Frost protection unit QAF65.3-J

For monitoring the air temperature

- **Robust plastic housing (glass fiber-reinforced)**
- **Active sensing element length approx. 300 mm**
- **Small switching differential**
- **High repeatability**
- **Setting range: -10...+15 °C**
- **Factory setting: 5 °C**
- **Degree of protection IP43**
- **Monitoring of frost protection temperature with micro switch (SPDT)**
- **Switching capacity: 16 (4) A, AC 250 V**
- **For fitting on air heating coils**
- **Viewing window in cover indicates the frost protection temperature set**
- **Push-in connection terminals[1]) for fast installation**

Use

The QAF65.3-J frost protection unit is used in ventilation and air conditioning plants to monitor the temperature of air heating coils on the air side to prevent damage due to frost. It has a small switching differential and offers high repeatability. Resetting takes place automatically.

Switching functions

The unit's switching action can trigger the following frost protection functions:

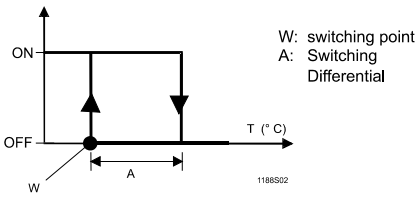
- Fan OFF
- Outside air damper FULLY CLOSED
- Heating coil valve FULLY OPEN
- Heating coil pump ON
- Refrigeration machine (compressor) and air humidifier OFF
- Frost alarm (optically and/or acoustically

Function

Changeover switch (SPDT)

When the air temperature drops and reaches the set frost protection level, the QAF65.3-J triggers a switching action (contacts 1 – 3 make and 1– 2 break). When the air temperature rises by the amount of the switching differential, the QAF65.3-J returns to its former state (contacts 1 – 3 break and 1 – 2 make).

Changeover contact TW frost protection



Type summary

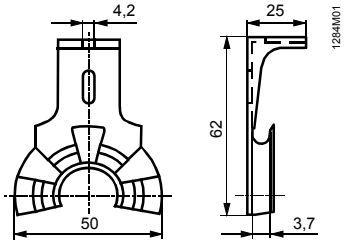
Product no.	Stock no.	Degree of protection	Setting range	Capillary tube length	Scope of delivery
QAF65.3-J	S55700-P150	IP43	-10...15 °C	3,000 mm	Frost protection unit incl. cable entry gland M16 x 1.5 mm and Mounting Instructions

Accessory

Not included in the scope of delivery

Type reference	*Description*
AQM63.0	Mounting flange
AQM63.2	Capillary supports set (includes 3 pieces)
AQM63.3	Capillary supports set (includes 6 pieces)

AQM63.2



AQM63.0

Technical design

The QAF65.3-J responds when the air temperature drops below the set frost protection level over a capillary **tube length of at least 300 mm.** Resetting takes place automatically when the air temperature returns to a level above the set frost protection temperature.

The air temperature is acquired over the total sensing element length (capillary tube). The gas-filled diaphragm and the capillary tube form the measuring system which is mechanically connected to the micro switch.

Mechanical design

Housing

- Mechanical frost protection unit with capillary tube for fitting to the air heating coil
- Housing made of PC (glass fiber-reinforced) for fitting to the air heating coil
- Cover made of PC, with viewing window
- PC plastic with the following properties:
  - Almost non-flammable
  - UV-protected, weatherproof and aging-resistant
  - Suited for higher temperatures
  - High resistance against chemical, mechanical and biological influences
- Cable entry gland M16 x 1.5 mm

Notes

Mounting aid

The frost protection unit is supplied complete with Mounting Instructions.

Mounting location

There must be sufficient clearance above the unit, ensuring that the viewing window is visible, the frost protection temperature can be set and the unit can be removed and refitted if necessary.

Frost protection unit

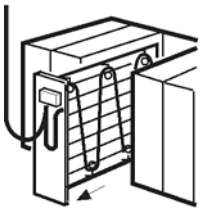
The ambient temperature at the housing (including the test loop) must be at least **2 °C higher** than the set frost protection temperature. **If this is not ensured (e.g. outdoors or in unheated rooms), the housing including the test loop must be fitted inside the supply air equipment.**

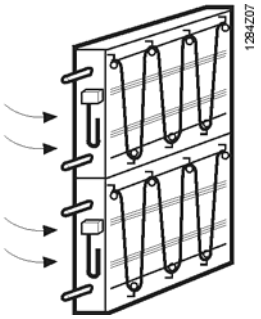
Capillary tube

The capillary tube must be laid across the downstream side of the heating coil (with air cooling coils upstream of the coil) at a distance of about 50 to 100 mm and at right angles to the coils, evenly across the entire surface. For test purposes, it is recommended to lay a loop of about 200 mm directly beneath the housing where the air enters the duct.

To ensure the capillary tube will not be damaged, a minimum bending radius of 20 mm must be observed.

Mounting is simplified by using AQM63.3 guide brackets (accessory item).





Commissioning notes

The required frost protection temperature is set from the front side with a screwdriver (remove cover).

Frost simulation

Frost conditions can be simulated by immersing the capillary tube test loop into a vessel filled with ice water.

Maintenance notes

The frost protection unit is maintenance-free.
The correct functioning of the unit can be checked by immersing the test loop into a vessel filled with ice water.

⚠ Setting the temperature

The frost protection temperature must be set by qualified personnel.

⚠ Wiring

The unit must be wired by qualified personnel.
The cables used must meet the insulation requirements for mains potential. Wiring must be made according to the connection diagram in compliance with local safety regulations.

⚠ Max. AC 250 V

Caution: The unit may be opened only when power is disconnected.

⚠ ⏚

Protective earth must be connected in compliance with regulations.

Disposal

The device is classified as waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed of as unsorted municipal waste. The relevant national legal rules are to be adhered to. Regarding disposal, use the systems setup for collecting electronic waste.

Observe all local and applicable laws.

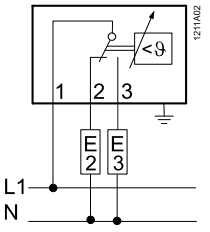
Technical data

Micro switch	Switching capacity	
	Nominal voltage	AC 24…250 V
	Nominal current I (I_M) contact connection 1-2	0.1...16 (2.5) A
	contact connection 1-3	0.1… 6 (2.5) A
	External fuse	16 A
	Safety class	I as per EN 60730
	Degree of protection	IP43 as per EN 60529
	Setting range (internally adjustable with tool)	
	QAF65.3	-10…15 °C
	Thermal switching differential	2 °C ± 1 °C
Norms and standards	CE conformity	
	Electromagnetic compatibility according to directive	2004/108/EG
	Low-voltage directive	2006/95/EG
	Product standards	
	Automatic electrical controls for household and similar use	EN 60730-1
	Special requirements for temperature-dependent controls	EN 60730-2-9
	Action type 2	BL (EN 60730-1/2-9/DIN EN 14597)
	Radio interference	Click rate N ≤5 as per EN 55014

Environmental conditions	Operation	Class 3K5 as per IEC 60721-3-3
	Max. temperature at sensor	120 °C
	Ambient temperature at housing	Max. 80 °C (T80)
	Humidity	<95% r.h.
	Mechanics	Class 3M2 as per IEC 60721-3-3
	Storage and transport	Class 2K3 as per IEC 60721-3-2
	Ambient temperature	-25…70 °C
	Humidity	<95% r.h.
	Pollution degree	2 as per EN 60730
	Media monitored	Air
Calibration	Factory setup (switching temperature)	5 °C
	Manufacturing deviation	± 3 °C
Electrical connections	Electrical connections	Push-in[1] terminals for wires 6 x 0.75...2.5 mm²
	Protective earth connection	Push-in[1] terminals for wires 2 x 0.75...2.5 mm²
	Cable entry gland	M16 x 1.5 mm
	Wiring	Type M (unprepared wires or prepared stranded wires, e.g. with ferrules)
General data	Colors	Housing: RAL 7042 (dark grey) Cover: RAL 7035 (light grey)
	Capillary tube dia.	2.3 mm
	Capillary length	3,000 mm
	Min. bending radius	R min. = 20 mm
	Materials	
	Switch support	Plastic
	Capillary tube and sensing element	Copper
	Diaphragm	Stainless steel
	Weight of standard set	0.26 kg

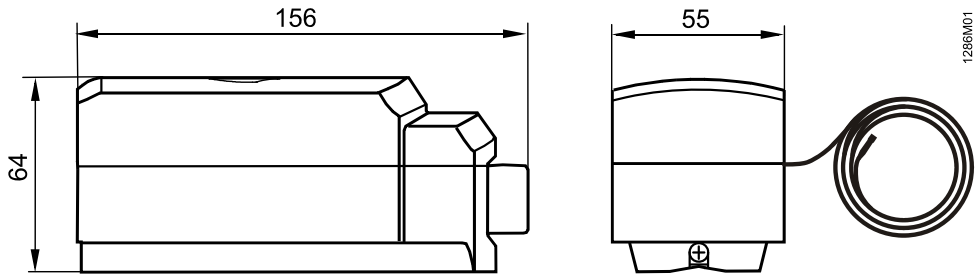
[1] "Push In" is a patented connection technique developed by Weidmüller, Germany's leading manufacturer of electrical connection technology

Connection diagram



⚠ Contacts 1 - 3 makes when frost protection temperature is reached (1 – 3 = Alarm). Contact 1 - 2 closed when normal conditions

Dimensions



Subject to change