AUTOMATION INTERFACES

GENERAL CATALOG

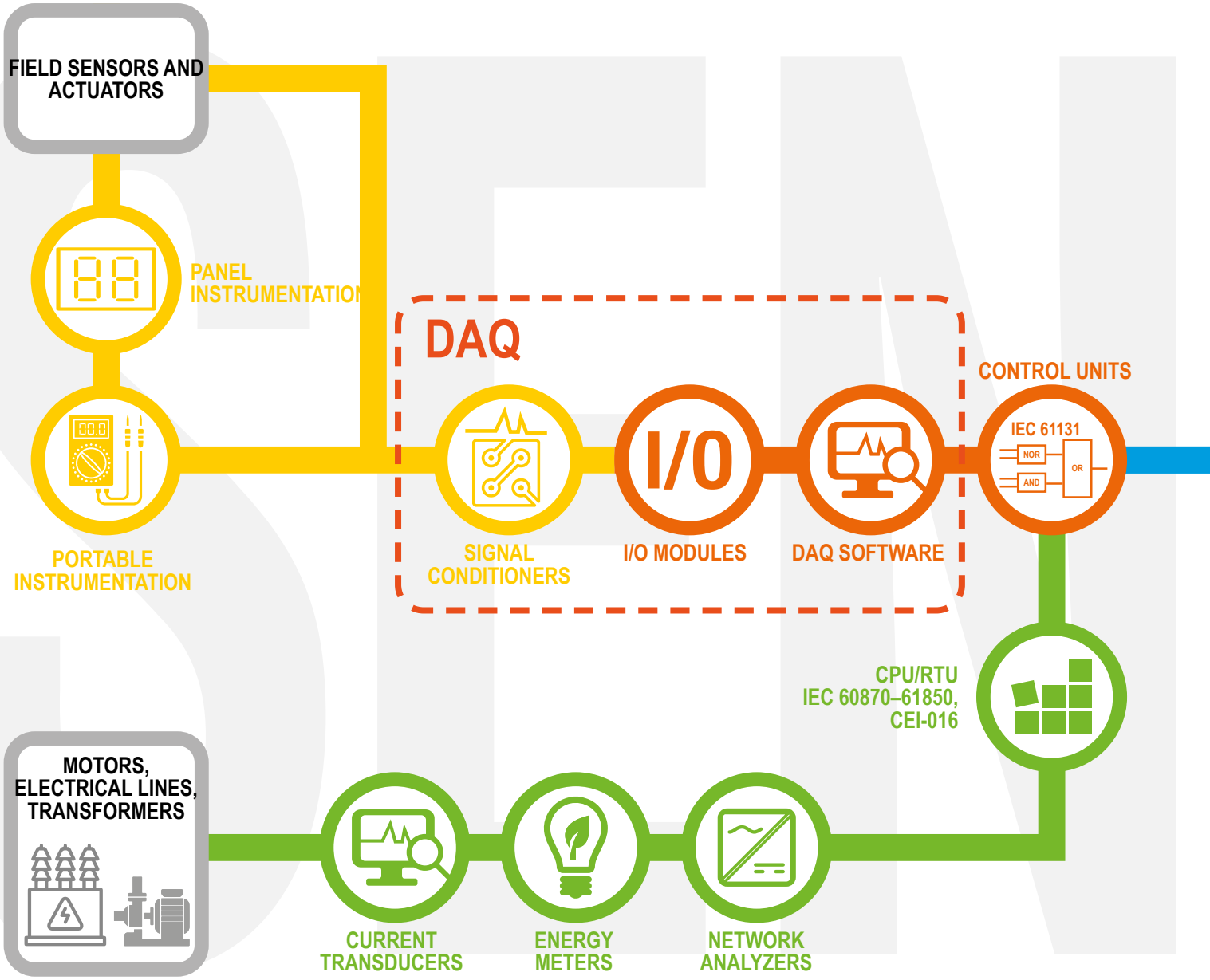
100% Made & Designed in Italy

SENECA

www.seneca.it

MISSION: WE MANAGE THE SIGNAL FROM SENSOR TO INDUSTRY 4.0

As one of the pioneering companies in Europe in the design and production of galvanic isolators and signal conditioners, SENECA provides an extensive catalog of high-performance and cost-effective products and systems. These solutions are capable of powering, isolating, converting, acquiring, displaying, and securely transmitting most industrial signals via cable, bus, or radio, thereby ensuring the integrity of the data processing cycle. In the era of Industry 4.0, manufacturing companies, machine builders, utilities, and the chemical and process industries increasingly rely on decentralized control devices and systems to monitor the operation of machines and plants. In this context, SENECA's goal is to ensure real-time access to data, providing clients with new information and tangible economic opportunities. This encapsulates the essence of the innovation process known as Industry 4.0, where data collection and connectivity are crucial.

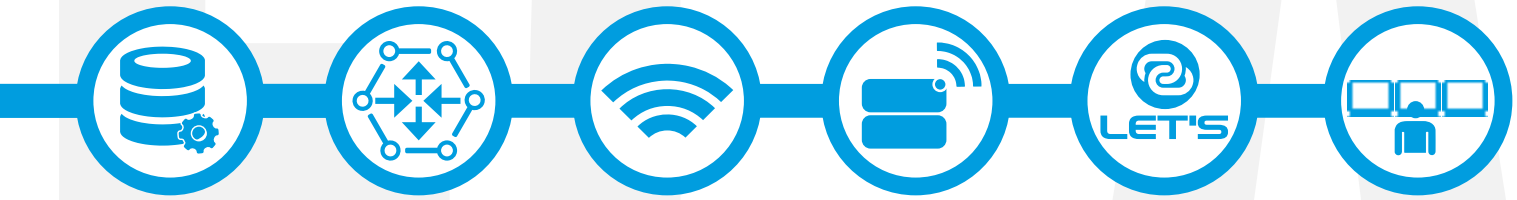


DATA ACQUISITION AND AUTOMATION

INDUSTRIAL COMMUNICATION AND REMOTE CONTROL

ENERGY AND ELECTRICAL MEASUREMENTS

PANEL AND MEASUREMENT INSTRUMENTATION



SMART DATALOGGER

INDUSTRIAL GATEWAYS

RADIOMODEM

RTU

EDGE SOLUTIONS / IIoT / REMOTE ACCESS

SUPERVISION, DATA CENTERS, DIGITAL PLATFORMS

SENECA

MADE IN ITALY
HIGH TECHNOLOGY

100% Made & Designed in Italy

Company

With over 35 years in the industrial automation sector, SENECA has achieved a leading position in the Italian market for electronic instrumentation by focusing on innovation, reliability, and expert support.
SENECA continuously innovates processes and products with targeted investments in cutting-edge machinery and skilled personnel.

Product Lines

The product lines, entirely conceived and produced within SENECA facilities, are compatible with and open to the most prevalent technological standards.
SENECA aims to consolidate and expand its range of excellence with a broad spectrum of products, particularly targeting automation technologies for data acquisition, remote control, supervision, and energy saving.

Business Units

Through the synergy of two business units (Automation Interfaces, Plant & Services) organized by quality standards, SENECA offers a complete array of automation solutions: from individual components to turnkey plants for any requirement.

Partnerships

SENECA collaborates with leading process industries, highly automated SMEs, major energy and industrial players, as well as various academic and research institutions.
SENECA develops a practical and effective business model, focused on solving real customer problems, and firmly believes in the technologies it brings to market.

Mission

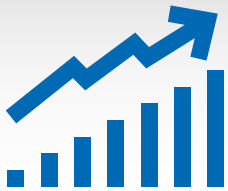
SENECA manufactures multi-sector equipment that powers, conditions, and galvanically isolates sensors and actuators, ensuring no device is damaged once connected to the control unit.
SENECA's products provide standardized signals via cables, buses, and wireless to most industrial control systems.

Markets

Electrical and process automation: oil & gas, refineries, chemical and petrochemical plants, steelworks, rolling mills, foundries, paper mills, sugar refineries, pharmaceutical industries, cement plants, metalworking, shipbuilding.
Distribution of electronic components, civil installations, home automation, remote control, and remote assistance. Solutions for the manufacturing sector, utilities, and building automation.

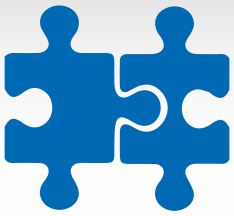
FACTS AND FIGURES

Italy's premier manufacturer of automation interfaces



Average growth rate over the last five years: 14%

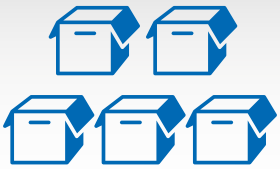
ISO 9001 quality certification since 1997



2 Synergistic Business Units

International product and process certifications

Global sales network with about 70 partners



150,000 units sold annually

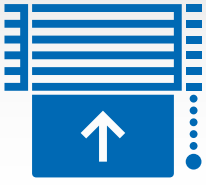
Latest generation Pick&Place: 50,000 components/hour

4 Product Lines +600 SKU Codes

Average order turnaround time: 48 hours

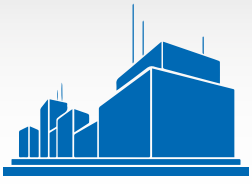
Over 2,500 active customers

Multichannel technical support within 48 hours



Automated warehouses with over 90,000 pieces readily available

Average MTBF > 1 million hours



High-tech headquarters exceeding 5,000 square meters

Customized warranties up to 60 months

DESIGN, PRODUCTION, LOGISTICS, UNDER ONE ROOF

DESIGN

- Integrated management of all product development phases
- Support from leading software for modeling, simulation, industrialization, and prototyping
- Employment of cutting-edge microelectronic technologies (FPGA, PSOC, CPLD, ASIC, DSP, MEMS, LVDS, VHDL)
- Hardware/Software engineering
- Rapid prototyping
- Metrological and electromagnetic compatibility tests

PRODUCTION

- SMT (Surface Mount Technology) lines for the latest generation Pick&Place machines: 50,000 components per hour
- AOI (Automated Optical Inspection) and ATE (Automatic Test Equipment) systems
- Burn-in tests across entire production
- Lean Production for rapid cycle changes
- Production process fully compliant with eco-friendly directives RAEE, ROHS, and REACH

STORAGE

- Immediate delivery of over 70,000 articles
- High-density secure storage in 12-meter-high towers
- Storage capacity equivalent to 1,000 square meters
- Real-time ERP connectivity
- Complete product traceability

1

DATA ACQUISITION AND AUTOMATION

1 DATA ACQUISITION AND AUTOMATION

SENECA's product line for Data Acquisition and Automation includes ModBUS RTU/TCP-IP, CANopen, Profinet IO I/O systems, HMI with LED, OLED, and IIoT technology, IEC 61131 logic controllers and for Energy Management IEC 60870-5-101, IEC 60870-5-104, IEC 61850 process controllers and flow computers. SENECA I/O systems are modular and open automation platforms for managing from a single signal to thousands of I/O. They include a wide variety of I/O modules: digital inputs, fast counters, digital relay and MOSFET outputs, analog channels (mA, V, Ohm, mV), strain gauges, resistance thermometers, thermocouples, electrical network measurements. SENECA systems are designed to support system integrators, engineering and design firms, instrument builders, electrical installers, and qualified technicians.

1.1 I/O MODULES

1.2 MULTIFUNCTION IEC 61131 CONTROLLERS

1.3 PROCESS CONTROL

1.4 HMI OLED

1.5 HMI OPERATOR PANELS

1.6 HMI IIoT

1.7 DAQ SOFTWARE

1.8 MANAGEMENT SOFTWARE

1.1

I/O MODULES

Z-PC LINE

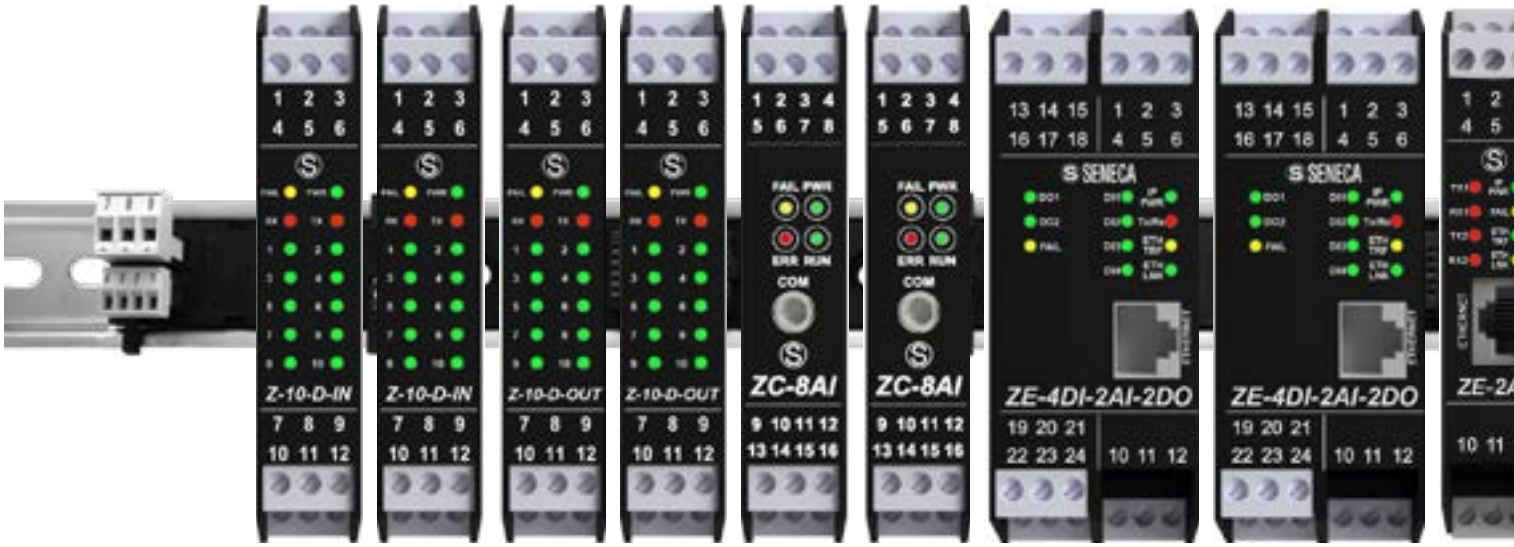
Scalable and Distributed I/O Modules

Extended Range

Modular management of the acquisition system, from a single signal to thousands of I/O with a wide range of analog, digital, temperature sensor, and load cell signals up to 24 digital and 8 analog signals in the same module.

ModBUS RTU/TCP-IP Models

Serial RS485 communication with ModBUS RTU protocol, up to 64 nodes without a repeater and speeds up to 115 kbps. Mixed I/O ModBUS RTU/TCP-IP modules with a 10/100Mbps Ethernet interface are configurable via a web server.



Configuration

Z-PC Series I/O modules offer multiple configuration possibilities from a single module to complex applications: plug&play EASY SETUP software, Z-NET4 design environment, SoftPLC IEC 61131-3, Web Server.

Integrations

Z-PC Series I/O modules create open and flexible IT-OT architectures. They can be integrated with multifunction controllers IEC 61131-3, HMI, network analyzers, third-party devices, and network interfaces and technologies (fieldbus, Ethernet, radio, optical fibers, IIoT, Edge, and Cloud).

Profinet Models

Z-PC Series I/O modules with Profinet IO RT Class 1 protocol are characterized by a minimum cycle time of 2 ms and Ethernet speed of 100 Mbps.
They support star, tree, and ring network architectures.

CANopen Models

Without the use of couplers, controllers, or repeaters for each communication line, the CANopen models ensure speeds up to 1 Mbps and are therefore ideal for system signal acquisition and control in plants and machinery.

Bus System

Power supply and data transmission are ensured by a bus support (RS485) that can be assembled from a DIN rail in formats of 1, 2, 4, 8 slots.
Alternatively, depending on the model, power supply and data transmission are distributed via terminals or IDC10 connectors.

Certifications

Passing rigorous tests for potential risks of fire, electrical shocks, and mechanical failures, most of the Z-PC Series I/O modules have UL (Underwriters Laboratories) international certification. The standard meets the most comprehensive requirements for the North American market.

R SERIES

I/O Modules with Integrated Networking

Applications

R Series I/O modules are designed for flexible wiring needs, reduced installation spaces (thickness 32 mm), high-density I/O applications.

Models
ModBUS RTU/TCP-IP

Modbus models support both Modbus TCP-IP communication (on 1 or 2 Ethernet ports) and serial RS485 communication with Modbus RTU protocol, up to 64 nodes without a repeater and speeds of 115 kbps.

Daisy Chain

Thanks to the dual Ethernet interface, a daisy chain connection to the next Ethernet device can be made, avoiding costly industrial switches and simplifying wiring.

Fault-by-pass

The Ethernet connection and data transmission remain active even in the event of a module failure or power outage, ensuring service availability and continuity.

Models
Profinet IO

R Series I/O modules with Profinet IO RT Class 1 protocol are characterized by a minimum cycle time of 2 ms and Ethernet speed of 100 Mbps.
They support star, tree, and ring network architectures.

Configuration

The configuration of ModBUS I/O is done via a web server. Profinet IO versions support softPLC IEC 61131-3 (e.g., Straton, CODESYS) and third-party design environments (e.g., Siemens TiA Portal).

ModBUS
Pass Through

Thanks to the "ModBUS Pass Through" feature, the module can redirect requests from Modbus TCP-IP to RS485, acting effectively as a gateway.

Peer-To-Peer

Digital signals can be duplicated across one or more modules in Peer-To-Peer mode (I/O mirror functionality) and transmitted remotely without the use of a Master PLC.

CHOICE GUIDE / GENERAL DATA AND CONFIGURATION

Model	Power Supply	Power Supply Trans-ducers	MAX ISOLATION	Format	Dimensions	Operating Temp.	UL
DIGITAL							
R-16DI-8DO	10..40 Vdc; 19..28 Vac	Yes, 12 Vdc / 40 mA	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-16DI-8DO-P	10..40 Vdc; 19..28 Vac	Yes, 12 Vdc / 40 mA	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-32DIDO-2	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-32DIDO-2-P	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
Z-10-D-OUT	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	x
Z-10-D-IN	10..40 Vdc; 19..28 Vac	Yes, 17 Vdc / 40 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	x
Z-5DI-2DO	10..40 Vdc; 19..28 Vac	Yes, 16 V / 30 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-20..+65°C	x
ZC-16DI-8DO	10..40 Vdc; 19..28 Vac	Yes, 16 V / 40 mA	1.5 kVac	Z-PC	35x102.5x111 mm	-10..+65°C	-
ZC-24DI	10..40 Vdc; 19..28 Vac	Yes, 16 V / 70 mA	1.5 kVac	Z-PC	35x102.5x111 mm	-10..+65°C	-
ZC-24DO	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	35x102.5x111 mm	-10..+65°C	-
Z-D-IN	10..40 Vdc; 19..28 Vac	Yes, 17Vdc / 20 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
Z-D-IO	10..40 Vdc; 19..28 Vac	Yes, 20 V / 30 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
Z-D-OUT	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ANALOG							
Z-3AO	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	x
Z-4AI	10..40 Vdc; 19..28 Vac	Yes, 20 Vdc, 40 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	x
Z-8AI	10..40 Vdc; 19..28 Vac	Yes, 13 Vdc / 90+90 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ZC-3AO	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ZC-8AI	10..40 Vdc; 19..28 Vac	Yes, 22 mA / 16 V	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
Z-DAQ-PID	10..40 Vdc; 19..28 Vac	Yes, 17 Vdc / 25 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ZE-2AI	10..40 Vdc; 19..28 Vac	Yes, 12 V / 40 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
ZE-2AI-P	10..40 Vdc; 19..28 Vac	Yes, 12 V / 40 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
MIXED							
R-4AO-8DIDO	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-4AO-8DIDO-P	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-4RTD-8DIDO	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-4RTD-8DIDO-P	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-8AI-8DIDO-2	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
R-8AI-8DIDO-2-P	10..40 Vdc; 19..28 Vac	-	1.5 kVac	R	106 x 90 x 32 mm	-25..+65°C	-
Z-4DI-2AI-2DO	10..40 Vdc; 19..28 Vac	Yes, 12 V / 40 mA, 12 V / 20 mA	3 kVac	Z-PC	35x102.5x111 mm	-25..+70°C	-
ZE-4DI-2AI-2DO	10..40 Vdc; 19..28 Vac	Yes, 12 V / 40 mA, 12 V / 20 mA	3 kVac	Z-PC	35x102.5x111 mm	-25..+70°C	-
ZE-4DI-2AI-2DO-P	10..40 Vdc; 19..28 Vac	Yes, 12 V / 40 mA, 12 V / 20 mA	3 kVac	Z-PC	35x102.5x111 mm	-25..+70°C	-
TEMPERATURE							
Z-4RTD2	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-20..+70°C	x
Z-4RTD2-SI	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
Z-4TC	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+65°C	-
Z-8NTC	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-20..+70°C	-
Z-8TC-1	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-20..+65°C	-
Z-8TC-LAB	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-20..+65°C	-
Z-8TC-SI	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
Z-8TC-SI-LAB	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
ZC-4RTD	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ZC-8TC	10..40 Vdc; 19..28 Vac	-	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
WEIGHING							
R-SG3	10..40 Vdc; 19..28 Vac	Yes, 5 Vdc / 60 mA	1.5 kVac	R	53.3x90x32.2 mm	-25..+65°C	-
R-SG3-P	10..40 Vdc; 19..28 Vac	Yes, 5 Vdc / 60 mA	1.5 kVac	R	53.3x90x32.2 mm	-25..+65°C	-
ZC-SG	10..40 Vdc; 19..28 Vac	Yes, 5 Vdc	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
ZE-SG3	10..40 Vdc; 19..28 Vac	Yes, 5Vdc / 60 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
ZE-SG3-P	10..40 Vdc; 19..28 Vac	Yes, 5Vdc / 60 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-
Z-SG	10..40 Vdc; 19..28 Vac	Yes, 5Vdc / 60 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-10..+65°C	-
Z-SG3	10..40 Vdc; 19..28 Vac	Yes, 5Vdc / 60 mA	1.5 kVac	Z-PC	17.5x102.5x111 mm	-25..+70°C	-

Special Features	CONFIGURATION					
	DIP Switch	EASY SETUP	EASY SETUP 2	Z-NET4	WEB SERVER	GSD/ GSDML/ EDS/XML
Daisy Chain, Fault-By-Pass, Pass-Through, Peer-To-Peer	x	-	x	-	x	
Daisy Chain, Fault-By-Pass	x	-	-	-		x
Daisy Chain, Fault-By-Pass, Pass-Through, Peer-To-Peer	x	-	-	-	x	
Daisy Chain, Fault-By-Pass	x	-	-	-		x
Programmable fail-safe function	x	x	x	x		
-	x	x	x	x		
-	x	x	x	x		
-	x	x	x	x		x
-	x	x	x	x		x
-	x	x	x	x		x
-	x	x	x	x		
-	x	x	x	x		
Programmable fail-safe function	x	x	x			
-	x	x	x	x		
-	x	x	x	x		
-	x	x	x	x		
-	x	x	x	-		x
-	x	x	x	-		x
PID Adjustment	x	x	x	x		
-	x	x	x	-	x	
-	x	-	-	-		x
Daisy Chain, LAN fault bypass, Max 32 Peer to Peer Rules (I/O Mirror), Counters with frequency measurement, TON, TOFF, Period, Modbus Passthrough (TCP-IP to RS485)	x	-	-	-	x	
Daisy Chain, LAN Fault ByPASS	x	-	-	-		x
Daisy Chain, LAN fault bypass, Max 32 Peer to Peer Rules (I/O Mirror), Counters with frequency measurement, TON, TOFF, Period, Modbus Passthrough (TCP-IP to RS485)	x	-	-	-	x	
Daisy Chain, LAN Fault ByPASS	x	-	-	-		x
Daisy Chain, Fault-By-Pass, Pass-Through, Peer-To-Peer, 1 input available for PT100	x	-	-	-	x	
Daisy Chain, Fault-By-Pass, 1 input available for PT100	x	-	-	-		x
-	x	x	x	x		
-	x	x	x		x	
-	x	-	-	-		x
-	x	x	x	x		
-	x	x		x		
-	x	x	x	x		
-	x	x	x	x		
-	x	x	x	x		
Interchangeable terminals	x	x	-	-		
-	x	x	-	-		
Interchangeable terminals	x	x	-	-		
-	x	x	x	-		x
-	x	x	x	-		x
Tare acquisition, stable weighing, predictive filter, piece counting	x	-	-	-	x	
Tare acquisition, stable weighing, Daisy Chain, Fault-By-Pass, Predictive filter, piece counting	x	-	-	-		x
Tare acquisition, stable weighing	x	x	x	-		x
Tare acquisition, stable weighing, predictive filter, piece counting	x	-	-	-	x	
Tare acquisition, stable weighing, predictive filter, piece counting	x	-	-	-		x
Tare acquisition, stable weighing	x	x	x	x		
Tare acquisition, stable weighing, predictive filter, piece counting	x	-	x	-		

CHOICE GUIDE / COMMUNICATION AND I/O

Model	Protocols				Interfaces					DI		
	ModBUS RTU	ModBUS TCP-IP	CANopen	Profinet IO	Ethernet Ports	Serial Ports	USB Ports	Jack	CAN Port	#	Type	
DIGITAL												
R-16DI-8DO	x	x	-		2	1 (RS485)	-	-	-	16	PNP, NPN	
R-16DI-8DO-P	-	-	-	x	2	-	-	-	-	16	PNP, NPN	
R-32DIDO-2	x	x	-		2	1 (RS485)	-	-	-	-	-	
R-32DIDO-2-P	-	-	-	x	2	-	-	-	-	-	-	
Z-10-D-OUT	x	-	-	-	-	1 (RS485)	-	-	-	-	-	
Z-10-D-IN	x	-	-	-	-	1 (RS485)	-	-	-	10	Reed, Contact, Proximity, PNP, NPN	
Z-5DI-2DO	x	-	-	-	-	1 (RS485)	1	-		5	Reed, Contact, Proximity, PNP, NPN	
ZC-16DI-8DO	x	-	x	-	-	1 (RS485)	1	-	1	16	PNP	
ZC-24DI	x	-	x	-	-	1 (RS485)	1	-	1	24	PNP	
ZC-24DO	x	-	x	-	-	1 (RS485)	1	-	1		-	
Z-D-IN	x	-	-	-	-	1 (RS485)	-	-	-	5	Reed, Contact, proximity PNP, NPN	
Z-D-IO	x	-	-	-	-	1 (RS485)	-	-	-	6	Reed, Contact, Proximity, PNP, NPN	
Z-D-OUT	x	-	-	-	-	1 (RS485)	1	-	-	-	-	
ANALOG												
Z-3AO	x	-	-	-	-	1 (RS485)	1			-	-	
Z-4AI	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8AI	x	-	-	-	-	1 (RS485)	1			-	-	
ZC-3AO	-	-	x	-	-	1 (RS232)		1	1	-	-	
ZC-8AI	-	-	x	-	-	1 (RS232)		1	1	-	-	
Z-DAQ-PID	x	-	-	-	-	1 (RS232/RS485)		1		-	-	
ZE-2AI	x	x	-	-	2	1 (RS485)				-	-	
ZE-2AI-P	-	-	-	x	2					-	-	
MIXED												
R-4AO-8DIDO	x	x	-		2	1 (RS485)	-	-	-	-	-	
R-4AO-8DIDO-P	-	-	-	x	2	-	-	-	-	-	-	
R-4RTD-8DIDO	x	x	-		2	1 (RS485)	-	-	-	-	-	
R-4RTD-8DIDO-P	-	-	-	x	2	-	-	-	-	-	-	
R-8AI-8DIDO-2	x	x	-		2	1 (RS485)	-	-	-	-	-	
R-8AI-8DIDO-2-P	-	-	-	x	2	-	-	-	-	-	-	
Z-4DI-2AI-2DO	x	-	-		-	1 (RS485)	1	-	-	4	PNP, NPN	
ZE-4DI-2AI-2DO	x	x	-		2	1 (RS485)	-	-	-	4	PNP, NPN	
ZE-4DI-2AI-2DO-P	-	-	-	x	2	-	-	-	-	4	PNP, NPN	
TEMPERATURE												
Z-4RTD2	x	-	-	-	-	1 (RS485)	1			-	-	
Z-4RTD2-SI	x	-	-	-	-	1 (RS485)	1			-	-	
Z-4TC	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8NTC	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8TC-1	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8TC-LAB	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8TC-SI	x	-	-	-	-	1 (RS485)	1			-	-	
Z-8TC-SI-LAB	x	-	-	-	-	1 (RS485)	1			-	-	
ZC-4RTD	-	-	x	-	-	1 (RS232)		1	1	-	-	
ZC-8TC	-	-	x	-	-	1 (RS232)		1	1	-	-	
WEIGHING												
R-SG3	x	x	-	-	1	1 (RS485)	1	-	-	-	-	
R-SG3-P	-	-	-	x	1	-	-			-	-	
ZC-SG	-	-	x	-	-	1 (RS232)	-	1	1	-	-	
ZE-SG3	x	x	-		1	1 (RS485)	-	-	-	-	-	
ZE-SG3-P	-	-	-	x	1	-	-	-	-	-	-	
Z-SG	x	-	-	-	-	1 (RS485)	1	-	-	-	-	
Z-SG3	x	-	-	-	-	1 (RS485)	1	-	-	-	-	

	Counters	DO #	DO Type	DI/DO #	DI/DO Type	AI #	AI Type	AO #	AO Type	Max resolution (AI/AO)
	16, 5kHz, 32bit	8	SPST Relay	-	-	-	-	-	-	-
	-	8	SPST Relay	-	-	-	-	-	-	-
	32, 500Hz, 32 bit	-	-	32	PNP, Mosfet	-	-	-	-	-
	-	-	-	32	PNP, Mosfet	-	-	-	-	-
	-	10	Mosfet	-	-	-	-	-	-	-
	10, 2.5kHz, 32 bit	-	-	-	-	-	-	-	-	-
	5, 5kHz, 32bit	2	SPST Relay		-	8	-	-	-	-
	8, 10kHz, 32bit	8	Mosfet		-		-	-	-	-
	8, 10kHz, 32bit	-		-	-	-	-	-	-	-
	-	24	Mosfet	-	-	-	-	-	-	-
	4, 100Hz, 16bit; 1, 10 kHz, 32bit			-	-	-	-	-	-	-
	-	2	SPST Relay	-	-	-	-	-	-	-
	-	5	SPST Relay	-	-	-	-	-	-	-
	-	-	-	-	-		-	3	mA, V	12 bit
	-	-	-	-	-	4	mA, V	-	-	16 bit
	-	-	-	-	-	8	mA, V	-	-	16 bit
	-	-	-	-	-		-	3	mA,V	14 bit
	-	-	-	-	-	8	mA, V	-	-	15 bit
	-	-	-	-	-	1	mA, V, mV, Ohm, TC J,K,T,E,N,R,S,B,L, PT100, PT500, PT1000, NI100	1	mA, V	14 bit
	-	-	-	-	-	2	mA, V	-	-	16 bit
	-	-	-	-	-	2	mA, V	-	-	16 bit
	-	-	-	8	PNP, Mosfet	-	-	4	mA, V	16 bit
	-	-	-	8	PNP, Mosfet	-	-	4	mA, V	16 bit
	-	-	-	8	PNP, Mosfet	4	Pt100, Pt500, Pt1000, Ni100, Cu50, Cu100, Ni120, Ni1000	-	-	14 bit
	-	-	-	8	PNP, Mosfet	4	Pt100, Pt500, Pt1000, Ni100, Cu50, Cu100, Ni120, Ni1000	-	-	14 bit
	-	-	-	8	PNP, Mosfet	8	mA, V, mV, TC J,K,T,E,N,R,S,B,L, PT100	-	-	24 bit
	-	-	-	8	PNP, Mosfet	8	mA, V, mV, TC J,K,T,E,N,R,S,B,L, PT100 (1 channel)	-	-	24 bit
	4, 5kHz, 32bit	2	SPDT Relay	-	-	2	mA, V	-	-	16 bit
	4, 5kHz, 32bit	2	SPDT Relay	-	-	2	mA, V	-	-	16 bit
	-	2	SPDT Relay	-	-	2	mA, V	-	-	16 bit
	-	-	-	-	-	4	PT100, PT500, PT1000, NI100	-	-	14 bit
	-	-	-	-	-	4	PT100, PT500, PT1000, NI100, CU50, CU100, NI120, NI1000	-	-	24 bit
	-	-	-	-	-	4	TC J,K,R,S,T,B,E,N, mV	-	-	16 bit
	-	-	-	-	-	8	NTC	-	-	16 bit
	-	-	-	-	-	8	TC J, K, E, N, S, R, B, T	-	-	16 bit
	-	-	-	-	-	8	TC J, K, E, N, S, R, B, T	-	-	16 bit
	-	-	-	-	-	8	TC J,K,R,S,T,B,E,N,L mV	-	-	24 bit
	-	-	-	-	-	8	TC J,K,R,S,T,B,E,N,L mV	-	-	24 bit
	-	-	-	-	-	4	Pt100, Ni100, Pt500, Pt1000	-	-	14 bit
	-	-	-	-	-	8	TC J,K,E,N,S,R,B,T, mV	-	-	15 bit
	-	-	-	2	PNP, NPN, Mosfet	1	Load Cell (mV)	-	-	24 bit
	-	-	-	2	PNP, NPN, Mosfet	1	Load Cell (mV)	-	-	24 bit
	-	-	-	1	PNP, Mosfet	1	Load Cell (mV)	-	-	15 bit
	-	-	-	2	PNP, Mosfet	1	Load Cell (mV)	1	mA, V	24 bit
	-	-	-	2	PNP, Mosfet	1	Load Cell (mV)	-	-	24 bit
	-	-	-	1	PNP, Mosfet	1	Load Cell (mV)	1	mA, V	24 bit
	-	-	-	2	PNP, Mosfet	1	Load Cell (mV)	1	mA, V	24 bit

SIGNAL FLOW

SENSORS & ACTUATORS




mA
V
Ohm
mV

Inputs
Namur, Reed
Photoelectric,
Proximity
TTL
Variable Reluctance
PNP, NPN
24 V Pulses
Counters
Outputs
SPST / SPDT Relays
Mosfet

Analog
mA, V
Digital
Namur, Reed
Photoelectric,
Proximity, TTL,
Variable Reluctance,
PNP, NPN, 24 V Pulses
Relay, Mosfet

I/O Modules ANALOG

I/O Modules DIGITAL

I/O Modules MIXED

Modbus

Data Recorder
DAQ Software

Multifunction IEC 61131-3 IEC 61850/870 Controllers

RTU / IIoT Edge Gateway

IT / IIoT Protocols
MQTT(s), OPC UA, http(s) post, Wi-Fi, 4G, PPP, HTTP(s), SMTP, FTP(s), SNMP

HMI

SCADA / Control Room

LET'S

Remote Control / Remote Assistance




Strain Gauge Load Cells

Thermocouples J, K, R, S, T, B, E, N**Thermistors** NTC
Resistance Thermometers Pt100, Pt500, Pt1000, Ni1000, Cu50, Cu100, Ni120
mV
Ohm

A, V
AC/DC

WEIGHING I/O Modules

TEMPERATURE I/O Modules

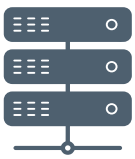
Network Analyzers

PLCs and Third-Party Devices

Radio Modules

Protocol Conversion Gateways

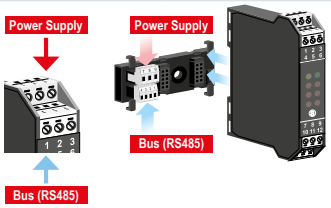
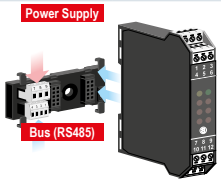
IoT / Cloud Platforms



Data Center

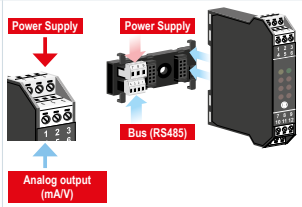
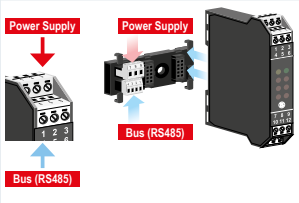
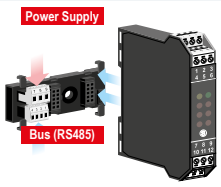
Modbus
EtherNet/IP
PROFINET
OPC UA
M-Bus
IEC 61850

DIGITAL I/O MODULES MODBUS RTU

	Z-D-IN	Z-D-OUT	Z-10-D-IN	Z-10-D-OUT
				
	Module with 5 digital inputs ModBUS RTU	**Module with 5 digital outputs ModBUS RTU**	**Module with 10 digital inputs ModBUS RTU**	**Module with 10 digital outputs ModBUS RTU**
INPUT / OUTPUT DATA				
Number of Channels	5	5	10	10
Type	#5 opto-isolated inputs Reed, Proximity, PNP, NPN, clean contact, etc. #4 counters, 100Hz, 16bit; 1 counter, 10 kHz, 32bit Debounce filter 5..250 ms Overflow indication for each counter	#5 SPST relay outputs (NO with common) Relay capacity max 5A 250 Vac with resistive load; 2A with inductive load Total current max 12 A on common terminal Relay safety state setting at startup in case of communication failure Safety time adjustable from 0.5 to 25 ms	#10 opto-isolated channels (reed, proximity, pnp, npn, clean contact) with common negative self-powered 24 Vdc, transient protected up to 600 W/ms #10 counters, 2.5kHz, 32 bit Inputs protected by fast transient TVS suppressors 600 W/ms Forward or reverse totalized counting Overflow indication for each counter Forward or reverse totalized counting	#10 MOSFET outputs protected against short circuit with common negative, powered from 6 to 40 Vdc, capacity 0.5 A, resistive or inductive load Safety time adjustable 33 ms..2184 s Voltage measurement of load supply Diagnostic signaling on the front for each channel: ON/OFF/Overload/ Open circuit Programmable fail-safe function (state of outputs in case of serial communication fail)
COMMUNICATION				
Interfaces	RS485 2 wires			
Speed	Up to 115.20 bps			
Protocols	ModBUS RTU slave			
Communication Time	< 10 ms (@ 38400 bps)			
Maximum distance	Up to 1,200 m			
Connectivity	Max 32 nodes			
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac			
Max Consumption	2.5 W			
Isolation	1,500 Vac across 3 ways			
Power supply for transducers	Yes, 17 Vdc / 40 mA	-	Yes, 17 Vdc / 40 mA	-
Protection class	IP20			
Operating Temperature	-10..+65°C			
Dimensions	17.5 x 100 x 112 mm			
Weight	Approximately 140 g			
Enclosure	Nylon 6 filled with 30% fiberglass, self-extinguishing class V0			
Connections	Removable screw terminals for conductors up to 2.5 mm2			
Mounting	35 mm DIN rail 46277			
Programming	Z-NET4 (system software) EASY SETUP (plug&play software) DIP Switch			
Data Memory	EEPROM for configuration parameters, retention time 10 years, FeRAM for saving counters			
Certifications	CE		UL-UR CSA, CE	
Bus support power / data				
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm			

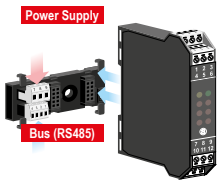
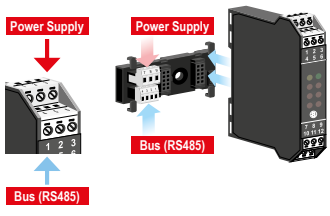
The technical data and diagrams in this document are indicative and not binding.

ANALOG I/O MODULES MODBUS RTU

	Z-DAQ-PID	Z-4AI	Z-8AI	Z-3AO
				
	Universal analog I/O module with PID control ModBUS RTU	**Module with 4 analog inputs ModBUS RTU**	**Module with 8 analog inputs ModBUS RTU**	**Module with 3 analog outputs ModBUS RTU**
INPUT / OUTPUT DATA				
Number of Channels	1 input, 1 output	4 inputs	8 inputs	3 outputs (active)
Type	Millivolt INPUT: configurable from -10 to +80 mV Voltage: configurable from 0 to 10 V Current: configurable from 0 to 20 mA Potentiometer: 1 kΩ.. 100 kΩ Thermocouple J, K, E, T, N, B, R, S RTD: Pt100, Pt500, Pt1000, Ni100 OUTPUT Voltage configurable between 0-10 V Active / passive current configurable between 0-20 mA	Bipolar voltage ±10 Vdc or ±2 Vdc, impedance 100 KΩ Bipolar direct current ± 20 mA, impedance 100 Ω	Programmable bipolar inputs in voltage (±2.5 Vdc, ±10 Vdc, impedance >100 kΩ) or in current (±20 mA)	Voltage (±10 V, 0/2..10 V, drive impedance > 600 W) or in current (0/4..20 mA, drive impedance < 600 Ω)
Resolution	14 bit	16 bit	16 bit	12 bit
Precision class	0.1%			
Stability	0.01%/°C			
COMMUNICATION				
Interfaces	RS485 2 wires			
	RS232 (3.5 mm stereo jack)	Micro USB		
Speed	Up to 115.20 bps			
Protocols	ModBUS RTU slave			
Communication Time	< 10 ms (@38.400 bps)			
Maximum distance	Up to 1,200 m			
Connectivity	Max 32 nodes			
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac			
Max Consumption	2.5 W			
Isolation	1,500 Vac across 3 ways			
Power supply for transducers	Yes, 17 Vdc / 40 mA	-	Yes, 17 Vdc / 40 mA	-
Protection class	IP20			
Operating Temperature	-10..+65°C		-20..+65°C	
Dimensions	17.5 x 100 x 112 mm			
Weight	Approximately 140 g			
Enclosure	Nylon 6 filled with 30% fiberglass, self-extinguishing class V0			
Connections	Removable screw terminals for conductors up to 2.5 mm2 Rear IDC10 connector for DIN rail 46277			
Mounting	Vertical position DIN rail 35mm IEC EN60715			
Programming	Z-NET4 (system software) EASY SETUP (plug&play configurator) DIP Switch			
Data Memory	EEPROM for configuration parameters, retention time 10 years			
Certifications	CE, UKCA	CE, UKCA	CE, UKCA, UL-UR	CE, UKCA, UL-UR
Bus support power / data				
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm			

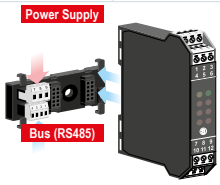
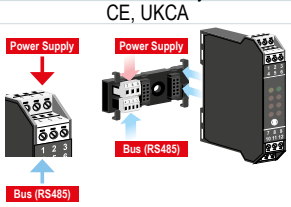
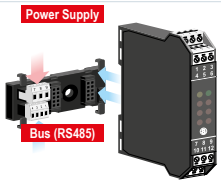
The technical data and diagrams in this document are indicative and not binding.

MIXED I/O MODULES MODBUS RTU

	Z-D-IO	Z-5DI-2DO	Z-4DI-2AI-2DO
			
	Universal analog I/O module with PID control ModBUS RTU	**Module with 4 analog inputs ModBUS RTU**	**Module with 8 analog inputs ModBUS RTU**
INPUT / OUTPUT DATA			
Number of Channels	6 inputs, 2 outputs	5 inputs, 2 outputs	6 inputs, 2 outputs
Type	INPUT # 6 digital inputs reed, proximity, pnp, npn, contact etc. OUTPUT #2 SPST digital relay outputs with common, capacity 2 A 250 Vac	INPUT # 5 digital inputs reed, proximity, pnp, npn, contact etc. OUTPUT #2 SPST digital relay outputs with common, capacity 2 A 250 Vac	# 4 digital inputs PNP / NPN; Input Tens. OFF < 4V, ON > 8V (max. 24 Vdc). Input Curr. 20mA #2 analog inputs 0-20 mA / 0-30 V; Resolution 16 bit (1..300 ms); samp. 0.1% f.s; protection 40V / 25mA #2 digital relay outputs NC / NO SPDT, max 250Vac - 5A
COMMUNICATION			
Interfaces	RS485 2 wires		
	RS232 (3.5 mm stereo jack)	Micro USB	
Speed	Up to 115,200 bps		
Protocols	MosBUS RTU		
Communication Time	< 10 ms (@38.400 bps)		
Maximum distance	Up to 1,200 m		
Connectivity	Max 32 nodes		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	2 W	3.5 W	
Isolation	1.5 kVac (across 3 ways)		
Power supply for transducers	Yes, 17 Vdc / 25 mA	Yes, 20 Vdc, 40 mA	Yes, 13 Vdc / 90+90 mA
Protection class	IP20		
Operating Temperature	-10..+65°C		-20..+65°C
Dimensions	17.5x100x112 mm		
Weight	Approximately 140 g		
Enclosure	Nylon 6 filled with 30% fiberglass, self-extinguishing class V0		
Connections	Removable screw terminals for conductors up to 2.5 mm2 Rear IDC10 connector for DIN rail 46277		
	3.5 mm jack (COM)	Frontal Micro USB	
Mounting	35 mm DIN rail 46277		
Programming	Z-NET4 (system software) EASY SETUP (plug&play configurator) DIP Switch EEPROM for configuration parameters, retention time 10 years		
Data Memory	EEPROM for configuration parameters, retention time 10 years, FeRAM for saving counters		
Certifications	CE, UKCA	CE, UKCA	CE, UKCA, UL-UR
Bus support power / data			
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm		

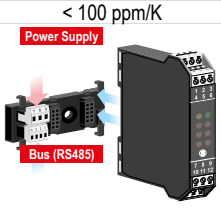
The technical data and diagrams in this document are indicative and not binding.

TEMPERATURE I/O MODULES MODBUS RTU

	Z-4RTD2	Z-4RTD2-SI	Z-4TC	Z-8NTC
				
	Module with 4 resistance thermometer inputs ModBUS RTU	**Module with 4 resistance thermometer inputs @24bit ModBUS RTU**	**Module with 4 thermocouple inputs ModBUS RTU**	**Module with 8 resistance thermometer inputs NTC ModBUS RTU**
INPUT / OUTPUT DATA				
Number of channels	4 inputs	4 inputs	4 inputs	8 inputs
Type	RTD with 2,3,4 wire wiring PT100, EN 60751/A2 (ITS-90), -200..+650°C PT500, EN 60751/A2 (ITS-90), -200..+750°C PT1000, EN 60751/A2 (ITS-90), -200..+210°C NI100, EN 60751/A2 (ITS-90), -60..+250°C	RTD with 2,3,4 wire wiring PT100, EN 60751/A2 (ITS-90), -200..+650°C PT500, EN 60751/A2 (ITS-90), -200..+750°C PT1000, EN 60751/A2 (ITS-90), -200..+210°C NI100, EN 60751/A2 (ITS-90), -60..+250°C CU50 GOST 6651-2009, -180..+200°C CU100 GOST 6651-2009, -180..+200°C Ni120 DIN 43760, -60..+250°C	TC type J, K, R, S, T. B, E, N Automatic detection of broken TC Input impedance: > 10 Ohm DMRR: > 60dB (50Hz); > 54dB (60Hz). Cold junction compensation error: <2°C (between 0 and 50°C) F.S voltage ± 150 mV with 16 bit resolution; input impedance >10 MOhm	Generic NTC, user-definable curve. Nominal values 1K, 10K, 50K @25°C; Resistance from 100 Ohm to 10 kOhm; from 1 kOhm to 100 KOhm; from 5 kOhm to 500 kOhm
Resolution	14 bit	24 bit	16 bit	16 bit
Precision class	0.05	0.05	0.1%	0.5%
Thermal Drift	< 50 ppm/K	< 50 ppm/K	< 50 ppm/K	<100ppm/K
COMMUNICATION				
RS485	#1 RS485 IDC10			
Protocol	ModBUS RTU			
Communication Time	< 10 ms (@38.400 bps)			
Max speed	115.200 bps			
Maximum distance	1,200 m			
Max # of nodes	32			
USB	#1 Micro USB			
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac			
Max Consumption	0.7 W		1 W	0.6 W
Max isolation	1,5 kVac across 6 ways	1,5 kVac across 3 ways		
Protection class	IP20			
Operating Temperature	-20..+70°C	-25..+70°C	-25..+65°C	-20..+70°C
Dimensions	17.5 x 100 x 112 mm			
Weight	120 g		110 g	Approximately 140 g
Enclosure	Nylon 6 filled with 30% fiberglass, self-extinguishing class V0			
Connections	Removable screw terminals for conductors up to 2.5 mm2 IDC10 connector for DIN rail Micro USB			
Mounting	35 mm DIN rail 46277			
Programming	DIP Switch EASY SETUP			
	EASY SETUP 2	-	EASY SETUP 2	
	Z-NET4			
Data Memory	EEPROM for configuration parameters, retention time 10 years			
Certifications	CE, UKCA, UL	CE, UKCA		
Bus support power / data				
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm			

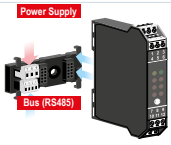
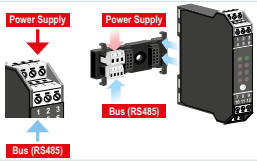
The technical data and diagrams in this document are indicative and not binding.

TEMPERATURE I/O MODULES MODBUS RTU

	Z-8TC-1	Z-8TC-LAB	Z-8TC-SI	Z-8TC-SI-LAB
				
	Modules with 8 thermocouple inputs ModBUS @15bit	**Module with 8 thermocouple inputs ModBUS @15 bit and interchangeable terminals**	**Modules with 8 thermocouple inputs ModBUS @24bit**	**Module with 8 thermocouple inputs ModBUS @24 bit and interchangeable terminals**
INPUTS / OUTPUTS / MEASUREMENT				
# of channels	8 individually activatable and configurable inputs			
Type	Thermocouple J, K, R, S, T. B, E, N (EN 600584-1, GOST R8 585) Range between -210 and + 1820 °C			
	Span: -10.1..81.4 mV		Span: -±150mV	
	Shunt up to 70 mV			
Measurement format	Voltage (µV), temperature (°C) on 16 bit integer and 32 bit floating point, direct or swapped			
Distance	Up to 1,200 m			
COMMUNICATION				
Interfaces	RS485 (IDC10), 2 wires / Micro USB			
Speed	Up to 115 kbps			
Protocol	ModBUS RTU			
Communication Time	<10 ms		<5 ms	
Channel sampling time	20..90 ms		25..400 ms	
Distance	Up to 1,200 m			
Connectivity	Max 32 nodes			
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac (50-60 Hz)			
Consumption	Max 0.6 W			
Isolation	1,500 Vac across 6 ways		1,500 Vac across 3 ways	
Protection against ESD	4 kV			
Protection class	IP20			
Operating Temperature	-20..+65°C		-25..+70°C	
Temperature Storage	-20..+85°C		-30..+85°C	
Dimensions	17.5 x 100 x 112 mm			
Weight	140 g			
Enclosure	PA6, black color			
Connections	Terminal block, removable 4 ways, pitch 3.5mm, max cable section 1.5mm2	Terminal block, removable 4 ways, interchangeable, pitch 3.5mm, max cable section 1.5mm2	Terminal block, removable 4 ways, pitch 3.5mm, max cable section 1.5mm2	Terminal block, removable 4 ways, interchangeable, pitch 3.5mm, max cable section 1.5mm2
	Rear IDC10 connector for DIN rail #1 Frontal Micro USB 2.0 for configuration and ModBUS RTU communication			
Mounting	35 mm DIN rail (IEC/EN 60715)			
Programming	DIP Switch, EASY SETUP, Z-NET4			
Data Memory	EEPROM for configuration parameters, retention time 10 years			
Certifications	CE, UKCA			
INPUT PAIR SETTINGS				
Reading stabilization filter	Yes			
Rejection	50/60 Hz			
Cold junction compensation	Yes			
ADC				
Resolution	15 bit		24 bit	
Precision class	0.1%		0.05%	
Stability	0.04%			
Linearity	0.025%			
Thermal Drift	< 100 ppm/K			
Bus support power / data				
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm			

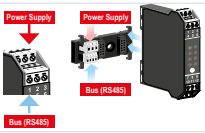
The technical data and diagrams in this document are indicative and not binding.

WEIGHING I/O MODULES MODBUS RTU

	Z-SG	Z-SG3
		
	Strain gauge converter modules with front Micro USB port	**Advanced strain gauge converter module ModBUS RTU**
INPUT / OUTPUT DATA		
Analog Input for up to 8 load cells in parallel	#1 ANALOG INPUT Differential measurement 4 or 6 wires / Input impedance: > 1 MΩ / Full scale: ± 10 mV / ± 320 mV / Error: 0.01% f.s. Thermal stability: 0.0025%/°C f.s. LOAD Power supply voltage: 5 Vdc / Minimum impedance: 87 Ω equivalent / Sensitivity: From ±1 mV/V to ±64 mV/V / Load cells: 4 or 6 wires	
Load cell trimming	Yes	
Re-transmitted Analog Output (net weight)	#1 ANALOG OUTPUT Voltage: Configurable between 0 - 10 Vdc, minimum load resistance 2 kΩ Current: Configurable between 0 - 20 mA, maximum load resistance 500 Ω Re-transmission error: 0.1% of the maximum range / Response time (10%..90%): 5 ms	
Digital Input / Output (tare calibration or weight threshold)	#1 DIGITAL INPUT/OUTPUT Optoisolated Digital Input: Min. voltage 12 V / Max voltage 30 V / Optoisolated Digital Output: Min. current 50 mA / Max voltage 30 V	
COMMUNICATION		
Interfaces	RS485 2 wires on terminals / RS485 on IDC10 connector / #1 Micro USB (programming)	
Speed	Up to 115,200 bps	
Protocols	ModBUS RTU	
Communication Time	< 10 ms (@38.400 bps)	
Maximum distance	Up to 1,200 m	
Connectivity	Max 32 nodes	
ModBUS Communication	Up to 128 nodes without repeater and max speed 115 kbps	
GENERAL DATA		
Power Supply	10..40 Vdc; 19..28 Vac	
Max Consumption	2 W	
Isolation	1.5 kVac	
Protection against ESD discharges	Yes, 4 kV	
Power supply for transducers	Yes, 5Vdc / 60 mA	
Protection class	IP20	
Operating Temperature	-10..+65°C	-25..+70°C
Dimensions	17.5x100x112 mm	
Weight	Approximately 110 g	
Enclosure	Nylon 6 filled with 30% fiberglass, self-extinguishing class V0	
Connections	Removable screw terminals for conductors up to 2.5 mm2 Rear IDC10 connector for DIN rail 46277 / Frontal Micro USB	Removable screw terminals 3 ways, pitch 5 mm
Mounting	Vertical position DIN rail 35mm IEC EN60715	
Certifications	CE, UKCA	
PROGRAMMING		
DIP Switch	x	x
Z-NET4	x	-
EASY SETUP	x	-
EASY SETUP 2	-	x
MEASUREMENTS		
ADC	24 bit	
Precision class	0.01%	
Stability	0.025%/°C	
Thermal Drift	<25 ppm/°C	
Integer / floating point value	X (weight only)	x
Min/max net weight value	-	x
Stabilized measurement with noise filter and predictive algorithm	-	x
Ratiometric measurement	x	x
ADVANCED FUNCTIONS		
Tare Functions (Silos, Reset, Acquisition)	-	x
Piece Counting Function	-	x
Datalogging on EASY Setup	-	x
Stable weight indication	x	x
Peer-To-Peer	-	x
Pass-Through	-	x
ADVANCED FUNCTIONS		
Upgradable Firmware	-	x
Independent digital I/O	-	x
Sampling frequency	-	x
Alarm threshold with hysteresis	-	x
Resolution	-	x
Floating point order	-	-
Bus support power / data		
	Z-PC-DINAL2-17.5 Quick DIN rail mounting support - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick DIN rail mounting support - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick DIN rail mounting support - 8 SLOTS P=17.5mm	

The technical data and diagrams in this document are indicative and not binding.

MODBUS RTU/TCP-IP I/O MODULES

	ZE-4DI-2AI-2DO	ZE-2AI	ZE-SG3
			
	Mixed module 4 digital inputs, 2 analog inputs, 2 digital outputs, ModBUS RTU / ModBUS TCP-IP	**Module 2 voltage - current inputs / ModBUS RTU / ModBUS TCP-IP**	**Advanced strain gauge converter module ModBUS RTU/ModBUS TCP-IP**
DIGITAL INPUTS			
Number	# 4 Digital Inputs	-	8 inputs
Type	PNP / NPN; Input Voltage. OFF < 4V, ON > 8V (max. 24 Vdc). Input Curr. 20mA	-	16 bit
Max frequency	5 kHz		
Current consumption	3mA @ 12Vdc, 10mA @ 24Vdc		
ADC	12..16 bit @10..150ms	-	
Counters	#4 resettable counters @32 bit max 5 kHz	-	
DIGITAL OUTPUTS			
Number	2 digital outputs	-	
Type	SPDT NA / NC Relay, max 250Vac - 5A	-	
DIGITAL INPUTS/OUTPUTS			
Number	-	-	#2 digital inputs/outputs
Type	-	-	Optoisolated Digital Input: Min. voltage 12 V / Max voltage 30 V Optoisolated Digital Output: Min. current 50 mA / Max voltage 30 V
ANALOG INPUTS			
Number	#2 analog inputs	#2 analog inputs	#1 analog input (up to 4 load cells in parallel)
Type	0-20 mA / 0-30 V; Resolution 16 bit (1..300 ms); samp. 0.1% f.s; protection 40V / 25mA	0-20 mA / 0-30 V; Resolution 16 bit (1..300 ms); samp. 0.1% f.s; protection 40V / 25mA	Differential measurement 4 or 6 wires Input impedance: > 1 MΩ Full scale: ± 10 mV / ± 320 mV Error: 0.01% f.s. Thermal stability: 0.0025%/°C f.s. LOAD CELL Power supply voltage: 5 Vdc Minimum impedance: 87 Ω equivalent Sensitivity: From ±1 mV/V to ±64 mV/V
ANALOG OUTPUTS			
Number	-	-	#1 analog output
Type	-	-	Voltage: Configurable between 0 - 10 Vdc, minimum load resistance 2 kΩ Current: Configurable between 0 - 20 mA, maximum load resistance 500 Ω Re-transmission error: 0.1% of the maximum range Response time (10%..90%): 5 ms
COMMUNICATION			
Interfaces	#1 Ethernet 10/100 Mbps		#1 Ethernet port (100 baseT on RJ45 with LAN fault bypass function)
	#2 RS485 ports		#1 RS485 port on terminals / IDC10
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)		
Protocols	ModBUS RTU, ModBUS TCP-IP		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	4 W	2 W	
Isolation	1,5 kVac across 3 ways	1,5 kVac across 2 ways	1,5 kVac across 6 ways
Protection class	IP20		
Operating Temperature	-25..+70°C		
Storage Temperature	-25..+85°C		
Humidity	30..90% non-condensing		
Dimensions	35x102.5x111 mm	17.5x102.5x111 mm	
Weight	Approximately 200 g	Approximately 110 g	
Enclosure	PA6, black color		
Connections	Removable screw terminals for conductors up to 2.5 mm2		Removable screw terminals 3 ways, pitch 5 mm
	Rear IDC10 connector for DIN rail 46277		
	RJ45 (x2)		RJ45 (x1)
Mounting	Vertical position DIN rail 35mm IEC EN60715		
Programming	DIP Switch / Web Server		
Special Features	LAN ModBUS TCP Server		Tare Function (Silos, Reset, Acquisition); Piece Counting Function; Peer-To-Peer; Pass-Through; advanced settings (upgradable firmware; independent digital I/O; alarm threshold with hysteresis; sampling frequency; resolution)
Data Memory	Data Memory		Flash 512 kB, FeRAM 64 kB (counters)
Certifications	Certifications	CE, UKCA	CE, UKCA, UL-UR
MEASUREMENTS			
ADC	16 bit	16 bit	24 bit
Precision class	0.01%	0.01%	0.01%
Thermal Stability	-	-	0.025%/°C
Integer / floating point value	-	-	Yes
Min/max net weight value	-	-	Yes
Stabilized Measurement	-	-	Yes, with noise filter and predictive filter
Ratiometric measurement	-	-	Yes
Bus support power / data			
	Z-PC-DINAL2-17.5 - Quick DIN rail mounting support - HEAD +2 SLOT P=17.5mm **Z-PC-DIN2-17.5 -** Quick DIN rail mounting support - 2 SLOT P=17.5mm **Z-PC-DIN8-17.5 -** Quick DIN rail mounting support - 8 SLOT P=17.5mm		**Z-PC-DINAL2-17.5** - Quick DIN rail mounting support - HEAD +2 SLOT P=17.5mm **Z-PC-DIN2-17.5** - Quick DIN rail mounting support - 2 SLOT P=17.5mm **Z-PC-DIN8-17.5** - Quick DIN rail mounting support - 8 SLOT P=17.5mm

The technical data and diagrams in this document are indicative and not binding.

MODBUS RTU/TCP-IP I/O MODULES

	R-16DI-8DO	R-32DIDO-2	R-SG3
			
	Module 16 digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU	**Module 32 digital inputs/outputs Modbus TCP-IP / Modbus RTU**	**Strain gauge converter module Modbus TCP-IP / Modbus RTU**
INPUT DATA			
Number of Channels	16 Digital		1 Analog
Type and Range	PNP with internal/external power, NPN with internal power; threshold Off / On: <8V; >9V	-	"Reading and power supply up to 4 (350 Ω) or 8 (1,000 Ω) strain gauge load cells, 4 or 6 wire connection, equivalent impedance 87 Ω"
Max frequency	5 kHz, 32 bit retaining counters	-	-
Current consumption	2.25mA	-	-
Compliance	IEC 6113-2 Type 1 & 3	-	-
OUTPUT DATA			
Number of Channels	8 Digital, isolated from each other	-	-
Type	SPST clean contact relay	-	-
Max Voltage / Current	30 Vac/dc / 1 A	-	-
Response Time	20 ms (P2P)	-	-
Contact Life	5*10^6 mechanical operations / 10^5 operations with load	-	-
INPUT / OUTPUT DATA			
Number of Channels	-	32 Configurable digital inputs/outputs	1 Digital Input/Output
Type and Range	-	Inputs ON/OFF: > 9 V; < 4 V; Vmax: 24 V MOSFET outputs, PNP; max voltage / current: 0.2 A / 24 V	Tare calibration or weight threshold Sensitivity from 1 to 64 mV/V
COMMUNICATION			
Interfaces	#2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45		#1 Ethernet port (with LAN fault-bypass function) 100 baseT on RJ45
	#1 RS485 port on terminals		
	#1 Micro USB (programming)		
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)		
Protocols	ModBUS RTU, ModBUS TCP-IP, http		
Ethernet communication cable	CAT5 or CAT5e unshielded		
ModBUS Communication	Up to 128 nodes without repeater and max speed 115 kbps		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	3 W		1.5 W
Isolation	1.5 kVac (3 points)		
Protection class	IP20		
Operating Temperature	-25..+65°C		
Dimensions	106 x 90 x 32 mm		53.3 x 90 x 32.2 mm
Weight	170 g		80 g
Enclosure	PC / ABS self-extinguishing material UL94-V0, black color		
Connections	Terminals pitch 3.5 mm, Micro USB connector and double RJ45 connector		Removable screw terminals pitch 5 mm
Mounting	35 mm DIN rail (IEC/EN 60715)		
Installation	On DIN rail EN 60715, wall / panel mounted		
Programming	Integrated Web Server DIP Switch		
Special Features	Dual Ethernet Daisy Chain connection		Factory calibration or with sample weight
	LAN fault bypass		-
	Max 32 Peer to Peer Rules (I/O Mirror)		-
	Counters with frequency measurement, TON, TOFF, Period		-
	Modbus Passthrough (TCP-IP to RS485)		-
Data Memory	FeRAM for counter backup		-
Certifications	CE, UKCA		

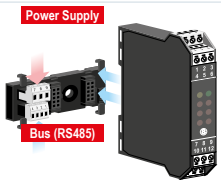
The technical data and diagrams in this document are indicative and not binding.

MODBUS RTU/TCP-IP I/O MODULES

	R-4RTD-8DIDO	R-4AO-8DIDO	R-8AI-8DIDO-2
Modbus RTU / Modbus TCP/IP			
	Module 4 RTD inputs, 8 digital inputs/ outputs Modbus RTU/TCP-IP	**Module 4 analog outputs, 8 digital inputs/ outputs Modbus RTU/TCP-IP**	**Module 8 analog inputs, 8 digital inputs/ outputs Modbus RTU/TCP-IP**
INPUT DATA			
Number of Channels	4 inputs		8 Analog
Type and Range	RTD with 2,3,4 wire wiring PT100, EN 60751/A2 (ITS-90), -200..+650°C PT500, EN 60751/A2 (ITS-90), -200..+750°C PT1000, EN 60751/A2 (ITS-90), -200..+210°C NI100, EN 60751/A2 (ITS-90), -60..+250°C CU50 GOST 6651-2009, -180..+200°C CU100 GOST 6651-2009, -180..+200°C Ni120 DIN 43760, -60..+250°C Ni1000 DIN 43760, -60..+250°C	-	V (±30V), mV (±120mV), mA (±24mA), TC J, K, T, E, N, R, S, B, L, Pt100 (±200°C)
Resolution	14 bit	-	-
Precision class	0.05	-	-
Thermal Drift	< 50ppm/K	-	-
OUTPUT DATA			
Number of Channels	-	4	-
Type	-	Voltage (±10 V) or current (0..20 mA); bipolar	-
INPUT / OUTPUT DATA			
Number of Channels	8 Digital Inputs/Outputs		
Type and Range	Inputs: ON/OFF: > 9 V; < 4 V; Vmax: 24 V Outputs: MOSFET, PNP; maximum voltage/current: 0.2 A / 24 V		
COMMUNICATION			
Interfaces	#2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 #1 RS485 port on terminals #1 Micro USB (programming)		
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)		
Protocols	ModBUS RTU, ModBUS TCP-IP, http		
Ethernet communication cable	CAT5 or CAT5e unshielded		
ModBUS Communication	Up to 128 nodes without repeater and max speed 115 kbps		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	3 W		
Isolation	1.5 kVac (3 points)		
LED Status Indicators	Power Supply Input/Output status STS (IP Address / DHCP) RX / TX (Data Reception / Transmission on RS485) Ethernet TRF / LNK (Packet Transit / Ethernet Connection)		
Protection class	IP20		
Operating Temperature	-25..+65°C		
Operating temperature	-25..+65°C		
Dimensions (WxHxD)	106 x 90 x 32 mm		
Weight	170 g		
Enclosure	PC / ABS self-extinguishing material UL94-V0, black color		
Connections	Terminals pitch 3.5 mm, Micro USB connector and double RJ45 connector		
Installation	On DIN rail EN 60715, wall / panel mounted		
Programming	Integrated Web Server DIP Switch		
Special Features	Dual Ethernet Daisy Chain connection LAN fault bypass Max 32 Peer to Peer Rules (I/O Mirror) Counters with frequency measurement, TON, TOFF, Period Modbus Passthrough (TCP-IP to RS485)		
Data Memory	FeRAM for counter backup		
Certifications	CE, UKCA		

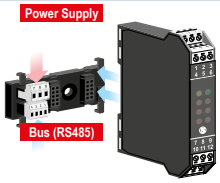
The technical data and diagrams in this document are indicative and not binding.

DIGITAL I/O MODULES MODBUS RTU / CANOPEN

	ZC-24DI	ZC-24DO	ZC-16DI-8DO
			
	Module with 24 digital inputs ModBUS/CANopen	**Module with 24 digital outputs ModBUS/CANopen**	**Modules with 16 digital inputs, 8 digital outputs ModBUS/CANopen**
INPUT / OUTPUT DATA			
Number of Channels	24 inputs	24 outputs	16 inputs, 8 outputs
Type	#24 digital inputs with EN 61131-2 type 2, synq polarity (PNP); #8 @ 32 bit, max frequency 10 kHz; Increment, reset, preset configuration; Overflow indication; Vmax=30V; Pulse width 250µs; On/off delay < 3ms; TPDO < 1ms	#24 Mosfet outputs (open source with common negative); Supply voltage 5..30 Vc; Imax=0.5A (from terminals) / 25 mA (from connectors); On/off delay < 1ms; RPDO < 1.25 ms	#16 digital inputs with EN 61131-2 type 2, synq polarity (PNP); 8 @ 32 bit, max frequency 10 kHz; Increment, reset, preset configuration; Overflow indication; Vmax=30V; Pulse width 250µs; On/off delay < 3ms; TPDO < 1ms #8 Mosfet outputs (open source with common negative); Supply voltage 5..30 Vc; Imax=0.5A (from terminals) / 25 mA (from connectors); On/off delay < 1ms; RPDO < 1.25 ms
COMMUNICATION			
Interfaces	RS485, RS232		
Speed	1Mbps (CANopen)		
Protocols	CAN bus standard (2.0A, 2.0B); CANopen (CiA 401 profile v.2.01); ModBUS RTU (via RS485)		
Communication Time	2.5 ms	1.2 ms	1.2..2.5 ms
Special Features	CANopen/ModBUS protocol switching		
GENERAL DATA			
Power Supply	10..40 Vdc / 19..28 Vac		
Max Consumption	2.5 W		
Isolation	1.5 kVac (across 3 ways)		
Power supply for transducers	Yes, 17 Vdc / 25 mA	Yes, 20 Vdc, 40 mA	Yes, 13 Vdc / 90+90 mA
Protection class	IP20		
Operating Temperature	-10..-65°C		
Dimensions	35 x 100 x 112 mm		
Weight	170 g		
Enclosure	Nylon 6 charged with 30% fiberglass, self-extinguishing class V0		
Connections	4-way detachable screw terminals, 3.5 mm pitch Rear IDC10 connector for DIN rail		
	Micro USB	Micro USB	Micro USB
Mounting	For 35 mm DIN rail 46277		
Programming	DIP switch, Z-NET4, EASY SETUP, EDS, Codesys (IEC 61131-3)		
Standards and Regulations	CE, CAN 2.0A, 2.0B CiA 401 v.2.01, IEC EN 61131-2		
CANOPEN REQUIREMENTS			
NMT	Slave		
Error Control	Node Guarding		
Node ID	Software, DIP-switch		
# of PDO	RX 5		
PDO Modes	Event triggered, sync (cyclic), sync (acyclic)		
PDO linking	Yes		
PDO mapping	Variable		
# of SDO Server	1		
Emergency Message	Yes		
Application Layer	CiA 301 v4.02		
Profile	CiA 401 v2.01		
Stability	0.01%/°C		
Bus support power / data			
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm		

The technical data and diagrams in this document are indicative and not binding.

CANOPEN ANALOG I/O MODULES

	ZC-8AI	ZC-4RTD	ZC-8TC	ZC-SG	ZC-3AO
					
	Module 8 analog inputs (mA, V) CANopen	**Module 4 inputs from resistance thermometer CANopen**	**Module 8 inputs from thermocouple CANopen**	**Module 1 input for load cell CANopen**	**Module 3 analog outputs (mA, V) CANopen**
INPUT / OUTPUT DATA					
Number of channels	8 inputs (isolated in pairs)	4 isolated inputs from RTD, 2, 3, 4 wire measurement	8 inputs (measuring from thermocouple or mV)	1 analog input, 1 digital input/ output	3 outputs
Type	Voltage (0-10 V); current (0-20 mA)	PT100 (EN 60751/A2-ITS90), -200..+650°C PT500 (EN 60751/A2-ITS90), -200..+750°C PT1000 (EN 60751/A2-ITS90), -200..+210°C Ni100 (EN 60751/A2-ITS90), -60..+250°C	Thermocouple: J, K, E, N, S, R, B, T; EN - 60584-1 (ITS-90) mV Range: -10.1 mV..+81.4 mV Input Impedance: 10 MΩ	ANALOG INPUT Differential measurement for 4/6 wires (±5 mV..±320 mV) Load Cells (strain gauge) Power supply voltage 5 Vdc; minimum impedance 87 equivalents; sensitivity from ±1mV/V to ±64 mV/V DIGITAL INPUT Zero and span calibration (max 30 V)	Voltage (± 10 V); Current (0-20, 4-20 mA)
Resolution	15 bit	14 bit	15 bit	24 bit	14 bit
Precision class	0.05%		0.1%	0.01%	0.01%
Thermal Drift	<100 ppm/°C	<50 ppm/°C	<100 ppm/°C	<25 ppm/°C	<100 ppm/°C
COMMUNICATION					
Interfaces	RS485, RS232				
Speed	1Mbps (CANopen)				
Protocols	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01);				
Communication Time	< 28 ms			< 7 ms	< 7 ms
GENERAL DATA					
Power Supply	10..40 Vdc; 19..28 Vac				
Power supply for transducers	Yes, 22 mA / 16 V	-		Yes, 5 Vdc	-
Max Consumption	5 W	1 W		2 W	2.5 W
Input Protection	Up to 4 kV				
Protection class	IP20				
Operating Temperature	-20..+65°C				
Dimensions	17.5x102.5x111 mm				
Weight	170 g				
Enclosure	Nylon 6 charged with 30% fiberglass, self-extinguishing class V0 4-way detachable screw terminals, 3.5 mm pitch				
Connections	Rear IDC10 connector for DIN rail 3.5 mm stereo jack front for RS232 (COM)				
Mounting	For 35 mm DIN rail 46277				
Programming	DIP switch, Z-NET4, EASY SETUP, EDS, Codesys (IEC 61131)				
Special Features	-			Tare acquisition, stable weighing	-
Standards and Regulations	CE, CAN 2.0A, 2.0B, CiA 401 v2.01, IEC 61131-2				
CANOPEN REQUIREMENTS					
NMT	Slave				
Error Control	Node Guarding				
Node ID	Software, DIP-switch				
# of PDO	RX 5				
PDO Modes	Event triggered, sync (cyclic), sync (acyclic)				
PDO linking	Yes				
PDO mapping	Variable				
# of SDO Server	1				
Emergency Message	Yes				
Application Layer	CiA 301 v4.02				
Profile	CiA 401 v2.01				
Bus support power / data					
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm				

The technical data and diagrams in this document are indicative and not binding.

PROFINET I/O MODULES

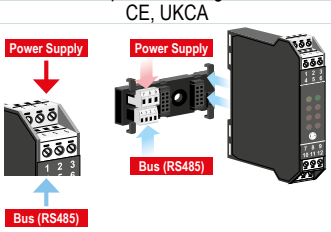
	R-16DI-8DO-P	R-32DIDO-2-P	R-SG3-P
			
	PROFINET I/O MODULES Module with 16 digital inputs / 8 digital relay outputs Profinet IO	**Module with 32 digital inputs/outputs Modbus Profinet IO Strain gauge converter module Profinet IO Reading and supply up to 4 (350Ω) or 8 (1,000Ω) strain gauge load cells, connection to 4 or 6 wires, equivalent impedance 87Ω Net weight retransmission in current (0..20, 4..20 mA) or voltage (0..5/10 V), 24-bit resolution SPST clean contact relay; max voltage/current 30 Vac/dc / 1 A; response time 20 ms (P2P); contact duration 5*106 mechanical ops. Configurable voltage 0..10 Vdc, minimum load resistance 2 kΩ; Configurable current 0..20 mA, maximum load resistance 500 Ω; Retransmission error: 0.1% of maximum range, response time (10%..90%):**	**Strain gauge converter module Profinet IO**
DIGITAL INPUTS			
Number	16	-	1
Type	PNP with internal/external power, NPN with internal power; threshold Off / On: <8V; >9V	-	Reading and supply up to 4 (350Ω) or 8 (1,000Ω) strain gauge load cells, connection to 4 or 6 wires, equivalent impedance 87Ω
ANALOG INPUTS			
Number			1
Type			Net weight retransmission in current (0..20, 4..20 mA) or voltage (0..5/10 V), 24-bit resolution
DIGITAL OUTPUTS			
Number	8	-	-
Type	SPST clean contact relay; max voltage/ current 30 Vac/dc / 1 A; response time 20 ms (P2P); contact duration 5*106 mechanical ops. / 10^5 operations with load	-	-
ANALOG OUTPUTS			
Number	-	-	1
Type	-	-	Configurable voltage 0..10 Vdc, minimum load resistance 2 kΩ; Configurable current 0..20 mA, maximum load resistance 500 Ω; Retransmission error: 0.1% of maximum range, response time (10%..90%): 5 ms
DIGITAL INPUTS/OUTPUTS (DI/DO)			
Number	-	32	2
Type	-	Inputs ON/OFF: > 9 V; < 4 V; Vmax: 24 V MOSFET outputs, PNP; max voltage / current: 0.2 A / 24 V	Calibration for tare or weight threshold Sensitivity from 1 to 64 mV/V
COMMUNICATION			
Interfaces	#1 or #2 Ethernet ports (with LAN fault-bypass) 100 baseT on RJ45		"1 Ethernet port 100 baseT on RJ45
Scan time	1 ms		
Protocols	Profinet IO		
Ethernet cable between devices	CAT5 or CAT5e unshielded		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Maximum absorption	3 W		1.5 W
Maximum isolation	1.5 kVac		
Protection class	IP20		
Operating Temperature	-25..+65°C		
Dimensions (WxHxD)	106 x 90 x 32 mm		Dimensions 110 x 52 x 32 mm
Weight	170 g		80 g
Enclosure	PC / ABS self-extinguishing material UL94-V0, black color		
Connections	Terminals pitch 3.5 mm Micro USB		
	RJ45 (x1 or x2)		RJ45 (x1)
Installation	On DIN rail EN 60715, wall / panel mounted		
Programming	DIP Switch Third-party IEC 61131-3 environments (Codesys, TiA Portal, etc.)		
Special Features	Daisy Chain, LAN Fault ByPASS		Tare acquisition, stable weighing, predictive filter, piece counting
Certifications	CE, UKCA		

The technical data and diagrams in this document are indicative and not binding.

PROFINET I/O MODULES

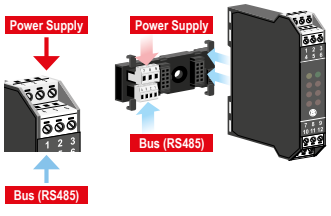
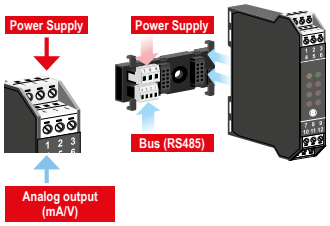
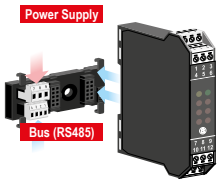
	R-4RTD-8DIDO-P	R-4AO-8DIDO-P	R-8AI-8DIDO -2-P
			
	Module with 4 RTD inputs, 8 digital inputs/ outputs	**Profinet Module with 4 analog outputs, 8 digital inputs/outputs Profinet**	**Module with 8 analog inputs, 8 digital inputs/ outputs Profinet**
DIGITAL INPUTS			
Number of channels	4 inputs		8 Analog
Type and Range	RTD with 2,3,4 wire wiring PT100, EN 60751/A2 (ITS-90), -200..+650°C PT500, EN 60751/A2 (ITS-90), -200..+750°C PT1000, EN 60751/A2 (ITS-90), -200..+210°C NI100, EN 60751/A2 (ITS-90), -60..+250°C CU50 GOST 6651-2009, -180..+200°C CU100 GOST 6651-2009, -180..+200°C 0≠Ni120 DIN 43760, -60..+250°C Ni1000 DIN 43760, -60..+250°C	-	V (±30V), mV (±120mV), mA (±24mA), TC: J, K, T, E, N, R, S, B, L, Pt100 (±200°C); 24-bit resolution
Resolution	14 bit	-	-
Precision class	0.05	-	-
Thermal Drift	< 50ppm/K	-	-
DIGITAL INPUTS/OUTPUTS (DI/DO)			
Number	-	1	-
Type	-	Calibration for tare or weight threshold; Sensitivity from 1 to 64 mV/V	-
OUTPUT DATA			
Number of channels	-	4	-
Type and Range	-	Voltage (±10 V) or current (0..20 mA); bipolar	-
DIGITAL INPUTS/OUTPUTS (DI/DO)			
Number	8		
Type	Inputs ON/OFF: > 9 V; < 4 V; Vmax: 24 V MOSFET outputs, PNP; max voltage / current: 0.2 A / 24 V		
COMMUNICATION			
Interfaces	#2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45		
Scan time	1 ms		
Protocols	Profinet IO		
Ethernet cable between devices	CAT5 or CAT5e unshielded		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Maximum absorption	3 W		
Maximum isolation	1.5 kVac		
LED Status Indicators	Power Supply Error Input/Output status STS (IP Address / DHCP) Profinet IO Communication		
Protection class	IP20		
Operating temperature	-25..+65°C		
Dimensions (WxHxD)	106 x 90 x 32 mm		
Weight	170 g		
Enclosure	PC / ABS self-extinguishing material UL94-V0, black color		
Connections	Terminals pitch 3.5 mm Micro USB RJ45 (x2)		
Installation	On DIN rail EN 60715, wall / panel mounted		
Programming	DIP Switch		
Special Features	Daisy Chain, LAN Fault ByPASS		
Certifications	CE, UKCA		

PROFINET I/O MODULES

	ZE-2AI-P	ZE-SG3-P	ZE-4DI-2AI-2DO-P
			
	Module with 2 analog inputs Profinet IO	**Strain gauge converter module Profinet IO**	**Module with 4 digital inputs, 2 analog inputs, 2 digital outputs Profinet IO**
DIGITAL INPUTS			
Number	-	1	4
Type	-	Reading and supply up to 4 (350Ω) or 8 (1,000Ω) strain gauge load cells, connection to 4 or 6 wires, equivalent impedance 87Ω	PNP or NPN; Voltage Input. OFF < 4V, ON > 8V (max. 24 Vdc); Input Current. 20mA; Current Absorbed 3mA@12Vdc, 10mA@24Vdc
ANALOG INPUTS			
Number	2	1	2
Type	Voltage 0..30 V, Current 0..20 mA, Precision 0.1% f.s, 16-bit Resolution, 40V / 25mA Input Protection	Net weight retransmission in current (0..20, 4..20 mA) or voltage (0..5/10 V), 24-bit resolution	Voltage 0..30 V, Current 0..20 mA, Precision 0.1% f.s, 16-bit Resolution, 40V / 25mA Input Protection
DIGITAL OUTPUTS			
Number	-	-	2
Type	-	-	SPDT clean contact relay; Max. Voltage 250Vac. Max. Current 2A.
ANALOG OUTPUTS			
Number	-	1	-
Type	-	Configurable voltage 0..10 Vdc, minimum load resistance 2 kΩ; Configurable current 0..20 mA, maximum load resistance 500 Ω; Retransmission error: 0.1% of maximum range, response time (10%..90%): 5 ms	-
DIGITAL INPUTS/OUTPUTS (DI/DO)			
Number	-	1	-
Type	-	Calibration for tare or weight threshold; Sensitivity from 1 to 64 mV/V	-
COMMUNICATION			
Interfaces	#1 Ethernet port (with LAN fault-bypass function) 100 baseT on RJ45 #1 RS485 port on IDC10 (COM1); RS232/RS485 on terminals		
Scan time	10 ms		2 / 10 ms
Protocols	Profinet IO		
Ethernet cable between devices	CAT5 or CAT5e unshielded		
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Power supply for transducers	Yes, 12 V / 40 mA	Yes, 5Vdc / 60 mA	Yes, 12 V / 40 mA, 12 V / 20 mA
Maximum absorption	2 W		4 W
Maximum isolation	1.5 kVac		3 kVac
Protection class	IP20		
Operating Temperature	-25..+70°C		
Dimensions (WxHxD)	17.5 x 102.5 x 111 mm		35 x 102.5 x 111 mm
Weight	110 g		
Enclosure	PA6, black color		
Connections	Removable screw terminals 3 ways, pitch 5 mm for cables up to 2.5mm2 Vertical position DIN rail 35mm IEC EN60715		
Installation	On DIN rail EN 60715, wall / panel mounted		
Programming	DIP Switch Third-party IEC 61131-3 platforms (CoDeSys, TiA Portal, etc.)		
Special Features	-	Tare acquisition, stable weighing, predictive filter, piece counting	-
Certifications	CE, UKCA		
Bus support power / data			
	Z-PC-DINAL2-17.5 Quick mounting support for DIN rail - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick mounting support for DIN rail - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick mounting support for DIN rail - 8 SLOTS P=17.5mm		**Z-PC-DINAL2-17.5** Quick DIN rail mounting support - HEAD +2 SLOTS P=17.5mm **Z-PC-DIN2-17.5** Quick DIN rail mounting support - 2 SLOTS P=17.5mm **Z-PC-DIN8-17.5** Quick DIN rail mounting support - 8 SLOTS P=17.5mm

The technical data and diagrams in this document are indicative and not binding.

Z-PC-DIN CONNECTION MODES

	A	B	C
Z-PC series I/O modules can be connected to the bus through their rear IDC10 connector. The bus is used for communication signal and power supply. There are various types of Z-PC-DIN depending on the size of the module to be connected.			

Model	Bus (RS485): Terminals or IDC10 Power Supply: Terminals or IDC10	Bus (RS485): Only IDC10 Power Supply: Terminals or IDC10	Bus (RS485): Only IDC10 Power Supply: Only IDC10
DIGITAL			
Z-10-D-OUT			x
Z-10-D-IN			x
Z-5DI-2DO		x	
ZC-16DI-8DO			x
ZC-24DI			x
ZC-24DO			x
Z-D-IN	x		
Z-D-IO		x	
Z-D-OUT	x		
ANALOG			
Z-3AO	x		
Z-4AI	x		
Z-8AI			x
ZC-3AO			x
ZC-8AI			x
Z-DAQ-PID		x	
ZE-2AI	x		
ZE-2AI-P	x		
MIXED			
Z-4DI-2AI-2DO	x		
ZE-4DI-2AI-2DO	x		
ZE-4DI-2AI-2DO-P	x		
TEMPERATURE			
Z-4RTD2			x
Z-4RTD2-SI			x
Z-4TC	x		
Z-8NTC			x
Z-8TC-1			x
Z-8TC-LAB			x
Z-8TC-SI			x
Z-8TC-SI-LAB			x
ZC-4RTD			x
ZC-8TC			x
WEIGHING			
ZC-SG			x
ZE-SG3	x		
ZE-SG3-P	x		
Z-SG		x	
Z-SG3	x		

Z-PC-DIN MODELS

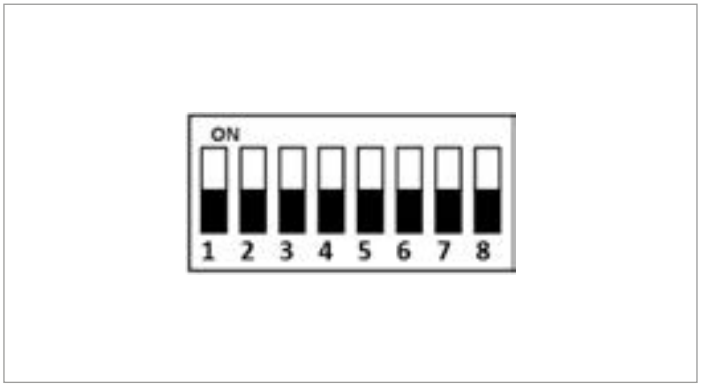
	DESCRIPTION	SLOT	PITCH	TERMINAL POWER/BUS	HOT SWAPPING	DIN RAIL MOUNTING
	**Z-PC-DINAL1-35** Quick DIN rail mounting support – head +1 slot P=35 mm	1	35 mm	Yes	Yes	Yes
	**Z-PC-DINAL2-17.5** Quick DIN rail mounting support – head +2 slot P=17.5 mm	2	17.5 mm	Yes	Yes	Yes
	**Z-PC DINAL2-52.5** Quick DIN rail mounting support – head +1 slot 52.5 mm + 1slot 17.5 mm	2	52.5 mm	Yes	Yes	Yes
	**Z-PC-DIN1-35** Quick DIN rail mounting support – 1 slot P=35 mm	1	35 mm	-	Yes	Yes
	**Z-PC-DIN2-17.5** Quick DIN rail mounting support – 1 slot P=17.5 mm	2	17.5 mm	-	Yes	Yes
	**Z-PC-DIN4-35** Quick DIN rail mounting support – 4 slot P=35 mm	4	35 mm	-	Yes	Yes
	**Z-PC-DIN8-17.5** Quick DIN rail mounting support – 8 slot P=17.5 mm	8	17.5 mm	-	Yes	Yes

CONFIGURATION AND PROGRAMMING

Programming tools provided by SENECA allow the creation, saving, and restoration of complete configurations in a few steps, both for individual distributed and integrated I/O modules and for integrated systems.

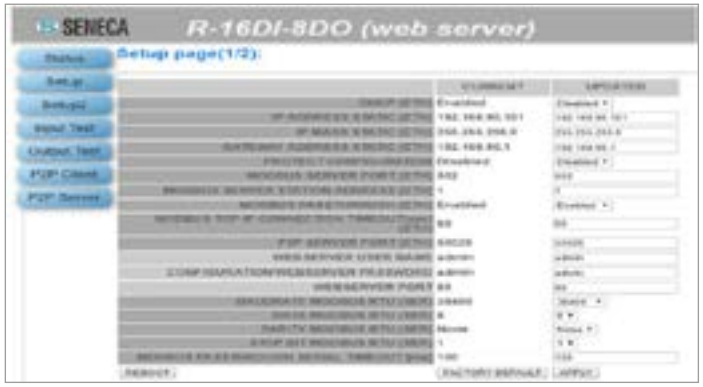
DIP SWITCH

Through DIP Switch, it's possible to configure baud rate, address, safety functions, and factory reset conditions.
They allow configuration changes during production and by the user.



WEB SERVER

Through Web Server, it's possible to configure all parameters of the I/O modules equipped with an Ethernet interface: inputs, outputs, communication and safety parameters, CGI commands

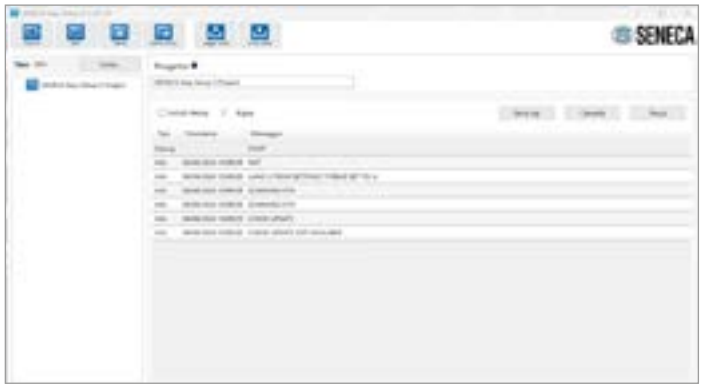


EASY SETUP

EASY SETUP is a software platform for configuring Seneca devices. It is the ideal tool for repetitive applications and for field use by installers, plant technicians, maintainers, and end users.

EASY SETUP 2

EASY SETUP 2 is the new programming platform for configurable SENECA instruments. Successor to EASY SETUP, the new suite includes various Windows-based tools useful for configuring SENECA instruments.

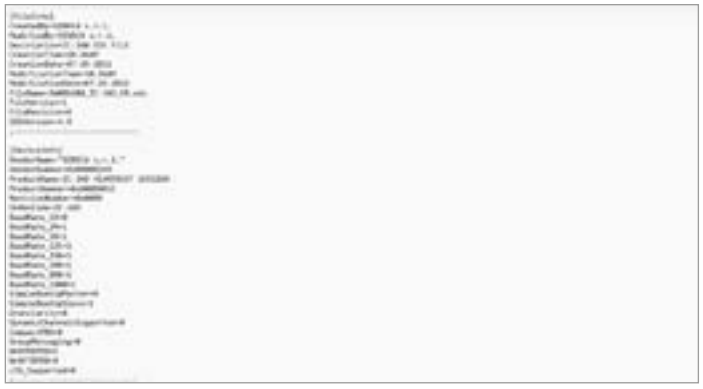


Z-NET4

Z-NET4 is a graphical programming environment used to configure distributed I/O modules and to create data acquisition, automation, and remote control projects managed by SENECA controllers and RTUs operating on IEC61131 platforms.

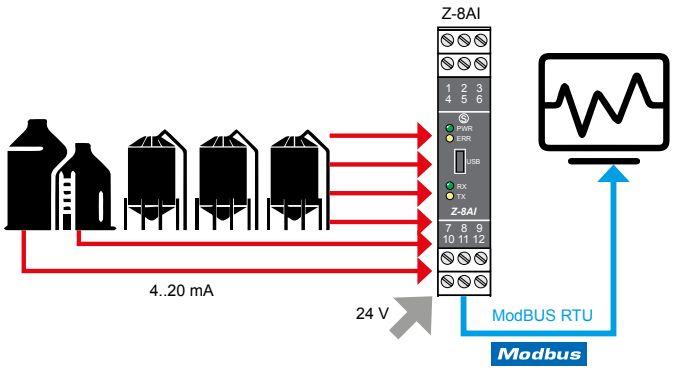
EDS / GSDML

With descriptive configuration files such as EDS or GSDML, it is possible to implement a fieldbus automation project (ModBUS, Profinet, Ethernet/IP) with the aid of third-party platforms.

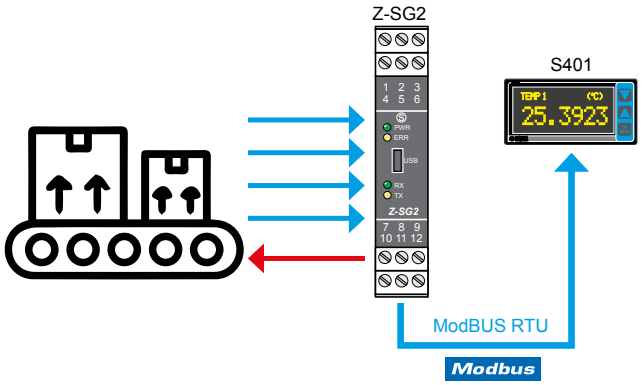


I/O MODULES – APPLICATION SCHEMATICS

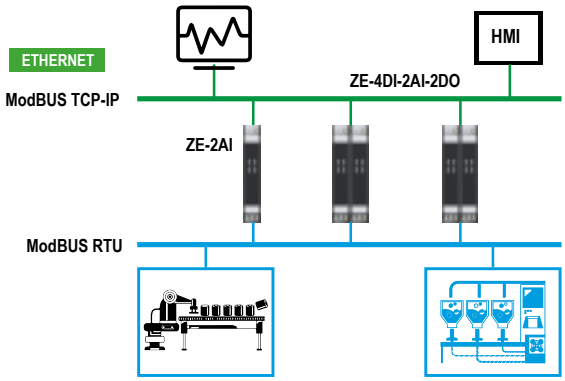
ACQUISITION OF PROCESS MEASUREMENTS AND RETRANSMISSION VIA MODBUS RTU



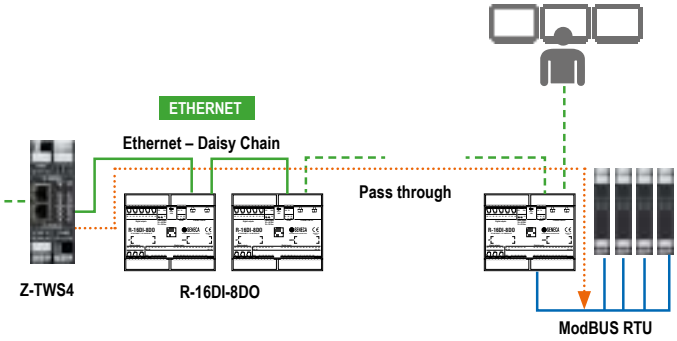
ACQUISITION AND DISPLAY MODBUS FOR WEIGHING SYSTEMS



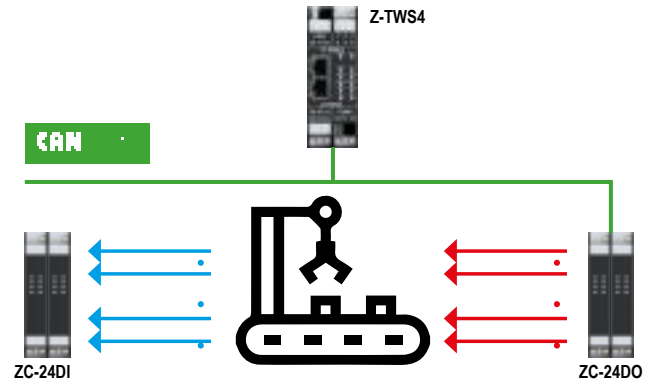
DATA ACQUISITION ON ETHERNET



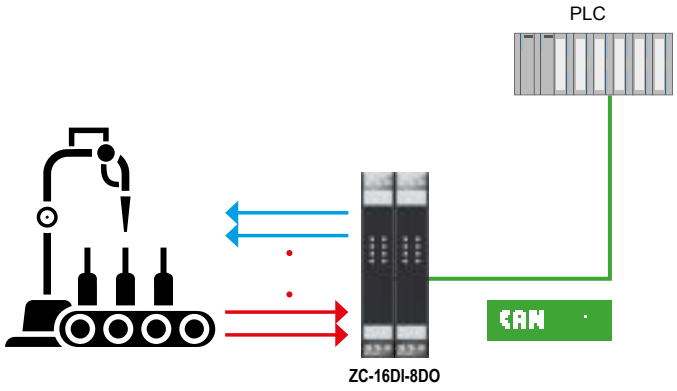
ETHERNET DAISY CHAIN AND MODBUS PASS-THROUGH



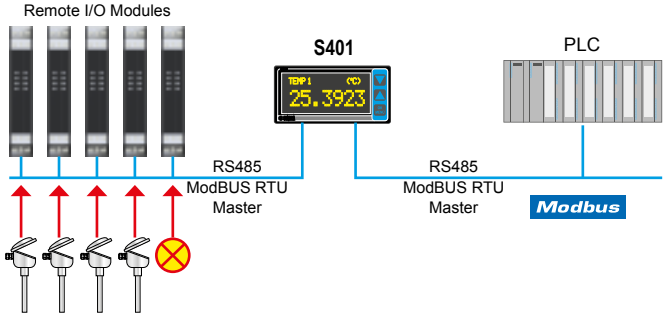
PROGRAMMABLE HANDLING SYSTEM



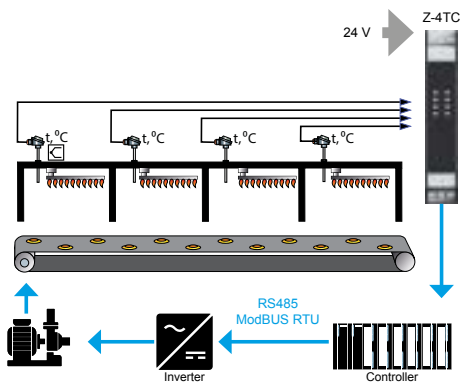
AUTOMATIC BOTTLING SYSTEM



LOCAL CONTROL VIA PLC AND REMOTE I/O



ACQUISITION AND TRANSMISSION OF TEMPERATURES TO A CLOSED-LOOP CONTROL SYSTEM



1.2

MULTIFUNCTION IEC 61131-3 CONTROLLERS

THE RANGE

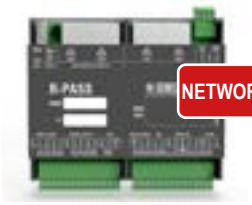
The multifunction SENECA controllers (Z-TWS-11, R-PASS-S, Z-TWS-4-RT, Z-PASS2-S-RT, S6001-RTU) are modern modular/all-in-one devices with high connectivity.
They combine PLC tasks based on the softLPLC Straton IEC 61131-3 platform with web server functionality, data logger, remote control, remote assistance, and energy management (compliant with IEC 60870-101/104, IEC 61850 protocols).
The controllers can be used with different architectures and configurations depending on the complexity of the system and the hardware requirements.

Z-TWS11

ENTRY LEVEL

Modular automation solution capable of managing 100 tags for universal applications.
Boasting high connectivity thanks to FTP client, SMTP client, http, ModBUS TCP, ModBUS RTU protocols, the controller also has onboard 2 configurable 16-bit analog inputs in voltage or current and can realize expandable automation systems with ModBUS / Ethernet I/O modules of the Z-PC Series.

R-PASS-S



NETWORKING

R-PASS-S represents a family of flexible, space-saving Industrial IoT Edge computing solutions with multiple daisy chain connections. In addition to the softPLC IEC 61131-3 and advanced routing functions, the R-PASS-S integrates 10 I/O channels and 1 Wi-Fi module (optional). They are also expandable with the R-COMM modem. R-PASS-S supports industrial/IT/Energy protocols including ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, MeterBUS master, SNMP, S7 Client, OPC UA Server, IEC 60870-5-101, IEC 60870-5-104, IEC 61850.

S6001-RTU

ALL-IN-ONE

S6001-RTU is a compact all-in-one unit with 31 I/O channels and 1 onboard 4G LTE modem. Thanks to extended connectivity (4G/LTE, Ethernet, ModBUS RTU/TCP, Serial), it is expandable and interfaced with other systems and allows communications to and from central units and remote monitoring of plants. S6001-RTU can also be used as a stand-alone plant controller.

Z-PASS2-S-RT

REMOTE CONTROL

Z-PASS2-S-RT is a high-performance controller with 6 integrated digital I/Os capable of combining PLC functions with routing and remote access features.
It is indeed based on the softPLC Straton with integrated web server, VPN, and 4G LTE modem/router with GPS/Glonass functionalities. Z-PASS2-S-RT can support Point-To-Point Remote Assistance connections or Single LAN Remote Control.

Z-TWS4-RT

MULTIFUNCTION

Z-TWS4-RT is an advanced control system with 4 integrated I/Os, 1 CAN port, 4 serial ports, 2 USB ports, dual Ethernet port. Designed for plant automations (Straton - Soft PLC IEC 61131-3) and Energy Management applications (thanks to the protocols IEC 60870-5-101, IEC 60870-5-104, IEC 61850), Z-TWS4 is also a Linux-based CPU designed for data acquisition and control applications.

ORDER CODES

Code	Description
R-PASS-0-4-E	Edge Controller IIoT Straton with Energy protocols and 4 Ethernet ports
R-PASS-0-4-S	Edge Controller IIoT Straton with 4 Ethernet ports
R-PASS-W-4-E	Edge Controller IIoT Straton with Energy protocols, Wi-Fi, and 4 Ethernet ports
R-PASS-W-4-S	Edge Controller IIoT Straton with Wi-Fi and 4 Ethernet ports
S6001-PC-4GWW	Pump controller with integrated I/O, 4G WW LTE, Straton programming system and 7" HMI
S6001-RTU-4GWW	All-in-one RTU with integrated I/O, 4G WW LTE modem, Straton
S6001-RTU-E-4GWW	All-in-one RTU with integrated I/O, 4G WW LTE modem, Straton, Energy protocols
Z-TWS11	Multifunction controller IEC 61131, embedded PLC Straton with integrated I/O
Z-TWS4-RT-E	Edge Controller IIoT, IEC 61131, integrated I/O, Energy protocols
Z-TWS4-RT-S	Edge Controller IIoT, IEC 61131, integrated I/O, Straton workbench

MULTIFUNCTIONALITY

- Versatile Controllers (SoftPLC, Remote controllers, gateways, dataloggers)
- Soft PLC IEC 61131-3
- Libraries of ready-to-use technological functions
- Universal application fields
- Datalogger functionality
- Advanced Alarm Management
- Industrial robustness
- Open to SCADA and DAQ systems
- Advanced technical support

CONNECTIVITY

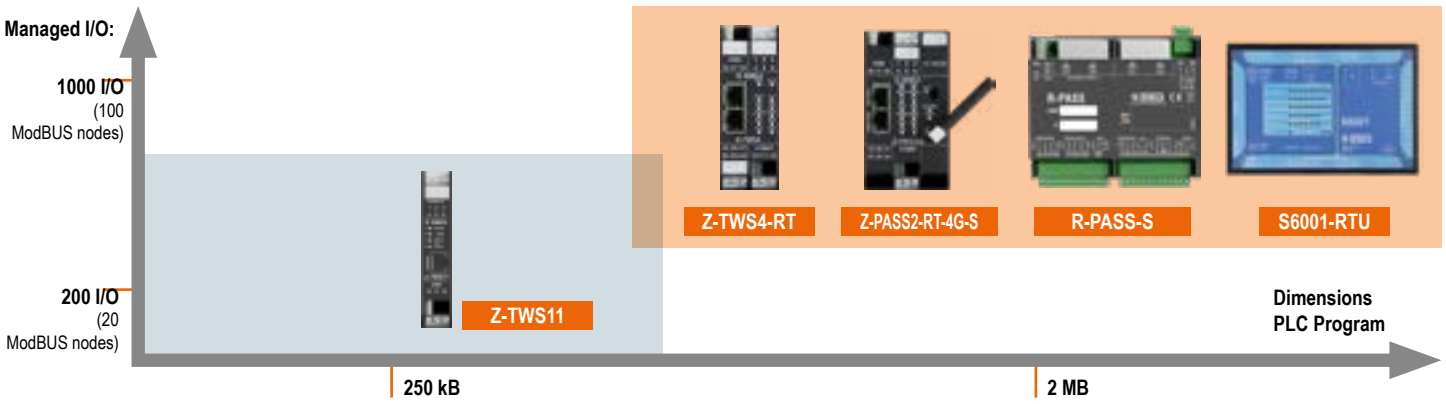
- Fieldbus (ModBUS RTU/CTP-IP, M-BUS, S7 Protocol)
- Energy Protocols IEC 61850, IEC 60870-5-101/104
- IT Protocols (HTTP/HTTPS, FTP/FTPS, SMTP, SNMP)
- Data exchange with OPC UA/DA standard
- IIoT Protocols (MQTT, HTTP post)
- Cloud platform support

INTEGRATION

- Integration with HMI
- Integration with communication interfaces
- Integration with radio modules
- Integration with I/O modules (onboard and external up to 1,000 points)
- Integration with energy meters
- Integration with third-party devices

GUIDE TO CHOICE

	Z-TWS11	R-PASS-S	Z-TWS4-RT	Z-PASS2-RT-4G-S	S6001-RTU
SoftPLC IEC 61131-3	x	x	x	x	x
Energy Controller IEC 60870-101/104, IEC 61850	-	x (ver.- -E)	x (ver.- -E)	x (ver.- -E)	x (ver.- -E)
Datalogger	x	x	x	x	x
Gateway	x	x	x	x	x
Router LAN	-	x	x	x	x
4G/LTE/GPS Router	-	Optional external	Optional external	x	x
Wi-Fi Router/AP	-	. Remote	-	-	-
Remote Assistance/Control Unit	-	with external modem/router		x	x



The technical data and diagrams in this document are indicative and not binding.

MULTIFUNCTION CONTROLLERS IEC 61131-3

	Z-TWS11	R-PASS-S	S6001-RTU	Z-PASS2-RT-4G-S	Z-TWS4-RT
					
	IEC 61131 controller with integrated I/O	**Remote Edge IIoT controller, IEC 61131, integrated I/O, 4xETH, optional Wi-Fi**	**Remote all-in-one controller with integrated I/O, 4G WW LTE, IEC 61131**	**Remote controller with 4G WW LTE modem; Edge IIoT, IEC 61131, integrated I/O**	**Edge IIoT controller, IEC 61131, integrated I/O**
GENERAL DATA					
Power Supply	10..40 Vdc; 19..28 Vac		24 Vac/dc	11..40 Vdc	
Max Consumption	2 W	8 W	10 W	6 W	
Battery / UPS	-	With additional R-COMM module	-	-	-
Max isolation	1.5 kVac				
Protection class	IP20				
Connections	3.5 mm pitch removable terminal block, 1.5 mm2 wire section				
	IDC10 power/bus connector	-	-	IDC10 power/bus connector	
Flash Memory (data)	256 MB	≥4 GB	1 GB	≥4 GB	≥4 GB
RAM	256 KBytes	512 MB	64 MB	512 MB	
Micro SD	Max 32 GB (PUSH-PUSH type micro SD slot	.	.	Max 32 GB (PUSH-PUSH type micro SD slot	
Supported SIM cards		Standard SIM with additional R-COMM module	Standard SIM with push slot		
I/O Channels	#2 AI mA/V 16-bit	#4 DI, #4 DO, #2 AI (mA, V)	Nr.17DI, 4AI, 8DO, 2AO	#6 DI/DO configurable, #2 AI (mA,V)	
Operating temperature	-10..+50°C	-20..+65°C	-10..+65°C	-25..+65°C	
Dimensions (WxHxD)	100 x 17.5 x 112 mm	106 x 90 x 32 mm	190x105x60 mm	52.5 x 102.5 x 111 mm	35 x 112 x 100 mm
Weight	110 g	170 g	700 g	Approximately 270 g	Approximately 240 g
Enclosure	Nylon 6 with 30% fiberglass, V0 flame retardant class	PC / ABS material Flame retardant UL94-V0, black color	Painted aluminum	PA6 fiberglass reinforced, black color	
Installation	For 35 mm DIN rail IEC EN 60715				
Certifications	CE, UKCA				CE, UKCA, UL
COMMUNICATION					
Ethernet Ports (ETH1, ETH2)	#1 Fast Ethernet (LAN/1WAN), 10/100Tx on front RJ45 4	#4 Fast Ethernet 10/100Tx ports with front RJ45 connector	#1 Ethernet port 10/100 Mbps (RJ45)	Nr.2 Fast Ethernet (LAN/1WAN), 10/100Tx su RJ45 frontal	
Serial ports (COM1, COM2, COM4)	#1 RS232 / RS485 port on terminals, max baud rate 115kbps				
	#1 RS485 (on IDC10), max baud rate 115kbps	#1 RS485 port on terminals, max baud rate 115kbps	#3 RS485 (on terminals or IDC10), max baud rate 115kbps	#1 RS485 (on terminals or IDC10), max baud rate 115kbps	
		-	#1 RS232 port (DB9M)	#1 RS485 port on terminals, max baud rate 115kbps	
USB Ports	#1 USB host port on side type A connector				
	-	#1 micro USB port for debugging		#1 micro USB port for debugging	
CAN Port	-	#1 CAN port (terminals)		#1 CAN port (terminals)	
Modem (Optional)	-	Multiband M2M/IoT, 4G / LTE World Wide with additional R-COMM module	Multiband M2M/IoT, 4G / LTE World Wide		-
Sat Receiver.	-	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS with additional R-COMM module	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS		-
Wi-Fi (opt.)		Integrated WiFi 802.11 b/g/n, band 2.4 ÷2.4835GHz, max Output Power: 17dBm (50 mW), security WEP / WPA / WPA2		-	-
Industrial Protocols	ModBUS TCP-IP, ModBUS RTU, custom protocols, FTP client, SMTP client, http	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTPs client, Samba	ModBUS TCP client / server, ModBUS RTU master/ slave, only SFTP server, HTTP/HTTPS server, SNMP, SAMBA, ftp client		
IoT Protocols	-	MQTT, MQTTs, OPC UA Server, https, http post			
Energy Protocols (Optional)	-	IEC 60870-101, IEC 60870-104, IEC 61850			
Connectivity	Max TCP-IP Client 1, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area 200 variables (tags)	Max TCP-IP Client 50, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area 2,000 variables (tags)			
SECURITY					
LAN / WAN separation	Yes				
Authentication	User / Password				
Permission Management	Supervisor	Supervisor / Users / Groups			
VPN Encryption Algorithm	-	OpenVPN AES-256bit-CBC + Auth SHA256 bit or user-selectable			
Security Protocols	-	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher			
SSL/TLS Certificates	-	Automated TLS certificate management for HTTPS	-	Automated TLS certificate management for HTTPS	
Cybersecurity Certificates (penetration testing)	-			Yes, OWASP, NIST 800-115, Risk Analysis, IEC62443	
SETTINGS					
Programming	Z-NET4, Web Server				
VPN Management Software	-	OpenVPN, VPN Client Communicator			
LET'S Remote Access Support	No	Yes			
PLC Programming	IEC 61131-3 (Straton)				
Max # PLC variables/tags	200	2,000			
PLC program size	250 kB	2048 kB			

The technical data and diagrams in this document are indicative and not binding.

STRATON

IEC 61131-3 PROGRAMMING

Evolution of the IEC 1131 published in 1992, the IEC 61131 standard represents the most successful effort to standardize industrial control technologies into an international standardization system. Part three of the standard, IEC61131-3, deals with programming languages used in industrial controllers. The standard defines textual (instruction list, structured text) and graphical (ladder diagram, function block diagram, sequential function chart) programming languages. According to the IEC 61131-3 standard, PLC programs are composed of a number of software elements, implemented in various languages.

PACKAGE

SENECA Straton Package
is a platform-independent SoftPLC software suite required for using SENECA's Straton CPUs such as Z-TWS11, Z-TWS4-RT, R-PASS-S, Z-PASS2-RT-4G-S, S6001-RTU. This suite is designed to facilitate the user's installation of all necessary software packages through a single installer.

IDE

SENECA Straton IDE
(Integrated Development Environment) is available in demo version or with tags 256, 512, and unlimited.
It serves as a design, programming, and testing interface with support for the languages of the IEC 61131-3 standard (ST, IL, FBD, SFC, LD). Includes I/O and fieldbus configuration tools, language conversion, data export, and Remote Control data exchange libraries.

STRATON IDE ACTIVATION KEY

- **Interface: USB 1.1, USB 3.0/2.0 compatible and certified**
- **Data Retention: 10 years at 25°C**
- **Data Endurance: >500,000 write cycles**
- **Power Supply: 5 V max.**
- **Energy Consumption: 25 mA max. (typical 5 mA / 190 µA configured / unconfigured)**
- **Temperature: 0...55° C, non-condensing**
- **MTBF (Mean Time Between Failures): 28 million hours at 25°C according to SN29500-1 standard**
- **Lifespan: Typical 10 years**
- **Dimensions: 54 mm x 16 mm x 8 mm**
- **Weight: 6 g**

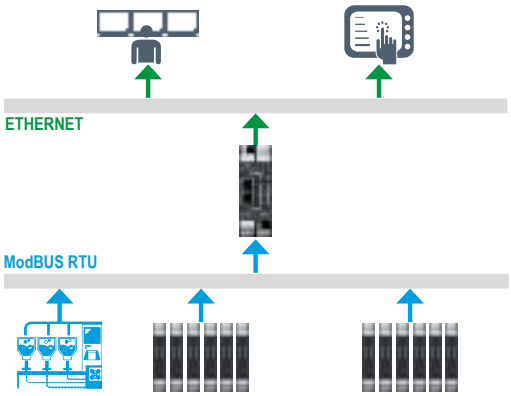
RoHS compliant
WEEE-Reg-No:
DE 90465365

ORDER CODES

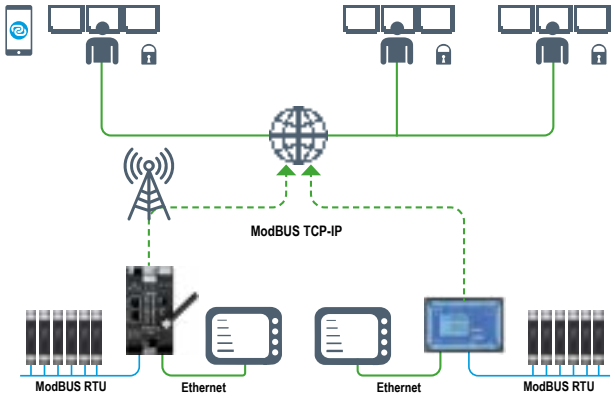
Code	Description
SSP	SENECA Straton Package - CPU Seneca Installer suite (included)
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-UN-UPD	STRATON IDE Unlimited Tags UPGRADE from V8 to V9
STRATON-870-850	Activation License for IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server
STRATON-870M	Activation License for IEC 60870-5-101/104 Master
STRATON-870S	Activation License for IEC 60870-5-101/104 Slave
STRATON-870S-850	Activation License for IEC 60870-5-101/104 Slave + IEC 61850 Client / Server
STRATON-D-USB	Straton activation key for IEC 61131 controllers
STRATON-FULL01	Activation License for IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server + SNMP extension
STRATON-IDE256	Straton development environment 256 tags with USB activation key
STRATON-IDE512	Straton development environment 512 tags with USB activation key
STRATON-IDEUN	Straton development environment unlimited tags with USB activation key
STRATON-SNMP	Straton SNMP agent driver extension
STRATON-UPGRADE1	Straton upgrade from 256 to 512 tags
STRATON-UPGRADE2	Straton upgrade from 256 to unlimited tags
STRATON-UPGRADE3	Straton upgrade from 512 to unlimited tags
STRATON-WB	Straton workbench IEC 61131 free editor (included)

APPLICATION DIAGRAMS

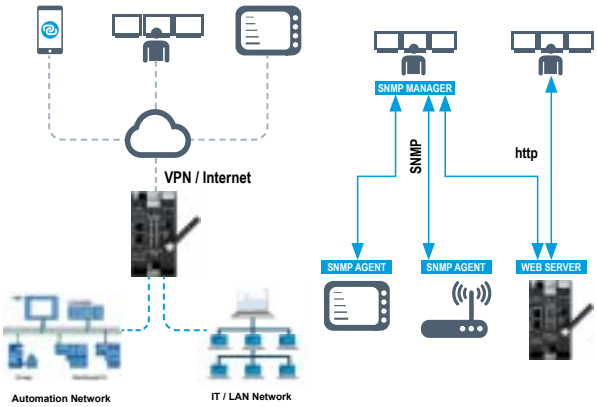
DISTRIBUTED AUTOMATION



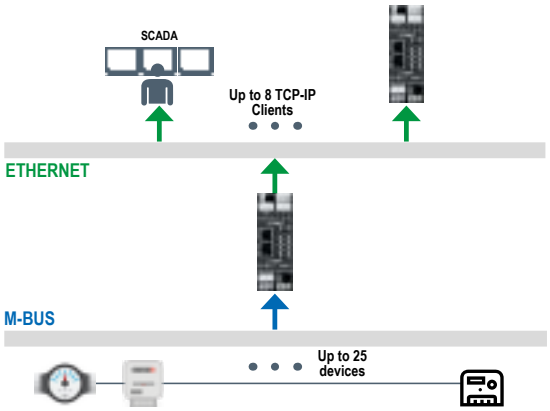
REMOTE CONTROL / REMOTE ASSISTANCE



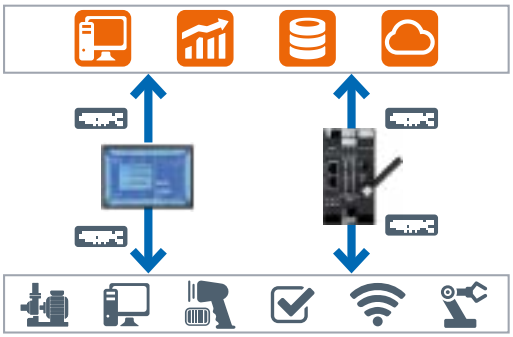
NETWORKING



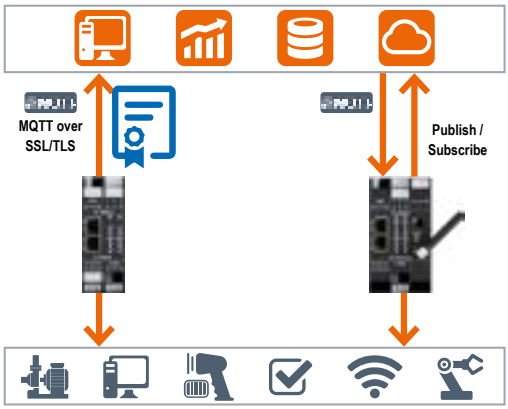
SMART METERING



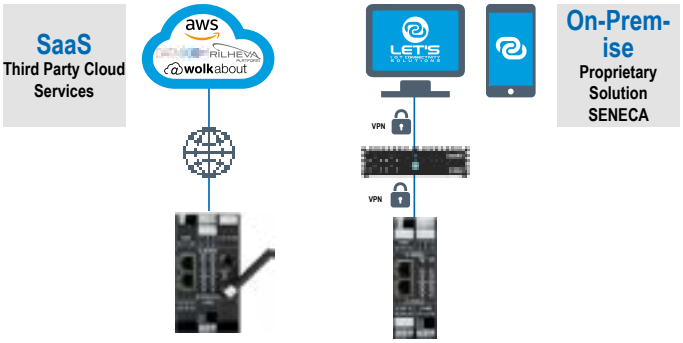
CONTROL WITH OPC UA/DA



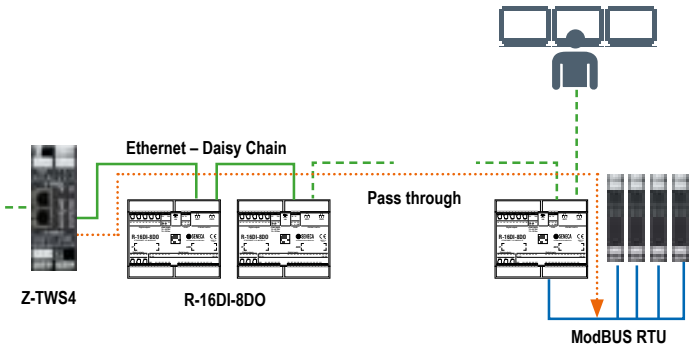
CONTROL WITH MQTT



CLOUD INTEGRATION



MODBUS PASS THROUGH



1.3

PROCESS CONTROL

Control and calculation units for process automation

In many process automation applications, precise measurement, control, and safety requirements must be met. This is compounded by rapid changes in demand, market fluctuations, technological innovations, and demands for greater production flexibility. Modern automation systems must therefore be accompanied by dedicated control units capable of shortening the design, realization, and commissioning times of plants.
SENECA proposes modular and integrable solutions in:

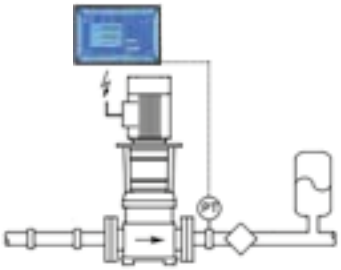
- **New systems**
- **Old systems**
- **System extensions**
- **Optimizations**
- **Revamping**

S6001 PUMP CONTROLLER

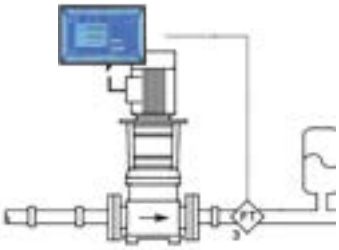
RTU WITH INTEGRATED I/O, 4G/LTE MODEM AND PUMP / PRESSURIZATION GROUP CONTROL, HMI 7"

The S6001 Pump Controller is a controller for pumping systems and pressurization groups capable of managing from 2 to 6 pumps (with possible Z-D-IO expansion I/O modules), with constant flow, level, and pressure regulation and user exchange via inverters. The S6001 Pump Controller allows receiving commands via SMS (on/off, auto/man) at pumping stations and calculating the estimated flow based on the characteristic curve of motorized users. It also allows sending information on the operating status and alarms following SMS commands. The basic configuration and management of alarms, trends, and historical data is easily done via a 7" ergonomic and intuitive touchscreen HMI interface.

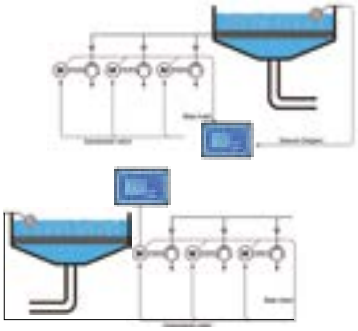
CONTROL MODES



Pump regulation scheme based on pressure measurement



Pump regulation scheme based on flow measurement



Pump regulation scheme based on level measurement

Z-FLOW COMPUTER

A UNIT FOR CALCULATING AND COMPENSATING THE FLOW OF VAPORS, LIQUIDS, AND GASES

The Z-FLOWCOMPUTER is an ideal calculator for calculating and compensating the flow of vapors, liquids, and gases. In particular, it performs mass and energy calculations for water/steam and flow compensation and volume correction for gases. The system is equipped with 1 digital PNP input, 2 voltage/current analog inputs, 1 universal analog input, 2 digital relay outputs, 1 analog voltage/current output, and 1 micro SD card slot up to 32 GB. Z-FLOWCOMPUTER is provided with a 4.3" HMI touchscreen with which it communicates via an Ethernet port. The versatility of this flow computer, ensured by its various signal inputs, allows its use in applications such as flow compensation or for energy efficiency calculations for issuing white certificates. For water and steam, the calculation standard used is IAPWS IF-97. For gases, the calculation norms used are AGA8 and SGERG 88, selectable through configuration.

CALCULATION STANDARDS

STEAM/WATER

Compressibility is calculated using the international standard IAPWS IF-97.

REAL GASES

Compressibility is calculated using Redlich-Kwong (RK) or Redlich-Kwong-Soave (RKS) equations for the most common gases in the industrial field, whose properties and information are fully known.

IDEAL GASES

Corrects for temperature and pressure variations where compressibility calculation is not required.

NATURAL GASES

The compressibility of natural gases is calculated using international standards: AGA8-92DC (ISO 12213-2)SGERG88 (ISO 12213-3)AGA8 GROSS METHOD 1 and METHOD 2.

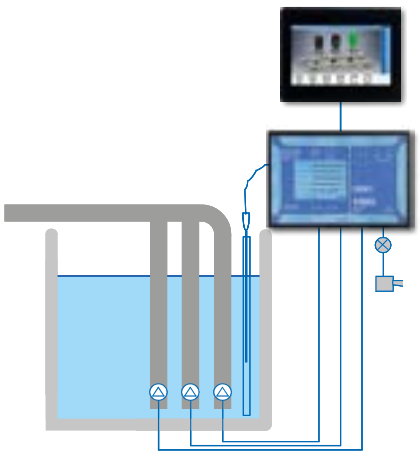
S6001 PUMP CONTROLLER

PUMP CONTROLLER WITH INTEGRATED I/O, 4G/LTE MODEM, 7" HMI

GENERAL DATA	
Power Supply	24 Vac/dc
Consumption	Maximum power: 10 VA, typical 6 VA
Section for removable terminals:	0.2..2.5 mm2 (AWG 24-12)
Isolation	1,500 Vac
LED Status Indicators	Power Supply Serial Communication Ethernet Communication GSM-UMTS signal level Digital I/O Status
Protection class	IP20
OPERATING TEMPERATURE	-10..+65°C
Dimensions	190x105x60 mm
Weight	1250 g
Enclosure	Painted aluminum
Connections	Removable terminals, maximum conductor size 2.5 mm^2
Mounting	DIN 35 mm rail (IEC EN 60715)
COMMUNICATION	
Ethernet	#1 port 10/100 Ethernet 10/100Tx (RJ45)
RS485	#2 RS485 ports from 110 bps to 115 kbps
RS232	#1 RS232 D9M port
USB	#1 USB host A port, maximum current 300 mA
Modem/Router	4G LTE (model S6001-PC-4GWW) LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/ B26/B28 - LTE-TDD: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 - GSM: B2/B3/B5/B GPS / GLONASS / BeiDou(compass) / Galileo / QZSS
Supported SIM cards	Mini SIM with push slot
Supported Protocols	ModBUS RTU/TCP (Slave), https, ftp, sftp, smtp, ppp, snmp, Open VPN
Remote Access LET'S	Yes
INPUT DATA	
Channels	#15 PNP opto-isolated digital inputs (max voltage 24 Vdc) #2 digital inputs for conductive fluid level control, adjustable sensitivity #4 analog inputs 0..20 mA @12bit, accuracy ±0.3% f.s., impedance 50 Ohm
OUTPUT DATA	
Channels	#8 SDPT relay outputs 5A - 250 Vac #1 Analog Output 0..10 V, @12bit, accuracy ±0.3% f.s., min impedance 1kOhm #1 Analog Output 0..20 mA, @12bit, accuracy ±0.3% f.s., max impedance 500 Ohm #1 Output 12V/50mA for alarms
PROCESSOR / MEMORY	
CPU	ARM 32 bit
Flash Memory (data)	1 GB
RAM / FeRAM	64 MB / 8 kB
Micro SD Slot	Yes, for SD cards up to 32 GB
CONFIGURATION	
PLC Programming	-
System Configuration	HMI App: pressure / flow / level adjustment (floats and/or probe) for 2 to 6 pumps
Web server	Yes
Datalogger	Yes
STANDARD	
Certifications	CE
HMI	
Display	7" TFT Color/LED, resistive touchscreen, 800x400
Memory	30 MB Flash / 512 MB DDR
Communication	#1 RS232, #1 Ethernet 10/100 Mbps, 1 USB host 2.0
Hardware Clock	Clock/calendar with backup battery (< 100 ppm)
Nominal Voltage / Current	18-32 Vdc / 0.3 A
Settings	Pump management, alarms, reports, trends, setpoints

HMI TECHNICAL DATA	
DISPLAY	
Display	TFT Color/LED
Screen Technology	Resistive
Colors	6k
Resolution	800x480
Diagonal	7"
Dimming	Yes
LED Backlight Duration	Over 20,000 hours
Front Laminate	10 years at air temp of 25°C
UV Resistance	Indoor applications, yellowing and fragility may occur after 300 accelerated aging tests for humidity
GENERAL DATA	
User Memory	30 MB Flash
RAM	512 MB DDR
Serial Port	RS232
Ethernet Port	10/100 Mbps
USB Port	Host Interface V2.0 max 500 mA
Hardware Clock	Clock/calendar with backup battery
Time Zone	Automatic
Clock Accuracy	<100 ppm
Voltage	18-32 Vdc
Nominal Current	0.3A

APPLICATION EXAMPLE



ORDER CODES	
Code	**Description**
S6001-PC	Pump controller with integrated I/O, 4G LTE modem, HMI 7"
S6001-PC-4GWW	Pump controller with integrated I/O, 4G LTE modem, HMI 7"
ACCESSORIES	
CE-RJ45-RJ45-C	Crossed Ethernet cable (RJ45 / RJ45) 1.5 MT
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5 MT
A-GSM	External dual band GSM swing antenna, cable 3.2 m
A-GSM-DIR-5M	Compact directional triband GSM-DECT-UMTS SMA-M antenna, cable 5 m
A-GSM-OMNIDIR	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. cable 5 m
A-GSM-OMNIDIR-10	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. cable 10 m
A-GSM-QUAD-N	External quadband GSM SMA-M antenna, cable 4 m
MSD	Micro SD memory card with adapter
Z-D-IO	Control module 6 digital inputs, 2 digital outputs / RS485 ModBUS RTU

The technical data and diagrams in this document are indicative and not binding.

Z-FLOWCOMPUTER

FLOW COMPUTER MULTIFUNCTION

TECHNICAL DATA

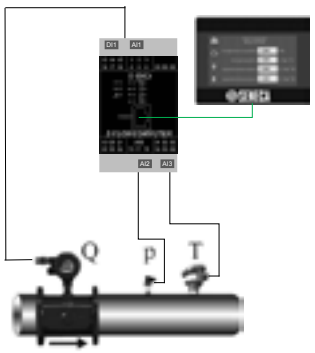
GENERAL DATA	
Power Supply	11..40 Vdc; 19..28 Vac
Consumption	Max 4 W
Isolation	1,500 Vac
Status Indicators	Power Supply Serial communication Ethernet Link and Transmission SD Card Digital I/O Status
Calculation standards	IAPWS IF-97 AGA8 GROSS METHOD 2 AGA8-92DC (ISO 12213-2), SGERG88 (ISO 12213-3) Redlich-Kwong (RK) Formula Redlich-Kwong-Soave (RKS) Formula Ideal Gas Law
Protection class	IP20
OPERATING TEMPERATURE	-10..+55°C
Dimensions	52.5 x 100 x 112 mm
Enclosure	Nylon 6 preloaded 30% fiberglass, self-extinguishing class V0
Connections	Removable terminals 3-way, 5 mm pitch
Mounting	DIN 35 mm rail (IEC EN 60175)
COMMUNICATION	
Ethernet	#1 port 10/100 Ethernet 10/100Tx (RJ45)
Serial	#1 RS485 port baud rate 115k on terminals
USB	#1 Micro USB port on side connector
Supported Protocols	ModBUS RTU, ModBUS TCP-IP, http, ftp
INPUT DATA	
Channels	#1 digital PNP input, (max voltage 30Vdc) #2 analog inputs 0..20 mA / 0..30 Vdc @16bit #1 universal input V / mA / RTD
OUTPUT DATA	
Channels	#2 SPDT relay outputs max 2A 250 Vac #1 analog output V – mA @14 bit
PROCESSOR / MEMORY	
CPU	ARM 32 bit
Flash Memory (data)	1MB+2MB
RAM	256 kB
FeRAM	256 byte
Micro SD slot (external memory)	Yes, max 32 GB
HMI (ONLY FOR Z-FLOWCOMPUTER MODEL)	
Power Supply	24 vdc
Display	4.3", 480x272, ARM 600 MHz, TFT 16 million colors
RAM	128 MB
Communication	1# USB host 2.0 #1 Ethernet
Dimensions	128x102x32 mm
CONFIGURATION	
Software	EASY FLOW COMPUTER
Web server	-
Datalogger	Yes
STANDARD	
Certifications	CE

MEASUREMENT APPLICATIONS

MASS AND STEAM CALCULATION

Water

Steam

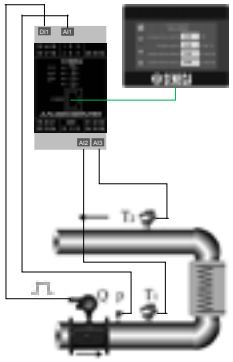


This application aims to measure the amount of heat and the mass of fluid flowing through the pipe.
For superheated steam measurement, flow, temperature, and pressure measurements are required. For saturated steam measurement, flow and either pressure or temperature measurements (just one of the two) are sufficient. For water measurement, only flow and temperature are required.

STEAM-WATER THERMAL DIFFERENCE

Water

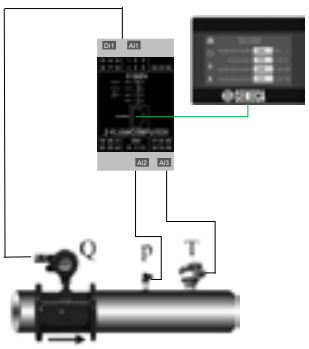
Steam



This application aims to measure the power and energy exchanged with another system.
Z-FLOWCOMPUTER calculates the power in the supply and return pipes and computes the difference; the result is the thermal power exchanged.

VOLUME CORRECTOR FOR NATURAL / REAL GAS

Gas



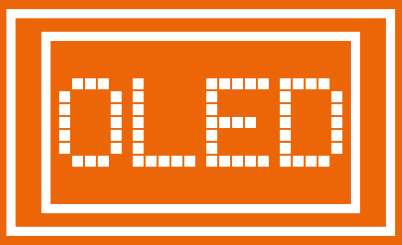
This application aims to compensate for the flow and correct the volume of a gas with reference to the base conditions of temperature (Tb) and pressure (Pb), starting from measurements under working conditions Q, P, and T. The calculation algorithms used are specified in the table below.

ORDER CODES

Code	Description
Z-FLOWCOMPUTER	Flow computer for calculating the flow of water, steam, and gas with an integrated 4.3" HMI
Z-FLOWCOMPUTER-B	Flow computer for calculating the flow of water, steam, and gas
ACCESSORIES	
MSD	Micro SD memory card with adapter
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5 MT
CS-DB9F-CLAMP	Serial RS485 cable (DB9F / terminals) 1.5 MT
CU-A-MICROB	USB-A Micro USB-B 5 P plug cable
SOFTWARE	
EASY FLOW COMPUTER	Z-FLOWCOMPUTER management software downloadable from www.seneca.it

The technical data and diagrams in this document are indicative and not binding.

1.4



HMI
OLED

S401

OLED INDICATOR WITH MODBUS INTERFACE

VISUALIZZAZIONE
Fino a 30 grandezze
(20 dirette, 10 calcolate)

FUNZIONI MASTER
27 funzioni matematiche,
20 letture da moduli slave,
10 scritture su moduli slave

SCROLLING AUTOMATICO
Scrolling automatico messaggi di testo

CABLAGGIO RIDOTTO
N°2 interfacce RS485
ModBUS (1 Master / Slave)

ELEVATA LUMINOSITÀ
70 cd/m²

DIMENSIONI RIDOTTE
96x48x40 mm

PROGRAMMAZIONE
Da tastiera
o via software

GESTIONE ALLARMI
Gestione allarmi su soglia
o su evento

TECHNICAL DATA

GENERAL DATA

Power Supply	10-40 Vdc / 19-28 Vac
Max Consumption	1 W
Isolation	1,500 Vac
Communication Interfaces	2 x RS485 ModBUS RTU Master / Slave Speed 1,200..115,200 bps
Memory	RAM: 256 byte XRAM: 4 kB Flash: 32 kB

DISPLAY AND MEASUREMENT

Display	OLED 2.7", 128 x 64 pixels
Front keys	3 navigation buttons
Display	Up to 20 measurements (max 3 per page) freely programmable
Serial communication	Address, parity, baud rate, response delay, transmission delay, reception timeout
Data Storage	RAM, table 20x4 bytes

THERMOMECHANICAL DATA

Operating Temperature	-10..+60°C
Frontal Protection	IP65
Dimensions (w x h x d)	96x48x40 mm

SETTINGS, STANDARDS

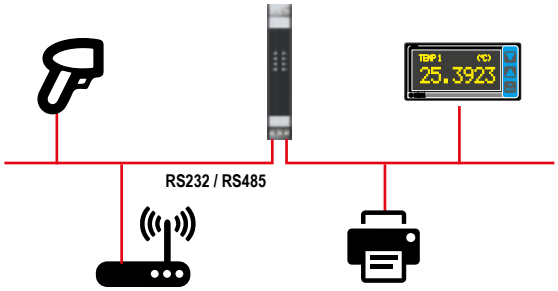
Software	Max 20 freely configurable queries, data management (EASY S401)
Settings	Communication parameters, language, contrast, brightness, scale, unit of measure offset
Certifications	CE

ORDER CODES

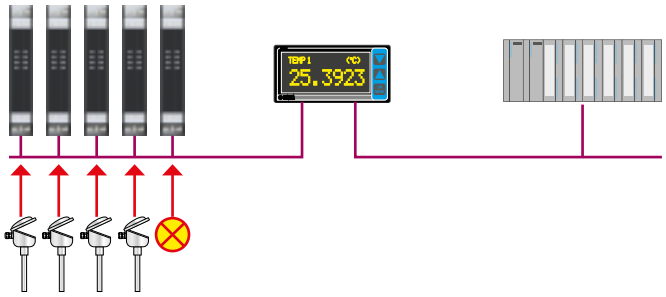
Code	Description
S401-L	Indicator with OLED display and ModBUS interface

APPLICATION EXAMPLES

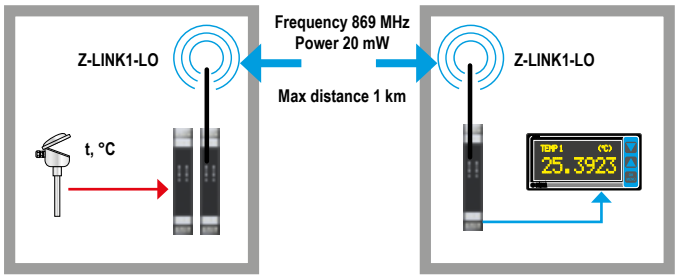
SERIAL CONNECTION



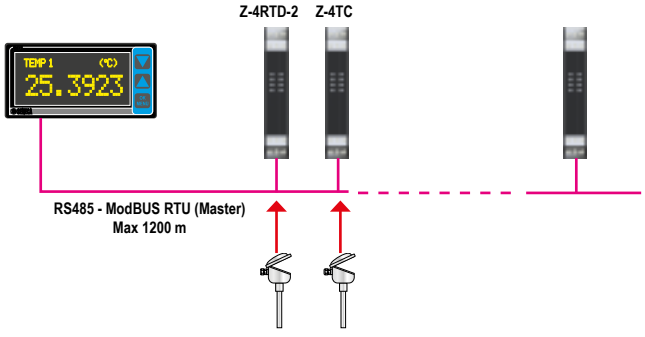
LOCAL PLC CONTROL



SIGNAL RETRANSMISSION



TEMPERATURE ACQUISITION



The technical data and diagrams in this document are indicative and not binding.

1.5

HMI
OPERATOR
PANELS
VISUAL

HMI OPERATOR PANELS VISUAL

The **VISUAL** touchscreen operator panels are designed to meet every application need, from small automations to complex industrial process control.
With displays 4.3", 7", 9.7", 10.1", 15" and widescreen format, they allow for displaying more information compared to a traditional display while ensuring containment of external dimensions.
The operator panels can be freely oriented horizontally or vertically, depending on the application needs. The displays are TFT up to 16 million colors with LED backlighting and high resolution.
VISUAL terminals are designed to be installed in the harshest environmental conditions thanks to the front panel with IP65/66 protection rating.
The VISUAL range is customizable through the EASY BUILDER PRO design environment equipped with a powerful editor and a simple and intuitive user interface. Through Ethernet, USB, RS232, RS485 communication interfaces, with support for ModBUS RTU / TCP-IP protocols, the terminals can be paired with the most common industrial controllers and other supervision and automation systems.

TECHNICAL DATA

	VISUAL1E	VISUAL2E	VISUAL3	VISUAL3-FLOW
				
	HMI 4.3" TFT Display, 1xETH, 256MB Flash	**HMI 7" TFT Display, 1xETH, 256MB Flash**	**HMI 4.3" TFT Display, 1xETH, 128MB Flash, UL**	**HMI 4.3" TFT Display, 1xETH, 256MB Flash, UL (ver. Z-FLOWCOMPUTER)**
DISPLAY				
Dimension	4.3" TFT LCD	7" TFT LCD	4.3 " TFT LCD	4.3 " TFT LCD
Resolution	480x272	800x480	480x272	480x272
Format	16:9	16:9	16:9	16:9
Brightness	400 cd/m2	350 cd/m2	500 cd/m2	500 cd/m2
Contrast	500:1	500:1	500:1	500:1
Backlight	LED > 30,000 hours	LED > 30,000 hours	LED, > 30,000 hours	LED, > 30,000 hours
Colors	16.7 million	16 million	16 million	16 million
Touchscreen	4-wire, resistive	4-wire, resistive	4-wire, resistive	4-wire, resistive
Accuracy	±2%	±2%	±2%	±2%
Accuracy	±2%	±2%	±2%	±2%
COMMUNICATION				
USB Host 2.0	1	1	1	1
Ethernet 10/100	1	1	1	1
Ethernet 10/100/1000	-	-	-	-
RS232	-	-		
RS485	-	-		
RS232/RS485	1	1	1	1
RS232/RS485/RS422	-	-	-	-
CAN bus Support	-	-	-	-
SD Card Slot	-	-	-	-
Wi-Fi	-	-	-	-
HDMI	-	-	-	-
GENERAL DATA				
Flash Memory	256 MB	256 MB	128 MB	128 MB
RAM	128 MB	128 MB	128 MB	128 MB
Processor	Dual Core RISC	Dual Core RISC	32 bit RISC 600 MHz	32 bit RISC 600 MHz
RTC	Integrated	Integrated	Integrated	Integrated
Power Supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	350 mA @ 24 Vdc	450 mA @ 24 Vdc	450 mA @ 24 Vdc	450 mA @ 24 Vdc
Enclosure	Plastic Housing	Plastic Housing	Plastic Housing	Plastic Housing
Dimensions (WxHxD)	128 x 102 x 32 mm	200.4 x 146.5 x 34 mm	128x102x32 mm	128x102x32 mm
Fanless	119x93 mm	192x138 mm	119x93 mm	119x93 mm
Weight	250 g	520 g	250 g	250 g
Operating temperature	0..55°C	0..55°C	0..45°C	0..45°C
Protection class	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65
Design	Yes	Yes	Yes	Yes
Certifications	CE	CE	CE, (UL)	CE, (UL)
CONFIGURATION AND PROGRAMMING				
EASY BUILDER PRO	Yes	Yes	Yes	-
EASY ACCESS	Dashboard	Dashboard	Dashboard	-
Options	-	-	-	
CODESYS	-	-	-	-
Jmobile	-	-	-	-
WEB SERVER	-	-	-	Yes
HMI Application	-	-	-	Yes

The technical data and diagrams in this document are indicative and not binding.

- High-resolution TFT display up to 16 million colors, LED-backlit
- High-performance RISC, Dual Core, Quad Core processors
- Flash memory up to 4GB
- RS232/RS485 and Ethernet communication supporting ModBUS RTU and ModBUS TCP-IP protocols
- Certifications: CE, UL, Atex Zone 2
- Industrial robustness with NEMA4/IP65/ IP66 front protection
- Windows programming tool with advanced editing features
- 4-wire resistive touchscreen

TECHNICAL DATA

	VISUAL4	VISUAL 4ET	VISUAL5-PC	VISUAL5-WB
				
	HMI 7" TFT Display, 1xETH, 128MB Flash, UL, Atex Zone 2, -20..+60°C	HMI 7" WVA Display, 2xETH, 4GB Flash, UL, -20..+55°C	HMI 7" TFT Display, 1xETH, 4GB Flash (ver. S6001-PC)	HMI 7" TFT Display, 1xETH, 4GB Flash
DISPLAY				
Dimension	7" TFT LCD	7" TFT LCD	7" TFT Display	7" TFT Display
Resolution	800x480	800x480	800X480	800X480
Format	16:9	16:9	16.9	16.9
Brightness	350 cd/m2	450 cd/m2	200 cd/m2	200 cd/m2
Contrast	800:1	800:1	N.D.	N.D.
Backlight	LED, > 30,000 hours	LED, > 30,000 hours	LED lifespan >20000 hours	LED lifespan >20000 hours
Colors	16.7 million	16.7 million	64k colors	64k colors
Touchscreen	4-wire, resistive	4-wire, resistive	-	-
Accuracy	±2%	±2%	N.D.	N.D.
COMMUNICATION				
USB Host 2.0	1	1	1	1
Ethernet 10/100	1	2	1	1
Ethernet 10/100/1000		-	-	-
RS232	1	1		-
RS485	1	1		-
RS232/RS485				-
RS232/RS485/RS422	-	-	1	1
CAN bus Support	-	-	-	-
SD Card Slot	-	-	-	-
Wi-Fi	-	-	-	-
HDMI	-	-	-	-
GENERAL DATA				
Flash Memory	128 MB	4 GB	4 GB	4 GB
RAM	128 MB	1 GB	512 MB	512 MB
Processor	32 bit RISC 600 MHz	Quad Core RISC	32-bit RISC 1 GHz	32-bit RISC 1 GHz
RTC	Integrated	Integrated	integrated processor	integrated processor
Power Supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	450 mA @ 24 Vdc	350 mA @ 24 Vdc	300 mA @ 24 Vdc	300 mA @ 24 Vdc
Enclosure	Plastic Housing	Aluminum casing	Plastic Housing	Plastic Housing
Dimensions (WxHxD)	200.4 x146.3 x 34 mm	200.3 x 146.3 x 34 mm	187X147 X29 mm	187X147 X29 mm
Fanless	192x138 mm	192 x 138 mm		
Weight	600 g	800 g	600 g	600 g
Operating temperature	'-20..+60°C	-20..55°C	0..50°C	0..50°C
Protection class	NEMA4 / IP65	NEMA4 / IP66	Front IP66 REAR IP20	Front IP66 REAR IP20
Design	Yes	Yes	-	-
Certifications	CE, UL, Atex Zone 2 certified	CE, UL	CE, UL, Atex Zone 2 certified	CE, UL, Atex Zone 2 certified
CONFIGURATION AND PROGRAMMING				
EASY BUILDER PRO	Yes	Yes	-	-
EASY ACCESS	Optional configurations available	Optional configurations available	-	-
Options	-	Optional configurations available	-	-
CODESYS	-	Optional configurations available	-	-
Jmobile	-	-	Yes	Yes
WEB SERVER	-	-	Yes	Yes
HMI Application	-	-	Yes	-

The technical data and diagrams in this document are indicative and not binding.

TECHNICAL DATA

	VISUAL 6E	VISUAL7N	VISUAL8E	VISUAL 9E
				
	HMI 7" TFT Display, 2xETH, 4GB Flash, UL	HMI 10.1" WVA Display, 1xETH, 256MB Flash	HMI 10.1" TFT Display, 2xETH, 4GB Flash, UL	HMI 10.1" TFT Display, 2xETH, 128MB Flash
DISPLAY				
Dimension	7" TFT LCD	10.1" TFT LCD	10.1" TFT LCD	10.1" TFT Display
Resolution	800x480	800x480	1024x600	1024x600
Format	16:9	16:9	16:9	16:9
Brightness	400 cd/m2	300 cd/m2	350 cd/m2	350 cd/m2
Contrast	800:1	1000:1	500:1	500:1
Backlight	LED > 30,000 hours	LED > 50,000 hours	LED, > 50,000 hours	LED, > 50,000 hours
Colors	16.7 million	16.7 million	16.7 million	16.7 million
Touchscreen	4-wire, resistive	4-wire, resistive	4-wire, resistive	4-wire, resistive
Accuracy	±2%	±2%	±2%	±2%
Accuracy	±2%	±2%	±2%	±2%
COMMUNICATION				
USB Host 2.0	1	1	1	1
Ethernet 10/100	2	1	1	1
Ethernet 10/100/1000	-	-	1	1
RS232	1	1	1	1
RS485	1	1	1	1
RS232/RS485	-	-	-	-
RS232/RS485/RS422	-	-	-	-
CAN bus Support	-	-	Yes	Yes
SD Card Slot	-	-	-	-
Wi-Fi	-	-	Optional configurations available	Optional configurations available
HDMI	-	-		
GENERAL DATA				
Flash Memory	4 GB	128 MB	4 GB	128 MB
RAM	1 GB	128 MB	1 GB	128 MB
Processor	Quad Core RISC	Dual Core RISC	Quad Core RISC	Quad Core RISC
RTC	Integrated	Integrated	Integrated	Integrated
Power Supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	820 mA @ 24 Vdc	510 mA @ 24 Vdc	1 A @ 24 Vdc	1A@24Vdc
Enclosure	Plastic Housing	Plastic Housing	Plastic Housing	Plastic Housing
Dimensions (WxHxD)	200.3 x 146.3 x 34 mm	271 x 213 x 40 mm	271 x 213 x 36.4 mm	271 x 213 x 36.4 mm
Fanless	192 x 138 mm	260 x 202 mm	260 x 202 mm	260 x 202 mm
Weight	600 g	1000 g	1200 g	1200 g
Operating temperature	0..55°C	0..55°C	0..50°C	0..50°C
Protection class	NEMA4 / IP66	NEMA4 / IP65	NEMA4 / IP65	UL Type4X / NEMA4 / IP66
Design	Yes	Yes	Yes	Yes
Certifications	CE, UL	CE	CE, UL	CE, UL
CONFIGURATION AND PROGRAMMING				
EASY BUILDER PRO	Yes	Yes	Yes	Yes
EASY ACCESS	Yes	Optional configurations available	Optional configurations available	Optional configurations available
Options	Yes	-	Optional configurations available	Optional configurations available
CODESYS	Yes	-	Optional configurations available	Optional configurations available
Jmobile	-	-	-	-
WEB SERVER	-	-	-	-
HMI Application	-	-	-	-

The technical data and diagrams in this document are indicative and not binding.

TECHNICAL DATA

	VISUAL 11E	VISUAL 12E	VISUALTV
			
	HMI 9.7" XGA TFT Display, 2xETH, 4GB Flash, UL	HMI 15" WVA Display, 2xETH, 4GB Flash, UL	HMI with external touchscreen, 2xETH, 4GB Flash, UL
DISPLAY			
Dimension	9.7" TFT Display	15" WVA Display	-
Resolution	1024x768	1024x768	Support up to 1920 x 1080 resolution
Format	4:3	4:3	Support for 16:9 or 4:3 aspect ratio
Brightness	350 cd/m2	350 cd/m2	-
Contrast	900:1	2500:1	-
Backlight	LED > 30,000 hours	LED > 70,000 hours	-
Colors	64k colors	16.2 million	-
Touchscreen	4-wire, resistive	4-wire, resistive	-
Accuracy	±2%	±2%	-
COMMUNICATION			
USB Host 2.0	1	1	1
Ethernet 10/100	1	1	1
Ethernet 10/100/1000	1	1	1
RS232	1	1	-
RS485	1	1	-
RS232/RS485	-	-	1
RS232/RS485/RS422	-	-	-
CAN bus Support	Yes		-
SD Card Slot	-	SD/DSDHC	-
Wi-Fi	Optional configurations available	-	-
HDMI		-	Yes
GENERAL DATA			
Flash Memory	4 GB	4 GB	4 GB
RAM	1 GB	1 GB	1 GB
Processor	Quad Core RISC	Quad Core RISC	Quad Core RISC
RTC	Integrated	Integrated	Integrated
Power Supply	24 Vdc	24 Vdc	24 Vdc
Consumption	1A@24Vdc	1.3A@24Vdc	850mA@24VDC
Enclosure	Plastic Housing	Aluminum casing	Plastic Housing
Dimensions (WxHxD)	260.6 x 203.1 x 36.5 mm	366 x 293 x 57 mm	29.8 x 130 x 115 mm
Fanless	250 x 192 mm	352 x 279 mm	
Weight	1000 g	2740 g	240 g
Operating temperature	0..50°C	0..50°C	0..50°C
Protection class	UL Type4X / NEMA4 / IP66	UL Type4X / NEMA4 / IP66	IP20
Design	Yes	Yes	
Certifications	CE, UL	CE, UL	CE, UL
CONFIGURATION AND PROGRAMMING			
EASY BUILDER PRO	Yes	Yes	Yes
EASY ACCESS	Optional configurations available	Optional configurations available	Optional configurations available
Options	Optional configurations available	Optional configurations available	Optional configurations available
CODESYS	Optional configurations available	Optional configurations available	Optional configurations available
Jmobile	-	-	-
WEB SERVER	-	-	-
HMI Application	-	-	-

The technical data and diagrams in this document are indicative and not binding.

EASY BUILDER PRO

HMI PROGRAMMING ENVIRONMENT

- Integrated Windows development environment, toolbars, dialog boxes, menus, drag & drop drawing objects
- Multifunctional objects for dynamic use supporting user screens (charts, buttons, alarm history, etc.)
- Multilingual display support
- Over 250 drivers available to ensure easy connection to PLCs, temperature controllers, barcode readers, etc.

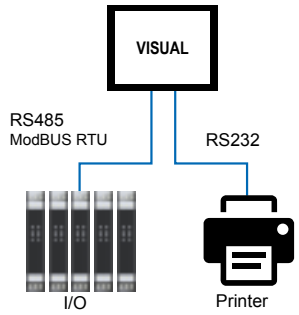
VISUAL EA

REMOTE ASSISTANCE TOOL

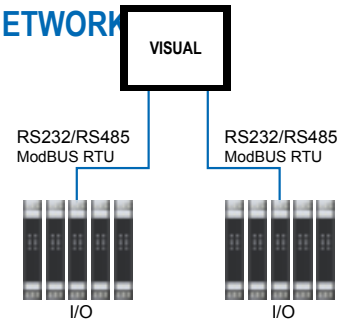
- Remote assistance system activated on HMI VISUAL equipped with Ethernet port
- Remote access to the operator panel and, in passthrough mode, to PLCs and devices connected to it (in serial or Ethernet mode) without any network configuration
- SSL-protected VPN connection for secure data and information exchange with minimal bandwidth usage

EXAMPLES OF CONNECTIONS

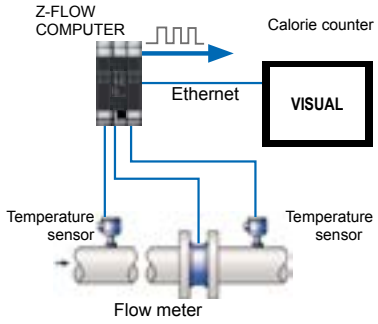
SERIAL



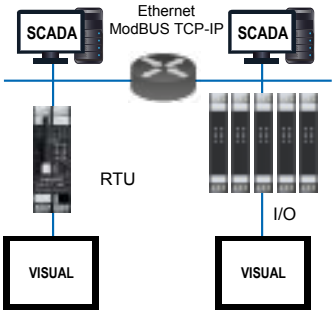
DISTRIBUTED NETWORK SERIAL



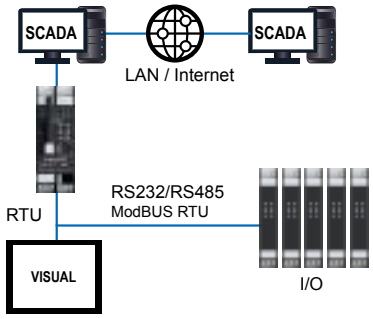
HMI FOR FLOW COMPUTER



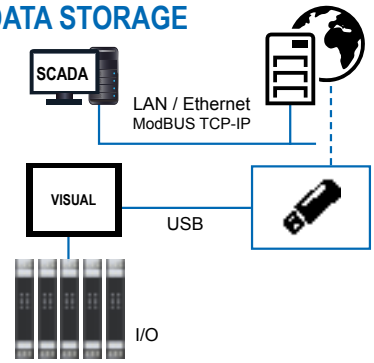
ETHERNET



REMOTE CONTROL



DATA STORAGE



ORDER CODES

Code	Description	Code	Description
VISUAL11E	HMI 9.7" XGA TFT Display, 2xETH, 4GB Flash, UL	**VISUAL5-PC**	HMI 7" TFT Display, 1xETH, 4GB Flash (ver. S6001-PC)
VISUAL12E	HMI 15" WVA Display, 2xETH, 4GB Flash, UL	**VISUAL5-WB**	HMI 7" TFT Display, 1xETH, 4GB Flash
VISUAL1E	HMI 4.3" TFT Display, 1xETH, 256MB Flash	**VISUAL6E**	HMI 7" TFT Display, 2xETH, 4GB Flash, UL
VISUAL2E	HMI 7" TFT Display, 1xETH, 256MB Flash	**VISUAL7N**	HMI 10.1" WVA Display, 1xETH, 256MB Flash
VISUAL3	HMI 4.3" TFT Display, 1xETH, 128MB Flash, UL	**VISUAL8E**	HMI 10.1" TFT Display, 2xETH, 4GB Flash, UL
VISUAL3-FLOW	HMI 4.3" TFT Display, 1xETH, 256MB Flash, UL (ver. Z-FLOWCOMPUTER)	**VISUAL9E**	HMI 10.1" TFT Display, 2xETH, 128MB Flash
VISUAL4	HMI 7" TFT Display, 1xETH, 128MB Flash, UL, Atex Zone 2, -20..+60°C	**VISUALTV**	HMI with external touchscreen, 2xETH, 4GB Flash, UL
VISUAL4ET	HMI 7" WVA Display, 2xETH, 4GB Flash, UL, -20..+55°C	**VISUALWIFI**	Wi-Fi expansion module Series VISUAL

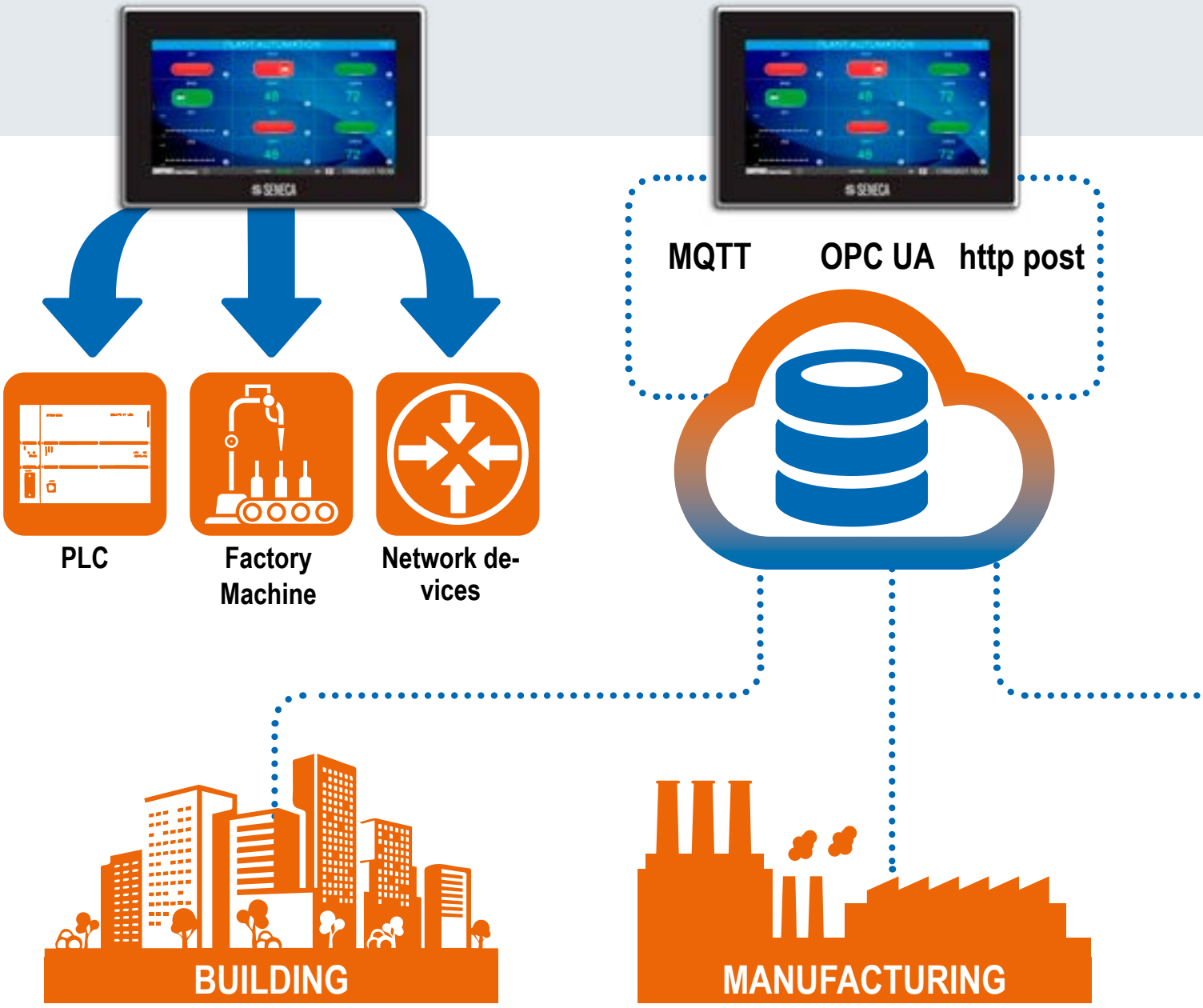
ACCESSORIES AND SOFTWARE

CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CS-DB9F-TIP-V	Serial RS485 cable (DB9F / tips)
CS-DB9M-TIP-V	Serial RS485 cable (DB9M / tips)
EB PRO	Programming environment
VISUAL EA	Remote Assistance Tool

1.6

HMI
IIOT

THE HMI SOLUTION ALL-IN-ONE WITHOUT PROGRAMMING FOR YOUR IIOT PROJECT

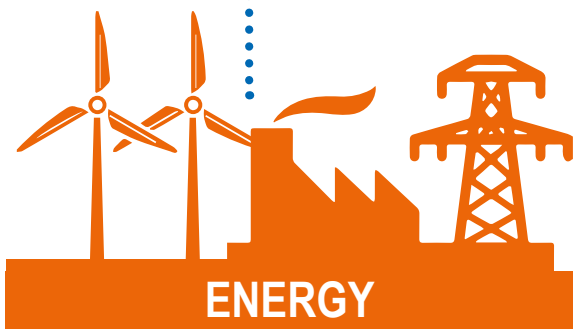


	Functions	Basic Version	Option -L (Logic)	Option -V (VPN)	Option -I (IoT)
1	Widget-based HMI 7" touchscreen	X			
2	Remote Display	X			
3	Display On Display	X			
4	ModBUS Gateway (serial Ethernet, shared memory, transparent)	X			
5	IoT / Cloud Gateway (with support for MQTT and http post)				X
6	Datalogger	X			
7	Alarm management unit	X			
8	LAN / WAN separator	X			
9	WiFi Router / Access Point	X			
10	Serial Sniffer	X			
11	Microcontroller with integrated I/O		X		
12	VPN module for remote assistance and control			X	

7" TOUCHSCREEN

Devices
ModBUS

SCADA / MES



HARDWARE
- Power supply 24Vac/dc
- Flash Memory 2 / 4 GB
- #2 DI/DO
- Front protection grade IP64
- Operating temperature -20..+55°C

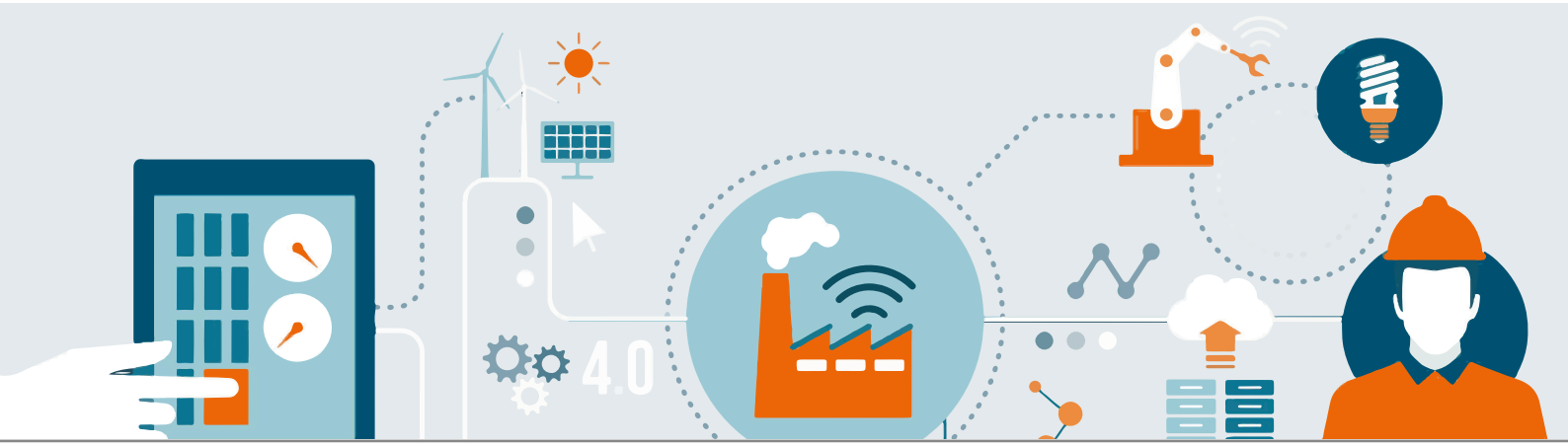
DISPLAY
- Display 7" TFT, 16M colors
- Capacitive multitouch
- Resolution 800x480 pixels
- Standard widget display
- Display on Display
- Remote display

STANDARD COMMUNICATION
- "2 Fast Ethernet ports
- #2 serial ports
- #2 USB ports
- ModBUS RTU
- ModBUS TCP-IP
- Max 32 TCP-IP clients, 2000 tags, 128 slave nodes ModBUS
- Max 244 slave nodes (128 on a single serial without repeater)

CONFIGURATION
- Integrated Web Server
- Widget library
- VPN management software
- Network management software (SDD, SESC)
- DIP switch factory reset
- Firmware update via web or USB pen (Fat32)

IIOT PROTOCOLS
- MQTT
- OPC UA
- http post, https
- FTP / SFTP
- Cloud support
- OpenVPN / SSL

CYBERSECURITY
- Data Encryption: Blowfish — Blowfish (128bit) in CBC mode
- Data Authentication: SHA1 — HMAC using Secure Hash Algorithm (160bit)
- Certification authority provided by VPN BOX
- Handshake Encryption: TLSv1/SSLv3 RSA- 2048 — 2048bit Ephemeral Diffie-Helman (DH)
- Service Channel: TLSv1/SSLv3 2048bit certificate

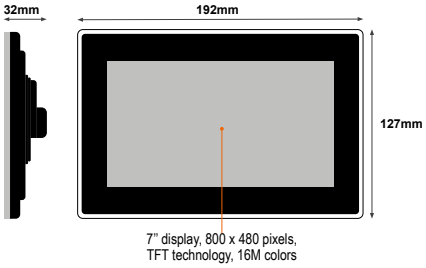


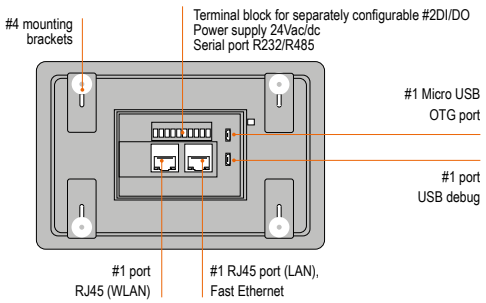
HMI 7” touchscreen with gateway functions, datalogger, remote assistance, and integrated I/O

TECHNICAL DATA

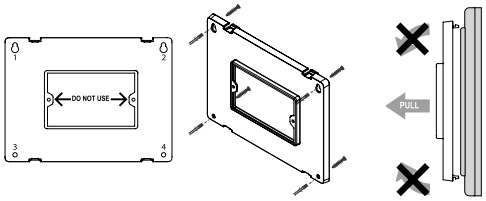
HMI DATA	
Screen	7" LCD TFT backlit, scratch-resistant glass
Resolution	800 x 480 pixels
Format	16/9
Brightness	350 cd/m2
Colors	16 M
Touchscreen	Capacitive
Durability	30,000 h (backlight level 5)
Viewing angles	70° / 50° / 70° / 70° (Top, Bottom, Left, Right)
Display Functionality	Standard widget-based display Remote display (on PC and devices with any O.S.) Display on Display (display emulation)
GENERAL DATA	
Power Supply	24 Vdc/ac +/- 10%
Consumption	AC: Max. 16 VA, 10 W; DC: Max. 9 W
Status Indicators	Ethernet Link and Traffic
Connections	#1 Removable terminal block, 3.5 mm pitch, 10 ways
Protection class	IP64 (front panel with membrane)
Operating temperature	-20..+55°C
Dimensions (WxHxD)	192 x 127 x 32 mm
Panel cutout dimensions (WxH)	157x102 mm
Weight	Approximately 420 g
Enclosure	ABS, black color
Installation	Via mounting brackets or wall mount
COMMUNICATION	
Ethernet Ports	#2 Fast Ethernet 10/100Tx ports on the rear RJ45
Serial Ports	#1 switchable RS232 / 485 serial port, max 115k #1 RS485 port, baud rate max 115kbps
USB Ports	#1 Micro USB OTG port #1 Micro USB serial port for software debugging
WiFi Module	WiFi 802.11 b/g/n, frequency band 2.4 to 2.4835 GHz
Protocols	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/SFTP Server/Client, HTTP/HTTPS server, OpenVPN, SSL, MQTT, OPC UA, HTTP post
Operating Modes	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunneling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, WiFi router, network redundancy unit, VPN remote assistance/ Remote Control module, microcontroller, LAN/WAN separator
I/O	
Configurable DI/DO	#2 digital channels (PNP inputs with internal power)
PROCESSING & MEMORY	
Processor	ARM 800 MHz
Flash Memory (data)	2 / 4 GB
RAM	512 GB
Micro SD card	no
SECURITY	
Data Encryption	Blowfish — Blowfish (128bit) in CBC mode
Data Authentication	SHA1 — HMAC using Secure Hash Algorithm (160bit)
Handshake Encryption	TLSv1/SSLv3 RSA-2048 — 2048bit Ephemeral Diffie-Helman (DH)
Service Channel	TLSv1/SSLv3 2048bit certificate
Web server authentication	Yes
Security Protocols	OpenVPN, SSL
SETTINGS & SOFTWARE	
DIP Switch	Factory reset
Web server	Yes, status information, setup, alarms, charts, widgets
VPN Management Software	VPN BOX Manager, OpenVPN, VPN Client Communicator
SDD (Seneca Discovery Device)	Yes
SESC (Seneca Ethernet to Serial Connection)	Yes
Firmware update	From web page or USB stick (FAT32)
STANDARDS	
Marking / Certifications	CE

LAYOUT AND SPACE REQUIREMENTS





WALL MOUNTING WITH FLUSH MOUNTING BOXES 503



ORDER CODES

Code	Description
HMI MULTIFUNCTION	
SSD-0-0-0-0	Advanced HMI touchscreen with integrated I/O
SSD-0-L-0-0	Advanced HMI touchscreen with logic and I/O
SSD-0-0-V-0	Advanced HMI touchscreen with VPN and I/O
SSD-0-0-0-I	Advanced HMI touchscreen with IIoT and I/O
SSD-0-L-V-0	Advanced HMI touchscreen with logic, VPN, and I/O
SSD-0-L-0-I	Advanced HMI touchscreen with IIoT, logic, and I/O
SSD-0-0-V-I	Advanced HMI touchscreen with IIoT, VPN, and I/O
SSD-0-L-V-I	Advanced HMI touchscreen with IIoT, logic, VPN, and I/O
UPGRADE	
SSD-UPG-L	SSD - Upgrade "logic" functions
SSD-UPG-V	SSD - Upgrade "VPN" functions
SSD-UPG-I	SSD - Upgrade "IIoT" functions
SSD-UPG-L-V	SSD - Upgrade "logic" and "VPN" functions
SSD-UPG-L-I	SSD - Upgrade "logic" and "IIoT" functions
SSD-UPG-V-I	SSD - Upgrade "VPN" and "IIoT" functions
SSD-UPG-L-V-I	SSD - Upgrade "logic," "VPN," and "IIoT" functions
VPN SERVER	
VPN BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/lets-connectivity-solutions/modulo-server-di-connettivita/vpn-box
IOT/CLOUD SOLUTION	
CLOUD BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/soluzioni-iot-scada-cloud/cloud-box
SOFTWARE TOOL	
SDD	SENECA Discovery Device, IP scanner
SESC	SENECA Ethernet to Serial Connection
ACCESSORIES	
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CU-A-MICRO-OTG	Micro USB OTG to USB Type A female adapter cable
MSD	Micro SD memory card with adapter

The technical data and diagrams in this document are indicative and not binding.

1.7

DAQ SOFTWARE

MODBUS Data Acquisition and Recording Software

2-channel license
Free download available at
www.seneca.it/data-recorder

BENEFITS

- Plug&play solution for real-time data acquisition and measurement
- DAQ system implementation in 3 steps
- Standard format data storage and export
- Full utilization of PC computing power
- No specialized training required
- Suitable for both industrial and educational laboratories
- Flexible and multi-format historical data and trend visualization
- Integrated alarm management, reporting, and mathematical processing functions

TOOLS / OPTIONS

Minimum Requirements

Windows 7 and later (32 or 64 bit) with .Net Framework 4.52 and later

Data acquisition and measurements via SENECA Series Z-PC remote I/O system

Windows & OPC tested

Ready-to-use portable measurement kits

TECHNICAL DATA

Max # of devices connected simultaneously	ModBUS TCP: Depending on the application ModBUS RTU: Over 40 with SENECA I/O modules Third-party ModBUS devices: Up to 32 before RS485 signal amplification
# of I/O systems that can be registered simultaneously:	Depending on the application
Maximum # of recordable channels:	From a minimum of two channels to unlimited channels, depending on the license size
Data acquisition sampling time	From a minimum of 1 second to a maximum of 24 hours
# of pages that can be managed simultaneously	64
Maximum # of displays per page	48
Maximum # of pens per graph	8
Maximum # of writable channels (analog + digital)	20
Maximum # of alarms that can be associated with each channel:	4 thresholds (high high alarm, high alarm, low alarm, low low alarm) in display and database storage 1 alarm threshold in writing to an output channel
Manual recording	Start and stop button
Automatic recording	Three different scheduling methods: At preset times and days Continuous and periodic with settable start time and duration Start and stop based on digital input state or event
Data export	CSV, OPC SERVER UA/DA, SQLITE (database format)
Mathematical functions	Arithmetic operators (+, -, *, /, ^) Boolean operators (AND, OR, XOR, NOT) Analog functions [Sin(), Cos(), Tan(), Sqrt(), exp(), ln(), log(), int(), sgn()] State equations to calculate the thermodynamic properties of fluids (saturation temperature, saturation pressure, enthalpy, etc.)
Calibration	On several channel groups associated with thermocouples or thermistors through linear interpolation - From 1 to 5 points per channel
Interface languages	Italian and English
Supported Operating Systems	Windows 7 and later with . Net Framework 4.52 and later; Windows Server 2003 and later

MAIN FUNCTIONS

PROJECT CONFIGURATION

From the Z-NET4 environment, display pages containing channel groups showing the instantaneous values acquired from the system are created.

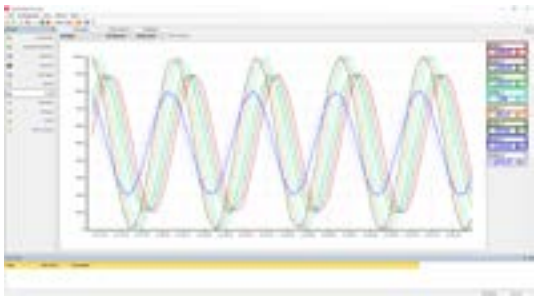
CHANNEL SETTINGS

The Channels page allows importing or setting individual channels. It is possible to enable/disable database saving, select the unit of measure for the channel, and set the start/end of recording and description.

SCHEDULER

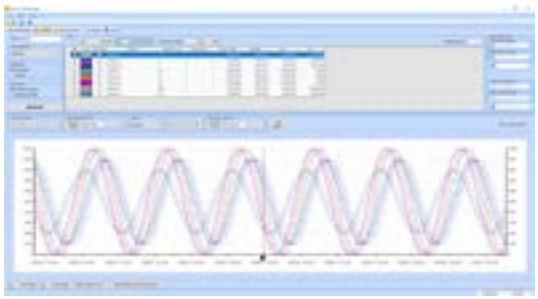
Flexible scheduling allows for manual recording or automatic recording up to 8 preset times, continuously, and with start from digital input.

INSTANT VALUE GRAPH



Each display page corresponds to a real-time temporal graph containing up to 8 concurrent pens or customizable displays, with a settable time axis.

DATA ARCHIVING / EXPORT



Each recording generates a database where the instantaneous, maximum, minimum, and average value for each sample is written. Data storage and export are available in CSV, OPC server UA/DA, SQLite formats.

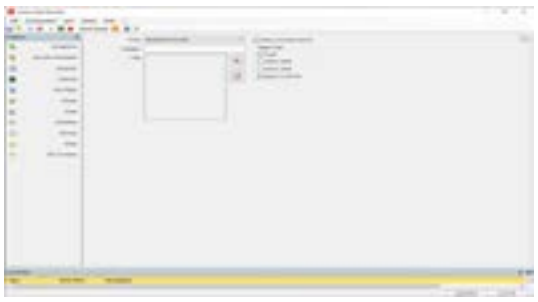
CALCULATED CHANNELS

In addition to physical channels, the software allows the creation of calculated channels from a combination of imported channels and mathematical operators, with the possibility of applying different scaling for each channel.

CALIBRATION

Calibration of one or groups of channels (measurements from TC and/or PT-100) using linear interpolation calculated on a variable number from one to five points chosen by the user.

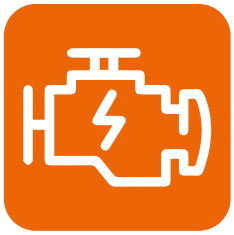
AUTOMATIC REPORTS

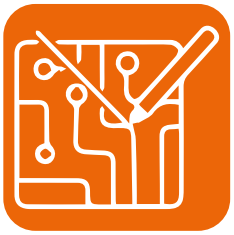


The software can generate automatic reports at the end of each recording of all project display pages or just some that can include graphs, value tables, and tables of recorded alarms.

APPLICATION AREAS


TEST ROOMS


ENGINE ROOMS


ELECTRONICS LABORATORIES


EDUCATIONAL LABORATORIES


TEST BENCHES


CLIMATIC CHAMBERS


INDUSTRIAL OVENS


METROLOGICAL OFFICES


TECHNICAL DEPARTMENTS

CONFIGURATIONS

Code		Description	
Basic Package	DR-	Data acquisition and display software for I/O modules and Modbus RTU/TCP-IP devices with alarm management, mathematical processing, and reporting	
Channels	-02	Acquisition and management of 2 recordable channels (video tracks) - free download from https://www.seneca.it/request-data-recorder/	
	-04	Acquisition and management of 4 recordable channels (video tracks)	
	-08	Acquisition and management of 8 recordable channels (video tracks)	
	-16	Acquisition and management of 16 recordable channels (video tracks)	
	-32	Acquisition and management of 32 recordable channels (video tracks)	
	-64	Acquisition and management of 64 recordable channels (video tracks)	
	UN-	Acquisition and management of unlimited recordable channels (video tracks)	
Options	PLUS-	Multi-client plus package	
	UPGRADE-	Service for upgrading the Data Recorder license	

ORDER CODES

Code	Description
I/O MODULES	
R-16DI-8DO	Ethernet module with 16 digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU
Z-10-D-IN	Module with 10 digital inputs / RS485 - ModBUS RTU
Z-10-D-OUT	Module with 10 digital outputs / RS485 - ModBUS RTU
Z-4DI-2AI-2DO	Mixed module with 4 digital inputs, 2 analog inputs, 2 digital outputs, RS485 - ModBUS RTU
Z-3AO	Module with 3 analog outputs / RS485 - ModBUS RTU
Z-4AI	Analog input module with 4 V-I inputs / RS485 - ModBUS RTU
Z-4RTD2	Module with 4 thermoresistance inputs / RS485 - ModBUS RTU
Z-4TC	Analog input module with 4 thermocouples / RS485 - ModBUS RTU
Z-5DI-2DO	Module with 5 digital inputs, 2 digital outputs RS485 - ModBUS RTU
Z-8AI	Module with 8 single-ended analog inputs or 4 differential / RS485 - ModBUS RTU
Z-8NTC	NTC thermoresistance 8 inputs module / RS485 - ModBUS RTU
Z-8TC-1	8 thermocouple inputs module / RS485 - ModBUS RTU, Micro USB port
Z-8TC-LAB	8 thermocouple inputs module / RS485 - ModBUS RTU, Micro USB port with interchangeable terminals
Z-DAQ-PID	Universal I/O module with PID regulation / RS485 - ModBUS RTU
Z-D-IN	Module with 5 digital inputs / RS485 - ModBUS RTU
Z-D-IO	Control module 6 digital inputs, 2 digital outputs / RS485 ModBUS RTU
Z-D-OUT	Relay output module with 5 outputs / RS485 - ModBUS RTU
ZE-2AI	Analog input module, ModBUS RTU / ModBUS TCP-IP
ZE-4DI-2AI-2DO	Hybrid Module: 2 Analog Inputs, 2 Digital Outputs, 4 Digital Inputs, ModBUS RTU / ModBUS TCP-IP
Z-SG	Strain Gauge Converter Module / RS485 - ModBUS RTU
Z-SG3	Advanced Strain Gauge Converter Module / RS485 - ModBUS RTU
NETWORK ANALYZERS	
S203RC-D	Three-Phase Network Analyzer, 600 Vac / 1000 Arms, Rogowski, Analog and Impulse Outputs, LCD Display, Micro USB App
R2032-L	Network Analyzer, Dual Ethernet with Universal Input (Power 24V)
R2032-H	Network Analyzer, Dual Ethernet with Universal Input (Power 230V)
S203TA-D	Three-Phase Network Analyzer, 600 Vac / 5 Arms, Analog and Impulse Outputs, Standard TA, LCD Display, Micro USB App
S604B-6-MOD	Base Network Analyzer for TA1/5A-RS485 Modbus, 1MB Memory Log
S604B-6-ETH	Base Network Analyzer for TA1/5A-Ethernet, 1MB Memory Log

ORDER CODES

Code	Description
NETWORK ANALYZERS	
S604B-80-MOD	Base Network Analyzer 80A-RS485 Modbus, 1MB Memory Log
S604B-80-ETH	Base Network Analyzer 80A-Ethernet, 1MB Memory Log
S604E-6-MOD	Energy PLUS Network Analyzer for TA1/5A-RS485 Modbus, 8MB Log Harmonics
S604E-6-ETH	Energy PLUS Network Analyzer for TA1/5A-Ethernet, 8MB Log Harmonics
S604E-80-ETH	Energy PLUS Network Analyzer 80A-Ethernet, 8MB Log Harmonics
S604E-80-MOD	Energy PLUS Network Analyzer 80A-RS485 Modbus, 8MB Log Harmonics
S711B6MOD	LCD 96x96 Basic Network Analyzer for TA1/5A-RS485 Modbus, 1MB Memory Log, 1 DI 2 DO
S711E6MOD	LCD 96x96 Energy PLUS Network Analyzer for TA1/5A-RS485 Modbus, 8MB Log, 1 DI 2 DO, Harmonics
S711E6MODAO	LCD 96x96 Energy PLUS Network Analyzer for TA1/5A-RS485 Modbus, 8MB Log, 1 DI 2 DO 1AO, Harmonics
S711E6ETH	LCD 96x96 Energy PLUS Network Analyzer for TA1/5A-Ethernet, 8MB Log, 1 DI 2 DO, Harmonics
COMMUNICATION INTERFACES	
EASY-USB	USB - UART TTL Converter with CD and Programming Software
R-KEY-LT	Compact ModBUS Industrial Gateway
RM169-1	Radio Modem 169 MHz with RS232/RS485 Interface Compliant with RED Directive 2014/53/EU
RTURADIO-169	Radio RTU 169MHz 0.5W, 4DI, 2 DO, 1 Counter, 2 AO, 2 AI, 1 RS485, BNC-F Connector
S107P	Portable RS232 - RS485/422 Serial Converter
S107USB	Portable USB/RS485 Serial Converter
S117P1	Configuration Kit K121, K120RTD, K111, T120, T121 - Portable Serial RS232-TTL-RS485/USB Converter
Z107	Back Panel RS232 – RS485/422 Serial Converter, 24 Vac/dc
Z-AIR-1	868MHz Radio Modem 0.5W with Integrated Omnidirectional Antenna, 1 RS485, RED Directive, 5 mt Cable, IP65 Stainless Steel Bracket
Z-KEY-0	Industrial Gateway - Serial Device Server
Z-KEY-MBUS	Gateway - Protocol Converter ModBUS RTU / TCP-IP ↔ M-BUS
Z-LINK2-LO	869 MHz Radio Modem with RS232/RS485 Interface Using LoRa Technology
Z-LINK1-NM	869 MHz Radio Modem with RS232/RS485 Interface
Z-MBUS	M-BUS ↔ RS232-RS485 Interface Adapter

1.8

SOFTWARE AND ACCESSORIES

MANAGEMENT SOFTWARE

SENECA PACKAGE

Includes the ZNET4 configuration environment, integrated applications for complete management of an automation project,

data export interfaces to Straton and OPC programming environments.

Z-NET4

ENGINEERING AND CONFIGURATION

Z-NET4 is a graphical programming environment used to configure Modbus slave modules and to carry out data acquisition, automation, and remote control projects managed by SENECA controllers and RTUs operating on IEC 61131-3 platforms.
Using Z-NET4, configuration files for the controllers can be automatically generated, modified when required, downloaded to the CPU, and used to configure the connected I/O modules. Z-NET4 also allows for real-time monitoring of the values from the modules and I/O variables, offering transparent and automatic management of variables controlled by the controllers.

PROJECT MANAGEMENT

A ZNET4/Straton automation project is based on configuration files generated by ZNET4, which include: variables related to I/O modules, PLC variables defined by the user, ModBUS RTU Master tasks for reading/writing I/O variables, and the definition of PLC variables accessible via ModBUS TCP Server and/or ModBUS RTU Slave.

HARDWARE CONFIGURATION

Z-NET4 enables the specification of the controller type and the configuration of its functional features such as serial ports, ModBUS parameters, communication modem parameters, etc. After configuring the CPU via Ethernet communication, it's possible to configure the connected I/O modules or other devices.

VARIABLE MANAGEMENT

Z-NET4 allows for the declaration of I/O variables in the field, ModBUS variables, and PLC variables, which can then be used in integrated applications (Web Factory, Trend Viewer), and exported to the Stratron environment or via OPC technology. In Z-NET4, the parameters for data acquisition and recording for the integrated DAQ ModBUS application "Data Recorder" are set.

TECHNOLOGICAL FUNCTION LIBRARIES

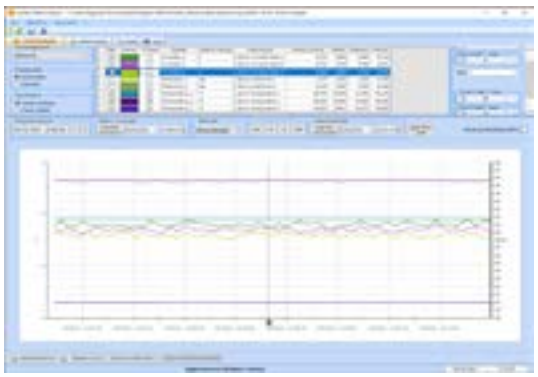
In ZNET4/Straton automation projects, additional integrative functions are offered:

- Management of alarm events from digital signals or thresholds on analog values
- Sending notifications via SMS and/or email
- Data and alarm logging with options for local storage on microSD cards, sending via FTP or email
- Variable datalogging with operations on a periodic log or triggered variable basis

WEB FACTORY

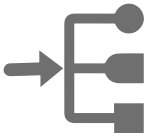
Web Factory is a license-free, intuitive tool with a responsive interface that enables the development of web pages from ZNET4 projects and their loading into SENECA CPUs. These pages can contain numerical values, text fields, visual indicators like LEDs or gauges, and real-time graphs, allowing interaction with the variables declared in the Z-NET4 project using graphic buttons.

TREND VIEWER



Trend Viewer is a tool related to the Data Recorder data acquisition system that allows for the visualization and processing of data collected from recording sessions. It supports the consultation of databases in real-time or complete sessions, viewing of historical data, data export, and customization of display pages.

ORDER CODES

	Code	Description
	CABLES	
	**CE-RJ45-RJ45-C**	Crossed Ethernet cable (RJ45 / RJ45) 1.5 MT
	CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5 MT
	CS-DB9F-CFV10	RS232 connection cable (DB9F-CFV10)
	CS-DB9F-CLAMP	Serial RS485 cable (DB9F / terminals) 1.5 MT
	CS-DB9F-DB9F	RS232 serial cable (DB9F / DB9F)
	CS-DB9F-TIP	K107B RS232 communication cable (DB9F - test leads)
	CS-DB9F-TIP-V	RS485 serial cable (DB9F / test leads) 1.5 MT for HMI VISUAL1/2/3
	CS-DB9M-DB9F	Straight RS232 serial cable for programming (DB9M / DB9F)
	CS-DB9M-DB9M	RS232 serial cable (DB9M / DB9M)
	CS-DB9M-MEF-1012	Serial communication cable Z-KEY (DB9M / MEF 10-12) 1.5 MT
	CS-DB9M-MEF-PH	Serial communication cable (DB9M / MEF PH) 3 wires 1.5 MT
	CS-DB9M-MICROB	Serial communication cable (DB9M / Micro USB) for Z-TWS5
	CS-DB9M-TIP	RS485 serial cable for radio modem (DB9M / test leads)
	CS-DB9M-TIP-V	RS485 serial cable (DB9M / test leads) for HMI VISUAL4
	CS-JACK-DB9F	Programming serial cable, Jack / DB9F
	CS-RJ10-DB25M-1	Modem communication cable (RJ10 / DB25M)
	CS-RJ10-DB25M-2	Modem and HMI communication cable (RJ10 / DB25M)
	CS-RJ10-DB9F	RS232 serial cable (RJ10 / DB9F)
	CS-RJ10-DB9M	Modem serial cable (RJ10 / DB9M)
	CS-RJ10-TIP	Serial communication cable (RJ10 / 4 test leads) 1.5 mt
	CS-TIP-MEF-PH	Serial communication cable (test leads / 4-way female connector)
	CS-TIP-MICROB	Serial communication cable (test leads / Micro USB) - Z-TWS5
	CS-TPW-TIP	RS485 serial cable Tp-wire (Tp-wire / test leads)
	CS-TPW-TPW	Tp-Wire Cable (Tp-wire / Tp-wire)
	CU-A-MICROB	USB-A to Micro USB-B 5-pin cable (KIT-USB, MY2, Z109REGBP)
	CU-A-MINIB-1	USB-A to Mini USB-B 5-pin cable, 1 meter (S203RC-D, Z109REGBP, Z113-1)
	CU-A-MINIB-2	USB-A to Mini USB-B 5-pin cable, 2 meters (S203RC-D)
	CU-A-MICRO-OTG	Micro USB OTG to USB Type A female adapter cable
	MEMORY	
	**MSD**	Micro SD memory card with adapter
	ADAPTERS	
	**FD01**	PULSECAP, a photodetector for counting pulses from an electronic counter, maximum frequency 10 Hz
	S20ADP-CM-S	Adapter card for sinusoidal pulse to NPN square wave
	SG-EQ4	Load cell equalization board up to 4 cells
	SG-EQ4-BOXPG7	Equalization board and box up to 4 cells
	Z-8R-10A	Interface board for 8 relays 24 Vdc, capacity 250 Vac - 10 A (accessory Z-10-D-OUT)
	BUS SYSTEM	
	**Z-PC-DIN1-35**	Support for rapid mounting on DIN rail 1 slot, 35 mm pitch
	Z-PC-DIN2-17.5	Support for rapid mounting on DIN rail 2 slot, 17.5 mm pitch
	Z-PC-DIN4-35	Support for rapid mounting on DIN rail 4 slot, 35 mm pitch
	Z-PC-DIN8-17.5	Support for rapid mounting on DIN rail 8 slot, 17.5 mm pitch
	Z-PC-DINAL1-35	Support for rapid mounting on DIN rail head + 1 slot, 35 mm pitch
	Z-PC-DINAL2-17.5	Support for rapid mounting on DIN rail head + 2 slot, 17.5 mm pitch
	Z-PC-DINAL2-52.5	Support for rapid mounting on DIN rail head
	POWER SUPPLIES	
	**Z-POWER-115-15VA**	DIN rail transformer 19 Vac, 115 / 15 VA with thermal fuse
	Z-POWER-230-15VA	DIN rail transformer 19 Vac, 230 / 15 VA with thermal fuse
	Z-POWER-230-25VA	DIN rail transformer 19 Vac, 230 / 25 VA with thermal fuse
	Z-SUPPLY,	single-phase switching power supply 24V @ 1.5 A

2

INDUSTRIAL COMMUNICATION AND REMOTE CONTROL

2 INDUSTRIAL COMMUNICATION AND REMOTE CONTROL

This line includes smart data loggers and industrial gateways, VPN routers, UHF/VHF radio devices, serial and fiber optic communication interfaces, remote control units, and remote alarm and assistance units. Seneca's industrial communication products support major network protocols such as HTTP, FTP, SMTP, TCP-IP, and technologies like 3G+, 4G LTE, IIoT (Cloud, HTTP post, OPC UA, MQTT) and web servers. Seneca communication devices expand network reach and enable the transfer of process data across different levels of IT and industrial communication architecture. Seneca solutions for networking and remote control ensure openness, scalability, and maximum connectivity for data transmission to and from supervision centers.

2.1 REMOTE ALARM UNITS

2.2 SMART DATALOGGERS

2.3 RTU FOR REMOTE CONTROL APPLICATIONS

2.4 INDUSTRIAL GATEWAYS

2.5 IIoT EDGE GATEWAYS

2.6 REMOTE ASSISTANCE AND CONTROL IOT/VPN PLATFORM

2.7 SERIAL/USB CONVERTERS

2.8 FIBER OPTIC CONVERTERS

2.9 RADIO MODULES

2.10 RADIO MEASUREMENT SYSTEMS

2.1

REMOTE ALARM UNITS

OVERVIEW

Seneca's remote alarm and data collection devices are designed to manage, monitor, and execute small automations for homes, buildings, plants, and production machinery via simple commands sent by SMS or app. With any mobile phone or smartphone, it's possible to control the switching on and off of a technical system, activate a contact, and receive alerts of anomalies or alarms. These professional and universal devices are easily programmable and operate on a 2G (GSM/GPRS), 4G/LTE, or Wi-Fi module, serving as a communication system capable of intelligently handling calls, commands, contacts, and data storage.

THE RANGE

B-ALARM

2G · 1DI 1DO

MYALARM2 BASE

2G · 4DI, 2AI 2DO (optional)

MYALARM2 SECURITY AUDIO

2G · 4G · 4DI, 2AI 2DO (optional)

MYALARM2 GPS

2G · 4G · 4DI, 2AI 2DO (optional) · GPS

MyALARM3 Cloud

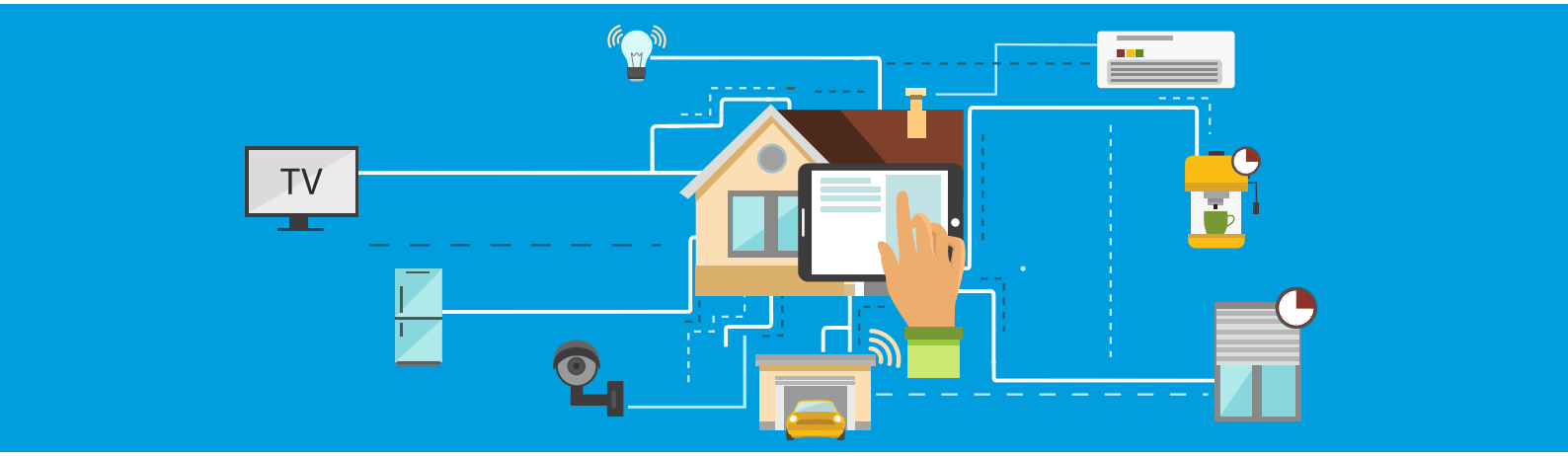
2G · 4DI, 2AI 2DO (optional) · GPS Dashboard

MyALARM3 Cloud W-AIR

Wi-Fi · 4DI, 2AI 2DO (optional)

VERSATILITY AND MULTIFUNCTIONALITY

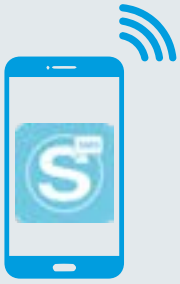
- Remote control of unattended sites
- Flexible configuration
- Automatic dispatch of commands, data, and alarms with push notifications/SMS
- Integrated 2G/4G/Wi-Fi and I/O
- Built-in temperature sensor
- Real-time alarm notifications and management
- On-off and timed commands for gates, motors, pumps, lights, etc.
- Open/close temperature threshold contacts (HVAC systems)
- Rechargeable Li-Ion battery
- Optional GPS module



APPLICATIONS

	B-ALARM	MYALARM2 MY2B:	MYALARM2 MY2S:	MYALARM2 MY2G:	MYALARM3 CLOUD
DOMOTICS & BUILDING					
Universal remote (gates, boilers, HVAC systems, etc.)	x	x	x	x	x
Smart thermostat	x	x	x	x	x
Light and lighting system controls	x	x	x	x	x
Access control and presence	x	x	x	x	x
Flood prevention system	x	x	x	x	x
Astronomical twilight switch		x	x	x	x
ENERGY MONITORING					
Network voltage control and blackout management	x	x	x	x	x
AUTOMATION AND REMOTE CONTROL					
Remote alarm and control systems	x	x	x	x	x
Water supply network alarm management	x	x	x	x	
Photovoltaic plant output control (via photodiode)	x	x	x	x	
Fiber optic continuity checks	x	x	x	x	
Plant metrics control (temperature, flow rate, level, etc.)		x	x	x	
Water leakage control		x	x	x	
Pump and motor operations (logic and operating hours)		x	x	x	x
Automatic irrigation systems		x	x	x	x
Data logger and event recorder		x	x	x	
Cold chain monitoring		x	x	x	
SECURITY					
Telephone dialer			x	x	
DTMF tone commands			x	x	
Automatic dispatch of commands and push notifications for alarms					x
GEOLOCATION					
Geolocation for machinery, vehicles, boats				x	(optional)
Virtual fence control				x	(optional)
MOBILE APPS iOS / Android					
Custom applications through widgets					x

CONFIGURATION AND PROGRAMMING

			B-ALARM	MYALARM2	MYALARM3 CLOUD
EASY SETUP		I/O management, data acquisition timing, logs (MYALARM2 only), commands, alarms, GSM communication, audio files (MYALARM2 only), administrative functions (passwords, credit, message redirection, etc.)	✓	✓	
SMS COMMANDS		Up to 16 different “fast” commands can be defined from the action list. Some smartphones send SMS in UNICODE characters instead of using the GSM alphabet.	✓	✓	
RINGS		If the unit has a voice type SIM CARD, operations can be performed at "zero cost" by sending rings, in response to which the units can carry out configured operations.	✓	✓	
SENECA SMS		With the iOS/Android Seneca SMS app, you can manage remote alarm units and data loggers equipped with a GSM interface via simple SMS. The app allows you to modify predefined templates and add one or more editable commands with extreme ease.	✓	✓	
MY3 CLOUD (APP)		MyALARM3 Cloud app offers high levels of parameter setting. It allows easy setting of critical plant times and guides users in customizing the interface.			✓

B-ALARM
Basic Alarm Unit

WANT TO KNOW MORE?

B-ALARM is a GSM device designed for remote alarm management of homes, buildings, plants, production machinery through simple commands sent via SMS. With any smartphone, you can control the switching on and off of the boiler, activate a contact, etc. The device contains a GSM module that acts like any cellular network terminal. The unit allows operation with zero-cost ring commands as well as fast numeric and timed code commands. It also has 1 digital input and 1 SPDT relay output with a capacity of 3 A / 250 Vac. B-ALARM can rely on a command book of 5 users and an extended SIM phone book up to 250 users.

HIGHLIGHTS

- INSTANT MESSAGING ALARM
- UNICODE MULTILINGUAL SUPPORT
- INTEGRATED MODEM AND I/O
- SMS COMMANDS / FREE RINGTONE COMMANDS
- CONTACT LIST UP TO 250 USERS PER APPLICATION
- RECHARGEABLE LI-ION BATTERY
- COMPATIBLE WITH ALL STANDARD VOICE/DATA SIM TYPES
- COUNTER AND TIMER MANAGEMENT

Shutdown button

SMA antenna connector

#1 Single pull-push slot
for mini SIM card

Wall
or DIN rail mounting - CEI EN 60715

Status LED

Quad-band GSM
(850 / 900 / 1800 /1900 MHz)

Power supply range: 10..28 Vdc
Rechargeable NiMh backup battery, 600 mAh, up to 1 hour of autonomy

#1 digital relay output,
SPDT 2A – 250V

#1 digital reed input,
contact, NPN / PNP 2 wires, FD01 5Hz

Micro USB
for upgrades and configuration

MYALARM2
A concentration of technologies

WANT TO KNOW MORE?

MyALARM2 BASE (MY2B) is a 2G (GSM/GPRS) or 4G/LTE device designed for remote monitoring of homes, buildings, facilities, and production machinery using simple SMS commands. Capable of sending alarms and SMS/emails in response to input anomalies, power failures, or exceeded temperature thresholds. Records all data on a MicroSD card and sends log files via email or FTP. MyALARM2 SECURITY AUDIO (MY2S) can also make voice calls and receive DTMF tone commands, including silencing alarms. The MyALARM2 GPS (MY2G) version includes geolocation features allowing for setting alarms for virtual fencing and speed.

QUICK SELECTION

	MyALARM2 - MY2B	MyALARM2 - MY2S	MyALARM2 - MY2G
SD card included	No	Yes	Yes
Integrated NTC sensor	(external optional)	(external optional)	(external optional)
I/O	4DI, 2AI, 2DO (optional)	4DI, 2AI, 2DO (optional)	4DI, 2AI, 2DO (optional)
Communication	GSM/GPRS	GSM/GPRS or 4G/LTE	GSM/GPRS or 4G/LTE
Integrated GPS	No	No	Yes
Datalogger	Yes	Yes	Yes
Pre-set scenarios	Yes	Yes	Yes
DTMF commands / Voice alarms	No	Yes	Yes
Email management	Yes	Yes	Yes
Contact list	20 SMS contacts, 20 email contacts, 1000 contacts for call commands	20 SMS contacts, 20 email contacts, 1000 contacts for call commands	20 SMS contacts, 20 email contacts, 1000 contacts for call commands

Communication: 2G (GSM/GPRS) or 4G/LTE
Integrated GSM/GPRS Quad-band modem 850/900/1800/1900 MHz, 4G/LTE-FDD B1/B3/B5/B7/B8/B20

Quick setup

Quick programming mini USB interface

GPS module (My2G version)
22-channel receiver, -165 dBm, fix time 32s, accuracy up to 2.5m

LCD Display
LCD display 128 x 32 pixels for I/O status visualization, totalizers/counters, GSM, and date

Data Acquisition
#4 Digital Inputs: Max frequency 30 Hz @ 32-bit [10 timers, 4 counters, 4 totalizers, 4 hour counters]
#2 Analog Inputs: Range (0-20 mA, 0-30 V), resolution 16-bit
#2 Digital Outputs: SPST Relay 3A (optional)

Compact dimensions
MyALARM2: 80 x 105 x 30 mm
IP66 enclosure (MY2-KITIP66) 130 x 180 x 75 mm

"SCROLL DISPLAY" button

SIM port for voice/data

Integrated and expandable memories
SD slot for microSD and microSDHC up to 32 GB
Integrated Flash memory

Rechargeable backup battery
(Li-On, 1000 mAh, max 8 hours autonomy)

Power supply: 12V

NTC sensor
wired to terminal

MYALARM3 CLOUD
Cloud at Your Fingertips

WANT TO KNOW MORE?

MyAlarm3 Cloud is a system composed of an intelligent GSM/GPRS or 4G/LTE or Wi-Fi control unit and a mobile app for remote control of homes, plants, machinery, and unattended installations. MyAlarm3 Cloud is an all-in-one, compact, and reliable system for residential or industrial applications, especially for the automatic transmission of data and alarms from unattended sites. The app offers the main features for monitoring with immediate consultation and easy use both from a web browser and mobile devices, allowing alarm management (in case of blackout, digital contact variations, exceeding analog input and temperature thresholds), timed, pulse, and on/off commands (lights, motors, gates, pumps, basculants, HVAC systems contacts, and twilight contacts), GPS (position notifications, virtual fence alarm).

SYSTEM CONFIGURATION

1. CONTROL UNIT

GSM/GPRS monitoring unit including 4 digital inputs, 2 analog inputs, 2 digital outputs (optional), LCD display, temperature sensor, external NTC sensor input, battery, and GPS module (optional).

2. APP iOS / ANDROID

Free mobile application MyALARM3 Cloud available on the Apple or Play Store. This powerful app, available in 10 languages, allows for simple advanced system configuration. Integrates tutorials, manuals, and online help.

3. CLOUD SERVICE

The MyALARM3 Cloud kit includes a 12-month subscription starting from the first activation date. For renewal information and costs, please visit:
www.seneca.it/myalarm3cloud
https://cloud.seneca.it

Wi-Fi module and antenna
(alternative to GSM/GPRS module)

Quick setup

Quick programming mini USB interface

LCD display
128x32 Dots
(shows status, I/O, battery level, GSM)

GSM/GPRS antenna and module

"Scroll display" button

Internal GPS module
(optional)

SIM slot for voice/data

SD Memory card

Rechargeable Li-Ion battery,
3.7V, 1100 mAh, autonomy up to 5 hours

Power supply: 12V

Power cable
with 230V plug

5 cm NTC temperature sensor

Integrated I/O terminals

- 4 digital inputs: REED Contact, PNP, Pulscap, relay (max frequency 30Hz)
- 2 analog inputs: Current 0..20 mA, 0..30 V; Resolution 16-bit; Accuracy 0.1% f.s.
- 2 digital outputs: SPST relay 3A/250Vac (optional)

External IP66 enclosure
(optional)

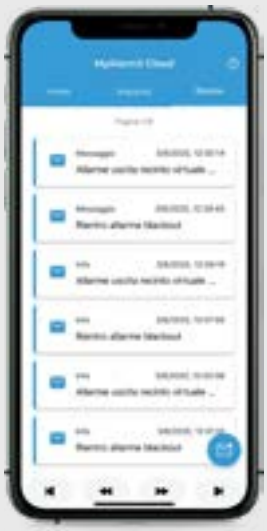
MYALARM3 CLOUD
Powerful and Easy App for Installation Monitoring

ADVANCED CONFIGURATION

ALARM AND COMMAND MANAGEMENT

GEOLOCATION

ALARM AND EVENT HISTORY



TUTORIALS AND ONLINE SUPPORT

DEVICE MANAGEMENT AND INVITATIONS

SCHEDULING AND CALENDAR

THERMOSTAT FUNCTION

TECHNICAL DATA

	B-ALARM	MYALARM2 MY2B	MyALARM MY2S	MYALARM2 MY2G	MYALARM3 CLOUD	MYALARM3 CLOUD W-AIR
						
	2G alarm unit, 1DI, 1DO with basic functions	**2G alarm unit, 4DI, 2AI, 2DO (optional), base version**	**2G (4G) alarm unit, 4DI, 2AI, 2DO (optional), security audio version**	**2G (4G) alarm unit, 4DI, 2AI, 2DO (optional), GPS version**	**2G (4G) alarm unit, 4DI, 2AI, 2DO, remote control, app-based version**	**Wi-Fi alarm unit, 4DI, 2AI, 2DO, remote control, app-based version**
GENERAL DATA						
Power Supply	10 - 30 Vdc	6-15 Vdc				
Max Consumption	2 W	3.5 W				
Protection class	IP20					
Rechargeable battery	Ni-MH, 600 mAh, autonomy up to 100 minutes	Li-ION (1,100 mAh), autonomy up to 8 hours (without auxiliary relay)				
SD Support	-	Push-push for SD card and SD HC card / max 32GB				
SIM slot	Push-push for mini SIM (15 x 25 mm)					-
Supported SIM	Mini SIM					-
Temperature probe	-	Integrated NTC thermistor (standard), external optional				
Protocols	SMS,	FTP client, SMTP client, SMTPS with SSL client			MQTT	
Display	-	128x32 Dots LCD with visible area 39mm x 8.6mm				
		Display scroll button				
2G modem	Quad-band (850/900/1800/1900 MHz).					-
4G modem	-	LTE-FDD B1/B3/B5/B7/B8/B20 or GSM/GPRS/EDGE 900/1800 MHz				-
Wi-Fi	-					2.4GHz (802.11b/g/n; Up to 150Mbps)
GPS	-			22-channel receiver Sensitivity: -165 dBm Fix time: 32 s typical Accuracy: Up to 2.5 m	Optional 22-channel receiver Sensitivity: -165 dBm Fix time: 32 s typical Accuracy: Up to 2.5 m	-
Connections	Spring-loaded terminals, 3.5 mm pitch					
	Micro USB					
	SMA Connector					
			MMCX Connector			-
Dimensions	114x54x32 mm	80 x 105 x 30 mm				
Weight	80 g	150 g				
Operating temperature	-10..+55°C	Operating temperature 0..45°C (recommended), -20..+55°C (powered), -20..+45°C (discharging)				
Material	ABS Polycarbonate					
Installation	DIN rail or wall					
Certifications	CE, UKCA					
FUNCTIONS AND SETTINGS						
Datalogger	-	Yes			-	
Basic configuration	Software (EASY SETUP), SMS commands, ringing	Software (EASY SETUP, EASY MYALARM2), SMS commands, ringing			Web or Mobile App (MyALARM3 CLOUD)	
App management	-	SENECA SMS			MyALARM3 Cloud	
CLOUD SERVICE					12 months free from activation	
Scenario management / widgets		Advanced automations, alarms on inputs, data logger, control of leaks, solar panels, pools, automatic gates, timed automations, hour counters, boiler control, blackout control			Electric network, temperature, 2G/4G/Wi-Fi network, GPS, present alarms, uptime, I/O management MAX/MIN analog threshold, counter threshold, digital input/output, GPS fence, absence, electric network, dawn and dusk, MIN/MAX temperature, selectable command	
Commands and alarms	Fast and timed commands (SMS) through ringing, SMS alarms	Fast and timed commands (SMS) through ringing, DTMF, vocal SMS alarms			Push alarms through App	
Email management	-	Yes			-	
History	-				Alarm logs, events, calendar	
Contact list	5 users (1 administrator), 250 contacts (for command ringing)	20 users (multi-administrator), 1000 contacts (for command ringing)			-	
Counter and timer management	1 counter / totalizer	4 counters / totalizers, 10 timers			4 counters / totalizers, 10 timers	
DIGITAL INPUTS						
Channels	1	4				
Type	Contact, voltage 6-24 V	Reed, Contact, PNP, Pulscap				
Max frequency	-	30 Hz				
ANALOG INPUTS						
Channels	-	2				
Type	-	Current 0..20 mA (max impedance 60 Ω); voltage 0..30 V (max impedance 100 kΩ)				
Resolution	-	16 bit				
Accuracy	-	0.1% f.s.				
DIGITAL OUTPUTS						
Channels	1	2 (optional)			2	
Type	SPDT relay 3 A / 250 Vac	SPST relay 3 A / 250 Vac				

The technical data and diagrams in this document are indicative and not binding.

SALES CONFIGURATION

B-ALARM

- Power supply 10..28Vdc
- Backup battery NiMh 600 mAh
- #1 digital Reed input, contact, NPN / PNP 2 wires, FD01 5Hz
- #1 digital output relay SPDT 2A - 250V
- #1 Micro USB port
- #1 GSM quad-band modem

ORDER CODES

Codes	Description
B-ALARM	Basic Alarm Unit, 1DI,1DO, SMS, backup battery

MYALARM2

- Power supply 12V
- Battery Li-On, 1,000 mAh, maximum autonomy 8 h
- #4 Digital Inputs: Max frequency Max 30 Hz @ 32 bit
- #10 timers, 4 counters, 4 totalizers, 4 hour meters
- #2 Analog Inputs: Range (0-20 mA, 0-30 V), 16-bit resolution
- #2 Digital Outputs: SPST Relay 3A (optional)
- #1 Micro USB port
- #1 2G/4G modem, optional GPS

ORDER CODES

Versions / Options	Codes	Description
Base Unit	MY2B	MYALARM2 BASE / DATALOGGER
	MY2S	MYALARM2 SECURITY AUDIO
	MY2G	MYALARM2 GPS
Modem	L	4G / LTE (only for MY2G and MYS versions)
SPST Relay Board	-0	Absent
	-R	Present
Preparation for other connections	-0	Absent
Connection system	-C	Connectors
	-M	Terminals
Colors	-B	Blue
	-G	Grey
IP66 enclosure (option)	-4X	IP66, electrically isolated, with front door

MYALARM3 CLOUD

- Power supply 12V
- Rechargeable battery 1100 mAh, autonomy up to 5h
- #4 digital REED Contact inputs, PNP, Pulscap, relay
- #2 analog inputs Current 0..20 mA, 0..30 V;
- 16-bit resolution; Accuracy 0.1% f.s.
- #2 digital outputs Relay SPST 3 A / 250 Vac (optional)
- GSM/GPRS or Wi-Fi communication
- Optional GPS

ORDER CODES

Codes	Description
MY3C-1Y	12-month Cloud Service renewal MyAlarm3 Cloud
MY3CLOUD-APP	iOS / Android MyAlarm3 Cloud Management App
MY3CLOUD-R-0-0-G	Cloud support alarm unit, relay, grey color
MY3CLOUD-R-0-0-G-G	Cloud support alarm unit, relay, GPS, grey color
MY3W-AIR-R-0-0-G	Cloud support alarm unit, relay, Wi-Fi, grey color

ACCESSORIES

Code	Description	Code	
A-GPS	External GPS antenna with magnetic base and MMCX connection	ALIM-MY2	Replacement power supply
A-GSM	Multiband external antenna with 3 m cable and SMA male connector	BATT-MY2	Replacement battery
A-GSM-DIR-5M	Compact directional GSM-UMTS antenna	BATT□GP80	Replacement battery for B-ALARM
A-GSM-OMNIDIR	Omnidirectional GSM-UMTS-WIFI antenna	BATT□MY2	Lithium battery 3.7V - 1,200mAh for MYALARM2
A-GSM-OMNiDIR-10	Omnidirectional GSM-UMTS-WIFI antenna with 10 m cable length	CU-A-MICRO-B	USB-A Micro USB-B 5 P plug cable
A□GSM□QUAD□N	External omnidirectional 4G/WI□FI antenna, FME, 3 mt cable	FD01	PULSECAP, photo-detector for pulse counting, max freq 10 Hz
ANT-WIFI-MP	WiFi 2.4/5.0 GHz "Blade", Black, Connector Mount, SMA Male	MSD	MicroSD card with SD adapter
ANTENNA-ST-4G	SMA Male straight Antennas Black - 4G - LTE	MY2-KITIP66	IP66 kit in ABS for quick field mounting
ANTENNA-STI-LO-MY2	GSM STILO STRAIGHT SMA-M nickel-plated	MY3C□1Y	12-month Cloud Service renewal MyAlarm3 Cloud
A□SCR□90	Antenna/spare part with 90-degree screw mounting on SMA connector	NTC-150	External NTC probe 1.5 m

2.2

SMART DATALOGGERS

ADVANCED DATALOGGERS

OVERVIEW

The advanced MYALARM SEAL, Z-GPRS3, Z-LOGGER3, Z-LTE dataloggers are solutions designed to meet the increasing demands for data collection, real-time analysis, and integration with IT systems in automation and plant monitoring, in line with the new productivity and communication models of Industry 4.0 and the Internet of Things.

Designed for alarm, telemetry, and datalogging functions, these devices come with an integrated UPS, built-in I/O channels, dedicated programming and visualization software, support for serial and Ethernet communication, MQTT protocol, and in most models, 2G or 4G modems with GNSS/GPS/GLONASS receiver.

The dataloggers can be linked to third-party IoT/Cloud platforms to centralize data, manage remote connections, and create customizable multi-user supervision pages.

MODELS	MYAALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE-WW
HARDWARE				
Integrated UPS	x	x	x	x
Modem	2G	-	2G	4GWW
Flash Memory	8 MB	8 MB	8 MB	8 MB
Micro SD	Max 32 GB	Max 32 GB	Max 32 GB	Max 32 GB
GPS/GNSS/GLONASS	x	-	-	x
I/O	4DI, 2AI, 2DO (optional)	4DI, 2AI, 2DO	4DI, 2AI, 2DO	4DI, 2AI, 2DO
Communication Interfaces	1 Micro USB	1 Ethernet 10/100, 1 RS232/RS485, 1 RS485, 1 Micro USB	1 Ethernet 10/100, 1 RS232/RS485, 1 RS485, 1 Micro USB	1 Ethernet 10/100, 1 RS232/RS485, 1 RS485, 1 Micro USB
Integrated NTC sensor	x	-	-	-
DATA/ALARMS				
Synchronous, asynchronous datalogger, on trigger	x	x	x	x
Alarm and email management	SMS / App / FTP / DTMF	FTP	SMS / App / FTP / DTMF	SMS / App / FTP / DTMF
Vocal alarms/DTMF commands	x		x	x
COMMUNICATION / IoT				
Protocols	http(s), MQTT(s), http(s) post	http(s), Ftp, ModBUS RTU/TCP-IP, MQTT(s), http(s) post	http(s), Ftp, ModBUS RTU/TCP-IP, MQTT(s), http(s) post, Rest	http(s), Ftp, ModBUS RTU/TCP-IP, MQTT(s), http(s) post, Rest
Routing	Public IP SIM, private APN	-	Public IP SIM, private APN, DDNS, ModBUS Pass Through	Public IP SIM, private APN, DDNS, ModBUS Pass Through
Transparent gateway ModBUS RTU – TCP-IP	-	x	x	x

PROGRAMMING

The advanced SENECA dataloggers ensure open and flexible programming thanks to a dedicated environment for developing control logics (SEAL), an integrated Web Server, an app for direct management of commands via SMS, and a data import and visualization tool (Log Factory). The HMI interface of the Cloud BOX' system completes the data management capability through customizable web supervision pages with widgets. They are also integrable with third-party Scada, Cloud, database, and web portal systems already available at the plants or managed by end-users.

SEAL
SYSTEM CONFIGURATIONS AND LOGICAL-MATHEMATICAL FUNCTIONS

WEB SERVER
MONITORING AND SETTING PARAMETERS

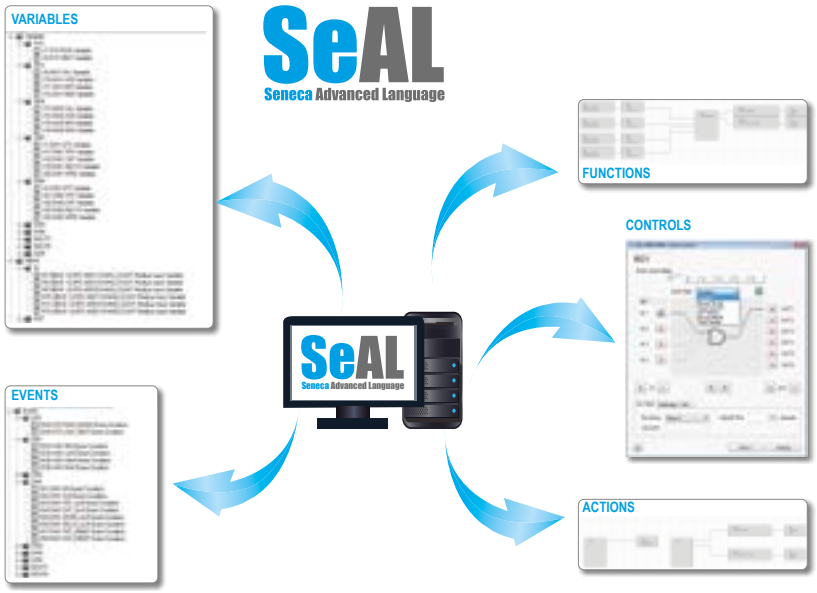
LOG FACTORY
STORAGE AND VISUALIZATION HISTORICAL FILES

SENECA SMS
ANDROID / IOS APP FOR SENDING AND CUSTOMIZING SMS COMMANDS

THIRD-PARTY SYSTEMS
SCADA SYSTEMS, CLOUD, DATABASES AND THIRD-PARTY WEB PORTALS

	MYALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE
SEAL	x	x	x	X
WEB SERVER	-	x	x	x
LOG FACTORY	x	x	x	x
SENECA SMS (mobile app)	x	-	x	x

SEAL, BLOCK PROGRAMMING ENVIRONMENT



SEAL is software designed for advanced management of automation and remote communication projects.
SEAL allows intuitive management of variables, commands, automations, alarms, thresholds, reporting, communication network with remote configuration and update capabilities via SIM or Ethernet.
Among the key features managed by SEAL are the monitoring of alarms and events associated with I/O channels, operations on bits, comparators, triggers, and timers.
SEAL allows for the setting of function blocks, threshold command blocks, and complete management of the ModBUS variables of the devices to be programmed.

MAIN FEATURES

DATA & EVENT LOGGING

There are three types of logs: events, data, and on trigger.
When activated, the logger saves the data on an internal Flash, which can then be sent to an email server, ftp server, http server, mqtt broker, or MicroSD card.

MQTT BROKER DATA SENDING

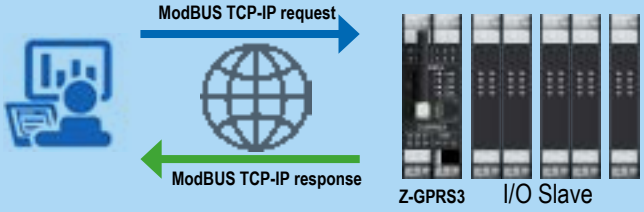
Data can be sent in real-time to an MQTT broker. The data is JSON-encoded and contains measurements and identifiers that trace back to the specific instrument that measured them and the variable measured.

AUDIO COMMAND SENDING

The dataloggers can receive audio calls for command execution through DTMF codes. Upon call, the device responds with an audio file from the SD card.

MODBUS PASS THROUGH

The devices can be used to convert Modbus TCP-IP to Modbus RTU from Ethernet or 2G/3G/4G connection in real-time.



DDNS

Dynamic DNS (DDNS or DynDNS) is a method to automatically link the server name with a dynamic IP.
It relies on the fact that in a modem connection, the IP can change without changing the name.

ACTIONS AND COMMANDS

Actions (commands) and messages must be executed by the device in response to a state change. Messages can be sent via EMAIL, SMS, AUDIO CALL, HTTP POST, and MQTT broker.

EMERGENCY MODE

It is possible to disable the execution of the SEAL program by setting all the dip switches to ON at startup. This emergency mode is useful if a SEAL program prevents connection to the SEAL itself (e.g., if the board is continuously rebooting).

THIRD-PARTY PLATFORMS

Thanks to the support of http(s) post/Rest and MQTT(s) protocols, SENECA dataloggers can connect industrial machines and thousands of I/Os in the field to third-party Cloud Computing platforms.

REMOTE UPDATING

It is possible to update a program developed in the SEAL environment and/or a configuration from the datalogger's webserver through a simple procedure via PPP modem connection or IP/ Ethernet address.

POWER CALCULATION FOR PHOTOVOLTAIC PLANTS

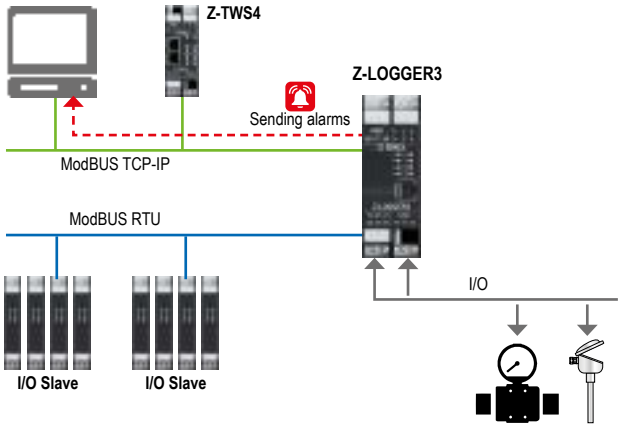
Using a Modbus TCP-IP client connection with the Z-GPRSS datalogger (Modbus TCP-IP Server), it is possible to estimate the average total typical power for use with solar panels.

	MYALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE
				
	Remote Datalogger with Programmable Logic	**Datalogger with integrated I/O and alarm management functions**	**GSM/GPRS datalogger with integrated I/O, remote control functions, and vocal alarms**	**4G/LTE WW datalogger with integrated I/O, remote control functions, and vocal alarms**
GENERAL DATA				
Power Supply	6..15 Vdc	11..40 Vdc/ 19..28 Vac		19..40 Vdc/ 19..28 Vac
Power supply for transducers	No	Yes		
Max isolation	-	1,500 Vac	1,500 Vac	1,500 Vac
Integrated UPS/Battery	Backup battery LiOn 3.7 V - 1.000 mAh	Yes (max autonomy 60 minutes)		
Connections	Spring-loaded terminals, 3.5 mm pitch	3-way screw terminals (5 mm pitch for cable up to 2.5 mm2)		
Vocal Alarms and DTMF Commands	Yes	No	Yes	
Protection class	IP20			
SIM	Push-push slot for mini SIM 15x25 mm	-	Push-push slot for mini SIM 15x25 mm	
Display	LCD 128x32 dots with visible area 39x8,6 mm	-		
OPERATING TEMPERATURE	-20..+55°C (0..45°C recommended)	-10..+50°C		
Built-in temperature sensor	Yes	No	No	No
Weight	150 g	250 g	280 g	
Dimensions (wxhxd)	80x105x30 mm	100x112x35 mm		
Installation	DIN rail or wall	35 mm DIN rail IEC EN60715		
Enclosure	ABS Polycarbonate	PBT, black		
Certifications	CE			
I/O CHANNELS				
Digital Inputs	#4 channels Reed, contact, PNP, Pulscap (photodiode) 30 Hz	#4 channels PNP, NPN (counters @32bit up to 30 Hz)		
Analog Inputs	#2 channels, voltage range (0..30 Vdc); current (0..20 mA); accuracy 0.1% f.s.	#2 channels, range 0..20 mA, 0..30 V, 16 bit		
DIGITAL OUTPUTS	Optional 2Relay board 3 A max - 250V SPST	#2 SPDT relay channels, max 2 A 250 Vac		
Expandability I/O ModBUS	No	Yes		
COMMUNICATION				
Communication Ports	-	#1 Ethernet 10/100 M (RJ45)		
	-	#1 RS232/RS485 switchable (terminal)		
	-	#1 RS485 ModBUS		
	#1 Micro USB B Host			
Protocols	http(s) post, MQTT(s)	FTP, SMTP, HTTP, ModBUS TCP, ModBUS RTU, HTTP post, MQTT	FTP client, SMTP client, HTTP rest (SSL), MQTT (SSL), ModBUS TCP Client/ Server, ModBUS RTU Master / Slave, Https, SMTP with SSL/TLS, MQTT with SSL/TLS	
Modem / GPS / Radio	GSM/GPRS Quad band (850 / 900 / 1800 / 1900 MHz)	No	2G - GSM/GPRS Quad Band 850/900/ 1800/1900 MHz	Multiband M2M/IoT, 4G / LTE World Wide · LTE-FDD: B1/B2/B3/B4/B5/B7/ B8/B12/ B13/B18/ B19/B20/B25/B26/B28 · LTE-TDD: B38/B39/B40/ B41 · WCDMA: B1/B2/B4/B5/B6/B8/B19 · GSM: B2/B3/B5/B · GPS / GLONASS / BeiDou (compass) / Galileo / QZSS
Transparent Gateway	No	Yes		
PROCESSING, MEMORY				
Flash Memory	8 MB			
Expandable memory	Micro SD included, push-push slot for SD and SDHC card up to 32 GB			
Datalogger	Measurements, alarms, events, logging on Micro SD card and on Flash			
Synchronous datalogger	Minimum sampling time 1 minute			
Asynchronous datalogger	Up to 8 trigger events with max input freq. 1 Hz			
PROGRAMMING				
Programming environment	SEAL (SENECA Advanced Language)			
Variable and trend visualization tool	Log Factory			
Max # logical blocks (SEAL)	32			
Max # variables managed per device	91	100		
Mobile app	SENECA SMS			
WEB SERVER	-	Yes		
Character encoding	UTF8/UNICODE			
Firmware update	SD Card, USB Port, external FTP	FTP, Webserver, micro SD		
IoT / Cloud support	Yes via http(s) post, MQTT(s)			

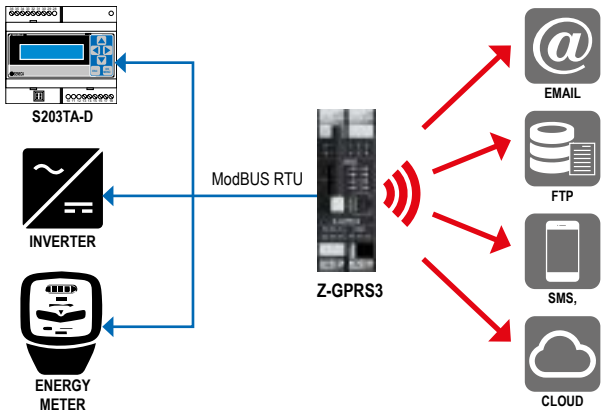
The technical data and diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS

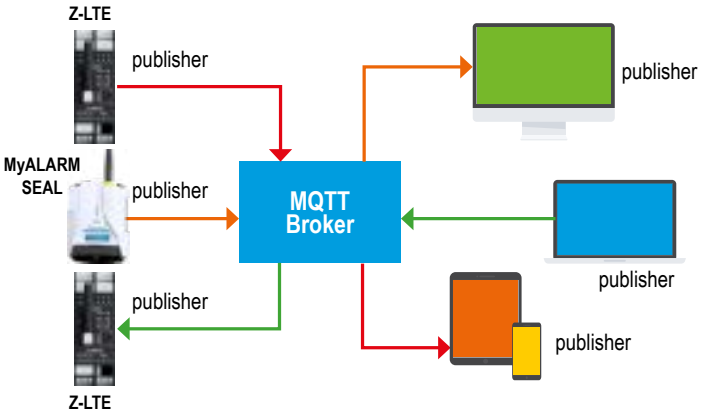
DATA ACQUISITION AND RETRANSMISSION



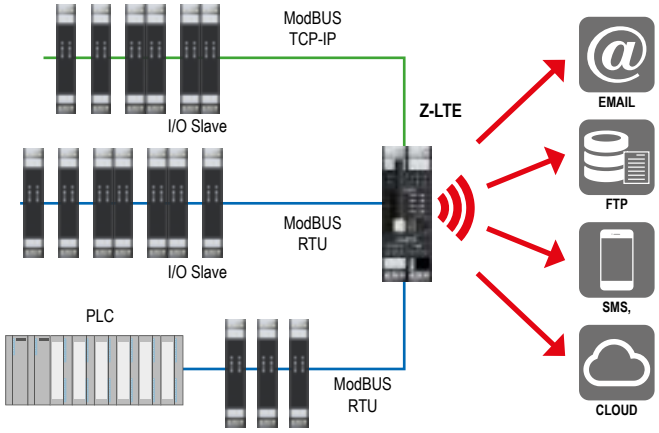
SUPERVISION AND CONTROL ENERGY MEASURES



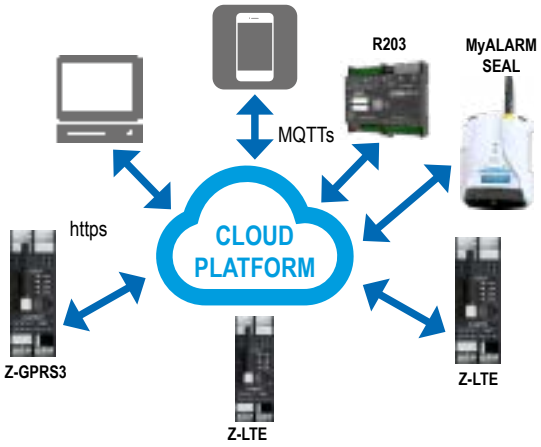
MQTT / MQTTS ARCHITECTURE



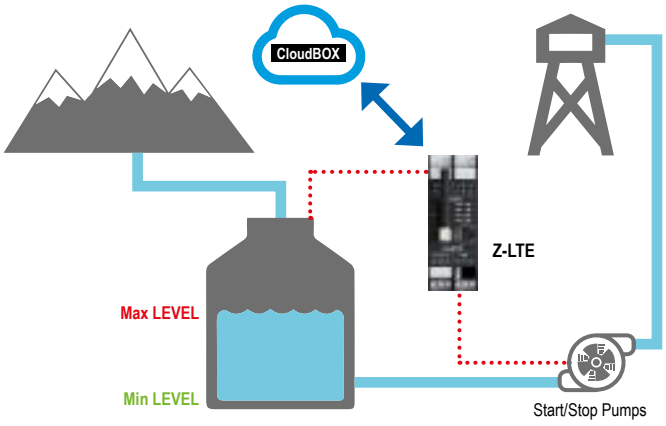
DATA LOGGING AND DATA RETRANSMISSION



DATA EXCHANGE ARCHITECTURE



REMOTE MONITORING PUMPS



ORDER CODES

Code	Description
MY-SEAL-0-0-0-B	Remote datalogger with SEAL programmable logic, blue color
MY-SEAL-0-0-0-G	Remote datalogger with SEAL programmable logic, gray color
MY-SEAL-0-0-G-B	Remote datalogger with SEAL programmable logic, GPS module, blue color
MY-SEAL-0-0-G-G	Remote datalogger with SEAL programmable logic, GPS module, gray color
MY-SEAL-R-0-0-B	Remote datalogger with SEAL programmable logic, relay board, blue color
MY-SEAL-R-0-0-G	Remote datalogger with SEAL programmable logic, relay board, gray color
MY-SEAL-R-0-G-B	Remote datalogger with SEAL programmable logic, relay board, GPS module, blue color
MY-SEAL-R-0-G-G	Remote datalogger with SEAL programmable logic, relay board, GPS module, gray color
Z-GPRS3	Advanced GSM/GPRS datalogger, integrated I/O, vocal alerts
Z-LOGGER3	Advanced alarm management module, datalogger, webserver
Z-LTE-WW	4G worldwide datalogger with integrated I/O, remote control functions, and vocal commands

2.3

RTU FOR REMOTE CONTROL APPLICATIONS

OVERVIEW

SENECA remote control devices are a perfect combination of the world of remote control and automation. The RTU range includes solutions for small plants, all-in-one solutions that concentrate I/O, control logic, and communication systems, and devices for special applications (unattended sites, pumping stations, energy management). The use of compatible platforms and widespread technological standards offers users the opportunity to improve the efficiency and quality of their investments in their applications. SENECA RTUs can be integrated with SENECA hardware (I/O modules, HMIs, communication interfaces) and third-party devices as well as with the LET'S remote assistance platform. They also offer flexible programming tools and dedicated libraries for remote control.

HIGHLIGHTS

WIDE RANGE OF RTUS FOR MULTI-SECTOR APPLICATIONS

REMOTE PLANT CONTROL 24/7

ADVANCED ALARMS

OPERATIONAL COST REDUCTION

ENERGY MONITORING

DATA STORAGE

OPEN TO SCADA / OPC

COMMANDS AND NOTIFICATION VIA EMAIL/SMS/APP

SOFT PLC IEC 61131 - STRATON

VPN / SSL SUPPORT

LET'S VPN/IOT PLATFORM (remote assistance / remote control)

INTEGRATED I/O

INTEGRATION WITH THIRD-PARTY DEVICES AND COMMUNICATION DEVICES

INTEGRATED MODEM/ROUTER 2G / 3G+ / 4G

SERIAL INTERFACES / MODBUS / ETHERNET

SPECIAL APPLICATIONS (PUMP CONTROLLER, LOW POWER)

KEY FUNCTIONS

DATA ACQUISITION

- Data acquisition and exchange from sensors, actuaries, counters, analyzers, thresholds
- Distributed I/O system
- A range of modules from 5 to 24 points
- Three-way galvanic isolation
- ModBUS RTU, ModBUS TCP-IP, CANopen, M-BUS, Profinet IO protocols
- Self-diagnosis and safety status management
- Hot swapping

INTEGRATED ALARM MANAGEMENT

- Timely warning in case of faults
- Event-driven actions towards external actuaries
- Alarm transmission to maintenance personnel via SMS
- Receiving and sending commands via SMS, email, or app
- Checking and verifying alarms, events, and plant status

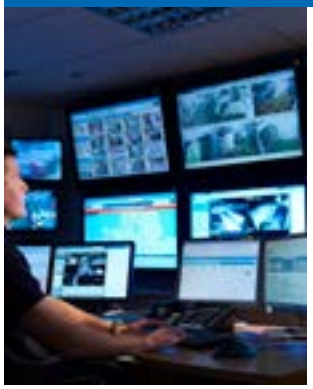
MULTI-STANDARD COMMUNICATION

- Modem/Router 2G/3G+/4G/
- Fast Ethernet ports, serial, USB
- Point-to-point, multipoint connections
- "Always ON" and "ON Demand" connection management
- Support for ModBUS RTU, /TCP-IP/, ASCII
- ModBUS RTU, ModBUS TCP-IP, CANopen, M□BUS, Profinet IO protocols
- Data log transfer via FTP, SMTP (email), pre-set hourly threshold

PROGRAMMING AND LIBRARIES

- Control logic based on SoftPLC Straton IEC 61131
- Sending emails/SMS
- Creation, storage, and display of data logs
- Alarm management and notifications
- Automated motorized user management
- Operating hour counting
- Counter management and totalizations
- Flow rate calculations

OPC / SCADA OPENING



- Opening to SCADA with OPC UA / OPC DA technology
- Integration between field and supervision with ModBUS RTU or TCP/IP protocol
- Integrated visualization environment Web Factory
- Real-time communication front end between field and Scada

IOT / VPN PLATFORMS

- Controllers integrable into the remote access platform, LET'S
- Support for VPN and SSL technologies
- Centralized supervision
- Predictive maintenance and diagnostics
- Remote software update
- Data and plant access in "Single LAN" and "Point-to-Point" mode
- MQTT, HTTP post

PUMP AND PRESSURIZATION GROUP CONTROL

- Sending commands via SMS
- Flow rate calculation
- Configuration via 7" touchscreen HMI
- Adjustment, startup, stop, and acceleration
- Water hammer elimination
- Extending the life of pumps
- Adjustment of pressures, levels, flows

ENERGY SECTOR APPLICATIONS

- RTU for transmission and distribution systems of electrical energy
- Availability of IEC 61850 protocol for local communication between devices in medium and high voltage electrical installations
- Availability of IEC 60870 (101 and 104) for communication in distributed networks of transport and distribution of electrical energy

LOW POWER RTU

RTU-LP

Family of low-consumption datalogger/RTU for remote contro of unattended sites.
The device can provide power to external sensors (max 100 mA) with automatic pre-activation and can operate autonomously for up to 3 years with the standard batteries provided.

RTU REMOTE ALARM

B-ALARM

B-ALARM is a GSM device designed for the remote management
of alarms in homes, buildings, plants, and production machines
through simple commands sent via
SMS messages. With any smartphone,
it is possible to control utilities, activate contacts, etc.

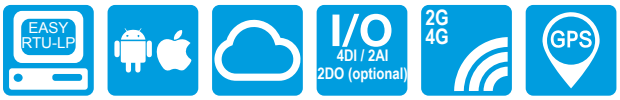
RTU REMOTE ALARM

MYALARM2

MyAlarm2 is a control unit designed for the remote contro of installations or remote sites, via GSM
or SMS. The MY2S version, with support for vocal alarms and DTMF tones, acts as a security control unit while the MY2G version, with an integrated GPS receiver, is applied to geolocation scenarios.

MYALARM3 CLOUD

MyAlarm3 Cloud is a system composed of an intelligent GSM/GPRS control unit and a mobile app for remote control of homes, plants, machinery, and unattended installations.
MyAlarm3 Cloud is a compact and reliable all-in-one system for residential or industrial applications.



COMPACT RTU / DATALOGGER

MYALARM SEAL

MYALARM SEAL is a datalogger capable of meeting the growing needs for data acquisition, real-time analysis, integration with IT systems, and control logic. MYALARM SEAL supports vocal alarms/audio commands with DTMF tones and the support of IT/IoT communication protocols.

Z-GPRS3

Z-GPRS3 is a high-performance quad-band GSM/GPRS datalogger, with integrated I/O and communication interfaces Ethernet, RS232/RS485, and MicroUSB.
The device is configured as the Master unit of the distributed I/O system SENECA Serie Z-PC.

COMPACT RTU / DATALOGGER

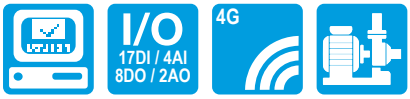
Z-LTE

Z-LTE meets the growing needs for data collection, real-time analysis, and integration with IT systems. This 4G/LTE device is available with 4 integrated communication ports (1 Ethernet 10/100, 1 RS232/RS485, 1 RS485, 1 MicroUSB) and support for industrial and IT/IoT protocols.

RTU PUMP CONTROLLER

S6001 PUMP CONTROLLER

S6001 Pump Controller is a controller for pumping systems and pressurization groups capable of managing from 2 to 6 pumps (with possible I/O expansion modules), with constant regulation of flow, level, and pressure.



RTU IEC 61131

Z-TWS11

Z-TWS11 is a multifunctional and multiprotocol control unit programmable via SoftPLC IEC 61131-1 Straton environment. The controller also has 2 analog inputs at 16 bits configurable in voltage or current and can realize expandable automation systems with I/O modules.

Z-TWS4-RT

Z-TWS4-RT is a high-performance multifunctional controller that combines PLC functionalities with those of datalogging, routing, and remote access via an external modem. It is based on softPLC StratON IEC 61131-3, equipped with 2 Fast Ethernet ports, 3 serial ports, and 1 USB host 2.0 port.

The technical data and diagrams in this document are indicative and not binding.

RTU IEC 61131

R-PASS-S

R-PASS-S represents a flexible and space-saving Industrial IoT Edge computing solution with multiple daisy chain connections. Besides the functions of sofPLC IEC 61131-3 and advanced routing, R-PASS-S integrates 10 I/O channels.
It is also expandable with the R-COMM modem.

I/O 4DI / 2AI 2DO | Modem/ Router External | LET'S | ModBUS RTU/CTP, M-BUS master, SNMP, S7 Client, FTP(s), HTTP(S), SMTP(s) client, Samba, J1939, CANopen, MQTT(S), MQTTs, OPC UA, http(s) post, OpenVPN. TLS

R-PASS-W-S

R-PASS-W-S represents a flexible and space-saving Industrial IoT Edge computing solution with multiple daisy chain connections.
Besides the functions of sofPLC IEC 61131-3 and advanced routing, R-PASS-W-S integrates 10 I/O channels and 1 Wi-Fi module.
It is also expandable with the R-COMM modem.

I/O 4DI / 2AI 2DO | Modem/ Router External | LET'S | ModBUS RTU/CTP, M-BUS master, SNMP, S7 Client, FTP(s), HTTP(S), SMTP(s) client, Samba, J1939, CANopen, MQTT(S), MQTTs, OPC UA, http(s) post, OpenVPN. TLS

Z-PASS2-RT-S

Z-PASS2-RT-S is a high-performance multifunctional controller that combines PLC functionalities with those of routing and remote access.
It is indeed based on softPLC StratON with integrated web server, VPN, and 4G LTE modem/router with GPS/Glonass capabilities.

I/O 6DI / DIO 2AI | 4G GPS | LET'S | PENETRATION TEST PASSED | ModBUS RTU/TCP, FTP/SFTP, HTTP(s), SNMP, MQTT(s), OPC UA, http(s) post

S6001 RTU

S6001-RTU is a compact all-in-one remote control unit that has 31 I/O channels. Thanks to extended connectivity (4G, Ethernet, Serial), the unit is expandable and interfaced with other systems through support for system protocols, allowing remote monitoring of plants.

I/O 17DI / 4AI 8DO / 2AO | 4G GPS | LET'S | ModBUS RTU/TCP, FTP/SFTP, HTTP(s), SNMP, MQTT(s), OPC UA, http(s) post

RTU ENERGY

Z-TWS4-RT ENERGY

The Z-TWS4-RT-E controller supports the communication protocols
IEC 60870-101/104 and IEC 61850.
The unit can be employed as a redundant controller for automation and remote contr of plants, electrical substations, transformation cabins, energy management, smart grids, distributed networks, etc.

I/O 4DI / 2AI 2DO | Modem/ Router External | LET'S | ModBUS RTU/CTP, M-BUS master, SNMP, S7 Client, FTP(s), HTTP(S), SMTP(s) client, Samba, J1939, CANopen, MQTT(S), MQTTs, OPC UA, http(s) post, OpenVPN. TLS

R-PASS-S ENERGY

The R-PASS-S-E controller supports the communication protocols IEC 60870-101/104 and IEC 61850.
The unit can be employed as a redundant controller for automation and remote contr of plants, electrical substations, transformation cabins, energy management, smart grids, distributed networks, etc.

I/O 6DI / DIO 2AI | Modem/ Router External | LET'S | ModBUS RTU/CTP, M-BUS master, SNMP, S7 Client, FTP(s), HTTP(S), SMTP(s) client, Samba, J1939, CANopen, MQTT(S), MQTTs, OPC UA, http(s) post, OpenVPN. TLS

R-PASS-W ENERGY

The R-PASS-W-E controller supports the communication protocols IEC 60870-101/104 and IEC 61850.
The unit can be employed as a redundant controller for automation and remote contr of plants, electrical substations, transformation cabins, energy management, smart grids, distributed networks, etc.

I/O 4DI / 2AI 2DO | Modem/ Router External | LET'S | Wi Fi | IEC 60870 IEC 61850

Z-PASS2-RT ENERGY

The Z-PASS2-RT-E controller supports the communication protocols IEC 60870-101/104 and IEC 61850. The unit can be employed as a redundant controller for automation and remote contr of plants, electrical substations, transformation cabins, energy management, smart grids, distributed networks, etc.

I/O 6DI / DIO 2AI | 4G GPS | LET'S | PENETRATION TEST PASSED | IEC 60870 IEC 61850

S6001 RTU ENERGY

The S6001-RTU-E controller supports the communication protocols IEC 60870-101/104 and IEC 61850.
The unit can be employed as a redundant controller for automation and remote contr of plants, electrical substations, transformation cabins, energy management, smart grids, distributed networks, etc.

I/O 17DI / 4AI 8DO / 2AO | 4G GPS | LET'S | IEC 60870 IEC 61850 | ModBUS RTU/TCP, FTP/SFTP, HTTP(s), SNMP, MQTT(s), OPC UA, http(s) post

MYALARM2 CEI

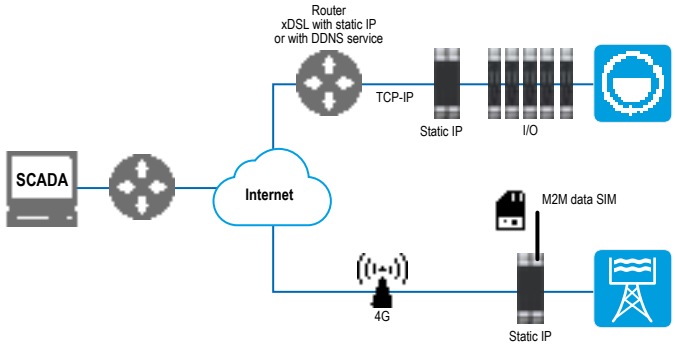
MYALARM2-CEI 0-16 is a remote management unit that allows for remote disconnection, reconnection, and diagnostics of energy generation plants.
The integrated GSM/GPRS module enables network operator (GSE) and plant manager intervention via coded SMS.

EASY CEI | I/O 4DI 2DO | GSM GPRS | CEI -016

The technical data and diagrams in this document are indicative and not binding.

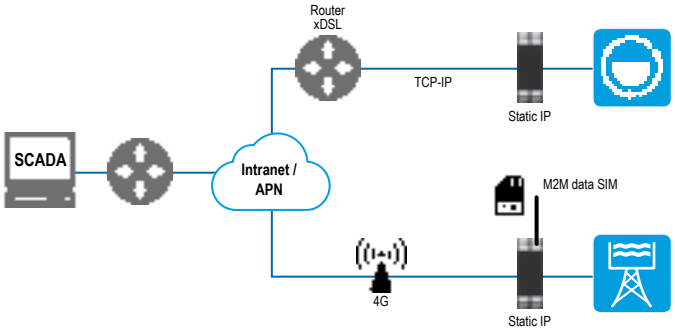
REMOTE CONTR ARCHITECTURES

WEB REMOTE CONTR INTRANET



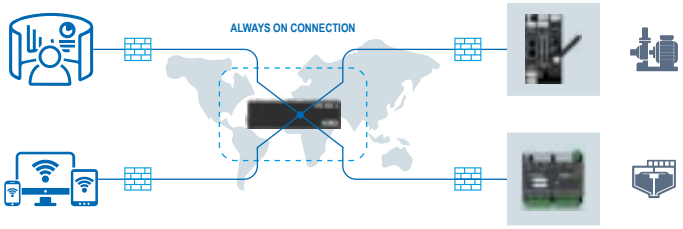
Web-based remote contr offers services for remote viewing, alarm notification, remote plant management, data collection, and analysis, leveraging the Internet, 4G standard, and DDNS technology.

REMOTE CONTR / PRIVATE APN



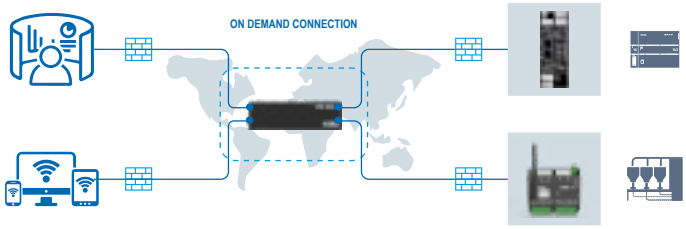
INTRANET / PRIVATE APN REMOTE CONTR SYSTEMS Intranet systems with a private APN involve a network with static IP addresses on peripheral SIM cards.

ALWAYS ON REMOTE CONTR ON



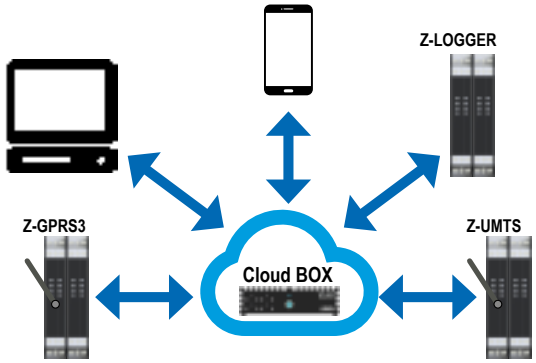
In Single LAN remote contr mode (always on connection), a public static IP is assigned to the VPN BOX server. Communication is simultaneous and always active between all remote sites and the various subnets that are part of the overall system.

ON DEMAND REMOTE ASSISTANCE



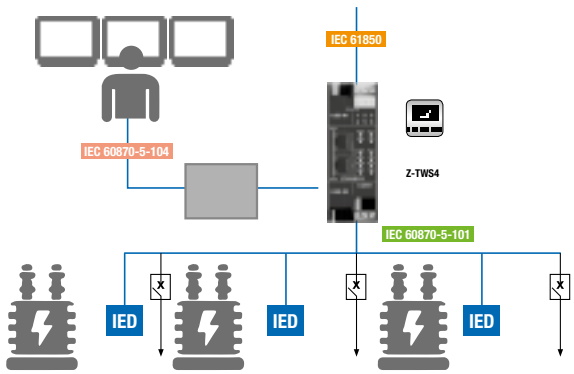
Point-To-Point remote assistance mode (on demand communication) establishes a point-to-point connection between supervision and machinery. Ideal for remote maintenance and diagnostic applications.

IOT / CLOUD MONITORING



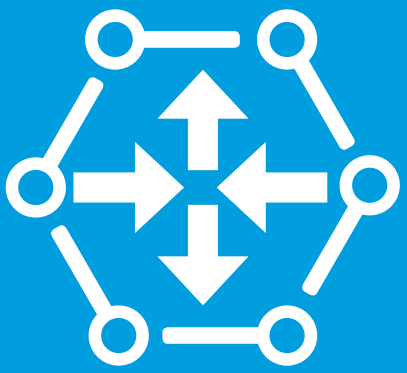
The Cloud-IoT solution proposed by SENECA allows centralizing data, managing remote connections, and creating customizable multi-user supervision pages.

ENERGY SECTOR MONITORING



SENECA controllers for Energy Management applications can serve as IEC 61850 Servers, conversion systems from ModBUS-RTU to ModBUS TCP, devices for creating virtual networks via the internet, and point-to-point tunnels.

2.4



INDUSTRIAL GATEWAYS

INDUSTRIAL GATEWAYS

SENECA's DIN rail protocol converters - industrial gateways are devices used to transfer data between different networks and fieldbuses.
The gateways available in R (32x53x90mm) or Z (17.5x100x112mm) formats can be used within the infrastructure to facilitate communication between networks and systems with different protocols. Configuration is performed via a Web Server or the dedicated EASY SETUP 2 software. Available in various Master / Slave configurations and compatible with major PLCs, they are integrable into configurators from various manufacturers.

HIGHLIGHTS

PROTOCOL CONVERSION
Industrial gateways connect Modbus devices to networks and fieldbuses by bidirectionally converting protocols such as ModBUS RTU/TCP-IP, M-BUS, Profinet, IO, M-BUS, Ethernet/IP0, OPC UA, IEC 61850.

SERIAL DEVICE SERVER
Gateways in this mode connect devices with RS232 or RS485 serial interfaces to a local network for the transmission of serial data via Ethernet.

CONNECTIVITY
Gateways manage up to 128 slave nodes per serial port, 1,200 bytes read/write, and 10 TCP-IP Servers.

FLEXIBLE CONFIGURATION
Configuration through serial, Ethernet, or USB ports is straightforward and immediate using the EASY SETUP 2 configuration software or a web server.

SHARED MEMORY
In the "Tag – 'shared memory'" Gateway mode, SENECA devices continuously acquire data via ModBUS and store it in their shared memory,

SERIAL SNIFFERS
With the serial sniffer feature, gateways analyze serial network traffic and display ModBUS protocol variables.

CERTIFICATIONS
Having passed stringent tests for potential fire hazards, electrical shocks, and mechanical failures, many models are equipped with UL certification.

INTEGRATION
"KEY" gateways facilitate compatibility and coexistence with PLCs, automation systems, and third-party programming environments (e.g., TiA Portal, PLCLogix 5000) thanks to the generation of specific configuration files EDS or GDSML.

AVAILABLE CONVERSIONS AND MODELS

PLC Side / Field Side	Modbus RTU	Modbus ASCII	Modbus TCP/IP	PROFINET	ETHERNET/IP
Modbus RTU		R-KEY-LT Z-KEY-0 Z-KEY-2ETH	R-KEY-LT Z-KEY-0 Z-KEY-2ETH	R-KEY-LT-P Z-KEY-P Z-KEY-2ETH-P	R-KEY-LT-E Z-KEY-E Z-KEY-2ETH-E
Modbus ASCII	R-LT Z-KEY-0 Z-KEY-2ETH		R-KEY-LT Z-KEY-0 Z-KEY-2ETH	R-KEY-LT-P Z-KEY-P Z-KEY-2ETH-P	R-KEY-LT-E Z-KEY-E Z-KEY-2ETH-E
Modbus TCP/IP	R-KEY-LT Z-KEY-0 Z-KEY-2ETH	R-KEY-LT Z-KEY-0 Z-KEY-2ETH		R-KEY-LT-P Z-KEY-P Z-KEY-2ETH-P	R-KEY-LT-E Z-KEY-E Z-KEY-2ETH-E
M-Bus	R-KEY-MBUS Z-KEY-MBUS		R-KEY-MBUS Z-KEY-MBUS	R-KEY-MBUS-P (*) Z-KEY-MBUS-P (*)	

(*) Soon available

FLEXIBLE AND RECONFIGURABLE DEVICES WITH FLEX TECHNOLOGY

SENECA's proprietary FLEX technology allows connecting a single device capable of supporting various protocols in serial and Ethernet industrial communication networks. From the same gateway, for example, it is possible to change the type of protocol conversion in a few steps, quickly addressing changes in production layouts or efficiently transferring data to and from PLCs and other Master/Slave or Client/Server devices. This flexible approach saves time, financial resources, and the hassle of managing multiple devices with different purchasing codes, regardless of the application type.

STRENGTHS

- A single multiprotocol solution on one device
- Maximum connectivity in a single hardware
- The functionality of multiple gateways at the price of one
- Simplification of purchasing codes
- Reduction in storage and handling costs
- Immediate selection of multiple protocol combinations based on the freely downloadable Seneca Discovery Device tool from the Seneca website
- No programming software or change of tag and I/O registers needed
- Supported and interchangeable protocols: ModBUS RTU, ModBUS TCP-IP, ModBUS ASCII, Profinet, Ethernet/IP, upcoming implementations (OPC UA, IEC 61850)
- Models integrating FLEX technology: R-KEY-LT, R-KEY-LT-E, R-KEY-LT-P, Z-KEY-0, Z-KEY-2ETH, Z-KEY-2ETH-E, Z-KEY-2ETH-P, Z-KEY-P, Z-KEY-E, upcoming integrations (R203-2-L; R203-2-H, R203-2-L-P, R203-H-P)

PROTOCOL RECONFIGURATION PROCEDURE WITH FLEX TECHNOLOGY

- Connect the PC to the FLEX device via Ethernet
- Launch the SENECA DISCOVERY DEVICE software, available on the SENECA website; scan the ModBUS / Ethernet network
- Select the new combination of protocols to apply to the device
- With the module turned off, set the DIP Switch to "Factory Reset"
- Turn on the module and set the DIP Switch to "Read configuration from Flash"

1 Connect the PC via Ethernet to the SENECA module

2 Launch the SENECA DISCOVERY DEVICE software and scan the ModBUS / Ethernet network

3 Change the protocol from ModBUS to Profinet or Ethernet/IP

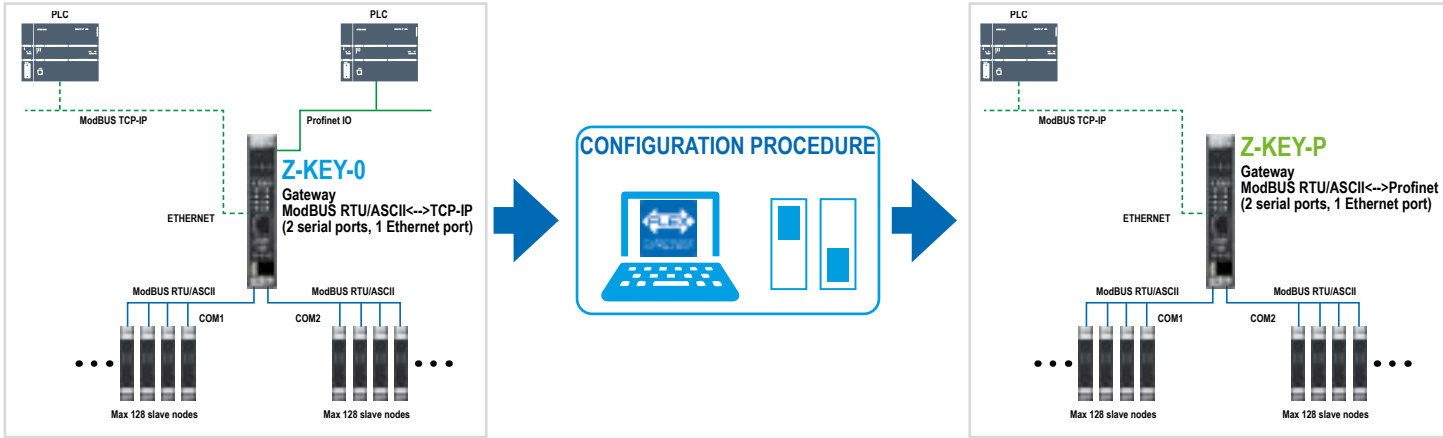
4 With the module turned off, set the DIP Switch to "ON" (reset factory settings)

5 Turn on the module and set the DIP Switch to "OFF", read configuration from Flash

6 Now the module operates with another combination of protocols

For more information: www.seneca.it/flex

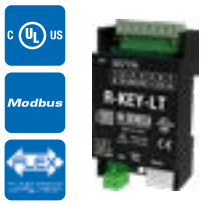
EXAMPLE OF TRANSFORMATION FROM MODBUS GATEWAY TO PROFINET GATEWAY



TECHNICAL DATA

ModBUS Gateways

This family of gateways allows connecting PLCs with serial, ModBUS, or Ethernet interfaces to ModBUS RTU/ ASCII Master/Slave and TCP-IP Client/Server devices



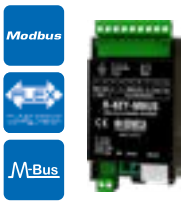
	R-KEY-LT	Z-KEY-0	Z-KEY-2ETH
	ModBUS RTU/ASCII Gateway↔TCP-IP (1 serial port, 1 Ethernet port)	ModBUS RTU/ASCII Gateway↔TCP-IP (2 serial ports, 1 Ethernet port)	ModBUS RTU/ASCII Gateway↔TCP-IP (2 serial ports, 2 Ethernet ports)
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac	11..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max Consumption	1 W	1.5 W	2 W
Max isolation	1.5 kVac (Ethernet)		
LED, status indicators	Power Supply Rx/Tx RS232/R485 Ethernet ACT/LNK		
Protection class	IP20		
Operating temperature	-25 °C..+65 °C		
Connections	7-way removable screw terminal, 5 mm pitch 2-way removable screw terminal, 5 mm pitch Bottom RJ45 connector	Removable screw terminals 3 ways, pitch 5 mm Rear IDC10 connector for DIN rail 46277	
		Front RJ45 connector	Front RJ45 connector (x2)
Dimensions (WxHxD)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	
Weight	80 g	100 g	170 g
Enclosure	PC/ABS self-extinguishing UL94-V0, Grey RAL 7035	Nylon PA6 30% glass fiber, self-extinguishing class V0	
Installation	For DIN rail (IEC EN 60715)		
Certifications	CE, UKCA, UL		CE, UKCA
COMMUNICATION			
Ethernet Ports	#1 Fast Ethernet 100 Tx		port #2 Fast Ethernet 100 Tx ports, switch configuration
Serial Ports #1	#1 serial port RS232 / RS485 switchable, max baud rate 115kbps on connector		
#2	-	#1 RS485 port, max baud rate 115k on IDC10 connector for bus and terminals	
Supported Protocols	ModBUS TCP-IP ModBUS RTU ModBUS ASCII		
Operating Modes	ModBUS RTU/ASCII TCP-IP Gateway ModBUS 'TAG' Gateway Serial Device Server TCP Server Serial Device Modbus Gateway Serial to Ethernet Virtual ID		
FLEX (multiprotocol configuration)	Yes		
Variable memory area	500 tags		
Connectivity	Max 8 TCP-IP Clients (Server Mode) Max 10 TCP-IP Servers (Client Mode) Max 128 Slave Nodes ModBUS RTU/ASCII per serial port		
CONFIGURATION			
DIP Switch	Yes		
WEB SERVER	Yes		
EASY SETUP 2	Yes		
EDS/GSDML	-		
SDD (Seneca Discovery Device)	Yes		
SESC (Seneca Ethernet to Serial Connection)	Yes		
ORDER CODES	R-KEY-LT	Z-KEY-0	Z-KEY-2ETH

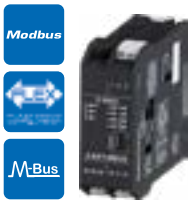
The technical data and diagrams in this document are indicative and not binding.

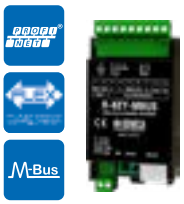
TECHNICAL DATA

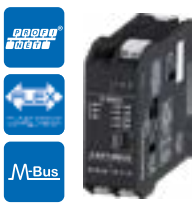
M-BUS Gateways

This family of gateways enables conversion from M-BUS (Meter Bus) protocol to ModBUS RTU / ModBUS TCP-IP and Profinet. These converters are capable of reading, converting, and transferring data from up to 25 M-BUS devices.









	R-KEY-MBUS	Z-KEY-MBUS	R-KEY-MBUS-P	Z-KEY-MBUS-P
	ModBUS RTU/TCP-IP ↔ M-BUS (1 M-BUS port, 1 serial port, 1 Ethernet port)	**ModBUS RTU/TCP-IP ↔ M-BUS (1 M-BUS port, 2 serial ports, 1 Ethernet port)**	**Profinet Gateway ↔ M-BUS (1 M-BUS port, 1 serial port, 1 Ethernet port)**	**Profinet Gateway ↔ M-BUS (1 M-BUS port, 2 serial ports, 1 Ethernet port)**
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac			
Max Consumption	Max 1 W	6.5 W (3.5 W typical)	Max 1 W	6.5 W (3.5 W typical)
Max isolation	1,500 Vac	1,500 Vac across 3 ways	1,500 Vac	1,500 Vac across 3 ways
LED status indicators	Power Supply M-BUS Power Supply Rx/Tx RS232/R485 M-BUSTx/Rx			
Protection class	IP20			
Operating temperature	-25..+65°C			
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch Screw terminals, 2-way removable screw terminal, 5 mm pitch Ethernet connector on the bottom side -	Removable screw terminals 3 ways, pitch 5 mm Rear IDC10 connector for DIN rail 46277 Front RJ45 connector Side Micro USB	Screw terminals, 7-way removable screw terminal, 5 mm pitch Screw terminals, 2-way removable screw terminal, 5 mm pitch Ethernet connector on the bottom side -	Removable screw terminals 3 ways, pitch 5 mm Rear IDC10 connector for DIN rail 46277 Front RJ45 connector Side Micro USB
Dimensions (WxHxD)	53.3 x 90 x 32.2 mm	100 x 35 x 112 mm	53.3 x 90 x 32.2 mm	100 x 35 x 112 mm
Weight	80 g	190 g	80 g	190 g
Enclosure	PC / ABS self-extinguishing UL94-V0	Black glass-filled PA6 plastic, black color	PC / ABS self-extinguishing UL94-V0	Black glass-filled PA6 plastic, black color
Installation	On DIN rail IEC EN 60715 or wall-mounted		On DIN rail IEC EN 60715 or wall-mounted	
Certifications	CE, UKCA		CE, UKCA	
COMMUNICATION				
Ethernet Ports	#1 Fast Ethernet 100 Tx port, RJ45		#1 Fast Ethernet 100 Tx port, RJ45	
Serial Ports				
#1	#1 switchable RS232 / RS485 serial port, max baud rate 115kbps			
#2		#1 RS485 port, max baud rate 115k on IDC10 connector for bus and terminals		#1 RS485 port, max baud rate 115k on IDC10 connector for bus and terminals
USB Ports		#1 Micro USB port on side connector		#1 Micro USB port on side connector
M-BUS Ports	#1 M-BUS port, max 25 slave nodes, baud rate from 300 to 38,400 bps			
Supported Protocols	ModBUS TCP-IP server ModBUS RTU slave M-BUS Master		Profinet IO (Class A Device, Cyclic Real-Time (RT), Acyclic Data) M-BUS Master	
Operating Modes	ModBUS RTU/TCP-IP↔M-BUS		Profinet IO Gateway↔ M-BUS	
FLEX (multiprotocol configuration)	Yes			
Variable memory area	500 tags			
Connectivity	Max 8 TCP-IP Clients (Server Mode) Max 128 slave nodes ModBUS RTU/ASCII Max 25 slave nodes M-BUS			
CONFIGURATION				
DIP Switch	Yes			
WEB SERVER	Yes			
EASY SETUP 2	-		Yes	
EDS/GSDML	-		Yes	
SDD (Seneca Discovery Device)	Yes			
ORDER CODES	R-KEY-MBUS	Z-KEY-MBUS	R-KEY-MBUS-P	Z-KEY-MBUS-P

The technical data and diagrams in this document are indicative and not binding.

TECHNICAL DATA

PROFINET IO Gateways

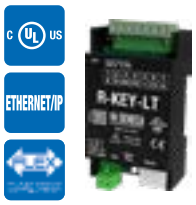
This family of gateways allows connecting PLCs with Profinet IO interfaces to ModBUS RTU/ ASCII Master/Slave devices and ModBUS TCP-IP Server.

	R-KEY-LT-P	Z-KEY-P	Z-KEY-2ETH-P
	ModBUS ↔ Profinet IO Gateways (1 serial port, 1 Ethernet port)	**ModBUS ↔ Profinet IO Gateways (2 serial ports, 1 Ethernet port)**	**ModBUS ↔ Profinet IO Gateways (2 serial ports, 2 Ethernet ports)**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac	11..40 Vdc; 19..28 Vac	
Max Consumption	1 W	1.5 W	2 W
Max isolation	1,500 Vac		
LED, status indicators	Power Supply Rx/Tx RS232/R485 Ethernet ACT/LNK Profinet Communication		
Protection class	IP20		
Operating temperature	-25 °C..+65 °C		
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch	Removable screw terminals 3 ways, pitch 5 mm	
	Screw terminals, 2-way removable screw terminal, 5 mm pitch	Rear IDC10 connector for DIN rail 46277	
	RJ45 connector on the bottom (x1)	Front RJ45 connector (x1)	Front RJ45 connector (x2)
Dimensions (WxHxD)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	
Weight	80 g	100 g	170 g
Enclosure	PC/ABS self-extinguishing UL94-V0, Grey RAL 7035	Nylon PA6 30% glass fiber, V0 flame retardant class	
Installation	For DIN rail (IEC EN 60715)		
Certifications	CE, UKCA, UL		CE, UKCA
COMMUNICATION			
Ethernet Ports	#1 Fast Ethernet 100 Tx port, RJ45		#2 Fast Ethernet 100 Tx ports, front RJ45 (switch configuration)
Serial Ports #1	#1 serial port RS232 / RS485 switchable, max baud rate 115kbps on connector		
#2	-	#1 RS485 port, max baud rate 115k on IDC10 connector for bus and terminals	
Supported Protocols	ModBUS TCP-IP ModBUS RTU MQTT ModBUS ASCII Profinet IO (Class A Device, Cyclic Real-time (RT) and Acyclic Data)		
Operating Modes	Profinet IO ModBUS RTU/TCP-IP Master Gateway Profinet IO ModBUS RTU/TCP-IP Slave Gateway Gateway with tag for Port#1 and Port#2 Master		
FLEX (multiprotocol configuration)	Yes		
Variable memory area	1200 Byte R + 1200 Byte W		
Connectivity	Max 3 TCP-IP Servers (Client Mode) Max 8 TCP-IP Clients Max 128 Slave Nodes ModBUS RTU/ASCII for serial port		
CONFIGURATION			
DIP Switch	Yes		
WEB SERVER	Yes		
EASY SETUP 2	Yes		
EDS/GSDML	Yes		
SDD (Seneca Discovery Device)	Yes		
SESC (Seneca Ethernet to Serial Connection)	-		
ORDER CODES	R-KEY-LT-P	Z-KEY-P	Z-KEY-2ETH-P

The technical data and diagrams in this document are indicative and not binding.

TECHNICAL DATA

Ethernet / IP Gateways

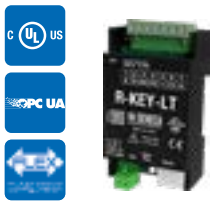
	R-KEY-LT-E	Z-KEY-E	Z-KEY-2ETH-E
Allows PLCs with Ethernet/IP interface to connect to ModBUS RTU Master/Slave and ModBUS TCP-IP Server devices.			
	ModBUS → Ethernet/IP (1 serial port, 1 Ethernet port)	**ModBUS → Ethernet/IP (2 serial ports, 1 Ethernet port)**	**ModBUS → Ethernet/IP (2 serial ports, 2 Ethernet ports)**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	1 W	1.5 W	2 W
LED Status Indicators	Power Supply Ethernet port connections RX / TX RS232/RS485 RX/TX RS485 Ethernet/IP Communication		
Max isolation	1.5 kVac		
Protection class	IP20		
Operating temperature	-25..+65°C		
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch Screw terminals, 2-way removable screw terminal, 5 mm pitch RJ45 connector on the bottom	Removable screw terminals 3 ways, pitch 5 mm Rear IDC10 connector for DIN rail 46277 Front RJ45 connector	Front RJ45 connector (x2)
Dimensions (WxHxD)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	
Weight	80 g	100 g	170 g
Enclosure	PC/ABS self-extinguishing UL94-V0	Nylon 6 with 30% glass fiber, V0 flame retardant class	
Installation	For DIN rail (IEC EN 60715)		
Certifications	CE, UKCA, UL		CE, UKCA
COMMUNICATION			
Ethernet Ports	#1 Fast Ethernet 100 Tx port, RJ45		#2 Fast Ethernet 100 Tx ports, front RJ45
Serial Ports #1	#1 serial port RS232 / RS485 switchable, max baud rate 115kbps on connector		
#2	-	#1 RS485 port, max baud rate 115k on IDC10 connector for buses and terminals	
Supported Protocols	ModBUS RTU, ModBUS TCP-IP, ModBUS ASCII MQTT		
Operating Modes	ModBUS RTU/TCP-IP/ASCII ↔ Ethernet/IP Gateway		
FLEX (multiprotocol configuration)	Yes		
Variable memory area	512 Byte R + 512 Byte W		
Connectivity	Max 3 TCP-IP clients (Server Mode) Max 128 slave nodes ModBUS RTU/ASCII		
CONFIGURATION			
DIP Switch	Yes		
WEB SERVER	Yes		
EASY SETUP 2	Yes		
EDS/GSDML	Yes		
SDD (Seneca Discovery Device)	Yes		
SESC (Seneca Ethernet to Serial Connection)	-		
ORDER CODES	R-KEY-LT-E	Z-KEY-E	Z-KEY-2ETH-E

The technical data and diagrams in this document are indicative and not binding.

TECHNICAL DATA

OPC UA Gateways

This family of gateways allows OPC Servers to connect to ModBUS RTU/TCP-IP Master devices and systems.



	R-KEY-LT-P	Z-KEY-P	Z-KEY-2ETH-P
	ModBUS ↔ OPC UA Gateway (1 serial port, 1 Ethernet port)	**ModBUS ↔ OPC UA Gateway (2 serial ports, 1 Ethernet port)**	**ModBUS ↔ OPC UA Gateway (2 serial ports, 2 Ethernet ports)**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	1 W	2 W @ 24 Vac (typical)	
Max isolation	1,500 Vac		
LED, status indicators	Power Supply Rx/Tx RS232/R485 Ethernet ACT/LNK		
Protection class	IP20		
Operating temperature	-25 °C..+65 °C		
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch	Removable screw terminals 3 ways, pitch 5 mm	
	Screw terminals, 2-way removable screw terminal, 5 mm pitch	Rear IDC10 connector for DIN rail 46277	
	RJ45 connector on the bottom (x1)	Front RJ45 connector (x1)	Front RJ45 connector (x2)
Dimensions (WxHxD)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	
Weight	80 g	170 g	
Enclosure	PC/ABS self-extinguishing UL94-V0, Grey RAL 7035	Nylon PA6 30% glass fiber, V0 flame retardant class	
Installation	For DIN rail (IEC EN 60715)		
Certifications	CE, UKCA, UL		CE, UKCA
COMMUNICATION			
Ethernet Ports	#1 Fast Ethernet 100 Tx port, RJ45		#2 Fast Ethernet 100 Tx ports, front RJ45 (switch configuration)
Serial Ports	-	#1 serial port RS232 / RS485 switchable, max baud rate 115kbps on connector	
Supported Protocols	ModBUS TCP-IP ModBUS RTU ModBUS ASCII OPC UA		
Operating Modes	OPC UA Server Gateway ↔ ModBUS RTU/TCP-IP Master		
FLEX (multiprotocol configuration)	Yes		
Variable memory area	1200 Bytes R/W		
Connectivity	Max 3 TCP-IP Servers (Client Mode) 128 ModBUS RTU/ASCII slave nodes per serial port		
CONFIGURATION			
DIP Switch	Yes		
WEB SERVER	Yes		
EASY SETUP 2	Yes		
EDS/GSDML	Yes		
SDD (Seneca Discovery Device)	Yes		
SESC (Seneca Ethernet to Serial Connection)	-		
ORDER CODES	R-KEY-LT-U	Z-KEY-U	Z-KEY-2ETH-U

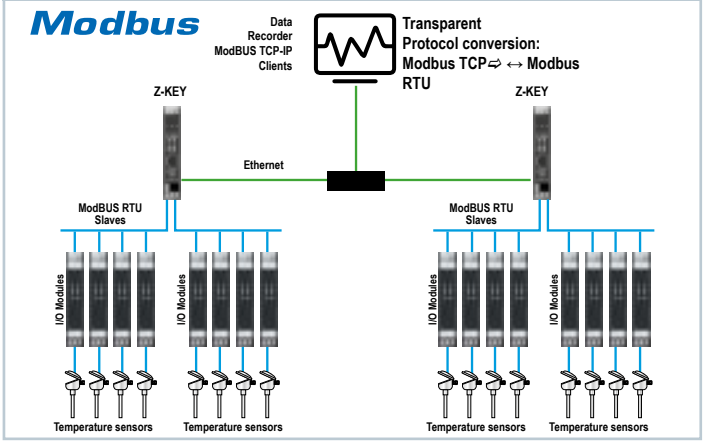
TECHNICAL DATA

IEC 81850 Gateways

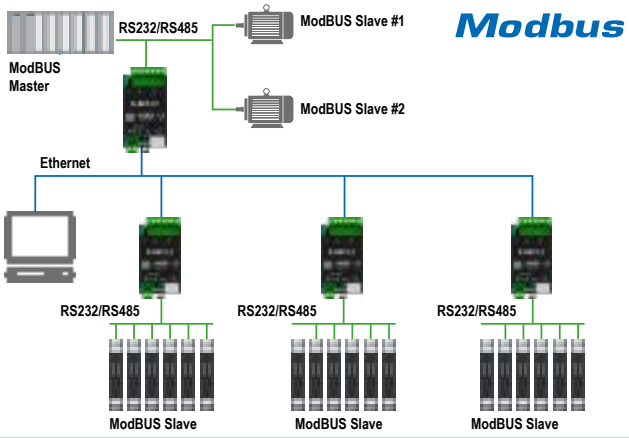
	R-KEY-LT-I	Z-KEY-I	Z-KEY-2ETH-I
This family of gateways allows IEC 61850 Servers to connect to ModBUS RTU/TCP-IP devices and systems. Master			
	ModBUS ↔ IEC 61850 Gateway (1 serial port, 1 Ethernet port)	**ModBUS ↔ IEC 61850 Gateway (2 serial ports, 1 Ethernet port)**	**ModBUS ↔ IEC 61850 Gateway (2 serial ports, 2 Ethernet ports)**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac		
Max Consumption	1 W	2 W @ 24 Vac (typical)	
Max isolation	1,500 Vac		
LED, status indicators	Power Supply Rx/Tx RS232/R485 Ethernet ACT/LNK		
Protection class	IP20		
Operating temperature	-25 °C..+65 °C		
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch	Removable screw terminals 3 ways, pitch 5 mm	
	Screw terminals, 2-way removable screw terminal, 5 mm pitch	Rear IDC10 connector for DIN rail 46277	
	RJ45 connector on the bottom (x1)	Front RJ45 connector (x1)	Front RJ45 connector (x2)
Dimensions (WxHxD)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	
Weight	80 g	170 g	
Enclosure	PC/ABS self-extinguishing UL94-V0, Grey RAL 7035	Nylon PA6 30% glass fiber, V0 flame retardant class	
Installation	For DIN rail (IEC EN 60715)		
Certifications	CE, UKCA, UL		CE, UKCA
COMMUNICATION			
Ethernet Ports	#1 Fast Ethernet 100 Tx port, RJ45		#2 Fast Ethernet 100 Tx ports, front RJ45 (switch configuration)
Serial Ports	#1 serial port RS232 / RS485 switchable, max baud rate 115kbps on connector		
Supported Protocols	ModBUS TCP-IP ModBUS RTU ModBUS ASCII IEC 61850 Server		
Operating Modes	IEC 61850 Server Gateway ↔ ModBUS RTU/TCP-IP Master		
FLEX (multiprotocol configuration)	Yes		
Variable memory area	512 Bytes R / 512 Bytes W		
Connectivity	Max 3 TCP-IP Servers 128 ModBUS RTU/ASCII slave nodes per serial port		
CONFIGURATION			
DIP Switch	Yes		
WEB SERVER	Yes		
EASY SETUP 2	Yes		
EDS/GSDML	Yes		
SDD (Seneca Discovery Device)	Yes		
SESC (Seneca Ethernet to Serial Connection)	-		
ORDER CODES	R-KEY-LT-I	Z-KEY-I	Z-KEY-2ETH-I

APPLICATION DIAGRAMS

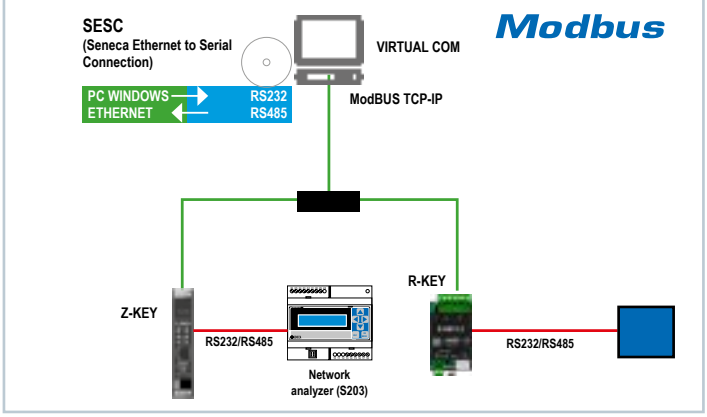
MODBUS GATEWAY - ETHERNET TO SERIAL



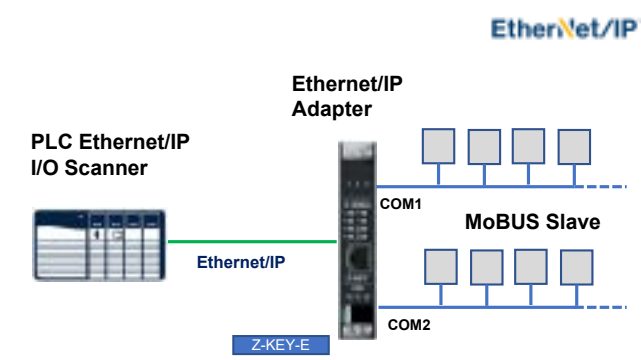
EXTENDED SERIAL OVER ETHERNET



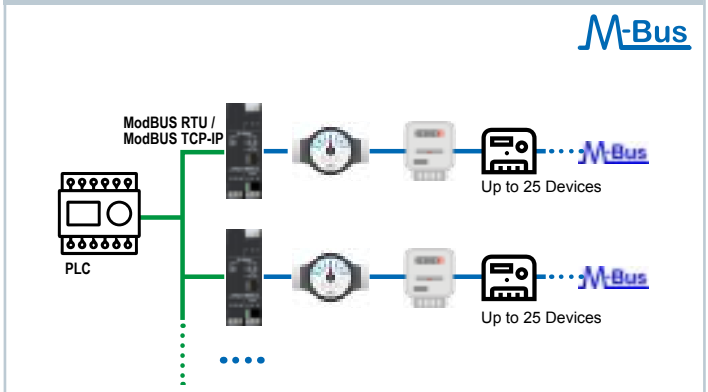
SERIAL DEVICE SERVER – VIRTUAL COM



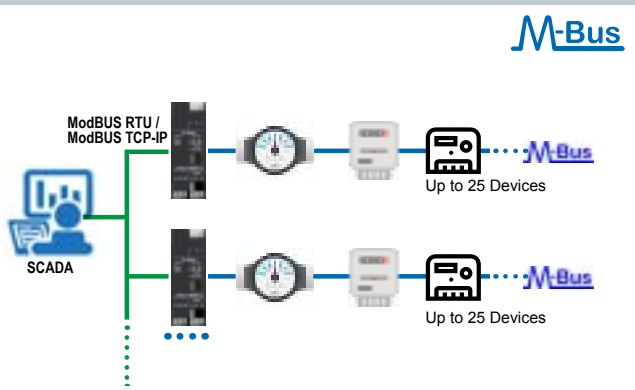
ETHERNET/IP GATEWAY - ADAPTER



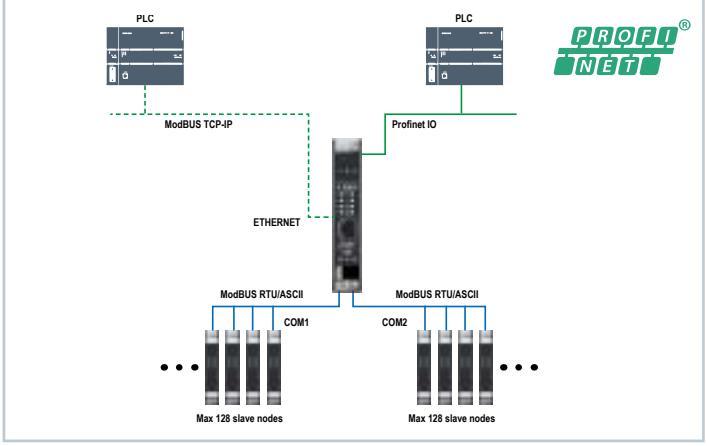
M-BUS GATEWAY - PLC CONNECTION



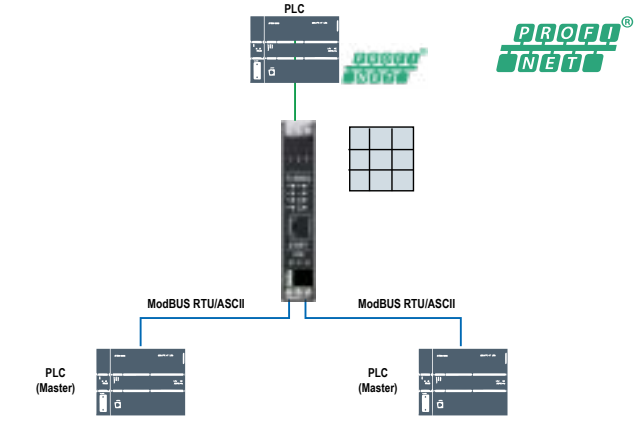
M-BUS GATEWAY - SCADA CONNECTION



PROFINET IO TO MODBUS GATEWAY MASTER



PROFINET IO TO MODBUS GATEWAY SLAVE



2.5

IIoT EDGE GATEWAY

IIoT EDGE GATEWAY

SENECA's Industrial IoT Edge computing devices are multipurpose with advanced functionality such as gateway, datalogger, alarm management, Wi-Fi router, logical functions, cybersecurity, and sofPLC IEC 61131-3 (also with IEC 61850 /60870 protocols). The modules offer client/server connectivity solutions for the creation of systems with varying complexity and simultaneous access points to the plant or single machine. Integrated into the LET'S platform, the gateways can support Point-To-Point connections for remote assistance or Single LAN for remote control. By using IIoT protocols like MQTT and OPC-UA, they perfectly integrate data analysis, supervision, and enterprise management systems, ERP and MES. Applications range from M2M/IoT communications to remote maintenance, network integration, protocol conversion, and integration with Cloud platforms and services across most industrial sectors.

MODELS

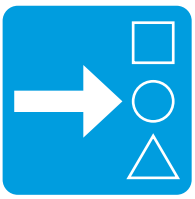
GATEWAY EDGE IIoT

	Z-PASS1-RT 	Z-PASS2-RT-4G 	R-PASS-0-4-0 	R-PASS-W-4-0 
SOFTPLC IEC 61131	Z-PASS2-RT-4G-S 	R-PASS-0-4-S 	R-PASS-W-4-S 	
SOFTPLC IEC 61131 IEC 60870 IEC 61850	Z-PASS2-RT-4G-E 	R-PASS-0-4-E 	R-PASS-W-4-E 	
HMI	SSD 	R-COMM 	Auxiliary module that interfaces directly with the R-PASS modules, providing modem and mini UPS functionalities. Available in 2 versions: **R-COMM-0-4GWW** **R-COMM-B-4GWW**	

OPERATION AND CONNECTIVITY

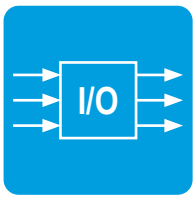
	GATEWAY				GATEWAY + SOFTPLC			GATEWAY+SOFTPLC+ ENERGY PROTECTION			GATEWAY+HMI
	R-PASS-0-4-0	R-PASS-W-4-0	Z-PASS1-RT	Z-PASS2-RT-4G	R-PASS-0-4-S	R-PASS-W-4-S	Z-PASS2-RT-4G-S	R-PASS-0-4-E	R-PASS-W-4-E	Z-PASS2-RT-4G-E	SSD
GATEWAY FEATURES											
ModBUS / Ethernet Serial Gateway	x	x	x	x	x	x	x	x	x	x	x
Shared memory gateway - Gateway with Tag	x	x	x	x	x	x	x	x	x	x	x
Transparent Gateway / Serial Device Server	x	x	x	x	-	-	-	-	-	-	x
IIoT / Edge / MQTT Gateway	x	x	x	x	x	x	x	x	x	x	Dashboard
ROUTING											
Router LAN	x	x	x	x	x	x	x	x	x	x	x
4G Router	Optional	Optional	-	x	Optional	Optional	x	Optional	Optional	x	-
Wi-Fi Router / Access Point	-	x	-	-	-	x	-	-	x	-	x
Advanced Router - Nat 1:1 & Static Router	x	x	x	x	x	x	x	x	x	x	x
ADVANCED FEATURES											
Datalogger	x	x	x	x	x	x	x	x	x	x	x
Remote alarm unit	x	x	x	x	x	x	x	x	x	x	x
VPN remote access unit	x	x	x	x	x	x	x	x	x	x	Dashboard
If-Then-Else logical rules	x	x	x	x	-	-	-	-	-	-	Dashboard
SoftPLC IEC 61131	-	-	-	-	x	x	x	x	x	x	-
Energy Controller IEC 60870/61850	-	-	-	-	-	-	-	x	x	x	-
HMI											
Widgets and Synoptics on HMI	x	x	x	x	x	x	x	x	x	x	x
Remote Display	x	x	x	x	x	x	x	x	x	x	x
7" LCD capacitive touch display	-	-	-	-	-	-	-	-	-	-	x

HIGHLIGHTS



Multifunctional devices

Z-PASS1 and Z-PASS2 are multifunction IoT devices: Modbus Gateway for data acquisition of up to 2000 tags (shared memory mode) with data logging and the ability to process data (If Then Else Logic); Transparent Gateways for extending serial communications via Ethernet/3G+/4G/VPN networks; Routers with Firewall, DynDNS, DHCP Server; Remote Assistance Units.



Integrated I/O

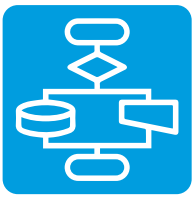
The integrated I/O expands input/output capabilities for general use. For diagnostic, security, and monitoring functions, the devices integrate DI/DO channels, which can be individually configured as digital inputs or outputs. The gateways also feature analog I/O for exchanging data with the field.

High connectivity

Equipped with Fast Ethernet ports, serial ports, and USB, the Edge gateways support ModBUS RTU / TCP-IP, FTP/FTPs, HTTP/HTTPS, OpenVPN, SSL/TLS, and Wi-Fi protocols. The Z-PASS2 models with 4G/LTE, SIM, and integrated GPS/GNSS function as 4G routers, capable of instantly sharing connections. Thanks to the external R-COMM modem, the R-PASS models provide 4G functionality, GPS receiver, and UPS battery.

Multilevel Cybersecurity

In IoT gateways, cybersecurity is of fundamental importance. Particularly ensuring security at the Edge level reduces the attack surface and is guaranteed by mechanical blocking of remote access, LAN/WAN separation, two-factor authentication, advanced access management, data encryption, OpenVPN protocols, HTTPS Server, TLS certificates for HTTPS, penetration testing compliant with OASWAP, NITS 800 115, Risk Analysis, IEC 62443.



Integrated If-Then-Else Logic

The Edge IoT gateways allow the implementation of logic rules that involve integrated or external I/O (acquired or written in shared memory). The configurable control logic (e.g., continuous or event-based writings, alarm sending, data processing, etc.) supports up to 2000 rules.

Data logging function

In Modbus Gateway functionality with Shared Memory, the Edge IIoT gateways can also activate the "Data Logger" mode, capable of handling up to 1000 log files / 100,000 samples. The tag values, associated with up to 4 groups with different sampling and transfer periods, are stored in log files. File transfer can be performed via USB stick, FTP server, email, HTTP post, MQTT.

NAT 1:1 and Advanced Routing

The NAT 1:1 and Static Router functionalities enable direct communication between the corporate WAN and automation LAN (which by default are independent and do not communicate with each other). They also allow the redirection of outgoing traffic from a device to a particular host or subnet.

IIoT Protocols

The IIoT gateways operate as OPC UA Servers and can be used in automation and data management applications with OPC UA clients from other manufacturers. They also support the MQTT protocol (Message Queue Telemetry Transport), ideal for real-time data transmission and M2M connections, and HTTP post communication for sending log samples and events, as well as advanced data logger and server settings management.

Remote Assistance Support

The Edge IIoT gateways also function as Client devices for the remote access platform to machines and plants "LET'S". Through the VPN BOX 2 Server, it is possible to implement Point-to-Point and On-Demand (P2P) connections to the field or create virtual networks, for "Always ON" connections for supervision, management, and monitoring of remote plants (Single LAN).

Easy Cloud Support

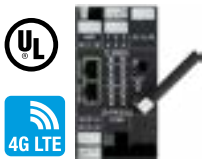
The Edge IIoT gateways can connect machines, plants, and thousands of field I/Os, ensuring compatibility with the most widespread IoT Cloud platforms via MQTT(s) and HTTP(s) protocols, simplifying configuration procedures with some of them.

Wi-Fi (option)

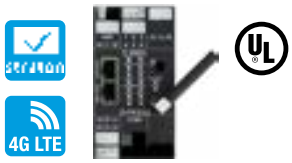
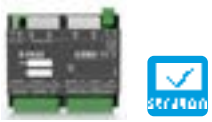
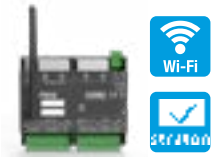
The gateways equipped with a 2.4 GHz 802.11 b/g/n Wi-Fi module ensure router or redundant network unit functionalities. It is also possible to select the Station mode (connection to an existing Wi-Fi access point) or Access Point mode (which other devices can connect to).

SoftPLC IEC 61131-3 (option)

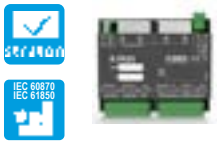
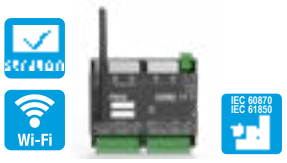
The gateways that include the Straton IEC 61131-3 softPLC platform combine PLC tasks with web server, data logger, remote control, remote assistance, and energy management functionalities (in compliance with IEC 60870-101/104, IEC 61850 protocols). The devices can be used with different architectures and configurations depending on the system complexity and hardware requirements.

	Z-PASS1-RT	Z-PASS2-RT-4G	R-PASS-0-4-0	R-PASS-W-4-0
				
	IIoT Edge Gateway, integrated I/O	**IIoT Edge Gateway / 4G Router, GPS, integrated I/O**	**Compact multifunction IIoT Gateway with 4 Ethernet ports**	**Compact multifunction IIoT Gateway, Wi-Fi, 4 Ethernet ports**
GENERAL DATA				
Power Supply	11..40 Vdc		10..40 Vdc; 19..28 Vac	
Max Consumption	6 W	6 W	8 W	8 W
Battery / UPS	-	-	With additional R-COMM module	
Max isolation	1.5 kVac			
LED status indicators	Power, Run; I/O Status; VPN Status; VPN Connection; RX/TX serial communication; Ethernet Link/Traffic	Power, Run; I/O Status; VPN Status; VPN Connection; RX/TX serial communication; Ethernet Link/ Traffic; 4G/LTE Level; Registered Modem; Data Connection; GPS; Battery; Modem Power	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; I/O Status	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; Wi-Fi Communication I/O Status
Protection class	IP20			
Connections	Removable terminal block, 3.5 mm pitch, 1.5 mm^2 cable section			
	IDC10 power/bus connector		-	-
Flash Memory (data)	≥4 GB			
RAM	512 MB			
Slot for SD card	Yes, Max 32GB		-	-
I/O Channels	#6 DI/DO configurable, #2 AI (mA,V)		#4 DI, #4 DO, #2 AI (mA, V)	
Operating temperature	-25..+65°C		-20..+65°C	
Dimensions (WxHxD)	35 x 102.5 x 111 mm	52.5 x 102.5 x 111 mm	106 x 90 x 32 mm	
Weight	Approximately 240 g	Approximately 270 g	170 g	
Enclosure	PA6 glass-fiber reinforced		PC / ABS self-extinguishing material UL94-V0	
Installation	For 35 mm DIN rail IEC EN 60715		On DIN rail EN 60715, wall / panel mounted	
Certifications	CE, UKCA			
COMMUNICATION				
Ethernet Ports (ETH1, ETH2)	#2 Fast Ethernet 10/100Tx ports (RJ45)		#24Fast Ethernet 10/100Tx ports (RJ45)	
Serial ports	#1 RS232 / RS485 port, max baud rate 115kbps			
	#2 RS485 ports, max baud rate 115kbps		#1 RS485 port, max baud rate 115kbps	
USB Ports	#1 USB host port on side type A connector			
	-	#1 micro USB port for debugging		
CAN Port	#1 CAN port (terminals)			
Modem	-	Multiband M2M/IoT, 4G / LTE World Wide	Optional (R-COMM)	
Sat Receiver.	-	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS	-	-
Wi-Fi	-	-	-	Integrated WiFi 802.11 b/g/n, band 2.4 ÷2.4835GHz, max Output Power: 17dBm (50 mW), security WEP / WPA / WPA2
Serial protocols	ModBUS TCP server, ModBUS RTU master/slave, FTP/SFTP server, HTTP/HTTPS server, SNMP		ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTPs client, Samba	
IoT Protocols	MQTT, MQTTs, OPC UA Server, https, http post			
Connectivity	Max TCP-IP Clients 50, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area for 2,000 variables (tags)			
SECURITY				
Authentication	Two-factor authentication (Google Authenticator)		User / Password	
Permission Management	Supervisor / Users / Groups		Supervisor	
Encryption algorithm (data encryption)	OpenVPN AES-256bit-CBC + Auth SHA256 bit or user-selectable		OpenVPN BF-CBC + Auth SHA1	
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher		OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS	
SSL/TLS Certificates	Automated TLS certificate management for HTTPS		-	-
Cybersecurity certificates (penetration test)	Yes, OWASP, NIST 800-115, Risk Analysis, IEC62443		-	-
SETTINGS				
Programming	WEB SERVER		Web Server, EASY SETUP 2	
VPN Management Software	OpenVPN, VPN Client Communicator			
Management tools	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)			
If Then Else Logic	Yes			
LET'S Support	Yes			
ORDER CODES	Z-PASS1-RT	Z-PASS2-RT-4G	R-PASS-0-4-0	R-PASS-W-4-0

The technical data and diagrams in this document are indicative and not binding.

	Z-PASS2-RT-4G-S	R-PASS-0-4-S	R-PASS-W-4-S
			
	IIoT Edge Gateway / 4G Router, GPS / SoftPLC Straton	**Compact multifunction IIoT Gateway / SoftPLC Straton, 4 Ethernet ports**	**Compact multifunction IIoT Gateway, Wi-Fi / SoftPLC Straton, 4 Ethernet ports**
GENERAL DATA			
Power Supply	11..40 Vdc	10..40 Vdc; 19..28 Vac	
Max Consumption	6 W	8 W	
Battery / UPS	-	With additional R-COMM module	
Max isolation	1.5 kVac		
LED status indicators	Power, Run; I/O Status; VPN Status; VPN Connection; RX/TX serial communication; Ethernet Link/Traffic; 4G/LTE Level; Registered Modem; Data Connection; GPS; Battery; Modem Power	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; I/O Status	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; Wi-Fi Communication I/O Status
Protection class	IP20		
Connections	Removable terminal block, 3.5 mm pitch, 1.5 mm^2 cable section		
	IDC10 power/bus connector	-	-
Flash Memory (data)	≥4 GB		
RAM	512 MB		
Slot for SD card	Yes, Max 32GB		
I/O Channels	#6 DI/DO configurable, #2 AI (mA,V)	#4 DI, #4 DO, #2 AI (mA, V)	
Operating temperature	-25..+65°C	-20..+65°C	
Dimensions (WxHxD)	52.5 x 102.5 x 111 mm	106 x 90 x 32 mm	
Weight	Approximately 270 g	170 g	
Enclosure	PA6 fiberglass reinforced, black color	PC / ABS self-extinguishing material UL94-V0, black color	
Installation	For 35 mm DIN rail IEC EN 60715	On DIN rail EN 60715, wall / panel mounted	
Certifications	CE, UKCA		
COMMUNICATION			
Ethernet Ports (ETH1, ETH2)	#2 Fast Ethernet 10/100Tx ports with front RJ45 connector	#4 Fast Ethernet 10/100Tx ports with front RJ45 connector	
Serial ports (COM1, COM2, COM4)	#1 RS232 / RS485 port on terminals, max baud rate 115kbps		
	#1 RS485 port, max baud rate 115kbps via terminals		
	#1 RS485 port, max baud rate 115kbps via IDC10 connector for bus and terminals	-	-
USB Ports	#1 USB host port on side type A connector	#1 USB host port on side type A connector	
	#1 micro USB port for debugging		
CAN Port	#1 CAN port (terminals)		
Modem	Multiband M2M/IoT, 4G / LTE World Wide	Optional (R-COMM)	
Sat Receiver.	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS	-	-
Wi-Fi	-	-	Integrated WiFi 802.11 b/g/n, band 2.4 ÷2.4835GHz, max Output Power: 17dBm (50 mW), security WEP / WPA / WPA2
Serial protocols	ModBUS TCP server, ModBUS RTU master/ slave, FTP/SFTP server, HTTP/HTTPS server, SNMP	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTPs client, Samba	
IoT Protocols	MQTT, MQTTs, OPC UA Server, https, http post		
Connectivity	Max TCP-IP Clients 50, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area for 2,000 variables (tags)		
SECURITY			
LAN / WAN separation	Yes		
Authentication	Two-factor authentication (Google Authenticator)	User / Password	
Permission Management	Supervisor / Users / Groups	Supervisor	
Encryption algorithm (data encryption)	OpenVPN AES-256bit-CBC + Auth SHA256 bit or user-selectable	OpenVPN BF-CBC + Auth SHA1	
Fixed TCP-IP ports for remote assistance	Yes	Yes	Yes
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/ TLS, TLS 1..2 or higher	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS	
SSL/TLS Certificates	Automated TLS certificate management for HTTPS	-	-
Cybersecurity certificates (penetration test)	Yes, OWASP, NIST 800-115, Risk Analysis, IEC62443	-	-
SECURITY			
Programming	WEB SERVER	Web Server, EASY SETUP 2	
VPN Management Software	OpenVPN, VPN Client Communicator		
Management tools	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection), SMS network and IO management		
If Then Else Logic	Yes		
LET'S Support	Yes		
PLC Programming	IEC 61131-3 (Straton)		
Max # PLC variables/tags	1,000		
PLC program size	2048 kB		
ORDER CODES	Z-PASS2-RT-4G-S	R-PASS-0-4-S	R-PASS-W-4-S

The technical data and diagrams in this document are indicative and not binding.

	Z-PASS2-RT-4G-E	R-PASS-0-4-E	R-PASS-W-4-E
			
	IIoT Edge Gateway / 4G Router, GPS, SoftPLC Straton with energy protection	**Compact multifunction IIoT Gateway / SoftPLC Straton with energy protection, 4 Ethernet ports**	**Compact multifunction IIoT Gateway / SoftPLC Straton with Energy, Wi-Fi, 4 Ethernet ports**
GENERAL DATA			
Power Supply	11..40 Vdc	10..40 Vdc; 19..28 Vac	
Max Consumption	6 W	8 W	
Battery / UPS	-	With additional R-COMM module	
Max isolation	1.5 kVac	1.5 kVac	1.5 kVac
LED status indicators	Power, Run; I/O Status; VPN Status; VPN Connection; RX/TX serial communication; Ethernet Link/Traffic; 4G/LTE Level; Registered Modem; Data Connection; GPS; Battery; Modem Power	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; I/O Status	Power; Log; Status; Serial Communication; Ethernet Communication; VPN Connection; Wi-Fi Communication I/O Status
Protection class	IP20		
Connections	Removable terminal block, 3.5 mm pitch, 1.5 mm^2 cable section		
	IDC10 power/bus connector	-	
Flash Memory (data)	≥4 GB		
RAM	512 MB		
Slot for SD card	Yes, Max 32GB	-	
I/O Channels	#6 DI/DO configurable, #2 AI (mA,V)	#4 DI, #4 DO, #2 AI (mA, V)	
Operating temperature	-25..+65°C	-20..+65°C	
Dimensions (WxHxD)	52.5 x 102.5 x 111 mm	106 x 90 x 32 mm	
Weight	Approximately 270 g	170 g	
Enclosure	PA6 fiberglass reinforced, black color	PC / ABS self-extinguishing material UL94-V0, black color	
Installation	For 35 mm DIN rail IEC EN 60715	On DIN rail EN 60715, wall / panel mounted	
Certifications	CE, UKCA		
GENERAL DATA			
Ethernet Ports (ETH1, ETH2)	#2 Fast Ethernet 10/100Tx ports with front RJ45 connector	#4 Fast Ethernet 10/100Tx ports with front RJ45 connector	
Serial ports (COM1, COM2, COM4)	#1 RS232 / RS485 port on terminals, max baud rate 115kbps		
	#1 RS485 port, max baud rate 115kbps via terminals		
	#1 RS485 port, max baud rate 115kbps via IDC10 connector for bus and terminals	-	-
USB Ports	#1 USB host port on side type A connector	#1 USB host port on side type A connector	
	#1 micro USB port for debugging		
CAN Port	#1 CAN port (terminals)		
Modem	Multiband M2M/IoT, 4G / LTE World Wide	Optional (R-COMM)	
Sat Receiver.	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS	-	-
Wi-Fi	-	-	Integrated WiFi 802.11 b/g/n, band 2.4 ÷2.4835GHz, max Output Power: 17dBm (50 mW), security WEP / WPA / WPA2
Serial protocols	ModBUS TCP server, ModBUS RTU master/slave, FTP/SFTP server, HTTP/HTTPS server, SNMP	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTPs client, Samba	
IoT Protocols	MQTT, MQTTs, OPC UA Server, https, http post		
Energy Protocols	IEC60870-101 Master / Slave IEC60870-104 Client / Server IEC61850 Client/Server		
Connectivity	Max TCP-IP Clients 50, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area for 2,000 variables (tags)		
SECURITY			
Authentication	Two-factor authentication (Google Authenticator)	User / Password	
Permission Management	Supervisor / Users / Groups	Supervisor	
Encryption algorithm (data encryption)	OpenVPN AES-256bit-CBC + Auth SHA256 bit or user-selectable	OpenVPN BF-CBC + Auth SHA1	
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS	
SSL/TLS Certificates	Automated TLS certificate management for HTTPS	-	-
Cybersecurity certificates (penetration test)	Yes, OWASP, NIST 800-115, Risk Analysis, IEC62443	-	-
SECURITY			
Programming	WEB SERVER	Web Server, EASY SETUP 2	
VPN Management Software	OpenVPN, VPN Client Communicator		
Management tools	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection), SMS network and IO management		
If Then Else Logic	Yes		
LET'S Support	Yes		
PLC Programming	IEC 61131-3 (Straton)		
Max # PLC variables/tags	1,000		
PLC program size	2048 kB		
ORDER CODES	Z-PASS2-RT-4G-E	R-PASS-0-4-E	R-PASS-W-4-E

The technical data and diagrams in this document are indicative and not binding.

7" touchscreen HMI with gateway, datalogger, remote assistance, and integrated I/O functions

HARDWARE
- Power supply 24Vac/dc
- Flash Memory 2 / 4 GB
- #2 DI/DO
- Protection degree: IP64 with membrane
- Operating temperature -20..+60°C

DISPLAY
- Display 7" TFT, 16M colors
- Capacitive multitouch
- Resolution 800x480 pixels
- Standard widget display
- Display on Display
- Remote display

STANDARD COMMUNICATION
- "2 Fast Ethernet ports
- #2 serial ports
- #2 USB ports
- ModBUS RTU
- ModBUS TCP-IP
- Max 32 TCP-IP clients, 2000 tags, 128 slave nodes ModBUS
- Max 244 slave nodes (128 on a single serial without repeater)

CONFIGURATION
- Integrated Web Server
- Widget library
- VPN management software
- Network management software (SDD, SESC)
- DIP switch factory reset
- Firmware update via web or USB pen (Fat32)

IIOT PROTOCOLS
- MQTT
- OPC UA
- http post, https
- FTP / SFTP
- Cloud support
- OpenVPN / SSL

CYBERSECURITY
- Data Encryption: Blowfish — Blowfish (128bit) in CBC mode
- Data Authentication: SHA1 — HMAC using Secure Hash Algorithm (160bit)
- Certification authority provided by VPN BOX
- Handshake Encryption: TLSv1/SSLv3 RSA- 2048 — 2048bit Ephemeral Diffie-Helman (DH)
- Service Channel: TLSv1/SSLv3 2048bit certificate

TECHNICAL DATA

HMI DATA	
Screen	7" LCD TFT backlit, scratch-resistant glass
Resolution	800 x 480 pixels
Format	16/9
Brightness	350 cd/m2
Colors	16 M
Touchscreen	Capacitive
Durability	30,000 h (backlight level 5)
Viewing angles	70° / 50° / 70° / 70° (Top, Bottom, Left, Right)
Display Functionality	Standard widget-based display Remote display (on PC and devices with any O.S.) Display on Display (display emulation)
GENERAL DATA	
Power Supply	24 Vdc/ac +/- 10%
Consumption	AC: Max. 16 VA, 10 W; DC: Max. 9 W
Status Indicators	Ethernet Link and Traffic
Connections	#1 Removable terminal block, 3.5 mm pitch, 10 ways
Protection class	IP64 (front panel with membrane)
Operating temperature	-20 °C..+60 °C
Dimensions (WxHxD)	192 x 127 x 32 mm
Panel cutout dimensions (WxH)	157x102 mm
Weight	Approximately 420 g
Enclosure	ABS, black color
Installation	Via mounting brackets or wall mount
COMMUNICATION	
Ethernet Ports	#2 Fast Ethernet 10/100Tx ports on the rear RJ45
Serial Ports	#1 switchable RS232 / 485 serial port, max 115k #1 RS485 port, baud rate max 115kbps
USB Ports	#1 USB OTG port #1 serial USB port for software debugging
WiFi Module	WiFi 802.11 b/g/n, frequency band 2.4 to 2.4835 GHz
Protocols	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/SFTP Server/Client, HTTP/HTTPS server, OpenVPN, SSL, MQTT, OPC UA, HTTP post
Operating Modes	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunneling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, WiFi router, network redundancy unit, VPN remote assistance/ Remote Control module, microcontroller, LAN/WAN separator
I/O	
Configurable DI/DO	#2 digital channels (PNP inputs with internal power)
PROCESSING & MEMORY	
Processor	ARM 800 MHz
Flash Memory (data)	2 / 4 GB
RAM	512 GB
Micro SD card	no
SECURITY	
Data Encryption	Blowfish — Blowfish (128bit) in CBC mode
Data Authentication	SHA1 — HMAC using Secure Hash Algorithm (160bit)
Handshake Encryption	TLSv1/SSLv3 RSA-2048 — 2048bit Ephemeral Diffie-Helman (DH)
Service Channel	TLSv1/SSLv3 2048bit certificate
Web server authentication	Yes
Security Protocols	OpenVPN, SSL
SETTINGS & SOFTWARE	
DIP Switch	Factory reset
Web server	Yes, status information, setup, alarms, charts, widgets
VPN Management Software	VPN BOX Manager, OpenVPN, VPN Client Communicator
SDD (Seneca Discovery Device)	Yes
SESC (Seneca Ethernet to Serial Connection)	Yes
Firmware update	From web page or USB stick (FAT32)
STANDARDS	
Marking / Certifications	CE
Standards	EN 300328, EN 301489-17, EN 301489-1, EN 60368-1, EN 62311

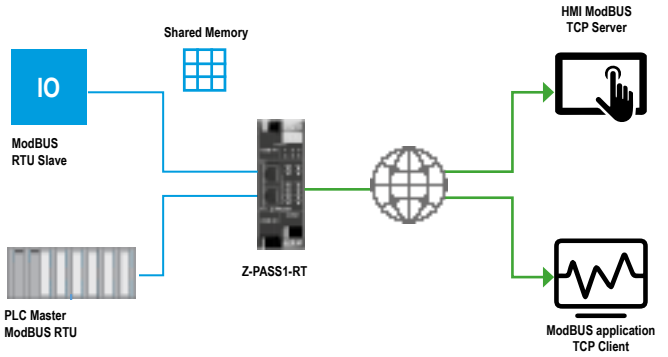
ORDER CODES

Code	Description
HMI MULTIFUNCTION	
SSD-0-0-0-0	Advanced HMI touchscreen with integrated I/O
SSD-0-L-0-0	Advanced HMI touchscreen with logic and I/O
SSD-0-0-V-0	Advanced HMI touchscreen with VPN and I/O
SSD-0-0-0-I	Advanced HMI touchscreen with IIoT and I/O
SSD-0-L-V-0	Advanced HMI touchscreen with logic, VPN, and I/O
SSD-0-L-0-I	Advanced HMI touchscreen with IIoT, logic, and I/O
SSD-0-0-V-I	Advanced HMI touchscreen with IIoT, VPN, and I/O
SSD-0-L-V-I	Advanced HMI touchscreen with IIoT, logic, VPN, and I/O
UPGRADE	
SSD-UPG-L	SSD - Upgrade "logic" functions
SSD-UPG-V	SSD - Upgrade "VPN" functions
SSD-UPG-I	SSD - Upgrade "IIoT" functions
SSD-UPG-L-V	SSD - Upgrade "logic" and "VPN" functions
SSD-UPG-L-I	SSD - Upgrade "logic" and "IIoT" functions
SSD-UPG-V-I	SSD - Upgrade "VPN" and "IIoT" functions
SSD-UPG-L-V-I	SSD - Upgrade "logic," "VPN," and "IIoT" functions
VPN SERVER	
VPN BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/lets-connectivity-solutions/modulo-server-di-connettivita/vpn-box
IOT/CLOUD SOLUTION	
CLOUD BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/soluzioni-iot-scada-cloud/cloud-box
SOFTWARE TOOL	
SDD	SENECA Discovery Device, IP scanner
SESC	SENECA Ethernet to Serial Connection
ACCESSORIES	
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CU-A-MICRO-OTG	Micro USB OTG to USB Type A female adapter cable
MSD	Micro SD memory card with adapter

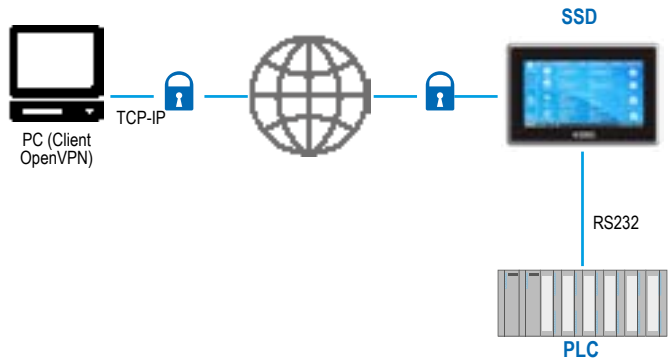
The technical data and diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS

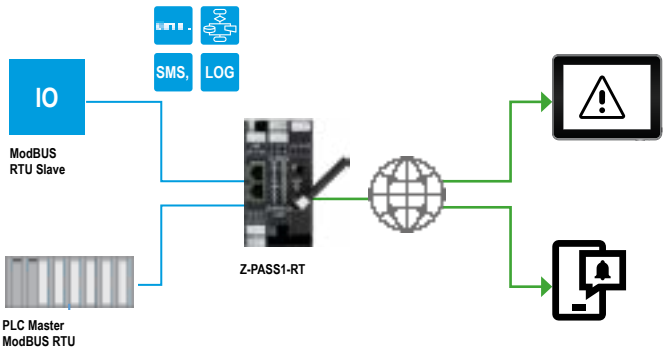
GATEWAY MODBUS SHARED MEMORY



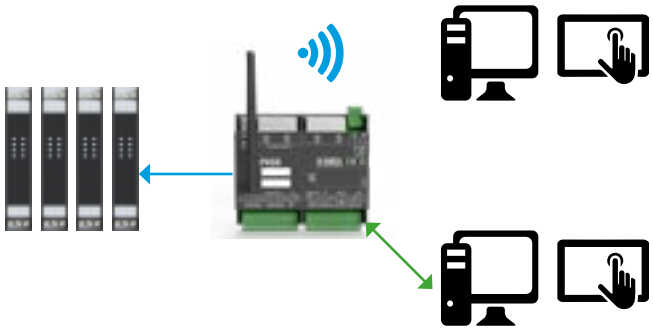
TRANSPARENT GATEWAY



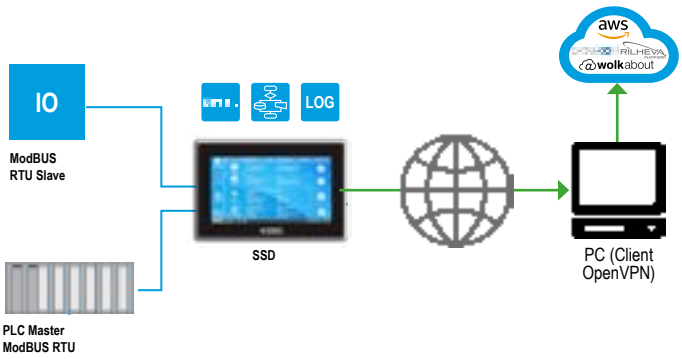
REMOTE ALARM



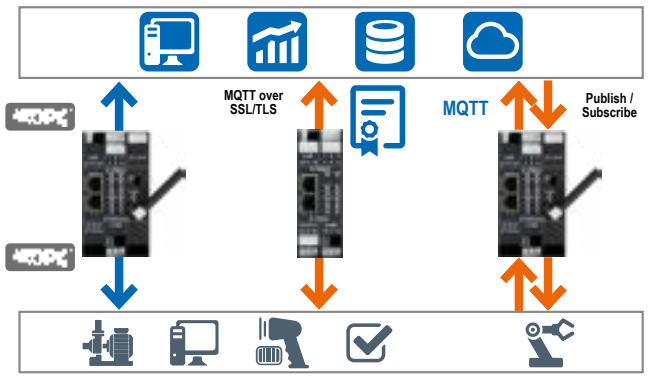
WI-FI Gateway



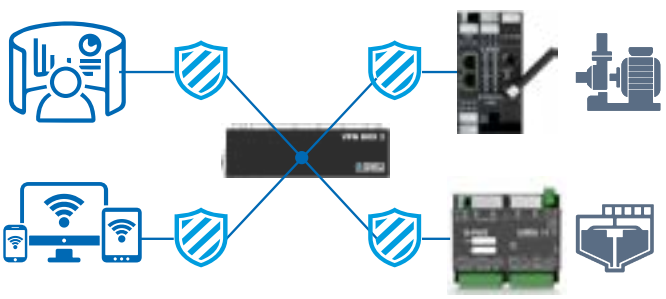
DATALOGGER / CLOUD GATEWAY



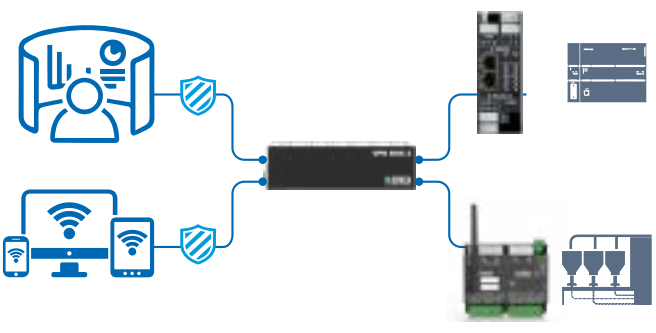
IIOT Connections



Remote Control SINGLE LAN



Remote Assistance POINT-TO-POINT



2.6

REMOTE ASSISTANCE AND REMOTE CONTROL VPN PLATFORM

VPN IIOT platform FOR REMOTE ASSISTANCE AND REMOTE CONTROL

LET'S is SENECA's VPN - IIoT platform that reduces maintenance costs for machine and plant automation and management applications, offering an integrated connectivity service at 3 levels: remote data access, programmable control, and network monitoring. Based on the VPN BOX Server module, LET'S enables "Always ON" connections (Remote Control / Single LAN mode) for plant supervision and "On Demand" connections (Remote Assistance / Point-to-Point mode) for third-party machines and devices and for maintenance or data collection services. Communication from a PC or mobile device takes place via desktop software or VPN Client Communicator APP. The industrial VPN – IoT gateways of the LET'S platform extend serial networks over Ethernet while also supporting complex architectures and safety-critical applications. The Z-PASS2-RT model, with an integrated 4G LTE modem, also functions as a router, DynDNS Server, and redundant communication device. SSD (Surprise Smart Display) is a versatile device that includes gateway, datalogger, alarm management, Wi-Fi router, and remote assistance / remote control functions, even in the Cloud. One of the platform's main innovations is integrating remote access functions with programmable automation through IEC 61131-3 based SENECA controllers. For energy management applications, LET'S controllers also support IEC 60870-5-101, IEC 60870-5-104, and IEC 61850 protocols.

MULTIFUNCTION CLIENT
LET'S Client devices perform gateway, datalogger, alarm management, LAN/Wi-Fi/4G router functions with DynDNS and NAT 1:1 support, control, remote assistance, and remote control.

REMOTE ALARM
LET'S devices send configurable alarms from the Web Server, associated with integrated I/O or Modbus tags, and send SMS/Email/notifications using HTTP, MQTT protocols, or control logic.

IN-HOUSE SERVER
Server connectivity module (HW or Virtual machine) compatible with LET'S client devices in Point-to-Point and Single LAN modes.
VPN BOX 2 offers advanced technologies and security standards validated by penetration testing.

OPC UA
OPC UA is a standard for cross-communications based on the client-server principle via a platform-independent architecture. LET'S gateways and controllers operate as OPC UA Servers offering interoperability, scalability, security, and centralized data management.

THIRD-PARTY PLC SUPPORT
LET'S devices are compatible with the most popular PLCs, supporting numerous fieldbus systems including the Siemens S7 protocol for IoT communications.

MQTT
LET'S devices open up to the IoT world thanks to the support of the MQTT protocol (Message Queue Telemetry Transport), ideal for real-time data transmission and M2M connections. The MQTT Client configuration is performed via Web Server.

CONTROL LOGIC AND SOFTPLC
LET'S gateways/routers perform microcontrol functions with an integrated set of if-then-else instructions. Remote controllers are real SoftPLC based on IEC 61131-3 Straton.

EXTENDED CONNECTIVITY
With Fast Ethernet and serial ports, LET'S products support fieldbus and IT systems. The wireless models also feature 4G LTE routers with integrated GPS/GNSS and/or 2.4 GHz Wi-Fi 802.11 b/g/n.

REMOTE ACCESS
Remote access clients for machines and plants interact with the VPN BOX 2 server, with which it is possible to implement Point-to-Point and Single LAN connections to the field or create virtual networks.

FLEXIBLE CONFIGURATION
Thanks to the web server, VPN tools, and integrated programming environments, diagnostics, security, connection checks, data acquisition, and alarm signaling are guaranteed with maximum flexibility.

DATALOGGING
LET'S clients also operate as a real-time multivariable DAQ system capable of handling up to 1000 log files / 100,000 samples and transferring them via USB stick, FTP server, email, HTTP post, MQTT.

CYBERSECURITY
The LET'S platform ensures advanced cybersecurity requirements, from two-factor authentication to automated TLS certificate management for HTTPS, and is certified through penetration testing.

PROGRAMMING REMOTE SOFTWARE UPDATE

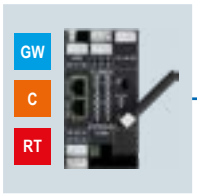
ASSET MANAGEMENT

REMOTE MONITORING AND KPI ANALYSIS

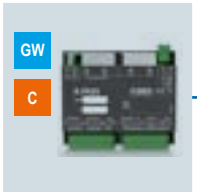
PLANT REMOTE CONTROL

REMOTE MACHINERY ASSISTANCE

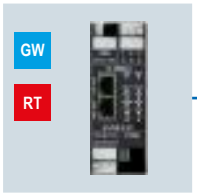
PREDICTIVE MAINTENANCE AND DIAGNOSTICS



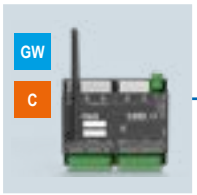
Z-PASS2-RT



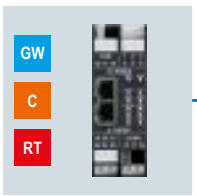
R-PASS



Z-PASS1-RT



R-PASS-W



Z-TWS4-RT

SSD (SURPRISE SMART DISPLAY)

LET'S IIoT CONNECTIVITY SOLUTIONS

IoT / VPN Connectivity Server Infrastructure based on VPN BOX 2 (Hardware or Virtual Machine)

wmvare

- Centralized configuration
- IIoT / Industry 4.0 ready
- State-of-the-art cybersecurity (certified penetration test)
- Simultaneous connection management
- Firewall-friendly architecture
- Available in Hardware and Virtual Machine versions

SCADA / Control Room

Data Center

IoT / Cloud Platforms

Mobile access

Remote programming

GW Gateway/Router

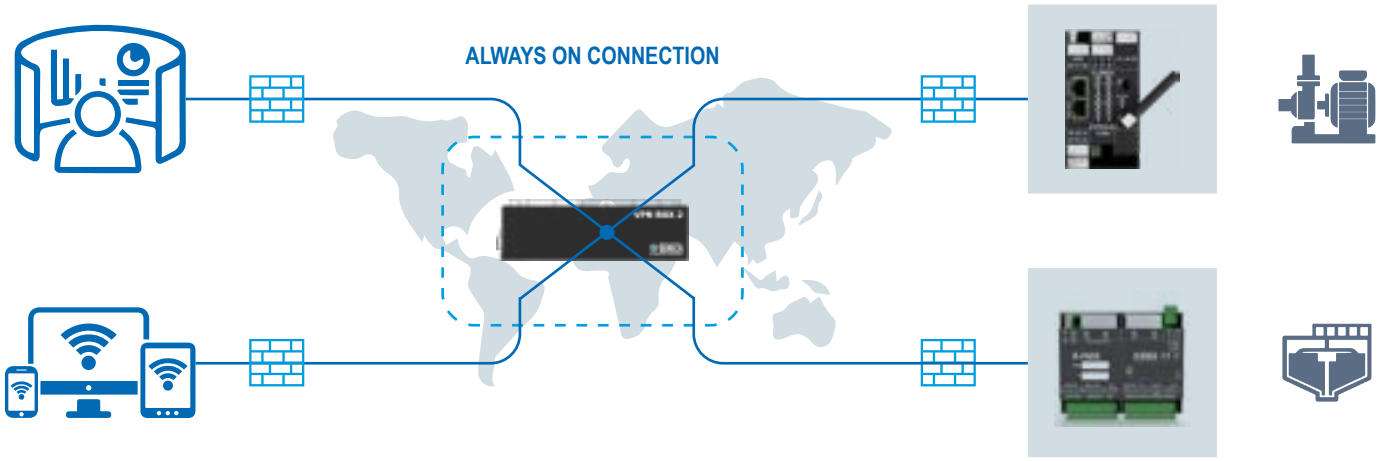
C IEC 61131-3 controllers

RT "Real-time" devices

SIMULTANEOUS OPERATIVE MODES

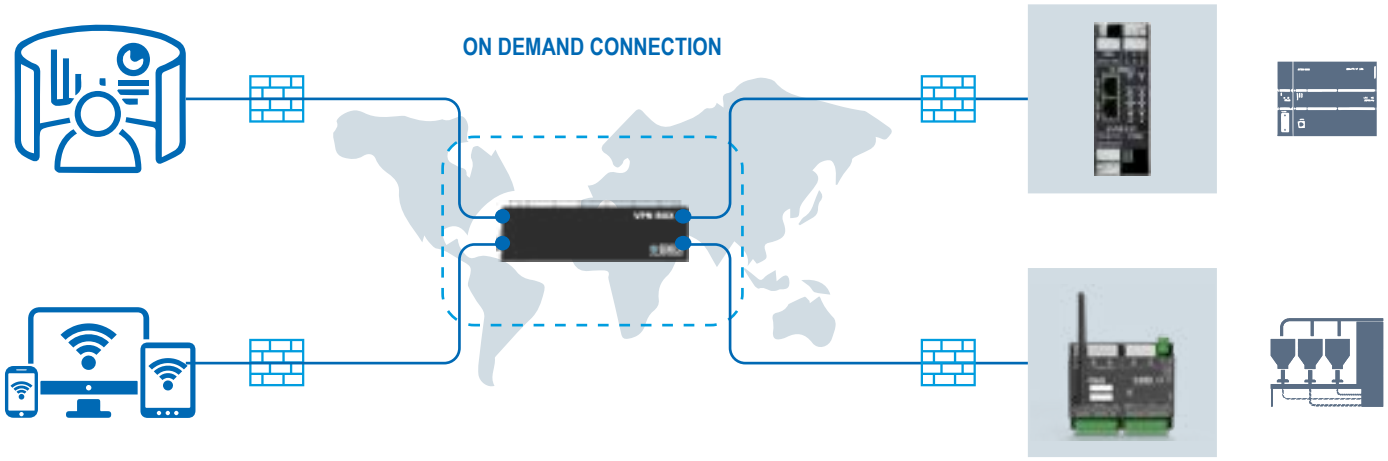
SINGLE LAN - REMOTE CONTROL

In Remote Control / Single LAN mode (always-on connection), VPN BOX functions as a network server to which a static and public IP is assigned. Communication is simultaneous and always active between all remote sites and the server, as well as between the various subnets that are part of the overall system. This type of connection is ideal for real-time monitoring and implementing a unified supervision system.



POINT-TO-POINT – REMOTE ASSISTANCE

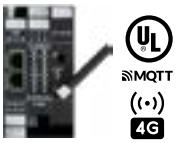
In Remote Assistance / Point-To-Point mode (on-demand connection), VPN BOX functions as a concentrator and establishes point-to-point communication between a PC (or mobile device) and the machine/plant. It also requires the assignment of a static and public IP or potentially a DynDNS address. This type of connection is ideal for remote maintenance and diagnostics applications, allowing multiple types of users/plants with different access profiles to coexist.



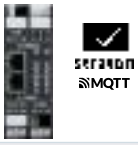
	Single LAN / Remote Control	Point-To-Point / Remote Assistance
Typical Applications	Monitoring, maintenance, supervision, data acquisition, local automation, alarms	Maintenance, diagnostics, plant startup, real-time customer assistance
Connection Types	Always ON Simultaneous and always active across all remote sites. Connection between different networks (e.g., 192.168.30.x, 192.168.40.x…) via VPN.	ON Demand P2P connection between user's PC / mobile device and the device / machine. On request and not simultaneous for the different sites.
Communication between VPN subnets	Yes, plants are visible / accessible by all VPN clients.	No, different plants for different users.
Subnet access	Via local addresses	Via local addresses / Layer 2 support
Multi-user management	No	Yes
Network configurations	Different configurations for different sites to avoid network conflicts.	Same for all sites (e.g., 192.168.20.x)
Supported SIM	.	.
Benefits	• Remote access to different LANs • Ability to query devices as if on-site (local) • Integration of heterogeneous networks	• Reduction of logistics and maintenance costs • Remote machine control • Multi-level user profiling and by individual plant

THE PLATFORM

VPN CLIENT / IIoT GATEWAY / ROUTER

	Z-PASS1-RT	Z-PASS2-RT	R-PASS	R-PASS-W	SSD
					
Versions	ModBUS / Ethernet (Real-Time)	ModBUS / Ethernet / 4G-LTE (Real-Time)	ModBUS / Ethernet	Wi-Fi	ModBUS / Ethernet / Wi-Fi
Integrated I/O	6DI/DO, 2AI	6DI/DO, 2AI	4DI, 4DO, 2AI	4DI, 4DO, 2AI	2DIDO
HMI	Web App				
Max # VPN Clients	500				
Protocols	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/SFTP Server/Client, HTTP/HTTPS server, MQTT, OPC UA, http post				
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher				
ModBUS / Shared Memory / Transparent Gateway	✓	✓	✓	✓	✓
Serial Device Server	✓	✓	-	-	-
Datalogger	✓	✓	✓	✓	✓
Alarm management	✓	✓	✓	✓	✓
Serial sniffer	✓	✓	✓	✓	✓
(NAT1:1) Static / LAN Router	✓	✓	-	-	-
Wi-Fi Router / AP	-	-	-	✓	✓
4G/LTE Router	-	✓	-	-	-
Remote Assistance / Remote Control VPN	✓	✓	✓	✓	✓
Microcontroller (If-then-else)	✓	✓	✓	✓	✓
LAN/WAN Switch	-	-	✓	✓	✓

VPN CLIENT / IIoT MULTIFUNCTION STRATON CONTROLLER

	Z-PASS2-RT-S	Z-TWS4-RT	R-PASS-S	R-PASS-W-S	S6001-RTU
					
Fast Ethernet ports	2	2	2 (4)	2 (4)	1
Serial Ports	3	3	3	3	3
USB Ports	1	1	2	2	1
Integrated I/O	6 DI/DO, 2AI	6 DI/DO, 2AI	4DI, 4DO, 2AI	4DI, 4DO, 2AI	15+2DI, 4AI, 8DO, 3AO
Modem/Router	4G/LTE	(Optional external)	Optional external (R-COMM)	Optional external (R-COMM)	4G/LTE
Programming environment	Z-NET4, Web Server, EASY SETUP 2				
Max # variables / tags	1000				
Program Size	2048 kB				
Diagnostics	WEB SERVER				
Protocols	ModBUS RTU/TCP-IP/ASCII, ModBUS TCP-IP, S7 Protocol, M-BUS, (S)FTP Server, HTTP(s) Server, SMTP(s) Client, SNMP, SAMBA, OPC UA/DA Client / Server, MQTT(s), http(s) post.				
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher				
Energy Protocols (Optional)	IEC 60870-101 Slave, IEC 60870-104 Master / Slave, IEC 61850 Client / Server.				
SoftPLC IEC 61131-3	✓	✓	✓	✓	✓
Energy Controller	✓	✓	✓	✓	✓
Datalogger	✓	✓	✓	✓	✓
Gateway	✓	✓	✓	✓	✓
LAN Router	✓	✓	✓	✓	✓
Wi-Fi Router	-	-	-	✓	-
4G/LTE Router	✓	-	-	-	✓
Remote assistance / remote control unit	✓	✓ (with external router).	✓	✓	✓
LAN/WAN Switch	-	-	-	-	✓

THE PLATFORM

SERVER INFRASTRUCTURE

- Hardware appliance or virtual machine
- Firewall friendly
- Simultaneous LAN / P2P management
- Automated firmware updates and backups
- Compliance LTS, 2FA, OpenVPN
- Flexible license management
- Full log management
- Supported products: R-PASS, R-PASS-S, SSD, Z-PASS1-RT, Z-PASS2-RT, Z-TWS4-RT, Z-PASS1, Z-PASS2, Z-TWS4

MULTILEVEL CYBERSECURITY

- Remote access lock with digital input
- LAN/WAN separation
- Two-factor authentication (Google Authenticator)
- Advanced permissions management (supervisor, users, groups)
- Data Encryption Algorithm (OpenVPN AES 256bit CBC + AUTH SHA 256bit or user-selectable)
- Security protocols: OpenVPN, SSL, HTTPS Server, MQTT Over TLS/SSL
- Automated TLS certificate management for HTTPS
- Certified penetration test (OASWAP, NITS 800 115, Risk Analysis, IEC 62443)

CONFIGURATION / PROGRAMMING

- Management Suite LET'S: Configuration, interface, and programming environments for complete remote monitoring project management
- Web Server (Network configuration, client, RTC, firmware updates)
- VPN Client Communicator (P2P/SINGLE LAN connections, credential-based access, automated certificate installation)
- OPEN VPN CONNECT (Client OpenVPN configuration, client authentication, support for TUN, TAP interfaces)
- STRATON (IEC 61131 SoftPLC automation logic, R/W functions from Siemens PLC with S7 Protocol).

VPN SCENARIOS

LET'S supports 3 main connection architectures based on the selected server infrastructure

1 - SENECA VPN BOX 2 Solution
HARDWARE APPLIANCE

2 - SENECA VPN BOX 2 Solution
VIRTUAL MACHINE

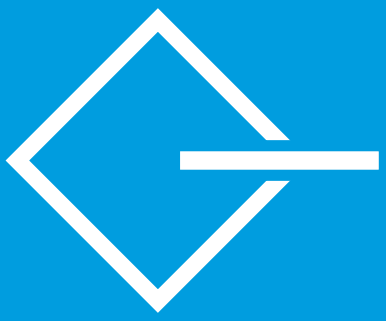
1 - Server-based solution
Open VPN

ORDER CODES

ORDER CODES	
Code	Description
VPN CONNECTIVITY SERVER	
VPN-BOX-2	PC Box - VPN server for simultaneous connections and low latency Point-to-Point / Single LAN.
VPN-BOX-2-D	VPN-BOX-2 Point-to-Point testing service valid for up to 30 days for max 2 devices.
VPN-BOX-2-VM	VPN-BOX-2 Virtual Machine
VPN-BOX-2-VM-D	VPN-BOX-2 Virtual Machine Point-to-Point / Single LAN max 2 devices.
VPN-CC-2	VPN Client Communicator, remote access software for VPN-BOX-2
VPN CLIENT / IIoT GATEWAY / ROUTER	
R-PASS-W-2-0	IIoT Edge Gateway with Wi-Fi and 2 Ethernet ports.
R-PASS-W-4-0	IIoT Edge Gateway with Wi-Fi and 4 Ethernet ports.
SSD-0-0-0-0	Advanced HMI touchscreen with integrated I/O
SSD-0-0-0-I	Advanced HMI touchscreen with IIoT and I/O
SSD-0-0-V-0	Advanced HMI touchscreen with VPN and I/O
SSD-0-0-V-I	Advanced HMI touchscreen with IIoT, VPN, and I/O
SSD-0-L-0-0	Advanced HMI touchscreen with logic and I/O
SSD-0-L-0-I	Advanced HMI touchscreen with IIoT, logic, and I/O
SSD-0-L-V-0	Advanced HMI touchscreen with logic, VPN, and I/O
SSD-0-L-V-I	Advanced HMI touchscreen with IIoT, logic, VPN, and I/O
Z-PASS1-RT	Industrial Gateway - Serial Device Server, integrated I/O, Real-Time.
Z-PASS2-RT-4G	4G real-time Gateway / Router, GPS and integrated I/O.

ORDER CODES	
Code	Description
VPN CLIENT / IIOT MULTIFUNCTION CONTROLLER	
R-PASS-0-2-E	Edge Controller IIoT Straton with Energy protocols and 2 Ethernet ports
R-PASS-0-2-S	Edge Controller IIoT Straton with 2 Ethernet ports
R-PASS-0-4-E	Edge Controller IIoT Straton with Energy protocols and 4 Ethernet ports
R-PASS-0-4-S	Edge Controller IIoT Straton with 4 Ethernet ports
R-PASS-W-2-E	Edge Controller IIoT Straton with Energy protocols, Wi-Fi, and 2 Ethernet ports
R-PASS-W-2-S	Edge Controller IIoT Straton with Wi-Fi and 2 Ethernet ports
R-PASS-W-4-E	Edge Controller IIoT Straton with Energy protocols, Wi-Fi, and 4 Ethernet ports
R-PASS-W-4-S	Edge Controller IIoT Straton with Wi-Fi and 4 Ethernet ports
Z-PASS2-RT-4G-S	4G real-time Remote Controller, GPS and integrated I/O.
Z-PASS2-RT-4G-E	4G real-time Remote Controller, energy protection, GPS and integrated I/O.
S6001-PC-4GWW	Pump controller with integrated I/O, 4G WW LTE, Straton programming system and 7" HMI
S6001-RTU-4GWW	All-in-one RTU with integrated I/O, 4G WW LTE modem, Straton
S6001-RTU-E-4GWW	All-in-one RTU with integrated I/O, 4G WW LTE modem, Straton, Energy protocols
Z-TWS4-RT-S	Multifunction IEC 61131 real-time controller, integrated I/O, Straton workbench.
Z-TWS4-RT-E	Multifunction IEC 61131 real-time controller, integrated I/O, energy protection. energy protection
SETTINGS AND PROGRAMMING	
EASY SETUP 2	SENECA programmable tool suite configurators
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-870-850	License: IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server
STRATON-870M	Activation License for IEC 60870-5-101/104 Master
STRATON-870S	Activation License for IEC 60870-5-101/104 Slave
STRATON-870S-850	License activation: IEC 60870-5-101/104 Slave + IEC 61850 Client / Server
STRATON-D-USB	Straton USB dongle
STRATON-IDE256	Straton 256 tag IDE with USB activation key
STRATON-IDE512	Straton 512 tag IDE with USB activation key
STRATON-IDEUN	Straton IDE unlimited tag - IEC 61131 development environment
Z-NET4	Z-PC Series I/O system and controller configurator

2.7



SERIAL/USB CONVERTERS

SERIAL CONVERTERS

	K107A	K107B	S107P
			
	Isolated serial repeater converter RS485 / RS48	**Isolated serial repeater converter RS232 / RS485**	**Portable RS232 - RS485/422 serial converter.**
GENERAL DATA			
Power Supply	19.2..30 Vdc; 22 mA (24 Vdc)	19.2..30 Vdc; 22 mA (24 Vdc)	9..12 Vdc (220 Vac power supply included)
Max Consumption	0.5 W	0.5 W	1 W
Isolation	1,500 Vac (3-way)	1,500 Vac (3-way)	1,000 Vac (RS232//RS485, power supply//RS485)
Status Indicators	Data Presence Reversed connection Power Supply	Data Presence Reversed connection Power Supply	Power Supply RTS signal status Data transmission Data reception
Protection class	IP20	IP20	IP20
Operating temperature	-20..+65°C	-20..+65°C	0..+55°C
Dimensions	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	100.5 x 50 x 24 mm
Weight	45 g	45 g	90 g
Enclosure	PBT, black	PBT, black	White self-extinguishing ABS
Connections	Spring terminals	Spring terminals	-
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
COMMUNICATION, PROCESSING			
Interfaces	RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	RS232B, protection up to 30 Vdc RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	RS232 DB9: RS485, 5-pole terminal block.
Operating modes	-	-	2-wire Half Duplex, 4-wire Full Duplex, point-to-point or multidrop.
Direction Change	Timed automatic	Timed automatic	Timed automatic, controlled by RTS RS232
Speed	Up to 250 kbps	Up to 250 kbps	Up to 115,200 bps
Protocol	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave
Distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
CONFIGURATIONS, STANDARDS			
Programming	DIP Switch	DIP Switch	DIP switch (speed, communication, direction change)
Standard	UL-UR, CE	UL-UR, CE	CE
ORDER CODES	K107A	K107B	S107P

	Z107	Z-4AI-D	Z-4TC-D
			
	Serial converter RS232 - RS485/422 For control panel	**A/D converter for 4 analog signals**	**A/D converter for 4 thermocouples**
GENERAL DATA			
Power Supply	19..40 Vdc, 19..28 Vac	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)
Max Consumption	2.5 W	2.5 W	2 W
Status Indicators	Power Supply RST signal status Data transmission Data reception	Power Supply RST signal status Data transmission Data reception	Power Supply RST signal status Data transmission Data reception
Protection class	IP20	IP20	IP20
Operating temperature	0..+55°C	0..+50°C	0..+50°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	200 g	200 g	200 g
Enclosure	Nylon 6 preloaded 30% fiberglass – V0 self-extinguishing class	Nylon 6 preloaded 30% fiberglass – V0 self-extinguishing class	Nylon 6 preloaded 30% fiberglass – V0 self-extinguishing class
Connections	Removable screw terminals for conductors up to 2.5 mm^2	Removable screw terminals for conductors up to 2.5 mm2	Removable screw terminals for conductors up to 2.5 mm^2
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
COMMUNICATION, PROCESSING			
Interfaces	RS232 on RJ45 connector on the front RS485/RS422, removable terminals, screw connection	RS232 (configuration)	RS232 (configuration)
Input	-	VOLTAGE (V) - 2..10 V full scale 16,000-point resolution - Impedance: 100 KΩ CURRENT (mA) ± 20 mA (bipolar) 16,000-point resolution - Impedance: 100 Ω	VOLTAGE ± 80 mV Impedance 10 MΩ Thermocouple Types: J, K, R, S, T, E; B, N
Output	-	4 digital channels from/to the control unit (1 configurable as clock or reset input)	4 digital channels from/to the control unit (1 configurable as clock or reset input)
CONFIGURATIONS, STANDARDS			
Programming	DIP switch (speed, communication, direction change)	PLC IEC 61131 libraries DIP switch (filter time, input time, scales, serial interface) Z-PROG (PC software)	PLC IEC 61131 libraries DIP switch (filter time, input time, scales, serial interface) Z-PROG (PC software)
Standard	CE	UL-UR, CE	UL-UR, CE
ORDER CODES	Z107	Z-4AI-D	Z-4TC-D

The technical data and diagrams in this document are indicative and not binding.

USB CONVERTERS

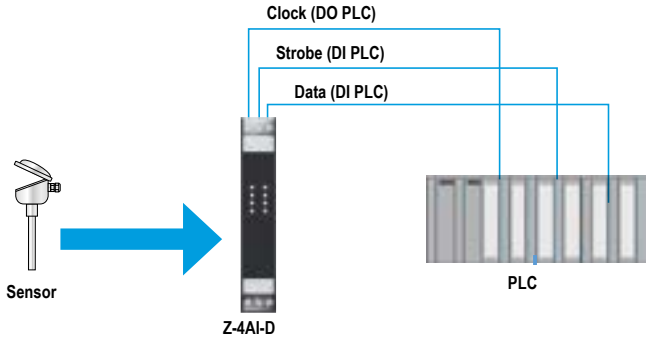
	K107USB	S117P1	S107USB
			
	Opto-isolated serial converter RS485 / USB (control panel version)	**Asynchronous serial converter RS232/USB, TTL/USB, RS485/USB**	**Opto-isolated serial converter RS485 / USB (portable version)**
GENERAL DATA			
Power Supply	Via PC USB port	Via PC USB port	Via PC USB port
Max Consumption	0.5 W	0.35 W	0.5 W
Isolation	1,500 Vac	1,500 Vac	1,500 Vac
Status Indicators	Data presence, reversed connection Power Supply	Power, Data transmission Data reception	Power, Data transmission Data reception
Protection class	IP20	IP20	IP20
THERMOMECHANICAL CHARACTERISTICS			
Operating temperature	-20..+65°C	-20..+65°C	0..+55°C
Dimensions	6.2 x 93.1 x 102.5 mm	90 x 50 x 25 mm	40 x 48 x 20.17 mm
Weight	45 g	50 g	ABS
Enclosure	PBT, black	ABS	ABS
Connections	Spring terminals	DB9 (RS232 connector) RJ10 (TTL connector)	5-pole terminal block
Mounting	35 mm DIN rail (IEC/EN 60715)	-	-
COMMUNICATION, PROCESSING			
Interfaces	RS485, 31 nodes, spring terminal Standard USB 1.0 and 2.0 interface, USB A and MINI USB B connectors, multiple connection on the same PC	RS232 USB 1.0, 1.1, and 2.0	RS485, termination and speed (from 1,200 bps to 250 kbps) adjustable Standard USB 1.0 and 2.0 interface, USB A and MINI USB B connectors, multiple connection on the same PC
Direction Change	Timed automatic	Timed automatic	Timed automatic
Speed	Up to 250 kbps	From 300 bps to 250 kbps	Up to 250 kbps
Protocol	ModBUS RTU slave	-	ModBUS RTU slave
Distance	Up to 1,200 m	-	Up to 1,200 m
CONFIGURATIONS, STANDARDS			
Programming	CD with driver, USB connection cable	CD driver support for Windows; Mac OS-X; Linux	CD with driver, USB connection cable
Certifications	CE	CE	CE
ORDER CODES	K107USB	S117P1	S107USB

	Z-MBUS	USB-ISO	EASY-USB
			
	RS232 Serial Adapter ↔ M-BUS	**Galvanic isolator USB**	**USB - UART TTL converter**
GENERAL DATA			
Power Supply	11..40 Vdc; 19..28 Vac	5V - 1A	From PC 5 V @ 100 mA
Max Consumption	0.5 W	-	0.35 W
Isolation	1,500 Vac	2,500 Vac	-
Status Indicators	Power supply Data transmission/reception on M-BUS port	Power Supply	-
Protection class	IP20	IP20	IP20
THERMOMECHANICAL CHARACTERISTICS			
Operating temperature	-20..+70°C	0..+50°C	-10..+65°C
Dimensions	100 x 17.5 x 112 mm	43 x 50 x 20 mm	84 x21 x 17 mm
Weight	140 g	25 g	-
Enclosure	Black glass-filled PA6 plastic, black color	ABS, black	PVC, transparent
Connections	3-way removable screw terminals, 5 mm pitch for cable up to 2.5 mm2 IDC10 rear connector	-	USB
Mounting	3-way removable screw terminals, 5 mm pitch for cable up to 2.5 mm² IDC10 rear connector	-	-
COMMUNICATION, PROCESSING			
Interfaces	#1 RS232 port on terminals M7-M8-M9 #1 Micro USB port on the front connector #1 M-BUS port (max 25 slave nodes)	#1 USB port (to MSC or other devices) #1 Mini USB port (to PC)	UART TTL serial, RJ11 connector USB, standard type A connector, USB 1.0, 1.1, 2.0 compatibility
Speed	From 300 bps to 250 kbps	Up to 250 kbps	From 300 bps to 250 kbps
Distance	3,000 m (M-BUS)	12 Mbps	-
CONFIGURATIONS, STANDARDS			
Programming	Web Server, SDD	CD with driver, USB connection cable	CD with driver, TTL connection cable
Certifications	CE	CE	CE
ORDER CODES	Z-MBUS	USB-ISO	EASY-USB

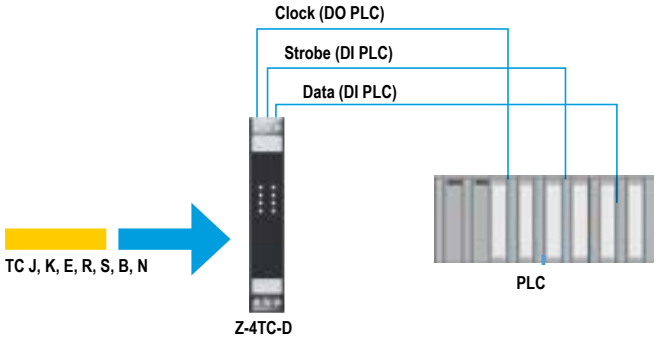
The technical data and diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS

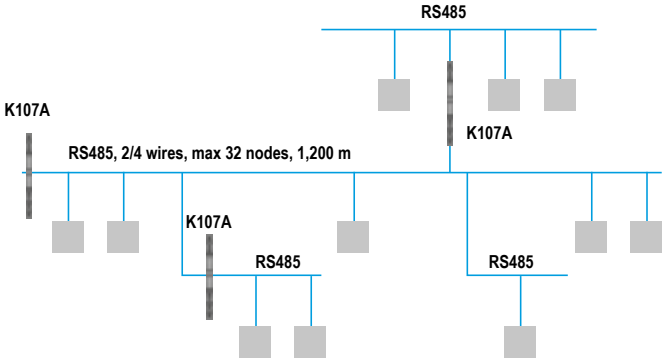
A/D conversion for mA/V input signals



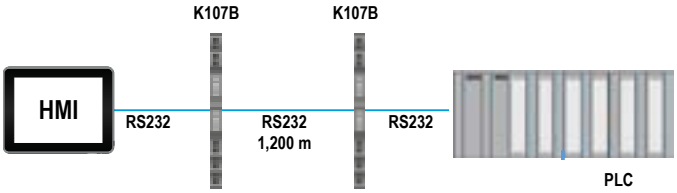
A/D conversion for thermocouples



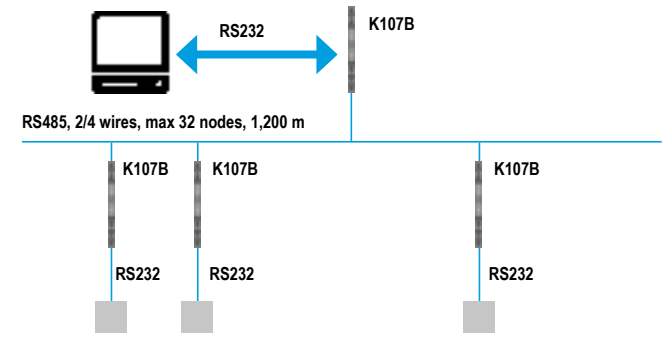
Connection of Multiple RS485 (ModBUS) serial lines with electrical isolation



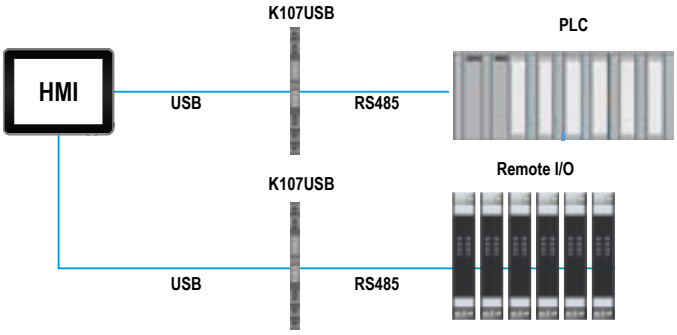
Bidirectional remote RS232 / RS485 transmission with electrical isolation



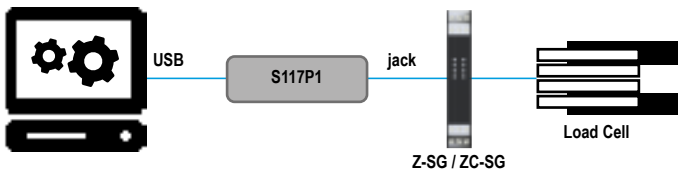
Bidirectional remote RS232 / RS485 transmission with electrical isolation for up to 32 nodes



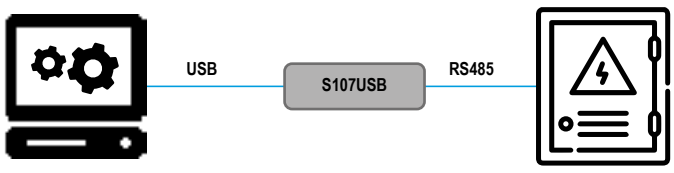
Multiple connection and data transmission with USB / RS485 electrical isolation



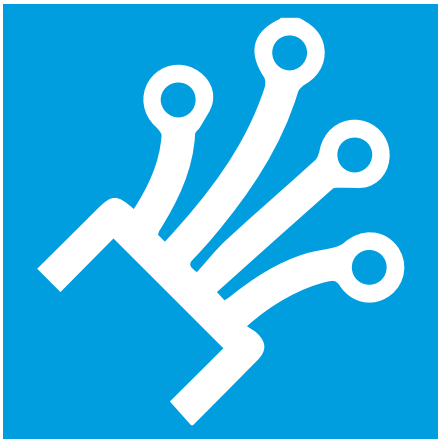
Configuration connection for strain gauge module



On-board diagnostics



2.8



FIBER OPTIC CONVERTERS

FIBER OPTIC CONVERTERS

SENECA's S232, S485, SETH, and SCAN fiber optic converters enable the extension of any type of network/bus (LAN/Ethernet, CAN, or serial) over optical fiber, even simultaneously.
They also guarantee high levels of safety and reliability. The modules allow the use of both single-mode and multi-mode fiber, ensuring a solid, reliable, and high-speed communication. The application of optical fiber ranges from industrial to civil environments, energy production plants, and telecommunications and control systems.

HIGHLIGHTS

HIGH-SPEED COMMUNICATION

NO NEED FOR PHYSICAL SEPARATION OF POWER AND DATA LINES

ABSOLUTE PROTECTION AGAINST ELECTRICAL SURGES

EASIER AND IMMEDIATE FIBER NETWORK DIAGNOSTICS

REAL-TIME DATA TRANSMISSION

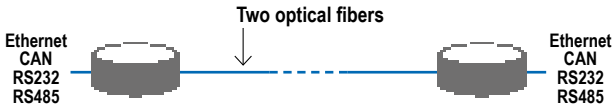
DURABLE COMMUNICATION MEDIUM

DISTANCE EXTENSION

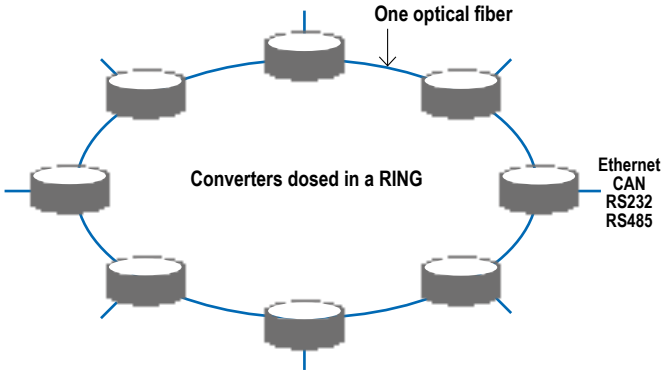
TOTAL IMMUNITY TO NOISE

CONNECTION TOPOLOGIES

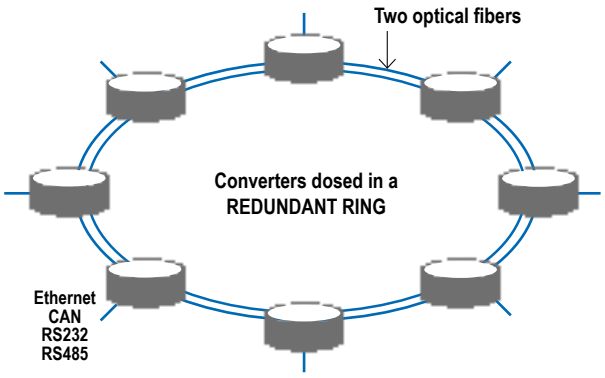
1. POINT TO POINT (LINKED DIRECTLY)



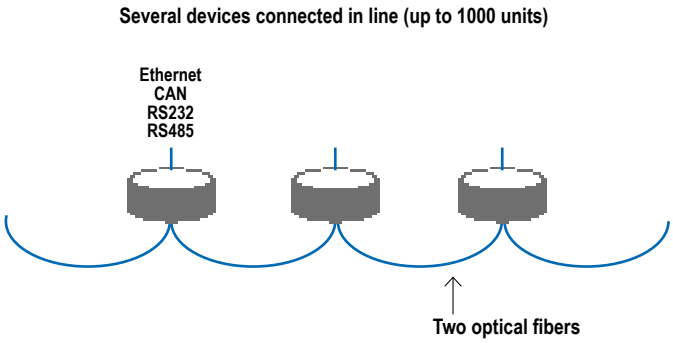
2. RING (SINGLE LOOP)



3. REDUNDANT RING (DOUBLE LOOP)



4. MULTI-DROP (IN-LINE)



	SERIAL CONVERTERS		BUS CONVERTERS	
	S232-FO	**S485-FO**	**SETH-FO**	**SCAN-FO**
				
	RS232 converter in single-mode/ multi-mode optical fiber single/ double loop	**RS485 converter in single-mode/ multi-mode optical fiber single/ double loop**	**Ethernet converter in single-mode/multi-mode optical fiber single/double loop**	**CAN converter in single-mode/ multi-mode optical fiber single/ double loop**
GENERAL DATA				
Power Supply	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac
Max absorption @24V	4 W	4 W	4 W	4 W
Isolation	4 kV on 3 paths	4 kV on 3 paths	4 kV on 3 paths	4 kV on 3 paths
Status Indicators	Optical fiber communication, serial communication, device status	Optical fiber communication, serial communication, device status	Optical fiber communication, Ethernet communication, device status	Optical fiber communication, CAN communication, device status
Operating temperature	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C
Dimensions (WxHxD)	71 x 95 x 60 mm	71 x 95 x 60 mm	71 x 95 x 60 mm	71 x 95 x 60 mm
Weight	200 g	200 g	200 g	200 g
Enclosure	PVC, white	PVC, white	PVC, white	PVC, white
Mounting	DIN 46277 guide	DIN 46277 guide	DIN 46277 guide	DIN 46277 guide
Programming	COMPOSITOR software (S232-FO-MONO) DIP Switch (S232-FO-MULTI)	COMPOSITOR software (S485-FO-MONO) DIP Switch (S485-FO-MULTI)	COMPOSITOR software	COMPOSITOR software
Integrated self-diagnostics	Yes	Yes	Yes	Yes
Compliance	CE	CE	CE	CE
COMMUNICATION				
Communication Ports	#1 isolated RS232	#1 isolated RS485	#1 Ethernet RJ45 port 100 Mbps, cat.7E cable	#1 CAN port
Topology	Single Loop (S232-SL- ...) Double Loop (S232-DL-...)	Single Loop (S485-SL- ...) Double Loop (S485-DL- ...)	Single Loop (SETH-SL- ...) Double Loop (SETH-DL- ...)	Single Loop (SCAN-SL-...) Double Loop (SCAN-DL- ...)
Max # of converters in series	1,000	1,000	1,000	1,000
Max # of independent networks	6	6	6	6
Fiber optics and connectors	Single-mode, LC/LC connectors (S232-FO-MONO) Multi-mode (62.5/125 or 50/125 µm), ST/ST connectors (S232-FO-MULTI)	Single-mode, LC/LC connectors (S485-FO-MONO) Multi-mode (62.5/125 or 50/125 µm), ST/ST connectors (S485-FO-MULTI)	Single-mode, LC/LC connectors (SETH-FO-MONO) Multimode, LC connectors (SETH-FO-MULTI)	Single-mode, LC/LC connectors (SCAN-FO-MONO) Multimode, LC connectors (SCAN-FO-MULTI)
Coverage	10 km (S232-FO-MONO) 2 km (S232-FO-MULTI)	10 km (S232-FO-MONO) 2 km (S232-FO-MULTI)	10 km (SETH-FO-MONO) 500 m (SETH-FO-MULTI)	10 km (SCAN-FO-MONO) 500 m (SCAN-FO-MULTI)
Interface and protocols	ModBUS RTU, transparent to communication protocols	ModBUS RTU, transparent to communication protocols	Ethernet, ModBUS TCP-IP, transparent to communication protocols	CAN (CAN 2.0, CANopen), transparent to communication protocols
Speed	From 1,200 to 115,200 bps	From 1,200 to 115,200 bps	10/100 MHz	From 5 kHz to 1 MHz

The technical data and diagrams in this document are indicative and not binding.

CONFIGURATION SOFTWARE

Through the **COMPOSITOR** software, freely downloadable from www.seneca.it, it is possible to configure projects and network parameters, identify the devices present on the network and their connections, as well as perform diagnostics and monitor the networks. Diagnostic registers can be easily read directly by SCADA and management software.

ORDER CODES	
SERIAL CONVERTERS	
S232-FO-MONO-SL	RS232 converters in single-mode fiber single loop
S232-FO-MONO-DL	RS232 converter in single-mode fiber double loop
S485-FO-MONO-SL	RS485 converter in single-mode fiber single loop
S485-FO-MONO-DL	RS485 converter in single-mode fiber double loop
S232-FO-MULTI-SL	Multi-drop fiber optic converter ↔ RS232 single loop
S232-FO-MULTI-DL	Multi-drop fiber optic converter ↔ RS232 double loop
S485-FO-MULTI-SL	Multi-drop fiber optic converter ↔ RS485 double loop
S485-FO-MULTI-DL	Multi-drop fiber optic converter ↔ RS485 single loop
ETHERNET CONVERTERS	
SETH-FO-MONO-SL	Ethernet converter in single-mode fiber single loop
SETH-FO-MONO-DL	Ethernet converter in single-mode fiber double loop
SETH-FO-MULTI-SL	Ethernet converter in multimode fiber single loop
SETH-FO-MULTI-DL	Ethernet converter in multimode fiber double loop
CAN CONVERTERS	
SCAN-FO-MONO-SL	CAN converter in single-mode fiber single loop
SCAN-FO-MONO-DL	CAN converter in single-mode fiber double loop
SCAN-FO-MULTI-SL	CAN converter in multimode fiber single loop
SCAN-FO-MULTI-DL	CAN converter in multimode fiber double loop
CABLES	
CU-A-MINIB-1	USB-A Mini USB-B 5P plug cable, 1 meter
CU-A-MINIB-2	USB-A Mini USB-B 5P plug cable, 2 meters
CE-RJ45-RJ45-C	Ethernet crossover cable (RJ45 / RJ45)
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
SOFTWARE	
COMPOSITOR	Configuration and test tool for fiber optic converters
FO TEST	Automatic test environment for fiber optic converters

2.9

RADIO MODULES

RADIO MODULES

THE RANGE

Leveraging its interface technology experience, SENECA's offering of radio modules and radio modems is one of the key elements of automation and communication systems, particularly in the transmission of signals over distances ranging from a few meters to tens of kilometers.
The use of radiofrequency devices allows distances of several kilometers to be reached with maximum reliability. It also enables remote control functions, remote device queries, and diagnostics in the field through point-to-point, multipoint, broadcasting, or signal repetition connections. Radio devices comply with the essential requirements of the Radio Equipment Directive (RED) 2014/53/EU and can be freely marketed within the European Union.




STRENGTHS

- Modulation NBFM / GFSK
- Interfaces RS232/RS485
- Wide power supply Vac/dc
- Integrated I/O
- Transmission power 25..500 mW
- Technologies ModBUS and LoRa
- Operating bands: 169 / 869 MHz
- Outdoor and harsh environment versions

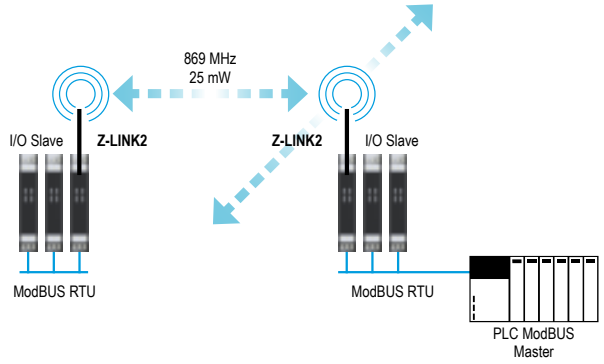
ANTENNA SELECTION

		Cable length	RM169-1	RTURADIO	Z-LINK2
	**A-169DV12**	5 m	1st choice for RM 169-1 code RM169-1-169DV12	1st choice for RM 169-1 code RTURA-DIO-169DV12	-
	**A-169DV12-10**	10 m	Alternative to A-169DV12	Alternative to A-169DV12	-
	A-169DV14	-	Alternative to A-169DV12	Alternative to A-169DV12	-
	A-169DV16	-	Alternative to A-169DV12	Alternative to A-169DV12	-
	**A-169YAGI**	10 m	Alternative to A-169DV12	Alternative to A-169DV12	-
	**A-GSM-MG**	3 m	-	-	Optional configu-rations available
	**A-STIL-D**	-	-	-	Included items

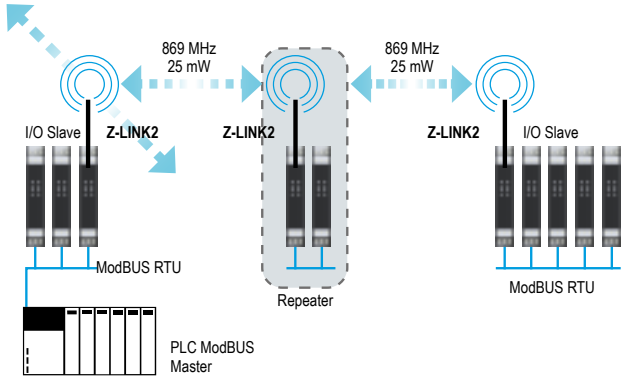
	Z-LINK2	Z-AIR-1	RM169-1	RTURADIO
				
	Wireless LoRa gateway / repeater	Simplex/half-duplex radio modem, 868 - 870 MHz, with integrated antenna, power supply 9-32 Vdc	169MHz radio modem, aluminum housing, RS232/RS485 interface	169MHz radio modem with integrated I/O (4DI, 2DO, 1 COUNT, RS485)
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac	9 – 32 Vdc	9 – 32 Vdc	9-32 Vdc with limited power source; 3.3-4.8 Vdc with battery power supply
Power for external modules	-	-	-	Yes
Max Consumption	1 W	30 mA (Rx) / 200 mA (Tx) @12Vdc	30 mA (Rx) / 200 mA (Tx) @12Vdc	30 mA (Rx) / 200 mA (Tx) @12VDC
LED Status Indicators	Power, data transmission via bus, data transmission via radio, installation test		On Air, On Data, IO status	On Air, On Data, IO status
Isolation	1,500 Vac	-	-	-
Hot swapping	Yes	No	No	No
Operating band		868 – 870 MHz	169.400 – 169.475 MHz	169.400 - 169.475 MHz
# of channels		1@CH50kHz; 3@CH25kHz	1@CH50kHz; 3@CH25kHz; 6@ CH12.5kHz	1@CH50kHz; 3@CH25kHz; 6@ CH12.5kHz
Channelization		25-50 kHz	12.5-25-50 kHz	12.5-25-50 kHz
Modulation		9K00F1D (@25 kHz channelization); 18K00F1D (@ 50 kHz channelization)	9K00F1D or 18K0F1D (NBFM / GFSK)	9K00F1D or 18K0F1D (NBFM / GFSK)
Data rate (radio)		9.6 kbps (@ 25 kHz channelization); 19.200 bps (@ 50 kHz channelization)	4,800 bps (@ 12.5 kHz channelization); 9.6 kbps (@ 25 kHz channelization); 19.200 bps (@ 50 kHz channelization)	4,800 bps (@ 12.5 kHz channelization); 9.6 kbps (@ 25 kHz channelization); 19.200 bps (@ 50 kHz channelization)
Encryption		AES 128 bit	AES 128 bit	AES 128 bit
RTC		-	Onboard encryption for custom applications	Onboard encryption for custom applications
Antenna		λ/2 integrated	λ/4 - λ/2 or 3-element Yagi	Short vertical whip antenna λ1/2 / λ1/4 / 3-element Yagi
Dimensions	17.5 x 100 x 112 mm	Ø 40 x L 320 mm	90 x 100 x 40 mm	140 x 110 x 50 mm
OPERATING TEMPERATURE	-10..+65°C	-30..+60°C	-30..60°C	-30..60°C
Weight	110 g	750 g	210 g	330 g
Enclosure	PA6, black color	Fiberglass	Aluminum casing	Aluminum casing
Protection class		IP65 (suitable for outdoor installations)	IP20	IP20
Mounting	Vertical position DIN rail 35mm IEC EN60715	Stainless steel wall mounting bracket (included)	On plate/wall	On plate/wall
Integrated I/O	-	-	#1 Digital Input, 5-24 Vdc or 3-20 Vac, Zinp. 2.2 kΩ (optoisolated) #1 Relay Output, N.O. 24 Vac @ 0.5 A or 32 Vdc @ 1 A	# 4 Digital Inputs, PNP 0-12 Vdc + 1 Counter 10 Hz # 2 Relay Outputs, N.O. 28 Vac @ 0.5 A or 60 Vdc @ 1 A #2 Analog Inputs (4-20 mA) #2 Analog Outputs (4-20 mA)
Connections	Removable screw terminals 3 ways, pitch 5 mm Rear IDC10 connector for DIN rail 46277 Standard front SMA connector for antenna			
Operating Modes	Bridge, Remote I/O, I/O repeater	Point-to-point, point-to-multipoint, broadcasting, digirepeater; routing table support for addressing	Point-to-point, point-to-multipoint, broadcasting, digirepeater; routing table support for addressing	Point-to-point, point-to-multipoint, broadcasting, Modbus (master/slave), routing table support for addressing
Programming	EASY SETUP, DIP-switch	RADIO SETUP	RADIO SETUP	RADIO SETUP
COMMUNICATION				
Interfaces	#1 RS232, # 1 RS485	RS485	RS232 / RS485	RS485
Protocol	ModBUS RTU, LoRa® (Z-LINK2, physical level) not compatible with Z-LINK1-LO	Transparent to the protocol (max 1024 bytes of buffer)	Transparent to the protocol (max 1024 bytes of buffer)	Modbus
Data speed		from 1.2 to 57.6 kbps	from 1.2 to 57.6 kbps	From 2,400 to 57,400 bps
Transmitter output power	25 mW	25/150/500 mW depending on the operational sub-band	50-150-500 mW	50-150-500 mW
Frequency deviation		±1.8 kHz @12.5 kHz / ±3 kHz @25 kHz	±1.8 kHz @12.5 kHz; ±3.8 kHz @25 kHz	±1.8 kHz @12.5 kHz; ±3.8 kHz @25 kHz
Output power stability		±1,5 dB		
Receiver type	Class 2	CLASS 2 - LBT and AGILITY	CLASS 2 - LBT and AGILITY	CLASS 1 - LBT and AGILITY
Receiver input sensitivity		BER <10-2 <-105dBm@50 kHz; <-107dBm@25 Khz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 kHz; <-110dBm@12.5 kHz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 kHz; <-110dBm@12.5 kHz
Coverage	Up to 1,000 m in open field	Up to 7 km in open field with directional antenna in a dominant position	Up to 10 km in open field with directional antenna	Up to 10 km in open field with directional antenna
STANDARD				
Approval	CE	CE	CE	CE
Standards	RED Directive (2014/53/EU), RoHS Directive (2011/65/EU), EN 62368-1+A11+AC, EN 62311, ETSI EN 300220-1 v.3.1.1, ETSI EN 300220-2 v.3.2.1, EN 55032+AC, EN IEC 61000-3-2, EN 61000-3-3+A1, EN 55024+A1, ETSI EN 301489-3 v.2.3.2, ETSI EN 301489-1 v.2.2.3	EN 50401, EN 60950-1, EN 301489-1/3, EN 300220-1/2 v 2.3.1, ERC 70-03, RED Directive 2014/53/EU, Directive 1999/5/EC, Directive 2012/19/EU	EN 300 220-1 v2.3.1, EN 300 220-2 v2.3.1, RED Directive 2014/53/EU	EN 300 220-1 v2.3.1, EN 300 220-2 v2.3.1, RED Directive 2014/53/EU

APPLICATION DIAGRAMS

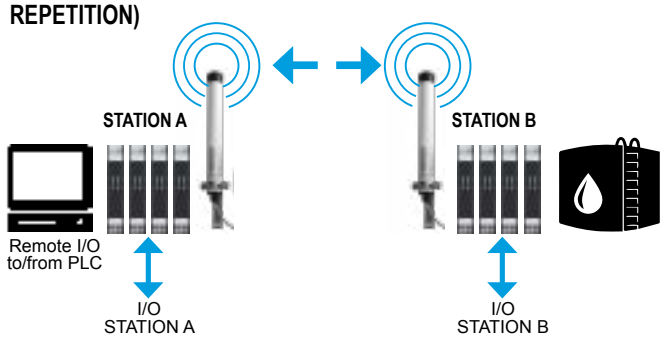
Z-LINK2
BRIDGE MODE (WIRELESS TRANSPARENT CONNECTION)



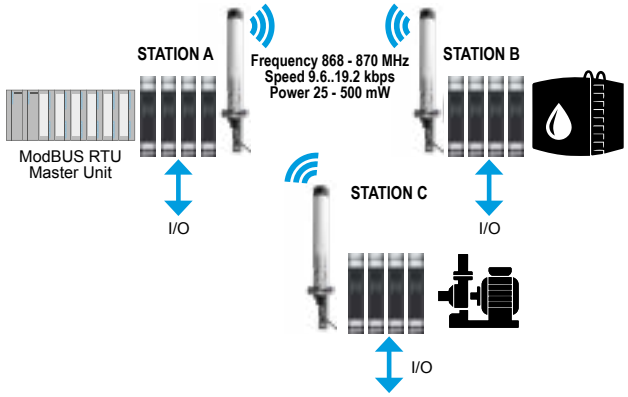
Z-LINK2 REPEATER MODE



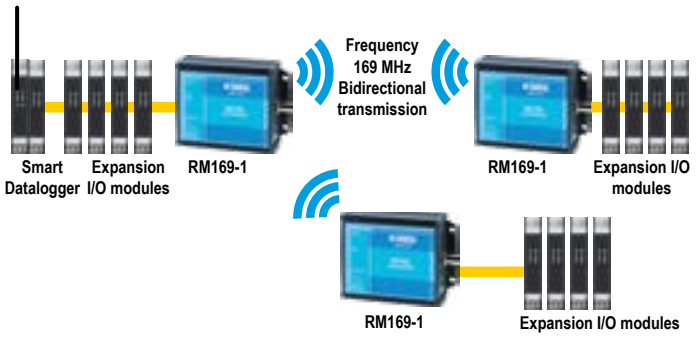
Z-AIR-1 POINT-TO-POINT DATA TRANSMISSION (E.G., I/O REPETITION)



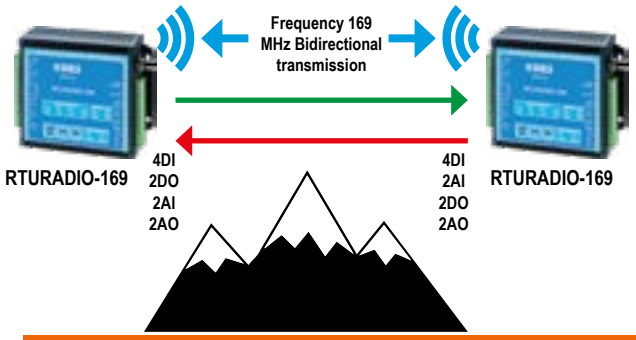
Z-AIR-1 POINT-TO-MULTIPOINT DATA TRANSMISSION



RM169-1 MODBUS I/O EXPANSION - POINT / MULTIPOINT



RTURADIO MIRRORING I/O - REMOTE SIGNAL REPLICATION



ORDER CODES

Code	Description
Z-LINK2	
Z-LINK2-LO	LoRa® WIRELESS GATEWAY / REPEATER
CS-RJ10-DB9F	RS232 serial cable (RJ10 / DB9F)
Z-PC-DIN2-17.5	Support for rapid mounting on DIN rail 2 slot, 17.5 mm pitch
Z-PC-DINAL2-17.5	Support for rapid mounting on DIN rail head + 2 slot, 17.5 mm pitch
ANT-LINK1-MG	External dual-band magnetic antenna SMA 4 dBi, 2.5 m cable
EASY SETUP 2	Configuration software
Z-AIR-1	
Z-AIR-1	868-870 MHz radio modem with integrated antenna, IP65 protection grade, RED directive
S107USB	Portable USB/RS485 Serial Converter
Z-AIR-1-SETUP	Z-AIR radiomodem configuration software
RM169-1	
RM169-1	169MHz radiomodem, 1DI, 1DO, RS485 with BNC F, RED
RM169-1-169DV12	169MHz radiomodem, 1DI, 1DO, RS485, dipole antenna, 5 m lambda/2, RED
RM169-1-DV12-10	169MHz radiomodem, 1DI, 1DO, RS485, dipole antenna, 10 m lambda/2, RED
RM169-1-169YAGI	169MHz radiomodem 0.2W, 1DI, 1DO, 1 RS485 + 3-element Yagi antenna (A-169DVYAGI) and 10 m RG58U cable
RM169-1-169DV14	169MHz radiomodem, 1DI, 1DO, RS485 + Yagi 3-element directional antenna, RED
A-169DV12	169MHz antenna, vertical dipole λ/2, BNC M, 5 m low-loss cable, mounting bracket
A-169DV14	169MHz antenna, vertical whip λ/4, BNC M, L=450 mm, no cable
A-169YAGI	169MHz antenna, 3-element Yagi, BNC M, 10 m low-loss cable, mounting bracket
RM169-SETUP	RM169 radiomodem configuration software

ORDER CODES

Code	Description
RTURADIO-169	
RTURADIO-169	RTU Radio 169MHz, 4DI, 2DO, 1 counter, 2AO, 2AI, RS485
RTURADIO-169DV14	RTU Radio 169MHz, 4DI, 2DO, 1 counter, 2AO, 2AI, RS485
RTURADIO-169DV12	RTU Radio 169MHz, 4DI, 2DO, 1 counter, 2AO, 2AI, RS485, dipole antenna, 5 m cable
RTURADIO-DV12-10	RTU Radio 169MHz, 4DI, 2DO, 1 counter, 2AO, 2AI, RS485, dipole antenna, 10 m cable
RTURADIO-169YAGI	RTU Radio 169MHz, 4DI, 2DO, 1 counter, 2AO, 2AI, RS485, Yagi antenna
S117P1	Serial converter RS232-TTL-RS485/USB portable
RTURADIO-SETUP	RTURADIO radiomodem configuration software
ANTENNAS	
A-169DV12	169MHz antenna dipole vertical λ/2, BNC M, 5 m cable
A-169DV12-10	169MHz antenna dipole vertical λ/2, BNC M, 10 m cable
A-169DV14	antenna 169MHz vertical whip λ/4, BNC M, L=450 mm
A-169DV16	169MHz ¼ λ antenna, length 45 cm, + BNC M
A-169YAGI	169MHz 3-element Yagi antenna, BNC M, 10 m cable

2.10

RADIO MEASUREMENT SYSTEMS

R-GWR

RADIO HUB LORA FOR WIRELESS SENSORS

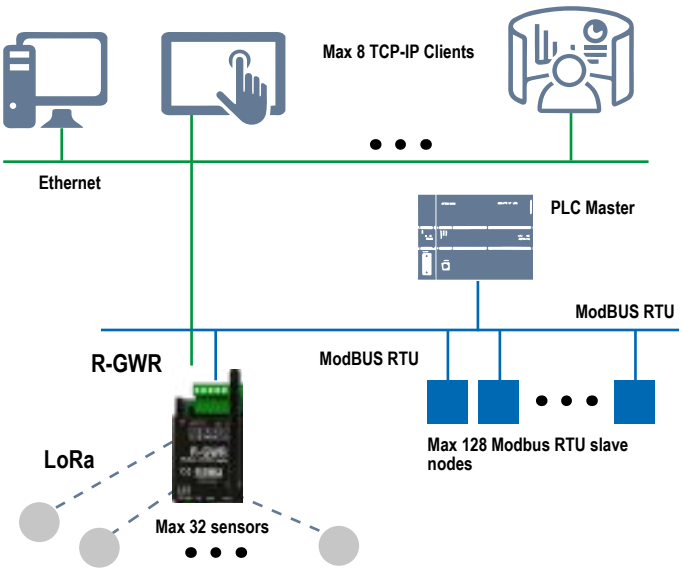
TECHNICAL DATA

GENERAL DATA	
Power Supply	10..40 Vdc; 19..28 Vac
Consumption	Max 1 W
Status Indicators	Power Supply Rx-Tx serial communications Assigned sensors Sensors in error
Protection class	IP20
Operating temperature	-20..+70°C
Connections	Screw terminals, 7-way removable screw terminal, 5 mm pitch Screw terminals, 2-way removable screw terminal, 5 mm pitch Ethernet Connector
Dimensions (WxHxD)	53.3 x 90 x 32.2 mm
Weight	80 g
Enclosure	PC / ABS self-extinguishing UL94-V0
Installation	On DIN rail IEC EN 60715 or wall-mounted
COMMUNICATION	
Ethernet Ports (ETH1, ETH2)	# 1 Fast Ethernet 100 Tx, RJ45 front Up to 8 TCP-IP Clients / Up to 10 TCP/IP Servers
Serial ports (COM1, COM2, COM4)	#1 serial port RS232 / RS485 switchable, max baud rate 115k on connector
Protocols	ModBUS TCP-IP, ModBUS RTU
Max # TCP-IP Clients (Server Mode)	8
Max # Modbus RTU Slave Nodes	128
WIRELESS	
Radio Technology	LoRa
Minimum measurement interval	30 seconds
Security	AES 128bit
Frequency	Frequency Band 865-865 MHz Nominal Frequency 863.110 MHz Bandwidth 25 kHz Max Power +14 dBm
Sensitivity	Up to -146 dBm
Power	+14 dBm
Max # of pairable sensors	32
SETTINGS & ADVANCED FUNCTIONS	
DIP Switch	Yes
Web server	Yes
SDD (Seneca Discovery Device)	Yes
Firmware update	WEB SERVER
Advanced diagnostics	Yes
STANDARDS	
Marking / Certifications	CE

ORDER CODES

Code	Description
R-GWR	ModBUS Gateway / Radio Hub for wireless sensors
SENSORS	
R-GWR-IP-1	Industrial sensor with digital/analog input
R-GWR-S-1	Home sensor with digital/analog input and flood protection
ACCESSORIES	
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45), 1.5 m
ALIM-MY2	Optional 230 V / 12 V power supply

APPLICATION DIAGRAM

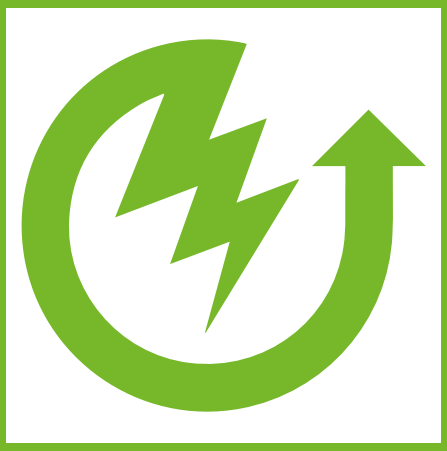


PAIRABLE SENSORS

	R-GWR-IP-1	R-GWR-S-1
		
	Industrial sensor with digital/ analog input	Home sensor with digital/ analog input and flood protection
GENERAL DATA		
Power Supply	3 V	3 V
Rechargeable	Lithium, 1,650 mAh, indicative max life 2 years	Lithium, 900 mAh, indicative max life 1 year
Protection class	IP40	IP20
Status LED	Data transmission/reception to/ from R-GWR	Data transmission/reception to/ from R-GWR
Temperature Operating environment	-25..+70°C	-25..+70°C
Temperature Storage	-40..+85°C	-40..+85°C
Humidity	10% ÷ 90% non-condensing	10% ÷ 90% non-condensing
Dimensions (WxHxD)	80 x 60 x 45 mm	65 x 45 x 30 mm
Weight	150 g	45 g
Enclosure	PC / ABS self-extinguishing UL94-V0 material	PC / ABS self-extinguishing UL94-V0 material
Connections	Screw terminals, 2-way removable screw terminal, 3.5 mm pitch	Screw terminals, 2-way removable screw terminal, 3.5 mm pitch Flood sensor connector
Mounting	Wall-mounted via screws or adhesive tape	Wall-mounted via screws or adhesive tape
Programming	WEB SERVER Pairing button	WEB SERVER Pairing button
RADIO COMMUNICATION		
Technology	LoRa	LoRa
Frequency Band	863..865 MHz	863..865 MHz
Nominal Frequency	863.11 MHz	863.11 MHz
Bandwidth	25 kHz	25 kHz
Sensitivity	Up to -146 dBm	Up to -146 dBm
Max RF Power	+14 dBm	+14 dBm
Max # of pairable sensors	32	32
INPUTS		
Integrated temperature/ humidity sensor	Temperature detection: -25..70 °C; Accuracy: 0.5 °C between 5..60 °C Humidity detection: 0..100%; Accuracy: 3% between 20 ÷ 80% RH	Temperature detection: -25..70 °C; Accuracy: 0.5 °C between 5..60 °C Humidity detection: 0..100%; Accuracy: 3% between 20 ÷ 80% RH
Analog/Digital/Counter Input (IN0)	Configurable analog input (measurement range 0-30V; accuracy: ±0.15 V) or digital (clean contact) or counter @16bit, max frequency 1Hz	Configurable analog input (measurement range 0-30V; accuracy: ±0.15 V) or digital (clean contact) or counter @16bit, max frequency 1Hz
Digital Input (IN1)	-	Reed relay for monitoring door openings and environments
Water Sensor Input (alternative to IN0 and IN1)	-	Level 1, Level 2, Flood sensor (optional)
Digital Input (IN2)	-	Tamper contact for opening housing

The technical data and diagrams in this document are indicative and not binding.

3



ENERGY AND ELECTRICAL MEASUREMENTS

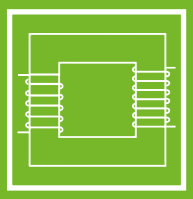
3 ENERGY AND ELECTRICAL MEASUREMENTS

SENECA's Energy and Electrical Measurements line includes systems for consumption monitoring such as multifunction Modbus network analyzers with web server, harmonic analysis, Rogowski sensors, and energy meters with Modbus/Ethernet/M-bus protocols, also available with MID certification. Additionally, there is a complete range of AC/DC current transformers with patented magnetic measurement or Hall effect technology, as well as traditional multistandard panel converters for electrical quantities (Vrms, Irms, Watt, VAR, frequency, Energy, power factor) with Modbus or analog output. The reliability and wide range of this instrumentation allows achieving fundamental goals such as reducing wiring, energy savings, revamping and retrofitting of existing installations, and improving energy efficiency with maximum ease of use.

3.1 MULTIFUNCTION NETWORK ANALYZERS SERIES 203

3.2 NETWORK ANALYZERS SERIES S604 / S711

3.3 CURRENT TRANSFORMERS SERIES TAA / TAC



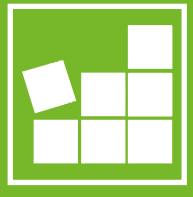
3.4 ROGOWSKI SENSORS

3.5 ENERGY METERS SERIES S500

3.6 CURRENT TRANSDUCERS SERIES T201

3.7 CONVERTERS FOR ELECTRICAL MEASUREMENTS

3.8 CONTROLLERS FOR ENERGY MANAGEMENT



3.1

MULTIFUNCTION POWER METERS

S203, Z203, R203, TPM203 Series

QUICK SELECTION GUIDE

	S203TA-D	S203RC-D	R203	T203PM	Z203-2
					
GENERAL DATA					
Precision class	0.2	0.5	0.5	1	0.5
Ethernet interface	-	-	x	-	-
ModBUS RTU interface	x	x	x	x	x
USB interface	x	x	-	x	x
Power Supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10-30 Vdc or 90..264 Vac	11.5 – 28 Vdc	10..40 Vdc; 19..28 Vac
Display	Front LCD	Front LCD	Widgets on external HMI	-	-
PROGRAMMING					
DIP Switch	x	x	-	-	x
Z-NET4	x	x	-	-	-
WEB SERVER	-	-	x	-	-
EASY SETUP	x	x	-	-	-
EASY SETUP 2	x	x	x	x	x
EASY SETUP app	x	x	-	-	-
GSDML / TiA Portal	-	-	-	-	-
INPUTS / OUTPUTS					
Input	Up to 600 Vac / 5 Arms	Up to 600 Vac / Rogowski 100 mV RMS	Up to 600 Vac, 5A (CT), 333 mV (CT with voltage output or Rogowski)	Up to 600A / 590Vac (AC/DC TRMS); ±600A / – +1000Vdc (TRMS)	Up to 500 Vac, 5 Arms
Re-transmitted analog output	x	x	x	X	X
Digital output (alarm/pulse)	x	x	x	x	x
MEASUREMENTS					
Direct measurement	-	-	-	x	-
Star voltage measurement	x	x	x	-	-
Delta voltage measurement	-	-	x	-	-
Three-phase Aron measurement	x	x	x	-	-
Single-phase measurement	x	x	x	x	x
Harmonic / THD measurements	-	-	Up to the 55th	Up to the 21th	-
External CTs	x	-	x	-	x
Rogowski Sensors	-	x	x	-	-
SPECIAL FEATURES					
Datalogger	-	-	x	x	-
ENERGY METER	x	x	x	x	x
Daisy Chain	-	-	x	-	-
LAN By Pass	-	-	x	-	-
Peer-To-Peer	-	-	X (ver. Profinet, Ethernet/IP)	-	-
ModBUS PASS Through	-	-	X (ver. Profinet, Ethernet/IP)	-	-

S203 Series

MODBUS NETWORK ANALYZERS WITH ANALOG OUTPUT

Network analyzers are specifically designed to detect the characteristics of the electrical supply in single-phase or three-phase networks and loads. They allow energy and power analysis, thus controlling the quality of the supply. At the same time, in many versions, they are also used to continuously record the behavior of the available alternating quantities.
Measurement and event reporting functions provide a useful information base to monitor the proper operation of a machine, maximizing energy efficiency.

HIGHLIGHTS

600 Vac

VOLTAGE INPUT

The S203 series analyzers support voltage inputs with a maximum range of up to 600 Vac (50-60 Hz)

100mA 5 Arms 4000A

POWER INPUT

The S203 series analyzers handle current inputs up to 5 Arms, (S203TA-D), 4,000 A (S203RC-D).

MEASURED VALUES

The S203 series analyzers provide via analog output (mA / V) the single-phase and three-phase values of the main electrical quantities: effective voltage, effective current, active power, reactive power, apparent power, frequency, power factor, energy (bidirectional). The configurable analog output allows the analyzer to also be used as a measurement converter.

ENERGY COUNTING

The S203TA-D and S203RC-D models are equipped with a pulse digital output and non-volatile memory for energy metering.

Modbus

COMMUNICATION

Equipped with a mini USB programming port (S203TA-D and S203RC-D) and RS485, all models support the Modbus RTU protocol up to a maximum of 32 nodes and 115,200 bps without the use of amplifiers or repeaters.

PROGRAMMING

All models are configurable via the free EASY SETUP2 software and connection through an easily accessible front Mini USB port.
Versions without a display are also programmable via DIP-switch.

LCD

DISPLAY

The S203 Series includes models with a high-brightness front LCD display (2 rows x 16 characters) with backlighting.

CONNECTIONS

Depending on the version, the main types of insertion are possible: single-phase, three-phase Aron, three-phase 4-wire. The analyzers can be connected to commercial CTs with a maximum secondary of 5A, precision transformers with a full scale from 15 to 100 A, Rogowski sensors with a maximum of 4,000 A.

CONFIGURATION APP

The models with displays can be configured via the Android app EASY SETUP APP, available on the Play Store.

4,000 Vac

ISOLATION

The analyzers provide protection against ESD discharges up to 4 kV, isolation between power input and other circuits up to 4,000 Vac, and isolation between communication (or analog output) and power supply of 1500 Vac.

TECHNICAL DATA

	S203TA-D	S203RC-D
		
	Advanced three-phase network analyzer	Advanced three-phase network analyzer for Rogowski sensors
GENERAL DATA		
Power Supply	10-40 Vdc, 19-28 Vac (50-60 Hz)	
Max Consumption	2.5 W	
Isolation	4 kVac (measurement input) 1.5 kVac (other circuits)	
Status Indicators	Power, Fail, RS485 Communication	
Installation category	350 V CAT II	
Display	Front LCD display 2 rows x 16 alphanumeric characters, backlit	
Retransmission error	0.1% (maximum field)	
Bandwidth	7 kHz	
Precision class	0.2% (voltmeter, ammeter, voltmeter)	Dependent on the Rogowski sensor
Types of insertion	Single-phase, three-phase, Aron	
Connections	Commercial CTs with a maximum secondary of 5A, typical accuracy 0.5%	Rogowski transducers with a maximum output of 100 mV RMS
Protection class	IP20	
Configuration	Front keys DIP Switch Z-NET4 EASY SETUP EASY SETUP APP	
Mounting	DIN 35 mm rail (IEC EN 60715)	
Connections	Screw terminals, 5.08 mm pitch	
Operating Temperature	-10..+65°C	
Dimensions	17.5 x 100 x 112 mm	
Weight	200 g	
Enclosure	UL V0 plastic material	
Certifications	CE, UKCA	
COMMUNICATION		
Interfaces	#1 RS485 port, # 1 USB port	
Speed	1 reading every 25 ms	
Protocol	ModBUS RTU	
Distance	Up to 1,200 m	
MEASUREMENTS AND I/O		
Channels	1 input, 2 outputs	
Input type	VOLTAGE: Up to 600 Vac (50-60 Hz)	
	CURRENT: Up to 5 Arms	CURRENT from Rogowski transducers with a maximum output of 100 mV RMS
Output type	VOLTAGE 0..5, 0..10 Vdc, minimum load resistance 2 kΩ CURRENT 0..20, 4..20 mA, maximum load resistance 500 Ω DIGITAL IMPULSE for energy meters (produced/absorbed), capacity 50 mA	

ACCESSORIES

ROGOWSKI SENSORS FOR S203RC-D

RC-V250-100
First-generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 115 mm

RC-V400-050
First-generation Rogowski sensor, output 50 mV/kA, 50-60 Hz, Ø 115 mm

RC-V400-100
First-generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 115 mm

RC-V500-100
First-generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 147 mm

RC150
Second-generation high-performance Rogowski sensor, maximum error <1%, Ø 8 mm, 100 mV/1kA

ORDER CODES

Code	Description
ANALYZERS	
S203RC-D	Three-Phase Network Analyzer, 600 Vac / 1000 Arms, Rogowski, Analog and Impulse Outputs, LCD Display, Micro USB App
S203TA-D	Three-Phase Network Analyzer, 600 Vac / 5 Arms, Analog and Impulse Outputs, Standard TA, LCD Display, Micro USB App
ACCESSORIES	
RC-V250-100	Rogowski Sensor 100mV/kA - 50/60Hz Ø 65 mm
RC-V400-050	Rogowski Sensor 50mV/kA - 50/60Hz 2m cable
RC-V400-100	Rogowski Sensor 100mV/kA - 50/60Hz 2m cable
RC-V500-100	Rogowski Sensor 100mV/kA - 50/60Hz 2m cable
RC150-025-100-10	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 10m cable
RC150-025-100-3M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 3m cable
RC150-025-100-5M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-3M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 3m cable
RC150-035-100-5M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-10	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-10	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-3M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 3m cable
RC150-040-100-5M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 5m cable
RC150-060-100-10	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 10m cable
RC150-060-100-3M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 3m cable
RC150-060-100-5M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 5m cable
RC150-090-100-10	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 10m cable
RC150-090-100-3M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 3m cable
RC150-090-100-5M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 5m cable
RC150-120-100-3M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 3m cable
RC150-120-100-5M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-130-100-5M	Rogowski Sensor L=13cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-180-100-3M	Rogowski Sensor L=180cm, Ø 57cm, 100mV/1kA - 50Hz, 3m cable
RC150-280-100-5M	Rogowski Sensor L=280cm, Ø 89cm, 100mV/1kA - 50Hz, 5m cable
RC150-300-100-5M	Rogowski Sensor L=300cm, Ø 96cm, 100mV/1kA - 50Hz, 5m cable
RC190-030-333-3M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-030-333-5M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 5m cable
RC190-035-333-3M	Rogowski Sensor L=35cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-060-333-3M	Rogowski Rogowski Sensor L=60cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-090-333-3M	Rogowski Rogowski Sensor L=90cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-160-333-3M	Rogowski Rogowski Sensor L=160cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable

The technical data and diagrams in this document are indicative and not binding.

Z203-2

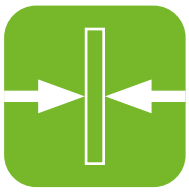
Single-phase network analyzer with Micro USB port

WIDE MEASUREMENT RANGE


SIMPLIFIED CONNECTIONS

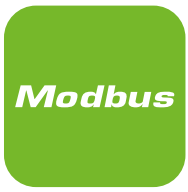

FLEXIBLE SETTINGS


VAC/DC


REDUCED DIMENSIONS


INTERNATIONAL CERTIFICATIONS

HIGH ISOLATION

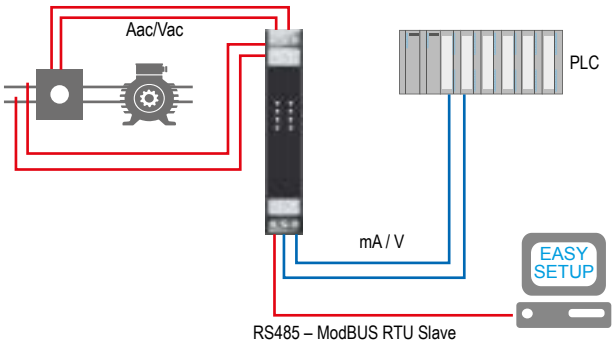


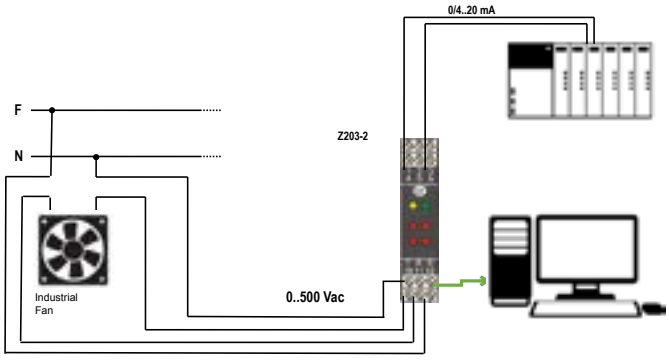
FIELDBUS INTERFACE

GENERAL DATA	
Power Supply	10-40 Vdc; 19-28 Vac
Consumption	Typical: 1.5 W @ 24Vdc, Max: 2.5 W
Isolation	3.750 Vac towards power circuits; 1,500 Vac (other circuits)
Protection	ESD < 4kV
Status Indicators	Power Supply Error Rx/Tx data packet
Type of insertion / Connection mode	Single-phase
Front protection level	IP20
Accuracy	0.5%
Thermal Stability	< 100 ppm/K
Programming	DIP Switch, Software (EASY SETUP 2)
Data Memory	EEPROM
Special Features	Energy counter (via impulses from digital output)
Mounting	Vertical position DIN rail 35mm IEC EN60715
Connections	Removable screw terminals, 3-way, 5 mm and 10 mm pitch Rear IDC10 connector for DIN rail 46277 Frontal Micro USB
Operating Temperature	-25..+65 °C (-20..+55°C UL)
Storage temperature	-30..+ 85°C
Humidity	30% ÷ 90% non-condensing
Dimensions (WxHxD)	17.5 x 102.5 x 111 mm
Weight	130 g
Enclosure	PA6, black color
Certifications	CE, UKCA, UL
MEASUREMENT AND CALCULATION TIMES	
Sampling time	8,000 sps (for voltage/current channels)
Bus scan time	10 ms
RMS values settling time	580..700 ms
Harmonic update times	30s
COMMUNICATION	
RS485 / MODBUS RTU	
Interfaces	#1 RS485 port
Protocol	ModBUS RTU slave
Distance	Up to 1,200 m
Speed	1,200..115,200 baud
Connections	Max 128 Seneca device nodes
USB	
Ports	#1 Micro USB programming port
MEASUREMENTS AND I/O	
Measured values	Vrms, Irms, Watt, Var, Frequency, Energy, Power factor
Number of channels	1 measurement input, 1 analog output, 1 digital output
Measurement Input	VOLTAGE: Configurable start/end scale between: 0..125 Vac; 0..250 Vac; 0..500 Vac; Input impedance: 600 kΩ CURRENT: Configurable start/end scale between: 0..1.25A; 0..2.5A; 0..5A Crest factor: 3; Nominal current: 5 Arms; Maximum current 15A
Analog output	VOLTAGE: 0..10 Vdc, minimum load resistance 2 kΩCURRENT: 0..20, 4..20 mA, maximum load resistance 500 Ω 12-bit resolution; transmission error: 0.1 % of the maximum field; thermal drift: 100 ppm/K
Digital Output	PULSE COUNTER: Passive type; capacity 50 mA; pulse duration 200 ms; Isolation 1500 V peak; Imax=V/R=50 mA

The technical data and diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS





ORDER CODES	
Code	**Description**
Z203-2	Single-phase network analyzer 500 Vac / 5A Micro USB
SOFTWARE	
(ASY SETUP 2	Plug&Play configuration software

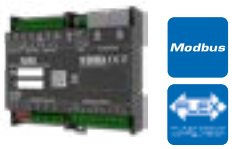
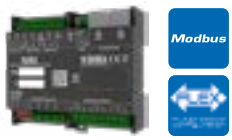
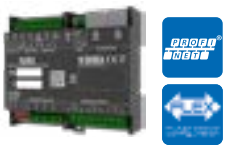
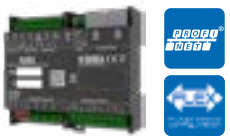
SERIE R203

MULTIFUNCTION NETWORK ANALYZERS WITH UNIVERSAL INPUT

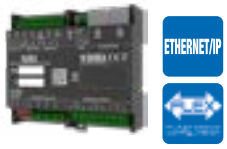
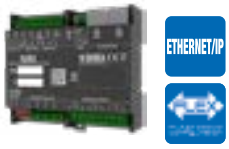
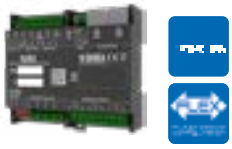
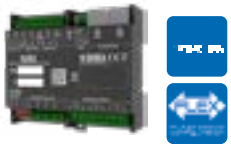
The R203 three-phase network analyzer accepts current measurement inputs for CTs with current/voltage output, TV, and Rogowski sensors (with voltage output up to 333 mV), with single-phase, three-phase Aron insertion types, and supports ModBUS RTU, ModBUS TCP-IP, Profinet, Ethernet/IP protocols (switchable with FLEX technology). Like many of the space-saving R-series products, the R203 features 1 or 2 Ethernet ports, also usable for daisy chain connections with automatic bypass protection. The analyzer provides an output signal in voltage (0..10Vdc) or current (0/4..20mA). The R203 also measures and records voltage/current harmonics up to the 55th order with THD (Total Harmonic Distortion) calculation. The instrument also functions as an Edge/IoT device (with MQTT protocol), Web Server, energy meter, and datalogger for reading the main parameters and downloading data and events.

HIGHLIGHTS

- Universal Analog Input (voltage, CT, TV, Rogowski)
- Integrated monitoring system for up to 40 devices
- Measured Values and Analog Output
- Configuration via Web Server or EDS
- THD measurement up to the 55th harmonic
- High Accuracy (0.2 / 0.5)
- Multi-protocol configuration and support
- Active/reactive/apparent energy meter
- Datalogger with up to 30 variables per tag / 55k samples
- Event Recorder (32k samples)
- Daisy Chain
- LAN BY-PASS (internal switch)
- Peer-To-Peer
- ModBUS Pass-Through (gateway)
- SSL/TLS/X.509 digital certificates, data transmission
- Edge/IoT Device

	R203-2-L	R203-2-H	R203-2-L-P	R203-2-H-P
				
	Three-phase network analyzer with 2xETH, 10-30 Vdc, ModBUS RTU/ TCP-IP	Three-phase network analyzer with 2xETH, 90-264 Vac, ModBUS RTU/ TCP-IP	Three-phase network analyzer with 2xETH, 10-30 Vdc, Profinet IO	Three-phase network analyzer with 2xETH, 90-264 Vac, Profinet IO
GENERAL DATA				
Power Supply	10-30 Vdc	90-264 Vac (50-60 Hz)	10-30 Vdc	90-264 Vac (50-60 Hz)
Max Consumption	2.5 W			
Max isolation	3,500 Vac			
Status Indicators	Input/Output status I/O address status Wiring error Ethernet Data Transit/Connection			
	RX/TX RS485		Profinet communication active	
	Datalogger		-	
Installation category	300 V CAT III	600 V CAT III	300 V CAT III	600 V CAT III
Type of insertion / Connection mode	Single-phase, three-phase 3-wire, three-phase 4-wire, Aron			
Front protection level	IP20			
Precision class	0.5			
Flash Memory (data)	8 MB		-	
Mounting	DIN 35mm IEC EN60715 rail mounting, wall or panel mounting with screws			
Connections	Screw terminals			
Operating Temperature	-25..+65°C			
Storage temperature	-30..+ 85°C			
Humidity	30% ÷ 90% non-condensing			
Dimensions	90 x 107 x 32 mm			
Weight	170 g			
Enclosure	Self-extinguishing PC/ABS UL94-V0 material, black color			
Certifications	CE, UKCA			
MEASUREMENT AND CALCULATION TIMES				
Sampling time	8,000 sps (for voltage/current channels)			
Bus scan time	10 ms		>2 ms	
RMS values settling time	580..700 ms			
Harmonic update times	30 s			
PROGRAMMING				
EASY SETUP 2	Communication parameters, I/O, datalogging		-	
WEB SERVER	Connection diagnostics, device configuration, alarm and I/O configuration, datalogger, special functions (ModBUS Pass Through), firmware update		Connection diagnostics, firmware update	
GSD/GSDML/EDS	-		Configuration, project and I/O management	
SPECIAL FEATURES				
Datalogger data	Max 30 variables per tag and approx. 65504 samples storable in internal flash; sampling time between 1s and 24h		-	
Event Datalogger	Recording up to 4096 samples with respective time tag, threshold, time window, date/time		-	
ENERGY METER	Active/reactive energy metering on digital output # 2 incremental 32-bit counters on digital inputs @5kHz		-	
Integrated monitoring system	Configuration, viewing, and simultaneous monitoring on SSD for up to 40 units connected in daisy-chain mode		-	
COMMUNICATION				
RS485 / ModBUS RTU				
Interfaces	#1 RS485 port		-	
Protocol	ModBUS RTU slave		-	
Distance	Up to 1,200 m		-	
Speed	1,200..115,200 baud		-	
Connections	Max 128 Seneca device nodes		-	
Ethernet / Profinet				
Ports	#2 Ethernet 100BaseT ports			
Speed	100 Mbps			
Protocols	ModBUS TCP-IP (switchable with FLEX technology), Seneca P2P I/O Mirror with broadcast (UDP based)		Profinet IO (switchable with FLEX technology)	
Multi-protocol Configuration (ModBUS, Profinet, Ethernet/IP)	yes			
CONNECTIVITY				
Daisy Chain	x			
LAN Fault By-Pass	x			
Peer-To-Peer	x		-	
ModBUS Pass-Through	x		-	
IT/IIoT Protocols	http(s), Ftp, MQTT(s)		-	
MEASUREMENTS AND I/O				
Number of channels	#1 measurement input, #2 DI (Digital Inputs), #2 DO (Digital Outputs), #1 AO (Analog Output)			
Measurement Input	PHASE VOLTAGE Up to 600 Vac, frequency 45 ÷ 65 Hz / Minimum voltage: 5 V (Full Scale 150 Vac); 20 V (Full Scale 600 Vac) / Voltage Transformer (VT) output up to 600 Vac relative to neutral PHASE CURRENT Current input for CT (Current Transformer): 1 ÷ 5A full scale / Voltage input (mV) for CT with voltage output or Rogowski: up to 250 mV / Network Frequency: 50 ÷ 60Hz Voltmeter: 0.2% / Ammeter: 0.2%, Wattmeter: 0.5%			
Analog output	VOLTAGE OUTPUT 0..10 Vdc, minimum load resistance: 2 kΩ CURRENT OUTPUT (active/passive): 0..20, 4..20 mA, maximum load resistance: 500 Ω Transmission Error: 0.1% of the maximum range Thermal Drift: 100 ppm/K			
Digital Inputs	Digital Inputs: #2, activated by 12 to 24V			
DIGITAL OUTPUTS	Digital Outputs: #2, capacity: Imax = 50 mA, Vmax = 28V			

The technical data and diagrams in this document are indicative and not binding.

	R203-2-L-E	R203-2-H-E	R203-2-L-U	R203-2-H-U
				
	Three-phase Network Analyzer, 2xETH, 10-30 Vdc, OPC UA	**Three-phase Network Analyzer, 2xETH, 90-264 OPC UA**	**Three-phase Network Analyzer, 2xETH, 10-30 Vdc, OPC UA**	**Three-phase Network Analyzer, 2xETH, 90-264 OPC UA**
GENERAL DATA				
Power Supply	10-30 Vdc	90-264 Vac (50-60 Hz)	10-30 Vdc	90-264 Vac (50-60 Hz)
Max Consumption	2.5 W			
Max isolation	3,500 Vac			
Status Indicators	Input/Output Status, I/O address status, wiring error, Ethernet data transit/connection, active Ethernet communication,			
Installation category	300 V CAT III	600 V CAT III	300 V CAT III	600 V CAT III
Type of insertion / Connection mode	Single-phase, three-phase 3-wire, three-phase 4-wire, Aron			
Front protection level	IP20			
Precision class	0.5			
Mounting	DIN 35mm IEC EN60715 rail mounting, wall or panel mounting with screws			
Connections	Screw terminals			
Operating Temperature	-25..+65°C			
Storage temperature	-30..+ 85°C			
Humidity	30% ÷ 90% non-condensing			
Dimensions	90 x 107 x 32 mm			
Weight	170 g			
Enclosure	Self-extinguishing PC/ABS UL94-V0 material, black color			
Certifications	CE, UKCA			
MEASUREMENT AND CALCULATION TIMES				
Sampling time	8,000 sps (for voltage/current channels)			
Bus scan time	>2 ms		>10 ms	
RMS values settling time	580..700 ms			
Harmonic update times	30s			
PROGRAMMING				
WEB SERVER	Connection diagnostics, firmware update		firmware diagnostics, device configuration, firmware update	
GSD/GSDML/EDS	Configuration, project and I/O management		-	-
INTERFACES				
Ports	#2 Ethernet 100BaseT ports			
Speed	100 Mbps			
Protocols	Ethernet/IP		OPC UA Server	
Connectivity	Daisy Chain, LAN Fault By-Pass			
MEASUREMENTS AND I/O				
Number of channels	#1 measurement input, #2 DI (Digital Inputs), #2 DO (Digital Outputs), #1 AO (Analog Output)			
Voltage Measurement Input	Up to 600 Vac, frequency: 45 ÷ 65 Hz			
	Minimum voltage 5 V (Full Scale 150 Vac); 20 V (Full Scale 600 Vac)			
	Voltage Transformer (VT) output up to 600 Vac relative to neutral			
Current Measurement Input	Current input for CT (Current Transformer): 1 ÷ 5A full scale			
	Voltage input (mV) for CT with voltage output or Rogowski: up to 250 mV			
	Network Frequency: 50 ÷ 60Hz			
	Accuracy: Volt Meter: 0.2%; Ampere Meter: 0.2%, Wattmeter: 0.5%			
Analog output	VOLTAGE 0..10 Vdc, min load resistance 2kΩ CURRENT (active/passive): 0..20, 4..20 mA, maximum load resistance: 500 Ω Transmission Error: 0.1% of the maximum range Thermal drift: 100 ppm/K			
Digital Inputs	Digital Inputs: #2, activated by 12 to 24V			
DIGITAL OUTPUTS	Digital Outputs: #2, capacity: Imax = 50 mA, Vmax = 28V			

The technical data and diagrams in this document are indicative and not binding.

FLEXIBLE AND RECONFIGURABLE DEVICES WITH FLEX TECHNOLOGY

SENECA's proprietary FLEX technology allows connecting a single device capable of supporting various protocols in serial and Ethernet industrial communication networks. Starting from the same network analyzer, for example, it is possible to change the type of protocol conversion in a few steps, addressing rapid production layout changes or efficiently transferring data to and from PLCs and other Master/Slave or Client/Server devices. This flexible approach saves time, financial resources, and the hassle of managing multiple devices with different purchasing codes, regardless of the application type.

STRENGTHS

- A single multiprotocol solution on one device
- Maximum connectivity in a single hardware
- The functionality of multiple gateways at the price of one
- Simplification of purchasing codes
- Reduction in storage and handling costs
- Immediate selection of multiple protocol combinations based on the freely downloadable Seneca Discovery Device tool from the Seneca website
- No programming software or change of tag and I/O registers needed
- Supported and interchangeable protocols: ModBUS RTU, ModBUS TCP-IP, ModBUS ASCII, Profinet, Ethernet/IP, upcoming implementations (OPC UA, IEC 61850)
- Models integrating FLEX technology: R-KEY-LT, R-KEY-LT-E, R-KEY-LT-P, Z-KEY-0, Z-KEY-2ETH, Z-KEY-2ETH-E, Z-KEY-2ETH-P, Z-KEY-P, Z-KEY-E, R203-2-L, R203-2-H, R203-2-L-P, R203-2-H-P, R203-2-L-U, R203-2-H-U

PROTOCOL RECONFIGURATION PROCEDURE WITH FLEX TECHNOLOGY

- Connect the PC to the FLEX device via Ethernet
- Launch the SENECA DISCOVERY DEVICE software, available on the SENECA website; scan the ModBUS / Ethernet network
- Select the new combination of protocols to apply to the device
- With the module turned off, set the DIP Switch to "Factory Reset"
- Turn on the module and set the DIP Switch to "Read configuration from Flash"

1 Connect the PC via Ethernet to the SENECA module

2 Launch the SENECA DISCOVERY DEVICE software and scan the ModBUS / Ethernet network

3 Change the protocol from ModBUS to Profinet or Ethernet/IP

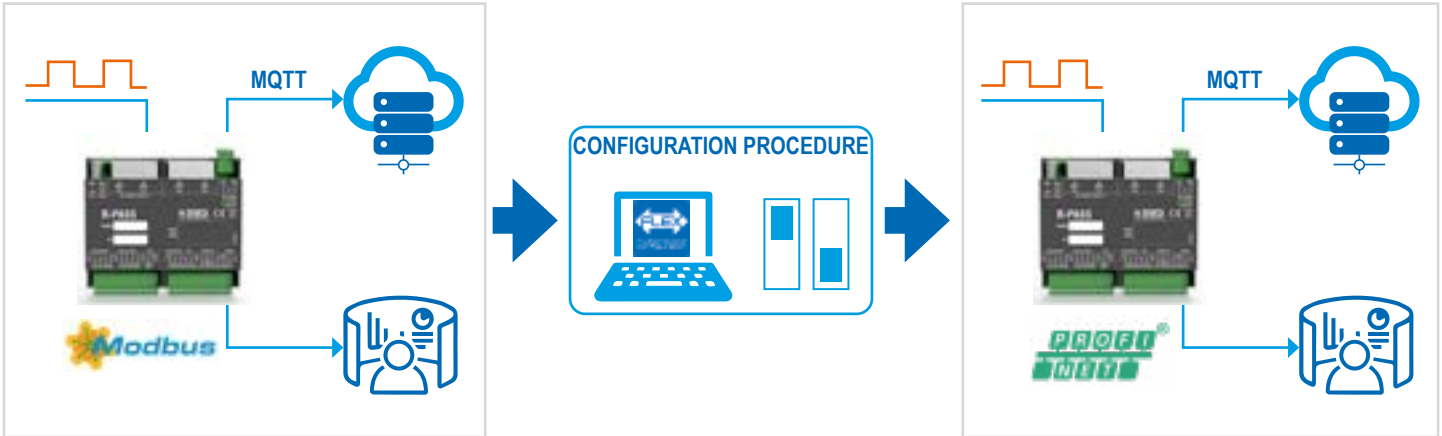
4 When the module is off, position the DIP Switches to "ON" (factory reset).

5 Turn on the module and set the DIP Switch to "OFF", read configuration from Flash

6 Now the module operates with another combination of protocols

For more information: www.seneca.it/flex

EXAMPLE OF CONVERSION FROM MODBUS ANALYZER TO PROFINET ANALYZER.

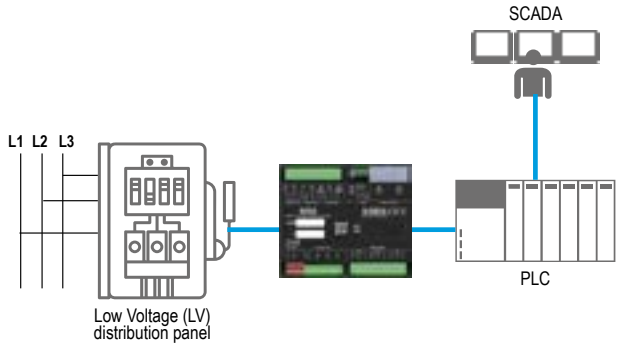


MAIN MEASUREMENTS

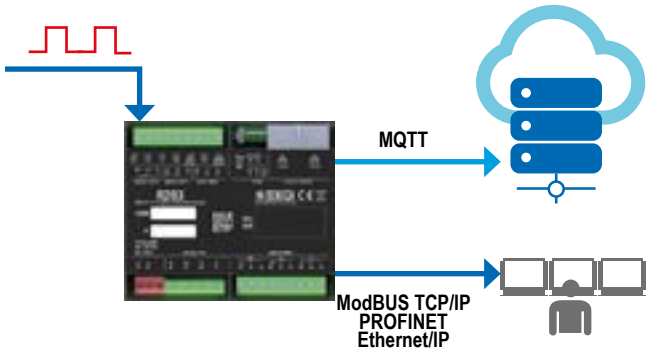
INSTANTANEOUS VALUES	
Voltage	VL1-L2, VL2-L3, VL3-L1, VL1-N, VL2-N, VL3-N
Current (+/-)	IL1, IL2, IL3, IN
Active Power (+/-)	P1, P2, P3, Ptot
Reactive Power (+/-)	Q1, Q2, Q3 and Qtot
Apparent Power (+/-)	S1, S2, S3 and Stot
Power Factor (inductive and capacitive)	PF1, PF2, PF3 and PFtot
Frequency	F1, F2, F3
Period	PER1, PER2, PER3
Voltage-Current Phase Angle [°]	Delta VIL1, VIL2, VIL3
Line Voltage Phase Angle [°]	Delta VL1-L2, VL2-L3, VL3-L1
Total Harmonic Distortion of Voltage (THD)	THD % VL1-N, VL2-N, VL3-N
Total Harmonic Distortion of Current (THD)	THD % IL1, IL2, IL3
AVERAGE VALUES IN DEMAND TIME	
Average Voltage	VL1-N, VL2-N, VL3-N, VL1-N MIN, VL1-N MAX, VL2-N MIN, VL2-N MAX, VL3-N MIN, VL3-N MAX
Average Current (+/-)	IL1, IL2, IL3, IL1 MIN, IL1 MAX, IL2 MIN, IL2 MAX, IL3 MIN, IL3 MAX
Average Active Power (+/-)	P1, P2, P3, P1 MIN, P1 MAX, P2 MIN, P2 MAX, P3 MIN, P3 MAX, Ptot
Average Reactive Power (+/-)	Q1, Q2, Q3, Q1 MIN, Q1 MAX, Q2 MIN, Q2 MAX, Q3 MIN, Q3 MAX, Qtot
Average Apparent Power (+/-)	S1, S2, S3, S1 MIN, S1 MAX, S2 MIN, S2 MAX, S3 MIN, S3 MAX, Stot
Average Power Factor (inductive and capacitive)	PF1, PF2, PF3, PF1 MIN, PF1 MAX, PF2 MIN, PF2 MAX, PF3 MIN, PF3 MAX, PFtot
MAXIMUM / MINIMUM / ABSOLUTE VALUES	
Voltage	VL1-N MIN, VL1-N MAX, VL2-N MIN, VL2-N MAX, VL3-N MIN, VL3-N MAX
Current (+/-)	IL1 MIN, IL1 MAX, IL2 MIN, IL2 MAX, IL3 MIN, IL3 MAX
Active Power (+/-)	P1 MIN, P1 MAX, P2 MIN, P2 MAX, P3 MIN, P3 MAX, Ptot
Reactive Power (+/-)	Q1 MIN, Q1 MAX, Q2 MIN, Q2 MAX, Q3 MIN, Q3 MAX, Qtot
Apparent Power (+/-)	S1 MIN, S1 MAX, S2 MIN, S2 MAX, S3 MIN, S3 MAX, Stot
Power Factor (inductive and capacitive)	PF1 MIN, PF1 MAX, PF2 MIN, PF2 MAX, PF3 MIN, PF3 MAX, PFtot
Counters	
Active Energy [Wh]	ACTIVE ENERGY IMPORTED L1 (+) Q1/Q4
	ACTIVE ENERGY IMPORTED L2 (+) Q1/Q4
	ACTIVE ENERGY IMPORTED L3 (+) Q1/Q4
	ACTIVE ENERGY EXPORTED L1 (-) Q2/Q3
	ACTIVE ENERGY EXPORTED L2 (-) Q2/Q3
	ACTIVE ENERGY EXPORTED L3 (-) Q2/Q3
	ACTIVE ENERGY IMPORTED TOTAL (+) Q1/Q4
	ACTIVE ENERGY EXPORTED TOTAL (-) Q2/Q3
	ACTIVE ENERGY BALANCE TOTAL (+/-)
REACTIVE ENERGY [VARH]	REACTIVE ENERGY IMPORTED L1 (+) Q1/Q2
	REACTIVE ENERGY IMPORTED L2 (+) Q1/Q2
	REACTIVE ENERGY IMPORTED L3 (+) Q1/Q2
	REACTIVE ENERGY EXPORTED L1 (-) Q3/Q4
	REACTIVE ENERGY EXPORTED L2 (-) Q3/Q4
	REACTIVE ENERGY EXPORTED L3 (-) Q3/Q4
	REACTIVE ENERGY IMPORTED L1 (+) Q1
	REACTIVE ENERGY IMPORTED L2 (+) Q1
	REACTIVE ENERGY IMPORTED L3 (+) Q1
	REACTIVE ENERGY IMPORTED L1 (-) Q2
	REACTIVE ENERGY IMPORTED L2 (-) Q2
	REACTIVE ENERGY IMPORTED L3 (-) Q2
	REACTIVE ENERGY IMPORTED L1 (+) Q3
	REACTIVE ENERGY IMPORTED L2 (+) Q3
	REACTIVE ENERGY IMPORTED L3 (+) Q3
	REACTIVE ENERGY IMPORTED L1 (-) Q4
	REACTIVE ENERGY IMPORTED L2 (-) Q4
	REACTIVE ENERGY IMPORTED L3 (-) Q4
	REACTIVE ENERGY IMPORTED TOTAL (+) Q1/Q2
	REACTIVE ENERGY EXPORTED TOTAL (-) Q3/Q4
	REACTIVE ENERGY BALANCE TOTAL (+/-)
APPARENT ENERGY [VAH]	APPARENT ENERGY BALANCE TOTAL (+/-)
HARMONIC ANALYSIS	
Voltage Harmonics from the fundamental to the 55th [V]	VL1-N, VL2-N, VL3-N
Current Harmonics from the fundamental to the 55th [A]	IL1, IL2, IL3
Voltage Harmonics from the 2nd to the 55th [% relative to the fundamental]	VL1-N, VL2-N, VL3-N
Current Harmonics from the 2nd to the 55th [% relative to the fundamental]	IL1, IL2, IL3

CONNECTION EXAMPLES

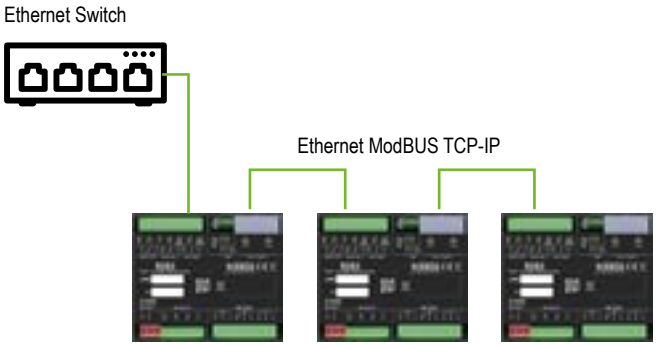
ENERGY MONITORING WITH PLC AND SCADA



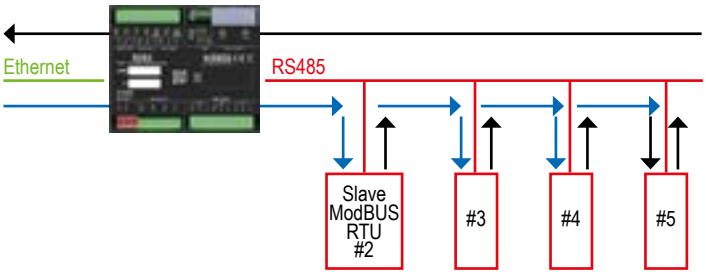
ENERGY MONITORING VIA MQTT



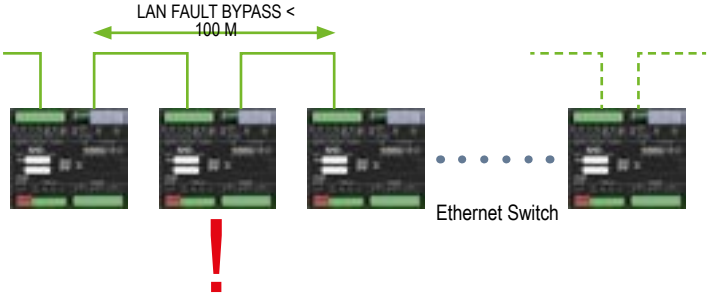
DAISY CHAIN



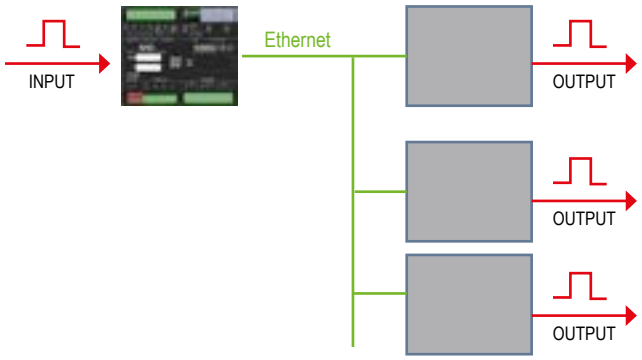
ModBUS Pass-Through



Fault By-Pass



Peer-To-Peer I/O Copy



ORDER CODES

Code	Description
NETWORK	
R203-2-L	Three-phase network analyzer, 2xETH, 24 Vdc, ModBUS RTU/TCP-IP
R203-2-H	Three-phase network analyzer, 2xETH, 90-264 Vac, ModBUS RTU/TCP-IP
R203-2-L-P	Three-phase network analyzer, 2xETH, 24 Vdc, Profinet IO
R203-2-H-P	Three-phase network analyzer, 2xETH, 90-264 Vac, Profinet IO
R203-2-L-E	Three-phase network analyzer, 2xETH, 24 Vdc, Ethernet/IP
R203-2-H-E	Three-phase Network Analyzer, 2xETH, 90-264 OPC UA
ROGOWSKI SENSORS	
RC150-025-100-10	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 10m cable
RC150-025-100-3M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 3m cable
RC150-025-100-5M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-3M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 3m cable
RC150-035-100-5M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-10	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-10	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-3M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 3m cable
RC150-040-100-5M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 5m cable
RC150-060-100-10	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 10m cable
RC150-060-100-3M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 3m cable

Code	Description
RC150-060-100-5M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 5m cable
RC150-090-100-10	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 10m cable
RC150-090-100-3M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 3m cable
RC150-090-100-5M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 5m cable
RC150-120-100-3M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 3m cable
RC150-120-100-5M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-130-100-5M	Rogowski Sensor L=13cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-180-100-3M	Rogowski Sensor L=180cm, Ø 57cm, 100mV/1kA - 50Hz, 3m cable
RC150-280-100-5M	Rogowski Sensor L=280cm, Ø 89cm, 100mV/1kA - 50Hz, 5m cable
RC150-300-100-5M	Rogowski Sensor L=300cm, Ø 96cm, 100mV/1kA - 50Hz, 5m cable
RC190-030-333-3M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-030-333-5M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 5m cable
RC190-035-333-3M	Rogowski Sensor L=35cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-060-333-3M	Rogowski Rogowski Sensor L=60cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-090-333-3M	Rogowski Rogowski Sensor L=90cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-160-333-3M	Rogowski Rogowski Sensor L=160cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-160-333-3M	Rogowski Rogowski Sensor L=160cm, Øint. 9cm, 333mV/1KA-50Hz, 3m cable

T203PM

SINGLE-PHASE NETWORK ANALYZERS WITH DIRECT CURRENT AND ENERGY MEASUREMENT

T203PM is a series of single-phase network analyzers for AC/DC TRMS with a ModBUS interface, analog and digital outputs, and inputs with 3 current measurement ranges: 100, 300, or 600 Aac/dc depending on the version (T203PM100-MU, T203PM300-MU, T203PM600-MU) and for voltage 290 Vac, 1000 Vdc. The devices directly measure current and energy without the use of external current transformers (CTs). The T203PM measures voltage, AC/DC current, active/reactive/apparent power, power factor, frequency, harmonic distortion (THD), retransmitting them via an analog output with a voltage of 0-10V. The T203PM analyzers are particularly robust, operating over a wide temperature range, -25..+65°C, with Isolation up to 3 kVac (on bare conductors), safety class CAT. III 600V (bare conductor) and 1kV (insulated conductor).

HIGHLIGHTS

DIRECT CURRENT AND ENERGY MEASUREMENT WITHOUT CTS

The following measurements are available without the need for external CTs: TRMS AC voltage and current, DC voltage, bipolar DC current, instantaneous power, active, reactive, and apparent energy, power factor, THD, and grid frequency.

ANALOG VOLTAGE OUTPUT

The analog output can replicate one of the input measurements with an accuracy of 1% (0.2% for voltage) at 23°C and a response time (10-90%) of 100 ms.

HARMONIC ANALYSIS

The input measurement bandwidth of 1.3kHz ensures voltage and current measurement with harmonic components up to the 21st (at 60 Hz grid frequency).

DIGITAL OUTPUT

The digital output is used for alarm signaling that may occur for a given associated measurement.

MODBUS RTU INTERFACE

The ModBUS RTU (Slave) protocol is supported both via the RS485 communication port up to 115,200 bps and via the USB port for programming operations.

MICRO USB PORT

The front Micro USB port allows for easy device configuration via software.
Firmware updates can also be performed through it.

CONFIGURATION VIA EASY SETUP2

The T203PM can be configured via the free EASY SETUP2 software and connected through the easily accessible front USB port.

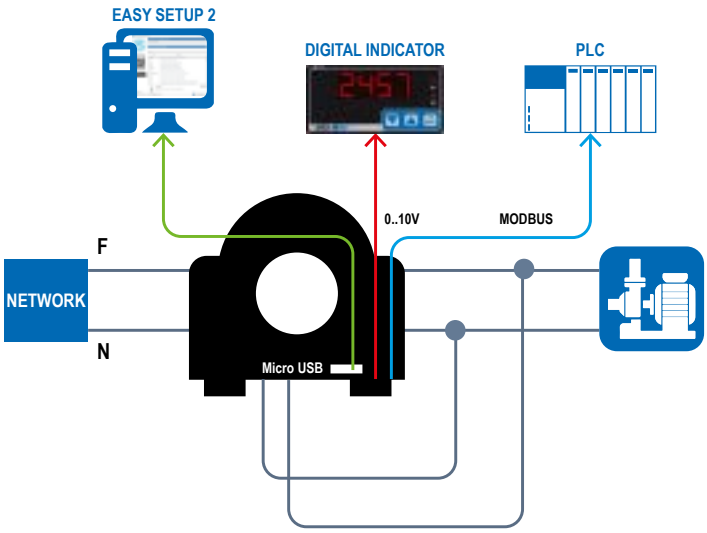
ENERGY COUNTER

The analyzers are equipped with 64-bit energy counters whose values (active, reactive, apparent) are stored in memory (FeRAM).

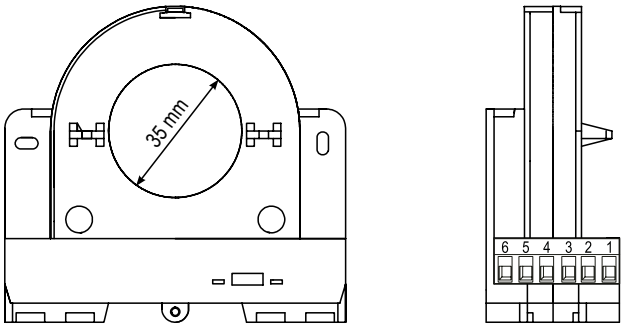
TECHNICAL DATA

	T203PM100-MU	T203PM300-MU	T203PM600-MU
			
	Single-phase AC/DC TRMS network analyzer, inputs up to 100 Vac/dc, ModBUS, analog and digital output	**Single-phase AC/DC TRMS network analyzer, inputs up to 300 Vac/dc, ModBUS, analog and digital output**	**Single-phase AC/DC TRMS network analyzer, inputs up to 600 Vac/dc, ModBUS, analog and digital output**
GENERAL DATA			
Power Supply	11.5 – 28 Vdc		
Consumption	Typical: < 70 mA @ 24 Vdc		
Max isolation	3 kVac (on bare conductors)		
Status Indicators	Power supply, USB communication, digital output		
Installation Category / Overvoltage Category	CAT. III 600V (bare conductor)		
	CAT. III 1kV (insulated conductor)		
Front protection level	IP20		
Precision class	1% of full scale at 50/60 Hz, 23°C		
Programming	EASY SETUP 2 Software		
Mounting	35mm DIN rail IEC EN60715, wall-mounted via screws, suspended via straps		
Connections	6-way removable screw terminals, 5 mm pitch for cables up to 2.5 mm2		
	Micro USB for programming and firmware updates		
Operating Temperature	-25..+70°C		
Dimensions	95 x 75 x 35 mm		
Weight	150 g		
Enclosure	PA6, black color		
Certifications	CE, UKCA		
MEASUREMENT AND CALCULATION TIMES			
Sampling Time	47,000 sps		
RMS values settling time	500..1000 ms		
MEASURED PARAMETERS			
Instantaneous values	Voltage, AC/DC current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD		
Avg / Max / Min Values	Voltage, AC/DC current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD		
Harmonics	Up to the 21th		
ACCURACY			
Precision class	1% of full scale at 50/60 Hz, 23°C		
INTERFACES			
SERIAL			
Interfaces	#1 RS485 port		
Protocol	ModBUS RTU		
Distance	Up to 1,200 m		
Connectivity	Max 32 nodes		
USB			
Ports	#1 Micro USB programming port		
MEASUREMENT INPUTS			
Voltage	Up to 0 – 100A or 0 – 90Vac (AC/DC TRMS); ±100A or 0 – +1000Vdc (TRMS DC Bipolar)	Up to 0 – 300A or 0 – 290Vac (AC/DC TRMS); ±300A or 0 – +1000Vdc (TRMS DC Bipolar)	Up to 0 – 600A or 0 – 590Vac (AC/DC TRMS); ±600A or 0 – +1000Vdc (TRMS DC Bipolar)
	Crest factor: 100A = 1.7 / 300A = 1.9 / 600A = 1.9		
	Bandwidth: 1.4 kHz		
	Overload: 3 x IN continuous		
MEASUREMENT INPUTS			
Channels	1DO, 1 AO		
Digital outputs	ACTIVE 0 – Vcc, max load 50mA		
Analog output	VOLTAGE: 0..10 Vdc, min load 2kΩ. Polarity reversal protection and overvoltage protection Resolution: 13.5 f.s.AC EMI Error: < 1% Temperature Coefficient: < 200 ppm/°C Measurement Hysteresis: 0.2% f.s. Response Time: < 200 ms		

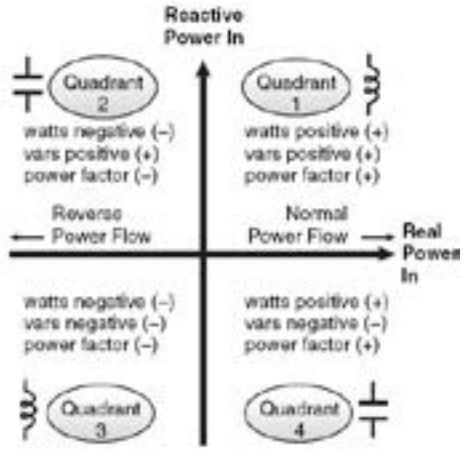
TYPICAL APPLICATION



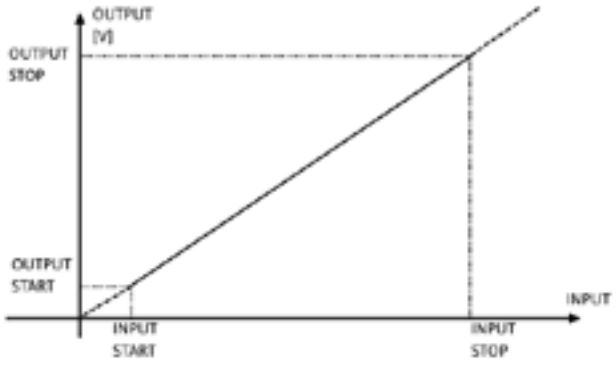
MODULE LAYOUT



AVAILABLE MEASUREMENTS VIA SERIAL



ANALOG OUTPUT



MEASURED INSTANTANEOUS, MIN, AND MAX VALUES

Voltage	V
AC / DC Current (+/-)	I
Active Power (+/-)	P
Reactive Power (+/-)	Q
Apparent Power (+/-)	S
Power Factor	PF
Frequency	F (measured grid voltage frequency)
THD	% (measured on current)

COUNTERS

ACTIVE ENERGY [Wh/10] (TOTAL (+/-))
REACTIVE ENERGY [VARh/10] (TOTAL (+/-))
APPARENT ENERGY [VAh/10] (TOTAL (+/-))

ORDER CODES

Code	Description
T203PM100-MU	Single-phase AC/DC TRMS network analyzer, inputs up to 100 Vac/dc, ModBUS, analog and digital output
T203PM300-MU	Single-phase AC/DC TRMS network analyzer, inputs up to 300 Vac/dc, ModBUS, analog and digital output
T203PM600-MU	Single-phase AC/DC TRMS network analyzer, inputs up to 600 Vac/dc, ModBUS, analog and digital output
CU-A-MICROB	USB-A to Micro USB-B 5 P Cable

3.2

NETWORK ANALYZERS
S604 / S711 Series

S604 / S711 Series

MULTIFUNCTION ANALYZERS FOR PANELS AND RECESSED MOUNTING

The multifunction network analyzers of the S604 and S711 series are innovative instruments for measuring and recording electrical parameters. They are particularly suitable when a device is needed for consumption analysis and control, offering excellent value for money. In versions with Rogowski current transducers, they provide extreme ease of connection and can be used in applications with high currents, linear measurements, retrofitting, energy audits, etc.The instruments can communicate through the RS485 serial port with the ModBUS RTU/ASCII protocol or via the LAN port with the ModBUS TCP-IP protocol. The ENERGY POWER PACK software is also provided for configuring the instrument. A web server interface is also available for managing the device from any PC connected to the LAN/Internet.

HIGHLIGHTS

INSERTION MODES

- From 3x230/400 V to 3x240/415 V three-phase 4-wire
- From 3x400 V to 3x415 V three-phase 3-wire
- From 230 V to 240 V single-phase

POWER SUPPLY

- Self-powered models
- Models with auxiliary power supply
- Extended power supply 85 ... 265 VAC / 110 VDC ±15%

DIGITAL I/O

- #1/2 outputs for alarms/pulses
- #1 input for calculating average values (DMD)

DATA STORAGE

- Recording of average active and reactive power values
- Up to 24 selectable parameters among instantaneous variables for recording MIN/AVG/MAX values
- Up to 8 MB memory for data recording

TYPICAL APPLICATIONS

- Energy monitoring and control systems
- Monitoring the load of individual machines
- Power peak control
- Control panels, generators, motor control, etc.
- Remote consumption detection and cost calculation

PROGRAMMING

Remote management of the instrument is possible via ENERGY POWER PACK software or through a web server interface.

COMMUNICATION

Models with communication in MODBUS RTU/ASCII via RS485 port or in MODBUS TCP via LAN port are available.

ENERGY MEASUREMENTS AND COUNTERS

- Total counters
- Separate inductive/capacitive counters
- Bidirectional measurement on four quadrants for all energies and powers
- Measurement of all the main parameters necessary for effective consumption analysis

THD & HARMONICS

THD values for voltage and current THD values for voltage and current + harmonics up to the 15th

INPUTS

- Versions for standard CTs of 1 or 5 A, direct insertion up to 80 A, or Rogowski coils

MULTIFUNCTION NETWORK ANALYZERS FOR PANELS

	S604B	S604E	S604E-ROG
			
	Three-phase network analyzers for inputs from CT 1/5 A, direct 80 A, BASIC version	**Three-phase network analyzers for inputs from CT 1/5 A, direct 80 A, ENERGY PLUS version**	**Three-phase network analyzers, ENERGY PLUS version with Rogowski coil set**
GENERAL DATA			
Power Supply	180..285 Vac line-neutral, Cat III (self-powered models) 85..265 Vac, Aux, Cat II (models with auxiliary power)	85..265 Vac, Aux, Cat II (models with auxiliary power)	
Max Consumption	3.5 VA - 1 W per single phase (self-powered models) 1.6 VA - 1 W (models with auxiliary power, RS485 interface) 4.5 VA - 1.6 W (models with auxiliary power, Ethernet interface)	1.6 VA - 1 W (models with auxiliary power, RS485 interface) 4.5 VA - 1.6 W (models with auxiliary power, Ethernet interface)	
Display	LCD, backlit, 43x29 mm, 3 rows, 4 digits + symbols		
Function keys	3 front keys, 1 protected key		
Operating temperature	-25..+55°C		
Sinusoidal vibration amplitude	50 Hz ± 0.075 mm		
Memory (for instruments with communication port)	1 MB	8 MB	
Recordings	Average values for active and reactive power	MIN/AVG/MAX values for all powers, selectable	
THD & Harmonics	THD values for voltage and current	THD values for voltage and current Harmonic values for voltage and current up to the 15th	
Apparent Energy Counters	Total or separate counters (inductive/capacitive)		
Connection Modes	Single-phase Three-phase, 4-wire, 3 currents Three-phase, 4-wire, 2 currents (aux models)		
Front protection level	IP51		
Terminal Protection Rating	IP20	IP20	IP20
Dimensions	72x90x65 mm		
Weight	436 g		
Certifications	CE		
ACCURACY			
Voltage	±0.2% reading 10% FS...FS (FS = full scale value)		
Current	±0.4% reading in 5% FS...FS		
Power	±0.5% reading ±0.1% FS (PF = 1)		
Frequency	±0.1% reading ±1 digit in the range 45...65 Hz		
Active Energy	Class 1 according to IEC/EN 62053-21		
Reactive Energy	Class 2 according to IEC/EN 62053-23		
COMMUNICATION			
Serial Port*	RS485 opto-isolated, 300..57,600 bps (optional)		
Ethernet Port*	10/100 Mbps, RJ45 connector (optional)		
Supported Protocols	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)		
I/O			
Voltage Input	3x180/310..3x285/495 Vac, Cat III, 300 V (self-powered models) 3x10/17…3x285/495 Vac, Cat III, 300 V (auxiliary power models)		
Current Input	6A (1/5A CT models); 80 A (models with 80 A direct insertion)		3 selectable ranges: 500 / 4,000 / 20,000 A via Rogowski Sensors
Digital Inputs	# 1 active opto-isolated channel (models without communication port), synchronization range for DMD average values 80..276 Vac/dc		
Digital output	# 1 (RS485 models) / 2 (models without communication port) passive opto-isolated channels, IEC/EN 62053-31		
PROGRAMMING			
Configuration Systems	Front keys Energy Power Pack software (MODBUS/Ethernet models) Web server (Ethernet models)		
ADDITIONAL EQUIPMENT			
			# 3 Rogowski coils RC150

***Alternative configuration**

The technical data and diagrams in this document are indicative and not binding.

MULTIFUNCTION NETWORK ANALYZERS FOR PANELS

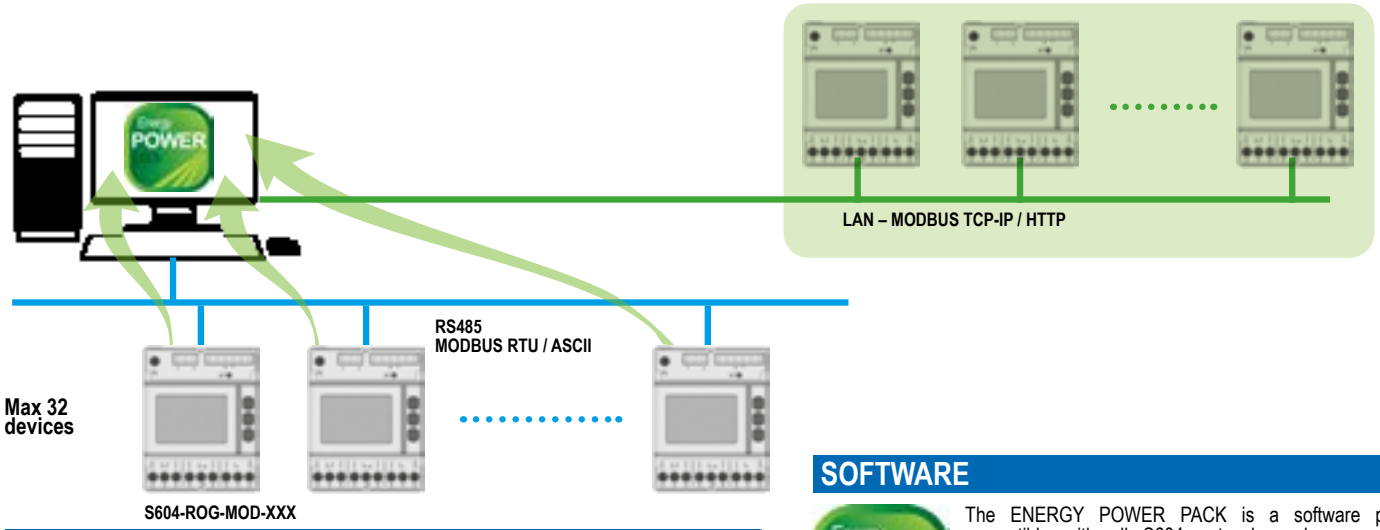
	S711B	S711E	S711EROG
			
	Three-phase Network Analyzer LCD 96x96 BASIC version	**Three-phase network analyzer LCD 96x96 ENERGY Plus version**	**Three-phase network analyzer LCD 96x96, ENERGY PLUS version, with Rogowski coil set**
GENERAL DATA			
Power Supply	230 Vac ±15%, 50-60 Hz (RS485 port models)	230 Vac ±15%, 50-60 Hz (RS485 port models) 85..265 Vac (Ethernet port models)	
Display	LCD, backlit 78x61 mm, 3 rows, 4 digits + symbols		
Function keys	4 front keys		
Operating temperature	-25..+55°C		
Sinusoidal vibration amplitude	50 Hz ± 0.075 mm		
Average value calculation (DMD)	Synchronization with DI or fixed window	Synchronization with DI, fixed or sliding window	
Memory (for instruments with communication port)	1 MB	8 MB	
Recordings	Average values for active and reactive power	MIN/AVG/MAX values for instantaneous variables Energy counters	
THD & HARMONICS	THD values for voltage and current	THD values for voltage and current Harmonic values for voltage and current up to the 15th	
Apparent Energy Counters	Total or separate counters (inductive/capacitive)		
Connection Modes	Three-phase, 4-wire, 3 currents Three-phase, 3-wire, 2 currents Single-phase		
Front protection level	IP51		
Terminal Protection Rating	IP20		
Wire diameter for measurement terminals	2,5 mm^2 / 14 AWG	1,5.. 1.5..6 mm^2 (CT models)	
Wire diameter for I/O/power/ COM terminals	1,5.mm^2 / 16 AWG	1,5.. 35 mm^2 (80 A insertion models)	
Dimensions	96x96x39 mm		
Weight	310 g		436 g
Certifications	CE		
ACCURACY			
Voltage	±0.2% reading 10% FS...FS (FS = full scale value)		
Current	±0.4% reading in 5% FS...FS		
Power	±0.5% reading ±0.1% FS (PF = 1)		
Frequency	±0.1% reading ±1 digit in the range 45...65 Hz		
Active Energy	Class 1 according to IEC/EN 62053-21		
Reactive Energy	Class 2 according to IEC/EN 62053-23		
COMMUNICATION			
Serial Port	RS485 for MODBUS RTU / ASCII communication (MODBUS models)		
Ethernet Port	-	Ethernet 10/100 Mbps for http communication, ModBUS TCP-IP (Ethernet models)	
Supported Protocols	ModBUS RTU/ASCII (RS485)	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)	
MEASUREMENT INPUTS I/O			
Voltage Input	Max Measurable Voltage: 600 Vac max L-L 20/35 VCA (*TV ratio, in case of TV use) Input Impedance: ›1.3 MOhm Frequency: 45 -65 Hz		
Current Input	Input from CT Max value: 7A Starting current (Ist): 2mA CT Load: max 0.15 VA per phase Min value for FFT calculation: 100 mA * CT ratio		3 selectable ranges: 500 / 4,000 / 20,000 A via Rogowski Sensors
Digital Input	# 1 channel for average value calculation synchronization (DMD), opto-isolated range 80..265 Vac/dc		# 1 active opto-isolated channel (models without communication port), synchronization range for DMD average values 80..276 Vac/dc
Digital output	# 2 channels for alarm events / pulse emission, NPN/PNP opto-isolated passive, max value 27 Vdc - 27 mA, pulse duration 50 ± 2 ms, max reaction time at output 1 s		
Analog output	-	# 1 opto-isolated active channel 0/4..20 mAcc, max load 500 W (model S711E6MODAO)	
PROGRAMMING			
Configuration Systems	Front keys Energy Power Pack software (MODBUS/Ethernet models)	Front keys Energy Power Pack software (MODBUS/Ethernet models) Web server (Ethernet models)	
ADDITIONAL EQUIPMENT			
	-	-	# 3 Rogowski coils RC150 from 30, 45, or 70 cm (internal diameter 10/14/22 cm), 3 m cable

(*) for equipped models

The technical data and diagrams in this document are indicative and not binding.

PROGRAMMING SYSTEMS

MODBUS / ETHERNET CONNECTIONS



FRONT KEYS

Readings, settings, and recordings are available via front keys, with the ability to manage up to 7 groups of pages on the instrument's display.

SOFTWARE

The ENERGY POWER PACK is a software package compatible with all S604 network analyzer models. It communicates via Modbus RTU and ModBUS TCP and performs multi-device management, up to a maximum of 32. ENERGY POWER PACK ensures the reading and display of all measurements, provides a complete parameter setup, downloads and converts recordings, and manages remote connections.

For versions with an integrated Ethernet port or with an external communication module, a Web Server is available and accessible via browser. With this system, it is possible to view all available values in the module and associate a recording with an exportable file in CSV format.

ORDER CODES

Code	Description
NETWORK	
S604B-6-ETH	Basic Analyzer, CT input 1/5A, with Ethernet
S604B-6-MOD	Basic Basic Analyzer, CT input 1/5A, with RS485
S604B-80-MOD	Basic Basic Analyzer, direct 80A input, with RS485
S604E-6-ETH	Energy Plus Analyzer for CT 1/5A - Ethernet, 8MB log. Arm.
S604E-6-MOD	Energy Plus Analyzer for CT 1/5A - RS485 Modbus, 8MB log. Arm.
S604E-80-ETH	Energy Plus Analyzer 80A - Ethernet, 8MB log. Arm.
S604E-80-MOD	Energy PLUS Network Analyzer 80A-RS485 Modbus, 8MB Log Harmonics
S604E-ROG-ETH-30	Energy Plus Kit Ethernet + 3 Rogowski Coils RC150 L = 30 cm Øint. 9.5 cm
S604E-ROG-ETH-45	Energy Plus Kit Ethernet + 3 Rogowski Coils RC150 L = 45 cm Øint. 14 cm
S604EROGETH45-10	Energy Plus Kit Ethernet + 3 Rogowski Coils RC150 L = 45 cm Øint. 14 cm
S604EROGETH45-5	Energy Plus Kit Ethernet + 3 Rogowski Coils RC150 L = 45 cm Øint. 14 cm
S604E-ROG-ETH-70	Energy Plus Kit Ethernet + 3 Rogowski Coils RC150 L = 70 cm Øint. 22 cm
S604E-ROG-MOD-30	Energy Plus Kit RS485 Modbus + 3 Rogowski Coils RC150 L = 30 cm Øint. 9.5 cm
S604E-ROG-MOD-45	Energy Plus Kit RS485 Modbus + 3 Rogowski RC150 L = 45 cm Øint. 14 cm
S604E-ROG-MOD-70	Energy Plus Kit RS485 Modbus + 3 Rogowski RC150 L= 70cm Øint.22cm
S711B6MOD	Basic Analyzer CT 1/5A RS485 1MB 1 DI/1 DO LCD
S711E6ETH	Energy Plus Analyzer CT 1/5A ETHERNET 8MB DI/DO LCD
S711E6MOD	Energy Plus Analyzer CT 1/5A RS485 8MB DI/DO LCD
S711E6MODAO	Energy Plus Analyzer CT 1/5A RS485 8MB DI/DO 1 AO LCD
S711EROGETH30	Energy Plus Analyzer ETH. 8MB+3ROG L30Ø10CM DI/DO LCD
S711EROGETH45	Energy Plus Analyzer ETH. 8MB+3ROG L45Ø14CM DI/DO LCD
S711EROGETH70	Energy Plus Analyzer ETH. 8MB+3ROG L70Ø22CM DI/DO LCD
S711EROGMOD30	Energy Plus Analyzer RS485 8MB + 3 Rogowski Coils L30 Ø10CM DI/DO LCD
S711EROGMOD30AO	Energy Plus Analyzer 485 8MB + 3 Rogowski Coils L30 Ø10CM DI/DO/ AO LCD
S711EROGMOD45	Energy Plus Analyzer RS485 8MB + 3 Rogowski Coils L45 Ø14CM DI/DO LCD
S711EROGMOD45AO	Energy Plus Analyzer 485 8MB + 3 Rogowski Coils L45 Ø14CM DI/DO/ AO LCD
S711EROGMOD70	Energy Plus Analyzer RS485 8MB + 3 Rogowski Coils L70 Ø22CM DI/DO LCD
S711EROGMOD70AO	Energy Plus Analyzer 485 8MB + 3 Rogowski Coils L70 Ø22CM DI/DO/ AO LCD

Code	Description
ROGOWSKI SENSORS	
RC150-025-100-10	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 10m cable
RC150-025-100-3M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 3m cable
RC150-025-100-5M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-3M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 3m cable
RC150-035-100-5M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-10	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-10	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-3M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 3m cable
RC150-040-100-5M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 5m cable
RC150-060-100-10	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 10m cable
RC150-060-100-3M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 3m cable
RC150-060-100-5M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 5m cable
RC150-090-100-10	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 10m cable
RC150-090-100-3M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 3m cable
RC150-090-100-5M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 5m cable
RC150-120-100-3M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 3m cable
RC150-120-100-5M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-130-100-5M	Rogowski Sensor L=13cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-180-100-3M	Rogowski Sensor L=180cm, Ø 57cm, 100mV/1kA - 50Hz, 3m cable
RC150-280-100-5M	Rogowski Sensor L=280cm, Ø 89cm, 100mV/1kA - 50Hz, 5m cable
RC150-300-100-5M	Rogowski Sensor L=300cm, Ø 96cm, 100mV/1kA - 50Hz, 5m cable
RC190-030-333-3M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-030-333-5M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 5m cable
RC190-035-333-3M	Rogowski Sensor L=35cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-060-333-3M	Rogowski Rogowski Sensor L=60cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-090-333-3M	Rogowski Rogowski Sensor L=90cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-160-333-3M	Rogowski Rogowski Sensor L=160cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable

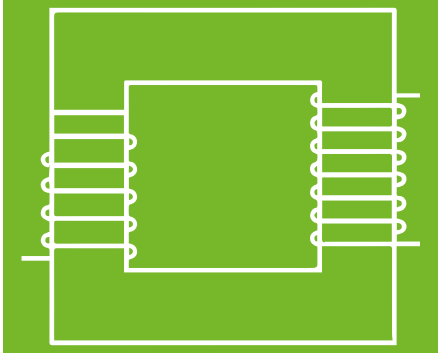
S604 / S711 SERIES

Measurement Parameters

Instantaneous values		Base	Energy Plus
VOLTAGE	VL1-N, VL2-N, VL3-N, VL1-L2, VL2-L3, VL3-L1, VΣ [V]	●	● MAM
CURRENT (+/-)	IL1, IL2, IL3, IN, IΣ [A]	●	● MAM
ACTIVE POWER (+/-)	PL1, PL2, PL3, PΣ [W] AVG	● AVG	● MAM
REACTIVE POWER (+/-)	QL1, QL2, QL3, QΣ [var] AVG	● AVG	● MAM
APPARENT POWER (+/-)	SL1, SL2, SL3, SΣ [VA]	●	● MAM
POWER FACTOR (inductive & capacitive)	PFL1, PFL2, PFL3, PFΣ	●	● MAM
DPF (+/-)	DPFL1, DPFL2, DPFL3 MAM		● MAM
TANGENT Ø (+/-)	TANØL1, TANØL2, TANØL3, TANØΣ	●	● MAM
VOLTAGE THD	THDVL1, THDVL2, THDVL3, THDVL1-L2, THDVL2-L3, THDVL3-L1 [V]	●	● MAM
CURRENT THD	THDAL1, THDAL2, THDAL3, THDAN [A]	●	● MAM
FREQUENCY	f [Hz]	●	● MAM
PHASE ORDER	Ph	●	●
AVERAGE VALUES (DMD)			
AVERAGE CURRENT (absolute)	IL1DMD, IL2DMD, IL3DMD, INDMD, IΣDMD [A]		●
AVERAGE ACTIVE POWER (import & export)	PL1DMD, PL2DMD, PL3DMD, PΣDMD [W]	●	●
SYSTEM AVERAGE ACTIVE POWER BALANCE (+/-)	PΣDMDBAL [W]		●
AVERAGE REACTIVE POWER (import & export)	QL1DMD, QL2DMD, QL3DMD, QΣDMD [var]	●	●
SYSTEM AVERAGE REACTIVE POWER BALANCE (+/-)	QΣDMDBAL [var]		●
AVERAGE APPARENT POWER (import & export)	SL1DMD, SL2DMD, SL3DMD, SΣDMD [VA]		●
SYSTEM AVERAGE APPARENT POWER BALANCE (+/-)	SΣDMDBAL [VA]		●
AVERAGE POWER FACTOR (import & export)	PFL1DMD, PFL2DMD, PFL3DMD, PFΣDMD		●
MAXIMUM VALUES			
MAXIMUM VOLTAGE	VL1-NMAX, VL2-NMAX, VL3-NMAX, VL1-L2MAX, VL2-L3MAX, VL3-L1MAX, VΣMAX [V]	●	●
MAXIMUM CURRENT (absolute)	IL1MAX, IL2MAX, IL3MAX, INMAX, IΣMAX [A]	●	●
MAXIMUM ACTIVE POWER (import & export)	PL1MAX, PL2MAX, PL3MAX, PΣMAX [W]		●
MAXIMUM REACTIVE POWER (import & export)	QL1MAX, QL2MAX, QL3MAX, QΣMAX [var]		●
MAXIMUM APPARENT POWER (import & export)	SL1MAX, SL2MAX, SL3MAX, SΣMAX [VA]		●
MAXIMUM POWER FACTOR (import & export)	PFL1MAX, PFL2MAX, PFL3MAX, PFΣMAX		●
MAXIMUM TANGENT Ø (import & export)	TANØL1MAX, TANØL2MAX, TANØL3MAX, TANØΣMAX		●
MAXIMUM VOLTAGE THD	THDVL1MAX, THDVL2MAX, THDVL3MAX, THDVL1-L2MAX, THDVL2-L3MAX, THDVL3-L1MAX [V]		●
MAXIMUM CURRENT THD	THDAL1MAX, THDAL2MAX, THDAL3MAX, THDANMAX [A]		●
MAXIMUM AVERAGE CURRENT (DMD)	IL1MAXDMD, IL2MAXDMD, IL3MAXDMD, IΣMAXDMD [A]		●
MAXIMUM AVERAGE ACTIVE POWER (DMD) (import & export)	PL1MAXDMD, PL2MAXDMD, PL3MAXDMD, PΣMAXDMD [W]	●	●
MAXIMUM AVERAGE REACTIVE POWER (DMD) (import & export)	QL1MAXDMD, QL2MAXDMD, QL3MAXDMD, QΣMAXDMD [var]	●	●
MAXIMUM AVERAGE APPARENT POWER (DMD) (import & export)	SL1MAXDMD, SL2MAXDMD, SL3MAXDMD, SΣMAXDMD [VA]		●
MINIMUM VALUES			
MINIMUM ACTIVE POWER	PΣMIN [W]	●	●
MINIMUM REACTIVE POWER	QΣMIN [var]	●	●
MINIMUM APPARENT POWER	SΣMIN [VA]	●	●
Counters			
ACTIVE ENERGY (import & export)	kWhL1, kWhL2, kWhL3, kWhΣ [Wh]	●	● EC
SYSTEM ACTIVE ENERGY BALANCE	kWhΣBAL [Wh]	●	● EC
REACTIVE ENERGY (import & export) (inductive & capacitive)	kvarhL1, kvarhL2, kvarhL3, kvarhΣ [varh]	●	● EC
SYSTEM REACTIVE ENERGY BALANCE (inductive & capacitive)	kvarhΣBAL [varh]	●	● EC
APPARENT ENERGY (import & export) (inductive & capacitive on request)	kVAhL1, kVAhL2, kVAhL3, kVAhΣ [VAh]	●	● EC
SYSTEM APPARENT ENERGY BALANCE (inductive & capacitive on request)	kVAhΣBAL [VAh]	●	● EC
INSTALLATION HOURS COUNTER	HRCNTi [h]		●
MEASUREMENT HOURS COUNTER	HRCNTm [h]		●
HARMONIC ANALYSIS UP TO THE 15th			
VOLTAGE HARMONICS	VL1-N, VL2-N, VL3-N, VL1-L2, VL2-L3, VL3-L1 [V]		● MAM
CURRENT HARMONICS	IL1, IL2, IL3, IN [A]		● MAM

LEGEND
● = Standard
AVG = Parameters for recording average values (fixed)
MAM = Parameters for recording MIN/MED/MAX values (up to 24 programmable parameters)
EC = Parameters for energy meter recording (fixed)
imp&exp = Separate values for imported and exported
abs = Absolute value
ind&cap = Separate values for inductive and capacitive
DMDBAL = Difference between the positive average value and the negative average value: [DMD+] - [DMD-]
BAL = Difference between the imported and exported value: [imp] - [exp]

3.3



CURRENT TRANSFORMERS TAA / TAC SERIES

CURRENT TRANSFORMERS TAA / TAC Series

The current transformers of the TAA / TAC Series are components with accuracy class 0.5, available in split-core versions (for easy installation), wound primary (for low primary current values), and busbar types (for high primary current values). They can be used for current measurement with both cables and busbar systems. They are the ideal complement for current measurement in combination with network analyzers, energy meters, and electrical measurement converters. The current transformers of the TAA / TAC Series are installed to reduce the line current to a value of up to 5 A on the secondary output circuit.

SUPPLY COMPLEMENT for analyzers, meters, converters

WIDE RANGE
Split-core models
Wound primary models
Busbar models

EASY INSTALLATION AND MAINTENANCE

TRANSFORMATION RATIO FROM 20/5 TO 1000/5

PRECISION CLASS 0.5

SECONDARY CURRENT 5A

NOMINAL CURRENT
2.5 I.ter@1s (dynamic)
40-80 IpN@1s (thermal)

PERFORMANCE / LOAD From 1 VA to 8 VA

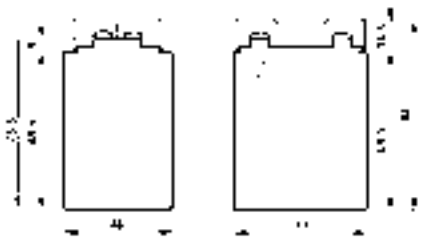
WOUND PRIMARY CLOSED CURRENT TRANSFORMERS

COMMON DATA	
Precision class	0.5
Nominal performance	3 VA
Secondary current	5A
Frequency	40-60 Hz
Nominal dynamic DC current	2.5 I.ter@1s
Nominal thermal DC current	40-80 IpN@1s
Reference voltage	0.72 kV
Test voltage	3kV@50Hz (1 min)
Permanent overcurrent	1.2 In
Safety coefficient (FS)	=<5
Operating Temperature	-25..+50°C
Storage Temperature	-40..+80°C
Relative humidity	90% without condensation
Air Isolation	Class E
Protection class	IP30 (CEI EN 60529)
Enclosure	Self-extinguishing ABS, sealable terminal covers
Installation type	DIN rail
Pole Dimensions	6 mm
Dimensions	47x56x84 mm
Reference standards	CEI 38-1, IEC 185, VDE 0414, EN600044-1, EN60044-1A

ORDER CODES

Order Code	Transformation ratio
TAC-0205-00-0000	20/5
TAC-0255-00-0000	25/5
TAC-0305-00-0000	30/5

DIMENSIONS



SPLIT-CORE CURRENT TRANSFORMERS

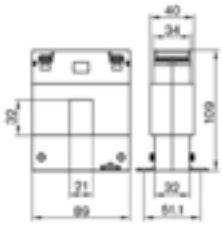
COMMON DATA

Precision class	0.5
Secondary current	5A
Frequency	40-60 Hz
Nominal dynamic DC current	2.5 I.ter@1s
Nominal thermal DC current	40-80 IpN@1s
Reference voltage	0.72 kV
Test voltage	3kV@50Hz (1 min)
Permanent overcurrent	1.2 In
Safety coefficient (FS)	=<5
Operating Temperature	-25..+50°C
Storage Temperature	-40..+80°C
Maximum cable temperature passing through	70°C
Relative humidity	90% without condensation
Air Isolation	Class E
Protection class	IP30 (CEI EN 60529)
Enclosure	Self-extinguishing ABS, protected terminals
Installation type	DIN rail
Reference standards	CEI 38-1, IEC 185, VDE 0414, EN600044-1, EN60044-1A

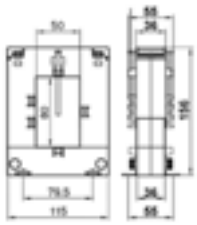
ORDER CODES

Order Code	Transformation ratio	Nominal performance	Fanless	Dimensions
TAA-01005-2030	100/5	1.5 VA	20x30 mm	89x111x40 mm
TAA-01505-2030	150/5	1.5 VA	20x30 mm	89x111x40 mm
TAA-02005-2030	200/5	1.5 VA	20x30 mm	89x111x40 mm
TAA-02505-2030	250/5	1.5 VA	20x30 mm	89x111x40 mm
TAA-03005-2030	300/5	1.5 VA	20x30 mm	89x111x40 mm
TAA-02505-5080	250/5	1.5 VA	50x80 mm	114x145x82 mm
TAA-04005-5080	400/5	1.5 VA	50x80 mm	114x145x82 mm
TAA-05005-5080	500/5	2.5 VA	50x80 mm	114x145x82 mm
TAA-06005-5080	600/5	2.5 VA	50x80 mm	114x145x82 mm
TAA-07505-5080	750/5	2.5 VA	50x80 mm	114x145x82 mm
TAA-08005-5080	800/5	2.5 VA	50x80 mm	114x145x82 mm
TAA-05005-8080	500/5	2.5 VA	80x80 mm	144x145x82 mm
TAA-08005-8080	800/5	2.5 VA	80x80 mm	144x145x82 mm
TAA-10005-8080	1000/5	2.5 VA	80x80 mm	144x145x82 mm

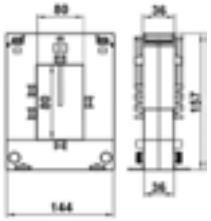
DIMENSIONS



SPLIT-CORE WITH HOLE CURRENT TRANSFORMERS 20x30 mm



SPLIT-CORE WITH HOLE CURRENT TRANSFORMERS 50x80 mm



SPLIT-CORE WITH HOLE CURRENT TRANSFORMERS 80x80 mm

BUSBAR CLOSED CURRENT TRANSFORMERS

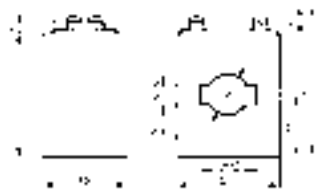
COMMON DATA

Secondary current	5A
Frequency	40-60 Hz
Nominal dynamic DC current	2.5 I.ter@1s
Nominal thermal DC current	40-80 IpN@1s
Reference voltage	0.72 kV
Test voltage	3kV@50Hz (1 min)
Permanent overcurrent	1.2 In
Safety coefficient (FS)	=<5
Operating Temperature	-25..+50°C
Storage Temperature	-40..+80°C
Maximum cable temperature passing through	70°C
Relative humidity	90% without condensation
Air Isolation	Class E
Protection class	IP30 (CEI EN 60529)
Enclosure	Self-extinguishing ABS, sealable terminal covers
Installation type	DIN rail
Dimensions	46x57x83.5 mm
Reference standards	CEI 38-1, IEC 185, VDE 0414, EN600044-1, EN60044-1A

ORDER CODES

Code Order Code	Precision class	Transformation ratio	Nominal performance	Fanless	Dimensions
TAC-0505-22-3010	1	50/5	1 VA	Cable: 22 mm Busbar 30x10 mm	46x57x83.5 mm
TAC-0605-22-3010	1	60/5	1 VA	Cable: 22 mm Busbar 30x10 mm	46x57x83.5 mm
TAC-01005-22-3010	1	100/5	1.5 VA	Cable: 22 mm Busbar 30x10 mm	46x57x83.5 mm
TAC-01505-22-3010	1	150/5	1.5 VA	Cable: 22 mm Busbar 30x10 mm	46x57x83.5 mm
TAC-01005-32-4010	1	100/5	2 VA	Cable: 32 mm Busbar 40x10 mm	46x71x98.5 mm
TAC-02505-32-4010	0.5	250/5	2.5 VA	Cable: 32 mm Busbar 40x10 mm	46x71x98.5 mm
TAC-04005-32-4010	0.5	400/5	5 VA	Cable: 32 mm Busbar 40x10 mm	46x71x98.5 mm
TAC-05005-32-4010	0.5	500/5	6 VA	Cable: 32 mm Busbar 40x10 mm	46x71x98.5 mm
TAC-08005-32-4010	0.5	800/5	8 VA	Cable: 32 mm Busbar 40x10 mm	46x71x98.5 mm

DIMENSIONS

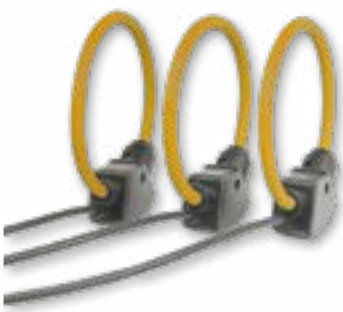


BUSBAR CLOSED CURRENT TRANSFORMERS Cable 22mm, busbar 30x10 mm

BUSBAR CLOSED CURRENT TRANSFORMERS Cable 32mm, busbar 40x10 mm

3.4

ROGOWSKI SENSORS



RC150 / RC190 SERIES

A flexible coil without a magnetic core, shaped like a toroid, is placed around the current conductor. The variable magnetic field produced by the current induces a voltage in the coil.

The output voltage is proportional to the rate of change of the current and, after an integrator circuit, it is proportional to the current value itself (as with a current transformer). The coil length varies from 25 to 300 cm with a rope diameter reduced to about 8 mm.

HIGHLIGHTS

TECHNOLOGY

- Junction point insensitive to the position of the inner conductor and currents from external conductors
- Shielded coil and cable against electromagnetic noise

ENGINEERING

- Coil diameter reduced to about 8 mm
- High flexibility

CALIBRATION

- Accuracy better than 1% even near the coil closure point
- Calibration point easily accessible for recalibration

OPTIMAL CLOSURE

- Secure closure even in the presence of vibrations and/or strains
- Stable closure ensures measurement repeatability

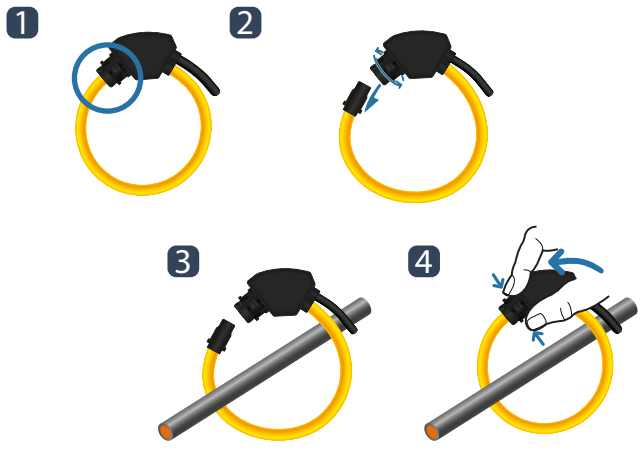
INSTALLATION

- Applications with difficult access
- Non-intrusiveness in the measurement circuit

TYPICAL APPLICATIONS

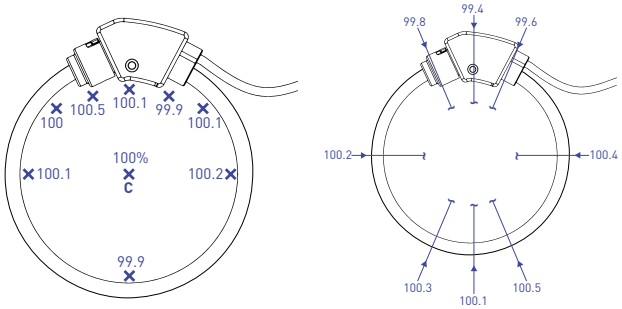
- Measurement of high currents
- Harmonics, transients, machine load, power, and consumption supervision
- Laboratory measuring instruments
- Control of welding machines

INSTALLATION PHASES



DIMENSIONS

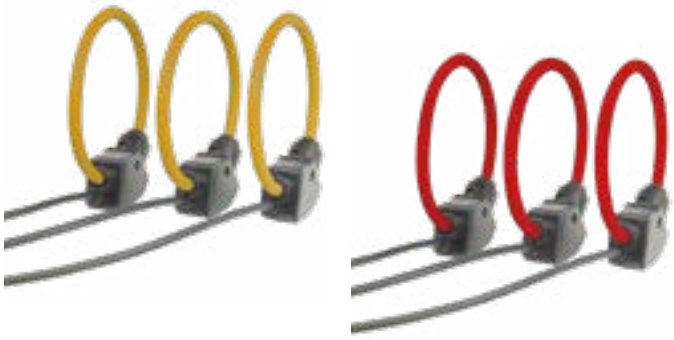
PRECISION RANGE



C (conductor centered)

HIGH-EFFICIENCY ROGOWSKI FLEXIBLE TRANSDUCERS

RC150 / RC190 SERIES

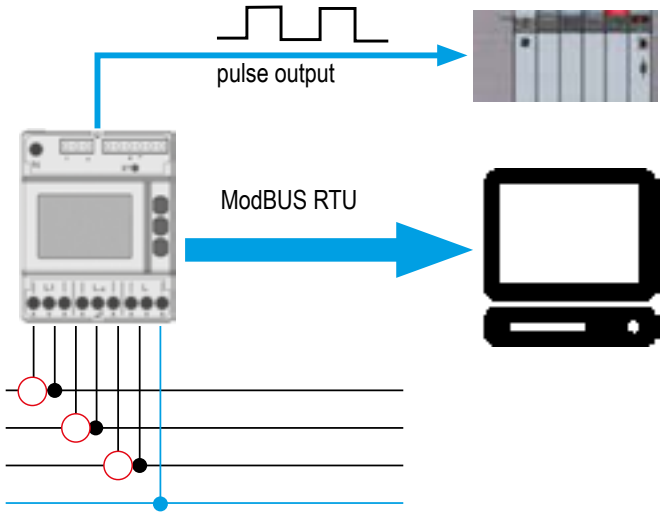


Suitable for measuring currents from mA to hundreds of kA, the RC150 and RC190 series ensure high linearity, wide dynamic range, and are very useful with large or irregularly shaped conductors. Their light weight and flexibility also make them optimal for use in places with limited access.
The transducers present no danger to open secondaries and cannot be damaged by large overloads. The absence of a magnetic core gives this range a very wide frequency response. All this makes them particularly suitable for measuring harmonic content or transients.
The bayonet closure guarantees linear detection at any distance between the conductor and transducer, even if they are not perpendicular to each other.

TECHNICAL SPECIFICATIONS

GENERAL DATA	
Coil Length	From 25 to 300 cm (for RC150 versions) From 30 to 300 cm (for RC190 versions)
Coil Diameter	From 8 ±0.2 mm to 57 cm (RC150) From 12 ±0.2 mm to 57 cm (RC190)
Cable length	3 m
Closure	Bayonet
Protection class	IP67
Material	UL94-V0 thermoplastic
OPERATING TEMPERATURE	-30..+80°C
Weight	150 to 500 g
ELECTRICAL SPECIFICATIONS	
Output Level (RMS)	100 mV / 1 kA @50 Hz (standard) (RC150) 333 mV / 1 kA @50 Hz (standard) (RC190)
Transducer Resistance	70..900 Ω (RC150) 300..2,000 Ω (RC190)
Accuracy	Better than ±1% of reading (with a conductor diameter of 15 mm) across the coil diameter
Frequency	Approximately 40 Hz to 20 kHz
Working Voltage	1,000 Vrms CAT III, 600 Vrms CAT IV, pollution degree 2
Test voltage	7,400 Vrms / 1 min
STANDARD	
Certifications	CE

EXAMPLE APPLICATION

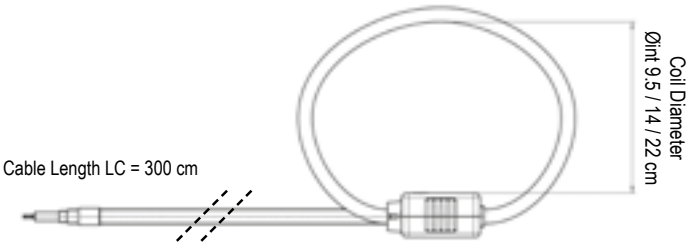


ORDER CODES

Code	Description
RC150-025-100-10	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 10m cable
RC150-025-100-3M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 3m cable
RC150-025-100-5M	Rogowski Sensor L=25cm, Ø 8cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-3M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 3m cable
RC150-035-100-5M	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 5m cable
RC150-035-100-10	Rogowski Sensor L=35cm, Ø 11cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-10	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 10m cable
RC150-040-100-3M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 3m cable
RC150-040-100-5M	Rogowski Sensor L=40cm, Ø 12cm, 100mV/1kA - 50Hz, 5m cable
RC150-060-100-10	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 10m cable
RC150-060-100-3M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 3m cable
RC150-060-100-5M	Rogowski Sensor L=60cm, Ø 19cm, 100mV/1kA - 50Hz, 5m cable
RC150-090-100-10	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 10m cable
RC150-090-100-3M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 3m cable
RC150-090-100-5M	Rogowski Sensor L=90cm, Ø 28cm, 100mV/1kA - 50Hz, 5m cable
RC150-120-100-3M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 3m cable
RC150-120-100-5M	Rogowski Sensor L=12cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-130-100-5M	Rogowski Sensor L=13cm, Ø 38cm, 100mV/1kA - 50Hz, 5m cable
RC150-180-100-3M	Rogowski Sensor L=180cm, Ø 57cm, 100mV/1kA - 50Hz, 3m cable
RC150-280-100-5M	Rogowski Sensor L=280cm, Ø 89cm, 100mV/1kA - 50Hz, 5m cable

The technical data and diagrams in this document are indicative and not binding.

DIMENSIONS



ORDER CODES

Code	Description
RC150-300-100-5M	Rogowski Sensor L=300cm, Ø 96cm, 100mV/1kA - 50Hz, 5m cable
RC190-030-333-3M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-030-333-5M	Rogowski Sensor L=30cm, Ø 9cm, 333mV/1kA - 50Hz, 5m cable
RC190-035-333-3M	Rogowski Sensor L=35cm, Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-060-333-3M	Rogowski Rogowski Sensor L=60cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-090-333-3M	Rogowski Rogowski Sensor L=90cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable
RC190-160-333-3M	Rogowski Rogowski Sensor L=160cm, Øint. Ø 9cm, 333mV/1kA - 50Hz, 3m cable

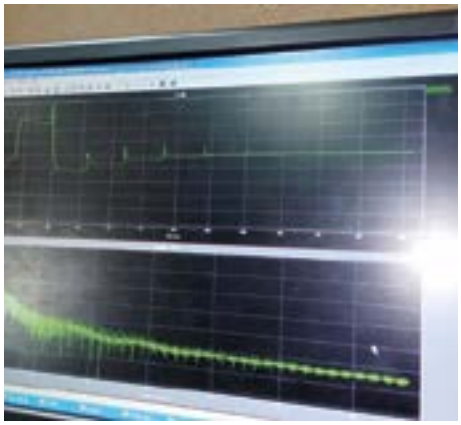
VANTAGGI DELLA BOBINA DI ROGOWSKI

- Adatta alla misurazione di correnti fino a centinaia di kA
- Molto utile con grandi conduttori o di forma irregolare o in luoghi scarsamente accessibili
- Non intrusiva, non assorbe potenza dal circuito sotto misura
- Caratterizzata da elevata linearità
- Facilità di accoppiamento al conduttore da misurare

CAMPI DI IMPIEGO

Misura di correnti molto elevate

Supervisione di armoniche e transienti



Supervisione del carico di singoli macchinari

Supervisione della potenza e dei consumi

Strumenti di misura da laboratorio

Controllo di macchine per la saldatura

SENSORI DI ROGOWSKI VS TA

	Sensori di Rogowski	Trasformatori Amperometrici
Misura di correnti elevate	●	
Applicazioni con accesso difficoltoso	●	
Spazi di cablaggio ridotti		●
Linearità della misura	●	
Non intrusività nel circuito di misura	●	
Barriere all'adozione (abitudine elettricisti / quadristi)		●
Prezzo		●

3.5

ENERGY COUNTERS

S500 Series

ENERGY COUNTERS

The energy meters of the S500 Series in DIN format are used for energy measurement in industrial and civil environments. They are available with integrated, remote communication and MID certification. The LCD display shows the totalizers and instantaneous power. For remote management, the ENERGY MODBUS PACK tools for meters with ModBUS interface and ENERGY M-BUS PACK for meters with M-BUS interface are available, in addition to the Web Server for versions with an Ethernet interface. The S500 meters are built in full compliance with the EN 50470-1 standard. The accuracy of active energy is in accordance with IEC/EN 62053-21 class 1. The accuracy of reactive energy complies with IEC/EN 62053-23 class 2.

HIGHLIGHTS

M-BUS COMMUNICATION

- Standard for remote reading of energy meters, sensors, and actuators
- Simplified 2-wire bus connection
- High number of network nodes (max 250 per branch)

MID CERTIFICATION

- Instruments suitable for fiscal use
- European Directive 2014/22/EU for measuring instruments
- Supplementary metrological marking

S0 OUTPUT / TARIFF INPUT

- # 1 input for tariff
- # 2 S0 outputs for energy pulse re-emission

COMMUNICATION PROTOCOLS

- External communication modules with side optical port or integrated into the module
- Support for ModBUS, Ethernet, M-BUS, Konnex protocols

ACCURACY

- Active Energy: class B, EN 50470-3
- Reactive Energy: class 2, IEC EN 62053-23

CONNECTIONS

- For 3/4 wire networks with balanced/unbalanced load
- Current: direct connection or via CT
- Single-phase/Three-phase voltages

CONFIGURATION

- Via front keys
- ENERGY MODBUS PACK software
- ENERGY M-BUS PACK software
- Web Server

TYPICAL APPLICATIONS

- Energy totalization for industrial machinery
- Remote consumption monitoring
- Energy distribution
- Energy and fiscal accounting

500 SERIES

	S501-40	S502-80	S504C	S534
	 MID	 MID	 MID	 MID
	40A single-phase energy meter, 2 wires, 1 DIN, certified MID	**80A single-phase energy meter, 2 wires, 2 DIN, certified MID**	**6A/80A three-phase energy meter, 4 wires, 4 DIN, integrated communication, certified MID**	**6A/80A three-phase energy meter, 3/4 wires, 4 DIN, certified MID**
GENERAL DATA				
Power Supply	Voltage derived from measurement circuit			
Max Consumption	1.5 VA - 1 W	7.5 VA - 0.5 W (per phase)	7.5 VA - 0.5 W (per phase) - M-BUS version 3.5 VA - 1 W (per phase) - Modbus/ Ethernet version	7.5 VA - 0.5 W (per phase)
Accuracy	Active energy class 1 according to IEC/EN 62053-21 and class B according to EN 50470-3 (MID)			
Tariff Input	Active opto-isolated Tariff 2 voltage range: 80..276 Vac/dc			
Metrological LED	Meter constant 5000 imp/kWh Pulse duration 4±0.1 ms	Meter constant 1000 imp/kWh	Meter constant 10000 imp/kWh Pulse duration 10±2 ms	
Counter reset	Optional configurations available			
OPERATING TEMPERATURE	-25..+55°C			
Protection class	IP51 (front), IP20 (terminals)			
Dimensions	18x90x64 mm	36x90x64 mm	72x90x64 mm	
Certifications	CE, MID			
VOLTAGE				
Nominal Value	230 V, 50-60 Hz	230 V 50 Hz 240 V 50 Hz 230 V 50/60 Hz 230..240 V 50/60 Hz	3x230/400..3x240/415 V 50/60 Hz	3x230/400 V 50 Hz 3x240/415 V 50 Hz 3x230/400 V 50/60 Hz 3x230/400..3x240/415 V 50/60 Hz
CURRENT				
Starting current Ist	20mA		2 mA (S504C-6) / 20 mA (S504C-80)	2 mA (S534-6) / 20 mA (S534-80)
Minimum current Imin	250mA		10 mA (S504C-6) / 250 mA (S504C-80)	10 mA (S534-6) / 250 mA (S534-80)
Transition current Itr	500mA		50 mA (S504C-6) / 500 mA (S504C-80)	50 mA (S534-6) / 500 mA (S534-80)
Reference current Iref (Ib)	5A		1 A (S504C-6) / 5 A (S504C-80)	1 A (S534-6) / 5 A (S534-80)
Maximum current Imax	40A		6 A (S504C-6) / 80 A (S504C-80)	6 A (S534-6) / 80 A (S534-80)
S0 OUTPUTS / ENERGY PULSE EMISSION				
Quantity/Type	1 passive opto-isolated	2 passive opto-isolated		
Maximum values	27 Vdc - 27 mA	250 Vac/dc - 100 mA	27 Vdc - 27 mA	250 Vac/dc - 100 mA
Pulse duration	100±0.5 ms	50±2 ms		
Meter constant	1000 imp/kWh	-	-	-
COMMUNICATION				
Supported Protocols	ModBUS, M-BUS, Ethernet	ModBUS, M-BUS, Ethernet, Konnex	ModBUS, M-BUS, Ethernet	ModBUS, M-BUS, Ethernet, Konnex
ModBUS Communication	RS485 port, Modbus RTU/ASCII, 30..57600 bps	-	RS485 port, Modbus RTU/ASCII, 30..57600 bps	-
M-BUS COMMUNICATION	EN 1434-3 wired port, M-BUS, 300..38400 bps	-	EN 1434-3 wired port, M-BUS, 300..38400 bps	-
Ethernet Communication	10/100BaseT, http, Ntp, Dhcp, Modbus TCP, 10/100 Mbps, data recording, web server	-	10/100BaseT, http, Ntp, Dhcp, Modbus TCP, 10/100 Mbps, data recording, web server	-
Type	Integrated / Via external interface	Via external interface	Integrated	Via external interface
CONFIGURATION				
Front keys	Yes			
PC Windows Software	E-MODBUS-PACK, E-MBUS-PACK			
			WEB SERVER	

The technical data and diagrams in this document are indicative and not binding.

S500 SERIES - PROGRAMMING

FRONT KEYS

Using the front keys available on all models, the following functions can be performed:

- **Scroll through pages and groups**
- **Temporarily display secondary values**
- **Access/exit programming pages**
- **Start/stop/reset partial counter**
- **Parameter settings**
- **Display test**

WEB SERVER

All S500 Series meters in the Ethernet version with integrated or external COM have access to a WEB SERVER via a secure connection.
The WEB SERVER provides access to the values present in the module and defines a recording with an exportable file in .csv format.

ENERGY MODBUS PACK

Downloadable for free from www.seneca.it

The models with Modbus communication can be configured via the ENERGY MODBUS PACK software package downloadable from www.seneca.it.

- **Serial port settings**
- **Search/add meters to the network**
- **Network parameter configuration for each meter**

ENERGY M-BUS PACK

Downloadable for free from www.seneca.it

The models with M-BUS communication can be configured via the ENERGY M-BUS PACK software package downloadable from www.seneca.it.

- **Serial port settings**
- **Search/add meters to the network**
- **Network parameter configuration for each meter**

ORDER CODES

Code	Description
COUNTERS	
S501-40-0	40A single-phase energy meter, 2 wires, 1 DIN
S501-40-0-MID	40A single-phase energy meter, 2 wires, 1 DIN, certified MID
S501-40-MOD-MID	40A single-phase energy meter, 2 wires, 1 DIN, RS485 Modbus, certified MID
S501-40-MBU-MID	40A single-phase energy meter, 2 wires, 1 DIN, M-Bus, certified MID
S502-80-MOD	80A single-phase energy meter, 2 wires, 2 DIN, RS485 Modbus
S502-80-MBU	80A single-phase energy meter, 2 wires, 2 DIN, M-Bus
S502-80-ETH	80A single-phase energy meter, 2 wires, 2 DIN, Ethernet
S502-80-MID	80A single-phase energy meter, 2 wires, 2 DIN, certified MID
S502-80-R	80A single-phase energy meter, 2 wires, 2 DIN, reset all counters
S504C-6-MOD-MID	1/5A three-phase energy meter, 4 wires, 4 DIN-RS485 Modbus, certified MID
S504C-6-MBU-MID	1/5A three-phase energy meter, 3/4 wires, 4 DIN-MBus, certified MID
S504C-6-ETH-MID	1/5A three-phase energy meter, 4 wires, 4 DIN-Ethernet, certified MID
S504C-80-MOD-MID	80A three-phase energy meter, 4 wires, 4 DIN-RS485 Modbus, certified MID
S504C-80-MBU-MID	80A three-phase energy meter, 4 wires, 4 DIN-MBus, certified MID
S504C-80-ETH-MID	80A three-phase energy meter, 4 wires, 4 DIN-Ethernet, certified MID
S534-6-MID	1/5A three-phase energy meter, 3/4 wires, 4 DIN, certified MID
S534-80-MID	80A three-phase energy meter, 3/4 wires, 4 DIN, certified MID
ACCESSORIES	
S107USB	Portable USB/RS485 Serial Converter
S117P1	Configuration Kit K121, K120RTD, K111, T120, T121 - Portable Serial RS232-TTL-RS485/USB Converter
S107MBU	USB - M-BUS Converter/Adapter, Portable Version
S500-MOD	Optical Communication Interface - RS485 Modbus Rtu Standard
S500-MBU	Optical Communication Interface - M-Bus
S500-ETH	Optical Communication Interface - LAN Modbus TCP-IP, web server
S500-KNX	Optical Communication Interface – KNX (Konnex)
SOFTWARE	
E-MODBUS PACK	Energy meter management software for the S500 Series with Modbus/Ethernet communication
E-M-BUS PACK	Energy meter management software for the S500 Series with M-BUS communication

S501 SERIES

Measurement Parameters	Symbol	UdM/State	Display	COM Port
Instantaneous values				
Voltage	V	V	●	●
Current	I	A	■	■
Power factor	PF		■	■
Active Power	P	kW	■	■
Apparent Power	S	kVA	■	■
Reactive Power	Q	kvar	■	■
Frequency	f	Hz	●	●
Power Direction	↔ display) +/- (port)		●	●
Stored Data				
Active energy		kWh	■	■
Inductive and capacitive apparent energy		kVAh	■	■
Inductive and capacitive reactive energy		kvarh	■ ◊	■
Resettable energy meters (NON-MID)		kWh, kVAh, kvarh	■ ◊	■
Resettable partial energy meters		kWh, kVAh, kvarh	■ ◊	■
Other Information				
Partial counter status	P	Started / Stopped	●	●
S0 output status	●	Active	●	

LEGEND

● = Present

■ = Bidirectional value

◊ = varh not available for MID S instrument

S502 SERIES

Measurement Parameters	Symbol	UdM/State	Display	COM Port
Instantaneous values				
Voltage	V	V		●
Current	I	A		■
Power factor	PF			■
Active Power	P	kW	■	■
Apparent Power	S	kVA	■	■
Reactive Power	Q	kvar	■	■
Frequency	f	Hz		●
Power Direction	↔		●	●
Stored Data				
Active energy		kWh	■	■
Inductive and capacitive apparent energy		kVAh	■ ◊	■ ◊
Inductive and capacitive reactive energy		kvarh	■	■
T1/T2 Tariff energy meters		kWh, kVAh, kvarh	■ ◊	■
Resettable partial energy meters		kWh, kVAh, kvarh	■ ◊	■
Energy balance		kWh, kVAh, kvarh	■ ◊	■
Other Information				
Current tariff	T	1/2		●
Voltage above/below limit	VOL, VUL	ON/OFF		●
Current above/below limit	IOL, IUL	ON/OFF		●
Frequency above/below limit	fOL, fUL	ON/OFF		●
Partial counters	PAR	START/STOP	●	●
S0 output status	1, 2	Active / Not active	●	

LEGEND

● = Present

■ = Bidirectional value

◊ = varh not available for MID S instrument

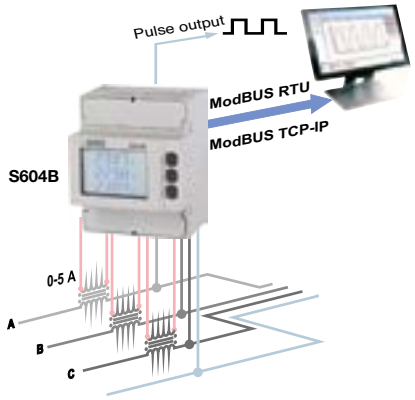
S504C - S534 SERIES

Measurement Parameters	Symbol	UdM/State	Display	COM Port	3-wire system	4-wire system
Instantaneous values						
Phase voltage	VL1-N - VL2-N - VL3-N	V		●		●
Line voltage	VL1-L2 - VL2-L3 - VL3-L1	V		●	●	●
System voltage	VΣ	V		●	●	●
Phase current	I1 - I2 - I3	A		■	●	●
Neutral current	IN	A		■		●
System current	IΣ	A		■	●	●
Phase power factor	PFL1 - PFL2 - PFL3	-		●		●
System power factor	PFΣ	-		●	●	●
Apparent phase power	SL1 - SL2 - SL3	VA (kVA)	■	■		●
Apparent system power	SΣ	VA (kVA)	■	■	●	●
Active phase power	PL1 - PL2 - PL3	W (kW)	■	■		●
Active system power	PΣ	W (kW)	■	■	●	●
Reactive phase power	QL1 - QL2 - QL3	var (kvar)	■	■		●
Reactive system power	QΣ	var (kvar)	■	■	●	●
Frequency	f	Hz		●	●	●
Phase order	CW/CCW	-	●	●	●	●
Energy direction	↔	-	●	●	●	●
Stored Data						
Active phase energy	L1 - L2 - L3	Wh (kWh)	■	■		●
Active system energy	Σ	Wh (kWh)	■	■	●	●
Reactive inductive and capacitive phase energy	L1 - L2 - L3	varh (kvarh)	■ ◊	■		●
Reactive inductive and capacitive system energy	Σ	varh (kvarh)	■ ◊	■	●	●
Inductive and capacitive apparent phase energy	L1 - L2 - L3	VAh (kVAh)	■	■		●
Inductive and capacitive apparent system energy	Σ	VAh (kVAh)	■	■	●	●
Active phase energy tariff 1/2	L1 - L2 - L3	Wh (kWh)	■	■		●
Active system energy tariff 1/2	Σ	Wh (kWh)	■	■	●	●
Reactive inductive and capacitive phase energy tariff 1/2	L1 - L2 - L3	varh (kvarh)	■ ◊	■		●
Reactive inductive and capacitive system energy tariff 1/2	Σ	varh (kvarh)	■ ◊	■	●	●
Inductive and capacitive apparent phase energy tariff 1/2	L1 - L2 - L3	VAh (kVAh)	■	■		●
Inductive and capacitive apparent system energy tariff 1/2	Σ	VAh (kVAh)	■	■	●	●
Resettable partial energy meters	Σ	Wh, varh, VAh (kWh, kvarh, kVAh)	■ ◊	■	●	●
Energy balance	Σ	Wh, varh, VAh (kWh, kvarh, kVAh)	■ ◊	■	●	●
Other Information						
Current tariff	T	1/2		●		
Secondary values	SEC	ON/OFF	●	●		
CT ratio	CT	Set value	●	●		
Voltage above/below limit	VOL, VUL	ON/OFF		●		
Current above/below limit	IOL, IUL	ON/OFF		●		
Frequency out of range	fOUT	ON/OFF		●		
Partial counters	PAR	START/STOP	●	●		
S0 output status	1, 2	Active	●			

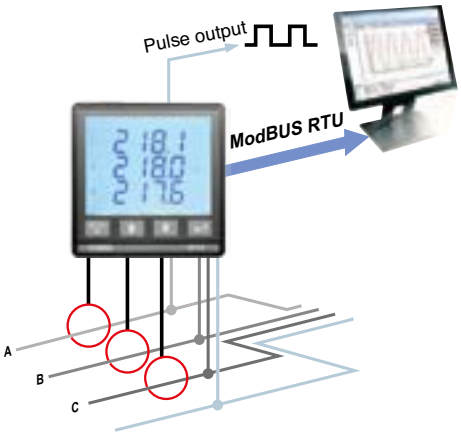
LEGEND
● = Present
■ = Bidirectional value
◊ = varh not available for MID S instrument

APPLICATION DIAGRAMS

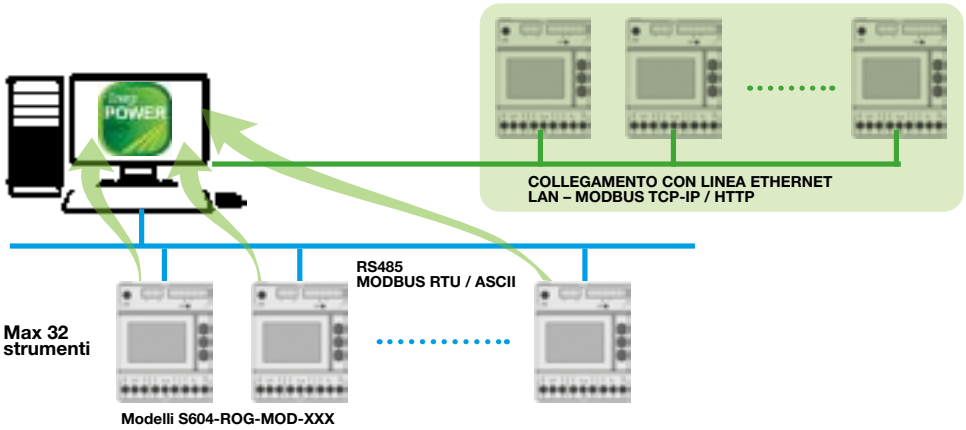
S604B/E



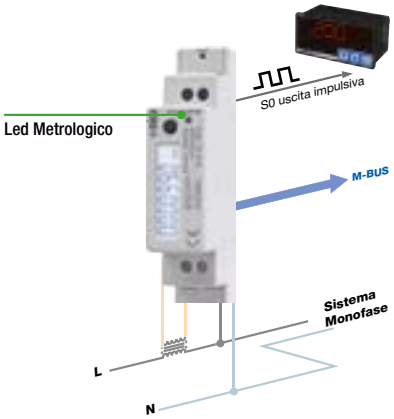
S711



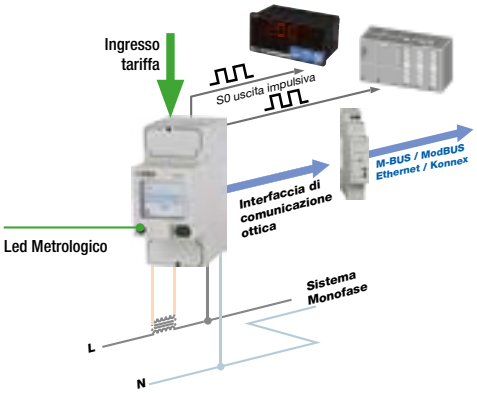
S604 / S711



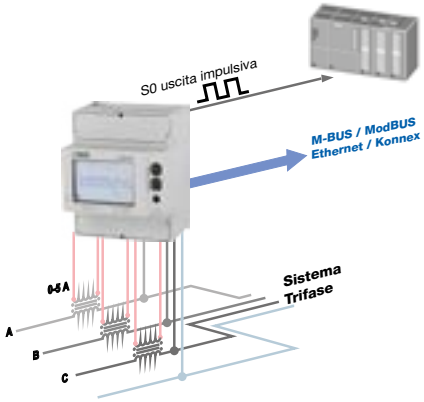
S501



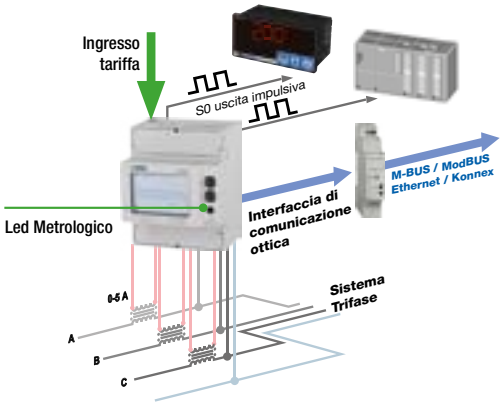
S502



S504C



S504 / S534



OPTICAL COMMUNICATION INTERFACES

S500-ETH
Interfaccia di comunicazione ottica - LAN Modbus TCP-IP, web server

S500-KNX
Interfaccia di comunicazione ottica – KNX (Konnex)

S500-MBU
Interfaccia di comunicazione ottica - M-Bus

S500-MOD
Interfaccia di comunicazione ottica - RS485 Modbus Rtu standard

WEB SERVER
- Visualizzazione valori in tempo reale
- Contatori totali
- Archiviazione ed esportazione dati
- Bilanci energia attiva, reattiva, apparente

SOFTWARE

ENERGY MODBUS PACK
- Parametri di connessione seriale
- Gestione contatori
- Aggiornamento firmware
- Gestione misure, valori, allarmi

ENERGY M-BUS PACK
- Configurazione rete M-BUS
- Ricerca e aggiunta automatica contatori
- Parametri di comunicazione

CAMPI DI IMPIEGO

Totalizzazione dell'energia elettrica per macchinari industriali

Misura dell'energia generata da fonti rinnovabili

Contabilizzazione dei consumi per centri residenziali e strutture ricettive

Ripartizione energetica dei consumi in edifici e complessi a uso terziario

Sistemi di monitoraggio e controllo

Monitoraggio remoto dei consumi e calcolo dei costi

3.6

CURRENT TRANSDUCERS

HOW TO MEASURE AND CONVERT CURRENT

CURRENT TRANSFORMERS WITH ANALOG OUTPUT

Current transformers with Volt or milliamp output (also available with loop power supply, ModBUS interface, and digital contacts for alarm management) provide direct current measurements that can be acquired by PLCs, indicators, and acquisition and control systems, without the need for separate transducers or auxiliary power wiring. The measurement conversion stage and output signal generation are integrated within the transducer. Modular current converters for panels measure alternating current applied at the input or acquired through sensors, then provide mA or V signals directly proportional to the measured current.

SOLUTIONS SENECA

CURRENT TRANSFORMERS T201 SERIES WITH ANALOG OUTPUT

OPEN CURRENT TRANSFORMERS T201 SERIES OPEN WITH ANALOG OUTPUT

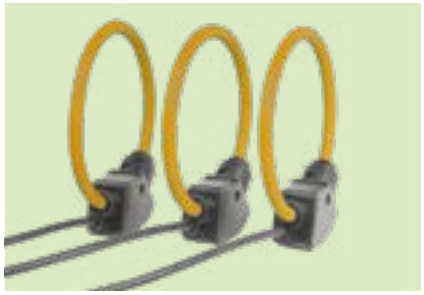
MODULAR CONVERTERS WITH ANALOG OUTPUT

CURRENT SENSORS AND MEASURING INSTRUMENTS

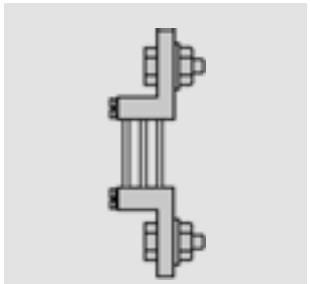
Rogowski sensors are flexible, coreless coils placed around the current conductor. They are suitable for measuring high currents by wrapping large bundles of cables, bus bars, irregularly shaped conductors, and hard-to-access conductors. Current shunts detect current flow through a low-value ohm precision resistor inserted in the current path. Zero Flux current sensors use a winding that makes them ideal for high precision measurements. Ammeters, clamp meters, and multimeters are also available that allow rapid current measurement with diagnostic functions and without circuit interruptions.

SENECA SOLUTIONS

OTHER OPTIONS



ROGOWSKI SENSORS - RC150 SERIES SENECA



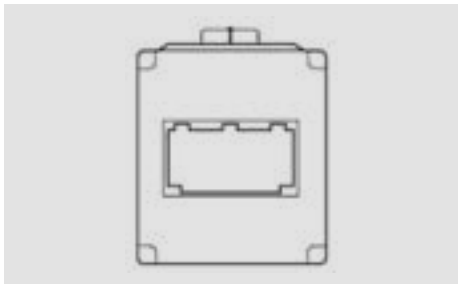
SHUNT - DERIVATORS

ZERO FLUX SENSORS

CLAMP METERS

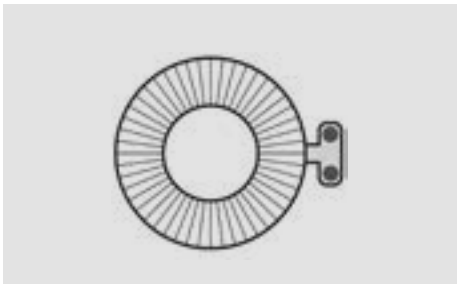
AMMETER TRANSFORMERS (CT)

Ammeter transformers or CTs consist of two insulated windings and a magnetic core. The primary winding is traversed by the current to be measured, while the secondary winding powers the measuring instruments. CTs are characterized by the transformation ratio between the primary and secondary current. They can be through-primary (cable or bus) to reduce the primary current to a secondary value of a few Amperes, primary-wound (with low primary values or with high power associated with small dimensions of the CT), or toroidal CTs where the conductor passes through the central hole and the windings are wound on the core.

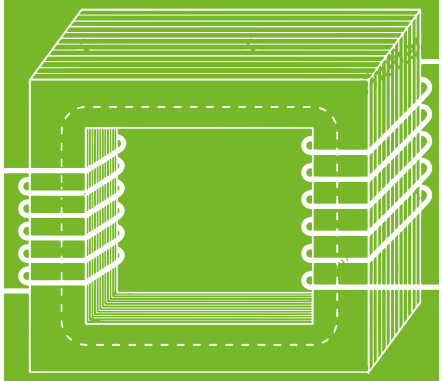


CT WITH THROUGH PRIMARY

CT WITH WOUND PRIMARY



TOROIDAL CT



GUIDE TO CHOICE

SERIE T201
CURRENT TRANSDUCERS
QUICK SELECTION GUIDE

	INPUTS	AC / AC TRMS				DC / DC Bipolar			
	OUTPUTS	mA	V	ModBUS	Contact	mA	V	ModBUS	Contact
MODELS	T201	x*	-	-	-	-	-	-	-
	T201DC	-	-	-	-	x	-	-	-
	T201DC100	-	-	-	-	x	-	-	-
	T201DCH50-LP	x	-	-	-	x	-	-	-
	T201DCH100-LP	x	-	-	-	x	-	-	-
	T201DCH300-LP	x	-	-	-	x	-	-	-
	T201DCH	-	x	-	-	-	x	-	-
	T201DCH100	-	x	-	-	-	x	-	-
	T201DCH300	-	x	-	-	-	x	-	-
	T201DCH50-M	-	x	x	-	-	x	x	
	T201DCH100-M	-	x	x	-	-	x	x	
	T201DCH300-M	-	x	x	-	-	x	x	
	T201DCH50-MU	-	x	x	x	-	x	x	x
	T201DCH100-MU	-	x	x	x	-	x	x	x
	T201DCH300-MU	-	x	x	x	-	x	x	x
	T201DCH600-MU	-	x	x	x	-	x	x	x
	T201DCH100-OPEN	-	x	x	x	-	x	x	x
	T201DCH300-OPEN	-	x	x	x	-	x	x	x
	T201DCH600-OPEN	-	x	x	x	-	x	x	x

*NO TRMS

SERIE T201
CURRENT TRANSDUCERS
QUICK SELECTION GUIDE

Model	POWER SUPPLY	INPUTS		OUTPUTS			DIMENSIONS		CONDUCTOR SIZING			Certifications	Precision class
		NOMINAL CURRENT	MEASURE-MENT TYPE	mA / V	ModBUS	Alarm	Totals	Through Hole	Max cable section	Max cable diameter	Max bar size through		
T201	Loop powered (5..28 Vdc)	40A	AC	4..20 mA	-	-	41x44x26 mm	12.3 mm	25 mm²	10 mm	-	CE, UL	0.2
T201DC	Loop powered (6..100 V)	40A	DC	4..20 mA	-	-	41x44x26 mm	12.3 mm	25 mm²	10 mm	-	CE, UL, EU Patent	0.2
T201DC100	Loop powered (6..100 V)	100A	DC	4..20 mA	-	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE, UL, EU Patent	0.2
T201DCH	10..28 Vdc	± 50 A	AC/DC TRMS	0..10 V	-	-	54x 41x30 mm	12.3 mm	25 mm²	10 mm	-	CE, UL	0.5
T2012DCH100	12..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar	0..10 V	-	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T2012DCH300	12..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar	0..10 V	-	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH50-LP	Loop powered (9..28 Vdc)	± 50 A	AC/DC TRMS or DC Bipolar	4..20 mA	-	-	95x68x26 mm	12.3 mm	25 mm²	10 mm	-	CE, UL	0,5 (AC) / 1 (DC)
T201DCH100-LP	Loop powered (9..28 Vdc)	± 100 A	AC/DC TRMS or DC Bipolar	4..20 mA	-	-	41x44x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH300-LP	Loop powered (9..28 Vdc)	± 300 A	AC/DC TRMS or DC Bipolar	4..20 mA	-	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH50-M	12..28 Vdc	± 50 A	AC/DC TRMS or DC Bipolar	0..10 V	x	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH100-M	12..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar	0..10 V	x	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH300-M	12..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar	0..10 V	x	-	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH50-MU	11.5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH100-MU	11.5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH300-MU	11.5..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x68x26 mm	20.8 mm	120 mm²	20 mm	12x5 mm (x2)*	CE	0.5
T201DCH600-MU	11.5..28 Vdc	± 600 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x75x35 mm	35 mm	300 mm²	33 mm	32x5 mm (x2)**	CE	0.5
T201DCH100-OPEN	11.5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x75x35 mm	35 mm	300 mm²	33 mm	32x5 mm (x2)**	CE	0.5
T201DCH300-OPEN	11.5..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x75x35 mm	35 mm	300 mm²	33 mm	32x5 mm (x2)**	CE	0.5
T201DCH600-OPEN	11.5..28 Vdc	± 600 A	AC/DC TRMS or DC Bipolar	0..10 V	x	x	95x75x35 mm	35 mm	300 mm²	33 mm	32x5 mm (x2)**	CE	0.5

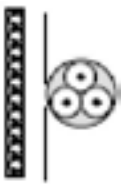
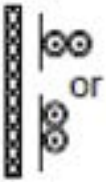
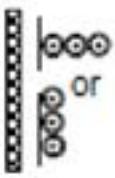
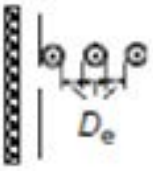
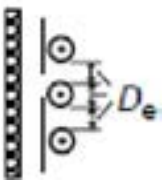
(*) Coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)

(**) Coupled with max capacity 695 A (ΔT 30°C) or 920 A (ΔT 50°C)

T201 SERIES
CURRENT TRANSDUCERS
CONDUCTOR SIZING - CABLES

The determination of current carrying capacity and installation method of cables refers to the IEC 60364-5-52 standard, considering the reference temperature of the conductor at 70°C and the ambient temperature at 30°C. However, the determination of the sizing of cables and insulated bars (section, thickness, diameter, length) in relation to the intensity of the current they carry must be related to various parameters and criteria such as thermal balance, insulations, power supplies, materials, voltage drop, and power loss of each specific installation.
Therefore, the data reported in these tables should be interpreted and contextualized within the scope of electrical design, cabling, and analysis of the electrical characteristics of the devices and components used.

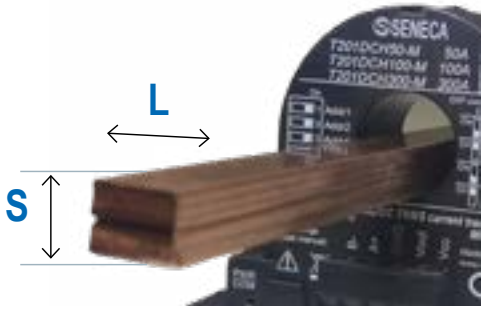
AMPACITY TABLE (AMPERES)
Installation methods B.52.1
PVC Isolation, copper conductors, conductor temp. 70°C, reference temp. 30°C

Nominal cross-sectional area of the conductor mm²	Multipolar cables		Monopolar cables				
	2 loaded conductors	3 loaded conductors	2 conductors in contact	3 stranded conductors	3 loaded conductors		
					In contact	Spacing	
						Horizontal	Vertical
							
	Method E	Method E	Method F	Method F	Method F	Method G	Method G
1	2	3	4	5	6	7	8
1.5	22	18.5	-	-	-	-	-
2.5	30	25	-	-	-	-	-
4	40	34	-	-	-	-	-
6	51	43	-	-	-	-	-
10	70	60	-	-	-	-	-
16	94	80	-	-	-	-	-
25 (*)	119	101	131	110	114	146	130
35	148	126	162	137	143	181	162
50	180	153	196	167	174	219	197
70	232	196	251	216	225	281	254
95	282	238	304	264	275	341	311
120 (**)	328	276	352	308	321	396	362
150	379	319	406	356	372	456	419
185	434	364	463	409	427	521	480
240	514	430	546	485	507	615	569
300 (***)	593	497	629	561	587	709	659
400	-	-	754	656	689	852	795
500	-	-	878	749	789	982	920
630	-	-	1005	855	905	1138	1070

Circular conductors are considered for sizes up to 16 mm² included. The values for larger sizes refer to shaped conductors and can be safely applied to circular conductors.

(*) T201DCH
(°°) T201DCH100..300
(***) T201DCH600

T201 SERIES
CURRENT TRANSDUCERS
CONDUCTOR SIZING - INSULATED BARS



Full copper bars are used in electrical panels, for power distribution, and when no predefined connection, branching, and fixing points are available. Full copper bars with rounded edges are excellent electrical conductors and are appreciated for their ductility, robustness, and resistance. In addition to electrical panels, they are used for power distribution or transmission, in the production of bus ducts, electrical conduits, and electrical power lines in industrial electrical installations with typical thicknesses of 4, 5, 10 mm and lengths of 1750 and 4200 mm.

AMPACITY TABLE (AMPERES) FULL COPPER BARS

Thermal rise ΔT according to DIN 43671 standard. Reference ambient temperature Ta = 35°C

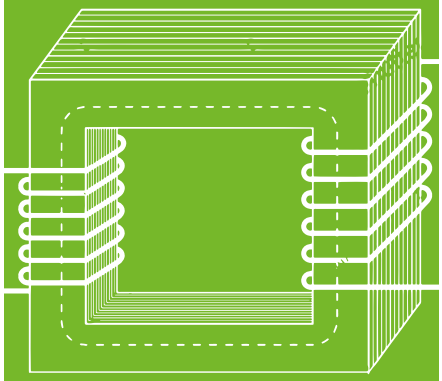
Dimensions	Sez mm²	T 30° C				T 50° C			
Number of bars in parallel		I	II	III	II II	I	II	III	II II
12 x 4	48	160				212			
12 x 5	60	183	334 (*)	460	514	241	440	607	679
15 x 5	75	218	405 (*)	567	635	289	537	751	841
20 x 5	100	274	500	690	772	363	663	914	1023
25 x 5	125	327	586	795	890	433	776	1053	1179
30 x 5	150	379	672 (**)	896	1003	502	890	1187	1329
32 x 5	160	400	695 (**)	931	1043	530	920	1234	1382
40 x 5	200	482	836	1090	1220	639	1108	1444	1617
50 x 5	250	583	994	1260	1411	772	1317	1670	1870
60 x 5	300	688	1150	1440	1613	912	1524	1908	2137
63 x 5	315	718	1197	1494	1673	951	1586	1980	2217
80 x 5	400	885	1450	1750	1960	1173	1921	2319	2597
100 x 5	500	1080	1730	2050	2296	1431	2292	2716	3042
125 x 5	625	1300	2022	2381	2666	1723	2679	3155	3532
20 x 10	200	427	734	959	1151	564	970	1269	1522
30 x 10	300	573	986	1289	1547	756	1300	1701	2041
40 x 10	400	715	1230	1609	1931	944	1624	2124	2549
50 x 10	500	852	1510	2040	2448	1129	2001	2703	3243
60 x 10	600	985	1720	2300	2760	1305	2279	3048	3658
80 x 10	800	1240	2110	2790	3124	1643	2796	3697	4140
100 x 10	1000	1490	2480	3260	3651	1974	3286	4320	4838
120 x 10	1200	1740	2860	3740	4188	2306	3790	4956	5500
160 x 10	1600	2220	3590	4680		2942	4757	6201	
200 x 10	2000	2690	4310	5610		3564	5711	7433	

Example of bar selection
For In = 800 A; maximum operating temperature Tmax = 85°C; number of bars in parallel = 1.

As the thermal rise T = Tmax - Ta = (85 - 35) = 50 °C, from the tables with T 50 °C, the bars with In ≥ 800 A are selected:

punched copper bar 63x5 (In = 951 A)
full copper bars: 63x5 (In = 951 A), 40 x 10 (In = 944 A)
full aluminum bar 50 x 10 (In = 874 A).

(*) T201DCH100..300
(**) T201DCH600



TECHNICAL DATA

AC/DC Current Transducers

The AC/DC current transducers **T201 Series** are devices capable of converting the measured current value (up to 300 A) into a standardized industrial signal of 4..20 mA or 0..10 V. Most models of the **T201 Series** are UL certified and characterized by low consumption, convenient adjustable measurement scales via DIP-switch, and high precision guaranteed by the absence of thermal drift. 16 models are available with different measurement principles: rectified average, magnetic balance (with patented technology), Hall Effect, or TRMS with bipolar input range. Some models are equipped with an RS485 interface supporting the ModBUS RTU protocol.

INPUT
Up to 600 A

OUTPUT
mA, V, PNP (Alarm)

POWER SUPPLY
Direct
Through Loop

REDUCED CONSUMPTION
No thermal drift
<25mA

TYPES OF MEASURE
AC TRMS / DC BIPOLAR
Hall Effect

HIGH PRECISION CLASS
0,2..05%

DATA MANAGEMENT STANDARD (VERSIONS –M /-MU)
ModBUS IEEE 754

WIDE TEMPERATURE RANGE
-20..+70°C

BASIC CONFIGURATION VIA DIP-SWITCH
1 2 3 4

COMPLETE CONFIGURATION VIA SOFTWARE (VERSIONS –M/-MU)
EASY SETUP

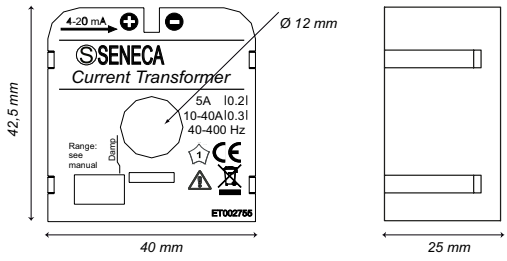
INTERNATIONAL PATENT
T201DC / T201DC100

INTERNATIONAL CERTIFICATION
c UL us LISTED

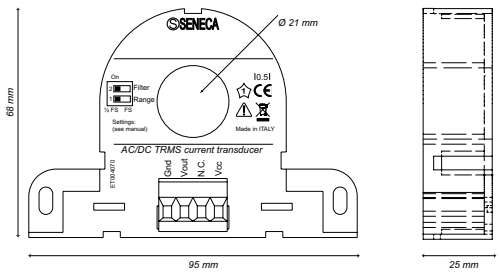
INSTALLATION AND DIMENSIONS

QUICK INSTALLATION ON DIN RAIL

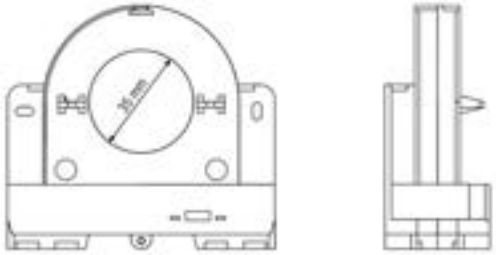
FORMAT 1



FORMAT 2



FORMAT 3



AC/DC CURRENT TRANSFORMERS WITH 4-20 mA OUTPUT

	T201	T201DC	T201DC100
		PATENTED TECHNOLOGY 	PATENTED TECHNOLOGY 
	Alternating current transformer 0..40 Aac, 8 input scales, 4..20 mA loop powered output	Bipolar direct current transformer 0..40 Adc, 8 input scales, 4..20 mA, inductively measured patented technology	Bipolar direct current transformer 0..100 Adc, 8 input scales, 4..20 mA, inductively measured patented technology
GENERAL DATA			
Power Supply	Loop powered (5..28 Vdc)	Loop powered (6..100 V)	
Consumption	< 21 mA		
Isolation and protections	3 kVdc (on bare conductors)		
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)		
Polarity of measurement	Positive (incoming current on label side)		
Protection class	IP20		
Precision class	0.2% f.s. (AC)	0.2% f.s. (DC)	
Configuration	DIP Switch		
Operating temperature	-20..+70°C		
Storage temperature	-40..+85°C		
Humidity	10rH..90% non-condensing		
Altitude	Up to 2,000 m a.s.l.		
Connections	Removable terminals (5 poles), pitch 5 mm for cables up to 2.5 mm²		
Through-hole diameter	12.3 mm		20.8 mm
Dimensions (WxHxD)	41x44x26 mm		95x68x26 mm
Mounting	Free or on DIN IEC EN 60715 rail via supplied accessories		
Enclosure	PA6, black color		
Weight	47 g		120 g
Certifications	CE, UL-UR	CE, UL-UR, European patent	
INPUT DATA			
Channels	1		
Range	5, 10, 15, 20, 25, 30, 35, 40 A	Monopolar 0..5, 0..10, 0..20,0.. 40A Bipolar -5..5, -10..10, -5..20, -10..40 A	Monopolar 0..10, 0..25, 0..50, 0..100 A Bipolar -10..10, -25..25, -10..50, -25..100 A
Measurement type	Rectified average	Magnetic balance	
Bipolar measure	No	Yes	
Overload	800A		2000 A (impulsive)
Bandwidth	20..1,000 Hz	n.d.	
Crest factor	2	1.2	
OUTPUT DATA			
Channels	1		
Range	4..20 mA (2 wires)		
Resolution	infinite	12 bit	
Max load	< 5000 Ohm @ 100 Vdc	-	
Error due to EMI	< 40µA	< 50µA	< 50µA
Thermal Drift	< 150 ppm/K		
Response Time	100 ms (without filter) 2.5 s (with filter)	100 ms (without filter) 600 ms (with filter)	
CONDUCTOR SIZING			
Max cable section	25 mm²		120 mm²
Max cable diameter	10 mm (H07V-K)		20 mm (H07V-K)
Max bar size through	-		2 bars 12x5 mm coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)
ORDER CODES	T201	T201DC	T201DC100

Technical data, diagrams, and images are indicative and not binding

HALL EFFECT CURRENT TRANSFORMERS WITH 0-10 V OUTPUT

	T201DCH	T201DCH100	T201DCH300
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	Hall effect AC or DC current transformer (± 50 A) with 0..10 V TRMS output	Hall effect AC or DC current transformer (± 100 A) with 0..10 V TRMS output	Hall effect AC or DC current transformer (± 300 A) with 0..10 V TRMS output
GENERAL DATA			
Power Supply	10..28 Vdc		
Consumption	< 25 mA		
Isolation and protections	3 kVdc (on bare conductors)		
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)		
Polarity of measurement	Positive (incoming current on label side)		
Protection class	IP20		
Precision class	0.5% f.s. (DC bipolar, AC TRMS)		
Configuration	DIP Switch		
Operating temperature	-10..+70°C	-20..+70°C	
Storage temperature	-40..+85°C	-40..+85°C	
Humidity	10rH..90% non-condensing		
Altitude	Up to 2,000 m a.s.l.		
Connections	Removable terminals (5 poles), pitch 5 mm for cables up to 2.5 mm²		
Through-hole diameter	12.3 mm	20.8 mm	
Dimensions (WxHxD)	54 x 41 x 30 mm	95x68x26 mm	
Mounting	Free or on DIN IEC EN 60715 rail via supplied accessories		
Enclosure	PA6, black color		
Weight	47 g	120 g	
Certifications	CE, UL-UR	CE, UL-UR	CE, UL-UR
INPUT DATA			
Channels	1		
Range	0..25, 0..50 Aac/dc TRMS	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 A Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 A Bipolar
Measurement type	AC/DC TRMS	AC/DC TRMS or DC Bipolar	
Bipolar measure	No	Yes	
Hysteresis	0.1% f.s.		
Overload	300 A continuous; 2,000 A impulsive	300 A continuous; 2,000 A impulsive	500 A continuous; 2,000 A impulsive
Bandwidth	1 kHz		
Crest factor	1.2	2	
OUTPUT DATA			
Channels	1		
Range	0..10 V		
Resolution	12 bit	12 bit	12 bit
Max load	> 2 kOhm		
Thermal Drift	< 200 ppm/K		
Response Time	Fast filter: 800 ms Slow filter: 2 s		
CONDUCTOR SIZING			
Max cable section	25 mm²	120 mm²	
Max cable diameter	10 mm (H07V-K)	20 mm (H07V-K)	
Max bar size through	-	2 bars 12x5 mm coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)	
ORDER CODES	T201DCH	T201DCH100	T201DCH300

Technical data, diagrams, and images are indicative and not binding

HALL EFFECT CURRENT TRANSFORMERS WITH 4-20 mA

	T201DCH50-LP	T201DCH100-LP	T201DCH300-LP
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	Hall effect AC or DC current transformer (± 50 A) with 4..20 mA loop powered output	Hall effect AC or DC current transformer (± 100 A) with 4..20 V TRMS output loop powered	Hall effect AC or DC current transformer (± 300 A) with 4..20 mA loop powered output
GENERAL DATA			
Power Supply	Loop powered (9..28 Vdc)		
Consumption	< 22 mA		
Isolation and protections	3 kVdc (on bare conductors)		
Overvoltage category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)		
Polarity of measurement	Positive (incoming current on label side)		
Protection class	IP20		
Precision class	AC: 0,5% f.s,; DC: 1% f.s.		
Configuration	DIP Switch		
Operating temperature	-20..+70°C		
Storage temperature	-40..+85°C		
Humidity	10rH..90% non-condensing		
Altitude	Up to 2,000 m a.s.l.		
Closed	core		
Connections	Removable terminals (5 poles), pitch 5 mm for cables up to 2.5 mm²		
Through-hole diameter	12.3 mm	20.8 mm	
Dimensions (WxHxD)	41x44x26 mm	95x68x26 mm	
Mounting	Free or on DIN IEC EN 60715 rail via supplied accessories		
Enclosure	PA6, black color		
Weight	47 g	120 g	120 g
Certifications	CE, UKCA, UL-UR		
INPUT DATA			
Channels	1		
Range	0..50 Aac/dc TRMS ±50 Adc bipolar	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 A Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 A Bipolar
Measurement type	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar measure	No	Yes	
Hysteresis	0.3% f.s.		
Overload	300 A continuous 2.000 A (impulsive)		500 A continuous 2.000 A (impulsive)
Bandwidth	1 kHz		
Crest factor	1.3		
OUTPUT DATA			
Channels	1		
Range	4..20 mA nominal 3.6 mA fault indication 22 mA maximum indication		
Resolution	12 bit		
Max load	< 1000 Ohm @ 28 Vdc		
Error due to EMI	< 1%		
Thermal Drift	< 200 ppm/K		
Response Time	Fast filter: 500 ms Slow filter: 1 s		
CONDUCTOR SIZING			
Max cable section	25 mm²	120 mm²	
Max cable diameter	10 mm	20 mm (H07V-K)	
Max bar size through	-	2 bars 12x5 mm coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)	
ORDER CODES	T201DCH50-LP	T201DCH100-LP	T201DCH300-LP

Technical data, diagrams, and images are indicative and not binding

HALL EFFECT CURRENT TRANSFORMERS WITH 0-10 V / MODBUS OUTPUT

	T201DCH50-M	T201DCH100-M	T201DCH300-M
	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 
	Hall effect AC or DC current transformer (± 50 A) with 0..10 V output, ModBUS interface	**Hall effect AC or DC current transformer (± 100 A) with 0..10 V output, ModBUS interface**	**Hall effect AC or DC current transformer (± 300 A) with 0..10 V output, ModBUS interface**
GENERAL DATA			
Power Supply	12..28 Vdc		
Consumption	< 25 mA		
Isolation and protections	3 kVdc (on bare conductors)		
Frontal LED	Power / Communication RS485		
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)		
Polarity of measurement	Positive (incoming current on label side)		
Protection class	IP20		
Precision class	0.5% f.s. (DC bipolar, AC TRMS)		
Configuration	DIP switch, Software (EASY SETUP)		
Data Log	Yes		
Operating temperature	-20..+70°C		
Storage temperature	-40..+85°C		
Humidity	10rH..90% non-condensing		
Altitude	Up to 2,000 m a.s.l.		
Connections	Removable terminals (5 poles), pitch 5 mm for cables up to 2.5 mm²		
Through-hole diameter	20.8 mm		
Dimensions (WxHxD)	95x68x26 mm		
Mounting	Free or on DIN IEC EN 60715 rail via supplied accessories		
Enclosure	PA6, black color		
Weight	120 g		
Certifications	CE, UKCA		
COMMUNICATION			
Communication port	RS485		
Protocol	ModBUS RTU slave		
Speed	1.200..115200 bps		
INPUT DATA			
Channels	1		
Range	0..25, 0..50 Aac/dc TRMS ±25 A, ±50 Adc Bipolar	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 Adc Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 Adc Bipolar
Measurement type	AC/DC TRMS or DC Bipolar		
Bipolar measure	Yes		
Hysteresis	0.3% f.s.		
Overload	300 A (continuous) 2.000 A (impulsive)	500 A continuous; 2,000 A impulsive	800 A continuous; 2,000 A impulsive
Bandwidth	1 kHz		
Crest factor	2		
OUTPUT DATA			
Channels	1		
Range	0..10 V		
Resolution	13 bit (10,000 points)		
Max load	> 2 kOhm		
Error due to EMI	<0,5%		
Thermal Drift	< 200 ppm/K		
Response Time	Fast filter: 800 ms Slow filter: 2 s		
CONDUCTOR SIZING			
Max cable section	120 mm²		
Max cable diameter	20 mm (H07V-K)		
Max bar size through	2 bars 12x5 mm coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)		
ORDER CODES	T201DCH50-M	T201DCH100-M	T201DCH300-M

Technical data, diagrams, and images are indicative and not binding

HALL EFFECT CURRENT TRANSFORMERS WITH 0-10 V OUTPUT - ALARM / MODBUS - USB

	T201DCH50-MU	T201DCH100-MU	T201DCH300-MU	T201DCH600-MU
				
	ModBUS	ModBUS	ModBUS	ModBUS
	Hall effect AC/DC current transformer (±50 Aac/dc) with analog or alarm output, ModBUS and USB interface	Hall effect AC/DC current transformer (±100 Aac/dc) with analog or alarm output, ModBUS and USB interface	Hall effect AC/DC current transformer (±300 Aac/dc) with analog or alarm output, ModBUS and USB interface	Hall effect AC/DC current transformer (±600 Aac/dc) with analog or alarm output, ModBUS and USB interface
GENERAL DATA				
Power Supply	11.5..28 Vdc			
Consumption	21 mA excluding load			
Isolation and protections	3 kVdc (on bare conductors)			
Front LED	Power / Communication USB / Digital output			
Overvoltage category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)			
Polarity of measurement	Positive (incoming current on label side)			
Protection class	IP20			
Precision class	0.5% f.s. (DC bipolar, AC TRMS)			
Configuration and data export	DIP switch, Software (EASY SETUP)			
Operating temperature	-20..+70°C			
Storage temperature	-40..+85°C			
Humidity				
Altitude	Up to 2,000 m a.s.l			
Connections	Removable terminals (5 poles), pitch 5 mm for cables up to 2.5 mm²			
Through-hole diameter	20.8 mm			35 mm
Dimensions (WxHxD)	95 x 68 x 25 mm			95 x 75 x 35 mm
Mounting	Free or on DIN IEC EN 60715 rail via supplied accessories			
Enclosure	PA6, black color			
Weight	120 g			
Certifications	CE, UKCA			
COMMUNICATION				
Communication port	RS485 / Micro USB			
Protocol	ModBUS RTU slave			
Speed	1.200..115200 bps			
INPUT DATA				
Channels	1			
Range	0-25 / 50 Aac/dc TRMS; ±25 / ±50 Adc Bipolar	0-50 /100 Aac/dc TRMS; ±50 / ±100 Adc Bipolar	0-150 / 300 Aac/dc TRMS; ±150 / ±300 Adc Bipolar	0-300 /-600 Aac/dc TRMS; ±300 / ±600 Adc Bipolar
Measurement type	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar measure	Yes			
Overload	$3xI_{IN}$ continuous; 2.000 A (impulsive)			
Bandwidth	1 kHz			
Crest factor	2			
OUTPUT DATA				
Analog channels	1			
Range	0..10 V			
Resolution	13 bit (10,000 points)			
Minimum load	2 kOhm			
Error due to EMI	<0,5%			
Thermal Drift	< 200 ppm/K			
Measurement hysteresis	0.2% f.s.			
Response Time	Fast filter: 800 ms Slow filter: 2 s			
Digital channels	1			
Function	Alarm (alternative to analog channel)			
Type	Active PNP output, max load 50 mA			
CONDUCTOR SIZING				
Max cable section	120 mm²			300 mm2
Max cable diameter	20 mm (H07V-K)			33 mm (FG16R16)
Max bar size through	2 bars 12x5 mm coupled with max capacity 334 A (ΔT 30°C) or 440 A (ΔT 50°C)			2 bars 32x5 mm coupled with max capacity 695 A (T 30°C) or 920 A (T 50°C)
ORDER CODES	T201DCH50-MU	T201DCH100-MU	T201DCH300-MU	T201DCH600-MU

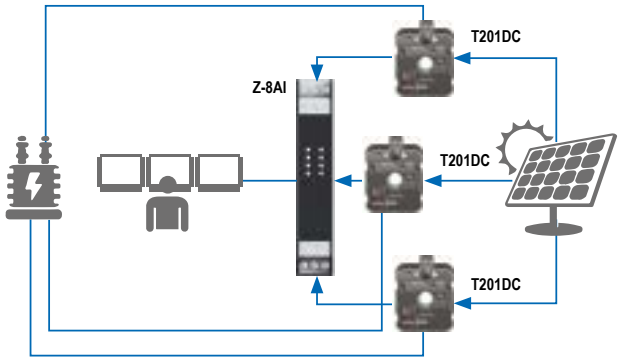
Technical data, diagrams, and images are indicative and not binding

HALL EFFECT OPEN CURRENT TRANSFORMERS WITH 0-10 V OUTPUT

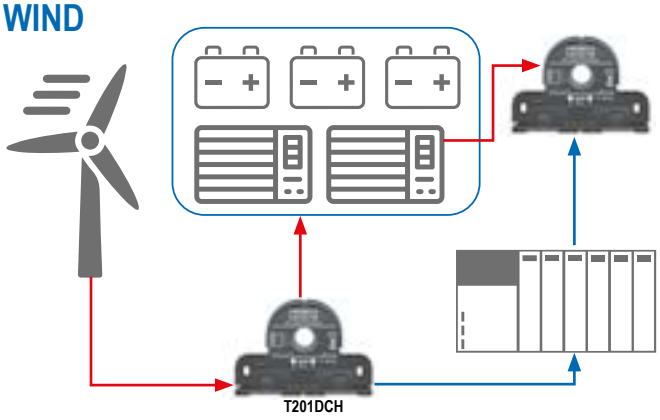
	T201DCH100-OPEN	T201DCH300-OPEN	T201DCH600-OPEN
	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 
	Hall effect openable AC/DC current transformer (± 100 A) bipolar/TRMS, 0..10 V output	Hall effect openable AC/DC current transformer (± 300 A) bipolar/TRMS, 0..10 V output	Hall effect openable AC/DC (± 600 A) Hall effect, bipolar/TRMS, 0..10 V output
GENERAL DATA			
Power Supply	12..28 Vdc		
Consumption	38 mA excluding load		
Isolation and protections	3 kVac (on bare conductors)		
Front LEDs	Power Supply Communication USB/RS485 Digital output		
Overvoltage category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)		
Polarity of measurement	Positive (incoming current on label side)		
Configuration and data export	DIP Switch, Software (EASY SETUP)		
Protection class	IP20		
Precision class	0.5% f.s. (DC bipolar, AC TRMS)		
Operating temperature	-25..+70°C		
Storage temperature	-40..+85°C		
Humidity	10rH..90% non-condensing		
Altitude	Up to 2,000 m a.s.l.		
Closed	Openable		
Connections	Screw terminals removable 5 ways, pitch 5 mm for cables up to 2.5 mm^2		
Through-hole diameter	35 mm		
Dimensions (WxHxD)	95x75x35 mm		
Mounting	DIN 35mm rail IEC EN60715 or fixing via plastic clamps.		
Enclosure	PA6, black color		
Weight	145 g		
Certifications	CE, UKCA		
COMMUNICATION			
Communication port	RS485 / USB		
Protocol	ModBUS RTU slave		
Speed	1.200..115200 bps		
INPUT DATA			
Channels	1		
Range	0-50 A, 0-100 Aac/dc TRMS; ±25 A, ±50 A, ±100 Adc Bipolar	0-75/150/300 Aac/dc TRMS; ±150/300 Adc Bipolar	0-150/300/600 Aac/dc TRMS; ±300/300 Adc Bipolar
Measurement type	AC/DC TRMS or DC Bipolar		
Bipolar measure	Yes		
Hysteresis	0.2% f.s.		
Overload	3xIIN continuous; 2,000 A (impulsive)		
Bandwidth	1 kHz		
Crest factor	2		
OUTPUT DATA			
Analog channels	1		
Range	0..10 V		
Resolution	13 bit (10,000 points)		
Max load	> 2 kOhm		
Error due to EMI	<0,5%	<1%	
Thermal Drift	< 200 ppm/K		
Response Time	Fast filter: 800 ms Slow filter: 2 s		
Digital channels	1		
Function	Alarm (alternative to analog channel)		
Type	Active PNP output, 50 mA max		
CONDUCTOR SIZING			
Max cable section	300 mm^2		
Max cable diameter	33 mm (FG16R16)		
Max bar size through	2 bars 32x5 mm coupled with max capacity 695 A (ΔT 30°C) or 920 A (ΔT 50°C)		
ORDER CODES	T201DCH100-OPEN	T201DCH300-OPEN	T201DCH600-OPEN

APPLICATION SCENARIOS

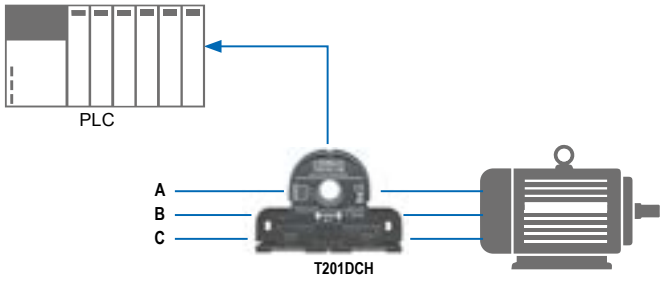
PHOTOVOLTAIC



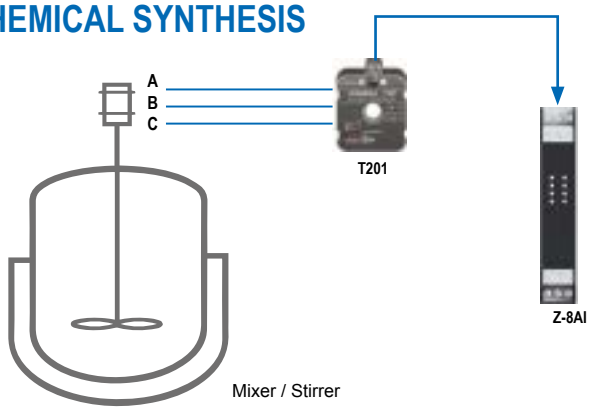
WIND



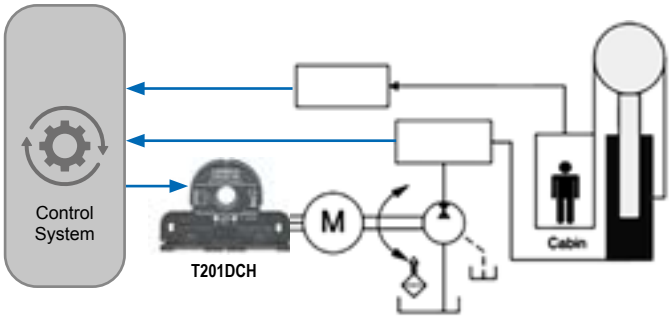
ELECTRIC MOTORS



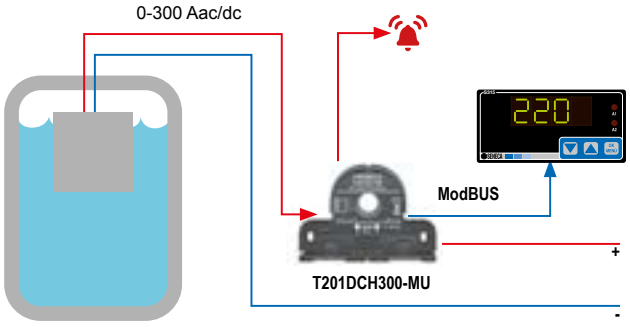
CHEMICAL SYNTHESIS



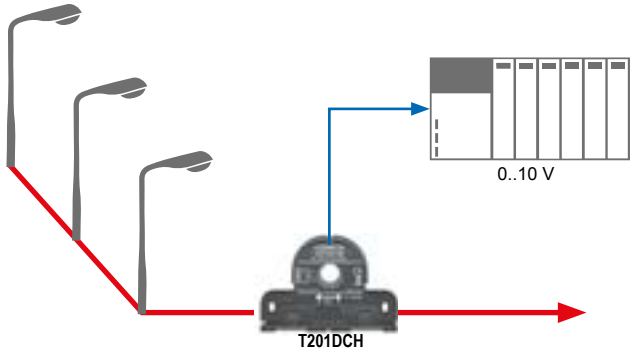
ELEVATORS



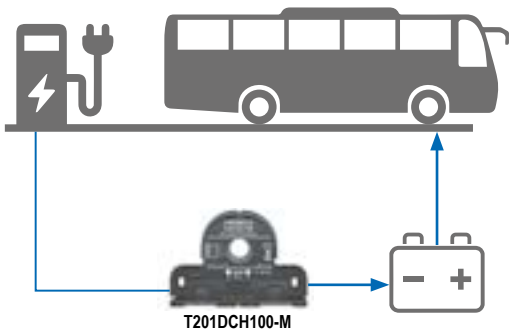
GALVANIC TREATMENTS



PUBLIC LIGHTING



ELECTRIC MOBILITY



3.7

MODULAR ELECTRICAL MEASUREMENT CONVERTERS

Modular electrical measurement converters

The converter modules for electrical measurements measure voltage and current values (alternating and/or direct) and convert them into a standardized current or voltage signal at the output terminals, proportional to the input value.
The scale parameters of inputs and outputs are selectable via software or DIP switches.
The modules ensure a high precision class (from 0.1 to 0.5%) and very high multi-channel galvanic isolation, up to 4,000 Vac.
In addition to the presence of power or error, modules equipped with a ModBUS interface also provide RS485 LED indication on the front panel.

HIGHLIGHTS

WIDE MEASUREMENT RANGE FOR CURRENTS AND VOLTAGES

- Alternating
- Continuous
- TRMS

SIMPLIFIED CONNECTIONS

2.5 mm² screw terminals

FLEXIBLE CONFIGURATION

- DIP-switch
- Software

COMPLETE POWER OPTIONS

Vac/dc switching
Loop/Self powered

REDUCED DIMENSIONS

17.5 / 35 mm

INTERNATIONAL STANDARDS

CE, UL

HIGH ISOLATION SIGNAL

Up to 4,000 Vac

AND BUS INTERFACES

- Analog Output
- RS485 Modbus

HIGH PRECISION CLASS

From 0.1 to 0.5%

RTU STATUS INDICATORS FOR CONTROL AND DIAGNOSTICS

CONVERTERS FOR ELECTRICAL MEASUREMENTS

	Z201	Z201-H	Z202
			
	Alternating current converter, 10..40 Vdc; 19..28 Vac	**Alternating current converter, 85..265 Vac/dc**	**Alternating voltage converter, 10..40 Vdc; 19..28 Vac**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac	85..265 Vac/dc	10..40 Vdc; 19..28 Vac
Max Consumption	< 2.5 W	< 2.5 W	< 1.5 W
Isolation	3,750 Vac (input/output/power supply) 1,500 Vac (output/power supply)	4,000 Vac (input/output/power supply)	3,750 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)
Protection class	IP20	IP20	IP20
LED Status Indicators	Power Supply	Power Supply	Power Supply
Response Time	< 200 ms	< 100 ms	< 30 ms
Interfaces			
Precision class	0.3%	0.3%	0.25%
Thermal Drift	<200 ppm/K	<200 ppm/K	<150 ppm/K
Configuration	DIP Switch	DIP Switch	DIP Switch
Operating Temperature	0..+55°C	-10..+65°C	0..+60°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g
Certifications	CE	CE	CE
INPUT DATA			
Channels	1	1	1
Type	ALTERNATING CURRENT 0..5 / 0..10 Aac	ALTERNATING CURRENT 0..5 / 0..10 Aac	ALTERNATING VOLTAGE 0..500 Vac (41 scales), input impedance 2,000 Ω/V Frequency 10 Hz..1 kHz
OUTPUT DATA			
Channels	1	1	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω
ORDER CODES	**Z201**	**Z201-H**	**Z202**

The technical data and diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENTS

	Z202-H	Z202-LP	Z203-2	Z204-1
				
	Alternating voltage converter, 85..265 Vac/dc	**Loop powered alternating voltage converter**	**Single-phase network analyzer**	**Alternating and direct voltage TRMS converter**
GENERAL DATA				
Power Supply	85..265 Vac/dc	5..28 Vdc (from loop)	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max Consumption	< 1.5 W	<1mA	< 2.5 W	< 1 W
Isolation	3,750 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)	4,000 Vac (input/output)	3,750 Vac (input/output/power supply)	4,000 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)
Protection class	IP20	IP20	IP20	IP20
LED Status Indicators	Power Supply	Power Supply	Power Supply Error RS485 communication	Power Supply Error RS485 communication
Response Time	< 100 ms	< 100 ms	< 10 ms	For a step change: 1 s from 10 to 90 %
Interfaces	-	-	Frontal Micro USB for programming (baud rate, address, parity, data/ stop bit) RS485 (backplane), as an alternative to analog output, speed up to 115,200 bps, ModBUS RTU protocol	RS232 (frontal connector for programming): baud rate, address, parity, data/stop bit RS485 (backplane), as an alternative to analog output, speed up to 115,200 bps, ModBUS RTU protocol
Precision class	0.3%	0.3%	0.5%	0.5% input; 0.1% output
Thermal Drift	+150 ppm/K	+150 ppm/K	+150 ppm/K	+100 ppm/K
Configuration	DIP Switch	DIP Switch	DIP Switch Software (EASY SETUP)	DIP Switch Software (EASY SETUP)
Operating Temperature	-10..+65°C	-20..+65°C	-10..+65°C	-20..+65°C
Dimensions	17.5 x 100 x 112 mm	35 x 100 x 112 mm	17.5 x 100 x 112 mm	35 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	CE	CE	CE	CE
INPUT DATA				
Channels	1 (single phase load)	1	1 (single phase load)	1
Type	ALTERNATING VOLTAGE 0..500 Vac (41 scales), input impedance 2,000 Ω/V Frequency 10 Hz..1 kHz	ALTERNATING VOLTAGE 0..500 Vac DIRECT VOLTAGE 0..540 Vdc, max voltage 710 Vpk Frequency DC / 20 Hz..20 kHz	ALTERNATING VOLTAGE Max load 500 Vac, frequency 50-60 Hz ALTERNATING CURRENT Rated load 5 A rms, max crest factor 3, max current 15 A, frequency 50 – 60 Hz	DIRECT VOLTAGE: 0..1,200 Vdc; ALTERNATING VOLTAGE 0..850 Vac Input impedance: 800 kΩ Frequency: 30..300 Hz
OUTPUT DATA				
Channels	1	1	1 analog, 1 digital	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	VOLTAGE 0-5, 0-10, 1-5, 2-10 V Analog retransmission: Vrms, Irms, Watt, Var, frequency, cosφ, energy CURRENT 0-20, 4-20 mA DIGITAL TBD counter	CURRENT Range: 0..20 mA; max impedance: 500 Ω VOLTAGE Range: 0..10 V; min impedance: 1 k Ω
ORDER CODES	**Z202-H**	**Z202-LP**	**Z203-2**	**Z204-1**

The technical data and diagrams in this document are indicative and not binding.

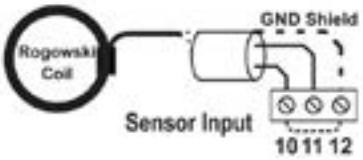
S201RC-LP

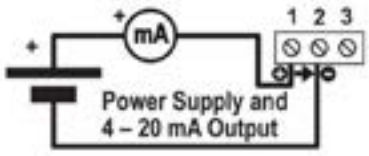
LOOP-POWERED CONVERTER FOR ROGOWSKI SENSORS

TECHNICAL DATA

GENERAL DATA	
Power Supply	From 4..20 mA output loop
Max Consumption	< 0.6 W
Protection class	IP20
LED Status Indicators	Out-of-range alarm
Response Time	0.5 / 1 s
Precision class	0.5 % of f.s. (@ 40..120 MHz)
Thermal Drift	<200 ppm/°C
Configuration	f.s. choice and filter
Operating Temperature	-25 … 70°C
Storage temperature	-40… 85°C
Humidity	10 - 90 % non-condensing
Altitude	Up to 2000 m a.s.l.
Dimensions (wxhxd)	18x105x62 mm including terminals
Connections	Removable connectors pitch 5mm for cables up to 2.5 mm^2
Enclosure	PC-ABS self-extinguishing material, gray color
Mounting	35 mm DIN rail (IEC/EN 60715)
Certifications	CE
INPUT DATA	
Channels	1
Type	ROGOWSKI SENSORS 100 mV/kA (330 mV/kA) Measurement type: TRMS Scales: 250, 500, 1000, 2000, 4000 A (50-60 Hz) Bandwidth: 3 kHz Overload: 10 kA (1 Vrms) Protection: Overvoltage and polarity reversal Damping filter: FAST = 0.5 s, SLOW = 1 s
OUTPUT DATA	
Channels	1
Type	CURRENT Power supply / Output 4..20 mA Maximum output: 22mA Power supply voltage: 9 - 28 Vdc Maximum load: 600 Ohm

CONNECTIONS



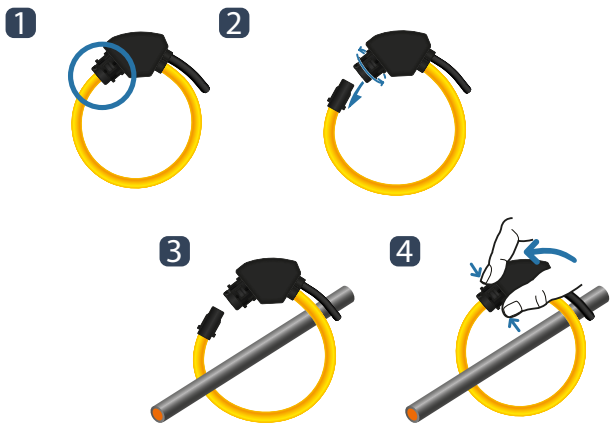


ERROR

ORDER CODES

Code	Description
S201RC-LP	LOOP-POWERED CONVERTER FOR ROGOWSKI SENSORS
RC150-025-100-3M	Rogowski Sensor L=25cm Øint.8cm,100mV/1kA-50Hz,cable L=3m.
RC150-035-100-3M	Rogowski Sensor L=35cm Øint.11cm,100mV/1kA-50Hz,cable L=3m.
RC150-040-100-3M	Rogowski Sensor L=40cm Øint.12cm,100mV/1kA-50Hz,cable L=3m.
RC150-060-100-3M	Rogowski Sensor L=60cm Øint.19cm,100mV/1kA-50Hz,cable L=3m.
RC150-090-100-3M	Rogowski Sensor L=90cm Øint.28cm,100mV/1kA-50Hz,cable L=3m.
RC150-120-100-3M	Rogowski Sensor L=120cm Øint.38cm,100mV/1kA-50Hz,cable L=3m.
RC150-180-100-3M	Rogowski Sensor L=180cm Øint.57cm,100mV/1kA-50Hz,cable L=3m.
RC190-030-333-3M	Rogowski Sensor L=30cm Øint.9.5cm,333mV/1kA-50Hz,cable L=3m.

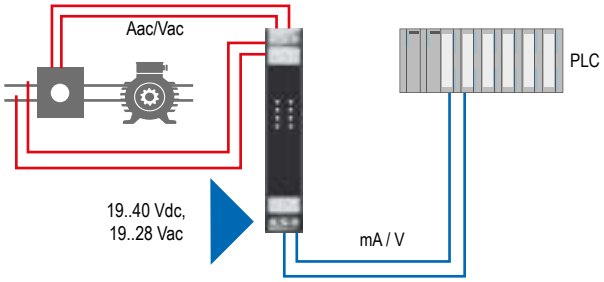
EXAMPLE OF ROGOWSKI SENSORS INSTALLATION



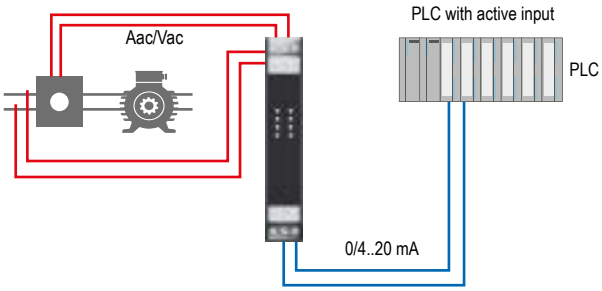
The technical data and diagrams in this document are indicative and not binding.

APPLICATION EXAMPLES

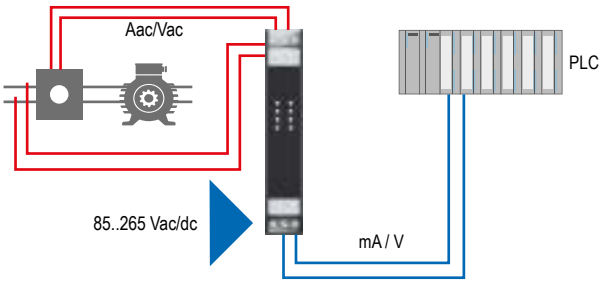
Z201



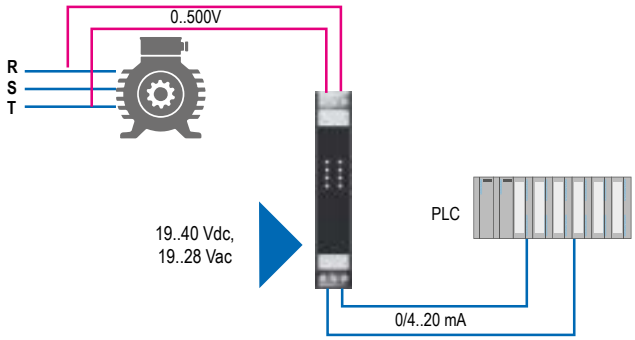
Z201-LP



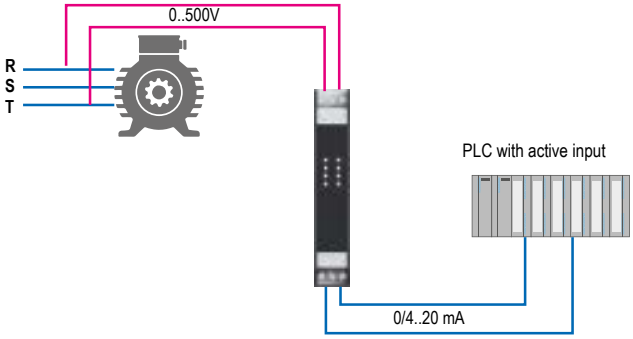
Z201-H



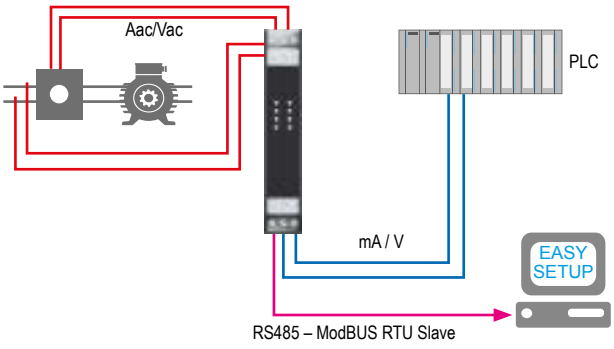
Z202



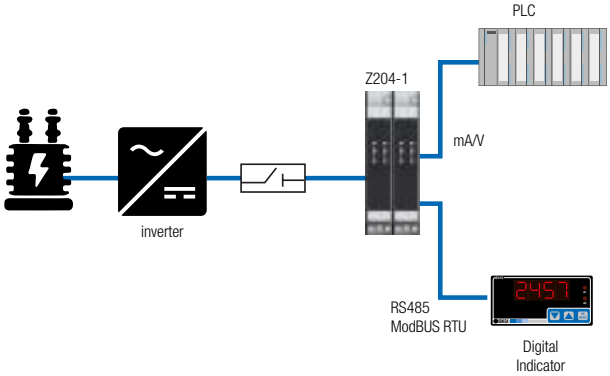
Z202-LP



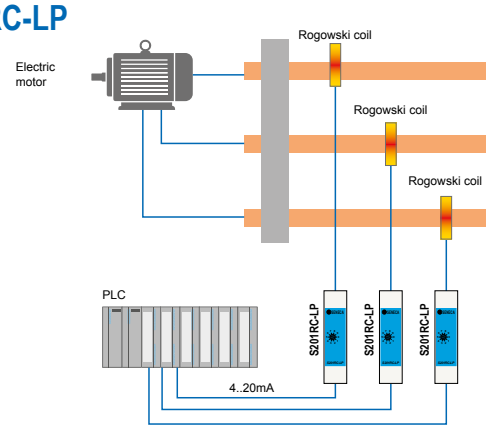
Z203-2



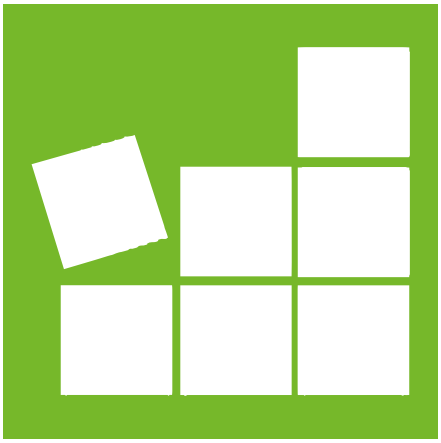
Z204



S201RC-LP

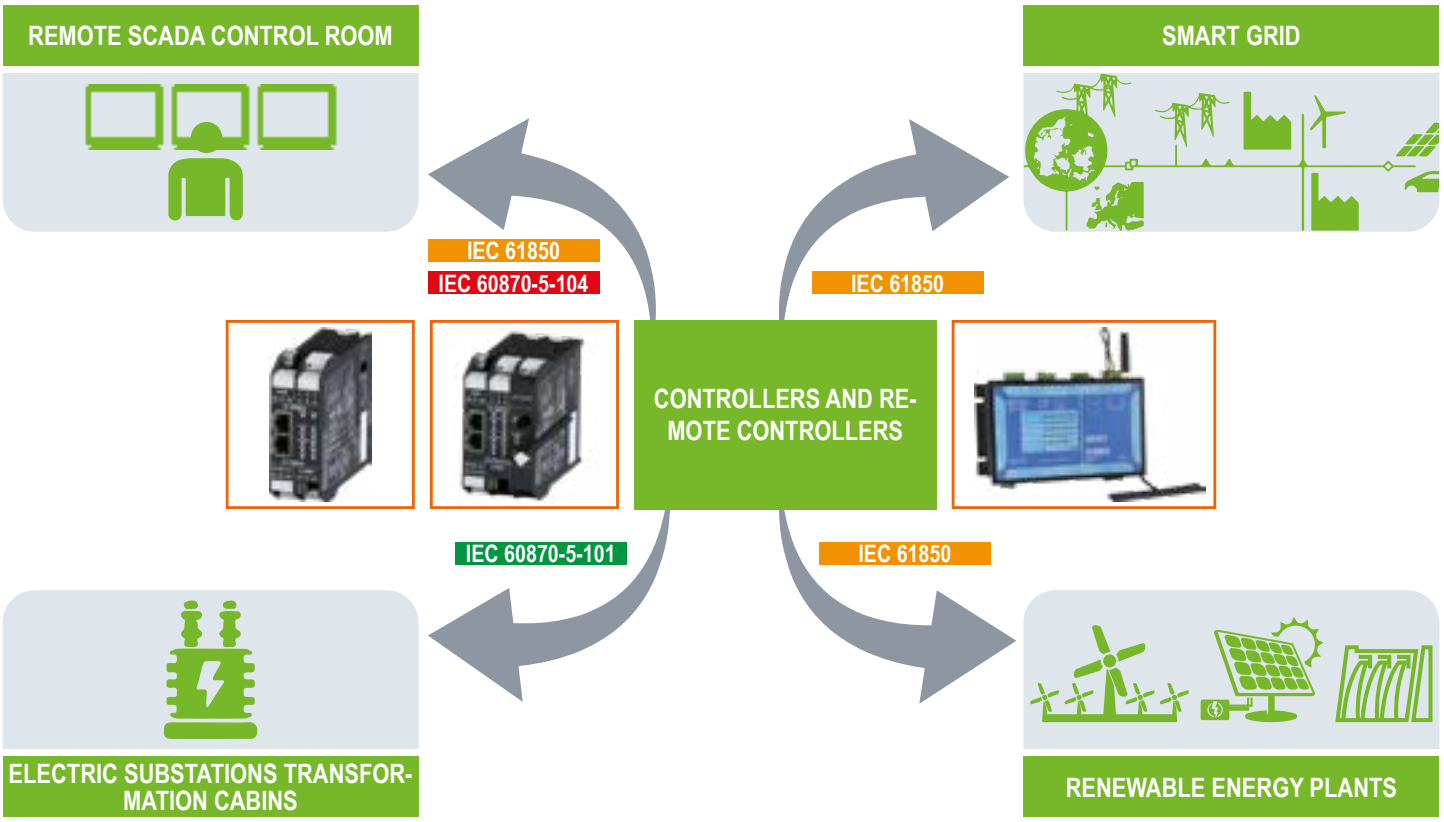


3.8



ENERGY CONTROLLERS

CONTROL AND COMMUNICATION FOR ELECTRIC NETWORKS



ENERGY CONTROLLERS AND REMOTE CONTROLLERS

For Energy Management applications, SENECA offers different types of controllers, Z-TWS4-E, Z-PASS2-S-E, S6001-RTU-E with the support of communication protocols IEC 60870-101/104 and IEC 61850. These units can be used as redundant controllers for plant automation, management of produced energy, management of renewable energy plants (biomass, photovoltaic, wind, etc.), development of smart grids, etc. They are also configurable as web servers and TCP-IP nodes and can be integrated with SCADA, EMS, and Web supervision platforms.

IEC 60870

IEC 60870 - REMOTE CONTROL

In the field of electrical engineering and power plant automation, the international standard IEC 60870 allows interoperability between devices from different manufacturers and is divided into six parts that define general information, operability conditions, electrical interfaces, performance requirements, and standard transmission protocols. The stack (data type) used in Straton particularly supports:

- IEC 60870-5-101 (serial communication)
- IEC 60870-5-104 Slave (communication via TCP/IP).

IEC 61850

IEC 61850 & GOOSE - ELECTRIC NETWORKS

The IEC 61850 standard was designed to send messages between sender and receiver optimally, making communication as direct as possible to avoid performance and functionality losses. The SENECA stack for the IEC 61850 server protocol includes the source, configurator, compiler, and runtime. The abstract data model defined in IEC 61850 can be "mapped" onto a different number of protocols, as in the case of GOOSE (Generic Object Oriented Substation Events, a mechanism that allows the sending of any data grouped in a dataset in less than a few milliseconds.

MULTIFUNCTION CONTROLLERS AND RTUS WITH ENERGY PROTOCOLS

	S6001-RTU ENERGY	R-PASS ENERGY	Z-PASS2-RT ENERGY	Z-TWS4-RT ENERGY
IEC 60870 IEC 61850				
	All-in-one remote controller with integrated I/O, 4G WW LTE modem, IEC 61131, IEC 60870-101, IEC 60870-104, IEC 61850	**Remote Edge IIoT Controller, IEC 61131, integrated I/O, 4xETH, Wi-Fi (opt.) IEC 60870-101, IEC 60870-104, IEC 61850**	**Remote Controller with 4G WW LTE modem; Edge IIoT, IEC 61131, integrated I/O, IEC 60870-101, IEC 60870-104, IEC 61850**	**Edge IIoT Controller, IEC 61131, integrated I/O, IEC 60870-101, IEC 60870-104, IEC 61850**
GENERAL DATA				
Power Supply	24 Vac/dc	10..40 Vdc; 19..28 Vac	11..40 Vdc	
Max Consumption	10 W	8 W	6 W	
Battery / UPS	-	With additional R-COMM module	-	-
Max isolation	1.5 kVac			
Protection class	IP20			
Connections	3.5 mm pitch removable terminal block, 1.5 mm2 wire section			
			IDC10 power/bus connector	
Flash Memory (data)	≥4 GB			
RAM	512 MB			
Micro SD	-	-	Max 32 GB (PUSH-PUSH type micro SD slot	
Supported SIM cards	Standard SIM with push slot	Standard SIM with additional R-COMM module	Standard SIM with push slot	
I/O Channels	Nr.17DI, 4AI, 8DO, 2AO	#4 DI, #4 DO, #2 AI (mA, V)	#6 DI/DO configurable, #2 AI (mA,V)	
Operating temperature	-10..+65°C	-20..+65°C	-25..+65°C	
Dimensions (WxHxD)	190x105x60 mm	106 x 90 x 32 mm	52.5 x 102.5 x 111 mm	52.5 x 112 x 100 mm
Weight	700 g	170 g	Approximately 270 g	Approximately 240 g
Enclosure	Painted aluminum	PC / ABS self-extinguishing UL94-V0, black color	PA6 fiberglass reinforced, black color	
Installation	For 35 mm DIN rail IEC EN 60715	On DIN rail EN 60715, wall / panel mounted	For 35 mm DIN rail IEC EN 60715	
Certifications	CE, UKCA			
COMMUNICATION				
Ethernet Ports (ETH1, ETH2)	#1 Ethernet port 10/100 Mbps (RJ45)	#4 Fast Ethernet 10/100Tx ports with front RJ45 connector	Nr.2 Fast Ethernet (LAN/1WAN), 10/100Tx su RJ45 frontal	
Serial ports (COM1, COM2, COM4)	#1 RS232 / RS485 port on terminals, max baud rate 115kbps #3 RS485 (on terminals or IDC10), max baud rate 115kbps #1 RS232 port (DB9M)	-	#1 RS232 / RS485 port on terminals, max baud rate 115kbps	
		#1 RS485 port on terminals, max baud rate 115kbps		
		-	#1 RS485 port on terminals, max baud rate 115kbps	
USB Ports	#1 USB host port on side type A connector			
	-	#1 micro USB port for debugging		
CAN Port	-	#1 CAN port (terminals)	#1 CAN port (terminals)	#1 CAN port (terminals)
Modem/Router	Multiband M2M/IoT, 4G / LTE World Wide (integrated)	Multiband M2M/IoT, 4G / LTE World Wide (with optional R-COMM module)	Multiband M2M/IoT, 4G / LTE World Wide (integrated)	-
Sat Receiver.	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS (with optional R-COMM module)	GPS / GLONASS / BeiDou (compass) / Galileo / QZSS	-
Wi-Fi (opt.)	-	WiFi 802.11 b/g/n, band 2.4 ÷2.4835GHz, max Output Power: 17dBm (50 mW), security WEP / WPA / WPA2	-	-
Serial / IT Protocols	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/SFTP Client/Server HTTP/HTTPS Server, SMTPs client, SNMP, Samba			
IoT Protocols	MQTT, MQTTs, OPC UA Server, https, http post			
Energy Protocols	IEC 60870-101, IEC 60870-104, IEC 61850			
Connectivity	Max TCP-IP Clients 50, Max ModBUS RTU/ASCII slave nodes 128 per port, Memory area for 2,000 variables (tags)			
Operating Modes	Industrial Gateway, LAN Router, Wi-Fi Router (opt.) Datalogger, Remote Alarm Unit, Remote VPN Access Unit, SoftPLC IEC 61131, Energy Controller IEC 60870/61850, Widget HMI, Remote Display			
SECURITY				
LAN / WAN separation	Yes			
Authentication	User / Password		Two-factor authentication (Google Authenticator)	
Permission Management	Supervisor		Supervisor / Users / Groups	
Security Protocols	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS	OpenVPN, SSL, HTTPS Server, MQTT over SSL/TLS, TLS 1..2 or higher		
SSL/TLS Certificates	-	-	Automated TLS certificate management for HTTPS	
Cybersecurity certificates (penetration test)	-	-	Yes, OWASP, NIST 800-115, Risk Analysis, IEC62443	
Encryption algorithm (data encryption)	OpenVPN BF-CBC + Auth SHA1	OpenVPN AES-256bit-CBC + Auth SHA256 bit or user-selectable		
PROGRAMMING				
Configuration environments	Z-NET4, Web Server			
VPN Management Software	OpenVPN, VPN Client Communicator			
LET'S Support	Yes			
PLC Programming	IEC 61131-3 (Straton)			
Max # PLC variables/tags	2,000			
PLC program size	2048 kB			

ORDER CODES

Code	Description
R-PASS-0-4-E	Edge Controller IIoT Straton with Energy protocols and 4 Ethernet ports
R-PASS-W-4-E	Edge Controller IIoT Straton with Energy protocols, Wi-Fi, and 4 Ethernet ports
S6001-RTU-E-4GWW	All-in-one RTU with integrated I/O, 4G WW LTE modem, Straton, Energy protocols
Z-PASS2-RT-4G-E	Edge IIoT Controller, 4G, prot. protection, GPS and integrated I/O.
Z-TWS4-RT-E	Edge Controller IIoT, IEC 61131, integrated I/O, Energy protocols

MYALARM2 CEI

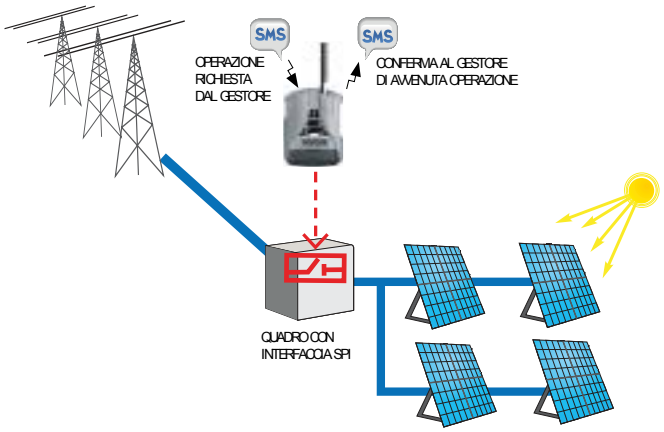
MYALARM2-CEI 0-16 è un'unità di telegestione che consente il teledistacco, il riallaccio e la diagnostica da remoto di impianti di generazione di energia. Con 2 uscite a relè, porta USB, batteria tampone, alloggio per MicroSD, display LCD e LED diagnostici, il modulo GSM/GPRS integrato consente l'intervento del gestore di rete (GSE) e dei responsabili di impianto mediante SMS codificati fino ad un massimo di 20 utenti. L'unità elabora il segnale ricevuto dal gestore ed emette un comando verso il sistema di protezione interfaccia (SPI) cui è collegato in modo da consentire il distacco e l'inibizione dei gruppi di generazione. Studiato per l'installazione facilitata e sicura con guida DIN il modulo può gestire fino a 4 sistemi di protezione interfaccia. Seneca propone 4 versioni compatibili con tutte le SPI presenti sul mercato, con antenna integrata o esterna e alimentazione a 220 Vac o 12 Vdc. Per applicazioni in condizioni ambientali critiche il dispositivo è disponibile anche in custodia ABS con grado di protezione IP66.

TECHNICAL DATA

GENERAL DATA	
Power Supply	5..15 Vdc @ 500 mA (*)
Consumption	3.5 W (max)
Protection class	IP20
Rechargeable battery	Lithium Polymers (1,100 mAh), autonomy up to 8 hours (without auxiliary relay)
Status indications	GSM / GPRS Device state power supply
Connections	Spring-loaded removable terminals, pitch 3.5 mm SMA connector for GSM antenna Micro USB port for configuration and power supply
Slot	Push-Push SIM for mini SIM (15 x 25 mm)
Supported SIM	Mini SIM
O.S.	Real-Time Multitasking
Display	LCD 128x32 Dots with visible area 39 mm x 8.6 mm Display scroll button
GSM / GPRS	Quad band 850 / 900 / 1800 / 1900 MHz
Dimensions	80 x 105 x 30 mm
Weight	150 g
Operating temperature	-10..+55°C
Storage temperature	-20..+85°C
Material	ABS Polycarbonate
Installation	DIN rail or wall
Included items	Power supply for network connection on terminals, support bracket, #2 screws, #2 anchors, GSM antenna, installation manual, USB cable
FUNCTIONS AND SETTINGS	
Basic configuration	Software (EASY CEI): SMS, users, PIN, POD, inputs, outputs, debug
Firmware update	Via software or through card
Alarm management	SMS,
Contact list	20 phone numbers
Commands	Latch, Unlatch
DIGITAL INPUTS	
Channels	4
Type	PNP OFF threshold: 0 - 2 Vdc, I < 1 mA ON threshold: 12 - 24 Vdc, I > 3 mA
DIGITAL OUTPUTS	
Channels	2
Type	SPST relay 3 A / 240 Vac
ANALOG OUTPUTS	
Channels	1
Type	12 Vdc
STANDARD	
Certifications	CE
Standards	ETSI EN 301489-7, EN 301511, EN 301489-1, IEC/EN 60950, CEI 0-16 (Annex M)

* Additional power supply range 24 Vdc and 220 Vac via supplied power supplies / transformers

SCHEMA APPLICATIVO



PROGRAMMAZIONE

MYALARM2-CEI-0-16 è accompagnato da un intuitivo tool di programmazione (EASY CEI) con cui è possibile configurare il codice POD, il codice PIN, i parametri dei canali I/O, i numeri di telefono abilitati alla ricezione delle notifiche, oltre alla personalizzazione delle stringhe SMS associate ai cambi di stato dell'impianto. Con EASY CEI è anche possibile salvare una copia della configurazione e aggiornare il firmware del dispositivo specie per eventuali implementazioni future.

QUADRO NORMATIVO

L'adozione del MYALARM2-CEI-0-16 si colloca nell'ambito degli incentivi erogati dal GSE per l'adeguamento a regola d'arte degli impianti di generazione in media tensione non programmabili da fonte rinnovabile con potenza nominale complessiva maggiore o uguale a 100 kW. Tale adeguamento si rende necessario per garantire la sicurezza di esercizio richiesta dal Servizio Elettrico Nazionale in conformità alla Normativa CEI 0-16 allegato M, alla delibera 421 (A.E.E.G) e all'Allegato A72 (TERNA).

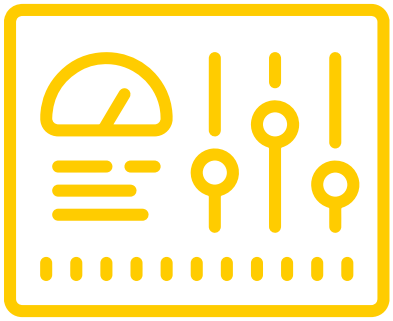
CODICI D'ORDINE

Codice	Descrizione
UNITÁ	
MY2CEI-016-0-220	Unità gestione teledistacco, antenna integrata, alim. 220Vac - 12Vdc
MY2CEI-016-0-24	Unità gestione teledistacco, antenna integrata, alim. 24Vdc - 12Vdc
MY2CEI-016-A-220	Unità gestione teledistacco, antenna est. A-GSM, alim. 220Vac - 12Vdc
MY2CEI-016-A-24	Unità gestione teledistacco, antenna est. A-GSM, alim. 24Vdc - 12Vdc

CODICI D'ORDINE

Codice	Descrizione
ACCESSORI	
A-GSM	Antenna esterna multibanda con cavo di 3 m e attacco SMA maschio
ALIM-MY2	Alimentatore 230 V / 12 V
ALIM-MY2-12-24	Trasformatore 24-12Vdc
CU-A-MICRO-B	Cavo plug USB-A Micro USB-B 5 P
MY2-KITIP66	KIT ABS per montaggio rapido, protezione IP66
PROGRAMMAZIONE	
EASY CEI	Software di gestione MYALARM2 CEI

4



INSTRUMENTATION FROM THE PANEL AND MEASUREMENT

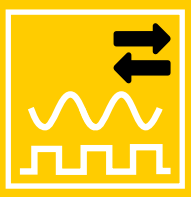
4 INSTRUMENTATION FROM THE PANEL AND MEASUREMENT

In the Instrumentation from the Panel and Measurement line, there are signal converters, digital indicators, totalizers, presetters, overvoltage protections, stabilized power supplies, temperature and humidity probes, multifunction calibrators. With a comprehensive offering dedicated to instrumentation for industrial monitoring, SENECA provides the most advanced optical, capacitive, and inductive technologies for normalizing field signals from sensors and actuators, galvanic isolation, electrical protection, connecting measurement loops, and controlling electrical and environmental parameters. The signal conditioning products can be used in universal applications, even in combination with other SENECA products. Their electrical and mechanical structure is designed to minimize wiring and maintenance activities.

4.1 MULTISTANDARD COMPACT ISOLATOR

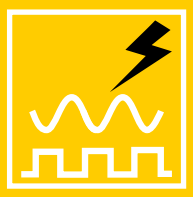
Z Series

4.2 MULTISTANDARD COMPACT CONVERTERS



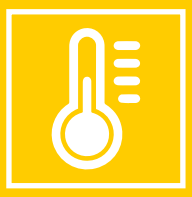
K Series

4.3 HIGH ISOLATION CONVERTERS

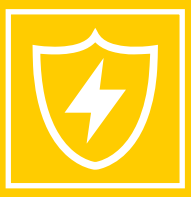


S Series

4.4 TEMPERATURE TRANSMITTERS

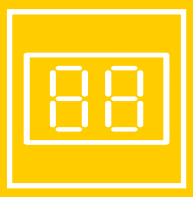


4.5 SURGE PROTECTION DEVICES



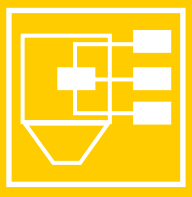
S400 Series

4.6 LED DIGITAL INDICATORS



S Series

4.7 BATCH CONTROLLERS

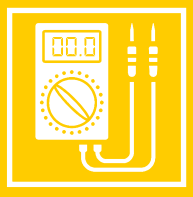


S20N1-S21N1 Series

4.8 PROFESSIONAL PORTABLE MEASUREMENT SYSTEMS

MY Series

4.9 MULTIFUNCTION CALIBRATORS



4.1

MULTISTANDARD ISOLATOR CONVERTERS

Z Line

Z Series

multistandard signal isolator converters with universal power supply

The modules of **Z Series** are reliable signal conditioners, designed for ease of use and installation. Available in multiple power standards, they meet the most common interface and conditioning needs. Most models feature 3-way galvanic separation at 1.5 kVac, compact dimensions (standard width 17.5 mm), DIN 42677 rail mounting, extended temperature range, high precision, and the ability to power the sensors connected to them. **Z Series** is the ideal solution for conditioning industrial analog signals, electrical signals from temperature sensors, load cells, serial, digital, and pulse signals.

UNIVERSAL POWER SUPPLY

Vac/dc switching; power from measurement loop

POWER SUPPLY FOR TRANSDUCERS

Loop current supply on input and output (min 20 Vdc)

REDUCED CONSUMPTION

< 2.5 W

HIGH MULTI-WAY ISOLATION

from 1.5 kVac up to 4kVac

ACCURACY

Up to 0.1%

SIGNALS STANDARD

mA, mV, A, V, Ohm, RTD, TC, load cell, Reed, Pnp, Npn, Hall effect, photoelectric sensor, 24V impulse

DURABILITY

Operational temperature up to -20..+65%, RH 90%

RELIABILITY

MTBF>500,000 hours

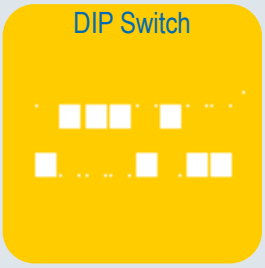
CERTIFICATIONS

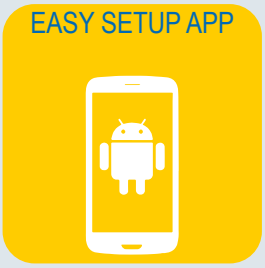
COMPACT DIMENSIONS

Width 17.5 mm

FLEXIBLE CONFIGURATION

The SENECA Z Series converters offer 3 configuration modes.
The vast majority of models allow for standard parameter configuration via DIP switches accessible on the side of the device.
In addition, some models offer extended functionality that can be set using the “EASY SETUP” PC software.
Other models, equipped with a Micro USB port on the front, are programmable via the “EASY SETUP APP” for Android terminals.






Removable screw terminals 2.5 mm²


Installation on 35 mm DIN rail (IEC/EN 60175)


Frontal 3.5 mm jack RS232 (COM)


Micro USB communication port

QUICK SELECTION

		CONVERSION			CONNECTION TYPES mA / Measurement Loop				
Model	Number of Inputs	Input Type	Number of Outputs	Output Type	Active Input	Passive Input	Active Output	Passive Output	
ANALOG CONVERTERS									
Z102	1	Ohm	1	mA, V			x	x	
Z109REG	1	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100	1	mA, V	x	x	x	x	
Z109REG2-1	2	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Ni100, Pt500, Pt1000, (Strobe)	2	mA, V, (SPST Relay)	x	x	x	x	
Z109REG2-H	2	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Ni100, Pt500, Pt1000, (Strobe)	2	mA, V, (SPST Relay)	x	x	x	x	
Z109REG-BP	1	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC	1	mA, V	x	x	x	x	
Z109S	1	mA	1	mA	x	x	x	x	
Z109S-DI	1	mA	1	mA	x	x	x	x	
Z109UI2-1	1	mA, V, mV	1	mA, V	x	x	x	x	
Z110D	2	mA	2	mA		x	x		
Z110S	1	mA	1	mA		x	x		
Z170REG-1	1	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Ni100, Pt500, Pt1000, (Strobe)	2	mA, V, (SPST Relay)	x	x	x	x	
Z190	2	mA, V	1	mA, V	x	x	x	x	
Z-SG	1	mV, load cell	1	mA, V, RS485 ModBUS					
Z-SG3	1	mV, load cell	1	mA, V, RS485 ModBUS					
FREQUENCY CONVERTERS									
Z104	1	mA, V	1	Contact, NPN Open Collector, Reed Relay	x	x			
Z111	1	Contact, Reed, NPN, Namur, Photoelectric, Hall, Variable Reluctance, Impedance 24 V, TTL, Volumetric Counter	1	mA, V			x	x	
ELECTRICAL MEASUREMENT CONVERTERS									
Z201	1	Aac	1	mA, V			x	x	
Z201-H	1	Aac	1	mA, V			x	x	
Z202	1	Vac	1	mA, V			x	x	
Z202-H	1	Vac	1	mA, V			x	x	
Z202-LP	1	Vac/dc	1	mA, V				x	
Z203-2	1	A, V	1	mA, V, RS485 ModBUS				x	
Z204-1	1	Vac/dc	1	mA, V, RS485 ModBUS				x	
TEMPERATURE CONVERTERS									
Z109PT2-1	1	Pt100, Ni100, Pt500, Pt1000	1	mA, V			x	x	
Z109TC2-1	1	TC (J,K,R,S,T,B,E,N)	1	mA, V			x	x	
RELAYS THRESHOLDS CONVERTERS									
Z112A	1	Contact, Reed, NPN, PNP, Namur, Photoelectric, Hall, Variable Reluctance, Impedance 24 V, TTL, Volumetric Counter	1	SPDT Relay					
Z112D	2	Contact, Reed, NPN, PNP, Namur, Photoelectric, Hall, Variable Reluctance, Impedance 24 V, TTL, Volumetric Counter	2	SPST Relay					
Z113-1	1	mA, V, Ohm, RTD, TC	2	SPST Relay	x	x			
A/D CONVERTERS									
Z-4AI-D	4	mA, V	3	Digital contacts	x	x			
Z-4TC-D	4	TC	3	Digital contacts					

POWER SUPPLY			CONFIGURATION			OTHER FEATURES			
Power Supply	Power supply for transducers	Max isolation	DIP Switch	Software	App	Prediction Class	OPERATING TEMPERATURE	Certifications	Special Functions / Features
x		1.5 kVac, 3-way	x			0.2%	0..+50°C	CE, UKCA	Root extraction, input filter, rejection, burn-out
x	18 Vdc	1.5 kVac, 3-way	x	x		0.2%	0..+50°C	CE, UKCA	Root extraction, input filter, rejection, burn-out
10..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac, 3-way	x	x	x	0.1%	-10..+60°C	CE, UKCA, UL	Root extraction, input filter, rejection, burn-out
85..265 Vac/dc	20 Vdc	1.5 kVac, 3-way	x	x		0.1%	-10..+60°C	CE, UKCA	Root extraction, input filter, rejection, burn-out
10..40 Vdc; 19..28 Vac	17 Vdc	1.5 kVac, 3-way	x	x	x	0.1%	-10..+60°C	CE, UKCA	Root extraction, input filter, rejection, burn-out
19..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac, 3-way	x			0.2%	0..+50°C	CE, UKCA, UL	
10..40 Vdc; 19..28 Vac	17 Vdc	3.5 kVac, 3-way	x			0.2%	-20..+60°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x	x	0.1%	0..+50°C	CE, UKCA, UL	Output mode zero elevation, scale inversion
External / From measurement loop		1.5 kVac, 2-way	x			0.1%	0..+50°C	CE, UKCA	
External / From measurement loop		1.5 kVac, 2-way	x			0.1%	0..+50°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		1.5 kVac, 4-way	x	x	x	0.1%	-10..+60°C	CE, UKCA, UL	Root extraction, input filter, rejection, burn-out
19..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac	x			0.2%	0..+50°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x		0.01%	-10..+60°C	CE, UKCA	Tare Functions (Reset, Acquisition); Stable weighing indication
10..40 Vdc; 19..28 Vac		1.5 kVac, 5-way	x	x		0.01%	-25..+70°C	CE, UKCA	Tare Functions (Silos, Reset, Acquisition); Piece Counting Function; Stable weighing indication;
19..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac, 3-way	x			0.2%	0..+50°C	CE, UKCA	Programmable integration constant
19..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac, 3-way	x			0.2%	0..+50°C	CE, UKCA, UL	
19..40 Vdc; 19..28 Vac		3.75 kVac, 3-way	x			0.3%	0..+55°C	CE, UKCA	
85..265 Vac/dc		4 kVac, 3-way	x			0.3%	0..+55°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		3.75 kVac, 3-way	x			0.25%	0..+60°C	CE, UKCA	
85..265 Vac/dc		4 kVac, 3-way	x			0.25%	0..+60°C	CE, UKCA	
External / From measurement loop		4 kVac, 2-way	x			0.25%	0..+60°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		3.75 kVac, 3-way	x	x		0.5%	0..+55°C	CE, UKCA, UL	
10..40 Vdc; 19..28 Vac		4 kVac, 3-way	x	x		0.5%	-20..+65°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x	x	0.1%	-10..+60°C	CE, UKCA, UL	Output mode zero elevation, scale inversion
10..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x	x	0.2%	0..+50°C	CE, UKCA, UL	Output mode zero elevation, scale inversion
19..40 Vdc; 19..28 Vac	20 Vdc	3 kVac, 3-way	x				0..+50°C	CE, UKCA	Repeater / Pulse Divider
19..40 Vdc; 19..28 Vac	20 Vdc	1.5 kVac, 3-way	x				0..+50°C	CE, UKCA	
10..40 Vdc; 19..28 Vac		3 kVac, 3-way	x	x			-10..+65°C	CE, UKCA	
19..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x		0.1%	0..+55°C	CE, UKCA, UL	PLC interface (data, clock, strobe)
19..40 Vdc; 19..28 Vac		1.5 kVac, 3-way	x	x		0.1%	0..+55°C	CE, UKCA, UL	PLC interface (data, clock, strobe)

ANALOG SIGNAL CONVERTERS

	Z109REG	Z109REG2-1	Z109REG2-H
			
	Universal converter with galvanic isolation	Universal converter with galvanic isolation, relay output, Micro USB 9..40 Vdc/19..28 Vac	Universal converter with galvanic isolation, micro USB, 85..265 Vac/dc
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	85..265 Vac/dc
Power supply for transducers	Active input 2 wires (min 18 Vdc)	Active input 2 wires (min 20 Vdc)	Active input 2 wires (min 20 Vdc)
Max Consumption	2.5 W	2.5 W (max) 1.6 W (24 Vdc, 20 mA)	2.5 W (max) 1.6 W (24 Vdc, 20 mA)
Isolation	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (input/output); 3.750 Vac (power supply//input-output)
LED Status Indicators	Power Supply Error	Power Supply Error	Power Supply Error
Response Time	35 ms	35 ms (11 bit)..140 ms (16 bit)	35 ms (11 bit)..140 ms (16 bit)
Interfaces	Frontal 3.5 mm jack RS232 (COM)	Micro USB	Frontal 3.5 mm jack RS232 (COM)
Precision class	0.1%	0.1%	0.1%
Thermal Drift	0.01%/°K	0.01%/°K	0.01%/°K
Linearity	0,05% (V,I), 0,2% (RTD),1°C (TC)	0,05% / 0.4%	0,05% / 0.4%
Configuration	DIP Switch Software (EASY SETUP)	DIP Switch Software (EASY SETUP) Android App	DIP Switch Software (EASY SETUP)
Operating Temperature	-20..+60°C	-20..+60°C	-20..+60°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Removable screw terminals 2.5 mm²	Removable screw terminals 2.5 mm²	Removable screw terminals 2.5 mm²
Enclosure	Nylon 6 with 30% fiberglass	Nylon 6 with 30% fiberglass	Nylon 6 with 30% fiberglass
Mounting	35 mm DIN rail (IEC/EN 60175)	35 mm DIN rail (IEC/EN 60175)	35 mm DIN rail (IEC/EN 60175)
Weight	200 g	200 g	200 g
Certifications	CE	CE- UL-UR CSA	CE- UL-UR CSA
INPUT DATA			
Channels	1	1 analog, 1 strobe	1 analog, 1 strobe
Type	• VOLTAGE (mV, V) Bipolar 0..2, 0..5, 0..10 V • CURRENT (mA) Bipolar 0..20 mA • RTD Pt100 (-200..+600°C) • THERMOCOUPLE Type J, K, R, S, T, E, B, N • POTENTIOMETER 0,5..15 kΩ	• VOLTAGE (mV, V) Bipolar from 75 mV to 20 V Resolution 15 bits + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC 3, 4 wire measurement Scale: -200..600°C Resolution 0.1°C • THERMOCOUPLE Type J, K, R, S, T, E, B, N Resolution 2.5 µV • POTENTIOMETER: 500 Ω ..10 kΩ • RHEOSTAT: 500 Ω..25 kΩ • STROBE: Alternative to the relay output	• VOLTAGE (mV, V) Bipolar from 75 mV to 20 V Resolution 15 bits + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC 3, 4 wire measurement Scale: -200..600°C Resolution 0.1°C • THERMOCOUPLE Type J, K, R, S, T, E, B, N Resolution 2.5 µV • POTENTIOMETER: 500 Ω ..10 kΩ • RHEOSTAT: 500 Ω..25 kΩ • STROBE: Alternative to the relay output
OUTPUT DATA			
Channels	1	1 analog, 1 relay	1 analog, 1 relay
Type	• VOLTAGE (V) 4 scales: 0..2, 0..10 V • CURRENT (mA) 2 scales: 0..20, 4..20 mA	• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Minimum load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Maximum load resistance: 600 Ω • RELAY Alternative to strobe input NC / NO in case of alarm	• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Minimum load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Maximum load resistance: 600 Ω • RELAY Alternative to strobe input NC / NO in case of alarm
ORDER CODES			
Code	**Z109REG**	**Z109REG2-1**	**Z109REG2-H**

The technical data and diagrams in this document are indicative and not binding.

Z109UI2-1	Z109REG-BP	Z109S-DI	Z109S
			
mA-V converter with galvanic isolation, micro USB	**Universal converter with bipolar voltage / current output, micro USB**	**Galvanic separator for high isolation current loops**	**Galvanic separator for current loops**
GENERAL DATA			
10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	9..40 Vdc; 19..28 Vac
Active input 2 wires (min 20 Vdc)	Active input 2 wires (17 Vdc)	Active input 2 wires (17 Vdc)	Active input 2 wires (17 Vdc)
2.5 W	2.5 W	2.5 W	2.5 W
1.500 Vac (3-way)	1.500 Vac (power supply / input)	3500 Vac (3-way)	1.500 Vac (3-way)
Power Supply	Power Supply Error	Power Supply	Power Supply
35 ms (11 bit)..140 ms (16 bit)	35 ms (11 bit)..140 ms (16 bit)	< 200 µs	< 60 ms
Micro USB	Micro USB	-	
0.1%	0.1%	0.2% or 10µA	0.2%
0.01%/°K	0.01%/°K	0.02%/°K	0.02% f.s. / °C
0.05 % (V,I), 0.01% (Vout)	-	-	0.05%
DIP Switch Software (EASY SETUP) App (EASY SETUP) Android App	DIP Switch Software (EASY SETUP) Android App	-	-
-20..+60°C	-20..+65°C	-20..+60°C	-20..+60°C
17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2
Nylon 6 with 30% fiberglass	Nylon 6 with 30% fiberglass	Nylon 6 with 30% fiberglass	Nylon 6 with 30% fiberglass
35 mm DIN rail (IEC/EN 60175)	35 mm DIN rail (IEC/EN 60175)	35 mm DIN rail (IEC/EN 60175)	35 mm DIN rail (IEC/EN 60175)
200 g	200 g	200 g	200 g
CE- UL-UR CSA	CE	CE	CE - UL
INPUT DATA			
1	1	1	1
• VOLTAGE (mV, V) Bipolar from 75 mV to 20 V 9 scales Resolution 15 bits + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA	• VOLTAGE Bipolar from 75 mV to 20 V • CURRENT Bipolar up to 20 mA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81,KTY84, NTC 2.3, 4 wire measurement • THERMOCOUPLE Type J, K, R, S, T, E, B, N • POTENTIOMETER: 500 Ω ..100 kΩ • RHEOSTAT: 500 Ω..25 kΩ	CURRENT 0…20 / 4..20 mA	CURRENT 2 scales: 0/4..20 mA
OUTPUT DATA			
1	1 (bipolar)	1	1
• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Minimum load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Maximum load resistance: 600 Ω	Voltage from -10 to +10 Vdc, min load 1000 Ω Current from -20 to + 20 mA, max load 500 Ω	Current, 0/4..20 mA, max load 600 Ω	• CURRENT (mA) 2 scales: 0/4..20 mA Maximum load resistance: 600 Ω
Z109UI2-1	**Z109REG-BP**	**Z109S-DI**	**Z109S**

The technical data and diagrams in this document are indicative and not binding.

ANALOG SIGNAL CONVERTERS

	Z102	Z110S	Z110D	Z170REG-1
				
	Potentiometric converter	Self-powered galvanic separator single channel	Self-powered galvanic separator double channel	Universal converter with 2 galvanically isolated analog outputs, micro USB
GENERAL DATA				
Power Supply	9..30 (optional) - 19..40 Vdc 19..28 Vac	Self-powered from input loop	Self-powered from input loop	10..40 Vdc; 19..28 Vac
Power supply for transducers	-	-	-	Yes max 25 mA, 17 Vdc
Max Consumption	2.5 W	-	-	0.5..2 W
Isolation	1.500 Vac (3-way)	1,500 Vac	1,500 Vac	1.500 Vac (4-way)
Protection class	IP20	IP20	IP20	IP20
LED Status Indicators	Power Supply	-	-	Power Supply Alarm
Response Time	< 40 ms	< 100 ms	< 100 ms	< 25 ms
Interface	-	-	-	Micro USB (front)
Communication with PLC	-	-	-	-
Precision class	0.2%	0.1%	0.1%	0.1%
Thermal Drift	0.02% f.s. / °C	0.02% f.s. / °C	0.02% f.s. / °C	0.01% /K
Linearity	0.05%	0.1% f.s.	0.1% f.s.	<1% (input), 0.01% (output)
Configuration	DIP Switch	-	-	DIP Switch Software (EASY SETUP) App (EASY SETUP)
Operating Temperature	0..+50°C	0..+50°C	0..+50°C	-20..+60°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	CE	CE	CE	CE- UL-UR CSA
INPUT DATA				
Channels	1	1	2	1
Type	• RHEOSTAT 2 wires: 0..300 Ω (I=6mA); 0..500 Ω (I=3.6mA); 0..1 K Ω (I=1,8 mA) • POTENTIOMETER 3 wires: Vref=1,8 Vcc, from 200 Ω to 1 M Ω	• CURRENT (mA) 4..20 mA	• CURRENT (mA) 4..20 mA	• VOLTAGE Configurable scale 0..10 V • CURRENT Configurable scale 0..20 mA (active/passive module) • POTENTIOMETER Configurable scale 1 kΩ ..100 kΩ THERMOCOUPLE: J,K,R,S,T,B,E,N • THERMAL RESISTANCE Pt100, Pt500, Pt1000, Ni100 14-bit resolution Configurable sampling period from 5 to 20 ms
OUTPUT DATA				
Channels	1	1	2	2
Type	• VOLTAGE (V) 4 scales: 0..5, 1..5, 0..10, 0..10 V Load impedance > 2.5 KΩ • CURRENT (mA) 2 scales: 0..20, 4..20 mA Loop impedance < 600Ω	• CURRENT (mA) 4..20 mA	• CURRENT (mA) 4..20 mA	• VOLTAGE Configurable scale 0..10 V • CURRENT Configurable scale 0..20 mA (active/passive) 14-bit resolution
ORDER CODES				
Code	**Z102**	**Z110S**	**Z110D**	**Z170REG-1**

The technical data and diagrams in this document are indicative and not binding.

ANALOG SIGNAL CONVERTERS

A/D CONVERTERS

Z190	Z-SG	Z-SG3	Z-4AI-D	Z-4TC-D
				
Signal summing subtractor with galvanic isolation	**Load cell converter**	**Advanced load cell converter**	**A/D converter for 4 analog signals**	**A/D converter for 4 thermocouples**
GENERAL DATA				
9..30 (optional) - 19..40 Vdc 19..28 Vac	9..30 (optional) - 19..40 Vdc 19..28 Vac	10..40 Vdc / 19..28 Vac	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)
Active input 2 wires (min 20 Vdc)	-	-	-	-
2.5 W	2 W	2 W	2.5 W	2 W
1.500 Vac (3-way)	1.500 Vac (3-way)	1.5 kVac (5 channels)	1,500 Vac (3-way)	1,500 Vac (3-way)
IP20	IP20	IP20	IP20	IP20
Power Supply	Power Supply Error Data transmission Data reception	RX/TX RS485 Digital I/O Activation Power Supply Load cell overload	Power Supply RST signal status Data transmission Data reception	Power Supply RST signal status Data transmission Data reception
-	< 10 ms	<10 ms	-	-
-	Micro USB Front IDC10 ModBUS RTU RS485	Frontal Micro USB IDC ModBUS RTU RS495	Frontal 3.5 mm jack RS232 (COM)	Frontal 3.5 mm jack RS232 (COM)
-	-	-	Synchronous serial three-wire: CLOCK, DATA, STROBE, standard 24V PNP levels	Synchronous serial three-wire: CLOCK, DATA, STROBE, standard 24V PNP levels
0.2%	0.01%	0.01%	-	-
0.02% f.s./°C	0.0025% f.s. / °C	<25 ppm/°C	-	-
0.05%	0.01%	0.025%/°C	-	-
DIP Switch	DIP Switch Software (EASY SETUP) Tare Functions (Reset, Acquisition); Stable weighing indication	DIP Switch, Web Server, Special Functions (Tare Functions (Silos, Reset, Acquisition); Piece Counting Function; Stable weighing indication; Peer-To-Peer; Pass-Through)	PLC IEC 61131 libraries DIP Switch Z-PROG (PC software)	PLC IEC 61131 libraries DIP Switch Z-PROG (PC software)
0..50°C	-20..+65°C	-25°..+70°C	0..+55°C	0..+55°C
17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 102.5 x 111 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Screw-in removable terminals	Screw-in removable terminals	Removable screw terminals for conductors up to 2.5 mm2	Screw-in removable terminals	Screw-in removable terminals
Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	Vertical position DIN rail 35mm IEC EN60715	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
200 g	200 g	Approximately 110 g	200 g	200 g
CE	CE	CE, UKCA	CE, UL	CE, UL
INPUT DATA				
2	1 analog, 1 digital	1 analog, 1 digital	4	4
VOLTAGE (V) 4 scales: 0..1, 0..5, 0..10, 2..10 V Input impedance 500 kΩ CURRENT (mA) 2 scales: 0/4..20 mA Active connection: loop powered 20 Vdc not stabilized Passive connection: input impedance 100 Ω	• ANALOG Strain gauge load cell, 4 or 6-wire connection, min 87 Ω for 1..4 load cells (350 Ω) or 1..8 load cells (1.000 Ω) Sensitivity: 1..64 mV/V • DIGITAL Tare calibration	• ANALOG Strain gauge load cell, 4 or 6-wire connection, min 87 Ω for 1 to 4 load cells (350 Ω) or 1 to 8 load cells (1,000 Ω); Sensitivity: 1..64 mV/V • DIGITAL Tare calibration	VOLTAGE (V) 2..10 V f.s Resolution: 16,000 points Impedance: 100 KΩ CURRENT (mA) ± 20 mA (bipolar) Resolution: 16,000 points Impedance: 100 Ω	VOLTAGE (mV) ± 80 mV Impedance 10 MΩ Thermocouple Types: J, K, R, S, T, E; B, N
OUTPUT DATA				
1	1 analog, 1 digital	1 analog, 1 digital	-	-
VOLTAGE (V) 4 scales: 0..5, 0..10, 1..5, 2..10 V, min load resistance 2 kΩ CURRENT (mA) 2 scales: 0/4..20 mA Passive/active connection (max loop impedance 600Ω)	CURRENT (mA) 0..20, 4..20 mA VOLTAGE (V) 0..10, 0..5 Vdc DIGITAL Weight threshold	CURRENT (mA) 0..20, 4..20 mA VOLTAGE (V) 0..10, 0..5 Vdc DIGITAL Weight threshold	-	-
Z190	**Z-SG**	**Z-SG3**	**Z-4AI-D**	**Z-4TC-D**

The technical data and diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENTS

	Z201	Z201-H	Z202
			
	Alternating current converter, 10..40 Vdc; 19..28 Vac	**Alternating current converter, 85..265 Vac/dc**	**Alternating voltage converter, 10..40 Vdc; 19..28 Vac**
GENERAL DATA			
Power Supply	10..40 Vdc; 19..28 Vac	85..265 Vac/dc	10..40 Vdc; 19..28 Vac
Max Consumption	< 2.5 W	< 2.5 W	< 1.5 W
Isolation	3,750 Vac (input/output/power supply) 1,500 Vac (output/power supply)	4,000 Vac (input/output/power supply)	3,750 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)
Protection class	IP20	IP20	IP20
LED Status Indicators	Power Supply	Power Supply	Power Supply
Response Time	< 200 ms	< 100 ms	< 30 ms
Interfaces	-	-	-
Precision class	0.3%	0.3%	0.25%
Thermal Drift	<200 ppm/K	<200 ppm/K	<150 ppm/K
Configuration	DIP Switch	DIP Switch	DIP Switch
Operating Temperature	0..+55°C	-10..+65°C	0..+60°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g
Certifications	CE	CE	CE
INPUT DATA			
Channels	1	1	1
Type	ALTERNATING CURRENT 0..5 / 0..10 Aac	ALTERNATING CURRENT 0..5 / 0..10 Aac	ALTERNATING VOLTAGE 0..500 Vac (41 scales), input impedance 2,000 Ω/V Frequency 10 Hz..1 kHz
OUTPUT DATA			
Channels	1	1	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω
ORDER CODES			
Code	**Z201**	**Z201-H**	**Z202**

The technical data and diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENTS

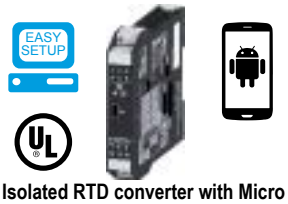
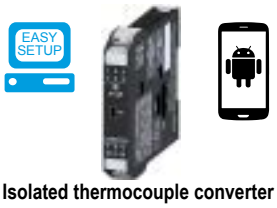
Z202-H	Z202-LP	Z203-2	Z204-1
			
Alternating voltage converter, 85..265 Vac/dc	**Loop powered alternating voltage converter**	**Single-phase network analyzer**	**Alternating and direct voltage TRMS converter**
85..265 Vac/dc	5..28 Vdc (from loop)	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
< 1.5 W	<1mA	< 2.5 W	< 1 W
3,750 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)	4,000 Vac (input/output)	3,750 Vac (input/output/power supply)	4,000 Vac (input/output; input/power supply) 1,500 Vac (output/power supply)
IP20	IP20	IP20	IP20
Power Supply	Power Supply	Power Supply Error RS485 communication	Power Supply Error RS485 communication
< 100 ms	< 100 ms	< 10 ms	For a step change: 1 s from 10 to 90 %
-	-	Frontal Micro USB RS485 (backplane), as an alternative to the analog output, speed up to 115,200 bps, ModBUS RTU protocol	RS232 (frontal connector for programming): baud rate, address, parity, data/stop bit RS485 (backplane), as an alternative to analog output, speed up to 115,200 bps, ModBUS RTU protocol
0.3%	0.3%	0.5%	0.5% input; 0.1% output
+150 ppm/K	+150 ppm/K	+150 ppm/K	+100 ppm/K
DIP Switch	DIP Switch	DIP Switch Software (EASY SETUP)	DIP Switch Software (EASY SETUP)
-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
17.5 x 100 x 112 mm	35 x 100 x 112 mm	17.5 x 100 x 112 mm	35 x 100 x 112 mm
Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
200 g	200 g	200 g	200 g
CE	CE	CE, UL	CE
1 (single phase load)	1	1 (single phase load)	1
ALTERNATING VOLTAGE 0..500 Vac (41 scales), input impedance 2,000Ω/V Frequency 10 Hz..1 kHz	ALTERNATING VOLTAGE 0..500 Vac DIRECT VOLTAGE 0..540 Vdc, max voltage 710 Vpk Frequency DC / 20 Hz..20 kHz	ALTERNATING VOLTAGE Max capacity: 500 Vac, frequency 35-75 Hz ALTERNATING CURRENT Nominal capacity: 5 A rms, crest factor max 3, max current 15 A, frequency 35-75 Hz	DIRECT VOLTAGE: 0..1,200 Vdc; ALTERNATING VOLTAGE 0..850 Vac Input impedance: 800 kΩ Frequency: 30..300 Hz
1	1	1 analog, 1 digital	1
CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2,500 Ω	CURRENT 4..20 mA, passive	VOLTAGE 0-5, 0-10, 1-5, 2-10 V Analog retransmission: Vrms, Irms, Watt, Var, frequency, cosϕ, energy CURRENT 0-20, 4-20 mA DIGITAL Impulse counter (200ms)	CURRENT Range: 0..20 mA; max impedance: 500 Ω VOLTAGE Range: 0..10 V; min impedance: 1 k Ω
Z202-H	**Z202-LP**	**Z203-2**	**Z204-1**

The technical data and diagrams in this document are indicative and not binding.

RELAY THRESHOLD CONVERTERS

	Z112A	Z112D	Z113S	Z113-1
				 
	Power supply amplifier for digital contacts, 1 relay output	**Power supply amplifier for digital contacts, 2 relay outputs**	**Adjustable single alarm threshold**	**Dual alarm threshold with universal analog input and relay output**
GENERAL DATA				
Power Supply	19..40 (9..30 optional) Vdc; 19..28 Vac	19..40 (9..30 optional) Vdc; 19..28 Vac	19..40 (9..30 optional) Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Power supply for transducers	Yes, active input 2 wires (min 20 Vdc)	Yes, active input 2 wires (min 20 Vdc)	Yes, active input 2 wires (min 20 Vdc)	Yes, active input 2 wires
Max Consumption	2.5 W	2.5 W	2.5 W	2.5 W
Isolation	1,500 Vac (power/input) 4,000 Vac (input/power/output)	1,500 Vac	1,500 Vac (power/input) 4,000 Vac (input/power/output)	1.500 Vac (3-way)
Protection class	IP20	IP20	IP20	IP20
LED Status Indicators	Power Supply Relay attracted	Power Supply Relay attracted	Power Supply Threshold exceeded	Power Supply Alarm
Interfaces	-	-	-	Micro USB (front)
Thermal Drift	0.01%/°C	0.01%/°C	0.01%/°C	0.01%/°K
Linearity	0.05%	0.05%	0.05%	0.05%
Configuration	DIP Switch Trimmer	DIP Switch Trimmer	DIP Switch Trimmer	DIP Switch Software (EASY SETUP)
Operating Temperature	0..+50°C	0..+50°C	0..+50°C	-20..+65°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	CE	CE	CE	CE
INPUT DATA				
Channels	1	2	1	1
Type	Impulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor), freq. Max 400 Hz	Impulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor), freq. Max 400 Hz	Voltage (V), 4 scales (0/1..5 Vdc, 0/2..10 Vdc); input impedance 500 kΩ Current (mA), 2 scales (0..20, 4..20 mA); active/passive connection; input impedance 100Ω	Voltage up to 10 V Bipolar current up to 20 mA RTDs Pt100, Pt500, Pt1000, Ni100 Thermocouples Type J, K, R, S, T, B, E, N Potentiometer up to 100 kΩ
OUTPUT DATA				
Channels	1	2	1	2
Type	SPDT relay 1A - 30Vdc / 5A - 250 Vac (resistive load)	Reed SPST relay, max capacity 0.5A - 100 Vac/dc (10 VA resistive load)	SPDT relay 1A - 30Vdc / 5A - 250 Vac (resistive load)	SPST relay, 1 common contact, 2 NO contacts, capacity 250 Vac - 3 A
ORDER CODES				
Code	**Z112A**	**Z112D**	**Z113S**	**Z113-1**

The technical data and diagrams in this document are indicative and not binding.

TEMPERATURE SENSOR CONVERTERS			FREQUENCY SIGNAL CONVERTERS	
	Z109PT2-1	**Z109TC2-1**	**Z104**	**Z111**
	 **Isolated RTD converter with Micro USB interface**	 **Isolated thermocouple converter with Micro USB interface**	 **mA/V - frequency converter with galvanic isolation**	 **Frequency - mA/V converter with galvanic isolation**
GENERAL DATA				
Power Supply	9..40 Vdc; 19..28 Vac	9..40 Vdc; 19..28 Vac	19..40 Vdc; 19..28 Vac	19..40 Vdc; 19..28 Vac
Power supply for transducers	-	-	Yes, 20 Vdc, max 20 mA, 2 wires	-
Max Consumption	2.5 W	2 W	2.5 W	2.5 W
Isolation	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (3-way)
Protection class	IP20	IP20	IP20	IP20
LED Status Indicators	Power Supply Error setting Out of scale	Power Supply Error	Power Supply Output (Relay attracted)	Power Supply Error
Response Time	35..140 ms	35..140 ms	350 ms	250 ms
Interfaces	Micro USB (front)	Micro USB (front)	-	-
Precision class	0.1% (RTD) - 0.3% (voltage output)	0.1% (TC) - 0.3% (voltage output)	0.2%	0.3%
Thermal Drift	0.01%/°K	0.01%/°K	0.02% f.s./°C	0.01% f.s./°C
Configuration	DIP Switch Software (EASY SETUP) Android App	DIP Switch Software (EASY SETUP) Android App	DIP Switch Trimmer (full scale)	DIP Switch Trimmer (full scale)
Operating Temperature	-20..+60°C	-20..+60°C	0..+50°C	0..+50°C
Dimensions	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals	Screw-in removable terminals
Enclosure	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber	Nylon 6 30% glass fiber
Mounting	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	CE	CE	CE	CE, UL-UR CSA
INPUT DATA				
Channels	1	1	1	1
Type	RTD Pt100, Pt500, Pt1000, Ni100 2, 3, 4-wire connection Excitation current: 1 mA Resolution 0.1°C	Thermocouple Type: J, K, R, S, T, E, B, N Resolution 5 µV Automatic break detection	VOLTAGE (V) 4 scales (0..1, 0..5, 0..10, 2..10 V); input impedance 1 MΩ CURRENT (mA) 2 scales (0/4..20 mA); active loop powered 15 Vdc non-stabilized; passive connection input impedance 100Ω	Impulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor, variable reluctance TTL, measurable frequency from 1 mHz to 9.99 kHz
OUTPUT DATA				
Channels	1	1	1	1
Type	VOLTAGE (V) 4 scales: 0..5, 0..10, 1..5, 2..10 V Min load impedance 2 kΩ Resolution: 2.5 µA / 1.25 mV CURRENT (mA) 2 scales: 0..20, 4..20 mA Max load impedance 600Ω Resolution: 2.5 µA / 1.25 mV	VOLTAGE (V) 4 scales: 0..5, 1..5, 0..10, 2..10 V Min load impedance 2.5 KΩ Resolution: 0,025%..0,032 % CURRENT (mA) Active/passive connection 2 scales: 0..20, 4..20 mA Max load impedance: 600 Ω Resolution: 0,025..0.032%	npn open collector pulse, 30 Vdc, 300 mA; reed relay 30 Vac/dc, 100 mA, max frequency 10 kHz	VOLTAGE (V) 4 scales 0..5, 0..10, 1..5, 2..10 V, min load resistance 2,500Ω CURRENT (mA) 2 scales 0/4..20 mA, max load resistance 600Ω
ORDER CODES				
Code	**Z109PT2-1**	**Z109TC2-1**	**Z104**	**Z111**

The technical data and diagrams in this document are indicative and not binding.

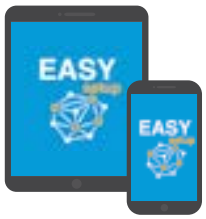
SOFTWARE & ACCESSORIES

EASY SETUP / EASY SETUP 2
Configuration software

Programmable models:
Z109REG, Z109REG2-1, Z109UI-2, Z109REG-BP, Z170REG-1, Z-SG, Z203-1, Z204-1, Z113-1, Z109PT2-1, Z109TC2-1
Minimum hardware requirements:
CPU 1GHz, 256 MB free on HDD, graphics card resolution 1024x769 pixels
Download: free from**www.seneca.it**

- Automatic connection to the module
- Operating and communication parameters setup
- Parameter monitoring
- Automatic module configuration
- Configuration testing and replication

EASY SETUP APP
Android configuration app



Programmable models:
Z109REG2-1, Z109UI2-1,
Z109REG-BP, Z170REG-1, Z109PT2-1, Z109TC2-1
Android version: 4.0 or higher
Compatible terminals: Android Smartphone/Tablet with OTG function
Download: Google Play Store

Mobile Phone with USB OTG support
Google play

- Automatic connection to the module
- Operating and communication parameters setup
- Parameter monitoring
- Automatic module configuration
- Configuration testing and replication

S117P1
RS232 SERIAL CONVERTER↔USB, TTL↔USB, RS485↔USB

- RS232, RS485, TTL asynchronous serial conversion
- Multiple S117P1 units can be connected to the same PC
- USB 1.0, 1.1, 2.0 standard compatibility
- RS485 communication, max 32 nodes
- External module power supply (100 mA, 12 Vdc)
- Included accessories: USB cable, TTL cable, driver CD

ORDER CODES	
Code	**Description**
S117P1	RS232 asynchronous serial converter↔USB, TTL↔USB, RS485↔USB

SYSTEM FOR LOAD CELL EQUALIZATION AND CONNECTION

ORDER CODES	
Code	**Description**
SG-EQ4	Equalization and connection board for up to 4 load cells in parallel
SG-EQ4-BOXPG7	Equalization and connection board for up to 4 load cells in parallel + IP67 enclosure complete with 7 mm diameter cable glands and 2 sealing plugs

Z-POWER
19 Vac transformers for DIN rail mounting

- **Primary voltage 230 (115) Vac ± 10%**
- **Housing made of self-extinguishing thermoplastic material (class V-0)**
- **Thermal fuse protection**
- **Dimensions: 3 DIN modules (15 VA), 5 DIN modules (25 VA)**
- **IP 40**

ORDER CODES	
Code	**Description**
Z-POWER 230-15VA	19 Vac transformer, 230-15 VA
Z-POWER 230-25VA	19 Vac transformer, 230-25 VA
Z-POWER 115-15VA	19 Vac transformer, 115-15 VA

Z-SUPPLY,
single-phase switching power supply 24V @ 1.5 A

- **Input:** 110..230 Vac @ 47-63 Hz 0.7 A; 110..315 Vdc, 0.7 A
- **Output:** 24 Vdc ± 2%
- **Redundancy:** Parallel connection of two Z-SUPPLY modules (only via IDC10 connector)
- **Output current:** 1.5A
- **Output control:** "Power Good" relay output
- **Internal fuse:** 1.25A type T (time-delay)
- **Mounting:** On DIN 46277 rail
- **Isolation:** Up to 3 KV input to output voltage

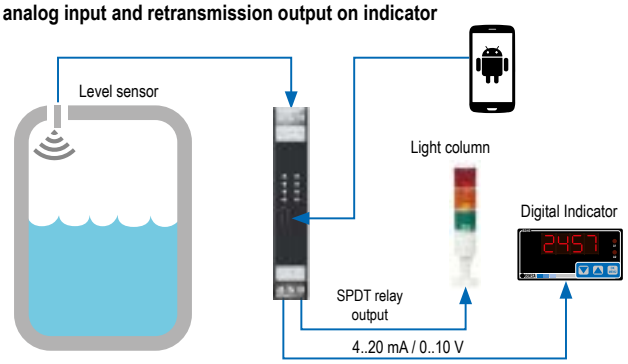
ORDER CODES	
Code	**Description**
Z-SUPPLY,	Single-phase 24V @ 1.5 A switch power supply

CABLES

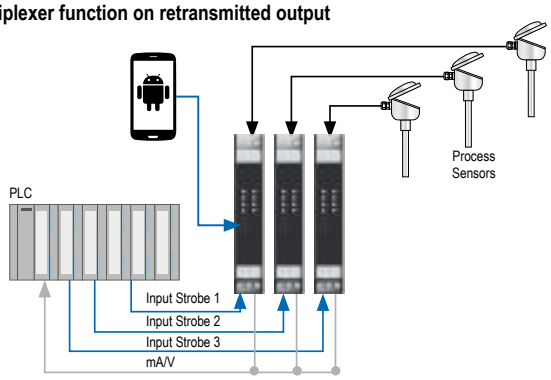
ORDER CODES	
Code	**Description**
CS-JACK-DB9F	Programming serial cable (Jack / DB9F)
CU-A-MICROB	USB-A Micro USB-B 5 P plug cable
CU-A-MICRO-OTG	Micro USB OTG to USB Type A female adapter cable

APPLICATION EXAMPLES

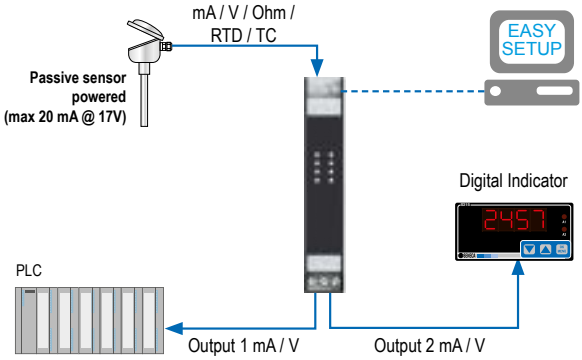
Z109REG2-1
Isolation and conversion with alarm threshold on analog input and retransmission output on indicator



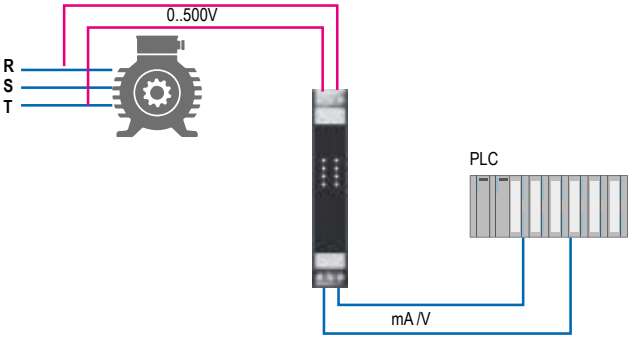
Z109REG2-1
Isolation and analog conversion with multiplexer function on retransmitted output



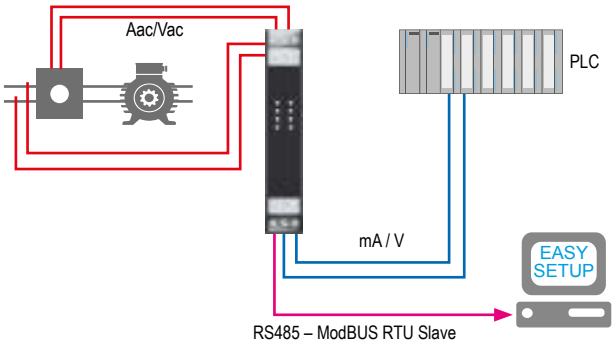
Z170REG-1
Analog signal duplication and retransmission



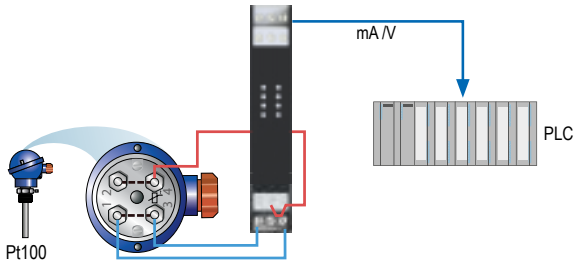
Z202
AC voltage conversion into a normalized mA/V signal



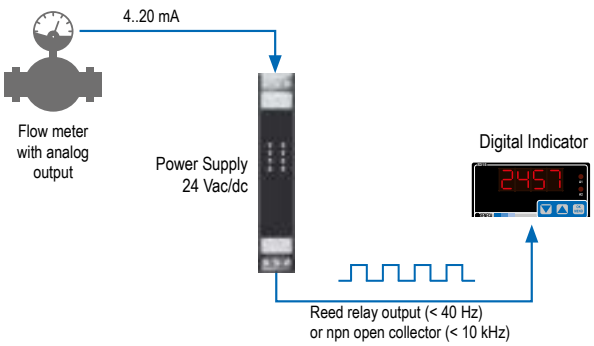
Z203-2
Single-phase network analyzer with signal retransmission at output



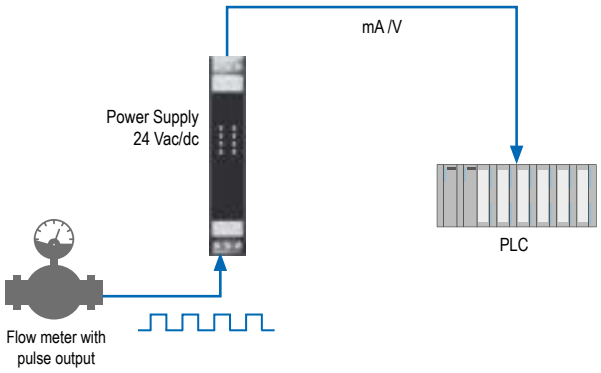
Z109PT2-1
Temperature conversion from Pt100 into a standard analog signal



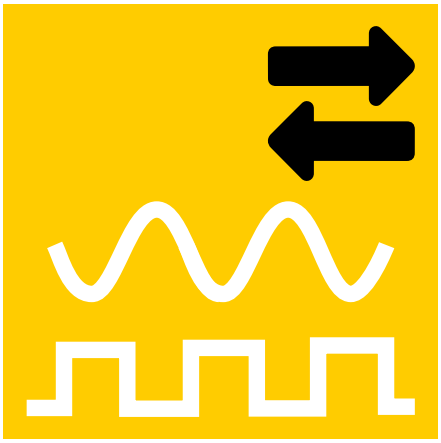
Z104
Pulse counting from flow meter with analog output



Z111
Instantaneous flow acquisition from meter with pulse output



4.2



COMPACT ISOLATOR CONVERTERS

K Line

K Line

Galvanic signal isolators

SENECA converter modules **K Series** feature 1.5 kVac three-way isolation using digital technology, with 0.1% precision class, power supply range from 19.2 to 30 Vdc, compact dimensions (102.5x93.1x6.2 mm), low power consumption, and an MTBF of over 500,000 hours. Signal configuration is immediate via DIP switch or software. Power supply technique is standard (on spring terminal) or distributed system, based on an expandable connector (K-BUS) that snaps onto 35 mm DIN rails according to EN 60715 standard.

ROBUST INDUSTRIAL DESIGN

HIGH RELIABILITY
>500.000 h

WIDE OPERATING TEMPERATURE RANGE
-20..+65°C

LOW POWER CONSUMPTION
<25mA

MULTI-WAY ISOLATION
power
OUT
IN
1.5 kV

COMPACT DIMENSIONS
6.2 mm

HIGH PRECISION
0.1%

SPECIAL FEATURES

READING STABILIZATION FILTER

INPUT/OUTPUT SCALE INVERSION

CYLINDRICAL HORIZONTAL TANK LINEARIZATION

ROOT EXTRACTION

SETTINGS

FLEXIBLE CONFIGURATION VIA DIP-SWITCH

PROGRAMMING VIA PC

EASY SETUP

POWER SUPPLY

DISTRIBUTED/DIRECT POWER SUPPLY ON TERMINAL

19.2..30 Vdc

EXPANDABLE POWER CONNECTOR

CERTIFICATIONS

INTERNATIONAL STANDARDS

CE, UL, CSA

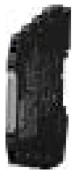
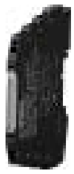
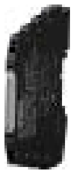
ATEX COMPLIANCE (K121)

II 3G Ex nA IIC T4 Gc X (gas)
II 3D Ex tc IIIC T135°C Dc X (dust)
EN 60079-0:2012
EN 60079-15:2010

QUICK SELECTION

		INPUTS		OUTPUTS			
Code	Conversion	#	Type	#	Type	Power Supply	Power Supply Rogowski
K121	Universal	1	mA, V, Ohm TC (J,K,R,S,T,B,E,N), RTD (Pt100, Ni100, Pt500, Pt1000)	1	mA (passive)	External / loop-powered	-
K109UI	Analog	1	mA, V	1	mA (active), V	19.2..30 Vdc	-
K109S	Analog	1	mA (active), V	1	mA (active), V	19.2..30 Vdc	yes
K109LV	Analog	1	mV	1	mA (active), V	19.2..30 Vdc	-
K111	Impulse/Digital	1	Contact, Namur, PNP/NPN 2/3 wires, reed, photocell, max frequency 20 kHz	2	PNP, NPN	19.2..30 Vdc	yes
K111D	Impulse/Digital	1	Contact, Namur, PNP/NPN 2/3 wires, reed, photocell; max freq. 20 kHz	2	PNP, NPN	19.2..30 Vdc	yes
K112	Impulse/Digital	1	Contact, Namur, PNP/NPN 2/3 wires, reed, photocell; frequency Max 400 Hz	2	PNP, NPN	19.2..30 Vdc	yes
K109PT	Temperature	1	Pt100	1	mA (active), V	19.2..30 Vdc	-
K109PT-HPC	Temperature	1	Pt100	1	mA (active), V	19.2..30 Vdc	-
K109PT1000	Temperature	1	Pt1000	1	mA (active), V	19.2..30 Vdc	-
K120RTD	Temperature	1	Pt100, Ni100	1	mA (passive)	External / loop-powered	-
K109TC	Temperature	1	TC (J,K,R,S,T,B,E,N)	2	mA (active), V, relay (alarm thresholds)	19.2..30 Vdc	-
K107A	Serial	1	RS485	1	RS485	19.2..30 Vdc	-
K107B	Serial	1	RS232	1	RS485	19.2..30 Vdc	-
K107USB	Serial	1	USB	1	RS485 (ModBUS)	External / via PC USB	-

				CONFIGURATION		
MAX ISOLATION	Precision Class	OPERATING TEMPERATURE	Certifications	DIP Switch	Software (EASY SETUP)	Special Features
1.5 kVac	0.1%	-20..+65°C	CE, Atex Zone 2	x	x	Measurement filter, fail-safe output, over-range, cable resistance compensation, cold junction compensation
1.5 kVac	0.1%	-20..+65°C	CE, UL	x	-	Programmable rejection, additional reading stabilization filter, programmable input over-scale, root extraction, cylindrical horizontal tank linearization
1.5 kVac	0.1%	-20..+65°C	CE, UL	x	-	Programmable rejection, additional reading stabilization filter, programmable input over-scale, root extraction, cylindrical horizontal tank linearization
1.5 kVac	0.1%	-20..+65°C	CE	x	-	Shunt release detection, programmable rejection, reading stabilization filter, input overload up to ± 50 V
1.5 kVac	-	-10..+65°C	CE	x	x	Short-circuit protected independent outputs, threshold operation, with hysteresis, window and inversion, input replicator/inverter, programmable input filter
1.5 kVac	-	-20..+65°C	CE	x	x	Frequency divider up to 256 pulses, independent outputs, input filter activatable with programmable cutoff frequency, input replicator
1.5 kVac	-	-10..+65°C	CE	x	-	
1.5 kVac	0.1%	-20..+65°C	CE, UL	x	-	Additional reading stabilization filter
1.5 kVac	0.1%	-20..+65°C	CE	x	-	Additional reading stabilization filter
1.5 kVac	0.1%	-20..+65°C	CE	x	-	Additional reading stabilization filter
-	0.1%	-20..+65°C	CE	x	x	Additional reading stabilization filter
1.5 kVac	0.1%	-20..+65°C	CE, UL	x	-	Additional reading stabilization filter
1.5 kVac	-	-20..+65°C	CE, UL	x	-	Automatic timed direction switching, automatic timed handshake
1.5 kVac	-	-20..+65°C	CE, UL	x	-	Automatic timed direction switching, automatic timed handshake
1.5 kVac	-	-20..+65°C	CE, UL	-	-	Ability to connect multiple units to the same PC

	UNIVERSAL	ANALOG		
	K121	**K109UI**	**K109S**	**K109LV**
	 Universal converter (mA, V, Ohm, RTD, TC) isolated loop powered	 Optoisolated V-I / V-I converter	 Optoisolated V-I / V-I converter with active input (transducer power supply)	 Optoisolated shunt / V-I converter
GENERAL DATA				
Power Supply	7..30 Vdc (from loop 4..20 mA)	19,2.. 30 Vdc	19,2.. 30 Vdc	19,2.. 30 Vdc
Power on side terminals		Yes	Yes	Yes
Max current consumption	24mA	22 mA (24 Vdc)	23 mA (24 Vdc); 45 mA (with aux power)	22 mA (24 Vdc)
Max dissipated power	<660 mW	500 mW	500 mW	500 mW
A/D Conversion	16 bit	14 bit	14 bit	14 bit
Rejection	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)
Configurable	Software (EASY SETUP)	DIP Switch	DIP Switch	DIP Switch
Filter	Additional reading stabilization	Additional reading stabilization	Additional reading stabilization	Additional reading stabilization
Dimensions	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
Isolation	1.5 kVac (2 channels)	1,5 kVac (3-vie)	1,5 kVac (3-vie)	1,5 kVac (3-vie)
Isolation Technique	Digital / optocoupler	Digital / optocoupler	Digital / optocoupler	Digital / optocoupler
Processing	32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation
Color	Black	Black	Black	Black
Case Material	PBT	PBT	PBT	PBT
Weight	45 g	45 g	45 g	45 g
Operating Temperature	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Connection	8 spring terminals	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS
Protection class	IP 20	IP 20	IP 20	IP 20
Precision class	0.1%	0.1%	0.1%	0.1%
Thermal Drift	< 120 ppm/K	< 120 ppm/K	< 120 ppm/K	< 120 ppm/K
LED	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm
Special Features	Cold junction compensation Insertable filter Output inversion	Root extraction Signal inversion Scalable ranges Tank linearization Programmable trimming	Root extraction Signal inversion Tank linearization Programmable trimming Auxiliary power supply 17..20 V, max current 25 mA	Programmable fault and trimming Insertable filter
Certifications	CE, II 3G Ex nA IIC T4 Gc X, II 3D Ex tc IIIC T135°C Dc X	CE, UL-UR CSA	CE, UL-UR CSA	CE
INPUT DATA				
Channels	1	1	1	1
Type	THERMOCOUPLE J, K, R, S, T, E, B, N, L (EN 60584) RTD (Pt100, Pt500, Pt1000, Ni100, Ni120, NI1000, Cu50, Cu100) with 2, 3, 4-wire connection VOLTAGE (V): 30V, impedance 200 kΩ VOLTAGE (mV): 150 mV, impedance 10 MΩ CURRENT: 24 mA, impedance 40 Ω Potentiometer: 500..100 kΩ, impedance 10 MΩ Resistance 0..400 (1760) Ω	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5/ 0..15 / 0..30 V (invertible) Impedance: 110 kΩ - 325 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Impedance: 35 Ω	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Impedance: 110 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Impedance: 35 Ω	SHUNT Range: ±25, 50, 60, 75, 80, 100, 120, 150, 200, 250, 300, 400, 500, 1000, 2000 mV (via DIP switch)
OUTPUT DATA				
Channels	1	1	1	1
Type	Current 4-20 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 /4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500Ω Protection: 25mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 /4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500Ω Protection: 25mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 /4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500Ω Protection: 25mA
Auxiliary static relay	-	-	-	-
Response time (10-90%):	140..620ms	< 40 ms (without filter) < 88 ms (with filter)	< 40 ms (without filter) < 88 ms (with filter)	< 25 ms (without filter) < 55 ms (with filter)
D/A conversion resolution				
ORDER CODES				
Code	K121	K109UI	K109S	K109LV

The technical data and diagrams in this document are indicative and not binding.

TEMPERATURE

K109PT	K109PT-HPC	K109PT1000	K120RTD	K109TC
				
Optoisolated converter Pt100 / V-I	**Optoisolated converter High-precision Pt100 / V-I**	**Optoisolated converter Pt1000 / V-I**	**Non-isolated Pt100 converter, Ni100 loop-powered**	**Optoisolated TC / V-I converter with adjustable threshold**
19.2..30 Vdc	19.2..30 Vdc	19.2..30 Vdc	Loop powered (5..30 Vdc)	19.2..30 Vdc
Yes	Yes	Yes	-	Yes
21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)
500 mW	500 mW	500 mW	500 mW	500 mW
14 bit	14 bit	14 bit	14 bit	14 bit
50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)
DIP Switch	DIP Switch	DIP Switch	DIP switch, Software (EASY SETUP)	DIP Switch
Additional for reading stabilization	Additional for reading stabilization	Additional for reading stabilization	Additional for reading stabilization	Additional for reading stabilization
6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
1.5 kVac 3-way (50 Hz, 1 min)	1.5 kVac 3-way (50 Hz, 1 min)	1.5 kVac 3-way (50 Hz, 1 min)	-	1.5 kVac 3-way (50 Hz, 1 min)
Digital (optoisolator)	Digital (optoisolator)	Digital (optoisolator)	-	Digital (optoisolator)
32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation
Black	Black	Black	Black	Black
PBT	PBT	PBT	PBT	PBT
45 g	45 g	45 g	45 g	45 g
-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring	Spring and/or BUS
IP 20	IP 20	IP 20	IP 20	IP 20
0.1% (max range)	0.1% (max range)	0.1%	0.1%	0.1%
< 100 ppm/K	< 100 ppm/K	< 100 ppm/K	< 100 ppm/K	< 100 ppm/K
Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm Auxiliary output status
Programmable fault and trimming Insertable filter	Programmable fault and trimming Insertable filter	Programmable fault and trimming Insertable filter	Type / RTD connection, measurement range filter, error, output inversion, and over-range	Programmable fault and trimming Insertable filter
CE, UL-UR CSA	CE	CE	CE	CE, UL-UR CSA
1	1	1	1	1
PT100 IEC 751 / EN 60751 standard – ITS90 Range: -150..+650°C Minimum span: 50°C Current on transmitter 900 µA 2, 3, 4-wire connection Max cable resistance: 20 Ω	PT100 IEC 751 / EN 60751 standard – ITS90 Range: -200..+160°C Minimum span: 20°C Current on transmitter 900 µA 2, 3, 4-wire connection Max cable resistance: 20 Ω	PT1000 EN 60751/A2 standard – ITS90 Range: -200..+210°C Minimum span: 30°C Current on transmitter < 350 µA 2, 3, 4-wire connection Max cable resistance: 50 Ω	Pt100 (EN 60751/A2-ITS90) Range: -200..+650°C Minimum span: 20°C 2, 3, 4-wire connection Ni100 Range: -60..+250°C Minimum span: 20°C 2, 3, 4-wire connection	Thermocouple Type J, K, E, N, S, R, B, T (ITS90) Minimum span 100°C Impedance 10 MΩ Semiconductor cold junction, ADC 13-bit, precision 0.15°C, 10-second update Max voltage ± 32V
1	1	1	1	1
VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500 Ω Protection: 25mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500 Ω Protection: 25 m	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500 Ω Protection: 25mA	CURRENT Range: 4..20 / 20..4 (2-wire) Load resistance: 1 kΩ Resolution: 0.5 µA (15 bits + sign) Protection: 30mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Maximum load resistance: 500 Ω
-	-	-	-	Nominal voltage: 24 Vac/dc Current: 60mA Surge protection: 50 V Adjustable hysteresis / alarm threshold
< 50 ms (without filter) < 200 ms (with filter)	< 50 ms (without filter) < 200 ms (with filter)	< 50 ms (without filter) < 200 ms (with filter)	< 220 ms (without filter) < 620 ms (with filter)	< 40 ms (without filter) < 88 ms (with filter)
1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA
K109PT	K109PT-HPC	K109PT1000	K120RTD	K109TC

The technical data and diagrams in this document are indicative and not binding.

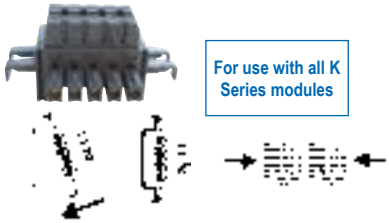
	FREQUENCY			SERIAL		
	K111	**K111D**	**K112**	**K107A**	**K107B**	**K107USB**
						
	Frequency threshold with two isolated outputs	**Frequency divider and repeater with two isolated outputs**	**Dual-channel isolated digital coupler**	**Isolated serial repeater converter RS485 / RS485**	**Optoisolated RS232 / RS485 serial converter**	**Optoisolated RS485 / USB serial converter**
GENERAL DATA						
Power Supply	19,2.. 30 Vdc	19.2..30 Vdc	19,2.. 30 Vdc	19.2..30 Vdc	19.2..30 Vdc	Via USB port
Power on side terminals	Yes	Yes	Yes	Yes	Yes	-
Hot swapping	Yes	Yes	Yes	Yes	Yes	Yes
Max current consumption	< 25 mA	< 25 mA	< 25 mA	22 mA (24 Vdc)	22 mA (24 Vdc)	60mA
Max dissipated power	500 mW	500 mW	500 mW	500 mW	500 mW	-
A/D Conversion	14 bit	14 bit	14 bit	-	-	-
Rejection	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)
Configurable	DIP Switch, Software (EASY SETUP)	DIP Switch, Software (EASY SETUP)	DIP Switch	DIP Switch	DIP Switch	DIP Switch
Filter	Programmable software	Programmable software	-	-	-	-
Dimensions	6.2 x 93.1 x 102.5 mm	6.2x93.1x102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
Isolation	1,5 kVac (3-vie)	1.5 kVac (3 channels)	1,5 kVac (3-vie)	1.5 kVac 3-way (50 Hz, 1 min)	1.5 kVac 3-way (50 Hz, 1 min)	1.5 kVac (USB / RS485)
Isolation Technique	Digital / optocoupler	Digital / optocoupler	Digital / optocoupler	Digital (optoisolator)	Digital (optoisolator)	Digital (optoisolator)
Processing	32-bit floating point calculation	32-bit floating point calculation	32-bit floating point calculation	-	-	-
Color	Black	Black	Black	Black	Black	Black
Case Material	PBT	PBT	PBT	PBT	PBT	PBT
Weight	45 g	45 g	45 g	45 g	45 g	45 g
Operating Temperature	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Connection	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS
Protection class	IP 20	IP20	IP 20	IP20	IP20	IP20
LED	Power presence, active thresholds, error	Output states	Power presence, Output status	Power Supply Data Presence Reversed connection	Power Supply Data Presence Reversed connection	Power Supply Data Presence Reversed connection
Communication	-	-	-	Automatic handshake Baud rate: 1.200..115200 bps	Automatic handshake Baud rate: 1.200..115200 bps	RS485 line termination settable Baud rate: 1.200..115200 bps RS485 serial communication via ModBUS RTU, max 32 nodes
Special Features	Input repetition	Frequency divider Average measurement in a window of N pulses (N <= 256) Direct operation	-	-	-	Supported operating systems: Windows 98, 2000, XP, Vista, 7, 10, Linux 2.24.0 and later
Certifications	CE	CE	CE	CE, UL-UR CSA	CE, UL-UR CSA	CE, UL-UR CSA
INPUT DATA						
Channels	1	1	1	1	1	1
Type	IEC 1131.2 contact (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) 2/3-wire Reed Photocell Max voltage: ±28 Vdc Frequency: Max 20 kHz, min 1 pulse every 116 minutes	IEC 1131.2 contact (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) 2/3-wire Reed Photocell Max voltage: ±28 Vdc Frequency: Max 20 kHz, min 1 pulse every 116 minutes	IEC 1131.2 contact (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) 2/3-wire Reed Photocell Max frequency: 400 Hz	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS232B, protection up to 30 Vdc	SERIAL USB standard 1.0 and 2.0, USB A and MINI USB B connectors
OUTPUT DATA						
Channels	2	2	2	1	1	1
Type	Independent PNP channels up to 200 mA, short-circuit protected	Independent PNP channels up to 200 mA, short-circuit protected	Independent PNP and NPN channels	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS485, 31 nodes, spring terminal, ModBUS RTU Slave half-duplex protocol, max 1,200 m, 31 nodes
ORDER CODES						
Code	K111	K111D	K112	K107A	K107B	K107USB (complete with programming cable and CD ROM)

The technical data and diagrams in this document are indicative and not binding.

ACCESSORIES & SOFTWARE

K-BUS

Expandable connector for fast power supply (EN 60175)



For use with all K Series modules

ORDER CODES	
K-BUS	Expandable 2-slot connector for fast power supply

K-SUPPLY

Redundant power supply with surge protection

For use with all K Series modules

ORDER CODES	
K-SUPPLY	Power module with electronic line protections

EASY SETUP / EASY LP

Complete collection of plug&play configuration tools for programmable SENECA devices

K111
K121
K120RTD

Free download from www.seneca.it

EASY USB USB - UART TTL converter

Power supply	from PC 5V @ 100 mA
Protection rating	IP20
UART TTL serial c	onnection, RJ11 connector, baud rate from 300 bps up to 250 Kbps
USB serial	connection, USB type A compatible with standard 1.0, 1.1, and 2.0
Dimensions	84 x 21 x 17 mm
Supported operating systems	Windows, Mac OS-X, Linux

ORDER CODES	
EASY-USB	USB - UART TTL converter

S117P1 RS232-USB Serial Converter, TTL-USB, RS485-USB

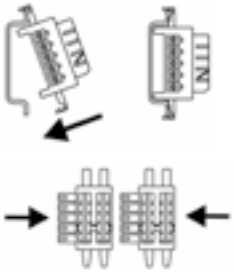
- **RS232, RS485, TTL asynchronous serial conversion**
- **Multiple S117P1 units can be connected to the same PC**
- **USB 1.0, 1.1, 2.0 standard compatibility**
- **RS485 communication, max 32 nodes**
- **External module power supply (100 mA, 12 Vdc)**
- **Included accessories: USB cable, TTL cable, driver CD + EASYLP (configuration software for K120RTD, K121, T120, and T121)**

ORDER CODES	
S117P1	RS232↔USB asynchronous serial converter, TTL↔USB, RS485↔USB complete with USB cable, TTL cable, CD driver + EASYLP (configuration software for K120RTD, K121, T120, and T121)

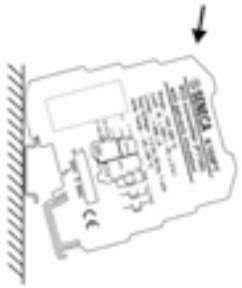
CONNECTIONS AND INSTALLATION

SPRING TERMINAL CONNECTION

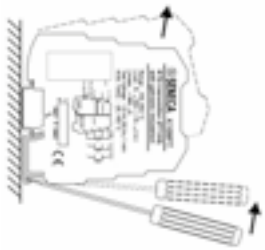
K-BUS CONNECTOR



MODULE INSERTION INTO THE RAIL



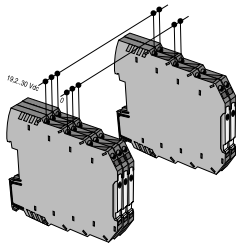
MODULE EXTRACTION FROM THE RAIL



POWER SUPPLY TECHNIQUES

Except for "loop powered" modules without bus power, K Series signal conditioners offer 3 power supply options: one traditional technique and two through the SMART SUPPLY distributed system. Direct module power involves connecting the (24 Vdc) source to the terminals of each device. The SMART SUPPLY system is based on the use of the expandable K-BUS connector. Typically, up to 16 modules can be powered via the bus by powering only one module, provided the total current consumption is below 400 mA. K-SUPPLY, an accessory with surge protection and differential mode filter, powers up to 75 modules, with a total maximum current consumption of 1.6 A (around 21 mA per module). It also features 2 independent inputs, enabling its use as a redundant power supply system, ensuring power availability even if one input source fails.

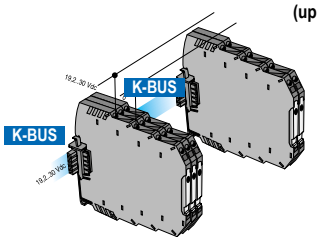
DIRECT POWER TO SPRING TERMINAL



1

SMART SUPPLY SYSTEM

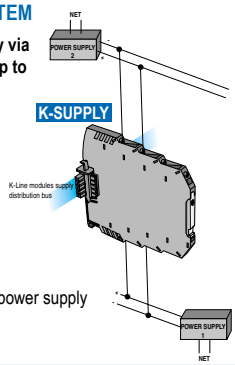
Distributed power supply with 2-slot K-BUS connector (up to 16 modules)



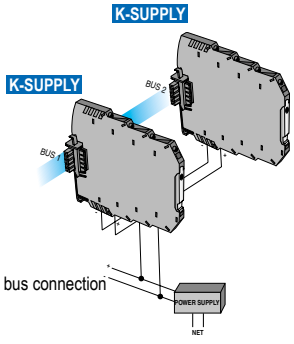
2

SMART SUPPLY SYSTEM

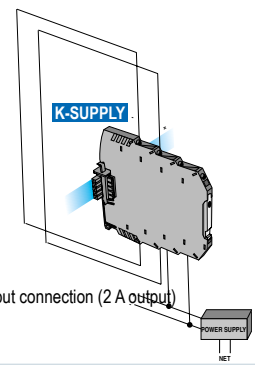
Distributed power supply via K-SUPPLY and K-BUS (up to 75 modules)



Redundant power supply



Multiple bus connection

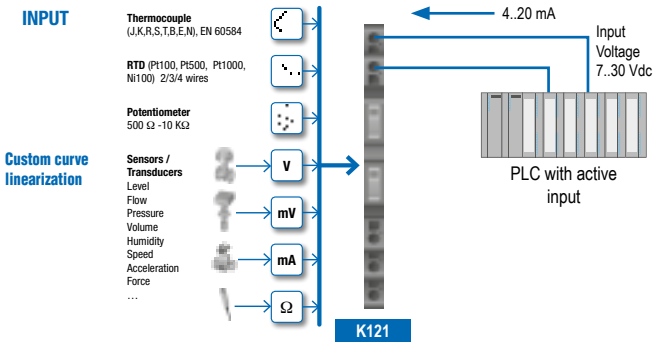


Parallel input connection (2 A output)

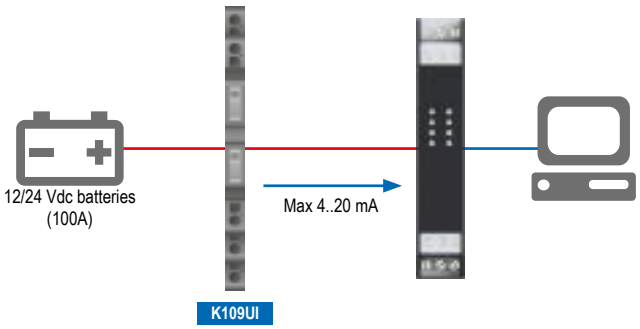
3

APPLICATION EXAMPLES

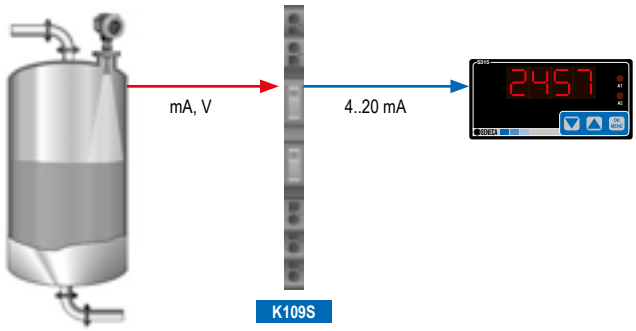
UNIVERSAL ANALOG SIGNAL CONVERSION AND TRANSMISSION TO PLC



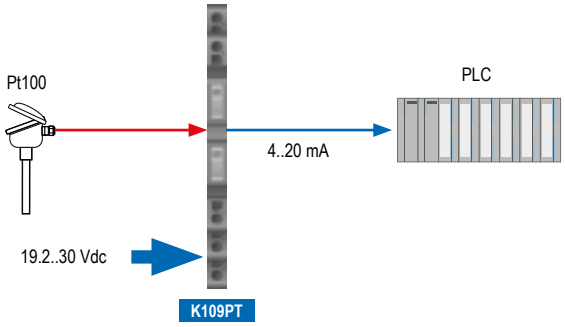
BATTERY CHARGING VOLTAGE MONITORING



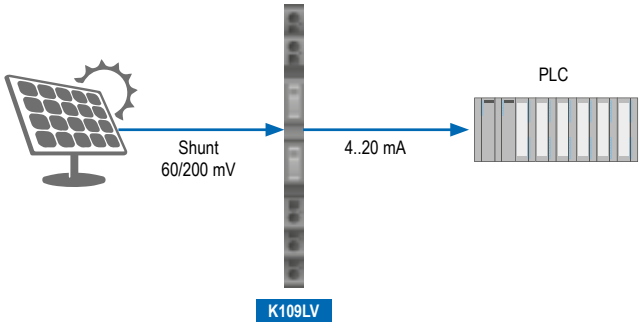
ANALOG SIGNAL CONVERSION, ISOLATION, AND RETRANSMISSION FROM 2-WIRE SENSOR



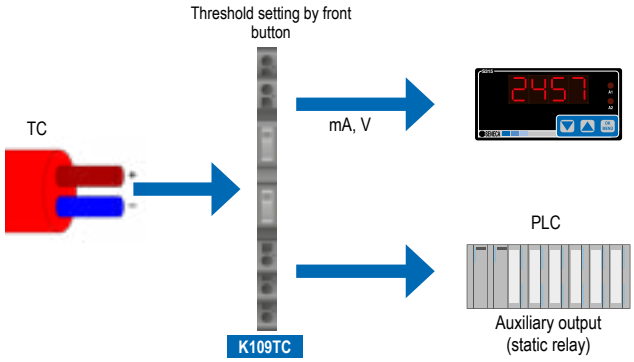
TEMPERATURE CONVERSION FROM PT100 INTO A STANDARD ANALOG SIGNAL



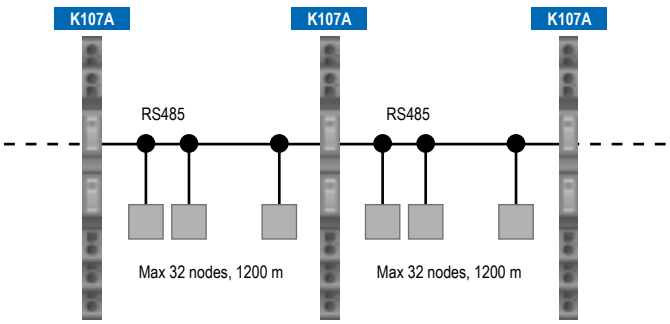
STRING CURRENT MEASUREMENT IN PHOTOVOLTAIC SYSTEMS



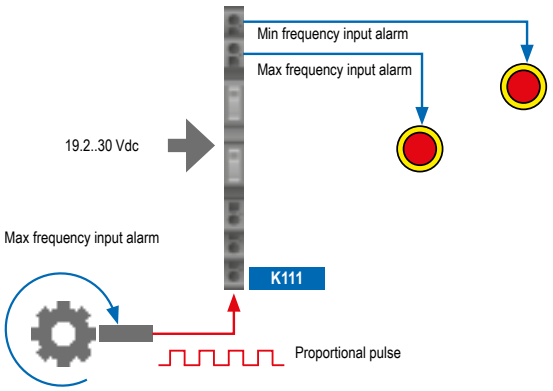
TEMPERATURE VALUE CONVERSION AND RETRANSMISSION FROM THERMOCOUPLE



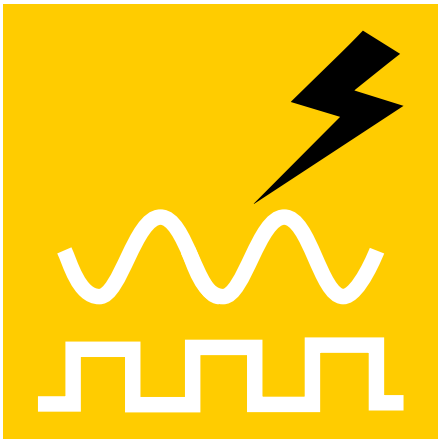
RS485 SERIAL REPEATER WITH GALVANIC ISOLATION



PULSE CONVERSION WITH ALARM THRESHOLD



4.3



HIGH ISOLATION CONVERTERS

S Line

S SERIES

The S Series includes signal converters, galvanic isolators, and high-isolation industrial power supplies (up to 4.5 kVac) that handle analog signals, Pt100, impulse signals, converting them into output signals in mA, V, pulse, SPDT/SPST relay. Designed for installation on 35 mm DIN rail (DIN 46277), they are powered within the range of 24 Vac/dc and 115/230 V.

ANALOG CONVERTERS

	S109REG	S109S	S102	S109PT
				
	V-I / V-I Converter	Galvanic isolation for 4..20 mA loop	Ohm / V-I Converter	Pt100 / V-I Converter
GENERAL DATA				
Power Supply	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz
Sensor power supply	20 Vdc non-stabilized	24 Vdc non-stabilized	20 Vdc non-stabilized	20 Vdc non-stabilized
Max Consumption	3.5 VA	1.5 VA	1.5 VA	3.5 VA
Isolation	4,500 Vac	4,500 Vac (power/input-output) 2,000 Vac (input/output)	4,500 Vac	4,500 Vac
Protection class	IP20	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²
Accuracy	±0.25%	±0.25%	±0.25%	±0.25%
Operating Temperature	-10..+60°C	-10..+60°C	0..+50°C	-10..+60°C
Dimensions	70 x 95 x 72 mm	35 x 95 x 72 mm	52.5 x 95 x 72 mm	70 x 95 x 72 mm
Weight	300 g	200 g	300 g	400 g
Mounting	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)
Certifications	CE	CE	CE	CE
INPUT DATA				
Number	1	1	1	1
Type	mA, V	mA	Ohm	Pt100 2.3 wires
OUTPUT DATA				
Number	1	1	1	1
Type	mA, V	mA	mA, V	mA, V
ORDER CODES				
Model	S109REG-1-ST (115/230 Vac power supply) S109REG-1-X7 (with tachogenerator input)	S109S-1-ST (115/230 Vac power supply)	S102-1-ST (115/230 Vac power supply)	S109PT-1-ST (115/230 Vac power supply)

ANALOG CONVERTERS / IMPULSE CONVERTERS

	S170	S2000	S104	S111
				
	Signal duplicator	Microprocessor-based calculation module	V-I / frequency converter	Frequency / V-I converter
GENERAL DATA				
Power Supply	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz
Sensor power supply	20 Vdc non-stabilized	20 Vdc non-stabilized	20 Vdc non-stabilized	20 Vdc non-stabilized
Max Consumption	3.5 VA	3.5 VA	1.5 VA	3.5 VA
Isolation	4.500 Vac (from/to power supply) 2.000 Vac (input/output)	4,500 Vac	4,500 Vac	4.500 Vac (from/to power supply) 2.000 Vac (input/output)
Protection class	IP20	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²
Accuracy	-	±0.1%	-	-
Operating Temperature	-10..+60°C	-10..+60°C	0..+50°C	-10..+60°C
Dimensions	70 x 95 x 72 mm	157.5 x 95 x 72 mm	52.5 x 95 x 72 mm	105 x 95 x 72 mm
Weight	300 g	500 g	300 g	450 g
Mounting	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)
Certifications	CE	CE	CE	CE
INPUT DATA				
Number	1	1	1	1
Type	mA, V	2DI, 4AI	mA, V	Clean contact, reed, NPN 2/3-wire, PNP 24 Vdc, NAMUR sensors, photoelectric, 24 Vdc pulses, freq. Max 680 Hz
OUTPUT DATA				
Number	2	6	1	1
Type	mA, V	4DO, 2AO	NPN open collector	mA, V
ORDER CODES				
Model	S170-1-ST (115 / 230 Vac)	S2000-1-ST (115 / 230 Vac)	S104-1-ST (115 / 230 Vac)	S111-1-ST (115 / 230 Vac)

The technical data and diagrams in this document are indicative and not binding.

CONTROL RELAYS			INDUSTRIAL POWER SUPPLIES
	S112	S113	S50
			
	Amplifiers for on/off sensors	Alarm thresholds	Power supply for current loop
GENERAL DATA			
Power Supply	115 / 230 Vac ±10%, 50-60 Hz; 24 Vac/dc (S112M-23-ST)	115 / 230 Vac ±10%, 50-60 Hz	115/230 Vac ± 10%, 50/60 Hz
Sensor power supply	20 Vdc non-stabilized	20 Vdc non-stabilized	-
Max Consumption	1.5 VA	1.5 VA (S113S); 3.5 VA (S113D, S113T)	1.5 VA
Isolation	4.500 Vac; 2.000 Vac (input/output S112M)	4,500 Vac	4,500 Vac
Protection class	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²
Operating Temperature	-10..+60°C	-10..+60°C	-10..+60°C
Dimensions	52.5 x 95 x 72 mm (S112A); 70 x 95 x 72 mm (S112D, S112M)	52.5 x 95 x 72 mm (S113S); 70 x 95 x 72 mm (S113D, S113T)	35 x 95 x 72 mm
Weight	250 g (S112A); 270 g (S112D); 280 g (S112M)	290 g (S113S); 280 g (S113D); 350 g (S113T)	150 g
Mounting	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)
Certifications	CE	CE	CE
INPUT DATA			
Number	1, 2	1	-
Type	Clean contact, reed NPN 2/3-wire 12/24 Vdc, PNP 2/3-wire 24 Vdc, NAMUR sensors, photoelectric, Hall effect, 24 Vdc pulses (max freq. 400 Hz)	mA, V	-
OUTPUT DATA			
Number	1, 2, 5	1, 2, 3	1
Type	S112A: 1 SPDT relay S112D: 2 SPDT relays S112M: 5 Reed SPST relays	S113S: 1 SPDT relays S113D: 2 SPDT relays S113T: 3 SPDT relays	Stabilized 24 Vdc, 40 mA
ORDER CODES			
Model	S112A-1-ST (115/230 Vac, 1 input, 1 relay output) S112D-1-ST (115/230 Vac, 2 inputs, 2 relay outputs) S112M-1-ST (115/230 Vac, 1 input, 5 relay outputs) S112M-1-ST (115/230 Vac, 1 input, 5 relay outputs) S112M-23-ST (24 Vac/dc, 1 input, 5 relay outputs)	S113S-1-ST (115/230 Vac, 1 relay output) S113T-1-ST (115/230 Vac, 3 relay outputs)	S50-1-ST (115 / 230 Vac) S50-3-ST (24 Vac)

INDUSTRIAL POWER SUPPLIES			
	S100S	S200	S200REG
			
	Dual power supply for current loop	Dual stabilized power supply	Adjustable stabilized power supply
GENERAL DATA			
Power Supply	115/230 Vac ± 10%, 50/60 Hz	115 / 230 Vac ±10% 50 / 60 Hz	115 / 230 Vac ±10% 50 / 60 Hz
Max Consumption	3.5 VA	7.5 VA	10 VA
Isolation	4,500 Vac	4,500 Vac	4,500 Vac
Protection class	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	-	-
Operating Temperature	-10..+60°C	-10..+60 °C	-10..+60 °C
Dimensions	52.5 x 95 x 72 mm	70 x 95 x 105 mm	70 x 95 x 105 mm
Weight	Approx. 300 g	Approximately 700 g	Approximately 700 g
Mounting	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)	Mounting on 35 mm DIN rail (DIN 46277)
Certifications	CE	CE	CE
INPUT DATA			
Number	-	-	-
Type	-	-	-
OUTPUT DATA			
Number	2	-	-
Type	Independent stabilized and galvanically isolated 24 Vdc 50 mA	+ 15 Vdc 350 mA - 15 Vdc 75 mA	S200REG-16 : 14 / 18 Vdc 500 mA S200REG-24 : 22 / 26 Vdc 350 mA
ORDER CODES			
Model	S100-1-ST (115/ 230 Vac) S100-3-ST (24 Vac)	S200-1-ST (115 / 230 Vac)	S200REG-24 (22 to 26 Vdc, max current 350 mA)

The technical data and diagrams in this document are indicative and not binding.

S91 / S91-400

MULTI-PROTECTION RELAYS FOR MOTORS

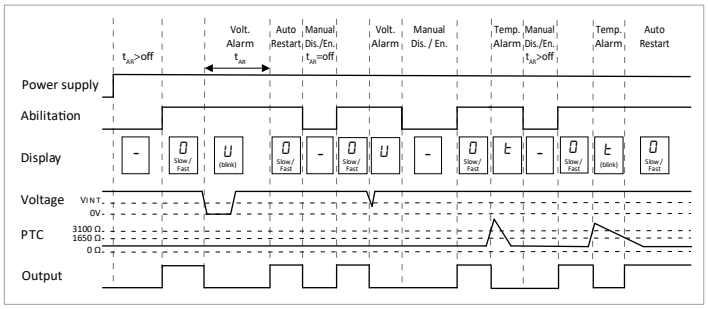
S91 and S91-400 are devices designed for motor protection, detecting phase sequence errors or phase loss, excessive current, and idle running by measuring power factor. They are equipped with rotary selectors for programming and an alarm display, featuring a PTC input for motor over-temperature protection and an enable input for motor start-up. S91 operates in 3 modes: single-phase or three-phase, with maximum current range of 5 or 16 A, functioning with or without PTC. Main applications include protection of single-phase or three-phase pumps against rotor blockage, over-temperature, and transmission system failure detection (e.g., belts or chains), with protection against system lock-up.

TECHNICAL DATA

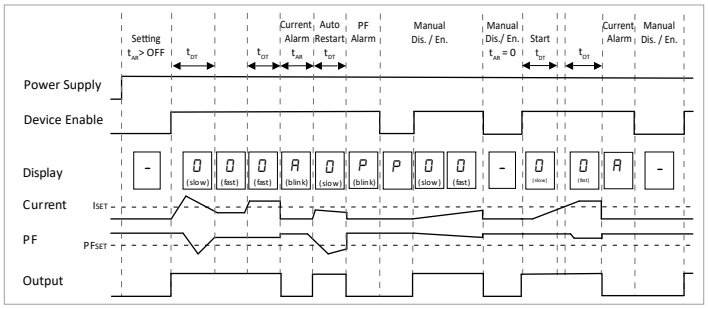
GENERAL DATA	
Power Supply	195 ÷ 255 Vac (S91); 400 Vac ±10% (S91-400)
Consumption	1.5 W (max)
Withstand voltage	2.5 kV
Impulse withstand voltage	4 kV
Nominal insulation voltage	600 V (cat II); 300 V (cat III)
Protection class	IP20
Operating temperature	-20 ÷ +65°C
Mounting	35 mm DIN rail IEC EN60715
Weight	250 g
Dimensions (WxHxD)	53.5 x 73 x 90 mm
Enclosure	UL94 VO, color ral7035
INDICATORS AND SETTINGS	
LED status indicator	Relay status
Front display	Disabled device; Inhibition time (slow rotation); Motor rotating (fast rotation); PTC sensor line shorted; PTC sensor line interrupted; Phase loss or undervoltage alarm; Phase sequence alarm; Overcurrent alarm; Minimum power factor alarm; Temperature alarm
Front selector	Single-phase or three-phase measurement; Maximum current range 5 or 16 A; Operation with or without PTC
Front trimmer adjustment	Auto-reset time setting, inhibition time, minimum power factor, intervention time, maximum current
Motor activation/ deactivation	Via enable input with inhibition time setting
CURRENT MEASUREMENT	
Types of insertion	Direct or via current transformer
Nominal Current	16 Aac
Current measurement limits	0.1 ÷ 16 Aac, measurement accuracy < 5%
Input type	Shunt
Measurement type	TRMS
Continuous thermal limit	16 Aac
Impulse thermal limit	45 Aac for 1 s
Dynamic limit	200 Aac for 10 ms
Power consumption	1.3 W
Phase loss intervention	< 200 ms
VOLTAGE MEASUREMENT	
Nominal voltage Ue	347 (L-N) / 600 (L-L) Vac Cat II; 277 (L-N) / 480 (L-L) Vac Cat III
Voltage measurement limits	60 ÷ 660 Vac, measurement accuracy < 5%
Frequency limits	50 – 60 Hz ±5%
Connection Modes	L1-L2-L3 or L-N
Voltage loss threshold	80 Vac (single-phase and three-phase)
Max phase difference - min	>20% (for three-phase only)
MOTOR COMMAND INPUT	
Nominal voltage	195 ÷ 255 Vac (S91); 400 Vac ±10% (S91-400)
Operating limits	0.85 ÷ 1.1 of nominal voltage
Power consumption/ dissipation	0.17 W
Minimum command duration	≥40 ms
RELAY OUTPUT	
Output type	SPDT
Working Voltage	250 Vac
Operating current	8A
PTC MEASUREMENT	
Input	Not isolated from the power grid, max cable length 30 m
Accuracy	1650 ÷ 3100 Ω; error < 5%
Short circuit detection	<25Ω±5Ω
Open circuit detection	>14kΩ±0,2kΩ

OPERATION DIAGRAMS

VOLTAGE / PTC

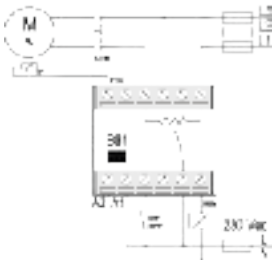


CURRENT / POWER FACTOR

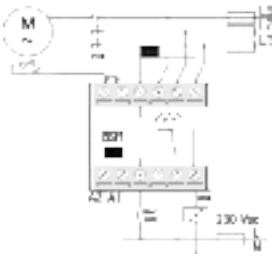


EXAMPLES OF CONNECTIONS

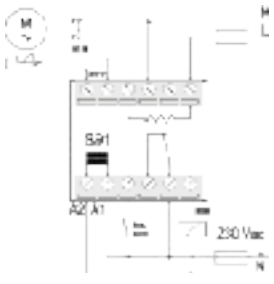
THREE-PHASE MOTOR WITH DIRECT CURRENT MEASUREMENT



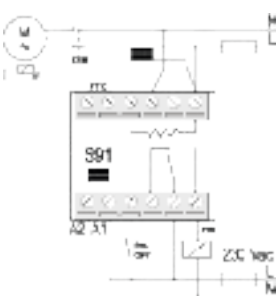
THREE-PHASE MOTOR WITH CURRENT MEASUREMENT VIA CURRENT TRANSFORMER



SINGLE-PHASE MOTOR WITH DIRECT CURRENT MEASUREMENT



SINGLE-PHASE MOTOR WITH CURRENT MEASUREMENT VIA CURRENT TRANSFORMER

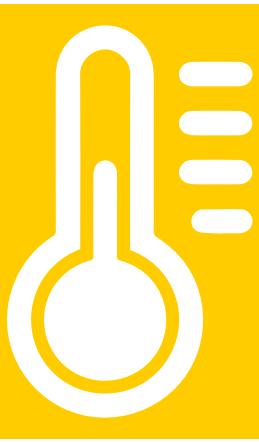


ORDER CODES

Code	Description
S91	Multi-protection relay for motors, 195 ÷ 255 Vac
S91-400	Multi-protection relay for motors, 400 Vac ±10%

The technical data and diagrams in this document are indicative and not binding.

4.4



TEMPERATURE TRANSMITTERS AND SENSORS

T120 / T121

HIGH-PRECISION TEMPERATURE TRANSMITTERS for head mounting, T120 and T121, are designed for universal use in machinery, plants, installations, and process industries. They convert input signals and retransmit them as a normalized current signal through a 4-20 mA loop. Input signals can come from 2, 3, 4-wire RTD sensors such as Pt100 (EN 60751) and Ni100 (DIN 43760). The T121 model also handles Cu50, Cu100, Ni121, and Ni1000 RTDs, and thermocouples type J, K, R, S, T, B, E, N, L (EN 60584), voltage, and resistance signals. T120 and T121 are characterized by compact dimensions and connections via spring terminals. All operating parameters can be configured via dedicated EASY SETUP / EASY LP software.

HIGHLIGHTS

OPERATING TEMPERATURE
-40..+85°C

RESOLUTION
UP TO 16 BITS

PRECISION CLASS
0.1%

SPRING TERMINAL CONNECTION

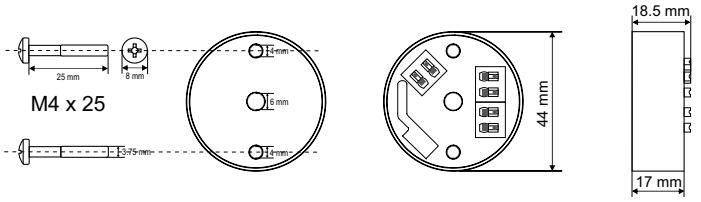
UNIVERSAL INPUT
RTD, TC, mV, Ω

LOOP OUTPUT / POWER SUPPLY
4..20 mA / 20..4 mA (2-wire); 5/7..30 Vdc

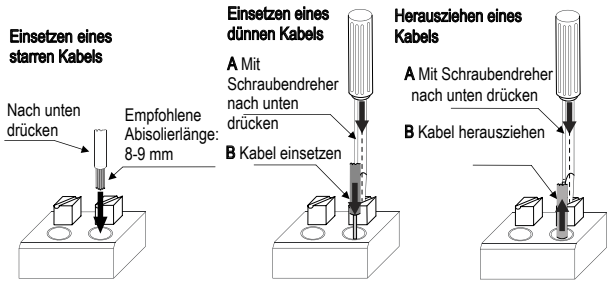
CALIBRATION CERTIFICATE

ATEX ZONE 2 PROTECTION (T121)

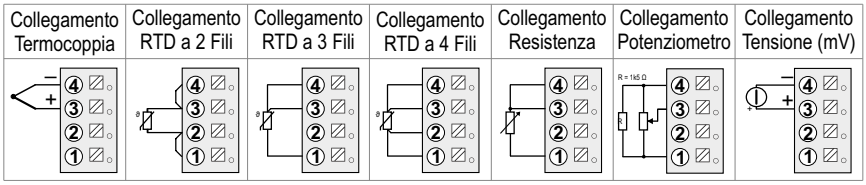
DIMENSIONS AND SPACE REQUIREMENTS



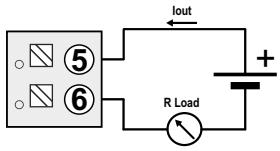
PUSH-WIRE TERMINAL CONNECTION



2/3/4-WIRE CONNECTION



CURRENT OUTPUT / LOOP



PROGRAMMING

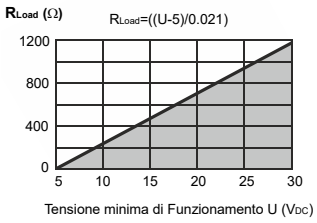
The T120 and T121 transmitters can be configured via the EASY USB tool, which converts the serial signal from the PC's USB to a UART TTL serial signal and vice versa, and the EASY LP software. The module can be configured even if it is not powered by the 4-20 mA loop, by drawing power through the programming connector.

The T120 and T121 transmitters can also be configured via S11P1, a USB – RS232/TTL converter, and EASY LP software. The module can be configured even if it is not powered by the 4-20 mA loop, by drawing power through the programming connector.

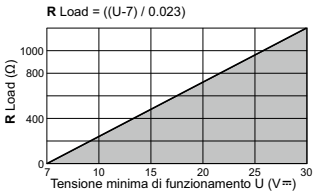
The EASY SETUP / EASY LP software allows configuring the T121 transmitter to linearize custom sensors within a specific working range. The software includes curves for all supported sensors. A tool is also provided to correctly configure the S311A indicator connected to the T121.

LOAD DIAGRAMS

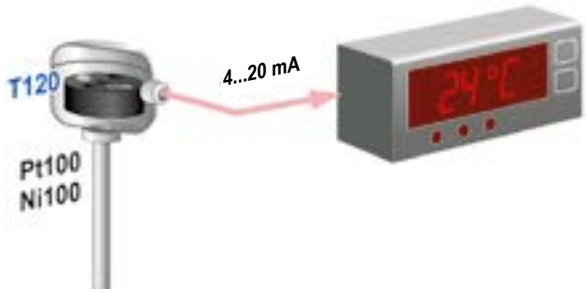
T120

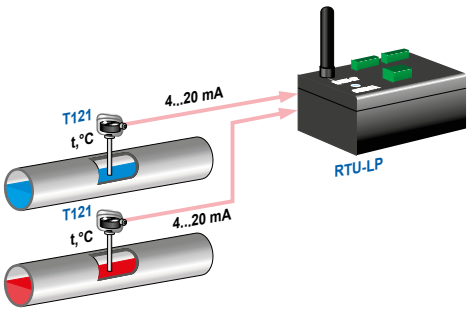


T121



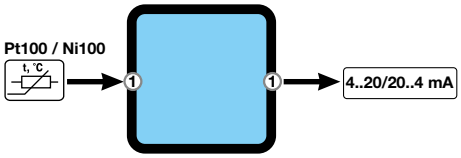
APPLICATION EXAMPLES



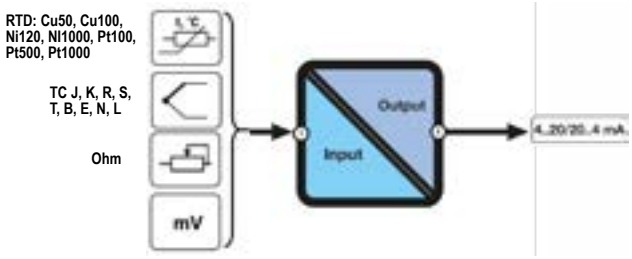


SIGNAL - ISOLATION DIAGRAMS

T120



T121



	T120	T121
		 
	Pt100 and Ni100 2-wire loop-powered transmitter	**Universal loop-powered isolated temperature transmitter**
GENERAL DATA		
Power Supply	5..30 Vdc (loop powered)	7..30 Vdc (loop powered)
Isolation and Protection	-	1.5 kVac
Protection class	IP20	IP20
Configurable sampling	100 ms (300 ms with 50/60 Hz rejection)	300 ms
Frequency rejection	50 / 60 Hz adjustable	> 60 dB at 50 and 60 Hz
Response Time	<220 ms (<620 ms with 50-60 Hz rejection)	< 620 ms
Precision class	0.1%	0.1% (min 0.1°C for RTD and 1°C for TC)
Thermal Drift	<100 ppm (30 ppm typical)	<100 ppm (30 ppm typical)
Measurement conversion	16 bit	16 bit
Transmission error	Max between 0.1% of measurement range or 0.1°C	Max between 0.1% of measurement range or 0.1°C
Error due to EMI	<0,5%	<0,5%
Operating temperature	-40..+85°C	-40..+85°C
Connections	6 spring terminals for 0.2 to 2.5 mm² cables, recommended stripping length 8 mm, 1 serial TTL 4-pin programming connector	6 spring terminals for 0.2 to 2.5 mm² cables, recommended stripping length 8 mm, 1 serial TTL 4-pin programming connector
Enclosure	Nylon / Glass, black color	Nylon / Glass, black color
Dimensions	Ø 43.7 x 20 mm	Ø 43.7 x 20 mm
Weight	35 g	35 g
INPUT DATA		
Number	1	1
Type	• Pt100 Standard: EN 60751/A2 (ITS-90) Measurement range: -200..+650°C Minimum span: 20°C 2, 3, 4-wire connection • Ni100 Measurement range: -60..+650°C Minimum span: 20°C 2, 3, 4-wire connection	• Cu50 (-180..+200°C, min span 20°C) • Cu100 (-180..+200°C, min span 20°C) • Ni100 (-60..+250°C, min span 20°C) • Ni120 (-80..+260°C, min span 20°C) • Pt100 (EN 60751/A2, -200..+650°C, min span 20°C) • Pt500 2, 3, 4-wire (-200..650°C, min span 20°C) • Pt1000 2, 3, 4-wire (-200..+200°C, min span 20°C) • TC J, K, R, S, T, B, E, N, L; input impedance 10 MΩ • Voltage: -150..+150 mV; input impedance 10 MΩ • POTENTIOMETER: 500 Ω..100 kΩ • Resistance 0..+400 (1.760) Ω
Resolution	Approx. 6 mΩ	Approx. 6 mΩ
OUTPUT DATA		
Number of channels	1	1
Type	CURRENT (mA) 4..20, 20..4 mA (2-wire)	CURRENT (mA) 4..20, 20..4 mA (2-wire)
Resolution	1µA (>14bit)	2µA (>13bit)
Output current protection	Approx. 30 mA	Approx. 30 mA
PROGRAMMING		
PC software EASY SETUP / EASY LP	Configuration of measurement start/end range, RTD connection type, rejection, measurement filter, cable resistance, fault/over-range output	Configuration of measurement start/end range, RTD connection type, rejection, measurement filter, cable resistance, fault/over-range output
STANDARD		
Certifications	CE	CE, II 3G Ex nA IIC T4 Gc X, II 3D Ex tc IIIC T135°C Dc X
Standards	EN 61000-6-4, EN 61000-6-2	EN 61000-6-4, EN 61000-6-2, EN 61010-1

ORDER CODES	
Code	**Description**
T120	2-wire loop-powered transmitter for Pt100 and Ni100 probes, standard
T120-C	2-wire loop-powered transmitter for Pt100 and Ni100 probes, calibrated
T121	Universal loop-powered isolated temperature transmitter, standard
T121-C	Universal loop-powered isolated temperature transmitter, calibrated
SOFTWARE	
EASY LP	Complete plug&play configuration tool collection for loop-powered devices (K120RTD, K121, T120, T121)
ACCESSORIES	
FLEX-DIN	DIN rail mount for T120 / T121
EASY-USB	USB - UART TTL converter
S117P1	Optoisolated asynchronous serial converter RS232/USB, TTL/USB, RS485/USB
PT100	
POZZ-100	Thermal well welded 100 mm length
POZZ-150	Thermal well welded 150 mm length
POZZ-200	Thermal well welded 200 mm length
POZZ-250	Thermal well welded 250 mm length
POZZ-300	Thermal well welded 300 mm length
POZZ-50	Thermal well welded 50 mm length
PT-150-3-M12	PT100 class B, d=3 mm, L=150 mm, M12 connector PT100 class B, d=3 mm, L=150 mm, M12 connector
PT-250-2-M12	PT100 class B, d=2 mm, L=250 mm, M12 connector
PT-150-3R-M12	PT100 class B, d=3 mm, L=150 mm, tapered terminal, M12 connector

ORDER CODES	
Code	**Description**
PT100	
PT100-100	Pt100 std Length 100 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-100-MA	Pt100 std Length 100 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-150	Pt100 std Length 150 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-150-MA	Pt100 std Length 150 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-200	Pt100 std Length 200 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-200-MA	Pt100 std Length 200 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-250	Pt100 std Length 250 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-250-MA	Pt100 std Length 250 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-300	Pt100 std Length 300 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-300-MA	Pt100 std Length 300 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-50	Pt100 std Length 50 mm, 3-wire watertight head attachment 1/2" G.M.
PT100-50-MA	Pt100 std Length 50 mm, 3-wire watertight head attachment 1/2" G.M. 4-20 mA output
PT100-A	Environmental Pt100
PT100-A-MA	Environmental Pt100 with 4-20mA output
PT100-SOLAR	Single-element Pt100 3-wire sensor for photovoltaic modules
PT100-SOLAR-MA	Single-element Pt100 3-wire sensor for photovoltaic modules, 4-20 mA output

PT100
PLATINUM TEMPERATURE PROBES

TECHNICAL DATA

GENERAL DATA

Sensor type	PT100
Execution	Standard, environmental, solar, with 4-20 mA analog output
Connection type	3-wire
Connection head	DIN B, watertight in painted die-cast aluminum
Insertion length	50, 100, 150, 200, 250, 300 mm
Threaded connection	1/2" G.M.
Standard	IEC / EN 60751, DIN 43760
Precision class	A (±0.15 °C or 1/10 DIN at 0°C) or B (±0.3°C at 0°C)
Ceramic insulator	Internal for insulation of connection wires from the protective sheath
Sheath material	AISI 316
Sheath diameter	Ø 6 - 8 mm (other values available on request)
Electrical connection	M20x1.5
Protection class	Minimum IP54

PROGRAMMING

The configuration of the T120 and T121 transmitters mounted on the head of the PT100 can be done using S11P1, USB - RS232/TTL converter, and EASY SETUP software. The module can be configured even if it is not powered by the 4-20 mA loop, by drawing power through the programming connector.

THERMOWELL

In specific conditions, it is advisable to cover the sheath with additional protection made from a thermowell created from a tube with a threaded process connection. With process connections with cylindrical thread.

ORDER CODES

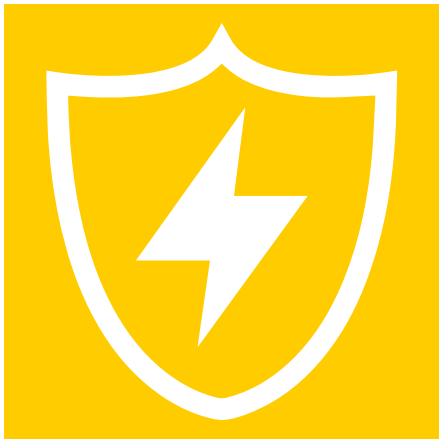
Code	Description
STANDARD PROBES	
PT100-100	Pt100 L=100 mm 3-wire watertight head attachment 1/2" G.M.
PT100-100-MA	Pt100 L=100 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA
PT100-150	Pt100 L=150 mm 3-wire watertight head attachment 1/2" G.M.
PT100-150-MA	Pt100 L=150 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA
PT100-200	Pt100 L=200 mm 3-wire watertight head attachment 1/2" G.M.
PT100-200-MA	Pt100 L=200 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA
PT100-250	Pt100 L=250 mm 3-wire watertight head attachment 1/2" G.M.
PT100-250-MA	Pt100 L=250 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA
PT100-300	Pt100 L=300 mm 3-wire watertight head attachment 1/2" G.M.
PT100-300-MA	Pt100 L=300 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA
PT100-50	Pt100 L=50 mm 3-wire watertight head attachment 1/2" G.M.
PT100-50-MA	Pt100 L=50 mm 3-wire watertight head attachment 1/2" G.M. 4-20 mA

ORDER CODES

Code	Description
PHOTOVOLTAIC PROBES	
PT100-SOLAR	Solar PT100 with 25x25x3 mm plate, 3 m cable
PT100-SOLAR-MA	Temperature probe for photovoltaic modules, 4-20 mA output
THERMOWELLS	
POZZ-100	Stainless steel thermowell attachment 1/2" GM for PT100 L=100mm
POZZ-150	Stainless steel thermowell attachment 1/2" GM for PT100 L=150mm
POZZ-200	Stainless steel thermowell attachment 1/2" GM for PT100 L=200mm
POZZ-250	Stainless steel thermowell attachment 1/2" GM for PT100 L=250mm
POZZ-300	Stainless steel thermowell attachment 1/2" GM for PT100 L=300mm
POZZ-50	Stainless steel thermowell attachment 1/2" GM for PT100 L=50mm
TEMPERATURE	
T120	2-wire loop-powered transmitter for Pt100 and Ni100 probes, standard
T120-C	2-wire loop-powered transmitter for Pt100 and Ni100 probes, calibrated
T121	Universal loop-powered isolated temperature transmitter, standard
T121-C	Universal loop-powered isolated temperature transmitter, calibrated
ACCESSORIES	
FLEX-DIN	DIN rail attachment T120 / T121
S117P1	Optoisolated asynchronous serial converter RS232/USB, TTL/USB, RS485/USB
SOFTWARE	
EASY SETUP	Configuration software for SENECA programmable instruments

The technical data and diagrams in this document are indicative and not binding.

4.5



SURGE PROTECTION

S400 Series

S400 SERIES

High-efficiency surge protection

The SENECA **S400** surge protection devices are designed to protect electrical systems and equipment against transient and impulsive over-voltages caused by atmospheric phenomena and electrical maneuvers. The S400 series includes:

- **Type 2 and 3 surge arresters for industrial power supply systems**
- **Protections for control, measurement, and regulation systems that can be used in binary and analog circuits, such as pulses, 0..10 Vdc signals, and 0/4..20 mA current loops**
- **Surge protection for computer and communication networks (Token Ring, ISDN, DS1, Ethernet, Power over Ethernet, RS232/422/485, etc.) with extremely high transmission speed and discharge capacity.**

S400HV-2

S400LV-1-N

K400CL

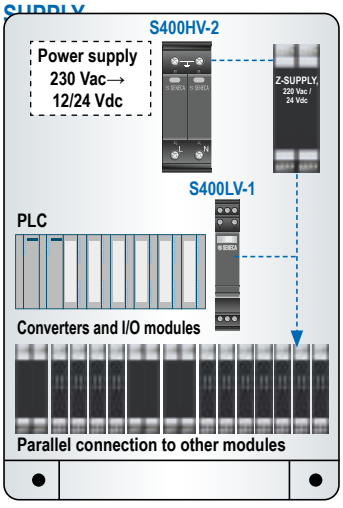
S400CL-1

S400CL-1-N

S400NET-1

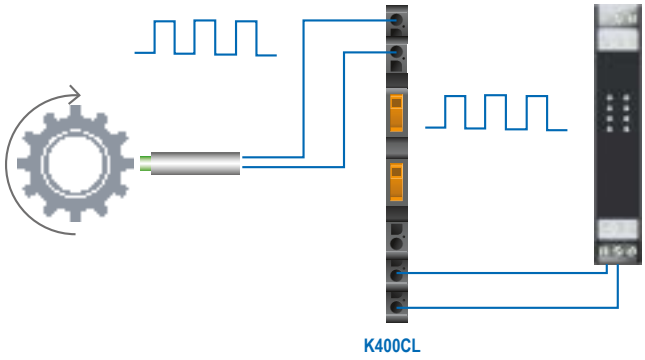
APPLICATION EXAMPLES

PROTECTION AND ISOLATION FOR TYPE 2 AND TYPE 3 POWER SUPPLY

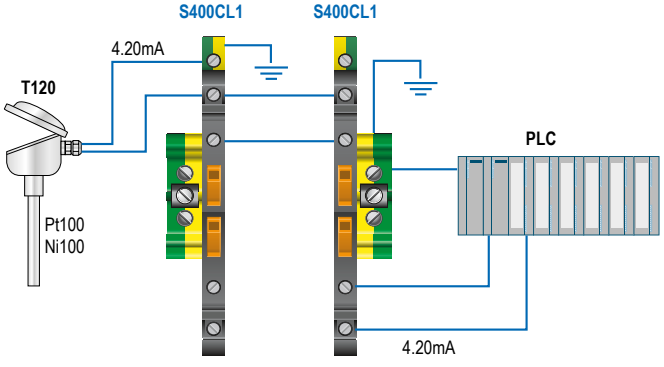


Automation panels, marshalling panels, PLC/DCS control panels, machine control panels, distribution boards, power center panels, MCC panels

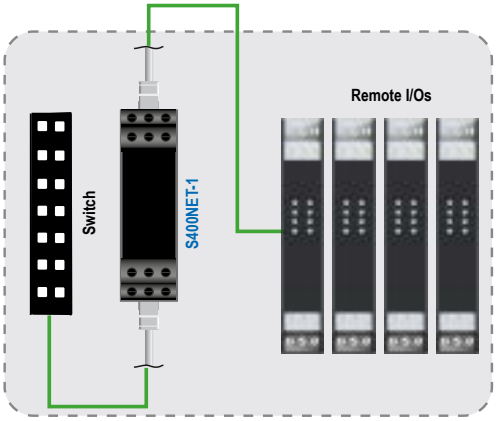
PROTECTION FOR PULSE MEASUREMENT DEVICES (REED, NAMUR, PNP, NPN, HALL EFFECT, ETC.)



PROTECTION OF AN ANALOG MEASUREMENT DEVICE



PROTECTION OF IT SIGNALS



Ethernet connection with the switch located in the local Electrical Panel

HIGH-EFFICIENCY INTELLIGENT SURGE PROTECTION

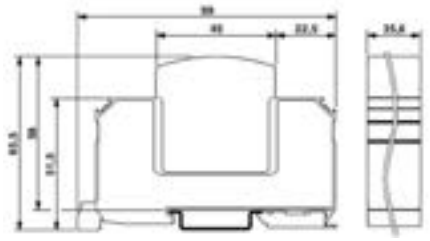
	TYPE 2/3 PROTECTION FOR POWER SUPPLY SYSTEMS		PROTECTION FOR MEASUREMENT AND CONTROL DEVICES			PROTECTION FOR COMPUTER NETWORKS AND TELECOMMUNICATIONS
	S400HV-2	**S400LV-1-N**	**K400CL**	**S400CL-1**	**S400CL-1-N**	**S400NET-1**
		 NEW		 UNTIL STOCKS LAST	 UNTIL STOCKS LAST COMING SOON	
	230 Vac surge protection, type 2 with 3 conductors (L, N, PE)	**Surge protection type 3, nominal voltage: 24 V AC/DC**	**Surge protection for analog and logic signals, slim format 6.2 mm**	**Surge protection for analog and logic signals with knife switch**	**Surge protection with integrated status indicator and knife switch for a potential-free signal circuit with 2 wires**	**Surge protection for Ethernet networks, serial networks, and field bus with 5 wires**
ELECTRICAL PROTECTION DATA (L-N / N-PE / L-PEN)						
Test class IEC / Type EN	II / T2	III / T3	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Nominal voltage U_N	240 / 415 Vac (TN-S); 240 / 415 Vac (TT)	24 Vac (TN-S)	24 Vdc	24 Vdc	24 Vdc	5 Vdc
Max permanent voltage U_C	L-N 335 Vac (L-N); 260 Vac (N-PE)	34 Vac	36 Vdc / 25 Vac	30 Vdc / 21 Vac	30 Vdc / 21 Vac	5.2 Vdc / 3.6 Vac
Nominal discharge current In (8/20)µs	L-N 20 kA / L-PE 20 kA / N-PE 20 kA	1kA	(wire-to-wire) 5 kA / (wire-to-ground) 5 kA / 10 kA (total)	(wire-to-wire) 5 kA / (wire-to-ground) 5 kA	5kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA
Max. Max discharge current Imax (8/20)µs	L-N 40 kA / L-PE 40 kA / N-PE 40 kA	1kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA / 20 kA (total)		20kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA
Atmospheric test current I_{imp} (10/350) µs per conductor			500A	500A	0.5kA	
Nominal load current I_L	80A	16 Aac (@63°C); 10 Adc				
Cumulative current (8/20)µs			20kA	10kA		20kA
Protection level Up	L-N ≤ 1,5 kV / L-PE ≤ 1,8 kV / N-PE ≤ 1,5 kV	≤ 0,18 kV (L-N) / ≤ 0,55 kV (L-PE) / ≤ 0,55 kV (N-PE)	(Conductor-to-conductor) 70 V (C2-10 kV / 5 kA / ≤50 V (C3-10A) / ≤80 V (D1 - 500 A) (Conductor-to-ground ≤650 V(C1-500 V / 250 A) / ≤700 V (C2-10 kV / 5 kA) / ≤700 V (D1 - 500 A)	(Conductor-to-conductor) ≤ 45 V (C1 - 500 V / 250 A ≤ 55 V /C2 - 10 kV / 5 kA)	(Conductor-to-conductor) ≤ 55 V (C1 - 1 kV / 500 A) ≤ 65 V (C2 - 10 kV / 5 kA) ≤ 50 V (C3 - 25 A) (Conductor-to-ground) ≤ 55 V (C3 - 100 A) ≤ 750 V (C1 - 1 kV / 500 A) ≤ 750 V (C2 - 10 kV / 5 kA) ≤ 700 V (C3 - 25 A) ≤ 750 V (C3 - 100 A) (Conductor-to-conductor) ≤ 50 V (C1 - 1 kV / 500 A) ≤ 65 V (C2 - 10 kV / 5 kA) (Conductor-to-ground) ≤ 750 V (C1 - 1 kV / 500 A) ≤ 750 V (C2 - 10 kV / 5 kA)	Conductor-to-conductor: ≤70 V (C1 - 1 kV / 500 A) ≤45 V (C3 - 25 A) ≤100 V (C2 - 10 kV / 5 kA) ≤70 V (6kV / 3 kA) Conductor-to-ground: ≤80 V /C1 - 1 kV / 500 A) ≤110 V (C2 - 10 kV / 5 kA) ≤100 V (6 kV / 3 kA) ≤45 V (C3 - 25 A) Conductor-GND: ≤45 V (C3 - 25 A)
Residual voltage at 5 kA	L-N ≤ 1,2 kV / L-PE ≤ 1,2 kV / N-PE ≤ 150 V					
Combination wave Uoc		≤ 25 ns				
Response time t_A	L-N ≤ 25 ns / N-PE ≤ 100 ns	L-N ≤ 25 ns / L-PE ≤ 100 ns / N-PE ≤ 100 ns	(wire-to-wire) ≤1 ns / (wire-to-ground) ≤100 ns	(wire-to-wire) ≤1 ns / (wire-to-ground) ≤100 ns		(wire-to-wire) ≤500 ns / (wire-to-ground) ≤500 ns
ELECTRICAL PROTECTION DATA (L-N / N-PE / L-PEN)						
Max prefuse for standard wiring	125 Aac (gG)	16 Aac - 10 Adc	315mA	315mA	630 mA (FF)	500mA
Max prefuse for pass-through wiring	80 Aac (gG)					
Short-circuit resistance I_{SCCR}	25kA					
Frequency limit fg (3dB) symmetric in the 50 Ohm system			typ. 6 MHz	typ. 6 MHz	typ. 940 kHz	
Conductor resistance			3.3 Ohm	3.3 Ohm	1.65 Ohm ±20%	2.2 Ohm
Limiting output voltage at 1 kV/ µs (spike/stat.)			(wire-to-wire) ≤ 60V / (wire-to-ground) ≤ 650V	≤45 V (wire-to-wire) / ≤650 V (wire-to-ground)		Spikes (wire-to-wire): ≤ 55 V Spikes (wire-to-ground): ≤ 55 V (PT 2x2-BE) / ≤ 1 µA (on PT 2x2+F-BE) Static voltage (wire-to-wire) ≤ 15 V Static voltage (wire-to-ground): ≤ 15 V / ≤ 30 V (PT 2x2+F-BE)
Dimensions (WxHxD)	35.6 x 90 x 58 mm	17.7 x 90 x 65.5 mm	6.2 x 93 x 102.5 mm	6.2 x 94.8 x 69.1 mm	6.2 x 105 x 83 mm	17.7 x 90 x 65.5 mm
Temperature range	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40..+70°C	-40°C.. +85°C
Protection class	IP20	IP20	IP20	IP20	IP20	IP20
UL 94 Combustibility class	V0	V0	V0	V0	V0	V0
Case Material	PA 6.6 - PBT	PA 6.6	PBT	PA 6.6	PBT	PA
Connection interface	Screw connection	Screw connection	Screw connection	Screw connection	Push-in connections	Screw connection (with the base element)
Certifications	CE, UL	CE	CE, UL	CE, UL	CE	CE, UL

The technical data and diagrams in this document are indicative and not binding.

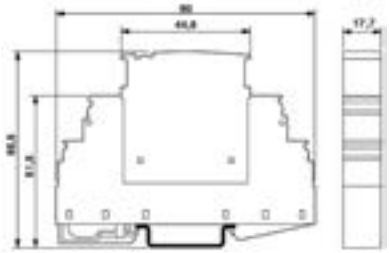
S400 SERIES

DIMENSIONS

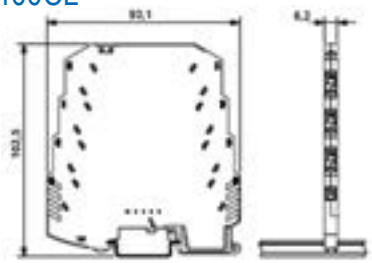
S400HV-2



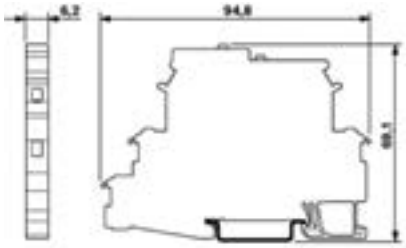
S400LV-1-N



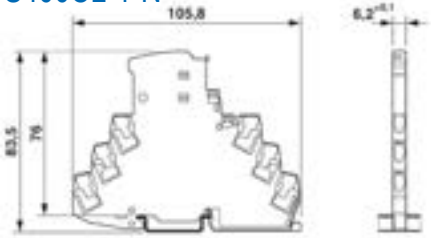
K400CL



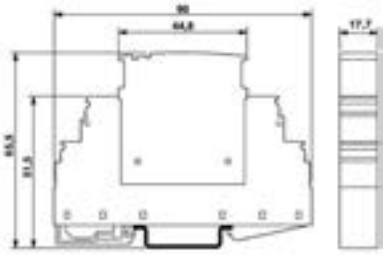
S400CL1



S400CL-1-N



S400NET-1



ACCESSORIES

S400HV-2-RIC-SL

S400HV-2-RIC-SN

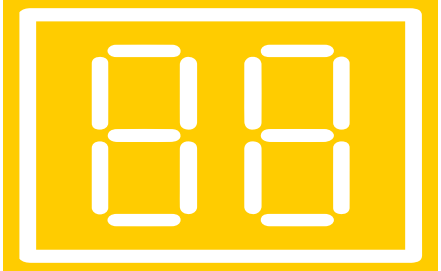
S400LV-1-RIC-SL

S400LV-1-RIC-SL

ORDER CODES

Code	Description
K400CL	Surge protection for analog and logic signals, slim format 6.2 mm
K400CL-10	Kit 10 p.zi K400CL
S400HV-2	230 Vac surge protection, type 2 with 3 conductors (L, N, PE)
S400HV-2-RIC-SL	Replacement plug 1L-N/PE for S400HV-2, without FM contact
S400HV-2-RIC-SN	Replacement plug N/PE for S400HV-2
S400LV-1	Surge protection 24VAac/dc, with FM contact, type 3 with 3 conductors (L, N, PE)
S400LV-1-RIC-SL	Replacement plug 24VAC/DC for S400LV-1, with FM contact
S400CL-1	Surge protection for analog and logic signals with knife switch
S400CL-1-15	Kit 15 pcs S400CL-1
S400CL-1-P5	Pack of 5 pcs closure walls for module S400CL-1
S400NET-1	Surge protection for Ethernet networks, serial networks, and field bus with 5 wires
S400NET-1-RIC-CL	Replacement plug for S400NET-1
S400ETH-DSK	Surge protection for Ethernet networks Class D/Cat.5 (100 Mbps)/5e (1 Gbps), PoE

4.6



DIGITAL INDICATORS

S Line

S Series

High-brightness and precision LED digital indicators

The S Series is a family of high-brightness and precision LED digital indicators for industrial applications. Equipped with scalable displays of 4, 6, 8, 4+7 digits, the S Series digital indicators handle universal inputs for analog, digital, and temperature sensor types, with retransmission output, ModBUS interface, and relay alarm activation via optional board. Available power supply ranges: 80-265 Vac, 10-40 Vdc, 19-28 Vac.
The indicators allow multiple display of instantaneous, integrated, and totalized values in increment or decrement mode. Programming can be done via front buttons or through the EASY SETUP 2 software.

High-brightness scalable display (4, 6, 8, 4+7 digits)

UNIVERSAL INPUT

Analog, Digital, Temperature (RTD, TC)

RETRANSMITTED OUTPUT

R

Analog or digital

OPTIONAL BOARD

ModBUS RS485 interface, relay SPDT outputs, reset input

ALARM ACTIVATION (RELAYS)

Threshold or hysteresis management

EXTENDED POWER SUPPLY

Range: 80-265 Vac; 10-40 Vdc / 19-28 Vac loop powered (S315)

POWER SUPPLY FOR TRANSDUCERS

SPECIAL FEATURES

TOTALIZER

S311A
S311D

Integrated values (S311A) and totalized in increment/decrement mode (S311D)

GENERATOR

S311G

Signal generation in auto/manual mode, bumpless filter

BATCH COUNTER

S311D

Batch counting associated with threshold (alarm/action on totalizer)

Alarm LED

Navigation and setting front buttons

Self-extinguishing PPO housing for DIN 43700 panel mounting

ACCURACY

Class 0.1%
A/D Conversion 14-16 bit

ISOLATION

Output
Input

1,500 Vac

PROGRAMMING

EASY SETUP

PC Software - Windows EASY SETUP accessible via serial converter (e.g., S107USB)

OPTIONAL HOUSING IP66

S315

PROTECTED ACCESS

FREQUENCY FILTER

S311D

HIGH-BRIGHTNESS AND PRECISION LED DIGITAL INDICATORS

	INDICATORS / TOTALIZERS WITH UNIVERSAL ANALOG INPUT				INDICATORS / GENERATORS WITH ANALOG INPUT
	S311A-4	S311A-6	S311A-8	S311A-11	S311G
					
	Indicator / Totalizer with 4-digit display with universal analog input	Indicator / Totalizer with 6-digit display with universal analog input	Indicator / Totalizer with 8-digit display with universal analog input	Indicator / Totalizer with 11-digit display with universal analog input	Indicator / Generator with 4-digit display and analog input
GENERAL DATA					
Power Supply	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)
Power supply for transducers	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA
Max Consumption	3 W	3 W	3 W	3 W	3 W
Isolation	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac
Communication interfaces	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave (optional card)
Operating Temperature	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C
Frontal Protection	IP65	IP65	IP65	IP65	IP65
Removable	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm
Dimensions	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm
Weight	200 g	200 g	200 g	200 g	200 g
Display	4-digit LED display	6-digit LED display	8-digit LED display	4+7 digit LED display	4-digit LED display
Status Indicators	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)	2 Automatic / Manual LEDs
Front keys	3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons
Accuracy	0.1%	0.1%	0.1%	0.1%	0.1%
Programming	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons
Special Features	Integrator	Integrator	Integrator	Integrator	Auto/Manual mode, Signal Generator, Bumpless filter
Certifications	CE	CE	CE	CE	CE
INPUT DATA					
Channels	1	1	1	1	1
Type and range	Voltage: 0-10 V Active/Passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouples J,K,R,S,T,B,E,N	Voltage: 0-10 V Active/Passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouples J,K,R,S,T,B,E,N	Voltage: 0-10 V Active/Passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouples J,K,R,S,T,B,E,N	Voltage: 0-10 V Active/Passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouples J,K,R,S,T,B,E,N	Voltage: 0-10 V Active/Passive current: 0-20 mA Potentiometer: 1..100 kΩ
Frequency	-	-	-	-	-
Reset	Yes: from digital input and front buttons	Yes: from digital input and front buttons	Yes: from digital input and front buttons	Yes: from digital input and front buttons	-
OUTPUT DATA					
Channels	1	1	1	1	1
Type and range	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)
Relay Outputs	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	-

The technical data and diagrams in this document are indicative and not binding.

COMPACT INDICATORS WITH ANALOG INPUT			INDICATORS / TOTALIZERS / BATCH COUNTERS WITH DIGITAL INPUT			
S311AK	**S312A**	**S315**	**S311D-4**	**S311D-6**	**S311D-8**	**S311D-11**
						
4-digit Indicator with mA/V analog input	**4-digit Indicator with universal analog input, 4 relay outputs, ModBUS interface**	**4-digit Indicator with 4-20 mA input, loop powered**	**4-digit Indicator / Totalizer / Batch Counter with digital/ frequency input**	**6-digit Indicator / Totalizer / Batch Counter with digital/ frequency input**	**8-digit Indicator / Totalizer / Batch Counter with digital/ frequency input**	**11-digit Indicator / Totalizer / Batch Counter with digital/ frequency input**
10-40 Vdc, 19-28 Vac	80-265 Vac (H version) 10-40 Vdc / 19-28 Vac (L version)	From measurement loop (max 30 V)	80-265 Vac (H version), 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version), 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version), 10-40 Vdc / 19-28 Vac (L version)	80-265 Vac (H version), 10-40 Vdc / 19-28 Vac (L version)
Max 16 V, 25 mA	Max 16 V, 25 mA	-	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA
0.9 W	3 W	-	3 W	3 W	3 W	3 W
1,500 Vac	1,500 Vac	-	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac
-	ModBUS RTU slave	-	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave
-10..+65°C	-10..+65°C	-10..+65°C	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C
IP65	IP65	IP65	IP65	IP65	IP65	IP65
Screw terminals, pitch 5.08 mm	Screw terminals, pitch 5.08 mm	Screw terminals, pitch 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm	terminal blocks, pitch 3.5 - 5.08 mm
96 x 48 x 40 mm	96x 48x 96 mm	96 x 48 x 40 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm
100 g	200 g	100 g	200 g	200 g	200 g	200 g
4-digit LED display	4-digit LED display	4-digit LED display	4-digit LED display	6-digit LED display	8-digit LED display	4+7 digit LED display
-	Alarms	-	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)	2 alarm LEDs (threshold activatable)
3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons	3 navigation buttons
0.05%	0.05%	0.05%	0.1%	0.1%	0.1%	0.1%
Front keys	Software EASY SETUP, front keys	Front keys	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons	Software EASY SETUP, front buttons
-	-	-	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)
CE	CE	CE	CE	CE	CE	CE
1	1	1	1	1	1	1
Voltage: 0-10 V Current: 0-20 mA	Voltage: 0..10 V Current: 0..20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751/EN 60751 – ITS90) Thermocouples J,K,R,S,T,B,E,N	4..20 mA current	Mechanical contact, Reed, NPN with 2 or 3 wires, PNP with 3 wires with 24 Vdc supply, Namur, Photoelectric, Variable reluctance, 24V pulses, TTL	Mechanical contact, Reed, NPN with 2 or 3 wires, PNP with 3 wires with 24 Vdc supply, Namur, Photoelectric, Variable reluctance, 24V pulses, TTL	Mechanical contact, Reed, NPN with 2 or 3 wires, PNP with 3 wires with 24 Vdc supply, Namur, Photoelectric, Variable reluctance, 24V pulses, TTL	Mechanical contact, Reed, NPN with 2 or 3 wires, PNP with 3 wires with 24 Vdc supply, Namur, Photoelectric, Variable reluctance, 24V pulses, TTL
-	-	-	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz
-	-	-	Yes: from digital input and front buttons	Yes: from digital input and front buttons	Yes: from digital input and front buttons	Yes: from digital input and front buttons
	1 analog output, 4 relays	-	1	1	1	1
-	0-10 V (min 1kΩ) 0-20 / 4-20 mA (max 500 Ω)	-	0-10 V (min 1kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)
-	Relay capacity 5A - 250 Vac	-	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card	#2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional card

The technical data and diagrams in this document are indicative and not binding.

A COMPLETE RANGE

MODULAR INDICATORS / TOTALIZERS WITH UNIVERSAL ANALOG INPUT

S311A

MODULAR INDICATORS / TOTALIZERS / BATCH COUNTERS WITH DIGITAL INPUT

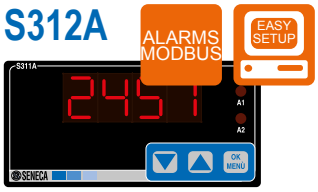
S311D

4-DIGIT LED INDICATORS WITH ANALOG INPUT

S311G

S311AK

S312A



S315

ORDER CODES

MODULAR INDICATORS / TOTALIZERS WITH UNIVERSAL ANALOG INPUT

Code				Description
Base model	S311A			Indicator / totalizer with universal analog input
Display		-4		4-digit LED display
		-6		6-digit LED display
		-8		8-digit LED display
		-11		4+7 digit LED display
Power Supply			-L	10-40 Vdc / 19-28 Vac
			-H	80-265 Vac
Optional board			-O	Card with 2 SPDT relays, ModBUS RTU interface, reset input

INDICATORS / GENERATORS WITH ANALOG INPUT

Code				Description
Base model	S311G			Indicator / signal generator with analog input
Display		-4		4-digit LED display
Power Supply			-L	10-40 Vdc / 19-28 Vac
			-H	80-265 Vac
Optional board			-O	ModBUS RTU

COMPACT INDICATORS / TOTALIZERS WITH ANALOG INPUT

Code	Description
S311AK-4-L	4-digit Indicator with mA/V analog input, 10-40 Vdc, 19-28 Vac
S311AK-4-L-IP66	4-digit Indicator with mA/V analog input, 10-40 Vdc, 19-28 Vac, with IP66 enclosure (130x80x60 mm)
S311AK-4-L-IP66D	4-digit Indicator with mA/V analog input, 10-40 Vdc, 19-28 Vac, with 2 instruments and double IP66 enclosure
S312A-4-H-4R	Indicator with 4-digit display, universal analog input, 4 relay outputs, ModBUS interface, 85-265 Vac
S312A-4-L-4R	Indicator with 4-digit display, universal analog input, 4 relay outputs, ModBUS interface, 10-40 Vdc, 19-28 Vac
S315	Loop powered 4-digit Indicator, 4-20 mA input
S315-IP66	Loop powered 4-digit Indicator, 4-20 mA input, with IP66 enclosure (130x80x60 mm)
S315-IP66D	Loop powered 4-digit Indicator, 4-20 mA input, with 2 instruments and double IP66 enclosure

MODULAR INDICATORS / TOTALIZERS / BATCH COUNTERS WITH DIGITAL INPUT

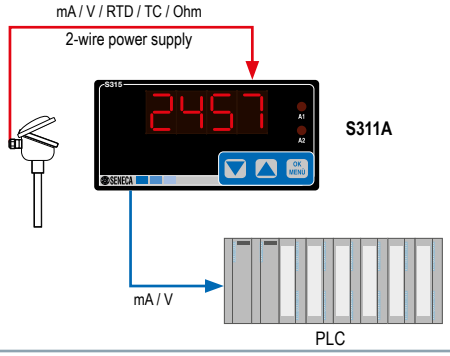
Code				Description
Base model	S311D			Indicator / totalizer / batch counter with digital/frequency input
Display		-4		4-digit LED display
		-6		6-digit LED display
		-8		8-digit LED display
		-11		4+7 digit LED display
Power Supply			-L	10-40 Vdc / 19-28 Vac
			-H	80-265 Vac
Optional board			-O	Card with 2 SPDT relays, ModBUS RTU interface, reset input

ACCESSORIES AND SOFTWARE

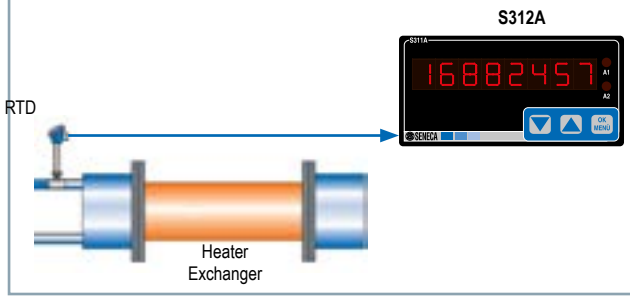
Code	Description
EASY SETUP	Configuration software for S311A, S311D, S312A models
S311OPZ	Optional card with 2 SPDT relay alarms, Modbus interface, reset input for S311A / S311D / S311G indicators (only ModBUS)
S311-T	Calibration service for S311 Series indicators - totalizers

APPLICATION DIAGRAMS

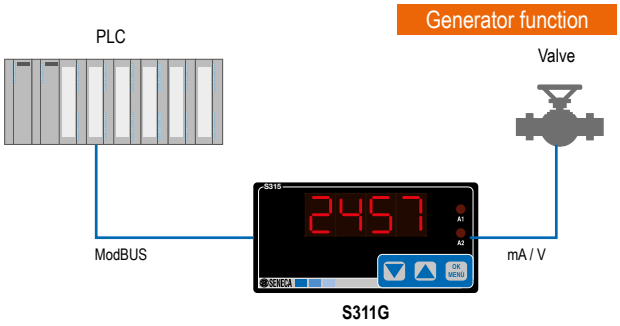
DISPLAY OF ANALOG SIGNAL AND RETRANSMISSION TO PLC



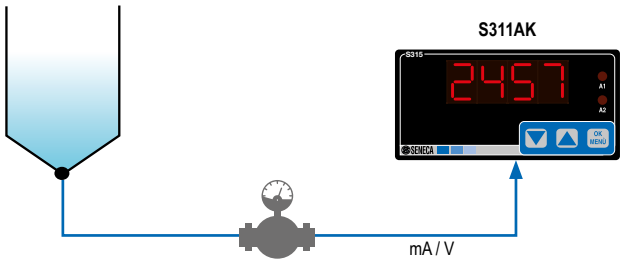
DATA VISUALIZATION FOR CONSUMPTION CALCULATION – HEAT EXCHANGER



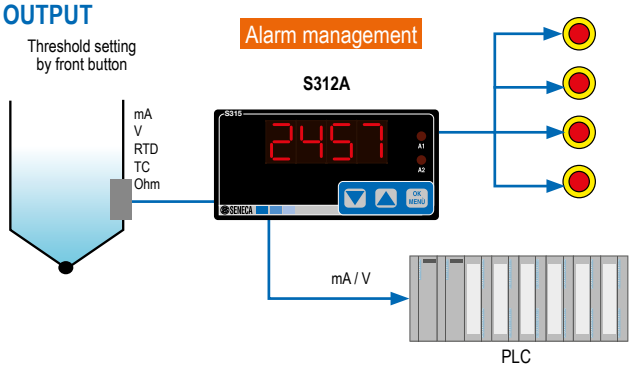
SIGNAL GENERATION IN AUTO/MAN MODE WITH BUMPLESS FUNCTION



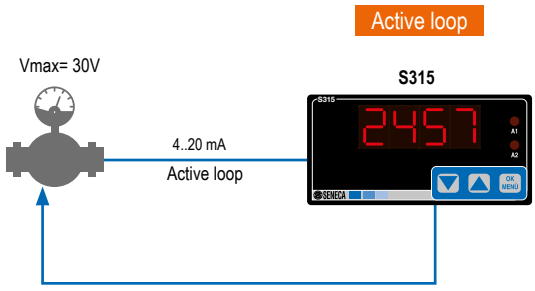
INSTANT DISPLAY OF ANALOG SIGNAL FROM SENSOR



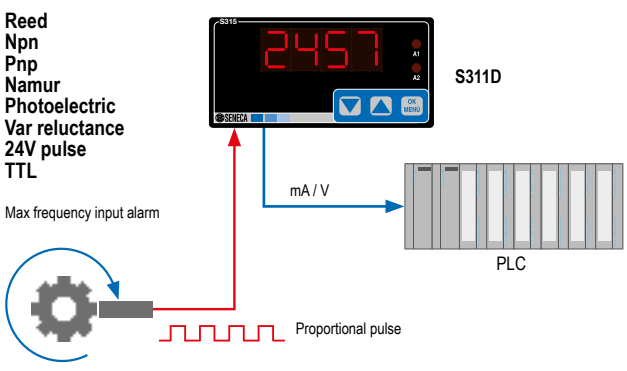
SIGNAL DISPLAY AND RETRANSMISSION WITH ALARMS OUTPUT



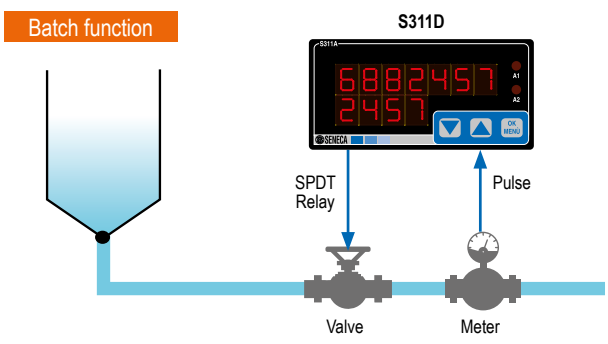
ANALOG SIGNAL VISUALIZATION FROM TRANSDUCER WITH ACTIVE LOOP



IMPULSE SIGNAL VISUALIZATION AND TOTALIZATION



OUTPUT ACTIVATION WITH TOTALIZER / BATCH COUNTER FUNCTION



HIGH BRIGHTNESS LED INDICATORS WITH ANALOG INPUT

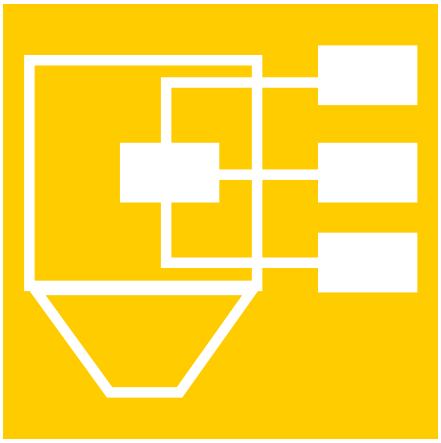
	S200 / S201	S301 / S301 B	S310 / S320A
			
	3 ½ digit digital indicators	4-digit Indicators with universal analog input and retransmitted output	3 ½ digit Indicators with analog input (V,I) and SPDT relay alarms
GENERAL DATA			
Power Supply	115 - 230 Vac ± 10% 50 - 60 Hz	115 - 230 Vac ± 10% 50 - 60 Hz	115 - 230 Vac ± 10% 50 - 60 Hz
Power supply for transducers	+15 Vdc 350 mA and -15 Vdc 75 mA; 24 Vdc, 500 mA	-	-
Max Consumption	11 VA	4 VA	3.5 VA
Rejection	40 dB	-	-
Communication Interfaces	-	RS232 / RS485, 9.600 bbs, max 1.000 m and 31 instruments	-
Memory	-	EEPROM, 10 years	-
DISPLAY AND MEASUREMENT			
Display	3 ½ digits Red 14 mm LEDs	4 digits Bargraph with 20 elements (50 mm) Red 14 mm LEDs	3 ½ digits Red 14 mm LEDs
Accuracy	0.3%	0.1% (voltage/current input, retransmitted output) 0.2% (thermoresistance, potentiometer)	0.3%
Stability	0.01%/°C	0.01%/°C	0.01%/°C
Linearity	-	From 0.01% to 0.5%	-
Cold junction	-	1°C (20-40°C)	-
INPUT DATA			
Channels	1	1	1
Type and range	Current: 0 – 20, 4 - 20 mA Voltage: 0 – 5/ 1-5/ 0 –10/ 2 -10 Vdc	Voltage from 200 mV to 10 V (4 scales) Current up to 20 mA Potentiometer up to 15 kOhms Pt100 (-200..+650°C) TC J,K,R,S,T,B	Current 0-20, 4-20 mA Voltage 0-2 / 0.4-2 / 0-5 / 1-5 (0-10, 2-10 on request) Vdc Pt100 (optional) TC K, J (optional)
Frequency	-	3 readings per second	-
ANALOG OUTPUT DATA			
Channels	1	1	1
Type and range	Precision potentiometer setpoint (0/1-5 Vdc; 4-20mA active)	Impressed current 0..20/4..20 mA Voltage 0..5 / 0..10 / 1..5 / 2..10 V	Active/passive retransmitted output, optically isolated, 0..20 / 4..20 mA
Resolution		From 0.025% to 0.032%	
ALARM OUTPUT DATA			
Contacts	-	3, 4	1, 2
Type	-	SPDT relay 5A - 250 Vac Open collector 35 Vdc - 200 mA	SPDT relay 5A - 250 Vac (resistive load)
THERMOMECHANICAL DATA			
Operating Temperature	-10..+60°C	-10..+55°C	0..50°C
Enclosure	Self-extinguishing Noryl "V0" shock-resistant	Self-extinguishing Noryl "V0" shock-resistant	Self-extinguishing Noryl "V0" shock-resistant
Frontal Protection	IP41	IP41	IP41
Removable	Removable	Removable	Removable
Dimensions	96x96x117 mm	96x48x148 mm (S301); 96x96x148 mm (S301B)	96x48x148 mm (S310); 96x96x148 mm (S320A)
Weight	750 g	500 g (S301); 600 g (S301B)	500 g (S310); 600 g (S320A)
SETTINGS, STANDARDS			
Software	-	Data request and writing	-
Front keys	-	Diagnostics and programming	-
Trimmer	Zero, span display (from -999 to 1,999)	-	Zero, span display (from -999 to 1,999); alarms
Jumpers / Shunt	Decimal point	-	Full scale, alarms, input type, decimal point, retransmitted output
Compliance	CE	CE	CE

ORDER CODES	
Code	**Description**
S200-1-ST	Stabilized dual power supply 115 / 230 Vac
S200D-1-ST	3 ½ digit Indicator with power supply 115 / 230 Vac
S201D-1-ST	3 ½ digit Indicator with power supply 115 / 230 Vac, powered Transducer 24 Vdc
S201DP-1-ST	3 ½ digit Indicator with power supply 115 / 230 Vac, powered Transducer 24 Vdc + setpoint
S301-1-R	4-digit Indicator with µP universal input and retransmitted output, powered 115 / 230 Vac
S301-1-R-AOC-S	4-digit Indicator with µP universal input and retransmitted output, Power Supply 115 / 230 Vac, 4 open collector alarms, RS232/RS485
S301-1-R-AR-S	4-digit Indicator with µP universal input and retransmitted output, Power Supply 115 / 230 Vac, 3 SPDT alarms, RS232/RS485
S301-23-R	4-digit Indicator with µP universal input and retransmitted output, powered 24 Vac/dc
S301-23-R-AOC-S	4-digit Indicator with µP universal input and retransmitted output, Power Supply 24 Vac/dc, 4 open collector alarms, RS232/RS485
S301-23-R-AR-S	4-digit Indicator with µP universal input and retransmitted output, Power Supply 24 Vac/dc, 3 SPDT alarms, RS232/RS485

ORDER CODES	
Code	**Description**
S301B-1-R	4-digit Indicator with µP and bargraph, universal input and retransmitted output, powered 115 / 230 Vac
S301B-1-R-AOC-S	4-digit Indicator with µP and bargraph, universal input and retransmitted output, powered 115 / 230 Vac, open collector alarms, RS232/RS485
S301B-1-R-AR-S	4-digit Indicator with µP and bargraph, universal input and retransmitted output, Power Supply 115 / 230 Vac, 3 SPDT alarms, RS232/RS485
S301B-23-R	4-digit Indicator with µP and bargraph, universal input and retransmitted output, powered 24 Vac/dc
S301B-23-R-AOC-S	4-digit Indicator with µP and bargraph, universal input and retransmitted output, Power Supply 24 Vac/dc, 4 open collector alarms, RS232/RS485
S301B-23-R-AR-S	4-digit Indicator with µP and bargraph, universal input and retransmitted output, powered 24 Vac/dc, 3 SPDT alarms, RS232/RS485
S320A-1-ST	3 ½ digit Indicator with V/I input and 2 relay alarms, dim. 96x96, powered 115 / 230 Vac
S320A-1-ST-R	3 ½ digit Indicator with V/I input and 2 relay alarms, dim. 96x96, Power Supply 115 / 230 Vac, retransmitted output
S320A-23-ST	3 ½ digit Indicator with V/I input and 2 relay alarms, dim. 96x96, powered 24 Vac/dc
S320A-23-ST-R	3 ½ digit Indicator with V/I input and 2 relay alarms, dim. 96x96, Power Supply 24 Vac/dc, retransmitted output

The technical data and diagrams in this document are indicative and not binding.

4.7



BATCH CONTROLLERS

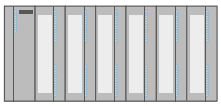
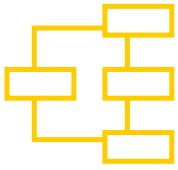
S20N1-S21N1 Series

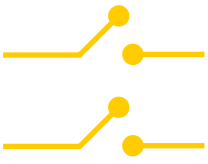
S20N1 / S21N1

BATCH CONTROLLER WITH PULSE INPUT, LED DISPLAY AND MODBUS INTERFACE

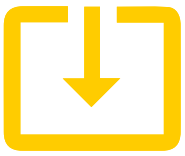
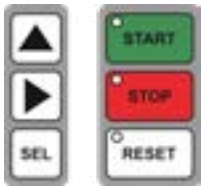
The SENECA S20N1 and S21N1 batch controllers represent economical, simplified, and safe solutions for process automation. Equipped with a front polycarbonate membrane measuring 72x144 mm with two 5-digit high-brightness red LED numerical displays, 7 operational status indication LEDs, and 6 front buttons for programming, S20N1 and S21N1 acquire digital signals from clean contacts, reed contacts, NPN transistors, Namur sensors, Hall effect sensors, or photoelectric sensors.
The systems are designed to control measuring probes and operate valves or motors to manage dosing, filling, withdrawal, and fluid regeneration processes in an automatic, timed, and highly precise manner. The SENECA S20N1 and S21N1 batch controllers can be used as stand-alone dosing units or as “auto-manual” stations. In this second mode, they act as local control units, allowing manual correction, integration, or interruption of dosages commanded remotely by the PLC. This improves system flexibility and redundancy, dosing capacity, recipe development, and energy efficiency of controlled processes.

- STAND-ALONE OPERATION OR AUTO-MANUAL STATION IN COMBINATION WITH PLC CONTROL
- FLEXIBLE RECIPE TMANAGEMENT
- 1 CONFIGURABLE PULSE INPUT (FREQ. MAX 2.2 kHz)
- 2 DIGITAL SPDT RELAY OUTPUTS (CAPACITY 5 A, 250 V, RESISTIVE LOAD)
- CONFIGURABLE RS485 MODBUS SERIAL PORT
- RS232 SERIAL PORT FOR IMPACT PRINTER CONNECTION
- S20N1KIT COMMAND BOARD FOR EXTERNAL BUTTONS AND LAMPS
- 2 5-DIGIT HIGH BRIGHTNESS RED LED NUMERIC DISPLAYS (SET + DOSING)
- MICRO USB CONNECTOR FOR SW/FW UPDATES
- 6 FRONT PROGRAMMING BUTTONS
- SPECIAL EX AND IP65 VERSIONS
- SELF-POWERED INPUT AMPLIFICATION BOARDS






APPLICATION FIELDS

- WATER TREATMENT
- WASTEWATER
- WINE, BEER, AND SPIRITS PRODUCTION
- PAPER MILLS
- FOOD & BEVERAGE
- PHARMACEUTICAL AND BIOENGINEERING
- OIL & GAS
- PRODUCTION OF SOLVENTS, DILUENTS, PAINTS

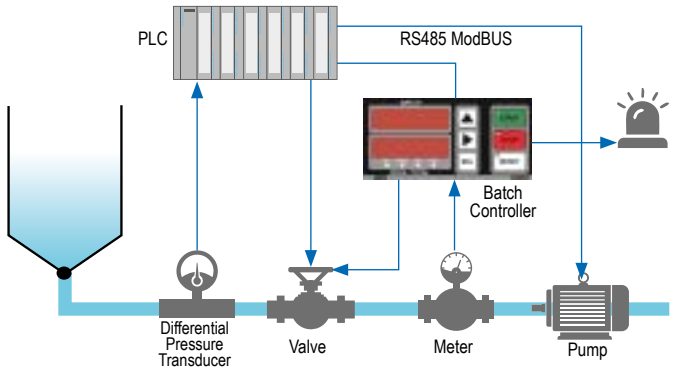




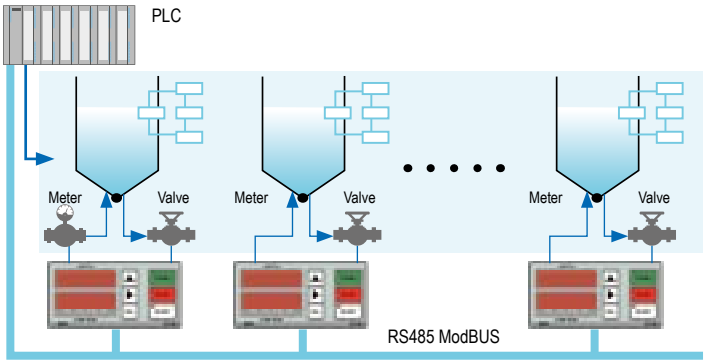



APPLICATION EXAMPLES

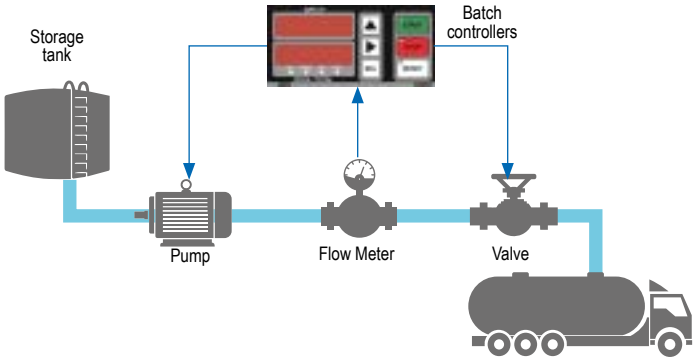
BATCH MANAGEMENT IN COMBINATION WITH PLC



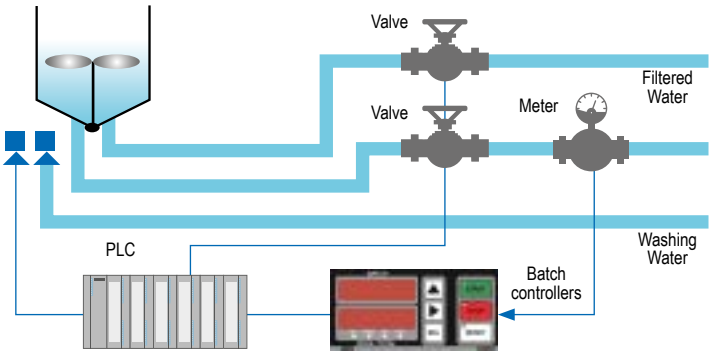
MULTI-RECIPE MANAGEMENT FROM REMOTE (PLC) OR LOCAL (AUTO-MANUAL STATION)



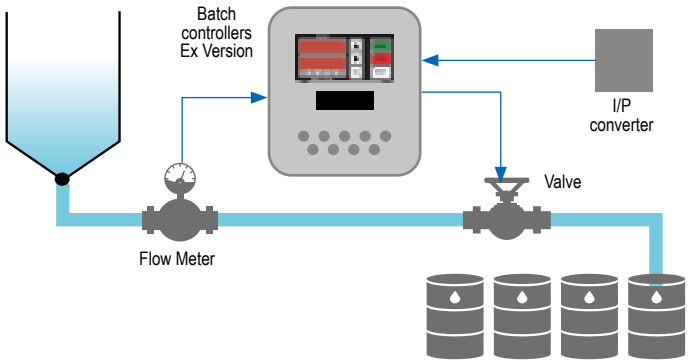
BATCH CONTROL FOR TANKER TRUCK FILLING



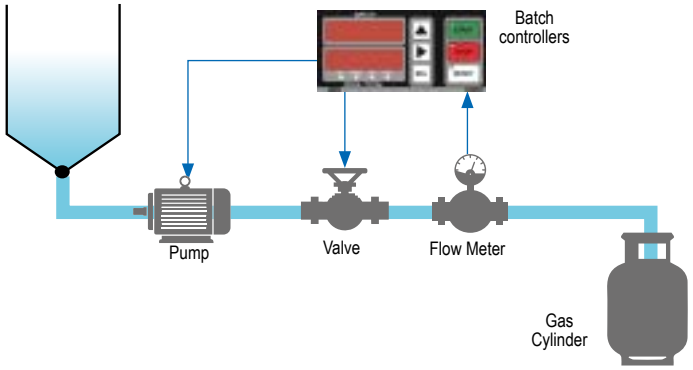
FILTER REGENERATION SYSTEM FOR AQUEDUCT SECTOR



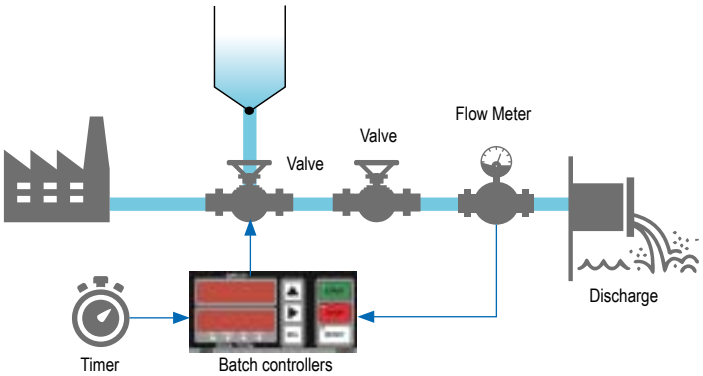
BARREL FILLING SYSTEM IN HAZARDOUS ENVIRONMENTS



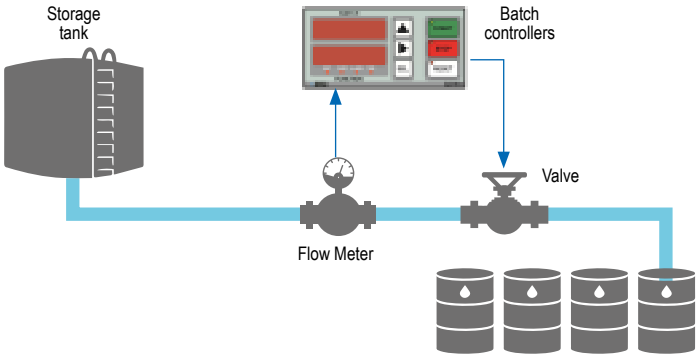
GAS REPLENISHMENT SYSTEM FOR THE OENOLOGY SECTOR



INDUSTRIAL DISCHARGE CONTROL SYSTEM



REPETITIVE BARREL FILLING SYSTEM WITH 2-SPEED VALVE CONTROL



PREDETERMINATORS

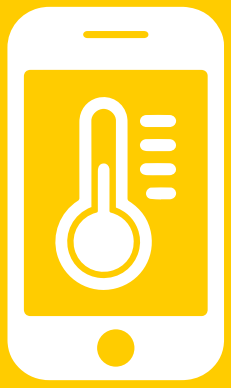
	S20N1	S21N1
		
	Basic Predeterminator	**Predeterminator with clock**
GENERAL DATA		
Power Supply	115/230 Vac ± 50/60 Hz; 24 Vac/dc	115/230 Vac ± 50/60 Hz; 24 Vac/dc
Power supply for transducers	12/24 Vdc, 30 mA (max)	12/24 Vdc, 30 mA (max)
Max Consumption	10 VA	10 VA
Data Storage	EEPROM, data storage	EEPROM, data storage
Clock	-	Clock with autonomous battery, data memory, automatic daylight saving time correction
Interfaces	#1 RS232 (printer command) #1 RS485 / ModBUS (data control and monitoring) #1 Micro USB (firmware update)	#1 RS232 (printer command) #1 RS485 / ModBUS (data control and monitoring) #1 Micro USB (firmware update)
DISPLAY AND MEASUREMENTS		
Display	2 numeric 5-digit LED displays	2 numeric 5-digit LED displays
Status Indicators	Start, stop, reset	Start, stop, reset
INPUT DATA		
Number of channels	1 (isolated)	1 (isolated)
Type	From reed sensor, npn (2/3 wire), Namur, Hall effect, photoelectric	From reed sensor, npn (2/3 wire), Namur, Hall effect, photoelectric
Frequency	1,000 Hz, minimum pulse duration 0.1 ms	1,000 Hz, minimum pulse duration 0.1 ms
Process	3 inputs (start, stop, reset)	3 inputs (start, stop, reset)
OUTPUT DATA		
Number of channels	2	2
Type	SPDT relay, 5 A 250 V (resistive load)	SPDT relay, 5 A 250 V (resistive load)
THERMOMECHANICAL DATA		
OPERATING TEMPERATURE	0..50°C	0..50°C
Enclosure	Self-extinguishing Noryl V0	Self-extinguishing Noryl V0
Frontal Protection	Front polycarbonate membrane	Front polycarbonate membrane
Connections	Removable rear terminal blocks	Removable rear terminal blocks
Dimensions (w x h x d)	144 x 72 x 130 mm	144 x 72 x 130 mm
Panel cutout dimensions	135 x 67 mm	135 x 67 mm
Weight	800 g	800 g
SETTINGS, STANDARDS		
Programming / Dosing	Via front buttons	Via front buttons
Operating Modes	Stand-alone or Auto-Manual in combination with remote PLC control (via RS485 - ModBUS)	Stand-alone or Auto-Manual in combination with remote PLC control (via RS485 - ModBUS)
Max # of recipes	1	8
Compliance	CE	CE

ORDER CODES	
Code	**Description**
Batch Controller - Standard Versions	
S20N1-1-ST	Batch controller with pulse input, LED display and ModBUS interface, powered 115 / 230 Vac
S20N1-23-ST	Batch controller with pulse input, LED display and ModBUS interface, powered 24 Vac/dc
S21N1-1-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock, powered 115 / 230 Vac
S21N1-23-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock, powered 24 Vac/dc
Batch Controller - EX Versions	
S20N1EX-1-ST	Batch controller with pulse input, LED display, and ModBUS interface in an explosion-proof Eexd housing, powered 115 / 230 Vac
S20N1EX-23-ST	Batch controller with pulse input, LED display, and ModBUS interface in an explosion-proof Eexd housing, powered 24 Vac/dc
S21N1EX-1-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock in an explosion-proof Eexd housing, powered 115 / 230 Vac
S21N1EX-23-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock in an explosion-proof Eexd housing, powered 24 Vac/dc

ORDER CODES	
Code	**Description**
Batch Controller - IP65 Versions	
S20N1IP65-1-ST	Batch controller with pulse input, LED display, and ModBUS interface in an IP65-rated housing, powered 115 / 230 Vac
S20N1IP65-23-ST	Batch controller with pulse input, LED display, and ModBUS interface in an IP65-rated housing, powered 24 Vac/dc
S21N1IP65-1-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock in an IP65-rated housing, powered 115 / 230 Vac
S21N1IP65-23-ST	Batch controller with pulse input, LED display, ModBUS interface, and self-powered clock in an IP65-rated housing, powered 24 Vac/dc
Accessories	
FH190-24	24-column impact printer for S21N1, powered 9-40 Vdc
S20ADP	Standard input amplification board
S20ADP-CM	Input amplification board in modular housing
S20ADP-IP65	Input amplification board in waterproof housing
S20N1-KIT-1-ST	Power supply board for buttons, powered 115 / 230 Vac
S20N1-KIT-23-ST	Power supply board for buttons, powered 24 Vac/dc

The technical data and diagrams in this document are indicative and not binding.

4.8



PROFESSIONAL PORTABLE MEASUREMENT SYSTEMS

MY Series

MY Series

PORTABLE PROFESSIONAL PROBES FOR TEMPERATURE AND HUMIDITY MEASUREMENTS

The **MY Series** is a range of portable transmitters capable of transforming mobile devices such as smartphones or tablets into Android-based data acquisition systems.
Easily configurable via a dedicated app, the MY Series allows the display of temperature (RTD, TC) and humidity values in analog or digital form, enabling the sharing of current measurements via SMS, email, and other data platforms.
The MY Series is the ideal candidate for professional and industrial measurements in various contexts (machinery, climate chambers, food storage and transport, laboratories, HVAC systems), both for diagnostic purposes and environmental parameter monitoring.

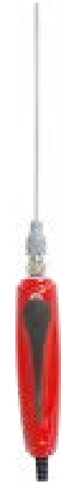
PIV - APP

Google play

HIGHLIGHTS

- IMMEDIATE SENSOR DATA DISPLAY ON SMARTPHONE OR TABLET
- FREE APP AVAILABLE FOR ANDROID DEVICES WITH MICRO USB OTG
- INSTANT MEASUREMENT AND SHARING VIA EMAIL, SMS, SOCIAL MEDIA, AND MESSAGING PLATFORMS
- PROBES AVAILABLE FOR RTD, THERMOCOUPLE, RELATIVE HUMIDITY, AND TEMPERATURE
- ANALOG OR DIGITAL DISPLAY OF THE MEASUREMENT
- MANAGEMENT OF MULTIPLE TRANSMITTERS WITH THE SAME APP
- QUICK SELECTION OF SCALES AND MEASUREMENT UNITS
- M121 CONNECTOR FOR RELIABLE AND PRECISE COUPLING WITH THE SENSOR ELEMENT

PT100 PROBES • MY-PT

	MY-PT-150-3	MY-PT-250-2	MY-PT-150-3R
			
	Portable PT100 probe, class B, d=3 mm, L=150 mm, rounded tip, M12M connector	**Portable PT100 probe, class B, d=2 mm, L=250 mm, rounded tip, M12M connector**	**Portable PT100 probe, class B, d=3 mm, L=150 mm, pointed tip, M12M connector**
GENERAL DATA			
Measurement type	Temperature	Temperature	Temperature
Power Supply	Powered by USB port	Powered by USB port	Powered by USB port
Environmental conditions	-20..+50°C (handle)	-20..+50°C (handle)	-20..+50°C (handle)
Interface	Micro USB	Micro USB	Micro USB
Accuracy	Class B (sensor), conversion error (whichever is greater between 1% of the measurement or 0.5°C)	Class B (sensor), conversion error (whichever is greater between 1% of the measurement or 0.5°C)	Class B (sensor), conversion error (whichever is greater between 1% of the measurement or 0.5°C)
Measurement Range	-30..300°C	-30..300°C	-30..300°C
Response Time	15 s	15 s	15 s
Probe connector	M12	M12	M12
Configuration system	Android PIV APP via smartphone with USB OTG	Android PIV APP via smartphone with USB OTG	Android PIV APP via smartphone with USB OTG
Functions / settings (through the app)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)
Marking	CE	CE	CE
SENSOR			
Thermocouple	Pt100, accuracy per IEC 751	Pt100, accuracy per IEC 751	Pt100, accuracy per IEC 751
Isolation	100 MΩ a 100 Vcc	100 MΩ a 100 Vcc	100 MΩ a 100 Vcc
Electrical connection	M12x1 (DIN-VDE0627) screw-in molded 4-contact nylon connector with metal thread	M12x1 (DIN-VDE0627) screw-in molded 4-contact nylon connector with metal thread	M12x1 (DIN-VDE0627) screw-in molded 4-contact nylon connector with metal thread
Protection class	IP67	IP67	IP67
Construction	High insulation compact mineral (MgO), AISI 316 stainless steel sheath	High insulation compact mineral (MgO), AISI 316 stainless steel sheath	High insulation compact mineral (MgO), AISI 316 stainless steel sheath
Diameter	3 mm	2 mm	3 mm
Length	150 mm	250 mm	150 mm

ORDER CODES

PT100 MEASUREMENT SYSTEM	
Code	**Description**
TRANSMITTER	
MY-PT-150-3	Portable transmitter for PT100 with PT-150-3-M12 probe
MY-PT-250-2	Portable transmitter for PT100 with PT-250-2-M12 probe
MY-PT-150-3R	Portable transmitter for PT100 with PT-150-3R-M12 probe
ACCESSORIES / SPARE PARTS	
PT-150-3-M12	PT100 class B, d=3 mm, L=150 mm, M12 connector
PT-250-2-M12	PT100 class B, d=2 mm, L=250 mm, M12 connector
PT-150-3R-M12	PT100 class B, d=3 mm, L=150 mm, tapered terminal, M12 connector
COMPLETE MEASUREMENT KIT	
MY-PT-KIT	Portable transmitter for PT100 with PT-150-3-M12, PT-250-3-M12, and PT-150-3R-M12 probes

COMPLETE MEASUREMENT KIT WITH PORTABLE CASE

The image is indicative and does not necessarily reflect the contents of the KIT

The technical data and diagrams in this document are indicative and not binding.

THERMOCOUPLE PROBES TYPE K • MY-TC | UM./TEMP. PROBES

	MY-TC-250-3	MY-TC-250-1.5	MY-TC-AC	MY-UT
				
	Portable thermocouple probe K, d=3 mm, L=250 mm, rounded tip, M12M connector	Portable thermocouple probe K, d=1.5 mm, L=250 mm, rounded tip, M12M connector	Portable type K thermocouple probe with arch, M12M connector	Portable probe for temperature and relative humidity measurement, M12M connector
GENERAL DATA				
Measurement type	Temperature	Temperature	Temperature	Temperature / Relative humidity
Power Supply	Powered by USB port	Powered by USB port	Powered by USB port	Powered by USB port
Environmental conditions	-20..+50°C (handle)	-20..+50°C (handle)	-20..+50°C (handle)	-20..+50°C (handle)
Interface	Micro USB	Micro USB	Micro USB	Micro USB
Accuracy	Greater of 1% of measurement / 2°C	Greater of 1% of measurement / 2°C	Greater of 1% of measurement / 2°C	±3% RH (20..80% RH) ±5% (<20%RH, >80%RH) ±0.5°C at 25°C, 1.5°C between -10..+60°C
Measurement Range	0..1,150°C	0..1,150°C	0..1,150°C	-40..+120°C (Temp.) / 0..100% (UR)
Response Time	15 s	15 s	15 s	10 s
Probe connector	M12	M12	M12	M12
Configuration system	Android PIV APP via smartphone with USB OTG	Android PIV APP via smartphone with USB OTG	Android PIV APP via smartphone with USB OTG	Android PIV APP via smartphone with USB OTG
Functions / settings (via app)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)	Analog and digital measurement display Max and min session storage Session reset with measurement time indication Scale change in analog mode Unit of measurement change (K, °C, °F, °R) Current measurement logging with date, time, value, and sharing option (SMS, Email, Whatsapp)
Marking	CE	CE	CE	CE
SENSOR				
Thermocouple	Single-element K thermocouple per IEC 584 class 2 (ASTM e 230)	Single-element K thermocouple per IEC 584 class 2 (ASTM e 230)	Compact version K thermocouple arch	Integrated capacitive temperature and relative humidity sensor
Isolation	100 MΩ a 500 Vcc	100 MΩ a 500 Vcc	100 MΩ a 500 Vcc	
Electrical connection	Molded male connector in nylon with screw-in M12x1 (DIN-VDE0627) connector with metal thread	Molded male connector in nylon with screw-in M12x1 (DIN-VDE0627) connector with metal thread	Molded male connector in nylon with screw-in M12x1 (DIN-VDE0627) connector with metal thread	Nylon-molded male connector with screw-in fitting M12x1 (DIN-VDE0627) with metal threading
Protection class	IP67	IP67		
Construction	Compact mineral insulation (MgO) with isolated hot junction, Inconel 600 sheath	Compact mineral insulation (MgO) with isolated hot junction, Inconel 600 sheath	Compact mineral insulation (MgO) with isolated hot junction	AISI 316 stainless steel (d=6 mm)
Diameter	3 mm	1.5 mm	12 mm	6 mm
Length	250 mm	250 mm	82 mm	120 mm
Additional equipment	K thermocouple, L=1000 mm, flat FEP wire ANSI M12M connector	K thermocouple, L=1000 mm, flat FEP wire ANSI M12M connector	K thermocouple, L=1000 mm, flat FEP wire ANSI M12M connector	-

ORDER CODES

PORTABLE THERMOCOUPLE MEASUREMENT SYSTEM FOR TC-K

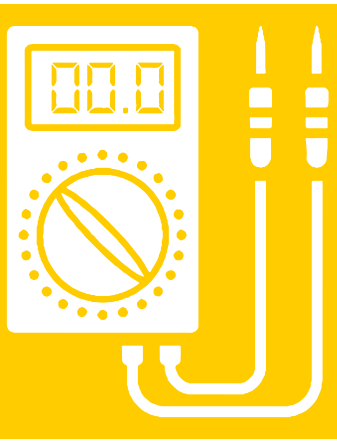
Code	Description
TRANSMITTER	
MY-TC-250-3	Portable transmitter for thermocouple with TCK-250-3-M12 and TCK-W-1000-M12 probes
MY-TC-250-1.5	Portable transmitter for thermocouple with TCK-250-1.5-M12 and TCK-W-1000-M12 probes
MY-TC-AC	Portable transmitter for thermocouple with TCK-AC-M12 and TCK-W-1000-M12 probes
ACCESSORIES / SPARE PARTS	
TCK-250-3-M12	Type K thermocouple, d=3 mm, L=250 mm, M12 connector attachment
TCK-250-1.5-M12	Type K thermocouple, d=1.5 mm, L=100 mm, M12 connector attachment
TCK-W-1000-M12	Type K thermocouple, exposed junction, L=1000 mm, M12 connector attachment
TCK-AC-M12	Type K thermocouple with arch, M12 connector attachment
COMPLETE MEASUREMENT KIT	
MY-TC-KIT	Portable transmitter for thermocouple with TCK-AC-M12, TCK-250-3-M12, TCK-250-1.5-M12, and TCK-W-1000-M12 probes

TEMPERATURE/HUMIDITY MEASUREMENT SYSTEM

Code	Description
TRANSMITTER	
MY-UT	Portable temperature/humidity transmitter with UT-M12 probe
ACCESSORIES / SPARE PARTS	
UT-M12	Temperature/relative humidity probe, M12 connector attachment
CONFIGURATION APP	
PIV-APP	Android app for data visualization, scaling, and sharing. Works with smartphones using USB OTG

The technical data and diagrams in this document are indicative and not binding.

4.9



MULTIFUNCTION CALIBRATORS

TEST-4

PORTABLE SIGNAL GENERATOR / MEASUREMENT DEVICE FOR ANALOG SIGNALS

Test-4 is an essential tool for calibration sessions, laboratory tests, and the simulation of analog measurements controlled by industrial devices (PLCs, regulators, data acquisition systems, etc.). With a total precision of less than 0.1% and a resolution of 1 µA / 1 mV, Test-4 guarantees optimal calibration results. It allows for the simulation of both voltage and current ramps (active or passive). It is equipped with a low-power OLED display, multi-turn trimmer knob, and a non-slip shell. Test-4 can be powered by a 220 Vac network through a dedicated power adapter or by 2 NiMh batteries, providing an average autonomy of 20 hours.

TECHNICAL DATA

GENERAL DATA

Power Supply	2 NiMh AA batteries, 2650 mAh Autonomy: 8 hours (minimum with max load), 20 hours (average) From 220 Vac network via dedicated charger/battery charger
Protection class	IP 20
Operating temperature	0..50°C (recommended)
Humidity	30..90% non-condensing
Dimensions	140 x 75 x 33 mm
Weight	250 g
Isolation	Battery-powered device, intrinsically isolated
Rejection	50-60 Hz
Max frequency Sampling	10 Hz
Input/Output signals	Measurement/Generation voltage: 0..11 V Measurement/Generation current: 0..21 mA Protection ± 30 V
Accuracy	0.1% for each input/output type
Resolution	0,002 mA 0,001 V
Standards	EN61000-6-4; EN61000-6-2; EN61010-1

OPERATIONAL DATA

Function buttons	ESC key for ESC / ON/OFF functions and reset from screensaver after 7 minutes of inactivity Knob: Increase/decrease current/voltage value (by rotating); change of "weight" with value*10N, N=0, 1, 2, 3 (by pressing)
Available languages	Italian, English, German, French, Spanish
Contrast	15 levels
Screensaver	Vertical scroll of display content after 7 minutes of inactivity. Restoration by pressing ESC / ON/OFF key
Function menu	General setup (select operation type, signal type, language, display contrast, encoder sensitivity) Generation (select voltage/current/passive current) Measurement (select voltage/current) Ramp mode for generating currents and voltages
Error signals	Overvoltage: Reading voltage higher than 11 V Undervoltage: Reading voltage lower than -0.2 V Overcurrent: Reading current higher than 21 mA Undercurrent: Reading current lower than -0.1 mA Flashing value: Voltage/Current generation failed

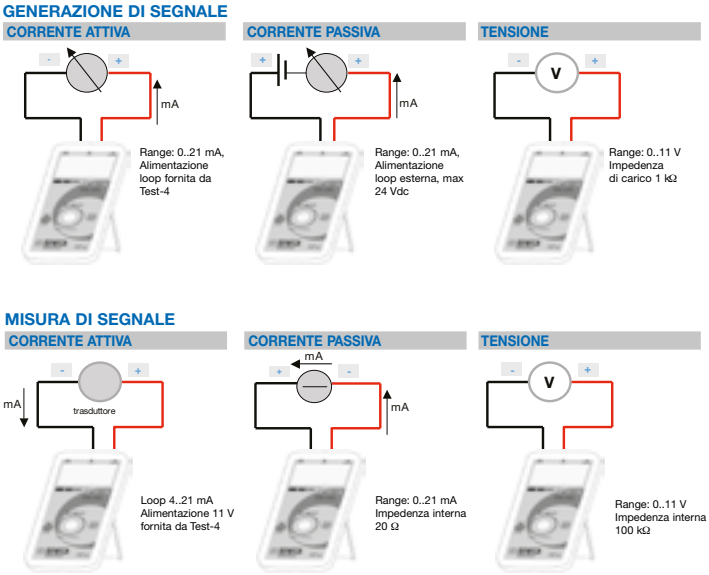
CONNECTIONS

Input/Output	2 mm diameter test leads
Power Supply	Battery charger socket, battery compartment on the back, under protective rubber cover
Micro USB	For future updates

EXAMPLES

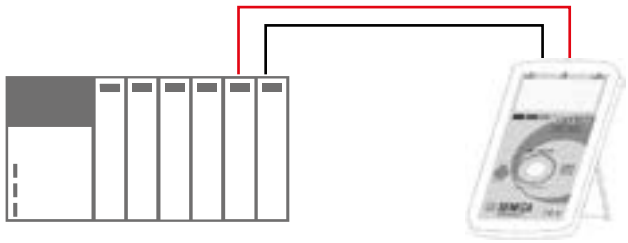
(1) Portable case
(2) Test-4 complete with NiMh 2650 mAh batteries
(3) Charger, (4) Test leads
(5) Operating manual

WIRING DIAGRAMS



EXAMPLES

FIELD SIGNAL SIMULATION



PROCESS CALIBRATION FOR SENSORS, ACTUATORS, POSITIONERS, PLCs, REGULATORS, ETC.

ORDER CODES

Code	Description
TEST-4	Signal generator, portable V-mA meter with ramp simulation
TEST-4-PK	Precision Kit (set of precision test leads and alligator clips) for Test-4
TEST-4-R	Set of precision test leads for Test-4
TEST-4-T	ISO 9001 calibration certificate for Test-4

The technical data and diagrams in this document are indicative and not binding.

MSC
MULTIFUNCTION SMART CALIBRATOR

TECHNICAL DATA

GENERAL DATA

Powered by mains	From 230 Vac network via standard USB charger
Battery-powered	1 Lithium Polymer (LiPo) battery, 3400 mAh; autonomy: 8 hours (minimum @ max load), 20 hours (max)
Protection class	IP20
Operating temperature	-20..50°C (not during charging), 0-45°C during charging
Storage temperature	0..35°C
Humidity	30..90% non-condensing
Isolation	Battery-powered device, intrinsically isolated No isolation from USB port
Overvoltage protection	230 Vac max without permanent damage
Rejection	50/ 60 Hz
Max frequency Sampling	10 Hz
Operating Modes	Measurement, Generation, Datalogger Ramp
Dimensions	88 x 147 x 25 mm
Weight	330 g
Included items	Connection cables (4), charger
Factory calibration certificate	included
Approval	CE
Standards	EN61326-1; EN61010-1

MEASUREMENT ACCURACY

Accuracy	Base accuracy: 0.03%, 0.04% for current
Resolution	1 µA; 1 mV; 5 µV; 0.1°C; 0.1 µV/V

GENERATION ACCURACY

Accuracy	Base accuracy: 0.03%, 0.04% for current
Resolution	1 µA; 1 mV; 5 µV; 0.1°C; 0.02 Ohm; 0.1 µV/V

INTERFACES AND SIGNALS

Buttons	On / Off / Pairing
LED	Power-on indicator LED Communication indicator LED Error indicator LED PAIRING BT indicator LED Datalogger on indicator LED (future) Battery status indicator LED
Buzzer	Buzzer for overload signal and inability to simulate requested value
Standard sockets	# 4 4mm sockets
Thermocouple connection	Mini plug (7.9mm) for thermocouple measurement and simulation
Power Supply	Micro USB
Micro USB	For firmware update or modbus communication (virtual COM)
Wireless communication	Bluetooth Low Energy 4.1 to smartphone and Android or iOS tablet

MEASUREMENT FUNCTIONS

Current	0..24 mA active and passive; protection ±28 V
VOLTAGE (V)	0,0÷27 V
VOLTAGE (mV)	-10mV÷+90mV
Thermocouple	Type J, K, T, E, N, R, S, B, L
Resistance thermometers (2, 3, 4 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2 to +2.4mV/V
Impulse	Max counting frequency 1000 Hz
Frequency	0.1..1000 Hz

GENERATION FUNCTIONS

Current	0.1 to 24 mA active and passive; protection ±28 V
VOLTAGE (V)	0,1÷26 V
VOLTAGE (mV)	-10mV÷+90mV
Thermocouple	Type J, K, T, E, N, R, S, B, L
Resistance thermometers (2 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2 to +2.4mV/V
Impulse	Min 0.5 ms (1 to 24V) adjustable number of pulses
Frequency	0.1..1000 Hz

DATALOGGER

Datalogger	Yes
Sampling Time	>500 ms

RAMP FUNCTION

.	Current/Voltage/TC/RTD/Load Cell
Functions	Single or Loop
Type	Maximum 9 segments, ramp resolution 100 ms, minimum ramp time 1 second

MANAGEMENT APP

Available languages	App in language
O.S / Store	iOS 10.3 or higher (App Store) / Android 4.0.3 or higher (Play Store)
Function Menu	General setup (operation type selection, signal type, language) Measurement (voltage/current/passive current/thermocouple/ resistance thermometers/load cell/impulses; average-min-max value, counter reset, measurement pause; value sharing; scale change) Generation (voltage/current/passive current/thermocouple/resistance thermometers/load cell/impulses; on-off; scale change)
Error Signals	Out of measurement scale Overload generation warning Low battery Internal anomaly

LEGEND

1. Socket for thermocouple measurement/ generation
2. Measurement/generation socket -EX
3. Measurement/generation socket -SN
4. Measurement/generation socket +SN
5. Measurement/generation socket +EX
6. Power ON/OFF button
7. Bluetooth RESET button
8. PWR power indicator LED
9. Bind connection indicator LED
10. Battery status indicator LED
11. Bluetooth/USB communication LED
12. Data recording LED
13. Error signaling LED
14. Micro USB connector for power/ communication
15. RESET button
16. Battery charging status LED

INCLUDED ITEMS

(1) Portable case, (2) MSC complete with batteries, (3) power plug, (4) USB data and charging cable, (5) calibration report, (6) operating manual, (7) test cables

MEASUREMENT RANGE

MAGNITUDE	Unit of Measure	GENERATION	MEASUREMENT
Voltage (high range)	[dc V]	0..26 V	0..26 V
Voltage (low range)	[dc mV]	-10..+90 mV	-10..+90 mV
Active current	[dc mA]	0.1..+24 mA	0..+24 mA
Passive current	[dc mA]	0,1..+24 mA (3..29 V)	0..+24 mA
Pt100	[°C]	-200..+859°C	-200..+850°C
Pt500	[°C]	-200..+859°C	-200..+850°C
PT1000	[°C]	-200..+859°C	-200..+850°C
Cu50 / Cu100	[°C]	-180..+200°C	-180..+200°C
Ni100 / Ni120	[°C]	-80..+260°C	-60..+250°C
Thermocouple J	[°C]	-210..+1200°C	-210..+1200°C
Thermocouple K	[°C]	-270..+1372°C	-200..+1372°C
Thermocouple T	[°C]	-270..+400°C	-200..+400°C
Thermocouple E	[°C]	-270..+1000°C	-200..+1000°C
Thermocouple N	[°C]	-270..+1300°C	-200..+1300°C
Thermocouple R	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple S	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple B	[°C]	0..+1820°C	250..+1820°C
Thermocouple L	[°C]	-200..+800°C	-200..+800°C
Load Cell 350 Ohm	[mV/V]	-0.2..+2.4 mV/V	-0.2..+2.4 mV/V
Pulse / Frequency	[Hz]	01..1000 Hz (1..24 V)	0,1..1000 Hz (3..24 Vdc)

ORDER CODES

Code	Description
MSC	Multifunction Smart Calibrator - Signal generator / meter, Bluetooth app-based calibrator
MSC TOOL	Free Windows application for firmware updates and data extraction in .csv format
USB-ISO	PC-USB isolator (accessory)
MSC-POWER	1A / 5V power supply (replacement)

The technical data and diagrams in this document are indicative and not binding.

MSC-D

MULTIFUNCTION SMART CALIBRATOR WITH LCD DISPLAY

TECHNICAL DATA

GENERAL DATA

Powered by mains	From 230 Vac network via standard USB charger
Battery-powered	1 Lithium Polymer (LiPo) battery, 3400 mAh; autonomy: 8 hours (minimum @ max load), 20 hours (max)
Protection class	IP20
Operating temperature	-20..50°C (not during charging), 0-45°C during charging
Storage temperature	0..35°C
Humidity	30..90% non-condensing
Isolation	Device powered with LCD display No isolation from USB port
Overvoltage protection	230 Vac max without permanent damage
Rejection	50/ 60 Hz
Max frequency Sampling	10 Hz
Operating Modes	Measurement, Generation, Datalogger Ramp
Dimensions	88 x 147 x 25 mm
Weight	330 g
Included items	Connection cables (4), charger
Factory calibration certificate	included
Approval	CE
Standards	EN61326-1; EN61010-1

MEASUREMENT ACCURACY

Accuracy	Base accuracy: 0.03%, 0.04% for current
Resolution	1 µA; 1 mV; 5 µV; 0.1°C; 0.1 µV/V

GENERATION ACCURACY

Accuracy	Base accuracy: 0.03%, 0.04% for current
Resolution	1 µA; 1 mV; 5 µV; 0.1°C; 0.02 Ohm; 0.1 µV/V

INTERFACES AND SIGNALS

Display	Capacitive touch screen, TFT-LCD color 3.5" resolution 320x480, with backlight
Buttons	On / Off / Pairing
LED	Power-on indicator LED Communication indicator LED Error indicator LED PAIRING BT indicator LED Datalogger on indicator LED (future) Battery status indicator LED
Buzzer	Buzzer for overload signal and inability to simulate requested value
Standard sockets	# 4 4mm sockets
Thermocouple connection	Mini plug (7.9mm) for thermocouple measurement and simulation
Power Supply	Micro USB
Micro USB	For firmware update or modbus communication (virtual COM)
Communication	Ethernet

MEASUREMENT FUNCTIONS

Current	0..24 mA active and passive; protection ±28 V
VOLTAGE (V)	0,0÷27 V
VOLTAGE (mV)	-10mV÷+90mV
Thermocouple	Type J, K, T, E, N, R, S, B, L
Resistance thermometers (2, 3, 4 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2 to +2.4mV/V
Impulse	Max counting frequency 1000 Hz
Frequency	0.1..1000 Hz

GENERATION FUNCTIONS

Current	0.1 to 24 mA active and passive; protection ±28 V
VOLTAGE (V)	0,1÷26 V
VOLTAGE (mV)	-10mV÷+90mV
Thermocouple	Type J, K, T, E, N, R, S, B, L
Resistance thermometers (2 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2 to +2.4mV/V
Impulse	Min 0.5 ms (1 to 24V) adjustable number of pulses
Frequency	0.1..1000 Hz

DATALOGGER

Datalogger	Yes
Sampling Time	>500 ms

RAMP FUNCTION

.	Current/Voltage/TC/RTD/Load Cell
Functions	Single or Loop
Type	Maximum 9 segments, ramp resolution 100 ms, minimum ramp time 1 second

MANAGEMENT APP

Available languages	App in language
O.S / Store	iOS 10.3 or higher (App Store) / Android 4.0.3 or higher (Play Store)
Function Menu	General setup (operation type selection, signal type, language) Measurement (voltage/current/passive current/thermocouple/ resistance thermometers/load cell/impulses; average-min-max value, counter reset, measurement pause; value sharing; scale change) Generation (voltage/current/passive current/thermocouple/resistance thermometers/load cell/impulses; on-off; scale change)
Error Signals	Out of measurement scale Overload generation warning Low battery Internal anomaly

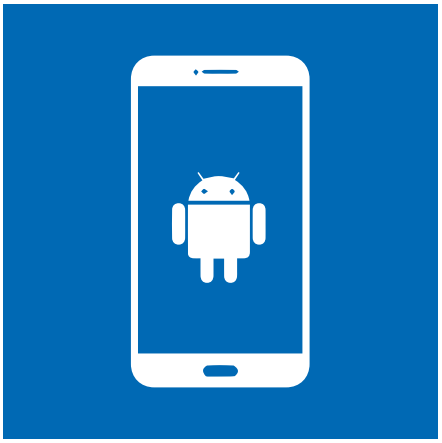
MEASUREMENT RANGE

MAGNITUDE	Unit of Measure	GENERATION	MEASUREMENT
Voltage (high range)	[dc V]	0..26 V	0..26 V
Voltage (low range)	[dc mV]	-10..+90 mV	-10..+90 mV
Active current	[dc mA]	0.1..+24 mA	0..+24 mA
Passive current	[dc mA]	0,1..+24 mA (3..29 V)	0..+24 mA
Pt100	[°C]	-200..+859°C	-200..+850°C
Pt500	[°C]	-200..+859°C	-200..+850°C
PT1000	[°C]	-200..+859°C	-200..+850°C
Cu50 / Cu100	[°C]	-180..+200°C	-180..+200°C
Ni100 / Ni120	[°C]	-80..+260°C	-60..+250°C
Thermocouple J	[°C]	-210..+1200°C	-210..+1200°C
Thermocouple K	[°C]	-270..+1372°C	-200..+1372°C
Thermocouple T	[°C]	-270..+400°C	-200..+400°C
Thermocouple E	[°C]	-270..+1000°C	-200..+1000°C
Thermocouple N	[°C]	-270..+1300°C	-200..+1300°C
Thermocouple R	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple S	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple B	[°C]	0..+1820°C	250..+1820°C
Thermocouple L	[°C]	-200..+800°C	-200..+800°C
Load Cell 350 Ohm	[mV/V]	-0.2..+2.4 mV/V	-0.2..+2.4 mV/V
Pulse / Frequency	[Hz]	0,1..+24 mA (1..24 V)	0,1..1000 Hz (3..24 Vdc)

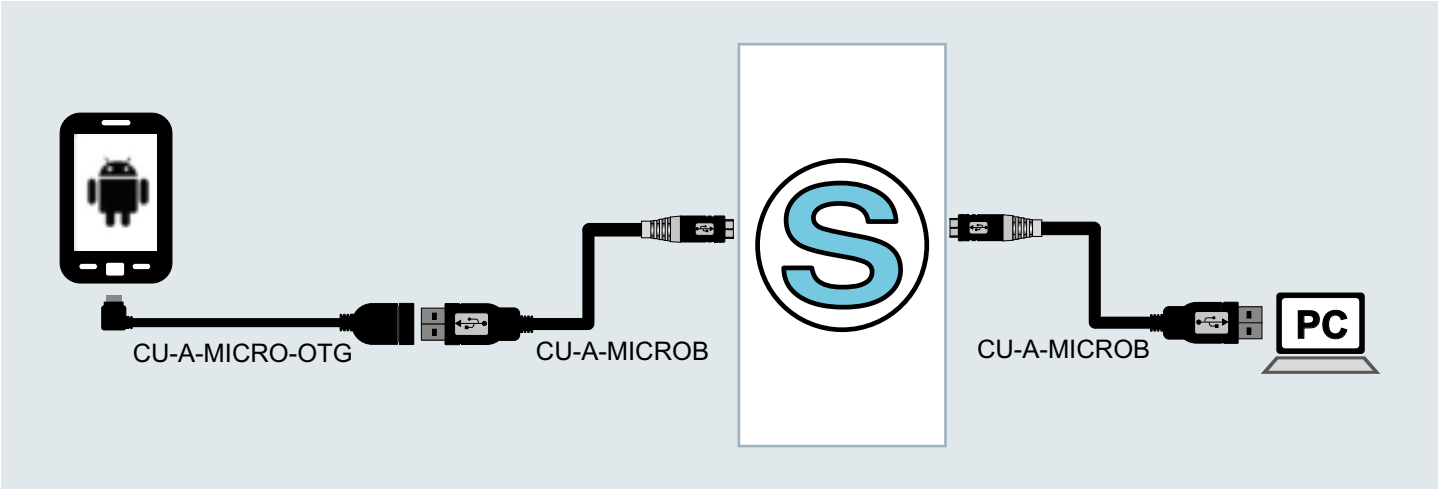
ORDER CODES

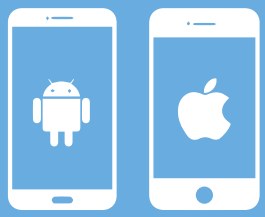
Code	Description
MSC-D	Multifunction Smart Calibrator - Signal generator / meter, Bluetooth app-based calibrator with LCD display
MSC TOOL	Free Windows application for firmware updates and data extraction in .csv format
USB-ISO	PC-USB isolator (accessory)
MSC-POWER	1A / 5V power supply (replacement)

The technical data and diagrams in this document are indicative and not binding.



SENECA APP FOR ANDROID / IOS TERMINALS





Mobile Phone with USB OTG support

Google play

- Direct access and settings via user-friendly interface
- No programming skills required
- Rapid configuration upload/download and configuration replication
- Availability of operating manuals on smartphone
- Your smartphone becomes the best configurator

App	Programmable products	Play Store	Supported Android versions	APP Store	Supported iOS versions	OTG required	Download from SENECA website
MYALARM3 CLOUD	MyALARM3 Cloud; MyALARM3 Cloud W-AIR	Yes	10+	Yes	10+	-	-
EASY SETUP APP	Z170REG-1, Z109REG2-1, Z1090REG-BP, Z109PT2-1, Z109UI2-1, Z109TC-1, Z-KEY, S203RC-D, S203TA-D	Yes	4.0.1+	-	-	Yes	-
MSC	MSC	Yes	5+	Yes	12.1+	-	-
SENECA SMS	B-ALARM, MYALARM2, MY ALARM SEAL, Z-GPRS3, Z-LTE, Z-PASS1, Z-PASS2, R-PASS, Z-PASS2-RT	Yes	-	Yes	-	-	-
VPN CC	VPN BOX	Yes	4.1+	-	-	-	-
PIV app	MY-PT, MY-UT, MY-TC	Yes	From 4.0.1 to 8	-	-	Yes	-
SENECA TEMP (*)	MYALARM2, Z-GPRS3, Z-LTE		-	-	-	-	Yes

(*) Apps no longer supported

CONNECTED AND GREEN PRODUCTS

SENECA offers a wide range of high-performance, cost-effective products and systems capable of powering, isolating, converting, acquiring, displaying, and securely transmitting most industrial signals via cable, bus, or radio, ensuring the integrity of the data processing cycle.
SENECA provides a comprehensive catalog of high-performance and cost-effective products and systems. SENECA's data collection, interconnection, remote control, and visualization solutions strategically support the customer's business in the digital transformation process and consumption reduction, aligning with Industry 4.0 and 5.0 models.
SENECA controllers, dataloggers, and remote alarm, remote assistance, and remote control units meet the growing need for data collection, real-time analysis, active monitoring, and integration with IT systems in automation and plant supervision, with support for IoT protocols such as Mqtt, OPC UA, and http post.
In terms of energy savings, SENECA offers systems with high connectivity standards: the values recorded by the next-generation network analyzers are available in standard formats for supervision, remote control, IoT, and Cloud systems.

SENECA products for Industry 4.0/5.0 projects

Ethernet / Profinet I/O Modules

EC 61131-3 controllers

Advanced HMI

Remote alarm unit

Cloud-based Remote Alarm Units

Smart Datalogger

RTU

Protocol Conversion Gateways

IIoT Edge Gateway

Radio Modules

Network Analyzers

Energy counters

Product correspondence - interconnection technologies

	TCP-IP	Industrial Ethernet	OPC UA	MQTT(s)	http post	Web API, Cloud	FTP / HTTP / HTTPS / SMTP / SNMP	VPN / Remote Access	Wireless (UHF, BLE, LoRa, Wi-Fi)
Ethernet / Profinet I/O Modules	x	x							
CPU / RTU IEC 61131-3	x	x	x	x	x		x	x	
HMI VISUAL	x								
MYALARM2							x		
MYALARM3						x			
Datalogger			x	x	x	x			
Protocol Converter Gateways	x	x							
IIoT Edge Gateway	x	x	x	x	x	x	x	x	
Radio Modules									x
Network Analyzers	x			x					
Energy counters	x								

ALPHABETICAL INDEX

ALPHABETICAL INDEX

ALPHABETICAL INDEX

ALPHABETICAL INDEX

NOTES

You Tube

https://www.youtube.com/@SENECAutomation

WEBSITE

Visit our website and discover a world of efficient automation products and solutions

www.seneca.it

SENECA

CONTACTS AND INFORMATION

Address

Legal and Operational Headquarters:
Via Austria 26: Via Austria 26 - 35127 Padova (I)
Tel. +39 049 8705 359 (408)
Fax +39 049 8706287

Web

Website: www.seneca.it
Documentation: www.seneca.it/cataloghi-flyers/
Support: www.seneca.it/supporto-e-assistenza/
E-commerce: www.seneca.it/vetrina/

Email

General information: info@seneca.it
Sales office: commerciale@seneca.it
Quality Assurance: qualita@seneca.it
Technical product support: supporto@seneca.it

Follow us on social media

CG2409IT - September 2024