

# MagneW3000 FLEX<sup>+</sup>

## Smart Electromagnetic Flowmeter Converter (Smart model)

### Model MGG10C

#### **OVERVIEW**

MagneW 3000 FLEX<sup>+</sup> electromagnetic flowmeter converter is a high-performance and highly reliable flowmeter converter based on Yamatake's proven MagneW 3000 FLEX flow measurement technologies. The MagneW FLEX<sup>+</sup> converter offers expanded flow rate measurement capabilities in the various processes when used with the MagneW detectors.

#### **FEATURES**

##### **Improve the performances and functions (compared with Yamatake conventional type converter)**

- Improve noise immunity performance up to 250 %
- Adopts the averaging function for pulsation flow application
- According to noise in the field, MagneW 3000 FLEX<sup>+</sup> converter provides an appropriate noise immunity technology like excitation frequency change and/or auto spike cut function.
- High speed response type is optional for batch application.
- Light in weight design (600 gram lighter than the conventional type converter)

##### **Universal power supply**

- AC 90 to 130 V, AC 180 to 250 V.

##### **Liquid Crystal Display with backlighting (optional)**

- Backlit display eases reading in direct sunlight or in a dark room.
- Simultaneously displays flow volume in percentage, actual flow rate and totalized value.



(Remote converter)

- Rotating display improves visibility of integral models mounted on pipes up to 90 degrees from standard.

##### **Setting parameters by infrared touch sensor (optional)**

- Allows safety setting, in severe environments, without opening the cover.
- Prevent malfunctioning of the infrared touch sensor via special security feature.

##### **Compatibility**

- Enables combination of the remote style MagneW 3000 FLEX<sup>+</sup> converter with the conventional Yamatake detectors. Consult your Yamatake representative.

##### **CE marking**

Conforms to RoHS requirements Conform with the RoHS (restriction of the use of certain hazardous substances in electrical and electronic equipment)

##### **China RoHS**

This device is used in the Oil & Gas, Petrochemical, Chemical, Pulp & Paper, Food & Beverage, Machinery, Steel/Metal & Mining, and Automobile industries and therefore does not fall under the China RoHS Legislation.

If this device is used in equipment or applications which fall under the China RoHS, labeling on the device and documents for the China RoHS may be required. If such documents are required, consult a Yamatake representative.

## **COMMUNICATION (SELECTABLE)**

- Yamatake SFN protocol
- HART protocol (HART Rev. 5)

## **APPLICATIONS**

Available for various applications

### **Pulp and Paper**

Pulp slurries, chemicals, green liquor, white water, white liquor, black liquor, corrosive fluid, industrial water, waste water

### **Petroleum/Petrochemical/Chemicals**

Corrosive fluid, electrolyte, dyestuffs, chemicals, industrial water, waste water

### **Water/Waste water**

Tap water, sewage water, sludge, sediment slurries, effluent

### **Food and Beverage**

Beer, milk, juice, wine, liquor, soy sauce, potable water, industrial water, waste water

### **Steel/Metal and Mining**

Alumina slurry, cooling water, sea water, corrosive fluid, industrial water, waste water

### **Machinery**

Corrosive fluid, cooling water, circulating water, waste water

### **Building/Construction**

Building material slurry, sediment slurry, cement, industrial water

### **Electric Power/Gas**

Corrosive fluid, cooling water, industrial water, waste water

## **FUNCTIONAL SPECIFICATIONS**

### **Type of protection**

#### **Enclosure rating**

JIS C 0920 Waterproof

NEMA ICS6-110.16 TYPE4X

IEC IP68

**Hazardous area certification: TBD**

### **Power supply**

#### **Normal operating voltage:**

AC 100 to 120 V, AC200 to 240 V, 47 to 63 Hz

#### **Operational voltage limit:**

AC 90 to 130 V, AC180 to 250 V, 47 to 63 Hz

### **Power consumption**

10 W max. (AC 90 to 130 V)

11 W max. (AC 180 to 250 V)

### **Lightning protection**

12 kV, 1000 A

Equipped with the lightning arrester in the power source and external input and output terminals.

### **Power failure**

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

### **EMC conformity standards**

EN61326

### **Ship classification**

Approved by NK (Nippon Kaiji Kyokai)

Approval No.: 11A008

Some model numbers selectable by the model selection table do not meet the requirements for NK approval. Check sections I (power supply) and II (output signal/communication) in the model selection table.

*Note: The MGG10C cannot be installed on the bridge or deck of the ship.*

*In the case of a remote model, the cables between the converter and detector must be covered with a flexible metal conduit.*

### **Input signal**

#### **Flow rate signal**

Electromotive force which is proportional to the average flow velocity.

#### **Contact input**

Solid-state contact or no-voltage contact (2 max.)

### **Output signal**

#### **Analog output**

4 to 20 mA DC

#### **Digital output**

DE

Analog or digital output is selectable.

#### **Contact output**

Open collector (2 max.)

#### **Contact capacity**

DC 30 V max., 200 mA max.

**Pulse output**

Open collector

**Contact capacity**

DC 30 V max., 200 mA max.

**Pulse Frequency**

0.00006 to 3000 Hz

**Pulse width**

adjustable from 0.10 to 999.99 ms or fixed at 50 % of the duty (In case of pulse frequency is 0.00006 to 0.5 Hz, pulse width is fixed at 1sec.)

Voltage drop during transistor ON: 2.7 V typ.  
(Voltage drop can be reduced to 2.0 V by a switch)**Counter drive pulse output**

Coil voltage: 24 VDC

Coil resistance: 210  $\Omega$ 

Pulse frequency: 0 to 20 Hz

Pulse width: adjustable from 30 ms to 999.99 ms.

**Analog output range/load resistance****Without SFC communication**

0.8 to 22.4 mA (-20 to +115 %)

Load resistance: 0 to 600  $\Omega$ **With SFC communication**

3.2 to 22.4 mA (-5 to +115 %)

External power supply for SFC communication:

16 to 45 V DC

Load resistance ( $\Omega$ ) = (External power supply voltage -8.5 V)/0.025**With HART communication by using Internal power supply**

3.2 to 22.4 mA (-5 to +115 %)

External power supply for SFC communication:

16 to 45 V DC

Load resistance: 0 to 600  $\Omega$ **With HART communication by using an external power supply**

3.2 to 22.4 mA (-5 to +115 %)

External power supply for HART communication: 16 to 45 V DC

Load resistance ( $\Omega$ ) = (External power supply voltage -8.5 V)/0.025**High-speed response type/no communication function**

0.8 to 22.4 mA (-20 to +115 %)

Load resistance: 0 to 600 W

**Digital output range/load resistance**

With DE output

3.2 to 22.4 mA (-5 to +115 %)

External power supply for DE communication: 16 to 45 V DC

Load resistance ( $\Omega$ ) = (External power supply voltage -8.5 V)/0.025**Unit of flow rate**

Selectable from %, volumetric flow rate unit, mass flow rate unit, time.

Volumetric flow rate: m<sup>3</sup>, l, cm<sup>3</sup>

Mass flow rate: t, kg, g

Time: d, h, min., s

**Operation Mode**

MEASURING MODE:

Mode for flow rate measurement

BASIC SETUP MODE:

Mode for quick start-up

ENGINEERING MODE

Mode for parameter configuration (Range, pulse scale, etc.)

MAINTENANCE MODE

Mode for maintenance

ADVANCED MODE

Mode for advanced functions

**Auto zeroing function (in the BASIC SETUP MODE)**

Adjust zero automatically

**Damping (in the BASIC SETUP MODE)**

Adjustable between 0.1 and 199.9 seconds

High-speed response type: Adjustable between 0 and 199.9 seconds

**Averaging function (in the ADVANCED MODE)**

Moving average processing of the measured flow rate

ON/OFF, Adjustable between 1.0 and 30.0 seconds

**Spike cut function (in the ADVANCED MODE)**

Eliminates steep noise spikes.

Auto/Manual/OFF

**Low flow cutoff**Adjustable between 0 and 10 % of setting range  
Below selected value, output is driven to the zero flow rate signal level.**Drop out**Adjustable between 0 and 10 % of setting range  
Below selected value, pulse output is fixed at 0 %.**Fail-safe mode**

Determine analog/pulse output direction when the flow meter detects a critical status condition.

LOW/HIGH/HOLD

**Compensation coefficient (in the ADVANCED MODE)**

Compensation coefficient used to multiply the output flow rate as required.

**Built-in counter function****Totalizer**

According to the pulse scale setting, it totals one count at a time. If double range of normal/reverse flow measurement function is set, it totals one count at a time for normal and reverse flows. If single range of flow measurement is set, it totals one count at a time only for normal flow direction.

**Totalizer with presetting function**

A preset value (target totalized value) can be set between 0000000000 and 9999999999.

The counting method is same as that of the standard totalizer.

**Normal/reverse flow difference totalizer**

The difference in flow volumes in the normal or reverse flow directions is calculated and counted.

**Contact input function****External 0 % lock input**

Forces outputs (analog, digital, pulse) to the zero flow rate signal level.

**External automatic zero adjustment input**

Adjust zero.

**External range switching input**

Switches two flow measurement ranges.

**Two flow measurement ranges:**

Dual range for nominal direction.

Normal/reverse range

**Built-in counter reset input**

Resets the totalized value in the built-in counter.

**Contact output function****Alarm output**

Outputs an alarm under the following conditions.

- Self-diagnostic result
- Empty pipe detection
- High/low limit alarm

**Range switching output**

Outputs the status of flow range.

- Large/small in the dual range
- Normal/reverse

**Counter preset status output**

Activates when the counter reaches the preset value.

**Self-diagnostic result output**

Activates only when a critical failure appears by the self-diagnostic.

**Empty detection output**

Activates only when empty status (when electrodes are in contact with air) is detected.

Please make sure that there is no air trap inside of the detector and process fluid conductivity should be 30 mS/cm or greater for functioning properly.

**High/low limit alarm output**

Activates when a high/low limit occurs.

**Two-stage flow rate alarm output (with two contact outputs)**

Activates when the first high/low limit alarm (H/L) occurs and the second high/low limit alarm (HH/LL) occurs.

**Function table by contact-input/contact output**

Table 1: one contact input and one contact output

Table 2: two contact inputs

Table 3: two contact outputs

**Table 1 : one contact input and one contact output**

Range function	Built-in counter function	Contact input function	Contact output function
0: Single range	A: Addition	X: Not activated	X: Not activated
			1: Alarm output
			4: Self-check result output
			5: Empty detection function
			6: High/low limit alarm
			1: External 0 % lock
		1: External 0 % lock	X: Not activated
			1: Alarm output
			4: Self-check result output
			5: Empty detection function
			6: High/low limit alarm
			2: External auto zeroing
	2: External auto zeroing	X: Not activated	
1: Alarm output			
4: Self-check result output			
5: Empty detection function			
6: High/low limit alarm			
4: Counter reset			
4: Counter reset	X: Not activated		
	1: Alarm output		
	4: Self-check result output		
	5: Empty detection function		
	6: High/low limit alarm		
	B: Addition with preset	X: Not activated	
1: External 0 % lock			
2: External auto zeroing			
4: Counter reset			
			3: Preset output
			3: Preset output
			3: Preset output
			3: Preset output

Range function	Built-in counter function	Contact input function	Contact output function
1: Automatic switching double range function	A: Addition	X: Not activated	2: Range switching output
		1: External 0 % lock	2: Range switching output
		2: External auto zeroing	2: Range switching output
		4: Counter reset	2: Range switching output

Range function	Built-in counter function	Contact input function	Contact output function
2: External switching double range	A: Addition	3: External range switching	X: Not activated
			1: Alarm output
			2: Range switching output
			4: Self-check result output
			5: Empty detection function
			6: High/low limit alarm
	B: Addition with preset	3: External range switching	3: Preset output

Range function	Built-in counter function	Contact input function	Contact output function
3: Normal/reverse automatic switching range	A: Addition	X: Not activated	2: Range switching output
		1: External 0 % lock	2: Range switching output
		2: External auto zeroing	2: Range switching output
		4: Counter reset	2: Range switching output
	C: Normal/reverse totalization	X: Not activated	2: Range switching output
		1: External 0 % lock	2: Range switching output
		2: External auto zeroing	2: Range switching output
		4: Counter reset	2: Range switching output

Range function	Built-in counter function	Contact input function	Contact output function
4: Normal/reverse external switching range	A: Addition	3: External range switching	X: Not activated
			1: Alarm output
			2: Range switching output
			4: Self-check result output
			5: Empty detection function
			6: High/low limit alarm
	B: Addition with preset	3: External range switching	3: Preset output
	C: Normal/reverse totalization	3: External range switching	X: Not activated
			1: Alarm output
			2: Range switching output
4: Self-check result output			
			5: Empty detection function
			6: High/low limit alarm

Table 2 : two contact inputs

Range function	Built-in counter function	Contact input function	Contact output function
0: Single range	A: Addition	X: Not activated	X: Not activated
		1: External 0 % lock	X: Not activated
		2: External auto zeroing	X: Not activated
		4: Counter reset	X: Not activated
		5: External 0 % lock + Auto zeroing	X: Not activated
		7: External 0 % lock + Counter reset	X: Not activated
		9: External auto zeroing + Counter reset	X: Not activated

Range function	Built-in counter function	Contact input function	Contact output function
2: External switching double range	A: Addition	3 External range switching	X: Not activated
		6: External 0 % lock + Range switching	X: Not activated
		8: External auto zeroing + Range switching	X: Not activated
		A: External range switching + Counter reset	X: Not activated

Range function	Built-in counter function	Contact input function	Contact output function	
4: Normal/reverse external switching range	A: Addition	3 External range switching	X: Not activated	
		6: External 0 % lock + Range switching	X: Not activated	
		8: External auto zeroing + Range switching	X: Not activated	
		A: External range switching + Counter reset	X: Not activated	
	C: Normal/reverse totalization		3 External range switching	X: Not activated
			6: External 0 % lock + Range switching	X: Not activated
			8: External auto zeroing + Range switching	X: Not activated
			A: External range switching + Counter reset	X: Not activated

Table 3 two contact outputs

Range function	Built-in counter function	Contact input function	Contact output function
0: Single range	A: Addition	X: Not activated	X: Not activated
			1: Alarm output
			4: Self-check result output
			5: Empty detection function
			6: High/low limit alarm
			E: High 1 and High 2 alarm or Low 1 and Low 2 alarm
			I: Self-check result + Empty detection
			J: Self-check result + High/Low limit alarm
			K: Empty detection + High/Low limit alarm
			B: Addition with preset
	D: Alarm + Preset output		
	F: Preset + Self-check		
	G: Preset + Empty detection		

Range function	Built-in counter function	Contact input function	Contact output function
1: Automatic switching double range	A: Addition	X: Not activated	2: Range switching output
			7: Alarm + Range switching output
			8: Self-check result + Range switching output
			9: Empty detection + Range switching output
			A: High/low limit alarm + Range switching output
			C: Range switching output + Self-check, Empty detection
			B: Range switching output + Preset output
	B: Addition with preset	X: Not activated	B: Range switching output + Preset output

Range function	Built-in counter function	Contact input function	Contact output function				
3: Normal/reverse automatic switching range	A: Addition	X: Not activated	2: Range switching output				
			7: Alarm + Range switching output				
			8: Self-check result + Range switching output				
			9: Empty detection + Range switching output				
			A: High/low limit alarm + Range switching output				
			C: Range switching output + Self-check, Empty detection				
			B: Addition with preset	X: Not activated	B: Range switching output + Preset output		
					C: Normal/reverse totalization	X: Not activated	2: Range switching output
							7: Alarm + Range switching output
							8: Self-check result + Range switching output
	9: Empty detection + Range switching output						
	A: High/low limit alarm + Range switching output						
	C: Range switching output + Self-check, Empty detection						



**Detectors coupled with MGG10C converter**

MGG10C works with the following Yamatake detectors.

In case of interchanging the converter only, recalibration with the detector at Yamatake factory is recommended for ensuring accurate measurement.

Integral style:

MGG11D, MGG11F, MGG11U, MGS11U,  
MGS11F, KID80A, KID90A, KID70A

Remote style:

MGG11D, MGG11F, MGG11U, MGG12D,  
MGG12F, MGG12U, MGS11U, MGS11F,  
MGG15D, MGG15F, KID15B, KID80B, KID90B,  
KID70B, KID20B, KID30B, KID10B, KID11B,  
KID12B, NNK140, NNM (some types are not compatible.)

**Optional specifications****Display (optional): LCD with backlighting****Main display**

7-segment, 6 digits

**Sub display**

16 digits, two lines

**Display**

Flow rate in %, Actual flow rate, Totalized value  
Configuration parameters, Self-diagnostic, Write protect status

Main display is selectable among “flow rate in %”, “actual flow rate” and “totalized value”.

**Data setting device**

Configuration by infrared ray touch sensor

Infrared ray touch sensor: Four switches

Write protect: Write protection level is set by switches in the converter.

Write protect level is indicated on the display.

**Empty pipe detection**

When the detector is empty, the analog output, digital output and pulse output are fixed at zero.

Display is latched to zero.

**Traceability certificate**

The following three documents are provided.

- Traceability system chart
- Traceability certificate
- Calibration certificate

**Indication other than SI units**

The following non-SI units are available.

Volume unit: B (barrel), G (gallon), kG (kilo-gallon), mG (milli-gallon), IG (imperial gallon)

Mass unit: lb (pound)

**Tag number on the terminal box**

The designated tag numbers (maximum 16 characters) should be stamped on a tag plate, which is attached to the terminal box. One line can contain 8 characters. Tag number exceed 8 characters will be stamped on the two lines.

**Air purge hole with PT1/4 internal thread**

Prepare air purge hole with PT1/4 internal thread by using one of the conduits of the converter.

**PERFORMANCE SPECIFICATION****Measurable process fluid conductivity**

It depends on the cable length between the converter and the detector.)

With the detector size of 2.5 to 1100 mm  
3 μS/cm or greater

**Accuracy (coupled with MGG, MGS and KID90 type detectors)**

Table 4

in combination with a detector

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

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement $\geq V_s$ $\times 40\%$	Velocity during measurement $\leq V_s$ $\times 40\%$
$1.0 \leq V_s \leq 10$	$\pm 0.5\%$ of rate	$\pm 0.2\%$ of Vs
$0.1 \leq V_s \leq 1.0$	$\pm(0.1/V_s + 0.4)\%$ of rate	$\pm 0.4(0.1/V_s + 0.4)\%$ of Vs

<Size 25 to 600 mm (1 to 24 inches)>

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement $\geq V_s$ $\times 20\%$	Velocity during measurement $\leq V_s$ $\times 20\%$
$1.0 \leq V_s \leq 10$	$\pm 0.5\%$ of rate	$\pm 0.1\%$ of Vs
$0.1 \leq V_s \leq 1.0$	$\pm(0.1/V_s + 0.4)\%$ of rate	$\pm 0.2(0.1/V_s + 0.4)\%$ of Vs

<Size 700 to 1100 mm (28 to 44 inches)>

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement $\geq V_s$ $\times 50\%$	Velocity during measurement $\leq V_s$ $\times 50\%$
$1.0 \leq V_s \leq 10$	$\pm 1.0\%$ of rate	$\pm 0.5\%$ of Vs
$0.1 \leq V_s \leq 1.0$	$\pm(0.2/V_s + 0.8)\%$ of rate	$(0.2/V_s + 0.8)\%$ of Vs

**Magnetic field effect**

$\pm 0.2\%$  FS max. (400 A/m)

**Fluctuation**

Range set as  $1 \leq V_s \leq 10$  m/s:  $\pm 0.1\%$  FS max.

Range set as  $0.1 \leq V_s \leq 1$  m/s:  $\pm 0.1/V_s\%$  FS max.

(Damping: 3seconds, with clean water (150 μS/cm))

## **PHYSICAL SPECIFICATION**

### **Housing and cover material**

Aluminum alloy (ADC12)

### **Glass**

Tempered glass (thickness 5 mm)

### **Name plate material**

SUS304 (thickness 0.5 mm)

### **Screw material**

SUS304

### **Gasket material between housing and cover**

EPDM

### **Paint**

Standard: baked acrylic resin

Corrosion-proof: Epoxy resin

### **Color**

Cover: light beige (Munsell 4Y7.2/1.3)

Housing: dark beige (Munsell 10YR4.7/0/5)

## **INSTALLATION SPECIFICATION**

### **Ambient temperature**

-25~+60 degree C

### **Ambient humidity**

5~100 %RH (no condensation)

### **Vibration**

Integral style: 500 Hz max. 4.9 m/s<sup>2</sup> (0.5 G) max.

Remote style: 500 Hz max., 19.6 m/s<sup>2</sup> (2 G) max.

### **Conduit connection**

G1/2 (PF1/2) internal thread, 1/2NPT internal thread, CM20 internal thread, pg13.5 internal thread

### **Mounting**

Remote style: Wall mounting, 2-inch pipe mounting

Integral style: Mount on the detector

### **Grounding**

Grounding resistance: 100 W max.

### **Weight**

3.1 kg

### **Site selection**

When selecting an installation site for the flowmeter, observe the following safety measures:

- Do not install the flowmeter near high-current power lines, motors or transformers to prevent damage from electromagnetic induction, which can cause equipment malfunction or output errors.
- Do not use the flowmeter to ground a welder. It can damage the flowmeter.
- Be sure to ground the welding power transformer when welding near the flowmeter to avoid output errors.
- Avoid locations subject to severe vibration or highly corrosive atmospheres to prevent detector breakage or equipment damage.
- Do not install the flowmeter in a location subject to direct sunlight, wind and rain. The converter and detector can be damaged.

**MODEL SELECTION****MagneW3000 FLEX<sup>+</sup> Smart Converter (Integral style)**

Model MGG10C - I II III IV - V VI VII VIII - / Options (Some options can be selected per each model.)

Basic model no.

MGG10C		Selections			Optional selections			
I	Power supply	100 to 120 V AC, 200 to 240 V AC, 47 to 63 Hz	M					
		24 V DC, noise filter 50 Hz	P					
		24 V DC, noise filter 60 Hz	R					
		110 V DC, 50 Hz (Note 6)	S					
		110 V DC, 60 Hz (Note 6)	T					
II	Output signal / Communication (Note 7)	Volume flow 4 to 20 mA DC output / with open collector pulse output / with HART communication	H					
		Volume flow 4 to 20 mA DC output / with open collector pulse output / with SFC communication	B					
		Volume flow DE output / with open collector pulse output / without communication	C					
		Volume flow 4 to 20 mA DC output / with open collector pulse output / without communication	R					
		Volume flow 4 to 20 mA DC output / with counter collector drive pulse output / without communication	S					
III	Electrical connection / Watertight gland	G1/2 internal thread / without watertight gland		1				
		G1/2 internal thread / with brass (Ni-plated) watertight gland		2				
		G1/2 internal thread / with plastic watertight gland		3				
		1/2NPT internal thread / without watertight gland (Note 2)		4				
		CM20 internal thread / without watertight gland		5				
		Pg13.5 internal thread / without watertight gland		6				
		G1/2 internal thread / with SUS304 watertight gland		7				
IV	Installation / Wiring direction	Horizontal piping mounting / upstream side			A			
		Horizontal piping mounting / downstream side			B			
		Horizontal piping mounting / left side viewed from upstream			C			
		Horizontal piping mounting / right side viewed from upstream			D			
		Vertical piping mounting / downstream side (flow direction: downstream to upstream)			E			
		Vertical piping mounting / downstream side (flow direction: upstream to downstream)			F			
		Vertical piping mounting / (flow direction: downstream to upstream)			T			
		Vertical piping mounting / (flow direction: upstream to downstream)			V			
V	Finish	Corrosion-resistant finish				1		
		Corrosion-proof finish					2	
VI	Display with data setting device	None					X	
		Main display: instantaneous flow rate in %					A	
		Main display: instantaneous actual flow rate						B
		Main display: indication of totalized value (Note 3)						C
VII	Contact inputs / outputs	1 input and 1 output (ranging function, warning for contact input/output, etc.)					1	
		2 inputs (ranging function, external automatic zero adjustment input, etc.)						2
		2 outputs (ranging function, warning for contact outputs.)						3
VIII	Style code	None					X	

Options	None	X
	Empty pipe detection function	A
	Traceability certificate for converter	C
	Plastic (Poly carbonate) window	G
	Indication other than SI units	H
	Attachment of the TAG number to the terminal box for converter (Note 4)	J
	Specific color paint (Note 5)	L
	with photo of the device	N
	with PT1/4 thread for air purge	Q

- Note: 1. In case of this code, it is necessary to supply 16 to 45 V DC on 4 to 20mA DC signal line.  
2. Must be selected for FM / CSA NI approval.  
3. In case of this code, option "B" must be selected.  
4. Must be selected for Tag no. requirement.  
5. Must specify Munsell No.  
6. Must not be selected in case that NK approval model is required.  
7. Code H must be selected in case that NK approval model is required.

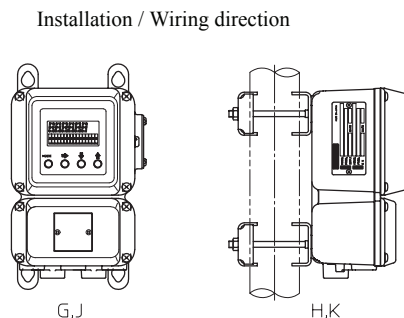
### MagneW3000 FLEX<sup>+</sup> Smart Converter (Remote style)

Model MGG10C - I II III IV - V VI VII VIII - Options (Some options can be selected per each model.)

Basic model no.

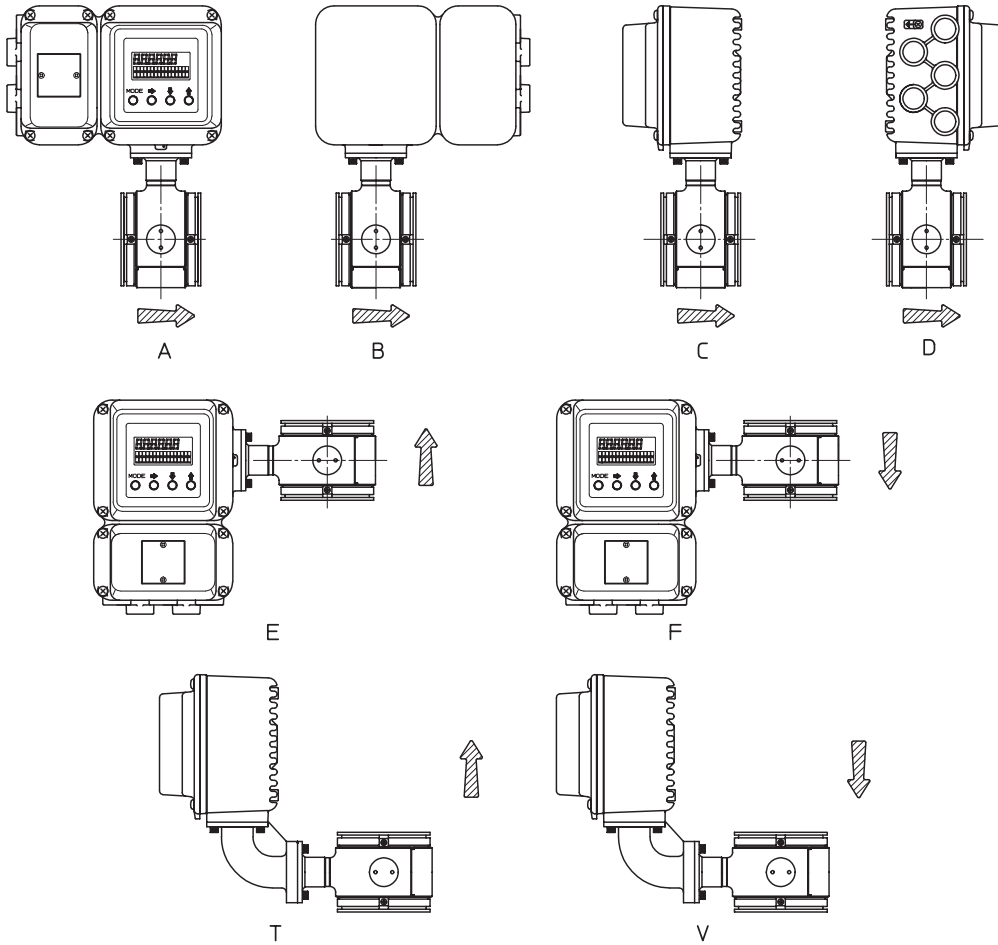
		Selections				Optional selections			
MGG10C									
I	Power supply	100 to 120 V AC, 200 to 240 V AC, 47 to 63 Hz	M						
		24 V DC, noise filter 50 Hz	P						
		24 V DC, noise filter 60 Hz	R						
		110 V AC, 50 Hz (Note 6)	S						
		110 V AC, 60 Hz (Note 6)	T						
II	Output signal / Communication (Note 7)	Volume flow 4 to 20 mA DC output / with open collector pulse output / with HART communication	H						
		Volume flow 4 to 20 mA DC output / with open collector pulse output / with SFC communication	B						
		Volume flow DE output / with open collector pulse output / without communication	C						
		Volume flow 4 to 20 mA DC output / with open collector pulse output /without communication	R						
		Volume flow 4 to 20 mA DC output / with counter collector drive pulse output /without communication	S						
III	Electrical connection / Watertight gland	G1/2 internal thread / without watertight gland		1					
		G1/2 internal thread / with brass (Ni-plated) watertight gland		2					
		G1/2 internal thread / with plastic watertight gland		3					
		1/2NPT internal thread / without watertight gland (Note 2)		4					
		CM20 internal thread / without watertight gland		5					
		Pg13.5 internal thread / without watertight gland		6					
		G1/2 internal thread / with SUS304 watertight gland		7					
IV	Installation / Wiring direction	Wall mounting with standard bracket			G				
		2-inch pipe mounting with standard bracket			H				
		Wall mounting with SUS304 bracket			J				
		2-inch pipe mounting with SUS304 bracket			K				
V	Finish	Corrosion-resistant finish		1					
		Corrosion-proof finish		2					
VI	Display with data setting device	None			X				
		Main display: instantaneous indication of flow volume in %			A				
		Main display: instantaneous indication of actual flow volume			B				
		Main display: indication of integrated flow volume (Note 3)			C				
VII	Contact inputs / outputs	1 input and 1 output (ranging function, warning for contact input/output, etc.)				1			
		2 inputs (ranging function, external automatic zero adjustment input, etc.)				2			
		2 outputs (ranging function, warning for contact outputs.)					3		
VIII	Style code	None							X

Options	Installation / Wiring direction	
	None	X
	Empty pipe detection function	A
	Traceability certificate for converter	C
	Plastic (Bicarbonate) window	G
	Indication other than SI units	H
	Attachment of the TAG number to the terminal box for converter (Note 4)	J
	Specific color paint (Note 5)	L
	with photo of the device	N
with PT1/4 thread for air purge	Q	

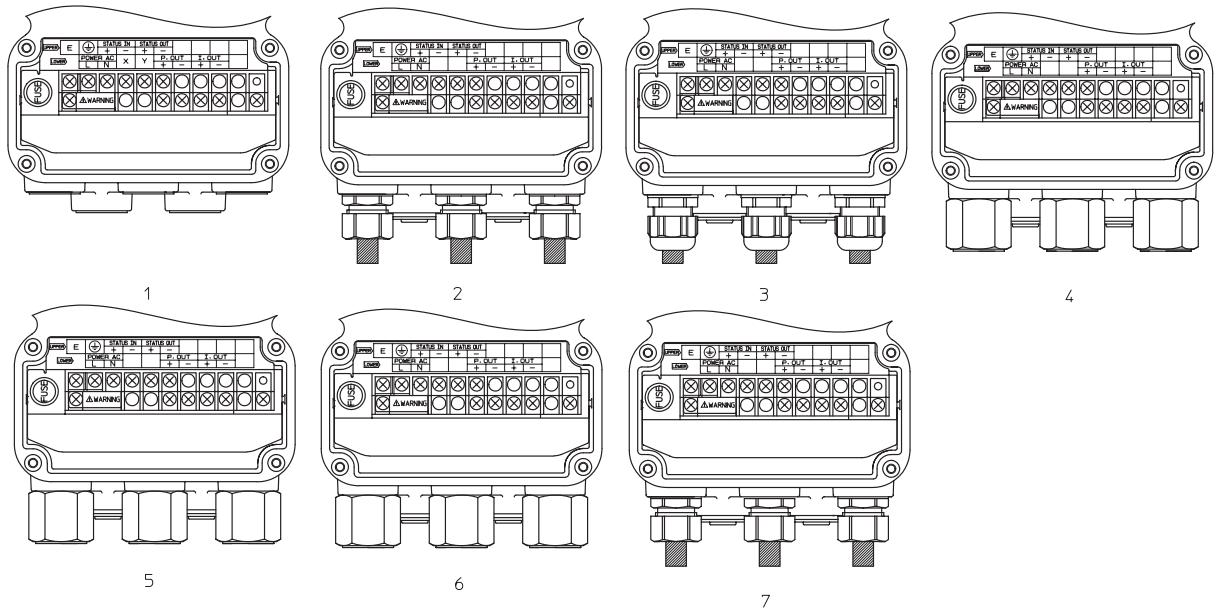


- Note:
- In case of this code, it is necessary to supply 16 to 45 V DC on 4 to 20 mA DC signal line.
  - Must be selected for FM / CSA NI approval.
  - In case of this code, option "B" must be selected.
  - Must be selected for Tag no. requirement
  - Must specify Munsell No.
  - Must not be selected in case that NK approval model is required.
  - Code H must be selected in case that NK approval model is required.

**MOUNTING / WIRING DIRECTION**



**CONDUIT CONNECTION / WATERTIGHT GLAND**



## CONVERTER TERMINAL DESCRIPTION

Table 5 Remote converter terminal descriptions

(1-contact output / 1-contact input)

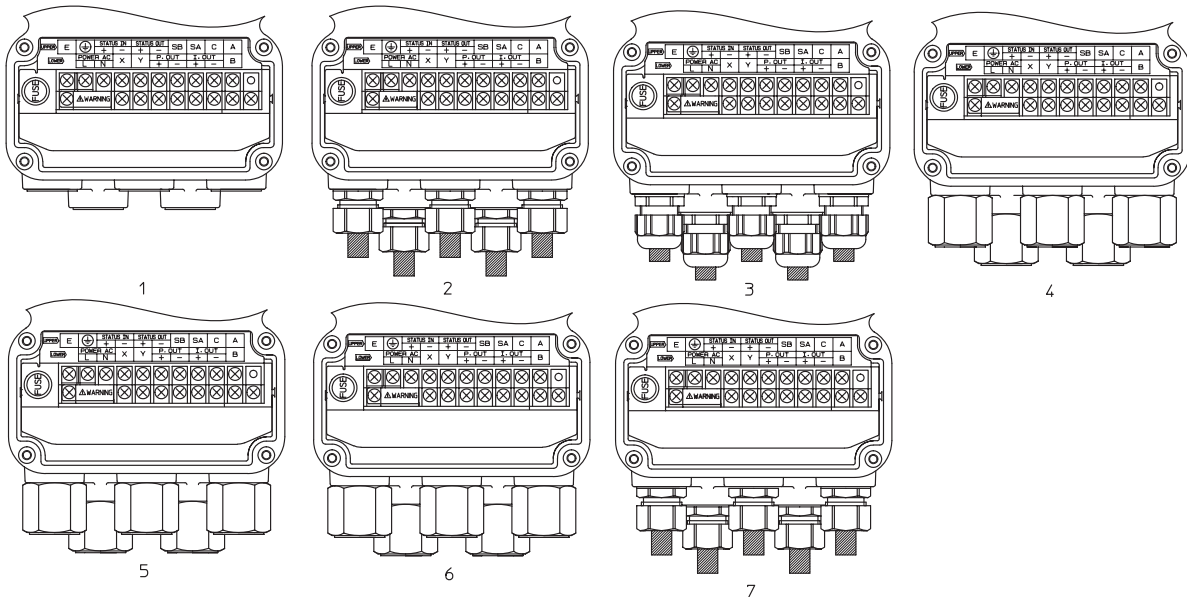
(2-contact inputs)

(2-contact outputs)

Symbol	Description		Symbol	Description		Symbol	Description	
A	Flow signal input from detector		A	Flow signal input from detector		A	Flow signal input from detector	
B								
C								
SA								
SB								
I. OUT	+	Analog output	I. OUT	+	Analog output	I. OUT	+	Analog output
	-			-			-	
P. OUT	+	Pulse output	P. OUT	+	Pulse output	P. OUT	+	Pulse output
	-			-			-	
X	Excitation output		X	Excitation output		X	Excitation output	
Y								
STATUS OUT	+	Contact output	STATUS IN 2	+	Contact input 2	STATUS OUT1	+	Contact output1
	-			-			-	
STATUS IN	+	Contact input	STATUS IN 1	+	Contact input 1	STATUS IOU2	+	Contact output2
	-			-			-	
POWER AC	L	Power supply	POWER AC	L	Power supply	POWER AC	L	Power supply
	N			N			N	
E	Not used		E	Not used		E	Not used	
⊥	Grounding (grounding resistance must be < 100 Ω)		⊥	Grounding (grounding resistance must be < 100 Ω)		⊥	Grounding (grounding resistance must be < 100 Ω)	

Note:

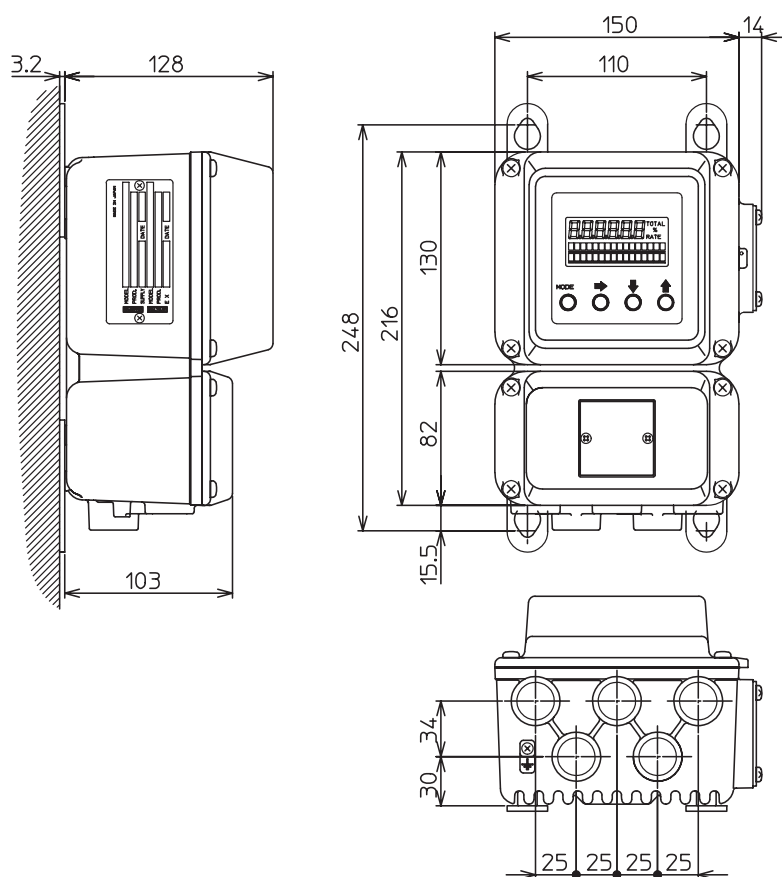
## CONDUIT CONNECTION / WATERTIGHT GLAND



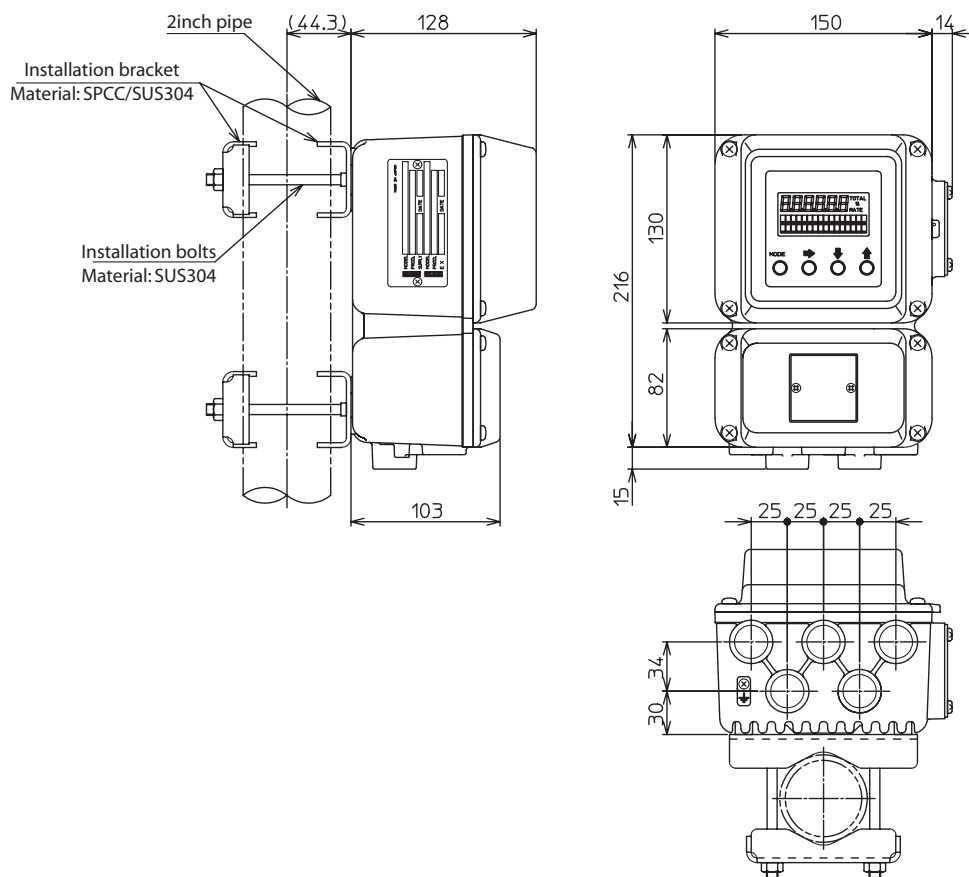
**Dimension drawings**

[Unit: mm]

**Wall mounting**

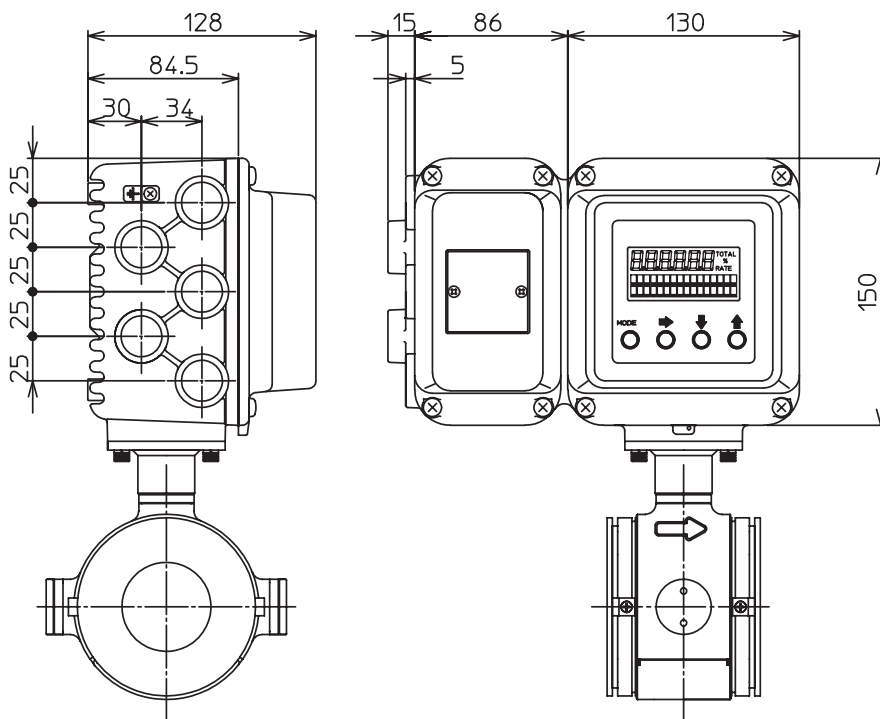


**2 inch pipe mounting**

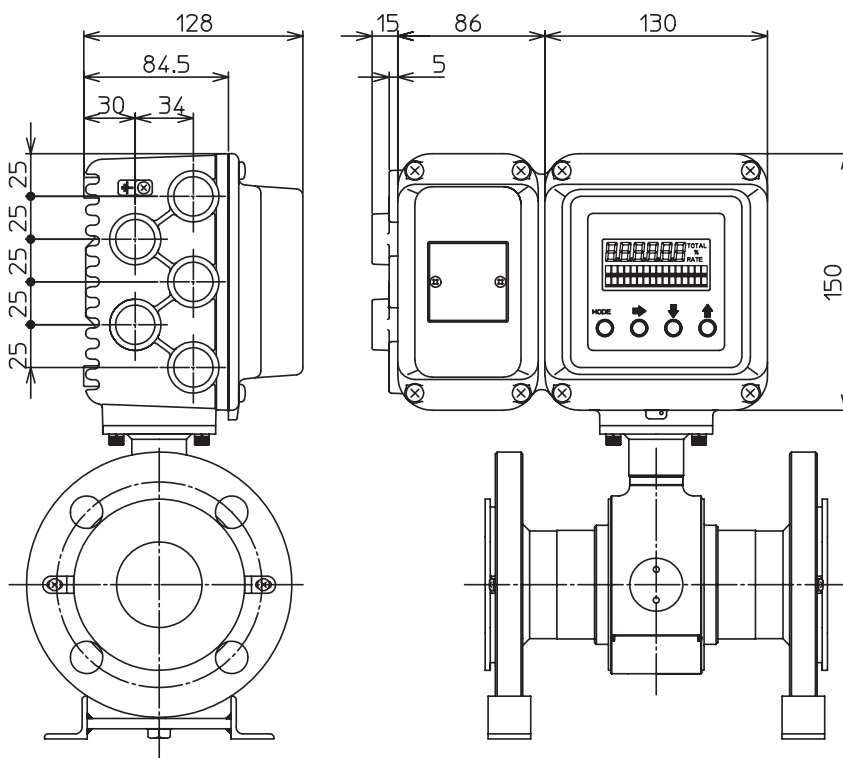


Integral type

[Unit: mm]



Flange type



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Specifications are subject to change without notice.

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