

Liquid Column Manometers



OUTLINE

Liquid column manometers measure pressure based on the height of a liquid column (water column or mercury column) in a glass tube or the difference of height of two connected liquid columns, and can be used in general measurement of vacuum, pressure and differential pressure. A U-tube type, single tube type, and inclined tube type is available. The type matched to the application and measurement range can be selected.

U-tube type

The U-tube manometer measures the sum or difference of the height of both liquid surfaces.

Single tube type

The single tube manometer reads the liquid level in the glass tube directly.

Inclined tube type

The inclined tube manometer uses an inclined single tube type glass tube, and measures pressure by magnifying low pressures of 0 to 3kPa from 2 to 4 times.

CLASSIFICATION

Type	Nominal length	Measurement range		Shape	Model
		Water column	Mercury column		
U-tube type	200 → 2000mm	0~2 → 0~19.6kPa	0~25 → 0~250kPa	Panel mounted type Wall mounted type Stand type	PM11 PM12 PM13
General-purpose U-tube type	200 → 1000mm	0~200 → 0~1000mm		Wall mounted type	PM16
Single tube type	300 → 2000mm	0~3 → 0~19.6kPa	0~40 → 0~250kPa	Panel mounted type	PM21
Inclined tube type	50 → 300mm	0~0.5 → 0~3kPa	—————	Panel mounted type	PM31 PM32 PM33
				Wall mounted type	PM34 PM35 PM36
				Stand type	PM37 PM38 PM39

Note) When measuring differential pressure, consider 1.5 times the standard pressure as the manometer Puncture pressure.

Liquid Column Manometers

U-tube type liquid column manometer

SPECIFICATIONS & MODEL NUMBER CONFIGURATION

For ordering, please specify the model number and each specs.

U-tube type liquid column manometer

P	M	1																		
			①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮			
Model			Selective spec.							Additional spec. (Option)										
Type	1	Panel mounted type																		
	2	Wall mounted type																		
	3	Stand type																		
①② Nominal length		14	200			21	1000													
		16	300			23	1500													
		18	500			24	2000													
		19	760																	
③ Wetted parts materials		Material		Puncture pressure																
		1	Hard vinyl chloride		0.3 MPa															
		2	SUS304 (General use)		0.5 MPa															
		3	SUS304 (High pressure use)		2.0 MPa															
⑧ Other additional specifications		0	Nil																	
		1	Required (Please specify the desired documents separately.) Scale (capacity), joint, finish, mercury																	
⑮ Documents		0	Nil																	
		1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, traceability certificate, inspection certificate, attended inspection																	

Manufacturing range

- When using with differential pressure, use 2 standard joints/unit.
- With the PM12, 13, use the ZV12-173 differential pressure regulating valve.
- 1 graduation value Standard specifications Water column: 0.02kPa Mercury column: 0.5kPa
- Standard joint Specify N type, P type, or T type.
- Standard: 1 T type (Rc1/4) is supplied.
- Range 250kPa (±125) is also available.

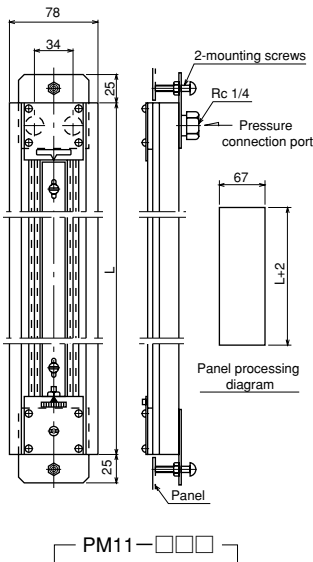
Specify "X" if there is no specification item.

Model	Model number	Nominal length	Measurement range		1 graduation value	Accuracy	Dimensions (mm)			Weight (kg)	
			Water column	Mercury column			L	L ₁	H	PM11,12	PM13
PM11	PM□□-14□	200	0~2 kPa	0~26 kPa	Water column 0.02 kPa	1 graduation	380	406	418	1.4	5.6
	PM□□-16□	300	0~3	0~40			480	506	518	1.6	6.0
	PM□□-18□	500	0~5	0~60			680	706	718	2.1	6.9
PM12	PM□□-19□	760	0~7.4	0~100			940	966	978	2.7	7.9
	PM□□-21□	1000	0~9.8	0~130			1180	1206	1218	3.6	9.2
PM13	PM□□-23□	1500	0~14.6	0~200			Mercury column 0.5 kPa	1 graduation	1680	1706	1718
	PM□□-24□	2000	0~19.6	0~250	2180	2206			2218	6.6	14.2

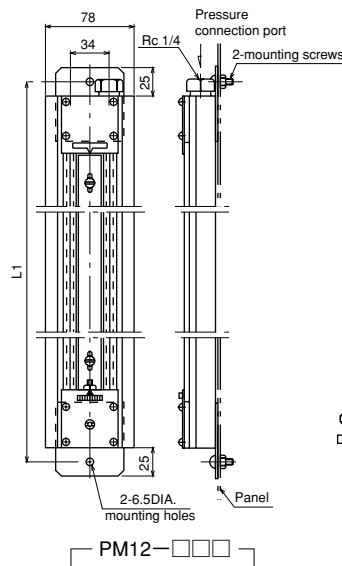
* Measurement range, 0 center is also available. Example: 125~0~125kPa (measured pressure: 250kPa)
Finish: Black

DIMENSIONS

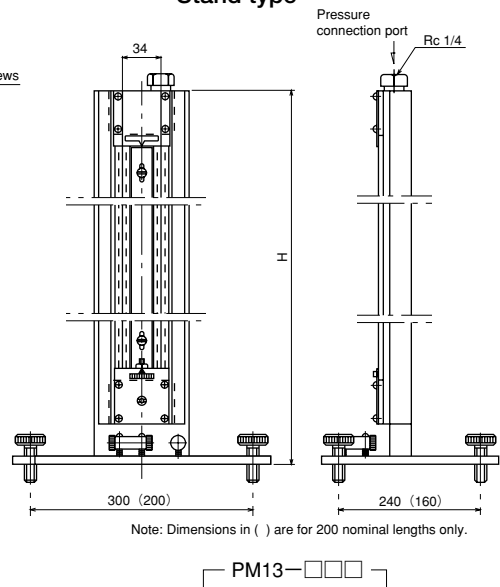
Panel mounted type



Wall mounted type



Stand type



● General-purpose U-tube liquid column manometer ●

SPECIFICATIONS & MODEL NUMBER CONFIGURATION

For ordering, please specify the model number and each specs.

General-purpose U-tube liquid column manometer

Model: **P M 1 6** — **1** — **X X X X** **X X X X X X X X**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

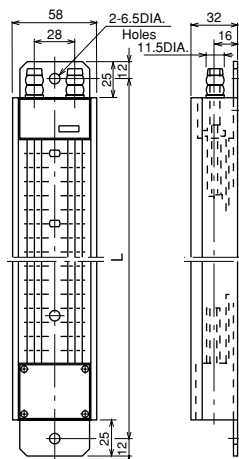
Model		Selective spec.		Additional spec. (Option)			
①② Nominal length	14	200		⑧ Other additional specifications	0	Nil	
	16	300			1	Required (Please specify the desired documents separately.) Mercury	
	18	500			⑮ Documents	0	Nil
	20	800				1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, traceability certificate, inspection certificate, standard inspection report, attended inspection
	21	1000					
③ Wetted parts materials	Material		Puncture pressure				
	1	Nylon, ABS resin		0.1 MPa			

Specify "X" if there is no specification item.

Type	Model	Model number	Nominal length	Measurement range		1 graduation value	Accuracy	Dimensions (mm)		Finish
				Water column	Mercury column			L	Weight (kg)	
U-tube type	PM16	PM16-14□	200	0 ~ 200 mm		1 mm	2 mm	326	0.5	Gray crystal
		PM16-16□	300	0 ~ 300				426	0.6	
		PM16-18□	500	0 ~ 500				626	0.8	
		PM16-20□	800	0 ~ 800				926	1.1	
		PM16-21□	1000	0 ~ 1000				1126	1.3	

DIMENSIONS

U-tube type



PM16-□□□

Liquid Column Manometers

● Single tube type liquid column manometer ●

SPECIFICATIONS & MODEL NUMBER CONFIGURATION

For ordering, please specify the model number and each specs.

Single tube type liquid column manometer

Model **P M 2 1** — —

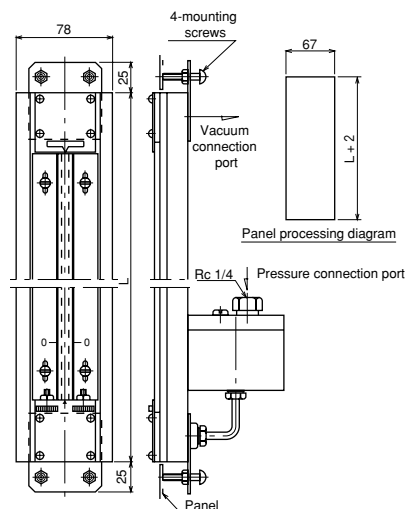
Model	Selective spec.	Additional spec. (Option)
①② Nominal length	16	300
	18	500
	19	760
	21	1000
	23	1500
	24	2000
③ Wetted parts materials	Material	
	1	Hard vinyl chloride
	2	SUS304 (General use)
⑧ Other additional specifications	Puncture pressure	
	0	Nil
	1	Required (Please specify the desired documents separately.) Mercury, scale (capacity), joint, finish
⑮ Documents	Puncture pressure	
	0	Nil
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, traceability certificate, inspection certificate, standard inspection report, attended inspection

Specify "X" if there is no specification item.

Type	Model	Model number	Nominal length	Measurement range		1 graduation value	Accuracy	Dimensions (mm)		Finish
				Water column	Mercury column			L	Weight (kg)	
Single tube type	PM21	PM21-16□	300	0 ~ 3 kPa	0 ~ 40 kPa	Water column 0.02 kPa	1 graduation	480	1.6	Black
		PM21-18□	500	0 ~ 5	0 ~ 60			680	2.3	
		PM21-19□	760	0 ~ 7.4	0 ~ 100			940	3.2	
		PM21-21□	1000	0 ~ 9.8	0 ~ 130	1180		4.0		
		PM21-23□	1500	0 ~ 14.6	0 ~ 200	1680		5.8		
		PM21-24□	2000	0 ~ 19.6	0 ~ 250	2180		7.6		

DIMENSIONS

Single tube type

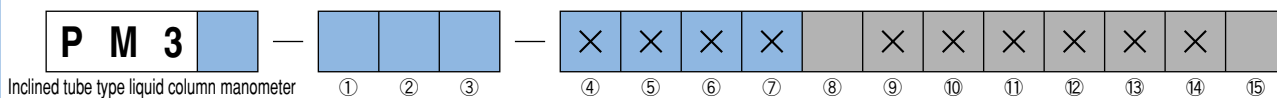


PM21-□□□

Inclined tube type liquid column manometer (Panel, wall mounting type)

SPECIFICATIONS & MODEL NUMBER CONFIGURATION

For ordering, please specify the model number and each specs.



Model		Selective spec.				Additional spec. (Option)					
Magnification· Type	1	Twice	Panel mounted type	4	Twice	Wall mounted type					
	2	3 times	Panel mounted type	5	3 times	Wall mounted type					
	3	4 times	Panel mounted type	6	4 times	Wall mounted type					
①② Nominal length		11	50	Only 3 times and 4 times are available.		14	200				
		12	100			15	250	Only twice and 3 times are available.			
		13	150			16	300	Only twice and 3 times are available.			
						Material		Puncture pressure			
③ Wetted parts materials		1	Hard vinyl chloride		0.3 MPa						
		2	SUS304 (General use)		0.5 MPa						
⑧ Other additional specifications		0	Nil								
		1	Required (Please specify the desired documents separately.) Scale (capacity), joint, finish								
⑮ Documents		0	Nil								
		1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, traceability certificate, inspection certificate, standard inspection report, attended inspection								

Manufacturing range

- 1 graduation value Standard specifications Water column: 0.01kPa
- Standard joint Specify N type, P type, or T type.
- Standard: 1 T type (Rc1/4) is supplied.
- When using with differential pressure, 2 joints/unit is necessary.

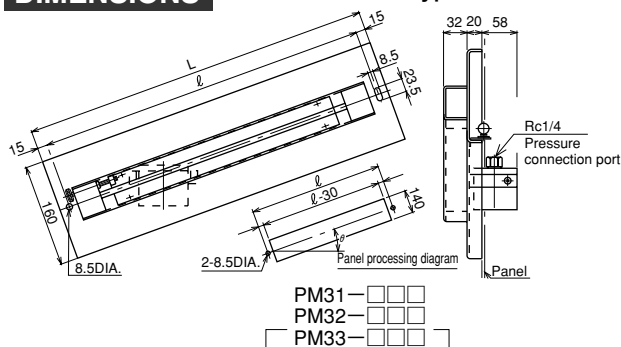
Specify "X" if there is no specification item.

Type	Model number	Magnification	Nominal length	Measurement range (Water column)	1 graduation value	Accuracy	Dimensions (mm)			Weight (kg)
							L	ℓ	θ	
Panel mounted type	PM32-11□	3	50	0 ~ 0.5 kPa	0.01 kPa	1 graduation	420	390	19° 20'	4.5
	PM33-11□	4					470	440	14° 30'	
	PM31-12□	2	100	0 ~ 1			470	440	29° 42'	
	PM32-12□	3					570	540	19° 20'	
	PM33-12□	4					670	640	14° 30'	
	PM31-13□	2					570	540	29° 42'	
	PM32-13□	3	150	0 ~ 1.5			720	690	19° 20'	
	PM33-13□	4					870	840	14° 30'	
	PM31-14□	2					670	640	29° 42'	
	PM32-14□	3					870	840	19° 20'	
	PM33-14□	4	200	0 ~ 2			1070	1040	14° 30'	
	PM31-15□	2					770	740	29° 42'	
	PM32-15□	3					1020	990	19° 20'	
	PM31-16□	2					870	840	29° 42'	
	PM32-16□	3	300	0 ~ 3			1170	1140	19° 20'	
	PM35-11□	3					50	0 ~ 0.5 kPa	420	
PM36-11□	4	470			440	14° 30'				
Wall mounted type	PM34-12□	2			100	0 ~ 1	0.01 kPa	1 graduation	470	440
	PM35-12□	3	570	540					19° 20'	
	PM36-12□	4	670	640					14° 30'	
	PM34-13□	2	570	540					29° 42'	
	PM35-13□	3	150	0 ~ 1.5	720	690			19° 20'	
	PM36-13□	4			870	840			14° 30'	
	PM34-14□	2			670	640			29° 42'	
	PM35-14□	3			870	840			19° 20'	
	PM36-14□	4	200	0 ~ 2	1070	1040			14° 30'	
	PM34-15□	2			770	740			29° 42'	
	PM35-15□	3			1020	990			19° 20'	
	PM34-16□	2			870	840			29° 42'	
	PM35-16□	3	300	0 ~ 3	1170	1140			19° 20'	

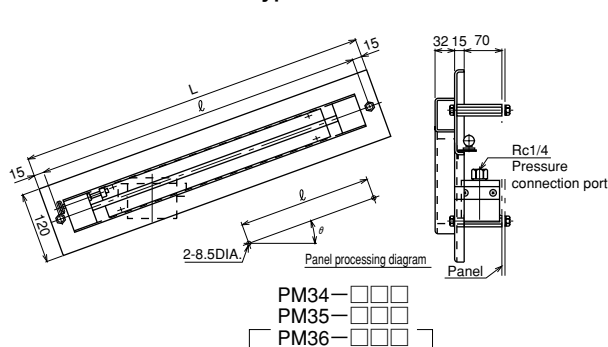
Finish: Black

DIMENSIONS

Panel mounted type



Wall mounted type



Liquid Column Manometers

Inclined tube type liquid column manometer (Stand type)

SPECIFICATIONS & MODEL NUMBER CONFIGURATION

For ordering, please specify the model number and each specs.

Inclined tube type liquid column manometer

P M 3	—	①	②	③	—	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮				
Model		Selective spec.									Additional spec. (Option)										
Magnification	7	Twice																			
	8	3 times																			
	9	4 times																			
①② Nominal length	11	50	Only 3 times and 4 times are available.										14	200							
	12	100											15	250	Only twice and 3 times are available.						
	13	150											16	300	Only twice and 3 times are available.						
	③ Wetted parts materials		Material									Puncture pressure									
		1	Hard vinyl chloride									0.3 MPa									
		2	SUS304 (General use)									0.5 MPa									
		⑧ Other additional specifications		0		Nil															
				1		Required (Please specify the desired documents separately.) Scale (capacity), joint, finish															
				⑮ Documents		0		Nil													
				1		Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, traceability certificate, inspection certificate, standard inspection report, attended inspection															

Manufacturing range

- 1 graduation value Standard specifications Water column: 0.01kPa
- Standard joint Specify N type, P type, or T type.
- Standard: 1 T type (Rc1/4) is supplied.
- When using with differential pressure, 2 joints/unit is necessary.

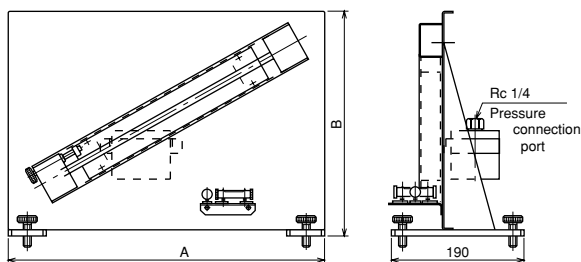
Specify "X" if there is no specification item.

Type	Model number	Magnification	Nominal length	Measurement range (Water column)	1 graduation value	Accuracy	Dimensions (mm)		Weight (kg)
							A	B	
Stand · Type 1	PM38-11□	3	50	0 ~ 0.5 kPa	0.01 kPa	1 graduation	400	239	—
	PM39-11□	4					460	229	
	PM37-12□	2	100	430			309		
	PM38-12□	3		540			289		
	PM37-13□	2		660			570		
Stand · Type 2	PM39-12□	4	100	0 ~ 1	0.01 kPa	1 graduation	510	359	—
	PM38-13□	3	150	0 ~ 1.5			680	590	
	PM39-13□	4					860	770	
	PM37-14□	2	200	0 ~ 2			620	530	
	PM38-14□	3					830	740	
	PM39-14□	4					1060	970	
	PM37-15□	2	250	0 ~ 2.5			700	610	
	PM38-15□	3					970	880	
	PM37-16□	2					780	690	
	PM38-16□	3	300	0 ~ 3			1110	1020	

Finish: Black

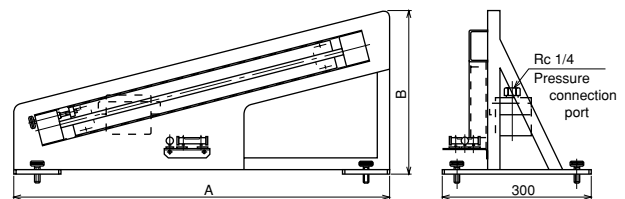
DIMENSIONS

Type 1



PM37-□□□
PM38-□□□
PM39-□□□

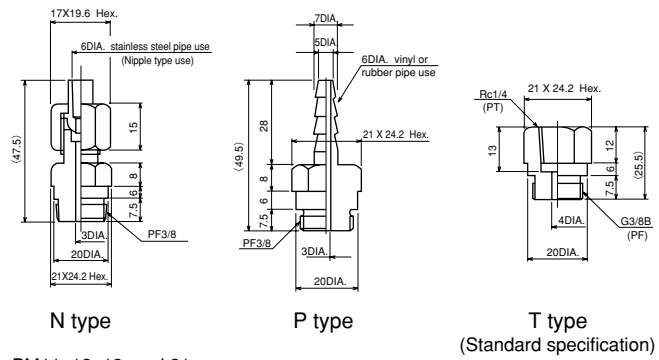
Type 2



PM37-□□□
PM38-□□□
PM39-□□□

ACCESSORIES

Standard joints



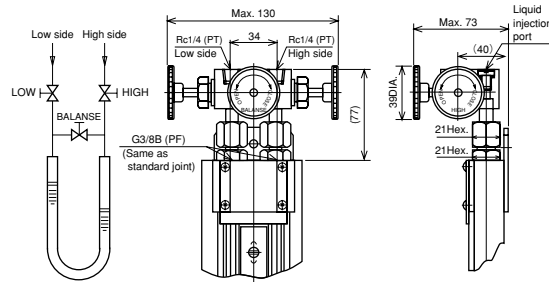
One standard joint (N type, P type, or T type) is supplied with the PM11, 12, 13, and 21.
 (With JIS B 2401-P14 O-ring packing)

Material SUS304

Notes 1. Not supplied when differential pressure regulating valve (ZV12-173) installed.

2. When measuring differential pressure without using a differential pressure regulating valve (ZV12-173), use two standard joints.

Differential pressure regulating valve

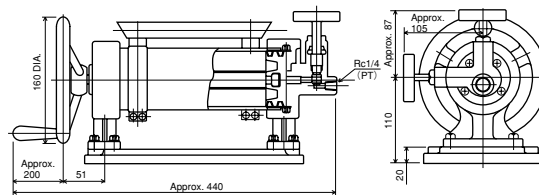


Model number ZV12-173

PM12, 13 dedicated valve combining a high pressure valve, low pressure valve, and equal pressure valve to prevent single side pressure at differential pressure measurements.

Wetted gas part material: SUS304
 Puncture pressure: 2MPa
 Weight: 0.9kg

Portable manual pump



Model number XJ11-111

This pump can be used as a vacuum and pressure generation system. It is conveniently portable.

Vacuum pressure generation system:
 Piston system
 Generated pressure:
 -0.09MPa~0.3MPa
 Weight: 11.3kg
 Finish: Black



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