# SIEMENS

1851P010

# Room Sensor QFA65

for relative humidity and temperature

**Operating voltage AC 24 V**
**Signal outputs DC 0...10 V for relative humidity and temperature**
**Accuracy of ±3 % r.h. within comfort range**

## Use

In ventilating and air conditioning plants to acquire
- relative humidity and
- temperature

in rooms.

The QFA65 is used as a
- control sensor and
- measuring sensor for building automation systems or indicating units.

## Ordering

When ordering, please give name and type reference.

## Equipment combinations

All systems / units that are capable of acquiring and handling the sensor's DC 0...10 V output signal.

**Siemens Building Technologies**
**HVAC Products**

## Mode of operation

**Relative humidity**

The sensor acquires the relative humidity with the help of a capacitive humidity sensor whose electrical capacity changes in function of the relative humidity of the ambient air. An electronic circuit converts the sensor's signal into a continuous DC 0...10 V signal, which represents 0...100 % relative humidity.

**Temperature**

The sensor acquires the temperature with a nickel sensing element (LG-Ni 1000) whose electrical resistance changes in function of the temperature of the ambient air. Similar to the acquisition of relative humidity, a measuring circuit converts the resistance value into a DC 0...10 V signal, corresponding to a temperature range of 0...50 °C.

## Mechanical design

The room sensor has been designed for wall mounting. It is 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 knockout openings.
All terminals are protected against false wiring.
The unit consists of two major sections: Casing and baseplate. Both snap together but can be detached again. The casing accommodates the temperature and humidity sensing elements. The baseplate carries the connecting terminals.

## Engineering notes

The transformer used must be suitable for safety extra low voltage (SELV). It must have separate windings and be suited for 100 % duty.
The transformer must be sized and fused in compliance with local safety regulations. When sizing the transformer, the power consumption of the QFA65 must be taken into account.
For the connection of the sensor, refer to the data sheets of the units with which the sensor is used. The maximum permissible line lengths should be observed.

- UNIGYR®/VISONIK®
  Both the temperature and the humidity sensor must be connected to a measured value input (U...) of the measured value module (PTM1.2U10).
- POLYGYR®
  If the signal of the QFA65 is fed to an RWF... or RZF... as a main controlled variable, the latter must be equipped with the following setting range insert:
  – AZW61.292-a% (0...100 %) or AZW61.222-aH95 (20...95 %) for the measured value «relative humidity»
  – AZW61.211-at 50 (0...50 °C) for the measured value «temperature»

## Fitting notes

Location:
On an inner wall of the space to be air conditioned. Not in recesseds, shelves, not behind curtains, not opposite or near heat sources.
The unit must not be exposed to spot lights or direct solar radiation.
The end of the conduit at the sensor must be sealed to prevent false measurements due to draughts through the conduit.

Installation instructions are printed on the packing.

## Technical data

| | | |
|---|---|---|
| **Humidity sensor** | Range of use | 10...95 % r.h. |
| | Measuring accuracy at 20 °C | |
| | 20...90 % r.h. | $\pm$5 % r.h. |
| | 40...60 % r.h. | $\pm$3 % r.h., (typical) |
| | Time constant | $\leq$2 min |
| | Output signal, linear | DC 1...9 V $\triangleq$ 10...90 % r.h. |
| | Output current | $\pm$1 mA max. |
| | | |
| **Temperature sensor** | Range of use | 0...50 °C |
| | Sensing element | LG-Ni 1000 |
| | Measuring accuracy at 20 °C | $\pm$0.8 K |
| | Time constant | 8 min (depending on air movement and thermal coupling to the wall) |
| | Output signal, linear | DC 0...10 V $\triangleq$ 0...50 °C |
| | Output current | $\pm$1 mA max. |
| | | |
| **Allgemeine Fühlerdaten** | Operating voltage (SELV) | AC 24 V $\pm$20 % |
| | Frequency | 50 or 60 Hz |
| | Power consumption | 0.35 VA |
| | Environmental conditions | |
| | Operation to | IEC 721-3-3 |
| | Climatic conditions | class 3K3 |
| | Temperature | 0...50 °C |
| | Humidity[1] | 5...85 % r. h. |
| | Transport to | IEC 721-3-2 |
| | Climatic conditions | class 2K3 |
| | Temperature | $-$25...+70 °C |
| | Humidity | <95 % r. h. |
| | Mechanical conditions | class 2M2 |
| | Protection standard of casing | IP 30 to IEC 529 |
| | Insulation class | III to EN 60 730 |
| | Electromagnetic compatibility | |
| | Immunity | EN 50 082-1 |
| | Emissions | EN 50 081-1 |
| | $\mathsf{C}\mathsf{E}$ conformance to | EMC guideline 89/336/EEC |
| | $\mathbf{C}$ conformity as per | |
| | Australian EMC Framework | Radio communication act 1992 |
| | Radio Interference Emmission Standard | AS/NZS 3548 |
| | Connecting terminals for | 2 x 1.5 mm$^2$ or 1 x 2.5 mm$^2$ |
| | Perm. line lengths | |
| | Copper cable 0.6 mm dia. | 50 m |
| | Copper cable 1 mm$^2$ | 150 m |
| | Copper cable 1.5 mm$^2$ | 300 m |
| | If the required line length exceeds 300 m, it needs to be shielded. | |
| | Materials and colors | |
| | Housing front | ASA + PC, NCS S 0502-G (white) |
| | Botton section of housing | ASA + PC, NCS 2801-Y43R (grey) |
| | Base | PC, NCS 2801-Y43R (grey) |
| | Sensor (entirely) | silicon-free |
| | Weight | approx. 0.1 kg |

1) The permissible ambient humidity may reach 95 % r.h. for short periods of time
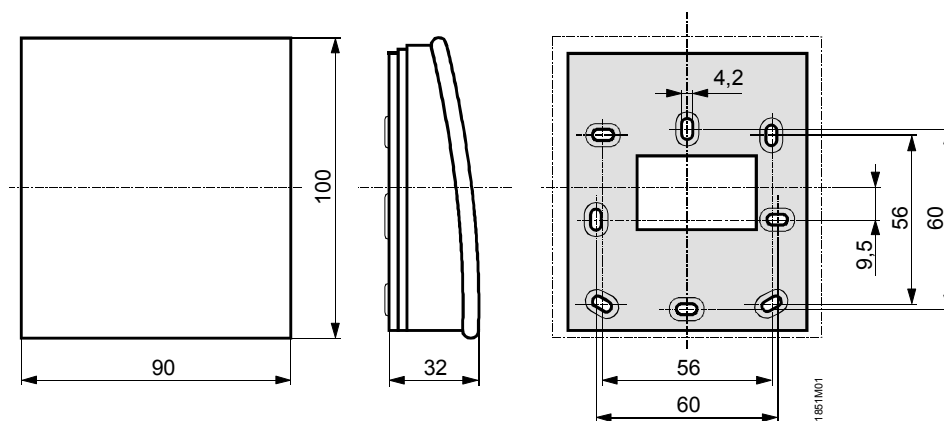
## Internal diagram
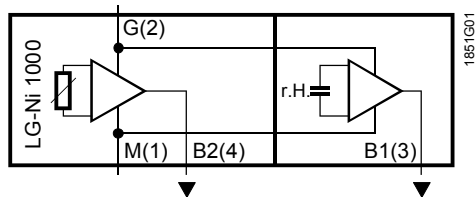


| | | |
|---|---|---|
| G | (2) | System potential AC 24 V |
| M | (1) | System and measuring neutral |
| B1 | (3) | Measuring signal DC 1...9 V for 10...90 % r.h. |
| B2 | (4) | Measuring signal DC 0...10 V for temperature measuring range 0...50 °C |

*Notes:* The number in parentheses corresponds to the terminal label on the terminal block.

## Dimensions



Dimensions in mm

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