



Symaro™

Immersion Temperature Sensors

QAE21...

Passive sensors for acquiring the water temperature in pipes and tanks.

Use

The QAE21... immersion temperature sensors are for use in ventilation and air conditioning plants for:

- Controlling or limiting the flow temperature
- Limiting the return temperature
- Controlling the DHW temperature

Type summary

| Typ | Outfit | Immersion length | Nominal pressure | Sensing element | Protection degree of housing |
|-------------|--|------------------|------------------|-----------------|------------------------------|
| QAE2111.010 | With clamp for protection pocket ¹⁾ | 100 mm | PN ³⁾ | Pt 100 | IP42 (IP54) ²⁾ |
| QAE2111.015 | With clamp for protection pocket ¹⁾ | 150 mm | PN ³⁾ | Pt 100 | IP42 (IP54) ²⁾ |
| QAE2112.010 | With clamp for protection pocket ¹⁾ | 100 mm | PN ³⁾ | Pt 1000 | IP42 (IP54) ²⁾ |
| QAE2112.015 | With clamp for protection pocket ¹⁾ | 150 mm | PN ³⁾ | Pt 1000 | IP42 (IP54) ²⁾ |
| QAE2120.010 | Including protection pocket with threaded nipple G ½ A | 100 mm | PN 10 | LG-Ni 1000 | IP42 (IP54) ²⁾ |
| QAE2120.015 | Including protection pocket with threaded nipple G ½ A | 150 mm | PN 10 | LG-Ni 1000 | IP42 (IP54) ²⁾ |
| QAE2121.010 | With clamp for protection pocket ¹⁾ | 100 mm | PN ³⁾ | LG-Ni 1000 | IP42 (IP54) ²⁾ |
| QAE2121.015 | With clamp for protection pocket ¹⁾ | 150 mm | PN ³⁾ | LG-Ni 1000 | IP42 (IP54) ²⁾ |
| QAE2130.010 | With clamp for protection pocket ¹⁾ | 100 mm | PN ³⁾ | NTC 10k | IP42 (IP54) ²⁾ |
| QAE2130.015 | With clamp for protection pocket ¹⁾ | 150 mm | PN ³⁾ | NTC 10k | IP42 (IP54) ²⁾ |

1) Protection pocket required (not included as standard)

2) IP54 with cable entry gland M16 (not included as standard)

3) Depending on the type of protection pocket used

Ordering

When ordering, please give name and type reference, e.g. :
 Immersion temperature sensor **QAE2120.010** or protection pocket **ALT-SS100**

Equipment combinations

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

Function

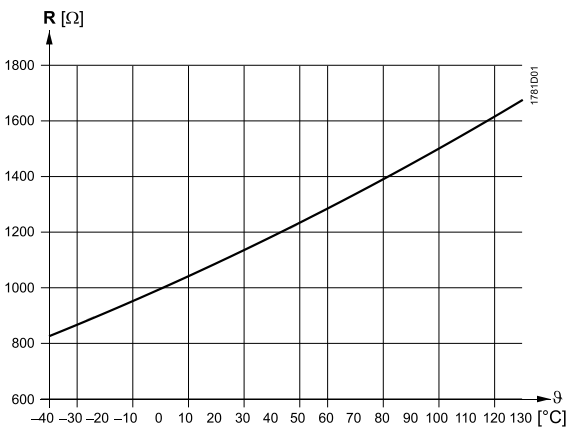
The sensor acquires the medium temperature via its sensing element whose resistance value changes as a function of the temperature.

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

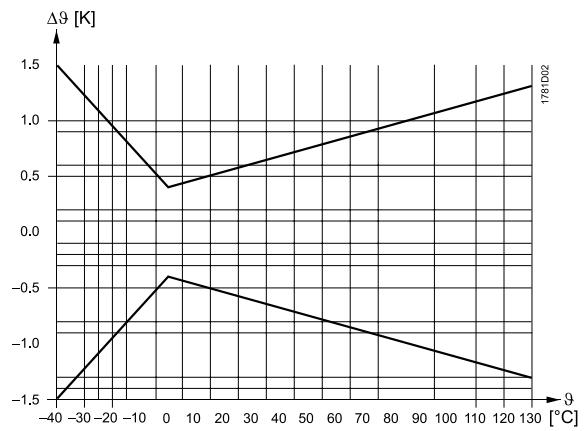
Sensing elements

LG-Ni 1000

Characteristic

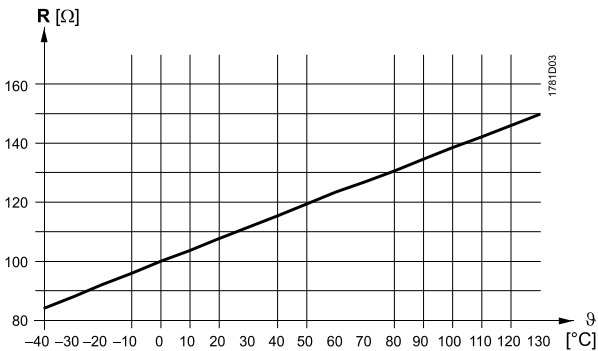


Accuracy

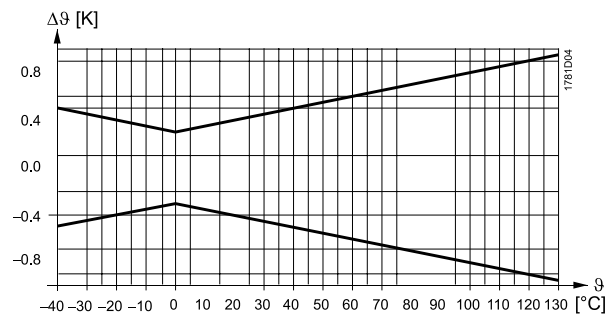


Pt 100 (class B)

Characteristic

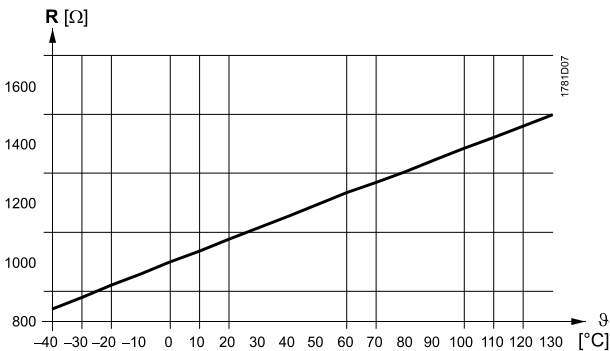


Accuracy

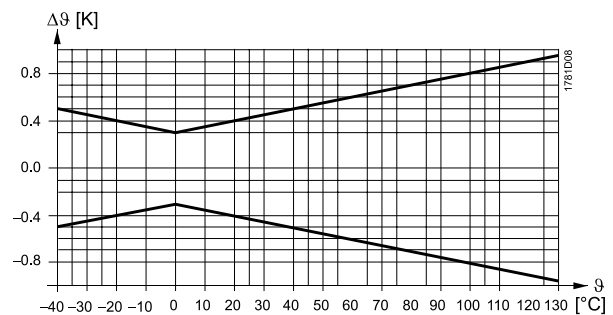


Pt 1000 (class B)

Characteristic

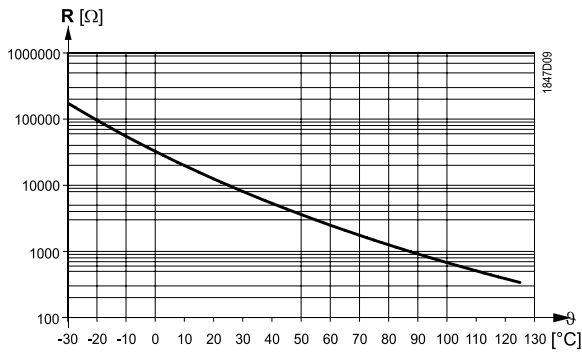


Accuracy

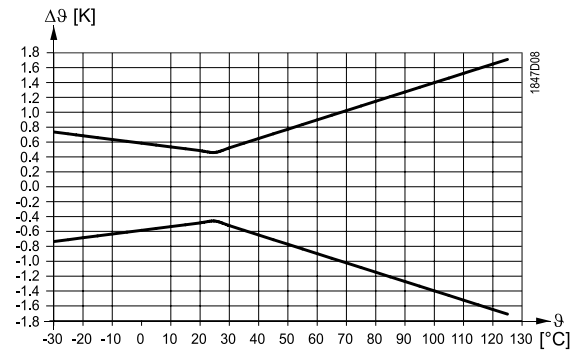


NTC 10k

Characteristic



Accuracy



Legend

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

Mechanical design

The immersion temperature sensors consist 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).

Accessories (not included in standard delivery)

| Name | Material | Nominal pressure | Type of sealing | Immersion length | Type reference |
|---------------------|----------------|------------------|-----------------------------|------------------|-------------------|
| Compression fitting | V4A (1.4571) | PN 16 | Threaded with sealing means | --- | AQE2102 |
| Protection pocket | Brass (CuZn37) | PN 10 | Threaded with sealing means | 100 mm | ALT-SB100 |
| Protection pocket | Brass (CuZn37) | PN 10 | Threaded with sealing means | 150 mm | ALT-SB150 |
| Protection pocket | V4A (1.4571) | PN 16 | Threaded with sealing means | 100 mm | ALT-SS100 |
| Protection pocket | V4A (1.4571) | PN 16 | Threaded with sealing means | 150 mm | ALT-SS150 |
| Protection pocket | V4A (1.4571) | PN 40 | With flange for flat seal | 100 mm | ALT-SSF100 |
| Protection pocket | V4A (1.4571) | PN 40 | With flange for flat seal | 150 mm | ALT-SSF150 |

For other protection pocket accessories, refer to Data Sheet N1194.

Engineering notes

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).

The max. media temperature for the QAE2130.xx is 125 °C!

Mounting and installation notes

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 such that the immersion rod or the protection pocket faces 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.

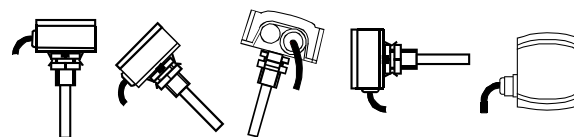
With all types of sensors, the immersion length must be a minimum of 60 mm!

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

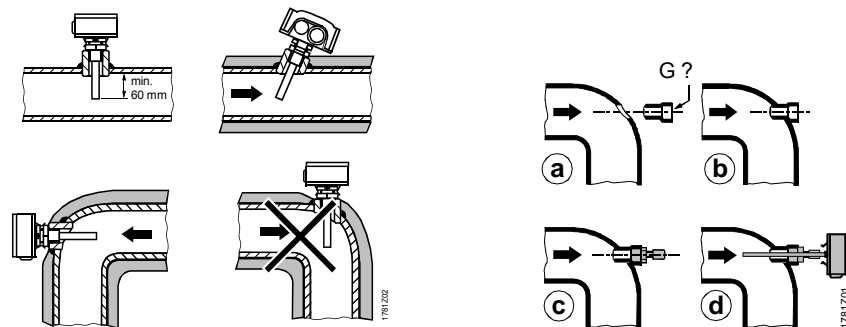
permitted:



not permitted:



Mounting



Note!

- For sensors with non-sealing threaded nipples G ½, sealing means must be used with the threaded connection (e.g. hemp, Teflon tape or similar)
- Tighten compression fitting AQE2102 on the sensor's immersion rod
 - *When tightening for the first time:*
 - Turn the nut about 1 ½ turns until strong resistance is felt. Then, slightly loosen the nut again and retighten ¼ turn
 - *For premounted compression fittings or repeated fitting:*
 - Screw the nut on until finger-tight. Then, tighten with a spanner ¼ turn for the final fit

Mounting Instructions are printed on the packaging.

Disposal



The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.

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

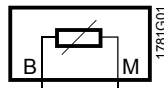
Technical data

| | | |
|-------------------------------------|------------------------------|---|
| Functional data | Measuring range | –30...+125 °C for NTC-Type –30...+130 °C other types |
| | Sensing element | Refer to "Type summary" |
| | Time constant | |
| | With protection pocket | Approx. 30 s |
| | Without protection pocket | Approx. 8 s |
| | Measuring accuracy | Refer to "Function" |
| | Immersion length | Refer to "Type summary" |
| Degree of protection | Nominal pressure | Refer to "Type summary" |
| | Protection class | III according to EN 60730-1 |
| | Protection degree of housing | Refer to "Type summary" according to EN 60529 |
| Electrical connections | Screw terminals for | 1 x 2.5 mm ² or x 1.5 mm ² |
| | Cable entry via | |
| | Grommet | For 5.5...7.2 mm dia. cable |
| | Cable entry gland | M 16 x 1.5 |
| Environmental conditions | Perm. cable lengths | Refer to Data Sheet of controller |
| | Operation | To IEC 721-3-3 |
| | Climatic condition | class 3K5 |
| | Temperature (housing) | –40...+70 °C |
| | Humidity (housing) | 5...95 % r.h. |
| | Transport | To EC 721-3-2 |
| | Climatic condition | class 2K3 |
| Temperature | –25...+70 °C | |
| Humidity | <95 % r.h. | |
| Mechanical environmental conditions | Class 2M2 | |
| 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 |
| | Protection pocket | Brass (CuZn37) |
| | Compression fitting | Stainless steel 1.4404, 1.4435, 1.4571 |
| | Cable entry gland M 16 x 1.5 | PA, RAL 7035 (light-grey) |
| | Packaging | Corrugated cardboard |

| | | |
|-----------------------------|---|--|
| Directives and Standards | Product standard | EN 60730-1 Automatic electrical controls for household and similar use |
| | EU conformity (CE) | CE1T1761xx *) |
| | Electromagnetic compatibility (Applications) | For use in residential, commerce, light-industrial and industrial environments |
| | UL | UL 873, http://ul.com/database |
| Environmental compatibility | The product environmental declaration CE1E1761 ^{*)} contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). | |
| Weight | Incl. Packaging | |
| | QAE2111.010 | Approx. 0,13 kg |
| | QAE2111.015 | Approx. 0,15 kg |
| | QAE2112.010 | Approx. 0,13 kg |
| | QAE2112.015 | Approx. 0,15 kg |
| | QAE2120.010 | Approx. 0,21 kg |
| | QAE2120.015 | Approx. 0,23 kg |
| | QAE2121.010 | Approx. 0,13 kg |
| | QAE2121.015 | Approx. 0,14 kg |
| | QAE2130.010 | Approx. 0,13 kg |
| QAE2130.015 | Approx. 0,15 kg | |

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

Internal diagram

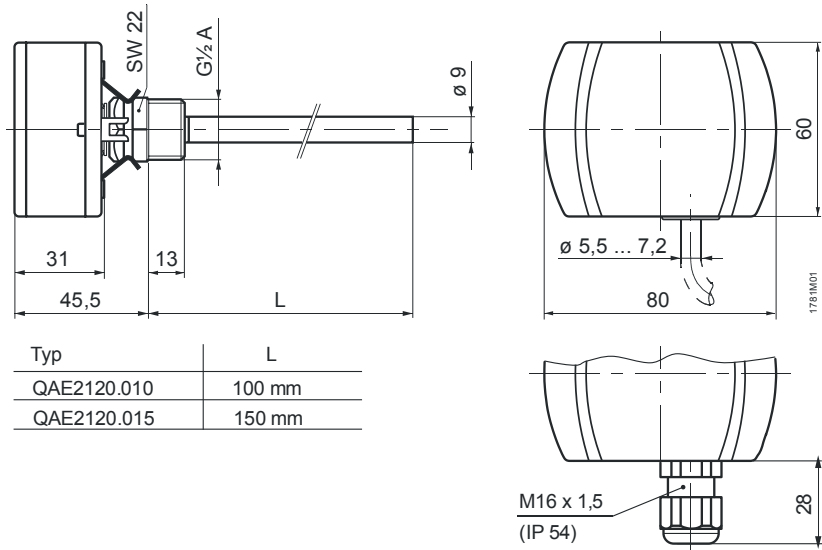


The internal diagram is identical for all types of immersion temperature sensors covered by this Data Sheet.

The connecting wires are interchangeable.

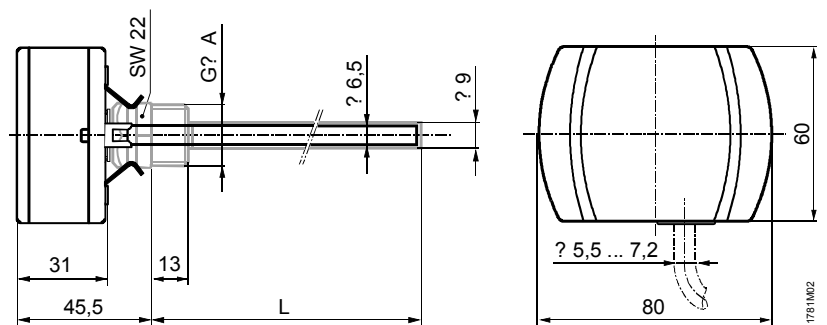
Dimensions (in mm)

QAE2120.010
QAE2120.015



| Typ | L |
|-------------|--------|
| QAE2120.010 | 100 mm |
| QAE2120.015 | 150 mm |

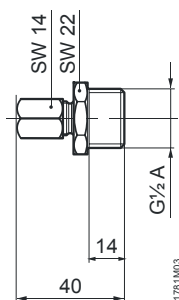
QAE2111.010
QAE2111.015
QAE2112.010
QAE2112.015
QAE2121.010
QAE2121.015
QAE2130.010
QAE2130.015



| Typ | L |
|-------------|--------|
| QAE2111.010 | 100 mm |
| QAE2111.015 | 150 mm |
| QAE2112.010 | 100 mm |
| QAE2112.015 | 150 mm |
| QAE2121.010 | 100 mm |
| QAE2121.015 | 150 mm |
| QAE2130.010 | 100 mm |
| QAE2130.015 | 150 mm |

Variable immersion length: with accessory AQE2102

Accessory
compression fitting
AQE2102



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