

MASSMAX 1400R Series

Coriolis Mass Flowmeter
Straight Twin Tube

OUTLINE

The **MASSMAX** 1400R series is a Coriolis mass flowmeter with a straight twin tube, and offers excellent cost performance. The straight measuring tube construction was selected based on our know-how accumulated through field experience and the requirements of customers. This design allows self-cleaning of the tube and low pressure loss. Although the **MASSMAX** 1400R is an inexpensive model, safety is assured by the increased pressure resistance of the sensor housing, thus delivering high performance, safety, and low cost. The wetted parts are made of Stainless Steel, and the sensor housing has a pressure resistance of up to 10 MPa. Four sizes from 15 to 50 mm in diameter are available. The **MASSMAX** 1400R series is suitable for a wide range of applications from small flow to large flow.

FEATURES

- For low-cost applications requiring self-cleaning and low pressure loss
- High accuracy: $\pm 0.15\%$ of reading (+zero stability)
- Secondary pressure container made of Stainless Steel (max. working pressure: 10 MPa) Suitable for chemical and petrochemical applications which require safety
- Applicable to the food and pharmaceutical industries with the sanitary ferrule connection (3A approved)
- Simultaneous measurement of mass flow rate (instantaneous and totalized), density, and temperature with one instrument
- Compliant with Japanese standard explosionproof
- Compliant with DNV GL and Lloyd's ship classifications (Remote type)

STANDARD SPECIFICATIONS

- Measuring principle : Coriolis force
- Meter size : 15, 25, 40, 50 (mm)
- Measuring range :

Meter size	Max. flow rate	Min. flow rate	Max. flow rate	Min. flow rate
	kg/h		kg/min	
15	4,800	48	80	0.8
25	20,000	200	333	3.33
40	60,000	600	1,000	10
50	125,000	1,250	2,083	20.83

- Enclosure : IP66/67 (IEC 60529)
- Ambient temperature: -40 to $+60^{\circ}\text{C}$ (compact type)
 -40 to $+65^{\circ}\text{C}$ (remote type)
See [Explosionproof] for the ambient temperature range of Ex types.



Fluid specifications

- Fluid : Liquids
- Fluid temperature and pressure:

Temperature *1	Pressure *2
-40 to $+130^{\circ}\text{C}$	-0.1 to 10MPa

See [Pressure and temperature rating table] for details.

*1 See [Explosionproof] for the ambient temperature range of Ex types.

*2 Pressure in this table means the allowable pressure range of the measuring tube. Note that the maximum operating pressure of the process is within the allowable pressure of the flange rating or the sensor housing. See [Pressure and temperature rating table] for details.

- Density : 400 to 2500 kg/m^3

Sensor specifications

- Process connection :
Flange; JIS10K/20K or equivalent
ASME Class 150/300 or equivalent, etc.
Sanitary fitting; ISO 2852 ferrule, etc. (optional)
- Materials:
Wetted parts:

Wetted parts	Material
Sensor tube	Stainless Steel (UNS S31803) *Equivalent to JIS SUS329J3L
Flow splitter	Stainless Steel (SS316/316L dual certified)
Flange	Stainless Steel (SS316/316L dual certified)

Non Wetted Part:

Outer cylinder; Stainless Steel 304 / 304L dual certified
Stainless Steel 316 / 316L dual certified*
*Optional

- Pressure rating of outer cylinder: 10 MPa at 20°C as standard.

Converter

- Housing material : Aluminum alloy (SS316L is optional)
- Painting : Siloxane coating
- Color : Gray for converter housing, jade green for converter cover and terminal cover
- Power supply : 100 V to 230 V AC (85 V to 253 V AC)
Option : 24 V DC (11 to 31 V DC)
Voltages in parentheses indicate the acceptable voltage range.
- Supply frequency : 48 to 63 Hz
- Power consumption : AC: Approx. 22 VA, DC: Approx. 12 W
- Grounding : Grounding resistance must be less than 100Ω for Non-ex types, less than 10Ω for Ex types
- Cable entry : G1/2 female adapter × 2
or 1/2 NPT female adapter × 2
or M20 × 1.5 female × 2
or G1/2 flameproof gasket adapter × 2
(Japanese standard explosionproof)
Note: Up to 3 cable entries can be provided.

Indication and outputs

- Display : Blue dot matrix LCD with backlight 128 × 64 pixels (59 × 31 mm) Each of 4 screens shows data in up to 3 lines. Data include instantaneous mass flow rate (bar graph indication available), totalized mass flow, instantaneous volume flow rate, totalized volume flow rate, density, temperature, and instantaneous flow rate trend graph (percentage indication). Setting parameters and self-diagnosis results are also displayed.
- Units of instantaneous mass flow rate : kg/h, kg/min, kg/sec, t/h, and others
Forward and reverse flow directions are indicated with "+" or "-".
- Units of totalized mass flow rate : kg, t, g, and others
Totalization of flow rates in forward and reverse directions is possible.
- Units of density : g/cm³, kg/m³, and others
- Units of temperature : °C, and others
- Current output : 4 to 20 mA (max. 22 mA)
*Preparing for HART communication
Load resistance is less than 1000Ω.
Select from among instantaneous mass flow rate, density, and temperature.
- Pulse output : Open collector output
Load rating : 32 V DC
20 mA or less (100 Hz < f ≤ 10 kHz)
Residual voltage at close <1.5 V (load current ≤ 1 mA)
<2.5 V (load current ≤ 10 mA)
<5 V (load current ≤ 20 mA)
100 mA or less (f ≤ 100 Hz)
Residual voltage at close <0.2 V (load current ≤ 10 mA)
<2 V (load current ≤ 100 mA)
Output frequency : Max. 10 kHz
Pulse rate : 36 to 36,000,000 pulse/h (0.01 Hz to 10 kHz)
Pulse width: Selectable from:
(1) Automatic: Pulse width which makes duty 50% at full scale frequency
(2) Fixed duty ratio: Always 1:1
(3) Arbitrary setting: 0.05 to 2000 ms
- Status output : Open collector output
Load rating : 32 V DC, 100 mA or less
Residual voltage at close <0.2 V (load current ≤ 10 mA)
<2 V (load current ≤ 100 mA)

- Contents : Selectable from:
(1) No status output (default setting)
(2) Flow direction identification
(3) Flow over-range
(4) Totalization preset
(5) Range identification (when double ranges are used)
(6) Errors and measurement alarms for flow rate, density, temperature, and others
- Control input
Input voltage : 8 to 32 V DC (ON)/2.5 V DC, 0.4 mA or less (OFF)
Max. current : 6.5 mA (input voltage ≤ 24 V DC)
Max. current : 8.2 mA (input voltage ≤ 32 V DC)
Control target : Selectable from:
(1) No control input (default setting)
(2) Hold output
(3) Lock output at 0%
(4) Reset totalization counter
(5) Reset errors
(6) Range identification (when double ranges are used)
(7) Others
- Combination of outputs
Standard : 4 to 20 mA output × 1, pulse output × 1, status output × 1, control input × 1 (total 4 points)
Option 1 : 4 to 20 mA output × 2, pulse output × 1 (total 3 points)
Option 2 : 4 to 20 mA output × 3, pulse output × 1 (total 4 points)
Option 3 : 4 to 20 mA output × 2, status output or pulse output (selectable) × 2 (total 4 points)
See "Converter code" on page 13 for details.
- Low cut-off : Current output and pulse output (can be set separately for each indication)
Range : 0 to 20% F.S. (0.1% step) Hysteresis: 0 to 5% F.S. (0.1% step)
- Time constant : Current output and pulse output (can be set separately for each indication)
Range : 0.0 to 100.0 sec (0.1 sec step)

Standard functions

- User-defined measuring units : Units for mass, volume, and time can be defined (max. 7 letters).
- Bi-directional flow measurement : Flow rates in both directions can be measured.
Flow direction is output as status output.
- Self-diagnosis : Error messages and status messages are displayed.
Function : CPU, memory, software, hardware, output connection
Status : Over-range, count-over, power failure
Application : Oscillating balance of measuring tube, vibration energy, other sensor circuit diagnosis
- Testing : Built-in simulator of current and pulse outputs
Allows for loop check without calibrator.
- Infrared touch sensor : Four touch sensors enable data to be set from outside without the need for opening the cover.
These serve as push buttons while the cover is opened.

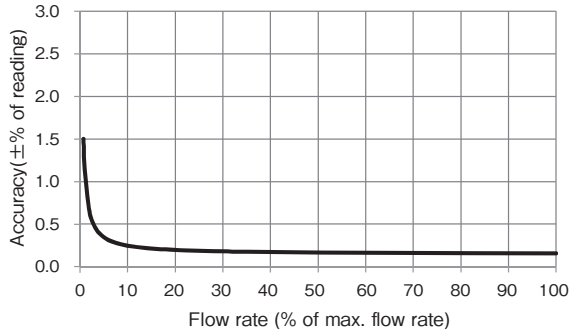
Accuracy (calibrated at the factory)

- Mass flow rate (pulse output)

Accuracy	±0.15% of reading
Zero stability	S15 : 0.65kg/h S25 : 2.70kg/h S40 : 8.00kg/h S50 : 17.0kg/h

- Reference conditions: Water at 20°C, 0.1 MPa

Measurement error (accuracy + zero stability)



		Measurement error (±% of reading)
% of max. flow rate	100 %	0.163
	50 %	0.177
	20 %	0.217
	10 %	0.285
	5 %	0.421
	1 %	1.504

Note: Accuracy is not assured for flow rates less than 1% of max. flow rate.

Effects of changes in process conditions:

Fluid temperature: ±0.0075% of max. flow rate for each 1°C

Fluid pressure: ±0.015% of max. flow rate for each 0.1 MPa

These effects should be considered when process conditions change after zero adjustment.

- Density (indicated value)

Measuring range	400 to 2500kg/m ³
Accuracy (calibrated at the factory)* (Meter size: 25, 40, 50)	±2kg/m ³
Accuracy (calibrated at the factory)* (Meter size: 15)	±5kg/m ³

When test certificates of density meters are required, density calibration option must be specified. (Size 25 or larger)

Effects of process (temperature or pressure) changes on density measurements:

The numbers below are for the cases in which process changes after density calibration.

Within 0.25 kg/m³ per 1°C change in temperature (Size S15)

Within 0.15 kg/m³ per 1°C change in temperature (Sizes S25, S40, and S50)

- Temperature (indicated value)

Measuring range	-40 to +130°C
Accuracy	±1°C

Explosion Proof

- Japanese standard explosionproof

Type of protection and class:

Compact type MMM1400RC-JEx

(Certificate number: CML21JPN1739X, CML21JPN21175X)

Ex db ia IIC T6...T1 Ga/Gb

Ex db eb ia IIC T6...T1 Ga/Gb

Ex tb IIIC T185°C Db

Remote type sensor MMS1000RF-JEx

(Certificate number: CML21JPN2904X, CML21JPN21181X)

Ex ia IIC T6...T1 Ga

Ex ia IIIC T185°C Da

Remote type converter MMC400RF-JEx

(Certificate number: CML21JPN1740X, CML21JPN21182X)

Ex db [ia] IIC T6 Gb

Ex db eb [ia] IIC T6.Gb

Ex tb IIIC T75°C Db

Compact type MMM1400RC-JEx (Japanese standard explosionproof)

Compact type MMM1400C-Ex (ATEX/IECEEx explosionproof)

Aluminum alloy converter housing (standard)

Ambient temperature °C	Fluid temperature °C	Temperature class	Max. surface temperature °C
-40 to +40	45	T6-T1	T80
	60	T5-T1	T95
	95	T4-T1	T130
	130	T3-T1	T165
	150	T3-T1	T185
-40 to +50	60	T6-T1	T95
	95	T5-T1	T130
	130	T4-T1	T165
	150	T3-T1	T185
-40 to +65	65	T4-T1	T100

Stainless steel converter housing (optional)

Ambient temperature °C	Fluid temperature °C	Temperature class	Max. surface temperature °C
-40 to +40	45	T6-T1	T80
	60	T5-T1	T95
	95	T4-T1	T130
	130	T3-T1	T165
	150	T3-T1	T185
-40 to +50	60	T5-T1	T95
	95	T4-T1	T130
-40 to +65	60	T5-T1	T95

Remote type MMS1000RF-JEx (Japanese standard explosionproof)

Remote type MMS1000F-Ex (ATEX/IECEEx explosionproof)

Ambient temperature °C	Fluid temperature °C	Temperature class	Max. surface temperature °C
-40 to +40	45	T6-T1	T80
	60	T5-T1	T95
	95	T4-T1	T130
	130	T3-T1	T165
	150	T3-T1	T185
-40 to +50	60	T6-T1	T95
	95	T5-T1	T130
	130	T4-T1	T165
	150	T3-T1	T185
-40 to +65	95	T4-T1	T130
	130	T3-T1	T165
	150	T3-T1	T185

- ATEX explosionproof

Type of protection and class:

Compact type MMM1400C-Ex

(Certificate number: PTB17 ATEX 2008 X)

II 1/2(1)G Ex db ia [ia Ga] IIC T6...T1 Ga/Gb or

II 1/2(1)G Ex db eb ia [ia Ga] IIC T6...T1 Ga/Gb or

II 1/2 G Ex db ia IIC T6...T1 Ga/Gb

II 1/2 G Ex db ea ia IIC T6...T1 Ga/Gb

II 2(1)D Ex tb [ia Da] IIIC Txxx°C Db or

II 2D Ex tb IIIC Txxx°C Db

Remote type sensor MMS1000F-Ex

(Certificate number: PTB17 ATEX 2007 X)

II 1 G Ex ia IIC T6...T1 Ga or II 1 D Ex ia IIIC Txxx°C Da

Remote type converter MMC400F-Ex

(Certificate number: PTB17 ATEX 2009 X)

II 2(1) G Ex db [ia Ga] IIC T6 Gb

II 2(1)G Ex db eb [ia Ga] IIC T6 Gb or

II 2 G Ex db [ia] IIC T6 Gb or

II 2 G Ex db eb [ia] IIC T6 Gb or

II 2(1)D Ex tb [ia Da] IIIC T75°C Db or

II 2D Ex tb IIIC T75°C Db

- IECEEx explosionproof

Type of protection and class:

Compact type MMM1400C-Ex

(Certificate number: IECEEx PTB17.0029X)

Ex db ia [ia Ga] IIC T6...T1 Ga/Gb or

Ex db eb ia [ia Ga] IIC T6...T1 Ga/Gb or

Ex ia IIC T6...T1 Ga/Gb or

Ex eb ia IIC T6...T1 Ga/Gb or

Ex tb [ia Da] IIIC Txxx°C Db or

Ex tb IIIC Txxx°C Db

Remote type sensor MMS1000F-Ex

(Certificate number: IECEEx PTB17.0028X)

Ex ia IIC T6...T1 Ga or II 1 D Ex ia IIIC Txxx°C Da

Remote type converter MMC400F-Ex

(Certificate number: IECEEx PTB17.0030X)

Ex db [ia Ga] IIC T6 Gb

Ex db eb [ia Ga] IIC T6 Gb or

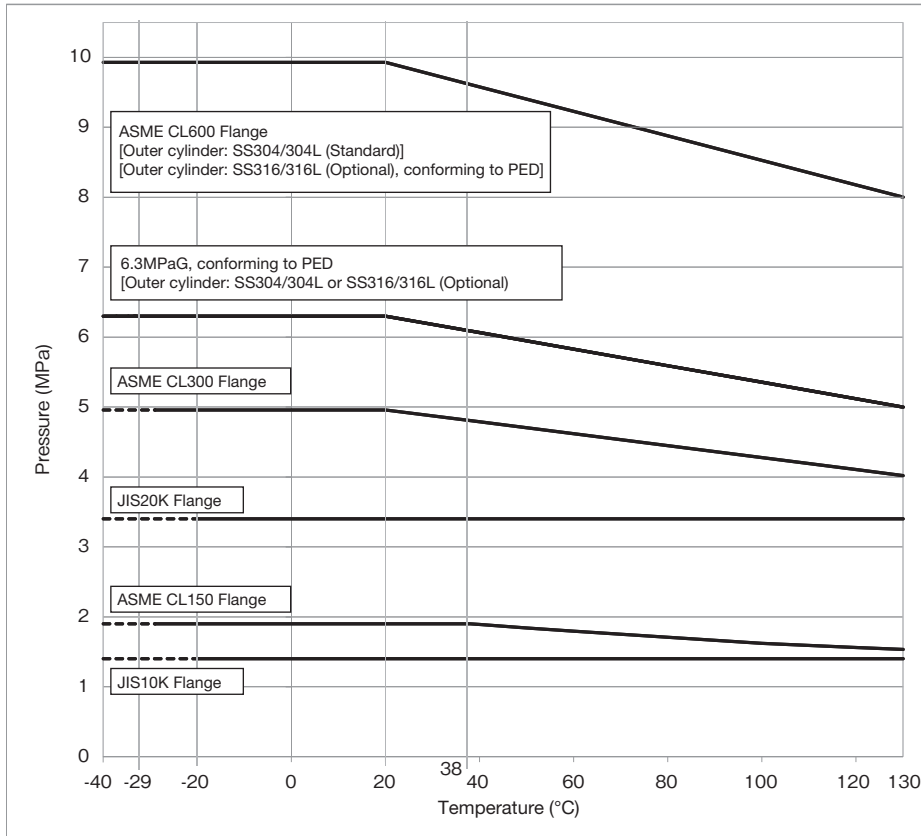
Ex db [ia] IIC T6 Gb or

Ex db eb [ia] IIC T6 Gb or

Ex tb [ia Da] IIIC T75°C Db or

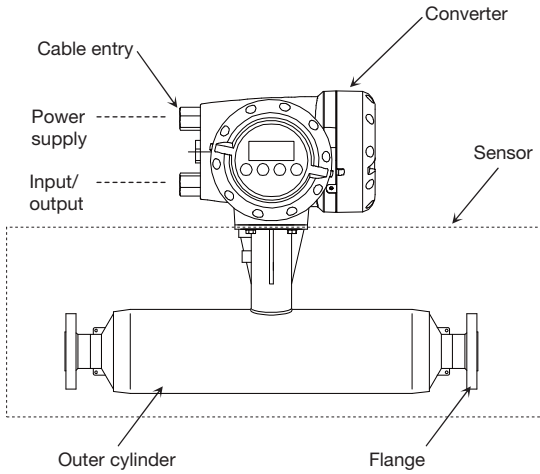
Ex tb IIIC T75°C Db

Pressure and temperature rating table

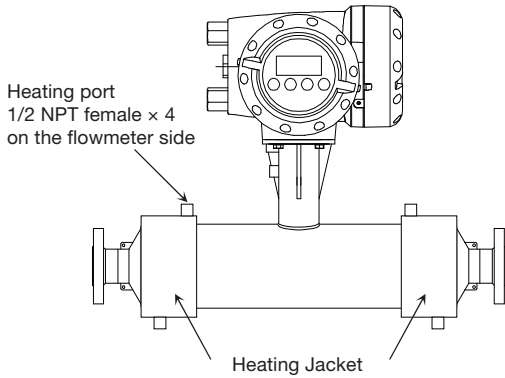


NAMES OF PARTS

Compact type



With heating jacket



FLOW RANGE

Meter size	Max. flow rate	Min. flow rate	Max. flow rate	Min. flow rate
	kg/h		kg/min	
15	4,800	48	80	0.8
25	20,000	200	333	3.33
40	60,000	600	1,000	10
50	125,000	1,250	2,083	20.83

PROCESS CONNECTION

• Flange connection

Meter size	Standard	Semi standard	Optional (One rank larger)
	Equiv. to JIS *1	Equiv. to ASME	Equiv. to JIS/ASME
15	15A 20K	1/2" class 150	25A 20K 1/2" class 300,600 1" class 150,300,600
25	25A 20K	1" class 150	40A 20K 1" class 300,600 1-1/2" class 150,300,600
40	40A 20K	1-1/2" class 150	50A 10K 1-1/2" class 300,600 2" class 150,300,600
50	50A 10K	2" class 150	50A 20K, 80A 10K 2" class 300,600 3" class 150,300,600

*1 JIS20K flange is commonly used for JIS 10K 10A to 10K 40A flange as standard. (Installation dimensions of JIS20K flange are equal to JIS10K except the flange thickness.)

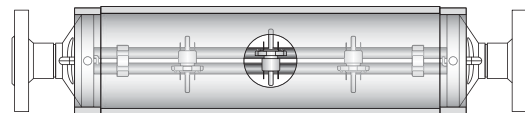
• Sanitary fitting (optional)

Meter size	Fitting
15	1" ISO 2852 ferrule (IDF-compliant)
25	1-1/2" ISO 2852 ferrule (IDF-compliant)
40	2" ISO 2852 ferrule (IDF-compliant)
50	3" ISO 2852 ferrule (IDF-compliant)

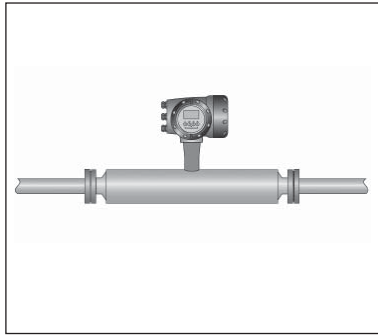
MEASURING TUBE DIMENSIONS

Meter size	Materials	Dimensions (mm)	
		Inside diameter	Wall thickness
15	S	8.4	0.56
25	S	14.96	0.46
40	S	24.85	0.55
50	S	36.68	0.71

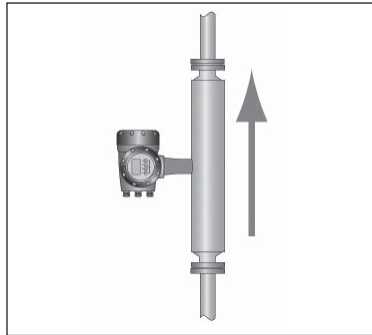
As shown below, the sensor tube is the straight twin tube consisting of two measuring tubes.



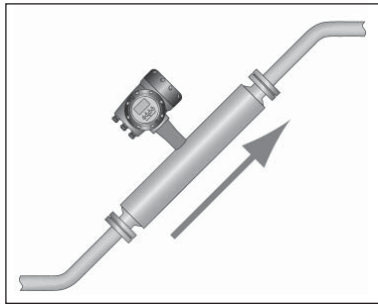
INSTALLATION NOTES



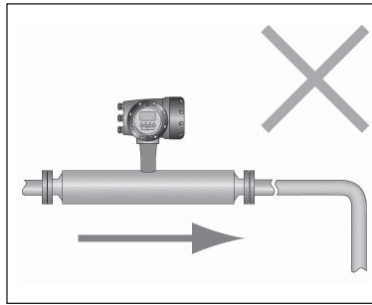
① When installing the flowmeter on the horizontal line, place the converter or the terminal box of remote type above the measuring tube.



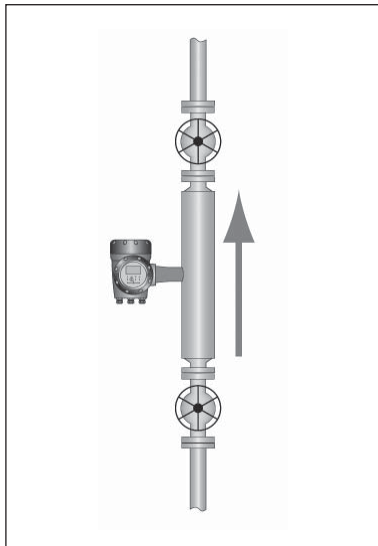
② When installing the flowmeter on the vertical line, install it in upward flow direction.



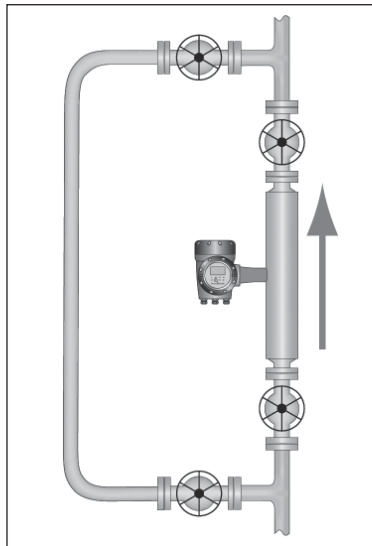
③ When installing the flowmeter on the slant line with upward flow, place the converter or the terminal box of remote type above the measuring tube.



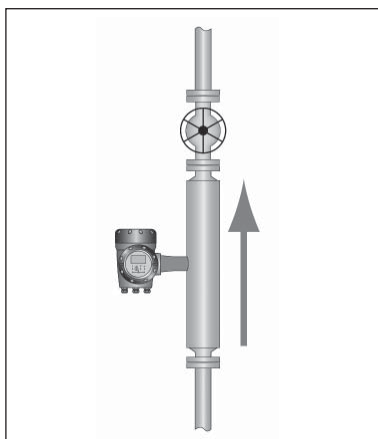
④ When installing the flowmeter on the horizontal line, make the upstream and downstream pipings be filled with liquids. Do not bend these pipings downward at the vicinity of flowmeter. To avoid unnecessary accumulation of gasses, do not install the flowmeter on the upper part of associated pipings in such processes containing air or gas.



⑤ When installing the flowmeter on the vertical line, provide with stop valves at both upstream and downstream to keep the flowmeter to be filled with liquids, which is necessary to perform zero adjustment.



⑥ It is highly recommended to equip with bypass and stop valves for maintenance purpose.

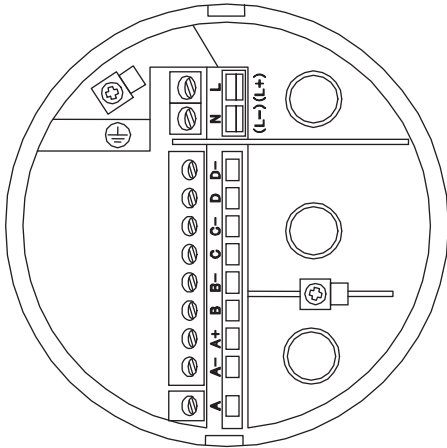


⑦ Install a control valve downstream if required to avoid the cavitations caused by throttling of valve.

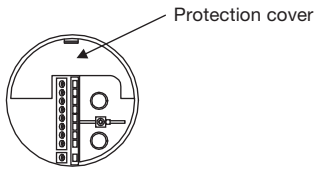
ELECTRICAL CONNECTION

(I/O terminals of MMC400RC/F converters)

- Two terminals for current output and pulse or status output (standard output)
- When other inputs/outputs are required, select them from the options.



The power supply terminal block has a protection cover.



Terminals	Description
L / L+	L and N for AC power supply
N / L-	L+ and L- for DC power supply
⊕	Grounding

Terminals	Polarity	Description (Standard: Code 600)
D-	-	Pulse or status output, frequency pulse, alarm output
D	+	
C-	-	Current output (4 to 20 mA/internal power supply)
C	+	
B-		
B		
A+		
A-		
A		

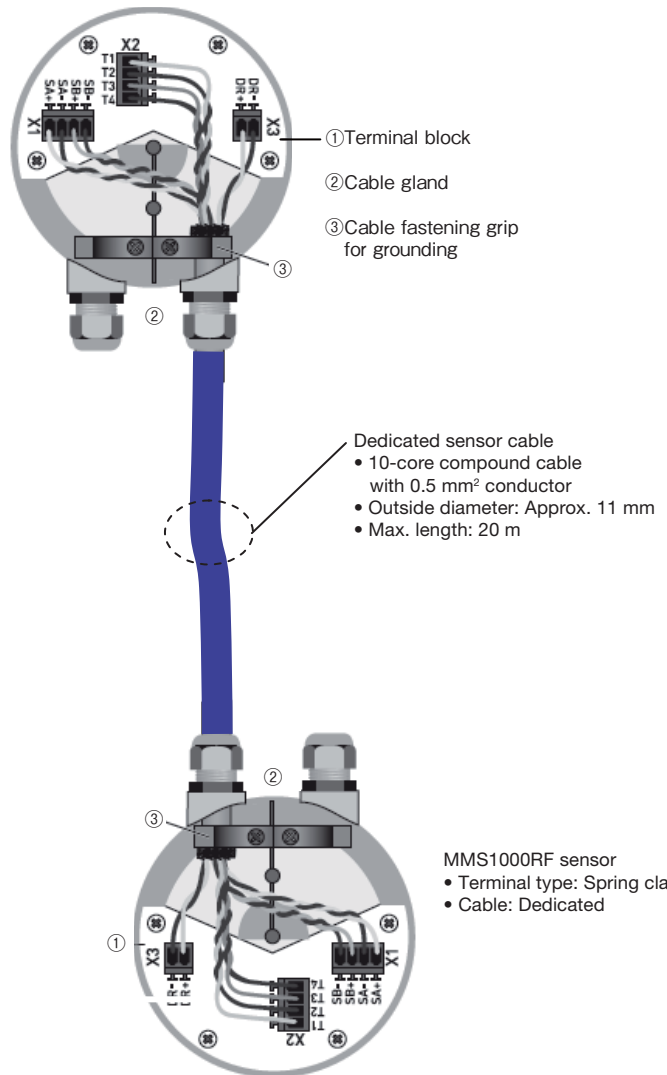
- Terminal type: Plug-in type screw terminal
- Wire cross section: 0.5 to 2.5 mm²
- Cable outside diameter: 7 to 12 mm

- Connection diagram for optional outputs (modular I/O print circuit)

Converter specifications	Polarity	Option 1	Option 2	Option 3	Option 4
		Current output, pulse or status output, control input (6EK)	Current output × 2, pulse or status output (6A8)	Current output × 3, pulse or status output (6AA)	Current output × 2, pulse or status output × 2 (6AE)
Terminal	D-	Pulse or status output, frequency pulse, alarm output	Pulse or status output	Pulse or status output	Pulse or status output No. 1
	D				
	C-	Current output	Current output No. 1	Current output No. 1	Current output No. 1
	C				
	B-	Control input	/	Current output No. 2	Pulse or status output No. 2
	B				
	A+	/	/	/	/
	A-	Status output or pulse, frequency pulse, alarm output	Current output No. 2	Current output No. 3	Current output No. 2
A	+				

Remote type sensor cable MMS1000RF + MMC400RF

- MMC400RF converter
- Terminal type: Spring clamp
 - Cable: Dedicated

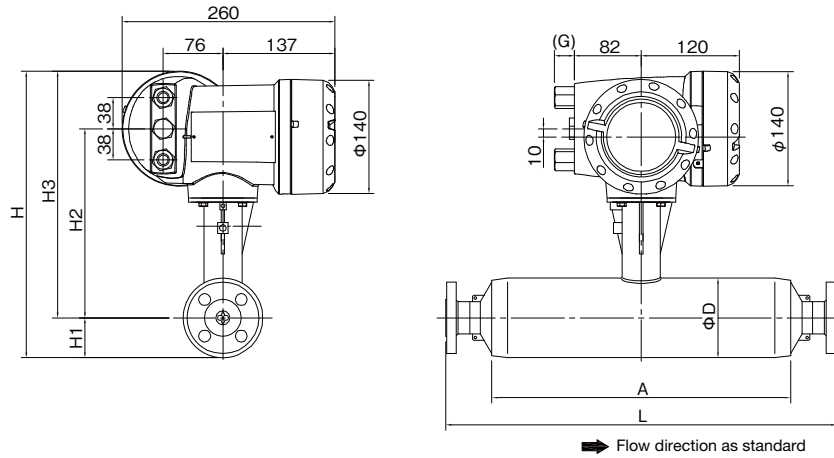


- Dedicated sensor cable
- 10-core compound cable with 0.5 mm² conductor
 - Outside diameter: Approx. 11 mm
 - Max. length: 20 m

- MMS1000RF sensor
- Terminal type: Spring clamp
 - Cable: Dedicated

DIMENSIONS

MMM1400RC compact type mass flowmeter with flange connection



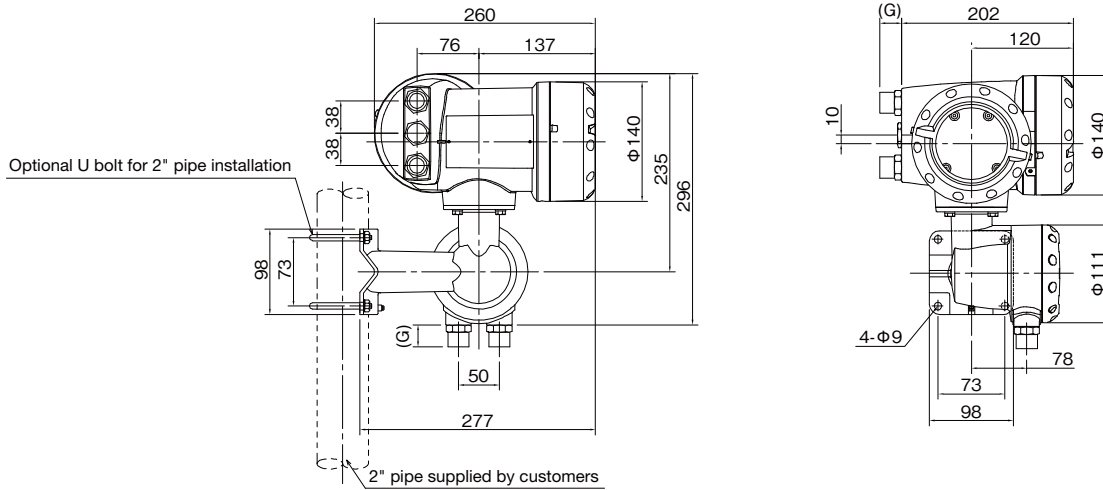
Meter size	Dimensions (mm)							Approx. mass (kg)
	L	A	H	H1	H2	H3	D	
15	491	381	362	51	241	311	102	13.5
25	527	385	374	57	247	317	114	16.5
40	698	518	428	84	274	344	168	29.5
50	846	649	480	110	300	370	219	57.5

1. Face-to-face dimension (L) is for standard flanges. See the table below for optional flanges.
2. H and H1 are the height from the bottom of the outer cylinder.
3. Length "G":
 26 mm for G1/2 female adapter, 1/2 NPT female adapter and Water-Proof gland.
 85 mm for Japanese standard explosionproof construction.

Meter size	Dimensions (mm)																								
	JIS 20K / 10K (lower row)					ASME Class150								ASME Class300					ASME Class600						
	15A	25A	40A	50A	80A	1/2"	3/4"	1"	1.5"	2"	3"	4"	1/2"	3/4"	1"	1.5"	2"	3"	1/2"	3/4"	1"	1.5"	2"	3"	
S15	491	499				519	529	535					529	539	547				541	551	561				
S25		527	533					563	575	579					575	589					589	605			
S40			698	700 696					740	744	756					754	756					770	776		
S50				850 846	868 856					894	906	920					906	926					926	946	

Numbers in boldface are face-to-face dimensions (L) for standard flanges.

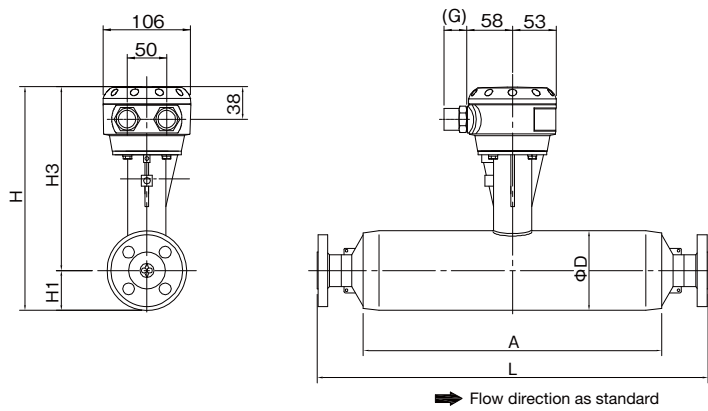
MMC400RF remote type converter



Mass: Approx. 5.8 kg

Length "G": 26 mm for G1/2 female adapter, 1/2 NPT female adapter and Water-Proof gland.
85 mm for Japanese standard explosionproof construction.

MMS1000RF remote type sensor with flange connection



Meter size	Dimensions (mm)						Approx. mass (kg)
	L	A	H	H1	H3	D	
15	491	381	362	51	311	102	13.5
25	527	385	374	57	317	114	16.5
40	698	518	428	84	344	168	29.5
50	846	649	480	110	370	219	57.5

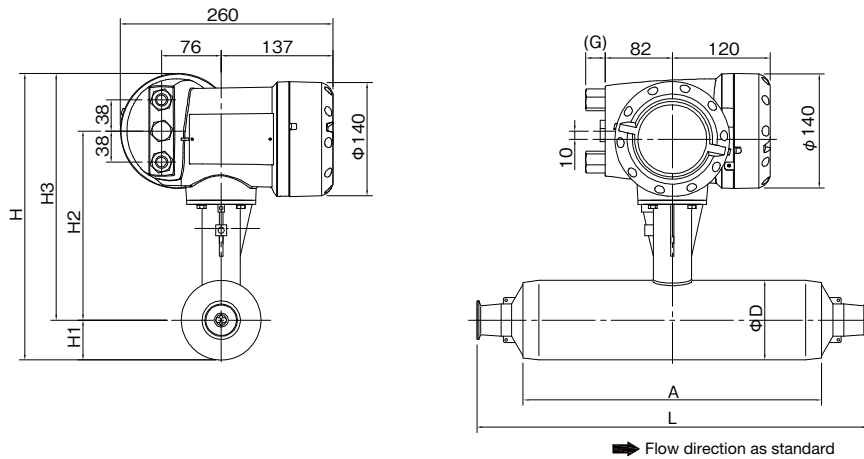
1. Face-to-face dimension (L) is for standard flanges. See the table below for optional flanges.
2. H and H1 are the height from the bottom of the outer cylinder.

Meter size	Dimensions (mm)																								
	JIS 20K / 10K (lower row)					ASME Class150								ASME Class300					ASME Class600						
	15A	25A	40A	50A	80A	1/2"	3/4"	1"	1.5"	2"	3"	4"	1/2"	3/4"	1"	1.5"	2"	3"	1/2"	3/4"	1"	1.5"	2"	3"	
S15	491	499				519	529	535					529	539	547				541	551	561				
S25		527	533					563	575	579					575	589				589	605				
S40			698	700	696				740	744	756				754	756						770	776		
S50				850	868					894	906	920					906	926					926	946	

Numbers in boldface are face-to-face dimensions (L) for standard flanges.

DIMENSIONS

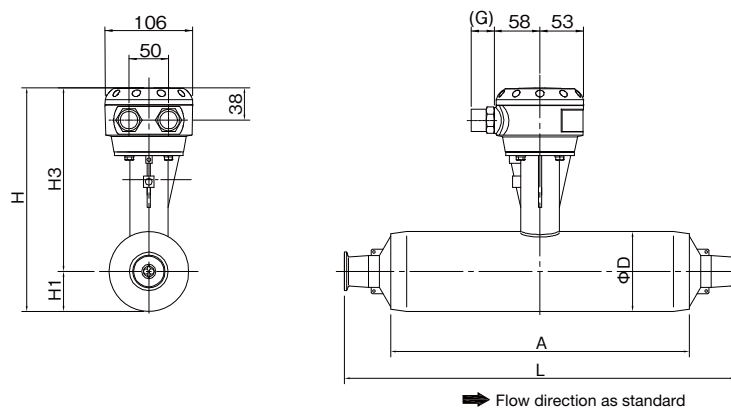
MMM1400RC compact type mass flowmeter with sanitary connection



Meter size	Dimensions (mm)							Approx. mass (kg)
	L	A	H	H1	H2	H3	D	
15	474	381	362	51	241	311	102	13.5
25	505	385	374	57	247	317	114	16.5
40	667	518	428	84	274	344	168	29.5
50	817	649	480	110	300	370	219	57.5

Length "G": 26 mm for G1/2 female adapter, 1/2 NPT female adapter and Waterproof gland.
85 mm for Japanese standard explosionproof construction.

MMS1000RF remote type sensor with sanitary connection



Meter size	Dimensions (mm)						Approx. mass (kg)
	L	A	H	H1	H3	D	
15	474	381	362	51	311	102	13.5
25	502	385	374	57	317	114	16.5
40	667	518	428	84	344	168	29.5
50	817	649	480	110	370	219	57.5

MODEL AND SPECIFICATION CODES

Measuring tube material: "S" Stainless Steel (UNS S31803) (standard)

[Model code]

Specifications	Compact type (Sensor + Converter)	Remote type	
		Sensor	Converter
General purpose (non explosionproof)	MMM1400RC-S□□	MMS1000RF-S□□	MMC400RF
Japanese standard explosionproof	MMM1400RC-JEx-S□□	MMS1000RF-JEx-S□□	MMC400RF-JEx
ATEX explosionproof	MMM1400C-Ex-S□□	MMS1000F-Ex-S□□	MMC400F-Ex

Note: □□: 15 to 50 are assigned as size codes.

(Sensor code)

Sensor Spec. Code	VE	4	S	0					Description	Std.
Sensor Code	VE								MMS1000R Sensor (Twin Straight Measuring Tube)	○
Meter Size	83								Meter Size 15	○
	84								Meter Size 25	○
	85								Meter Size 40	○
	86								Meter Size 50	○
(Fixed code)	4							Always 4	○ : Standard △ : Semi-standard ▲ : Option	○
Measuring Tube Material		S							Stainless Steel UNS S31803	○
Measuring Tube Surface Finish	0								Standard	○
	2								Polished Ra=0.8μm+	○
Process connection	UH								15A JIS20K	○
	VH								25A JIS20K	○
	WH								40A JIS20K	○
	XG								50A JIS10K	○
	XH								50A JIS20K	○
	YG								80A JIS10K	○
	YH								80A JIS20K	○
	KD								1/2" ASME class 150	▲
	KE								1/2" ASME class 300	▲
	KF								1/2" ASME class 600	▲
	LD								3/4" ASME class 150	▲
	LE								3/4" ASME class 300	▲
	LF								3/4" ASME class 600	▲
	MD								1" ASME class 150	△
	ME								1" ASME class 300	▲
	MF								1" ASME class 600	▲
	ND								1-1/2" ASME class 150	△
	NE								1-1/2" ASME class 300	▲
	NF								1-1/2" ASME class 600	▲
	PD								2" ASME class 150	△
	PE								2" ASME class 300	▲
	PF								2" ASME class 600	▲
	RD								3" ASME class 150	▲
	RE								3" ASME class 300	▲
	RF								3" ASME class 600	▲
	SD								4" ASME class 150	▲
MT								1" ISO 2852 ferrule (IDF-compliant)	▲	
NT								1-1/2" ISO2852 ferrule (IDF-compliant)	▲	
PT								2" ISO2852 ferrule (IDF-compliant)	▲	
RT								3" ISO2852 ferrule (IDF-compliant)	▲	
(Fixed code)	0								Always 0	○
Outer cylinder *	G								SS304/304L dual certified	○
	H								SS304/304L dual certified	○
	0								SS304/304L dual certified Allowable pressure: 6.3 MPa at 20°C, conforming to PED	○
	A								SS316/316L dual certified Allowable pressure: 6.3 MPa at 20°C, conforming to PED	○
	B								SS316/316L dual certified Allowable pressure: 10 MPa at 20°C, conforming to PED	○
Heating Jacket	0								Without	○
	2								Heating jacket (1/2NPT female)	○
	3								Air purge connection (1/2NPT female)	○
Explosionproof Approvals	0								Without	○
	1								ATEX explosionproof Ex	○
	R								IECEx explosionproof Ex	○
	9								Japanese standard explosionproof JEx	○
Sanitary Approvals	0								Without	○
	1								EHEDG (European Hygienic Equipment Design Group) *1	○
	2								3A (American Dairy Approval) *1	○
Type	0								Compact type	○
	1								Remote type with aluminum terminal box	○
	2								Remote type with Stainless Steel terminal box	○
Calibration	0								Standard 3-point flow calibration	○
	1								5-point flow calibration	○
	A								3-point flow calibration + density calibration (for Sizes 25 to 50)	○
	B								5-point flow calibration + density calibration (for Sizes 25 to 50)	○
	D								5-point flow calibration + UKAS calibration (for Sizes 25 to 50)	○
Degreasing	0								Without	○
	1								Degreasing wetted parts	○
Special specifications	00								Without	○
	00/Z								Special	○

Note: Special requirements not included in the above coding system should be designated by adding "/Z" at the end of the code. Consult us for the availability of such requirements before ordering.

* Codes "G" and "H" are recommended for services in the food industry and waste water treatment, which do not require pressure resistance. Codes "0", "A" and "B" comply with the EU pressure equipment directive (PED). These are recommended for services in the oil and chemical industries and high-pressure processes, which require pressure resistance and higher safety.

[Converter code]

MMC400RC/RF

Converter spec. code	VE	54	4					2	0	0	2			0	0		Description	Std.	
Converter code	VE	54															MMC400R converter	○	
(Fixed code)			4														Always 4	○	
Type			4														Compact type	○	
			H														Remote type (required for ship classification / high temperature / low temperature models)		
Power supply				A													100 to 230 V AC	○	
				1													12 to 24 V DC		
Explosionproof Approval				0													Without	○	
				1													ATEX explosionproof (Ex)		
				F													IECEx explosionproof (Ex)		
				9													Japanese standard explosionproof (JEx)		
Cable entries for input, output, and power supply				0													M20 × 1.5 female for ATEX explosionproof		
				4													1/2NPT female adapter		
				5													G1/2 female adapter	○	
				6													M20 × 1.5 Waterproof gland		
				9													G1/2 flameproof gasket adapter for Japanese standard explosionproof		
Language for indication				2													English	○	
(Fixed code)					0	0											Always 00	○	
Converter housing										1							Aluminum alloy	○	
										2							SS316L (compact type)		
										3							SS316L (remote type)		
(Fixed code)										2						Always 2	○		
Output										6	0	0					4 to 20 mA × 1, pulse or status × 1, total 2	○	
										6	E	K					4 to 20 mA × 1, pulse × 1, status × 1, control input × 1		
										6	A	8					4 to 20 mA × 2, pulse or status × 1 (selectable)		
										6	A	A					4 to 20 mA × 3, pulse or status × 1 (selectable)		
										6	A	E					4 to 20 mA × 2, pulse × 1, pulse or status × 1 (selectable)		
Measurement										0							Mass flow rate, density, temperature as standard	○	
(Fixed code)											0						Always 0	○	
Sensor cable																	0	Without (compact type)	○
																	4	5 m cable (only for remote type)	
																	1	10 m cable (only for remote type)	
																	5	20 m cable (only for remote type)	
Special specifications																	00	Without	
																	00/Z	Special	

Note: Special requirements not included in the above coding system should be designated by adding "/Z" at the end of the code. Consult us for the availability of such requirements before ordering.

STANDARD ACCESSORIES

- Data sheet for setting : 1 set
- Instruction manual : 1 set

OPTIONS

- Waterproof cable gland for G1/2 cable connection (code: WG)
- Number of cable entries for external connection: 3 (code: 3G)
- U bolt for 2" pipe installation (code: PM)

* Specification is subject to change without notice.



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