

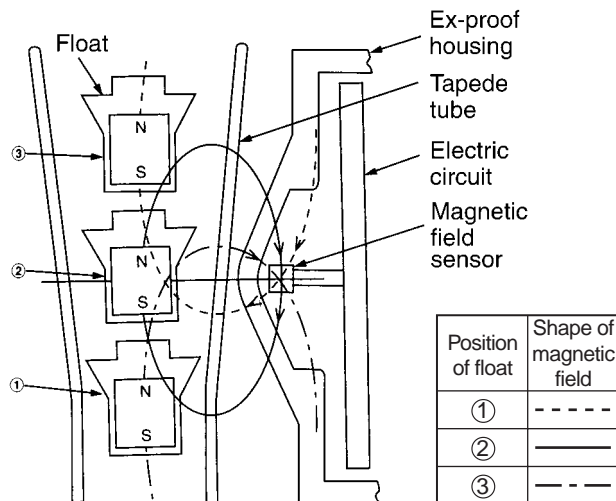
GENERAL

MX-52D EPO FLOW is an Intelligent type 2-wire electric output rotameter. Detection of position of float, data processing and conversion into current output are all conducted by electronics in converter unit, thus moving parts are eliminated except float in flowmeter. This guarantees high reliability and high accuracy. The compact designed 250mm length tube fits all types of process lines.

By adopting newest electronics technology, High sensitivity magnetic field sensor, Low power consumption microprocessor and Non-volatile memory, "EPO FLOW" is the latest in the line of epoch-making flowmeters.

OPERATION PRINCIPLE

As shown in figure below, a magnet with vertical polarity is molded in the float. Float moves vertically in response to the flow rate of fluid. An oval shaped magnetic field exists between N pole and S pole of the magnet. Two magnetic field sensors whose sensitivities are designed equal are located at 90° angle, close to the tapered tube. These 2 sensors generate output signal which corresponds to the strength of magnetic field and its angle. By differential data processing of these outputs from 2 sensors, the angle of magnetic field which represents the position of float is obtained. Thus, the flow rate of fluid can be calculated from the position of float.



FEATURES

1. No moving part except float guarantees high durability and reliability.
2. Digital data processing.
3. 2-wire DC4 to 20mA output.
4. No magnetic coupling construction eliminates mechanical friction that achieves high accuracy.
5. Simple mechanical construction, compact and light.
6. Independent terminal box offers better water tight capability and anti-electro field interference.
7. ExdIICT6 pressure tight explosion proof construction suitable even for Hydrogen atmosphere.

UP GRADED



STANDARD SPECIFICATION

Detector

- Available size : 15, 20, 25, 40, 50, 65, 80 and 100mm
- Applicable fluid : Liquids and Gases
- Fluid press. : Max. 34kgf/cm²G (3.33MPa)
- Fluid temp. : Max.120°C (To be within flange limitaion)
- Process conn. : Flange connection
JIS10K, 20K, ANSI #150, 300, Others
- Flow direction : Bottom to Top
- Material : Refer to CONSTRUCTION AND MATERIAL

Converter / Transmitter

- Method : Magnetic Field Sensor
- Accuracy : Standard ±1.5% F.S.
Fine version ±1.0% F.S.
- Repeatability : 0.5% F.S. (at 25°C)
- Indicator : 3 1/2 digit LCD indication
By industrial unit or % of full scale
- Output signal : DC4 to 20mA (2-wire system)
Max.Load 500Ω
- Response time : Within 0.4 sec.
- Power source : DC11 to 45V
- Amb. Temp. : -30 to 70°C (To be free from condensation)
- Temp. effect : 0.02% (F.S.) /°C
- Enclosure : Pressure tight Explosion proof Exd II CT6
(RIIS Certification No.C12024)
- Additional features : Time constant setting, Low-cut off setting,
Zero and SPAN adjustment, Error detection
(Sensor, Memory, Flow rate)

STANDARD RANGE PRODUCTS

1) LIQUID MEASUREMENT

Model code	Size	Scale range
MX-52D-015-L1 MX-52D-015-L2 MX-52D-015-L3	15mm (1/2")	0.02 to 0.2m ³ /h 0.05 to 0.5m ³ /h 0.1 to 1.0m ³ /h
MX-52D-020-L1 MX-52D-020-L2 MX-52D-020-L3	20mm (3/4")	0.05 to 0.5m ³ /h 0.1 to 1.0m ³ /h 0.2 to 2m ³ /h
MX-52D-025-L1 MX-52D-025-L2 MX-52D-025-L3	25mm (1")	0.1 to 1.5m ³ /h 0.2 to 2.0m ³ /h 0.3 to 3.0m ³ /h
MX-52D-040-L1 MX-52D-040-L2 MX-52D-040-L3	40mm (1-1/2")	0.4 to 4.0m ³ /h 0.5 to 5.0m ³ /h 0.8 to 8.0m ³ /h
MX-52D-050-L1 MX-52D-050-L2 MX-52D-050-L3	50mm (2")	0.5 to 5.0m ³ /h 1 to 10m ³ /h 1.5 to 15m ³ /h
MX-52D-065-L1 MX-52D-065-L2 MX-52D-065-L3	65mm (2-1/2")	1.5 to 15m ³ /h 2 to 20m ³ /h 2.5 to 25m ³ /h
MX-52D-080-L1 MX-52D-080-L2 MX-52D-080-L3	80mm (3")	2 to 20m ³ /h 3 to 30m ³ /h 4 to 40m ³ /h
MX-52D-100-L1 MX-52D-100-L2 MX-52D-100-L3	100mm (4")	5 to 50m ³ /h 6 to 60m ³ /h 8 to 80m ³ /h

Above table shows flow range for water measurement (Sp.Gr.1.0, Viscosity 1.0cP). In case the liquid to be measured is other than water, a conversion calculation is required.

2) GAS MEASUREMENT

Model code	Size	Scale range
MX-52D-015-G1 MX-52D-015-G2 MX-52D-015-G3	15mm (1/2")	0.5 to 5Nm ³ /h 1 to 10Nm ³ /h 2 to 20Nm ³ /h
MX-52D-020-G1 MX-52D-020-G2 MX-52D-020-G3	20mm (3/4")	1.5 to 15Nm ³ /h 3 to 30Nm ³ /h 5 to 50Nm ³ /h
MX-52D-025-G1 MX-52D-025-G2 MX-52D-025-G3	25mm (1")	3 to 30Nm ³ /h 5 to 50Nm ³ /h 6 to 60Nm ³ /h
MX-52D-040-G1 MX-52D-040-G2 MX-52D-040-G3	40mm (1-1/2")	8 to 80Nm ³ /h 12 to 120Nm ³ /h 15 to 150Nm ³ /h
MX-52D-050-G1 MX-52D-050-G2 MX-52D-050-G3	50mm (2")	10 to 100Nm ³ /h 20 to 200Nm ³ /h 30 to 300Nm ³ /h
MX-52D-065-G1 MX-52D-065-G2 MX-52D-065-G3	65mm (2-1/2")	45 to 450Nm ³ /h 60 to 600Nm ³ /h 75 to 750Nm ³ /h
MX-52D-080-G1 MX-52D-080-G2 MX-52D-080-G3	80mm (3")	40 to 400Nm ³ /h 60 to 600Nm ³ /h 80 to 800Nm ³ /h
MX-52D-100-G1 MX-52D-100-G2 MX-52D-100-G3	100mm (4")	100 to 1000Nm ³ /h 120 to 1200Nm ³ /h 150 to 1500Nm ³ /h

Above tables shows flow range for Air flow measurement at 0°C, 1atm. In case the operating condition is different from above, a conversion calculation is required.

CUSTOM CALIBRATION RANGE

1) LIQUID MEASUREMENT

Model code	MAX acceptable viscosity (cP)	Size	Scale Range (m ³ /h)
MX-52D-015-L9	30	15mm (1/2")	Min. 0.01 to 0.1 Max. 0.15 to 1.5
MX-52D-020-L9	40	20mm (3/4")	Min. 0.05 to 0.5 Max. 0.2 to 2
MX-52D-025-L9	50	25mm (1")	Min. 0.1 to 1.0 Max. 0.4 to 4
MX-52D-040-L9	80	40mm (1-1/2")	Min. 0.3 to 3 Max. 1 to 10
MX-52D-050-L9	100	50mm (2")	Min. 0.3 to 3 Max. 2 to 20
MX-52D-065-L9	120	65mm (2-1/2")	Min. 1.5 to 15 Max. 2.5 to 25
MX-52D-080-L9	150	80mm (3")	Min. 1.5 to 15 Max. 4 to 40
MX-52D-100-L9	200	100mm (4")	Min. 3 to 30 Max. 8 to 80

Above table shows flow range for water measurement (Sp. Gr. 1.0, Viscosity 1.0cP). In case the liquid to be measured is other than water, perform a conversion calculation and confirm that required scale range for measuring liquid is in the above range table for the size.

$$Q_w = Q_a \times \sqrt{(\rho \times 6.3) \div (7.3 - \rho)}$$

Q_w : Water converted flow rate

Q_a : Flow rate of liquid to be measured

ρ : Density of the liquid to be measured

2) GAS MEASUREMENT

Model code	Size	Scale Range (Nm ³ /h)
MX-52D-015-G9	15mm (1/2")	Min. 0.3 to 3 Max. 3 to 30
MX-52D-020-G9	20mm (3/4")	Min. 1.5 to 15 Max. 6 to 60
MX-52D-025-G9	25mm (1")	Min. 3 to 30 Max. 10 to 100
MX-52D-040-G9	40mm (1-1/2")	Min. 6 to 60 Max. 20 to 200
MX-52D-050-G9	50mm (2")	Min. 10 to 100 Max. 45 to 450
MX-52D-065-G9	65mm (2-1/2")	Min. 45 to 450 Max. 75 to 750
MX-52D-080-G9	80mm (3")	Min. 45 to 450 Max. 100 to 1000
MX-52D-100-G9	100mm (4")	Min. 100 to 1000 Max. 150 to 1500

Above tables shows flow range for Air flow measurement at 0°C, 1atm. In case the operating condition is different from above, perform a conversion calculation and confirm that the required scale range for measuring gas is in the above range table for the size.

$$Q_A = Q_G \times \sqrt{\gamma / 1.293} \times \sqrt{1.033 / (1.033 + p)} \times \sqrt{(273 + t) / 273}$$

Q_A : Air converted flow rate (Nm³/h)

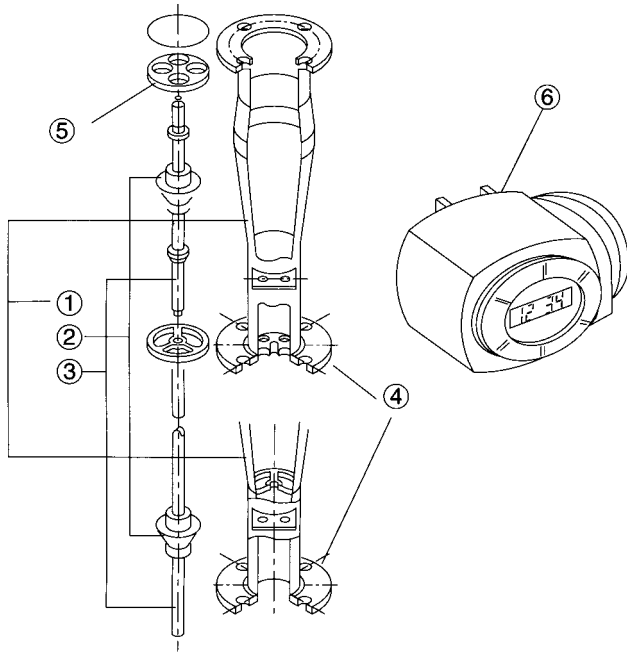
Q_G : Flow rate of the gas to be measured (Nm³/h)

ρ : Density of the gas to be measured (kg/Nm³)

p : Operating pressure (kgf/cm²G)

t : Operating temperature (°C)

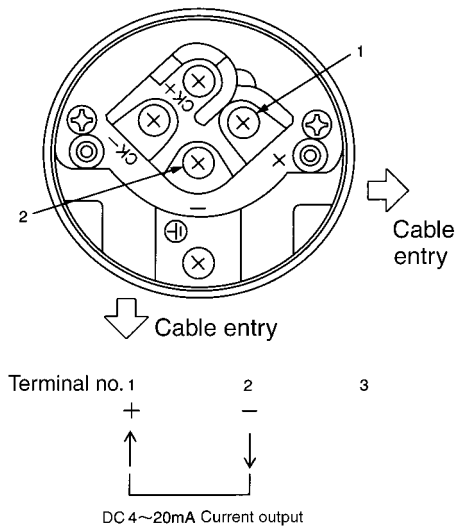
CONSTRUCTION AND MATERIAL



No.	Part Name	Material class		
		1	2	3
1	Tapered tube	SUS316	SUS316	SUS316L
2	Float	SUS316	SUS316	SUS316L
3	Float rod	SUS316	SUS316	SUS316L
4	Flange	Carbon steel	SUS316	SUS316L
5	Float guide	SUS316	SUS316	SUS316L
6	Converter	ADC12	ADC12	ADC12

Special material, i.e. Hastelloy C, Titanium, Tantalum, etc. on request. Consult factory for details.

WIRING

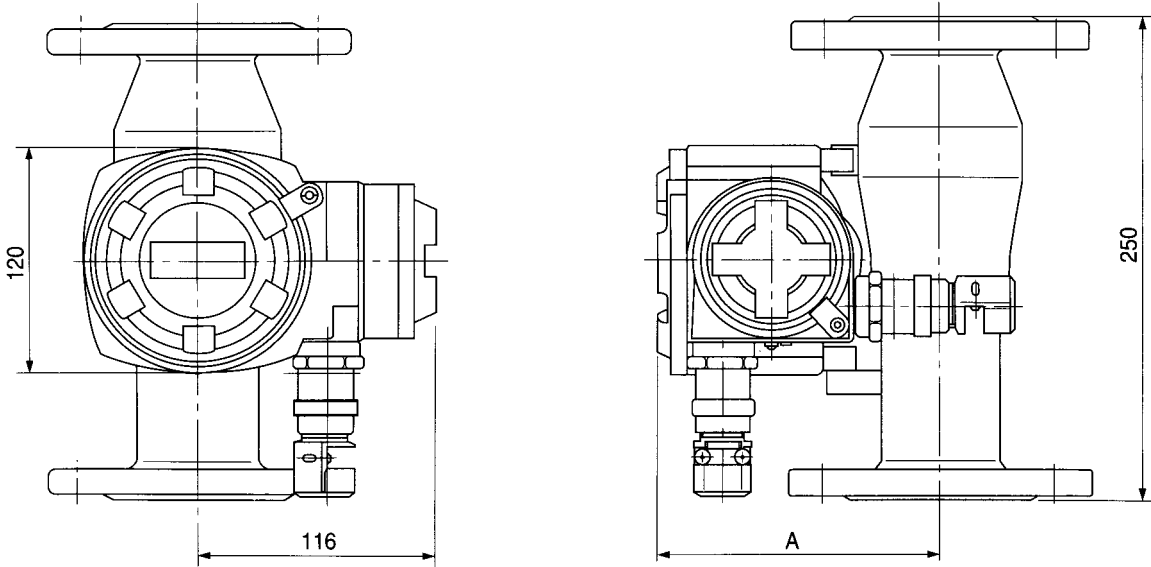


Two cable entries are provided for selection for field convenience.

MODEL CODE

MX-52D	-	-	-	-	-	-	-	-	-	Description
Size	015									15 mm (1/2")
	020									20 mm (3/4")
	025									25 mm (1")
	040									40 mm (1-1/2")
	050									50 mm (2")
	065									65 mm (2-1/2")
	080									80 mm (3")
	100									100 mm (4")
Range	L1									Liquid standard range 1
	L2									Liquid standard range 2
	L3									Liquid standard range 3
	L9									Custom calibration range for liquid
	G1									Gas standard range 1
	G2									Gas standard range 2
	G3									Gas standard range 3
	G9									Custom calibration range for Gas
	Material class	1								
2										Material class 2
3										Material class 3
9										Other special
Connection flange	J1									JIS10K
	J2									JIS20K
	A1									ANSI#150
	A2									ANSI#300
	99									Others
Connection flange size	0									Same as Meter Size
	1									Meter Size+1
	2									Meter Size+2

DIMENSION AND WEIGHT



Two cable entries are provided for selection for field convenience.

Dimension and Weight for MX-52D

Size	A (mm)	Weight (kg)
15mm (1/2")	125	6.5
20mm (3/4")	125	7
25mm (1")	125	7.5
40mm (1-1/2")	135	9.5
50mm (2")	140	11.5
65mm (2-1/2")	150	14.5
80mm (3")	155	16.5
100mm (4")	175	22

OTHER MX VARIATIONS

Besides MX-52D, following types are available. They all have same installation dimension.

Model	Function
MX-400	Local indication only
MX-710	Local indication+1 point alarm (Non-Ex)
MX-720	Local indication+2 points alarm (Non-Ex)
MX-71S	Local indication+1 point alarm (IS)
MX-72S	Local indication+2 points alarm (IS)
MX-52E	Local indication+Electric output (Ex-d)*

*Analog pointer indication

* Specification is subject to change without notice.



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