SIEMENS

Symaro™

Immersion Temperature Sensor Modbus RTU

QAE2154.010/MO

Immersion temperature sensor with Modbus communication

- Temperature sensor for acquiring the water temperature in pipes and tanks
- Modbus RTU (RS-485)
- On-event addressing via push button together with Climatix™ controllers
- DIP switches setting together with other controllers

Use

The sensor is used in ventilation and air conditioning plants for:

- Controlling or limiting the flow temperature
- Limiting the return temperature
- Controlling the domestic hot water (DHW) temperature

Function

The immersion temperature sensor acquires the temperature of the medium via its sensing element whose resistance value changes as a function of the temperature. This change is converted to a Modbus RS-485 output signal. The output signal corresponds to the selected temperature range.

Technical design

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

Type summary

Product number	SSN NO.	Accessory	Immersion length	Operating voltage	Output signal
QAE2154.010/MO	S55720-S465	With clamp for protection pocket [1)]	100 mm	AC 24 V ±20 %/ DC 13.5...35 V	Modbus RTU

[1)] Protection pocket needs to be ordered separately.

Ordering

When ordering, please specify name and product number, for example: Immersion temperature sensor QAE2154.010/MO.

Accessories

Accessories are not included with standard delivery.

Name	Material	Nominal pressure	Type of sealing	Immersion length	Type reference
Protection pocket	Brass (CuZn37)	PN10	Threaded with sealing means	100 mm	ALT-SB100
Protection pocket	V4A (1.4571)	PN16	Threaded with sealing means	100 mm	ALT-SS100
Protection pocket	V4A (1.4571)	PN40	With flange for flat seal	100 mm	ALT-SSF100

For other protection pocket accessories, see datasheet N1194.

Notes

Engineering

If the nominal pressure exceeds PN10, protection pockets made of stainless steel (V4A) are required. The temperature measuring range must be selected on the sensor, if required.

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

Depending on use, the sensor should be located as follows:

- For flow temperature control (heating flow):
  - Directly after the pump if the pump is located in the flow
  - 1.5 to 2 m after the mixing valve if the pump is located in the return
- For return temperature limitation:
  In the return at a location where the temperature can be correctly acquired

The sensor should be installed in an elbow with the immersion rod or the protection pocket facing the direction of flow. The water must be well mixed where the temperature is acquired. This is downstream from the pump or, if the pump is mounted in the return, at least 1.5 m after the mixing point.

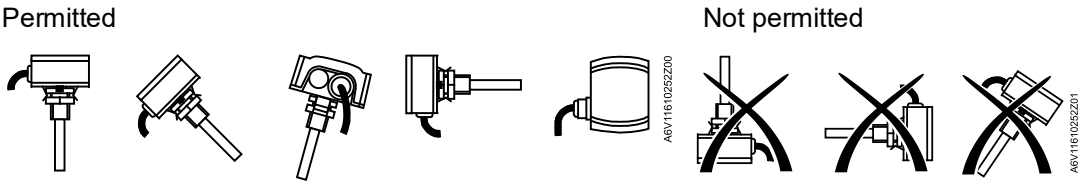
Mount the sensor so that the cable does not enter from the top.

For all sensors, the immersion length must be a minimum of 60 mm.

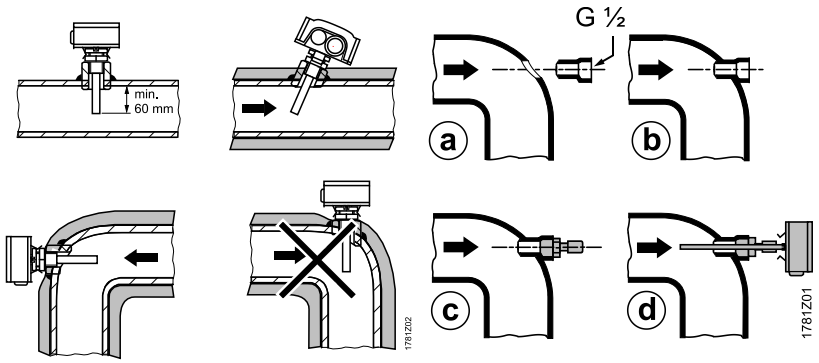
Do not cover the sensor with insulation.

To fit the sensor, a threaded fitting or T-piece G ½ must be welded into the pipe.

Mounting positions



Mounting



NOTICE! For sensors with non-sealing threaded nipples G ½, use a sealant with the threaded connection (for example, hemp, Teflon tape and so on).

Mounting instructions

Mounting instructions are enclosed in the package.

Disposal

This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.

For additional details, refer to www.siemens.com/bt/disposal.

Technical data

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 ±20 % or DC13.5…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	-10...120 °C
Immersion length	100 mm
Sensing element	Pt 1000 class B to DIN EN 60 751
Time constant With pocket Without pocket	 30 s at 2 m/s 8 s at 2 m/s
Measuring accuracy in the range of 0…70 °C -10…120 °C	 ±1 K ±1.4 K
Nominal pressure	PN 16

Ambient conditions and protection classification	
Protection degree of housing	IP54 according to EN 60529
Protection class	III according to EN 60730-1

Ambient conditions and protection classification	
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.

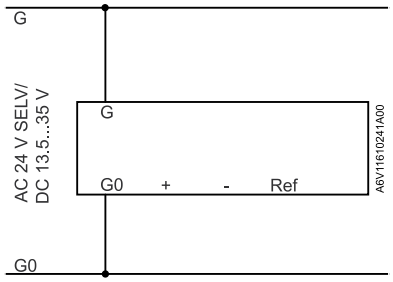
Standards, directives and approvals	
Product standard	EN 60730-1, EN 60730-2-9, EN 61000-6-2, EN 61000-6-3 Automatic electrical controls for household and similar use
Electromagnetic compatibility (Applications)	For use in residential, commerce, light-industrial and industrial environments
EU conformity (CE)	A5W00028382A *)
RCM conformity	A5W00028384A *)
UL	UL 873, http://ul.com/database
UKCA	A5W00188744A *)
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	
Cable lengths for measuring signal Max. perm. cable lengths	See data sheet for the device handling the signal
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	
Base	Polycarbonate, RAL 7001 (silver-grey)
Cover	Polycarbonate, RAL 7035 (light-grey)
Immersion rod	Stainless steel to DIN 17 440 Steel 1.4571
Cable entry gland	PA, RAL 7035 (light-grey)
Packaging	Corrugated cardboard
Weight including package	Approx. 184.4 g

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

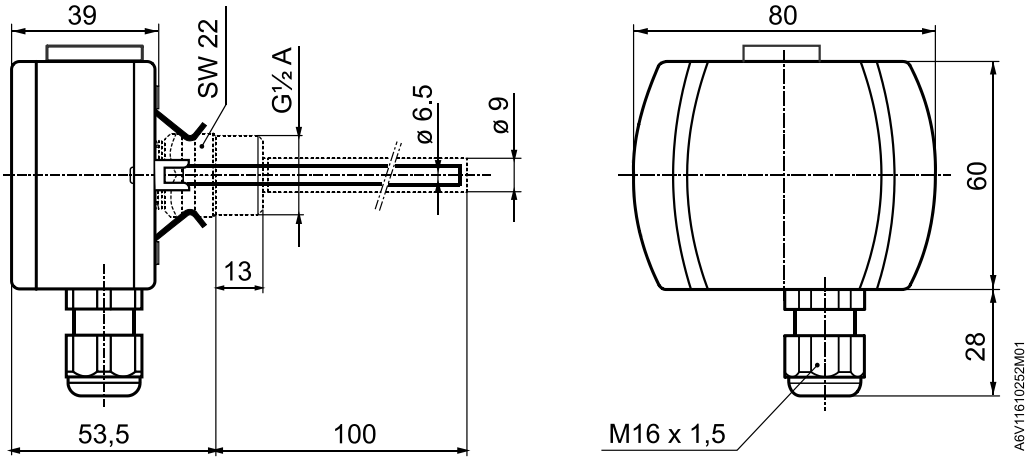
Diagrams

Connection terminals



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

Dimensions



Dimensions in mm

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