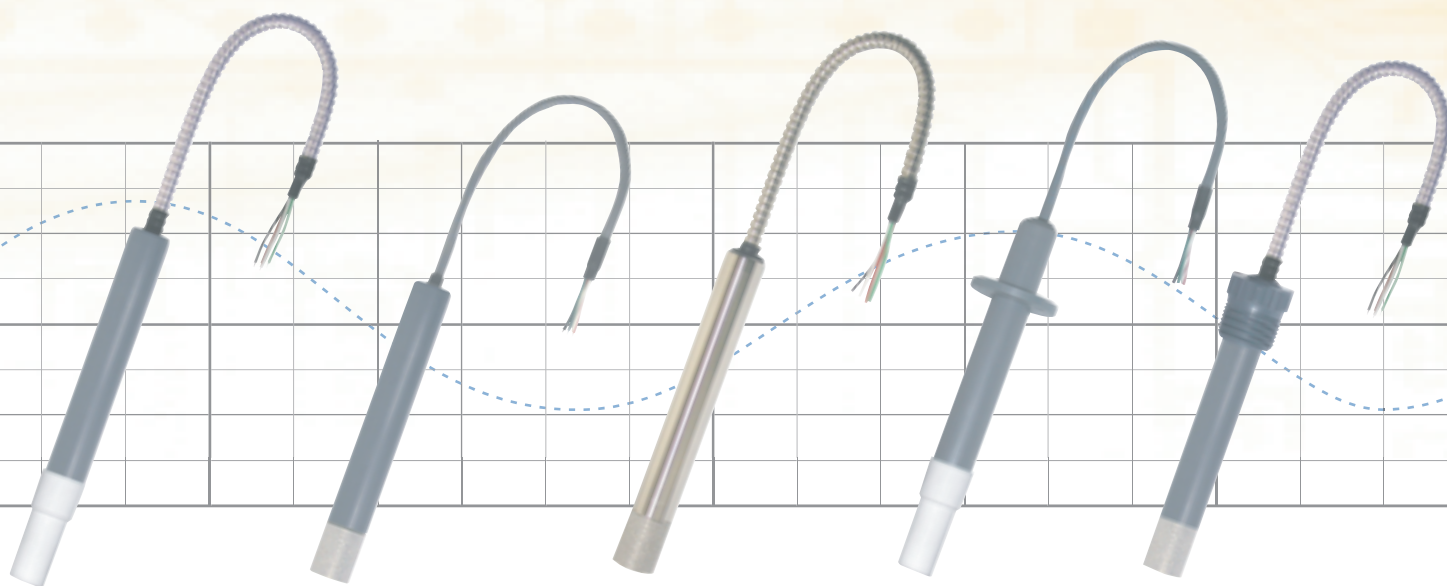# PHP01

Programmable Humidity Probes

humidity

Integrated sensor/transmitter construction

Factory calibration eliminates need for costly humidity calibration

Hermetically sealed electronics ensures reliable performance in the harshest environments

Digital re-calibration and re-programming of output via PC and without the use of potentiometers

Auto-calibration of electronics provides stable and accurate output with minimum need for periodic calibrations

Product Features

- *Low cost OEM and HVAC relative humidity probe*
- *PVC or Stainless Steel Probe*
- *Output is 4-20 mA standard*
- *Factory calibrated 0% to 100%RH*
- *Digital re-calibration, no potentiometers*
- *Digitally re-programmable*
- *Optional temperature output, RTD sensor*
- *High accuracy and long term stability*
- *Integrated hermetically sealed RH microprocessor based transmitter*
- *Built-in temperature compensation*
- *Sensor fail detection feature*
- *Self calibration of transmitter electronics*

Description

The PHP01 is a Programmable Humidity Probe which provides an accurate analog output directly proportional to 0...100 % RH. Using the patented MIST Microprocessor Integrated Sensor Transmitter™ technology, PHP01 feature digital zero and span adjustment and can be re-calibrated by the use of PHP01-PKit communication module and software. Multiple configurations are available.
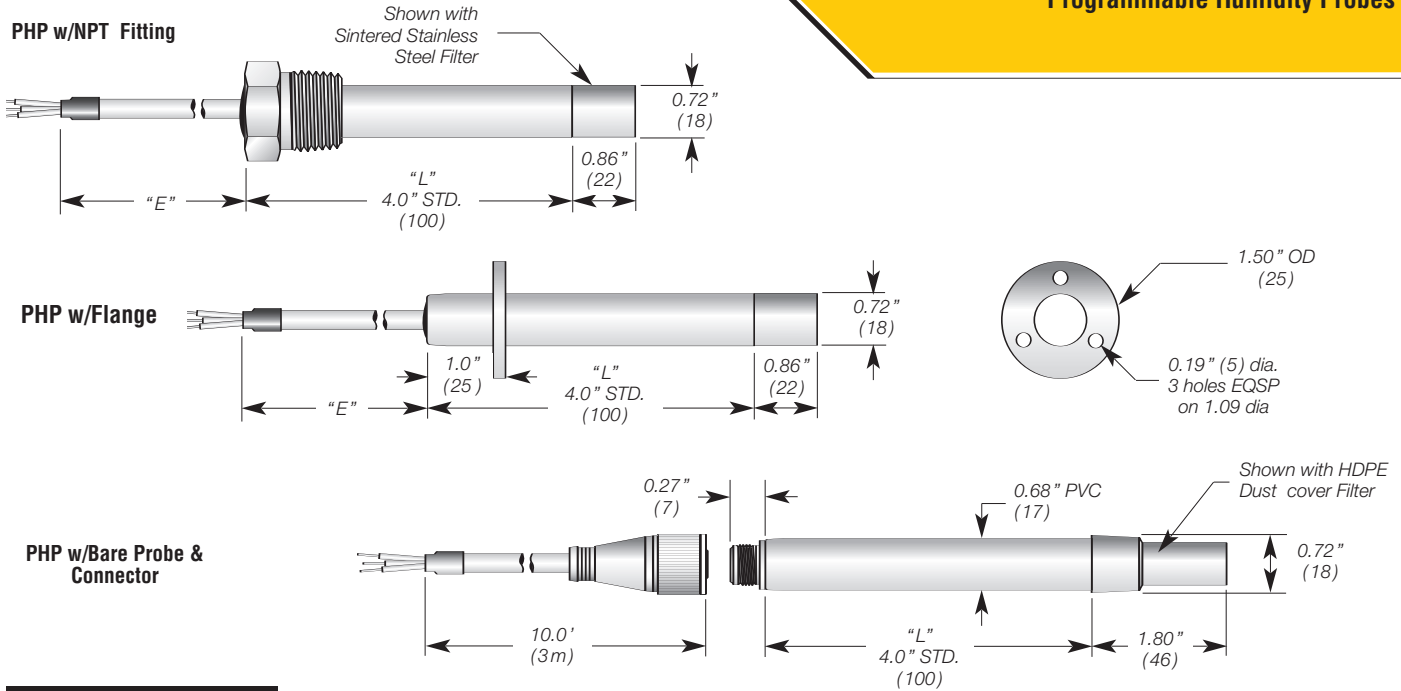
The PHP01 utilizes a thin-film polymer capacitive humidity sensor that provides excellent stability and fast response. The sensor fully recovers from condensation. The PHP01 shows an excellent linearity and accuracy of ±2 % from 5...95 % RH with two point calibration and ±3% accuracy with one point calibration. It comes factory calibrated from 0..100% for RH with a standard output of 4...20 mA but 0...5 V or 0...10 V are also available. Optional temperature output, with various RTD bulbs or thermistors, is also available.

The construction of PHP01 is very robust and long lasting. The probe consists of dust filter cap made from porous plastic or sintered stainless, humidity sensor, signal conditioning circuitry potted and completely hermetically sealed and extension cable or connector. There are no accessible parts inside the housing. Three standard models are available: probe only, probe with fitting and probe with flange. Probe material is PVC or stainless. The compact size, durability and high accuracy makes it ideal choice for many applications that require the monitoring and controlling of humidity and temperature.

Application / Process Notes

- *Climate rooms*
- *Greenhouses*
- *Warehouses*
- *HVAC installations*
- *Energy management*
- *OEM and HVAC equipment*

PHP w/NPT Fitting

Shown with Sintered Stainless Steel Filter

0.72" (18)
0.86" (22)
"E"
"L" 4.0" STD. (100)

PHP w/Flange

0.72" (18)
1.0" (25)
"E"
"L" 4.0" STD. (100)
0.86" (22)

1.50" OD (25)
0.19" (5) dia. 3 holes EQSP on 1.09 dia

PHP w/Bare Probe & Connector

0.27" (7)
0.68" PVC (17)
Shown with HDPE Dust cover Filter
0.72" (18)
10.0' (3m)
"L" 4.0" STD. (100)
1.80" (46)

Custom Builder :

MODEL	BOX1	BOX2	BOX3	BOX4	BOX5	BOX6	BOX7	BOX8	BOX9	BOX10	BOX11	BOX12
PHP01	- __	- H	- _	- _	- 6	- _	- _	- ___	- ___	- __	- ___	- __

BOX1 CODE	Temperature Output
N0	No Temperature Output
P2	Pt 100 Ω @ 0 °C, α = 0.00385 Class B, 2-wire
P3	Pt 100 Ω @ 0 °C, α = 0.00385 Class B, 3-wire
Q2	Pt 1000 Ω @ 0 °C, α = 0.00385 Class B, 2-wire
Q3	Pt 1000 Ω @ 0 °C, α = 0.00385 Class B, 3-wire

Notes: For non-standard temperature outputs consult factory. For current or voltage temperature outputs is **PHP02** brochure.

BOX3 CODE	Humidity Output Accuracy
2	± 2 % RH from -18 °C to +82 °C
3	± 3 % RH from -29 °C to +82 °C
5	± 5 % RH from -29 °C to +82 °C

Note:

Code 3 accuracy of ± 3 % RH (from 5% to 95% RH) is standard with 1 point calibration. Calibration Cerrificate available.

BOX4 CODE	Humidity Output
A	4 - 20 mA Loop Powered, 2-wire
C	4 - 20 mA Source Powered, 3-wire
E	0 - 5 VDC
G	0 - 10 VDC

Other outputs available. Consult Factory.

BOX6 CODE	Probe Material
P	PVC
S	316 Stainless Steel

Other materials available. Consult factory.

BOX7 CODE	Dust Filter
1	Porous Plastic HDPE
2	Sintered Stainless Steel

Other materials available. Consult factory.

BOX8 CODE	Probe Length " L "
040	4.0 "
060	6.0 "
080	8.0 "
100	10.0 "

BOX9 CODE	Fitting Type
000	None
F12	Fixed 1/2 " NPT (for SS probe)
F34	Fixed 3/4" NPT (for PVC probe)
F15	Flange, 1.5 " O.D.

PHP01 Programming Kit
Model : PHP01-Kit1

The protramming kit is needed to re-calibrate or re-scales the PHP01 Humidity Probes. It includes software, RS-232 module and wall adapter.

BOX10 CODE	Lead Wire Termination
PV	PVC Insulation, 90 °C (195 °F) max.
TF	Teflon Insulation, 200 °C (392 °F) max.
TA	Teflon with SS Armor, 200 °C (392 °F) max.
TB	Teflon with SS Overbraid, 200 °C (392 °F) max.
BA	Male Receptable and Molded Connector with 15 feet of cable
CA	Male Receptable and Connector with screws (no cable)

BOX11 CODE	Lead Wire Length " E "
120	10 feet
180	15 feet
240	20 feet
300	25 feet
---	No cable

BOX12 CODE	Options
00	None
C1	Calibration certificate (specify 1 point)
C2	Calibration certificate (specify 2 points)

Technical Specifications

Sensing Element :	Thermoset polymer thin film capacitive RH sensor
Humidity Range :	0% to 100% RH
System Accuracy :	±2%, ±3%, or ±5% RH (5% to 95% RH range)
Supply Voltage :	12-36 VDC, polarity protected
Power Requirement :	40 mA max @ 24 VDC
Supply Voltage Effect :	±0.002 RH/volt (negligible) from 12-36 VDC
Humidity Output :	4–20 mA, loop powered 2-wire, 0 to 100% RH 4–20 mA, source powered 3-wire, 0 to 100% RH 0–5 VDC, 0 to 100% RH 0–10 VDC, 0 to 100% RH
Temperature Output :	Pt100 Ohm or Pt1000 Ohm (2-wire or 3-wire)
Repeatability :	±0.5% RH
Linearity :	±1% RH
Hysteresis :	±1% RH of operating humidity span
Sensor Stability :	±1% RH typical at 50% RH in 1 year
Temperature Effect :	±0.03% RH/0°C ±1% RH at 10°C to 85°C (40°F to 185°F)
Temperature Comp.:	-23°C to +85°C (-10°F to +185°F)
Operating Environment :	-40°C to +85°C (-40°F to +185°F) non-condensing (0% to 95% RH)
Storage Environment :	-50°C to +85°C (-58°F to +185°F) non-condensing
Zero and Span Adjust. :	Digital recalibration via PHP01-Kit1 Module and PC
Sensor Break Indication :	Upscale to 23 mA
Polarity Protection :	Diode reverse polarity protected
Sensor Protection :	HDPE dust cover 60 micron or sintered SS dust cover 60 micron
Sensor Housing :	PVC or SS316
Mounting :	Flange, 1/2" NPT fitting, 3/4" NPT fitting, or bare probe
Pressure Ratings :	50 psig for PVC housing and 100 psig for SS housing
Probe Connections :	Various extension cables, molded connectors with extension cable and connector with screws
Protection :	Electronics IP67 (NEMA 6X), sensor IP20 and with dust filter IP50

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