

Symaro™

Thread room sensor

QAA2890/WI, QFA2890/WI, QPA2892/WI



Thread room sensor

- Wireless communication KNX IoT over Thread
- Battery-powered:
QAA2890/WI, QFA2890/WI: 3 x alkaline batteries type AAA, 1.5 V
QPA2892/WI: 2 x alkaline batteries type AA, 1.5 V
- Temperature accuracy: $\pm 0.3 \text{ K}$ @ $21 \dots 25 \text{ }^{\circ}\text{C}$, $\pm 0.7 \text{ K}$ @ $15 \dots 21 \text{ }^{\circ}\text{C}$ / $25 \dots 35 \text{ }^{\circ}\text{C}$, $\pm 1 \text{ K}$ @ $0 \dots 15 \text{ }^{\circ}\text{C}$ / $35 \dots 50 \text{ }^{\circ}\text{C}$
- Relative humidity accuracy: $\pm 2 \text{ } \%$ r.h. @ $30 \dots 70 \text{ } \%$ r.h., $\pm 5 \text{ } \%$ r.h. @ $0 \dots 30 \text{ } \%$ r.h. / $70 \dots 100 \text{ } \%$ r.h.
- CO₂ accuracy: $\pm 50 \text{ ppm}$ / $\pm 2 \text{ } \%$ m.v. @ $0 \dots 2000 \text{ ppm}$
- Range of use: $-15 \dots +50 \text{ }^{\circ}\text{C}$ / $0 \dots 100 \text{ } \%$ r.h. (non-condensing) / $0 \dots 5000 \text{ ppm}$

Use

Sensors acquire the following values in ventilation and air conditioning plants:

- Temperature
- Relative humidity
- CO₂ concentrations

Wireless communication KNX IoT over Thread exchanges sensor data with controllers, tools or the cloud over a wireless Thread network.

Functions

Relative humidity

The sensor acquires relative humidity via a digital capacitive relative humidity sensor with bandgap temperature sensor.

The electronic measuring circuit converts the sensor element's humidity signal to a wireless digital signal (0...10000), corresponding to a relative humidity range of 0...100 %.

Temperature

The sensor acquires the temperature via a digital humidity and temperature sensor.

The temperature signal from sensing element is converted to wireless digital signal (0...10000), corresponding to a temperature range of 0...50 °C.

CO₂ concentration

The Symaro™ air quality sensor acquires the CO₂ concentration by infrared absorption measurement (NDIR).

The resulting wireless digital output signal (0...5000) is proportional to the CO₂ content of the ambient air, corresponding to a CO₂ concentration range of 0...5000 ppm.

Mechanical design

Thread room sensors are designed for wall mounting, flush mounting and tape mounting. They are suitable for use with most commercially available recessed conduit boxes.

The device has 2 parts:

- Plastic housing with electronic components
- Mounting plate

Type summary

Product number	SSN NO.	Temperature measuring range	Humidity measuring range	CO ₂ measuring range	Operating voltage	Output signal
QAA2890/WI	S55720-S550	0...50 °C	---	---	DC 4.5 V (3 x 1.5 V AAA alkaline batteries)	Wireless digital signal
QFA2890/WI	S55720-S551	0...50 °C	0...100 %	---	DC 4.5 V (3 x 1.5 V AAA alkaline batteries)	Wireless digital signal
QPA2892/WI	S55720-S552	0...50 °C	0...100 %	0...5000 ppm	DC 3 V (2 x 1.5 V AA alkaline batteries)	Wireless digital signal

Delivery

When ordering, specify name and product number, e.g.: Thread room sensor QFA2890/WI.

Inbox items

Name	Quantity
Sensor	1
Mounting plate	1
Set of screws and plastic insert	1
Mounting instructions	1
Batteries	QAA2890/WI, QFA2890/WI: 3 x 1.5 V AAA alkaline batteries QPA2892/WI: 2 x 1.5 V AA alkaline batteries
Tape	1

Equipment combinations

Type of units	Product number	SSN NO.
KNX-IoT to BACnet gateway ¹⁾	OCT200.KNBA	S55812-Y102
Thread mesh extender	OCT100.R	S55812-Y101

¹⁾ Power adapter needs to be ordered separately.

All documents can be downloaded from <http://siemens.com/bt/download>.

Product documentation

Title	Document ID
Mounting instruction	A6V12816395
Quick start guide	A6V12905642
CE declarations	A5Wxxx
RCM	A5Wxxx
UKCA	A5Wxxx
FCC	A5Wxxx
Environmental product declaration	A5Wxxx

Related documents such as environmental declarations, CE declarations, etc., can also be downloaded at the following Internet address:

www.siemens.com/bt/download

⚠ CAUTION**National safety regulations**

Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.

⚠ WARNING**Explosion due to fire or short-circuit, even with discharged batteries**

Risk of injury due to flying parts

- Prevent the batteries from coming in contact with water.
- Do not recharge batteries.
- Do not damage or disassemble batteries.
- Do not heat batteries over 85 °C.

⚠ WARNING**Risk of explosion**

Personal injury and property damage

- Install the battery at the correct polarity (+/-) using the illustration in the battery compartment.
- Install only the correct battery types according to the indication in the battery compartment.
- In case of a leakage, avoid contact with skin, eyes and mucous membranes.
- Remove leaking battery from the battery compartment with a cloth.

Observe the following:

- The batteries must be new and undamaged.
- Do not mix new and used batteries.
- Store, transport and dispose of the batteries in compliance with local requirements, regulations and laws and observe the instructions of the battery manufacturer.

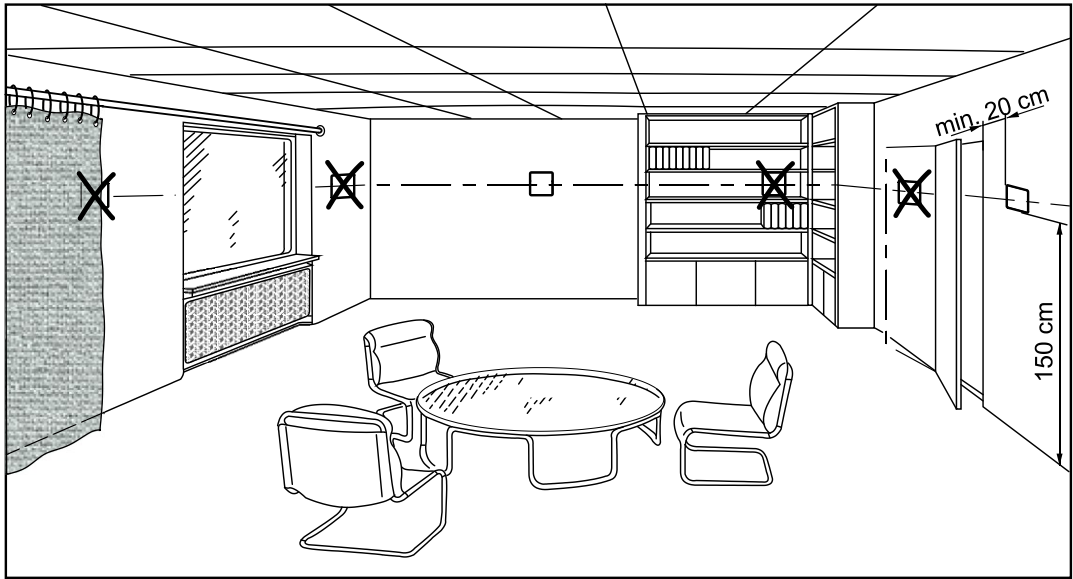
NOTICE**Radio frequency energy**

Interference to radio communications

- Install and use equipment in accordance with installation guide.
- Read all regulatory compliance information.

Mounting

Location



- The device is designed for wall mounting, flush mounting and tape mounting.
- Inside wall (not an outside wall!) of the room; not in recesses, behind curtains, above or close to heat sources or shelves and not on walls where a chimney is located. Do not expose the unit to spot lights or direct sunlight.
- Install the sensor in the occupied space about 1.5 m above the floor and at least 20 cm from the next wall.
- Seal the end of the conduit at the sensor to prevent false measurements caused by draughts through the conduit.

Mounting instructions

Mounting instructions are enclosed in the package.

Chemical vapors

The humidity sensor is a sensitive measuring device and must be handled with care. Chemical vapors at high concentration in combination with long exposure times may distort the sensor reading.

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

LED

In the following table:

- Short press (<2 s) means short press the push button
- Long press (>20 s) means long press the push button

LED color	Device status	LED pattern	Push button operation
Off	Unpowered device / powered device without display	Off	N/A
Green	Start up (e.g. battery installation)	Fast flashing (100 ms on / 100 ms off) for 3 s	N/A
	Normal (connected)	On for 8 s	Short press to activate LED
	Joining	Flashing 1 (1/4 s on / 7/4 s off) during joining and is timeout after 120 s	Short press to activate LED, then short press within 8 s to join ¹⁾
Orange	Initial state (no connection)	On for 8 s	Short press to activate LED
	Factory reset	Fast flashing (100 ms on / 100 ms off) for 8 s	Long press to start factory reset
Red	Connection lost ⁴⁾	Flashing 1 (1/4 s on / 7/4 s off) for 8 s	Short press to activate LED
	Low battery / Hardware error	Fast flashing (100 ms on / 100 ms off) for 8 s	
	Programming mode	Permanent on during programming mode and is timeout after 4 minutes.	Short press to activate LED, then short press within 8 s to enter programming mode ^{2) 3)}
	SRP service registration failure	Fast flashing (100 ms on / 100 ms off) for 8 s	N/A
Off and green	Firmware update	Constant off during firmware downloading, fast flashing (100 ms on / 100 ms off) during new firmware startup.	N/A

Notes

- ¹⁾ Device is in initial state (no connection).
- ²⁾ Before entering programming mode, device needs connect to Thread network.
- ³⁾ Device can enter programming mode via gateway. For details, see [Quick start guide](#).
- ⁴⁾ If device connection is lost (LED flashes red) and users want to join, they need factory reset the device firstly.

Maintenance

Change of batteries

Check battery power by short press of the push button to activate the LED.

The batteries are almost empty if LED is red and keeps fast flashing (100 ms on / 100 ms off) for 8 s and must be replaced.

For optimal performance, we recommend using high performance alkaline batteries.



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 www.siemens.com/bt/disposal.

Regulatory compliance information

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation

FCC Caution: Changes or modifications not expressly approved by Siemens Switzerland Ltd. could void user authority to operate the equipment. United States representative <https://new.siemens.com/us/en/products/buildingtechnologies/home.html>

IC Statement

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiofrequency radiation exposure statement

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Déclaration d'exposition aux rayonnements de radiofréquence

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

United Kingdom conformity assessed

Contact for regulatory topics: (GB) Siemens plc, Sir William Siemens House, Princess Road, Manchester, M20 2UR

Radio equipment directive

Simplified EU Declaration of Conformity

Hereby, Siemens Switzerland Ltd declares that the radio equipment type QAA2890/WI, QFA2890/WI and QPA2892/WI are in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:

<https://siemens.com/bt/download>.

IMDA standards

The device complies with IMDA standards.

Complies with
IMDA Standards

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Technical data

Power supply	
Operating voltage QAA2890/WI, QFA2890/WI QPA2892/WI	DC 4.5 V (3 x 1.5 V AAA alkaline batteries) DC 3 V (2 x 1.5 V AA alkaline batteries)
Battery life QAA2890/WI QFA2890/WI QPA2892/WI	10 years (10 minutes transmission rate with COV on) 10 years (10 minutes transmission rate with COV on) 9 years (10 minutes transmission rate with COV on and CO ₂ indicator off)
Power consumption QAA2890/WI, QFA2890/WI QPA2892/WI	Max. 20 mA Max. 250 mA

Radio communication	
Frequency range	2400...2483.5 MHz
Maximum transmission power	7.73 dBm
Range	≤ 10 m, depending on application and building
Protocol	Open Thread
MAC protocol	IEEE 802.15.4
Zigbee channels	11...26

Functional data of sensor	
Humidity sensor	
Range of use	0...100 % r.h. (non-condensing)
Measuring range	0...100 % r.h.
Measuring accuracy at 30...70 % r.h. 0...30 % r.h./70...100 % r.h.	±2 % r.h. ±5 % r.h.
Time constant t_{63}	20 s
Output signal	Wireless digital signal (0...10000)
Temperature sensor	
Range of use	-15...+50 °C
Measuring range	0...50 °C
Measuring accuracy at 21...25 °C 15...21 °C/25...35 °C, 0...15 °C/35...50 °C	±0.3 K ±0.7 K ±1 K
Time constant t_{63}	≤ 8.5 min (depending on air movement and thermal coupling to the wall)
Output signal	Wireless digital signal (0...10000)
CO₂ sensor	
Range of use	0...5000 ppm
Measuring range	0...5000 ppm
Measuring accuracy at 0...2000 ppm	±50 ppm / ±2 % m.v.
Time constant t_{63}	5 min
Output signal	Wireless digital signal (0...10000)

Ambient conditions and protection classification	
Protection degree of housing	IP30 according to EN60529
Protection class	III according to EN60730
Environmental conditions	
Storage	
Climatic conditions	
Temperature	-15...+50 °C
Humidity	0...95 % r. h. (non-condensing)
Mechanical conditions	Class 1M2
Transport	
Climatic conditions	
Temperature	-25...+70 °C
Humidity	<95 % r.h.
Mechanical conditions	Class 2M2
Operation	
Climatic conditions	
Temperature (housing with electronics)	-15...+50 °C
QAA2890/WI & QFA2890/WI	0...50 °C
QPA2892/WI	
Humidity	0...95 % r. h. (non-condensing)
Mechanical conditions	Class 3M2

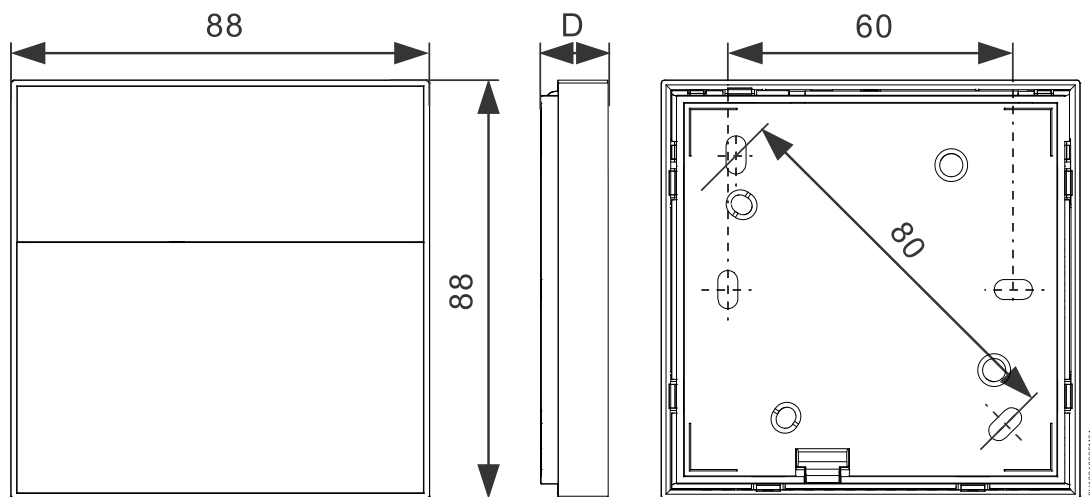
Standards, directives and approvals	
Product standard	EN 60730-1 EN 301489-1 EN 301489-17 EN IEC 62311 EN 300328
Electromagnetic compatibility (Applications)	For use in residential, commerce, light-industrial and industrial environments
EU conformity (CE)	xx *)
RCM conformity	xx *)
UKCA conformity	xx *)
FCC	xx *)

Standards, directives and approvals	
UL	UL 60730, http://ul.com/database
RoHS	Directive 2011/65/EU restriction of the use of certain hazardous substances in electronic equipment
Environmental compatibility	The product environmental declaration (xxx *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

General	
Materials and colors	Makrolon 6485, RAL9003
Sensor (complete assembly)	Silicone
Packaging	Corrugated cardboard
Weight including package QAA2890/WI QFA2890/WI QPA2892/WI	Approx. 204.6 g Approx. 204.6 g Approx. 226.3 g

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

Dimensions



Dimensions in mm

Type	D
QAA2890/WI, QFA2890/WI	14
QPA2892/WI	18

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