

Symaro™

## Immersion Temperature Sensor

QAE9120.010



### Immersion temperature sensor in pipes and tanks

- Passive sensor for acquiring the water temperature in pipes and tanks.

## Use

The QAE9120.010 immersion temperature sensor is for use 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

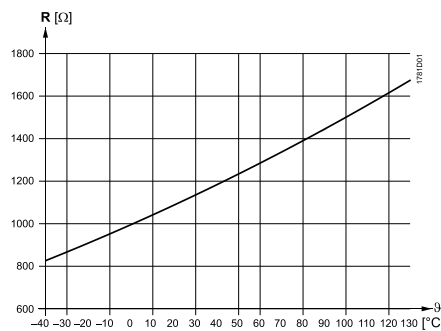
The sensor acquires the medium temperature via its sensing element whose resistance value changes as a function of the temperature.

The signal is delivered for further handling by a suitable controller.

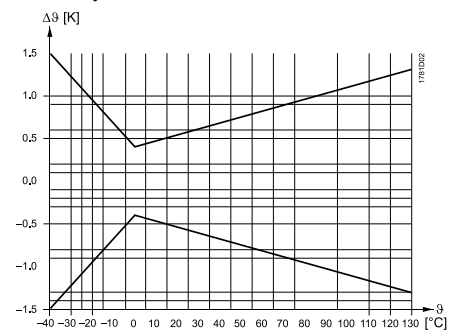
### Sensing elements

LG-Ni 1000

Characteristic



Accuracy



Legend

R Resistance value in Ohm  
 $\theta$  Temperature in degrees Celsius  
 $\Delta\theta$  Temperature differential in Kelvin

## Mechanical design

The immersion temperature sensor consists of the following components:

- Two-sectional plastic housing comprised of base with connection terminals and removable cover (snap-on design)
- Immersion rod complete with sensing element

The connection terminals can be accessed after removing the cover. The cable entry is via a grommet which, if required, can be replaced by a cable entry gland M16 (IP54).

## Type summary

Type	Outfit	Immersion length	Normal pressure	Sensing element	Protection degree of housing	Packing size
QAE9120.010	Including protection pocket with threaded nipple G ½ A	100 mm	PN 10	LG-Ni 1000	IP42 (IP54) <sup>1)</sup>	20 pieces in multipacks

<sup>1)</sup> IP54 with cable entry gland M16 (not included as standard)

## Ordering

When ordering, please give name and type reference, e.g.: Immersion temperature sensor QAE9120.010 or protection pocket ALT-SS100.

## Accessories (not included in standard delivery)

Name	Material	Nominal pressure	Type of sealing	Immersion length	Type reference
Compression fit-ting	V4A (1.4571)	PN16	Threaded with sealing means	---	AQE2102
Protection pocket	Brass (CuZn37)	PN10	Threaded with sealing means	100 mm	ALT-SB100
Protection pocket	Brass (CuZn37)	PN10	Threaded with sealing means	150 mm	ALT-SB150
Protection pocket	V4A (1.4571)	PN16	Threaded with sealing means	100 mm	ALT-SS100
Protection pocket	V4A (1.4571)	PN16	Threaded with sealing means	150 mm	ALT-SS150
Protection pocket	V4A (1.4571)	PN40	With flange for flat seal	100 mm	ALT-SSF100
Protection pocket	V4A (1.4571)	PN40	With flange for flat seal	150 mm	ALT-SSF150

For other protection pocket accessories, refer to datasheet N1194.

## Equipment combinations

All systems or devices capable of acquiring and handling the sensor's passive output signal.

## Notes

### Engineering

Protection pockets made of Brass may not be used with nominal pressures over PN 10 or at temperatures over 130 °C. For higher nominal pressures or temperatures up to max. 135 °C the protection pocket is to omit (max. PN 16) or a protection pocket made of stainless steel (V4A) is required (see table accessories).

### Mounting and installation

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

- For flow temperature control (in the 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.

The sensor should be mounted such that the cable does not enter from the top.

With all types of sensors, the immersion length must be a minimum of 60 mm!

The sensor must not be covered by lagging.

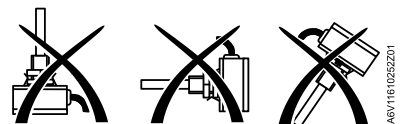
To fit the sensor, a threaded fitting or T-piece G ½ must be welded into the pipe.

### Mounting positions

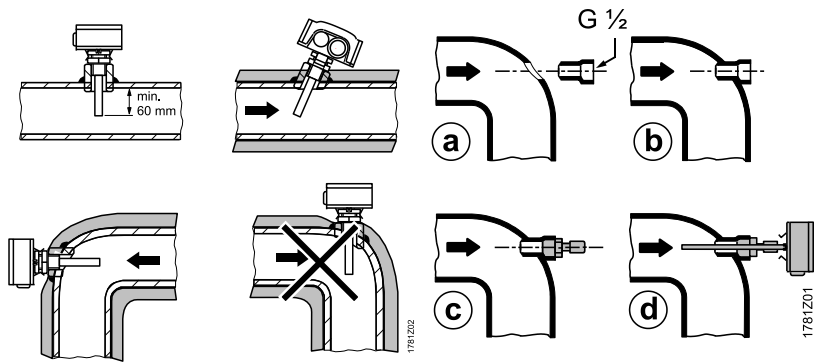
Permitted



Not permitted



## Mounting



**NOTICE!** For sensors with non-sealing threaded nipples G 1/2, sealing means must be used with the threaded connection (e.g., hemp, Teflon tape or similar).

Mounting instructions are printed on the packaging.

## 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.

## Technical data

Functional data	
Measuring range	-30...130 °C
Sensing element	Refer to Type summary [→ 2]
Time constant With protection pocket Without protection pocket	Approx. 30 s Approx. 8 s
Measuring accuracy	Refer to Function [→ 2]
Immersion length	Refer to Type summary [→ 2]
Nominal pressure	Refer to Type summary [→ 2]

Ambient conditions and protection classification	
Protection degree of housing	Refer to Type summary [→ 2] according to EN 60529
Protection class	III according to EN 60730-1
<b>Environmental conditions</b>	
Transport	IEC 60721-3-2
• Climatic conditions	Class 2K3
– Temperature	-25...70 °C
– Humidity	<95 % r.h.
• Mechanical environmental 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 Automatic electrical controls for household and similar use
Electromagnetic compatibility (Applications)	For use in residential, commerce, light-industrial and industrial environments
EU conformity (CE)	CE1T1761xx *)
UL	UL 873, <a href="http://ul.com/database">http://ul.com/database</a>
Environmental compatibility	The product environmental declaration (A5W00126198A *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

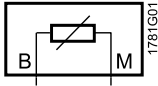
General	
Perm. cable lengths	Refer to data sheet of controller
Electrical connections screw terminals for	1 × 2.5 mm <sup>2</sup> or 2 × 1.5 mm <sup>2</sup>
Cable entry via Grommet	For 5.5...7.2 mm dia. cable
Cable entry gland	M 16 × 1.5
<b>Materials and colors</b>	
Base	Polycarbonate, RAL 7001 (silver-grey)
Cover	RAL 7016
Immersion rod	Stainless steel to DIN 17 440 Steel 1.4571
Protection pocket	Brass (CuZn37)
Compression fitting	Stainless steel 1.4404, 1.4435, 1.4571

General	
Cable entry gland M16 × 1.5	PA, RAL 7035 (light-grey)
Packaging	Corrugated cardboard
Weight	Approx. 0.21 kg

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

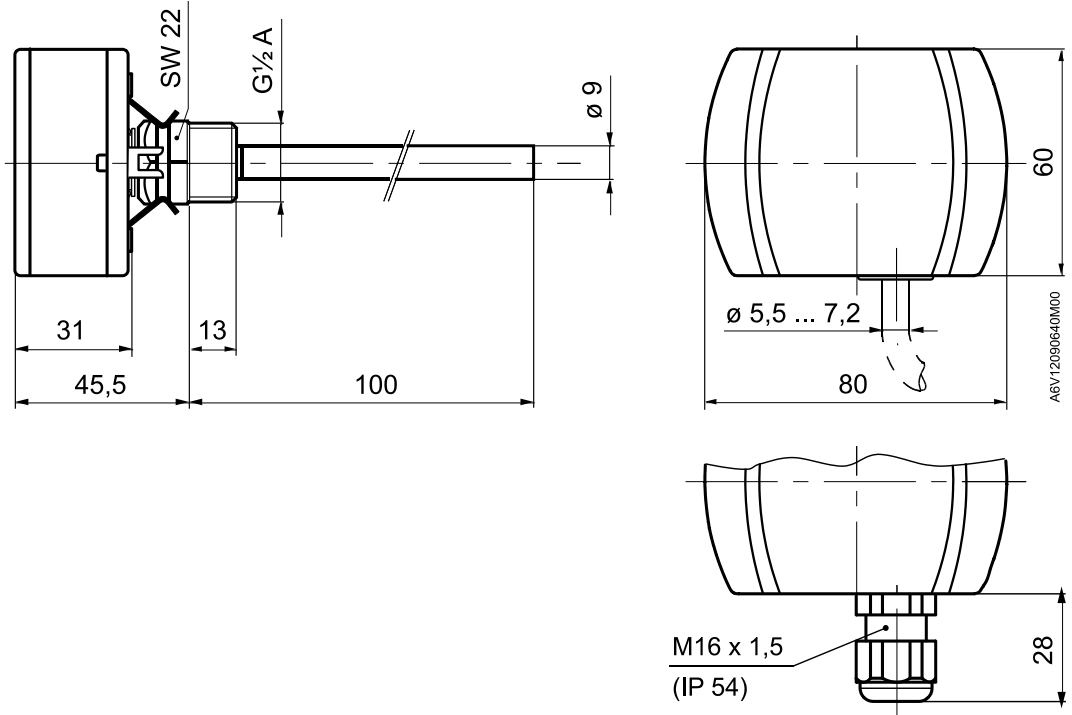
## Diagrams

### Connection terminals

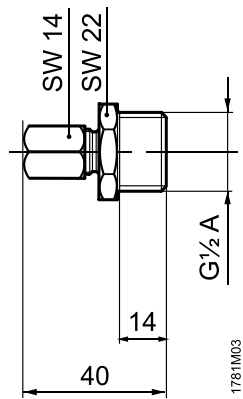


Legend      B      Room temperature measuring signal  
                   M      Measuring neutral

### Dimensions



### Accessory compression fitting AQE2102



Dimensions in mm

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