

AcuDew

High Performance Dewpoint Transmitter

The **Shaw Moisture Meters AcuDew Dewpoint Transmitter** is a compact, 2 wire, 4-20 mA loop powered transmitter, used for trace moisture measurement of process gases and dry compressed air.

Utilising the ultra high capacitance SHAW dewpoint sensor, the AcuDew is a robust and reliable dewpoint transmitter, offering excellent sensitivity, repeatability and speed of response. The AcuDew dewpoint transmitter also incorporates the SHAW AutoCal feature to ensure accuracy between laboratory calibrations.



AcuDew provides a linear 4-20 mA signal over the chosen measurement range, loop powered by a 7-28 V DC source. Various dewpoint ranges are available, covering an overall range from -120 °C to +20 °C dewpoint (-184 °F to +68 °F). The output is configurable in °C dewpoint, °F dewpoint, ppm(V), ppb(v), g/m³ and lb/MMSCF.

The AcuDew dewpoint transmitter is also available with Modbus RTU Serial Line RS485 digital communication.

The rugged stainless-steel construction and industrial M12 connector provide a protection rating of IP66 (NEMA 4X) and can withstand extreme environmental conditions across a wide range of industrial applications. The AcuDew dewpoint transmitter has been tested to withstand pressures up to 35,000kPA (350 bar) for direct connection in to pipelines.

Easy to install and operate, requiring little or no maintenance, AcuDew offers reliable and accurate measurements. The microprocessor circuitry of the AcuDew dewpoint transmitter drives its high resolution to provide advanced self-diagnostics for fault conditions. When installed in remote locations, the 4-20 mA signal can be transmitted to a control system over distances up to 1,000 meters (3,280 feet).

The AcuDew is fully compatible with the Acu range of single channel displays: the AcuLoop plug-in signal indicator for local display; the panel mount AcuVu with 4-20 mA retransmission and fully programmable alarms; and the AcuTrak with additional on-board pressure dewpoint calculations and RS485 communications.

Each AcuDew transmitter is supplied ready for use with a Certificate of Calibration traceable to National and International Humidity Standards, an instruction manual and 2 m of cable.

Features

- 2-wire, loop powered, 4-20 mA dewpoint transmitter
- AcuDew available with Modbus RTU Serial Line RS485 digital communication
- Various ranges: overall range -120 °C to +20 °C dewpoint (-184 °F to +68 °F)
- Accuracy ±2 °C dewpoint (±3.6 °F)
- AutoCal (automatic calibration) feature
- Output configurable in °C dewpoint, °F dewpoint, ppm(V), ppb(v), g/m³ and lb/MMSCF
- Open/short circuit detection
- Weatherproof rating IP66 (NEMA 4X)
- Fully compatible with the single channel displays: AcuLoop, AcuVu, AcuTrak, SU4 sample system and SWS sample system



MOISTURE METERS

DEWPOINT SENSOR SPECIFICATIONS

- **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
 - Go (Gold):** -120 to -20 °C (-184 to -4 °F) dewpoint 0.1 ppb - 1,000 ppm(V)
 - 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
- **Calibration Warranty:** 12 months from date of dispatch

- **AutoCal:** Field calibration/span check facility. Activated and operated via the potentiometer on the transmitter body
- **Factory Calibration:** Supplied with Certificate of Calibration traceable to NPL (National Physical Laboratory)
- **Accuracy:** ± 2 °C (±3.6 °F) dewpoint NPL traceable -90 °C to +20 °C (-130 °F to +68 °F)
- **Resolution:** 0.005 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 2 to 5 litres per minute. Max: 25 litres/min

ELECTRICAL

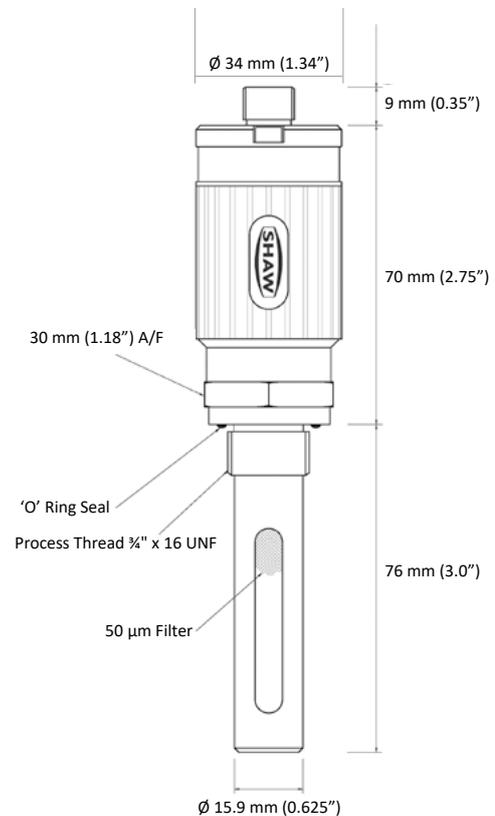
- **Electromagnetic Compatibility (EMC):** Immunity & Emissions: Complies with BS EN 61326
- **Warm Up Time:** 10 seconds
- **Fault Conditions:** Open circuit/under range: output drives to 20.5 mA
Short circuit/over range: output drives to 20.75 mA
- **Approvals:**  

- **Maximum Series Resistance:** = {40 x (Supply Voltage - 7)} Ω
- **Output Signal:** 4-20 mA Linear
- **Communications:** Modbus RTU capable, baud rate=4800, 9600, 19200 or 38400
- **Isolation:** Sensing element connected to the 4-20 mA loop but isolated from transmitter body
- **Operating Voltage:** 12-28 V DC reverse polarity protected

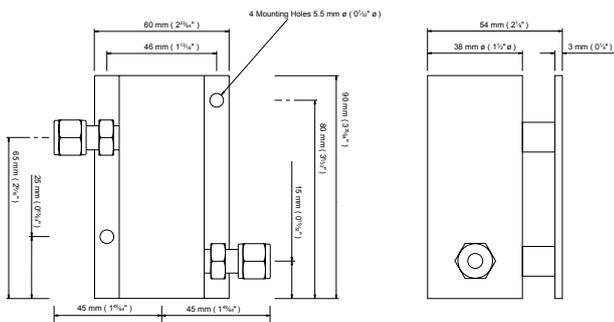
MECHANICAL

- **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, M12 five pin cable connector at the transmitter and the other end terminated with bootlace ferrules
- **Cable:** **Analogue Transmitter:** Supplied with 2m standard cable. Nominal diameter 3.4mm, 92 Ω/km at 20°C. **Modbus Transmitter:** Supplied with 2m 4-wire cable: Nominal diameter 4.5mm, 92 Ω/km at 20°C.
- **Transmitter Enclosure:** Wetted parts 316 stainless steel with aluminium body
- **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:** 3/4" UNF (16tpi) with integral Viton "O" ring seal
- **Mechanical Warranty:** 24 months in case of faulty workmanship and defective parts
- **Weight:** 215 grams (0.474 lb) includes connector

DEWPOINT TRANSMITTER DIAGRAM



SENSOR HOLDER ASSEMBLY DIAGRAM



NOTE:
The assembly is shown with 6.35 mm (1/4 inch) OD tube fittings.
The dimension across the tube fittings will vary for all other size fittings.

Related Products

AcuTrak Hygrometer

- Single channel inline
- 4-20 mA analogue output
- Two independent alarms
- Fully programmable relay alarms
- Onboard pressure dewpoint calculations
- User selectable units
- RS485 serial communications
- Compatible with AcuDew



AcuVu Hygrometer

- Panel mount
- Four digit LED display
- Two programmable relay alarms
- 4-20 mA analogue output
- Factory set to your choice of engineering units
- Compatible with AcuDew/AcuDew-M



AcuLoop Plug In Display

- Four digit LED, plug in display
- Loop powered
- Connects directly to the AcuDew transmitter
- Self-contained and robust
- Adjustable display: 210° rotation on its stem and 360° rotation (four x 90 increments) on its axis for inverted viewing
- Compatible with AcuDew/AcuDew-M



SWS Sample System

- Designed for gas or general compressed air sampling
- Weatherproof sample system
- Combines pressure regulation, filtration and flow control
- Dewpoint meter and dewpoint transmitter housed inside the IP65 rated cabinet
- Allows operation at ideal sampling conditions
- Compatible with AcuDew/AcuDew-M



SU4 Sample Conditioning Unit

- Combines: pressure regulator, sensor holder and flow meter
- Mounted on a back plate
- Compatible with AcuDew/AcuDew-M



Approvals:



Ordering Information

To order an AcuDew Dewpoint Transmitter

Choose your transmitter: **AcuDew** or **AcuDew-M**

AcuDew - 4-20 mA analogue

AcuDew-M - 4-20 mA with Modbus RTU digital communication

AcuDew - (Range)

R - Choose the 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

Go (Gold) -120 to -20 °C (-184 to -4 °F) dewpoint 0.1 ppb - 1,000 ppm(V)

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

For example:

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

To order an **AcuDew with Modbus RTU** with a measuring range of -80 °C to 0 °C (-112 °F to +32 °F) dewpoint (grey sensor), please order as **AcuDew-M-G**

PLEASE NOTE: AcuDew is supplied with 2 metres of 2 wire cable. AcuDew-M is supplied with 2 metres of 4 wire cable.

To order a Sensor Holder for use with the AcuDew Dewpoint Transmitter

AcuDew - (SEH) Sensor Holder - (F) Fitting Size

F - Choose fitting size for sensor holder:

4: ¼" 8: ½" 6: 6 mm

For example:

To order a Sensor Holder with ¼" fitting please order as **AcuDew-SEH-4**



To order an AcuTrak Hygrometer

AcuTrak - (R) Range - (U) Units

R - Choose the required range for the AcuDew transmitter

U - Choose the required units for the AcuTrak hygrometer

C: °C dewpoint F: °F dewpoint P: ppm(V) B: ppb(V)

For example:

To order an AcuTrak for an AcuDew with a measuring range of -80 °C to 0 °C (-112 °F to +32 °F) dewpoint (grey sensor), specifying °C as units, please order as **AcuTrak-G-C**

