

Instantaneous/Accumulated Flowsensor NW, OF-W

Handling Manual - -

Features

Model	NW□□-□T□□	OF□□Z□W□
Display and number of digits	LCD, eight digits	
Display unit	L, m ³ and L/min, m ³ /min	
Output signal (option)	Open drain output (equivalent to open collector) Pulse width ··· 10 ms or more Maximum rated voltage···DC 30V Output capacity ··· ON resistance: 150 Ω or less, OFF resistance: 100 kΩ or more (Remaining voltage 1.5V or lower at input current 10 mA or less)	
Other functions	Trip accumulation function, constant setting function, accumulated value zero clear function, instantaneous value hold function	
Weight	NW05: Approx. 280 g NW10: Approx. 250 g NW20: Approx. 500 g	OF05W: Approx. 240 g OF10W: Approx. 260 g
Power supply	Built-in lithium battery Battery life Approx. 4 years (under normal use condition) * Battery cannot be replaced.	
Use temperature range	0 to +60°C	
Use humidity range	35 to 85%RH (no dewing)	

Notes on handling

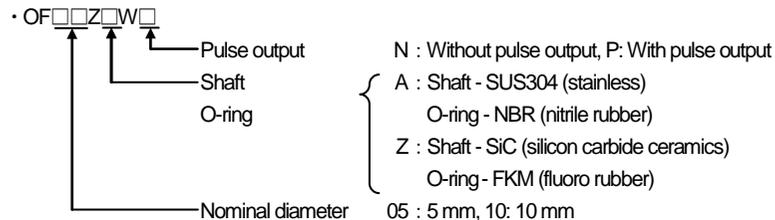
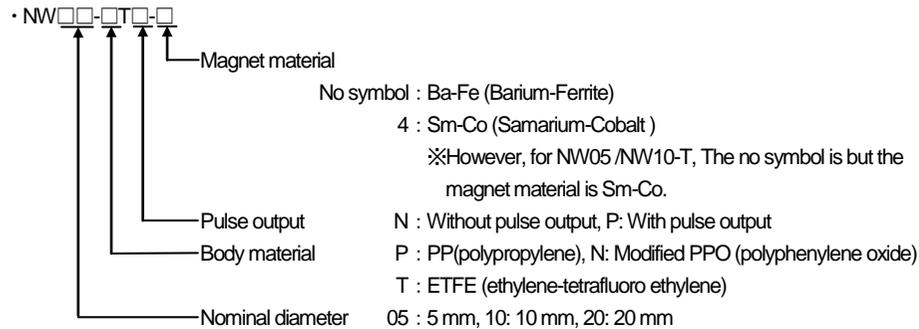
The pulse unit of output signal is indicated on the plate attached to the side of the body.
 The standard specifications are as follows:
 NW05-□TP : 10 mL/P , NW10-□TP : 1L/P , NW20-□TP : 1L/P
 OF05Z□WP : 10 mL/P , OF10Z□WP : 10 mL/P

- Keep the flowsensor 20 cm or more away from the power line.
- When the flowsensor is affected by a noise (e.g., from a relay, motor, etc), attach a spark killer or similar device to cancel the noise.
- The flowsensor may malfunction near a device generating a higher frequency waves such as a cellular phone, ultrasonic washer, high-frequency generator, transceiver, etc.
- Pay attention to the polarity of outputs when using them. Keep the output lines 20 cm or more away from the power line.
 Output line (white): +, output line (black): -

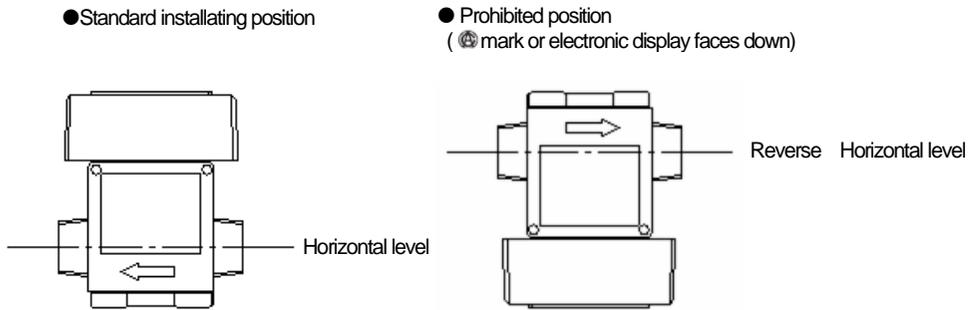
Notes on piping

- Make sure to align the flow direction of the fluid with the arrow on the main body indicating the flow direction.
- Provide a straight pipe at the upstream side (for NW only. OF - W does not require a straight pipe).
 If the pipe near the flowsensor at the upstream side bends two- or three-dimensionally or its diameter enlarged or reduced radically, the measurement accuracy may be affected.
- Make sure to make the pipe diameter at the inlet side larger than the nozzle diameter of the flowsensor (Please refer to the table on the next page).
- If the flow in the pipe has pulsation, the measurement accuracy may be affected.
 When transferring the fluid with a metering pump which can cause pulsation, cancel the pulsation using an accumulator or similar devices.
- Make sure not to apply excessive stress to the flowsensor when installing it.
- Keep warm the entire system where the fluid can freeze in winter. If the fluid leaks due to freezing, the measurement accuracy may be affected.
- Avoid installing the flowsensor where it is exposed to a direct sunlight (indoor specifications).
- Observe the appropriate conditions for the flow rate range, working pressure, and fluid temperature as indicated on the plate attached to the side of the flowsensor. Avoid installing the flowsensor where it is exposed to excessive pressure such as water hammer.
- An air pocket in the flowsensor affects its accuracy. Use the flowsensor with its measurement chamber filled with the fluid. Also, air passing through the chamber affects the accuracy. Be careful not to allow air to be mixed in the fluid.
- Do not place sensor near a strong magnet or magnetic field.

Product code



- The flowsensor can be installed in any position except for the position shown below. However, keep its position as close as possible to the standard position shown below to have the highest accuracy.
Note that the models NW05TTN and NW10TTN must be installed in the standard position.
(OF-W can be installed horizontally or vertically in the upright or flat position. Make sure that the front plate becomes perpendicular to the ground (it must not be parallel to the ground)).



Inner pipe diameter for straight pipe)

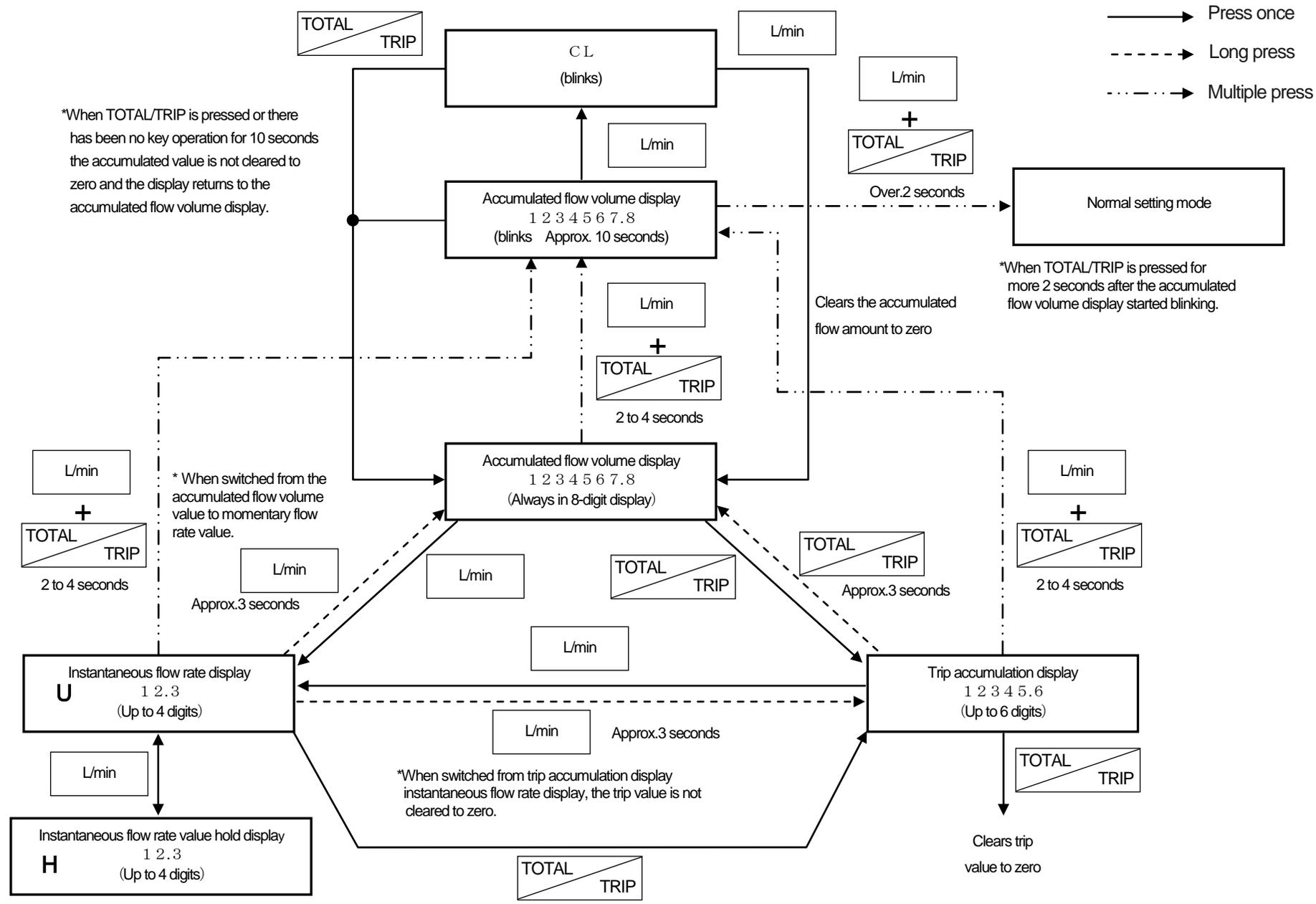
Model	Inner diameter on inlet side	Straight pipe on each side of flowmeter
NW05	5.5 mm or more	5D or more than (D : Nominal diameter)
NW10	10.5 mm or more	
NW20	15.5 mm or more	
OF05W	5.5 mm or more	No straight pipe is required
OF10W	10.5 mm or more	

Tightening torque)

Model	Tightening torque
NW05	5±2N·m
NW10	
NW20	7±2N·m
OF05W	5±2N·m
OF10W	7±2N·m

Switch operation

- L/min**
 - Switches from accumulated flow volume or trip accumulation display to instantaneous flow rate display.
 - Pressing and holding this button for approximately 3 seconds while the instantaneous flow rate is displayed switches to the display shown immediately before switching to instantaneous flow rate display. (When it is switched to trip accumulation display, the trip accumulation value is not cleared to zero.)
 - Pressing this button while the instantaneous flow rate is displayed, the instantaneous flow rate shown at that moment is held.
 - Pressing this button while holding the instantaneous flow rate cancels held display.
 - Pressing this button while the accumulated flow volume is displayed causes CL display to blink.
 - Pressing this button while the CL is blinking resets the accumulated value and switches to accumulated flow volume display.
- TOTAL TRIP**
 - Switches from accumulated flow amount or instantaneous flow rate display to trip accumulation display and clears the trip accumulation value to zero.
 - Pressing this button while the trip accumulation is displayed, the value clears it to zero. Pressing and holding the button for 3 more seconds switches to accumulated flow volume display.
 - Pressing this button while accumulated flow volume display or CL display is blinking switches to accumulated flow volume display without resetting the accumulated value.
- L/min + TOTAL TRIP**
 - Pressing these buttons together for 2 or more seconds but less than 4 seconds causes accumulated flow volume display to blink.
 - Pressing these buttons together for 4 or more seconds switches to the normal setting mode (Please see below for the operation method in this mode).



*When TOTAL/TRIP is pressed or there has been no key operation for 10 seconds the accumulated value is not cleared to zero and the display returns to the accumulated flow volume display.

* When switched from the accumulated flow volume value to momentary flow rate value.

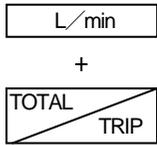
*When switched from trip accumulation display instantaneous flow rate display, the trip value is not cleared to zero.

*When TOTAL/TRIP is pressed for more 2 seconds after the accumulated flow volume display started blinking.

*Calculation of the accumulated value and trip accumulation value continues during hold display.

Clears trip value to zero

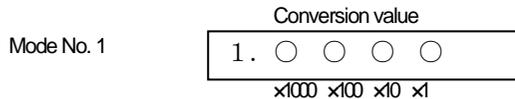
■ **Constant setting function**



- Pressing these buttons together for 4 or more seconds switches to the constant setting mode.
- When there has been no key operation for 10 seconds or the TOTAL/TRIP button is pressed while a constant setting value is displayed, the display returns to accumulated value display and any value which has not yet been accepted is discarded.

Mode No. 1 (pulse constant conversion value*)

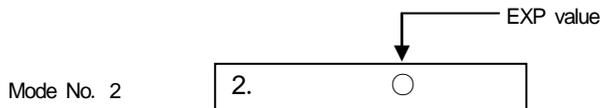
Pressing the L/min and TOTAL/TRIP for 4 or more seconds together Mode No. 1 and the display changes as shown below (○ represents the current value).



1. Pressing and holding the L/min button for 2 seconds makes the most significant digit to blink and ready for change.
2. Pressing the L/min button each time changes the value. (The available values are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.)
3. Pressing the TOTAL/TRIP button accepts the value and makes the second significant digit to blink and ready for change.
4. When the least significant digit is set, display returns to the state in 1.
5. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

Mode No. 2 (EXP value for pulse constant conversion value *)

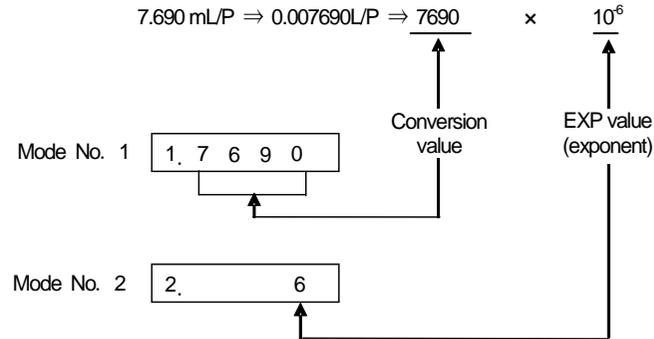
Pressing the L/min button while Mode No. 1 is on switches to Mode No. 2 and the display changes as shown below (○ represents the current value).



1. Pressing and holding the L/min button for 2 seconds makes the setting value to blink and ready for change.
2. Pressing the L/min button each time changes the value. (The available values are 0, 1, 2, 3, 4, 5, 6, and 7.)
3. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

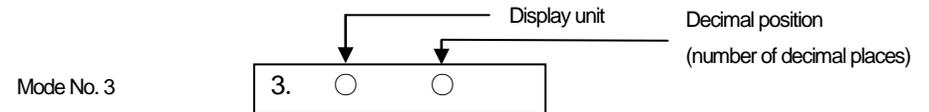
* The values set in Modes No. 1 and No. 2 are used as the conversion value and EXP value, respectively. The pulse constant can be set by entering these values. Note that the unit for the pulse constant set with Modes No. 1 and No. 2 is "L/P."

(Example) Setting the pulse constant value NW10 with 7.690 mL/P



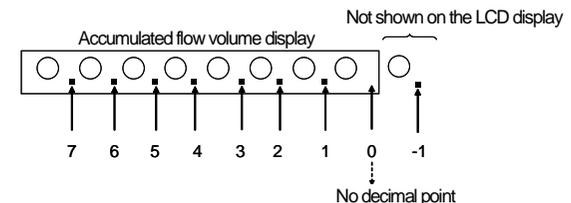
Mode No. 3 (decimal position for accumulated flow volume display)

Pressing the L/min button while Mode No. 2 is on switch to Mode No. 3 and the display changes as shown below. (○ represents the current value.)



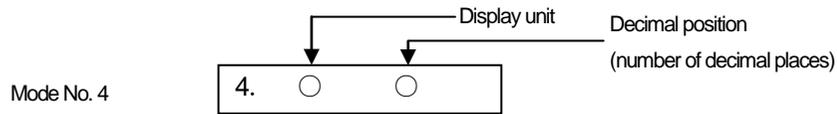
1. Pressing and holding the L/min button for 2 seconds makes the left digit to blink and ready for change.
2. Each time L/min is pressed, the value is changed (The available values are 0 and 1, which choose "L" and "m³" as the unit, respectively).
3. Pressing the TOTAL/TRIP button accepts the value and the right digit blinks.
4. Pressing the L/min button each time changes the value (The available values are -1, 0, 1, 2, 3, 4, 5, 6, and 7).
5. Pressing the TOTAL/TRIP button accepts the value and returns to the state in 1.
6. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

The rightmost value represents the decimal position, and "0" means that the least significant digit of a displayed value is in the digit of 10⁰L (or 10⁰m³) while "-1" means that the least significant digit of a displayed value is in the digit of 10¹L (or 10¹m³).



Mode No. 4 (decimal position for trip accumulation flow volume)

Pressing the L/min button while Mode No. 3 is on switches to Mode No. 4 and the display changes as shown below (○ represents the current value).

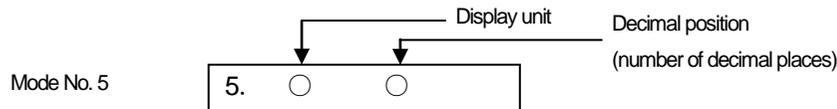


1. Pressing and holding the L/min button for 2 seconds makes the left digit to blink and ready for change.
2. Pressing the L/min button each time changes the value (The available values are 0 and 1, which choose "L" and "m³" as the unit, respectively).
3. Pressing the TOTAL/TRIP button accepts the value and the right digit blinks.
4. Pressing the L/min button each time changes the value (The available values are -1, 0, 1, 2, 3, 4, and 5).
5. Pressing the TOTAL/TRIP button accepts the value and returns to the state in 1.
6. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

The rightmost value represents the decimal position, and "0" means that the least significant digit of a displayed value is in the digit of 10⁰L (or 10⁰m³) while "-1" means that the least significant digit of a displayed value is in the digit of 10¹L (or 10¹m³).

Mode No. 5 (decimal position for instantaneous flow rate display)

Pressing the L/min button while Mode No. 4 is on switches to Mode No. 5 and the display changes as shown below (○ represents the current value).

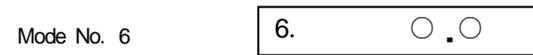


1. Pressing and holding the L/min button for 2 seconds makes the left digit to blink and ready for change.
2. Pressing the L/min button each time changes the value (The available values are 0 and 1, which choose "L/min" and "m³/min" as the unit, respectively).
3. Pressing the TOTAL/TRIP button accepts the value and the right digit blinks.
4. Pressing the L/min button each time changes the value (The available values are -1, 0, 1, 2, and 3).
5. Pressing the TOTAL/TRIP button accepts the value and returns to the state in 1.
6. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

The rightmost value represents the decimal position, and "0" means that the least significant digit of a displayed value is in the digit of 10⁰L (or 10⁰m³) while "-1" means that the least significant digit of a displayed value is in the digit of 10¹L (or 10¹m³).

Mode No. 6 (instantaneous flow rate updating frequency)

Pressing the L/min button while Mode No. 5 is on switches to Mode No. 6 and the display changes as shown below (○ represents the current value).



1. Pressing and holding the L/min button for 2 seconds makes the setting value to blink and ready for change.
2. Pressing the L/min button each time changes the value (The available values are 0.5, 1.0, 2.0, 3.0, 4.0, and 5.0 seconds and the default is 2.0 seconds).
3. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

Mode No. 7 (pulse output digit)

Pressing the L/min button while Mode No. 6 is on switches to Mode No. 7 and the display changes as shown below (○ represents the current value).



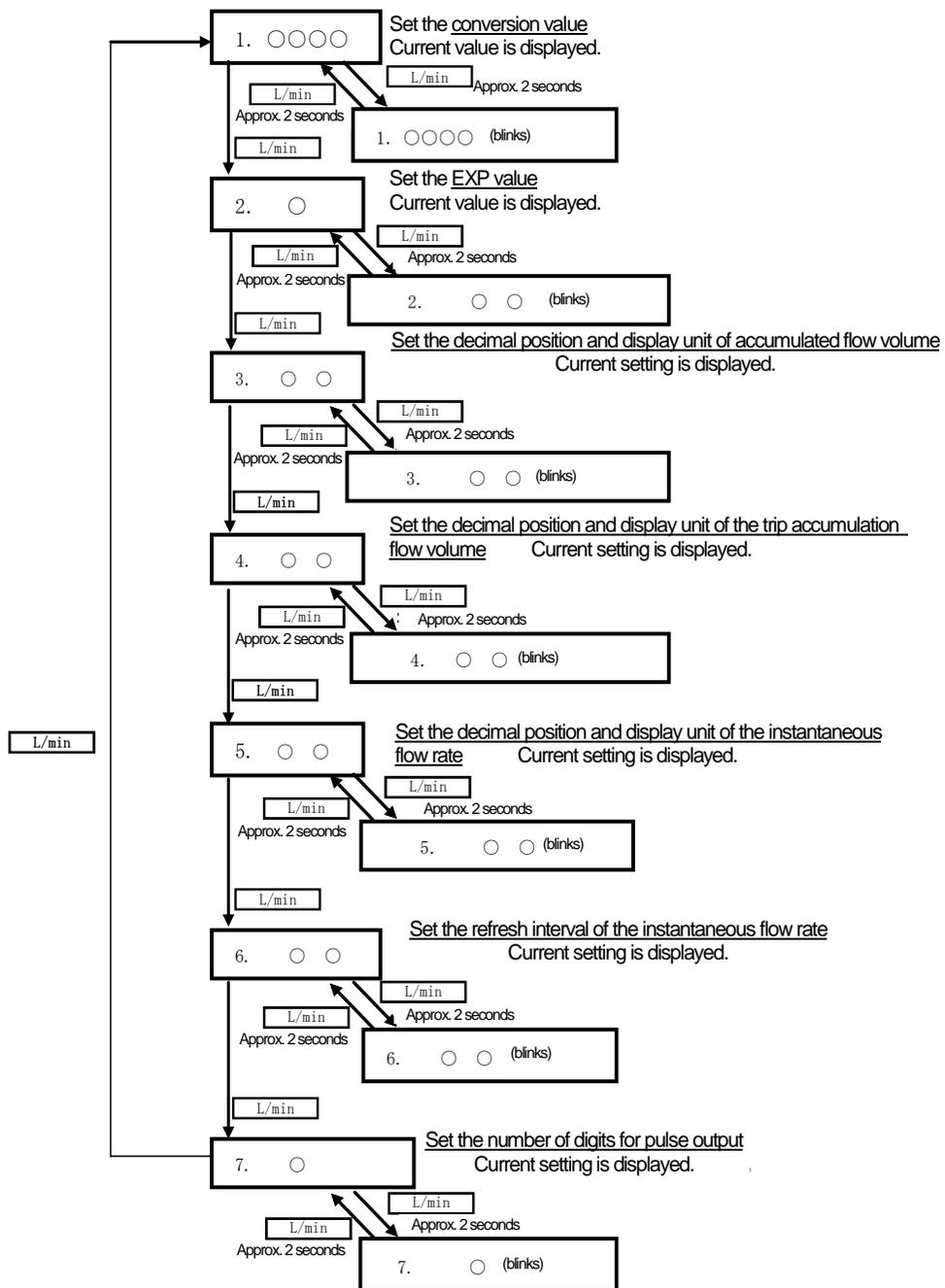
1. Pressing and holding the L/min button for 2 seconds makes the setting value to blink and ready for change.
2. Pressing the L/min button each time changes the value (The available values are 0, 1, 2, 3, 4, 5, 6, 7, and 8). "0" indicates a unit less pulse. For other values, a pulse is output each time the digit corresponding to the specified value in accumulated flow amount display counts up (For example, when "3" is specified, a pulse is output each time the third digit of accumulated flow amount display counts up).
3. Pressing and holding the L/min button for 2 seconds accepts the value and turns on display.

Note: *Be sure to choose a pulse output digit higher than the most significant digit of the pulse constant. (Otherwise, the pulse output becomes undefined.)*

Pressing the L / min button returns to the state in Mode No.1.

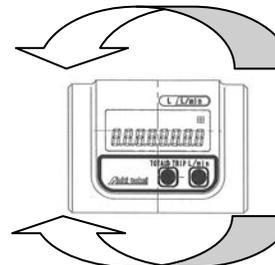
Factory settings

Model	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7
NW05	2500	6	02	02	02	2.0	1
NW10	7690	6	01	01	01	2.0	2
NW20	2500	5	01	01	01	2.0	2
OF05W	4600	7	03	03	03	2.0	2
OF10W	2500	6	02	02	02	2.0	1



Rotation angle of display part

270° counterclockwise



50° clockwise



The display part cannot be rotated unlimitedly in one direction. Never rotate it after rotation stops at the stopper. Otherwise the display part will be broken and values cannot be displayed.

■ Battery voltage drop detection function

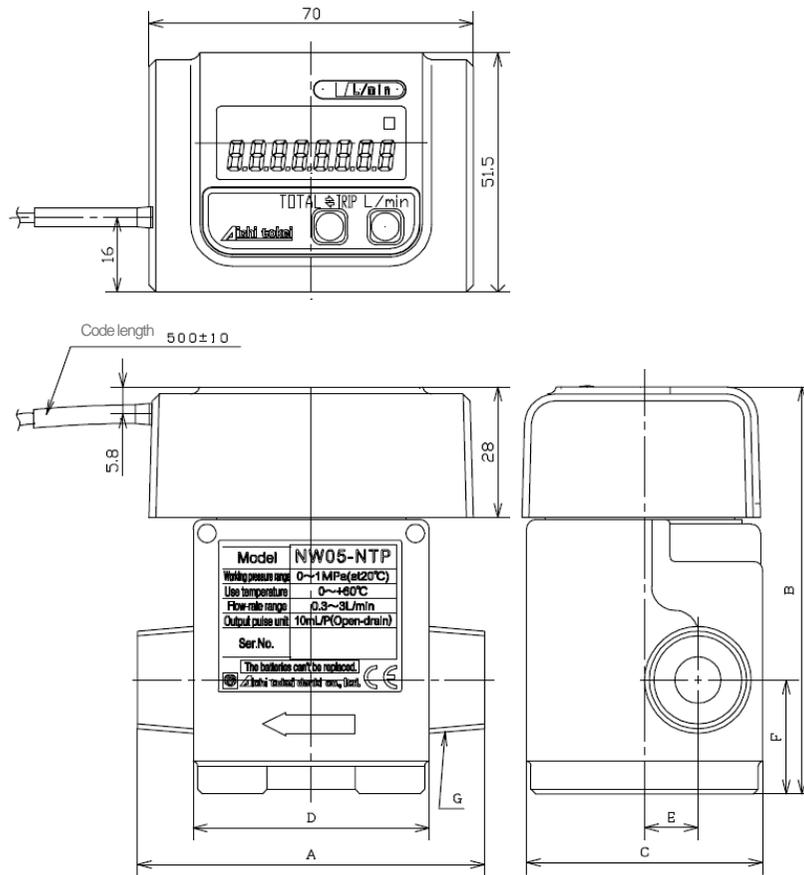
When the battery voltage drops below a specified value, the least significant digit of a displayed value blinks.

■ Storage mode

Pressing and holding the TOTAL/TRIP and L/min buttons together for 10 or more seconds switches to the storage mode and the LCD shows "- - - - -". In this mode, pressing and holding the TOTAL/TRIP and L/min buttons together for 2 or more seconds returns to the normal mode (accumulated flow volume display).

* The storage mode is not used in normal use.

■ External dimensions



Unit: mm

model	NW05	NW10	NW20	OF05	OF10
A	80	80	110	80	90
B	87	87	105.5	87	87
C	52	52	74	52	52
D	52	52	74	52	52
E	11	11	16	8	11
F	25	25	35.5	25	25
G	R1/2	R1/2	R3/4	R1/4	R1/2

■ Warranty

● Warranty period

One year after the dispatch date from Aichi Tokei Denki facility.

● Warranty scope

We are making every effort to produce our products with high quality, however if a defect which is subject to our liability should occur during the warranty period under normal use, we shall repair the product or replace it with a normal product for free.

Please understand that we shall determine whether the free remedy shall apply to your situation after our investigation of the product.

Also please understand that the free remedy shall not be applied to a defect:

- 1) Caused by use which does not follow the instructions given in our catalog, product specifications, and/or handling manual,
- 2) Caused by disaster such as a fire, earthquake, storm, flood, or lightning, or a destructive act such as a crime,
- 3) Caused by corrosion due to use in a corrosive environment,
- 4) Caused by acts of animals such as a dog, cat, rat, or insect,
- 5) Caused by a factor other than our product,
- 6) Which could not be foreseen with the science and technology levels at the time of shipment,
- 7) Caused by a repair or alteration other than done by or specified by us, and/or
- 8) Caused by an inappropriate inspection and/or maintenance or replacement of a consumable.

Please note that "warranty" in this context means warranty for our product alone and we shall not be reliable for any damage resulting from a defect of our product, including but not limited to a damage to equipment other than our product, loss of profit, loss of opportunity, transportation fee, and construction fee.



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The product specification might be changed without prior notice.