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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

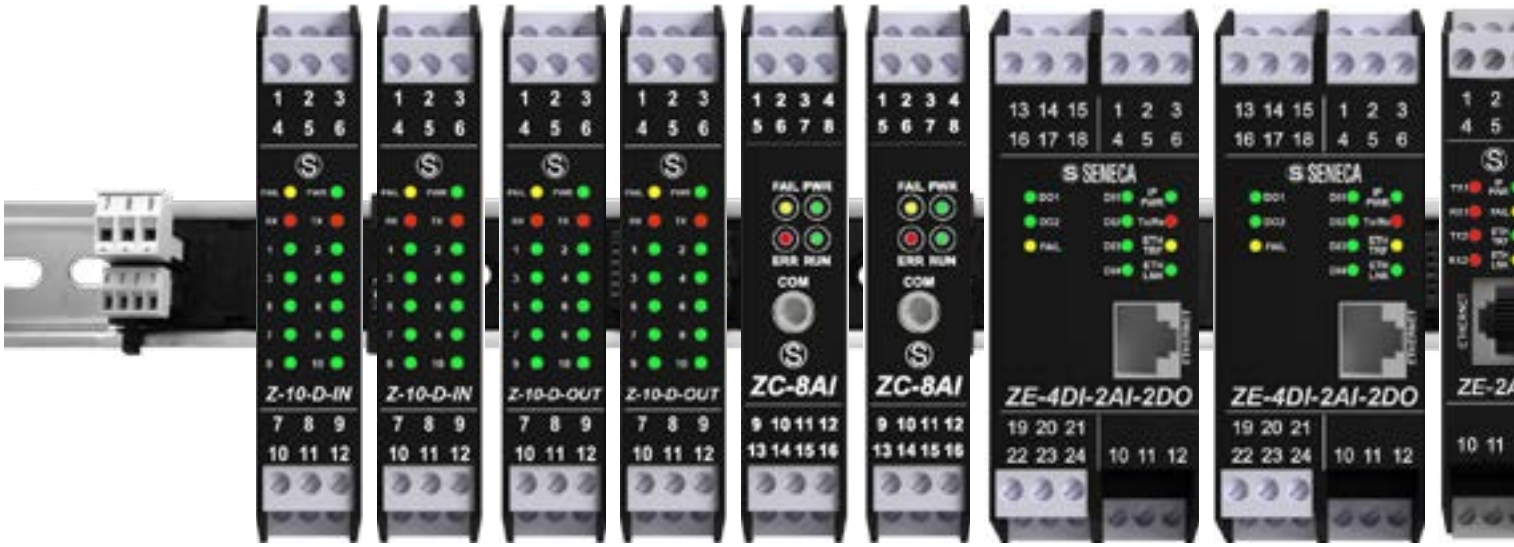
Scalable and Distributed I/O Modules

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

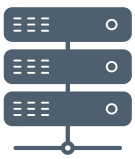


Protocol Conversion Gateways

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

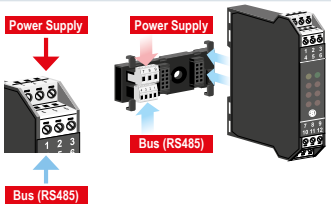
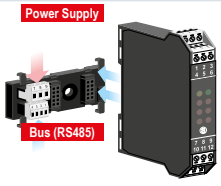


IoT / Cloud Platforms



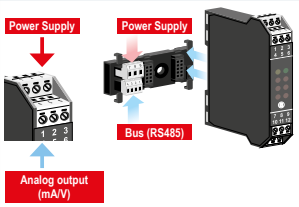
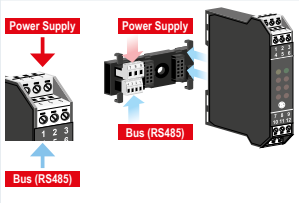
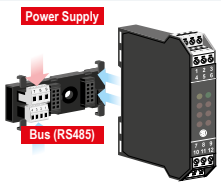
Data Center

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			

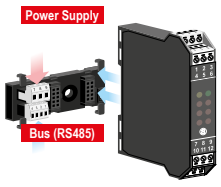
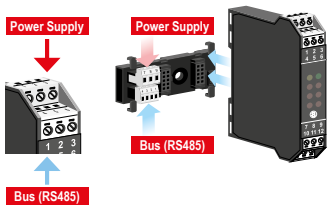
The technical data and diagrams in this document are indicative and not binding.

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			

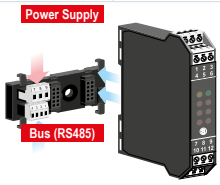
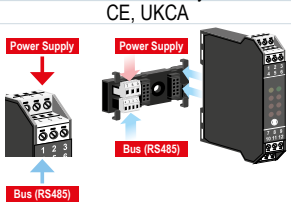
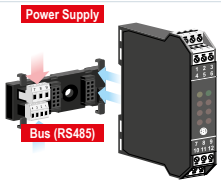
The technical data and diagrams in this document are indicative and not binding.

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		

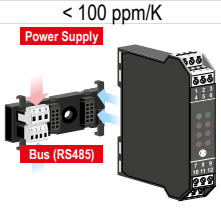
The technical data and diagrams in this document are indicative and not binding.

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			

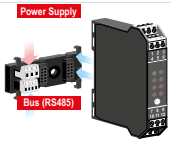
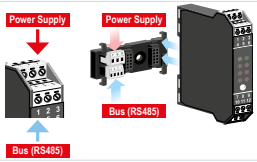
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TEMPERATURE I/O MODULES MODBUS RTU

	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			

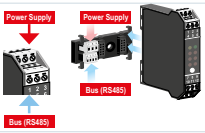
The technical data and diagrams in this document are indicative and not binding.

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		

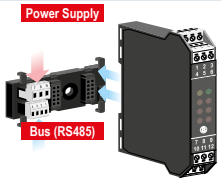
The technical data and diagrams in this document are indicative and not binding.

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		

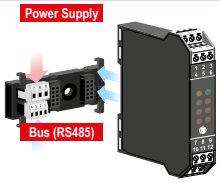
The technical data and diagrams in this document are indicative and not binding.

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

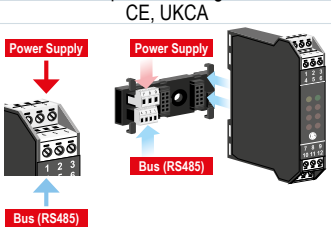
	R-16DI-8DO-P	R-32DIDO-2-P	R-SG3-P
			
	PROFINET I/O MODULES Module with 16 digital inputs / 8 digital relay outputs Profinet IO	**Module with 32 digital inputs/outputs Modbus Profinet IO Strain gauge converter module Profinet IO Reading and supply up to 4 (350Ω) or 8 (1,000Ω) strain gauge load cells, 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

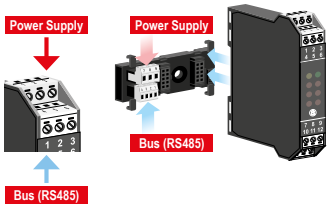
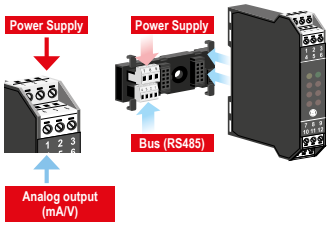
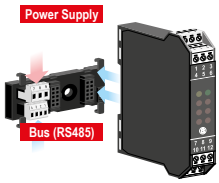
	R-4RTD-8DIDO-P	R-4AO-8DIDO-P	R-8AI-8DIDO -2-P
			
	Module with 4 RTD inputs, 8 digital inputs/ outputs	**Profinet Module with 4 analog outputs, 8 digital inputs/outputs Profinet**	**Module with 8 analog inputs, 8 digital inputs/ outputs Profinet**
DIGITAL INPUTS			
Number of channels	4 inputs		8 Analog
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

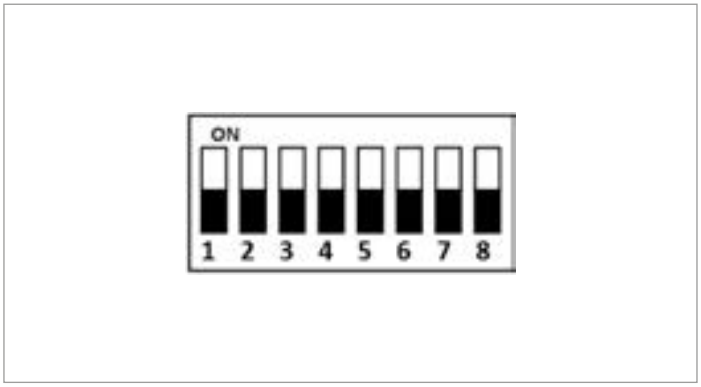
	DESCRIPTION	SLOT	PITCH	TERMINAL POWER/BUS	HOT SWAPPING	DIN RAIL MOUNTING
	**Z-PC-DINAL1-35** Quick DIN rail mounting support – head +1 slot P=35 mm	1	35 mm	Yes	Yes	Yes
	**Z-PC-DINAL2-17.5** Quick DIN rail mounting support – head +2 slot P=17.5 mm	2	17.5 mm	Yes	Yes	Yes
	**Z-PC DINAL2-52.5** Quick DIN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

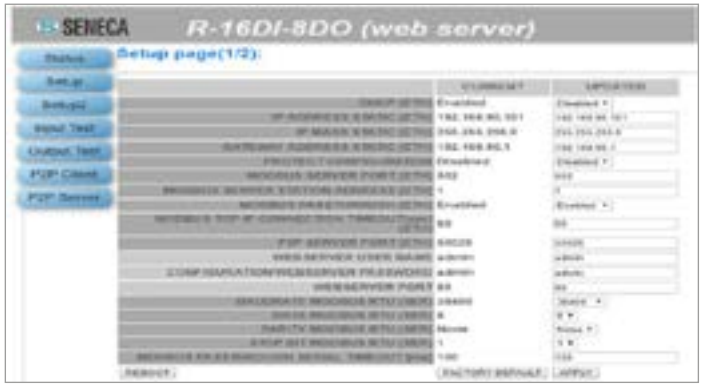
DIP SWITCH

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



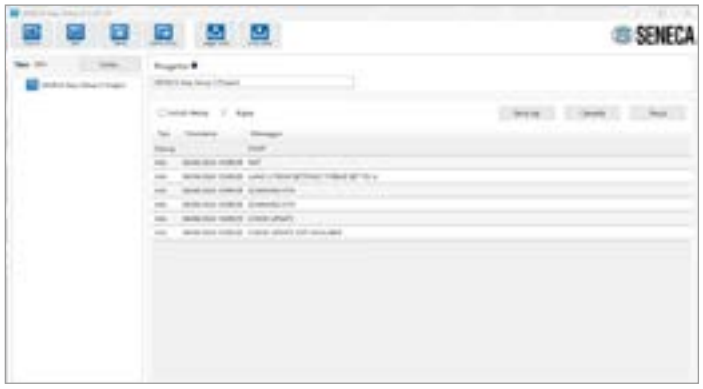
EASY SETUP

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.



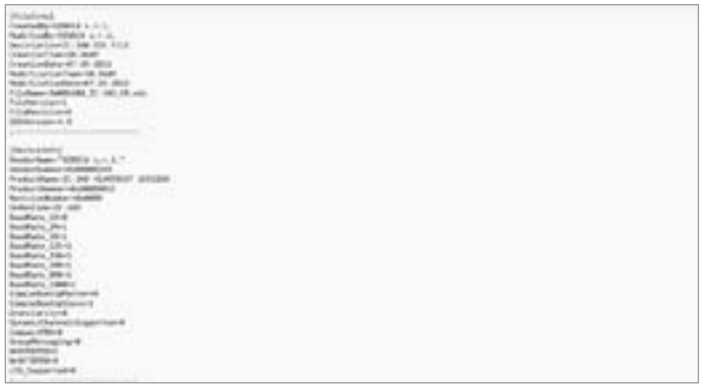
Z-NET4

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.



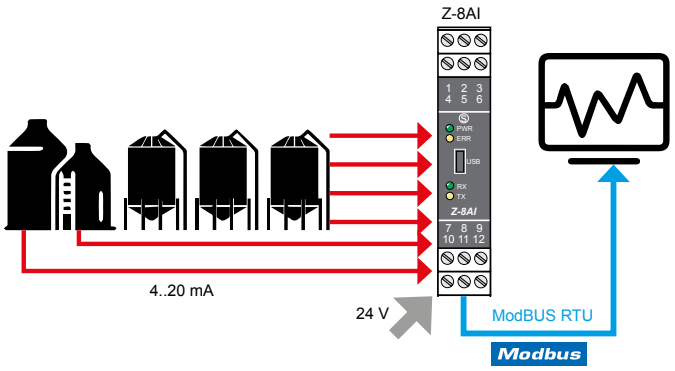
EDS / GSDML

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.

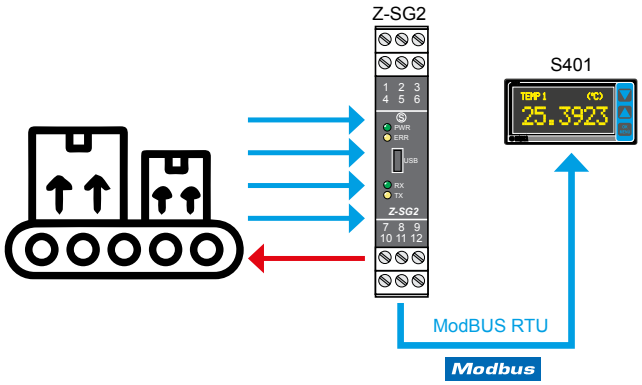


I/O MODULES – APPLICATION SCHEMATICS

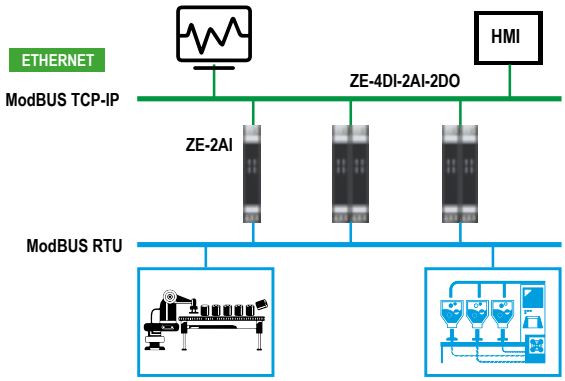
ACQUISITION OF PROCESS MEASUREMENTS AND RETRANSMISSION VIA MODBUS RTU



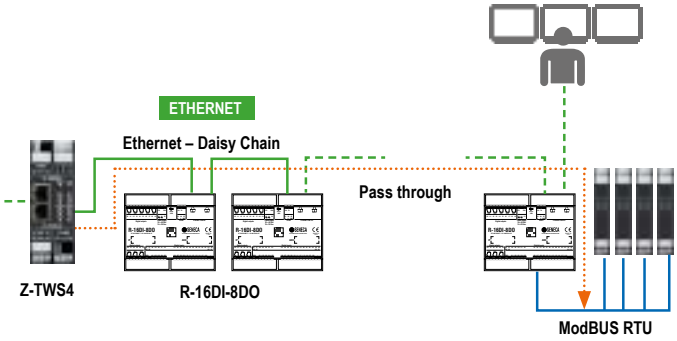
ACQUISITION AND DISPLAY MODBUS FOR WEIGHING SYSTEMS



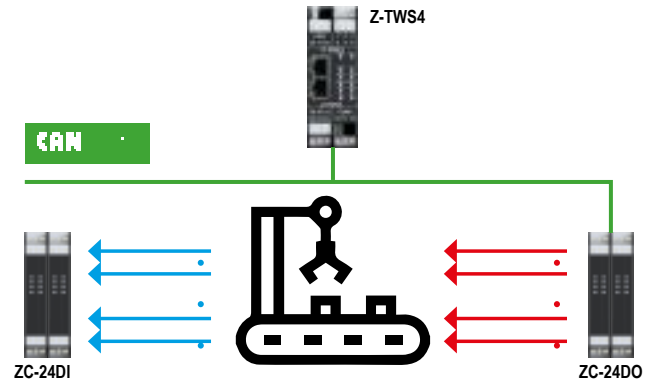
DATA ACQUISITION ON ETHERNET



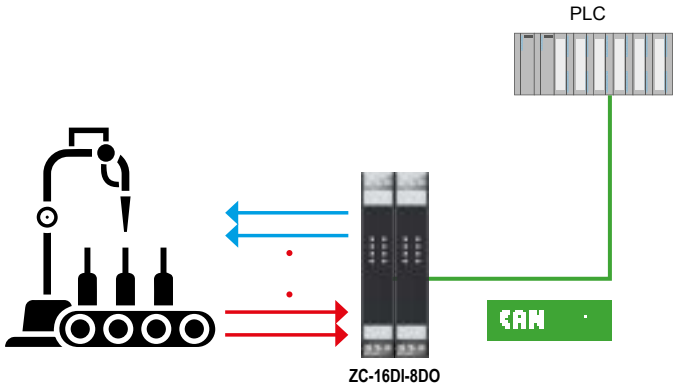
ETHERNET DAISY CHAIN AND MODBUS PASS-THROUGH



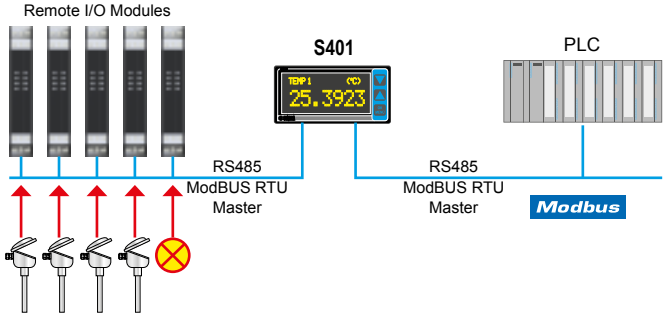
PROGRAMMABLE HANDLING SYSTEM



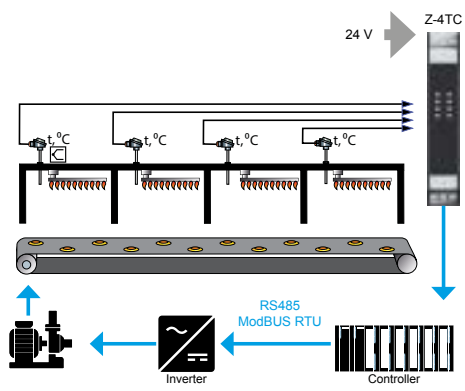
AUTOMATIC BOTTLING SYSTEM



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.

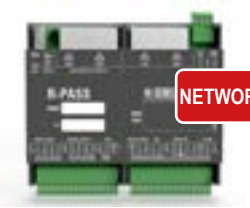
Z-TWS11



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

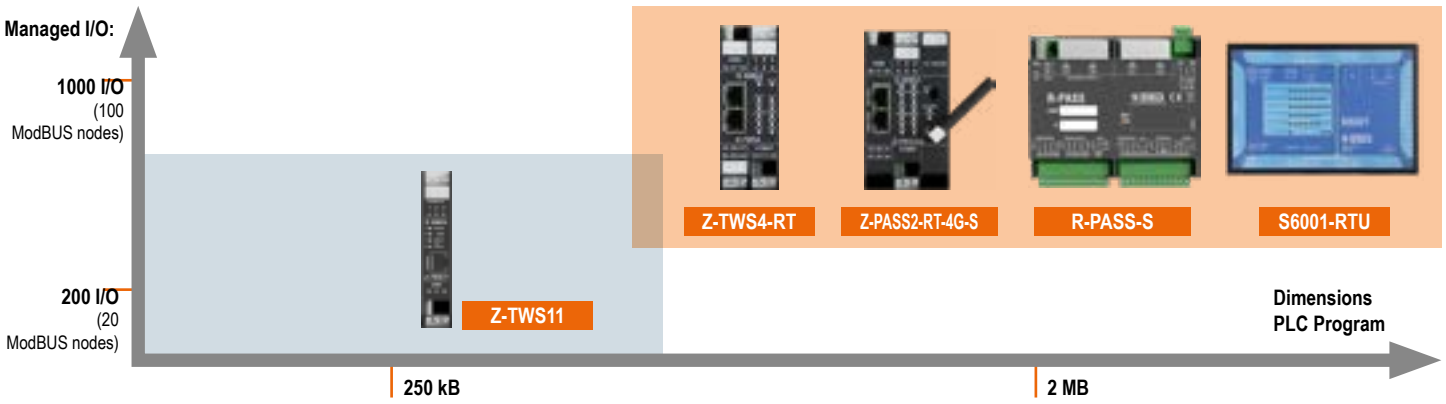
- Fieldbus (ModBUS RTU/CTP-IP, M-BUS, S7 Protocol)
- Energy Protocols IEC 61850, IEC 60870-5-101/104
- IT Protocols (HTTP/HTTPS, FTP/FTPS, SMTP, SNMP)
- Data exchange with OPC UA/DA standard
- IIoT Protocols (MQTT, HTTP post)
- Cloud platform support

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**

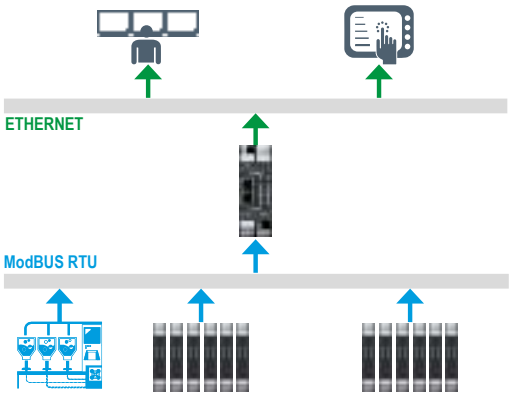
RoHS compliant
WEEE-Reg-No:
DE 90465365

ORDER CODES

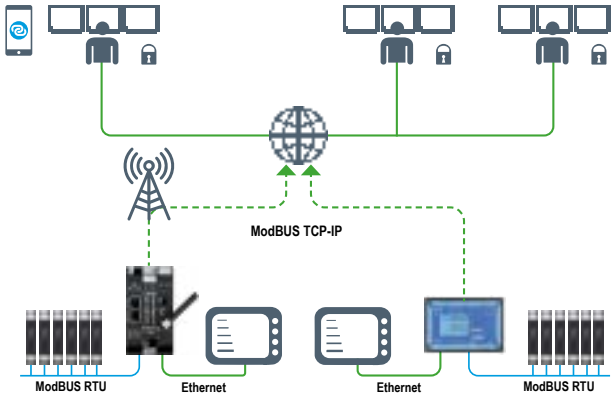
Code	Description
SSP	SENECA Straton Package - CPU Seneca Installer suite (included)
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-UN-UPD	STRATON IDE Unlimited Tags UPGRADE from V8 to V9
STRATON-870-850	Activation License 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

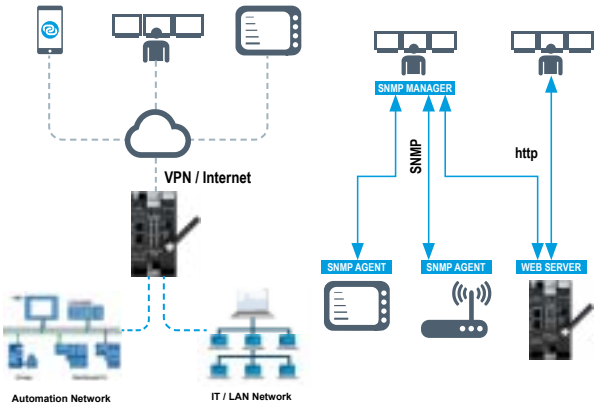
DISTRIBUTED AUTOMATION



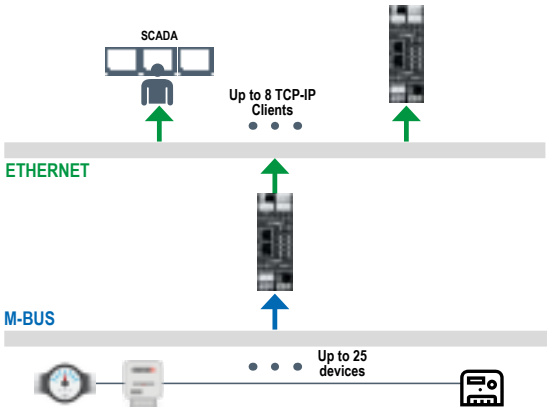
REMOTE CONTROL / REMOTE ASSISTANCE



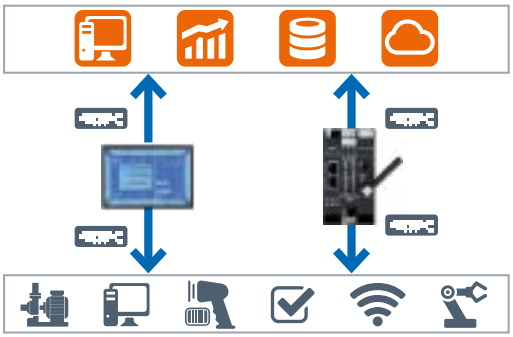
NETWORKING



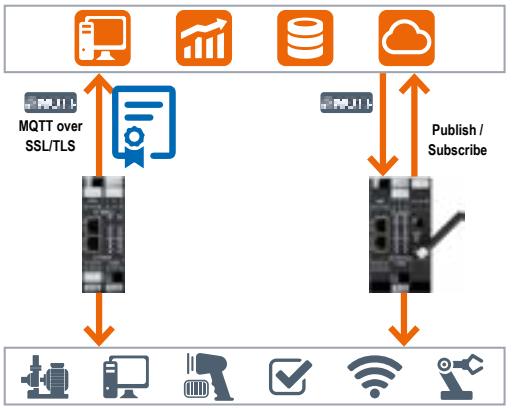
SMART METERING



CONTROL WITH OPC UA/DA

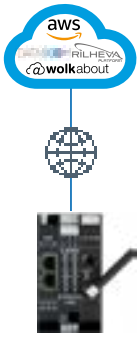


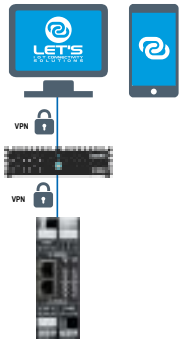
CONTROL WITH MQTT



CLOUD INTEGRATION

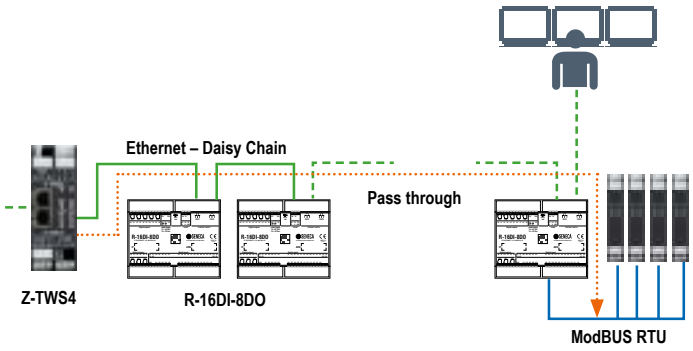
SaaS
Third Party Cloud Services





On-Premise
Proprietary Solution SENECA

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**

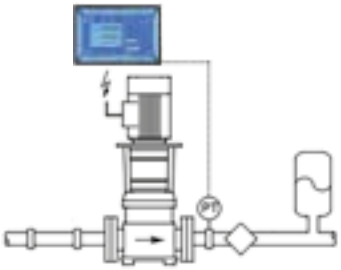
S6001 PUMP CONTROLLER

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

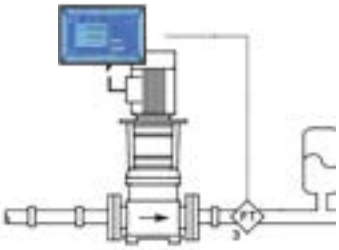


The S6001 Pump Controller is a controller for pumping systems and pressurization groups capable of managing from 2 to 6 pumps (with possible Z-D-IO expansion I/O modules), with constant flow, level, and pressure regulation and user exchange via inverters. The S6001 Pump Controller allows receiving commands 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.

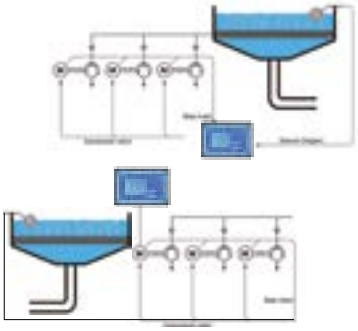
CONTROL MODES



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.



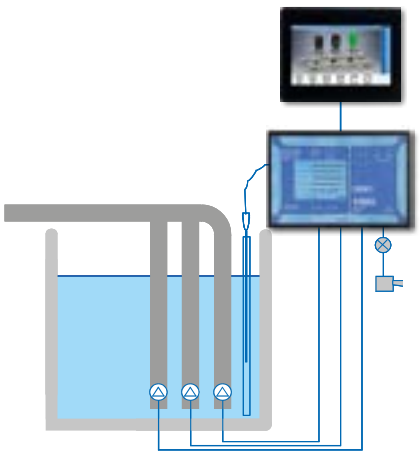
S6001 PUMP CONTROLLER

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

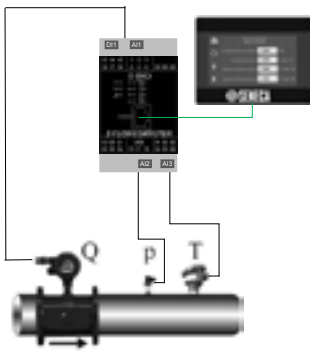
GENERAL DATA	
Power Supply	11..40 Vdc; 19..28 Vac
Consumption	Max 4 W
Isolation	1,500 Vac
Status Indicators	Power Supply Serial communication Ethernet Link and Transmission SD Card Digital I/O Status
Calculation standards	IAPWS IF-97 AGA8 GROSS METHOD 2 AGA8-92DC (ISO 12213-2), SGERG88 (ISO 12213-3) 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

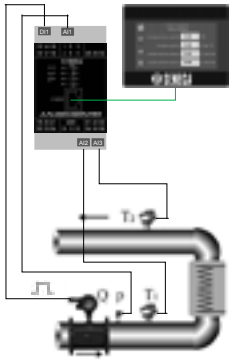


This application aims to measure the amount of heat and the mass of fluid flowing through the pipe.
For superheated steam measurement, flow, temperature, and pressure measurements are required. For saturated steam measurement, flow and either pressure or temperature measurements (just one of the two)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

STEAM-WATER THERMAL DIFFERENCE

Water

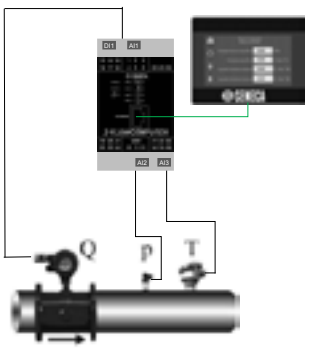
Steam



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



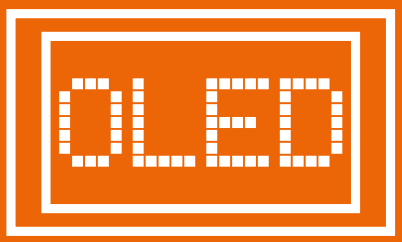
This application aims to compensate for the flow and correct the volume of a gas with reference to the base conditions of temperature (Tb) and pressure (Pb), starting from measurements under working conditions Q, P, and T. The calculation algorithms used are specified in the table below.

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

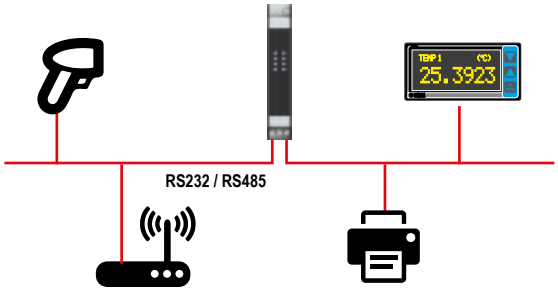
Software	Max 20 freely configurable queries, data management (EASY S401)
Settings	Communication parameters, language, contrast, brightness, scale, unit of measure offset
Certifications	CE

ORDER CODES

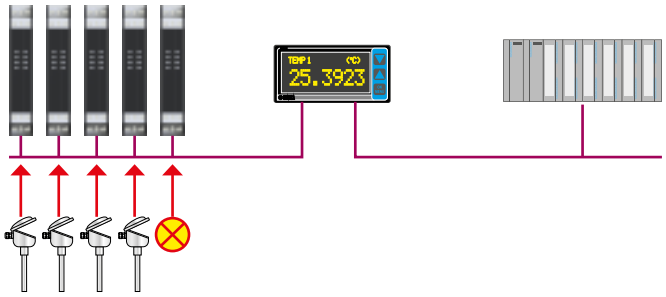
Code	Description
S401-L	Indicator with OLED display and ModBUS interface

APPLICATION EXAMPLES

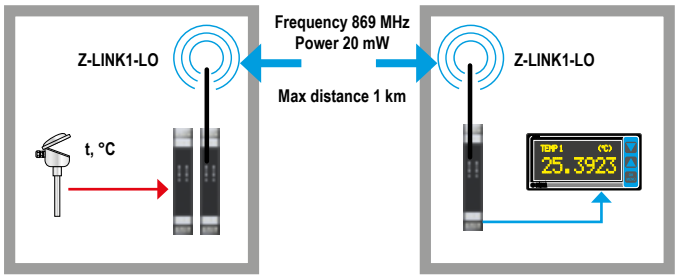
SERIAL CONNECTION



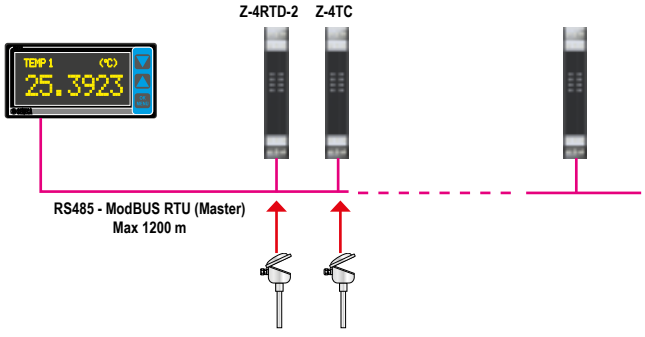
LOCAL PLC CONTROL



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.

HMI OPERATOR PANELS VISUAL

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.

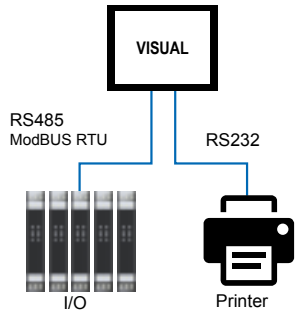
VISUAL EA

REMOTE ASSISTANCE TOOL

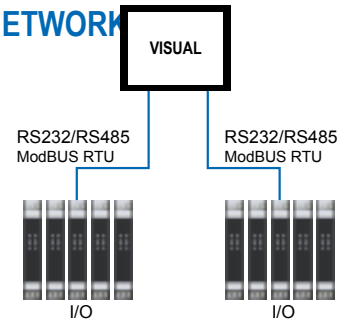
- Remote assistance system activated on HMI VISUAL equipped with Ethernet port
- Remote access to the operator panel and, in passthrough mode, to PLCs and devices connected to it (in serial or Ethernet mode) without any network configuration
- SSL-protected VPN connection for secure data and information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

EXAMPLES OF CONNECTIONS

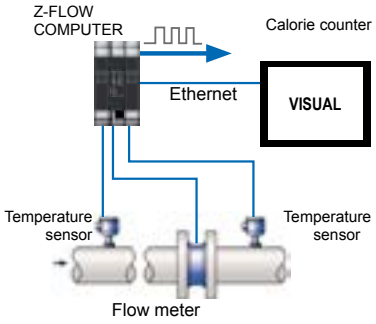
SERIAL



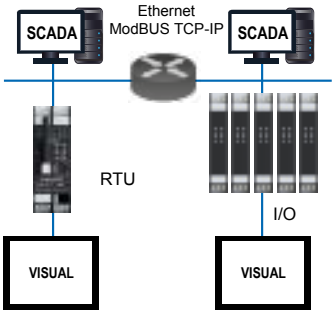
DISTRIBUTED NETWORK SERIAL



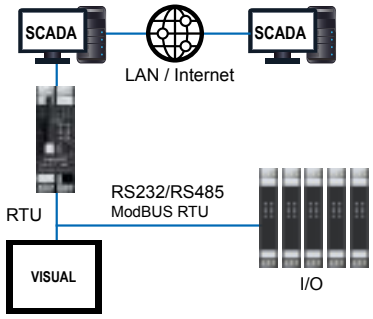
HMI FOR FLOW COMPUTER



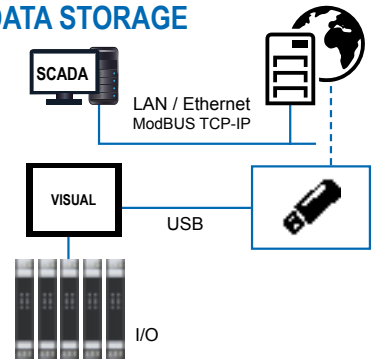
ETHERNET



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

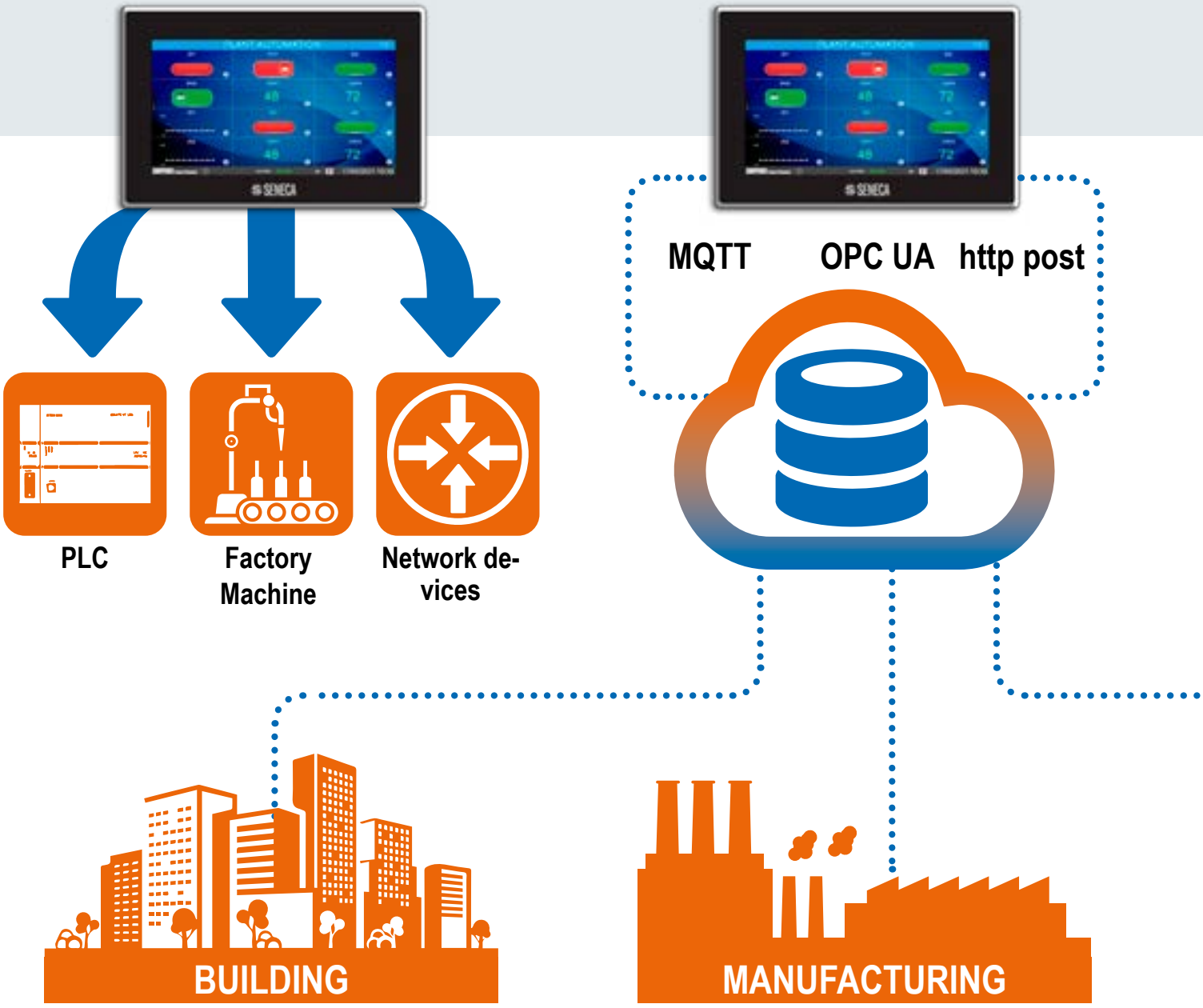
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CS-DB9F-TIP-V	Serial RS485 cable (DB9F / tips)
CS-DB9M-TIP-V	Serial RS485 cable (DB9M / tips)
EB PRO	Programming environment
VISUAL EA	Remote Assistance Tool

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	

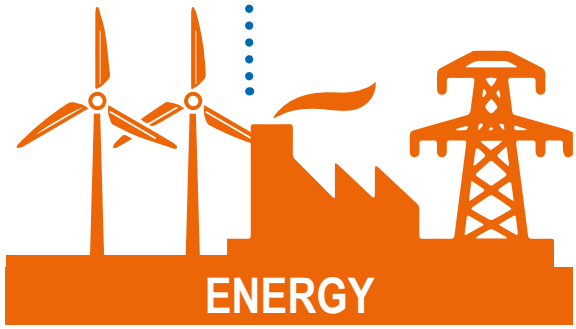
7" TOUCHSCREEN





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

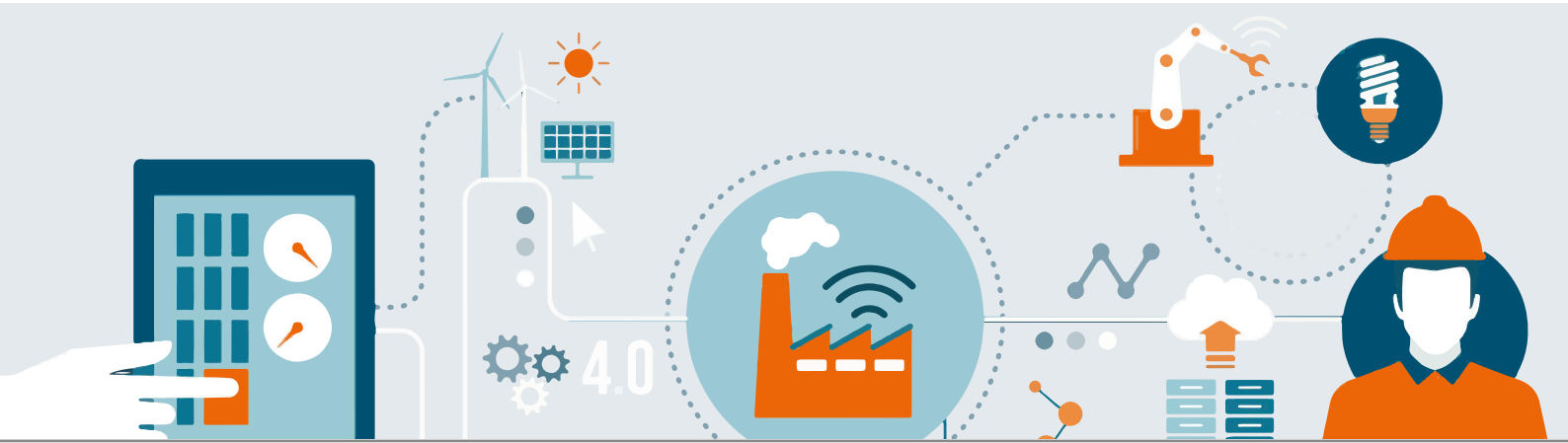
DISPLAY
- Display 7" TFT, 16M colors
- Capacitive multitouch
- Resolution 800x480 pixels
- Standard widget display
- Display on Display
- Remote display

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



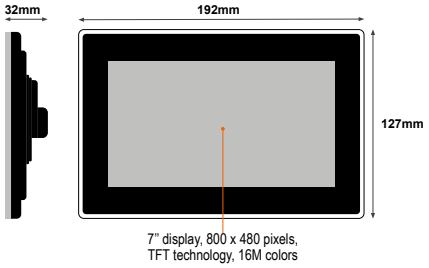


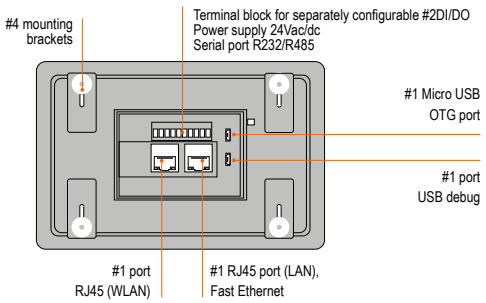
HMI 7” touchscreen with gateway functions, datalogger, remote assistance, and integrated I/O

TECHNICAL DATA

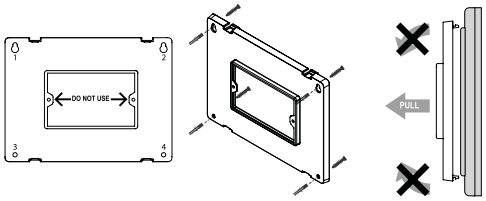
HMI DATA	
Screen	7" LCD TFT backlit, scratch-resistant glass
Resolution	800 x 480 pixels
Format	16/9
Brightness	350 cd/m2
Colors	16 M
Touchscreen	Capacitive
Durability	30,000 h (backlight level 5)
Viewing angles	70° / 50° / 70° / 70° (Top, Bottom, Left, Right)
Display Functionality	Standard widget-based 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



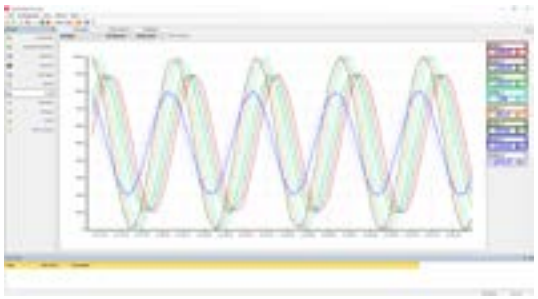
The Channels page allows importing or setting individual channels. It is possible to enable/disable database saving, select the unit of measure for the channel, and set the start/end of recording and description.

SCHEDULER



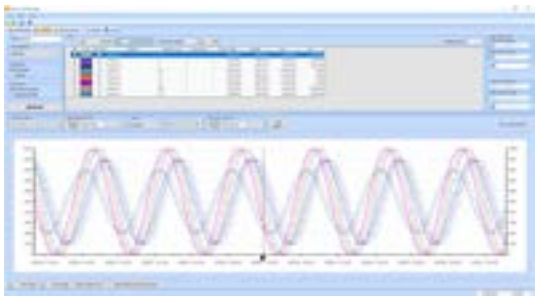
Flexible scheduling allows for manual recording or automatic recording up to 8 preset times, continuously, and with start from digital input.

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.

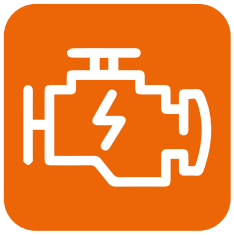
AUTOMATIC REPORTS

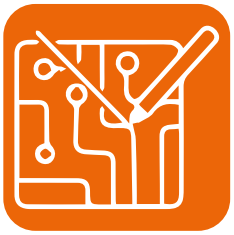


The software can generate automatic reports at the end of each recording of all project display pages or just some that can include graphs, value tables, and tables of recorded alarms.

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:

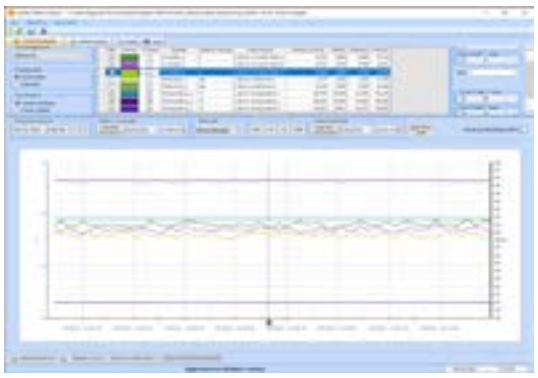
- Management of alarm events from digital signals or thresholds on analog values
- Sending notifications via SMS and/or email
- Data and alarm logging with options for local storage on microSD cards, sending via FTP or email
- Variable datalogging with operations on a periodic log or triggered variable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

WEB FACTORY



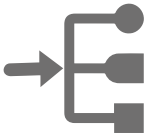
Web Factory is a license-free, intuitive tool with a responsive interface that enables the development of web pages from ZNET4 projects and their loading into SENECA CPUs. These pages can contain numerical values, text fields, visual indicators like LEDs or gauges, and real-time graphs, allowing interaction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