

Digital Rate Meter

















TI-1000

Operation Manual



Precautions

Please read this Operation Manual including the following precautions carefully to ensure safe use of your meter.

-  <Caution> Do not use this product for applications outside of the product specifications.
-  <Caution> Please keep the load not greater than rating.
-  <Caution> Direct sunshine is avoided, and ratings are used in the place of each Onshime and the place where the be dewy occurs easily. Do not do.
-  <Caution> Do not use it in the place with the combustible gas and the ignition thing.
-  <Caution> Do not use it where the temperature and relative humidity exceeds rating, and where the dew condensation occurs easily either.
-  <Caution> Do not subject the unit to strong vibrations or shocks.
-  <Caution> Do not allow metallic debris, dust, or moisture to penetrate the unit.
-  <Caution> Please separate wiring of input signal line and main part of the product from source origin of noise and the static—ridden strong electric wire.
-  <Caution> For safety, professional wiring electrical work, such as electrical wiring is please go. Please shut off the power when electrical wiring.
-  <Caution> Do not touch the terminal while operating. It gets an electric shock.
-  <Caution> Do not neither take apart the product nor touch its inside when powered on . It could lead to risk of electric shock.
-  <Caution> Wipe it with a dry cloth when you clean the meter.
-  <Caution> Devices to be connected to each terminal of the terminal block,use the one that is properly isolated from hazardous live parts.
-  <Caution> Since there is no power switch in this machine, it will be in an operating state immediately after power supply impression. Equipment to be incorporated in the side of our customers,please be prepared to supply the switch and circuit breaker which adapted to IEC/EN60947-1 or IEC/EN60947-3 standard in the position that you can operate immediately in emergency. Moreover, please specify that they are interrupting devices.
-  <Caution> This machine is designed to be used with the panel mounted. When used in a state other than that, there is a possibility that the protective device is provided with is impaired.
-  <Caution> Use the temperature rating 70 °C or more power cord.

1. About confirmation of an attachment and a guaranteed period

About confirmation of an attachment.

When you received as a product, please confirm whether it includes the following.

- (1) T I – 1 0 0 0 (The chosen specification) 1
- (2) T I – 1 0 0 0 Operation manual (This book) 1
- (3) Unit label (Attachment) 1

If there are the mistaking parts and the missing parts, please inform a dealer or us.
(There is a case that you don't attach by convenience.)

About a guaranteed period and a guaranteed area.

●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 lightening, 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 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.

2. Specifications

(1) Standard specifications

| Item | | Specifications | |
|-------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rate meter | Measuring types | Ratemeter (speed, rotation, flow rate, etc.), differential rate, ratio, shot speed, passing time, cycletimer, stop watch | |
| | Measuring system | Periodic sampling operation | |
| | Scaling (Pulse rate) | 1×10^{-9} – 9999 (selectable) | |
| | Measurement accuracy | | < speed, rotation, flow rate, differential rate, ratio, passing time > $\pm 0.05\%$ F.S. ± 1 digit (at Sampling time for 0.5 second or more , per one input) |
| | | | < shot speed > $\pm 0.1\%$ rdg. ± 1 digit (in one measurement less than 100Hz) |
| | | | < cycletimer, stop watch > $\pm 2\text{mS}$ ± 1 digit (in one measurement) |
| | Display | 7 segment red color LED (character height : 14mm) $\times 5$ digits | |
| | Indication area | -9999~99999 (When indication overflowed, 99999 or -9999 blinking) | |
| | Decimal point | Displays 1 – 3 decimal points. (selectable) | |
| | Time unit | Per hour , per minute , per second (selectable) | |
| | Sampling time | Rate reading averaged by 0.1–99.9sec (selectable) | |
| | Display mode | Blank, Real, least significant digit fixed at 0, or 0/5 (selectable) | |
| | Moving average | Averaged by 1 – 19 input pulses. (selectable) | |
| Auto zero time | The time (0.5–120 sec. selectable), following input stop, at which the reading returns to zero. | | |
| Measurement reset | Front reset key and Reset input of terminal stand | | |
| Sensor input | Sensor input signal | NPN open collector pulse input (10mA min.) or ground contact | |
| | Option input (F) | Voltage pulse input (LOW : 2.0V or lower, HI : 3.8V–30V) | |
| | Sensor input response | 0.01Hz–10kHz (duty 50%) (Low : 0.01–50Hz, Mid : 0.01Hz–1kHz, Hi : 0.01Hz–10kHz switch shifting) | |
| | Sensor power | DC 12V ($\pm 10\%$) 100mA MAX | |
| | Sensor power (24V) | DC 24V ($\pm 10\%$) 60mA MAX | |
| Auxiliary input | Reset input | 50ms or more is turned on. and, reset (terminal board : open collector input) | |
| | Hold selection input (Reverse-rotation) | Hold / peak hold / bottom hold / Reverse-rotation signal (Mode No.7) (terminal board : open collector input) | |

| | | |
|--------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Others | Mode protect | Protection of the mode setting |
| | Data backup | Each mode setting value is memorized by FRAM (The memory number of times is within 100,000 times, About 10 year safekeeping.) |
| | Power supply | AC 100-240V (-15% / +10%) 120mA max 50/60Hz approx 20VA |
| | Power supply (DC) | DC 12-24V $\pm 10\%$ DC type is outside the scope of CE Marking. |
| | Operating temperature / humidity conditions | 0-50°C / 30-80% RH (non-condensing) |
| | Weight / Dimensions | approx 400g / W96 × H48 × D130 (mm) |
| | Case-material | ABS color (Terminal board PBT Black color) |
| | Case-Color | Black |
| | Protection class | IP66 「Front only」 |
| | Installation environment | The indoor use. Altitude 2,000m max Overvoltage category II , Pollution degree 2 |

(2) Output specifications

《NPN Open collector Preset output : standard equipment》

| | |
|---------------------------|----------------------------------------------------------------------------------|
| Output terminal | Output terminals No.9-6(OUT1),10-6(OUT2) (COM common) |
| Output condition | Judgment output is compared with the indication value by pre-set value. |
| Output system | NPN Open collector output 2 stages (DC 30V 50mA max) |
| Output indication | During preset output, the OUT1 and OUT2 LEDs are activated. |
| Output reset | Front reset key and Reset input of terminal stand (50ms or more is turned on) |
| Time to prohibit judgment | The preset output function is disabled for the specified time |

《Photo MOS relay Preset output : K option》

| | |
|---------------------------|---------------------------------------------------------------------------------------------------------------|
| Output terminal | Output terminals No.15-16(OUT3),17-18(OUT4) |
| Output condition | Judgment output is compared with the indication value by pre-set value. |
| Output system | Photo MOS relay output 2 stages (“a” point of contact) (Voltage : AC140V DC30V , Load current : 0.12A max) |
| Output indication | During preset output, the OUT3 and OUT4 LEDs are activated. |
| Output reset | Front reset key and Reset input of terminal stand (50ms or more is turned on) |
| Time to prohibit judgment | The preset output function is disabled for the specified time |

《Analog output : A option》

| | |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output terminal | Output terminals No.19-20 (Analog output) |
| Current output (AI) | DC 4 - 20mA load impedance 500Ω or less |
| Output accuracy | Within $\pm 0.3\%$ F.S. for indicated value (at 23°C) |
| The temperature characteristic | ± 100 ppm/°C |
| Output response | Approx 50ms (But, an output change is time until the 90% arrival.) |
| Output resolution | <p>12-bit D/A conversion operation DC4-20mA : 4000 resolution ※Maximum output area : It's possible to output to 102.3% to the maximum of each output. ※An analog output is outputting calculation to the indication value shown to 7segment LED. Therefore the resolution sometimes falls from 4000 by setting of Mode No. "C" and "d".</p> |

3. Mounting meter

How to mount meter

1. Cut the panel to insert the meter from the front.

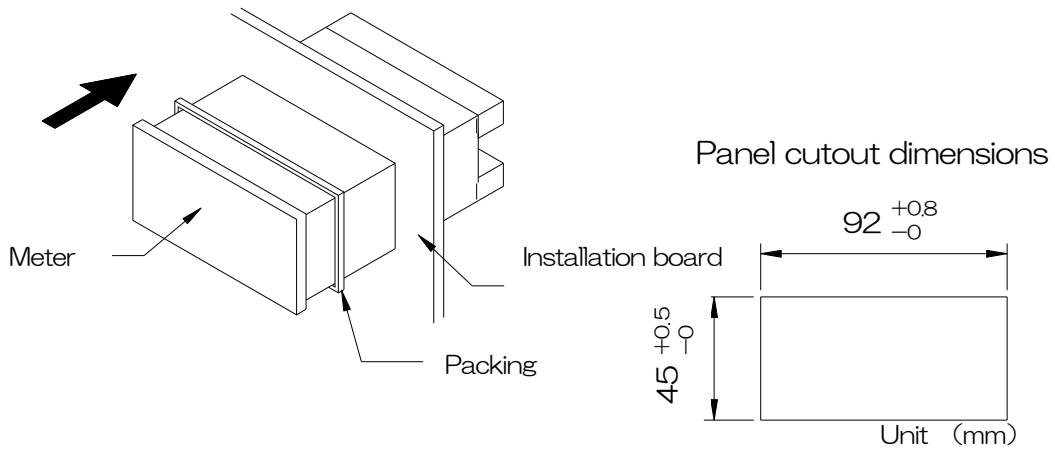


Fig.1

2. Please push the Fitting for fixing the body into a right and left both sides of the meter.

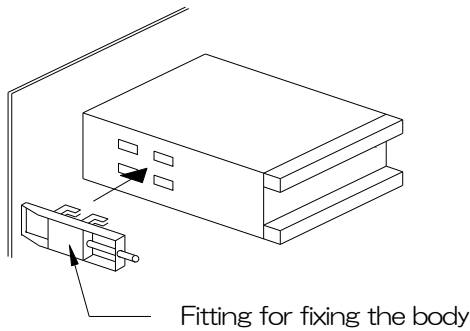


Fig.2

3. Slide in the rear side (terminal stand side) as for the fitting for fixing the body. It turns a screw by the driver. The meter is fixed (right and left both sides)

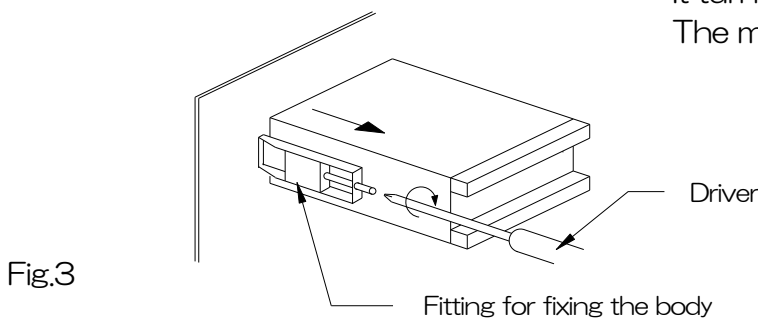


Fig.3

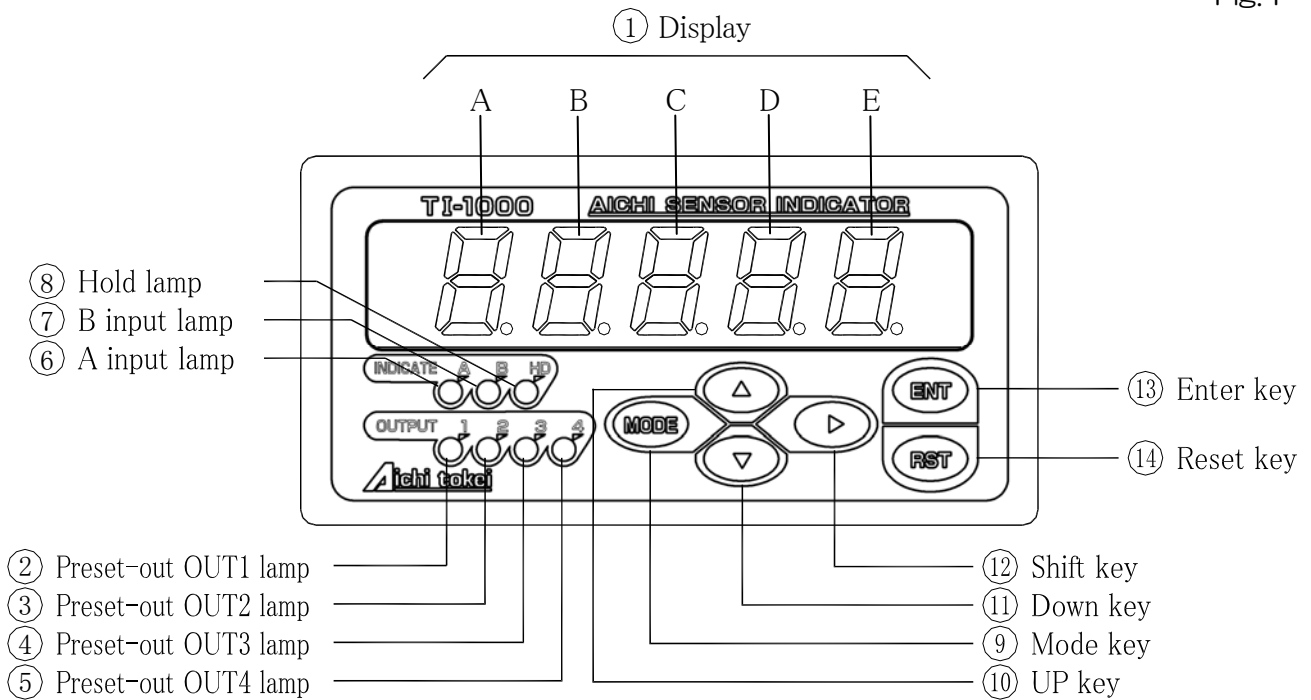


<Caution>

1. Please install it horizontally.
2. Fit the body on to a panel 1.0–4.0 mm in thickness.
3. Please do not tighten the screw of the mounting bracket too much.
(The case might be damaged when tightening too much.)
4. When you mount the machine, please provide a space of at least 20mm from the wall in the direction of up and down, right and left and rear (terminal stand side).

4. Names and functions of components on front

Fig.4



① Display unit (A to E)

Measurement state : Measurements are displayed.

Setting state : When the mode is set, it displays it as follows.

A Mode No. is displayed.

B - E Mode items such as the converted value, etc are displayed.

: When the preset output is set, the value input now is displayed.

: When the teaching function is set, the value set now is displayed.

②—⑤ Preset output lamp

Measurement state : When the preset output is output, it lights.

Setting state : When the preset output is set, OUT1-4 that is setting it now is displayed.

⑥, ⑦ Each input display lamp

Measurement state : When Mode No.0 BC is "02"-"07"(ratio measurement), the measurement display switch of Ratio measurement (A and B input lamp is turned off)/
A input measurement (A input lamp light)/
B input measurement (B input lamp light.) can be done.



Setting state : The set A input measurement or B input measurement lamp lights when the teaching function is set.

⑧ Hold display lamp

Hold input function is set in Mode No.7 B. (Refer to P.30)

When the hold input of the terminal stand is turned on, and the holding operation is done, it lights.

⑨ **Mode key** 

Measurement state : It enters the mode setting state if  +  are pushed for 2 sec. or more.

: It enters the preset output setting state if only  is pushed for 2 sec. or more.

Setting state : When the mode is set, the mode number is raised.

When the preset output is set, OUT 1-4 is changed.

⑩ **Up key** 

Setting state : When each setting it, the numerical value of a set digit is raised.

⑪ **Down key** 

Measurement state : When this key is pushed for 2 sec. or more, the state of the mode protecting is displayed. (Refer to P.36 Mode protect function)

Setting state : When each setting it, the numerical value of a set digit is lowered.

⑫ **Shift key** 

Measurement state : When Mode No.0 BC is "00" (A input measurement) or "01" (B input measurement), The teaching function works. (Refer to P.37 Teaching function)

Setting state : When each setting it, a set digit is shifted to a right digit.

⑬ **Enter key** 

Measurement state : When Mode No.0 BC is "02"-"07" (ratio measurement), the measurement display switch of Ratio measurement / A input measurement / B input measurement can be done.

Setting state : When the mode is set, and the preset output is set, a set value is registered, and it returns it to Measurement state.

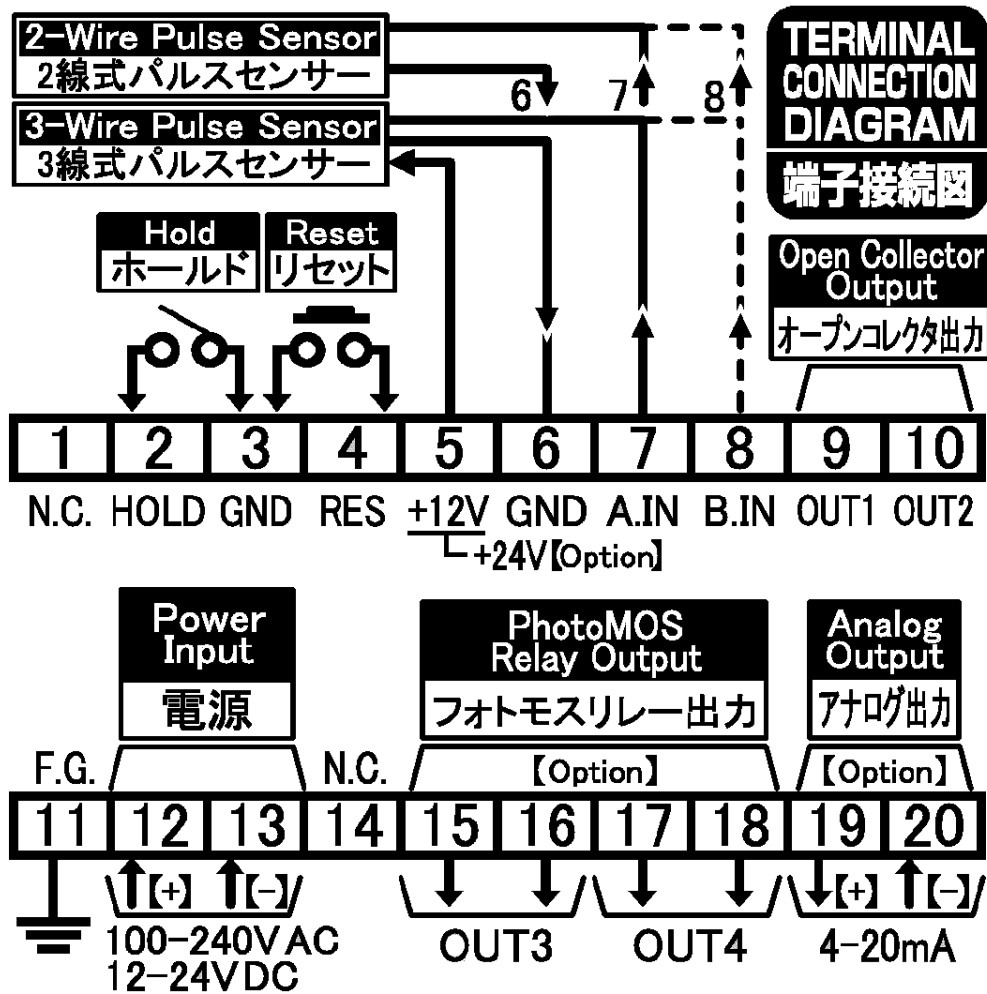
⑭ **Reset key** 

Measurement state : When this key is pushed for 2 seconds or more, the output of measurement reset (Indicated value 0) and preset output OFF.

Setting state : When the mode is set, and the preset output is set, a set value is not registered, and it returns it to Measurement state.

5. Connecting terminal boards

Fig.5

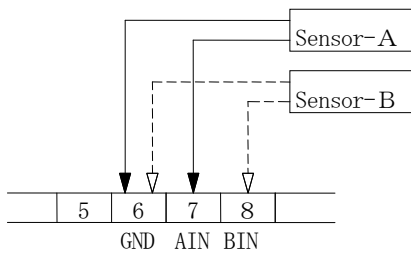


⚠ <Caution>

- 1) For safety, professional wiring electrical work, such as electrical wiring is please go.
Please shut off the power when electrical wiring.
- 2) Power supply confirmation
 - Confirm the specification of the AC power supply type and the DC power supply type well.
 - DC power supply type notes the polarity.5
- 3) Wire correctly after often confirming the terminal stand label.
- 4) The wiring technique is different depending on the kind of the sensor.
Wire correctly referring to the connection diagram (P.9) and the manual of the sensor.
The sensor and the meter might break down when connecting it by mistake.
- 5) Do not use the sensor power supply for the usages other than the sensor.
- 6) Tighten the screw of the terminal stand surely.
- 7) Do not touch the terminals while power is being supplied. There is a risk of electrical shock.

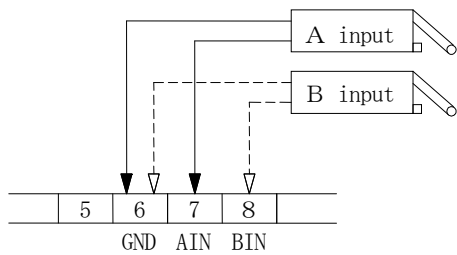
A. Pulse output 2-wire type sensor

Fig.6



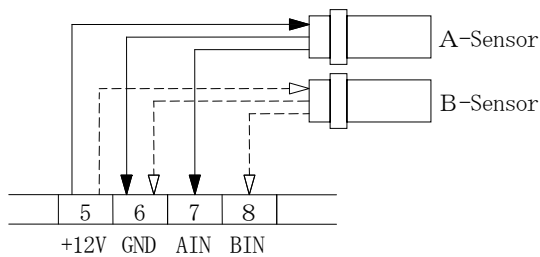
B. Ground contact output sensor

Fig.7



C. Pulse output 3-wire type sensor

Fig.8



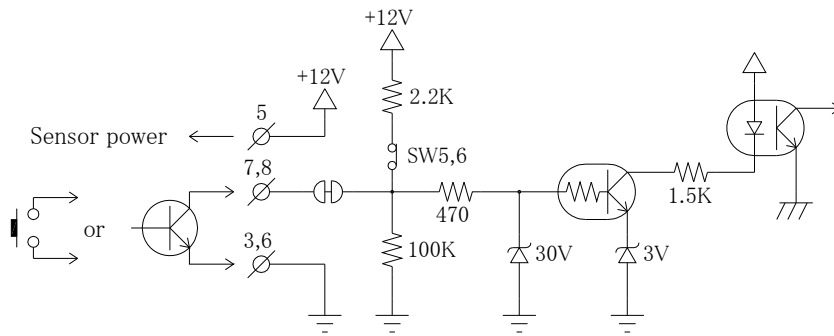
NOTE

- When mis-counting by the chattering of the having point of contact input, (Relay etc.) Connect the electrolytic capacitor with terminal stand 6-7 (A input) and 6-8 (B input) according to the frequency.
- When mis-counting because of the noise etc, Connect the film capacitor with the same terminal according to the width of the input frequency and the noise.

6. Construction of input circuit

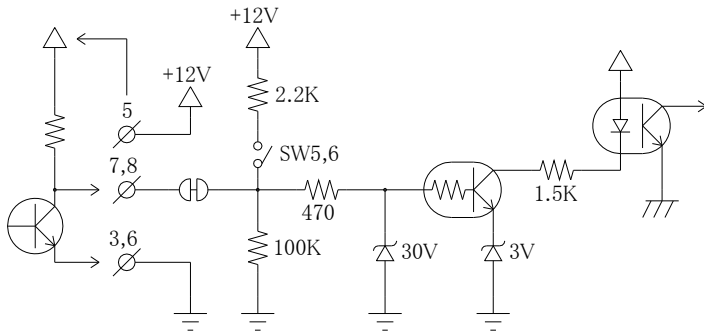
① NPN open collector pulse input

Fig.9



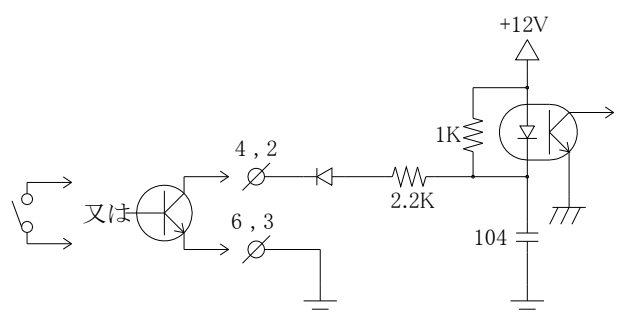
② Voltage pulse input

Fig.10



③ Reset • Hold input

Fig.11



7. Dip switch

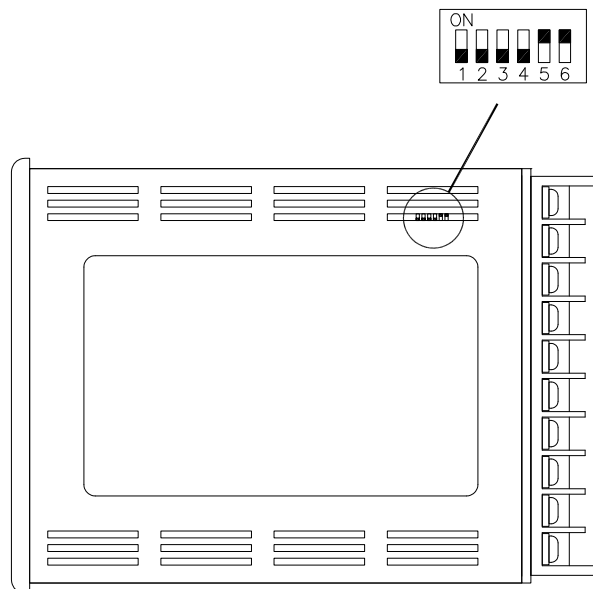
Sensor input, and relationship of the sensor input response is shown in Table1.

Table.1

| | B.IN | | A.IN | | B.IN | A.IN |
|-----------------------------------|------|-----|------|-----|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Input frequency 0.01Hz - 50Hz LOW | ON | OFF | OFF | ON | | |
| Input frequency 0.01Hz - 1kHz MID | OFF | ON | ON | OFF | | |
| Input frequency 0.01Hz - 10kHz HI | OFF | OFF | OFF | OFF | | |
| NPN open collector input | | | | | ON | ON |
| Voltage pulse input | | | | | OFF | OFF |

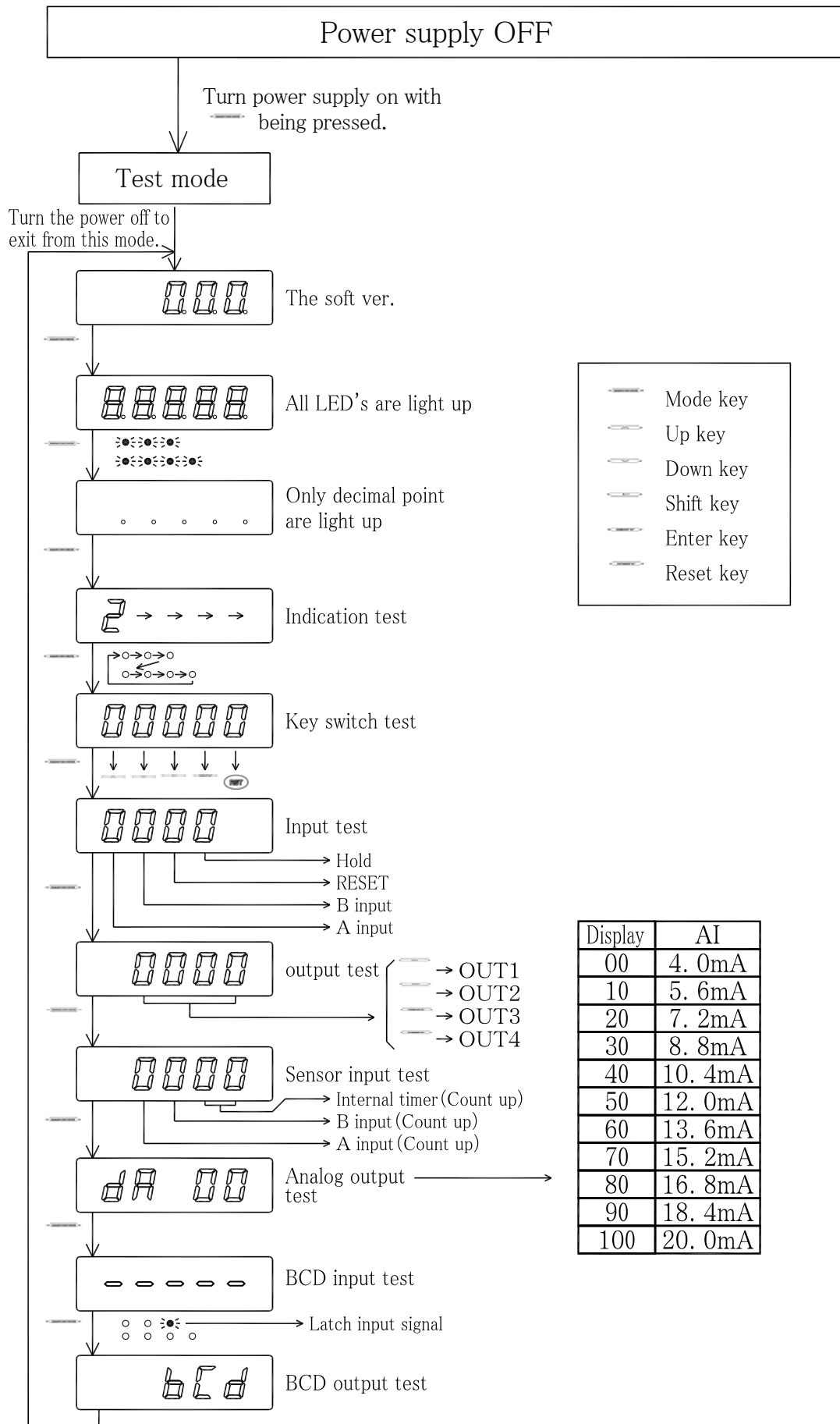
When a sensor optional input is not specified, sensor input is “NPN open collector”, and Sensor input response is “HI”.

Fig.1 2

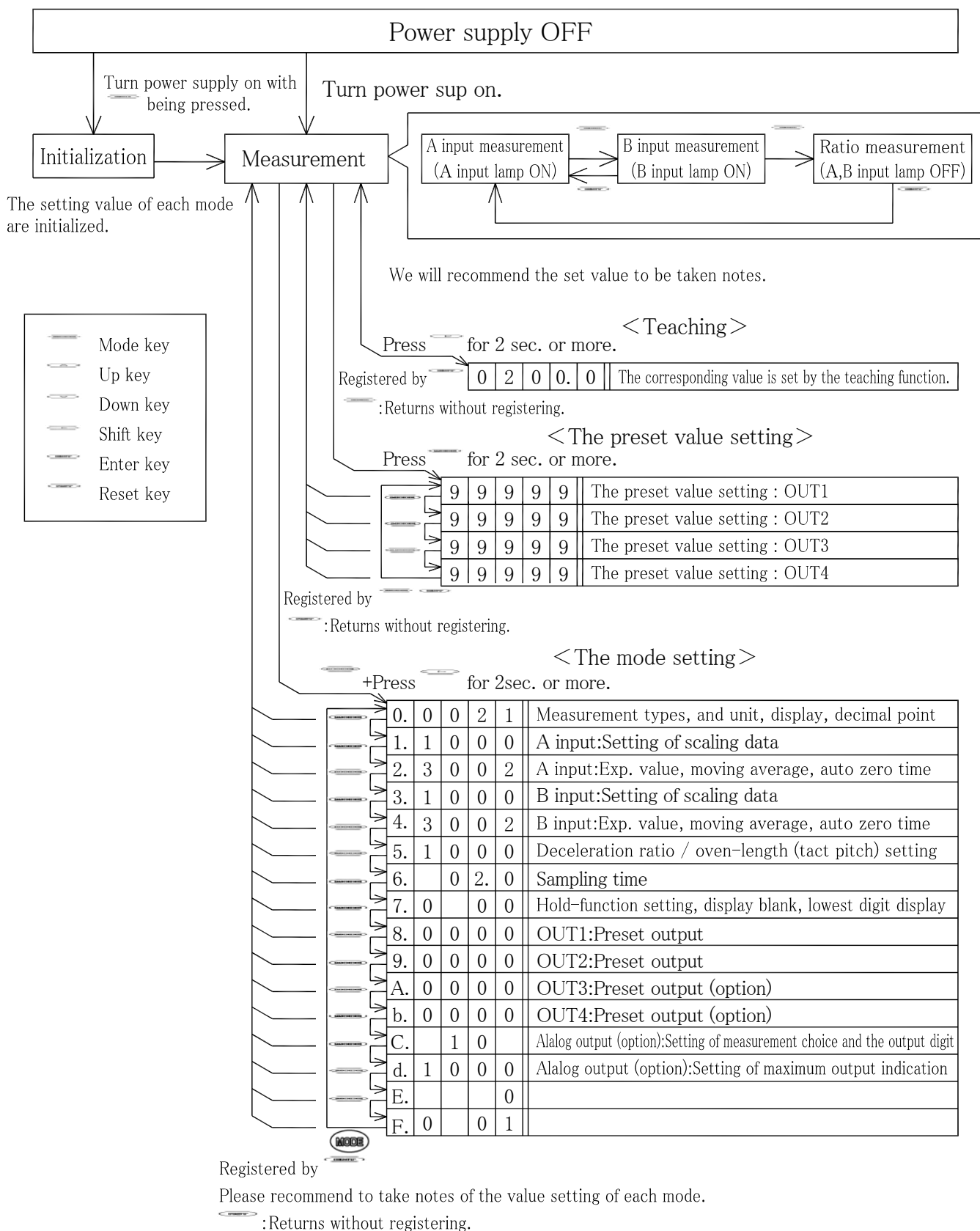


8. The setting menu

«Test Mode»



《Setting menu》



9. Initialization and program setting









User can change the set value. Table 3 illustrates variation of default value.

<Initialization>

Initialization is to be performed when powered on, pressing ENT key .

In case of which computer requires runaway reaction e.g. when disturbed by noise or so, please initialize it and reset the value that you wish to have.

Table 2

| Operating Key | Indication | Procedure |
|-------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | A B C D E P r o - Program No. ← | Turn on the power while pressing the  key. The program is displayed No.0. |
|  | A B C D E P r o - ↑ 0~A |  changes the flash figure. Each time the key is pressed, a flash figure is rising up. |
|  | A B C D E P r o - ↑ 0~A |  changes the flash figure. Each time the key is pressed, a flash figure is down. |
|  | | After adjusting the setting, use  to register it. It returns to the measurement display after a set value is registered. |

<Program setting>

Default value of mode for each program

Table 3

| Program Mode No. | Pro-0 | Pro-1 | Pro-2 | Pro-3 | Pro-4 | Pro-5 | Pro-6 | Pro-7 | Pro-8 | Pro-9 |
|---------------------------|--------|----------|--------|--------|--------|--------|-----------|-----------|-----------|--------|
| | ND05 | ND10-P,N | ND10-T | ND20 | OF05 | OF10 | VN05 ※ | VN10 ※ | VN20 ※ | |
| 0. | 0021 | 0012 | 0011 | 0011 | 0011 | 0013 | 0012 | 0013 | 0012 | 0012 |
| 1. | 1000 | 2500 | 7692 | 7692 | 2500 | 4600 | 2500 | 8333 | 8333 | 5000 |
| 2. | 3002 | 6002 | 6002 | 6002 | 5002 | 7002 | 6002 | 8002 | 7002 | 6002 |
| 3. | 1000 | 2500 | 7692 | 7692 | 2500 | 4600 | 2500 | 8333 | 8333 | 5000 |
| 4. | 3002 | 6002 | 6002 | 6002 | 5002 | 7002 | 6002 | 8002 | 7002 | 6002 |
| 5. | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 6. | 020 | 020 | 020 | 020 | 020 | 020 | 020 | 020 | 020 | 020 |
| 7. | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 | 0_00 |
| 8. | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| 9. | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| A. | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| b. | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| C. | _10_ | _10_ | _10_ | _10_ | _10_ | _10_ | _10_ | _10_ | _10_ | _10_ |
| d. | 1000 | 0300 | 0200 | 0100 | 0600 | 0850 | 0500 | 1000 | 1000 | 6000 |
| E. | __0 | __0 | __0 | __0 | __0 | __0 | __0 | __0 | __0 | __0 |
| F. | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 | 0_01 |
| OUT 1 | 00250 | 00075 | 00050 | 00025 | 00150 | 00213 | 00125 | 00250 | 00250 | 01500 |
| OUT 2 | 00750 | 00225 | 00150 | 00075 | 00450 | 00638 | 00375 | 00750 | 00750 | 04500 |
| OUT 3 | 00250 | 00075 | 00050 | 00025 | 00150 | 00213 | 00125 | 00250 | 00250 | 01500 |
| OUT 4 | 00750 | 00225 | 00150 | 00075 | 00450 | 00638 | 00375 | 00750 | 00750 | 04500 |
| Location of decimal point | 0000.0 | 000.00 | 0000.0 | 0000.0 | 0000.0 | 00.000 | 000.00 | 00.000 | 000.00 | 000.00 |

※When output of VN is set at "frequency pulse 200Hz"

<Mode setting when VN (output setting : unit pulse) is connected>

Please comply fully with the settings illustrated at Table 4 when connecting sensor is VN (Output setting : unit pulse).

Setting of VN (output : unit pulse) Table 4

| Mode No. \ Sensor | VN05 | VN10 | VN20 |
|---------------------------|--------|--------|--------|
| 0. | 0013 | 0012 | 0012 |
| 1. | 1000 | 1000 | 1000 |
| 2. | 6002 | 5002 | 4002 |
| 3. | 1000 | 1000 | 1000 |
| 4. | 6002 | 5002 | 4002 |
| 5. | 1000 | 1000 | 1000 |
| 6. | 020 | 020 | 020 |
| 7. | 0_00 | 0_00 | 0_00 |
| 8. | 0000 | 0000 | 0000 |
| 9. | 0000 | 0000 | 0000 |
| A. | 0000 | 0000 | 0000 |
| b. | 0000 | 0000 | 0000 |
| C. | _10_ | _10_ | _10_ |
| d. | 1000 | 1000 | 6000 |
| E. | __0 | __0 | __0 |
| F. | 0_01 | 0_01 | 0_01 |
| OUT 1 | 00250 | 00250 | 01500 |
| OUT 2 | 00750 | 00750 | 04500 |
| OUT 3 | 00250 | 00250 | 01500 |
| OUT 4 | 00750 | 00750 | 04500 |
| Location of decimal point | 00.000 | 000.00 | 000.00 |

 <Caution>

※When initialization is performed existing setting values turn back to the default, so please make sure you preserve the records of all the setting values before initialization.

Setting value of each mode

| Mode No. | Notes | | | | |
|----------|-------|---|---|---|---|
| | A | B | C | D | E |
| 0. | | | | | |
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | — | | | | |
| 7. | | — | | | |
| 8. | | | | | |
| 9. | | | | | |
| A. | | | | | |
| b. | | | | | |
| C. | — | | | | — |
| d. | | | | | |
| E. | — | — | — | | |
| F. | | — | | | |

Setting value of alarm presetting















| | Notes | | | | |
|-------|-------|---|---|---|---|
| | A | B | C | D | E |
| OUT 1 | | | | | |
| OUT 2 | | | | | |
| OUT 3 | | | | | |
| OUT 4 | | | | | |

1 0. Content and setting the each mode

«1. Operating method (the mode setting)»

When doing mode setting, please operate as follows.

Table.5

| Operating key | Indication | Procedure | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|----|---|---|---|---|---|---|---|---|---|------------------|--------------|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  +  | <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="padding: 0 10px;">0.</td> <td style="padding: 0 10px; border: 1px solid black; text-align: center;">0</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">2</td> <td style="padding: 0 10px;">1</td> </tr> <tr> <td style="padding: 0 10px;">↓</td> <td colspan="2" style="padding: 0 10px;">↓</td> <td colspan="2"></td> </tr> <tr> <td style="padding: 0 10px;">Mode No.</td> <td colspan="4" style="padding: 0 10px;">Data value</td> </tr> </table> | A | B | C | D | E | 0. | 0 | 0 | 2 | 1 | ↓ | ↓ | | | | Mode No. | Data value | | | | <p>While pushing down  , press  for 2 sec. or more.</p> <p>"0" appears in displays A ,the value setting for Mode No.0 is shown.</p> |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | |
| 0. | 0 | 0 | 2 | 1 | | | | | | | | | | | | | | | | | | |
| ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | |
| Mode No. | Data value | | | | | | | | | | | | | | | | | | | | | |
|  | <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="padding: 0 10px;">0.</td> <td style="padding: 0 10px; border: 1px solid black; text-align: center;">0</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">2</td> <td style="padding: 0 10px;">1</td> </tr> <tr> <td></td> <td style="padding: 0 10px;">↑</td> <td colspan="3"></td> </tr> <tr> <td></td> <td style="padding: 0 10px;">0-9</td> <td colspan="3"></td> </tr> </table> | A | B | C | D | E | 0. | 0 | 0 | 2 | 1 | | ↑ | | | | | 0-9 | | | | <p> changes the flash figure.</p> <p>Each time the key is pressed, a flash figure is rising up.</p> <p>(0→1→...→9→0→1...)</p> <p>※In Situation, doesn't indicate by a setting figure, up to nine.</p> |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | |
| 0. | 0 | 0 | 2 | 1 | | | | | | | | | | | | | | | | | | |
| | ↑ | | | | | | | | | | | | | | | | | | | | | |
| | 0-9 | | | | | | | | | | | | | | | | | | | | | |
|  | <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="padding: 0 10px;">0.</td> <td style="padding: 0 10px; border: 1px solid black; text-align: center;">9</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">2</td> <td style="padding: 0 10px;">1</td> </tr> <tr> <td></td> <td style="padding: 0 10px;">↑</td> <td colspan="3"></td> </tr> <tr> <td></td> <td style="padding: 0 10px;">9-0</td> <td colspan="3"></td> </tr> </table> | A | B | C | D | E | 0. | 9 | 0 | 2 | 1 | | ↑ | | | | | 9-0 | | | | <p> changes the flash figure.</p> <p>Each time the key is pressed, a flash figure is down.</p> <p>(9→8→...→1→0→9...)</p> |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | |
| 0. | 9 | 0 | 2 | 1 | | | | | | | | | | | | | | | | | | |
| | ↑ | | | | | | | | | | | | | | | | | | | | | |
| | 9-0 | | | | | | | | | | | | | | | | | | | | | |
|  | <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="padding: 0 10px;">0.</td> <td style="padding: 0 10px; border: 1px solid black; text-align: center;">9</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">2</td> <td style="padding: 0 10px;">1</td> </tr> <tr> <td></td> <td style="padding: 0 10px;">↑</td> <td style="padding: 0 10px;">→</td> <td style="padding: 0 10px;">→</td> <td style="padding: 0 10px;">→</td> </tr> <tr> <td></td> <td colspan="4" style="padding: 0 10px;">└──────────┘</td> </tr> </table> | A | B | C | D | E | 0. | 9 | 0 | 2 | 1 | | ↑ | → | → | → | | └──────────┘ | | | | <p>A figure of flash indication is shifted. Each time the key is pressed, a flash figure is shifted, to the right.</p> |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | |
| 0. | 9 | 0 | 2 | 1 | | | | | | | | | | | | | | | | | | |
| | ↑ | → | → | → | | | | | | | | | | | | | | | | | | |
| | └──────────┘ | | | | | | | | | | | | | | | | | | | | | |
|  | <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="padding: 0 10px;">1.</td> <td style="padding: 0 10px; border: 1px solid black; text-align: center;">1</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">0</td> <td style="padding: 0 10px;">0</td> </tr> <tr> <td style="padding: 0 10px;">↑</td> <td colspan="4"></td> </tr> <tr> <td style="padding: 0 10px;">0-9, A,b,C,d,E,F</td> <td colspan="4"></td> </tr> </table> | A | B | C | D | E | 1. | 1 | 0 | 0 | 0 | ↑ | | | | | 0-9, A,b,C,d,E,F | | | | | <p>The Mode No. is changed.</p> <p>Each time  is pressed, the Mode No. is rising. [Rise]</p> <p>(0→1→...→F→0→1...)</p> <p>All modes are "1-F".</p> <p>When the Mode No. reached "F", return to "0".</p> |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | |
| 1. | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| ↑ | | | | | | | | | | | | | | | | | | | | | | |
| 0-9, A,b,C,d,E,F | | | | | | | | | | | | | | | | | | | | | | |
|  | | <p>After adjusting the setting, use  to register it.</p> <p>It returns to the measurement display after a set value is registered.</p> | | | | | | | | | | | | | | | | | | | | |
|  | | <p>It returns to the measurement display without registering a set value.</p> | | | | | | | | | | | | | | | | | | | | |

<Caution>

※Please make the mode protect function "L-off" at the mode setting. If it's a condition of "L-on", it can't be changed.

About the contents of the mode protect function, please refer to "11.Mode protect function".

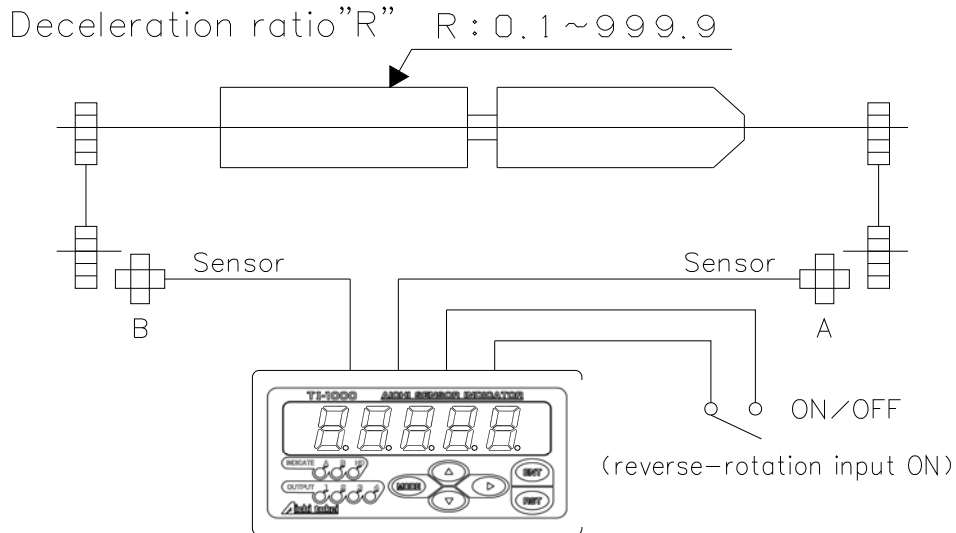
«2. Content of the each mode and set value»

| Mode No. | Measuring types, Measurement unit, Display decimal point |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | <div style="display: flex; justify-content: space-around; margin-bottom: 10px;"> ABCDE </div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;"> 0.0021 </div> <div style="margin-left: 100px;"> <p>→ Display decimal point setting 0 : 0 2 : 0.00 1 : 0.0 3 : 0.000</p> <p>→ Measuring unit 0 : hour 1 : minute 2 : second 3 : hour-minute 4 : minute-second [The above measurement selecting 08,13 - 15 alone can be used.</p> <p>→ Measuring types 00 : A-input : speed, rotation, flow rate measurement 01 : B-input : speed, rotation, flow rate measurement 02 : Ratio measurement (absolute ratio measurement) $B/A \times 100$ 03 : Ratio measurement (error ratio measurement) $(B-A)/A \times 100$ 04 : Ratio measurement (difference measurement) A-B 05 : Ratio measurement (density) $B/(A+B) \times 100$ 06 : Ratio measurement (sum measurement) A+B 07 : Ratio measurement (differential rate measurement) $(A+B)/R$ or $(A-B)/R$ 08 : Passing time measurement 09 : Shot speed UA (2 sensor one direction speed) 10 : Shot speed UB1 (1 sensor one direction speed) 11 : Shot speed UB2 (1 sensor reciprocal speed) 12 : Shot speed UC (2 sensor reciprocal speed) 13 : Cycle-timer measurement 14 : Stop watch A 15 : Stop watch B NOTE : Upon setting 16 - 19, same operation as with 00 is mode.</p> </div> <hr style="border-top: 1px dashed black;"/> <p>Option : A In analog output, The real-time output functions only when I set Mode No.0 "00"(A input) or "01"(B input) or "08"(Passing time measurement). Otherwise, set it in 1(Synchronizes for the display).</p> <hr style="border-top: 1px dashed black;"/> <p>When use analog output, the measurement unit choose 0(hour) or 1(minute) or 2(second).</p> |
| (00) (01) | <p>[Ratemeter] When I use it in Ratemeter (speed, rotation,flow rate), choose this mode. Choose "00"(A input) or "01"(B input).</p> |

- (02) absolute ratio measurement $\cdot \cdot \cdot B/A \times 100$
 (03) error ratio measurement $\cdot \cdot \cdot (B-A) / A \times 100$
 (04) difference measurement $\cdot \cdot \cdot A-B$
 (05) density $\cdot \cdot \cdot B / (A+B) \times 100$
 (06) sum measurement $\cdot \cdot \cdot A+B$

[differential rate measurement]

There is a signal of two kinds of number of revolutions of A and B, The 2 signals are input, and the following calculation is considered to be it. Furthermore, analog output and the preset output are possible for indication value data.



(07)

1) Calculation type

- ① A and B turn in the same direction : $(A-B) / R$
 [Terminal stand 2-3 is a state of OFF]
- ② A and B turn to the opposite direction : $(A+B) / R$
 [Terminal stand 2-3 is a state of ON]

2) Setting method

- ① Set scaling of A input and B input : (Mode No.1 -4)
- ② Deceleration ratio (R) setting : (Mode No.5)
- ③ Sampling time : (Mode No.6)
- ④ Setting of the preset output (Std.) : (Mode No.8, 9)
 (Option) : (Mode No.A, b)
- ⑤ Setting of the analog output.
 (Option) : (Mode No.C, d)
- ⑥ Setting of the reverse-rotation input : (Mode No.7)

3) Operation explanation

- ① A input lamp lights up when I push **ENT** during a measurement, and number of revolutions of the A input is displayed.
 B input lamp lights it up when I push **ENT** once again and displays number of revolutions of the B input.
 A input lamp and B input lamp turn off the light when I push **ENT** once again, and differential rate is displayed.
- ② Reverse-rotation input is shown terminal stand 2-3 when short-circuit.
 When, in this state, I operate the above "①", Number of revolutions and differential rate of each input are displayed.
 Perform the A input with open collector signal or no voltage point of contact signal

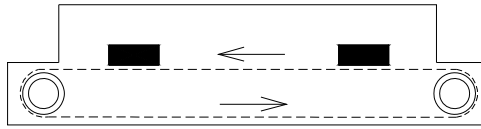
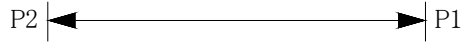
(08) [Passing time measurement]

When it is measured time via P2 by P1 (Distance, Oven-length, tact pitch), please choose this mode.

Set the unit of scaling in "mm".

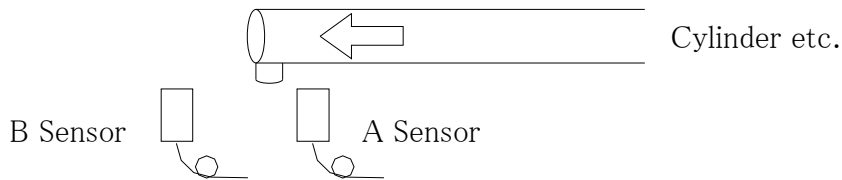
(Refer to Mode No. 5 : Oven-length (tact pitch) setting)

Oven-length (tact pitch) (Ex : 3. 00m)



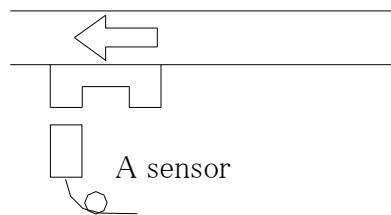
(09) [Shot speed]

UA type (2 sensor one direction speed)



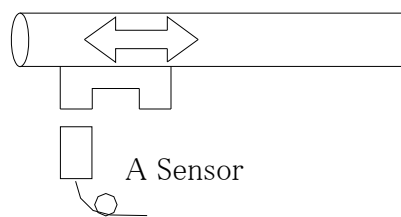
(10)

UB1 type (1 sensor one direction speed)



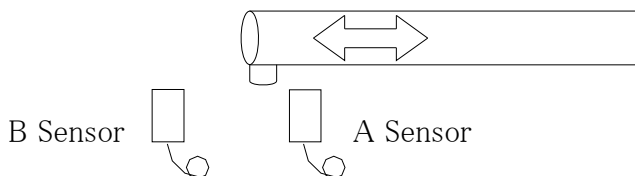
(11)

UB2 type (1 sensor reciprocal speed)



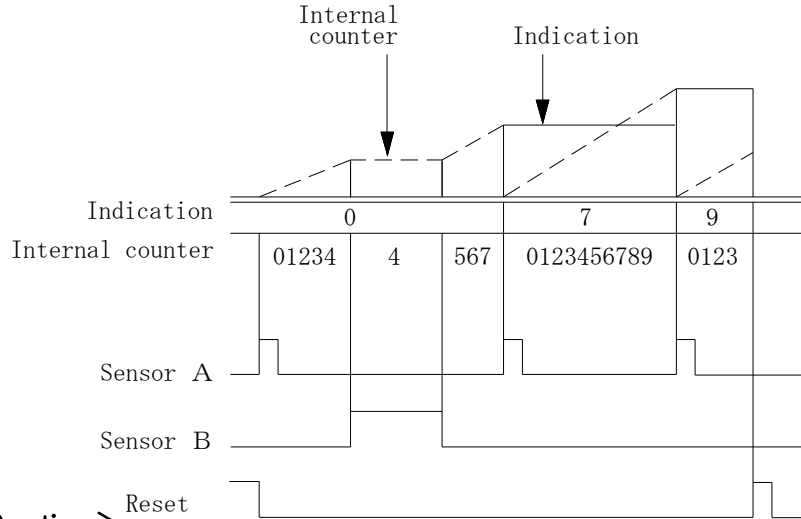
(12)

UC type (2 sensor reciprocal speed)



(1 3) [Cycle-timer measurement]

- 1) When sensor input A does ON, it is started time measurement.
- 2) It is displayed measurement time when sensor input did ON again, and time measurement is started again.
- 3) The time measurement is suspended between ON sensor input B.
- 4) When ON did reset input, indication is returned to 0, and the time measurement stops.

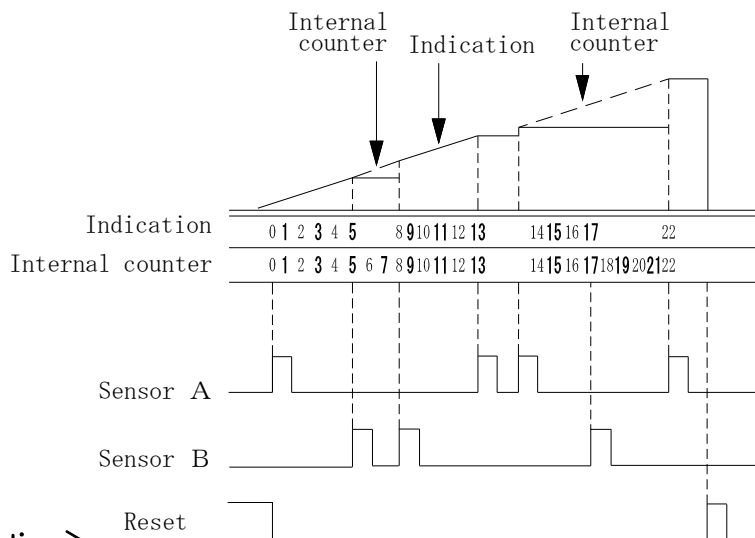


! <Caution>

When blackout and power supply OFF are considered to be it when they use this function, indication measuring returns to 0.

(1 4) [Stop watch A]

- 1) When sensor input A does ON, a measurement is started and displays it at the same time. When sensor input A does ON once again, a measurement is stopped.
- 2) Sensor input B works as input in a lap time. When ON is considered to be it during time measurement, the indication is performed hold of, but can continue measuring the time. Then, When B sensor input does ON, it is gone back up for time measurement indication. The second input is not B sensor, and, in the case of A sensor, the time until the point in time is displayed, and time measurement is stopped.
- 3) When ON did reset input, indication is returned to 0, and the time measurement stops.



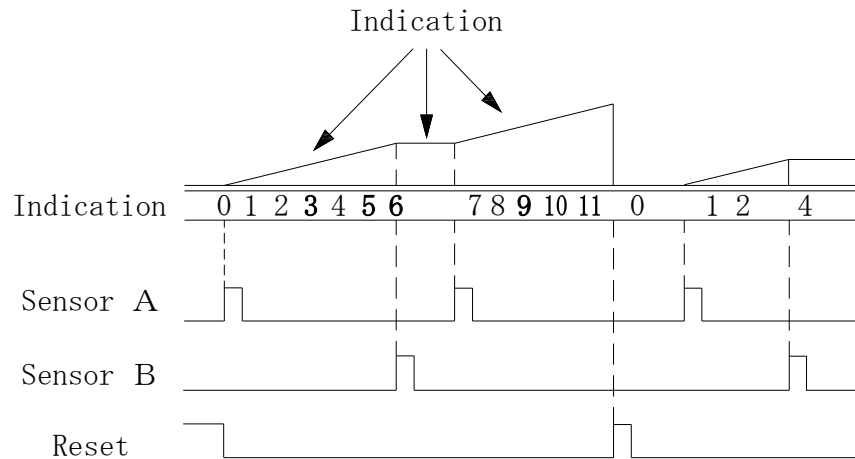
! <Caution>

When blackout and power supply OFF are considered to be it when they use this function, indication measuring returns to 0.

(15)

[Stop watch B]

- 1) When sensor input A does ON, a measurement is started and displays it at the same time.
- 2) When ON does B sensor next, a measurement stops.
- 3) When reset input is performed ON of, indication and the internal counter are corrected to 0 and are stopped time measurement



! <Caution>

When blackout and power supply OFF are considered to be it when they use this function, indication measuring returns to 0.

Measuring unit

- 1) Choose any Measuring unit. But, when I chose "00"(A input) or "01"(B input), "03-07"(Ratio measurement), "09-12"(Shot speed).
3 : hour-minute becomes 1 : minute.
4 : minute-second becomes 2 : second.
- 2) When it is chosen "08"(Passing time measurement), "13~15"
(Cycle-timer, Stop watch A and B) by a measuring types,
3 : hour-minute and 4 : minute-second are selectable.

When it is chosen Measuring unit above, please refer to P.38 (caution below) for preset output.

Display decimal point setting

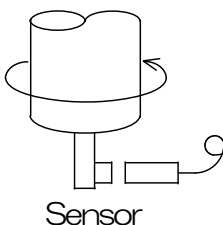
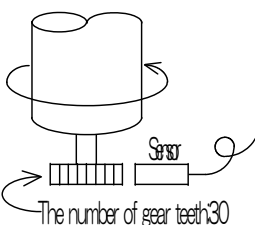
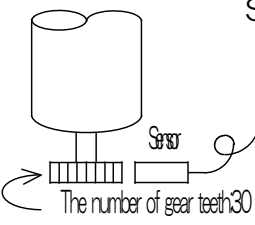
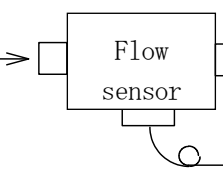
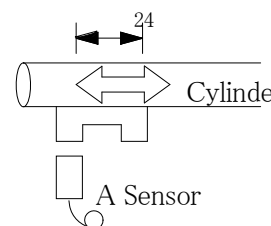
Please set a position displaying a decimal point.
But the decimal point is ignored when I set 3 : hour-minute or
4 : minute-second with Mode No.0 "D : Measuring unit".

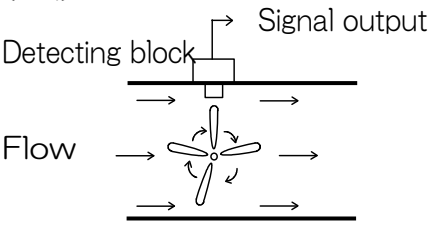

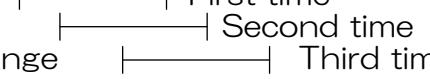
NOTE

This decimal point setting links setting of the preset output.

| Mode No. | A-input : Setting of scaling data | | | | | | | | | | | | | | | | | | | | |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| 1 | <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>1.</td><td>1</td><td>0</td><td>0</td><td>0</td></tr> </table> <p style="text-align: center;">Scaling data : 0001 – 9999 (Do not set 0000)</p> </div> <hr style="border-top: 1px dashed black;"/> <p>Please set the pulse rate (scaling data) of the sensor. 4 digit of numerical value to set with this mode, and please input Exp.value of Mode No. 2. Then “$1 \times 10^{-9} \sim 9999$” can set the magnification per 1 signal.</p> <p>Measuring types : 08(Passing time measurement), set it in unit “mm/p” Measuring types : 09~12(shot speed), set the distance between the sensor.</p> | A | B | C | D | E | 1. | 1 | 0 | 0 | 0 | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| 1. | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | |
| | <p>(Ex.) Using a flow sensor which emits 1 pulse per 1.234mL, the cumulative total flow in liters can be expressed using the following conversion.</p> <div style="text-align: center; margin-top: 20px;"> $1.234\text{mL} \longrightarrow 0.001234\text{L} \xrightarrow{\text{Scaled to the desired unit (L)}} \frac{1234}{10^6} \times 10^{-6}$ <div style="display: flex; justify-content: center; gap: 100px; margin-top: 10px;"> <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>1.</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> <p>Mode No.1</p> </div> <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>2.</td><td>6</td><td>*</td><td>*</td><td>*</td></tr> </table> <p>Mode No.2</p> </div> </div> <div style="display: flex; justify-content: center; gap: 100px; margin-top: 10px;"> <div style="text-align: center;"> <p>4 digits(Scaling data)</p> </div> <div style="text-align: center;"> <p>Exp. Value(exponent)</p> </div> </div> </div> | A | B | C | D | E | 1. | 1 | 2 | 3 | 4 | A | B | C | D | E | 2. | 6 | * | * | * |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| 1. | 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| 2. | 6 | * | * | * | | | | | | | | | | | | | | | | | |
| | <p>The above is based on the example of flow rate measurement, while for examples of conversion value, refer to next page.</p> <p>For ratio-measurement, sensor is connected to A and B for each 1 piece, then, set Mode No.“3”and“4”.</p> | | | | | | | | | | | | | | | | | | | | |

Calculation example of scaling data (setting example)

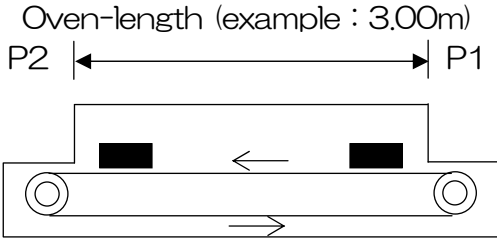
| Example | Arithmetic expression |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Arithmetic expression | In case of " Revolution " Scaling data=1 revolution/pulse In case of " Speed " Scaling data=Amount of transfer/pulse In case of " Flow " Scaling data=Flow rate value/pulse |
| 〔Ex.1〕 Revolution | Factor → 1 revolution/1 pulse = 1  $0001 \times 10^{-0} \text{ or } 1000 \times 10^{-3}$ ※ Please register scaling data of "the left side or "the right side". The right side can be adjusted slightly. |
| 〔Ex.2〕 Revolution | Factor → 1 revolution/30 pulse = 1/30 = 0.033333  3333×10^{-5} ※ Please register scaling data of "Mode No.1" and "Mode No.2". The number of gear teeth 30 |
| 〔Ex.3〕 Speed | Factor → The speed of " Drive roller ; 100 φ " is indicated. Scaling data=Amount of transfer/pulse Scaling data = $100 \times \pi / 30 \div 10.47197 \text{ mm}$  1047×10^{-2} 1047×10^{-3} 1047×10^{-5} In case of " mm/min " In case of " cm/min " In case of " m/min " "Mode No.1" → Exp. value |
| 〔Ex.4〕 Flow | Factor → 7.692 mL/pulse Scaling data=Flow rate value/pulse  7692×10^{-3} 7692×10^{-6} In case of " mL/min " In case of " L /min " "Mode No.1" → Exp. value |
| 〔Ex.5〕 Shot Speed | Factor → length between 2 points = 24mm (In case of 2 sensors, length between sensors) K=Input moving length between 2 points  2400×10^{-2} 2400×10^{-3} 2400×10^{-5} In case of " mm/min " In case of " cm/min " In case of " m/min " Mode "1" → EXP Value |
| NOTE As well as when two sensors are used, set the mode "1" and "2" only. Ignore mode "3" and "4". | |

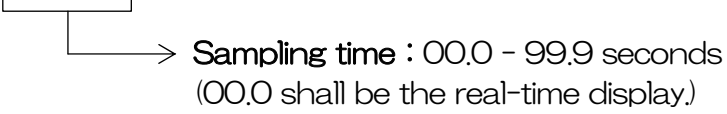
| Mode No. | A-input : Exp.value, moving average, auto-zero time | | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|--------------|-------------|------------|-------------|------------|-------------|------------|--------------|
| 2 | <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>A B C D E</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">2. 3 0 0 2</div> </div> <div> <p>Auto-zero time</p> <table style="border: none;"> <tr><td>0 : Disable</td><td>5 : 10 sec.</td></tr> <tr><td>1 : 0.5 sec.</td><td>6 : 20 sec.</td></tr> <tr><td>2 : 1 sec.</td><td>7 : 30 sec.</td></tr> <tr><td>3 : 2 sec.</td><td>8 : 60 sec.</td></tr> <tr><td>4 : 5 sec.</td><td>9 : 120 sec.</td></tr> </table> <p>Moving average</p> <p>00-19 times (00 and 01 are equivalent in effect.)</p> <p>Exp.value (exponent 10ⁿ)</p> <p>n=0 - 9</p> </div> </div> | 0 : Disable | 5 : 10 sec. | 1 : 0.5 sec. | 6 : 20 sec. | 2 : 1 sec. | 7 : 30 sec. | 3 : 2 sec. | 8 : 60 sec. | 4 : 5 sec. | 9 : 120 sec. |
| 0 : Disable | 5 : 10 sec. | | | | | | | | | | |
| 1 : 0.5 sec. | 6 : 20 sec. | | | | | | | | | | |
| 2 : 1 sec. | 7 : 30 sec. | | | | | | | | | | |
| 3 : 2 sec. | 8 : 60 sec. | | | | | | | | | | |
| 4 : 5 sec. | 9 : 120 sec. | | | | | | | | | | |
| <p>[Exp. Value]</p> <p>The magnification per 1 pulse is decided at registered property of "Mode No.1" and "Exp. value" .</p> | | | | | | | | | | | |
| <p>[Moving average range]</p> <p>Set the number of pulses to be averaged. For example, when 04 is set, four pulses are read, calculated, averaged, and indicated.</p> <p>This function is effective in the case that the flow rate value per pulse is not exact. For this calculation, however, the latest one pulse is taken in and the preceding pulse is discharged, and four pulses are read, moving-averaged, and indicated.</p> <p>This function should be applied only at 20 Hz or less.</p> | | | | | | | | | | | |
| <p>[Ex.]</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">  </div> <div> <p>Input pulse </p> <p>Moving average range </p> <p style="margin-left: 100px;">First time</p> <p style="margin-left: 100px;">Second time</p> <p style="margin-left: 100px;">Third time</p> </div> </div> <p>For example, if fitting angles four blades of the impeller are uneven, the indication is unstable even if the flow rate is constant, but setting 4 for moving average offers average values calculated taking the latest pulses in. And as seen in the above figure, the calculation is made every time when a pulse comes in, but the indicated time becomes that set according to "the setting of the sampling time" of "Mode No.6" .</p> <p>《Relationship between the moving average range and sampling time》</p> <p>The newest data, obtained from the moving average performed at the preset sampling interval, is indicated in the reading if sampling is specified.</p> | | | | | | | | | | | |
| <p>[Auto-zero time]</p> <p>If no input signal comes in within the set time, this function returns the reading indication value to "0".</p> | | | | | | | | | | | |

| | | | | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-----------|-----------|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 2 | (Ex.) The magnification per 1 signal assumes it 0.1234, and the moving average zeroes indication by invalidity five seconds after the last input signal. | | | | | | | | | | |
| | A | B | C | D | E | Mode No.1 | | | | | |
| | <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">1.</td> <td style="padding: 2px 10px;">1</td> <td style="padding: 2px 10px;">2</td> <td style="padding: 2px 10px;">3</td> <td style="padding: 2px 10px;">4</td> </tr> </table> | | | | | 1. | 1 | 2 | 3 | 4 | B~E : (1 2 3 4 × 10 ⁻⁴ = 0. 1 2 3 4) |
| | 1. | 1 | 2 | 3 | 4 | | | | | | |
| A | B | C | D | E | Mode No.2 | | | | | | |
| <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">2.</td> <td style="padding: 2px 10px;">4</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">4</td> </tr> </table> | | | | | 2. | 4 | 0 | 0 | 4 | B : 4 (Exp value input mentioned above) CD : 00 (Moving average invalidity) E : 4 (It is indication "0" 5 sec. after the last input signal) | |
| 2. | 4 | 0 | 0 | 4 | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--|--|----|---|---|---|---|--|--|--|--|--|
| Mode No. | B-input : Setting of scaling data | | | | | | | | | | | | | | | | | | | | |
| 3 | <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td style="text-align: center;">E</td> </tr> <tr> <td colspan="5" style="text-align: center;"> <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">3.</td> <td style="padding: 2px 10px;">1</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> </tr> </table> </td> </tr> <tr> <td colspan="5" style="text-align: center;"> </td> </tr> </table> <p style="text-align: center; margin-left: 100px;"> Scaling data : 0001 – 9999 (Do not set 0000) </p> | A | B | C | D | E | <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">3.</td> <td style="padding: 2px 10px;">1</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> </tr> </table> | | | | | 3. | 1 | 0 | 0 | 0 | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">3.</td> <td style="padding: 2px 10px;">1</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> </tr> </table> | | | | | 3. | 1 | 0 | 0 | 0 | | | | | | | | | | | | |
| 3. | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Setting method same as Mode No.1 (A-input : Setting of scaling data) | | | | | | | | | | | | | | | | | | | | | |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--|--|----|---|---|---|---|--|--|--|--|--|-------------|-------------|--------------|-------------|------------|-------------|------------|-------------|------------|--------------|
| Mode No. | B-input : Exp.value, moving average, auto-zero time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td style="text-align: center;">E</td> </tr> <tr> <td colspan="5" style="text-align: center;"> <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">4.</td> <td style="padding: 2px 10px;">3</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">2</td> </tr> </table> </td> </tr> <tr> <td colspan="5" style="text-align: center;"> </td> </tr> </table> <div style="margin-left: 100px;"> <p>Auto-zero time</p> <table style="margin-left: 20px;"> <tr> <td>0 : Disable</td> <td>5 : 10 sec.</td> </tr> <tr> <td>1 : 0.5 sec.</td> <td>6 : 20 sec.</td> </tr> <tr> <td>2 : 1 sec.</td> <td>7 : 30 sec.</td> </tr> <tr> <td>3 : 2 sec.</td> <td>8 : 60 sec.</td> </tr> <tr> <td>4 : 5 sec.</td> <td>9 : 120 sec.</td> </tr> </table> <p>Moving average 00-19 times</p> <p>Exp.value (exponent 10⁻ⁿ) n=0 - 9</p> </div> | A | B | C | D | E | <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">4.</td> <td style="padding: 2px 10px;">3</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">2</td> </tr> </table> | | | | | 4. | 3 | 0 | 0 | 2 | | | | | | 0 : Disable | 5 : 10 sec. | 1 : 0.5 sec. | 6 : 20 sec. | 2 : 1 sec. | 7 : 30 sec. | 3 : 2 sec. | 8 : 60 sec. | 4 : 5 sec. | 9 : 120 sec. |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">4.</td> <td style="padding: 2px 10px;">3</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">2</td> </tr> </table> | | | | | 4. | 3 | 0 | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 4. | 3 | 0 | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 : Disable | 5 : 10 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 : 0.5 sec. | 6 : 20 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 : 1 sec. | 7 : 30 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 : 2 sec. | 8 : 60 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 : 5 sec. | 9 : 120 sec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Setting method same as Mode No.3 (A-input : Exp.value, moving average, auto-zero time) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Mode No. | Deceleration ratio/Oven-length (tact pitch) setting | | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|---|---|----|---|----|----|---|
| 5 | <p>[Deceleration ratio setting] ※This mode is effective in Mode No.0 Measuring types 「07 : differential rate measurement」 setting</p> <table border="1" data-bbox="293 349 580 439"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>5.</td> <td>1</td> <td>0</td> <td>0.</td> <td>0</td> </tr> </table> <p style="text-align: center;">└──────────┘ └──────────┘ → Deceleration ratio R : 000.1 - 999.9 (Do not set 000.0)</p> | A | B | C | D | E | 5. | 1 | 0 | 0. | 0 |
| A | B | C | D | E | | | | | | | |
| 5. | 1 | 0 | 0. | 0 | | | | | | | |
| <p>[Oven-length (tact pitch) setting] ※This mode is effective in Mode No.0 Measuring types 「08 : Passing time measurement」 setting</p> <table border="1" data-bbox="293 797 580 887"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>5.</td> <td>1</td> <td>0.</td> <td>0</td> <td>0</td> </tr> </table> <p style="text-align: center;">└──────────┘ └──────────┘ → Oven-length (tact pitch) : 00.01 - 99.99 m [unit : m] (Do not set 00.00) (Decimal point-position is fixed)</p> | | A | B | C | D | E | 5. | 1 | 0. | 0 | 0 |
| A | B | C | D | E | | | | | | | |
| 5. | 1 | 0. | 0 | 0 | | | | | | | |
| <p>Oven-length (tact pitch) setting</p> <p>For this mode, setting is necessary only at time selecting the 「passing time measurement」. For instance, upon setting the distance (over length) from P1 to P2 of oven, the passing time of the distance is displayed.</p> <div style="text-align: center;"> <p>Oven-length (example : 3.00m)</p>  </div> <p>In the case of the example mentioned above, Oven length is 3m, it becomes the following setting</p> <table border="1" data-bbox="588 1809 876 1899"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>5.</td> <td>0</td> <td>3.</td> <td>0</td> <td>0</td> </tr> </table> | | A | B | C | D | E | 5. | 0 | 3. | 0 | 0 |
| A | B | C | D | E | | | | | | | |
| 5. | 0 | 3. | 0 | 0 | | | | | | | |

| Mode No. | Sampling time | | | | | | | | | | |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|---|---|----|---|----|---|--|
| 6 | <div style="text-align: center; margin-bottom: 10px;"> <table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 10px;">A</td> <td style="padding: 0 10px;">B</td> <td style="padding: 0 10px;">C</td> <td style="padding: 0 10px;">D</td> <td style="padding: 0 10px;">E</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px 10px;">6.</td> <td style="border: 1px solid black; padding: 2px 10px;">0</td> <td style="border: 1px solid black; padding: 2px 10px;">2.</td> <td style="border: 1px solid black; padding: 2px 10px;">0</td> <td></td> </tr> </table> </div> <div style="margin-left: 150px; margin-top: 10px;">  <p style="margin-left: 100px;">→ Sampling time : 00.0 - 99.9 seconds (00.0 shall be the real-time display.)</p> </div> <hr style="border-top: 1px dashed black; margin: 10px 0;"/> <p>For sampling time, input signal is measured with its set time, and its mean value is calculated and displayed, then, use it for preventing the flashing or for stabilizing the display. Accordingly, renewal shall be made by averaging the display for each set time.</p> <p>With the setting of 00.0, display is made for each pulse. It is effective with about 1 pulse / seconds , whereas, pay attention to the fact That the faster pulse induces more flicker.</p> <hr style="border-top: 1px dashed black; margin: 10px 0;"/> <p>When change sampling time, and after former sampling time was over, it becomes effective</p> | A | B | C | D | E | 6. | 0 | 2. | 0 | |
| A | B | C | D | E | | | | | | | |
| 6. | 0 | 2. | 0 | | | | | | | | |

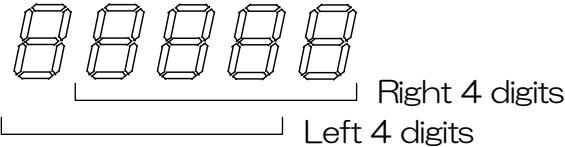
| Mode No. | Hold input function setting, display blank, lowest digit display | | | | | | | | | | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|----|---|--|---|---|
| 7 | <div style="display: flex; align-items: center; margin-bottom: 20px;"> <div style="margin-right: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px 10px;">A</td> <td style="padding: 2px 10px;">B</td> <td style="padding: 2px 10px;">C</td> <td style="padding: 2px 10px;">D</td> <td style="padding: 2px 10px;">E</td> </tr> <tr> <td style="padding: 2px 10px;">7.</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;"> </td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;">0</td> </tr> </table> </div> <div> <p>→ Lowest digit display 0 : Real 1 : Fixed at 0 2 : 0 or 5</p> <p>→ Display blank 0 : Normal display 1 : Blank display</p> <p>→ Hold input function setting 0 : No use 1 : Peak hold 2 : Bottom hold 3 : Hold 4 : Reverse-rotation input (differential rate measurement)</p> </div> </div> <hr style="border-top: 1px dashed black;"/> <p>[Hold input function setting] Set a function when ON(short) did terminal stand 2 – 3</p> <p>0 : No use Hold input is invalid.</p> <p>1 : Peak hold Between ON, it updates a highest value indication level while blinking.</p> <p>2 : Bottom hold Between ON, it updates a smallest value indication level while blinking.</p> <p>3 : Hold Between ON, It displays a current value while blinking.</p> <p>4 : Reverse-rotation input (differential rate measurement) It functions as Reverse-rotation input. (This function becomes invalid other than differential rate measurement)</p> <hr style="border-top: 1px dashed black;"/> <p>[Display blank] When I set it to 1, A measured value(7segment LED) and each lamp display it and do not turn on. (But preset put lamp OUT1-4 is excluded)</p> <hr style="border-top: 1px dashed black;"/> <p>[Lowest digit display] The form of indication for the least significant digit (digit on the right end) is selected.</p> <p>0 : Real Synchronized at the sampling time. 1 : Fixed at 0 Always, "0". 2 : 0 or 5 0-4 are expressed as 0, and 5-9 as 5.</p> | A | B | C | D | E | 7. | 0 | | 0 | 0 |
| A | B | C | D | E | | | | | | | |
| 7. | 0 | | 0 | 0 | | | | | | | |

| Mode No. | OUT1 : Preset output (open collector output) | | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|----------|---------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|
| 8 | <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="margin-right: 10px;">A B C D E</div> <div style="border: 1px solid black; padding: 2px 5px;">8. 0 0 0 0</div> </div> <div style="margin-left: 100px;"> <p>→ Output mode</p> <table style="margin-left: 20px;"> <tr><td>0 : Comparison</td><td>5 : 100 ms (1 shot)</td></tr> <tr><td>1 : Hold</td><td>6 : 250 ms (1 shot)</td></tr> <tr><td>2 : 10 ms (1 shot)</td><td>7 : 500 ms (1 shot)</td></tr> <tr><td>3 : 20 ms (1 shot)</td><td>8 : 1 sec (1 shot)</td></tr> <tr><td>4 : 50 ms (1 shot)</td><td>9 : 2 sec (1 shot)</td></tr> </table> <p>→ Upper or lower limit selection</p> <ul style="list-style-type: none"> 0 : Upper limit 1 : Lower limit (Immediate) 2 : Lower limit (Delay) <p>→ Judgement output prohibition time : 00 - 99 sec</p> </div> | 0 : Comparison | 5 : 100 ms (1 shot) | 1 : Hold | 6 : 250 ms (1 shot) | 2 : 10 ms (1 shot) | 7 : 500 ms (1 shot) | 3 : 20 ms (1 shot) | 8 : 1 sec (1 shot) | 4 : 50 ms (1 shot) | 9 : 2 sec (1 shot) |
| 0 : Comparison | 5 : 100 ms (1 shot) | | | | | | | | | | |
| 1 : Hold | 6 : 250 ms (1 shot) | | | | | | | | | | |
| 2 : 10 ms (1 shot) | 7 : 500 ms (1 shot) | | | | | | | | | | |
| 3 : 20 ms (1 shot) | 8 : 1 sec (1 shot) | | | | | | | | | | |
| 4 : 50 ms (1 shot) | 9 : 2 sec (1 shot) | | | | | | | | | | |
| <p>[Output mode]</p> <p>0 : Comparison This is output when the indication value exceeds the upper/lower limit setting value (preset value). When the indication value returns to within the set range, the output is turned off.</p> <p>1 : Hold This is output when the indication value exceeds the upper/lower limit setting value (preset value). The presetting output, once activated, is sustained until reset.</p> <p>2~9 : One shot output A pulse of pre-specified width is output once when the indication value exceeds the upper/lower limit setting value (preset value).</p> | | | | | | | | | | | |
| <p>[Upper and lower limits selection]</p> <p>0 : Upper limit : It outputs, 「Indication value \geq Preset value」</p> <p>1 : Lower limit (Immediate) : It outputs, 「Indication value \leq Preset value」</p> <p>2 : Lower limit (Delay) : It outputs, 「Indication value $>$ Preset value \rightarrow Indication value \leq Preset value」</p> | | | | | | | | | | | |
| <p>[Judgement output prohibition time]</p> <p>The time in seconds following power startup or reset at which the presetting output function is activated is specified.</p> | | | | | | | | | | | |
| <p>[Ex.] Preset output OUT1 works 5 sec. later after ON did a power supply. It is set by the upper limit output and output maintenance hold.</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;">A B C D E</div> <div style="border: 1px solid black; padding: 2px 5px;">8. 0 5 0 1</div> </div> | | | | | | | | | | | |

| Mode No. | OUT2 : Preset output (open collector output) | | | | | | | | | | | | | | | | | | | | |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| 9 | <table border="1" style="margin-left: 20px;"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>9.</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table> <p style="margin-left: 40px;"> → Output mode 0 : Comparison 5 : 100 ms (1 shot) 1 : Hold 6 : 250 ms (1 shot) 2 : 10 ms (1 shot) 7 : 500 ms (1 shot) 3 : 20 ms (1 shot) 8 : 1 sec (1 shot) 4 : 50 ms (1 shot) 9 : 2 sec (1 shot) </p> <p style="margin-left: 40px;"> → Up limit / down limit selection 0 : Up limit 1 : Down limit 2 : Down limit (delay) </p> <p style="margin-left: 40px;"> → Judgement output prohibition time : 00 - 99 sec </p> <hr style="border-top: 1px dashed black;"/> <p>The setting method same as Mode No."8" OUT1</p> <p>[Ex.] With the judging output inhibition time 30 seconds, down limit is selected, and output-mode 50 ms (1 shot) is selected, then, setting is made as follows.</p> <table border="1" style="margin-left: 20px;"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>9.</td> <td>3</td> <td>0</td> <td>1</td> <td>4</td> </tr> </table> | A | B | C | D | E | 9. | 0 | 0 | 0 | 0 | A | B | C | D | E | 9. | 3 | 0 | 1 | 4 |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| 9. | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | |
| 9. | 3 | 0 | 1 | 4 | | | | | | | | | | | | | | | | | |



| Mode No. | OUT3 : Preset output (photo MOS relay output) (Option K) | | | | | | | | | | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|----|---|---|---|---|
| A | <table border="1" style="margin-left: 20px;"> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>A.</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table> <p style="margin-left: 40px;"> → Output mode 0 : Comparison 5 : 100 ms (1 shot) 1 : Hold 6 : 250 ms (1 shot) 2 : 10 ms (1 shot) 7 : 500 ms (1 shot) 3 : 20 ms (1 shot) 8 : 1 sec (1 shot) 4 : 50 ms (1 shot) 9 : 2 sec (1 shot) </p> <p style="margin-left: 40px;"> → Up limit / down limit selection 0 : Up limit 1 : Down limit 2 : Down limit (delay) </p> <p style="margin-left: 40px;"> → Judgement output prohibition time : 00 - 99 sec </p> <hr style="border-top: 1px dashed black;"/> <p>The setting method same as Mode No."8" OUT1</p> | A | B | C | D | E | A. | 0 | 0 | 0 | 0 |
| A | B | C | D | E | | | | | | | |
| A. | 0 | 0 | 0 | 0 | | | | | | | |

| Mode No. | OUT4 : Preset output (photo MOS relay output) | (Option K) | | | | | | | | | | |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|----------|---------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--|
| b | <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="margin-right: 10px;">A B C D E</div> <div style="border: 1px solid black; padding: 2px 5px;">b. 0 0 0 0</div> </div> <div style="margin-left: 100px;"> <p>→ Output mode</p> <table style="margin-left: 20px;"> <tr> <td>0 : Comparison</td> <td>5 : 100 ms (1 shot)</td> </tr> <tr> <td>1 : Hold</td> <td>6 : 250 ms (1 shot)</td> </tr> <tr> <td>2 : 10 ms (1 shot)</td> <td>7 : 500 ms (1 shot)</td> </tr> <tr> <td>3 : 20 ms (1 shot)</td> <td>8 : 1 sec (1 shot)</td> </tr> <tr> <td>4 : 50 ms (1 shot)</td> <td>9 : 2 sec (1 shot)</td> </tr> </table> <p>→ Up limit / down limit selection</p> <ul style="list-style-type: none"> 0 : Up limit 1 : Down limit 2 : Down limit (delay) <p>→ Judgement output prohibition time : 00 - 99 sec</p> </div> | 0 : Comparison | 5 : 100 ms (1 shot) | 1 : Hold | 6 : 250 ms (1 shot) | 2 : 10 ms (1 shot) | 7 : 500 ms (1 shot) | 3 : 20 ms (1 shot) | 8 : 1 sec (1 shot) | 4 : 50 ms (1 shot) | 9 : 2 sec (1 shot) | |
| 0 : Comparison | 5 : 100 ms (1 shot) | | | | | | | | | | | |
| 1 : Hold | 6 : 250 ms (1 shot) | | | | | | | | | | | |
| 2 : 10 ms (1 shot) | 7 : 500 ms (1 shot) | | | | | | | | | | | |
| 3 : 20 ms (1 shot) | 8 : 1 sec (1 shot) | | | | | | | | | | | |
| 4 : 50 ms (1 shot) | 9 : 2 sec (1 shot) | | | | | | | | | | | |
| The setting method same as Mode No."8" OUT1 | | | | | | | | | | | | |

| Mode No. | Analog output : Setting of measurement choice and the output digit | (Option A) | | | | | | | | | | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|---|---|---|----|--|---|---|--|--|
| C | <div style="text-align: center; margin-bottom: 10px;"> <table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 10px;">A</td> <td style="padding: 2px 10px;">B</td> <td style="padding: 2px 10px;">C</td> <td style="padding: 2px 10px;">D</td> <td style="padding: 2px 10px;">E</td> </tr> <tr> <td style="padding: 2px 10px;">C.</td> <td style="padding: 2px 10px;"></td> <td style="padding: 2px 10px;">1</td> <td style="padding: 2px 10px;">0</td> <td style="padding: 2px 10px;"></td> </tr> </table> </div> <div style="margin-left: 100px;"> <p>→ Digit selection 0 : Right 4digits : comparison 1 : Left 4digits : comparison</p> <p>→ Analog output method 0 : Real time output 1 : Synchronizes for display 2 : Synchronizes for measurement (calculation value)</p> </div> <hr style="border-top: 1px dashed black; margin: 20px 0;"/> <p>[Digit selection] The four digits for comparison output are selected.</p> <div style="text-align: center; margin: 10px 0;">  </div> <hr style="border-top: 1px dashed black; margin: 20px 0;"/> <p>[Analog output method]</p> <p>0 : Real time output The real time is analog output in sync with inside calculation. The real-time output functions only when I set Mode No.0 “00”(A input) or “01”(B input) or “08”(Passing time measurement). Otherwise, set it in 1 (Synchronizes for the display).</p> <p>1 : Synchronizes for the display The analog output is output for an indication value. When hold input functions, the analog output is output for a displayed value now. (It synchronizes at indication sampling time) For example when a peak hold is functioning, analog output by the present shown value (Peak hold value).</p> <p>2 : Synchronizes for the measurement (calculation value) The analog output is output for a calculated value. (It synchronizes at indication sampling time) The difference with 1 (Synchronizes for the display), When it is input hold, not an indication value, it is made analog output for a calculated value.</p> | A | B | C | D | E | C. | | 1 | 0 | | |
| A | B | C | D | E | | | | | | | | |
| C. | | 1 | 0 | | | | | | | | | |

| Mode No. | Analog output : Setting of maximum output indication | (Option A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|---|--------------------------------------------------|---|----|---|---|---|---|---|---|---|---|---|-------------|--------|--|--|--|--|--------------------------|--|--|--|--|--|-------------------------------------|---|---|---|---|---|-------------|------------|--|--|--|--|--------------------------------------------------|--|
| d | <div style="text-align: center;"> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">A</td> <td style="padding: 2px;">B</td> <td style="padding: 2px;">C</td> <td style="padding: 2px;">D</td> <td style="padding: 2px;">E</td> </tr> <tr> <td style="padding: 2px;">d.</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">0</td> </tr> </table> <div style="margin-left: 100px;"> </div> </div> <hr style="border-top: 1px dashed black;"/> <p>Set an indication value of the time when the analog output is maximum. Set a value in four digits, neglecting the decimal point. For example, both 500.0 and 50.00 are all right. (It sets as "5000" in this case.)</p> <p>[Ex.] Setting to output it to the maximum voltage current when it in real time outputs, and the display value becomes 5000 is the following.</p> <div style="margin-left: 40px;"> <table style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">A</td> <td style="padding: 2px;">B</td> <td style="padding: 2px;">C</td> <td style="padding: 2px;">D</td> <td style="padding: 2px;">E</td> <td style="padding: 2px;">Mode No."C"</td> </tr> <tr> <td colspan="5" style="border: 1px solid black; text-align: center; padding: 2px;">C. 0 0</td> <td style="padding: 2px;">C : 0 (Real time output)</td> </tr> <tr> <td colspan="5"></td> <td style="padding: 2px;">D : 0 (Right 4-digits : comparison)</td> </tr> </table> <table style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">A</td> <td style="padding: 2px;">B</td> <td style="padding: 2px;">C</td> <td style="padding: 2px;">D</td> <td style="padding: 2px;">E</td> <td style="padding: 2px;">Mode No."d"</td> </tr> <tr> <td colspan="5" style="border: 1px solid black; text-align: center; padding: 2px;">d. 5 0 0 0</td> <td style="padding: 2px;">B - E (Setting of maximum output ndication:5000)</td> </tr> </table> </div> <p>NOTE : he analog output outputs it at absolute value for an indication level. (There are no relations in a plus and the minus of the indication level) In the case of the example mentioned above, it is output as follows.</p> <div style="text-align: center; margin: 20px 0;"> </div> <p>※ For an analog output MAX level, it is output linearly to 102.3%. ※ When setting Mode No. d as (0000), an analog output is always 102.3%.</p> | A | B | C | D | E | d. | 1 | 0 | 0 | 0 | A | B | C | D | E | Mode No."C" | C. 0 0 | | | | | C : 0 (Real time output) | | | | | | D : 0 (Right 4-digits : comparison) | A | B | C | D | E | Mode No."d" | d. 5 0 0 0 | | | | | B - E (Setting of maximum output ndication:5000) | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d. | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | Mode No."C" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C. 0 0 | | | | | C : 0 (Real time output) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | D : 0 (Right 4-digits : comparison) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | Mode No."d" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d. 5 0 0 0 | | | | | B - E (Setting of maximum output ndication:5000) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1 1. Mode protect function






When the mode protect function is made effective,  and  operation is invalid by mode setting. Therefore the set value can't be changed.

In an early stage, the mode protect function is invalid .

When doing the mode protect function setting, please operate as follows.

«Operation of the mode protect»

Table.6

| Operation key | Indication | Procedure |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | A B C D E L - o F F ↑ (The mode protect : present) | Press the key for 2 sec. or more. The present mode protect state is displayed . [The regular factory setting is "L-off" .] |
|  | A B C D E L - o n ↑ (The mode protect : change) | Keep pressing  for 8 sec as it's continuously, the state of mode protect is changed. ※" OFF → ON" or "ON → OFF" |
|  | | It usually returns when  is stopped being pressed. |

 <Caution>

- ※The preset value setting and the offset value setting always can be changed.
- ※The mode protection function becomes "OFF" , when it's initialized.

1 2. Teaching function

What is the teaching function?

Change the current indication level to any value. (setting automatic as for the scaling data.)
 [Ex.] when input frequency 100Hz is displayed as 200.0rpm, for changing the display value from 200.0 to 180.0, converted value may be changed, whereas, upon setting " 180.0" by the teaching function, 180.0 is automatically displayed. At this time, converted value is automatically re-written by reverse calculation from the set value as 180.0

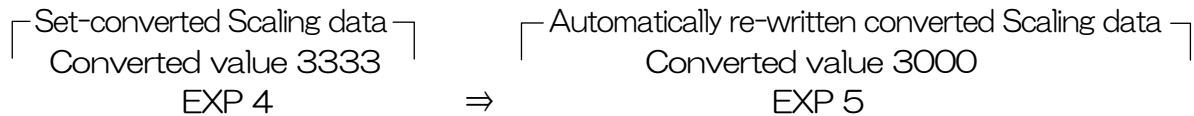











Table.7

| Operating key | Indication | Procedure |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | A B C D E ● 2 0 0. 0 | Push  for 2 sec.. or more. In the case of A input measurement, A input lamp blinks. In the case of B input measurement, B input lamp blinks. |
|  | A B C D E 0→2→0→0→0 ↑—————┘ | A figure of flash indication is shifted. Each time the key is pressed, a flash figure is shifted, to the right. |
|   | A B C D E 0 1 8 0. 0 ↑ 0 - 9 | Push this key for changing the value flashing. One figure moves up and down every time it pushes once. |
|  | | After input of the desired value from the data value 200.0, push  . Upon pushing this  key, the measuring mode returns, and the converted Scaling data and EXP value can be re-written. |
|  | | It returns to the measurement display without registering a set value. |

(The decimal point position links setting of Mode No.0 "E" Display decimal point setting)

<Caution>

- This teaching function can set only ratemeter (speed, rotation, flow rate) of A-input and B-input. (Need to set in Mode No.0 'BC' 00 or 01)
 When it is other measurement types, teaching function becomes invalid.
- Do not make this operation at time of stop or low turning(Frequency).

13. Calling up and modifying the preset value setting

Set the value to pre-set of the preset out by the following method.

The set range is “-9999” - “99999”

In addition, please refer to Mode No.8-b (P.31-33) for the setting of the preset output.

Table.8

| Operating key | Indication | Procedure | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----|---|---|---|---|---|---|----|---|-----|-----|-----|-----|--|----------------------------------------------------------------------------------------------------------------------------------|----|----|----|--|-----------------------------------------------------------------------------------------------------------------|----|----|----|--|-----------------------------------------------------------------------------------------------------------|
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>0</td><td>2</td><td>0</td><td>0.</td><td>0</td></tr> <tr><td>1 ●</td><td>2○</td><td>3○</td><td>4○</td><td></td></tr> </table> | A | B | C | D | E | 0 | 2 | 0 | 0. | 0 | 1 ● | 2○ | 3○ | 4○ | | Push for 2 sec.. or more. “OUT1” lamp lights up, and a current preset value is displayed. | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 2 | 0 | 0. | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| 1 ● | 2○ | 3○ | 4○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>9</td><td>9</td><td>9</td><td>9</td><td>9</td></tr> <tr><td colspan="5" style="text-align: center;">↑</td></tr> <tr><td>1 ●</td><td>2○</td><td>3○</td><td>4○</td><td></td></tr> </table> | A | B | C | D | E | 9 | 9 | 9 | 9 | 9 | ↑ | | | | | 1 ● | 2○ | 3○ | 4○ | | A figure of flash indication is shifted. Each time the key is pressed, a flash figure is shifted, to the right. | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| ↑ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 ● | 2○ | 3○ | 4○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>9</td><td>0</td><td>9</td><td>9</td><td>9</td></tr> <tr><td colspan="5" style="text-align: center;">↑</td></tr> <tr><td colspan="5" style="text-align: center;">0-9</td></tr> <tr><td>1 ●</td><td>2○</td><td>3○</td><td>4○</td><td></td></tr> </table> | A | B | C | D | E | 9 | 0 | 9 | 9 | 9 | ↑ | | | | | 0-9 | | | | | 1 ● | 2○ | 3○ | 4○ | | Push this key for changing the value flashing. One figure moves up and down every time it pushes once. |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 0 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| ↑ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0-9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 ● | 2○ | 3○ | 4○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>9</td><td>9</td><td>9</td><td>9</td><td>9</td></tr> <tr><td>1○</td><td>2 ●</td><td>3○</td><td>4○</td><td></td></tr> </table> | A | B | C | D | E | 9 | 9 | 9 | 9 | 9 | 1○ | 2 ● | 3○ | 4○ | | Push key. The OUT1 lamp shifts to OUT2 lamp. OUT2 lamp lights up, and a current preset value is displayed and can set it. | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 1○ | 2 ● | 3○ | 4○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>9</td><td>9</td><td>9</td><td>9</td><td>9</td></tr> <tr><td>1○</td><td>2○</td><td>3 ●</td><td>4○</td><td></td></tr> </table> | A | B | C | D | E | 9 | 9 | 9 | 9 | 9 | 1○ | 2○ | 3 ● | 4○ | | Push key. The OUT2 lamp shifts to OUT3 lamp. OUT3 lamp lights up, and a current preset value is displayed and can set it. | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 1○ | 2○ | 3 ● | 4○ | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table style="border-collapse: collapse; margin: 0 auto;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>9</td><td>9</td><td>9</td><td>9</td><td>9</td></tr> <tr><td>1○</td><td>2○</td><td>3○</td><td>4 ●</td><td></td></tr> </table> | A | B | C | D | E | 9 | 9 | 9 | 9 | 9 | 1○ | 2○ | 3○ | 4 ● | | Push key. The OUT3 lamp shifts to OUT4 lamp. OUT4 lamp lights up, and a current preset value is displayed and can set it. | | | | | | | | | | |
| A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 1○ | 2○ | 3○ | 4 ● | | | | | | | | | | | | | | | | | | | | | | | | |
| | | After adjusting the setting, use to register it. It returns to the measurement display after a set value is registered. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | It returns to the measurement display without registering a set value. | | | | | | | | | | | | | | | | | | | | | | | | | |

(Decimal point of the display value is inter connected with Mode No.0 - E.)

<Caution>

- In case selecting the time-measuring time (Mode No.0 08, 13, 14, 15) and the measuring unit (hour—minute) (minute—second), be sure to set the value of display unit C to “0” .
- When K option is not equipped with, OUT3 and OUT4 are not output.(only a lamp turns on.)

! <Caution>

The analog output range is adjusted correctly at a factory.
Please do not touch except necessity.

«Adjustment method»

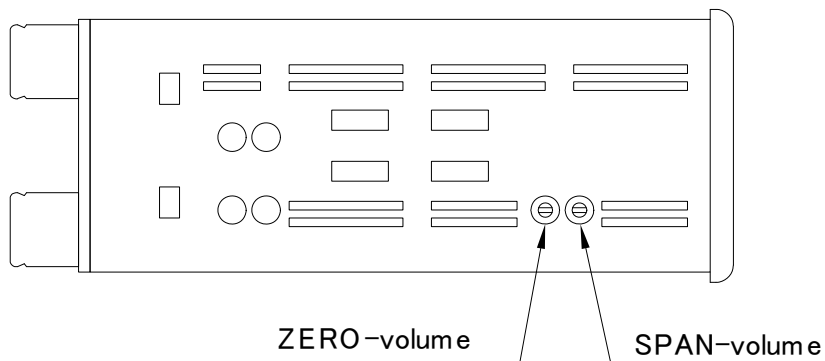
1. Power on the **MODE** being pressed to put the instrument into the test mode.
2. Press the **MODE** until the analog output test “Ad” appears.
3. Please coordinate the ZERO volume with the SPAN volume to become the following output voltage/current. (Please adjust it from the ZERO volume by all means.)

Current output (AI) type unit

| Indication | Output current | |
|------------|----------------|--------------------------------|
| 0 | 4 mA | Turn the zero volume to adjust |
| 100 | 20 mA | Turn the span volume to adjust |

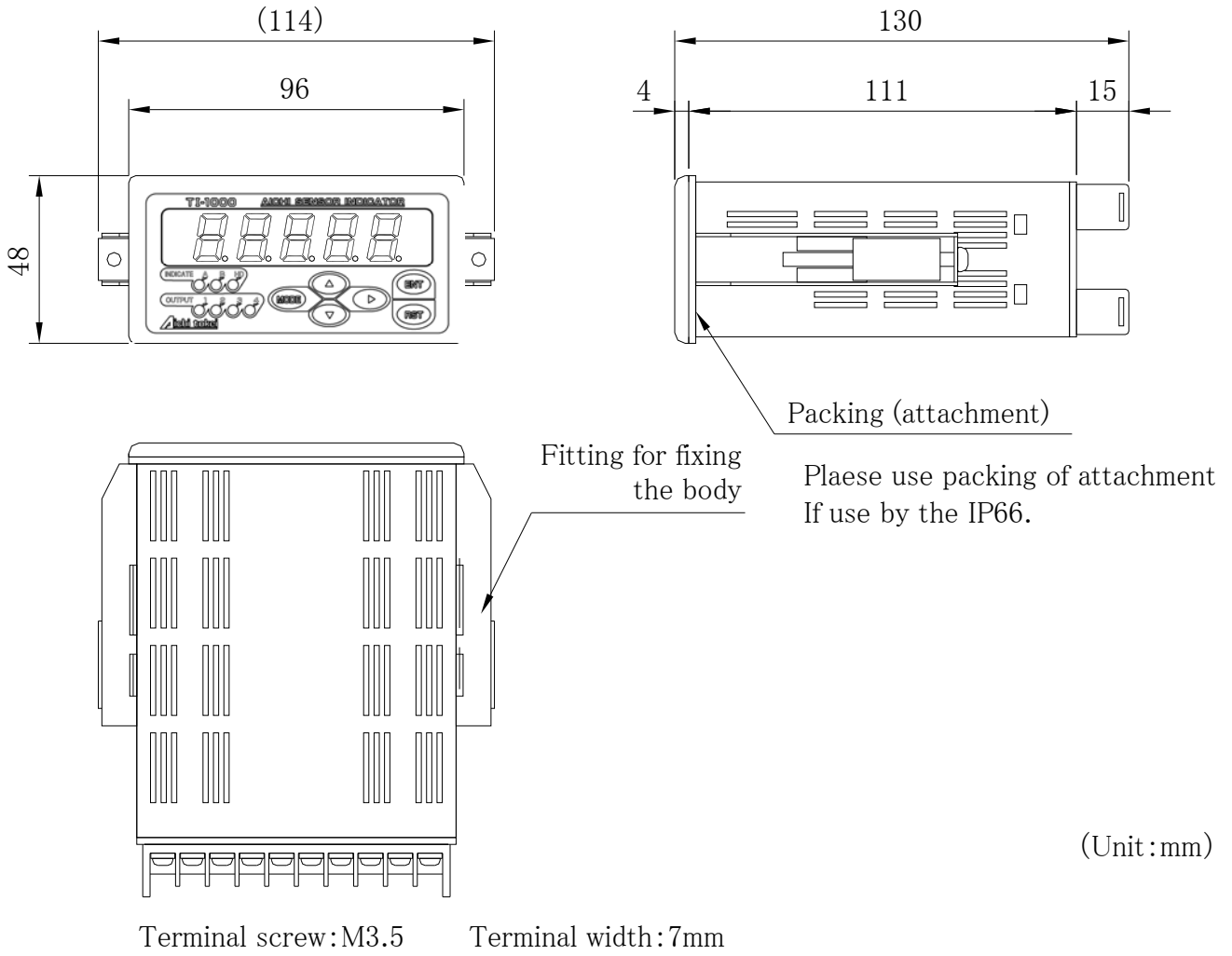
(※ Repeat the procedure several times for fine adjustment.)

Fig.13



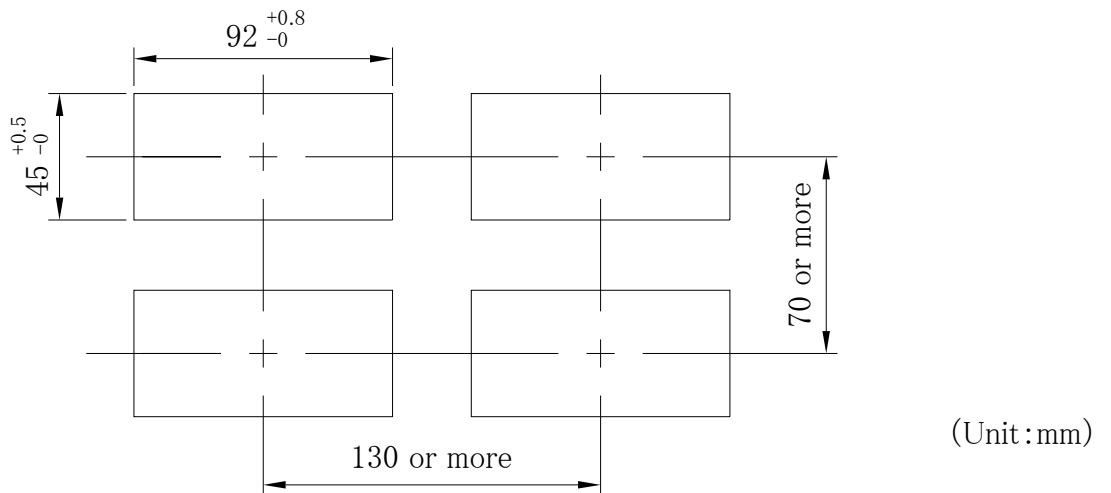
15. External dimensions

Fig.14



(Unit : mm)

Fig.15



(Unit : mm)

16. About a noise countermeasure

When influence of noise occurred, please be careful about the following.

When doing a blackout and a malfunction by influence of noise, please be initialized. (Refer to P.14)

Please take notes of the value setting of each modes.

If it becomes normal, please take the following measure.

And please setting it once again.

- (1) Do not share the power supply with a power line directly.
(When I share a power line, please use an isolation transformers)
- (2) Please use 3 cores of shielding wire for a sensor , separate as much as possible from a source of noise.
- (3) Please avoid a source of noise (power supply line and inverter), make it as short as possible. After that, please install a sensor code.
- (4) A great many noises may be included in F.G. Line of the device.
In this case you should not tie F.G. of the meter.
- (5) Please separate from a power supply line,
in a case affected by noise.
And please install a EMI filter.

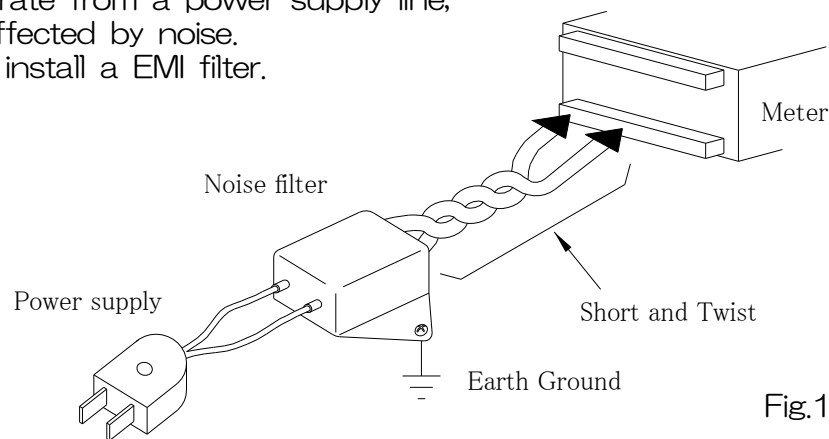


Fig.16

- (6) The manner of the sensor cord installation.
When there is a power supply line near the sensor cord, a surge and noise are influenced.
Therefore , install a sensor cord independently or for 50 cm or more.

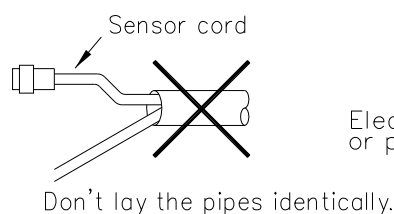


Fig.17

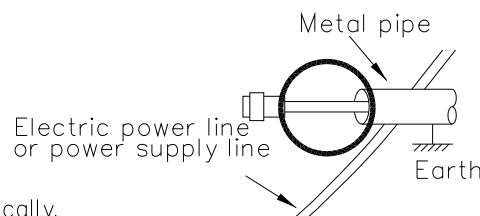


Fig.18

- (7) When being affected than other equipment, please use a spark killer like Fig.19 and take a measure.

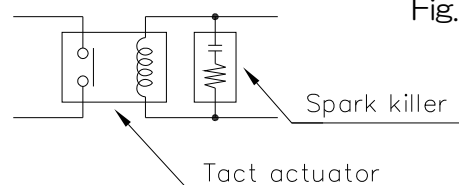


Fig.19

- (8) If there is an unclear point, please even consult with use about a dealer or us.

17. Troubleshooting

When abnormality occurred, please check it as follows.

| No. | Problem | Checking point | Solution |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Display does not appear at all. | <p>→Has it connected with the rear terminal correctly?</p> <p style="text-align: center;">↓</p> <p>→Does a sensor power supply short-circuit? (Or it is an overcurrent)</p> | <p>→Connect correctly according to "Connecting terminal boards (Refer to P.8)</p> <p>→Sensor specifications confirmation. Take off a sensor and check the operation.</p> <p>→Initialize (Refer to P.14)</p> <p>When display still does not appear, have it serviced.</p> |
| 2 | Unusual <ul style="list-style-type: none"> • LED lighting, key • switch operation, • preset output, • analog output | <p>→Check with the test mode. (Refer to P.11)</p> | <p>→Initialize (Refer to P.14)</p> <p>When it still does not resume normal status, have it serviced.</p> |
| 3 | Remains at "0" | <p>→Is the setting for each mode correct?</p> <p style="text-align: center;">↓</p> <p>→Is the sensor input normal?</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">↓</p> <p>→Is the distance of the sensor normal?</p> <p style="text-align: center;">↓</p> <p>→Is the input system of this meter suitable for the output signal of the sensor?</p> | <p>→Check the setting again. (Refer to P.18-35)</p> <p>→Check the connection of the sensor (Refer to P.9) . Check with the test mode (Refer to P.12) .</p> <p>→The sensor lamp flash is confirmed. A sensor is tested. "ON/OFF"</p> <p>When it still does not resume normal status, have it serviced.</p> |
| 4 | Indicator is flashing "99999" . (Error indication) | <p>→Check whether the scaling is not too large</p> <p>→Influence of noise.</p> | <p>→Change the scaling data. (Refer to P.24-27 for Mode No.1-4)</p> <p>→Noise countermeasure (Refer to P.41)</p> |

| No. | Problem | Checking point | Solution |
|-----|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | Indication is not stable | <p>→It is sometimes displayed smaller than a real value. ↓</p> <p>→It is sometimes displayed more greatly than a real value. ↓</p> <p>↓</p> <p>↓</p> <p>↓</p> <p>→Because the movement of the measurement thing fluctuates, the signal of the sensor sways</p> | <p>→Detection error of the sensor. check the accuracy of the sensor when there is little quantity of detection</p> <p>→Noise countermeasure (Refer to P.41)</p> <p>→When it is caused by the chattering such as relays, Please attach a capacitor to the sensor input terminal.</p> <p>→Lengthen sampling time (Refer to P.29)</p> <p>When it still does not resume normal status, have it serviced.</p> |
| 6 | Indication goes out. An indication level becomes than double. | →Influence of the spark noise with a relay or the electromagnetic valve | →Noise countermeasure (Refer to P.41) |
| 7 | Other problems | | →Have it serviced. |

< MEMO >



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The product specification might be changed without prior notice.