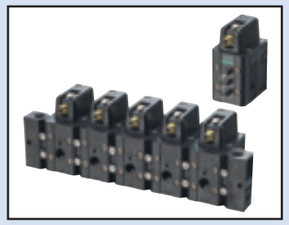


Fine level switch

KML502 Series

Easy-to-install liquid level detector with no setup required

RoHS

How to order

● Single unit

KML502 - 1 D - A -M

- KML502: Model No.
- 1: ❶ Sensing classification (Switching water level)
- D
- A: ❷ Switch type
- -M: ❸ Option

❶ Sensing classification (switching water level)

Code	Description
1	8 to 12mm
2	1 to 3mm

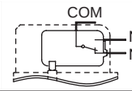
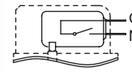
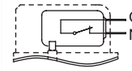
Note: Value obtained with water as measured at working pressure 20kPa (ambient temperature: 24±2°C).

❸ Option

Code	Description
Blank	Single unit
-M	Single unit with manifold plate

Note: The following joiner sets are required to expand the manifold.

❷ Switch type

Code	Description	
A	Micro switch (C contact)	
B	Reed switch (A contact)	
C	Reed switch (B contact)	

● Manifold

MKML2 - 1 D - A - 5

- MKML2: Model No.
- 1: ❶ Sensing classification (Switching water level)
- D
- A: ❷ Switch type
- 5: ❸ Manifold station No.

❶ Sensing classification (switching water level)

Code	Description
1	8 to 12mm
2	1 to 3mm

Note: Value obtained with water as measured at working pressure 20kPa (ambient temperature: 24±2°C).

❸ Manifold station No.

Code	Description
1	One station
2	2 stations
3	3 stations
4	4 stations
5	5 stations

❷ Switch type

Code	Description
A	Micro switch (C contact)
B	Reed switch (A contact)
C	Reed switch (B contact)

● Joiner set

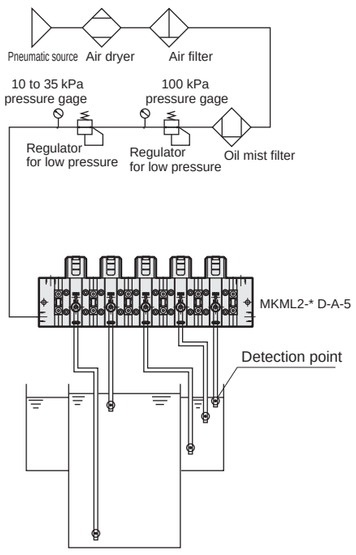
KML502-JC-SET

Specifications

Item		KML502-1D-*	KML502-2D-*
Supply gas	Working fluid	Compressed air/nitrogen gas (*1)	
	Working pressure kPa	15 to 35	10 to 35
	Operating ambient temperature °C	5 to 60	
Ambient temperature °C		5 to 60	
Proof pressure kPa	P.S. port	100	
	P.I. port	10 (1000mm for detection fluid water)	6 (600mm for detection fluid water)
Contact capacity	A type	3A 125/250 VAC resistance load (micro switch)	
	B type, C type	0.25A 100 VDC resistance load (reed switch)	
Switching water level mm		8 to 12 (*2)	1 to 3 (*2)
Hysteresis mm		2 (*2)	
Repeatability mm		±1 (*2)	
Response time ms		200 or less (working pressure 20 kPa, ambient temperature 24°C, detection tube inner diameter ø4 length 5 m)	
Detection tube bore size ø mm		4	
Tube length m		Within 5	
Consumption flow rate cm³/min (ANR)		750 or less (at working pressure 20 kPa)	
Detection flow rate cm³/min (ANR)		45±10 (at working pressure 20 kPa)	
Weight kg		0.14	

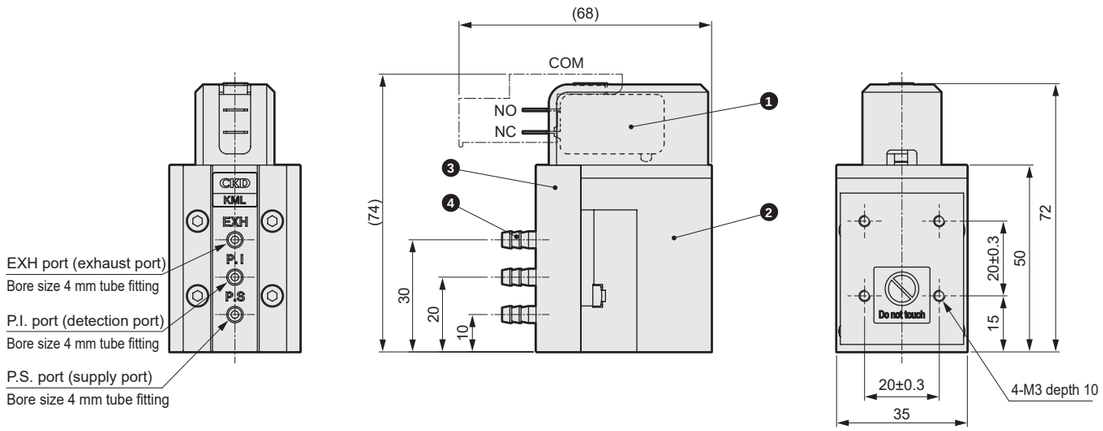
*1: Use fluid passed through a filter with filtration accuracy within 0.3 µm.
*2: The above specifications are values obtained at working pressure 20 kPa (ambient temperature: 24±2°C).

Piping example



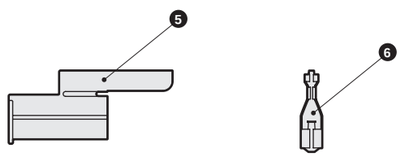
Dimensions and main part material

● KML502-* D-A



Part No.	Part name	Material
1	Switch	-
2	Body	PPS
3	Plate	PPS
4	Fitting	Stainless steel
-	Diaphragm	FKM,FFKM

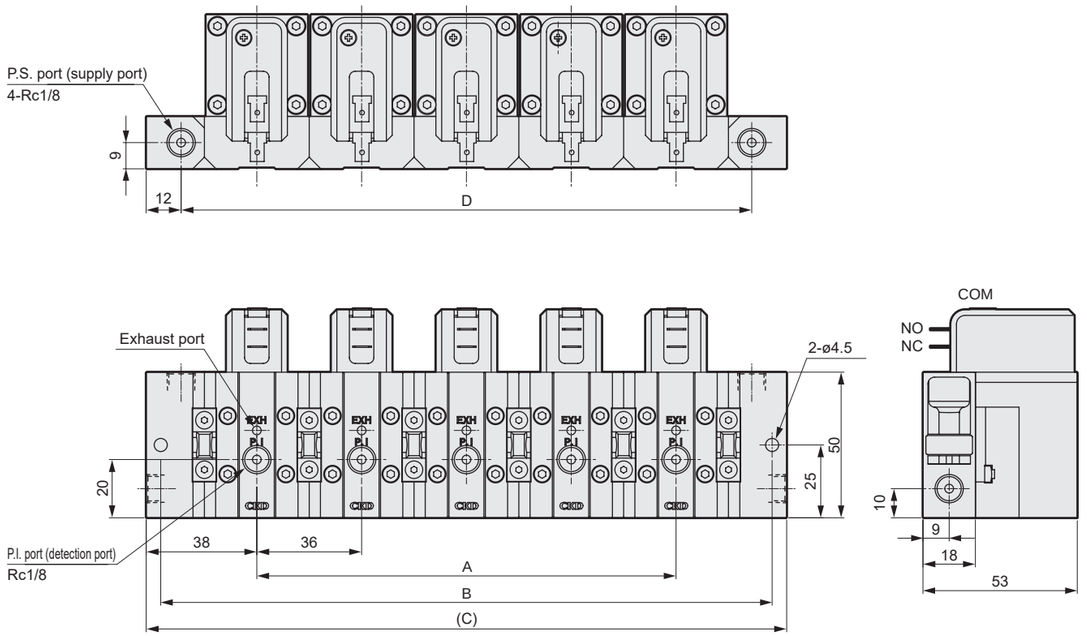
● Housing, terminal (attachment)



Part No.	Part name	Material
5	Housing	Nylon 66
6	Terminal	Brass, tin plating

Dimensions

● MKML2-*D-A-5 (manifold)



Number of sub-plates	A	B	C	D
1	-	66	76	52
2	36	102	112	88
3	72	138	148	124
4	108	174	184	160
5	144	210	220	196

Fine level switch

KML60 Series

Detects liquid level at 4 points using 1 detection tube

RoHS

How to order

● Single unit

KML60 - 4 R -0

- KML60: Model No.
- 4: No. of output points: 4-point setting
- R: ❶ Setting trimmer operation indicator lamp direction
- -0: ❷ Mounting

❶ Setting trimmer operation indicator lamp direction

Code	Description
Blank	P.I. port side
R	P.I. port rear side

❷ Mounting

Code	Description
Blank	Single unit
-0	Single unit for manifold

● Manifold

MXKML2 - A 3 - X12 -R

- MXKML2: Model No.
- A: ❶ mount together KML502 switch
- 3: ❷ Station No.
- X12: ❸ Manifold switch array
- -R: ❹ Setting trimmer operation indicator lamp direction

❶ KML502 switch types mixed

Code	Description
0	No KML502 combination
A	Micro switch (C contact)
B	Reed switch (A contact)
C	Reed switch (B contact)

❷ Station No.

Code	Description
1	One station
2	2 stations
3	3 stations
4	4 stations
5	5 stations

❸ Manifold switch array *1, *2, *3

Code	Description
X	KML60-4
1	KML502-1D- * (*=❶)
2	KML502-2D- * (*=❶)

*1: Specify the switch array on the manifold with an alphanumeric array of X/1/2.
*2: Specify the array from the left front side of the manifold (P.I. port side).
*3: Specify with the same number of digits as the number of sub-plate stations specified in "Item ❷".

❹ Setting trimmer operation indicator lamp direction

Code	Description
Blank	P.I. port side
-R	P.I. port rear side

[Example of model No.]

MXKML2-A3-X12-R

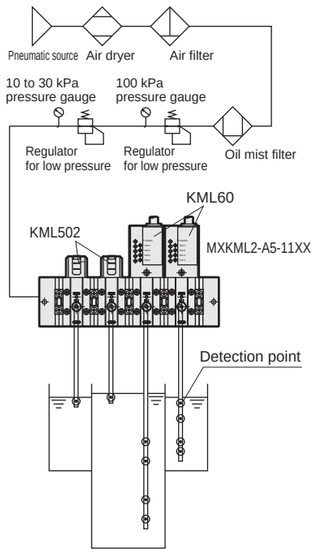
Model: MXKML2
❶Mixed KML502 switches: A type
❷Station No. 3 stations
❸Manifold switch array: From front left in the order of KML60-4R, KML502-1D-A, KML502-2D-A
❹Setting trimmer operation indicator lamp direction: P.I. port rear side

Specifications

Item			KML60-4
Supply gas	Working fluid		Compressed air/nitrogen gas (*1)
	Working pressure	kPa	10 to 30 (when the set water level is 10 to 500 mm and water is used as the detection fluid)
			15 to 30 (when the set water level is 10 to 1,000 mm and water is used as the detection fluid)
	Fluid temperature	°C	5 to 50
Ambient temperature		°C	5 to 50
Proof pressure	P.S. port	kPa	100
	P.I. port		20 (2000mm when the detection fluid is water)
Switching water level		mm	10 to 1000 (*2) User arbitrary setting 4 points
Power supply voltage			12 to 24 VDC ±10% Voltage ripple rate 5% or less
Current consumption		mA	40 or less (when using 24 VDC)
Switch output			NPN open collector 4-point (28 VDC 80mA or less)
Insulation resistance		MΩ	100 or more (500 VDC for 1 minute)
Withstand voltage			Commercial frequency 500 VAC, 1 minute
Repeatability		mm	±10 (10 minutes after power on) (*2)
Hysteresis		mm	4 or less (set water level 10 to 200 mmH_2O) 20 or less (set water level 200 to 1000 mmH_2O) (*2)
Response time		ms	600 or less (working pressure 20kPa, detection tube I.D. ø4 mm, length 5 m)
Temperature characteristics		mm/°C	±1.2
Detection tube bore size		ø mm	4
Detection tube length		m	Within 5
Consumption flow rate cm^3/min (ANR)			80 or less
Weight		kg	0.23

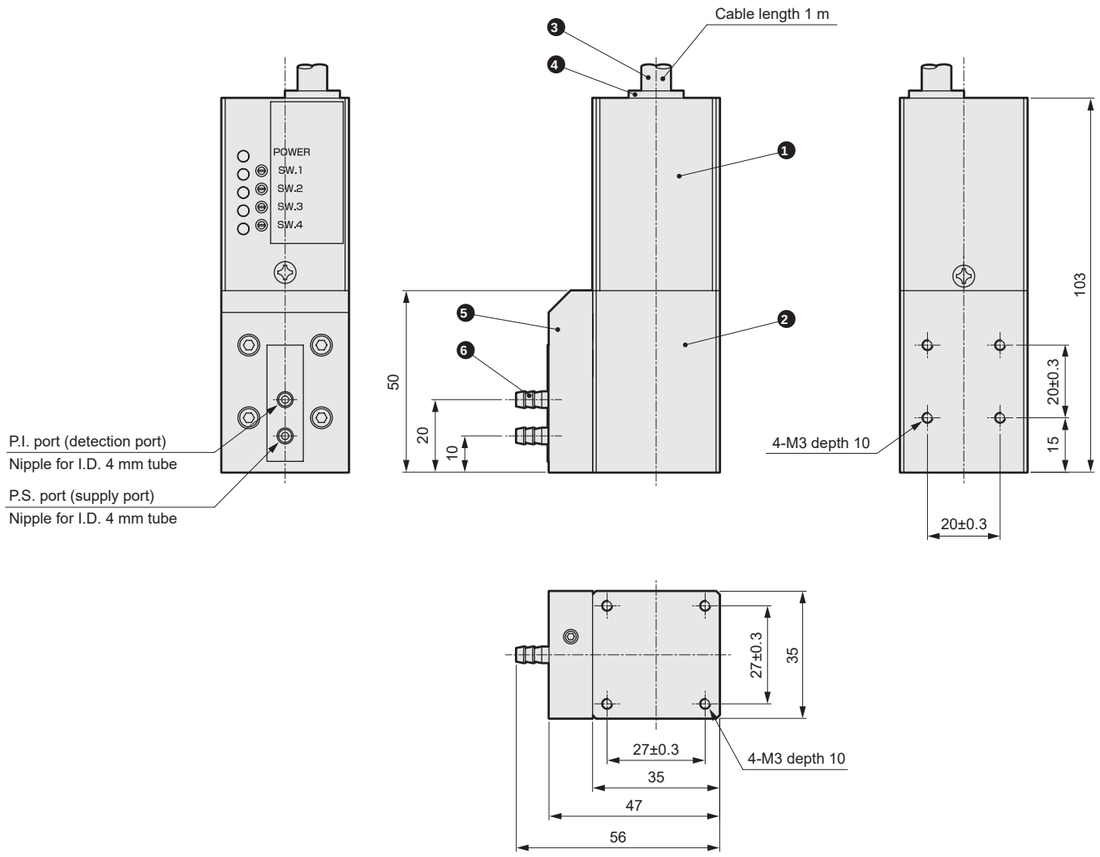
*1: Use fluid passed through a filter with a Degree of filtration of 0.3 μm or more.
*2: The above specifications are values obtained at working pressure 20kPa, power supply 24 VDC, and ambient temperature 20°C. The detection fluid is water.

Piping example



Dimensions and main part material

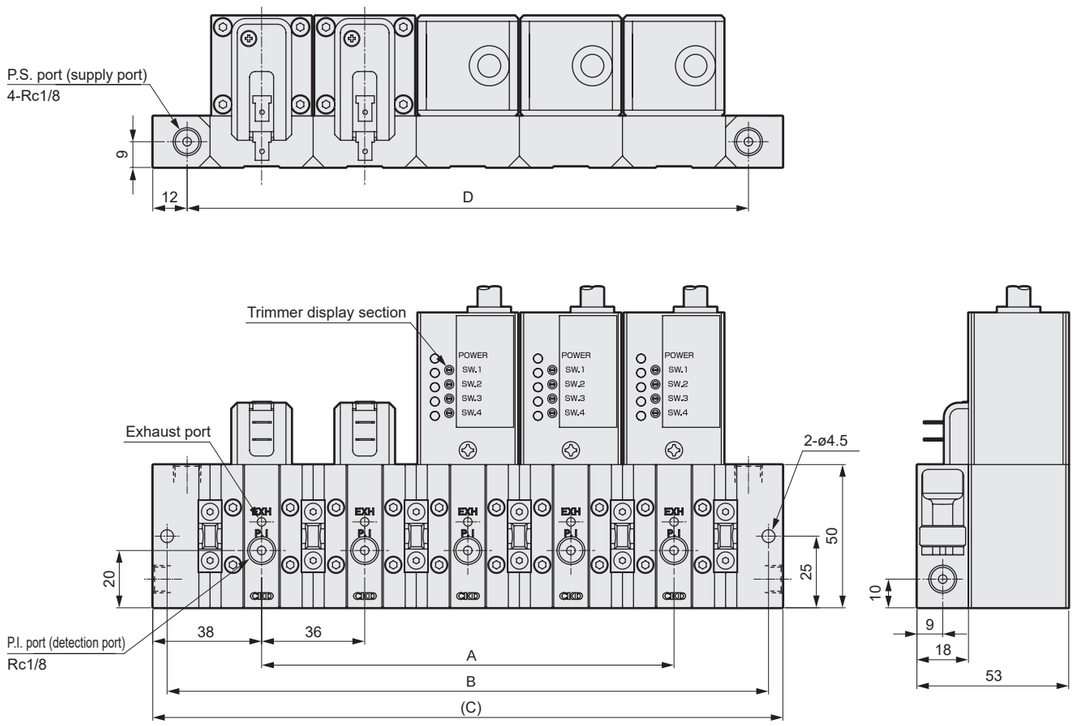
● KML60-4



Part No.	Part name	Material
1	Cover	PVC
2	Base	PVC
3	Sensor cable	PVC
4	Bush	Nylon 66
5	Manifold	For KML60: PVC For MXKML2: PPS
6	Nipple	SUS304

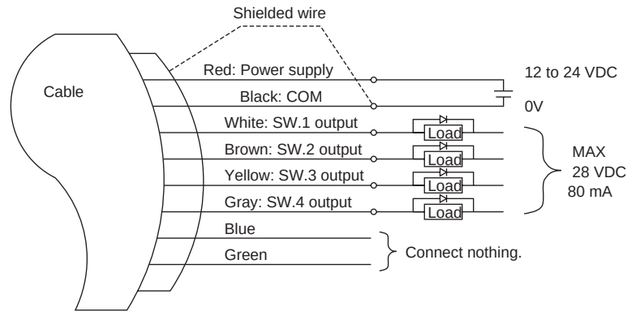
Dimensions

● MXKML2-A5-* * XXX (manifold)



Number of sub-plates	A	B	C	D
1	-	66	76	52
2	36	102	112	88
3	72	138	148	124
4	108	174	184	160
5	144	210	220	196

Wiring connection diagram



Digital fine level switch

KML703 Series

Resistant to environmental pressure fluctuation (differential pressure method)
Remote operation enabled and communication function (RS485) built in

RoHS

How to order

● Single unit

KML703 - G - 485 - 3

Model No. ❶ Detection — Communication: RS485 communication — ❷ Sensor cable length

❶ Detection

Code	Description
G	Gauge pressure method
D	Differential pressure method

❷ Sensor cable length

Code	Description
Blank	Sensor cable 5 m
-3	Sensor cable 3 m

● Option

KML703 - B

Model No. ❶ Option

❶ Option

Code	Description
B	Bracket for sensor body
P	Power supply cable (3 m)
O	Output cable (3 m)

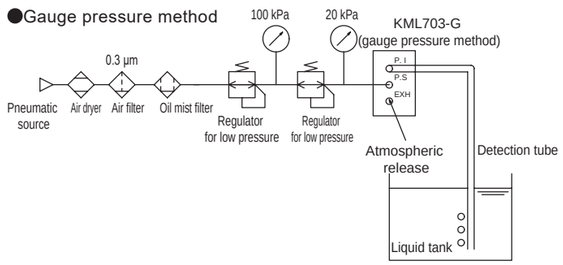
Specifications

Item		KML703-G-485	KML703-D-485
Detection		Gauge pressure method	Differential pressure method
Supply gas	Working fluid	Compressed air/nitrogen gas (*1)	
	Working pressure kPa	10 to 30	
	Fluid temperature °C	5 to 50	
Ambient temperature °C		5 to 50	
Proof pressure kPa	P.S. port	100	
	P.I. port	10 (1000mm when the detection fluid is water)	
Switching water level mm		1 to 700 (*2) User free setting 8 points	
Environmental pressure fluctuation kPa		-	Within ±3 (Confirm that detection tubes are in same pressure environment.)
Consumption flow rate Ncm³/min		70 or less	140 or less
Monitor output		4 to 20 mADC (load resistance: 200 to 550 Ω)	
Power supply voltage		24 VDC ±10%, voltage ripple rate 1% or less	
Current consumption mA		130 or less (when using 24 VDC)	
Switch output		NPN open collector 8-point (CH1 to CH6 contact a, CH7 to CH8 contact b) (30 VDC 50mA or less)	
Insulation resistance MΩ		100 or more (500 VDC for 1 minute)	
Withstand voltage		Commercial frequency 500 VAC, 1 minute	
Repeatability mm		±3 (10 minutes after power on) (*2)	
Hysteresis mm		1 to 10 setting (*2)	
Response time ms		600 or less (working pressure 20kPa, detection tube I.D. ø4 mm, length 5 m)	
Temperature characteristics mm/°C		Within ±1.2 (detection fluid: water)	
Detection tube bore size ø mm		4	
Detection tube length m		Within 5	
Weight kg		0.51	

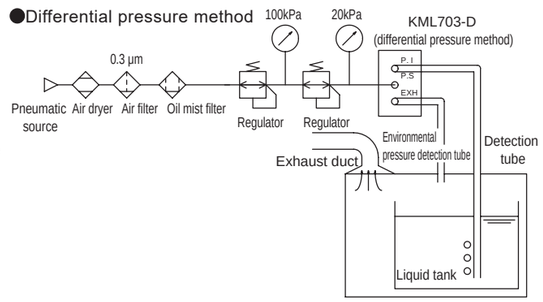
*1: Use a filter with a Degree of filtration of 0.3 µm or more.
*2: The above specifications are values obtained when the working pressure is 20kPa, the power supply 24 VDC is 20°C, the ambient temperature is, the ø of the inner diameter of the detection pipe is 4 × 5 m long, the specific gravity setting value 1, and the nozzle mounting height is 0. The detection fluid is water.

Piping example

●Gauge pressure method



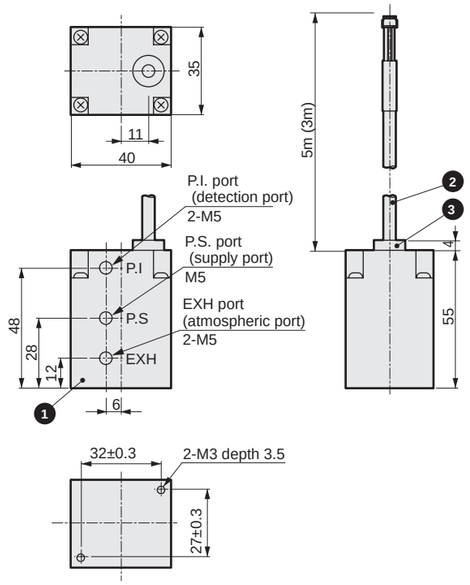
●Differential pressure method



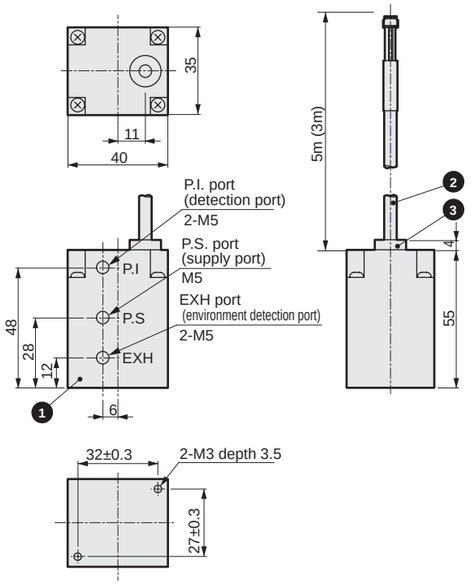
Dimensions and main part material

● Sensor body

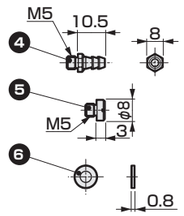
• KML703-G-485



• KML703-D-485



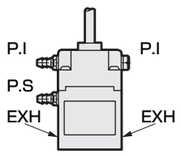
● Nipple, plug, gasket (accessory)

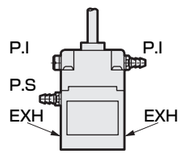


There are two PI and EXH ports on the front and back of this product. For unused ports, install the attached plugs to prevent leakage.

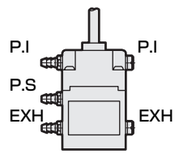
* With the gauge pressure method, leave the EXH port open and do not attach a plug.

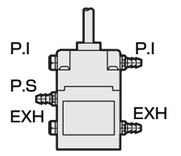
Gauge pressure method





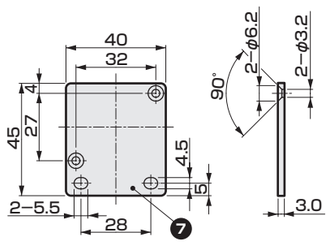
Differential pressure method





● Bracket for sensor body (option)

• KML703-B

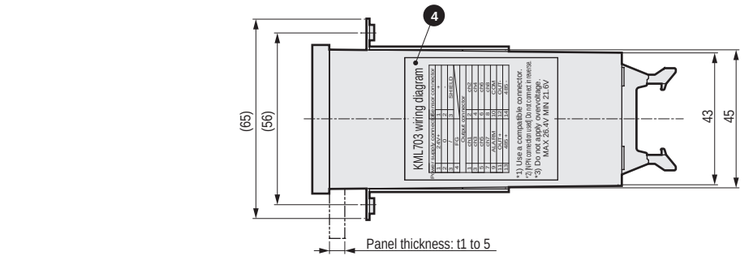


* For mounting bracket
Two flat head machine screws included

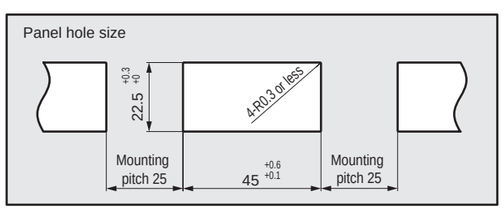
Part No.	Part name	Material
1	Body	PPS
2	Sensor cable	PVC
3	Bush	PA
4	Nipple	SUS304
5	Plug	SUS304
6	Gasket	PTFE
7	Bracket	SUS304

Dimensions and main part material

● Indicator

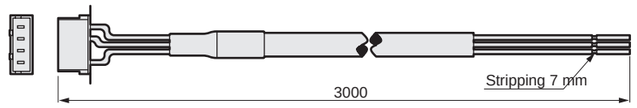


Part No.	Part name	Material figure No.
1	Front panel	
2	Case	PBT
3	Mounting bracket	SUS304
4	Wiring indication nameplate	
5	Serial nameplate	



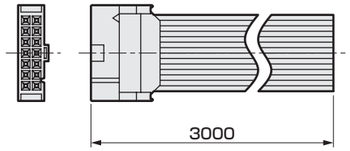
● Power cable (option)

• KML703-P



● Output cable (option)

• KML703-O



Wiring connection diagram