



Symaro™

Room Temperature
Sensors

QAA20..1..

- Active sensors for acquiring the room temperature
- Operating voltage AC 24 V or DC 13.5...35 V
- Signal output DC 0...10 V or 4...20 mA

Use

In heating, ventilation and air conditioning plants for acquiring the room temperature.

Type summary

Type reference	Measuring range	Operating voltage	Output signal
QAA2061	0...50 °C	AC 24 V ±20 % / DC 13.5...35 V SELV or class 2 (US)	DC 0...10 V
QAA2061D			
QAA2071	0...50 °C	DC 13.5...35 V SELV or class 2 (US)	4...20 mA

Ordering and delivery

When ordering, please give name and type reference, e.g.:
Room temperature sensor **QAA2061**.

Equipment combinations

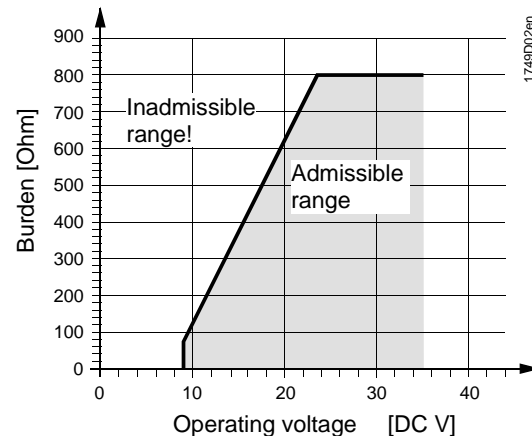
All systems or devices capable of acquiring and handling the sensor's DC 0...10 V or 4...20 mA output signal.

Function

The sensor acquires the room temperature via its sensing element whose resistance value changes as a function of the temperature. This change is converted to a DC 0...10 V or 4...20 mA output signal, depending on the type of sensor. The output signal corresponds to the selected temperature range.

Burden diagram

Output signal, terminal I1



Mechanical design

QAA20..1

The units have been designed for wall mounting. They are suitable for use with most commercially available recessed conduit boxes. The cables can be introduced from the rear (concealed wiring) or from below or above (surface-run wires) through knock-out openings.

The units consist of two major sections: Casing and baseplate. Both snap together but can be detached again.

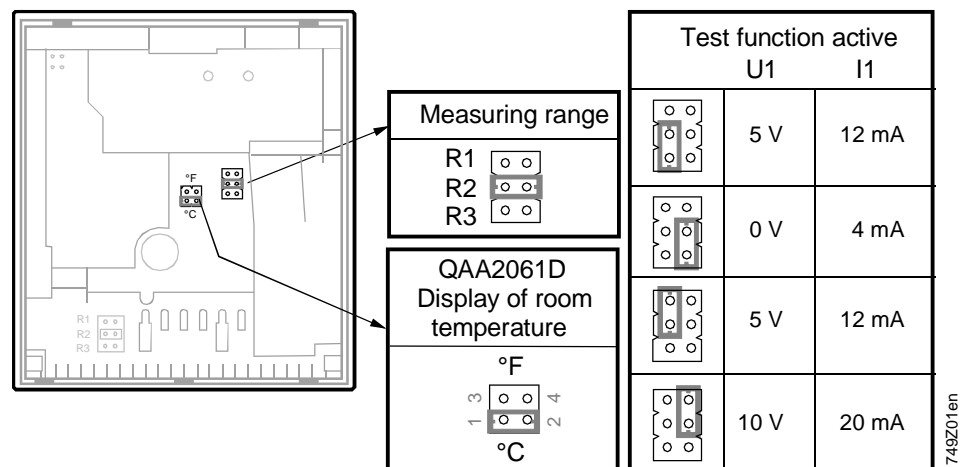
The measuring circuit, the sensing element and the setting element are located on the printed circuit board inside the casing.

The baseplate carries the connecting terminals.

QAA2061D

Mechanical design is similar to QAA20.1.. with additional LC-Display. Display of room temperature in °C or °F

Setting element



The setting element is accessible after removing the baseplate.

It consists of 6 pins and a shorting plug. It is used to select the required measuring range and to activate the test function.

The different plug positions have the following meaning

- For the active temperature measuring range:
Shorting plug in the upper position (R1) = -35...+35 °C,

Shorting plug in the mid position (R2) = 0...50 °C (factory setting)

Shorting plug in the lower position (R3) = –50...+50 °C

- *For activating the test function:*

Shorting plug in the vertical position: The values according to the table "Test function active" will be made available at the signal output.

Fault

In the event of fault, the output signal will reach 0 V (4 mA) after 60 seconds.

Engineering notes

Room sensors with active outputs have a high power loss, which ultimately influences temperature measurement. The degree of influence depends on the operating voltage and is compensated in the SymaroTM room sensors for an operating voltage of AC 24 V or DC 24 V. Over- or undercompensation may occur for other operating voltages.

Furthermore, the measuring accuracy is impacted by the following factors:

- Prevailing air flow
- Wall surface (rough, smooth)
- Wall texture (wood, plaster, concrete, brick)
- Wall type (interior, exterior).

This application-specific measuring inaccuracy is constant for an installed sensor after approx. 1 operating hour, and it can be adjusted as needed in a higher system (e.g. controller). No correction on the local LCD.

To power the sensor, a transformer for safety extra low-voltage (SELV) with separate windings for 100 % duty is required. When sizing and electrically protecting the transformer, local safety regulations must be observed.

When sizing the transformer, the power consumption of the room temperature sensor must be taken into consideration. For correct wiring, refer to the Data Sheets of the devices with which the sensor is used.

The permissible cable lengths must be observed.

Cable routing and
cable selection

When laying the cables, it must be observed that the longer the cables run side by side and the smaller the distance between them, the greater the electrical interference. Twisted pair cables are required for the secondary supply lines and the signal lines.

Mounting notes

Location

On an inner wall of the space to be heated or air conditioned. Not in recesses, shelves, not behind curtains, not above or near heat sources.

The unit must not be exposed to direct solar radiation.

The end of the conduit at the sensor must be sealed to prevent false measurements due to draughts through the conduit.

The permissible ambient conditions should be observed.

Installation instructions

Installation instructions are printed inside of the packing.

Commissioning notes

Check wiring before switching on power. The temperature measuring range must be selected on the sensor, if required.

Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic waste.

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

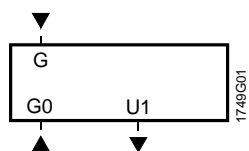
Technical data

Power supply	Operating voltage	refer to "Type summary"
	Frequency	50/60 Hz at AC 24 V
	Power consumption	
	QAA2061, QAA2061D	≤0.3 VA
	QAA2071	≤0.7 W
	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
Line lengths for measuring signal	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
Functional data	Measuring range	0...50 °C (R2 = factory setting), –35...+35 °C (R1), –50...+50 °C (R3)
	Sensing element	Pt 1000
	Time constant	approx. 7 min
	Measuring accuracy at AC 24 V / DC 24V in the range of:	
	23 °C	±0.50 K
	–25...+25 °C	±0.75 K
	–50...+50 °C	±0.9 K
	Output signal, linear (terminal U1)	DC 0...10 V \cong 0...50 °C or –35...+35 °C or –50...+50 °C max. ±1 mA
	Output signal, linear (terminal I1)	4...20 mA \cong 0...50 °C or –35...+35 °C or –50...+50 °C
	Burden	refer to "Function"
Degree of protection	Protection class	III according to EN 60730-1
	Protection degree of housing	IP30 according to EN 60529
Electrical connections	Connection terminals for	1 × 2.5 mm ² or 2 × 1.5 mm ²
Environmental conditions	Operation	IEC 60721-3-3
	Climatic conditions	class 3K5
	Temperature (housing with electronics)	–15...+50 °C
	Humidity	0...95 % r. h. (non-condensing)
	Mechanical conditions	class 3M2
	Transport	IEC 60721-3-2
	Climatic conditions	class 2K3
	Temperature	–25...+70 °C
	Humidity	<95 % r. h.
	Mechanical conditions	class 2M2

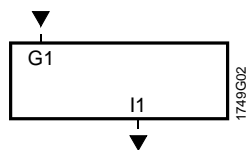
Materials and colors	Housing front	ASA+PC, NCS S 0502-G (white) equates to RAL9010
	Bottom	ASA+PC, NCS 2801-Y43R (grey) equates to RAL 7035
	Base	PC, NCS 2801-Y43R (grey) equates to RAL 7035
	Packaging	corrugated cardboard
	Sensor (complete assembly)	silicone-free
Directives and Standards	Product standard	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)	CE1T1749xx ^{*)}
	RCM Conformity	8000078879_en ^{*)}
Environmental compatibility	UL	UL 873, http://ul.com/database
		The product environmental declaration CE1E1961 ^{*)} contains data on environmentally compatible product design and assessment (RoHS compliance, materials composition, packaging, environmental benefit, disposal).
Weight	Incl. packaging	0.13 kg
	Without LCD display	Approx. 0.130 kg
	With LCD display	Approx. 0,150 kg

Connection terminals

QAA2061
QAA2061D

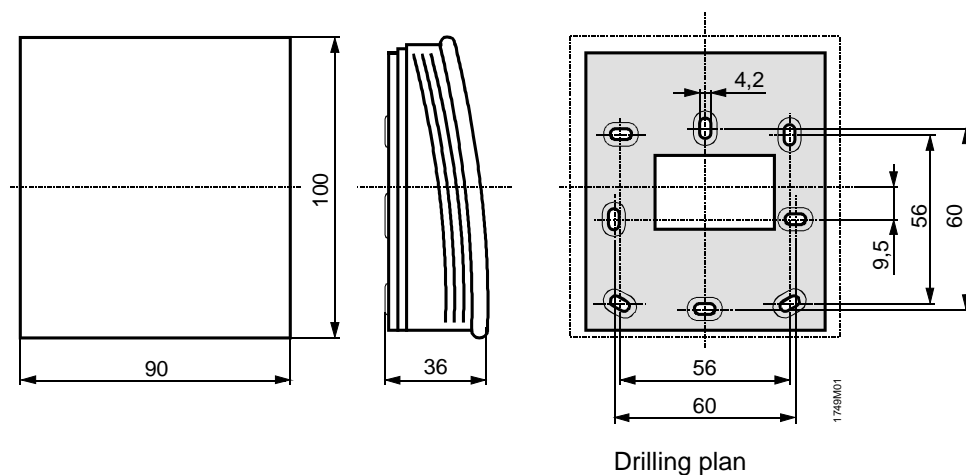


QAA2071



- G, G0 Operating voltage AC 24 V (SELV) or DC 13.5...35 V
- G1 Operating voltage DC 13.5...35 V
- I1 Signal output 4...20 mA for temperature range (R2 = 0...50 °C, factory setting)
- U1 Signal output DC 0...10 V for temperature range (R2 = 0...50 °C, factory setting)

Dimensions



Dimensions in mm