SIEMENS 1<sup>801</sup>



# Strap-on temperature sensor

**QAD2...** 

- Strap-on sensor for acquiring the temperature of pipework.
- Range of use -30... 125/130 °C / 5...95 % r. F. non-condensing (not suitably for chillers)

#### Use

Acquisition of temperature of pipework for

- controlling or limiting the flow temperature
- limiting the return temperature
- controlling the d.h.w. temperature

#### Type summary

Type reference	Sensing element	Range of use	Time constant
QAD22	LG-Ni 1000	-30+130 °C	3 s
QAD2010	Pt 100	-30+130 °C	3 s
QAD2012	Pt 1000	-30+130 °C	3 s
QAD2030	NTC 10k	-30+125 °C	6 s

### **Ordering**

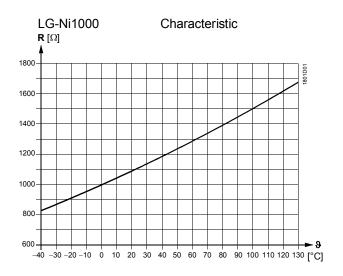
When ordering, please give type reference, e.g.: Strap-on temperature sensor QAD2...

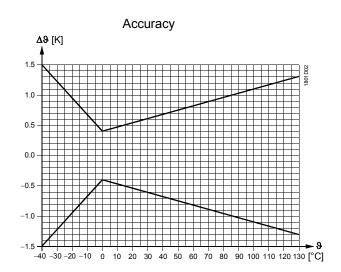
## **Equipment combinations**

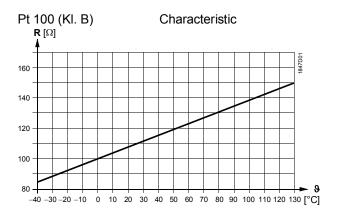
The QAD2... is suited for use with all types of controllers that can handle analog passive sensor signals.

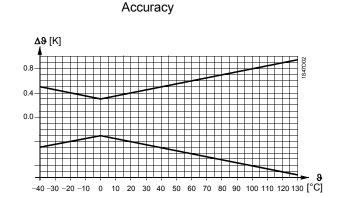
The sensor's nickel sensing element acquires the temperature of pipework. The resistance of the sensing element changes as a function of the medium temperature. The resistance value is used for handling by a suitable controller.

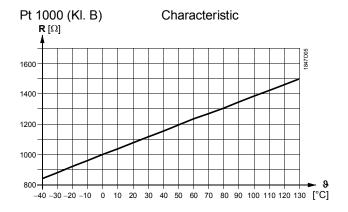
## Sensing element

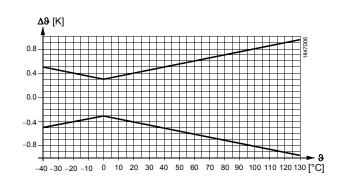




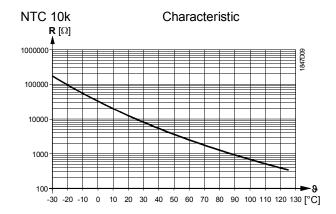


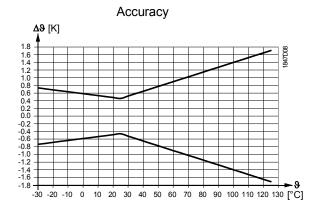






Accuracy





Legend

- R Resistance in Ohm
- 9 Temperature in degrees Celsius
- Δ9 Temperature differential in Kelvin

#### Mechanical design

The strap-on temperature sensor consists of the following components:

- Two-sectional plastic housing comprised of base with connection terminals, grommet and removable cover (snap-on design)
- The coupling sheet with sensing element is flexible and adapts to the pipe's surface
- Mounting clamp (adjustable strap-on band) for pipe diameters from 15...140 mm

The connection terminals can be accessed after removing the housing cover. Cable entry is made via a grommet (tension relief into housing). If required, the grommet can be replaced by a Pg 11 cable entry gland.

## **Technical data**

Sensing element	General sensor data	Range of use	refer to "Type summary"	
(referred to the pipe's surface)           Measurement accuracy         refer to "Function"           Measured medium         water, other liquid media           Type of measurement and output         passive           Degree of protection         IP 42 as per IEC 60529           and safety class         III as per EN 60730           Electrical connections         Screw terminals for         max. 1 x 2.5 mm²           Cable entry         grommet for cable of 5.57.2 mm dia.           Permitted cable lengths         refer to Data Sheet of controller           Environmental conditions         class 3K5           Temperature (housing)         -5+50 °C           Humidity         <95 % r.h.		Sensing element	refer to "Type summary"	
Measurement accuracy         refer to "Function"           Measured medium         water, other liquid media           Type of measurement and output         passive           Degree of protection and safety class         Degree of protection         IP 42 as per IEC 60529           Electrical connections         Safety class         III as per EN 60730           Electrical connections         Screw terminals for         max. 1 x 2.5 mm²           Cable entry         grommet for cable of 5.57.2 mm dia.           Pg 11 cable entry gland         can be fitted           Permitted cable lengths         refer to Data Sheet of controller           Environmental conditions         class 3K5           Temperature         -5+50 °C           Humidity (housing)         595 % r.h.           Transport         as per IEC 60721-3-2           Climatic conditions         class 2K3           Temperature         -25+70 °C           Humidity         <95 % r.h.		Time constant t <sub>63</sub>	refer to "Typ summary"	
Measured medium water, other liquid media Type of measurement and output passive  Degree of protection and safety class Electrical connections Electrical connections  Electrical connections  Screw terminals for max. 1 x 2.5 mm²  Cable entry grommet for cable of 5.57.2 mm dia. can be fitted Permitted cable lengths refer to Data Sheet of controller  Environmental conditions  Climatic conditions  Temperature (housing) Transport as per IEC 60721-3-3  Climatic conditions  Temperature  Climatic conditions  Climatic conditions  Temperature  Climatic conditions  Temperature  Climatic conditions  Temperature  Climatic conditions  Class 2K3  Temperature  Climatic conditions  Class 2K3  Temperature  Climatic conditions  Class 2M2  Materials  Base  PA-GF35  Housing cover  ASA Luran S  Adjustable strap-on band  Stainless steel  Packaging  Colors  Base  Silver-grey, RAL 7001  light-grey, RAL 7035  Weight			(referred to the pipe's surface)	
Type of measurement and output passive  Degree of protection and safety class Safety class III as per EN 60730  Electrical connections  Electrical connections  Electrical connections  Electrical connections  Environmental conditions  Coperation  Climatic conditions  Climatic conditions  Climatic conditions  Transport  Climatic conditions  Climatic conditions  Tamport  Climatic conditions  Class 2K3  Temperature  -25+70 °C  Humidity  <95 % r.h.  Mechanical conditions  class 2M2  Materials  Base  PA-GF35  Housing cover  ASA Luran S  Adjustable strap-on band  Packaging  Colors  Base  Housing cover		Measurement accuracy	refer to "Function"	
Degree of protection and safety class         Degree of protection         IP 42 as per IEC 60529           Electrical connections         Safety class         III as per EN 60730           Electrical connections         Screw terminals for max. 1 x 2.5 mm²           Cable entry pg11 cable entry gland Permitted cable lengths         grommet for cable of 5.57.2 mm dia. can be fitted           Permitted cable lengths         refer to Data Sheet of controller           Environmental conditions         class 3K5           Climatic conditions         class 3K5           Temperature (housing)         -5+50 °C           Humidity (housing)         595 % r.h.           Transport         as per IEC 60721-3-2           Climatic conditions         class 2K3           Temperature         -25+70 °C           Humidity         <95 % r.h.		Measured medium	water, other liquid media	
Safety class   Safety class   Ill as per EN 60730		Type of measurement and output	passive	
Screw terminals for   max. 1 x 2.5 mm²	Degree of protection	Degree of protection	IP 42 as per IEC 60529	
Cable entry Pg 11 cable entry gland can be fitted Permitted cable lengths refer to Data Sheet of controller  Environmental conditions Operation as per IEC 60721-3-3 Climatic conditions class 3K5 Temperature (housing) -5+50 °C Humidity (housing) 595 % r.h.  Transport as per IEC 60721-3-2 Climatic conditions class 2K3 Temperature -25+70 °C Humidity 95 % r.h. Mechanical conditions class 2M2  Materials Base PA-GF35 Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight Weight	and safety class	Safety class	III as per EN 60730	
Pg 11 cable entry gland   Permitted cable lengths   Permitted cable	Electrical connections	Screw terminals for	max. 1 x 2.5 mm <sup>2</sup>	
Permitted cable lengths   refer to Data Sheet of controller		Cable entry	grommet for cable of 5.57.2 mm dia.	
Colors   Base   PA-GF35     Housing cover   ASA Luran S     Adjustable strap-on band   Packaging     Colors   Base   Packaging     Colors   Row of the packaging     Colors   Climatic conditions     Class 2K3     Class 2K3     Climatic conditions     Class 2K3     Climatic conditions     Class 2K3     Climatic conditions     Class 2K3     Class 2K3     Climatic conditions     Class 2K3     Climatic conditions     Class 2K3     Climatic conditions     Class 2K3     Class 2K3     Climatic conditions     Climatic conditions     Class 2K3     Climatic conditions     Climatic conditions     Class 2K1     Climatic conditions     Climatic conditions     Class 2K1     Climatic conditions     Clas		Pg 11 cable entry gland	can be fitted	
Climatic conditions		Permitted cable lengths	refer to Data Sheet of controller	
Temperature (housing)	Environmental conditions	Operation	as per IEC 60721-3-3	
Humidity (housing)   595 % r.h.     Transport   as per IEC 60721-3-2     Climatic conditions   class 2K3     Temperature   -25+70 °C     Humidity   <95 % r.h.     Mechanical conditions   class 2M2     Materials   Base   PA-GF35     Housing cover   ASA Luran S     Adjustable strap-on band   stainless steel     Packaging   cardboard     Colors   Base   silver-grey, RAL 7001     Housing cover   light-grey, RAL 7035     Weight   without packaging   0.072 kg		Climatic conditions	class 3K5	
Transport as per IEC 60721-3-2 Climatic conditions class 2K3 Temperature -25+70 °C Humidity <95 % r.h. Mechanical conditions class 2M2  Materials Base PA-GF35 Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg		Temperature (housing)	−5+50 °C	
Climatic conditions		Humidity (housing)	595 % r.h.	
Temperature -25+70 °C Humidity <95 % r.h. Mechanical conditions class 2M2  Materials Base PA-GF35 Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg		Transport	as per IEC 60721-3-2	
Humidity Mechanical conditions  Class 2M2  Materials  Base PA-GF35 Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging  Colors Base Silver-grey, RAL 7001 Housing cover Ight-grey, RAL 7035  Weight  without packaging 0.072 kg		Climatic conditions	class 2K3	
Materials  Base PA-GF35 Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging Colors Base Silver-grey, RAL 7001 Housing cover light-grey, RAL 7035 Weight without packaging 0.072 kg		Temperature	–25+70 °C	
Materials         Base         PA-GF35           Housing cover         ASA Luran S           Adjustable strap-on band         stainless steel           Packaging         cardboard           Colors         Base         silver-grey, RAL 7001           Housing cover         light-grey, RAL 7035           Weight         without packaging         0.072 kg		Humidity	<95 % r.h.	
Housing cover ASA Luran S Adjustable strap-on band stainless steel Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg		Mechanical conditions	class 2M2	
Adjustable strap-on band stainless steel Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg	Materials	Base	PA-GF35	
Packaging cardboard  Colors Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg		Housing cover	ASA Luran S	
Colors  Base silver-grey, RAL 7001 Housing cover light-grey, RAL 7035  Weight without packaging 0.072 kg		Adjustable strap-on band	stainless steel	
Housing cover light-grey, RAL 7035 Weight without packaging 0.072 kg		Packaging	cardboard	
Weight without packaging 0.072 kg	Colors	Base	silver-grey, RAL 7001	
		Housing cover	light-grey, RAL 7035	
incl. packaging 0.083 kg	Weight	without packaging	0.072 kg	
		incl. packaging	0.083 kg	

The permissible cable lengths are dependent on the controller with which the sensor is used. They are specified in the Data Sheet of the relevant controller.

#### Mounting and installation notes

Depending on the application, the sensor is to 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 limiting the return temperature:

In the return at a location where the temperature can be correctly acquired

The water must be well mixed where the temperature is acquired.

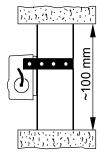
The pipe may not be lagged in the vicinity of the sensor.

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

#### Permitted mounting positions







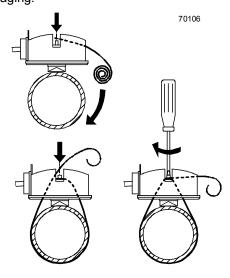
Not permitted mounting position

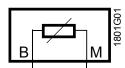


#### Fixing

Mounting Instructions are printed on the packaging.

- Remove any paint on the pipe before fitting the strap-on temperature sensor.
- Ensure that the sensor is fixed firmly with the adjustable band supplied.





The connecting wires are interchangeable.

## **Dimensions** (in mm)

