

# MagneW™ Two-wire PLUS+

## Two-wire Electromagnetic Flowmeter

Model MTG18A (Integral type)

Model MTG14C/MTG18B (Remote type)

### OVERVIEW

The MagneW Two-wire PLUS+ is a high performance electromagnetic flowmeter based on field proven Azbil Corporation's two-wire loop powered technology. The MagneW Two-wire PLUS+ offers the stable and accurate measurement of a traditional magflow meter with low power consumption. The result is a lower overall cost of ownership.

### FEATURES

#### Two-wire operation

MagneW Two-wire PLUS+ improves its noise immunity performance by 700% maximum and 250% in average. For the spike noise, MagneW Two-wire PLUS+ improves its noise immunity performance in 250% in average.

#### High accuracy and stable output

MagneW Two-wire PLUS+ provides high accuracy ( $\pm 0.5\%$  of rate) and its output is as stable as current four wired magnetic flowmeters.

#### Minimum measurable fluid conductivity

The MagneW Two-wire PLUS+ offers a minimum process fluid conductivity of  $10\mu\text{S}/\text{cm}$  which is the best among two-wire magflow meters thereby maximizing applicability.

#### Wider range in size

MagneW Two-wire PLUS+ offers wider range in detector size.

Detector size: 2.5 to 200 mm.

#### Wafer and flange style, integral and remote style available

The MagneW Two-wire PLUS+ is available integral or remote, flanged or wafer, making the selection of the right meter for the application simple.

#### Electrode status diagnostic function

The MagneW Two-wire PLUS+ offers the diagnostic function for the electrode condition.

It diagnoses the Empty pipe condition or scale on electrode condition.



### APPLICATIONS

- Corrosive liquid measurement
- Chemical solution measurement
- Drainage/waste disposal fluid measurement
- Drinking water and waste water service
- Industrial/agricultural water measurement
- Seawater measurement

## FUNCTIONAL SPECIFICATIONS

### Enclosure rating

NEMA TYPE 4X, IEC IP67

### Hazardous Areas certifications

#### Integral type

##### FM approval

<for Division 1>

Class I, Division 1, Groups A, B, C & D, T4;  
Class II, Division 1, Groups E, F & G, T4;  
Class III, T4,  $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

<for Division 2>

Nonincendive for  
Class I, Division 2, Groups A, B, C & D, T4;  
Class II, Division 2, Groups F & G, T4;  
Class III, T4; Class I, Zone 2, Group IIC, T4,  
 $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

##### CSA certification

<for Division 1>

Class I, Division 1, Groups A, B, C & D, T4;  
Class II, Division 1, Groups E, F & G, T4;  
Class III, T4,  $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

<for Division 2>

Class I, Division 2, Groups A, B, C, & D, T4;  
Class II, Division 2, Groups E, F & G, T4;  
Class III, T4,  $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

##### ATEX(KEMA) Certification

<for Type n>

$\text{Ex}$  II 3 GD

Ex nA II T6 T135°C at  $T_{\text{process}}$ :  $-40\dots+85\text{ °C}$   
Ex nA II T5 T135°C at  $T_{\text{process}}$ :  $-40\dots+100\text{ °C}$   
Ex nA II T4 T135°C at  $T_{\text{process}}$ :  $-40\dots+130\text{ °C}$   
 $-40\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

KEMA 07ATEX0066

IP66/67

##### NEPSI Certification

<Increased safety and Dust ignition proof>

GYJ22.1841X

Ex ec IIC T6 Gc; Ex tb IIIC T135°C Db

Ex ec IIC T5 Gc; Ex tb IIIC T135°C Db

Ex ec IIC T4 Gc; Ex tb IIIC T135°C Db

$-40\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$  IP 67

### Remote type

#### FM approval

<for Division 2>

Nonincendive for  
Class I, Division 2, Groups A, B, C & D, T4;  
Class II, Division 2, Groups F & G, T4;  
Class III, T4; Class I, Zone 2, Group IIC, T4,  
 $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

#### CSA certification

<for Division 2>

Class I, Division 2, Groups A, B, C & D, T4;  
Class II, Division 2, Groups E, F & G, T4;  
Class III, T4,  $-20\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

### European Pressure Equipment Directive (2014/68/EU)

This product is subject to the European Pressure Equipment Directive (PED).

Article 4 of the PED differentiates pressure equipment according to the degree of danger.

The maximum allowable pressure of this product is stated on page 5 of this document. Note, however, that because this product is designed and manufactured in accordance with sound engineering practice (SEP) as described in article 4, section 3 of the PED, there are restrictions on the pressure range when this product is used in a country where PED is applicable.

Determine the maximum allowable pressure by checking the following items.

#### (1) Group of the fluid

Check the group of the fluid according to article 13 of the PED.

- Group 1: Hazardous fluids
- Group 2: Non-hazardous fluids

#### (2) Vapor pressure at the maximum allowable temperature of the measured fluid

Check the applicable category, (i) or (ii).

- Liquid whose vapor pressure at the maximum allowable temperature is greater than 0.5 bar above normal atmospheric pressure (1013 mbar)
- Liquid having a vapor pressure at the maximum allowable temperature of not more than 0.5 bar above normal atmospheric pressure (1013 mbar)

#### (3) Nominal size (DN) of the electromagnetic flowmeter

Check the nominal size of the flowmeter.

#### (4) Maximum allowable pressure for equipment designed by SEP.

In table 1, find the cell where the results of (1), (2), and (3) meet.

“Tables 6–9” shown in table 1 below are taken from article 4 and annex II of the PED.

## (5) Maximum pressure

Whichever of the pressures below is the lowest is the applicable pressure.

- Maximum pressure for this product: see page 5 of this document
- Maximum pressure for SEP equipment defined by the PED: see (4) above
- Maximum pressure for the flange: see the applicable standard

**Table 1. Maximum allowable pressure for SEP products**

| (1) Fluid group             | Group 1                        |          |          | Group 2  |          |          | Group 1  |          |          | Group 2  |          |  |
|-----------------------------|--------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| (2) Vapor pressure          | (i)                            |          |          | (i)      |          |          | (ii)     |          |          | (ii)     |          |  |
| PED table                   | Table 6                        |          |          | Table 7  |          |          | Table 8  |          |          | Table 9  |          |  |
| (3)<br>Nominal size<br>(DN) | (4) Maximum allowable pressure |          |          |          |          |          |          |          |          |          |          |  |
|                             | mm                             | bar      | MPa      | bar      | MPa      | bar      | MPa      | bar      | MPa      | bar      | MPa      |  |
|                             | 2.5                            | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 5                              | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 10                             | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 15                             | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 25                             | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 40                             | 0.5      | 0.05     | 25.0     | 2.50     | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 50                             | 0.5      | 0.05     | 20.0     | 2.00     | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 65                             | 0.5      | 0.05     | 15.3     | 1.53     | No limit | No limit | No limit | No limit | No limit | No limit |  |
|                             | 80                             | 0.5      | 0.05     | 12.5     | 1.25     | 25.0     | 2.50     | No limit | No limit | No limit | No limit |  |
|                             | 100                            | 0.5      | 0.05     | 10.0     | 1.00     | 20.0     | 2.00     | No limit | No limit | No limit | No limit |  |
|                             | 125                            | 0.5      | 0.05     | 8.0      | 0.80     | 16.0     | 1.60     | No limit | No limit | No limit | No limit |  |
| 150                         | 0.5                            | 0.05     | 6.6      | 0.66     | 13.3     | 1.33     | No limit | No limit | No limit | No limit |          |  |
| 200                         | 0.5                            | 0.05     | 5.0      | 0.50     | 10.0     | 1.00     | No limit | No limit | No limit | No limit |          |  |

## Output signal

### Analog output

4 to 20 mA DC

### Digital output

DE

Analog or Digital output is selectable.

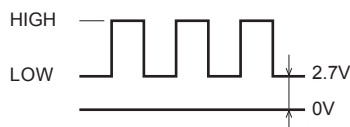
### Pulse output

Open collector output (30V DC, 100 mA max.)

Pulse frequency: 0.0001 to 200 Hz

Pulse width: 1 ms to 1 s

LOW value: 2.7V (10mA) (Refer to the blow drawing.)



### Contact output

Open collector output (30V DC, 100 mA max.)

Pulse or contact output is selectable

### Communication protocol

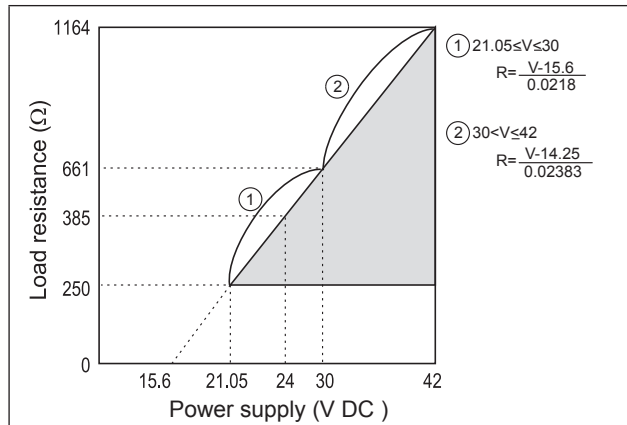
SFC communication and HART communication

**HART communication**

- Multidrop mode: current fixed at 12mA  
Optional Burst mode is not available.

**Load resistance characteristic of communication**

External power supply 21.05 to 42V DC for communication.



Note) The load resistance of 250 Ω or more is necessary for communications of SFC and the HART communicator.

**Flow unit**

- Volume flow: m<sup>3</sup>, L, cm<sup>3</sup>, G (gallon), mG, kG,  
B (barrel), IG (imperial gallon), mIG, kIG  
Mass flow: t, kg, g, lb  
Time: d, h, min., s

**Display**

**Display: LCD**

Main display: 7-segment, 8 digits  
Sub display: 16 digits, 2 lines  
Display contents:

Simultaneously displays % flow rate, Actual flow rate (eng. unit) and Totalized value.

**Data setting**

Operation by four key switches

**Damping**

Adjustable between 0.5 and 199.9 seconds.

**Low flow cutoff**

Adjustable between 0 and 10% of setting range.  
Below selected value, output is driven to the zero flow rate signal level.

**Dropout**

Adjustable between 0 and 10% of setting range.  
Below selected value, pulse output is cut.

**Electrode status diagnostic**

Detect empty pipe condition or scale on electrode condition by monitoring flow rate signal. Once the flow rate signal fluctuates over a certain threshold, the device judges that the detector is empty or scale appears on the electrode.

The Electrode status diagnostic function makes the analog output and pulse output to the values as selected in the below “Electrode status output mode” table.

The display alternately shows the output values selected and “EMPTY OR SCALE ON ELECTRODE”.

There are five threshold levels to meet an environment where the device is installed. Set an appropriate threshold level from below.

- SENSITIVITY HIGH
- SENSITIVITY MID
- SENSITIVITY LOW
- SENSITIVITY LL
- SENSITIVITY LLL

Default setting: OFF

Operating condition:

The following conditions must be met when using the electrode status diagnostic function.

- Diameter: 10 mm or larger
- Electric conductivity of fluid: 30 μS/cm or greater
- Grounding: Grounding resistance must be less than 100Ω
- The noise level must be over the set threshold when the pipe is empty.
- The noise level must be under the set threshold when the process fluid flows in the detector.

“Electrode status output mode” table

| Output/Display         | Parameter selection in the “Electrode status output mode” |  |  |
|------------------------|---|--|--|
|                        | OFF   | ZERO   | HOLD   |
| Analog 4 – 20mA output | Output values as the meter measures.                      | Analog output is fixed to 0% (4mA).  | Analog output is held at its last good value.  |
| Pulse output           | Output values as the meter measures.                      | Pulse output is fixed to 0 (does not generate pulses).   | Pulse output is held at its present state.   |
| Display                | Display the value as it measures.                         | Flashes the message 0% and “Empty or scale on electrode” alternately (when % flow rate is specified for the main display).<br>Flashes the message 0.000 RATE and “Empty or scale on electrode” alternately (when actual flow rate is specified for the main display).<br>Flashes the message XXXXXXXX (totalized value at setup) and “Empty or scale on electrode” alternately (when totalized value is specified for the main display). | Flashes the values at its last good values and a message of “Empty or scale on electrode” alternately. |

**Lightning protection**

12 kV, 1000A  
Equipped with the lightning arrester in the power source and external output terminals.

**Power failure**

An EEPROM retains data record of totalized value when pulse output is used (retention period approximately 10 years).

**Power supply**

15.6 to 42V DC (without communication)  
21.05 to 42V DC (with communication)  
Current capacity: 24mA min.  
In case of current capacity is 22mA, the voltage must be 15.6V minimum.

**Size**

**Wafer style**

25, 40, 50, 65, 80, 100 mm (1, 1-1/2, 2, 2-1/2, 3, 4 inches)

**Flange style**

2.5, 5 mm (0.1, 0.2 inch) (Model MTG18A only)  
10, 15, 25, 40, 50, 65, 80, 100, 150, 200 mm (3/8, 1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 6, 8 inches)

**Flange rating**

ANSI150, ANSI300, DIN PN10, DIN PN16, DIN PN25, JIS10K, JIS20K, JIS30K

**Reference flange standard**

JIS; JIS B2210 (1984)  
ANSI; ANSI B16.5 (1988)

**Ambient temperature limits**

-20 to 60 °C (-4 to 140 °F)

**Ambient humidity limits**

10 to 90% RH

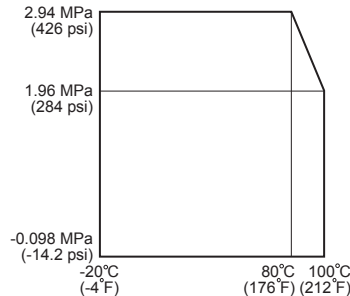
**Vibration effect**

Integral style: 4.9m/s<sup>2</sup>(0.5G) max.  
Remote style converter: 19.6m/s<sup>2</sup>(2G) max.  
Remote style detector: 19.6m/s<sup>2</sup>(2G) max.

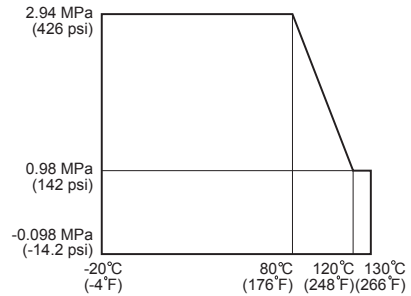
**Temperature range and pressure range of process fluid**

Refer to the following.

Size: 2.5 to 10 mm (0.1 to 3/8 inch)



Size: 15 to 200 mm (1/2 to 8 inch)



**Measurable electrical conductivity**

10 μS/cm or greater  
50 μS/cm or greater (10 mm (3/8 inch), 15 mm (1/2 inch) for remote type)

**Measurement flow range**

| Size |        | Maximum flow velocity range is 0 to 0.3 m/s (0 to 0.98 ft/s) |              | Maximum flow velocity range is 0 to 10 m/s (0 to 32.8 ft/s) |            | Conversion factor K |
|------|--------|--|--------------|---|------------|---------------------|
|      |        | Minimum range  |              | Maximum range   |            |                     |
| mm   | inches | m <sup>3</sup> /h  | GPM          | m <sup>3</sup> /h   | GPM        |                     |
| 2.5  | 0.1    | 0 to 0.00531   | 0 to 0.02335 | 0 to 0.1767   | 0 to 0.778 | 56.59               |
| 5    | 0.2    | 0 to 0.02121   | 0 to 0.09337 | 0 to 0.7068   | 0 to 3.112 | 14.15               |
| 10   | 3/8    | 0 to 0.08483   | 0 to 0.3735  | 0 to 2.827  | 0 to 12.44 | 3.537               |
| 15   | 1/2    | 0 to 0.1909  | 0 to 0.8404  | 0 to 6.361  | 0 to 28.00 | 1.572               |
| 25   | 1      | 0 to 0.5302  | 0 to 2.335   | 0 to 17.67  | 0 to 77.80 | 0.5659              |
| 40   | 1-1/2  | 0 to 1.358   | 0 to 5.976   | 0 to 45.23  | 0 to 199.1 | 0.2210              |
| 50   | 2      | 0 to 2.121   | 0 to 9.337   | 0 to 70.68  | 0 to 311.2 | 0.1415              |
| 65   | 2-1/2  | 0 to 3.584   | 0 to 15.78   | 0 to 119.4  | 0 to 525.9 | 0.08371             |
| 80   | 3      | 0 to 5.429   | 0 to 23.91   | 0 to 180.9  | 0 to 796.7 | 0.05526             |
| 100  | 4      | 0 to 8.483   | 0 to 37.35   | 0 to 282.7  | 0 to 1244  | 0.03537             |
| 150  | 6      | 0 to 19.09   | 0 to 84.04   | 0 to 636.1  | 0 to 2800  | 0.01572             |
| 200  | 8      | 0 to 33.93   | 0 to 149.4   | 0 to 1130   | 0 to 4979  | 0.008842            |

Velocity V (m/s) = K × Q

K = Conversion factor = 1/3600 × 4/(πD<sup>2</sup>) × 1000<sup>2</sup>, D = Size (mm), Q = Flow rate (m<sup>3</sup>/h)

## PERFORMANCE SPECIFICATIONS

### Analog output accuracy

Size: 2.5, 5 mm (0.1, 0.2 inch)

$V_s$  = velocity of setting range (m/s)

| $V_s$ (m/s)             | Velocity during measurement $\geq V_s \times 50\%$ | Velocity during measurement $\leq V_s \times 50\%$  |
|-------------------------|--|---|
| $1.0 \leq V_s \leq 10$  | $\pm 0.5\%$ of rate                                | $\pm 0.5\%$ of $V_s$                                |
| $0.3 \leq V_s \leq 1.0$ | $\pm \frac{0.5}{V_s}$ % of rate                    | $\pm 0.5 + \left(\frac{0.5}{V_s}\right)$ % of $V_s$ |

Size: 10, 15 mm (3/8, 1/2 inch)

$V_s$  = velocity of setting range (m/s)

| $V_s$ (m/s)             | Velocity during measurement $\geq V_s \times 40\%$ | Velocity during measurement $\leq V_s \times 40\%$  |
|-------------------------|--|---|
| $1.0 \leq V_s \leq 10$  | $\pm 0.5\%$ of rate                                | $\pm 0.5\%$ of $V_s$                                |
| $0.3 \leq V_s \leq 1.0$ | $\pm \frac{0.5}{V_s}$ % of rate                    | $\pm 0.4 + \left(\frac{0.5}{V_s}\right)$ % of $V_s$ |

Size: 25 to 200 mm (1 to 8 inches)

$V_s$  = velocity of setting range (m/s)

| $V_s$ (m/s)             | Velocity during measurement $\geq V_s \times 30\%$ | Velocity during measurement $\leq V_s \times 30\%$  |
|-------------------------|--|---|
| $1.0 \leq V_s \leq 10$  | $\pm 0.5\%$ of rate                                | $\pm 0.5\%$ of $V_s$                                |
| $0.3 \leq V_s \leq 1.0$ | $\pm \frac{0.5}{V_s}$ % of rate                    | $\pm 0.3 + \left(\frac{0.5}{V_s}\right)$ % of $V_s$ |

Accuracy is guaranteed by the totalized flow volume under the condition of continuous flow measurement for 30 seconds or longer.

## PHYSICAL SPECIFICATIONS

### Converter case finishing

#### Standard

Baked acrylic paint

#### Corrosion-proof

Baked epoxy paint

### Converter case material

Aluminum alloy

### Display cover material

Tempered glass

### Terminal box finishing (Model MTG18B only)

**Standard:** Baked acrylic paint

**Corrosion-proof:** Baked epoxy paint

### Terminal box material (Model MTG18B only)

Aluminum alloy

## Detector main body materials

### Case material

Size 2.5 to 15 mm (0.1 to 1/2 inch):

SCS13 stainless steel

Size 25 to 200 mm (1 to 8 inches):

SUS304 stainless steel

### Measuring pipe material

SUS304 stainless steel

## Flange

SUS304 stainless steel

(size 2.5 to 65 mm (0.1 to 2-1/2 inches))

Carbon steel + corrosion-preventive painting

(size 80 to 200 mm (3 to 8 inches))

## Process wetted materials

**Lining:** PFA

### Electrodes

SUS316L, ASTM B574 (Hastelloy C-276 equivalent),

Titanium, Tantalum, Nickel, Zirconium, Platinum-

Iridium

### Grounding rings

SUS316, SUS316L, ASTM B575 (Hastelloy C-276 equivalent),

Titanium, Tantalum, Zirconium, Platinum

## INSTALLATION

### Electrical connection

1/2NPT internal thread (must be selected for FM approval)

CM20 internal thread

G1/2 internal thread

### Remote converter mounting

Wall mounting, 2-inch pipe mounting

### Grounding

The grounding is essential for flow measurement.

The most effective grounding method is direct connection to earth ground with minimal impedance.

For approval selection code "1", to maintain Intrinsic safety of system connect conductor to earth ground so that it has less than 1 Ohm to earth ground. See ANSI/ISA RP12.06.01 Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations for guidance on installation of intrinsically safe apparatus and systems.

### Pipe connection

Wafer style (Size: 25 to 100 mm (1 to 4 inches))

Flange style (Size: 2.5 to 200 mm (0.1 to 8 inches))

### Length of straight pipe

Required straight pipe length clearance on the upstream side and the downstream side, while installing the detector.

#### Upstream side

A minimum 5D straight pipe length is required.  
 A minimum 10D straight pipe length is required if a diffuser/valve/pump is installed upstream side.

#### Downstream side

2D straight pipe length is recommended.  
 (Where D is the nominal bore diameter of the detector)

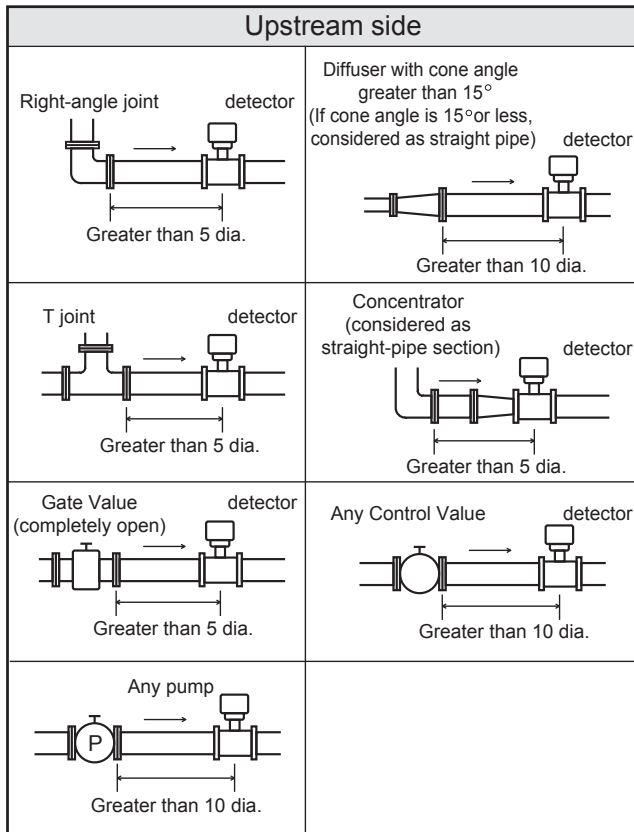


Figure 1. Length of straight pipe

### Cable between converter and detector

(Remote type)

#### Length

70 m (233 ft) or shorter  
 (25 mm (1 inch) to 200 mm (8 inches))  
 30 m (98 ft) or shorter  
 (10 mm (3/8 inch), 15 mm (1/2 inch))

#### Outside diameter

11.4 mm (0.45 inch)

#### Maximum cable length of SMC11 cable

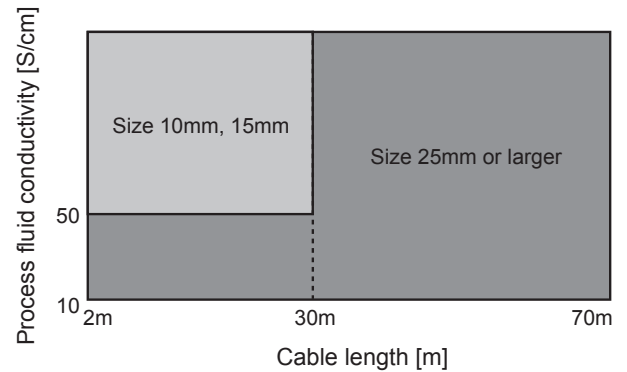


Figure 2. Maximum cable length of SMC11 cable

## Notice for installation

To fully enjoy the performance of the device, please choose an appropriate location according to the following.

### Notice after installation

#### WARNING

When removing the device from the piping, make sure that there is no line pressure or process fluid inside of the device. Removing the device before depressurizing may result in serious injury.

#### CAUTION

Do not use the device as a foothold. It may cause injury or damage of the device.

### Notice for environment

- Install the flowmeter in a location with an ambient temperature of -25 °C to 60 °C (-13 °F to 140 °F) and an ambient humidity of 5 to 100%RH to prevent equipment malfunction or output errors.
- Do not install the flowmeter in a location subject to severe vibration or in a highly corrosive atmosphere. The converter and detector can be damaged. \* When install some electromagnetic flowmeters in closer location, keep minimum 500 mm (20 inch) space from each flowmeter. Closer electromagnetic flowmeter installation may cause magnetic interference each other and results in output errors.
- Do not install the flowmeter in a location subject to severe vibration or in a highly corrosive atmosphere. The converter and detector can be damaged.
- When install some electromagnetic flowmeters in closer location, keep minimum 500 mm (20 inch) space from each flowmeter. Closer electromagnetic flowmeter installation may cause magnetic interference each other and results in output errors.

### Notice for application

- Electrolytic bath application, process fluid with higher voltage/current  
Process fluid of the electrolytic bath application is mostly with high voltage/current.  
It is not a suitable application for the two wire loop powered magnetic flowmeter.  
Example: Sodium hypochlorite with 200V and 30kA  
Four wire magnetic flowmeter is recommended.

- Application which pipe frequently becomes empty  
Both two wire magnetic flowmeter and four wire magnetic flowmeter have empty pipe detection function. The two wire magnetic flowmeter detects empty by monitoring signal fluctuation caused by empty pipe condition. Therefore the empty pipe detection function of the two wire magnetic flowmeter sometimes does not work properly if noise level is too low or too high. The four wire magnetic flowmeter detects empty by monitoring impedance between electrodes and grounding. So the four wire magnetic flowmeter directly monitors the empty pipe condition. If the application requires empty detection quickly and perfectly, the four wire magnetic flowmeter is recommended.
- Plastic piping or piping with liner  
If the customer piping is plastic or lined with insulation material, process fluid may not be properly grounded. In such case, it is recommended to connect earth wire between upstream side grounding ring and downstream side grounding ring for better grounding.
- Slurry application  
Process fluid with slurry exceeds 3% is not suitable for the two wire magnetic flowmeter. The four wire magnetic flowmeter is recommended for the fluid with slurry concentration more than 3%.  
If hard particles hit the electrode, output of the two wire magnetic flowmeter may fluctuate even though the slurry concentration is less than 3%. In this case, the four wire magnetic flowmeter is recommended.
- Electrochemically homogeneous fluid  
Install the device where the process fluid is electrochemically homogeneous. If two kind of process fluids are mixed at the upstream side, the process fluid must be uniformly mixed.
- The application which the electric conductivity changes or non-homogeneous fluid  
Do not use the device for the following fluid conditions even if the electric conductivity, temperature, and pressure are within the device specifications. Those fluid may cause of inaccurate flow measurement.
  - Fluids that have sufficient conductivity at high temperature but do not meet the conductivity requirement at room temperature (about 20°C (68°F)).  
(e.g. fatty acids and soap)
  - Some fluids contain surfactant  
(e.g. rinse, shampoo and CWM (coal water mixture))
  - Insulating adhesive materials  
(e.g. kaolinite, kaolin, calcium stearate)



- The analog output may fluctuate due to flow noise, which is generated by the process fluid flow. In such a case, connect the upstream grounding ring to the downstream grounding ring by a wire. The output fluctuation may be reduced.
- The following fluids will permeate the PFA liner. The vent hole option is recommended for the following fluids.
  - Nitric acid
  - Aqueous ammonia
  - High temperature sodium hydrate

### Caution On PLC Connection

A circuit in some PLC may affect the flow measurement and the analog output may fluctuate.

In this case, make sure that the both PLC and the MagneW Two-wire PLUS+ flowmeter are properly grounded. Proper grounding solves the fluctuation problem.

### Notice for power supply

- Use the following power supply. If the power supply does not meet the following specifications, this device may not work.
  - Current capacity: 24mA min.

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### CAUTION

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In accordance with the safety standards of flameproof regulation, please comply with the following instructions.:

- (1) The voltage of general equipment such as the power supply and the receiver should not exceed 250VAC, 50/60Hz, 250VDC at any time at normal or abnormal operation.
- (2) The ambient temperature around the device is 50 °C (122 °F) maximum.
- (3) The process fluid temperature is 125 °C (257 °F) max. for the size of 15 mm (1/2 inch) or larger.
- (4) The process fluid temperature is 100 °C (212 °F) max. for the size of 10 mm (3/8 inch) or smaller.
- (5) Use the specified flameproof cable glands.
- (6) Wait for seven minutes after switching OFF the power supply, before opening the front cover or the terminal cover.

A specified explosion-proof performance is available only when this device is used under the conditions described above.

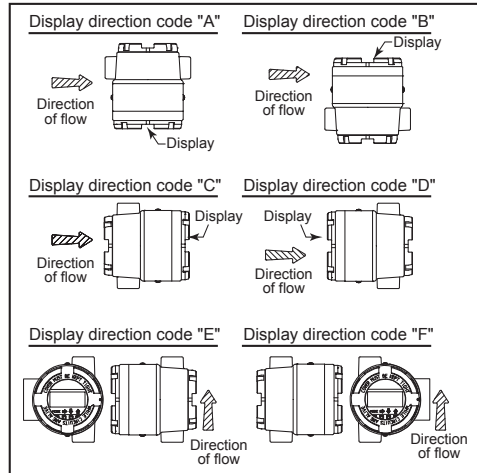
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# MODEL SELECTION

## MagneW Two-wire PLUS+

Model MTG18A - I II III IV V VI VII VIII IX X XI - XII XIII - Options (some options can be selected per each model)

| Basic model no.                     |                                  | Selections   |                 |              |    |   |    |  |  |  |  | Optional selections Options |  |  |   |      |         |   |                       |                |     |
|-------------------------------------|----------------------------------|--|-----------------|--------------|----|---|----|--|--|--|--|-----------------------------|--|--|---|------|---------|---|-----------------------|----------------|-----|
| MTG18A                              |                                  |  |                 |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| I                                   | Line size                        | 2.5 mm (0.1 inch) (flange type only)   | 002             | *1           |    |   |    |  |  |  |  |                             |  |  | X | None | Options |   |                       |                |     |
|                                     |                                  | 5 mm (0.2 inch) (flange type only)   | 005             | *1           |    |   |    |  |  |  |  |                             |  |  |   | B    |         | Traceability certificate                        |                       |                |     |
|                                     |                                  | 10 mm (3/8 inch) (flange type only)  | 010             | *1           |    |   |    |  |  |  |  |                             |  |  |   | C    |         | Material certificate (electrode/grounding ring) |                       |                |     |
|                                     |                                  | 15 mm (0.5 inch) (flange type only)  | 015             | *1           |    |   |    |  |  |  |  |                             |  |  |   | G    |         | Gasket for plastic piping                       |                       |                |     |
|                                     |                                  | 25 mm (1 inch)   | 025             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 40 mm (1-1/2 inches)   | 040             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 50 mm (2 inches)   | 050             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 65 mm (2-1/2 inches)   | 065             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 80 mm (3 inches)   | 080             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 100 mm (4 inches)  | 100             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 150 mm (6 inches) (flange type only)   | 150             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 200 mm (8 inches) (flange type only)   | 200             |              |    |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | II   | Lining          | PFA          |    | P |    |  |  |  |  |                             |  |  |   |      |         | X   | Finish / paint        | Standard paint | XII |
|                                     |                                  | III  | Pipe connection | Wafer JIS10K |    |   | 11 |  |  |  |  |                             |  |  |   |      |         | 2   | Corrosion-proof paint |                |     |
| Wafer JIS16/20K                     |                                  |  |                 |              | 12 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer JIS30K                        |                                  |  |                 |              | 13 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer ANSI 150                      |                                  |  |                 |              | 21 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer ANSI 300                      |                                  |  |                 |              | 22 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer DIN PN10                      |                                  |  |                 |              | 41 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer DIN PN16                      |                                  |  |                 |              | 42 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Wafer DIN PN25                      |                                  |  |                 |              | 43 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange JIS10K                       |                                  |  |                 |              | J1 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange JIS20K                       |                                  |  |                 |              | J2 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange JIS30K                       |                                  |  |                 |              | J3 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange JIS10K for 10 mm size flange |                                  |  |                 | *2           | J4 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange JIS20K for 10 mm size flange |                                  |  |                 | *2           | J5 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange ANSI 150                     |                                  |  |                 |              | A1 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange ANSI 300                     |                                  |  |                 |              | A2 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange DIN PN10                     |                                  |  |                 |              | D1 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange DIN PN16                     |                                  |  |                 |              | D2 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| Flange DIN PN25                     |                                  |  |                 |              | D3 |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| IV                                  | Electrode                        |  |                 | SUS316L      |    |   | L  |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | ASTM B574 (Hastelloy C-276 equivalent)   |                 |              | C  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Titanium   |                 |              | K  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Zirconium  |                 |              | H  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Tantalum   |                 |              | T  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Nickel   |                 |              | N  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Platinum-iridium   |                 |              | P  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| V                                   | Grounding ring                   | SUS316   |                 |              | S  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | ASTM B575 (Hastelloy C-276 equivalent)   |                 |              | C  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Titanium   |                 |              | K  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Zirconium  |                 |              | H  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Tantalum   |                 |              | T  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Platinum   |                 |              | P  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| VI                                  | Wiring connection                | G1/2 internal thread   |                 |              | A  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | G1/2 internal thread with plastic water tight gland  |                 |              | B  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | G1/2 internal thread with brass Ni-plated watertight gland   |                 |              | C  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | 1/2NPT internal thread (must be selected for FM approval)  |                 | *4           | D  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | CM20 internal thread   |                 |              | E  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | G1/2 internal thread with two plastic watertight glands  |                 |              | J  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | G1/2 internal thread with two brass Ni-plated watertight gland   |                 |              | K  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| VII                                 | Face-to-face dimension           | Standard   |                 |              | A  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Replacement for SMT3000 (for wafer type 40 to 100 mm)  |                 |              | S  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| VIII                                | Installation / Display direction | Horizontal piping / Right side viewed from upstream  |                 |              | A  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Horizontal piping / Left side viewed from upstream   |                 |              | B  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Horizontal piping / Downstream side  |                 |              | C  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Horizontal piping / Upstream side  |                 |              | D  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Vertical piping / Right side of piping / Flow direction: Upward  |                 |              | E  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Vertical piping mounting / Left side of piping / Flow direction: Upward  |                 |              | F  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| IX                                  | Calibration                      | Standard   |                 |              | J  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Volume flow 4-20mA DC output/with SFC communication  |                 |              | E  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Volume flow DE output/with communication   |                 |              | D  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| X                                   | Output / communication           | Volume flow 4-20mA DC output with HART communication   |                 |              | T  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Volume flow 4-20mA DC output with SFC communication  |                 |              | E  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Volume flow DE output/with communication   |                 |              | D  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | Volume flow 4-20mA DC output with HART communication   |                 |              | T  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
| XI                                  | Approval/ Certification          | None   |                 |              | X  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | FM approval, Class I, II, III, Division 1, Groups A, B, C, D, E, F & G, T4<br>CSA certification, Class I, II, III, Division 1, Groups A, B, C, D, E, F & G, T4       |                 | *5           | 1  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | FM approval, NI for Class I, II, III, Division 2, Groups A, B, C, D, E, F & G, T4<br>CSA certification, Class I, II, III, Division2, Groups A, B, C, D, E, F & G, T4 |                 | *5           | 2  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | ATEX Type nA certification   |                 |              | 4  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |
|                                     |                                  | NEPSI Increased safety Ex ec IIC T4 to T6 Gc   |                 |              | 6  |   |    |  |  |  |  |                             |  |  |   |      |         |   |                       |                |     |



Note) \*1: Flange of size 2.5 to 15 mm detector is 15 mm flange.  
 \*2: Available for size 2.5 to 10 mm detector.  
 \*3: Must be selected if tagging is required.  
 \*4: Must select "Approval 1 or 2".  
 \*5: Must select "Wiring connection D".  
 \*6: This option is not applicable except if the approval/certification code is "X."

**MagneW Two-wire PLUS+ Wafer/Flange remote type converter**

Model MTG14C - I II III IV - Options (some options can be selected per each model)

Basic model no.

| Basic model no. |                               | Selections  |   |    |   | Options |   |
|-----------------|-------------------------------|---|---|----|---|---------|---|
| MTG14C          |                               |   |   |    |   | -       |   |
| I               | Analog output / communication | Volume flow 4-20 mA DC output / with SFC communication  | E |    |   |         |   |
|                 |                               | Volume flow DE output / with communication  | D |    |   |         |   |
|                 |                               | Volume flow 4-20 mA DC output / with HART communication   | T |    |   |         |   |
| II              | Wiring connection             | G1/2 internal thread  | A |    |   |         |   |
|                 |                               | G1/2 internal thread with a plastic water-tight gland   | B |    |   |         |   |
|                 |                               | G1/2 internal thread with a brass Ni-plated water-tight gland   | C |    |   |         |   |
|                 |                               | 1/2NPT internal thread  | D |    |   |         |   |
|                 |                               | CM20 internal thread  | E |    |   |         |   |
|                 |                               | G1/2 Internal Thread/two-Plastic Watertight Glands applying   | J |    |   |         |   |
|                 |                               | G1/2 Internal Thread/two-Brass Ni plated Watertight Glands applying   | K |    |   |         |   |
| III             | Converter mounting            | Wall mounting with standard bracket   |   | G  |   |         |   |
|                 |                               | 2-inch pipe mounting with standard bracket  |   | H  |   |         |   |
| IV              | Approval                      | None  |   |    | X |         |   |
|                 |                               | FM approval, Class I, II, III, Division 2, Groups A, B, C, D, F & G, T4<br>CSA certification, Class I, II, III, Division 2, Groups A, B, C, D, E, F & G, T4 |   | *2 | 2 |         |   |
| V               | Option                        | None  |   |    |   | X       |   |
|                 |                               | Traceability certificate  |   |    |   | B       |   |
|                 |                               | With the Tag number plate on the converter housing  |   |    |   | *1      | K |
|                 |                               | Corrosion-proof paint   |   |    |   |         | 2 |

Note) \*1: Must be selected if tagging is required.

\*2: Must select "Wiring connection D".

**MagneW Two-wire PLUS+ Wafer/Flange remote type cable**

Model SMC11 - I II III

Basic model no.

| Basic model no. |                         | Selections               |                        |                |
|-----------------|-------------------------|--------------------------|------------------------|----------------|
| SMC11           |                         |                          |                        |                |
| I               | Cable                   | 2 m (6 feet 8 inches)    | 02                     |                |
|                 |                         | 3 m (10 feet)            | 03                     |                |
|                 |                         | 4 m (13 feet 4 inches)   | 04                     |                |
|                 |                         | 5 m (16 feet 8 inches)   | 05                     |                |
|                 |                         | 10 m (33 feet 4 inches)  | 10                     |                |
|                 |                         | 15 m (50 feet)           | 15                     |                |
|                 |                         | 20 m (66 feet 8 inches)  | 20                     |                |
|                 |                         | 30 m (100 feet)          | 30                     |                |
|                 |                         | 40 m (133 feet 4 inches) | 40                     |                |
|                 |                         | 50 m (166 feet 8 inches) | 50                     |                |
|                 |                         | 60 m (200 feet)          | 60                     |                |
|                 |                         | 70 m (233 feet 4 inches) | 70                     |                |
|                 |                         | II                       | Terminals for detector | With terminals |
| III             | Terminals for converter | With terminals           |                        | A              |

**MagneW Two-wire PLUS+ Wafer/Flange remote type detector**

Model MTG18B - I II III IV V VI VII VIII IX - Options (some options can be selected per each model)

Basic model no.

Selections

Options

|                 |                         |  |     |   |  |  |  |  |    |    |      |
|-----------------|-------------------------|--|-----|---|--|--|--|--|----|----|------|
| <b>MTG18B</b>   |                         |  |     |   |  |  |  |  |    |    |      |
| I               | Diameter                | 10 mm (3/8 inch)   | 010 |   |  |  |  |  |    |    |      |
|                 |                         | 15 mm (1/2 inch)   | 015 |   |  |  |  |  |    |    |      |
|                 |                         | 25 mm (1 inch)   | 025 |   |  |  |  |  |    |    |      |
|                 |                         | 40 mm (1-1/2 inches)   | 040 |   |  |  |  |  |    |    |      |
|                 |                         | 50 mm (2 inches)   | 050 |   |  |  |  |  |    |    |      |
|                 |                         | 65 mm (2-1/2 inches)   | 065 |   |  |  |  |  |    |    |      |
|                 |                         | 80 mm (3 inches)   | 080 |   |  |  |  |  |    |    |      |
|                 |                         | 100 mm (4 inches)  | 100 |   |  |  |  |  |    |    |      |
|                 |                         | 150 mm (6 inches)  | 150 |   |  |  |  |  |    |    |      |
|                 |                         | 200 mm (8 inches)  | 200 |   |  |  |  |  |    |    |      |
| II              | Lining                  | PFA  |     | P |  |  |  |  |    |    |      |
| III             | Pipe connection         | Wafer JIS10K   |     |   |  |  |  |  |    | 11 |      |
|                 |                         | Wafer JIS16/20K  |     |   |  |  |  |  |    | 12 |      |
|                 |                         | Wafer JIS30K   |     |   |  |  |  |  |    |    | 13   |
|                 |                         | Wafer ANSI 150   |     |   |  |  |  |  |    |    | 21   |
|                 |                         | Wafer ANSI 300   |     |   |  |  |  |  |    |    | 22   |
|                 |                         | Wafer DIN PN10   |     |   |  |  |  |  |    |    | 41   |
|                 |                         | Wafer DIN PN16   |     |   |  |  |  |  |    |    | 42   |
|                 |                         | Wafer DIN PN25   |     |   |  |  |  |  |    |    | 43   |
|                 |                         | Flange JIS10K  |     |   |  |  |  |  |    |    | J1   |
|                 |                         | Flange JIS20K  |     |   |  |  |  |  |    |    | J2   |
|                 |                         | Flange JIS30K  |     |   |  |  |  |  |    |    | J3   |
|                 |                         | Flange JIS10K for 10 mm size flange  |     |   |  |  |  |  |    |    | J4   |
|                 |                         | Flange JIS20K for 10 mm size flange  |     |   |  |  |  |  |    |    | J5   |
|                 |                         | Flange ANSI 150  |     |   |  |  |  |  |    |    | A1   |
|                 |                         | Flange ANSI 300  |     |   |  |  |  |  |    |    | A2   |
|                 |                         | Flange DIN PN10  |     |   |  |  |  |  |    |    | D1   |
| Flange DIN PN16 |                         |  |     |   |  |  |  |  | D2 |    |      |
| Flange DIN PN25 |                         |  |     |   |  |  |  |  | D3 |    |      |
| IV              | Electrode               | SUS316L  |     |   |  |  |  |  |    | L  |      |
|                 |                         | ASTM B574 (Hastelloy C-276 equivalent)   |     |   |  |  |  |  |    | C  |      |
|                 |                         | Titanium   |     |   |  |  |  |  |    |    | K    |
|                 |                         | Zirconium  |     |   |  |  |  |  |    |    | H    |
|                 |                         | Tantalum   |     |   |  |  |  |  |    |    | T    |
|                 |                         | Nickel   |     |   |  |  |  |  |    |    | N    |
|                 |                         | Platinum-iridium   |     |   |  |  |  |  |    |    | P    |
| V               | Grounding ring          | SUS316   |     |   |  |  |  |  |    | S  |      |
|                 |                         | ASTM B575 (Hastelloy C-276 equivalent)   |     |   |  |  |  |  |    | C  |      |
|                 |                         | Titanium   |     |   |  |  |  |  |    |    | K    |
|                 |                         | Zirconium  |     |   |  |  |  |  |    |    | H    |
|                 |                         | Tantalum   |     |   |  |  |  |  |    |    | T    |
|                 |                         | Platinum   |     |   |  |  |  |  |    |    | P    |
|                 |                         | SUS316L  |     |   |  |  |  |  |    |    | L    |
| VI              | Wiring connection       | G1/2 internal thread   |     |   |  |  |  |  |    | A  |      |
|                 |                         | G1/2 internal thread with plastic water-tight gland  |     |   |  |  |  |  |    | B  |      |
|                 |                         | G1/2 internal thread with brass Ni-plated water-tight gland  |     |   |  |  |  |  |    |    | C    |
|                 |                         | 1/2NPT internal thread   |     |   |  |  |  |  |    |    | D    |
|                 |                         | CM20 internal thread   |     |   |  |  |  |  |    |    | E    |
| VII             | Face-to-face dimension  | Standard   |     |   |  |  |  |  |    | A  |      |
|                 |                         | Azbil Corporation's SMT3000 wafer type   |     |   |  |  |  |  |    |    | S    |
| VIII            | Calibration             | Standard calibration   |     |   |  |  |  |  |    | J  |      |
| IX              | Approval/ Certification | None   |     |   |  |  |  |  |    | X  |      |
|                 |                         | FM approval, NI for Class I, II, III, Division 2, Groups A, B, C, D, F & G, T4<br>CSA certification, Class I, II, III, Division 2, Groups A, B, C, D, E, F & G, T4 |     |   |  |  |  |  |    |    | *3 2 |

|   |   |         |
|---|---|---------|
| X | None  | Options |
| B | Traceability certificate  |         |
| C | Material certificate (electrode/ grounding ring)                |         |
| G | Gasket for plastic piping                                       |         |
| K | With the Tag number plate on the terminal box *1                |         |
| 2 | Corrosion-proof paint   |         |
| 4 | Attached stainless steel 304 bolts and nuts for installation *2 |         |

Note)

\*1: Must be selected if tagging is required.

\*2: Available for wafer type.

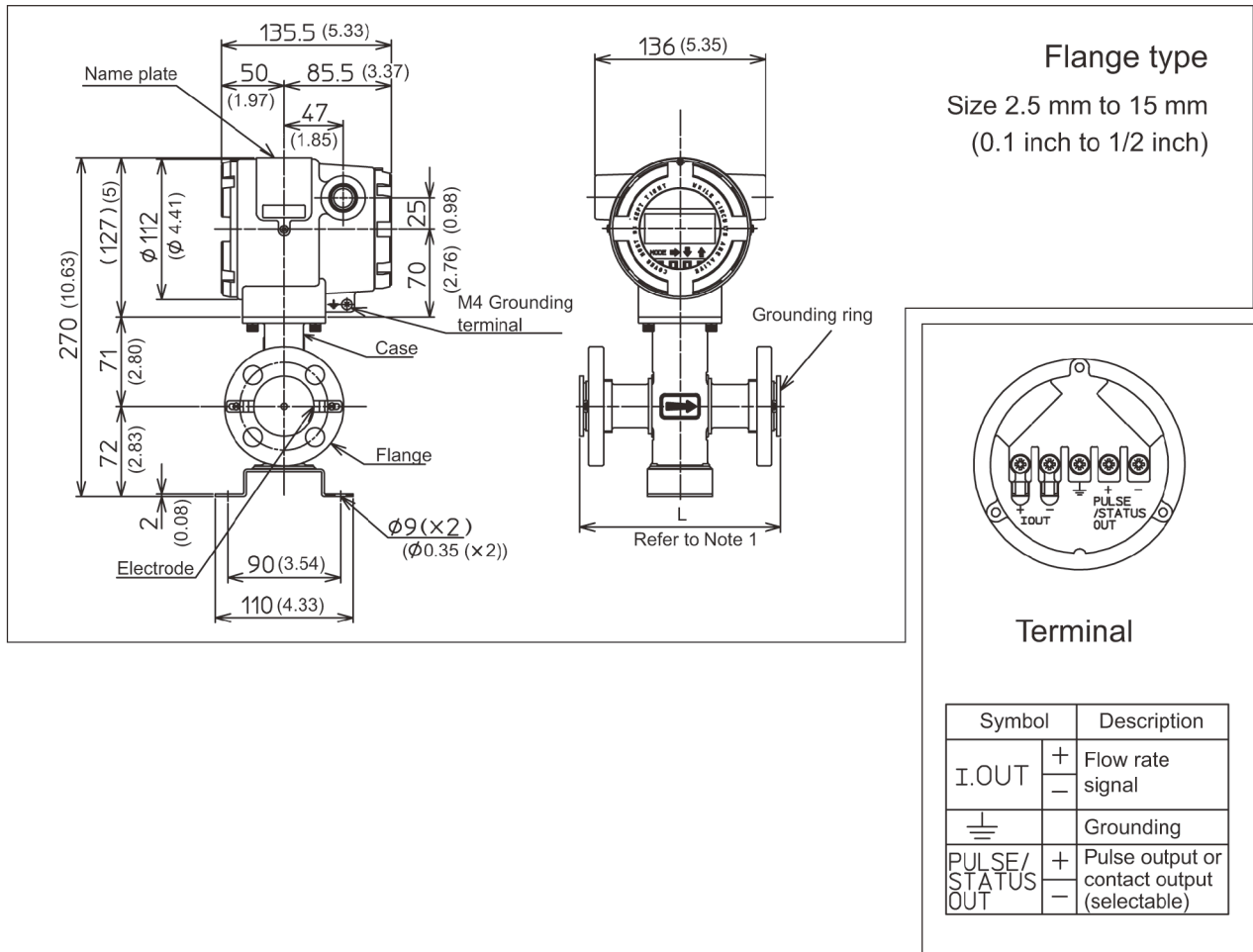
\*3: Must select "Wiring connection D".

## DIMENSIONS

All dimensions are in millimeters, dimensions in brackets ( ) are in inches (inch).

### Model MTG18A - Flange type size 2.5 mm (0.1 inch) to 15 mm (1/2 inch)

(Unit : mm (inch))



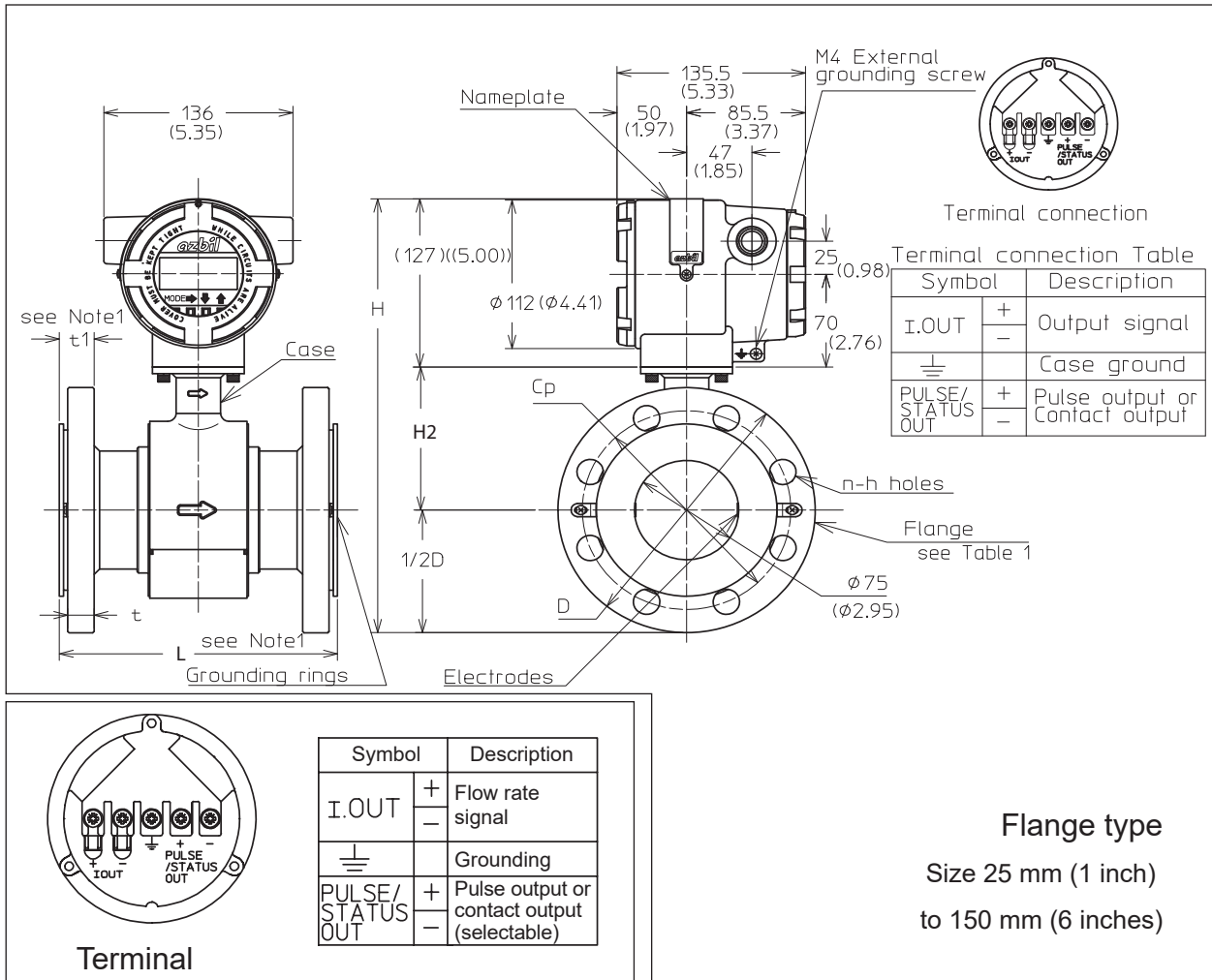
- Note) 1. •When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.  
•When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 2.

| Size mm<br>(inch)         | Model no. | Flange rating | J1  | J2  | J3  | J4                  | J5                  | A1            | A2            | D1/D2       | D3/D4       |
|---------------------------|-----------|---------------|-----|-----|-----|---------------------|---------------------|---------------|---------------|-------------|-------------|
|                           |           |               | JIS |     |     |                     |                     | ANSI          |               | DIN         |             |
|                           |           |               | 10K | 20K | 30K | 10K<br>10 mm flange | 20K<br>10 mm flange | 150           | 300           | PN<br>10/16 | PN<br>25/40 |
| 2.5 to 10<br>(0.1 to 3/8) | Dimension | L             | 160 | 160 | 160 | 160                 | 160                 | 160 (6.3)     | 160 (6.3)     | 160         | 160         |
|                           | Weight    | (kg)          | 6.8 | 7   | 8   | 6.7                 | 6.8                 | 6.4 (14.1 lb) | 6.9 (15.2 lb) | 6.9         | 7.1         |
| 15<br>(1/2)               | Dimension | L             | 200 | 200 | 200 | -                   | -                   | 200 (7.87)    | 200 (7.87)    | 200         | 200         |
|                           | Weight    | (kg)          | 6.8 | 6.8 | 6.8 | -                   | -                   | 6.4(14.1 lb)  | 6.9(15.2 lb)  | 6.9         | 7.1         |

Model MTG18A - Flange type size 25 mm (1 inch) to 150 mm (6 inches)

(Unit : mm (inch))



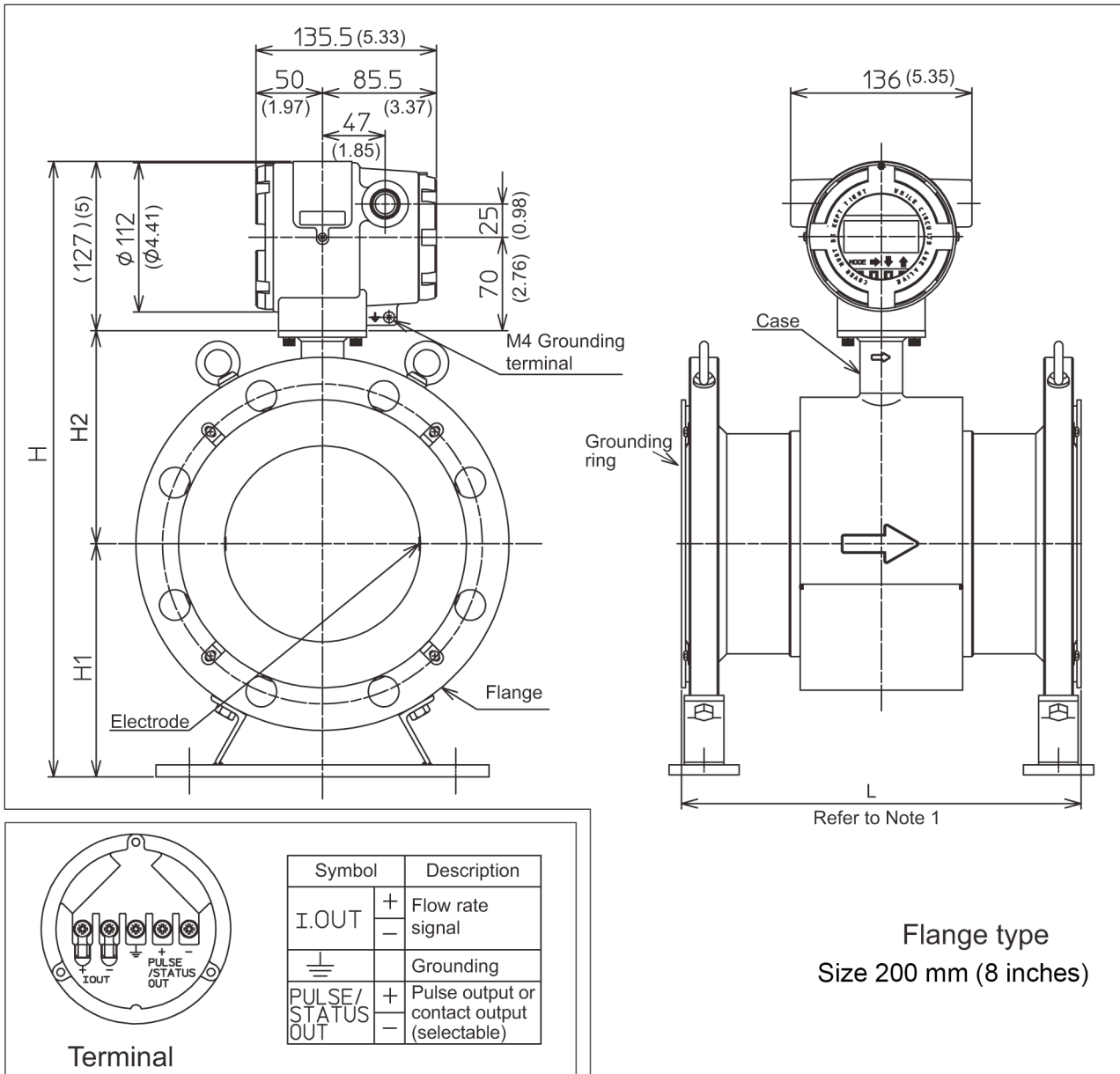
- Note) 1.
- When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.
  - When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 3.

| Size mm<br>(inches) | Model no.     |      | J1    | J2    | J3    | A1              | A2              | D1/D2    | D3/D4 |
|---------------------|---------------|------|-------|-------|-------|-----------------|-----------------|----------|-------|
|                     | Flange rating | JIS  |       |       | ANSI  |                 | DIN             |          |       |
|                     |               | 10K  | 20K   | 30K   | 150   | 300             | PN 10/16        | PN 25/40 |       |
| 25<br>(1)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200   |
|                     |               | H    | 267   | 267   | 269   | 258 (10.16)     | 266 (10.47)     | 262      | 262   |
|                     |               | D    | 125   | 125   | 130   | 110 (4.33)      | 125 (4.92)      | 115      | 115   |
|                     |               | H2   | 77    | 77    | 77    | 77 (3.03)       | 77 (3.03)       | 77       | 77    |
|                     | Weight        | (kg) | 9.2   | 9.5   | 10.3  | 8.6 (18.96 lb)  | 9.6 (21.16 lb)  | 9.1      | 9.4   |
| 40<br>(1.5)         | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200   |
|                     |               | H    | 281   | 281   | 291   | 273.5 (10.77)   | 288.5 (11.36)   | 286      | 286   |
|                     |               | D    | 140   | 140   | 160   | 125 (4.92)      | 155 (6.10)      | 150      | 150   |
|                     |               | H2   | 84    | 84    | 84    | 84 (3.31)       | 84 (3.31)       | 84       | 84    |
|                     | Weight        | (kg) | 8.3   | 8.6   | 11.0  | 7.9 (17.41 lb)  | 10.3 (22.71 lb) | 8.7      | 9.7   |
| 50<br>(2)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200   |
|                     |               | H    | 297.5 | 297.5 | 302.5 | 295 (11.61)     | 302.5 (11.91)   | 302.5    | 302.5 |
|                     |               | D    | 155   | 155   | 165   | 150 (5.91)      | 165 (6.5)       | 165      | 165   |
|                     |               | H2   | 93    | 93    | 93    | 93 (3.66)       | 93 (3.66)       | 93       | 93    |
|                     | Weight        | (kg) | 11.9  | 12.0  | 13.7  | 12.4 (27.34 lb) | 13.9 (30.64 lb) | 13.3     | 13.8  |
| 65<br>(2.5)         | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200   |
|                     |               | H    | 314.5 | 314.5 | 327   | 317 (12.99)     | 322 (13.31)     | 319.5    | 319.5 |
|                     |               | D    | 175   | 175   | 200   | 180 (7.09)      | 190 (7.48)      | 185      | 185   |
|                     |               | H2   | 100   | 100   | 100   | 100 (3.94)      | 100 (3.94)      | 100      | 100   |
|                     | Weight        | (kg) | 13.9  | 14.0  | 15.7  | 14.7 (32.4 lb)  | 15.2 (33.51 lb) | 15.3     | 15.8  |
| 80<br>(3)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200   |
|                     |               | H    | 327.5 | 335   | 340   | 330 (13.62)     | 340 (14.13)     | 335      | 335   |
|                     |               | D    | 185   | 200   | 210   | 190 (7.48)      | 210 (8.27)      | 200      | 200   |
|                     |               | H2   | 108   | 108   | 108   | 108 (4.25)      | 108 (4.25)      | 108      | 108   |
|                     | Weight        | (kg) | 14.4  | 16.7  | 20.4  | 17.6 (38.8 lb)  | 20.4 (44.97 lb) | 14.4     | 16.5  |
| 100<br>(4)          | Dimension     | L    | 250   | 250   | 250   | 250 (9.84)      | 250 (9.84)      | 250      | 250   |
|                     |               | H    | 352.5 | 360   | 367.5 | 362.5 (14.27)   | 375 (14.76)     | 357.5    | 365   |
|                     |               | D    | 210   | 225   | 240   | 230 (9.06)      | 255 (10.04)     | 220      | 235   |
|                     |               | H2   | 120.5 | 120.5 | 120.5 | 120.5 (4.74)    | 120.5 (4.74)    | 120.5    | 120.5 |
|                     | Weight        | (kg) | 20.2  | 23.7  | 28.6  | 25.2 (56.60 lb) | 34 (74.96)      | 19.6     | 23.4  |
| 150<br>(6)          | Dimension     | L    | 300   | 300   | 300   | 300 (11.81)     | 300 (11.81)     | 300      | 300   |
|                     |               | H    | 427   | 439.5 | 449.5 | 427 (16.81)     | 447 (17.6)      | 429.5    | 437   |
|                     |               | D    | 280   | 305   | 325   | 280 (11.02)     | 320 (12.6)      | 285      | 300   |
|                     |               | H2   | 160   | 160   | 160   | 160 (6.3)       | 160 (6.3)       | 160      | 160   |
|                     | Weight        | (kg) | 32.4  | 39.7  | 52.3  | 34.6 (76.3 lb)  | 52.1 (114.9 lb) | 28.7     | 36.6  |

**Model MTG18A - Flange type size 200 mm (8 inches)**

(Unit : mm (inch))



- Note) 1. •When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.  
 •When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

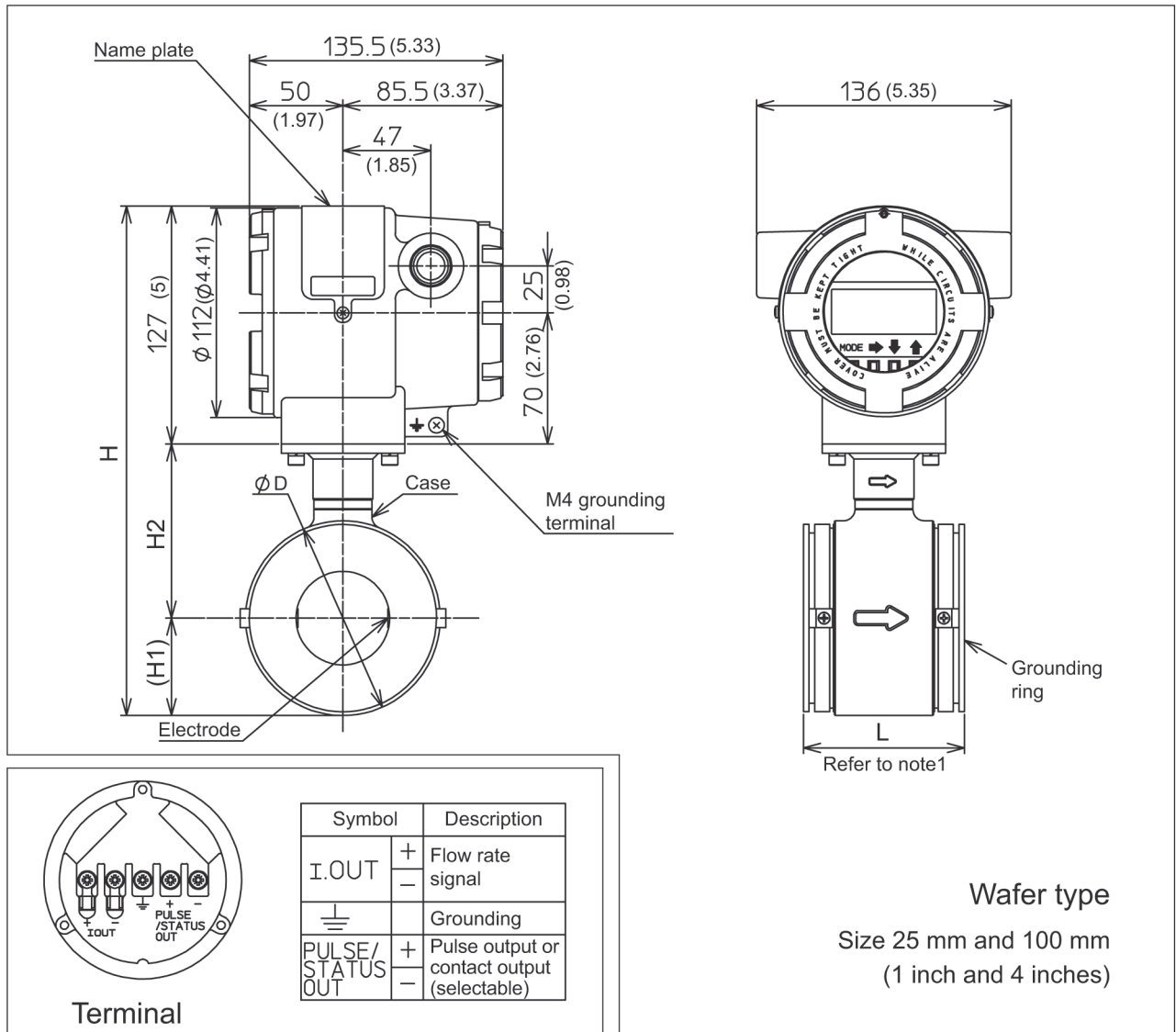
Table 4.

| Size mm (inches) | Model no.     | J1   | J2   | J3  | A1              | A2              | D1/D2       | D3    | D4   |     |
|------------------|---------------|------|------|-----|-----------------|-----------------|-------------|-------|------|-----|
|                  |               | JIS  |      |     | ANSI            |                 | DIN         |       |      |     |
|                  | Flange rating | 10K  | 20K  | 30K | 150             | 300             | PN 10/16    | PN 25 | PN40 |     |
| 200 (8)          | Dimension     | L    | 350  | 350 | 350             | 350 (13.78)     | 350 (13.78) | 350   | 350  | 350 |
|                  |               | H    | 508  | 515 | 531             | 516 (20.31)     | 537 (21.14) | 514   | 526  | 534 |
|                  |               | H1   | 196  | 203 | 219             | 204 (8.03)      | 225 (8.86)  | 202   | 214  | 222 |
|                  | H2            | 185  | 185  | 185 | 185 (7.28)      | 185 (7.28)      | 185         | 185   | 185  |     |
| Weight           | (kg)          | 49.8 | 59.8 | 87  | 61.8 (136.2 lb) | 90.8 (200.2 lb) | 48.1        | 68.5  | 72   |     |



**Model MTG18A - Wafer type size 25 mm (1 inch) to 100 mm (4 inches)**

(Unit : mm (inch))



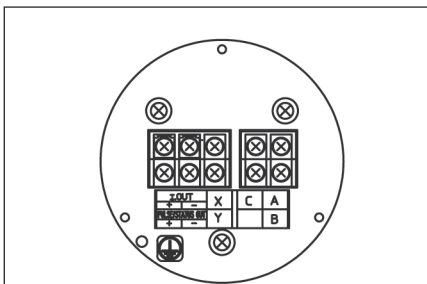
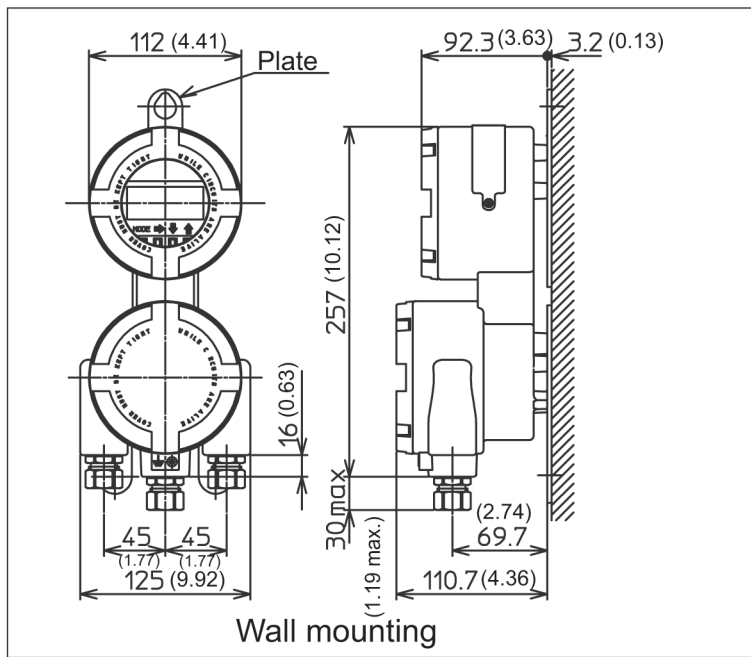
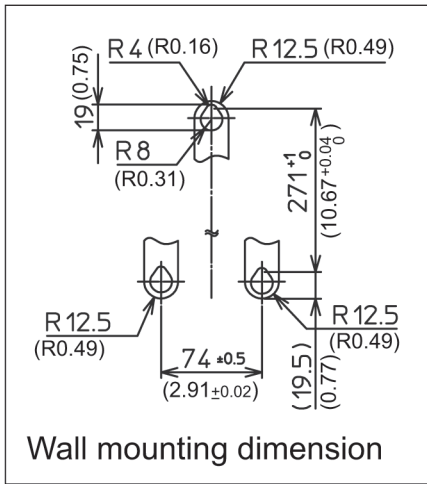
- Note) 1. •When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.  
 •When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 5.

| Flange rating               | 25 mm<br>(1 inch) | 40 mm<br>(1-1/2 inch) |                 | 50 mm<br>(2 inches) |                 | 65 mm<br>(2-1/2 inches) | 80 mm<br>(3 inches) |                  | 100 mm<br>(4 inches) |                  |                  |
|-----------------------------|-------------------|-----------------------|-----------------|---------------------|-----------------|-------------------------|---------------------|------------------|----------------------|------------------|------------------|
| Face-to-face dimension code | A                 | A                     | S               | A                   | S               | A                       | A                   | S                | A                    | S                |                  |
| Dimension size              | L                 | 94 (3.7)              | 80 (3.15)       | 98 (3.86)           | 86 (3.39)       | 104 (4.09)              | 96 (3.78)           | 106 (4.17)       | 130 (5.12)           | 120 (4.72)       | 150 (5.91)       |
|                             | H                 | 238 (9.37)            | 254.5 (10.02)   |                     | 272 (10.71)     |                         | 289 (11.38)         | 302 (11.89)      |                      | 327 (12.87)      |                  |
|                             | H1                | 34 (1.34)             | 43.5 (1.71)     |                     | 52 (2.05)       |                         | 62 (2.44)           | 67 (2.64)        |                      | 79.5 (3.13)      |                  |
|                             | H2                | 77 (3.03)             | 84 (3.31)       |                     | 93 (3.66)       |                         | 100 (3.94)          | 108 (4.25)       |                      | 120.5 (4.74)     |                  |
|                             | D                 | 68 (2.68)             | 87 (3.43)       |                     | 104 (4.09)      |                         | 124 (4.88)          | 134 (5.28)       |                      | 159 (6.26)       |                  |
| Weight                      | (kg)              | 3.7<br>(8.2 lb)       | 3.8<br>(8.4 lb) | 4.3<br>(9.5 lb)     | 4.4<br>(9.7 lb) | 5.0<br>(11.0 lb)        | 5.5<br>(12.1 lb)    | 6.4<br>(14.1 lb) | 7.1<br>(15.7 lb)     | 8.2<br>(18.1 lb) | 9.2<br>(20.3 lb) |

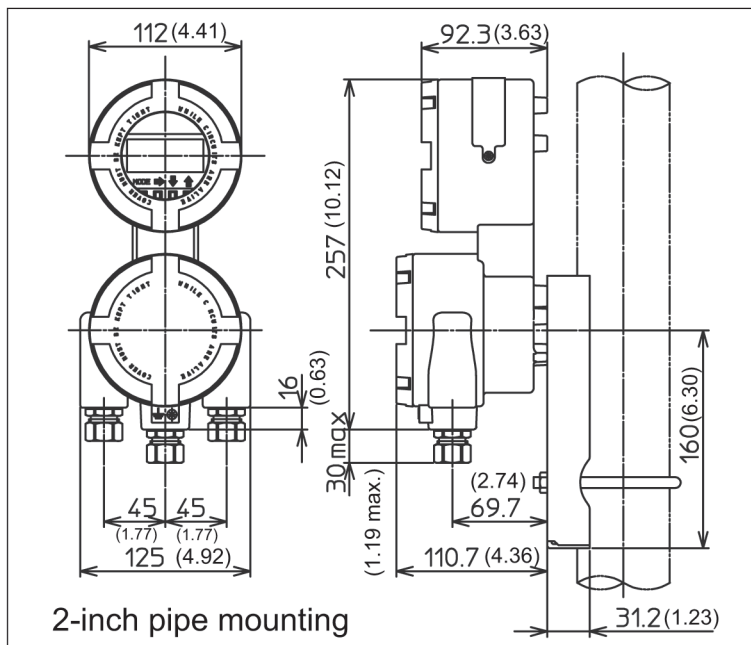
Model MTG14C - Converter

(Unit : mm (inch))

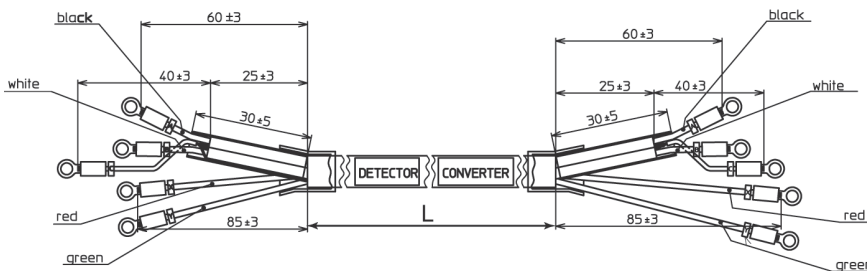


| Symbol  | Description                          |
|---|--------------------------------------|
| I-OUT $\begin{matrix} + \\ - \end{matrix}$            | Flow rate signal                     |
| $\text{---}$  | Grounding                            |
| PULSE/STATUS OUT $\begin{matrix} + \\ - \end{matrix}$ | Pulse output or contact (selectable) |
| X   | Excitation output                    |
| Y   |                                      |
| A   | Flow rate signal input               |
| B   |                                      |
| C   |                                      |

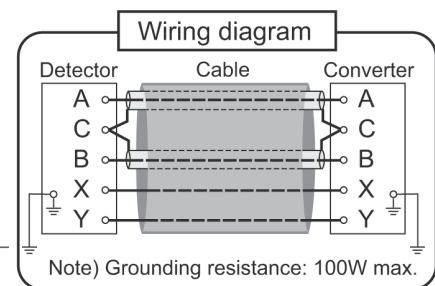
\* Terminal screw: M4



Model SMC11 - Cable

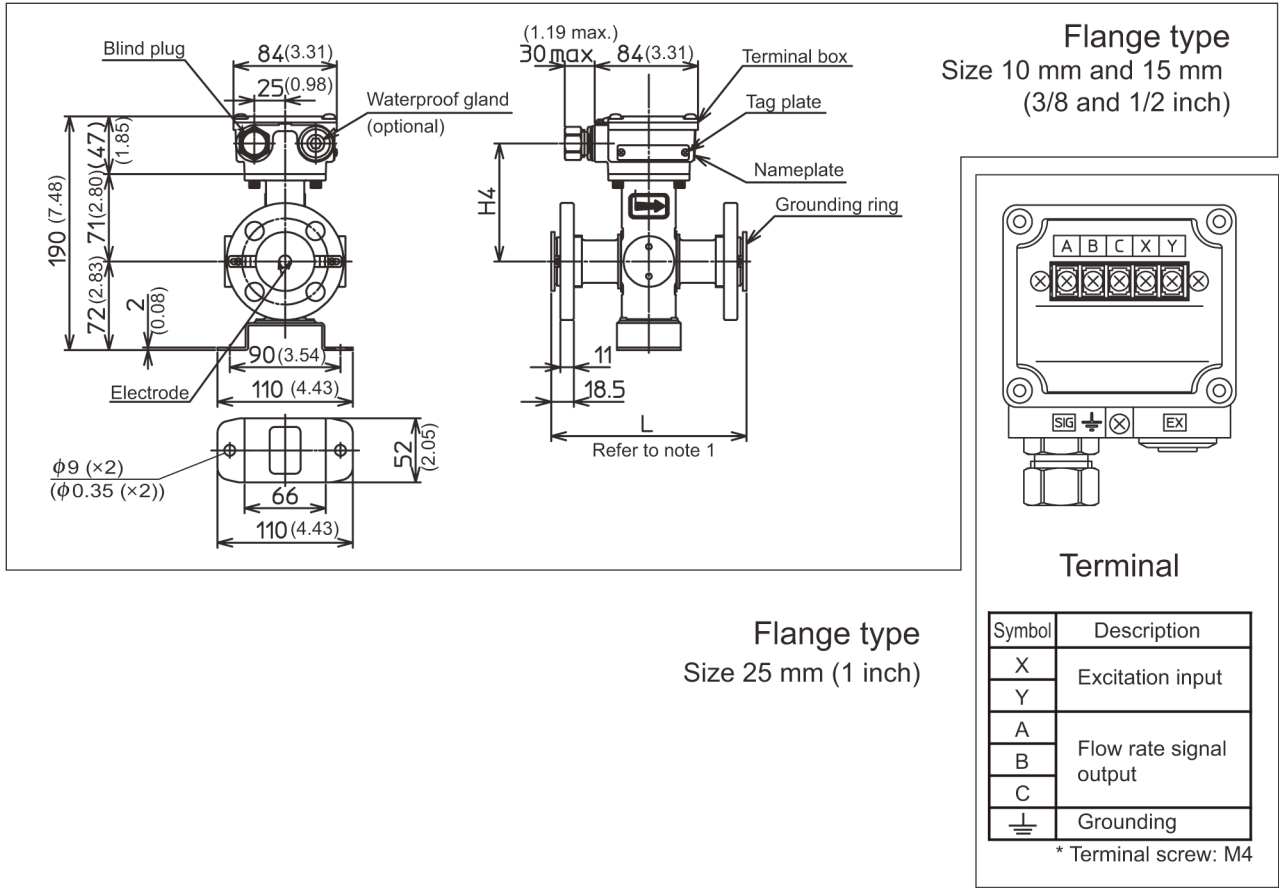


L: Cable length



**Model MTG18B - Detector - Flange type size 10 mm (3/8 inch) and 15 mm (1/2 inch)**

(Unit : mm (inch))



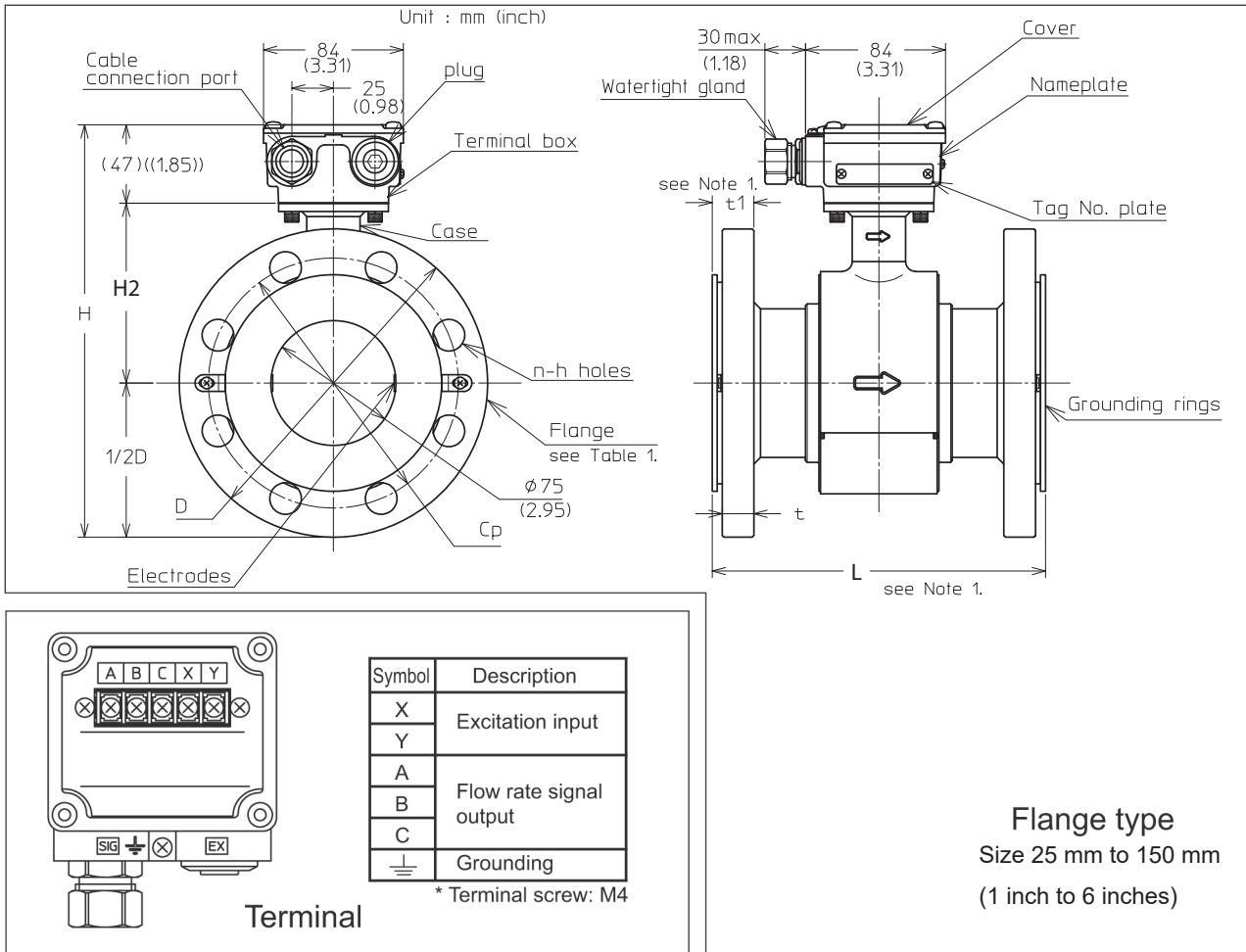
- Note 1*
- When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.
  - When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

**Table 6.**

| Size mm (inches) | Model no.     |      | J1  | J2  | J3  | J4               | J5               | A1            | A2            | D1/D2    | D3/D4    |
|------------------|---------------|------|-----|-----|-----|------------------|------------------|---------------|---------------|----------|----------|
|                  | Flange rating |      | JIS |     |     |                  |                  | ANSI          |               | DIN      |          |
|                  |               |      | 10K | 20K | 30K | 10K 10 mm flange | 20K 10 mm flange | 150           | 300           | PN 10/16 | PN 25/40 |
| 10 (3/8)         | Dimension     | L    | 160 | 160 | 160 | 160              | 160              | 160 (6.3)     | 160 (6.3)     | 160      | 160      |
|                  | Weight        | (kg) | 5   | 5.2 | 6.2 | 4.9              | 5                | 4.6 (10.1 lb) | 5.1 (11.2 lb) | 5.1      | 5.3      |
| 15 (1/2)         | Dimension     | L    | 200 | 200 | 200 | 200              | 200              | 200 (7.87)    | 200 (7.87)    | 200      | 200      |
|                  | Weight        | (kg) | 5.2 | 5.4 | 6.4 | 5.1              | 5.2              | 4.8 (10.6 lb) | 5.3 (11.7 lb) | 5.3      | 5.5      |

Model MTG18B - Detector - Flange type size 25 mm (1inch) to 150 mm (6 inches)

(Unit : mm (inch))



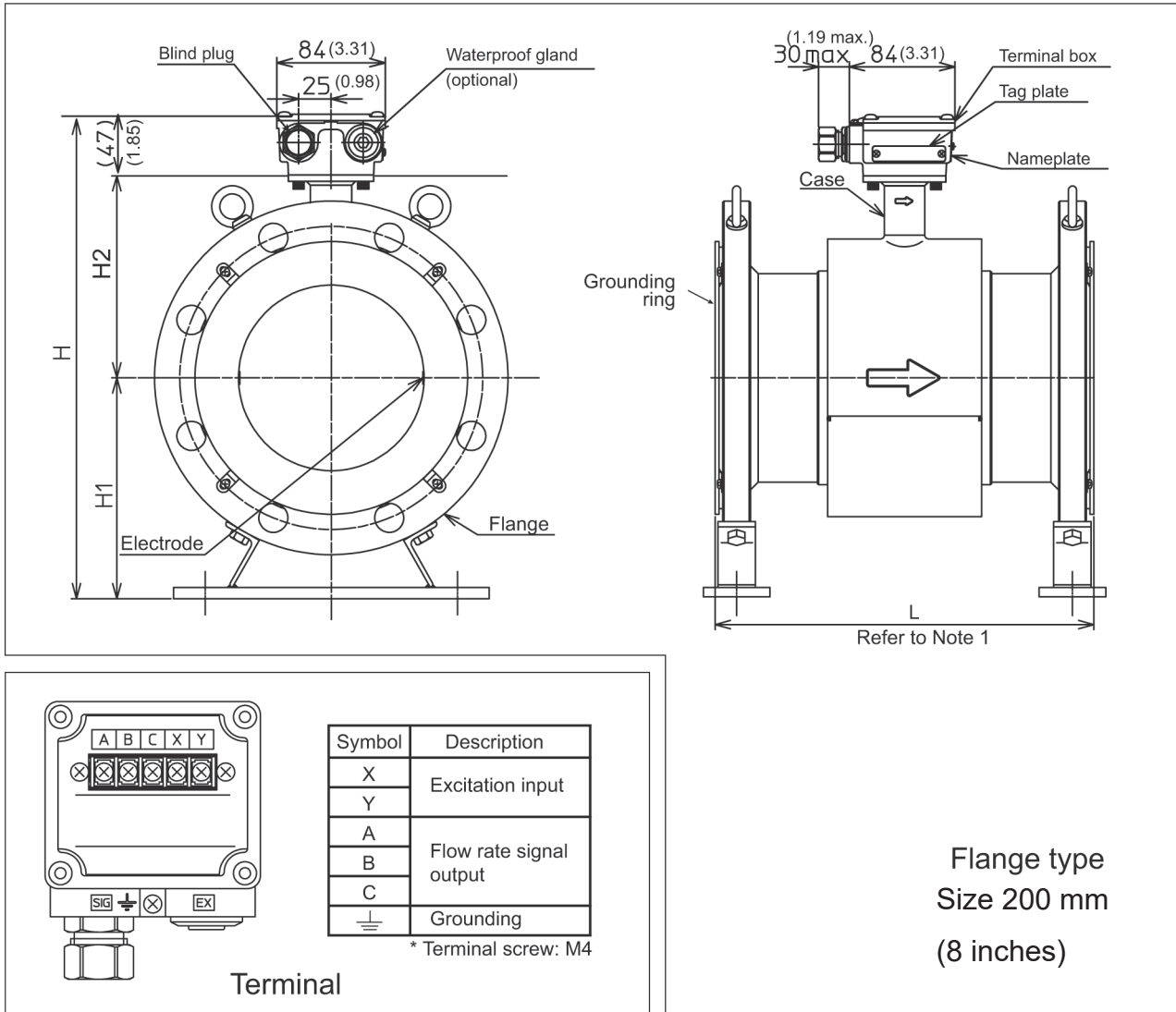
- Note) 1.
- When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.
  - When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 7.

| Size mm<br>(inches) | Model no.     |      | J1    | J2    | J3    | A1              | A2              | D1/D2    | D3/D4    |
|---------------------|---------------|------|-------|-------|-------|-----------------|-----------------|----------|----------|
|                     | Flange rating |      | JIS   |       |       | ANSI            |                 | DIN      |          |
|                     |               |      | 10K   | 20K   | 30K   | 150             | 300             | PN 10/16 | PN 25/40 |
| 25<br>(1)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200      |
|                     |               | H    | 187   | 187   | 189   | 178 (7.01)      | 186 (7.32)      | 182      | 182      |
|                     |               | D    | 125   | 125   | 130   | 110 (4.33)      | 125 (4.92)      | 115      | 115      |
|                     |               | H2   | 77    | 77    | 77    | 77 (3.03)       | 77 (3.03)       | 77       | 77       |
|                     | Weight        | (kg) | 9.2   | 9.5   | 10.3  | 8.6 (18.96 lb)  | 9.6 (21.16 lb)  | 9.1      | 9.4      |
| 40<br>(1.5)         | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200      |
|                     |               | H    | 201   | 201   | 211   | 193.5 (7.62)    | 208.5 (8.21)    | 206      | 206      |
|                     |               | H1   | 140   | 140   | 160   | 127 (5.00)      | 155 (6.10)      | 150      | 150      |
|                     |               | H2   | 84    | 84    | 84    | 84 (3.31)       | 84 (3.31)       | 84       | 84       |
|                     | Weight        | (kg) | 8.3   | 8.6   | 11.0  | 7.9 (17.41 lb)  | 10.3 (22.71 lb) | 8.7      | 9.7      |
| 50<br>(2)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200      |
|                     |               | H    | 217.5 | 217.5 | 222.5 | 215 (8.46)      | 222.5 (8.76)    | 222.5    | 222.5    |
|                     |               | D    | 155   | 155   | 165   | 150 (5.91)      | 165 (6.5)       | 165      | 165      |
|                     |               | H2   | 93    | 93    | 93    | 93 (3.66)       | 93 (3.66)       | 93       | 93       |
|                     | Weight        | (kg) | 11.9  | 12.0  | 13.7  | 12.4 (27.34 lb) | 13.9 (30.64 lb) | 13.3     | 13.8     |
| 65<br>(2.5)         | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200      |
|                     |               | H    | 234.5 | 234.5 | 247   | 237 (9.33)      | 242 (9.53)      | 239.5    | 239.5    |
|                     |               | D    | 175   | 175   | 200   | 180 (7.09)      | 190 (7.48)      | 185      | 185      |
|                     |               | H2   | 100   | 100   | 100   | 100 (3.94)      | 100 (3.94)      | 100      | 100      |
|                     | Weight        | (kg) | 13.9  | 14.0  | 15.7  | 14.7 (32.4 lb)  | 15.2 (33.51 lb) | 15.3     | 15.8     |
| 80<br>(3)           | Dimension     | L    | 200   | 200   | 200   | 200 (7.87)      | 200 (7.87)      | 200      | 200      |
|                     |               | H    | 247.5 | 255   | 260   | 250 (10.24)     | 260 (10.98)     | 255      | 255      |
|                     |               | D    | 185   | 200   | 210   | 190 (7.48)      | 210 (8.27)      | 200      | 200      |
|                     |               | H2   | 108   | 108   | 108   | 108 (4.25)      | 108 (4.25)      | 108      | 108      |
|                     | Weight        | (kg) | 14.4  | 16.7  | 20.4  | 17.6 (38.8 lb)  | 20.4 (44.97 lb) | 14.4     | 16.5     |
| 100<br>(4)          | Dimension     | L    | 250   | 250   | 250   | 250 (9.84)      | 250 (9.84)      | 250      | 250      |
|                     |               | H    | 272.5 | 280   | 287.5 | 282.5 (11.12)   | 295 (11.61)     | 277.5    | 285      |
|                     |               | D    | 210   | 225   | 240   | 230 (9.06)      | 255 (10.04)     | 220      | 235      |
|                     |               | H2   | 120.5 | 120.5 | 120.5 | 120.5 (4.74)    | 120.5 (4.74)    | 120.5    | 120.5    |
|                     | Weight        | (kg) | 20.2  | 23.7  | 28.6  | 25.2 (55.34 lb) | 34 (75.4 lb)    | 19.8     | 23.4     |
| 150<br>(6)          | Dimension     | L    | 300   | 300   | 300   | 300 (11.81)     | 300 (11.81)     | 300      | 300      |
|                     |               | H    | 347   | 359.5 | 369.5 | 347 (13.66)     | 367 (14.45)     | 349.5    | 357      |
|                     |               | D    | 280   | 305   | 325   | 280 (11.02)     | 320 (12.6)      | 285      | 300      |
|                     |               | H2   | 160   | 160   | 160   | 160 (6.3)       | 160 (6.3)       | 160      | 160      |
|                     | Weight        | (kg) | 32.4  | 39.7  | 54.3  | 34.6 (76.28 lb) | 52.1 (114.9 lb) | 28.7     | 36.6     |

Model MTG18B - Detector - Flange type size 200 mm (8 inches)

(Unit : mm (inch))



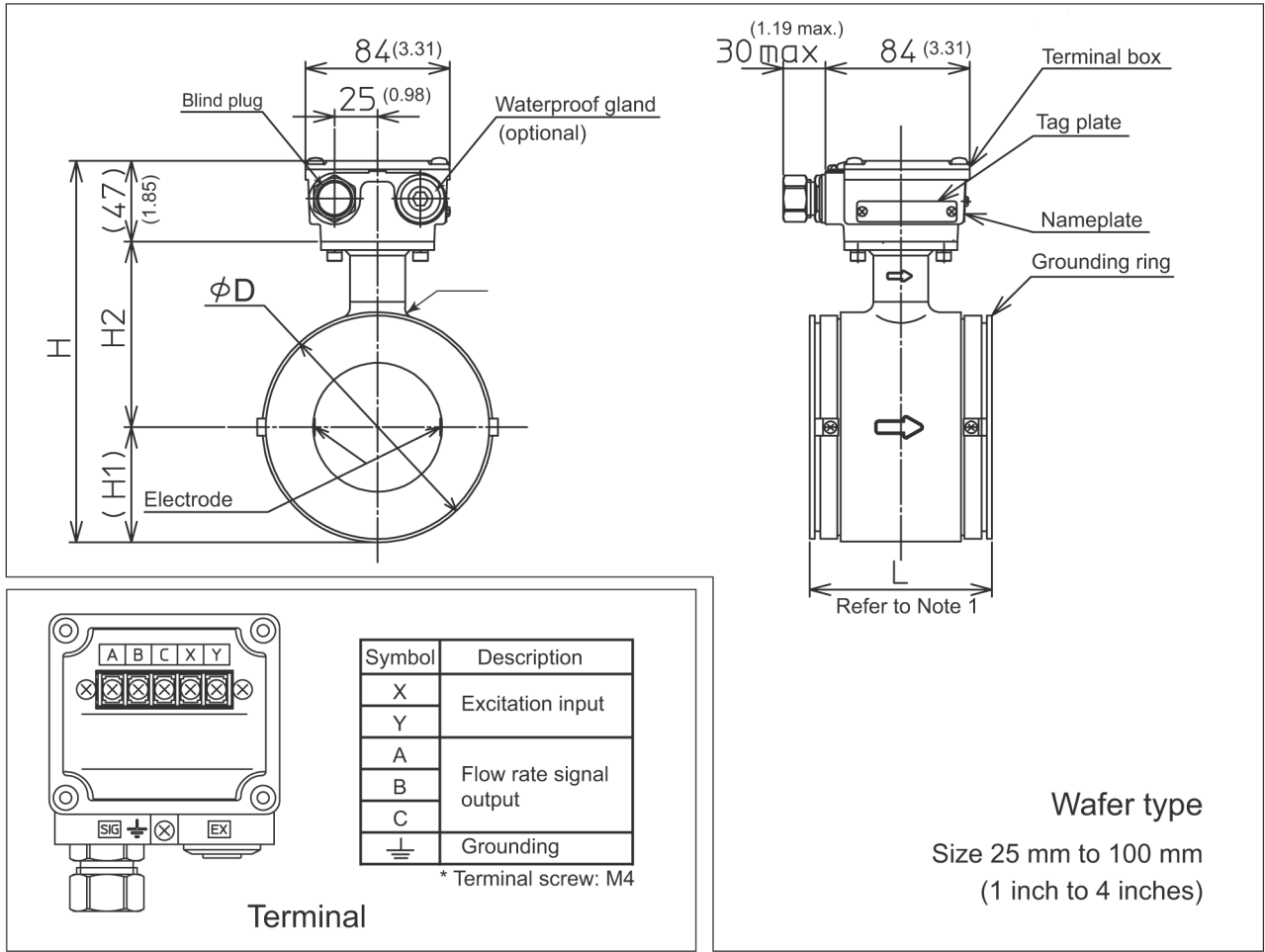
- Note) 1. •When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.  
•When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 8.

| Size mm (inches) | Model no.     |      | J1  | J2  | J3   | A1            | A2            | D1/D2    | D3    | D4    |
|------------------|---------------|------|-----|-----|------|---------------|---------------|----------|-------|-------|
|                  | Flange rating |      | JIS |     |      | ANSI          |               | DIN      |       |       |
|                  |               |      | 10K | 20K | 30K  | 150           | 300           | PN 10/16 | PN 25 | PN 40 |
| 200 (8)          | Dimension     | L    | 350 | 350 | 350  | 350 (13.78)   | 350 (13.78)   | 350      | 350   | 350   |
|                  |               | H    | 428 | 435 | 451  | 436 (17.17)   | 457 (17.99)   | 434      | 446   | 454   |
|                  |               | H1   | 196 | 203 | 219  | 204 (8.03)    | 225 (8.86)    | 202      | 214   | 222   |
|                  |               | H2   | 185 | 185 | 185  | 185 (7.28)    | 185(7.28)     | 185      | 185   | 185   |
|                  | Weight        | (kg) | 48  | 58  | 85.2 | 60 (132.3 lb) | 89 (196.2 lb) | 46.3     | 66.7  | 70.2  |

**Model MTG18B - Detector - Wafer type size 25 mm (1 inch) to 100 mm (4 inches)**

(Unit : mm (inch))



- Note) 1. •When grounding ring material is SUS316, gasket dimension is not included to the face-to-face dimension.  
•When grounding ring material is other than SUS316, a 3 mm of Teflon gasket dimension is included to the face-to-face dimension.

Table 9.

| Flange rating               | 25 mm<br>(1 inch) | 40 mm<br>(1-1/2 inch) |              | 50 mm<br>(2 inches) |            | 65 mm<br>(2-1/2 inches) | 80 mm<br>(3 inches) |            | 100 mm<br>(4 inches) |              |            |
|-----------------------------|-------------------|-----------------------|--------------|---------------------|------------|-------------------------|---------------------|------------|----------------------|--------------|------------|
| Face-to-face dimension code | A                 | A                     | S            | A                   | S          | A                       | A                   | S          | A                    | S            |            |
| Dimension size              | L                 | 94 (3.7)              | 80 (3.15)    | 98 (3.86)           | 86 (3.39)  | 104 (4.09)              | 96 (3.78)           | 106 (4.17) | 130 (5.12)           | 120 (4.72)   | 150 (5.91) |
|                             | H                 | 158 (6.22)            | 174.5 (6.87) |                     | 192 (7.56) |                         | 209 (8.23)          | 222 (8.74) |                      | 247 (9.72)   |            |
|                             | H1                | 34 (1.34)             | 43.5 (1.71)  |                     | 52 (2.05)  |                         | 62 (2.44)           | 67 (2.64)  |                      | 79.5 (3.13)  |            |
|                             | H2                | 77 (3.03)             | 84 (3.31)    |                     | 93 (3.66)  |                         | 100 (3.94)          | 108 (4.25) |                      | 120.5 (4.74) |            |
|                             | D                 | 68 (2.68)             | 87 (3.43)    |                     | 104 (4.09) |                         | 124 (4.88)          | 134 (5.28) |                      | 159 (6.26)   |            |
| Weight                      | (kg)              | 2                     | 2            | 2.5                 | 2.6        | 3.2                     | 3.7                 | 4.6        | 5.3                  | 6.4          | 7.4        |
|                             |                   | (4.4 lb)              | (4.4 lb)     | (5.5 lb)            | (5.7 lb)   | (7.1 lb)                | (8.2 lb)            | (10.1 lb)  | (11.7 lb)            | (14.1 lb)    | (16.3 lb)  |

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