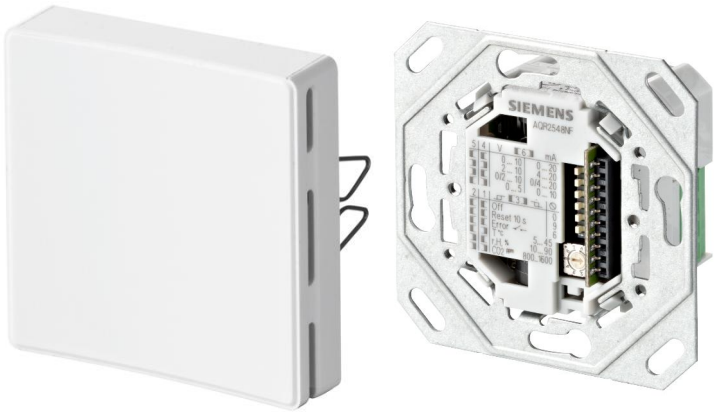


AQR253… AQR254…

Symaro™

Flush-mount room sensor AQR253… AQR254…

- **Active flush-mounted room sensor comprising front module, base module and design frame accessory that can be ordered separately**
- **Operating voltage AC 24 V or DC 15-36 V**
- **Adjustable signal outputs:**
  DC 0-10 V; DC 2-10 V; DC 0-5 V;
  DC 0-20 mA; DC 4-20 mA; DC 0-10 mA;
- **Maintenance-free CO_2 sensing element based on optical infrared absorption measurement (NDIR[1)])**
- **VOC[2)] sensing element based on a heated tin dioxide semi-conductor**
- **Determination of air quality (IAQ[3)]) by maximum selection from CO_2 and VOC sensing signals**
- **CO_2 value indicated by LED**
- **Field of use 0…+50 °C / 0…95 % r.h. (non-condensing) / 0…2000 ppm**
- **Active multi-sensor for CO_2-temperature, CO_2-humidity, and humidity-temperature**
- **Passive temperature sensor (LG-Ni1000 / NTC 10k)**

1) NDIR = Non-dispersive infrared
2) VOC = Volatile organic compounds
3) IAQ = Indoor air quality

Use

In ventilation and air conditioning plants, to optimize comfort and energy consumption based on demand-controlled ventilation.
The room sensor records:

- CO_2 concentration to indicate presence in smoke-free rooms.
- VOC concentration to indicate presence of odors in rooms, e.g. from tobacco smoke, body odor, material fumes.
- Relative humidity in the room.
- Temperature in the room.

Typical use:

- Measure CO_2 and VOC concentration:
  In party rooms, foyers, exposition and exhibition halls, canteens, shopping malls, sports facilities, sales rooms, meeting rooms, residential rooms.
- Measure CO_2 concentration:
  In rooms with varying occupancy with regard to time or number of persons, smoke-free rooms such as museums, theaters, movie theaters, lecture halls, offices, classrooms.

Note

Devices for CO_2 or VOC measurement are not suited for safety applications such as: Warning against presence of gas or smoke.

Type summary

The mounted sensor comprises:

- A front module
- A base module with mounting plate
- A design frame that can be ordered separately (see "Accessories")

Front module

Type	*Stock number*	*Humidity measuring r ange*	*Temperature measuring range*	*Air quality indication*
AQR2530NNW	S55720-S137	---	---	---
AQR2532NNW	S55720-S136	---	0-50 °C	---
AQR2533NNW *)	S55720-S140	0-100 % r.h.	---	---
AQR2535NNW	S55720-S141	0-100 % r.h.	0-50 °C	---
AQR2535NNWQ	S55720-S219	0-100 % r.h.	0-50 °C	LED
AQR2534ANW	S55720-S138	0-100 % r.h.	0-50 °C and LG-Ni1000	---
AQR2534FNW *)	S55720-S139	0-100 % r.h.	0-50 °C and NTC 10k	---

*) Not supplied anymore

Base module

Type	*Stock number*	*CO_2 measuring range*	*VOC measuring range*
AQR2540NF **AQR2540NH** **AQR2540NG**	S55720-S142 S55720-S143 S55720-S144	---	---
AQR2547NF	S55720-S146	---	0-100 %
AQR2546NF **AQR2546NH** **AQR2546NG**	S55720-S147 S55720-S150 S55720-S153	0-2000 ppm 1)	---
AQR2548NF	S55720-S148	0-2000 ppm 1)	0-100 %

1) ppm = Parts per million

Mounting plate format			*ASN supplement*
	CEE/VDE	70.8 x 70.8 mm	AQR2540NF; AQR2547NF; AQR2546NF; AQR2548NF;
	British Standard	83 x 83 mm	AQR2540NH; AQR2546NH;
	3 Modular	110 x 64 mm	AQR2540NG; AQR2546NG;
	UL	64 x 110 mm	…J

Ordering

When ordering, provide both name and type reference of the sensor, e.g.:
- Room sensor front module: AQR2532NNW / S55720-S136
- Room sensor base module (British Standard): AQR2540NH / S55720-S143

Place a separate order for the design frames AQR2500N…W listed in the "Accessories" section.

Overview of module combinations and sensor functions

Sensor modules					*Module types (ASN)*			*Sensor output*			*Relay output* [2]
Base module		***Front module***			***Base module***	***+***	***Front module***	***X1***	***X2***	***B, M***	***C, DO***
			T		AQR2540…	+	AQR2532…	---	T		T
		r.h.			AQR2540…	+	AQR2533… [*]	r.h.	---		r.h.
		r.h.	T		AQR2540…	+	AQR2535…	r.h.	T		r.h. / T
		r.h.	T	–□– [1]	AQR2540…	+	AQR2534…	r.h.	T	–□– [1]	r.h. / T
	VOC				AQR2547…	+	AQR2530…	VOC	---		VOC
	VOC		T		AQR2547…	+	AQR2532…	VOC	T		VOC / T
	VOC	r.h.			AQR2547…	+	AQR2533… [*]	VOC	r.h.		VOC / r.h.
	VOC	r.h.	T		AQR2547…	+	AQR2535…	VOC	r.h.		VOC / r.h. / T
	VOC	r.h.	T	–□– [1]	AQR2547…	+	AQR2534…	VOC	r.h.	–□– [1]	VOC / r.h. / T
CO_2					AQR2546…	+	AQR2530…	CO_2	---		CO_2
CO_2			T		AQR2546…	+	AQR2532…	CO_2	T		CO_2 / T
CO_2		r.h.			AQR2546…	+	AQR2533… [*]	CO_2	r.h.		CO_2 / r.h.
CO_2		r.h.	T		AQR2546…	+	AQR2535…	CO_2	r.h.		CO_2 / r.h. / T
CO_2		r.h.	T		AQR2546…	+	AQR2535…Q	CO_2	r.h.		CO_2 / r.h. / T
CO_2		r.h.	T	–□– [1]	AQR2546…	+	AQR2534…	CO_2	r.h.	–□– [1]	CO_2 / r.h. / T
CO_2 [3]	VOC [3]				AQR2548…	+	AQR2530…	CO_2	IAQ [3]		IAQ [3]
CO_2	VOC		T		AQR2548…	+	AQR2532…	CO_2	T		IAQ / T
CO_2	VOC	r.h.			AQR2548…	+	AQR2533… [*]	CO_2	r.h.		IAQ / r.h.
CO_2	VOC	r.h.	T		AQR2548…	+	AQR2535…	CO_2	r.h.		IAQ / r.h. / T
CO_2	VOC	r.h.	T		AQR2548…	+	AQR2535…Q	CO_2	r.h.		IAQ / r.h. / T
CO_2	VOC	r.h.	T	–□– [1]	AQR2548…	+	AQR2534…	CO_2	r.h.	–□– [1]	IAQ / r.h. / T

Unavailable measuring variables on terminals X1 / X2

*) Not supplied anymore

1) LG-Ni1000 / NTC 10k

2) Measuring variables and error messages act on the sensor settings (see "Functions) on the relay contact

3) CO_2 and VOC measuring variables to determine room air quality (IAQ) by maximum selection

Equipment combinations

All systems and devices capable of processing the following sensor signals:

- Active sensor signals:
  DC 0-10 V; DC 2-10 V; DC 0/2-10 V; DC 0-5 V;
  DC 0-20 mA; DC 4-20 mA; DC 0/4-20 mA; DC 0-10 mA;
- Passive sensor signals:
  For sensors AQR2534ANW (LG-Ni1000 or NTC 10k)

If sensors are used for:

- Min., max., and average calculation, or
- Enthalpy, enthalpy difference, absolute humidity and dew point calculation, in combination with the signal converter SEZ220 (data sheet N5146) recommended.

Accessories

Siemens Design frames

See "Dimensions" for design frame dimensions.

Type	*Stock number*	*Frame designation (color)*	*Design frame format*
AQR2510NFW	S55720-S158	DELTA line (titanium white)	CEE/VDE 80 x 80 mm
AQR2510NHW	S55720-S159	DELTA miro (titanium white)	British Standard 90 x 90 mm
AQR2510NGW	S55720-S160	DELTA azio (titanium white)	3 Modular 120 x 80 mm
AQR2510NGW	S55720-S160	DELTA azio (titanium white)	UL 80 x 120 mm

Third-party design frames

The sensor can be combined with the design frames from the following third manufacturers:

Manufacturer	*Type*
SIEMENS	Delta line
	Delta vita
	Delta miro
	Delta profil (with intermediate frame)
BERKER	B.1
	B.7
Feller	EDIZIOdue + PRESTIGE (with intermediate frame)
GIRA	E2
	Event
JUNG	Ap581 ALWW
	A500 (A581 WW)
	AS500 (AS 581 WW)
MERTEN	SYSTEM M

We recommend comparing the frame dimensions of third-party frames to the dimensions listed in section "Dimensions".

Temperature, passive (AQR2534)

The sensor measures the room temperature using a sensing element whose electric resistance changes as a function of the ambient air temperature. The following sensing elements are available depending on the front module (see "Type summary"):

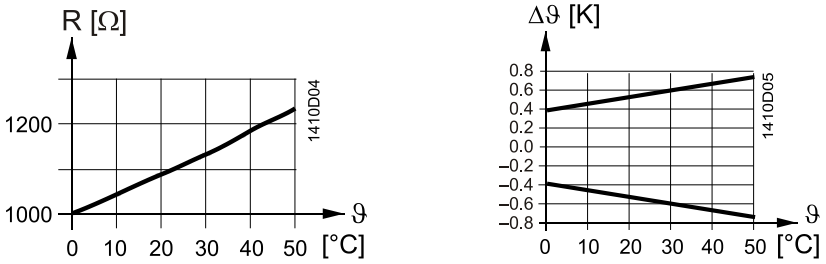
- LG-Ni1000 or
- NTC 10k

Passive output signal on terminals B, M: Resistance values and accuracy depending on the selected sensing element (see diagram below).

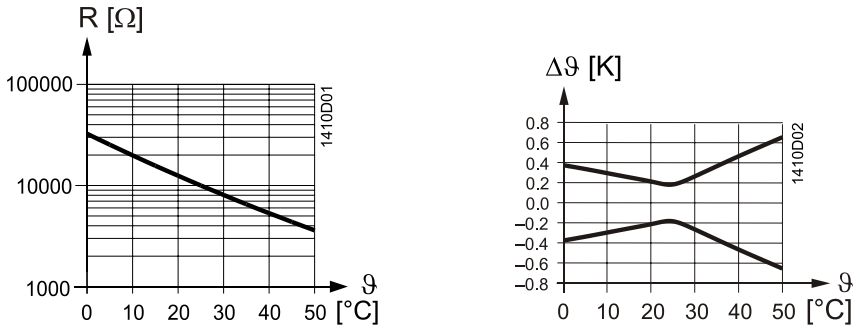
Sensing elements

Characteristic curve: Accuracy:

LG-Ni1000:



NTC 10k



R Resistance in Ohm
ϑ Temperature in degrees Celsius
Δϑ Temperature difference in Kelvin

Active sensors

The output signal of the sensors described below is provided either as linear voltage or current signal.

Output signal selection (DIP switches 4, 5, and 6)

Select the desired output signal (size, range) as per the following table using DIP switches 4, 5, and 6 on the base module.

DIP switch symbols:
◧ = *Switch position left*
◨ = *Switch position right*

DIP switches	**◧6**	**6◨**
	U [V]	***I [mA]***
◧5 **◧4**	0-10 V	0-20 mA
5◨ **4◨**	2-10 V	4-20 mA
5◨ **◧4**	0/2-10 V 0 V = error message (error)	0/4-20 mA 0 mA = error message (error)
◧5 **4◨**	0-5 V	0-10 mA

Output signals and measuring range

The linear output signals on output terminals X1 [1] or X2 [1] correspond to the following measuring ranges [1]

Output signals / load [2]:		*For measuring ranges [1]:*	
DC 0-10 V	at max. ±1 mA or	CO_2:	0-2000 ppm
DC 2-10 V	at max. ±1 mA or	VOC:	0-100 % VOC
DC 0-5 V	at max. ±1 mA or	IAQ:	0-100 % IAQ
DC 0-20 mA	at 0-500 Ohm or	r.h.:	0-100 % r.h.
DC 4-20 mA	at 0-500 Ohm or	T:	0-50 °C
DC 0-10 mA	at 0-500 Ohm.		

1) Depending on measured variable and module combination (see "Type summary")

2) Depending on signal selection (DIP switches 4, 5, and 6)

Temperature, active
(AQR2532,..34,..35)[2)]

The sensor measures the room temperature using a sensing element whose electric resistance changes as a function of the ambient air temperature.

Active output signal:	*For measuring range:*
On terminal X2, see above for available output signals	0-50 °C

2) Depending on module combination (see "Type summary")

Relative humidity
(AQR2533[*)], …34, …35)

The sensor measures the relative humidity in the room using a humidity sensing element whose electrical capacitance changes as a function of relative humidity.

Active output signal:	*For measuring range:*
On terminal X1 [3)] or X2 [3)], See above for available output signals	0-100 % r.h.

3) Depending on module combination (see "Type summary")

*) Not supplied anymore

CO_2 concentration
(AQR2546, AQR2548)

The sensor uses infrared absorption measurement to determine CO_2 concentration in the air (NDIR). The sensor provides exact measurements at all times and does not require maintenance or recalibration thanks to an integrated, stable reference light source.

Active output signal:	*For measuring range:*
On terminal X1, see above for available output signals	0-2000 ppm.

Air quality indication

(AQR2535…Q)

The background-lit symbol informs on the current level of CO_2 in the room. The colors **green** / **orange** / **red** of the background lighting indicate **good** / **mediocre** / **poor** air quality. The air quality indicator light on green signalises a concentration of ≤1000 ppm, orange ≤1500 ppm, and red exceeding 1500 ppm.

VOC concentration
(AQR2547)

The sensor determines the mixed gas concentration (VOC) based on a metal-oxide semiconductor sensing element. The sensor provides exact measurements following a warm-up period and does not require maintenance or recalibration thanks to an integrated compensation mechanism.

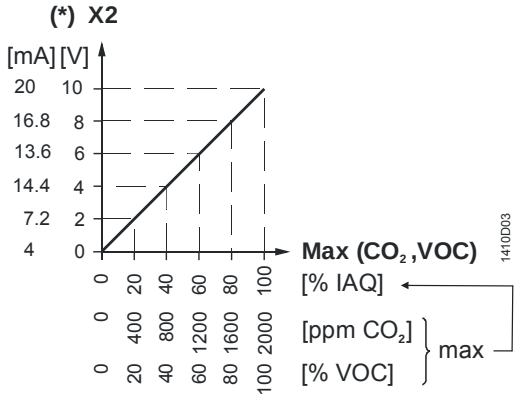
Active output signal:	*For measuring range:*
On terminal X1, see above for available output signals	0-100 % VOC.

Room air quality (IAQ)
(AQR2548 + AQR 2530)

The sensor measures CO_2 and VOC concentrations in the air. The greater of the two demand signals (maximum select) is provided as air quality demand (IAQ) for a ventilation controller.

Active output signal:	*For measuring range:*
On terminal X2, see above for available output signals	0-100 % IAQ.

Ventilation demand characteristic curve diagram (output X2)



(*) Sample measuring ranges 4…20 mA and 0…10 V

Potential-free relay contact

A potential-free relay contact on the base module (connection terminals C and DO) switches in dependence of selected measuring variable, switching characteristic, and switching setpoint.

- Maximum load of relay contacts: AC/DC 30 V, 0.5 A cos φ = 0.5.
- The switching circuit is fused externally (≤ 1 A); there is no internal fuse in the device.

Measured value selection (DIP switches 1 and 2)

DIP switches 1 and 2 help determine the measured value acting on the relay. Measured variables T, r.h., or CO_2/VOC/IAQ are provided depending on the sensor module (see "Type summary" and "Mechanical design").

Measured variables	T	r.h.	CO_2/VOC/IAQ [6]
DIP switches 1 and 2	**2** / **1**	**2** / **1**	**2** / **1**

6) Depending on the sensor module

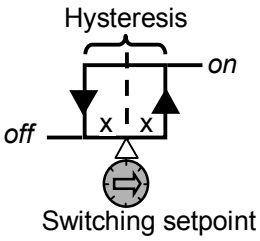
Switching characteristic selection (DIP switch 3)

Use DIP switch 3 to determine the switching characteristic (NO or NC) for the relay contact.

	3	**3**
Measured value < Switching setpoint	Open	Closed
Measured value > Switching setpoint	Closed	Open
for missing measured value	Open	Closed

Switching hysteresis

The adjustable switching setpoint is located in the center of the switching hysteresis:



Measured variable	*Hysteresis*	*X*
CO_2	150 ppm	75 ppm
VOC	7.5 %	3.75 %
IAQ	7.5 %	3.75 %
r.h.	5 %	2.5 %
T	2.5 K	1.25 K

Read sample:
Effective switching value = set switching setpoint
- minus "x" for switch-off point (off) or
- plus "x" for switch-on point (on).

Select relay-switching setpoint (rotary selection switch)

		Rotary selection switch position base module									
		1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	
Switching setpoints of measured variables	***CO_2***	800	900	1000	1100	1200	1300	1400	1500	1600	**ppm**
	VOC	40	45	50	55	60	65	70	75	80	**%VOC**
	IAQ	40	45	50	55	60	65	70	75	80	**%IAQ**
	r.h.	10	20	30	40	50	60	70	80	90	**%r.h.**
	T	5	10	15	20	25	30	35	40	45	**°C**

Auxiliary functions (DIP switches 1 and 2 and rotary selection switch)

DIP switches 1 and 2 and the rotary selection switch allow for implementing the following auxiliary functions:

Auxiliary functions	*Rotary selection switch positions*	*DIP switches 1 and 2*
Reset function *(Reset 10s)*	9 (*)	**2** / **1**
Test function	8	
Fault signaling function *(Error)*	6	
Auxiliary functions off *(Off)*	0	

(*) Switch position 9 for at least 10 seconds.

Reset function (Reset)

Rotary selection switch on position 9 for at least 10 seconds:
When the front and base modules are assembled during commissioning, the sensor outputs (X1, X2) on the base module automatically assume the active measured values from the existing module types.

Set the rotary selection switch to the ready to operate base module to position 9 for at least 10 seconds to reset the base module to default (factory setting).

Note: Reposition the rotary selection switch from position 9 to the previously set position after activating the reset function. This is the only way to assume new measured variables on the sensor outputs when re-attaching the front module on the base module.

Test function

Rotary selection switch on position 8:
The test function provides a test signal on the base module on sensor outputs (X1, X2) to check the sensor function.
The following test signals are provided as per the available sensing elements on the base module:

CO_2 concentration:	400 ppm
VOC concentration:	30%
Room air quality IAQ:	40 %
Relative humidity:	50 %
Temperature:	30 °C

Fault signal function (Error)

Rotary selection switch on position 6:
The relay contact on the base module (connection terminals C and DO) is activated as soon as an error from a sensor is signaled (e.g. in case of a missing or defective sensing element).

Notes:

- The fault signaling function does not monitor a passive temperature sensor (e.g. LG-Ni1000).
- The switching function can be inverted using DIP switch 3.

NO contact NO (normally open)	NC contact NC (normally closed)

Response to errors

The following fault signal is indicated at the associated active sensor output (X1, X2) as soon as a fault occurs (within 10 s) on a sensor module:

Selected, active output signal:	*Fault indication signal on defective, active measured value output:*	
DC 0/2-10V or DC 0/4-20mA	0 V 0 mA.	
	For T-sensors: Min. value	*For r.h./CO_2/VOC sensors: Max. value*
DC 0-10 V	0 V	10 V
DC 2-10 V	2 V	10 V
DC 0-5 V	0 V	5 V
DC 0-20 mA	0 mA	20 mA
DC 4-20 mA	4 mA	20 mA
DC 0-10 mA	0 mA	10 mA

Design

The device is designed for flush-mounting. Run the cables from the wall outlet to the sensor base module.
The mounted device consists of:

- One base module with snapped-on mounting plate
- One design frame (ordered as separate accessory) and
- One front module.

The sensing elements are located in either the basic or the front module (see "Type summary").

Anti-theft device

Both models are connected via snap-on device and anti-theft device (red security plug) and can be easily be detached. Use a screwdriver to easily unlock the anti-theft device. Red security plug is including with the front module.

Setting and connecting elements

The setting elements DIP switch and rotary selection switch as well as the printed setting aids are available on the base module after removing the front module. See "Functions" for setting variants and their impact on sensor functions.

Printed setting aids

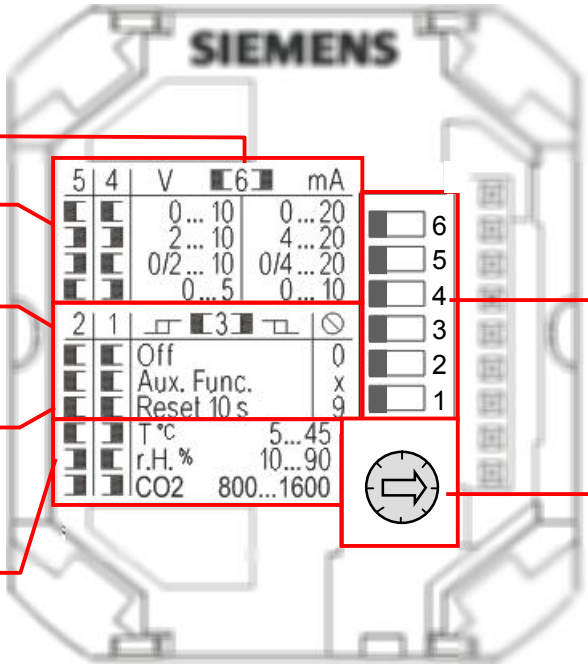
Signal variable [V] or [mA] (DIP switch 6)

Output signal (DIP switches 4 and 5)

Relay contact switching characteristic (DIP switch 3)

Auxiliary functions (DIP switches 1and 2 rotary selector switch 0-9)

Relay constant measured variable (DIP switch 1 and 2) and switching setpoint (rotary selection switch)



Setting elements

DIP switch symbols:
◧ = Switch position left.
◨ = Switch position right.

DIP switches ◧1 - ◧6.

Rotary selection switch (switch positions 0-9)

Measuring circuits and connection terminals (see "Connection terminals") are located on the base module in addition to the setting elements.

Engineering notes

Measuring accuracy

Measuring accuracy among other factors depends on the following:

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

See also "Mounting notes".

Measuring inaccuracies are constant for an installed sensor after approx. 1 operating hour.

They can be adjusted as needed in a higher system (e.g. on the controller).

Adjustment Own heating

- No measured value adjustment is required on the controller for active temperature sensors due to own heating.
- The following adjustments of measured values on the controller are required for passive temperature sensors to compensate for own heating depending on the output signal and number of signal outputs:

								Measured value adjustment on controller		
Sensor modules					*Module types (ASN)*			*Voltage output*	*Current output*	
Base module		*Front module*			*Base module*	+	*Front module*	*1 or 2*	*1 output*)*	*2 outputs*)*
		r.h.	T	⊣□⊢	AQR2540…	+	AQR2534…	0.5 °C	ca. 0.9 °C	1.0-1.8 °C **)
	VOC	r.h.	T	⊣□⊢	AQR2547…	+	AQR2534…	2.9 °C	2.7-3.1 °C **)	3.0-3.8 °C **)
CO_2		r.h.	T	⊣□⊢	AQR2546…	+	AQR2534…	0,9 °C	ca. 1.3 °C	1.4-2.1 °C **)
CO_2	VOC	r.h.	T	⊣□⊢	AQR2548…	+	AQR2534…	3,0 °C	3.0-3.4 °C **)	3.2-3.9 °C **)

*) At load 430 Ohm.

**) not recommended (for physical reasons).

Power

A transformer for safety extra-low voltage SELV with separate windings, suited for 100% duty, powers the sensor. Size and fuse the transformer in compliance with local safety regulations.
When sizing the transformer, consider the power consumption of the sensor. The data sheets for the devices with which the sensor is wired provide information on how to connect the sensor.
Observe maximum permissible cable lengths.

Cable routing and cable selection

When laying the cables, remember that electrical interference increases with longer, parallel cable runs and smaller distances between cables. Use screened cables for applications in environments exposed to severe electromagnetic interference. Use twisted pair cables for secondary power lines and signal lines.

Longer transmission lines between sensor and signal-processing device can result in measured value deviations. For line impedance > 1 Ohm, we recommend to loop G0 on the device and run it separately to the signal-processing device.

Potential-free relay contact

Very high voltage peaks may occur when switching inductive loads (e.g. switching contacts) that may impact device operation. An attenuator switched parallel to the inductive load (e.g. RC element) prevents this.

The present existing switching state remains for a drop off of voltage. As a result, the relay contact cannot be used to monitor voltage.

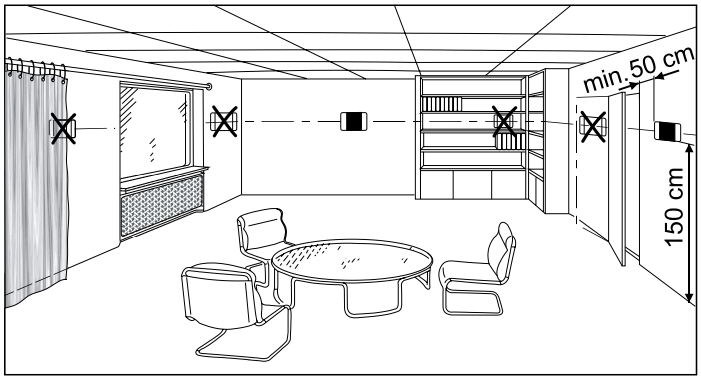
Mounting notes

Observe the following points when mounting the room sensor:

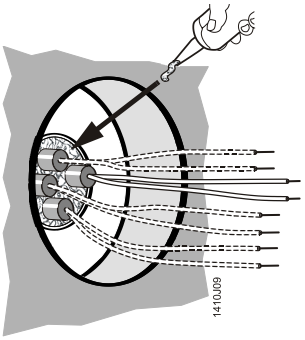
Mounting location

Sensor mounted on interior wall of room to be conditioned:

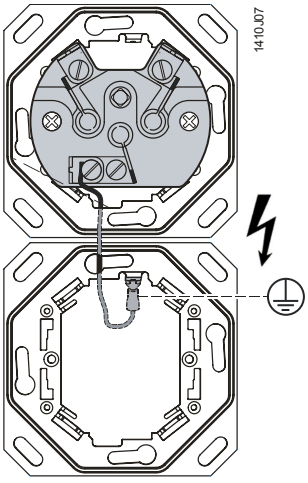
- At ca. 1.5 m height in the room and at least 50 cm from the next wall.
- Not on outside walls.
- Not in niches or behind curtains.
- Not above or near heat sources or shelves.
- Not on walls covering heat sources such as a chimney.
- Not in the radiation range of heat sources and lighting bodies e.g. spotlights.
- Not in areas exposed to direct solar radiation.



Seal the end of the installation conduit to prevent false measurements due to air drafts.



Comply with the various regulations on separating various voltage levels, when mounting the temperature sensor (with low voltage protection) alongside the recessed conduit boxes connected to the low-voltage power. In this case, the mounting frames must be connected to the protective ground wire with a flat plug connector plug and therefore grounded.



Observe the permissible ambient climate (see "Technical data").

Mounting instructions

Mounting instructions are enclosed in the device package.
See the following guideline for more information on mounting the sensor: "Symaro Sensor Installation Guide" Z-F01040501EN.

Commissioning notes

Recommended commissioning procedure:

- Check the wiring prior to supplying power.
- Set the desired voltage or current output signal using DIP switches, 4, 5, and 6 (see section "Functions", "Output signal selection").
- Briefly plug in the front module on the base module and remove. As a result, the sensor outputs (X1, X2) on the base module also take over the active measured variables of the existing module types (see also "Functions", "Reset function").
- Activate the test function on position 8 using the rotary selection switch. A test signal is provided on sensor outputs (X1, X2) to test the sensor functions (see "Functions", "Test function").
- Deactivate the test function as well as an other auxiliary function using DIP switches 1 to 3 as needed, and activate using the rotary selection switch (see "Functions", "Auxiliary functions").
- Install anti-theft protection (red security plug) on the base module as needed.
- Mount the design frame on the mounting plate on the base module and plug in the front module.

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.

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.

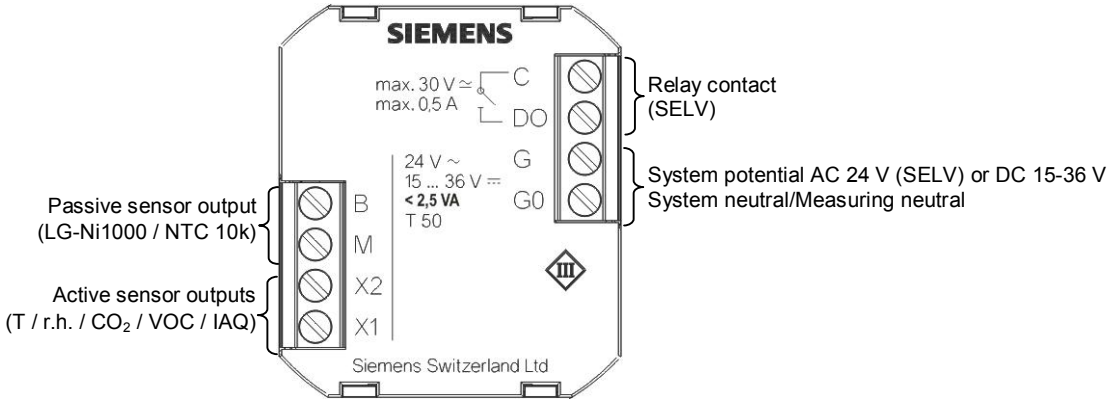
Technical data

Power	Operational voltage	AC 24 V ±20 % or DC15…35 V (SELV)
	Frequency	50/60 Hz at AC 24 V
	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
	Total power consumption (front and base module)	At "U" output signal: "I" output signal:
	Devices without VOC (AQR2540N…, AQR2546N…)	< 0.5 VA < 1.5 VA
	Devices with VOC (AQR2547N…, AQR2548N…)	< 1.5 VA < 2.5 VA
Potential-free relay contact	Relay type	Bistable
	Max. switching voltage / Max. nominal current	AC/DC 30 V, 0.5 A cos φ = 0.5
	Fuse	external, max. 1 A (slow)
	Response on voltage failure	No change of state.
Line length for measuring sign.	Permissible line length	See data sheet of the signal processing device
Function data CO_2 (AQR2546, AQR2548)	Measuring range	0-2000 ppm.
	Measuring accuracy at 23 °C and 1013 hPa	≤± (50 ppm + 2 % of measured value).
	Temperature dependency	±2 ppm / °C (typically)
	Pressure dependency	0,14 % of measured value / hPa
	Long-term drift	≤±5% of measuring range / 5 years (typically)
	Time constant t_{63}	<5 min
	Active output signal, connection X1	Select output signal: See "Functions".
	Potential-free relay contact, connections: C and DO	Switching setpoint selection: See "Functions"
	Recalibration-free	For at least 8 years
Function data VOC (AQR2547)	Measuring range	0-100 % VOC.
	Note on measuring accuracy (see also "Engineering notes")	Warm-up time: ca. 20 minutes Initial self-acting calibration after 8 hours operation
	Time constant t_{63} VOC	<3.5 min
	Active output signal, connection X1	Select output signal: See "Functions".
	Potential-free relay contact, connections: C and DO	Switching setpoint selection: See "Functions"
Functional data (IAQ) (AQR2548 + AQR 2530)	Measuring range	Max. selection from CO_2 and VOC Weighting: 100 % VOC ≙ 2000 ppm CO_2
	Active output signal, connection X2	Select output signal: See "Functions".
	Potential-free relay contact, connections: C and DO	Switching setpoint selection: See "Functions"
Function data r.h. (AQR2533[1], …34, …35)	Measuring range	0-100 % r.h.
	Field of use	0-95 % r.h. (non-condensing)
	Measuring accuracy at 25 °C 20-80 % r.h. 0-95 % r.h.	 ±3 % r.h. ±5 % r.h. (typically)
	Time constant	20 s
	Active output signal, connection X1 or X2 depending on module type (see "Type summary")	Select output signal: See "Functions".
	Potential-free relay contact, connections: C and DO	Switching setpoint selection: See "Functions"
Function data temperature active (AQR2532, ..34 [1], 35 [1])	Measuring range	0-50 °C
	Measuring accuracy at AC 24 V for 25 °C 5-30 °C	 <±0.25 K (temperature sensor, typically) < ±0.5 K (at output signal 0…10 V) < ±0.6 K (at output signal 4…20 mA)
	Time constant t_{63}	Ca. 13 min
	Active output signal, connection X2	Select output signal: See "Functions".
	Potential-free relay contact, connections: C and DO	Switching setpoint selection: See "Functions"
Function data temperature passive (AQR2534)	Sensing elements	Depending on front module (see "Type summary") NTC 10k (B=3988) or LG-Ni1000
	Measuring range	0-50 °C (detailed data see "Functions")
	Time constant t_{63}	Ca. 13 min
	Adjustment for own heating	See "Engineering notes".
	Output signal (terminals B, M)	Passive

Degree of protection	Protection degree of housing	IP30 with front module IP20 without front module according to EN 60529
	Protection class	III according to EN 60730-1
Electrical connection	Screw terminals for	1 × 0.25...2.5 mm^2 (wire / strand) 2 × 0.25...1.5 mm^2 (wire / strand)
Environmental conditions	Operation as per	IEC 60721-3-3
	Climatic conditions	Class 3K3
	Temperature (housing and electronics)	0 - 50 °C
	Humidity	0-95% r. h. (non-condensing)
	Mechanical conditions	Class 3M2.
	Transport as per	IEC 60721-3-2
	Climatic conditions	Class 2K3
	Temperature	−25...+70 °C
	Humidity	<95 % r.h.
	Mechanical conditions	Class 2M2
Materials and colors	Top part of front module	ASA + PC titan white (similar to RAL9010).
	Lower part of front module Housing parts of base module	PC light-gray RAL 7035 PC light-gray RAL 7035.
	Anti-theft device	POM bright red RAL 3000.
	Siemens Design frames	ASA + PC titan white (similar to RAL9010).
	Mounting plate	Steel
	Sensor, total	Silicone-free
	Packaging	Corrugated cardboard
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)	CE1T1410xx [2]
	RCM Conformity	CE1T1410en_C1 [2]
Environmental compatibility	The product environmental declaration CE1E1410[2] contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Dimensions (weight)	Including packaging, depending on the module type	
	Front module	between 30 – 50 g
	Base module	between 60 – 100 g.

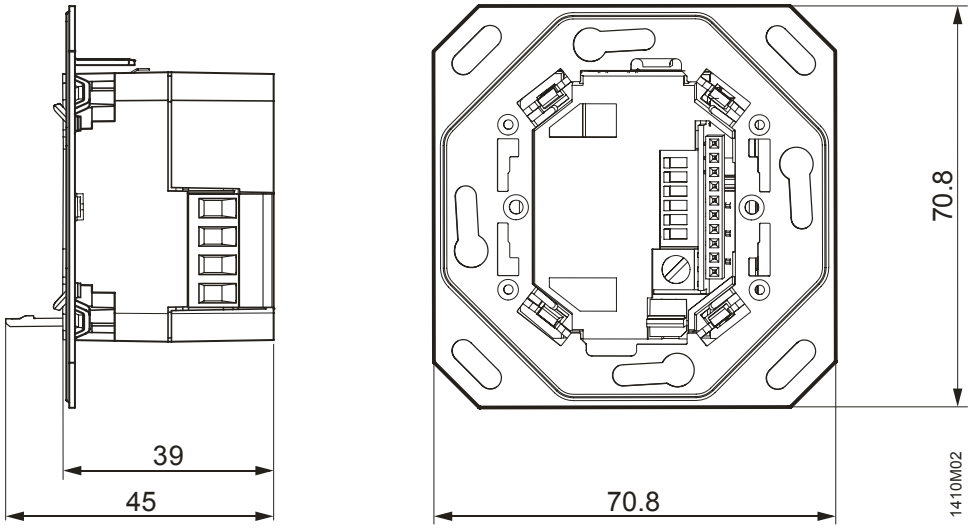
1) Possible module combination, see "Type summary".
2) The documents can be downloaded from http://siemens.com/bt/download.
*) Not supplied anymore

Connection terminals

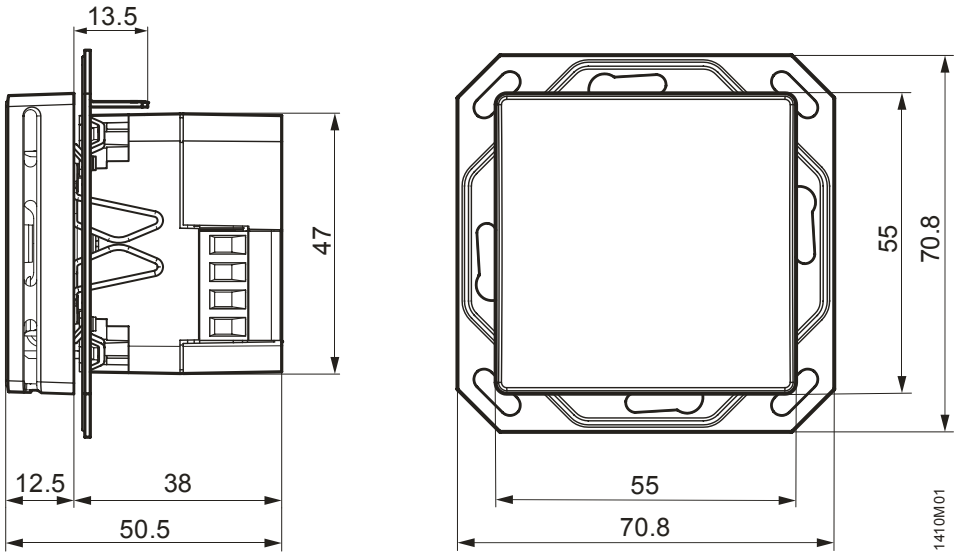


Dimensions (in mm)

Base module

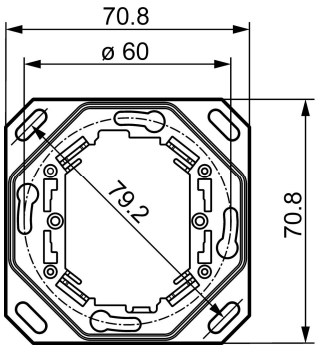


Front and base module (assembled without design frame)

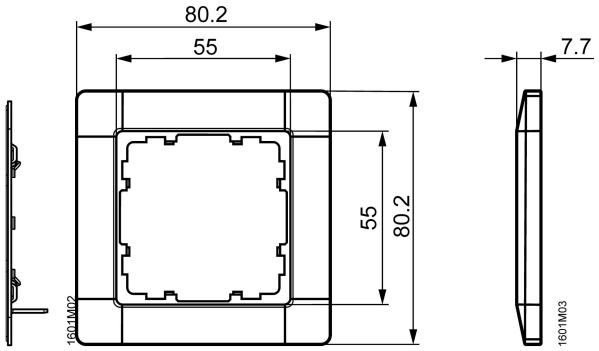


Mounting plate and design frame

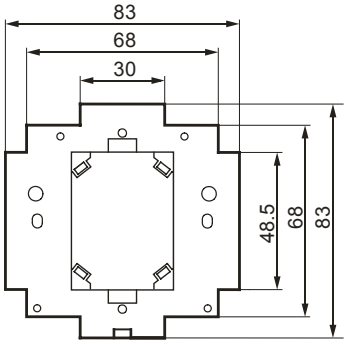
Mounting plate "CEE/VDE" (square):



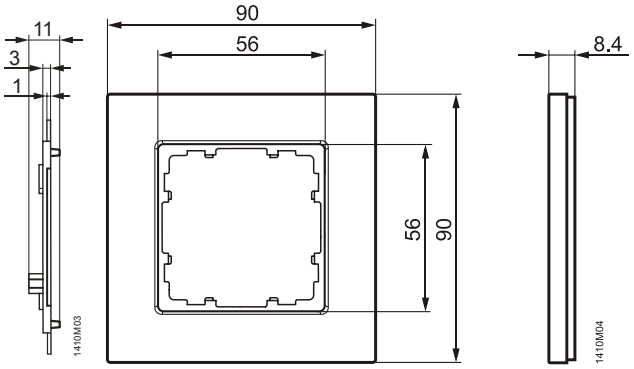
DELTA line design frame:



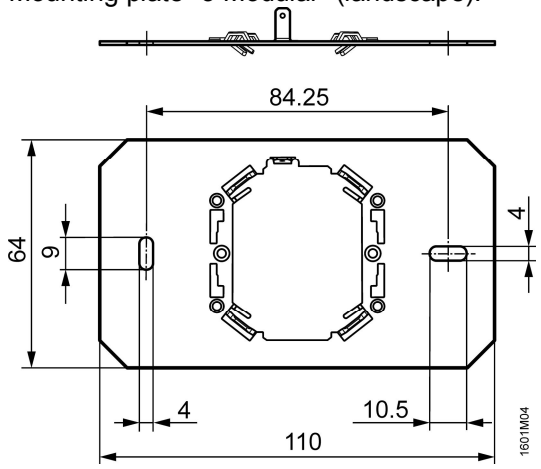
Mounting plate "British standard" (square):



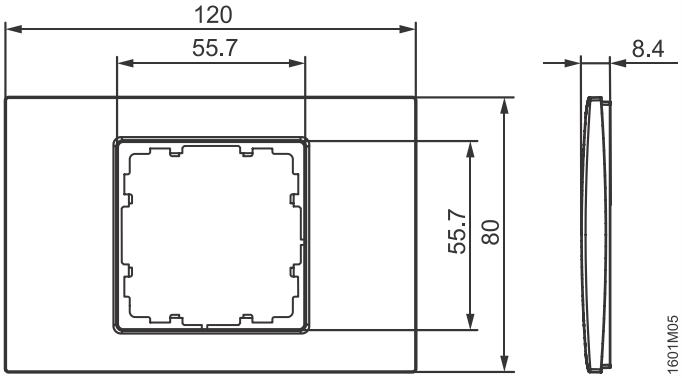
DELTA miro design frame:



Mounting plate "3 Modular" (landscape):



Design frames "DELTA azio":



Mounting plate "UL" (portrait):
Dimensions same as for mounting plate "3 Modular" (see above), but portrait format

Design frame "DELTA azio":
Dimensions same as for design frame "DELTA azio" (see above), but portrait format

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Technical specifications and availability subject to change without notice.

SIEMENS

1 408

Flush-mount room temperature sensor

AQR2531...

- **Passive sensor to acquire room temperature.**
- **Field of use 0…+50 °C**

Use

In heating, ventilation and air conditioning plants, primarily in the comfort range for acquiring room temperature.

Type summary

Type	*Stock number*	*Sensing element*	*Field of use*	*Time constant*
AQR2531ANW	S55720-S133	LG-Ni1000	0…50 °C	ca. 12 min
AQR2531BNW *)	S55720-S134	Pt1000	0…50 °C	ca. 12 min
AQR2531FNW *)	S55720-S135	NTC 10k	0…50 °C	ca. 12 min

*) Not supplied anymore

Ordering

When ordering, please give name and type reference, for example:
Flush-mount room temperature sensor **AQR2531ANW.**
Place a separate order for the mounting plates AQR2500N… and design frames AQR2510N…W listed in the "Accessories" section.

Equipment combinations

All systems and devices that record and process the sensor's passive output signal.

Accessories

Format		*Mounting plates*			*Siemens design frames* *(titan white)*			
		Type	*Item no.*	*Dimensions*	*Type*	*Item no.*	*Name*	*Dimensions*
	CEE/VDE	AQR2500NF	S55720-S161	70,8 x 70,8 mm	AQR2510NFW	S55720-S158	DELTA line	80 x 80 mm
	British Standard	AQR2500NH	S55720-S162	83 x 83 mm	AQR2510NHW	S55720-S159	DELTA miro	90 x 90 mm
	3 Modular	AQR2500NG	S55720-S163	110 x 64 mm	AQR2510NGW	S55720-S160	DELTA azio	120 x 80 mm
	UL	AQR2500NJ	S55720-S164	64 x 110 mm	AQR2510NGW	S55720-S160	DELTA azio	80 x 120 mm

Third-party design frames

The sensor can be combined with the design frames from the following third manufacturers:

Manufacturer	*Type*
SIEMENS	Delta Line
	Delta Vita
	Delta Miro
	Delta profile (with intermediate frames).
BERKER	B.1
	B.7
Feller	EDIZIOdue + PRESTIGE (with intermediate frames).
GIRA	E2
	Event
JUNG	Ap581 ALWW
	A500 (A581 WW)
	AS500 (AS 581 WW)
MERTEN	SYSTEM M

We recommend comparing the frame dimensions of third-party frames to the dimensions listed in section "Dimensions".

Functions

The sensor measures the room temperature using a sensing element whose electric resistance changes as a function of the ambient air temperature.

The following sensing elements are available depending on the front module (see "Type summary"):

- LG-Ni1000 or
- Pt 1000 or
- NTC 10k

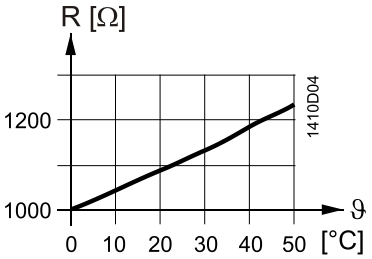
The sensing signal (Resistance) is provided for processing by a suitable control device.

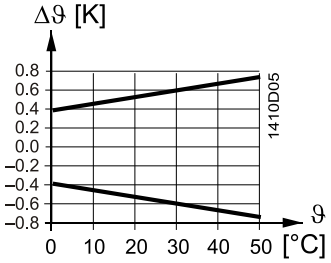
Sensing elements

Characteristic curve:

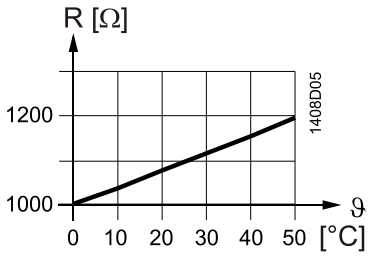
Accuracy:

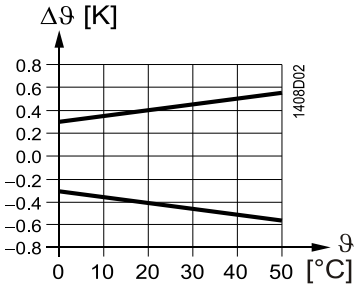
LG-Ni1000



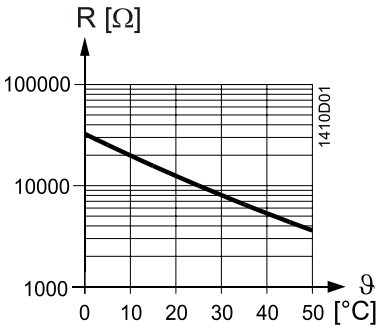


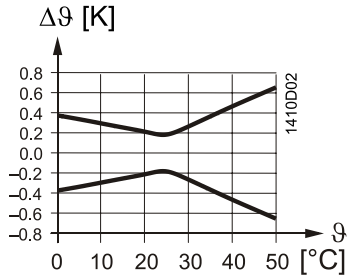
Pt 1000





NTC 10k





Key

R	Resistance in Ohm
ϑ	Temperature in degrees Celsius
Δϑ	Temperature difference in Kelvin

Design

The device is designed for flush-mounting. It will fit most commonly available flush-mounted wall outlets.
The mounted device consists of:

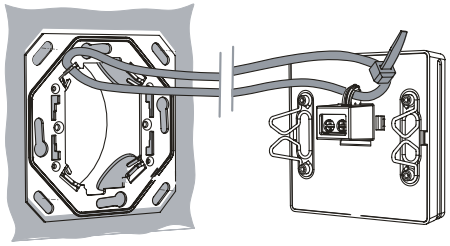
- The sensor housing with sensing element,
- the mounting plate and
- a design frame.

The mounting plate and design frames are ordered separately (see "Accessories").

Sensor and mounting plate are connected via catch spring.

Anti-theft device

The sensor includes anti-theft protection by, for example, simply attaching a cable binder to the mounting plate.



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.

Engineering notes

Maximum permissible cable lengths depend on the controller. They are listed in the controller's datasheet.

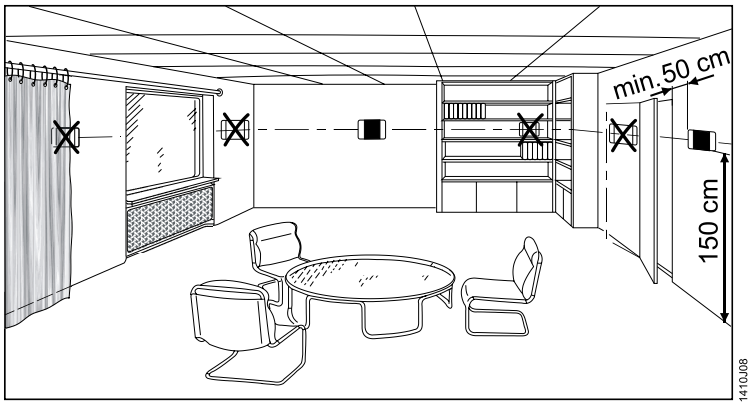
Mounting notes

Observe the following points when mounting the room sensor:

Mounting location

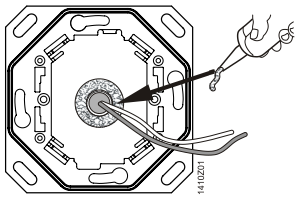
Sensor mounted on interior wall of room to be conditioned:

- At ca. 1.5 m height in the room and at least 50 cm from the next wall.
- Not on outside walls.
- Not in niches or behind curtains.
- Not above or near heat sources or shelves.
- Not on walls covering heat sources such as a chimney.
- Not in the radiation range of heat sources and lighting bodies e.g. spotlights.
- Not in areas exposed to direct solar radiation.



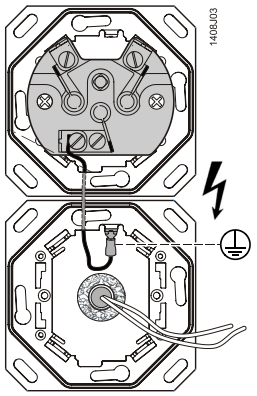
Seals
Installation piping

Seal the end of the installation conduit to prevent false measurements due to air drafts.



Ground, mounting frames

Comply with the various regulations on separating various voltage levels, when mounting the temperature sensor (with low voltage protection) alongside the recessed conduit boxes connected to the low-voltage power. In this case, the mounting frames must be connected to the protective ground wire with a flat plug connector plug and therefore grounded.



Observe the permissible ambient climate (see "Technical data").

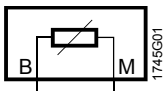
Mounting instructions	Mounting instructions are enclosed in the device package. See the following guideline for more information on mounting the sensor: "Symaro Sensor Installation Guide" Z-F01040501EN.

Technical data

Functional data	Field of use	0… 50 °C
	Sensing elements	by type: LG-Ni1000, Pt1000, NTC 10k.
	Time constant	Ca. 12 min
	Accuracy	see "Functions"
	Sensing type and output	Passive
Degree of protection	Degree of protection	IP 30 as per IEC 60529
	Protection class	III as per EN 60730-1
Electrical connection	Screw terminals for	2 x 1.5 mm^2 or 1 x 2.5 mm^2
	Permissible cable lengths	See the data sheet for the controller used.
Environmental conditions	Operation as per Climatic conditions Temperature Humidity Mechanical conditions	IEC 60721-3-3 Class 3K3 0-50 °C 0-95% r. h. (non-condensing) Class 3M2
	Transport and storage as per Climatic conditions Temperature Humidity Mechanical conditions	IEC 60721-3-2 Class 2K3 −25- +65 °C <95 % r.h. Class 2M2.
Materials	Housing	ASA + PC titan white (similar to RAL9010).
	Siemens Design frames	ASA + PC titan white (similar to RAL9010).
	Mounting plate	Steel
	Sensor, total	Silicone-free
	Packaging	Corrugated cardboard
Environmental compatibility	The product environmental declaration CE1E1408en*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Dimensions (weight)	Including packaging	Ca. 0.1 kg

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

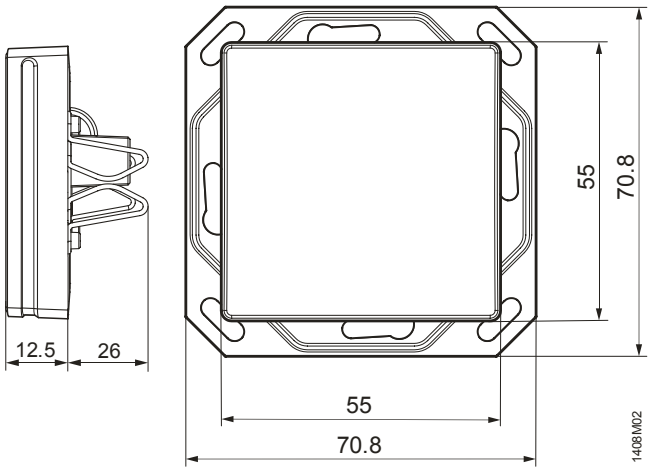
Connection diagram



(pins are interchangeable).

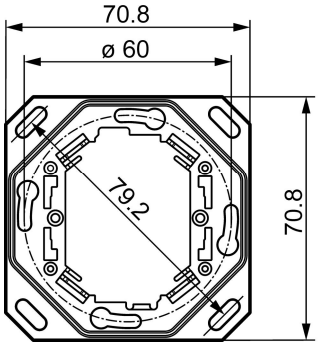
Dimensions (in mm)

Sensor mounted on mounting plate CEE/VDE

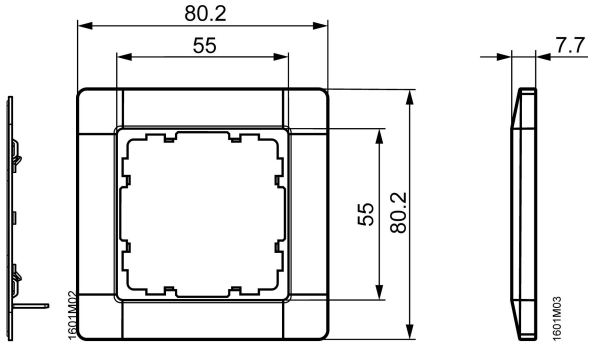


Mounting plate and design frame

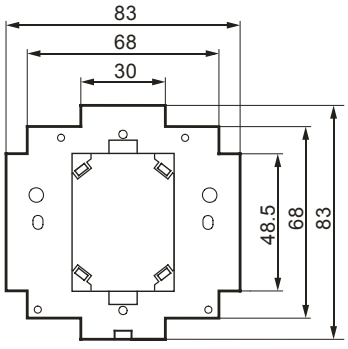
Mounting plate "CEE/VDE" (square):

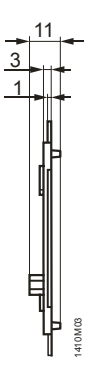


DELTA line design frame:

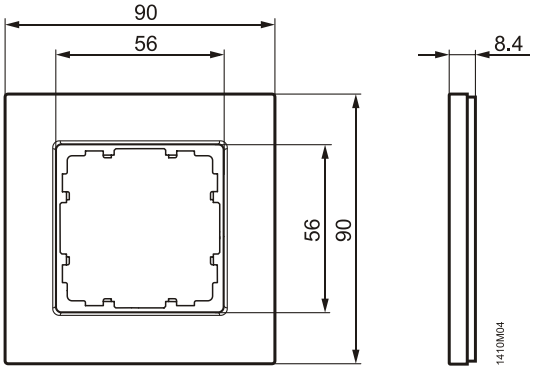


Mounting plate "British standard" (square):

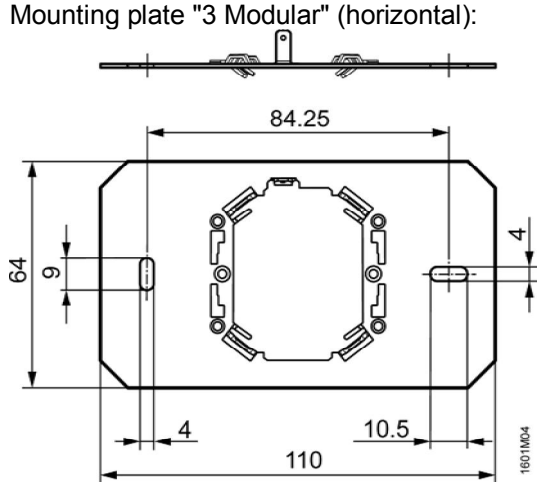




DELTA miro design frame:

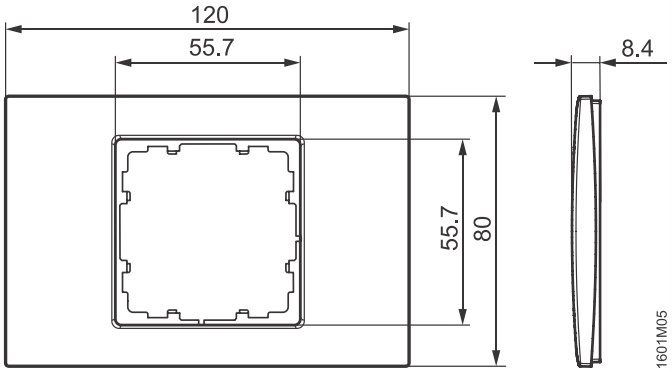


Mounting plate "3 Modular" (horizontal):



Mounting plate "UL" (vertical):
Dimensions same as for mounting plate "3 Modular" (see above), but vertical

DELTA azio design frame:



DELTA azio design frame:
Dimensions as for DELTA azio design frame (see above), but vertical

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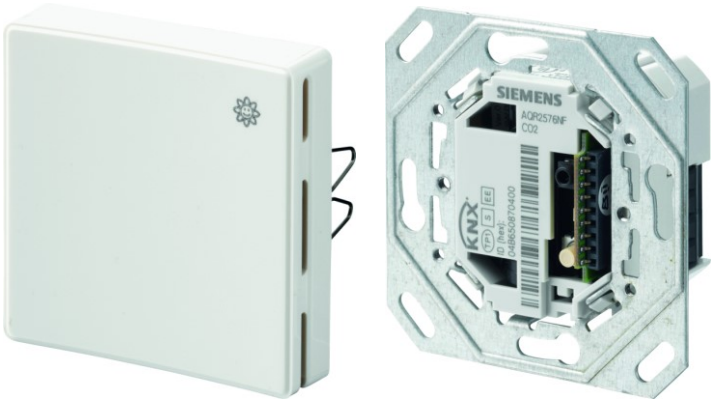


AQR253… AQR257…

Symaro™

Flush-mount room sensor KNX S-Mode / KNX LTE-Mode / KNX PL-Link

AQR253…
AQR257…

- **Communicating room sensor with KNX S-Mode, KNX LTE-Mode and KNX PL-Link for Desigo™ Total Room Automation**
- **Combinable multi-sensor to measure temperature, humidity, and CO_2 concentration**
- **Range 0…+50 °C / 0…95 % r.h. (non-condensing) / 0…5000 ppm**
- **Air quality indication via LED**
- **PID room temperature controller and ventilation controller (KNX S-Mode)**
- **2 binary inputs for potential-free contacts**
- **Input for additional, remote passive temperature sensor (NTC 10k)**
- **Optimized, energy-saving measuring methods ideal for energy-efficient room applications**
- **Supplied via bus**
- **Maintenance free**

Use

The room sensor is used in heating, ventilating and air conditioning plants to optimize comfort and energy consumption via demand-controlled ventilation.

The room sensor records:
- CO_2 concentration in rooms with varying occupancy due to time or number of people such as in museums, movie theaters, offices, meeting rooms, class rooms, auditoriums, hospitals, living spaces.
- Relative room humidity.
- Room temperature.
- A second room temperature for averaging, or floor or ceiling temperature.

The room sensor helps to control:
- Room temperature via PID controller.
- Air quality:
- Humidity.

As well as
- Switching of electrical devices
- Switching and dimming lights
- Control solar protection systems.
- Monitor window contacts.

Note

Devices featuring CO_2 measurement are not suited to safety applications such as gas or smoke alarm.

Type summary, ordering

An installed sensor comprises front module, base module with mounting plate as well as separate-order design frame (see “Accessories”). Both front and base module can be combined as needed:

Front module

Type	*Stock number*	*Humidity measuring range*	*Temperature measuring range*	*Air quality indication*
AQR2530NNW	S55720-S137	–	–	–
AQR2532NNW	S55720-S136	–	0…50 °C	–
AQR2533NNW *)	S55720-S140	0…100 % r.h.	–	–
AQR2535NNW	S55720-S141	0…100 % r.h.	0…50 °C	–
AQR2535NNWQ	S55720-S219	0…100 % r.h.	0...50 °C	LED

*) Not supplied anymore

Base module

Type	*Stock number*	*CO_2 measuring range* 1)	*Format*	*Dimensions [mm]*
AQR2570NF	S55720-S203	–	CEE/VDE	70.8 x 70.8
AQR2570NH	S55720-S204	–	British Std	83 x 83
AQR2570NG	S55720-S205	–	3 Modular	110 x 64
AQR2570NJ	S55720-S206	–	UL	64 x 110
AQR2576NF	S55720-S207	0…5000 ppm	CEE/VDE	70.8 x 70.8
AQR2576NH	S55720-S208	0…5000 ppm	British Std	83 x 83
AQR2576NG	S55720-S209	0…5000 ppm	3 Modular	110 x 64
AQR2576NJ	S55720-S210	0…5000 ppm	UL	64 x 110

All base modules have one input for a remote NTC 10k temperature sensor as well as connections for 2 potential-free contacts to operate lighting and solar protection systems.
1) ppm = Parts per million

Accessories

Siemens Design frames

Type (ASN)	*Stock number (SSN)*	*Frame designation (color)*	*Format*	*Dimensions [mm]*
AQR2510NFW	S55720-S158	DELTA line (titanium white)	CEE/VDE	80 x 80
AQR2510NHW	S55720-S159	DELTA miro (titanium white)	British Standard	90 x 90
AQR2510NGW	S55720-S160	DELTA azio (titanium white)	3 Modular UL	120 x 80 80 x 120

See "Dimensions" for design frame dimensions.

Third-party design frames

The sensor can be combined with the design frames from the following third manufacturers:

Manufacturer	*Product number*
Siemens DELTA	DELTA line, DELTA miro, DELTA vita, DELTA profil (with adapter frame for inserts 55 mm x 55 mm)
Berker	B.1, B.7
Feller	EDIZIOdue PRESTIGE (with adapter frame for inserts 55 mm x 55 mm)
Gira	E2, Event
Jung	Ap581, A500, AS500
Merten	System M

We recommend comparing the frame dimensions of third-party frames to the dimensions listed in section "Dimensions".

Sensors and room operator units

The following temperature sensors can be used to record a second temperature as an option. The double pushbutton listed below can be connected to the binary inputs.

Designation	*Type*	*Data sheet*
Flush-mount temperature sensor *	AQR2531FNW *)	1408
Outside sensor	QAC2030	1811E
Strap-on temperature sensor	QAD2030	1801
Duct temperature sensor	QAM2130.040	1761
Duct temperature sensor	QAP1030.200	1831
DELTA pushbutton, double	5TD2 111	

* Use with mounting plate as per the regionally common format

See "Mounting plates and design frames" on page 13.

*) Not supplied anymore

Equipment combinations

The room sensors are KNX certified and can be connected to all suitable devices with KNX, provided the corresponding data points are available.

The room sensors can be used with the following building automation and control systems:

- Desigo TRA V6.1 (KNX PL-Link)
- Synco 700 (KNX LTE-Mode)
- GAMMA Building Management Systems / third-party devices (KNX S-Mode)

Controllers and actuators	*Type*	*Data sheet*
KNX PL-Link compact controller	PXC3..	9203
Synco 7… controller	RMS705 / RMK770	3123 / 3132
Synco living central apartment unit	QAX903 / QAX913…	2741 / 2740
Controller (KNX S-Mode)	RXB2x.1…, RXL2x.1	3873 / 3874 / 3877
Climatix controller	POL63x.00 / POL68x.xx	3230 / 3903
Fan coil control, 3-stage	5WG15621AB11	see www.siemens.com/gamma
Motorized valve actuator	5WG15627AB02	
Electrothermal valve actuator	5WG16051AB01	

Configuration and service tools		
USB-KNX interface	OCI700.1	5655

Functions

The room sensor allows for measuring the room temperature, relative humidity, and CO_2 concentration in the room. An additional, passive temperature sensor can be connected to measure another temperature. The binary inputs of the room sensor detect the status of up to two connectable, potential-free contacts. As a result, up to four measured values and two states can be transmitted to other members of the building automation and control system via the common KNX bus interface.
Integrated control functions for room temperature and ventilation allow for immediate control of suitable actors to control heating, cooling, and ventilation.

Temperature
(AQR2532…, AQR2535…)

The room sensor measures the room temperature via an integrated sensing element. The room temperature serves as control variable of the integrated room temperature controller and can be transmitted to other bus members. If an additional, passive room temperature sensor is connected to the base module, the second measured room temperature can be averaged with the internally measured room temperature.

(AQR257…)

Each base module has an input for a passive NTC 10k sensing element. The measured temperature can be transmitted to the bus members depending on the selected sensor type as either a room temperature weighted at 100%: 0% to 0% (ext.: int) 100% or as a universal temperature, e.g. floor or ceiling temperature.

Relative humidity
(AQR2533…*), AQR2535…)

The room sensor acquires the relative humidity in the room with the aid of a humidity sensing element integrated in the front module. The relative room humidity serves as control variable of the integrated ventilation controller and can be transmitted to other bus members.

*) Not supplied anymore

CO_2 concentration
(AQR2576…)

The room sensor determines the CO_2 concentration via infrared absorption measurement (NDIR). The sensor provides exact measurements at all times without maintenance or recalibration required because of the dual-channel and dual thermopile detectors structure. One of the two detectors is CO2 sensitive for measurement and another is used as reference because it is gas insensitive. This structure allows a self compensation to the homogeneous changes in optical path and lamp aging. The CO_2 concentration serves as control variable of the integrated ventilation controller and can be transmitted to other bus members.

Air quality indication

(AQR2535…Q)

The background-lit symbol informs on the current level of CO_2 in the room. The colors **green** / **orange** / **red** of the background lighting indicate **good** / **mediocre** / **poor** air quality. The display can be switched on or off via communication object, e.g. switch or timer.

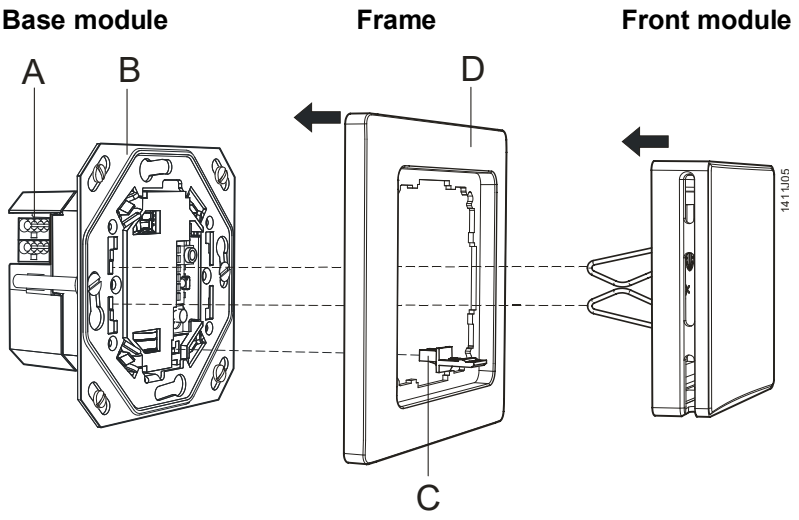
Binary inputs
(AQR257…)

The room sensor acquires the states of up to two potential-free contacts. The two inputs can be parameterized freely to switch and dim lighting as well as control solar protection plants via suitable actors. At the same time, window contacts, for example, can also be monitored. The states are transmitted to other bus members.

Control functions
(AQR257…,
KNX S-Mode)

The room sensors can be connected to suitable heating, ventilating, and air conditioning actors with KNX S-Mode via integrated control functions for room temperature, humidity, and air quality.
A proven PID controller for heating and cooling in KNX S-Mode is provided to control the room temperature.
The integrated room humidity controller and room air quality controller can be used for ventilation control.

Design



A KNX bus connection terminal
B Mounting plate
C Anti-theft device
D Design frame

The room sensor comprises:

- One base module with snapped-on mounting plate.
- One design frame (ordered as separate accessory) and
- One front module.

The sensing elements are located in either the base or the front module (see "Type summary").

Engineering notes

Detailed product documentation

For detailed information on engineering, mounting, and commissioning room sensors, see Technical principles CE1P1411en.

Measuring accuracy

Measuring accuracy among other factors depends on the following:

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

See also "Mounting notes".

In an installed sensor, measuring inaccuracies are constant after a ca. 1-hour operating time.

Measuring inaccuracies relating to temperature measurements can be corrected as needed.

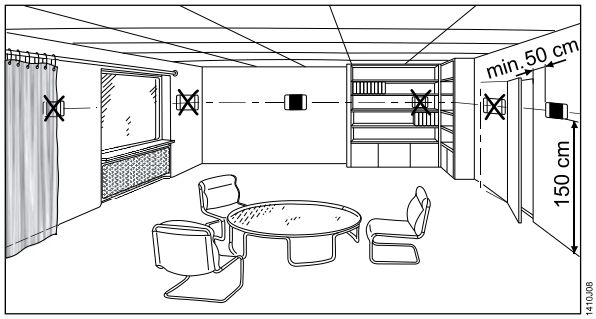
Mounting and installation notes

Observe the following points when mounting the room sensor:

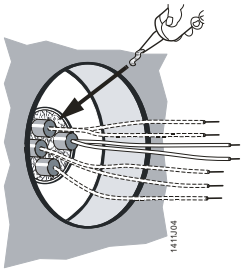
Mounting location

Sensor mounted on interior wall of room to be conditioned:

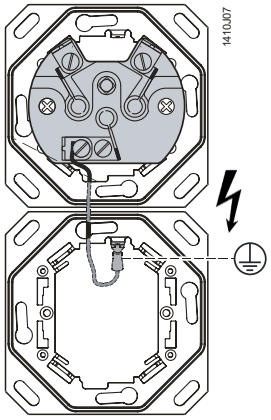
- At ca. 1.5 m height in the room and at least 50 cam from the next wall.
- Not on outside walls.
- Not in niches or behind curtains.
- Not above or near heat sources or shelves.
- Not on walls covering heat sources such as a chimney.
- Not in the radiation range of heat sources and lighting bodies e.g. spotlights.
- Not in areas exposed to direct solar radiation.



Seal the end of the installation conduit to prevent false measurements due to air drafts.



Comply with the various regulations on separating various voltage levels, when mounting the temperature sensor (with extra-low voltage protection) alongside the recessed conduit boxes connected to the low-voltage power. In this case, the mounting frames must be connected to the protective ground wire with a flat plug connector plug designed for grounding.



Note the permissible ambient climate (see "Technical data").

Anti-theft device

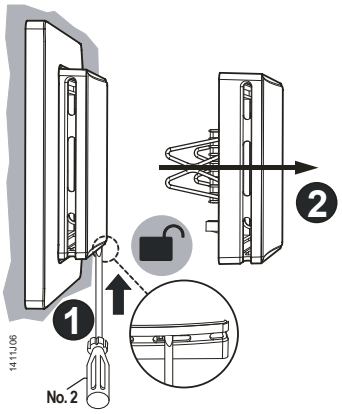
The front and base module are interconnected via removable snap-on equipment and anti-theft device (red safety plug). Use a screwdriver to easily unlock the anti-theft device. The red safety plug is supplied with the front module.

Mounting instructions

Mounting instructions are enclosed in the device package.
Supplementary information on sensor mounting is also available in the following: "Symaro guidelines on sensor mounting" Z-F01040501EN.

Removal

Remove the front module from the base plate, to exchange either front or base module, or to use the tool connection plug.



1. Use one hand to unlock the anti-theft device with a screwdriver as needed.
2. Pull out the front module with the other hand.

Installation

The device is designed for flush-mounted cabling.
Run the cables from the wall outlet to the sensor base module.

- To cable KNX PL-Link (topology, allowed cables and cable length), read the Desigo TRA installation instructions, CM111043.
- Use only suitable, certified cables for the KNX bus.
- Do not swap the wires for the KNX cable.
  – Red terminal is for CE + (KNX+)
  – Gray terminal is for CE - (KNX-)
- Comply with local installation regulations.
- Use a flat plug to connect the ground cable in the plug (same plug in case of switch or mains plug).

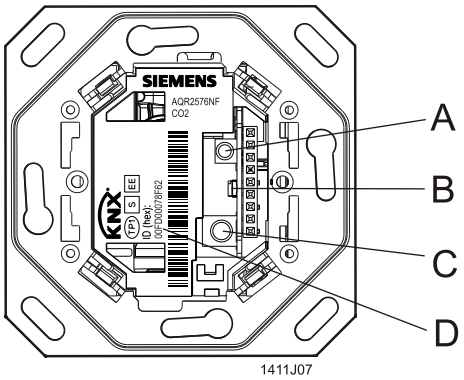
Caution

- **The device is not protected against inadvertent connection to AC 230 V.**

Commissioning notes

Service and connection elements

The service elements program button with LED and the tool connection plug as well as the printed KNX ID are available on the base module.
The base module contains the measuring switch and connection terminals in addition to service elements (see "Connection terminals").



A Tool connection plug
B LED status display
C Programming button
D KNX ID no. (hex and barcode)

Commissioning prerequisites

- Prior to commissioning, all devices must be mounted as per mounting instructions M1411 as well as those for the devices to be connected, and connected to voltage supply as well as bus cabling.
- Test both voltage supply and bus cabling.

Recommended commissioning procedure:

- Check the wiring prior to supplying power.
- Install anti-theft protection (red security plug) on the base module as needed.
- Mount the design frame on the mounting plate on the base module and plug in the front module.

Commissioning variants

There commissioning variants are available depending on the system environment:

System/Network environment	*Engineering and commissioning tool(s)*
KNX PL-Link	Desigo ABT, SSA
KNX LTE-Mode	Synco ACS
KNX S-Mode	ETS3, ETS4

- Basic knowledge of using the tools is prerequisite.
- An interface converter, e.g. OCI700 with tool connection cable is required to connect a PC with USB interface to a KNX network.
- Depending on the environment, both type and number of adjustable parameters will vary.

For more information, see basic documentation CE1P1411en.

Response to errors

When combining the front and base module during commissioning, the base module automatically detects the active measure variables of the existing module types.

If a previously unavailable measured variable is parameterized during commissioning, the base module generates an error message.

If an error is present in a sensor module, an error message is output at the corresponding, active sensor object within 10 seconds.

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

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	Operational voltage (SELV)	DC 21…29 V, from bus (SELV or class 2 (US))
	Bus load (total, front and base module) Device without CO_2 (AQR2570N…) Device with CO_2 (AQR2576N…)	At DC 24 V <5 mA <15 mA
Function data CO_2 (AQR2576)	Measuring range	0...5000 ppm
	Measuring accuracy at 23 °C and 1013 hPa	≤± (50 ppm +2% *of measured value*); ≤± (50 ppm +3% *of measured value*) for measured value >2000 ppm
	Temperature dependency	±2 ppm / °C (typically)
	Pressure dependency	*0.14% of measured value / hPa*
	Long-term drift	≤±5% of measuring range / 5 years (typically)
	Time constant t_{63}	<5 min
	Recalibration-free	For at least8 years
Function data r.h. (AQR2533 *), …34 *), …35)	Measuring range	0…100% r.h.
	Field of use	0...95% r.h. (non-condensing)
	Measuring accuracy at 25 °C 20…80% r.h. 0…95% r.h.	 ±3% r.h. ±5% r.h. (typically)
	Time constant	20 s
Function data temperature (AQR2532, …34 1) *), …35 1))	Measuring range	0...50 °C
	Measuring accuracy in the range of 25 °C 5...30 °C	 <±0.25 K (temperature sensor, typically) < ±0.5 K
	Time constant t_{63}	Ca. 13 min
Function data temperature external (AQR257…)	Sensing elements	Compatible with NTC 10k (B=3988)
	Measuring range	0...50 °C
	Measuring accuracy (without temperature sensor)	<±0.1 K
	Input signal (terminals B, M)	Passive
	Permissible cable length	10 m
Function data binary inputs (AQR257…)	Inputs for potential-free contact	2
	Signal voltage	14…16 V
	Signal current When contact is closed Pulse when closing	 0.5 mA 10 mA
	Functions	Parameterizable for: Switch lighting, dim lighting, control blinds, monitor contact, send 8-bit value
	Permissible cable length	10 m

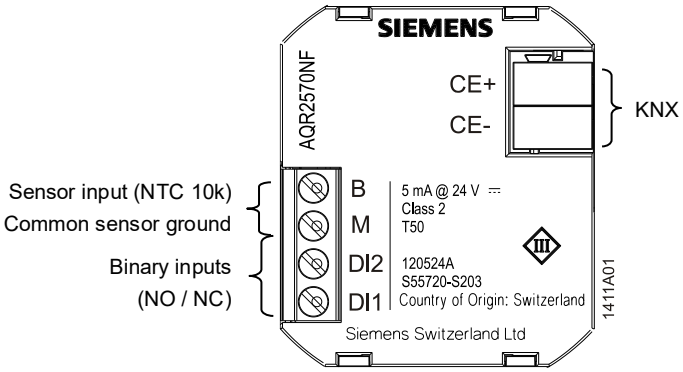
Degree of protection	Protection degree of housing	IP30 with front module IP20 without front module according to EN 60529
	Protection class	III according to EN 60730-1
Electrical connection	Bus connection: Spring terminal	0.6 – 0.8 mm wire
	Sensor inputs: 4 screw terminals	1 × 0.25...2.5 mm^2 (wire/strand) 2 × 0.25...1.5 mm^2 (wire/strand)
Environmental conditions	Operation as per Climatic conditions Temperature (housing and electronics) Humidity Mechanical conditions	IEC 60721-3-3 Class 3K3 0 … 50 °C 0…95% r. h. (non-condensing) Class 3M2.
	Transport as per Climatic conditions Temperature Humidity Mechanical conditions	IEC 60721-3-2 Class 2K3 −25...+70 °C <95% r.h. Class 2M2
Materials and colors	Top part of front module	ASA + PC titanium white (similar to RAL9010).
	Bottom part of front module and housing parts base module	PC light-gray RAL 7035
	Anti-theft device	POM bright red RAL 3000.
	Siemens Design frames	ASA + PC titanium white (similar to RAL9010).
	Mounting plate	Steel
	Sensor, total	Silicone-free
	Packaging	Corrugated cardboard
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)	CE1T1410xx [2] & CE1T1411xx [2]
	RCM Conformity	CE1T1410en_C1 [2]
	UL	UL873 http://ul.com/database
Environmental compatibility	The product environmental declaration CE1E1410*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Dimensions (weight)	Incl. packaging, depending on module type Front module Base module	 Between 30 – 50 g Between 60 – 100 g

1 Possible module combinations, see "Type summary, ordering

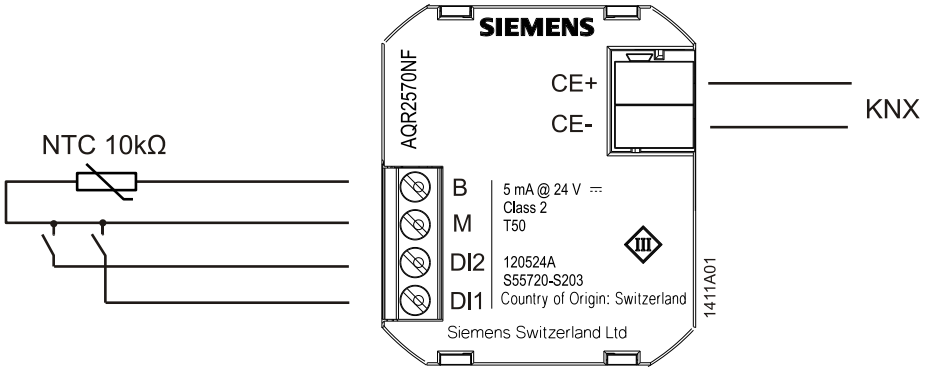
2) The documents can be downloaded from http://siemens.com/bt/download.

*) Not supplied anymore

Connection terminals

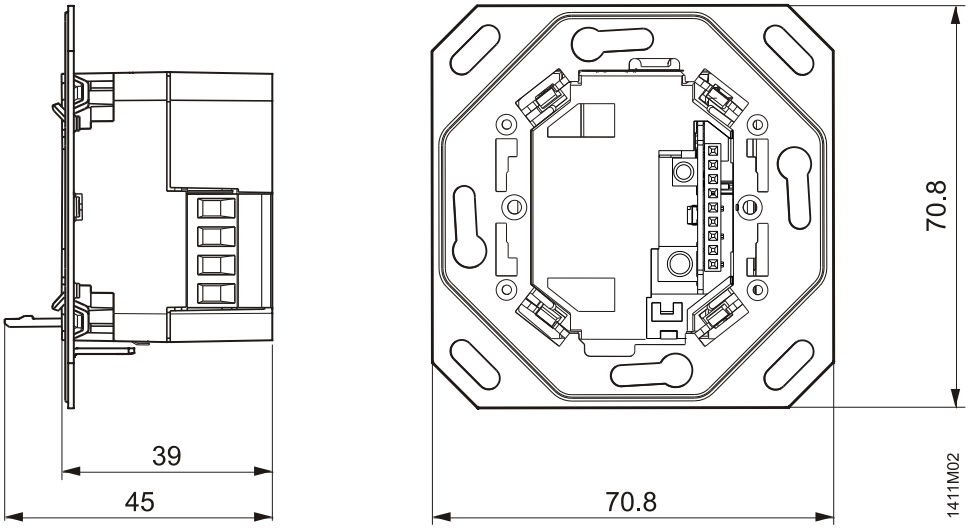


Connection diagram

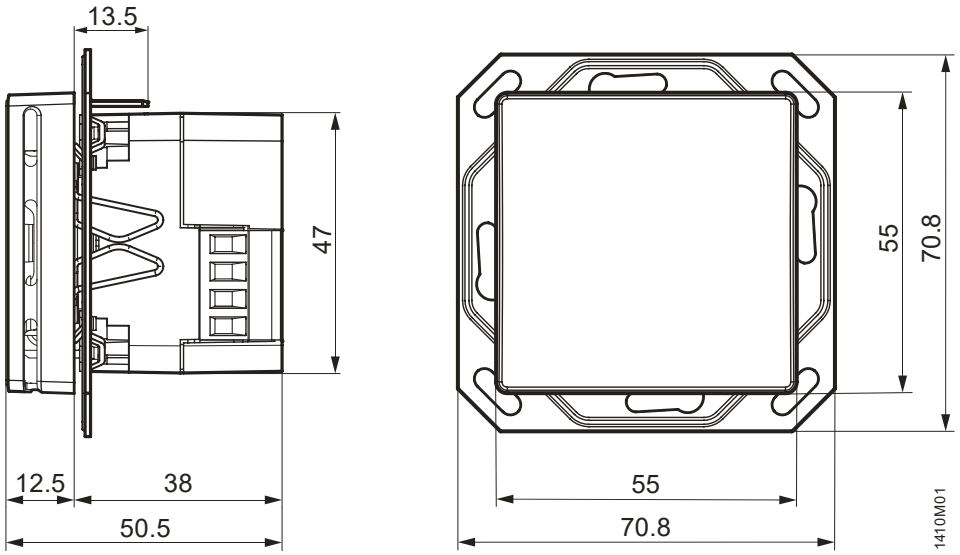


Dimensions (in mm)

Base module

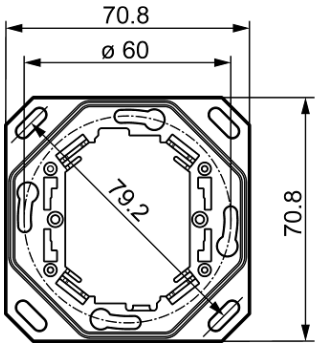


Front and base module
(assembled without design frame)

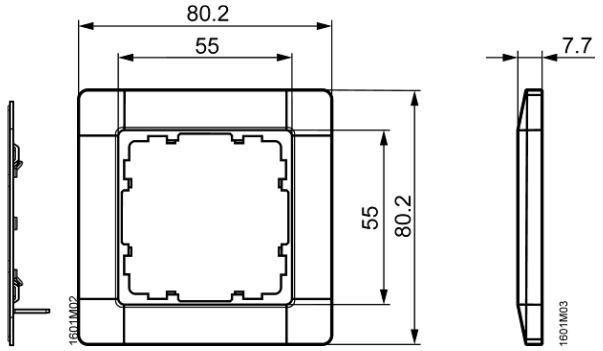


Mounting plate and design frame

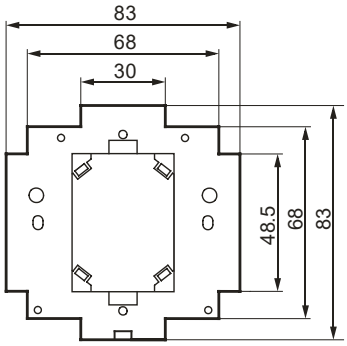
Mounting plate "CEE/VDE" (square):



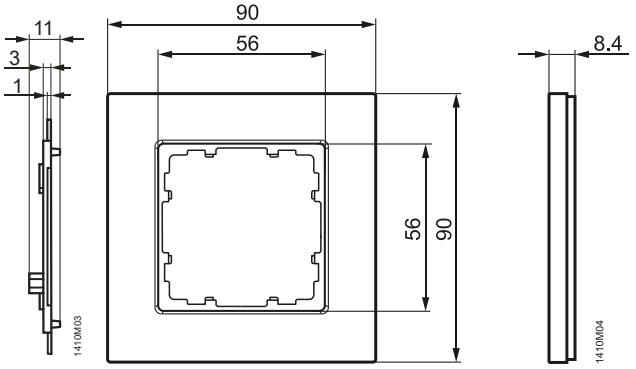
DELTA line design frame:



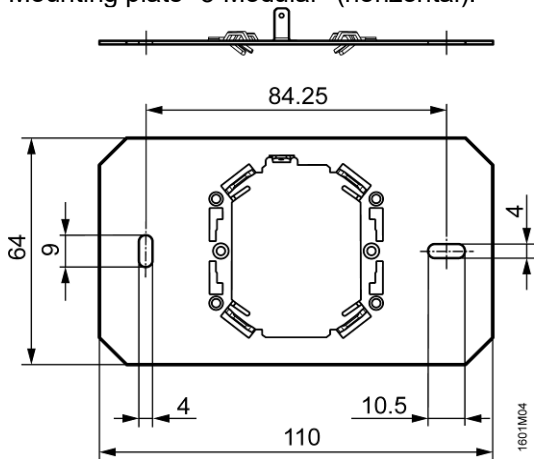
Mounting plate "British standard" (square):



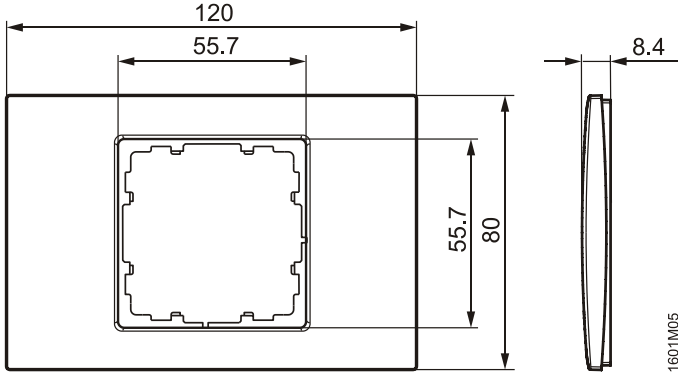
DELTA miro design frame:



Mounting plate "3 Modular" (horizontal):



DELTA azio design frame:



Mounting plate "UL" (vertical):
Dimensions same as for mounting plate "3 Modular" (see above), but vertical

DELTA azio design frame:
Dimensions as for DELTA azio design frame (see above), but vertical

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