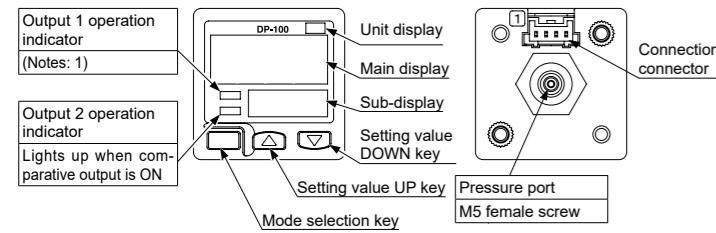


Thank you for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

WARNING

- 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 designed for use with non-corrosive gas. It cannot be used for liquid or corrosive gas.
- Japanese Measurement Laws prohibit the use of this product in Japan.

1 PART DESCRIPTION



Notes: 1)

Function	Without IO-Link communication	During IO-Link communication
Output 1 operation indicator (Notes: 1)	Lights up when comparative output is ON (Notes 2)	Flashes
Output 2 operation indicator		

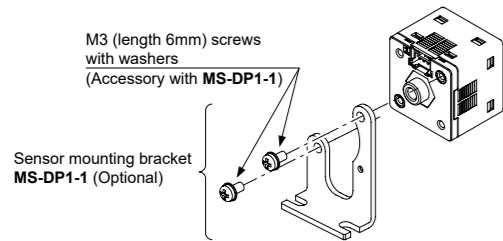
Notes: 2) Synchronized with output operation indicator 2

2 PIPING

- To connect a commercial coupler to the pressure port, manually hold the main unit of the product and install the coupler by tightening it to a tightening torque of 1N·m or less. The commercial coupler or pressure port section will be damaged if the tightening torque is excessive. Wrap sealing tape around the coupler when connecting to prevent leaks.

3 MOUNTING

- The sensor mounting bracket **MS-DP1-1** is available as an option. When mounting the sensor onto the sensor mounting bracket, etc., the tightening torque should be 0.5N·m max.

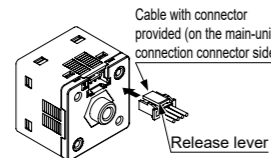


- The panel mounting bracket **MS-DP1-2** (optional) and **MS-DP1-4** (optional), as well as the front cover **MS-DP1-3** (optional) and **DPX-04** (optional) are also available.
- The type of the front cover differs depending on the mounting bracket. Use **MS-DP1-3** for **MS-DP1-2**, and **DPX-04** for **MS-DP1-4**.
- To mount the panel mounting bracket, refer to the Instruction Manual enclosed with **MS-DP1-2** or **MS-DP1-4**.

4 WIRING

Connection method

- Insert the cable with connector (included in this product) into the connection connector section of this product as shown in the figure to the right.



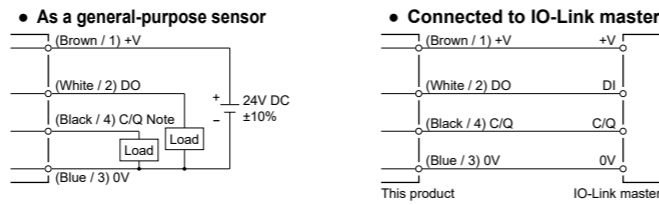
<Recommended product>
 Contact: SPHD-001T-P0.5
 Housing: PAP-04V-S
 [JST Mfg. Co., Ltd.]

Note: Do not pull by holding the cable without pressing the release lever, as this can cause cable break or connector break.

<Connection connector pin arrangement>

Connector pin No.	Wiring color/ M12 connector Terminal No.	Terminal name
1	Brown / 1	+V
2	Black / 4	IO-Link communication (C/Q)
3	White / 2	Control output (DO)
4	Blue / 3	0V

5 CONNECTION



<Terminal arrangement of M12 connector type>

Terminal No.	Terminal name	Recommended extension cable
1	+V	Extension cable with connectors on both end XS5W series [OMRON Corporation]
2	Control output (DO)	
3	0V	
4	IO-Link communication (C/Q) Note	

Note: When the product is used as a general-purpose sensor, the IO-Link communication output (C/Q) provides the same output operation as the control output (DO)

How to mount M12 connector

If the fixed ring loosens, the connector will come off, causing this product to generate a communication error. Before use, check that the fixed ring is not loose.

- Firmly tighten the fixed ring by rotating it.



6 LIST OF FUNCTIONS

Function	Setting on main unit	IO-Link communication setting (Note)
Mode setting for comparative output	Select from EASY mode / Hysteresis mode / Window comparator mode	Index61_2
Threshold value setting	EASY mode : Threshold value	Index60_1
	Hysteresis mode / Window comparator mode : Lo side	Index60_2
Zero-adjust setting	Execute / Cancel	Index2
	Key lock	Index12
Key lock	Set / release	Index82_4
Peak / bottom hold function	Setting	Index82_4
Comparative output mode setting	N.O. / N.C.	Index61_1
Response time setting	Select from 10 steps	Index66
Displayed color of the main display selection	Select from 4 modes	Index82_1
Pressure unit selection	Select from 2 modes DP-101□ is fixed	Index83
Display setting of Sub-display selection	Select from 5 modes	Index82_2
	No. display setting	Index84_1
Custom display setting	Index84_2	
Display speed selection	Select from 3 steps	Index82_3
Hysteresis fixed value selection	Select from 8 steps	Index61_3
Eco mode setting	Select from 3 modes	Index80
Setting check code	8 digit indication	-
Reset setting	Execute	Index2
Remote zero-adjust setting	-	Index2
Zero-adjust execution notification	-	Index85
Auto-reference setting	-	Index2
Operating time	-	Index163
Number of data save operations	-	Index164
Notification Flag Setting	-	Index168
Notification Event Code	-	Index169

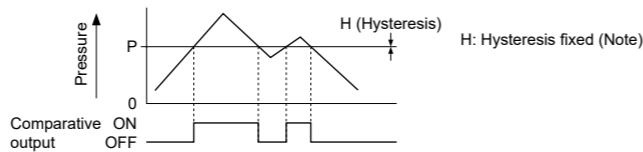
Note: For the IO-Link communication setting, refer to the attached sheet, "Index List" (IMJE-DPLINDEXV1EN 09/2018).

7 OUTPUT MODE AND OUTPUT OPERATION

- The EASY mode, hysteresis mode or window comparator mode can be selected as the output mode for comparative output. Refer to "9 MENU SETTING MODE" for details.

EASY mode

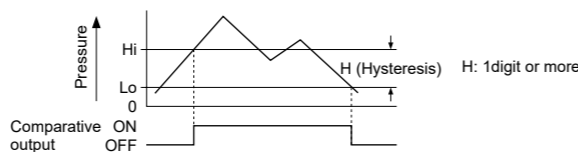
- The comparative output is turned ON or OFF when the threshold is reached. The tolerance of the threshold is specified by the hysteresis setting.



Notes: Hysteresis can be fixed in 8 levels. Refer to "9 MENU SETTING MODE" for setting.

Hysteresis mode

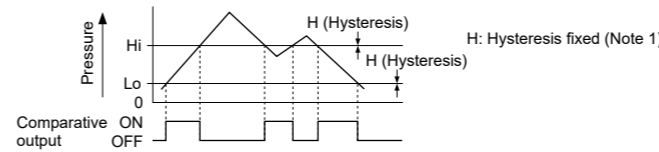
- The comparative output is turned ON or OFF when the upper or the lower threshold is reached and remains ON or OFF until the other threshold is reached.



Note: "Hi - I" or "Lo - I" is displayed on the sub-display.

Window comparator mode

- The comparative output is turned ON or OFF when the pressure lies between the upper and the lower threshold. The tolerance of the threshold is specified by the hysteresis setting.

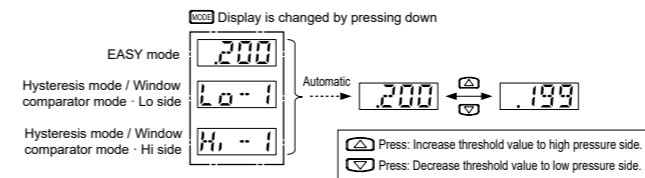


Note: 1) Hysteresis can be fixed in 8 levels. Refer to "9 MENU SETTING MODE" for setting.
 2) "Hi - I" or "Lo - I" is displayed on the sub-display.
 3) Set the interval between the Lo side and Hi side to the same value as the hysteresis fixed value or higher.

8 RUN MODE

Setting the threshold value

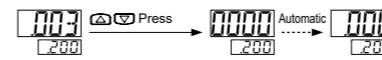
- Refer to "Comparative output mode setting" in "9 MENU SETTING MODE" for setting conditions.
- The Sub display conducts the threshold value. Main display does not changed.



Note: If the set pressure range is exceeded, "UP" (exceeds the upper limit) or "DN" (exceeds the lower limit) will appear on the sub display. "DN" will also appear if the Hi side threshold value exceeds the Lo side threshold value when setting the "hysteresis mode / window comparator mode" threshold value.

Zero-adjustment function

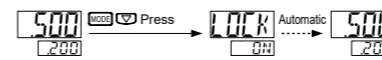
- The zero-adjustment function forcibly sets the pressure value to zero when the pressure port is opened.



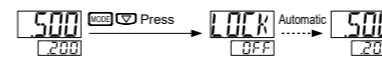
Key lock function

- The key lock function protects settings from being changed inadvertently. The function can also be activated via IO-Link communication.

<Key lock set>



<Key lock released>



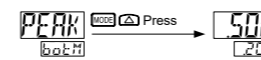
Peak / bottom hold function

- The peak / bottom hold functions display the peak value and bottom value of the fluctuating pressure.
- The peak value is displayed on the main display and the bottom value is displayed on the sub-display.
- The higher pressure side indicates the peak value, while the lower pressure side indicates the bottom value.

<Peak / bottom hold set>

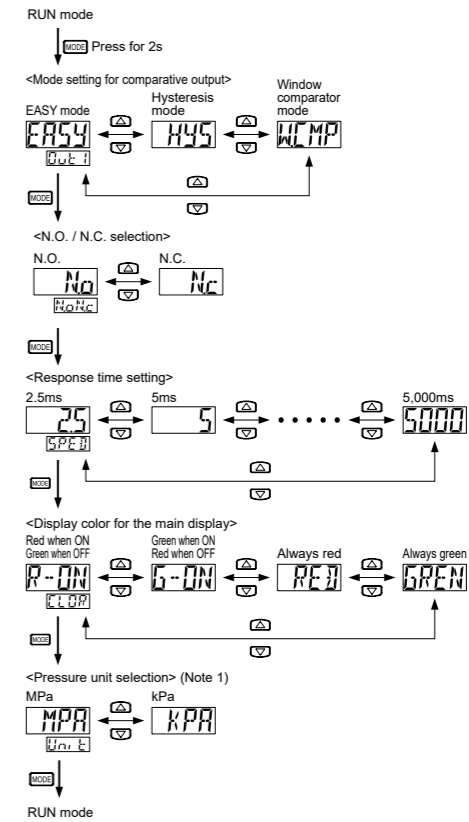


<Peak / bottom hold released>



9 MENU SETTING MODE

- When you press the mode selection key during the setting process, the sensor switches to the next setting item. When you press and hold the mode selection key for 2 seconds, all changes are saved and the sensor will change to RUN mode.

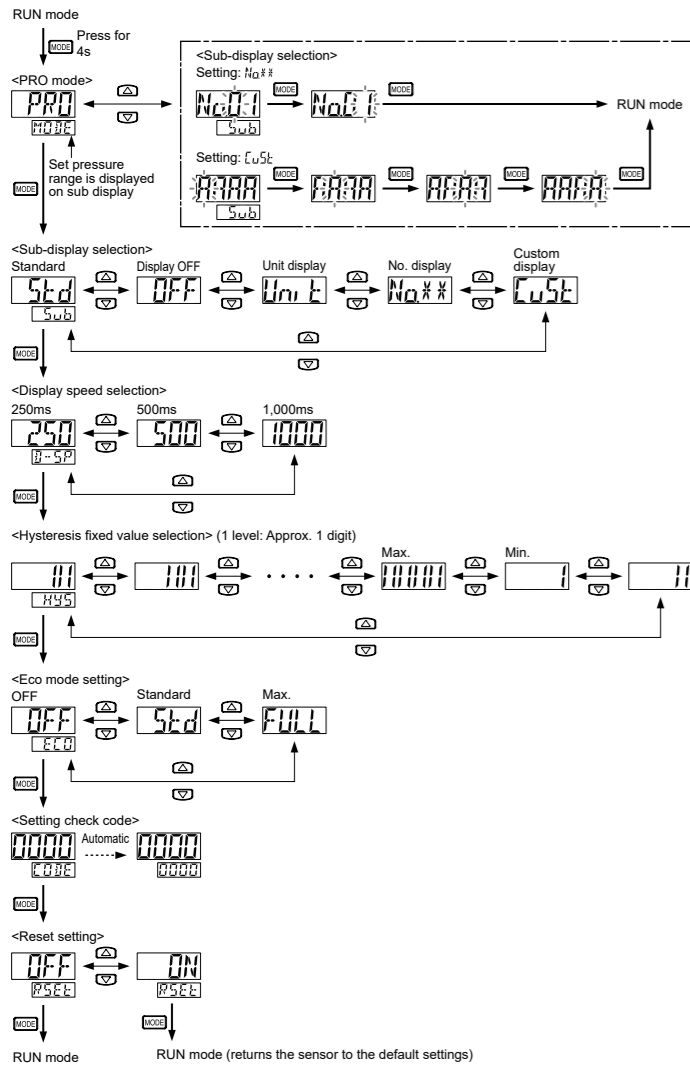


Setting item (Note 2) (Note 3)	Factory setting	Description
Mode setting for comparative output	EASY	Sets the output operation of the comparative output
N.O. / N.C. selection	Low pressure type NC	Selects normally open (N.O.) or normally closed (N.C.).
	High pressure type NO	
Response time setting	25	Sets the response time in milliseconds (ms). Response time available: 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000
Display color for the main display	R-ON	Selects the color of the main display.
Pressure unit selection (Note 1)	Low pressure type KPA	Pressure unit can be changed. (High pressure type only)
	High pressure type MPA	

Notes: 1) For the low pressure type, the setting item is not displayed.
 2) Settings can be configured via IO-Link communication.
 3) If settings are configured simultaneously with this operating procedure and via IO-Link communication, the settings that are applied last will be used.

10 PRO MODE

- When you press the mode selection key during the setting process, the sensor switches to the next setting item. When you press and hold the mode selection key for 4 seconds, all changes are saved and the sensor will change to RUN mode.



Setting item (Notes: 1, 2)	Factory setting	Description
Sub-display selection	Std	Selects what is displayed on the sub-display. Std : threshold OFF : nothing. Unit : pressure unit selected No## : desired No. Cust : desired numbers, alphabets (some of them cannot be displayed) and signs can be shown.
Display speed selection	250	Sets the speed of how often the displayed pressure value on the main display is updated.
Hysteresis fixed value selection	11	Sets hysteresis of the EASY mode and the window comparator mode (8 levels)
Eco mode setting	OFF	Current consumption can be lowered. OFF : normal operation (ECO mode is off.) Std : if no key operation is carried out for approx. 5s in RUN mode, the display becomes dark. FULL : if no key operation is carried out for approx. 5s in RUN mode, the display is turned off. Press any key to temporarily show the normal indication.
Setting check code	Low pressure type 0100 High pressure type 0000	Current settings are stored in code, which you can display. For codes. Refer to "Code table".
Reset setting	OFF	If set to "ON", the sensor returns to the default settings (factory settings).

- Notes: 1) Settings can be configured via IO-Link communication.
2) If settings are configured simultaneously with this operating procedure and via IO-Link communication, the settings that are applied last will be used.

Code table

• Main display (1st digit from left)

Code	1st digit	2nd digit	3rd digit	4th digit
	Setting mode for comparative output	N.O. / N.C. selection	Threshold display	Display color for the main display
0	EASY	N.O.	EASY mode : Threshold value, Hysteresis mode / Window comparator mode : Lo side	Red when ON Green when OFF
1	Hysteresis	N.C.	Hysteresis mode / Window comparator mode : Hi side	Green when ON Red when OFF
2	Window comparator	—	—	Always red
3	—	—	—	Always green
4	—	—	—	—
5	—	—	—	—
6	—	—	—	—
7	—	—	—	—

• Sub-display (5th digit from left)

Code	5th digit	6th digit	7th digit	8th digit
	Response time	Unit selection	Display speed	Eco mode
0	2.5ms	MPa	250ms	OFF
1	5ms	kPa	500ms	Std
2	10ms	—	1,000ms	Full
3	25ms	—	—	—
4	50ms	—	—	—
5	100ms	—	—	—
6	250ms	—	—	—
7	500ms	—	—	—
8	1,000ms	—	—	—
9	5,000ms	—	—	—

11 ERROR INDICATION

Error message	Cause	Corrective action
E-1	The load is short-circuited causing overcurrent.	Turn OFF the power and check the load.
E-3	Pressure is being applied during zero-point adjustment.	Applied pressure at the pressure port should be brought to atmospheric pressure and zero-point adjustment should be done again.
E-4	External input is carried out outside the rated pressure range.	Applied pressure range should be adjusted to fall within the rated pressure range.
10 10	The applied pressure exceeds the upper limit of the display pressure range.	Applied pressure range should be adjusted to fall within the rated pressure range.
-10 10	The applied pressure exceeds the lower limit of the display pressure range.	

When other error message is displayed, contact us.

12 SPECIFICATIONS

• Model

DP-10 [1][2][3]-[4]-[5]-[6]

[1]: 1: Low pressure type, 2: High pressure type

[2]: Z: Unit: Pa

[3]: L3: IO-Link communication type (Baud rate: COM3)

[4]: M: M5 female screw

[5]: P: PNP output type

[6]: None: Discrete wire type, C: M12 connector type

Item	Type	Discrete wire type		M12 connector type	
		Low pressure type	High pressure type	Low pressure type	High pressure type
Pressure type		Gauge pressure			
Rated pressure range		-100 to +100kPa	-0.1 to +1.0MPa	-100 to +100kPa	-0.1 to +1.0MPa
Set pressure range		-101.0 to +101.0kPa	-0.101 to +1.010MPa	-101.0 to +101.0kPa	-0.101 to +1.010MPa
Pressure resistance		500kPa	1.5MPa	500kPa	1.5MPa
Applicable fluid		Non-corrosive gas			
Supply voltage		12 to 24V DC ±10%			
Power consumption		Normal operation: 720mW max. (current consumption 30mA max. at 24V supply voltage) ECO mode (STD): 480mW max. (current consumption 20mA max. at 24V supply voltage) ECO mode (FULL): 380mW max. (current consumption 15mA max. at 24V supply voltage)			
IO-Link communication (C/Q)		IO-Link specification: Ver1.1			
Baud rate		COM3 (230.4kbit/s)			
Process data length		PD : 4byte			
Control output (DO) (Notes: 2)		PNP open-collector transistor • Maximum source current: 50mA • Applied voltage: 30V DC max. (between comparative output and +V) • Residual voltage: 2V max. (at 50mA source current) (Notes: 3)			
Output operation		Selectable either N.O. or N.C., with key operation			
Short-circuit protection		Incorporated			
Hysteresis fixed values		Selectable from 8 different levels (Approx. 1 to 8digit) (Notes: 4)			
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		2.5ms, 5ms, 10ms, 25ms, 50ms, 100ms, 250ms, 500ms, 1,000ms or 5,000ms selectable with key operations			
Over voltage category		1			
Pollution degree		2			
Operating altitude		2,000m max. (Notes: 5)			
Ambient temperature		-10 to +50°C (No dew condensation or icing allowed). Storage: -10 to +60°C			
Ambient humidity		35 to 85% RH. Storage: 35 to 85% RH			
Temperature characteristics		Within ±0.5% F.S. (at +20°C reference)	Within ±1% F.S. (at +20°C reference)	Within ±0.5% F.S. (at +20°C reference)	Within ±1% F.S. (at +20°C reference)
Material		Enclosure: PBT (with glass fiber), LCD display: acrylic, pressure port: stainless steel (SUS 303), mounting screw section: brass (nickel-plated), O-ring: H-NBR, key part: silicon rubber			
Weight		Approx. 30g (main body only)			
Accessories		Cable with a connector, 2m long (Discrete wire type): 1 pc. (Notes: 6)		Cable with a connector, 0.3m long (M12 connector type): 1 pc. (Notes: 6)	

- Notes: 1) For the IO-Link communication setting, refer to the attached sheet, "Index List" (IMJE-DPLINDEXV1EN 09/2018).
2) When the product is used as a general-purpose sensor, the IO-Link communication output (C/Q) provides the same output operation as the control output (DO).
3) This value is applicable when the cable length is 2m.
4) It becomes a fixed value (Approx. 1 digit) when using Hysteresis mode.
5) Do not use or store in an environment pressurized to atmospheric pressure or higher at an altitude of 0m.
6) One end of the cable with connector is provided with a connector for connection to the main unit.

13 CAUTIONS

- This product has been developed / produced for industrial use only.
- This product is suitable for indoor use only.
- Use within the rated pressure range.
- Do not apply pressure exceeding the pressure resistance value. The diaphragm will be damaged resulting in faulty operation.
- Make sure that the power supply is off while wiring.
- Incorrect wiring will damage the sensor.
- Verify that the supply voltage including the ripple 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 use during the initial transient time after the power supply is switched on.
- You can extend the cable up to 20m max. with 0.3mm² min. cable. However, in order to reduce noise, make the wiring as short as possible.
- 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.
- The specification may not be satisfied in a strong magnetic field.
- Do not use the product in dusty or dirty places or in places that are exposed to 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 resulting in faulty operation.
- Do not operate the keys with pointed or sharp objects.
- Do not apply stress directly to the sensor cable joint by forcibly bending or pulling.

14 COMPLIANCE WITH STANDARDS

This product complies with the following standards and regulations.

- For the EU: EMC Directive 2014/30/EC
Contact for CE:
Panasonic Marketing Europe GmbH
Panasonic Testing Center
Winsbergring 15, 22525 Hamburg, Germany



Panasonic Industrial Devices SUNX Co., Ltd.

http://panasonic.net/id/pidsx/global

Overseas Sales Division (Head Office)

2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan

Phone: +81-568-33-7861 FAX: +81-568-33-8591

About our sale network, please visit our website.

PRINTED IN JAPAN

© Panasonic Industrial Devices SUNX Co., Ltd. 2018