QXA2000

AQX2000

Condensation Monitor QXA2000

The QXA2000 condensation monitor is used to avoid damage due to condensation on chilled ceilings and in HVAC plant.
It operates on AC/DC 24 V and has a potentialfree AC/DC 1…48 V changeover contact. Suited for use with extension module AQX2000 (AC 230 V) equipped with a potentialfree AC 12…250 V changeover contact.

Use

For monitoring condensation in buildings with chilled ceilings or in ventilation, air conditioning or heating plant.
The condensation monitor is used

- to prevent condensation on chilled ceilings
- to prevent condensation at critical spots of HVAC plant or buildings (in air ducts, near fans, etc.)
- as a condensation switch

In general, the condensation monitor is for use on all kinds of surfaces where condensation must be avoided.

Ordering and delivery

When ordering the condensation monitor, please give name and type reference. It is supplied complete with a strap-on band for pipe diameters from 10 to 100 mm and thermal conductive paste.
The AQX2000 extension module, which is offered as an accessory item, must be ordered separately.

Equipment combinations

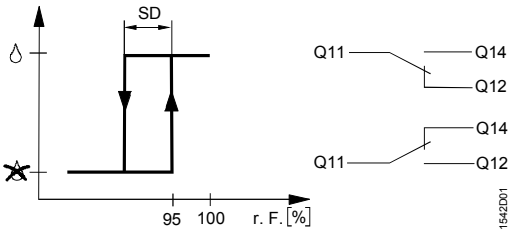
Suited for use with all types of devices

- that operate on AC/DC 24 V and that can handle the condensation signal delivered by the monitor's potentialfree AC/DC 1...48 V relay changeover contact, or
- that, in connection with the AQX2000 extension module, operate on AC 230 V and that can handle the condensation signal delivered by the module's potentialfree AC/DC 12...250 V relay changeover contact

Mode of operation

With its sensing element, the condensation monitor acquires the relative humidity close to the dewpoint (=100 % r. h.). The resistance of the sensing element rises sharply in the range of 90...100 % r. h. Before the dewpoint is reached, the electronics energizes the relay. When, for instance, in the case of chilled ceiling applications, the relay contact switches over (2-position output), the following actions are triggered:

1. Cooling will be shut down via the valve or by a controller until the condensation signal is no longer present.
2. The water flow temperature will immediately be raised by an adjustable value (typically 1 to 2 K) and slowly reduced again after the signal has disappeared. This application requires a specific function in the controller.



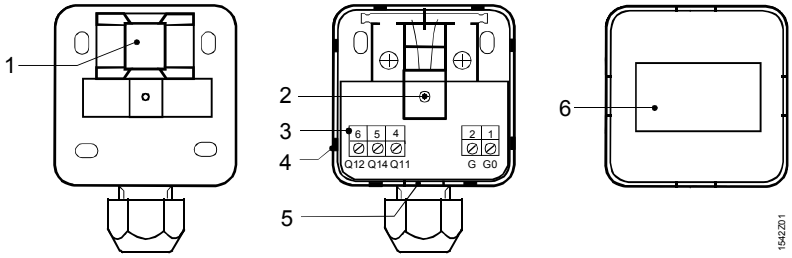
Legend

SD Switching differential
Q... Relay contact output

Mechanical design

QXA2000

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



Legend

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 Label with connection diagram

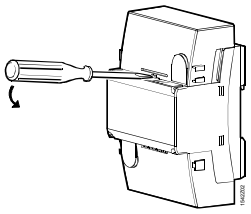
AQX2000

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

RXZ40.1

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

When fitting the terminal cover, it must be ensured that it engages correctly.



Removal of terminal cover

Accessories

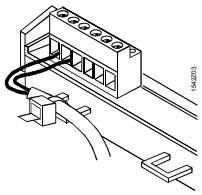
Name	*Type reference*
Extension module AC 230 V	AQX2000
Terminal cover	RXZ40.1

Engineering notes

The AQX2000 extension module operates on AC 230 V mains voltage.
It feeds AC 24 V to the condensation monitor and delivers the condensation signal via its potentialfree AC/DC 12...250 V relay changeover contact.

⚠ Caution!

Cable stain relief for the AC 230 V terminals is mandatory. The cables must be attached to the lugs on the base using cable ties (see illustration).



⚠ Caution!

The AQX2000 extension module may only be accessed by authorized staff.

Mounting notes

QXA2000 condensation monitor

Mounting choices:
- Pipe-mounting with strap-on band (pipe diameter 10...100 mm)
- Surface-mounting on walls or ceilings with the help of 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.
Following is to be noted:
- Apply a thin layer of thermal conductive paste on the mounting surface
- Mount the condensation monitor at the coldest spot of the chilled ceiling (plant)
- In the case of water-cooled chilled ceilings, mount the monitor on the water inlet pipe
- Protect the sensing element against aggressive chemicals and dirt (both can adversely affect the correct operation of the monitor and drastically shorten its life)

Note

The monitor must not be continuously exposed to condensation. It is supplied complete with Mounting Instructions.

AQX2000 extension module AC 230 V

Mounting choices:
- On top hat rails conforming to EN 60 715–TH 35-7.5
- On walls (with the help of screws)

The cable length to the condensation monitor must not exceed 20 m.

Commissioning notes

No special commissioning procedure is required. A functional test can be made by exhaling slowly onto the sensing element several times, thus simulating condensation.

Caution!

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

Technical data

QXA2000

Power supply G (G+), G0 (G–)	Operating voltage	AC/DC 24 V ±20 %
	Frequency	50/60 Hz
	Power consumption	max. 1 VA
Functional data	Switching point on increase of humidity	95 ±4 % r. h.
	Switching differential (fixed)	approx. 5 % r. h.
	Response time in static air	
	From 80 auf 99 % r. h.	max. 3 min
	From 99 auf 80 % r. h.	max. 3 min
	Condensation	max. 30 min
Output Q11, Q12, Q14	Relay output	potentialfree changeover contact
	Current range at AC/DC 24 V	0.02...1 (1) A
	Starting current at AC/DC 24 V	≤10 A for ≤20 ms
	Switching capacity	min. AC/DC 1 V, 1 mA max. AC/DC 48 V, 0.5 A
Protection data	Degree of protection of housing	IP 40 to EN 60 529
	Safety class	III to EN 60 730
Connections	Mechanically	strap-on band for pipe dia. 10...100 mm
	Electrical connections	
	Screw terminals for	max. 2 x 1.5 mm^2 or 1 x 2.5 mm^2
Environmental conditions	Operation to	IEC 60 721-3-3
	Climatic conditions	class 3K5
	Temperature (housing with electronics)	–5...+50 °C
	Humidity	5...95 % r. h. (noncondensing)
	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
Materials and colors	Housing	thermoplastics, pure-white
Norms and standards	Product safety	
	Automatic electrical controls for domestic use and similar applications	EN 60 730-1
	Electromagnetic compatibility	
	Immunity	EN 61 000-6-2
	Emissions	EN 61 000-6-3
	CE conformity	
	Electromagnetic compatibility	89/336/EEC
	Low-voltage directive	73/23/EEC
	conformity	
	Australian EMC Framework	Radio Communication Act 1992
	Radio Interference Emmission Standard	AS/NZS 3548
Weight	Including packaging	0.126 kg

AQX2000

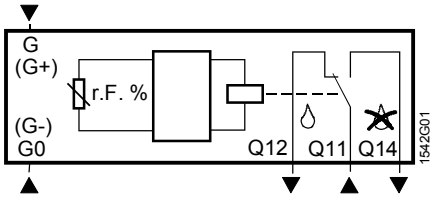
Power supply (L, N)	Operating voltage	AC 230 V ±10 %
	Frequency	50/60 Hz
	Power consumption	max. 4 VA
Inputs	Status signal input (D, GND)	
	Contact voltage	DC 37 V (SELV)
	Contact current	13 mA
Outputs	Voltage output (G, G0)	
	Operating voltage	AC 24 V ±20 %
	Frequency at AC 24 V	50/60 Hz
	Load	max. 1 VA
	Relay output (Q11, Q12, Q14)	potentialfree changeover contact
	Operating voltage range	AC/DC 12...250 V
	Operating current range	0.01...6 A
	Switching capacity	min. AC/DC 12 V, 10 mA max. AC/DC 250 V, 6 A

Protective data	Degree of protection of housing	
	With terminal cover and wall-mounting without top hat rail	IP 30 to EN 60 529
	Safety class to EN 60 730	device suited for use with equipment of safety class I or II
Connections	Electrical connections	
	Screw terminals for	max. 2 x 1.5 mm^2 or 1 x 2.5 mm^2
	Cable length to the **QXA2000**	max. 20 m
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 2K3
	Temperature	−25...+70 °C
	Humidity	<95 % r. h.
	Mechanical conditions	class 2M2
Materials	Housing	ABS + PC
	Terminal cover	ABS + PC
Norms and standards	Product safety	
	Automatic electrical controls for domestic use and similar applications	EN 60 730-1
	Electromagnetic compatibility	
	Immunity	EN 61 000-6-2
	Emissions	EN 61 000-6-3
	CE conformity	
	Electromagnetic compatibility	89/336/EEC
	Row-voltage directive	73/23/EEC
	✓ conformity	
	Australian EMC Framework	Radio communication act 1992
	Radio Interference Emmission Standard	AS/NZS 3548
Weight	Including packaging	0.2 kg

Diagrams

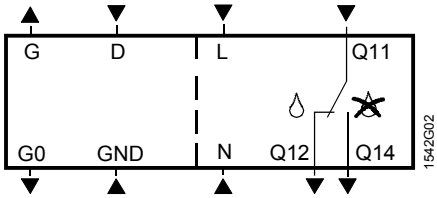
Internal diagrams

QXA2000



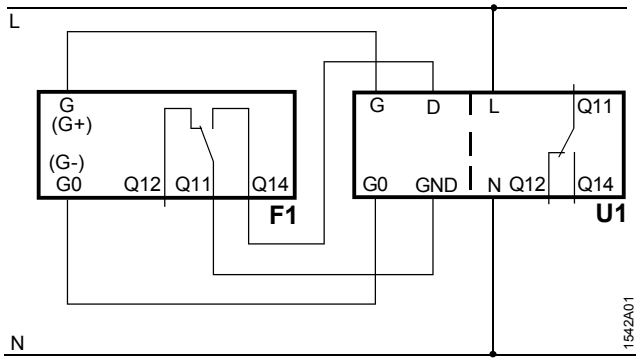
G (G+) Operating voltage AC 24 V (DC 24 V)
G0 (G–) System neutral
Q... Potentailfree changeover contact AC/DC 1... 48 V

AQX2000



G Operating voltage AC 24 V
G0 System neutral
D, GND Status signal input DC 37 V for potentialfree changeover contact of the QXA2000
L, N Mains voltage AC 230 V
Q... Potentialfree changeover contact AC/DC 12...250 V

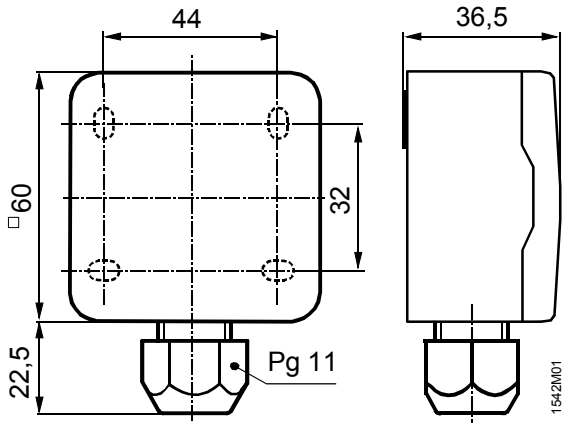
Connection diagram



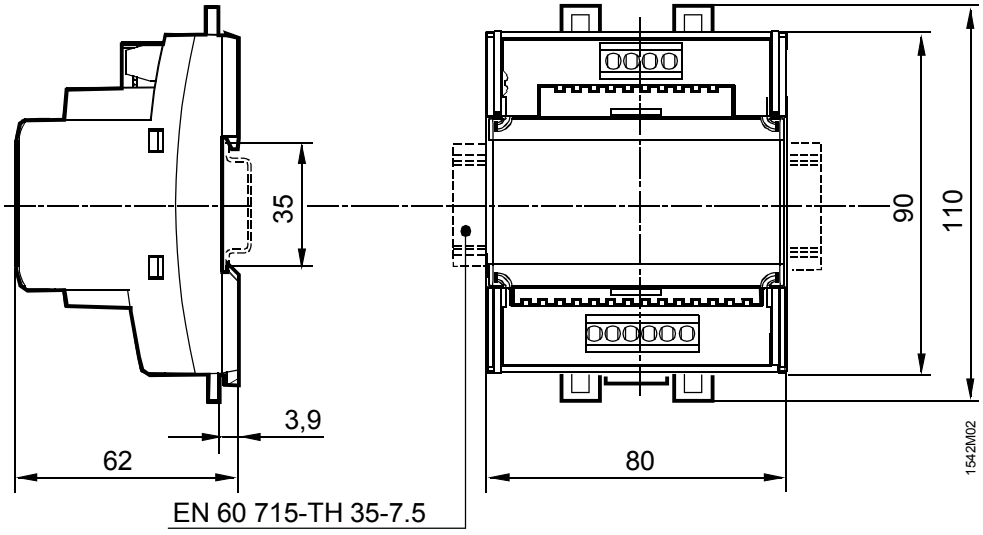
F1 Condensation monitor QXA2000
U1 Extension module AQX2000 (AC 230 V)

Dimensions

QXA2000



AQX2000



Dimensions in mm