

# PRO-CHEM ANALYTIK

## Model AMT-Ex

### Dewpoint Hygrometer

#### Intrinsically Safe 4-20mA Transmitter

#### FEATURES

- **3 Wire Intrinsically Safe Dewpoint Transmitter**
- **Ex ia IIC T4**
- **Overall Range: -120°C to +20°C Dewpoint**
- **Accuracy  $\pm 2^{\circ}\text{C}$  Dewpoint**
- **AUTOMATIC CALIBRATION**
- **Can be configured for Linear 4-20mA signal in:  $^{\circ}\text{C}$  &  $^{\circ}\text{F}$  Dewpoint, ppm(v), g/m<sup>3</sup>, lb/MMSCF**
- **Temperature Compensation**
- **Failure Diagnostics**
- **Long Term Stability**
- **Fast Response**
- **IP66 / NEMA4X Protection**



**Model AMT Dewpoint Hygrometer** is a two wire 4-20mA loop powered transmitter, used for continuous measurement of humidity in a process gas or compressed air, which will output a linear 4-20mA signal corresponding to the dewpoint temperature. The Model AMT transmitter can also be factory configured to output a 4-20mA linear signal for any other moisture unit e.g. ppm(v), ppm(w), g/m<sup>3</sup>, lb/MMSCF etc.

The Ultra High Capacitance sensing element is long lasting and offers excellent sensitivity, repeatability and response speed. Each unit is supplied with a Certificate of Calibration, traceable to International Humidity Standards, validating accuracy to  $\pm 2^{\circ}\text{C}$  dewpoint.

The transmitter also incorporates an Automatic Calibration (AUTOCAL) feature, which allows the user to carry out a field calibration / span check. The AUTOCAL feature is operated by means of two small button switches built within the transmitter enclosure. To avoid tamper, the switches are locked in normal use and can only be activated by following a special routine.

The integral RISC microprocessor circuitry of the Model AMT transmitter allows high resolution with advanced self-diagnostics for fault conditions. It also enables periodic re-calibration of the moisture sensor, storing calibration data within the fully self contained unit. Loop powered by a 7V to 28V dc source, the Model AMT transmitter will provide a linear 4-20mA signal over the chosen range.

The mechanics of the Model AMT transmitter have been designed to cope with extreme environmental conditions. The rugged stainless steel construction offers protection to IP66 (NEMA4X), with the transmitter electrical connections made via a secure industrial connector.

Model AMT transmitter can withstand 35,000 kPa (350bar) maximum pressure and by employing a low resistance cable, the transmitter can be located at significant distances, in excess of 1000 metres, from the control room.

Designed with the operator in mind, for reliable and accurate measurements, the Model AMT transmitter is extremely easy to install and operate, requiring little or no maintenance.

The Model AMT transmitter is supplied with a Certificate of Calibration, an instruction manual and 2m connecting cable.

## MODEL AMT Dewpoint Hygrometer 4-20mA Loop Powered Transmitter

**TRANSMITTER TYPE:** 2 Wire, 4-20mA Loop Powered Transmitter

**OUTPUT SIGNAL:** 4 to 20mA Linear

**OPERATING VOLTAGE:** 7V - 28V dc. Reverse polarity protected.

**MAXIMUM SERIES RESISTANCE:** = {40 x (Supply Voltage - 7)} ohms

**SENSING ELEMENT:** Ultra High Capacitance - Aluminium Oxide Type

**RANGES:**

SD: -100°C to +20°C (-148°F to +68°F) dewpoint	} 0.1 °C / °F resolution
LD: -120°C to +20°C (-184°F to +68°F) dewpoint	
HD: -65°C to +20°C (-85°F to +68°F) dewpoint	

SP: 1 to 1000 ppm(v)	1ppm resolution
MP: 0.1 to 100.0 ppm(v)	0.1ppm resolution
LP: 0.01 to 10.00 ppm(v)	0.01ppm resolution

PB: 1 to 1000 ppb(v)	1ppb resolution
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HG: 0.01 to 10.00 g/m <sup>3</sup>	0.01g/m <sup>3</sup> resolution
LG: 0.001 to 1.000 g/m <sup>3</sup>	0.001g/m <sup>3</sup> resolution

LB: 0.1 to 100.0 lbs/MMSCF	0.1 lbs/MMSCF resolution
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*NOTE: ppm, ppb, g/m<sup>3</sup> & lbs/MMSCF ranges are stated at atmospheric pressure. Model AMT Transmitter can be configured to provide corresponding ranges for operation at other constant pressure. This must be stated at time of order.*

**AUTOCAL:** Field calibration / Span check facility. Activated and operated via two button switches on the Transmitter body. Locked in normal operating mode to avoid tamper.

**FACTORY CALIBRATION:** Supplied with Certificate of Calibration traceable to NPL / NIST

**ACCURACY:** ± 2°C dewpoint (NPL / NIST traceable for range -90°C to +20°C)

**TEMPERATURE COEFFICIENT:** Temperature compensated for operating range.

**RESOLUTION:** 6 micro-amps

**REPEATABILITY:** Better than ±0.3°C dewpoint

**OPERATING TEMPERATURE:** -20°C to +60°C

**STORAGE TEMPERATURE:** -20°C to +70°C

**OPERATING PRESSURE:** From 1kPa (0.01 barA) to Maximum 35,000kPa (350 barA)

**OPERATING HUMIDITY (External):** Maximum - 95% RH Non-condensing

**SAMPLE FLOW RATE:** Flow independent but ideally 2 to 5 litres per minute. Max: 25 litres/min.

**CABLE TERMINATIONS:** IP66 (NEMA4X) rated, size C, DIN EN 175301 connector at the Transmitter and other end terminated with bootlace ferrules.

**CABLE:** Supplied with 2m standard cable. Nominal diameter 3.4mm, 92ohms/km at 20°C

**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 :** Output drives to 20.50mA  
**Short Circuit :** Output drives to 20.75mA  
**System Error:** Output drives to 21.00mA

**ISOLATION:** Sensing Element connected to the 4-20mA loop but isolated from Transmitter body.

**TRANSMITTER ENCLOSURE:** 316 Stainless steel 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 / NEMA4X 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.

**CALIBRATION WARRANTY:** 12 months.

**WEIGHT:** 175grams (includes connector)

## ORDERING INFORMATION

### Dewpoint Hygrometer Model AMT - [XX]

Supplied with connector and 2m cable

XX = Choose required range:

SD: -100°C to +20°C (-148°F to +68°F) dewpoint  
LD: -120°C to +20°C (-184°F to +68°F) dewpoint  
HD: -65°C to +20°C (-85°F to +68°F) dewpoint

SP: 1 to 1000 ppm(v)  
MP: 0.1 to 100.0 ppm(v)  
LP: 0.01 to 10.00 ppm(v)

PB: 1 to 1000ppb(v)

HG: 0.01 to 10.00 g/m<sup>3</sup>  
LG: 0.001 to 1.000 g/m<sup>3</sup>

LB: 0.1 to 100.0 lbs/MMSCF

*E.g. Transmitter with range -100 to +20°C dewpoint, order: Dewpoint Hygrometer Model AMT-SD*

### Connection Cable Model CAB-AMT- [XXX]

XXX = Choose required length of Cable

Leave Blank: 2m (Included with Model AMT)  
XXX: Insert cable length in metres

(Available in 10m, 15m, 25m, 50m, 75m & 100m lengths)

*E.g. For 60 metres of cable, order: Model CAB-AMT-75*

## Model SH-AMT Sensor Holder (Optional)

(Flow Through Sample Cell)

**MATERIAL OF CONSTRUCTION:** 316 grade stainless steel.

**PORTS:** Inlet & outlet both 1/8" NPT F

**PIPE FITTINGS:** 2 x Swagelok® male pipe fittings.  
(1/4", 1/8" or 6mm OD - inlet / outlet fitting size to be stated at time of order)

**MOUNTING PLATE:** 68 x 54 x 3mm Passivated mild steelplate with 2 fixing holes - 5.5mm diameter.

**WEATHERPROOF CLASSIFICATION:** IP66 / NEMA4X - with Model AMT transmitter installed.

**WEIGHT:** 500grams (includes 2 fittings & mounting plate)

## ORDERING INFORMATION

### Sensor Holder Model SH-AMT - [X]-[X]

Supplied with Mounting Plate

X = Choose Inlet Pipe Fitting

0: None  
4: 1/4"  
8: 1/8"  
6: 6mm

X = Choose Outlet Pipe Fitting

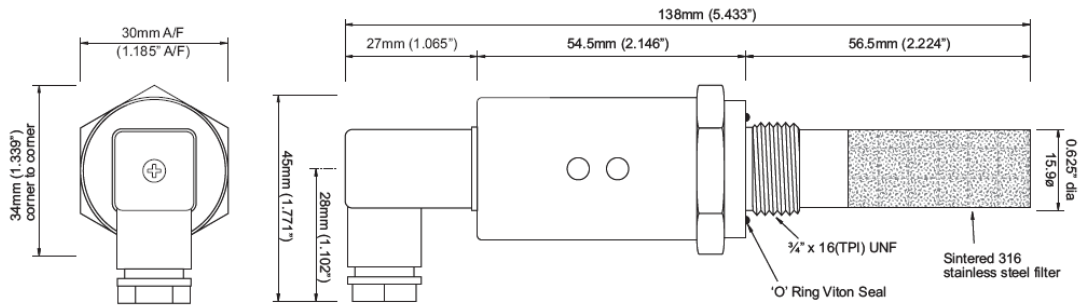
0: None  
4: 1/4"  
8: 1/8"  
6: 6mm

*E.g. For Sensor Holder with two 1/4" fittings, order: Model SH-AMT-4-4*

## Dimensions

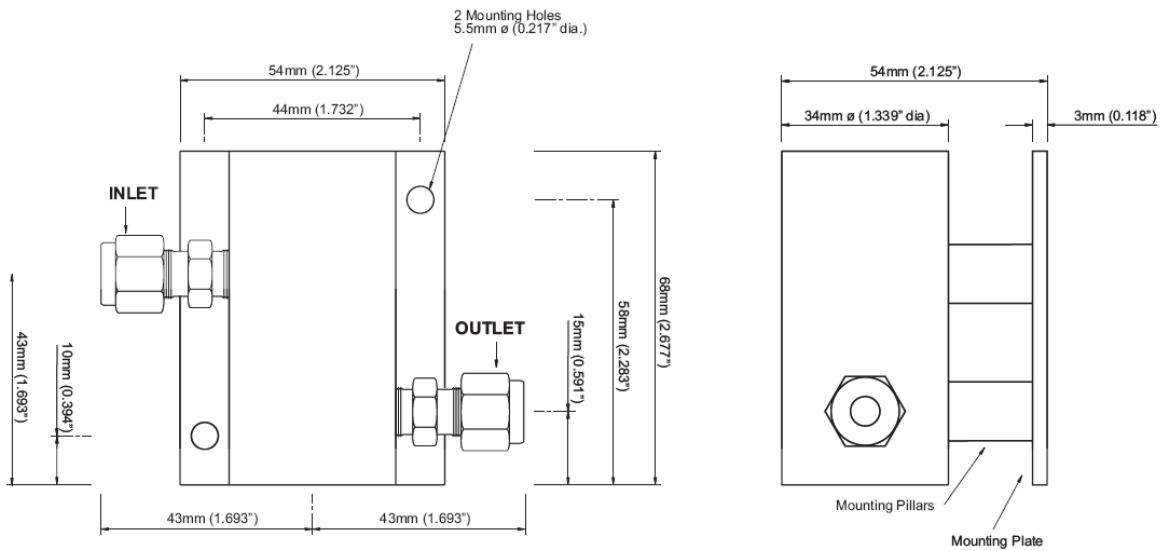
### Model AMT Dewpoint Hygrometer

4-20mA Loop Powered Transmitter



### Model SH-AMT Sensor Holder

Flow Through Sample Cell



NOTE. The Assembly is shown with 1/4" OD tube fittings. The dimension across the tube fittings will vary for all other size fittings.