

# General Specifications

## AXR Two-wire Magnetic Flowmeter Integral Flowmeter



GS 01E30D01-01EN

### ■ GENERAL DESCRIPTION

The ADMAG AXR two-wire magnetic flowmeter can be installed in the two-wire system without any AC power source, thus drastically reducing the initial instrumentation cost.

The ADMAG AXR is the world's first two-wire magnetic flowmeter which employs the fluid noise free "Dual Frequency Excitation Method," achieving excellent stability for instrumentation.

Like the AXF four-wire magnetic flowmeter series, the ADMAG AXR has user-friendly functions such as a full dot-matrix LCD indicator, electrode adhesion level diagnosis function, and a multi-lingual display. The magnet switches can be used for checking and setting parameters without opening the case cover.

Note: The "Dual Frequency Excitation Method" is Yokogawa's unique technology.



### ■ FEATURES

#### ● High Performance and Excellent Functionality

##### Dual Frequency Excitation Method

The "Dual Frequency Excitation Method" combines two strengths: stability in flow measurement due to low frequency excitation and high noise resistance due to high frequency excitation. Therefore, the method is strong against fluctuations of fluid condition and is ideal for stable measurement.

##### High Accuracy

The ADMAG AXR performs 0.5% of rate under normal flowrate conditions.

##### Electric Noise Resistance

The ADMAG AXR offers electric noise resistance compared with the four-wire magnetic flowmeter.

#### ● Reducing the Instrumentation Cost

##### Reducing the Wiring Cost

The two-wire system reduces the wiring cost drastically.

##### Direct Connection with the DCS

AC power sources are not necessary. The ADMAG AXR can be connected with almost all distributors, signal conditioner cards, and input modules.

##### Energy Saving

Compared with four-wire magnetic flowmeters, the ADMAG AXR can drastically decrease power consumption.

#### ● User-friendly Functionality

##### Enhanced Diagnostic Function

By checking the level of the insulating substance on the electrodes, it is possible to determine when maintenance is required.

Results of mean flow measurement during a given period, etc. can be checked by using parameters.

##### Clear and Versatile Indications

The full dot-matrix LCD indicator facilitates various displays such as one to three lines and multi-lingual display.

In an alarm condition, a full description of the countermeasure is indicated.

##### Parameter Setting

Magnet switches and push switches are employed.

Magnet switches enable parameters to be set without opening the case cover in the hazardous area.

##### Various Output Signals

In addition to the current output, one output can be selected among pulse, alarm, and status. Various functions such as multiple-range, forward and reverse flow measurement, and flow rate upper/lower limit alarm are achieved. The pulse output is a high speed of 10,000 pps (pulses per second).

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## STANDARD SPECIFICATIONS

### Converter

The contents of (\*1) and (\*2) described in the converter specifications are follows.

- \*1: One output can be selected from pulse, alarm, or status through the parameter setting.
- \*2: For models without an indicator, the configuration tool (Such as handheld terminal or FieldMate, etc.) is necessary to set or change parameters.

#### Excitation Method:

- Dual frequency excitation: Size 25 to 200 mm (1 to 8 in.)

#### Output Signals:

Current output and digital output can be carried out simultaneously.

Refer to "WIRING EXAMPLE".

- Current output: 4 to 20 mA DC, two-wire system  
Output range: 3.8 to 20.5 mA (-1.25 to 103.13%)
- Digital output (\*1):  
Transistor contact output, open collector  
Contact rating: 30 V DC, 120 mA DC  
Low level: 0 to 2 V DC (refer to Figure 1)

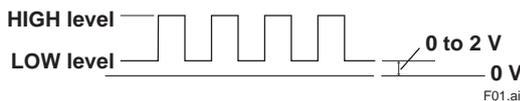


Figure 1 High and Low levels (transistor contact output)

#### Current Output Status at System Alarms (Burnout)

- Up-scale: 110%, 21.6 mA DC or more (standard)
- Down-scale: -5%, 3.2 mA DC or less

#### Supply Voltage:

- 14.7 to 35 V DC for general-purpose use and explosion proof type
- 14.7 to 32 V DC for lightning protector (optional code A)

Note 1: Supply voltage means the voltage necessary to provide between the power terminals of the magnetic flowmeter.

Note 2: Connecting with the commercial AC power supply will damage the flowmeter. Be sure to use the DC power supply in the predetermined range.

Note 3: The ADMAG AXR can be connected with almost all distributors, signal conditioner cards, and I/O modules except certain devices. Referring to the following table for Yokogawa's devices, choose an appropriate connecting device and the corresponding length of cable. For devices other than those in the table, decide on the connection by referring to the supply voltage specifications and the description in "WIRING EXAMPLE".

Connecting device		Maximum length of cable (rough guideline)	
Name	Model	Cable with cross section of 2 mm <sup>2</sup>	Cable with cross section of 1.25 mm <sup>2</sup>
Signal Conditioner Card	EA1 EA2	2 km	2 km
I/O Module	AAM11 AAM11B	2 km	2 km
Analog I/O Module (for FIO)	AAI143	2 km	2 km
	AAI141 AAI841 AAI135 AAI835	Not applicable	Not applicable
	SAI143	1.4 km	0.8 km
	SDBT SDBS	2 km	2 km
JUXTA	VJA1	2 km	2 km
	VJA4	2 km	2 km

#### Communication Requirement:

Communication Signal:

BRAIN or HART communication signal (superimposed on 4 to 20 mA DC signals)

Note: HART is a registered trademark of the HART Communication Foundation.

#### Conditions of Communication Line:

- Supply Voltage: 20.6 to 35 V DC
- Load Resistance: 250 to 600 Ω (including cable resistance)

Refer to Figure 2.

#### BRAIN

Communication Distance: Up to a distance of 2 km when a CEV cable is used

Refer to "WIRING EXAMPLE".

Load Capacitance: 0.22 μF or less

Load Inductance: 3.3 mH or less

Distance from other Power Line: 15 cm (6 in.) or more (Avoid parallel wiring.)

Input Impedance of Communicating Device:

10 kΩ or more at 2.4 kHz

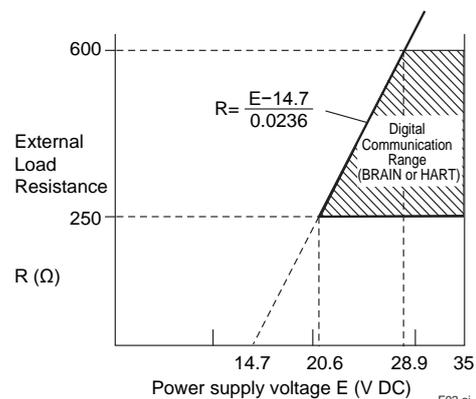


Figure 2 Relationship Between Power Supply Voltage And External Load Resistance

**Indicator (\*2):**

Full dot-matrix LCD (128 x 64 pixels)  
Operational switch: 4 magnet switches (including push switches)

**Lightning Protector:**

When optional code A is selected, the lightning protector is built into the power supply and digital output terminals.

**Protection:**

General-purpose Use/TIIS Flameproof type:  
IP66, IP67

Explosion proof type except for TIIS:

In the case of explosion proof type except TIIS, refer to description of "Enclosure" in "HAZARDOUS AREA CLASSIFICATION".

**Converter Coating:**

Case and Cover: Corrosion-resistant coating  
Coating Color: Mint-green paint (Munsell 5.6 BG 3.3/2.9 or its equivalent)

**Converter Material:**

Case and Cover: Aluminum alloy

**Mounting/Shapes:**

- Electrical Connection: ANSI 1/2 NPT female  
ISO M20 x 1.5 female  
JIS G1/2 (PF1/2) female
- Direction of Electrical Connection: The direction can be changed even after delivery.
- Terminal Connection: M4 size screw terminal

**Grounding:**

Grounding resistance of 100 Ω or less is necessary. When the optional code A is selected, grounding resistance of 10 Ω or less shall be required.

\* This also applies to TIIS explosion proof types.

\* For an explosion proof type except for TIIS, follow the domestic electrical requirements in each country.

**Functions****How to Set Parameters (\*2):**

Both of four push buttons and magnet switches can be used for setting. The magnet switches can be used to set parameters without opening the case cover.

The magnet switches need operational magnets (optional code BM). These are also available as part number F9840PA.

Users can choose a language on indicator from English, Japanese, German, French, Italian, and Spanish. Parameters can also be set with the configuration tool (Such as HHT (handheld terminal) or FieldMate, etc.). The language for the HHT is English only.

**Instantaneous Flow Rate/Totalized Value Display Functions (for models with an indicator) (\*2):**

The full dot-matrix LCD enables user selections of displays from one line to three lines for:

- Instantaneous flow rate
- Instantaneous flow rate (%)
- Instantaneous flow rate (bar graph)
- Current output value (mA)
- Totalized forward-direction flow rate
- Totalized reverse-direction flow rate
- Totalized differential flow rate
- Tag No.
- Results of electrode adhesion diagnosis
- Communication type

**Totalizer Display Function (\*2):**

The flow rate is counted one count at a time according to the setting of totalization pulse weights. For forward and reverse flow measurement functions, the totalized values of the flow direction (forward or reverse) and the flow direction are displayed on the indicator together with the units. The difference of totalized values between the forward and reverse flow rate can be displayed. Totalization for the reverse flow rate is carried out only when "Forward and reverse flow measurement functions" is selected.

**Damping Time Constant (\*2):**

The time constant can be set from 1.0 second to 200.0 seconds (63% response). The default is 5 seconds.

When the damping time is short, the output fluctuates. Set the time to 5 seconds or more for control loop.

**Span Setting Function (\*2):**

Span flows can be set in units such as volume flow rate, mass flow rate, time, or flow rate value. The velocity unit can also be set.

Volume Flow Rate Unit: kcf, cf, mcf, Mgal (US), kgal (US), gal (US), mgal (US), kbbbl (US)\*, bbl (US)\*, mbbbl (US)\*, μbbbl (US)\*, MI (megaliter), m<sup>3</sup>, kl (kiloliter), l (liter), cm<sup>3</sup>

Mass Flow Rate Unit (Density must be set): klb (US), lb (US), t (ton), kg, g

Velocity Unit: ft, m (meter)

Time Unit: s (sec), min, h (hour), d (day)

\* "US Oil" or "US Beer" can be selected.

**Pulse Output (\*1)(\*2):**

Scaled pulse is output one by one according to the setting of pulse weight.

Pulse Width: Duty 50% or fixed pulse width (0.05, 0.1, 0.5, 1, 20, 33, 50, 100, 200, 330, 500, 1000, 2000 ms) can be selected.

Output Rate: 0.0001 to 10,000 pps (pulses per second)

**Multi-range Functions (\*1)(\*2):**

Automatic range switching

When the flow rate exceeds 100% of the range, transition to the next range (up to two ranges) is carried out automatically. Range switching can be confirmed by the status output and on the indicator.

**Forward and Reverse Flow Measurement Functions (\*1)(\*2):**

Flows in both forward and reverse directions can be measured. The reverse flow measurement can be confirmed by the status output and on the indicator.

**Totalization Switch (\*1)(\*2):**

The status output is carried out when a totalized value becomes equal to or greater than the set value.

**Preset Totalization (\*1)(\*2):**

The parameter setting enables a totalized value to be preset to a setting value or zero.

**Alarm Selection Function (\*2):**

Alarms are classified into the System Alarms (hardware failure), Process Alarms (such as Signal Overflow and Adhesion Alarm), Setting Alarms, and Warnings. Process Alarms and Setting Alarms can be activated or deactivated for each item. The current output for an alarm can be selected from the following settings. If any System Alarm occurs, turn the power off and back on again to return to the normal condition.

System Alarm: 21.6 mA or more, 3.2 mA or less  
 Process Alarm, Setting Alarm:  
 21.6 mA or more, 20.5 mA, HOLD  
 (fixed to the current value before  
 the alarm), 4 mA, 3.8 mA

The default settings of each alarm are as follows:

	Standard	Optional code C1
System Alarm	21.6 mA or more	3.2 mA or less
Process Alarm	21.6 mA or more	3.8 mA
Setting Alarm	21.6 mA or more	3.8 mA

**Alarm Output (\*1)(\*2):**

Alarms are generated only for the items selected via the 'Alarm Selection Function' if relevant failures occur.

**Self Diagnosis Functions (\*2):**

When an alarm is output, details of the System Alarms, Process Alarms, Setting Alarms, and Warnings are displayed together with the specific description of corresponding countermeasures. Results of mean flow measurement during a given period, etc. can be checked by using parameters.

**Flow Rate Upper/Lower Limit Alarms (\*1)(\*2):**

If a flow rate becomes out of the predetermined range, the alarm output is generated.

**Electrode Adhesion Diagnosis Function (\*1) (\*2):**

This function enables checking of the adhesion level of insulating substances to the electrodes. Depending on the status of adhesion, users are notified by a warning or an alarm via status outputs. While adhesion diagnosis is being carried out (approximately 5 minutes), a current of 4 mA is output because the flow measurement is not performed. Adhesion diagnosis should only be carried out when the fluid velocity is completely zero by closing the valve.

When adhesion diagnosis is carried out, change the control loop to the manual mode first.

**Data Security during Power Failure:**

Data (parameters, totalization value, etc.) storage by EEPROM. No back-up battery required.

**Low Cut (\*2):**

In this function, the values of the current output along with LCD indication, totalization, and pulse, which are corresponding to setting span of 0 to 10%, are fixed at 0% (including reverse flow). The default setting is 5%.

When the Low Cut point is small, the incorrect output may occur at the flow rate of zero. Set the Low Cut point to 5%. If the span is small, the damping time is short or the fluid is low conductivity, the incorrect output may easily occur at the flow rate of zero.

**Zero Adjustment Function (\*2):**

By using the parameter setting, zero adjustment is carried out to ensure that the output for zero flow is 0%. Zero adjustment should be carried out only when the flowtube is filled with measurement fluid and the flow is completely stopped by closing the valves. During zero adjustment (450 seconds), the current output is 10.4 mA.

● **Flowtubes**

**Size of AXR Flowtubes:**

**Lay length code 1**

Unit: mm (in.)

Use	Process Connection	Integral Flowmeter
General-purpose Use	Wafer <sup>*1</sup>	80 (3.0), 100 (4.0), 150 (6.0), 200 (8.0)
	Flange <sup>*1</sup>	25 (1.0), 40 (1.5), 50 (2.0), 65 (2.5), 80 (3.0), 100 (4.0), 150 (6.0), 200 (8.0)
Explosion Proof Type	Wafer <sup>*1</sup>	80 (3.0), 100 (4.0)
	Flange <sup>*1</sup>	25 (1.0), 40 (1.5), 50 (2.0), 65 (2.5), 80 (3.0), 100 (4.0)

\*1: The dimensions of lay length code 1 are the same as those of the PFA lining standard lay length (lay length code 1) in the AXF series. For details, refer to "EXTERNAL DIMENSIONS."

**Lay length code 2**

Unit: mm (in.)

Use	Process Connection	Integral Flowmeter
General-purpose Use	Wafer <sup>*2</sup>	25 (1.0), 40 (1.5), 50 (2.0), 65 (2.5), 80 (3.0), 100 (4.0), 150 (6.0), 200 (8.0)
Explosion Proof Type	Wafer <sup>*2</sup>	25 (1.0), 40 (1.5), 50 (2.0), 65 (2.5), 80 (3.0), 100 (4.0)

\*2: Excluding the size of 65 mm, dimensions of lay length code 2 are the same as those of PFA lining replacement models (lay length code 2) in AXF series. Lay lengths for special gaskets (optional codes GA, GB, GD) are different. For details, refer to "EXTERNAL DIMENSIONS."

**Coating:**

**General-purpose Use/Explosion Proof Type:**

- Size 25 to 100 mm (1 to 4 in.) (Wafer type),
- Size 25 to 100 mm (1 to 4 in.) (Flange type):
  - Housing: No coating (Stainless steel surface)
  - Flange (Flange type only):
    - No coating (Stainless steel surface)
- Size 150 to 200 mm (6.0 to 8 in.) (Wafer type),
- Size 150 to 200 mm (6.0 to 8 in.) (Flange type):
  - Housing, Flange (Flange type only)
    - Corrosion-resistant coating
    - Coating color; Mint green (Munsell 5.6 BG 3.3/2.9 or its equivalent)

**Flowtube Material:**

Size 25 to 100 mm (1 to 4 in.)

Part Name		Material	
Housing		Stainless steel-JIS SUS304 (AISI 304 SS/EN 1.4301 equivalent)	
Flange		Stainless steel-JIS SUS304 or SUSF304 (AISI 304 SS/EN 1.4301 equivalent)	
Mini-Flange	Wafer type	Size 25 mm (1.0 in.)	Stainless steel-SCS13
		Size 40 to 100 mm (1.5 to 4.0 in.)	Stainless steel-JIS SUS430 ASTM 4300/DIN X6Cr17/ EN 1.4016 equivalent
Pipe	Wafer type	Size 25 mm (1.0 in.)	Stainless steel-SCS13
		Size 40 to 100 mm (1.5 to 4.0 in.)	Stainless steel-JIS SUS304 (AISI 304 SS/EN 1.4301 equivalent)
	Flange type	Size 25 mm (1.0 in.)	Stainless steel-SCS13
		Size 40 to 100 mm (1.5 to 4.0 in.)	Stainless steel-JIS SUS304 (AISI 304 SS/EN 1.4301 equivalent)

Size 150 mm (6.0 in.) to 200 mm (8.0 in.)

Part Name		Material
Housing		Carbon steel-JIS SPCC equivalent
Flange	Process Connection code: B**	Stainless steel-JIS SUS304 or SUSF304 (AISI 304 SS/EN 1.4301 equivalent)
	Process Connection code: C**	Carbon steel-JIS SS400 or SFVC 2A
Mini-Flange	Wafer Type	Carbon steel-JIS SS400 or SFVC 2A
Pipe	Flange Type/Wafer Type	Stainless steel-JIS SUS 304 (AISI 304 SS/EN 1.4301 equivalent)

**Wetted Part Material:**

**Lining;**

Fluorocarbon PFA<sup>\*1</sup> lining

\*1: PFA is FDA (U.S. Food and Drug Administration) approval material.

The inner surface of the PFA lining is mirror-finished to Ra of 0.05 to 0.15 μm. The value of Ra is the average of measurements at several points. Mirror finished PFA lining is standard for size 25 to 100 mm (1 to 4 in.) and optional for size 150 to 200 mm (6 to 8 in.) specified by optional code PM.

**Electrode;**

Stainless steel-JIS SUS316L (AISI 316L SS/EN 1.4404 equivalent), Hastelloy<sup>\*1</sup> C276 equivalent, Tantalum, Platinum-Iridium

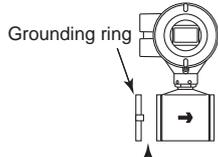
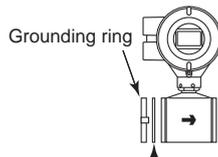
**Grounding Ring/Grounding Electrode;**

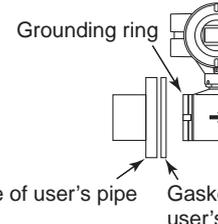
- Grounding Ring (plate type)  
Stainless steel-JIS SUS316 (AISI 316 SS/EN 1.4401 equivalent), Stainless steel-JIS SUS316L (AISI 316L SS/EN 1.4404 equivalent), Hastelloy<sup>\*1</sup> C276 equivalent
- Grounding Electrode (electrode type)<sup>\*2</sup>  
Fluorocarbon PFA lining + grounding electrode (Tantalum, Platinum-Iridium)

\*1: Hastelloy is a registered trademark of Haynes International Inc.

\*2: The permeable fluids (such as nitric acid, hydrofluoric acid, or sodium hydroxide at high temperature) are unusable.

**Gasket;**

Use	General-purpose Use/ Explosion Proof Type
Standard	 <p>No gasket within Flowtube</p>
Optional code (GA, GC, or GD)	 <p>Gasket within Flowtube</p>
	Gasket Material (within Flowtube)
	GA: Fluororubber for PVC pipes (Viton®) GC: Acid-resistant fluororubber for PVC pipes (Viton®) GD: Alkali-resistant fluororubber for PVC pipes (Viton®)

Use	General-purpose Use/ Explosion Proof Type
Optional code (BCF, BSF, BCC, or BSC)	 <p>Flange of user's pipe    Gasket for user's flange</p>
	Gasket Material (for user's flange)
	BCF, BSF: PTFE-sheathed non-asbestos BCC, BSC: Chloroprene rubber

**Electrode Construction:**

Internal insertion type

**HAZARDOUS AREA CLASSIFICATION**

**FM**

\*AXR025C-AXR100C

Applicable Standard:

FM3600, FM3610, FM3615,  
FM3810, ANSI/NEMA250

Type of Protection:

Explosion proof for Class I, Division 1, Groups A, B, C & D

Dust-ignition proof for Class II/III, Division 1, Groups E, F & G

Intrinsically safe electrodes for Class I, Division 1, Groups A, B, C & D

“SEAL ALL CONDUITS WITHIN 18 INCHES” WHEN INSTALLED IN DIV. 2, “SEAL NOT REQUIRED”

Specification of Protection:

Electrode Circuit Um: 250 Vac/dc

Supply Voltage: 35 Vdc max.

Output Signal: 4 to 20 mA

Digital Output: ON; 2 Vdc, 120 mA max.

OFF; 30 Vdc max., 4 mA

Excitation Circuit: 29 V max.

Enclosure: NEMA 4X

Process Temperature:

Temperature Code	Maximum Process Temperature	Minimum Process Temperature
T6	+70°C (+158°F)	-40°C (-40°F)
T5	+85°C (+185°F)	-40°C (-40°F)
T4	+130°C (+266°F)	-40°C (-40°F)

Ambient Temp.: -40°C to +55°C  
(-40°F to +131°F)

Note: Installation shall be in accordance with the manufacturer's instructions, National Electric Code, ANSI/NFPA-70, and Local Electric Code.

**CENELEC ATEX (KEMA):**

\*AXR025C-AXR100C

Applicable Standard:

EN 60079-0, EN 60079-1,  
EN 60079-7, EN 60079-11,  
EN 61241-0, EN 61241-1

Certificate: KEMA 08ATEX0138

**Type of Gas Atmosphere Protection**

Type of Protection:

Group: II

Category: 2G

Ex d e [ia] IIC T6...T4

Specification of Protection:

Electrode Circuit Um: 250 Vac/dc

Supply Voltage: 35 Vdc max., Um=250 V

Output Signal: 4 to 20 mA, Um=250 V

Excitation Circuit: 29 V max.

Enclosure: IP66, IP67

Process Temperature:

Temperature Class	Maximum Process Temperature	Minimum Process Temperature
T6	+70°C (+158°F)	-40°C (-40°F)
T5	+85°C (+185°F)	-40°C (-40°F)
T4	+130°C (+266°F)	-40°C (-40°F)

Ambient Temp.: -40°C to +55°C  
(-40°F to +131°F)

**Type of Dust Atmosphere Protection**

Type of Protection:

Group: II

Category: 2D

Ex tD A21 IP6x T90°C, T110°C, T130°C

Specification of Protection:

Electrode Circuit Um: 250 Vac/dc

Supply Voltage: 35 Vdc max., Um=250 V

Output Signal: 4 to 20 mA, Um=250 V

Excitation Circuit: 29 V max.

Enclosure: IP66, IP67

Process Temperature:

Maximum Surface Temperature	Maximum Process Temperature	Minimum Process Temperature
T90°C (+194°F)	+70°C (+158°F)	-40°C (-40°F)
T110°C (+230°F)	+85°C (+185°F)	-40°C (-40°F)
T130°C (+266°F)	+130°C (+266°F)	-40°C (-40°F)

Ambient Temp.: -40°C to +55°C  
(-40°F to +131°F)

Note: Grounding resistance of 100Ω or less is necessary. When the optional code A is selected, grounding resistance of 10Ω or less shall be required.

**IECEX:**

\*AXR025C-AXR100C

Applicable Standard:

IEC60079-0, IEC60079-1,  
IEC60079-7, IEC60079-11,  
IEC61241-1

Certificate: IECEX KEM 08.0026

**Type of Gas Atmosphere Protection**

Type of Protection:

Ex d e [ia] IIC T6...T4 Gb

Specification of Protection:

Electrode Circuit Um: 250 Vac/dc

Supply Voltage: 35 Vdc max., Um=250 V

Output Signal: 4 to 20 mA, Um=250 V

Excitation Circuit: 29 V max.

Enclosure: IP66, IP67

Process Temperature:

Temperature Class	Maximum Process Temperature	Minimum Process Temperature
T6	+70°C (+158°F)	-40°C (-40°F)
T5	+85°C (+185°F)	-40°C (-40°F)
T4	+130°C (+266°F)	-40°C (-40°F)

Ambient Temp.: -40°C to +55°C  
(-40°F to +131°F)

**Type of Dust Atmosphere Protection**

Type of Protection:

Ex tD IIC A21 IP6x T90°C, T110°C, T130°C...T130°C Db

Specification of Protection:

Electrode Circuit Um: 250 Vac/dc

Supply Voltage: 35 Vdc max., Um=250 V

Output Signal: 4 to 20 mA, Um=250 V

Excitation Circuit: 29 V max.

Enclosure: IP66, IP67

Process Temperature:

Maximum Surface Temperature	Maximum Process Temperature	Minimum Process Temperature
T90°C (+194°F)	+70°C (+158°F)	-40°C (-40°F)
T110°C (+230°F)	+85°C (+185°F)	-40°C (-40°F)
T130°C (+266°F)	+130°C (+266°F)	-40°C (-40°F)

Ambient Temp.: -40°C to +55°C  
(-40°F to +131°F)

Note: Grounding resistance of 100Ω or less is necessary.  
When the optional code A is selected, grounding resistance of 10 Ω or less shall be required.

○ **TIIS**

Certificate:

Size (mm)	Certificate	Size (mm)	Certificate
25 (1.0 in.)	TC18680	65 (2.5 in.)	TC18683
40 (1.5 in.)	TC18681	80 (3.0 in.)	TC18684
50 (2.0 in.)	TC18682	100 (4.0 in.)	TC18685

Construction: Ex d e [ia] IIC T4

Converter: Flameproof enclosure

Flowtube: Increased safety and intrinsically safety (ia)

Electrode: Intrinsically safety (ia)

Gas Group And Temperature Class: IIC T4

- Non-intrinsically safety circuit
  - Supply Voltage: 14.7 to 35 V DC
  - Output Signal: 4 to 20 mA DC
  - Allowable Voltage (Um): 250 V AC, 50/60Hz
  - Excitation Circuit: 29 V max.
- Intrinsically safety circuit
  - Maximum Voltage (Uo): 354 V
  - Maximum Current (Io): 4.77 mA
  - Maximum Electrical Power (Po): 0.211 W
- Fluid Temperature: 130°C max
- Ambient Temperature: -20 to 55°C
- Grounding:
  - Grounding resistance of 100 Ω or less is necessary.
  - When the optional code A is selected, grounding resistance of 10 Ω or less shall be required.
- Flameproof packing adapter:
  - The specifying optional code G11 or G12 is necessary.

■ **STANDARD PERFORMANCE**

Accuracy:

General-Purpose Use; Vs: Span setting value (m/s)

Size in mm (in.)	Span in m/s (ft/s)	Accuracy
25 to 100 (1 to 4)	0.3 ≤ Vs < 1 (1 ≤ Vs < 3.3)	±0.25 cm/s (at indications less than 50% of span)
		±(0.4+0.1/Vs)% of rate (at indications 50% or more of span)
	1 ≤ Vs < 2 (3.3 ≤ Vs < 6.7)	±0.2% of span (at indications less than 35% of span)
±0.5% of rate (at indications 35% or more of span)		
150 to 200 (6 to 8)	0.5 ≤ Vs < 1 (1.65 ≤ Vs < 3.3)	±0.16% of span (at indications less than 30% of span)
		±0.5% of rate (at indications 30% or more of span)
	1 ≤ Vs < 2 (3.3 ≤ Vs < 6.7)	±0.3% of span (at indications less than 35% of span)
±0.5% of rate (at indications 35% or more of span)		
2 ≤ Vs ≤ 10 (6.7 ≤ Vs ≤ 33)	±0.16% of span (at indications less than 30% of span)	
	±0.5% of rate (at indications 30% or more of span)	

Explosion proof Type;

Vs: Span setting value (m/s)

Size in mm (in.)	Span in m/s (ft/s)	Accuracy
25 to 100 (1 to 4)	1 ≤ Vs < 2 (3.3 ≤ Vs < 6.7)	±0.45% of span (at indications less than 30% of span)
		±0.25% of span (at indications from 30% or more to less than 45% of span)
	2 ≤ Vs ≤ 10 (6.7 ≤ Vs ≤ 33)	±0.5 % of rate (at indications 45% or more of span)
±0.24 % of span (at indications less than 35% of span)		
2 ≤ Vs ≤ 10 (6.7 ≤ Vs ≤ 33)	±0.5 % of rate (at indications 35% or more of span)	

The accuracy of a product before shipment is defined as totalized value at the result of calibration test in our water actual flow test facility. Calibrated conditions in our water actual test facility are

as follows:

- Fluid temperature: 20 ± 10°C
- Ambient temperature: 20 ± 5°C
- Length of straight runs: 10 D or more on the up-stream side; 5 D or more on the downstream side
- Reference conditions: Similar to BS EN29104 (1993); ISO 9104 (1991)

**Accuracy for Multi-drop of HART (generally accepted values)**

Vs: Span setting value (m/s)

Size in mm (in.)	Span in m/s (ft/s)	Accuracy
25 to 100 (1 to 4)	0.3 ≤ Vs < 1 (1 ≤ Vs < 3.3)	±(0.4+0.3/Vs)% of span
	1 ≤ Vs < 2 (3.3 ≤ Vs < 6.7)	± 0.5% of span
	2 ≤ Vs ≤ 10 (6.7 ≤ Vs ≤ 33)	± 0.25% of span (at indications less than 50% of span) ± 0.5% of rate (at indications 50% or more of span)
150 to 200 (6 to 8)	0.5 ≤ Vs < 1 (1.65 ≤ Vs < 3.3)	±(0.4+0.3/Vs)% of span
	1 ≤ Vs < 2 (3.3 ≤ Vs < 6.7)	± 0.5% of span
	2 ≤ Vs ≤ 10 (6.7 ≤ Vs ≤ 33)	± 0.25% of span (at indications less than 50% of span) ± 0.5% of rate (at indications 50% or more of span)

**Repeatability (Reference):**

±0.2% of rate  
(When the flow velocity is 1.5 m/s toward 2 m/s of setting span)

**Insulation Resistance:**

Inspection location	Terminal	Test voltage	Standard
Power Supply/Digital Output - Functional Grounding	SUPPLY/DO ⏏	500 V DC	100 MΩ or more

When the optional code A is selected (with the lightning protector), values are as follows.

Power Supply/Digital Output - Functional Grounding	SUPPLY/DO ⏏	100 V DC	20 MΩ or more
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Note: Conduct the test according to the instruction manual.

**Dielectric Strength:**

Inspection location	Terminal	Test voltage	Test time	Standard
Power Supply/Digital Output - Functional Grounding	SUPPLY/DO ⏏	500 V AC	1 min.	25 mA or less

When the optional code A is selected (with the lightning protector), values are as follows.

Power Supply/Digital Output - Functional Grounding	SUPPLY/DO ⏏	100 V AC	1 min.	6 mA or less
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Note: Conduct the test according to the instruction manual.

**Safety Requirement Standards:**

- EN61010-1
- Altitude of installation site: Max. 2000 m above sea level
- Installation category: I  
“Overvoltage category (Installation category)” describes a number which defines a transient overvoltage condition. It implies the regulation for impulse withstand voltage. “ I ” applies to electrical equipment which is supplied from the circuit when appropriate transient overvoltage control means (interfaces) are provided.
- Pollution degree: 2  
“Pollution degree” describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering. “ 2 ” applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs. Occasionally, however, temporary conductivity caused by condensation must be expected.
- Indoor/Outdoor use

**EMC Conformity Standards:** CE , N200

EN61326-1 Class A, Table 2 (For use in industrial locations)  
EN61326-2-3

**Pressure Equipment Directive:**

Module: H  
Type of Equipment: Piping  
Type of Fluid: Liquid and Gas  
Group of Fluid: 1 and 2

**General-purpose Use/Explosion Proof Type;**

MODEL	DN (mm) (*1)	PS (MPa) (*1)	PS · DN (MPa · mm)	CATEGORY (*2)
AXR025G/C	25	4	100	Article 3 (*3) paragraph 3
AXR040G/C	40	4	160	II
AXR050G/C	50	4	200	II
AXR065G/C	65	2	130	II
AXR080G/C	80	2	160	II
AXR100G/C	100	2	200	II
AXR150G	150	2	300	II
AXR200G	200	2	400	III

- \*1: PS: Maximum allowable pressure for Flowtube  
DN: Nominal size
- \*2: For details, see “Table 6 Covered by ANNEX II of EC Directive on Pressure Equipment Directive 97/23/EC.”
- \*3: AXR025G/C is outside the scope of CE marking for PED.

**■ NORMAL OPERATING CONDITIONS**

**Ambient Temperature:**

−40 to +55°C (−40 to +131°F)

- \*1: Minimum temperature should also be limited according to minimum fluid temperature of flow tube’s specification.  
Refer to description of “Fluid Temperature and Pressure”.
- \*2: Indicator operating range: −20 to +55°C (−4 to +131°F)

**Ambient Humidity: 0 to 100%**

Lengthy continuous operation at 95% or more is not recommended.

**Fluid Conductivity:**

Size 25 to 200 mm (1 to 8 in.): 10 μS/cm or larger

Note: For a fluid with large flow noise (pure water, pure alcohol or others), or a fluid with low conductivity and low viscosity, the output fluctuates and is impossible to measure accurately.

**Output Fluctuation:**

The output fluctuates depending on the fluid conditions and damping settings.

The following table shows the output fluctuation as a rough guideline at flow velocity near 100% of flow span (damping: 5 s)

- Size 25 to 100 mm (1 to 4 in.)

Fluid Conductivity [ $\mu\text{S/cm}$ ]	Fluctuation (% of rate) as a rough guideline	
	Flow Span 2.0 m/s	Flow Span 4.0 m/s
10	3.0% or less	7.0% or less
50	1.0% or less	1.0% or less
100	0.5% or less	0.5% or less
500	0.5% or less	0.5% or less

- Size 150 to 200 mm (6 to 8 in.)

Fluid Conductivity [ $\mu\text{S/cm}$ ]	Fluctuation (% of rate) as a rough guideline	
	Flow Span 2.0 m/s	Flow Span 4.0 m/s
10	5.0% or less	Non-recommendation
50	2.0% or less	3.0% or less
100	1.0% or less	1.0% or less
500	0.6% or less	1.0% or less

**Measurable Flow Rate Range:**

**General-purpose Use;**

SI Units (Size: mm, Flow rate:  $\text{m}^3/\text{h}$ )

Size (mm)	0 to Min. Span Flow Rate (0.3 m/s)	0 to Max. Span Flow Rate (10 m/s)
25	0 to 0.5302 $\text{m}^3/\text{h}$	0 to 17.671 $\text{m}^3/\text{h}$
40	0 to 1.3572	0 to 45.23
50	0 to 2.1206	0 to 70.68
65	0 to 3.584	0 to 119.45
80	0 to 5.429	0 to 180.95
100	0 to 8.483	0 to 282.74

Size (mm)	0 to Min. Span Flow Rate (0.5 m/s)	0 to Max. Span Flow Rate (10 m/s)
150	0 to 31.810 $\text{m}^3/\text{h}$	0 to 636.1 $\text{m}^3/\text{h}$
200	0 to 56.550	0 to 1,130.9

English Units (Size: in., Flow rate: GPM)

Size (in.)	0 to Min. Span Flow Rate (1 ft/s)	0 to Max. Span Flow Rate (33 ft/s)
1.0	0 to 2.335 GPM	0 to 77.80 GPM
1.5	0 to 5.253	0 to 175.0
2.0	0 to 9.337	0 to 311.2
2.5	0 to 14.59	0 to 486.2
3.0	0 to 21.01	0 to 700.2
4.0	0 to 37.35	0 to 1244

Size (in.)	0 to Min. Span Flow Rate (1.65 ft/s)	0 to Max. Span Flow Rate (33 ft/s)
6.0	0 to 140.1 GPM	0 to 2800 GPM
8.0	0 to 249.0	0 to 4979

**Explosion Proof Type;**

SI Units (Size: mm, Flow rate:  $\text{m}^3/\text{h}$ )

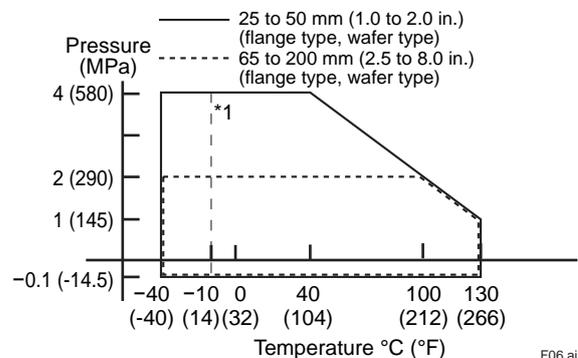
Size (mm)	0 to Min. Span Flow Rate (1.0 m/s)	0 to Max. Span Flow Rate (10 m/s)
25	0 to 1.7672 $\text{m}^3/\text{h}$	0 to 17.671 $\text{m}^3/\text{h}$
40	0 to 4.524	0 to 45.23
50	0 to 7.069	0 to 70.68
65	0 to 11.946	0 to 119.45
80	0 to 18.096	0 to 180.95
100	0 to 28.275	0 to 282.74

English Units (Size: in., Flow rate: GPM)

Size (in.)	0 to Min. Span Flow Rate (3.3 ft/s)	0 to Max. Span Flow Rate (33 ft/s)
1.0	0 to 7.781 GPM	0 to 77.80 GPM
1.5	0 to 17.51	0 to 175.0
2.0	0 to 31.13	0 to 311.2
2.5	0 to 48.63	0 to 486.2
3.0	0 to 70.03	0 to 700.2
4.0	0 to 124.5	0 to 1244

**Fluid Temperature and Pressure:**

The following figure shows maximum allowable fluid pressure for the flowtube. Further fluid pressure should also be limited according to flange rating.



\*1: For wafer types of 40 to 200 mm (1.5 to 8.0 in.), and for carbon steel flange types (process connection code: C\*\*) of 150 to 200 mm (6.0 to 8.0 in.), the minimum fluid temperature is  $-10^\circ\text{C}$  ( $+14^\circ\text{F}$ ).

\*2: For fluid temperature of the explosion proof type, refer to descriptions of "HAZARDOUS AREA CLASSIFICATION".

**Vibration Conditions:**

9.8  $\text{m/s}^2$  or less (frequency of 500 Hz or less)

Note: · Level of vibration is in conformity with IEC 60068-2-6 (SAMA 31.1-1980).

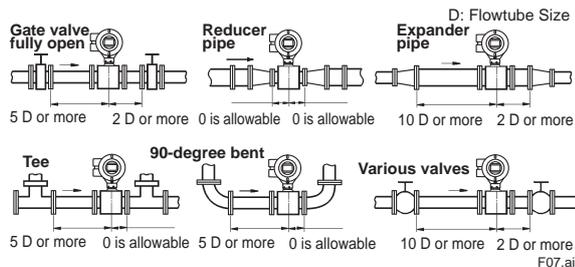
- Avoid locations with much vibration where the pipe vibration frequency is 500 Hz or more. Such a condition may cause damage to the instrument.

## ■ CAUTIONS FOR INSTALLATION

### Mounting of Flowmeters and Required Length of Straight Runs

Based on JIS B7554 “Electromagnetic Flowmeters” and our piping condition test data, we recommend the piping conditions as shown in the following figures.

When installing two or more magnetic flowmeters on a single pipe, provide a run of at least 5D between them.



#### Required length of straight runs

- \*1: Do not install anything in the flowmeter that may interfere with the magnetic field, electromagnetic force, or flow velocity distribution.
- \*2: A straight run may not be required on the downstream side of the flowmeter. However, if a downstream valve or other fitting causes irregularity or deviation in flows, provide a straight run of 2D to 3D on the downstream side.
- \*3: The valves shall be mounted on the downstream side so that deviated flows do not occur in the flowtube and to avoid startup from an empty condition.

### Maintaining Stable Fluid Conductivity

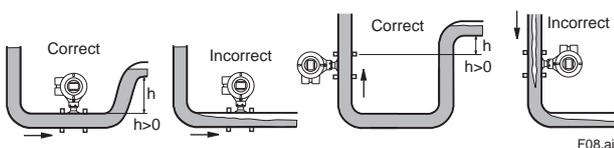
Do not install the flowmeter at a place where fluid conductivity tends to become uneven. If chemicals are fed on the upstream side of a magnetic flowmeter, they may affect the flow-rate's indications. To avoid this situation, it is recommended that the chemical feed ports be located on the downstream side of the flowmeter. If it is unavoidable that chemicals must be fed on the upstream side, provide a sufficient length of straight run (approximately 50D) to ensure the proper mixture of fluids.

### Mounting Position

#### • Pipes must be fully filled with liquids.

It is essential that pipes remain fully filled at all times, otherwise flow rate indications may be affected and measurement errors may be caused. Piping shall be designed so as to maintain the flowtube filled with fluids.

Vertical mounting is effective in such cases as when fluids tend to separate or solid matter may be precipitated. When employing vertical mounting, direct the fluids from the bottom to the top to ensure that the pipes remain fully filled.



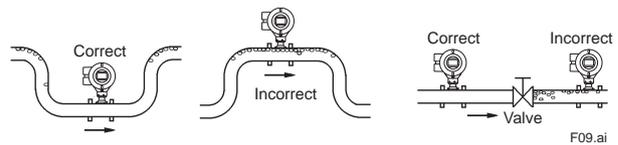
#### Mounting Positions

#### • Avoiding air bubbles.

If air bubbles enter a measurement pipe, the flow rate indication may be affected and measurement errors may occur.

If the fluid contains air bubbles, arrange piping to prevent the bubbles from accumulating in a flowtube.

Some operations of the valve may cause low pressure and create air bubbles in the pipes, so mount the flowtube on the upstream side of the valve to avoid possible low pressure and air bubbles.

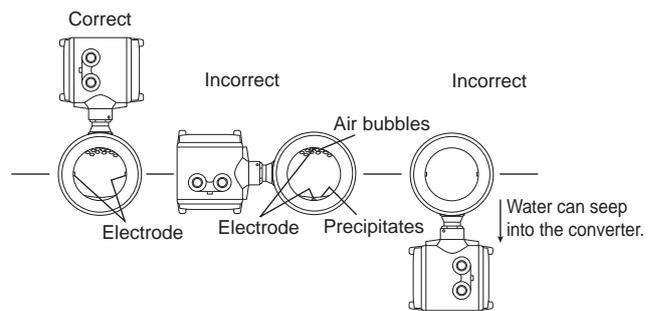


#### Avoiding Air Bubbles

#### • Mounting Orientation

If electrodes are perpendicular to the ground, air bubbles near the top or precipitates at the bottom may cause measurement errors.

Ensure that the converter of an integral flowmeter is mounted above the piping to prevent water from entering them.



#### Mounting Orientation

#### Location

- The flowmeter should be installed away from electrical motors, transformers, inverters, and other power sources in order to avoid interference with measurement.
- Install the flowmeter in a location where it is not exposed to direct sunlight.

#### Grounding

For accurate measurement of flow rate, a reference electric potential needs to be kept in the magnetic flowmeter. Therefore, the magnetic flowmeter should be grounded in accordance with certain specifications (grounding resistance of 100 Ω or less, or 10 Ω or less depending on the selected option). Grounding is mandatory especially for insulated piping such as PVC-sheathed pipes. If not, the magnetic flowmeter measures the flow incorrectly because the reference electrical potential is floating. Moreover, grounding is also mandatory in the simultaneous outputs of current and pulse. If not, the flowmeter causes a large measurement error because the outputs interfere with each other.

### Applications

- For a fluid containing high concentration slurries or hard solids (such as earth and sand, metal powder, and pulp & paper), contact of the solids on the electrode surface will make the output fluctuate. Therefore, two-wire magnetic flowmeters are not suitable for measuring such fluids. Use the AXF four-wire magnetic flowmeter.
- In the vicinity of an electrolysis bath, strong stray current may flow in the fluid. Use the AXF four-wire magnetic flowmeter in such an application.
- **If the pipe is empty, indications fluctuate or the Process Alarm (Signal Overflow) occurs. The pipe must be fully filled with liquid.**
- **The explosion proof type cannot be used for control loop at the flow rates of less than 30% output.**

### INNER DIAMETER OF GROUNDING RING, OUTER DIAMETER FOR EFFECTIVE SEALING

Lay length code 1 (Flange, Wafer type); Unit: mm (in.)

Size	Inner diameter of Ground ring	Outer diameter for effective sealing
25 (1.0)	28 (1.10)	53 (2.09)
40 (1.5)	41 (1.61)	71 (2.80)
50 (2.0)	53 (2.09)	84 (3.31)
65 (2.5)	66 (2.60)	103 (4.06)
80 (3.0)	77 (3.03)	114 (4.49)
100 (4.0)	102 (4.02)	140 (5.51)
150 (6.0)	146.1 (5.75)	190 (7.48)
200 (8.0)	193.6 (7.62)	240 (9.45)

Lay length code 2 (Wafer type); Unit: mm (in.)

Size	Inner diameter of Ground ring	Outer diameter for effective sealing
25 (1.0)	28 (1.10)	53 (2.09)
40 (1.5)	41 (1.61)	71 (2.80)
50 (2.0)	53 (2.09)	84 (3.31)
65 (2.5)	66 (2.60)	103 (4.06)
80 (3.0)	77 (3.03)	114 (4.49)
100 (4.0)	102 (4.02)	140 (5.51)
150 (6.0)	140.7 (5.54)	190 (7.48)
200 (8.0)	188.9 (7.44)	240 (9.45)

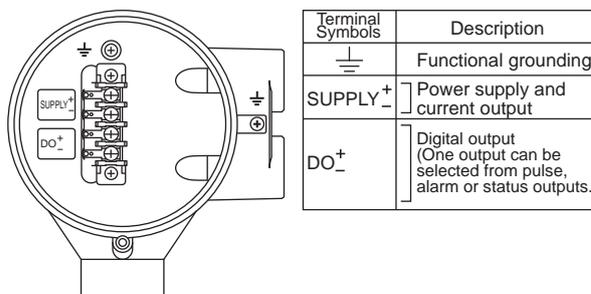
Note: Ensure that the I.D. of the gasket does not protrude into the I.D. of the grounding ring. (This dimension is also applied to when no grounding ring is used).  
 If the I.D. of the gasket is too large, however, fluid leakage may result.  
 Ensure that the O.D. of the gasket is larger than the O.D. for effective sealing.  
 If the O.D. of the gasket is smaller than the O.D. for effective sealing, fluid leakage may result due to the lack of effective sealing.

### ACCESSORIES

Centering device (wafer type only): 1 pc.  
 Plug: 1 pc.

### TERMINAL CONFIGURATION AND TERMINAL WIRING

Terminal configuration      Terminal wiring



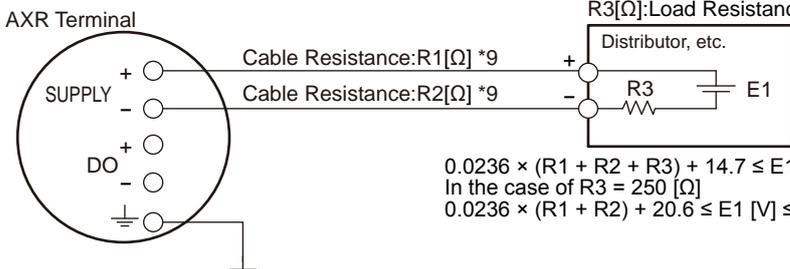
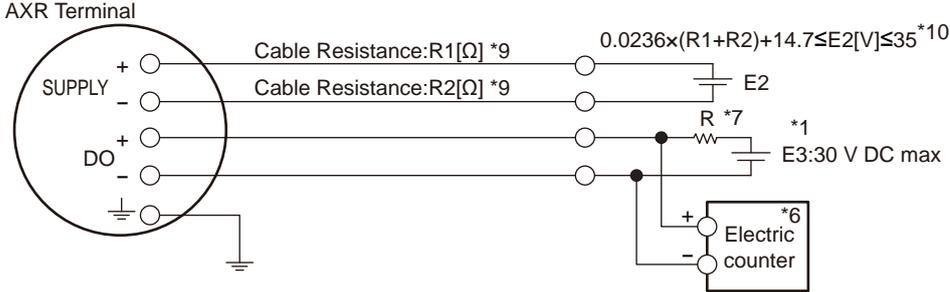
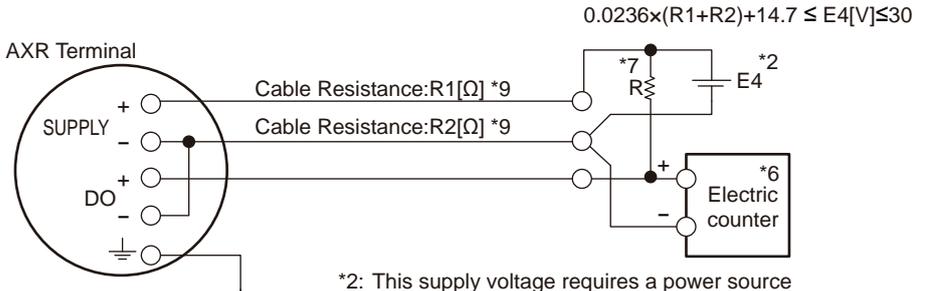
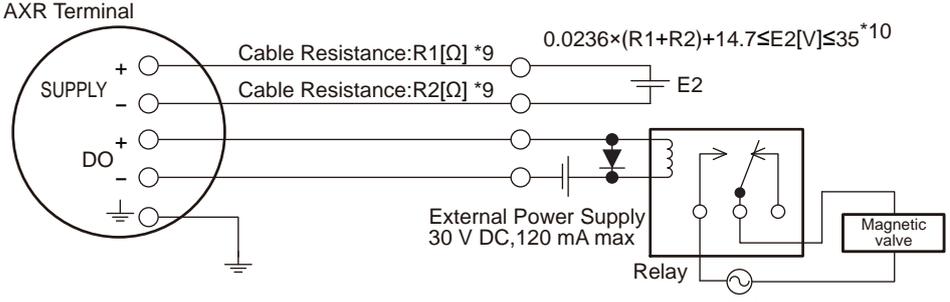
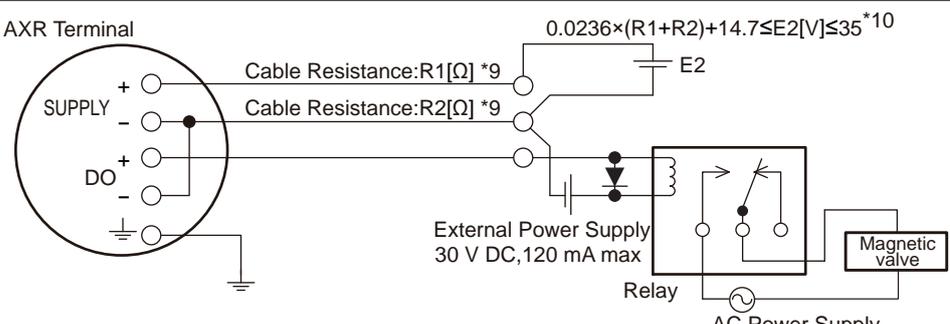
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### Recommended Power and Output Cable:

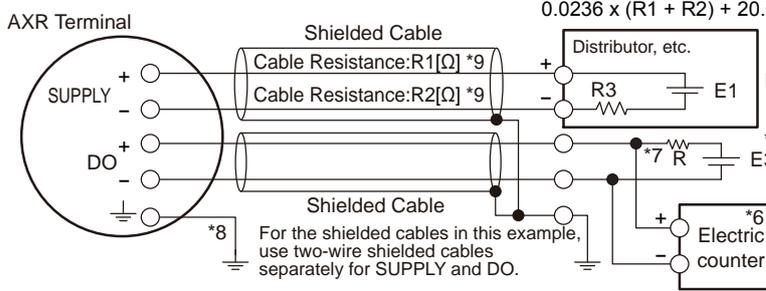
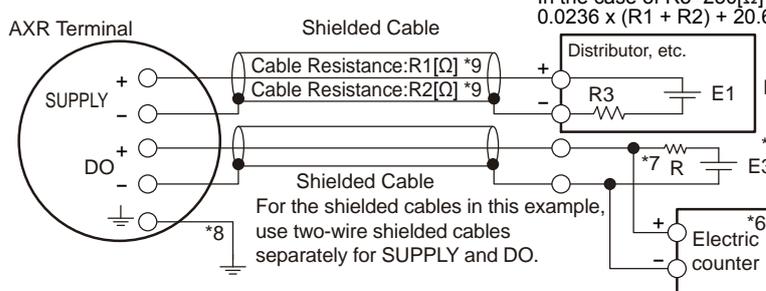
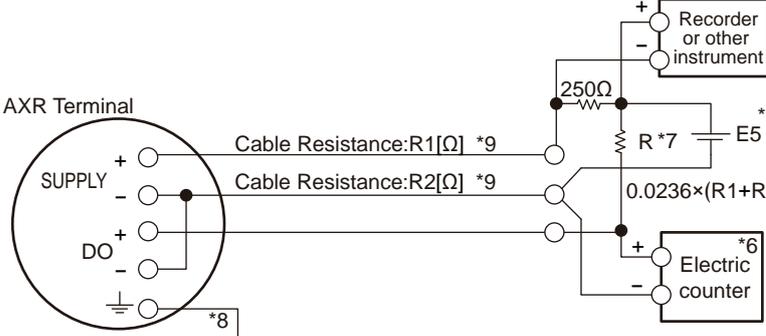
- Use polyvinyl chloride insulated and sheathed portable power cables (JIS C3312) or equivalents.
- Outer Diameter: 6.5 to 12 mm (0.26 to 0.47 in.)  
 10.5 or 11.5 mm (0.41 or 0.45 in.) for optional code EG and EU.  
 6 to 12 mm (0.24 to 0.47 in.) for optional code EP.
  - Nominal Cross section (single wire): 0.5 to 2.5 mm<sup>2</sup>
  - Nominal Cross section (standard wire): 0.5 to 1.5 mm<sup>2</sup>

## ■ WIRING EXAMPLE

### ● Current Output, Pulse Output, Status Output and Alarm Output

Connection	Description
<p><b>Current Output</b> In this case, Communication is possible (up to a distance of 2 km when a CEV cable is used.)</p>	 <p>AXR Terminal</p> <p>Cable Resistance: R1[Ω] *9</p> <p>Cable Resistance: R2[Ω] *9</p> <p>R3[Ω]: Load Resistance</p> <p>Distributor, etc.</p> <p>R3</p> <p>E1</p> <p><math>0.0236 \times (R1 + R2 + R3) + 14.7 \leq E1 [V] \leq 35^{*10}</math> In the case of R3 = 250 [Ω] <math>0.0236 \times (R1 + R2) + 20.6 \leq E1 [V] \leq 35^{*10}</math></p>
<p><b>Pulse Output</b> In this case, No communication is possible when a four-wire cable is used.</p>	 <p>AXR Terminal</p> <p>Cable Resistance: R1[Ω] *9</p> <p>Cable Resistance: R2[Ω] *9</p> <p><math>0.0236 \times (R1 + R2) + 14.7 \leq E2 [V] \leq 35^{*10}</math></p> <p>E2</p> <p>R *7</p> <p>*1</p> <p>E3: 30 V DC max</p> <p>*6</p> <p>Electric counter</p> <p>*1: This supply voltage requires a power source with a maximum output current of no less than E3/R.</p>
<p><b>Pulse Output</b> In this case, No communication is possible when a three-wire cable is used.</p>	 <p>AXR Terminal</p> <p>Cable Resistance: R1[Ω] *9</p> <p>Cable Resistance: R2[Ω] *9</p> <p><math>0.0236 \times (R1 + R2) + 14.7 \leq E4 [V] \leq 30</math></p> <p>*7</p> <p>R</p> <p>*2</p> <p>E4</p> <p>*6</p> <p>Electric counter</p> <p>*2: This supply voltage requires a power source with a maximum output current of no less than (E4/R + 0.0236).</p>
<p><b>Status Output Alarm Output</b> In this case, No communication is possible when a four-wire cable is used.</p>	 <p>AXR Terminal</p> <p>Cable Resistance: R1[Ω] *9</p> <p>Cable Resistance: R2[Ω] *9</p> <p><math>0.0236 \times (R1 + R2) + 14.7 \leq E2 [V] \leq 35^{*10}</math></p> <p>E2</p> <p>External Power Supply 30 V DC, 120 mA max</p> <p>Relay</p> <p>AC Power Supply</p> <p>Magnetic valve</p>
<p><b>Status Output Alarm Output</b> In this case, No communication is possible when a three-wire cable is used.</p>	 <p>AXR Terminal</p> <p>Cable Resistance: R1[Ω] *9</p> <p>Cable Resistance: R2[Ω] *9</p> <p><math>0.0236 \times (R1 + R2) + 14.7 \leq E2 [V] \leq 35^{*10}</math></p> <p>E2</p> <p>External Power Supply 30 V DC, 120 mA max</p> <p>Relay</p> <p>AC Power Supply</p> <p>Magnetic valve</p>

• Simultaneous Current-Pulse Output

Connection	Description
<p>Simultaneous Current-Pulse Output</p> <p><b>Example 1</b> In this case, Communication is possible (up to a distance of 2 km when a CEV cable is used) and when a two-wire shielded cable is used.</p>	<p>When simultaneous output of current and pulse output are used, no communication is possible in some cases. Refer to following example 1 to 3.</p>  <p> <math>0.0236 \times (R1 + R2 + R3) + 14.7 \leq E1 [V] \leq 35^{*10}</math>              In the case of <math>R3=250[\Omega]</math>  <math>0.0236 \times (R1 + R2) + 20.6 \leq E1 [V] \leq 35^{*10}</math> </p> <p>*3: This supply voltage requires a power source with a maximum output current of no less than <math>E3/R</math>.</p>
<p><b>Example 2</b> In this case, Communication is possible (up to a distance of 2 km when a CEV cable is used) and when a one-wire shielded cable is used.</p>	 <p> <math>0.0236 \times (R1 + R2 + R3) + 14.7 \leq E1 [V] \leq 35^{*10}</math>              In the case of <math>R3=250[\Omega]</math>  <math>0.0236 \times (R1 + R2) + 20.6 \leq E1 [V] \leq 35^{*10}</math> </p> <p>*4: This supply voltage requires a power source with a maximum output current of no less than <math>E3/R</math>.</p>
<p><b>Example 3</b> In this case, No communication is possible when a three-wire cable is used.</p>	 <p> <math>0.0236 \times (R1 + R2) + 20.6 \leq E5 [V] \leq 30</math> </p> <p>*5: This supply voltage requires a power source with a maximum output current of no less than <math>(E5/R+0.0236)</math>.</p>
<p><b>The range of load resistance R for the pulse output</b></p>	<p>The range of load resistance R for the pulse output must basically be 1 kΩ and 2 W. The load resistance should be selected by calculation as shown below when proper transmission is impossible due to the length of cable or frequency of pulse output.</p> $\frac{E (V)}{120} \leq R (k\Omega) \leq \frac{0.1}{C (\mu F) \times f (kHz)} \dots (1)$ $P (mW) = \frac{E^2 (V)}{R (k\Omega)} \dots (2)$ <p>             E: Supply voltage (V)              f: Frequency of pulse output (kHz)              R: Value of load resistance (kΩ)              C: Cable capacitance (μF)              P: Electrical power of the load resistance (mW)              Note: <math>C \approx 0.1 (\mu F/km)</math> for CEV cable         </p>

• The Wiring Examples of Digital External Indicator Using Current Output

Connection	Description
<p><b>Current Output</b></p> <p><b>Example 1</b> Connection to digital external indicator</p>	<p>Transmission of AXR output might fail when the external indicator breakdown occurs.</p> $0.0236 \times (R1 + R2 + R3 + R4) + V2 + 14.7 \leq E1 [V] \leq 35^{*10}$ $0.0236 \times (R1 + R2 + R4) + V2 + 20.6 \leq E1 [V] \leq 35^{*10}$
<p><b>Example 2</b> Connection to analog external indicator</p>	<p>Transmission of AXR output might fail when the external indicator breakdown occurs.</p> $0.0236 \times (R1 + R2 + R3 + R4 + 10) + 14.7 \leq E1 [V] \leq 35^{*10}$ $0.0236 \times (R1 + R2 + R4 + 10) + 20.6 \leq E1 [V] \leq 35^{*10}$

\*6: To avoid the influence of external noise, use an electric counter which fits to the pulse frequency.  
 \*7: Resistor is not necessary in the case of an electric counter which can receive contact pulse signal directly.  
 \*8: Ground the AXR to avoid the current output error in simultaneous current-pulse output.  
 \*9: Calculate the cable resistance by using the following as a rough guideline: 10.9 Ω per 1 km for the cable with the cross section of 2 mm<sup>2</sup>, 19.5 Ω per 1 km for the cable with the cross section of 1.25 mm<sup>2</sup>.  
 \*10: The maximum voltage is 32 V DC in the case of Lighting Protector specification (optional code A).

## MODEL AND SUFFIX CODE

### • Wafer Type

Model	Suffix Code	Description	Applicable Model
AXR025	-----	Size 25 mm (1 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR040	-----	Size 40 mm (1.5 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR050	-----	Size 50 mm (2 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR065	-----	Size 65 mm (2.5 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR080	-----	Size 80 mm (3 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR100	-----	Size 100 mm (4 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR150	-----	Size 150 mm (6 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR200	-----	Size 200 mm (8 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
Use	G -----	General-Purpose Use	Size 25 mm (1.0 in.) to 100 mm (4.0 in.)
	C -----	Explosion proof Type (*1)	
Output Signal and Communication	-D -----	Integral Flowmeter with 4 to 20 mA DC Output and BRAIN Communication	
	-E -----	Integral Flowmeter with 4 to 20 mA DC Output and HART Communication	
Power Supply	1 -----	Integral Flowmeter Operating voltage range 14.7 to 35 V DC Two-wire system	
Lining (*2)	A -----	Fluorocarbon PFA	
Electrode Material (*2)	L -----	JIS SUS316L (AISI 316L SS/EN 1.4404 Equivalent)	
	P -----	Platinum-iridium	
	H -----	Hastelloy C276 Equivalent	
	T -----	Tantalum	
Electrode Structure	1 -----	Non-replaceable	
Grounding Ring and Grounding Electrode Material (*2)	N -----	None (*3)	
	S -----	JIS SUS316 (AISI 316 SS/EN 1.4401 Equivalent)	
	L -----	JIS SUS316L (AISI 316L SS/EN 1.4404 Equivalent)	
	P -----	Platinum-iridium	
	H -----	Hastelloy C276 Equivalent	
Process Connection (*4) (*5)	-AA1 -----	ANSI Class 150 Wafer	Size 200 mm (8.0 in.) Size 65 mm (2.5 in.) to 200 mm (8.0 in.) Size 25 mm (1.0 in.) to 50 mm (2.0 in.)
	-AA2 -----	ANSI Class 300 Wafer	
	-AD1 -----	DIN PN 10 Wafer (*6)	
	-AD2 -----	DIN PN 16 Wafer (*6)	
	-AD4 -----	DIN PN 40 Wafer (*6)	
	-AJ1 -----	JIS 10K Wafer	
	-AJ2 -----	JIS 20K Wafer	
-AG1 -----	JIS F12 (JIS75M) Wafer		
Lay Length	1 -----	Lay length code 1 (*7)	Size 80 mm (3.0 in.) to 200 mm (8.0 in.)
	2 -----	Lay length code 2 (*8)	
Electrical Connection (*9)	-0 -----	JIS G1/2 female	
	-2 -----	ANSI 1/2 NPT female	
	-4 -----	ISO M20 x 1.5 female	
Indicator (*10)(*11)	1 -----	Integral Flowmeter with indicator (Horizontal)	
	2 -----	Integral Flowmeter with indicator (Vertical)	
	N -----	Integral Flowmeter without indicator	
Calibration	B -----	Always B	
Options	/□	Optional code (See the Table of Optional Specifications)	

\*1: For explosion proof types, specify types of explosion proof certification using the optional codes.  
For the TIIS flameproof type, select optional code G11 or G12. Available only for JIS G1/2 female electrical connections.  
Available only for wiring of using a flameproof packing adapter approved by Yokogawa.  
The flameproof metal conduit wiring for TIIS flameproof type is not permitted.

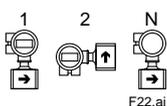
\*2:  $\Delta$  Users must consider the characteristics of selected wetted parts material and influence of process fluids.  
The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the instrument itself can be damaged and that fragments from the instrument can contaminate the user's process fluids.  
Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.

\*3: Available only for metal piping.

\*4: Mating dimensions are based on standards as follow:  
ANSI: ASME B 16.5, DIN: DIN 2501, JIS: JIS B 2220 and JIS G 3443-2

\*5: Allowable fluid pressure should also be limited according to fluid temperature and pressure.

- \*6: Even when DIN PN10, 16, or 40 is required for a model of size 25 to 50 mm (1.0 to 2.0 in.), select PN40 (Process connection code: AD4) because there is no difference in the dimensions of the mating faces.  
Even when DIN PN10 or 16 is required for a model of size 65 to 150 mm (2.5 to 6.0 in.), select PN16 (Process connection code: AD2) because there is no difference in the dimensions of the mating faces.
- \*7: The dimensions of lay length code 1 are the same as those of the PFA lining standard lay length (lay length code 1) in the AXF series. For details, refer to "EXTERNAL DIMENSIONS".
- \*8: Excluding the size of 65 mm, dimensions of lay length code 2 are the same as those of PFA lining replacement models (lay length code 2) in AXF series. Lay lengths for special gaskets (optional codes GA, GB, GD) are different. For details, refer to "EXTERNAL DIMENSIONS".
- \*9: For an explosion proof type except for TIIS, select "ANSI 1/2 NPT female" or "ISO M20 × 1.5 female".  
For the TIIS flameproof type, select "JIS G1/2 female" and optional code G11 or G12.
- \*10: Select from among the figures at the right.



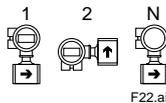
- \*11: In the case of the TIIS flameproof type, select "with indicator" (code 1 or 2).

● Flange Type

Model	Suffix Code	Description	Applicable Model
AXR025	-----	Size 25 mm (1 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR040	-----	Size 40 mm (1.5 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR050	-----	Size 50 mm (2 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR065	-----	Size 65 mm (2.5 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR080	-----	Size 80 mm (3 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR100	-----	Size 100 mm (4 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR150	-----	Size 150 mm (6 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
AXR200	-----	Size 200 mm (8 in.) Two-wire Magnetic Flowmeter Integral Flowmeter	
Use	G -----	General-Purpose Use	Size 25 mm (1.0 in.) to 100 mm (4.0 in.)
	C -----	Explosion proof Type (*1)	
Output Signal and Communication	-D -----	Integral Flowmeter with 4 to 20 mA DC Output and BRAIN Communication	
	-E -----	Integral Flowmeter with 4 to 20 mA DC Output and HART Communication	
Power Supply	1 -----	Integral Flowmeter Operating voltage range 14.7 to 35 V DC Two-wire system	
Lining (*2)	A -----	Fluorocarbon PFA	
Electrode Material (*2)	L -----	JIS SUS316L (AISI 316L SS/EN 1.4404 Equivalent)	
	P -----	Platinum-iridium	
	H -----	Hastelloy C276 Equivalent	
	T -----	Tantalum	
Electrode Structure	1 -----	Non-replaceable	
Grounding Ring and Grounding Electrode Material (*2)	N -----	None (*3)	
	S -----	JIS SUS316 (AISI 316 SS/EN 1.4401 Equivalent)	
	L -----	JIS SUS316L (AISI 316L SS/EN 1.4404 Equivalent)	
	P -----	Platinum-iridium	
	H -----	Hastelloy C276 Equivalent	
	T -----	Tantalum	
Process Connection (*4) (*5)	-BA1 -----	ANSI Class 150 Flange JIS SUS304 or SUSF304	Size 200 mm (8.0 in.) Size 65 mm (2.5 in.) to 100 mm (4.0 in.) Size 25 mm (1.0 in.) to 50 mm (2.0 in.)
	-BA2 -----	ANSI Class 300 Flange JIS SUS304 or SUSF304	
	-BD1 -----	DIN PN 10 Flange(JIS SUS304 or SUSF304) (*6)	
	-BD2 -----	DIN PN 16 Flange JIS SUS304 or SUSF304 (*6)	
	-BD4 -----	DIN PN 40 Flange JIS SUS304 or SUSF304 (*6)	Size 80 mm (3.0 in.) to 100 mm (4.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 200 mm (8.0 in.)
	-BJ1 -----	JIS 10K Flange JIS SUS304 or SUSF304	
	-BJ2 -----	JIS 20K Flange JIS SUS304 or SUSF304	
	-BG1 -----	JIS F12 (JIS75M) Flange JIS SUS304 or SUSF304	
	-CA1 -----	ANSI Class 150 Flange (Carbon Steel)	Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.)
	-CA2 -----	ANSI Class 300 Flange (Carbon Steel)	
	-CD1 -----	DIN PN 10 Flange (Carbon Steel) (*6)	
	-CD2 -----	DIN PN 16 Flange (Carbon Steel) (*6)	
	-CJ1 -----	JIS 10K Flange (Carbon Steel)	Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.) Size 150 mm (6.0 in.) to 200 mm (8.0 in.)
	-CJ2 -----	JIS 20K Flange (Carbon Steel)	
	-CG1 -----	JIS F12 (JIS75M) Flange (Carbon Steel)	
Lay Length	1 -----	Lay length code 1 (*7)	
Electrical Connection (*8)	-0 -----	JIS G1/2 female	
	-2 -----	ANSI 1/2 NPT female	
	-4 -----	ISO M20 x 1.5 female	
Indicator (*9)(*10)	1 -----	Integral Flowmeter with indicator (Horizontal)	
	2 -----	Integral Flowmeter with indicator (Vertical)	
	N -----	Integral Flowmeter without indicator	
Calibration	B ----	Always B	
Options	/□	Optional code (See the Table of Optional Specifications)	

\*1: For explosion proof types, specify types of explosion proof certification using the optional codes.  
 For the TIIS flameproof type, select optional code G11 or G12. Available only for JIS G1/2 female electrical connections.  
 Available only for wiring of using a flameproof packing adapter approved by Yokogawa.  
 The flameproof metal conduit wiring for TIIS flameproof type is not permitted.

- \*2:  Users must consider the characteristics of selected wetted parts material and influence of process fluids.  
The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the instrument itself can be damaged and that fragments from the instrument can contaminate the user's process fluids. Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.
- \*3: Available only for metal piping.
- \*4: Mating dimensions are based on standards as follow:  
ANSI:ASME B 16.5, DIN: DIN 2501, JIS:JIS B 2220 and JIS G 3443-2
- \*5: Allowable fluid pressure should also be limited according to fluid temperature and pressure.
- \*6: Even when DIN PN10, 16, or 40 is required for a model of size 25 to 50 mm (1.0 to 2.0 in.), select PN40 (Process connection codes: BD4) because there is no difference in the dimensions of the mating faces.  
Even when DIN PN10 or 16 is required for a model of size 65 to 150 mm (2.5 to 6.0 in.), select PN16 (Process connection codes: BD2) because there is no difference in the dimensions of the mating faces.
- \*7: The dimensions of lay length code 1 are the same as those of the PFA lining standard lay length (lay length code 1) in the AXF series.  
For details, refer to "EXTERNAL DIMENSIONS".
- \*8: For an explosion proof type except for TIIS, select "ANSI 1/2 NPT female" or "ISO M20 × 1.5 female".  
For the TIIS flameproof type, select "JIS G1/2 female" and optional code G11 or G12.
- \*9: Select from among the figures at the right.



- \*10: In the case of the TIIS flameproof type, select "with indicator" (code 1 or 2).

■ **OPTIONAL SPECIFICATIONS**

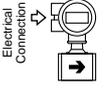
○ Available – : Not available

Item	Specifications	Applicable Model		Code
		General	Explosion proof	
		AXR***G	AXR***C	
Lightning Protector	A lightning protector is built into the power supply and digital output terminals. Supply voltage: 14.7 to 32 V DC Allowable current: Max 6000 A (1×40 μs), Repeating 1000 A (1×40 μs) 100 times Applicable Standards: IEC61000-4-4, IEC61000-4-5	○	○	A
Down-scale of output status at alarms (Burnout)	The current output is set to 3.2 mA (-5%) or less during System Alarms (hardware failure), and 3.8 mA during Process Alarms and Setting Alarms. Standard products are delivered with a setting of 21.6 mA (110%) or more during System Alarms, Process Alarms and Setting Alarms.	○	○	C1
Mass Unit Setting	The flow rate span, transmission pulse weight, and totalizer display pulse weight can be set in terms of mass unit. Specify the density of the process fluid when ordering in addition to the mass flow rate span, transmission pulse weight (for mass unit), and totalizer display pulse weight (for mass unit). 1. Density a. Available density Numerics: Specify the numeric within the value of 500 to 2000 kg/m <sup>3</sup> , 4.2 to 16.7 lb/gal, or 31.2 to 124.8 lb/cf. And it can be up to five digits, to a maximum of 32000 ignoring the decimal point. A fraction is limited to the fourth decimal place. b. Available density units: kg/m <sup>3</sup> , lb/gal, lb/cf Example: A water density is about 1000kg/m <sup>3</sup> . In this case specify "1000kg/m <sup>3</sup> ". However a density is changed by temperature. Specify the actual density. (The 1000kg/m <sup>3</sup> is equivalent to 8.345lb/gal and 62.43lb/cf.) 2. The mass flow rate span, transmission pulse weight, and totalizer display pulse weight a. Available density Numerics: Specify the numeric within the value of 0.0001 to 32000. And it can be up to five digits, to a maximum of 32000 ignoring the decimal point. A fraction is limited to the fourth decimal place. b. Mass Units Available mass units: t, kg, g, klb, lb Available time units: /d, /h, /min, /s  Note1: In the case of specifying the mass flow span, calculate the volumetric flow span by the setting density, and specify the available value in the mass flow span. Note2: In the case of transmission pulse weight and totalizer display pulse weight, specify the mass unit which was specified as the flow unit.	○	○	MU
Waterproof Glands	Waterproof glands are attached to the electrical connections. Available only for JIS G1/2 female electric connections.	○	–	EG
Waterproof Glands with Union Joints	Waterproof glands with union joints are attached to the electrical connections. Available only for JIS G1/2 female electric connections.	○	–	EU
Plastic Glands	Plastic glands are attached to the electrical connections. Available only for JIS G1/2 female electric connections.	○	–	EP
Mirror Finished PFA Lining	Mirror finishing on the PFA lining inside of the tube to the smoothness lining. The Ra is average of measured values on several points. Size 150 to 200 mm (6 to 8 in.): Ra 0.05 to 0.15 μm Mirror finished PFA lining is standard for size 25 to 100 mm (1 to 4 in.) and optional for size 150 to 200 mm (6 to 8 in.) specified by optional code PM.	○	–	PM
Stainless Steel Tag Plate	A pendant tag plate of JIS SUS304 (AISI 304 SS/EN 1.4301 equivalent) is provided. Choose this option when a pendant tag plate is required in addition to the standard nameplate with the tag number inscribed on it. Dimension (Height × Width): Approx. 12.5 (4.92) × 40 (15.7) mm (inch)	○	○	SCT
Direction change of the electrical connection (*1)	+90 degrees rotated converter to change the direction of the electrical connection.	○	○	RA
	+180 degrees rotated converter to change the direction of the electrical connection.	○	○	RB
	–90 degrees rotated converter to change the direction of the electrical connection.	○	○	RC

Item	Specifications		Applicable Model		Code									
			General	Explosion proof										
			AXR***G	AXR***C										
Bolts, Nuts, and Gaskets (*2)	Bolts, nuts, and gaskets are provided for wafer connections. Available only for ANSI 150, JIS10K, or, JIS20K wafer connections.	Bolts and nuts: Carbon steel; Gaskets: Chloroprene rubber (*3)	○	○	BCC									
		Bolts and nuts: Carbon steel; Gaskets: PTFE-sheathed non-asbestos (*4)	○	○	BCF									
		Bolts: JIS SUS304 (AISI 304 SS stainless steel equivalent); Nuts: JIS SUS403 (AISI 403 SS stainless steel equivalent); Gaskets: Chloroprene rubber (*3)	○	○	BSC									
		Bolts: JIS SUS304 (AISI 304 SS stainless steel equivalent); Nuts: JIS SUS403 (AISI 403 SS stainless steel equivalent); Gaskets: PTFE-sheathed non-asbestos (*4)	○	○	BSF									
Special Gaskets (*5)	Viton® gaskets for use with PVC piping. Allowable temperature and pressure are equivalent to Valqua #4010, special fluororubber not mixed.		○	○	GA									
		Acid-resistant Viton® gaskets for use with PVC piping. Allowable temperature and pressure are equivalent to Valqua #4010, special fluororubber mixed (mixing #D2470).	○	○	GC									
		Alkali-resistant Viton® gaskets for use with PVC piping. Allowable temperature and pressure are equivalent to Valqua #4010, special fluororubber mixed (mixing #RCD970).	○	○	GD									
Oil-prohibited Use	Electrodes, linings, and grounding rings are assembled and packed with polyethylene after being cleaned with water and acetone and dried with air. The label 'OIL FREE' is affixed.	○	○	K1										
Oil-prohibited Use with Dehydrating Treatment	Electrodes, linings, and grounding rings are assembled and packed with polyethylene including desiccants after being cleaned with water and acetone and dried with air. The label 'OIL & WATER FREE' is affixed.	○	○	K5										
Epoxy Resin Coating	Epoxy resin coating which has alkali-resistance instead of standard polyurethane resin coating. The color is same as standard type.	○	○	X1										
High Anti-corrosion Coating	Three-layer coating (polyurethane coating on two-layer epoxy resin coating) in the same range as that for the standard coating. The color is same as standard type. Salt/alkali/acid/weather-resistance.	○	○	X2										
Material Certificate	Reproduced material certificates for pipe, electrodes, grounding rings/grounding electrodes, flanges or mini flanges.	○	○	M01										
Hydrostatic Test	The test verifies the absence of leaks by applying the following water pressures (which are determined under process connection conditions) to linings for ten minutes. Test results are described in the Note column of a test certificate (QIC). <table border="0" style="width: 100%;"> <tr> <td>Process Connection:</td> <td>Water Pressure:</td> </tr> <tr> <td>ANSI Class 150, DIN PN10, JIS 10K</td> <td>1.5 MPa</td> </tr> <tr> <td>ANSI Class 300, DIN PN16, JIS 20K</td> <td>3.0 MPa</td> </tr> <tr> <td>DIN PN40</td> <td>6.0 MPa</td> </tr> <tr> <td>JIS F12</td> <td>1.25 MPa</td> </tr> </table>	Process Connection:	Water Pressure:	ANSI Class 150, DIN PN10, JIS 10K	1.5 MPa	ANSI Class 300, DIN PN16, JIS 20K	3.0 MPa	DIN PN40	6.0 MPa	JIS F12	1.25 MPa	○	○	T01
Process Connection:	Water Pressure:													
ANSI Class 150, DIN PN10, JIS 10K	1.5 MPa													
ANSI Class 300, DIN PN16, JIS 20K	3.0 MPa													
DIN PN40	6.0 MPa													
JIS F12	1.25 MPa													
Calibration Certificate	Level 2: The Declaration and the Calibration Equipment List are issued.	○	○	L2										
	Level 3: The Declaration and the Primary Standard List are issued.	○	○	L3										
	Level 4: The Declaration and the Yokogawa Measuring Instruments Control System are issued.	○	○	L4										
Vent Hole	With a vent hole provided for permeable fluids (such as nitric acid, hydrofluoric acid, or sodium hydroxide at high temperature). Available only for a flange type tube.	○	○	H										

Item	Specifications	Applicable Model		Code																											
		General	Explosion proof																												
		AXR***G	AXR***C																												
Five-point Calibration in User-specified Span	<p>A flow test near 0, 25, 50, 75, and 100% of the user-specified span is performed instead of the standard flow test (general-purpose use: span; 2 m/s, test point; 0, 30, 100%, explosion proof type: span; 2 m/s, test point; 0, 35, 100%) and a test certificate (QIC) is submitted. Specify the span flow rate and unit when placing an order. Specify the span (100% flow span) whose corresponding flow velocity lies between 1.0 to 10 m/s and that is less than the maximum line capacity. Selectable range of flow rate span is showing below.</p> <table border="1"> <tr> <td>Size: mm (in.)</td> <td colspan="2">Selectable range of flow rate span: m<sup>3</sup>/h (Flow rate span velocity: m/s)</td> </tr> <tr> <td>25 (1)</td> <td>1.77 (1.0) to</td> <td>11 (6.22)</td> </tr> <tr> <td>40 (1.5)</td> <td>4.53 (1.0) to</td> <td>28 (6.30)</td> </tr> <tr> <td>50 (2)</td> <td>7.07 (1.0) to</td> <td>56 (7.92)</td> </tr> <tr> <td>65 (2.5)</td> <td>12.0 (1.0) to</td> <td>80 (6.70)</td> </tr> <tr> <td>80 (3)</td> <td>18.1 (1.0) to</td> <td>126 (6.96)</td> </tr> <tr> <td>100 (4)</td> <td>28.3 (1.0) to</td> <td>190 (6.72)</td> </tr> <tr> <td>150 (6)</td> <td>63.6 (1.0) to</td> <td>380 (5.97)</td> </tr> <tr> <td>200 (8)</td> <td>113 (1.0) to</td> <td>670 (5.92)</td> </tr> </table>	Size: mm (in.)	Selectable range of flow rate span: m <sup>3</sup> /h (Flow rate span velocity: m/s)		25 (1)	1.77 (1.0) to	11 (6.22)	40 (1.5)	4.53 (1.0) to	28 (6.30)	50 (2)	7.07 (1.0) to	56 (7.92)	65 (2.5)	12.0 (1.0) to	80 (6.70)	80 (3)	18.1 (1.0) to	126 (6.96)	100 (4)	28.3 (1.0) to	190 (6.72)	150 (6)	63.6 (1.0) to	380 (5.97)	200 (8)	113 (1.0) to	670 (5.92)	○	○	SC
Size: mm (in.)	Selectable range of flow rate span: m <sup>3</sup> /h (Flow rate span velocity: m/s)																														
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200 (8)	113 (1.0) to	670 (5.92)																													
Bar-magnet for operation of magnet switches (*6)	Bar-magnet for operation of magnet switches, with a case.	○	○	BM																											
FM Approval	FM Explosion proof See "HAZARDOUS AREA CLASSIFICATION"	—	○	FF1																											
CENELEC ATEX Certification (KEMA Approval)	ATEX Explosion proof See "HAZARDOUS AREA CLASSIFICATION"	—	○	KF2																											
IECEX Certification (*7)	IECEX Explosion proof See "HAZARDOUS AREA CLASSIFICATION"	—	○	SF2																											
TIIS Certification	TIIS flameproof See "HAZARDOUS AREA CLASSIFICATION" (Need to select optional code G11 or G12.)	—	○	JF3																											
Flameproof packing adapter for TIIS Flame-proof Type (*8)	One flameproof packing adapter and one blind plug.	—	○	G11																											
	Two flameproof packing adapters	—	○	G12																											

\*1:

Standard	+90-degree rotation	+180-degree rotation	-90-degree rotation
	Optional Code RA	Optional Code RB	Optional Code RC
			

\*2: When specifying the optional code BCC or BSC, it is advisable to specify the optional code GA, GC, or GD at the same time to prevent potential leakage caused by the difference in elasticity between the flowtube and chloroprene gaskets.

\*3: Allowable temperature and pressure with the optional code BCC or BSC (only for Gaskets: Chloroprene rubber) are equivalent to Valqua #2010.

\*4: Allowable temperature and pressure with the optional code BCF or BSF (only for Gaskets: PTFE-sheathed non-asbestos) are equivalent to Valqua #7030 (S).

\*5: Refer to description of "Gasket" in the "Wetted Part Material".

Special gaskets are inserted between the flowtube and the grounding ring or grounding electrode.

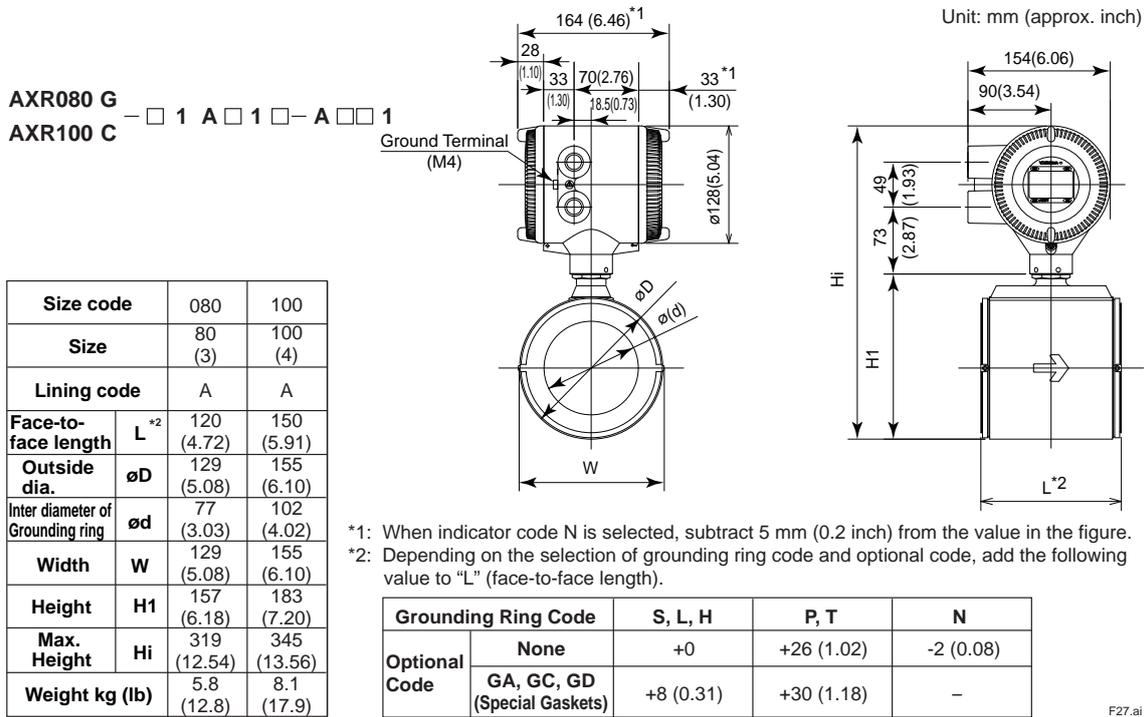
\*6: Keep the bar-magnet in the case because of the powerful magnetic force.

\*7: Applicable only for Australia, New Zealand, Singapore and India.

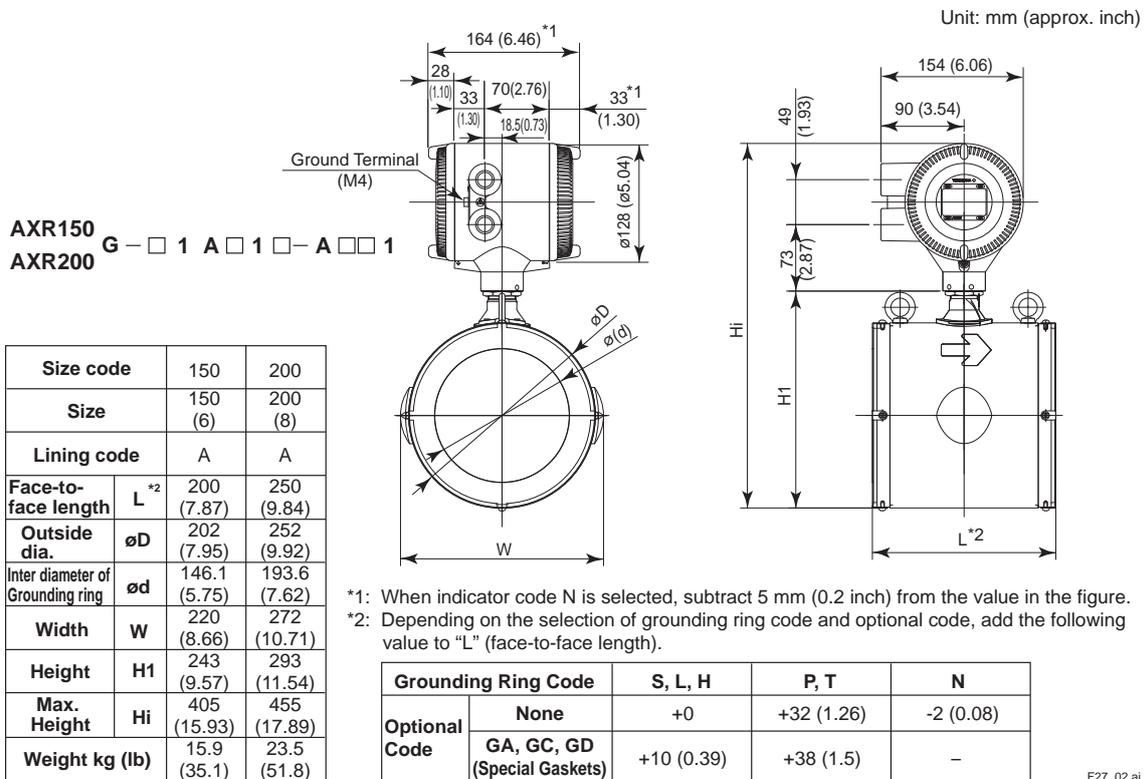
\*8: For the TIIS flameproof type, select optional code G11 or G12. Available only for JIS G1/2 female electric connection.

## EXTERNAL DIMENSIONS

### • Lay Length Code 1, AXR080-AXR100, Wafer Type



### • Lay Length Code 1, AXR150-AXR200, Wafer Type

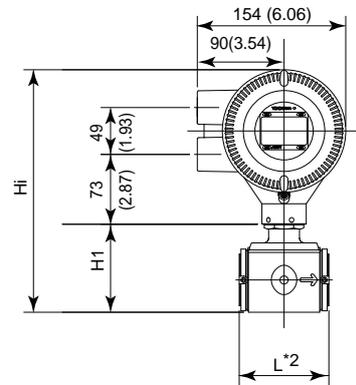
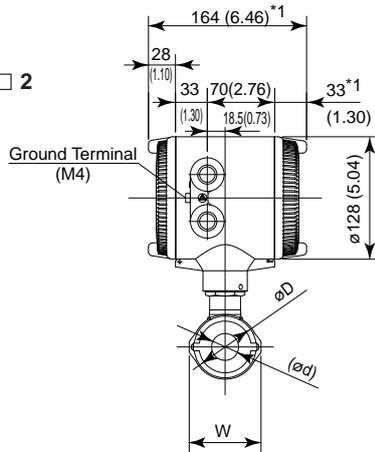


● Lay Length Code 2, AXR025, Wafer Type

Unit: mm (approx. inch)

AXR025<sup>G</sup> - □ 1 A □ 1 □ - A □ □ 2  
C

Size code	025	
Size	25 (1)	
Lining code	A	
Face-to-face length	L <sup>*2</sup>	93 (3.66)
Outside dia.	øD	67.5 (2.66)
Inter diameter of Grounding ring	ød	28 (1.10)
Width	W	74.5 (2.93)
Height	H1	92 (3.62)
Max. Height	Hi	253.5 (9.98)
Weight kg (lb)	3.6 (7.8)	



- \*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.
- \*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length).

Grounding Ring Code		S, L, H	P, T	N
Optional Code	None	+0	+22 (0.87)	-2 (0.08)
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+26 (1.02)	-

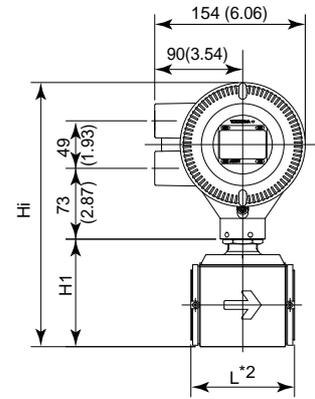
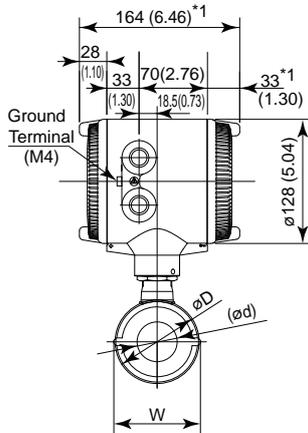
F28.ai

● Lay Length Code 2, AXR040-AXR065, Wafer Type

Unit: mm (approx. inch)

AXR040<sup>G</sup> - □ 1 A □ 1 □ - A □ □ 2  
AXR050<sup>C</sup>  
AXR065

Size code	040	050	065
Size	40 (1.5)	50 (2)	65 (2.5)
Lining code	A	A	A
Face-to-face length	L <sup>*2</sup>	106 (4.17)	120 (4.72)
Outside dia.	øD	86 (3.39)	117 (4.61)
Inter diameter of Grounding ring	ød	41 (1.61)	66 (2.60)
Width	W	86 (3.39)	117 (4.61)
Height	H1	111 (4.37)	147 (5.79)
Max. Height	Hi	273 (10.73)	309 (12.17)
Weight kg (lb)	4.1 (9.1)	4.8 (10.7)	5.4 (11.9)



- \*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.
- \*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length).

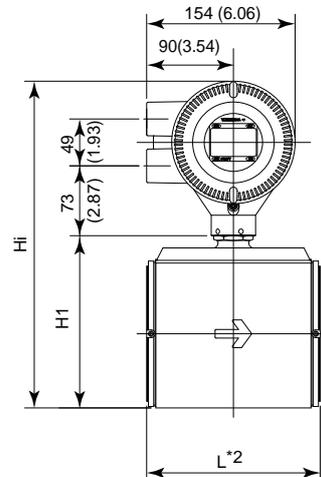
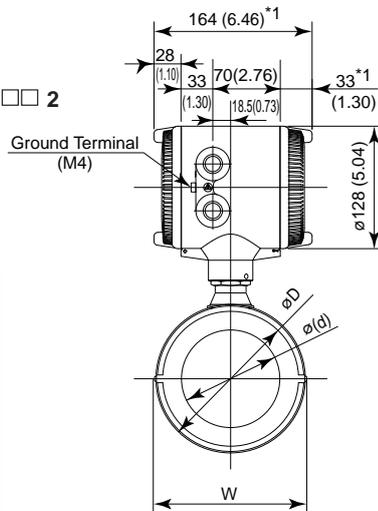
Grounding Ring Code		S, L, H	P, T	N
Optional Code	None	+0	+22 (0.87)	-2 (0.08)
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+26 (1.02)	-

F29.ai

• Lay Length Code 2, AXR080-AXR100, Wafer Type

Unit: mm (approx. inch)

AXR080 G □ 1 A □ 1 □ - A □ □ 2  
 AXR100 C



<b>Size code</b>		080	100
<b>Size</b>		80 (3)	100 (4)
<b>Lining code</b>		A	A
<b>Face-to-face length</b>	L*2	160 (6.30)	180 (7.09)
<b>Outside dia.</b>	øD	129 (5.08)	155 (6.10)
<b>Inter diameter of Grounding ring</b>	ød	77 (3.03)	102 (4.02)
<b>Width</b>	W	129 (5.08)	155 (6.10)
<b>Height</b>	H1	157 (6.18)	183 (7.02)
<b>Max. Height</b>	Hi	319 (12.54)	345 (13.56)
<b>Weight kg (lb)</b>		6.5 (14.4)	8.9 (19.6)

\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.  
 \*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length).

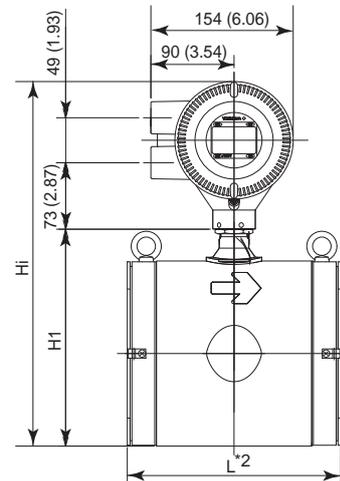
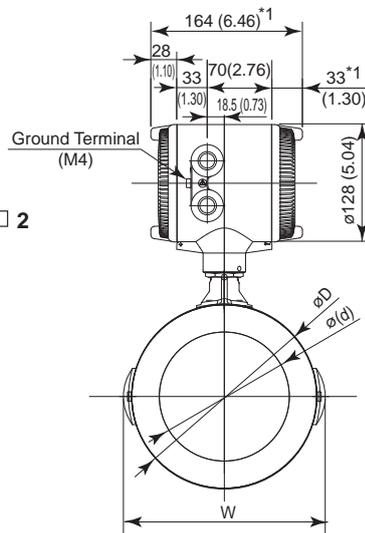
Grounding Ring Code		S, L, H	P, T	N
Optional Code	None	+0	+22 (0.87)	-2 (0.08)
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+26 (1.02)	-

F30.ai

• Lay Length Code 2, AXR150-AXR200, Wafer Type

Unit: mm (approx. inch)

AXR150 G □ 1 A □ 1 □ - A □ □ 2  
 AXR200



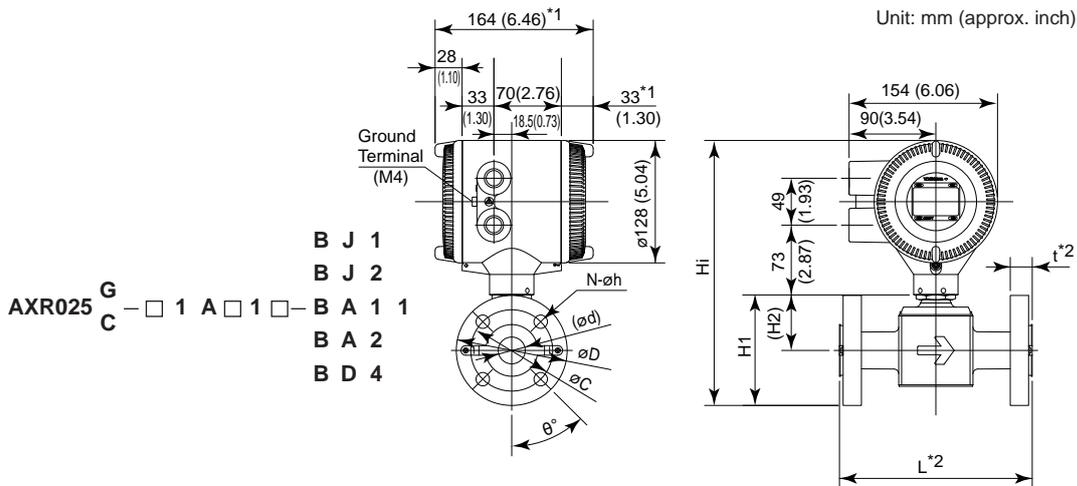
<b>Size code</b>		150	200
<b>Size</b>		150 (6)	200 (8)
<b>Lining code</b>		A	A
<b>Face-to-face length</b>	L*2	230 (9.06)	300 (11.81)
<b>Outside dia.</b>	øD	202 (7.95)	252 (9.92)
<b>Inter diameter of Grounding ring</b>	ød	140.7 (5.54)	188.9 (7.44)
<b>Width</b>	W	220 (8.66)	272 (10.71)
<b>Height</b>	H1	243 (9.57)	293 (11.54)
<b>Max. Height</b>	Hi	405 (15.93)	455 (17.89)
<b>Weight kg (lb)</b>		19.3 (42.5)	28.2 (62.2)

\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.  
 \*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length).

Grounding Ring Code		S, L, H	P, T	N
Optional Code	None	+0	+28 (1.1)	-6 (0.24)
	GA, GC, GD (Special Gaskets)	+2 (0.08)	+30 (1.18)	-

F30\_02.ai

● Lay Length Code 1, AXR025, JIS/ANSI/DIN Flange Type



Process Connection	BJ1 (JIS10K)	BJ2 (JIS20K)	BA1 (ANSI Class 150)	BA2 (ANSI Class 300)	BD4 (DIN PN40)
Size code	025	025	025	025	025
Size	25 (1)	25 (1)	25 (1)	25 (1)	25 (1)
Lining code	A	A	A	A	A
Face-to-face length	$L_{-3}^{0+2}$ 200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
Outside dia.	$\phi D$ 125 (4.92)	125 (4.92)	108.0 (4.25)	124.0 (4.88)	115 (4.53)
Thickness	$t^{*2}$ 18 (0.71)	20 (0.79)	18.2 (0.72)	21.5 (0.85)	22 (0.87)
Inter diameter of Grounding ring	$\phi d$ 28 (1.10)	28 (1.10)	28 (1.10)	28 (1.10)	28 (1.10)
Pitch circle dia.	$\phi C$ 90 (3.54)	90 (3.54)	79.2 (3.12)	88.9 (3.50)	85 (3.35)
Bolt hole interval	$\theta^\circ$ 45	45	45	45	45
Hole dia.	$\phi h$ 19 (0.75)	19 (0.75)	15.7 (0.62)	19.1 (0.75)	14 (0.55)
Number of holes	N 4	4	4	4	4
Height	H1 120 (4.74)	120 (4.74)	112 (4.40)	120 (4.74)	115 (4.54)
Height	H2 58 (2.28)	58 (2.28)	58 (2.28)	58 (2.28)	58 (2.28)
Max. Height	Hi 282 (11.09)	282 (11.09)	273 (10.76)	281 (11.07)	277 (10.90)
Weight kg (lb)	6.1 (13.4)	6.5 (14.3)	5.6 (12.3)	6.7 (14.7)	6.4 (14.1)

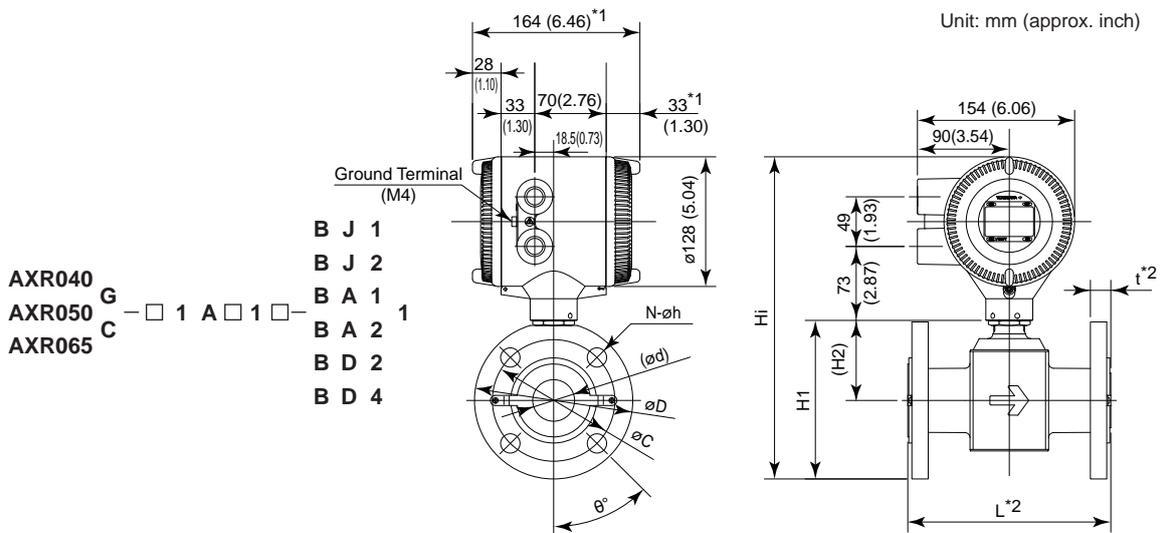
\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.

\*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length) and "t" (thickness of flange).

Grounding Ring Code	L		t		L		t	
	S, L, H	P, T	N					
Optional Code	None	+0	+0	+26 (1.02)	+13 (0.51)	-2 (0.08)	-1 (0.04)	
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+4 (0.16)	+30 (1.18)	+15 (0.59)	—	—	

F31.ai

• Lay Length Code 1, AXR040-AXR065, JIS/ANSI/DIN Flange Type



Process Connection	BJ1 (JIS10K)			BJ2 (JIS20K)			BA1 (ANSI Class 150)			BA2 (ANSI Class 300)			BD4 (DIN PN40)		BD2 (DIN PN16)	
Size code	040	050	065	040	050	065	040	050	065	040	050	065	040	050	065	
Size	40 (1.5)	50 (2)	65 (2.5)	40 (1.5)	50 (2)	65 (2.5)	40 (1.5)	50 (2)	65 (2.5)	40 (1.5)	50 (2)	65 (2.5)	40 (1.5)	50 (2)	65 (2.5)	
Lining code	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Face-to-face length	$L_{-3}^{+2}$ 200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	
Outside dia.	$\phi D$ 140 (5.51)	155 (6.10)	175 (6.89)	140 (5.51)	155 (6.10)	175 (6.89)	127.0 (5.00)	152.4 (6.00)	177.8 (7.00)	155.4 (6.12)	165.1 (6.50)	190.5 (7.50)	150 (5.91)	165 (6.50)	185 (7.28)	
Thickness	$t^{+2}$ 20 (0.79)	20 (0.79)	22 (0.87)	22 (0.87)	22 (0.87)	24 (0.94)	21.5 (0.85)	23.1 (0.91)	26.4 (1.04)	24.6 (0.97)	26.4 (1.04)	29.4 (1.16)	22 (0.87)	24 (0.94)	22 (0.87)	
Inter diameter of Grounding ring	$\phi d$ 41 (1.61)	53 (2.09)	66 (2.60)	41 (1.61)	53 (2.09)	66 (2.60)	41 (1.61)	53 (2.09)	66 (2.60)	41 (1.61)	53 (2.09)	66 (2.60)	41 (1.61)	53 (2.09)	66 (2.60)	
Pitch circle dia.	$\phi C$ 105 (4.13)	120 (4.72)	140 (5.51)	105 (4.13)	120 (4.72)	140 (5.51)	98.6 (3.88)	120.7 (4.75)	139.7 (5.50)	114.3 (4.50)	127.0 (5.00)	149.4 (5.88)	110 (4.33)	125 (4.92)	145 (5.71)	
Bolt hole interval	$\theta^\circ$ 45	45	45	45	22.5	22.5	45	45	45	45	22.5	22.5	45	45	45	
Hole dia.	$\phi h$ 19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	15.7 (0.62)	19.1 (0.75)	19.1 (0.75)	22.4 (0.88)	19.1 (0.75)	22.4 (0.88)	18 (0.71)	18 (0.71)	18 (0.71)	
Number of holes	N	4	4	4	8	8	4	4	4	4	8	8	4	4	4	
Height	H1	138 (5.43)	157 (6.16)	176 (6.93)	138 (5.43)	157 (6.16)	176 (6.93)	131 (5.17)	155 (6.11)	177 (6.97)	146 (5.73)	162 (6.36)	184 (7.24)	143 (5.63)	162 (6.36)	181 (7.13)
Height	H2	68 (2.67)	79 (3.11)	89 (3.50)	68 (2.67)	79 (3.11)	89 (3.50)	68 (2.67)	79 (3.11)	89 (3.50)	68 (2.67)	79 (3.11)	89 (3.50)	68 (2.67)	79 (3.11)	89 (3.50)
Max. Height	Hi	299 (11.79)	318 (12.52)	338 (13.31)	299 (11.79)	318 (12.52)	338 (13.31)	293 (11.53)	317 (12.47)	339 (13.35)	307 (12.09)	323 (12.72)	346 (13.62)	304 (11.98)	323 (12.72)	343 (13.50)
Weight kg (lb)		7.5 (16.5)	8.7 (19.2)	11.0 (24.2)	8.0 (17.6)	8.9 (19.6)	11.3 (24.9)	7.2 (15.8)	9.3 (20.5)	12.8 (28.2)	9.6 (21.1)	10.9 (24.0)	14.6 (32.2)	8.7 (19.1)	10.6 (23.4)	11.8 (26.0)

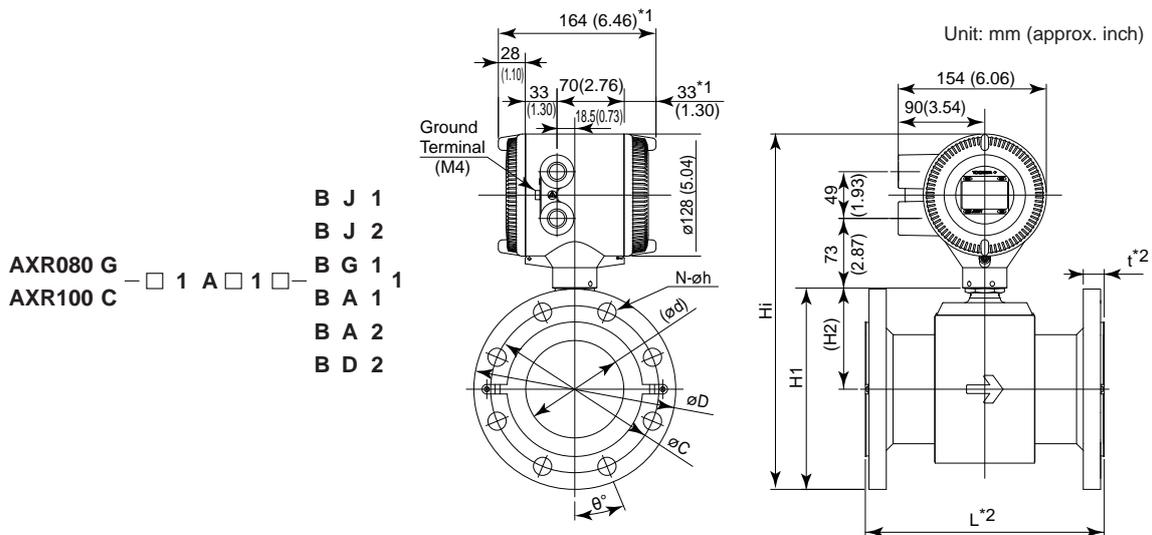
\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.

\*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length) and "t" (thickness of flange).

Grounding Ring Code	L		t		L		t	
	S, L, H		P, T		N			
Optional Code	None	+0	+0	+26 (1.02)	+13 (0.51)	-2 (0.08)	-1 (0.04)	
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+4 (0.16)	+30 (1.18)	+15 (0.59)	—	—	

F32.ai

• Lay Length Code 1, AXR080-AXR100, JIS/ANSI/DIN Flange Type

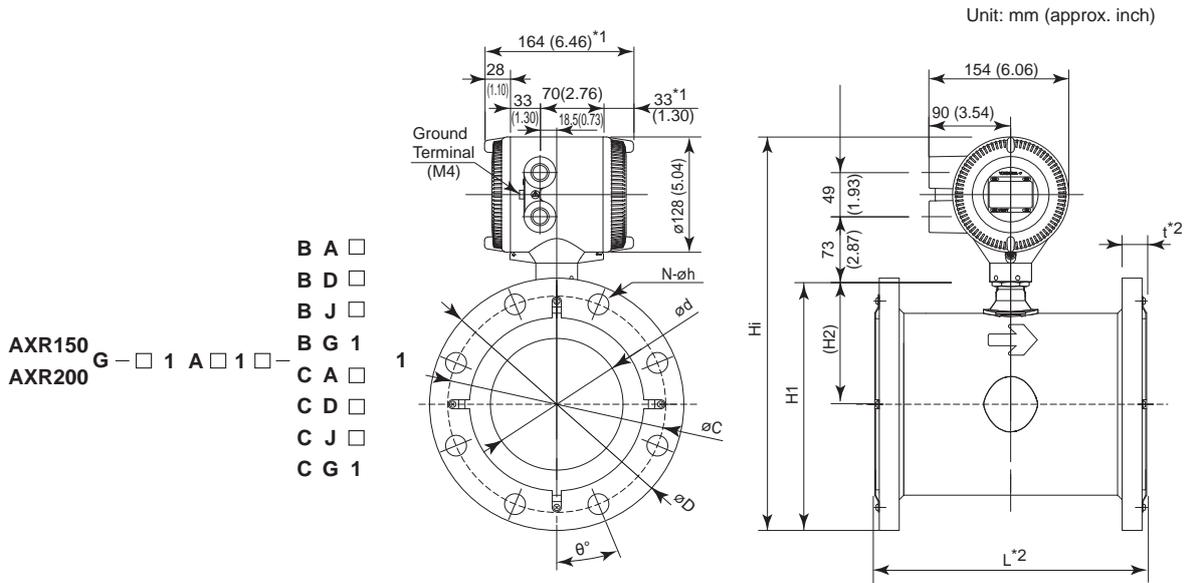


Process Connection	BJ1 (JIS10K)		BJ2 (JIS20K)		BG1 (JIS F12)		BA1 (ANSI Class 150)		BA2 (ANSI Class 300)		BD2(DIN PN16)	
Size code	080	100	080	100	080	100	080	100	080	100	080	100
Size	80 (3)	100 (4)	80 (3)	100 (4)	80 (3)	100 (4)	80 (3)	100 (4)	80 (3)	100 (4)	80 (3)	100 (4)
Lining code	A	A	A	A	A	A	A	A	A	A	A	A
Face-to-face length	L <sub>3</sub> *2		L <sub>3</sub> *2		L <sub>3</sub> *2		L <sub>3</sub> *2		L <sub>3</sub> *2		L <sub>3</sub> *2	
Outside dia.	200 (7.87)	250 (9.84)	200 (7.87)	250 (9.84)	200 (7.87)	250 (9.84)	200 (7.87)	250 (9.84)	200 (7.87)	250 (9.84)	200 (7.87)	250 (9.84)
Thickness	185 (7.28)	210 (8.27)	200 (7.87)	225 (8.86)	211 (8.31)	238 (9.37)	190.5 (7.50)	228.6 (9.00)	209.6 (8.25)	254.0 (10.00)	200 (7.87)	220 (8.66)
Inter diameter of Grounding ring	22 (0.87)	26 (1.02)	26 (1.02)	28 (1.10)	22 (0.87)	22 (0.87)	27.9 (1.10)	27.9 (1.10)	32.4 (1.28)	35.8 (1.41)	24 (0.94)	24 (0.94)
Pitch circle dia.	77 (3.03)	102 (4.02)	77 (3.03)	102 (4.02)	77 (3.03)	102 (4.02)	77 (3.03)	102 (4.02)	77 (3.03)	102 (4.02)	77 (3.03)	102 (4.02)
Bolt hole interval	150 (5.91)	175 (6.89)	160 (6.30)	185 (7.28)	168 (6.61)	195 (7.68)	152.4 (6.00)	190.5 (7.50)	168.1 (6.62)	200.2 (7.88)	160 (6.30)	180 (7.09)
Hole dia.	19 (0.75)	19 (0.75)	23 (0.91)	23 (0.91)	19 (0.75)	19 (0.75)	19.1 (0.75)	19.1 (0.75)	22.4 (0.88)	22.4 (0.88)	18 (0.71)	18 (0.71)
Number of holes	8	8	8	8	4	4	4	8	8	8	8	8
Height	187 (7.36)	211 (8.30)	195 (7.68)	218 (8.59)	200 (7.87)	225 (8.85)	190 (7.48)	220 (8.66)	200 (7.87)	233 (9.16)	195 (7.68)	216 (8.49)
Max. Height	95 (3.74)	106 (4.16)	95 (3.74)	106 (4.16)	95 (3.74)	106 (4.16)	95 (3.74)	106 (4.16)	95 (3.74)	106 (4.16)	95 (3.74)	106 (4.16)
Weight kg (lb)	349 (13.74)	372 (14.65)	357 (14.06)	380 (14.95)	362 (14.25)	386 (15.21)	352 (13.86)	382 (15.02)	362 (14.25)	394 (15.52)	357 (14.06)	377 (14.85)
	11.3 (24.9)	15.2 (33.5)	14.1 (31.0)	19.7 (43.4)	13.9 (30.6)	18.3 (40.3)	14.6 (32.2)	20.5 (45.2)	18.3 (40.3)	29.6 (65.2)	13.6 (29.9)	17.3 (38.1)

\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.  
 \*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length) and "t" (thickness of flange).

Grounding Ring Code	L		t		S, L, H		P, T		N	
	Optional Code	None	+0	+0	+26 (1.02)	+13 (0.51)	-2 (0.08)	-1 (0.04)		
	GA, GC, GD (Special Gaskets)	+8 (0.31)	+4 (0.16)	+30 (1.18)	+15 (0.59)	—	—			

• Lay Length Code 1, AXR150-AXR200, JIS/ANSI/DIN Flange Type



Process Connection	BJ1/CJ1 (JIS 10K)	BJ2/CJ2 (JIS 20K)	BG1/CG1 (JIS F12)	BA1/CA1 (ANSI Class 150)	BA2/CA2 (ANSI Class 300)	BD1/CD1 (DIN PN10)	BD2/CD2 (DIN PN16)
Size code	150 200	150 200	150 200	150 200	150 200	200	150 200
Size	150 (6)	200 (8)	150 (6)	200 (8)	150 (6)	200 (8)	150 (6) 200 (8)
Lining code	A	A	A	A	A	A	A
Face-to-face length	L <sup>*2</sup>	300 (11.81)	350 (13.78)	300 (11.81)	350 (13.78)	350 (13.78)	300 (11.81) 350 (13.78)
Outside dia.	øD	280 (11.02)	330 (12.99)	305 (12.01)	350 (13.78)	290 (11.42)	342 (13.46)
Thickness	t <sup>*2</sup>	27 (1.06)	27 (1.06)	33 (1.30)	35 (1.38)	27 (1.06)	29 (1.14)
Inter diameter of Grounding ring	ød	146.1 (5.75)	193.6 (7.62)	146.1 (5.75)	193.6 (7.62)	146.1 (5.75)	193.6 (7.62)
Pitch circle dia.	øC	240 (9.45)	290 (11.42)	260 (10.24)	305 (12.01)	247 (9.72)	299 (11.77)
Bolt hole interval	θ°	22.5	15	15	15	30	22.5
Hole dia.	øh	23 (0.91)	23 (0.91)	25 (0.98)	25 (0.98)	19 (0.75)	19 (0.75)
Number of holes	N	8	12	12	12	6	8
Height	H1	281 (11.06)	331 (13.03)	294 (11.56)	341 (13.43)	286 (11.26)	337 (13.27)
Height	H2	141 (5.55)	166 (6.54)	141 (5.55)	166 (6.54)	141 (5.55)	166 (6.54)
Max. Height	Hi	443 (17.42)	493 (19.39)	456 (17.95)	503 (19.80)	448 (17.64)	499 (19.65)
Weight kg (lb)		29.2 (64.4)	38.7 (85.3)	38.5 (84.9)	53.3 (117.5)	31.3 (69.0)	44.6 (98.3)

\*1: When indicator code N is selected, subtract 5 mm (0.2 inch) from the value in the figure.

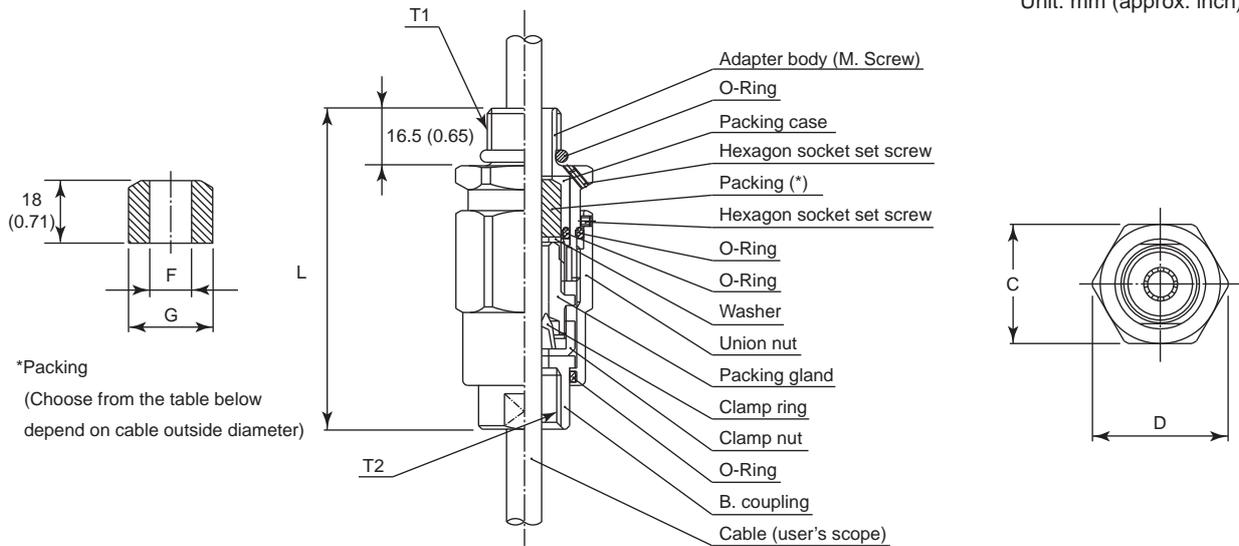
\*2: Depending on the selection of grounding ring code and optional code, add the following value to "L" (face-to-face length) and "t" (thickness of flange).

Grounding Ring Code	L		t				
	S, L, H	P, T	N	N			
Optional Code	None	+0	+0	+32 (1.26)	+16 (0.63)	-2 (0.08)	-1 (0.04)
	GA, GC, GD (Special Gaskets)	+10 (0.39)	+5 (0.20)	+38 (1.5)	+19 (0.75)	—	—

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● Flameproof Packing Adapter for TIIS Flameproof Type (Optional code G11 or G12)

Unit: mm (approx. inch)



\*Packing  
(Choose from the table below depend on cable outside diameter)

Dimension					Cable outer diameter	Packing diameter		Identification mark	Weight Kg (lb)
T1	T2	C	D	L		F	G		
G 1/2	G 1/2	35 (1.38)	39 (1.54)	94.5 (3.72)	ø8.0 to ø10.0 (0.31 to 0.39)	ø10.0 (0.39)	ø20.0 (0.79)	16 8-10	0.26 (0.57)
					ø10.0 to ø12.0 (0.39 to 0.47)	ø12.0 (0.47)		16 10-12	

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● Unless otherwise specified, difference in the dimensions are refer to the following table.

General tolerance in the dimensional outline drawing.

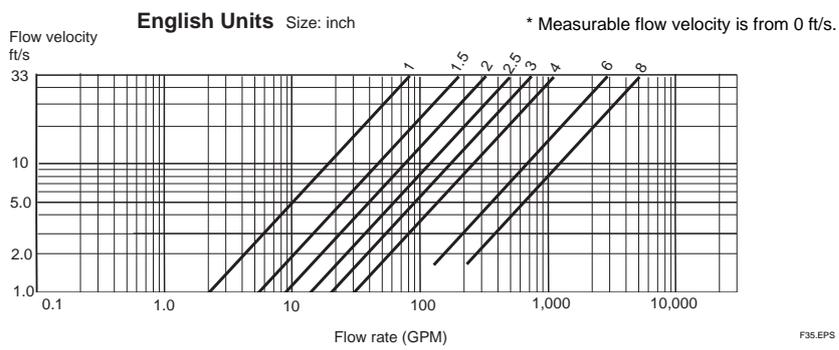
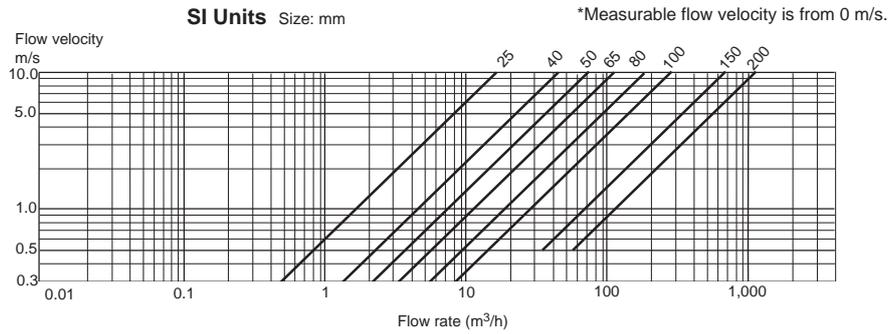
Unit : mm (approx.inch)

Category of basic dimension			Tolerance	Category of basic dimension		Tolerance
Above	Equal or below			Above	Equal or below	
	3 (0.12)		±0.7 (±0.03)	500 (19.69)	630 (24.80)	±5.5 (62.17)
3 (0.12)	6 (0.24)		±0.9 (±0.04)	630 (24.80)	800 (31.50)	±6.25 (60.25)
6 (0.24)	10 (0.39)		±1.1 (±0.04)	800 (31.50)	1000 (39.37)	±7.0 (60.28)
10 (0.39)	18 (0.71)		±1.35 (±0.05)	1000 (39.37)	1250 (49.21)	±8.25 (60.32)
18 (0.71)	30 (1.18)		±1.65 (±0.06)	1250 (49.21)	1600 (62.99)	±9.75 (60.38)
30 (1.18)	50 (1.97)		±1.95 (±0.08)	1600 (62.99)	2000 (78.74)	±11.5 (60.45)
50 (1.97)	80 (3.15)		±2.3 (±0.09)	2000 (78.74)	2500 (98.43)	±14.0 (60.55)
80 (3.15)	120 (4.72)		±2.7 (±0.11)	2500 (98.43)	3150 (124.02)	±16.5 (60.65)
120 (4.72)	180 (7.09)		±3.15 (±0.12)			
180 (7.09)	250 (9.84)		±3.6 (±0.14)			
250 (9.84)	315 (12.40)		±4.05 (±0.16)			
315 (12.40)	400 (15.75)		±4.45 (±0.18)			
400 (15.75)	500 (19.69)		±4.85 (±0.19)			

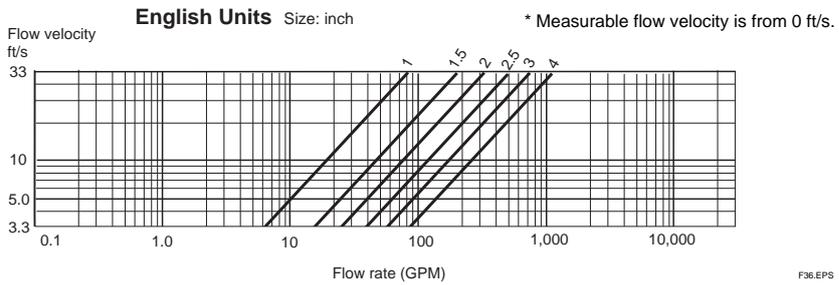
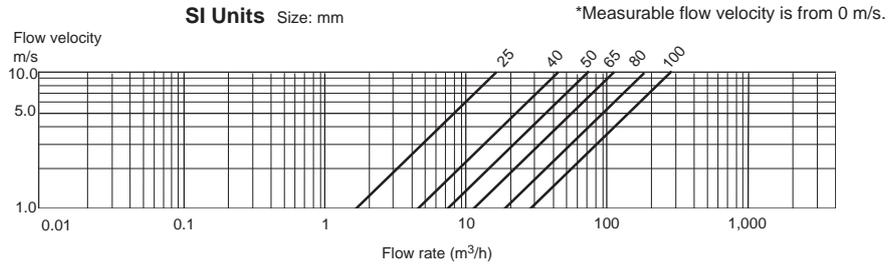
Remarks: The numeric is based on criteria of tolerance class IT18 in JIS B 0401.

## ■ SIZING DATA (Measurable flow velocity is from 0 m/s.)

General-purpose Use;



Explosion Proof Type;



## ■ RECOMMENDED GASKETS BETWEEN FLOWTUBES AND USER'S FLANGES

Use compressed non-asbestos fiber gaskets, PTFE-sheathed non-asbestos gaskets or gaskets which have equivalent elasticity. For optional codes GA, GC, and GD, use rubber gaskets or others which have equivalent elasticity (such as Teflon-coated rubber gaskets).

### ~~~~~ORDERING INFORMATION~~~~~

**Note 1: When ordering, the span flow rate, unit, output pulse weight, and totalizer display pulse weight can be specified. These parameters will then be set before shipment. A Tokuchu request is necessary except when these parameters are specified within the range.**

**Note 2: Some options, if ordered, require the relevant specifications to be input when ordering.**

1. Model, specification and option codes
2. Tag number
 

Each tag number can be specified in up to 16 characters in a combination of letters (capital or small letters), numbers, “.” and “.”.

For HART protocol, up to 8 characters can be specified. If specified, the tag number is inscribed on the product’s name plate and tag plate (if optional code SCT is selected).

If the user wishes to change only the tag number to be set into a converter’s memory, specify the software tag.

If a tag number is not specified, the tag number is set as a blank.
3. Span flow rates and units
 

Span flow rate can be specified numerically within the value of 0.0001 to 32000. It can be up to five digits, to a maximum of 32000 ignoring the decimal point, and a fraction is limited to the fourth decimal place.

Specify the unit which is specified for the flow unit in the “Span Setting Function.”

The span flow rates are set to the first range in the forward direction.

A span flow rate and its unit must be specified when the Mass Unit Setting (optional code MU) or Five-point Calibration in User-specified Span (optional code SC) is specified.

If a span flow rate and its unit are not specified, the relevant product is delivered with the setting at 1 m/s (3.3 ft/s).

4. Transmission pulse weight
 

If specified, a span flow rate must be set first, and then volume per pulse must be set.

It can be specified numerically within the value from 0.0001 to 32000, and its unit must be specified in the same unit as the span flow rate.

(Example: When “m<sup>3</sup>” is selected as “Span Flow Rate”, specify “10 m<sup>3</sup>/p” as pulse weight unit.)

Unless specified, the relevant product is delivered with the setting at 0 pulse/second.
5. Totalizer display pulse weight
 

If specified, a span flow rate must be set first, and then volume per totalization pulse count must be set.

It can be specified numerically within the value from 0.0001 to 32000, and its unit must be specified in the same unit as the span flow rate.

(Example: when “m<sup>3</sup>” is selected as “Span Flow Rate”, specify “10 m<sup>3</sup>/p” as pulse weight unit.)

Unless specified, the relevant product is delivered with the setting at 0 pulse/second.
6. Fluid name

### ✦✦✦✦ RELATED INSTRUMENTS ✦✦✦✦

Calibrator for Magnetic Flowmeter (AM012):  
 GS 01E06K02-00E  
 BT200 Brain Terminal: GS 1C0A11-E  
 FieldMate: GS 01R01A01-01E

### ✦✦✦✦ Reference ✦✦✦✦✦✦✦✦

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