Dew Point Meters

SUTO TECHNOLOGY AND SERVICES

AIR AND POWER CONSUMPTION
For system optimization

MACHINE & SYSTEM MONITORING
No straight pipe section required

PURITY MONITORING
To ensure Product quality

LEAKAGE MANAGEMENT
Cost saving in systems

DISPLAY & LOGGER TECHNOLOGY
Smart graphical, statistical analysis

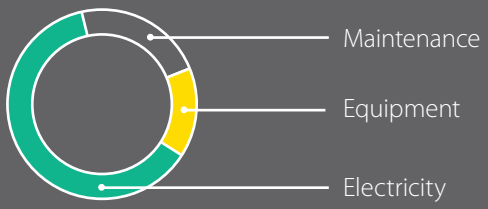
SUPPORT SERVICES AND CALIBRATION
For optimal performance

REDUCE COSTS BY IMPROVING PERFORMANCE

Quantitative measuring helps you to discover exactly where money can be saved. Some companies make the mistake of only measuring the energy consumption of the compressor while a smarter method is to measure the air consumption.

For example, a modern compressor converts ~90% of the electrical power into heat and only 10% into compressed air. This makes compressed air ten times more expensive than electricity. To assure the efficiency and effectiveness of a compressed air system, the measurement of flow is crucial.

Cost distribution in compressed air systems



WORLD-WIDE INDUSTRIAL SUPPORT SERVICES

SUTO is committed to the success of your business.
We offer world-wide service with our test and calibration labs in Germany, Hong Kong and China.
We are dedicated to technical expertise and precision in all of our products and services.

DEW POINT SENSOR (-100 ... 0 °C Td)
S220

Very fast response time —
ensures safe and reliable measurements

S220 FEATURES

COMPACT DESIGN
Makes it easy to fit into the application

PRECISE MEASUREMENT
Unique QCM sensor technology

LOW DEW POINT
Measures down to -100 °C Td

PRESSURE SENSOR
Integrated as option

S220 FEATURES AT A GLANCE

- Small size makes it ideal for dryer installations
- Measures dew points down to -100 °C Td
- 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 °C dew point
- M12 connector

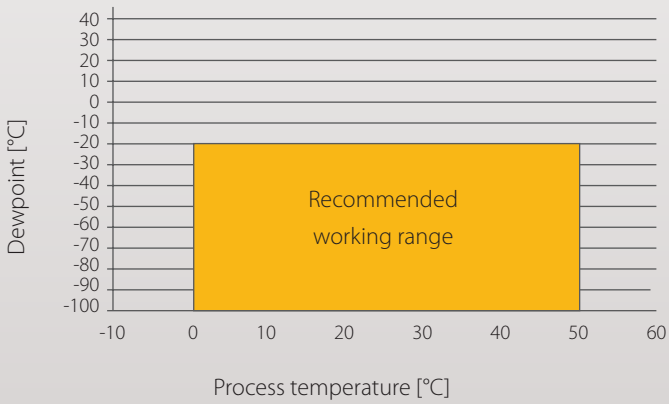
S220 SENSOR TECHNOLOGY

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

Recommended working range S220

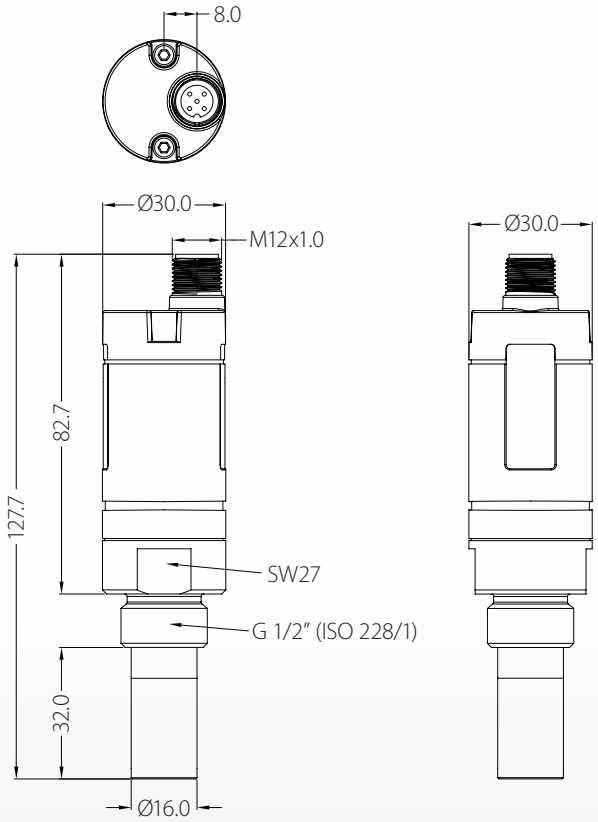


S220 TECHNICAL DATA

General Specifications	
Measurement range	Dew point -100 ... 0 °C Td Temperature -30 ... +70 °C Pressure -0.1 ... 1.6 MPa
Dew point sensor	QCM
Temperature sensor	Pt100
Pressure sensor	Piezo resistive type
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C Pressure 0.05 bar
Operating Pressure	-0.1 ... 1.6 MPa
Operating Temperature (Medium)	-30 ... +70 °C
Measured gases (Medium)	Air, Argon, O_2, N_2, CO_2*
Response Time t90 (@ 4 l/min)	-80 °C Td -> -20 °C Td = 20 sec -20 °C Td -> -80 °C Td =180 sec
Ambient Temperature	0 ... +50 °C
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 poles
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 °C
Storage Temperature	-20 ... +50 °C
Weight	204 g

* To support CO_2, the S220 must be configured ex-works or the SFA software must be used. SFA software can be downloaded from the SUTO website.

Dimensions



S220 BENEFITS

The SUTO dew point sensor S220 provides long term stable and reliable dew point measurements at very low dew points in industrial applications.

The sensor technology used in the sensor is developed by SUTO and offers superior measurement signals at very low moisture applications, allowing reliable measurements down to -100 °C.

The included sinter cap protects the sensor from dust and other particles, this ensures a stable measurement and low maintenance at the same time.

The measured sensor data is transmitted via different signals. Depending on the selected model multiple measurement values, like dew point and pressure can be output at the same time. The various analog output options or digital Modbus outputs make the S220 the prefect dew point sensor to fit into any low moisture application.

S220 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S220 DEW POINT SENSOR (-100 ... 0 °C Td)	
Order No.	**Description**
S699 0220-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, 1 x 4 ... 20 mA
S699 0221-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, 2 x 4 ... 20 mA, dew point and temperature
S699 0222-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, RS-485 (Modbus)
S699 0223-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, incl. pressure, 2 x 4 ... 20 mA, dew point and pressure
S699 0224-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, incl. pressure, RS-485 (Modbus)
S699 0225-X	S220, dew point sensor, -100 ... 0 °C Td, G 1/2" thread, 16 bar, loop powered 4 ... 20 mA
Accessories	
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

DEW POINT SENSOR (-50 ... +20 °C Td)
S212

Very fast response time —
ensures safe and reliable measurements

S212 FEATURES

COMPACT DESIGN
Makes it easy to fit into the application

PRECISE MEASUREMENT
Long term stable results

LOW DEW POINT
Measures down to -50 °C Td

ANALOG OUTPUT
4 ... 20 mA 3-wire

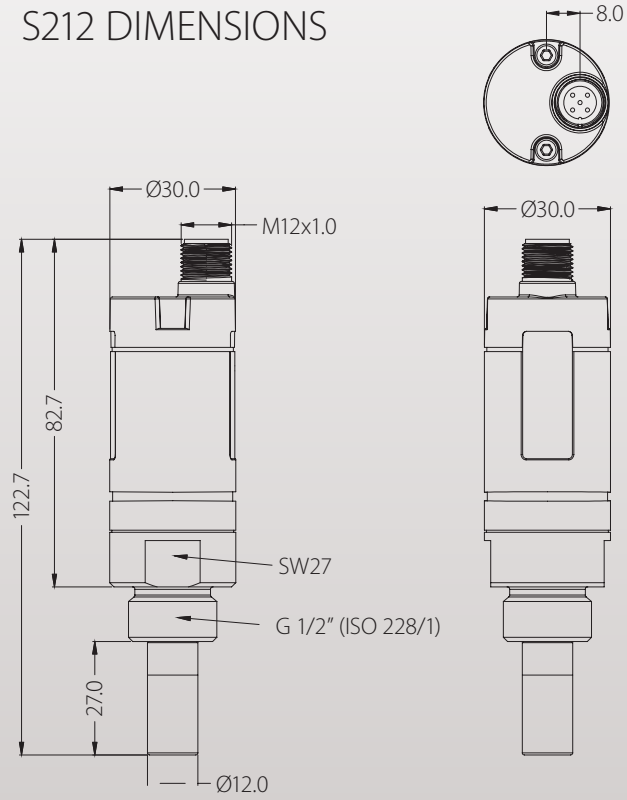
S212 BENEFITS

- Dew point sensor for low dew point applications down to -50 °C Td
- 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 S212 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.

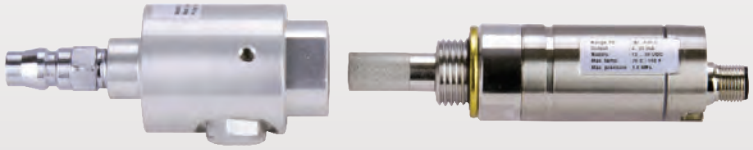
S212 DIMENSIONS



S212 TECHNICAL DATA

General Specifications	
Measuring range	Dew point -50 ... +20 °C Td Temperature -30 ... +70 °C
Dew point sensor	Polymer
Temperature sensor	Pt100
Pressure sensor	N/A
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C
Operating Pressure	-0.1 ... 5.0 MPa
Operating Temperature (Medium)	-30 ... +70 °C
Measured gases (Medium)	Air, Argon, O_2, N_2, CO_2*
Response Time t90 (@ 4 l/min)	-50 °C Td -> 0 °C Td = 20 sec 0 °C Td -> -50 °C Td = 180 sec
Ambient Temperature	-20 ... +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 poles
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 ... +70 °C
Storage Temperature	-20 ... +50 °C
Weight	195 g

* Please note for CO_2 the measurement range is limited to -40 °C Td.



Connection of S212 with measuring chamber to compressed air

S212 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S212 DEW POINT SENSOR (-50 ... +20 °C Td)	
Order No.	**Description**
S699 0412	S212, dew point sensor including M12 connector (straight type), -50 ... +20 °C Td, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

DEW POINT SENSOR (-20 ... +50 °C Td)
S215

Ensure your dry air — **monitor the dew point**

S215 FEATURES

COMPACT DESIGN
Makes it easy to fit into the application

PRECISE MEASUREMENT
Long term stable results

DEW POINT
Measures down to -20 °C Td

ANALOG OUTPUT
4 ... 20 mA loop powered

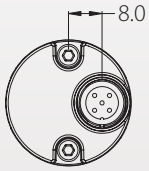
The SUTO dew point sensor S215 provides reliable and long term stable dew point monitoring in industrial applications. With this model dew point measurement in refrigerant dryers becomes affordable and can replace traditional temperature measurement which often couldn't tell the real dew point.

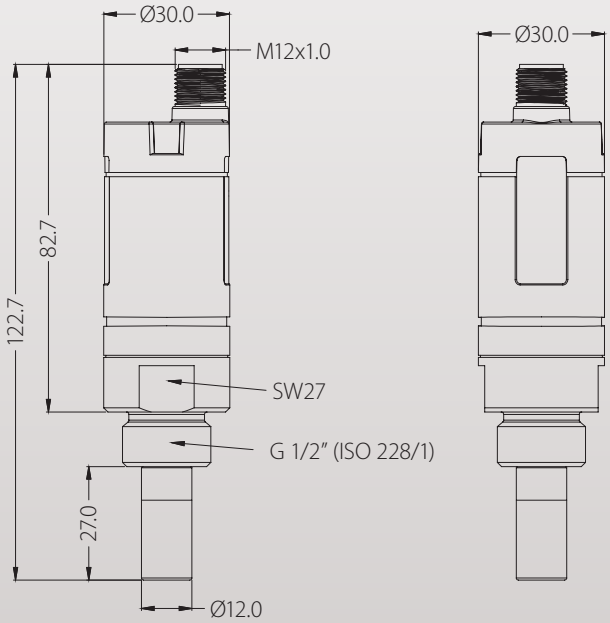
S215 outputs the measurement value through the loop powered 4 -20 mA signal.

S215 BENEFITS

- 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

S215 DIMENSIONS





S215 TECHNICAL DATA

General Specifications	
Measuring range	Dew point -20 ... +50 °C Td Temperature -30 ... +70 °C
Dew point sensor	Polymer
Temperature sensor	NTC
Pressure sensor	N/A
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C
Operating Pressure	-0.1 ... 5.0 MPa
Operating Temperature (Medium)	-30 ... +70 °C
Measured gases (Medium)	Air, Argon, O_2, N_2, CO_2
Response Time t90 (@ 4 l/min)	-20 °C Td -> +20 °C Td = 20 sec +10 °C Td -> -20 °C Td = 60 sec
Ambient Temperature	-20 ... +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 poles
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 ... +70 °C
Storage Temperature	-20 ... +50 °C
Weight	195 g

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

S215 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S215 DEW POINT SENSOR (-20 ... +50 °C Td)	
Order No.	**Description**
S699 0415	S215, dew point sensor including M12 connector (straight type), -20 ... +50 °C Td, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

DEW POINT SENSOR (-100 ... +20 °C Td)
S230 / S231

Unique dual sensor system —
Outstanding accuracy and wide range

S230 / S231 FEATURES

ATEX, IECE X AND GB EX APPROVAL

PRECISE MEASUREMENT
Unique QCM sensor technology

LOW DEW POINT
Measures down to -100 °C Td

DUAL SENSOR SYSTEM
High precision over the whole range

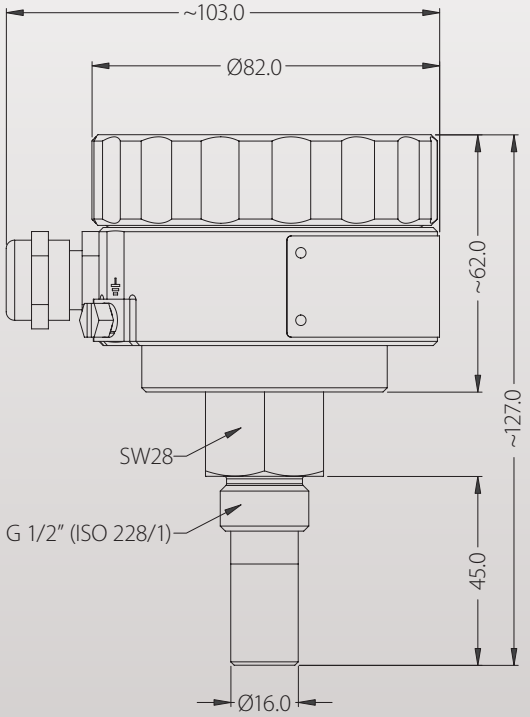
The SUTO S230 / S231 dew point sensors provide reliable, long term stable dew point monitoring in industrial or hazardous applications. SUTO's unique dual sensor technology optimizes sensor sensitivity and accuracy by automatically selecting the ideal sensor type for the situation.

The S230 / S231 comes ready to use and simple to install with your choice of 4-20 mA or Modbus/RTU (RS485) outputs. If required, parameters can quickly and easily be configured through the SUTO service software.

S230 / S231 BENEFITS

- Dew point sensor with optional ATEX, IECEx approval
- Dual sensor technology for high accuracy of 2 °C Td over the whole range from –100 ... +20 °C Td
- Two outputs available: 4 ... 20 mA, RS-485 (Modbus/RTU).
- IP65 casing provides robust protection in rough industrial environment
- G 1/2" Process connection

S230 / S231 DIMENSIONS



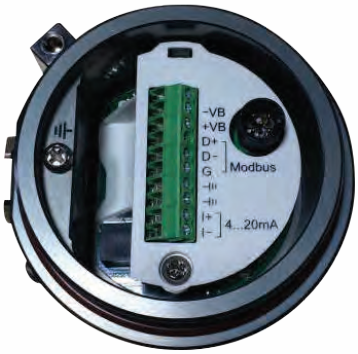
S230 / S231 TECHNICAL DATA

General Specifications	
Measurement range (model depending)	Dew point -100 ... +20 °C Td (S230) -50 ... +20 °C Td (S231) Temperature -30 ... +70 °C
Dew point sensor	QCM & Polymer
Temperature sensor	NTC
Pressure sensor	N/A
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C
Operating Pressure (model depending)	-0.1 ... 1.6 MPa (S230) -0.1 ... 35 MPa (S231)
Operating Temperature (Medium)	0 ... +50 °C
Measured gases (Medium)	Non-corrosive gases
Response Time t90 (@ 4 l/min)	-20 °C Td -> -60 °C Td = < 240 sec -60 °C Td -> -20 °C Td = < 30 sec
Ambient Temperature	0 ... +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	Aluminum 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

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

Cable connection



Screw terminals with signal labels inside the connection chamber

Accessories

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

S230 / S231 ORDERING

Please use the following tables to assist in placing your order with our sales staff.

S230 DEW POINT SENSOR (-100 ... +20 °C Td)	
Order No.	**Description**
S699 0230	Dew point sensor, -100 ... +20 °C Td, G 1/2" thread, 1.6 MPa, 1 x 4 ... 20 mA, RS-485 (Modbus)
A1480	Ex option ATEX (to be ordered for hazardous environment)
A1481	Ex option IECEx (to be ordered for hazardous environment)
A1482	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

S231 DEW POINT SENSOR (-50 ... +20 °C Td)	
Order No.	**Description**
S699 0231	Dew point sensor, -50 ... +20 °C Td, G 1/2" thread, 35 MPa, 1 x 4 ... 20 mA, RS-485 (Modbus)
A1480	Ex option ATEX (to be ordered for hazardous environment)
A1481	Ex option IECEx (to be ordered for hazardous environment)
A1482	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

DEW POINT SENSOR WITH DISPLAY AND ALARM (-60 ... +20 °C Td) S201

Your process under control —
fast and easy dew point monitoring

S201 FEATURES

INTEGRATED DISPLAY
For on site values

PRECISE MEASUREMENT
long term stable sensor element

DEW POINT
Measures down to -60 °C Td

ALARM RELAY
React if your dew point changes

S201 BENEFITS

- Dew point sensor for low dew point applications down to -60 °C Td
- Long term stability
- Graphic display
- Relay output for alarms
- 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

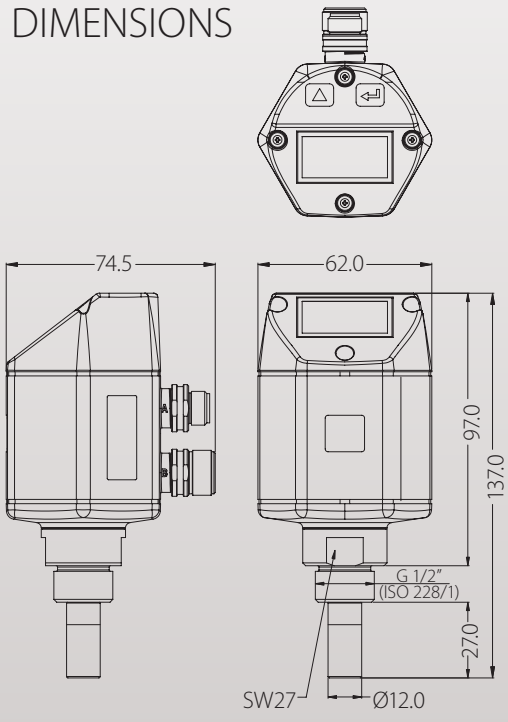
The SUTO dew point sensor S201 provides reliable and long term stable dew point monitoring in industrial applications. The newly developed sensor features improved signal and stability in demanding industrial applications.

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.

S201 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.

S201 DIMENSIONS



S201 TECHNICAL DATA

General Specifications	
Measuring range	Dew point -60 ... +20 °C Td Temperature -30 ... +70 °C
Dew point sensor	Polymer
Temperature sensor	Pt100
Pressure sensor	N/A
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C
Operating Pressure	-0.1 ... 5.0 MPa
Operating Temperature (Medium)	-30 ... +70 °C
Measured gases (Medium)	Non-corrosive gases
Response Time t90 (@ 4 l/min)	-60 °C Td -> -20 °C Td = 20 sec 0 °C Td -> -60 °C Td = 180 sec
Ambient Temperature	-20 ... +50 °C
Ambient Humidity	0 ... 100 % 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 poles
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 ... +70 °C
Storage Temperature	-20 ... +50 °C
Weight	226 g

Alarm adjustment at dew point sensor

S201 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S201 DEW POINT SENSOR WITH DISPLAY AND ALARM (-60 ... +20 °C Td)	
Order No.	**Description**
S699 0406	S201, dew point sensor including 2 x M12 connectors (straight type) -60 ... +20 °C Td, G ½" thread
A699 4003	High pressure option 35 MPa (350 bar)

DEW POINT MONITOR (-50 ... +20 °C Td / -20 ... +50 °C Td) S305

Know your air quality —
Plug & Play

S305 FEATURES

PLUG & PLAY
Simply connect your compressed air

DEW POINT MEASUREMENT
-50 ... +50 °C Td depending on the model

PRECISE MEASUREMENT
± 2 °C Td accuracy

ALARM INDICATION
With internal relays or alarm units

S305 FEATURES AT A GLANCE

- 2 models: -50 ... +20 °C Td and -20 ... +50 °C Td
- 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 Td
- 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

S305 BENEFITS

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 S305 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.

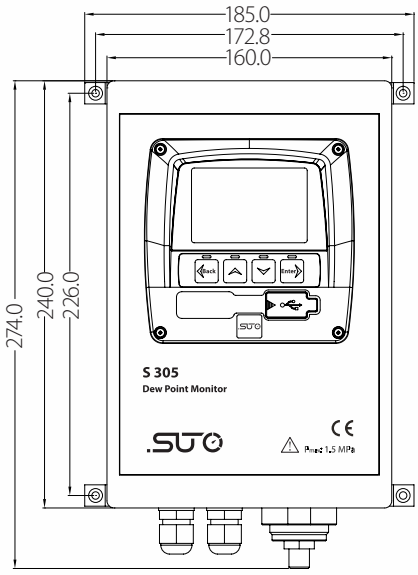
S305 TECHNICAL DATA

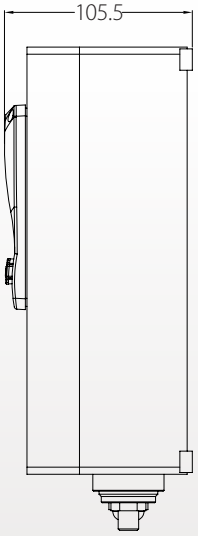
General Specifications	
Measuring range (model depending)	Dew point -50 ... +20 °C Td -20... +50 °C Td
Dew point sensor	Polymer
Temperature sensor	NTC
Pressure sensor	N/A
Accuracy	Dew point ±2 °C Td Temperature 0.3 °C
Operating Pressure	0.3 ... 1.5 Mpa
Operating Temperature (Medium)	-30 ... +70 °C
Measured gases (Medium)	Non-corrosive gases
Response Time t90 (@ 4 l/min)	-50 °C Td -> -20 °C Td = 20 sec 0 °C Td -> -40 °C Td = 120 sec
Ambient Temperature	-10 ... +40 °C
Ambient Humidity	0 ... 100 % 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
Casing material	ABS, Aluminium alloy
Classification	IP65
EMC	IEC 61326-1
Approval	-
Sensor protection	Sinter filter
Transport Temperature	-30 ... +70 °C
Storage Temperature	0 ... +40 °C
Weight	520 g

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

S305 DIMENSIONS





optional alarm unit mounted on the housing

S305 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S305 DEW POINT MONITOR (-50 ... +20 °C Td / -20 ... +50 °C Td)	
Order No.	**Description**
D699 3050	S305, dew point monitor, -20 ... +50 °C Td, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 100 ... 240 VAC, 2 relay outputs
D699 3051	S305, dew point monitor, -20 ... +50 °C Td, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 24 VDC, 2 relay outputs
D699 3052	S305, dew point monitor, -50 ... +20 °C Td, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 100 ... 240 VAC, 2 relay outputs
D699 3053	S305, dew point monitor, -50 ... +20 °C Td, 6 mm quick connector, 15 bar, 1 x 4 ... 20 mA, 24 VDC, 2 relay outputs
Accessories	
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 S305 to trigger the alarm)
A554 0025	Alarm unit, 100 ... 240 VAC, red light and buzzer alarm, mounted at S305 casing (unit is using the relay outputs of S305 to trigger the alarm)
A553 0106	Power cable with mains plug, 1.8 m

BREATHING APPARATUS FILLING STATION MONITOR S307

Made for your application —
designed to fit your needs

S307 FEATURES

COMPACT DESIGN
Makes it easy to fit into the application

SIGNAL INPUTS
Digital and analog input

EASY TO USE
User-friendly design

ALARM RELAY
React if your humidity changes

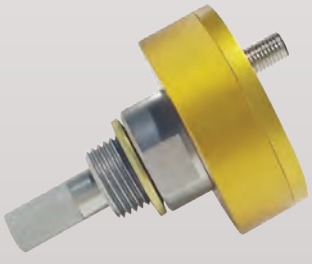
S307 BENEFITS

- Monitors filling pressure up to 35 MPa
- Monitors humidity of filling air
- Monitors CO level of filling air (option)
- Relay output to stop compressor
- Counts total operating hours and filter operating hours
- Power supply: 100 ... 240 VAC
- Panel mountable (optional wall mountable)
- Customizable: Compressor company logo and service information
- IP65 casing provides robust protection in rough environment
- Pressure, humidity and CO Alarm settings
- Easy sensor replacement by service people

The filling station monitor S307 is used to monitor and control breathing apparatus filling stations in regards of pressure, humidity and CO level. Through programmed alarm settings the display indicates reached limits and activates relays to stop the compressor.

The pressure and humidity sensor are installed into the high pressure pipe. The CO sensor requires a pressure reduction to ambient conditions. The display unit is available in the panel or wall mountable version. Under regular operating conditions the optional CO sensor has a life time of 2 years. Sensors can be easily replaced by service personnel.

The display can be customized in regards of startup screen (company logo) and service contacts.



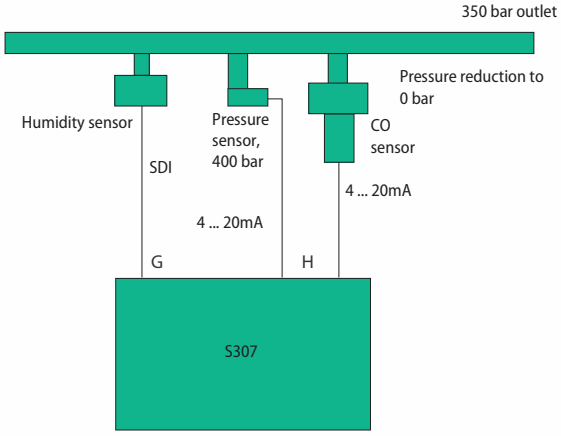
S217-HP

CO Sensor

S307 TECHNICAL DATA

General Specifications	
Response time t90	< 10 sec
Output signal	2 x relay, 240 V / 5 A
Sensor input signals	2 × 4 ... 20 mA and 1 × SDI
Cable glands	4 cable glands for supply and sensor cables
Casing	Panel size: 92 x 92 mm Wall mount size: 118 x 115 x 98 mm Material: ABS
Classification	IP65
EMC	According to IEC 61326-1
Measuring range	Pressure: 0 ... 400 bar Humidity: 0 ... 100 mg/m³ CO: 0.1 ... 20 ppm
Accuracy	Pressure: 1 % F.S. Humidity: 2 % F.S. CO: 1 ppm
Sensor life time	CO sensor: 2 years
Power supply:	100 ... 240 AC / 10 VA
Medium temperature	-20 ... 50 °C
Ambient conditions	0 ... 50 °C
Transport temperature	-30 ... +70 °C
Max. pressure	35 MPa

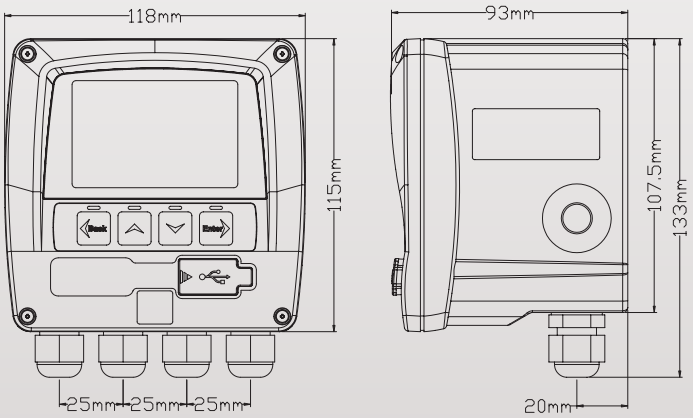
S307 SYSTEM OVERVIEW

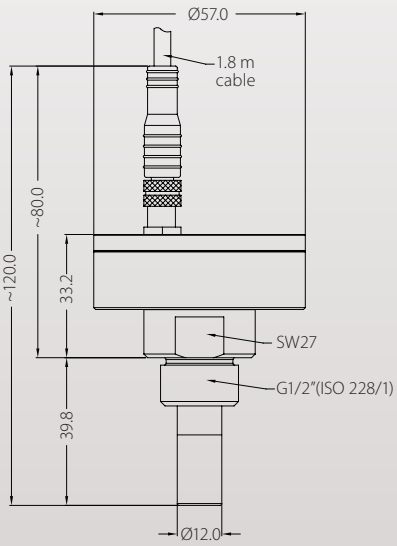


S307 PANEL INSTALLATION

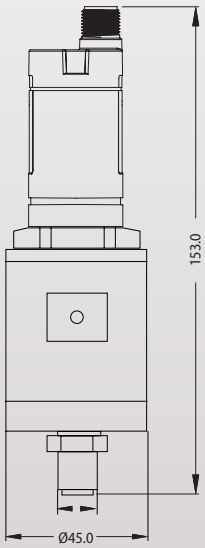
The instrument can be mounted into the compressor casing. The back cover protects against water and dust.

S307 DIMENSIONS





S217-HP



CO Sensor

S307 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S307 Breathing Apparatus Filling Station Monitor	
Order No.	**Description**
D500 3070	S307, filling station monitor, panel version, 100 ... 240 VAC, 2 relay outputs
0660 0153	S217-HP, humidity sensor, 4 ... 20 mA (3-wire), 0 ... 100 mg/m^3, G 1/2'' thread, 350 bar, M8
S604 3071	CO sensor, 0 ... 20 ppm, 4 ... 20 mA, 24 VDC
S694 3560	Pressure sensor, 400 bar, 4 ... 20 mA, 24 VDC, G 1/4" thread
0660 0153-X	Replacement service for the S217-HP humidity sensor
S365 3071	CO sensor cell, 0 ... 20 ppm
A1645	Wall mountable casing with 4 cable glands
A1649	Back cover casing for panel version, 4 cable glands

PORTABLE DEW POINT METER (-100 ... +50 °C Td) S505

Ultra portable —
all in one single handheld

S505 FEATURES

DATA LOGGER
To save and print your measurements

PORTABLE UNIT
Handheld unit within a rugged case

LOW DEW POINT
Measures down to -100 °C Td

PRESSURE SENSOR
Always integrated

S505 BENEFITS

- Measures dew point, temperature and pressure (all in one instrument)
- 3 sensor solutions available:
  - Q : -100 ... -30 °C Td sensor for trace moisture applications
  - P : -50 ... +50 °C Td 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

With the S505 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 S505 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.

S505 comes with two sensor units: Sensor Q uses the new QCM technology which provides fast and accurate measurement results at dew points below –30 °C Td down to –100 °C Td. Sensor P is for high moisture applications from -50 ... +50 °C Td where the SUTO polymer sensor is more suitable. Both sensors can be easily exchanged.

Additional features unique to the S505 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. S505 comes in a robust transport casing including measuring chamber, battery charger, USB cable and a PTFE hose allowing for quick connection to the compressed air system and immediate measurements.

S505 TECHNICAL DATA

General Specifications		
Measuring range	Sensor Q: Sensor P: Pressure*: Temperature:	-100 ... -30 °C Td -50 ... +50 °C Td -0.1 ... 1.5 MPa -30 ... +50 °C
Accuracy	Dew point: Pressure: Temperature:	±2 °C Td ±0.005 MPa ±0.3 °C
	(Stated uncertainty at: Ambient / process temperature of 23 °C ±3 °C and ambient humidity of < 95 % rH, no condensation)	
Measured gas	Non-corrosive gases	
Ambient conditions	Ambient temp.: Storage temp.: Ambient humidity: EMC:	0 ... +50 °C -40 ... +65 °C 0 ... 80 % rH, no condensation IEC / EN 61326
Response time t90	-50 °C Td -> -10 °C Td = < 10 seconds -10 °C Td -> -50 °C Td = < 5 minutes	
Charger / battery	USB charger: Battery life: Charging time:	5VDC, 2A 6 h 4 h
Data logger	Memory size: Medium:	4 GB SD card

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

Option: wireless printer used to print the measurement results on site. Perfect solution for quick audits.

The included transport case protects the measurement instrument. At the same time it holds all accessories.

Detail views

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

USB port SD card slot

Unique measuring / parking chamber for fast sensor response

PTFE hose with quick-connect

S505 ORDERING

Please use the following table to assist in placing your order with our sales staff.

S505 PORTABLE DEW POINT METER (-100 ... +50 °C Td)	
Order No.	**Description**
P600 0505	S505-1 Set consisting of: - Handheld meter with data logger and S4A software - Sensor unit P -50 ... +50 °C Td - Parking/Measuring chamber - PTFE hose and quick connector - USB charger with USB cable - Transport case
P600 0506	S505-2 Set consisting of: - Handheld meter with data logger and S4A software - Sensor unit Q -100 ... -30 °C Td - Parking/Measuring chamber - PTFE hose and quick connector - USB charger with USB cable - Transport case
P600 0507	S505-3 Set consisting of: - Handheld meter with data logger and S4A software - Sensor unit P -50 ... +50 °C Td - Sensor unit Q -100 ... -30 °C Td - Parking / Measuring chamber - PTFE hose and quick connector - USB charger with USB cable - Transport case S505, L400 x W300 x H130 mm
Options / accessories	
A554 0020	SUTO mobile printer for printouts on site

DEW POINT SENSORS
S211 / S215 / S220

COMPACT DESIGN
Makes it easy to fit into the application

Very fast response time — **ensures safe and reliable measurements**

DEW POINT SENSOR FEATURES

COMPACT DESIGN
Makes it easy to fit into the application

PRECISE MEASUREMENT
± 2 °C Td Accuracy

SIGNAL OUTPUT
4 … 20 mA Modbus/RTU

DISPLAY OPTION
For on-site values

PRESSURE SENSOR
integrated as option

AIR QUALITY
ISO-8573 Monitors humidity

S211 FEATURES

FOR DESICCANT DRIERS
Measures down to -60 °C Td

S215 FEATURES

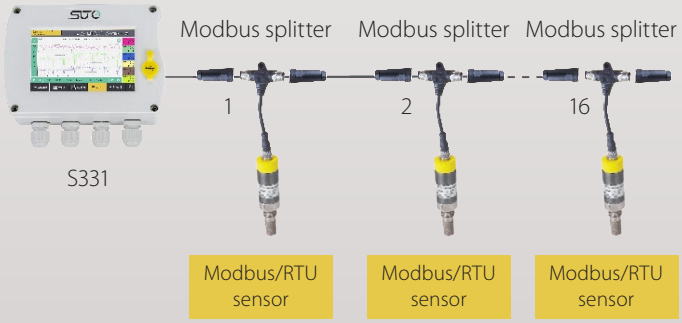
FOR FRIDGE DRIERS
Measures down to -20 °C Td

S220 FEATURES

HIGH TECH APPLICATIONS
QCM + Polymer
-100 … 20 °C Td CD

DUAL SENSOR SYSTEM
High precision over the whole range

MODBUS SENSOR NETWORK



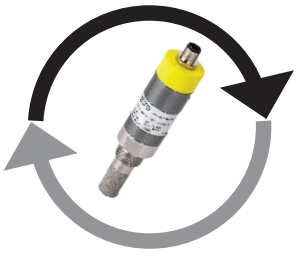
The Modbus/RTU bus allows to connect several sensors to a single bus line via Daisy-Chain.

For example up to 16 sensors to a S331

DEW POINT SENSOR BENEFITS

- Compact size makes them ideal for dryer installations.
- Optional display for on-site values. Display can be rotated by 340 ° to fit your needs.
- User friendly signal outputs:
  2-wire analog 4… 20 mA or 3-wire analog 4...20 mA + Modbus/RTU
- IP65 casing provides robust protection.
- Low maintenance costs due to stable and reliable measurements which increase calibration intervals.
- Measured values available in several units:
  °C Td • g/m³ • mg/m³ • ppmv • g/kg (@ reference pressure) • % RH
  and more, please ask our support for other measurement units.

The exchange calibration service eliminates down time and enables users to have a seamless record of their dew point measurements.
The user receives in advance a calibrated sensor unit with calibration certificate and the same sensor settings. The onsite sensor is then switched against the calibrated one and returned to the supplier.



DISPLAY OPTION

The OLED display directly mounted on the sensor provides on-site real time values. The display can be easily rotated by 340 ° to fit your application.

SENSOR PROTECTION

The stainless steel sinter filter cap protects the sensor from dust and other impurities.
At the same time it offer fast response times and reliable measurement results.

ROBUST MATERIALS

The main body is made from high class aluminum alloy with a soft finish.

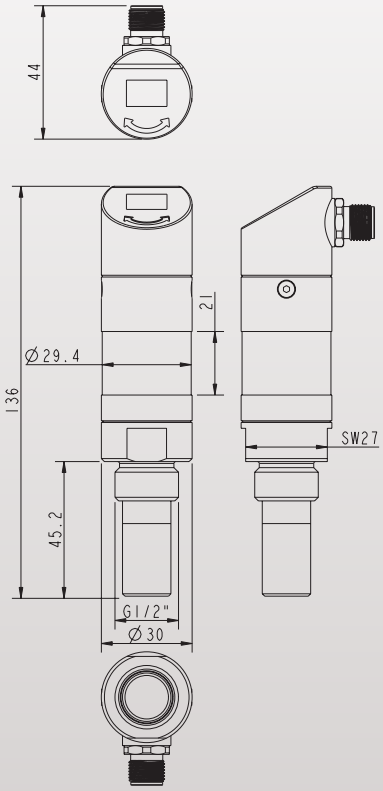
The process connection is a 1.4301 (SUS 304) stainless steel connection, made to last forever.

Top cover made from aluminum at the same quality as the main body.

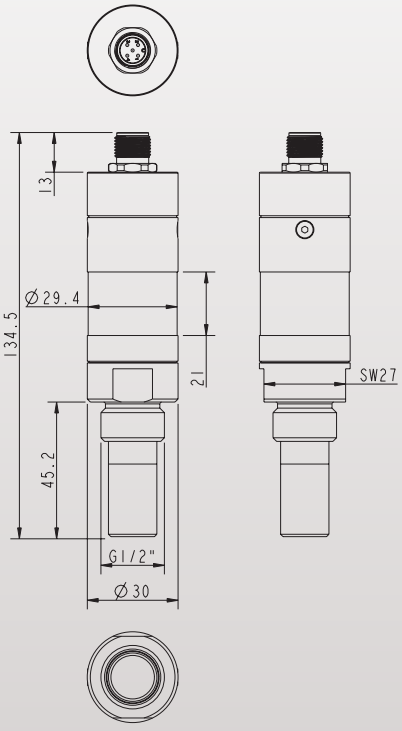
The optional display cover is made from robust Polycarbonate with ABS reinforcement to withstand the rough environment.

DIMENSIONS

WITH DISPLAY



WITHOUT DISPLAY



UNIQUE SENSOR ELEMENTS

Our QCM sensor is the result of years of high-tech research and development. The sensor was especially designed for low dew point applications where other sensor types fail.

The combination of QCM and the well known Polymer sensor makes the S220 the worlds first model to measure accurate over the whole range, from -100 °C Td up to +20 °C Td by switching automatically between the two sensor elements as needed.

By fitting additionally a pressure sensor into the measurement unit, SUTO is combining 4 sensor elements (Polymer, QCM, Pt100, pressure) into a single dew point sensor.

TECHNICAL DATA

General Specifications		
Process connection	G 1/2" (ISO 228/1), stainless steel 1.4301 (SUS 304)	
Operating conditions	Medium Temp.: -30 ... +70 °C / Ambient Temp. : 0 ... +50 °C / Ambient Humidity: 0 ... 100 % rH	
Supply voltage	15 ... 30 VDC	
Materials	Casing: Aluminum alloy / Process thread: Stainless steel 1.4301 (SUS 304) / Display cover: PC + ABS	
Classification / Approval	IP65 / CE	
Sensor protection	Sinter filter (stainless steel)	
Transport & Storage	Transport Temperature: -30 ... + 70 °C / Storage Temperature: -20 ... + 50 °C	
Weight	180 g	
Measured gases (Medium)	Air, Argon, O_2, N_2, CO_2*	
Output Signal	4 ... 20 mA 2-wire, 4 ... 20 mA 3-wire + Modbus/RTU	
Current consumption	2-wire: 4 ... 20 mA 3-wire: 40 mA @ 24 VDC 3-wire with display: 50 mA @ 24 VDC	
Accuracy	Dew point: +/- 1 °C Td (0 ... 20 °C Td) +/- 2 °C Td (-60 ... 0 °C Td / +20 ... +50 °C Td) +/- 3 °C Td (-100 ... -60 °C Td)	Temperature: +/- 0.3 °C Pressure: 0.5% FS
Sensor types	Temperature sensor: Pt100 / Pressure sensor: Piezo resistive type	
Display option	0.66" OLED display, indicates the measured value and unit	

Model Specifications	S215	S211	S220
Measurement Range	Dew point: -20 ... +50 °C Td Temperature: -30 ... +70 °C Pressure: 0 ... 1.6 MPa	Dew point: -60 ... +20 °C Td Temperature: -30 ... +70 °C Pressure: 0 ... 1.6 MPa	Dew point: -100 ... +20 °C Td Temperature: -30 ... +70 °C Pressure: 0 ... 1.6 MPa
Dew point sensor	Polymer	Polymer	Polymer + QCM
Operating Pressure	-0.1 ... 1.6 MPa -0.1 ... 35.0 MPa optional	-0.1 ... 1.6 MPa -0.1 ... 35.0 MPa optional	-0.1 ... 1.6 MPa

* CO2 medium:

If the S211 is used in CO_2 the range is limited to -40 °C Td

The S220 must be set to CO_2 ex works or by using the SFA Service Software + Service Kit (please state at the order if S220 will be used in CO_2)

USEFUL ACCESSORIES

Measuring chamber for easy installation through quick coupling

By-pass measuring chamber with 6 mm hose connections as in- and outlet

High pressure measuring chamber for applications up to 35.0 MPa

M12 Sensor cable with open ends
5 m or 10 m

DEW POINT SENSOR ORDERING

Please use the following tables to assist in placing your order with our sales staff.

Visit our website or e-mail us:
www.suto-itec.com
sales@suto-itec.com

Dew point sensor with 2-wire analog output		
Order No.	**Code**	**Description**
S699 1215	**S1215**	S215, Dew point sensor, -20 ... +50 °C Td, -0.1 ... 1.6 MPa, 2-wire 4 ... 20 mA output
S699 1211	**S1211**	S211, Dew point sensor, -60 ... +20 °C Td, -0.1 ... 1.6 MPa, 2-wire 4 ... 20 mA output
S699 1220	**S1220**	S220, Dew point sensor, -100 ... +20 °C Td, -0.1 ... 1.6 MPa, 2-wire 4 ... 20 mA output
Operating Pressure		
	A	Standard pressure range -0.1 ... 1.6 MPa
A1381	**B**	High pressure range -0.1 ... 35.0 MPa (for S211 & S215 only)

Dew point sensor with 3-wire analog output and SDI		
Order No.	**Code**	**Description**
S699 2215	**S2215**	S2215, Dew point sensor, -20 ... +50 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA
S699 2211	**S2211**	S1211, Dew point sensor, -60 ... +20 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA
S699 2220	**S2220**	S2220, Dew point sensor, -100 ... +20 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA
Operating Pressure		
	A	Standard pressure range -0.1 ... 1.6 MPa
A1381	**B**	High pressure range -0.1 ... 35.0 MPa (for S211 & S215 only)
Display Option		
A1383	**A**	Without Display
A1384	**B**	With Display

Dew point sensor with 3-wire analog output and Modbus/RTU		
Order No.	**Code**	**Description**
S699 3215	**S3215**	S215, Dew point sensor, -20 ... +50 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA, Modbus/RTU*
S699 3211	**S3211**	S211, Dew point sensor, -60 ... +20 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA, Modbus/RTU*
S699 3220	**S3220**	S220, Dew point sensor, -100 ... +20 °C Td, -0.1 ... 1.6 MPa, 3-wire 4 ... 20 mA, Modbus/RTU*
Operating Pressure		
	A	Standard pressure range -0.1 ... 1.6 MPa
A1381	**B**	High pressure range -0.1 ... 35.0 MPa (for S211 & S215 only)
Pressure Measurement		
	A	Without pressure sensor
A1382	**B**	With pressure sensor, 0 ... 1.6 MPa (operating pressure is limited to max. 1.6 MPa)
Display Option		
A1383	**A**	Without Display
A1384	**B**	With Display

* Standard Modbus Settings:
Slave Address: last two digits of the serial number / Communication settings: 19200 baud, 8 / N / 1

If your applications needs other settings, please state it at the order or use the Service Kit to set the sensor on site

OUTPUT UNIT
The dew point sensor is available with different measurement units for dew point, humidity, temperature and pressure. Standard is: **Dew point = °C Td / Temperature = °C / Pressure = bar** If you would like to have a different unit as output, please specify it at the order or use the optional Service Kit with the Service Software to change the output unit. For example pressure in PSI or humidity in ppmv.

DEW POINT SENSOR ORDERING

ACCESSORIES	
Order No.	**Description**
A699 3491	Measuring chamber with quick connector, up to 1.5 MPa, 2 l/min purge @ 0.8 MPa
A699 3493	Measuring chamber by-pass, up to 1.5 MPa, 6 mm hose connection as in- and outlet
A699 3590	High pressure measuring chamber, up to 35.0 MPa, G 1/4" inner thread process connection
A553 0104	Sensor cable, 5 m , M12 connector, open end wires
A553 0105	Sensor cable, 10 m , M12 connector, open end wires

CALIBRATION	
Order No.	**Description**
R699 3396	Re-calibration dew point sensor, incl. certificate of calibration