

# Instruction and operation manual

# S 217

## Dew point sensor



CE

Dear Customer,

Thank you for choosing our product.

The operating instructions must be read in full and carefully observed before starting up the device. The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or non-compliance with this manual.

Should the device be tampered with in any manner other than a procedure which is described and specified in the manual, the warranty is cancelled and the manufacturer is exempt from liability.

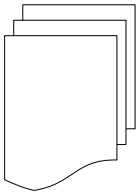
The device is destined exclusively for the described application.

SUTO offers no guarantee for the suitability for any other purpose. SUTO is also not liable for consequential damage resulting from the delivery, capability or use of this device.

## Table of contents

1. Safety instructions.....	4
2. Application.....	6
3. Features.....	6
4. Technical Data.....	7
4.1 General.....	7
4.2 Accuracy .....	7
5. Dimensional drawing.....	8
6. Electrical connection .....	9
7. Installation .....	9
7.1 Installation Requirements.....	10
7.2 Installation Procedure .....	10
7.3 Order information.....	11
8. Maintenance.....	12
9. Disposal or waste.....	12
10. Warranty.....	13

## 1. Safety instructions



**Please check if this instruction manual accords to the product type.**

Please observe all notes and instructions indicated in this manual. It contains essential information which have to be observed before and during installation, operation and maintenance. Therefore this instruction manual has to be read carefully by the technician as well as by the responsible user / qualified personnel.

This instruction manual has to be available at the operation site of the dew point sensor at any time. In case of any obscurities or questions, regarding this manual or the product, please contact the manufacturer.

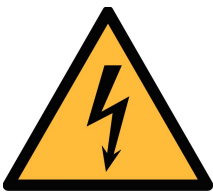


### **WARNING!**

#### **Compressed air!**

**Any contact with quickly escaping air or bursting parts of the compressed air system can lead to serious injuries or even death!**

- Do not exceed the maximum permitted pressure range (see sensors label).
- Only use pressure tight installation material.
- Avoid that persons get hit escaping air or bursting parts of the instrument.
- The system must be pressureless during maintenance work.



### **WARNING!**

#### **Voltage used for supply!**

**Any contact with energized parts of the product, may lead to a electrical shock which can lead to serious injuries or even death!**

- Consider all regulations for electrical installations.
- The system must be disconnected from any power supply during maintenance work.
- Any electrical work on the system is only allowed by authorized qualified personal.

**WARNING!****Permitted operating parameters!**

**Observe the permitted operating parameters, any operation exceeding this parameters can lead to malfunctions and may lead to damage on the instrument or the system.**

- Do not exceed the permitted operating parameters.
- Make sure the product is operated in its permitted limitations.
- Do not exceed or undercut the permitted storage and operation temperature and pressure.
- The product should be maintained and calibrated frequently, at least annually.

**General safety instructions**

- It is not allowed to use the product in explosive areas.
- Please observe the national regulations before/during installation and operation.

**Remarks**

- It is not allowed to disassemble the product.
- Always use spanner to mount the product properly.

**ATTENTION!****Measurement values can be affected by malfunction!**

**The product must be installed properly and frequently maintained, otherwise it may lead to wrong measurement values, which can lead to wrong results.**

**Storage and transportation**

- Make sure that the transportation temperature of the sensor is between -30°C ... 70°C.
- For transportation it is recommended to use the packaging which comes with the sensor.
-

- Please make sure that the storage temperature of the sensor is between -10°C ... 50°C.
- Avoid direct UV and solar radiation during storage.
- For the storage the humidity has to be <90%, no condensation.

## 2. Application

The SUTO dew point sensor S 217-OEM provides reliable and long term stable dew point monitoring in industrial applications. The newly developed sensor features improved signal and stability in demanding industrial applications.

It's designed for OEM applications in desiccant and refrigeration dryers.

The measured dew point is output via the loop-powered 4-20 mA signal. Sensor parameters such as analogue output scaling, physical units, can be set ex factory.

## 3. Features

- Small size makes it ideal for dryer installations
- Measures dew points down to – 60 °C
- 2-wire loop powered sensor or 3-wire
- IP65 casing provides robust protection in rough industrial environment
- Very fast response time ensures safe and reliable indication whenever dew points are out of valid ranges
- Can be installed directly into dryers through G 1/2" thread
- High accuracy of 1 ... 2 °C dew point
- Withstands condensation
- Can be supplied with connection cable attached
- M8 connector and cable with open wires

## 4. Technical Data

### 4.1 General

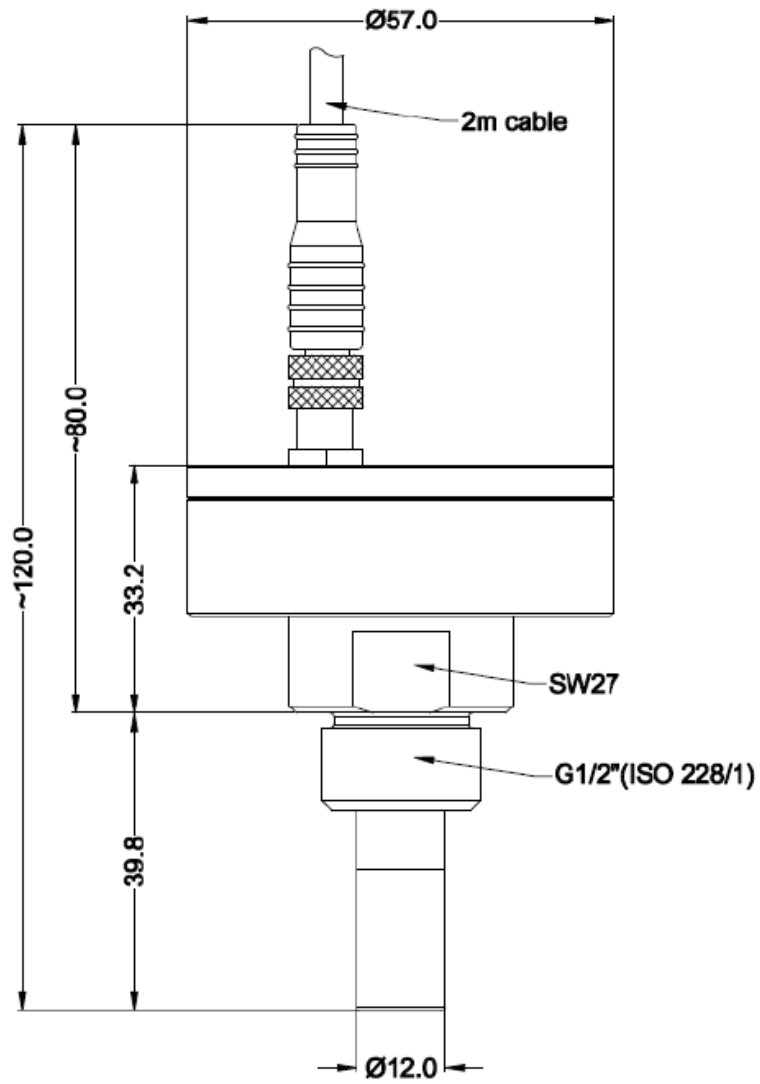
<b>CE</b>	
Measuring range	-60 ... +20°C -50 ... +20°C -20 ... +50°C
Accuracy	1 °C [-5 ... +10 °C] 2 °C [-5 ... +50 °C]
Pressure range	-0.1 ... 5.0 MPa -0.1 ... 35 MPa (S 217-1)
Power supply	12 ... 30 VDC
Measured gas	Non-corrosive gases
Ambient temperature	-10 °C ... +50 °C
Transport temperature	-30 °C ... +70 °C
Response time $t_{90}$	< 30 sec (descending) < 10 sec (ascending)
Output signal	4 ... 20 mA, 2 wire (S699 2170 and S699 2173) 4 ... 20 mA, 3 wire (S699 2174 and S699 2175)
Cable	M8 connector, 1.8 m, open wires, 3 pole
Casing	Process connection: stain-less steel Casing: Al alloy
Cassification	IP 65
Process connection	G ½" thread (ISO 228/1)
Sensor protection	Stainless steel sinter filter pore size <30 µm
EMC	According to IEC 61326-1

### 4.2 Accuracy

#### Stated accuracy under following conditions:

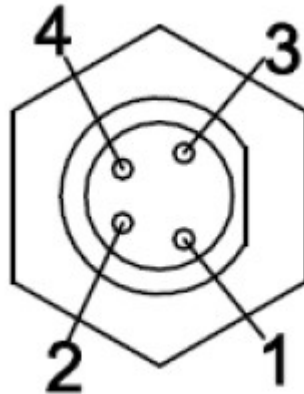
- Ambient temperature  $23 \pm 3^\circ\text{C}$
- Process temperature  $23 \pm 3^\circ\text{C}$
- Ambient humidity <95%, no condensation
- Airflow > 1 l/min at sensor tip

### 5. Dimensional drawing





## 6. Electrical connection



- 1: SDI     Digital signal (internal use)
- 2: -V<sub>B</sub>:    Negative supply voltage
- 3: +V<sub>B</sub>:    Positive supply voltage
- 4: +I:       4 ... 20 mA (3-wire)

### Cable color coding

Pin 1	Pin 2	Pin 3	Pin 4
SDI	-V <sub>B</sub>	+V <sub>B</sub>	I
brown	white	blue	black

## 7. Installation

Before installing the sensor, please make sure that all components listed below are included in your package.

Qty	Description	Item No.
1	Sensor	Model specific
1	2m cable with M8 connector	No P/N
1	Instruction manual	No P/N
1	Calibration certificate	No P/N

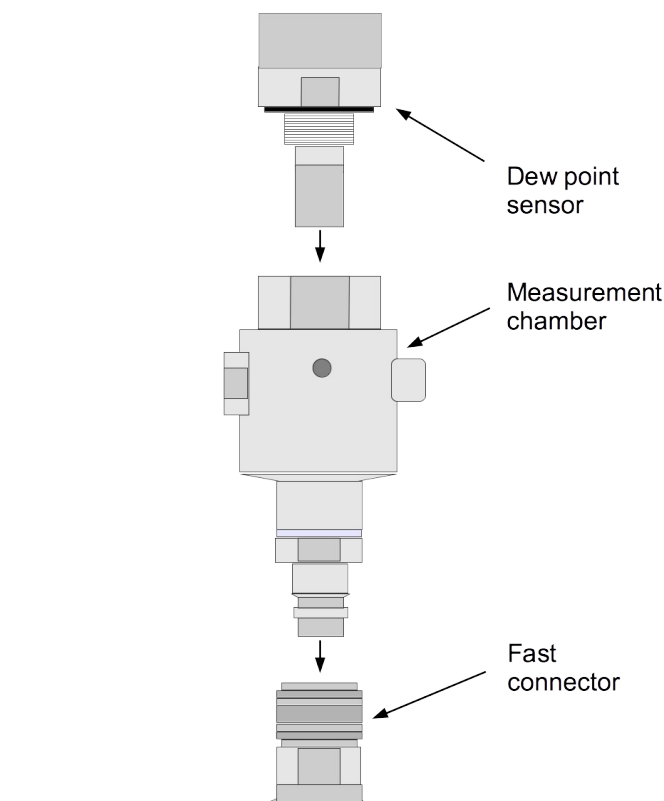
## 7.1 Installation Requirements

The flowing air or gas has to pass the sensor tip for a proper measurement. This can be realized with a measurement chamber. For a installation without measuring chamber you need to concern the installation depth which is described in the next chapter.

## 7.2 Installation Procedure

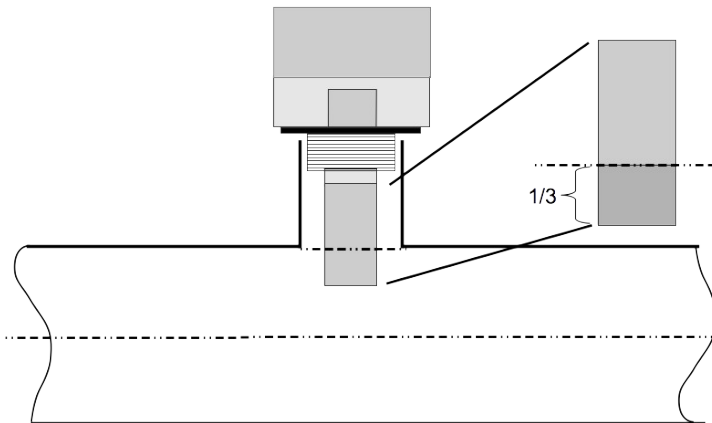
The following steps explain the procedure of an appropriate installation.

### Installation of the sensor with measurement chamber



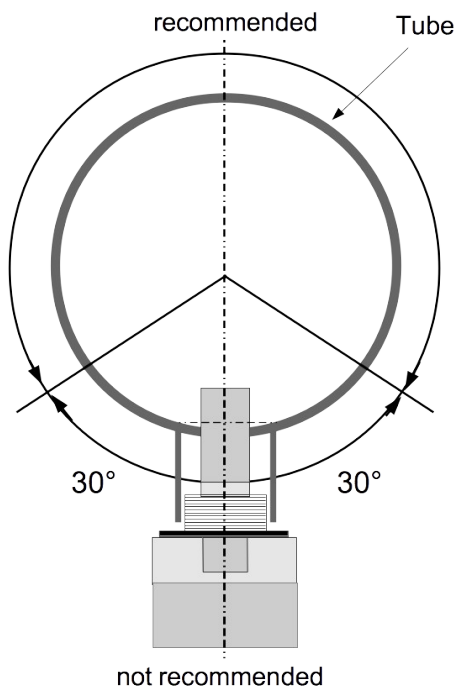
1. connect the sensor with the measurement chamber.
2. Connect the sensor and the measurement chamber with the fast connector.

### Installation of the sensor without measurement chamber



- Install the sensor only if the system is pressureless.
- Not less than 1/3 of the sensor tip should be inside of the pipe. For this please check the size of the nozzle.
- The inner thread has to be G 1/2".

### Remarks



Please install the sensor only in the recommended area like you can see in the picture. A upside down installation is not permitted. Please consider that the distance to the vertical level must be >30°.

### Removal of the sensor

To remove the sensor unscrew the sensor from the measurement chamber or from the nozzle. Please observe that the system is pressureless when the sensor is removed.

### 7.3 Order information

Order no.	Description
S699 2170	S 217-0, dew point sensor, 4 ... 20 mA (2-wire), -50 ... +20 °C, G 1/2" thread, 50 bar, M8

S699 2173	S 217-3, dew point sensor, 4 ... 20 mA (2-wire), -20 ... +50 °C, G 1/2" thread, 50 bar, M8
S699 2174	S 217-4, dew point sensor, 4 ... 20 mA (3-wire), -20 ... +50 °C, G 1/2" thread, 50 bar, M8
S699 2175	S 217-5, dew point sensor, 4 ... 20 mA (3-wire), -50 ... +20 °C, G 1/2" thread, 50 bar, M8
S699 2176	S 217-6, dew point sensor, 4 ... 20 mA (2-wire), -60 ... +20 °C, G 1/2" thread, 50 bar, M8
S699 2177	S 217-7, dew point sensor, 4 ... 20 mA (3-wire), -60 ... +20 °C, G 1/2" thread, 50 bar, M8
A1390	S 217, customized measuring range
A1391	S 217, high pressure option 35 Mpa (350 bar)
A554 2005	Service kit for sensor configuration including software
A699 3491	Measuring chamber for easy installation in compressed air system up to 15 bar
A699 3493	Measuring chamber bypass type (in and out 6 mm hose connection)
C198 0002	Sinter cap, stainless steel

## 8. Maintenance

Please observe from time to time the sinter cap. If it appears to be dirty, it is recommended to replace it for this please contact the manufacturer.



### **ATTENTION!**

**Contaminated filters can lead to longer response time and to wrong measurements.**

## 9. Disposal or waste

Electronic devices are recyclable material and do not belong in the household waste.

The sensor, the accessories and its packings must be disposed according to your local statutory requirements. The dispose can also be carried by

the manufacturer of the product, for this please contact the manufacturer.

## 10. Warranty

SUTO provides a warranty for this product of 24 months covering the material and workmanship under the stated operating conditions from the date of delivery. Please report any findings immediately and within the warranty time. If faults occurring during the warranty time SUTO will repair or replace the defective unit, without charge for labour and material costs but there is a charge for other service such as transport and packing costs.

Excluded from this warranty is:

- Damage caused by:
  - Improper use and non-adherence to the instruction manual.
  - Use of unsuitable accessories.
  - External influences (e.g. damage caused by vibration, damage during transportation, excess heat or moisture).

The warranty is cancelled:

- If the user opens the measurement instrument without a direct request written in this instruction manual.
- If repairs or modifications are undertaken by third parties or unauthorised persons.
- If the serial number has been changed, damaged or removed.

Other claims, especially those for damage occurring outside the instrument are not included unless responsibility is legally binding.

Warranty repairs do not extend the period of warranty.



### **ATTENTION!**

**Batteries have a reduced warranty time of 12 month.**





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