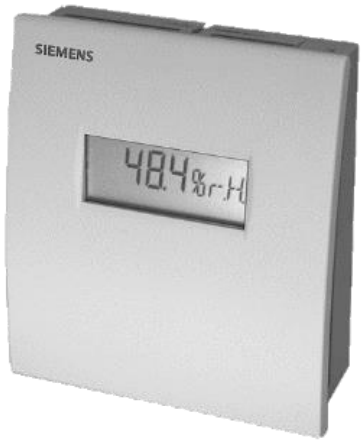
SIEMENS

Symaro™

Room sensors for relative humidity and temperature Modbus RTU

QFA2050/MO, QFA2050D/MO



Room relative humidity and temperature sensors with Modbus communication

- Modbus RTU (RS-485)
- Relative humidity measuring accuracy of 3 % within the comfort range
- DIP switches set together with other controllers

Use

QFA2050/MO and QFA2050D/MO are used in ventilation and air conditioning plants to acquire room

- relative humidity
- temperature

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

Technical design

The units are designed for wall mounting and can be deployed with most types of commercially available recessed conduit boxes. The cables can be introduced from the rear (concealed wiring), from below or above (surface-run wires) through knock-out openings.

Measured value display

QFA2050D provides the measured values on its LCD display. The following measured values are displayed, alternating at intervals of 5 s:

- Temperature: in °C or °F
- Humidity: in % r.h.

Type summary

Product number	SSN No.	Temperature measuring range	Humidity measuring range	Operating voltage	Output signal
QFA2050/MO	S55720-S508	-40…70 °C	0…100 %	AC 24 V ±20 %/ DC 13.5...35 V	Modbus RTU
QFA2050D/MO	S55720-S509	-40…70 °C	0…100 %	AC 24 V ±20 %/ DC 13.5...35 V	Modbus RTU

Ordering and delivery

When ordering, specify name and product number, for example: Room sensor QFA2050/MO.

Notes

Engineering

The following impacts the accuracy of measurement:

- 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 hour of operation and can be adjusted as needed in a higher system (e.g. controller).

No correction on the local LCD.

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 the electrical interference. Use shielded cables in EMC-prone environments.

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

Mounting

Location

Inner wall (not exterior!) in the room to be air conditioned; not in niches, not behind curtains, not above or close to heat sources or shelves nor on walls with a chimney. Do not expose to direct light from spot lights or direct solar radiation.

Install the sensor in the occupied space about 1.5 m above the floor and at least 50 cm from the next wall.

Seal the end of the conduit at the sensor to prevent false measurements due to drafts through the conduit.

Mounting instructions

Mounting instructions are enclosed in the package.

Chemical vapors

The sensor is a highly sensitive measuring device and must be handled with care. Exposure to high concentrations of chemical vapors for longer periods may distort sensor readings.

!	*NOTICE*
	Avoid direct contact with chemicals in any form. Do not touch sensitive components with bare hands or tools as this will negatively impact measuring accuracy.

CAUTION! Do not to apply voltmeters or ohmmeters directly to the sensing element.

Commissioning

Sensor functions can be checked 30 minutes after applying power.

Disposal

The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

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

Technical data

Function	
Communication	Modbus RTU (RS-485)
Supported baud rate	9600; 19200; 38400; 57600; 76800; 115200
Transmission format	1-8-E-1; 1-8-O-1; 1-8-N-1; 1-8-N-2
Bus termination	120 ohm, jumper selection

For detailed information on specific functions, see Basic documentation (A6V12045847 *).

Power supply	
Operating voltage	AC 24 V ±20 % or DC 13.5…35 V (SELV) or AC/DC 24 V class 2 (US)
Frequency	48...63 Hz at AC 24 V
External supply line protection	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
Power consumption	≤ 1.5 VA

Functional data	
Humidity sensor	
Measuring range	0…100 % r.h.
Range of use	0…95 % r.h. (non-condensing)
Measuring accuracy at 23 °C and AC/DC 24 V in 0...95 % r.h. 30...70 % r.h.	 ±5 % r.h. ±3 % r.h.
Temperature dependency	≤ 0.05 % r.h./°C
Time constant	Approx. 20 s
Temperature sensor	
Measuring range	-40…70 °C
Range of use	-15…50 °C
Measuring accuracy at AC/DC 24 V in 23 °C 15...35 °C -35...50 °C	 ±0.3 K (typical) ±0.7 K ±1 K
Time constant t_{63}	8.5 min

Ambient conditions and protection classification	
Protection degree of housing	IP30 according to EN 60529 in built-in state
Protection class	III according to EN 60730-1
Environmental conditions	
Storage	IEC 60721-3-1
• Climatic conditions	Class 1K3
– Temperature	-15...50 °C
– Humidity	< 95 % r.h.
• Mechanical conditions	Class 1M2
Transport	IEC 60721-3-2
• Climatic conditions	Class 2K3
– Temperature	-25...70 °C
– Humidity	0...95 % r.h.

Ambient conditions and protection classification	
• Mechanical conditions	Class 2M2
Operation	IEC 60721-3-3
• Climatic conditions	Class 3K5
– Temperature (housing with electronics)	-15...50 °C
– Humidity	< 95 % r.h.
• Mechanical conditions	Class 3M2

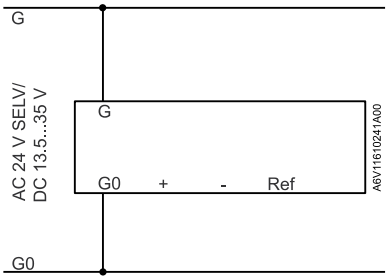
Standards, directives and approvals	
Product standard	EN 60730-1, EN 60730-2-9, EN 61000-6-2, EN 61000-6-3 Automatic electrical controls for household and similar use
Electromagnetic compatibility (Applications)	For use in residential, commercial, light-industrial and industrial environments
EU conformity (CE)	A5W00138204A *)
RCM conformity	A5W00138207A *)
UL	UL 873, http://ul.com/database
Environmental compatibility	The product environmental declaration (A5W00128109A *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

General	
Cable lengths for measuring signals Perm. cable lengths	See data sheet for the device handling the signal
Electrical connections screw terminals	1 × 2.5 mm² or 2 × 1.5 mm²
Product life time	> 10 years
Materials and colors	
Housing front	ASA + PC, NCS S 0502-G (white) equates to RAL9010
Bottom section of housing	ASA + PC, NCS 2801-Y43R (grey) equates to RAL7035
Base	PC, NCS 2801-Y43R (grey) equates to RAL7035
Sensor (complete assembly)	Silicone-free
Packaging	Corrugated cardboard
Weight including package QFA2050/MO QFA2050D/MO	 Approx. 141 g Approx. 155 g

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

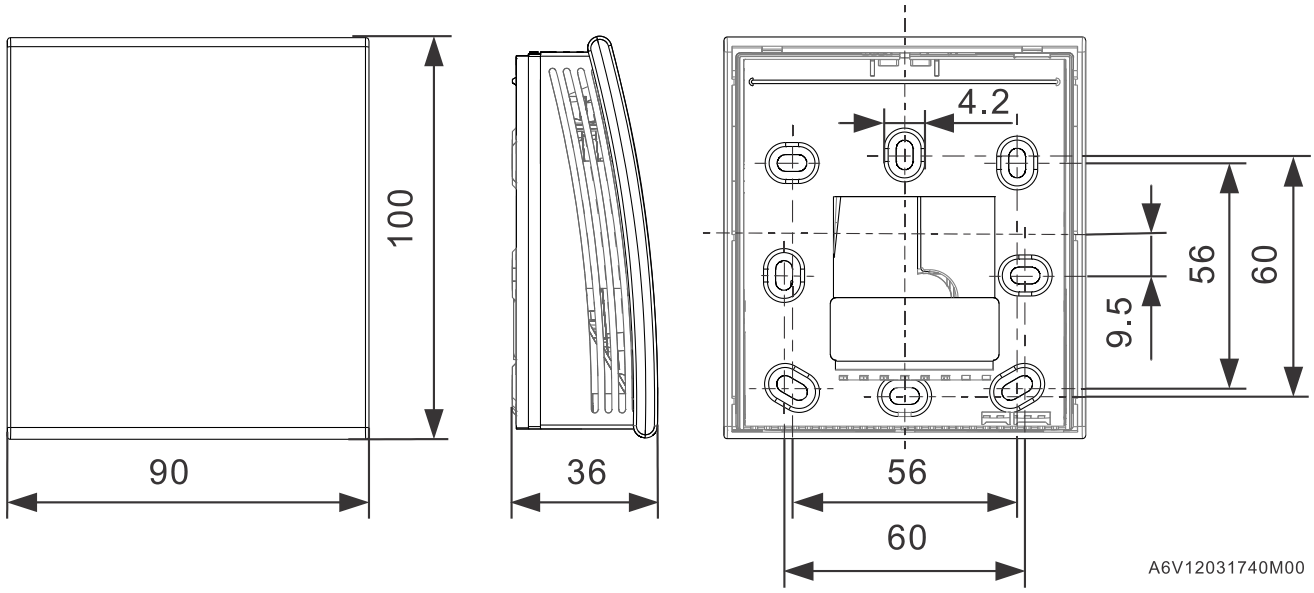
Diagrams

Connection terminals



G	Operating voltage AC 24 V ±20 % or DC 13.5...35 V
G0	GND
+	RS485 Modbus A
-	RS485 Modbus B
Ref	GND_ISO

Dimensions



Dimensions in mm

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