

# OPERATION MANUAL

## Dew Formation Probe for Sensor Switching Module

### Description



### Characteristic features

- Detection of high air humidity, dew formation or condensation
- Double sensor principle for highest working reliability
- Application range from 0 to 100% RH, 0 to 60° C
- Model with connection cable and plug

### Typical areas of applications

- Cool ceiling switch, air conditioning systems
- Humidity protection in switchgear cabinets
- Monitoring of flat roofs
- Condensate detection in external walls
- Ventilation regulation in sanitary rooms
- Leakage monitor for water tight housings
- Industrial applications, laser systems

### Technical Data

Dew formation probe	
Measuring range	93..99 % RH
Sensor element	SHS A4L and also gold plated Interdigital structure
Tolerance	± 3 % RH
General	
Probe dimensions	Ø 12 x 90 mm
Probe material	PVC / Epoxide FR4
Cable material	PVC
Connection	RJ11-plug, 4-pole
Cable gland	M16x1,5
Cable length	1000 mm
Scope of supply	Measuring probe with documentation
CE-conformance	2014/30/EU
EMV-noise emission	EN 61000-6-3:2011
EMVnoise withstanding	EN 61000-6-1:2007
Art.-No.:	
Dew formation probe	0636 0007

### Attention

Please avoid extreme mechanical and inappropriate exposure.

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

### Features

The dew formation probe detects upcoming condensation, before it originates. The application areas are right from automatic ventilation controls for sanitary rooms, showers or swimming halls, humidity monitoring for external walls, pipelines or cellar rooms, monitoring of cool ceilings & display windows and also humidity control in switchgear cabinets. In addition, the probe is also used for special applications, for example, as protection switch for submerged pumps or as condensate protection for chilled laser mirrors.

The measuring probe is a combi-sensor consisting of two single sensors. One resistive dew formation sensor in thick layer technology regulates the high value of relative humidity (approx. 93 to 99 % RH). A second, conductance sensor embedded as interdigital structure on a carrier substrate detects possibility of condensation.

The combination of these two processes result into a reliable switching behaviour, because of which the probe is also suitable for critical applications like cool ceilings. If the sensor is used without any thermal contact to an object, the electronics switches ON on reaching very high humidity value, for example, during fog. Further areas of applications come up if the probe is kept under thermal contact to an object, for example, if the rear side is adhered to the object to be protected by means of a thermal conducting medium: In such a case, the probe responds to surface humidity of the object and switches ON directly before reaching the dew point i.e. before the condensate originates.

In combination with universal sensor-switching module 0557 0005, 0557 0005-01, 0557 0005-02 this dew formation probe results into a dew formation protection switch for universal applications.

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### Application notes

As is important for all humidity probes, the measuring element should be installed with protection against aggressive media and contaminations! Owing to the construction of thick layer sensor, the measuring element shows logarithmic characteristics. Hence, an adjustment is not necessary for most of the applications.

To test the functioning of probe, a special diaphragm reference cell with 97 % RH is available. However, the measuring element can also be exposed to breathing flow or cooled down on the backside up to dew point threshold. In this condition, the electronics must register „Dew formation“.

For particular applications, the suitability of probes should be checked before installation.

### RJ11-plug connector

The DEW-sensor is connected between Pin 2 and 4 and is potential free. The Interdigital structure is wired between Pin 4 and 3/5. Pin 1 and 6 are not occupied in case of probe. For Universal sensor switching module, Pin 4 is connected to AC Signal (output) and Pin 2 is the input to measuring amplifiers. Pin 3 and 5 are AC like connected to ground through a capacitor.



View of contacts on the plug

Pin	Function	Description	wire colour
1,6		Unoccupied	
2	OUT	AC output	white
3	CAP	AC Ground	brown
4	IN	Signal (input)	green
5	CAP	AC ground	yellow

### Connections for Universal Sensor-Switching module (0557 0005, 0557 0005-01, 0557 0005-02)

The applicable safety regulations should be followed! Connection and mounting operation should be carried out by only trained personnel after switching off the voltage supply.

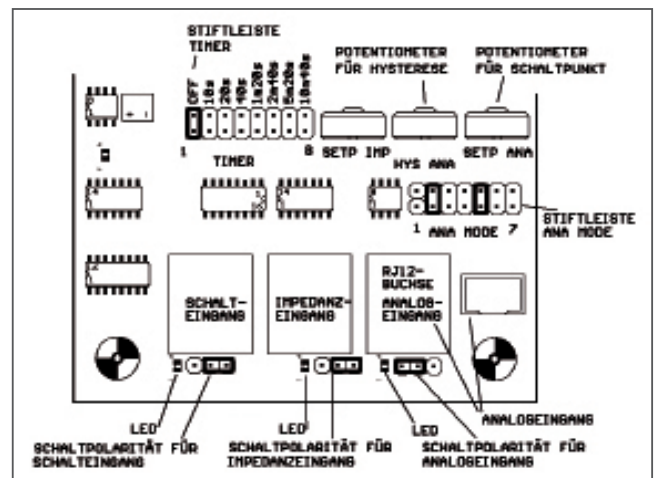
The RJ11-plug connector is meant for direct connection to the sensor-switching module. The plug connector is brought out through the hole in the housing and properly secured through cable gland. The plug connector of the probe is inserted at the middle RJ11-socket „IMPEDANCE INPUT“ (see sketch).

### Configuration of jumpers

Since the three inputs of the module are „OR“ connected, the jumper connections „Switching polarity“ of two other unused inputs must be kept in unwired inactive position (see sketch). The associated LEDs below the input socket may not glow. If this is not ensured, the relay shall be always in ON condition!

The other two potentiometers and jumpers of the pin strip „ANA-MODE“ will not have any influence on the functioning.

The switching behaviour of the device is decided by the jumper connections below the input socket: In the right position, as shown in sketch, the relay switches ON if registering dew formation. In the left position, the switching behaviour is reversed, i.e. the relay switches ON with dry sensor. The switching behaviour of the device can be observed at the light emitting diode (LED). In active condition (= relay closed), the LED glows.



### Adjustment of switching point

The adjustment of switching point for impedance input is done by a trim potentiometer „SETP IMP“. Only a small variation is possible through adjustment and the middle position works for most of the applications. The adjustment range is right from approx. 93% RH (nearly left end position of the potentiometers, i.e. anticlockwise direction) up to approx. 98% RH (right end position).

### Adjustment of time delay

Finally, adjustment of time delay is carried out by placing the jumper connection of the pin strip „TIMER“ at the desired position. With this, the configuration is complete and the device is ready for use.