

# AR753

## TWO-CHANNEL LARGE DISPLAY WITH STANDARD MATHEMATICAL FUNCTIONS, ALARMS AND CLOCK



**4 COLORS  
DISPLAY**

- control of temperature and other physical parameters (humidity, pressure, level, speed, etc.) processed into a standard electric signal (0/4÷20mA, 0÷10V, 0÷60mV, 0÷2,5kΩ)
- 2 universal measuring inputs (thermoresistance, thermocouple and analogue) with additional features:
  - mathematical (difference, sum and average of measurements from two inputs)
  - with measured minimum and maximum value saved in the memory
  - remote data display (via MODBUS-RTU, slave)
- real-time clock displayed alternately with measurements
- programmable display colours for measurement channels, clock, LED indicators and alarms
- 2 independent on/off alarm outputs (ON-OFF, heating, cooling, relative alarms, manual mode) with LED indication and a colour display
- BIN digital input for switching the operating mode: start/stop for outputs, manual/automatic mode for outputs, two-position switching of the set value (day/night) for alarms, display "Hold" feature for measurements, changing or stopping the switching of displayed channels, direct display of measured value inputs (for mathematical functions), etc.
- analogue output 0/4÷20mA or 0/2÷10V (alarm, retransmission)
- option of converting an input signal into a standard analogue output
- selecting control value outputs (input, difference, sum, average from measurements)
- manual mode (open control loop) available for binary and analogue outputs, setting the value of the output signal in the range of 0 ÷ 100%, option of auto-activation due to sensor failure
- built-in 24Vdc/50mA power supply adapter for supplying on-site transducers
- RS485 serial interface, galvanically isolated, MODBUS-RTU, slave
- compensation of line resistance for resistance sensors
- temperature compensation of thermocouple cold ends
- programmable display values (measurements, mathematical or remote functions), input types, indication ranges (for analogue inputs), alarm options, communication, access, display and other parameters
- option of protecting access to the configuration of parameters with user password
- methods for configuring parameters:
  - via membrane keyboard (IP65), located on the front panel of the device
  - via RS485 or PRG (programmer AR956/955) and freeware ARsoft-LOG (Windows 7/8/10), MODBUS-RTU
- 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 devices of the same type (duplicate configuration)
- 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

**Contents of set:**

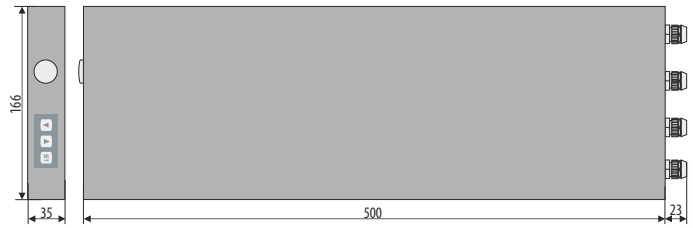
- display
- user manual

**Available accessories:**

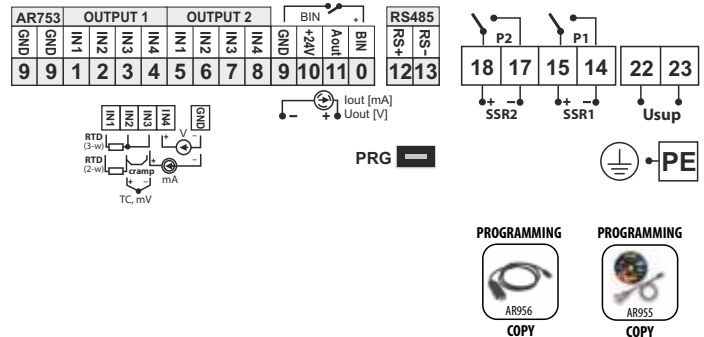
- programmer AR956 or AR955
- RS485 to USB converter

**DIMENSIONS, INSTALLATION DATA**

<b>Enclosure type</b>	wall mounting IP51, DELTA-BOX
<b>Enclosure dimensions</b>	500 x 166 x 35 mm (S x W x G)
<b>Fixing methods</b>	in horizontal guides at the back of the housing (eg with M4 or M5 screws for retractable nuts in guides)
<b>Material</b>	aluminum
<b>Conductor cross-sections</b> (for detachable connectors)	2,5mm <sup>2</sup> (supply, bi-state outputs), 1,5mm <sup>2</sup> (other)



**TERMINAL STRIPS, ELECTRICAL CONNECTIONS**



PRG - programming connector is available after unscrewing cap in the left side of the housing (next to the keyboard). (do not use simultaneously with RS485)  
 Insert electric wires into the housing through cable glands(M12x1,5)  
 To terminal PE inside the housing next to the upper gland join a ground / neutral wire

**ORDERING PROCEDURE**

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Supply	Code	Output 1, 2	Code	Analog output	Code
230 Vac	S1	relay	P	0/4÷20 mA	WA
24 Vac/dc	S2	SSR	S	0/2÷10V	WU

**For example**

**AR753 / S1 / P / P / WA**

AR753, supply 230 Vac, 2 relay outputs, output 0/4÷20 mA, interface RS485

## 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 ( $R_{we} = 50 \Omega$ )	0/4 ÷ 20 mA
- voltage ( $R_{we} = 110 k\Omega$ )	0 ÷ 10 V
- voltage ( $R_{we} > 2 M\Omega$ )	0 ÷ 60 mV
- resistance (3- or 2-wire)	0 ÷ 2500 $\Omega$
- remote data display (via RS485 or PRG port)	-1999 ÷ 9999
<b>Number of measurement inputs</b>	2
<b>Response time for measurements</b> (10 ÷ 90%)	0,5 ÷ 4 s (programmable)
<b>Resistance of leads</b> (RTD, $\Omega$ )	$R_L < 25 \Omega$ (for each line)
<b>Resistance current</b> (RTD, $\Omega$ )	400 $\mu$ A (Pt100, Ni100), 200 $\mu$ A (remaining)
<b>Processing errors</b> (at 25°C ambient temperature):	
- basic	- for RTD, mA, V, mV, $\Omega$ - for thermocouple
	0,1 % of measuring range $\pm 1$ digit
	0,2 % of measuring range $\pm 1$ digit
- additional for thermocouples	<2 °C (thermocouple cold junction temperature compensation)
- additional caused by ambient temperature changes	< 0,003 % of input range /°C
<b>Resolution of measured temperature</b>	0,1 °C
<b>Display range (resolution of analog inputs)</b>	-1999 ÷ 9999, programmable
<b>Position of decimal point for analog inputs</b>	programmable, 0 ÷ 0,000
<b>Binary inputs</b> (contact or voltage <24V)	bistable, active level: short-circuit or < 0,8 V
<b>Communication interface</b> (RS485 i PRG, do not use at the same time)	- RS485 (galvanically separated), option - PRG programming link (no separation), standard
	- bitrate 2,4 ÷ 115,2 kb/s, - format 8N1 (8 data bit, 1 bit stop, no parity bit), - MODBUS-RTU protocol (SLAVE)
<b>Outputs</b> (2 relays or SSR)	- relay (P1, P2), standard - SSR (SSR1, SSR2), option
	5A / 250Vac (for resistive loadsh), 1 main, 1 additional, SPST-NO transistor type NPN OC 24V, internal resistance 850 $\Omega$
<b>Analogue outputs</b> (1 current or voltage, without separation from input)	- current 0/4 ÷ 20 mA (standard) - voltage 0/2 ÷ 10 V (option) - output basic error
	maximum resolution 1,4 $\mu$ A (14 bit) output load $R_o < 500 \Omega$ maximum resolution 0,7 mV (14 bit) output load $I_o < 3,7$ mA ( $R_o > 2,7 k\Omega$ ) < 0,1 % of output range
<b>7-segment LCD display with brightness control</b>	4 digits, height 100 mm, 4 colors (red, orange, yellow, green)
<b>Signalling</b>	- relays active - messages and errors
	LED diode, 4 colors (as for display) LED display
<b>Power supply (Usup)</b>	- 230Vac (standard) - 24Vac/dc (opcja)
	85 ÷ 260 Vac/ 5VA 20 ÷ 50 Vac/ 5VA, 20 ÷ 72 Vdc/ 5W
<b>Power supply to filed transmitters</b>	24Vdc / 50mA
<b>Rated operating conditions</b>	0 ÷ 50°C, <100 %RH (non-condensing)
<b>Working environment</b>	air and neutral gases
<b>Protection rating</b>	IP51, wall mounted aluminum, DELTA-BOX
<b>Weight</b>	~2300g
<b>Electromagnetic compatibility (EMC)</b>	- immunity: acc. to PN-EN 61000-6-2 - emission: acc. to PN-EN 61000-6-4