SIEMENS

Symaro™

Duct Humidity and Temperature Sensor

QFM1660

Active sensor for acquiring the air humidity and temperature in air duct

- Operating voltage AC 24 V or DC 19…30 V
- Signal output DC 0...10 V for relative humidity
- Signal output DC 0...10 V for temperature
- Measuring accuracy ±0.5 K @ 23 °C / ±5 % r.h. within the measuring range
- Range of use 0…50 °C / 10…90 % r.h. (non-condensing)

CB1Q3731en
2023-08-07

Use

The QFM1660 is suitable for use with most heating, ventilating, and air conditioning (HVAC) controllers. Common applications for the sensor are ventilation and air conditioning equipment in buildings.

Functions

Relative humidity

The sensor acquires the relative humidity in the air duct via its capacitive humidity sensing element whose electrical capacitance changes as a function of the relative humidity.

The electronic measuring circuit converts the sensor's signal to a continuous DC 0...10 V signal, corresponding to a relative humidity range of 0...100 %.

Temperature

The sensor acquires the temperature in the air duct via its sensing element whose electrical resistance changes as a function of the temperature.

This change in resistance is converted to an active DC 0...10 V output signal corresponding to a temperature range of 0...50 °C.

Mechanical design

The duct sensor consists of a housing, a printed circuit board, connection terminals and an immersion rod with a measuring tip.

The measuring circuit is located on the printed circuit board inside housing, the connection terminals are on the board.

The sensing elements are located at the end of the measuring tip and protected by a filter cap on the measuring tip.

Cable entry is made via the screwed cable gland M16 supplied with the sensor.

Immersion rod and housing are made of plastic and are rigidly connected.

The sensor is directly screwed into the duct.

Type summary

Product no.	SSN no.	Operating voltage
QFM1660	S55720-S198	AC 24 V ±20 %; DC 19…30 V

Product documentation

Title	Document ID
Mounting instructions	M3731
CE declarations	T3731

Related documents such as the environmental declarations, declarations of conformity, etc., can be downloaded from the following Internet address:

www.siemens.com/bt/download

Notes

Engineering

Powering the sensor requires a transformer for safety extra-low-voltage (SELV) with separate windings for 100 % duty. When sizing and protecting the transformer, comply with all local safety regulations.

When sizing the transformer, consider the sensor's power consumption.

For correct wiring, see the related device data sheets.

Observe all permissible line lengths.

Cable routing and cable selection

Note that when routing cables, the longer the cable runs and the closer the cables, the greater electrical interference. Use shielded cables in EMC-prone environments.

Twisted pair cables are required for both secondary supply lines and signal lines.

Mounting

Location

Mount the sensor in the center of the duct wall. If used together with steam humidifiers, the distance to the humidifier must be minimum 3 m and maximum 10 m.

Fit the sensor in the extract air duct if the application involves dew point shifting.

Mounting instructions

Mounting instructions are enclosed in the package.

Chemical vapors

It is of great importance to understand that a humidity sensor is a sensitive measure device and needs to be handled with care. Chemical vapors at high concentration in combination with long exposure times may offset the sensor reading.

Commissioning

Check wiring before switching on power.

⚠ We recommend not to use voltmeters or ohmmeters directly at the sensing element.

Disposal

This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.
For additional details, refer to Siemens information on disposal.

Technical data

Power supply	
Operating voltage	AC 24 V ±20 % or DC 19…30 V (SELV) or AC/DC 24 V class 2 (US)
Frequency	50/60 Hz @ AC 24 V
Power consumption	≤1 VA

Functional data of humidity sensor	
Range of use	10…90 % r.h. (non-condensing)
Measuring range	10…90 % r.h.
Measuring accuracy 10...90 % r.h. @ 25 °C/20 °C	±5 % r.h.
Output signal, linear (terminal U1)	DC 0...10 V, corresponding to 0...100 % r.h.

Functional data of temperature sensor	
Measuring range	0...50 °C
Measuring accuracy at AC 24 V	±0.5 K @ 23 °C **)
Output signal, linear (terminal U2)	DC 0...10 V, corresponding to 0...50 °C

Ambient conditions and protection classification	
Degree of protection of housing	IP42 as per IEC 60529 in built-in state
Protection class	III as per EN 60730
Environmental conditions	
Transport • Climatic conditions • Temperature • Humidity • Mechanical conditions	IEC 60721-3-2 • Class 2K3 • -20…60 °C • 5...95 % r.h. • Class 2M2
Operation • Climatic conditions • Temperature (housing with electronics) • Humidity • Mechanical conditions	IEC 60721-3-3 • Class 3K5 • 0...50 °C • 10...90 % r.h. • Class 3M2

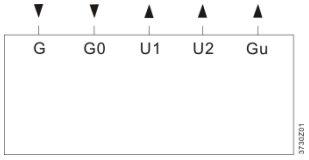
Standards, directives and approvals	
EU conformity (CE)	CB1T3731xx *)

*) The documents can be downloaded from http://siemens.com/bt/download.
**) The accuracy is only available from July 18th, 2023 (production date).

General	
Connection terminals for	1 × 2.5 mm² or 2 × 1.5 mm²
Materials Base/cover/plastic tube/filter tube	ABS
Packaging	PAP 20 cardboard
Weight with package	160 g

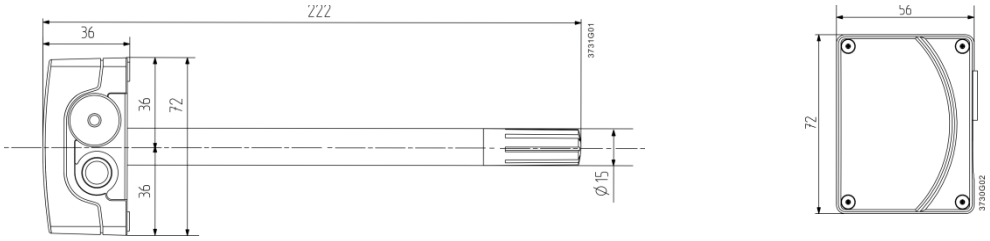
Diagrams

Connection terminals



G, G0	Operating voltage AC 24 V or DC 19…30 V (SELV)	U1	Signal output DC 0...10 V for relative humidity 0...100 %
U2	Signal output DC 0...10 V for temperature 0...50 °C	Gu	Signal ground (connected with G0 internally)

Dimensions



Dimensions in mm

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