

## E8F2

### Reading the Digital Display

The E8F2 displays alphanumeric characters, such as measurement values and menu items, on a 7-segment display. Examples are shown below.

Display	Meaning
OP	Output type: <u>Operation</u>
kPa	Unit: <u>kPa</u>
Ud	<u>Width</u>

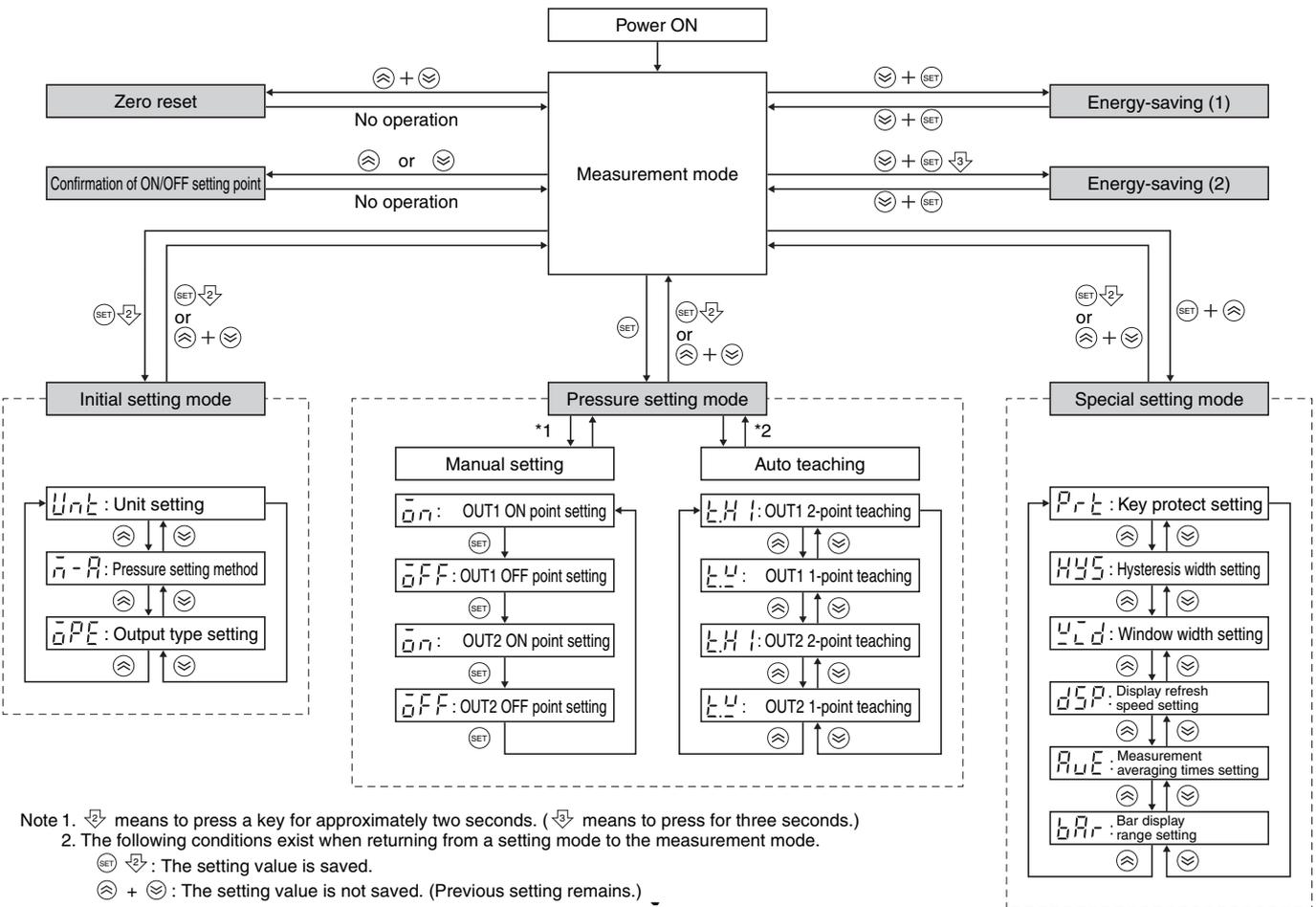
The following abbreviations are used by the digital display.

Abbreviation	Meaning	Abbreviation	Meaning
Unt	Unit	DSP	Display
M-A	Manual/Auto	AVE	Average
OPE	Operation	BAR	Bar
PRT	Protect	AUT	Auto
HYS	Hysteresis	ECO	Echo
WID	Width		

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

### Modes

The E8F2 has a variety of functions in addition to a measurement value display function. These functions are divided in four modes, with the measurement mode branching into three subordinate modes. The relationship among each mode and switching methods is shown in the following figure.



Note 1.  $\odot$  means to press a key for approximately two seconds. ( $\odot$  means to press for three seconds.)

2. The following conditions exist when returning from a setting mode to the measurement mode.

$\odot$  : The setting value is saved.

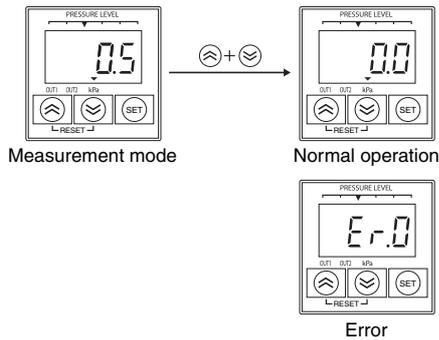
$\odot + \odot$  : The setting value is not saved. (Previous setting remains.)

\*1. Moves when the pressure setting method in the initial setting mode is set to  $\bar{n}$  (manual).

\*2. Moves when the pressure setting method in the initial setting mode is set to  $\bar{A}$  (auto teaching).

### Zero Reset

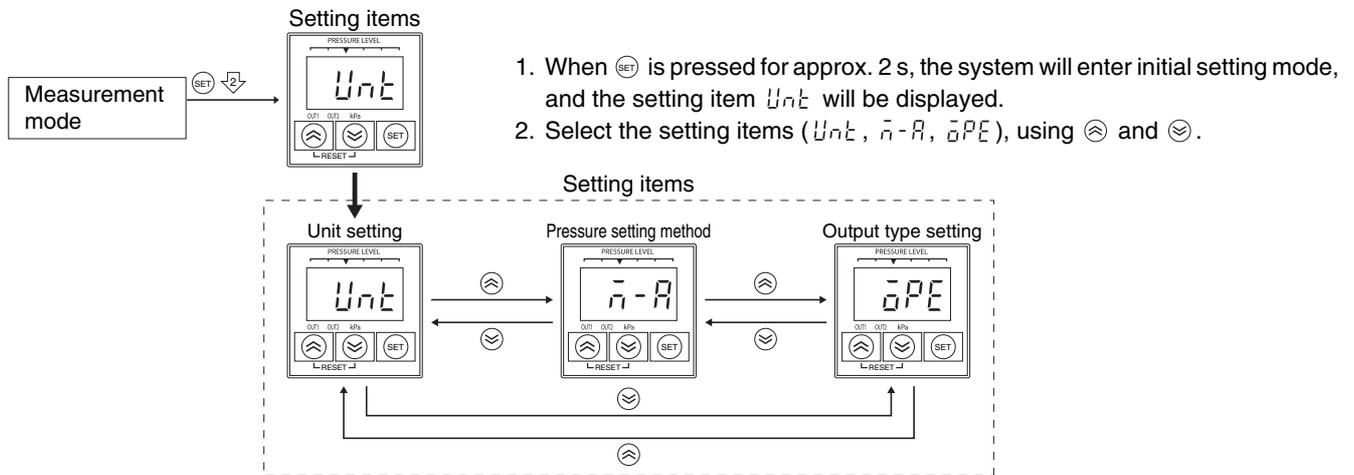
Note: Perform the zero reset with the Sensor open to atmospheric pressure.



Press  $\uparrow$  and  $\downarrow$  at the same time to reset the displayed measurement value to zero. The zero reset must be within  $\pm 5\%$  FS of the rated pressure. If this range is exceeded, the zero reset will be invalid.

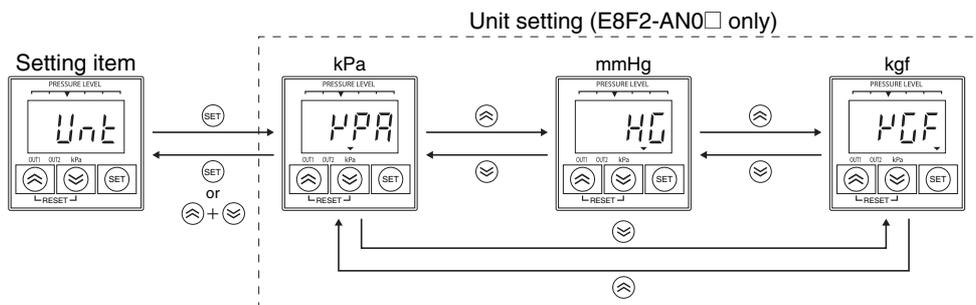
### Initial Setting Mode

Set the unit, pressure setting method, and output type in the initial setting mode.



1. When  $\text{SET}$  is pressed for approx. 2 s, the system will enter initial setting mode, and the setting item  $Unit$  will be displayed.
2. Select the setting items ( $Unit$ ,  $n-R$ ,  $oPE$ ), using  $\uparrow$  and  $\downarrow$ .

### Unit Setting (Reference)

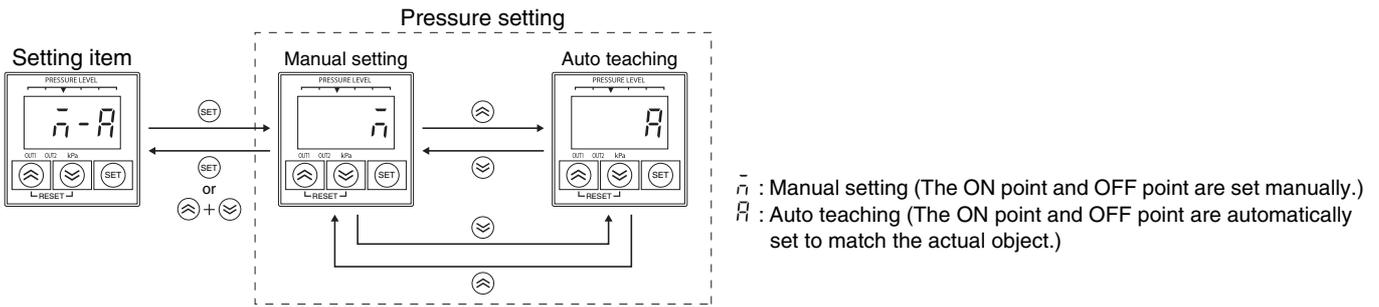


1. Press  $\text{SET}$  when  $Unit$  is displayed, and the set unit will be displayed.
2. Select the unit using  $\uparrow$  and  $\downarrow$ .
3. Press  $\text{SET}$  to select the displayed unit, and the system will return to the setting item display ( $Unit$ ).
4. Press  $\uparrow$  and  $\downarrow$  at the same time to return to the setting item display ( $Unit$ ) without changing the selection.

Note: The unit mmHg can be set only with the E8F2-AN0□.

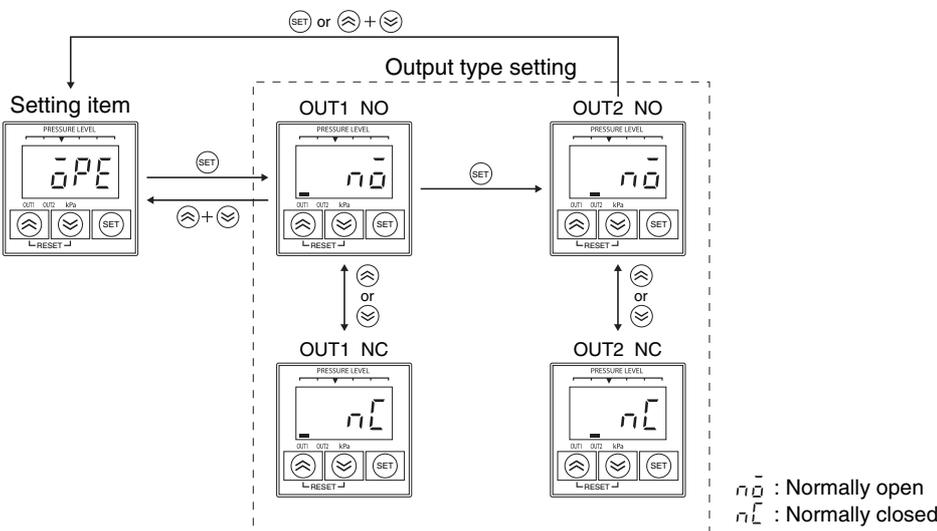
**Note: This menu item is prohibited in Japan due to revisions to the Measurement Law that prohibit the use of non-SI units. Leave the setting at the initial setting of  $kPa$  (kPa) and do not change the setting to other units.**

### Pressure Setting Method



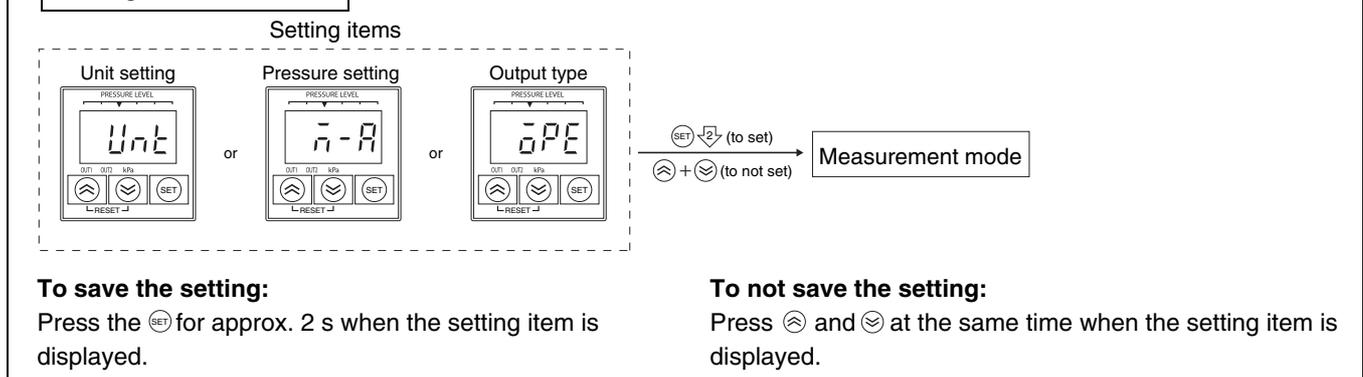
1. Press **SET** when  $\bar{n}$  -  $\bar{A}$  is displayed, and the set pressure setting method will be displayed.
2. Select the pressure setting method using  $\uparrow$  and  $\downarrow$ .
3. Press **SET** to select the displayed pressure setting method, and the system will return to the setting item display ( $\bar{n}$  -  $\bar{A}$ ).
4. Press  $\uparrow$  and  $\downarrow$  at the same time to return to the setting item display  $\bar{n}$  -  $\bar{A}$  without changing the selection.

### Output Type Setting



1. Press **SET** when  $\bar{o}PE$  is displayed, and the set output type for OUT1 will be displayed.
2. Select the output type using  $\uparrow$  and  $\downarrow$ .
3. Press **SET** to select the displayed output type, and the set output type for OUT2 will be displayed.
4. Select the output type using  $\uparrow$  and  $\downarrow$ .
5. Press **SET** to select the displayed output type for OUT2, and the system will return to the setting item display ( $\bar{o}PE$ ).
6. Press  $\uparrow$  and  $\downarrow$  at the same time to return to the setting item display ( $\bar{o}PE$ ) without changing the selection.

### Returning to Measurement Mode



### Pressure Setting Mode

The E8F2 outputs signals based on the measurement values and can be used to control external devices, such as valves and vacuum equipment.

To control external devices, a reference value is set, and settings are made so that the output turns ON if the measurement value exceeds the reference value, and OFF if it falls below the reference value. (This relationship can also be reversed.)

Pressure setting mode is used to set the point at which output

turns ON (ON point) and the point at which output turns OFF (the OFF point). There are two setting methods: manual and auto-teaching.

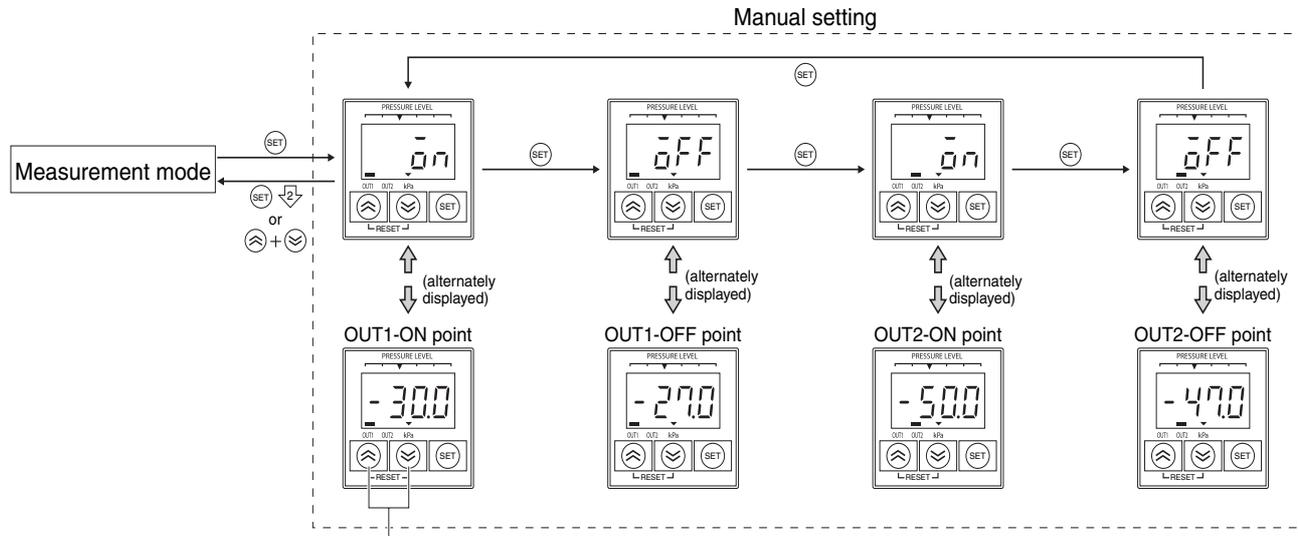
This section describes these setting methods for the ON points and OFF points. (Note: The following description applies when the output type is set to normally open.) Also, the hysteresis mode and window mode are determined by the relation between the ON point and the OFF point. (Refer to the following table for details.)

Mode	Relation between ON/OFF set values	Operating mode	
		Normally open	Normally closed
Hysteresis mode	ON-point set value > OFF-point set value		
Window mode	ON-point set value < OFF-point set value		
	ON-point set value = OFF-point set value	The output will be unstable. Use hysteresis mode or window mode.	

Note: Standard default settings: ON point = (-)30 kPa, OFF point = (-)27 kPa. Negative values are for the E8F2-AN0C only.

### Manual Setting

Note: Manual setting can be performed if  $\bar{n}$  is selected for the pressure setting method in the initial settings.



1. Press  $\text{SET}$  to enter the pressure setting mode, and  $\bar{0n}$  and the set ON point for OUT1 will be alternately displayed.
2. Change the ON point (for OUT1) using  $\leftarrow$  and  $\rightarrow$ .
3. Press  $\text{SET}$  to select the displayed ON point, and  $\bar{0FF}$  and the set OFF point for OUT1 will be alternately displayed.
4. Change the OFF point (for OUT1) using  $\leftarrow$  and  $\rightarrow$ .
5. Press  $\text{SET}$  to select the displayed OFF point, and  $\bar{0n}$  and the set ON point for OUT2 will be alternately displayed.
6. Change the ON point (for OUT2) using  $\leftarrow$  and  $\rightarrow$ .
7. Press  $\text{SET}$  to select the displayed ON point, and  $\bar{0FF}$  and the set OFF point for OUT2 will be alternately displayed.
8. Change the OFF point (for OUT2) using  $\leftarrow$  and  $\rightarrow$ .
9. Press  $\text{SET}$  to select the displayed OFF point, and  $\bar{0n}$  and the set ON point for OUT1 will be alternately displayed.

#### Returning to Measurement Mode

**Saving the set value**.....Press  $\text{SET}$  for approx. 2 s. (Valid for any set value display.)

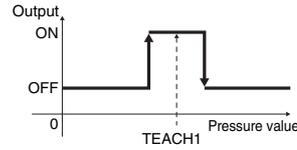
**Not saving the set value**.....Press  $\leftarrow$  and  $\rightarrow$  at the same time. (Valid for any set value display.)

### Auto Teaching

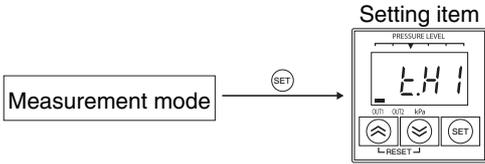
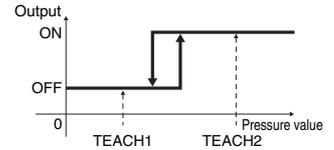
By using auto teaching, measurement values can be input as set values for the ON point and OFF point rather than by using key entry. There are two types of teaching: one-point teaching to set one point and two-point teaching to set two points.

Note: Auto-teaching can be performed if  $\bar{R}$  is selected for the pressure setting method in the initial settings.

#### One-point Teaching

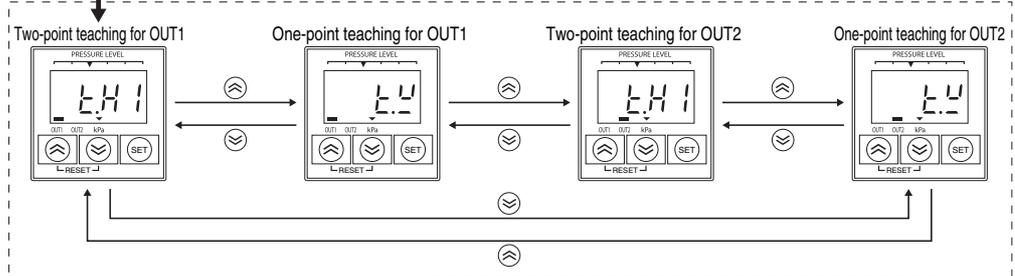


#### Two-point Teaching



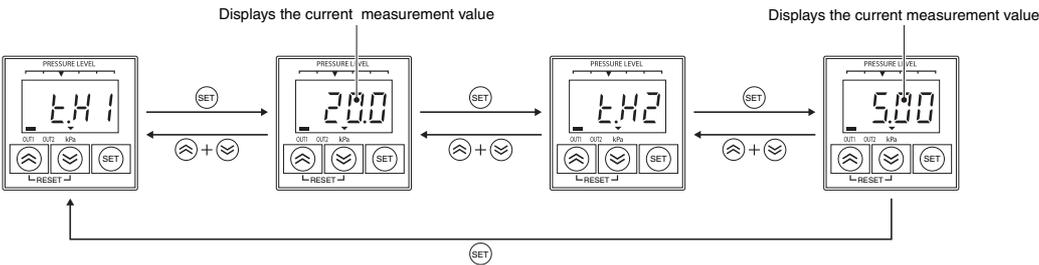
1. Press  $\text{SET}$  to enter pressure setting mode. The OUT1 indicator light and the  $E.H.1$  will be displayed.
2. Select one-point teaching or two-point teaching for OUT1 or OUT2 using  $\text{UP}$  and  $\text{DOWN}$ .

#### Auto teaching setting



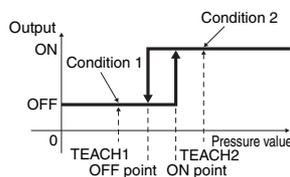
$E.H.1$  : Teaching, hysteresis mode, first point  
 $E.U.$  : Teaching, window mode

### • Two-point Teaching (Hysteresis Mode Teaching) OUT1



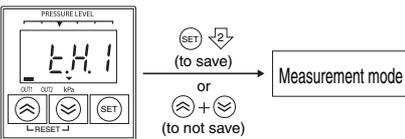
1. Press  $\text{SET}$  at condition 1 in the following figure when  $E.H.1$  is displayed, and the present measurement value will be displayed.
2. Check the measurement value, and press  $\text{SET}$ . Teaching for the first point will be completed when teaching is executed.
3. Press  $\text{SET}$  at condition 2 in the following figure to display the present measurement value.

#### Two-point Teaching



There will be no problem if the order or size of TEACH 1 and TEACH 2 are reversed.

ON point = (TEACH1 + TEACH2) ÷ 2  
 OFF point = ON point - 3% FS  
 Default: 3% FS (Can be changed.)



4. Check the measurement value, and press  $\text{SET}$ . Teaching for the second point will be completed when teaching is executed.
5. Press  $\text{SET}$  for approx. 2 s when  $E.H.1$  is displayed, the set value will be set using teaching, and the system will return to measurement mode.
6. Press  $\text{UP}$  and  $\text{DOWN}$  at the same time to return to measurement mode without changing the selection.

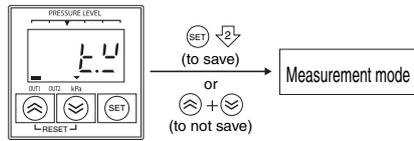
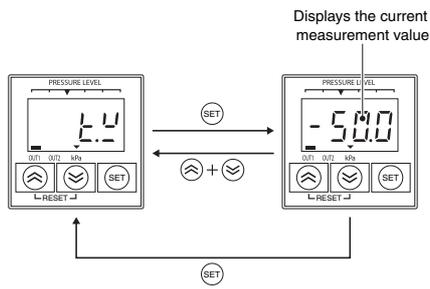
Note: Hysteresis mode will be set automatically if 2-point teaching is performed.

This function is convenient for applications for checking a vacuum pressure.

**Auto Teaching**

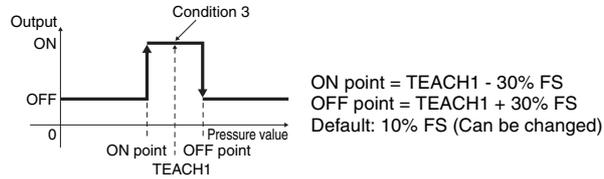
**• One-point Teaching (Window Mode Teaching)**

**OUT1**



1. Press **SET** at condition 3 in the following figure when  $\underline{\quad}\underline{\quad}$  is displayed, and the present measurement value will be displayed.

**One-point Teaching**



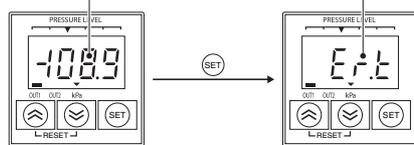
2. Check the measurement value and press **SET**. Teaching will be completed when teaching is executed.
3. Press **SET** for approx. 2 s when  $\underline{\quad}\underline{\quad}$  is displayed. The set value will be set using teaching, and the system will return to measurement mode.
4. Press **←** and **→** at the same time to return to measurement mode without changing the selection.

Note: Window mode will be set automatically if 1-point teaching is performed.

This function is convenient for applications to confirm source pressure.

**• Teaching Errors**

The current value is out of the setting range.

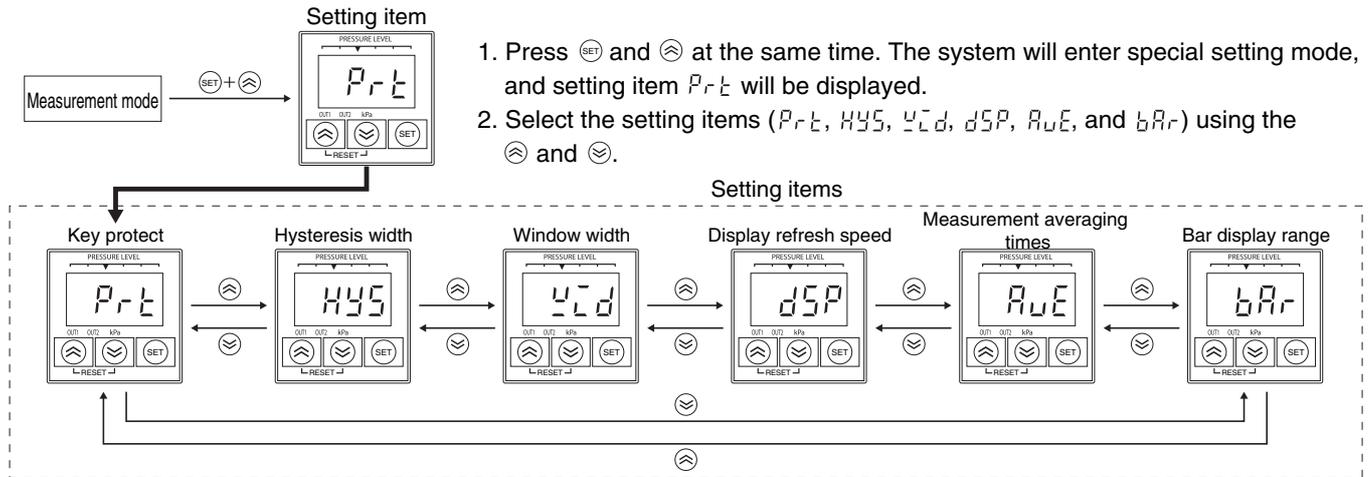


Meaning of display: Er.t (error teaching)

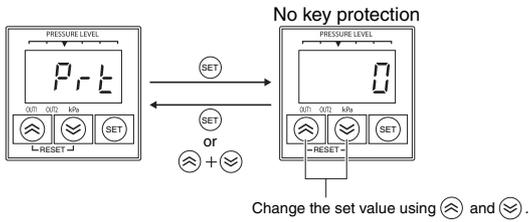
- Pressing **SET** will not be enabled if the present value is outside the setting range or the calculation result after teaching is outside the setting range. In that case, an error message will be displayed for 1 s if teaching is executed.

### Special Setting Mode

Set the key protection, hysteresis width, window width, display refresh speed, measurement averaging times, and bar display range in special setting mode.



### Key Protect Setting



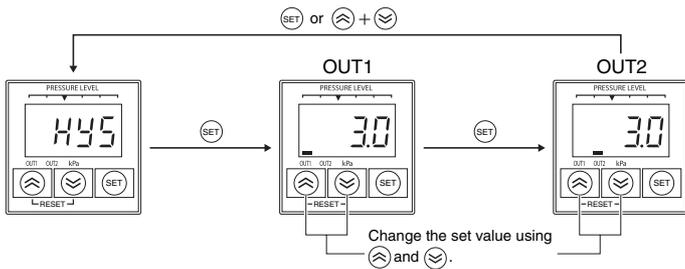
1. Press **SET** when *Prt* is displayed, and the set key protect set value will be displayed.
2. Change the set value using **↶** and **↷**.
3. Press **SET** to select the displayed set value, and the system will return to the setting item display (*Prt*).
4. Press **↶** and **↷** at the same time to return to the setting item display (*Prt*) without changing the selection.

### Key Protection Status

- 0: No key protection will be set.
- 1: Initial setting and pressure setting will be prohibited.
- 2: Moving to any function other than pressure setting confirmation, special settings, and the energy saving function will be prohibited.

### Hysteresis Width Setting

The hysteresis width can be changed as shown in the following figure. (The hysteresis mode, however, can be changed only if it is set using teaching.)



1. Press **SET** when *HYS* is displayed, and the hysteresis width set value set for OUT1 will be displayed.
2. Change the set value using **↶** and **↷**. The setting range is 0% to 10% FS.
3. Press **SET** to select the displayed set value, and the hysteresis width set value set for OUT2 will be displayed.
4. Change the set value using **↶** and **↷**.
5. Press **SET** to select the displayed set value, and the system will return to the setting item display (*HYS*).
6. Press **↶** and **↷** at the same time to return to the setting item display (*HYS*) without changing the selection.

**Note 1. Hysteresis Mode**

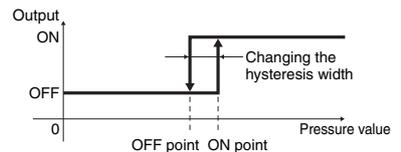
The hysteresis width setting is not valid if the set values were set manually. It is valid only if auto-teaching was used.

**Window Mode**

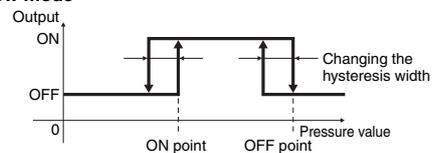
The hysteresis width setting is valid for the measurement values.

2. In hysteresis mode, the width between the ON point and OFF point becomes the hysteresis width. It cannot be changed with the hysteresis mode setting.

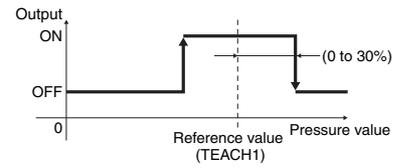
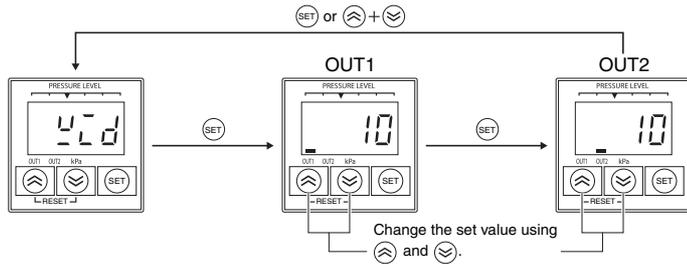
### Hysteresis mode



### Window mode



### Window Width Setting



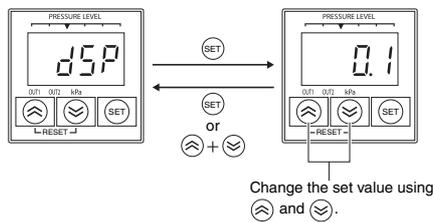
1. Press **SET** when  $u\bar{L}d$  is displayed, and the window set value set for OUT1 will be displayed.
2. Change the set value using **→** and **←**. The setting range relative to the reference value is 0% to 30% FS.
3. Press **SET** to select the displayed set value, and the window width set value set for OUT2 will be displayed.
4. Change the set value using **→** and **←**.
5. Press **SET** to select the displayed set value, and the system will return to the setting item display ( $u\bar{L}d$ ).
6. Press **→** and **←** at the same time to return to the setting item display ( $u\bar{L}d$ ) without changing the selection.

Note: This setting is not valid if hysteresis mode is used.

### Display Refresh Speed Setting

The following refresh speeds can be set.

- 0.1: Displays the average of a 0.1-s interval.
- 0.5: Displays the average of a 0.5-s interval.
- 1.0: Displays the average of a 1.0-s interval.

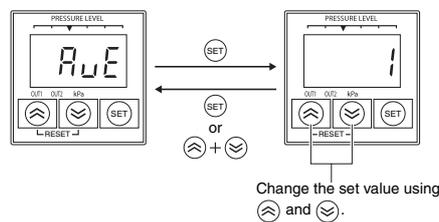


1. Press **SET** when  $d5P$  is displayed, and the set value set for the display refresh speed will be displayed.
2. Change the set value using **→** and **←**.
3. Press **SET** to select the displayed set value, and the system will return to the setting item display ( $d5P$ ).
4. Press **→** and **←** at the same time to return to the setting item display ( $d5P$ ) without changing the selection.

Note: The number of measurements to average is set with the Measurement Averaging Times Setting (AVE).

### Measurement Averaging Times Setting

Any of the following number of measurement times can be set: 1, 8, 32, or 256.



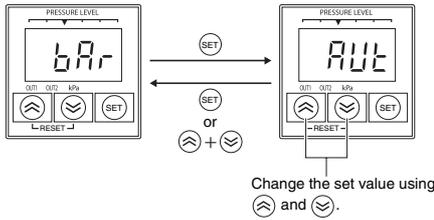
1. Press **SET** when  $RUE$  is displayed to display the set value set for the measurement averaging times.
2. Change the set value using **→** and **←**.
3. Press **SET** to select the displayed number of times, and the system will return to the setting item display ( $RUE$ ).
4. Press **→** and **←** at the same time to return to the setting item display ( $RUE$ ) without changing the selection.

Note: If the Display Refresh Speed is set to 0.5 s and the Measurement Averaging Times is set to 32, 32 measurements will be averaged as one block and then the block average over 0.5 s will be displayed. This will be repeated every 0.5 s.

### Bar Display Range Setting

The setting range for set values is 1% to 20% FS of the display range per bar.

If the setting is AUT, the best display range will be calculated from the set ON point, and that will be used as the set value.



1. Press  $\text{SET}$  when *bAr* is displayed, and the set value set for the bar display range will be displayed.
2. Change the set value using  $\uparrow$  and  $\downarrow$ .
3. Press  $\text{SET}$  to select the displayed set value, and the system will return to the setting item display (*bAr*).
4. Press  $\uparrow$  and  $\downarrow$  at the same time to return to the setting item display (*bAr*) without changing the selection.

Note: The bar display function only for output 1. This setting is valid only in Hysteresis Mode.

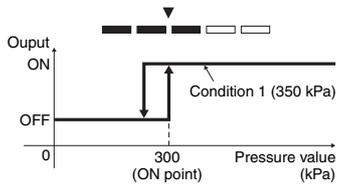
### Bar Display

The bar display enables intuitively reading the level of the measured pressure relative to the ON point and OFF point. The bar displays data only for OUT1. Also, the display method is different in hysteresis mode and window mode.

#### • Hysteresis Mode

The size of the present measurement value is expressed using five bars with the point between the second and third bars from the left as the ON point.

#### 1-MPa Model, ON Point: 300 kPa



Display range per bar:

$$300 \text{ kPa} \leq 1 \text{ MPa} \times \frac{1}{2}, \text{ so,}$$

$$300 \text{ kPa} \times \frac{1}{3} = 100 \text{ kPa}$$

At condition 1, all three bars on the left will be lit.

The display range per bar will be the set value for the bar display range in the special setting mode. The range will be as follows if the set value is *AUT*.

$$\text{If ON point} \leq \text{Rated pressure} \times \frac{1}{2}:$$

$$\text{Display range per bar} = \text{ON point} \times \frac{1}{3}$$

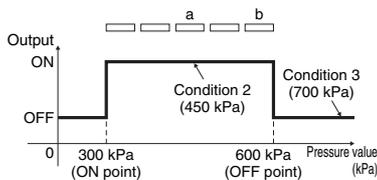
$$\text{If ON point} > \text{Rated pressure} \times \frac{1}{2}:$$

$$\text{Display range per bar} = (\text{Rated pressure} - \text{ON point}) \times \frac{1}{3}$$

#### • Window Mode

The space between the ON point and the OFF point is divided into five parts, and the position of the present measurement value is expressed using one lit bar. Also, if the measurement value is at or below the ON point or at or above the OFF point, the left and right bars will flash.

#### 1-MPa Mode, ON Point: 300 kPa, OFF Point: 600 kPa



At condition 2, only bar (a) will be lit.

At condition 3, only bar (b) will be lit.

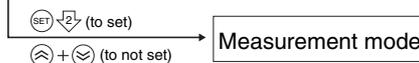
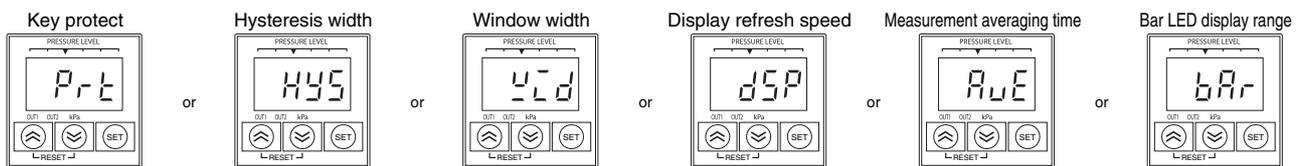
The display range per bar:

$$(\text{Difference between ON point and OFF point}) \times \frac{1}{5}$$

Note: Setting the bar display range for special setting mode is invalid.

### Returning to Measurement Mode

#### Setting items



#### To save the set value:

Press  $\text{SET}$  for approx. 2 s when the setting item is displayed.

#### To not save the set value:

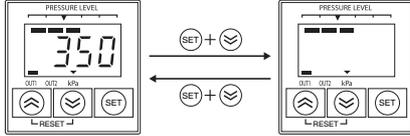
Press  $\uparrow$  and  $\downarrow$  at the same time when the setting item is displayed.

## Energy-saving Function

The E8F2 has a function to reduce power consumption by displaying the pressure measurement value with the bars only (i.e., turning OFF the digital display).

### Energy-saving 1

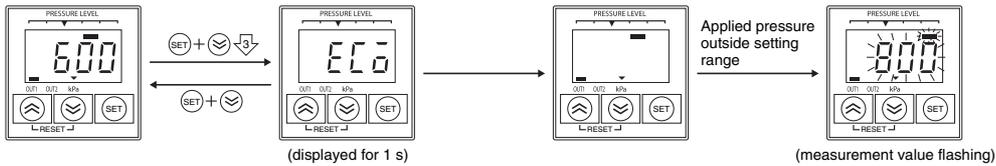
Normal measurement mode



1. Press **SET** and **DOWN** at the same time in measurement mode, to turn OFF the digital display.
2. Press **SET** and **DOWN** again at the same time to return to the normal display.

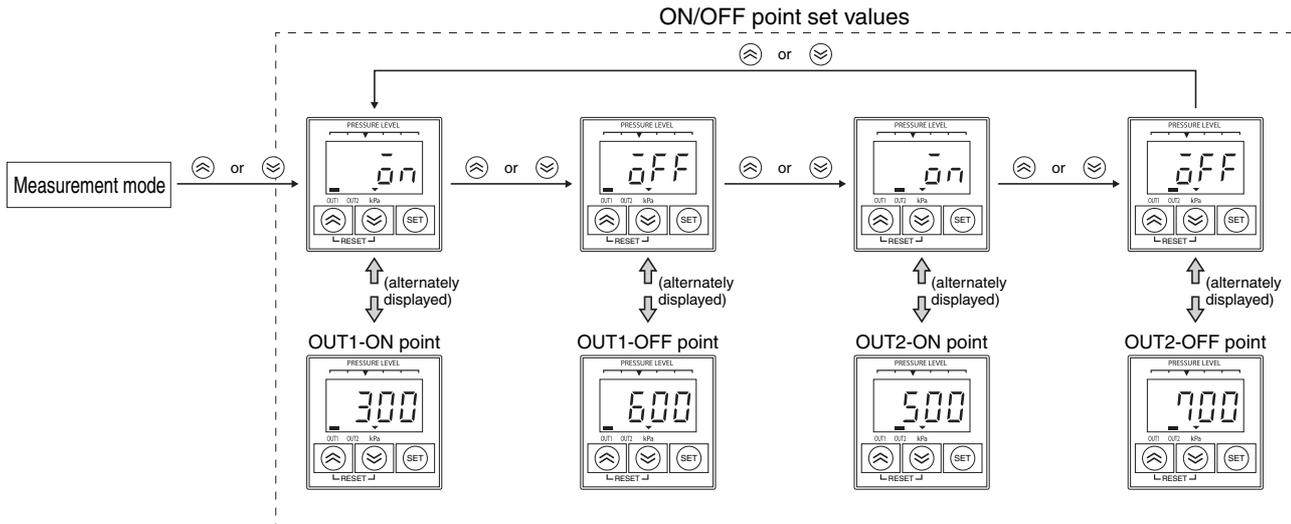
### Energy-saving 2

In window mode, the measurement value (digital display) will flash to signify an alarm if the measurement value is outside the setting range.



1. Press **SET** and **DOWN** at the same time for approx. 3 s to display **ELO**, and after 1 s only the digital display will turn OFF.
2. The digital display will flash along with the bars if the measurement value is at or below the ON point or at or above the OFF point only if the system is set to window mode.
3. Press **SET** and **DOWN** at the same time to return to the normal display.

### Confirmation of ON/OFF Point Set Value



The currently set ON point and OFF point can be checked.

Press (left or right arrow) in measurement mode, and  $\bar{0}n$  and ON point set for OUT1 will be displayed alternately.

Press the buttons again to alternately display  $\bar{0}ff$  and the OFF point set for OUT1.

After OUT1 is displayed, press (left or right arrow) to proceed to displaying OUT2.

The display will automatically return to the measurement value if there is no key input for approx. 2 s while the set value is displayed.

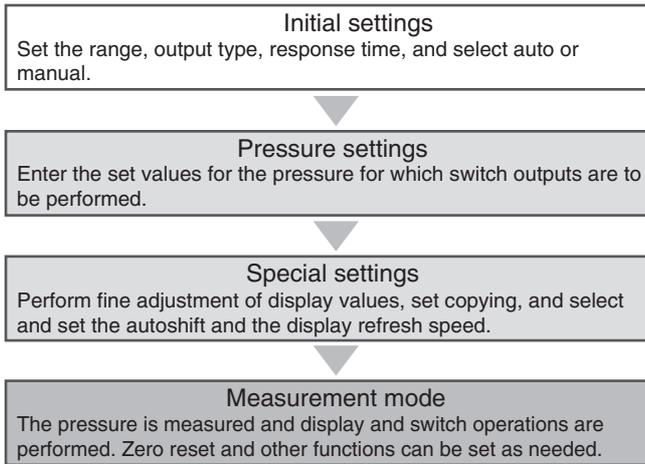
### Error Display

LED display	Error	Reset method
$E_{r,r}$ (flashing)	Sensor error	Contact OMRON.
$E_{r,s}$ (flashing)	Sensor error	
Pressure value flashing	Input upper limit error	Set the applied pressure to the rated pressure or lower.
	Input lower limit error	Do not apply a reverse pressure. Apply pressure within the rated range.
$E_{r,\bar{0}}$	Output load short-circuit	The load is short-circuited or incorrect wiring is causing overcurrent to flow. Check the wiring and attach an appropriate load if required.
$E_{r,t}$	Teaching input out of range	Perform teaching at pressure within the rated range. If required, change the hysteresis width and window width in special setting mode so that the ON/OFF set values are within the rating.
$E_{r,0}$	Zero reset error	Set the applied pressure to 0 (i.e., atmosphere released).

## E8MS/E8M

### Setting Methods

#### Setting Procedure



#### Initial Settings

Press the button to select the channel to be set, and press the button for at least 2 s. Initialization will start. Initialization is performed for each channel.

##### 1. Pressure Range Setting

- The appropriate pressure range for the Sensor to be connected can be selected.
- Press the or button to select the range to be used, and then press the button.



in0	↔	in1	↔	in2	↔	in3
(Micro (differential pressure) -1 kPa)		(Positive pressure 1 MPa)		(Low pressure 100 kPa)		(Vacuum pressure -101 kPa (default))

##### 2. Output Type Setting

- Set the output type for OUT1.

Press the or button to select either non-reverse output mode or reverse output mode, and then press the button.



**(Non-reverse output mode) 1nO ↔ 1nC (Reverse output mode)**

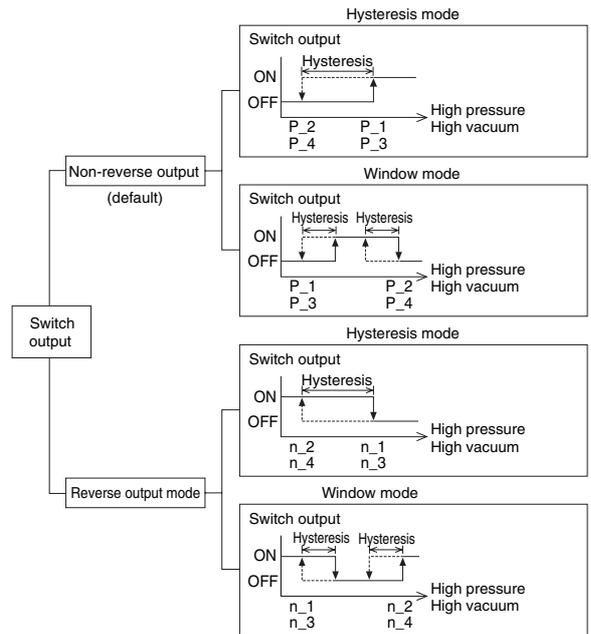
- Set the output type for OUT2 in the same way (CH1 only).

As with OUT1, press the or button to make the selection, and then press the button.



**(Non-reverse mode) 2nO ↔ 2nC (Reverse mode)**

#### Output Modes



- The description and figure above uses OUT1 as an example. OUT2 is the same as OUT1, but n\_1 and n\_2 will be n\_3 and n\_4, and P\_1 and P\_2 will be P\_3 and P\_4.
- In hysteresis mode, the control output may chatter when the input pressure changes near the set point if the hysteresis is set to 2 digits or less.
- The hysteresis is always 3 digits in window mode. Allow a spacing of at least 7 digits when setting the pressure. Operation will not be performed if there are less than 7 digits.

#### Response Time Setting

- Set the response time for switch output. Switch chattering can be prevented by using this setting.
  - Press the or button to select the displayed response time (ms), and then press the button.
- Response time: 5 ↔ 20 ↔ 160 ↔ 640**



#### Pressure Setting Method Selection

- Manual setting or auto presetting can be selected as the pressure setting method. Auto presetting is used to automatically achieve the best settings by using the target workpiece when the switch output will be used to check vacuum.
  - Press the or button to select the setting method, and then press the button.
- (Manual setting) nAn ↔ AUt (Auto presetting)**
- All settings will be completed, and the system will enter measurement mode.



## Pressure Setting Mode

### Manual Setting

The set value will be set manually if manual setting is selected for the pressure setting method in the initial settings. Perform the pressure settings for each channel.

#### 1. Selecting the Set Value Input Mode for OUT1 (P\_1)

- Press the  button to select the channel to set in the measurement mode, and then press the  button to display the set value.
- P\_1 (n\_1 for reverse output mode) and the present set value will flash alternately on the display. 
- Press the  or  button to change and set the set value. The set value can be increased with the  button and decreased with the  button. Press the  button to increase the number by 1 digit, and hold the button down to continue increasing. Press the  button to decrease the number by 1 digit, and hold the button down to continue decreasing.
- Check the number and press the  button.

#### 2. Selecting the Set Value Input Mode for OUT1 (P\_2)

- P\_2 (n\_2 for reverse output mode) and the present set value will flash alternately on the display.
- Press the  or  button to change and set the set value. 
- The set value can be increased with the  button and decreased with the  button. Press the  button to increase the number by 1 digit, and hold the button down to continue increasing. Press the  button to decrease the number by 1 digit, and hold the button down to continue decreasing.
- Check the number and press the  button.

#### 3. Selecting the Set Value Input Mode for OUT2 (P\_3 and P\_4) (for CH1 Only)

- As in 1 and 2, press the  or  button to change and set the set value. 
- Press the  button to increase the number by 1 digit, and hold the button down to continue increasing. Press the  button to decrease the number by 1 digit, and hold the button down to continue decreasing.
- Check the number and press the  button.

#### 4. Checking the Autoshift Value

- C\_5 (C\_3 when set to CH2 to CH4) and the autoshift value will flash alternately on the display. The shift value will be displayed as 0 if autoshift has not been input. 
- Check the number and press the  button.
- All settings will be completed, and the system will enter measurement mode.

### Auto Presetting

Settings can be calculated and saved from the measurement pressure if auto presetting is selected in the initial settings. The set values are automatically set by repeating vacuum and non-vacuum states several times from the workpiece for which settings will be made.

#### 1. Selecting Auto Presetting OUT1

- Press the  button in measurement mode to select the channel to be set, and then press the  button to display AP1. 

#### 2. Preparing the Device for OUT1

- Prepare the device for which the OUT1 pressure will be set.

#### 3. Setting Auto Presetting Values for OUT1

- Press the  button to display A1L.
- Measurement will start. Operate the device and change the pressure.
- The appropriate value will be automatically set when the pressure change is detected. (If setting OUT1 is not required, press the  and  buttons at the same time for 1 s min. The display will change to AP2.)

#### 4. Setting Auto Presetting OUT2 (CH1 Only)

- Press the  button to switch the display to AP2. 

#### 5. Preparing and Setting the Device for OUT2

- Prepare the device for which the OUT2 pressure will be set, and then set OUT2 using the same procedure described above for setting OUT1.
- A2L will be displayed and measurement will start. The appropriate value will be automatically set when the pressure change is detected. (If setting OUT2 is not required, press the  and  buttons at the same time for 1 s min. The system will return to measurement mode.)

#### 6. Completing Settings

- Press the  button to complete auto presetting mode and return to measurement mode.

The set values for auto presetting will be as follows:

$$\begin{aligned} \text{ON point} &= A - (A - B)/4 & A &= \text{Maximum pressure} \\ \text{OFF point} &= B + (A - B)/4 & B &= \text{Minimum pressure} \end{aligned}$$

## Special Settings

### Display Value Fine Tuning

This function can be used to match display values by eliminating variation in the output values of CH1 to CH4. Fine tuning can be performed on the pressure sensor display values within  $\pm 5\%$  FS.

- Press the and buttons at the same time for 2 s min. to display FSt. If fine tuning is not required, press the button when FSt is displayed. The system will move the copying function.
- Press the or button to select the channel, and then press the button.
- FSt and the present pressure set value will be displayed alternately.
- Press the or button to increase or decrease the number as desired. (Increase or decrease of  $\pm 5\%$  R.D. possible.)
- Check the number, and then press the button. FSC and the adjusted amount of change (percent) will be displayed alternately.
- Press the button to return to the FSt display. Press the or button, and perform the settings at the FSt display for other channels in the same way.
- After completing the settings at the FSt display for the other channels, press the button when FSt is displayed. The system will proceed to the copying function.

\* The pressure set value may change  $\pm 1$  digit when fine adjustment of display values is performed.

### Copying

- Four items are copied: pressure set value, range setting, output type, and response time.
  - If copying is performed from CH1 to CH2, CH3, or CH4, the OUT1 data for CH1 will be copied. If copying is performed from CH2, CH3, or CH4 to CH1, the OUT1 data or CH2, CH3, or CH4 will be copied to OUT1 of CH1.
- CPy will be displayed.
  - If copy mode setting is not required, press the button. The system will proceed to the autoshift function.
  - Press the or button to select the copy source displayed on the channel display section.
  - Press the button to switch the copy source channel display from flashing to lit.
  - After CPy and the copy source channel will be displayed alternately, press the or button to select the copy source channel.
- C\_11 (CH1)  $\leftrightarrow$  C\_22 (CH2)  $\leftrightarrow$  C\_3 (CH3)  $\leftrightarrow$  C\_4 (CH4)**
- Press the button to return to the CPy display.
  - To copy other channels, press the or button again and repeat the same procedure.
  - After the setting has been completed, CPy will be displayed, and the system will proceed to autoshift mode.

\* The pressure set value of the copied channel may change  $\pm 1$  digit when copying is used.

### Autoshift

Autoshift is a function to correct the set values of each switch output according to the change in source pressure.

This enables proper judgment of switch output even if the source output changes.

Refer to the following details for autoshift.

- Press the or button when SH1 is displayed, and CH1 and "on" or "oF" will be displayed alternately. Press the button when SH1 is displayed to proceed to the display refresh speed setting.
- **(Autoshift ON) on  $\leftrightarrow$  oF (Autoshift OFF)**
- Press the or button to select autoshift mode, and then press the button.
- For CH2, CH3, or CH4, press the or button in the same way to select autoshift mode.
- After autoshift mode settings have been completed for all channels, press the button to proceed to the display refresh speed setting.

### Display Refresh Speed Setting

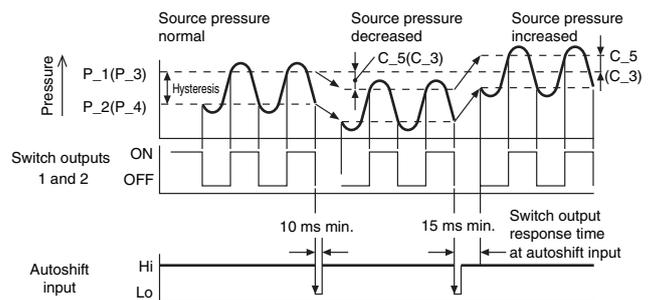
Set the display refresh speed for the measurement value.

- Press the or button when dSP is displayed, select "s" for the display refresh speed, and then press the button.
  - All settings will be completed, and the system will enter measurement mode.
- Display refresh speeds: 0.1  $\leftrightarrow$  0.5  $\leftrightarrow$  1.0

### About Autoshift

The switch may not operate correctly if the change in the source pressure is large. Autoshift is a function that corrects the change in the source pressure and corrects the switch set value using the measurement pressure when the autoshift is input as the reference pressure.

### Correcting Set Values Using Autoshift



### Setting Range Using Autoshift Input

	Pressure range				
	-1 MPa	-100 kPa	0	100 kPa	1 MPa
Micro (differential pressure)		-1 kPa	0.1 kPa	0.1 kPa	
		-1 kPa	0.1 kPa	0.1 kPa	
Vacuum pressure		-101 kPa	10 kPa	10 kPa	
		-101 kPa	10 kPa	10 kPa	
Low pressure		-10 kPa	100 kPa	100 kPa	
		-10 kPa	100 kPa	100 kPa	
Positive pressure		-100 kPa	1 MPa	1 MPa	
		-100 kPa	1 MPa	1 MPa	

Setting pressure range    
  Setting range

## Autoshift Setting

- Maintain constant pressure for 10 ms min. after the autoshift signal is input.
- The display will show “ooo” for approx. 1 s when the autoshift signal is input, and the pressure at that point will be saved at C\_5 or C\_3 as the correction value. By using the saved correction value, the switch set in response to autoshift in initial settings will operate with the correction value added to the set value.
- Responding to CH1  
For the operating value of OUT1 and OUT2, correction value C\_5 will be added to P\_1 to P\_4 or n\_1 to n\_4.
- Responding to CH2 to CH4  
For the operating value of OUT1, correction value C\_3 will be added to P\_1 and P\_2 or n\_1 and n\_2.
- A time of 15 ms max. is required until the switch operates immediately after autoshift is input.
- If the measurement pressure exceeds the setting pressure range when the autoshift is input, it will be corrected to within the setting pressure range.
- The correction value will be zero is autoshift is set to “oF.”
- “ooo” will not be displayed if autoshift for all channels is set to oF even if the autoshift input is set to Lo (no-voltage input).
- Correction values after autoshift input will be lost if the power supply is turned OFF and will be reset to zero (initial values) when the power supply is turned ON again.

\* EEPROM is not used as the memory location for correction values.

## Other Functions

### Peak Hold and Bottom Hold

These functions detect and update the maximum and minimum values during normal measurement. The display values can be held.

- Press the  button for 2 s min.
  - Press the  or  button to select the peak mode or bottom mode, and then press the  button. 
  - When  $\bar{n}_P$  (peak mode) is selected, the peak value will flash on the display.
  - When  $\bar{n}_b$  (bottom mode) is selected, the bottom value will flash on the display.
  - When  $\bar{n}_n$  is selected (neither peak mode nor bottom mode), the system will return to measurement mode.
- $\bar{n}_P$     $\leftrightarrow$     $\bar{n}_b$     $\leftrightarrow$     $\bar{n}_n$   
 (peak mode)   (bottom mode)   (neither peak mode nor bottom mode)
- Press either the  or  button to release the hold (i.e., clear the peak and hold values).

### Key Lock

This function can be used to prevent incorrect operation, such as inadvertently changing the set value. Set to LoC (lock mode) to disable the buttons.

#### Lock

- Press the  button for 4 s min., and release the  button when the present setting UnL is displayed. 
- Set the display to LoC using the  or  button.
- Press the  button to return to measurement mode.

#### Release

- Press the  button for 4 s min., and release the  button when the present setting LoC is displayed. 
- Set the display to UnL using the  or  button.
- Press the  button to return to measurement mode.

### Zero Clear

The measurement pressure display can be adjusted to zero within  $\pm 5\%$  FS of the atmospheric pressure.

- Press the  and  buttons at the same time for 1 s min. to clear the display to zero when the measurement pressure display is within  $\pm 5\%$  FS, regardless of the measurement pressure at that point. When pressing the buttons, press the  button before the  button. If the  button is pressed first, the channel select function may operate.
- The system will automatically return to measurement mode.

### Channel Select

- The channel can be selected in the following order by pressing the  button: 1→2→3→4→1→... The display section will show measurement pressure value for each selected channel.

### Channel Scan

- Press the  button for 2 s min. The channel to be displayed and the corresponding measurement pressure will be displayed at intervals of approx. 2 s.
- Press the  button again for 2 s min. to release the function.

### Error Messages

Error messages show the error location and category when an error occurs.

Error	Error message	Description	Corrective action
Overcurrent error	OUT1 Er 1	Overcurrent is flowing to the switch output load.	Turn OFF the power supply, remove the cause of the error on the output where the overcurrent occurred, and then turn ON the power supply again.
	OUT2 Er 2		
Residual pressure error	Er 3	Pressure of at least $\pm 5\%$ FS is applied to the pressure sensor when the value is cleared to zero. Note: The error will be displayed for approx. 2 s, and then the system will reset to measurement mode.	Return the applied pressure to the atmosphere and then clear the value again to zero.
Applied pressure error	---	Pressure in excess of the upper limit of the setting pressure range is applied.	Check that the sensor is connected and wired properly, or return the applied pressure to within the setting pressure range.
	----	The sensor may not be connected or it may be wired incorrectly. Alternatively, pressure in excess of the lower limit of the setting pressure range may be applied.	
System error	Er 5	This message is displayed when an internal data error occurs.	Cycle the power supply.
	Er 6	This message is displayed when an internal data error occurs.	
	Er 7	This message is displayed when an internal data error occurs.	
	Er 8	This message is displayed when an internal data error occurs.	

\* Contact your OMRON representative if the system does not reset even if the corrective actions described above are performed.

### Default Set Values

Mode	Details	Setting	LCD display
Initial setting	Pressure range	0.0 to -101.0 [kPa]	in3
	Output type	Normally open	in0(2n0)
	Response time	5 ms	5
	Pressure setting method	Manual	nAn
Pressure setting	Set value	-75.8 [kPa]	-75.8
Special setting	Autoshift	OFF	oF
	Display refresh speed	0.1 [s]	0.1
Other modes	Key lock	Released	UnL