Panasonic
INDUSTRY

For Gas

Dual Display

Digital Pressure Sensor

DP-100 SERIES Ver.2

DP-100L SERIES IO-Link Compatible, Self-monitoring Type

Pressure Sensors That Are More Advanced Than Ever

IO-Link compatible, self-monitoring sensor lineup

2025.11

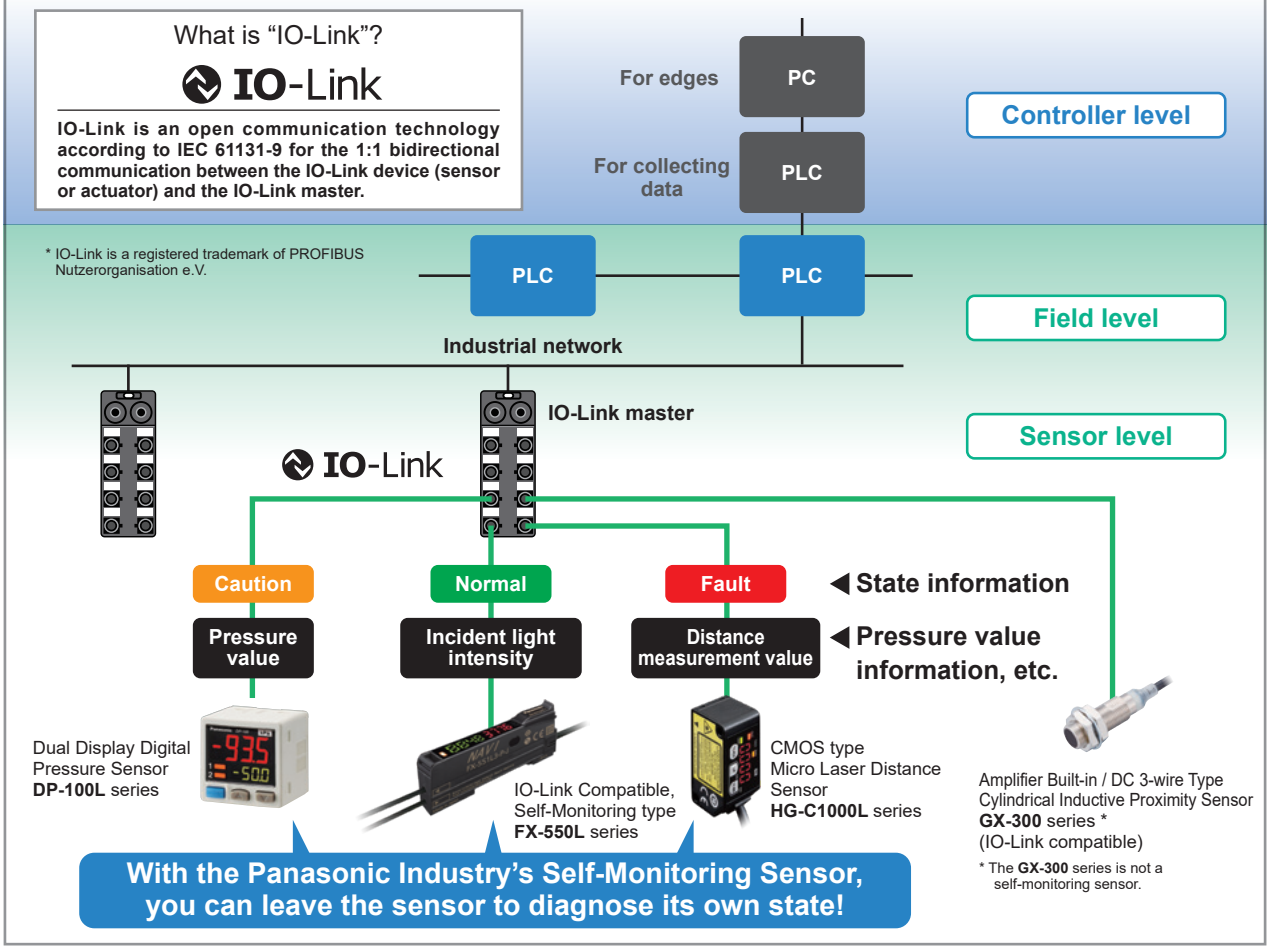
Reduction of the data analysis burden - one small step towards IoT.

IO-Link Compatible, Self-Monitoring Type Self-Monitoring Sensor
DP-100L Series Lineup

IO-Link compatible

Collecting sensor level data

Field data collected and accumulated for “preventive maintenance” and “operation monitoring”.
An analysis of such field data requires high-level know-how and time, causing a burden to people responsible for the production site management.
The **Self-Monitoring Sensor** manufactured by Panasonic Industry is capable of reporting sensor data and its own state to the host device through the I/O Link master.
With the Self-Monitoring Sensor, you can immediately judge the state of the sensor and easily identify the cause of failure.
Thus, this sensor contributes to the **reduction of the burden experienced by the client in collecting and analyzing data**.



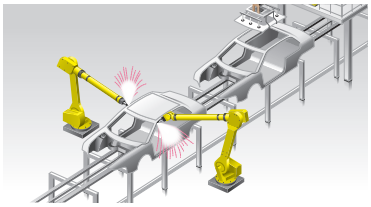
Examples of IoT in the industrial automation field

Before the introduction of Self-Monitoring Sensors

- We want to avoid production line stoppage that might occur due to unexpected sensor failure.
  Line stoppage hours × (manufacturing unit cost / hour) = Loss
- We want to minimize the production line down time to almost zero.

Issues unveiled by predictive maintenance

- **The amount of data to be collected is large and this may lower the PLC processing capacity.**
- **The burden of data analysis is large.**
- **Resetting the replaced sensors is troublesome.**



After the introduction of Self-Monitoring Sensors

- **The Self-Monitoring Sensor helps solve existing issues and enables easier improvement of equipment operating rates.**

Predictive maintenance creates efficient, worker-friendly environments.

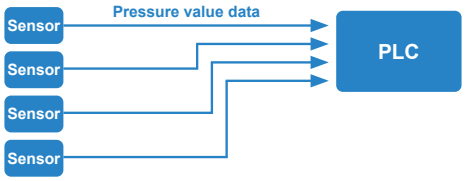
Leave the sensor diagnosis to the sensor itself.
- **All you need to do is to monitor the sensor state.**
- **PLC can be used exclusively for controlling devices.**
- **Possible to check detail information at a desired timing.**

Leave the resetting for replaced sensors to the higher-level master
- **Automatically written from the connected master.**
- **Possible not only to save time but also to prevent human errors.**

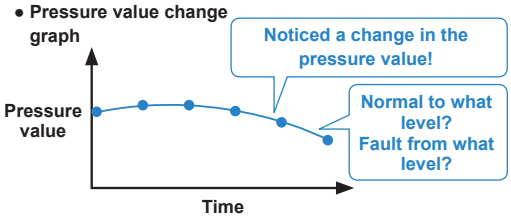
Self-monitoring function

With the Panasonic Industry's Self-Monitoring Sensor, you can get high-level solutions!

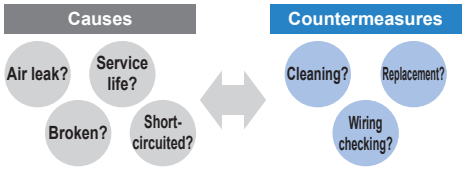
The introduction of IoT requires collection of the incident pressure value data and presents the following problems.



Previously only ON/OFF data was required. But, due to an addition of the pressure value data, the PLC processing burden has increased.



We noticed a change in the pressure value. However, because there is no judgment criteria, we cannot tell whether the status is normal or not.



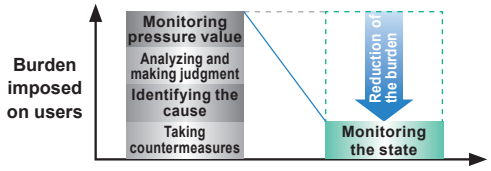
Unless we identify the cause of changes in the pressure value, we cannot optimize countermeasures targeting the sensors.

Problems are solved by the high-level self-diagnosis.

Status	Judgement of the state	
Normal	Operation is normal.	
Notification	Check the settings. Detected state is faulty.	* Recover to the normal state through checking installation and settings. Reduction in the pressure value
Caution	Getting close to the end of service life. Reached the state where the device should be replaced.	* Limitation in the writing frequency into the memory or in the operation hours, etc.
Fault	Short-circuited or broken. Reached the state where it is impossible to control as a device.	* Short-circuited output, damaged EEPROM, etc.

* By creating a program with a PLC, etc., the "State" of the self-monitoring sensor can be grasped.

Easy use of IoT



"Predictive maintenance" can be easily achieved through monitoring the state of the Self-Monitoring Sensor.

Achieved further efficiency with 4 upgrades, keeping the same operability
DP-100 series

UPGRADE 1

Superior visibility

Improved visibility in Digital Display

Improvements to the digital display deliver a wide viewing angle along with increased clarity. The display pressure range and set pressure range have also been increased.

Old DP-100 series | New DP-100 series

UPGRADE 2

Long-distance transmission of analog output

Addition of analog current output capability to multifunctional models

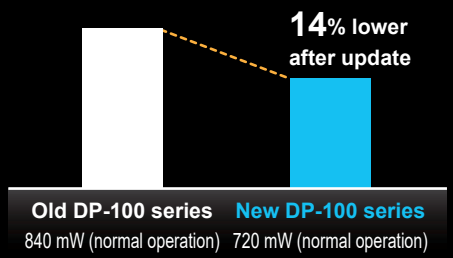
Users can now select either voltage output or current output as analog output according to their application.

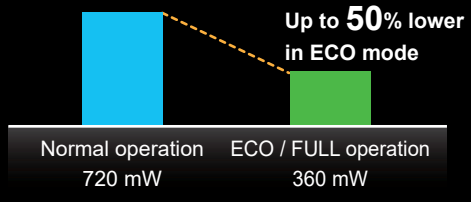
UPGRADE 3

Reduced environmental impact

14% lower power consumption (during normal operation)

Thanks to a redesign of its circuitry, power consumption of the low-power-consumption **DP-100** series during normal operation has been reduced by 14%. The display is shut off entirely during ECO / FULL mode operation for power savings of up to 50% compared to normal operation, and display brightness is lowered during ECO / STD mode operation for power savings of up to 30% compared to normal operation.





UPGRADE 4

Enhanced power circuitry

Addition of a reverse polarity protection circuit to the transistor output circuit

To prevent from breakage due to miswiring.

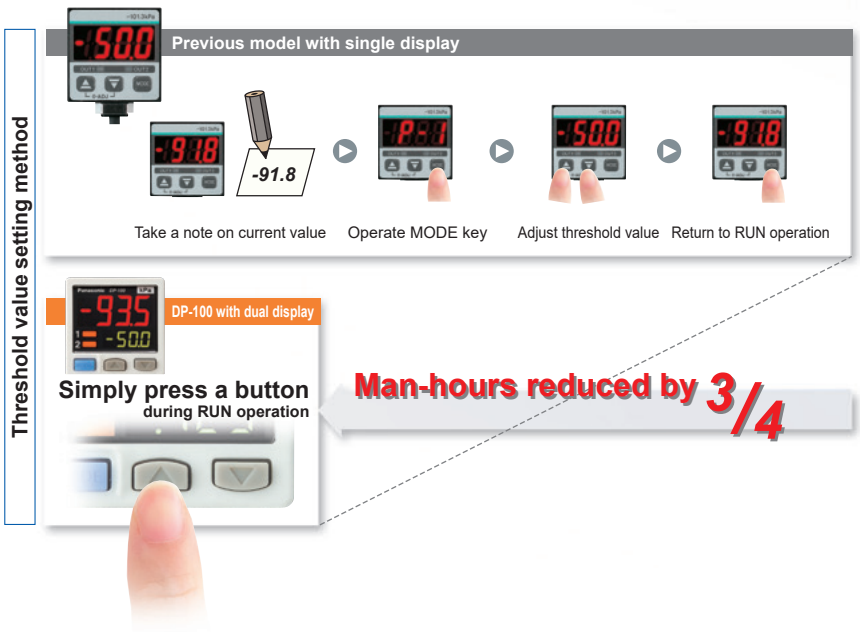
A new global standard

Dual Display + Direct setting

"Current value" and "threshold value" can be checked at the same time!

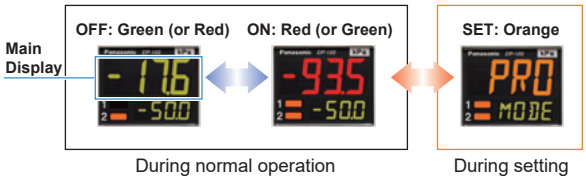
Dual display allows direct setting of threshold value

Equipped with a 30 mm 1.181 in square compact-sized dual display. The current value and the threshold value can be checked at the same time, so the threshold value can be set and checked smoothly without switcing to another screen mode. ON / OFF operations still continue while the threshold values are being set, so setting to the same sensitivity as dial control-type sensors is possible. Key lock function is equipped as well.



3-color display (Red, Green, Orange)

The main display changes color in line with changes in the status of output ON / OFF operation, and it also changes color while setting is in progress. The sensor status can therefore be understood easily, and operating errors can be reduced.



Readable digital display

Alphanumeric indication in 12 segments is used. This improved visual checking.

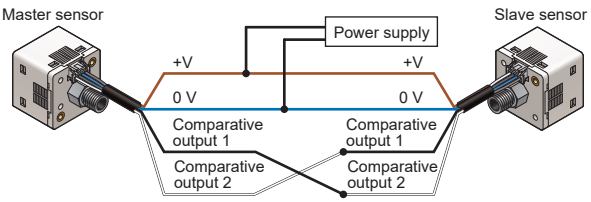
Copy function helps operation to be accurate and quick

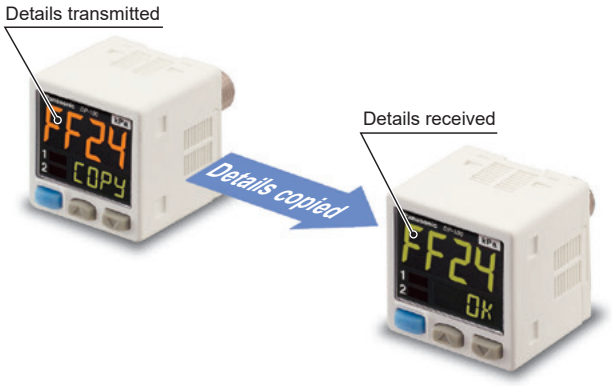
Copy function reduces man-hours and human error

Sensors can be connected to a master sensor one by one, and a copy of the setting details for the master sensor can be transmitted as data to other sensors. If making the same settings for multiple sensors, this prevents setting errors among other sensors and in addition, when machinery design are changed, there would be less change in work orders.

Setting details can be copied.

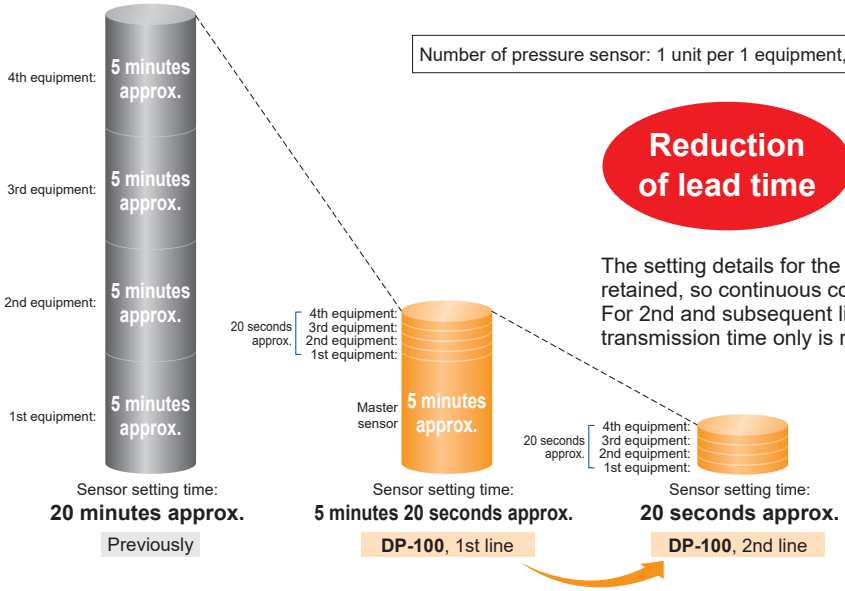
Copying via wiring





**Note: Settings cannot be copied from the new version (Ver. 2) to the old version.
However, settings can be copied from the old version to the new version (Ver. 2).**

Advantage 1 Setting man-hours are reduced and sensor setting time is shortened.



Number of pressure sensor: 1 unit per 1 equipment, 4 equipment per 1 line

Reduction of lead time

The setting details for the master sensor are retained, so continuous copying is possible. For 2nd and subsequent lines, the data transmission time only is required.

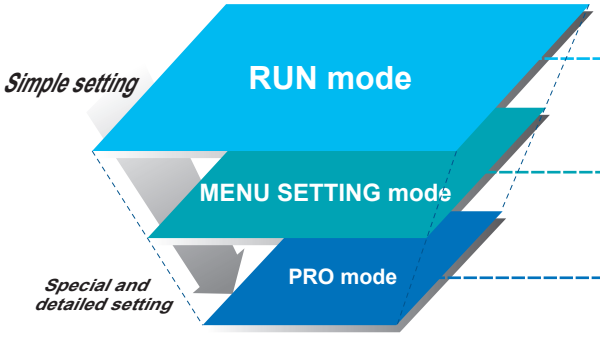
Advantage 2 Human operating error is reduced.

- Because all details are copied automatically, problems as a result of human error can be prevented.
- Instruction manuals can be updated easily when changes are made to equipment design.

Setting is smooth and easy

The sensor's setting operation mode has a 3-level configuration to suit the frequency of use.

The setting levels are clearly separated into "RUN mode" for operation settings that are carried out daily, "MENU SETTING mode" for basic settings, and "PRO mode" for special and detailed setting. These make setting operations easy to understand and easy to carry out.



RUN mode

Settings such as threshold value adjustment and key lock operation can be carried out while the sensor is operating.

MENU SETTING mode

Basic settings such as output mode setting and NO / NC switching can be carried out.

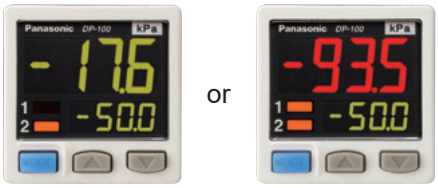
PRO mode

High-level function settings such as hysteresis adjustment and the copy function can be carried out.

Displayed in orange while setting is in progress

The display appears in red and green during RUN operation, but it changes to orange while setting is in progress, so that the sensor status can be viewed at a glance.

RUN operation RUN mode



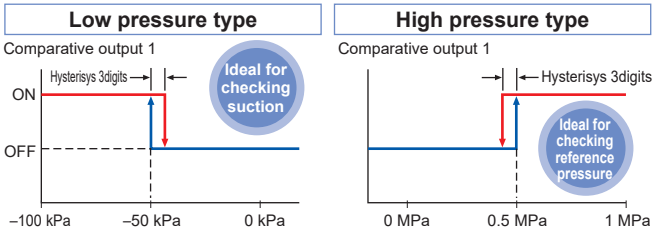
Red or green when output is ON / OFF

While setting MENU SETTING mode PRO mode

Orange while setting is in progress

Default settings that can be used straight away

Easy-to-use default settings are provided for applications that are used frequently by pressure sensors. The default settings for low pressure types are ideal for suction confirmation applications, and those for high pressure types are ideal for checking reference pressure.



Buttons with good clicking touch

The buttons have a good clicking touch, allowing smooth setting.

The clicking feeling is transmitted even through gloves.

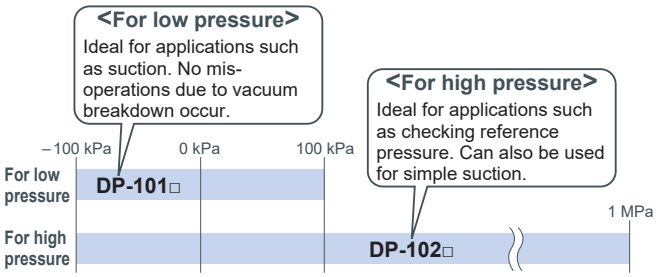
Reset function

If a problem ever occurs with the sensor settings, they can be reset to the default settings.

Full range of performance and functions in a compact body

All lineup models are compound pressure types

No sensor settings are required to switch between positive pressure and negative pressure, so that the number of registered part numbers can be decreased.



High performance accomplished Low pressure type

The low pressure type displays measurements in 0.1 kPa at a resolution of 1/2,000 and has a response time of 2.5 ms (variable up to 5,000 ms), ±0.5 % F.S. temperature characteristics and ±0.1 % F.S. repeatability, achieving high detection performance.

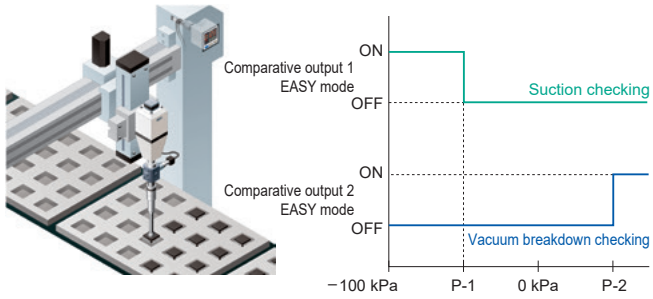
Resolution: 1/2,000
Response time: 2.5 ms
Temperature characteristics: ±0.5 % F.S.
Repeatability: ±0.1 % F.S.

Displays measurements in 0.1 kPa

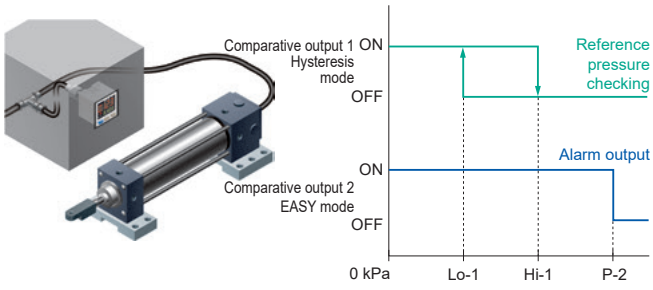
Equipped with independent dual output Standard type

Equipped with two independent comparative outputs, and separate sensing modes can be selected for each of them. Since there are two comparative outputs, one of the comparative outputs can even be used for alarm output. In addition, output, which is not being used, can be disabled.

- **Vacuum breakdown can also be notified during suction applications!**



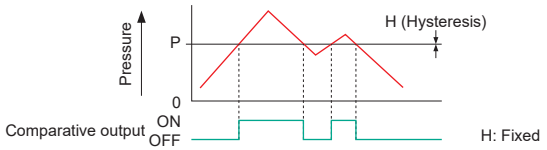
- **Reference pressure alarm output is possible during reference pressure checking!**



Three output modes are suitable for a wide range of applications

1 EASY mode

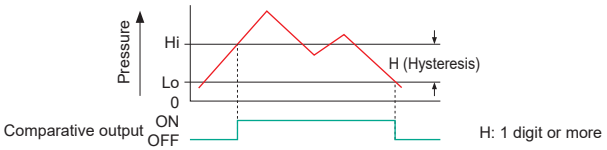
This mode is used for comparative output ON / OFF control.



Notes: 1) Hysteresis can be fixed to one of eight different levels.
2) "P-1" appears in the sub display for comparative output 1, and "P-2" appears for comparative output 2.

2 Hysteresis mode

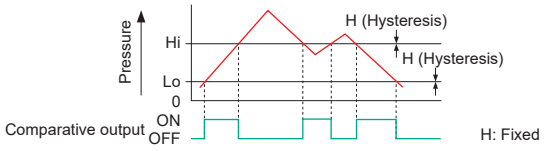
This mode is used for setting comparative output hysteresis to the desired level and for carrying out ON / OFF control.



Note: "Hi-1" or "Lo-1" appears in the sub display for comparative output 1, and "Hi-2" or "Lo-2" appears for comparative output 2.

3 Window comparator mode

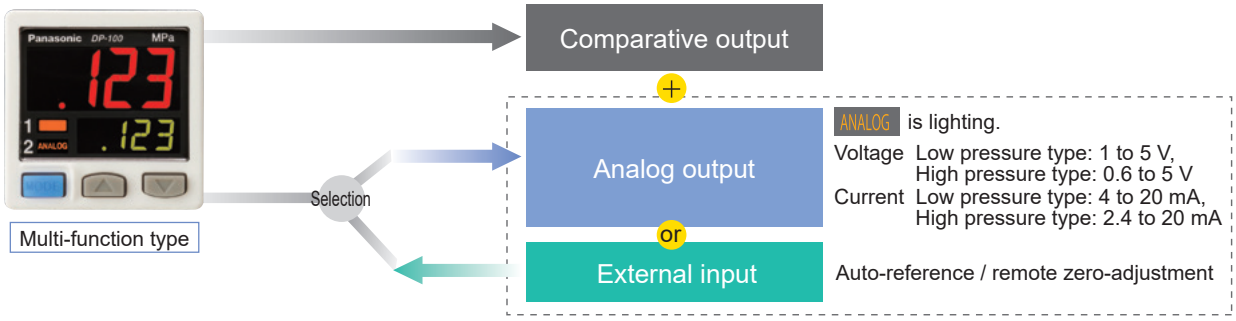
This mode is used for setting comparative output ON and OFF at pressures within the setting range.



Notes: 1) Hysteresis can be fixed to one of eight different levels.
2) "Hi-1" or "Lo-1" appears in the sub display for comparative output 1, and "Hi-2" or "Lo-2" appears for comparative output 2.

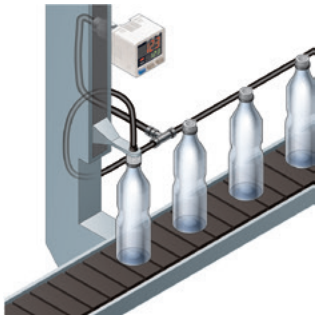
Possible to switch over analog output and external input Multi-function type

Multi-function type that enables the selection of analog output (voltage/current) or external input (auto-reference/remote zero-adjustment) is available. It complies a wide range of applications.



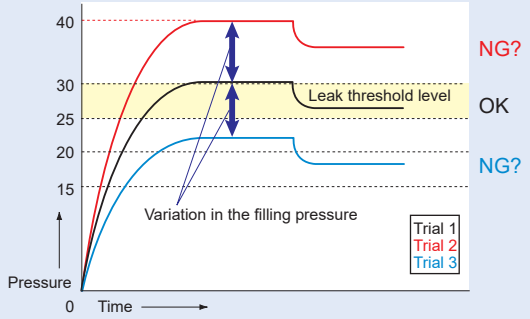
Equipped with auto-reference / remote zero-adjustment functions, More precise pressure management is achieved with a minimum of effort Multi-function type

If the reference pressure of the device changes, two functions are selectable. One is auto-reference function, which partially shift the comparative output judgment level by the amount that the reference pressure shifts. The other is remote zero-adjustment function, which can reset the display value to zero via external input. These functions are ideal for places where the reference pressure fluctuates wildly, or where fine settings are required.



Without auto-reference and remote zero-adjustment functions

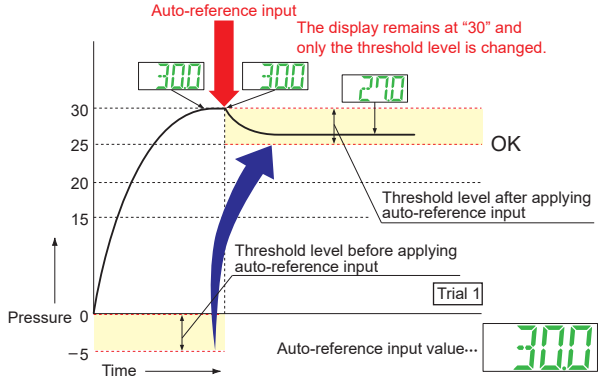
Comparative output: Window comparator mode
Hi-1⋯30, Lo-1⋯25
Fixed set value



Because the threshold level is fixed for conventional pressure sensors, changes in the reference pressure result in wrong decisions.

With auto-reference function applied

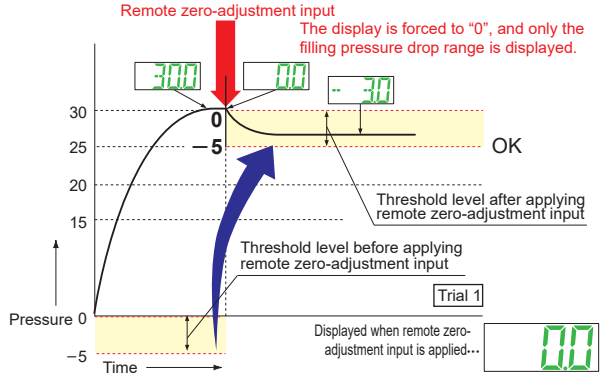
Comparative output: Window comparator mode
Hi-1⋯0, Lo-1⋯−5
Sets the absolute threshold level



When auto-reference input is applied, the reference pressure “30” is added to the threshold level. If the reference pressure changes to “20” or “40”, the auto-reference input compensates for this every time by changing the threshold level, so any variation in the filling pressure can be ignored.

With remote zero-adjustment function applied

Comparative output: Window comparator mode
Hi-1⋯0, Lo-1⋯−5
Sets the absolute threshold level



When remote zero-adjustment input is applied, the reference pressure is forced to “0”. If the reference pressure changes to “20” or “40”, the remote zero-adjustment input adjusts the reference pressure to “0” every time the reference pressure changes, so any variation in the filling pressure can be ignored.

Other useful functions

Sub display can be customized

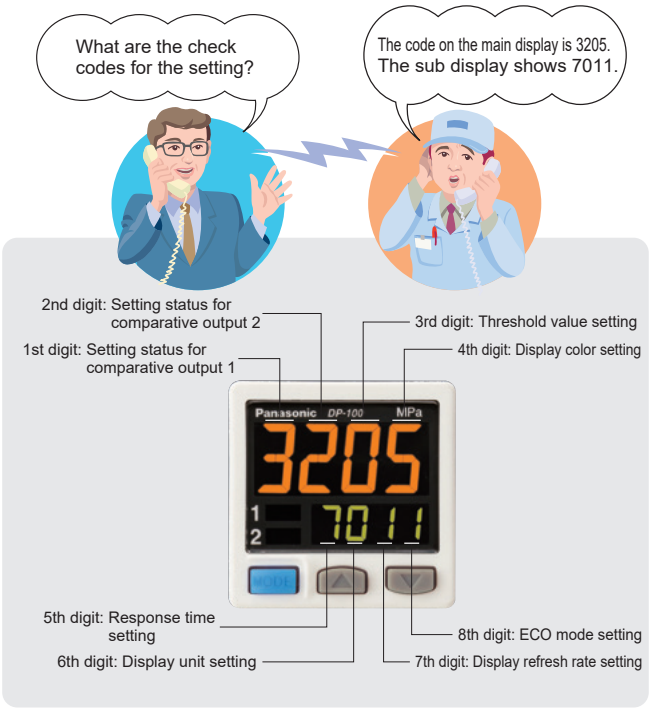
The sub display can be set to indicate any other desired values or letters apart from the threshold value. This eliminates the need for tasks such as affixing a label to the device to indicate the normal pressure value.

Indicates desired values and letters

<Unit display> <Number display> <Desired letter display>

Setting details can be recognized at a glance

The **DP-100** setting details appear in the digital display. Because the settings are in numeric form that can be easily understood, it is useful such as when receiving technical support by telephone.



Peak hold and Bottom hold functions

The peak values and bottom values for fluctuating pressures can be displayed using the dual display.

Energy-saving design! Equipped with an ECO mode

This mode lowers the display luminance to cut power consumption by approximately 30 %. The displays can also be turned off completely to achieve a power saving of approximately 50 %.

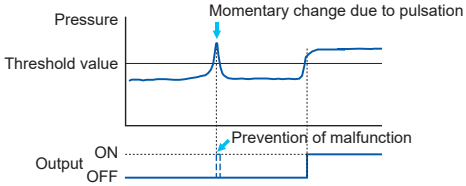
Current consumption for 24 V power supply: **30 mA or less**

Current consumption for 24 V power supply: **20 mA or less**

Current consumption for 24 V power supply: **15 mA or less**

Response time is selectable

The response time can be changed in a range of 2.5 ms to 5,000 ms in 10 steps. This prevents chattering and malfunction caused by a sudden pressure change or other factor.



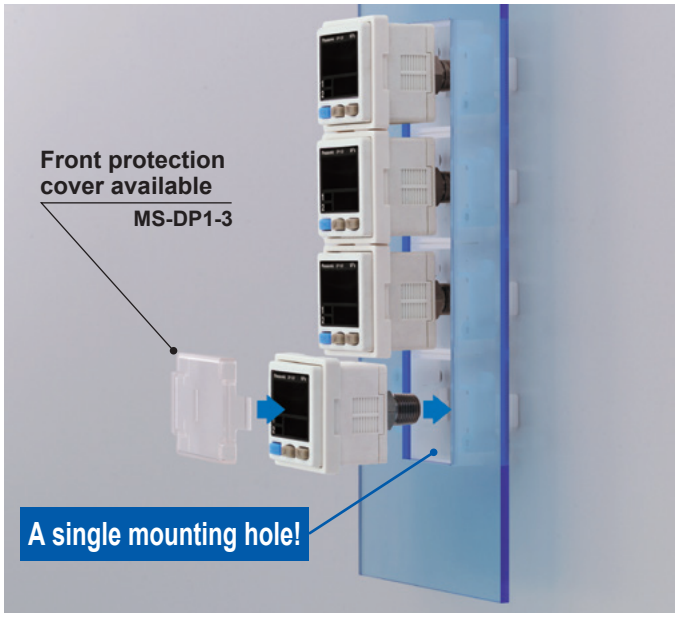
Display refresh rate can be changed

The digital display refresh rate can be set to 250 ms, 500 ms or 1,000 ms (3 steps). Setting a longer time reduces display flickering.

Installation is also easy!

Tight installation to panels is possible

An exclusive mounting bracket that is suitable for 1 to 6 mm 0.039 to 0.236 in panel thickness is available.



- **An exclusive mounting bracket that supports tight installation is available**

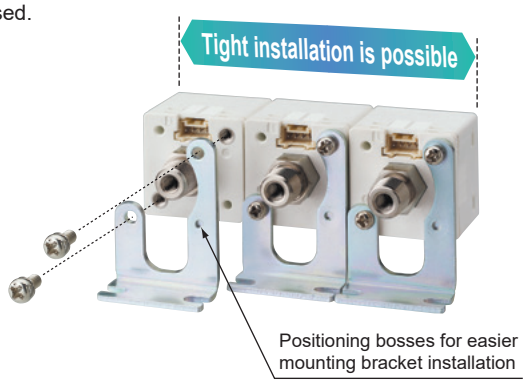
  Space savings can also be achieved even when an L-shaped mounting bracket is used.

- **MS-DP1-1**

Ceiling mounting　Floor mounting

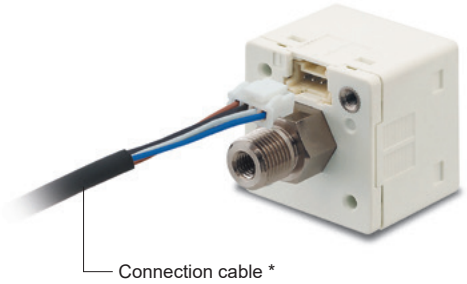
- **MS-DP1-5**

Rear mounting



Cable can be connected with one-touch

Connector attached cable (2m 6.562 ft), as an accessory, can be connected easily with one-touch connection.



* Options: 1 m 3.281 ft / 3 m 9.843 ft / 5 m 16.404 ft types are also available.

- **Types without connector attached cable are also available** DP-10□-J

Commercially-available connectors can be used for cable connections. Cables in required length can be used, so this contributes to reduction in waste of unwanted cables.

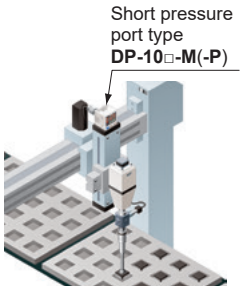
* Refer to p.16 for recommended commercially-available connectors.

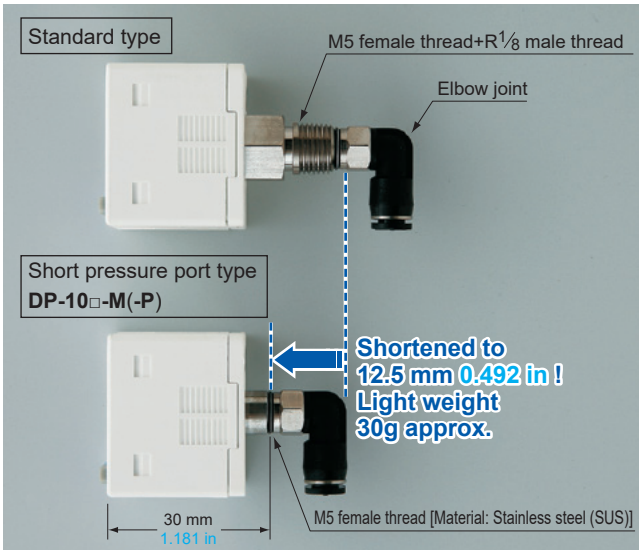
A lineup of products for various applications

Short pressure port type is lightweight and takes up little space

Compact size with a depth of only 30 mm 1.181 in, so that it can easily fit into narrow spaces.

Further, 10 g lighter than standard types. This reduces the loads on movable parts such as robot arms.

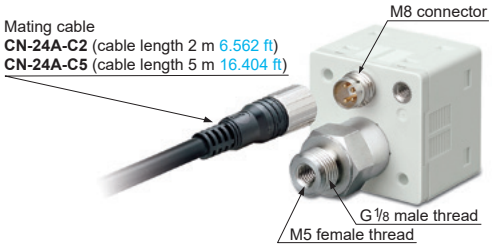




* The illustration shows connection using an elbow joint. The elbow joint is sold separately.

M8 plug-in connector types are also available (Only for Europe)

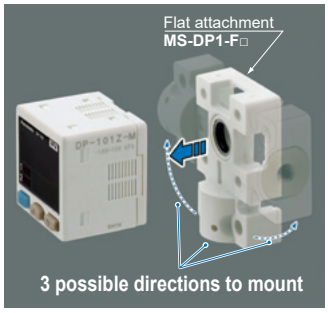
DP-11□-E-P-J



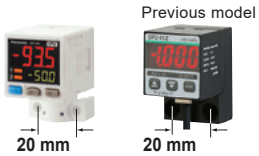
Flat installation on the wall by shifting the direction of the pressure port

For short pressure port type

By mounting the flat attachment to **DP-10□-M(-P)**, pressure port and cable can now be pulled out in downward, left or right directions. Flat mounting on surfaces such as the wall is made possible.



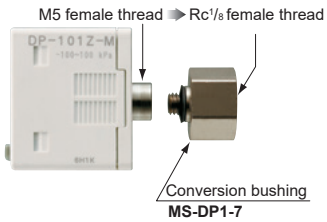
Previous model **DP2** / **DP3** series (discontinued) can be switched over to **DP-100** series.



Rc1/8 conversion bushing is available. Compatible with previous model

For short pressure port type

By equipping the push-in converter with **DP-10□-M(-P)**, pressure port can be converted from M5 female thread to Rc1/8 female thread. Bore diameter conversion to the **DP2** / **DP3** series (discontinued) is possible.



Comparison of DP-100 and DP-100L Series' Functions

○: Equipped, — : Not equipped

Function			**DP-100** Series		**DP-100L** Series	
			Standard Type	High-function Type	Main Body	During IO-Link Communication
RUN mode	Threshold value setting		○	○	○	○
	Zero adjustment function		○	○	○	○
	Key lock function		○	○	○	○
	Peak hold/bottom hold function		○	○	○	○
	Auto reference function		—	○	—	○
	Remote zero adjustment function		—	○	—	○
	Error display function		○	○	○	○
MENU SETTING mode	Comparative output 1 [control output (DO)] output mode setting	EASY mode	○	○	○	○
		Hysteresis mode	○	○	○	○
		Window comparator mode	○	○	○	○
	Comparative output 2 [communication output (C/Q)] output mode setting	EASY mode	○	—	○*1	○*1
		Hysteresis mode	○	—	○*1	○*1
		Window comparator mode	○	—	○*1	○*1
	Analog voltage/current output/external input switching	Analog voltage output	—	○	—	—
		Analog current output	—	○	—	—
		Auto reference input	—	○	—	—
		Remote zero adjustment input	—	○	—	—
	N.O./N.C. switching		○	○	○	○
	Response time setting		○	○	○	○
	Display color switching for main display		○	○	○	○
	Unit switching		○*2	○*2	—	—
PRO mode	Sub display switching		○	○	○	○
	Display refresh rate switching		○	○	○	○
	Hysteresis fix value switching		○	○	○	○
	Linked display color switching		○	—	○	○
	ECO mode setting		○	○	○	○
	Setting check code		○	○	○	○
	Setting copy mode		○	○	—	—
	Reset setting		○	○	○	○

*1: Communication output (C/Q) setting is linked with control output (DO).
*2: Unit cannot be switched in products (**DP-101Z**□, **DP-102Z**□) for Japan.

ORDER GUIDE

DP-100 series

Model No.

DP-10 [1] [Z] [A] - [M] - [P] - [J]

Rated pressure range
1: −100.0 to +100.0 kPa
2: −0.100 to +1.000 MPa

Unit
Z: Pa (for Japan)
None: Pa, kgf/cm², bar, psi, mmHg*, inchHg*
*: **DP-101**□ only

External input
None: Comparative output
A: Equipped with external input and analog output

Type
None: Standard type
M: Short pressure port type

Comparative output
None: NPN output
P: PNP output

Cable
None: With connector attached cable 2 m 6.562 ft
J : Without connector attached cable

Type				Appearance	Rated pressure range	Model No.	Pressure port	Comparative output
Standard pressure port type	Asia	Standard	For low pressure	 * **CN-14A-C2** (Connector attached cable 2 m 6.562 ft is attached. (Excluding M8 plug-in connector type)	−100.0 to +100.0 kPa	**DP-101**	M5 female thread + R 1/8 male thread	NPN open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102**		
		Multi-function	For low pressure		−100.0 to +100.0 kPa	**DP-101A**		
			For high pressure		−0.100 to +1.000 MPa	**DP-102A**		
	Europe	Standard	For low pressure		−100.0 to +100.0 kPa	**DP-101-E-P**	M5 female thread + G 1/8 male thread	PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102-E-P**		
		Multi-function	For low pressure		−100.0 to +100.0 kPa	**DP-101A-E-P**		
			For high pressure		−0.100 to +1.000 MPa	**DP-102A-E-P**		
	M8 plug-in connector type	Standard	For low pressure		−100.0 to +100.0 kPa	**DP-111-E-P-J**	M5 female thread + G 1/8 male thread	PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-112-E-P-J**		
		Multi-function	For low pressure		−100.0 to +100.0 kPa	**DP-111A-E-P-J**		
			For high pressure		−0.100 to +1.000 MPa	**DP-112A-E-P-J**		
	North America	Standard	For low pressure		−100.0 to +100.0 kPa	**DP-101-N**	M5 female thread + NPT 1/8 male thread	NPN open-collector transistor
						DP-101-N-P		PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102-N**		NPN open-collector transistor
						DP-102-N-P		PNP open-collector transistor
		Multi-function	For low pressure		−100.0 to +100.0 kPa	**DP-101A-N**		NPN open-collector transistor
						DP-101A-N-P		PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102A-N**		NPN open-collector transistor
						DP-102A-N-P		PNP open-collector transistor
Short pressure port type	Asia	Standard	For low pressure		−100.0 to +100.0 kPa	**DP-101-M**	M5 female thread	NPN open-collector transistor
						DP-101-M-P		PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102-M**		NPN open-collector transistor
						DP-102-M-P		PNP open-collector transistor
		Multi-function	For low pressure		−100.0 to +100.0 kPa	**DP-101A-M**		NPN open-collector transistor
						DP-101A-M-P		PNP open-collector transistor
			For high pressure		−0.100 to +1.000 MPa	**DP-102A-M**		NPN open-collector transistor
						DP-102A-M-P		PNP open-collector transistor

Type without connector attached cable

Type without connector attached cable **CN-14A-C2** is available. When ordering this type, suffix "**-J**" to the end of Model No.
(Excluding M8 plug-in connector type and short pressure port type)
(e.g.) Type without connector attached cable of **DP-101-N** is "**DP-101-N-J**"

Accessory

• **CN-14A-C2**
(Connector attached cable 2 m 6.562 ft)

ORDER GUIDE

IO-Link compatible, Self-monitoring type DP-100L series

Model No.

DP-10 [1] [Z] [L3] - [M] - [P] - [C]

Rated pressure range
1 : −100.0 to +100.0 kPa
2 : −0.100 to +1.000 MPa

Unit
Z : Pa

I/O function
L3 : IO-Link baud rate COM3 supported

Cable
None: Discrete wire type
(Cable length: 2 m 6.562 ft)
C : M12 connector type
(Cable length: 0.3 m 0.984 ft)

Control output
P : PNP output type

Pressure port
M : M5 female thread

Type		Appearance	Rated pressure range	Model No.	Pressure port	Control output
Discrete wire type	For low pressure	 *Attached CN-14A-C2 (Connector attached cable 2 m 6.562 ft)	−100.0 to +100.0 kPa	**DP-101ZL3-M-P**	M5 female thread	PNP open-collector transistor
	For high pressure		−0.100 to +1.000 MPa	**DP-102ZL3-M-P**		
M12 connector type	For low pressure	 * Attached M12 connector cable (0.3 m 0.984 ft)	−100.0 to +100.0 kPa	**DP-101ZL3-M-P-C**		
	For high pressure		−0.100 to +1.000 MPa	**DP-102ZL3-M-P-C**		

Accessory

• **CN-14A-C2** (Connector attached cable 2 m 6.562 ft)

* M12 connector cable (0.3 m 0.984 ft) is not sold separately.

OPTIONS

Designation	Model No.	Description	
Connector attached cable	**CN-14A-C1**	Length: 1 m 3.281 ft	Discrete wires 0.2 mm² 4-core cabtyre cable with connector on one end Cable outer diameter: ø3.7 mm ø0.146 in
	CN-14A-C2 (Note)	Length: 2 m 6.562 ft	
	CN-14A-C3	Length: 3 m 9.843 ft	
	CN-14A-C5	Length: 5 m 16.404 ft	
Connector attached cable (Bending-resistant cable)	**CN-14A-R-C1**	Length: 1 m 3.281 ft	Discrete wires 0.2 mm² 4-core bending-resistant cabtyre cable with connector on one end Cable outer diameter: ø3.7 mm ø0.146 in
	CN-14A-R-C2	Length: 2 m 6.562 ft	
	CN-14A-R-C3	Length: 3 m 9.843 ft	
	CN-14A-R-C5	Length: 5 m 16.404 ft	
M8 connector attached cable	**CN-24A-C2**	Length: 2 m 6.562 ft	For M8 plug-in connector type The connector on one end Cable outer diameter: ø4 mm ø0.157 in
	CN-24A-C5	Length: 5 m 16.404 ft	
Connector	**CN-14A**	Set of 10 housings and 40 contacts	
Sensor mounting bracket	**MS-DP1-1**	Allows sensors to be installed on the flooring or ceiling. Multiple sensors can also be mounted closely.	
	MS-DP1-5	Allows sensors to be installed on the wall. Multiple sensors can also be mounted closely.	
Panel mounting bracket	**MS-DP1-2**	Allows installation to panels with thickness of 1 to 6 mm 0.039 to 0.236 in. Multiple sensors can also be mounted closely.	
	MS-DP1-4	Allows replacement from **DP2** / **DP3** series (discontinued) to **DP-100** / **DP-100L** series. For newly designed set-up, please use panel mounting bracket **MS-DP1-2** for panel mounting.	
Front protection cover	**MS-DP1-3**	Protects the adjustment surfaces of sensors. (Can be attached when using the panel mounting bracket **MS-DP1-2**)	
	DPX-04	Protects the adjustment surfaces of sensors. (Can be attached when using the panel mounting bracket **MS-DP1-4**)	
Conversion bushing	**MS-DP1-7**	By equipping with the **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**, pressure port can be converted to Rc1/8 female thread. Replacement from **DP2** / **DP3** series (discontinued) is possible.	
Flat attachment	**MS-DP1-FM**	M5 female thread	For **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)** Pressure port and cable can now be pulled out in downward, left or right directions. Flat mounting on surfaces such as the wall is made possible.
	MS-DP1-FR	Rc1/8 female thread	
	MS-DP1-FN	NPT1/8 female thread	
	MS-DP1-FE	G1/8 female thread	

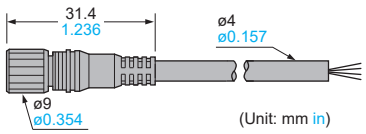
Note: The connector attached cable **CN-14A-C2** is supplied with the **DP-100** series (excluding **DP-10□-J** and M8 plug-in connector type) and **DP-10□ZL3-M-P**.

Connector attached cable

- **CN-14A-C□**
- **CN-14A-R-C□**

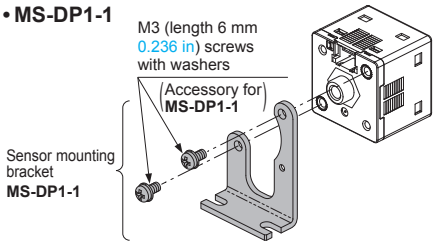
M8 connector attached cable

- **CN-24A-C□**

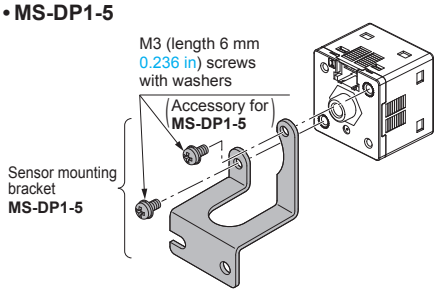


Sensor mounting bracket

- **MS-DP1-1**

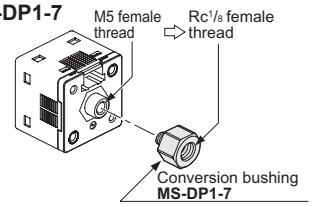


- **MS-DP1-5**



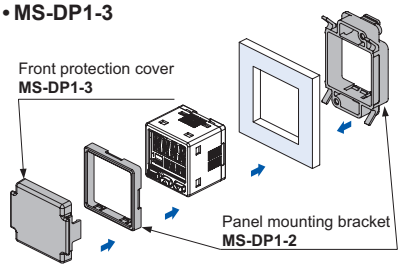
Conversion bushing

- **MS-DP1-7**

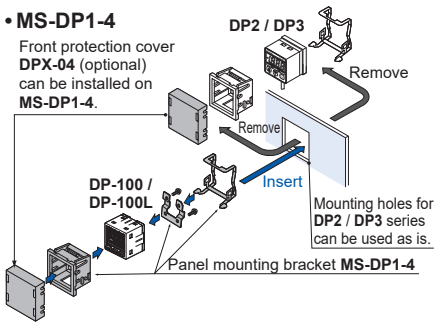


Panel mounting bracket, Front protection cover

- **MS-DP1-2**
- **MS-DP1-3**

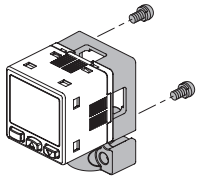


- **MS-DP1-4**

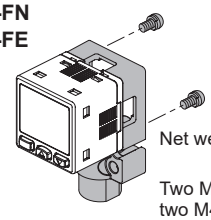


Flat attachment

- **MS-DP1-FM**



- **MS-DP1-FR**
- **MS-DP1-FN**
- **MS-DP1-FE**



Net weight: **MS-DP1-FM** 15g approx.
MS-DP1-FR/FN/FE 25g approx.

Two M3 (length 8 mm 0.315 in) screws, two M4 (length 20 mm 0.787 in) screws are attached.

Recommended connector*

Manufactured by J.S.T. Mfg. Co.,Ltd.
Contact: SPHD-001T-P0.5
Housing: PAP-04V-S

Recommended crimping tool*

Manufactured by TE Connectivity Japan G.K.
Model No.: 1473562-4
Manufactured by J.S.T. Mfg. Co.,Ltd.
Model No.: YC-610R

Recommended connector (e-CON)*

Manufactured by TE Connectivity Japan G.K.
Model No.: 1473562-4
Manufactured by 3M Japan Limited
Applicable connector: 37104-3122-000 FL

Recommended extension cables for M12 connector type*

Manufactured by OMRON Corporation
Extension cable with connectors on both ends XS5W series

* Contact the manufacturer for details of the recommended products.

SPECIFICATIONS

DP-100 seires

Item \ Type		Standard		Multi-function	
		For low pressure	For high pressure	For low pressure	For high pressure
Model No.	Asia (Note 2)	**DP-101(-M)(-P)**	**DP-102(-M)(-P)**	**DP-101A(-M)(-P)**	**DP-102A(-M)(-P)**
	Europe	**DP-101-E-P**	**DP-102-E-P**	**DP-101A-E-P**	**DP-102A-E-P**
	M8 plug-in connector type	**DP-111-E-P-J**	**DP-112-E-P-J**	**DP-111A-E-P-J**	**DP-112A-E-P-J**
	North America (Note 2)	**DP-101-N(-P)**	**DP-102-N(-P)**	**DP-101A-N(-P)**	**DP-102A-N(-P)**
Applicable regulations and certifications		CE Marking (EMC Directive, RoHS Directive), UKCA Marking (EMC Regulations, RoHS Regulations),UL/c-UL Recognition			
Type of pressure		Gauge pressure			
Rated pressure range		−100.0 to +100.0 kPa	−0.100 to +1.000 MPa	−100.0 to +100.0 kPa	−0.100 to +1.000 MPa
Set pressure range		−101.0 to +101.0 kPa −1.030 to +1.030 kgf/cm² −1.010 to +1.010 bar −14.64 to +14.64 psi −757 to +757 mmHg −29.8 to 29.8 inHg	−0.101 to +1.010 MPa −101 to +1,010 kPa −1.03 to +10.30 kgf/cm² −1.01 to +10.10 bar −14.6 to +146.4 psi	−101.0 to +101.0 kPa −1.030 to +1.030 kgf/cm² −1.010 to +1.010 bar −14.64 to +14.64 psi −757 to +757 mmHg −29.8 to 29.8 inHg	−0.101 to +1.010 MPa −101 to +1,010 kPa −1.03 to +10.30 kgf/cm² −1.01 to +10.10 bar −14.6 to +146.4 psi
Pressure withstandability		500 kPa	1.5 MPa	500 kPa	1.5 MPa
Applicable fluid		Non-corrosive gas			
Selectable unit		For low pressure: kPa, kgf/cm², bar, psi, mmHg, inHg, For high pressure: MPa, kPa, kgf/cm², bar, psi			
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less			
Power consumption		Normal operation: 720 mW or less (Current consumption 30 mA or less at 24 V supply voltage) ECO mode: 480 mW or less at STD (Current consumption 20 mA or less at 24 V supply voltage) 360 mW or less at FULL (Current consumption 15 mA or less at 24 V supply voltage)			
Comparative output [Comparative output 1, Comparative output 2 (Note 3)]		<Asia (NPN output), North America (NPN output)> NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current)		<Asia (PNP output), Europe, North America (PNP output)> PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and +V) • Residual voltage: 2 V or less (at 100 mA source current)	
	Output operation / Output modes	N.O./N.C. (selectable by key operation) / EASY mode / Hysteresis mode / Window comparator mode			
	Hysteresis	Minimum 1 digit (variable) (however, 2 digits when using psi unit)			
	Repeatability	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)
	Response time	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms, 5,000 ms, selectable by key operation			
	Short-circuit protection	Incorporated			
External input (Note 4) [Auto-reference function / Remote zero-adjustment function]		———		<Asia (NPN output), North America (NPN output)> ON voltage: 0.4 V DC or less OFF voltage: 5 to 30 V DC, or open Input impedance: 10 kΩ approx. Input time: 1 ms or more	<Asia (PNP output), Europe, North America (PNP output)> ON voltage: 5 V to +V DC OFF voltage: 0.6 V DC or less, or open Input impedance: 10 kΩ approx. Input time: 1 ms or more
Analog voltage output (Note 4)		———		Output voltage: 1 to 5 V DC Zero point: within 3 V ±5 % F.S. Span: within 4 V ±5 % F.S. Linearity: within ±1 % F.S. Output impedance: 1 kΩ approx.	Output voltage: 0.6 to 5 V Zero point: within 1 V ±5 % F.S. Span: within 4.4 V ±5 % F.S. Linearity: within ±1 % F.S. Output impedance: 1 kΩ approx.
Analog current output (Note 4)		———		Output current: 4 to 20 mA Zero point: 12 mA ±5 % F.S. Span: 16 mA ±5 % F.S. Linearity: within ±1 % F.S. Load resistance: 250 Ω (max.)	Output current: 2.4 to 20 mA Zero point: 4 mA ±5 % F.S. Span: 17.6 mA ±5 % F.S. Linearity: within ±1 % F.S. Load resistance: 250 Ω (max.)
Display		4 digits + 4 digits 3-color LCD display (Display refresh rate: 250 ms, 500 ms, 1,000 ms, selectable by key operation)			
	Displayable pressure range	−101.0 to +101.0 kPa −1.030 to +1.030 kgf/cm² −1.010 to +1.010 bar −14.64 to +14.64 psi −757 to +757 mmHg −29.8 to 29.8 inHg	−0.101 to +1.010 MPa −101 to +1,010 kPa −1.03 to +10.30 kgf/cm² −1.01 to +10.10 bar −14.6 to +146.4 psi	−101.0 to +101.0 kPa −1.030 to +1.030 kgf/cm² −1.010 to +1.010 bar −14.64 to +14.64 psi −757 to +757 mmHg −29.8 to 29.8 inHg	−0.101 to +1.010 MPa −101 to +1,010 kPa −1.03 to +10.30 kgf/cm² −1.01 to +10.10 bar −14.6 to +146.4 psi
Indicator		Orange LED Output 1 operation indicator: Lights up when comparative output 1 is ON Output 2 / analog voltage / current output operation indicator: Lights up when comparative output 2 is ON		Orange LED Output 1 operation indicator: Lights up when comparative output is ON Output 2 / analog voltage / current output operation indicator: Lights up when analog voltage / current output is set	
Environmental resistance	Protection	IP40 (IEC)			
	Ambient temperature	−10 to +50 °C +14 to +122 °F (No dew condensation or icing allowed), Storage: −10 to +60 °C +14 to +140 °F			
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH			
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance	50MΩ or more with 500 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance	10 to 500 Hz frequency, 3 mm 0.118 in double amplitude or maximum acceleration 196 m/s², in X, Y and Z directions for two hours each (when panel is mounted: 10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude or maximum acceleration 49 m/s², in X, Y and Z directions for two hours each)			
	Shock resistance	100 m/s² acceleration (10 G approx.) in X, Y and Z directions three times each			
Temperature characteristics		Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)	Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)
Pressure port		Asia: M5 female thread + R (PT) 1/8 male thread [excluding **DP-□-M(-P)**], Europe: M5 female thread + G 1/8 male thread, North America: M5 female thread + NPT 1/8 male thread			
Material		Enclosure: PBT (glass fiber reinforced), LCD display: Acrylic, Pressure port: Stainless steel (SUS303) , Mounting threaded part: Brass (nickel plated), Switch part: Silicone rubber			
Connecting method / Cable length		Connector / Total length up to 100 m 328.084 ft (CE / UKCA compliance: less than 30 m 98.425 ft) is possible with 0.3 mm², or more, cable.			
Weight		Net weight: 40 g approx. (**DP-10□-M(-P)**: 30 g approx.), Gross weight: 130 g approx. (**DP-10□-M(-P)**:120 g approx.)			
Accessories		**CN-14A-C2** (Connector attached cable 2 m 6.562 ft): 1pc. (excluding M8 plug-in connector type)			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) Model Nos. of Asia type having "**-M**" are short pressure port type. Model Nos. of Asia and North America types having the suffix "**-P**" are PNP output type.
3) Only standard type is equipped with comparative output 2.
4) Cannot be used at the same time.

SPECIFICATIONS

IO-Link compatible, Self-monitoring type DP-100L series

Item \ Type		Discrete wire type		M12 connector type	
		For low pressure	For high pressure	For low pressure	For high pressure
Model No.		**DP-101ZL3-M-P**	**DP-102ZL3-M-P**	**DP-101ZL3-M-P-C**	**DP-102ZL3-M-P-C**
Applicable regulations and certifications		CE Marking (EMC Directive, RoHS Directive), UKCA Marking (EMC Regulations, RoHS Regulations), UL/c-UL Recognition			
Type of pressure		Gauge pressure			
Rated pressure range		−100.0 to +100.0 kPa	−0.100 to +1.000 MPa	−100.0 to +100.0 kPa	−0.100 to +1.000 MPa
Set pressure range		−101.0 to +101.0 kPa	−0.101 to +1.010 MPa	−101.0 to +101.0 kPa	−0.101 to +1.010 MPa
Pressure withstandability		500 kPa	1.5 MPa	500 kPa	1.5 MPa
Applicable fluid		Non-corrosive gas			
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less			
Power consumption (Note 2)		Normal operation: 720 mW or less (Current consumption 30 mA or less at 24 V supply voltage) ECO mode: 480 mW or less at STD (Current consumption 20 mA or less at 24 V supply voltage) 360 mW or less at FULL (Current consumption 15 mA or less at 24 V supply voltage)			
Communication output (C/Q) (Note 3)	IO-Link communication	IO-Link Specification V1.1			
	Baud rate	COM3 (230.4 kbps)			
	Process data	4 byte			
	Minimum cycle time	1.0 ms			
Control output (DO)		PNP open-collector transistor • Maximum source current: 50 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 50 mA source current)			
	Output operation	N.O./N.C. (selectable by key operation)			
	Output modes	EASY mode / Hysteresis mode / Window comparator mode			
	Hysteresis	Minimum 1 digit (variable)			
	Repeatability	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)
	Response time	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms, 5,000 ms, selectable by key operation			
	Short-circuit protection	Incorporated			
Display		4 digits + 4 digits 3-color LCD display (Display refresh rate: 250 ms, 500 ms, 1,000 ms, selectable by key operation)			
	Displayable pressure range	−101.0 to +101.0 kPa	−0.101 to +1.010 MPa	−101.0 to +101.0 kPa	−0.101 to +1.010 MPa
Output indicator		Orange LED (Output operation indicator 1: Flashes during IO-Link communication, Lights up when the control output is ON during non-IO-Link communication (synchronized with the output operation indicator 2) Output operation indicator 2: Lights up when the control output is ON)			
Environmental resistance	Protection	IP40 (IEC)			
	Ambient temperature	−10 to +50 °C +14 to +122 °F (No dew condensation or icing allowed), Storage: −10 to +60 °C +14 to +140 °F			
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH			
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance	50 MΩ or more with 500 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance	10 to 500 Hz frequency, 3 mm 0.118 in double amplitude or maximum acceleration 196 m/s^2, in X, Y and Z directions for two hours each (when panel or flat attachment is mounted: 10 to 150 Hz frequency, 0.75 mm 0.030 in double amplitude or maximum acceleration 49 m/s^2, in X, Y and Z directions for two hours each)			
	Shock resistance	100 m/s^2 acceleration (10 G approx.) in X, Y and Z directions three times each			
Temperature characteristics		Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)	Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)
Pressure port		M5 female thread			
Material		Enclosure: PBT (glass fiber reinforced), LCD display: Acrylic, Pressure port: Stainless steel (SUS303) , Mounting threaded part: Brass (nickel plated), Switch part: Silicone rubber			
Connecting method		Connector			
Cable length		Total length up to 20 m 65.617 ft is possible with 0.3 mm^2, or more, cable.			
Weight		Net weight: 30 g approx., Gross weight: 125 g approx.		Net weight: 30 g approx., Gross weight: 95 g approx.	
Accessories		**CN-14A-C2** (Connector attached cable 2 m 6.562 ft): 1 pc.		Dedicated M12 connector cable, 0.3 m 0.984 ft long: 1 pc.	

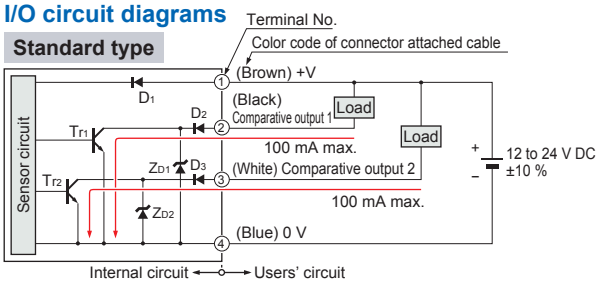
Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) The power consumption does not include the output load current.
3) When the sensor is used as an ordinary sensor, the communication output (C/Q) provides the same output operation as the control output (DO).

I/O CIRCUIT AND WIRING DIAGRAMS

DP-10□ — NPN output type

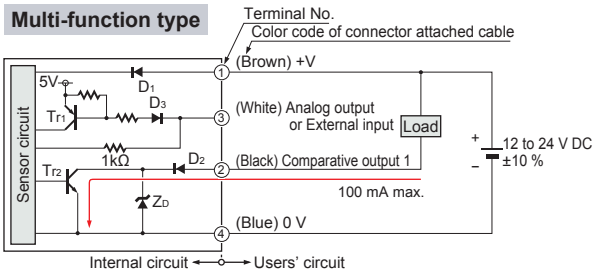
I/O circuit diagrams

Standard type



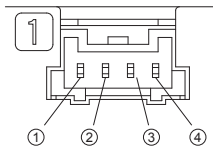
Symbols··· D_1 to D_3 : Reverse supply polarity protection diode
Z_{D1}, Z_{D2} : Surge absorption zener diode
Tr_1, Tr_2 : NPN output transistor

Multi-function type



Symbols··· D_1 to D_3 : Reverse supply polarity protection diode
Z_D : Surge absorption zener diode
Tr_1 : PNP input transistor
Tr_2 : NPN output transistor

Terminal arrangement diagram

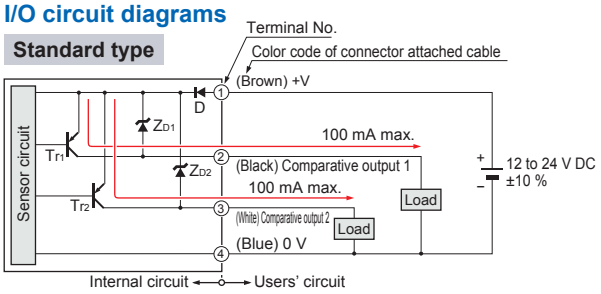


Terminal	Designation
①	+V
②	Comparative output 1
③	Standard type: Comparative output 2 Multi-function type: Analog output or External input
④	0 V

DP-10□-P — PNP output type

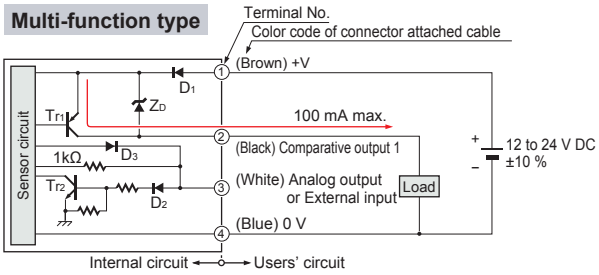
I/O circuit diagrams

Standard type



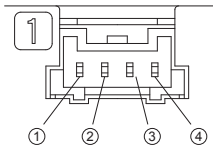
Symbols··· D : Reverse supply polarity protection diode
Z_{D1}, Z_{D2} : Surge absorption zener diode
Tr_1, Tr_2 : PNP output transistor

Multi-function type



Symbols··· D_1 to D_3 : Reverse supply polarity protection diode
Z_D : Surge absorption zener diode
Tr_1 : PNP output transistor
Tr_2 : NPN input transistor

Terminal arrangement diagram

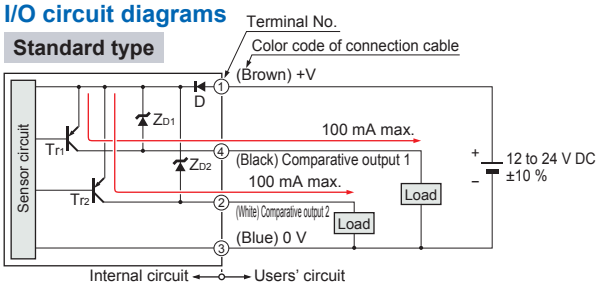


Terminal	Designation
①	+V
②	Comparative output 1
③	Standard type: Comparative output 2 Multi-function type: Analog output or External input
④	0 V

DP-11□-E-P-J — PNP output type

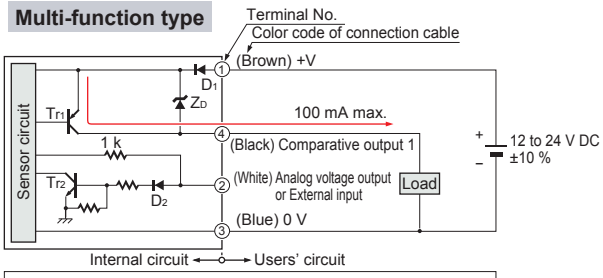
I/O circuit diagrams

Standard type



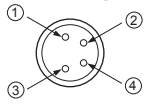
Symbols··· D : Reverse supply polarity protection diode
Z_{D1}, Z_{D2} : Surge absorption zener diode
Tr_1, Tr_2 : PNP output transistor

Multi-function type



Symbols··· D_1, D_2 : Reverse supply polarity protection diode
Z_D : Surge absorption zener diode
Tr_1 : PNP output transistor
Tr_2 : NPN input transistor

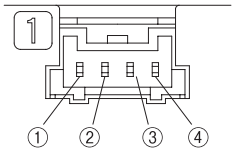
Terminal arrangement diagram



Terminal	Designation
①	+V
②	Standard type: Comparative output 2 Multi-function type: Analog output or External input
③	0 V
④	Comparative output 1

WIRING DIAGRAMS

DP-100L series · Terminal arrangement diagram of the connector on the sensor side



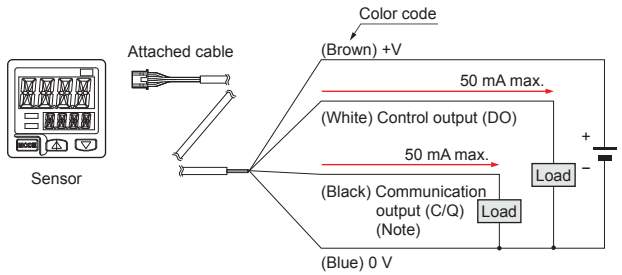
Terminal No.	Designation
①	+V
②	Communication output (C/Q) (Note)
③	Control output (DO)
④	0 V

Note: When the sensor is used as an ordinary sensor, the communication output (C/Q) provides the same output operation as the control output (DO).

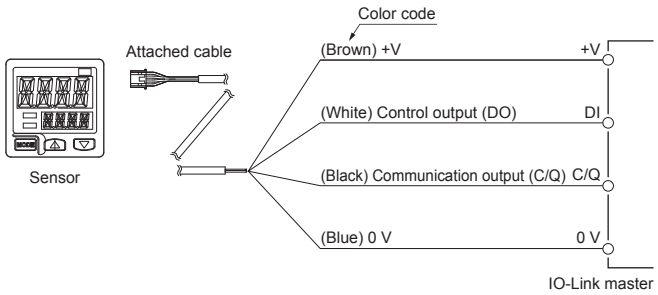
DP-100L series · Wiring diagrams

DP-10□ZL3-M-P — Discrete wire type

<When using as an ordinary sensor>



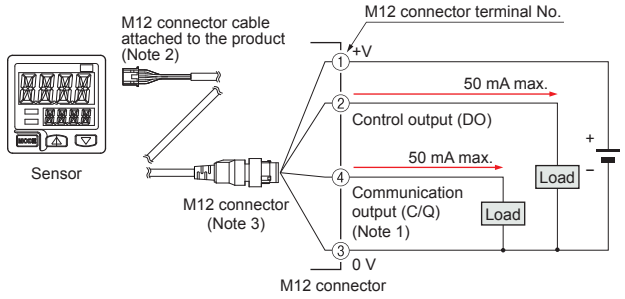
<When connecting to the IO-Link master>



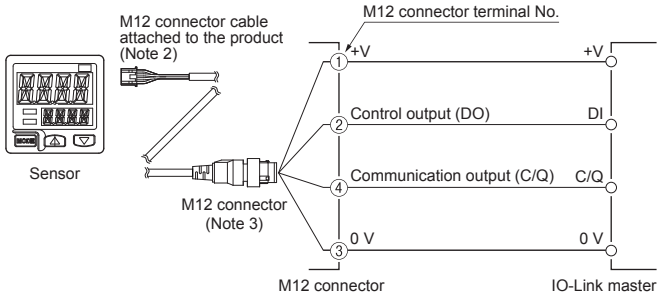
Note: When the sensor is used as an ordinary sensor, the communication output (C/Q) provides the same output operation as the control output (DO).

DP-10□ZL3-M-P-C — M12 connector type

<When using as an ordinary sensor>

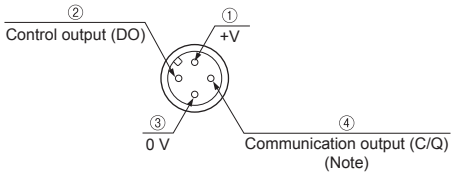


<When connecting to the IO-Link master>



Notes: 1) When the sensor is used as an ordinary sensor, the communication output (C/Q) provides the same output operation as the control output (DO).
2) Be sure to use the dedicated M12 connector cable attached to the product. Note that the pin arrangement is different from that for commercially available M12 connector cables.
3) When wiring with the discrete wire or extending the cable from the dedicated M12 connector attached to the product, separately prepare commercially available M12 connector cable.

DP-100L series · M12 connector terminal arrangement diagram



Terminal No.	Designation
①	+V
②	Control output (DO)
③	0 V
④	Communication output (C/Q) (Note)

Note: When the sensor is used as an ordinary sensor, the communication output (C/Q) provides the same output operation as the control output (DO).

PRECAUTIONS FOR PROPER USE

Refer to the instruction manual for details.
The instruction manual data can be downloaded from our website.

- This catalog is a guide to select a suitable product. Be sure to read instruction manual of the product prior to its use.

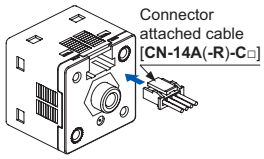
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- This product is used for noncorrosive gas. The product shall not be used for liquid or corrosive gas. Never use fluids having inflammability, toxicity, etc., that affect the human body, either.

Wiring

- Make sure that the power supply is off while wiring.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this sensor, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Incorrect wiring will cause problems with operation.

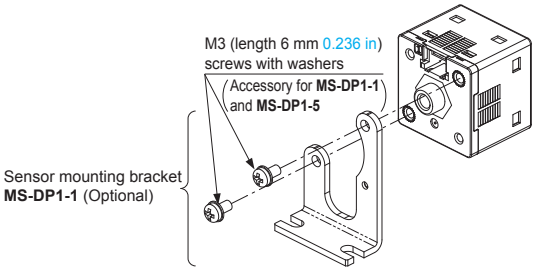
Connection

- Do not apply stress directly to the connection cable leader or to the connector.

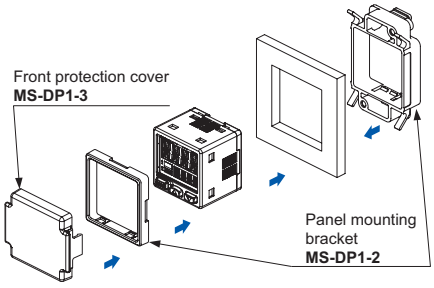


Mounting

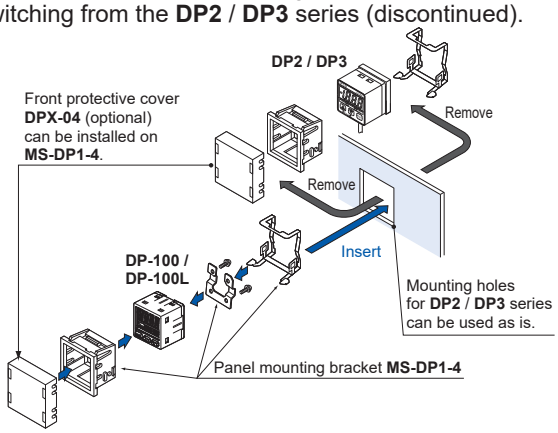
- **MS-DP1-1** / **MS-DP1-5** sensor mounting brackets are available separately, and it should be used for mounting. When tightening the sensor to the sensor mounting bracket, use a tightening torque of 0.5 N·m or less.



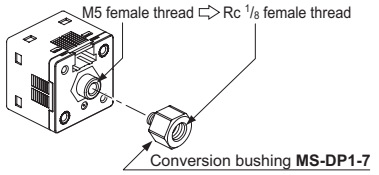
- The **MS-DP1-2** panel mounting bracket (optional) and the **MS-DP1-3** front protection cover (optional) are also available.



- The **MS-DP1-4** panel mounting bracket is available when switching from the **DP2** / **DP3** series (discontinued).

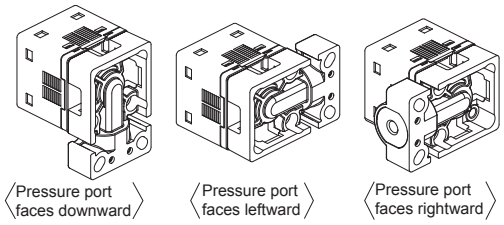


- The **MS-DP1-7** conversion bushing is available for **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**. It can be used to switch between this model and the **DP2** / **DP3** series (discontinued). When connecting to the pressure port, use a tightening torque of 1.0 N·m or less.



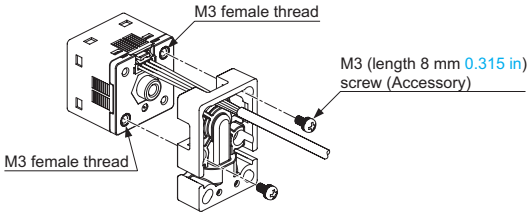
- The **MS-DP1-F□** flat attachment is available for **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**. If using the **MS-DP1-F□** flat attachment (optional), install by following the procedures given below.

(1) Decide the direction of this product to mount with the sensor.

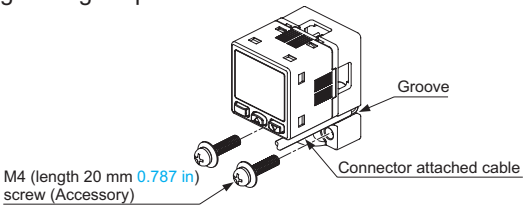


Note: It is not possible to mount this product such that the pressure port faces upward.

(2) Mount this product with the M3 female threads of the sensor by using the attached M3 (length 8 mm 0.315 in) screws. The tightening torque should be 0.5 N·m or less.



(3) Mount this product with the mounting surface by using the attached M4 (length 20 mm 0.787 in) screws. The tightening torque should be 1.2 N·m or less.



Note: Take care that if the cable with connector is sticking out of the side groove of this product when mounting, the cable may disconnected.

PRECAUTIONS FOR PROPER USE

Refer to the instruction manual for details.
The instruction manual data can be downloaded from our website.

Conditions in use for CE and UKCA conformity (DP-100 series)

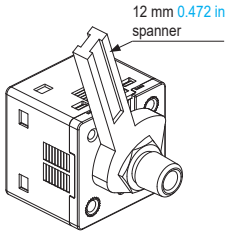
- The **DP-100** series is a CE and UKCA conformity product complying with EMC Directive. The harmonized standard with regard to immunity that applies to this product is EN 61000-6-2 and the following condition must be met to conform to that standard.

Condition

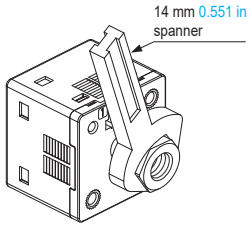
- The line to connect with this sensor should be less than 30 m 98.425 ft.

Piping

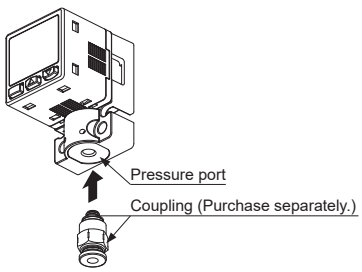
- If connecting a commercially-available coupling to the pressure port, attach a 12 mm 0.472 in spanner (14 mm 0.551 in spanner for **DP-100-E** type) to the hexagonal section of the pressure port to secure it, and tighten at a torque of 9.8 N·m or less. If it is tightened using excessive torque, it may damage the coupling or the pressure port.
  In addition, wrap sealing tape around the coupling when connecting it to prevent leaks.



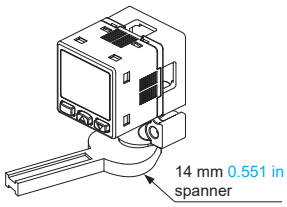
- If connecting a commercially-available joint to the pressure port of the **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**, hold the main unit in your hand to steady it, and tighten to a torque of 1.0 N·m or less. If it is tightened to an excessive torque, the joint or the main unit may become damaged.
- If connecting a commercially-available joint to the pressure port of the **MS-DP1-7**, tighten to a torque of 9.8 N·m or less.



- The tightening torque should be 1 N·m or less when connecting a coupling to the pressure port of **MS-DP1-FM**.



- When connecting the coupling to the pressure port of **MS-DP1-FR/FE/FN**, hold the pressure port with a 14 mm 0.551 in spanner and make sure that the tightening torque is 9.8 N·m or less.
  In addition, in order to prevent any leakage, wind a sealing tape on the coupling when connecting.



Note: Do not tighten the pressure port by holding the product with the spanner. It may cause the product breakage.

Flat attachment

- Make sure to mount **MS-DP1-F□** with the sensor properly. If it is not mounted properly, air leakage may occur.
- Take care that the excessive mounting and dismounting of this product may cause deterioration of the O-ring.
- If you touch the O-ring of **MS-DP1-F□**, or any scratch or dust, etc. is attached to it, air leakage may occur and the sensing performance may deteriorate.
  Take sufficient care when using and storing **MS-DP1-F□**.

Others

- This product has been developed / produced for industrial use only.
- Use within the rated pressure range.
- Do not apply pressure exceeding the pressure withstandability value. The diaphragm will get damaged and correct operation shall not be maintained.
- Do not use during the initial transient time (0.5 sec. approx.) after the power supply is switched on.
- This product is suitable for indoor use only.
- The specification may not be satisfied in a strong magnetic field.
- Avoid dust, dirt, and steam.
- Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.
- Do not insert wires, etc., into the pressure port.
  The diaphragm will get damaged and correct operation shall not be maintained.
- Do not operate the keys with pointed or sharp objects.

PRECAUTIONS FOR PROPER USE

Refer to the instruction manual for details.
The instruction manual data can be downloaded from our website.

RUN mode

• This is the normal operating mode.

Setting item	Description
Threshold value setting	The threshold values for ON/OFF operation can be changed directly by pressing the increment key (UP) and the decrement key (DOWN).
Zero-adjustment function	This forces the pressure value display to be reset to zero when the pressure port is open on the atmospheric pressure side.
Key lock function	Stops key operations from being accepted.
Peak hold / bottom hold function	Displays the peak value and bottom value for fluctuating pressure. The peak value appears in the main display, and the bottom value appears in the sub display.

MENU SETTING mode

• If the mode selection key is pressed and held for 2 seconds in RUN mode, the mode will switch to MENU SETTING mode.
• If the mode selection key is pressed while a setting is being made, the mode will switch to RUN mode. In this case, the settings that have been changed will be entered.

Setting item	Description
Comparative output 1 output mode setting	Sets the output mode for comparative output 1.
Comparative output 2 output mode setting (excluding **DP-100** series multi-function type)	Sets the output mode for comparative output 2.
Analog output / external input switching (multi-function type only)	Allows switching between analog voltage output / analog current output, and auto-reference input / remote zero-adjust-ment input.
N.O./N.C. switching	Sets normally open (N.O.) or normally closed (N.C.).
Response time setting	Sets the response time. The response time can be selected from 2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms and 5,000 ms.
Display color switching for main display	Allows the color for the main display to be changed. The colors can be set to 'red / green' or 'green / red' to correspond to ON/OFF output, or it can be fixed at 'red' or 'green' all the time.
Unit switching	Pressure unit can be changed.

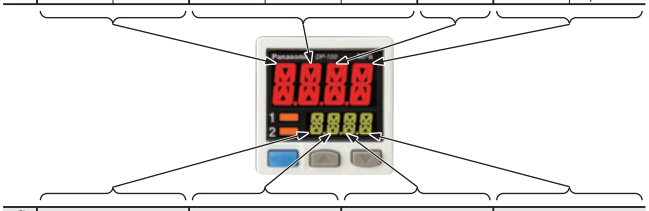
PRO mode

• If the mode selection key is pressed and held for 5 seconds in RUN mode, the mode will switch to PRO mode.
• If the mode selection key is pressed while a setting is being made, the mode will switch to RUN mode. In this case, the settings that have been changed will be entered.

Setting item	Description
Sub display switching	Changes the information in the sub display during RUN mode operation to the desired alphanumeric display.
Display refresh rate switching	Changes the display refresh rate for the pressure value displayed in the main display.
Hysteresis fix value switching	Sets the hysteresis for EASY mode and window comparator mode. (8 steps)
Linked display color switching (excluding **DP-100** series multi-function type)	Allows the display color for the main display to be switched in line with the output operation for comparative output 1 or comparative output 2.
ECO mode setting	Allows power consumption to be reduced by dimming the display or turning it off.
Setting check code	Allows the setting details to be checked via codes.
Setting copy mode (**DP-100** series only)	Allows the setting details for the master sensor to be copied to slave sensors.
Reset setting	Resets the settings to the factory settings.

Setting confirmation code table

Code	1st digit		2nd digit			3rd digit	4th digit	
			Standard type		Multi-function type			Standard type only
	Comparative output 1 output mode	NO/NC switching	Comparative output 2 output mode	NO/NC switching	Analog voltage output / External input	Threshold value display	Display color for main display	Display color linking
0	EASY	N.O.	OFF	OFF	Analog voltage output	P-1, Lo-1	Red when ON	Comparative output 1
1		N.C.	EASY	N.O.	Auto-reference	Hi-1		Comparative output 2
2	Hysteresis	N.O.		N.C.	Remote zero-adjustment	P-2, Lo-2	Green when ON	Comparative output 1
3		N.C.	Hysteresis	N.O.	Analog current output	Hi-2		Comparative output 2
4	Window comparator	N.O.		N.C.	—	ADJ.	Always red	Comparative output 1
5		N.C.	Window comparator	N.O.	—	—		Comparative output 2
6	—	—		N.C.	—	—	Always green	Comparative output 1
7	—	—	—	—	—	—		Comparative output 2



Code	5th digit	6th digit	7th digit	8th digit
	Response time	Unit switching	Display refresh rate	ECO mode
0	2.5 ms	MPa	250 ms	OFF
1	5 ms	kPa	500 ms	STD
2	10 ms	kgf/cm^2	1,000 ms	FULL
3	25 ms	bar	—	—
4	50 ms	psi	—	—
5	100 ms	mmHg	—	—
6	250 ms	inchHg	—	—
7	500 ms	—	—	—
8	1,000 ms	—	—	—
9	5,000 ms	—	—	—

DP-100L series event functions

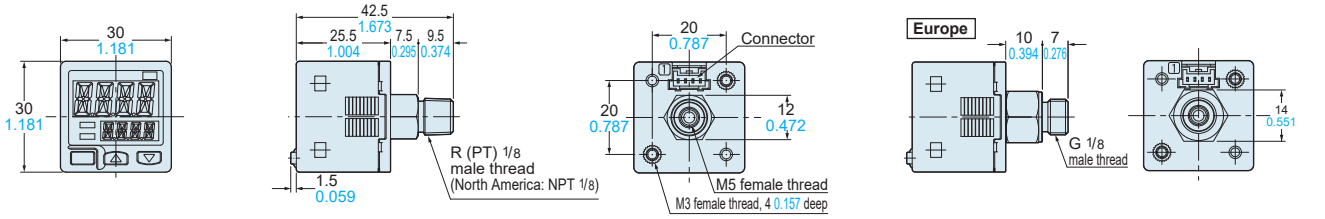
Error level	Sensor display	State
Notification	E-3	Application of pressure during zero-adjustment
	E-4	Outside the rated pressure range
	1010	Pressure upper limited exceeded or output element malfunctioned
	−1010	Pressure lower limit exceeded
Caution	Display of measured value	Operation hours exceeded
	Display of measured value	Nonvolatile memory writing frequency exceeded
Fault	E-1	Detection of output wire short-circuit / overcurrent

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from the website.

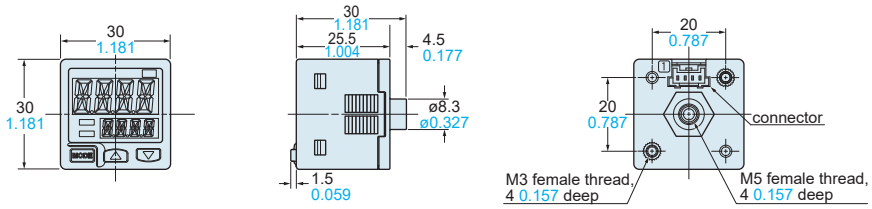
DP-10□(-P)

Sensor



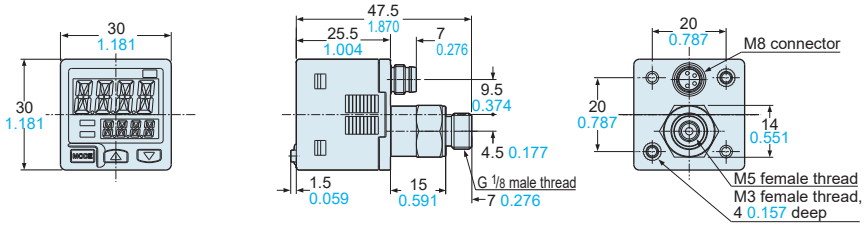
DP-10□-M(-P) DP-10□ZL3-M-P(-C)

Sensor



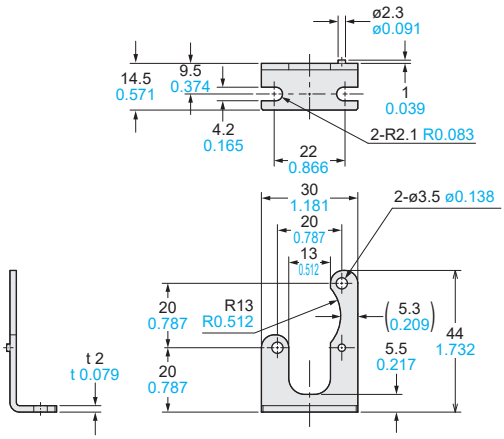
DP-11□-E-P-J

Sensor



MS-DP1-1

Sensor mounting bracket (Optional)

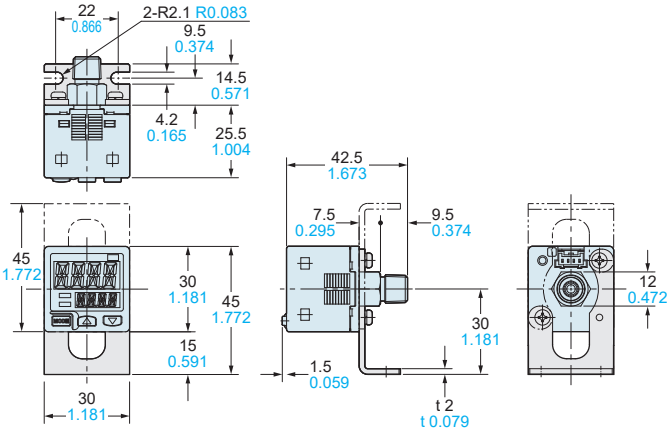


Material: Cold rolled carbon steel (SPCC)
(Trivalent uni-chrome plated)

Two M3 (length 6 mm 0.236 in) screws with washers are attached.

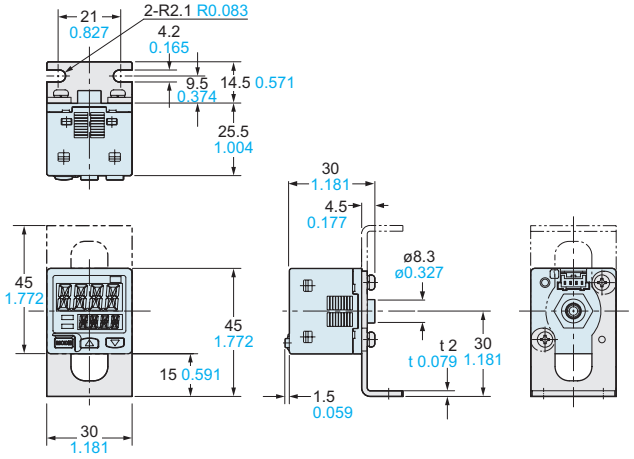
Assembly dimensions

Mounting drawing with **DP-10□(-P)**



Assembly dimensions

Mounting drawing with **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**

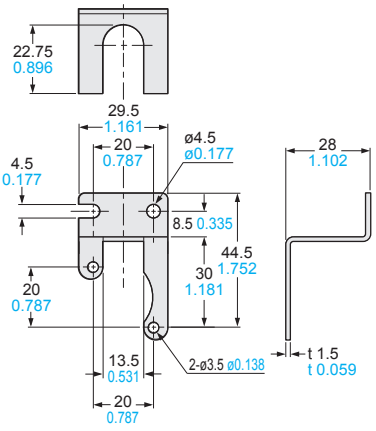


DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from the website.

MS-DP1-5

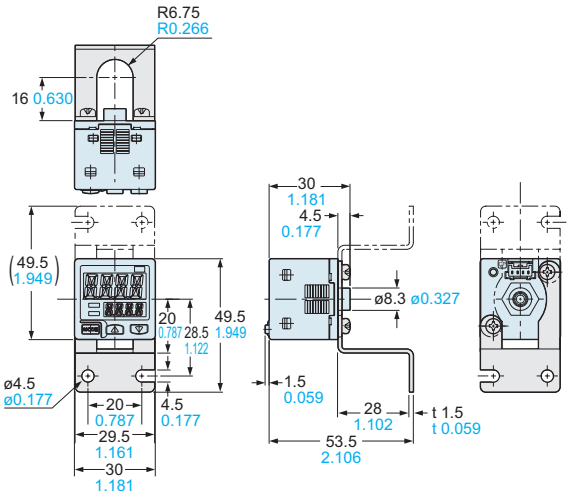
Sensor mounting bracket (Optional)



Material: Stainless steel (SUS304)
Two M3 (length 6 mm 0.236 in) screws with washers are attached.

Assembly dimensions

Mounting drawing with **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**

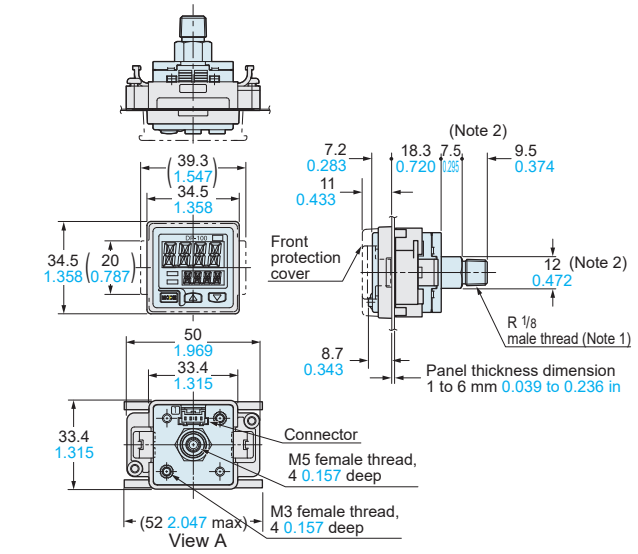


MS-DP1-2 MS-DP1-3

Panel mounting bracket (Optional), Front protection cover (Optional)

Assembly dimensions

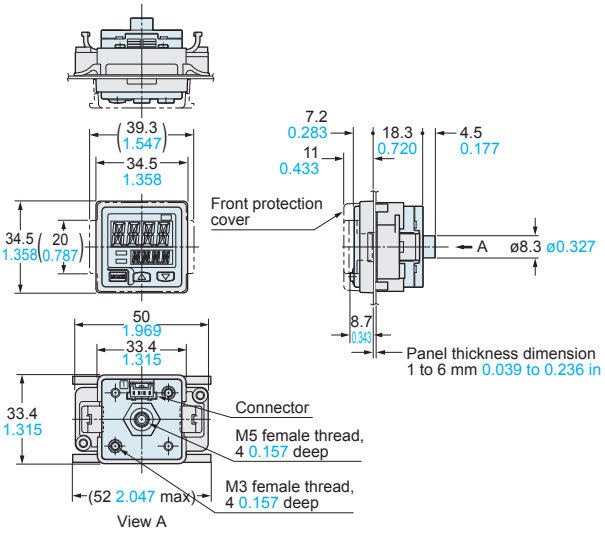
Mounting drawing with **DP-10□(-P)**



Material: Polyacetal (Panel mounting bracket)
Polycarbonate (Front protection cover)

Assembly dimensions

Mounting drawing with **DP-10□-M(-P)** / **DP-10□ZL3-M-P(-C)**

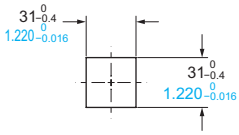


Material: Polyacetal (Panel mounting bracket)
Polycarbonate (Front protection cover)

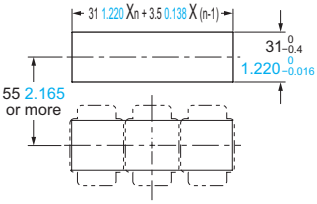
Notes: 1) **DP-10□-E-P** has a G1/8 male thread. **DP-10□-N(-P)** has a NPT1/8 male thread.
2) In case of **DP-10□-E-P**, the dimension 7.5 become to be 10, the dimension 9.5 become to be 7 and the dimension 12 become to be 14.

Panel cut-out dimensions

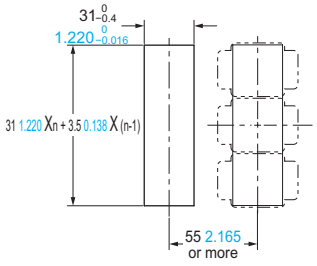
When 1 unit is installed



When “n” units are installed horizontally in series



When “n” units are installed vertically in series



Note: The panel thickness should be 1 to 6 mm 0.039 to 0.236 in.

DIMENSIONS (Unit: mm in)

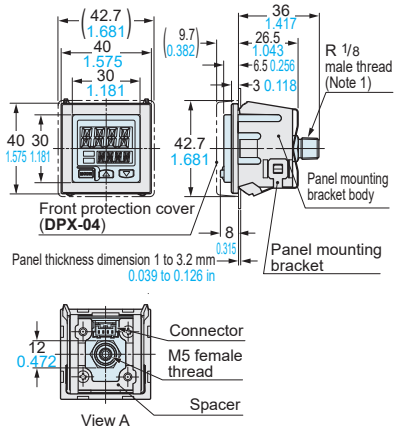
The CAD data can be downloaded from the website.

MS-DP1-4

Panel mounting bracket (Replacement from conventional model) (Optional)

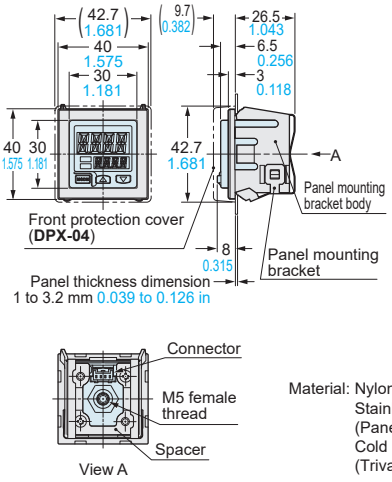
Assembly dimensions

Mounting drawing with **DP-10□(-P)**

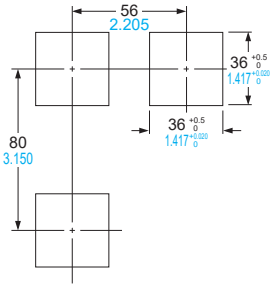


Material: Nylon 6 (Panel mounting bracket body)
Stainless steel (SUS304) (Panel mounting bracket)
Cold rolled carbon steel (SPCC)
(Trivalent uni-chrome plated) (Spacer)

Mounting drawing with **DP-10□-M(-P) / DP-10□ZL3-M-P(-C)**



Panel cut-out dimensions

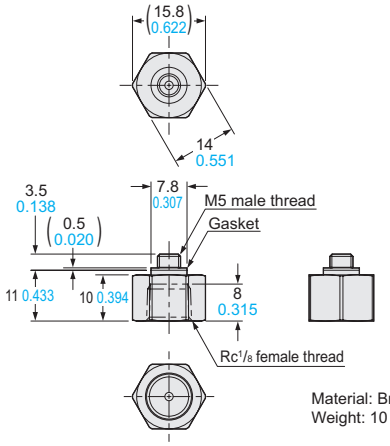


Material: Nylon 6 (Panel mounting bracket body)
Stainless steel (SUS304)
(Panel mounting bracket)
Cold rolled carbon steel (SPCC)
(Trivalent uni-chrome plated) (Spacer)

Notes: 1) **DP-10□-E-P** has a G1/8 male thread. **DP-10□-N(-P)** has a NPT1/8 male thread.
2) The panel tickness should be 1 to 32 mm 0.039 to 1.260 in.

MS-DP1-7

Conversion bushing (Optional)



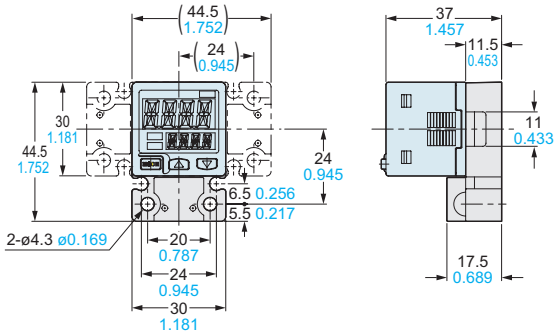
Material: Brass (Nickel plated)
Weight: 10 g approx.

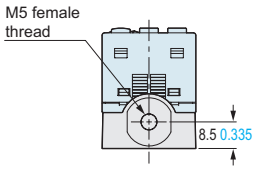
MS-DP1-FM

Flat attachment (Optional)

Assembly dimensions

Mounting drawing with **DP-10□-M(-P) / DP-10□ZL3-M-P(-C)**





Material: Polybutylene terephthalate (PBT)
(Glass fiber reinforced) (Enclosure)
Stainless steel (SUS303) (Pressure port)
Hydrogenated Nitrile Butadiene Rubber
(H-NBR) (O-ring)
Weight: 15 g approx. (flat attachment only)

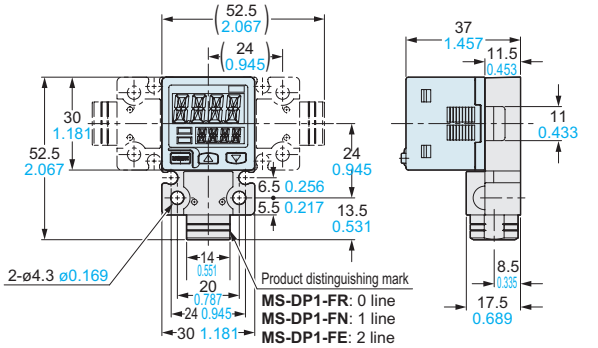
Two M3 (length 8 mm 0.315 in) screws,
two M4 (length 20 mm 0.787 in) screws
are attached.

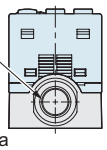
MS-DP1-FR/FN/FE

Flat attachment (Optional)

Assembly dimensions

Mounting drawing with **DP-10□-M(-P) / DP-10□ZL3-M-P(-C)**





Note: **MS-DP1-FR** has a Rc1/8 female thread. **MS-DP1-FN** has a NPT1/8 female thread.

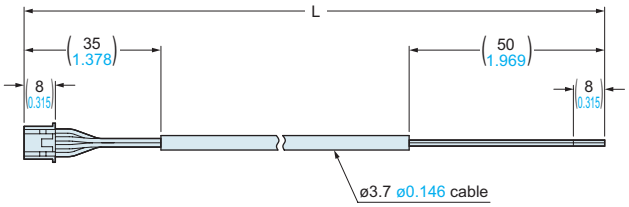
Material: Polybutylene terephthalate (PBT)
(Glass fiber reinforced) (Enclosure)
Stainless steel (SUS303) (Pressure port)
Hydrogenated Nitrile Butadiene Rubber
(H-NBR) (O-ring)
Weight: 25 g approx. (flat attachment only)

Two M3 (length 8 mm 0.315 in) screws,
two M4 (length 20 mm 0.787 in) screws
are attached.

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from the website.

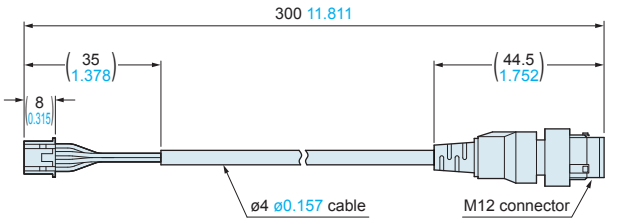
CN-14A(-R)-C□ Connector attached cable (Optional, CN-14A-C2 is attached to DP-100 series (excluding DP-10□-J) and DP-10□ZL3-M-P)



• Length L

Model No.	Length L (mm in)
CN-14A(-R)-C1	1,000 39.370
CN-14A(-R)-C2	2,000 78.740
CN-14A(-R)-C3	3,000 118.110
CN-14A(-R)-C5	5,000 196.850

Dedicated M12 connector cable (attached to DP-10□ZL3-M-P-C)



Note: Be sure to use the dedicated M12 connector cable attached to the product. Note that the pin arrangement is different from that for commercially available M12 connector cables.

Disclaimer

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Panasonic INDUSTRY

Panasonic Industry Co., Ltd.
Industrial Device Business Division
7-1-1, Morofuku, Daito-shi, Osaka 574-0044, Japan
industry.panasonic.com

Specifications are subject to change without notice.
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