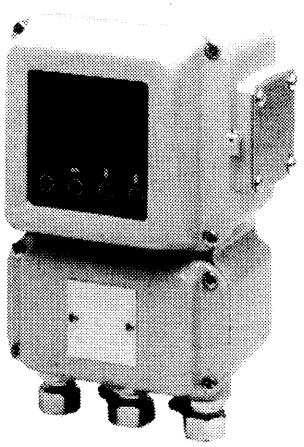
YAMATAKE Specification

MagneW 3000 FLEX Smart Electromagnetic Flowmeter Converter (General model) MGG10C (Integral/Remote)

Introduction

The MagneW 3000 FLEX electromagnetic flowmeter converter is a high performance, highly reliable flowmeter. Based on Yamatake's proven MagneW 3000 flow measurement technologies, the MGG10C offers expanded flowrate and process measurement capabilities when used with the new range of MagneW 3000 FLEX detectors.



(Remote converter)

Special features

1) Liquid crystal display with optional backlighting
- Backlit eases reading in direct sunlight or in a dark room.
- Simultaneously displays flow volume in %, actual flow volume and integrated flow volume.
- Rotating display improves visibility of integral models mounted on pipes up to 90° degrees from standard.

2) Setting parameters by optional infrared touch sensor
- Allows sare setting, in severe environments, without opening the cover of the converter.
- Prevent malfunctioning of the infrared touch sensor via special security feature.

3) Easy changeover of integral and remote models
- One converter case is used for both models.

4) Broader range of pitch in cable connection port
- Allows incorporation of an all-purpose waterproofing gland the pitch of the cable connection port has been significantly increased.

5) Compatibility
- Enables combination of the remote electromagnetic flow converter with conventional detectors. Please talk to your Yamatake representative for details.

6) Approvals
- Conforms CE marking.

Wide variety of applications

Pulp and Paper:
Pulp liquids, chemicals, corrosive liquids, industrial water, wastewater, etc.

Petroleum/petrochemical/chemicals:
Corrosive liquids, dyestuffs, chemicals, industrial water, waste water, etc.

Public utilities:
Portable water, sewage systems, community drainage, human waste, sludge, sediment slurry, regulation of total effluent, etc.

Food:
Beer, milk, juice, wine, liquor, potable water, light, medium and high density fluids, industrial water, waste water, etc.

Steel/nonferrous metals/ceramics:
Alumina slurry, cooling water, industrial water, sea water, corrosive liquids, wastewater, etc.

Machinery/equipment/electric machinery:
Corrosive liquids, cooling water, circulating water, industrial water, waste water, etc.

Construction:
Building material slurry, sediment slurry, cement slurry, industrial water, etc.

Shipbuilding:
Sediment slurry, etc.

Electric power:
Corrosive liquids, cooling water, industrial water, wastewater, etc.

Gas:
Circulating water for air conditioning, etc.

Converter specifications (standard)

<Equipment specifications>

Structure: JIS C 0920 Water-proof model
NEMA ICS6-110 TYPE4X
IEC PUBL 529 IP66

Finish: Standard; Acrylic resin
Corrosion - resistant; Acrylic resin
Corrosion - proof ; Epoxy resin

Color: Light beige (Munsell 4Y7.2/1.3)

Main body material: Aluminum alloy

Display cover material: Tempered glass, 5mm thick
Aluminum alloy

Main power supply: AC100V, 110V, 115/120V±10%
AC200V, 220V, 230/240V±10%
Frequency: 50Hz or 60Hz
DC24V±10%

Power consumption: Within 13W (17VA)

Input signal:
Flow signal: Flow proportional voltage signal from the detector
Contact input (optional):
Solid-state contact or no-voltage contact

Output signal:
Excitation current:
Output of the excitation current to the detector coil
Analog output: 4 to 20mADC (select digital output)
Digital output: DE (Select analog output)
Contact output (optional):
Open collector
Contact capacity: 30VDC max., 200mA max.
Pulse output (optional):
Open collector
Contact capacity: 30VDC max., 200mA max.
Pulse frequency: 2000Hz max.
Pulse width: 0.3 to 999.9ms
Random setting or fixed at 50% of the duty

Analog output range/load resistance
Without SFC communication:
0.8mA to 22.4mA (-20% to +115%)
Load resistance: 0 to 600 ohm
With SFC communication:
3.2mA to 22.4mA (-5% to +115%)
External power source for SFC communication: DC16 to 45V
Load resistance (Ω) =
(External power source for communication - 8.5V) / 0.025

Digital output range/load resistance
With SFC communication:
3.2mA to 22.4mA (-5% to +115%)
External power source for SFC communication/ digital communication: DC16 to 45V
Load resistance (Ω) =
(External power source for communication - 8.5V) / 0.025

Display (optional): Indication by LCD with backlighting
Main display: 7-segment, 6 digits
Sub display: 16 digits, 2 lines
Display contents:
Instantaneous indication of flow volume in percentage, instantaneous indication of actual flow volume and indication of integrated flow volume (when pulse output selected)
Selection of main display and secondary display:
Random selection depending on data , three columns maximum.

Data setter (optional):
Setting by means of infrared touch sensor
Infrared touch sensor: four key switches

Unit of flow indication:
Can be selected from between percentage, volume flow, mass flow, time.
Indication of volume flow: m^3, ℓ, cm^3
Indication of mass flow: t, kg, g
Indication of time: d, h, min, s

Damping time constant:
Continuous variable from 0.5s to 199.9s (time duration until 63.2% of the set range is reached.)

Low flow cutoff:
Output corresponding to 0 to 10% of the set range of the analog output and digital output is fixed at 0%
(the integer is a continuous variable.)

Dropout:
Pulse output corresponding to 0 to 10% of the set range of the analog output and digital output is cut (the integer is a continuous variable.)

Lightning protection:
12kV, 1000A
Incorporated into the power source and external input and output terminals.

Power failure:
An EEPROM retains data record of integrated flow volume when pulse output is used (retention period approximately 10 years)

Converter specifications (standard)

Installation specifications

Ambient temperature: -25 to +60°C

Ambient humidity: 5 to 100% RH

Wiring connection port:
G1/2 (PF1/2) internal threads, 1/2 NPT internal threads, CM20 internal threads, Pg 13.5 internal threads

Installation: Integral detector / converter, Wall mounting, 2B pipe mounting

Grounding: Category D(Grounding resistance: lower thAn 100 Ω)

Mass : 3.7kg

Functions

Functions of built-in counter (optional for pulse output models):

Totalizer:
Depending on the pulse distortion setting, it totals one count at a time, for forward and reverse flows in case of forward/reverse flow difference totalizer.

Totalizer with presetting function:
A preset value target total can be set between 0000000000 and 9999999999. The counting method is the same as the standard totalizer's.

Forward/reverse flow difference totalizer:
The difference in flow volumes in the forward and reverse directions is calculated and counted.

Contact input function (optional)

External 0% lock input:
Enables 0% stop of the flow indication, analog output, digital output and pulse output via contact input.

External automatic zero adjustment input:
Adjusts the zeropoint by contact input.

External range changeover input:
Switches double range or forward/reverse range is achieved by contact input.

Built-in counter reset input (optional for pulse output model):
Resets the integrated value of the built-in counter by contact input.

Contact output function (optional):

Alarm actuating contact output:
Outputs alarm-actuating contacts for self-diagnosis, no-load detection, and upper/lower flow limit value alarm.

Range identification output:
Outputs ID signal contacts for large and small ranges, forward and reverse direction ranges.

Preset status output (for the pulse output model):
Outputs a contact is output when the built-in counter reaches the preset value.

Self-diagnosis alarm output:
Outputs an alarm-actuating contact when the self-diagnosis function detects an erros.

Empty-status detection
Outputs an alarm-actuating contact when the fluid level in the detector goes below the electrode level.

Upper/lower flow limit value alarm output:
Outputs an alarmactuating contact is output when the flow volume exceeds the set upper/lower limit values.

Two-stage flow value alarm output: (with two contact outputs)
Outputs an alarm-actuating contact when the simultaneous flow value exceeds the set two upper limits (H and HH) or the two lower limits (L and LL).

Options

Empty-pipe detection:

When the fluid level in the detector goes below the electrode level, the analog output, digital output and pulse output are fixed at 0%.

Pulse output:

Refer to "Output" in the standard specifications.
Must be selected in case of using totalizer.

Certification of traceability:

From 3 sources: Measuring management system the configuration for your electromagnetic flowmeter, a repair certification, and test reports.

Tropicalization treatment (for transportation/storage):

Protects the electromagnetic flow meter in harsh environments during transportation and/or storage. The following treatments can be applied: corrosion protection, moisture prevention and mildew proofing.

Indication other than SI units:

Units to be exported other than SI units. Those units are as follows:

Volume unit:

B (barrel), kG (kilo-gallon), G (gallon), mG (milli-gallon)

Mass unit: ℓb

Tag number on terminal box:

The designated tag numbers (maximum 16 characters) should be stamped on a plate, which is attached to the terminal box. One line can contain 8 characters, so if more characters must be written on two lines. Characters can be upper-case English letters, numbers and hyphens (-).

Pt1/4 air purge hole:

One of the cable connection ports is a dedicated air purge hole with threads for a PT1/4 screw.

For another options, please contact your Yamatake representative.

Performance (standard)

Measurable condition rate:

With detector of 2.5mm to 1100mm in diameter;

3μS/cm or more (consult your Yamatake engineer when conditions are 3μS/cm or less.)

Accuracy (in combination with a detector):

Refer to Table 1.

Table 1

<diameter 2.5~15mm> Upper limit value of Vs=set velocity range

Vs (m/s)	Velocity during measurement≧Vs×40%	Velocity during measurement≦Vs×40%
1.0≦Vs≦10	±0.5% of indicated value	±0.2% of Vs
0.1≦Vs≦1.0	±(0.1/Vs+0.4%) of the indicated value	±0.4(0.1/Vs+0.4)% of Vs

<diameter 25~600mm> Upper limit value of Vs=set velocity range

Vs (m/s)	Velocity during measurement≧Vs×20%	Velocity during measurement≦Vs×20%
1.0≦Vs≦10	±0.5% of indicated value	±0.1% of Vs
0.1≦Vs≦1.0	±(0.1/Vs+0.4%) of the indicated value	±0.2(0.1/Vs+0.4)% of Vs

<diameter 700~1100mm> Upper limit value of Vs=set velocity range

Vs (m/s)	Velocity during measurement≧Vs×50%	Velocity during measurement≦Vs×50%
1.0≦Vs≦10	±1.0% of indicated value	±0.5% of Vs
0.1≦Vs≦1.0	±(0.2/Vs+0.8%) of the indicated value	±0.5(0.2/Vs+0.8)% of Vs

Model Number Table

MagneW 3000 FLEX (General Converter/Integral models)

Basic Model No. **MGG10C** - Selections - Optional selections - Options

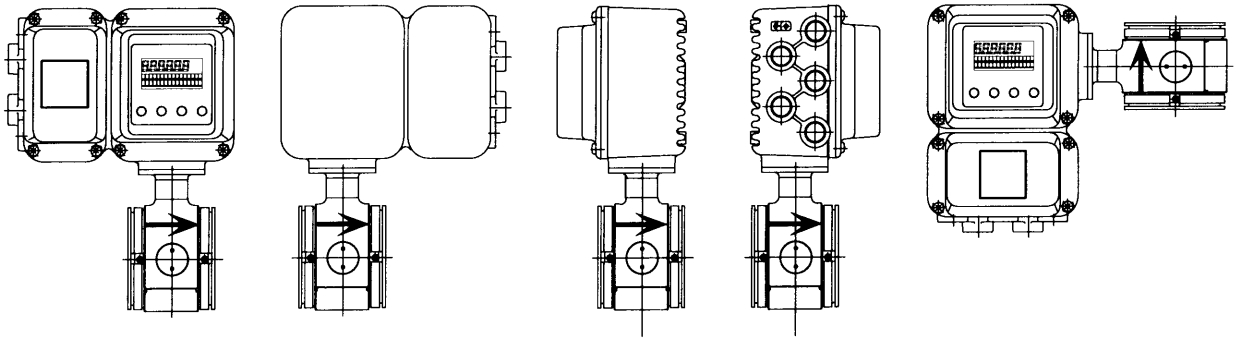
Power supply	AC100V 50/60Hz	A	
	AC110V 50/60Hz	B	
	AC115/120V 50/60Hz	C	
	AC200V 50/60Hz	D	
	AC220V 50/60Hz	E	
	AC230/240V 50/60Hz	F	
	DC24V AC Noise filter 50Hz	G	
	DC24V AC Noise filter 60Hz	H	
Output signal/ Communication	Volume flow 4 to 20mA DC output /Without communication	A	
	Volume flow 4 to 20mA DC output/With communication	B	
	Volume flow DE output/With communication Note 2	C	
	Others	□	
Conduit connection/ Watertight gland	G1/2 internal thread/Without watertight gland		1
	G1/2 inetrnal thread/With brass(Ni-plated) watertight gland		2
	G1/2 internal thread/With plastic watertight gland		3
	1/2NPT internal thread/Without watertight gland		4
	CM20 internal thread/Without watertight gland		5
	Pg13.5 internal thread/Without watertight gland		6
	Others		□
Installation/ Wiring direction	Integral model: Horizontal piping mounting/Upstream side		A
	Integral model: Horizontal piping mounting/Downstream side		B
	Integral model: Horizontal piping mounting/Left side viewed from upstream		C
	Integral model: Horizontal piping mounting/Right side viewed from upstream		D
	Integral model: Vertical piping mounting/Downstream side (Flow direction:Downstrem to upstream)		E
	Integral model: Others		□

X	Finish	Standard finish
1		Corrosion-resistant finish
2		Corrosion-proof finish
X	Display with data setting device	None
A		Main display: Instantaneos indication of flow volume in %
B		Main display: Instantaneos indication of actual flow volume
C		Main display: Indication of integrated flow volume Note 1
X	Contact inputs/ outputs	None
1		1 input and 1 output
2		2 inputs
3		2 outputs
X	Approval	None

X	No Option	
A	Empty-pipe detection	
B	Pulse output(Open collector)	
C	Certification of traceability	
E	Tropicalization treatment	
H	Indication other than SI units	
J	Attachment of the TAG number to the terminal box	
Q	PT1/4 air purge hole	
□	Others	

Note 1 : In case of this code, option "B" must be selected.

Note 2 : In case of this code, it is necessary to supply 16 to 45 VDC on 4 to 20mADC signal line.



A B C D E

Basic Model No. **MGG10C** - Selections - Optional selections - Options

Power supply	AC100V 50/60Hz	A	
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	AC115/120V 50/60Hz	C	
	AC200V 50/60Hz	D	
	AC220V 50/60Hz	E	
	AC230/240V 50/60Hz	F	
	DC24V AC Noise filter 50Hz	G	
	DC24V AC Noise filter 60Hz	H	
Output signal/ Communication	Volume flow 4 to 20mA DC output /Without communication	A	
	Volume flow 4 to 20mA DC output/With communication	B	
	Volume flow DE output/With communication Note 2	C	
	Others	□	
Conduit connection/ Watertight gland	G1/2 internal thread/Without watertight gland		1
	G1/2 inetrnal thread/With brass(Ni-plated) watertight gland		2
	G1/2 internal thread/With plastic watertight gland		3
	1/2NPT internal thread/Without watertight gland		4
	CM20 internal thread/Without watertight gland		5
	Pg13.5 internal thread/Without watertight gland		6
	Others		□
Installation/ Wiring direction	Remote model: Wall mounting/With standard bracket		G
	Remote model: 2B pipe mounting/With standard bracket		H
	Remote model: Others		□

X	No Option	
A	Empty-pipe detection	
B	Pulse output(Open collector)	
C	Certification of traceability	
E	Tropicalization treatment	
H	Indication other than SI units	
J	Attachment of the TAG number to the terminal box	
Q	PT1/4 air purge hole	
□	Others	

X	Finish	Standard finish
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Display with data setting device	None
A		Main display: Instantaneos indication of flow volume in %
B		Main display: Instantaneos indication of actual flow volume
C		Main display: Indication of integrated flow volume Note 1

X	Contact inputs/ outputs	None
1		1 input and 1 output
2		2 inputs
3		2 outputs

X	Approval	None

Note 1 : In case of this code, option "B" must be selected.

Note 2 : In case of this code, it is necessary to supply 16 to 45 VDC on 4 to 20mADC signal line.

Converter Terminal Correspondence Table

1-contact input and 1-contact output

Symbol		Description
A		Flow rate signal input
B		
C		
SA		
SB		
I.OUT	+	Current output
	−	
P.OUT	+	Pulse output
	−	
X		Excitation output
Y		
STATUS OUT	+	Contact output
	−	
STATUS IN	+	Contact input
	−	
POWER AC	L	Power supply
	N	
E		Not used
⏚		Class D grounding

2-contact input

Symbol		Description
A		Flow rate signal input
B		
C		
SA		
SB		
I.OUT	+	Current output
	−	
P.OUT	+	Pulse output
	−	
X		Excitation output
Y		
STATUS IN 2	+	Contact input 2
	−	
STATUS IN 1	+	Contact input 1
	−	
POWER AC	L	Power supply
	N	
E		Not used
⏚		Class D grounding

2-contact output

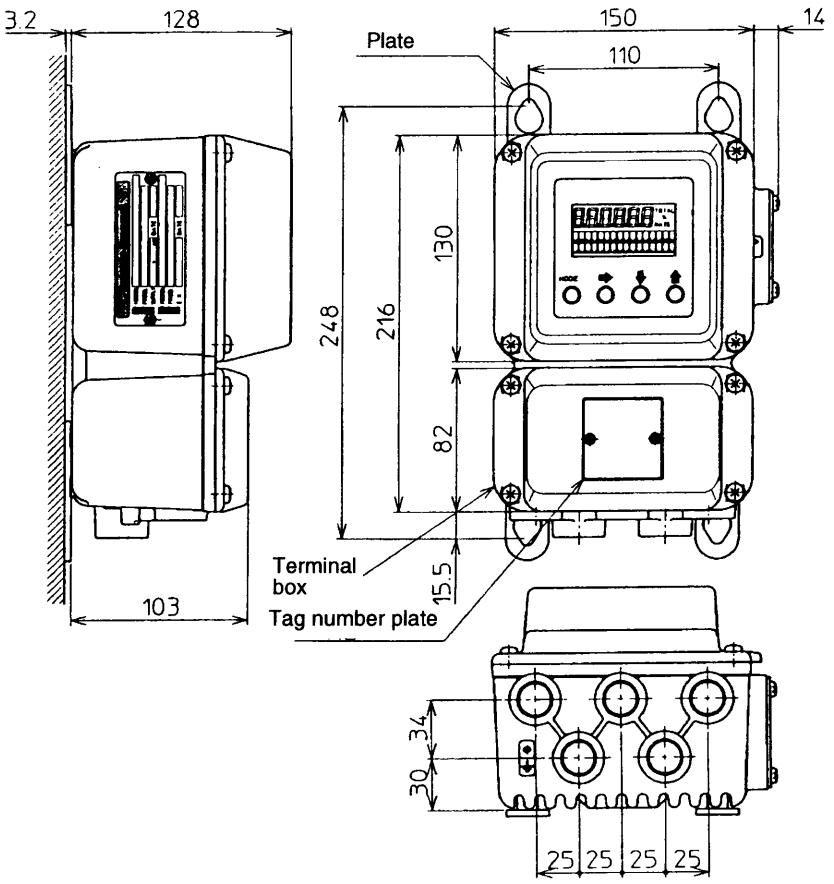
Symbol		Description
A		Flow rate signal input
B		
C		
SA		
SB		
I.OUT	+	Current output
	−	
P.OUT	+	Pulse output
	−	
X		Excitation output
Y		
STATUS OUT1	+	Contact output 1
	−	
STATUS OUT2	+	Contact output 2
	−	
POWER AC	L	Power supply
	N	
E		Not used
⏚		Class D grounding

Note) When the power supply is 24 V DC, "POWER AC" should read "POWER 24 V DC."

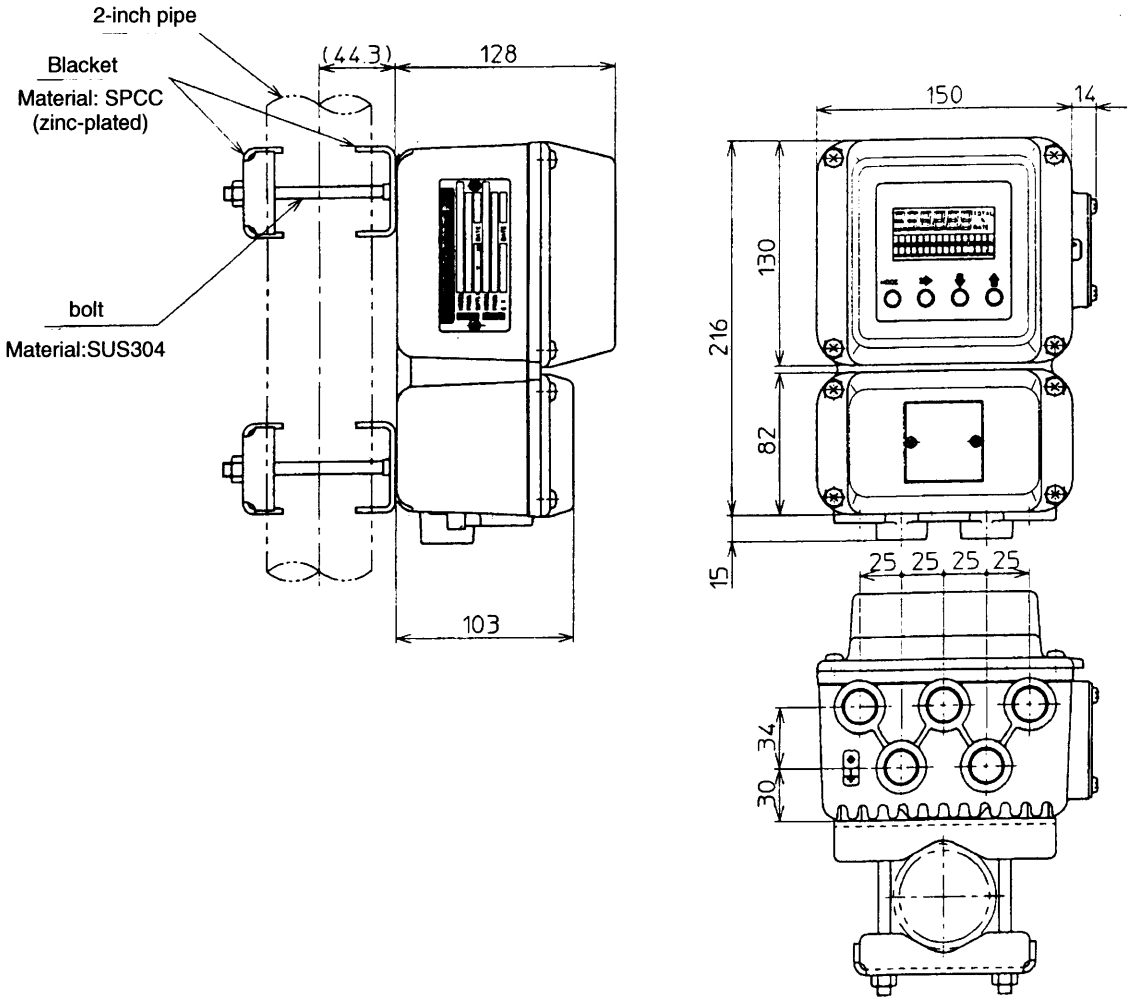
Dimension

(Unit:mm)

Wall mounting

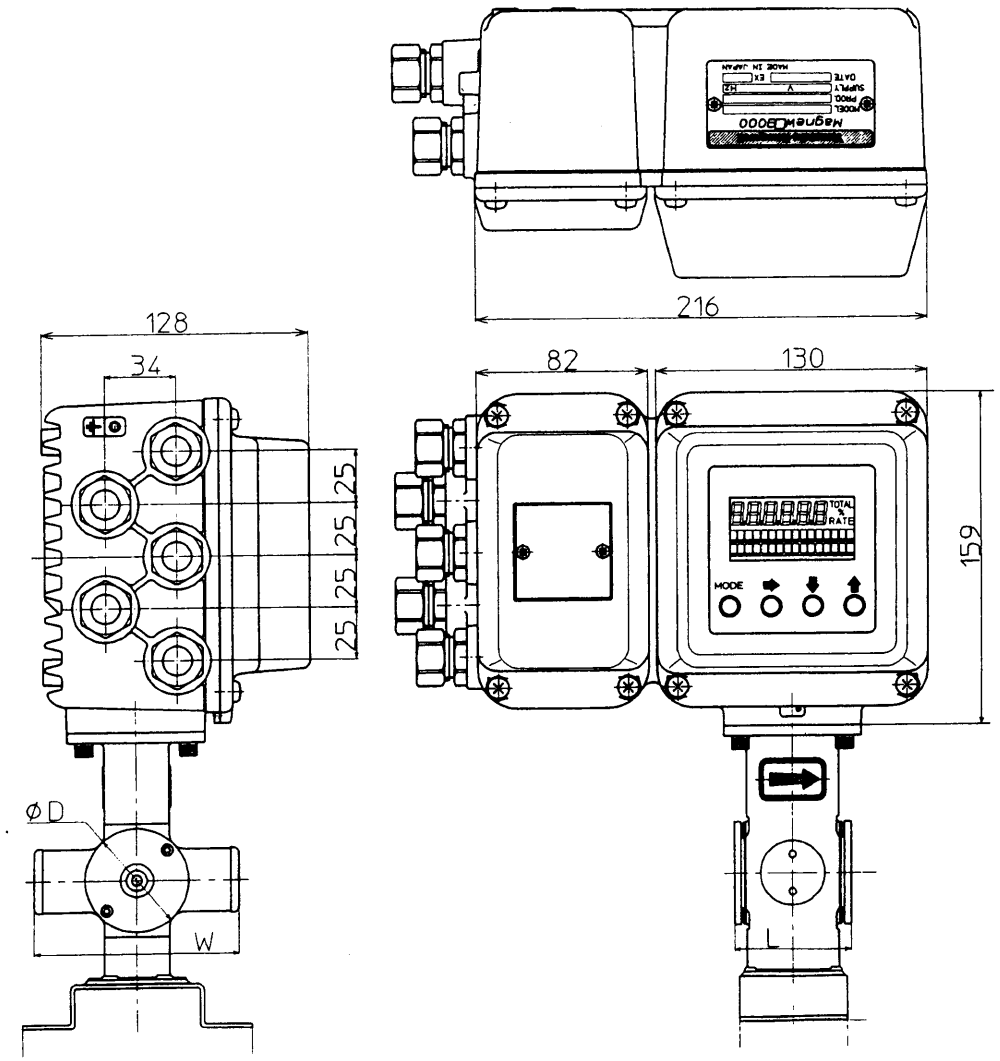


2-inch pipe mounted



(Unit:mm)

Integral Type



Note: The mass of an integral detector is 100g less than the mass of remote detectors.

Specifications are subject to change without notice.

YAMATAKE

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