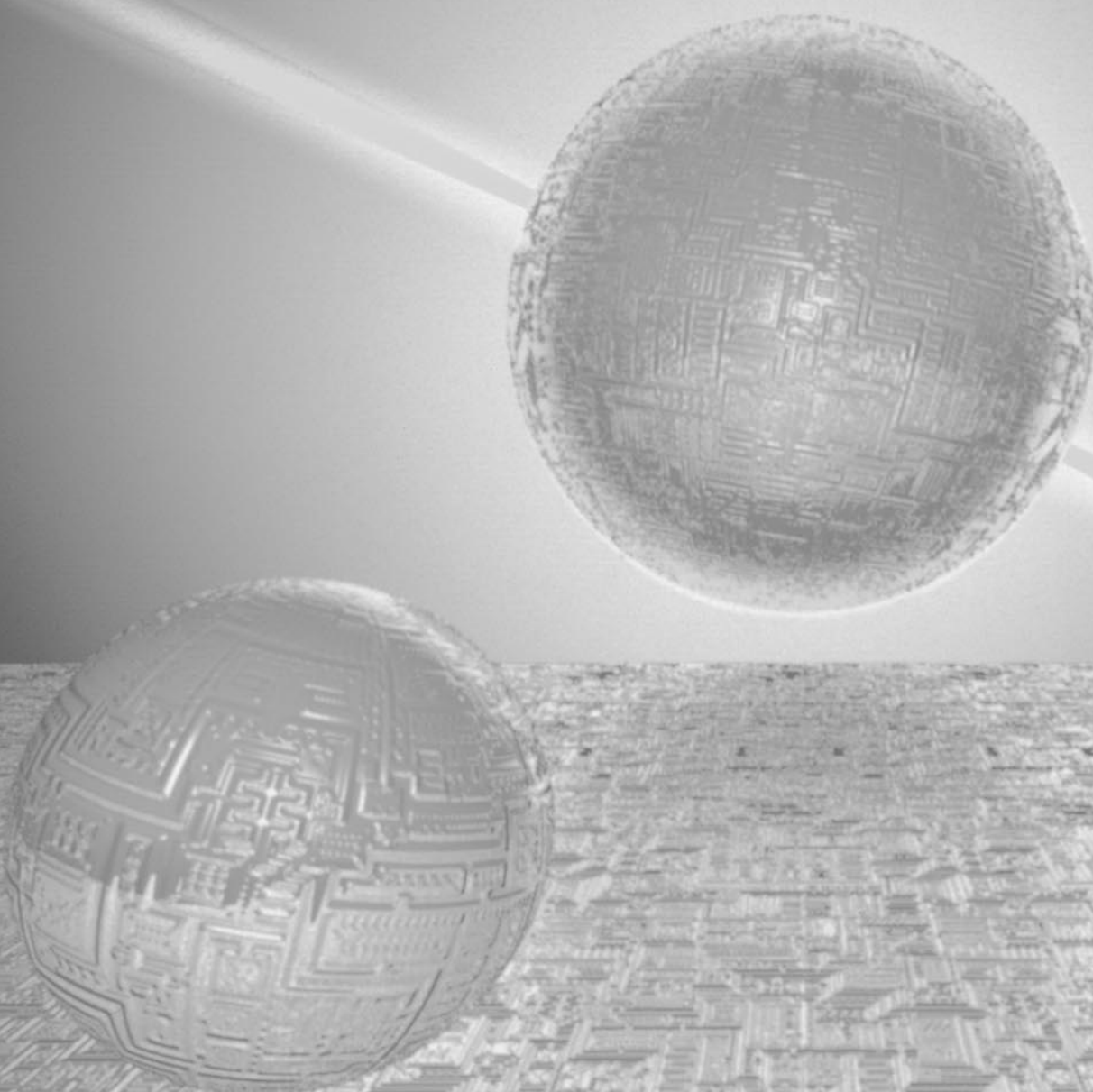


P SERIES PURGEMETERS

PURGEMETERS

**FULL COVERAGE FOR SEMI-CONDUCTOR PROCESSES FOR BUILT-IN USE
FOR EQUIPMENTS FOR GENERAL INDUSTRIAL PROCESSES**

PURGEMETERS



TIV TOKYO KEISO CO., LTD.

FLOW RATE INDICATION

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

$$Q_{AIR}=Q_0 \times \sqrt{\frac{r_0}{1.293}} \times \sqrt{\frac{273+T_0}{273}} \times \sqrt{\frac{1.033}{1.033+P_0}}$$

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/Nm³)

Operating temperature (°C)

Operating pressure (kgf/cm²G)

2) In case the indication unit is Operating condition

$$Q_{AIR}=Q_0 \times \sqrt{\frac{r_0}{1.293}} \times \sqrt{\frac{273}{273+T_0}} \times \sqrt{\frac{1.033+P_0}{1.033}}$$

Converted flow rate for air

Flow rate of actual gas on actual condition

Flow rate at operating condition: T₀°C, P₀ kgf/cm²G

Density of actual gas (kg/Nm³)

Operating temperature (°C)

Operating pressure (kgf/cm²G)

For liquid measurement

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

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

Water converted flow rate

Flow rate of actual liquid

Density of actual liquid (g/cm³)

Density of float (g/cm³)

Table for float density

Float material	PVC	Teflon	Stainless steel
Density (g/cm ³)	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

	G A S	FORMULA	Density kg/Nm ³ at 0°C, 1atm	Viscosity cP	
				at 0°C	at 20°C
Inorganic compounds	Ammonia	NH ₃	0.7713	0.0093	0.0100
	Argon	Ar	1.783	0.0212	0.0222
	Nitrous oxide	N ₂ O	1.988	0.0137	0.0146
	Nitrogen oxide	NO	1.340	0.0179	0.0188
	Carbon monoxide	CO	1.250	0.0166	0.0177
	Carbon dioxide	CO ₂	1.977	0.0138	0.0147
	Sulfurous acid gas	SO ₂	2.927	0.0116	0.0126
	Hydrogen chloride	HCl	1.639	0.0131	0.0143
	Chloride	Cl ₂	3.214	0.0123	0.0132
	AIR	(AIR)	1.293	0.0171	0.0181
	Oxygen	O ₂	1.429	0.0192	0.0203
	Cyanogen	C ₂ N ₂	2.335	0.0093	-
	Hydrogen Bromide	HBr	3.645	0.0170	-
	Bromine	Br ₂	7.139	0.0146	0.0153
	Hydrogen	H ₂	0.08994	0.0084	0.0088
	Nitrogen	N ₂	1.251	0.0166	0.0175
	Fluorine	F ₂	1.696	-	-
Inorganic compounds	Hydrogen sulfide	H ₂ S	1.539	0.0117	0.0124
	Helium	He	0.1785	0.0186	0.0196
	Acetylene	C ₂ H ₂	1.171	0.0096	0.0102
	Acetone	C ₃ H ₆ O	2.593	0.0066	-
	Isobutane	C ₄ H ₁₀	2.595	0.0069	0.0074
	Isopropyl alcohol	C ₃ H ₈ O	2.683	0.0070	-
	Ethanol	C ₂ H ₆ O	2.057	0.0075	-
	Ethane	C ₂ H ₆	1.356	0.0086	0.0092
	Ethyl ether	C ₄ H ₁₀ O	3.309	0.0068	-
	Ethylene	C ₂ H ₄	1.260	0.0094	0.0101
	Ethyl chloride	C ₂ H ₅ Cl	2.880	0.0094	-
	Methyl chloride	CH ₃ Cl	2.308	0.0098	0.0106
	Methylene chloride	CH ₂ Cl ₂	3.792	0.0091	0.0099
	Chloroform	CHCl ₃	5.329	0.0093	0.0100
	Butane	C ₄ H ₁₀	2.703	0.0069	0.0074
	Propane	C ₃ H ₈	2.020	0.0075	0.0080
	Propyl alcohol	C ₃ H ₈ O	2.683	0.0068	-
	Propylene	C ₃ H ₆	1.879	0.0078	0.0084
	Hexane	C ₆ H ₁₄	3.847	0.0059	-
	Benzene	C ₆ H ₆	3.488	0.0068	0.0074
	Pentane	C ₅ H ₁₂	3.221	0.0062	-
	Methanol	CH ₃ O	1.430	0.0087	-
	Methane	CH ₄	0.7168	0.0102	0.0108
	Methyl ether	C ₂ H ₆ O	2.057	0.0085	0.0091
	City gas	13A	0.8405	-	0.0130

P SERIES PURGEMETERS

PURGEMETERS

INDEX & QUICK REFERENCE

INDEX & QUICK REFERENCE

○Best △Available

Classification by Application	Reference pages	Model	To measure liquids	To measure gases	To measure chemical and pure water	To measure small flow	To measure large flow	Fluorine resin made body acceptable	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
P-100(Old model P-115)	3		○	○	△	○				○		△	△	○	○		△	△
P-200(Old model P-125)	5		○	○	△	○						△	△	○			△	△
P-300	7		○	○	△	○						△	△					△
P-400(Old model P-415)	9		○	○	△	○			△			△	△					△
P-510(Old model P-500-1)	11		○	○	△		○		△		△	△	△	○	○	○	△	△
P-520(Old model P-500-2)	13		○	△	○		○	△	○				△	○	○		△	△
P-530	15		○	○	△		○					△	△	○	△	△	○	△
P-540	17		○	○	△		○				△	△	△	○		○	○	△
P-550	19		○	○	△		○					△	△	○		△	○	△
P-610(Old model P-600-1)	21			○		○			○	○			△					△
P-620(Old model P-600-2)	23		○		△		○		○	○			△	○		△	△	△
P-710(Old model P-700-1)	25		○	○	○	○		○		○			△	○	○			△
P-771(Old model P-770-1)	27		○		○	○		○		○			△	○	○			△
P-772(Old model P-770-2)	29		○		○		○	○				△	△	○	○			△
P-773	31		○		○		○	○		○		△	△	○	○		○	△
P-774	33		○		○		○	○		○			△	○	○		○	△
P-810(Old model P-800-1)	35		○	○	△	○					○	△	△	△	△	○		△
P-820(Old model P-800-2)	37		○	○	△	○				△	○	△	△	○	△	○	△	△
P-830	39		○		△		○			○		○	△	○		△	○	△
P-900	41		○	○	△	○				△		△	△					△
NP	42		○	○	△	○				△			○					△
XP	43		○	○	△	○			○	○			○	△				△
Reed Switch Type Alarm unit	45													○				
PAU Optical alarm unit	47													○				
E3C Separate Type Optical alarm unit	48													○				
PAS/IAU Purgemeter, Analog output unit	49														○			
P-7810 Series Purgemeter, Analog output provided	50														○			△
PCS/OAC Purgemeter, Analog unit	51														○			
Advice for your product selection	53,54	Fluid name, Flow range, Pressure, Temperature																
	55	Mounting option																
	56	Other option																
	57	Valve position selection, Float reading position etc.																
	58	Calculate compensation																

● Old model P-115

■ GENERAL

Standard type purgometer. 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

Measuring object		Liquids and gases	
Measuring range	Air	※1 Min. 4~20 NmL/min. Max. 5~50 NL/min.	<ul style="list-style-type: none"> • Air at 0°C, 1atm • When selecting flow range, refer to standard flow rate table.
	Water	※2 Min. 5~50 mL/min. Max. 0.4~2 L/min.	<ul style="list-style-type: none"> • In case Op. Press. at gas is not 1atm, refer to page 1.
Range ability		10:1	10:2 occasionally
Accuracy		± 5%F.S.	
Max. Op. Press.		8kgf/ cm ² G(0.78MPaG)	When packing PTFE is used, Max. Op. Press. is 5kgf/cm ² G
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)
	Body	SUS304	SUS316,BS
	Tapered 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	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	Rc1/8,NPT1/4,NPT1/8	
Mounting	Std.	Lock-nut mount onto panel front	Refer to ordering information for details.
	Opt.	Bezel installation,Panel-rear installation,Stand provided etc.	
Weight(std. type)		0.5Ka	

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

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

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General ○	45, 46 page
	CE, UL Version ○	45, 46 page
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output unit	○	49 ~ 52 page

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

In case alarm output code is O or E		In case alarm output code is A to D			
AIR(1atm,0°C)	Water	AIR(1atm,0°C)	Alarm setting range	Water	Alarm setting range
4~20 Nl/min					
6~30 Nl/min					
10~50 Nl/min					
10~100 Nl/min					
20~200 Nl/min					
30~300 Nl/min					
50~500 Nl/min	5~50 mL/min	50~500 Nl/min	100~400 Nl/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	0.1~1 L/min	0.2~0.8 L/min
3~30 Nl/min		4~20 Nl/min	4~16 Nl/min		
5~50 Nl/min	0.3~1.5 L/min	6~30 Nl/min	6~24 Nl/min		
	0.4~2 L/min	10~50 Nl/min	10~40 Nl/min		

※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 differs.
Consult factory for details.

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-10 □-□□-□□-□□	① Fluid name	② Measuring range	③ Press.	④ Temp.	⑤ Mounting option	⑥ Other option
(Use Model Code Table for selection)	(For specification procedure, refer to page 53)					



■ BASIC MODEL CODE

SERIES NAME		FLOW DIRECTION	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	
									DESCRIPTION	
P-10	0	→	0	0	7	Z	R	2		
			VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	1	1/8
							2	2	1/4(Standard)	
							Z	Special	Lock-nut mounting onto panel front.	
							R	Rc thread(Standard)	If you want to use any other mounting, select from [Mounting opt].	
							N	NPT thread		
							Z	Special		
							N	NBR(Standard)		
							C	CR	Select it for ammonia gas.	
							F	VITON		
							E	EPDM		
							T	PTFE	Construction (gas) part material is only available for SUS316	
							Z	Special		
							4	SUS304(Standard)		
							6	SUS316		
							B	BS	Available for receiving orders in lots.	
							Z	Special		
			0	0	0				Not provided	
			A	0	0				Reed switch alarm (LO)	
			B	0	0				Reed switch alarm (LC)	
			C	0	0				Reed switch alarm (HO)	
			D	0	0				Reed switch alarm (HC)	
			E	0	0				PAU ALARM UNIT provided	
			F	0	0				Refer to page 47.	
			E	0	0				E3C Separate Type Optical alarm unit provided	
			G	0	0				Refer to page 48.	
			G	0	0				PAS/IAU Purgemeter, Analog output unit	
			Z	0	0				Refer to page 49.	
			Z	0	0				Special	
			0	0	0				Not provided	
			L	0	0				Bottom (gas for atmospheric pressure scale)	
			U	0	0				Top (gas for pressure scale or for negative pressure on the secondary side)	
			Z	0	0				Special	
			0	0	0				Bottom rear → Top rear (Standard)	
			1	0	0				Select this code normally.	
			9	0	0				Select this code normally.	
			Special	0	0				Valve should be installed externally.	

■ OTHER AVAILABLE OPTIONS

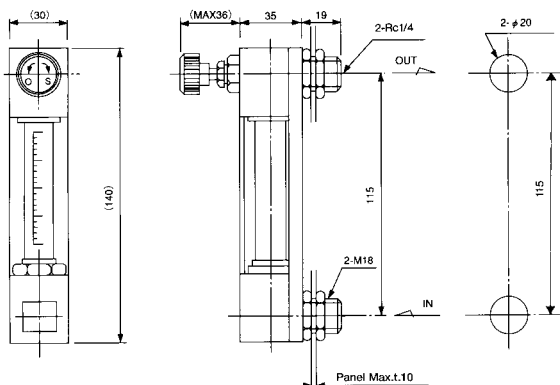
You can specify the following options:

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)

● STANDARD TYPE
P-100-U0-4N-R2

■ Valve provided at Outlet

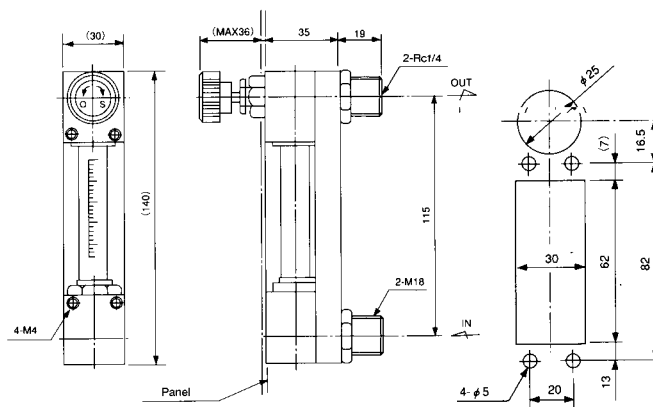


PANEL CUT

P-100-U0-4N-R2 — N2 — 10NL/min — 0.01kgf/cm²G — C

Valve provided at Outlet

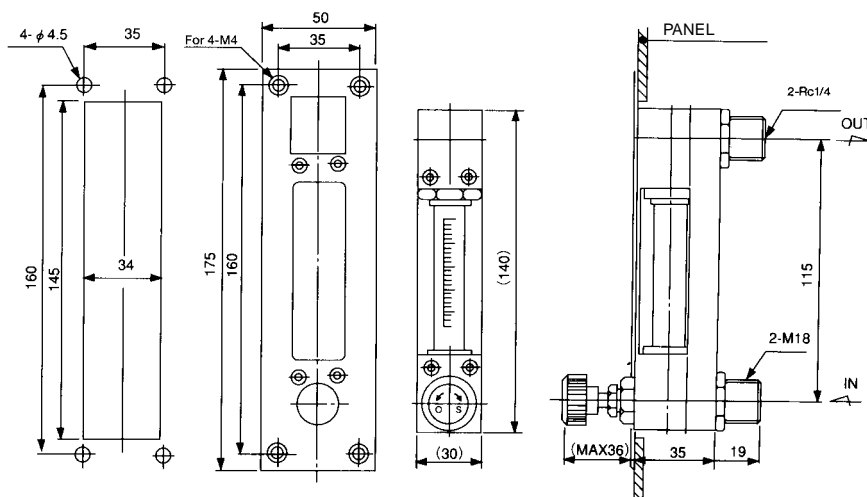
■ The others are standard type



PANEL CUT

Connection Size	Hole diameter(mm)
Rc1/4, 1/4NPT	ϕ 20
Rc1/8, 1/8NPT	ϕ 16

■ The others are standard type



PANEL CUT

Parts name	Standard material	Available material
Support	Aluminium	—
Body	SUS304	SUS316,C3604
Tapered tube	Pyrex glass	ZEONEX
Float	SUS316/Glass	PTFE,Ruby
Packing	NBR	VITON, CR, EPDM, PTFE
Fitting	SUS304	SUS316,C3604
Valve	SUS304	SUS316
Cover	Polv-carbonate	—

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

—Refer to page 45, 46.

E	PAU ALARM UNIT provided	Refer to page 47.
F	E3C Separate Type Optical alarm unit provided	Refer to page 48.
G	PAS/IAL1 Purgometer. Analog output unit provided	Refer to page 49.

Refer to page 47.

d	Refer to page 48.
---	-------------------

Refer to page 49.

● Old model P-125

■ GENERAL

Standard type purgometer. 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

Measuring object		Liquids and gases	
Measuring range	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.
	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	· In case Op. Press. at gas body is not 1atm, refer to page 1.
Range ability		10:1	10:2 occasionally
Accuracy		± 3%F.S.	
Max. Op. Press.		8kgf/cm ² 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)
	Body	SUS304	SUS316, BS
	Tapered tube	Pyrex glass	
	Packing	NBR(max80°C)	Viton (max.120°C), CR(max.80°C), EPDM(max.80°C)
	Support	Aluminium	
	Cover	Poly-carbonate	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	Rc1/8,NPT 1/4,NPT 1/8	
Mounting	Std.	Lock-nut mount onto panel front	Refer to ordering information for details.
	Opt.	Bezel installation, Panel-rear installation,Stand provided etc.	
Weight (std. type)		0.6kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General ○	45, 46 page
	CE, UL Version ○	45, 46 page
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output 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 O.E and F		In case alarm analog output code is A to D			
AIR(1atm,0°C)	Water	AIR(1atm,0°C)	Alarm setting range	Water	Alarm setting range
5-50 Nl/min					
10-100 Nl/min					
20-200 Nl/min					
30-300 Nl/min					
50-500 Nl/min	5-50 mL/min	50-500 Nl/min	100-400 Nl/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	2-20 Nl/min	4-16 Nl/min	0.1-1 L/min	0.2-0.8 L/min
3-30 Nl/min		3-30 Nl/min	6-24 Nl/min		
	0.15-1.5 L/min				
5-50 Nl/min		5-50 Nl/min	10-40 Nl/min		
6-60 Nl/min	0.2-2 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 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 Fluid name	② Measuring range	③ Press.	④ Temp.	⑤ Mounting Option	⑥ Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)					



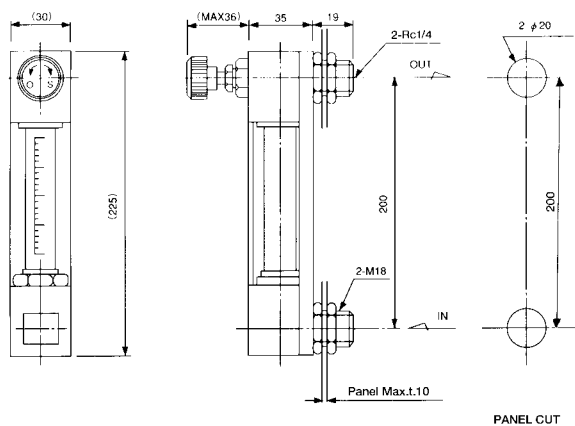
■ BASIC MODEL CODE

SERIES NAME		VALVE		ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	DESCRIPTION
	FLOW DIRECTION							CONNECTION SIZE		
P-20	0	↑	VALVE	0	↑	N	R	2		
								CONNECTION SIZE		
								1	1/8	
								2	1/4 (Standard)	
								Z	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)			
						C	CR			Select it for ammonia gas.
						F	VITON			
						E	EPDM			
						Z	Special			
						4	SUS304 (Standard)			
						6	SUS316			
						B	BS			Available for receiving orders in lots
						Z	Special			
					0	Not provided				
					A	Reed switch alarm (LO)				Refer to page 45, 46.
					B	Reed switch alarm (LO)				
					C	Reed switch alarm (HC)				
					D	Reed switch alarm (HC)				
					E	PAU ALARM UNIT provided				Refer to page 47.
					F	E3C Separate Type Optical alarm unit provided				Refer to page 48.
					Z	Special				
					0	Not provided				
					L	Bottom (gas for atmospheric pressure scale)				Refer to valve location selection guide (Page 57).
					U	Top (body 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	
				9	Special					

DIMENSIONS

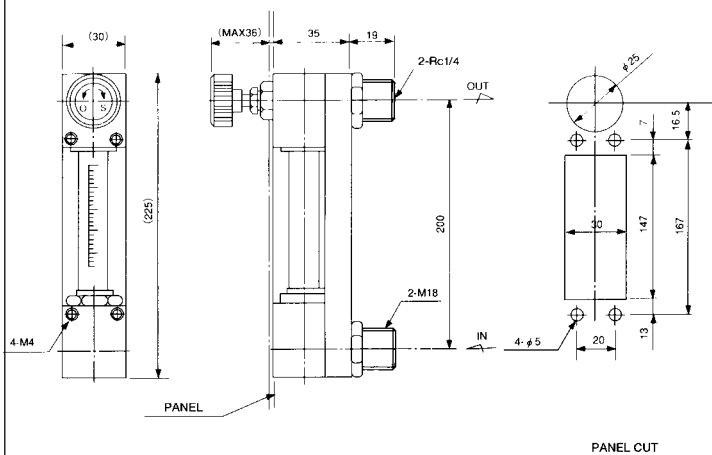
STANDARD TYPE

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



PANEL-REAR INSTALLATION TYPE

P-200-U0-4N-R2, Valve provided at Outlet, Panel-rear installation
(Mounting Option code **C**)



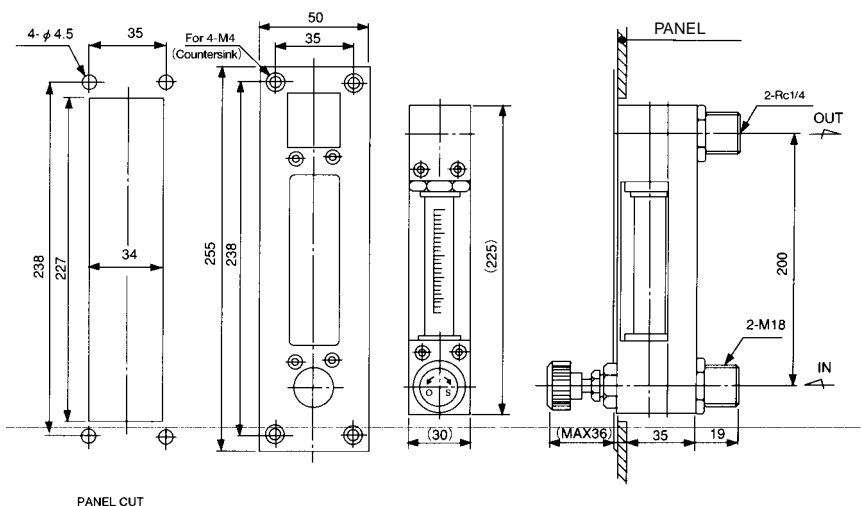
Panel cut dimension

Connection Size	Hole diameter(mm)
Rc1/4, 1/4NPT	φ 20
Rc1/8, 1/8NPT	φ 16

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

BEZEL INSTALLATION TYPE

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



Standard material

Parts name	Standard material	Available material
Support	Aluminium	
Body	SUS304	SUS316,C3604
Tapered tube	Pyrex glass	
Float	SUS316/Glass	PTFE,Ruby
Packing	NBR	VITON,CR,EPDM
Joint	SUS304	SUS316,C3604
Valve	SUS304	SUS316
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

A	Reed switch alarm(LO)	Refer to page 45, 46.
B	Reed switch alarm(LC)	
C	Reed switch alarm(HO)	
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		Liquids and gases	
Measuring range	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. · In case Op. Press.at gas is not 1atm, refer to page 1.
	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	
Range ability		10:1	
Accuracy		±3%F.S.	
Max. Op. Press.		8kgf/ cm ² 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)
	Body	SUS304	SUS316
	Tapered tube	Pyrex glass	
	Packing	NBR(max80°C)	Viton(max.120°C), CR(max.80°C),EPDM(max.80°C)
	Support	C2700T	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	Rc1/8,3/8, 1/2,NPT1/8,1/4,3/8, 1/2,JIS10KFF etc.	
Mounting	Std.	Piping mounting	Refer to ordering information for details.
	Opt.	Panel mounting by attached metal fitting Flange mounting etc.	
Weight(std. type)		0.4kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	×
	CE, UL Version	×
PAU Optical alarm unit	×	
Optical alarm unit	×	
Analog output 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		
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		
6 ~ 60	NL/min	0.2 ~ 2	L/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 ⑥ Other Option on page 56).

■ ORDERING INFORMATION

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)					

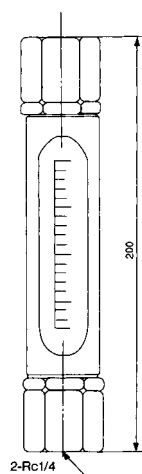


■ BASIC MODEL CODE

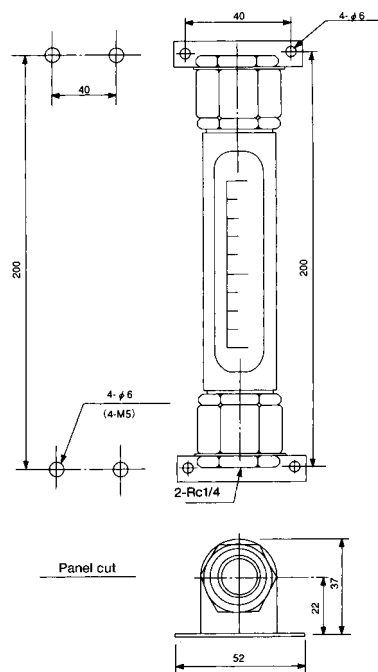
SERIES NAME	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	DESCRIPTION
P-300	T	N	R	2	EXAMPLE
	T	N	R	1	1/8
				2	1/4(Standard)
				3	3/8
				4	1/2
				Z	Special
			R	Rc thread(Standard)	In the case of flange connection, connection size is 3/8 and 1/2 or more.
			N	NPT thread	
			Z	Special	
			N	NBR(Standard)	
			C	CR	Select it for ammonia gas.
			F	VITON	
			E	EPDM	
			Z	Special	
4				SUS304(Standard)	
6				SUS316	
B				Special	

■ DIMENSIONS

● 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

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

■ GENERAL

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	
Measuring range	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. · In case Op. Press.at gas is not 1atm, refer to page 1.
	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	
Range ability		10:1	
Accuracy		± 3%F.S.	
Max. Op. Press.		10kgf/cm ² G(0.98MPaG)	PVC···5kgf/cm ² 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
	Tapered 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	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	1/4NPT,JIS10KFF etc.	
Mounting	Std.	Lock-nut mount onto panel front	Refer to ordering information for details.
	Opt.	Flange pipe mount, Stand provided etc.	
Weight(std. type)		0.9kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General × CE, UL Version ×	
PAU Optical alarm unit	×	
Optical alarm unit	×	
Analog output 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		
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		
6 ~ 60 NL/min		0.2 ~ 2 L/min

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 NAME		VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	
P-40	0	+	0	+	N	F	2	DESCRIPTION	
		VALVE	ALARM ANALOG OUTPUT	BODY (GAS) MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
						1	1/8		
						2	1/4(Standard)		
						3	3/8	In the case of flange connection, connection size is 3/8 and 1/2 or more. Rc1/8, 3/8, 1/2 are provided with male/female sockets.	
						4	1/2		
						Z	Special		
						R	Rc thread(Standard)	Lock-nut mounting onto panel front. If you want to use any other mounting, select from [Mounting Option] .	
						N	NPT thread		
						Z	Special	Specify Z for flange	
						N	NBR(Standard)		
						C	CR	Select it for ammonia gas.	
						F	VITON		
						T	PTFE		
						Z	Special		
						4	SUS304(Standard)		
						6	SUS316		
						P	PVC		
						Z	Special		
						0	Not provided		
						0	Not provided		
						L	Bottom(gas for atmospheric pressure scale)	Refer to valve location selection guide (Page 57).	
						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	Specify only this code for PVC material. Valve should be installed externally.	
						9	Special		

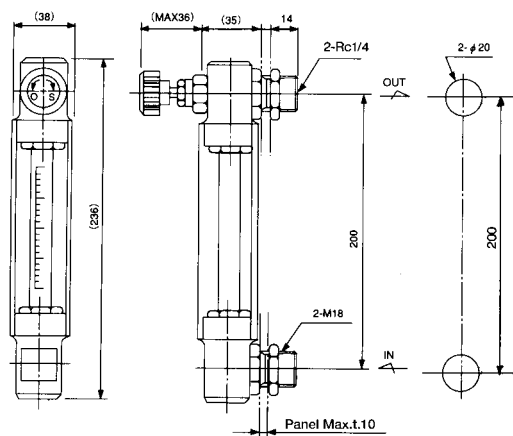
■ ORDERING INFORMATION

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)					

■ DIMENSIONS

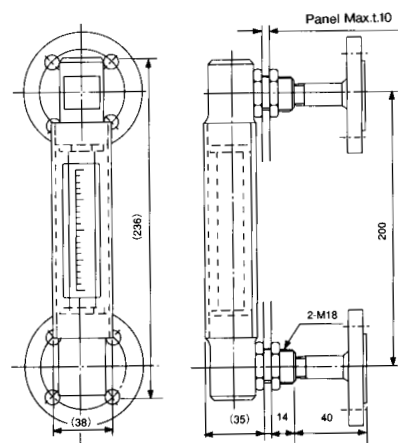
● STANDARD TYPE

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



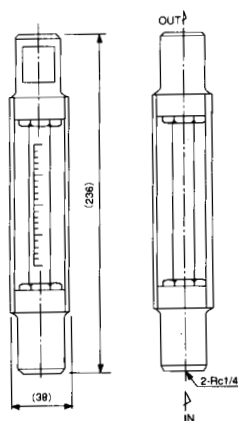
● FLANGE ENDED TYPE

(P-400-00-4N-Z4, Valve not provided, flange connection)
(Mounting Option code **E**)



● 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

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

■ GENERAL

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

General purpose(Large flow rate)

■ STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Measuring range	Air	Min. 2.5~25 NL/min. Max. 60~600 NL/min.	<ul style="list-style-type: none"> 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.
	Water	Min. 0.1~1 L/min. Max. 3~30 L/min.	
Range ability		10:1	
Accuracy		±5%F.S.	
Max. Op. Press.		8kgf/cm ² 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)
	Body	SUS304	SUS316, Aluminum
	Tapered tube	Pyrex glass	Refer to P-7□□ series for fluorine resin made tapered tube.
	Packing	NBR(max.80°C)	Viton(max.120°C), CR(max.80°C), EPDM(max.80°C)
	Support Cover	SPCC or BS	
Connection	Std.	Rc3/8	Refer to Basic model code for details.
	Opt.	Rc1/2, NPT3/8, NPT1/2, 3/8SW, 3/8VCR, JIS10KFF etc.	
Mounting	Std.	Thread(M3) mount onto panel front	Refer to ordering information for details.
	Opt.	Bezel installation, Panel-rear installation, Stand provided Flange pipe tube installation	
Weight(std. type)		2.0kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	○
	CE, UL Version	○
PAU Optical alarm unit	○	45, 46 page
Optical alarm unit	×	47 page
Analog output unit	○	49~52 page

■ 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, E and F			In case alarm analog output code is A to D		
AIR(1atm, 0°C)	Water		AIR(1atm, 0°C)	Water	Alarm setting range
2.5~25 NL/min	0.1~1 L/min				
3~30 NL/min					
5~50 NL/min	0.2~2 L/min	5~50 NL/min*	10~40 NL/min	0.3~3 L/min	0.6~2.4 L/min
10~100 NL/min	0.3~3 L/min	10~100 NL/min	20~80 NL/min	0.5~5 L/min	1~4 L/min
20~200 NL/min	0.5~5 L/min	20~200 NL/min	40~160 NL/min	1~10 L/min	2~8 L/min
30~300 NL/min	1~10 L/min	30~300 NL/min	60~240 NL/min	1.5~15 L/min	3~12 L/min
40~400 NL/min	1.5~15 L/min	40~400 NL/min	80~320 NL/min	2~20 L/min	4~16 L/min
50~500 NL/min	2~20 L/min	50~500 NL/min	100~400 NL/min	3~30 L/min	6~24 L/min
60~600 NL/min	3~30 L/min	60~600 NL/min	120~480 NL/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).

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-51□-□□-□□-□□	①	②	③	④	⑤	⑥
(Use model code table for selection)	Fluid name	Measuring range	Press.	Temp.	Mounting Option	Other Option
	(For specification procedure, refer to page 53)					



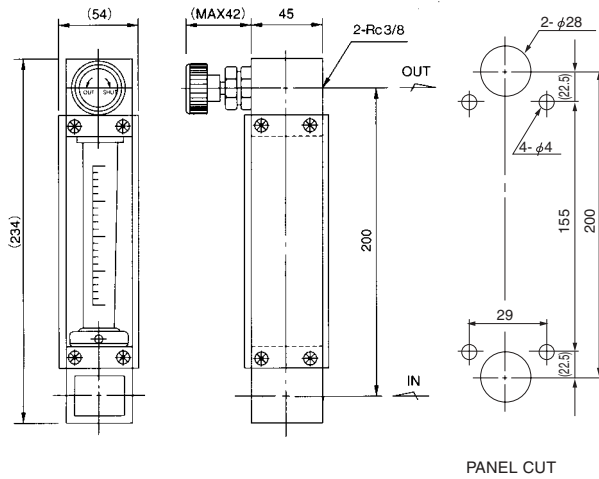
■ BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	
P-51	0	0	4	Z	4	3	DESCRIPTION	
	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
						3	3/8(Standard)	
						4	1/2	Connection type code R,N,S can not be selected.
						5	3/4	Connection type code L only can be selected.
						6	1	Flow direction code 1 (bottom top) only can be selected.
						Z	Special	Select 3,4,5,6,Z for flange
						R	Rc thread	Front thread(M3) of panel, mounting or pipe mounting
						N	NPT thread	Same as above
						L	Rc thread	Lock-nut mounting onto panel front.
						M	NPT thread	Same as above
						S	SW	Same as above
						V	VCR	Same as above
						Z	Special	Select Z for flange
						N	NBR(Standard)	
						C	CR	Select it for ammonia gas.
						F	VITON	
						E	EPDM	
						Z	Special	
						4	SUS304(Standard)	Select P-520 model for PVC and PTFE. Select P-7□□ series for fluorine resin made tapered tube.
						6	SUS316	
						A	Aluminium(For Gas)	
						Z	Special	
						0	Not provided	
						A	Reed switch alarm (LO)	Refer to page 45, 46.
						B	Reed switch alarm (LC)	
						C	Reed switch alarm (HO)	
						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	
						L	Bottom(gas for atmospheric pressure scale)	
						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.
						9	Special	

DIMENSIONS

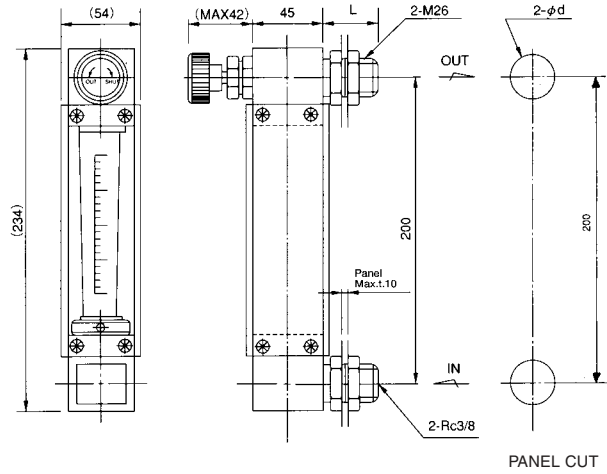
STANDARD TYPE

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



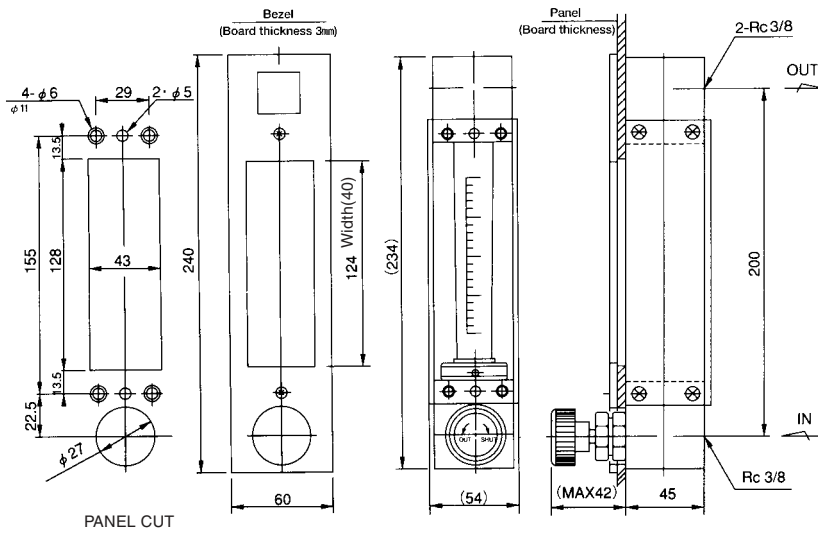
PANEL-FRONT INSTALLATION TYPE

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



BEZEL INSTALLATION TYPE

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



PANEL CUT SIZE

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

Connection size	Hole dia ϕd	Rear dia L
Rc 3/8	$\phi 28$	26
NPT 3/8	$\phi 28$	26
Rc 1/2	$\phi 32$	26
NPT 1/2	$\phi 32$	26
Rc 3/4	$\phi 38$	28
3/8 SW	$\phi 22$	(38)
3/8 VCR	$\phi 32$	(37.5)
1/2 VCR	$\phi 32$	(37.5)

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

A	Reed switch alarm(LO)	Refer to page 45, 46.
B	Reed switch alarm(LC)	
C	Reed switch alarm(HO)	
D	Reed switch alarm(HC)	

In case alarm output code is E, G

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

■ GENERAL

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

Pure/Ultra pure water lines

■ STANDARD SPECIFICATION

Measuring objec		Liquids	
Measuring range	Water	Min. 1~10* L/min Max. 12~60 L/min	When selecting flow range, refer to standard flow rate table.
Range ability		10:1	
Accuracy		±5%F.S.	
Max. Op. Press.		5kgf/cm ² G(0.49MPaG)	
Max. Op. Temp.		60°C	Body material Heat-proof PVC - max 80°C (PTFE - max 80°C).
Material		Std.	Option (Specify by model code)
		Body	PVC(max60°C) Heat-proof PVC(max.80°C), PTFE(max.80°C)
		Tapered tube	Pyrex glass (Refer to P-7□□ series for fluorine resin made tapered tube.)
		Packing	Viton EPDM
		Support	SUS304
		Cover	Transparent PVC
Connection	Std.	Rc1/2	Refer to Basic model code for details.
	Opt.	Rc3/4,NPT1/2,NPT3/4 etc.	
Mounting	Std.	Thread (M3) mount onto panel front	Refer to ordering information for details.
	Opt.	Panel-rear installation,	
Weight (std. type)		1.2kg	

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

■ ALARM AND ANALOG OUTPUT

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

■ STANDARD FLOW RATE TABLE

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

In case alarm analog output code is O,E and G		In case alarm analog output code is A to D	
AlR(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
	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).

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-52 □-□□-□□-□□	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)					



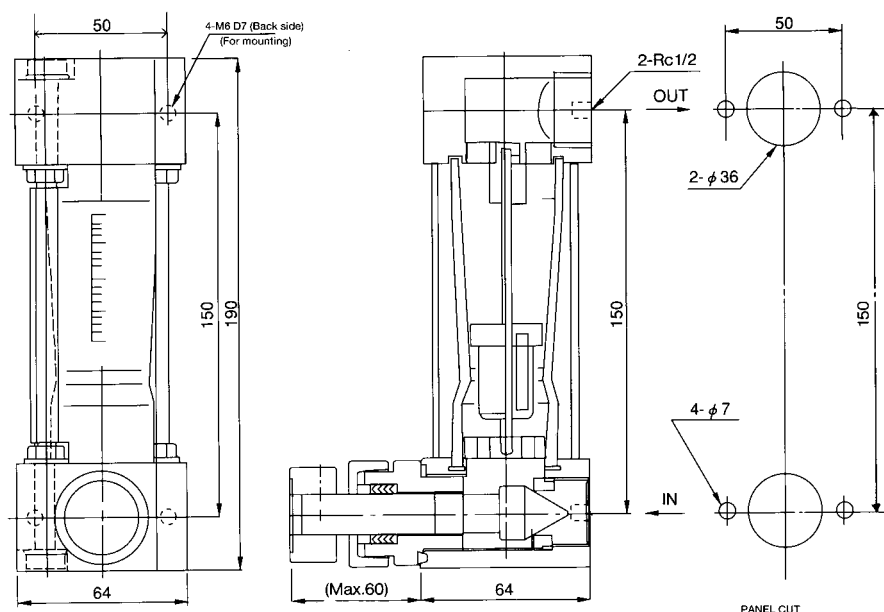
■ BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE		DESCRIPTION
P-52	0	+	0	+	+	4			
						4	1/2 (Standard)		
						5	3/4		
						6	1		Flow direction code is only bottom → top.
						Z	Special		
						R	Rc thread (Standard)		Thread mounting onto panel front. If you want to use any other mounting, select from [Mounting Option].
						N	NPT thread		
						Z	Special		
						F	Viton(Standard)		
						E	EPDM		
						Z	Special		
						P	PVC(Standard)		
						T	PTFE		
						4	SUS304		
						B	BS		
						Z	Special		
						0	Not provided		
						A	Reed switch alarm (LO)		Refer to page 45, 46.
						B	Reed switch alarm (LC)		
						C	Reed switch alarm (HO)		
						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		
						L	Bottom		
						Z	Special		
						0	Bottom rear → Top rear (Standard)		Select this code normally.
						1	Bottom → Top		Valve is not provided.
						9	Special		

■ DIMENSIONS

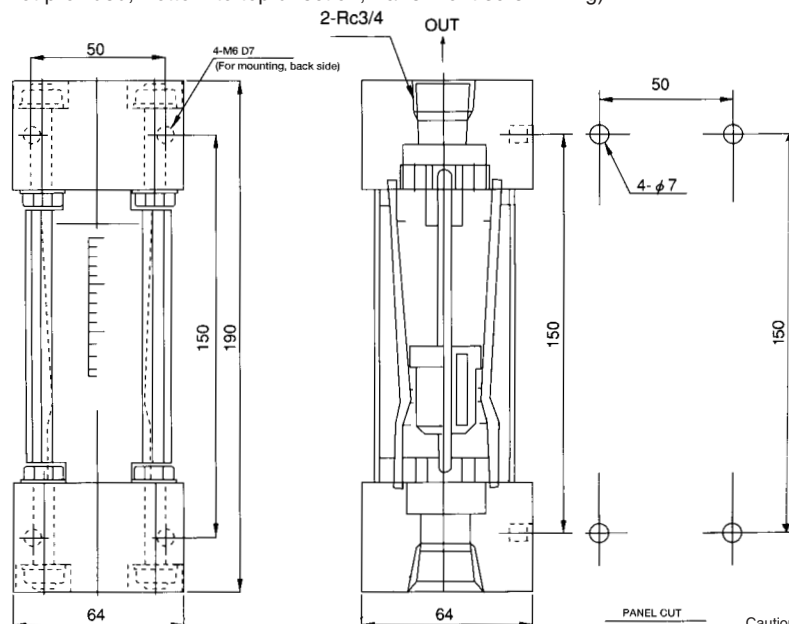
● STANDARD TYPE

(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)



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

● Standard Material

Parts name	Standard material	Available material
Body	PVC	PTFE, SUS304
Tapered tube	Pyrex glass	
Float	PVC	SUS304, PTFE
Packing	VITON	EPDM
Float rod	FEP covering SUS316	
Float stopper	PVC	PTFE
Valve	PVC	PTFE
Column	SUS304	
Cover	Transparent 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

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

● In case alarm output code is E, G

E	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

Measuring object	Liquids and gases	
Measuring range	Air	Min. 5~50 NL/min. Max. 30~300 NL/min.
	Water	Min. 0.2~2 L/min. Max. 1~10 L/min.
Range ability	10:1	
Accuracy	±5%F.S.	
Max. Op. Press.	8kgf/cm ² 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)
	Body	SUS304
	Tapered tube	Pyrex glass
	Packing	NBR(max.80°C) Viton (max.120°C), CR(max.80°C), EPDM(max.80°C)
	Support	Aluminum
Connection	Std.	Rc3/8
	Opt.	Rc1/2, NPT3/8, NPT1/2, 3/8SW, 3/8VCR etc.
Mounting	Std.	Thread (M3) mount onto panel front
	Opt.	Bezel installation, Panel-rear installation.
Weight (std. type)	1.5kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	×
	CE, UL Version	○
PAU Optical alarm unit	×	45, 46 page
Optical alarm unit	×	
Analog output unit	×	

■ STANDARD FLOW RATE TABLE

In case alarm analog output code is 0			In case alarm analog output code is A to D		
AIR(1atm,20°C)	Water		AIR(1atm,20°C)	Water	Alarm setting range
10~50 NL/min	0.2~2 L/min		20~100 NL/min	20~80 NL/min	0.3~3 L/min
20~100 NL/min	0.3~3 L/min		40~200 NL/min	40~160 NL/min	0.6~2.4 L/min
40~200 NL/min	0.5~5 L/min		60~300 NL/min	60~240 NL/min	1~4 L/min
60~300 NL/min	1~10 L/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 Other Option on page 56).



■ BASIC MODEL CODE

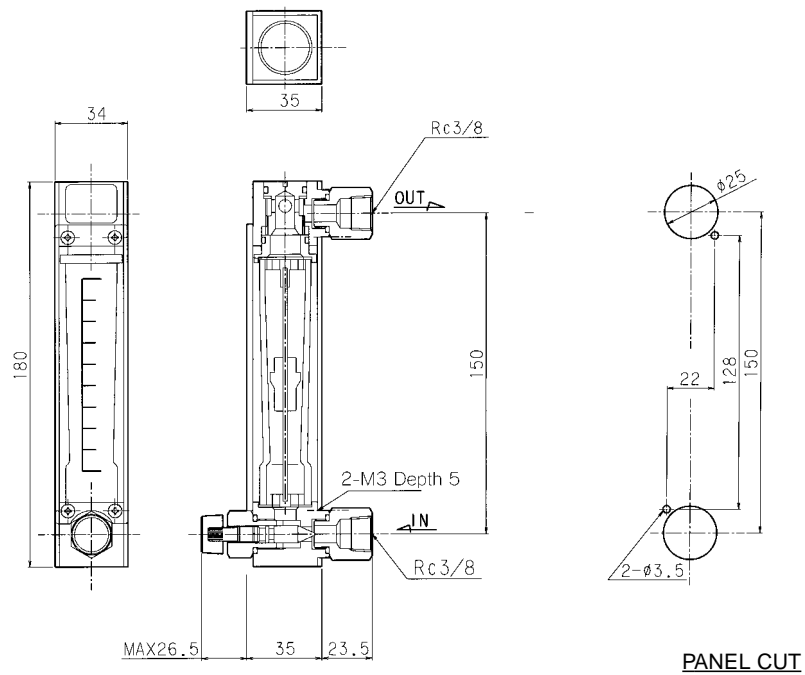
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	DESCRIPTION
P-53	0	1	4	2	3	3		
	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
						3/8 (Standard)		
						1/2		Connection type code S can not be selected.
						Special		
					R	Rc thread		
					N	NPT thread		
					S	SW	Front thread mount onto panel,	Bezel installation can be selected. Refer to Mounting Option in page 55 for details.
					V	VCR		
					Z	Special		
					N	NBR (Standard)		
					C	CR		Select it for ammonia gas.
					F	VITON		
					E	EPDM		
					Z	Special		
			4	SUS304 (Standard)				Select P-520 model for PVC, PTFE.
			6	SUS316				Select P-7□□ series for fluorine resin made tapered tube.
			Z	Special				
			0	Not provided				
			A	Reed switch alarm (LO)				
			B	Reed switch alarm (LC)				Refer to page 45, 46.
			C	Reed switch alarm (HO)				
			D	Reed switch alarm (HC)				
			Z	Special				
			0	Not provided				
			L	Bottom (gas for atmospheric pressure scale)				Refer to valve position selection guide (Page 57).
			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.
			9	Special				

■ ORDERING INFORMATION

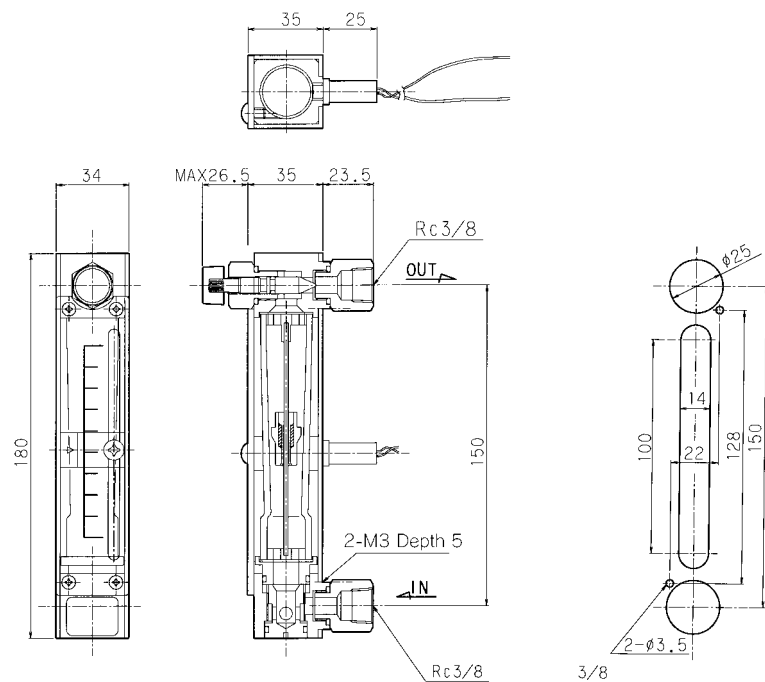
Basic model code	Designation items for detailed specifications					
P-53□-□□-□□-□□	①	②	③	④	⑤	⑥
	Fluid name	Measuring range	Press.	Temp.	Mounting Option	Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)					

■ DIMENSIONS

● P-530-L0-4N-R3



● 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	—

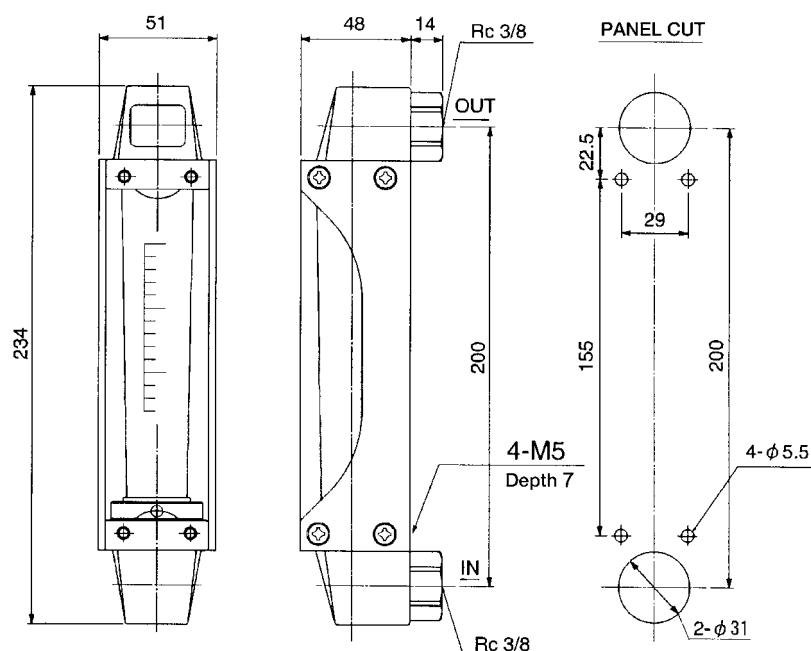
Parts whose names are described in **bold letters** are in contact with fluids to be measured.

● In case alarm output code is A to D

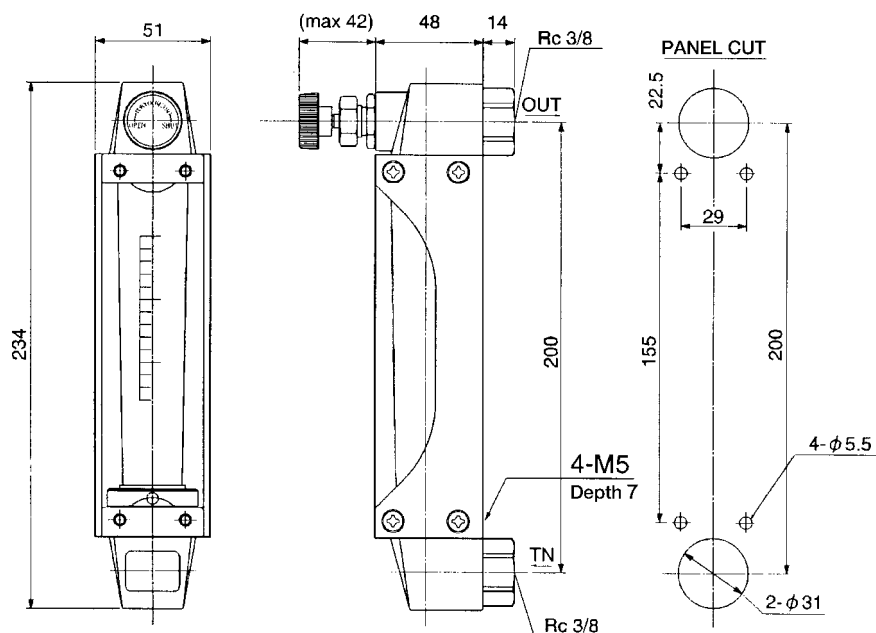
A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

■ DIMENSIONS

● P-540-00-4N-R3



● P-540-U0-4N-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

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
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/cm²G operation pressure rating.

■ MAJOR APPLICATIONS

All applications (Medium~Large sizes)

■ STANDARD SPECIFICATION

Measuring object		Liquids and Gases	
Measuring range	Air	Min. range: 35 ~ 350NL/min Max. range: 55 ~ 550NL/min	Air, 0℃, 0MPa(1atm) Below table is indicated by flow rate of Air at 0℃, 1 atm. Flow rate conversion is necessary when fluid specification is different. Consult factory for details.
	Water	Min. range: 1.2 ~ 12 L/min Max. range: 3 ~ 30 L/min	
Range ability		10 : 1	
Indication accuracy		± 5%F.S.	
Max. Op. Press.		10kgf/cm ² G(0.98MPa)	
Max. Op. Temp.		130℃	Standard products have the packing materials made of NBR, so Max. Temp. is 80℃.
	Material	Standard	Option
	Body	SUS316	
	Tapered tube	Pyrex glass	
	Packing	NBR(Max.80℃)	Viton (Max.130℃),
	Support	Aluminium	
Protection Cover		Acryl	
Process connection	Std.	Rc1/2	Refer to Model Code for details.
	Option	Rc3/8, 3/4, 3/8, 1/2SW NPT3/8, 1/2, 3/4	
Installation	Std.	Panel front screw (M3) mount, Panel front rock nut mount	Refer to Model Code for details.
	Option	Bezel mount, Panel rear screw mount	
Approx Weight		1.3kg(Std. Version)	

■ ALARM CONTACT AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General type ○	45,46 page
	UL Version ○	45,46 page
PAU Optical alarm unit	×	
Optical alarm unit	×	
Analog output unit	×	

■ STANDARD FLOW RATE TABLE

In case that the Alarm Output Code is A ~ D			
AIR(0MPa,0°C)	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 ⑥ [Other Option] on page 56).

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-55□-□□-□□-□□	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)					



■ OTHER AVAILABLE OPTIONS

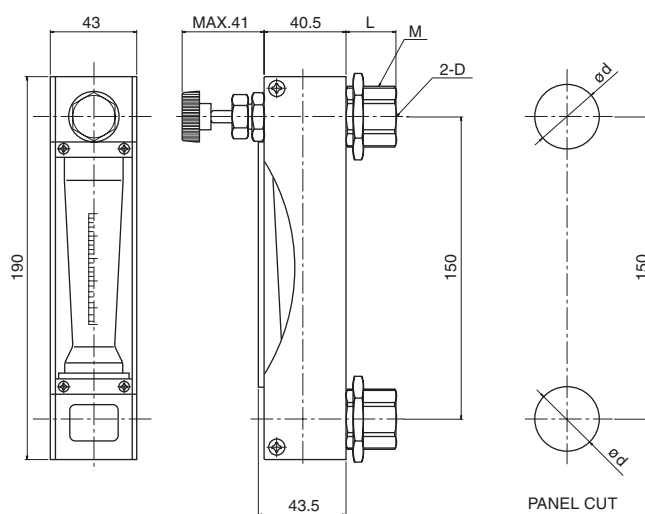
The following options can be specified;
Two point alarm, front panel adjustable alarm, double graduations, special graduations, hose fittings, special connection fittings, etc. (Consult factory for details.)

■ BASIC MODEL CODE

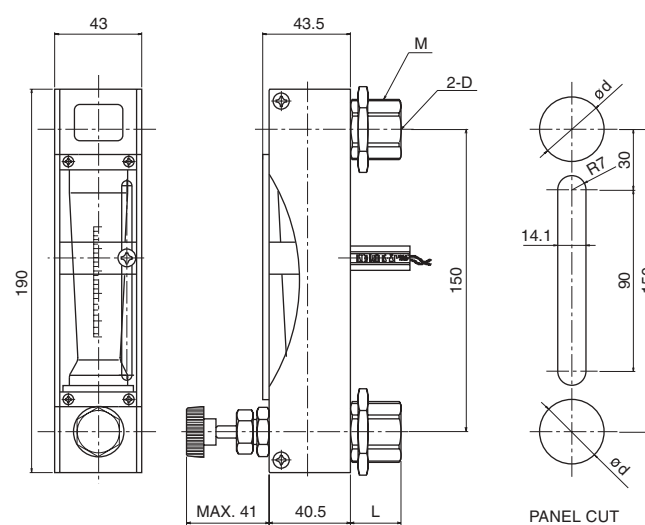
SERIES NAME		VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE		DESCRIPTION	
FLOW DIRECTION											
P-55	0	L	0	B	N	R	4				
		VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE				
							3	3/8			
							4	1/2 (Std.)			
							5	3/4	Available only for Alarm/Output code M and R.		
						R	Rc Thread	Panel front rock nut mount only	Bezel mounting also available. (Consult factory)		
						M	NPT Thread	Ditto			
						S	SW	Ditto			
						N	NBR (Std.)				
						F	Viton				
						Z	Special				
						6	SUS316 (Std.)	Select P-520 model for PVC and PTFE. Select P-7□ series for fluorine resin made tapered tube.			
						Z	Special				
						0	Not provided				
						A	Reed switch alarm (LO)			Refer to page 45, 46	
						B	Reed switch alarm (LC)				
						C	Reed switch alarm (HO)				
						D	Reed switch alarm (HC)				
						Z	Special				
						0	Not provided				
L	Bottom (gas for atmospheric pressure scale)			Refer to valve location selection guide (Page 57).							
U	Top (gas for pressure scale or for negative pressure on the secondary side)										
Z	Special										
0	Bottom rear→Top rear (Std.)			Select this code normally							
9	Special										

■ DIMENSIONS

● P-550-U0-6N-□□



● P-550-LA-6N-□□



Caution: Use non-magnetize material for mounting panel.

Connection	Connection	ϕd	L	M
	Rc3/8	32	22.5	M30
	Rc1/2	34	22.5	M32
	Rc3/4	42	23.5	M40
	SW3/8	32	25	M30
	SW1/2	32	21.3	M30

● 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 **bold letters** are in contact with fluids to be measured.

● In case alarm output code is A to D

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

● Old model P-600-1

■ GENERAL

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

MAJOR APPLICATIONS

General gas process

STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Measuring range	Air	Min. 0.2~2 NL/min. Max. 4~40 NL/min.	<ul style="list-style-type: none"> · 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.
Range ability		10:1	
Accuracy		±10%F.S.	
Max. Op. Press.		5kgf/ cm ² G(0.49MPaG)	
Max. Op. Temp.		60°C	
Material		Std.	Option
	Body	Acryl	
	Tapered tube	Acryl	
	Packing	NBR	Viton, CR
	Fitting	C3604	SUS304,SUS316
Connection	Std.	Rc1/8	Refer to Basic model code for details.
	Opt.	NPT etc.	
Mounting	Std.	Thread mount onto panel front	
Weight (std. type)		0.2kg	



■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General ×	
	CE, UL Version ×	
PAU Optical alarm unit	×	
Optical alarm unit	×	
Analog output unit	×	

STANDARD FLOW RATE TABLE

In case alarm analog output code is 0	
AlR(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 ⑥ **Other Option** on page 56).

■ BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	DESCRIPTION
P-610	1 VALVE	0	B	N	R	1		
						CONNECTION SIZE		
						1	1/8	
						Z	Special	
						R	Rc thread (Standard)	
						N	NPT thread	
						Z	Special	
						N	NBR(Standard)	
						C	CR	
						F	Viton	
						Z	Special	
						B	C3604(Standard)	
						4	SUS304	
						6	SUS316	
						Z	Special	
						0	Not provided	
						Z	Special	
						0	Not provided	
						L	Bottom	
						U	Top	
						Z	Special	

■ ORDERING INFORMATION

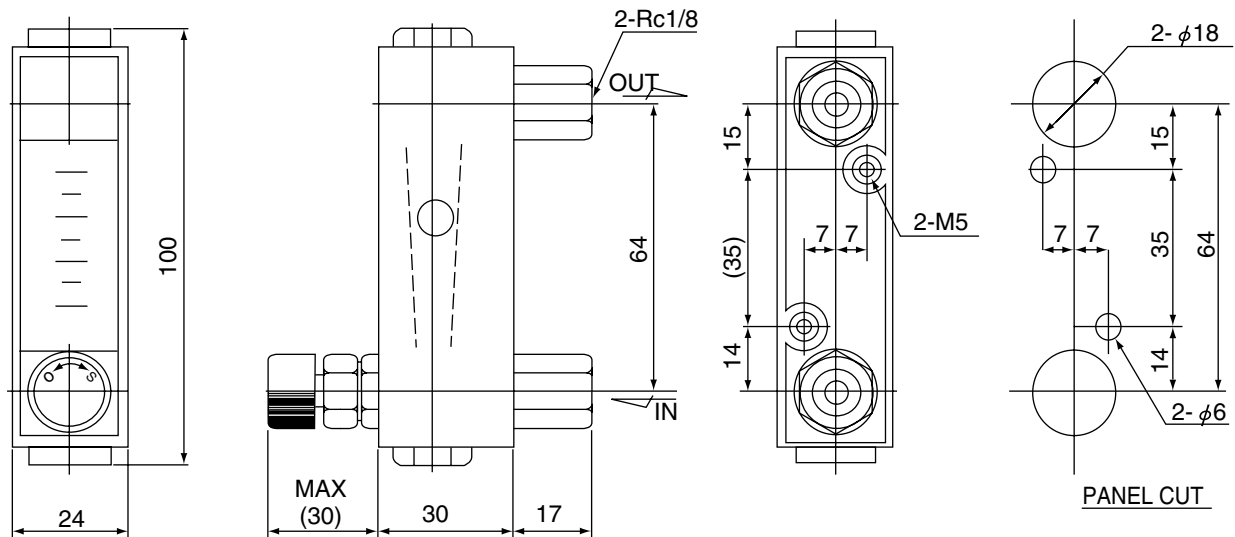
Basic model code	Designation items for detailed specifications					
P-610-□□-□□-□□	① Fluid name	② Measuring range	③ Press.	④ Temp.	⑤ Mounting Option	⑥ Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)					

■ DIMENSIONS

● 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
Cap	C3604	SUS304, SUS316
Graduation board	Transparent PVC	

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

● Old model P-600-2

■ GENERAL

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

Cooling water lines at semiconductor production equipments

STANDARD SPECIFICATION

Measuring object		Liquids	
Measuring range	Water	Min. 0.1~1 L/min. Max. 1~10 L/min.	
Range ability		10:1	
Accuracy		±10%F.S.	
Max. Op. Press.		10kgf/cm ² G(0.98MPa)	
Max. Op. Temp.		60°C	
Material		Std.	Option
	Body	Acryl	
	Tapered tube	Acryl	
	Packing	NBR	Viton, CR
	Fitting	C3604	SUS304,SUS316
Connection	Std.	Rc3/8	Refer to Basic model code for details.
	Opt.	3/8SW NPT3/8 etc.	
Mounting	Std.	Thread mount onto panel front	
Weight (std. type)		0.3kg	



■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	○	45, 46 page
CE, UL Version	△	45, 46 page
PAU Optical alarm unit	×	
Optical alarm unit	×	
Analog output unit	×	

STANDARD FLOW RATE TABLE

In case alarm analog output code is 0			In case alarm analog output code is A to D		
AIR(1atm, 0°C)	Water		Water		Alarm setting range
	0.1~1	L/min	0.1~1	L/min ※	0.2~0.8 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-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	DESCRIPTION
P-620	7 VALVE	0	B	Z	R	3	
					CONNECTION SIZE		
					CONNECTION TYPE	3	3/8 (Standard)
						Z	Special
					R		Rc thread (Standard)
					N		NPT thread
					S		SW
					Z		Special
				N		NBR(Standard)	
				C		CR	
				F		Viton	
				Z		Special	
			B			C3604 (Standard)	
			4			SUS304	
			6			SUS316	
			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)	
		Z				Special	
		0				Not provided	
		U				Top	
		Z				Special	

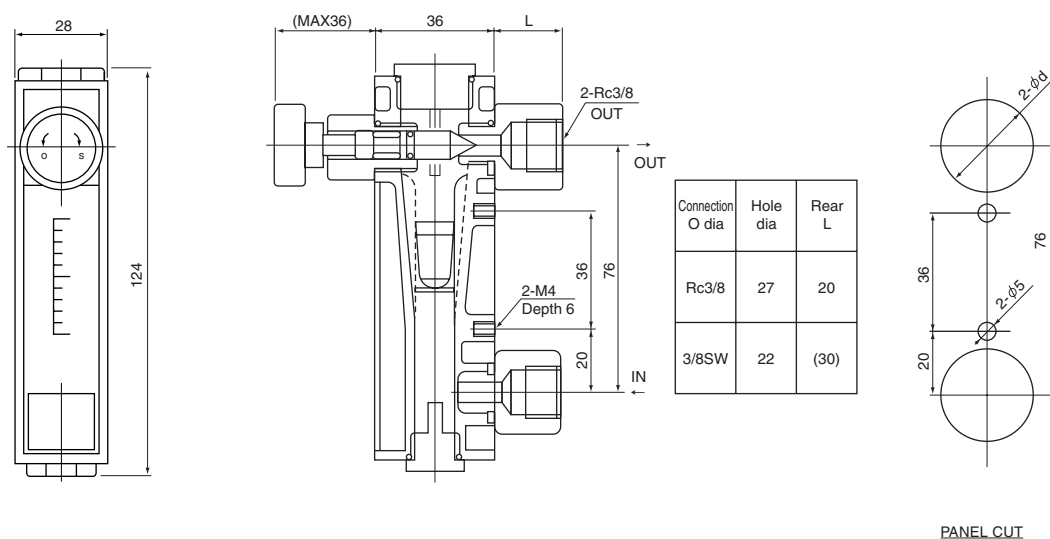
■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-620-□□-□□-□□	① Fluid name	② Measuring range	③ Press.	④ Temp.	⑤ Mounting Option	⑥ Other Option
(Use model code table for selection)	(For specification procedure, refer to page 53)					

■ DIMENSIONS

● STANDARD TYPE

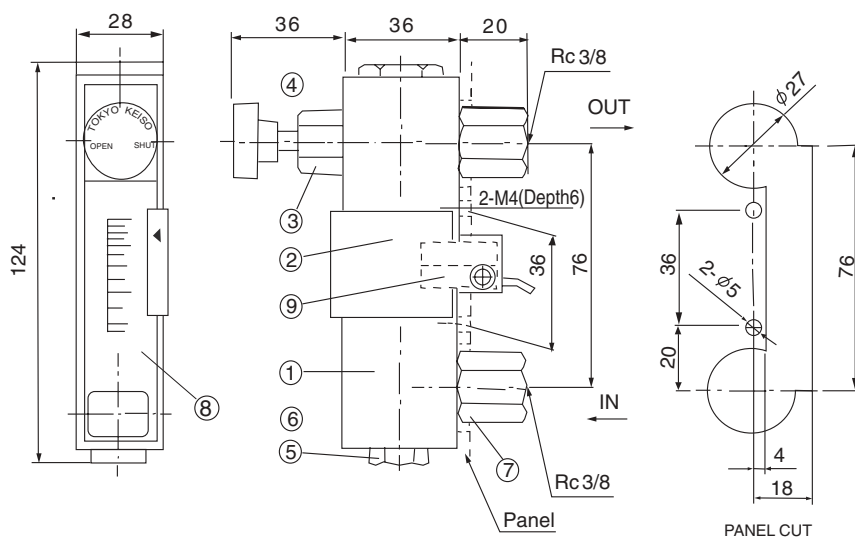
(P-620-U0-BN-R3 Valve provided at Outlet, Panel front screw fixing)



● P-620-U□-□□-R3

Dimensions are different in case of the flow range of 0.1~1L/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
Cap	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

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

■ GENERAL

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

General purpose (Small flow rate)

■ STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Measuring range	Water	Min. 3~30 mL/min. Max. 0.4~2 L/min.	Select P-772 for large flow type
	Air	Min. 50~500 NmL/min. Max. 2~20 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.
Range ability		10:1	
Accuracy		±5%F.S.	
Max. Op. Press.		5kgf/cm ² G(0.49MPaG)	
Max. Op. Temp.		70°C	
Material		Std.	Option (Specify by model code)
	Body	ETFE	PFA(Connection type T)
	Tapered tube	Pyrex glass	CTFE, Silica glass, Poly-orefin resin (ZEONEX)
	Packing	PTFE	
	Support	Poly-ascethal	PPS is available as option
	Cover	Poly-carbonate	
	Std.	Rc1/8	
Connection	Opt.	Tube connection OD=6.35mm 6mm, 8mm(Specify the tube length)	Refer to Basic model code for details.
	Std.	Thread mount onto panel front or panel-rear installation,	Refer to ordering information for details.
Mounting	Std.		
	Opt.		
Weight (std. type)		0.1kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	×
	CE, UL Version	×
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output unit	○	49~52 page

■ STANDARD FLOW RATE TABLE

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

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

*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).

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-710- □□-□□-□□	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)					



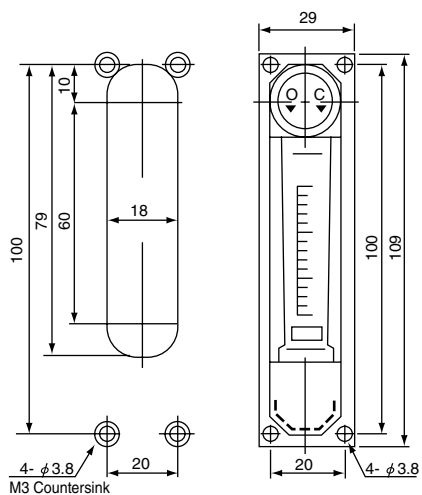
■ BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	TAPERED TUBE MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE		DESCRIPTION	
P-710	U	0	G	T	H	1				
	VALVE	ALARM ANALOG OUTPUT	TAPERED TUBE MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE				
							1	Rc 1/8 (Standard)		Only when connection type code is F
							A	φ6.35×1t		Only when connection type code is T
							B	φ6×1t		Only when connection type code is T
							C	φ8×1t		Only when connection type code is T
							Z	Special		
							R	Rc thread (Standard)		
							T	Tube end fitting		Pillar fitting
							Z	Special		
							T	PTFE(Standard)		Rubber cushion provided
							G	Pyrex glass(Standard)		
							T	CTFE		Analog output code G and H can not be selected
							Z	Poly-orefin resin		
							0	Not provided		
							E	PAU ALARM UNIT provided		Refer to page 47.
							F	E3C Separate type Optical alarm unit		Refer to page 48.
							G	PAS/IAU analog output unit		Refer to page 49.
H	PCS/OAC analog output unit	Refer to page 51,52.								
Z	Special									
0	Not provided									
L	Bottom	Refer to valve position selection guide (Page 57).								
U	Top									
Z	Special									

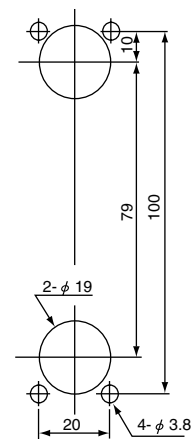
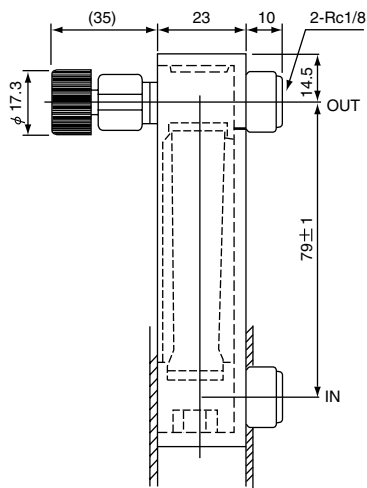
■ DIMENSIONS

● STANDARD TYPE

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



Panel rear installation



Panel front installation

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

■ GENERAL

All teflon, ultra-clean purgometer.
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.

■ STANDARD SPECIFICATION

Measuring object	Liquids	
Measuring range	Water Min. 3~15 mL/min. Max. 0.2~2 L/min.	Select P-772 for large flow type
Range ability	10:1	10:2 occasionally
Accuracy	± 5%F.S.	
Max. Op. Press.	5kgf/cm ² G(0.49MPa)	
Max. Op. Temp.	60°C	
Material	Std.	Option (Specify by model code)
	Body	PFA
	Tapered tube	PFA
	Packing	PTFE
	Support	PVC
	Cover	PVC
Connection	Std.	Tube connection OD:6.35mm, ID:4.35mm
	Opt.	Tube connection OD:6mm,8mm Thread connection:Rc1/8
Mounting	Std.	Thread mount onto panel front
	Opt.	
Weight (std. type)	0.2kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	×
	CE, UL Version	×
PAU Optical alarm unit	○	47 page
Optical alarm unit	×	
Analog output unit	○	49~52 page

■ STANDARD FLOW RATE TABLE

In case alarm analog output code is 0 and E,H		In case alarm analog output code is A to D	
AIR(1atm, 0°C)	Water	AIR(1atm, 0°C)	Water
	3~15 mL/min		
	2~20 mL/min		
	3~30 mL/min		
	5~50 mL/min		
	10~100 mL/min		
	20~200 mL/min		
	30~300 mL/min		
	50~500 mL/min		
	0.1~1 L/min		
	0.2~2 L/min		

*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, 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-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)					

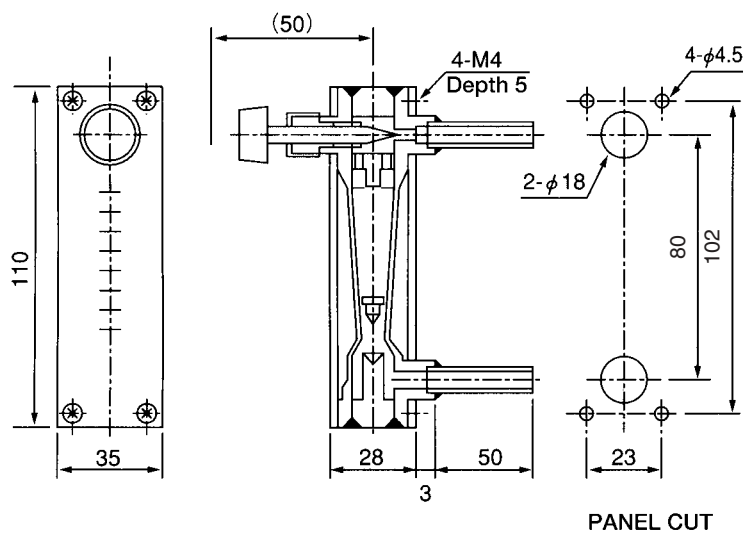


■ BASIC MODEL CODE

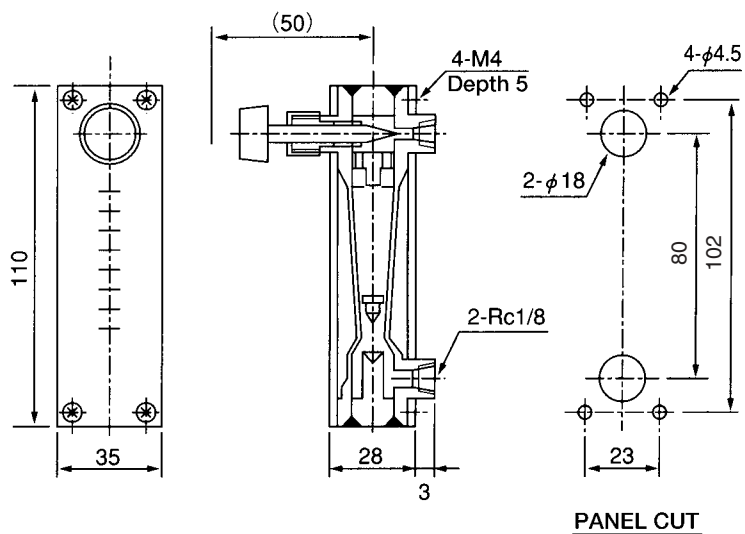
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	DESCRIPTION
P-771	VALVE	0 ALARM ANALOG OUTPUT	T WETTED PARTS MATERIAL	W PACKING MATERIAL	T CONNECTION TYPE	A CONNECTION SIZE		
						A	φ6.35×1t (Standard)	
						B	φ6×1t	
						C	φ8×1t	
						1	Rc1/8	
						Z	Special	
						T	Tube end fitting (Standard)	
						R	Rc thread	
						Z	Special	
						W	Not provided/Welding construction(Standard)	
						T	PFA(Standard)	Tapered tube material is also PFA.
						Z	Special	
		0	Not provided					
		E	PAU ALARM UNIT provided					Refer to page 47.
		G	PAS/IAU ANALOG OUTPUT UNIT					Refer to page 49.
		H	PCS/OAC ANALOG OUTPUT UNIT					Refer to page 51, 52.
		Z	Special					
		0	Not provided					
		U	Top					Refer to valve position selection guide on page 57.
		Z	Special					

■ DIMENSIONS

● 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 **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.
G	PAS/IAU ANALOG OUTPUT UNIT provided	Refer to page 49.
H	PCS/OAC analog output unit provided	Refer to page 51, 52.

■ GENERAL

Ultra-clean purgometer 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

Measuring object	Liquids	
Measuring range	Water	Min. 0.06~0.6 L/min. Max. 4.5~45 L/min.
Range ability	10:1	
Accuracy	± 5%F.S.	
Max. Op. Press.	5kgf/cm ² G(0.49MPa)	
Max. Op. Temp.	60°C	High.Temp. version up to 90°C available as option. Consult factory.
Material	Std.	Option (Specify by model code)
	Body	PFA
	Tapered tube	PFA
	Packing	PTFE
	Support	PVC
	Cover	Transparent PVC
Connection	Std.	Tube end connection/OD: 19mm,ID:15.8mm
	Opt.	Rc1/2,3/4,NPT1/2,3/4 etc.
Mounting	Std.	Thread mount onto panel front
	Opt.	Panel-rear installation
General quantity (std. type)	0.8kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General ○	45,46 page
	CE, UL Version ×	
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output unit	○	49~52 page

■ STANDARD FLOW RATE TABLE

In 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)	Water	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	4~40 L/min	8~32 L/min
	4.5~45 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 graduation, 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-772-□□-□-□□	①	②	③	④	⑤	⑥
(Use model code table for selection)	Fluid name	Measuring range	Press.	Temp.	Mounting Option	Other Option
(For specification procedure, refer to page 53)						



■ BASIC MODEL CODE

SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE
P-772	U	0	T	T	D	DESCRIPTION
	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	CONNECTION TYPE	CONNECTION SIZE	
					D	φ19 × 1.6(Standard)
					4	1/2
					5	3/4
					Z	Special φ10/8,12/10,12.7/9.5,19/16,25/22,25.4/22.2
				T		Tube end fitting (Standard)
				R		Rc thread
				N		NPT thread
				Z		Special
			T			PFA(Standard)
			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
		F				E/C Separate type Optical alarm unit provided
		G				PAS/IAU ANALOG OUTPUT UNIT
		Z				Special
	0					Not provided
	U					Top
	Z					Special

Refer to page 45,46.

Refer to page 47.

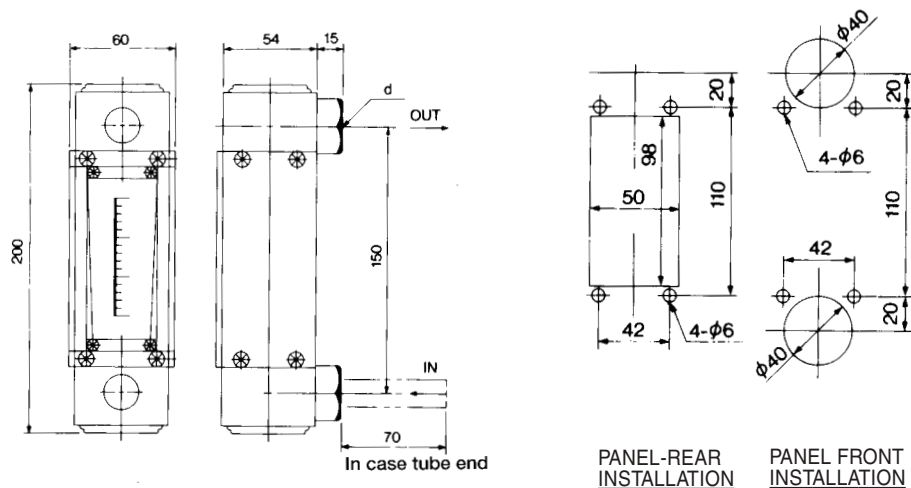
Refer to page 48.

Refer to page 49.

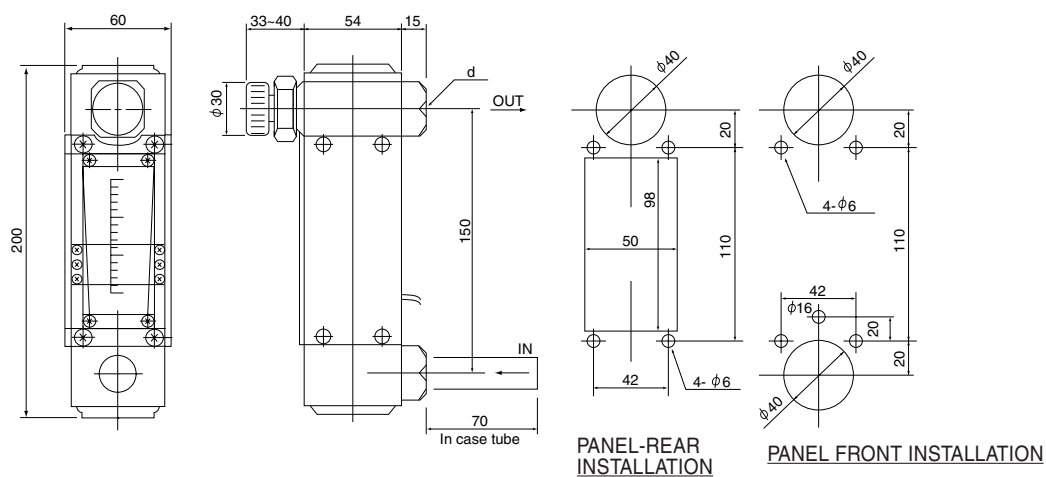
Refer to valve position selection guide in page 57.

DIMENSIONS

- 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 **bold letters** are in contact with fluids to be measured.

- In case alarm output code is A to D

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

- In case alarm output code is E to G

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

P-773

■ GENERAL

P-773 is integrated PFA molded body purgometer.
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.

■ STANDARD SPECIFICATION

Measuring object	Liquids	
Measuring range	Water	Min. 0.1~1 L/min.
		Max. 1~10 L/min.
Range ability	10:1	
Accuracy	±5% F.S.	
Max. Op. Press.	5kgf/cm ² G(0.49MPa)	
Max. Op. Temp.	60°C	
Material	Std.	Option (Specify by model code)
	Body	PFA
	Tapered tube	PFA
	Packing	PTFE
	Support	PVC
	Cover	Transparent PVC
Connection	Std.	Tube end connection 3/8~ (Refer to model code for details)
	Other	Rc1/4, 3/8, NPT1/4, 3/8 etc.
Mounting	Std.	Thread mount onto panel front
		Refer to ordering information for details
Weight (std. type)	0.6kg	

■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General ○	45,46 page
	CE, UL Version ○	45,46 page
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output unit	○	49~52 page

■ 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 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		
	0.5 ~ 5 L/min		
	1 ~ 10 L/min		
		0.3 ~ 3 L/min	1 ~ 2.4 L/min
		0.5 ~ 5 L/min	1 ~ 4 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

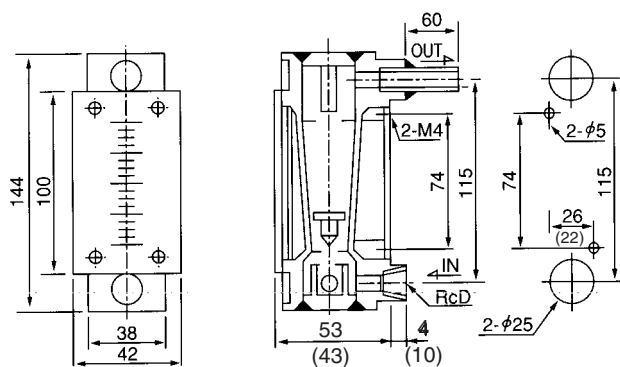
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	FLOW RANGE	CONNECTION TYPE	EXAMPLE	DESCRIPTION	
P-773	U	0	A	5			
	U	VALVE	ALARM ANALOG OUTPUT	CONNECTION TYPE	1	Rc1/4	
					2	Rc3/8	
					3	NPT1/4	
					4	NPT3/8	
					5	Tube end fitting(3/8"×t1.59)	
					6	Tube end fitting(1/2"×t1.59)	
					7	Tube end fitting(φ8×t1.0)	
					8	Tube end fitting(φ10×t1.0)	
					9	Tube end fitting(φ12×t1.0)	
					Z	Special	
					A	0.1~1 L/min	In case alarm analog output is 0, selection is possible
					B	0.2~2 L/min	In case alarm analog output is 0, selection is possible
					1	0.3~3 L/min	
					2	0.5~5 L/min	
					3	1~10 L/min	
					Z	Other special	
					0	Not provided	
					A	Reed switch alarm (LO)	Refer to page 45,46.
					B	Reed switch alarm (LC)	
					C	Reed switch alarm (HO)	
					D	Reed switch alarm (HC)	
					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	Refer to page 49.					
Z	Special						
0	Not provided						
U	Top	Refer to valve position selection guide on page 57.					
Z	Special						

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-773- □-□□□	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)					

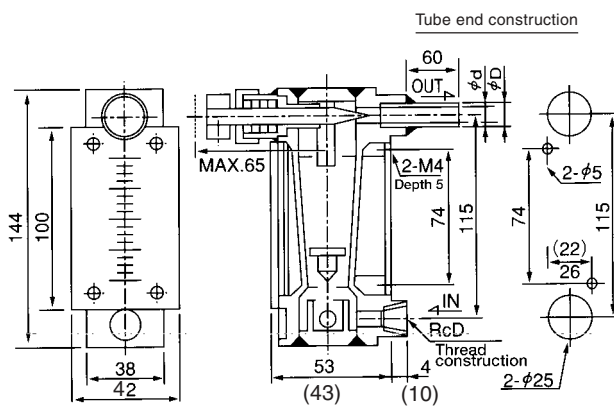
■ DIMENSIONS

● P-773-0-□□□, Valve not provided



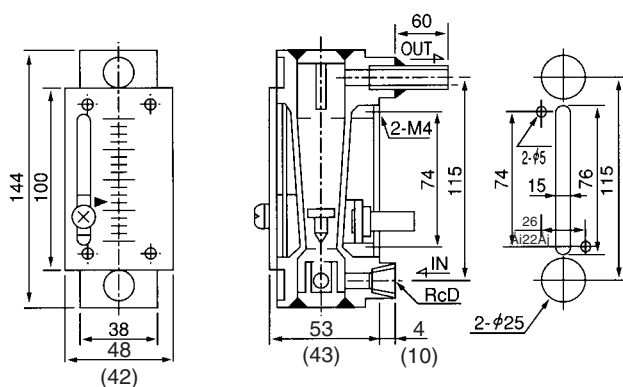
() for 3L/min. or less.

● P-773-U-□□□, Valve provided



() for 3L/min. or less.

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



() for 3L/min. or less.

● 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 **bold letters** are in contact with fluids to be measured.

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

● In case alarm output code is A to D

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

● In case alarm output code is A to D

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.

P-774

■ GENERAL

P-774 model is a new asset to fully fluorine resin purgometer 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.

■ STANDARD SPECIFICATION

Measuring object	Liquids	
Measuring range	Water	Min. 0.1~1 L/min. Max. 0.7~7 L/min.
Range ability	10:1	
Accuracy	±5%F.S.	
Max. Op. Press.	5kgf/cm ² G(0.49MPa)	
Max. Op. Temp.	60°C	
Material	Std.	
Body	PFA	Integrated mold
Tapered tube	PFA	
Sealing	PTFE	Valve provided
Support	PVC	
Cover	PVC	
Connection	Std.	φ10 Pillar fitting (Super fitting)
	Opt.	Refer to Basic model code for details.
Mounting	Std.	Thread mount onto panel front
	Opt.	Refer to ordering information for details
Weight (std. type)	0.5kg	



■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General	○ 45,46 page
	CE, UL Version	○ 45,46 page
PAU Optical alarm unit	○	47 page
Optical alarm unit	○	48 page
Analog output unit	○	49~52 page

■ STANDARD FLOW RATE TABLE

In 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)	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	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
	0.7~7 L/min	0.7~7 L/min	1.4~5.6 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 graduation, built-in joint type, etc.

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

■ BASIC MODEL CODE

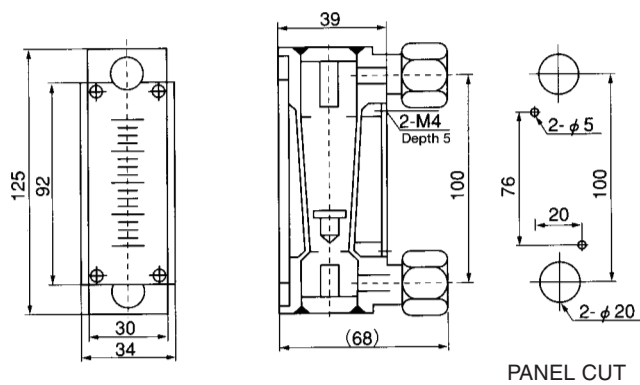
SERIES NAME	VALVE	ALARM ANALOG OUTPUT	BODY MATERIAL	PACKING MATERIAL	CONNECTION TYPE	DESCRIPTION
P-774	U	0	T	W	d	EXAMPLE
	U	0	T	W	d	DESCRIPTION
				P	P	Tube end fitting(Standard)
				Z	Z	Special
				W	W	Not provided/Welded construction(Standard)
				Z	Z	Special
				T	T	PFA(Standard)
				Z	Z	Special
				0	0	Not provided
				A	A	Reed switch alarm (LO)
				B	B	Reed switch alarm (LC)
				C	C	Reed switch alarm (HO)
				D	D	Reed switch alarm (HC)
				E	E	PAU ALARM UNIT provided
				F	F	E3C Separate type Optical alarm unit provided
				G	G	PAS/IAU ANALOG OUTPUT UNIT
				Z	Z	Special
				0	0	Not provided
				U	U	Top
				Z	Z	Special
						Refer to valve position selection guide on page 57.

■ ORDERING INFORMATION

Basic model code	Designation items for detailed specifications					
P-774- □□-□□-□	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)					

■ DIMENSIONS

- 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 **bold letters** are in contact with fluids to be measured.

● In case alarm output code is A to D

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

● In case alarm output code is E to G

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.

■ 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 range	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. · In case Op. Press at gas is not 1atm, refer to page 1.
	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min.	
Range ability		10:1	
Accuracy		P-813: ±3%F.S. P-812: ±5%F.S.	
Max. Op. Press.		8kgf/cm ² G(0.78MPaG)	
Max. Op. Temp.		120°C	In case Viton seal
Material		Std.	Option (Specify by model code)
	Body	SCS14	SUS316 (SUS316L is also available. Consult factory)
	Tapered tube	Pyrex glass	
	Packing	Viton(max.120°C)	CR(max.80°C)
	Support	SUS304	
Cover		Transparent PVC	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	Rc1/8, NPT1/4, 1/4, 3/8SW, 1/4, 3/8VCR etc.	
Mounting	Std.	Lock-nut mount onto panel	Refer to ordering information for details.
	Opt.	front Bezel installation,	
Weight (std. type)		0.6kg(P-813)	

■ ALARM AND ANALOG OUTPUT

Type		Availability		Reference pages
		P-812	P-813	
Reed switch type alarm unit	General	×	×	
	CE, UL Version	×	×	
PAU Optical alarm unit		○	○	47 page
Optical alarm unit		×	×	49~52 page
Analog output unit		○	×	

■ 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(1atm, 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		
10~50	NL/min	0.3~1.5	L/min
12~60	NL/min	0.4~2	L/min

In case alarm analog 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	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-813 model / 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(1atm, 0°C)		Water	
5~50	NmL/min		
10~100	NmL/min		
20~200	NmL/min		
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

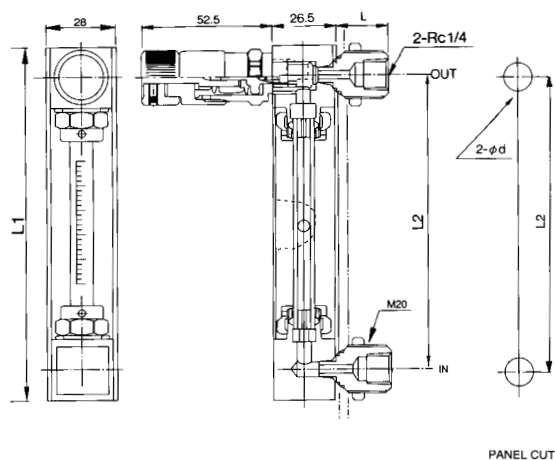
In case alarm output code is G, flow range is different. Consult for details.

■ BASIC MODEL CODE

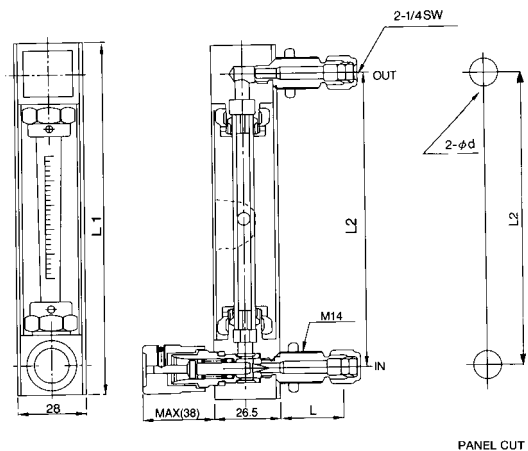
SERIES NAME	L DIMENSION	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE		
								DESCRIPTION		
P-81	2	3	0	9	F	F	2			
		VALVE	ALARM ANALOG OUTPUT				CONNECTION SIZE			
							1	1/8	Only connection type code R and N can be selected.	
							2	1/4 (Standard)		
							3	3/8	Only connection type code S and V can be selected.	
							Z	Special		
							R	Rc thread (Standard)	Bezel installation is also possible. Refer to Mounting Option in page 53 for details.	
							N	NPT thread		
							S	SW		
							V	VCR		
							Z	Special.		
							F	Viton(Standard)		
							C	CR	Select it for ammonia gas.	
							Z	Special		
							6	SCS14 (Standard)		
							E	SUS316/EP polished	High quality type	
							Z	Special		
							0	Not provided		
							E	PAU ALARM UNIT provided	Refer to page 47.	
							G	PAS/IAU ANALOG OUTPUT UNIT	Refer to page 49.	
							Z	Special		
							0	Not provided		
							1	Belows valve provided at outlet (High grade valve)	Refer to valve position selection guide (Page 57).	
							2	Belows valve provided at inlet (High grade valve)		
							3	Needle valve provided at outlet		
							4	Needle valve provided at inlet		
							Z	Special		
							2	145mm	Beware, as standard flow rate is different depending on this code.	
							3	224mm		
9	Special									

DIMENSIONS

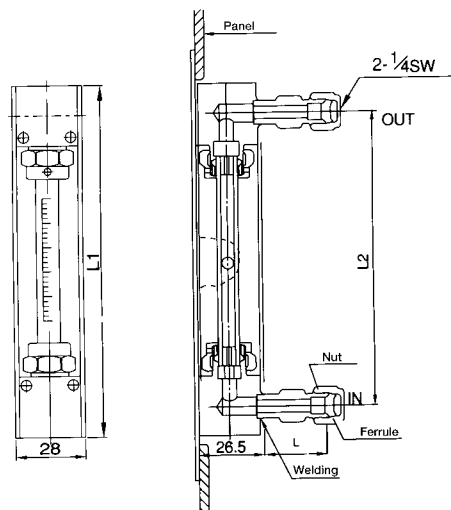
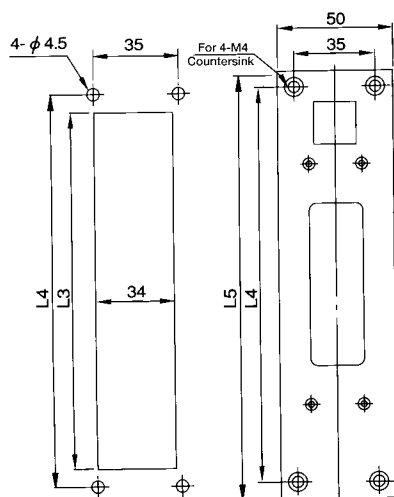
● **STANDARD TYPE** (Rc 1/4 conn. Bellows valve provided)
(P-81□-10-6F-R2 Valve provided at Outlet, Panel front lock-nut fixing)



● **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 **D**)



DIMENSION TABLE

Model	Dimension (mm)				
	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

Connection size	Hole dia(d)(mm)	Rear dia L(mm)
Rc 1/8, NPT1/8	φ16	(20.5)
Rc 1/4, NPT1/4	φ22	(20.5)
1/4 SW	φ16	(28)
3/8 SW	φ22	(30)
1/4 VCR	φ22	(30)
3/8 VCR	φ32	(34.5)

● 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.

● 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

STANDARD SPECIFICATION

Measuring object		Liquids and gases	
Measuring range	Air	※1 Min. 4~20 NmL/min. Max. 12~60 NL/min.	<ul style="list-style-type: none"> · Air at 0oC, 1atm · When selecting flow range, refer to standard flow rate table. · In case Op. Press at gas body is not 1atm, refer to page 1.
	Water	Min. 5~50 mL/min. Max. 0.2~2 L/min. ※2	
Range ability		10:1	10:2 occasionally
Accuracy		P-823: ±3%F.S. P-821: ±5%F.S.	
Max. Op. Press.		8kgf/cm ² G(0.78MPaG)	
Max. Op. Temp.		120°C	
Material		Std.	Option (Specify by model code)
	Body	SCS14	SUS316 (SUS316L is also available. Consult factory)
	Tapered tube	Pyrex glass	
	Packing	Viton(max.120°C)	CR(max.80°C)
	Support	SPCC	
	Cover	Acryl	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.	Rc1/8,NPT1/8,1/4,3/8SW,1/4,3/8VCR etc.	
Mounting	Std.	Lock-nut mount onto panel front	Refer to ordering information for details.
	Opt.	Bezel installation,	
Weight (std. type)		0.6kg(P-821)	

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

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

■ ALARM AND ANALOG OUTPUT

Type	Availability		Reference pages
	P-821	P-823	
Reed switch type alarm unit	General	○	45,46 page
	CE, UL Version	○	45,46 page
PAU Optical alarm unit	○	○	47 page
Optical alarm unit	×	×	
Analogue output unit	○	×	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 output code is O and E		In case alarm analog output code is A to D					
AIR(1atm,0°C)	Water	AIR(1atm,0°C)		Alarm setting range		Water	Alarm setting range
4~20 Nl/min							
6~30 Nl/min							
10~50 Nl/min							
10~100 Nl/min							
20~200 Nl/min							
30~300 Nl/min							
50~500 Nl/min							
0.1~1 Nl/min	5~50 mL/min	50~500 Nl/min	Nl/min	100~400 Nl/min	Nl/min	5~50 mL/min	10~40 mL/min
0.2~2 Nl/min	10~100 mL/min	0.1~1 Nl/min	Nl/min	0.2~0.8 Nl/min	Nl/min	10~100 mL/min	20~80 mL/min
0.3~3 Nl/min	20~200 mL/min	0.2~2 Nl/min	Nl/min	0.4~1.6 Nl/min	Nl/min	20~200 mL/min	40~160 mL/min
0.5~5 Nl/min	30~300 mL/min	0.3~3 Nl/min	Nl/min	0.6~2.4 Nl/min	Nl/min	30~300 mL/min	60~240 mL/min
1~10 Nl/min	50~500 mL/min	0.5~5 Nl/min	Nl/min	0.1~4 Nl/min	Nl/min	50~500 mL/min	100~400 mL/min
2~20 Nl/min		1~10 Nl/min	Nl/min	2~8 Nl/min	Nl/min		
		3~15 Nl/min	Nl/min	4~16 Nl/min	Nl/min		
3~30 Nl/min	0.1~1 L/min	4~20 Nl/min	Nl/min	6~24 Nl/min	Nl/min	0.1~1 L/min	0.2~0.8 L/min
10~50 Nl/min	0.3~1.5 L/min	6~30 Nl/min	Nl/min				
12~60 Nl/min	0.4~2 L/min	10~50 Nl/min	Nl/min	10~40 Nl/min	Nl/min	0.3~1.5L/min	0.3~1.2 L/min

※ 1 1~5NmL/min is available.Consalt 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).

■ ORDERING INFORMATION

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



■ P-823 model / 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		In case alarm analog output code is A to D			
AIR(1atm,0°C)	Water	AIR(1atm,0°C)	Alarm setting range	Water	Alarm setting range
5-50 Nl/min					
10-100 Nl/min					
20-200 Nl/min					
30-300 Nl/min					
50-500 Nl/min					
0.1-1 Nl/min	5-50 mL/min	50-500 Nl/min	100-400 Nl/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		
		2-20 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/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				

May be different depending on the scale length.

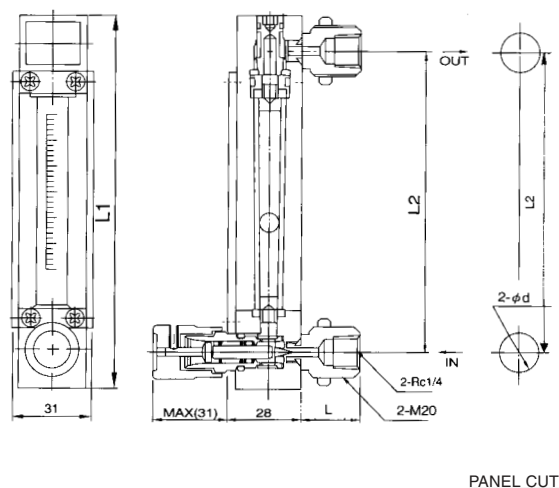
In case alarm output code is G, flow range is different. Consult for details.

■ BASIC MODEL CODE

SERIES NAME	L DIMENSION	VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE	
								DESCRIPTION	
P-82	1	-3	0	-9	F	R	2		
		VALVE	ALARM ANALOG OUTPUT	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE		
							1	1/8	Only connection type code R and N can be selected.
							2	1/4 (Standard)	
							3	3/8	Only connection type code S and V can be selected.
							Z	Special	
							R	Rc thread (Standard)	Bezel installation is also possible. Refer to Mounting Option on page 55 for details.
							N	NPT thread	
							S	SW	
							V	VCR	
							Z	Special	
							F	Viton(Standard)	
							C	CR	Select it for ammonia gas.
							Z		
							6	SCS14 (Standard)	
							E	SUS316/EP polished	High quality type
							Z	Special	
							0	Not provided	
							A	Reed switch alarm (LO)	Refer to page 45,46.
							B	Reed switch alarm (LC)	
							C	Reed switch alarm (HC)	
							D	Reed switch alarm (HO)	
							E	PAU ALARM UNIT provided	
							G	PAS/IAU ANALOG OUTPUT UNIT	Refer to page 49.
Z	Special								
0	Not provided								
1	Bellows valve provided at outlet (High grade valve)	Refer to valve position selection guide (Page 57).							
2	Bellows valve provided at inlet (High grade valve)								
3	Needle valve provided at outlet								
4	Needle valve provided at inlet								
Z	Special								
1	115mm	Beware, as standard flow rate is different depending on this code.							
3	224mm								
9	Special								

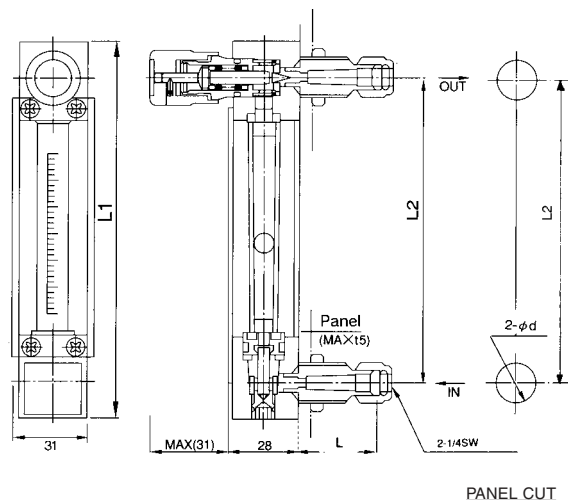
DIMENSIONS

● **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

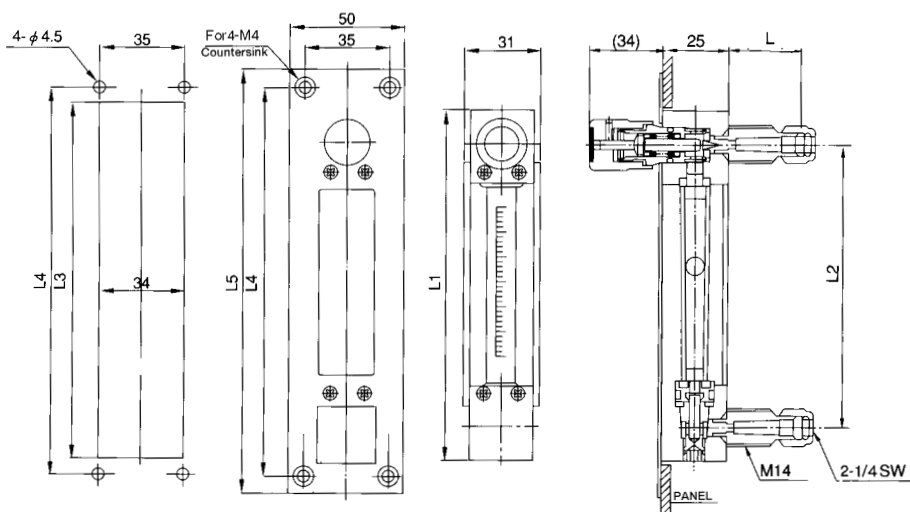
● **STANDARD TYPE** (SW 1/4 conn. Needle valve provided)
(P-82□-30-6F-S2, Valve provided at Outlet, Panel front lock-nut fixing)



PANEL CUT

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

● **BEZEL INSTALLATION TYPE**
(P82□-30-□□-□□, Valve provided at Outlet, Bezel fixing.)
(Mounting Option code **D**)



DIMENSION TABLE

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

STANDARD MATERIAL

Parts name	Standard material	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	

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	φ16	(22)
Rc 1/4, NPT1/4	φ22	(22)
1/4 SW	φ16	(29.5)
3/8 SW	φ22	(30)
1/4 VCR	φ22	(30)
3/8 VCR	φ32	(34.5)

● In case alarm output code is A to D

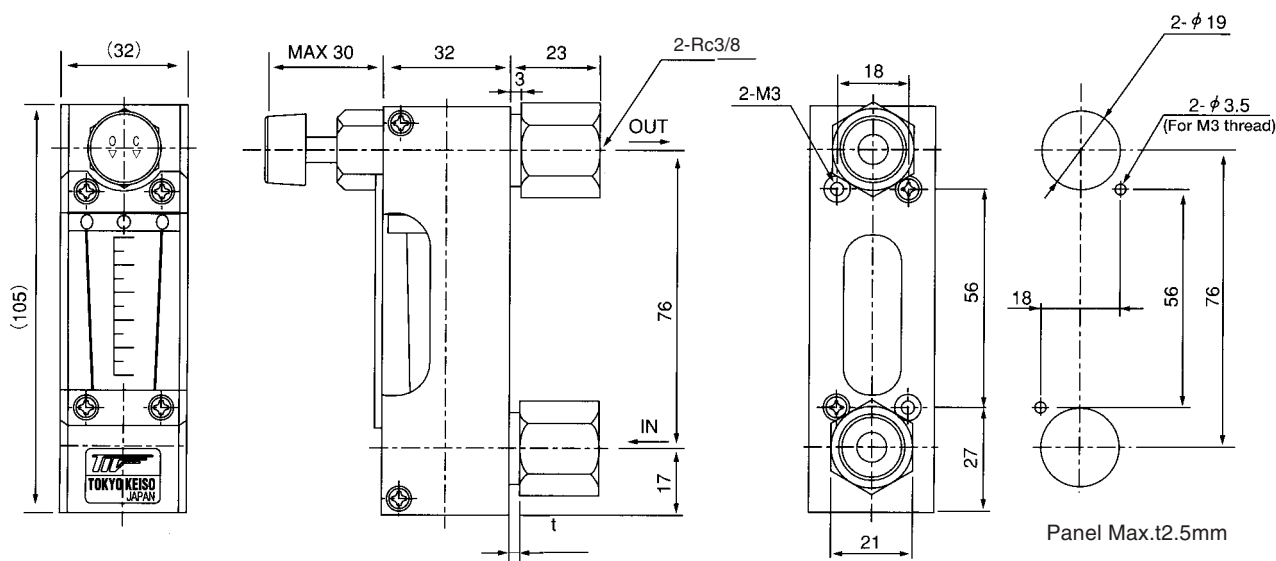
A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

● 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.

DIMENSIONS

● P-831-U□-6F-R3 (Valve provided)

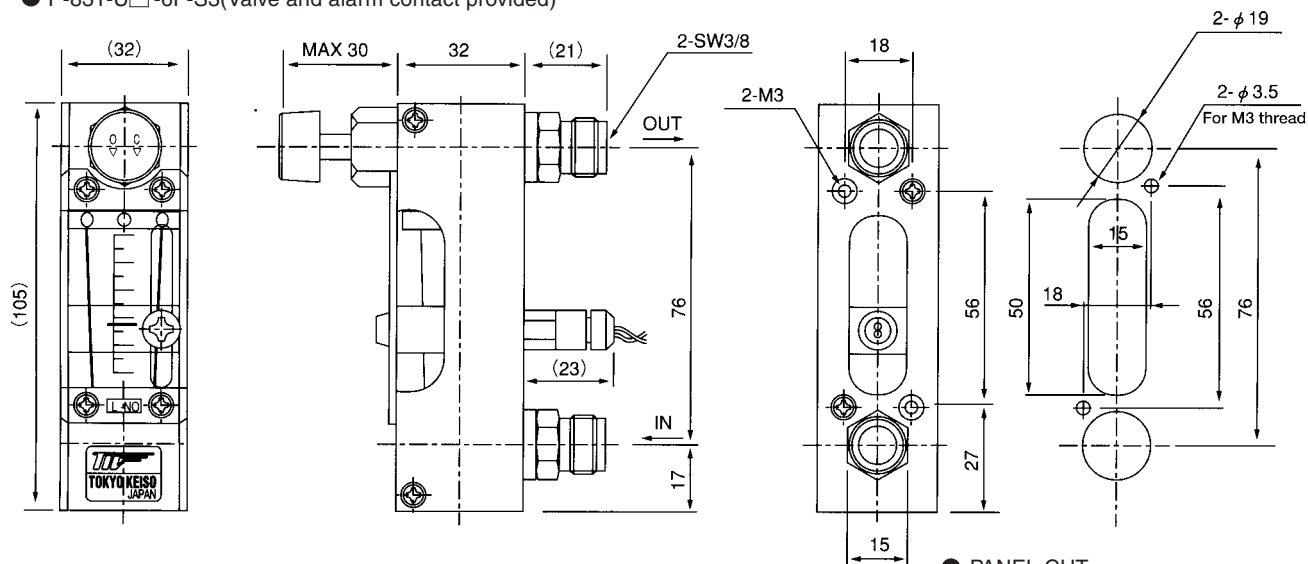


Panel: Max.t2.5mm

PANEL CUT

Remove joint once before panel installation.

● P-831-U□-6F-S3(Valve and alarm contact provided)



● PANEL CUT

Use nonferrous material panel.

● STANDARD MATERIAL

Parts name	Standard material	Available material
Body	SCS14	—
Tapered tube	Pyrex glass	—
Float	SUS316	—
Float rod	SUS316	—
O-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

A	Reed switch alarm (LO)	Refer to page 45, 46.
B	Reed switch alarm (LC)	
C	Reed switch alarm (HO)	
D	Reed switch alarm (HC)	

■ 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		Liquids and gases	
Measuring range	Air	Min. 0.1~1 SL/min. Max. 4~40 SL/min.	· Air at 20°C, 1atm · When selecting flow range, refer to standard flow rate table.
	Water	Min. 0.1~1 L/min. Max. 0.25~2.5 L/min.	
Range ability		10:1	
Accuracy		± 5%F.S.	
Max. Op. Press.		8kgf/ cm ² G(0.78MPaG)	
Max. Op. Temp.		120°C	
Material		Std.	
	Body	SUS316	
	Tapered tube	Pyrex glass	
	Packing	Viton	
	Support	SUS304	
	Cover	Poly-carbonate	
Connection	Std.	NPT1/4	Refer to Basic model code for details.
	Opt.		
Mounting	Std.	Thread mount onto panel front	Refer to Dimension for details.
	Opt.		
Weight(std. type)		0.5ka(NP-□1□□)	



■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General CE, UL Version	
PAU Optical alarm unit		
Optical alarm unit		
Analog output unit		

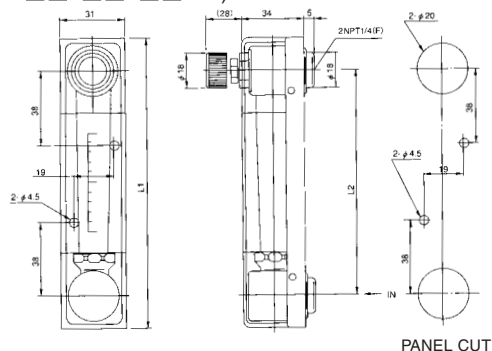
■ DIMENSION TABLE

Model	Dimension(mm)	
	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	Polv-carbonate	—

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

■ BASIC MODEL CODE

SERIES NAME		VALVE	GRADUATION	WETTED PARTS MATERIAL	PACKING MATERIAL	CONNECTION TYPE	CONNECTION SIZE	EXAMPLE / DESCRIPTION	
	FLOW RANGE								
NP-	L11	T VALVE	0	6	F	N	2		
	FLOW RANGE		GRADUATION				CONNECTION SIZE	2	1/4
								N NPT thread	
								F	Viton
								6	SUS316
								0	Flow rate graduation
	P	Percent graduation	Percent graduation indication at flow range						
	L	Not provided							
	U	Bottom (gas for atmospheric pressure scale)		Refer to valve location selection guide (Page 57).					
		Top (gas for pressure scale or for negative pressure on the secondary side)							
	L11	Water	0.01~0.1	L/min		L dimension 114mm			
L12	0.03~0.3		L/min						
L13	0.05~0.5		L/min						
L14	0.1 ~ 1		L/min						
L15	0.15~1.5		L/min						
L16	0.2 ~ 2		L/min						
L17	0.25~2.5		L/min						
L21		0.01~0.1	L/min		L dimension 224mm				
L22		0.03~0.3	L/min						
L23		0.05~0.5	L/min						
L24		0.1 ~ 1	L/min						
L25		0.15~1.5	L/min						
L26		0.2 ~ 2	L/min						
L27		0.25~2.5	L/min						
G11	Air	0.1 ~ 1	SL/min		L dimension 114mm				
G12		0.2 ~ 2	SL/min						
G13		0.5 ~ 5	SL/min						
G14		1 ~ 10	SL/min						
G15		1.5 ~ 15	SL/min						
G16		2 ~ 20	SL/min						
G17		3 ~ 30	SL/min						
G18		4 ~ 40	SL/min						
G21		0.1 ~ 1	SL/min			L dimension 224mm			
G22		0.2 ~ 2	SL/min						
G23	0.5 ~ 5	SL/min							
G24	1 ~ 10	SL/min							
G25	2.5 ~ 25	SL/min							
G26	4 ~ 40	SL/min							

■ ORDERING INFORMATION

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

■ GENERAL

Standard specification type purgometer 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		Liquids and gases	
Measuring range	Gas	Min. 0.1~1 NL/min. Max. 2~20 NL/min.	· Gas at 20°C, 1atm · When selecting flow range, refer to standard flow rate table.
	Water	Min. 0.02~0.1 L/min. Max. 0.2~1.0 L/min.	
Range ability		10:1	10:2 occasionally
Accuracy		± 5%F.S.	
Max. Op. Press.		5kgf/ cm ² G(0.49MPaG)	
Max. Op. Temp.		50°C	
Material		Std.	
	Body	POM(Poly-acetals)	Engineering plastic integrated mold
	Tapered tube	Pyrex glass	
	Packing	Viton	
	Cover	Poly-carbonate	
Connection	Std.	Rc1/4	Refer to Basic model code for details.
	Opt.		
Mounting	Std.	Thread mount onto panel front	Refer to Dimension for details.
	Opt.		
General quantity (std. tvpe)		0.1kg	



■ ALARM AND ANALOG OUTPUT

Type	Availability	Reference pages
Reed switch type alarm unit	General CE, UL Version	
PAU Optical alarm unit		
Optical alarm unit		Refer to page 47.
Analog output unit		

■ OTHER AVAILABLE OPTIONS

You can specify the following options:

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

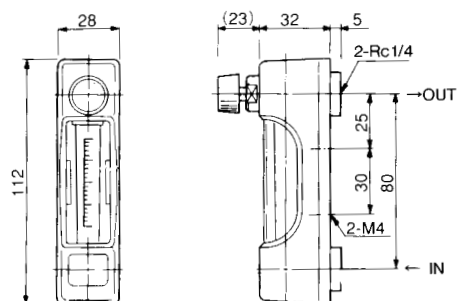
(For details, refer to ⑥ **Other Option** and **One-Point Advice** on page 56).

● STANDARD MATERIAL

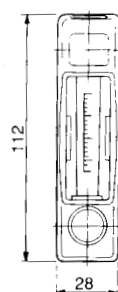
Parts name	Standard material	Available material
Body	Poly-acetals	—
Tapered tube	Pyrex glass	—
Float	SUS316/Glass	—
Packing	Viton	—
Valve	Poly-acetals	—
Cover	Poly-carbonate	—

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

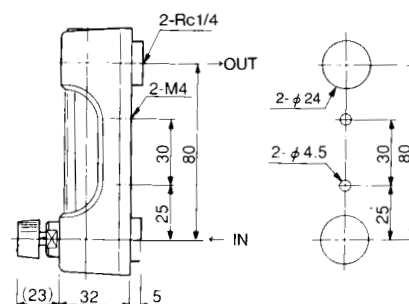
■ DIMENSIONS



Gas use (XP-G□-U0)



Liquid use (XP-L□-L0)



PANEL CUT

■ ORDERING INFORMATION

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

ALARM AND ANALOG OUTPUT UNIT

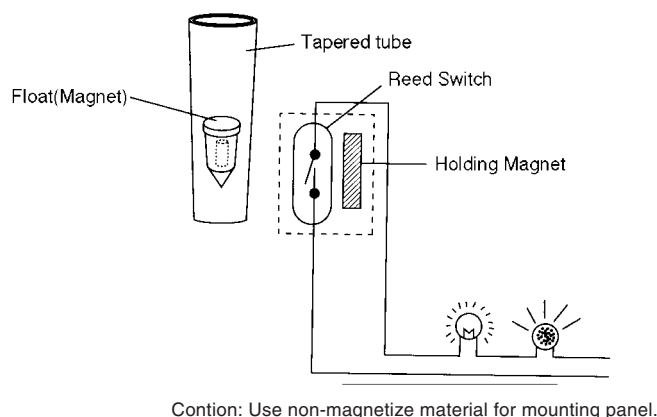
CODE	METHOD	PAGE	FEATURES
A B C D	REED SWITCH TYPE	45,46	Self-holding type
E	PAU OPTICAL ALARM UNIT	47	Power 24 VDC Open collector output
F	E3C SEPARATE AMPLIFIER TYPE OPTICAL ALARM UNIT	48	Power 100 VAC contact output and contactless output
G	PAS/IAU ANALOG OUTPUT UNIT	49	DC 4 to 20mA output available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

REED SWITCH TYPE

● Purgemeter with alarm

Code **A****B****C****D**

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.



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

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.

Reset-Span	Model	Reset-Span(%F.S)
	P-100,P-200,P-821	25
	P-510,P-520,P-550, P-620,P-772,P-773, P-774,P-823	20

*May be different depending on the scale length.

Construction Water proof

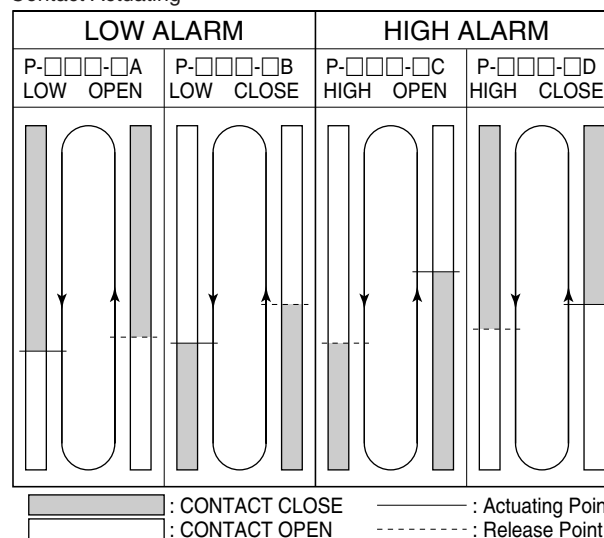
Amb. Temp. -10~60°C

<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.



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 standard
EN 60950: 1992
EN 61010: 1993

Contact Read switch contact
Connection Lead wire ended (50cm) (2m is also available)
Construction Water proof (IP 67 equ.)
Amb. Temp. -10~60°C

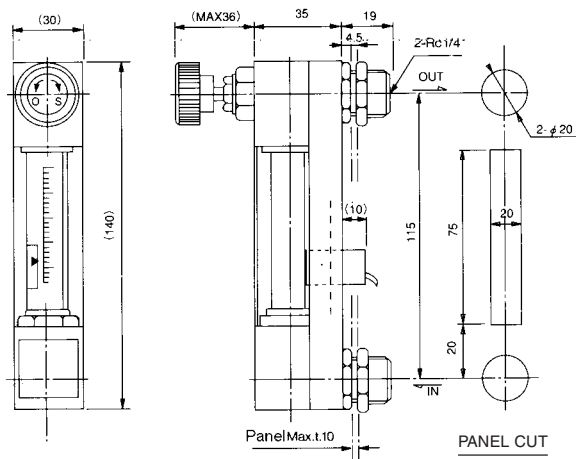
● Reed switch compatible with UL standards

UL standard UL508

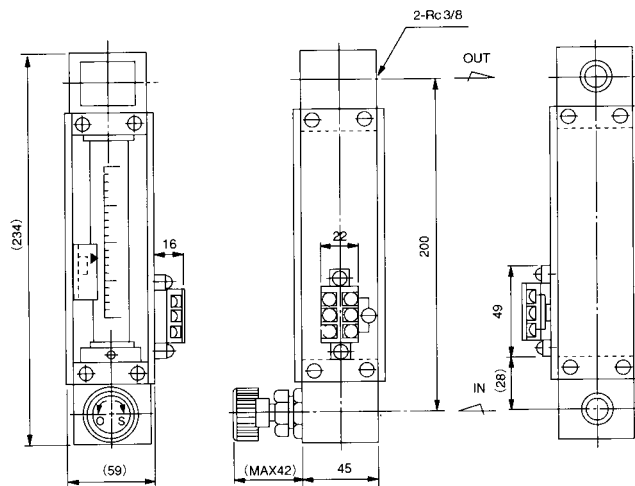
Contact Reed switch contact
Max. Capacity 10W
Max. Voltage DC24V
Max. Current 0.5A
Connection Lead wire(200cm sttached)
Construction Water proof (IP 67 equ.)
Amb. Temp 0~50°C

REED SWITCH TYPE
STANDARD DIMENSIONS OF PURGEMETERS
WITH REED SWITCH ALARM

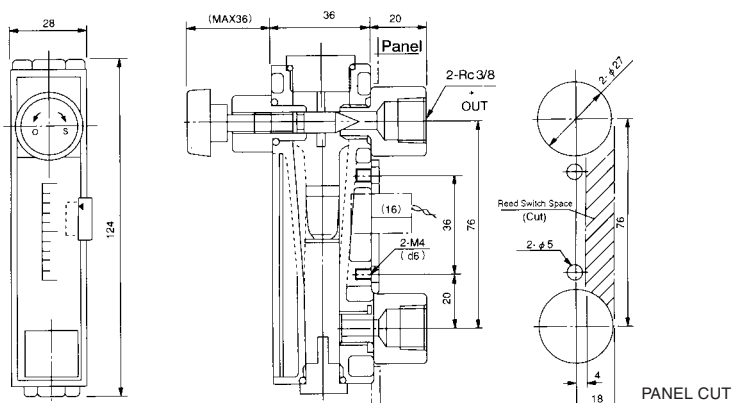
P-100-U□-4N-R2 model



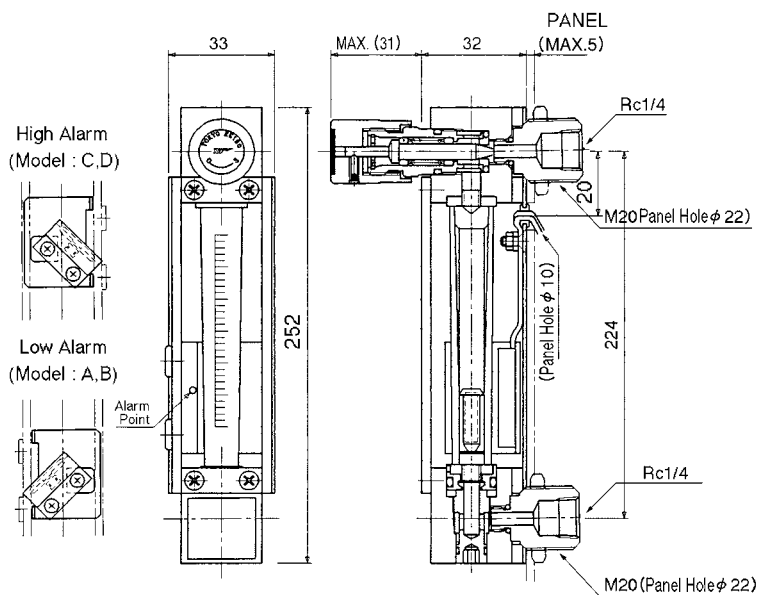
P-510-L□-4N-R3 model



P-620-U□-BN-R3 model



P-823-3□-6F-R2 model



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

● SEPARATE AMPLIFIER TYPE OPTICAL ALARM UNIT

Code **F**

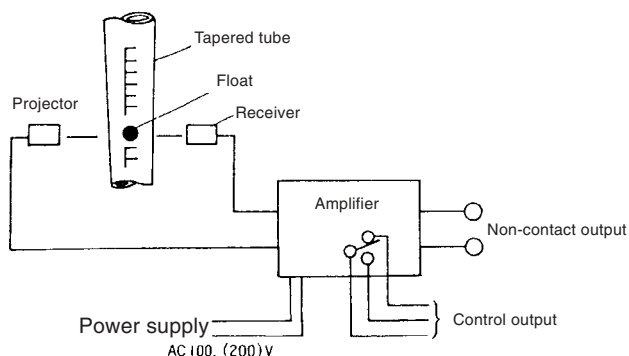
■ GENERAL

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 $\pm 10\%$ (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 substances 2mm

Operating: by selector switch

DARK ON when light is cut off

LIGHT 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

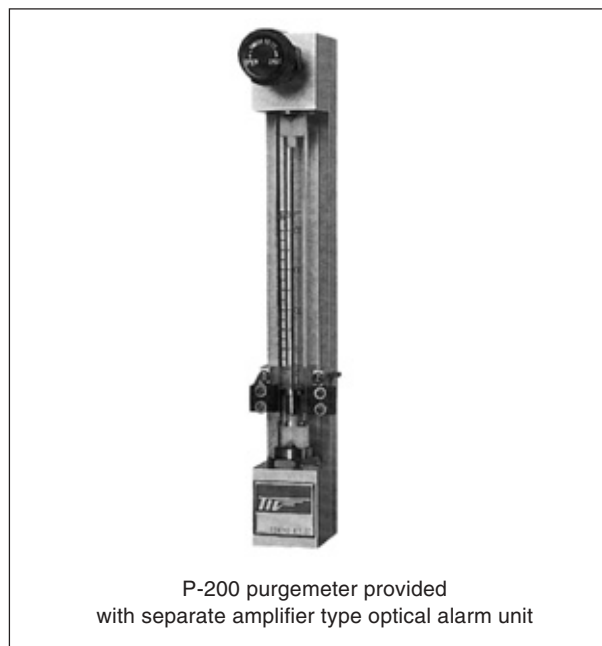
Shock resistance: approx. 50G (about 30G for amplifier unit)

Power consumption: 3W or less

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

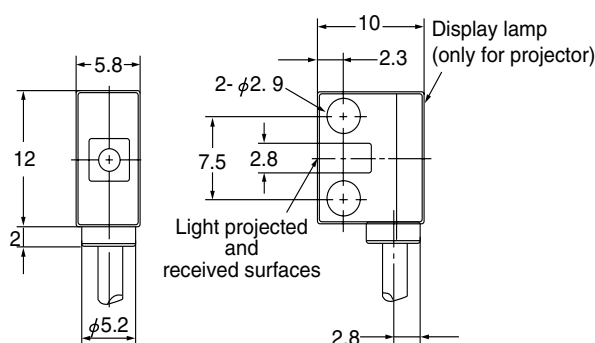
Ambient humidity: 35 to 85 %RH

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

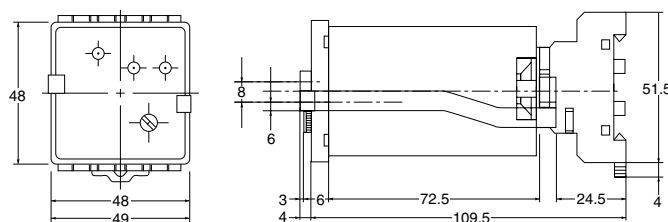


P-200 purgometer provided with separate amplifier type optical alarm unit

■ External dimensions

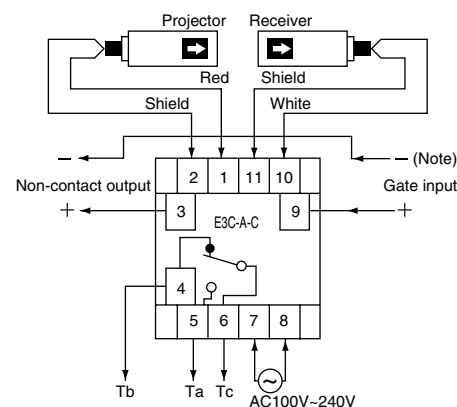


Sensor/transmission type



Amplifier unit

■ Connection diagram



■ GENERAL

PAS/IAU is a unit to provide optical detection of the purgometer 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 purgometers to purgometers made of 100% fluorine resin for pure water and various chemical liquids.

● **EASY LAYOUT WITH DETECTOR AND CONVERTER 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 : $\pm 3\%$ (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 : Std. 5m provided

Specification of IAU-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

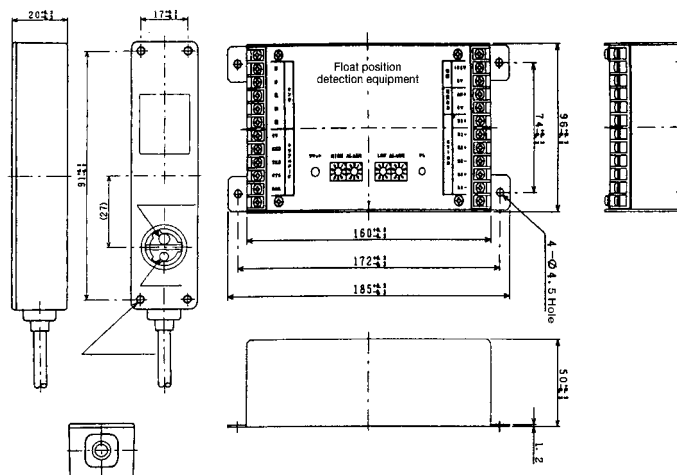
Setting resolution : Power supply

Consumption : Max. 250mA

Electrical connection : 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)

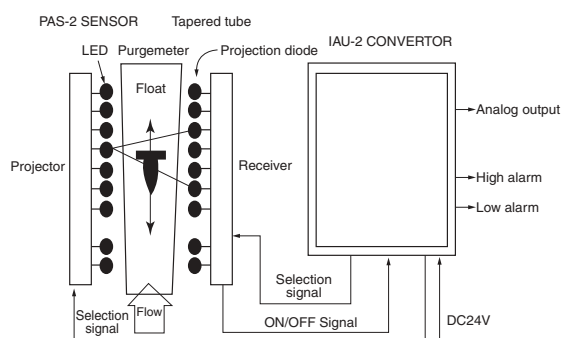
When liquid flows through the tapered tube upward, the float rises to the level which is determined by flow rate.

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 CONVERTER)

Such processing is all done by high-speed microprocessor.

<OPERATION PRINCIPLE>

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/cm²G(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 :

Fluid contact section	PFA
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

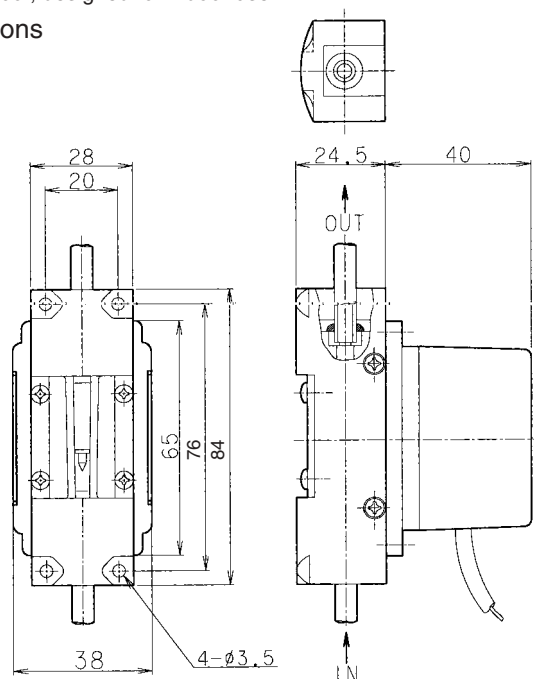
Permissible load resistance : 300 ohms

Wiring system : 4-wire type

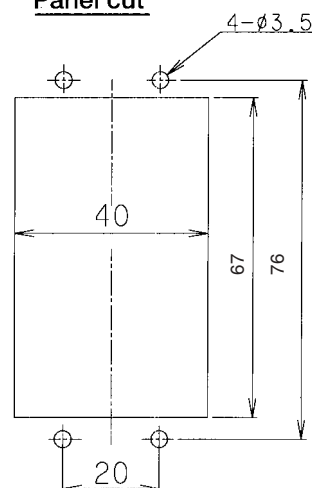
Power supply : DC 12 V +/- 10%

Structure : non-water proof, designed for indoor use

External dimensions



Panel cut



Model code

P-7810-0-T2-L		Description
Flow range	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
	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

OVERVIEW

PCS-1 is a sensor provided with current transmission function specifically for the purgometer. 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 purgometer. 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)

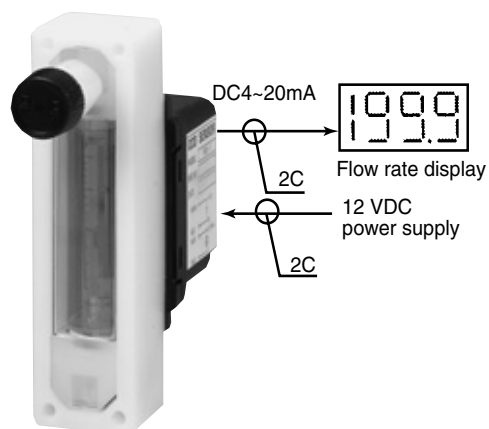
Attached equipment: P-710 and P-771

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

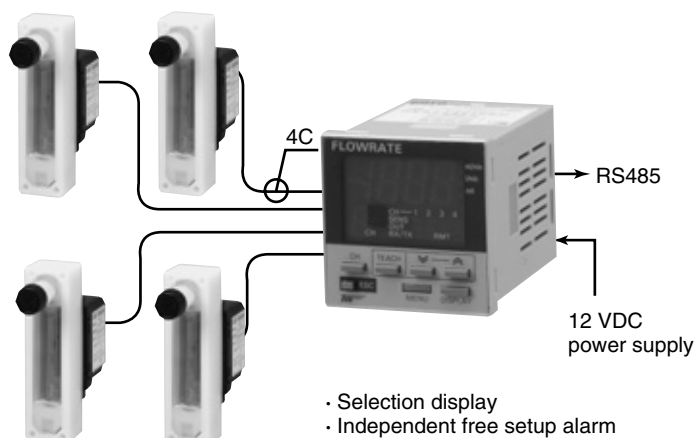


■ EXAMPLE OF USE

Normal remote display

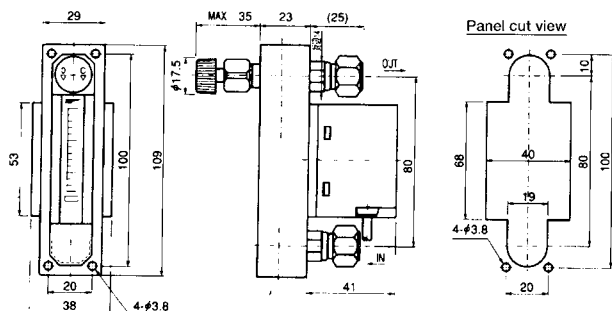


Exclusive flow controller OAC-1

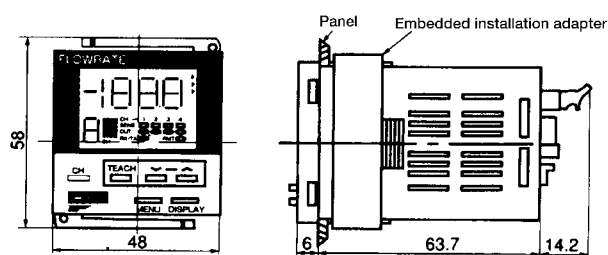


■ EXTERNAL DIMENSIONS

P-710 purgometer (with PCS-1 transmitter)

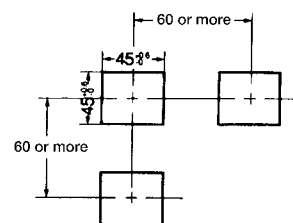
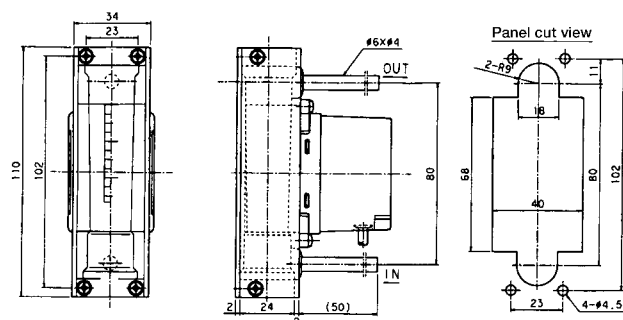


Exclusive flow controller



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

P-771 purgometer (with PCS-1 transmitter)



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

(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 model code		Designation items for detailed specifications					
Page	Model name	① Fluid name	② Flow range	③ Press.	④ Temp.	⑤ Mounting method (optional)	⑥ Other options
3,4	P-100	Specify the fluid name. (Models NP and XP: "need not be specified")	Specify the max. flow rate. (Refer to the standard flow rate table). (P-773, NP and XP: "need not be specified")	Specify the setup pressure.		Specify the setup standard temperature.	Specify the mounting method.
5,6	P-200	Example of entries • Water • Pure water • Other fluids • N ₂ • AIR • O ₂ • H ₂ • Ar • He • CO ₂ • C ₃ H ₈ • Other Gases	Fluid Gas	Fluid Gas	Normal temperature (20°C) Other than 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 56:	When there is no need to specify according to the course table on page 56:
7,8	P-300						
9,10	P-400						
11,12	P-510						
13,14	P-520						
15,16	P-530						
17,18	P-540						
19,20	P-550						
21,22	P-610						
23,24	P-620						
25,26	P-710						
27,28	P-771						
29,30	P-772						
31,32	P-773						
33,34	P-774						
35,36	P-810						
37,38	P-820						
39,40	P-830						
41	P-900						
42	NP						
43	XP						
		Example of entries	□□ mL/min. etc. □□ NL/min etc. □□ L/min. etc. □□ NL/min etc.	Omit □□ MPa etc.	Omit □□ MPa etc.	Omit □□ °C etc.	Omit Specify the code number according to the selection table.
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, N₂, Air, O₂, H₂, Ar, He, CO₂, C₃H₈, 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/cm²G(=1atm)
2kgf/cm²G

② Flow range

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 →	<ul style="list-style-type: none"> 1000mL/min =1L/min 1000mL/h=1L/h
Gas →	<ul style="list-style-type: none"> 1000NmL/min =1NL/min 1000NL/h=1Nm³/h 1000SmL/min =1SL/min 1000SL/h=1Sm³/h etc.

- When fluid is other than water (with a density of 1.0 g/cm³ 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.

④ Temperature

One-point advice

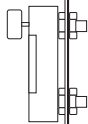
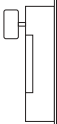
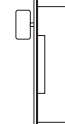
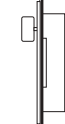
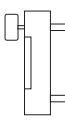
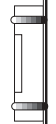
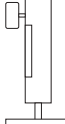
Specify the design standard temperature and temperature unit.

<Example of entries>
20°C

⑤ Mounting option One-point advice

- 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 Åc, specify it separately.

Selection Table for mounting option

Mounting method		Lock nut mount onto panel front	Thread mount onto panel front	Panel-rear installation	Bezel installation (trim strip)	Flange mounting (Must be specified except for JIS 10K)	Panel mounting by attached metal fitting	With stand
Code number		A	B	C	D	E	F	G
Model and page								
P-100	3	Need not be specified	×	○	○	×	×	○
P-200	5	Need not be specified	×	○	○	×	×	○
P-300	7	×	×	×	×	○	○	×
P-400	9	Need not be specified	×	×	×	○	×	×
P-510	11	Need not be specified	Need not be specified	△	○	○	×	○
P-520	13	○	Need not be specified	○	×	×	×	×
P-530	15	×	Need not be specified	○	○	×	×	×
P-540	17	×	Need not be specified	○	○	×	×	×
P-550	19	Need not be specified	×	×	×	×	×	×
P-610	21	×	Need not be specified	×	×	×	×	×
P-620	23	×	Need not be specified	×	×	×	×	×
P-710	25	×	Need not be specified	Need not be specified	×	×	×	×
P-771	27	×	Need not be specified	○	×	×	×	×
P-772	29	×	Need not be specified	△	×	×	×	×
P-773	31	×	Need not be specified	○	×	×	×	×
P-774	33	×	Need not be specified	×	×	×	×	×
P-810	35	Need not be specified	×	×	○	×	×	○
P-820	37	Need not be specified	×	×	○	×	×	○
P-830	39	×	Need not be specified	×	×	×	×	×
P-900	44	×	Need not be specified	×	×	×	×	×
NP	42	×	Need not be specified	×	×	×	×	×
XP	43	×	Need not be specified	×	×	×	×	×

<How to Specify (Example)>

When you want to specify **Bezel installation** for the standard P-100 series, N2, 1 to 10 NL/min. and valve bottom:

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:

P 100 L0 4N R2 N2 10NL/min D

Standard model with valve inlet

Fluid name

Flow range

Specify "Bezel 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	M	N	O	P	Q	R	S	T
Optional item	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).
Model and page									
P-100	3	×	×	○	×	○	○	○	○
P-200	5	×	○	○	×	○	○	○	○
P-300	7	×	×	×	×	×	○	×	×
P-400	9	×	×	×	×	×	○	×	○
P-510	11	○	○	○	○	○	○	×	○
P-520	13	×	○	○	○	○	×	×	○
P-530	15	×	×	Need not be specified	×	○	×	×	×
P-540	17	○	○	○	×	○	×	×	○
P-550	19	Need not be specified	△	Need not be specified	×	○	×	×	○
P-610	21	×	×	×	×	×	×	×	○
P-620	23	○	×	△	×	○	×	×	○
P-710	25	×	×	×	×	×	×	×	○
P-771	27	×	×	×	×	○	×	×	×
P-772	29	×	○	○	×	○	×	×	×
P-773	31	Need not be specified	×	Need not be specified	×	○	×	×	×
P-774	33	Need not be specified	×	Need not be specified	×	○	×	×	×
P-810	35	×	×	×	×	○	×	×	○
P-820	37	×	○	○	×	○	×	×	○
P-830	39	Need not be specified	×	Need not be specified	×	○	×	×	○
P-900	41	×	×	×	×	×	×	×	○
NP	42	×	×	×	×	×	×	×	×
XP	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□-□□-□□-□□ - 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:

P 510 UA 4N R3 Water 20L/min M

Valve outlet Alarm code A standard type

Fluid name

Flow range

Specify "Two point alarm".

Note: Pressure and temperature **need not be specified**, so they are omitted.

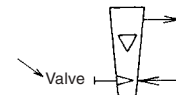
⑦ Valve position selection guide One-point advice

Use	Conditions	Valve position	Application
For liquid	Not in particular	Top recommended	Top recommended to ensure float stability
For gas	Atmospheric pressure on the secondary side (1atm)	Bottom (inlet side)	Shipped when pressure in the tapered tube is 1 atm
	Pressurized gas	Top (outlet side)	Shipped with the tapered tube at your specified pressure
	Negative pressure on the secondary side		If a valve is provided on the inlet side, the tapered tube will be vacuum and hunting will occur to the float.

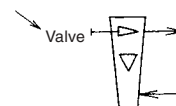
- 1) Specify the inlet and outlet pressure in case of purgemeter with valve
- 2) If there is no suggestion, valve is designed as different pressure 0.05MPa.
- 3) Consult factory for details if different pressure is under 0.05MPa.

Valve position
1. For liquid, the valve may be located on the inlet or outlet side.

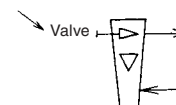
2. For gas,
- (1) Gas to be measured has a pressure of 1 atm.



- (2) Gas to be measured is pressurized.



- (3) Gas to be measured is vacuum.

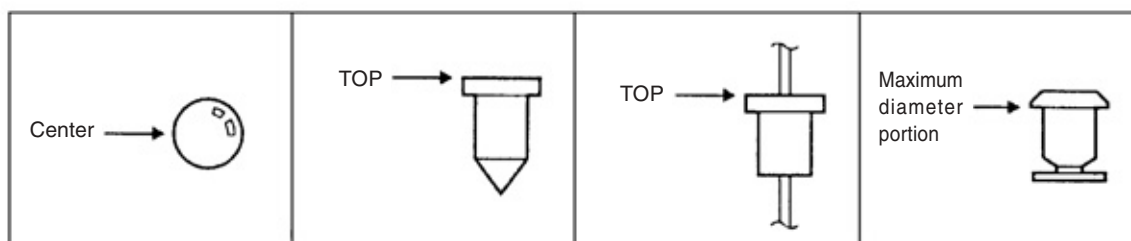


⑧ Density of gases One-point advice

- 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

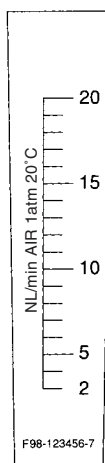
- Read the graduation on the glass tube and float position to get the flow rate. The reading position differs depending on the float shape. The following shows general reading positions according to float profile. For details, refer to the Operation Manual of each product.



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

- 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)



⑪ 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 purgometer 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

$$C_r = \sqrt{[r_d(r_f - r)] / [r(r_f - r_d)]}$$

C_r : Conversion coefficient

r_d : Design density (See the approval drawing).

r : Design liquid density (density of the liquid to be measured this time)

r_f : 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/cm³), and the flow meter indicates 10L/min.
(float material: stainless steel)

Alcohol true flow rate=

$$10 \times \sqrt{[1.0 \times (7.9 - 0.8)] / [0.8 \times (7.9 - 1.0)]}$$

=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

$$C_r = \sqrt{r_d / r}$$

C_r : Density conversion coefficient

r_d : Design density kg/Nm³ (Refer to approval drawing).

r : Density of gas to be measured kg/Nm³

Pressure conversion

$$C_p = \sqrt{(p + 1.013) / (p_d + 1.013)}$$

C_p : Pressure conversion coefficient

p_d : Design pressure kgf/cm²G (Refer to approval drawing).

p : Operating pressure kgf/cm²G

Temperature conversion

$$C_t = \sqrt{(t_d + 273) / (t + 273)}$$

C_t : Temperature conversion coefficient

t_d : Design temperature °C (Refer to approval drawing).

t : 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/cm²G.

True flow rate of carbon dioxide gas = 10 × C_r × C_p × C_t

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

P SERIES PURGEMETERS

CF030F111-2E

Dec.2002

●Specification subject to change without notice

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