AR660
Universal controller with single reading

APAR

Single-channel universal regulator with elements fuzzy logic PID

PROGRAMMING

AR955

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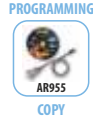
- regulation and monitoring of temperature and other physical values (humidity, pressure, level, speed,etc.) processed to a standard electrical signal (0/4÷20mA, 0÷10V, 0÷60mV, 0÷2,5kΩ)
- 1 universal measurement input (thermoresistance, thermocouple, and analog) with memory of the minimum and maximum measured value and a remote data display function (over the MODBUS-RTU protocol)
- BIN programmable digital input to change the controller's mode of operation: control start/stop, manual mode for outputs, step-wise change of the preset value (day/night), keypad block, display indications stop (HOLD function)
- 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%
- digital LED readout with programmable illumination brightness
- built-in 24 Vdc power supply for supplying on-site transducers
- 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 parameter
- access to configuration parameters is protected by the user's 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)
- enclosure for the DIN35 rail, IP20
- 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
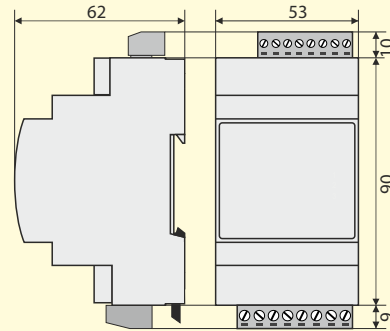
Contents of set:
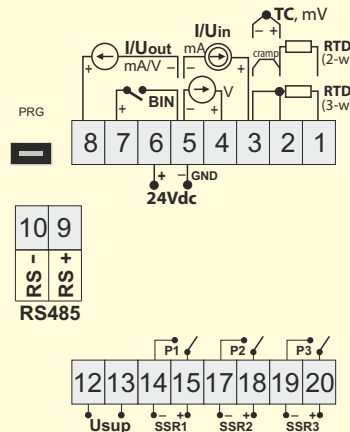- regulator
- user manual
- warranty card

Available accessories:
- AR955/GP or AR956 programmer
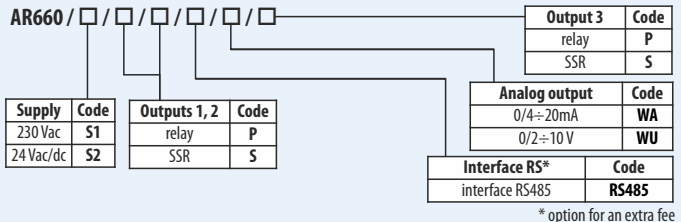- RS485 to USB converter

DIMENSIONS, INSTALATTION DATA

Enclosure dimensions	Modulbox 3MH53, 53x90x62 mm
Fixing methods	on a TS35 rail (DIN EN 50022-35)
Material	ABS/PC
Conductor cross-sections	2,5mm^2(supply, bi-state outputs),1,5mm^2 (other)

TERMINAL STRIPS, ELECTRICAL CONNECTIONS

How to order

AR660 / ☐ / ☐ / ☐ / ☐ / ☐ / ☐

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:
AR660 / S1 / S / P / RS485 / P
AR660, supply 230 Vac, main output (1) SSR, auxiliary output (2 i 3) relays, interface RS485

TECHNICAL DATA

Universal inputs (programmable)		measurement ranges			
- Pt100 (RTD, 3- or 2-wire)		-200	÷	850	℃
– Ni100 (RTD, 3- or 2-wire)		-50	÷	170	℃
- Pt500 (RTD, 3- or 2-wire)		-200	÷	620	℃
- Pt1000 (RTD, 3- or 2-wire)		-200	÷	520	℃
- thermocouple J (TC, Fe-CuNi)		-40	÷	800	℃
- thermocouple K (TC, NiCr-NiAl)		-40	÷	1200	℃
- thermocouple S (TC, PtRh 10-Pt)		-40	÷	1600	℃
- thermocouple B (TC, PtRh30PtRh6)		300	÷	1800	℃
- thermocouple R (TC, PtRh13-Pt)		-40	÷	1600	℃
- thermocouple T (TC, Cu-CuNi)		-25	÷	350	℃
- thermocouple E (TC, NiCr-CuNi)		-25	÷	820	℃
- thermocouple N (TC, NiCrSi-NiSi)		-35	÷	1300	℃
- 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℃ 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 ℃ (cold ends temperature)
- additional caused by ambient temperature changes		< 0,003 % of input range /℃
Resolution of measured temperature		0,1 ℃
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	5A / 250vac (for resistive loads), 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		red 4 digits, height 10mm
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℃, <100 %RH (non-condensing)
Working environment		air and neutral gases
Protection rating		on a TS35 rail, 53x90x58mm, IP40(enclosure), IP20 (of the connections side)
Weight		~160g
Electromagnetic compatibility (EMC)		- immunity: acc. to PN-EN 61000-6-2
		- emission: acc. to PN-EN 61000-6-4