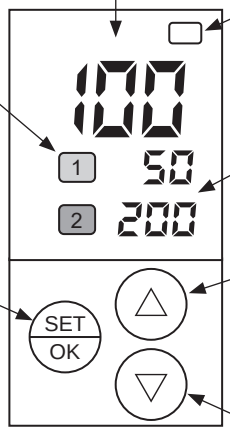
Names and functions of display/operation section



Main screen display

Displays reference value, various set values and model status.

Output display

- Display color changes once the threshold is reached. (Display color can be set to green or orange)

Notification display

Used when setting the notification display.

Sub-screen display

Displays the threshold, detection pressure and various settings.

SET/OK key

- Use to confirm the set value.
- Use to cancel when in setting mode.
- Activates numerical input.
- Use to enter settings mode.
- Use to return to the RUN mode.
- Use to revise settings (return to the settings existing when setting mode was entered).

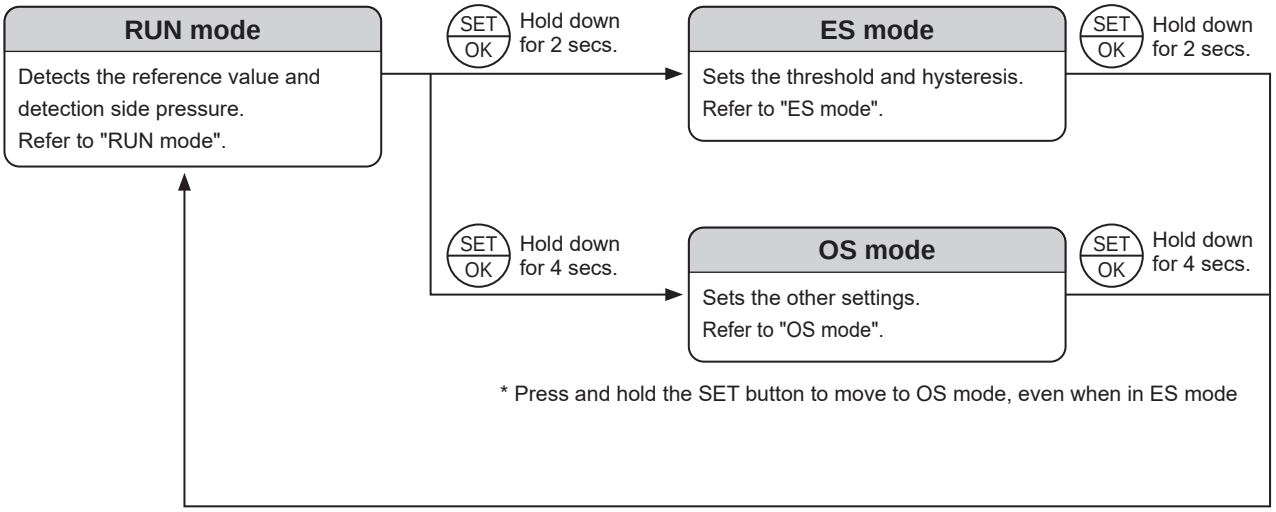
△ Key

- Use to switch to the sub-screen when in RUN mode.
- When setting various data, this key is used to increase set values, etc.
- Use to change the setting mode.

▽ Key

- Use to switch to the sub-screen when in RUN mode.
- When setting various data, this key is used to decrease set values, etc.
- Use to change the setting mode.

Setting



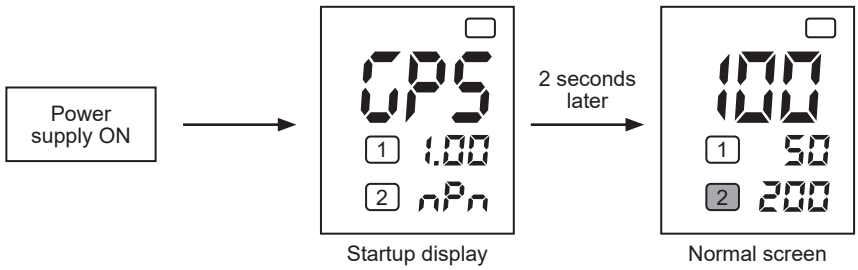
* Press and hold the SET button to move to OS mode, even when in ES mode

RUN mode (normal operation)

● RUN mode is the regular display and output operation mode which succeeds the startup display when the power is turned ON.

Startup display

The following startup display appears when the power is turned ON.

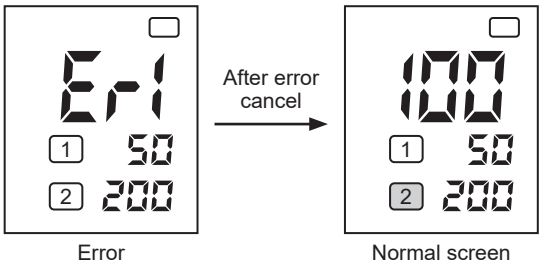


Normal screen

Screen	Display		Display color
	GPS3-E (short range)	GPS3 (wide range)	
Main screen	10 to 200 FF (beyond display range upper limit) -FF (beyond display range lower limit)	20 to 500 FF (beyond display range upper limit) -FF (beyond display range lower limit)	Green display
Sub screen	Threshold (CH1/2): 10 to 200, no display Detection side output kPa: 0 to 220 bar: 0 to 2.20 (overseas option only) psi: 0 to 31.9 (overseas option only) Output display: ON/OFF (IO-Link compatible option only)	Threshold (CH1/2): 20 to 500, no display Detection side output kPa: 0 to 220 bar: 0 to 2.20 (overseas option only) psi: 0 to 31.9 (overseas option only) Output display: ON/OFF (IO-Link compatible option only)	Green display
CH1/2 output display	ON		2-color display (green/orange) *Freely configurable
Notification display	Blinking or OFF * Freely configurable (default setting: OFF)		Orange display

Detecting abnormalities

At error detection, the main screen displays an error code indicating the content of the abnormality.
(Error code display remains until the error is canceled.)



Error display	Description	Countermeasures
Er1	Sensor signal error *1 (damage/disconnection/over pressure (more than 250 kPa)/P2 ≥ P1 x 1.1)	Displayed when there is a disconnection or the sensor signal exceeds the full scale. Return supply pressure to within the rated pressure range.
Er2	Outside setting range (0-point calibration)	Turn the supply pressure OFF and conduct 0-point calibration at atmospheric pressure.
Er3	Outside setting range (various settings)	Configure within each setting range.
Er4	PIN entry error	Enter the set PIN.
Er7	Temperature sensor error *1	Use within the operating temperature range (0 to 50°C).
Er8	Overcurrent (contact output) *1	Ensure the output current is 100 mA or less.
Er9	Memory error (ROM/RAM/EEPROM)	Contact CKD for details.
-H- (blinking)	Supply pressure is above 220 kPa *1	Lower the supply pressure to within the rated pressure range.
-L- (blinking)	Supply pressure is below 45 kPa *1	Raise the supply pressure to within the rated pressure range.
FF	Above display range upper limit	GPS3-E: above 200, GPS3: above 500 Detect distance within the reference value display range.
-FF	Below display range lower limit	GPS3-E: below 10, GPS3: below 20 Detect distance within the reference value display range.

(*1: Output is OFF. Automatic recovery when back within specification range.)

Initializing

With the power supply OFF, press SET + △ + ▽ buttons simultaneously and turn the power ON.

*1: When initializing, make a note in advance of any of the current settings you wish to preserve.

*2: Display OFF at shipping (option code: T) products will switch to display ON when initialized.

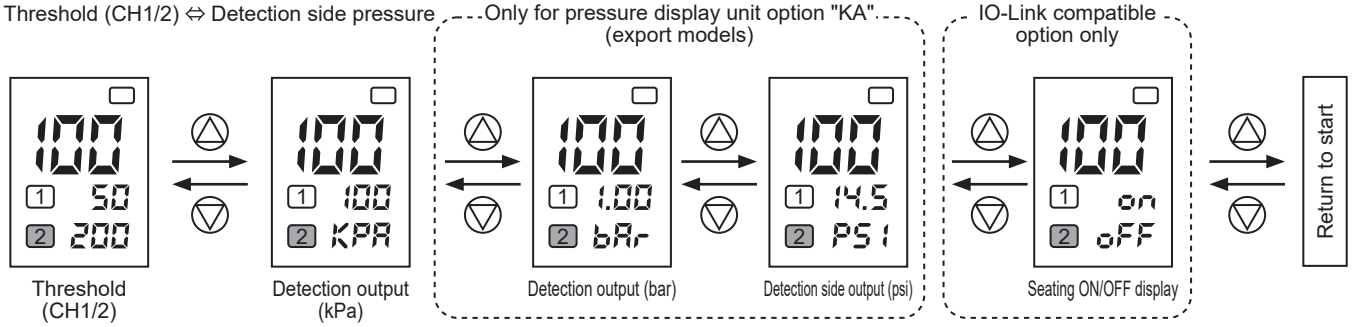
Easy setting (in RUN mode)

● Frequently used settings can be configured during regular operation.

Sub screen selection

△ or ▽ can be used to switch to the sub screen.

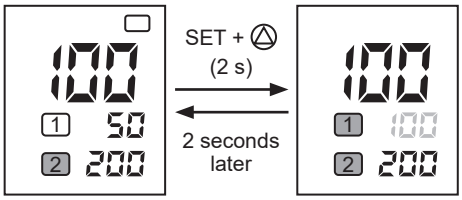
Threshold (CH1/2) ⇔ Detection side pressure



CH1 auto threshold setting

Press and hold SET + △ (2 seconds or more) to set the current display value to the CH1 threshold.

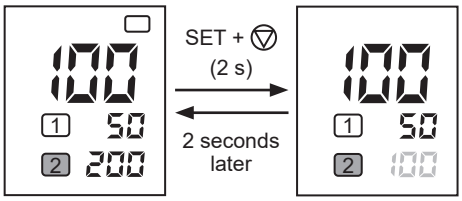
*Er3 will be displayed on the sub screen if this is outside the configurable range.



CH2 auto threshold setting

Press and hold SET + ▽ (2 seconds or more) to set the current display value to the CH2 threshold.

*Er3 will be displayed on the sub screen if this is outside the configurable range.

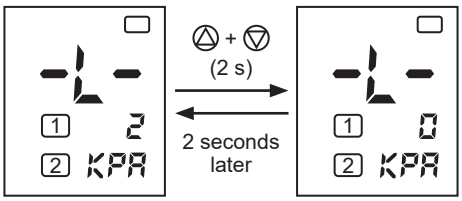


0-point calibration

△ + ▽ (2 seconds or more) to set the detection side pressure 0-point calibration. 0-point drift can be calibrated.

Set the supply pressure to OFF before making this setting.

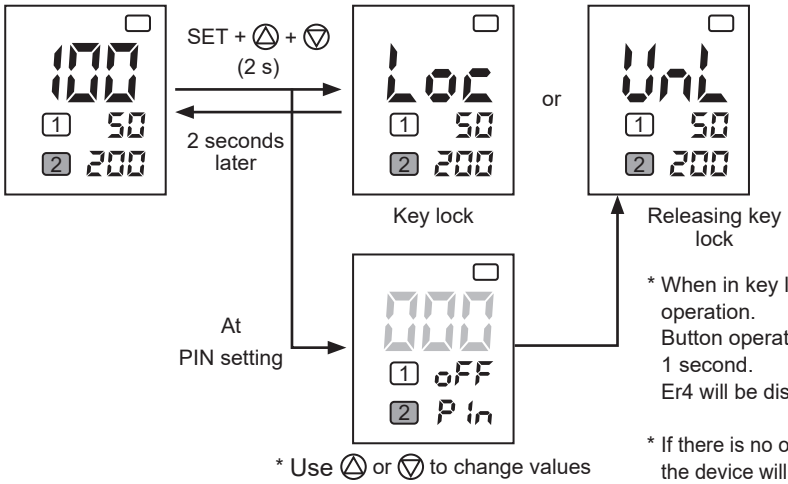
*Er2 will be displayed on the main screen if this is outside the configurable range.



Key lock

Press and hold SET+ △ + ▽ (2 seconds or more) to set key lock and release settings.

Take care during button operation to ensure that each setting is not modified incorrectly.



* When in key lock mode, this configuration is the only possible operation.
  Button operation in key lock mode will cause Loc to be displayed for 1 second.
  Er4 will be displayed for 1 second if an incorrect PIN is entered.

* If there is no operation for 30 seconds or more when in PIN input state, the device will return to RUN mode.

ES mode

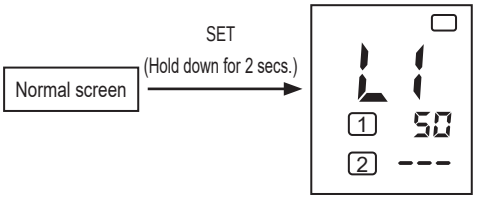
● Sets the threshold and hysteresis.
Regular operation is halted when entering ES mode. * Outputs retain their status as of when the mode was entered.

(1) ES mode list

Display	Setting items	Description
L1	CH1 threshold	CH1 threshold setting
H1	CH1 hysteresis	CH1 hysteresis setting
L2	CH2 threshold	CH2 threshold setting
H2	CH2 hysteresis	CH2 hysteresis setting

(2) Moving to ES mode

Press and hold SET (2 seconds or more) to move from the normal screen to ES mode.
After moving to ES mode, use △ or ▽ to switch among setting items.



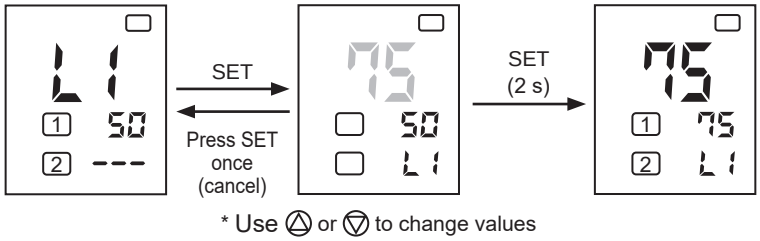
(3) Returning to the normal screen

Press and hold SET (2 seconds or more) to move to RUN mode.

CH1 threshold setting (At shipment: 50)

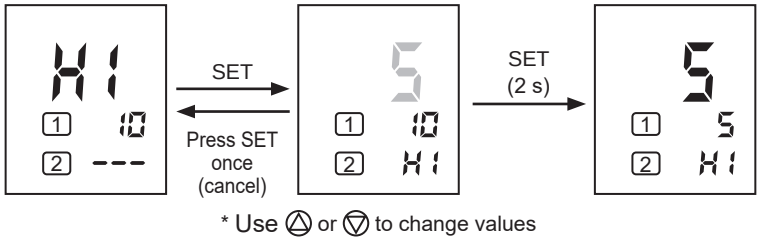
CH1 threshold should be set to no display or to a value in the table below.

GPS3-E (short range)	10 to 200
GPS3 (wide range)	20 to 500



CH1 hysteresis setting (At shipment: 10)

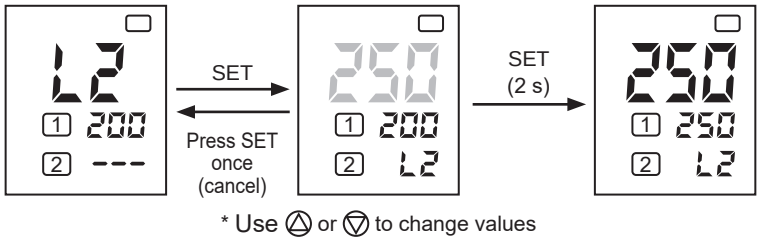
CH1 hysteresis can be set from 1 to 20.



CH2 threshold setting (At shipment: 50)

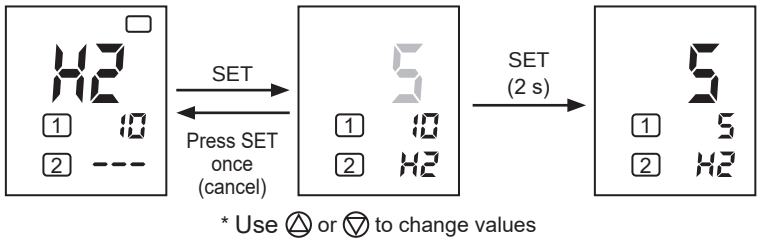
CH2 threshold should be set to no display or to a value in the table below.

GPS3-E (short range)	10 to 200
GPS3 (wide range)	20 to 500



CH2 hysteresis setting (At shipment: 10)

CH2 hysteresis can be set from 1 to 20.



OS mode

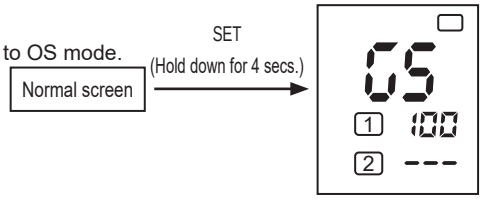
● Sets other settings.
Regular operation is halted when entering OS mode. * Outputs retain their status as of when the mode was entered.

(1) OS mode list

Display	Setting items	Description
GS	Actual measurement calibration	Setting to match the master gauge clearance and the reference value
Cor	Display color	Setting of CH1/2 ON/OFF display colors
Por	Screen non-display	Setting of main/sub screen non-display
Inf	Notification display	Setting of orifice nozzle blockage notification display
Pin	PIN	Setting of PIN

(2) Moving to OS mode

Press and hold SET (4 seconds or more) to move from the normal screen to OS mode.
After moving to OS mode, use △ or ▽ to switch among setting items.



(3) Returning to the normal screen

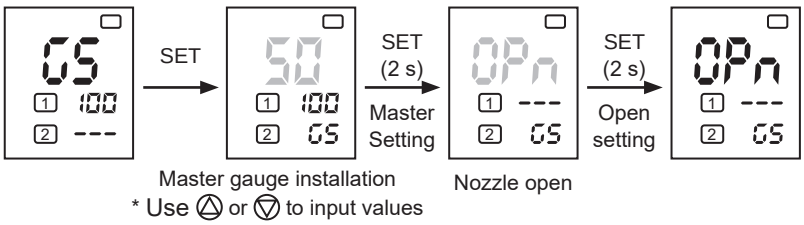
Press and hold SET (2 seconds or more) to move to RUN mode.

Actual measurement calibration Displays the newly converted reference value based on the master setting and open setting pressure.
Setting order [1] → [2] Note: The threshold must be reconfigured after conducting actual measurement calibration.

[1] Master setting:
After installing the reference master gauge, enter the reference value numerically and record the pressure with the master gauge installed.

GPS3-E	20 to 100
GPS3	30 to 100

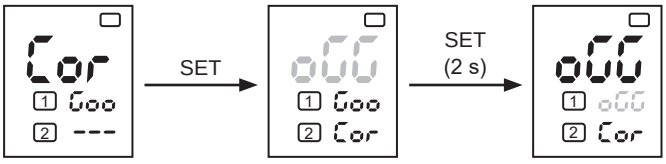
[2] Open setting:
Record the pressure with the nozzle open.
Note: Fully open the nozzle when using this setting.



Master gauge installation
Nozzle open
* Use △ or ▽ to input values

Setting of display color (Default: Goo)

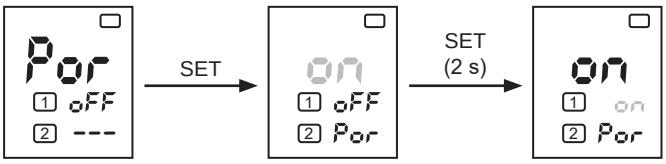
Sets the CH1/2 ON/OFF display colors.
From left: No output/CH1: ON/CH2: ON display colors.
(G is green, o is orange)



* Use △ or ▽ to select Goo or oGG

Setting of screen non-display (Default: OFF)

Sets the main/sub screen non-display settings.
Non-display for all except output display and notification display. (With this setting ON and 3 minutes without key operation)

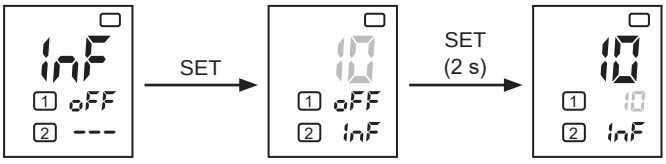


* Select OFF or ON with △ or ▽

Setting of notification display (Default: OFF)

Configure the variation in detection side pressure (%) required to activate this function. If the detection side pressure exceeds the set ratio:
Display blinks slowly (nozzle may be blocked) (*1)
If the detection side pressure falls below the set ratio:
Display blinks rapidly (internal orifice may be blocked)

(*1) When the light is blinking without a workpiece present (Blinking also occurs during regular contact, due to the detection structure)

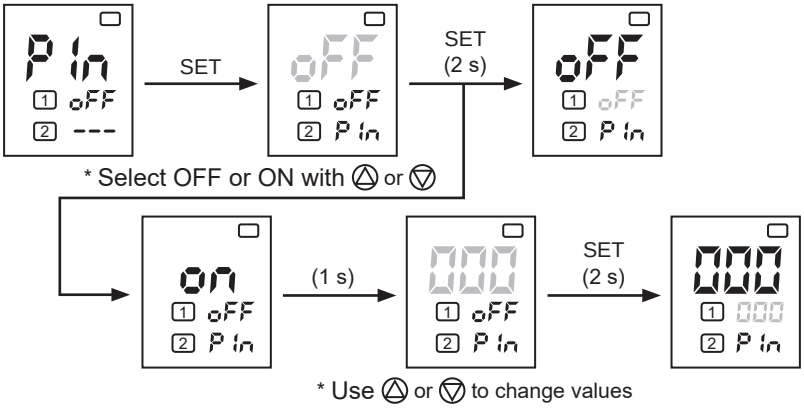


* Use △ or ▽ to change values (1 to 80)

Set the supply pressure to ON and set the nozzle to the open state.
* Er3 will be displayed on the main screen if this is outside the supply range.

Setting of PIN (Default: OFF)

Sets the PIN (000 to 999) required to release the key lock.



* Select OFF or ON with △ or ▽
* Use △ or ▽ to change values

* Pressing the SET button once before confirming any setting will cancel.

IO-Link parameter specifications

● Communication specifications

Descriptions	Details
Communication protocol	IO-Link
Communication protocol version	V1.1
Transmission bit rate	COM2 (38.4kbps)
Port	Class A
Process data length (input)	4 byte
Process data length (output)	0 byte
Min. cycle time	5ms
Data storage	1kbyte
SIO mode support	Yes

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Data name	MSB															LSB
	Ref. value															
Data range	20 to 500 (for GPS3-L-□) 10 to 200 (for GPS3-EL-□)															
Format	UInteger16															

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Data name	Error	WARNING	Alert display output (interior orifice may be clogged)	Alert display output (nozzle may be clogged)	Below display range lower limit	Beyond display range upper limit	Control output CH2	Control output CH1	Detection side pressure value *1							
Data range	True/False								-5 to 250 *3							
Format	Boolean								Integer 8							

*1 For products for which the detection pressure value can be confirmed, "V2.0" is stamped on the upper right of the product nameplate. (As products without the above printing do not use Bits 0 to 7, the detection side pressure value cannot be confirmed.)

*2 IODD files can be downloaded from the CKD website.
The IODD file to be applied differs with the above *1 printing.
Please apply the correct ver. IODD file to take advantage of product features.

*3 Display value on IODD (unit: kPa).
For information about the relation of process data and the detection side pressure value, refer to the instruction manual.