OPERATION MANUAL

Dew point controller TPS-D

Description

Characteristic features

- Condensation monitor for cool ceilings
- Switch point 94 % RH on surface
- Operating temperature from 0 to 60 °C
- Potential free static switch contacts
- Operating voltage 20-28 V DC/AC~
- Defined behaviour during dew formation or condensation
- Damp proof sensor with dust filter
- Calibrated, reliable device
- Over voltage protection
- Spill waterproof electronics
- Minimum assembly expenses easy mounting
- Minimum wiring expenses (plug)
- Maintenance free, no wearing parts
- High system reliability
- 24 Months guarantee
- German manufacture as per QS ISO 9001

Technical data

Sensor details	
Switch point	94 % RH, ±4 % factory adjusted
Switching hysteresis	4 % RH approx.
Operat. temperature	0...60 °C
Dew formation	Allowed
Condensation	Allowed for short time
Measuring medium	Atmospheric air without additives
Response time	Approx 120 sec. for a rise of 75 % RH on dew formation
Dust guard filter	Polyethylene sinter material
Power supply	
Operating voltage	Floating auxiliary voltage, 24 V AC ±20 %, 50 Hz or 20-28 V DC
Operating current	Typ. 5 mA, max. 7 mA
Function control	Red LED indication during operation
Ausgangsstufe	
Switch characteristics	Potential free static current contact. Closed during normal operation (condensate free) Opens in absence of power supply or on dew formation.
Actuator	Semiconductor relay
Contact voltage	Max. 39 Vss
Contact current	Max. 25 mA AC/DC
Contact resistance	Closed: <30 Ω Open : >1 MΩ
Switching indication	Red LED during closed contact position (dry)

Other data	
Dimensions L x B x H (mm)	Approx. 90 x 18 x 30 mm (without mounting and cable)
Connection plug	PHOENIX CONTACT FK-MCP 1,5/4-ST-3,5, Art. Nr. 19 39 934
Electronics enclosure	IP 20
CE-conformance	2014/30/EU
EMV-Noise emission	EN 61000 -6-3-2011
EMV-Noise immunity	EN 61000 -6-1:2007
Scope of supply	Switch electronics with attached sensor and mains lead / plug
Guarantee	24 Months

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Areas of application

Apart from cool ceilings, following are the typical areas of application for the regulating device:

- In the glass panels of indoor swimming halls or display windows for keeping it frost free and ice free with optimum energy input.
- In water treatment plants or industrial installationsfor detecting „sweating“ of cold pipeline network.
- To prevent condensate formation in the outside walls or steel doors of halls and stockrooms and to protect the brick work.
- During any repair of cement flooring or flat roofs, it is used at the end of the drying process to detect any type of building leakage.
- For detecting condensate formation in the sensitive electronic components of swithgear panels or machines.
- For maisture and leakage monitors: The potential free static switch contact is compatible with all common commercial alarm equipment and signalling systems.

Functional description

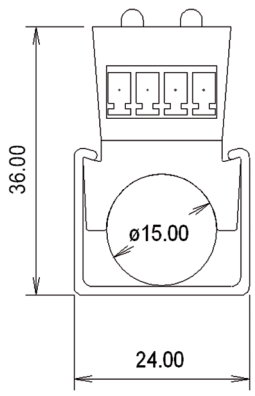
The condensation monitor is an electronic Hygrostat which is meant to sense dew formation or beginning of water condensation on cooled objects. As soon as the measured value of surface humidity exceeds a certain limit (approx. 94 % RH), it opens the relay contact and trips the static switch contact (safety function). For example, this signal can be used for switching on a heater.

With the new measurement philosophy and application of a special sensor with logarithmic characteristics, it is now possible to regulate very close to the dew start point. With the help of this technology, now the maximum cooling performance of the ceilings can be achieved, without the risk of condensate formation.

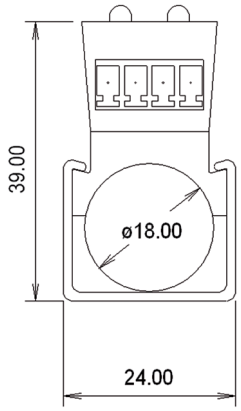
During product development, reliable mode of operation was the most important criterion. The circuit is protected against overvoltage, reverse polarity and faulty connections. In addition to the humidity sensing element, which reacts to the critical air humidity values below the condensation limit, there is a safety circuit which detects the dew occurence and independently trips the static power circuit. With the optimised AC-circuit technology, the sensor experiences even a short time contact with water without getting destroyed due to electrolysis effect. A sinter filter over the sensor element protects it from accumulated dust and ensures many years of operation without cleaning or maintenance. The model with attached tubular sensor can be directly mounted on the inlet of the cooling panels with minimum fitment expenses. The sensor with aluminium profile is fitted on the tube and fixed with the enclosed assembly strap. The wiring expenses are also very less. The device is provided with a mains lead and plug, which is only to be connected.

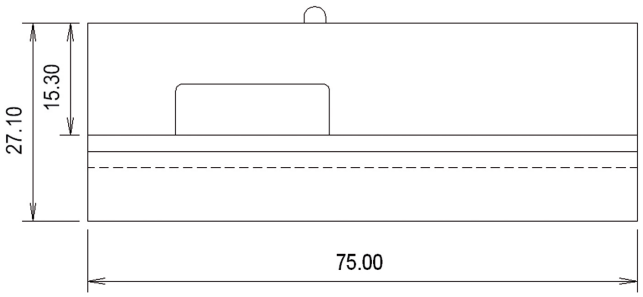
Dimensional drawing

With tube probe 15 mm

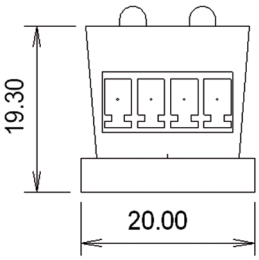


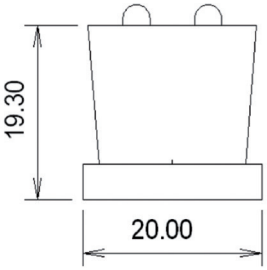
With tube probe 18 mm





With flat probe (special versions!)





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Terminations of various models

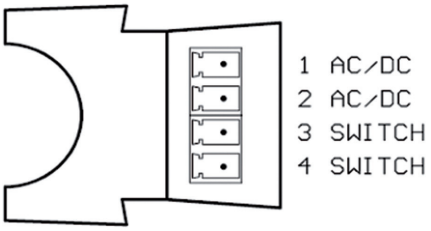
Article	Art.no.
TPS-D12-BU	Dew point controller, tubeØ12 mm with Phönix-connector
TPS-D15-BU	Dew point controller, tubeØ15 mm with Phönix-connector
TPS-D18-BU	Dew point controller, tubeØ18 mm with Phönix-connector
TPS-D22-BU	Dew point controller, tubeØ22 mm with Phönix-connector
TPS-D28-BU	Dew point controller, tubeØ28 mm with Phönix-connector
TPS-D35-BU	Dew point controller, tubeØ35 mm with Phönix-connector
TPS-D42-BU	Dew point controller, tubeØ42 mm with Phönix-connector
0557 0010	Dew point controller, tubeØ 76,4 mm
0557 0010-01	Dew point controller, tubeØ 88,9 mm
0557 0010-02	Dew point controller, tubeØ 114,3 mm
0557 0010-03	Dew point controller, tubeØ 60,3 m

Connector configuration

Stift	Funktion
1	Operating voltage 24 V
2	Operating voltage 24 V
3	Potential free switch contact
4	Potential free switch contact

The representation refers to the dew point controller with view to the connector pins.

Referring connector port: PHOENIX CONTACT FKMC 1,5/4-ST -3,5, Order No. 19 39 93 4



Electrical connection

The electrical connection should be carried out by only expert personnel who are familiar with relevant safety regulations. Only a floating voltage source (DC or AC) is needed as a supply. When many dew point controllers are to be connected to the same voltage supply, all the devices should be wired in the same manner to prevent earth interconnection.

Assembly

The model with attached tubular sensor can be directly mounted on tubes with minimum fitment expenses. The sensor with aluminium profile is fitted on the tube and fixed with the enclosed cable strap. The wiring expenses are also very less. The device is provided with a 4-pin connector.

For application as condensation monitor, the sensor must be installed at the coldest location. A representation of the room atmosphere must be available. Air flows or heat sources can disturb the functioning.

While assembling, it should be ensured that the sensor part is in direct thermal contact with the tube or the object. Perfeet functioning is guaranteed only if there is no air-gap between the tube and aluminium profile of the sensor. Therefore, a sensor is suitable only for a specific cross section of the tube. Improvised assembly leads to inevitable malfunctioning.

The mechanical fitment is carried out through a cable strap provided with the device or by mounting with screws. To improve thermal conduction, some thermal compound should be applied in the sensor area between the aluminium profile and the tube. Only silicon free thermal compounds should be used and only a thin coat should be applied!

It is recommended to check the functioning of condensation monitor after assembly at site in order to bring out any possible assembly errors and prevent subsequent damages.

To check this, the cool ceilings must be undercooled below the dew point level for a short period. During water condensate formation, the dew formation monitor must respond and the static power circuit should get tripped.

Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.

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