

# GENERAL GUIDANCE

6-1th Edition

Flowmeters  
and  
Levelmeters

Level Measurement  
Instruments

Flow Measurement  
Instruments

Related  
Instruments

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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.


## Applicable fluids

 : For liquid measurement     : For gas measurement

 : For steam measurement

## Explosion-proof

 : Flameproof types available

 : Intrinsically safe types available

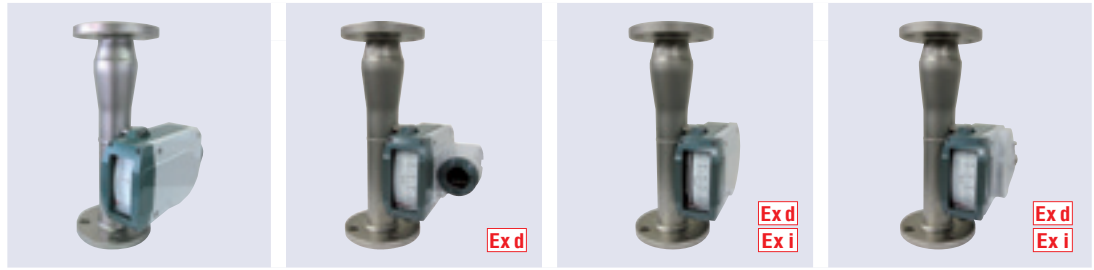
Contact us for instruments for certified high-pressure gas equipment.

## Metal Tube Variable Area Flowmeter

### Metal Tube Variable Area Flowmeter



#### AM7000 series



Model	AM7000/L	AM7000/T	AM7000/R/N/M	AM7000/E/H
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
Measuring range (water)	Min. Max.	0.01 to 0.1 m <sup>3</sup> /h 20 to 200 m <sup>3</sup> /h		
Measuring range (air)	Min. Max.	0.3 to 3 m <sup>3</sup> /h (nor) 480 to 4800 m <sup>3</sup> /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. Max.	0.04 to 0.4 m <sup>3</sup> /h 10 to 100 m <sup>3</sup> /h
Measuring range (air)	Min. Max.	1.2 to 12 m <sup>3</sup> /h (nor) 60 to 600 m <sup>3</sup> /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	

### 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. Max.	0.4 to 2 L/h 60 to 600 L/h		
Measuring range (air)	Min. Max.	12 to 60 L/h (nor) 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, NW0276			



MA-900 series

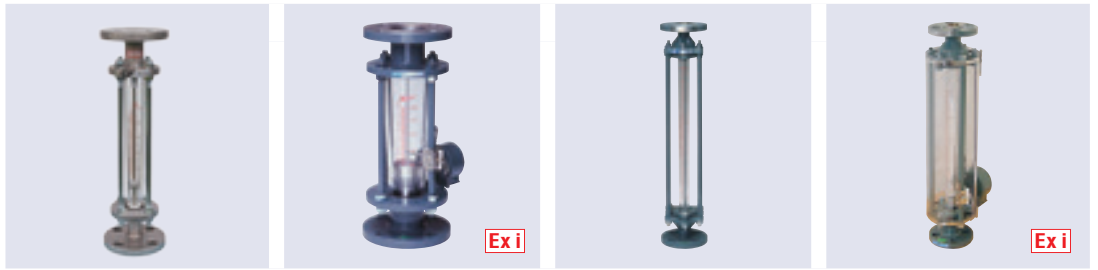


Model	MA-900		MA-950		MA-920		
Fluid	Liquid, Gas						
Function	·Local indication		·Local indication ·Alarm output (Hall IC)		·Local indication (Digital display) ·Current output		
Measuring range (water)	Min.	0.1 to 0.5 L/h				0.6 to 3 L/h	
	Max.	60 to 600L/h				60 to 600 L/h	
Measuring range (air)	Min.	3 to 15 L/h (nor)				10 to 100 L/h (nor)	
	Max.	2.2 to 22 m <sup>3</sup> /h (nor)				2.2 to 22 m <sup>3</sup> /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		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				0.9 to 9 L/h		7 to 70 L/h	
	Max.	10 to 100 m <sup>3</sup> /h				5.2 to 52 m <sup>3</sup> /h		5 to 50 m <sup>3</sup> /h	
Measuring range (air)	Min.	0.45 to 4.5 m <sup>3</sup> /h (nor)				15 to 150 L/h (nor)		0.3 to 3 m <sup>3</sup> /h (nor)	
	Max.	110 to 1100 m <sup>3</sup> /h (nor)				100 to 1000 m <sup>3</sup> /h (nor)		16 to 160 m <sup>3</sup> /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

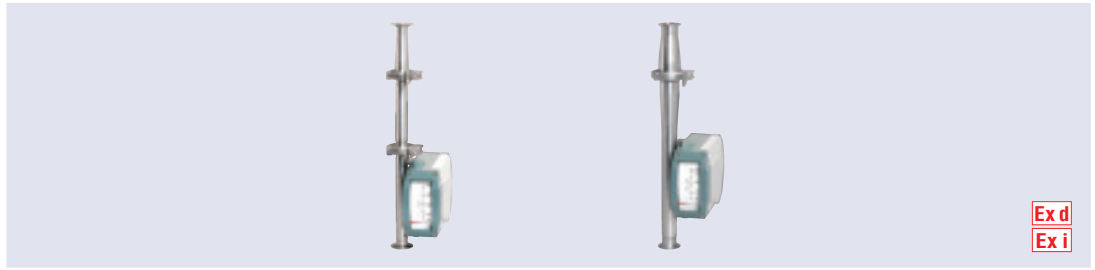


Model	AC (Small size)		AC (Medium size)		AC-T		
Fluid	Liquid						
Function	·Local indication	·Local indication ·Alarm output (Reed switch)	·Local indication	·Local indication ·Alarm output (Reed switch)	·Local indication		
Measuring range (water)	Min.	0.1 to 1 L/min		0.4 to 4 m <sup>3</sup> /h		2 to 20 L/min	
	Max.	10 to 100 L/min		2 to 20 m <sup>3</sup> /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/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
Measuring range (water)	Min.	0.01 to 0.1 m <sup>3</sup> /h		
	Max.	7 to 70 m <sup>3</sup> /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.	0.025 to 0.25 m <sup>3</sup> /h
	Max.	760 to 7600 L/h
Process connection	1S to 2.5S	1S to 3S
Standard material	SUS304	
Optional material	SUS316, SUS316L	

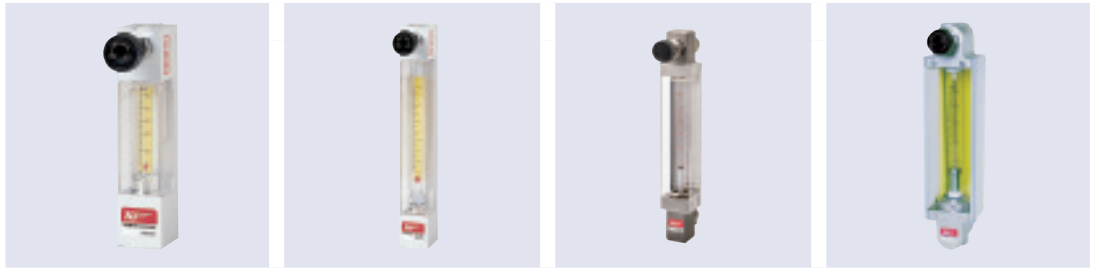
Electromagnetic Flowmeter for Sanitary Application

MAGMAX®  
6000 series



Model	EGM6300C
Fluid	Conductive liquids
Function	·Local indication ·Current output ·Local totalizer ·Pulse output
Measuring range (water)	Min. 0 to 0.6 m <sup>3</sup> /h Max. 0 to 300 m <sup>3</sup> /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		
Fluid	Liquid, Gas								
Function	·Local indication ·Alarm output		·Local indication ·Alarm output		·Local indication		·Local indication ·Alarm output		
Measuring range (water)	Min.	5 to 50 mL/min						0.1 to 1 L/min	
	Max.	0.2 to 2 L/min						3 to 30 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)	
	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)	
Process connection	Rc 1/8, Rc 1/4				Rc 1/4		Rc 3/8		
Standard material	SUS304/SUS316				SUS304/SUS316		SCS14/SUS304		
Installation length	115 mm		200 mm		200 mm		200 mm		
Alarm	·UL-approved reed switch ·Optical alarm unit				-		·UL-approved reed switch ·Optical alarm unit		

P series



Model	P-530		P-810		P-820		P-830		
Fluid	Liquid, Gas		Gas, Liquid (equivalent to water)		Gas, Liquid (equivalent to water)		Liquid (equivalent to water)		
Function	·Local indication ·Alarm output		·Local indication ·Alarm output		·Local indication ·Alarm output		·Local indication ·Alarm output		
Measuring range (water)	Min.	0.2 to 2 L/min						0.1 to 1 L/min	
	Max.	1 to 10 L/min						1.5 to 7 L/min	
Measuring range (air)	Min.	10 to 50 L/min (nor)		5 to 50 mL/min (nor)		0.5 to 5 mL/min (nor)		-	
	Max.	50 to 250 L/min (nor)		6 to 60 L/min (nor)		6 to 60 L/min (nor)		-	
Process connection	Rc 3/8		Rc 1/4, 1/4" SW, 1/4" VCR				Rc 3/8, 3/8" SW		
Standard material	SCS14/SUS304		SCS14/SUS316		SCS14/SUS316		SCS14/SUS304		
Installation length	150 mm		224 mm		115 · 224 mm		76 mm		
Alarm	·UL-approved reed switch		·Optical alarm unit		·UL-approved reed switch ·Optical alarm unit		·UL-approved reed switch		

P series



P series  
(for micro flow rates)



Model	P-900		P-850		Model	P-880		
Fluid	Gas, Liquid (equivalent to water)		Liquid, Gas		Fluid	Gas		
Function	·Local indication		·Local indication		Function	·Local indication		
Measuring range (water)	Min.	5 to 50 mL/min				Measuring range (water)	Min.	-
	Max.	0.25 to 2.5 L/min				Measuring range (water)	Max.	-
Measuring range (air)	Min.	80 to 800 mL/min (nor)		20 to 200 mL/min (nor)		Measuring range (air)	Min.	0.15 to 1.5 mL/min (nor)
	Max.	6 to 60 L/min (nor)		2 to 20 L/min (nor)		Measuring range (air)	Max.	6 to 60 L/min (nor)
Process connection	Rc 1/4, 1/4NPT		Rc 1/8		Process connection	Rc 1/4, 1/4" SW, 1/4" VCR		
Standard material	SUS304		SCS14/SUS304		Standard material	SCS14/SUS316		
Installation length	114 · 224 mm		80 mm		Installation length	115-130-145 mm		
Alarm	-		-		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)**

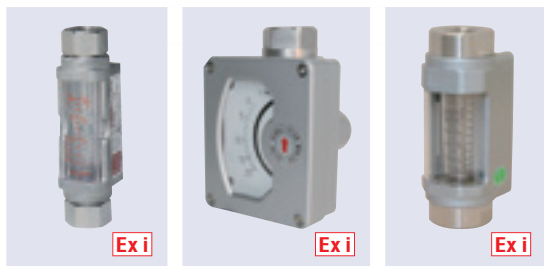


Model	P-771		P-772		P-773		P-710	
Fluid	Liquid		Liquid		Liquid		Liquid, Gas	
Function	·Local indication ·Alarm output		·Local indication ·Alarm output		·Local indication ·Alarm output		·Local indication ·Alarm output	
Measuring range (water)	Min.	3 to 15 mL/min	0.06 to 0.6 L/min		0.1 to 1 L/min		3 to 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		PFA		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		

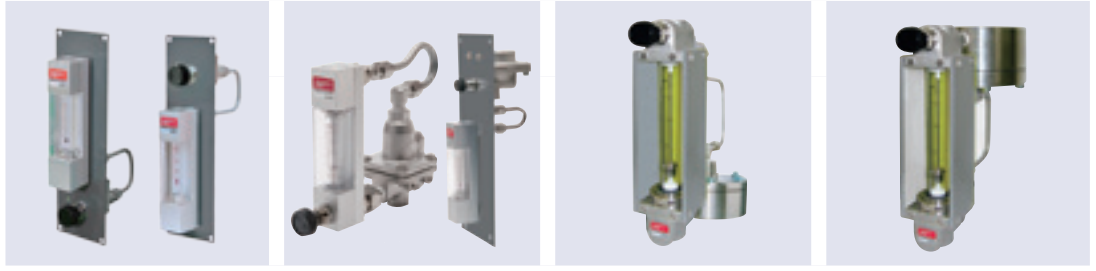
**Flow Switch (for process use)**

**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 m³/h High alarm 0.13 to 2 m³/h
	Max.	Low alarm 5 to 70 m³/h High alarm 6.5 to 70 m³/h
Process connection	Flange 15 mm to 150 mm	
Standard material	FC200, SCS13, SCS14	

**CP series  
Purege Set**



Model	Primary press. control	<b>CP-11-100, 200, 400</b>	<b>CP-21-100, 200, 400</b>	<b>CP-31-500</b>	<b>CP-41-500</b>
	Secondary press. control	<b>CP-12-100, 200, 400</b>	<b>CP-22-100, 200, 400</b>	<b>CP-32-500</b>	<b>CP-42-500</b>
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	<b>C-11</b>	<b>C-21</b>	<b>C-31</b>	<b>C-41</b>	<b>C-51</b>
	Secondary press. control	<b>C-12</b>	<b>C-22</b>	<b>C-32</b>	<b>C-42</b>	<b>C-52</b>
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 <sup>3</sup> /h (nor)	0.36 to 3.6 m <sup>3</sup> /h (nor)	0.9 to 9 m <sup>3</sup> /h (nor)	2.1 to 21 m <sup>3</sup> /h (nor)
	Max.	0.3 to 3 L/min (nor)	0.36 to 3.6 m <sup>3</sup> /h (nor)	0.9 to 9 m <sup>3</sup> /h (nor)	2.1 to 21 m <sup>3</sup> /h (nor)	3.6 to 36 m <sup>3</sup> /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	<b>C-61</b>	<b>C-71</b>	<b>C-81</b>
	Secondary press. control	<b>C-62</b>	<b>C-72</b>	<b>C-82</b>
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 <sup>3</sup> /h (nor)	5.4 to 54 m <sup>3</sup> /h (nor)	9 to 90 m <sup>3</sup> /h (nor)
	Max.	5.4 to 54 m <sup>3</sup> /h (nor)	9 to 90 m <sup>3</sup> /h (nor)	23 to 230 m <sup>3</sup> /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**



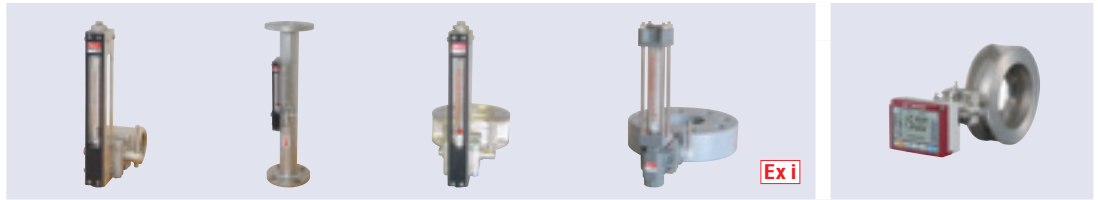


# Differential Pressure Flowmeter

## ORIFLOMETER®



### O/HDT series



Model	O-180		O-680		O-780		HDT1000		
Fluid	Liquid (Viscosity: up to 3 mPa·s), 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		
Standard DP (Liquid)	15 kPa				20 kPa		-		
Measuring range (water)	Min.	0.05 to 0.25 m³/h						0.023 to 0.23 m³/h	
	Max.	300 to 1500 m³/h				340 to 1700 m³/h		106 to 1060 m³/h	
Standard DP (Gas)	5 kPa				20 kPa		-		
Measuring range (air)	Min.	0.7 to 3.5 m³/h (nor)				0.84 to 4.2 m³/h (nor)		0.34 to 3.4 m³/h (nor)	
	Max.	4600 to 23000 m³/h (nor)				9000 to 45000 m³/h (nor)		1720 to 17200 m³/h (nor)	
Process connection			·Rc 3/8 to Rc 4 ·Flange / Wafer 10 mm to 500 mm (3/8" to 20")						
Standard material	Measuring pipe	SGP, SUS304, SUS316, PVC, HT-PVC							
	Indicator	SCS14, PVC, HT-PVC						SUS304	

### O/HDT series

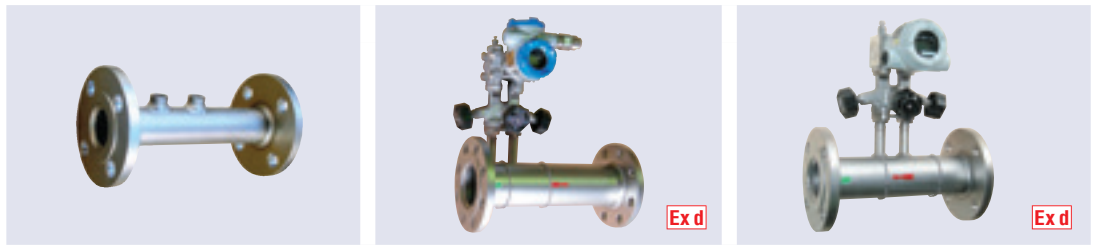


Model	O-100		O3000		O7000		
Fluid	Liquid, Gas						
Function	·Local indication ·Alarm output		·Local indication ·Current output ·HART communication		·Local indication ·Alarm output ·Current output ·Pulse output		
Standard DP (Liquid)	30 kPa				60 kPa		
Measuring range (water)	Min.	0.5 to 2.5 m³/h				0.8 to 4 m³/h	
	Max.	400 to 2000 m³/h				600 to 3000 m³/h	
Standard DP (Gas)	10 kPa		40 kPa		60 kPa		
Measuring range (air)	Min.	6.8 to 34 m³/h (nor)				18 to 90 m³/h (nor)	
	Max.	6600 to 33000 m³/h (nor)				14400 to 72000 m³/h (nor)	
Process connection	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")		·Rc 1/2 to 4 ·Flange/Wafer: 15 mm to 300 mm		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	Measuring pipe	SS400, SUS304, SUS316				SS400, SUS304, SUS316	
	Indicator					SUS304, SUS316	

## V-Cone® Flowmeter



### V series

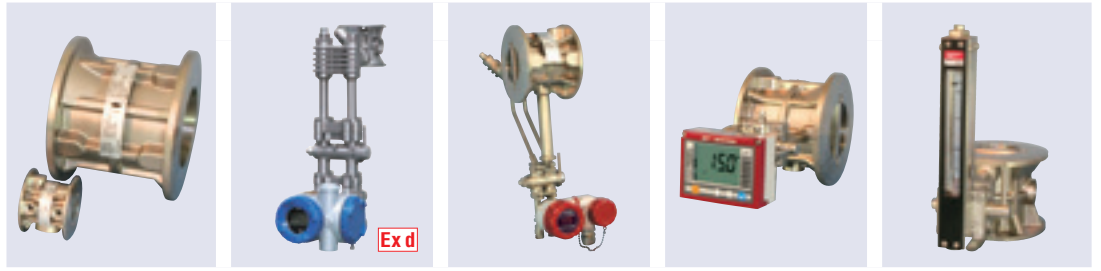


Model	VC		VD		VM		
Fluid	·Steam, Liquid, Gas				·Gas, Saturated steam		
Function	Differential pressure port: Rc 1/2 or Rc 1/4		·Local indication ·Current output		·Local indication ·Current output ·Mass flow		
Measuring range (water)	Min.					-	
	Max.					-	
Measuring range (air)	Min.	-				-	
	Max.						
Measuring range (Saturated steam)	Min.					-	
	Max.					-	
Process connection	Flange 15 mm to 400 mm (1/2" to 16")		2600 to 28315 kg/h		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. Max.	0.4 to 5.5 m <sup>3</sup> /h 9 to 119.73 m <sup>3</sup> /h 6 to 77 m <sup>3</sup> /h (nor)			0.26 to 1.3 m <sup>3</sup> /h 18 to 90 m <sup>3</sup> /h
Measuring range (air)	Min. Max.	120 to 1587 m <sup>3</sup> /h (nor)			750 to 7500 m <sup>3</sup> /h (nor)
Measuring range (Saturated steam)	Min. Max.	8 to 103 kg/h 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-K	UCUF-M	UCUF-02M	UCUF-04MT
Fluid			Liquid		
Measuring range (water)	Min. Max.	0 to 50 mL/min 0 to 8 L/min		0 to 10 mL/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"
Standard material	PFA				

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

Converter

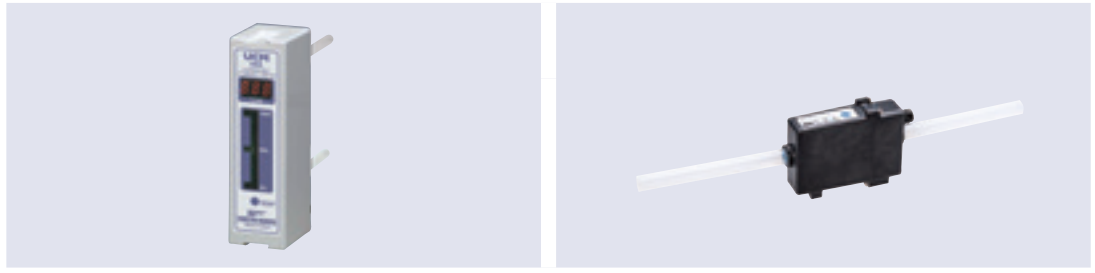
SFC series



Model	SFC4000	SFC2000	SFC3000	SFC-900	SFC-010L	SFC-010T	SFC-011J
Power supply	24 V DC						
Output	Flow rate Pulse Alarm	-4 to 20 mA DC -1 to 5 V DC		4 to 20 mA DC		-4 to 20 mA DC -0 to 20 mA DC	
		Open collector: 0 to 1000 Hz max.			-4 to 20 mA DC -1 to 5 V DC		4 to 20mA DC
		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-06SS

Integrated Type

UCM®/UCF series



Model	<b>UCM-04A/06A</b>		<b>UCF006</b>	
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	<b>CLFC300</b>		<b>CLFC500</b>	
Power supply	24 V DC			
Fluid	Liquid			
Flow control range (water)	Min.	2.5 to 25 mL/min	50 to 500 mL/min	
	Max.	200 to 2000 mL/min	300 to 3000 mL/min	
Process connection	SUPER300 Type PILLAR FITTING etc.		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	<b>FCV-3000</b>		<b>FCV-3000T</b>		<b>FCV-1000S</b>	
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

FCA6000 series



Model	FCA6100	FCA6200	FCA6300
Power supply	24 V DC		
Function	<ul style="list-style-type: none"> <li>·Flow rate indication</li> <li>·Flow rate output</li> <li>·Alarm output</li> <li>·Pulse output</li> </ul>		
Setting input	1 to 5 V DC	0 to 10 V DC	4 to 20 mA DC
MV (flow rate) output	4 to 20 mA DC	0 to 10 V DC	4 to 20 mA DC

Ultrasonic Flowmeter (for process use)

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	<b>UL330</b>	<b>UL350</b>	<b>UL6300</b>
Fluid	Liquid		
Function	<ul style="list-style-type: none"> <li>·Flow rate indication</li> <li>·Totalizer</li> <li>·Current output</li> <li>·Pulse output</li> <li>·Status output</li> </ul>	<ul style="list-style-type: none"> <li>·Flow rate indication</li> <li>·Totalizer</li> <li>·Current output</li> <li>·Pulse output</li> <li>·Status output</li> <li>·RS485 (optional)</li> </ul>	<ul style="list-style-type: none"> <li>·Flow rate indication</li> <li>·Totalizer</li> <li>·Bar graph</li> <li>·Current output (HART)</li> <li>·Pulse output</li> <li>·Status output</li> </ul>
Measuring range (flow velocity)	Min. 0 to 0.3 m/s Max. 0 to 10 m/s	Min. 0 to 0.3 m/s Max. 0 to 10 m/s	Min. 0 to 0.5m/s Max. 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, Polyethylene lining		

Portable Clamp-on Type

UL6400



Model	<b>UL6400</b>
Fluid	Liquid
Function	<ul style="list-style-type: none"> <li>·Flow rate indication</li> <li>·Totalizer</li> <li>·Flow velocity indication</li> <li>·Bar graph</li> </ul>
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

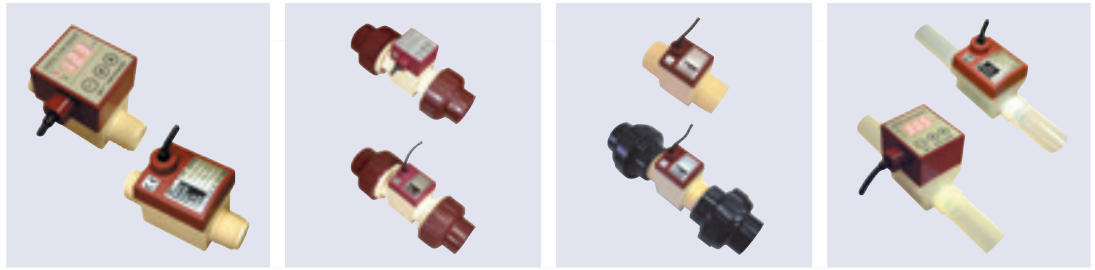
SONICMAX®  
UL3400



Model	<b>UL3400</b>
Fluid	Liquid
Function	<ul style="list-style-type: none"> <li>·Flow rate Indication</li> <li>·Totalizer</li> <li>·Current output</li> <li>·Pulse output</li> <li>·Status output</li> </ul>
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



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")	·R 1-1/4 ·Flange 32 mm (1-1/4")	Tube end: 3/8" to 1"	
Standard material	PPS resin	PPS resin /PVC			New PFA

Turbine Flowmeter



Axial-flow Flowmeter

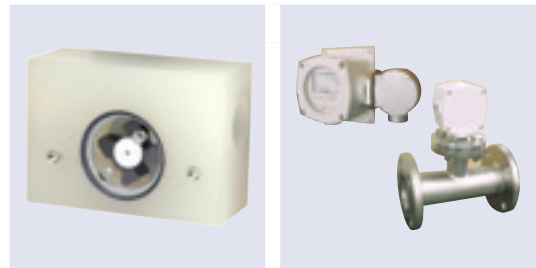
TW series



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

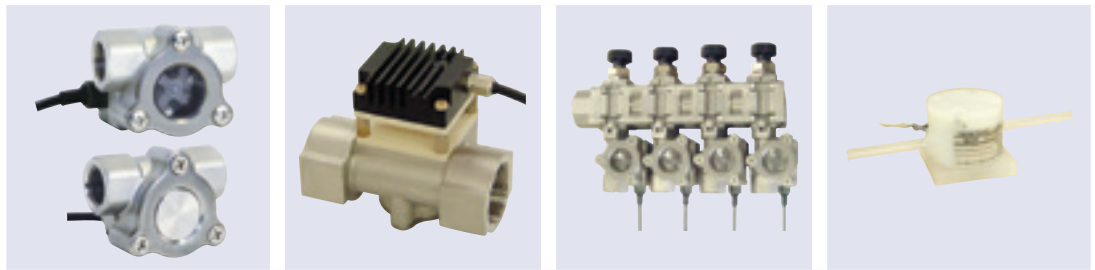
W series



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 <sup>3</sup> /h
	Max.	5 to 50 L/min	50 to 400 m <sup>3</sup> /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



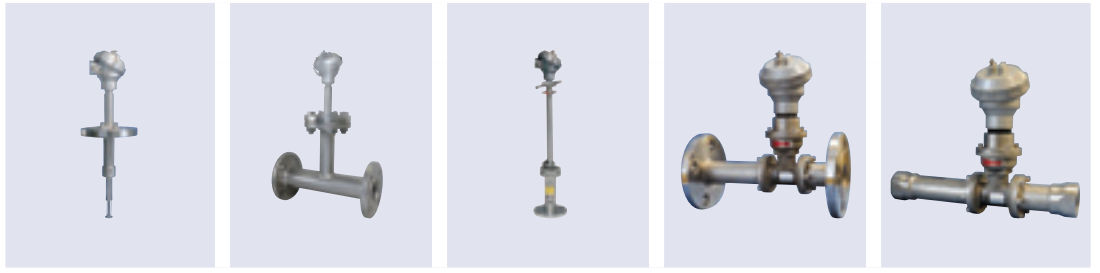
Model	W-2000/2000N		W-3000	MU-1000	W-800
Fluid	Liquid			Cooling water	Liquid
Function	·Current output ·Pulse output		·Pulse output	·Current output ·Pulse output	·Pulse output
Measuring range (water)	Min.	0.5 to 3 L/min		0.6 to 3 L/min	0.04 to 0.2 L/min
	Max.	6 to 60 L/min		2 to 20 L/min	5 to 50 L/min
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

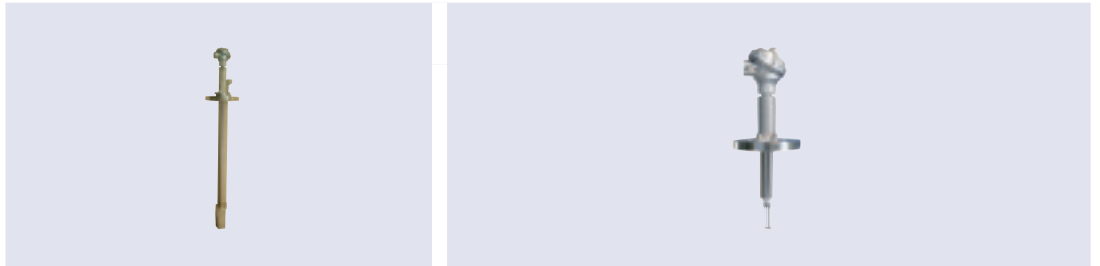


Model	Insertion type	Flange type	Insertion type (Variable length)	Small size	Built-in straightener type
Fluid	<b>TH-1100</b>	<b>TH-1200</b>	<b>TH-1400</b>	<b>TH-1700</b>	<b>TH-1800</b>
Measuring range (air)	Gas				
Min.	0 to 45 m <sup>3</sup> /h (nor)	0 to 45 m <sup>3</sup> /h (nor)	0 to 45 m <sup>3</sup> /h (nor)	0 to 250 L/min (nor)	0 to 10 L/min (nor)
Max.	0 to 680000 m <sup>3</sup> /h (nor)	0 to 7000 m <sup>3</sup> /h (nor)	0 to 680000 m <sup>3</sup> /h (nor)	0 to 14000 L/min (nor)	0 to 5800 L/min (nor)
Operating temperature	80°C Max.				
Standard type	240°C Max.		180°C Max.		
High-temp. type					
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				

Built-in purge function

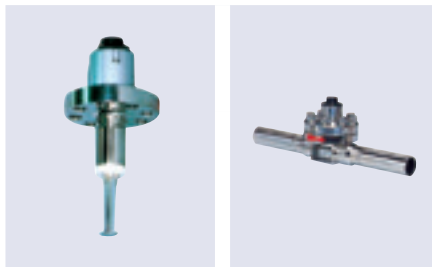
High temperature / Low temperature type

TH-Detector



Model	Insertion type		Insertion type		
Fluid	<b>TH-1100-SP</b>	<b>TH-3200-SP</b>	<b>TH-3100</b>	<b>TH-3200</b>	<b>TH-3300</b>
Measuring range (air)	Gas				
Min.	0 to 120 m <sup>3</sup> /h (nor)	0 to 260 m <sup>3</sup> /h (nor)	0 to 80 m <sup>3</sup> /h (nor)	0 to 60 m <sup>3</sup> /h (nor)	
Max.	0 to 390000 m <sup>3</sup> /h (nor)			0 to 38000 m <sup>3</sup> /h (nor)	
Operating temperature	80°C Max.	550°C Max.	550°C Max.		-196°C to 0°C
High-temp. type	240°C Max.				
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



Model	Insertion type	In-line welding type
Fluid	<b>TH-1100-HQ</b>	<b>TH-1500-HQ</b>
Measuring range (air)	Gas	
Min.	0 to 50 m <sup>3</sup> /h (nor)	0 to 260 L/min (nor)
Max.	0 to 3300 m <sup>3</sup> /h (nor)	0 to 4500 L/min (nor)
Operating temperature	120°C Max.	
Process connection / Process pipe size	Flange: 50 mm to 100 mm (2" to 4")	Flange: 15 mm to 25 mm (1/2" to 1")
Standard material	SUS316L	

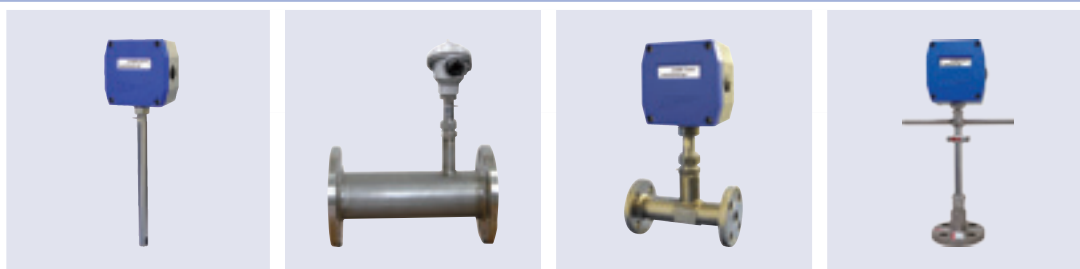
TRX-Converter



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

SRT series

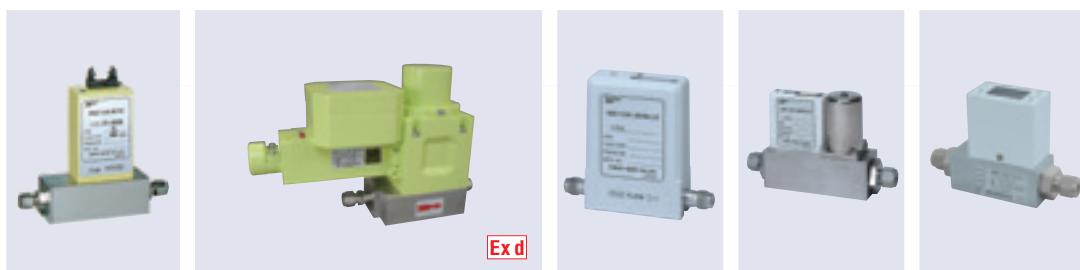
Compact & Separate type



Model	SRT1100	SRT1200	SRT1300	SRT1400
Fluid	Gas			
Function	<ul style="list-style-type: none"> <li>·Local indication</li> <li>·Analog output</li> <li>·Pulse output</li> <li>·Alarm output</li> <li>·RS-485</li> </ul>			
Measuring range (air)	Min. 0 to 60 m³/h (nor) Max. 0 to 890000 m³/h (nor)	0 to 40 m³/h (nor) 0 to 10000 m³/h (nor)	0 to 2.5 m³/h (nor) 0 to 300 m³/h (nor)	0 to 60 m³/h (nor) 0 to 310000 m³/h (nor)
Operating temperature	120°C Max.			
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")	Flange: 50 mm to 900 mm
Standard material	SUS316, SUS316L			


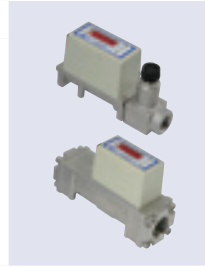
Thermal Mass Flowmeter

TF series  
HM series

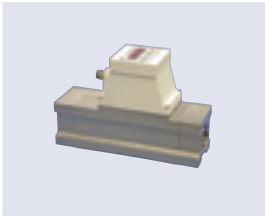

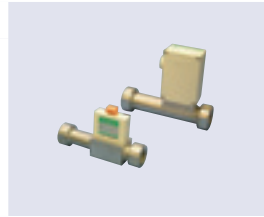


Model	TF-5000/TF-6000	EP-TF-5300	H-EP-TF-5300	HM1000	HM5000	HM9700A
Fluid	Gas			Gas		
Function	·Voltage output			·Voltage output		·Local indication ·Current output ·Alarm output
Measuring range (air)	Min. 0 to 5 mL/min (nor) Max. 0 to 500 L/min (nor)			0 to 5 mL/min (nor)		1 to 20 L/min (nor)
Process 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	<b>TF-1000</b>	<b>TF-900</b>	<b>TF-4000</b>	<b>TF-600</b>	<b>TF-600D/600V</b>
Fluid	Gas	Air, N <sub>2</sub> , O <sub>2</sub>	Air, N <sub>2</sub> , O <sub>2</sub>	Air, N <sub>2</sub>	
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)
	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)
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	
Model	<b>TF-4100</b>	<b>TF-2000T</b>	<b>TF-2261T</b>
Fluid	Air, N <sub>2</sub>	Gas	Air, N <sub>2</sub>
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
Measuring range (air)	Min.	0 to 4000 L/min (nor)	0 to 2 L/min (nor)
	Max.	0 to 16000 L/min (nor)	0 to 750 m <sup>3</sup> /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

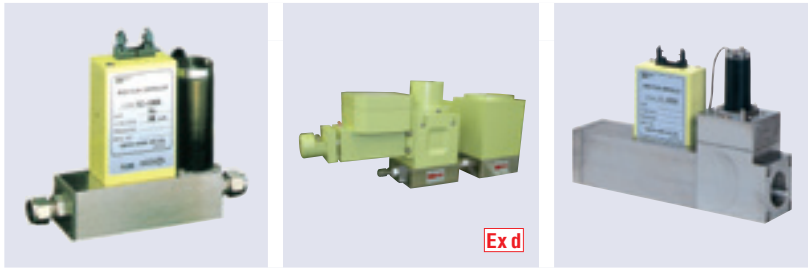
Converter for TF series



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



TC series



Ex d

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 5 mL/min (nor)	
	Max.	0 to 500 L/min (nor)	0 to 100 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



Converter for TC series



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

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

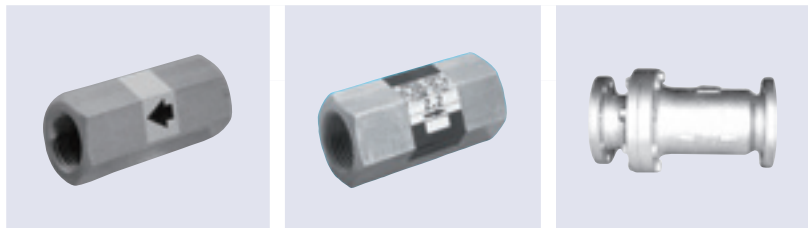


CX series



Model	CX-1101	CX-1500	CX-1510	CX-2000
Fluid	Liquid	Gas	Water	Liquid
Flow range (water/air)	Min.	5 to 13 m³/h (nor)	0.7 to 1.1 m³/h	0.2 to 1.2 m³/h
	Max.	25 to 70 L/min	600 to 1000 m³/h (nor)	22 to 60 m³/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.	0.06 to 0.6 L/min	5 to 20 L/min
	Max.	4 to 7 L/min	0.6 to 9 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 <sup>3</sup> /h
	Max.	4500 to 35000 L/min	1600 to 16000 L/min		100 to 1000 m <sup>3</sup> /h
Process pipe size	20 mm to 450 mm (3/4" to 18")				
Standard material	SUS316 / C3604				

## Flapper-type Flowmeter



### STK/K series

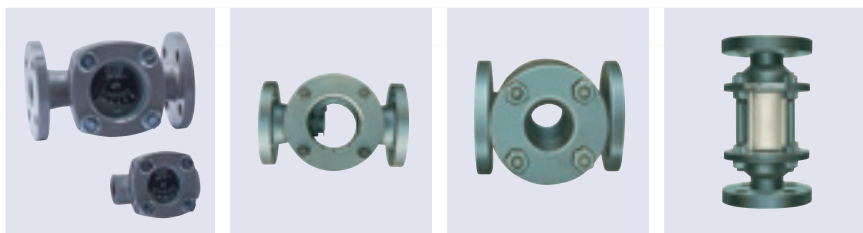


Model	STK2000	STK7400	K-200	K-740
Fluid	Liquid			
Function	·Local indication	·Local indication ·Alarm output	·Local indication	·Local indication ·Alarm output
Measuring range (water)	Min.	0.3 to 1.5 m <sup>3</sup> /h	0.2 to 1 m <sup>3</sup> /h	0.2 to 0.6 m <sup>3</sup> /h
	Max.	120 to 600 m <sup>3</sup> /h	100 to 300 m <sup>3</sup> /h	100 to 300 m <sup>3</sup> /h
Process connection	Flange 15 mm to 300 mm (1/2" to 12")		Flange 20 mm to 300 mm (3/4" to 12")	Flange 15 mm to 300 mm (1/2" to 12")
Standard material	SS400, SGP SCS14, SUS304, PVC		FC200, SUS304, SUS316	FC200 SCS13, SCS14

## Sight Glass



### STK/K series



Model	STK4000	K-400	K-500	K-600
Fluid	Liquid			
Function	·Local indication			
Measuring range (water)	Min.	0.16 to 0.6 m <sup>3</sup> /h	0.1 to 0.3 m <sup>3</sup> /h	-
	Max.	120 to 600 m <sup>3</sup> /h	50 to 150 m <sup>3</sup> /h	-
Process connection	·Rc 1/2 to 3/4 ·Flange 25 mm to 300 mm (1" to 12")	Flange 15 mm to 150 mm (1/2" to 6")		Flange 15 mm to 125 mm (1/2" to 5")
Standard material	FCD450, SS400 SCS14, SUS304	FC200, SUS304, SUS316 FC200 (SGP)/ Glass lining (only for K-500: 25 mm to 100 mm (1" to 4"))		SS400 / SGP SUS304, SUS316





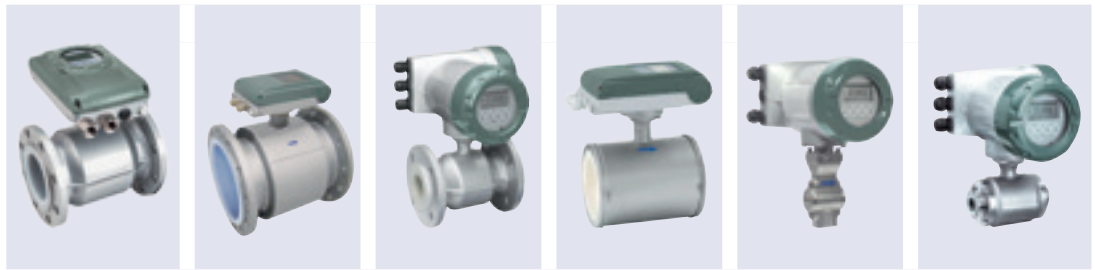
**Compact Type Electromagnetic Flowmeter**

**EGM series**



	PFA Lining (Meter size 10 mm to 150 mm)			Hard rubber / Polypropylene (PP) Lining (Meter size 25 mm to 1000 mm)		
<b>Model</b>	<b>EGM1050C</b>	<b>EGM1100C</b>	<b>EGM1300C</b>	<b>EGM2050C</b>	<b>EGM2100C</b>	<b>EGM2300C</b>
<b>Fluid</b>	Conductive liquids					
<b>Function</b>	-Flow rate indication		-Totalizer	-Current output (HART)	-Pulse output	-Status output
<b>Measuring range</b>	Min.	0 to 0.09 m <sup>3</sup> /h			0 to 0.6 m <sup>3</sup> /h	
	Max.	0 to 700 m <sup>3</sup> /h			0 to 33000 m <sup>3</sup> /h	
<b>Process connection</b>	Wafer 10 mm to 150 mm (3/8" to 6")			Flange 25 mm to 1000 mm (1" to 40")		
<b>Standard material</b>	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)	
<b>Model</b>	<b>EGM4050C</b>	<b>EGM4100C</b>	<b>EGM4300C</b>	<b>EGM5100C</b>	<b>EGM5300C</b>	<b>EGM6300C</b>
<b>Fluid</b>	Conductive liquids					
<b>Function</b>	-Flow rate indication		-Totalizer	-Current output (HART)	-Pulse output	-Status output
<b>Measuring range</b>	Min.	0 to 0.09 m <sup>3</sup> /h			0 to 0.6 m <sup>3</sup> /h	
	Max.	0 to 33000 m <sup>3</sup> /h			0 to 300 m <sup>3</sup> /h	
<b>Process connection</b>	Flange 10 mm to 1000 mm (1" to 40")			Wafer 10 mm to 100 mm (3/8" to 4")		Sanitary joint 1S to 4S
<b>Standard material</b>	PFA · PTFE · ETFE / Hastelloy® C			Zirconia ceramic · Alumina ceramic/Platinum		PFA / Hastelloy® C / 316SS

**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)
<b>Model</b>	<b>EGM7300C</b>	<b>EGM1300CS</b>	<b>EGM2300CS</b>
<b>Fluid</b>	Conductive liquids		
<b>Function</b>	-Flow rate indication -Totalizer -Current output (HART) -Pulse output -Status output	-Flow rate indication -Totalizer -Alarm output (Dry contact)	
	Min. Max.	0 to 0.6 m <sup>3</sup> /h 0 to 300 m <sup>3</sup> /h	0 to 0.6 m <sup>3</sup> /h 0 to 700 m <sup>3</sup> /h 0 to 3000 m <sup>3</sup> /h
<b>Process connection</b>	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")
<b>Standard material</b>	Zirconia ceramic Alumina ceramic	PFA/ Hastelloy® C	PP · Hard rubber / Hastelloy® C

**Battery-powered Electromagnetic Watermeter**

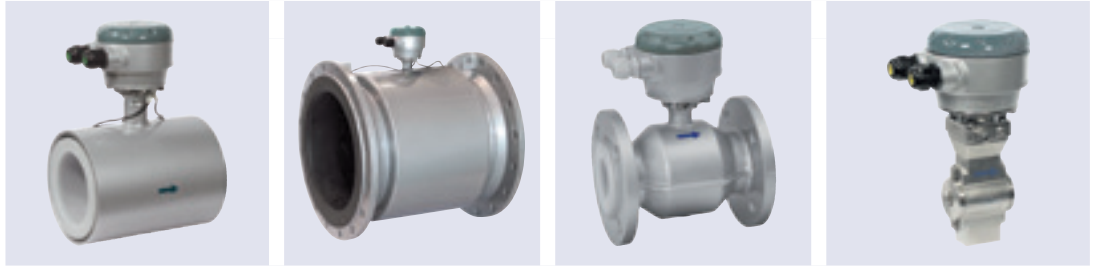
**ETM series**



<b>Model</b>	<b>ETM3070</b>
<b>Fluid</b>	Water (50 µS/cm or more)
<b>Function</b>	-Flow rate indication -Totalizer -Pulse output
<b>Measuring range</b>	Min. Max.
	0 to 0.9 m <sup>3</sup> /h 0 to 1000 m <sup>3</sup> /h
<b>Process connection</b>	Flange 25 mm to 200 mm (1" to 8")
<b>Standard material</b>	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)
		<b>EGS1000</b>	<b>EGS2000</b>	<b>EGS4000</b>	<b>EGS5000</b>
Model		Conductive liquids			
Fluid					
Measuring range	Min.	0 to 0.09 m <sup>3</sup> /h	0 to 0.6 m <sup>3</sup> /h	0 to 0.09 m <sup>3</sup> /h	0 to 0.01 m <sup>3</sup> /h
	Max.	0 to 700 m <sup>3</sup> /h	0 to 33000 m <sup>3</sup> /h	0 to 33000 m <sup>3</sup> /h	0 to 300 m <sup>3</sup> /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	
		<b>EGC050W</b>	<b>EGC100W</b>	<b>EGC300F/W</b>	
Model		100 to 230 V AC / 24 V DC			
Power supply		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output			
Function		EGS/MGS/IFS series Electromagnetic flow detectors			
Applicable instrument					

**SWIRLMAX® Vortex Flowmeter**



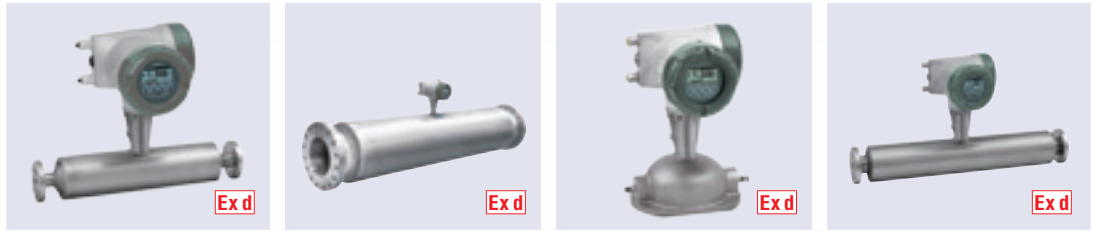
**VFM series**



		<b>VFM4200</b>
Model		Gas, Liquid, Steam
Fluid		·Local indication ·Current output ·Pulse output
Function		
Measuring range (water /20°C)	Min.	0.91 m <sup>3</sup> /h
	Max.	1772 m <sup>3</sup> /h
Measuring range (air /0 MPa)	Min.	12.1 m <sup>3</sup> /h (nor)
	Max.	25250 m <sup>3</sup> /h (nor)
Measuring range (saturated steam /0.1 MPa)	Min.	11.8 kg/h
	Max.	22996 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 400 mm)	Single tube (Meter size 1 mm to 4 mm)	Straight single tube (Meter size 6 mm to 80 mm)
<b>Model</b>		<b>MMM1400C</b>	<b>MMM2400C</b>	<b>MMM3400C</b>	<b>MMM7400C</b>
<b>Fluid</b>		Liquid			
<b>Function</b>		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output ·Density measurement (for 15 mm or larger meter sizes)			
<b>Measuring range</b>	Min.	48 kg/h	1560 kg/h	0.3 kg/h	12 kg/h
	Max.	125,000 kg/h	4,600,000 kg/h	450 kg/h	560,000 kg/h
<b>Process connection</b>		Flange 15 mm to 80 mm (1/2" to 3")	Flange 100 mm to 400 mm (4" to 12")	1/4 NPT male	Flange 10 mm to 100 mm (3/8" to 4")
<b>Standard material</b>		ASTM UNS S31803 / 316L SS		316L SS	Titanium · Hastelloy® C22

**MMM series**



Twin tube  
(Meter size 8 mm to 250 mm)

<b>Model</b>		<b>MMM6400C</b>
<b>Fluid</b>		Liquid, Gas
<b>Function</b>		·Flow rate indication ·Totalizer ·Current output (HART) ·Pulse output ·Status output ·Density measurement
<b>Measuring range</b>	Min.	5 kg/h
	Max.	1,000,000 kg/h
<b>Process connection</b>		Flange 10 mm to 250 mm (3/8" to 4")
<b>Standard material</b>		316/316L SS (dual certified)

**Flowmeter for Filling Machines**



**Coriolis Mass Flowmeter**

**MMM series**

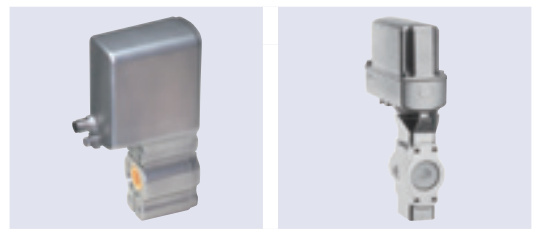


Twin tube  
(Meter size 10 mm, 15 mm)

<b>Model</b>		<b>MMM4011C</b>
<b>Fluid</b>		Liquid
<b>Function</b>		·Pulse output
<b>Recommended filling conditions</b>	<b>Flow rate</b>	8 mm: 5 to 165 g/sec 10 mm: 10 to 360 g/sec 15 mm: 25 to 1200 g/sec
	<b>Min. filling volume</b>	8 mm: 7.5 g 10 mm: 15 g 15 mm: 37.5 g
	<b>Min. filling time</b>	1.5 s
<b>Process connection</b>		Sanitary joint: 10 mm to 15 mm (3/8" to 1/2")
<b>Standard material</b>		316L SS

**Electromagnetic Flowmeter**

**EGM series**



Ceramic type  
(Meter size 10 mm, 15 mm)

Ceramic type  
(Meter size 2.5mm to 40 mm)

<b>Model</b>		<b>EGM5500C</b>	<b>EGM5015C</b>
<b>Fluid</b>		Conductive liquids	
<b>Function</b>		·Pulse output	
<b>Recommended filling conditions</b>	<b>Flow rate</b>	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
	<b>Min. filling volume</b>	10 mm: 100 mL 15 mm: 200 mL	2.5 mm: 10 mL 40 mm: 1500 mL
	<b>Min. filling time</b>	1.5 s	1.5 s
<b>Process connection</b>		Wafer: 10 mm to 15 mm (3/8" to 1/2")	Wafer: 10 mm to 40 mm (3/8" to 1-1/2")
<b>Standard material</b>		Zirconia ceramic / Platinum	Zirconia ceramic Alumina ceramic / Platinum

## Blow-by Gas Flowmeter



### BF series

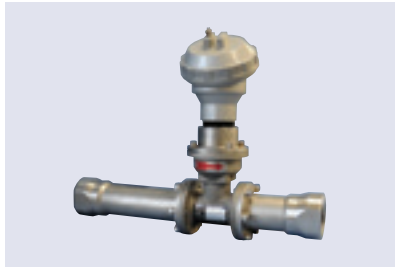


Model		BF-2000S	BF-4000S
Fluid		Gas	
Measuring range (air)	Min.	20 to 200 L/min (nor)	10 to 100 L/min (nor)
	Max.	20 to 300 L/min (nor)	10 to 150 L/min (nor)
Temperature		0 to 60°C	
Pressure loss		200 Pa at 200 L/min (nor)	200 Pa at 100 L/min (nor)
Power supply		Standard: 100 V AC Option: 110 V to 240 V AC	
Output		·4 to 20 mA DC or 1 to 5 V DC ·Serial (RS485) ·Flow alarm	·Pulse ·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

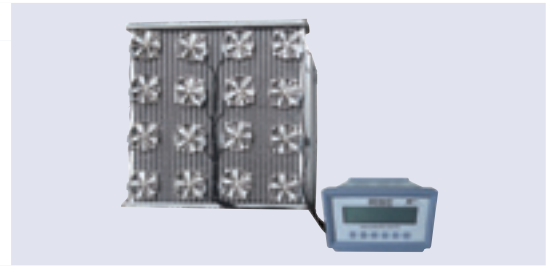
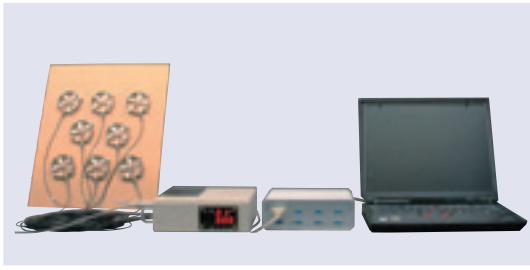


Model		TRX-700-CNG
Function		·Flow indication ·Temperature indication or Total flow (continuous)
Power supply		90 to 264 V AC
Output		·4 to 20 mA DC or 1 to 5 V DC ·RS485 ·Flow alarm
Cable length		10 m (100 m Max.)

Radiator Air Flow Measurement System



RF series



	RF-1000 series	RF-2000 series
	<b>Propeller sensor</b>	<b>Propeller sensor</b>
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
	<b>Converter</b>	<b>Converter</b>
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 m³/h
	Max.	88 to 3530 m³/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

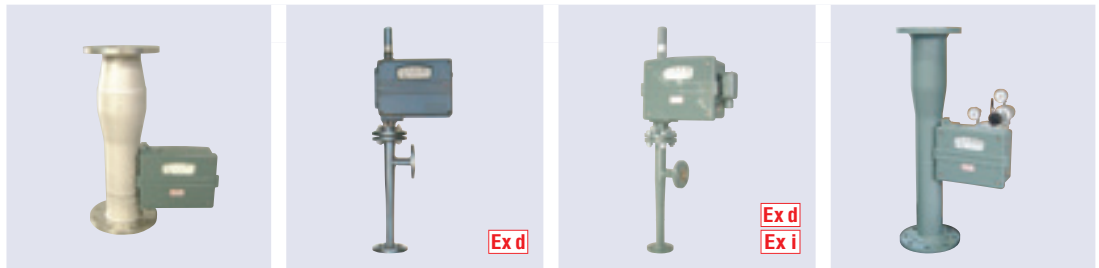


AM-1000 series



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 <sup>3</sup> /h			
	Max.	15 to 150 m <sup>3</sup> /h			
Measuring range (air)	Min.	0.35 to 3.5 m <sup>3</sup> /h (nor)			
	Max.	450 to 4500 m <sup>3</sup> /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 <sup>3</sup> /h		
	Max.	80 to 800 m <sup>3</sup> /h		
Measuring range (air)	Min.	0.3 to 3 m <sup>3</sup> /h (nor)		
	Max.	560 to 5590 m <sup>3</sup> /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 <sup>3</sup> /h	0.01 to 0.1 m <sup>3</sup> /h
	Max.	20 to 200 m <sup>3</sup> /h	20 to 200 m <sup>3</sup> /h
Measuring range (air)	Min.	-	0.3 to 3 m <sup>3</sup> /h (nor)
	Max.	-	640 to 6400 m <sup>3</sup> /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

<b>M-910</b>		
<b>Model</b> <b>M-910</b>		
<b>Fluid</b> Liquid, Gas		
<b>Function</b> ·Local indication ·Pneumatic output		
<b>Measuring range (water)</b>	Min.	0.4 to 2 L/h
	Max.	30 to 300 L/h
<b>Measuring range (air)</b>	Min.	12 to 60 L/h (nor)
	Max.	170 to 8500 L/h (nor)
<b>Process connection</b> Rc 1/4 to 3/4 Flange: 10 mm to 25 mm (3/8" to 1")		
<b>Standard material</b> SUS304, SUS316, SUS316L		
<b>Optional material</b> Titanium, NW0276		


### Metal Tube Variable Area Flowmeter for Sanitary Applications

<b>AM-1000-SR series</b>						
<b>Model</b>		<b>AM-1401-SR</b>	<b>AM-1311-SR</b>	<b>AM-1521-SR</b>	<b>AM-1691-SR</b>	<b>AM-1741-SR</b>
<b>Fluid</b>		Liquid				
<b>Function</b>		·Local indication	·Local indication ·Pneumatic output	·Local indication ·Current output	·Local indication ·Totalizer ·Pulse output	·Local indication ·Alarm output
<b>Measuring range (water)</b>	Min.	0.01 to 0.1 m <sup>3</sup> /h				
	Max.	7 to 70 m <sup>3</sup> /h				
<b>Process connection</b>		Sanitary joint: 1S to 4.5 S				
<b>Standard material</b>		SUS304, SUS316, SUS316L				


### Metal Tube Variable Area Flowmeter for Slurry Applications

<b>AS/S series</b>			
<b>Model</b>		<b>AS-1000</b>	<b>S-102/S-752</b>
<b>Fluid</b>		Liquid	
<b>Function</b>		·Local indication ·Current output ·Alarm output	·Totalizer ·Pulse output ·Pneumatic output
<b>Measuring range (water)</b>	Min.	0.02 to 0.1 m <sup>3</sup> /h	0.04 to 0.2 m <sup>3</sup> /h
	Max.	30 to 150 m <sup>3</sup> /h	38 to 190 m <sup>3</sup> /h
<b>Process connection</b>		Flange: 15 mm to 150 mm (1/2" to 6")	Flange: 20 mm to 150 mm (3/4" to 6")
<b>Standard material</b>		SUS304, SUS316, SUS316L PVC	SUS304, SUS316, SUS316L PVC (for 25 mm to 150 mm)



### Glass Tube Variable Area Flowmeter

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

### Purgemeter

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

### Flow Switch/Flow Monitor

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

# 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<sup>3</sup> 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

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

$Q_{\text{air}}$  : Corrected flow rate

$Q_0$  : Flow rate of the measuring gas in actual conditions

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

$\rho_0$  : Density of the measuring gas (kg/m<sup>3</sup> (nor))

$T_0$  : Fluid temperature (°C)

$P_0$  : Fluid pressure (MPa)

2. When the flow rate is indicated in operating conditions

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

$Q_{\text{air}}$  : 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)

$\rho_0$  : Density of the measuring gas (kg/m<sup>3</sup> (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<sup>3</sup>

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

$Q$  : Corrected flow rate

$Q_0$  : Flow rate of the measuring liquid

$\rho_0$  : Density of the measuring liquid (g/cm<sup>3</sup>)

$\rho_1$  : Density of the float (g/cm<sup>3</sup>)

## Table of float density

Float material	Fluorocarbon resin	Glass	Ruby	PVC	Stainless steel	Titanium	NW0276 (equivalent to Hastelloy C)	Stainless steel AM7000
Density (g/cm <sup>3</sup> )	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 <sup>3</sup> (nor) at 0°C, 0 MPa	Viscosity (mPa·s)	
				at 0°C	at 20°C
Inorganic compounds	Ammonia	NH <sub>3</sub>	0.7713	0.0093	0.0100
	Argon	Ar	1.783	0.0212	0.0222
	Nitrous oxide	N <sub>2</sub> O	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 <sub>2</sub>	1.977	0.0138	0.0147
	Sulfurous acid gas	SO <sub>2</sub>	2.927	0.0116	0.0126
	Hydrogen chloride	HCl	1.639	0.0131	0.0143
	Chloride	Cl <sub>2</sub>	3.214	0.0123	0.0132
	Air (AIR)	(AIR)	1.293	0.0171	0.0181
	Oxygen	O <sub>2</sub>	1.429	0.0192	0.0203
	Cyanogen	C <sub>2</sub> N <sub>2</sub>	2.335	0.0093	–
	Hydrogen bromide	HBr	3.645	0.0170	–
	Bromine	Br <sub>2</sub>	7.139	0.0146	0.0153
	Hydrogen	H <sub>2</sub>	0.08994	0.0084	0.0088
Nitrogen	N <sub>2</sub>	1.251	0.0166	0.0175	
Fluorine	F <sub>2</sub>	1.696	–	–	
Hydrogen sulfide	H <sub>2</sub> S	1.539	0.0117	0.0124	
Helium	He	0.1785	0.0186	0.0196	

	Gas	Molecular formula	Density: kg/m <sup>3</sup> (nor) at 0°C, 0 MPa	Viscosity (mPa·s)	
				at 0°C	at 20°C
Organic compounds	Acetylene	C <sub>2</sub> H <sub>2</sub>	1.171	0.0096	0.0102
	Acetone	C <sub>3</sub> H <sub>6</sub> O	2.593	0.0066	–
	Isobutane	C <sub>4</sub> H <sub>10</sub>	2.595	0.0069	0.0074
	Isopropyl alcohol	C <sub>3</sub> H <sub>8</sub> O	2.683	0.0070	–
	Ethanol	C <sub>2</sub> H <sub>6</sub> O	2.057	0.0075	–
	Ethane	C <sub>2</sub> H <sub>6</sub>	1.356	0.0086	0.0092
	Ethyl ether	C <sub>4</sub> H <sub>10</sub> O	3.309	0.0068	–
	Ethylene	C <sub>2</sub> H <sub>4</sub>	1.260	0.0094	0.0101
	Ethyl chloride	C <sub>2</sub> H <sub>5</sub> Cl	2.880	0.0094	–
	Methyl chloride	CH <sub>3</sub> Cl	2.308	0.0098	0.0106
	Methylene chloride	CH <sub>2</sub> Cl <sub>2</sub>	3.792	0.0091	0.0099
	Chloroform	CHCl <sub>3</sub>	5.329	0.0093	0.0100
	Butane	C <sub>4</sub> H <sub>10</sub>	2.703	0.0069	0.0074
	Propane	C <sub>3</sub> H <sub>8</sub>	2.020	0.0075	0.0080
	Propyl alcohol	C <sub>3</sub> H <sub>8</sub> O	2.683	0.0068	–
	Propylene	C <sub>3</sub> H <sub>6</sub>	1.879	0.0078	0.0084
	Hexane	C <sub>6</sub> H <sub>14</sub>	3.847	0.0059	–
	Benzene	C <sub>6</sub> H <sub>6</sub>	3.488	0.0068	0.0074
	Pentane	C <sub>5</sub> H <sub>12</sub>	3.221	0.0062	–
Methanol	CH <sub>4</sub> O	1.430	0.0087	–	
Methane	CH <sub>4</sub>	0.7168	0.0102	0.0108	
Methyl ether	C <sub>2</sub> H <sub>6</sub> O	2.057	0.0085	0.0091	
Utility gas	13A	0.8407	–	0.0105	

# LEVEL MEASUREMENT AND CONTROL INSTRUMENTS

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

The following symbols are applicable to level measurement and control instruments.

## Explosion-proof

**Ex d** : Flameproof types available      **Ex i** : Intrinsically safe types available

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

## Float Type Level Meter

### Float & Tape Type Level Meter (Tank Gauge)

FT/FP-1000 series  
FT-2000 series

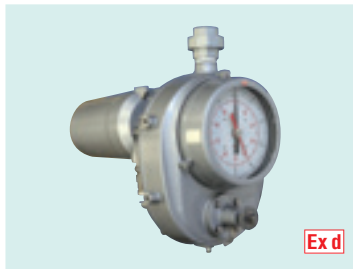


Ex d

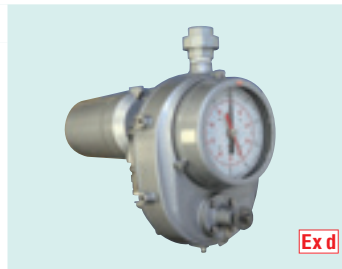
Model	<b>FT-1000</b>	<b>FP-1000</b>	<b>FT-2000</b>
Function	·Local indication	·Current output ·Alarm output	·Pneumatic output ·Digital output
Measuring range	3 m		
	Min.	30 m	10 m
Max.	30 m	10 m	30 m
Temperature (at the wetted parts)	-196 to 400°C	0 to 150°C	-196 to 400°C
Pressure	Standard: For low pressure applications Option: For high pressure applications		
Process connection	·Rc 1-1/2 ·Flange 40 mm (1-1/2")		
Standard float material	SUS304		
Optional float material	SUS316, SUS316L, PVC		SUS316, SUS316L

### Analog Transmitter

TR/AT series



Ex d



Ex d



Model	<b>TR-210, TR-221 to 226</b>	<b>TR-101 to 106</b>	<b>AT-101W</b>
Power supply / Supply air	24 V DC	-	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 points	Alarm contact: 1 to 6 points	Pneumatic output: 20 to 100 kPa

### Digital Transmitter

DM4N series



Ex d

Model	<b>DM4N-1</b>	<b>DM4N-2</b>	<b>DM4N-3</b>
Power supply	20 to 35 V DC	85 to 264 V AC	
Function	Digital output: Level · Temperature · Alarm		
Communication	One-way communication	Two-way communication	One-way communication
Measuring range	0 to 40 m, 0 to 60 m		

**Magnet Float Type Level Transmitter**

**FP-7100 series**



<b>Model</b>		<b>FP-7100</b>
<b>Power supply</b>		24 V DC
<b>Function</b>		Level measurement, interface measurement
<b>Output</b>		4 to 20 mA DC
<b>Measuring range</b>	Min.	300 mm
	Max.	5000 mm
<b>Temperature (at the wetted parts)</b>		·SUS + 0 to 100°C ·PVC + 0 to 60°C ·PFA + 0 to 100°C
<b>Pressure</b>		1 MPa max. (0.2 MPa max. for resin)
<b>Process connection</b>		Flange: 80 mm to 200 mm (3" to 8")
<b>Wetted parts material</b>		SUS304, SUS316, SUS316L, PVC, PFA

**Magnetostrictive Level Transmitter**

**FGY1000**



<b>Model</b>		<b>FGY1000</b>
<b>Power supply</b>		24 V DC
<b>Function</b>		Level measurement, interface measurement
<b>Output</b>		4 to 20 mA DC (2-wire system)/HART (Rev.7)
<b>Measuring range</b>	Min.	250 mm
	Max.	7500 mm
<b>Temperature (at the wetted parts)</b>		·SUS: -40 to 125°C ·PVC: 0 to 60°C ·PFA: 0 to 100°C
<b>Pressure</b>		2 MPa max.
<b>Process connection</b>		Flange: 50 mm to 200 mm (2" to 8"), Ferrule: 2.5 S to 6.5 S Screw: R2, G2
<b>Wetted parts material</b>		SUS304, SUS316, SUS316L, Titanium, NW0276, PVC, PFA (tubing)

**LT-321**



<b>Model</b>		<b>LT-321</b>
<b>Power supply</b>		24 V DC
<b>Function</b>		Level measurement
<b>Output</b>		4 to 20 mA DC (4-wire system)
<b>Measuring range</b>	Min.	250 mm
	Max.	5000 mm
<b>Temperature (at the wetted parts)</b>		·SUS: -40 to 125°C ·PVC: 0 to 60°C ·PFA: 0 to 100°C
<b>Pressure</b>		2 MPa max.
<b>Process connection</b>		Flange: 50 mm to 125 mm (2" to 5")
<b>Wetted parts material</b>		SUS304, SUS316, SUS316L, PVC, PFA

**MAG GAUGE Metal Tube Type Level Meter**

**FM series**



<b>Model</b>		<b>FM-1000</b>	<b>FM-3100</b>
<b>Function</b>		·Local indication ·Alarm output ·4 to 20 mA DC ·Alarm output + 4 to 20 mA DC	·Local indication ·Alarm output
<b>Measuring range</b>	Min.	250 mm	250 mm
	Max.	0 to 4380 mm (Depends on chamber material)	2000 mm
<b>Temperature (at the wetted parts)</b>		-10 to 120°C (350°C Max.)	-10 to 120°C
<b>Pressure</b>		20 MPa max.	1 MPa max.
<b>Process connection</b>		Flange 25 mm (1") (standard)	Flange 10 mm to 25 mm (3/8" to 1")
<b>Chamber material</b>		·SUS304, SUS316, SUS316L ·PVC (HT-PVC) ·SUS + PVC lining ·SUS + ETFE lining	SUS304, SUS316, SUS316L

## Displacer Type Level Meter

### Servo-balancing Type Tank Gauge

#### FW9000NN



Ex d

Model		<b>FW9000NN</b>
Power supply		100 to 240 V AC
Function		·Digital output ·Current output
Measuring range	Min.	5 m
	Max.	60 m
Temperature (at the wetted parts)		-200 to 300°C
Pressure		·Atmospheric (Low pressure version) ·3 MPa max. (High pressure version)
Process connection		Flange: 80 mm to 150 mm (3" to 6")
Pressurized parts material	Low press. version	AC2A, SCS13, SCS14
	High press. version	SCS13, SCS14

### Torque Tube Type Level Meter

#### FST series



Ex d  
Ex i

Model		<b>FST4000</b>
Power supply		8 to 40 V DC
Function		·Level measurement ·Interface measurement ·Density measurement
Output		4 to 20 mA DC
Measuring range	Min.	300 mm
	Max.	3000 mm
Temperature (at the connect. part)		-196 to 450°C
Pressure		ASME Class 150 to 2500
Process connection		Flange: 40 mm to 100 mm (1-1/2" to 4")
Displacer material		SUS304, SUS316, SUS316L, NW0276, MONEL, PVC

### Spring-balancing Type Level Meter

#### FS series



Ex d

Model	<b>FS-110</b>	<b>FS-115</b>	<b>FS-313</b>	<b>FS-512</b>	<b>FS-517</b>
Function	·Local indication	·Local indication ·Alarm output	·Local indication ·Pneumatic output 20 to 100 kPa	·Local indication ·Current output	·Local indication ·Current output ·Alarm output
Level measurement · Interface measurement · Density measurement					
Power supply / Supply air	-	-	0.14 MPa	12 to 30 V DC	
Measuring range	Min.	300 mm			
	Max.	3000 mm			
Temperature (at the wetted parts)	-10 to 150°C (-40 to 350°C)				
Pressure	9.8 MPa max.				
Process connection	Flange: 80 mm to 125 mm (3" to 5")				
Displacer material	SUS304, SUS316, SUS316L, NW0276, PVC				

## Microwave Level Meter

#### TLR series



Ex d  
Ex i



Ex d  
Ex i



Ex d  
Ex i

Model	<b>TLR7400</b>	<b>TLR7500</b>	<b>TLR3500</b>
Measuring object	Liquid, Paste, Slurry		
Frequency band	24 GHz	80 GHz	
Output/Power supply	2-wire, 4 to 20 mA DC / 24V DC		
Measuring range	Min.	0.1 m	
	Max.	100 m	50 m
Liquid temperature	-50 to 200°C		-50 to 150°C
Pressure	· Horn antenna: 0 kPa (abs) to 4 MPa · Drop antenna: 0 kPa (abs) to 4 MPa	· Lens antenna: 0 kPa (abs) to 4 MPa	· Lens antenna: 0 kPa (abs) to 2.5 MPa
Wetted part material	SS316L: Process connection, metal horn antenna PTFE, PEEK: Drop antenna	SS316L: Process connection PEEK: Lens antenna	
Process connection	G1-1/2 Flange 40 mm to 200 mm (1-1/2" to 8")	G3/4 to G3 Flange 50 mm to 200 mm (2" to 8")	Sanitary joint: 1.5S to 2S



## Micropulse Level Meter

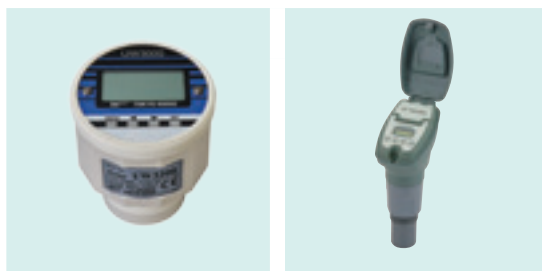
### TGR/TGF series



Model		TGR3000	TGF2200	TGR4500	TGF1100
Measuring object		Liquid, Slurry, Granules		Liquid	Liquid, Slurry, Granules
Output		4 to 20 mA DC			
Power supply		24 V DC			
Measuring range	Min.	-	<ul style="list-style-type: none"> <li>Single rod: 1 m</li> <li>Twin rod: 1 m</li> <li>Single cable: 1 m</li> <li>Twin cable: 1 m</li> <li>Coaxial: 0.6 m</li> </ul>	-	-
	Max.	<ul style="list-style-type: none"> <li>Single rod: 3 m</li> <li>Twin rod: 3 m</li> <li>Single cable: 35 m</li> <li>Twin cable: 8 m</li> <li>Coaxial: 3 m</li> </ul>	<ul style="list-style-type: none"> <li>Single rod: 6 m</li> <li>Twin rod: 3 m</li> <li>Single cable: 40 m</li> <li>Twin cable: 28 m</li> <li>Coaxial: 6 m</li> </ul>	<ul style="list-style-type: none"> <li>Single rod: 3 m</li> <li>Single cable: 24 m</li> <li>Twin cable: 24 m</li> <li>Coaxial: 3 m</li> </ul>	<ul style="list-style-type: none"> <li>Single cable: 10 m (20 m)</li> <li>Coaxial: 4 m</li> </ul>
Temperature (process)		-40 to 200°C	<ul style="list-style-type: none"> <li>Single cable: -50 to 200°C</li> <li>Others: -30 to 150°C</li> </ul>	<ul style="list-style-type: none"> <li>Single rod, Twin cable: -30 to 200°C</li> <li>Twin cable: -30 to 150°C</li> </ul>	-50 to 100°C
Pressure		0 kPa (abs) to 4 MPa		1.6 MPa max.	0 kPa (abs) to 1.6 MPa
Wetted part material		SS316L (excluding probe)		SS316	SS316L (excluding probe)
Probe material		SS316, SS316L	<ul style="list-style-type: none"> <li>SS316: Cable</li> <li>PVDF: Single rod sheath</li> <li>SS316L: Rod, Coaxial</li> <li>Hastelloy C-22: Single cable, Coaxial</li> </ul>	SS316	SS316, SS316L
Process connection		G 3/4 to 1-1/2, 3/4 to 1-1/2 NPT Flange: 40 mm to 100 mm (1-1/2" to 4")	G 1/2 to 1-1/2, 1/2 to 1-1/2 NPT Flange 40 mm to 200 mm (1-1/2" to 8")	G 1 to 1-1/2 1 to 1-1/2 NPT	G 3/4 to 1, 3/4 to 1 NPT

## Ultrasonic Level Meter

### UW series



Model	UW3200	UW5000
Measuring object	Liquid, Slurry	Liquid, Slurry, Powder, Granule, Gravel
Power supply	12 to 24 V DC	100 to 240 V AC
Output	4 to 20 mA DC	4 to 20 mA DC
Measuring range	0.3 to 10 m	0 to 5 m (min.) 0 to 60 m (max.)

## Purge Type Level Meter

### CP series Purge



Model	CP-22-100-B
Supply fluid	Air, N <sub>2</sub>
Supply pressure	0.3 to 0.99 MPa
Standard flow range	0 to 1.2 L/min (std) (20°C, 1 atm)
Mounting type	<ul style="list-style-type: none"> <li>Panel mount type</li> <li>U-bolt mount type</li> <li>Box type</li> <li>Dual type</li> </ul>
Panel material	Sheet steel, SUS304

### PGT Bubbler tube



Model	PGT
Measuring object	Liquid
Max. measuring length	<ul style="list-style-type: none"> <li>Stainless st.: 16000 mm</li> <li>PVC: 4000 mm</li> </ul>
Process connection	<ul style="list-style-type: none"> <li>Fixed flange: 10 mm to 25 mm JIS10K</li> <li>Sliding flange: 15 mm to 40 mm JIS10K</li> </ul>
Purge connection	Rc 1/4
Material	SUS304, SUS316 PVC

## Level Switch

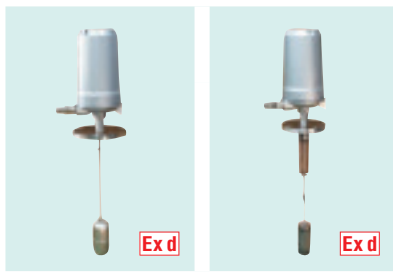
### Float Type / Displacer Type Level Switch

#### FP-4000 series



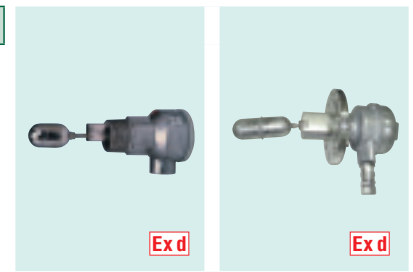
Model	<b>FP-4000</b>	<b>FP-4100</b>	<b>FP-4200</b>
Alarm	1 to 5 points	1 to 6 points	
Max. length of guide pipe	·4.9 m for stainless steel model ·3.9 m for Ex-proof model and resin model		
Contact switch	Reed switch		
Temperature (at the wetted parts)	0 to 60°C (-20 to 150°C)		0 to 60°C (-5 to 80°C)
Pressure	0.66 MPa max.		0.13 MPa max.
Process connection	Flange 50 mm (2")		Flange 80 mm (3")
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	<b>FR-6000</b>	<b>FS-100</b>
Alarm	1 point	1, 2, 3 or 4 points
Contact switch	Micro switch	Micro switch
Temperature (at the wetted parts, for stainless steel model)	-25 to +400°C	-60 to +400°C
Pressure	up to JIS20K, ASME300	4.9 MPa max.
Process connection	Flange 100 mm (4")	Flange 80 mm to 150 mm (3" to 8")
Float material	SUS304, SUS316, SUS316L	SUS316, SUS316L, TP340

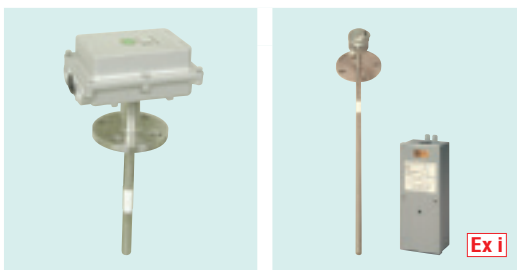
#### FB series



	Float type	Float type
Model	<b>FB-5000</b>	<b>FB-7000</b>
Alarm	1 point	1 point
Contact switch	Reed switch	Micro switch
Temperature (at the wetted parts)	-5 to +90°C	-170 to +400°C
Pressure	2 MPa max.	4 MPa max.
Process connection	R 1-1/2 Flange 40 mm (1-1/2")	Flange 80 mm (3")
Float material	SUS316	SUS316L

### Capacitance Type Level Switch

#### CA-1000 series



	<b>CA-1000</b>	<b>CA-1000S</b>
Model		
Alarm	1 point	
Temperature (at the wetted parts)	-10 to 80°C (-10 to 300°C)	
Pressure	1 MPa max.	
Process connection	Flange: 25mm (1")	
Probe material	SUS304, SUS316, SUS316L	

### Relay Driver

#### RD series



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

## Peripheral Instruments for Tank Gauging System

### Receiver for Digital Tank Gauging System

#### CATAMS® series NMR series



Model	CATAMS	NMR5000	IFX30000	DIR-530
Function	Tank data monitoring software	Tank Data Receiver	Interface unit	Tank data receiver
Main display mode	<ul style="list-style-type: none"> <li>·Calibration with 12 different screens</li> <li>·Real-time tank data</li> <li>·Data after loading/unloading</li> <li>·Data of all tanks</li> <li>·Liquid level in the bar graph</li> <li>·Data history</li> <li>·Error codes and details</li> <li>·Alarm record</li> <li>·Others</li> </ul>	<ul style="list-style-type: none"> <li>·Main menu</li> <li>·One tank</li> <li>·Tank lists</li> <li>·Tank status</li> <li>·Tank graphs</li> <li>·History</li> <li>·Slot status</li> </ul>	-	<ul style="list-style-type: none"> <li>·For constant monitoring of a single tank</li> <li>·For small tank yards with a few tanks</li> <li>·Interface for host systems</li> </ul>
Power supply	Depending on PC specifications	100 to 240 V AC	24 V DC	85 to 250 V AC
Host interface	<ul style="list-style-type: none"> <li>·LAN</li> <li>·RS-232C</li> <li>·Others</li> </ul>	<ul style="list-style-type: none"> <li>·LAN</li> <li>·RS-232C</li> <li>·Others</li> </ul>	<ul style="list-style-type: none"> <li>·LAN</li> <li>·RS-232C</li> <li>·RS-485</li> <li>·USB Type-C</li> </ul>	<ul style="list-style-type: none"> <li>·RS-232C</li> <li>·RS-485 Others</li> </ul>
Number of transmitters	-	<ul style="list-style-type: none"> <li>·Max. 256 transmitters (2 way)</li> <li>·Max. 128 transmitters (1 way)</li> </ul>	<ul style="list-style-type: none"> <li>·Max. 32 transmitters (2 way)</li> <li>·Max. 16 transmitters (1 way)</li> </ul>	<ul style="list-style-type: none"> <li>·Max. 16 transmitters (2 way)</li> <li>·Max. 4 transmitters (1 way)</li> </ul>
Communication	-	<ul style="list-style-type: none"> <li>·Max. 160 transmitters (communication with third-party products)</li> </ul>	<ul style="list-style-type: none"> <li>·Max. 20 transmitters (communication with third-party products)</li> </ul>	

### Tank-side Indicator

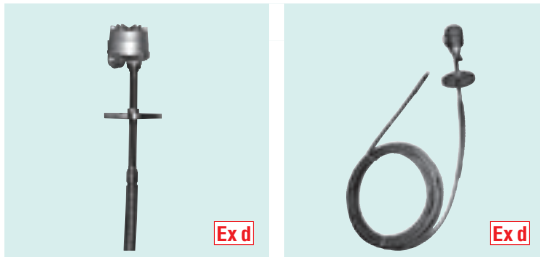
#### DIR series



Model	<b>DIR-110NN</b>
Function	Tank-side indication
Indication	<ul style="list-style-type: none"> <li>·Liquid level</li> <li>·Temperature</li> <li>·Other statuses</li> </ul>
Power supply	100 to 240 V AC
Output	Relay contact (6 points)
Applicable tank gauge	FW9000NN

### Temperature Sensor for Tanks

#### AT series



Model	ATM	ATS
Function	Averaging temperature sensor	Multi-spot type averaging temperature sensor
Measuring range	0 to 100°C	
Probe length	30 m max.	
Number of elements	16 max.	
Process connection	Flange: 40 mm to 100 mm (1-1/2" to 4")	

## MICROCELL Weight Measurement System

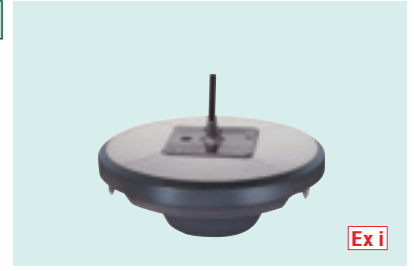
### SVS series



Model	<b>SVS2000</b>
Measuring method	MICROCELL
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

## Oil Leak Detector

### CSR series



Model	<b>CSR-3005/AS-40</b>
Measuring method	Capacitance type
Measuring object	Floated oil
Power supply	100 / 200 V AC
Output	Contact output
Measuring range	3 to 5 mm oil layer

## Level Gauge for LNG Tanks

### Servo-balancing Type Tank Gauge

#### FW9000NN series



Model	<b>FW9000NN</b>	
Power supply	100 to 240 V AC	
Output	·Digital output ·Current output	
Measuring range	Min.	5 m
	Max.	60 m
Temperature (at the wetted parts)	-200 to 300°C	
Pressure	·Atmospheric (Low pressure version) ·3 MPa max. (High pressure version)	
Process connection	Flange: 80 mm to 150 mm (3" to 6")	
Pressurized parts material	SCS13, SCS14	

#### FW-2200 series



Model	<b>FW-2200</b>	
Power supply	100 V AC (standard)	
Output	Digital output	
Measuring range	Min.	30 m
	Max.	60 m
Temperature (at the wetted parts)	-200 to 80°C	
Pressure	2 MPa max.	
Process connection	Flange: 40 mm (1-1/2")	
Pressurized parts material	SCS13, SCS14	

## Density Meter

### LNG/LPG Density meter



Model	<b>01146</b>
Power supply	85 to 240 V AC
Output	RS485 / 20 mA loop (Modbus protocol)
Measuring range	·Density measurement: 400 to 1000 kg/m <sup>3</sup> ·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 max.
Process connection	6" ASME 150
Sensor head material	316L SS

## Marine Use Tank Gauging Systems

### Magnetic Float Type Level Gauge

#### SPT series



Ex i



Ex i

Model	SPT3500N	SPT7200N
Measuring method	·Level: Magnetic float (Hall IC) ·Temperature: Pt 1000 RTD (max. 3 points) ·Pressure: Ceramic sensor	·Level: Magnetic float (reed switch) ·Temperature: Pt 100 RTD (max. 2 points)
Measuring object	Level, temperature, and pressure of liquid cargo	Level and temperature of liquid cargo
Indication	2-Line LCD with backlight (Separate indicator is available)	-
Output	2-wire system for power supply and serial BCD signal	Resistance output
Measuring range	·Level: 35 m max. ·Temperature: -25 to 115°C ·Pressure: 80 to 200 kPa	·Level: 30 m max. ·Temperature: -25 to 125°C
Accuracy	·Level: ±20 mm (standard) or ±10 mm (precision type) ·Temperature: ±1.5°C ·Pressure: ±0.5% F.S.	·Level: ±1% F.S. ·Temperature: ±2°C
Standard material	·Guide pipe: SUS304 ·Flange: SUS304 ·Float: SUS316L	·Guide pipe: SUS304 ·Flange: SUS304 ·Float: SUS316L
Optional material	·Guide pipe: SUS316 / SUS316L ·Flange: SUS316 / SUS316L ·Float: TP340 (LPG specification)	·Guide pipe: SUS316, SUS316L ·Flange: SUS316, SUS316L
Explosion proof	EX ia IIC T6...T4	Ex ia IIC T6 ... T4 Ga Ex ia IIIC T80°C, T150°C, T200°C Da

### Radar Level Gauge

#### TA series



Model	TA840
Method	Radar
Measuring range	0.5 to 42 m
Resolution	0.1 mm
Accuracy	± 10 mm
Application	For cargo tank
Communication	RS485
Standard material	SUS316L
Explosion proof	Intrinsically safe (ATEX)

### High-level Alarming Device

#### FP/MIA series



Ex i



Ex i

Model	FP-7091	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)	
Accuracy	± 10 mm	± 10 mm
Application	·Cargo ·Slop and fuel tanks ·Bilge alarm etc.	Cargo tank etc.
Power supply	-	24 V DC (2-wire)
Standard material	·Float: SUS316 ·Guide pipe: SUS304, SUS316 SUS316L	·Sensor: SUS316L ·Support: SUS304, SUS316, SUS316L
Construction	·Non-explosion-proof (IP65) ·Intrinsically safe (Ex ia IIC T6)	·Non-explosion-proof (Equivalent IP66) ·Intrinsically safe (Ex ia IIC T6)

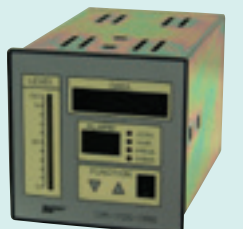
Instrument for Control Rooms

Super DIR series Receiver



Model	<b>Super DIR-M3200</b>	<b>Super DIR-M8000</b>	<b>CALTIS II Windows</b>
LCD display	10.4" touch panel	·10.4" touch panel ·19" touch panel	Delivery: ·Pre-installed PC (or CD-ROM for software only)
Power supply	24VDC		Your computer specification
Max. number of input sensors	32 units (up to 16 units in case of including 4 to 20 mA sensors)	80 units (32 units of SPT-3500 + 48 units of other sensors)	·Super DIR-M3200/M8000 series
Connecting instrument (input)	<ul style="list-style-type: none"> <li>·SP (T) 3500N</li> <li>·SP (T) 7200N</li> <li>·TA840</li> <li>·Others: 4 to 20 mA level, temperature, and pressure sensors, etc.</li> </ul>		
Connecting instrument (output)	<ul style="list-style-type: none"> <li>·DIR-700-DB II</li> <li>·Serial communication RS232C/RS485</li> <li>·Ethernet (LAN) communication</li> </ul>		<ul style="list-style-type: none"> <li>·Serial communication RS232C/RS485</li> <li>·Ethernet (LAN) communication</li> </ul>

TAN series DIR series



Model	<b>TAN-M1600-RP</b>	<b>DIR-700-DB II</b>
Function	Annunciator unit	Multi-monitor 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 (Indication selectable: level, temperature and pressure) ·Alarm status ·Error
Number of input	16 Max.	-
Input signal	<ul style="list-style-type: none"> <li>·Non-voltage contact</li> <li>·Open collector contact</li> </ul>	RS232C (from Super DIR-M3200 / M8000 series)

# RELATED INSTRUMENTS





## Level Transmitter

### FCX-AIII series



Ex d  
Ex i

Model		<b>FKE</b>
Measuring object		Liquid
Function		·Local indication ·4 to 20 mA (2-wire)
Measuring range	Min.	0.32 kPa
	Max.	500 kPa
Process connection		Flange: 40 to 100 mm (1-1/2" to 4")
Standard material		SUS316

## Differential Pressure / Pressure Transmitter

### FCX-A III series



Ex d  
Ex i



Ex d  
Ex i



Ex d  
Ex i

Model		<b>FKC</b>	<b>FKG</b>	<b>FKD</b>
Measuring object		Liquid, Gas, Steam	Liquid, Gas, Steam	Liquid, Gas, Steam
Function		·Local indication ·Current output	·Local indication ·Current output	·Local indication ·Current output
Measuring range	Min.	0.1 kPa	1.3 kPa	0.32 kPa
	Max.	3000 kPa	50000 kPa	500 kPa
Process connection		Rc 1/4	Rc 1/4	Flange: 15 to 100 mm (1/2" to 4")
Standard material		SUS316	SUS316	SUS316

### DT series



Model		<b>DT</b>
Measuring object		Liquid, Gas
Function		·Local indication ·Current output ·Pulse output
Measuring range	Min.	1 kPa
	Max.	50 kPa
Process connection		Rc 1/4
Standard material		SUS316

## Receiver

### IR/RR series



Model	<b>IR4600</b>	<b>IR-6000</b>	<b>IR1700</b>	<b>RR930N</b>	<b>RR940N</b>
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 / Indication	·Flow rate ·Totalizer	·Flow rate ·Totalizer	·Flow rate ·Totalizer	·Flow rate ·Totalizer	·Flow rate ·Totalizer
Input	·Open collector pulse ·4 to 20 mA DC ·1 to 5 V DC ·0 to 5 V DC (optional) ·Voltage pulse ·Square root extraction function	·Open collector pulse ·4 to 20 mA DC ·1 to 5 V DC ·0 to 5 V DC (optional) ·Voltage pulse	·Open collector pulse ·Voltage pulse	·Open collector pulse	·Open collector pulse
Output	·4 to 20 mA DC ·Pulse ·Alarm	·4 to 20 mA DC ·Pulse ·Alarm	·4 to 20 mA DC ·1c contact relay output (optional) ·Alarm output (flow rate/totalizer)	Re-output of pulse	Selectable from 4 to 20 mA DC or Voltage pulse
Power supply for the sensor	24 V DC	24 V DC	12 V DC	12 V DC	12 V DC

# Products

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## Flow Measurement and Control Instruments

- Metal tube variable area flowmeter
- Purgemeter
- Flow switch / Flow monitor
- Ultrasonic flowmeter
- Coriolis mass flowmeter
- Thermal flowmeter
- Turbine flowmeter
- Constant flow valve
- Flow measurement system for automobile bench test
- Direct reading type variable area flowmeter
- Purge set
- Differential pressure flowmeter (Orifice type, V-Cone)
- Electromagnetic flowmeter
- Vortex flowmeter
- Thermal mass flowmeter/controller
- Flowmeter for air conditioning
- Sight glass

## Level Measurement and Control Instruments

- Float-tape type level meter
- Magnetostrictive level transmitter
- Torque tube type level meter
- Purge type level meter
- Microwave level meter
- Ultrasonic level meter
- Tank gauging system
- Magnet float type level meter
- Metal tube type level meter
- Servo-balancing displacer type level gauge
- Spring-balancing displacer type level meter
- Micro pulse meter
- Level switch
- Marine cargo monitoring system

## Related instruments

- Pressure transmitter
- Level transmitter
- Differential pressure transmitter
- Receiver

\* Specification is subject to change without notice.

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