PHM330
Differential Pressure Transmitter

eyc-tech PHM330
Differential Pressure Transmitter

Match with
eyc-tech AFMT Average Flow Measuring Tube
(Pitot tube)

| Features |

- Uses hot-wire type differential pressure sensor
- High sensitivity at low differential pressure, low zero-point drift, minimum measurable value as low as 1 Pa
- Pressure resistance up to 1 bar, differential pressure measurement range of ±50 … ±1500 Pa
- Aluminum alloy housing, IP65 protection rating
- Includes square root function for converting into air velocity and airflow, and simultaneous display on the screen
- Provides analog output with RS-485 communication function
- DIP switch to adjust range and square root function

| Introduction |

The eyc-tech PHM330 differential pressure transmitter, equipped with an aluminum alloy housing, is less affected by the external environment, ensuring stable and reliable airflow measurement. Its sensing element is a hot-wire type sensor, providing excellent zero-point stability and the ability to detect low differential pressures, allowing for precise measurements at low air velocities.

| Applications |

Exhaust air treatment / Differential pressure monitoring / Airflow monitoring / Water treatment / Air handling unit flow

Differential Pressure-PHM330

| Specification |

Measurement

Measuring element	Hot-wire type diff. pressure sensor, flow-through
Measuring range	±50 ... ±1500 pa

Output

Output	4 ... 20 mA / 0 ... 10 V / RS-485
Signal connection	3-wire
Load resistance	Current output : ≦500 Ω
	Voltage output : ≧ 10 KΩ
Response time	t63 ≦ 2 ms
Display type	LCD Module with back light, double line character
Display range	V=Air velocity (at 25℃)
	Q=Air quantity (with eyc-tech AFMT)
Digit height	5.56 mm

Accuracy

Accuracy	±1.0% F.S. ±4% M.V
Temperature influence	1% m.v. per 10℃

Environment

Measuring medium	Air
Operating temperature	-20 ... +80℃ (Non-display)
	0 ... +50℃ (Display)
Operating humidity	0 ... 95%RH (Non-condensing)
Storage temperature	-20 ... +80℃

Electrical

Power supply	DC 24 V ± 10 % & AC 24 V ± 10 %
Current consumption	DC 24 V : ≦45 mA(Display) / ≦40 mA(Non-display)
	AC 24 V : ≦95 mA(Display) / ≦90 mA(Non-display)
Overvoltage protection	≦DC 40 V
Electrical connection	M12 connector
	*with 2 m cable

Installation

Installation	Wall type

Protection

IP rating	IP65
Electrical protection	■ Over-voltage
	■ Reverse polarity
	■ Short circuit
Pressure resistance	1 bar
Burst pressure	3 bar

Certification

Certification	CE

Material

Housing	Aluminum alloy
Weight	Display : 497 g / Non-display : 478 g

| Hot-wire Type Differential Pressure Principle |

Hot-wire type differential pressure measurement technology calculates the pressure difference by measuring the air flow rate. When there is a pressure difference between two measurement points, air flows from the high-pressure side to the low-pressure side through a channel inside the transmitter. The channel contains a heating element and two temperature sensors. By comparing the heating and temperature changes, the air flow rate can be precisely measured, which in turn allows the calculation of the pressure difference. This technology can detect extremely low air flow rates, making it possible to precisely measure small pressure differences. Additionally, hot-wire type measurement technology has the characteristic of low zero-point drift, meaning the transmitter can maintain a stable initial zero point even after prolonged use, ensuring measurement precision and reliability.

Differential Pressure-PHM330
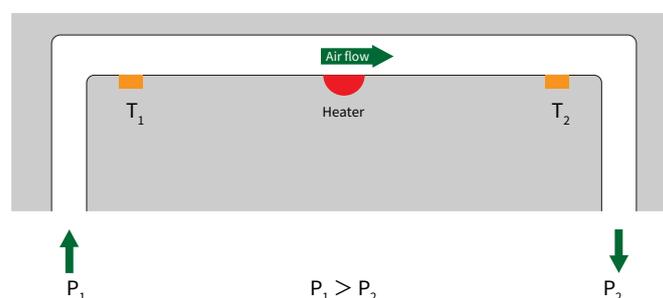
| with the eyc-tech Pitot Tube Principle |

eyc-tech PHM330 Differential Pressure Transmitter is built on the structure of thermal mass flow measurement, with eyc-tech AFMT Average Flow Measuring Tube(Pitot tube), based on the flow continuity formula (the law of conservation of mass) and the Bernoulli formula (the law of conservation of energy), the wind speed calculation formula is deduced to achieve an effective and accurate measurement.

■ Flow rate formula

$$V = K \sqrt{\frac{2}{\rho} \Delta P}$$

■ Flow formula

$$q_v = K \varepsilon A \sqrt{\frac{2}{\rho} \Delta P}$$

$$q_m = q_v \times \rho$$

V   = Velocity of the liquid(m/s)

ΔP = Difference between total pressure and static pressure (Dynamic pressure)(Pa)

ρ = Flow density(kg/m3)

K   = Flow coefficient

   q_v = Volume flow of liquid(m^3/s)

 q_m = Mass flow of liquid(kg/s)

K   = Flow coefficient of average flow measuring

ε = Inflation coefficient of liquid going thru measuring tube during operation

A   = Cross-sectional area of duct during operation(m^2)

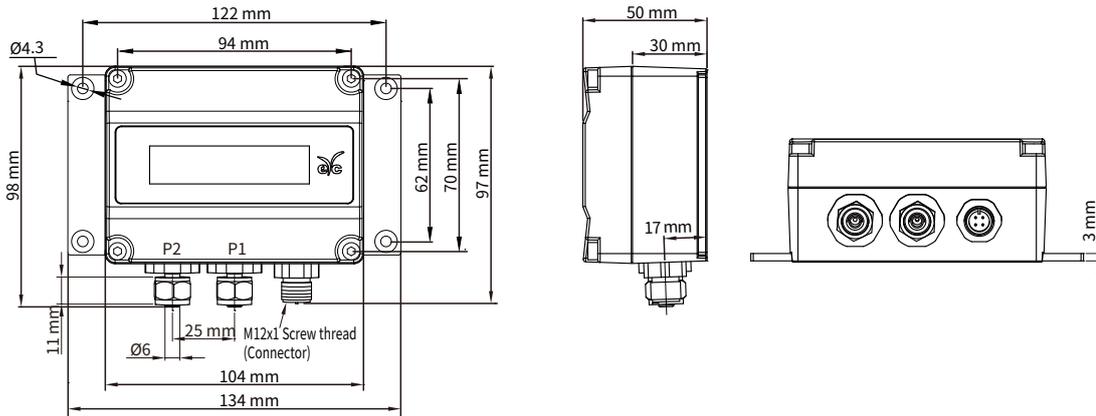eyc-tech PHM330 Differential Pressure Transmitter

eyc-tech AFMT Average Flow Measuring Tube(Pitot tube)
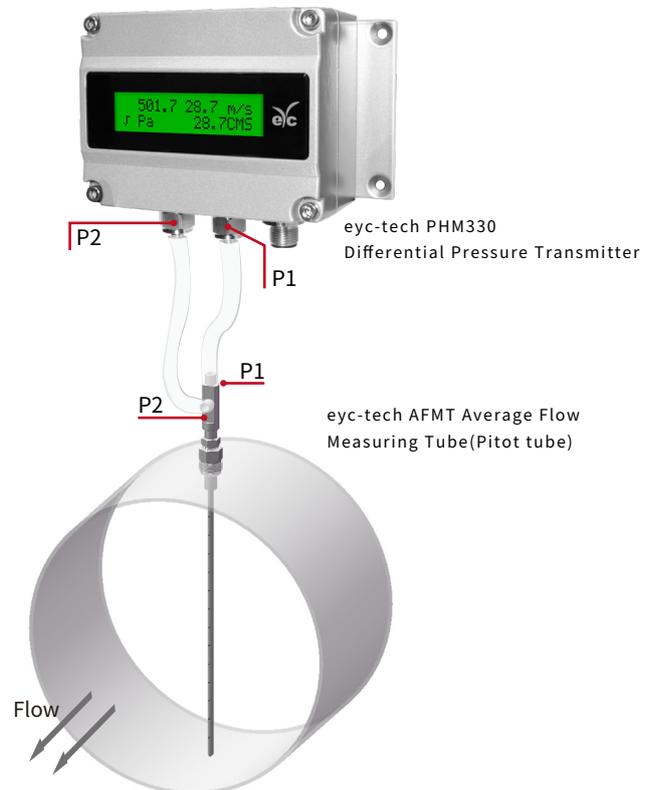
Note : The opening direction of holes on probe should be parall el to flow direction

eyc-tech AFMT Average Flow Measuring Tube(Pitot tube)
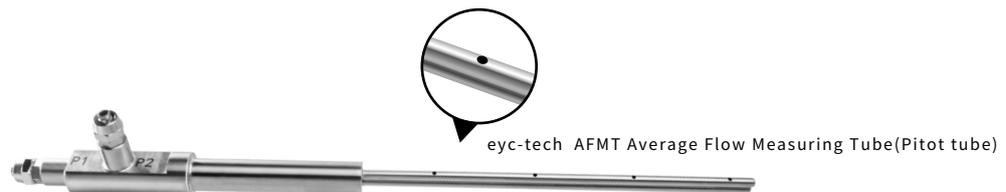
| Pressure Unit Conversion Table |

Unit		Pa	mbar	hPa	kPa	mmWS	inH$_2$O	mmHg
Range	±50 / 100		0.5 / 1	0.5 / 1	0.05 / 0.1	5 / 10	0.2 / 0.4	0.375 / 0.75
	±300 / 500		3 / 5	3 / 5	0.3 / 0.5	30 / 50	1.2 / 2	2.25 / 3.75
	±1000 / 1500		10 / 15	10 / 15	1 / 1.5	100 / 150	4 / 6	7.5 / 11.25

Differential Pressure-PHM330

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| Dimension |

122 mm
94 mm
Ø4.3
98 mm
62 mm
70 mm
97 mm
P2   P1
11 mm
25 mm
Ø6
M12x1 Screw thread (Connector)
104 mm
134 mm

50 mm
30 mm
17 mm
3 mm

※P1 / P2 : Connected to Ø6 PVC / PTFE compressed air pipe

| Connection Diagram |

Brown   +
1   4   Black   RS-485+
Gray   RS-485-
5
White + V mA — OUT
2   3
Blue   —

Power supply

DC 24 V ±10%
&
AC 24 V ±10%
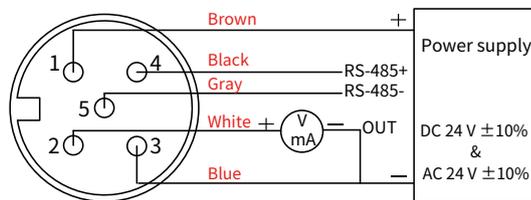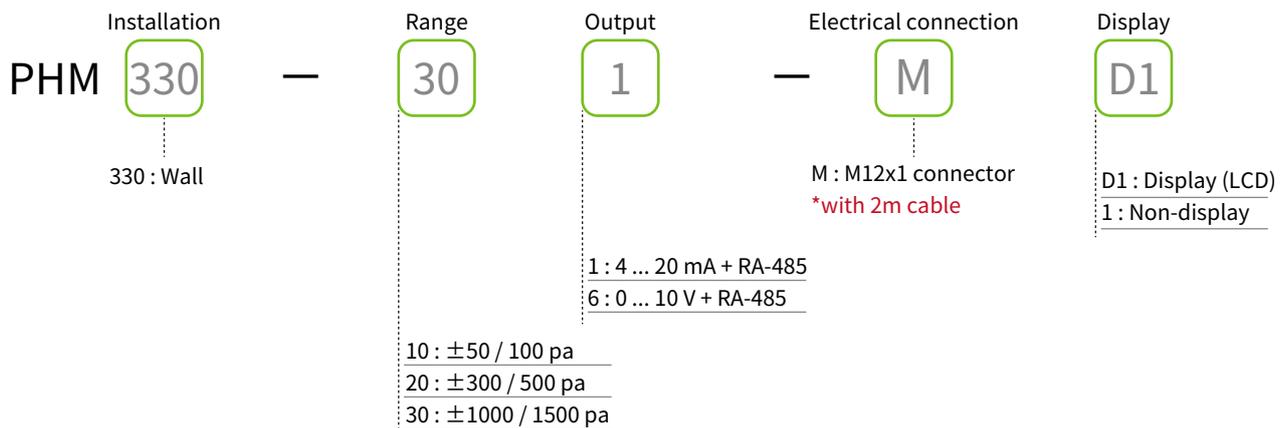
5P M12 Connector+RS-485

*Please make sure the product and the device which connect with RS-485 are on common ground, avoid damaged product.

| Ordering Guide |

Installation	Range	Output	Electrical connection	Display
PHM 330	— 30	1	— M	D1

330 : Wall

M : M12x1 connector
*with 2m cable

D1 : Display (LCD)
1 : Non-display

1 : 4 ... 20 mA + RA-485
6 : 0 ... 10 V + RA-485

10 : ±50 / 100 pa
20 : ±300 / 500 pa
30 : ±1000 / 1500 pa

*Recommended best-selling

Product ordering number	Product Specifications
PHM330-201-MD1	±300 / 500 pa, 4 ... 20 mA + RS-485, M12, Display

| Additional Option Test Report | For more detailed information please contact us.

◼ ISO 9001

Project	Measurand level or range
Pressure	Differential pressure : 0 ... 500 Pa / 0 ... 1000 Pa / 0 ... 10000 Pa