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# Micro Differential Pressure Gage



## Manostar Gage WO70 General purpose compact type Micro Differential Pressure Gage

RoHS compliant

Utility model registration
No.1996515
No.2027772
Design registration
No.777491

- Flag pointer is installed normally, which are easily to manage predicted value or threshold value of differential pressure.
- It is easy to convert polarity enable by piping connector.
- Even when the pressure becomes excessive, the original mechanism avoid damage to moving parts.
- Small hysteresis is realized by the silicone rubber diaphragm.
- The pointer is not fluctated by the original band-linked mechanism.




**WO70FV**
**(surface installation type)**




**WO70PV**
**(panel installation type)**

**<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 an exhauster

＊(refer to p.93)

**Product code**

| W | O | 7 | 0 | F | V | 100 | D |
|---|---|---|---|---|---|---|---|

(example)

Pressure range code

| | | |
|---|---|---|
| Unit | D | Pa |
| | E | kPa |
| Pressure range | Max. value of scale | |
| Piping connector | V | For vinyl or plastic tube |
| Type | F | Surface installation type |
| | PC | Panel installation type |

◆If you order or ask, please specify the product code and the pressure range code.

## Specification

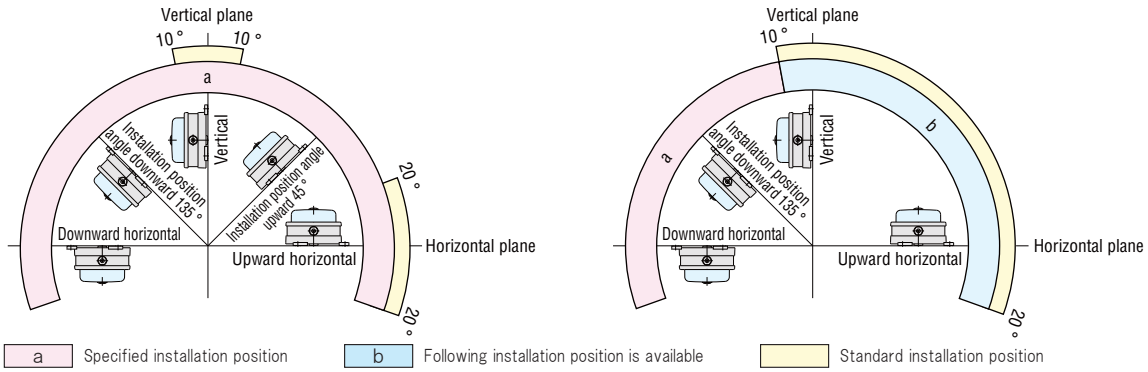
| Types | Surface installation type | Panel installation type |
|---|---|---|
| | WO70 F V | WO70 P V |
| Pressure units | Pa, kPa | |
| Pressure measuring method | Measuring differential pressure | |
| Flag pointer color | Red | |
| Pressure receiving element | Diaphragm | |
| Gas to be measured | Air or non-corrosive gas (not liquid) | |
| Scale indicating angle | Approximately 90 ° | |
| Medium and ambient temperature | − 10 to + 50 ℃ (no freezing) | |
| Ambient humidity | 90 % RH or less (no dewing) | |
| Withstanding pressure of instrument body | 50 kPa (refer to p.104) | |
| Material of the outer case | Polycarbonate and polyamide | |
| Withstanding vibration | 5 to 10 Hz Amplitude : 10 ㎜,<br>10 to 50 Hz Acceleration : 39 m/s$^2$ (each two hours on triaxial directions) | |
| Withstanding impact | 100 m/s$^2$ (each six times on triaxial directions) | |
| Applicable piping | ・Vinyl or plastic tube or rubber tube (I.D. 6)･･･The resinous piping connectors (installed) for Vinyl or plastic tube<br>・Metal tube (O.D. 6 ± 0.1)･･･Metal type piping connector (option) is needed.<br>・Hard plastic tube (O.D. 6 × I.D. 4)･･･Metal type piping connector (option) and Inner sleeve set (XIN6 × 4) are needed.(refer to p.92) | |
| Piping connector polarity | ・The piping connector indicated red color is high pressure side and blue color is low pressure side.<br>・Enabling to convert the polarity by changing connectors of high pressure side for low pressure side. | |
| Mass | Approximately 200 g. | |
| Accessory | One set of installation nuts(only for WO70PV type) | |

| Pressure range codes | Pressure ranges | Standard installation position | Accuracy (at 20 ℃) | Material of pressure receiving element | Withstanding pressure of receiving element (refer to p.104) |
|---|---|---|---|---|---|
| 100 D | 0 ～ 100 Pa | Installation position from upward horizontal to vertical is available. | ± 2.5 % FS | Silicone rubber | 20 kPa |
| 200 D | 0 ～ 200 Pa | | | | |
| 300 D | 0 ～ 300 Pa | | | | |
| 500 D | 0 ～ 500 Pa | | | | |
| 1000 D | 0 ～ 1000 Pa | | | | |
| 2 E | 0 ～ 2 kPa | | | | |
| 3 E | 0 ～ 3 kPa | | | | |
| 5 E | 0 ～ 5 kPa | | | | |
| ＋−100 D | −100 ～ +100 Pa | | | | |
| ＋−200 D | −200 ～ +200 Pa | | | | |
| ＋−300 D | −300 ～ +300 Pa | | | | |
| ＋−500 D | −500 ～ +500 Pa | | | | |

## WO70 Installation position

**Pressure range specified Vertical or Upward horizontal that is standard installation position.**

All ranges




a Specified installation position　b Following installation position is available　Standard installation position

◆In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.
◆In case of ordering standerd installation position, you do not specify installation position. Please specify pressure range code in the specification table.

# Micro Differential Pressure Gage

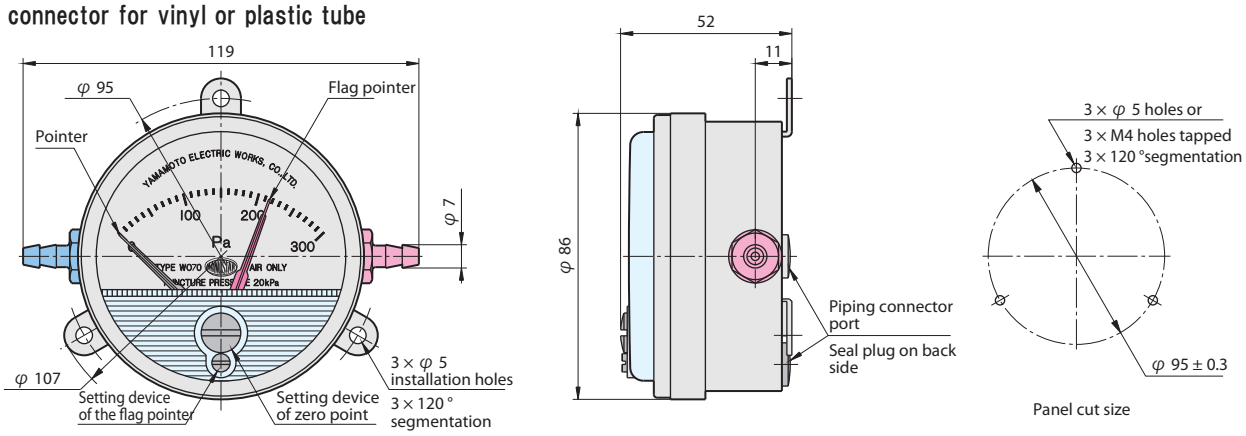


## Manostar Gage WO70FV

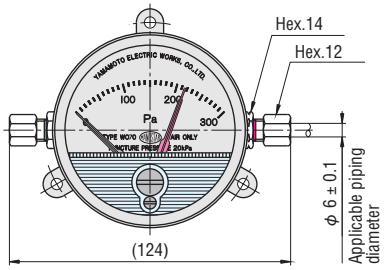
### Outline drawing

#### The piping connector installed on side view.

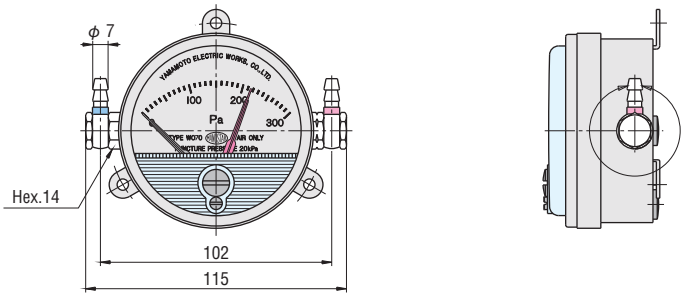
**VT connector for vinyl or plastic tube**




**MT connector for metal tube**

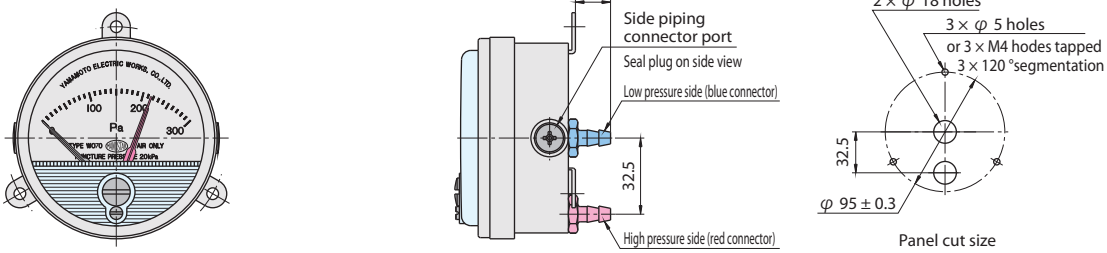



**VR rotary connector for vinyl or plastic tube**

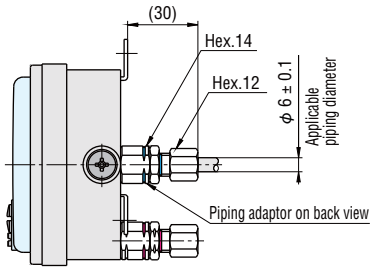



#### The piping connector installed on back view

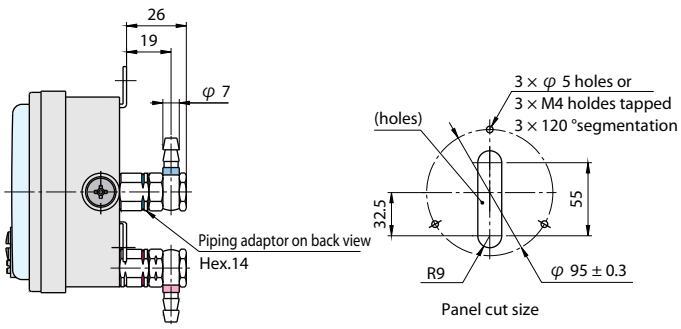
**VT connector for vinyl or plastic tube**




**MT connector for metal tube**




**VR rotary connector for vinyl or plastic tube**



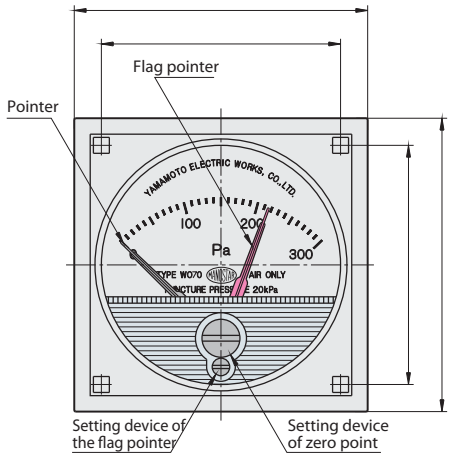

**Caution**

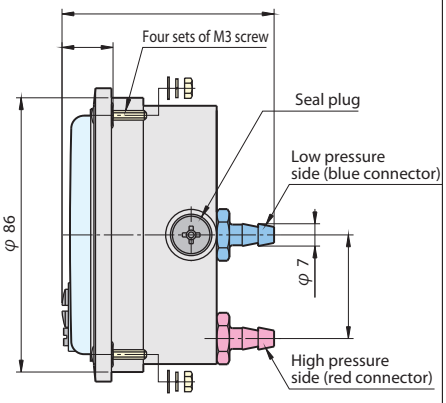
- When you install MT and VR connector on back view piping connector port, use the piping adaptor on back view (KGA70FBA-L, KGA70FBA-H). It is necessary to avoid interference with piping connectors and panel and to help put a locking spanner at this adaptor as a spacer.
- The piping connectors are installed in side connector ports on side view (factory-setting). When you use back view connector ports, remove seal plugs in back view connector ports, and install connectors to back view connector ports as shown in the above outline drawing (both high pressure side and low pressure side). Install seal plugs in side connector ports and be careful that the O-rings do not drop out from side connector port.
- Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.
  Tighten the piping connectors with the torque of 1 N·m.
  Tighten the seal plugs with the torque of 0.5 N·m.
  (Be sure to use a locking spanner at connectors to tighten the cap nut of metal tube. Be careful not to let the tightening torque directly load to the main body of the instrument.)

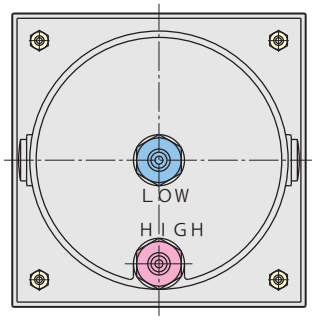
# Manostar Gage WO70PV

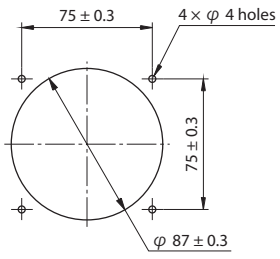
## Outline drawing

### VT connector for vinyl or plastic tube



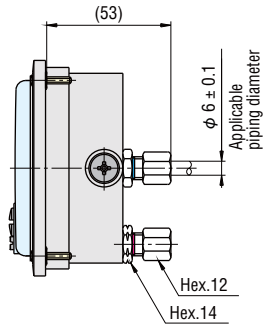




Panel cut size

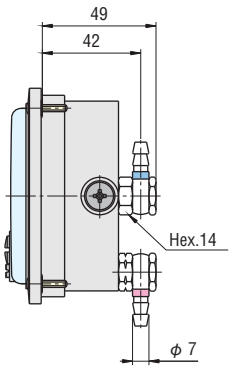
Caution

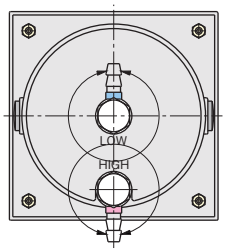
Tighten the piping connectors with the torque of 1 N·m.
Tighten the seal plugs with the torque of 0.5 N·m.
Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.
(Be sure to use a locking spanner at connectors to tighten the cap nuts of metal tube. Be careful not to let the tightening torque directly loaded to the main body of the instrument.)

### MT connector for metal tube

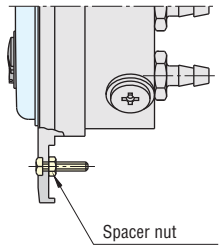



### VR rotary connector for vinyl or plastic tube



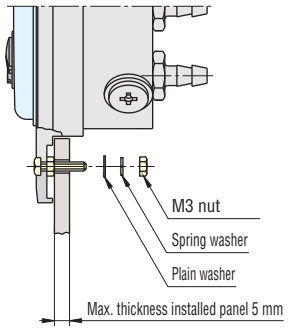




## How to install WO70PV




1. Remove four sets of a M3 nut, a spring washer and a plain washer from the packing bag.
(Do not remove spacer nuts from set screws.)

2. After installing the instrument body on the panel, set a plain washer and a spring washer. Then tighten a M3 nut from the back side of panel.




Caution

If you install the instrument on the panel without spacer nuts, the instrument body will be broken.

## Caution for changing back view piping connectors of WO70FV and WO70PV

Caution

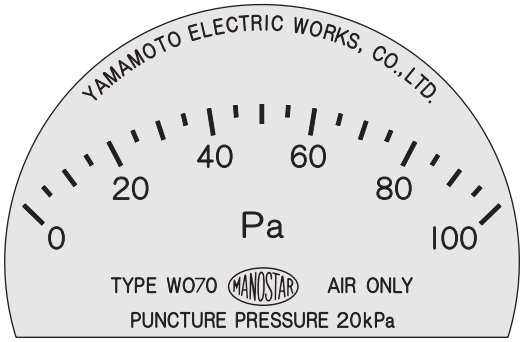
WO70 model polarity of back view connector is decided to high and low puressure side.
In case of installing the connectors to back view connector ports, install the connector of high pressure side in the port which the sign of "HIGH" is displayed and the connector of low pressure side in the port which the sign of "LOW" is displayed.

# Micro Differential Pressure Gage



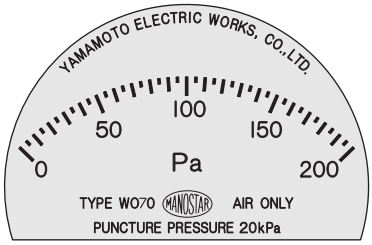
## Manostar Gage WO70 model Scale table

### Single pressure range

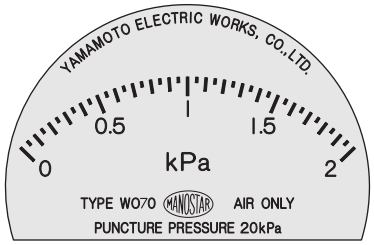



Actual size

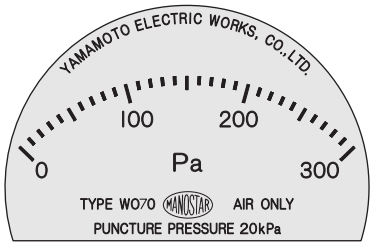
| Pressure range | Min. scale |
|---|---|
| 0 ～ 100 Pa | 5 Pa |
| 0 ～ 1000 Pa | 50 Pa |



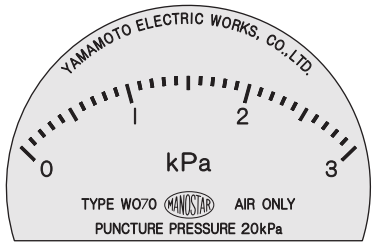

| Pressure range | Min. scale |
|---|---|
| 0 ～ 200 Pa | 5 Pa |



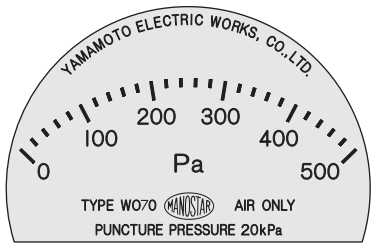

| Pressure range | Min. scale |
|---|---|
| 0 ～ 2 kPa | 0. 05 kPa |



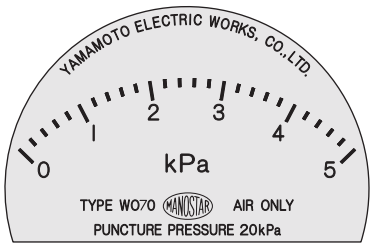

| Pressure range | Min. scale |
|---|---|
| 0 ～ 300 Pa | 10 Pa |




| Pressure range | Min. scale |
|---|---|
| 0 ～ 3 kPa | 0. 1 kPa |

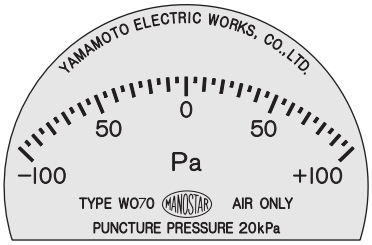



| Pressure range | Min. scale |
|---|---|
| 0 ～ 500 Pa | 20 Pa |

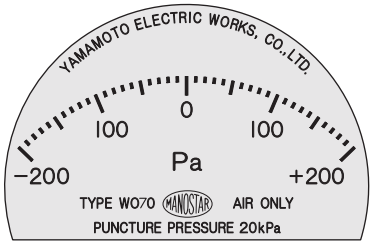



| Pressure range | Min. scale |
|---|---|
| 0 ～ 5 kPa | 0. 2 kPa |

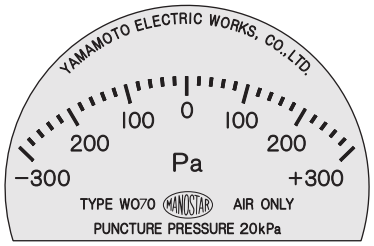
### Zero point center range



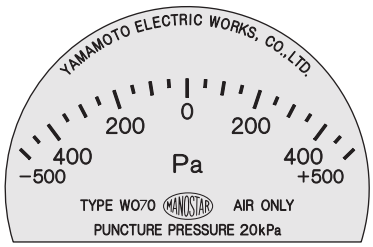

| Pressure range | Min. scale |
|---|---|
| −100～+100 Pa | 5 Pa |




| Pressure range | Min. scale |
|---|---|
| −200～+200 Pa | 10 Pa |

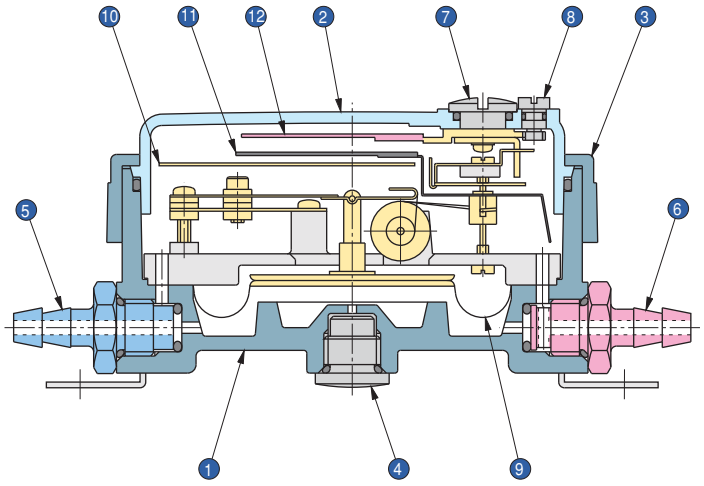



| Pressure range | Min. scale |
|---|---|
| −300～+300 Pa | 20 Pa |




| Pressure range | Min. scale |
|---|---|
| −500～+500 Pa | 50 Pa |

## Main structure




| No. | Name |
|---|---|
| 1 | Housing |
| 2 | Clear cover |
| 3 | Flame of wall hanging |
| 4 | Seal plug |
| 5 | Low pressure side piping connector (blue) |
| 6 | High pressure side piping connector (red) |
| 7 | Setting device of zero point |
| 8 | Setting device of the flag pointer |
| 9 | Diaphragm |
| 10 | Scale plate |
| 11 | Pointer |
| 12 | Flag pointer |

## Accessory for WO70 RoHS compliant

### MT connector(ring joint type)

These piping connectors can be connected to metal tube made from copper and aluminum and so on (O.D. 6, tolerannce ± 0.1).
When this connector is connected to hard plastic tube (O.D. 6, I.D. 4), remove the sleeve made of bress and use the resinous inner sleeve set (XIN6 × 4, refer to p.92) that is the optional accessory.

**High pressure side MT connector**

Product code KGA70MT-H



**Low pressure side MT connector**

Product code KGA70MT-L



### VR connector

These piping connectors are rotary elbow type and can be connected to vinyl, plastic or rubber tube of I.D. 6.

**High pressure side VR connector**

Product code KGA70VR-H



**Low pressure side VR connector**

Product code KGA70VR-L



### Piping adaptor on back view

When you install MT and VR connector in back side connector port of WO70FV, use the backview piping adaptor. It is necessary to avoid interference with connectors and panel. It is also necessary as a spacer to help put a locking spanner at this adaptor.

**High pressure side back view piping adaptor**

(for FV type)

Product code KGA70FBA-H



**Low pressure side back view piping adaptor**

(for FV type)

Product code KGA70FBA-L



### Reserve connector (standard accessories)

**High pressure side VT connector**

Product code KGA70VT-H-P



**Low pressure side VT connector**

Product code KGA70VT-L-P



**Seal plug**

Product code KGA70PLG



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

# 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.<br>You should be sure to refer to the Japanese original document. |

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