SHAW
MOISTURE METERS

SDT-Ex
Intrinsically Safe Dewpoint Transmitter

Shaw Moisture Meters SDT-Ex is a compact, 3 wire, 4-20 mA dewpoint transmitter designed to meet the stringent demands of industrial applications.



The SDT-Ex is certified intrinsically safe to ATEX: Ex II 1 GD Ex ia IIC T4 Ga (-20 °C ≤ Ta ≤ +60 °C)
IECEx: Ex ia IIIC T_{200}135 °C Da (-20 °C ≤ Ta ≤ +60 °C) for use in hazardous areas using a signal isolator.



Incorporating advanced electronics, this dew point transmitter derives its power from a 7 - 28 V DC non-isolated power source and is configured to output a linear, isolated, 4 - 20 mA signal for distances up to 1,000 meters (3,280 ft).

Utilising the Ultra High Capacitance Shaw Moisture Sensor, various dewpoint ranges are available covering an overall range from -100 °C to +20 °C dewpoint. The 4 - 20 mA output is configurable in °C dewpoint, °F dewpoint, ppm(V), ppb(v), g/m³ and lb/MMSCF.

The unit is fully self-contained within a robust housing, providing weatherproof protection to IP66/NEMA 4X.

The SDT-Ex dewpoint transmitter is supplied ready to use, with a Certificate of Calibration traceable to National & International Humidity Standards at NPL, instruction manual and two metres (6.56 feet) of cable.

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Features

- 3 wire, 24 V, 4 - 20 mA dewpoint transmitter
- Intrinsically safe to ATEX and IECEx standards
  ATEX II 1 GD Ex ia IIC T4 Ga (-20 °C ≤ Ta ≤ +60 °C)
  IECEx Ex ia IIIC T_{200}135 °C Da (-20 °C ≤ Ta ≤ +60 °C)
- Overall range -100 °C to +20 °C dewpoint
- Output configurable in °C , °F dewpoint, ppm(V), ppb(v), g/m³ and lb/MMSCF
- Accuracy ± 2 °C (±3.6 °F) dewpoint
- Weatherproof rating IP66 – NEMA 4X
- Open/short circuit detection
- Linear 4 - 20 mA output signal
- Self-contained, robust and reliable
- Supplied with Certificate of Calibration traceable to National & International Humidity Standards at NPL

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Specifications

DEWPOINT SENSOR

- **Sensing Element**
  Shaw Ultra High Capacitance Aluminium Oxide Sensor
- **Ranges**
  Dewpoint = 0.1 °C/0.2 °F resolution

  ZD: -100 °C to +20 °C (-148 °F to +68 °F) dewpoint
  HD: -65 °C to +20 °C (-85 °F to +68 °F) dewpoint

  P (Purple):-100 to 0 °C (-148 to +32 °F) dewpoint, 0 - 6,000 ppm(V)
  S (Silver):-100 to -20 °C (-148 to -4 °F) dewpoint, 0 - 1,000 ppm(V)
  G (Grey): -80 to 0 °C (-112 to +32 °F) dewpoint, 0 - 6,000 ppm(V)
  R (Red): -80 to -20 °C (-112 to -4 °F) dewpoint, 0 - 1,000 ppm(V)
  B (Blue): -80 to +20 °C (-112 to +68 °F) dewpoint, 0 - 23,000 ppm(V)

MP:	0.1 to 100.0 ppm(V)	0.1 ppm resolution
LP:	0.01 to 10.00 ppm(V)	0.01 ppm resolution
GH:	0.01 to 10.00 g/m³	0.01 g/m³ resolution
LB:	0.1 to 100.0 lb/MMSCF	0.1 lb/MMSCF resolution

- **Intrinsic Safety Certification**
  ATEX and IECEx:
  II 1 GD Ex ia IIC T4 Ga
  II 1 GD Ex ia IIIC T_{200} 135°C Da
  (-20°C ≤ Ta ≤ +60°C)
- Approvals
  CE and UKCA:
  CE 0598 UKCA 1180
- **AutoCal**
  Field calibration/span check facility. Activated and operated via potentiometer on the transmitter body
- **Factory Calibration**
  Supplied with Certificate of Calibration traceable to National Physical Laboratory (NPL)
- **Accuracy**
  ± 2 °C (±3.6 °F) dewpoint NPL traceable -90 °C to +20 °C (-130 °F to +68 °F)
- **Temperature Coefficient:** Temperature compensated
- **Resolution:** 0.016 mA
- **Repeatability:** Better than ±0.3 °C (±0.54 °F) dewpoint
- **Operating Temperature:** -20 °C to +60 °C (-4 °F to +140 °F)
- **Storage Temperature:** -20 °C to +70 °C (-4 °F to +158 °F)
- **Response Times**
  Wet to dry: -20 °C to -60 °C - less than 120 secs
  Dry to wet: -100 °C to -20 °C - less than 20 secs
- **Sample Flow Rate:** Flow independent but ideally two to five litres per minute. Max: 25 litres/min.
- **Calibration Warranty:** 12 months from date of dispatch

ELECTRICAL

- **Electromagnetic Compatibility (EMC)**
  Immunity: complies with EN 61000-6-1:2001
  Emissions: complies with EN 61000-6-3:2000
- **Warm Up Time:** 10 seconds
- **Fault Conditions**
  Open circuit/under range: output drives to 20.5 mA
  Short circuit/over range: output drives to 20.75 mA
- **Isolation**
  Sensing element connected to the 4 - 20 mA loop but isolated from transmitter body
- **Output Signal:** 4 - 20 mA Linear
- **Operating Voltage:** 7 - 28 V DC reverse polarity protected
- **Maximum Series Resistance**
  = {40 x (Supply Voltage – 7)} ohms

MECHANICAL

- **Operating Pressure**
  From 1kPa (0.01 barA) to maximum 35,000kPa (350 barA)
- **Operating Humidity (External)**
  Maximum - 95% RH non-condensing
- **Cable Terminations**
  IP66/NEMA 4X rated, size C, DIN EN 175301 connector at the transmitter and other end terminated with bootlace ferrules
- **Cable**
  Supplied with 2 m standard cable. Nominal diameter 3.4 mm, 92 ohms/km at 20 °C
- **Transmitter Enclosure**
  Hard anodised aluminium body with size C, DIN EN 175301 connector
- **Sensor Protection**
  316 sintered stainless steel filter - 50 micron
- **Probe Material (Wetted Parts)**
  316 stainless steel
- **Weatherproof Classification**
  IP66/NEMA 4X when connector mated to transmitter
- **Mechanical Connection**
  ¾" UNF (16tpi) with integral Viton "O" ring seal
- **Mechanical Warranty**
  24 months in case of faulty workmanship and defective parts
- **Weight**
  250 grams (0 lb 8.8 oz) includes connector

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Ordering Information

To order a SDT-Ex Dewpoint Transmitter

SDT-Ex - (Range)

R - Choose required range:

ZD:	-100 °C to +20 °C (-148 °F to +68 °F) dewpoint	
HD:	-65 °C to +20 °C (-85 °F to +68 °F) dewpoint	
P (Purple)	-100 to 0 °C (-148 to +32 °F) dewpoint	0 - 6,000 ppm(V)
S (Silver)	-100 to -20 °C (-148 to -4 °F) dewpoint	0 - 1,000 ppm(V)
G (Grey)	-80 to 0 °C (-112 to +32 °F) dewpoint	0 - 6,000 ppm(V)
R (Red)	-80 to -20 °C (-112 to -4 °F) dewpoint	0 - 1,000 ppm(V)
B (Blue)	-80 to +20 °C (-112 to +68 °F) dewpoint	0 - 23,000 ppm(V)

MP:	0.1 to 100.0 ppm(V)
LP:	0.01 to 10.00 ppm(V)
GH:	0.01 to 10.00 g/m³
LB:	0.1 to 100.0 lb/MMSCF

Example:
To order a SDT-Ex with a measuring range of -80 °C to 0 °C (-112 °F to +32 °F) dewpoint (grey sensor), please order as **SDT-Ex-G**

To order a Sensor Holder for use with SDT-Ex

F - Choose fitting size for sensor holder:

4: ¼" **8:** ⅛" **6:** 6 mm

Example:
To order a Sensor Holder with ¼" fitting please order as **SDT-SEH-4**

Related Products

SU4 Sample Conditioning Unit



The SU4 sample conditioning unit reduces the pressure from the dryer to give a pressure and flow suitable for trace moisture measurement. Combining pressure reduction control, a sensor holder and a flow meter for up to 10 litres per minute, (1 -2 litre is usual for continuous use), mounted on a stove enamelled back plate.

Moisture measurement under pressure will not give the correct answer but room pressure used in the SU4 will read correctly.

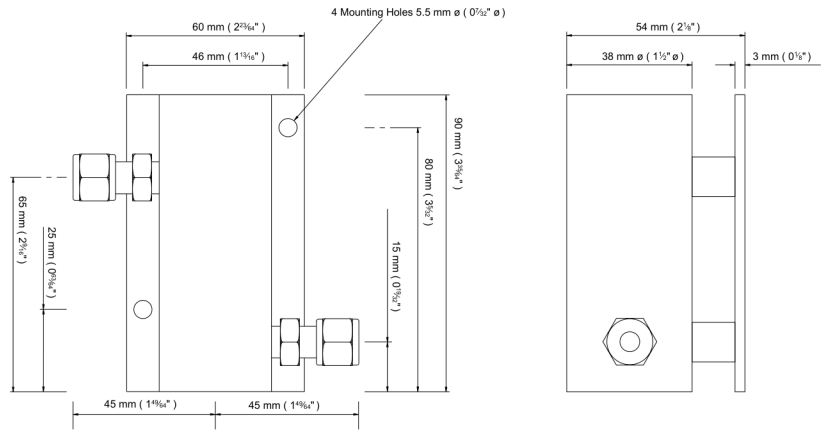
The SU4 is supplied with pneumatic connections with a choice of ⅛", ¼" or 6 mm compression fittings if required for inlet and outlet.

SU4 Specification Sheet

Also available:

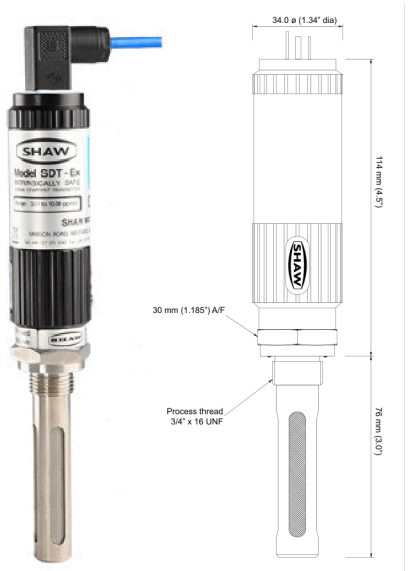
- Signal isolator
- Loop powered display
- Screwdriver
- Pressure calculator
- Instruction manual
- Certificate of Calibration

Sensor Holder Assembly Diagram



NOTE:
The assembly is shown with 6.35 mm (¼ inch) OD tube fittings.
The dimension across the tube fittings will vary for all other size fittings.

Dewpoint Transmitter



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