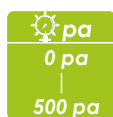


# PHM33 Differential Pressure Transmitter



Range



Air velocity measurement



MEMS



Proof pressure



Burst pressure



Monitor in time



Protect rating



Digital output

## Application

- The principle of differential pressure transmitter is measuring trace of differential pressure, the air through pressure in and pressure out, PCB will transduce it to differential pressure signal.
- Silicon chips on Thermo Differential Pressure Module of MEMS integration technology
- Off set function by bottom / UI software
- Low-pressure monitoring, high pressure bearable
- Option RS-485 communication interface, Modbus RTU protocol
- DIP switch output and range
- Physical switch : mbar / Pa / hPa / kPa / mmH2O / mmWS / inH2O / mmHg
- Square root function
- Application Field — monitor differential pressure of Cleanroom / hospital / air duct / filter environment and monitor air flow

## Specification

### Input

|                 |                                     |
|-----------------|-------------------------------------|
| input type      | Thermo Differential Pressure Module |
| measuring range | 0 ... 500 pa                        |

### Output

|                                    |                                                                                          |
|------------------------------------|------------------------------------------------------------------------------------------|
| output                             | 0-20mA / 4-20mA / 0-1V / 0-5V / 1-5V / 2-10V / 0-10V                                     |
| signal connection                  | 3-wire                                                                                   |
| ModBus                             | RS-485                                                                                   |
| accuracy ( at 25°C )               | ± 0.5 % of F.S.                                                                          |
| load resistance ( current output ) | 4-20mA < 500Ω / 0-10V ≥ 10KΩ                                                             |
| response time ( t 63 )             | ≤ 2 ms                                                                                   |
| display type                       | LCD Module with back light, double line character                                        |
| display range                      | as unit is Pa : V = air velocity ( at 25°C ) /<br>Q = air quantity ( use with eYc AFMT ) |
| height of character                | 5.56 mm                                                                                  |

### Environment

|                         |                                                                          |
|-------------------------|--------------------------------------------------------------------------|
| media measured          | air                                                                      |
| environment temperature | - 20 ... + 80 °C ( without display ) ;<br>0...+50 °C ( without display ) |
| environment humidity    | 97 %RH (non-cond.)                                                       |
| storage temperature     | - 40 ... + 80 °C                                                         |
| compensation            | 0 ... + 70 °C                                                            |

### Temperature Influence

|                   |                           |
|-------------------|---------------------------|
| temperature drift | ± 1.75 % ( 5°C ... 55°C ) |
|-------------------|---------------------------|

### Electrical

|                        |                                                                                                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| power supply           | 8 ... 35 VDC / 12 ... 30 VAC                                                                                                                                                                                    |
| current consumption    | DC 8V : ≤ 120 mA(display) / ≤ 100 mA(non-display)<br>DC 24V : ≤ 45 mA(display) / ≤ 40 mA(non-display)<br>AC 12V : ≤ 140 mA(display) / ≤ 120 mA(non-display)<br>AC 24V : ≤ 90 mA(display) / ≤ 80 mA(non-display) |
| overvoltage protection | ≤ 40VDC                                                                                                                                                                                                         |
| electrical connection  | M12 connector                                                                                                                                                                                                   |

### Installation

|              |      |
|--------------|------|
| installation | wall |
|--------------|------|

### Protection

|                     |                                                      |
|---------------------|------------------------------------------------------|
| protect rating      | IP 65                                                |
| electric protection | ⊙Polarity protection ⊙over-voltage<br>⊙short circuit |
| proof pressure      | 2 bar                                                |
| burst pressure      | 5 bar                                                |

### Certification

|               |    |
|---------------|----|
| certification | CE |
|---------------|----|

### Material

|        |                                     |
|--------|-------------------------------------|
| case   | Aluminum alloy                      |
| weight | display : 497g ; non-display : 478g |

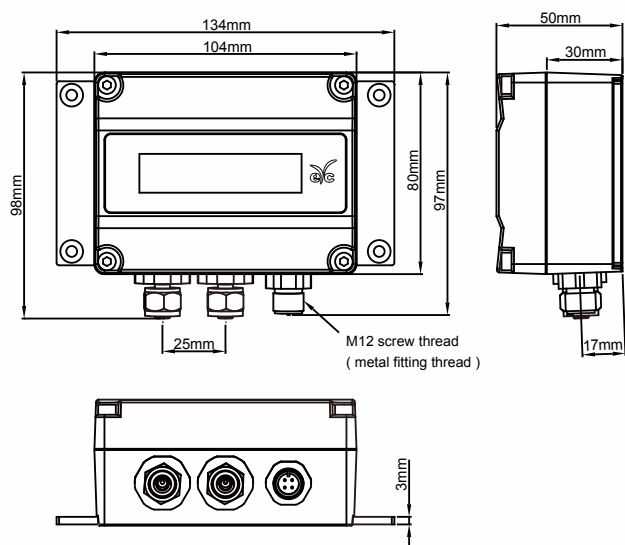
## Ordering Guide

| type                  | PMM                                                                                    | 33       | —      | 10       | 1                               | —      | N      | D      |
|-----------------------|----------------------------------------------------------------------------------------|----------|--------|----------|---------------------------------|--------|--------|--------|
| installation          | wall<br>duct                                                                           | 33<br>34 |        |          |                                 |        |        |        |
| range                 | 50 / 100 / 250 pa<br>100 / 300 / 500 pa                                                |          | —<br>— | 10<br>20 |                                 |        |        |        |
| output                | 4 ... 20mA<br>0 ... 20mA<br>2 ... 10V<br>1 ... 5V<br>0 ... 10V<br>0 ... 5V<br>0 ... 1V |          |        |          | 1<br>2<br>4<br>5<br>6<br>7<br>8 |        |        |        |
| electrical connection | plastic cable gland<br>M12x1 metal connector                                           |          |        |          |                                 | —<br>— | N<br>M |        |
| display               | display<br>RS-485                                                                      |          |        |          |                                 |        |        | D<br>1 |

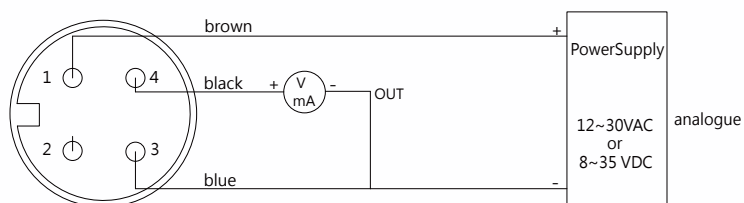
## Pressure unit conversion table

| Unit  | Pa          | mbar      | hPa       | kPa           | mmWS     | inH2O     | mmHg             |
|-------|-------------|-----------|-----------|---------------|----------|-----------|------------------|
| Range | 50/100/250  | 0.5/1/2.5 | 0.5/1/2.5 | 0.05/0.1/0.25 | 5/10/25  | 0.2/0.4/1 | 0.375/0.75/1.875 |
|       | 100/300/500 | 1/3/5     | 1/3/5     | 0.1/0.3/0.5   | 10/30/50 | 0.4/1.2/2 | 0.75/2.25/3.75   |

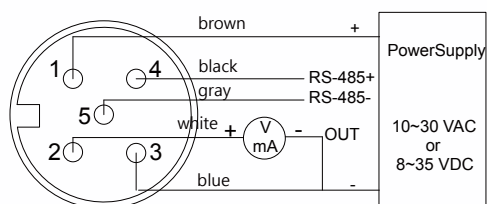
## Diagram



## Connection

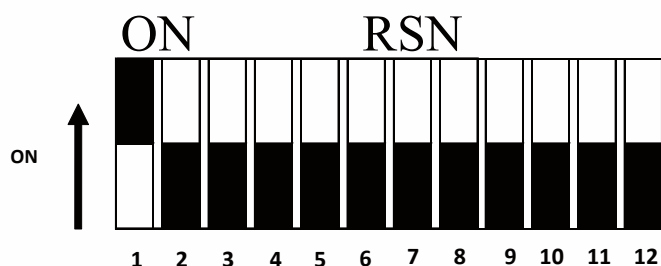


4P M12 Connector + Analogue



5P M12 Connector + RS-485

## DIP Switch



### 【 Function 】

1. DIP Switch Active / Deactivate
2. The Type for Analog Output
- 3 & 4. Switch Measuring range
- 5 & 6 & 7. Switch physical quantity unit
8. Zero switch
9. Linear / square root output switching
10. Filtering On / Off
- 11 & 12 . RS-485 Station no. switch

◎ 1. DIP Switch Active / Deactivate : Set the DIP switch as On/ Off

| STATUS       | OPEN | CLOSE |
|--------------|------|-------|
| DIP Switch 1 |      |       |

◎ 2. The Type for Analog Output

| STATUS       | 0-10V | 4-20mA |
|--------------|-------|--------|
| DIP Switch 2 |       |        |

◎ 3 & 4. Switch Measuring range : upon ordering code ( unit : Pa )

| DIP Switch 3 | DIP Switch 4 | Range (10)   | Range (20) |
|--------------|--------------|--------------|------------|
|              |              | 50           | 300        |
|              |              | 100          | 500        |
|              |              | 250          | 1000       |
|              |              | upon request |            |

( Other unit : please refer to pressure unit conversion table)

◎ 8. Zero switch

| STATUS       | 0-100 % | -100~100% |
|--------------|---------|-----------|
| DIP Switch 8 |         |           |

◎ 9. Linear / square root output switching

| STATUS       | √ | LINEAR |
|--------------|---|--------|
| DIP Switch 9 |   |        |

◎ 10. Filtering On / Off

| STATUS        | OPEN | CLOSE |
|---------------|------|-------|
| DIP Switch 10 |      |       |

◎ 11 & 12. Switch RS-485 station no. : ID 1-4

| DIP Switch 11 | DIP Switch 12 | STATION |
|---------------|---------------|---------|
|               |               | 1       |
|               |               | 2       |
|               |               | 3       |
|               |               | 4       |

◎ 5 & 6 & 7. Switch physical quantity unit

| DIP Switch 5 | DIP Switch 6 | DIP Switch 7 | UNIT  |
|--------------|--------------|--------------|-------|
|              |              |              | mbar  |
|              |              |              | Pa    |
|              |              |              | hPa   |
|              |              |              | kPa   |
|              |              |              | mmH2O |
|              |              |              | mmWS  |
|              |              |              | inH2O |
|              |              |              | mmHg  |