AR642

Universal controller with double reading

Single-channel universal regulator with elements fuzzy logic PID

- control and monitoring of temperature and other physical values (humidity, pressure, level, speed, etc.) processed to a standard electrical signal (0/4÷20mA, 0÷10V, 0÷60mV, 0÷2,5kΩ)
- 1 universal input (thermometer, thermocouple and analogue)
- BIN programmable digital input for changing operational mode of the controller: control start/stop, manual/automatic mode for outputs, two-position switching of the set value (day/night), keyboard lock
- 2 or 3 outputs of ON/OFF type with the following characteristics:
  - output 1 (main): ON-OFF with hysteresis, PID, fuzzy logic (auto-tuning) PID
  - output 2, 3 (auxiliary/alarm): ON-OFF with hysteresis
- analogue output 0/4÷20mA or 0/2÷10V (constant-control, retransmission)
- advanced function of selecting PID parameters with fuzzy logic elements
- available for binary and analogue outputs, for setting the value of the output signal in the range of 0 ÷ 100%
- programmable operation characteristics (process controller, ramping)
- built-in 24 Vdc power supply for supplying on-site transducers
- two-line LED digital readout with adjustable brightness:
  - Upper dispaly- measured value,
  - Bottom dispaly - setpoint of output 1
- RS485 serial interface, galvanically isolated, MODBUS-RTU
- compensation of line resistance for resistance sensors
- temperature compensation of thermocouple cold ends
- programmable input, range of indications (for analogue inputs), options for adjustment, alarms, communication, access and other configuration parameters
- access to configuration parameters protected with a user password
- methods for configuring parameters:
  - via membrane keyboard (IP65) located on the front panel of the device
  - via RS485 or PRG AR955/GP programmer and freeware: ARsoft-LOG (Windows 7/8/10)
- software and programmer allow you to view the measured value and quickly configure single or few sets of parameters previously saved in the computer for re-use, e.g. in other controllers of the same type (duplicate configuration)
- ingress protection rating: IP65 from the front
- high accuracy, long-term stability and immunity to interference
- optional to choose (in the ordering method): power supply 24Vac/dc, output SSR, analog output 0/2÷10V, digital input BIN and interface RS485

Contents of set:

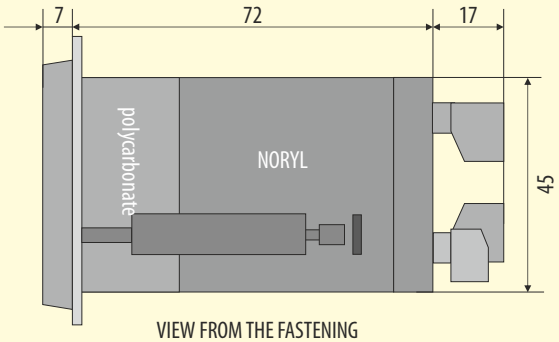
- regulator with handles mounting in the window
- user manual
- warranty card

Available accessories:

- programmer AR955/GP
- RS485 to USB converter

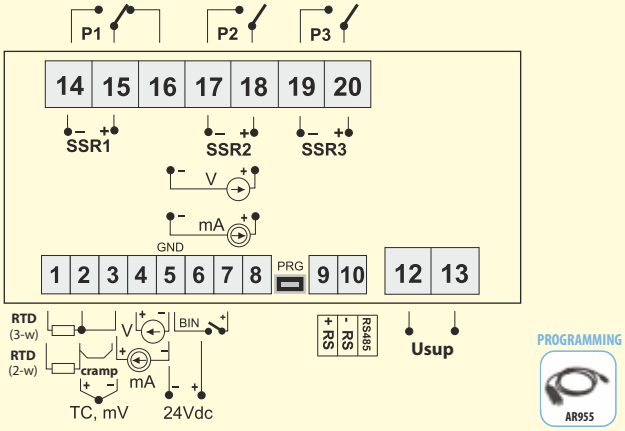
DIMENSIONS, INSTALATTION DATA

Enclosure dimensions	48x96x79 mm
Panel window	46x92 mm
Fixing methods	panel, grips on the side of the enclosure
Material	self-extinguishing polycarbonate NORYL 94V-0



VIEW FROM THE FASTENING HOLDER SIDE

TERMINAL STRIPS, ELECTRICAL CONNECTIONS



How to order

AR642 / □ / □ / □ / □ / □ / □

Supply	Code
230 Vac	S1
24 Vac/dc	S2

Outputs 1, 2	Code
relay	P
SSR	S

Output 3	Code
relay	P
SSR	S

Analog output	Code
0/4÷20mA	WA
0/2÷10 V	WU

Interface RS*	Code
interface RS485	RS485

* option for an extra fee

Fox example:
AR642 / S1 / S / P / RS485 / P
AR642, supply 230 Vac, main output (1) SSR, auxiliary output (2 i 3) relays, interface RS485

www.apar.pl

APAR - Commercial Office, 05-090 Raszyn, ul. Gałczyńskiego 6
tel. +48 22 101-27-31, +48 22 853-48-56 • email: automatyka@apar.pl

TECHNICAL DATA

Universal inputs (programmable)			**measurement ranges**
- Pt100 (RTD, 3- or 2-wire)			-200 ÷ 850 °C
- Ni100 (RTD, 3- or 2-wire)			-50 ÷ 170 °C
- Pt500 (RTD, 3- or 2-wire)			-200 ÷ 620 °C
- Pt1000 (RTD, 3- or 2-wire)			-200 ÷ 520 °C
- thermocouple J (TC, Fe-CuNi)			-40 ÷ 800 °C
- thermocouple K (TC, NiCr-NiAl)			-40 ÷ 1200 °C
- thermocouple S (TC, PtRh 10-Pt)			-40 ÷ 1600 °C
- thermocouple B (TC, PtRh30PtRh6)			300 ÷ 1800 °C
- thermocouple R (TC, PtRh13-Pt)			-40 ÷ 1600 °C
- thermocouple T (TC, Cu-CuNi)			-25 ÷ 350 °C
- thermocouple E (TC, NiCr-CuNi)			-25 ÷ 820 °C
- thermocouple N (TC, NiCrSi-NiSi)			-35 ÷ 1300 °C
- current (R_{we} = 50 Ω)			0/4 ÷ 20 mA
- voltage (R_{we} = 110 kΩ)			0 ÷ 10 V
- voltage (R_{we} > 2 MΩ)			0 ÷ 60 mV
- resistance (3- or 2-wire)			0 ÷ 2500 Ω
Number of measurement inputs			1
Response time for measurements (10 ÷ 90%)			0,25 ÷ 3 s (programmable)
Resistance of leads (RTD, Ω)			R_d < 25 Ω (for each line)
Resistance current (RTD, Ω)			400 µA (Pt100, Ni100), 200 µA (remaning)
Processing errors (at 25°C ambient temperature):			
- basic	- for RTD, mA, V,mV, Ω		0,1 % of measuring range ±1 digit
	- for thermocouples		0,2 % of measuring range ±1 digit
- additional for thermocouples			<2 °C (cold ends temperature)
- additional caused by ambient temperature changes			< 0,003 % of input range /°C
Resolution of measured temperature			0,1 °C
Binary inputs (contact or voltage <24V)			bistable, active level: short-circuit or < 0,8 V
Communication interface (RS485 i PRG, do not use at the same time)	- RS485 (galvanically separated), option		- bitrate 2,4 ÷ 115,2 kb/s, - format 8N1 (8 data bit, 1 bit stop, no parity bit), - MODBUS-RTU protocol (SLAVE)
	- PRG programming link (no separation), standard		
Outputs (3 relays or SSR)	- relay (P1, P2, P3), standard		8A / 250Vac (for resistive loads), 1 main (SPDT), 2 additional (SPST-NO)
	- SSR (SSR1, SSR2, SSR3), option		transistor type NPN OC, 11V, internal resistance 440 Ω
Analogue outputs (1 current or voltage)	- current 0/4÷20 mA (standard)		maximum resolution 1,4 µA (14 bit)
			output load Ro < 350 Ω
	- voltage 0/2÷10 V (option)		maximum resolution 0,7 mV (14 bit)
			output load Io < 3,7 mA (Ro > 2,7 kΩ)
	- output basic error		< 0,1 % of output range
7-segment LCD display with brightness control		- top	red 4 digits, height 9 mm
		- bottom	green 4 digits, height 9 mm
Signalling	- relays active		LED's red
	- messages and errors		LED dispaly
Power supply (Usup)	- 230Vac (standard)		85 ÷ 260 Vac/ 3VA
	- 24Vac/dc (option)		20 ÷ 50 Vac/ 3VA, 20 ÷ 72 Vdc/ 3W
Power supply to filed transmitters			24Vdc / 30mA
Rated operating conditions			0 ÷ 50°C, <100 %RH (non-condensing)
Working environment			air and neutral gases
Protection rating			IP65 front, IP20 of the connections side
Weight			~200g
Electromagnetic compatibility (EMC)			- immunity: acc. to PN-EN 61000-6-2
			- emission: acc. to PN-EN 61000-6-4

Version 3.0.1 2013.03.19

www.apar.pl
APAR - Commercial Office, 05-090 Raszyn, ul. Gałczyńskiego 6
tel. +48 22 101-27-31, +48 22 853-48-56 • email: automatyka@apar.pl