

## INSTRUCTION MANUAL

Pressure Sensor High-performance Digital Display  
**DP-100 Series** For use outside Japan

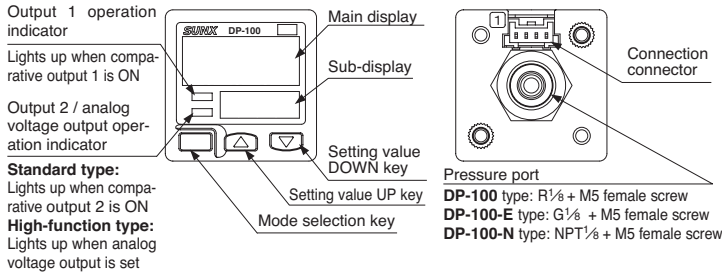
MJE-DP100 No.6091-00

Thank you very much for using SUNX 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

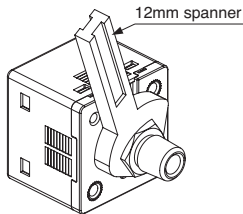
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Japanese Measurement Laws prohibit the use of this product in Japan.

### 1 NAMES OF EACH PART



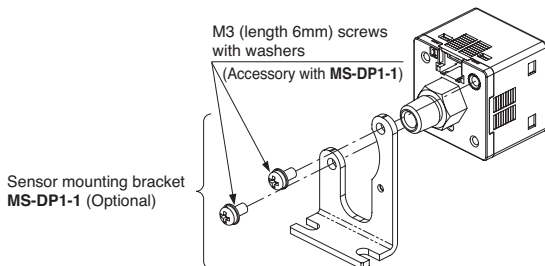
### 2 PIPING

- When connecting a commercial coupler to the pressure port, attach a 12mm spanner (14mm for **DP-100-E** type) to the pressure port's hexagon section to fix the port, and then tighten with a tightening torque of 9.8N·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.

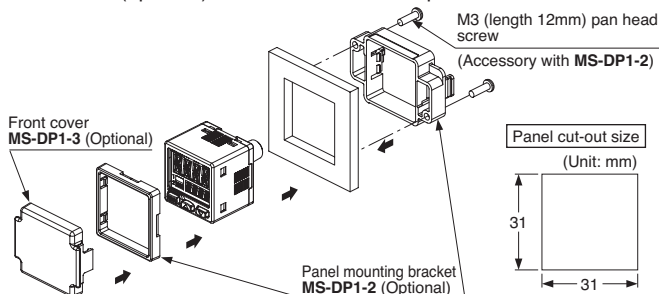


### 3 MOUNTING

- 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 1.2N·m or less.



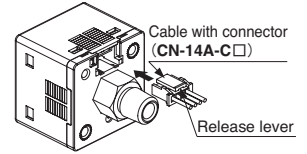
- The panel mounting bracket **MS-DP1-2** (optional) and front cover **MS-DP1-3** (optional) are also available as options.



### 4 WIRING

#### Connection method

- Insert the cable with connector **CN-14A-C** into this product's connection connector section as shown in the right figure.



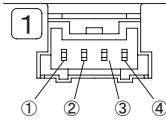
#### Disconnection method

- Pressing the release lever of the cable with connector, pull out the cable.

<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.

#### <Connection connector pin arrangement>



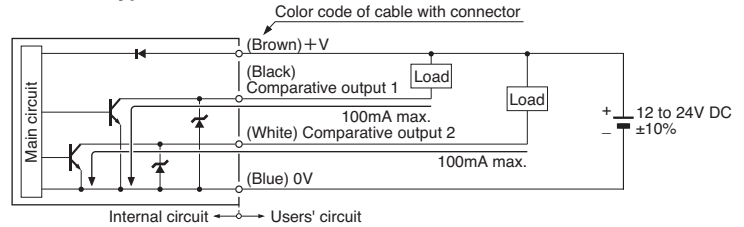
Connector pin No.	Terminal name
①	+V
②	Comparative output 1
③	Standard type: Comparative output 2 High-function type: Analog voltage output or external input
④	0V

### 5 I/O CIRCUIT DIAGRAMS

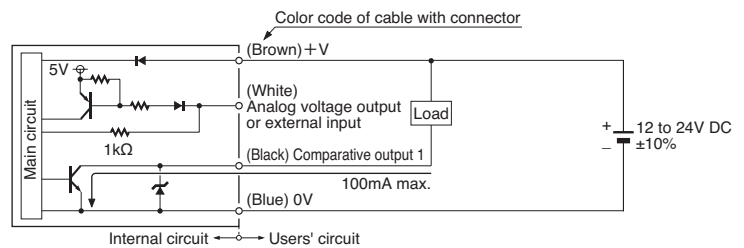
When using the analog voltage output, take care to the input impedance of the connected device. Furthermore, note that if the cable is extended, the cable resistance will cause the voltage to drop.

#### NPN output type

##### Standard type

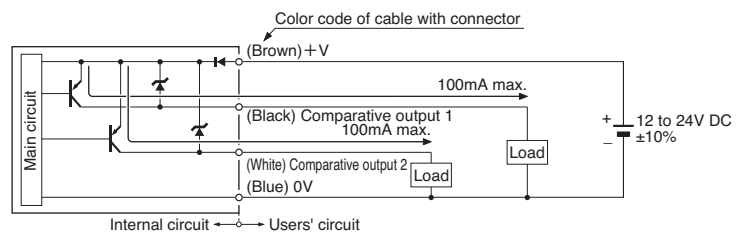


##### High-function type

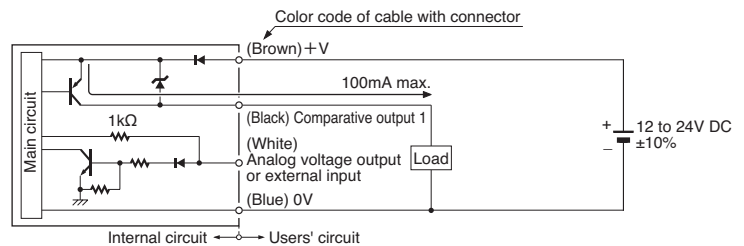


#### PNP output type

##### Standard type



##### High-function type



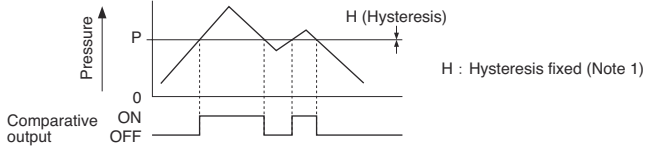
## 6 OUTPUT MODE AND OUTPUT OPERATION

- The EASY mode, hysteresis mode or window comparator mode can be selected as the output mode for comparative output 1 and comparative output 2.

Refer to '**Comparative output 1/2 output mode setting**' in '**9 MENU SETTING MODE**' for details.

### EASY mode

- ON / OFF of the comparative output is controlled in this mode.



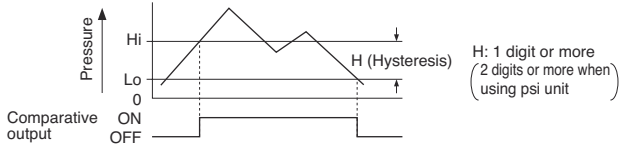
Notes:1) Hysteresis can be fixed in 8 steps.

Refer to '**Hysteresis fixed value selection**' in '**10 PRO MODE**' for setting.

2) ' $P-1$ ' is displayed for comparative output 1 and ' $P-2$ ' for comparative output 2.

### Hysteresis mode

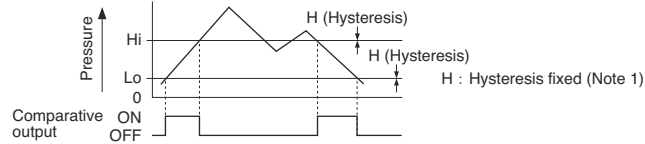
- The comparative output ON / OFF state can be controlled with randomly set hysteresis in this mode.



Note: ' $H_i-1$ ' or ' $L_o-1$ ' is displayed for comparative output 1 and ' $H_i-2$ ' or ' $L_o-2$ ' for comparative output 2.

### Window comparator mode

- In this mode, the ON or OFF state of the comparative output is controlled with a pressure in the set range.



Notes:1) Hysteresis can be fixed in 8 steps.

Refer to '**Hysteresis fixed value selection**' in '**10 PRO MODE**' for setting.

2) ' $H_i-1$ ' or ' $L_o-1$ ' is displayed for comparative output 1 and ' $H_i-2$ ' or ' $L_o-2$ ' for comparative output 2.

## 7 SETTING

### <Setting procedures>

#### RUN MODE

This is the pressure detection state.  
Refer to '**8 RUN MODE**'.

**MODE**  
Press for 2 sec.

#### MENU SETTING MODE

This is the setting mode for simple setting.  
Refer to '**9 MENU SETTING MODE**'.

**MODE**  
Press for 4 sec.

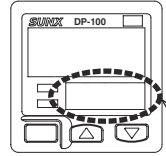
#### PRO MODE

This is the setting mode for detailed setting.  
Refer to '**10 PRO MODE**'.

## 8 RUN MODE

### Setting the threshold value

- Refer to '**Comparative output 1/2 output mode setting**' and '**Analog voltage output / external input selection**' in '**9 MENU SETTING MODE**' for setting conditions.



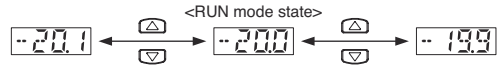
Since only the sub-display changes in the threshold setting, the following shows only the sub-display.

Note: If the set pressure range is exceeded, '**UP**' (exceeds the upper limit) or '**DOWN**' (exceeds the lower limit) will appear on the sub-display.  
'**DOWN**' 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.

### Standard type

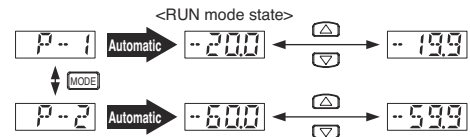
#### <Setting condition 1>

Comparative output 1 output mode: '**EASY**' (EASY mode)  
Comparative output 2 output mode: '**OFF**' (OFF)



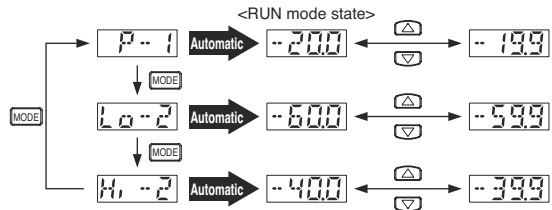
#### <Setting condition 2>

Comparative output 1 output mode: '**EASY**' (EASY mode)  
Comparative output 2 output mode: '**EASY**' (EASY mode)



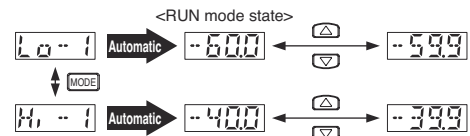
#### <Setting condition 3>

Comparative output 1 output mode: '**EASY**' (EASY mode)  
Comparative output 2 output mode: '**HYS**' (Hysteresis mode) or '**WCOMP**' (Window comparator mode)



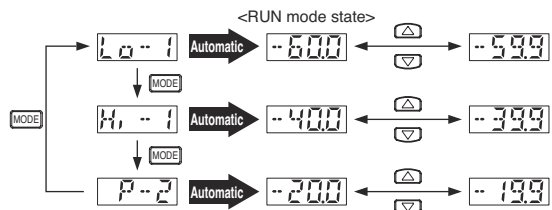
#### <Setting condition 4>

Comparative output 1 output mode: '**HYS**' (Hysteresis mode) or '**WCOMP**' (Window comparator mode)  
Comparative output 2 output mode: '**OFF**' (OFF)



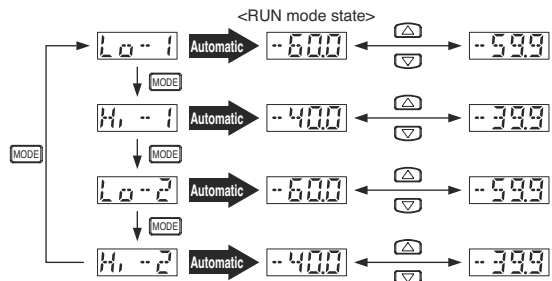
#### <Setting condition 5>

Comparative output 1 output mode: '**HYS**' (Hysteresis mode) or '**WCOMP**' (Window comparator mode)  
Comparative output 2 output mode: '**EASY**' (EASY mode)



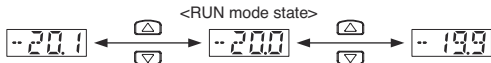
#### <Setting condition 6>

Comparative output 1 output mode: '**HYS**' (Hysteresis mode) or '**WCOMP**' (Window comparator mode)  
Comparative output 2 output mode: '**HYS**' (Hysteresis mode) or '**WCOMP**' (Window comparator mode)

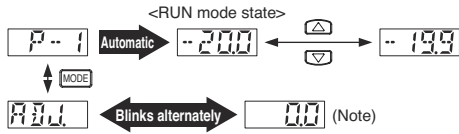


• High-function type

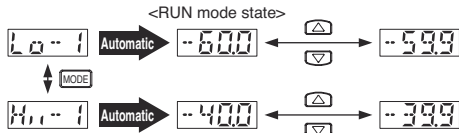
**<Setting condition 7>**  
 Comparative output 1 output mode: 'EASY' (EASY mode)  
 Analog voltage output / external input selection: 'ROUT' (Analog voltage output)



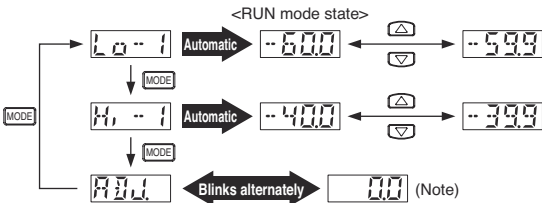
**<Setting condition 8>**  
 Comparative output 1 output mode: 'EASY' (EASY mode)  
 Analog voltage output / external input selection: 'AREF' (Auto-reference input) or 'ZERO' (Remote zero-adjustment input)



**<Setting condition 9>**  
 Comparative output 1 output mode: 'HYS' (Hysteresis mode) or 'WCOMP' (Window comparator mode)  
 Analog voltage output / external input selection: 'ROUT' (Analog voltage output)



**<Setting condition 10>**  
 Comparative output 1 output mode: 'HYS' (Hysteresis mode) or 'WCOMP' (Window comparator mode)  
 Analog voltage output / external input selection: 'AREF' (Auto-reference input) or 'ZERO' (Remote zero-adjustment input)

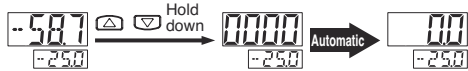


Note: Auto-reference value and remote zero-adjustment value are displayed.  
 For details, refer to '12 AUTO-REFERENCE FUNCTION' and '13 REMOTE ZERO-ADJUSTMENT FUNCTION'.

• Common

**Zero-adjustment function**

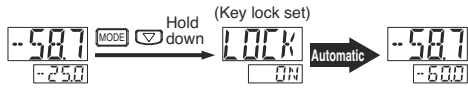
- The zero-adjustment function forcibly sets the pressure to 'zero' when the pressure port is opened.



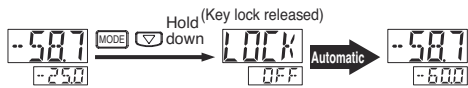
**Key lock function**

- The key lock function prevents key operations so that the conditions set in each setting mode are not inadvertently changed.

<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.

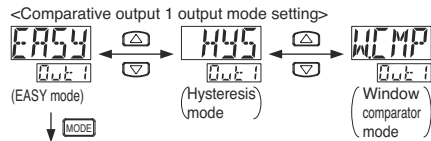


**9 MENU SETTING MODE**

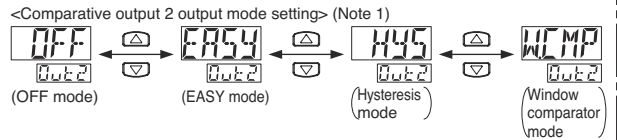
- When the mode selection key is held down for two seconds in the RUN mode, the menu setting mode will open.
- The mode will change to the RUN mode when the mode selection key is held down during this setting process.
- The leftmost setting items are the default settings (factory settings).

<RUN mode>

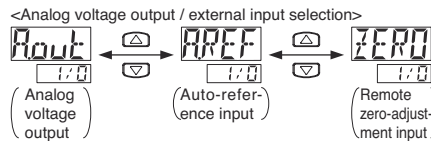
↓ MODE Press for 2 sec.



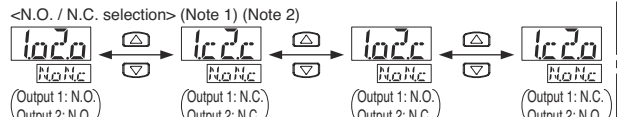
• Standard type



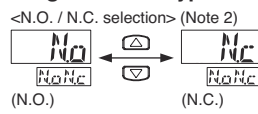
• High-function type



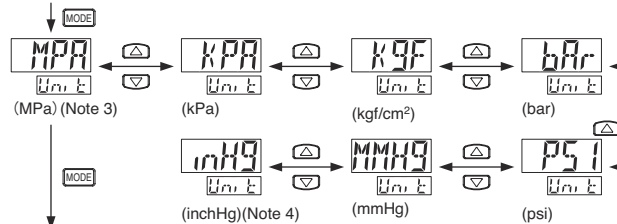
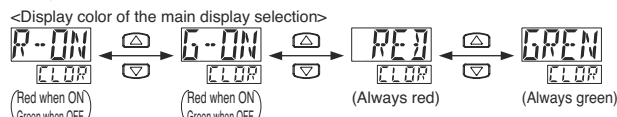
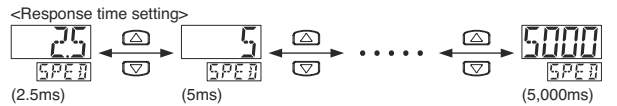
• Standard type



• High-function type



↓ MODE



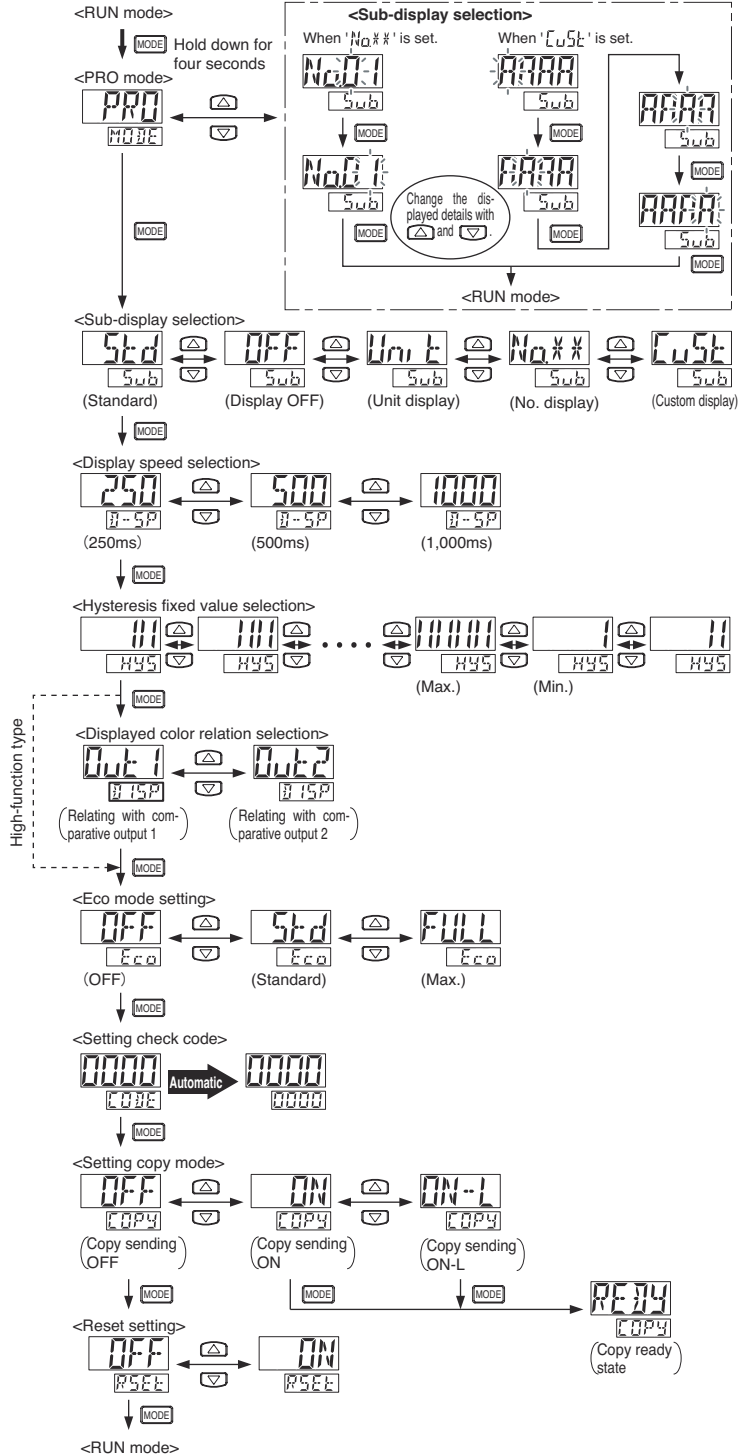
<RUN mode>

- Notes: 1) If the comparative output 2 output mode setting is set to 'OFF', the display of N.O. / N.C. selection is the same as the high-function type.  
 2) The default setting of the high pressure type is 'NO', and that of the low pressure type is 'NC'.  
 3) The default setting of the low pressure type is 'MPA'. 'MPA' is not displayed.  
 4) This is not displayed on the high-pressure type.

Setting item	Description
Comparative output 1 output mode setting	Sets the output operation of comparative output 1.
Comparative output 2 output mode setting (Standard type only)	Sets the output operation of comparative output 2.
Analog voltage output / external input selection (High-function type only)	Selects analog voltage output, auto-reference input, or remote zero-adjustment input.
N.O. / N.C. selection	Normal open (N.O.) or normal close (N.C.) can be selected.
Response time setting	Sets the response time. The response time can be selected from 2.5ms, 5ms, 10ms, 25ms, 50ms, 100ms, 250ms, 500ms, 1,000ms or 5,000ms.
Displayed color of the main display selection	Displayed color of the main indicator can be changed.
Unit selection	Pressure unit can be changed.

# 10 PRO MODE

- When the mode selection key is held down for four seconds in the RUN mode, the PRO mode will open.
- The mode will change to the RUN mode when the mode selection key is held down during this setting process. In this case, the changed item is entered.
- The leftmost settings are the default settings (factory setting).



Setting item	Description
Sub-display selection	Changes the indication of the sub-display. 'OFF': Displays nothing. 'Unit': Presently selected pressure unit is displayed. 'No. display': Desired No. can be shown. 'Custom': Desired alphabets, numbers and signs can be shown.
Display speed selection	Changes the speed of the displayed pressure value on the main display.
Hysteresis fixed value selection	Sets hysteresis of the EASY mode and the window comparator mode. (8 steps)
Displayed color relation selection (Standard type only)	The setting contents set at the displayed color setting in Menu setting mode can be related with either comparative output 1 or comparative output 2.
Eco mode setting	Current consumption can be lowered. 'OFF': Normal operation (ECO mode is off). 'Std': If any key operation is not carried out for approx. 5 sec. in RUN mode, the display becomes dark. 'Full': If any key operation is not carried out for approx. 5 sec. in RUN mode, the display is turned off. Press any key to return to the normal indication.
Setting check code	Current setting contents can be checked. For codes, refer to 'List of code settings'.
Copy mode setting	The setting of the master side sensor can be copied to the slave side sensors. For details, refer to '11 SETTING COPY FUNCTION'. 'ON': The setting contents are copied. 'ON-L': The setting contents are copied, and the slave side sensor goes into key-lock state.
Reset setting	Returns to default settings (factory settings).

# List of code settings

Code	First digit		Second digit		Third digit	Fourth digit	
	Comparative output 1 output mode	N.O. / N.C. selection	Standard type	High-function type		Standard type only	Displayed color connection
0	EASY	N.O.	OFF	OFF	P-1, Lo-1	Red when ON	Comparative output 1
1		N.C.	EASY	N.O.	Hi-1		Comparative output 2
2	Hysteresis	N.O.		N.C.	P-2, Lo-2	Green when ON	Comparative output 1
3		N.C.	Hysteresis	N.O.	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

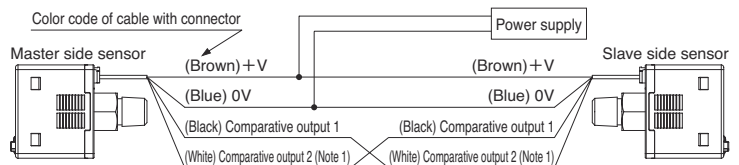
Code	Fifth digit	6th digit	7th digit	8th digit
	Response time	Unit selection	Display speed	Eco mode
0	2.5ms	MPa	250ms	OFF
1	5ms	kPa	500ms	Std
2	10ms	kgf/cm <sup>2</sup>	1,000ms	Full
3	25ms	bar		
4	50ms	psi		
5	100ms	mmHg		
6	250ms	inchHg		
7	500ms			
8	1,000ms			
9	5,000ms			

# 11 SETTING COPY FUNCTION

- This can copy the settings of the master side sensor to the slave side sensor.
- Be sure to use the setting copy function between the identical models. This function cannot be used between different models.
- Only one sensor can be connected on slave side with a master side sensor for the setting copy function.

## <Setting procedure>

- ① Set the setting copy function of the master side sensor to 'Copy sending ON' or 'Copy sending ON-L', and then press the mode selection key so that the sensor is in copy ready state. For details, refer to '<Setting copy mode>' in '10 PRO MODE'.
- ② Turn off the master side sensor.
- ③ Connect the master side sensor with the slave side sensor as shown below.



Notes: 1) For the high-function type, analog voltage / external input.

- ④ Turn on the master side sensor and the slave side sensor at the same time. (Note2) (Note 3)
- ⑤ Set contents (16-bit coded) are shown in orange on the main display of the master side sensor and the copying starts.
- ⑥ The same code explained above is shown in green on the the main display of the slave side sensor, and 'OK' is shown on the sub-display (When copying is complete.)
- ⑦ Turn off the power of the master side sensor and the slave side sensor and disconnect the wire.

※ If copying the setting to another sensor repeatedly, follow steps ③ to ⑥.

Notes: 2) Take care that if the power is not turned on at the same time, the setting contents may not be copied.

3) Note that when the power is on, pulse output is output to comparative output 1.

## <To cancel the setting copy mode of master side sensor>

- ① Whilst the slave side sensor is disconnected, turn on the power of the master side sensor.
- ② Press the mode selection key for approx. two seconds.

