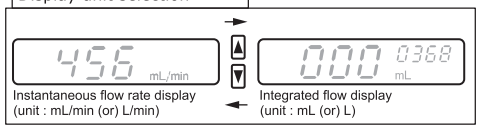
How to operate - Normal mode

Displaying the integrated flow

< instantaneous flow rate display >

M Press once

Display unit selection



Instantaneous flow rate display (unit : mL/min (or) L/min)

Integrated flow display (unit : mL (or) L)

M Press once (determination).

Integration reset
Integration is reset when the ▲ and ▼ keys are held clown for 2 sec.

<Integrated flow display>

Press simultaneously for 2 sec.

M Press once

To instantaneous flow rate display

Note : Integration is reset with the external input. See auto reference function.
Note : Integration is also reset or Integrating function display setting is keeping when power is turned OFF.

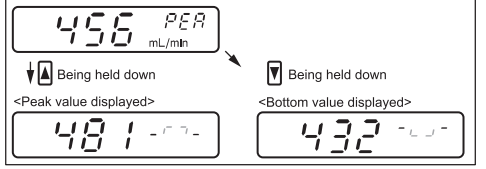
Peak hold function

<Instantaneous flow rate display>

Display unit selection

M and ▼ press simultaneously

Peak hold display



▲ Being held down

▼ Being held down

<Peak value displayed>

<Bottom value displayed>

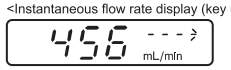
▼ Press once

Reset peak hold function. To instantaneous flow rate display

Key lock function

・Key lock

<Instantaneous flow rate display (key unlock)>



▲ ▼ and M press simultaneously for 1 sec.

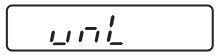
<Intantaneous flow rate display (key lock) >

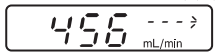
・Key unlock

<Instantaneous flow rate display (key lock) >

▲ ▼ and M press simultaneously for 3 sec.

<Intantaneous flow rate display (key lock) >



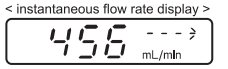


Note: Keys are unlocked when the controller is shipped. Lock keys if necessary.
The key lock/unlock state is held even if power is turned OFF.
While key lock, all the operations are not accepted excluding the key lock release operation.
While key lock, If the key is operated, it becomes a "Loc" display.

Standard setting mode

How to enter to standard setting mode

< instantaneous flow rate display >

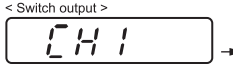


M Press for 3 sec.

At instantaneous flow rate display, press M key for 3 sec. to enter to standard setting mode.

Flash

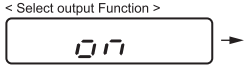
< Switch output >



Press once (detocmination) → To switch output setting display

M Press once

< Select output Function >



Press once. (determination) → To forcihle cutput setting display

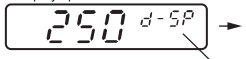
M Press once

< 0 point adjustment >

Press once. (determination) → To 0 point adjustment setting display

M Press once

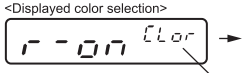
<Display speed selection>



Press once. (determination) → To display speed setting display

M Press once Setting value.

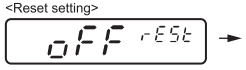
<Displayed color selection>



Press once. (determination) → To displayed color setting display

M Press once Setting value.

<Reset setting>



Press once. (determination) → To reset setting display

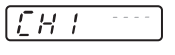
M Press once

<Model number>

M Press once

To instantaneous flow rate display

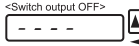
Data setting of switch output function



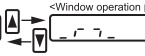
Press ▲ or ▼ key to select flow rate unit

Press M key to set.

<Switch output OFF>

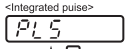


<Window operation [1] >



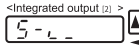
<Window operation [2] >

<Integrated puise>

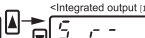


<Hysteresis operation [1] >

<Integrated output [2] >



<Integrated output [1] >

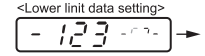


<Hysteresis operation [2] >

M Press once (determination)

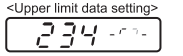
CH1 ON/OFF data setting

<Lower linit data setting>



M

<Upper limit data setting>



▲ Count UP Press ▲ key once to increase by one figure and press it continuously to keep set figure increased.

▼ Count down Press ▼ key once to decrease by one figure and press it continuously to keep sel figure decreased.

M Press once. (determination)

CH2 operation mode change (Set same as CH1) I

M Press once. (determination)

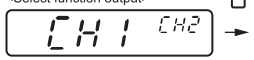
CH2 ON/OFF data setting (Set same as CH1)

M Press once. (determination)

To instantaneous flow rate display

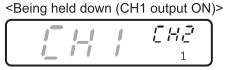
Select function output mode

<Select function output>

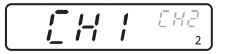


M Press once. (determination) → To instantaneous flow rate display

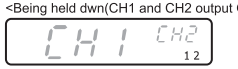
<Being held down (CH1 output ON)>



<Being held dwn(CH2 output ON)>



<Being held dwn(CH1 and CH2 output ON)>



0 point adjustment mode

0 point adjustment setting display

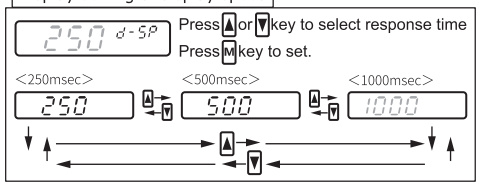
Press simultaneously (adjusted value reading) adjustment value display

M Press once. (determinatio)

→ To instantaneous flow rate display

Setting of display speed

Display setting of display speed



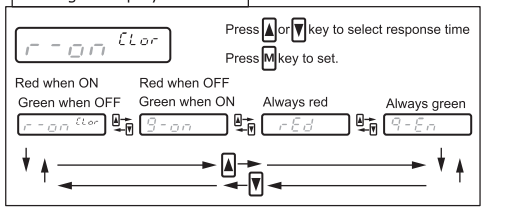
M Press once. (determination)

To instantaneous flow rate display

Setting of display color

Display color setting display

Setting of display color



M Press once. (determination)

To instantaneous flow rate display

Sub display shows the state of CH2

Main display shows the state of CH1.

Reset to the initial setting

Press ▲ or ▼ key to select response time

Press M key to set.

Reset setting

<Reset is not executed>

<Reset is executed>

M Press once. (determination)

To instantaneous flow rate display

Model number display

Model number display

Full scale flow rate

<Model number>

<Working fluid>
Ai : Air

<Switch oulput>
N : NPN output
P : PNP output

Warning / Caution to secure safety

Safety caution are ranked by the safety caution as **<DANGER>**, **<WARNING>**, **<CAUTION>**

DANGER : When a dangerous situation may occur, or when there is high urgency to a warning leading to fatal or serious injuries, if handing is mistaken.
WARNING : When a dangerous situation may occur if handing is mistaken, leading to fatal or serious injuries.
CAUTION : When a dangerous situation may occur if handing is mistaken, leading to minor injuries or physical damages.

Flow unit

DANGER

- Do not use this product with flammable fluids.

CAUTION

- This product's flow rate is measured at a mass flow unaffected by temperature or pressure. The unit is l/min, but this is the display when the mass flow is converted to volumetric flow at 20°C 1 barometric pressure (101 kPa)

WARNING

- This product cannot be used as a business meter.
- This product does not conform to measurement laws, and cannot be used for commercial purposes. Use this sensor for factory applications.

- Do not use fluids other than the applicable fluid because accuracy cannot be guaranteed.

- Compressed air from the compressor contains drainage (water, oxidized oil, foreign substances, etc.), so install a filter, air dryer, and oil mist filter (microalescer) on the primary side (upstream) of the sensor. The sensor's meshing rectifies flow in the pipe. It does not filter out foreign substances, so provide a filter.

- When using a valve on the primary side of this product, use only an oil-prohibited specification valve. This sensor could malfunction or fail if exposed to splattering grease, oil, etc. Also, there is a risk of abrasion dust entering the sensor depending on the valve. Install a filter to prevent the dust from entering the sensor.

- Vaporize liquidified gas before use. Entry of liquidified gas into this product will result in damage.

Wiring

DANGER

- Use power voltage and output within the specified voltage.
- If voltage exceeding the specified voltage is applied, the sensor could malfunction or be damaged, or electrical shock or fire could occur. Do not use a load exceeding the output rating. Failure to observe this could result in damage to the output or fire.

WARNING

- Check wire colors when wiring. Incorrect wiring connections could result in sensor damage, problems, and malfunctions.
- Check wiring insulation.
- Check that wires do not contact other circuits and that there are no ground faults or insulation faults across terminals. An over current could flow in and damage the sensor.
- Use a DC stabilized power supply, within the specified rating, insulated from the AC power supply. Failure to insulate the power supply could result in electrical shock. If power is not stabilized, the peak value could be exceeded. This could damage the product or impair accuracy.
- Attach a connector cover after connecting connectors.
- Check that stress is not directly applied to cable leadout or connector sections.
- Stop the control device and machine devices, and turn the power off before wiring. Starting operation suddenly could result in unpredictable operation and hazards. Conduct an energized test with control devices and machine devices stopped, and set target switch data. Discharge electrostatic accumulated in personnel or tools before and during work. Connect and wire bend-resistant material, such as robot wire material, for movable sections.
- Do not use this product at levels exceeding the power voltage range. If voltage exceeding this range is applied or if AC power is applied, the controller could rupture or burn.
- Separate this product and its wiring as far away as possible from sources of noise such as high-voltage lines. Provide separate measures for surge applied to the power cable. The display or output could fluctuate.
- Do not short-circuit the load. This product could rupture or burn.
- Connect either the plus or minus side of the power supply to the F.G. For metal body (stainless steel, aluminum) power supplies, use DC-stabilized power separated from the AC primary side. A varistor (limit voltage 40 V) is connected between the metal body internal power circuit and metal body to prevent dielectric breakdown of the sensor. Do not conduct a withstand voltage test or insulation resistance test between the internal power circuit and metal body. Disconnect wiring if this testing is required. An excessive potential difference between power and metal body will burn internal parts. After installation, connecting and wiring the metal body, electrical welding of the device or frame, or short circuit accidents, etc., could cause welding current, excessive high voltage caused by welding, or surge voltage, etc., to run through wiring or ground line connected between such devices, damaging lines or devices. Conduct work such as electric welding after removing this product and F.C connection of the wiring.

WARNING

- Analog output accuracy is also affected by self generation of heat cause by energizing in addition to temperature characteristics. Provide enough stand-by time (5minutes and over after energizing) before staring operation.
- This product does not use speed control for four seconds after power is turned on to complete self-diagnostics. Provide a control circuit and program that ignore signals for four seconds after power is turned on.

CAUTION

- If a problem occurs during operation, immediately turn power off, stop use, and contact your dealer.
- Keep this product's flow within the rated flow range.
- Use this product within the working pressure range.
- If the output setting value is changed, control system devices could operate unintentionally. Stop devices before changing settings.
- Regularly inspect the product at least once a year or more, and confirm that it is operating correctly.
- Do not disassemble or modify this product. Doing so could result in faults.
- This case is made of resin. Do not use solvent, alcohol or any other detergent in cleaning to remove contamination, etc. This may damage the resin. Wipe off dirt with a rag soaked in a diluted neutral detergent solution and wrung out well.
- Check backflow currents caused by broken wiring or wiring resistance. If other devices, including a flow sensor, are connected to the same power as the flow sensor, and the switch output wire and power line's minus side are temporarily short circuited to check the operation of the control panel's input unit, or if the power line's minus side is broken, a backflow current could flow to and damage the flow sensor switch output circuit.

① Names and Functions of Each Parts