

Two-channel large display with standard mathematical functions, alarms and clock



**4 COLORS
DISPLAY**
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- 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, analogue output 0/2÷10V

Contents of set:

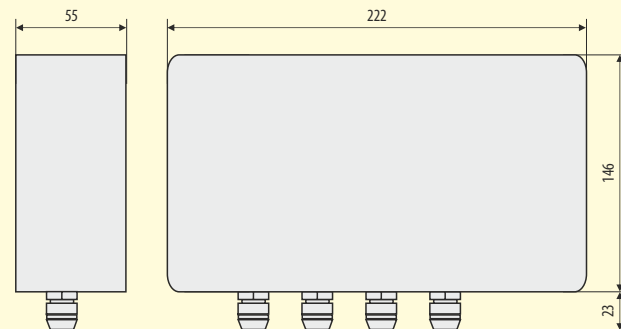
- display
- user manual

Available accessories:

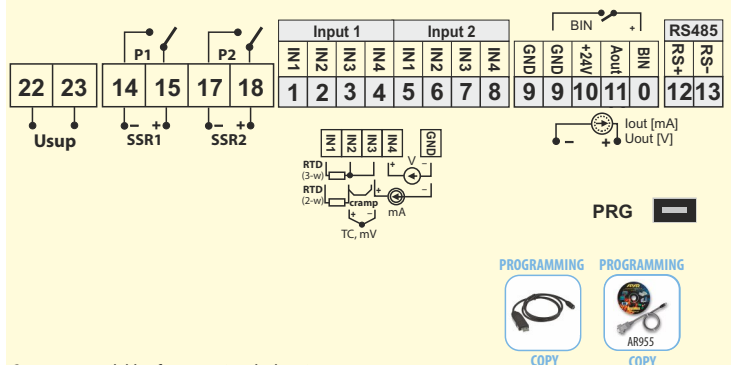
- programmer AR956 or AR955
- RS485 to USB converter

Dimensions, Installation data

| | |
|--|---|
| Enclosure type | industrial IP65, Gainta G218 |
| Enclosure dimensions | 222 x 146 x 55 mm (S x W x G) |
| Fixing methods | 4 holes Ø4,3 mm, spacing 210x116 mm, available after removing the front cover |
| Material | polycarbonate |
| Conductor cross-sections (for detachable | 2,5mm ² (supply, bi-state outputs), 1,5mm ² (other) |



Terminal strips, Electrical connections



Connectors available after removing the housing cover.

Insert electric wires into the housing through cable glands (M12x1,5)

PRG - socket located on the display board (do not use simultaneously with RS485)

How to order

| | | | | | |
|---------------------------|-------------|----------------------|-------------|---------------------|-------------|
| AR540 / □ / □ / □ / □ / □ | | | | | |
| Supply | Code | Output 1, 2 | Code | Interface RS | Code |
| 230 Vac | S1 | relay | P | Interface RS485 | Rs485 |
| 24 Vac/dc | S2 | SSR | S | | |
| | | Analog output | Code | | |
| | | 0/4÷20 mA | WA | | |
| | | 0/2÷10 V | WU | | |

For example:

AR540 / S1 / P / P / RS485 / WA

AR540, supply 230 Vac, 2 relay outputs (interface RS485, output 0/4÷20 mA)

| 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 ($R_{in} = 50 \Omega$) | | 0/4 ÷ 20 mA |
| - voltage ($R_{in} = 110 k\Omega$) | | 0 ÷ 10 V |
| - voltage ($R_{in} > 2 M\Omega$) | | 0 ÷ 60 mV |
| - resistance (3- or 2-wire) | | 0 ÷ 2500 Ω |
| - remote data display (via RS485 or PRG port) | | -1999 ÷ 9999 |
| Number of measurement inputs | | 2 |
| Response time for measurements (10 ÷ 90%) | | 0,5 ÷ 4 s (programmable) |
| Resistance of leads (RTD, Ω) | | $R_L < 25 \Omega$ (for each line) |
| Resistance current (RTD, Ω) | | 400 μ A (Pt100, Ni100), 200 μ A (remaining) |
| Processing errors (at 25°C ambient temperature): | | |
| - basic | - for RTD, mA, V,mV, Ω - for thermocouple | 0,1 % of measuring range \pm 1 digit 0,2 % of measuring range \pm 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 |
| Display range (resolution of analog inputs) | | -1999 ÷ 9999, programmable |
| Position of decimal point for analog inputs | | programmable, 0 ÷ 0,000 |
| 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 - 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) |
| Outputs (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 Ω |
| Analogue outputs (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 μ 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 |
| 7-segment LCD display with brightness control | | 4 digits, height 57 mm, 4 colors (red, orange, yellow, green) |
| Signalling | - relays active - messages and errors | LED diode, 4 colors (as for display) LED dispaly |
| Power supply (Usup) | - 230Vac (standard) - 24Vac/dc (opcja) | 85 ÷ 260 Vac/ 5VA 20 ÷ 50 Vac/ 5VA, 20 ÷ 72 Vdc/ 5W |
| Power supply to filed transmitters | | 24Vdc / 50mA |
| Rated operating conditions | | 0 ÷ 50°C, <100 %RH (non-condesing) |
| Working environment | | air and neutral gases |
| Protection rating | | IP65, industrial enclosure, wall mounting |
| Weight | | ~800g |
| Electromagnetic compatibility (EMC) | | - immunity: acc. to PN-EN 61000-6-2 - emission: acc. to PN-EN 61000-6-4 |