PID AUTO TUNING FUZZY LOGIC

PUR-99

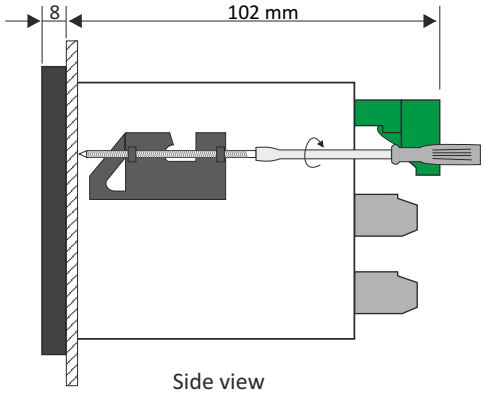
- PID, Auto-tuning, Fuzzy-Logic
- double LED display: PV - measured value
  SV - setpoint value
- universal input: 0/4-20 mA, 0-10V, 0-150 mV, RTD or TC
- REL 5A / OC (SSR) outputs
- analogue output: active or passive, power supply output: 24V DC
- RS-485 / Modbus RTU
- signal peak value detection
- free configuration software S-Config

PUR-99 is an advanced PID controller with two control loops (heating / cooling), supported by the auto-tuning function and Fuzzy-Logic algorithm. The main advantages are two rows of display: the first one presents measuring value, second one - programmed values. The device has a build-in REL, OC (SSR) or analog output, according to the customer selection: active current output, passive isolated current output or active voltage output, which can be used in the process of control. The **PUR-99** controller is equipped with one universal input, type: 0/4-20 mA, 0-10V, 0-150 mV, Pt 100/500/1000 or TC (K, S, J, T, N, R, B, E). During the measurement process only one kind of input is available. Cold junction of thermocouple sensor is compensated automatically. RTD and TC inputs feature with fully linearized characteristics. Thanks to wide range of characteristic curves (linear, square root, quadratic, user-defined and volume characteristic for cylindrical tanks) the controller may be used in various process control systems. The 24V DC / 100 mA output is designed to supply measuring transducers, and the RS-485 port enables data transmission in production process monitoring systems. The controller can be configured with the local keyboard or free S-Config software via the RS-485 communication port.

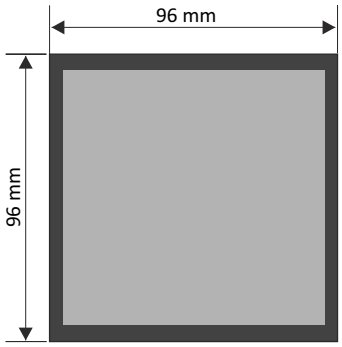
TECHNICAL DATA

Power supply **Power consumption**	19V ÷ 50V DC; 16V ÷ 35V AC or 85 ÷ 260V AC/DC, all separated for 85 ÷ 260V AC/DC and 16V ÷ 35V AC power supply: max. 7 VA; for 19V ÷ 50V DC power supply: max. 7 W
Display	LED, double: 4 x 20 mm (PV) + 4 x 13 mm (SV) + single indicator 1 x 10 mm high; red or green
Displayed values	-999 ÷ 9999 + decimal point
Input	current: 0-20 mA or 4-20 mA, input resistance < 65 Ω (typ. 30 Ω), overload-protected, input current limited to 50 mA; voltage: 0-5 V, 1-5V, 0-10V or 2-10V, input resistance > 100 kΩ milivoltage: 0-60 mV, 0-75 mV, 0-100 mV, 0-150 mV, input resistance > 1,5 MΩ thermoresistance: Pt100, Pt500, Pt1000 (automatic recognition of 2, 3 and 4-conductor connection, resistance compensation of connecting conductors to 20 Ω at any conductor); measuring range: -100°C ÷ 600°C thermocouple: type K, S, J, T, N, R, B, E; measuring range: **K**: -200°C ÷ +1370°C; **S**: -50°C ÷ +1768°C; **J**: -210°C ÷ +1200°C; **T**: -200°C ÷ +400°C; **N**: -200°C ÷ +1300°C; **R**: -50°C ÷ +1768°C; **B**: +250°C ÷ +1820°C; **E**: -200°C ÷ +1000°C accepted prolonged input overload: 20%
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)
Stability	50 ppm/°C
Binary outputs	1, 2 or 4 x REL NO 5A/250V AC (resistance), 3A/250V AC (reactance); 0 or 1 x OC (SSR) I_{max}=30mA, U_{max}=30VDC, P_{max}=100mW
Analogue output (available with 2 x REL or OC, see ordering)	active current: operating range 0/4-20 mA (max. 0-24 mA), load resistance 700 Ω max., resolution 13 bit passive current: isolated, operating range 4-20 mA (max. 2,8-24 mA), load resistance 600 Ω@24VDC, resolution 13 bit active voltage: operating range 0/1-5V, 0/2-10V (max. 0-11V), load resistance min. 2000 Ω, resolution 13 bit
Power supply output	24V DC +5%, -10% / max. 100 mA, stabilized
Communication interface	RS-485, 8N1 and 8N2, 1200 bit/s ÷ 115200 bit/s, Modbus RTU (not galvanically isolated)
Operating temp.	0°C ÷ +50°C (standard), -20°C ÷ +50°C (option)
Storage temp.	-10°C ÷ +70°C (standard), -20°C ÷ +70°C (depending on option)
Protection class	IP 65 (front), additional integrated frame IP 65 for panel cut-out sealing; IP 20 (case and connection clips)
Case	panel mounting; material: NORYL - GFN2S E1
Dimensions	case (WxHxD): 96 x 96 x 100 mm panel cut-out dimensions: 90,5 x 90,5 mm installation depth: min. 102 mm board thickness: standard 7 mm or other depending on used board thickness brackets (see Accessories)
Weight	230 g max.

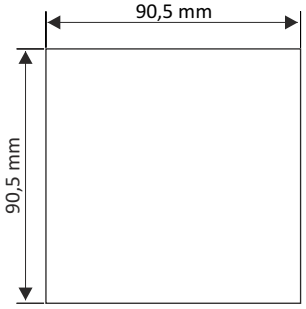
DIMENSIONS



Side view

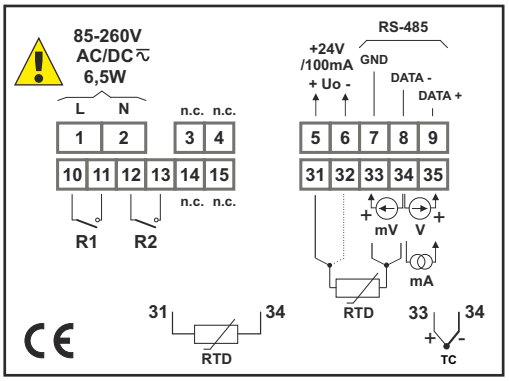


Case dimensions

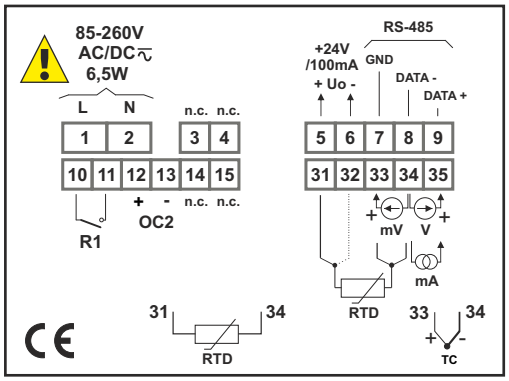


Panel cut-out dimensions

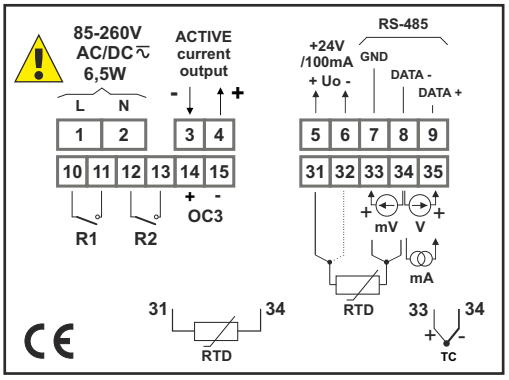
EXAMPLARY PIN ASSIGNMENTS



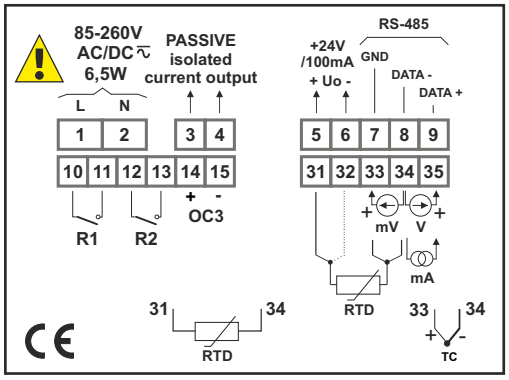
version with 2 x REL



version with 1 x REL and 1 x OC (SSR)



version with 2 x REL, 1 x OC (SSR)
and 1 x AO 0/4-20 mA, active



version with 2 x REL, 1 x OC (SSR)
and 1 x AO 4-20 mA, passive

ORDERING

PUR-99-X-J0-1XXX-10-X-XX1

main display colour:
R : red
G : green

type of outputs:
100 : 2 x REL
200 : 1 x REL + 1 x OC (SSR)
111 : 4 x REL
120 : 2 x REL + 1 x OC (SSR)
125 : 2 x REL + 1 x OC (SSR) + 1 x AO *(4-20 mA, passive, isolated)*
12D : 2 x REL + 1 x OC (SSR) + 1 x AO *(0/4-20 mA, active, non-isolated)*
12E : 2 x REL + 1 x OC (SSR) + 1 x AO *(0/1-5V, 0/2-10V, active, non-isolated)*

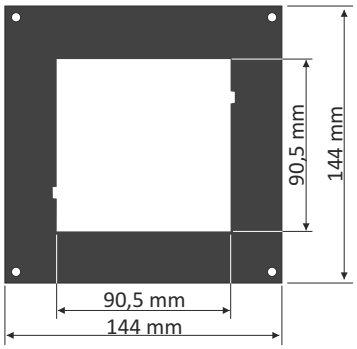
options:
00 : no options
01 : integrated frame IP 65 for panel cut-out sealing
08 : operating temp. -20°C ÷ +50°C
0P : integrated frame IP 65 for panel cut-out sealing
+ operating temp. -20°C ÷ +50°C

power supply:
3 : 24V AC/DC
4 : 85V - 260V AC/DC

SECURITY DOOR WITH LOCK

STD-99
A transparent door with IP 54 rate and lockable with security key, for 96 x 96 mm case

MOUNTING PLATES



SMP-1414/99
to mount 96 x 96 mm size unit in place of 144 x 144 mm cut-out

BOARD THICKNESS BRACKETS / ADAPTORS

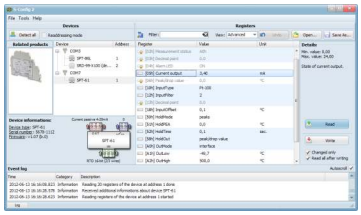
SPH-07
1 ÷ 7 mm board thickness brackets (2 pcs)
standard included with device

SPH-45
1 ÷ 45 mm board thickness brackets (2 pcs)

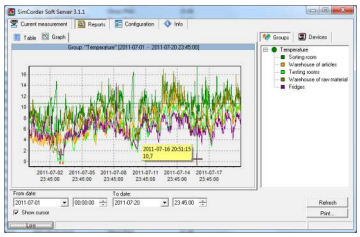
SPH-05
1 ÷ 5 mm board thickness brackets (2 pcs)

SRH-94
brackets for mounting devices on DIN 35/7.5 or 15 rail (2 pcs)

SOFTWARE



S-Config 2 is used for the simultaneous detection of devices in multiple Modbus RTU networks and allows user to change the configuration of most of them. For each detected device a list of its registers, which the user can modify, is displayed and also additional informations about device parameters (type, address in the network, etc.).
S-Config software can be downloaded from SIMEX website at **www.simex.pl**



SimCorder Soft is a visualisation application created to facilitate work with advanced networks of the SIMEX devices, for acquisition, visualisation, reporting, archiving, exporting and printing of measurement data from all network devices. You can download measurements from the devices automatically or on demand. There is a possibility of immediate notification about emergency states via SMS or e-mail, which will often allow to quickly resolve an arising problem while avoiding long and expensive stoppages. You can view the measurement data, emergency states and configuration via the internet at every time.

CONVERTERS

The **SRS-U4** module is designed to connect a USB host to slave devices equipped with RS-485 interface. The PC with special software can be used as a host. The **SRS-U4** unit guarantees full galvanic isolation between USB and RS-485 circuits. The converter can work with any devices equipped with RS-485 interface and contains integrated circuit which supports USB 1.1 and USB 2.0 standards. The main purpose is connection of PC host computer with industrial data acquisition and visualisation systems based on RS-485 interface.
The **SRS-U4** can be also manufactured with DIN mounting adaptor.