



READ THE INSTRUCTION MANUAL BEFORE USING

INSTRUCTION MANUAL

CORROSION-PROOF TYPE
MANOSTAR TRANSMITTER

EMTGP1

No. TR-EMTGP1-E02

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

1-2-3, Nishishiraike-cho, Nagata-ku, Kobe, 653-0031 JAPAN


TEL. +81-78-631-6000 FAX. +81-78-631-6020


Manostar




INTRODUCTION

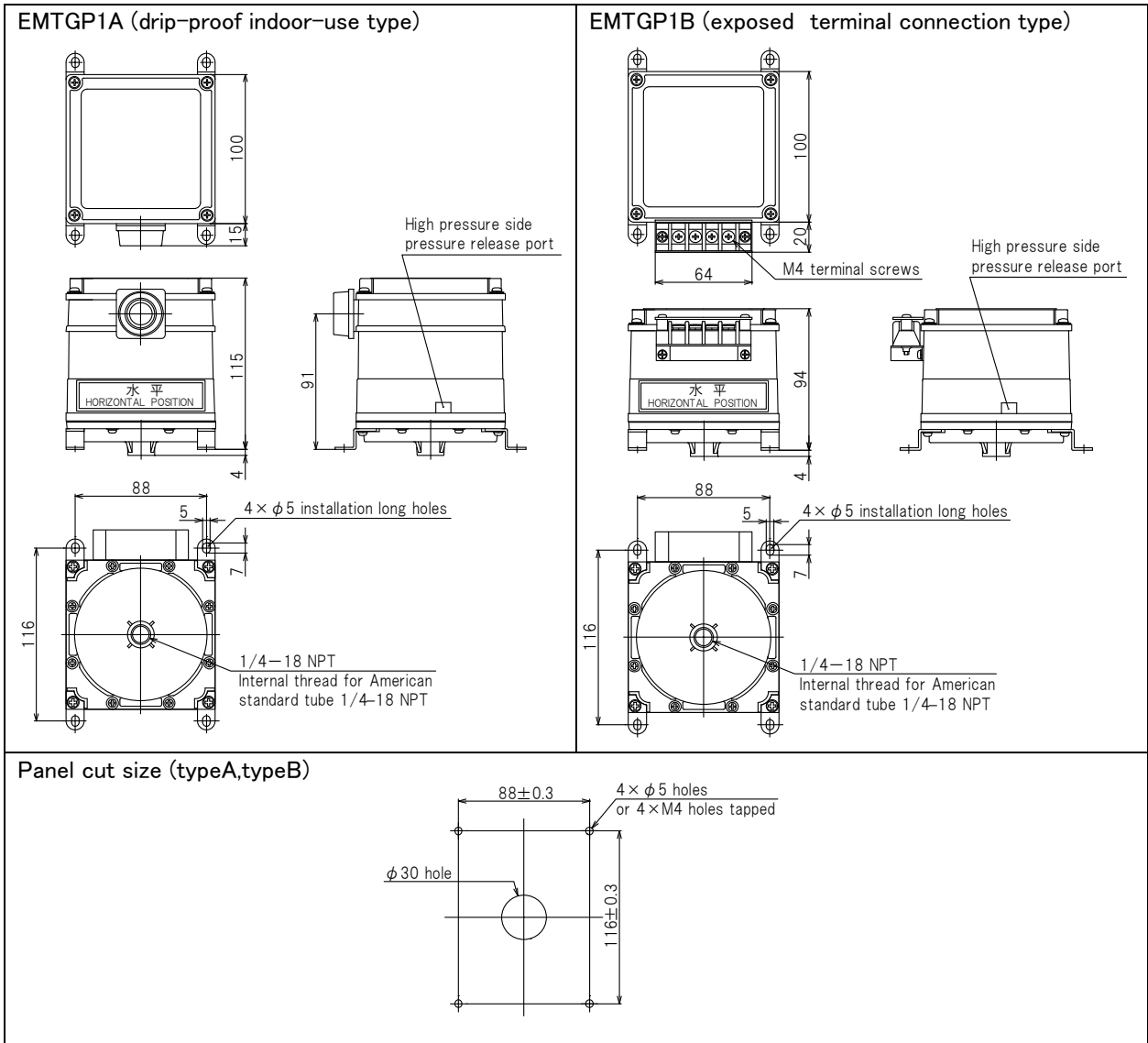
Thank you very much for purchasing of 「MANOSTAR TRANSMITTER EMTGP1」.

 Caution	<p>To ensure your safety in using this instrument:</p> <ul style="list-style-type: none">– Be sure to read the instruction manual carefully before using this instrument so that you can use it properly. <p>Wrong use may result in failure of this instrument and lead to its damage and accident. This manual should be kept in a proper place so that you can refer to it any time you need.</p>
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 Warning
<ul style="list-style-type: none">– Do not apply the pressure to the instrument more than it can withstand. The diaphragm and the retainer are broken and cause of injury or accident, etc. disaster if the pressure exceeding withstanding pressure of the pressure receiving element is applied to the instrument. The case body and the transparent cover of the instrument are broken and cause of injury or accident, etc. disaster if the pressure exceeding withstanding pressure of the instrument body is applied to the instrument.– Avoid using where instrument is exposed to many vibration and impact. Using this instrument where intensified vibration and impact may be damaged instrument. It is expected that gas leaks of instrument which harms a parson.– Do not exceed rated surrounding temperature, humidity and altitude in use. Using this instrument by exceeding rated surrounding temperature and humidity and altitude it may be damaged and cause the accident.– Do not disassemble or reconstruct your instrument. It may void your warranty.

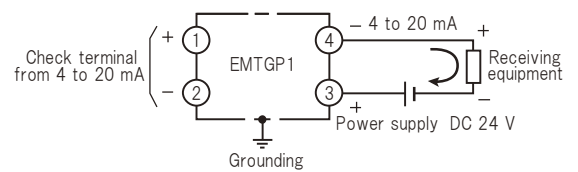
 Caution
<ul style="list-style-type: none">– As to where to install and how to install the instrument, be sure to follow the instruction manual provided so as to ensure a proper method.– Do not use organic solvent for cleaning. Use of organic solvent, such as thinner and benzene, to remove surface dirt and stain may cause melting and cracking on the surface. To remove dirt and stain, be sure to wipe them off with a wet cloth using diluted neutral cleanser.– Wrong terminal connection If the signal input and output terminals are connected to the power supply, the internal mechanism burns out.– Dropping the product Product is a precision instrument. If you drop the product, there is a possibility that the exterior, also the interior mechanism damage.– Removal of the piping If you replace the old pipes, please do not pull the pipe with a strong force. There is a possibility that the pipe cap is broken.

I . OUTLINE DRAWING

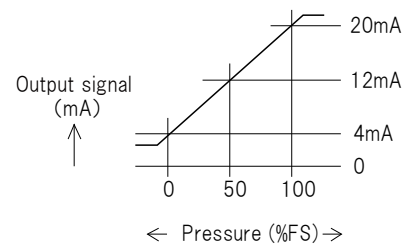


II . EXTERNAL CONNECTION DIAGRAM

- Two wires method transmitter receives 24V DC power supply from outside and using power supply wiring, transmits 4 to 20mA DC signal to external receiver units.
- Two wires method transmitter can monitor output signal during operation, if they are connected with ampere meter with internal resistance of less than $10\ \Omega$ to check terminal.



**Transmission output diagram
(differential pressure – output signal)**



 Caution	<p>Our receiver is equipped with AC-DC power supply circuit for two wires method our transmitter, therefore, In using combination with our receiver, there is no need of the AC-DC power supply which is separately available.</p>
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III. INSTALLATION AND TRIAL RUNNING

1. Installation

- 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. (refer to p.5)
- Take the space of 0.5 m above the transmitter for the purpose of adjustment and maintenance.
- Do not install the instrument outdoors directly. If you need to get it installed outdoors directly, store the instrument at the storage casing with dew-proof construction.
- Avoid using where the instrument is subject to vibration, big impact and high humidity.
- Do not use at the place where corrosive gas (such as sulfuric gas and ammonia gas etc.) is present.
- Try to use the instrument as far away as possible from intensified power source and the unit generating high frequency (high frequency welder and high frequency sewing machine etc.).
- The instrument is not designed for measurement of combustible gases and installation where explosive danger or hazardous risk exists.
- Measurement of flammable gases and installation in the explosive hazardous area are not possible with the apparatus.

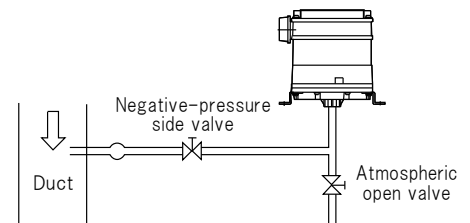
2. Pressure of measurement and connection of piping

The apparatus is exclusively designed for use with negative pressure measurement of gage pressure. Connect the pipe for measurement pressure source (negative pressure) to the 1/4-18NPT internal thread located at the under the apparatus. The measurement pressure will be the differential pressure from the atmospheric pressure.

 Caution	<p>1/4-18NPT with the torque of 5.0 N·m. Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.</p>
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3. Caution of piping

- Before implementing the piping work, be sure to read the Section V “Accessories for Manostar Transmitter”.
- Considering the maintenance services, it is recommended to install the calibration valve device as shown in the figure at the right.
- **Prohibition of common piping**



Piping each of pressure detectors and pressure receiving instruments tube exclusively dedicated for it, and do not connect the piping commonly with the adjacent system as shown in the right figure.

Common piping causes measurement error because the pressure of each system interferes.

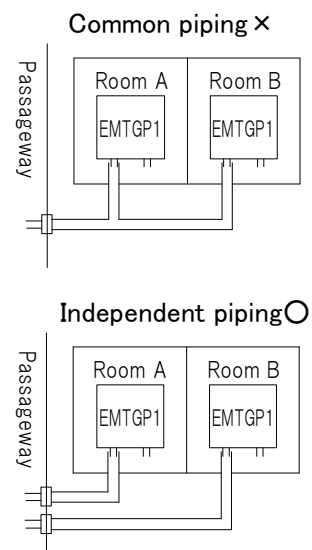
- **Prevention of clogged piping due to drain**

If drain remains in the line, it causes measurement error. Be sure to install the pressure receiving instrument above the pressure outlet port of the pressure detector and arrange the line so that the drain water should not remain in the slack piping.

If the arrangement mentioned above in not possible, install a drain tank within the line as shown in the right figure and clean it once in a while. After the cleaning of the tank, check that the air tightness is fully kept.

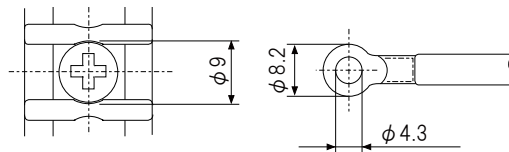
- **Errors caused by long distance piping**

The speed of response is delayed when the product is used for remote monitoring. In such application, the I.D. of the connection tube should be as large as possible. If the piping conditions of the high and low pressure side are significantly different, the difference in the piping resistance between high and low pressure side causes the difference in pressure transmission time, and the measurement becomes inaccurate.



4. Wiring and connection

- <EMTGP1A> can be used for cabling or conduit wiring. In addition, try to use wiring accessory or connecting accessories that is separately sold.
- Use shielded wire for input and output wiring on current and voltage signal, and do not put them near power line. Moreover, do not let it go through the same conduit with power line.
- Exercise care about terminal connection number because it is different according to types. Make sure about a code of terminal connecting part on the terminal block, in accordance with the external connection diagram.
- Use a crimping terminal suitable for M4 terminal screw.
- Provide the the instrument on the grounding terminal with the class D grounding (grounding resistance is 100 Ω or less).
Get grounding at the foot of installed unit. Also, EMTGP1A can get it from the grounding terminal inside the upper cover.
- Make a one point grounding at the one end of shielded output signal cable.



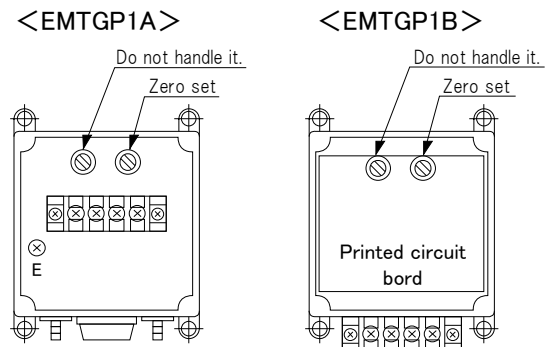
 Caution	<p>Tighten the terminal screws with the torque of 1.0~1.3 N·m. Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.</p>
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5. Zero adjusting

- 1) Since zero point of the instrument is changed according to mounting posture, therefore, after installation of horizontal posture is completed, be sure to perform zero adjustment.
- 2) After making sure that there is no mistake about wiring and connection, supply each equipment with power and start a warm-up for 10 minutes.
- 3) Detach the tube to the piping connector of the apparatus to ensure the atmospheric open condition or manipulate the calibration valve device.
- 4) Take out the upper cover of the instrument, turn the zero set adjuster inside and set zero point output of the instrument at the value indicated on the table below.
- 5) As for span set adjusting, it has been adjusted already at our factory. Do not handle it.

Output signal table

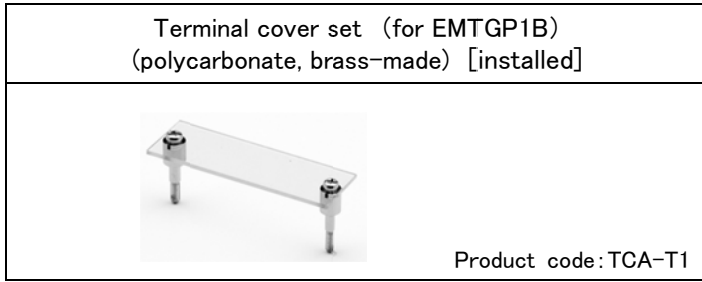
Output signal (DC)	Zero point
4 to 20mA	4.0mA




IV. COMBINATION WITH RECEIVING INSTRUMENT AND DC POWER SUPPLY

- For combination with our receiving instrument, no separate DC power supply is required.
- For combination with our square root converter, a separate DC power supply is required.

V. ACCESSORIES FOR MANOSTAR TRANSMITTER

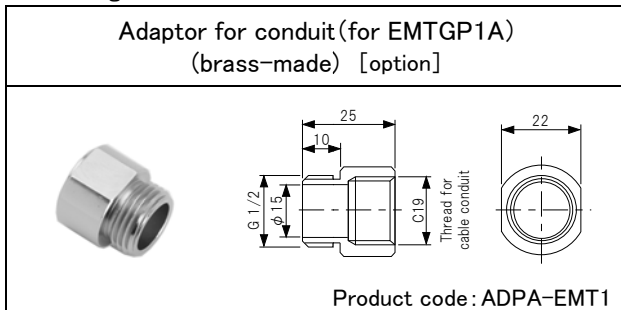


For wiring

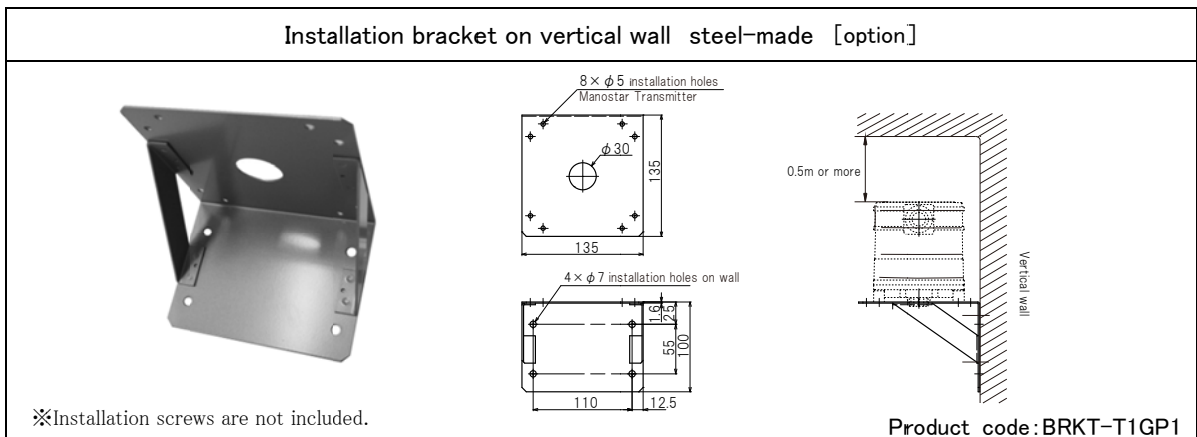
Plastic ground (for EMTGP1A) (polyacetal-made) [option]				
	Product code	Rubber bushing color	Applicable cable outer diameter (mm)	
			Min.	Max.
	AC4-2T	Black	6.5	9.0
	AC4-3T	Red	8.5	11.0
	AC4-4T	Green	10.0	12.5

- Plastic ground is used to wire transmitter with instrumentation cable. Choose the plastic ground of the size that rubber bush can hold external of cable as shown right table.
- Please use shielded cable.

For wiring conduit



When you wire the conduit tube of normal diameter 19 or pliable metal conduit throughout the conduit tube, use the adaptor for conduit as shown at left figure. Because wire inlet size of the transmitter differ by internal thread of G 1 / 2.



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.

VI. PERIODIC INSPECTION

Generally speaking, it is important not to exert external stress to keep life and reliability of the instrument for a long time.

Proper use of this instrument will ensure its faultless service over many years without any necessity of periodic lubrication.

However, it is recommended that it is subjected to periodic inspection (calibration) once a year.

VII. PRODUCT WARRANTY

Warranty Period

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

Coverage

In the event of any failure or defect in the product or non-conformity of specifications due to the reasons solely attributable to Yamamoto Electric Works, Yamamoto Electric Works shall remedy such malfunctioning or defective product at its own cost in one of the following ways to be selected by Yamamoto Electric Works:

- i) repair such product,
- ii) replace such product.

However, this Warranty shall not cover the damages or defects that arise due to any of the following reasons.

- (1) Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual or the specifications arranged between the purchaser and Yamamoto Electric Works.
- (2) Any failure resulting from factors other than a defect of our product, such as the purchaser's equipment or the design of the purchaser's software.
- (3) Any failure resulting from modifications or repairs carried out by any person other than Yamamoto Electric Works' staff.
- (4) Any failure caused by a factor that cannot be foreseen at a scientific/technical level at the time when the product has been shipped from Yamamoto Electric Works.
- (5) Any disaster such as fire, earthquake, and flood, or any other external factor, such as abnormal voltage, for which we are not liable.

Yamamoto Electric Works specifically disclaims all implied warranties of merchantability and/or fitness for a particular use or purpose, as well as liability for incidental, special, indirect, consequential or other damages relating to the product.

*This product warranty is only valid within Japan.

Product Applicability

Our products are designed and manufactured as general-purpose products for general industries. Therefore, our products are not intended for the applications below and are not applicable to them.

- (1) Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- (2) Public utilities such as electricity, gas, or water services
- (3) Usage outdoors, under similar conditions or in similar environments

This document has been translated from the original Japanese version, and the original Japanese version takes first priority.

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

<Prior notice>

The specifications and description of the product explained in this instruction manual may be subject to change without prior notice because of modification and the like.