

MagneW 3000 PLUS Smart Electromagnetic Flowmeter Detector (Ceramic lining) Model MGG18D

OVERVIEW

The MagneW 3000 PLUS ceramic lining detector is a high-performance and highly-reliable flow meter based on Yamatake's proven MagneW 3000 flow measurement technologies. A broader portfolio of MagneW 3000 PLUS meets various applications.

FEATURES

- A unique high-quality electrode structure offers the strongest ceramic lining detector against thermal shock.
- Ceramic lining detectors range in size from 15 mm to 100 mm are available and meet various severe applications, such as high-temperature, high-pressure, and wearing applications.
- Mirror finish surface of the ceramic lining is available for scaling applications.]
- The standard accuracy is +/- 0.5% of rate. Also available is an optional high accuracy calibration rated at +/- 0.35% of rate (sizes of 40mm to 100mm (1-1/2 to 4 inches) , combined with MGG14C).

APPLICATIONS

Applicable to a wide range of applications in various industries.

Pulp and paper

Liquid, pulp, chemicals, corrosive liquids, etc.

Petroleum/petrochemical/chemicals

Corrosive liquids, dyes, chemicals, etc.

Public utilities

Service water, sewage, excrement, sludge, sediment slurry etc.

Steel/non-ferrous metals/ceramics

Aluminum slurry, corrosive liquids, etc.

Machinery/equipment/electric machinery

Corrosive liquids, etc.



Remote model
(Diameter 15 to 100 mm)

Construction

Construction material slurry, sediment slurry, cement slurry, etc.

Shipbuilding

Sediment slurry, etc.

FUNCTIONAL SPECIFICATIONS

Type of protection

JIS C 0920 waterproof model
NEMA ICS6-110 TYPE4
IEC PUBL 529 IP66

Temperature range of liquid to be measured

Ceramic lining

Diameter (mm)	Temperature of the liquid to be measured	
	Integral model	Remote model
15 to 100	-40 to +120°C	-40 to +180°C

Measurable electrical conductivity

Combined with model MGG14C converter
3 $\mu\text{S}/\text{cm}$ or more
(in case of less than 3 $\mu\text{S}/\text{cm}$, consult your Yamatake representative)

Measurement flow range

Refer to the minimum/maximum set ranges shown in the table below.

Diameter (mm)	Minimum set range (m^3/h) (Minimum constant flow speed of 0 to 0.1 m/s)	Maximum set range (m^3/h) (Maximum constant flow speed of 0 to 0.1 m/s)	Flow conversion factor K
15	0 to 0.0637	0 to 6.36	1.572
25	0 to 0.177	0 to 17.6	0.5659
40	0 to 0.453	0 to 45.2	0.2210
50	0 to 0.707	0 to 70.6	0.1415
80	0 to 1.81	0 to 180	0.005526
100	0 to 2.83	0 to 282	0.03537

Measurement flow velocity range

0 to 10 m/s

Measurable flow pressure

-0.098 to +3.92 MPa {-1 to +40 kgf/cm^2 }

Flange rating

JIS 10K, 20K, 30K, 40K
ANSI 150, 300, JPI 150, 300
DIN PN10, 16, 25, 40
JIS G3451 F12 (diameter 80 to 100 mm)

Ambient temperature limits

-25 to +60°C (integral model)
-30 to +80°C (integral model)

Ambient humidity limits

10 to 90% RH

Optional specifications

Test report

Calibration certificate, withstand voltage test, insulation resistant, hydrostatic pressure test, physical inspection are included.

Traceability certificate

The following three documents are included.

- Traceability system chart
- Traceability certificate
- Test report

Attaching the tag number to the terminal box

Stamp the tag with the specified number and attach to the terminal box. The maximum number of characters in the tag number is 8.

Attaching the tag number to the neck section

Stamp the tag with the specified number and attach to the neck section of the detector. The maximum number of characters in the tag number is 16.

Mirror finish for ceramic lining

Polish the surface of ceramic lining.

For additional specifications, please contact your Yamatake representative

PERFORMANCE SPECIFICATIONS**Accuracy**

(in combination with the model MGG14C converter)
<diameter 15 mm>

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

<diameter 25 to 100 mm>

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement $\geq V_s \times 20\%$	
	Standard Accuracy (Calibration Code A)	*)High Accuracy (Calibration Code U)
$1.0 \leq V_s \leq 10$	$\pm 0.5\%$ of rate	$\pm 0.35\%$ of rate
$0.1 \leq V_s \leq 1.0$	$\pm (0.1/V_s + 0.4)\%$ of rate	$\pm (0.1/V_s + 0.25)\%$ of rate

Vs (m/s)	Velocity during measurement $\leq V_s \times 20\%$	
	Standard Accuracy (Calibration Code A)	*)High Accuracy (Calibration Code U)
$1.0 \leq V_s \leq 10$	$\pm 0.1\%$ of Vs	$\pm 0.07\%$ of Vs
$0.1 \leq V_s \leq 1.0$	$\pm 0.2(0.1/V_s + 0.4)\%$ of Vs	$\pm 0.2(0.1/V_s + 0.25)\%$ of Vs

*)High accuracy calibration is available for sizes of 40 to 100mm (1½ to 4 inches).

Reference Conditions for high accuracy calibration:

- Fluid: Tap water
- Fluid temperature: 15 to 30°C
- Ambient temperature: 15 to 30°C
- Ambient humidity: 30 to 70%
- Length of straight pipe:
Upstream > 20×DN
Downstream > 5×DN
(DN: Pipe diameter nominal)
- Properly grounded
- Properly centered

PHYSICAL SPECIFICATIONS**Finish**

Corrosion-preventive acrylic resin

Color

Light beige (Munsell 4Y7.2/1.3, terminal box)

Dark beige (Munsell 10YR4.7/0.5, detector housing)

Main body material**Measuring pipe material**

Ceramic (Al₂O₃ 99.7%)

Housing

Cast steel (diameter 15, 25 mm)

Aluminum alloy (diameter 40 to 100 mm)

Terminal box

Aluminum alloy (remote model)

Material of parts in contact with liquid**Lining**

Ceramic (Al₂O₃ 99.7%)

(diameter 15 to 100 mm)

Electrode

SUS316L, Hastelloy C, Titanium, Zirconium, Tantalum, Tungsten-carbide, Platinum-iridium

Grounding ring

None, Platinum metallize

Structure of electrode

Internal insertion type

(electrode can not be removed)

INSTALLATION

Electrical connection

Integral model

Connection to converter

Remote model

G1/2 (PF1/2) internal thread, 1/2 NPT internal thread, CM20 internal thread, Pg 13.5 internal thread

Pipe connection

Wafer

Grounding

Resistance lower than 100 Ω

Mounting

Horizontally-mounted electrode

Length of straight pipe

Upstream side

A minimum five straight pipe diameters

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

Downstream side

Two straight pipe diameters is recommended.

Cable (between remote detector and converter)

Maximum length

300 m (depending on fluid conductivity)

Outer diameter

10 to 12 mm

Signal cable

Dedicated cable (11.4 mm, 0.75 mm²)
or equivalent (CVVS, CEEV, etc.)

Excitation cable

Dedicated cable MGA12W

(O.D. 10.5 mm, 2 mm²)

or equivalent (CVV and others)

MODELSELECTIONS

Wafer type (15 to 100 mm) Ceramic (Al₂O₃ 99.7%) liner

Model MGG18D - I II III IV V VI VII VIII IX - X XI - Y/Options (some options can be selected per each model)

Basic model no.		Selections						Optional selections	
MGG18D									
I	Line size	15 mm	015						
		25 mm	025						
		40 mm	040						
		50 mm	050						
		80 mm	080						
		100 mm	100						
II	Linear	Ceramic (Al ₂ O ₃ 99.7%)						C	
III	Piping connection	Wafer JIS 10K		11					
		Wafer JIS 20K		12					
		Wafer JIS 30K		13					
		Wafer ANSI 150		21					
		Wafer ANSI 300		22					
		Wafer JIS G3451 F12 (Size 80 mm or larger)		31					
		Wafer DIN PN10		41					
		Wafer DIN PN16		42					
		Wafer DIN PN25		43					
		Wafer DIN PN40		44					
		Wafer JPI 150		61					
		Wafer JPI 300		62					
IV	Electrode	SUS316L				L			
		Hastelloy C				C			
		Titanium				K			
		Zirconium				H			
		Tantalum				T			
		Tungsten carbide				W			
V	Grounding ring	None (Note 1)					X		
		Platinum metallize					M		
VI	Electrical connection / watertight gland	Integral type					1		
		Remote type	G1/2 internal thread / without watertight gland					2	
			G1/2 internal thread / with brass (Ni-plated) watertight gland					3	
			G1/2 internal thread / with plastic watertight gland					4	
			1/2NPT internal thread / without watertight gland (Note 2)					5	
			CM20 internal thread / without watertight gland					6	
			Pg 13.5 internal thread / without watertight gland					7	
			G1/2 internal thread / with SUS304 watertight gland					8	
VII	Face-to-face dimensions	Standard						A	
VIII	Installation / wiring direction	Integral type						H	
		Remote type	Upstream side (horizontal / vertical piping mounting)						A
			Downstream side (horizontal / vertical piping mounting)						B
			Horizontal piping mounting / left side viewed from upstream						C
			Horizontal piping mounting / right side viewed from upstream						D
IX	Calibration	Standard						A	
		+/- 0.35% of rate calibration (Size 40 to 100 mm (1 1/2 to 4 inches))						U	
		Others						<input type="checkbox"/>	
X	Finish	Standard						X	
		Corrosion-resistant finish						1	
		Corrosion-proof finish						2	
XI	Bolt / nut	None						X	
		Carbon steel						1	
		SUS304						2	

Note) 1. This specification (without grounding ring) is applicable when the grounding is possible through pipe line. In case of plastic pipes or lined pipes, this selection is not applicable. Please select "M" as grounding ring selection code.
 2. Must be selected for CSA/FM NI approval

Remote type

Options	Yamatake version (must be selected)	Y
	Calibration certificate (sent to ordering location separately)	A
	Traceability certificate for detector	B
	Attachment of the TAG number plate to neck section for detector (Note 3)	L
	Mirror-finish ceramic lining	U

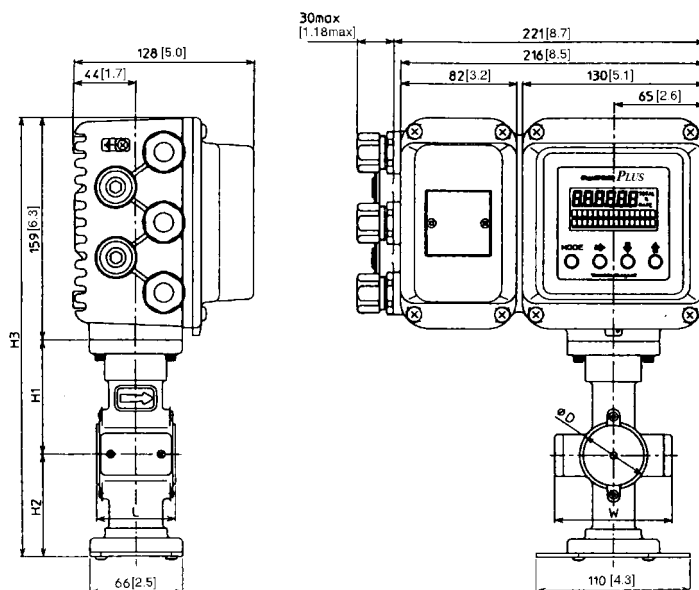
Integral type

Options	Yamatake version (must be selected)	Y
	Calibration certificate (sent to ordering location separately)	A
	Traceability certificate for detector	B
	Attachment of the TAG number plate to neck section for detector (Note 3)	L
	Mirror-finish ceramic lining	U

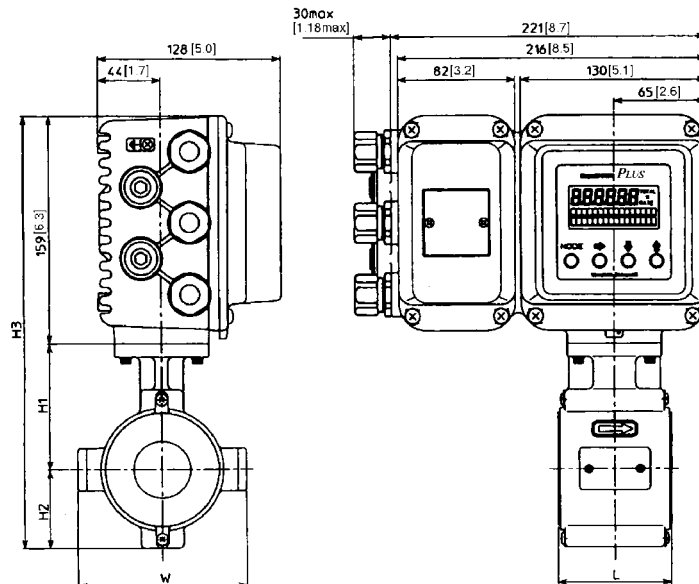
Note) 3. Must be selected for Tag no. requirement

DIMENSIONS

Integral style (15 to 25 mm)

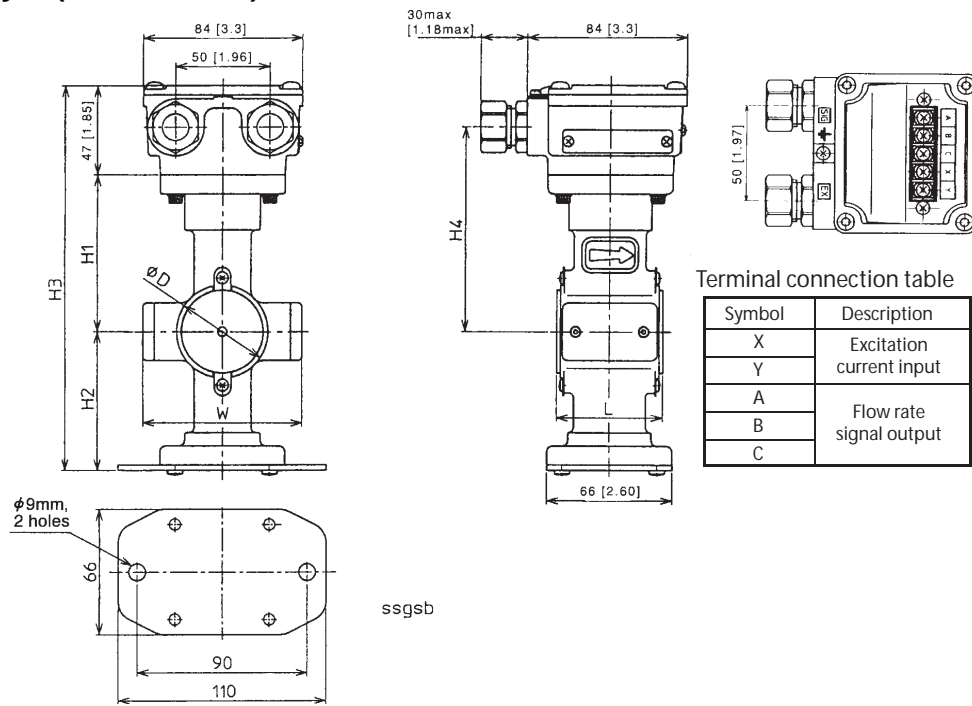


Integral style (40 to 100 mm)

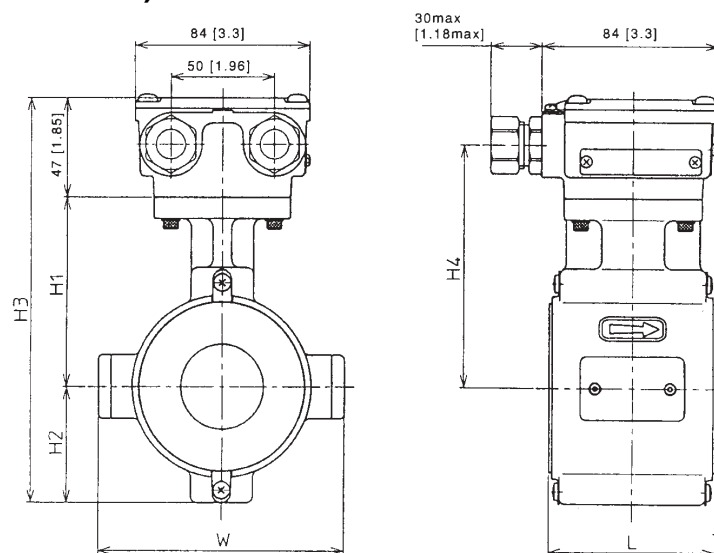


Size		mm	15	25	40	50	80	100
		(inches)						
Face to face dimension	L	mm	56	56	80	86	106	120
		(inches)						
Height	H1	mm	82	89	88	95	109	121
		(inches)						
	H2	mm	73	80	55	64	78	90
		(inches)						
	H3	mm	314	328	302	318	346	370
		(inches)						
Width	W	mm	84	94	116	132	161	185
		(inches)						
Outer diameter	D	mm	48.5	65	86	102	132	156
		(inches)						
Weight included a converter model MGG14C		kg	5.5	5.5	5.2	5.8	7.6	9.0
		(lb)						

Remote style (15 to 25 mm)



Remote style (40 to 100 mm)



Size		mm	15	25	40	50	80	100
		(inches)						
Face to face dimension	L	mm	56	56	80	86	106	120
		(inches)						
Height	H1	mm	82	89	88	95	109	121
		(inches)						
	H2	mm	73	80	55	64	78	90
		(inches)						
	H3	mm	202	216	190	206	234	258
		(inches)						
	H4	mm	107	114	113	120	134	146
		(inches)						
Width	W	mm	84	94	116	132	161	185
		(inches)						
Outer diameter	D	mm	48.5	65	86	102	132	156
		(inches)						
Weight (kg)		kg	2.5	2.8	2.4	3.0	4.8	6.3
		(lb)						

azbil

Yamatake Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan

URL:<http://www.azbil.com>