

I/O MODULES R LINE (ModBUS, Ethernet, IO Profinet)



1

1.2

R LINE

The R Line I/O modules are tools designed for flexible wiring requirements, reduced installation spaces, high I/O density applications with integrated ModBUS/Ethernet/Profinet IO communication. The configuration can be performed through dedicated software, web server with HTML5 support and DIP-switch.

The Profinet IO versions provide for configuration using CODESYS softPLC software and Siemens TIA Portal / Simatic / Step7 design environment. Able to power external sensors and equipped with isolation between inputs, outputs and other low voltage circuits equal to 1,500 Vac, the R Line modules can be connected in daisy chain mode with fault-bypass to ensure the Ethernet connection even in the case of failure of a module in the chain.

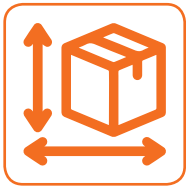


GENERAL

HIGHLIGHTS

MODBUS / ETHERNET MODULES

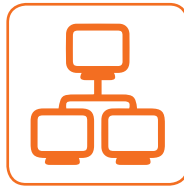
IO PROFINET MODULES



FLEXIBLE AND SPACE-
SAVING APPLICATIONS



HIGH I/O DENSITY



DOUBLE PROTOCOL



CONFIGURATION
VIA WEB SERVER



IO PROFINET
REAL-TIME CLASS1



CONFIGURATION
VIA TIA PORTAL



INTEGRATED
NETWORKING



DAISY CHAIN



HW INTEGRATION



RETENTIVE COUNTERS
6 KHZ, 32 BIT



CONFIGURATION
VIA CODESYS



Tbus=1ms

REDUCED
SCAN TIME



FAULT-BYPASS



INDUSTRIAL STRENGTH



FAULT-BYPASS
MIRRORING-P2P



MODBUS
PASS-THROUGH



MACHINE AUTOMATION

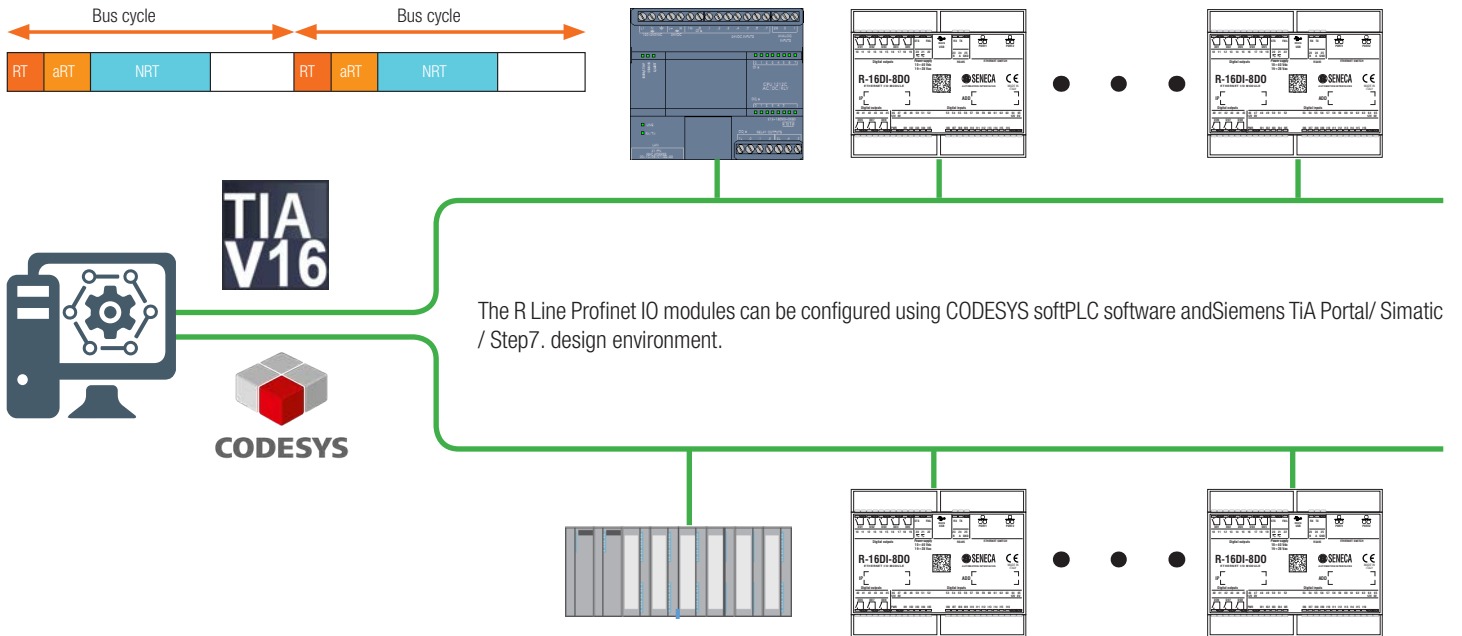


DECENTRED
PERIPHERY

IO PROFINET MODULES

RT Class 1

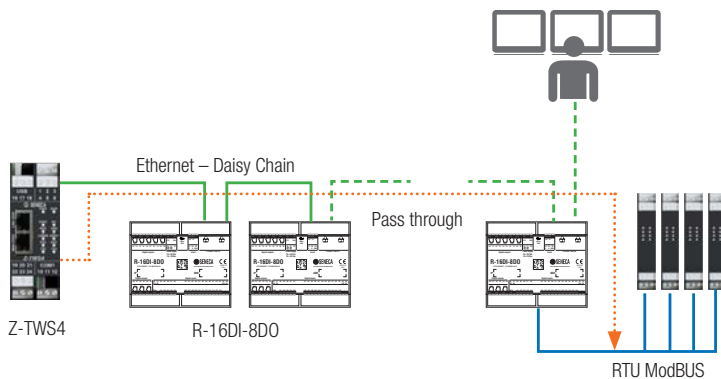
The R Line modules support Profinet IO Class 1 (RT), variant in which the various devices are not synchronised and each operate with its own cycle time. At the beginning, the transmission of cyclical RT data takes place, followed by acyclical RT data, such as alarms. At the end, a portion of bandwidth is reserved for non-real-time communication that can coexist on the same physical network (for example based on TCP/IP). In class 1 the aim is to achieve isochrony in software mode, relying on Ethernet priorities, with Profinet packets defined as priority 6 and managed by standard switches.



EXAMPLES OF CONNECTION AND ARCHITECTURE

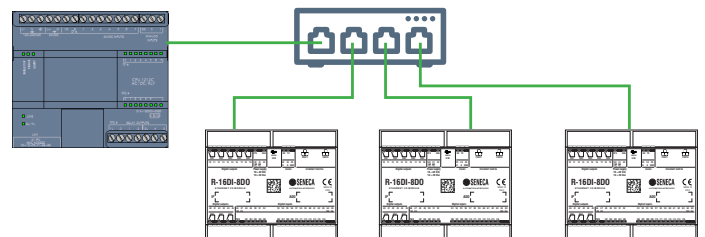
MODBUS / ETHERNET MODULES

ETHERNET DAISY CHAIN, MODBUS PASS-THROUGH



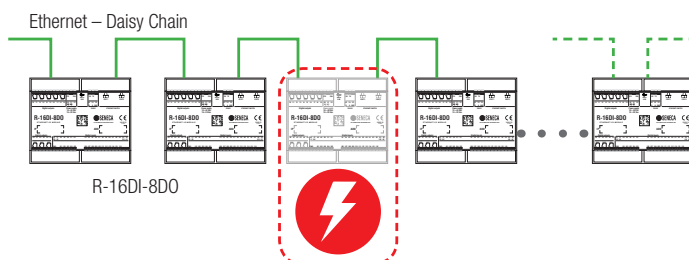
IO PROFINET MODULES

EXAMPLE OF STAR ARCHITECTURE (WITH SWITCH)



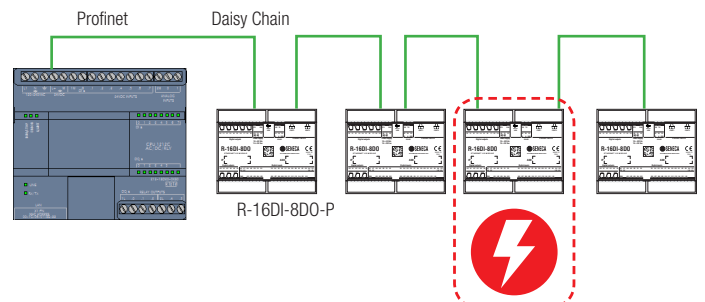
By connecting the communication nodes to a switch with multiple PROFINET ports, a network topology with a star structure is automatically created, thanks to which the entire network continues to function if a single device fails.

FAULT BY-PASS



Ethernet connection and data transmission active even in the event of failure or power failure of a module in the chain.
In this way the availability and continuity of the service are guaranteed.

EXAMPLE OF DAISY CHAIN ARCHITECTURE WITH LAN FAULT BY-PASS



Ethernet connection and data transmission active even in the event of failure or power failure of a module in the chain.
In this way the availability and continuity of the service are guaranteed.

DIGITAL I/O MODULES

	R-16DI-8DO	R-16DI-8DO-P	R-32DIDO	R-32DIDO-P
	Modbus ETHERNET  16-CH digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU	PROFINET  16-CH digital inputs / 8 digital relay outputs Profinet IO	Modbus ETHERNET COMING SOON  32-CH digital inputs / outputs Modbus TCP-IP / Modbus RTU	PROFINET  32-CH digital inputs / outputs Modbus Profinet IO
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Auxiliary voltage output	12 Vdc / 40 mA	12 Vdc / 40 mA	-	-
Max consumption	3 W	3 W	3 W	3 W
Max isolation	1.5 kVac (3 points)	1.5 kVac (3 points)	1.5 kVac (3 points)	1.5 kVac (3 points)
Status indicators	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C	-25..+65°C	-25..+65°C
Dimension (l x h x d)	106 x 90 x 32 mm	106 x 90 x 32 mm	106 x 90 x 32 mm	106 x 90 x 32 mm
Weight	170 g	170 g	170 g	170 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)
Data Memory	Memory (FeRAM) for counters backup	-	Memory (FeRAM) for counters backup	-
COMMUNICATION				
Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-	Up to 128 nodes without repeater and max speed 115 kbps	-
INPUT DATA				
Number of Channels	16 Digital	16 Digital	-	-
Type and Range	PNP with internal / external power supply, NPN with internal power supply; Off / On threshold: <8V; >9V	PNP with internal / external power supply, NPN with internal power supply; Off / On threshold: <8V; >9V	-	-
Max. frequency	5 kHz, 32-bit retentive counters	-	50 Hz, 32-bit retentive counters	-
Current consumption	2.25 mA	2.25 mA	-	-
Conformity	IEC 6113-2 Type 1 & 3	IEC 6113-2 Type 1 & 3	-	-
OUTPUT DATA				
Number of Channels	8 Digital, isolated from each other	8 Digital, isolated from each other, individually configurable	-	-
Type	SPST dry contact relay	SPST dry contact relay	-	-
Voltage / Current mx	30 V ac-dc / 1 A	30 V ac-dc / 1 A	-	-
Response time	20 ms (P2P)	20 ms (P2P)	-	-
Duration of contacts	5*10 ⁶ mech. op. / 105 op. with load	5*10 ⁶ mech. op. / 105 op. with load	-	-
INPUT / OUTPUT DATA				
Number of Channels	-	-	32 digital inputs/outputs	32 digital inputs/outputs
Type and Range	-	-	ON/OFF Inputs: > 9 V; < 4 V; Vmax: 24 V MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V	ON/OFF Inputs: > 9 V; < 4 V; Vmax: 24 V MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V
STANDARD				
Certifications	EC	EC	EC	EC

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

ANALOG MODULES

	R-8RTD-8DIDO	R-8RTD-8DIDO-P	R-SG	R-SG-P
	  COMING SOON	  COMING SOON	  COMING SOON	  COMING SOON
	8-CH thermoresistance inputs + 8 digital inputs/outputs Modbus TCP-IP/ Modbus RTU	8-CH input thermoresistance + 8 digital inputs/outputs IO Profinet	Strain gauge converter module Modbus TCP-IP / Modbus RTU	Strain gauge converter module IO Profinet
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max consumption	3 W	3 W	TBD	TBD
Max isolation	1.5 kVac (3 points)	1.5 kVac (3 points)	-	-
Status indicators	Power supply STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply STS (IP / DHCP address) IO Profinet Communication	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C	-25..+65°C	-25..+65°C
Dimension (lxhxd)	106 x 90 x 32 mm	106 x 90 x 32 mm	110 x 52 x 32 mm	110 x 52 x 32 mm
Weight	170 g	170 g	80 g	80 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal	EASY SETUP2 configurator Integrated Web Server	CoDeSys TIA Portal
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool Tare or weight threshold calibration	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Tare or weight threshold calibration
Data Memory	Memory (FeRAM) for counters backup	-	Memory (FeRAM) for counters backup	-
COMMUNICATION				
Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	IO Profinet
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-	Up to 128 nodes without repeater and max speed 115 kbps	-
INPUT DATA				
Number of Channels	8 Analog	8 Analog	1 Analog	1 Analog
Type and Range	RTD (Pt100, Pt500, Pt1000, Ni100)	RTD (Pt100, Pt500, Pt1000, Ni100)	Reading and powering up to 4 (350 Ω) or 8 (1,000 Ω) strain gauge load cells, 4 or 6 wire connection, 87 Ω equivalent impedance, sensitivity from to 64 mV / V	Reading and powering up to 4 (350 Ω) or 8 (1,000 Ω) strain gauge load cells, 4 or 6 wire connection, 87 Ω equivalent impedance, sensitivity from to 64 mV / V
Resolution	24 bit ADC	24 bit ADC	24 bit ADC	24 bit ADC
Accuracy	-	-	0.01%	0.01%
Thermal drift	-	-	25 ppm/K	25 ppm/K
INPUT / OUTPUT DATA				
Number of Channels	8 digital inputs/outputs, individually configurable	8 digital inputs/outputs, individually configurable	2 digital inputs/outputs	2 digital inputs/outputs
Type and Range	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V Outputs MOSFET, PNP; max voltage / current: 0.2 A / 24 V	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Outputs MOSFET, PNP; max voltage / current: 0.2 A / 24 V	Tare or weight threshold calibration	Tare or weight threshold calibration
STANDARD				
Certifications	EC	EC	EC	EC

MIXED MODULES

R-8AI-8DIDO

Modbus
ETHERNET

COMING
SOON



8-CH analog inputs, 8 digital inputs/outputs Modbus TCP-IP / Modbus RTU

R-8AI-8DIDO-P

PROFINET

COMING
SOON



8-CH analog inputs / 8 digital inputs / outputs Profinet IO

GENERAL DATA

Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Auxiliary voltage output	12 Vdc / 40 mA	12 Vdc / 40 mA
Max consumption	3 W	3 W
Max isolation	1.5 kVac	1.5 kVac
Status indicators	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C
Dimension (lxhxd)	106 x 90 x 32 mm	106 x 90 x 32 mm
Weight	170 g	170 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Web Server built-in, DIP-switch	CoDeSys TIA Portal, DIP-switch
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)
Data Memory	Memory (FeRAM) for counters backup	-

COMMUNICATION

Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-

INPUT DATA

Number of Channels	8 Analog	8 Analog
Type and Range	Voltage: -30 V ÷ -30 V; -120m V ÷ +120 mV Current: -24 mA ÷ +24 mA Thermocouple: J, K, T, E, N, R, S, B, L Heat resistance: Pt100: -200°C ÷ 200°C (1 channel only for cold coupling comp.)	Voltage: -30 V ÷ -30 V; -120m V ÷ +120 mV Current: -24 mA ÷ +24 mA Thermocouple: J, K, T, E, N, R, S, B, L Heat resistance: Pt100: -200°C ÷ 200°C (1 channel only for cold coupling comp.)
Max. frequency	50 Hz, 32-bit retentive counters	-
Resolution	24 bit ADC	24 bit ADC

INPUT / OUTPUT DATA

Number of Channels	8 digital inputs/outputs, individually configurable	8 digital inputs/outputs, individually configurable
Type and Range	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Impedance: 9 kΩ MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Impedance: 9 kΩ MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V

STANDARD

Certifications	EC	EC
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