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.

Applicable fluids

: For liquid measurement : For gas measurement

: For steam measurement

Explosion-proof

Ex d : Flameproof types available

Ex i : 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/cm^3 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

$$Q_{air} = Q_0 \times \sqrt{\frac{\rho_0}{1.293}} \times \sqrt{\frac{273+T_0}{273}} \times \sqrt{\frac{0.1013}{0.1013+P_0}}$$

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)
ρ_0 : Density of the measuring gas (kg/m^3 (nor))
T_0 : Fluid temperature (°C)
P_0 : Fluid pressure (MPa)

2. When the flow rate is indicated in operating conditions

$$Q_{air} = Q_0 \times \sqrt{\frac{\rho_0}{1.293}} \times \sqrt{\frac{273}{273+T_0}} \times \sqrt{\frac{0.1013+P_0}{0.1013}}$$

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)
ρ_0 : Density of the measuring gas (kg/m^3 (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/cm^3

$$Q = Q_0 \times \sqrt{\frac{\rho_0(\rho_1-1)}{(\rho_1-\rho_0)}}$$

Q : Corrected flow rate
Q_0 : Flow rate of the measuring liquid
ρ_0 : Density of the measuring liquid (g/cm^3)
ρ_1 : Density of the float (g/cm^3)

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	8.2	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) at 0°C	Viscosity (mPa·s) at 20°C
Inorganic compounds	Ammonia	NH_3	0.7713	0.0093	0.0100
	Argon	Ar	1.783	0.0212	0.0222
	Nitrous oxide	N_2O	1.988	0.0137	0.0146
	Nitrogen oxide	NO	1.340	0.0179	0.0188
	Carbon monoxide	CO	1.250	0.0166	0.0177
	Carbon dioxide	CO_2	1.977	0.0138	0.0147
	Sulfurous acid gas	SO_2	2.927	0.0116	0.0126
	Hydrogen chloride	HCℓ	1.639	0.0131	0.0143
	Chloride	$C\ell_2$	3.214	0.0123	0.0132
	Air	(AIR)	1.293	0.0171	0.0181
	Oxygen	O_2	1.429	0.0192	0.0203
	Cyanogen	C_2N_2	2.335	0.0093	–
	Hydrogen bromide	HBr	3.645	0.0170	–
	Bromine	Br_2	7.139	0.0146	0.0153
	Hydrogen	H_2	0.08994	0.0084	0.0088
	Nitrogen	N_2	1.251	0.0166	0.0175
	Fluorine	F_2	1.696	–	–
	Hydrogen sulfide	H_2S	1.539	0.0117	0.0124
	Helium	He	0.1785	0.0186	0.0196

	Gas	Molecular formula	Density: kg/m^3 (nor) at 0°C, 0 MPa	Viscosity (mPa·s) at 0°C	Viscosity (mPa·s) at 20°C
Organic compounds	Acetylene	C_2H_2	1.171	0.0096	0.0102
	Acetone	C_3H_6O	2.593	0.0066	–
	Isobutane	C_4H_{10}	2.595	0.0069	0.0074
	Isopropyl alcohol	C_3H_8O	2.683	0.0070	–
	Ethanol	C_2H_6O	2.057	0.0075	–
	Ethane	C_2H_6	1.356	0.0086	0.0092
	Ethyl ether	$C_4H_{10}O$	3.309	0.0068	–
	Ethylene	C_2H_4	1.260	0.0094	0.0101
	Ethyl chloride	$C_2H_5C\ell$	2.880	0.0094	–
	Methyl chloride	$CH_3C\ell$	2.308	0.0098	0.0106
	Methylene chloride	$CH_2C\ell_2$	3.792	0.0091	0.0099
	Chloroform	$CHC\ell_3$	5.329	0.0093	0.0100
	Butane	C_4H_{10}	2.703	0.0069	0.0074
	Propane	C_3H_8	2.020	0.0075	0.0080
	Propyl alcohol	C_3H_8O	2.683	0.0068	–
	Propylene	C_3H_6	1.879	0.0078	0.0084
	Hexane	C_6H_{14}	3.847	0.0059	–
	Benzene	C_6H_6	3.488	0.0068	0.0074
	Pentane	C_5H_{12}	3.221	0.0062	–
	Methanol	CH_4O	1.430	0.0087	–
	Methane	CH_4	0.7168	0.0102	0.0108
	Methyl ether	C_2H_6O	2.057	0.0085	0.0091
	Utility gas	13A	0.8407	–	0.0105

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	·Local indication ·Current output ·Local totalizer ·Pulse output ·Alarm output	·Local indication ·Alarm output R: Reed switch N: Proximity switch M: Micro switch	·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		Flange: 15 mm to 150 mm (1/2" to 6")			
Standard material		SUS304, SUS316, SUS316L			
Available lining material		Rubber, Fluorocarbon resin, PVC, Glass			

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

NLZ series

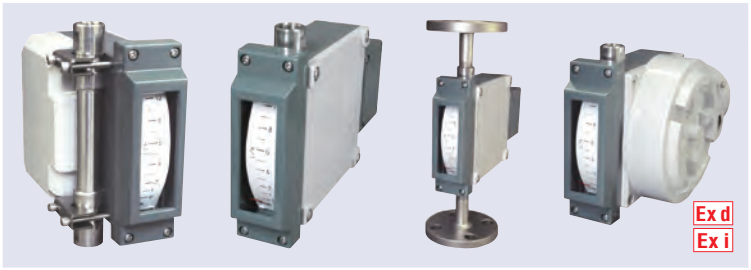
Model		NLZ1000	NLZ2000
Fluid		Liquid, Gas, Steam	
Function		·Local indication ·Current output ·Alarm output ·HART communication ·FOUNDATION Fieldbus	
Measuring range (water)	Min.	0.04 to 0.4 m^3/h	
	Max.	10 to 100 m^3/h	
Measuring range (air)	Min.	1.2 to 12 m^3/h (nor)	
	Max.	60 to 600 m^3/h (nor)	
Process connection		Flange: 15 mm to 100 mm (1/2" to 4") for Liquid 15 mm to 80 mm (1/2" to 3") for Gas	
Standard material		316L SS, PTFE Lining	
Installation length		250 mm	
Ex proof		Intrinsic safety (Ex i)	Flame proof (Ex d)

AM9000 series


Model		AM9000/L	AM9000/T	AM9000/R/N/M	AM9000/E/H/P
Fluid		Liquid, Gas, Steam			
Function		Local indication	·Local indication ·Current output ·Local totalizer ·Pulse output ·Alarm output	·Local indication ·Alarm output R: Reed switch N: Proximity switch M: Micro switch	·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		Flange: 15 mm to 150 mm (1/2" to 6") for Liquid 15 mm to 100 mm (1/2" to 4") for Gas			
Standard material		SCS16 / 316SS			
Installation length		250 mm (300 mm for connection size 125 mm (5") and 150 mm (6"))			

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	·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 Flange: 10 mm (3/8") to 25 mm (1")			
Standard material		SUS304, SUS316, SUS316L			
Option material		Titanium, MA276			

MA-900 series

Model		MA-900	MA-950	MA-920
Fluid		Liquid, Gas		
Function		Local indication	·Local indication ·Alarm output (Hall IC)	·Local indication (Digital display) ·Current output
Measuring range (water)	Min.	0.1 to 0.5 L/h		0.6 to 3 L/h
	Max.	60 to 600L/h		60 to 600 L/h
Measuring range (air)	Min.	3 to 15 L/h (nor)		10 to 100 L/h (nor)
	Max.	2.2 to 22 m^3/h (nor)		2.2 to 22 m^3/h (nor)
Process connection		Rc 1/4 to 3/4 Flange: 10 mm (3/8") to 25 mm (1")		
Standard material		SUS304, SUS316		

Direct Reading 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		Flange: 15 mm to 100 mm (1/2" to 4")	Flange: 25 mm to 100 mm (1" to 4")	Flange: 10 mm to 100 mm (3/8" to 4") for Liquid 10 mm to 50 mm (3/8" to 2") for Gas	
Standard material		SS400, SUS304, PVC, HT-PVC		FC200, SUS304, SUS316, SUS316L, PVC (10 mm to 20 mm)	

Resin Tube Variable Area Flowmeter

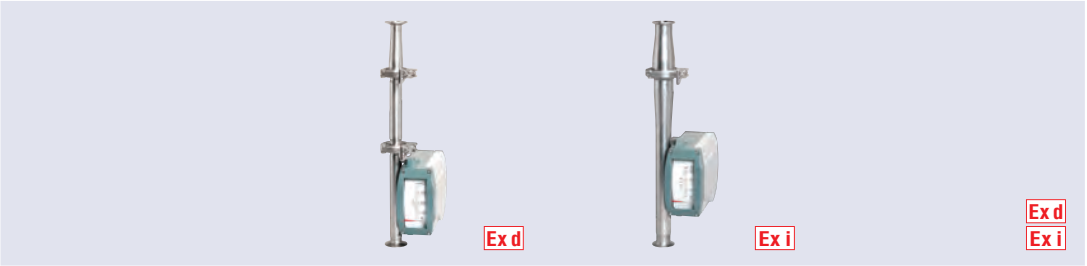
AC/AC-T series




Model		AC (Small size)		AC (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 to 25 mm (1/2" to 1")		Rc, TS socket, Flange: 40 mm, 50 mm (1-1/2", 2")		Rc 1/2, 3/4
Standard material		Body: PVC / Tapered tube: Acrylic resin				PVDF/PFA

Metal Tube Variable Area Flowmeter for Sanitary Application

AM7000/SR series



Model		AM7000/SR	AM7000/T/SR	AM7000/R/N/M/SR	AM7000/E/H/P/SR
Fluid		Liquid			
Function		Local indication	·Local indication ·Current output ·Local totalizer ·Pulse output ·Alarm output	·Local indication ·Alarm output R: Reed switch N: Proximity switch M: Micro switch	·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 4.5S			
Standard material		SUS304, SUS316, SUS316L			

Glass Tube Variable Area Flowmeter for Sanitary Application

R-101-SR series

Model		R-101-SR	R-101-SRE
Fluid		Liquid	
Function		Local indication	
Measuring range (water)	Min.	5 to 50 L/h	0.025 to 0.25 m^3/h
	Max.	760 to 7600 L/h	2.3 to 23 m^3/h
Process connection		1S to 2.5S	1S to 3S
Standard material		SUS304	
Optional material		SUS316, SUS316L	

Electromagnetic Flowmeter for Sanitary Application

MAGMAX® 6000 series

Model		EGM6300C
Fluid		Liquid
Function		·Local indication ·Current output ·Local totalizer ·Pulse 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 1/4	Rc 3/8	
Standard material		SUS304/SUS316			SCS14/SUS304	SCS14/SUS304
Installation length		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



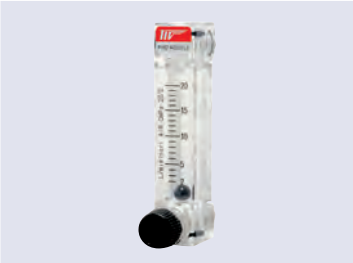


Model		P-810	P-820	P-830	P-900	P-850
Fluid		Gas, Liquid (equivalent to water)		Liquid (equivalent to water)	Gas, Liquid (equivalent to water)	Liquid, Gas
Function		·Local indication ·Alarm output	·Local indication ·Alarm output	·Local indication ·Alarm output	Local indication	Local indication
Measuring 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		Rc 1/4, 1/4" SW, 1/4" VCR		Rc 3/8, 3/8" SW	Rc 1/4, 1/4NPT	Rc 1/8
Standard material		SCS14/SUS316	SCS14/SUS316	SCS14/SUS304	SUS304	SCS14/SUS304
Installation length		224 mm	115 · 224 mm	76 mm	114 · 224 mm	80 mm
Alarm		Optical alarm unit	·UL-approved reed switch ·Optical alarm unit	UL-approved reed switch	–	–

P series (for micro flow rates)

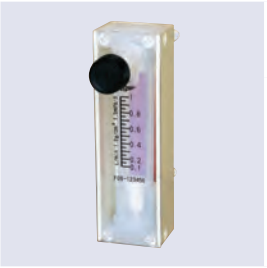
Model		P-880
Fluid		Gas
Function		Local indication
Measuring range (water)	Min.	–
	Max.	–
Measuring range (air)	Min.	0.15 to 1.5 mL/min (nor)
	Max.	6 to 60 L/min (nor)
Process connection		Rc 1/4, 1/4" SW, 1/4" VCR
Standard material		SCS14/SUS316
Installation length		115·130·145 mm
Alarm		–

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 Rc 3/8	Rc 3/8, 3/8" SW, 3/8NPT	Rc 1/4
Standard material		Acryl resin	Acryl resin	Polyacetal
Installation length		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		Rc 1/8, Tube end	Rc, NPT (1/2 · 3/4), Tube end	Rc, NPT (1/4 · 3/8), Tube end	Rc 1/8, Fitting
Standard material		PFA			ETFE
Installation length		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 (equivalent to 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 Rc 1	Rc 1/2 to Rc 1-1/2	Rc 1/2 to Rc 1
Standard material	Tapered tube	Acryl resin	SUS316	Acryl resin
	Body	SUS304	SCS14	SCS14
Fluid temperature		0 to 60°C	0 to 100°C	0 to 60°C

Flow Switch (for process use)

F-740 series

Model		F-740
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		Flange 15 mm to 150 mm
Standard material		FC200, SCS13, SCS14

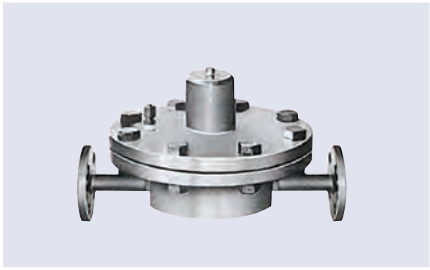
CP series Purege Set




Model	Primary press. control	CP-11-100, 200, 400	CP-21-100, 200, 400	CP-31-500	CP-41-500
	Secondary press. 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

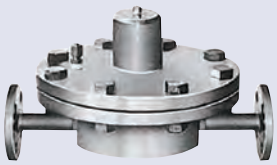
C series Constant flow valve



Model	Primary press. control	C-11	C-21	C-31	C-41	C-51
	Secondary press. 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, Flange 15 mm (1/2")	Rc 1/2, Flange 15 mm (1/2")	Flange 20 mm (3/4")
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	

C series Constant flow valve



Model	Primary press. control	C-61	C-71	C-81
	Secondary press. 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/h (nor)
	Max.	5.4 to 54 m^3/h (nor)	9 to 90 m^3/h (nor)	23 to 230 m^3/h (nor)
Process connection		Flange 20 mm (3/4")	Flange 25 mm (1")	Flange 50 mm (2")
Standard material		SUS304		
Controllable DP range		0.1 to 0.6 MPa		

CR/CAM series Purege Set

Combination with R series

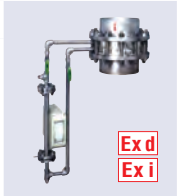
Combination with AM series

Differential Pressure Flowmeter

ORIFLOMETER®

O/HDT series

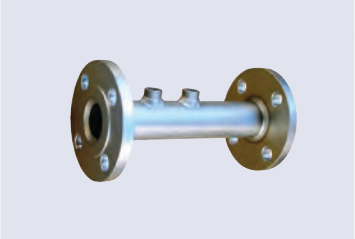
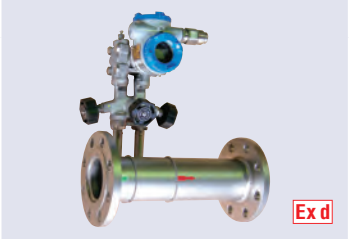


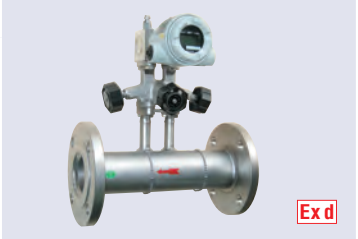



Model		O-180	O-680	O-780	HDT1000	O-100	O7000
Fluid		Liquid (Viscosity: up to 3 mPa·s), Gas				Liquid, Gas	
Function		Local indication	·Local indication ·Alarm output (Optical alarm unit)	·Local indication ·Alarm output (Reed switch)	·Local indication ·Alarm output ·Current output ·Pulse output ·Battery-powered	·Local indication ·Alarm output	·Local indication ·Alarm output ·Current output ·Pulse output
Standard DP (Liquid)		15 kPa		20 kPa	–	30 kPa	40 kPa
Measuring range (water)	Min.	0.03 to 0.15 m^3/h		0.17 to 0.7 m^3/h	0.23 to 2.3 m^3/h	5 to 25 m^3/h	0.8 to 3 m^3/h
	Max.	300 to 1500 m^3/h		450 to 1700 m^3/h	106 to 1060 m^3/h	400 to 2000 m^3/h	500 to 2000 m^3/h
Standard DP (Gas)		5 kPa		20 kPa	–	10 kPa	40 kPa
Measuring range (air)	Min.	0.46 to 2.3 m^3/h (nor)		0.9 (1.35) to 4.5 m^3/h (nor)	0.34 to 3.4m^3/h (nor)	6.8 to 34 m^3/h (nor)	20 to 80 m^3/h (nor)
	Max.	4600 to 23000 m^3/h (nor)		9000 (13500) to 45000 m^3/h (nor)	1720 to 17200 m^3/h (nor)	6600 to 33000 m^3/h (nor)	15000 to 60000m^3/h (nor)
Process connection		·Rc 3/8 to Rc 4 ·Flange / Wafer 10 mm to 500 mm (3/8" to 20")			·Rc 1/2 to Rc 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,Fflange tap: 50 mm to 500 mm (2" to 20") Vena contracta tap: 200 mm to 500 mm (8" to 20")	
Standard material	Measuring pipe	SGP, SUS304, SUS316, PVC, HT-PVC			SUS304	SS400, SUS304, SUS316	
	Indicator	SCS14, PVC, HT-PVC					

V-Cone® Flowmeter

V series



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 m^3/h	–
	Max.		112 to 1245 m^3/h	–
Measuring range (air)	Min.		7 to 71 m^3/h (nor)	
	Max.		300 to 32859 m^3/h (nor)	
Measuring range (Saturated steam)	Min.		6 to 65 kg/h	
	Max.		2600 to 28315 kg/h	
Process connection		Flange 15 mm to 400 mm (1/2" to 16")	Flange 15 mm to 300 mm (1/2" to 12")	
Standard material		SUS304		

Wafer-Cone® Flowmeter

V series Wafer type

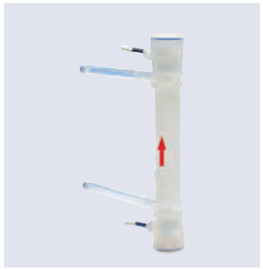



Model		VH	VT	VNT	VDT	VTW
Fluid		Liquid, Gas, Saturated steam			Liquid, Gas	Liquid
Function		Differential pressure port: Rc 1/4 or Rc 1/8	·Local indication ·Current output	·Local indication ·Totalizer ·Current output ·Pulse output	·Local indication ·Current output ·Battery-powered	Local indication
Measuring range (water)	Min.	–	0.4 to 5.5 1m^3/h			0.26 to 1.3 m^3/h
	Max.		9 to 119.73 m^3/h			18 to 90 m^3/h
Measuring range (air)	Min.		6 to 77 m^3/h (nor)			–
	Max.		120 to 1587 m^3/h (nor)		750 to 7500 m^3/h (nor)	–
Measuring range (Saturated steam)	Min.		8 to 103 kg/h		–	–
	Max.		170 to 2421 kg/h		–	–
Process connection		Wafer: 25 mm to 100 mm (1" to 4")				
Standard material		SCS14A				

Ultrasonic Flowmeter (for built-in use)

Detector (Sensor)

UCUF® series

Model		UCUF-E	UCUF-M	UCUF-02M	UCUF-04MT
Fluid		Liquid			
Measuring range (water)	Min.	0 to 50 mL/min		0 to 10 mL/min	–
	Max.	0 to 8 L/min	0 to 80 L/min	0 to 100 mL/min	0 to 2 L/min
Process connection		Tube end: 3/8"	Tube end: 1/4" to 1"	Tube end: 1/4" to 1"	
Standard material		PFA			

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

Converter

SFC series



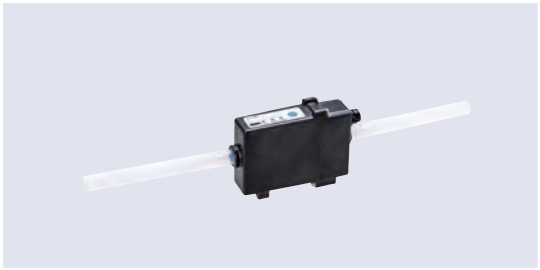




Model		SFC4000	SFC2000	SFC3000	SFC-900	SFC-010L	SFC-010T	SFC-011J
Power supply		24 V DC						
Output	Flow rate	·4 to 20 mA DC ·0 to 10 mA DC	4 to 20 mA DC			·4 to 20 mA DC ·0 to 20 mA DC	·4 to 20 mA DC ·1 to 5 V DC	4 to 20mA DC
	Pulse	Open collector: 0 to 1000 Hz max.						
	Alarm	2 points	–	2 points				–
Communication		RS485 (Protocol: MODBUS)						
Applicable Detector (Sensor)		UCUF-K, UCUF-M, UCUF-E	UCUF- K, UCUF-M	UCUF-K, UCUF-M, UCUF-E	UCUF-K, UCUF-M	UCUF-02M	UCUF-04MT	UCUF-M

Integrated Type

UCM®/UCF series

Model		UCM04A/06A	UCF006
Power supply		24 V DC	
Fluid		Liquid	Water
Function		·Flow rate indication ·Analog output	·Analog output ·Pulse output
Measuring range (water)	Min.	0 to 0.2 L/min	0 to 8 L/min
	Max.	0 to 8 L/min	
Process connection		Tube end: 1/4", 3/8"	Tube end: 3/8"
Standard material		PFA	

Flow Controller (for built-in use)

All-in-one type

CLFC® series

		All-in-one Flow Controller with a ultrasonic flowmeter, a control valve and a controller	
Model		CLFC300	CLFC500
Power supply		24 V DC	
Fluid		Liquid	
Flow control range (water)	Min.	2.5 to 25 mL/min	
	Max.	200 to 2000 mL/min	300 to 3000 mL/min
Process connection		SUPER300 Type PILLAR FITTING	
Standard material		PFA, PTFE	
Setting input		4 to 20 mA DC	
MV (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.	2.5 to 25 mL/min	–	0.2 to 2 L/min
	Max.	200 to 2000 mL/min	50 to 500 mL/min	1 to 10 L/min
Process connection		Tube end: ø6.35 × ø4.35	Tube end: ø4 × ø2.8	Tube end: ø9.53 × ø6.35 Tube end: ø12.7 × ø9.53
Standard material		PTFE, PFA	THV	PCTFE, PTFE, PFA

Controller

FCA series

Model	FCA-3100	FCA-3200	FCA-3300
Power supply	24 V DC		
Function	Flow rate indication ·Voltage output ·Alarm output		
PV (flow rate) input	4 to 20 mA DC	0 to 10 V DC	0 to 5 V DC
Setting input	1 to 5 V DC	0 to 10 V DC	0 to 5 V DC
MV (flow rate) output	1 to 5 V DC	0 to 10 V DC	0 to 5 V DC

Clamp-on Type

UL300 UL6000 series

		General purpose, for small pipe sizes	General purpose, for small and medium pipe sizes	High-performance , for small to large pipe sizes
Model		**UL330**	**UL350**	**UL6300**
Fluid		Liquid		
Function		·Flow rate indication ·Totalizer ·Current output ·Pulse output ·Status output	·Flow rate indication ·Totalizer ·Current output ·Pulse output ·Status output ·RS485 (optional)	·Flow rate indication ·Totalizer ·Bar graph ·Current output (HART) ·Pulse output ·Status output
Measuring range (flow velocity)	Min.	0 to 0.3 m/s	0 to 0.3 m/s	0 to 0.5m/s
	Max.	0 to 10 m/s	0 to 10 m/s	0 to 20m/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

		UL6400
Model		**UL6400**
Fluid		Liquid
Function		·Flow rate indication ·Totalizer ·Flow velocity indication ·Bar graph
Measuring range (flow velocity)	Min.	0 to 0.5m/s
	Max.	0 to 20m/s
Measurable pipe size		15 mm to 1500 mm (1/2" to 60") (Pipe O.D. ≥20 mm)
Pipe material		Metal, Resin, Polyethylene lining

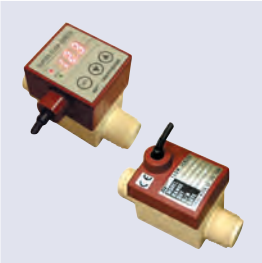
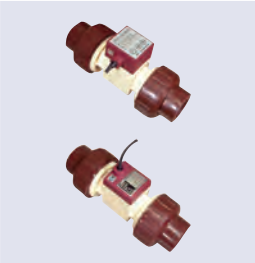
3-Beam In-line Type

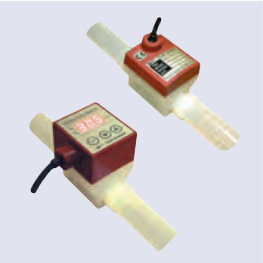
SONICMAX® UL3400 series

		UL3400
Model		**UL3400**
Fluid		Liquid
Function		·Flow rate Indication ·Totalizer ·Current output ·Pulse output ·Status output
Measuring range (flow velocity)	Min.	0 to 0.3 m/s
	Max.	0 to 20 m/s
Process connection		Flange: 25 mm to 2000 mm (1" to 80")
Standard material		316L SS

Vortex Flow Sensor

VF series



Model		VF-2000	VF-2200	VF-2300	VF-3000
Fluid		Liquid (low viscosity)			
Type / Function		·Current output type ·Pulse output type ·Flow rate indication + Current/Alarm output type			
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		R3/8 to 1/2	·TS socket DN25 (1") ·Rc 1 ·Flange 25 mm (1")	·TS socket DN30 ·R 1-1/4 ·Flange 40 mm (1-1/2")	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		Liquid
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, 3/8
Standard material		SCS14

Mini-wheel / Mag-wheel / Manifold Mini-wheel Flowmeter

W series


Model		W-200	W-500
Fluid		Liquid	
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 m^3/h
	Max.	5 to 50 L/min	50 to 400 m^3/h
Process connection		Rc 1/4 to 1/2	·Rc 1/2 to 1 ·Flange 15 mm to 200 mm
Standard material		P.P./ PVC SUS316	SUS304 SUS316/ PVC

Mini-wheel / Mag-wheel / Manifold Mini-wheel Flowmeter

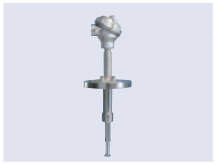
W series

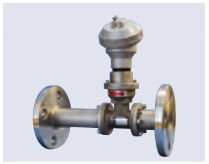
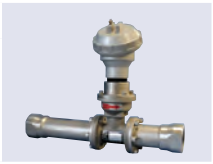



		Magnetic type			Optical type
Model		W-2000/2000N	W-3000	MU-1000	W-800
Fluid		Liquid		Cooling water	Liquid
Function		·Current output ·Pulse output	Pulse output	·Current output ·Pulse output	Pulse output
Measuring range (water)	Min.	0.5 to 3 L/min		0.6 to 3 L/min	0.04 to 0.2 L/min
	Max.	6 to 60 L/min	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

TH series

TH·Detector



		Insertion type	Flange type	Insertion type (Variable length)	Small size	Built-in straightener type
Model		**TH-1100**	**TH-1200**	**TH-1400**	**TH-1700**	**TH-1800**
Fluid		Gas				
Measuring range (air)	Min.	0 to 45 m^3/h (nor)	0 to 45 m^3/h (nor)	0 to 45 m^3/h (nor)	0 to 250 L/min (nor)	0 to 10 L/min (nor)
	Max.	0 to 680000 m^3/h (nor)	0 to 7000 m^3/h (nor)	0 to 680000 m^3/h (nor)	0 to 14000 L/min (nor)	0 to 5800 L/min (nor)
Operating temperature	Standard type	Max. 80℃				
	High-temp. type	Max. 240℃	Max. 180℃			
Process connection / Process pipe size		Flange: 50 mm to 1500 mm (2" to 60")	Flange: 50 mm to 150 mm (2" to 6")	Flange: 50 mm to 1500 mm (2" to 60")	Flange: 15 mm to 50 mm (1/2" to 2")	Rc 3/8 to 1 Flange: 15 mm to 50 mm (1/2" to 2")
Standard material		SUS304, SUS316, SUS316L				

TH·Detector

Built-in purge function

High temperature / Low temperature type

		Insertion type		Insertion type		
Model		**TH-1100-SP**	**TH-3200-SP**	**TH-3100**	**TH-3200**	**TH-3300**
Fluid		Gas				
Measuring range (air)	Min.	0 to 120 m^3/h (nor)	0 to 260 m^3/h (nor)	0 to 80 m^3/h (nor)	0 to 60 m^3/h (nor)	
	Max.	0 to 390000 m^3/h (nor)		0 to 380000 m^3/h (nor)		
Operating temperatur	Standard type	Max.80℃	Max. 550℃	Max. 550℃		-196℃ to 0℃
	High-temp. type	Max. 240℃				
Process connection / Process pipe size		Flange: 50 mm to 1500 mm (2" to 60")		Flange: 80 mm to 1500 mm (3" to 60")	Flange: 65 mm to 1500 mm (2-1/2" to 60")	
Standard material		SUS304, SUS316, SUS316L				

TH-HQ Detector Polished (EP) type


		Insertion type	In-line welding type
Model		**TH-1100-HQ**	**TH-1500-HQ**
Fluid		Gas	
Measuring range (air)	Min.	0 to 50 m^3/h (nor)	0 to 260 L/min (nor)
	Max.	0 to 3300 m^3/h (nor)	0 to 4500 L/min (nor)
Operating temperature		Max. 120℃	
Process connection / Process pipe size		Flange: Max. 120℃	Flange: 15 mm to 25 mm
Standard material		SUS316L	

TRX·Converter



Model	TRX-600	TRX-700	TRX-900
Power supply	100, 110, 115, 200, 220, 240 VAC	96 to 264 VAC	
Function	·Flow rate ·Totalizer ·Temperature ·Temp. compensation ·Purge control	·Flow rate ·Totalizer ·Alarm contact output ·Bar graph indication ·Temperature / pressure compensation	
Output	·Current output ·Pulse output (Photo MOS open collector) ·RS-485	·Current output ·Alarm output ·Pulse output (open collector) ·RS-485	
Cable length	Max. 50 m	Max. 100 m	
Housing	Waterproof (for outdoor use)	Panel mount (for indoor use)	Waterproof (for outdoor use)

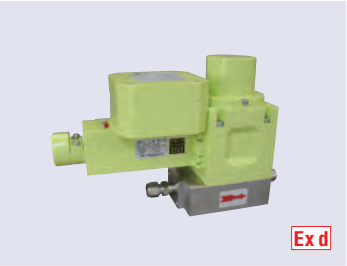
SRT series

Compact & Separate type



		Insertion type	In-line type (medium size)	In-line type (small size)
Model		**SRT1100**	**SRT1200**	**SRT1300**
Fluid		Gas		
Function		·Local indication ·Analog output ·Pulse output · Alarm output ·RS-485		
Measuring range (air)	Min.	0 to 60 m^3/h (nor)	0 to 40 m^3/h (nor)	0 to 2.5 m^3/h (nor)
	Max.	0 to 890000 m^3/h (nor)	0 to 10000 m^3/h (nor)	0 to 300 m^3/h (nor)
Operating temperature		Max. 120℃		
Process connection / Process pipe size		Flange: 50 mm to 1500 mm (2" to 60")	Flange: 40 mm to 150 mm (1-1/2" to 6")	·Rc 3/8 to 1 ·Flange: 10 mm to 25 mm (3/8" to 1")
Standard material		SUS316, SUS316L		

TF series
HM series



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" SW	1/4" to 1/2" SW	
Standard material		SUS316			SUS316		

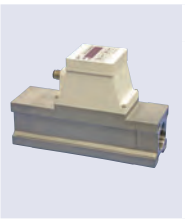
TF series

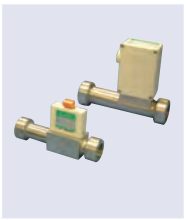




		Small to Large flow	Compact type	High performance	Compact type	Indicator / valve built-in
Model		TF-1000	TF-900	TF-4000	TF-600	TF-600D/600V
Fluid		Gas	Air, N_2, O_2	Air, N_2, O_2	Air, N_2	
Function		·Voltage output ·Current output	Voltage output	·Local indication ·Totalizer ·Current output ·RS-485 ·Pulse output ·Alarm output	Voltage output	·Local indication ·Voltage output ·Pulse output ·Alarm output ·RS-485
Measuring range (air)	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	

TF series



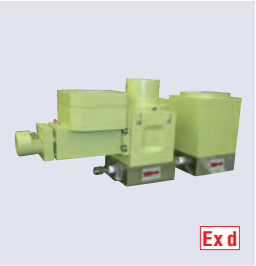


		Rotatable indicator type, for large flow rates	Flow rate, Totalizer, Alarm indication + output		For medium to large flow rate
Model		TF-4100	TF-2000N	TF-2261N	TF-1161/TF-1261
Fluid		Air, N_2	Gas	Air, N_2	Air, N_2
Function		·Local indication ·Current output ·Voltage output ·Pulse output ·Alarm output ·RS-485	·Local indication ·Current output ·Pulse output ·Alarm output	·Local indication ·Current output ·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 2 ·Flange 15 mm to 80 mm	·Rc 1 to 2 ·Flange 25 mm to 80 mm	
Standard material		A6061-T6, SCS13	SUS316	SUS304, SUS316	

Converter for TF series

Type	TM-2000
Applicable instrument	·TF-900 ·TF-1000 ·TF-5000/6000 ·(H-) EP-TF-5300
Function	·Flow rate indication ·Totalizer ·Analog output ·Pulse output

TC series



Model		TC-1000/2000	EP-TC-1000/2000 V	TC-3000
Fluid		Gas		
Function		·Flow rate control ·Voltage output		·Flow rate control ·4 to 20 mADC ·0 to 5 VDC
Measuring range (air)	Min.	0 to 5m L/min (nor)		0 to 2 L/min (nor)
	Max.	0 to 500 L/min (nor)	0 to 100 L/min (nor)	0 to 800 L/min (nor)
Process connection		Rc, SW 1/4" to 1"	Rc, SW, VCR 1/4" or 3/8"	Rc 1/4 to 1
Standard material		SUS316		

HM series

Model		HM1000	HM5000
Fluid		Gas	
Function		·Flow rate control ·Voltage output	
Measuring range (air)	Min.	0 to 2 L/min (nor)	0 to 5m L/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 for TC series

Type	TM-1400
Power supply	85 to 240 V AC
Applicable instrument	·TC-1000 ·TC-2000 ·TC-3000 ·EP-TC-1000/2000V
Function	·Flow rate indication ·Analog output ·Pulse output ·Flow rate setting

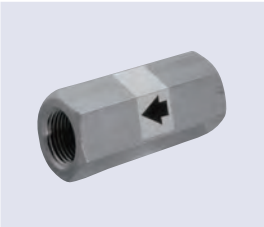
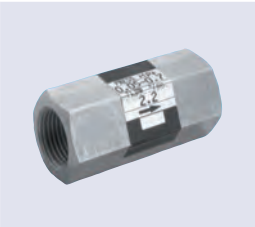
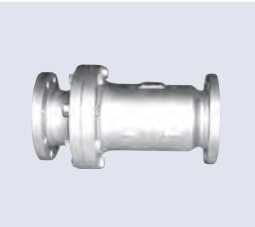
Constant Flow Valve

CX series




Model		CX-1101	CX-1500	CX-1510	CX-2000
Fluid		Liquid	Gas	Water	Liquid
Flow range (water/air)	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 ·Flange 15 mm to 150 mm (1/2" to 6")	·Rc (NPT) 1/2 to 2 ·Flange 15 mm to 100 mm (1/2" to 4")	Flange 15 mm to 100 mm (1/2" to 4")

FPC/RSP/NSPW series

Model		FPC	RSP	NSPW/NFFW/NFF-S
Fluid		Water	Water	Liquid
Flow 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 ·Flange 32 mm to 80 mm (1-1/4" to 3")

Pitot Tube Flowmeter, Calorie Monitor (for Air conditioning application)

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 ·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
Process pipe size		20 mm to 450 mm (3/4" to 18")				
Standard material		SUS316 / C3604				

Sight Glass

K series

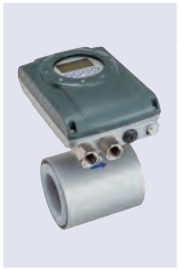
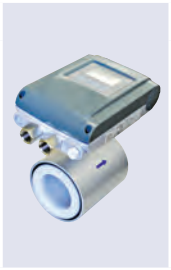




Model		K-200	K-400	K-500	K-600	K-740
Fluid		Liquid				
Function		Local indication		–	–	·Local indication ·Alarm output
Measuring range (water)	Min.	0.2 to 1 m^3/h	0.06 to 0.3 m^3/h	–	–	0.12 to 0.6 m^3/h
	Max.	60 to 300 m^3/h	30 to 150 m^3/h	–	–	60 to 300 m^3/h
Process connection		Flange 20 mm to 300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

Compact Type Electromagnetic Flowmeter

EGM series

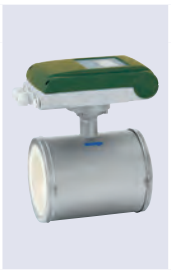





		PFA Lining (Meter size 10 mm to 150 mm)			Hard rubber / Polypropylene (PP) Lining (Meter size 25 mm to 1000 mm)		
Model		EGM1050C	EGM1100C	EGM1300C	EGM2050C	EGM2100C	EGM2300C
Fluid		Conductive liquids					
Function		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output					
Measuring range	Min.	0 to 0.09 m^3/h			0 to 0.6 m^3/h		
	Max.	0 to 700 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")		
Standard material		PFA / Hastelloy® C			Polypropylene (PP) · Hard rubber / Hastelloy® C		

EGM series



		PFA or other Lining (Meter size 10 mm to 1000 mm)			Ceramic type (Meter size 2.5 mm to 100 mm)		Sanitary type (Meter size 25 mm to 100 mm)
Model		EGM4050C	EGM4100C	EGM4300C	EGM5100C	EGM5300C	EGM6300C
Fluid		Conductive liquids					
Function		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output					
Measuring range	Min.	0 to 0.09 m^3/h			0 to 0.01 m^3/h		0 to 0.6 m^3/h
	Max.	0 to 33000 m^3/h			0 to 300 m^3/h		0 to 300 m^3/h
Process connection		Flange 10 mm to 1000 mm (1" to 40")			Wafer 10 mm to 100 mm (3/8" to 4")		Sanitary joint 1S to 4S
Standard material		PFA · PTFE · ETFE / Hastelloy® C			Zirconia ceramic · Alumina ceramic/Platinum		PFA / Hastelloy® C / 316SS

Battery-powered Electromagnetic Watermeter

EGM series



		Capacitive type (Meter size 25 mm to 100 mm)	Electromagnetic flow switch (Meter size 10 to 150 mm)	Electromagnetic flow switch (Meter size 10 to 300 mm)
Model		EGM7300C	EGM1300CS	EGM2300CS
Fluid		Conductive liquids		
Function		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output	·Flow rate indication ·Totalizer ·Alarm output (Dry contact)	
Measuring range	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	PP · 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 indication ·Totalizer ·Pulse output
Measuring range	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




		PFA Lining (Meter size 10 mm to 150 mm)	Hard rubber / PP 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)
Model		**EGS1000**	**EGS2000**	**EGS4000**	**EGS5000**
Fluid		Conductive liquids			
Measuring range	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 33000 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 25 mm to 1000 mm (1" to 40")	Wafer 10 mm to 100 mm (3/8" to 4")
Standard material		PFA / Hastelloy® C	Polypropylene (PP) · Hard rubber / Hastelloy® C	PFA · PTFE · ETFE / Hastelloy® C	Zirconia ceramic Alumina ceramic / Platinum

Separate Type Converter

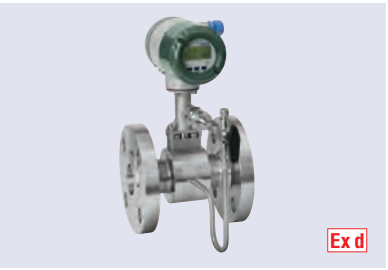
EGC series




	Standard type		High-performance type
Model	**EGC050W**	**EGC100W**	**EGC300F/W**
Power supply	100 to 230 V AC / 24 V DC		
Function	·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output		
Applicable instrument	EGS/MGS/IFS series Electromagnetic flow detectors		

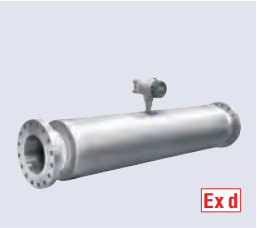
SWIRLMAX® Vortex Flowmeter

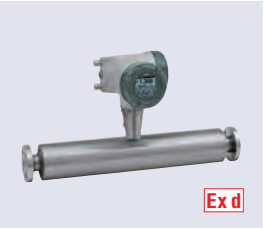
VFM series



		VFM4070C
Model		
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		Flange 15 mm to 300 mm (1/2" to 12") Wafer 15 mm to 100 mm (1/2" to 4")
Standard material		316L SS

MMM series





		Straight twin tube (Meter size 15 mm to 50 mm)	Straight twin tube (Meter size 10 mm to 250 mm)	Single tube (Meter size 1 mm to 4 mm)	Straight single tube (Meter size 6 mm to 80 mm)
Model		**MMM1400C**	**MMM2400C**	**MMM3400C**	**MMM7400C**
Fluid		Liquid			
Function		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output ·Density measurement (for 15 mm or larger meter sizes)			
Measuring range	Min.	48 kg/h	1560 kg/h	0.3 kg/h	12 kg/h
	Max.	125000 kg/h	2300000 kg/h	450 kg/h	560000 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 / 316L SS		316L SS	Titanium · Hastelloy® C22

MMM series

		Twin tube (Meter size 8 mm to 100 mm)
Model		**MMM6400C**
Fluid		Liquid, Gas
Function		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output ·Density measurement (for 15 mm or larger meter sizes)
Measuring range	Min.	5 kg/h
	Max.	175,000 kg/h
Process connection		Flange 10 mm to 100 mm (3/8" to 4")
Standard material		316/316L SS (dual certified)

Flowmeter for Filling Machines

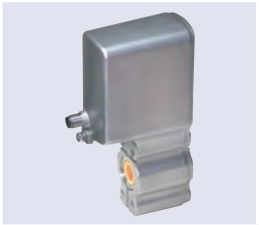
Coriolis Mass Flowmeter

MMM series

		Twin tube (Meter size 10 mm, 15 mm)
Model		**MMM4011C**
Fluid		Liquid
Function		Pulse output
Recommended filling conditions	Flow rate	10 mm: 15 to 370 g/sec 15 mm: 50 to 1200 g/sec
	Min. filling volume	10 mm: 23 g 15 mm: 75 g
	Min. filling time	1.5 s
Process connection		Sanitary joint: 10 mm to 15 mm (3/8" to 1/2")
Standard material		316L SS

Electromagnetic Flowmeter

EGM series



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

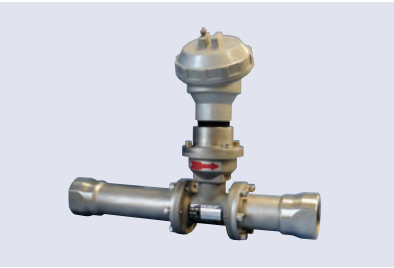
Blow-by Gas Flowmeter

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 Option: 110 V to 240 V AC	
Output		·4 to 20 mA DC or 1 to 5 V DC ·Pulse ·Serial (RS485) ·Flow alarm ·Differential pressure alarm	
Process connection		Rc 1-1/2	Rc 1
Accuracy		1.5% R.D (20 L/min (nor) or higher) 1.5% FS (20 L/min (nor) or lower)	1.5% R.D (10 L/min (nor) or higher) 1.5% FS (10 L/min (nor) or lower)

CNG Flow Measurement System

TH series Detector



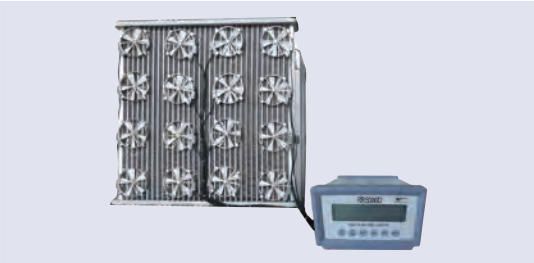
Model		TH-1800-T
Fluid		CNG
Function		Local indication +Current output
Measuring range	Min.	5 to 365 L/min (nor)
	Max.	45 to 3795 L/min (nor)
Protection category		Equivalent to IP65
Process connection		·Rc 1/2 to 1 ·Flange: 15 mm to 50 mm (1/2" to 2")
Accuracy		±1% R.D (Flow range 5 to 100%)
Standard material		SUS304/ Fluororubber
Option material		SUS316/ Fluororubber
Converter		TRX-700-CNG

TRX series Converter

Model	TRX-700-CNG
Function	Flow indication + Temperature indication or Total flow (continuous)
Power supply	90 to 264 V AC
Output	·4 to 20 mA DC or 1 to 5 V DC ·RS485 ·Flow alarm
Cable length	10 m (Max. 100 m)

Radiator Air Flow Measurement System

RF series



	RF-1000 series	RF-2000 series
	Propeller sensor	**Propeller sensor**
Model	RS-1038 / RS-1050	RS-1050-IR
Sensor type	Optical sensor with optical cable	Infra-Red sensor with electrical cable
Measuring range	RS-1038: 0.5 to 30 m/s RS-1050: 0.4 to 30 m/s	0.4 to 30 m/s
Temperature	0 to 120°C (100°C in continuous operation)	-40 to 120°C (100°C in continuous operation)
Accuracy	RS-1038: ± (1.5% of R.D + 0.05 m/s) at 0.5 to 20 m/s RS-1050: ± (1% of R.D + 0.05 m/s) at 0.4 to 20 m/s	± (1% of R.D + 0.05 m/s) at 0.4 to 20 m/s
Sensor diameter	RS-1038: approx. 40 mm RS-1050: approx. 64 mm	approx. 69 mm
	Converter	**Converter**
Model	RR-5000B	RR5000D
Power supply	12 V DC	12 to 24 V DC
Measuring channel	8 ch	16 ch
Output	-5 to 5 V DC	0 to 5 V DC
Accuracy	Frequency output: ± 1 Hz Analog output: ± 0.6% R.D. ± 0.01 V	Frequency output: ± 1 Hz Analog output: ± 0.6% R.D. ± 0.01 V
Communication	RS485 (RS232 converter + Wind1 required)	RS485, CAN network

Flowmeter for Engine Cooling Water

EF series

		Detector/Converter Separate type
Model		**EF-AUTO**
Fluid		Conductive liquids
Measuring range	Min.	0 to 1 L/min
	Max.	0 to 1400 L/min
Temperature		-20 to 180°C
Pressure		0 to 1 MPa
Process connection		Hose fitting 6 mm to 50 mm (1/4" to 2")
Power supply		100 to 230 V AC
Output		4 to 20 mA DC
Protection category		Equivalent to IP65
Material		Zirconia ceramic, alumina ceramic

Flowmeter for Intake Air

GFM series

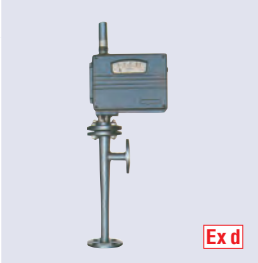
		Detector/Converter Integrated type
Model		**OPTISONIC 7300**
Fluid		Air
Measuring range	Min.	12 to 300 m^3/h
	Max.	88 to 3530 m^3/h
Temperature		-20 to 100°C
Pressure		Atmospheric pressure
Process connection		Flange: 65 mm to 250 mm (2-1/2" to 10")
Power supply		100 V AC
Output		4 to 20 mA DC
Protection category		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 ·Totalizer ·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.	450 to 4500 m^3/h (nor)				
Process connection		Flange: 15 mm to 150 mm (1/2" to 6")				
Standard material		SUS304, SUS316, SUS316L				
Available lining material		Rubber, fluorocarbon resin, PVC, glass				

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		Flange: 15 mm to 300 mm (1/2" to 12")			
Standard material		SUS304, SUS316, SUS316L			
Available lining material		Rubber, fluorocarbon resin, PVC, glass			

A series

Model		A-102	A-103-D	A-750
Fluid		Liquid	Gas	Liquid, Gas
Function		Local indication		·Local indication ·Alarm output (Reed switch)
Measuring range (water)	Min.	0.01 to 0.1 m^3/h	–	0.01 to 0.1m $^3/h$
	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)	0.3 to 3 m^3/h (nor)
	Max.	–	640 to 6400 m^3/h (nor)	640 to 6400 m^3/h (nor)
Process connection		Flange: 15 mm to 150 mm (1/2" to 6")		
Standard material		SS400, SUS304, SUS316		

Metal Tube Variable Area Flowmeter for Micro Flow Measurement

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
Optional material		Titanium, MA276

Metal Tube Variable Area Flowmeter for Sanitary Applications

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 ·Totalizer ·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 4.5 S				
Standard material		SUS304, SUS316, SUS316L				

Metal Tube Variable Area Flowmeter for Slurry Applications

AS/S series

Model		AS-1000	S-102/S-752
Fluid		Liquid	
Function		·Local indication ·Totalizer ·Current output ·Pulse output ·Alarm output ·Pneumatic output	·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		Flange: 15 mm to 150 mm (1/2" to 6")	Flange: 20 mm to 150 mm (3/4" to 6")
Standard material		SUS304, SUS316, SUS316L PVC	SUS304, SUS316, SUS316L PVC (for 25 mm to 150 mm)

Glass Tube Variable Area Flowmeter

R-105-RK

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
Process connection		Rc 1/2
Standard material		PVC, PTFE
Installation length		150 mm
Alarm		·UL-approved reed switch ·Optical alarm unit

Flow Switch/Flow Monitor

FA series

Model		FA-1000	FA-5000
Fluid		Liquid (equivalent to water)	Liquid (equivalent to 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 resin
	Body	ADC12 (Housing)	SCS13
Fluid temperature		0 to 100℃	0 to 50℃

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.