INTRODUCTION DEW POINT MEASUREMENT

The measurement of pressure dew point in compressed air systems or gas distribution networks has become more important recently. Manufacturers world wide are getting aware of negative effects of having too much moisture in the air / gas pipes, as it can cause:

• Corrosion in the pipes
• Reduces lifespan of pneumatic parts
• Failures in actuators
• Contamination of compressed air system in general
• Unscheduled production stops.
• Incalculable additional production costs

Dryers used to remove moisture from gas, are not always performing as they intend to do, mostly caused by poor maintenance. Dew point measurement acts as an insurance system, monitoring the dryer performance and indicating alarms whenever values are out of valid ranges. As a result it provides:

• Fast responses to failures in compressed air drying through permanent monitoring of pressure dew point.
• Increase the lifespan of compressed air system and its components.
• Makes maintenance of the compressed air system more efficient.
• Ensures stable quality of products through less problems in operation of the system.

But dew point measurement is not only restricted to applications in air / gas drying. There are many more processes in industry where a well monitored dew point is crucial for the overall process and the quality of the products.

Applications for dew point monitoring:
• Plastic injection and blow moulding
• High voltage switch gears and transformers
• Spray painting process
• Bottle filling
• Medical gases
• Pipeline drying

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S 220 DEW POINT SENSOR (-100ºC ... 0ºC)

Features

- Very fast response time ensures safe and reliable indication whenever dew points are out of valid ranges
- Small size makes it ideal for dryer installations
- Measures dew points down to -100℃
- SUTO QCM sensor technology
- Version with integrated pressure measurement
- Various output versions available: 1 x 4 ... 20 mA, 2 x 4 ... 20 mA, RS-485 (Modbus), 4 ... 20 mA loop powered
- IP65 casing provides robust protection in rough industrial environment
- Can be installed directly into dryers through G 1/2" thread
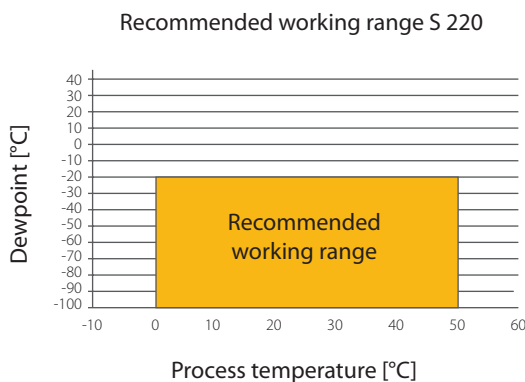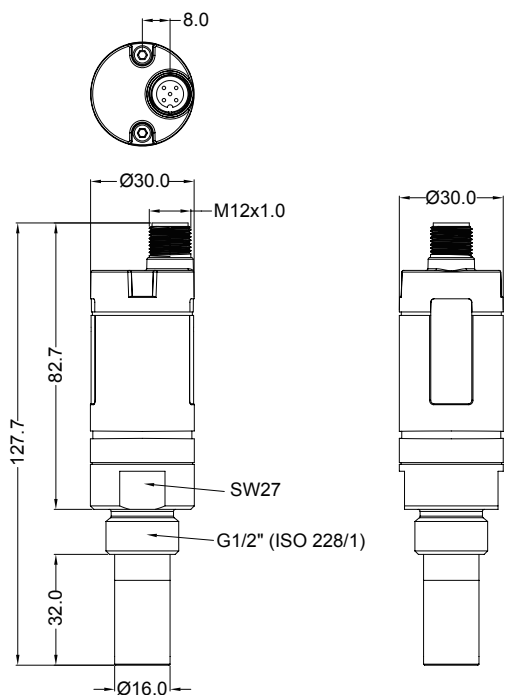- High accuracy of ±2℃ dew point
- M12 connector

The SUTO dew point sensor S 220 provides reliable and long term stable dew point monitoring in industrial applications.
SUTO is using a new sensor technology which has superior signals at very low moisture levels thus providing reliable measurements down to -100℃.

A stainless steel sinter filter with pore sizes below 30 μm protects the sensor from particles. It's designed for applications where very low moisture levels needs to be detected.

The measured dew point is output through a 4-20 mA signal (3-wire or loop powered). Sensor parameters such as analogue output scaling, physical units, can be easily changed by using SUTO service kit.

Technical data S 220

Measurement range	Dew point Temperature Pressure	-100℃ ... 0℃ -30℃ ... +70℃ -0.1 ... 1.6 MPa
Dew point sensor	QCM	
Temperature sensor	Pt100	
Pressure sensor	Piezo resistive type	
Accuracy	Dew point Temperature Pressure	±2℃ 0.3℃ 0.05 bar
Operating Pressure	-0.1 ... 1.6 MPa	
Operating Temperature (Medium)	-30℃ ... +70℃	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	-80℃-> -20℃: 20 sec -20℃-> -80℃: 180 sec	
Ambient Temperature	0℃ ... +50℃	
Ambient Humidity	0 ... 100%rH	
Supply Voltage	12 ... 30 VDC	
Current consumption (model depending)	30 mA @ 24 VDC 3-Wire 20 mA @ 24 VDC 2-Wire	
Output signals (model depending)	4 ... 20 mA 3-Wire 4 ... 20 mA 2-Wire Modbus RTU	
Electrical connection	M12, 5 pole	
Process connection	G 1/2" thread (ISO 228/1) Stainless steel 1.4301 (SUS 304)	
Casing material	Zinc alloy	
Classification	IP65	
EMC	IEC 61326-1	
Approval	-	
Sensor protection	Sinter filter/perforated cap	
Transport Temperature	-30℃ ... +70℃	
Storage Temperature	-20℃ ... +50℃	
Weight	204 g	

Recommended working range S 220

Recommended working range

Dewpoint [℃] / Process temperature [℃]

S 220 DEW POINT SENSOR (-100ºC ... 0ºC)

Dimensions

Sensor Technology

The innovative QCM Sensor Technology used by SUTO measures moisture changes in parts per billion range.

Stated accuracy under following conditions:

- Ambient temperature 23°C ±3°C
- Process temperature 23°C ±3°C
- Ambient humidity < 95%, no condensation
- Airflow > 2 l/min at sensor tip

Order no.	Description
S699 0220-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, 1 x 4 ... 20 mA
S699 0221-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, 2 x 4 ... 20 mA, dew point and temperature
S699 0222-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, RS-485 (Modbus)
S699 0223-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, incl. pressure, 2 x 4 ... 20 mA, dew point and pressure
S699 0224-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, incl. pressure, RS-485 (Modbus)
S699 0225-X	S 220, dew point sensor, -100°C ... 0°C, G 1/2" thread, 16 bar, loop powered 4 ... 20 mA
A554 2005	Service kit for sensor configuration including software
A699 3491	Measuring chamber for easy installation in compressed air system up to 1.5 MPa
A699 3493	Measuring chamber bypass type (in and out 6 mm hose connection)
R699 3696	Sensor calibration
C190 0193	Perforated filter cap, aluminum
C198 0008	Sinter cap, diameter 16 mm, stainless steel, 30 µm pore size

X: Select the desired sensor protection cap by adding A or B at the end of the order number.
 A: stainless steel sinter filter, pore size < 30 µm (standard)
 B: Perforated sensor cap (standard, requires a prefilter 0.1 µm)
 Example: S699 0220-B

☞ Find more informationn about accessories for dew point sensors at the end of this catalog

DEW POINT MEASUREMENT

Features

- Dew point sensor for low dew point applications down to -50°C
- Long term stability
- IP65 casing provides robust protection in rough industrial environment
- Fast response time ensures safe and reliable indication whenever dew points are out of valid ranges
- Can be installed directly into dryers through G ½" thread
- High accuracy of ±2°C dew point

The SUTO dew point sensor S 212 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 makes it an ideal choice for dew point measurements in desiccant dryers.

The measured dew point is output via a 4-20 mA signal output. The compact size of the sensor makes it an ideal choice for installations in tight environments. Sensor parameters such as analogue output scaling, alarm values, units, etc, can be easily changed by using SUTO service kit. This kit is used to connect the sensor to a PC for configuration changes.

Connection of S 212 with measuring chamber to compressed air

Technical data S 212	
Measuring range	Dew point -50°C ... +20°C Temperature -30°C ... +70°C
Dew point sensor	Polymer
Temperature sensor	Pt100
Pressure sensor	N/A
Accuracy	Dew point ±2°C Temperature 0.3°C
Operating Pressure	-0.1 ... 5.0 MPa
Operating Temperature (Medium)	-30°C ... +70°C
Measured gases (Medium)	Non-corrosive gases
Response Time t90 (@ 4 l/min)	-50°C -> 0°C: 20 sec 0°C -> -50°C: 180 sec
Ambient Temperature	-20°C ... +50°C
Ambient Humidity	0 ... 100 %rH
Supply Voltage	12 ... 30 VDC
Current consumption	30 mA @ 24 VDC
Output signals	4 ... 20 mA 3-Wire
Electrical connection	M12, 5 pole
Process connection	G 1/2" thread (ISO 228/1) Stainless steal 1.4301 (SUS 304)
Casing material	Zinc alloy
Classification	IP65
EMC	IEC 61326-1
Approval	-
Sensor protection	Sinter filter
Transport Temperature	-30°C ... +70°C
Storage Temperature	-20°C ... +50°C
Weight	195 g

Order no.	Description
S699 0412	S 212, dew point sensor including M12 connector (straight type), -50°C ... +20°C, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

DEW POINT MEASUREMENT

S 215 DEW POINT SENSOR (-20ºC ... +50ºC)

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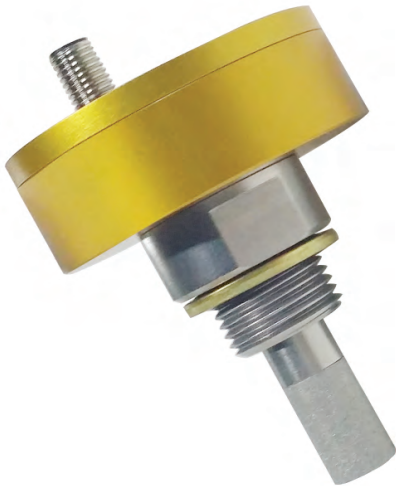Dew point sensor ideal for refrigerant dryers. Loop powered 4 ... 20 mA output.

Features

- Affordable dew point sensor for mid range applications such as refrigerant dryer monitoring
- Long term stability
- IP65 casing provides robust protection in rough industrial environment
- Fast response time ensures safe and reliable indication whenever dew points are out of valid ranges
- Can be installed directly into dryers through G ½" thread
- High accuracy of ±2°C dew point

The SUTO dew point sensor S 215 provides reliable and long term stable dew point monitoring in industrial applications. With this model dew point measurement in refrigerant dryers becomes affordable and can replace traditional temperature measurement which often couldn't tell the real dew point.

S 215 outputs the measurement value through the loop powered 4 -20 mA signal.

Technical data S 215		
Measuring range	Dew point Temperature	-20°C ... +50°C -30°C ... +70°C
Dew point sensor	Polymer	
Temperature sensor	NTC	
Pressure sensor	N/A	
Accuracy	Dew point Temperature	±2°C 0.3°C
Operating Pressure	-0.1 ... 5.0 MPa	
Operating Temperature (Medium)	-30°C ... +70°C	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	-20°C -> +20°C: 20 sec +10°C -> -20°C: 60 sec	
Ambient Temperature	-20°C ... +50°C	
Ambient Humidity	0 ... 100 %rH	
Supply Voltage	12 ... 30 VDC	
Current consumption	20 mA @ 24 VDC	
Output signals	4 ... 20 mA 2-Wire	
Electrical connection	M12, 5 pole	
Process connection	G 1/2" thread (ISO 228/1) Stainless steal 1.4301 (SUS 304)	
Casing material	Zinc alloy	
Classification	IP65	
EMC	IEC 61326-1	
Approval	-	
Sensor protection	Sinter filter	
Transport Temperature	-30°C ... +70°C	
Storage Temperature	-20°C ... +50°C	
Weight	195 g	

Order no.	Description
S699 0415	S 215, dew point sensor including M12 connector (straight type), -20°C ... +50°C, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

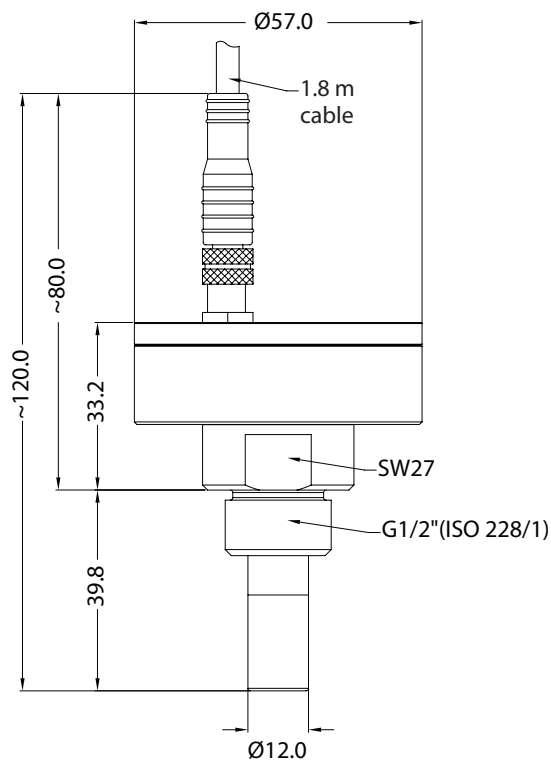# .SUTO

S 217-OEM DEW POINT SENSOR (-50ºC ... +50ºC)

Features

- Small size makes it ideal for dryer installations
- Measures dew points down to -50℃
- 2-wire or 3-wire output
- 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℃ dew point
- Withstands condensation
- M8 / M12 connector and cable with open wires

The SUTO dew point sensor S 217 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. Through our new sensor technology paired with a compact casing, S 217-OEM can be offered at very attractive prices. This allows applications in smaller dryers and point of use dryers using a more energy efficient dew point control.

The measured dew point is output via the loop-powered 4 ... 20 mA signal or 3 wire 4 ... 20 mA output. Sensor parameters such as analogue output scaling, physical units, can be set ex factory.

Stated accuracy under following conditions:

- Ambient temperature 23℃ ±3℃
- Process temperature 23℃ ±3℃
- Ambient humidity < 95%, no condensation
- Airflow > 1 l/min at sensor tip

Technical data S 217		
Measurement range (model depending)	Dew point	-50℃ ... +20℃ -20℃ ... +50℃
	Temperature	-30℃ ... +70℃
Dew point sensor	Polymer	
Temperature sensor	NTC	
Pressure sensor	N/A	
Accuracy	Dew point	±2℃
	Temperature	0.3℃
Operating Pressure	-0.1 ... 5.0 MPa	
Operating Temperature (Medium)	-30℃ ... +70℃	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	-40℃ -> -20℃: 20 sec 0℃ -> -40℃: 120 sec	
Ambient Temperature	-20℃ ... +5℃	
Ambient Humidity	0 ... 100 %rH	
Supply Voltage	12 ... 30 VDC	
Current consumption (model depending)	30 mA @ 24 VDC 3-Wire 20 mA @ 24 VDC 2-Wire	
Output signals (model depending)	4 ... 20 mA 3-Wire 4 ... 20 mA 2-Wire	
Electrical connection	Cable, 1.8 m, open end wire, M8 connector, 4 pole	
Process connection	G 1/2" thread (ISO 228/1) Stainless steel 1.4301 (SUS 304)	
Casing material	Aluminium alloy	
Classification	IP65	
EMC	IEC 61326-1	
Approval	-	
Sensor protection	Sinter filter	
Transport Temperature	-30℃ ... +70℃	
Storage Temperature	-20℃ ... +50℃	
Weight	198 g	

S 217-OEM DEW POINT SENSOR (-50ºC ... +50ºC)

Dimensions

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
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

S 230/231 DEW POINT SENSOR (-100ºC ... +20ºC)

Features / Benefits

- Dew point sensor with optional ATEX, IECEx approval
- Dual sensor technology for high accuracy of 2°C over the whole range from –100°C ... +20°C
- Two outputs available: 4 ... 20 mA, RS-485 (Modbus RTU).
- IP65 casing provides robust protection in rough industrial environment

The SUTO S 230/231 dew point sensors provide reliable, long term stable dew point monitoring in industrial or hazardous applications. SUTO's unique dual sensor technology optimizes sensor sensitivity and accuracy by automatically selecting the ideal sensor type for the situation.

The S 230/231 comes ready to use and simple to install with your choice of 4-20mA or Modbus RTU (RS485) outputs. If required, parameters can quickly and easily be configured through the SUTO service software.

Accuracy tested under following reference conditions:

- Ambient temperature 23°C ±3°C
- Process temperature 23°C ±3°C
- Ambient humidity < 95%, no condensation
- Airflow > 2 l/min at sensor tip

Technical data S 230/231		
Measurement range (model depending)	Dew point	-100° ... +20°C (S 230) -50° ... +20°C (S 231)
	Temperature	-30° ... +70°C
Dew point sensor	QCM & Polymer	
Temperature sensor	NTC	
Pressure sensor	N/A	
Accuracy	Dew point	±2°C
	Temperature	0.3°C
Operating Pressure (model depending)	-0.1 ... 1.6 MPa (S 230) -0.1 ... 35 MPa (S 231)	
Operating Temperature (Medium)	-30° ... +70°C	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	< 240 sec -20°C-> -60°C < 30 sec -60°C-> -20°C	
Ambient Temperature	-20°... +50°C	
Ambient Humidity	0 ... 100 %rH	
Supply Voltage	12 ... 30 VDC	
Current consumption	40 mA @ 24 VDC	
Output signals	4 ... 20 mA (isolated) Modbus RTU	
Electrical connection	Screw terminals	
Process connection	G 1/2" thread (ISO 228/1) Stainless steal 1.4301 (SUS 304)	
Casing material	Aluminium alloy	
Classification	IP67	
EMC	IEC 61326-1	
Approval	Ex db[ib] IIC T4 Gb	
Sensor protection	Sinter filter	
Transport Temperature	-30° ... +70°C	
Storage Temperature	-20° ... +50°C	
Weight	728 g	

S 230/231 DEW POINT SENSOR (-100ºC ... +20ºC)

Dimensions
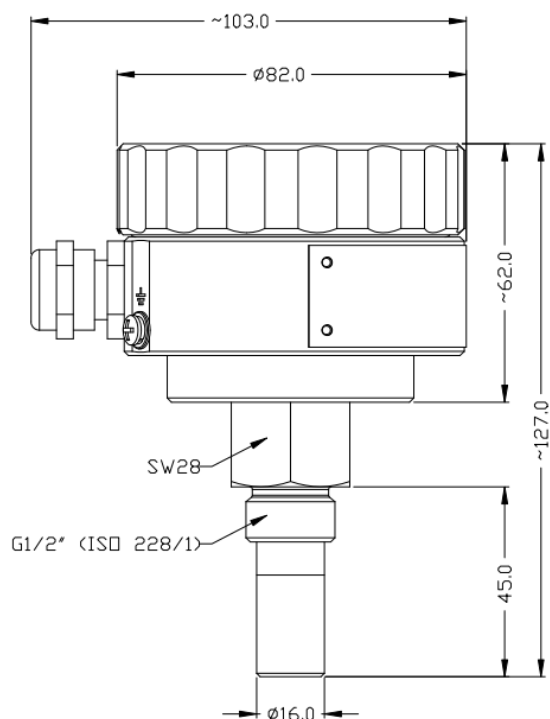
Accessories

Measuring chamber with inlet / outlet valve and compression fitting for gas supply

Cable connection

Screw terminals with signal labels inside the connection chamber

Order no.	Description
S699 0230	S 230, dew point sensor, -100°C ... +20°C, G 1/2" thread, 1.5 MPa, 1 x 4 ... 20 mA, RS-485 (Modbus)
S699 0231	S 231, dew point sensor, -50°C ... +20°C, G 1/2" thread, 35 MPa, 1 x 4 ... 20 mA, RS-485 (Modbus)
A1480	S 230/231: Ex option ATEX (to be ordered for hazardous environment)
A1481	S 230/231: Ex option IECEx (to be ordered for hazardous environment)
A1482	S 230/231: Ex option GB3836 (to be ordered for hazardous environment)
Accessories	
A554 2301	Measuring chamber with inlet / outlet valve and compression fittings for gas supply, 1.5 MPa
A554 2302	Measuring chamber with insertion type sampling tubes (for applications where purge losses are not acceptable), 1.5 MPa

S 201 DEW POINT SENSOR WITH DISPLAY AND ALARM (-60ºC … +20ºC)

The SUTO dew point sensor S 201 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.

The measured dew point is output via a 4-20 mA signal output. The integrated display shows online measurement values and alarm status. One alarm can be programmed which will activate a relay.

S 201 features a complete dew point meter with sensor, display, keyboard and alarm.

Sensor parameters such as analogue output scaling, alarm values, units, etc, can be easily changed by using SUTO service kit. This kit is used to connect the sensor to a PC for configuration changes.

Alarm adjustment at dew point sensor

Features

- Dew point sensor for low dew point applications down to -60°C
- Long term stability
- Graphic display
- Relay output
- IP65 casing provides robust protection in rough industrial environment
- Fast response time ensures safe and reliable indication whenever dew points are out of valid ranges
- Can be installed directly into dryers through G ½" thread
- High accuracy of ±2°C dew point

Technical data S 200/201		
Measuring range	Dew point	-60°C ... +20°C
	Temperature	-30°C ... +70°C
Dew point sensor	Polymer	
Temperature sensor	Pt100	
Pressure sensor	N/A	
Accuracy	Dew point ±2°C	
	Temperature 0.3°C	
Operating Pressure	-0.1 ... 5.0 MPa	
Operating Temperature (Medium)	-30°C ... +70°C	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	-60°C -> -20°C: 20 sec	
	0°C -> -60°C: 180 sec	
Ambient Temperature	-20°C ... +50°C	
Ambient Humidity	0 ... 90 %rH	
Supply Voltage	12 ... 30 VDC	
Current consumption	80 mA @ 24 VDC	
Output signals	4 ... 20 mA 3-Wire	
	Alarm Relay (NO 32 VDC / 500 mA)	
Electrical connection	2 x M12, 5 pole	
Process connection	G 1/2" thread (ISO 228/1)	
	Stainless steal 1.4301 (SUS 304)	
Casing material	PC + ABS	
Classification	IP65	
EMC	IEC 61326-1	
Approval	-	
Sensor protection	Sinter filter	
Transport Temperature	-30°C ... +70°C	
Storage Temperature	-20°C ... +50°C	
Weight	226 g	

Order no.	Description
S699 0406	S 201, dew point sensor including 2 x M12 connectors (straight type) -60°C ... +20°C, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

S 305 DEW POINT MONITOR (-50ºC ... +20ºC / -20ºC ... +50ºC) .SUTO

Features

- 2 models: -50°C ... +20°C and -20°C ... +50°C
- Plug & Play (complete solution)
- Compressed air supply through 6 mm Quick-Connect
- Power supply: 100 ... 240 VAC or 24 VDC
- Wall or panel mountable
- Accuracy of ±2°C
- IP65 casing provides robust protection in rough industrial environment
- 4 ... 20 mA output to PLC or SCADA system
- Pre– and Main-Alarm programmable:
        - Optical: red blinking display
        - 2 relay outputs

Refrigeration dryers are the most commonly used dryer type in compressed air system around the world. If the required drying is not achieved, the impact of wet air can be serious: Rust in the pipes, failures of machines, and a negative impact on product quality.

SUTO offers with the S 305 a measuring device for dew point monitoring that kicks in alarm indications when drying values are not within the desired range.

The All-In-One dew point monitor serves as a measuring and display device. The connection to the compressed air network is via a 6-mm quick connect and corresponding connecting hose. The entire measuring unit is integrated together with the display in a rugged housing (IP65) and is available both as a panel variant or as a wall-mounted housing. Two alarm levels can be programmed (pre and main alarm), serving an optical indications or separate relay outputs. The dew point meter allows a simple and inexpensive dew point monitoring.

Stated accuracy under following conditions:
- Ambient temperature 23°C ±3°C
- Process temperature 23°C ±3°C
- Ambient humidity < 95%, no condensation
- Airflow > 1 l/min at sensor tip

Technical data S 305		
Measuring range (model depending)	Dew point	-50°C ... +20°C -20°C ... +50°C
Dew point sensor	Polymer	
Temperature sensor	NTC	
Pressure sensor	N/A	
Accuracy	Dew point Temperature	±2°C 0.3°C
Operating Pressure	0.3 ... 1.5 Mpa	
Operating Temperature (Medium)	-30°C ... +70°C	
Measured gases (Medium)	Non-corrosive gases	
Response Time t90 (@ 4 l/min)	-50°C -> -20°C: 20 sec 0°C -> -40°C: 120 sec	
Ambient Temperature	-10°C ... +40°C	
Ambient Humidity	0 ... 90 %rH	
Supply Voltage (model depending)	100 ... 240 VAC 24 VDC	
Current consumption (model depending)	40 mA @ 220 VAC 120 mA @ 24 VDC	
Output signals	4 ... 20 mA 3-Wire	
Electrical connection	Screw terminals	
Process connection	6 mm quick connector Aluminium alloy	
Casing material	ABS	
Classification	IP65	
EMC	IEC 61326-1	
Approval	-	
Sensor protection	Sinter fiter	
Transport Temperature	-30°C ... +70°C	
Storage Temperature	0°C ... +40°C	
Weight	520 g	

.SUTO S 305 DEW POINT MONITOR (-50ºC ... +20ºC / -20ºC ... +50ºC)

Dimensions
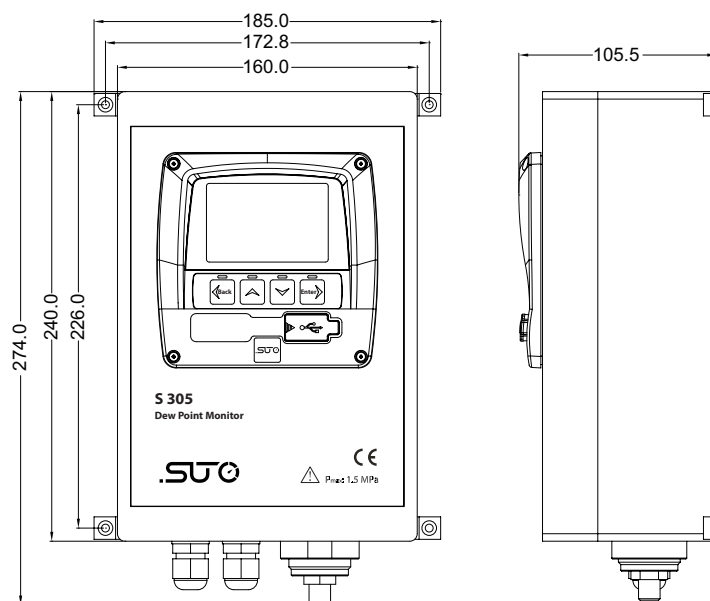
Alarm adjustment at dew point sensor

Order no.	Description
D699 3050	S 305, dew point monitor, -20°C ... +50°C, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 100 ... 240 VAC, 2 relay outputs
D699 3051	S 305, dew point monitor, -20°C ... +50°C, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 24VDC, 2 relay outputs
D699 3052	S 305, dew point monitor, -50°C ... +20°C, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 100 ... 240 VAC, 2 relay outputs
D699 3053	S 305, dew point monitor, -50°C ... +20°C, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 24VDC, 2 relay outputs
C198 0005	Filter cap, stainless steel, 30 µm pore size
A554 0024	Alarm unit, 100 ... 240 VAC, red light and buzzer alarm, wall mountable (unit is using the relay outputs of S 305 to trigger the alarm)
A554 0025	Alarm unit, 100 ... 240 VAC, red light and buzzer alarm, mounted at S 305 casing (unit is using the relay outputs of S 305 to trigger the alarm)
A553 0106	Power cable with mains plug, 1.8 m

S 505 PORTABLE
DEW POINT METER (-100ºC ... +50ºC)

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- Fast response time
- Wide measuring range
- Accurate

Features

- Measures dew point, temperature and pressure (all in one instrument)
- 3 sensor solutions available:
    Q: -100℃ ... -30℃ sensor for trace moisture applications
    P: -50℃ ... +50℃ sensor for standard applications
    Q+P: covering the full range of dew point measurement
- Modern color touch screen interface
- Data logger, USB interface, wireless connection to portable printer
- Measuring / parking chamber for fast sensor response
- Application software included

Technical data S 505		
Measuring range	Sensor Q:	-100℃ ... -30℃
	Sensor P:	-50℃ ... +50℃
	Pressure:	-0.1 ... 1.5 MPa
	Temperature:	-30℃ ... +50℃
Accuracy	Dew point:	±2℃ dew point
	Pressure*:	±0.005 MPa
	Temperature:	±0.3℃
	(Stated uncertainty at: Ambient / process temperature of 23℃ ±3℃ and ambient humidity of < 90%, no condensation)	
Measured gas	Non-corrosive gases	
Ambient conditions	Ambient temp.:	0℃ ... +50℃
	Storage temp.:	-40℃ ... +65℃
	Ambient humidity:	< 90%, no condensation
	EMC:	IEC / EN 61326
Response time t90	-50℃ -> -10℃: < 10 seconds	
	-10℃ -> -50℃: < 5 minutes	
Charger / battery	USB charger:	5VDC, 2A
	Battery life:	6 h
	Charging time:	4 h
Data logger	Memory size:	4 GB
	Medium:	SD card

With the S 505 SUTO has combined next generation measurement technology with modern user interface design. The experienced user knows that dew point measurement also requires the measurement of line pressure (according to ISO 8573), since dew point is pressure dependent. With the S 505 the line pressure is measured in combination with the dew point, so the user can be confident that the calculation is accurate and free from human error.

S 505 comes with two sensor units: Sensor Q uses the new QCM technology which provides fast and accurate measurement results at dew points below –30℃ down to –100℃. Sensor P is for high moisture applications from -50° ... +50℃ where the SUTO polymer sensor is more suitable. Both sensors can be easily exchanged.

Additional features unique to the S 505 include:

1. A modern, state of the art graphical user interface with touch screen functions for ease of operation similar to modern smart phones.

2. The data logger can record as many as 100 million values which are stored on a flash card. The card can be removed for fast transportation of the recorded information to your PC, or alternatively the information can be transferred or read via USB .

3. Using a portable printer on-site printouts can be created showing the measured values, location and date/time. Of course these values can be stored as well for report generation in your office.

4. S 505 comes in a robust transport casing including measuring chamber, battery charger, USB cable and a Teflon® hose allowing for quick connection to the compressed air system and immediate measurements.

* at least 0.3 MPa is needed for the measuring chamber supplied with the instrument. For low pressure measurings below 0.3 MPa choose the optional bypass measuring chamber A699 3501

Portable wireless printer HDT 312

Transport case: compact + safe

![SUTO logo]

Details

Easy sensor module change through slide-in module with auto-connect

USB port   SD card slot

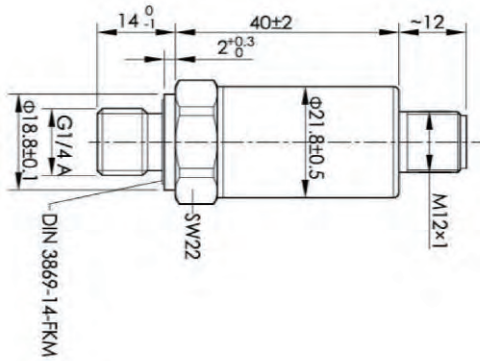Unique measuring / parking chamber for fast sensor response

Teflon hose with quick connect

Order no.	Description
P600 0505	**S 505-1 Set consisting of:** - Handheld meter with data logger and S4A software - Sensor unit P -50°C ... +50°C - Parking/Measuring chamber - Teflon hose and quick connector - USB charger with USB cable - Transport case
P600 0506	**S 505-2 Set consisting of:** - Handheld meter with data logger and S4A software - Sensor unit Q -100°C ... -30°C - Parking/Measuring chamber - Teflon hose and quick connector - USB charger with USB cable - Transport case
P600 0507	**S 505-3 Set consisting of:** - Handheld meter with data logger and S4A software - Sensor unit P -50°C ... +50°C - Sensor unit Q -100°C ... -30°C - Parking / Measuring chamber - Teflon hose and quick connector - USB charger with USB cable - Transport case S 505, L400 x W300 x H130 mm
Options / accessories	
A554 0020	SUTO mobile printer HDT 312
A554 0021	Paper roll for HDT 312 (contains 3 rolls)
A699 3501	Parking/Measuring chamber by-pass type

DEW POINT MEASUREMENT

PRESSURE SENSORS

.SUTⒶ

Features

- High accuracy and affordable industrial pressure sensor
- Excellent anti-interference capability (EMC, EMI)
- Salt-spray, temperature and humidity tested
- IP67 protection
- 4-20 mA loop powered and Modbus RTU type available

Dimensions

Technical data	4 ... 20mA	Modbus
Supply voltage	24VDC (12 ... 32VDC)	
Accuracy	±0.5% F.S. (typ.)	0.25% F.S.
Media temperature	-30°C ... +100°C	-40°C ... +85°C
Output signal	4 ... 20 mA, 2-wire	Modbus RTU
Casing material	Stainless steel	
Protection	IP67	IP65
Mechanical connection	G 1/4" A (ISO 228/1)	
Electrical connection	M12 connector, 4 pins	
Storage temperature	-40°C ... 100°C	-40°C ... +85°C
Operating temperature	-30°C ... +80°C	-40°C ... +85°C
Repeatability	< ± 0.25% F.S.	0.1% F.S.
Proof pressure	2 x F.S.	
Vibration resistance	IEC 60068-2-6 (5 ... 2000Hz, 10g)	
Shock resistance	IEC 60068-2-27 (50g, 11ms)	
EMC proof	IEC 61000-6-2/3/4	

Modbus version:
Baud rate: 19,200
Framing/Parity/Stop: 8, N, 1
Device address: 1 (default), please specify on order!

Applications

- Industrial equipment
- Hydraulic systems
- Pneumatic systems
- Industrial engines
- HVAC/R equipment
- Spraying systems
- Pumps
- Cooling systems

Order no.	Description
Stationary	
S694 3557	Pressure sensor, 1.6 MPa, 4 ... 20 mA loop powered, M12 connector, 5 m cable, open ends
S694 3558	Pressure sensor, 4.0 MPa, 4 ... 20 mA loop powered, M12 connector, 5 m cable, open ends
S694 2559	Pressure sensor, 1.6 MPa, Modbus RTU, M12 connector
A553 0105	Sensor cable 10 m, with M12 connector, open wires, 4 pole
R200 0030	Pressure sensor calibration 1.6 MPa type, at 3 points

Remarks: other ranges on request

TEMPERATURE SENSORS

Installation

- Temperature measurement in liquids, gases and vapors
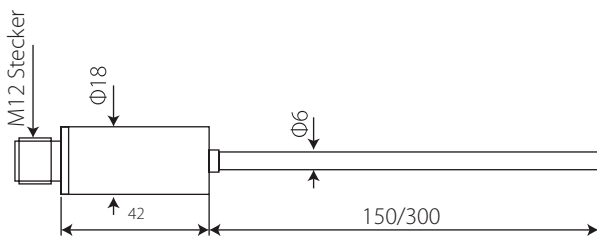- Inlet / outlet temperature of dryers
- Outlet temperature of compressors

Features

- Easy installation in compressed air systems
- 4 ... 20 mA transmitter

Temperature transmitter 4 ... 20 mA

Dimensions

M12 Stecker
Φ18
Φ6
42
150/300

Technical data	
Measuring range	-50°C ... +200°C
Sensor	Pt1000, class A
Supply	16 ... 24 VDC
Output signal	4 ... 20 mA, 2 wire loop powered
Scaling	4 mA —> -50°C 20 mA —> +200°C
Accuracy	0.5% of reading + 0.2% FS
Connection type	M 12 connector
Tube material	Stainless steel 1.4571
Sensor diameter	6 mm
Sensor tube length	150 mm, 300 mm
Classification	IP67
Ambient temperature (electronics)	-40°C ... +90°C

Order no.	Description
S693 0003	Temperature transmitter, -50°C ... +200°C, 4 ... 20 mA loop powered, 6 x 150 mm sensor tube
S693 0004	Temperature transmitter, -50°C ... +200°C, 4 ... 20 mA loop powered, 6 x 300 mm sensor tube
A554 6003	Compressor fitting 6mm, G1/2", PTFE ring, 0.6 MPa
A554 6004	Compressor fitting 6mm, G1/2", metal ring, 1.6 MPa
A553 0104	Sensor cable 5 m, with M12 connector, open wires, AWG24 (0.2 mm^2)

FURTHER USEFUL SENSORS AND SYSTEMS

CURRENT SENSOR

.SUTO

Features

- Easy installation
- Wide measuring range
- Accurate current sensing
- 4-20 mA output signal

Applications

- Current sensing at compressors for load / unload analyzes
- Current sensing for power / energy measurement
- Evaluation of machine operation hours

SUTO current clamp sensor is an AC RMS current sensor composed of a flexible active part (Rogowski coil model) connected to a compact digital converter, capable of measuring the current carried on a power conductor up to a value of 3000 A AC.

The digital converter supplies an output of 4-20 mA DC in linear proportion to the measured current.

Technical data	
Measuring range	30 ... 3000 A AC
Fundamental frequency	40 ... 70 Hz
Output signal	4 ... 20 mA DC 0 A AC = 4 mA DC 1000 A AC = 20 mA DC
Maximum output	21,6 mA DC
Load impedance	≤ 300 Ω
Accuracy	0.5% of reading + 0.2% of range
Power supply	10 VDC to 32 VDC
Current consumption	≤ 30 mA
Clamp diameter	100 mm (1000 A) 150 mm (3000 A)
Maximum temperature of clamped cable	≤ +80°C
Protection rating	IP67
Service voltage	≤ 1000 CAT III, 600 V CAT IV

Position sensitivity

Conductor Position	Typical Error(%)
🔴	<0.5%
🔵	<0.8%
⚫	<1%

Order no.	Description
S554 0156	SUTO current clamp sensor, 1000A, 100 mm diameter, including connector to S 551
S554 0155	SUTO current clamp sensor, 1000A, 100 mm diameter, open wire ends
S554 0157	SUTO current clamp sensor, 3000 A, 150 mm diameter, including connector to S 551
S554 0158	SUTO current clamp sensor, 3000 A, 150 mm diameter, open wire ends

FURTHER USEFUL SENSORS AND SYSTEMS