simex

ENVIRONMENTAL MONITORING & CONTROL

ProSens





Measure,
Control and Log Data

ProSens

- TRANSMITTER
- DISPLAY
- METER
- CONTROLLER

in one



ProSens is a new series of modern industrial devices, which integrates sensors, converters, meters and controllers functionalities. Using the latest miniaturisation technologies these compact devices are able to be equipped with two independent universal inputs, two binary or two analogue outputs, as well as communication port RS-485 with Modbus protocol.

Within the **ProSens** range, models 200 and 400 have integrated temperature and relative humidity sensor. As well as an exceptionally wide working temperature range (-30 ÷ +120°C) they are also equipped with mathematical functions, which make it possible to transform measured values into others, e.g. to calculate dew point, sum or difference of two measured values.

A large built-in display and output signals mean that the **ProSens** units find applications in control systems. There are many industrial applications, where **ProSens** can act as stand-alone controller. It can also cooperate with master devices via Modbus protocol, being part of big network, which makes it perfect device for distributed monitoring system.

Applications

- food processing industry
- building HVAC automation
- warehouses, cold rooms
- glasshouses, breeding
- factories and manufacturing
- museums, archives, galleries
- server rooms, air-conditioned rooms
- weather stations







Measurement



The primary functionality of ProSens is taking measurements. Depending on needs and requirements, this compact device is equipped with top quality, precise and stable temperature and humidity sensors and/or with universal inputs that are standard for industrial automation. Thanks to its equipment the device guarantees a very high level of measurement reliability. Both version of probes - integrated and cable ones - are made of stainless steel. The sensors are protected with a replaceable PTFE or stainless steel mesh filter. The filter type is adjusted to a particular version of the probe.

Control



A proper reaction of a controller is triggered by measured values interpretation, which impacts the state of output signals. Users can choose from between binary outputs and analogue outputs (current and voltage ones) to adjust their model to the requirements of a specific application. Due to that the device is characterised by a wide range of various outputs and the possibility of applying them in one unit. As a consequence, the ProSens meters can be used for digital or proportional controlling, and for combining both functions in one device as well.

Communication



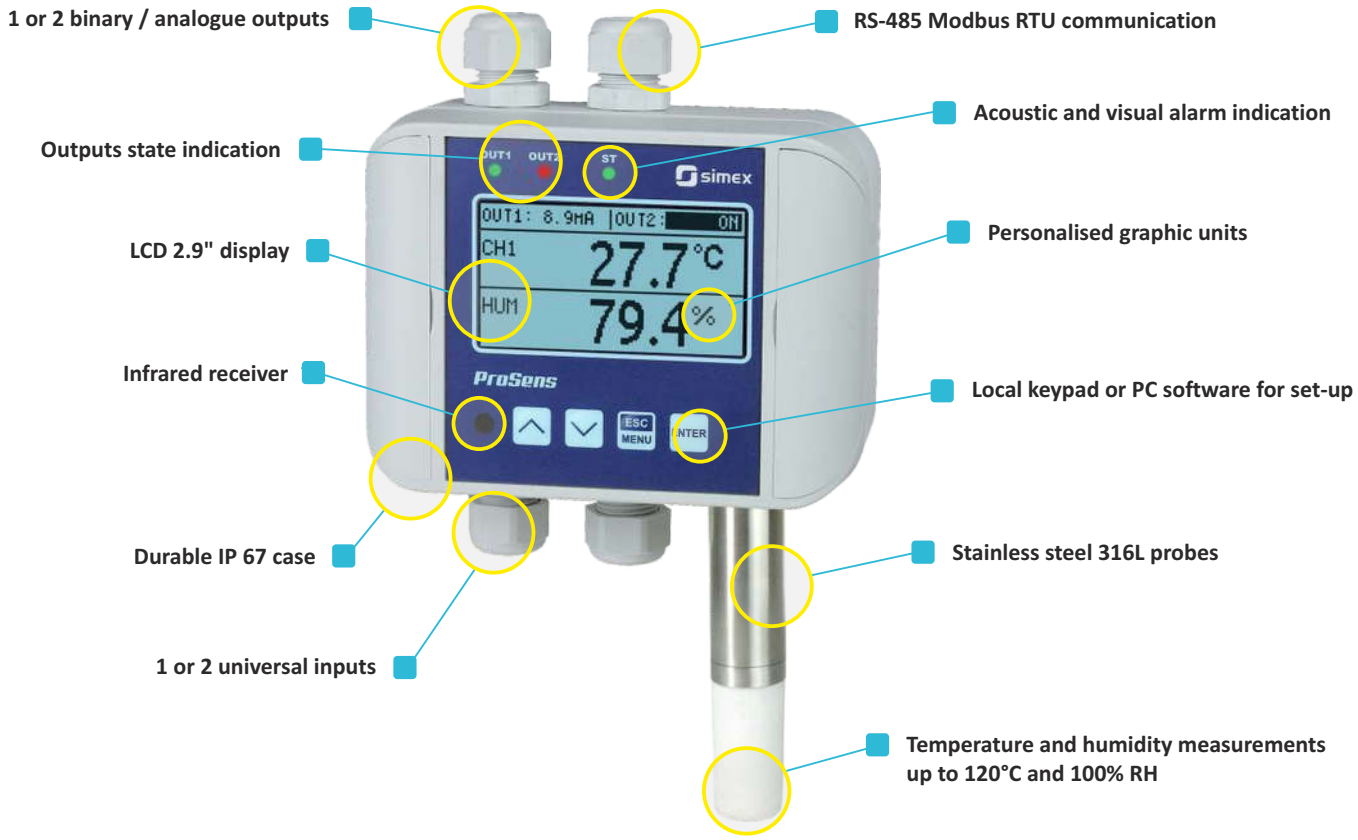
What is required in case of more advanced measuring and controlling networks is communication between devices. For such applications we offer the RS-485 interface which is standard equipment supporting the Modbus RTU protocol. The free S-Config 2 software is used for communication functionalities that facilitate the device's remote configuration without the need to use a local keyboard. Measured values and output states are shared in the Slave mode. It concerns more advanced applications with existing or required central steering and visualisation systems for the devices in the ProSens series.







Main features



- 1 or 2 measuring channels available, with or without a probe
- Integrated or cable probes made of 316L steel, used for temperature or temperature and humidity measurements
- Replaceable filter made of PTFE or 316L mesh, 25 µm
- Universal inputs of a very wide spectrum of analogue signal types (I, U, RTD, TC)
- Binary and analogue outputs for indicating and controlling (1 or 2 E REL, I, U)
- Very clear 2.9'' LCD display
- Indication of 1, 2, or 4 parameters on one screen
- Individual descriptions of measuring channels
- Optional elaboration of personalised graphic units, displayed at measurements (e.g.: m^3, l/h, kPa, °F, etc.)
- Standard equipment: RS-485 Modbus RTU interface for integration with superordinate visualisation or control systems
- Device configuration performed by means of local buttons, optional remote controller or free S-Config 2 software
- Operating temperature: -30°C ÷ +80°C
- IP rate protection: IP 67 (version without display), IP 65 (version with display)

Typical measurements

for T or T+RH probes:


temperature


humidity


dew point

for universal inputs, e.g.:


CO_2


barometric pressure


flow


pH



redox

... and many more

A wide range of possibilities

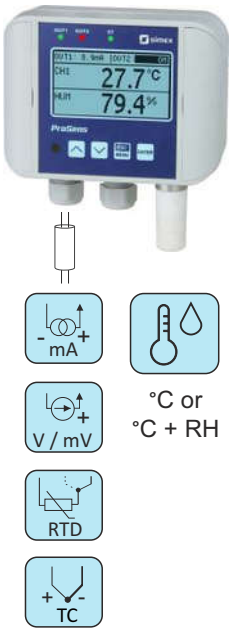
Thanks to the universal device construction it is possible to apply 1 or 2 independent measuring channels. The most common type equipped with a probe (integrated or cable one) measures temperature or temperature and humidity in the sensor area, or on the installation in case of choosing cable probes. Regardless of the above, in case of a two-channel device a user can connect an external sensor by means of another, universal measuring input. If there is no need to apply constructions equipped with probes, both measuring inputs in the device can be used to connect external sensors installed directly on external industrial installations.

Inputs configuration

- 1 x temp. or temp. + RH probe

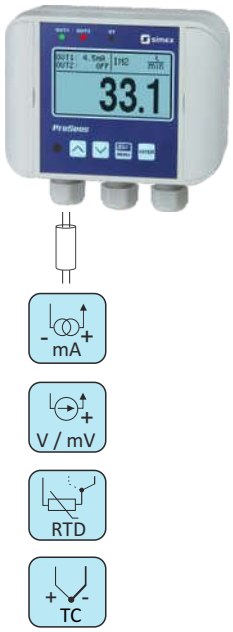


- 1 x temp. or temp. + RH probe
- 1 x universal (U, I, RTD, TC)

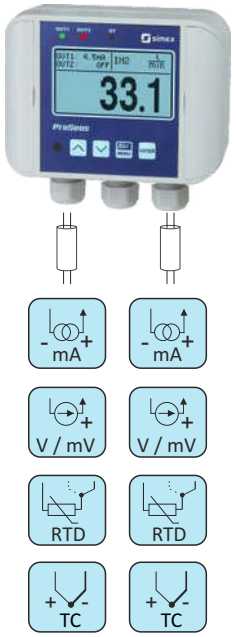


ProSens 200, 400, 600 series

- 1 x universal (U, I, RTD, TC)



- 2 x universal (U, I, RTD, TC)



ProSens 100 series

Exemplary outputs configuration



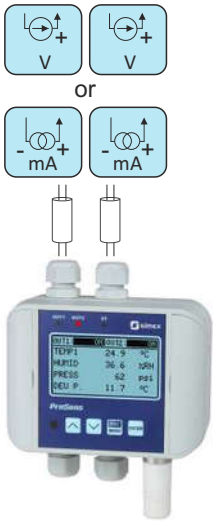
- 2 x E REL



- 1 x AO (0-10V)
- 1 x E REL
- 1 x RS-485



- 1 x AO (0/4-20 mA)
- 1 x E REL
- 1 x RS-485



- 2 x AO (0-10V) or
- 2 x AO (0/4-20 mA)
- 1 x RS-485

Wiring within available glands is customised depending on fitter's requirements.

Technical data



Series	ProSens 100	ProSens 200			ProSens 400	ProSens 600		
Model	**QM-100**	**QM-211**	**QM-212**	**QM-213**	**QM-421 / 422**	**QM-612-XX-1**	**QM-612-XX-2**	**QM-621 / 622**
Power supply	24V DC (11 ÷ 36V DC), power consumption: 2.5 W max.							
Display	none or graphic LCD, 128 x 64 points, with backlight							
Type of probe	none	integrated radial, length 40 mm, Ø 18 mm, stainless steel 316L, PTFE filter cap	integrated radial, length 90 mm, Ø 18 mm, stainless steel 316L, PTFE filter cap	integrated radial, length 145 mm, Ø 18 mm, stainless steel 316L, PTFE filter cap	integrated axial, L=200 or 300 mm, Ø 12 mm, stainless steel 316L probe and filter cap	cable probe L=90 mm, Ø 18 mm, stainless steel 316L, PTFE filter cap	cable probe L=90 mm, Ø 18 mm, stainless steel 316L, PTFE filter cap, 5 pin M12 connector	cable probe L=200 or 300 mm, Ø 12 mm, stainless steel 316L probe and filter cap
Probe parameters	none	**temp.:** measuring range -30 ÷ 80°C, typ.err. ±0.5°C @ -10 ÷ 80°C **temp. & humidity:** measuring range -30 ÷ 80°C, typ.err. ±0.2°C @ 10 ÷ 60°C (±0.4°C @ -30°C; ±0.7°C @ 120°C); 0 ÷ 100% RH; typ.err. ±1.8% RH (10 ÷ 90% @ 25°C)	**temp.:** measuring range -30 ÷ 105°C; typ.err. ±0.5°C @ -10 ÷ 85°C **temp. & humidity:** measuring range -30 ÷ 105°C; typ.err. ±0.2°C @ 10 ÷ 60°C (±0.4°C @ -30°C, ±0.7°C @ 120°C); 0 ÷ 100% RH; typ.err. ±1.8% RH (10 ÷ 90% @ 25°C)	**temp.:** measuring range -50 ÷ 120°C; typ.err. ±0.5°C @ -10 ÷ 85°C **temp. & humidity:** measuring range -40 ÷ 120°C; typ.err. ±0.2°C @ 10 ÷ 60°C (±0.4°C @ -30°C, ±0.7°C @ 120°C); 0 ÷ 100% RH; typ.err. ±1.8% RH (10 ÷ 90% @ 25°C)	**temp.:** measuring range -50 ÷ 120°C; typ.err. ±0.5°C @ -10 ÷ 80°C **temp. & humidity:** temp. measuring range -40 ÷ 120°C; typ.err. ±0.2°C @ 10 ÷ 60°C (±0.4°C @ -30°C, ±0.7°C @ 120°C); humidity measuring range 0 ÷ 100% RH; typ.err. ±1.8% RH (10 ÷ 90% @ 25°C)			
Number of inputs	1 or 2 universal	0 or 1 universal						
Type of universal inputs	**current:** 0/4-20 mA; **voltage:** 0/1-5 V, 0/2-10V, 0-60 mV, 0-75 mV, 0-100 mV, 0-150 mV; **RTD:** Pt100, Pt500, Pt1000, measuring range: -100°C ÷ 600°C; **thermocouple:** type K, S, J, T, N, R, B, E; measuring ranges: -200°C ÷ +1370°C (**K**); -50°C ÷ +1768°C (**S**); -210°C ÷ +1200°C (**J**); -200°C ÷ +400°C (**T**); -200°C ÷ +1300°C (**N**); -50°C ÷ +1768°C (**R**); +250°C ÷ +1820°C (**B**); -200°C ÷ +1000°C (**E**) **accuracy:** 0.1% @25°C ± one digit (inputs: current, voltage, milivoltage, thermoresistance, thermocouple K, J, E); 0.2%@ 25°C (thermocouple N), 0.5%@25°C (thermocouple S, T, R, B)						
Binary outputs	0, 1 or 2 electronic NO relays, 24V AC/35V DC, max. 200 mA							
Analogue outputs	0, 1 or 2: **active current:** operating range 0/4-20 mA (0-24 mA max.); **passive current:** isolated, operating range 4-20 mA (2.8-24 mA max.); **active voltage:** operating range 0/1-5V, 0/2-10V (0-11V max.)							
Communication interface	RS-485, 8N1 and 8N2, 1200 bit/s ÷ 115200 bit/s, Modbus RTU, not galvanically isolated							
Operating temperature	-30°C ÷ +80°C, case with electronics (out of range -20 ÷ +70°C LCD and IR receiver turn off)							
Protection class	IP 67 (version without display); IP 65 (version with display)							
Case	wall mounted, 120 x 90 x 50 mm, ASA LURAN							

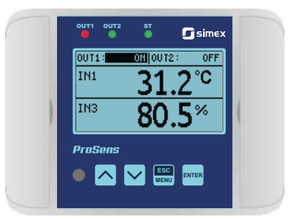
Data presentation



No display version, LED signalling



One measurement display mode



Two measurements display mode



Four measurements display mode



Menu display mode



Device status information

Visualisation & utility software

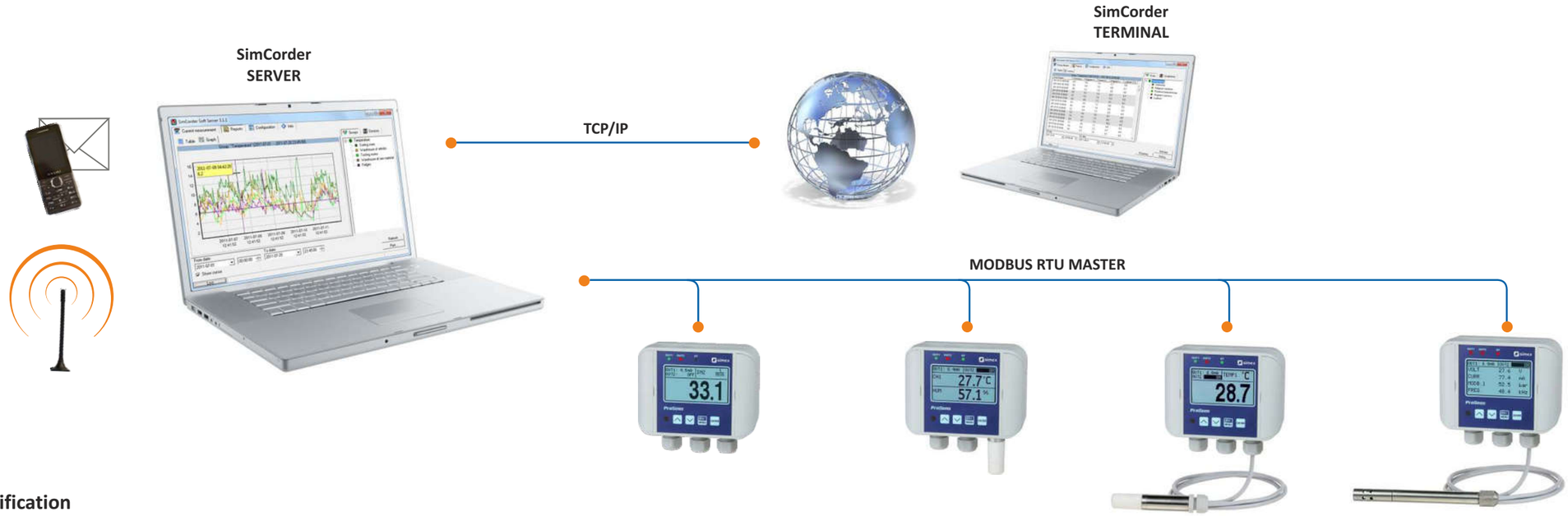
ProSens

SimCorder Soft

SimCorder Soft communicates with external devices using the RS-485 interface with the Modbus RTU protocol and reads measurement data from the above devices. A computer may be connected directly to the network of devices or via the internet. In case of the latter, an RS-485 Ethernet converter is necessary. This software enables sound and visual alerts (e.g. in case the temperature is too high in the cooler, excessive humidity, insufficient flow etc.). The system can be configured so that each alert evokes a particular response of selected signalling modules. Any changes in the device settings as well as reading of measurements is completed remotely at one station.

Monitoring from anywhere

A computer with **SimCorder Soft** installed in the **Network SERVER** version may share recorded data and system information such as emergency states via the internet. The data can be viewed as tables or diagrams or exported to various file formats on a computer with the **Network TERMINAL** version installed. The **Network TERMINAL** version also allows to print reports based on the above data. An insight into the entire system is possible from anywhere and at any time.



Immediate notification

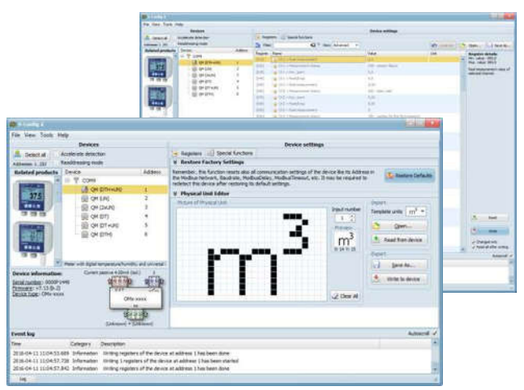
After detecting emergency states, **SimCorder Soft** in the Alarm or Network versions generates text messages (an external GSM modem is required) and e-mails about the same and sends them to applicable telephone numbers (max. 5 numbers) and e-mail addresses. This enables to immediately respond in case of such situations as system failure or exceeding the permissible measuring parameters.

Depends on needs there are following versions of SimCorder Software:

Features	BASIC	ALARM	NETWORK	
			SERVER	TERMINAL
USB dongle key with license required	✓	✓	✓	
semiSCADA	✓ *	✓ *	✓ *	
Data measurement on demand	✓	✓	✓	
Direct cooperation with data loggers	✓	✓	✓	
Easy devices reconfiguration	✓	✓	✓	
Alarm state signalization	✓	✓	✓	✓
Alarm forwarding to external devices		✓	✓	
GSM and e-mail notification		✓	✓	
Remote network			✓	✓

* functionality resulting from the license

S-Config 2



S-Config 2 software can be downloaded free from SIMEX website at **www.simex.pl**

S-Config 2 is free software used for configuring the ProSens series devices.

The software is used for a simultaneous detection of devices in multiple Modbus RTU networks and provides users with a possibility of changing the configuration of most of the devices. There is a list of registers presented for each detected device. The registers can be modified by users. The lists also include additional information concerning device parameters, such as: type, address, baud rate, etc.

The ProSens series devices can provide detailed information concerning their properties. In particular, the information includes:

- device type,
- serial number,
- firmware version,
- inputs type,
- outputs type and number.

Additional functionality available for ProSens series within the software is elaboration of personalised graphic units, displayed at measurements (e.g.: m^3, l/h, kPa, °F, etc.)

Accessories

Cable probes





PPQ-612-XX-1-X **PPQ-612-00-2-X**

Cable probe Ø18, L=90 mm, housing SS 316L, filter FPQ-P350



PPQ-621-XX-1-X

Cable probe Ø12, L=200 mm, housing SS 316L, filter from SS mesh 25 µm



PPQ-622-XX-1-X

Cable probe Ø12, L=300 mm, housing SS 316L, filter from SS mesh 25 µm

Ordering:

PPQ-612-00-2-X
PPQ-612-XX-1-X
PPQ-621-XX-1-X
PPQ-622-XX-1-X

measurement of:
2 : temperature
3 : temperature & humidity

cable length:
05 (0,5m), **10** (1m), **15** (1,5m), **20** (2m), **25** (2,5m), **30** (3m)

Filters

FPQ-P350

Teflon filter (PTFE) with increased resistance against splashing water, non-absorbent surface, does not rust, operating temperature -30 ÷ +120°C

Connection accessories





CPQ-00 **CPQ-XX**

M12 connector, 5-pin, for PPQ-612 probes

Ordering:

CPQ-XX

cable length:
05 (0,5m), **10** (1m), **15** (1,5m), **20** (2m), **25** (2,5m), **30** (3m)

Mounting accessories

HPQ-FS12
Flat circular flange for Ø12 probes, SS 316L



HPQ-TS12
Thread bracket for Ø12 probes, SS 316L, M20x1,5



HPQ-W1218
Wall mounting bracket for Ø12 and Ø18 probes, SS 316L



HPQ-CGS18
Thread bracket for Ø18 probes, M25x1,5



Additional accessories



SIR-15

InfraRed remote controller may be used as external programming keyboard for all ProSens devices equipped with the display.

Ordering

ProSens

QM-XXX-XX-X-X-X-XX-X-10-3-X

probe version:
100-00-0 : without probe
211-00-0 : radial, Ø 18 mm, L=40 mm
212-00-0 : radial, Ø 18 mm, L=90 mm
213-00-0 : radial, Ø 18 mm, L=145 mm
421-00-0 : axial, Ø 12 mm, L=200 mm
422-00-0 : axial, Ø 12 mm, L=300 mm
621-XX-1 : cable, Ø 12 mm, L=200 mm
622-XX-1 : cable, Ø 12 mm, L=300 mm
612-XX-X : cable, Ø 18 mm, L=90 mm

cable & connector type:
0 : none
1 : PUR, gland
2 : PUR, connector (applies to probe Ø 18 mm)

cable length:
00 : none
05 : L=0,5 m
10 : L=1 m
15 : L=1,5 m
20 : L=2 m
25 : L=2,5 m
30 : L=3 m

the number of available glands:
2 : 2 pcs
3 : 3 pcs
4 : 4 pcs
5 : 5 pcs (does not apply to radial & axial probes)

display:
0 : none
1 : LCD, 128 x 64 pixels

outputs:
00 : none
11 : 2 x E REL
21 : 1 x AO *(0/4-20 mA, active, non-isolated)* + 1 x E REL
31 : 1 x AO *(4-20 mA, passive, isolated)* + 1 x E REL
41 : 1 x AO *(0-10V, active, non-isolated)* + 1 x E REL
22 : 2 x AO *(0/4-20 mA, active, non-isolated)*
33 : 2 x AO *(4-20 mA, passive, isolated)*
44 : 2 x AO *(0-10V, active, non-isolated)*

measurement 1:
1 : universal input *(I, U, RTD, TC)* - without probe
2 : temperature probe
3 : temperature & humidity probe

measurement 2:
0 : none
1 : universal input *(I, U, RTD, TC)* - without probe

Probe version:



ProSens 200 radial probe



ProSens 400 axial probe



ProSens 600 cable probe

Glands configuration:

- for 100 and 400 series



2 pcs



3 pcs



4 pcs



5 pcs

- for 200 and 600 series



2 pcs



3 pcs



4 pcs

SIMEX Ltd.
Wielopole 11
80-556 Gdańsk
Poland
tel. (+48) 58 762-07-77
fax (+48) 58 762-07-70
e-mail: info@simex.pl
www.simex.pl

www.prosens24.eu

BRPRSEN_v1.16.041