

Symaro™

Duct Temperature Sensor Modbus RTU

QAM2151.040/MO



Duct temperature sensor with Modbus communication

- Modbus RTU (RS-485)
- On-event addressing via push button together with Climatix™ controllers
- DIP switches setting together with other controllers

Use

The duct temperature sensor is used in ventilation and air conditioning plants as:

- Supply or exhaust air temperature sensors
- Limit sensors, for example, for minimum limitation of the supply air temperature
- Reference sensors, for example, for compensation of the room temperature as a function of the outside temperature
- Dew point temperature sensors
- Measuring sensors, for example, for measured value indication or for connection to a building automation and control system

Technical design

Cable entry is made via the M16 cable entry gland (IP54) supplied with the sensor which can be screwed into the housing. Probe and housing are rigidly connected.

The sensor is designed for screwed or flanged mounting.

It can be fitted as follows:

- With the mounting flange supplied with the sensor (recommended), which is to be fitted to the sensor and then secured according to the required immersion length
- Without the mounting flange (using the maximum immersion length). For that propose, the housing has 4 holes for fitting the sensor directly to the air duct

Type summary

Product number	SSN NO.	Probe length	Measuring range	Operating voltage	Output signal
QAM2151.040/MO	S55720-S466	0.4 m	-50...50 °C	AC 24 V ±20 %/ DC 13.5...35 V	Modbus RTU

Ordering and delivery

When ordering, specify name and product number, for example: Duct temperature sensor QAM2151.040/MO.

The sensor is supplied complete with mounting flange AQM63.0 and cable entry gland M16.

Notes

Engineering

Powering the sensor requires a transformer for safety extra low-voltage (SELV) with separate windings for 100 % duty. When sizing and protecting the transformer, comply with all local safety regulations.

When sizing the transformer, determine the power consumption of the room sensor.

For correct wiring, see the datasheets of the devices with which the sensor is used.

Observe permissible line lengths.

Cable routing and cable selection

Note that when routing cables, the longer the cables run side by side and the smaller the distance between them, the greater the electrical interference. Shielded cables must be used in environments with EMC problems.

Twisted pair cables are required for the secondary supply lines and the signal lines.

Mounting and installation

Mounting location

- For supply air temperature control: Downstream from the fan, if the fan is located after the last air handling unit. Otherwise, after the last air handling unit with a minimum distance of 0.5 m

- For exhaust air temperature control: Always upstream of the exhaust air fan
 - As a limit sensor for the supply air temperature: As close as possible to the air outlet into the room
 - For dew point control: Immediately after the spray trap of the air washer
- Manually bend the probe so that it lies diagonally across the duct or in equally spaced windings across the entire duct cross-section. The probe must not touch the duct wall.

Mounting instructions

Mounting instructions are enclosed in the package.

Mounting positions

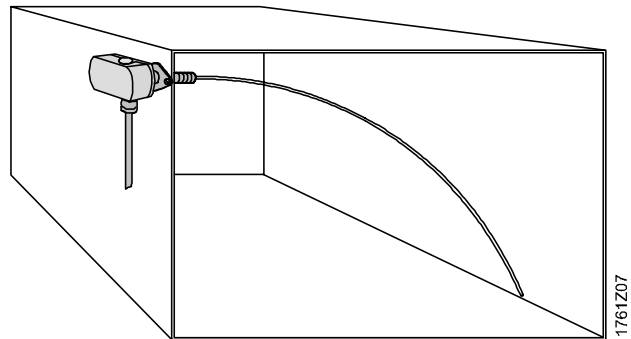
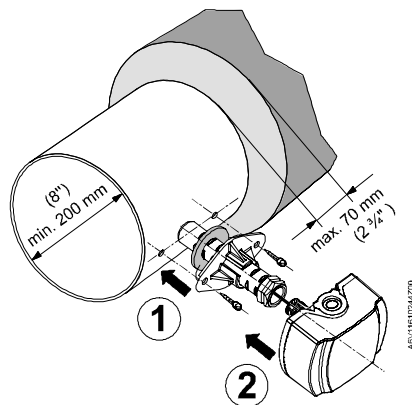
Permitted



Not permitted



Mounting examples



Disposal



The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Function	
Communication	Modbus RTU (RS-485)
Supported baud rate	9600; 19200; 38400; 57600; 76800; 115200
Transmission format	1-8-E-1; 1-8-O-1; 1-8-N-1; 1-8-N-2
Bus termination	120 ohm, jumper selection

For detailed information about specific functions, see Basic documentation (A6V11610643*).

Power supply	
Operating voltage	Safety extra-low voltage (SELV) AC 24 V $\pm 20\%$ or DC 13.5...35 V or AC/DC 24 V class 2 (US)
Frequency	50/60 Hz at AC 24 V
External supply line protection (EU)	Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A
Power consumption	≤ 1.5 VA

Functional data	
Measuring range	-50...50 °C
Probe	
Probe length	0.4 mm
Minimum bending radius	10 mm
Sensing element	Pt 1000
Time constant	30 s at 2 m/s
Dead time	< 1 s
Measuring accuracy in the range of	
-25...25 °C	± 0.75 K
-50...50 °C	± 0.9 K

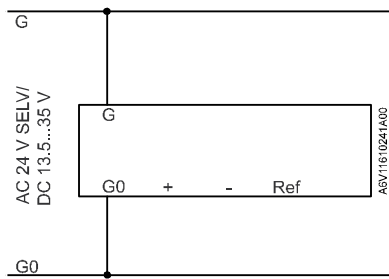
Ambient conditions and protection classification	
Protection degree of housing	IP54 according to EN 60529
Protection class	III according to EN 60730-1
Environmental conditions	
Transport	IEC 60721-3-2
• Climatic conditions	Class 2K3
– Temperature	-25...70 °C
– Humidity	< 95 % r.h.
• Mechanical conditions	Class 2M2
Operation	IEC 60721-3-3
• Climatic conditions	Class 3K5
– Temperature (housing)	-40...70 °C
– Humidity (housing)	5...95 % r.h.

Standards, directives and approvals	
Product standard	EN 60730-1, EN 60730-2-9, EN 61000-6-2, EN 61000-6-3 Automatic electrical controls for household and similar use
EU conformity (CE)	A5W00037903A *)
RCM conformity	A5W00037912A *)
UL	UL 873, http://ul.com/database
Environmental compatibility	The product environmental declaration (A5W90011832 *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

General	
Line lengths for measuring signals	
Perm. cable lengths	
Copper cable 0.6 mm dia.	50 m
Copper cable 1 mm ²	150 m
Copper cable 1.5 mm ²	300 m
Electrical connections terminals for	1 × 2.5 mm ² or 2 × 1.5 mm ²
Cable entry gland (enclosed)	M 16 × 1.5
Materials and colors	
Probe	Copper, polyolefine
Base	Polycarbonate, RAL 7001 (silver-grey)
Cover	Polycarbonate, RAL 7035 (light-grey)
Mounting flange	PA 66 (black)
Cable entry gland	PA, RAL 7035 (light-grey)
Packaging	Corrugated cardboard
Weight including package	Approx. 213.8 g

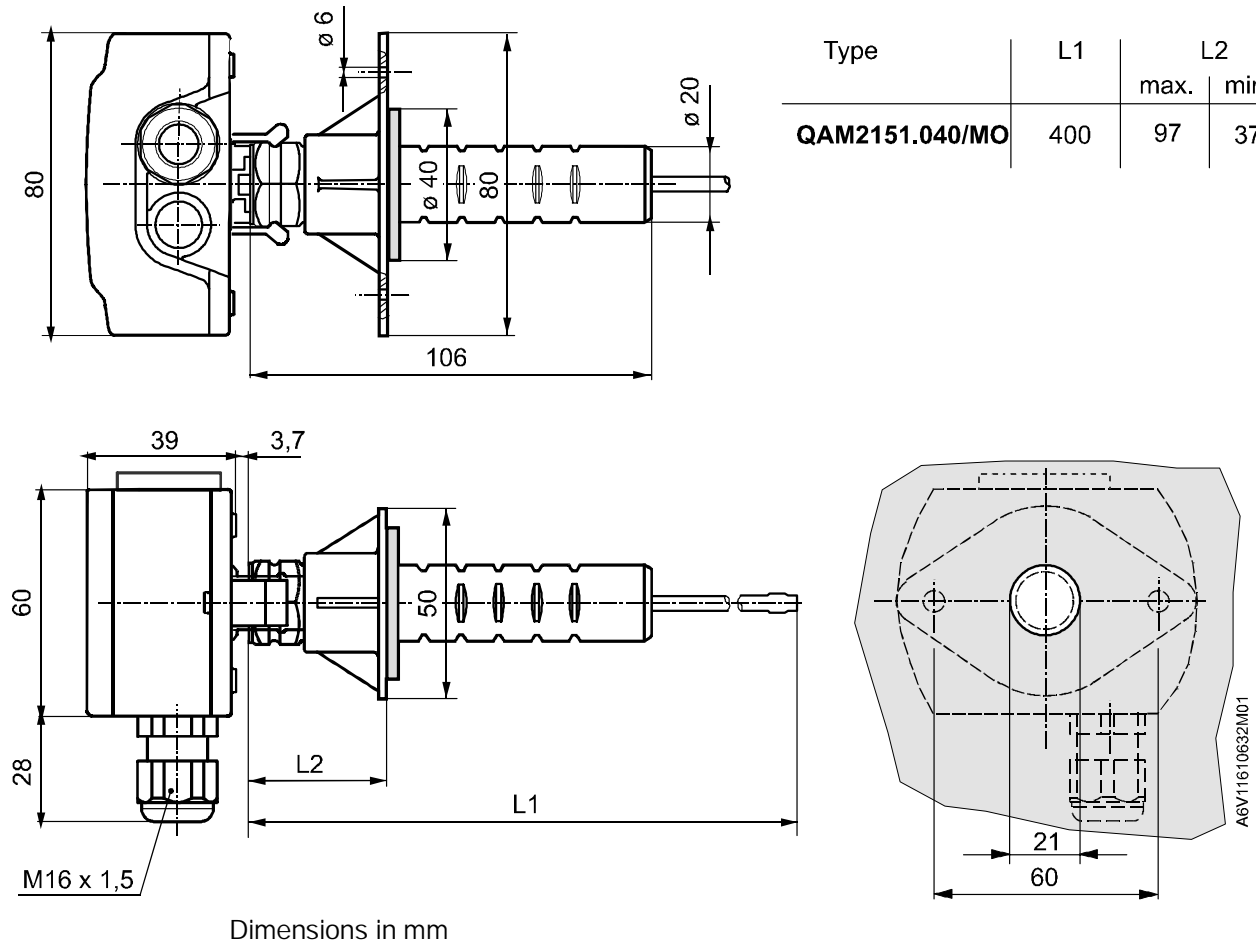
*) The documents can be downloaded from <http://siemens.com/bt/download>.

Connection terminals



- G Operating voltage AC 24 V \pm 20 % or DC 13.5...35 V
- G0 Ground
- + RS485 Modbus A
- RS485 Modbus B
- Ref GND_ISO

Dimensions



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