AR247 Temperature and humidity controller

AR247/1

PROGRAMMING

COPY

AR247/2

AR247/3

- high class digital relative humidity and temperature sensor with a protective filter (ABS material as a standard, mesh: 1 mm)
- probe integrated with the enclosur, external on a wire or a stainless steel pipe
- temperature compensation of relative humidity measurement
- programmable digital filter smoothing and stabilizing measurements
- 3 independent outputs of on/off type (ON-OFF, control 2- and 3-position):
  - output 1 (main): ON-OFF with hysteresis, PID, AUTOTUNING PID
  - output 2, 3 (auxiliary/alarm): ON-OFF with hysteresis
  - performance characteristics: heating/humidification, cooling/drying, relative alarms
- analogue output 0/4÷20mA (standard) or 0/2÷10V (optional), constant-control, retransmission
- calculation of dew/frost point (° C) and absolute humidity (g/m^3)
- possibility to choose control signal for outputs (humidity or temperature)
- manual mode (open control loop) available for binary and analogue outputs, setting the value of the output signal in the range of 0 ÷ 100%
- programmable BIN digital input and function button "F" for changing the operational mode of the controller: control start/stop mode, manual mode for outputs, two-position switching of the set value (day/night), keypad lock etc.
- two-line digital LED readout with adjustable brightness
- access to configuration parameters protected by a user password or no password required
- configuration of parameters from keyboard, through the RS485 or AR956 (AR955) programmer and ARSOFT-WZ1 software for quick copy all configuration parameters
- available accessory filter with metal mesh to increase sensor protection
- optional RS485 interface, galvanically insulated, MODBUS-RTU protocol
- universal power supply 15-350 Vdc, 20-250 Vac / 50-60Hz
- IP65 degree of protection provided by the industrial housing which improves its reliability due to high resistance to water, dust and condensation inside the unit

Contents of set:
- controller
- user manual
- warranty card

Available accessories:
- filter with metal mesh (mesh~25 µm)
- programmer AR956 (or AR955)
- RS485 to USB converter
- measuring probes AR281/282/283/284

How to order

AR247 / □ / □ / □ / □ / □ / □

Output 3	Code
relay	P
SSR	S

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

Outputs 1,2	Code
relay	P
SSR	S

Interface RS**	Code
interfejs RS485	RS485

*standard
** option for an extra fee

Type of measuring probe	Code
integrated with housing (standard)	1
external with cable 1,5m	2
	3
on stainless steel pipe, length 150 mm	L150
on stainless steel pipe, length 250 mm	L250

For example: AR247 / 1 / P / P / RS485 / WA / P
probe integrated with housing, 3 relay outputs, interface RS485, output 0/4÷20mA

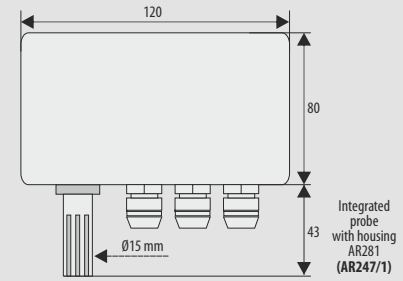
TECHNICAL DATA

Measurement range for the probe		0÷100 %RH, -30÷80 °C, **do not pour water on the measuring probe**
Measurement accuracy		same as for the SHT31 sensor made by Sension*
	humidity	typically ± 2% RH over the measuring range transmitter *
	temperature	typically ±0,3 °C over the measuring range transmitter*
Hysteresis and stability		±0,8 %RH, long-term stability <0,25 %RH/year *
Measurement period and filtration		1s, delay of programmable digital filter: 0÷5s
Response time (63%) for a step change		8s (for air flow >3,6km/h, and switched off program filtration)*
Readout measurement resolution		programmable: 0.1 or 1 %RH, °C , g/m^3
LED display and indicators		2 x 3 digits 14 mm, indication of status of outputs and measuring units
Outputs	relay (P)	1 x SPDT (8A/250 Vac dla obciążeń rezystancyjnych), 2 x SPST-NO (5A)
	for SSR (option)	transistor type NPN OC, 11 V, internal resistance 440 Ω
	analog current	0/4÷20 mA, output load capacity Ro R_0<500 Ω, resolution 12bit
	analog voltage	0/2÷10 V, output load capacity Ro I_0<4 mA (R_w > 2,5 kΩ), resolution 12bit
	RS485 galvanically separated (option), PRG	protocol MODBUS-RTU slave, bitrate 2,4÷57,6 kb/s, format 8N1
Binary input BIN (bistable)		contact or voltage < 24V, active when: short circuit or < 0,8 V
Supply (Usup)	universal, compatible to standard 24Vdc and 230Vac	15-350 Vdc / 3VA 20-250 Vac / 3VA / 50-60Hz
Rated operating conditions		-20÷60 °C, <100 %RH (non-condesing), air and neutral gases
Electromagnetic compatibility (EMC)		immunity: acc. to PN-EN 61000-6-2
		emission: acc. to PN-EN 61000-6-4

*for controllers with software version below "u11", measurement accuracy is in accordance with documentation attached with purchase (± 3 ÷ 5% RH, ± 0.5 ÷ 1.8° C, hysteresis ± 1% RH, long-term stability <0.5% RH / year)

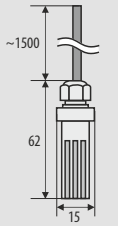
DIMENSIONS, INSTALLATION DATA

Dimensions , weight, material	120 x 80 x 55 mm, ~340g (AR247/1 version), polycarbonate
Fixing methods	4 holes Φ4,3mm, distance108x50 mm when the front cover is removed

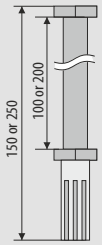


Integrated probe with housing AR281 **(AR247/1)**

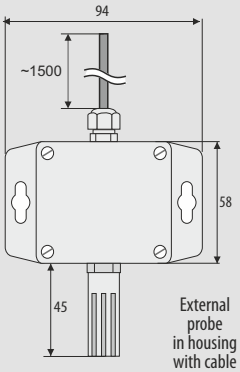
WARNING:
For older AR247 regulators exchangeable AR28x measuring probes should be ordered with SHT11 sensor. Using a standard probe with sensor SHT31 needs updating regulator's firmware (up to version> "u10")



External probe with cable AR282 **(AR247/2)**



Probe on the pipe of steel stainless AR284/L150 **(AR247/L150)** AR284/L250 **(AR247/L250)**

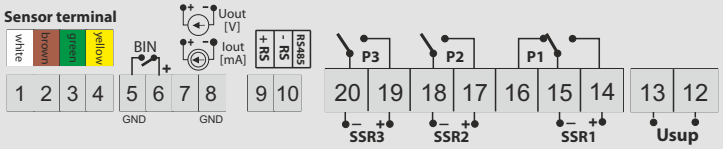


External probe in housing with cable AR283 **(AR247/3)**

TERMINAL STRIPS, ELECTRICAL CONNECTIONS

PRG - socket located on the board of the display (**do not use in the same time with RS485**)

Sensor terminal



Connections available after removing housing cover and display board

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Calibration Certification – **SHT1x / SHT2x / SHT7x Series**

SENSIRION
THE SENSOR COMPANY

Calibration Certification

Product: SHT1x / SHT2x / SHT7x Series

Description: Digital Humidity and Temperature Sensors

The above mentioned products are calibrated to meet the specifications according to the corresponding Sensirion data sheet. Each device is individually tested after its calibration.

Sensirion uses transfer standards for the calibration. These transfer standards are themselves subject to a scheduled calibration procedure. The calibration of the reference itself used for the calibration of the transfer standards is performed by an ISO/IEC 17025 accredited laboratory.

The accreditation body is full member of the International Laboratory Accreditation Cooperation (www.ilac.org). Calibration certificates issued by facilities accredited by a signatory to the ILAC Mutual Recognition Arrangement (MRA) are accepted by all signatories to the ILAC MRA.

This provides traceability of measurement to recognized national standards and to units of measurement realized at the “National Physical Laboratory” (NPL) or other recognized national standards laboratories like “Physikalisch-Technische Bundesanstalt” (PTB) or “National Institute of Standards and Technology” (NIST).

Staefa, August 2010

Dr. Felix Mayer
Co-CEO, Sensirion AG

Andreas Kaatz
Quality Manager, Sensirion AG

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