Manostar Electronic Micro Differential Pressure Measurement System

Manosys Presure Transmitter EMT1H Intrinsically safe apparatus type

Type approval No.T56176

Explosion-proof performance	i3aG4

Intrinsically-safe apparatus is called by the structure which is designed in consideration of a necessary safety factor to make a combustible gas not ignited by the spark or rising in temperature at normal condition and even at accident and admitted explosion-proof safety by public institution test.

EMT1H
(Pressure Transmitter + Safety Barrier)

<Example of main use field>
Air conditioning control system of factories
Measuring negative pressure in bag filter and differential pressure in air conditioning
Monitoring of pressure loss in filter
Production lines of precision machine
Air conditioning control system of buildings

<Example of use>
Detector of a pressure loss in an air filter
Measuring the inside pressure of clean rooms
Detector of a pressure loss in a bag filter
Measuring of dynamic pressure in a ventilator and a exhauster

＊(refer to p.93)

Product code

E M T 1 H [V] S [100] (example)

- [100]: Pressure range code
  - Pressure range → Max. value of scale
- [V]: Piping connector
  - V: For vinyl or plastic tube
  - M: For metal tube

◆If you order or ask, please specify the product code and the pressure range code.
◆Above mentioned product code is a set of pressure transmitter ands Safety barrier.
◆It is impossible to order Safety Barrier only.

System specification

Type	EMT1H S
Composition	Pressure Transmitter EMT1H and Safety Barrier MTL787S+
Explosion-proof type	Intrinsically safe apparatus structure
Gas to be measured class	3aG4
Intrinsically safe circuit	The condition of external wiring:Max. external resistance 10 Ω or less Max. external capacitance 0.03 μF Max. external inductance 1 mH or less

Pressure Transmitter EMT1H specification

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	Withstanding impact	100 m / s^2 (each six times on triaxial directions)
Gas to be measured	Air or non-corrosive gas (not liquid)	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)
Pressure receiving element	Diaphragm (silicon rubber)		
Material of the outer case	Aluminum die-cast, Painted outer case surfaces (color gray)		
Withstanding pressure of instrument body	500 kPa (refer to p.104)		
Standard installation position	Upward horizontal(0° ± 5°)		
Conversion method of electric signal	Variable inductance		
Insulation resistance	Between terminal and grounding terminal more than 20 MΩ (500 V DC megger)	Mass	Approximately 1100 g
Withstand voltage	Between terminal and grounding terminal 500 VAC 50 / 60 Hz for one minite		
Medium and ambient temperature	0 to 40 ℃ (no freezing)		
Ambient humidity	90 % RH or less (no dewing)		

Safety Barrier MTL787S+ specification

Intrinsically safe circuit Max. voltage	28.16 V	Non- intrinsically safe circuit allowable voltage Rated operating voltage and current	AC 250 V 50/60 Hz, DC 250 V
Intrinsically safe circuit Max. current	93 mA		DC 25.5 V 50 mA
Intrinsically safe circuit Max. power consumption	0.655 W	Accessory	TKA-SMC7 two sets of installation bracket
Mass	Approximately 120 g		

Pressure range code	Pressure range	Accuracy (at 20 ℃)	Temperature characteristic (zero + span)	Withstanding pressure of receiving element (refer to p.104)	Output and transmission
10	0 ～ 10 Pa	± 2 % FS	± 0.2 % FS/℃	10 kPa	Two wires method: Output signal from 4 to 20 mA DC (load resistance : 250 Ω max.) Power supply 24 V DC ± 10 % (ripple : Within 0.2 V P-P)
20	0 ～ 20 Pa				
30	0 ～ 30 Pa				
50	0 ～ 50 Pa	± 1 % FS	± 0.1 % FS/℃		
100	0 ～ 100 Pa				
200	0 ～ 200 Pa				
300	0 ～ 300 Pa				
500	0 ～ 500 Pa				
1 K	0 ～ 1 kPa				
2 K	0 ～ 2 kPa			40 kPa	
3 K	0 ～ 3 kPa				
5 K	0 ～ 5 kPa				
10 K	0 ～ 10 kPa				
20 K	0 ～ 20 kPa				
30 K	0 ～ 30 kPa			100 kPa	
50 K	0 ～ 50 kPa				
±10	−10 ～ +10 Pa	± 2 % FS	± 0.2 % FS/℃	10 kPa	
±20	−20 ～ +20 Pa				
±30	−30 ～ +30 Pa				
±50	−50 ～ +50 Pa	± 1 % FS	± 0.1 % FS/℃		
±100	−100 ～ +100 Pa				

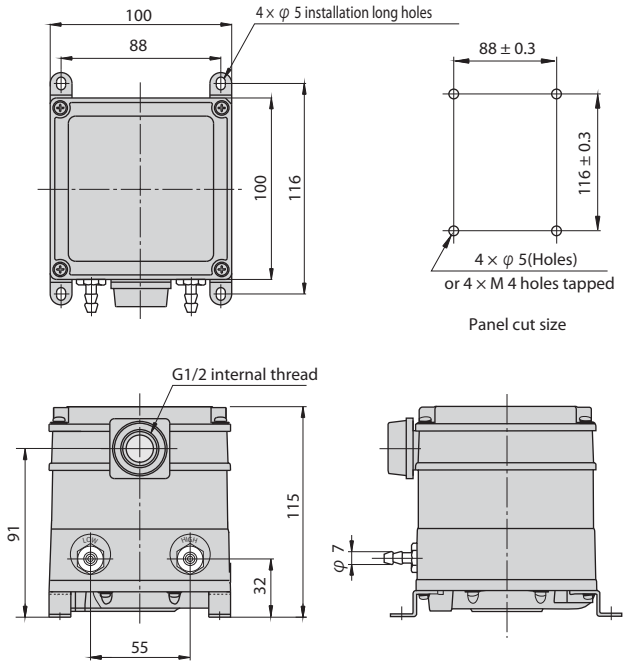
◆Available installation position is only upward horizontal.

WO81
WO70
FR51A
MS30
MS61A
MS65
EB3C
EMD8
EMD7
EMT6
EMT1
EMTGP1
EMT1H
EMP5
EMA3
EMRT1
HWS15
Combination of Manosys
Accessories
Application Cautions for use Maintenance

Manostar Electronic Micro Differential Pressure Measurement System

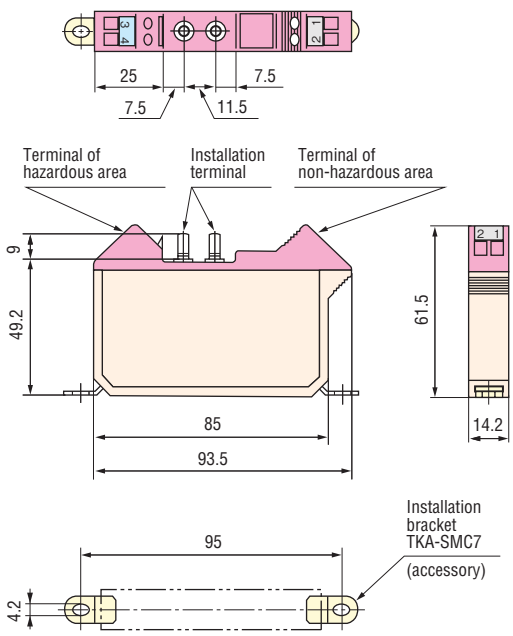
Pressure Transmitter EMT1H Outline drawing

EMT1H

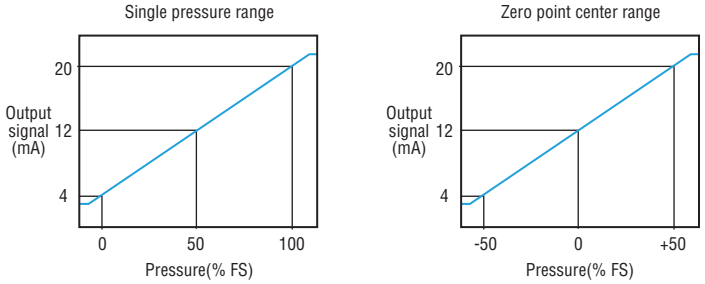


Safety Barrier Outline drawing

MTL787S+



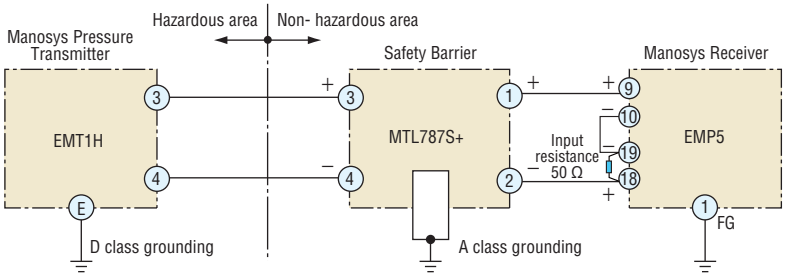
Transmission output diagram (Differential pressure-output signal)



Terminal connection diagram

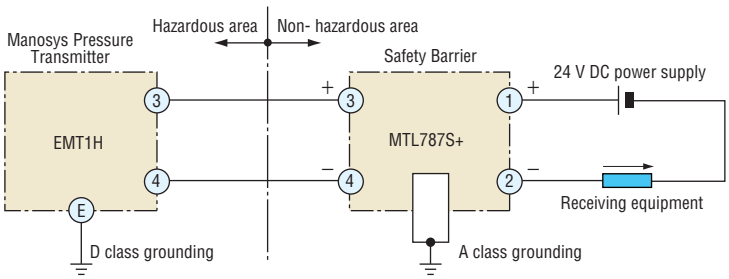
When EMT1H is used with Manosys Receiver

Manosys Receiver is equipped with DC power supply. Therefore, there is no need of the DC power supply equipment which is sparete placement available.



When EMT1H is used with external 24 V DC power supply

When EMT1H is used with external 24 V DC power supply, use the DC power supply which is constant voltage and low ripple, and use load resistance of 250 Ω or less.



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.

Warning

For use

Do not change the composition parts and circuits.

Safety barrier must be in totally enclosed constraction-case and installed in non- hazardous area.

For grounding

Connect Safety Barrier to ground separately according to A class grounding.

Connect Pressure Transmitter to ground according to D class grounding.

Note: Actual construction of the details grounding, refer to a releavant the guideline for explosion-proof electric equipment in each country.

For wiring

To identify intrinsically safe circuits by color, use light blue cable or cable wrapped light blue tape around terminal of cable in wiring.

Wires of intrinsically safe circuit must be used by rating or less.

Use 600 V polyvinyl chloride insulated wire (JIS C3307) or wire with characteristic of insulation equal to or better than insulated wire (JIS C3307), or instrumentation cable (JISC364) that cross-sectional is 0.5 mm^2 or more.

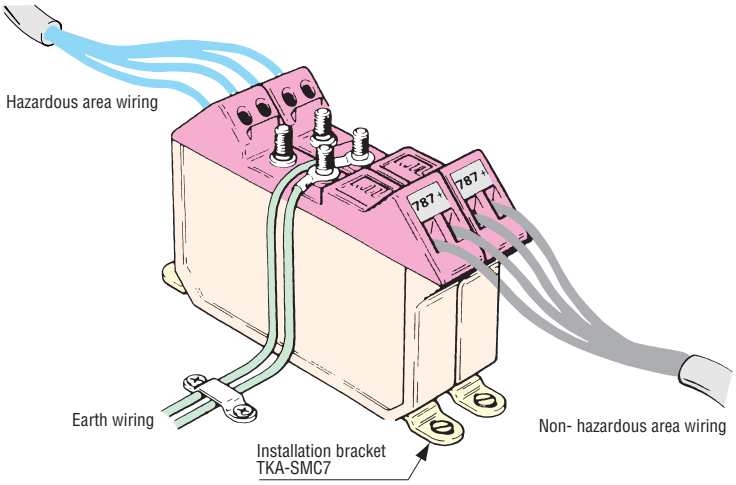
The external wiring of the intrinsically safe circuit must be separated from other circuits. Because it is prevented from electromagnetic induction, electrostatic induction and contacting with other circuits.

Use magnetic shield, such as metallic sheath, and separate intrinsically safe circuit from non- intrinsically safe circuit, to prevent the wiring of the intrinsically safe circuit in a panel from electromagnetic induction and electrostatic induction.

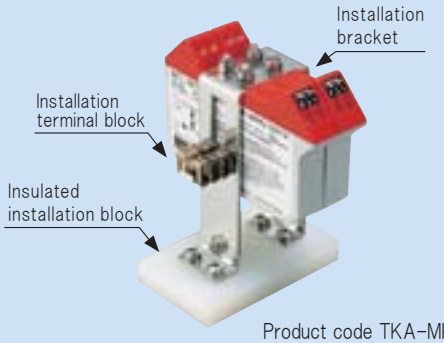
In wiring, do some treatment that combustible gas should not leak to non-hazardous area.

Note: For the details of wiring, refer to a releavantest guideline for explosion-proof electric equipment in each country.

Recommended installation of Safety Barrier



Accessory for Safety Barrier

Installation bracket	Installation bracket to install two sets of Safety Barriers
(One set is attached to the instrument body)  One set (two pieces) Product code TKA-SM7C	Two sets of Safety Barriers can be installed. It is easy to ground to earth and to connect the shilding wire of cable by using earth terminal.  Product code TKA-MK2

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. You should be sure to refer to the Japanese original document.

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