



# RF-01N

## Transmitter for relative humidity and temperature of Gases

### Description:

A capacitance-based polymer sensor is used to measure relative humidity in the RF-01N. Polymer sensors consist of two electrodes separated by a film of thermoset polymer that absorbs or releases water as the relative humidity of the gas that surrounds the sensor changes. Capacitance measurements of the polymer film are used to determine the relative humidity. Polymer sensors can measure relative humidity from 0...100%, respond rapidly and exhibit no drift. Capacitance sensors are unaffected by most contaminants and are not damaged by freezing or inundation by water. Sophisticated integrated circuits provide a high level, fully conditioned and temperature compensated 4...20 mA or 0...10 VDC output signal. A temperature sensor is also integrated in the dual output combined humidity/temperature version transmitters.

### Application:

The RF-01N is a two-wire transmitter with a 4...20 mA loop powered output or 0...10 VDC output. The sensor recovers rapidly from 100% saturation and is calibration free. The polymer capacitance sensor is not affected by condensation, fog, high humidity or contaminants. The RF-01N provides a stable, repeatable, and accurate means of measuring humidity only or both temperature and humidity in the harshest of environments. The combined humidity/temperature version provides dual 4...20 mA or 0...10 VDC output signals to control both humidity and temperature with one sensor which reduces installation costs. The duct mount version is also available with an optional alpha-numeric LCD display to provide local indication of humidity and temperature simultaneously. Typical applications are monitoring of humidity and temperature such as exhaust, outside air and supply air.

## Features

/ Duct mount or outdoor installation

/ Long term stability

/ Accuracy 2%, 3% or 5%

/ Recovers rapidly from

100% saturation

/ Analog output for humidity and optional for temperature

/ Local alpha-numeric display for duct mount models (optional)





## Versions:

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The series RF-01N for relative humidity and temperature can be supplied as an outside air model or as a duct mount model. To protect the sensor from damage caused by particle bombardment and damaging deposits or even dust portions both models can be supplied fitted with a sintered filter. Duct mount models are available with an optional 2-line alpha numeric LCD-display.

#### Options:

**LCD-Display:** 2-line alpha numeric LCD, 8 characters / line, display resolution: 0.1 % RH; 0.1°C (for duct mount only)

**PT100 / PT1000:** RTD temperature sensor DIN Class B; ± 0.3°C at 0°C, (Option only for models with a single humidity output signal)

## Ordering Codes:

<b>Order number</b>	<b>RF-01N.</b>	<b>1.</b>	<b>2.</b>	<b>1.</b>	<b>1</b>
<b>RF-01N Temp. and Humidity Transmitter</b>					
<b>Version /</b>					
1 = Duct mount					
1a = Duct mount with sintered filter					
2 = Outside air model					
2a = Outside air model with sintered filter					
<b>Accuracy humidity sensor /</b>					
2 = 2 % accuracy					
3 = 3 % accuracy					
5 = 5 % accuracy					
<b>Output signal /</b>					
1 = 4...20 mA, humidity					
2 = 4...20 mA, humidity and temperature					
3 = 0...10 VDC, humidity					
4 = 0...10 VDC, humidity and temperature					
<b>Options /</b>					
0 = none					
1 = LCD display (Duct mount only)					
2 = temperature sensor PT100 DIN class B *					
3 = temperature sensor PT1000 DIN class B *					

\* Option only for models with a simple humidity output signal !

## Technical Specifications:

<b>Humidity sensor /</b>	Capacitance polymer
<b>Relative Humidity range /</b>	0...100 % RH
<b>Accuracy:</b>	± 2 % for 10...90 % RH at 25°C or ± 3 % for 20...80 % RH at 25°C or ± 5 % for 20...80 % RH at 25°C depending on the sensor
<b>Temperature sensor /</b>	RTD
<b>Accuracy:</b>	DIN Class B; ± 0.3°C at 0°C
<b>Hysteresis /</b>	± 1 %
<b>Repeatability /</b>	± 0.1 %
<b>Temperature limits /</b>	-40...+60°C (-40...+140°F)
<b>Storage temp. /</b>	-40...+80°C (-40...+176°F)
<b>Compensated temperature range /</b>	-20...+60°C (-4...+140°F)
<b>Response time /</b>	15 seconds
<b>Drift /</b>	< 1 % RH / year
<b>Enclosure rating /</b>	IP66 for Duct mount (housing only) IP66 for OSA mount
<b>Housing material /</b>	Duct mount model: PBT Outside air model: Polycarbonate
<b>Weight /</b>	Duct mount model: 0.3 kg Outside air model: 0.45 kg
<b>Agency approvals /</b>	CE

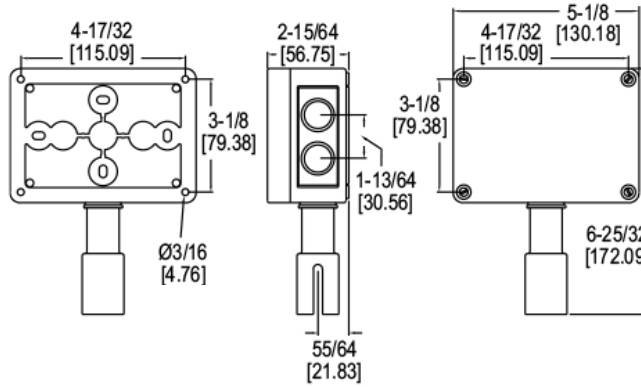
## Electrical Specifications:

<b>Supply voltage /</b>	10...35 VDC
<b>Output signal /</b>	1x output: 4...20 mA for humidity 2x outputs: 4...20 mA for humidity and temperature
<b>or Output signal /</b>	1x output: 0...10 VDC @ max. 5 mA for humidity 2x outputs: 0...10 VDC @ max. 5 mA for humidity and temperature measurement
<b>Electrical connection /</b>	removable screw terminal block

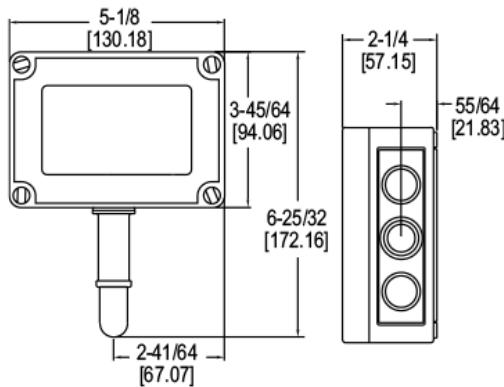


# Dimensions in mm:

## Outside air model [mm]



## Outside air model with sintered filter for polluted gases [mm]



## Duct mount model (top without / bottom with sintered filter [mm])

