# EVEN COVERAGE FOR SEMI-CONDUCTOR PROCESSES FOR BUILT-IN USE FOR EQUIPMENTS FOR GENERAL INDUSTRIAL PROCESSES



# TOKYO KEISO CO.,LTD.



In this catalogue, possible measuring range for each model is shown in the following conditions:

For liquid measurement, Water (Sp. Gr. 1.0, Viscosity 1.0cP) For gas measurement, Air at 0°C, 1atm

If actual operating condition differs from above, a compensation calculation mentioned below is required for selection.

Moreover, when the specification is modified after delivering the products, refer to the compensation calculations in <12> on page 58.

#### For gas measurement applications

Compensation is required by density, pressure and temperature of measuring gas.

Compensation is required as follows;

1) In case the indication unit is Normal

$$Q_{AIR}=Q_{0} X \sqrt{\frac{r_{0}}{1.293}} X \sqrt{\frac{273+T_{0}}{273}} X \sqrt{\frac{1.033}{1.033+P_{0}}}$$

Converted flow rate for air Flow rate of actual gas on actual condition (Flow rate at normal: 0°C, 1atm) Density of actual gas (kg/Nm<sup>3</sup>) Operating temperature (°C) Operating pressure (kgf/cm<sup>2</sup>G)

2) In case the indication unit is Operating condition

$$Q_{AIR}=Q_{0} X \sqrt{\frac{r_{0}}{1.293}} X \sqrt{\frac{273}{273+T_{0}}} X \sqrt{\frac{1.033+P_{0}}{1.033}}$$

Converted flow rate for air Flow rate of actual gas on actual condition Flow rate at operating condition:  $T_0^\circ CP_0 \text{ kgf/cm}^2 G$ Density of actual gas (kg/Nm<sup>3</sup>) Operating temperature (°C) Operating pressure (kgf/cm<sup>2</sup>G)

#### For liquid measurement

In case the Sp. Gr. of the liquid to be measured is not 1.0.

$$Q=Q_0 X \sqrt{\frac{r_0(r_1-1)}{(r_1-r_0)}}$$

Water converted flow rate Flow rate of actual liquid Density of actual liquid (g/cm<sup>3</sup>) Density of float (g/cm<sup>3</sup>)

Table for float density

Float material	PVC	Teflon	Stainless steel
Density (g/cm <sup>3</sup> )	1.45	2.2	7.9

Note:

- 1) Additional weight is integrated for special versions including reed switch alarm version to increase float density.
- 2) Reed switch alarm contact has a built-in magnet, and density is different from that of the above Table.

Normally, liquid having a viscosity of 5cP can be measured by the P-series purgemeters.

To measure the high viscosity fluid (oil, etc.), compensation calculation is available by computer. Consult factory for details.

#### Physical characteristic of gases

			Density kg/Nm <sup>3</sup>	Viscos	sity cP				Density kg/Nm <sup>3</sup>	Viscos	sity cP
	GAS	FORMULA	at 0°Ć,1atm	at 0°C	at 20°C		GAS	FORMULA	at 0°Ć,1atm	at 0°C	at 20°C
	Ammonia	NH₃	0.7713	0.0093	0.0100		Acetylene	C <sub>2</sub> H <sub>2</sub>	1.171	0.0096	0.0102
	Argon	Ar	1.783	0.0212	0.0222		Acetone	C3H6O	2.593	0.0066	-
	Nitrous oxide	N2O	1.988	0.0137	0.0146		Isobutane	C4H10	2.595	0.0069	0.0074
	Nitrogen oxide	NO	1.340	0.0179	0.0188		Isopropyl alcohol	C₃H₀O	2.683	0.0070	-
	Carbon monoxide	CO	1.250	0.0166	0.0177		Ethanol	C2H6O	2.057	0.0075	-
п	Carbon dioxide	CO <sub>2</sub>	1.977	0.0138	0.0147	п	Ethane	C <sub>2</sub> H <sub>6</sub>	1.356	0.0086	0.0092
ore	Sulfurous acid gas	SO <sub>2</sub>	2.927	0.0116	0.0126	orc	Ethyl ether	C4H10O	3.309	0.0068	-
Inorganic	Hydrogen chloride	HCℓ	1.639	0.0131	0.0143	Inorganic	Ethylene	C <sub>2</sub> H <sub>4</sub>	1.260	0.0094	0.0101
	Chloride	Cl2	3.214	0.0123	0.0132		Ethyl chloride	C₂H₅Cℓ	2.880	0.0094	-
ön	AIR	(AIR)	1.293	0.0171	0.0181	ön	Methyl chloride	CH₃Cℓ	2.308	0.0098	0.0106
compounds	Oxygen	O2	1.429	0.0192	0.0203	compounds	Methylene chloride	CH <sub>2</sub> Cℓ <sub>2</sub>	3.792	0.0091	0.0099
ů	Cyanogen	C <sub>2</sub> N <sub>2</sub>	2.335	0.0093	-	ů	Chloroform	CHℓ₃	5.329	0.0093	0.0100
ds	Hydrogen Bromide	HBr	3.645	0.0170	-	ds	Butane	C4H10	2.703	0.0069	0.0074
	Bromine	Br <sub>2</sub>	7.139	0.0146	0.0153		Propane	C₃H₃	2.020	0.0075	0.0080
	Hydrogen	H <sub>2</sub>	0.08994	0.0084	0.0088		Propyl alcohol	C₃H₀O	2.683	0.0068	-
	Nitrogen	N2	1.251	0.0166	0.0175		Propylene	C3H6	1.879	0.0078	0.0084
	Fluorine	F2	1.696	-	-		Hexane	C6H14	3.847	0.0059	-
	Hydrogen sulfide	H₂S	1.539	0.0117	0.0124		Benzene	C6H6	3.488	0.0068	0.0074
	Helium	He	0.1785	0.0186	0.0196		Pentane	C5H12	3.221	0.0062	-
							Methanol	CH₄O	1.430	0.0087	-
							Methane	CH <sub>4</sub>	0.7168	0.0102	0.0108
							Methyl ether	C2H6O	2.057	0.0085	0.0091
							City gas	13A	0.8405	-	0.0130

# P SERIES PURGEMETERS PURGEMETERS

INDEX & QUICK REFERENCE

# **INDEX & QUICK REFERENCE**

	С	Be	st ∠	∖Av	ailal	ole											
Classification by		То	Ъ	Ч	Ъ	Ъ	Flu	Re	Com	Produ	Fol	Qu	Ala	An	٨S	Avai	Ava
Applicatio	n	measure liquids	measure	measure chemical and	measure	To measure large flow	Fluorine resin made	Resin made body acceptable	Compact designing preferred (total length: 150mm or less)	Product with internal surfaces electro-polished ground required	For hot pure water	Quick delivery, from stock	Alarm contact required	Analog output required	SW,VCR connection required	Availability for CE and UL standards are required	Availability for unit production is required
		asu	asu	asur	asu	asu	le re	ma	esign	h inter	pt	del	ŝ	D D	Я	ty fo	ility
		Ire	lre	о, С		Ire	esin	de	ling p	mal su	Jre	İve	ntac	Jtpt	cor	۲ ۳	for
		liqu	gas	her	sm	larc	m	bod	referr	urface	¥a	ŗ,	ct re	ut n	nne	and	unit
		lids	gases	nica	small flow	ge f	ade	d V d	t) pa	ele St	lter	fror	gqu	equ	ĉtio	Ē	pro
				a	flov	Nol		acc	otal le	ctro-p		n s	lire	Jire	n	stan	npc
					<		body acceptable	ept	)ngth:	olishe		toc	Q	d	,eqi	dard	ction
Reference pages				oure			acc	abl	150r	)d gro					uire	ls ar	si n
				pure water			ěpt	ē	nm o	und r					ă	e rec	req
Model	$\overline{\ }$			ate			abl		rless	equir						quire	uire
P-100(Old model P-115)	3	$\cap$	$\square$		$\bigcirc$		Ð		$\bigcirc$	R R			$\cap$	$\bigcirc$		ă	Å
P-200(Old model P-115) P-200(Old model P-125)	5	$\bigcirc$	$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $	$\wedge$	$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $							$  \triangle  $	$\bigcirc$			$\square$	$\bigtriangleup$
P-300	7	$\overline{0}$	$\overline{\bigcirc}$	$\wedge$	$\overline{\mathbf{O}}$						$\wedge$	$\wedge$					$\wedge$
P-400(Old model P-415)	9	Õ	Ŏ	$\triangle$	$\overline{\mathbf{O}}$			$\triangle$			$\square$	$\triangle$					$\square$
P-510(Old model P-500-1)	11	Õ	Õ	$\triangle$		0		$\square$		$\triangle$	$\triangle$	$\triangle$	0	0	0	$\triangle$	$\triangle$
P-520(Old model P-500-2)	13	$\bigcirc$	$\triangle$	$\bigcirc$		$\bigcirc$	$\triangle$	0				$\triangle$	0	$\bigcirc$		$\triangle$	$\triangle$
P-530	15	0	0	$\triangle$		$\bigcirc$					$\triangle$	$\triangle$	0	$\triangle$	$\bigtriangleup$	0	$\bigtriangleup$
P-540	17	0	0	$\triangle$		0				$ \Delta $	$\triangle$	$\triangle$	0		0	0	$\bigtriangleup$
P-550	19	0	$\bigcirc$	$\triangle$		0					$\square$	$\triangle$	$\bigcirc$		$\triangle$	$\bigcirc$	$\triangle$
P-610(Old model P-600-1)	21		O		0			$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $	$\bigcirc$			$ \Delta $					$\triangle$
P-620(Old model P-600-2)	23 25	0	$\cap$	$\square$	$\cap$	0	$\square$	0	$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $			$\triangle$	$\bigcirc$	$\cap$	$\triangle$	$\square$	$\triangle$
P-710(Old model P-700-1) P-771(Old model P-770-1)	25	$\overline{0}$	$ \circ $	$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $	$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $		$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $		$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $				$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $	$\bigcirc$			$\land$
P-772(Old model P-770-2)	29	0		$\overline{\bigcirc}$	$\cup$	$\bigcirc$	$\overline{0}$				$\triangle$	$\overline{\wedge}$	$\bigcirc$	$\overline{0}$			$\triangle$
P-773	31	$\overline{O}$		$\overline{0}$		$\bigcirc$	$\bigcirc$		0		$\triangle$	$\triangle$	$\overline{\bigcirc}$	$\overline{0}$		$\bigcirc$	$\triangle$
P-774	33	Õ		Õ		Õ	Õ		Õ			$\square$	$\overline{\mathbf{O}}$	Õ		$\overline{O}$	$\triangle$
P-810(Old model P-800-1)	35	Õ	0	$\triangle$	0					0	$\triangle$	$\triangle$	$\triangle$	$\triangle$	0		$\triangle$
P-820(Old model P-800-2)	37	$\bigcirc$	0	$\triangle$	$\bigcirc$				$\triangle$	0	$\triangle$	$\triangle$	0	$\triangle$	$\bigcirc$	$\triangle$	$\triangle$
P-830	39	0		$\triangle$		0			0		0	$\triangle$	0		$\triangle$	0	$\bigtriangleup$
P-900	41	0	0	$\triangle$	0				$\triangle$		$\triangle$	$\triangle$					$\triangle$
NP	42	0	$\bigcirc$	$\triangle$	$\bigcirc$				$ \Delta $			$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $					$\triangle$
XP Deed Switch Type Alarm unit	43	$\bigcirc$	$\left  \right. \right $	$  \triangle  $	$\cup$			$  \bigcirc$	$\bigcirc$			$  \cup$	$ \Delta $				$\square$
Reed Switch Type Alarm unit PAU Optical alarm unit	45 47												$ \bigcirc$				
E3C Separate Type Optical alarm unit	47																
PAS/IAU Purgemeter, Analog output unit	40													$\bigcirc$			
P-7810 Series Purgemeter, Analog output provided														$\overline{0}$			$\triangle$
PCS/OAC Purgemeter, Analog unit	51													Ŏ			
	53,54						inge	, Pre	essu	re, T	emp	berat	ture				
	55	Мо	untir	ng o	ptior												
Advice for your product selection				ptio													
									at re	eadir	ng po	ositio	on e	tc.			
	58	Cal	cula	te c	omp	ensa	atior	1									

# P-100 • Old model P-115

# GENERAL

Standard type purgemeter. Widely accepted in the market. Suitable for both liquids and gases.

Applicable from built-in use for equipments up to purging monitoring of industrial processes. Available for PTFE sealing.

# ■ MAJOR APPLICATIONS

General purpose, built-in use for equipments (Small flow rate)

## STANDARD SPECIFICATION

Mea	suring	object	Liquids and gases			
Meas	uring	Air	%1 Min. 4~20 NmL/min. Max. 5~50 NL/min.	Air at 0°C, 1atm     When selecting flow     range, refer to standard     flow rate table.		
ran	ge	Water	Min. 5~50 mL/min. Max. 0.4~2 L/min. *2	<ul> <li>In case Op. Press. at gas is not 1atm, refer to page 1.</li> </ul>		
Ra	nge ab	ility	10:1	10:2 occasionally		
A	Accurac	:y	±5%F.S.			
Max	. Op. P	ress.	8kgf/ cm²G(0.78MPaG)	When packing PTFE is used, Max. Op. Press. is 5kgf/cm <sup>2</sup> G		
Мах	Max. Op. Temp.		120°C	Standard products have the packing materials made of NBR, so Max. Temp.is 80°C		
	Material		Std.	Option(Specify by model code)		
	В	ody	SUS304	SUS316,BS		
	Taper	ed tube	Pyrex glass	Products by ZEONEX are also available. Consult factory separately.		
	Packing		NBR(max80°C)	Viton(max.120°C), CR(max.80°C), PTFE(max.120°C), EPDM(max.80°C)		
	Support		Aluminium			
	Cover		Poly-carbonate			
C		Std.	Rc1/4	Refer to Basic model code		
Connect	lion	Opt.	Rc1/8,NPT1/4,NPT1/8	for details.		
		Std.	Lock-nut mount onto panel front	Refer to ordering		
	Mounting Opt.		Bezel installation,Panel-rear installation,Stand provided etc.	information for details.		
Weig	ht(std. t	type)	0.5kg			

1 1~5NmL/min is available.Consult factory for details.
 2 0.5~5L/min is available.Consult factory for details.

#### %2 0.5~5L/min is available.Consult factory for details.

#### ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Deed switch type closes weit	General	0	45, 46 page
Reed switch type alarm unit	CE, UL Version	0	45, 46 page
PAU Optical ala	rm unit	0	47 page
Optical alarm	unit	0	48 page
Analog outpu	t unit	0	49 ~ 52 page

STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

In case alar	rm out	put code	is O or E		In c	ase al	arm out	put co	de is A t	o D	
AIR(1atm,	(3°0,	W	ater	AIR(1	atm,0°C)	Alarm se	tting range	W	/ater	Alarm se	tting range
4~20 Nm	ıL/min										Λ
6~30 Nm	ıL/min										
10~50 Nm	IL/min				/		/		/		
10~100 Nm	ıL/min	/	/	/	/	/	/	/	/	/	/
20~200 Nm	nL/mir										
30~300 Nm	ıL/min	/				$\vee$		$\langle$		$\vee$	
50~500 Nm	L/min	5~50	mL/min	50~500	NmL/min	100~400	NmL/min	5~50	mL/min	10~40	mL/min
0.1~1 NL/	/min	10~100	mL/min	0.1~1	NL/min	0.2~0.8	NL/min	10~100	mL/min	20~80	mL/min
0.2~2 NL/	/min	20~200	mL/min	0.2~2	NL/min	0.4~1.6	NL/min	20~200	mL/min	40~160	mL/min
0.3~3 NL/	/min	30~300	mL/min	0.3~3	NL/min	0.6~2.4	NL/min	30~300	mL/min	60~240	mL/min
0.5~5 NL/	/min	50~500	mL/min	0.5~5	NL/min	1~4	NL/min	50~500	mL/min	100~400	mL/min
1~10 NL/	/min			1~10	NL/min	2~8	NL/min				
2~20 NL/	/min	0.1~1	L/min	3~15	NL/min	3~12	NL/min				
3~30 NL/	/min			4~20	NL/min	4~16	NL/min	0.1~1	L/min	0.2~0.8	L/min
5~50 NL/	/min	0.3~1.5	L/min	6~30	NL/min	6~24	NL/min				
5~50 NL/	/111111	0.4~2	L/min	10~50	NL/min	10~40	NL/min				

1 1~5NmL/min is available.Consult factory for details.
 0.5~5L/min is available.Consult factory for details.

\*May be different depending on the scale length.
 \*In case alarm output code is G, flow range differs.
 Consult factory for details.

# ORDERING INFORMATION

				• <u> </u>		
Basic model code	Designation items for detailed specifications					
P-10	① Fluid name – M	② 1easuring range —	③ Press	④ - Temp	⑤ Mounting option	6 Other option
(Use Model Code Table for selection)		(For specificat	tion proce	edure, refe	r to page 53)	

					and a second sec	TORY		THE OWN HART	
BA	-	СМ	-	DEL	С	DD	E		
SERIES N	FLOW DIRECTION	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	E	EXAMPLE
P-10	0	- VALVE	0	-4		R R CON	CONNECTION	$\angle$	
			ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL 4 6 B Z	ATERNAL ATE			1/4(S Speci (Standard) hread al dard)	tandard) al Lock-nut mounting onto panel front. If you want to use any other mounting, select from <u>Mounting opt</u> . Select it for ammonia gas. Construction (gas) part material is only available for SUS316 Available for receiving orders in lots.
		0 L U	Botto Top (gas	Reed Reed Reed PAU E3C Sepa PAS/IAL Speci provic m (gas fi for pressures				C) HO) HC) ovided it provided it provided it provided it provided	Refer to page 45, 46. Refer to page 47. Refer to page 48. Refer to page 49. Refer to valve location selection guide (Page 57).
	0 1 9		Special           ttom rear → Top rear (Standard)         Select this code normally.           lect this code normally.         Valve should be installed externally.						

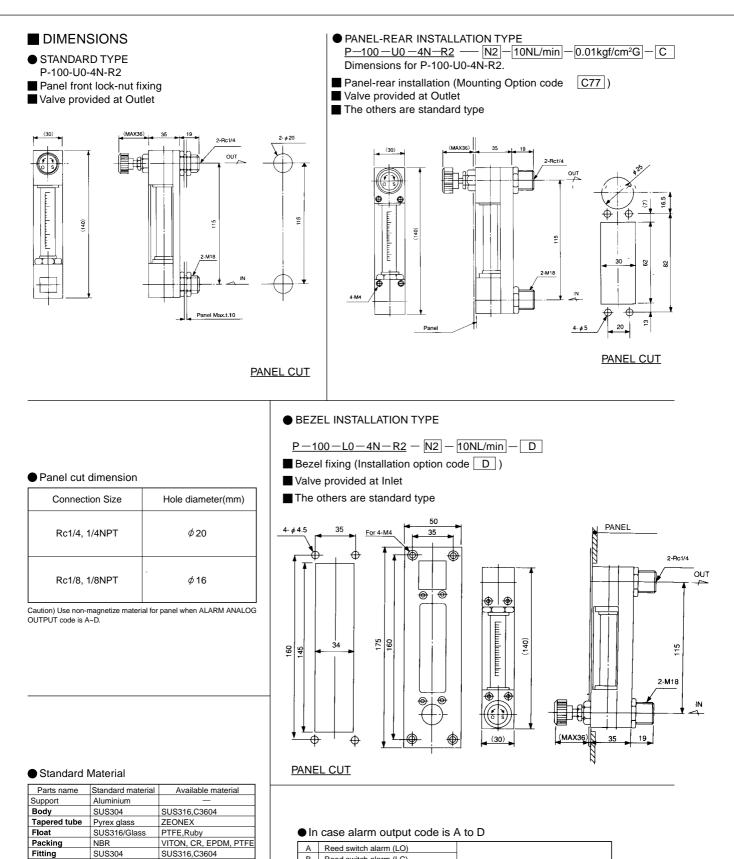
## **OTHER AVAILABLE OPTIONS**

You can specify the following options:

Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduations, built-in check valve type, built-in valve lock mechanism type, built-in rubber joint type, built-in joint type, etc.

(For details, refer to (6) Other Option and One-Point Advice on page 56)

#### 3



 Cover
 Poly-carbonate
 —

 Parts whose names are described in **bold letters** are in contact with fluids to be measured.
 —
 —

SUS316

SUS304

Valve

# B Reed switch alarm (LC) Refer to page 45, 46. C Reed switch alarm (HO) Refer to page 45, 46.

D Reed switch alarm (HC)

#### In case alarm output code is E to G

Е	PAU ALARM UNIT provided	Refer to page 47.
F	E3C Separate Type Optical alarm unit provided	Refer to page 48.
G	PAS/IAU Purgemeter, Analog output unit provided	Refer to page 49.

Standard type purgemeter. 200mm installation dimension characterized by an easy-to-see scale and high-precision measurement. It is used over an extensive field including test equipment. The installation dimension is the same as that of the large flow rate model P-510.

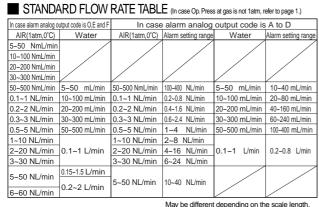
#### MAJOR APPLICATIONS

General purpose, built-in use for equipments (Small flow rate)

#### STANDARD SPECIFICATION

Mea	suring	object	Liquids and gases					
Meas	urina	Air	Min. 5~50 NmL/min. Max. 6~60 NL/min.	· Air at 0°C, 1atm     · When selecting flow range,     refer to standard flow rate     table.				
ran		Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	<ul> <li>In case Op. Press. at gas body is not 1atm, refer to page 1.</li> </ul>				
Ra	nge ab	oility	10:1	10:2 occasionally				
A	Accurac	су	± 3%F.S.					
Max	. Op. P	ress.	8kgf/cm <sup>2</sup> G(0.78MPaG)					
Max	. Op. T	emp.	120°C	Standard products have the packing materials made of NBR, so Max. Temp.is 80°C.				
	Material		Std.	Option (Specify by model code)				
	Body		SUS304	SUS316, BS				
	Taper	red tube	Pyrex glass					
	Pa	cking	NBR(max80°C)	Viton (max.120°C), CR(max.80°C), EPDM(max.80°C)				
	Su	pport	Aluminium					
	C	over	Poly-carbonate					
Connect	tion	Std.	Rc1/4	Refer to Basic model code				
Connec		Opt.	Rc1/8,NPT 1/4,NPT 1/8	for details.				
		Std.	Lock-nut mount onto panel fror	Pofor to ordoring				
Mounti	Mounting		Bezel installation, Panel-rea	information for datails				
Weig	ght (std	. type)	0.6kg					
AL	AR	M AN	D ANALOG OUT	-				
1		Tvi	pe Availabi	lity Reference pages				

Туре		Availability	Reference pages
Deed switch type clarm unit	General	0	45, 46 page
Reed switch type alarm unit	CE, UL Version	0	45, 46 page
PAU Optical ala	rm unit	0	47 page
Optical alarm	unit	0	48 page
Analog outpu	t unit	×	



# OTHER AVAILABLE OPTIONS

#### You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduations, built-in check valve type, built-in valve lock mechanism type, built-in rubber joint type, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).

# ORDERING INFORMATION

Basic model code	Designation items for detailed specifications						
P-20	①     ②     ③     ④     ⑤       Fluid name     Measuring range     Press.     Temp.     Mounting Option     Other Option						
(Use model code table for selection)	(For specification procedure, refer to page 53)						



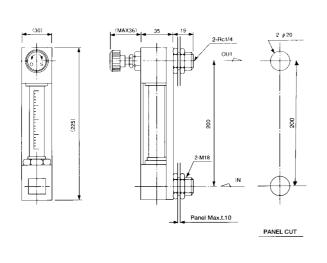
#### BASIC MODEL CODE SERIES NAME VALVE ALARM ANALOG OUTPL WETTED PACKING MATERIAL CONNECTION CONNECTION FLOW DIRECTION EXAMPLE PARTS MATERIAL ITYPE I SIZE DESCRIPTION P-20 0 N -R -L 0 -4 2 CONNECTION SIZE PACKING MATERIAL WETTED PARTS MATERIA VALVE ALARM ANALOG OUTPU CONNECTION TYPE 1 1/8 2 Z 1/4(Standard) Special R Rc thread(Standard) Lock-nut mounting onto panel front. N NPT thread If you want to use any other mounting, select from Mounting Option Z Special N NBR(Standard) CR Select it for ammonia gas. С VITON Е EPDM Z Special SUS304(Standard) 4 6 SUS316 BS В Available for receiving orders in lots. Special 0 Not provided A Reed switch alarm(LO) B Reed switch alarm(LC) Refer to page 45, 46. С Reed switch alarm(HO) D Reed switch alarm(HC) E PAU ALARM UNIT provided Refer to page 47. E3C Separate Type Optical alarm unit provided Refer to page 48. F Z Special 0 Not provided Bottom(gas for atmospheric pressure scale) Refer to valve location Top(body for pressure scale or for neselection guide(Page 57). gative pressure on the secondary side) Special 0 Bottom rear $\rightarrow$ Top rear(Standard) Select this code normally. 1 Bottom → Top Valve should be installed externally 9 Special

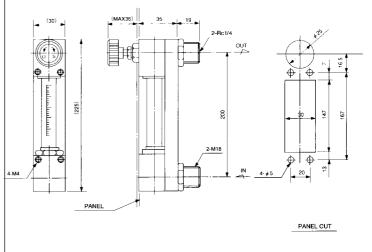
#### ● STANDARD TYPE

(P-200-U0-4N-R2 Valve provided at Outlet, Panel front locknut fixing)

#### PANEL-REAR INSTALLATION TYPE P-200-U0-4N-R2, Valve provided at Outlet, Panel-rear installation

(Mounting Option code C)



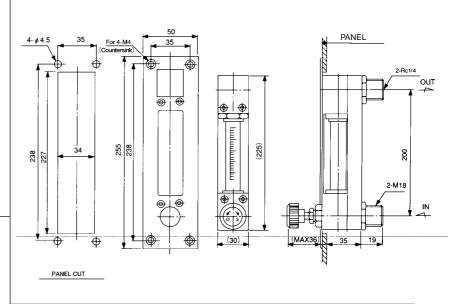


BEZEL INSTALLATION TYPE
 P-200-L0-4N-R2, Valve provided at Inlet, Bezel installation.
 (Mounting Option code D)

#### Panel cut dimension

Connection Size	Hole diameter(mm)
Rc1/4, 1/4NPT	φ20
Rc1/8, 1/8NPT	φ16

Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A–D.



#### Standard material

etanadra materia	Available material
Aluminium	
SUS304	SUS316,C3604
Pyrex glass	
SUS316/Glass	PTFE,Ruby
NBR	VITON,CR,EPDM
SUS304	SUS316,C3604
SUS304	SUS316
Poly-carbonate	
	SUS316/Glass NBR SUS304 SUS304

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### In case alarm output code is A to D

-		
Α	Reed switch alarm(LO)	
В	Reed switch alarm(LC)	Refer to page 45, 46.
С	Reed switch alarm(HO)	1 Color to page 43, 40.
D	Reed switch alarm(HC)	

#### In case alarm output code is E, F

E PAU ALARM UNIT provided Refer to page 47.	
F E3C Separate Type Optical alarm unit provided Refer to page 48.	

# **P-300**

# GENERAL

Compact, straight-through type. Simple structure and easy control for flow range.

# ■ MAJOR APPLICATIONS

General purpose, direct mounting onto process piping

## STANDARD SPECIFICATION

Measuring object		object	Liquids and gases	
Air Measuring range Water		Air	Min. 80~800 NmL/min. Max. 6 ~ 60 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard flow rate</li> </ul>
		Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	table. · In case Op. Press.at gas is not 1atm, refer to page 1.
Ra	nge ab	ility	10:1	
A	ccurac	;y	<u>±</u> 3%F.S.	
Max	. Op. P	ress.	8kgf/ cm <sup>2</sup> G(0.78MPaG)	
Max. Op. Temp.		emp.	120°C Standard products have the packing r made of NBR, so Max. Temp. is 80°C	
Material		ıl	Std.	Option(Specify by model code)
	Body		SUS304	SUS316
	Taper	ed tube	Pyrex glass	
	Packing		NBR(max80°C)	Viton(max.120°C), CR(max.80°C),EPDM(max.80°C)
	Support		C2700T	
	Std.		Rc1/4	Refer to Basic model code
Connection Opt.		Opt.	Rc1/8,3/8, 1/2,NPT1/8,1/4,3/8, 1/2,JIS10KFF etc.	for details.
Mounting Std. Opt.		Std.	Piping mounting	Refer to ordering
		Opt.	Panel mounting by attached metal fitting Flange mounting etc.	information for details.
Weight(std. type)		. type)	0.4kg	

# ■ ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Reed switch type alarm unit General CE, UL Version		×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala		×	
Optical alarm	unit	×	
Analog outpu	t unit	×	

# STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1 atm, refer to page 1.)

AIR(1atm,0°C)	WATER		
80 ~ 800 NmL/min	5 ~ 50 mL/min		
0.1 ~ 1 NL/min	5 ~ 50 1112/11111		
0.2 ~ 2 NL/min	10 ~ 100 mL/min		
0.3 ~ 3 NL/min	20 ~ 200 mL/min		
0.5 ~ 5 NL/min	30 ~ 300 mL/min		
1 ~ 10 NL/min	50 ~ 500 mL/min		
2 ~ 20 NL/min	0.1 ~ 1 L/min		
3 ~ 30 NL/min	0.15 ~ 1.5 L/min		
5 ~ 50 NL/min	0.2 ~ 2 L/min		
6 ~ 60 NL/min	0.2 ~ 2 L/IIIII		

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options:

ORDERING INFORMATION

Double graduations, special graduations, built-in rubber joint type, built-in joint type, etc.

(For details, refer to 6 Other Option on page 56).

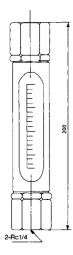


# BASIC MODEL CODE

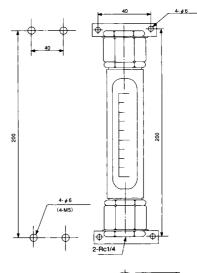
SERIES NAME	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	
<b>D</b> 000						
P-300	-4	N	-R	2		
	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
	Ð	2	Ξ	1	1/8	
	Å,	A	2	2	1/4(Standard)	
	TS	<u> </u>	F	3	3/8	In the case of flange connection,
	ž	Ē	Ŕ	4	1/2	connection size is 3/8 and 1/2 or more.
	Ĥ			Ζ	Special	
	꼰		R	Rc th	read(Standard)	
	₽		Ν	NP <sup>*</sup>	T thread	
			Z	Spe	ecial	Select Z for flange
		N		(Star	ndard)	
		С	CR			Select it for ammonia gas.
		F	VITC			
		E	EPD			
		Z	Spec			
	4		S304(	Stan	dard)	
	6	SU	S316			
	В	Spe	ecial			

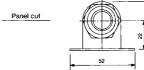
Basic model code	Designation items for detailed specifications			
P-300-□□-□□	①     ②     ③     ④     ⑤     ⑥       Fluid name     Measuring range     Press.     Temp.     Mounting Option     Other Option			
(Use model code table for selection)	(For specification procedure, refer to page 53)			

● STANDARD TYPE P-300-4N-R2



 PANEL-REAR INSTALLATION TYPE (WITH PANEL FITTING ATTACHMENT)
 P-300-4N-R2 (Mounting Option code F))





#### Standard material

Parts name	Standard material	Available material
Body	SUS304	SUS316
Tapered tube Pyrex glass -		
Float	SUS316/Glass	PTFE,Ruby
Packing	NBR	VITON,CR,EPDM
Protection tube	SUS304	SUS304
Look-out	C3604	SUS304

**P-40** 

Designed in a corrosion resistant structure of all stainless steel. Compatible with flange connection as well as panel installation.

#### **MAJOR APPLICATIONS**

Corrosion resistant equipments

# STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Air Measuring range Water		Min. 80~800 NmL/min. Max. 6~60 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard flow rate table.</li> </ul>
		Min. 5~50 mL/min. Max. 0.2~2 L/min.	<ul> <li>In case Op. Press.at gas is not 1 atm, refer to page 1.</li> </ul>
Range	ability	10:1	
Accu	racy	±3%F.S.	
Max. Op	. Press.	10kgf/cm <sup>2</sup> G(0.98MPaG)	PVC <sup>…</sup> 5kgf/cm <sup>2</sup> G
Max. Op. Temp.		120°C (PVC…60°C)	Standard products have the packing materials made of NBR, so Max. Temp.is 80°C.
Material		Std.	Option(Specify by model code)
	Body	SUS304	SUS316, PVC
Та	pered tube	Pyrex glass	
Packing		NBR(max80°C)	Viton(max.120°C), CR(max.80°C), PTFE(max.120°C PVC body is not applicable)
Support		SCS14	PVC
Cover		Acryl	
Std.		Rc1/4	Refer to Basic model code
Connection	Opt.	1/4NPT, JIS10KFF etc.	for details.
Mounting	Std.	Lock-nut mount onto panel front	Refer to ordering information
mounting	Opt.	Flange pipe mount, Stand provided etc.	for details.
Weight(std. type)		0.9kg	

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
General		×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	rm unit	×	
Optical alarm	unit	×	
Analog outpu	t unit	×	

#### STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

AIR(1atm, 0°C)	Water
80 ~ 800 NmL/min	5 ~ 50 mL/min
0.1 ~ 1 NL/min	5 ~ 50 mL/min
0.2 ~ 2 NL/min	10 ~ 100 mL/min
0.3 ~ 3 NL/min	20 ~ 200 mL/min
0.5 ~ 5 NL/min	30 ~ 300 mL/min
1 ~ 10 NL/min	50 ~ 500 mL/min
2 ~ 20 NL/min	0.1 ~ 1 L/min
3 ~ 30 NL/min	0.15 ~ 1.5 L/min
5 ~ 50 NL/min	0.2 ~ 2 L/min
6 ~ 60 NL/min	0.2 ~ 2 L/IIIII

May be different depending on the scale length.

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options: Double graduations, special graduations, built-in check valve type, built-in rubber joint type, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).



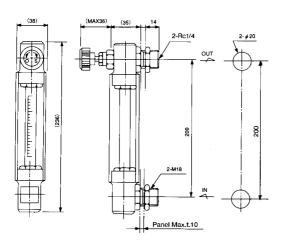
# BASIC MODEL CODE

SERIES N	IAME	<	₽	BC	Ρį	2	2			/
	FLOW DIRECTION	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	E	EXAM	IPLE
	/ DIR		IALOG	ATE	G MA	СТЮ	CTIC			
	ECT		ŝ	RIA	TER	Ż	N N N			
										DESCRIPTION
P-40	0	-L	0	-4	Ν	-R	2	$\square$		
		- VALVE	O ALARM ANALOG OUTPUT	4 BODY (GAS) MATERIAL	PACKING MATERIAL	CONNECTION TYPE	SIZE			
			A	AE	G	19	1	1/8		
			A	2 (S	I AN	2 N	2	1/4(Sta	ndard)	
			۵ ۵	TAN	Π Π	Ē	3	3/8		In the case of flange connection, connection
			2	ц Ц Ц	Ā	Ř	4	1/2		size is 3/8 and 1/2 or more. Rc1/8, 3/8. 1/2
			Ę	₽	l '		Z	Speci		are provided with male/female sockets.
			1			R	Rc thread			nut mounting onto panel front. want to use any other mounting,
						N	NPII	nread		t from Mounting Option .
						Ζ	Speci	al	Spec	cify Z for flange
					Ν		R(Stan	dard)		
					С	CR			Sele	ct it for ammonia gas.
					F	VIT				
					Z	Spe				
				4	-		(Stand	ard)		
				6		S316	Otaric	aiu)		
				P	PVC					
				z	Spe	-				
			0	Not p		vided				
		0		provid						
		L			for atmospheric pressure scale)					to valve location selection guide
		U	1.0		scale or for negative pressure on the secondary side)			econdary side)	(Page	e 57).
	_	Z		ecial					0.10	at the factor of a second at the
	0	Botto	m re	rear→Top rear(Standard)						ct this code normally. fy only this code for PVC material.
	1	Botto	m→	Тор						should be installed externally.
	9	Speci	ial							

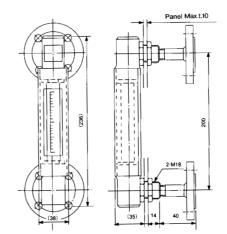
Basic model code	Designation items for detailed specifications				
P-40	①     ②     ③     ④     ⑤     ⑥       Fluid name     Measuring range     Press.     Temp.     Mounting Option     Other Option				
(Use model code table for selection)	(For specification procedure, refer to page 53)				

#### STANDARD TYPE

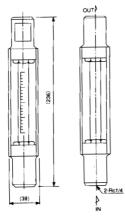
(P-400-U0-4N-R2, Valve provided at outlet , Panel front lock-nut fixing)



• FLANGE ENDED TYPE (P-400-00-4N-Z4, Valve not provided, flange connection) (Mounting Option code \_\_\_\_)



• FLOW DIRECTION STRAIGHT-THROUGH TYPE P-401-00-4N-R2, Thread connection of bottom to top direction.



#### Standard Material

Parts name	Standard material	Available material
Body	SCS14	PVC
Tapered tube	Pyrex glass	
Float	SUS316/Glass	PTFE,Ruby
Packing	NBR	VITON,CR,PTFE
Joint	SUS304	SUS316
Valve	SUS304	SUS316
Cover	Acryl	SPCC,SUS304
Mounting board	SPCC	SUS304

10

Purgemeter for medium and large flow rate. Aluminum body available in addition to standard Stainless-steel body. It is the same size as P-200 model of small flow rate type.

# MAJOR APPLICATIONS

**P-510** 

General purpose(Large flow rate)

#### STANDARD SPECIFICATION

Measuring object		object	Liquids and gases			
Measuring		Air	Min. 2.5~25 NL/min. Max. 60~600 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard flow rate table.</li> </ul>		
ran	range Water		Min. 0.1~1 L/min. Max. 3~30 L/min.	<ul> <li>In case Op. Press. at gas is not 1atm, refer to page 1.</li> </ul>		
R	ange a	bility	10:1			
	Accura	асу	±5%F.S.			
Ma	x. Op.	Press.	8kgf/ cm <sup>2</sup> G(0.78MPaG)			
Ма	Max. Op. Temp.		120°C	Standard products have the packing materials made of NBR, so Max. Temp.is 80°C.		
	Material Body		Std.	Option(Specify by model code)		
			SUS304	SUS316, Aluminum		
	Taper	ed tube	Pyrex glass	Refer to P-7 series for fluorine resin made tapered tube.		
	Packing		NBR(max80°C)	Viton(max.120°C), CR(max.80°C), EPDM(max.80°C)		
	Su	pport	SPCC or BS			
	Co	over	Acryl			
		Std.	Rc3/8	Refer to Basic model code		
Connec	tion	Opt.	Rc1/2,NPT3/8,NPT1/2,3/8SW, 3/8VCR,JIS10KFF etc.	for details.		
Mounti	ng	Std.	Thread(M3)mount onto panel front Lock-nut mount onto panel front	Refer to ordering information		
		Opt.	Bezel installation, Panel-rear installation, Stand provided Flange pipe tube installation	for details.		
Wei	ght(std	. type)	2.0kg			

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Deed witch two classes with	General	0	45, 46 page
Reed switch type alarm unit	CE, UL Version	0	45, 46 page
PAU Optical ala	ırm unit	0	47 page
Optical alarm	unit	×	
Analog outpu	t unit	0	49~52 page

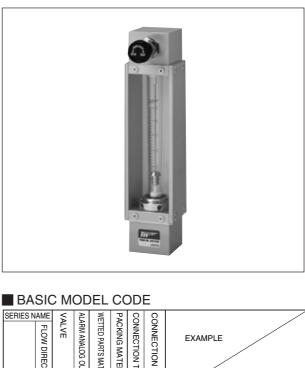
# In case Op. Press at gas is not 1atm, refer to page 1.)

In case ala	rm analog o	utput code i	s O,E and F		In case alarm analog output code is A to D						
AIR(1a	tm,0°C)	Wa	ater	AIR(1a	atm,0°C)	Alarm setting range		Water		Alarm setting range	
2.5~ 25	NL/min	0.1~1 L/min									
3 ~ 30	NL/min	0.1~1	L/min		-						-
5 ~ 50	NL/min	0.2~2	L/min	5~50	NL/min*	10~40	NL/min		L/min	00.04	L/min
10~100	NL/min	0.3~3	L/min	10~100	NL/min	20~80	NL/min	0.3~3 L/min		0.0~2.4 L/IIII	
20~200	NL/min	0.5~5	L/min	20~200	NL/min	40~160	NL/min	0.5~5	L/min	1~4	L/min
30~300	NL/min	1~10	L/min	30~300	NL/min	60~240	NL/min	1~10	L/min	2~8	L/min
40~400	NL/min	1.5~15	L/min	40~400	NL/min	80~320	NL/min	1.5~15	L/min	3~12	L/min
50~500	NL/min	2~20	L/min	50~500	NL/min	100~400	NL/min	2~20	L/min	4~16	L/min
60~600	NL/min	3~30	L/min <sup>2</sup>	60~600	NL/min	120~480	NL/min	3~30	L/min <sup>2</sup>	6~24	L/min
*Float material should be PVC *2 Available for Viscosity 1.0cP only.											

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduations, built-in check valve type, built-in rubber joint type, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).

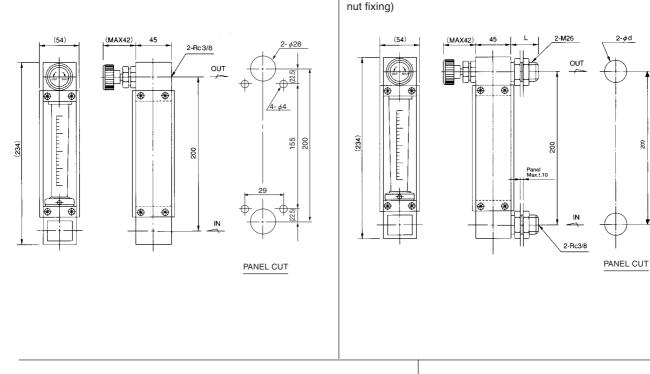


P-51       0       -L       0       -4       N       -R       3         W       A       M       PA       A       N       -R       3       3/8(Standard)         3       3/8(Standard)       -4       1/2       Comedion type code RNS can not te selected         0       V       4       1/2       Comedion type code RNS can not te selected         0       A       TFT       F       3/4       Comedion type code RNS can not te selected         0       V       A       T       Select 3.4,5,6,2 tor ftange       R         N       NPT thread       Same as above       Bezel installation can be selected. Refer to be selected. Refer to an a bove         0       N NBR(Standard)       C       C C R       Select I for animonia gas.         F       VITON       E       EPDM       Z       Special         4       SUS304(Standard)       6       SUS316       PTFE. Select P-7□ series for fluorine resin made tapered tube.         0       Not provided       A       Ree			<b>DW DIRECTION</b>		ANALOG OUTPUT	PARTS MATERIAL	NG MATERIAL	ECTION TYPE	ECTION SIZE		EXAM		DESCRIPTION	
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above       SW     Same as above       Z     Special       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       A     SUS304(Standard)       G     SuUS304(Standard)       Select P-520     model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.       Z     Special       O     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (HC)       C     Refer to page 45, 46.       C     Reed switch alarm (HC)       E     PAJALARM UNIT provided       A     PAS/IAU analog output unit       Refer to page 47.       G     PAS/IAU analog output unit       Refer to valve location selection guide       Presure on the secondary side       Z     Special       O     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bott		P-51	0	-L	0	-4	N	-R	3		/			
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above page 55 for details.       V     VCR     Same as above page 55 for details.       C     CR     Select 2 for flange       N     NBR(Standard)     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Z     Special     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Q     Not provided     A       A     Reed switch alarm (LO)     Refer to page 45, 46.       C     Reed switch alarm (HC)     Refer to page 47.       G     PAS/IAU analog output unit     Refer to page 49.       Z     Special     Imposited       L     Bottom gas for atmospheric pressure scale up ressure on the secondary side       Z     Special       Q     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.				VALVE	ALARM /	WETTED	PACKING	CONNEC	CONNECTION SIZE					
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above page 55 for details.       V     VCR     Same as above page 55 for details.       C     CR     Select 2 for flange       N     NBR(Standard)     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Z     Special     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Q     Not provided     A       A     Reed switch alarm (LO)     Refer to page 45, 46.       C     Reed switch alarm (HC)     Refer to page 47.       G     PAS/IAU analog output unit     Refer to page 49.       Z     Special     Imposited       L     Bottom gas for atmospheric pressure scale up ressure on the secondary side       Z     Special       Q     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.					ź	P	N N	Ĭ	3	3/8(	Standard)			
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above page 55 for details.       V     VCR     Same as above page 55 for details.       C     CR     Select 2 for flange       N     NBR(Standard)     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Z     Special     Select P-520 model for PVC and PTFE. Select P-72□series for fluorine resin made tapered tube.       Q     Not provided     A       A     Reed switch alarm (LO)     Refer to page 45, 46.       C     Reed switch alarm (HC)     Refer to page 47.       G     PAS/IAU analog output unit     Refer to page 49.       Z     Special     Imposited       L     Bottom gas for atmospheric pressure scale up ressure on the secondary side       Z     Special       Q     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.					5	E	A	ž				-		
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above       SW     Same as above       Z     Special       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       A     SUS304(Standard)       G     SuUS304(Standard)       Select P-520     model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.       Z     Special       O     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (HC)       C     Refer to page 45, 46.       C     Reed switch alarm (HC)       E     PAJALARM UNIT provided       A     PAS/IAU analog output unit       Refer to page 47.       G     PAS/IAU analog output unit       Refer to valve location selection guide       Presure on the secondary side       Z     Special       O     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bott					ã	S S	뛰	Υ	-		1			
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above       SW     Same as above       Z     Special       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       A     SUS304(Standard)       G     SuUS304(Standard)       Select P-520     model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.       Z     Special       O     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (HC)       C     Refer to page 45, 46.       C     Reed switch alarm (HC)       E     PAJALARM UNIT provided       A     PAS/IAU analog output unit       Refer to page 47.       G     PAS/IAU analog output unit       Refer to valve location selection guide       Presure on the secondary side       Z     Special       O     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bott					Ę	A	₽	щщ			a cial			
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above       SW     Same as above       Z     Special       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       A     SUS304(Standard)       G     SuUS304(Standard)       Select P-520     model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.       Z     Special       O     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (HC)       C     Refer to page 45, 46.       C     Reed switch alarm (HC)       E     PAJALARM UNIT provided       A     PAS/IAU analog output unit       Refer to page 47.       G     PAS/IAU analog output unit       Refer to valve location selection guide       Presure on the secondary side       Z     Special       O     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bott					F	🛱		Б	-					
L     Rc thread     Lock-nut mounting onto panel front.     Bezel installation can be selected. Refer to Mounting Option in S       N     NPT thread     Same as above       SW     Same as above       Z     Special       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       N     NBR(Standard)       C     CR       Select Z for flange       A     SUS304(Standard)       G     SuUS304(Standard)       Select P-520     model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.       Z     Special       O     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (HC)       C     Refer to page 45, 46.       C     Reed switch alarm (HC)       E     PAJALARM UNIT provided       A     PAS/IAU analog output unit       Refer to page 47.       G     PAS/IAU analog output unit       Refer to valve location selection guide       Presure on the secondary side       Z     Special       O     Not provided       L     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bott					F	Ř								
L       Inc thread       onto panel front.       be zelected. Refer to be selected. Refer to Mounting Option in page 55 for details.         V       VCR       Same as above       Mounting Option in page 55 for details.         V       VCR       Same as above       Mounting Option in page 55 for details.         Z       Special       Select Z for flange       Mounting Option in page 55 for details.         Z       Special       Select Z for flange       Mounting Option in page 55 for details.         Z       Special       Select Z for flange       Mounting Option in page 55 for details.         Z       Special       Select P-520 model for PVC and PTFE. Select P-7[] series for fluorine resin made tapered tube.         Z       Special       Select P-520 model for PVC and PTFE. Select P-7[] series for fluorine resin made tapered tube.         Z       Special       Select P-520 model for PVC and PTFE. Select P-7[] series for fluorine resin made tapered tube.         Z       Special       Select N alarm (LO)       Refer to page 45, 46.         C       Reed switch alarm (HC)       E       PAU ALARM UNIT provided       Refer to page 47.         G       PAS/IAU analog output unit       Refer to page 49.       Z       Special         0       Not provided       A       Refer to valve location selection guide (Page 57).						'				ouu				
SW       same as above       page 55 for details.         V       VCR       Same as above         Z       Special       Select Z for flange         NNRR(standard)       C       CR         C       CR       Select I for ammonia gas.         F       VITON       E         E       EPDM       Select P-520 model for PVC and         6       SUS316       PTFE. Select P-71□series for fluorine resin made tapered tube.         Z       Special       Select P-520 model for PVC and         0       Not provided       A         A       Reed switch alarm (LO)       B         B       Reed switch alarm (HC)       Refer to page 45, 46.         C       Reed switch alarm (HC)       E         D       Reed switch alarm (HC)       Refer to page 47.         G       PAXJAU analog output unit       Refer to page 49.         Z       Special       Special         0       Not provided       Refer to valve location selection guide         L       Bottomgas for atmospheric pressure scale)       Refer to valve location selection guide         U       Top(gas for pressure scale or for negative pressure on the secondary side)       Refer to valve location selection guide         U								L			onto panel	front.	be selected. Refer to	
V       VCR       Same as above         Z       Special       Select Z for flange         N       NBR(Standard)       C         C       CR       Select it for ammonia gas.         F       VITON       E         E       EPDM       Z         Z       Special       A         4       SUS304(Standard)       Select P-520 model for PVC and PTFE. Select P-7□□series for fluorine resin made tapered tube.         Z       Special       Special         0       Not provided       A         A       Reed switch alarm (LO)       B         B       Reed switch alarm (HO)       D         D       Reed switch alarm (HC)       E         E       PAJALARM UNIT provided       Refer to page 45, 46.         C       Reed switch alarm (HC)       E         E       PAJALARM UNIT provided       Refer to page 49.         Z       Special       O         0       Not provided       Refer to valve location selection guide         L       Bottom(gas for atmospheric pressure scale)       Refer to valve location selection guide         V       Top(gas for pressure scale) or for negative pressure on the secondary side)       Refer to valve location selection guide <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>read</td><td>Same as</td><td>above</td><td>Mounting Option in</td></t<>										read	Same as	above	Mounting Option in	
Z       Special       Select Z for flange         N       NBR(Standard)       C         C       C       R         F       VITON       E         E       EPDM       Z         Z       Special       Select If for ammonia gas.         F       VITON       E         E       EPDM       Z         Z       Special       Select P-520 model for PVC and PTFE. Select P-7□ series for fluorine resin made tapered tube.         Z       Special       O         O       Not provided       A         A       Reed switch alarm (LO)       B         B       Reed switch alarm (LO)       Refer to page 45, 46.         C       Reed switch alarm (HO)       D         D       Reed switch alarm (HC)       E         E       PAU ALARM UNIT provided       Refer to page 47.         G       PAS/IAU analog output unit       Refer to page 49.         Z       Special       O         O       Not provided       Refer to valve location selection guide         L       Bottom(gas for atmospheric pressure scale)       Refer to valve location selection guide         U       Top(gas for pressure scale or for negative pressure on the secondary side)								-	-					
N       NBR(Standard)         C       CR       Select it for ammonia gas.         F       VITON         E       EPDM         Z       Special         4       SUS304(Standard)         6       SUS316         PTFE.       Select P-520 model for PVC and PTFE.         Aluminium(For Gas)       PTFE.         Z       Special         0       Not provided         A       Reed switch alarm (LO)         B       Reed switch alarm (HC)         C       Reed switch alarm (HC)         D       Reed switch alarm (HC)         E       PAU ALARM UNIT provided         A       Pacial         0       Not provided         L       Bottom(gas for atmospheric pressure scale)         U       Top(gas for pressure scale or for negative pressure on the secondary side)         Z       Special         0       Bottom rear → Top rear(Standard)         Select this code normally.         1       Bottom →Top								-	-					
C       C       C       C       Select it for ammonia gas.         F       VITON       E       EPDM         Z       Special       Select P-520 model for PVC and PTFE. Select P-7□ series for fluorine resin made tapered tube.         Z       Special       PTFE. Select P-7□ series for fluorine resin made tapered tube.         O       Not provided       A         A       Reed switch alarm (LO)       B         B       Reed switch alarm (HC)       E         D       Reed switch alarm (HC)       E         E       PAU ALARM UNIT provided       Refer to page 45, 46.         C       Reed switch alarm (HC)       E         E       PAU ALARM UNIT provided       Refer to page 47.         G       PAS/IAU analog output unit       Refer to page 49.         Z       Special       Valve slocation selection guide         U       Top(gas for pressure scale)       Refer to valve location selection guide         U       Top(gas for pressure scale) or for negative pressure on the secondary side       Page 57).         Z       Special       Select this code normally.         0       Bottom rear → Top rear(Standard)       Select this code normally.							NI	-			Select 4	siect z for liange		
F       VITON         E       EPDM         Z       Special         4       SUS304(Standard)         6       SUS316         PTFE.       Select P-520 model for PVC and ptressries for fluorine resin made tapered tube.         Z       Special         0       Not provided         A       Reed switch alarm (LO)         B       Reed switch alarm (HO)         D       Reed switch alarm (HC)         E       PAJ/AU analog output unit         Z       Special         0       Not provided         A       Reed switch alarm (HC)         E       PAJ/AU analog output unit         Refer to page 47.       G         G       PAS/IAU analog output unit         Z       Special         0       Not provided         L       Bottom(gas for atmospheric pressure scale)         U       Top(gas for pressure scale or for negative pressure on the secondary side)         Z       Special         0       Bottom rear → Top rear(Standard)         Select this code normally.         1       Bottom →Top									Stanua	ru)	Soloot it	for o	mmonio goo	
E       EPDM         Z       Special         4       SUS304(Standard)         6       SUS316         A       Aluminium(For Gas)         Z       Special         0       Not provided         A       Reed switch alarm (LO)         B       Reed switch alarm (HO)         D       Reed switch alarm (HC)         E       PAJALARM UNIT provided         A       PAS/LAU analog output unit         Refer to page 47.       G         G       PAS/LAU analog output unit         Z       Special         0       Not provided         L       Bottom(gas for atmospheric pressure scale)         U       Top(gas for pressure scale) or for negative pressure on the secondary side)         Z       Special         0       Bottom rear → Top rear(Standard)         1       Bottom → Top							-	-	2N		Select I	l IUI a	ininonia gas.	
4       SUS304(Standard)       Select P-520 model for PVC and PTFE. Select P-7□]series for fluorine resin made tapered tube.         2       Special       PTFE. Select P-7□]series for fluorine resin made tapered tube.         0       Not provided       A Reed switch alarm (LO)       Refer to page 45, 46.         C       Reed switch alarm (HC)       E PAU ALARM UNIT provided Refer to page 47.       G PAS/IAU analog output unit         Z       Special       O Not provided       Refer to page 47.         G       PAS/IAU analog output unit       Refer to page 49.       Z         Z       Special       O       O Not provided         U       Top(gas for pressure scale)       Refer to valve location selection guide (Page 57).         Z       Special       O         0       Bottom rear →Top rear(Standard)       Select this code normally.														
6       SUS316       Select P-520 model for PVC and PTFE. Select P-7□_Iseries for fluorine resin made tapered tube.         2       Special       PTFE. Select P-7□_Iseries for fluorine resin made tapered tube.         0       Not provided       A         A       Reed switch alarm (LO)       B         B       Reed switch alarm (LC)       C         C       Reed switch alarm (HC)       B         D       D       Reed switch alarm (HC)       B         E       PAU ALARM UNIT provided       Refer to page 45, 46.       C         C       Reed switch alarm (HC)       B       Beced switch alarm (HC)       B         E       PAU ALARM UNIT provided       Refer to page 47.       G       PAS/IAU analog output unit       Refer to page 49.       Z         Z       Special       0       Not provided       Pater to valve location selection guide (Page 57).         Z       Special       Z       Special       Pater to valve location selection guide (Page 57).         Z       Special       Z       Select His code normally.       Yeare should be installed externally.         1       Bottom →Top       Valve should be installed externally.       Yeare should be installed externally.							z	Spe	cial					
6       SUS316       PTFE. Select P-7□□series for fluorine resin made tapered tube.         Z       Special       fluorine resin made tapered tube.         0       Not provided       A         A       Reed switch alarm (LC)       Refer to page 45, 46.         C       Reed switch alarm (HC)       B         D       Reed switch alarm (HC)       Refer to page 47.         G       PAS/IAU analog output unit       Refer to page 49.         Z       Special       O         0       Not provided       Refer to valve location selection guide (Page 57).         Z       Special       O         0       Bottom rear → Top rear(Standard)       Select this code normally.         1       Bottom → Top       Valve should be installed externally.						4			Standa	rd)	Salaat	D 500	model for BVC and	
Aluminium(For Gas)     fluorine resin made tapered tube.       Z     Special       0     Not provided       A     Reed switch alarm (LO)       B     Reed switch alarm (LC)       C     Reed switch alarm (HO)       D     Reed switch alarm (HC)       E     PAU ALARM UNIT provided       G     PAS/IAU analog output unit       Z     Special       0     Not provided       L     Bottom(gas for atmospheric pressure scale)       U     Top(gas for pressure scale or for negative pressure on the secondary side)       Z     Special       0     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bottom → Top						-								
0       Not provided         A       Reed switch alarm (LO)         B       Reed switch alarm (LC)         C       Reed switch alarm (HC)         D       Reed switch alarm (HC)         E       PAU ALARM UNIT provided         Refer to page 45, 46.         G       PASIAU analog output unit         Z       Special         0       Not provided         L       Bottom(gas for atmospheric pressure scale) pressure on the secondary side)         Z       Special         0       Bottom rear → Top rear(Standard)         Select this code normally.         1       Bottom → Top									n(For G	ias)				
A     Reed switch alarm (LO)       B     Reed switch alarm (LC)       C     Reed switch alarm (HO)       D     Reed switch alarm (HC)       E     PAU ALARM UNIT provided       G     PAS/IAU analog output unit       Z     Special       0     Not provided       L     Bottom(gas for atmospheric pressure scale) pressure on the secondary side       Z     Special       0     Bottom rear → Top rear(Standard)       Select this code normally.       1     Bottom → Top	1													
B     Reed switch alarm (LC)     Refer to page 45, 46.       C     Reed switch alarm (HO)     D       D     Reed switch alarm (HC)     E       E     PAU ALARM UNIT provided     Refer to page 47.       G     PAS/IAU analog output unit     Refer to page 49.       Z     Special     0       U     Top(gas for pressure scale or for negative pressure on the secondary side)       Z     Special       Q     Bottom rear →Top rear(Standard)       Select this code normally.     1	1								arm /l	$\overline{0}$	_			
C       Reed switch alarm (HO)         D       Reed switch alarm (HC)         E       PAU ALARM UNIT provided         G       PAS/IAU analog output unit         Z       Special         0       Not provided         L       Bottom(gas for atmospheric pressure scale)         U       Top(gas for pressure scale or for negative pressure on the secondary side)         Z       Special         0       Bottom rear →Top rear(Standard)         Select this code normally.       1         Bottom →Top       Valve should be installed externally.	1								· ·			er to n	age 45, 46,	
D     Reed switch alarm (HC)       E     PAU ALARM UNIT provided     Refer to page 47.       G     PAS/IAU analog output unit     Refer to page 49.       Z     Special     0       Not provided     Bottom(gas for atmospheric pressure scale)     Refer to valve location selection guide (Page 57).       Z     Special     0       0     Bottom rear → Top rear(Standard)     Select this code normally.       1     Bottom → Top     Valve should be installed externally.	1										-	o p		
E         PAU ALARM UNIT provided         Refer to page 47.           G         PAS/IAU analog output unit         Refer to page 49.           Z         Special         0           U         Top(gas for atmospheric pressure scale) pressure on the secondary side)         Refer to valve location selection guide (Page 57).           Z         Special         0           0         Bottom rear → Top rear(Standard)         Select this code normally.           1         Bottom → Top         Valve should be installed externally.					-									
Z       Special         0       Not provided         L       Bottom(gas for tamospheric pressure scale)         U       Top(gas for pressure scale or for negative pressure on the secondary side)         Z       Special         0       Bottom rear → Top rear(Standard)         Select this code normally.         1       Bottom → Top					-						ed Refe	r to p	age 47.	
0         Not provided           L         Bottom(gas for pressure scale)           U         Top(gas for pressure scale or for negative pressure on the secondary side)           Z         Special           0         Bottom rear →Top rear(Standard)           1         Bottom →Top					G			inalo	g outpu	ut ur	nit Refe	r to p	age 49.	
L         Bottom(gas for atmospheric pressure scale)         Refer to valve location selection guide           U         Top(gas for pressure scale or for negative pressure on the secondary side)         Refer to valve location selection guide           Z         Special         Special         Select this code normally.           1         Bottom →Top         Valve should be installed externally.					-									
U         Top(gas for pressure scale or for negative pressure on the secondary side)         Refer to valve location selection guide (Page 57).           Z         Special         0         Bottom rear → Top rear(Standard)         Select this code normally.           1         Bottom → Top         Valve should be installed externally.				-										
U         10pigs for pressure scale or for negative pressure on the secondary side)         (Page 57).           Z         Special         0           0         Bottom rear →Top rear(Standard)         Select this code normally.           1         Bottom →Top         Valve should be installed externally.					-		0 1 1 /			—́ Rofor	r to val	ve location selection guide		
Z         Special           0         Bottom rear → Top rear(Standard)         Select this code normally.           1         Bottom → Top         Valve should be installed externally.				U								guido		
0         Bottom rear → Top rear(Standard)         Select this code normally.           1         Bottom → Top         Valve should be installed externally.				7	<u> </u>						_			
1 Bottom→Top Valve should be installed externally.			0								Sele	ct this	s code normally	
	1													
	1		9	Speci									, and the second s	

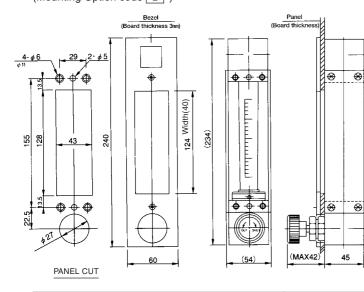
Basic model code	Designation items for detailed specifications					
P-51	①     ②     ③     ④     ⑤       Fluid name     -     Measuring range     -     Press.     -     Temp.     -     Mounting Option     -     Other Option					
(Use model code table for selection)	(For specification procedure, refer to page 53)					

#### STANDARD TYPE

(P-510-U0-4N-R3 Valve provided at Outlet, panel front thread (M3) mounting type)



BEZEL INSTALLATION TYPE (P-510-L0-4N-R3, Valve provided at Outlet, Bezel installation.) (Mounting Option code D)



#### PANEL CUT SIZE

PANEL-FRONT INSTALLATION TYPE

(P-510-U0-4N-L3 , Valve provided at Outlet, panel front lock-

For PANEL-FRONT INSTALLATION TYPE, Panel cut dimension may differ depending on connection size and rating. Refer to following table.

200

φ28	26
φ28	26
φ32	26
φ32	26
φ38	28
φ22	(38)
φ32	(37.5)
φ32	(37.5)
	φ 28 φ 32 φ 32 φ 32 φ 38 φ 22 φ 32

Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A~D.

#### Standard Material

Parts name	Standard material	Available material
Body	SUS304	Aluminium,SUS316
Tapered tube	Pyrex glass	—
Float	SUS304	—
Packing	NBR	VITON,CR,EPDM
Spindle	SUS304	SUS316
Valve	SUS304	SUS316
Mounting board	SPCC	SUS304
Cover	Acryl	—

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### In case alarm output code is A to D

IN

Rc 3/8

2-Rc 3/8

8

⊗

45

OUT

Α	Reed switch alarm(LO)	
В	Reed switch alarm(LC)	Refer to page 45, 46.
С	Reed switch alarm(HO)	Helel to page 45, 46.
D	Reed switch alarm(HC)	

#### In case alarm output code is E, G

		ease alain saipai seas is -	-, •		
	Е	PAU ALARM UNIT provided	Refer to page 47.		
ſ	G	PAS/IAU Analog output unit	Refer to page 49.		

Resin (PVC, TEFLON) construction eliminates the possibility of introduction of metallic ions into process liquids. Suitable for Pure and Ultra pure water lines in Semi-conductor production facilities.

# MAJOR APPLICATIONS

**P-520** 

Pure/Ultra pure water lines

#### STANDARD SPECIFICATION

Mea	suring	objec	Liquio	ls				
	suring nge	Water	Min. Max.	1~ 10* 12~60		When selecting flow range, refer to standard flow rate table.		
Ra	ange ab	ility	10:1					
	Accurac	ÿ	<u>+</u> 5%	F.S.				
Max	. Op. P	ress.	5kgf/	cm <sup>2</sup> G(0.4	49MPaG)			
Max. Op. Temp.			60°C			Body material Heat-proof PVC - max 80°C (PTEE - max 80°C).		
	Materia	ıl	Std.			Option (Specify by model code)		
	В	ody	PVC(max60°C)			Heat-proof PVC(max.80°C),PTFE(max.80°C)		
	Тарен	ed tube	Pyrex glass			(Refer to P-7		
	Pa	cking	Viton			EPDM		
	Su	pport	SUS3	304				
	C	over	Trans	parent P	VC			
Connec	tion	Std.	Rc1/2			Refer to Basic model code for		
Connec		Opt.	Rc3/4,	NPT1/2,N	IPT3/4 etc.	details.		
Mount	ling	Std.	Thread (	Thread (M3) mount onto panel front		Refer to ordering information for		
wount	ung 🗌	Opt.	Panel-rear installation,			details.		
Weig	ght (std	. type)	1.2kg					

\*Consult in case 1~10 L/min or less

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	0	45,46 page
Reed switch type alarm unit	CE, UL Version	0	45,46 page
PAU Optical alarm unit		0	47 page
Optical alarm unit		×	
PAS/IAU analog output ur	nit	0	49~52 page

# STANDARD FLOW RATE TABLE

(Consult in case 1~10 L/min or less.)

In case alarm analog ou	tput code is O,E and G	In case alarm analog output code is A to D					
AIR(1atm,0oC)	Water	Water	Alarm setting range				
	1~10 L/min	1.2~12 L/min	2.4~10 L/min				
	1.5~15 L/min	1.5~15 L/min	3 ~ 12 L/min				
	2 ~ 20 L/min	2 ~ 20 L/min	4 ~ 16 L/min				
	3 ~ 30 L/min	3 ~ 30 L/min	6 ~ 24 L/min				
	4 ~ 40 L/min	4 ~ 40 L/min	8 ~ 32 L/min				
	4.5~45 L/min	4.5~45 L/min	9 ~ 36 L/min				
	5 ~ 50 L/min	5 ~ 50 L/min	10~ 40 L/min				
$\vee$	12~ 60 L/min	12~ 60 L/min	18~ 48 L/min				

May be different depending on the scale length.

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduations, built-in joint type, etc.

(For details, refer to 6) Other Option on page 56).



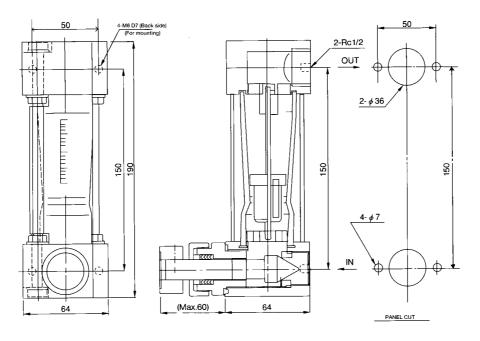
#### BASIC MODEL CODE

SERIES I	NAME	<	≥	œ	P	0	0		
	FLOW DIRECTION	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMPLE
P-52	0	-L	0	-P	F	-R	4		
			O ALARM ANALOG OUTPUT	4 WETTED PARTS MATERIAL		CONNECTION TYPE R Z N 10 E	NP1 Spe n(Sta	thread	Flow direction code is only bottom → top. Thread mounting onto panel front. If you want to use any other mounting, select from [Mounting Option].
					Z	Spe			
				Р		C(Sta	Indar	d)	
				Т	PTF				
				4 B	BS	\$304			
				Z	Spe	cial			
			0	Not p					
			A	Reed			arm (l	_0)	
				Reed					Refer to page 45, 46.
			С	Reed				· /	1 10101 to page +0, +0.
				Reed					
								orovided	Refer to page 47.
				PAS/I/ Spec		alog	outpu	unit	Refer to page 49.
		0		provi					
		L	_	tom					
		Z		ecial					
	0	Bott							Select this code normally.
	1			→Тор					Valve is not provided.
	9	Spe	cial						

Basic model code	Designation items for detailed specifications						
P-52	①     ②     ③     ④     ⑤       Fluid name     Measuring range     Press.     Temp.     Mounting Option     Other Option						
(Use model code table for selection )	(For specification procedure, refer to page 53)						

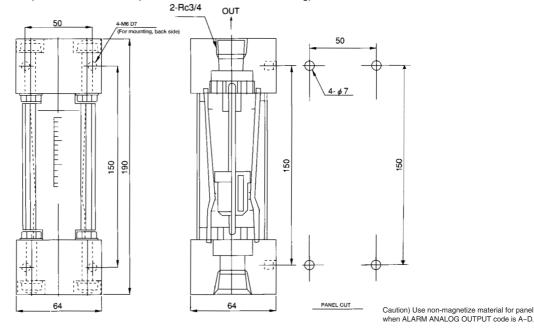
# STANDARD TYPE

(P-520-L0-4N-PF-R4 Valve provided at Inlet, Panel front screw fixing)



#### FLOW DIRECTION STRAIGHT-THROUGH TYPE

(P-521-00-PF-R5, Valve not provided, Bottom to top direction, Panel front screw fixing)



#### Standard Material

Standard material	Available material		
PVC	PTFE,SUS304		
Pyrex glass			
PVC	SUS304,PTFE		
VITON	EPDM		
FEP covering SUS316			
PVC	PTFE		
PVC	PTFE		
SUS304			
Transparent PVC			
	PVC Pyrex glass PVC VITON FEP covering SUS316 PVC PVC SUS304		

Parts whose names are described in **bold lettrs** are in contact with fluids to be measured.

#### • In case alarm output code is A to D

Α	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	Relei to page 45, 46.
D	Reed switch alarm (HC)	

#### • In case alarm output code is E, G

Е	PAU ALARM UNIT provided	Refer to page 47.
G	PAS/IAU analog output unit provided	Refer to page 49.

# **P-530**

# GENERAL

Compacter than P-510 series. Purgemeter for large flow rate. Swagelok and VCR connection are also available.

# ■ MAJOR APPLICATIONS

General purpose (Large flow rate)

# STANDARD SPECIFICATION

			1			
Mea	suring	object	Liquids and gases			
Meas	Air		Min. 5~50 NL/min. Max. 30~300 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard flow rate table.</li> </ul>		
range	ige	Water	Min. 0.2~2 L/min. Max. 1~10 L/min.	<ul> <li>In case Op. Press. at gas is not 1atm, refer to page 1.</li> </ul>		
Ra	inge at	oility	10:1			
A	Accura	су	±5%F.S.			
Max	. Op. F	Press.	8kgf/ cm <sup>2</sup> G(0.78MPaG)			
Max	Max. Op. Temp.		120°C	Standard products have the packing materials made of NBR, so Max. Temp. is 80°C.		
	Materia	al	Std.	Option (Specify by model code)		
	Body		SUS304	SUS316		
	Tape	red tube	Pyrex glass	Refer to P7 Series for fluorine resin made tapered tube.		
	Pa	acking	NBR(max80°C)	Viton (max.120°C), CR(max.80°C), EPDM(max.80°C)		
	Su	upport	Aluminum			
	С	over	Acryl			
		Std.	Rc3/8	Refer to Basic model code for		
Connec	tion	Opt.	Rc1/2,NPT3/8,NPT1/2, 3/8SW,3/8VCR etc.	details.		
Mount	ing	Std.	Thread (M3) mount onto panel front	Refer to ordering information for		
wount	ii iy	Opt.	Bezel installation, Panel-rear installation,	details.		
Weig	ght (sto	d. type)	1.5kg			

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Deed outling the stars unit	General	×	
Reed switch type alarm unit	CE, UL Version	0	45,46 page
PAU Optical alarm unit		×	
Optical alarm unit		×	
Analog output unit		×	

#### ■ STANDARD FLOW RATE TABLE

In case alarm a	nal	og output	code is O		In case alarm analog output code is A to D					
AIR(1atm,20°	NR(1atm,20°C) Water			AIR(1atm,20°C) Alarm setting range			ge Water Alarm setting		ting range	
10~50 NL/m					$\sim$		$\sim$	0.3~3 L/min	06.24	L/min
20~100 NL/m	in	0.3~3	L/min	20~100	NL/min	20~80	NL/min	0.5~5 L/IIIII	0.0~2.4	L/11111
									1~4	L/min
60~300 NL/m	in	1~10	L/min	60~300	NL/min	60~240	NL/min	1~10 L/min	2~8	L/min

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options:

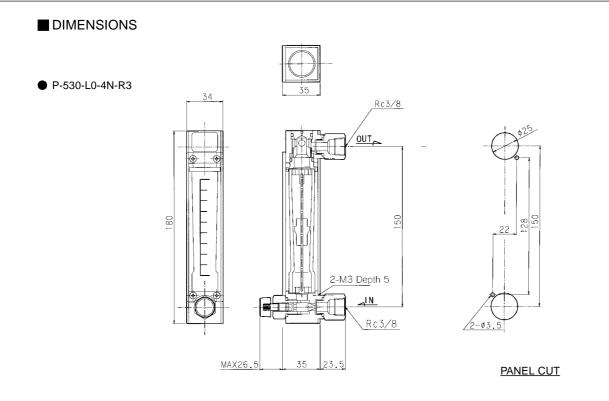
Two point alarm, reed switch lead wire length, double graduations, special graduations, built-in rubber joint type, built-in joint type, etc. (For details, refer to 6 <u>Other Option</u> on page 56).



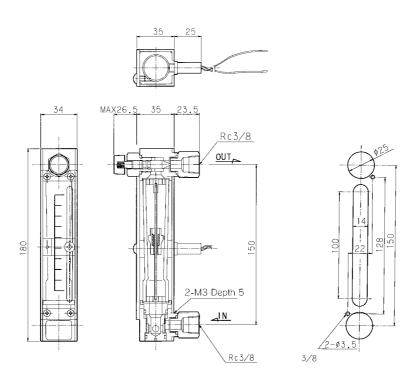
# BASIC MODEL CODE

SI	ERIES	FLOW DIRECTION     Section     Se	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMPL	E
	<b>-</b> 53	0	-L	0	-4	Ν	-R	3			
			VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	4	3/8 (Standard) 1/2	Connection	type code S can not be selected.
				ດັ	₽	R	<u> </u>	Ζ	Special		
				ç		₽	R	Rct	nread		
				TPL			Ν	NPT	thread	Front thread	Bezel installation can be
				Ę			S	SW		mount onto	selected. Refer to Mounting
							V	VCF	ł	panel,	Option in page 55 for details.
							z	Spe	cial		
						N	NBF	R (St	andard)		
						С	CR			Select it f	or ammonia gas.
						F	VIT	-			
						E	EPD				
						Z	Spe				
					4	SUS	\$304	(Sta	ndard)	Select P-	520 model for PVC, PTFE.
					6	SUS	5316				70 series for fluorine
					z	Spe	cial			resin mad	le tapered tube.
				0	Not p	· ·					
				А	Reed						
					Reed					Refer to	page 45, 46.
					Reed						
				D			switch alarm (HC)				
			0	Z	Spec						
			L			or atmospheric pressure scale)			sure scale)	Refer to v	alve position selection
			U			cale or for negative pressure on the secondary side)				guide (Pa	
			Z		ecial					<u> </u>	<b>,</b>
		0	Bott			→Top rear (Standard)			ndard)	Select thi	s code normally.
L		9	Spe	Special							

Basic model code	Designation items for detailed specifications							
P-53	1 2 3 4 5 6 Fluid name – Measuring range – Press. – Temp. – Mounting Option – Other Option							
(Use model code table for selection )	(For specification procedure, refer to page 53)							



• P-530-UA-4N-R3



#### Standard Material

Parts name	Standard material	Available material
Body	SUS304	SUS316
Tapered tube	Pyrex glass	_
Float	SUS304	SUS316
Packing	NBR	VITON, EPDM
Float rod	SUS316	_
Float stopper	POM	_
Valve	SUS304	SUS316
Fitting	SUS304	SUS316
Mounting board	Aluminum	—
Cover	Transparent Acryl	_

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### • In case alarm output code is A to D

Α	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

# **P-540**

# GENERAL

Compact design covers a variety of flow range. Light weight and smartness available for wide range usage.

# ■ MAJOR APPLICATIONS

General purpose (Large flow rate)

# STANDARD SPECIFICATION

Mos	curing	object	Liquids and gases			
Measuring range		Air	Min. 2.5~25 NL/min. Max. 60~600 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard</li> </ul>		
		Water	Min. 0.1~1 L/min. Max. 3~30 L/min.	flow rate table. · In case Op. Press. at gas is not 1atm, refer to page 1.		
Ra	nge ab	ility	10:1			
	ccurac		±5%F.S.			
Max	. Op. P	ress.	8kgf/ cm <sup>2</sup> G(0.78MPaG)			
Max. Op. Temp.			120°C	Standard products have the packing materials made of NBR, so Max. Temp. is 80°C.		
	Material		Std.	Option (Specify by model code)		
	В	ody	SUS304 (Body SCS14)	SUS316		
	Таре	red tube Pyrex glass		Refer to P-7 series for fluorine resin made tapered tube.		
	Packing		NBR(max80°C)	Viton (max.120°C), CR(max.80°C), EPDM(max.80°C)		
		pport	Aluminum			
	C	over	Poly-carbonate			
		Std.	Rc3/8	Refer to Basic model code		
Connect	ion	Opt.	Rc1/2,NPT3/8,NPT1/2,3/8SW 3/8VCR	for details.		
Mounti		Std.	Thread (M3) mount onto panel front			
wount	i y	Opt.	Panel-rear installation			
Weig	ht (std	. type)	1.8kg			

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	×	
Reed switch type alarm unit	CE, UL Version	0	45,46 page
PAU Optical ala	ırm unit	×	
Optical alarm	unit	×	
Analog outpu	t unit	×	

# STANDARD FLOW RATE TABLE

(In case Op.Press at gas is not 1atm,refer to Page 1.)

In case	alarm anal	og output	code is O		In case alarm analog output code is A to D																
AIR(1	atm,0°C)	w	ater	AIR(1	atm,0°C)	Alarm setting range		Water		Alarm setting range											
2.5~25	NL/min	0.1~1 L/min																			
3~30	NL/min	0.1~1	L/IIIIII						-												
5~50	NL/min	0.2~2	L/min	5~50	NL/min	10~40	NL/min	0.0.0	L/min	06.04	L/min										
10~100	NL/min	0.3~3	L/min	10~100	NL/min	20~80	NL/min	0.3~3	L/IIIII	0.0~2.4	L/IIIII										
20~200	NL/min	0.5~5	L/min	20~200	NL/min	40~160	NL/min	0.5~5	L/min	1~4	L/min										
30~300	NL/min	1~10	L/min	30~300	NL/min	60~240	NL/min	1~10	L/min	2~8	L/min										
40~400	NL/min	1.5~15	L/min	40~400	NL/min	80~320	NL/min	1.5~15	L/min	3~12	L/min										
50~500	NL/min	2~20	L/min	50~500	NL/min	100~400	NL/min	2~20	L/min	4~16	L/min										
60~600	NL/min	3~30	L/min	60~600	NL/min	120~480	NL/min	3~30	L/min	6~24	L/min										
								* Availa	ble for vi	scosity 1.	0cP only										

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, reed switch lead wire length, double graduations, special graduations, built-in rubber joint type, built-in joint type, etc. (For details, refer to 6 Other Option on page 56).

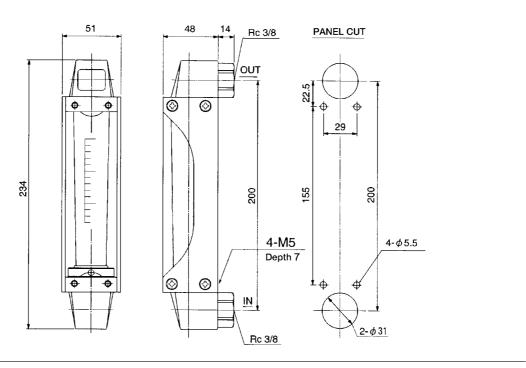


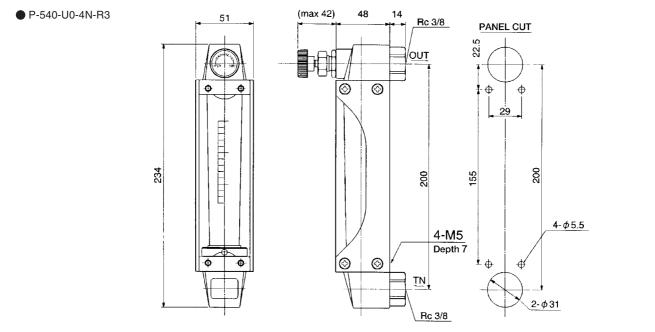
# BASIC MODEL CODE

SERIES N		VALVE	ALAR	WETT	PAC	ç	C Q					
	FLOW DIRECTION	.VE	ALARM ANALOG OUTPUT	fed parts m	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		ΕX	KAM	PLE	
	-			ATERIAL			V SIZE		/	/	DESCRIPTION	
P-54	0	-L	0	-4	N	-R	3	$\angle$				
		VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	SIZE	0.10				
			5	P	1	I₹	3		(Stan	dard)		
			GO	s S		R		1/2		t the	read mount onto panel	
			Š	IA1	₽	N	NPT th				ead mount onto panel	
			ק	핖		S	SW		Same as			
				ĨÃ		v	VCR		Same as		Bezel installation can be selected.	
				· ·	N	•	(Standa	_	oumo a	00000		
					C	CR	lotanac		Sele	ect it	for ammonia gas.	
					F	VIT	NC					
					Е	EPD	DM					
					Z	Spe						
				4	SUS	304 (	Standa	ard)			520 model for PVC, PTFE.	
				6		3316				elect P-7 Series for fluorine res		
				Z	Spe				mad	le tap	pered tube.	
			0	Not p								
			A				arm (L		_			
			В				arm (L		F	Refe	r to page 45, 46.	
			C				arm (F		_			
			D			cn al	arm (H	HC)	_			
		0	Z	Speci					-			
		0 L							Dofor	to valve location selection guide		
		U				or atmospheric pressure scale) ale or for negative pressure on the secondary side)				terer Page		
		z	Spe		care or ior negative pressure on the secondary side)			aut) (	i aye	<i>vi</i> ,		
	0	_			op r	ear (	Standa	ard)				
	5	20110			201	(						

Basic model code	Designation items for detailed specifications							
P-54	①     ②     ③     ④     ⑤       Fluid name     –     Measuring range     –     Press.     –     Temp.     –     Mounting Option     –     Other Option							
(Use model code table for selection)	(For specification procedure, refer to page 53)							

#### • P-540-00-4N-R3





Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A-D.

#### Standard Material

Parts name	Standard material	Available material		
Body	SCS14			
Tapered tube	Pyrex glass			
Float	SUS304	SUS316		
Float rod	SUS316			
Packing	NBR	Viton, CR, EPDM		
Float stopper	PTFE			
Valve	SUS304	SUS316		
Joint	SCS304	SUS316		
Mounting board	Aluminum			
Cover	Poly-carbonate			

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### • In case alarm output code is A to D

[	Α	Reed switch alarm (LO)		
	В	Reed switch alarm (LC)	Refer to page 45, 46.	
	С	Reed switch alarm (HO)	Refer to page 45, 46.	
	D	Reed switch alarm (HC)		

# **P-550**

# GENERAL

P-550 is a Purgemeter which covers Max. 30L/min.(Water) or 550NL/min (Air) by compact designed 150mm mounting length and 43mm width.

P-550 covers much more tough applications than existing purgemeters thanks to 130°C Max. temperature and 10kgf/cm<sup>2</sup>G operation pressure rating.

#### ■ MAJOR APPLICATIONS

All applications (Medium~Large sizes)

#### STANDARD SPECIFICATION

			-		
Measuring	object	Liquids and	Gases		
Measuring	Air	Min. range: 35~350NL/min Max. range: 55~550NL/min	Air, 0°C, 0MPa(1atm) Below table is indicated by flow rate of Air at 0°C,1 atm. Flow rate		
range	Water	Min. range: 1.2~12 L/min Max. range: 3~30 L/min	conversion is necessary when fluid specification is different. Consult factory for details.		
Range ab	oility	10:1			
Indication ac	curacy	±5%F.S.			
Max. Op. P	ress.	10kgf/cm <sup>2</sup> G(0.98MPa)			
Max. Op. Temp.		130℃	Standard products have the packing materials made of NBR, so Max. Temp. is 80°C.		
Ма	terial	Standard	Option		
В	ody	SUS316			
Tape	red tube	Pyrex glass			
Pa	cking	NBR(Max.80℃)	Viton (Max.130℃),		
	pport	Aluminium			
Protect	ion Cover	Acryl			
Process	Std.	Rc1/2	Refer to Model Code		
	Option	Rc3/8,3/4,3/8,1/2SW NPT3/8,1/2,3/4	for details.		
	Std.	Panel front screw (M3) mount, Panel front rock nut mount	Refer to Model Code		
	Option	Bezel mount, Panel rear screw mount	for details.		
Approx W	eight	1.3kg(Std. Version)			

# ALARM CONTACT AND ANALOG OUTPUT

Туре		Availability	Reference pages
Dead an itali tana alama mitu	General type	0	45,46 page
Reed switch type alarm unit	UL Version	0	45,46 page
PAU Optical ala	rm unit	×	
Optical alarm	unit	×	
Analog output	t unit	×	

# ■ STANDARD FLOW RATE TABLE

In case that the Alarm Output Code is A $\sim$ D								
AIR(0MPa,0℃)	Alarm setting range	Water	Alarm setting range					
35~350 NL/min	70~280 NL/min	1.2~12 L/min	2.4~10 L/min					
40~400 NL/min	80~320 NL/min	1.5~15 L/min	3~12 L/min					
50~500 NL/min	100~400 NL/min	2~20 L/min	4~16 L/min					
55~550 NL/min	110~440 NL/min	3~30 L/min	6~24 L/min					

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options: Two point alarm, reed switch lead wire length, double graduations, special graduations, built-in rubber joint type, built-in joint type, etc. (For details, refer to () Other Option on page 56).

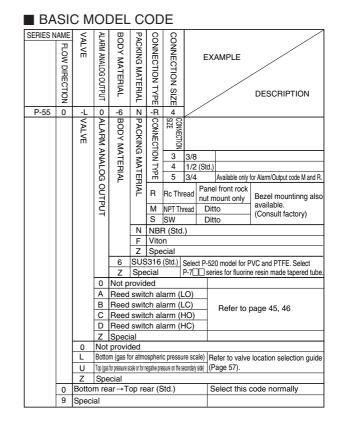
#### ORDERING INFORMATION

	alle.			
	da k	4		
		Raw Concession		
	e la			
	E.			

# ■ OTHER AVAILABLE OPTIONS

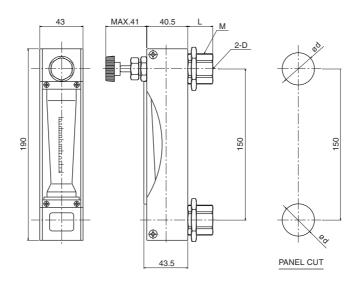
The following options can be specified;

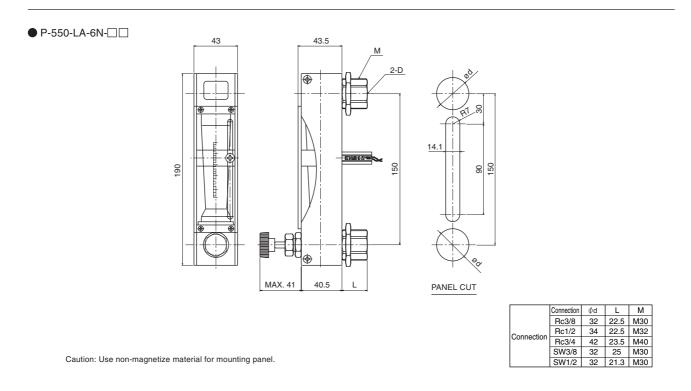
Two point alarm, front panel adjustable alarm, double graduations, special graduations, hose fittings, special connection fittings, etc. (Consult factory for details.)



Basic model code	Designation items for detailed specifications						
P-55	①     ②     ③     ④       Fluid name     —     Measuring range     —       Press.     —     Temp.     —       Mounting Option     —     Other Option						
(Use model code table for selection)	(For specification procedure, refer to page 53)						

## ● P-550-U0-6N-□□





#### Standard Material

Parts name	Standard material	Available material
Body	SUS316	
Tapered tube	Pyrex glass	
Float	SUS316	
Float rod	SUS316	
Float stopper	PTFE	
Packing	NBR	Viton
Tapered tube holder	SUS316	
Valve	SUS316	
Cover	Aluminum	
Front Cover	Transparent Acryl	

Parts whose names are described in  $\ensuremath{\textbf{bold}}$  letters are in contact with fluids to be measured.

#### ● In case alarm output code is A to D

А	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

# **P-610**

# GENERAL

Acryl moulded compact version for gas measurement. Very much suitable for built-in use for equipments.

# MAJOR APPLICATIONS

#### General gas process

# STANDARD SPECIFICATION

Measu	uring object	t	Liquids and gases	
Measur range		ir	Min. 0.2~2 NL/min. Max. 4~40 NL/min.	Air at 0°C, 1atm     When selecting flow range, refer     to standard flow rate table.     In case Op. Press. at gas is     not 1atm, refer to page 1.
Rang	ge ability		10:1	
Ac	Accuracy		±10%F.S.	
Max. C	Max. Op. Press.		5kgf/ cm <sup>2</sup> G(0.49MPaG)	
Max. Op. Temp.			60°C	
Ma	Material		Std.	Option
	Body		Acryl	
٦	Fapered tu	be	Acryl	
	Packing		NBR	Viton, CR
Fitting			C3604	SUS304,SUS316
Connectio	Std.		Rc1/8	Refer to Basic model code
Conflectio	Opt.		NPT etc.	for details.
Mounting	g Std.		Thread mount onto panel front	
Weight	(std. type)		0.2kg	

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	rm unit	×	
Optical alarm	unit	×	
Analog output	t unit	×	

# STANDARD FLOW RATE TABLE

In case alarm analog output code is 0							
AIR(1atm, 0°C)	Air						
0.2~2 NL/min							
0.3~3 NL/min							
0.5~5 NL/min							
1~ 10 NL/min							
2~ 20 NL/min							
3~ 30 NL/min							
4~ 40 NL/min							

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Double graduations, special graduations, built-in rubber joint type, built-in joint type, etc.

(For details, refer to <sup>(6)</sup> Other Option on page 56).



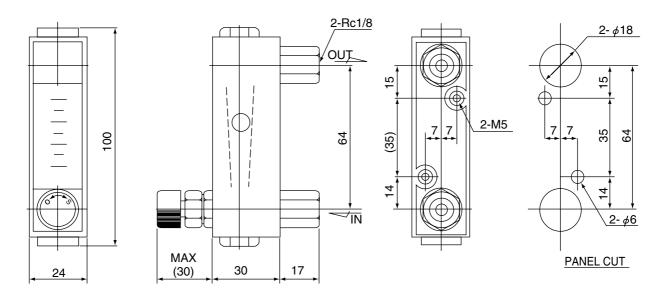
# BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMPLE	
		P	F		YPE	SIZE			DESCRIPTION
P-610	-L	0	-B	N	-R	1			
	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL		CR Vito Spe	NP Spe R(Sta n	1/8 Special ead (Standard) T thread cial andard)		
			В		C3604(Standard)				
			4		SUS304				
			6 Z		<u>6316</u>				
		0		Special provided					
		z	Spec		100				
	0	Not	provided					1	
	L		tom						
	U	Тор	)						
	Ζ	Spe	ecial						

Basic model code	Designation items for detailed specifications					
P-610-	①     ②     ③     ④     ⑤     ⑥       Fluid name     -     Measuring range     -     Temp.     -     Mounting Option     -     Other Option					
(Use model code table for selection )	(For specification procedure, refer to page 53)					

# • STANDARD TYPE

(P-610-L0-BN-PF-R1 Valve provided at Inlet, Panel front screw fixing) PANEL CUT



#### ● STANDARD MATERIAL

Parts name	Standard material	Available material
Body, Tapered tube	Transparent Acryl integral mold	
Packing	NBR	Viton, CR
Float	SUS304 /Glass	SUS316, Ruby
Valve body	C3604	SUS304, SUS316
Valve needle	SUS304	SUS316
Fitting	C3604	SUS304, SUS316
Сар	C3604	SUS304, SUS316
Graduation board	Transparent PVC	

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

Acryl moulded compact version for liquids measurement. Max. 10L/min. range possible even for compact body. Available widely as flow switch. Easy In-line maintenance possible without removing from instrument panel.

#### MAJOR APPLICATIONS

**P-620** 

Cooling water lines at semiconductor production equipments

#### STANDARD SPECIFICATION

Measuring object			Liquids	
Meas	Measuring Water		Min. 0.1~1 L/min.	
ran	ge`	vvaler	Max. 1~10 L/min.	
Ra	nge	ability	10:1	
A	Accu	racy	±10%F.S.	
Max	. Op	. Press.	10kgf/cm <sup>2</sup> G(0.98MPa)	
Max	. Op	. Temp.	60°C	
	Material		Std.	Option
		Body	Acryl	
	Tapered tube		Acryl	
	Packing		NBR	Viton, CR
	Fittng		C3604	SUS304,SUS316
Connoc	Connection Std.		Rc3/8	Refer to Basic model code
Opt.		Opt.	3/8SW NPT3/8 etc.	for details.
Mounting Std.		Std.	Thread mount onto panel front	
Weig	ght (s	std. type)	0.3kg	

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	0	45, 46 page
Reed switch type alarm unit	CE, UL Version	$\triangle$	45, 46 page
PAU Optical ala	ırm unit	×	
Optical alarm	unit	×	
Analog outpu	t unit	×	

# STANDARD FLOW RATE TABLE

In case alarm anale	og output	code is 0	In case alarm analog output code is A to D					
AIR(1atm, 0°C)	1	Water	V	Vater	Alarm setting range			
	0.1~1	L /main	0.1~1	L/min ×	0.2~0.8	L/min		
	0.1~1	L/min	0.4~1.2	L/min	0.5~ 1	L/min		
	0.2~2	L/min	0.2~2	L/min	0.4~1.6	L/min		
	0.3~3	L/min	0.3~3	L/min	0.75~1.8	L/min		
	0.5~5	L/min	0.5~5	L/min	2~4	L/min		
	0.6~6	L/min	0.6~6	L/min	2 ~4.8	L/min		
	0.8~8	L/min	0.8~8	L/min	2 ~6.4	L/min		
	1~10	L/min	1~10	L/min	2~8	L/min		
	*Produce in case model code is P620-UIT-4N-B3							

\*Produce in case model code is P620-U -4N-R3 Refer to page 24.

# ■ OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduation, built-in rubber joint type, built-in joint type, etc. For details, refer to (6) Other Option on page 56).



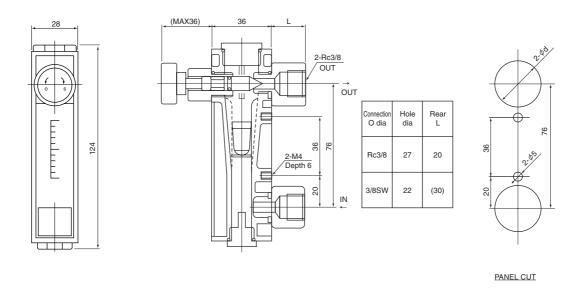
# BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMPLE
P-620	-U	0	-B	N	-R	3		
	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL BODY MATERIAL		CR Vito Spe	Z Rc t NPT SW Spe R(Sta	ndard)	
			6		5316			
			Z	Spe				
		0	Not p					
		Α	Reed					
			Reed					Refer to page 45, 46.
		С	Reed					
		D	Reed		ch al	arm (	HC)	
	<u> </u>	Z	Spec					
	0		t provi	aed				
	U Z	Top						
L	12	Spe	ecial					

Basic model code	Designation items for detailed specifications					
P-620	①     ②     ③     ④       Fluid name     -     Measuring range     -     Press.     -     Mounting Option     -     Other Option					
(Use model code table for selection )	(For specification procedure, refer to page 53)					

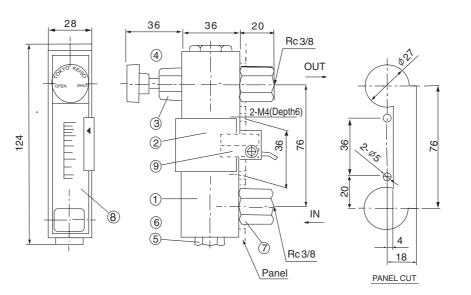
#### STANDARD TYPE

(P-620-U0-BN-R3 Valve provided at Outlet, Panel front screw fixing)



#### ● P-620-U 🗌 - 🔲 - R3

Dimensions are different in case of the flow range of  $0.1 \sim 1L/min$ . Consult factory for details.



Caution: Use non-magnetize material for mounting panel.

#### ● STANDARD MATERIAL

Parts name	Standard material	Available material		
Body, tapered tube	Acryl	—		
Packing	NBR	Viton, CR		
Float	SUS304	SUS316		
Сар	C3604	SUS304, SUS316		
Valve body	C3604	SUS304, SUS316		
Valve needle	SUS304	SUS316		
Fitting	C3604	SUS304, SUS316		
Graduation board	Acryl	—		

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

# • In case alarm output code is A to D

Γ	А	Reed switch alarm (LO)	
Γ	В	Reed switch alarm (LC)	Refer to page 45, 46.
Γ	С	Reed switch alarm (HO)	Helel to page 45, 46.
	D	Reed switch alarm (HC)	

Purgemeter made of all fluorine resin. A ZEONEX (poly-olefin) tapered tube is also available in addition to glass tapered tube. Fully compatible with measurement of various corrosive solutions including hydrofluoric acid. Lightweight and extra-compact.

#### MAJOR APPLICATIONS

**P-710** 

General purpose (Small flow rate)

#### STANDARD SPECIFICATION

Measuring object		object	Liquids and gases	
		Water	Min. 3~30 mL/min. Max. 0.4~2 L/min.	Select P-772 for large flow type
Measuring range		Air	Min. 50~500 NmL/min. Max. 2~20 NL/min.	<ul> <li>Air at 0°C, 1atm</li> <li>When selecting flow range, refer to standard flow rate table.</li> <li>In case Op. Press. at gas is not 1atm,refer to page1.</li> </ul>
Rar	nge ab	ility	10:1	
A	ccurac	;y	±5%F.S.	
Max.	Max. Op. Press.		5kgf/ cm2G(0.49MPaG)	
Max.	Op. T	emp.	70°C	
Ν	Material		Std.	Option (Specify by model code)
	В	ody	ETFE	PFA(Connection type T)
	Taper	ed tube	Pyrex glass	CTFE, Silica glass, Poly-orefin resin (ZEONEX)
	Pa	cking PTFE		
	Su	oport	Poly-ascethal	PPS is available as option
	Cover		Poly-carbonate	
		Std.	Rc1/8	Refer to Basic model code
Connect	ion	Opt.	Tube connection OD=6.35mm 6mm,8mm(Specity the tube length)	for details.
Mountin	ng	Std.	Thread mount onto panel front or panel-rear installation,	Refer to ordering information for details.
		Opt.		
Weigl	ht (std.	type)	0.1kg	

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	rm unit	0	47 page
Optical alarm	unit	0	48 page
Analog outpu	t unit	Ó	49~52 page

#### STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

AIR(1atm\_0°C)

AIR(1atm, 0°C)	Water
	3 ~ 30 mL/min(Water)
50~500 mL/min(nor)	5 ~ 50 mL/min
0.1~1 L/min(nor)	10 ~ 100 mL/min
0.2~2 L/min(nor)	20 ~ 200 mL/min
0.3~3 L/min(nor)	30 ~ 300 mL/min
0.5~5 L/min(nor)	50 ~ 500 mL/min
1~ 10 L/min(nor)	0.1 ~ 1 L/min
2~ 20 L/min(nor)	0.12~1.2 L/min
	0.4 ~ 2 L/min

\*In case alarm output code is G, flow rate is different. Consult factory for details. \*In case flow range is 0.4-2L/min(Water), valve code is only available for O and U. \*Applicable tapered tube for air is only Code G.

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Double graduations, special graduations, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).



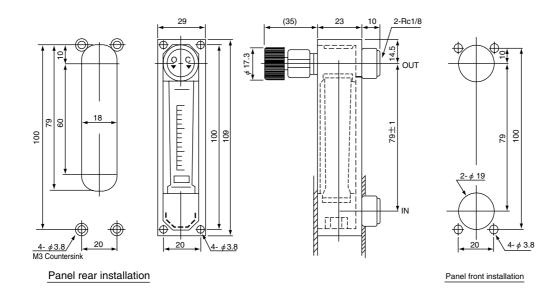
## BASIC MODEL CODE

				_	-	-			
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	TAPERED TUBE MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMP	DESCRIPTION
P-710	-U	0	-G	T	-R	1			
	VALVE	O ALARM ANALOG OUTPUT	TAPERED TUBE MATERIAL			Tube e Spe E(St	$\begin{array}{c} \text{Rc 1/8 (S} \\ \hline \phi 6.35 \times \\ \hline \phi 6 \times 1t \\ \hline \phi 8 \times 1t \\ \text{Special} \\ \hline \text{hread (St} \\ \hline \text{hread (St} \\ \hline \text{cial} \\ \hline \text{andard)} \end{array}$	1t andard)	Only when connection type code is R Only when connection type code is T Only when connection type code is T Only when connection type code is T Pillar fitting r cushion provided
			G	CTF		iss(S	tandard)	Analog o	utput code G and H can not be selected
			Z		_	fin re	sin	niiai0y Ul	npui coue a anu ri cali noi de selecieu
		0	Not p				011		
		Ē				JNIT	provided	Refer t	o page 47.
		F					l alarm unit		o page 48.
		G	PAS/	AU a	analo	g ou	tput unit	Refer t	o page 49.
		Н	PCS/	OAC	anal	og ol	itput unit	Refer t	o page 51,52.
		Ζ	Spec	ial					
	0	Not	provi	ded					
	L	Bot	tom					Refer t	o valve position selection
	U	Тор						guide (	Page 57).
	Ζ	Spe	ecial		_	_			

Basic model code	Designation items for detailed specifications					
P-710	1 2 3 4 6 6 Fluid name – Measuring range – Press. – Temp. – Mounting Option – Other Option					
(Use model code table for selection )	(For specification procedure, refer to page 53)					

# • STANDARD TYPE

(P-710-U0-GT-R1 Valve provided at Outlet, Panel screw fixing)



#### STANDARD MATERIAL

Part name	Standard material	Available material
Support	Poly-ascethal	PPS resin
Body	ETFE	PFA
Tapered tube	Pyrex glass	ZEONEX, CTFE
Packing	PFA	PTFE
Float	PTFE/Glass	Ruby
Valve body	PCTFE	_
Valve needle	PCTFE	—
Cover	Poly-carbonate	—

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### • In case alarm output code is E to H

E	PAU ALARM UNIT provided	Refer to page 47.
F	E3C Separate Type Optical alarm unit provided	Refer to page 48.
G	PAS/IAU analog output unit provided	Refer to page 49.
н	PCS/OAC analog output unit provided	Refer to page 51, 52.

**P-771** 

All teflon, ultra-clean purgemeter. Metallic parts are not used even for construction parts to avoid production of rust into atmosphere. All PFA mold, tube ended connection.

Best choice for Pure/Ultra pure water process and Chemical injection process in Semi-conductor production facilities.

# MAJOR APPLICATIONS

Pure/Ultra pure water lines, chemical injection lines in semi-conductor production process.

S	STANDARD SPECIFICATION							
Mea	suring	object	Liquids					
Measuring range Water		Water	Min. 3~15 mL/min. Max. 0.2~2 L/min.	Select P-772 for large flow type				
Ra	nge a	bility	10:1	10:2 occasionally				
A	Accura	су	±5%F.S.					
Max	. Op. I	Press.	5kgf/cm <sup>2</sup> G(0.49MPa)					
Max	. Op. <sup>-</sup>	Гетр.	60°C					
I	Material		Std.	Option (Specify by model code)				
	E	Body	PFA	Integral model				
	Таре	ered tube	PFA	Integral mold				
	Pa	acking	PTFE	Valve provided				
	S	upport	PVC	Valve provided				
	0	Cover	PVC					
Connect	tion	Std.	Tube connection OD:6.35mm, ID:4.35mm	Refer to Basic model code				
Connect	Opt.		Tube connection OD:6mm,8mm Thread connection:Rc1/8	for details.				
Mounti		Std.	Thread mount onto panel front	Refer to ordering information				
wound	iiy	Opt.		for details				
Weig	ht (sto	l. type)	0.2kg					

# 

BASIC MODEL CODE								
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	E	EXAMPLE
P-771	-U	0	-T	W	-T	A	$\vee$	
	VALVE	ALARM ANALOG CUTPUT	1t3					
		0	Z Not p	Spe rovid				
		E				NIT pr	ovided	Refer to page 47.
			PAS/IA	U ANA	ANALOG OUTPUT UNIT			Refer to page 49.
			PCS/O	AC AN				Refer to page 51, 52.
		Ζ	Speci					
	0	Not	provid	rovided				
	υ	Тор	)					Refer to valve position selection guide on page 57.
	Z	Spe	ecial					

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Deed with the end of the second	General	×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	ırm unit	0	47 page
Optical alarm	i unit	×	
Analog outpu	t unit	0	49~52 page

# STANDARD FLOW RATE TABLE

In case alarm analog o	utput code	is 0 and E,H	In case alarm analog	output code is A to D			
AIR(1atm, 0°C)	V	Vater	AIR(1atm, 0°C)	Water			
	3-15         mL/min           2-20         mL/min           3-30         mL/min           5-50         mL/min           20-200         mL/min           20-200         mL/min           30-300         mL/min           50-500         mL/min           0-100         mL/min           0-100         mL/min		/				
	0.2~2	L/min	V				
*Alarm output code is G. flow range is different.							

\*Alarm output code is G, flow range is different. Consult factory for details.

# OTHER AVAILABLE OPTIONS

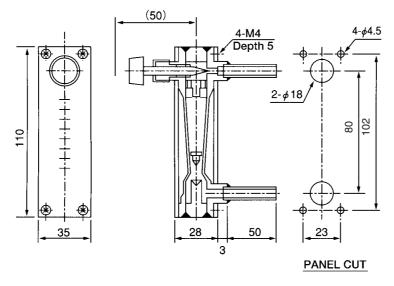
You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduation, builtin joint type, etc.

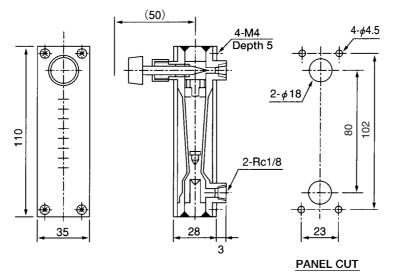
(For details, refer to 6) Other Option on page 56).

Basic model code	Designation items for detailed specifications							
P-771	1 2 3 4 5 6 Fluid name – Measuring range – Press. – Temp. – Mounting Option – Other Option							
(Use model code table for selection )	(For specification procedure, refer to page 53)							

P771-U0-TW-TA(Tube end fitting)



#### P-771-U0-TW-R1(Rc1/8 fitting)



#### • STANDARD MATERIAL

Parts name	Standard material	Available material			
Body, tapered tube	PFA integral mold	-			
Float	PTFE	—			
Float stopper	PFA	—			
Valve body	PCTFE	—			
Valve needle	PCTFE	—			
Fitting	PFA	_			
Cover	PVC	—			
Graduation board	Transparent PVC	_			
Parts whose names are described in <b>bold letters</b> are in contact with					

Parts whose names are described in **bold letters** are in contact wi fluids to be measured.

#### ● In case alarm output code is E to H

Е	PAU ALARM UNIT provided	Refer to page 47.
G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.
н	PCS/OAC analog output unit provided	Poter to page 51 52

H PCS/OAC analog output unit provided Refer to page 51, 52.

Ultra-clean purgemeter made of all fluorine resin. A extra-clean structure is ensured by a fitting directly coupled with tube, similarly to P-771. It is designed in an integral main unit/tapered tube structure, with valve and cap configured in a welded structure. This product provides excellent sealing properties. Compatible with pure water, extra-pure water and chemical solutions to a maximum flow rate of 45L/min.

#### MAJOR APPLICATIONS

Pure/Ultra pure water lines, chemical injection lines in semi-conductor production process.

#### STANDARD SPECIFICATION

Mea	suring	object	Liquids	
Measuring range Water		Water	Min. 0.06~0.6 L/min. Max. 4.5~45 L/min.	
Ra	nge ab	ility	10:1	
A	ccurac	cy 🛛	±5%F.S.	
Max	. Op. P	ress.	5kgf/cm <sup>2</sup> G(0.49MPa)	
Max	. Ор. Т	emp.	60°C	High.Temp. version up to 90°C available as option. Consult factory.
1	Material		Std.	Option (Specify by model code)
	В	ody	PFA	Interrupted model
	Taper	ed tube	PFA	Integrated mold
	Pa	cking	PTFE	Valve provided
	Su	pport	PVC	
	Co	over	Transparent PVC	
Connection Std. Opt.		Std.	Tube end connection/OD: 19mm,ID:15.8mm	Refer to Basic model code
		Opt.	Rc1/2,3/4,NPT1/2,3/4 etc.	for details.
Mounti	na 🗌	Std.	Thread mount onto panel front	Refer to ordering information
wounti		Opt.	Panel-rear installation	for details
General	quantity	(std. type)	0.8kg	

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	0	45,46 page
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	ırm unit	0	47 page
Optical alarm	unit	0	48 page
Analog outpu	t unit	0	49~52 page

## STANDARD FLOW RATE TABLE

In case alarm analog output	case alarm analog output code is 0 and E,F and G				In case alarm analog output code is A to D		
AIR(1atm, 0°C)	Wa	ater	Water		Alarm setting range		
/	0.06~0.6 L/min						
	0.1~1	L/min					
	0.2~2	L/min					
	0.3~3	L/min					
	0.5~5	L/min	0.5~5	L/min	1~4	L/min	
	0.6~6	L/min	0.6~6	L/min	1.2~4.8	L/min	
	1~10	L/min	1~10	L/min	2~8	L/min	
	1.5~15	L/min	1.5~15	L/min	3~12	L/min	
	2~20	L/min	2 ~20	L/min	4~16	L/min	
	3~30	L/min	3 ~30	L/min	6~24	L/min	
	4~40 L/min 4.5~45 L/min		4 40 1/10		8~32	L/min	
/			4 ~40	L/min	0~32	L/mm	

May be different depending on the scale length.

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduation, builtin joint type, etc.

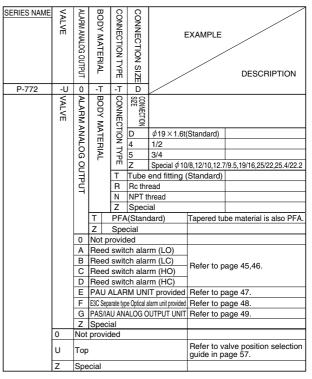
(For details, refer to <sup>(6)</sup> Other Option on page 56).

#### ORDERING INFORMATION

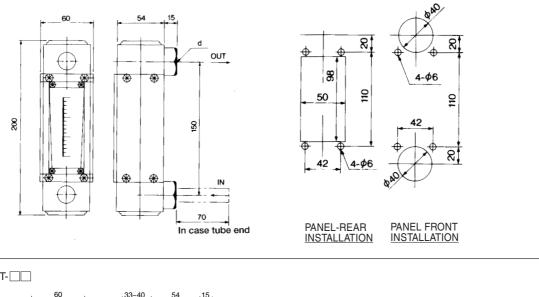
Basic model code	   	Designation	items for	detailed s	specifications	
P-772- 🔲 - 🗌 - 🗌 -	① Fluid name	② Measuring range –	③ Press	④ - Temp	Mounting Option –	6 Other Option
(Use model code table for selection )	     	(For specifica	tion proc	edure, ref	er to page 53)	



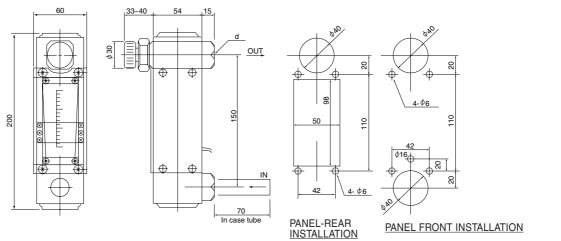
#### BASIC MODEL CODE



● P-772-00-T- □□, Valve not provided, Panel front screw fixing



• P-772-UA-T-



Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A~D.

#### • STANDARD MATERIAL

Parts name	Standard material	Available material	
Body, tapered tube	PFA integrated mold	_	
Float	PTFE	-	
Float stopper	PFA	-	
Valve body	PCTFE		
Valve needle	PCTFE	—	
Graduation board	Transparent PVC	-	
Support board	PVC	_	
Cover	Transparent PVC	_	
Parts whose names are described in <b>bold letters</b> are in contact with fluids to be measured.			

#### In case alarm output code is A to D

- A Reed switch alarm (LO)
- B Reed switch alarm (LC) Refer to page 45, 46.
- CReed switch alarm (HO)DReed switch alarm (HC)

#### • In case alarm output code is E to G

	Е	PAU ALARM UNIT provided	Refer to page 47.
Γ	F	PCS/OAC ANALOG OUTPUT UNIT provided	Refer to page 48.
	G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.

P-773 is integrated PFA molded body purgemeter.

All sealing parts are fusing construction without mechanical sealing such as O rings for perfect sealing capability. Float rod is also eliminated to meet higher clean technology requirements. Compact design with 115mm C/C dimension for easy assembling onto various types of devices.

# MAJOR APPLICATIONS

Pure/Ultra pure water lines, chemical injection lines in semi-conductor production process.

		a abia at	1 day data		
Measuring object		ig object	Liquids		
Measuring Water		Water	Min. 0.1~1 L/min.		
rar	nge	Water	Max. 1~10 L/min.		
Ra	nge a	ability	10:1		
A	Accur	acy	±5% F.S.		
Max	. Ор.	Press.	5kgf/cm <sup>2</sup> G(0.49MPa)		
Max	. Ор.	Temp.	60°C		
	Mate	rial	Std.	Option (Specify by model code)	
Body		Body	PFA	Integrated mold	
	Тар	pered tube	PFA	integrated mold	
	F	Packing	PTFE	Valve provided	
	e,	Support	PVC		
		Cover	Transparent PVC		
		Std.	Tube end connection 3/8~	Refer to Basic model code for	
Connec	tion		(Refer to model code for details)	details.	
	Γ	Other	Rc1/4, 3/8, NPT1/4, 3/8 etc.	uerans.	
Moun	ting	Std.	Thread mount onto panel front	Refer to ordering information	
Moun	ung			for details	
Wei	ght (s	std. type)	0.6kg		

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages			
Read quitab tupo alorm unit	General	0	45,46 page			
Reed switch type alarm unit	CE, UL Version	0	45,46 page			
PAU Optical alarr	n unit	0	47 page			
Optical alarm u	init	0	48 page			
Analog output u	unit	0	49~52 page			

# STANDARD FLOW RATE TABLE

(In case Op. Press at gas is not 1atm, refer to page 1.)

In case alarm analog outp	ut code is 0 and E,F and G	In case alarm analog output code is A to D		
AIR(1atm,0°C)	Water	Water	Alarm setting range	
	0.1 ~ 1 L/min			
	0.2 ~ 2 L/min			
	0.3 ~ 3 L/min	0.3 ~ 3 L/min	1 ~ 2.4 L/min	
	0.5 ~ 5 L/min	0.5 ~ 5 L/min	1 ~ 4 L/min	
	1 ~ 10 L/min	1 ~ 10 L/min	2 ~ 8 L/min	

May be different depending on the scale length.

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, reed switch lead wire length, double graduations, special graduation, built-in joint type, etc. (For details, refer to 6 Other Option on page 56).



# BASIC MODEL CODE

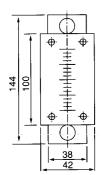
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	FLOW RANGE	CONNECTION TYPE			EXAMPLE DESCRIPTION
P-773	-U	0	Α	5			
	VALVE	ALARM ANALOG OUTPUT	A FLOW RANGE	0.2~ 0.3~	Rc1/4 Rc3/8 NPT1/4 NPT3/8 Tube enc Tube enc Tube enc	l fitting(1 l fitting(4 l fitting(4	3/8" × t1.59) /2" × t1.59) 28 × t1.0) 28 × t1.0) 20 × t1.0) 2
			3		0 L/min		
			Z		er special		
		0 A	Not p		ed ch alarm (		
					ch alarm (	,	
					ch alarm (		Refer to page 45,46.
		-			ch alarm (	,	
		Е			,	,	Refer to page 47.
		F	E3C Sep	arate typ	e Optical alarm u	unit provided	Refer to page 48.
		G	PAS/IA	U AN	ALOG OUTF	PUT UNIT	Refer to page 49.
		Ζ	Speci	al			
[	0	Not	provid	bed			
	U	Тор	)				Refer to valve position selection guide on page 57.
	Ζ	Spe	ecial				

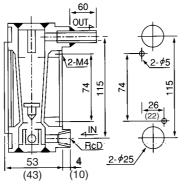
Basic model code	Designation items for detailed specifications		
P-773	①     ②     ③     ④     ⑤       Fluid name     Measuring range     Press.     –     Temp.     –     Mounting Option     –     Other Option		
(Use model code table for selection )	(For specification procedure, refer to page 53)		



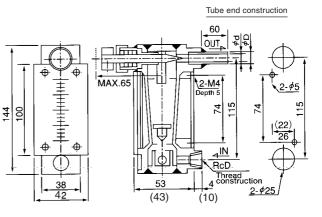
● P-773-0-□□□, Valve not provided

● P-773-U-□□□, Valve provided



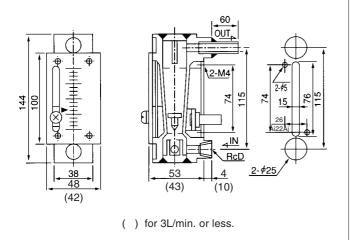


( ) for 3L/min. or less.



( ) for 3L/min. or less.

● P-773-0-□□, EN version alarm contact provided



Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A–D.

#### ● STANDARD MATERIAL

Standard material	Available material
PFA integrated mold	-
PTFE	-
PFA	-
PCTFE	-
PCTFE	-
Transparent PVC	-
PVC	-
Transparent PVC	-
	PFA integrated mold PTFE PFA PCTFE PCTFE Transparent PVC PVC

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### • In case alarm output code is A to D

А	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	D-f 45 40
С	Reed switch alarm (HO)	Refer to page 45, 46.

D Reed switch alarm (HC)

#### • In case alarm output code is A to D

Γ	Е	PAU ALARM UNIT provided	Refer to page 47.
	F	E3C Separate type Optical alarm unit provided	Refer to page 48.
	G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.

P-774 model is a new asset to fully fluorine resin purgemeter series of Tokyo Keiso Co.,Ltd., having 100mm installation dimension. Cleanliness is ensured by a PFA molded body integrally built with the fitting and the sealing section of welded structure.

# MAJOR APPLICATIONS

Pure/Ultra pure water lines, chemical injection lines in semi-conductor production process.

Measuring object		object	Liquids		
Measuring range Water		Water	Min. 0.1~1 L/min.	Select P-772 and P-773 for	
		vvaler	Max. 0.7~7 L/min.	large flow type.	
Ra	nge a	bility	10:1		
A	Accura	су	±5%F.S.		
Max	. Ор.	Press.	5kgf/cm <sup>2</sup> G(0.49MPa)		
Max	. Op. '	Temp.	60°C		
	Material		Std.		
	Body Tapered tube Sealing		PFA	Integrated mold	
			PFA	Integrated mold	
			PTFE	Valve provided	
	S	upport	PVC		
	Cover		PVC		
Connect	tion	Std.	<pre> \$\$\phi\$10 Pillar fitting (Super fitting) \$\$\$ \$\$\$\$ \$\$\$\$ \$\$\$ \$\$\$ \$\$\$ \$\$\$ \$\$\$ \$\$\$</pre>	Refer to Basic model code	
Connect		Opt.		for details.	
Mounti	ng	Std.	Thread mount onto panel front	Refer to ordering	
wound	Opt.			information for details	
Wei	Weight (std. type)		0.5kg		

# ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Deed with the elements	General	0	45,46 page
Reed switch type alarm unit	CE, UL Version	0	45,46 page
PAU Optical ala	ırm unit	0	47 page
Optical alarm	unit	0	48 page
Analog outpu	t unit	0	49~52 page

# STANDARD FLOW RATE TABLE

In case alarm analog output code is 0 and E,F and G			In case al	arm analog	output code	e is A to D
AIR(1atm, 0°C)	Water		W	ater	Alarm sett	ing range
	0.1~1	L/min				
	0.2~2	L/min		-		
	0.3~3	L/min	0.3~3	L/min	0.6~2.4	L/min
	0.5~5	L/min	0.5~5	L/min	1.0~4.0	L/min
	0.6~6	L/min	0.6~6	L/min	1.2~4.8	L/min
$\checkmark$	0.7~7	L/min	0.7~7	L/min	1.4~5.6	L/min

Ma y be different depending on the scale length.

# OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduation, builtin joint type, etc.

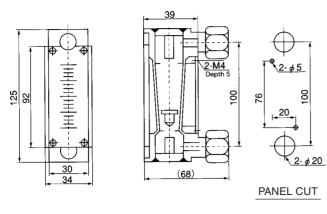
(For details, refer to 6) Other Option on page 56).



#### BASIC MODEL CODE SERIES NAME VALVE BODY MATERIAL PACKING MATERIAL ALARM ANALOG OUTPUT CONNECTION TYPE EXAMPLE DESCRIPTION P-774 -U -T PACKING MATERIAL -P ALARM ANALOG OUTPUT -T W -P TYPE PACTING P TUPE PACTING P Tube ent fit Z Special PFA(Standard) Z Special ALVE P Tube end fitting(Standard) Pillar fitting Z Special Temperd tube material is also PFA. Z Special 0 Not provided Reed switch alarm (LO) А B Reed switch alarm (LC) Refer to page 45,46. Reed switch alarm (HO) Reed switch alarm (HC) С Ы PAU ALARM UNIT provided Refer to page 47. Е F E3C Separate type Optical alarm unit provided Refer to page 48. G PAS/IAU ANALOG OUTPUT UNIT Refer to page 49. Z Special Not provided 0 Refer to valve position U Тор selection guide on page 57. Ζ Special

Basic model code	Designation items for detailed specifications
P-774- 🔲 - 🔲 - 🗌	①     ②     ③     ④     ⑤       Fluid name     -     Measuring range     -     Press.     -     Temp.     -     Mounting Option     -     Other Option
(Use model code table for selection )	(For specification procedure, refer to page 53)

● P-774-00-TW-P, No valve and output provided version



Caution) Use non-magnetize material for panel when ALARM ANALOG OUTPUT code is A-D.

## ● STANDARD MATERIAL

Parts name	Standard material	Available material		
Body, tapered tube	PFA integrated mold	—		
Float	PTFE	_		
Float stopper	PFA	-		
Valve body	PCTFE	—		
Valve needle	PCTFE	—		
Graduation board	Transparent PVC	-		
Support board	PVC	—		
Parts whose names are described in <b>bold letters</b> are in contact with				

fluids to be measured.

#### In case alarm output code is A to D

А	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	nelei lo page 45, 46.
D	Reed switch alarm (HC)	

## ● In case alarm output code is E to G

E	E	PAU ALARM UNIT provided	Refer to page 47.
F	F	E3C Separate type Optical alarm unit provided	Refer to page 48.
	G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.

# P-810 •Old model P-800-1

# GENERAL

Provide optimum measurement of flow rate of various gases in semi-conductor production process. High reliability is ensured circumferential seals. Rich experiences in operation and use in various devices. Also available are the products with low-leakage and high-quality structure provided with electrolytic polishing.

## ■ MAJOR APPLICATIONS

Gas flow measurement in semi-conductor production equipments process

#### STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Measuring -	Air	Min. 5~50 NmL/min. Max. 6~60 NL/min.	· Air at 0°C, 1atm     · When selecting flow     range, refer to standard     flow rate table
range	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	<ul> <li>In case Op. Press at gas is not 1atm, refer to page 1.</li> </ul>
Range abili	ity	10:1	
Accuracy		P-813:±3%F.S. P-812:±5%F.S.	
Max. Op. Pre	ess.	8kgf/cm <sup>2</sup> G(0.78MPaG)	
Max. Op. Temp.		120°C	In case Viton seal
Material		Std.	Option (Specify by model code)
Bo	dy	SCS14	SUS316 (SUS316L is also available. Consult factory)
Tapere	d tube	Pyrex glass	
Pack	king	Viton(max.120°C)	CR(max.80°C)
Sup	port	SUS304	
Cov	ver	Transparent PVC	
	Std.	Rc1/4	Befer to Basic model code
Connection	Opt.	Rc1/8, NPT1/4, 1/4,3/8SW, 1/4, 3/8VCR etc.	for details.
Mounting	Std.	Lock-nut mount onto panel	Refer to ordering
Mounting C	Opt.	front Bezel installation,	information for details.
Weight (std. type)		0.6kg(P-813)	

#### ALARM AND ANALOG OUTPUT

Turne	Availability		Deference reaso	
Туре	Туре			Reference pages
Reed switch type	General	×	×	
alarm unit	CE, UL Version	Х	×	
PAU Optical ala	PAU Optical alarm unit			47 page
Optical alarm	×	×		
Analog outpu	0	×	49~52 page	

#### P-812model / STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

	In case alarm analog output code is O and E						
AIR(1at	:m, 0°C)	Water					
10~50	NmL/min						
20~100	NmL/min						
40~200	NmL/min						
60~300	NmL/min						
50~500	NmL/min						
0.1~1	NL/min	5 ~50 mL/min					
0.2~2	NL/min	10~100 mL/min					
0.3~3	NL/min	20~200 mL/min					
0.5~5	NL/min	30~300 mL/min					
1~10	NL/min	50~500 mL/min					
2~20	NL/min	0.1~ 1 L/min					
3~30	NL/min	- 0.1~ 1 L/min					
10~50	NL/min	0.3~1.5 L/min					
12~60	NL/min	0.4~ 2 L/min					

# In case alar m output code is G, flow range is different. Consult for details.

# OTHER AVAILABLE OPTIONS

#### You can specify the following options:

Two point alarm, reed switch lead wire length, double graduations, special graduations, built-in rubber joint type, built-in joint type, etc. For details, refer to (6) Other Option on page 56).

# ORDERING INFORMATION

Basic model code	Designation items for detailed specifications				
P-81	①     ②     ③     ④       Fluid name     –     Measuring range     –     Temp.     –     Mounting Option     –     Other Option				
(Use model code table for selection )	(For specification procedure, refer to page 53)				

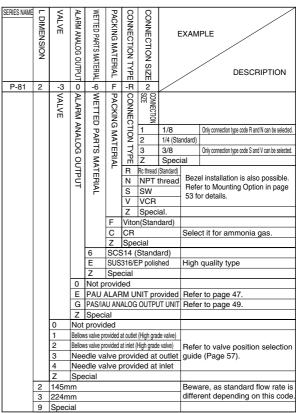


#### P-813 model / STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1 atm, refer to page 1.)

In case alarm analog output code is O and E			
AIR(1atm, 0°C)		Water	
5 ~50	NmL/min		/
10~100	NmL/min	1	
20~200	NmL/min	1	
30~300	NmL/min		
50~500	NmL/min		
0.1~ 1	NL/min	5 ~50	mL/min
0.2~ 2	NL/min	10~100	mL/min
0.3~ 3	NL/min	20~200	mL/min
0.5~ 5	NL/min	30~300	mL/min
1 ~10	NL/min	50~500	mL/min
2 ~20	NL/min	0.1~ 1	L/min
3 ~30	NL/min		
5 ~50	NL/min	0.15~1.5	L/min
6 ~60	NL/min	0.2~ 2	L/min

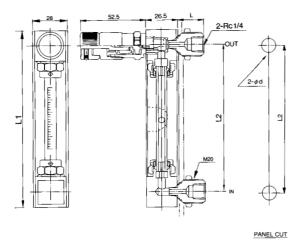
In case alarm output code is G, flow range is different. Consult for details.

# BASIC MODEL CODE

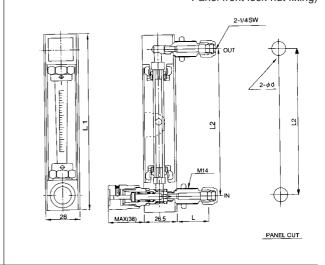


#### DIMENSIONS

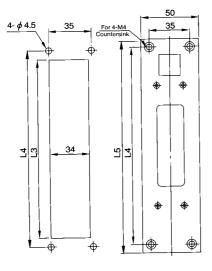
● STANDARD TYPE (Rc 1/4 conn. Bellows valve provided) (P-81□-10-6F-R2 Valve provided at Outlet, Panel front lock-nut fixing)

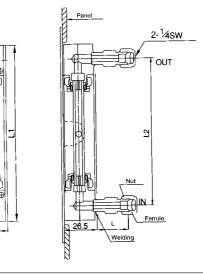


 STANDARD TYPE (SW 1/4 conn. Needle valve provided) (P-81 -40-6F-S2 Valve provided at Inlet, Panel front lock-nut fixing)



● BEZEL INSTALLATION TYPE (P81□-00-6F-S2, Valve not provided, Bezel fixing.) (Mounting Option code □)





#### DIMENSION TABLE

Model	Dimension (mm)							
woder	L1	L2	L3	L4	L5			
P-812	170	145	175	190	205			
P-813	249	224	254	265	280			

#### STANDARD MATERIAL

Parts name	Standard material	Available material
Body	SCS14	SUS316, SUS316L
Tapered tube	Pyrex glass	
Float	SUS316/Glass	Ruby
Packing	Viton	CR
Sealing press	SUS316	
Fitting	SUS316	
Valve	SUS316	
Mounting board	SUS304	
Cover	Transparent PVC	

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### PANEL CUT SIZE

TT

Connection size	Hole dia(d)(mm)	Rear dia L(mm)
Rc 1/8,NPT1/8	<i>¢</i> 16	(20.5)
Rc 1/4,NPT1/4	<i>\$</i> 22	(20.5)
1/4 SW	<i>ф</i> 16	(28)
3/8 SW	<i>ф</i> 22	(30)
1/4 VCR	<i>\$</i> 22	(30)
3/8 VCR	<i>\$</i> 32	(34.5)

#### • In case alarm output code is E to G

Е	PAU ALARM UNIT provided	Refer to page 47.
G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.

#### 36

## -820 • Old model P-800-2

#### GENERAL

Widely accepted for semi-conductor production process as well as P-810 model. Alarm contact by reed switch is additionally available.

#### MAJOR APPLICATIONS

Gas flow measurement in semi-conductor production equipments

ST	ANI	DARE	SPECIFICATION	
Meas	Measuring object		Liquids and gases	
Measu	Air		*1 Min. 4~20 NmL/min. Max. 12~60 NL/min.	<ul> <li>Air at 0oC, 1atm</li> <li>When selecting flow range, refer to standard flow rate table.</li> </ul>
rang	e	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min. *2	<ul> <li>In case Op. Press at gas body is not 1atm, refer to page 1.</li> </ul>
Ran	ge ab	ility	10:1	10:2 occasionally
Ac	curac	y	P-823: ±3%F.S. P-821: ±5%F.S.	
Max.	Op. P	ress.	8kgf/cm <sup>2</sup> G(0.78MPaG)	
Max.	Max. Op. Temp.		120°C	
м	lateria	l	Std.	Option (Specify by model code)
	В	Body SCS14		SUS316 (SUS316L is also available. Consult factory)
· ·	Taper	ed tube	Pyrex glass	
	Pad	cking	Viton(max.120°C)	CR(max.80°C)
	Su	pport	SPCC	
	Co	over	Acryl	
		Std.	Rc1/4	Befer to Basic model code
Connectio	Connection Op		Rc1/8,NPT1/8,1/4,3/8SW, 1/4,3/8VCR etc.	for details.
Mountin	~	Std.	Lock-nut mount onto panel front	Refer to ordering
wounting	y 🗌	Opt.	Bezel installation,	information for details.
Weigh	nt (std	. type)	0.6kg(P-821)	
%11~5Nm	nL/min	is available	e.Consalt factory for details.	

%1 1~5NmL/min is available.Consalt factory for details. %2 0.5~5L/min is available.Consult factory for details.

#### ALARM AND ANALOG OUTPUT

Type	Availa	ability	Reference pages	
Туре	P-821	P-823	nelefence pages	
General		0	0	45,46 page
Reed switch type alarm unit	CE, UL Version	0	0	45,46 page
PAU Optical ala	ırm unit	0	0	47 page
Optical alarm	×	×		
Analog outpu	t unit	0	×	49~52 page

#### P-821 model / STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

In case alarm analog	In case alarm analog output code is O and E			In case alarm analog output code is A to D				
AIR(1atm,0°C)	W	ater	AIR(1	atm,0°C)	Alarm se	etting range	Water	Alarm setting range
4~20 NmL/min							/	- 7
6~30 NmL/min								
10~50 NmL/min	]			/				
10~100 NmL/min		/		/				
20~200 NmL/min								
30~300 NmL/min								
50~500 NmL/min	V				$\sim$			
0.1~1 NL/min	5~50	mL/min	50~500	NmL/min	100~400	NmL/min	5~50 mL/min	10~40 mL/min
0.2~2 NL/min	10~100	mL/min	0.1~1	NL/min	0.2~0.8	NL/min	10~100 mL/min	20~80 mL/min
0.3~3 NL/min	20~200	mL/min	0.2~2	NL/min	0.4~1.6	NL/min	20~200 mL/min	40~160 mL/min
0.5~5 NL/min	30~300	mL/min	0.3~3	NL/min	0.6~2.4	NL/min	30~300 mL/min	60~240 mL/min
1~10 NL/min	50~500	mL/min	0.5~5	NL/min	0.1~4	NL/min	50~500 mL/min	100~400 mL/min
2~20 NL/min			1~10	NL/min	2~8	NL/min		
	0.1~1	I /min	3~15	NL/min	4~16	NL/min	0.1~1 L/min	0.2~0.8 L/min
3~30 NL/min	0.1~1	L/11111	4~20	NL/min	6~24	NL/min	0.1~1 L/IIIII	0.2~0.0 L/IIIII
10~50 NL/min	0.3~1.5	L/min	6~30	NL/min		NI (		
12~60 NL/min	0.4~2	L/min	10~50	NL/min	10~40	NL/min	0.3~1.5L/min	0.3~1.2 L/min
×1 1~5NmL/mir	%1 1~5NmL/min is available.Consalt factory for details.							

\*1 1~5NmL/min is available.Consult factory for details \*2 0.5~5L/min is available.Consult factory for details.

May be different depending on the scale length. In case alarm output code is G, flow range is different. Consult for details.

#### OTHER AVAILABLE OPTIONS

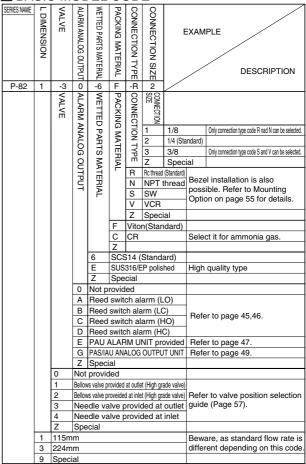
You can specify the following options:

Two point alarm, reed switch lead wire length, double graduations, special graduations, built-in rubber joint type, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).



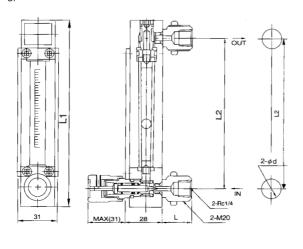
Basic model code	Designation items for detailed specifications				
P-82	①     ②     ③     ④     ⑤     ⑥       Fluid name     –     Measuring range     –     Press.     –     Temp.     –     Mounting Option     –     Other Option				
(Use model code table for selection )	(For specification procedure, refer to page 53)				

						RATE TA	BLE
	p. Press at gas	s is not					
	output code is O and E		In case alarm analog output code is A to D				
AIR(1atm,0°C)	Water	AIR(1	atm,0°C)	Alarm se	etting range	Water	Alarm setting range
5~50 NmL/min							
10~100 NmL/min							
20~200 NmL/min			/				
30~300 NmL/min							
50~500 NmL/min	<u> </u>	<u> </u>		<u> </u>		<u> </u>	
0.1~1 NL/min	5~50 mL/min					5~50 mL/min	10~40 mL/min
0.2~2 NL/min	10~100 mL/min	0.1~1				10~100 mL/min	20~80 mL/min
0.3~3 NL/min	20~200 mL/min		NL/min		NL/min	20~200 mL/min	40~160 mL/min
0.5~5 NL/min	30~300 mL/min		NL/min		NL/min	30~300 mL/min	60~240 mL/min
1~10 NL/min	50~500 mL/min		NL/min	0.1~4		50~500 mL/min	100~400 mL/min
2~20 NL/min				2~8	NL/min		
3~30 NL/min	0.1~1 L/min				NL/min	0.1~1 L/min	0.2~0.8 L/min
		3~30	NL/min	6~24	NL/min		
5~50 NL/min	0.15~1.5 L/min	5~50	NL/min	10~40	NL/min	0.15~1.5 L/min	0.3~1.2L/min
6~60 NL/min	0.2~2 L/min	Ĺ					
BASIC	In case alarm		t code is				ne scale length. Isult for details.



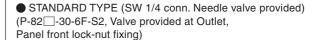
#### DIMENSIONS

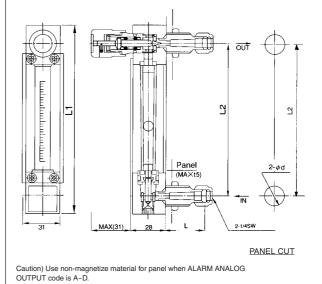
● STANDARD TYPE (Rc 1/4 conn. Needle valve provided) (P-82 □ -40-6F-R2, Valve provided at Inlet, Panel front lock-nut fixing)



PANEL CUT

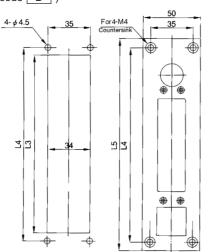
Ξ

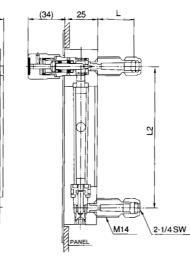




BEZEL INSTALLATION TYPE

(P82 -30- , Valve provided at Outlet, Bezel fixing.) (Mounting Option code D)





#### DIMENSION TABLE

Marial	Dimension(mm)							
Model	L1	L2	L3	L4	L5			
P-821	143	115	145	160	175			
P-823	252	224	254	265	280			

#### **•**STANDARD MATERIAL

Parts name	Standard materia	Available material
Body	SCS14	
Tapered tube	Pyrex glass	
Float	SUS316/Glass	
Packing	Viton	CR
Spindle	SUS316	
Fitting	SUS316	
Valve	SUS316	
Mounting board	SPCC	
Cover	Acryl	
Desta harriera		• • • • • • • • • • • • • • • • • • •

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### PANEL CUT SIZE

Connection size	Hole dia(d)(mm)	Rear dia L(mm)
Rc 1/8,NPT1/8	<i>ф</i> 16	(22)
Rc 1/4,NPT1/4	Ø22	(22)
1/4 SW	<i>ф</i> 16	(29.5)
3/8 SW	<i>\$</i> 22	(30)
1/4 VCR	<i>\$</i> 22	(30)
3/8 VCR	Ø32	(34.5)

#### In case alarm output code is A to D

Α	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	nelei to page 45, 40.
D	Deed quiteb clarm (HC)	

D	Reed switch alarm (HC)	

#### In case alarm output code is E to G

E	PAU ALARM UNIT provided	Refer to page 47.
G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.

# **P-830**

#### GENERAL

CE marking and compatibility with EN Standards. Improved by re-examination of conventional purgemeter structure and material, our product ensures a heat resistance of 130°C.

#### MAJOR APPLICATIONS

Cooling water lines at semiconductor production equipments

#### STANDARD SPECIFICATION

Mea	surin	g object	Liquids	
	Measuring range Water		Min. 0.1~1.0 L/min. Max. 1.5~7 L/min.	
Ra	inge a	bility	10:1	10:2 occasionally
	Accura	асу	±5% F.S.	
Max	. Ор.	Press.	10kgf/cm <sup>2</sup> G(0.98MPa)	
Max	. Ор.	Temp.	130°C	
	Mate	rial	Std.	
	Body		SCS14/SUS304	
	Tapered tube		Pyrex-glass	
	F	acking	Viton	
	S	Support	Aluminum	
	Cover		Acryl	
Conne	otion	Std.	3/8SW	Refer to Basic model code for
COILIE	CIION	Opt.	Rc3/8,NPT3/8 etc.	details.
Mount	ting Std.		Thread mount onto panel front	Refer to ordering information for details.
Genera	quanti	ty (std. type)	0.5kg	

#### ALARM AND ANALOG OUTPUT

Type		Availability	Reference pages
туре		Availability	nelelelice pages
Reed switch type alarm unit	General	×	
Reed Switch type alarm unit	CE, UL Version	0	45, 46 page
PAU Optical alarr	n unit	×	
Optical alarm u	ınit	×	
Analog output u	unit	×	

#### STANDARD FLOW RATE TABLE

In case alarm anal	og output co	ode is 0	In case alarm analog output code is A to D				
AIR(1atm,0°C)	Wat	er	Wa	Water		Alarm setting range	
	0.1~1.0	L/min	0.1~1.0	L/min	0.1~0.8	L/min	
	0.4~1.5	L/min	0.4~1.5	L/min	0.4~1.2	L/min	
	0.2~2	L/min	0.2~2	L/min	0.6~1.6	L/min	
	0.3~3	L/min	0.3~3	L/min	0.6~2.4	L/min	
	0.4~4	L/min	0.4~4	L/min	0.8~3.2	L/min	
	0.5~5	L/min	0.5~5	L/min	1~5	L/min	
	1.5~7	L/min	1.5~7	L/min	1.5~7	L/min	

#### OTHER AVAILABLE OPTIONS

You can specify the following options:

Two point alarm, Variable type on the front of alarm contact, reed switch lead wire length, double graduations, special graduation, builtin rubber joint type, built-in joint type, etc.

(For details, refer to (6) Other Option on page 56).



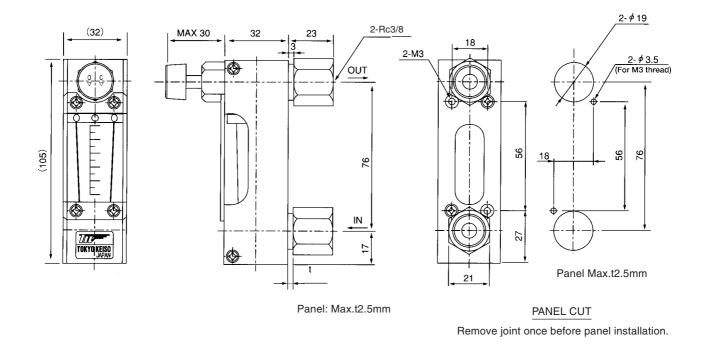
BAS	BASIC MODEL CODE							
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		EXAMPLE DESCRIPTION
P-831	-U	Α	-6	F	-S	3		
	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE R N S Z Vito Spe	Rc 1 NP SW Spe	3/8 Special hread thread (Standard	(b
			6		514/5	SUS	304	
		0	Not p					
		A	Reed				· /	Poterto page 45, 46
		B C	Reed Reed					Refer to page 45, 46.
			Reed					
		z	Speci		ona	unn	(110)	
	0	No		rovided				l
	U	Тор	2					
	Ζ	Spe	ecial					

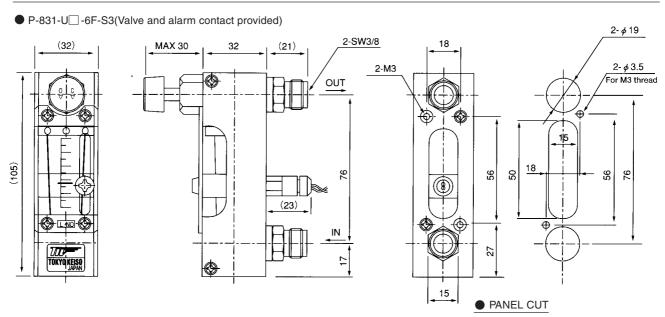
#### ORDERING INFORMATION

Basic model code	Designation items for detailed specifications
P-831	①     ②     ③     ④     ⑤       Fluid name     Measuring range     Press.     Temp.     Mounting Option     Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)

#### DIMENSIONS

● P-831-U -6F-R3 (Valve provided)





Use nonferrous material panel.

#### ● STANDARD MATERIAL

Parts name	Standard material	Available material
Body	SCS14	—
Tapered tube	Pyrex glass	—
Float	SUS316	—
Float rod	SUS316	—
0-ring	Viton	—
Valve	SUS304	SUS316
Fitting	SUS304	SUS316
Mounting board	Aluminum	_
Cover	Transparent Acryl	—

Parts whose names are described in **bold letters** are in contact with fluids to be measured.

#### • In case alarm output code is A to D

А	Reed switch alarm (LO)	
В	Reed switch alarm (LC)	Refer to page 45, 46.
С	Reed switch alarm (HO)	Helel to page 45, 46.
D	Reed switch alarm (HC)	

# **P-900**

#### GENERAL

Smart designed purgemeter with all stainless steel body. Unified material achieves effective price and quick delivery.

#### MAJOR APPLICATIONS

Corrosion resistant equipments

#### STANDARD SPECIFICATION

Measu	ring o	object	Liquids and gases	
Measurir	ng	Air	Min. 80~800 NmL /min. Max. 6~60 NL/min.	Air at 0°C, 1atm     When selecting flow range, refer to     standard flow rate table.
range		Water	Min. 5~50 mL/min. Max. 0.25~2.5 L/min.	<ul> <li>In case Op. Press at gas is not 1atm, refer to page 1.</li> </ul>
Rang	e abi	lity	10:1	
Acc	curac	у	±3%F.S./P-902 ±5%F.S./P-901	
Max. O	Max. Op. Press.		8kgf/ cm <sup>2</sup> G(0.78MPaG)	
Max. O	)р. Те	emp.	120°C	
Ma	aterial		Std.	Option (Specify by model code)
	B	ody	SUS304	SUS316 is also available
Т	aper	ed tube	Pyrex glass	
	Pad	cking	Viton	
	Support		SUS304	
	Co	over	Poly-carbonate	
Connectio	_	Std.	Rc1/4	Refer to ordering information for details.
Connection	"  _	Opt.	1/4NPT	neier to ordening intoffiation for details.
Mounting		Std.	Thread mount onto panel front	Refer to ordering information for details.
wounting		Opt.		neier to ordening intoffiation for details.
Weight	t (std.	type)	0.5kg(P-901)	

#### ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
Reed switch type alarm unit	General ×		
Reed Switch type alarm unit	CE, UL Version	×	
PAU Optical alarr	n unit	×	
Optical alarm u	ınit	×	
Analog output u	unit	×	

#### STANDARD FLOW RATE TABLE (In case Op. Press at gas is not 1atm, refer to page 1.)

In case alarm analog output code is 0					
AIR(1atm,0°C)	Water				
80~800 NmL/min	5 ~ 50 mL/min				
0.1~1 NL/min	5~50 mL/min				
0.2~2 NL/min	10~100 mL/min				
0.3~3 NL/min	20~200 mL/min				
0.5~5 NL/min	30~300 mL/min				
1~10 NL/min	50~500 mL/min				
2~20 NL/min	0.1~1 L/min				
3~30 NL/min	0.1~ T L/IIIII				
5~50 NL/min	0.15~1.5 L/min				
6~60 NL/min	0.2~ 2 L/min				
0∼00 NL/min	0.25~2.5 L/min				

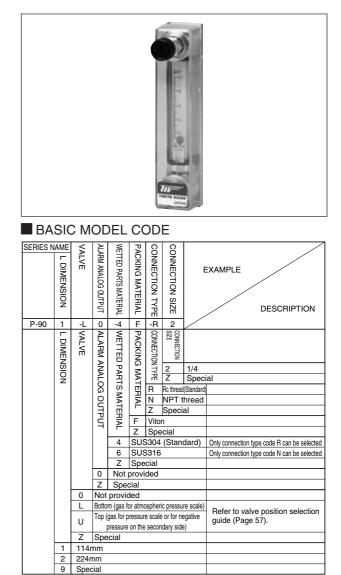
#### OTHER AVAILABLE OPTIONS

You can specify the following options: Double graduations, special graduations, built-in check valve type, built-in rubber joint type, built-in joint type, etc. (For details, refer to (6) Other Option on page 56).

#### DIMENSION TABLE

Madal	Dimens	sion (mm)
Model	L1	L2
P-901	146	114
P-902	256	224

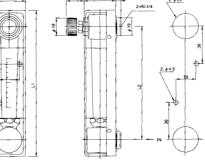
● STANDARD MATERIAL					
Parts name	Standard material	Available material			
Body	SUS304	SUS316			
Tapered tube	Pyrex glass				
Float	SUS316/Glass	Ruby			
Packing	Viton	CR			
Valve	SUS304	SUS316			
Mounting board	SUS304				
Cover	Poly-carbonate				
Parts whose names are described in <b>bold letters</b> are in contact wi fluids to be measured.					



#### DIMENSIONS

#### STANDARD TYPE

Parts whose names are described in bold letters are in contact with fluids to be measured.



#### PANEL CUT

#### ORDERING INFORMATION

Basic model code	Designation items for detailed specifications				
P-90	1 2 3 4 5 6 Fluid name – Measuring range – Press – Temp. – Mounting Option – Other Option				
(Use model code table for selection)	(For specification procedure, refer to page 53)				

#### GENERAL

Standard graduation type of P-900. Much more cost effective and delivery from stock.

#### ■ MAJOR APPLICATIONS

Quick delivery, anti-corrosion equipments

#### STANDARD SPECIFICATION

Measuring object		object	Liquids and gases	
		Air	Min. 0.1~1 SL/min.	· Air at 20°C, 1atm
Measu	urina		Max. 4~40 SL/min.	When selecting flow range,
ran		Water	Min. 0.1~1 L/min.	refer to standard flow rate
		Walei	Max. 0.25~2.5 L/min.	table.
Rai	nge ab	ility	10:1	
A	ccurac	ÿ	±5%F.S.	
Max.	Op. P	ress.	8kgf/ cm <sup>2</sup> G(0.78MPaG)	
Max.	Op. T	emp.	120°C	
Ν	Materia		Std.	
	В	ody	SUS316	
[	Taper	ed tube	Pyrex glass	
[	Pa	cking	Viton	
[ [	Su	oport	SUS304	
[	Cover		Poly-carbonate	
<u> </u>		Std.	NPT1/4	Refer to Basic model code
Connect	ion	Opt.		for details.
		Std.	Thread mount onto panel front	Refer to Dimension for details.
Mountin	ng	Opt.		
Weig	Weight(std. type)		0.5kg(NP-[]1])	

#### ALARM AND ANALOG OUTPUT

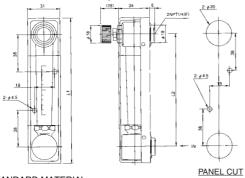
Туре		Availability	Reference pages
	General	×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala		×	
Optical alarm	unit	×	
Analog outpu	t unit	×	

#### DIMENSION TABLE

Model	Dimension(mm)			
Model	L1	L2		
NP-[]1	146	114		
NP-🗆2	256	224		

#### DIMENSIONS

## ● STANDARD TYPE (NP-G□ -□□ -□□ -N2)



#### STANDARD MATERIAL

Parts name	Standard material	Available material			
Body	SUS316	-			
Tapered tube	Pyrex glass	—			
Float	SUS316/Glass	-			
Packing	Viton	-			
Valve	SUS316	-			
Mounting board	SUS304	-			
Cover	Poly-carbonate	—			
Parts whose names are described in <b>bold letters</b> are in contact					

Parts whose names are des with fluids to be measured.

#### BASIC MODEL CODE

SERIES	NAME	<	ណ្ឌ	×.	P	8	2		/
	FLO	VALVE	GRADUATION	VETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
	FLOW RANGE	111	Ŭ A	PAR	NG I	E	IEC.	E	EXAMPLE
	RAI		1	TSM	AM	Į	TIO		
	NGE		z	ATEF	Ē	Ē	N S		
	111			AL AL	P	PE	ÎZE		DESCRIPTION
NP-	L11	-L	0	-6	F	-N	2	$\square$	
	FLOW RANGE		GRADUATION	WETTED PARTS MATERIAI	PACKING MATERIAL	CONNECTION	CONNECTION SIZE		
	×	.< ⊟	þ	ED P)	ING	ECTIO	IECTI		
	RA		A	ARTS	MATE	N TYPE	2	1/4	
	NGI		ģ	MATE	RIAL	N		thread	
	111		-	RIAL	F	Vito			
				6		5316			
			0				uation		Actual flow rate graduation indication at flow range
			P	Perce		radua	ation		Percent graduation indication at flow range
		0 L		provi		ocohor		iro coalo)	Refer to valve location selection
		U							guide (Page 57).
	L11		0.01			nin			
	L12		0.03	~0.3	L/r	nin			
	L13		0.05	~0.5	L/r	nin			
	L14			0.1 ~ 1 L/min					L dimension 114mm
	L15		0.15		L/min L/min				
	L16 L17		0.2		-	nin nin			
	L21	Water	0.23			nin			
	L22		0.03			nin			
	L23		0.05	~0.5	L/r	nin			
	L24		0.1	~ 1	L/r	nin			L dimension 224mm
	L25		0.15			nin			
	L26		0.2			nin nin			
	L27 G11		0.25			nin /min			
	G12		0.2			/min			1
	G13		0.5			/min			1
	G14		1 ~	10	SL	/min			L dimension 114mm
	G15			~ 15		/min			
	G16		2~			/min			-
	G17	Air		~ 30 SL/min					
	G18 G21		4~ 0.1			/min /min			
	G22		0.1			/min			•
	G23		0.5		-	/min			
	G24			10		/min			L dimension 224mm
	G25			~ 25		/min			-
	G26		4 ~	40	SL	/min			

#### ORDERING INFORMATION

Basic model code	Designation items for detailed specifications
NP-00-00-00-00	No designation
(Use model code table for selection )	

#### GENERAL

Standard specification type purgemeter adopted engineering plastic integrated mold body. Smart and compact design. Quick delivery and low cost contributing to cost-down.

#### ■ MAJOR APPLICATIONS

General purpose, quick delivery

#### STANDARD SPECIFICATION

Measuring object		object	Liquids and gases	
		Gas	Min. 0.1~1 NL/min.	· Gas at 20°C, 1atm
Meas	uring	040	Max. 2~20 NL/min.	· When selecting flow range,
ran	ge	Water	Min. 0.02~0.1 L/min.	refer to standard flow rate
		water	Max. 0.2~1.0 L/min.	table.
Ra	nge ab	oility	10:1	10:2 occasionally
A	Accura	су	±5%F.S.	
Max	. Op. F	ress.	5kgf/ cm <sup>2</sup> G(0.49MPaG)	
Max	. Op. T	emp.	50°C	
	Material		Std.	
	Body		POM(Poly-acetals)	Engineering plastic integrated mold
	Tape	red tube	Pyrex glass	
	Pa	cking	Viton	
	С	over	Poly-carbonate	
<u> </u>		Std.	Rc1/4	Refer to Basic model code
Connection O		Opt.		for details.
Mounting		Std.	Thread mount onto panel front	Refer to Dimension for
		Opt.		details.
General quantity (std. type)		(std. type)	0.1kg	

#### ALARM AND ANALOG OUTPUT

Туре		Availability	Reference pages
	General	×	
Reed switch type alarm unit	CE, UL Version	×	
PAU Optical ala	ırm unit	0	Refer to page 47.
Optical alarm	unit	×	
Analog outpu	t unit	×	

#### OTHER AVAILABLE OPTIONS

You can specify the following options:

Variable type on the front of alarm contact, special graduation, builtin rubber joint type, built-in joint type, etc.

(For details, refer to 6 Other Option and One-Point Advice on page 56).

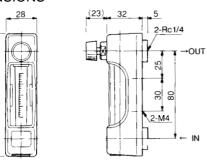
#### • STANDARD MATERIAL

Parts name	Standard material	Available material				
Body	Poly-acetals	-				
Tapered tube	Pyrex glass	_				
Float	SUS316/Glass	—				
Packing	Viton	-				
Valve	Poly-acetals	—				
Cover	Poly-carbonate	_				
Parts whose names are described in <b>bold letters</b> are in contact with						

Parts whose names an fluids to be measured.

112

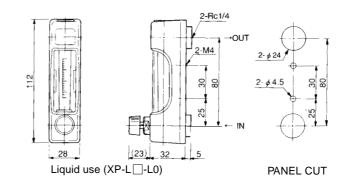
#### DIMENSIONS





#### ■ BASIC MODEL CODE

SERIES NAME	FLOW RANGE	VALVE	ALARM ANALOG OUTPUT	EXAMPLE	DESCRIPTION	
XP-	L1	-L	0	<u> </u>		
	FLOW RANGE	VALVE	ALARM ANALOG OUTPUT			
			0	Not provided		
			E	PAU ALARM UNIT provided	Refer to page 47.	
		0	Not	provided	Refer to valve position	
		L	Bottor	n (gas for atmospheric pressure scale)	selection guide	
		U	Top (gas f	or pressure scale or for negative pressure on the secondary side)	(Page 57).	
	L1		0.02-	-0.1 L/min		
	L2	1	0.04-	-0.2 L/min		
	L3	Water	0.06-	-0.3 L/min		
	L4	1	0.1~	0.5 L/min		
	L5	1	0.2~	1.0 L/min		
	G1		0.1~	1 NL/min	The notation of the fluid	
	G2	1	0.3~	3 NL/min	name of Tapered tube	
	G3	Gas	0.6~	6 NL/min	is Gas.	
	G4	(Air)	1.0~	10 NL/min		
	G5	1	2.0~	20 NL/min		
	00	Customer	designatio	n graduation Refer to Designation items for	detailed specifications in page 53.	



ORDERING INFORMATION

Gas use (XP-G -U0)

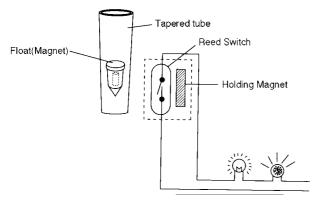
Basic model code	Designation items for detailed specifications (Only when customer designation graduation)
XP	①     ②     ③     ④     ⑥       Fluid name     –     Measuring range     –     Press.     –     Mounting Option     –     Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)

# ALARM AND ANALOG OUTPUT UNIT

CODE	METHOD	PAGE	FEATURES
ABCD	REED SWITCH TYPE	45,46	Self-holding type
E	PAU OPTICAL ALARM UNIT	47	Power 24 VDC Open collector output
F	E3C SEPARATE AMPLIFIER TYPE OPTICAL ALARM UNIT	48	Power 100 VAC contact output and contactless output
G	PAS/IAU ANALOG OUTPUT UNIT	49	DC 4 to 20mA output available
_	P-7810 SERIES PURGEMETER WITH ANALOG OUTPUT	50	2 to 20 mL/min. continuous output available
Η	PCS/OAC ANALOG OUTPUT UNIT	51,52	Continuous output by CCD sensor available

## Alarm and Analog Output Unit Purgemeter with alarm Code ABCD

A reed switch contact for flow alarm can be mounted on P series purgemeters. You can get the lower or upper limit flow alarm contact in addition to monitoring of the instantaneous flow rate by float position. This is effectively used for monitoring of flow interruption in various purging processes and for such control as inflow restrictions. (Note that some restrictions are placed on the flow range as well as the models that can be installed.) In addition to general reed type switches, reed switches compatible with CE (conforming to EN Standards) are also available to meet world-wide requirements.



Contion: Use non-magnetize material for mounting panel.

#### STANDARD SPECIFICATION

General type reed switch

Models where reed switch type alarm is available. P-100,P-200,P-510,P-520,P-550,P-620,P-772,P-773, P-774, P-820

Number of point 1 point (High or Low) 2 point alarm also available as option. But subject to limitation of scale range and setting point. Consult factory for details.

Alarm setting range Std. 20~80% of full scale

Contact	Reed switch (Self-holding type)				
Max.	contact capacity	AC10VA,DC10W			
Max.	voltage	AC125V,DC100V			
Max.	current	0.5A			
	0	,			

Connection Lead wire connection (50cm) (2m is also available) Models P-510 and P-520 are other optional codes. You can specify that the terminal is not necessary.

Deeet Case			
Reset-Span	Model	Reset-Span(%.F.S)	
	P-100,P-200,P-821	25	
	P-510,P-520,P-550,		
	P-510,P-520,P-550, P-620,P-772,P-773,	20	
	P-774,P-823		
	*May be different dep	pending on the scale length.	
Construction	Water proof		
	_		

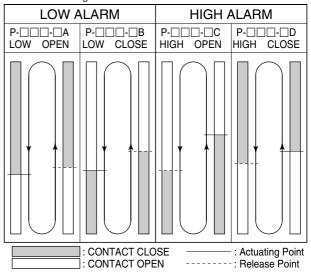
Amb. Temp. -10~60°C <Note>

A magnet is set in the float. In case of the short distance to mount reed switch, they interfere each other, and it may happen that the rate of flow can not be indicated accurately. Contact the factory if the distance to mount is less than 100mm.



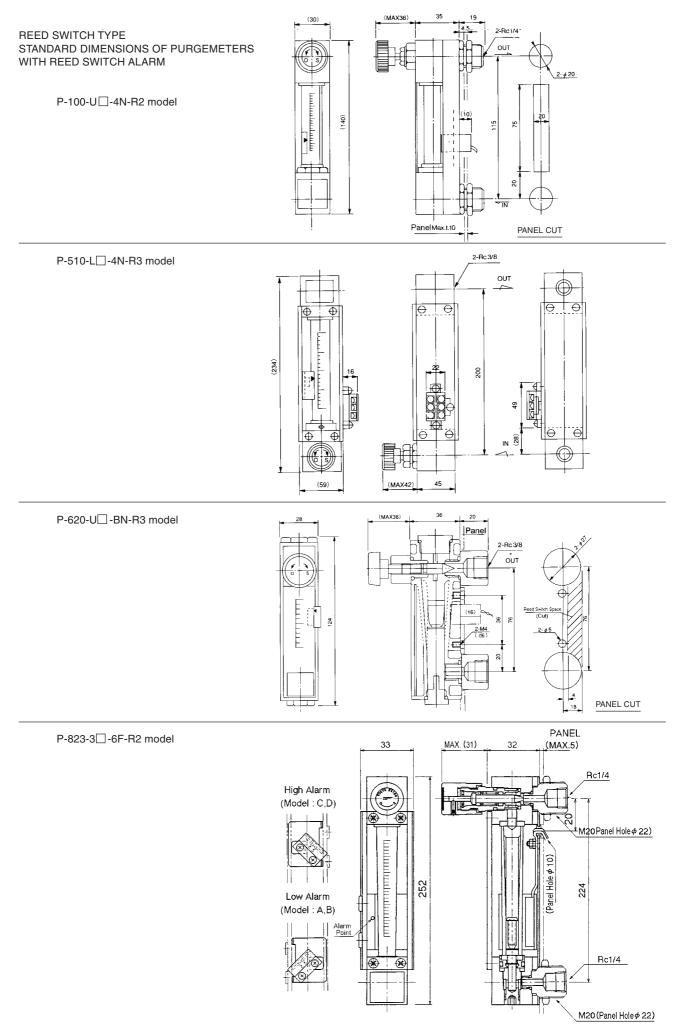
P-510 Purgemeter equipped with the reed switch

Contact Actuating



Reed switch compatible with CE and EN Standards Reed Switch alarm accepted EN Standard is available which is suitable for applicable area.

EN standar	d						
EN 60950: 1992							
EN 610	10: 199	93					
Contact	Read	switch contact					
Connection	Leed	wire ended (50cm)	(2m is also available)				
Construction	Water	proof (IP 67 equ.)	, , , , , , , , , , , , , , , , , , ,				
Amb. Temp.	-10~6	• • • • • •					
F							
Reed switch	n compa	atible with UL stand	lards				
UL standard	UL508						
Contact	Reed	switch contact					
Max. Capa	city	10W					
Max. Voltag	je	DC24V					
Max. Curre	nt	0.5A					
Connection		Lead wire(200cm	sttached)				
Construction		Water proof (IP 67	equ.)				
Amb. Temp		0~50°C	. ,				



For the upper limit alarm, the lead wire should be routed from the bottom.

### Alarm and analog output unit PAU •OPTICAL ALARM UNIT

#### GENERAL

PAU is an optical sensing type alarm unit, and can be mounted on almost all the purgemeters. This highly reliable optical system ensures flow interruption alarm, and allows working flow to be verified. It is a low-cost system which implements remote control of the measuring processes by various purgemeters which are based on direct reading at site.

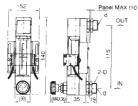
#### STANDARD SPECIFICATION

Models of purgemeters compatible with this unit

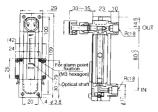
Models	:P-100,P-200,P-510,P-520,P-710,P-771,
	P-772,P-773,P-774,P-810,
	P-820,XP series purgemeter
Output	:Open collector (NPN) rated output
	30VDC, 80mA
Operation	:Dark ON (The open collector turns on when
	light is cut off)
Response time	:0.5 ms or less
	:24 VDC +/- 10% (power ripple 10% or less)
	:37mA or less (light projection and receiver)
Photosensitive adjust knob	
,	:LED display lamp
	:By cord pull-put (connection of lead wire)
	:Projector 0.1mm2 x 2C 2m
Coru lengin	Receiver 0.1mm2 x 3C 2m
Otra vetera	
Structure	:Water-proof enclosed type (equivalent to IP64)
Material	:Exterior features: fluid crystal polyester (filled
	with polypropylene)
Ambient illumination	:3000 lux or less
Ambient temperature	:-25 to + 55°C (no dew condensation)
	(
Ambient temperature	:-25 to + 55°C (no dew condensation) :85%RH or less

#### ■ INSTALLATION EXAMPLE ON PURGEMETER

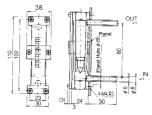
#### P-100-LE-4N-R2 model



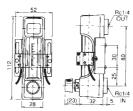
#### P-710-UE-GT-R1 model



#### P-771-0E-TW-TB model



#### 





#### Example of using PAU alarm unit

#### Application for current interruption and alarm

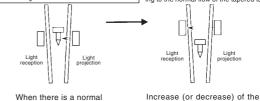
#### Processes in the supply of coolant and air to the incubator where a problem occurs when fluid flow is suspended



If the fluid flows correctly, light passes by and alarm does not operate. When the flow is suspended or reduced, the float is lowered to cut off light. This will cause the alarm to operate. The lamp and buzzer are provided to notify current interruption.

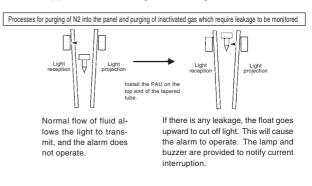
#### Application of working flow holding

Process of allowing a constant flow rate to flow at all times Install the PAU at the position corresponding to the normal flow of the tapered tube.



flow of fluid, light is cut off and alarm operates. Increase (or decrease) of the flow rate causes the float to move, and allows the light to transmit. This will cause alarm to be turned off. The lamp and buzzer are provided to notify changes in flow rate.

#### Application for leakage monitoring



### • SEPARATE AMPLIFIER TYPE OPTICAL ALARM UNIT

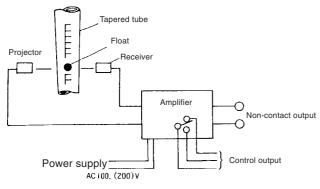
#### GENERAL

The separate amplifier type optical alarm unit comprises of a projector, receiver and amplifier unit.

Relay contact output and non-contact output are provided from the amplifier, depending on the presence or absence of the float.

#### OPERATING PRINCIPLE

Install the projector and receiver so as to hold the tapered tube in-between. The system detects if the float is present at the specified position or not. You can use the switches for selection; LIGHT ON when light is applied (without float) and DARK ON when light is cut off (with float). Since operation is provided by instantaneous contact, the holding circuit must be configured to meet the purpose of use when you want to use alarm on a continuous basis.



Block diagram

#### STANDARD SPECIFICATIONS

Models of purgemeters compatible with this unit:

P-100, P-200, P-710, P-772, P-773, P-774 (There are restrictions to the flow range. For details, see the description on relevant pages).

Power voltage: 100/200 VAC +/-10% (for common use), 50/ 60Hz(for common use)

Projector and receiver setup distance: 10cm or less Detected substances: Non-transparent substances (standard) Minimum detected substance width: Non-transparent sub-

Operating: by selector switch

DARK ON when light is cut off

stances 2mm

LIHGT ON when light is applied Response time: Non-contact output 1/2 ms or less, and

Contact output 20 ms or less

Control output: Contact output 1C 220 VAC 1A ( $\cos \phi = 1$ ) Non-contact output, output current 1.5 to 4 mA

Ambient illumination: 3000 luxes or less on the light receiving surface (incandescent lamp)

Receiver orientation angle: 10 to 60 deg.

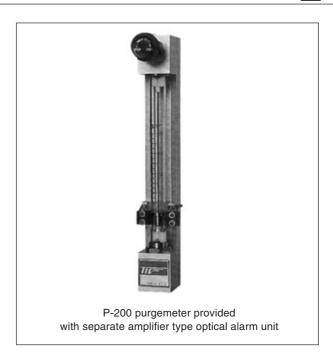
Vibration resistance: New complex width: 1.5 mm durable 10 to 50 Hz Three directions, X, Y and Z, two hours each

Shock resistance: approx. 50G (about 30G for amplifier unit) Power consumption: 3W or less

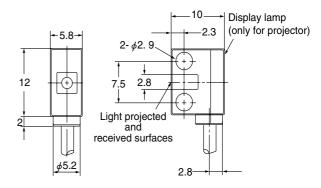
Ambient temperature: -25 to + 70 °C for projector and receiver -10 to 55 °C for amplifier unit

Ambient humidity: 35 to 85 %RH

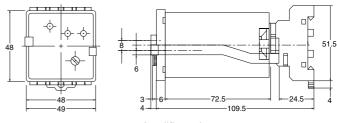
Extension cord: Shielded cord (max. length: 9m)



#### External dimensions

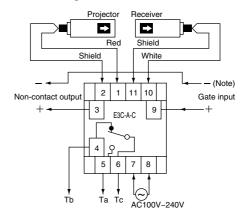


Sensor/transmission type



Amplifier unit





Code F

# Alarm and Analog Output Unit PAS/IAU •ANALOG OUTPUT UNIT

Code G

#### GENERAL

PAS/IAU is a unit to provide optical detection of the purgemeter float position and to output the flow rate in the form of electric signals.

It has become possible to provide remote control of very small flow process where electric signal output could not be obtained because of very small flow rate.

It has become possible to provide remote control of the flow rate of ultra-pure water and high-purity chemical liquids in the semi-conductor production process. This ensures more advanced process management. Furthermore, analog output of instantaneous flow rate and upper and lower limit alarm output are provided, thereby making a significant contribution to process computerization.

#### FEATURES

- REMOTE INDICATION/CONTROL NOW POSSIBLE EVEN FOR VERY SMALL FLOW PROCESS
   Very small current which was difficult to take out as output can now be taken out as DC4 to 20mA electrical signals. This promotes remote process control and computerization.
- APPLICABLE FOR VARIOUS TYPES OF PURGEMETERS Available for an extensive range of models from various purgemeters to purgemeters made of 100% fluorine resin for pure water and various chemical liquids.
- EASY LAYOUT WITH DETECTOR AND CON-VERTER INSTALLED SEPARATELY

The detector and converter can be installed separately at a maximum distance of 5m by means of a exclusive cable. This ensures easy layout of the piping on instrumentation panel.

HIGH ACCURACY

A high level of accuracy and repeatability are provided by high-precision digital operation through a high-resolution optical sensor and microprocessor.

HIGH FUNCTIONAL CONVERTER

A self-diagnostic function and alarm functions (2 points) which can be set as desired are provided in addition to analog output of instantaneous flow rate of 4 to 20mA.

#### STANDARD SPECIFICATION

Components : 1) PAS-2 SENSOR

```
: 2) IAU-2 CONVERTER
```

PAS/IAU Purgemeter, Analog output unit is available for: Model: P-100,P-510,P-520,P-710,P-771,P-772,P-773,P-774,P-812,P-821 Specification of PAS-2 SENSOR

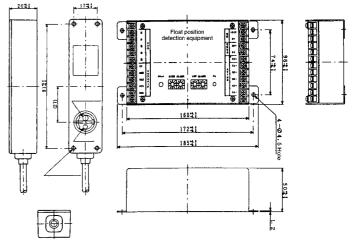
Detection method : Float location detection by LED optical method Detection accuracy : ± 3%(F.S.) (For scale length 50mm)

Amb. Light	: Max. 500Lux
Amb. Temp.	: -10~+50°C
Amb. Humidity	: Max. 85%RH (To be free from condensation)
Construction	: Water proof (equivalent to IP54)
Connection cable	e : Std. 5m provided
Specification of L	AU-2 CONVERTER
Output	: DC4~20mA (Max. load 500 Ω)
Alarm contact	: Adjustable Hi and Lo alarm provided
Contact Action	: NPN Open collector output
Alarm setting :	Setting by digital switch
Setting resolution	nality : Power supply
Consumption :	Max. 250mA
Electrical connect	tion : By M3 screw terminal
Construction :	Indoor use (equivalent to IP40)
Installation :	4-M4 thread





DIMENSIONS



### OPERATION PRINCIPLE

Holding a tapered tube of the flow meter in-between, LED array and light receiving element array are installed as sensors of float height, as illustrated. (PAS-2 SENSOR)

When liquid flows through the tapered tube upward, the float rises to the level which is determined by flow rate.

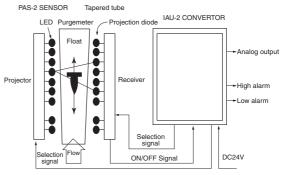
The optical system of the sensor is designed to ensure that several opposing light receiving elements will be turned on if there is no float in the light path when the LED is turned on. Therefore, you can get the height of the float in the tapered tube by checking of light reviewing elements are turned on or off when LEDs are turned on one by one.

By turning on and off the light receiving elements for two adjacent LEDs, this equipment detects the height of the float at the resolution corresponding to 1/2 of the pitch of the light receiving element.

The float height is converted into the flow rate to output the current signal directly proportional to the flow rate. Furthermore, upper and lower alarm outputs are also provided. (IAU-2 CON-VERTER)

Such processing is all done by high-speed microprocessor.

<OPERATION PRINCIPLE>



## Alarm and analog output unit P-7810 Series • PURGEMETER WITH ANALOG OUTPUT

#### Overview

P-7810 is a purge meter developed by flow meter production technologies of Tokyo Keiso cultivated through years of designing and production experience.

It is combined with the renowned PCS type CCD sensor and is used as a remote flow sensor. It allows fluid to be directly viewed in the tapered tube, and displays the flow at the float position. It is compatible with remote monitoring and control since it allows the flow value to be output as current signal of DC 4 to 20mA. The minimum range is 2 to 20 mL/min to cover the world's minimum range as a fluid flow sensor

#### FEATURES

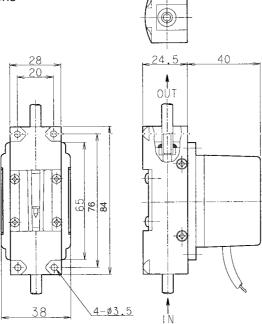
- · Covers the world's minimum range as a fluid flow sensor.
- The entire fluid contact section is designed in PFA and Teflon structure, and is perfectly ion-free.
- Tube joint compatible with semiconductor equipment
- Saves your cost since the product is equipped with 4-loop compatible OAC-1 dedicated controller.

#### STANDARD SPECIFICATION

Object for measurement: Fluid in general (pure water, extra pure water, low-viscosity chemical fluid) Measuring range : Minimum 2 to 20mL/min. Maximum 30 to 300mL/min. For details, see the model code table. Maximum operating pressure : 5kgf/cm<sup>2</sup>G(0.49MPa) Maximum operating temperature : 60°C Direction of flow : Bottom to top Installation : installed on the panel Process connection : Connected to 6.35mm tube end Material : PFA Fluid contact section Enclosure cover PP Fitting PFA tube Scale plate Transparent tube Screws Poly-carbonate

Output DC4 to 20mA Output accuracy : +/-3% F.S. Accuracy guarantee output range : 10:1 Permissible load resistance : 300 ohms Wiring system : 4-wire type Power supply : DC 12 V +/- 10% Structure : non-water proof, designed for indoor use

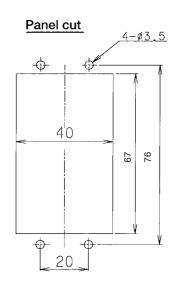
#### External dimensions





#### Model code

P-7810-0-T2-L		Description			
	0020	2 ~ 20	mL/min		
	0030	3 ~ 30	mL/min		
	0040	4 ~ 40	mL/min		
	0050	5 ~ 50	mL/min		
	0060	6 ~ 60	mL/min		
Flow range	0070	7 ~ 70	mL/min		
	0080	8 ~ 80	mL/min		
	0090	9 ~ 90	mL/min		
	0100	10~100	mL/min		
	0150	15~150	mL/min		
	0200	20~200	mL/min		
	0300	30~300	mL/min		



## Alarm and analog output unit PCS/OAC • CCD sensor

Code H

#### OVERVIEW

PCS-1 is a sensor provided with current transmission function specifically for the purgemeter. It optically detects the float position by the newly developed CCD sensor. It allows the flow rate to be output as current signal of DC4 to 20mA, in addition to permitting display of flow rate by the float of the normal purgemeter. In addition to remote display by current output, it is equipped with an OAC-1 flow controller which ensures a flow control of four systems by one unit, and enables cost-effective remote monitoring.

#### STANDARD SPECIFICATIONS

#### CCD sensor: PCS-1

Current output: DC4 to 20mA, permissible load resistance: 300 ohms, Wiring system: 4-wire type

Output resolution: 1/255 (+/-0.5% (F.S.)

The output becomes partial output due to the scale stroke, without becoming full-scale output. In this case, the output conversion of 4 to 20mA does not change with respect to the scale of 0 to 100%. For details, contact us.

Output accuracy: +/-3% (F.S.) < 25 +/- 10°C Power voltage: DC 12 V +/- 10% Current consumption: 0.1A or less Electric connection: By exclusive cable terminal (cable length: 2m or 7m, to be specified at the time of ordering)

Exclusive flow controller OAC-1

- One special-purpose flow controller OAC-1 can be connected with a maximum of four PCS-1 sensors, and display can be provided by selection.
- Function: Supplies a specified power to the PCS sensor. Flow rate display by 3-1/2 digit LED display
- Flow alarm: Open collector (30 VDC, 30mA max.) Protected against short-circuiting RS485 communication functions
- Power supply: 12 VDC +/- 10% (with a circuit to protect against reverse connection)
- Current consumption: 0.7A or less (when connected with four sensors)
- Connection with PCS sensor: By exclusive connector
- Installation: on the panel (DIN48 x 48)
- Structure: For indoor use (equivalent to IP40)

Object for measurement: Fluid in general (transparent fluid such as pure water and chemical fluid)

Attached equipment: P-710 and P-771

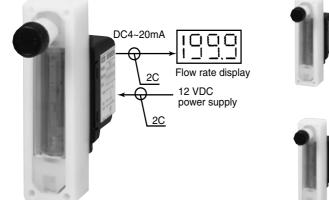
Flow range, maximum operating pressure, maximum operating temperature, material, connection method, and mounting method are different according to each meter manufacturer.



#### EXAMPLE OF USE

Normal remote display

Exclusive flow controller OAC-1

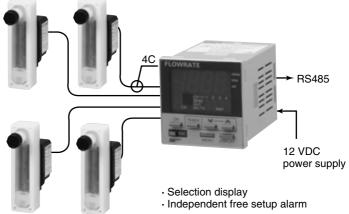


Panel cut view

20

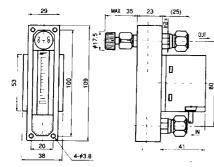
8 호

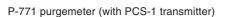
89

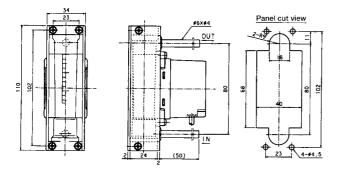


#### EXTERNAL DIMENSIONS

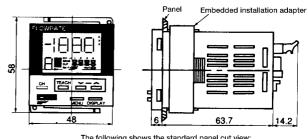
P-710 purgemeter (with PCS-1 transmitter)



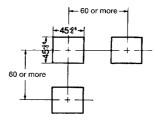




Exclusive flow controller



The following shows the standard panel cut view: (Conforms to DIN43700)



Note: 1. The installation panel should be 1 to 5mm thick.

## ADVICE FOR YOUR PRODUCT SELECTION

• "Ordering information" given for each model contains the following description.

(Example) P-100 series

Basic model code	Designation items for detailed specifications					
P-10	① Fluid name	② Flow range -	③ - Press	④ - Temp	⑤ - Mounting option –	6 Other options
$\stackrel{-}{\dashv}$ (Use the model code table for selection.)						

Basic model code: Use the model code table of each series for selection.

Contact us if you have selected a special one such as "Z" in the basic mode code.

Designation items for detailed specifications

Selection procedure to omit the items when filled with "Need not be specified".

Basic mo	odel code			Designation ite	ms for detailed specifica	ations				
Page	Model	1	2 3			4	5	6		
, age	name	Fluid name	Flow range Press.			— Temp.	Mounting method (optional)	Other options		
3,4	P-100	•	Specify the max. flow rate.		*	¥ 	¥	*		
5,4	P-200	Specify the fluid name. (Models NP and XP: "need not be specified")	(Refer to the standard flow rate table). (P-773, NP and	Specify	the setup pressure.	Specify the setup standard temperature	. Specify the mounting method.	Specify the option.		
-		*	XP: "need not be specified")		*	*				
7,8	P-300	Example of entries		_п		Other the Normal	When	When When		
9,10	P-400	<ul> <li>Pure water</li> <li>Other fluids</li> </ul>	Gas	Fluid	Gas	nal	ther	ther		
11,12		-				an r	e is n	e is n		
13,14		• N2		l A		Dera	o nee	o nee		
	P-530	• AIR • O2				Other than normal temperature Normal temperature (20°C)	When there is no need to specify according to the course table on page 55: When there is no need to specify according to the course table on page 55:	When there is no need to specify according to the course table on page 56:		
17,18		• H2				emperat (20°C)	specif	specif		
19,20		• Ar • He				°C) erat	y acc	y acc		
21,22		• CO2 • C3H8					ordin	ordin		
23,24		Other Gases				(20°C)	g to ti	g to ti g to ti		
25,26	P-710					0	he co	he co		
27,28	P-771				For basic For basic		urset	urse t		
29,30	P-772			.4 N ess	model valve model valve code L or code U,		table	table		
31,32	P-773			MPa or more ss than 0.4 MI	atmospheric pressure scale pressure scale or negative		on pa	on pa		
33,34	P-774			or m	pressure on the secondary		ige 55	ıge 56		
35,36	P-810			0.4 MPa or more	side					
37,38	P-820			മ്						
39,40				"Ne	"Need not "Must be		Ne Nr	"Ne		
41	P-900			"Must be specified" "Need not be specified"	be specified" specified" Shipped as 0 Specify the flow	"Must be specified 	"Must be specified "Need not be specified	"Must be specified "Need not be specified		
42	NP			st be specified ed not be specified	Shipped as 0 MPa (1 atm) Specify the flow meter pressure on the primary	st be specified ed not be specified	st be specified" ed not be specified"	st be specified ed not be specified		
43	XP				side.					
		Ū	mL/				table.	Speci accor table.		
		Example of entri	min. etc. NmL/min etc.	Omiti etc.	MPa etc.	Omit etc.	ording	ecify the cording		
		erm		≓ etc.			t t	he co g to th		
		ntri					ne se	ne se		
		xample of entries	min. etc. NL/min etc.				Specify the code number according to the selection table.	Specify the code number according to the selection table.		
			u have found out	unclear points o	r questions, refer to the	)ne-Point Advi	<u> </u>	1		
		"''	If you have found out unclear points or questions, refer to the One-Point Advice on pages 54 to 58.							

\* Must be specified for XP model when the scale has been specified by the customer.

### 1 Fluid name One-point advice

- Specify the name of the fluid you want to use.
- <Example> Water, N<sub>2</sub>, Air, O<sub>2</sub>, H<sub>2</sub>, Ar, He, CO<sub>2</sub>, C<sub>3</sub>H<sub>8</sub>, etc.
- Inform us of fluid density and viscosity. For the name of the fluid as shown above, enter only the fluid name.

3 Pressure

One-point advice

Specify the operating pressure and pressure unit.

<Example of entries> 1.033kgf/cm<sup>2</sup>G(=1atm) 2kgf/cm<sup>2</sup>G

(4) Temperature One-point advice

Specify the maximum flow according to the standard flow rate table.

\*2L/min. in the case of 0.2 to 2L/min.

- \*20NL/min in the case of 2 to 20NL/min.
- You can also select the flow range other than the standard flow rate.
- You can also select the unit of flow other than the standard flow rate.

<Example of flow rate unit>

Liquid $\rightarrow$	- 1000mL/min
	=1L/min
	<ul> <li>1000mL/h=1L/h</li> </ul>
Gas→	<ul> <li>1000NmL/min</li> </ul>
	=1NL/min
	<ul> <li>1000NL/h=1Nm<sup>3</sup>/h</li> </ul>
	<ul> <li>1000SmL/min</li> </ul>
	=1SL/min
	$100001 / h$ $10m^{3}/ h$

- 1000SL/h=1Sm<sup>3</sup>/h etc.
- When fluid is other than water (with a density of 1.0 g/cm<sup>3</sup> and viscosity of 1.0cP) or air (with a temperature of 0°C and pressure of 1atm), use the conversion formula to make compensation and apply it to the relevant flow range.
- <Conversion formula>

For liquid - Refer to the right on page 1.

For gas - Refer to the left on page 1.

- Specify the design standard temperature and temperature unit.
- <Example of entries> 20°C

#### 5 Mounting option One-point advice

- $\cdot$  You can specify other than standard mounting methods.
- · Specify the following code number if you want to use special mounting method.
- Omit the entry for "need not be specified". (Assumed as having been selected in terms of the basic model code)
- · When installation set screws are attached for Å¢, specify it separately.

Selection Table for mounting option

	Need not be specified Need not be specified Need not be specified	c	D 0 0 × × 0 ×	E	F           X           X           X           X           X           X           X           X           X           X           X           X           X           X           X           X           X           X	G G C C C C C C C C C C C C C C C C C C
Need not be specified         Need not be specified	×     I       ×     I       ×     I       Need not be specified     I	0 × × △ 0 0	0 × × 0 ×	× 0 0 × × ×	× 0 × × × × ×	0 × × 0 ×
Need not be specified         ×         Need not be specified         Need not be specified         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×	×     I       ×     I       ×     I       Need not be specified     I	0 × × △ 0 0	0 × × 0 ×	× 0 0 × × ×	× 0 × × × × ×	0 × × 0 ×
×       Need not be specified       Need not be specified       ○       ×       ×       ×       ×	×        ×        Need not be specified       Need not be specified       Need not be specified       Need not be specified	× × △ ○	× × 0 × 0	0 0 0 × ×	0 × × × ×	× × 0 ×
Need not be specified       Need not be specified       O       ×       ×       ×	×        Need not be specified        Need not be specified        Need not be specified        Need not be specified	×	× 0 × 0	0 0 × ×	× × × ×	× 0 ×
Need not be specified	Need not be specified Need not be specified Need not be specified Need not be specified	△ ○ ○	0 × 0	0 × ×	× × ×	0 ×
	Need not be specified Need not be specified Need not be specified	0 0	× 0	×××	× ×	×
× ×	Need not be specified Need not be specified	0	0	×	×	
×	Need not be specified					×
	'	0				
Need not be specified			0	×	×	×
'	×	×	×	×	×	×
×	Need not be specified	×	×	×	×	×
×	Need not be specified	×	×	×	×	×
×	Need not be specified N	leed not be specified	×	×	×	×
×	Need not be specified	0	×	×	×	×
×	Need not be specified	$\bigtriangleup$	×	×	×	×
×	Need not be specified	0	×	×	×	×
×	Need not be specified	×	×	×	×	×
Need not be specified	×	×	0	×	×	0
Need not be specified	×	×	0	×	×	0
×	Need not be specified	×	×	×	×	×
×	Need not be specified	×	×	×	×	×
×	Need not be specified	×	×	×	×	×
×	Need not be specified	×	×	×	×	×
	×       ×       ×       ×       ×       ×       Need not be specified       ×	×       Need not be specified         ×       Need not be specified	×       Need not be specified       Need not be specified         ×       Need not be specified       ○         ×       Need not be specified       △         ×       Need not be specified       ○         ×       Need not be specified       ○         ×       Need not be specified       ×         ×       Need not be specified       ×         ×       Need not be specified       ×         Need not be specified       ×       ×         ×       Need not be specified       ×         ×       <	×       Need not be specified       Need not be specified       ×         ×       Need not be specified       ○       ×         ×       Need not be specified       △       ×         ×       Need not be specified       △       ×         ×       Need not be specified       △       ×         ×       Need not be specified       ×       ×         ×       Need not be specified       ×       ×         Need not be specified       ×       ×       ○         ×       Need not be specified       ×       ×         ×       Need not be specified       ×       <	×       Need not be specified       Need not be specified       ×       ×         ×       Need not be specified       △       ×       ×         ×       Need not be specified       ×       ×       ×         ×       Need not be specified       ×       ×       ×         ×       Need not be specified       ×       ×       ×         Need not be specified       ×       ×       ×       ×         Need not be specified       ×       ×       ×       ×         ×       Need not be specified       ×       ×       ×         ×	×       Need not be specified       Need not be specified       ×       ×         ×       Need not be specified       △       ×       ×         ×       Need not be specified       ×       ×       ×         Need not be specified       ×       ×       △       ×         Need not be specified       ×       ×       △       ×         Need not be specified       ×       ×       △       ×         ×       Need not be specified       ×       ×       ×         ×

1 2 3 4 5 6

P-10 - . - . - . - Fluid name - Flow rate range - Press. - Temp. - Mounting option - Other options

Specify D according to the code number in the selection table.

Thus, your ordering format should be as follows:

Р	100	LO	4N	R2	N2	10NL/min	D	
/					+	+	<b>↓</b>	
	Standard r	model wit	h valve inl	et	Fluid name	Flow range	Specify "Be	zel installation".

Note: Press. and temp. need not be specified , so they are omitted.

#### (6) Other options One-point advice

· You can specify the following options.

· Specify the following code number if there is an option you want to choose.

· Specify the consecutive code numbers if there are two or more options you want to choose.

• For the details of option, contact us.

Other options (Selection Table)

Option		Alarm front variable	Two point alarm	Reed switches compatible with CE or UL	Specify terminal position or "No terminal" (if you do want to have a terminal).	Specify the length of the reed switch lead wire.	Dual scale / special scale	Built-in check	Valve lock mechanism	With various fittings	
	Code No.		L	М	Ν	0	Р	Q	R	S	Т
	Optional item Model and page		Alarm position can be set from the front. (Need not be specified for P-773, P-774 and P-830)	For standard one- point alarm, you can specify two- point alarm such as upper/lower limit alarm and lower/lower limit alarm.	Reed switches on page 43 (Need not be specified for P- 773, P-774 and P-830)	You can specify alarm terminal position (rear, top) or "No terminal" (if you do want to have a terminal).	For the standard lead wire length of 50cm, you can specify 2 meters.	You can specify the dual graduation, one- point graduation or percent graduation.	You can specify the built-in check valve type for prevention of counterflow.	You can specify the valve with a mechanism to avoid deviation of flow setup values.	You can specify such attachments as SW, VCR, male/female sockets, special joint (takenoko). (Size and material must be specified).
	P-100	3	×	×	0	×	0	0	0	0	0
	<b>-</b> 200	5	×	0	0	×	0	0	0	0	0
	-300	7	×	×	×	×	×	0	×	×	0
	⊃-400	9	×	×	×	×	×	0	×	0	0
	P-510	11	0	0	0	0	0	0	0	×	0
	<b>-</b> 520	13	×	0	0	0	0	0	×	×	0
	<b>-</b> 530	15	×	×	Need not be specified	×	0	0	×	×	×
	<b>-</b> 540	17	0	0	0	×	0	0	×	×	0
	P-550	19	Need not be specified		Need not be specified	×	0	0	×	×	0
	P-610	21	×	×	×	×	×	0	×	×	0
	P-620	23	0	×		×	0	0	×	×	0
	P-710	25	×	×	×	×	×	0	×	×	0
	P-771	27	×	×	×	×	×	0	×	×	×
	P-772	29	×	0	0	×	0	0	×	×	×
	P-773	31	Need not be specified	×	Need not be specified	×	0	0	×	×	×
	P-774	33	Need not be specified	×	Need not be specified	×	0	0	×	×	×
	P-810	35	×	×	×	×	0	0	×	×	0
$\vdash$	<b>-</b> 820	37	×	0	0	×	0	0	×	×	0
	-830	39	Need not be specified	×	Need not be specified	×	0	0	×	×	0
	<b>-</b> 900	41	×	×	×	×	×	0	×	×	0
	NP	42	×	×	×	×	×	×	×	×	×
	ХР	43	×	×	×	×	×	×	×	×	×

<How to Specify (Example)>

When you want to specify two-point alarm for the standard P-510 series, "Mounted on the panel front by screws" with water of 3kgf/cm2G at 20°C, 2 to 20L/min. with reed switch equipped with lower limit open alarm and with valve outlet:

P-51 - P-51 - Fluid name - Flow rate range - Press. - Temp. - Mounting method (optional) -

Other options

Specify M according to the code number in the selection table.

Thus, your ordering format should be as follows:

Р	510	UA	4N	R3	Water	20L/min	М	
					¥	¥	ł	-
Valve of	outlet Aları	m code A	standard ty	/pe	Fluid name	Flow range	Specify	y "Two point alarm".
				Note:	Pressure and	temperature	need r	not be specified, so they are omitted.

#### ⑦ Valve position selection guide One-point advice

Use	Conditions	Valve position	Application	Valve position 1. For liquid, the valve may be located on the inlet or outlet side.	
For liquid	Not in particular	Top recommended	Top recommended to ensure float stability	<ul><li>2. For gas,</li><li>(1) Gas to be measured has a pres sure of 1 atm.</li></ul>	
	Atmospheric pressure on the secondary side (1atm)	Bottom (inlet side)	Shipped when pressure in the tapered tube is 1 atm	Valve	
For gas	Pressurized gas	Top (outlet side)	Shipped with the tapered tube at your specified pressure	(2) Gas to be measured is pressurized.	
	Negative pressure on the secondary side	Top (outlet side)	If a valve is provided on the inlet side, the tapered tube will be vacuum and hunting will occur to the float.	(3) Gas to be measured is vacuum.	

Valve <sub>+</sub>

1) Specify the inlet and outlet pressure in case of purgemeter with valve

2) If there is no suggestion, valve is designed as different pressure 0.05MPa.

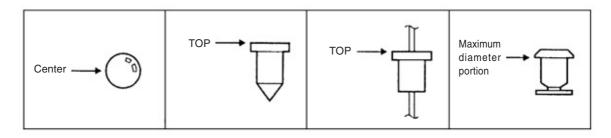
3) Consult factory for details if different pressure is under 0.05MPa.

(8) Density of gases One-point advice

· A major gas property chart is given on the bottom line of page 1. Use it for your flow rate conversion.

(9) Float reading position ||One-point advice

• Read the graduation on the glass tube and float position to get the flow rate. The reading position differs depending on the float shape. The following shows general reading positions according to float profile. For details, refer to the Operation Manual of each product.



(10) When you want to have the same product as you are now using: One-point advice

 $\cdot$  Specify our serial production number of the product you are now using.

We will produce and ship the same product in conformity to our production record.(Ex.F98-123456-7)



1 How to make quick model selection One-point advice

· You will find at-a-glance guide "INDEX & QUICK REFERENCE" on page 2.

#### 12 How to compensation calculation | One-point advice

An indication error will occur to the purgemeter for the measurement principle if the specifications of the fluid to be measured and physical property values are different from those of the design conditions.

1)Liquid measuring specifications

$$C r = \sqrt{[rd(rf-r)]/[r(rf-rd)]}$$

- C r : Conversion coefficient
- *r* d : Design density (See the approval drawing).
- : Design liquid density (density of the liquid to be measured this time)
- rf : Density at float section

#### · How to calculate compensation (example)

Put alcohol into the flow meter designed based on water (with a density of 1.0 g/cm<sup>2</sup>), and the flow meter indicates 10L/min. (float material: stainless steel)

Alcohol true flow rate= 10 X / [1.0X(7.9-0.8)] / [0.8X(7.9-1.0) =11.34L/min

Errors may also occur when measuring the liquid having a viscosity considerably different from that in design conditions.

Compensation in this case is different according to design conditions of individual flow meter. So contact us for information.

#### 2) Gas measurement specifications

Density conversion

$$Cr = \sqrt{rd/r}$$

- C r :Density conversion coefficient
- rd :Design density kg/Nm<sup>3</sup> (Reter to approval drawing).
- r :Density of gas to be measured kg/Nm<sup>3</sup>

Pressure conversion

Cp = 
$$\sqrt{(p+1.013)} / (pd+1.013)$$

- Cp :Pressure conversion coefficient
- pd :Design pressure kgf/cm2G (Reter to approval drawing).
- p :Operating pressure kgf/cm<sup>2</sup>G

Temperature conversion

t

- Ct : Temperature conversion coefficient
- :Design temperature °C (Reter to approval drawing). td :Operating temperature °C

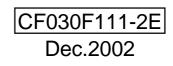
· How to calculate compensation (example)

The flow meter designed under the conditions of 1.293 kg/Nm3 of air at 20 °C and 3 kgf/cm2g indicates 10NL/min. when 1.977 kg/Nm3 of carbon dioxide gas is fed at 40 °C and 6 kgf/cm<sup>2</sup>G.

True flow rate of carbon dioxide gas=10XC r XCpXCt

=10 X \(1.293/1.977) X \/ (6+1.013) / (3+1.013) X \sqrt{(20+273) / (40+273)} X 10.34NL/min

### P SERIES PURGEMETERS



•Specification subject to change without notice



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