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Датчики влажности Siemens QXA2100 и QXA2101





QXA2101

QXA2100

Condensation monitor

QXA2100
QXA2101

Monitor to prevent damage caused by condensation on chilled ceilings and HVAC plants with AC/DC 24 V power.

Application

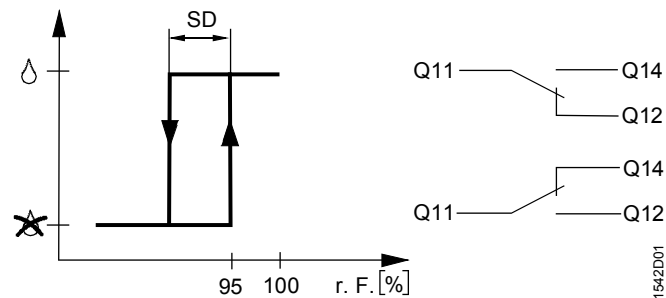
- Monitors condensation build up in buildings with chilled ceilings or ventilation, air conditioning, and heating plants
- Prevents condensation on chilled ceilings
- Prevents condensation at critical points in HVAC plants or buildings (ducts, fans, etc.)
- Prevents condensation on surfaces
- Use as a condensation switch

Functions

With the sensing element, the condensation monitor records relative humidity close to the dew point (= 100 % r. h.). The resistance of the sensing element raises sharply between 90...100 % r. h. The electronics switch the relay prior to reaching the dew point. For example, switching the relay (2-point output) has the following effect on chilled ceiling applications:

1. The cool output is switched off through valve position or controller until the condensation signal disappears.
2. Water flow temperature is increased immediately to a selectable value (e.g. 1 to 2 K) and then slowly lowered after the signal disappears.

The specific control function is required on the controller for this application.



Key

SD Switching differential
Q... Relay contact output

The diagram shows the relay status when power is on.
When power is off the relay contact Q11-Q12 is closed.

Note

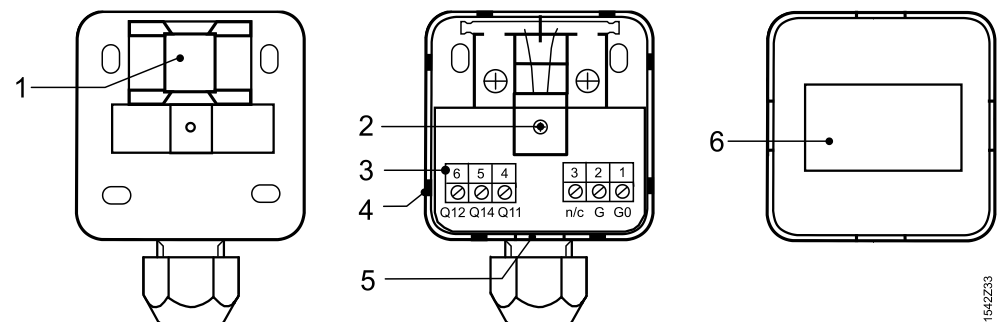
The detector does not withstand continuous condensation.

Technical design

The device is planned for AC/DC 24 V power with potential free AC/DC 1...30 V changeover contact or with extension module AQX2000 for AC 230 V power with potential free AC/DC 12...250 V changeover contact.

QXA2100

Housing with snap-on cover made of pure white, flame retardant thermoplastics with spring-loaded humidity sensing element, holding relay with changeover contact, connection terminals, and Pg 11 cable entry glands made of plastic.



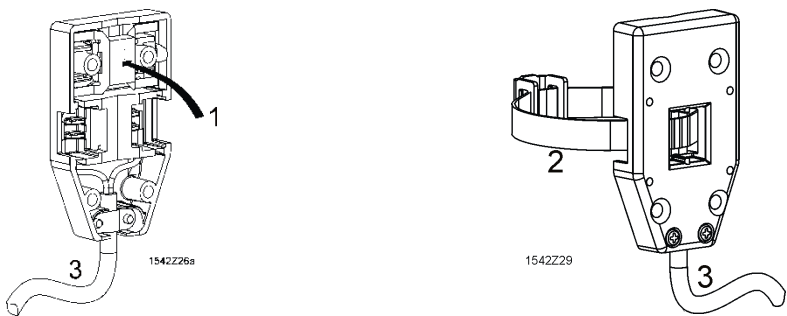
Key

- 1 Sensing element
- 2 Fixing screw with strap-on band
- 3 Terminal block
- 4 Nose of snap-on facility
- 5 Slot for lifting the cover with the help of a screwdriver
- 6 Connection label

QXA2101

The same as QXA2100, but with remote sensor head (fixed cable connection of 1 m) rather than a directly integrated sensor.

View: Sensor head on the mounting side View: Sensor head front side



- 1 Sensing element
- 2 Tensioning strap
- 3 Connector cable 1 m to base housing

AQX2000

The AQX2000 extension module consists of base, top section, and printed circuit board with lateral connection terminals.



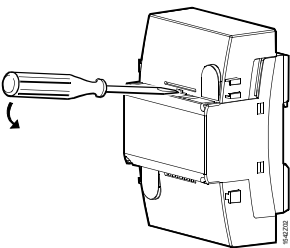
Note

The AQX2000 extension module is not supplied anymore.

RXZ40.1

The RXZ40.1 terminal cover is available as an option for the AQX2000 extension module. It provides protection against electric shock and keeps terminals free from dust and dirt.

When fitting the terminal cover, ensure that it engages correctly.



Removal of terminal cover

Type summary

Type	Order number	Designation
QXA2100	S55770-T375	Condensation monitor.
QXA2101	S55770-T376	Condensation monitor with offset sensor

Scope of delivery

- a QXA2100 condensation detector or
- a QXA2101 condensation detector with offset sensor.
- a tensioning strap for pipe diameters of 10...100 mm.
- thermal conductive paste.
- mounting instructions.

Accessories

Type	Order number	Designation
AQX2000	BPZ:AQX2000	Extension module ^{*)}
RXZ40.1	BPZ:RXZ40.1	Terminal cover

^{*)} Not supplied anymore

Equipment combinations

All devices that

- can work with AC/DC 24 V power and the condensation signal from the potential free AC/DC 1...30 V relay changeover contact
- with the help of the AQX2000 extension module, with AC 230 V power, it can work the condensation signal from potential free AC/DC 12...250 V relay changeover contact.

Notes

Engineering

The AQX2000^{*)} extension module is operated with AC 230 V power. It provides AC 24 V power for the condensation detector and the condensation signal on the potential free AC/DC 12...250 V relay changeover contact.

^{*)} not available any more

Mounting

Condensation detector
QXA2100/QXA2101

- Pipe mounting with tensioning strap (pipe diameter 10...100 mm)
- Surface-mounting on walls or ceilings with 4 screws

The condensation monitor performs its function only if the humidity sensing element assumes the same temperature as the surface to be protected against condensation. Please note:

- Apply a thin layer of thermal conductive paste on the mounting surface
- Mount at the coldest spot of the chilled ceiling (plant)
- Mount on the water inlet pipe on water-cooled chilled ceilings

Note

Protect the sensing element against aggressive chemicals and dirt, since this can adversely affect the proper operation of the monitor and significantly shorten its life. The condensation detector is supplied with mounting instructions.

Mounting AQX2000
extension module AC
230 V

- Top hat rails EN 60 715–TH 35-7.5
 - Wall mounted (with the help of screws)
- Maximum cable length to condensation detector: 20 m

Installation



Electrical voltage

Electric shock

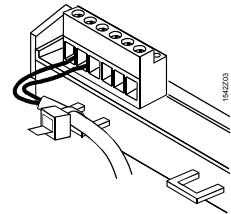
- Work on electrical installations may only be carried out by qualified electricians or by instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electrical regulations.
- Terminal cover RXZ40.1 must be used when using the AQX2000 extension module outside a closed panel.



Electrical wiring can loosen from the terminals

Fire hazard or risk of injury from electrical shock or short circuiting

- Strain relief required on AC 230 V terminals. Fix wiring with cable bindings (see image below) to the tabs in the housing base.



Commissioning

A functional test can be conducted if needed, by exhaling slowly onto the sensing element several times to simulate condensation.

Note

Do not expose the sensing element to tap water as this can cause electrolytic corrosion.

Power lines
AC 230 V

Local regulations regulate sizing and fusing of power lines. Power lines must be fused in the extension module AQX2000 with strain relief (see Engineering).

Disposal



The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.

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

Technical data

QXA2100, QXA2101

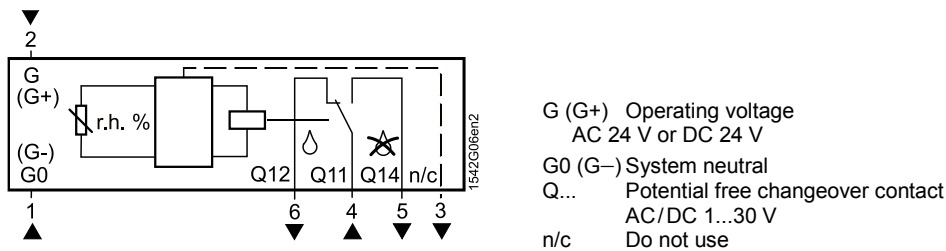
Power supply G (G+), G0 (G–)	Operating voltage	SELV/PELV AC/DC 24 V $\pm$ 20 %
	Frequency	50/60 Hz
	Power consumption	Max. 1 VA
	External fuse	- Transformer with secondary current limit of max. 10 A or - external secondary current fuse with max. T 10 A non-renewable fuse or - max. C 13 A circuit breaker Required under all circumstances
Functional data	Switching point on increase in humidity	95 $\pm$ 4 % r. F.
	Switching differential (fixed)	Ca. 5 % r. h.
	Response time in static air	
	80 to 99 % r. h. 99 to 80 % r. h.	Max. 3 min Max. 3 min
Output Q11, Q12, Q14	Relay output	Potential free changeover contact
	Current range at AC/DC 24 V	0.02...1 (1) A
	Starting current at AC/DC 24 V	$\leq$ 5 A for $\leq$ 20 ms
	Switching capacity	min. AC/DC 1 V, 1 mA max. AC/DC 30 V, 1 A
Connections	External fuse	External fuse at max. T 4 A non-renewable fuse required
	Mechanical	strap-on band for pipe $\varnothing$ 10...100 mm
	Electrical connections	
	Screw terminals for	1.5 mm ²
Protective data	Housing	IP 40 per EN 60 529
	Protection class	III as per EN 60 730
Environmental conditions	Transport to	IEC 60 721-3-2
	Climatic conditions	Class 2K2
	Temperature	–25...+60 °C
	Humidity	<95 % r. h.
	Mechanical conditions	Class 2M2
	Operation to	IEC 60 721-3-3
	Climatic conditions	Class 3K5
	Temperature (housing with electronics)	–5...+50 °C
Directives, standards	Humidity	5...95 % r. h. (noncondensing)
	Mechanical conditions	Class 3M2
	Product standard	
	Automatic electronic controls for household and similar use	
		EN 60730-1
	EU conformity (CE)	A5W00004359 ¹⁾
	RCM conformity	CB1T3302en_C1 ¹⁾
	EAC compliance	Eurasian compliance
Materials and colors	Housing	Thermoplastic, pure white, flame retardant
Dimensions (weight)	Including packaging QXA2100	0.126 kg
	QXA2101	0.126 kg

AQX2000

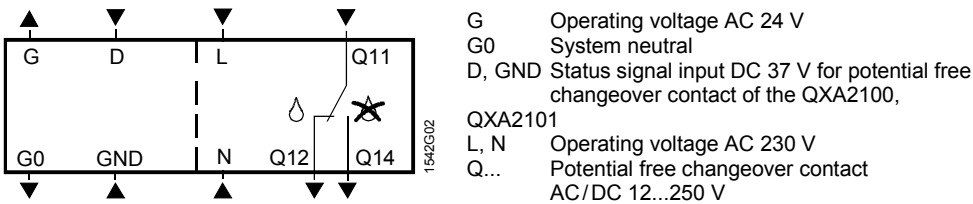
Power L, N	Operating voltage	AC 230 V $\pm 10\%$
	Frequency	50/60 Hz
	Power consumption	Max. 4 VA
	External fuse	External secondary current fuse - with max. T 10 A non-renewable fuse or - max. C 13 A circuit breaker Required under all circumstances
Inputs	Status signal input D, GND	
	Contact voltage	DC 37 V (SELV/PELV))
	Contact current	13 mA
Outputs	Voltage output G, G0	
	Rated voltage range	AC 24 V $\pm 20\%$ (SELV/PELV)
	Frequency at AC 24 V durable	50/60 Hz max. 1 VA
	Relay output Q11, Q12, Q14	Potential free changeover contact Not suitable for connecting to SELV/PELV circuits Line fusing requires strain relief AC/DC 12...250 V 0,01...6 A Min. AC/DC 12 V, 10 mA Max. AC/DC 250 V, 6 A 1500 V
	Rated voltage range	
	Rated current range	
	Switching capacity	
	Insulation against power (L, N)	
	External fuse	External secondary current fuse - with max. T 6 A non-renewable fuse or - max. C 6 A circuit breaker Required under all circumstances
Connections	Electrical connections	
	Screw terminals for	Max. 2 x 1.5 mm ² or 1 x 2.5 mm ²
	Wire length to QXA2100, QXA2101	Max. 20 m
Protective data	Degree of protection of housing	
	With terminal cover and wall-mounting without top hat rail	IP30 to EN 60 529
	Safety class to EN 60 730	device suited for use with equipment of safety classes I and II
Environmental conditions	Operation to	IEC 60 721-3-3
	Climatic conditions	Class 3K5
	Temperature (housing with electronics)	-5...+50 °C
	Humidity	<85 % r. h.
	Mechanical conditions	Class 3M2
	Transport to	IEC 60 721-3-2
	Climatic conditions	Class 2K2
	Temperature	-25...+60 °C
	Humidity	<95 % r. h.
	Mechanical conditions	Class 2M2
Directives, standards	Product standard	
	Automatic electronic controls for household and similar use	EN 60730-1
	EU conformity (CE)	CE1T1542xx ¹⁾
	RCM conformity	CB1T3302en_C1 ¹⁾
	EAC compliance	Eurasian compliance
Materials	Housing	ABS + PC
	Terminal cover	ABS + PC
Dimensions (weight)	Including packaging	0.2 kg

Connection diagrams

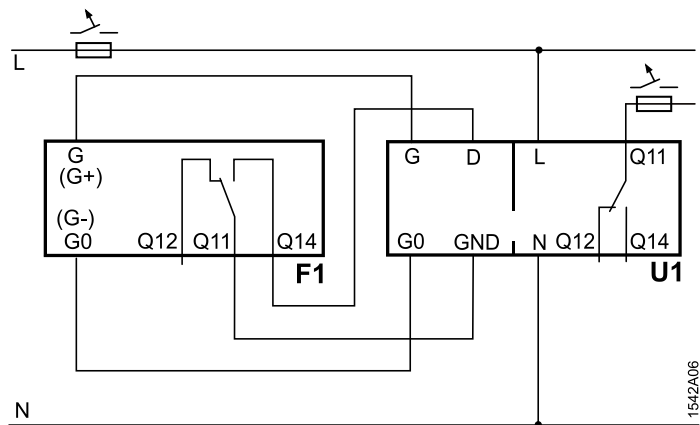
Internal diagrams
QXA2100, QXA2101



AQX2000



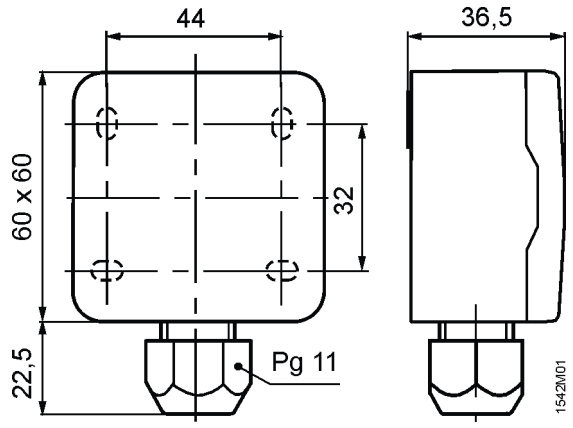
Connection diagram



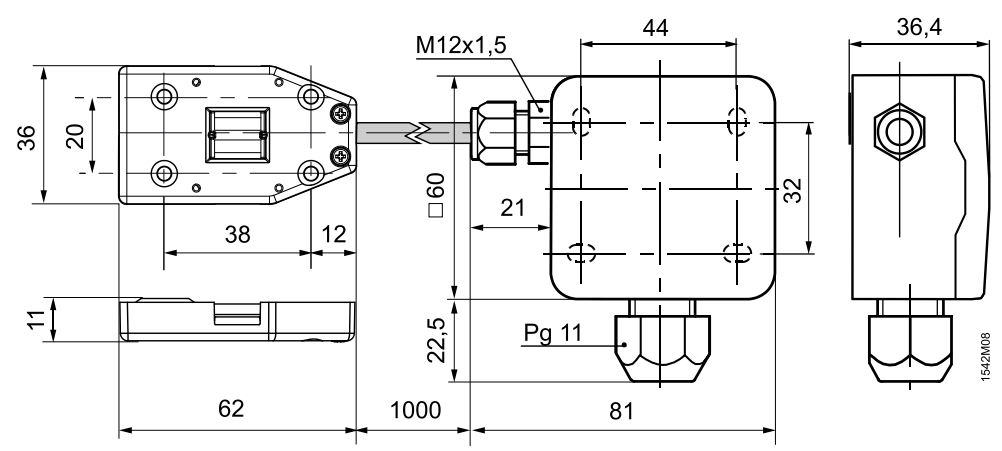
F1 Condensation detector QXA2100 / QXA2101
U1 AQX2000 extension module AC 230 V

Dimensions

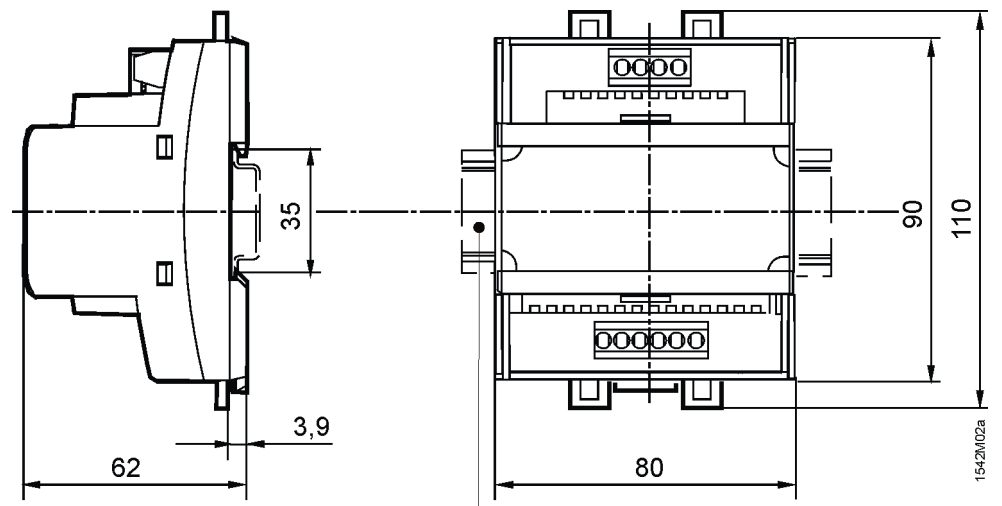
QXA2100



QXA2101



AQX2000



Dimensions in mm

Top hat rails