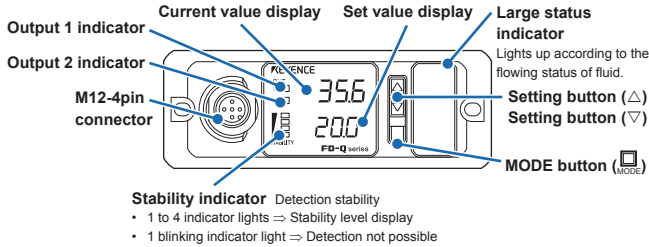


Clamp-on Flow Sensor FD-Q Series Setting Guide

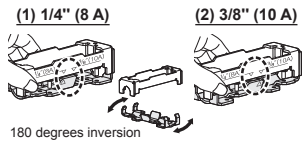


For precautions and operation details, refer to the instruction manual included with the product.



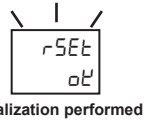
Bracket Set-Up

- The bracket provided with each unit is adjustable between the two supported pipe diameters (ex. FD-Q10C on the right).
- Simply rotate the bottom half 180° to switch the bracket diameter.



Initializing (Factory Default)

- To initialize, press the Δ arrow 5 times while holding down the MODE button.
- From this screen simply arrow up to "yes" and press MODE to select.
- Press MODE once more to complete initialization.



Selecting the Flow Units (Gallons or Liters)

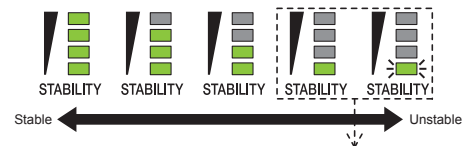
- After initialization or upon start-up, it is possible to change the units.
- Simply press and hold the MODE and Δ buttons while on the PNP/NPN selection screen.

Calibration

Set-value

- To calibrate the sensor, simply press (and/or hold) the Δ or ∇ arrows to change the set-value.
- * Image represents default display for standard detection.

Stability Check



If the stability indicator shows 1-indicator light or 1-blinking indicator light, the detection stability is low.
 Stability may improve by changing the installation condition.
 See "Troubleshooting (P4)".

Start-Up/Initialization Settings

- To return to a previous screen, press \square + Δ .
- When \square + Δ + ∇ are pressed simultaneously in this menu, the quick setting code can be entered.

A. Selecting NPN/PNP (Press Δ or ∇ to select.)
 nPn NPN output
 PnP PNP output

B. Selecting ch.1 and ch.2 functions (Press Δ or ∇ to select.)

Selection	Mode	ch.1 (pin (4))	ch.2 (pin (2))
A	oFF	1 Control Output Mode	Control output
B	out	2 Control Output Mode	Control output
C	in	Control Output + External Input Mode	Control output
D	AnLG	Control Output + Analog Output Mode	Control output

C. Selecting flow direction (Press Δ or ∇ to select.)
 "rEu" is displayed if the wrong flow direction is selected.
 r Flow direction: From left to right
 L Flow direction: From right to left

D. Selecting bore diameter of pipe (Press Δ or ∇ to select.)
 Please confirm if the direction and setting of the FD-Q metal fitting match.

Model	Selection	NPS	DN
FD-Q10C	1/4	1/4"	8 A
	3/8	3/8"	10 A
FD-Q20C	1/2	1/2"	15 A
	3/4	3/4"	20 A
FD-Q32C	1	1"	25 A
FD-Q50C	1 1/4	1 1/4"	32 A
	1 1/2	1 1/2"	40 A
	2	2"	50 A

To Provide Better Flow Readings

E. Correcting the flow rate value (Press Δ or ∇ to select.)
 oFF No correction
 SEL Selecting pipe schedule
 SPAn Setting flow rate magnification (Span adjustment)

Selecting pipe schedule (schedule) correctly will improve flow rate readings. (Press Δ or ∇ to select.)

SGP	SGP	Sch	Sch
20	SGP	20	Sch.20
40	SGP	40	Sch.40
80	SGP	80	Sch.80

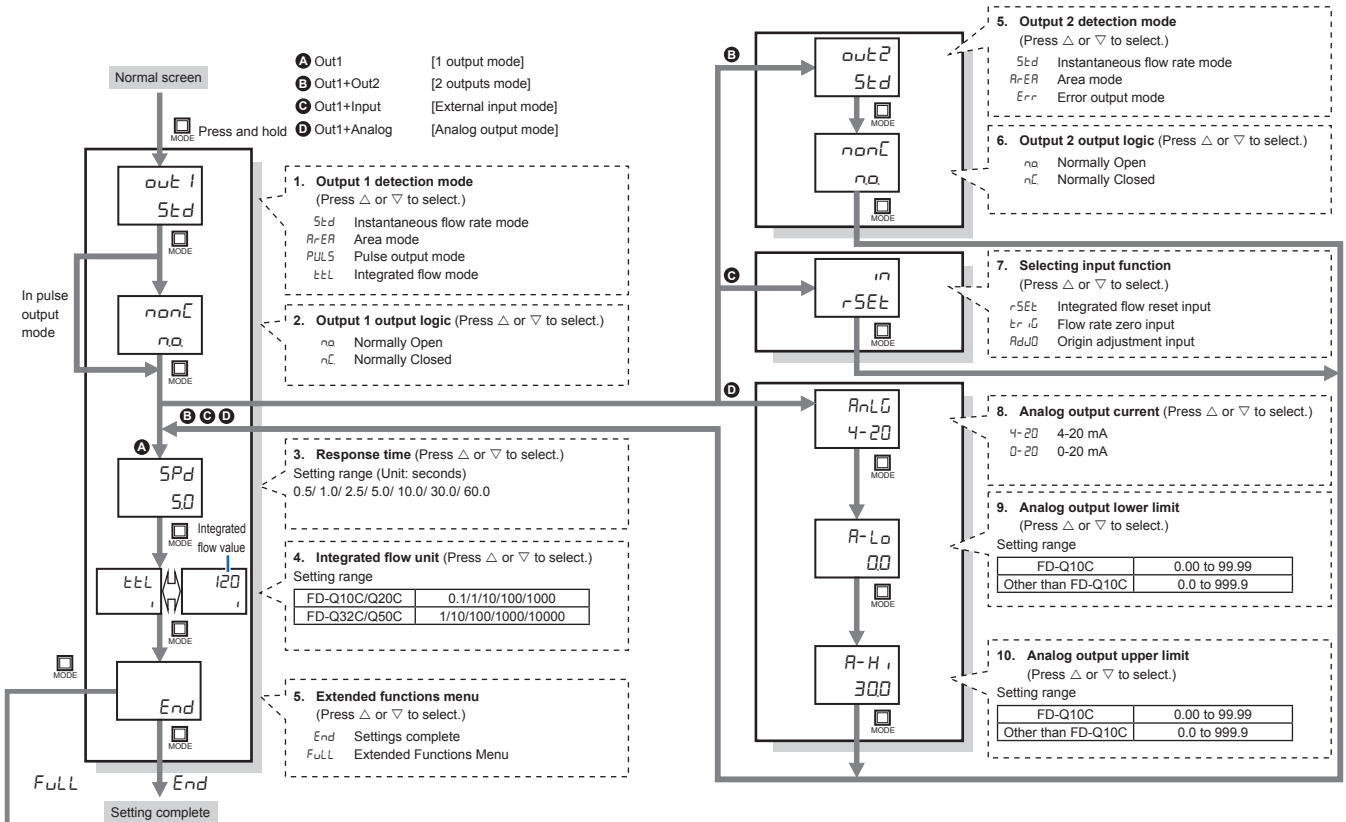
Adjusting flow rate span
 The flow rate values can be adjusted by 0.1x to 2.5x the initial values of the instantaneous flow rate value detected by the FD-Q Series. (Press Δ or ∇ to select.)
 Setting range: 0.10 to 2.50

Selecting the Flow Units

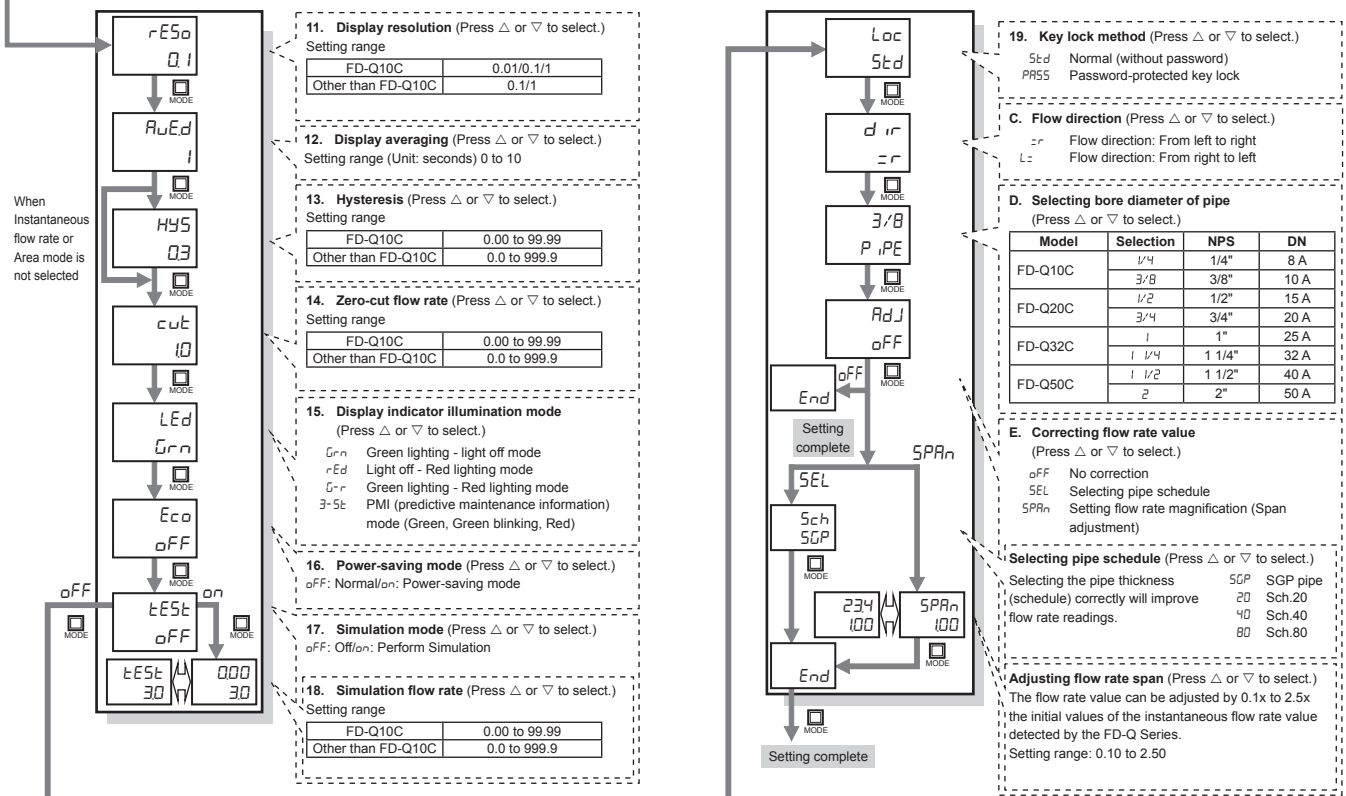
F. Selecting the units
 L liter
 G gallon

Menu Structure

Reference: To return to the previous screen, press [MODE] + Δ.



More advanced settings (Extended function settings)

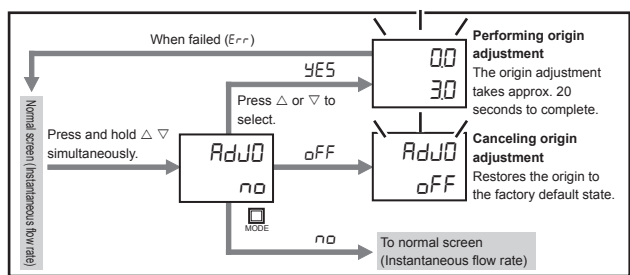


Useful Functions

■ Origin adjustment

This function adjusts the instantaneous flow rate value to "Zero" when performed. This helps to provide better readings when detecting in a low flow rate area, etc.

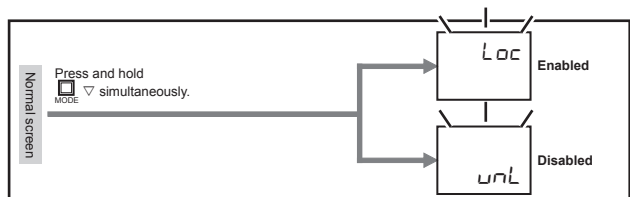
- Point** Perform this function when the pipe is filled with fluid and the fluid is not moving. (Err) is displayed when the function fails due to the pipe not being completely filled, liquid isn't stationary, etc.



■ Key lock

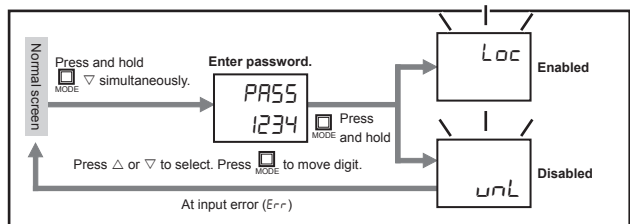
This function prevents operation mistakes by locking/disabling key operations. This is effective when you do not want the setting to be easily changed.

Enabling/Disabling key lock



Enabling/Disabling password-protected key lock

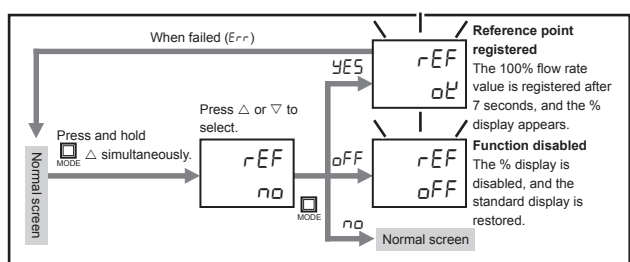
- Reference** Set the key lock method to PASS in "Extended function settings (P2)" to use this function.



■ Condition monitoring function

This function registers the current instantaneous flow rate value as 100% and displays the current status on the screen. This is an effective way to monitor the flow rate, relative to a base flow rate.

- Point**
 - Perform the Condition monitoring function when the fluid is flowing at a nominal rate that you would like to be represented as 100%. (Err) is displayed if the fluid is not flowing inside the pipe, or the pipe is not completely filled with liquid.
 - When performed at a low flow rate, the display may become unstable.



- Reference**
 - After this function is performed, you can check the display by pressing MODE.
 - The condition monitoring function is effective only for the instantaneous flow rate value and its set value.
 - If the reference point is registered at a low flow rate, the value may become unstable.

■ Quick setting code

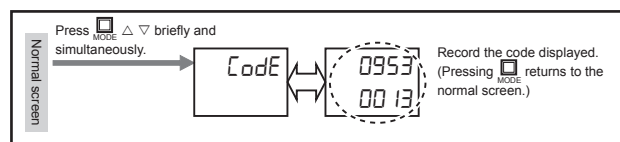
This function restores multiple setting parameters instantaneously by entering an 8-digit setting code recorded on the FD-Q Series main unit. This is convenient when applying the same settings to multiple FD-Q Series sensors.

- NOTICE** Entering the code restores the settings for the control output and external input. If a wrong code is entered, an unexpected operation may occur. Note if a wrong code is entered and an external device connected to the sensor, the sensor may be damaged.

- Point**
 - This function cannot restore set values. Separately record them as necessary.
 - (Err) is displayed when an invalid code is entered.

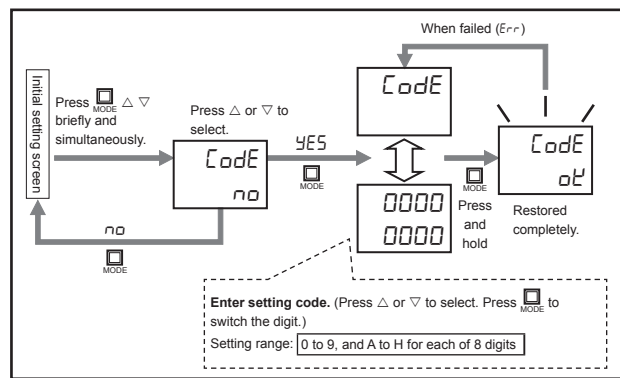
Checking the current quick setting code

(Perform from the normal screen.)




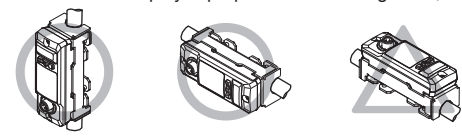
Restoring the settings by entering the code

(Perform from the initial setting screen.)



- Reference** The initial setting screen is displayed when "Initializing" is performed, or when the power is turned on for the first time.

Troubleshooting

Problem	Cause	Solution
$E_r C$ is displayed.	Excessive current (overcurrent) is flowing through output 1 or output 2.	<ul style="list-style-type: none"> Check if the output wires are connected correctly and are not in contact with other wires. Check if the load is within the rated range for the output.
$E_r E$ is displayed.	The memory has reached its end of life, or the sensor is malfunctioning.	Perform initialization. If the problem persists, contact KEYENCE.
$r E u$ is displayed.	The fluid flows in the opposite direction of the setting.	Set the flow direction according to the correct fluid flow direction.
$FFFF$ is displayed.	The integrated flow display has exceeded the display range.	<ul style="list-style-type: none"> Perform the integrated flow reset. Change the integrated flow unit to a more appropriate setting, or use an external counter.
$L o c$ is displayed.	Key lock function is active.	Disable the Key lock function when you want to change the settings.
$---$ is displayed. <ul style="list-style-type: none"> The instantaneous flow rate experience large fluctuations. Occasionally "0" L/min (G/min) is displayed. (One stability indicator lights or blinks.) 	<ul style="list-style-type: none"> The sensor is not properly fixed to the pipe and bracket. The pipe is not filled with fluid. The detection signal is unstable. 	<ul style="list-style-type: none"> Check the sensor for partial tightening, looseness, or uneven mounting, and reinstall it. Install the sensor so that the display is perpendicular to the ground, not parallel.  <ul style="list-style-type: none"> If there is rust or dirt on the pipe surface, clean or avoid this area when installing. Also, removing rust or dirt on the pipe surface using sandpaper, etc. may improve the state. If there is a seam on the contact surface or the back side of the pipe, move the sensor away from the seam before installation. If air bubbles or foreign matters are expected inside the pipe, change the installation location, or remove them through high-pressure washing. <p>If the problem persist, then the fluid or the pipe may be causing detection issues, or the sensor may be damaged.</p>
	The sensor is affected by pulsation, air bubbles or non-ideal flow distribution.	Increase the response time.
	Cavitation is occurring due to pressure changes.	<ul style="list-style-type: none"> Install the sensor on a straight section of pipe. Avoid installing just after a bore conversion section or a bulb.
The instantaneous flow rate does not change from "0".	The integrated flow display has been set.	Press the MODE button to switch the screen, and check if the integrated flow display is set.
	When using the external input function, the flow rate zero input ($E_r \cdot \bar{U}$) is selected, and the external input is being sent.	<ul style="list-style-type: none"> Check if the wiring arrangement is correct. If the input line and output line are in contact, separate them. If the flow rate zero input ($E_r \cdot \bar{U}$) has been set accidentally, select a different option.
	No flow.	Check valves for open and close conditions, and also check the pipe and filter for clog.
	The fluid is actually flowing, however, with the flow rate value less than the zero cut flow rate.	Adjust the zero cut flow rate value.
The flow rate differs greatly from the actual flow rate value.	The bore diameter of pipe or the pipe schedule selected by setting differs from those of the actual pipe.	Set the bore diameter and the pipe schedule correctly. Adjust the flow rate span according to the actual flow rate value.
	The origin adjustment has not been correctly performed.	Perform the origin adjustment again when the pipe is filled with fluid and the fluid is still.
	The characteristic of the fluid largely differs from that of water.	Adjust the flow rate span according to the actual flow rate value.
The display turns on and off.	<ul style="list-style-type: none"> The power is not turned on. The connector cable is damaged. The unit is in the power-saving mode. 	<ul style="list-style-type: none"> Check the power capacity. Check the wiring for crossed wires or loose connections. Replace the connector cable with a spare. Check if the sensor is in the power-saving mode.