

Manostar Electronic Micro Differential Pressure Measurement System

- WO81
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- FR51A
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- EMT1**
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Manosys Pressure Transmitter EMT1 General purpose type

RoHS compliant

- High accuracy and high reliability micro differential transmitter
- 32 variation of pressure ranges are available from 10 Pa to 50 kPa and ± 10 Pa to ± 5 kPa
- High performance diaphragm and differential inductance method is applied in displacement sensor
- There are a lot of sales achievement product in advanced control field of differential pressure.



EMT1A
(drip-proof indoor-use type)



EMT1B
(exposed terminal connection type)

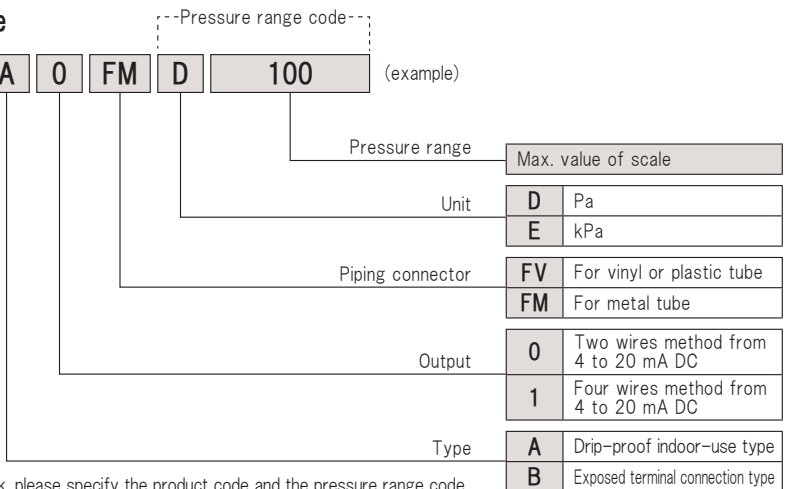
<Example of main use field>
 Nuclear facilities
 Air conditioning control system of the food factories
 Air conditioning control system of the high-rise buildings
 Hospital and medical facilities
 Production lines of the car and the semi-conductor
 Exhaust gas pressure control of coffee-roaster machines

<Example of use>
 Measuring the inside pressure of clean rooms
 Detection of the pressure loss of an air filter
 Measuring air volume and velocity in a ventilator and an exhauster.

*(refer to p.93)

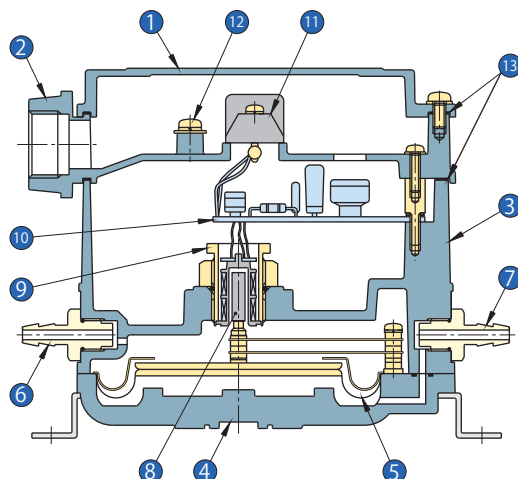
Product code

EMT1 A O FM D 100 (example)



- ◆If you order or ask, please specify the product code and the pressure range code.
- ◆In case of measuring air volume and air velocity, specification of pressure detection side is needed. Please tell us the data for calculating air volume and velocity.

Main structure



No.	Name
1	Cover
2	Terminal box
3	Housing
4	Base
5	Diaphragm
6	High pressure side piping connector
7	Low pressure side piping connector
8	Core
9	Coil bobbin
10	Circuit board
11	Terminal block
12	Screw of earth terminal
13	Cover packing

Specification

Types	Drip-proof indoor-use type			Exposed terminal connection type		
	EMT1A			EMT1B		
Pressure units	Pa, kPa			Withstanding vibration	5 to 10 Hz Amplitude : 10 mm, 10 to 50 Hz Acceleration : 39 m / s ² (each two hours on triaxial directions)	
Pressure measuring method	Measuring differential pressure					
Gas to be measured	Air or non-corrosive gas (not liquid)			Withstanding impact	100 m / s ² (each two hours on triaxial directions)	
Pressure receiving element	Diaphragm (silicon rubber)					
Material of the outer case	Aluminum die-cast, Painted outer case surfaces (paint color gray)			Applicable piping	1. Vinyl, plastic or rubber tube (I.D. 6) ...Applicable model attached with piping connector for vinyl or plastic tube 2. Metal tube (O.D. 6 ± 0.1) ...Applicable model attached with piping connector for metal tube 3. Hard plastic tube (O.D. 6 × I.D. 4) ...Optional inner sleeve set (XIN 6 × 4) is needed for type attached with piping connector for metal tube. (refer to p.92)	
Withstanding pressure of instrument body	500 kPa (refer to p.104)					
Standard installation position	Upward horizontal(0° ± 5°)			Mass	EMT1A Approximately 1100 g EMT1B Approximately 960 g	
Conversion method of electric signal	Variable inductance					
Insulation resistance	Between each terminal and case 20M Ω or more (500 V DC megger)					
Medium and ambient temperature	0 to 50 °C (no freezing)					
Ambient humidity	90 % RH or less (no dewing)					
Pressure range codes	Pressure ranges	Accuracies (at 20 °C)	Temperature characteristics (zero + span) from 0 to 40 °C	Withstanding pressures of pressure receiving element (refer to p.104)	Output and transmission methods	
D 10 D 15 D 20 D 30	0 ~ 10 Pa 0 ~ 15 Pa 0 ~ 20 Pa 0 ~ 30 Pa	± 2 % FS	± 0.2 % FS/°C	10 kPa	Two wires method : Output signal from 4 to 20 mA DC (load resistance : 500 Ω or less) Power supply voltage 24 V DC ± 10% (ripple : Within 0.2 V P-P) Four wires method : Output signal from 4 to 20 mA DC (load resistance : 500 Ω or less) Power supply voltage 100 V AC ± 10% 50 / 60 Hz Approximately 2 VA	
D 50 D 75 D 100 D 150 D 200 D 300 D 500 D 1000	0 ~ 50 Pa 0 ~ 75 Pa 0 ~ 100 Pa 0 ~ 150 Pa 0 ~ 200 Pa 0 ~ 300 Pa 0 ~ 500 Pa 0 ~ 1000 Pa					± 1 % FS
E 2 E 3 E 5 E 10 E 20	0 ~ 2 kPa 0 ~ 3 kPa 0 ~ 5 kPa 0 ~ 10 kPa 0 ~ 20 kPa	100 kPa	150 kPa			
E 30 E 50	0 ~ 30 kPa 0 ~ 50 kPa			± 2 % FS		± 0.2 % FS/°C
E 100	0 ~ 100 kPa	± 1 % FS	± 0.1 % FS/°C			
D +- 10 D +- 20 D +- 30	- 10 ~ + 10 Pa - 20 ~ + 20 Pa - 30 ~ + 30 Pa			± 2 % FS		± 0.2 % FS/°C
D +- 50 D +- 100 D +- 200 D +- 300 D +- 500 D +- 1000	- 50 ~ + 50 Pa - 100 ~ + 100 Pa - 200 ~ + 200 Pa - 300 ~ + 300 Pa - 500 ~ + 500 Pa - 1000 ~ + 1000 Pa	± 1 % FS	± 0.1 % FS/°C			
E +- 2 E +- 3 E +- 5	- 2 ~ + 2 kPa - 3 ~ + 3 kPa - 5 ~ + 5 kPa					

◆For measuring combustible gas pressure or using in combustible gas area, use EMT1H type (refer to p.63) that is intrinsically safe type.

◆Available installation position is only upward horizontal.

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Manostar Electronic Micro Differential Pressure Measurement System

WO81

Manosys Pressure Transmitter EMT1 General purpose compact type

WO70

Outline drawing

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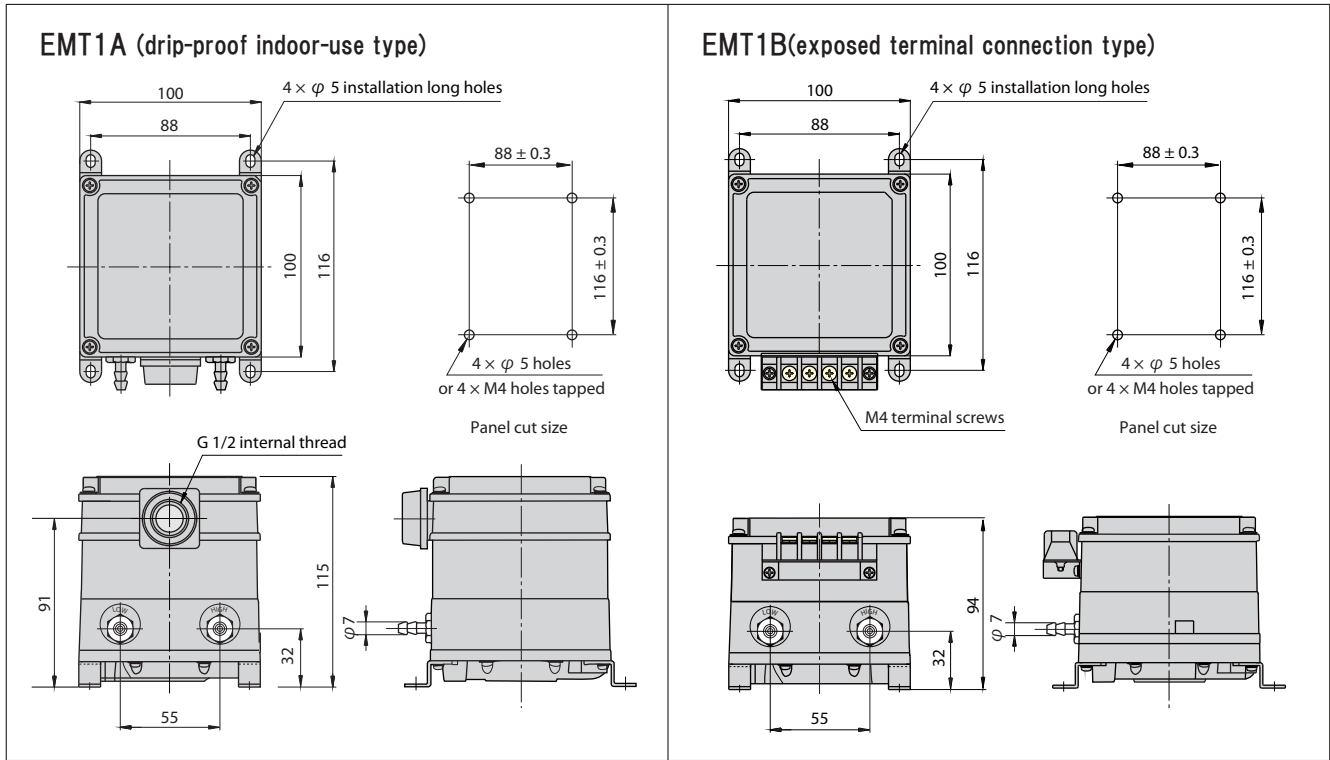
Combination of Manosys

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Application

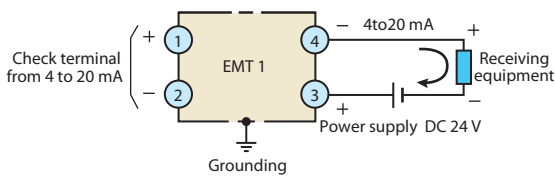
Cautions for use

Maintenance



Terminal connection diagram

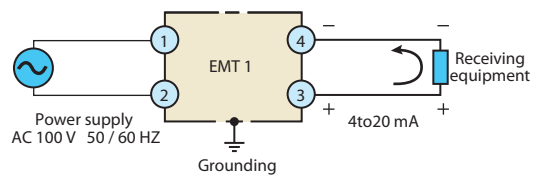
Two wires method



Manosys transmitter can monitor output signal during working, if they are connected a ammeter with internal resistance of 10 Ω or less to check terminal.

◆ Manosys receiver is equipped with DC power supply circuit for two wires method Manosys transmitter, therefore, In using combination with Manosys receiver, there is no need of the DC power supply equipment which is separately available. (refer to p.72)

Four wires method



◆ Refer to p.83 about combination of Manosys transmitter, receiver and controller.

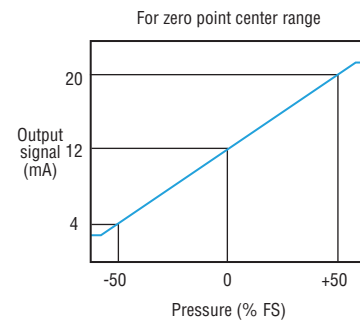
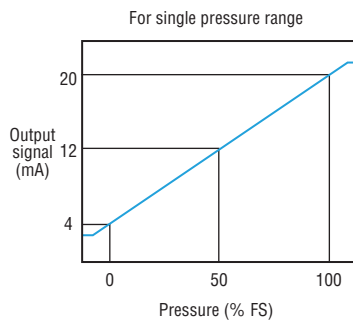


Caution

Do not apply excessive torque more than necessary, otherwise it will damage the instrument body. Tighten the screw of terminal with the torque from 1.0 to 1.3 N·m.

Transmission output diagram (differential pressure-output signal)

● Output signal 4~20 mA DC



For accessory EMT1A RoHS compliant

Plastic ground (for EMT1A)																					
<p>For wiring</p> <p>Plastic ground is used to wiring transmitter with instrumentation cable. Choose the plastic ground of the size that rubber bush hold external of cable as shown right table. Be carefully O.D. of cable</p>																					
	<table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th rowspan="2">Product code</th> <th rowspan="2">Rubber bushing color</th> <th colspan="2">Applicable cable outer diameter (mm)</th> </tr> <tr> <th>Min.</th> <th>Max.</th> </tr> </thead> <tbody> <tr> <td>XAC4-2</td> <td>Black</td> <td>6.5</td> <td>9.0</td> </tr> <tr> <td>XAC4-3</td> <td>Red</td> <td>8.5</td> <td>11.0</td> </tr> <tr> <td>XAC4-4</td> <td>Green</td> <td>10.5</td> <td>12.5</td> </tr> </tbody> </table>	Product code	Rubber bushing color	Applicable cable outer diameter (mm)		Min.	Max.	XAC4-2	Black	6.5	9.0	XAC4-3	Red	8.5	11.0	XAC4-4	Green	10.5	12.5		
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Adaptor for conduit (for EMT1A)	
<p>For wiring conduit</p> <p>When you wire the conduit tube of nominal diameter 19 or pipe metal conduit throughout the conduit tube, use the adaptor for conduit as shown right figure. Because wire inlet size of the transmitter differ by internal thread of G 1 / 2.</p>	<p style="text-align: right; margin-top: 10px;">Product code ADPA-EMT1</p>

Thread for cable conduit	
<p>For installation bracket on vertical wall Install this instrument at horizontal position (inclination angle at 5°). If installation surface is vertical, use the installation bracket on vertical wall to install horizontally. Take the space of 0.5 m above the transmitter for the purpose of adjustment and maintenance.</p> <div style="text-align: center; margin: 10px 0;"> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>When piping connector port is parallel to wall</p> </div> <div style="text-align: center;"> <p>When piping connector port is vertical to wall</p> </div> </div>	<p style="text-align: right; margin-top: 10px;">Product code BRKT-EMT1</p>

VT type connector	MT type connector	MTW type connector (double ring joint type)
<p>Product code KGAT1VT</p>	<p>Product code KGAT1MT</p>	<p>Product code KGAT1MTW-S</p> <p style="margin-top: 5px;">(made from Stainless steel)</p>

*Because of quality improvement or any reason, some specifications are possibility of changing without notice.

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Product Warranty

Warranty Period

This product warranty is valid for one year from the date of delivery to a place specified by an ordering party who has transacted directly with Yamamoto Electric Works Co., Ltd.

Coverage

If a product breaks down due to a reason for which we are responsible during the warranty period and you return the product to us, we will either repair or replace the product free of charge.

This warranty does not cover:

- (1) Usage of the product under any inappropriate conditions or environment contrary to what is described in our product catalog, specifications or manual.
Handling or usage of the product other than as described in our product catalog, specifications or manual.
- (2) Breakdown due to a reason other than a fault within our product.
- (3) Any product that has been modified or repaired by a party other than us.
- (4) Any breakdown due to a reason that was not foreseeable based on scientific and technical standards applied at the time of shipment.
- (5) Any breakdown due to a reason not attributable to us such as a natural calamity or other disaster.

These terms of warranty represent our entire liability with respect to the product, and we shall have no liability for any other loss arising in connection with a breakdown of the product.

*This product warranty is only valid within Japan.

This document is a translation from the original Japanese version, and the original Japanese version has priority over this translation.

Be sure to refer to the original Japanese for the details of this warranty.



Caution

The Japanese original document shall always take precedence over the translated versions.

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Sole Agent  **Manostar CO.,LTD.**

1-2-3, Nishishiriike-cho, Nagata-ku, Kobe,
Hyogo 653-0031 JAPAN
TEL. +81 (78) 621-7000 FAX. +81 (78) 621-7788

Manufacturer  **Yamamoto Electric Works Co., Ltd.**

1-2-3, Nishishiriike-cho, Nagata-ku, Kobe,
Hyogo 653-0031 JAPAN
TEL. +81 (78) 631-6000 FAX. +81 (78) 631-6020