

GENERAL GUIDANCE

FOURTH EDITION

Flowmeters and Levelmeters

Flow Measurement Instruments

Level Measurement Instruments

Related Instruments



TOKYO KEISO CO., LTD.

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FLOW MEASUREMENT AND CONTROL INSTRUMENTS


A wide variety of instruments are available for various flow measurement applications.

The following symbols are applicable to flow measurement and control instruments on Page 2 to 24.

Applicable fluids

 : For liquid measurement

 : For gas measurement

 : For steam measurement

Explosion-proof

Exd : Flameproof types available

Exi : Intrinsically safe types available

Contact us for instruments for certified high-pressure gas equipment.

Nominal flow rate of variable area flowmeters

In this catalog, the following fluids are used for the measuring range of each model.

Liquid: Water with a density of 1.0 g/cm³ and a viscosity of 1.0 mPa·s

Gas: Air at 0°C, 0 MPa (1 atm)

If actual operating conditions differ from the above, correct the values with the formulas given below.

For gas measurement

Correct the value considering the density, pressure, and temperature of the measuring gas.

1. When the flow rate is indicated in the normal condition

$$Q_{air} = Q_0 \times \sqrt{\frac{Y_0}{1.293}} \times \sqrt{\frac{273+T_0}{273}} \times \sqrt{\frac{0.1013}{0.1013+P_0}}$$

Q_{air} : Corrected flow rate

Q_0 : Flow rate of the measuring gas in actual conditions

(Flow rate in normal conditions: 0°C, 0 MPa)

Y_0 : Density of the measuring gas (kg/m³ (nor))

T_0 : Fluid temperature (°C)

P_0 : Fluid pressure (MPa)

2. When the flow rate is indicated in operating conditions

$$Q_{air} = Q_0 \times \sqrt{\frac{Y_0}{1.293}} \times \sqrt{\frac{273}{273+T_0}} \times \sqrt{\frac{0.1013+P_0}{0.1013}}$$

Q_{air} : Corrected flow rate

Q_0 : Flow rate of the measuring gas in actual conditions

(Flow rate in operating conditions: T_0 °C, P_0 MPa)

Y_0 : Density of the measuring gas (kg/m³ (nor))

T_0 : Fluid temperature (°C)

P_0 : Fluid pressure (MPa)

For liquid measurement

When the density of the measuring liquid is not 1.0 g/cm³

$$Q = Q_0 \times \sqrt{\frac{Y_0(Y_1-1)}{Y_1(Y_0-1)}}$$

Q : Corrected flow rate

Q_0 : Flow rate of the measuring liquid

Y_0 : Density of the measuring liquid (g/cm³)

Y_1 : Density of the float (g/cm³)

Table of float density

Float material	Fluorocarbon resin	Glass	Ruby	PVC	Stainless steel	Titanium	MA276 (equivalent to Hastelloy C)	Stainless steel AM7000
Density (g/cm ³)	2.2	2.67	4	1.45	7.9	4.5	8.94	7.7
Applicable instrument	Glass tube flowmeter						Metal tube flowmeter	

Note: 1. Some models have weights in the float, which increases the density.

2. Some models will be affected by fluids with a viscosity of 1 mPa·s or larger. See the respective product catalogs.

Properties of gases

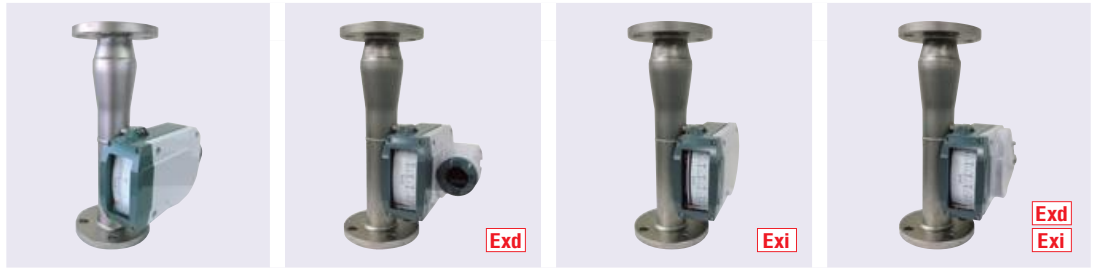
	Gas	Molecular formula	Density: kg/m ³ (nor) at 0°C, 0 MPa	Viscosity (mPa·s)		Gas	Molecular formula	Density: kg/m ³ (nor) at 0°C, 0 MPa	Viscosity (mPa·s)	
				at 0°C	at 20°C				at 0°C	at 20°C
Inorganic compounds	Ammonia	NH ₃	0.7713	0.0093	0.0100	Acetylene	C ₂ H ₂	1.171	0.0096	0.0102
	Argon	Ar	1.783	0.0212	0.0222	Acetone	C ₃ H ₆ O	2.593	0.0066	-
	Nitrous oxide	N ₂ O	1.988	0.0137	0.0146	Isobutane	C ₄ H ₁₀	2.595	0.0069	0.0074
	Nitrogen oxide	NO	1.340	0.0179	0.0188	Isopropyl alcohol	C ₃ H ₈ O	2.683	0.0070	-
	Carbon monoxide	CO	1.250	0.0166	0.0177	Ethanol	C ₂ H ₆ O	2.057	0.0075	-
	Carbon dioxide	CO ₂	1.977	0.0138	0.0147	Ethane	C ₂ H ₆	1.356	0.0086	0.0092
	Sulfurous acid gas	SO ₂	2.927	0.0116	0.0126	Ethyl ether	C ₄ H ₁₀ O	3.309	0.0068	-
	Hydrogen chloride	HCl	1.639	0.0131	0.0143	Ethylene	C ₂ H ₄	1.260	0.0094	0.0101
	Chloride	Cl ₂	3.214	0.0123	0.0132	Ethyl chloride	C ₂ H ₅ Cl	2.880	0.0094	-
	Air (AIR)	(AIR)	1.293	0.0171	0.0181	Methyl chloride	CH ₃ Cl	2.308	0.0098	0.0106
	Oxygen	O ₂	1.429	0.0192	0.0203	Methylene chloride	CH ₂ Cl ₂	3.792	0.0091	0.0099
	Cyanogen	C ₂ N ₂	2.335	0.0093	-	Chloroform	CHCl ₃	5.329	0.0093	0.0100
	Hydrogen bromide	HBr	3.645	0.0170	-	Butane	C ₄ H ₁₀	2.703	0.0069	0.0074
	Bromine	Br ₂	7.139	0.0146	0.0153	Propane	C ₃ H ₈	2.020	0.0075	0.0080
	Hydrogen	H ₂	0.08994	0.0084	0.0088	Propyl alcohol	C ₃ H ₈ O	2.683	0.0068	-
	Nitrogen	N ₂	1.251	0.0166	0.0175	Propylene	C ₃ H ₆	1.879	0.0078	0.0084
	Fluorine	F ₂	1.696	-	-	Hexane	C ₆ H ₁₄	3.847	0.0059	-
	Hydrogen sulfide	H ₂ S	1.539	0.0117	0.0124	Benzene	C ₆ H ₆	3.488	0.0068	0.0074
	Helium	He	0.1785	0.0186	0.0196	Pentane	C ₅ H ₁₂	3.221	0.0062	-
Organic compounds						Methanol	CH ₄ O	1.430	0.0087	-
						Methane	CH ₄	0.7168	0.0102	0.0108
						Methyl ether	C ₂ H ₆ O	2.057	0.0085	0.0091
						Utility gas	13A	0.8407	-	0.0105

Metal Tube Flowmeter

Metal Tube Variable Area Flowmeter



AM7000 series



Model		AM7000/L	AM7000/T	AM7000/R/N/M	AM7000/E/H/P
Fluid		Liquid, gas, steam			
Function		Local indication	<ul style="list-style-type: none"> Local indication Current output Local totalization Totalized pulse output Alarm output 	<ul style="list-style-type: none"> Local indication Alarm output R: Reed switch N: Proximity switch M: Micro switch 	<ul style="list-style-type: none"> Local indication E: Current output H: Current output + HART communication P: PROFIBUS PA
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h			
	Max.	15 to 150 m ³ /h			
Measuring range (air)	Min.	0.3 to 3 m ³ /h (nor)			
	Max.	450 to 4500 m ³ /h (nor)			
Process connection		15 mm to 150 mm (1/2" to 6")			
Standard material		SUS304, SUS316, SUS316L			
Available lining material		Rubber, fluorocarbon resin, PVC, glass			

Metal Tube Variable Area Flowmeter for Micro Flow Measurement



AM3000/M-900 series



Model		AM3000/E	AM3000/H	M-900	M-950
Fluid		Liquid, gas			
Function		Local indication + Current output	Local indication + Current output + HART communication	Local indication	<ul style="list-style-type: none"> Local indication Alarm output (reed switch)
Measuring range (water)	Min.	0.4 to 2 L/h			
	Max.	60 to 600 L/h			
Measuring range (air)	Min.	12 to 60 L/h (nor)			
	Max.	1700 to 17000 L/h (nor)			
Process connection		-Rc 1/4" to 3/4" -10mm to 25mm (3/8" to 1") flange			
Standard material		SUS304, SUS316, SUS316L			
Available material		Titanium, MA276			

MA-900 series

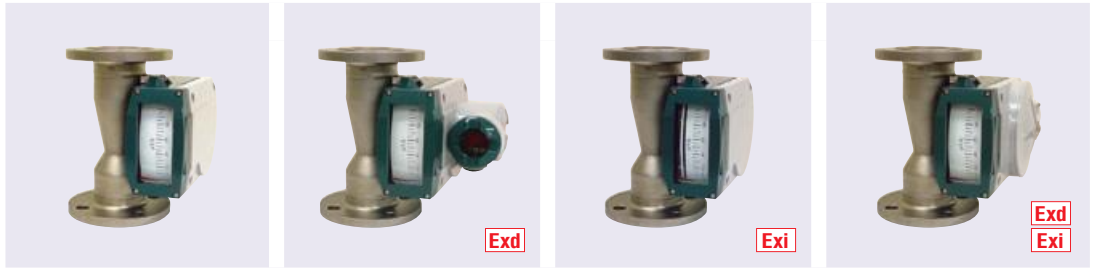


Model		MA-900	MA-950	MA-920
Fluid		Liquid, gas		
Function		Local indication	<ul style="list-style-type: none"> Local indication Alarm output (Hall IC) 	<ul style="list-style-type: none"> Local indication (Digital LED display) Current output
Measuring range (water)	Min.	0.1 to 0.5 L/h		
	Max.	60 to 600 L/h		
Measuring range (air)	Min.	3 to 15 L/h (nor)		
	Max.	2.2 to 22 m ³ /h (nor)		
Process connection		-Rc 1/4" to 3/4" -10 mm to 25 mm (3/8" to 1") flange		
Standard material		SUS304, SUS316		



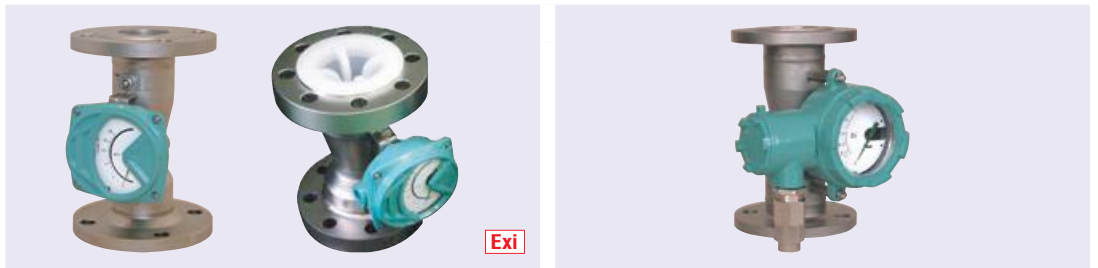
Compact Type Metal Tube Variable Area Flowmeter

AM9000 series



Model	AM9100/L		AM9100/T	AM9100/R/N/M	AM9100/E/H/P
Fluid	Liquid, gas, steam				
Function	Local indication	<ul style="list-style-type: none"> -Local indication -Current output -Local totalization -Totalized pulse output -Alarm output 		<ul style="list-style-type: none"> -Local indication -Alarm output R: Reed switch N: Proximity switch M: Micro switch 	<ul style="list-style-type: none"> -Local indication E: Current output H: Current output + HART communication P: PROFIBUS PA
Measuring range (water)	Min.	3.5 to 35 L/h			
	Max.	20 to 200 m ³ /h			
Measuring range (air)	Min.	0.1 to 1 m ³ /h (nor)			
	Max.	177 to 1770 m ³ /h (nor)			
Process connection	Liquid: 15 mm to 150 mm (1/2" to 6"), Gas: 15 mm to 100 mm (1/2" to 4")				
Standard material	SCS16/316SS				
Face-to-face dimension	250 mm (300 mm for Process connection of 125 mm and 150 mm (5", 6"))				

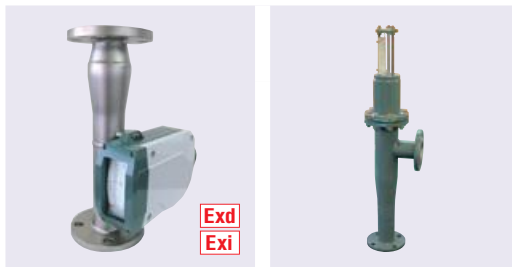
NMX series



Model	NMX1000		NMX2000
Fluid	Liquid, gas, steam		
Function	<ul style="list-style-type: none"> -Local indication -Current output -Alarm output -HART communication 	<ul style="list-style-type: none"> -Local indication -Current output -Alarm output -HART communication 	
Measuring range (water)	Min.	0.004 to 0.04 m ³ /h	
	Max.	10 to 100 m ³ /h	
Measuring range (air)	Min.	0.12 to 1.2 m ³ /h (nor)	
	Max.	60 to 600 m ³ /h (nor)	
Process connection	Liquid: 15 mm to 100 mm (1/2" to 4"), Gas: 15 mm to 80 mm (1/2" to 3")		
Standard material	316SS, PTFE lining		
Face-to-face dimension	250 mm		

Slurry Flowmeter

AM7000/SL S series



Model	AM7000/SL		S-102/S-752
Fluid	Liquid		
Function	<ul style="list-style-type: none"> -Local indication -Current output -Local totalization -Totalized pulse output -Alarm output 	<ul style="list-style-type: none"> -Local indication -Alarm output (reed switch) 	
Measuring range (water)	Min.	0.02 to 0.1 m ³ /h	0.04 to 0.2 m ³ /h
	Max.	30 to 150 m ³ /h	38 to 190 m ³ /h
Process connection	15 mm to 150 mm (1/2" to 6")		20 mm to 150 mm (3/4" to 6")
Standard material	SUS304, SUS316, SUS316L		SUS304, SUS316, SUS316L, PVC 25 mm to 150 mm (1" to 6")

Flow Switch (for process use)

F series



Model	F-746	
Fluid	Liquid (Viscosity: up to 5 mPa·s)	
Function	Alarm output	
Alarm setting range (water)	Min.	Low alarm: 0.1 to 2 m ³ /h High alarm: 0.13 to 2 m ³ /h
	Max.	Low alarm: 5 to 70 m ³ /h High alarm: 6.5 to 70 m ³ /h
Process connection	15 mm to 150 mm (1/2" to 6")	
Standard material	FC200, SCS13, SCS14	

Direct Observation Type Flowmeter

Glass Tube Variable Area Flowmeter



R series



Model		R-101-E	R-751-E	R-101	R-751-R/R-751
Fluid		Liquid, gas	Liquid	Liquid, gas	
Function		·Local indication	·Local indication ·Alarm output (reed switch)	·Local indication	·Local indication ·Alarm output (reed switch)
Measuring range (water)	Min.	25 to 250 L/h	0.3 to 3 m ³ /h	0.9 to 9 L/h	7 to 70 L/h
	Max.	10 to 100 m ³ /h	8 to 80 m ³ /h	5.2 to 52 m ³ /h	5 to 50 m ³ /h
Measuring range (air)	Min.	0.45 to 4.5 m ³ /h (nor)	–	15 to 150 L/h (nor)	0.3 to 3 m ³ /h (nor)
	Max.	110 to 1100 m ³ /h (nor)	–	100 to 1000 m ³ /h (nor)	16 to 160 m ³ /h (nor)
Process connection		15 mm to 100 mm (1/2" to 4")	25 mm to 100 mm (1" to 4")	10 mm to 100 mm (3/8" to 4"), 10 mm to 50 mm (3/8" to 2") for gas	
Standard material		SS400, SUS304, PVC, HT-PVC		FC200, SUS304, SUS316, SUS316L, PVC (process connection 10 mm to 20 mm (3/8" to 3/4"))	
Available lining material		–		PVC, glass	

Resin Variable Area Flowmeter



AC/AC-T series



Model		AC series (small size)		AC series (medium size)		AC-T
Fluid		Liquid				Liquid
Function		·Local indication	·Local indication ·Alarm output (reed switch)	·Local indication	·Local indication ·Alarm output (reed switch)	·Local indication
Measuring range (water)	Min.	0.1 to 1 L/min	3 to 30 L/min	0.4 to 4 m ³ /h		2 to 20 L/min
	Max.	10 to 100 L/min	7 to 70 L/min	2 to 20 m ³ /h		5 to 50 L/min
Process connection		Rc, TS socket, Flange 15 mm, 20 mm, 25 mm (1/2", 3/4", 1")		Rc, TS socket, Flange 40 mm, 50 mm (1-1/2", 2")		Rc 1/2", 3/4"
Standard material		Body: PVC / Tapered tube: Acryl				PVDF/PFA

Metal Tube Variable Area Flowmeter



A series

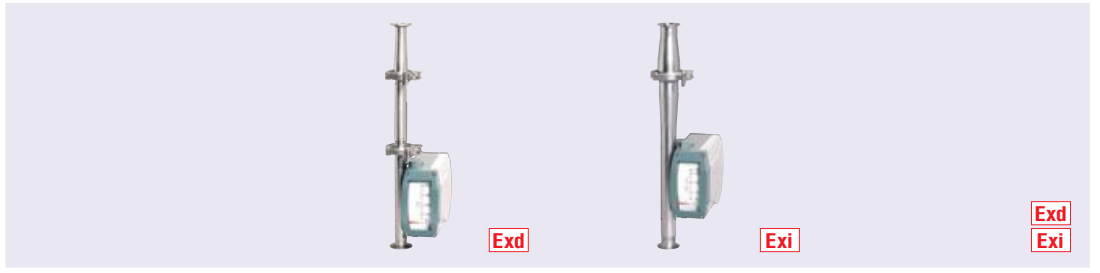


Model		A-102	A-103-D	A-752
Fluid		Liquid	Gas	Liquid
Function		·Local indication		
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h	–	0.01 to 0.1 m ³ /h
	Max.	20 to 200 m ³ /h	–	20 to 200 m ³ /h
Measuring range (air)	Min.	–	0.3 to 3 m ³ /h (nor)	–
	Max.	–	640 to 6400 m ³ /h (nor)	–
Process connection		15 mm to 150 mm (1/2" to 6")		
Standard material		SS400, SUS304, SUS316		



Sanitary Type Metal Tube Variable Area Flowmeter

AM7000SR series



Model	AM7000/SR	AM7000/T/SR	AM7000/R/N/M/SR	AM7000/E/H/P/SR
Fluid	Liquid			
Function	Local indication	<ul style="list-style-type: none"> Local indication Current output Local totalization Totalized pulse output Alarm output 	<ul style="list-style-type: none"> Local indication Alarm output R: Reed switch N: Proximity switch M: Micro switch 	<ul style="list-style-type: none"> Local indication E: Current output H: Current output + HART communication P: PROFIBUS PA
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h		
	Max.	7 to 70 m ³ /h		
Process connection	1S to 4-1/2S			
Standard material	SUS304, SUS316, SUS316L			

Sanitary Type Glass Tube Variable Area Flowmeter

R series



Model	R-101-SR	R-101-SRE
Fluid	Liquid	
Function	Local indication	
Measuring range (water)	Min.	0.025 to 0.25 m ³ /h
	Max.	760 to 7600 L/h
Process connection	1S to 2-1/2S	1S to 3S
Standard material	SUS304	
Available material	SUS316, SUS316L	

Sanitary Type Electromagnetic Flowmeter

MAGMAX® 6000 series



Model	EGM6300C	
Fluid	Liquid	
Function	<ul style="list-style-type: none"> Flow rate Pulse output Total flow Current output 	
Measuring range (water)	Min.	0 to 0.6 m ³ /h
	Max.	0 to 300 m ³ /h
Process connection	1S to 4S	
Standard material	PFA / Hastelloy® C	
Certification	EHEDG / 3A	

P series



Model		P-100	P-200	P-400	P-510	P-530
Fluid		Liquid, gas			Liquid, gas	
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication	·Local indication ·Alarm output	·Local indication ·Alarm output
Measuring range (water)	Min.	5 to 50 mL/min			0.1 to 1 L/min	0.2 to 2 L/min
	Max.	0.2 to 2 L/min			3 to 30 L/min	1 to 10 L/min
Measuring range (air)	Min.	0.5 to 5 mL/min (nor)	5 to 50 mL/min (nor)	80 to 800 mL/min (nor)	2.5 to 25 L/min (nor)	10 to 50 L/min (nor)
	Max.	5 to 50 L/min (nor)	6 to 60 L/min (nor)	6 to 60 L/min (nor)	60 to 600 L/min (nor)	50 to 250 L/min (nor)
Process connection		Rc 1/8", Rc 1/4"			Rc 3/8"	
Standard material		SUS304/SUS316			SCS14/SUS304	SCS14/SUS304
Face-to-face dimension		115 mm	200 mm	200 mm	200 mm	150 mm
Alarm		·UL-approved reed switch ·Optical alarm unit		-	·UL-approved reed switch ·Optical alarm unit	·UL-approved reed switch

P series



Model		P-810	P-820	P-830	P-900	P-850
Fluid		Gas, liquid (water)		Liquid (water)	Gas, liquid (water)	Liquid, gas
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication	·Local indication
Measuring range (water)	Min.	5 to 50 mL/min	5 to 50 mL/min	0.1 to 1 L/min	5 to 50 mL/min	5 to 50 mL/min
	Max.	0.2 to 2 L/min	0.2 to 2 L/min	1.5 to 7 L/min	0.25 to 2.5 L/min	0.1 to 1 L/min
Measuring range (air)	Min.	5 to 50 mL/min (nor)	0.5 to 5 mL/min (nor)	-	80 to 800 mL/min (nor)	20 to 200 mL/min (nor)
	Max.	6 to 60 L/min (nor)	6 to 60 L/min (nor)	-	6 to 60 L/min (nor)	2 to 20 L/min (nor)
Process connection		1/4" SW, 1/4" VCR, Rc 1/4"		3/8" SW, Rc 3/8"	Rc 1/4", NPT 1/4"	Rc 1/8"
Standard material		SCS14/SUS316	SCS14/SUS316	SCS14/SUS304	SUS304	SCS14/SUS304
Face-to-face dimension		145 mm, 224 mm	115 mm, 224 mm	76 mm	114 mm, 224 mm	80 mm
Alarm		Optical alarm unit	·UL-approved reed switch ·Optical alarm unit	UL-approved reed switch	-	-

**P series
(for ultramicro flow rates)**



Model		P-880
Fluid		Gas
Function		·Local indication
Measuring range (water)	Min.	-
	Max.	-
Measuring range (air)	Min.	0.15 to 1.5 mL/min (nor)
	Max.	6 to 60 L/min (nor)
Process connection		1/4" SW, 1/4" VCR, Rc 1/4"
Standard material		SCS14/SUS316
Face-to-face dimension		115 mm, 130 mm, 145 mm
Alarm		-

P series (Resin)



Model		P-060	P-620	XP
Fluid		Liquid, gas	Liquid	Liquid, gas
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output
Measuring range (water)	Min.	10 to 100 mL/min	0.1 to 1 L/min	0.02 to 0.1 L/min
	Max.	1 to 10 L/min	1 to 10 L/min	0.2 to 1 L/min
Measuring range (air)	Min.	0.2 to 2 L/min (nor)	-	0.1 to 1 L/min (nor)
	Max.	30 to 300 L/min (nor)	-	2 to 20 L/min (nor)
Process connection		Rc 1/8" to 3/8"	Rc 3/8", 3/8" SW, NPT 3/8"	Rc 1/4"
Standard material		Acryl	Acryl	Polyacetal
Face-to-face dimension		84 mm	76 mm	80 mm
Alarm		UL-approved reed switch	UL-approved reed switch	Optical alarm unit

P-700 series (Fluorocarbon resin)



Model		P-771	P-772	P-773	P-710
Fluid			Liquid		Liquid, gas
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output
Measuring range (water)	Min.	3 to 15 mL/min	0.06 to 0.6 L/min	0.1 to 1 L/min	3 to 30 mL/min
	Max.	0.2 to 2 L/min	4.5 to 45 L/min	1 to 10 L/min	0.4 to 2 L/min
Measuring range (air)	Min.	-	-	-	50 to 500 mL/min (nor)
	Max.	-	-	-	2 to 20 L/min (nor)
Process connection		Tube end, Rc 1/8"	Tube end, Rc 1/2"	Tube end, Rc 3/8"	Tube end, Rc 1/8"
Standard material			PFA		ETFE
Face-to-face dimension		80 mm	150 mm	115 mm	79 mm
Alarm		·Optical alarm unit	·UL-approved reed switch ·Optical alarm unit	·UL-approved reed switch ·Optical alarm unit	·Optical alarm unit

Note: Depending on specifications, Model P-772-U (with a valve) falls in "Valves or components thereof" listed in (ii) -7 of row 3 of Appended Table 1 of the Export Trade Control Order. Consult us for details.

Flow Switch, Flow Monitor

FA series



Model		FA-3000	FA4000	FA-6000
Fluid			Liquid (water)	
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output
Measuring range (water)	Min.	0.3 to 3 L/min	0.1 to 1 L/min	3 to 30 L/min
	Max.	5 to 50 L/min	13 to 130 L/min	10 to 100 L/min
Process connection		Rc 3/8" to 1"	Rc 1/2" to 1-1/2"	Rc 1/2" to 1"
Standard material	Tapered tube	Acryl	SUS316	Acryl
	Body	SUS304	SCS14	SCS14
Fluid temperature		0 to 60°C	0 to 100°C	0 to 60°C

CP series



Model	Primary pressure control	CP-11-100, 200, 400	CP-21-100, 200, 400	CP-31-500	CP-41-500
	Secondary pressure control	CP-12-100, 200, 400	CP-22-100, 200, 400	CP-32-500	CP-42-500
Fluid		Gas		Liquid, gas	
Flow control range (water)	Min.	-	5 to 50 mL/min	0.2 to 2 L/min	0.5 to 5 L/min
	Max.	-	0.2 to 2 L/min	0.5 to 5 L/min	1 to 10 L/min
Flow control range (air)	Min.	10 to 100 mL/min (nor)	0.1 to 1 L/min (nor)	5 to 50 L/min (nor)	15 to 150 L/min (nor)
	Max.	0.3 to 3 L/min (nor)	5 to 50 L/min (nor)	15 to 150 L/min (nor)	30 to 300 L/min (nor)
Process connection		Rc 1/8"	Rc 1/4"	Rc 3/8"	Rc 1/2"
Standard material		SUS304			
Controllable Dp range		C-11: 0.03 to 0.3 MPa C-12: 0.05 to 0.3 MPa	0.06 to 0.4 MPa	0.1 to 0.5 MPa	0.1 to 0.6 MPa

C series



Model	Primary pressure control	C-11	C-21	C-31	C-41	C-51
	Secondary pressure control	C-12	C-22	C-32	C-42	C-52
Fluid		Gas		Liquid, gas		
Flow control range (water)	Min.	-	0.9 to 9 L/h	12 to 120 L/h	30 to 300 L/h	70 to 700 L/h
	Max.	-	12 to 120 L/h	30 to 300 L/h	70 to 700 L/h	120 to 1200 L/h
Flow control range (air)	Min.	10 to 100 mL/min (nor)	0.015 to 0.15 m ³ /h (nor)	0.36 to 3.6 m ³ /h (nor)	0.9 to 9 m ³ /h (nor)	2.1 to 21 m ³ /h (nor)
	Max.	0.3 to 3 L/min (nor)	0.36 to 3.6 m ³ /h (nor)	0.9 to 9 m ³ /h (nor)	2.1 to 21 m ³ /h (nor)	3.6 to 36 m ³ /h (nor)
Process connection		Rc 1/8"	Rc 1/4"	Rc 3/8", 15 mm (1/2") JIS10K	Rc 1/2", 15 mm (1/2") JIS10K	20 mm (3/4") JIS10K
Standard material		SUS304	SCS14	SUS304		
Controllable Dp range		0.03 to 0.3 MPa	0.06 to 0.4 MPa	0.1 to 0.5 MPa	0.1 to 0.6 MPa	

Constant flow valve



Model	Primary pressure control	C-61	C-71	C-81
	Secondary pressure control	C-62	C-72	C-82
Fluid		Liquid, gas		
Flow control range (water)	Min.	120 to 1200 L/h	180 to 1800 L/h	300 to 3000 L/h
	Max.	180 to 1800 L/h	300 to 3000 L/h	1000 to 10000 L/h
Flow control range (air)	Min.	3.6 to 36 m ³ /h (nor)	5.4 to 54 m ³ /h (nor)	9 to 90 m ³ /min (nor)
	Max.	5.4 to 54 m ³ /h (nor)	9 to 90 m ³ /min (nor)	23 to 230 m ³ /h (nor)
Process connection		20 mm (3/4") JIS10K	25 mm (1") JIS10K	50 mm (2") JIS10K
Standard material		SUS304		
Controllable Dp range		0.1 to 0.6 MPa		

Differential Pressure Flowmeter

Oriflo Meter®



O/HDT series

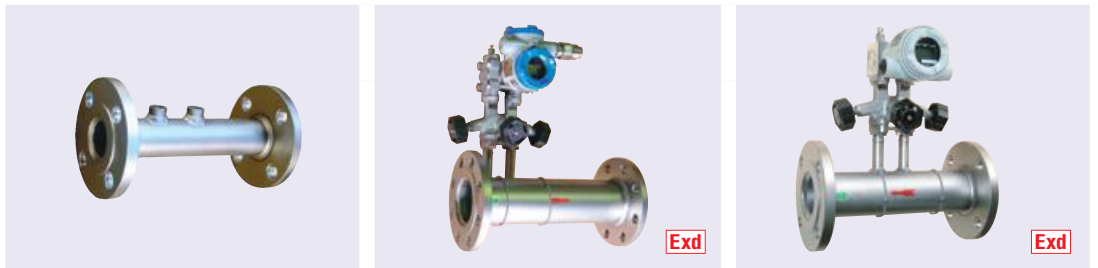


Model	O-180	O-680	O-780	HDT1000	O-100	O-1000
Fluid	Liquid (Viscosity: up to 3 mPa·s), gas				Liquid, gas	
Function	Local indication	·Local indication ·Alarm output (optical alarm unit)	·Local indication ·Alarm output (reed switch)	·Local indication ·Alarm output ·Current output ·Totalized pulse output ·Battery-powered	·Local indication ·Alarm output	·Local indication ·Alarm output ·Pneumatic output ·Current output ·Totalized pulse output
Standard differential pressure (liquid)	15 kPa		20 kPa	-	30 kPa	40 kPa
Measuring range (water)	Min.	0.03 to 0.15 m³/h		0.23 to 2.3 m³/h	5 to 25 m³/h	0.8 to 3 m³/h
	Max.	300 to 1500 m³/h		450 to 1700 m³/h	400 to 2000 m³/h	500 to 2000 m³/h
Standard differential pressure (gas)	5 kPa		20 kPa	-	10 kPa	40 kPa
Measuring range (air)	Min.	0.46 to 2.3 m³/h (nor)		0.9 (1.35) to 4.5 m³/h (nor)	0.34 to 3.4 m³/h (nor)	6.8 to 34 m³/h (nor)
	Max.	4600 to 23000 m³/h (nor)		9000 (13500) to 45000 m³/h (nor)	1720 to 17200 m³/h (nor)	6600 to 33000 m³/h (nor)
Process connection	·Thread: Rc 3/8" to 4" ·Flange, Wafer 10 mm to 500 mm (3/8" to 20")			·Thread: Rc 1/2" to 4" ·Flange, Wafer 15 mm to 300 mm (1/2" to 12")	D-D/2 tap: 100 mm to 500 mm (4" to 20") Corner tap, flange tap: 50 mm to 500 mm (2" to 20") Vena contracta tap: 200 mm to 500 mm (8" to 20")	
Standard material	SGP, SUS304, SUS316, PVC, HT-PVC			SUS304, others	SS400, SUS304, SUS316	
	Measuring pipe Indicator	SCS14, PVC, HT-PVC				

V-cone Flowmeter



V series Flange type



Model	VC	VD	VM
Fluid	Steam, liquid, gas		Gas, saturated steam
Function	Differential pressure port: Rc 1/2" or Rc 1/4"	·Local indication ·Current output	·Local indication ·Current output ·Mass flow
Measuring range (water)	Min.	0.4 to 3.47 m³/h	-
	Max.	112 to 1245 m³/h	-
Measuring range (air)	Min.	7 to 71 m³/h (nor)	
	Max.	300 to 32859 m³/h (nor)	
Flow range (Saturated steam)	-	6 to 65 kg/h	
Process connection	15 mm to 400 mm (1/2" to 16")	15 mm to 300 mm (1/2" to 12")	
Standard material	SUS304		

Wafer-Cone® Flowmeter



V series Wafer type



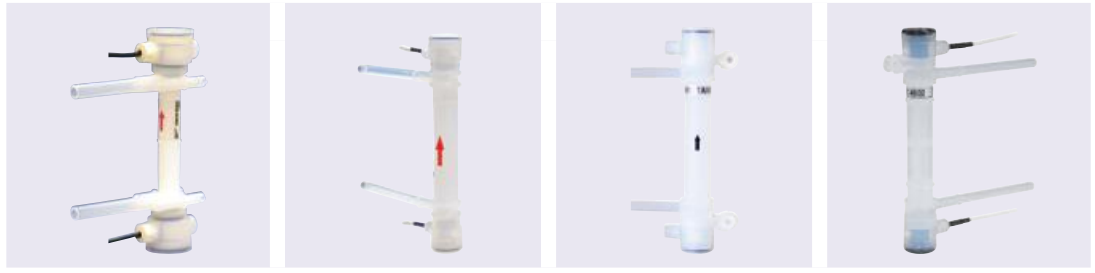
Model	VH	VT	VNT	VDT	VTW
Fluid	Liquid, gas, saturated steam			Liquid, gas	Liquid
Function	Differential pressure port: Rc 1/4" or Rc 1/8"	·Local indication ·Current output	·Local indication ·Totalizing indication ·Current output ·Pulse output	·Local indication ·Current output ·Battery-powered	Local indication
Measuring range (water)	Min.	0.4 to 5.51 m³/h			0.26 to 1.3 m³/h
	Max.	9 to 119.73 m³/h			18 to 90 m³/h
Measuring range (air)	Min.	6 to 77 m³/h			-
	Max.	120 to 1587 m³/h (nor)		750 to 7500 m³/h (nor)	-
Measuring range (saturated steam)	Min.	8 to 103 kg/h			-
	Max.	170 to 2421 kg/h			-
Process connection	25 mm to 100 mm (1" to 4")				
Standard material	SCS14A				

Ultrasonic Flowmeter (for built-in use)

Detector



UCUF series



Model	UCUF-K	UCUF-M	UCUF-02M	UCUF-04MT
Fluid	Liquid			
Measuring range (water)	Min.	0 to 0.05 L/min	0 to 10 mL/min	-
	Max.	0 to 80 L/min	0 to 100 mL/min	0 to 2 L/min
Process connection	Tube end 3/8", 1/2", 3/4", 1"	Tube end 1/4", 3/8", 1/2", 3/4", 1"	Tube end 1/4"	Tube end 1/4"
Standard material	PFA			

* Max. fluid temperature for UCUF-04MT is 180°C.

Converter

SFC series



Model	SFC-720	SFC-780/017	SFC-2000	SFC-900	SFC-010L	SFC-010T
Power supply	24 V DC					
Output	Flow rate	· 4 to 20 mA DC · 0 to 10 V DC	4 to 20 mA DC		· 4 to 20 mA DC · 0 to 20 mA DC	· 4 to 20 mA DC · 1 to 5 V DC and others
	Pulse output	Totalized pulse	· Frequency pulse · FAULT output	Frequency pulse	· Frequency pulse · Totalized pulse	Frequency pulse
	Alarm	2 points		-	2 points	
Communication	-			· RS485 · Protocol: MODBUS		
Applicable detector	UCUF-K, M				UCUF-02M	UCUF-04MT

Converter-integrated Type



UCM[®] series



Model	UCM04A/06A	
Power supply	24 V DC	
Fluid	Liquid	
Function	· Flow rate indication · Analog output	
Measuring range	Min.	0 to 0.2 L/min
	Max.	0 to 8 L/min
Process connection	Tube end 1/4", 3/8"	
Standard material	PFA	

All-in-one type

CLFC® series Controller



All-in-one ultrasonic flowmeter with a sensor, a converter, a control valve, and a controller

Model	CLFC300	
Power supply	24 V DC	
Fluid	Liquid	
Flow control range (water)	Min.	2.5 to 25 mL/min
	Max.	200 to 2000 mL/min
Process connection	ø1/4" tube end	
Standard material	PFA, PTFE	
Target flow rate input	4 to 20 mA DC	
Current flow rate output	4 to 20 mA DC	

Control Valve

FCV series



Model	FCV-3000	FCV-3000T	FCV-1000S
Fluid	Liquid		
Flow control range (water)	Min.	–	0.2 to 2 L/min
	Max.	2.5 to 25 mL/min	1 to 10 L/min
Process connection	200 to 2000 mL/min	50 to 500 mL/min	ø9.53 × ø6.35 tube end ø12.7 × ø9.53 tube end
Standard material	ø6.35 × ø4.35 tube end	ø4 × ø2.8 tube end	PCTFE, PTFE, PFA
	PTFE, PFA	THV	

Converter

FCA series



Model	FCA-3100	FCA-3200	FCA-3300	FCA-7100	FCA-7200	FCA-7300
Power supply	24 V DC					
Function	·Flow rate indication ·Voltage output ·Alarm output (use with flowmeters having electrical output function)			·Flow rate indication ·Current output ·Pulse output ·Voltage output ·Alarm output ·Built-in converter function for ultrasonic flowmeters (use with a UCUF detector)		
Current flow rate input	4 to 20 mA DC	0 to 10 V DC	0 to 5 V DC	–	–	–
Target flow rate input	1 to 5 V DC	0 to 10 V DC	0 to 5 V DC	1 to 5 V DC	0 to 10 V DC	4 to 20 mA DC
Current flow rate output	1 to 5 V DC	0 to 10 V DC	0 to 5 V DC	4 to 20 mA DC	0 to 10 V DC	4 to 20 mA DC



Clamp-on Type

UL300
UL6000
series



Model		General purpose type, for small pipe sizes	General purpose type, for small to medium pipe sizes	High-performance type, for small to large pipe sizes
Fluid		UL330	UL350	UL6300
Function		Liquid	Liquid	Liquid
Measuring range (velocity range)		<ul style="list-style-type: none"> ·Flow rate indication ·Total flow indication ·Current output ·Pulse output ·Status output 	<ul style="list-style-type: none"> ·Flow rate indication ·Total flow indication ·Current output ·Pulse output ·Status output ·RS485 serial output (optional) 	<ul style="list-style-type: none"> ·Flow rate indication ·Total flow indication ·Bar graph ·Current output (HART) ·Pulse output ·Status output
Min.		0 to 0.3 m/s	0 to 0.3 m/s	0 to 0.5 m/s
Max.		0 to 10 m/s	0 to 10 m/s	0 to 20 m/s
Measurable pipe size		25 mm to 400 mm (1" to 16")	25 mm to 1000 mm (1" to 40")	15 mm to 4000 mm (1/2" to 160")
Pipe material		Metal, resin	Metal, Resin, Polyethylene lining	

Portable Clamp-on Type

UL6400 series



Model		UL6400
Fluid		Liquid
Function		<ul style="list-style-type: none"> ·Flow rate indication ·Total flow indication ·Velocity indication ·Bar graph
Min.		0 to 0.5 m/s
Max.		0 to 20 m/s
Measurable pipe size		15 mm to 1500 mm (1/2" to 60") For pipes with 20 mm or larger O.D.
Pipe material		Metal, Resin, Polyethylene lining

3-Beam In-line Type

UL3030K series

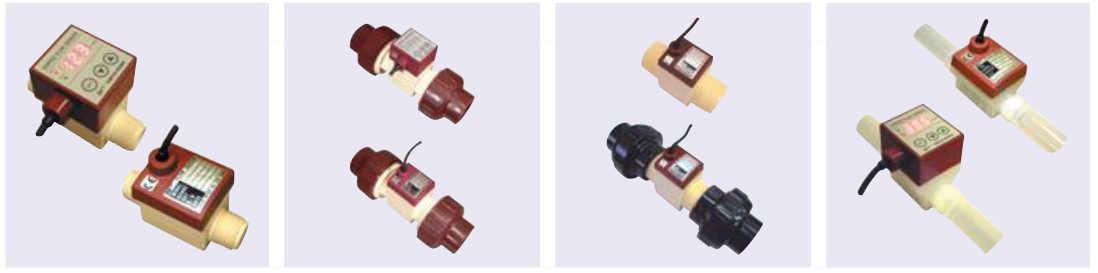


Exd

Model		UL3030K
Fluid		Liquid
Function		<ul style="list-style-type: none"> ·High accuracy: ±0.5% of reading ·Flow rate indication ·Current output (HART) ·Pulse output ·Status output
Min.		0 to 0.5 m/s (0 to 0.9 m ³ /h)
Max.		0 to 20 m/s (0 to 220,000 m ³ /h)
Process connection		Flange 25 mm to 2000 mm (1" to 80")
Standard material		316/316LSS



VF series



Model	VF-2000		VF-2200	VF-2300	VF-3000
Fluid	Liquid (low viscosity)				
Function	·Current output ·Pulse output ·Flow rate indication + current/alarm output				
Measuring range (water)	Min.	0.5 to 4 L/min	10 to 100 L/min	-	0.3 to 2.5 L/min
	Max.	4 to 40 L/min	10 to 150 L/min	25 to 250 L/min	15 to 150 L/min
Process connection	Tapered thread (male) R 3/8" to 1/2"		TS socket (nominal diameter 25) 25 mm (1") JIS10K flange Tapered thread (female) Rc 1"	TS socket (nominal diameter 30) 40 mm (1-1/4") JIS10K flange Tapered thread (male) R 1-1/4"	PFA tube end 3/8" to 1"
Standard material	PPS resin		PPS resin/PVC		New PFA

Turbine Flowmeter



Axial-flow Flowmeter

TW series



Model	TW-080/TW-090	
Fluid	Cooling water, various fluids	
Function	Voltage output/pulse output	
Measuring range (water)	Min.	0.2 to 2 L/min
	Max.	2 to 20 L/min
Process connection	Rc 1/4"	
Standard material	SCS14	

Mini-wheel, Mag-wheel, Manifold Mini-wheel Flowmeter®

W series



Model	W-200		W-500
Fluid	Cooling water, various fluids		
Function	·Current output ·Voltage output ·Pulse output		·Local indication ·Current output ·Pulse output
Measuring range (water)	Min.	0.3 to 1 L/min	0.7 to 3.5 m³/h
	Max.	5 to 50 L/min	50 to 400 m³/h
Process connection	Rc 1/4"		Rc 1/2" to 1" 15 mm to 200 mm (1/2" to 8") flange
Standard material	P.P./PVC SUS316		SUS304 SUS316/PVC

Mini-wheel, Mag-wheel, Manifold Mini-wheel Flowmeter®

W series



Model	Magnetic type W-2000/2000N		Magnetic type W-3000	Magnetic type MU-1000	Optical type W-800
Fluid	Various liquids				
Function	Current output/pulse output		Pulse output	·Current output ·Pulse output	Pulse output
Measuring range (water)	Min.	0.5 to 3 L/min		0.6 to 3 L/min	0.04 to 0.2 L/min
	Max.	6 to 60 L/min		2 to 20 L/min	5 to 50 L/min
Process connection	Rc 3/8" Rc 1/2" Rc 3/4"			Rc 3/8"	Rc 1/4" to 3/4" 1/4" to 3/4" tube end
Standard material	SCS14				PFA (PTFE)



Detector

TH series



Model	TH-1100		TH-1200		TH-1400		TH-1700		TH-1800		
Fluid	Gas										
Measuring range (air)	Min.	0 to 0.5 m/s (nor)								0 to 45 m/s (nor)	
	Max.	0 to 130 m/s (nor)									
Operating temperature	80°C (Max. 240°C)				80°C (Max. 180°C)						
Process connection (main)	50 mm to 350 mm (2" to 14")			50 mm to 150 mm (2" to 6")		50 mm to 350 mm (2" to 14")		15 mm to 50 mm (1/2" to 2")			
Standard material	SUS304, SUS316, SUS316L										

For high/low temperatures

TH series



Model	TH-1100-SP		TH-3200-SP		TH-3100		TH-3200		TH-3300		
Fluid	Gas										
Measuring range (air)	Min.	0 to 0.5 m/s (nor)								0 to 5 m/s (nor)	
	Max.	0 to 75 m/s (nor)									
Operating temperature	80°C (Max. 240°C)			Max. 550°C		0 to 550°C			-196 to 0°C		
Process connection (main)	6" to 14"				3" to 14"		2-1/2" to 14"				
Standard material	SUS304, SUS316, SUS316L										

TH-HQ series
Polished type



Model	TH-1100-HQ		TH-1500-HQ	
Fluid	Gas			
Measuring range (air)	Min.	0 to 0.5 m/s (nor)		
	Max.	0 to 75 m/s (nor)		
Operating temperature	Max. 120°C			
Process connection (main)	50 mm to 100 mm (2" to 4")		15 mm to 25 mm (1/2" to 1")	
Standard material	SUS316L			

Converter

TRX series



Model	TRX-600		TRX-700		TRX-900	
Power supply	100 V, 110 V, 115 V, 200 V, 220 V, 240 V AC		96 V to 264 V AC			
Function	<ul style="list-style-type: none"> -Flow rate -Total flow -Temperature -Temperature compensation -Purge control 		<ul style="list-style-type: none"> -Flow rate -Total flow -Alarm contact output -Bar graph (Flow rate, Total flow, Temperature) -Temperature/pressure compensation 			
Output	<ul style="list-style-type: none"> -Current output -Pulse output (Photo MOS open collector) -RS-485 		<ul style="list-style-type: none"> -Current output -Alarm output -Pulse output (open collector) -RS-485 			
Cable length	Max. 50 m		Max. 100 m			
Construction	Waterproof (for outdoor)		Panel mount (for indoor)		Waterproof (for outdoor)	

SRT series



Model	SRT1100		SRT1200		SRT1300		
Fluid	Gas						
Function	-Local indication -Analog output -Pulse output -Alarm output -RS-485						
Measuring range (air)	Min.	0 to 6 m/s (nor)				0 to 150 m/s (nor)	
	Max.	0 to 150 m/s (nor)					
Process connection (main)	50 mm to 1500 mm (2" to 60")		40 mm to 150 mm (1-1/2" to 6")		10 mm to 25 mm (3/8" to 1")		
Standard material	SUS316L			SUS304			

Constant Flow Valve

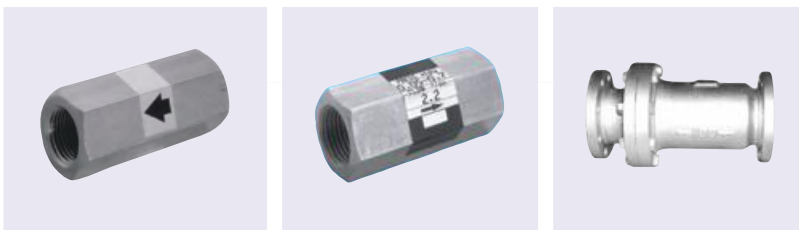


CX series



Model		CX-1101	CX-1500	CX-1510	CX-2000
Fluid		Liquid	Gas	Water	Liquid
Measuring range (water)	Min.	3 to 10 L/min	5 to 13 m ³ /h (nor)	0.7 to 1.1 m ³ /h	0.2 to 1.2 m ³ /h
	Max.	25 to 70 L/min	600 to 1000 m ³ /h (nor)	22 to 60 m ³ /h	10 to 70 m ³ /h
Process connection		Rc 1/2" to 1-1/2"	Rc (NPT) 1/2" to 2" 15 mm to 150 mm (1/2" to 6")	Rc (NPT) 1/2" to 2" 15 mm to 100 mm (1/2" to 4")	15 mm to 100 mm (1/2" to 4")

FPC/RSP/NSPW series



Model		FPC	RSP	NSPW/NFFW/NFF-S
Fluid		Water	Water	Water, other liquids
Measuring range (water)	Min.	0.7 to 2 L/min	0.06 to 0.6 L/min	5 to 20 L/min
	Max.	4 to 7 L/min	0.6 to 9 L/min	22 to 850 L/min
Process connection		Rc 1/4" to 1/2"	Rc 3/8", Rc 1/2"	Rc 3/8" to 1" 1-1/4" to 3"

Pitot Tube Flowmeter, Calorie Monitor (for Air Conditioners)



CFW/CDT series



Model		CFW1000	CFW2000	CDT1000	CDT2000	CDT3000
Fluid		Water, cold water, hot water				
Function		Local indication	·Local indication ·Detachable	·Local indication ·Alarm output ·Current output ·Battery-powered (local indication)	·Local indication ·Detachable ·Battery-powered	·Local indication ·Alarm output ·Current output ·Calorie monitor
Measuring range (water)	Min.	12 to 100 L/min		5 to 50 L/min		0.3 to 3 m ³ /h
	Max.	4500 to 35000 L/min		1600 to 16000 L/min		100 to 1000 m ³ /h (nor)
Process connection		20 mm to 450 mm (3/4" to 18")				
Standard material		SUS316/C3604				

Sight Glass



K series

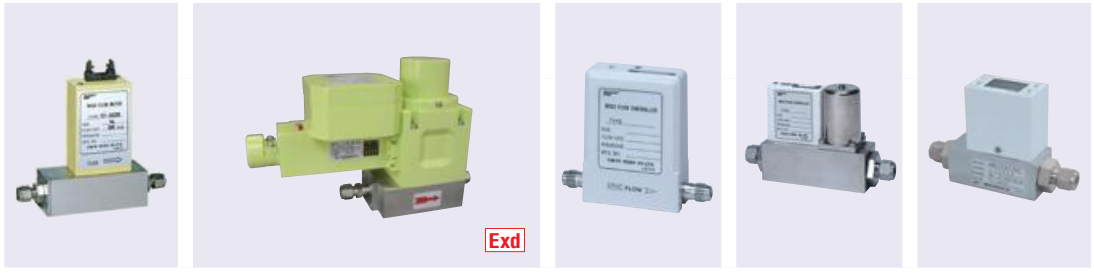


Model		K-200	K-400	K-500	K-600	K-740
Fluid		Liquid				
Function		Local indication			-	-
Measuring range (water)	Min.	0.2 to 1 m ³ /h	0.06 to 0.3 m ³ /h	-	-	·Local indication ·Alarm output
	Max.	60 to 300 m ³ /h	30 to 150 m ³ /h	-	-	0.12 to 0.6 m ³ /h 60 to 300 m ³ /h
Process connection		20 mm to 300 mm (3/4" to 12")	15 mm to 150 mm (1/2" to 6")		15 mm to 125 mm (1/2" to 5")	15 mm to 300 mm (1/2" to 12")
Standard material		FC200, SUS304, SUS316 FC200 (SGP)/Glass lining (K-500: 25 mm to 100 mm (1" to 4"))			SS400/SGP SUS304, SUS316	FC200 SCS13, SCS14

Detector



TF series HM series



Extl

Model	TF-5000/TF-6000	EP-TF-5300	H-EP-TF-5300	HM1000	HM5000	HM9700A	
Fluid	Gas			Gas			
Function	Voltage output			Voltage output		Local indication Current output Alarm output	
Measuring range (air)	Min.	0 to 5 mL/min (nor)			0 to 5 mL/min (nor)		1 to 20 L/min (nor)
	Max.	0 to 500 L/min (nor)			0 to 20 L/min (nor)	0 to 400 L/min (nor)	10 to 200 L/min (nor)
Process connection	Rc 1/4" to 1"	Rc 1/4" to 3/4"		1/4" SWL	1/4" to 1/2" SWL		
Standard material	SUS316			SUS316			

TF series



Model	TF-1000	TF-900	TF-4000	TF-600	TF-600D/600V	
Fluid	Gases	Air, N ₂ , O ₂	Air, N ₂ , O ₂	Air, N ₂		
Function	Voltage output Current output	Voltage output	Local indication Total flow indication Current output RS-485 Totalized pulse output Alarm output	Voltage output	Local indication Voltage output Totalized pulse output Alarm output RS-485	
Measuring range	Min.	0 to 2 L/min (nor)	0 to 10 L/min (nor)	0 to 2 L/min (nor)	0 to 20 L/min (nor)	0 to 5 L/min (nor)
	Max.	0 to 1000 L/min (nor)	0 to 100 L/min (nor)	0 to 1000 L/min (nor)	0 to 100 L/min (nor)	0 to 1000 L/min (nor)
Process connection	Rc 1/4" to 1"	Rc 1/4"	Rc 1/4" to 3/4"	Rc 1/4"	Rc 1/4" to 3/4"	
Standard material	SUS316	SCS14, polyacetal	SCS14	SCS14, SUS316		

Converter

TM series



Model	TM-2000
Applicable instrument	TF-1000 Other TF series
Function	Flow rate indication Total flow indication Analog output Totalized pulse output

TF series



Model	TF-4100	TF-2000N	TF-2261N	TF-1161/TF-1261
Fluid	Air, N ₂	Gases	Air, N ₂	Air, N ₂
Function	Local indication Current output Voltage output RS-485 Totalized pulse output Alarm output	Local indication Current output Totalized pulse output Alarm output	Local indication Current output Totalized pulse output Alarm output	Current output
Measuring range (air)	Min.	0 to 4000 L/min (nor)	0 to 2 L/min (nor)	0 to 80 m ³ /h (nor)
	Max.	0 to 16000 L/min (nor)	0 to 750 m ³ /h (nor)	0 to 1500 m ³ /h (nor)
Process connection	Rc 1" to 2"	Rc 1/4" to JIS 10K 80 mm (3")	JIS 10K 25 mm to 80 mm (1" to 3")	JIS 10K 25 mm to 80 mm (1" to 3")
Standard material	A6061-T6, SCS13	SUS316	SUS304, SUS316	SUS304, SUS316

Detector

TC series



Model		TC-1000/2000	EP-TC-1000/2000V	NM-1500/DM/AC/DC	TC-3000
Fluid		Gases			
Function		·Flow rate control ·Voltage output		·Flow rate control ·Voltage output ·RS-485	·Flow rate control ·4 to 20 mA DC ·0 to 5 V DC
Measuring range (air)	Min.	0 to 5 mL/min (nor)		0 to 10 mL/min (nor)	0 to 2 L/min (nor)
	Max.	0 to 500 L/min (nor)	0 to 100 L/min (nor)	0 to 150 L/min (nor)	0 to 800 L/min (nor)
Process connection		Rc 1/4" to 1"	OD 1/4", Rc 1/8"	1/4" VCR/SWL 3/8" SWL	Rc 1/4" to 1"
Standard material		SUS316		SUS316L	SUS316

HM series



Model		HM1000	HM5000
Fluid		Gases	
Function		·Flow rate control ·Voltage output	
Measuring range (air)	Min.	0 to 2 L/min (nor)	0 to 5 mL/min (nor)
	Max.	0 to 20 L/min (nor)	0 to 400 L/min (nor)
Process connection		1/4" SW	1/4" to 1/2" SW
Standard material		SUS316	

Converter

TM series



Model	TM-1400	HS1000A	ARP100
Applicable instrument	·TC-1000 ·TC-2000 ·TC-3000 ·EP-TC-1000/2000V	·HM1000 ·HM5000 ·HM9700A	·NM-1500AM ·NM-1500DM ·NM-1500AC ·NM-1500DC
Function	·Flow rate indication ·Analog output ·Totalized pulse output ·Flow rate setting	·Flow rate indication ·Flow rate setting ·Analog output	·Flow rate indication ·Flow rate setting

Integral Mount Type Electromagnetic Flowmeter

EGM series

PFA lining (Meter size 10 mm to 150 mm)		PFA lining (Meter size 10 mm to 150 mm)		Hard rubber-Polypropylene lining (Meter size 25 mm to 1000 mm)		Hard rubber-Polypropylene lining (Meter size 25 mm to 1000 mm)		PFA or other lining (Meter size 10 mm to 1000 mm)					
Model		EGM1100C		EGM1300C		EGM2100C		EGM2300C		EGM4100C			
Fluid		Conductive liquids											
Function		·Flow rate indication ·Total flow indication ·Current output (HART) ·Pulse output ·Status output											
Measuring range (water)	Min.	0 to 0.09 m ³ /h				0 to 0.6 m ³ /h				0 to 0.09 m ³ /h			
	Max.	0 to 700 m ³ /h				0 to 33000 m ³ /h				0 to 33000 m ³ /h			
Process connection		Wafer 10 mm to 150 mm (3/8" to 6")				Flange 25 mm to 1000 mm (1" to 40")				Flange 10 mm to 1000 mm (3/8" to 40")			
Standard material		PFA/Hastelloy® C				Polypropylene ·Hard rubber/Hastelloy® C				PFA-PTFE-ETf /Hastelloy® C			

EGM/MGM series

PFA or other lining (Meter size 10 mm to 1000 mm)		Ceramic type (Meter size 2.5 mm to 100 mm)		Ceramic type (Meter size 2.5 mm to 100 mm)		Sanitary type (Meter size 25 mm to 100 mm)		2-wire system (Meter size 10 mm to 150 mm)			
Model		EGM 4300C		EGM5100C		EGM5300C		EGM6300C		MGM4042K	
Fluid		Conductive liquids									
Function		·Flow rate indication ·Total flow indication ·Current output (HART) ·Pulse output ·Status output								·Flow rate indication ·Total flow indication ·Current output (HART)	
Measuring range (water)	Min.	0 to 0.09 m ³ /h		0 to 0.01 m ³ /h		0 to 0.6 m ³ /h		0 to 0.6 m ³ /h		0 to 0.09 m ³ /h	
	Max.	0 to 33000 m ³ /h		0 to 300 m ³ /h		0 to 300 m ³ /h		0 to 300 m ³ /h		0 to 700 m ³ /h	
Process connection		Flange 10 mm to 1000 mm (3/8" to 40")		Wafer 10 mm to 100 mm (3/8" to 4")		Sanitary joint 1S to 4S		Sanitary joint 1S to 4S		Flange 10 mm to 150 mm (3/8" to 6")	
Standard material		PFA-PTFE-ETFE/Hastelloy® C		Zirconia ceramic-Alumina ceramic/Platinum		PFA/Hastelloy® C/316SS		PFA/Hastelloy® C/316SS		PFA-PTFE/Hastelloy® C	

EGM series

Capacitance detection type (Meter size 25 mm to 100 mm)		Electromagnetic flow switch (Meter size 10 mm to 150 mm)		Electromagnetic flow switch (Meter size 25 mm to 300 mm)			
Model		EGM7300C		EGM1300CS		EGM2300CS	
Fluid		Conductive liquids					
Function		·Flow rate indication ·Total flow indication ·Current output (HART) ·Pulse output ·Status output		·Flow rate indication ·Total flow indication ·Alarm output (contact)			
Measuring range (water)	Min.	0 to 0.6 m ³ /h		0 to 0.09 m ³ /h		0 to 0.6 m ³ /h	
	Max.	0 to 300 m ³ /h		0 to 700 m ³ /h		0 to 3000 m ³ /h	
Process connection		Wafer 25 mm to 100 mm (1" to 4")		Wafer 10 mm to 150 mm (3/8" to 6")		Flange 25 mm to 300 mm (1" to 12")	
Standard material		Zirconia ceramic Alumina ceramic		PFA/Hastelloy® C		Polypropylene-Hard rubber /Hastelloy® C	

ETM series

Battery-powered (Meter size 25 mm to 200 mm)			
Model		ETM3070	
Fluid		Water (50 µS/cm or more)	
Function		·Flow rate ·Total flow indication ·Pulse output	
Measuring range (water)	Min.	0 to 0.9 m ³ /h	
	Max.	0 to 1000 m ³ /h	
Process connection		Flange 25 mm to 200 mm (1" to 8")	
Standard material		Rilsan (polyamide resin) /304SS	

Separate Type Detector

EGS series



Model		PFA lining (Meter size 10 mm to 150 mm)	Hard rubber-Polypropylene lining (Meter size 25 mm to 1000 mm)	PFA or other lining (Meter size 10 mm to 1000 mm)	Ceramic type (Meter size 2.5 mm to 100 mm)
Fluid		Conductive liquids			
Measuring range (water)	Min.	0 to 0.09 m ³ /h	0 to 0.6 m ³ /h	0 to 0.09 m ³ /h	0 to 0.01 m ³ /h
	Max.	0 to 700 m ³ /h	0 to 33000 m ³ /h	0 to 30000 m ³ /h	0 to 300 m ³ /h
Process connection		Wafer 10 mm to 150 mm (3/8" to 6")	Flange 25 mm to 1000 mm (1" to 40")	Flange 10 mm to 1000 mm (3/8" to 40")	Wafer 10 mm to 100 mm (3/8" to 4")
Standard material		PFA/Hastelloy® C	Polypropylene-Hard rubber /Hastelloy® C	PFA-PTFE-ETFE /Hastelloy® C	Zirconia ceramic- Alumina ceramic/Platinum

Separate Type Converter

EGC series



Model	Standard type EGC100W	High-performance type EGC300F/W
Power supply	100 V to 230 V AC/24 V DC	
Function	<ul style="list-style-type: none"> ·Flow rate indication ·Total flow indication ·Current output (HART) ·Pulse output ·Status output 	
Applicable instrument	EGS/MGS/IFS series electromagnetic flow detectors	

SWIRLMAX® Vortex Flowmeter


VFM series



Model		VFM4070C
Fluid		Gas, liquid, steam
Function		·Local indication ·Current output ·Pulse output
Measuring range (water)	Min.	0 to 0.91 m ³ /h
	Max.	0 to 1839 m ³ /h
Measuring range (air)	Min.	0 to 12.1 m ³ /h (nor)
	Max.	0 to 41799 m ³ /h (nor)
Measuring range (saturated steam)	Min.	0 to 11.8 kg/h
	Max.	0 to 23866 kg/h
Process connection		15 mm to 300 mm (1/2" to 12") Wafer 15 mm to 100 mm (1/2" to 4")
Standard material		SUS316L



Coriolis Mass Flowmeter

MMM series					
		Exd	Exd	Exd	Exd
		Straight twin tube (Meter size 15 mm to 50 mm)	Straight twin tube (Meter size 100 mm to 250 mm)	Single tube (Meter size 1 mm to 4 mm)	Straight single tube (Meter size 6 mm to 80 mm)
Model		MMM1300C	MMM2300C	MMM3300C	MMM7300C
Fluid		Liquid			
Function		·Flow rate indication ·Total flow indication ·Current output (HART) ·Pulse output ·Status output ·Density measurement (for 15 mm or larger meter sizes)			
Measuring range	Min.	48 kg/h	1,560 kg/h	0.3 kg/h	12 kg/h
	Max.	125,000 kg/h	2,300,000 kg/h	450 kg/h	560,000 kg/h
Process connection		Flange 15 mm to 80 mm (1/2" to 3")	Flange 100 mm to 300 mm (4" to 12")	1/4" NPT male	Flange 10 mm to 100 mm (3/8" to 4")
Standard material		ASTM UNS S31803 / 316LSS	ASTM UNS S31803 / 316LSS	316LSS	Titanium-Hastelloy® C22



Flowmeter for Filling Machines



Coriolis Mass Flowmeter

OPTIBATCH® series		
		Twin tube (Meter size 10 mm, 15 mm)
Model		MMM4011C
Fluid		Liquid
Function		Pulse output
Filling flow rate	Recommended	10 mm: 15 to 370 g/s 15 mm: 50 to 1200 g/s
	Min. filling volume	10 mm (3/8"): 23 g 15 mm (1/2"): 75 g
	Min. filling time	1.5 s
Process connection		Sanitary joint: 10 mm to 15 mm (3/8" to 1/2")
Standard material		316LSS

Electromagnetic Flowmeter

BATCHFLUX® series			
		Ceramic type (Meter size 10 mm, 15 mm)	Ceramic type (Meter size 2.5 mm to 40 mm)
Model		EGM5500C	EGM5015C
Fluid		Conductive liquids	
Function		Pulse output	
Filling flow rate	Recommended	10 mm: 60 to 200 mL/s 15 mm: 150 to 600 mL/s	2.5 mm: 3 to 10 mL/s 40 mm: 1000 to 3000 mL/s
	Min. filling volume	10 mm (3/8"): 100 mL 15 mm (1/2"): 200 mL	2.5 mm: 10 mL 40 mm : 1500 mL
	Min. filling time	1.5 s	-
Process connection		10 mm to 15 mm (3/8" to 1/2")	10 mm to 40 mm (3/8" to 1-1/2")
Standard material		Zirconia ceramic/ Platinum	Zirconia ceramic/ Alumina ceramic/Platinum

Blow-by Gas Flowmeter



BF series



Model		BF-2000S	BF-4000S
Fluid		Gas	
Measuring range (air)	Min.	20 to 200 L/min (nor)	10 to 100 L/min (nor)
	Max.	20 to 300 L/min (nor)	10 to 150 L/min (nor)
Temperature		0 to 60°C	
Pressure loss		200 Pa at 200 L/min (nor)	200 Pa at 100 L/min (nor)
Power supply		Standard: 100 V AC, 110 V to 240 V AC	
Output		4 to 20 mA DC or 1 to 5 V DC · Totalized pulse · Serial (RS485) · Flow alarm · Differential pressure alarm	
Process connection		Rc 1-1/2"	Rc 1"
Accuracy		1.5% R.D. (at 20 L/min (nor) or higher) 1.5% F.S. (at 20 L/min (nor) or lower)	1.5% R.D. (at 10 L/min (nor) or higher) 1.5% F.S. (at 10 L/min (nor) or lower)

CNG Flow Measurement System

TH series detector



Model		TH-1800T
Fluid		CNG
Function		Local indication + Current output
Measuring range	Min.	5 to 365 L/min (nor)
	Max.	45 to 3795 L/min (nor)
Transmitter construction		Water-tight (equivalent to IP65)
Process connection		RC 1/2" to 2"
Accuracy		±1% R.D. (flow range: 5 to 100%)
Standard material		SUS304/Fluororubber
Available material		SUS316/Fluororubber
Converter		TRX-700-CNG

TR series converter



Model	TRX-700-CNG
Function	Flow indication + Temperature indication or Total flow (continuous)
Power supply	100 V AC
Output	· 4 to 20 mA DC · Pulse output · RS232C · Flow alarm
Cable length	10 m (Max. 100 m)

Radiator Air Flow Measurement System



RF-1000 series



	Converter	Detector	Propeller sensor	Propeller sensor
Model	RR-5000B	Model	RS-1050	RS-1038
Power supply	12 V DC	Measurable range	0.4 to 30 m/s	0.5 to 30 m/s
Number of measuring channels	8 ch	Accuracy	±1% R.D. +0.05 m/s at 0.4 to 20 m/s	±1.5% R.D. +0.05 m/s at 0.5 to 20 m/s
Output	-5 to +5 V DC	Temperature	0 to 120°C (100°C in continuous operation)	0 to 120°C (100°C in continuous operation)
Accuracy	Frequency conversion: ±1 Hz Analog output: ±0.6% R.D. ±0.01 V	Outer diameter	Approx. 64 mm	Approx. 40 mm
Communication	RS-485	Optical cable	RS-3000, ø0.3 core, 6 m (standard)	RS-3000, ø0.3 core, 6 m (standard)

Flowmeter for Cooling Water



EF series



	Detector/Converter
Model	EF-AUTO
Fluid	Conductive liquids
Measuring range	0 to 1 L/min 0 to 1400 L/min
Fluid temperature	-20 to 180°C
Pressure	0 to 1.0 MPa
Process connection	6 mm to 50 mm (1/4" to 2")
Power supply	100 to 230 V AC
Output	4 to 20 mA DC
Construction	Equivalent to IP65
Body material	Zirconia ceramic, alumina ceramic

Flowmeter for Intake Air



GFM series



	Detector/Converter
Model	OPTISONIC 7300
Fluid	Air
Measuring range	12 to 300 m³/h 88 to 3530 m³/h
Fluid temperature	-20 to 100°C
Pressure	Atmospheric pressure
Process connection	65 mm to 250 mm (2-1/2" to 10")
Power supply	100 V AC
Output	4 to 20 mA DC
Construction	IP66

Metal Tube Variable Area Flowmeter



AM-1000 series



Model		AM-1400	AM-1520	AM-1740	AM-1690	AM-1310
Fluid		Liquid, gas, steam				
Function		·Local indication	·Local indication ·Current output	·Local indication ·Alarm output	·Local indication ·Local totalization ·Totalized pulse output	·Local indication ·Pneumatic output
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h				
	Max.	15 to 150 m ³ /h				
Measuring range (air)	Min.	0.35 to 3.5 m ³ /h (nor)				
	Max.	4500 to 45000 m ³ /h (nor)				
Process connection		15 mm to 150 mm (1/2" to 6")				
Standard material		SUS304, SUS316, SUS316L				
Available lining material		Rubber, fluorocarbon resin, PVC, glass				

Sanitary Flowmeter



AM-1000-SR series



Model		AM-1401-SR	AM-1311-SR	AM-1521-SR	AM-1691-SR	AM-1741-SR
Fluid		Liquid				
Function		·Local indication	·Local indication ·Pneumatic output	·Local indication ·Current output	·Local indication ·Local totalization ·Pulse output	·Local indication ·Alarm output
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h				
	Max.	7 to 70 m ³ /h				
Process connection		1S to 4-1/2S				
Standard material		SUS304, SUS316, SUS316L				

For Large Flow Rates



M series



Model		M-400	M-520	M-740	M-310	
Fluid		Liquid, gas, steam				
Function		·Local indication	·Local indication ·Current output	·Local indication ·Alarm output	·Local indication ·Pneumatic output	
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h				
	Max.	80 to 800 m ³ /h				
Measuring range (air)	Min.	0.3 to 3 m ³ /h (nor)				
	Max.	560 to 5590 m ³ /h (nor)				
Process connection		15 mm to 300 mm (1/2" to 12")				
Standard material		SUS304, SUS316, SUS316L				
Available lining material		Rubber, fluorocarbon resin, PVC, glass				

For Micro Flow Rates



M-910 series



Model		M-910
Fluid		Liquid, gas
Function		·Local indication ·Pneumatic output
Measuring range (water)	Min.	0.4 to 2 L/h
	Max.	30 to 300 L/h
Measuring range (air)	Min.	12 to 60 L/h (nor)
	Max.	170 to 8500 L/h (nor)
Process connection		·Rc 1/4" to 3/4" ·Flange 10 mm to 25 mm (3/8" to 1")
Standard material		SUS304, SUS316, SUS316L
Available material		Titanium, MA276

Metal Tube Variable Area Flowmeter (250 mm unified installation length)



MX series



Model		MX-400	MX-710	MX-52E	MX-52D
Fluid		Liquid, gas			
Function		·Local indication	·Local indication ·Alarm output (intrinsically safe design)	·Local indication ·Current output (flameproof design)	·Local indication ·Current output (flameproof design)
Measuring range (water)	Min.	0.01 to 0.1 m ³ /h			
	Max.	8.5 to 85 m ³ /h			
Measuring range (air)	Min.	0.3 to 3 m ³ /h (nor)			
	Max.	150 to 1500 m ³ /h (nor)			
Process connection		15 mm to 100 mm (1/2" to 4")			
Standard material		SUS304, SUS316, SUS316L			

Slurry Flowmeter



AS series



Model		AS-1000
Fluid		Liquid
Function		·Local indication ·Totalized pulse output ·Current output ·Alarm output ·Local totalization ·Pneumatic output
Measuring range (water)	Min.	0.02 to 0.1 m ³ /h
	Max.	30 to 150 m ³ /h
Process connection		15 mm to 150 mm (1/2" to 6")
Standard material		SUS304, SUS316, SUS316L, PVC

Glass Tube Flowmeter



R-105-RK series



Model		R-105-RK
Fluid		Gas
Function		Local indication
Measuring range (air)	Min.	0.11 to 1.1 m ³ /h (nor)
	Max.	11 to 110 m ³ /h (nor)
Process connection		Rc 3/8" to 2"
Standard material		Aluminum/SUS304

Purgemeter



P series



Model		P-520
Fluid		Liquid
Function		·Local indication ·Alarm output
Measuring range (water)	Min.	1 to 10 L/min
	Max.	12 to 60 L/min
Measuring range (air)	Min.	-
	Max.	-
Process connection		Rc 1/2"
Standard material		PVC, PTFE
Face-to-face dimension		150 mm
Alarm		·UL-approved reed switch ·Optical alarm unit

Flow Switch/Flow Monitor



FA series



Model		FA-1000	FA-5000
Fluid		Liquid (water)	Liquid (water)
Function		·Local indication ·Alarm output	Local indication
Measuring range (water)	Min.	0.1 to 1 L/min	1 to 10 L/min
	Max.	10 to 100 L/min	10 to 50 L/min
Process connection		Rc 1/4" to 1-1/2"	Rc 3/4"
Standard material	Tapered tube	SUS304	Acryl
	Body	ADC12 (Housing)	SCS13
Fluid temperature		0 to 100°C	0 to 50°C

Note: Depending on specifications, Model P-520-L (with a fluorocarbon resin valve) falls in "Valves or components thereof" listed in (ii) -7 of row 3 of Appended Table 1 of the Export Trade Control Order. Consult us for details.

LEVEL MEASUREMENT AND CONTROL INSTRUMENTS

Various level instruments and monitoring systems are available for small to large tanks, vessels, tankers, etc. that contain crude oil, chemicals, powders, granules and others.

The following symbols are applicable to level measurement and control instruments on Page 26 to 37.

Explosion-proof

Exd : Flameproof types available **Exi** : Intrinsically safe types available

Contact us for instruments for bonded tanks and high-pressure applications.

Spring-balanced and Servo-balancing Type Tank Gauge

FT/FP-1000 series FT-2000 series



Model		FT-1000	FP-1000	FT-2000
Function		·Local indication ·Current output ·Alarm contact ·Pneumatic output ·Digital output		
Measuring range	Min.	0 to 3 m		
	Max.	0 to 25 m	0 to 10 m	0 to 25 m
Temperature (at the wetted parts)		-196 to 400°C	0 to 150°C	-196 to 400°C
Pressure		For low and high pressures		
Indication accuracy		±3 mm	±10 mm	±1.5 mm
Process connection		40 mm (1-1/2") flange, Rc1-1/2"		
Standard float material		SUS304		
Available float material		SUS316, SUS316L, PVC		SUS316, SUS316L

Analog Transmitter

TR/AT series



Model	TR-210 or TR-221 to 226	TR-101 to 106	AT-101W
Power supply/Air supply	24 V DC or 100 V AC	-	Pneumatic pressure: 0.14 MPa
Function	Current output, alarm output	Alarm output	Pneumatic output
Output	4 to 20 mA DC	Alarm contact: 1 to 6	Pneumatic output: 20 to 100 kPa

Digital Output Transmitter

DM4N series



Model	DM4N-1	DM4N-2	DM4N-3
Power supply	20 to 35 V DC	85 to 264 V AC (50/60 Hz)	
Function	·Digital output ·Level transmission ·Temperature transmission ·Alarm output		
Communication	1-way	2-way	1-way
Measuring range	0 to 40 m, 0 to 60 m		

Level Gauge for LNG Tanks

Servo-balancing Type Tank Gauge

FW-9000N series



Exd

Model		FW-9000N
Power supply		100 to 240 V AC
Function		·Digital output ·Current output
Measuring range	Min.	-
	Max.	0 to 60 m
Temperature (at the wetted parts)		-164°C
Pressure		·Low pressure (atmospheric) ·High pressure (up to 3 MPa)
Process connection		80 mm to 150 mm (3" to 6")
Pressurized parts material	For low pressures	SCS13, SCS14

Density Meter

Density meter for LNG/LPG tanks



Exd
Exi

Model		01146 density meter
Power supply		85 to 240 V AC
Function		RS485/20 mA loop (Modbus protocol)
Measuring range		·Density measurement: 400 to 1000 kg/m ³ ·Liquid level measurement: 0 to 100 m ·Temperature measurement: -200 to +100°C
Temperature (at the wetted parts)		-200 to 65°C
Pressure		350 mbar G (Max.)
Process connection		150 mm (6") ANSI 150 # FF
Sensor head material		SUS316L

FW-2200 series



Exd

All-wire type

Model		FW-2200
Power supply		100 V AC (standard)
Function		Digital output
Measuring range	Min.	0 to 30 m
	Max.	0 to 60 m
Temperature (at the wetted parts)		-164°C
Pressure		Low pressure (atmospheric)
Process connection		40 mm (1-1/2")
Pressurized parts material	For low pressures	AC4C, SCS13, SCS14
	For high pressures	SCS13, SCS14

Microwave Level Meter for LNG Tanks

RTG series



Exi

Model		RTG3960
Power supply		100 to 240 V AC
Measuring object		LNG
Output		·4 to 20 mA DC ·Relay output×2
Fluid temperature		-164°C
Pressure		Low pressure (atmospheric)
Wetted parts material		SUS316, quartz
Process connection		150 mm (6")

Level Gauge

Servo-balancing Type Tank Gauge

FW-9000N series



Exd

Model		FW-9000N
Power supply		100 to 240 V AC
Function		·Digital output ·Current output
Measuring range	Min.	-
	Max.	0 to 60 m
Temperature (at the wetted parts)		-164°C to +300°C
Pressure		·Low pressure (atmospheric) ·High pressure (up to 3 MPa)
Process connection		80 mm to 150 mm (3" to 6")
Pressurized parts material	For low pressures	AC2A, SCS13, SCS14
	For high pressures	SCS13, SCS14

Torque Tube Type Level Gauge

FST series



Exd
Exi

Model		FST4000
Power supply		8 to 40 V DC
Function		Level measurement Interface measurement Density measurement
Output		4 to 20 mA DC
Measuring range	Min.	0 to 300 mm
	Max.	0 to 3000 mm
Temperature (at the wetted parts)		-196 to +450°C
Pressure		ASME150 to 2500
Process connection		40 mm to 100 mm (1-1/2" to 4")
Available displacer material		SUS304, SUS316, SUS316L, NW0276, MONEL, PVC

Displacer Type Level Meter

FS series



Exd

Model	FS-110	FS-115	FS-313	FS-512	FS-517
Function	Local indication	Local indication+ Alarm output	Local indication+ Pneumatic transmitter 20 to 100 kPa	Local indication+ Current output	Local indication+ Current output+Alarm output
Level measurement, Interface measurement, Density measurement					
Measuring range	0 to 300 mm				
	0 to 3000 mm				
Temperature (at the wetted parts)		-10 to 150°C (-40 to 350°C)			
Pressure		9.8 MPa (Max.)			
Process connection		3" to 5"			
Available displacer material		SUS304, SUS316, SUS316L, MA276, PVC			

Magnet Float Type Level Transmitter

FP-7100 series



Exd
Exi

Model		FP-7100
Power supply		24 V DC
Function		Level measurement
Output		4 to 20 mA DC
Measuring range	Min.	0 to 300 mm
	Max.	250 to 3810 mm (5000)
Temperature (at the wetted parts)		·SUS: 0 to 100°C ·PVC: 0 to 60°C ·PFA: 0 to 100°C
Pressure		1 MPa (Max.) (0.2 MPa for resin)
Process connection		80 mm (3" (Min.))
Pressurized parts material		SUS304, SUS316, SUS316L, PVC, PFA

Magnetostrictive Level Transmitter

High-precision LT series



Exd

Model		LT-321
Power supply		24 V DC
Function		Level measurement
Output		4 to 20 mA DC (four-wire system)
Measuring range	Min.	0 to 250 mm
	Max.	0 to 3710 mm (5000)
Temperature (at the wetted parts)		·SUS : -40 to 125°C ·PVC : 0 to 60°C ·PFA : 0 to 100°C
Pressure		2 MPa (Max.)
Process connection		50 mm (2" (Min.))
Pressurized parts material		SUS304, SUS316, SSS316L, PVC, PFA

MAG GAUGE® Level Gauge

FM series



Exd
Exi

Exd
Exi

Model		FM-1000	FM-3100
Function		·Local indication ·Alarm output ·4 to 20 mA DC ·Alarm output + 4 to 20 mA DC	·Local indication ·Alarm output
Measuring range	Min.	0 to 250 mm	0 to 250 mm
	Max.	0 to 4380 mm (depending on chamber materials)	0 to 2000 mm
Temperature (at the wetted parts)		-10 to 120°C (Max. 300°C depending on materials)	-10 to 120°C
Pressure		7.3 MPa (Max.) (depending on models)	1 MPa (Max.)
Process connection		25 mm (1" (standard))	10 mm to 25 mm (3/8" to 1")
Available chamber material		·SUS304, SUS316, SUS316L ·PVC (HT-PVC) ·SUS+PVC lining ·SUS+ETFE lining ·SUS+PFA lining ·SUS+PTFE lining ·SUS+Glass lining	SUS304, SUS316, SUS316L

Purge Type Level Meter

CP series



Model	CP-22-100-B
Supply fluid	Air, N ₂
Supply pressure	0.3 to 0.99 MPa
Standard measuring range	0 to 1.2 L/min (std.) (20°C, 1 atm)
Installation type	·Panel mount type ·U-bolt installation type ·Box type ·Dual type
Available body material	Panel SPCC, SUS304

PGT series



Model	PGT
Measuring object	Liquid
Max. measuring length	·Stainless steel: 16000 mm ·PVC: 4000 mm
Process connection	3/8" to 1", JIS10K (fixed flange) 1/2" to 1-1/2", JIS10K (sliding flange)
Purge connection	Rc 1/4"
Available material	SUS304, SUS316, PVC

Microwave Level Meter

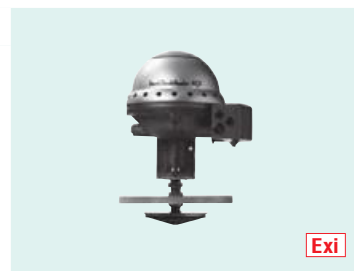
RTG3900 series



Exi



Exi



Exi

Model	RTG3920	RTG3930	RTG3950
Power supply	100 to 240 V AC		
Measuring object	Various petroleum and chemical products	Various liquids, sticky liquids	Crude oil, gasoline, various liquids
Output	·4 to 20 mA DC ·Relay output × 2		
Liquid temperature	230°C (Max.)		
Pressure	-0.02 to 0.02 MPa		Atmospheric
Gas parts material	SUS316, PTFE, FPM		SUS316, aluminum, PTFE, FPM

Microwave Level Meter

TLR series



Model	TLR3000	
Measuring object	Liquid, slurry	
Output	4 to 20 mA DC	
Power supply	24 V DC	
Measuring range	Min.	0.5 m
	Max.	40 m
Temperature (at the wetted parts)	-40 to 200°C	
Pressure	·Horn antenna: 0 kPa (abs) to 4 MPa ·Drop antenna: 0 kPa (abs) to 1.6 MPa	
Gas parts material	Standard: SS316L MA276 PTFE, PP (drop antenna)	
Connection size	40 mm to 100 mm (1-1/2" to 4")	

Micropulse Level Meter

TGR series



Model	TGR3000	TGR4500
Measuring object	Liquid, slurry, granules	Liquid
Output	4 to 20 mA DC	
Power supply	24 V DC	
Measuring range	Min.	-
	Max.	·Single rod: 3 m ·Twin rod: 3 m ·Single cable: 35 m ·Twin cable: 8 m ·Coaxial probe: 3 m
Temperature (at the wetted parts)	-40 to 200°C	·Single rod, twin cable: -30 to 200°C (of the process liquid) ·Twin cable: -30 to 150°C (of the process liquid)
Pressure	0 kPa (abs) to 4 MPa	1.6 MPa (Max.)
Wetted parts material	SS316L	SS316
Standard probe material	SS316L	SS316
Connection size	G 3/4" to 1-1/2" male, flange	G 1" to 1-1/2" male

Level Switch

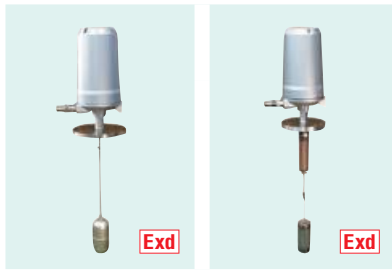
Float Type/Displacer Type Level Switch

FP-4000 series



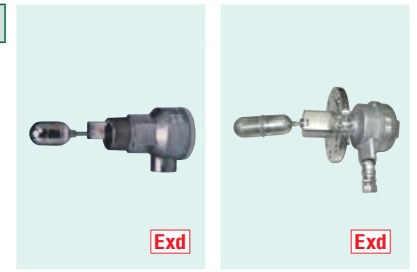
Model	FP-4000	FP-4100	FP-4200
Number of alarm points	1 to 5	1 to 6	
Max. length of guide pipe	-SUS: 4.9 m (3.9 m for explosion-proof models) -Resin: 3.9 m		
Contact switch	Reed switch		
Temperature (at the wetted parts) (SUS)	0 to 60°C (-5 to 100°C)		0 to 60°C (-5 to 80°C)
Pressure range (SUS)	0.66 MPa		0.13 MPa
Process connection	50 mm (2")		80 mm (3")
Available float material	SUS304, SUS316, SUS316L, PVC, HT-PVC, PP, PFA	SUS304, SUS316, SUS316L, PVC, HT-PVC, PP, PFA	SUS304, SUS316, SUS316L, PVC, HT-PVC, PP, PTFE, PFA

FR series FS series



	Float type	Spring-balancing displacer type
Model	FR-6000	FS-100
Number of alarm points	1	1, 2, 3, or 4
Contact switch	Micro switch	Micro switch
Temperature (at the wetted parts)	0 to 150°C (-25 to +400°C)	-60 to +400°C
Pressure range	10K, 20K, 30K class	4.9 MPa (Max.)
Process connection	100 mm (4") flange, etc.	80 mm to 150 mm (3" to 6") flange
Available float material	SUS304, SUS316, SUS316L	SUS316, SUS316L, TP35

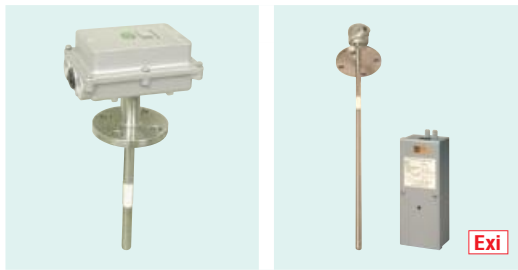
FB series



	Float type	Float type
Model	FB-5000	FB-7000
Number of alarm points	1	1
Contact switch	Reed switch	Micro switch
Temperature (at the wetted parts)	-5 to +90°C	0 to 150°C (-70 to +400°C)
Pressure range	2 MPa (Max.)	4 MPa (Max.)
Process connection	R 1-1/2" male, 40 mm (1-1/2") flange	80 mm (3") flange
Available float material	SUS316	SUS316L

Capacitance Type Level Switch

CA1000 series



	Capacitance type	Capacitance type
Model	CA-1000	CA-1000S
Number of alarm points	1	
Temperature (at the wetted parts)	-10 to 80°C (-10 to 300°C)	
Pressure range	1 MPa (Max.)	
Process connection	25 mm (1") JIS10K FF	
Available float material	SUS304, SUS316, SUS316L	

Relay Driver

RD series



Model	RD-1000
Function	A relay unit to increase electric contact capacity of level switches and other contacts
Combination instrument	Combination with level switches
Power supply	100 V AC/200 V AC
Output	1 contact output
	-

Peripheral Instruments for Tank Gauge Systems

Receiver for Digital Tank Gauging Systems

CATAMS® series



Model	CATAMS	NMR-4000	IFX-20000	DIR-530
	Tank data monitoring software	Tank data receiver	Interface unit	Tank data receiver
Main display mode	<ul style="list-style-type: none"> ·Calibration with 12 different screens ·Real-time tank data ·Data after loading/unloading ·Data of all tanks ·Liquid level in the bar graph ·Data history ·Error codes and details ·Alarm record ·Others 	<ul style="list-style-type: none"> ·Menu ·1 tank ·Tank data list ·Alarm status confirmation ·Block list ·Bar graph ·Alarm record ·System data change 	-	<ul style="list-style-type: none"> ·For constant monitoring of a single tank ·For small tank yards with a few tanks ·Interface for host systems
Host interface	<ul style="list-style-type: none"> ·RS-232 ·LAN ·Others 	<ul style="list-style-type: none"> ·RS-232C (1 or 2 ports) ·Parallel I/O ·RS-232C (1 port) + Parallel I/O ·RS-232C (2 ports) + Parallel I/O ·LAN port 	RS-232C or LAN 2 ch	<ul style="list-style-type: none"> ·RS-232C ·RS-485 ·Others
Number of transmitters	-	160 units (Max.)	Max. 32 transmitters per unit (up to 8 units)	1 to 16 units
Communication	-	-	<ul style="list-style-type: none"> ·1 way ·2 way ·Communication with third-party products 	<ul style="list-style-type: none"> ·1 way ·2 way

Tank-side Indicator

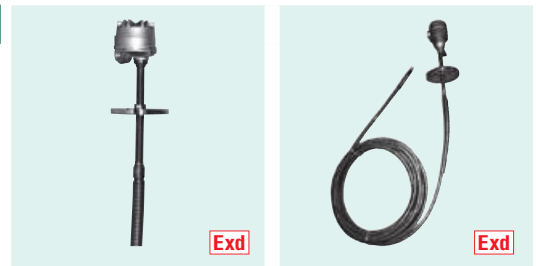
DIR series



Model	DIR-110N
Indication	<ul style="list-style-type: none"> ·Liquid level ·Temperature ·Other statuses
Output	<ul style="list-style-type: none"> ·4 to 20 mA DC ·Liquid level ·Temperature ·Relay contact output (4 points)
Applicable tank gauge	FW-9000N (DM4N transmitter)

Temperature Sensor for Tanks

AT series

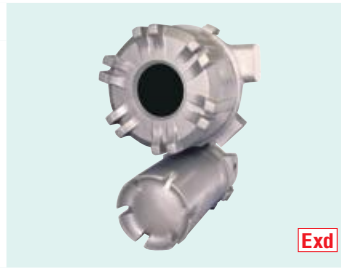


Model	ATM	ATS
	Averaging temperature sensor	Multispot type averaging temperature sensor
Measuring range	0 to 100°C	
Measuring length	30 m (Max.)	
Number of elements	16 elements (Max.)	
Process connection	40 mm to 100 mm (1-1/2" to 4")	

FDC/DIR series



Exd



Exd



Exi

Model	FDC-1000	DIR-110	CSR-3005/AS-40
Measuring method	·Field device controller ·Remote adjustment of inlet/outlet valves	·Tank-side indicator ·Indication: Temperature, level ·Transmitter to be connected: FW-9000	Oil leak detector (capacitance type)
Measuring object	-	-	Floated oil
Power supply	100 to 240 V AC	100 to 240 V AC	100 V AC/200 V AC
Output	Contact output: 8 points (Max.)	·Indication only ·4 to 20 mA	Contact output
Measuring range	-	-	3 to 5 mm oil layer

MICROCELL Level System

SVS series



Model	SVS2000
Measuring method	MICROCELL level system
Measuring object	·Direct measurement of product mass in vessels ·Measuring object: Silo, hopper, etc.
Power supply	100 V AC
Output	4 to 20 mA DC
Measuring range	-

Ultrasonic Level Meter

UW series



Exd

Model	UW5000
Measuring method	Ultrasonic sensor
Measuring object	Liquid, slurry, powder, granule, gravel
Power supply	100 to 240 V AC
Output	4 to 20 mA DC
Measuring range	0 to 5 m, 0 to 60 m (Max.)

Marine Cargo Monitoring System

Float Type Level Meter

SPT series



Exi



Exi



Exi

Model	SPT-3500S	SPT-7200
Measuring method	·Level: Magnetic float (Hall IC) ·Temperature: Pt 1000 RTD ·Pressure: Ceramic sensor	·Level: Magnetic float (reed switch) ·Temperature: Pt 100 RTD
Measuring object	Level, temperature, and pressure of liquid cargo	Level and temperature of liquid cargo
Indication	·6-digit LCD ·Level and temperature selectable ·Separable (up to 10 m)	·Level: Analog, analog + digital ·Temperature: Digital
Output	2-core cable for power supply and serial pulse signal	
Measuring range	·Level: 20 m (Max.) ·Temperature: -50 to 150°C ·Temperature in tanks: -25 to 85°C ·Pressure: 800 to 2000 hPa	·Level: 25 m (Max.) ·Temperature: -25 to 105°C
Measuring accuracy	·Level: ±20 mm (Precision type: ± 10 mm) ·Temperature: ±2°C ·Pressure: ±0.5% F.S.	·Level: ±1% F.S. ·Temperature: ±2°C
Standard material	·Float: SUS316 ·Guide pipe: SUS304 ·Pressure sensor: SUS316	·Guide pipe: SUS304 ·Flange: SUS304 ·Float: SUS316L
Available material	·Float: SUS316L, titanium ·Guide pipe: SUS316, SUS316L	·Guide pipe: SUS316, SUS316L ·Flange: SUS316, SUS316L
Construction	Ex ia II CT6	Ex ia II CT5 Temperature: i3nG5

Radar Level Gauge

TA series



Model	TA840
Method	Radar level gauge
Measuring range	0.5 to 42 m
Resolution	0.1 mm
Accuracy	±10 mm
Application	For cargo tanks
Communication line	RS485
Standard material	SUS316L
Construction	Intrinsically safe (ATEX)

High-level Alarming Device

FP/MIA series



Exi



Exi

Model	FP-7000	MIA-LIDEC
Method	Float type level switch	Acoustic wave type level switch
Sensor	Reed switch	Piezo-electric element
Contact signal	2 points detection (high level and overflow)	Current signal (18 mA in normal conditions/ 6 mA in alarm conditions)
Accuracy	± 10 mm	±10 mm
Application	·FP-7091S-T: Cargo, slop and fuel tanks ·FP-7091S: Bilge alarm ·FP-7091S-T: Cargo and slop tanks, washproof	·Liquid level detection: High alarm ·Overflow alarm ·Type: High alarm alone High alarm and overflow alarm combined
Power supply	-	18 to 28 V DC (2-wire system)
Standard material	·Float: SUS316 ·Guide pipe: SUS304, SUS316, SUS316L	·Sensor: SUS316L ·Support: SUS304, SUS316, SUS316L
Construction	·Non-explosion-proof (IP65) ·Intrinsically safe (Ex ia II CT6)	·Non-explosion-proof (equivalent to IP66) ·Intrinsically safe (Ex ia II CT6)

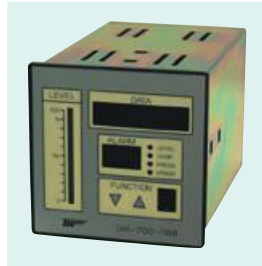
Instrument for Control Rooms

Receiver



Model	Super DIR-M3200	Super DIR-M8000	CALTIS Windows
LCD display	10.4" touch panel	-10.4" touch panel -19" touch panel	Delivery: -Pre-installed PC (or CD-ROM for software only)
Max. number of input sensors	32 (including up to 16 units of 4 to 20 mA sensors)	80 (32 units of SPT-3500 + 48 units of other sensors)	
Connecting instrument (input)	-TA840 -SPT-3500 -SPT-7200 -Others: Level, temperature, and pressure sensors, etc.	-Super DIR-M8000-IF interface unit (SPT-3500, level, temperature, and pressure sensors, etc.)	-
Connecting instrument (output)	-RS232C/RS485/LAN	-Super DIR-M8000-IF interface unit -LAN -RS232C/RS485	

TAN series
DIR series

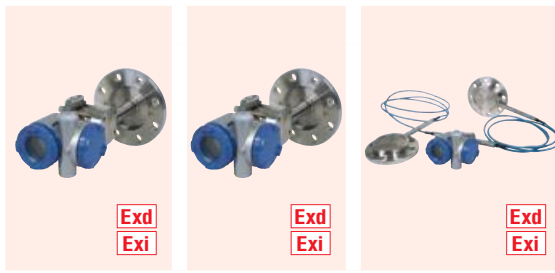


Model	TAN-M1600-RP	DIR-700-DB II
	Annunciator unit	Multimonitor for cargo tanks
Power supply	24 V DC	24 V DC
Output/Indication	Output -Contact output for buzzers -CPU trouble self-diagnosis contact output -Contact output for external alarm lamps	Indication -Bar graph of level -Cargo data digital (selectable) -Alarm status -Error -Selected function -2-color LEDs for identifying alarm locations
Number of inputs	16	-
Input signal	-Non-voltage contact -Open collector contact	RS-232C (from Super M series)

RELATED INSTRUMENTS

Level Transmitter

FCX-AⅢ series



Model		FKE	FKY	FKX
Measuring object		Liquid	Liquid	Liquid
Function		·Local indication ·Current output	·Local indication ·Current output	·Local indication ·Current output
Measuring range	Min.	0.32 kPa	3 kPa	3 kPa
	Max.	500 kPa	500 kPa	500 kPa
Process connection		80 mm, 100 mm (3", 4")	40mm, 50 mm (1-1/2", 2")	40mm, 50 mm (1-1/2", 2")
Standard material		SUS316	SUS316	SUS316

Multi-digit Differential Pressure Transmitter

DT series



Model		DT
Measuring object		Liquid, gas
Function		·Local indication ·Current output ·Totalized pulse output
Measuring range	Min.	1 kPa
	Max.	50 kPa
Process connection		Rc1/4"
Standard material		SUS316

Pressure Transmitter

FCX-AⅢ series



Model		FKG
Measuring object		Liquid, gas, steam
Function		·Local indication ·Current output
Measuring range	Min.	1.3 kPa
	Max.	5000 kPa
Process connection		Rc1/4"
Standard material		SUS316

Differential Pressure (Flow) Transmitter

FCX-AⅢ series



Model		FKC
Measuring object		Liquid, gas, steam
Function		·Local indication ·Current output
Measuring range	Min.	0.1 kPa
	Max.	3000 kPa
Process connection		Rc1/4"
Standard material		SUS316

Receiver

IR/RR series



Model	IR4600	IR6000	IR1600	RR930N	RR940N
Power supply	·85 to 264 V AC ·12 to 24 V DC	·85 to 264 V AC ·24 V DC	·24 V DC	·10 to 27 V DC	·10 to 27 V DC
Function	·Flow rate ·Total flow	·Flow rate ·Total flow	·Flow rate ·Total flow	·Flow rate ·Total flow	·Flow rate ·Total flow
Input	·Open collector pulse ·4 to 20 mA DC ·1 to 5 V DC, 0 to 5 V DC (optional) ·Voltage pulse ·Built-in extraction function ·Squared signal	·Open collector pulse ·4 to 20 mA DC ·1 to 5 V DC, 0 to 5 V DC (optional) ·Voltage pulse	·Pulse input 1 to 1000 Hz (full scale) ·Voltage pulse	·Pulse input 0.1 to 1000 Hz (full scale)	·Pulse input 0.1 to 1000 Hz (full scale)
Output (re-output)	·4 to 20 mA DC ·Totalized pulse ·Alarm output	·4 to 20 mA DC ·Totalized pulse ·Alarm output	·4 to 20 mA DC (optional) ·Alarm output	Re-output of pulse	Select from 4 to 20 mA DC or voltage output
Power supply for the sensor	24 V DC	24 V DC	12 V DC	12 V DC	12 V DC

PRODUCTS

Flowmeter

- Variable area flowmeter (metal tube type, direct observation type, sanitary, slurry, purgometer, purge set, flow switch)
- Ultrasonic flowmeter ● Electromagnetic flowmeter ● Coriolis mass flowmeter ● Vortex flowmeter ● Vortex flow sensor
- Thermal flowmeter ● Flowmeter for filling machines ● Constant flow valve ● Sight glass
- Flowmeter for air conditioners ● Mass flowmeter/mass flow controller ● Differential pressure flowmeter (orifice, V-cone)
- Turbine flowmeter ● Flow measurement system for automobile bench test (blow-by gas flowmeter, CNG flow measurement system, radiator air flow management system, flowmeter for cooling water, flowmeter for intake air)

Level meter

- Spring-balanced (float) type tank gauge ● Servo-balancing type tank gauge ● Density meter for LNG/LPG tanks
- Torque tube type level gauge ● Displacer type level meter ● Magnet float type level transmitter
- Metal tube (MAG GAUGE[®]) level gauge ● Magnetostrictive level transmitter
- Microwave level gauge (microwave level meter, micropulse level meter) ● Purge type level meter
- Level switch (float type, spring-balanced type, electrostatic capacity type) ● Ultrasonic level meter
- CATAMS[®] tank gauge system ● MICROCELL level system ● Marine cargo monitoring system

Related instruments

- Level transmitter ● Multi-digital differential pressure transmitter ● Pressure transmitter ● Differential pressure transmitter
- Receiver

Individual catalogues or technical guidances are available for all the products introduced in this general guidance.
Contact your agent or TOKYO KEISO.

* Specification is subject to change without notice.

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