Intrinsically Safe Humidity Assembly

Overview

Models AH74 and AH75 are 2-wire temperature compensated humidity transmitters that are FM and CFM approved as intrinsically safe for use in hazardous locations. Both models are available with an optional temperature transmitter output. AH75 incorporates a digital display for remote indication of relative humidity and temperature.

The transmitters utilize a thin film capacitive humidity sensor which provides outstanding sensitivity and chemical robustness. The transmitter converts the humidity sensor's signal into a 4 to 20 mA DC current, which changes proportionally from 4 mA at 0% RH to 20 mA at 100% RH. The optional temperature loop produces a second 4 to 20 mA DC output where the current changes from 4 mA at the lowest temperature of the range, to 20 mA at the top of the temperature range. The leads that supply power also carry the current signal.

- Accuracy of ±2.5% RH
- Temperature compensated
- Temperature output option
- Two-point field calibration
- NIST traceable calibrations

Applications

Building automation systems (HVAC), hospitals, food storage,warehouses, clean rooms, pharmaceutical, drying equipment, and emissions monitoring.

Specifications

Output(s):
Humidity: 4 to 20 mA DC = 0% to 100% RH.
Temperature: 4 to 20 mA DC over specified range (optional).

Humidity Range: 0 – 100% RH

Sensing Element:
Humidity: Thin film capacitive element.
Temperature: 1000 ohm platinum RTD.

Temperature Effect: ±0.03% RH/°C ±1% from 10°C to 85°C

Operating Temperature:
Transmitter:
-40 to 176°F (-40 to 80°C), non-condensing.
-4 to 176°F (-20 to 80°C), non-condensing, model AH75.
Sensor:
-40 to 176°F (-40 to 80°C),

Storage Temperature:
-58 to 185°F (-50 to 85°C), non-condensing.

Supply voltage: 9.5 to 28 VDC .

Voltage effect: ±0.001% of span/volt from 9.5 to 28 VDC.

Loop resistance: The maximum allowable resistance of the signal-carrying loop, including extension wires and load resistors, is given by this formula: $R_{loopmax} = (V_{supply} - 9.5)/0.02$ AMPS).

Accuracy: Includes linearity, hysteresis, repeatability, and voltage effects.
Humidity: ±2.5% from 10% to 80% RH @ 25°C, ±3.5% from 80% to 90% RH @ 25°C.
Temperature: ±0.5°F(0.27°C) @ 77°F (25°C) or +/- 0.75% of span, whichever is greater.

Adjustments: Zero and Span field adjustments, non-interacting.

Time Constant: 50 seconds in slow moving air.

Connections: Screw terminals (22-14 AWG wire).

Weight:
AH74 0.54 lbs (245 g).
AH75 0.61 lbs (276 g).

Min. output current: 3.8 mA.

Max. output current: 22 mA.

Filter: 60 micron stainless-steel sintered filter (replacement P/N : AC103512)

Factory Mutual Approvals:
Intrinsically safe:
Suitable for the following hazardous area locations:
Class I, Division 1, Groups A, B, C, D
Class I, Zone 0, AEx ia IIC T4
Non-Incendive:
Suitable for the following hazardous area locations:
Class I, Division 2, Groups A, B, C, D

Transmitter entity parameters:
V_{max} = 28 volts; I_{max} = 100 mA; C_i = 0.037 µF and L_i = 0 mH.

▼= STANDARD OPTIONS
Specifications subject to change

Transmitter ranges:

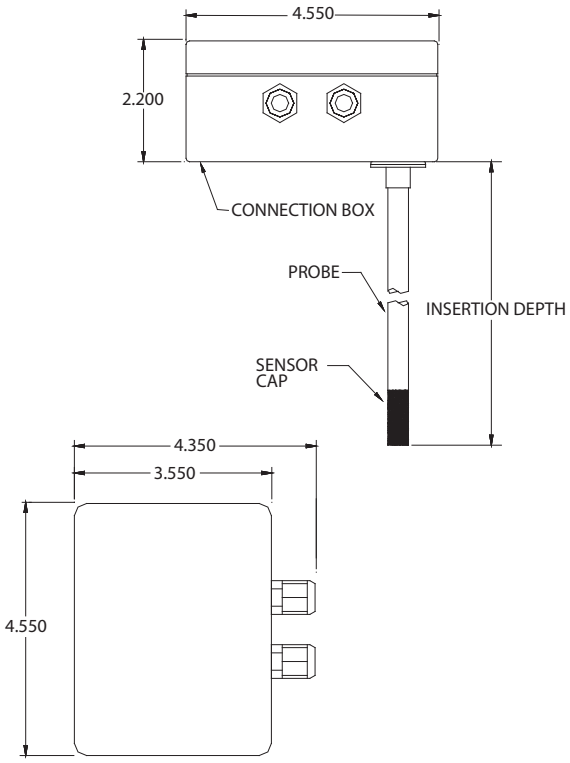
Code	Transmitter range
▼NT	No temperature transmitter
EN	-20°F to 140°F
S	0°F to 100°F
▼A	20°F to 120°F
BI	30°F to 130°F
KK	30°F to 180°F
N	32°F to 122°F
H	40°F to 90°F

Specification and order options

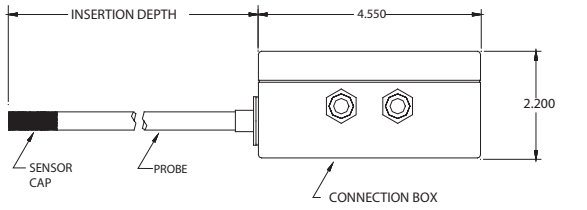
AH75	Model Number: ▼AH74 - Humidity Transmitter with Optional Temperature Transmitter , No Display ▼AH75 - Humidity Transmitter with Optional Temperature Transmitter, with Display
1	Probe Diameter: 1 = 0.375"
C3	Probe Location / Cable Bushings Option: Please refer to dimensional drawings for probe Location. C1 = Probe Location A (Rear) / Single Cable Gland C2 = Probe Location A (Rear) / Dual Cable Glands ▼C3 = Probe Location A (Rear) / Single Conduit Fitting, 1/2" NPT ▼C4 = Probe Location A (Rear) / Dual Conduit Fittings, 1/2" NPT ▼C5 = Probe Location B (Bottom) / Single Cable Gland ▼C6 = Probe Location B (Bottom) / Dual Cable Glands ▼C7 = Probe Location B (Bottom) / Single Conduit Fitting, 1/2" NPT ▼C8 = Probe Location B (Bottom) / Dual Conduit Fittings, 1/2" NPT *Note: If a temperature loop is desired, dual cable glands or dual conduit fittings must be selected unless special cable is used during installation. Please refer to National Electrical Code ANSI/NFPA 70 for installation in accordance with US requirements, or Canadian Electrical Code, C22.1 for installation in accordance with Canadian requirements.*
L40	Probe Length: ▼L40 = 4"
T1	Filter Type: ▼ T1 = Sintered Stainless Steel T2 = Slotted Stainless Steel
HT490	Transmitter Model Number: ▼ HT490 = Intrinsically Safe Transmitter
F	Display: C = Display, Metric Units (AH75_ Series Only) ▼ F = Display, English Units (AH75_ Series Only) ▼ N = No Display
1	Signal Output: ▼1 = 4-20mA
N25	Calibration Accuracy: ▼ N25 = ±2.5% from 10% to 80% (25°C) with NIST Certificate S25 = ±2.5% from 10% to 80% (25°C)
NT	Temperature Transmitter Range from table: ▼A, NT
AH751C3L40T1HT490F1N25NT = Sample part number	

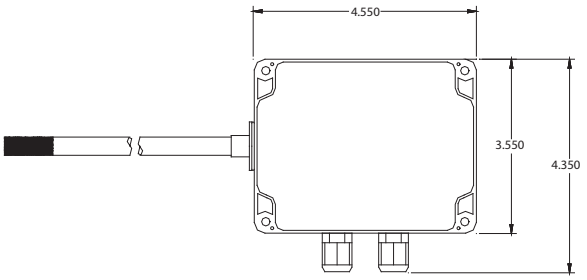
Dimensions:

Probe Location A



Probe Location B





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Specifications subject to change