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MODBUS I/O MODULES, 8 CH INPUTS FROM THERMOCOUPLES

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Z-8TC-1, Z-8TC-LAB, Z-8TC-SI, Z-8TC-SI-LAB

Z-8TC-1, Z-8TC-LAB, Z-8TC-SI, Z-8TC-SI-AB are digital converters for thermocouple type J,K,E,N,S,R,B,T,L, with 8 channels measurement. The modules feature RS485 ModBUS RTU communication, cold junction compensation, high accuracy, overall isolation up to 1.5kV. ''SI' 'versions feature higher resolution up to 24 bits. The ''LAB" versions feature interchangeable terminals in pairs. Each thermocouple has its own ''flying" terminal, which is easy and quick to use particularly for laboratory measurements.

Thermocouple acquisition type J,K,E,N,S,R,B,T,L (EN600584-1,GOST8.585)

Reading formats in voltage (V) or degrees (°C)

High speed of acquisition

Programmable temperature value in case of failure or shutdown

Simplified cabling via BUS for DIN rail

Channels independently enabled and configurable

Protection against ESD up to 4kV

Special versions SI (highresolution) and LAB (interchangeable terminals)

Operating temperature -25..+70°C

MicroUSB and RS485 ModBUS RTU communication interfaces

	Z-8TC-1	Z-8TC-SI	Z-8TC-LAB	Z-8TC-SI-LAB
	8-CH inputs from thermocouples @15bits Modbus module	**8-CH inputs from thermocouples @24bits Modbus module**	**8-CH inputs from thermocouples @15bits Modbus module, interchangeable terminals**	**8-CH inputs from thermocouples @24bits Modbus module, interchangeable terminals**
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac (50-60 Hz)	10..40 Vdc; 19..28 Vac (50-60 Hz)	10..40 Vdc; 19..28 Vac (50-60 Hz)	10..40 Vdc; 19..28 Vac (50-60 Hz)
Power consumption	Max 0.6 W	Max 0.6 W	Max 0.6 W	Max 0.6 W
Isolation	1,500 Vac 6-way	1,500 Vac 3-way	1,500 Vac 6-way	1,500 Vac 3-way
ESD protection	4 kV	4 kV	4 kV	4 kV
Status indicators	Power supply Error Data transmission Data reception	Power supply Error Data transmission Data reception	Power supply Error Data transmission Data reception	Power supply Error Data transmission Data reception
Degree of protection	IP20	IP20	IP20	IP20
Operating tempure	-20..+65 °C	-20..+65 °C	-20..+65 °C	-20..+65 °C
Storage temperature	-20..+85 °C	-20..+85 °C	-20..+85 °C	-20..+85 °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
Weight	140 g	140 g	140 g	140 g
Case	PA6, color black	PA6, color black	PA6, color black	PA6, color black
Connections	Removable 4-way terminal block, 3.5mm pitch, max. cable cross section 1.5mm2 IDC10 rear connector for DIN rail Nr.1 Micro USB 2.0 front connector for ModBUS RTU configuration and communication	Removable 4-way terminal block, 3.5mm pitch, max. cable cross section 1.5mm2 IDC10 rear connector for DIN rail Nr.1 Micro USB 2.0 front connector for ModBUS RTU configuration and communication	Removable 4-way terminal block, interchangeable, 3.5mm pitch, max cable cross section 1.5mm2 IDC10 rear connector for DIN rail Nr.1 Micro USB 2.0 front connector for ModBUS RTU configuration and communication	Removable 4-way terminal block, interchangeable, 3.5mm pitch, max cable cross section 1.5mm2 IDC10 rear connector for DIN rail Nr.1 Micro USB 2.0 front connector for ModBUS RTU configuration and communication
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)
Data Memory	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years
Approvals	CE, UKCA	CE, UKCA	CE, UKCA	CE, UKCA
COMMUNICATION				
Interfaces	RS485 (IDC10), 2 wires Micro USB	RS485 (IDC10), 2 wires Micro USB	RS485 (IDC10), 2 wires Micro USB	RS485 (IDC10), 2 wires Micro USB
Speed	Up to 115 kbps	Up to 115 kbps	Up to 115 kbps	Up to 115 kbps
Protocol	ModBUS RTU	ModBUS RTU	ModBUS RTU	ModBUS RTU
Communication time	<10 ms	<5 ms	<10 ms	<5 ms
Channel sampling time	20..90 ms	25..400 ms	20..90 ms	25..400 ms
Distance	Up to 1.200 m	Up to 1.200 m	Up to 1.200 m	Up to 1.200 m
Connectivity	Max 32 nodes	Max 32 nodes	Max 32 nodes	Max 32 nodes
SETTINGS				
DIP Switch	x	x	x	x
EASY SETUP	x	x	x	x
Z-NET4	x	x	x	x
INPUT / OUTPUT / MEASUREMENT				
No. of channels	8 inputs that can be activated and configured individually	8 inputs that can be activated and configured individually	8 inputs that can be activated and configured individually	8 inputs that can be activated and configured individually
Type	Thermocouple J, K, R, S, T. B, E, N (EN 600584-1, GOST R8 585) Ranges from -210 to + 1820 °C Span: -10.1..81.4 mV Shunt up to 70 mV	Thermocouple J, K, R, S, T. B, E, N, L (EN 600584-1, GOST R8 585) Ranges from -210 to + 1820°C Span: -±150mV Shunt up to 70mV	Thermocouple J, K, R, S, T. B, E, N (EN 600584-1, GOST R8 585) Ranges from -210 to + 1820 °C Span mV: -10.1..81.4 mV Shunt up to 70mV	Thermocouple J, K, R, S, T. B, E, N, L (EN 600584-1, GOST R8 585) Ranges from -210 to + 1820°C Span: -±150mV Shunt up to 70mV
Measurement format	Voltage (µV), temperature (°C) on Integer 16 bit and floating point 32 bit, direct or swapped	Voltage (µV), temperature (°C) on Integer 16 bit and floating point 32 bit, direct or swapped	Voltage (µV), temperature (°C) on Integer 16 bit and floating point 32 bit, direct or swapped	Voltage (µV), temperature (°C) on Integer 16 bit and floating point 32 bit, direct or swapped
Safety value	x	x	x	x
INPUT PAIR SETTINGS				
Stabilization filter	x	x	x	x
Rejection	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Cold junction comp.	x	x	x	x
ADC				
Resolution	15 bit	24 bit	15 bit	24 bit
Accuracy class	0,1%	0,05%	0,1%	0,05%

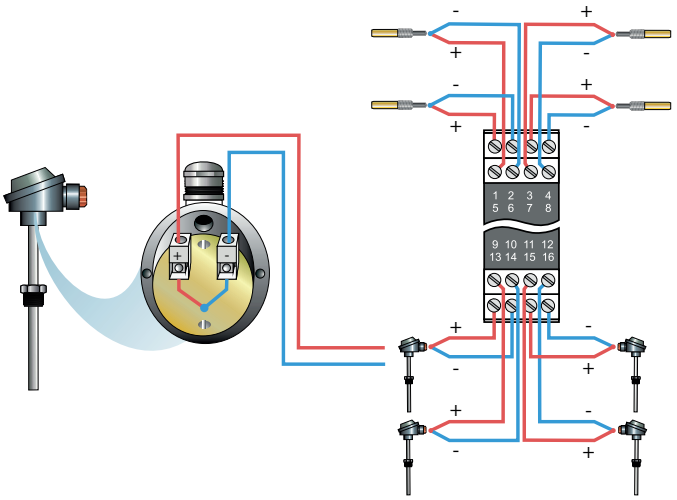
Technical data and diagrams on this document are to be considered indicative and not binding

MODBUS I/O MODULES, 8 CH INPUTS FROM THERMOCOUPLES

WIRING DIAGRAM

THERMOCOUPLES

Thermocouples are among the most widely used because they are inexpensive easily replaceable, standardized and suitable for measuring a wide range of temperatures Their limitation main limitation is accuracy, as they are difficult to obtain errors systematically smaller than one degree centigrade In addition thermocouples are nonlinear devices The principle of operation of the thermocouple was discovered in 1821 by Thomas Johann Seebeck The Estonian scientist discovered that in a circuit consisting of two conductors of a different nature, subjected to a gradient of temperature a potential difference is established It is this phenomenon called the Seebeck effect, to be exploited by the thermocouples.



TC MATERIALS AND CABLES

Type	Alloy	Cables standards					
		ANSI MC96.1		DIN 43710		IEC 584-3	
		-	+	-	+	-	+
J	Fe-Co	red	white	blue	red	white	black
K	Cr-Al	red	yellow	green	red	white	green
R	Pt13%Rh-Pt	red	black	white	red	white	orange
S	Pt10%Rh-Pt	red	black	white	red	white	orange
T	Cu-Co	red	blue	brown	red	white	brown
E	Cr-Co	red	purple	black	red	white	purple
B	Pt30%Rh-Pt6%Rh	red	gray	red	gray	white	gray
N	Nicrosil-Nisil	red	brown	-	-	white	pink

ORDER CODES

Code	Descriptoin
Z-8TC-1	8-CH thermocouples input @15bits Modbus module
Z-8TC-LAB	8-CH thermocouples input @15bits Modbus module, interchangeable terminals
Z-8TC-SI	8-CH thermocouples input @24bits Modbus module
Z-8TC-SI-LAB	8-CH thermocouples input @24bits Modbus module, interchangeable terminals
ACCESSORIES	
CU-A-MICROB	USB-A Micro USB-B Plug Cable 5 P
Z-PC-DIN2-17.5	DIN rail quick mounting bracket 2 slots pitch 17.5mm
Z-PC-DIN8-17.5	DIN rail quick mounting bracket 8 slots pitch 17.5mm
Z-PC-DINAL2-17.5	DIN rail quick mounting bracket head + 2 slots 17.5 mm pitch
Z-SUPPLY	Single-phase switching power supply 24V @ 1.5 A
SOFTWARE	
EASY SETUP	SENECA programmable instruments plug&play configurator
Z-NET4	SENECA system configurator for automation projects

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