NITTOSEIKO

FLOW METERS

PRODUCTS GUIDE

NITTOSEIKO CO.,LTD.

Control System Division

30 Nogamibata, Nobu-Cho, Ayabe, Kyoto
623-0041, JAPAN
TEL : +81-773-42-3151
E-mail:sales@nittoseiko.co.jp

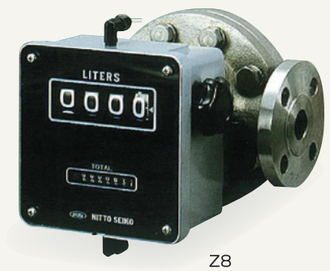
URL : https://www.nittoseiko.co.jp/en.html

Wide range high-precise flow meters which are needed in every industries.

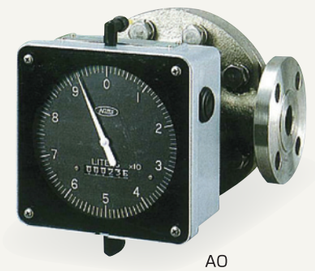
Since 1949, when NITTOSEIKO started the manufacture and sales of water meters, our accumulated precision processing technologies and measurement Know-How brings various kind of flow meters into the world. Presently, we have wide range line-up of sophisticated equipment in order to meets strict demand from every industries. Furthermore, we focus to development of application, and we realize high-systemization by combination of accessories. We, NITTOSEIKO apply to your every inquiries about fluid measurement and control.

Flow meter for liquid whith excellent durability and simple structure

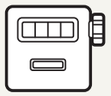
Rotary Flow Meter type RS



Z8


A0

Kind of counter unit


Z8
Zero resettable type


A0
Pointer type


IO
Instantaneous flow rate type


CN
Pneumatic batch counter type

Specification *( )is for special specification

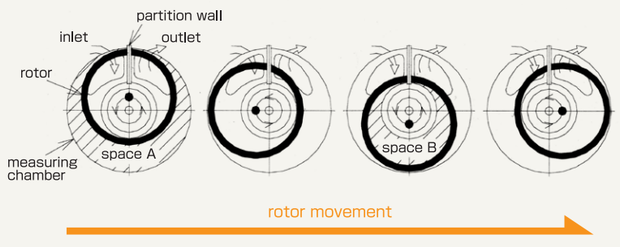
Measured liquid	Chemical liquid, Edible liquid, Petroleum, Water, Etc.
Nominal size	25A, 40A, 50A, 80A, 100A
Liquid viscosity	0.5～500mPa·s(0.2～30,000mPa·s)
Liquid temperature	0～200℃ (Only for stainless steel material -20～200℃)
Liquid pressure	2.0MPa or under
Accuracy	Within ±0.5% (Within ±0.2%)
Connection	JIS10K, JIS20K, ANSI, and others.
Material	FC200／CAC406, FC200／FC200 FC200／SCS14,SCS14／SCS14
Flow range	170～50,000L／h
Explosion proof	Flameproof enclosure ExdⅡBT4
Output	Pulse output

Feature

- Ceramics material is used in wetted parts as a standard. Excellent durability.
- Special plastic material for rotor makes high chemical resistance and abrasion resistance.
- Low pressure loss, and available for measuring high viscosity liquid.
- Less affected from temperature and viscosity enables keeping good accuracy.
- Large register and easy to read.
- Variety of pulse signal makes expansion easy.

Principle

Rotor rotates by a pressure from the liquid which comes from inlet, and push out liquid filled in the measuring chamber to outlet.
Space A and B in the measuring chamber become a "Measuring volume" and measures a flow by multiplying number of rotor's rotation and measuring volume.



Flow meter equipped with electronic indication on measuring part of simple structure rotary piston flow meter.

Super Rotary Flow Meter type RQ

Main purpose

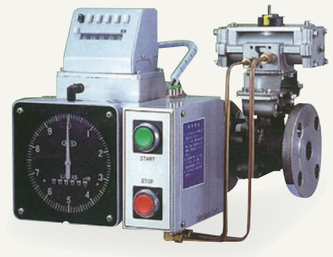
- Control and management of various kind of liquid such as edible liquid chemical liquid and so on.

Specification *( )is for special specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	25A, 40A, 50A, 80A, 100A
Liquid viscosity	0.5～500mPa·s(0.2～30,000mPa·s)
Liquid temperature	0～200℃(Only for stainless steel material -10～200℃)
Liquid pressure	2.0MPa or under
Accuracy	Within ±0.2% (Within ±0.5%)
Flow range	200～50,000L／h(40～50,000L/h)
Explosion proof	Field indication type : Intrinsic safety ExiaⅡBT4 Output type : Flameproof enclosure ExdⅡBT4X
Output	Pulse·alarm output／analog output

Easily available for field batch control by combination of mechanical preset counter and pneumatic valve.

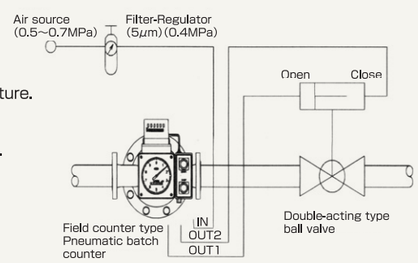
Field counter type Pneumatic Batch Counter type RSCN



Feature

- Do not need any electric power but only need air source.
- Safety use in hazardous area where need explosion proof structure.
- Easy operation by push-button.
- Low air consumption. Economical.
- Variety of pulse signal makes expansion easy.

*Ball valve is sold separately. Available for connecting both single-acting type and double-acting type.



Rotary piston type flow meter which is less affected from temperature and viscosity

Small Size Rotary Flow Meter type R

Main purpose

- Control and management of various kind of liquid such as edible liquid chemical liquid and so on.

Specification *( )is for special specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	20A,25A
Liquid viscosity	0.5～500mPa·s(500～30,000mPa·s)
Liquid temperature	0～200℃(Only for stainless steel material -20～200℃)
Liquid pressure	2.0MPa or under
Accuracy	Within ±0.5%
Material	FC200／CAC406, FC200／FC200 FC200／SCS14, SCS14／SCS14
Flow range	5～1,600L／h
Explosion proof	Flameproof enclosure d2G4(Reed switch pulser only)
Output	Pulse output

High precise flow meter suitable for small flow rate.

Micro Flow Meter NICO FLOW

type NH

Main purpose

- High precision measurement and batch control of small flow rate.
- Process control of additive, and mixing flow control in chemical plant.

Specification *( )is for special specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	1/4B, 1/2B, 15A, 20A
Liquid viscosity	0.4～100mPa·s(100mPa.s and over)
Liquid temperature	-5～80℃(-5～120℃)
Liquid pressure	1.0MPa or under(1.0～21MPa)
Accuracy	Within ±0.75%
Material	SCS14, SUS316, PVC
Flow range	0.5～600L／h
Explosion proof	Flameproof enclosure ExdⅡBT4X
Output	Pulse output

Micro flow meter equipped electronic indication on the measuring part of Nico Flow.

Electronic flow meter for small flow rate NICO EYE

type NE

Main purpose

- High precision measurement and batch control of small flow rate.
- Process control of additive, and mixing flow control in chemical plant.

Specification *( )is for special specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	1/4B, 1/2B, 15A, 20A
Liquid viscosity	0.4～100mPa·s(100mPa.s and over)
Liquid temperature	-5～80℃
Liquid pressure	1.0MPa or under(1.0～6.3MPa)
Accuracy	Within ±0.75%
Material	SCS14, SUS316
Flow range	1～600L／h
Output	Pulse·alarm output／analog output

Micro flow meter equipped explosion proof type electronic indication.

Explosion-proof type NICO EYE

type NQ

Main purpose

- Process control of additive, and mixing flow control in chemical plant.

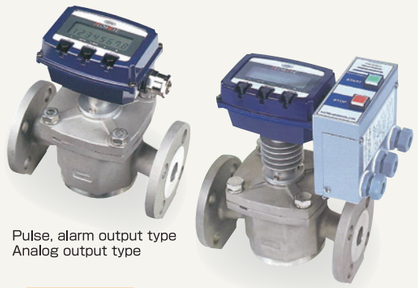
Specification *( )is for special specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	1/4B, 1/2B, 15A, 20A
Liquid viscosity	0.4～100mPa·s(100mPa.s and over)
Liquid temperature	-5～120℃
Liquid pressure	1.0MPa or under
Accuracy	Within ±0.75%
Material	SCS14, SUS316
Flow range	1～600L／h
Explosion proof	Flameproof enclosure ExdⅡBT4
Output	Pulse·alarm output／analog output

Rotary piston type flow meter equipped with electronic indication.

Electronic Positive Displacement Flow Meter FLOW EYE

type FE



Main purpose

- Control and management of various kind of liquid such as edible liquid chemical liquid and so on.

Specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum, Water, Etc.
Nominal size	20A, 25A, 40A
Liquid viscosity	0.5～10,000mPa·s
Liquid temperature	-10～80℃
Liquid pressure	1.0MPa or under
Accuracy	Within ±0.5%
Material	SCS14
Flow range	1～6,500L／h
Output	Pulse·alarm output／analog output

Positive displacement flow meter equipped explosion proof type electronic indication.

Explosion-proof type FLOW EYE

type FQ

Main purpose

- Control and management of various kind of liquid such as edible liquid chemical liquid and so on.

Specification

Measured liquid	Chemical liquid, Edible liquid, Petroleum,Water, Etc.
Nominal size	20A, 25A, 40A
Liquid viscosity	0.5～10,000mPa·s
Liquid temperature	-10～80℃
Liquid pressure	1.0MPa or under
Accuracy	Within ±0.5%
Material	SCS14
Flow range	1～6,500L／h
Explosion proof	Flameproof enclosure ExdⅡBT4
Output	Pulse·alarm output／analog output

Flow meter for high-pressure liquid which is eliminated tooth gear structure in the counter unit, directly outputs pulse signal from rotor sensor.

Flow meter for high pressure

type RH2P

Main purpose

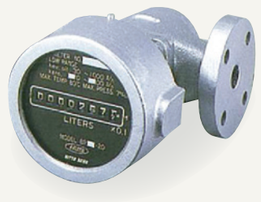
- Control of Hydraulic, Foaming, Paint line.

Specification *( )is for special specification

Measured liquid	Kind of oil such as hydraulic oil, Paint, etc.
Nominal size	20A, 25A, 40A
Liquid viscosity	2～5,000mPa·s(5,000mPa·s and over)
Liquid temperature	-5～120℃
Liquid pressure	21.0MPa or under
Accuracy	Within ±0.5%
Material	S45C
Flow range	15～6,000L／h
Output	Pulse output

Rotary piston flow meter realized Small size, Light weight, and Easy to use.

Oil Meter type BR



Main purpose

- Fuel control of small size boiler, burner, central-heating etc.

Specification

Measured liquid	Kerosene, Light oil, Heavy oil A/B/C
Nominal size	15A, 20A, 25A
Liquid viscosity	2～500mPa·s
Liquid temperature	0～120℃
Liquid pressure	1.0MPa or under
Accuracy	Within ±0.5%
Material	FC200
Flow range	10～2,500L／h
Output	Pulse output (1L／P)

Rotary piston type flow meter with LCD indication which is realized smaller size and lower cost.

Micro Oil Meter type RE

Main purpose

- Control of oil.

Specification

Measured liquid	Kerosene, Light oil, Heavy oil and other kind of oil.
Nominal size	G3／8
Liquid temperature	Unit type：-10～55℃, Separate type：-10～120℃
Liquid pressure	0.7MPa or under
Accuracy	Within ±1.0%
Material	ADC
Flow range	2～250L／h
Output	Pulse output (0.01L／P)

Large volume type positive displacement type flow meter applied outer-cam type slide vane.

Slide Vane Flow Meter type SS

Main purpose

- Control and management of many industries such as Petroleum refining, Chemical, Food, Power, Vessel and so on.

Specification *( )is for special specification

Measured liquid	Chemical liquid, Petroleum, Water, Etc.
Nominal size	80A, 100A, 150A
Liquid viscosity	0.4～500mPa·s
Liquid temperature	0～120℃(Only for stainless steel material -10～120℃)
Liquid pressure	2.0MPa or under
Accuracy	Within ±0.5% (Within ±0.2%)
Material	FC200, SCS13
Flow range	3～200m³／h
Explosion proof	Flameproof enclosure ExdIIBT4
Output	Pulse output

Flow meter for oil equipped with electric indication.

Electonic Flow Meter for Oil OIL EYE type OE

Main purpose

- Control and measurement for Boiler feed oil, fuel oil, and Non-corrosive Mid. To High viscosity liquid.

Specification *( )is for special specification

Measured liquid	Kerosene, Light oil, Heavy oil A／B／C, Non-corrosive Mid. To High viscosity liquid.
Nominal size	15A, 20A, 25A, 40A
Liquid viscosity	2～1000mPa·s
Liquid temperature	0～80℃(0～120℃)
Liquid pressure	1.0MPa or under
Accuracy	Within ±0.5%
Material	FC200
Flow range	10～6,000L／h
Output	Pulse·alarm output／analog output

High accuracy positive displacement flow meter which is realized sanitation structure required as flow meter for edible liquid.

Food Flow Meter type FS FSE0

Main purpose

- Control and measurement for Raw milk, Probiotics drinks, Alcohol, Juice, Syrup.
- Control and management of Loading, Unloading, Filling, Proportional mixing.

Specification *( )is for special specification

Measured liquid	Edible liquid.
Nominal size	25A, 40A, 50A, 65A, 80A
Liquid viscosity	1～500mPa·s(1～30,000mPa·s)
Liquid temperature	0～80℃
Liquid pressure	0.5MPa or under
Accuracy	Within ±0.5%
Material	SCS13, SCS14
Flow range	170～50,000L／h
Output	Pulse output

TOPICS

Technical data 01

Viscosity unit conversion table

*There is Viscosity and Kinematic viscosity. Kinematic viscosity is viscosity divided by density.

[Viscosity]

			Pa·s	P	cP	kg/m·s	lb/ft·s
1	Pa·s	=	1	1×10	1×10^{3}	1	6.72×10^{-1}
1	P	=	1×10^{-1}	1	1×10^{2}	1×10^{-1}	6.72×10^{-2}
1	cP	=	1×10^{-3}	1×10^{-2}	1	1×10^{-3}	6.72×10^{-4}
1	kg/m·s	=	1	1×10	1×10^{3}	1	6.72×10^{-1}
1	lb/ft·s	=	1.488	1.488×10	1.488×10^{3}	1.488	1

[Kinematic viscosity]

			m²/s	cm²/s	St	cSt	ft²/s
1	m²/s	=	1	1×10^{4}	1×10^{4}	1×10^{6}	1.076×10
1	cm²/s	=	1×10^{-4}	1	1	1×10^{2}	1.076×10^{-3}
1	St	=	1×10^{-4}	1	1	1×10^{2}	1.076×10^{-3}
1	cSt	=	1×10^{-6}	1×10^{-2}	1×10^{-2}	1	1.076×10^{-5}
1	ft²/s	=	9.29×10^{-1}	9.29×10^{2}	9.29×10^{2}	9.29×10^{4}	1

It detects phase difference between tubes occurred by Coriolis force, and measure mass flow directly.

Mass flow meter CLEAN FLOW type FB

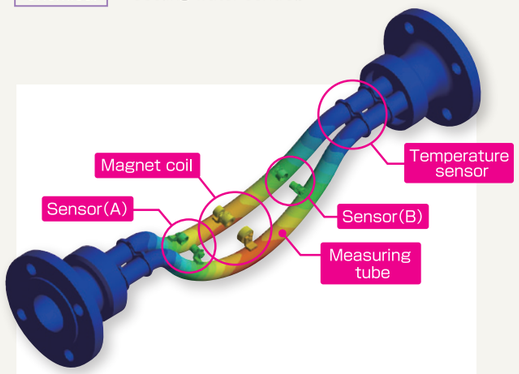

Unit type


Remote type sensor


Remote type transmitter

Main purpose

Chemical, Food	●Accurate measurement of pure water. ●For filling or blending. ●Concentration management of ingredients and products. ●Organic waste water control.
Ship, Port	●Fuel consumption measurement. ●Loading or discharging cargo oil. ●Cappuccino-effect bunkering measures. ●Feed water and oil for boiler.
Car	●Filling engine oil. ●Paint or coating control. ●Various inspection machine. ●Coolant injection.
Energy Petroleum, Chemical	●Chemical liquid injection. ●Fuel oil receiving. ●Mixing lubricant oil, or asphalt. ●Cooling water control.



"Minimized measuring tube" and "High rigidity housing" make the component which resist high vibration.
It realizes excellent zero stability and temperature stability.

Vibration range
Large — Small

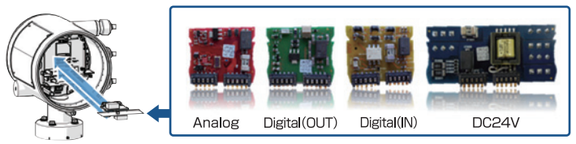
Sensor specification

Measured fluid	Liquid, Gas
Nominal size	10A, 15A, 20A, 25A, 40A, 50A, 65A, 80A, 100A, 150A, 200A
Meter size	015, 025, 050, 080, 100, 150
Connection	JIS10K, 20K ASME/ANSI 150, 300, 600 JPI 150, 300, 600 DIN PN16, 40, 63 Ferrule
Flow range	0~860,000kg/h (6 Type)
Accuracy	Flow rate : General type ±0.4%, High accuracy type ±0.15% Density : General type 0.010kg/L, High accuracy type 0.002kg/L
Temperature	General type : -50~160℃ High accuracy type : -50~205℃ Explosion-proof type is depending on the specification
Pressure	Depending on the connection end
Wetted parts material	SUS316L, alloy C(Option)
Explosion-proof	Japanese certification body(CML), ATEX／IECEx, cFMus

Transmitter specification

Power	100~240VAC,50/60Hz 11~30VDC
Power consumption	20W
Degree of protection	IP65／IP67, NEMA 4X
Housing material	Aluminum Stainless (Remote type : Option)
Output	Analog : 4~20mADC Digital : 2(Pulse or status output) HART
Transmission distance	200m max.(Remote type)

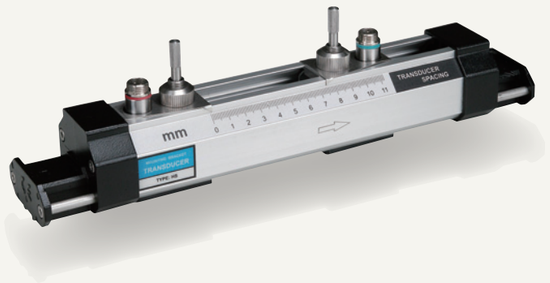
Optional plug-in card makes easy to add the additional output.




Various indication contents with back-light. Easy operation and setting by touch sensor.

Clamp-on type ultrasonic flow meter which can measure the flow from outside of pipe.

Clamp on type Ultrasonic Flow Meter type NU2



Main purpose

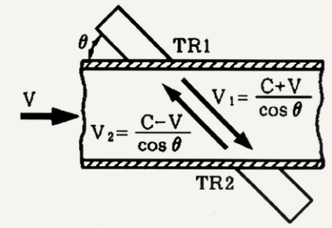
- Management of tap water, industrial water, and agricultural water.
- Operation check of existing flow meter.
- Control circulating water of combined heat power.
- Measure a heat/cold water line of air conditioning.

Specification

Measured liquid	Homogeneity liquid of which ultrasonic can propagate. Water, Sea water, Industrial water, kind of oil, Acid, Alkali, Alcohol, etc
Nominal size	15A~600A
Turbidity	10,000ppm or under
Liquid temperature	-30~90℃(For high temperature liquid -30~160℃)
Accuracy	±2.0% of reading (In case of lower than 2m/sec flow speed, ±0.04m/sec)
Flow range	0~±10m/s
Output	Pulse output／analog output

Principle

This is applied propagation time difference method. Transducers installed to the upstream and downstream output ultrasonic to forward direction and reverse direction. At this moment, flow velocity "V" is calculated from propagation time difference, and convert to flow volume "Q".
There is not a wetted parts because of measuring from outside of pipe so that it can measure wide variety of liquid without care about corrosion and pressure drop.



Apply to respective measurement application.

Handheld type

Handheld type which is realized space save and light weight (less than 500g) save of transmitter makes good portability and easy operation.
Chargeable battery enable it to operate 10 hours duration. It is suitable for checking temporary flow inspection or checking existing flow meter performance in the facility.

DIN rail mount type

It is available to installing on the DIN rail as well as other equipment. Back face plate makes it install to control box free of position.

Impeller type flow meter realized weight and space saving despite built-in strainer.

Water supply Flow Meter type B-F

Main purpose

- Control of Boiler feed water, chemical/water treatment plant, hot/cold industrial water.

Specification

Measured liquid	Water, Hot water, high-temperature water, etc.
Nominal size	20A, 25A, 40A, 50A
Liquid viscosity	1mPa·s
Liquid temperature	General type : 0～110℃, High-temperature type : 110～200℃
Liquid pressure	2.0MPa or under
Accuracy	Within ±1.0%
Material	FCD450／CAC406, FCD450／SCS13 SCS13／SCS13
Flow range	0.3～25m³／h
Output	Pulse output

Axial flow type turbine flow meter with high durability, good maintainability, and numerous sales result.

Turbine Flow Meter type K

Main purpose

- Management of plant water such as water source, industrial water, ground water, and waste water.
- Wide application of water management such as building air conditioning.

Specification

Measured liquid	Water, Industrial water, Ground water, Hot water, Waste water.
Nominal size	50A, 80A, 100A, 125A, 150A, 200A, 250A, 300A, 350A
Liquid viscosity	1mPa·s
Liquid temperature	0～150℃
Liquid pressure	2.0MPa or under
Accuracy	Within ±2.0%
Material	FC200／CAC406, FC200／SCS13, SCS13／SCS13
Flow range	4～1,000m³／h
Output	Pulse output

Axial flow type turbine flow meter which is strong corrosion resistance by using fluororesin and ceramics for wetted parts.

Acid-proof Turbine Flow Meter type CT4

Main purpose

- Control and management of strong corrosive liquid or pure water.

Specification

Measured liquid	Strong corrosive liquid, Pure water.
Nominal size	20A, 25A, 40A, 50A
Liquid viscosity	0.3～10mPa·s
Liquid temperature	0～80℃
Liquid pressure	0.7MPa or under
Accuracy	Within ±0.5%
Material	Fluororesin
Flow range	350～25,000L／h
Output	Pulse output

Flow meter for water equipped with electronic indication onto the impeller type flow meter.

Electronic Flow Meter for Water AQUA EYE type AE

Main purpose

- Control of Boiler feed water, chemical/water treatment plant, hot/cold industrial water.

Specification

Measured liquid	Water, Hot water, etc.
Nominal size	25A, 40A, 50A
Liquid viscosity	1mPa·s
Liquid temperature	0～80℃, High temperature type 110℃
Liquid pressure	2.0MPa or under
Accuracy	Within ±1.0%
Material	FCD450／CAC406, FCD450／SCS13 SCS13／SCS13
Flow range	0.5～25m³／h
Output	Pulse·alarm output／analog output

Turbine flow meter equipped with electronic indication so that it enable various kind of indication and output.

Electronic Turbine Flow Meter type KQ

Main purpose

- Control of Boiler feed water, chemical/water treatment plant, hot/cold industrial water.

Specification

Measured liquid	Water, Industrial water, Ground water, Hot water, Waste water
Nominal size	50A, 80A, 100A, 125A, 150A, 200A, 250A, 300A
Liquid viscosity	1mPa·s
Liquid temperature	0～150℃
Liquid pressure	2.0MPa or under
Accuracy	Within ±2.0%
Material	FC200／CAC406, FC200／SCS13, SCS13／SCS13
Flow range	4～800m³／h
Output	Pulse·alarm output／analog output

TOPICS

Technical data 02

Pressure unit conversion table

			Pa	MPa	bar	kgf/cm²	mmH₂O	mmHg (Torr)	lbf/in² (psi)
1	Pa	=	1	1×10^{-6}	1×10^{-5}	1.020×10^{-5}	1.020×10^{-1}	7.501×10^{-3}	1.450×10^{-4}
1	MPa	=	1×10^{6}	1	1×10	1.020×10	1.020×10^{5}	7.501×10^{3}	1.450×10^{2}
1	bar	=	1×10^{5}	1×10^{-1}	1	1.020	1.020×10^{4}	7.501×10^{2}	1.450×10
1	kgf/cm²	=	9.807×10^{4}	9.807×10^{-2}	9.807×10^{-1}	1	1.000×10^{4}	7.356×10^{2}	1.422×10
1	mmH₂O	=	9.807	9.807×10^{-6}	9.807×10^{-5}	1.000×10^{-4}	1	7.356×10^{-2}	1.422
1	mmHg	=	1.333×10^{2}	1.333×10^{-4}	1.333×10^{-3}	1.360×10^{-3}	1.360×10	1	1.934×10^{-2}
1	lbf/in²	=	6.895×10^{3}	6.895×10^{-3}	6.895×10^{-2}	7.031×10^{-2}	7.031×10^{-1}	5.172×10	1

Flow sensor based on the principle of Karman's vortex.

Vortex Type Flow Sensor FLOP type QS QU

Main purpose

- Measurement and control of cooling water, pure water.

Specification

Measured liquid	Water, Pure water.
Nominal size	10A, 15A, 20A, 25A, 32A, 40A
Liquid viscosity	1mPa·s
Liquid temperature	0～90℃
Liquid pressure	1.0MPa or under
Accuracy	Within ±2.0%
Material	PPS, SUS316
Flow range	4～350L／min
Output	Analog output

TOPICS

Technical data 03

IP Degree of protection

IP degree of protection is protection code for housing of electronic components specified by International Electrotechnical Commission (IEC60529) and JIS C0920.
Indicate degree of protection from solid foreign material or water intrusion by number (First symbol·Second symbol)

IP-□□

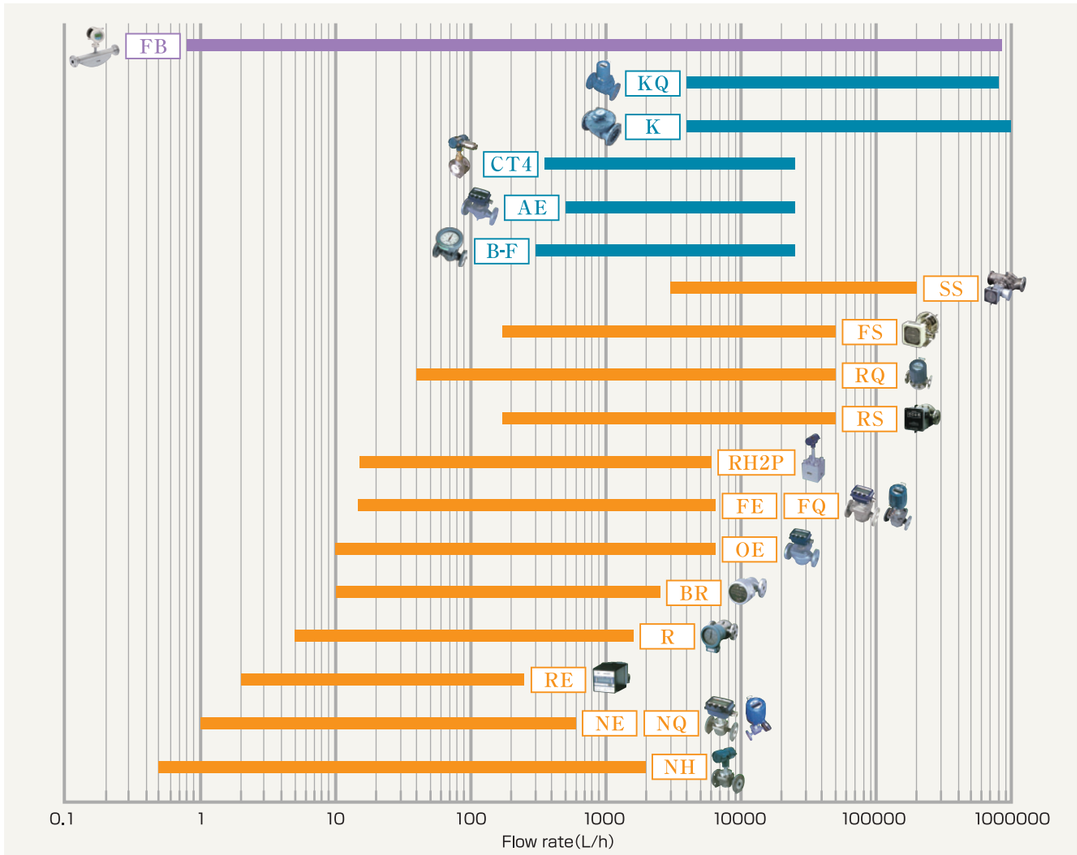
First symbol Degree of protection from human body or solid.

0	Without protect
1	Protected against a solid object greater than 50mm such as a hand.
2	Protected against a solid object greater than 12.5mm such as a finger.
3	Protected against a solid object greater than 2.5mm such as a tool and wire.
4	Protected against a solid object greater than 1mm such as a tool and wire.
5	Protect from fine particle which affect operation and safety of electronic component.
6	No ingress of dust

Second symbol Degree of protection from water intrusion

0	Without protection
1	Protected against vertically falling drops of water.
2	Protected against water drops up to 15 degrees from the vertical.
3	Protected against water drops up to 60 degrees from the vertical.
4	Protected against splash of water from all direction.
5	Protected against nozzle spray from all direction.
6	Protected against strong nozzle spray from all direction.
7	Protected against the effect of immersion in water.
8	Protected against the effect of immersion in water constantly.

■Flow range list



■Connectable receiver and converter

Products name	model	Connectable receiver and converter (○: Directly available, △: Converter is needed)													
		Converter			Pulse divider	Totalizer	Batch counter			Multi counter	Digital flow rate indicator			Printer	
		EZ2	KF3	KZ2	KD2	TH61	PH4	EX3E-PH4	PX2	PL1	TM81	MC81	MC74	PR2080E	PR8080B
Rotary Flow Meter	RS	○		○	○	○	○	○	○	○	△	△		○	○
Super Rotary Flow Meter	RQ				○	○	○	○	○	○	○	○		○	○
Field counter type Pneumatic Batch Counter	RSCN	○		○	○	○	○	○	○	○				○	○
Small Size Rotary Flow Meter	R	○		○	○	○	○	○	○	○	△	△		○	○
Micro Flow Meter NICO FLOW	NH		○			△	○	○	○	○	△	△	○	△	△
Electronic flow meter for small flow rate NICO EYE	NE		○		○	○	○			○	○	○	○	○	○
Explosion-proof type NICO EYE	NQ		○		○	○	○	○	○	○	○	○	○	○	○
Electronic Positive Displacement Flow Meter FLOW EYE	FE		○		○	○	○			○	○	○	○	○	○
Explosion-proof type FLOW EYE	FQ		○		○	○	○	○	○	○	○	○	○	○	○
Flow meter for high pressure	RH2P		○			△	○			○	△	△	○	△	△
Oil Meter	BR				○	○	○			○				○	○
Micro Oil Meter	RE				○	○	○			○				○	○
Slide Vane Flow Meter	SS	○		○	○	○	○	○	○	○	△	△		○	○
Electonic Flow Meter for Oil OIL EYE	OE		○		○	○	○			○	○	○	○	○	○
Food Flow Meter	FS	○		○	○	○	○	○	○	○	△	△		○	○
Food Flow Meter	FSEO		○			△	○			○	△	△	○	△	△
Mass flow meter CLEAN FLOW	FB				○	○	○	○	○	○	○	○	○	○	○
Clamp on type Ultrasonic Flow Meter	NU2				○	○					○	○		○	○
Water supply Flow Meter	B-F	○		○	○	○	○	○	○	○	△	△		○	○
Turbine Flow Meter	K	○		○	○	○	○	○	○	○	△	△		○	○
Acid-proof Turbine Flow Meter	CT4		○			△	○			○	△	△	○	△	△
Electronic Flow Meter for Water AQUA EYE	AE		○		○	○	○			○	○	○	○	○	○
Electronic Turbine Flow Meter	KQ				○	○	○	○	○	○	○	○		○	○
Vortex Type Flow Sensor FLOP	QS·QU										○	○			

Batch counter type PH4

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／No-voltage contact input
Control output	Contents	Metering signal, Predictive signal, End of batch signal／Status signal
	Channel	Metering signal : 2 point, Other : 1 point
	Signal	No-voltage contact signal output
Setting value	Batch volume	10 points 6 digits setting
	Predictive volume	1 points 4 digits setting
Output pulse	Channel	1 point
	Signal	12V no-contact signal output／Open collector signal output

Main purpose

- It receive pulse signal from flow meter, and batch control of flow by sending control signal to valves and pumps.

Explosion proof type batch counter type EX3E-PH4

Specification

Explosion proof	Explosion proof code	Exd IIB T5
Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／No-voltage contact input
Control output	Contents	Metering signal, Predictive signal, End of batch signal／Status signal
	Channel	Discuss separately
	Signal	No-voltage contact signal output／Voltage contact signal output
Setting value	Batch volume	10 points 6 digits setting
	Predictive volume	1 points 4 digits setting
Output pulse	Channel	1 point
	Signal	12V no-contact signal output／Open collector signal output

Main purpose

- Flame proof enclosure type batch counter equipped in batch counter type PH4
  It receive pulse signal from flow meter, and batch control of flow by sending control signal to valves and pumps.

Explosion proof type batch counter type PX2

Specification

Explosion proof	Explosion proof code	Exd IIB T4 Gb(Ex2015)
Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／No-voltage contact input
Control output	Contents	Metering signal, Predictive signal, End of batch signal, Alarm signal Buzzer ringing
	Channel	Metering signal : 2 point, Other : 1 point
	Signal	No-voltage contact signal output
Setting value	Batch volume	5 points 5 digits setting
	Predictive volume	1 points 4 digits setting
Output pulse	Channel	1 point
	Signal	12V no-contact signal output／Open collector signal output

Main purpose

- It has flame proof enclosure, and can be used in hazardous area in the factory.
  It receive pulse signal from flow meter, and batch control of flow by sending control signal to valves and pumps.

Multi counter type PL1

Main purpose

- Receiving the pulse signal from up to 2 flow meters, it indicates flow volume, output pulse signal, and select one of Preset Counter, Scaling totalizer, Simple batch counter, or flow rate indicator as an inner setting.

Specification

Input pulse	Channel	2 point
	Signal	Voltage no-contact input／Open collector input／No-voltage contact input
Output pulse	Channel	2 point
	Signal	Open collector signal output

Totalizer type TH61

Main purpose

- Receiving the pulse signal from flow meter and it indicates total volume.

Specification

Input pulse	Channel	1 point (2 point for Addition／Subtraction function)
	Signal	Voltage no-contact input／Open collector input／No-voltage contact input
Distribution output	Channel	1 point
	Signal	12V no-contact signal output

Large indicator type DH1

Main purpose

- Largely indicate the indication of PH4, digital flow rate indicator totalizer MC74 or MC81.

Specification

Input	Signal	RS-485 communication
Character size	H57 × W32／H84 × W48／H137 × W81	
Number of indication digits	6／5／4／3 Digits	

High-brightness type Large indicator type DS1

Main purpose

- Applied high brightness LED and waterproof case enable indicate largely the value for Batch counter PH4, and Digital flow rate indicator and totalizer MC74/MC81.

Specification

Input	Signal	RS-485 communication
Character size	H60 × W33／H100 × W56	
Number of indication digits	6／5／4 Digits	
Degree of protection	IP65 or equivalent	

Converter type EZ2

Main purpose

- Receiving the pulse signal from flow meter and it outputs analog signal, divided pulse signal, and distributing pulse signal.

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input
Analog output	Channel	2 point
	Signal	4～20mADC／0～20mADC／0～100μADC 1～5VDC／0～10VDC／0～5VDC／0～10mVDC
Divided pulse signal output	Channel	2 point
	Signal	Voltage no-contact signal output／ Open collector signal output／ No-voltage contact signal output
Distributing pulse output	Channel	1 point
	Signal	12V no-contact signal output

Converter type KZ2

Main purpose

- Receiving the pulse signal from flow meter and it outputs analog signal, divided pulse signal, and distributing pulse signal.

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input
Analog output	Channel	1 point
	Signal	4～20mADC／0～100μADC／1～5VDC 0～5VDC／0～10mVDC
Divided pulse signal output	Channel	1 point
	Signal	Open collector signal output
Distributing pulse output	Channel	1 point
	Signal	12V no-contact signal output

Converter type KF3

Main purpose

- Receiving the unscaled pulse signal from flow meter and it outputs analog signal and pulse signal.

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／ No-voltage contact input
Analog output	Channel	1 point
	Signal	4～20mADC／0～100μADC／1～5VDC 0～5VDC／0～10mVDC
Scaled pulse signal output	Channel	1 point
	Signal	12V no-contact signal output／ Open collector signal output
Distributing pulse output	Channel	1 point
	Signal	12V no-contact signal output／ Open collector signal output

Pulse divider type KD2

Main purpose

- Receiving the pulse signal from flow meter, it outputs divided pulse and distributing pulse.

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／ No-voltage contact input
Divided pulse or distributing pulse output	Channel	2 point
	Signal	12V no-contact signal output／ Open collector signal output／ No-voltage contact signal output
Distributing pulse output	Channel	1 point
	Signal	12V no-contact signal output／ Open collector signal output

TOPICS

Technical data 04

Categorize by standard for explosion-protected electrical apparatus

*Refer to the page 20 for Categorize by technical standard of International Electrotechnical Commission (IEC)

Explanation of example: d2G4
Type of protection is flame proof enclosure, and applied to the gas with its ignition temperature exceed 135℃ but not over the 200℃ including Ethylene, Butane.

Example d 2 G4

Kind of type of protection	Code
Flameproof enclosure	d
Pressurized apparatus	f
Oil immersion	o
Increased safety	e
Intrinsic safety	i
Special protection structure	s

Explosion class	Explosion class for explosive gas
1	For the gas classified in explosion class 1 and steam
2	For the gas classified in explosion class 1, 2 and steam
3a	For the gas classified in explosion class 1, 2 and water gas, hydrogen
3b	For the gas classified in explosion class 1, 2 and carbon disulfide
3c	For the gas classified in explosion class 1, 2 and acetylene
3n	For all gas

Degree of ignition	Ignition temperature
G1	Exceed 450℃
G2	Over the 300℃ but not exceed 450℃
G3	Over the 200℃ but not exceed 300℃
G4	Over the 135℃ but not exceed 200℃
G5	Over the 100℃ but not exceed 135℃
G6	Over the 85℃ but not exceed 100℃

Explosion class and degree of ignition for typical example of explosive gas

Explosion class \ Degree of ignition	G1	G2	G3	G4	G5	G6
1	Acetone / Ammonia / Carbon monoxide / Ethane / Acetic acid / Ethyl acetate / Toluene / Propane / Benzene / Methanol / Methane	Ethanol, Isopentyl acetate, 1-Butanol, Butane, Acetic anhydride	Gasoline, Hexane	Acetaldehyde, Ethyl ether		
2	Coal gas	Ethylene, Ethylene oxide				
3	Water gas, Hydrogen	Acetylene			Carbon disulfide	Ethyl nitrate

Digital flow rate indicator type TM81

Main purpose

- Receiving the analog signal from flow meter and indicate instantaneous flow rate.

Specification

Analog Input	Channel	1 point
	Signal	4～20mADC／1～5VDC

Digital flow rate indicator and totalizer type MC81

Main purpose

- Receiving the analog signal from flow meter and indicate instantaneous flow rate/ integrating volume, and output pulse signal.

Specification

Analog Input	Channel	1 point
	Signal	4～20mADC／0～20mADC／1～5VDC 0～5VDC／0～10VDC
Output pulse	Channel	1 point
	Signal	12V no-contact signal output／ Open collector signal output

Digital flow rate indicator and totalizer type MC74

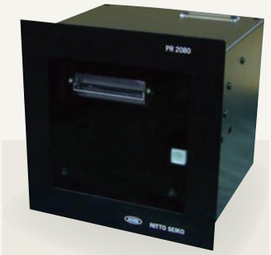
Main purpose

- Receiving the pulse signal from flow meter and indicate instantaneous flow rate/ integrating volume, and output pulse signal.

Specification

Input pulse	Channel	1 point
	Signal	Voltage no-contact input／Open collector input／ No-voltage contact input
Output pulse	Channel	1 point
	Signal	12V no-contact signal output／ Open collector signal output／Distribution output

Printer type PR2080E



Main purpose

- Receiving flow pulse signal from flow meter or batch counter, it printouts filling volume per batch or integrating volume per setting time.

Specification

Input pulse	Channel	2 point
	Signal	Voltage no-contact input／Open collector input／ No-voltage contact input

Printer type PR8080B

Main purpose

- Receiving flow pulse signal from flow meter or batch counter up to 8 equipment, it printouts filling volume per batch or integrating volume per setting time.

Specification

Input pulse	Channel	8 point
	Signal	Voltage no-contact input／Open collector input／ No-voltage contact input

TOPICS

Technical data 05

Categorize by technical standard of International Electrotechnical Commission (IEC)

*Refer to the page 18 for Categorize by standard for explosion-protected electrical apparatus

Explanation of example: ExdII BT4
Type of protection is flame proof enclosure according to the IEC, and applied to the gas such as Ethylene with equipment surface temperature be lower than 135 deg C.

Example: Ex d IIB T4 X
- Ex: explosion-proof (According to the IEC standard)
- d: Kind of type of protection
- IIB: Group
- T4: Degree of temperature
- X: Operating condition (in case of limitation for operation condition)

Kind of type of protection	Code
Flameproof enclosure	d
Pressurized apparatus	p
Oil immersion	o
Increased safety	e
Intrinsic safety	ia,ib
Encapsulation	ma,mb
Special protection structure	s

Group	Explosion proof apparatus group
II	For factory or work place
IIA	Applied to gas categorized to A or steam
IIB	Applied to gas categorized to B or steam
IIC	Applied to gas categorized to C or steam

Degree of temperature	Degree of temperature for explosion proof apparatus
T1	Lower than 450℃ of surface temperature
T2	Lower than 300℃ of surface temperature
T3	Lower than 200℃ of surface temperature
T4	Lower than 135℃ of surface temperature
T5	Lower than 100℃ of surface temperature
T6	Lower than 85℃ of surface temperature

Explosion class and degree of temperature for typical example of explosive gas

Group \ Degree of temperature	T1	T2	T3	T4	T5	T6
IIA	Acetone / Ammonia / Carbon monoxide / Ethyl acetate / Toluene / Propane / Benzene / Methanol / Methane / LP Gas / Ethane	Ethanol, Isopentyl acetate, 1-Butanol, i-Butane, Acetic anhydride a	Gasoline, n-Hexane	Acetaldehyde		
IIB	City gas	Ethylene, Ethylene oxide		Ethyl ether		
IIC	Hydrogen	Acetylene			Carbon dioxide	Ethyl nitrate

Process controller

type BC100

Specification

Number of connection channel	Max. 64ch.
Number of control channel	Up to 32ch per connected channel simultaneously
Mixing rate	Available memorizing up to 999 pattern
Input	Flow signal (Open collector) Input frequency : Max 150Hz. Limit switch signal (Open collector)
Output	Solenoid valve operation／ Pump operation (Open collector)
Indication	Approximate 116 × 86mm TFT color LCD
Keyboard	Alphanumeric character, Decimal point, Space, Dash, and Katakana input
Printout	Direct-line thermal method ASC II, JIS Level 1, 2 Kanji sets
Power	100V AC 50／60Hz
External dimension	W322 × D540 × H660

Main purpose

- For mixing work or mixing control of multiple liquid.
- For efficient change of each batch control.
- Batch command and result management by PC.
- Batch work in hazardous area.
  *Pressurized apparatus

Feature

It is available for BC100 to batch controlling 32 line at same time.*
It memorizes Up to 64 kind of liquid and 999 kind of mixing rate.
It is suitable for control and management of various kind of production.
*1 it may reduce depending on the ancillary function

Explosion proof type printer

type NP100

Specification

Communication method	RS485
Printing method	Thermal line dot method
Character density	8dot/mm(Same as vertical × horizontal)
Print speed	HS mode 150mm/sec(MAX) LQ mode 110mm/sec(MAX) HQ mode 60mm/sec(MAX) 2 color print mode 60mm/sec(MAX)
Print width	104mm(MAX)
Paper width	111.5mm±0.5mm
Applied rolled paper diameter	Φ150mm(MAX)
power	85～115V AC
External dimension	W355 × H273(+300～1000 : Stand part) × D434
Explosion proof	Pressurized apparatus(fG4) Internal pressure control box is separately needed.
Print soft	Print soft is not included.

Main purpose

- Print out and attach process management or test report for each production lot or each products on site.
- Issue a delivery slip on site of delivery/receiving from tank truck, loading, or unloading.

Feature

- Available changing paper during power ON.
- It can be used in the hazardous area (Hazardous zone 1, Degree of ignition G4) where handling flammable gas/liquid.

Please specify the following specification

(Detail is to be discussed)

1	Measured fluid	Name : Density :
2	Flow range	Max. : Nor. : Min. :
3	Fluid temperature	Max. : Nor. : Min. :
4	Fluid pressure	Max. : Nor. : Min. :
5	Fluid viscosity	mPa･s @ ℃
	(Kinematic viscosity)	mm²/s @ ℃
6	Fluid density	
7	Ambient temperature	℃
8	Measuring accuracy	Reading scale %, Full scale %
9	Process connection	
10	Explosion proof	Yes / No
11	Power source	
12	Output specification	
13	Purpose of use	

Please check and let us know the serial number in case of replacement from existing item.

TOPICS

Technical data 06

About Serial number (SER No.)

Flow meter, Converter, and Receiver have serial number.
When using flow meter combine with converter and/or receiver, please match with same serial number.
Please check the serial number when you make an inquiry so that we can check the detail of specification which do not appear in the model code.
Serial number is shown on the name plate which is attached to the indication part of flow meter, or name tag which is attached to the outer case of converter and receiver.