

MMM4011C Coriolis Mass Flowmeter Mountable on Fillers

OUTLINE

MMM4011C, a lightweight, compact Coriolis mass flowmeter, is ideal for mounting on various filling machines for liquids such as beverages and cooking oil, and for controlling their mass flow rate.

By combining our expertise and customers' demands, we have developed a lightweight, compact, highly accurate, and durable flowmeter. This product has a simple design; it comes without an indicator, operates on 24 V DC, and the output information is pulse output (open collector) only.

MMM4011C can directly measure the mass flow rate of liquids regardless of changes in their physical properties (temperature, density, viscosity, conductivity, and others).

With two meter sizes of 10 and 15 mm this flowmeter is ideal for the process of filling low-conductivity liquids including oil, pure water, and molasses.

FEATURES

- **Lightweight, compact design; mountable on fillers**
189 × 333 × 59.5 mm / 2.8 to 2.9 kg
- **Measuring mass flow rate**
Directly measures the mass flow rate of liquids.
- **Measuring low-conductivity liquids**
Measures the flow rate of oil, pure water, molasses, and other low-conductivity liquids.
Suitable for filling processes that are difficult for electromagnetic flowmeters to measure.
- **Excellent resistance**
The fully-sealed structure withstands cleaning and high humidity. The perfect weld without any openings keeps out water and moisture.
- **High resolution and accuracy with high-speed pulse outputs**
A setting of 10,000 Hz allows 0.1 g per pulse to be measured.

STANDARD SPECIFICATIONS

- Measuring Principle : Coriolis force
- Meter Size : 10, 15 mm
- Fluid : Liquid
- Enclosure : P67 (IEC 60529/NEMA6)
- Fluid Temperature : 0 to +100 °C
- Ambient Temperature : -40 to +55 °C
- Pressure : 0 Pa (abs) to +4 MPa (for the measuring tube only)
- Mounting : Sanitary fittings
1" ISO2852 ferrule (equiv. to IDF ferrule)
1/2" Tri Clover clamp



• Materials:

Parts	Material
Measuring tube (wetted part)	SS316L
Fitting (wetted part)	SS316L
Housing	SS316

• Output

Pulse output (open collector)
Load rating : up to 30 V DC, 20 mA
Pulse rate : up to 10,000 Hz/F.S.
Pulse width : duty ratio of 1:1

• Power supply

24 V DC ±20%
Power consumption : 3 W
(Inrush current: 5 A/100 μs)

• Accuracy

±0.15% of reading (see the next page for details)
Conditions : water, 20 °C, and 0.1 MPa (accredited by UKAS EN17025)

Repeatability : depending on the filling time

1.5 to 3 seconds	Within 0.13%
3 to 5 seconds	Within 0.07%
5 seconds or more	Within 0.04%

RECOMMENDED FILLING FLOW RATE

Meter size	Recommended filling flow rate (g/sec)	Minimum filling volume (g)	Minimum filling time (sec)
10 mm	15 to 370	23	1.5
15 mm	50 to 1200	75	1.5

The measuring range can be up to 130% of the recommended filling flow rate.

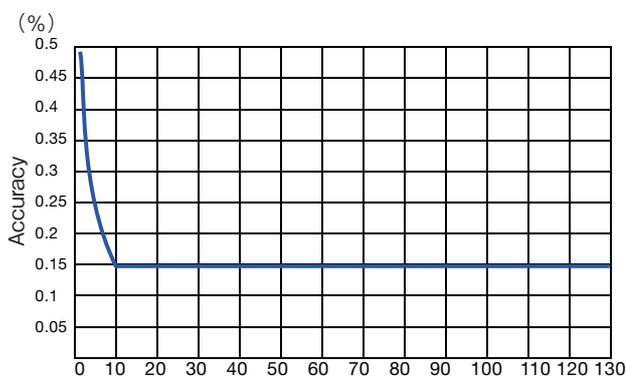
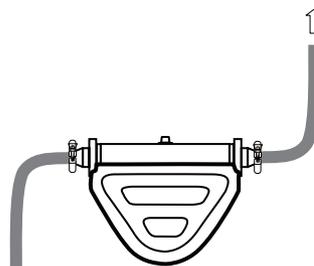
DETAILS OF ACCURACY

Accuracy	Condition
±0.15% of reading	At least 10% of the maximum recommended filling flow rate
0.1% of reading + zero stability	Up to 10% of the maximum recommended filling flow rate

Zero stability: 0.005% of the maximum recommended filling flow rate

LENGTH OF STRAIGHT TUBE

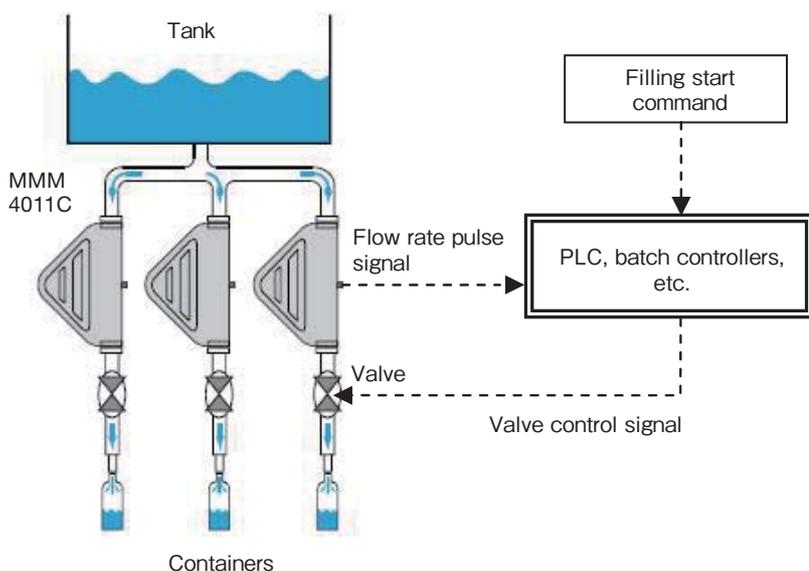
There is no need to connect straight tubes upstream and downstream.



Maximum recommended filling flow rate (%)
 Meter size 10 mm: 370 g/sec
 Meter size 15 mm: 1200 g/sec

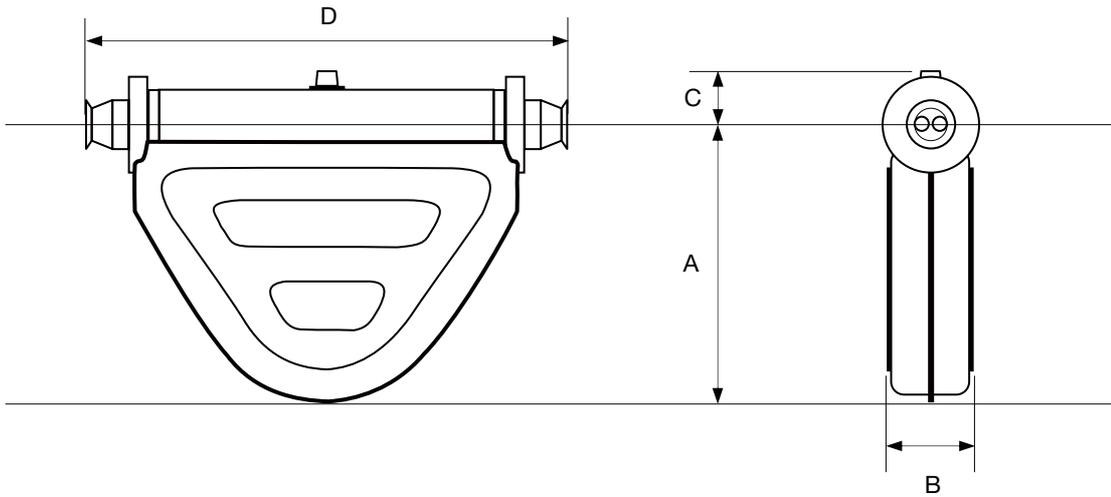
EXAMPLE

A typical configuration for a filling system



*1 Note
 Preliminary tests are recommended; mount the product on your equipment and check its performance.

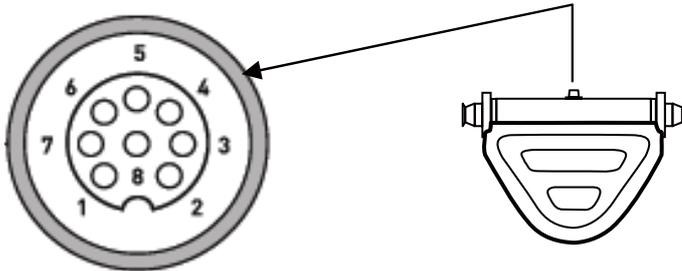
EXTERNAL DIMENSIONS



Meter size (mm)	Dimensions (mm)				Mass (kg)
	A	B	C	D	
10	189	59.5	35	333	2.8
15	189	59.5	35	333	2.9

ELECTRICAL CONNECTION

Wiring terminal (M12 male)



Terminal number	Color*	Description
1	White	24 V DC power supply (+)
2	Brown	RS485A (for service tools only)
3	Green	RS485B (for service tools only)
4	Yellow	Power supply (-)
5	Gray	Pulse output (+)
6	Pink	Pulse output (-)
7	Blue	NC
8	Translucent	NC

*These colors indicate those of the optional cable set including a connector plug for wiring.

MODEL AND SPECIFICATION CODES

Model : MMM4011C-S □□

* □□ : size code (10 or 15)

Flowmeter spec. code	VE		4	B				0	K				H		0	0	0	3		Description
Sensor code	VE																			MMM4011C
Meter size		91																		Meter size 10
		92																		Meter size 15
(Fixed code)			4																	4
Measuring tube material				B																B (stainless steel SS316L)
																				○ : Standard - : Not available
Measuring tube surface finish					0															None
					2															Standard (Inner surface of wetted parts is polished at Ra of 0.5 μm. Surface of outer housing is polished.)
Process connection																				1/2" Tri Clover clamp (only for meter size 10)
																				1" ISO2852 ferrule (only for meter size 15)
(Fixed code)																				○ -
Outer housing																				K (stainless steel SS316)
Cable and connector for power supply and output wiring																				None
																				2-m cable + connector and plug (Lumberg)
																				10-m cable + connector and plug (Lumberg)
Explosion proof certification																				0 (not certified)
Hygiene/sanitary approvals																				None
																				3A (American Dairy Approval) *Specify code "2" also for the measuring tube surface finish.
(Fixed code)																				H (integral type)
Calibration																				3-point calibration (standard)
																				5-point calibration (UKAS certified)
(Fixed code)																				0
(Fixed code)																				0
(Fixed code)																				0
(Fixed code)																				0
(Fixed code)																				3
Additional function																				(Blank) Not provided
																				/Z Provided

SPECIFICATIONS WHEN ORDERING

1. Model: MMM4011C
2. Meter size: 10 or 15 mm
3. Pulse output: totalized pulse of mass flow rate
Specify the volume of mass flow rate per pulse. Example: 0.1 g, 1 g, 10 g, etc. per pulse

STANDARD ACCESSORIES

- Instruction manual: 1 copy

OPTIONS

- Lumberg 8-pole female connector (M12 × 1) for power supply and output wiring

* Specification is subject to change without notice.



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