General Specifications

Magnetic Flowmeter
CA Series

GS 01E40A01-01EN

■ GENERAL DESCRIPTION

Magnetic Flowmeter CA Series is a high-quality and highly reliable Capacitance Magnetic Flowmeter product developed based on years of experience and achievements from the former product ADMAG CA.

Magnetic Flowmeter CA Series is excellent at measurement in adhesive fluids, slurry fluids or ultra-low conductivity fluids. Since Magnetic Flowmeter CA Series adopts a non-wetted electrode construction, picking up the signal voltage by non-wetted capacitance electrodes provided outside a ceramic pipe through the capacitance of the pipe. With outstanding reliability and ease of operation and maintenance, developed on decades of field-proven experience, the CA will increase user benefits while reducing total cost of ownership.



Size 15 mm (0.5in.)



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



Size 150, 200 mm (6, 8 in.)

■ FEATURES

●Measurement of adhesive fluids and slurry fluids.

By adopting non-wetted electrode and ceramic measuring tube, Stable measurement of adhesive fluids and slurry fluids are available.

●Measurement of ultra-low conductivity fluids

Measurement of ultra-low conductivity fluids with a conductivity 0.01 µS / cm are available.

●Multiple Inputs and Outputs

Maximum four inputs/outputs of current, pulse, and status signals can be selected.

●Improved Operation and Monitoring Function

Operation authority level setting for ensuring safety, process data trend display, display backlight flashing (Squawk) function, and data store / restore function with display unit internal memory or microSD card are available.

●Improved Maintainability

Diagnostic functions that contribute to preventive maintenance of the plant are installed. Diagnosis of the device (verification function) that can be executed without demounting from piping is available.

●Communication Protocol

HART

●Worldwide approvals

There are a number of approvals required in various regions throughout the world. To meet the needs of all markets and applications, The CA Series offers communication protocols, explosion proof, EMC etc...

●Multiple Languages

We have incorporated multiple languages, which are user selectable, into the CA Series.
English, French, German, Italian, Spanish, Portuguese, Russian, Chinese, Japanese.

YOKOGAWA

Yokogawa Electric Corporation
2-9-32, Nakacho, Musashino-shi, Tokyo, 180-8750 Japan
Tel.: +81-422-52-4443 Fax.: +81-422-52-2018

GS 01E40A01-01EN
© Copyright Sep. 2022 (KP)
7th Edition Aug. 20, 2026 (KP)

■ GENERAL

Measuring Principle:

By applying the occurrence of electromotive force proportional to the flow velocity when fluid moves in the magnetic field, the flowmeter can measure the flow velocity of conductive liquid. It calculates the instantaneous flow rate, integrated flow rate, etc. from the measured flow velocity.

System Configuration:

Basic configuration: Sensor, Transmitter

	Function
Sensor	Detects the flow velocity
Transmitter	Amplifies a sensor and converts signals.

Main Element of Sensor:

	Function
Wetted Part	Measuring pipe, Grounding Devices
Non-wetted Part	Housing, Excitation coil, Non-wetted capacitance electrodes

Note: Grounding devices are for taking the reference electric potential from the process fluid in measuring the electromotive force, and are fixed at two locations, upstream and downstream of the flow. For details of grounding, read "Cautions on Selection and Installation".

Main Element of Transmitter:

Display unit, Setting keys, Amplifier unit (including I/Os and power supply unit)

■ CONSTRUCTION

Use:

Use	Specification
General-purpose	Applicable to Integral Flowmeter IP Protection Grade: IP66/IP67, Type 4X (CSA)
Explosion protection	Use: Explosion Protection Specification: Explosion protection for the use in hazardous area. IP Protection Grade: Read "Explosion Protection"

Construction:

Integral type. Integrated structure of a sensor and a transmitter.

Process Connection:

Wafer is available.
For the size range, read "MODEL AND SUFFIX CODE".

Type	Process connection
Wafer	ASME Class 150, Class 300 EN PN10, PN16, PN40 GB PN10, PN16, PN40 JIS F12, 10K, 20K

Electrode Construction:

Non-wetted capacitance electrodes.

Grounding Device Construction:

Grounding Ring Plate	Ring flat plate with mounting bracket

Wetted Part:

Wetted Part	Material
Measuring pipe	Ceramics (*) * : Alumina ceramics (99.8%)
Grounding Device	Grounding Ring Plate Stainless steel 316L, Nickel alloy (*), Titanium * : ASTM B575 UNS N10276 or ASME SB-575 UNS N10276
Gasket (Note)	Ceramics Tube Side Standard: Fluororesin with ceramic fillers (Valqua #7020) Optional (for plastic piping): GA: Fluororubber Optional (for metal piping): GF: Fluororesin with alkali-resistant carbons Installed Pipe Side Standard: None (supplied by customer) Optional (for wafer type, with bolts, nuts, and gaskets): BSC: Chloroprene rubber (CR) BSF: PTFE-sheathed non-asbestos joint sheet

Note: The description is about the material of gaskets supplied with flowmeter, to be used between the sensor pipe and grounding ring or the process flange. This includes whether gaskets are necessary, or whether gaskets should be supplied by customer. For details of gaskets, read "Cautions on Selection and Installation" and "Optional Code".

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Non-wetted Part Material:

Transmitter Housing:
Low copper aluminum alloy EN AC-43400
Sensor Housing:

Size	Material
15 mm (0.5 in.)	Stainless steel SCS11 (*1)
25 to 200 mm (1 to 8 in.)	Stainless steel 304

*1: JIS standard casting material

Measuring Pipe:
- Ceramics Tube
  For the ceramics tube which is also a wetted part, read “Measuring pipe” in “Wetted part”.

Coating:

Standard Coating:

Coated Part	Coating Specification
Sensor housing	Polyurethane resin solvent coating, or no coating (*1)
Transmitter housing (incl. cover)	Urethane curing type polyester resin powder coating

Rugged Coating (*2):

Coated Part	Coating Specification
Sensor housing	Expoxy and polyurethane resin solvent coating, or no coating (*1)
Transmitter housing (incl. cover)	Epoxy and polyurethane resin solvent coating

*1: No coating in sizes 15 to 100 mm (0.5 to 4 in.). Coating is done to sizes 150 mm (6 in.) and more.
*2: Rugged coating is for applications which need salt tolerance resistance, alkali resistance, acid resistance, and/or weather resistance. Epoxy resin undercoating twice and polyurethane resin overcoating once are performed to the same area as standard coating.

Coating Color:
Mint green (Munsell 5.6BG3.3/2.9 equivalent)

Cable Entry:

JIS G1/2 female

ASME 1/2 NPT female

ISO M20 x 1.5 female

Cable Entry Direction:
The cable entry direction can be specified from +90, +180, or -90 degree rotation when optional code RH is ordering.

Wiring Terminal:

Extra-system Connection Part (*1):
M4 Screw or Clamp type
*1: Connections for input/output signals and power supply.

Grounding:

Grounding Resistance: 10 Ω or less
Note: When the built-in lightning protector as standard is not required, grounding resistance 100 Ω or less can be applied.
For grounding of explosion protection, appropriate construction is required according to the regulations of each country.

■ FUNCTIONS

Display and Setting:

Display unit (3 infrared switches with LCD) enables the user to set the parameters without opening the display cover.
Note: Parameter setting by setting tool such as HHT (handheld terminal) and FieldMate (device adjustment / management software) is also possible.

Display:
Full dot matrix LCD, 64 × 128 dots, with backlight, dot reversal display available

Display Language (*):
Display Code 1:
English, French, German, Italian, Spanish, Portuguese, Russian and Japanese. The display languages are selectable and can be changed by customer.
Display Code 2:
English and Chinese. The display languages are selectable and can be changed by customer.
* : The setting is English when shipped from factory.

Display Screen Configuration:
Display Screen Item:
Status display (icon), Time (necessary to set the time at power-on), Data display (max. four lines), Infrared switch operation status
Flow Rate Screen:
Measured Data Screen or Online Trend Screen is available. Update period selectable from 0.2, 0.4, 1, 2, 4, and 8 seconds.
Measured Data Screen:
Display up to 4 data points simultaneously with numbers, bar graphs, icons, or character strings. Specify up to 8 points of data and change display data with infrared switches or automatic scroll function (scroll period 2, 4, or 8 seconds).
Selectable Data in Measured Data Screen:
HART
Flow rate (%), Flow velocity, Volume flow rate, Mass flow rate, Totalizer 1, Totalizer 2, Totalizer 3, Current output 1, Tag No., Communication protocol, Totalizer 1 count, Totalizer 2 count, Totalizer 3 count
Online Trend Screen:
Display one data as trend graph. The display data can be changed with infrared switches or automatic scroll function (scroll period 2, 4, or 8 seconds) selecting up to four data.
Selectable Data in Online Trend Screen:
Flow rate (%), Flow velocity, Volume flow rate, Mass flow rate, Totalizer 1, Totalizer 2, Totalizer 3, Current output 1

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Alarm Screen:
When an alarm occurs, the flow rate screen and the alarm screen are alternately displayed in the cycle (2, 4, or 8 seconds) linked with the flow rate screen update cycle. Select simple screen (single line display) or detail screen (with alarm countermeasure display).
NAMUR NE 107 Alarm Display Function:
Based on NAMUR NE 107, alarms are classified and displayed as follows. It can also be set to hide.
F: Failure
C: Function Check
S: Out of Specification
M: Maintenance Required
Offline Trend Screen (when optional code MC (microSD card) is selected):
Data stored by the data logging function can be displayed on the trend screen. The selectable data is the same as that for the Online Trend Screen.
Display Backlight Flashing (Squawk) Function:
Display backlight can be set to flash once or continuously at 4-second cycle to identify the device.
Display Operation Authority:
Display operation authority level against the parameters can be controlled by selecting from operator, maintenance, or specialist by passcode.
Operator:
Only parameters related to display setting can be set.
Maintenance:
Only parameters related to display setting and zero adjustment can be set.
Specialist:
All parameters can be set.

Communication Function:

HART:
Protocol Version: HART 7
Communication Signal:
Superimposed on the Current Output 1
Communication Line Condition:
Load Resistance:
230 to 600 Ω (including cable resistance)

Input/Output Function:

Input/Output Signal:
Input/Output up to four points can be selected from type A, E in the table.

Input Signal

- **Status Input (Dry contact) (Type E)**

Load Resistance:
200 Ω or less (ON), 100 kΩ or more (OFF)

Output Signal

- **Current Output (Active) (Type A, E)**

4 to 20 mA DC signal
Load Resistance:
750 Ω maximum, including cable resistance

- **Pulse/Status Output (Passive) (Type A, E)**

Transistor contact output (open collector)
Contact Capacity: 30 V DC (OFF), 200 mA (ON)
Pulse Rate:
0.0001 to 10000 pps (pulse per second)
Pulse Width:
0.05, 0.1, 0.5, 1, 20, 33, 50, 100, 200, 330, 500, 1000, 2000 ms, or Duty cycle 50% (Maximum pulse width 5 minutes) configurable
Frequency Output Range: 1 to 12500 Hz

Flow Calculation Function:

Span Setting:
Span flow can be set in units such as volume flow rate, mass flow rate, time, and 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), kbbl (US)*, bbl (US)*, mbbl (US)*, µbbl (US)*, Ml (megaliter), m^3, kl (kiloliter), l (liter), cm^3
*: "US Oil" or "US Beer" can be selected.
Mass Flow Rate Unit:
klb (US), lb (US), t (ton), kg, g
Velocity Unit: ft, m (meter)
Time Unit: s (second), min (minute), h (hour), d (day)
Mass Flow Rate Processing:
The mass flow rate V_m is obtained in the following expression.
$V_m = V_f \times \rho$
V_m: Mass flow rate [kg/s]
V_f: Volume flow rate [m^3/s]
ρ: Density [kg/m^3]

Input/Output (HART)

Type	Input/Output Signal				Communication and I/O Code
	I/O1 Terminal	I/O2 Terminal	I/O3 Terminal	I/O4 Terminal	HART 7
Type A	Current Output 1 Active	Pulse/Status Output 1 Passive	—	—	JA
Type E			Status Input (No-voltage)	Pulse/Status Output 2 Passive	JE

Note: "Active" means no external power supply, "Passive" means external power supply is required.

Note: A HART communication signal is superimposed on the current output of the I/O1.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Damping Function (63% response):
Can be set for each measurement value of flow velocity, volume flow rate, mass flow.
Output Damping:
For each measured value, the time constant for instantaneous value output (1.0 to 200.0 seconds, shipped with 3.0 seconds) and the time constant for totalization / pulse output (0.0 to 200.0 seconds, shipped with 3.0 seconds) can be individually set. Note that decreasing damping time generally increases output fluctuation.
Display Damping:
A common time constant can be set for each screen display value of each measurement value. Time constant 0.0 to 200.0 seconds (shipped with 0.0 seconds).

Current Output:
Current signal (4 to 20 mA DC) proportional to instantaneous flow rate is output.

Pulse Output:
The totalized value of the flow rate is converted into the number of pulses converted by the pulse rate, and is output.

Frequency Output:
Frequency signal (Duty 50%) proportional to the instantaneous value of the flow rate is output.
Output terminal is shared with pulse output.

Totalization Function:
Three independent totalizers can be allocated independently, including the start and stop of integration, for each measured value of volume flow rate, mass flow.
Totalization Type:
Forward / reverse difference flow totalization, Absolute value totalization, Forward direction totalization, Reverse direction totalization
Totalization Display:
Select from actual flow rate display or count value display scaled by counter conversion rate.

Low-cut Function:
For each current output, pulse output, or frequency output, the output signal below the set actual flow rate can be cut. (*). It is independent for current output, common for pulse output and frequency output.
*: When "Forward and Reverse Flow Measurement" or "Absolute Range" is used, the output signal below the set actual flow rate value against the absolute value of the measured one is cut.

Output Processing Function:

Multi-range:
Flow range can be switched to two ranges by status input or automatic switching. By status output, it is possible to identify in what range the measurement is being measured, and the status is also displayed on the display.

Forward and Reverse Flow Measurement:
Flow rate measurement in both forward and reverse directions is possible. By status output, it is possible to identify in which direction the measurement is being performed, and the status is also displayed on the display.

Absolute Range:
With 12 mA as flow rate zero, measurements in the forward (12 to 20 mA) and reverse (4 to 12 mA) directions are possible in a single range.

Totalization Switch:
Status signal is output when the totalized value becomes equal to or larger than the set value.

Preset Totalization:
By parameter setting or status input, the totalized value is preset to zero or a set value.

0% Signal Lock:
With status input, the current output is forcibly fixed to 0%. Mode is selectable whether to continue output processing for instantaneous flow rate display/ pulse output/ flow rate totalization or to fix flow rate at 0.

Alarm Function:

Alarm Configuration:
Alarms are classified into system alarm (device failure), process alarm, setting alarm, and warning.
Alarm output availability can be selected for each item.

Current Output at Alarm Occurrence:
The current output at alarm occurrence is arbitrarily selected from 2.4 mA or less, 3.8 mA fixed, 4 mA fixed, 20.5 mA fixed, 21.6 mA or more, measured value, or HOLD.

Alarm Countermeasure Indication:
A specific countermeasure method can be displayed on the display when an alarm occurs.

Alarm Type:
System Alarm:
CPU failure, A/D converter failure, Sensor coil circuit break (open), Sensor coil short circuit
Process Alarm:
Input signal error (signal overflow)
Setting Alarm:
Detect inconsistency in parameter setting
Warning:
Warning in a state where measurement can be continued

Alarm History:
Keep history of up to four alarms.

Verification Function:

Function to diagnose the soundness of the device itself. Diagnose the magnetic circuit, excitation circuit, arithmetic processing circuit, etc. During offline (i.e. flow measurement function stopped) and display the result without demounting the device from piping.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Data Management Function:
Store / Restore Function of Parameters:
Main parameters can be stored and restored using nonvolatile memory of display unit. The restore can also be used for copying parameters to another device (except for parameters under unmatched specification for the devices). When optional code MC is selected, this function is also available by using microSD card.
Data Logging Function (when optional code MC (microSD card) is selected):
It is possible to log up to three process data at the same time. In addition to displaying the logged results on the trend screen, it is also possible to connect the microSD card to a PC and retrieve the data.
Logging Cycle:
1 second, 10 seconds, 30 seconds, 1 minute, 5 minutes, 30 minutes, 1 hour
Logging Time:
10 minutes, 30 minutes, 1 hour, 3 hours, 12 hours, 24 hours, 72 hours, 240 hours, 720 hours, 1440 hours
Logging Data:
Flow velocity, Volume flow rate, Mass flow rate
Data Security During Power Failure:
Protection of data, such as parameters and integrated values, by nonvolatile memory at power failure.
Factory Default Parameter Restore:
It is possible to restore the parameters to the values that were set at the time of factory shipment.

Lightning Protection:
Input/Output terminals, and power supply terminal.
Test Standard: IEC61000-4-5
Test Method:
Series mode 1 kV / Common mode 2 kV
Surge waveform 8/20 µS

■ CONFORMITY STANDARDS

Safety Requirements:
EN61010-1
EN61010-2-030
CAN/CSA-C22.2 No.61010-1
CAN/CSA-C22.2 No.61010-2-30
CAN/CSA-C22.2 No.94.2
UL 61010-1
UL 61010-2-030
UL 50E
IEC 60529
Altitude at Installation Site:
Max. 2000 m above sea level
Installation Category (Overvoltage category): II
Micro Pollution Degree: 2
Macro Pollution Degree: 4
Protection Degree:
General-purpose: IP66/IP67, Type 4X (CSA)
Explosion Protection: Read "Explosion Protection"

EMC:
For CA0015-CA0100
EN61326-1 Class A, Table 2
EN61326-2-3
EN61000-3-2 Class A
EN61000-3-3
RCM in Australia/New Zealand
KC mark in Korea
CMIM mark in Morocco

For CA0150, CA0200(Only emission)
EN55011 Class A Group 1
EN61000-3-2 Class A
EN61000-3-3
RCM in Australia/New Zealand

Morocco conformity mark :
This conformity mark indicates that the product complies with Moroccan safety and EMC requirements.
Note: Applicable for CA0015 to CA0100.

Food Contact Materials Regulations
FDA 21 CFR 177:
Polymer and rubber used in wetted parts are compatible.
Refer to the Declaration of Conformity for details.

GB 4806:
Note: Excluded if the following specification codes are included:
OPTIONAL CODE:
GA (Plastic Pipe Gaskets), BSC (Bolts, Nuts, and Gaskets (Type C))
Refer to the Declaration of Conformity for details.

Japan Food Sanitation Act:
Complies with Article 18 of the Food Sanitation Act and Ministry of Health and Welfare Notification No. 370.
Note: Excluded if the following specification codes are included:
OPTIONAL CODE:
GRJ (Grounding Rings (Plate Type J)), GA (Plastic Pipe Gaskets), GF (Metal Pipe Alkali-resistant Gaskets)
Refer to the Declaration of Conformity for details.

■ HAZARDOUS AREA CLASSIFICATION

Select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

IECEx
Applicable Standard:
IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC 60079-31
Certificate:
IECEx FMG 17.0014X

Flameproof

Type of Gas Atmosphere Protection
Ex db IIC T6...T4 Gb
(Transmitter Wiring Terminal: M4 screw type)
Ex db eb IIC T6...T4 Gb or Ex db IIC T6...T4 Gb
(Transmitter Wiring Terminal: Clamp type)

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Type of Dust Atmosphere Protection
Ex tb IIIC T70°C ...T120°C Db

Enclosure: IP66/IP67 in accordance with IEC 60529
Maximum Surface Temperature:

Max. Surface Temp.	T70°C	T85°C	T120°C
Max. Process Temp.	70°C	85°C	120°C
Min. Process Temp.	-10°C	-10°C	-10°C

Ambient Temperature: -20°C to +50°C
Process Temperature:

Temp. Class	T6	T5	T4
Max. Process Temp.	70°C	85°C	120°C
Min. Process Temp.	-10°C	-10°C	-10°C

Power Supply:
100 to 240 Va.c. (50/60 Hz) / 100 to 120 Vd.c.
24 Va.c. (50/60 Hz) / 24 Vd.c.
Current I/O: 4 to 20 mA, 32 Vd.c. max.
Digital I/O: 30 Vd.c. max., 200 mA max.

FM (USA)
Applicable Standard:
FM 3600, FM3615, FM3616, FM3810,
ANSI/UL 50E, NEMA 250, ANSI/UL 61010-1,
ANSI/UL 61010-2-30
Certificate:
FM17US0140X

Flameproof

Type of Protection:
Explosionproof for Class I,
Division 1, Groups A, B, C and D.
Dust-Ignitionproof for Class II, III, Division 1,
Groups E, F and G.
Temperature Class T6...T4.

Enclosure: Type 4X
Ambient Temperature: -20°C to +50°C
Process Temperature:

Temperature Class	T6	T5	T4
Max. Surface Temp.	T70°C	T85°C	T120°C
Max. Process Temp.	70°C	85°C	120°C
Min. Process Temp	-10°C	-10°C	-10°C

Power Supply:
100 to 240 Va.c. (50/60 Hz) / 100 to 120 Vd.c.
24 Va.c. (50/60 Hz) / 24 Vd.c.
Current I/O: 4 to 20 mA, 32 Vd.c. max.
Digital I/O: 30 Vd.c. max., 200 mA max.

Japan Flameproof
Applicable Standard:
JNIOSH-TR-46-1
JNIOSH-TR-46-2
JNIOSH-TR-46-9
Construction: Ex db IIC T4 Gb
Ex tb IIIC T120°C Db
Enclosure: IP66/IP67
Ambient Temperature:
-20°C to +50°C
Process Temperature:
-10°C to +120°C
Maximum Surface Temperature: +120°C
Power Supply:
100 to 240 Va.c.(50/60 Hz)/100 to 120 Vd.c.
24 Va.c.(50/60 Hz)/24 Vd.c.
Current I/O: 4 to 20 mA, 32 Vd.c. max.
Digital I/O: 30 Vd.c. max.,200 mA max
Power consumption: 13 W max

■ PERFORMANCE

Accuracy:

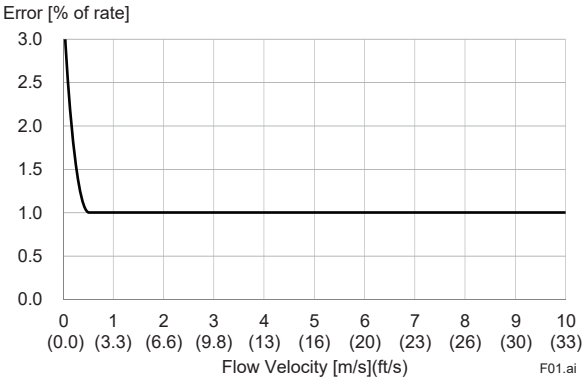
Size 15 to 100 mm (0.5 to 4 in.):
fluid conductivity of 0.1 µS/cm or more

Size mm (in.)	Flow Velocity V m/s (ft/s)	Accuracy (Accuracy Code B)
15 (0.5)	V < 0.5 (1.6)	±5 mm/s
	0.5 ≤ V ≤ 10 (1.6) (33)	±1 % of rate
25 to 100 (1) (4)	V < 0.5 (1.6)	±2.5 mm/s
	0.5 ≤ V ≤ 10 (1.6) (33)	±0.5 % of rate

Size 150, 200 mm (6, 8 in.):
fluid conductivity of 1 µS/cm or more

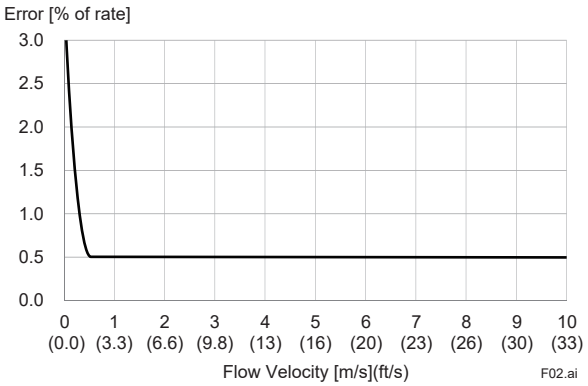
Size mm (in.)	Flow Velocity V m/s (ft/s)	Accuracy (Accuracy Code B)
150, 200 (6, 8)	V < 0.5 (1.6)	±5 mm/s
	0.5 ≤ V ≤ 10 (1.6) (33)	±1 % of rate

Sizes 15 mm (0.5 in.)

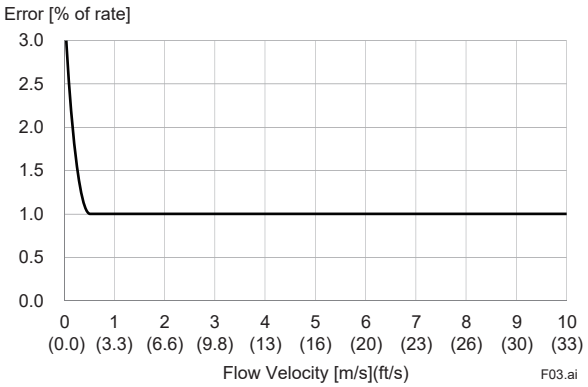


All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

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



Sizes 150, 200 mm (6, 8 in.)



Note: "of rate" means accuracy relative to the indicated value.
Note: The accuracy above is the result of calibration test at our water flow facility before shipment. It is defined by the integrated value of the pulse output. As for the current output accuracy, add ±8 μA (±0.05% of span) to the accuracy above.
Calibration takes place at reference conditions as below.
Medium: Water
Density: 0.9 to 1.1 kg/l
Medium temperature: 10 to 35°C (50 to 95°F)
(Average temperature 22.5°C (72.5°F))
Ambient temperature: 10 to 35°C (50 to 95°F)
Process pressure (absolute):
0.1 to 0.2 MPa (15 to 29 psi)
Reference Standards:
JIS B 7554, ISO 4185, ISO 5168, ISO 20456, BS EN 29104

Repeatability:
±0.1% of rate (Minimum ± 1 mm/s)
Note: "of rate" means accuracy relative to the indicated value.

Measurement Range:
Minimum Span Velocity: 0.5 m/s (1.6 ft/s)
Maximum Span Velocity: 10 m/s (33 ft/s)
Note: For details of span flow rate, read "Sizing Data", and "Ordering Information".

Power Consumption:
13 W
Note: The power consumption is the same as above regardless of the communication and I/O type.

Insulation Resistance:
Between power supply terminals and ground terminal:
100 MΩ/500 V DC
Between power supply terminals and input/output terminals:
100 MΩ/500 V DC
Between ground terminal and input/output terminals:
20 MΩ/100 V DC or 125 V DC
Between input/output terminals:
20 MΩ/100 V DC or 125 V DC

Withstand Voltage:
Between power supply terminals and ground terminal:
1400 V AC for 2 seconds
Between power supply terminals and input/output terminals:
1400 V AC for 2 seconds

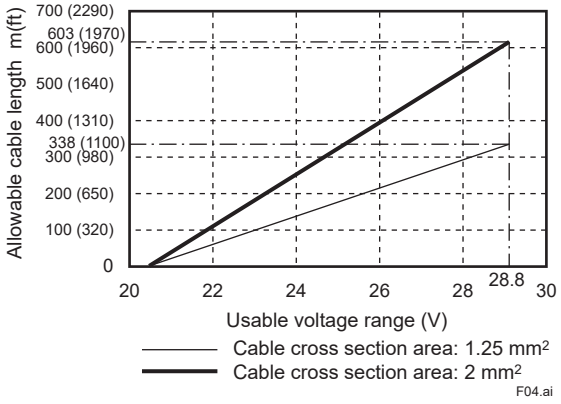
■ NORMAL OPERATING CONDITIONS

Ambient Temperature:
–20 to 50°C (–40 to 122°F)
Note: Minimum value is limited according to minimum fluid temperature of sensor's specification. Read “Fluid Temperature and Pressure”.
Refer to the HAZARDOUS AREA CLASSIFICATION for Explosion protection type.

Ambient Humidity:
5 to 80% (no condensation)

Power Supply:
Power Supply Code 1:
AC Type:
Rated Power Supply: 100 to 240 V AC, 50/60 Hz
Operating Voltage Range: 80 to 264 V AC
DC Type:
Rated Power Supply: 100 to 120 V DC
Operating Voltage Range: 90 to 130 V DC
Power Supply Code 2:
AC Type:
Rated Power Supply: 24 V AC, 50/60 Hz
Operating Voltage Range: 20.4 to 28.8 V AC
DC Type:
Rated Power Supply: 24 V DC
Operating Voltage Range: 20.4 to 28.8 V DC

Supply Voltage and Power Supply Cable Length for Power Supply Code 2:



All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Fluid Conductivity:

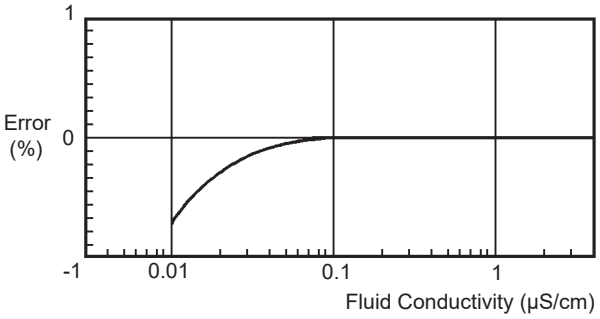
Size 15 to 100 mm (0.5 to 4 in.): 0.01 µS/cm or larger
Size 150, 200 mm (6, 8 in.): 1 µS/cm or larger

Note: In case of size 15 to 100 mm (0.5 to 4 in.) for fluid of which conductivity is from 0.01 µS/cm to 0.1 µS/cm, refer to accuracy in the figure below.

Measured Data for Reference:

Measured Condition

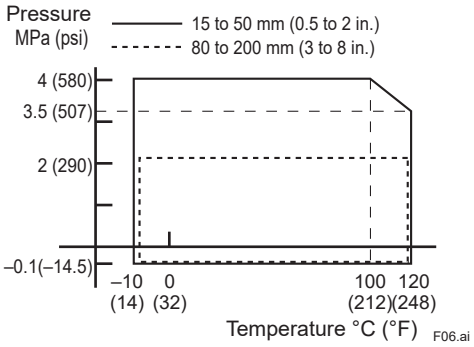
Size	: 25 mm (1 in.)
Fluid name	: Glycerin + Ethylene glycol
Viscosity	: 30 cSt
Flow velocity	: 1 m/s
Damping	: 3 seconds
Measured Time	: 20 seconds



F05.ai

Fluid Temperature and Pressure:

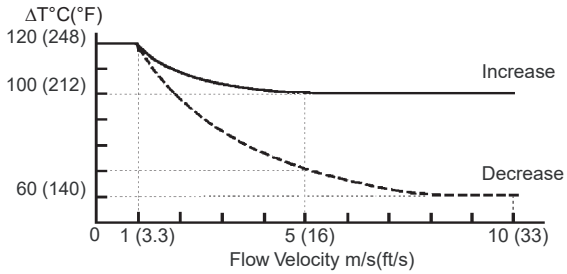
The following figure shows the usable temperature and pressure range of the sensor in each size. It is also limited by the flange pressure rating of the process connection.
For fluid temperature of the Explosion Protection, read descriptions of “Explosion Protection”.



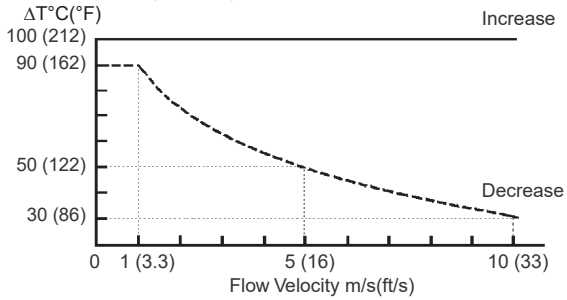
F06.ai

Thermal Shock Temperature and Flow Velocity of Ceramics Tube:

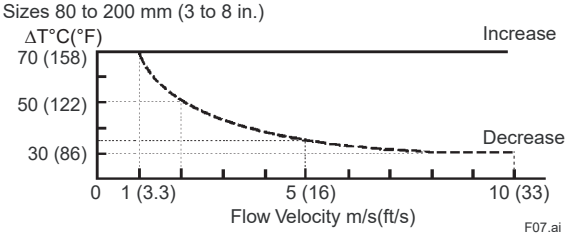
Sizes 15, 25 mm (0.5, 1 in.)



Sizes 40, 50 mm (1.5, 2 in.)



Sizes 80 to 200 mm (3 to 8 in.)



F07.ai

“Decrease” means that the temperature of a measured fluid drops rapidly, while “Increase” means that the temperature rises rapidly. The maximum allowable ranges in both cases are indicated by the curves shown in the diagrams, with the solid line indicating the maximum increase, and the broken line the maximum decrease.

ΔT: Change in temperature of measured fluid in one second

Flow velocity: Flow velocity of the measured fluid

Vibration Conditions:

19.6 m/s^2 - rms (5 to 2000 Hz)

Note: Vibration conditions are based on IEC 60068-2-64. Avoid installation in a place with much vibration (vibration frequency 2000 Hz or more). It may cause damage to the device.

■ CAUTIONS ON SELECTION AND INSTALLATION

Wiring:

For the power code (-1 100-240 V AC / 100 - 120 V DC), don't bundle the power supply wire and other signal wire into the same wiring port.

Ceramics Tube:

It is excellent in chemical resistance, heat resistance and abrasion resistance. Measuring pipe sintered with high purity alumina ceramics is a structure that also serves as a lining.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Recommended Gasket (for installed piping flange):

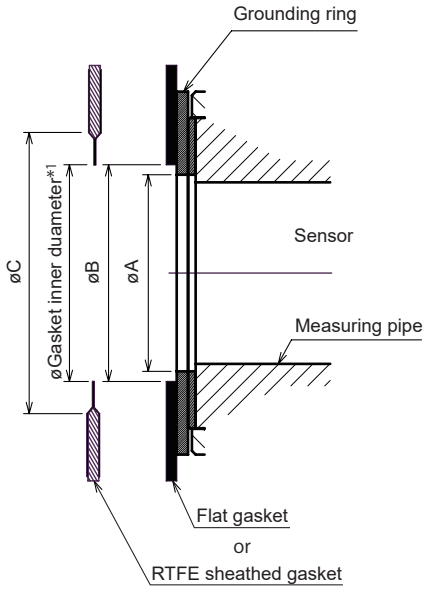
Use compressed non-asbestos joint sheet gaskets, PTFE-sheathed non-asbestos joint sheet gaskets or gaskets which have equivalent elasticity. When selecting optional code GA for plastic piping, use rubber gaskets or ones which have equivalent elasticity (such as PTFE-sheathed rubber gaskets). Dimensions of the gasket should be determined with reference to the following table (by process connection and lining) and figure. If the inner diameter of the gasket is too large or the outer diameter is too small, liquid leakage may occur.

Unit: mm

Size	Ceramics Tube / Wafer			
	Inner Diameter for Effective Sealing [øA]	Recommended Inner Diameter of Gasket		Minimum Inner Diameter of Gasket*1
		Flat Gasket [øB]	PTFE- sheathed Gasket [øC]	
15	15	22		15
25	27	35		27
40	40	49		40
50	52	61		52
80	81	90		81
100	98	115		98
150	144	167		144
200	192	218		192

Unit: inch

Size	Ceramics Tube / Wafer			
	Inner Diameter for Effective Sealing [øA]	Recommended Inner Diameter of Gasket		Minimum Inner Diameter of Gasket*1
		Flat Gasket [øB]	PTFE- sheathed Gasket [øC]	
0.5	0.59	0.87		0.59
1.0	1.06	1.38		1.06
1.5	1.57	1.93		1.57
2.0	2.05	2.40		2.05
3.0	3.19	3.54		3.19
4.0	3.86	4.53		3.86
6.0	5.67	6.57		5.67
8.0	7.56	8.58		7.56



*1: To prevent the gasket from protruding into the flow path, make sure that this length is smaller than the minimum inner diameter of the gasket in the table.

Noise Avoidance:

The flowmeter should be installed away from electrical motors, transformers, and other power sources in order to avoid interference with measurement. When installing two or more magnetic flowmeters, provide a distance of at least 10D (D is size of model code) each other. If diameters of them are different, let D be the larger one.

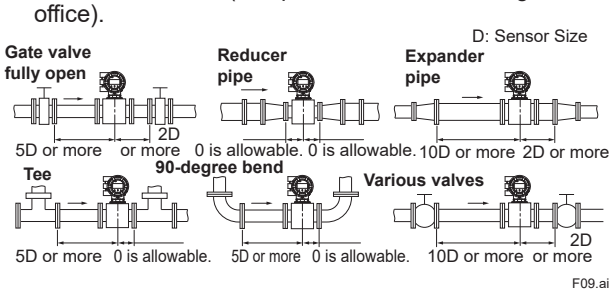
Empty Detection:

Piping should be designed to ensure a full pipe. Magnetic Flowmeter CA Series does not employ an empty detection circuit, and an empty pipe condition can result in an erratic output.

Mounting of Flowmeters and Required Straight Pipe Length:

Based on JIS B 7554 “Magnetic Flowmeters” and our piping condition test data, we recommend the piping conditions as shown in the following figures. This is not always enough when the piping line incorporates multiple conditions at the same time.

For fluids which have large flow noise (pure water, pure alcohol or others), low conductivity or low viscosity, design the upper stream straight length which is over 20D (If impossible, contact Yokogawa office).



Required Straight Pipe Length

- Do not install anything in the vicinity that may interfere with the magnetic field, induced signal voltages, or flow velocity distributions of the flowmeter.
- 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 distance of 2D to 3D on the downstream side.
- The valves shall be mounted on the downstream side so that deviated flows do not occur in the sensor and to avoid startup from an empty condition.
- In case the piping conditions are compounded, install on the straight pipe section where the upstream part is sufficiently rectified.

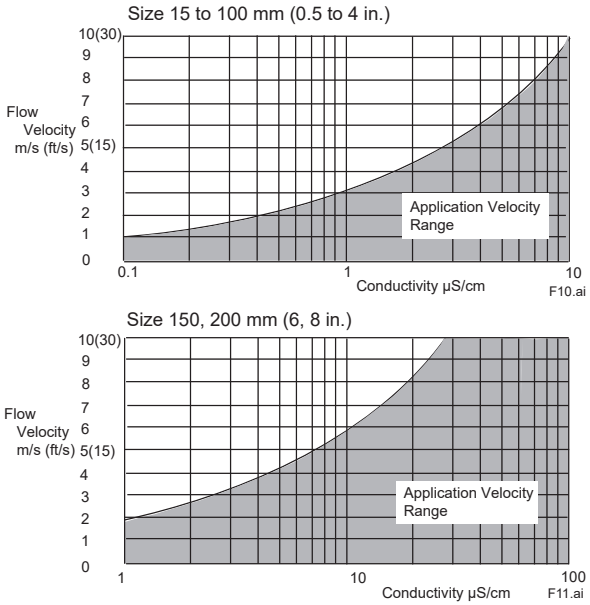
Maintaining Stable Fluid Conductivity:

Do not install the flowmeter where fluid conductivity tends to become uneven. If chemicals are fed near 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 straight pipe length (approximately 50D or more) to ensure the proper mixture of fluids.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Fluids With High Flow Noise:

When used for fluids with high flow noise (pure water, alcohols) and low viscosity and low conductivity, the output fluctuation increases and the measurement is affected, Flow velocity in the range below is available.



Adhesive Fluid of Insulator:

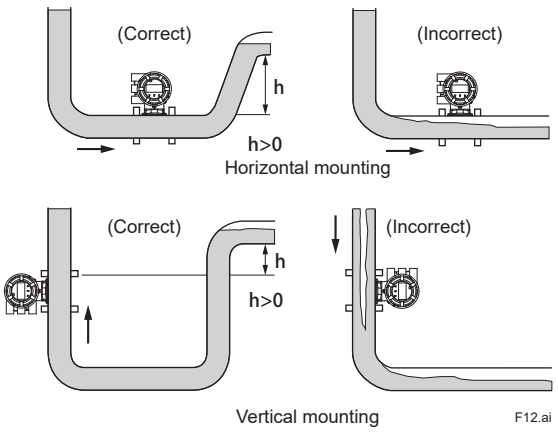
When measuring adhesive fluid of insulator, selecting mirror finished ceramics tube (optional code CM). Those help reduce the adhesion on the inner surface of the pipe.

Abrasive Slurry Fluid:

For abrasive slurry fluids mixed with minerals, earth and sand etc., install on vertical piping. This reduces uneven wear of the ceramics tube.

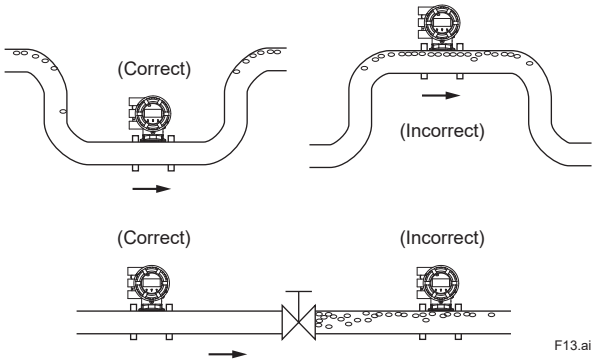
Mounting Positions:

- 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 sensor 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

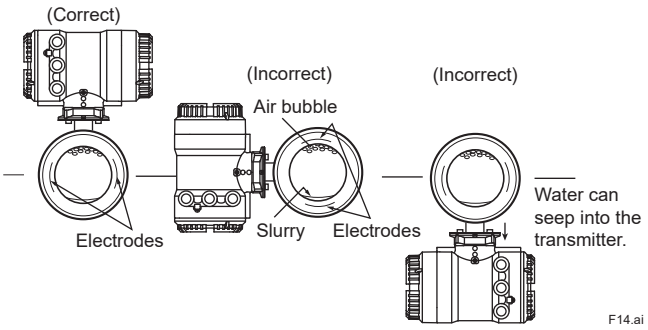
- Avoiding Air Bubbles.
  If air bubbles enter a measurement pipe, flow rate indications may be affected and measurement errors may be caused.
  In cases where fluids contain air bubbles, piping must be designed to prevent them from accumulating in the measurement pipe of a sensor.
  If a valve exists near the sensor, try to mount the sensor on the valve's upstream side in order to prevent a possible reduction of pressure inside the pipe, thereby avoiding the possibility of air bubbles.



Avoiding Air Bubbles

Mounting Orientation:

Install the magnetic flowmeter so that the electrodes position is not perpendicular to the ground. Otherwise it may cause the measuring errors because air bubbles at upper side or slurry at downside covers the electrode.
Mount the transmitter of an integral flowmeter above the piping to prevent water from entering them.



Mounting Orientation

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

■ MODEL AND SUFFIX CODE

Note:

1: There are some limitations on the combination of specifications. Read specification code table when selecting specification code.

2: For EN, GB standard wafer type of sizes 15 to 50 mm (0.5 to 2 in.), select PN40 even for lower pressure rating because the dimensions of mating faces for PN10, 16, and 40 are the same.
For EN, GB standard wafer type of sizes 80 to 150 mm (3 to 6 in.), select PN16 even for lower pressure rating because the dimensions of mating faces for PN10 and 16 are the same.

3: The dimensions of mating faces are based on the following flange standards.
JIS F12: JIS G 3443-2, JIS 10K, 20K: JIS B 2220 and JIS G 3443-2,
ASME: ASME B 16.5, EN: EN 1092-1, GB: GB/T 9124.1
Each flange standard has the specifications for the limitation on the available fluid temperature and pressure as well as the dimensions. Be sure that user's fluid conditions meet the specifications of each flange standard when selecting a process connection code.

4: For "Grounding Device", "Grounding Rings" must be selected. It is also necessary to select its type (material) from the optional codes.

5: The lay length for ceramics tube (wafer) are the same as those of the conventional model ADMAG CA series. The lay length depends on the presence or absence of the optional gaskets, so see the Dimensional Drawings.

6: ⚠ Measuring pipe, and grounding device (grounding ring plate) are wetted parts.
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. Contact Yokogawa for detailed information of the wetted parts material.

7: Select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.
In the case that final destination is Taiwan and the explosion type is required, select IECEx explosion protection type.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

●General-purpose, Explosion protection

Model	Suffix Code	Description	Limitation
CA0015		Magnetic Flowmeter (15 mm/0.5 in)	
CA0025		Magnetic Flowmeter (25 mm/1 in)	
CA0040		Magnetic Flowmeter (40 mm/1.5 in)	
CA0050		Magnetic Flowmeter (50 mm/2 in)	
CA0080		Magnetic Flowmeter (80 mm/3 in)	
CA0100		Magnetic Flowmeter (100 mm/4 in)	
CA0150		Magnetic Flowmeter (150 mm/6 in)	
CA0200		Magnetic Flowmeter (200 mm/8 in)	
Use	**-G**	General-purpose	
	-C	Explosion protection	
Construction	**A**	Integral Flowmeter	
Explosion Protection	**000**	Non Explosion Protection Approval	
	SF2	IECEx Flameproof	See Restriction for Explosion Protection type
	FF2	FM Flameproof	See Restriction for Explosion Protection type
	JF5	Japan Flameproof	See Restriction for Explosion Protection type
Process Connection (Wafer)	**AA1**	ASME Class 150 Wafer	15 to 200 mm (0.5 to 8 in.)
	AA2	ASME Class 300 Wafer	15 to 200 mm (0.5 to 8 in.)
	AE1	EN PN10 Wafer	200 mm (8 in.)
	AE2	EN PN16 Wafer	80 to 200 mm (3 to 8 in.)
	AE4	EN PN40 Wafer	15 to 50 mm (0.5 to 2 in.)
	AC1	GB PN10 Wafer	200 mm (8 in.)
	AC2	GB PN16 Wafer	80 to 200 mm (3 to 8 in.)
	AC4	GB PN40 Wafer	15 to 50 mm (0.5 to 2 in.)
	AG1	JIS F12 Wafer	80 to 200 mm (3 to 8 in.)
	AJ1	JIS 10K Wafer	15 to 200 mm (0.5 to 8 in.)
	AJ2	JIS 20K Wafer	15 to 200 mm (0.5 to 8 in.)
Lining	**C**	Ceramics Tube	
Electrode	**N**	Non-wetted Capacitance Electrode	
Grounding Device	**2**	Grounding Rings	Select an optional code
Housing and Coating	**1**	Standard Material with Standard Coating	
	2	Standard Material with Rugged Coating	
Cable Entry	**0**	JIS G1/2 Female	See Restriction for Explosion Protection type
	2	ASME 1/2 NPT Female	See Restriction for Explosion Protection type
	4	ISO M20×1.5 Female	See Restriction for Explosion Protection type
Accuracy	**B**	Standard	
Power Supply	**-1**	100-240 V AC / 100-120 V DC	
	-2	24 V AC / DC	
Communication and I/O	**J#**	#: A, E HART 7 and I/O (Type A, E). See "Details".	
Transmitter Wiring Terminal	**1**	M4 Screw-type	
	2	Clamp Type	
Display	**1**	With Display (English, Multi-language)	
	2	With Display (English, Chinese)	
	N	Without Display	
Optional Specification		/# Refer to optional specification table.	

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

●Details: Communication and I/O (HART type)

Type	Communication and I/O Code	Number of Input and Output		
	HART 7	Current Output Active	Pulse/Status Output Passive	Status Input (No-voltage)
Type A	JA	1	1	—
Type E	JE	1	2	1

●Details: Restriction for Explosion protection type

For Explosion protection type, the following combinations of suffix code or optional code are restricted. For other optional codes, see optional code tables.

Item	Code	Restriction of Combination	
		Mandatory	Not Available
IECEx Flameproof	SF2	—	• Use: -G • Cable Entry: 0 (JIS G1/2)
FM Flameproof	FF2	• Cable Entry: 2 (ASME 1/2NPT)	• Use: -G
Japan Flameproof	JF5	• Cable Entry: 4 (ISO M20) • Optional Code: V5#	• Use: -G • Cable Entry: 0 (JIS G1/2), 2 (ASME 1/2NPT) • Display: N (Without Display)

■ OPTIONAL CODE

●Application, Usage, and Operating Function

Item	Specification and Applicable Condition	Code
Mirror Finished Ceramics (for adhesive fluid)	Finish the inner surface of the ceramics tube to a mirror finish with Ra 0.1 μm or less. The Ra is average of measured values on several points.	**CM**
Oil Prohibited Use	Electrodes, linings, grounding devices (grounding rings plate, gaskets) 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 Dehydration	Measuring pipe, and grounding devices (grounding rings plate) of sizes 15 to 200 mm (0.5 to 8 in.) 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**
Mass Unit Setting	The flow rate calculation is performed in mass unit. In addition to fluid density, specify span flow rate, pulse weight, and totalization weight in mass unit. For specifying procedures, read “Ordering Information”.	**MU**
Signal Down on Failure	The current output signal is set as follows when shipped. Output signal at CPU failure or alarm occurrence: 2.4 mA (–10 %) or less (The standard setting is 21.6 mA (110%) or more at CPU failure or alarm occurrence.)	**C1**
Signal Down on Failure (NAMUR NE 43 Compliant)	The current output signal is set as follows when shipped. Output signal limits: 3.8 to 20.5 mA Output signal at CPU failure or alarm occurrence: Low: 2.4 mA (–10%) or less	**C2**
Signal Up on Failure (NAMUR NE 43 Compliant)	The current output signal is set as follows when shipped. Output signal limits: 3.8 to 20.5 mA Output signal at CPU failure or alarm occurrence: High: 21.6 mA (110%) or more	**C3**
microSD Card	A microSD card slot is added to the display unit, and a microSD card (capacity 1 GB, format FAT 16) is inserted when shipped. When using parameter store / restore function with microSD card, and/or data logging function, specify optional code MC. Be careful that the microSD card slot is not mounted unless optional code MC is specified.	**MC**

●Tag Plate and Mounting Bracket

Item	Specification and Applicable Condition	Code
Stainless Steel Tag Plate	The pendant type tag plate (stainless steel 304) is wired around the flowmeter neck. Select optional code SCT when necessary in addition to that on the nameplate, on which the Tag No. is inscribed. Plate size (Height x Width): Approx. 12.5 mm x 40 mm (4.92 in. x 15.7 in.)	**SCT**

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

●Piping Parts

Item	Specification and Applicable Condition	Code
Bolts, Nuts and Gaskets (Type C)	The mounting bolts, nuts and gaskets of process connection code: AJ1, AJ2, AA1 are supplied. For ceramics tube, when adopting the optional code BSC, there is a risk of liquid leakage due to the difference in elasticity, so between the detector and the earth ring, also using a gasket of hardness equivalent to chloroprene rubber is recommended. Bolt: Stainless steel 304 Nut: Stainless steel 304 Gasket(*): Chloroprene rubber (CR), thickness: 3 mm (0.12 in.) *: The allowable temperature and pressure is equivalent to that of Valqua #2010 series. The Gasket is installed between the grounding ring and the user's pipe.	**BSC**
Bolts, Nuts and Gaskets (Type F)	The mounting bolts, nuts and gaskets of process connection code: AJ1, AJ2, AA1 are supplied. Bolt: Stainless steel 304 Nut: Stainless steel 304 Gasket(*): PTFE-sheathed non-asbestos joint sheet, thickness: 3 mm (0.12 in.) *: The allowable temperature and pressure is equivalent to that of Valqua #7030 (S) series. The Gasket is installed between the grounding ring and the user's pipe.	**BSF**

●Grounding Device

Grounding devices are attached at factory.

Item	Specification and Applicable Condition	Code
Grounding Rings (Plate Type N)	Material: Stainless Steel 316L, Thick Type. Thickness: 3 mm (0.12 in.)	**GRN**
Grounding Rings (Plate Type J)	Material: Nickel Alloy, Thick Type. Thickness: 3 mm (0.12 in.)	**GRJ**
Grounding Rings (Plate Type W)	Material: Titanium, Thick Type. Thickness: 3 mm (0.12 in.)	**GRW**

●Gasket

Grounding devices are attached at factory.

Item	Specification and Applicable Condition	Code
Plastic Pipe Gaskets	Fluororubber gasket (Viton) for plastic piping such as PVC. The allowable temperature and pressure range is the same as those of Valqua #4010 with no special formulation.	**GA**
Metal Pipe Alkali-resistant Gaskets	Alkali-resistant (fluorocarbon resin containing carbon) gasket for metal piping. The allowable temperature and pressure range is the same as those of Valqua #7026.	**GF**

●Direction of Cable Entry, Cable Glands

Item	Specification and Applicable Condition	Code
Cable Entry Direction Change	Rotate the transmitter and change the direction of the cable entry (+90, +180, or -90 degree). For specifying procedures, read “Ordering Information”.	**RH**
Waterproof Glands* (Type G2)	2 pcs. of waterproof gland, and a blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EG2**
Waterproof Glands* (Type G3)	3 pcs. of waterproof gland, and no blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EG3**
Waterproof Glands* (Type U2)	2 pcs. of waterproof gland with union joint, and a blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EU2**
Waterproof Glands* (Type U3)	3 pcs. of waterproof gland with union joint, and no blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EU3**
Plastic Glands* (Type P2)	2 pcs. of plastic gland, and a blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EP2**
Plastic Glands* (Type P3)	3 pcs. of plastic gland, and no blanking plug. Available only for cable entry code 0 (JIS G1/2 female thread).	**EP3**
Flameproof** gland 1 piece	1 piece of Flameproof gland with JIS G1/2 female, and 2 blanking plugs. Available only for cable entry code 4 (ISO M20×1.5 Female thread).	**V51**
Flameproof** gland 2 pcs.	2 pcs. of Flameproof gland with JIS G1/2 female and a blanking plug. Available only for cable entry code 4 (ISO M20×1.5 Female thread).	**V52**
Flameproof** gland 3 pcs.	3 pcs. of Flameproof gland with JIS G1/2 female and no blanking plug. Available only for cable entry code 4 (ISO M20×1.5 Female thread).	**V53**

* : Cannot be selected for Explosion Protection

** : The thread of connection between CA and Flameproof gland is M20, and the thread of connection between Flameproof gland and CABLE is G1/2.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

●Certificate, Calibration, and Various Test

Item	Specification and Applicable Condition	Code
Material Certificate	Material certificate is issued. Target Parts: Grounding Devices (Grounding Rings Plate Type)	**M01**
Material Certificate (EN 10204-3.1)	Material certificates according to EN 10204 Type 3.1 with a dedicated cover is issued. The target parts are the same as optional code M01.	**E01**
Calibration Certificate (Level 2)	The Declaration and the Calibration Equipment List are issued.	**L2**
Calibration Certificate (Level 3)	The Declaration and the Primary Standard List are issued.	**L3**
Calibration Certificate (Level 4)	The Declaration and the Yokogawa Measuring Instruments Control System are issued.	**L4**
ISO/IEC 17025 calibration (Standard span, 3 points)*1	ISO/IEC 17025 calibration and certificates with the MRA mark (Standard flow points). Not applicable with the following specifications: • Optional code: L2, L3, L4 (Calibration Certificate) • Optional code: L11, L12 (ISO/IEC 17025 calibration) • Optional code: SC (Specified Span Five-point Calibration)	**L10**
ISO/IEC 17025 calibration (Specified span, 2points)*1	ISO/IEC 17025 calibration and certificates with the MRA mark (2points of user-specified flow span, around 50 and 100%). Not applicable with the following specifications: • Optional code: L2, L3, L4 (Calibration Certificate) • Optional code: L10, L12 (ISO/IEC 17025 calibration) • Optional code: SC (Specified Span Five-point Calibration) • Optional code: MU (Mass Unit Setting)	**L11**
ISO/IEC 17025 calibration (Specified span, 4points)*1	ISO/IEC 17025 calibration and certificates with the MRA mark (4points of user-specified flow span, around 25, 50, 75 and 100%). Not applicable with the following specifications: • Optional code: L2, L3, L4 (Calibration Certificate) • Optional code: L10, L11 (ISO/IEC 17025 calibration) • Optional code: SC (Specified Span Five-point Calibration) • Optional code: MU (Mass Unit Setting)	**L12**
Specified Span Five-point Calibration	With the customer's specified span, the actual flow inspection of 5 points around 0, 25, 50, 75, and 100% is performed. Instead of the flow inspection at the standard flow rate of 2 m/s (6.56 ft/s), the result of flow inspection with the customer specified span is described in a test certificate (QIC). For specifiable spans, read "Ordering Information".	**SC**
Hydrostatic Test	The water pressure depending on the process connection is applied to the ceramics tube for 10 minutes to check that there is no leakage, and the result is described in a test certificate (QIC). For the test water pressure on each process connection, see the separate table.	**T01**
PMI Test (Type 1)	Fluorescent X-ray analysis of nickel, chromium and molybdenum is performed on parts made of stainless steel or nickel alloy, and a test report is issued. Target Parts: Grounding Rings (Plate Type) Not applicable with the following specifications: • Optional code: GRW (Grounding Rings, Material: Titanium)	**PM1**

*1: Please confirm "ISO/IEC 17025 calibration-related confirmation list"

●Details: Water Pressure of Hydrostatic Test (Optional Code T01):

Process connection code	Process connection	Size: mm (in.)	Water pressure (MPa)
AA1	ASME Class 150	15 to 200 (0.5 to 8)	3.0
AA2	ASME Class 300	15 to 50 (0.5 to 2)	6.0
		80 to 200 (3 to 8)	3.0
AE1, AC1	EN PN10, GB PN10	200 (8)	1.5
AE2, AC2	EN PN16, GB PN16	80 to 200 (3 to 8)	2.4
AE4, AC4	EN PN40, GB PN40	15 to 50 (0.5 to 2)	6.0
AG1	JIS F12	80 to 200 (3 to 8)	1.8
AJ1	JIS 10K	15 to 200 (0.5 to 8)	2.1
AJ2	JIS 20K	15 to 50 (0.5 to 2)	3.0
		80 to 200 (3 to 8)	

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

●ISO/IEC 17025 calibration-related confirmation list

○Item to check regarding calibration, etc.
- Calibration values of the calibration certificate are reported as the measured values at the time we performed thecalibration.
- We do not make a statement of conformity.

○Item to check regarding certificates, etc.
- The calibration certificate will be written in both Japanese and English.
- Certificates etc. cannot be duplicated and used again.
- Certificates etc. are not issued electronically.

○Confidentiality
- We promise not to disclose to anyone any business information about our customers that we learn in the course of carrying out calibration and other work.
- However, we may disclose such information to a third party at our discretion in the following cases.
  (1) When disclosing information to a accreditation body when we undergo an audit for ISO/IEC 17025 etc.
  (2) When there is an order or request from the law or a goverment agency.

○Calibration specification etc.
- ISO/IEC 17025 calibration will be performed and calibration certificates with the MRA mark will be issued.
- If the span flow rate unit is other than "m^3/h", the unit will be converted to "m^3/h", (see "Unit Conversion Values List (Optional Code L11, L12)").
- If the conversion result exceeds the acceptable flow rate range in "m^3/h", it will be adjusted to within the acceptable flow rate range .
- Zero adjustment will be performed before calibration.
- For hygienic and hygienic with explosion protection specifications, calibration is performed using a jig from our facility that simulates an adapter, the included adapter is not used.
- The calibration conditions for each optional code are shown in "Calibration Specifications" below.

○Calibration Specifications (Optional Code L10, L11, L12)

	Optional Code L10	Optional Code L11	Optional Code L12
Setting Span	2.0 m/s	Customer-specified Span	
Output	Frequency 0 Hz – 1 kHz		
Number of Calibration Points	3 points	2 points	4 points
Calibration Points *1, *2, *3	Around 2.0 m/s, 1.0 m/s, 0.4 m/s	Around 100%, 50% of specified span*4	Around 100%, 75%, 50%, 25% of specified span*4
Calibration Conditions	Medium: Water Medium temperature: 15 °C to 30 °C Ambient temperature: 15 °C to 25 °C		

*1: The flow rate is adjusted within a range of ±5%. For the 100% point, it is adjusted within a range of 95% ±5% so as not to exceed the upper limit.
*2: The 0.4 m/s point will be adjusted within the range of the acceptable flow rate.
*3: If the flow rate exceeds the acceptable range, it will be adjusted to within the range.
*4: The selectable flow rate span of optional codes L11, L12 are as shown in "• Selectable Span Flow Rate Range (Optional Code L11, L12)".

• Acceptable Flow Rate Range (Optional Code L10, L11, L12)

Size mm	Min. Flow Rate m^3/h	Max. Flow Rate m^3/h
15	0.26	2.80
25	0.70	10.8
40	1.80	29.0
50	2.90	43.0
80	7.30	121
100	11.3	183
150	26.0	389
200	46.0	635

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

• Selectable Span Flow Rate Range (Optional Code L11, L12)

Size mm	Selectable Span Flow Rate Range of L11		Selectable Span Flow Rate Range of L12	
	Min. Span Flow Rate m^3/h	Max. Span Flow Rate m^3/h	Min. Span Flow Rate m^3/h	Max. Span Flow Rate m^3/h
15	0.58	2.80	1.30	2.80
25	1.56	10.8	3.50	10.8
40	4.00	28.0	9.00	28.0
50	6.45	43.0	14.5	43.0
80	16.3	121	36.5	121
100	25.2	183	56.5	183
150	57.8	380	130	380
200	103	635	230	635

○Unit Conversion Values List (Optional Code L11, L12)

If the span flow rate unit is other than "m^3/h", the unit will be converted to "m^3/h", using the following conversion values.

If the conversion result exceeds the acceptable flow rate range in m^3/h, the flow rate will be adjusted to within the acceptable flow rate range and actual flow calibration will be performed.

• Volume Units

Unit	Description	Conversion Value to "m^3"
l	liter	0.001
gal(US)	US liquid gallon	0.003785412
bbl(US Oil)	US Oil barrel	0.158987295
bbl(US Beer)	US Beer barrel	0.117347765
cf	cubic feet	0.028316847

• Time Units

Unit	Description	Conversion Value to "h"
s	second	1/3600
min	minute	1/60
d	day	24

• Flow Velocity Units

If the span units are velocity, convert to volumetric flow rate using the nominal size (mm).

If the unit of length is "ft", convert it to "m" using the following:

Unit	Description	Conversion Value to "m"
ft	feet	0.3048

• Prefixes

If a prefix is added, the following values are used for conversion.

Prefix	Description	Value
M	mega	10^6
k	kilo	10^3
c	centi	10^{-2}
m	milli	10^{-3}
μ	micro	10^{-6}

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

■ ACCESSORIES

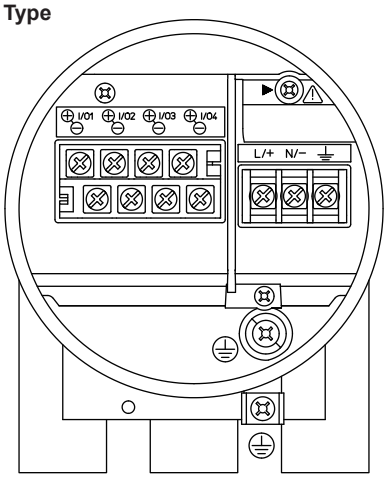
- Centering Device: 1 set
- Blanking Plug: 1 to 2 pcs.
- Gasket (sensor side): 2 sheets

Note: Accessories differ depending on specifications to be selected.

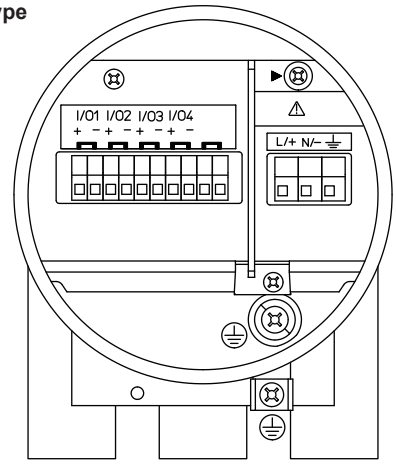
■ TERMINAL CONFIGURATION

<To be wired to Power Supply and I/Os>

M4 Screw Type



Clamp Type



Terminal Symbol	Description
▶	Shorting Screw (Need to be fixed for normal operation)
⏚	Functional Grounding
N/- **L/+**	Power Supply
I/O4 - **I/O4 +** **I/O3 -** **I/O3 +** **I/O2 -** **I/O2 +** **I/O1 -** **I/O1 +**	Selected Input/Output (Note)
⏚	Protective Grounding (Inside and outside of the terminal box)

F15.ai

Note: Read "Functions" for the input/output signal terminals.

Recommended Cable for Power and Input/Output:

JIS C 3401 control cable equivalent
JIS C 3312 power cable equivalent
14 AWG Belden 8720 equivalent
Outer Diameter:
Without gland:
ø6.5 to ø12 mm (ø0.26 to ø0.47 in.)
With waterproof gland (optional code EG, EG#, EU, EU#, EW):
For power and input/output cable:
ø7.5 to ø12 mm (ø0.30 to ø0.47 in.)
With plastic gland (optional code EP, EP#):
ø6 to ø12 mm (ø0.24 to ø0.47 in.)
Nominal Cross Section:
Single wire: 0.5 to 2.5 mm^2
Stranded wire: 0.5 to 1.5 mm^2

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

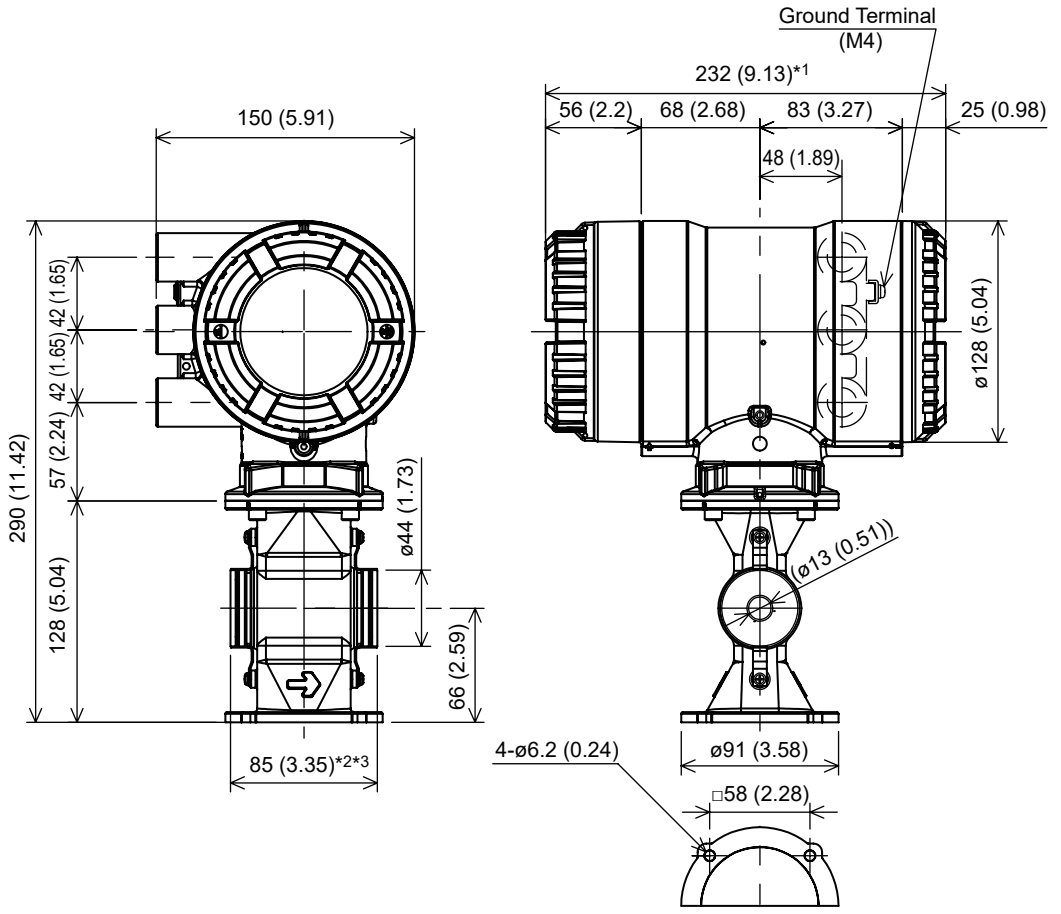
■ DIMENSIONAL DRAWINGS

Unit: mm (approx. in.)

Size 15 mm (0.5 in.)

CA0015

Size Code



*1: This length becomes 21 mm (0.83 in.) shorter when display code N is selected.

*2: The lay length include the dimensions of the ground ring (/GRN, /GRJ, /GRW) and the gasket supplied as standard and the gasket of the optional code (/GA, /GF) supplied as an additional specification. These gaskets are used between the flowmeter body and the ground ring.

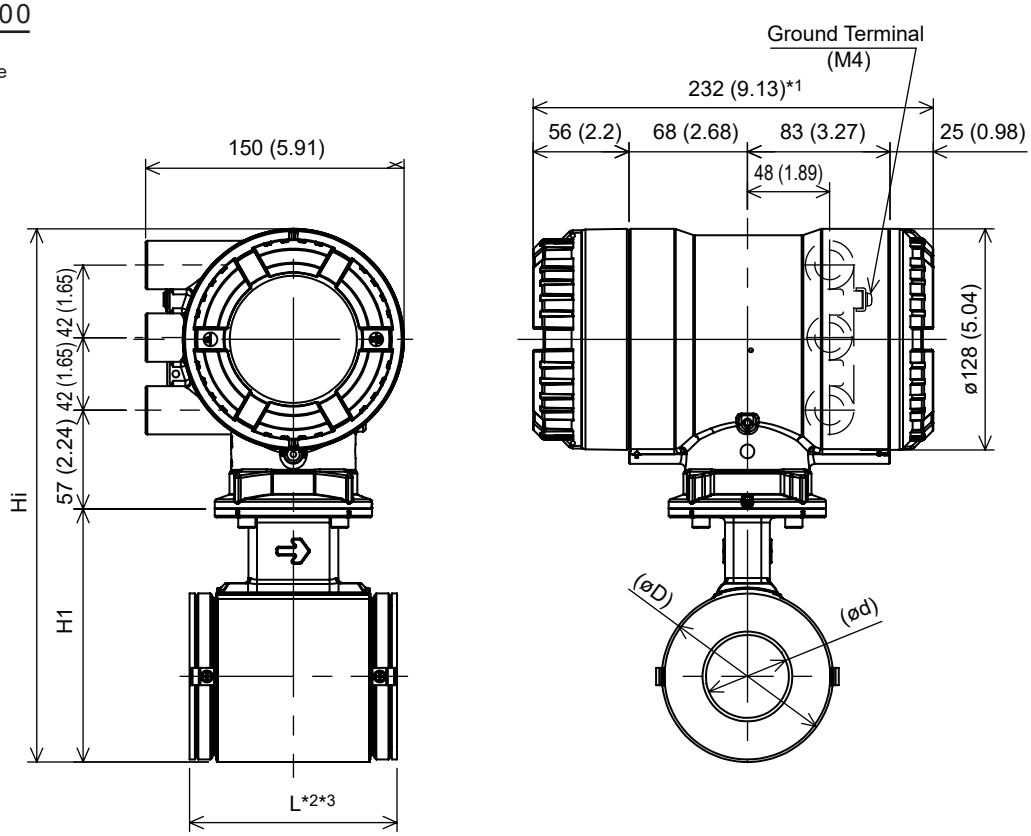
*3: When a gasket of the optional code (/BSC, /BSF) is selected, +6 mm (0.24 in.) is added to the lay length. The gasket supplied with this additional specification is used between the ground ring and the customer's piping.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Unit: mm (approx. in.)

Size 25 to 100 mm

CA0025
CA0040
CA0050
CA0080
CA0100
Size Code



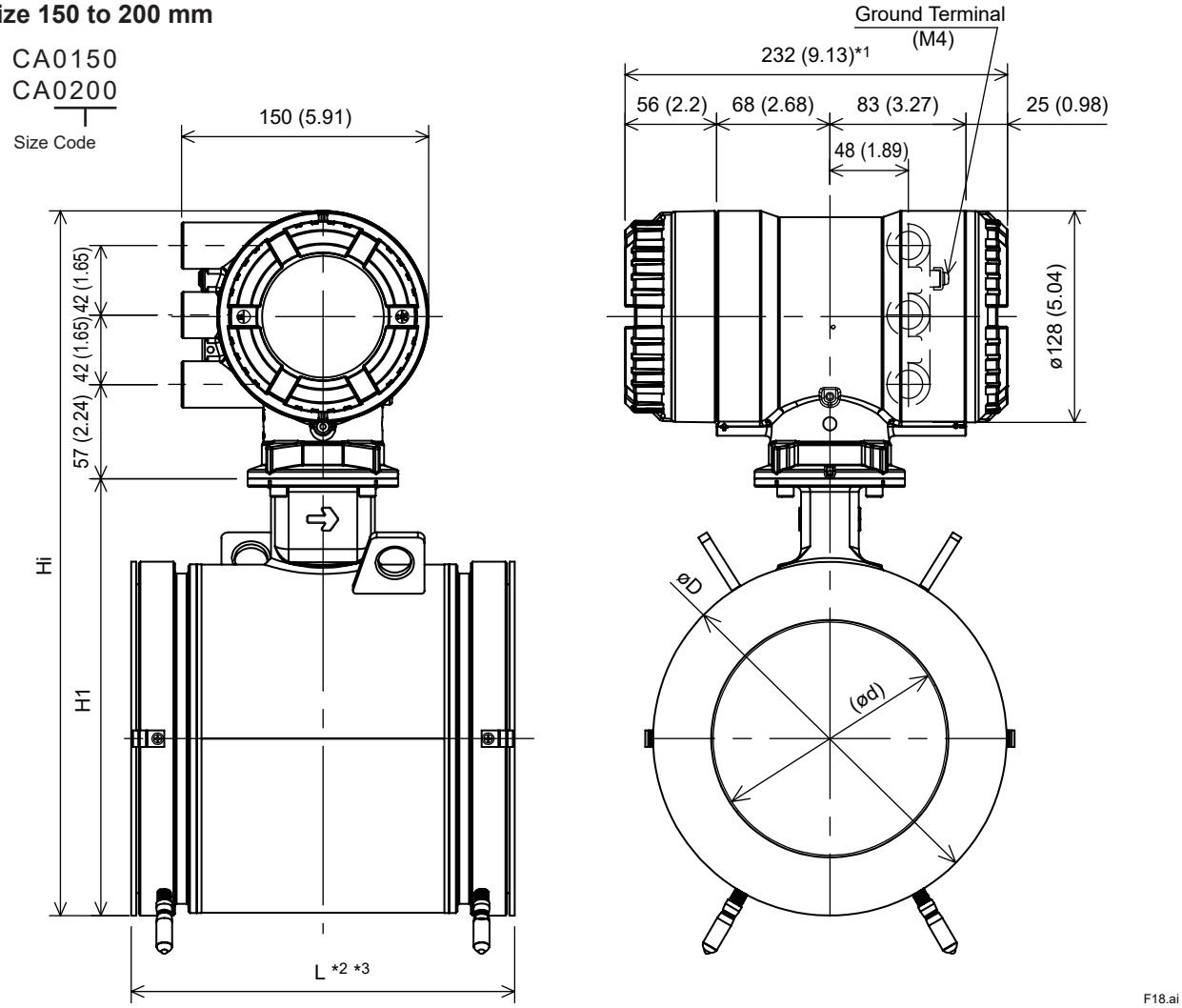
*1: This length becomes 21 mm (0.83 in.) shorter when display code N is selected.
*2: The lay length include the dimensions of the ground ring (/GRN, /GRJ, /GRW) and the gasket supplied as standard and the gasket of the optional code (/GA, /GF) supplied as an additional specification. These gaskets are used between the flowmeter body and the ground ring.
*3: When a gasket of the optional code (/BSC, /BSF) is selected, +6 mm (0.24 in.) is added to the lay length. The gasket supplied with this additional specification is used between the ground ring and the customer's piping.

Size Code		0025	0040	0050	0080	0100
Size		25 (1)	40 (1.5)	50 (2)	80 (3)	100 (4)
Lay Length	L	93 (3.66)	106 (4.17)	120 (4.72)	160 (6.30)	180 (7.09)
Outer Diameter	øD	68 (2.66)	86 (3.39)	99 (3.90)	129 (5.08)	155 (6.10)
Lining Inner Diameter	ød	23 (0.91)	36 (1.42)	48 (1.89)	73 (2.85)	93 (3.65)
Height	H1	110 (4.31)	129 (5.07)	147 (5.77)	177 (7.97)	202 (7.94)
Maximum Height	Hi	272 (10.69)	291 (11.45)	309 (12.15)	339 (13.35)	364 (14.31)
Approx. Weight, Unit: kg (lb)		5.2 (11.6)	6.0 (13.3)	6.7 (14.9)	9.3 (20.6)	12.0 (26.5)

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

Unit: mm (approx. in.)

Size 150 to 200 mm



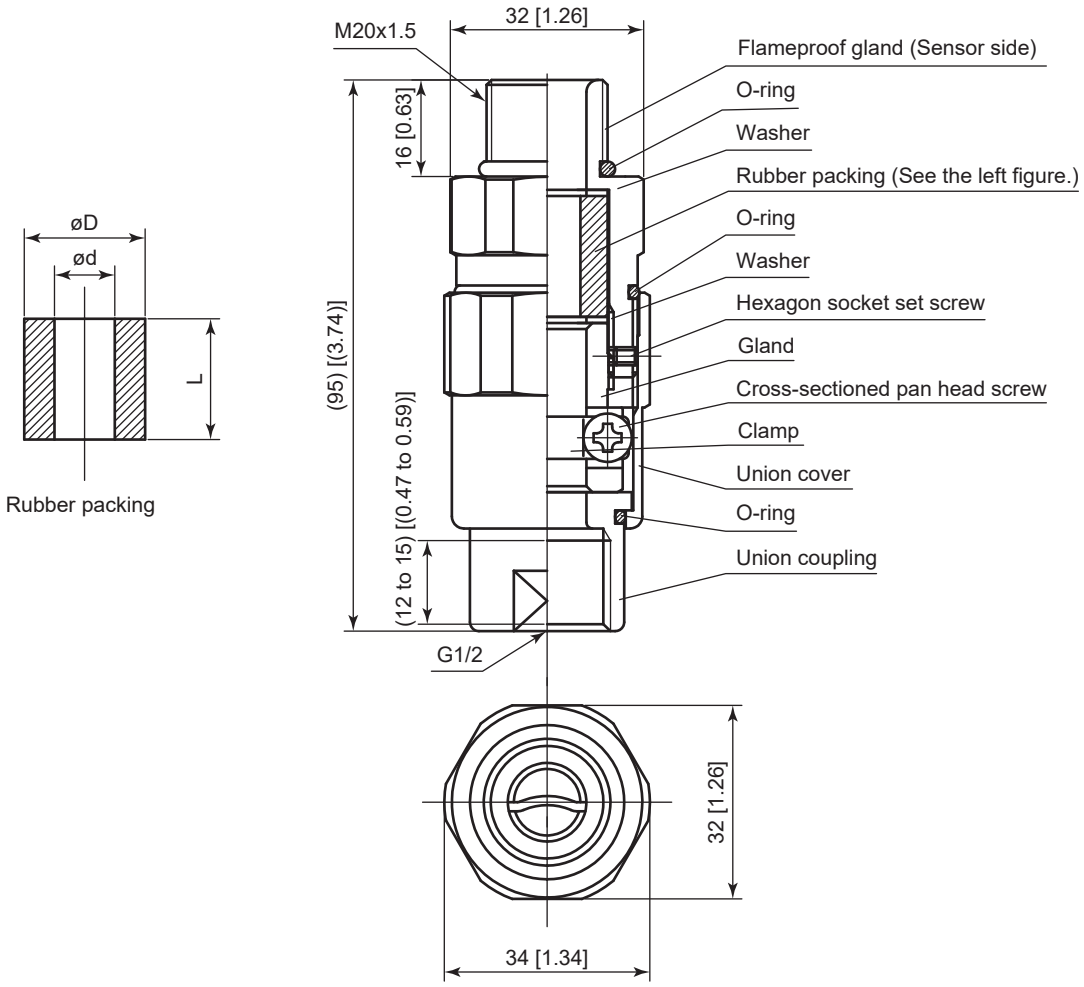
*1: This length becomes 21 mm (0.83 in.) shorter when display code N is selected.
*2: The lay length include the dimensions of the ground ring (/GRN, /GRJ, /GRW) and the gasket supplied as standard and the gasket of the optional code (/GA, /GF) supplied as an additional specification. These gaskets are used between the flowmeter body and the ground ring.
*3: When a gasket of the optional code (/BSC, /BSF) is selected, +6 mm (0.24 in.) is added to the lay length. The gasket supplied with this additional specification is used between the ground ring and the customer's piping.

Size Code		0150	0200
Size		150 (6)	200 (8)
Lay Length	**L**	232 (9.13)	302 (11.89)
Outer Diameter	**øD**	214 (8.43)	264 (10.39)
Lining Inner Diameter	**ød**	141 (5.56)	187 (7.37)
Height	**H1**	264 (10.41)	314 (12.37)
Maximum Height	**Hi**	426 (16.78)	476 (18.75)
Approx. Weight, Unit: kg (lb)		22.8 (50.4)	35.9 (79.2)

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

(1) Flameproof Packing Adapter (Optional code V5#: #=1 to 3)

Unit: mm ([ ]: approx.inch)



Unit: mm ([ ]: approx.inch)

Dimensions of rubber packing (before compression)			Identification mark of rubber packing	Cable outer diameter	
L	øD	ød		Min.	Max.
20 [0.79]	ø20 [0.79]	ø10 [0.39]	ø10 [0.39]	ø8.0 [0.31]	ø10.0 [0.39]
20 [0.79]	ø20 [0.79]	ø12 [0.47]	ø12 [0.47]	ø10.0 [0.39]	ø12.0 [0.47]

F19.ai

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

(2) Mounting bolts (Optional code BSC, BSF)

Size [mm (in)]	Process Connection Code					
	AJ1		AJ2		AA1	
	Nominal Bolt Diameter	Length of Through-bolt [mm (in)]	Nominal Bolt Diameter	Length of Through-bolt [mm (in)]	Nominal Bolt Diameter	Length of Through-bolt [mm (in)]
15 (0.5)	M12	160 (6.30)	M12	160 (6.30)	1/2UNC	155 (6.10)
25 (1)	M16	200 (7.87)	M16	180 (7.87)	1/2UNC	190 (7.48)
40 (1.5)	M16	200 (7.87)	M16	200 (7.87)	1/2UNC	190 (7.48)
50 (2)	M16	220 (8.66)	M16	220 (8.66)	5/8UNC	240 (9.45)
80 (3)	M16	255 (10.04)	M20	295 (11.61)	5/8-11UNC	265 (10.43)
100 (4)	M16	280 (11.02)	M20	295 (11.61)	5/8UNC	290 (11.42)
150 (6)	M20	340 (13.39)	M22	360 (14.17)	3/4UNC	345 (13.58)
200 (8)	M20	410 (16.14)	M22	435 (17.13)	3/4UNC	420 (16.54)

(3) Limit Deviation

Unless otherwise specified, size limit deviation in the drawings are as shown in the following table.

General limit deviation in the dimensional outline drawing.

Unit: mm (approx. in.)

Category of basic size		Limit deviation	Category of basic size		Limit deviation
Above	Equal or below		Above	Equal or below	
	3 (0.12)	±0.7 (±0.03)	500 (19.69)	630 (24.80)	±5.5 (±0.22)
3 (0.12)	6 (0.24)	±0.9 (±0.04)	630 (24.80)	800 (31.50)	±6.25 (±0.25)
6 (0.24)	10 (0.39)	±1.1 (±0.04)	800 (31.50)	1000 (39.37)	±7.0 (±0.28)
10 (0.39)	18 (0.71)	±1.35 (±0.05)	1000 (39.37)	1250 (49.21)	±8.25 (±0.32)
18 (0.71)	30 (1.18)	±1.65 (±0.06)	1250 (49.21)	1600 (62.99)	±9.75 (±0.38)
30 (1.18)	50 (1.97)	±1.95 (±0.08)	1600 (62.99)	2000 (78.74)	±11.5 (±0.45)
50 (1.97)	80 (3.15)	±2.3 (±0.09)	2000 (78.74)	2500 (98.43)	±14.0 (±0.55)
80 (3.15)	120 (4.72)	±2.7 (±0.11)	2500 (98.43)	3150 (124.02)	±16.5 (±0.65)
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)			

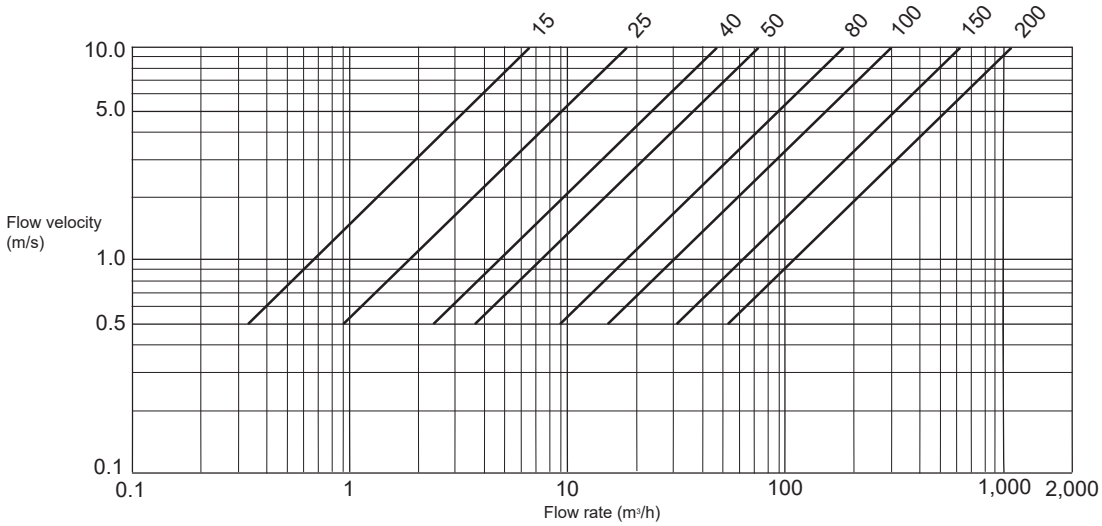
Remarks: The numeric is based on criteria of standard tolerance grade IT18 in JIS B 0401-1.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

■ SIZING DATA

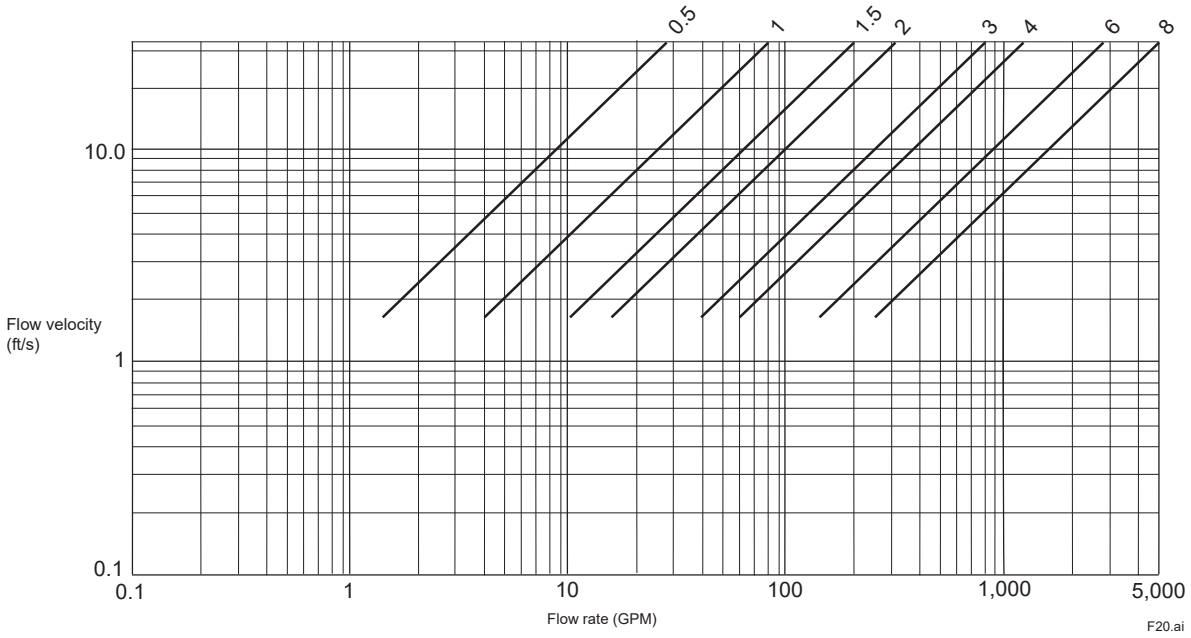
SI Units Size: mm

* Measurable flow velocity is from 0 m/s.



English Units Size: inch

* Measurable flow velocity is from 0 ft/s.



F20.ai

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

■ 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 be set before shipment. Custom configuration request is necessary for setting these parameters out of regular setting range.

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

1. Model, Suffix Code and Optional Code
2. Tag No.

   The Tag No. can be specified by a combination of the characters shown in the following table.

Symbol	-	Hyphen-minus	.	Period		Space (*1)
	_	Underscore	=	Equal sign	+	Plus sign
	/	Slash	(	Left round bracket	)	Right round bracket
	:	Colon	#	Hash mark	!	Exclamation mark
Number	0, 1, 2, 3, 4, 5, 6, 7, 8, 9					
Uppercase letter	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z					
Lowercase letter (*2)	a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z					

*1: Leading and trailing space characters are deleted and left-justified, then printed on the name plate/ tag plate and written to the amplifier memory.

*2: The lowercase letters are converted to uppercase and written to the parameter “Tag”. For parameter “Long Tag”, they are written in lowercase as is.

Tag No. can be "described on the nameplate and stainless steel tag plate (optional code SCT)" and "set to the memory in the transmitter". Refer to the table below for the item to be specified.

Described/ Setting Destination	Items to be Specified	Maximum Number of Characters
• Name plate • Stainless steel tag plate (Optional code SCT)	TAG NO	30
• Amplifier memory		30 There are restrictions on the write destination parameters. Read the next table.
	SOFTWARE TAG (Overrides "TAG NO" designation)	Read the next table

The characters specified by "TAG NO" are also written to the memory (parameter) in the amplifier. If it is necessary to specify a different tag number only for the amplifier memory, specify "SOFTWARE TAG". It is also possible to specify only "SOFTWARE TAG". Names of the parameter to be written and the maximum number of characters are as shown in the table below. If the number of specified characters exceed the maximum number, the characters from the beginning up to the maximum number is written.

Tag No. in Amplifier Memory			
Items to be Specified	Communication	Parameter Name	Maximum Number of Characters
TAG NO or SOFTWARE TAG	HART	Long Tag	32
		Tag	8

3. Range and Unit of Flowrate Span

   Specify the range of span flow rate in the range of 0.0001 to 999999000000.0000 (the number of significant digits in operation is the upper six digits). Up to four digits below the decimal point that can be specified (by 0.0001 unit).

   Specify units in the unit described in "Flow Calculation Function". This span flow rate is set to the positive first range. Be sure to specify the range and unit of flowrate span when selecting the Mass Unit Setting (optional code MU), or Specified Span Five-point Calibration (optional code SC), ISO/IEC 17025 calibration (Specified span, 2 points) (Optional code L11), or ISO/IEC 17025 calibration (Specified span, 4 points) (Optional code L12).

   The measurement flow range (minimum and maximum of span flow rate) is shown below (in the case of flow rate unit m^3/h and GPM). Specify the span flow within this range. The range specifying different unit must also fall into the same flow rate (flow velocity) range after conversion.

Measurable Flow Rate Range

SI Units (Size: mm, Flow rate: m^3/h)

Size (mm)	0 to Min. Span Flow Rate m^3/h (0.5 m/s)	0 to Max. Span Flow Rate m^3/h (10 m/s)
15	0 to 0.3181	0 to 6.3617
25	0 to 0.8836	0 to 17.6714
40	0 to 2.2620	0 to 45.2389
50	0 to 3.5343	0 to 70.6858
80	0 to 9.0478	0 to 180.955
100	0 to 14.1372	0 to 282.743
150	0 to 31.8087	0 to 636.172
200	0 to 56.5487	0 to 1130.97

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

Size (in.)	0 to Min. Span Flow Rate GPM (1.64 ft/s)	0 to Max. Span Flow Rate GPM (33 ft/s)
0.5	0 to 1.4005	0 to 28.0098
1	0 to 3.8903	0 to 77.8050
1.5	0 to 9.9591	0 to 199.181
2	0 to 15.5611	0 to 311.220
3	0 to 39.8363	0 to 796.724
4	0 to 62.2441	0 to 1244.88
6	0 to 140.049	0 to 2800.98
8	0 to 248.977	0 to 4979.52

4. Output Pulse Weight (Pulse Status Output 1)

   Specify the volume flow per pulse, after specifying the span flow rate. This output pulse weight is set to the Pulse Status Output 1. For unit, specify "unit/p" which means "(the same unit as the flow rate span)/p".

   (Example: When "m^3" is selected for "Span Flow Rate", "unit/p" means "m^3/p".)

   The specifiable numerical digit and range is the same as that for "4. Range and Unit of Flowrate Span.

   Unless specified, it is set as 0 [span unit/p] when shipped.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

5. Totalizer Display Pulse Weight (Totalizer 1)

   Specify the volume flow per pulse, after specifying the span flow rate. This totalizer display pulse weight is set to the Totalizer 1. For unit, specify "unit/p" which means "(the same unit as the flow rate span)/p".

   (Example: When "m^3" is selected for "Span Flow Rate", "unit/p" means "m^3/p".)

   The specifiable numerical digit and range is the same as that for "4. Range and Unit of Flowrate Span.

   Unless specified, it is set as equivalent to 1 m^3 [span unit/p] when shipped.

6. Mass Unit (optional code MU)

   The flow rate calculation is performed in mass unit. In addition to fluid density, specify span flow rate, output pulse weight, and totalizer display pulse weight in mass unit.

   The specifiable numerical digit and range is the same as that for "4. Range and Unit of FLowrate Span.

   (1) Density

   Numerical Value:

   Specify within six digits (up to three digits below the decimal point) in the range of 500 to 2000 kg/m^3 (4.2 to 16.7 lb/gal, 31.2 to 124.8 lb/cf).

   Unit:

   kg/m^3, lb/gal, lb/cf

   The density of water is about 1000 kg/m^3. Then specify "1000 kg/m^3" in this case. However, as the density varies with temperature, specify the density at the time of flow measurement.

   (2) Flowrate Span

   Numerical Value:

   When setting the mass span flow rate, calculate the volume span flow rate from the "density" and it must be within the measurable flow rate range. The settable numerical range for the mass span flow rate is the same as that for the volume span flow rate.

   Unit:

   Mass Unit: t, kg, g, klb, lb

   Time Unit: /d, /h, /min, /s

   (3) Output Pulse Weight, Totalizer Display Pulse Weight

   For unit, specify "unit/p" which means "(the same unit as the flow rate span)/p".

7. Specified Span Five-point Calibration (optional code SC)

   A flow test at the five points around 0, 25, 50, 75, 100% of the customer specified span is performed. In the test certificate (QIC), the result for the customer specified span is recorded instead of that for the standard flow rate of 2 m/s (6.56 ft/s). Corresponding flow velocity of the selectable span lies between 0.5 to 10 m/s (1.64 to 33 ft/s). It is also limited by the capacity of our flow test facility. Specify it within the following range. The specifiable numerical digit and range is the same as that for "4. Range and Unit of FLowrate Span.

Selectable Range of Flow Rate Span

SI Units (Size: mm, Flow rate: m^3/h)

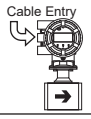
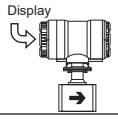
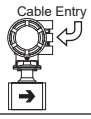
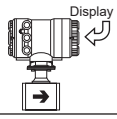
Size (mm)	Min. Span Flow Rate m^3/h (m/s)	Max. Span Flow Rate m^3/h (m/s)
15	0.32 (0.5)	2.80 (4.40)
25	0.89 (0.5)	11.0 (6.22)
40	2.27 (0.5)	28.0 (6.19)
50	3.54 (0.5)	56.0 (7.92)
80	9.05 (0.5)	126 (6.96)
100	14.2 (0.5)	190 (6.72)
150	31.9 (0.5)	380 (5.97)
200	56.6 (0.5)	670 (5.92)

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

Size (in.)	Min. Span Flow Rate GPM (ft/s)	Max. Span Flow Rate GPM (ft/s)
0.5	1.4005 (1.64)	12.328 (14.4)
1	3.8903 (1.64)	48.4315 (20.4)
1.5	9.9591 (1.64)	123.280 (20.3)
2	15.5611 (1.64)	246.560 (25.9)
3	39.8363 (1.64)	554.761 (22.8)
4	62.2441 (1.64)	836.544 (22.0)
6	140.050 (1.64)	1673.08 (19.5)
8	248.977 (1.64)	2949.92 (19.4)

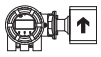
8. Direction of Cable Entry (optional code RH)

   Rotate the transmitter and change the direction of the cable entry. See the table below and specify either +90, +180, or -90 degree. When the direction of cable entry is not changed, optional code RH is not necessary.

Direction of Cable Entry			
Standard (0 degree)	+90 degree rotation	+180 degree rotation	-90 degree rotation
			

9. Direction of Display

   When the specification "With Display" is selected, specify direction of the display. Specify according to the horizontal or vertical direction of the installation piping.

Direction of Display		Without Display
Horizontal	Vertical	
		

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation

10. ISO/IEC 17025 calibration (optional code L10, L11,L12)

    Please specify the customer name, address, and flow rate span (only for L11, L12). Please refer to the "ISO/IEC 17025 calibration-related confirmation list" when ordering.

    In the test certificate (QIC), the result for the customer specified span is recorded instead of that for the standard flow rate of 2 m/s (6.56 ft/s), when the optional codes L11 or L12 is selected.

    Please refer to the "ISO/IEC 17025 Calibration Confirmation" when ordering.

■ RELATED INSTRUMENTS

Product	Document Number
AM012 Calibrator for Magnetic Flowmeter	GS 1E6K2-E
FieldMate Versatile Device Management Wizard	GS 01R01A01-01E
ADMAG TI Series AXG Magnetic Flowmeter General Specifications	GS 01E22A01-01EN
ADMAG TI Series AXW Magnetic Flowmeter [Size: 25 to 400 mm (1 to 16 in.)]	GS 01E24A01-01EN
ADMAG TI Series AXW Magnetic Flowmeter [Size: 500 to 1800 mm (20 to 72 in.)]	GS 01E25D11-01EN
FSA130 Magnetic Flowmeter / Vortex Flowmeter Verification Tool	GS 01E21A04-01EN

■ REFERENCE STANDARD

Design and Test on Magnetic Flowmeters:

JIS B 7554(1997), ISO 20456(2017),
NAMUR NE70(2006), ASME MFC-16-2014

■ TRADEMARKS

HART is a registered trademark of FieldComm Group.

Viton is a registered trademark of DuPont.

ADMAG, AXG, AXW, and FieldMate are registered trademarks of Yokogawa Electric Corporation.

All other company and product names mentioned in this document are trade names, trademarks or registered trademarks of their respective companies.

In this document, trademarks or registered trademarks are not marked with ™ or ®.

Note: The terms “transmitter” and “sensor” in this document are used in the same manner as “converter” and “flowtube” respectively which are used for our previous magnetic flowmeter models.

<Information on EU WEEE Directive>

EU WEEE (Waste Electrical and Electronic Equipment)

Directive is only valid in the EU.

This instrument is intended to be sold and used only as a part of equipment which is excluded from WEEE

Directive, such as large-scale stationary industrial tools, a large-scale fixed installation and so on, and, therefore, subjected to the exclusion from the scope of the WEEE Directive. The instrument should be disposed of in accordance with local and national legislation/regulations.

All Rights Reserved. Copyright © 2022, Yokogawa Electric Corporation
Subject to change without notice.