Digital Panel Meters 47 Series

DC INPUT DIGITAL PANEL METER

(4 1/2 digit, process meter, LED display type)

Model: 47LYV

OPERATING MANUAL

MG CO., LTD. www.mgco.jp
5-2-55 Minamitsumori, Nishinari-ku, Osaka 557-0063 JAPAN

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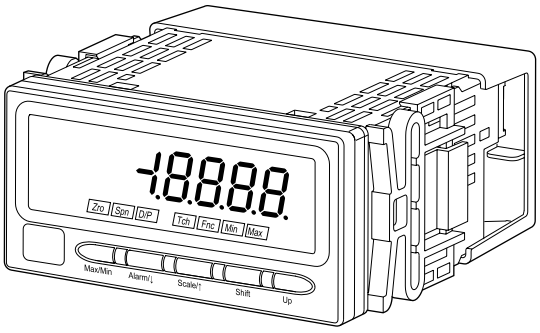
1. INTRODUCTION

1.1 BEFORE USE....

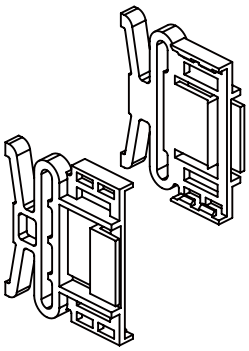
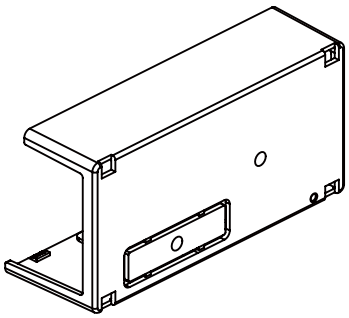
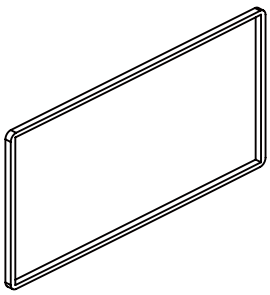
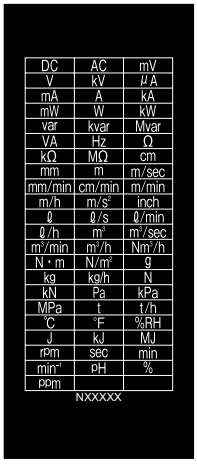
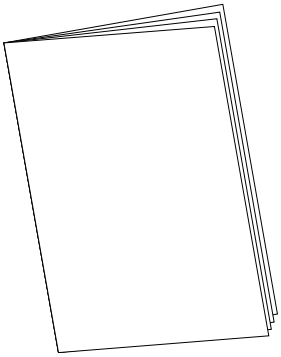
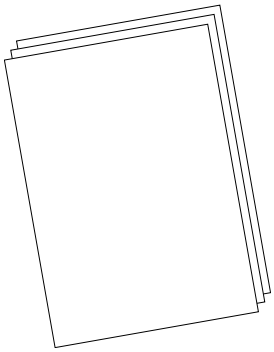
Thank you for choosing us. Before use, please check contents of the package you received as outlined below.

■ PACKAGE INCLUDES

Digital panel meter



Accessories

Mounting bracket (2) 	Terminal cover (1)  (tethered to the meter with a strap)	Watertight packing (1) 
Engineering unit sticker label sheet (1) 	Instruction manual 	Ordering Information Sheet  (included with the option code '/SET' only)

DC	AC	mV
V	kV	μA
mA	A	kA
mW	W	kW
var	kvar	Mvar
VA	Hz	Ω
kΩ	MΩ	cm
mm	m	m/sec
mm/min	cm/min	m/min
m/h	m/s²	inch
ℓ	ℓ/s	ℓ/min
ℓ/h	m³	m³/sec
m³/min	m³/h	Nm³/h
N・m	N/m²	g
kg	kg/h	N
kN	Pa	kPa
MPa	t	t/h
°C	°F	%RH
J	kJ	MJ
rPm	sec	min
min⁻¹	pH	%
ppm		

NXXXXX

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

1.2 **SAFETY PRECAUTIONS** (that must be observed)

The following signs are used in this manual to provide precautions required to ensure safe usage of the unit. Please understand these signs and graphic symbols, read the manual carefully and observe the description.

The following signs show seriousness of safety hazard or damage occurred when used wrongly with the signs ignored.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, may result in serious injury or death.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in injury or in property damage.

Indicates prohibitions.	Indicates mandatory cautions.	Indicates cautions.

⚠ WARNING


CAUTION

For safety, make sure that wiring is performed by qualified personnel only.
- Failure to do so may result in a fire, electric shock or injury.


CAUTION
ELECTRIC SHOCK

Do not touch the terminals while the power is on.
- Doing so may result in electric shock.


MANDATORY
CAUTION

Check the connection diagram carefully before wire connection.
- Failure to do so may result in malfunction, a fire or electric shock.


MANDATORY
CAUTION

Provide safety measures outside of the unit to ensure safety in the whole system if an abnormality occurs due to malfunction of the unit or another external factor affecting the unit's operation.


PROHIBITION
TO BE WET

Do not splash water on the unit except for the front panel installed correctly.
- Doing so may result in a fire, electric shock or injury.


MANDATORY
CAUTION

Stop using the unit immediately if smokes, unusual smell or abnormal noises come(s) from it.
- Using the unit continuously may result in a fire or electric shock.


MANDATORY
CAUTION

Stop using the unit if it is dropped or damaged.
- Using the unit continuously may result in a fire or electric shock.

MANDATORY CAUTION

Tighten the terminal blocks and terminal block screws with a specified torque.
- Excessive fastening may result in damage of the screws and loose screws may occasionally result in ignition.

PROHIBITION

Do not throw the unit into the fire.
- Doing so may result in rupture of the electronic component.

⚠ CAUTION

PROHIBITION TO DISCOMPOSE

Never discompose or remodel the unit.
- Doing so may result in electric shock, malfunction or injury.

PROHIBITION

Do not connect or remove the unit while its power is on.
- Doing so may result in electric shock, malfunction or injury.

MANDATORY CAUTION

Do not allow fine shavings or wire scraps to enter the unit in machining screws or wiring.
- Doing so may result in malfunction of the unit.

MANDATORY CAUTION

Make sure to attach the terminal cover.
- Failure to do so may result in electric shock.

PROHIBITION

Do not pull the wires connecting to the unit.
- Doing so may result in electric shock, damage of the unit or injury.

PROHIBITION

Do not use the unit in an atmosphere where combustible gas is present.
- Doing so may result in inflammation, ignition, or smoke.

PROHIBITION

Do not cover the ventilation slits with cables, etc.
- Doing so may result in malfunction or heating.

1.3 POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

- This equipment is suitable for Pollution Degree 2 and Installation Category II (transient voltage 2500 V). Reinforced insulation (input to power: 300 V) is maintained. Prior to installation, check that the insulation class of this unit satisfies the system requirements.
- The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE requirements. Failure to observe these requirements may invalidate the CE conformance.
- Our products conforming to the EU Directives conforms to the standards required based on the premise that they are built into various equipment, apparatus or control panels to use. Because the EMC performance depends on the configuration, wiring or arrangement of the equipment, apparatus and control panels you build, it is necessary for you to make such equipment, apparatus or control panels to conform finally to the CE Marking by yourselves.

⚠ CAUTION

This product conforms to the EMC Directive for electrical and electronic apparatus intended for use in industrial environments. If it is used in the residential environments, it may cause radio interference, and the user is requested to take appropriate measures.

■ ENVIRONMENT

Install the unit within the installation specifications.

- Indoors use.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH without condensing.
- Altitude up to 2000 meters.
- Provide sufficient space around the unit for heat dissipation.
- Mount the unit to a panel between 1.6 and 8 mm thick.
- Install the unit in a well-ventilated place in order to prevent internal temperature rise.
- Refer to “PANEL CUTOUT” to install several units. In mounting the unit with other equipment side by side, provide sufficient space between them, according to the dimensions in the panel cutout.
- Do not use the unit under the following environments:
  - Where the unit is exposed to direct sunlight, rain or wind. (The unit is not designed for outdoor use.)
  - Where condensation may occur due to extreme temperature changes.
  - Where corrosive or flammable gas is present.
  - Where heavy dust, iron powder or salt is present in the air.
  - Where organic solvent such like benzine, thinner, and alcohol, or strong alkaline materials such like ammonia and caustic soda may attach to the unit, or where such materials are present in the air.
  - Where the unit is subject to continuous vibration or physical impact.
  - Where there are high-voltage lines, high-voltage equipment, power lines, power equipment, equipment with transmission unit such like a ham radio equipment, or equipment generating large switching surges around the unit.

■ WIRING

- In order to prevent potential electric shock, wire the unit after turning off the power supply and making sure that the power is not supplied to the cable.
- In order to enable the operator to turn off the power input immediately, install a switch or a circuit breaker according to the relevant requirements in IEC 60947-2 and properly indicate it.
- Be sure to confirm the name and polarity of each terminal before wiring to the terminal block.
- Do not connect anything to unused terminals.
- Be sure to attach the terminal cover to prevent electric shock.

■ HANDLING CAUTIONS

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.
- Use the unit within the noted supply power voltage and rated load.
- Clean the surface of the unit with wet soft cloth. Do not use organic solvent such like benzine, thinner and alcohol. Doing so may result in deformation or discoloration of the unit.
- When abnormality is found such like smokes, unusual smell and abnormal noises coming from the unit, immediately cut the power supply and stop using it.

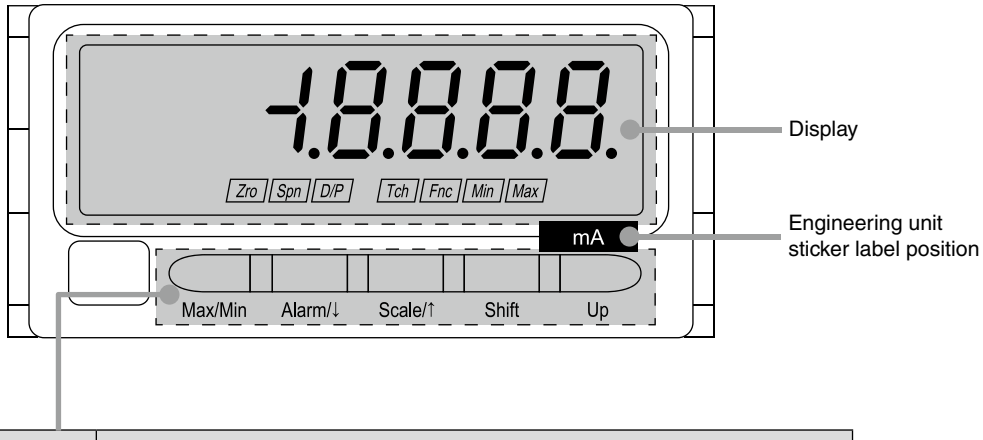
■ TO ENSURE DUSTPROOF AND WATERPROOF (degree of protection IP66)

To ensure dustproof and waterproof for front panel follow conditions below.

- Observe the designated panel cutout size (W92 × H45 mm) specified by us.
- The watertight packing included in the product package must be placed between the body and panel when installing on the panel.
- Insert the unit into the panel cutout, and fasten both mounting brackets tightly until they hit the panel.
- After installation, confirm that there are no following abnormalities.
  - The packing is contorted.
  - There are some spaces between front panel and panel.
  - The packing is run off the edge.
  - The packing is cut off.
  - There are foreign objects sticking.

1.4 COMPONENT IDENTIFICATION

■ FRONT VIEW



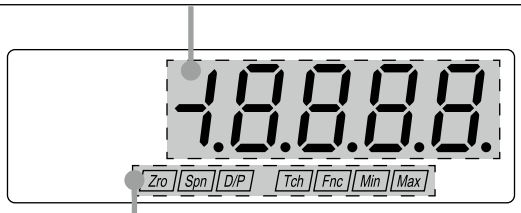
BUTTON	FUNCTION
Max/Min	Used to switch the main display to show the present value, MAX value or MIN value, and to reset the MAX and MIN values. Also used to cancel a set item.
Alarm/↓	Used to move on to setting modes or to shift through setting items in each setting mode.
Scale/↑	Used to move on to the scaling and other setting modes, or to shift through setting items in each setting mode.
Shift	Used to move on to the setting standby status of each setting mode and to shift through display digits in each setting item.
Up	Used to change setting values in a setting standby mode and to execute/cancel Forced Zero in Measuring Mode.

NOTE

- The engineering unit sticker label position is our recommended position.
- When an engineering unit is specified by the Ordering Information Sheet, the unit(s) will be shipped with the sticker label put on the above position.

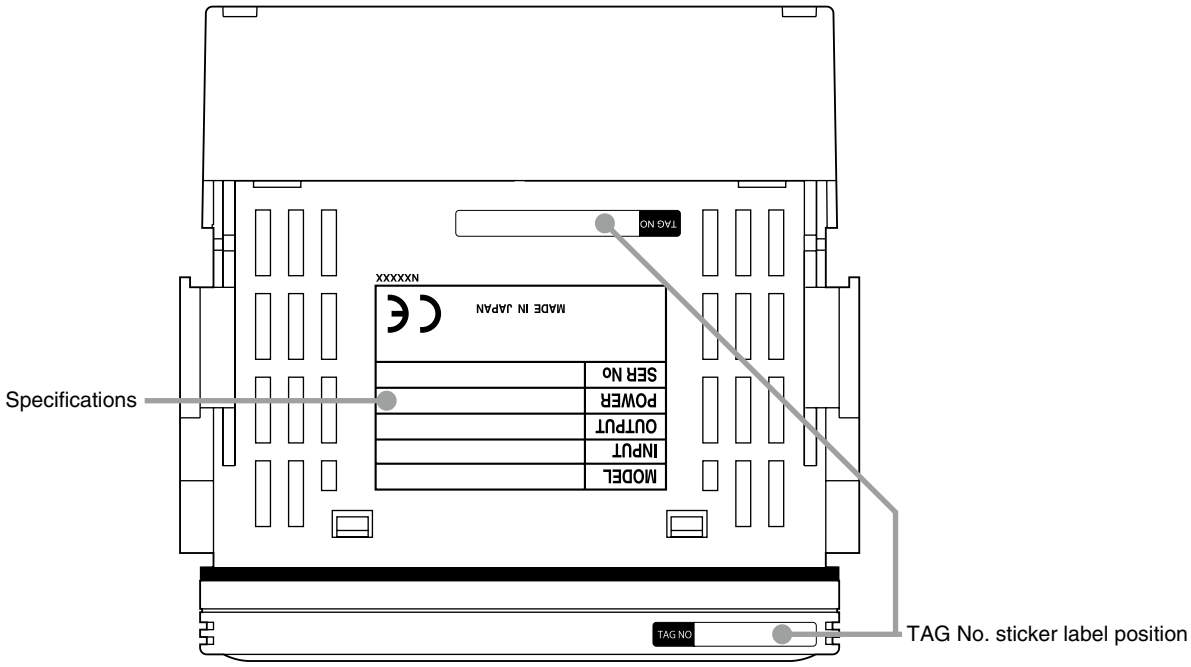
■ DISPLAY

COMPONENT	FUNCTION
Main display	Indicates present, MAX and MIN values, parameters, setting values and error codes.



INDICATOR	MODE	FUNCTION
Function	Setting	Indicates parameters in each mode. 'Zro', 'Spn', 'D/P', 'Tch' and 'Fnc' indicators turn on in combination depending on the parameters.
		Teach Calibration. 'Zro' or 'Spn' indicator turns on and 'Tch' indicator blinks. (Refer to 11.1 TEACH CALIBRATION.)
		'Max' and 'Min' indicators blink when a parameter is within invalid range while setting.
	Measuring	Indicates Forced Zero mode. 'Zro' and 'Fnc' indicators turn on. (Refer to 10.1 FORCING THE PRESENT DISPLAY VALUE TO ZERO.)
		Indicates MAX or MIN value. 'Max' or 'Min' indicator turns on. (Refer to 10.2 RETAINING MAX AND MIN VALUES.)

■ TOP VIEW

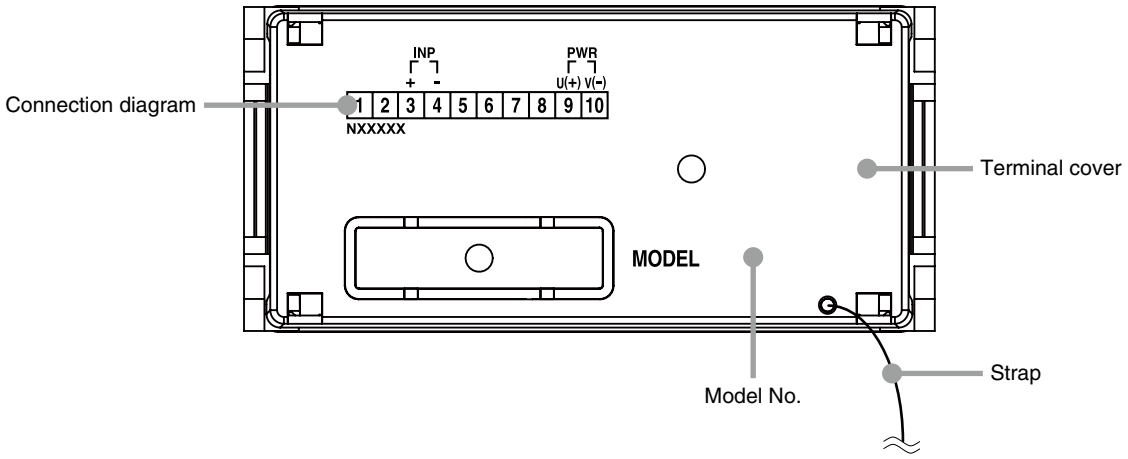


NOTE

- Contents of the specification label depend on the specifications.
- The tag No. label sticker position is our recommended position.
- When a tag No. is specified, the unit(s) will be shipped with the tag No. sticker label put on the above position. Max. 17 alphanumeric characters can be specified. Please consult us.

■ **REAR VIEW**

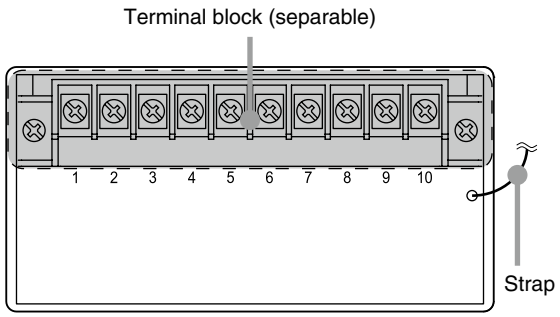
• With Terminal Cover



NOTE

- The connection diagram depends on the specifications.
- The MODEL shows the same as that in the specification label on the top of the unit.

• Without Terminal Cover

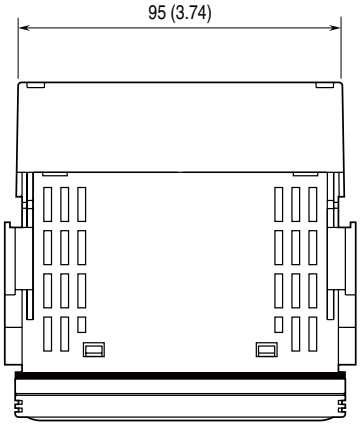


1.5 INSTALLATION

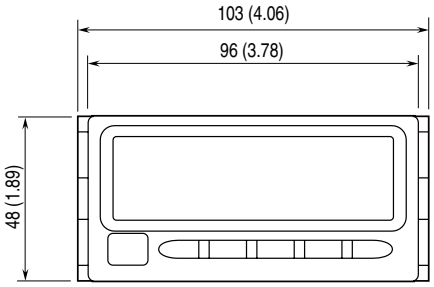
1.5.1 EXTERNAL DIMENSIONS

unit: mm (inch)

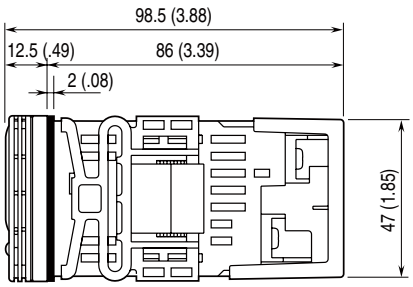
■ **TOP VIEW**



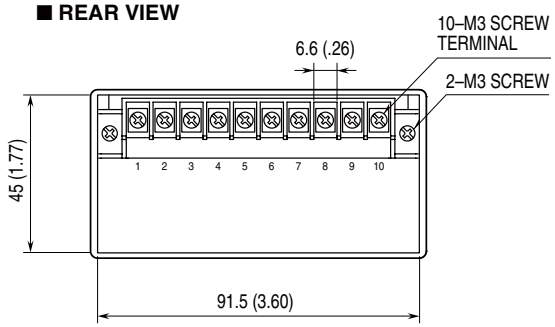
■ **FRONT VIEW**



■ **SIDE VIEW**

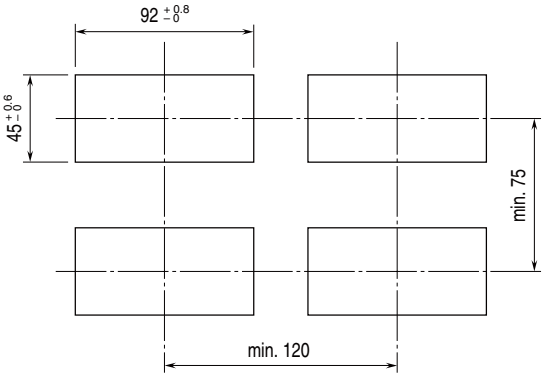


■ **REAR VIEW**



1.5.2 PANEL CUTOUT DIMENSIONS

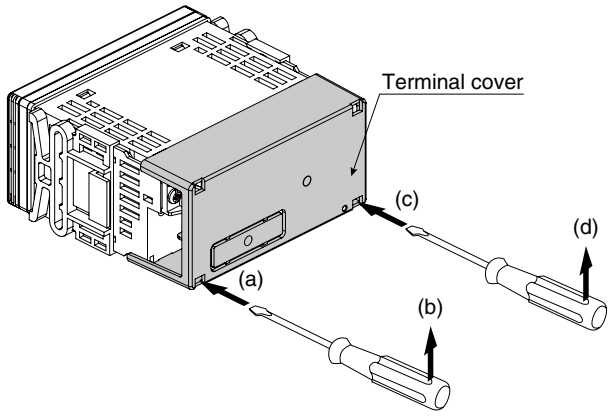
unit: mm



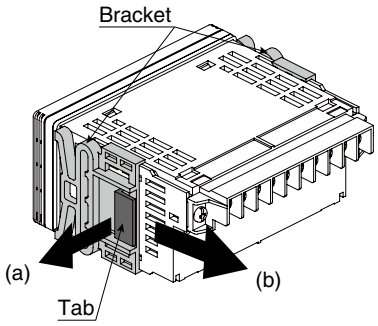
Panel thickness: 1.6 to 8.0 mm

1.5.3 INSTALLATION

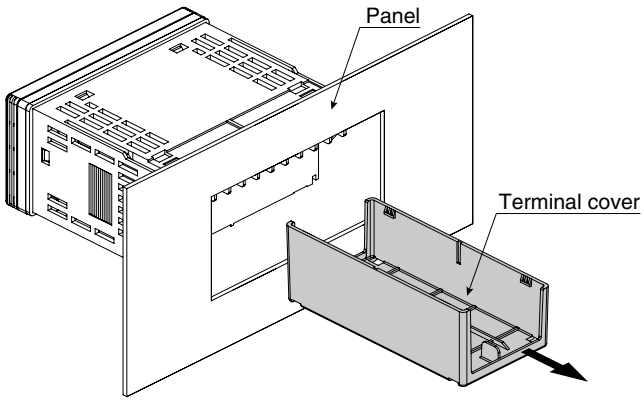
(1) Remove the terminal cover.
  (a) Insert the minus tip of a screwdriver into a hole at the lower left corner of the cover.
  (b) Pull the handle upward.
  (c) Then insert the screwdriver into a hole at the lower right corner.
  (d) Pull the handle upward to separate the terminal cover.



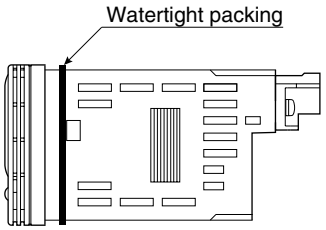
(2) Remove the mounting brackets.
  (a) Flip a tab of a bracket.
  (b) Then pull the bracket toward the terminal block to remove it.



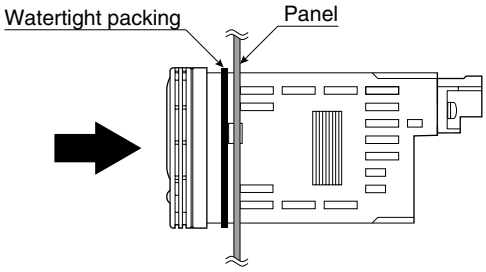
(3) Put the terminal cover through the panel cutout.



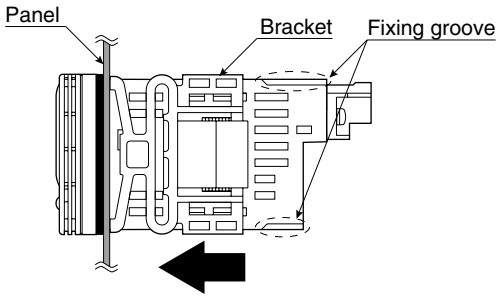
(4) Make sure that the watertight packing is placed behind the front cover regardless of necessity of water-tightness.



(5) Insert the unit into the panel cutout.



(6) Push the mounting brackets into the grooves on both sides of the rear module, until they hit the panel's rear side.



IMPORTANT

To conform to degree of protection IP66, confirm visually that the packing is not contorted, cut off or excessively run off the edge after installation.

1.6 WIRING INSTRUCTIONS

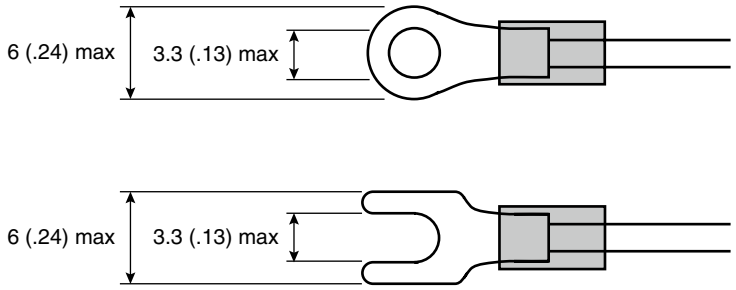
1.6.1 CAUTION IN WIRING

- For safety, make sure that wiring is performed by qualified personnel only.
- In order to prevent potential electric shock, wire the unit after turning off the power supply and making sure that the power is not supplied to the cable.
- Be sure to confirm the name and polarity of each terminal before wiring to it.
- Do not connect anything to unused terminals.
- We offer a series of lightning surge protectors for protection against induced lightning surges. Please contact us to choose appropriate models.

1.6.2 RECOMMENDED SOLDERLESS TERMINAL

- Use solderless terminals for M3. Refer to the drawings below.

unit: mm (inch)

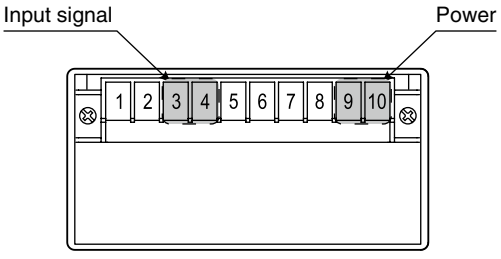


Applicable wire size: 0.25 to 1.65 mm^2
Torque: 0.6 N·m
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd., Nichifu Co., Ltd.

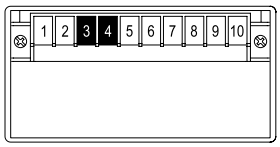
IMPORTANT

- Insulated solderless terminals are recommended.
- In using non-insulated solderless terminals, cover them with insulating caps or tubes.
- Ring tongue terminals are recommended rather than spade tongue terminals to prevent from falling off.

1.6.3 TERMINAL ASSIGNMENT



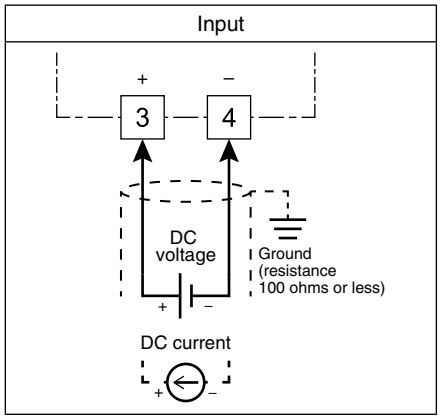
1.6.4 WIRING INPUT SIGNAL



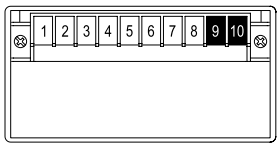
Connect DC voltage or current signal wires.

IMPORTANT

- Be sure to confirm the input polarity in wiring. Wrong connection may result in malfunction of the unit.
- In order to prevent potential electric shock, wire the unit after cutting the input signal and making sure that the power is not supplied to the cable.
- Take measures to reduce noise as much as possible, e.g. by using shielded twisted pair wires for the input signal. Ground the input shield to the most stable earth to prevent noise troubles.
- Do not connect anything to unused terminals.



1.6.5 WIRING POWER

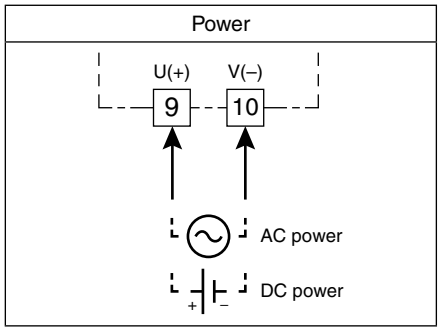


Connect power according to the power input code. The power specifications are shown in the following table.

CODE	RATING	PERMISSIBLE RANGE
M2	100 to 240 V AC	85 to 264 V AC, 50/60 Hz approx. 4 VA
R	24 V DC	±10% approx. 2 W
P	110 V DC	85 to 150 V DC approx. 2 W

IMPORTANT

- For safety, make sure that wiring is performed by qualified personnel only.
- In order to prevent potential electric shock, wire the unit after turning off the power supply and making sure that the power is not supplied to the cable.
- Use wires as thick as possible and twist them from the end.
- For DC power, confirm the polarity.



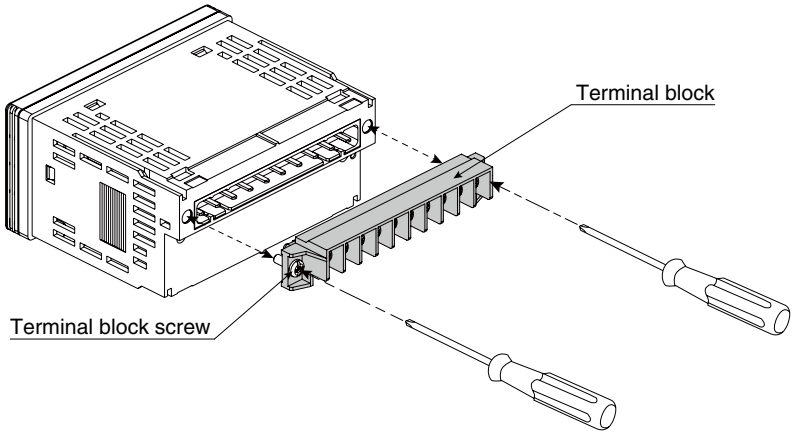
1.6.6 INSTALLING/SEPARATING TERMINAL BLOCK

The terminal block is separable in two pieces. Tighten (loosen) uniformly two screws on both sides of the terminal block to install (separate).

Torque: 0.6 N·m

IMPORTANT

Be sure to turn off the power supply and input signal before installing/separating the terminal block.

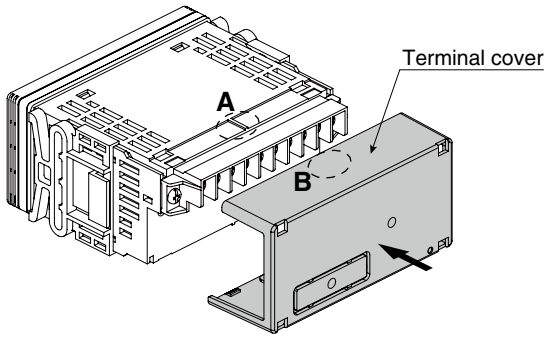


1.6.7 ATTACHING/REMOVING TERMINAL COVER

Be sure to put the terminal cover on for safety after wiring.

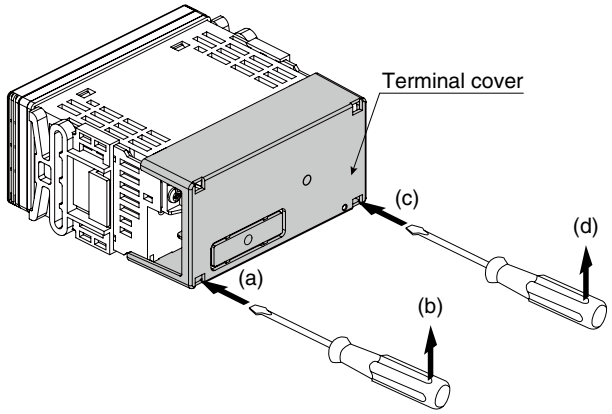
■ ATTACHING TERMINAL COVER

Fit the convex part A of the meter in the concave part B of the terminal cover and push the cover until it clicks into place.



■ **REMOVING TERMINAL COVER**

(a) Insert the minus tip of a screwdriver into a hole at the lower left corner of the cover.
(b) Pull the handle upward.
(c) Then insert the screwdriver into a hole at the lower right corner.
(d) Pull the handle upward to separate the terminal cover.



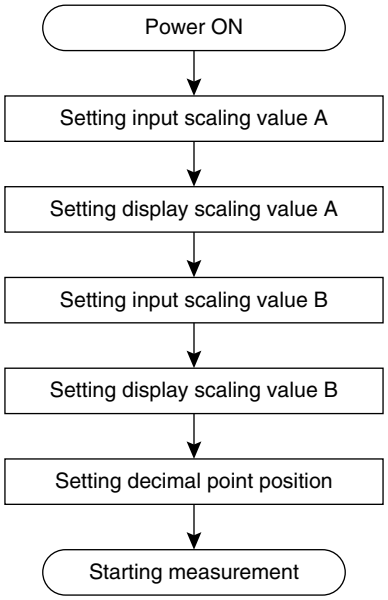
2. BASIC SETTING AND OPERATION

2.1 BASIC SETTING

This section describes flow and procedure of the basic setting.
The following shows the flow and procedure to set the input to 4 – 20 mA DC and the display to 0.00 – 10.00 m with the input code 'A' as an example.

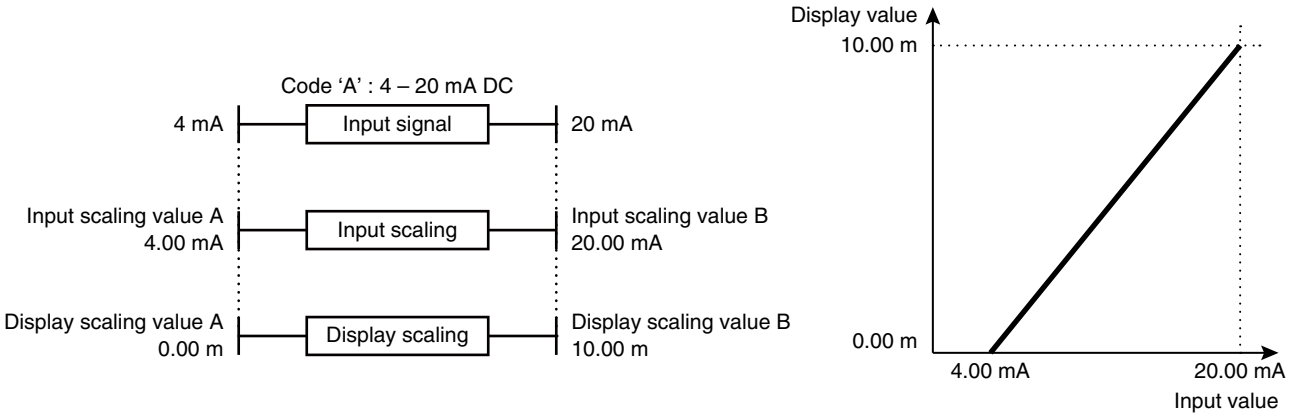
2.1.1 BASIC SETTING FLOW

The basic setting is as shown in the following flowchart.



2.1.2 RELATION BETWEEN INPUT SCALING AND DISPLAY SCALING

The relation between input scaling and display scaling is as shown in the following figure and chart.



Input scaling: 0% input value (input scaling value A) and 100% input value (input scaling value B)
Display scaling: 0% display value (display scaling value A) and 100% display value (display scaling value B)

2.1.3 BASIC SETTING PROCEDURE

The following shows the procedure to set the input to 4 – 20 mA DC and the display to 0.00 – 10.00 m with the input code 'A' as an example. Set values meeting signals of an equipment to use. Refer to 3. SETTING SCALING VALUES for details of setting.

■ PARAMETER LIST FOR BASIC SETTING

Parameters used in the basic setting are as shown in the following table.

PARAMETER	SETTING VALUE	FUNCTION INDICATOR	SETTING
Input scaling value A	04.00	Zro, Tch	0% input: 4.00 mA
Display scaling value A	0000*1	Zro, D/P	0% display: 0.00 m
Input scaling value B	20.00	Spn, Tch	100% input: 20.00 mA
Display scaling value B	1000*1	Spn, D/P	100% display: 10.00 m
Decimal point position	10.00	D/P	2 decimal places (10^{-2})

*1 The decimal point position depends on the decimal point position setting.

■ BASIC SETTING PROCEDURE

The basic setting procedure is as follows.

1 **Confirm the wiring, turn on the power and move on to Scaling Setting Mode (measurement stopped).**

- Hold down Scale/↑ button for 3 seconds or more.

2 **Set input scaling value A.**

- Press Shift button to shift the display into the setting standby mode.
- Press Shift button to go to the next digit and Up button to change the blinking value.

3 **Set display scaling value A.**

- Press Alarm/↓ or Scale/↑ button to apply the new setting and go to the next or previous parameter setting.
- Press Shift button to shift the display into the setting standby mode.
- Press Shift button to go to the next digit and Up button to change the blinking value.

4 **Set input scaling value B.**

- Press Alarm/↓ or Scale/↑ button to apply the new setting and go to the next or previous parameter setting.
- Press Shift button to shift the display into the setting standby mode.
- Press Shift button to go to the next digit and Up button to change the blinking value.

5 **Set display scaling value B.**

- Press Alarm/↓ or Scale/↑ button to apply the new setting and go to the next or previous parameter setting.
- Press Shift button to shift the display into the setting standby mode.
- Press Shift button to go to the next digit and Up button to change the blinking value.

6 **Set decimal point position.**

- Press Alarm/↓ or Scale/↑ button to apply the new setting and go to the next or previous parameter setting.
- Press Shift button to shift the display into the setting standby mode and Up button to select the decimal point position.

7 **Return to Measuring Mode (measurement started).**

- Hold down Alarm/↓ or Scale/↑ button for 1 second or more to apply the new setting and return to Measuring Mode.

2.2 BASIC SETTING OPERATION AND INSTRUCTIONS

This section describes basic operation and instructions when setting parameters.

2.2.1 BASIC SETTING OPERATION

Parameters can be grouped into three setting types, “numerical value setting”, “setting value selection” and “decimal point position selection”. Basic operation of each type is as shown below.

■ NUMERICAL VALUE SETTING

1 **Press Shift button to shift the display into the setting standby mode.**

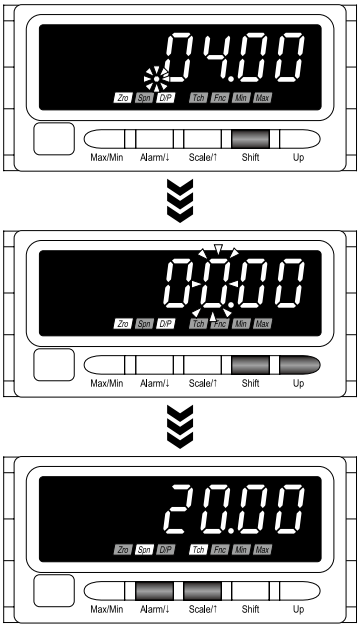
• The most significant digit starts blinking.

2 **Press Shift and Up buttons to set a numerical value.**

• Press Shift button to go to the next digit.
• Press Up button to change the blinking value.

3 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• The next or previous parameter setting is indicated.

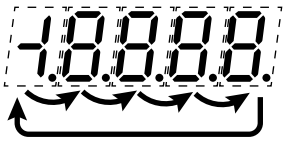


*1 Display depands on the specifications and settings.

NOTE

■ SHIFTING DIGITS

Each time pressing Shift button, the blinking digit moves to the right.



■ SETTING A NUMERICAL VALUE

• Each time pressing Up button, the numeral is incremented by 1.
• The negative sign (-) must be set to the leftmost digit. For example, set ‘-04.00’ instead of ‘-4.00’.

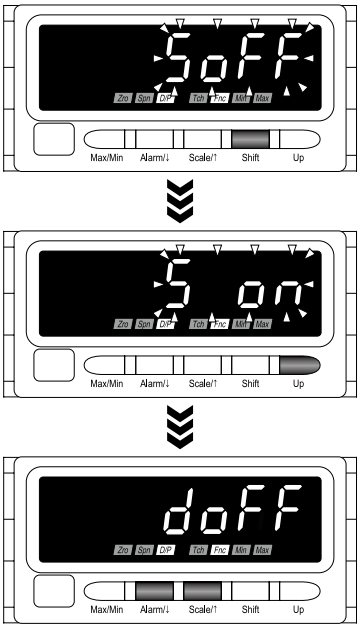
■ SETTING VALUE SELECTION

1 **Press Shift button to shift the display into the setting standby mode.**
• The current set value starts blinking.

2 **Press Up button to select your desired setting value.**

3 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• The next or previous parameter setting is indicated.



*1 Display depands on the specifications and settings.

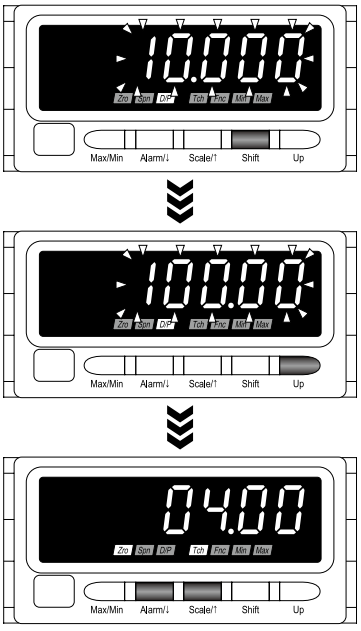
■ DECIMAL POINT POSITION SELECTION

1 **Press Shift button to shift the display into the setting standby mode.**
• The current set value starts blinking.

2 **Press Up button to select a desired decimal point position.**

3 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• The next or previous parameter setting is indicated.

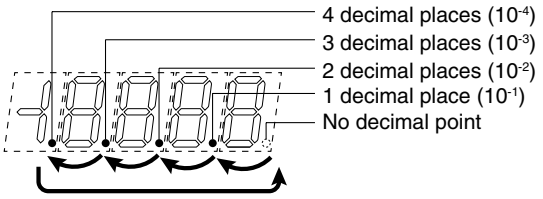


*1 Display depands on the specifications and settings.

NOTE

■ MOVING THE DECIMAL POINT

Pressing Up button moves the decimal point one place to the left.



■ DECIMAL POINT POSITION

"No decimal point" to "4 decimal places" can be selected in the decimal point position setting.

SETTING VALUE	FUNCTION
10000	No decimal point
10000	1 decimal place (10^{-1})
10000	2 decimal places (10^{-2})

SETTING VALUE	FUNCTION
10000	3 decimal places (10^{-3})
10000	4 decimal places (10^{-4})

2.2.2 INSTRUCTIONS ON BASIC OPERATION

■ INVALID PARAMETERS

- 'Max' and 'Min' indicators start blinking when a parameter is within invalid range (following cases). Return the setting within the valid range.
  - In setting an input scaling value beyond the setting range, or setting 'input scaling value A ≥ input scaling value B'.

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…

- The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode.
- The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
- This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…

- Hold down Max/Min button for 1 second or more to return to Measuring Mode without applying the last changes while the display is in the setting standby mode.
- If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

■ ORDER TO DISPLAY PARAMETERS

- Refer to 5. PARAMETER CONFIGURATION for details.

3. SETTING SCALING VALUES

■ INPUT SCALING

Input scaling means setting an input value within the setting range (conformance range) per input code.
The input scaling values include A and B.

- Input scaling value A is minimum value (0%) of input signal.
- Input scaling value B is maximum value (100%) of input signal.

e.g. Input signal 4 – 20 mA DC

Input scaling value A	4 mA
Input scaling value B	20 mA

IMPORTANT

- Set 'input scaling value A < input scaling value B'.
- Setting beyond the setting range is not available.
- Input scaling value A and input scaling value B can be adjusted by applying actual input signals. Refer to 11.1 TEACH CALIBRATION for details.

■ DISPLAY SCALING

Display scaling means setting a value to display actually.
The display scaling values include A and B. A decimal point can be set in any position.

- Display scaling value A is a display value for the input scaling value A.
- Display scaling value B is a display value for the input scaling value B.
- Decimal point position can be set in common for both display scaling value A and B.

e.g. Display value 0.00 – 10.00 m

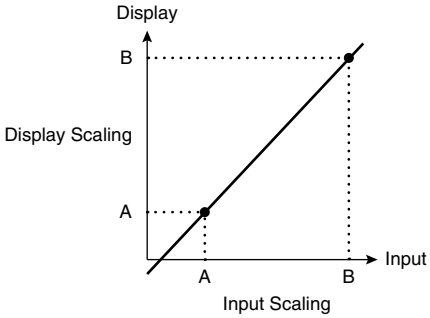
Display scaling value A	0.00 m
Display scaling value B	10.00 m
Decimal point position	00.00 (2 decimal places)

IMPORTANT

Both normal scaling (display scaling value A < display scaling value B) and inverted scaling (display scaling value A > display scaling value B) can be set within the range of -19999 to 19999.

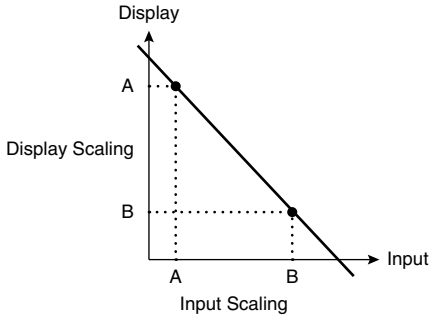
■ Normal Scaling

The display value increases
when the input signal increases.



■ Inverted Scaling

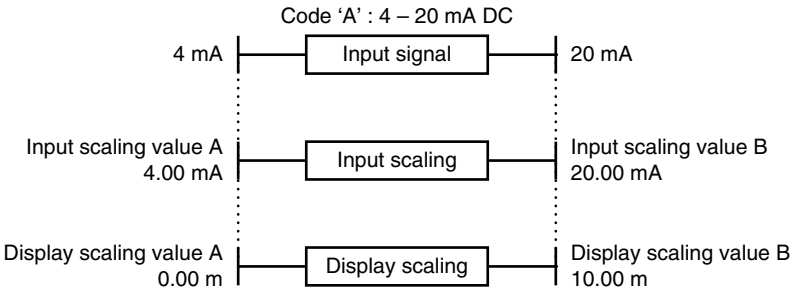
The display value decreases
when the input signal increases.



■ RELATION BETWEEN INPUT SCALING AND DISPLAY SCALING

The relation between input scaling and display scaling is as shown in the following figure.

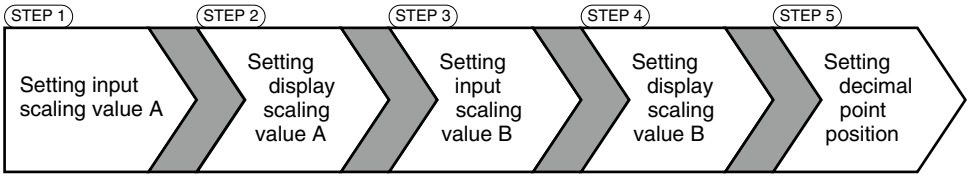
e.g. Input code 'A', to display 4 – 20 mA DC input as 0.00 – 10.00 m



■ PROCEDURE TO SET SCALING VALUES

• Flow in setting scaling values

5-step settings are necessary to set scaling values.



• Operating procedure to set scaling values

Following pages describe operating procedures in each step to set the input scaling to 4 – 20 mA DC, and the display scaling to 0.00 – 10.00 m as an example.

3.1 STEP 1. INPUT SCALING VALUE A

3.1.1 INPUT SCALING LIST

Input scaling default values and setting ranges are as shown in the following tables.

■ CURRENT INPUT

INPUT SIGNAL	DEFAULT VALUE	SETTING RANGE
A: 4 – 20 mA DC	Input scaling value A: 04.00 Input scaling value B: 20.00	4.00 – 20.00 mA
D: 0 – 20 mA DC	Input scaling value A: 00.00 Input scaling value B: 20.00	0.00 – 20.00 mA

■ VOLTAGE INPUT

INPUT SIGNAL	DEFAULT VALUE	SETTING RANGE
5: 0 – 5 V DC	Input scaling value A: 0.000 Input scaling value B: 5.000	0.000 – 5.000 V
6: 1 – 5 V DC	Input scaling value A: 1.000 Input scaling value B: 5.000	1.000 – 5.000 V
4W: -10 – +10 V DC	Input scaling value A: -10.000 Input scaling value B: 10.000	-10.000 – +10.000 V
5W: -5 – +5 V DC	Input scaling value A: -5.000 Input scaling value B: 5.000	-5.000 – +5.000 V

NOTE

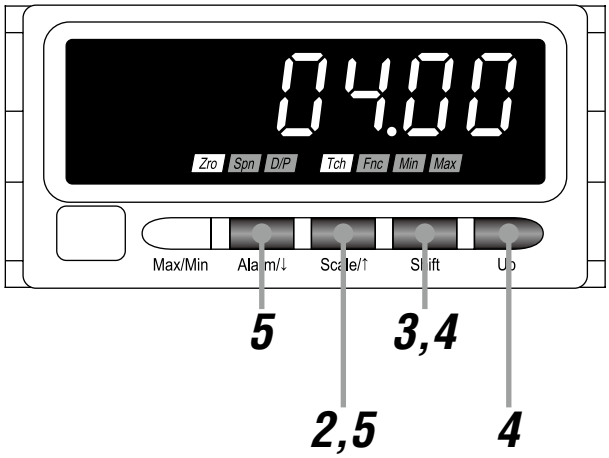
■ SHIFTING DIGITS

• Each time pressing Shift button, the blinking digit moves to the right.

■ SETTING A NUMERICAL VALUE

• Each time pressing Up button, the numeral is incremented by 1.

3.1.2 OPERATING PROCEDURE



NOTE

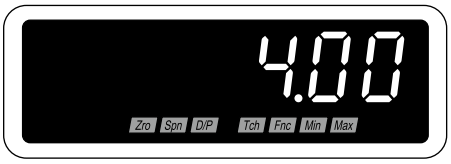
The left figure shows a display example (default value of input code 'A'). The display depends on the specifications and settings. Refer to 3.1.1 INPUT SCALING LIST for details.

1 **Confirm the wiring, and turn on the power.**

- All the indications turn on for approximately 3 seconds and then the display moves on to Measuring Mode.

■ Immediately after power on (all indicators on)

■ Measuring Mode



*1 Display depends on the specifications, settings and input.

NOTE

Indication 'S.ERR' may blink, which shows the input out of the measuring range and does not show the unit failure.

2 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.

NOTE

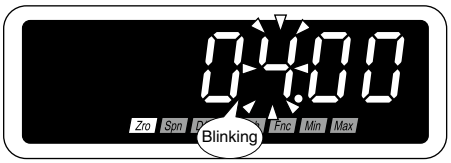
Skip to Step 6 if the default value is acceptable.

3 **Press Shift button to shift the display into the setting standby mode.**

- The fifth digit starts blinking, to which you can apply changes.
- 'Tch' indicator turns off.

4 **Press Shift and Up buttons to set to '04.00'.**

• Press Shift button to go to the next digit and Up button to change the blinking value.



NOTE

• '04.00' is a display example. Set any value within the setting range.
• 'Min' and 'Max' indicators start blinking when the set value is within invalid range or is same as the input scaling value B. Return the setting within the valid range.
• The negative sign (-) must be set to the leftmost digit. For example, set '-04.00' instead of '-4.00'.

5 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the display scaling value A will be indicated within the range of -19999 to 19999 depending on the setting.
• Press Scale/↑ button, and the decimal point position will be indicated.

6 **■ TO GO ON TO SET THE DISPLAY SCALING VALUE A,**
Skip to Step 3 in "3.2 STEP 2. DISPLAY SCALING VALUE A"

■ TO QUIT,
Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.

NOTE

■ INPUT SCALING SETTING
• Do not set 'input scaling value A ≥ input scaling value B'.

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…
• The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode (indication blinking in Step 3 and 4).
• The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
• This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…
• Hold down Max/Min button for 1 second or more in the setting standby mode (indication blinking in Step 3 and 4) to return to Measuring Mode without applying the last changes.
• If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

3.2 STEP 2. DISPLAY SCALING VALUE A

3.2.1 DISPLAY SCALING LIST

Display scaling default values and setting ranges are as shown in the following tables.

■ CURRENT INPUT

INPUT SIGNAL	DEFAULT VALUE	SETTING RANGE
A: 4 – 20 mA DC	Display scaling value A: 4.000 Display scaling value B: 20.00	-19999 to 19999
D: 0 – 20 mA DC	Display scaling value A: 0.000 Display scaling value B: 20.00	

■ VOLTAGE INPUT

INPUT SIGNAL	DEFAULT VALUE	SETTING RANGE
5: 0 – 5 V DC	Display scaling value A: 0.000 Display scaling value B: 5.000	-19999 to 19999
6: 1 – 5 V DC	Display scaling value A: 1.000 Display scaling value B: 5.000	
4W: -10 – +10 V DC	Display scaling value A: -10.00 Display scaling value B: 10.000	
5W: -5 – +5 V DC	Display scaling value A: -5.000 Display scaling value B: 5.000	

NOTE

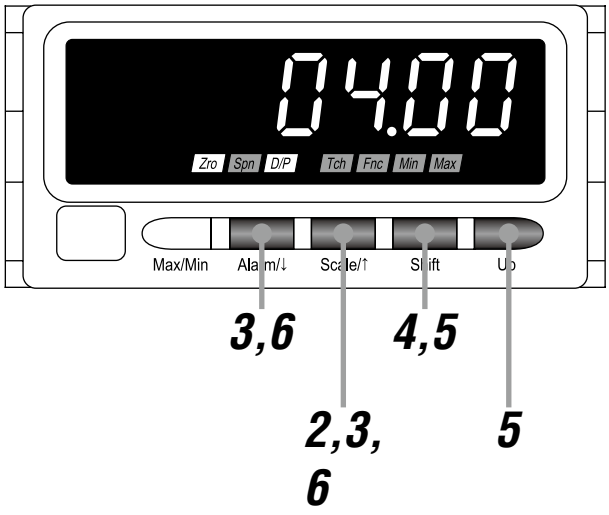
■ SHIFTING DIGITS

• Each time pressing Shift button, the blinking digit moves to the right.

■ SETTING A NUMERICAL VALUE

• Each time pressing Up button, the numeral is incremented by 1.

3.2.2 OPERATING PROCEDURE



NOTE

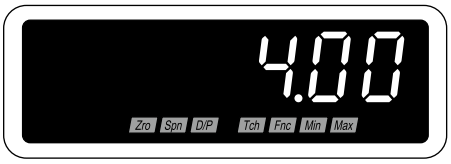
The left figure shows a display example (default value of input code 'A'). The display depends on the specifications and settings. Refer to 3.2.1 DISPLAY SCALING LIST for details.

1 **Confirm the wiring, and turn on the power.**

- All the indications turn on for approximately 3 seconds and then the display moves on to Measuring Mode.

■ Immediately after power on (all indicators on)

■ Measuring Mode



*1 Display depends on the specifications, settings and input.

NOTE

Indication 'S.ERR' may blink, which shows the input out of the measuring range and does not show the unit failure.

2 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.

3 **Press Alarm/↓ or Scale/↑ button to go to the display scaling value A setting.**

- The display scaling value A is indicated.
- 'Zro' and 'D/P' indicators turn on.

NOTE

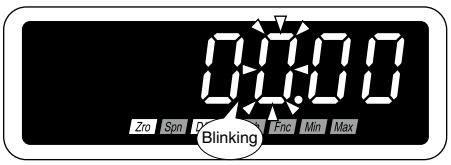
Skip to Step 7 if the default value is acceptable.

4 **Press Shift button to shift the display into the setting standby mode.**

• The fifth digit starts blinking, to which you can apply changes.

5 **Press Shift and Up buttons to set to '00.00'.**

• Press Shift button to go to the next digit and Up button to change the blinking value.



NOTE

• '00.00' is a display example. Set any value within the range of -19999 to 19999.
• The decimal point position depends on the decimal point position setting. Disregard the decimal point here.
• The negative sign (-) must be set to the leftmost digit. For example, set '-04.00' instead of '-4.00'.

6 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the input scaling value B will be indicated.
• Press Scale/↑ button, and the input scaling value A will be indicated.

7 **■ TO GO ON TO SET THE INPUT SCALING VALUE B,**
Skip to Step 3 in "3.3 STEP 3. INPUT SCALING VALUE B".

■ TO QUIT,
Hold down Alarm/↓or Scale/↑ button for 1 second or more to return to Measuring Mode.

NOTE

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…

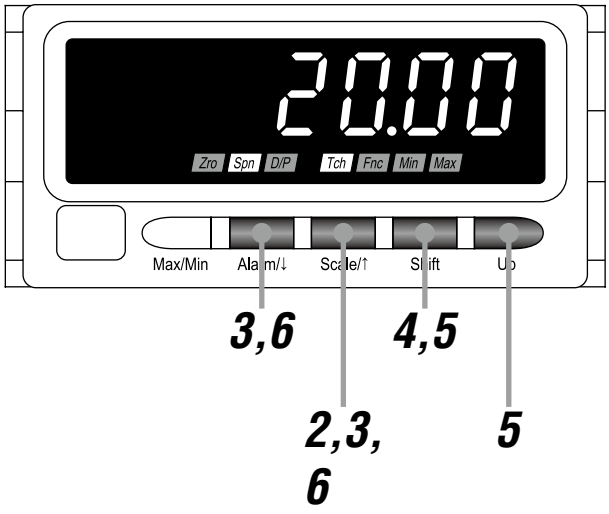
• The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode (indication blinking in Step 4 and 5).
• The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
• This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…

• Hold down Max/Min button for 1 second or more in the setting standby mode (indication blinking in Step 4 and 5) to return to Measuring Mode without applying the last changes.
• If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

3.3 STEP 3. INPUT SCALING VALUE B

3.3.1 OPERATING PROCEDURE



NOTE

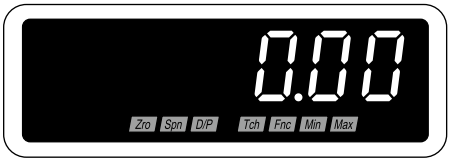
The left figure shows a display example (default value of input code 'A'). The display depends on the specifications and settings. Refer to 3.1.1 INPUT SCALING LIST for details.

1 **Confirm the wiring, and turn on the power.**

- All the indications turn on for approximately 3 seconds and then the display moves on to Measuring Mode.

■ Immediately after power on (all indicators on)

■ Measuring Mode



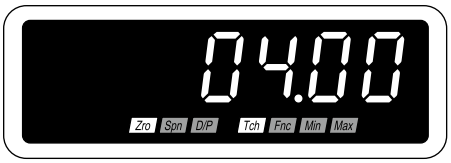
*1 Display depends on the specifications, settings and input.

NOTE

Indication 'S.ERR' may blink, which shows the input out of the measuring range and does not show the unit failure.

2 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.



3 **Press Alarm/↓ or Scale/↑ button to go to the input scaling value B setting.**

- The input scaling value B is indicated.
- 'Spn' and 'Tch' indicators turn on.

NOTE

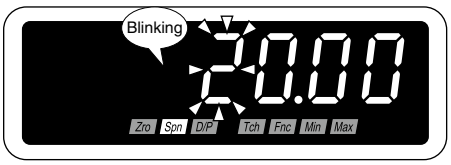
Skip to Step 7 if the default value is acceptable.

4 **Press Shift button to shift the display into the setting standby mode.**

- The fifth digit starts blinking, to which you can apply changes.
- 'Tch' indicator turns off.

5 **Press Shift and Up buttons to set to '20.00'.**

- Press Shift button to go to the next digit and Up button to change the blinking value.



NOTE

- '20.00' is a display example. Set any value within the setting range.
- 'Min' and 'Max' indicators start blinking when the set value is within invalid range or is same as the input scaling value A. Return the setting within the valid range.
- The negative sign (-) must be set to the leftmost digit. For example, set '-04.00' instead of '-4.00'.

6 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

- And the next parameter setting is indicated.

NOTE

- Press Alarm/↓ button, and the display scaling value B will be indicated within the range of -19999 to 19999 depending on the setting.
- Press Scale/↑ button, and the display scaling value A will be indicated within the range of -19999 to 19999 depending on the setting.

7 **■ TO GO ON TO SET THE DISPLAY SCALING VALUE B,**
Skip to Step 3 in "3.4 STEP 4. DISPLAY SCALING VALUE B".

■ TO QUIT,
Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.

NOTE

■ INPUT SCALING SETTING

- Do not set 'input scaling value A ≥ input scaling value B'.

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…

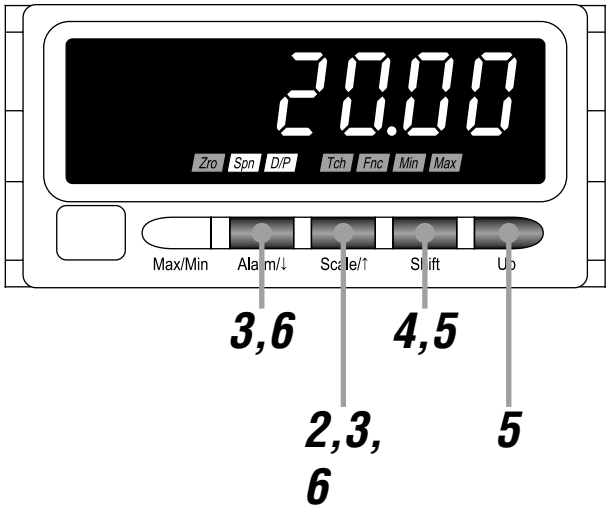
- The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode (indication blinking in Step 4 and 5).
- The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
- This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…

- Hold down Max/Min button for 1 second or more in the setting standby mode (indication blinking in Step 4 and 5) to return to Measuring Mode without applying the last changes.
- If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

3.4 STEP 4. DISPLAY SCALING VALUE B

3.4.1 OPERATING PROCEDURE



NOTE

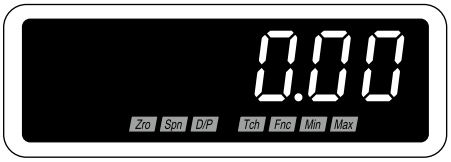
The left figure shows a display example (default value of input code 'A'). The display depends on the specifications and settings. Refer to 3.2.1 DISPLAY SCALING LIST for details.

1 **Confirm the wiring, and turn on the power.**

- All the indications turn on for approximately 3 seconds and then the display moves on to Measuring Mode.

■ Immediately after power on (all indicators on)

■ Measuring Mode



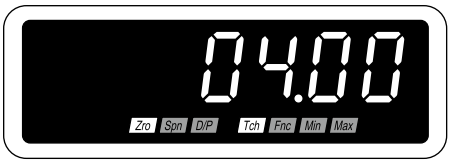
*1 Display depends on the specifications, settings and input.

NOTE

Indication 'S.ERR' may blink, which shows the input out of the measuring range and does not show the unit failure.

2 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.



3 **Press Alarm/↓ or Scale/↑ button to go to the display scaling value B setting.**

- The display scaling value B is indicated.
- 'Spn' and 'D/P' indicators turn on.

NOTE

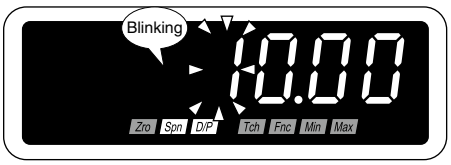
Skip to Step 7 if the default value is acceptable.

4 **Press Shift button to shift the display into the setting standby mode.**

• The fifth digit starts blinking, to which you can apply changes.

5 **Press Shift and Up buttons to set to '10.00'.**

• Press Shift button to go to the next digit and Up button to change the blinking value.



NOTE

• '10.00' is a display example. Set any value within the range of -19999 to 19999.
• The decimal point position depends on the decimal point position setting. Disregard the decimal point here.
• The negative sign (-) must be set to the leftmost digit. For example, set '-04.00' instead of '-4.00'.

6 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the decimal point position will be indicated.
• Press Scale/↑ button, and the input scaling value B will be indicated.

7 **■ TO GO ON TO SET THE DECIMAL POINT POSITION,**
Skip to Step 3 in "3.5 STEP 5. DECIMAL POINT POSITION."

■ TO QUIT,
Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.

NOTE

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…

• The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode (indication blinking in Step 4 and 5).
• The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
• This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…

• Hold down Max/Min button for 1 second or more in the setting standby mode (indication blinking in Step 4 and 5) to return to Measuring Mode without applying the last changes.
• If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

3.5 STEP 5. DECIMAL POINT POSITION

3.5.1 DECIMAL POINT POSITION LIST

Default values of decimal point position are as shown in the following tables.

■ CURRENT INPUT

INPUT SIGNAL	DEFAULT VALUE
A: 4 – 20 mA DC	2000 2 decimal places (10^{-2})
D: 0 – 20 mA DC	2000 2 decimal places (10^{-2})

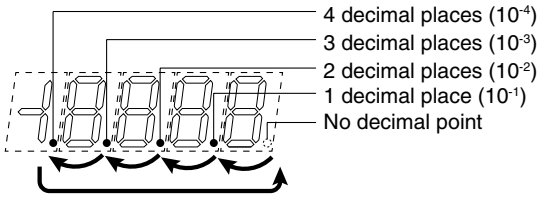
■ VOLTAGE INPUT

INPUT SIGNAL	DEFAULT VALUE
5: 0 – 5 V DC	5000 3 decimal places (10^{-3})
6: 1 – 5 V DC	5000 3 decimal places (10^{-3})
4W: -10 – +10 V DC	10000 3 decimal places (10^{-3})
5W: -5 – +5 V DC	5000 3 decimal places (10^{-3})

NOTE

■ MOVING THE DECIMAL POINT

• Pressing Up button moves the decimal point one place to the left.



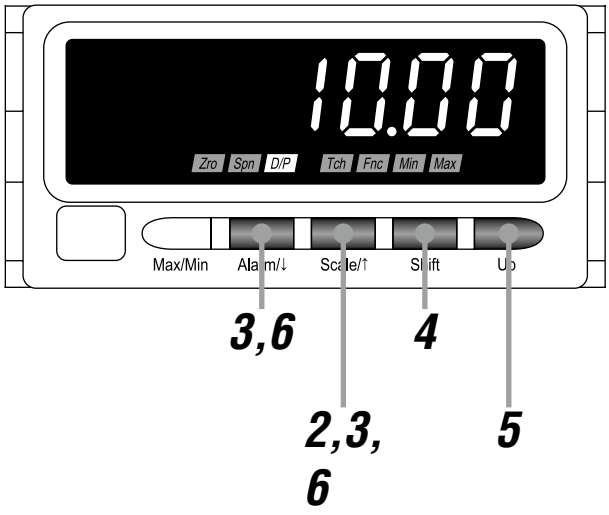
■ DECIMAL POINT POSITION

• "No decimal point" to "4 decimal places" can be selected in the decimal point position setting.

SETTING VALUE	FUNCTION
10000	No decimal point
10000	1 decimal place (10^{-1})
10000	2 decimal places (10^{-2})

SETTING VALUE	FUNCTION
10000	3 decimal places (10^{-3})
10000	4 decimal places (10^{-4})

3.5.2 OPERATING PROCEDURE



NOTE

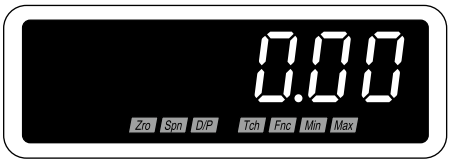
The left figure shows a display example (display scaling value B). The display depends on the specifications and settings. Refer to 3.5.1 DECIMAL POINT POSITION LIST for details.

1 **Confirm the wiring, and turn on the power.**

- All the indications turn on for approximately 3 seconds and then the display moves on to Measuring Mode.

■ Immediately after power on (all indicators on)

■ Measuring Mode



*1 Display depends on the specifications, settings and input.

NOTE

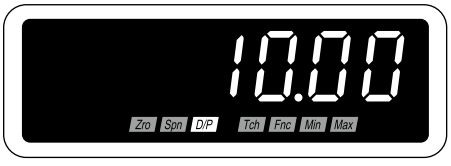
Indication 'S.ERR' may blink, which shows the input out of the measuring range and does not show the unit failure.

2 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.

3 **Press Alarm/↓ or Scale/↑ button to go to the decimal point position setting.**

- The decimal point position is indicated.
- 'D/P' indicator turns on.

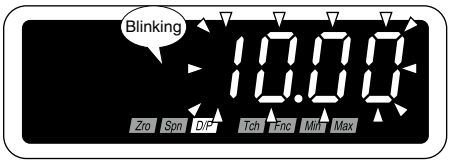


NOTE

Skip to Step 7 if the default value is acceptable.

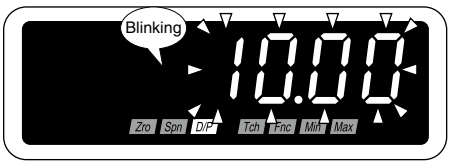
4 **Press Shift button to shift the display into the setting standby mode.**

• The indication starts blinking, to which you can apply changes.



5 **Press Up button to select the decimal point position.**

• Select 2 decimal places (10^{-2}).
• Press Up button to move the decimal point.



NOTE

The right figure shows a display example. Select one among "no decimal point", and "1 decimal place" to "4 decimal places".

6 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the input scaling value A will be indicated.
• Press Scale/↑ button, and the display scaling value B will be indicated within the range of -19999 to 19999 depending on the setting.

7 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

NOTE

■ IF THE FRONT BUTTONS ARE LEFT UNTOUCHED…

• The indication turns on with applying the last changes after the specified time period (default: 15 sec.) while it is in the setting standby mode (indication blinking in Step 4 and 5).
• The display goes back automatically to Measuring Mode after the specified time period (default: 15 sec.) in one of the other modes.
• This time period (automatic return time) is configurable. (Refer to 9. GOING BACK AUTOMATICALLY TO MEASURING MODE.)

■ TO ABORT A SETTING…

• Hold down Max/Min button for 1 second or more in the setting standby mode (indication blinking in Step 4 and 5) to return to Measuring Mode without applying the last changes.
• If you get lost in a setting mode, you can execute initialization. (Refer to 13.2 INITIALIZING SETTING VALUES.)

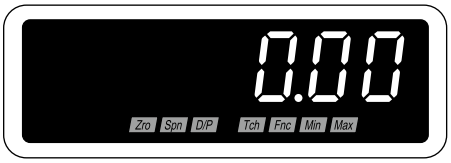
4. OPERATION

Make sure that 0.00 – 10.00 m is correctly indicated according to the input 4 – 20 mA DC provided.

IMPORTANT

Before operating, make sure that the wiring is correct, the input and the power supply are within the specification range.

1 **Apply 4 mA input (0%) and make sure that 0.00 m is indicated.**

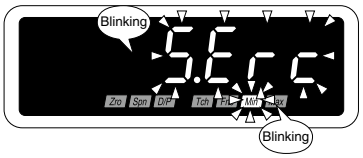


*1 Display depends on the specifications, settings and input.

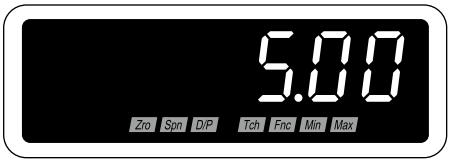
NOTE

■ **WHEN THE FOLLOWING IS INDICATED…**

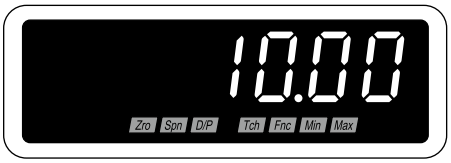
- When 'S.ERR' is indicated, the input is not applied correctly. Check the input wiring, equipment and signal. When 'Min' indicator blinks, the input signal is under the specification voltage/current. And when 'Max' indicator blinks, the input is over the specification voltage/current.
- When the indication is shifted with 'Zro' and 'Fnc' indicators on, the Forced Zero is being executed. Cancel the Forced Zero. (Refer to 10.1 FORCING THE PRESENT DISPLAY VALUE TO ZERO.)



2 **Apply 12 mA input (50%) and make sure that 5.00 m is indicated.**



3 **Apply 20 mA input (100%) and make sure that 10.00 m is indicated.**



NOTE

When the indication is shifted with the function indicators off, perform Teach Calibration. (Refer to 11.1 TEACH CALIBRATION.)

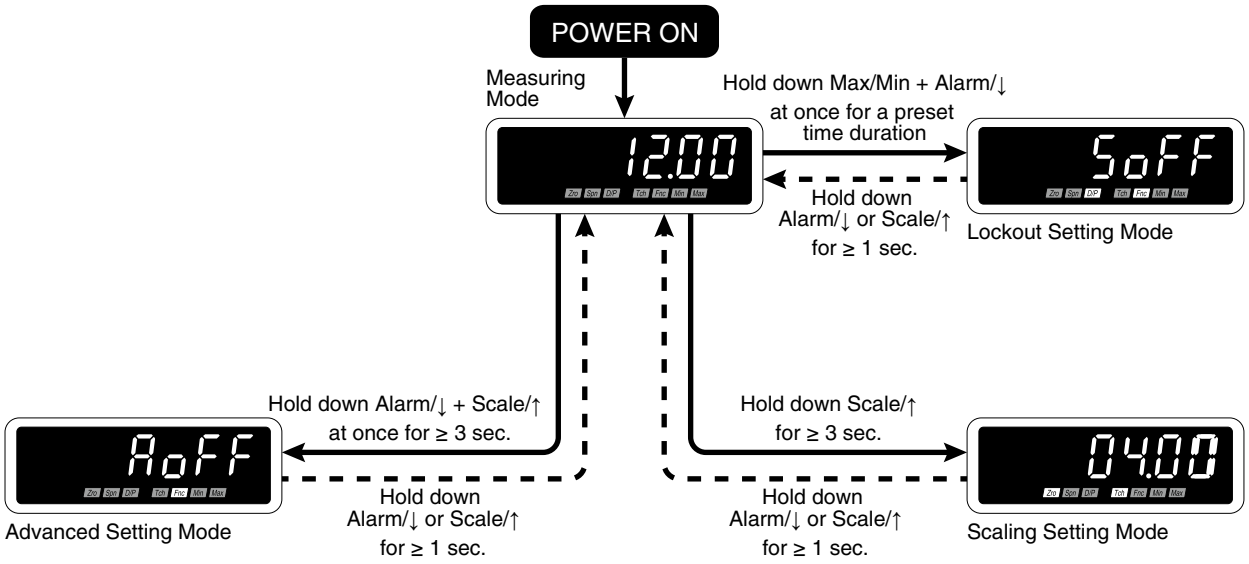
5. PARAMETER CONFIGURATION

■ MODE

Parameters can be grouped in several modes.
The 47LYV has modes as shown in the following table.

MODE	FUNCTION	MEASUREMENT
Measuring	Normal measurement state where the unit takes in input. Present value, MAX and MIN values can be indicated in Measuring Mode. Also Forced Zero can be executed and canceled in this mode. When the power is supplied, the unit operates in Measuring Mode.	Measuring
Scaling Setting	Basic settings such like input scaling and display scaling, and Teach Calibration can be performed.	Measuring stopped
Advanced Setting	Moving average, low-end cutout and brightness can be set. Also the firmware version can be confirmed.	
Lockout Setting	Settings to prevent inadvertent button operation can be performed. Mode transition and set values can be locked.	

■ MODE TRANSITION



■ TRANSITION FROM MEASURING MODE TO EACH MODE

To Scaling Setting Mode	Hold down Scale/↑ button for 3 seconds or more.
To Advanced Setting Mode	Hold down Alarm/↓ + Scale/↑ buttons at once for 3 seconds or more.
To Lockout Setting Mode	Hold down Max/Min + Alarm/↓ buttons at once for a preset time duration.

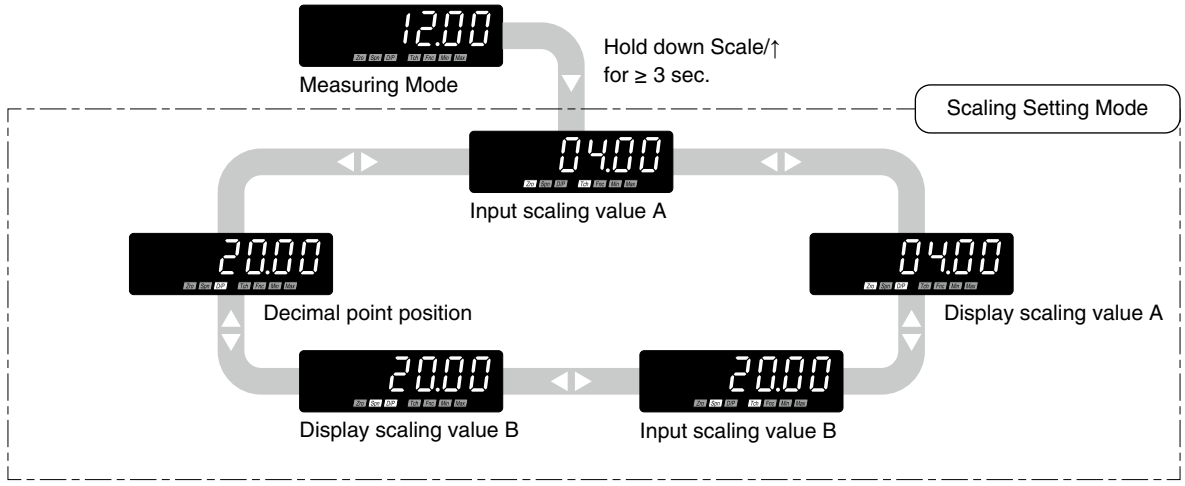
■ TRANSITION FROM EACH MODE TO MEASURING MODE

Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.

■ SHIFTING THROUGH SETTING PARAMETERS

(1) Parameter shifting in Scaling Setting Mode

In Scaling Setting Mode, pressing Alarm/↓ button shifts one parameter to the next (clockwise in the following figure). Pressing Scale/↑ button shifts one to the previous (counterclockwise).

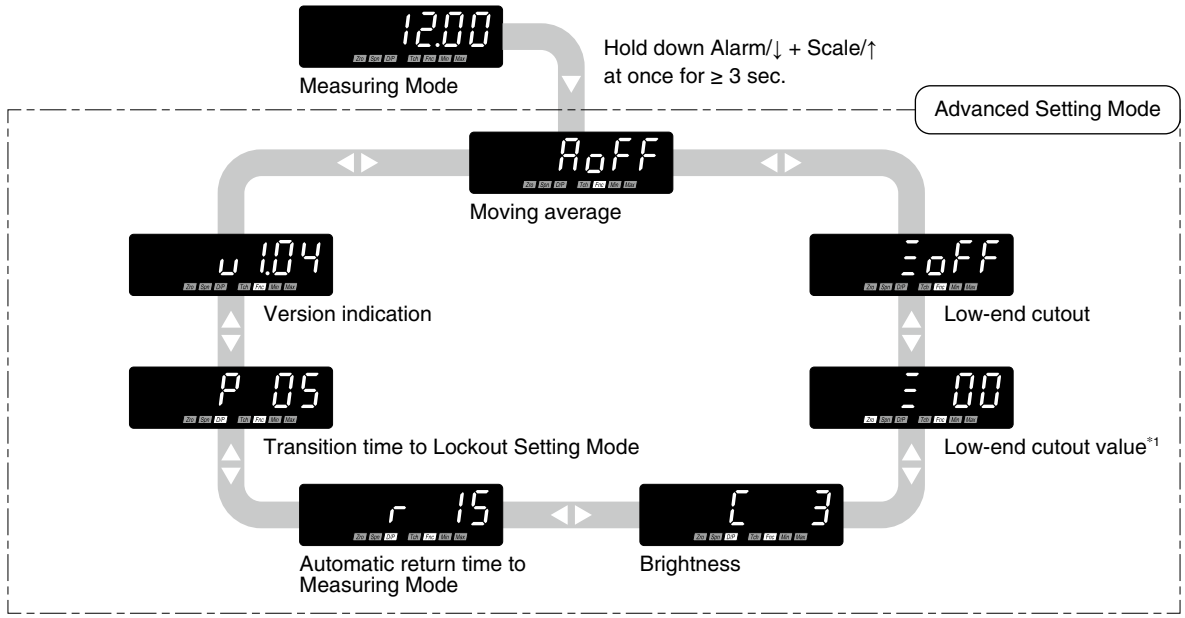


NOTE

- The display depends on the input code and settings. The above displays show default values with the input code "A".
- Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode from each parameter.

(2) Parameter shifting in Advanced Setting Mode

In Advanced Setting Mode, pressing Alarm/↓ button shifts one parameter to the next (clockwise in the following figure). Pressing Scale/↑ button shifts one to the previous (counterclockwise).



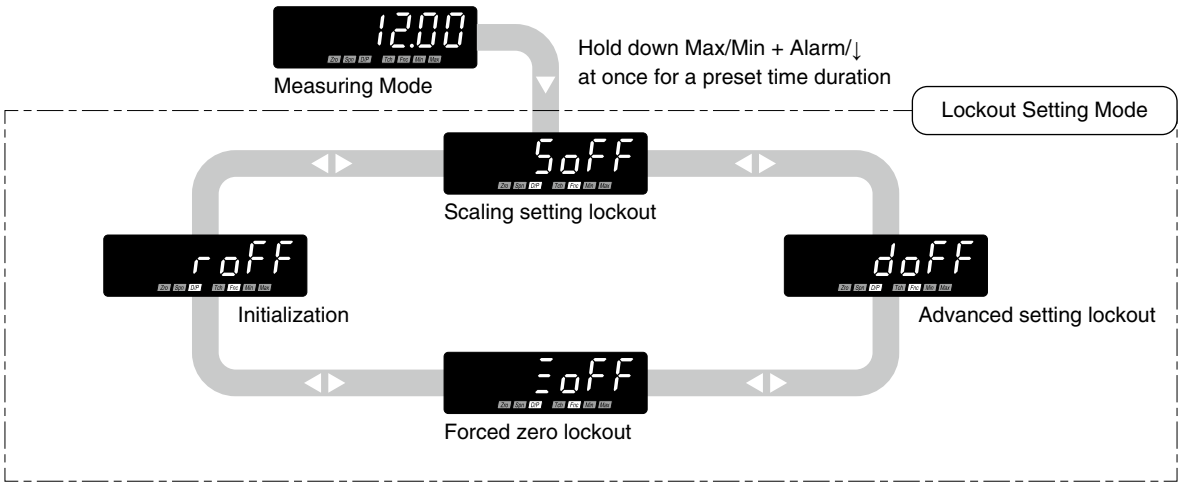
*1 With the cutout set to OFF, the low-end cutout value setting is locked.

NOTE

- The display depends on the settings. The above displays show default values.
- Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode from each parameter.

(3) Parameter shifting in Lockout Setting Mode

In Lockout Setting Mode, pressing Alarm/↓ button shifts one parameter to the next (clockwise in the following figure). Pressing Scale/↑ button shifts one to the previous (counterclockwise).



NOTE

- The display depends on the settings. The above displays show default values.
- Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode from each parameter.

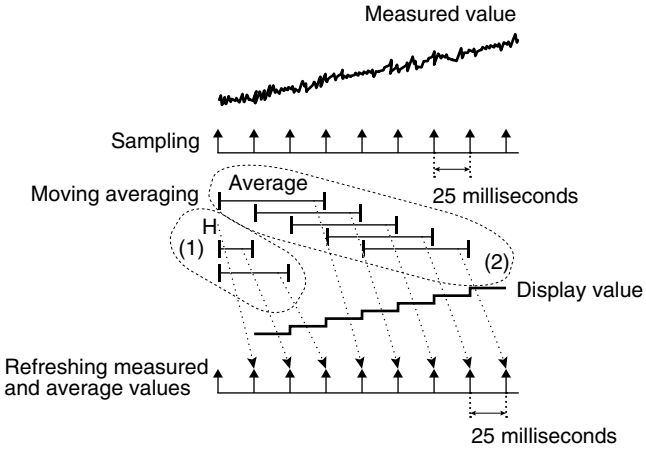
6. AVERAGING INPUT

Moving average processing of measured values is configurable. The number of samples in processing the moving average can be selected in the following table. This operation averages sampled values, and then, averages with a new sample added and the oldest one omitted. Such operation is repeated as shown in the following figure. For instance, when 'A 4' is selected, the moving average processing with 4 samples (100 millisecond intervals) is repeated. Moving average is used to remove periodic varied noise superimposed on the input signal and suppress the display flickering.

■ NUMBER OF SAMPLES

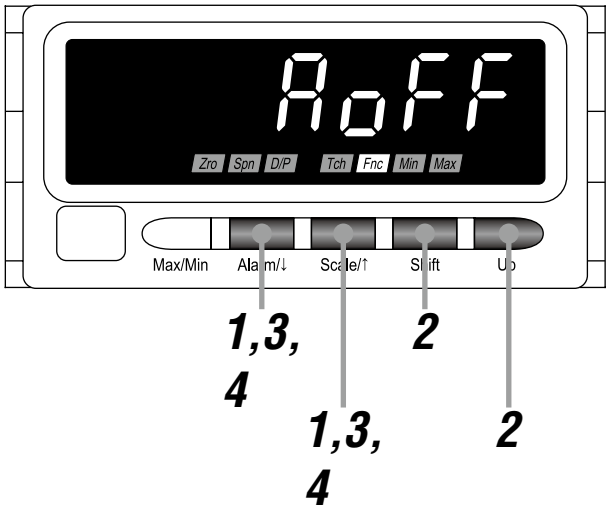
DISPLAY	FUNCTION	DEFAULT VALUE
AoFF	No moving averaging	AoFF
A 2	Moving average with 2 samples (50 millisecond intervals)	
A 4	Moving average with 4 samples (100 millisecond intervals)	
A 8	Moving average with 8 samples (200 millisecond intervals)	

■ EXAMPLE OF MOVING AVERAGE WITH 4 SAMPLES



(1) The moving average operation starts immediately after the power is on or the moving average is set. Until the sampling No. reaches the set value, all samples are averaged every 25 milliseconds.
(2) After the sampling No. reaches the set value, a new sample is added to be averaged with the oldest one omitted. Such operation is repeated.

6.1 OPERATING PROCEDURE



NOTE

The following figures are display examples. The displays depend on the settings.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

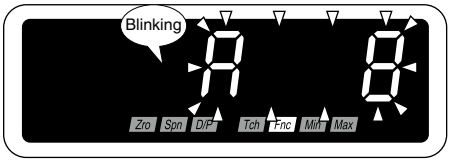
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Shift or Up button to select.**

- Select one among 'AOFF', 'A 2', 'A 4' and 'A 8'.



3 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

- And the next parameter setting is indicated.

NOTE

- Press Alarm/↓ button, and the low-end cutout 'ZOFF' or 'Z ON' will be indicated depending on the setting.
- Press Scale/↑ button, and the version indication will be indicated.

4 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

7. ELIMINATING FLUCTUATION AROUND “0”

A measured value less than the preset cutout value can be forcibly cut to 0 (figure below). This parameter is called low-end cutout and the value is called low-end cutout value. Enable the low-end cutout first (table below) and set the low-end cutout value within the range of 00 to 99. The low-end cutout is effective to eliminate slippage or fluctuation of the display values near zero.

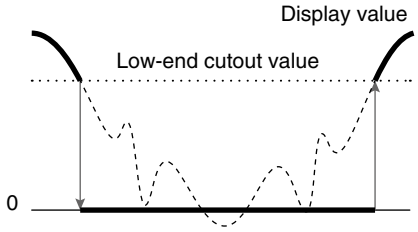
■ LOW-END CUTOUT

DISPLAY	FUNCTION	DEFAULT VALUE
EoFF	Low-end cutout OFF	EoFF
E on	Low-end cutout ON	

■ SETTING RANGE

Set the low-end cutout value for the two lowest digits of the display scaling value within the range of 00 to 99.
The default value is 00.

■ DISPLAY EXAMPLE WITH LOW-END CUTOUT ON



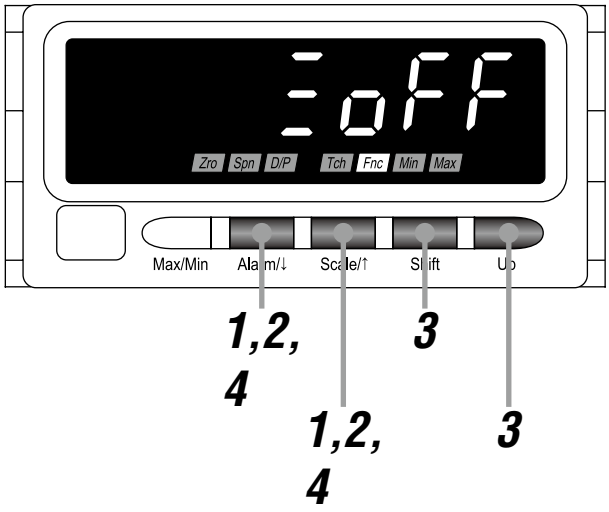
Fluctuation near 0 and negative reading can be cut to 0.

NOTE

Set the display scaling value A to 0 when the low-end cutout is set to ON. Otherwise with the display scaling ±1000 and the low-end cutout value 50, for example, the indication with the scaling value -1000 to 49 will be cut to 0.

7.1 LOW-END CUTOUT

7.1.1 OPERATING PROCEDURE



NOTE

- Procedures to change 'ZOFF' to 'Z ON' are described here.
- To change 'Z ON' to 'ZOFF', the procedures are same. Select 'ZOFF' in Step 3.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

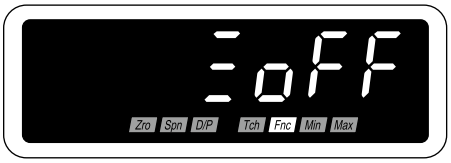
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

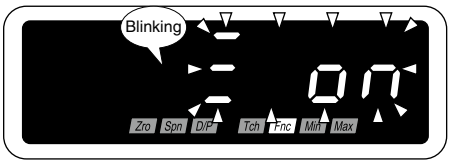
'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the low-end cutout setting.**

- 'ZOFF' is indicated.
- 'Fnc' indicator turns on.



3 **Press Shift or Up button to select 'Z ON'.**



4 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

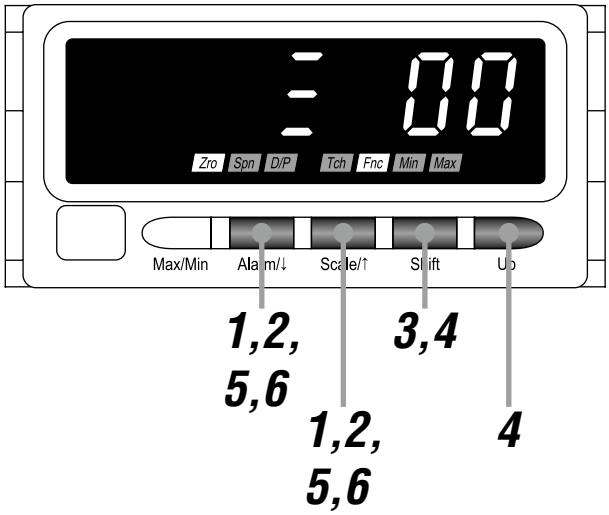
- Press Alarm/↓ button, and the low-end cutout value will be indicated within the range of 'Z 00' to 'Z 99' depending on the setting. When low-end cutout OFF is selected, the brightness 'C 1', 'C 2', 'C 3', 'C 4' or 'C 5' will be indicated depending on the setting.
- Press Scale/↑ button, and the moving average sampling No. 'AOFF', 'A 2', 'A 4' or 'A 8' will be indicated depending on the setting.

5 **■ TO GO ON TO SET THE LOW-END CUTOUT VALUE,**
Skip to Step 2 in "7.2 LOW-END CUTOUT VALUE."

■ TO QUIT,
Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.

7.2 LOW-END CUTOUT VALUE

7.2.1 OPERATING PROCEDURE



NOTE

The following figures are display examples. The displays depend on the settings.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

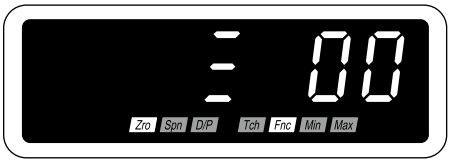
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the low-end cutout value setting.**

- The low-end cutout value is indicated.
- 'Zro' and 'Fnc' indicators turn on.

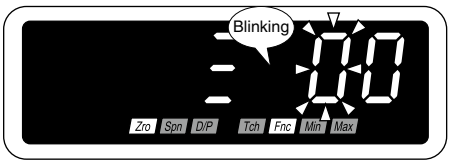


NOTE

The low-end cutout value is indicated within the range of 'Z 00' to 'Z 99' depending on the setting.

3 **Press Shift button to shift the display into the setting standby mode.**

- The second digit starts blinking, to which you can apply changes.



4 **Press Shift and Up buttons to set the low-end cutout value.**

• Set within the range of 'Z 00' to 'Z 99'.

NOTE

Set the value for the display scaling. The decimal point is not indicated.

5 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the brightness 'C 1', 'C 2', 'C 3', 'C 4' or 'C 5' will be indicated depending on the setting.
• Press Scale/↑ button, and the low-end cutout 'Z ON' will be indicated.

6 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

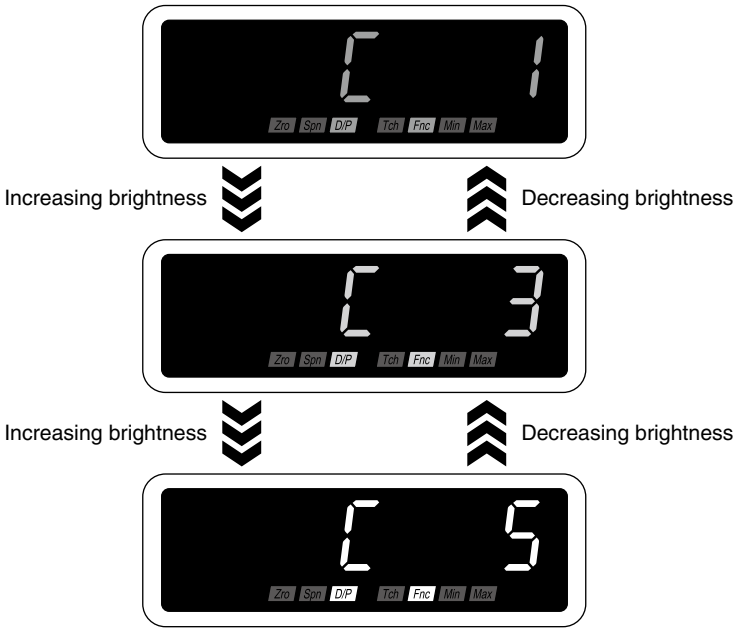
8. ADJUSTING BRIGHTNESS OF DISPLAY

The brightness of the display can be adjusted (figures below). The brightness can be selected in the following table.

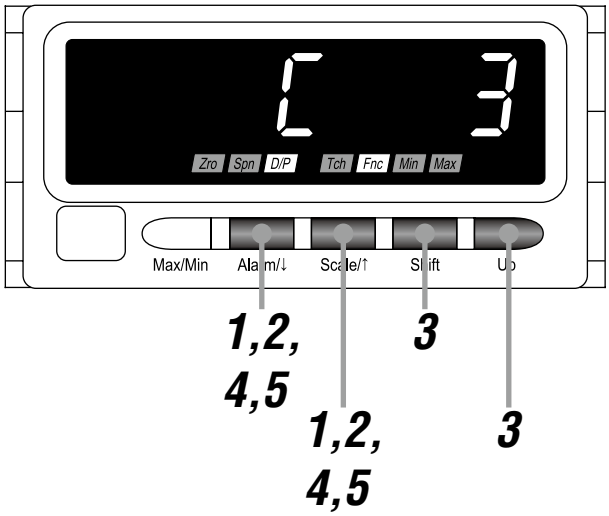
■ DISPLAY BRIGHTNESS

DISPLAY	FUNCTION	DEFAULT VALUE
C 1	Brightness level 1 (dark)	C 3
C 2	Brightness level 2	
C 3	Brightness level 3	
C 4	Brightness level 4	
C 5	Brightness level 5 (bright)	

■ ADJUSTMENT IMAGE



8.1 OPERATING PROCEDURE



NOTE

The following figures are display examples. The displays depend on the settings.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

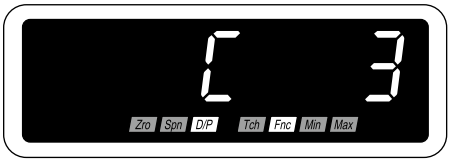
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the brightness setting.**

- The brightness is indicated.
- 'D/P' and 'Fnc' indicators turn on.

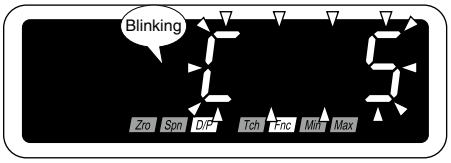


NOTE

'C 1', 'C 2', 'C 3', 'C 4' or 'C 5' is indicated depending on the setting.

3 **Press Shift or Up button to select.**

- Select one among 'C 1', 'C 2', 'C 3', 'C 4' and 'C 5'.



4 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the automatic return time to Measuring Mode will be indicated within the range of 'R 00' to 'R 99' depending on the setting.
• Press Scale/↑ button, and the low-end cutout value will be indicated within the range of 'Z 00' to 'Z 99' depending on the setting. The low-end cutout 'ZOFF' will be indicated with the cutout set to OFF.

5 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

9. GOING BACK AUTOMATICALLY TO MEASURING MODE

The display goes back automatically to Measuring Mode if the front buttons are left untouched for the specified time period while it is in one of the setting modes. This time period is called automatic return time and can be set within the range of 1 to 99 seconds (Table 1). With the value set to 'R 00', the display must always be exited manually from the setting mode. The display does not go back automatically to Measuring Mode depending on the modes (Table 2).

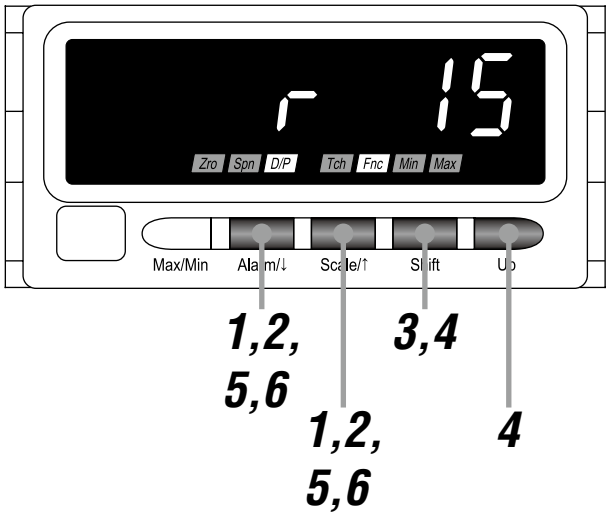
■ TABLE 1: AUTOMATIC RETURN TIME

DISPLAY	FUNCTION	DEFAULT VALUE
r 00	Automatic return disabled	r 15
r 01 to r 99	1 to 99 seconds	

■ TABLE 2: AUTOMATIC RETURN IN EACH MODE

MODE	OPERATION	SETTING TIME OUT
Measuring Mode	Displaying MAX or MIN value	Disabled
	Executing Forced Zero	Disabled
Scaling Setting Mode		Enabled
Advanced Setting Mode		Enabled
Lockout Setting Mode		Enabled

9.1 OPERATING PROCEDURE



NOTE

The following figures are display examples. The displays depend on the settings.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

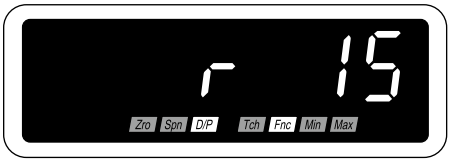
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the automatic return time to Measuring Mode setting.**

- The automatic return time to Measuring Mode is indicated.
- 'D/P' and 'Fnc' indicators turn on.

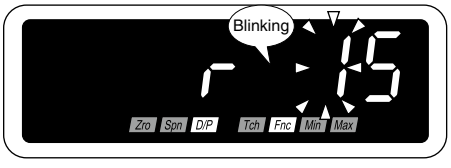


NOTE

The automatic return time to Measuring Mode is indicated within the range of 'R 00' to 'R 99' depending on the setting.

3 **Press Shift button to shift the display into the setting standby mode.**

- The second digit starts blinking, to which you can apply changes.



4 **Press Shift and Up buttons to set the automatic return time to Measuring Mode.**

- Set within the range of 'R 00' to 'R 99'.

5 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the transition time to Lockout Setting Mode will be indicated within the range of 'P 00' to 'P 99' depending on the setting.
• Press Scale/↑ button, and the brightness 'C 1', 'C 2', 'C 3', 'C 4' or 'C 5' will be indicated depending on the setting.

6 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

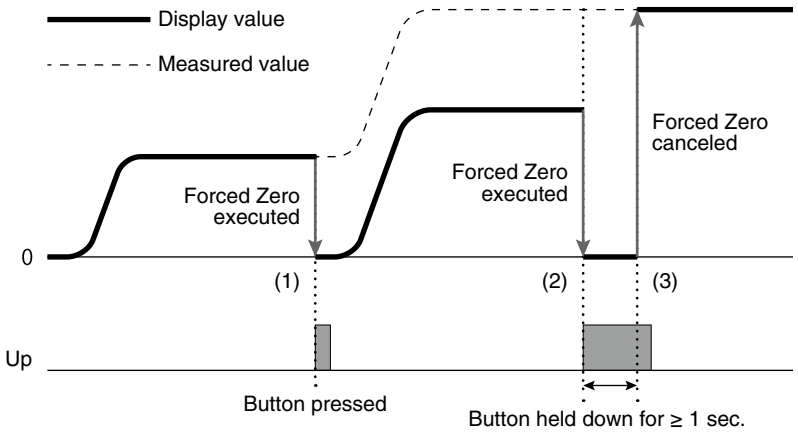
10. USEFUL FUNCTIONS

10.1 FORCING THE PRESENT DISPLAY VALUE TO ZERO

The display value can be forced to 0 while in Measuring Mode. Press Up button during Measuring Mode to shift the present display value to zero and to continue measuring in reference to this point. This operation is called Forced Zero. This function can be used for applications such as measuring the weight of the contents in a container by canceling the weight of the empty container, or indicating the weight of each material adding into a container one after another.

■ DISPLAY VALUE IN EXECUTING AND CANCELING FORCED ZERO

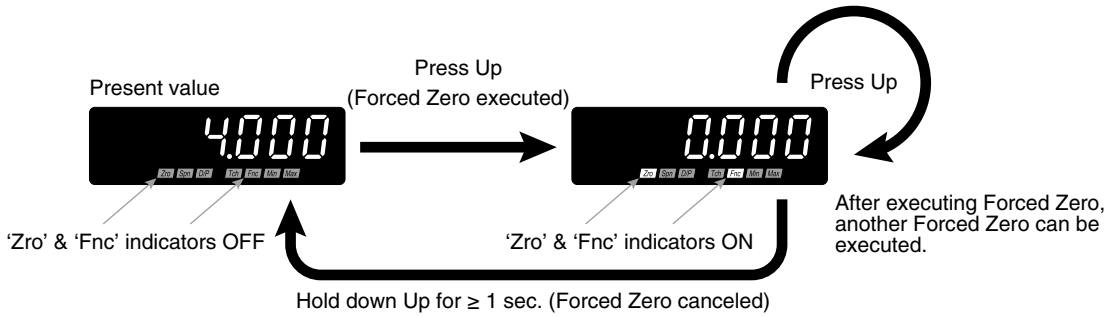
The display value changes as shown in the following figure when Forced Zero is executed or canceled while in measuring.



(1) Press Up button to shift the present display value to zero.
(2) Press Up button again for 1 second or more to cancel the Forced Zero mode. The display value is forced to 0 once.
(3) Then the display is back to indicate the measured value.

■ OPERATING PROCEDURE TO EXECUTE/CANCEL FORCED ZERO

(1) Press Up button in Measuring Mode to execute the Forced Zero.
(2) Hold down Up button for 1 second or more to cancel the Forced Zero mode.



*1 Display depends on the specifications, settings and input.

NOTE

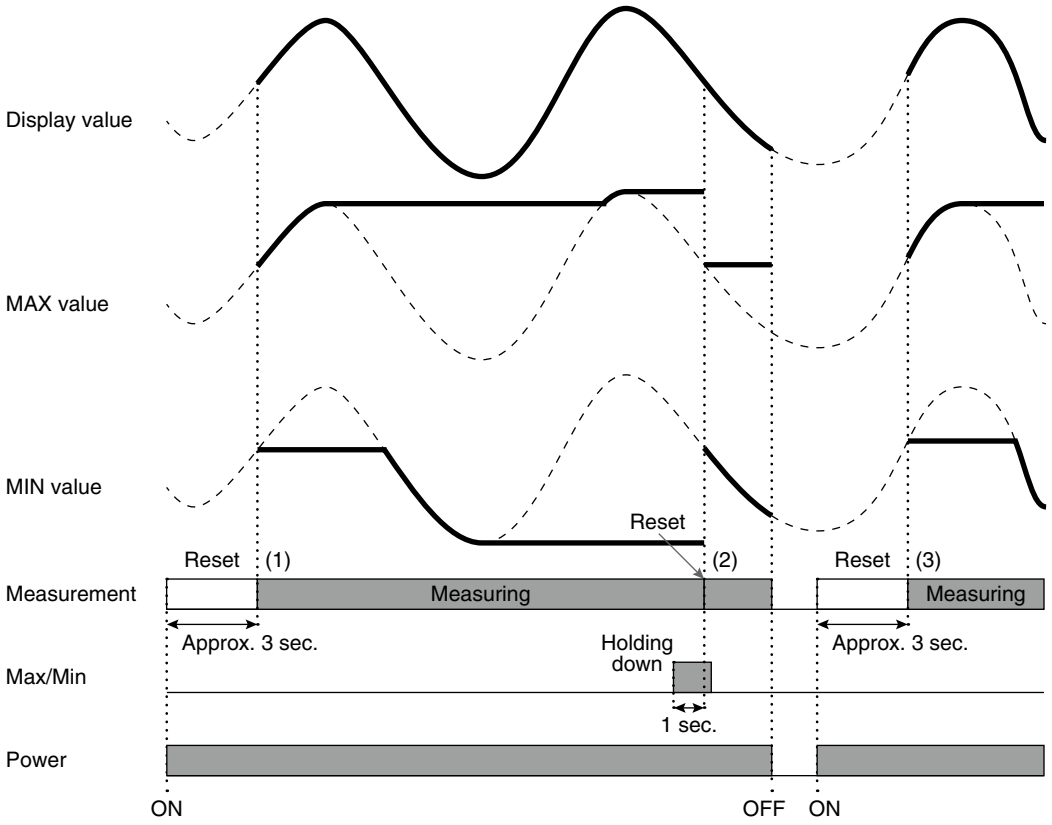
- Forced Zero cannot be executed or canceled while in the MAX/MIN Value Display mode.
- Forced Zero value is stored in memory even when the power is removed.
- Forced Zero cannot be executed or canceled while 'S.ERR' is indicated. Increase or decrease the input signal within the measurable range and then execute the Forced Zero again.

10.2 RETAINING MAX AND MIN VALUES

MAX and MIN values can be confirmed while in Measuring Mode. Each time pressing Max/Min button during Measuring Mode, the indication is switched in the order of MAX value to MIN value and back to original indication. Max. value is updated while it is indicated. Min. value is updated while it is indicated.

■ MAX AND MIN VALUES

MAX and MIN values are updated while in measuring.

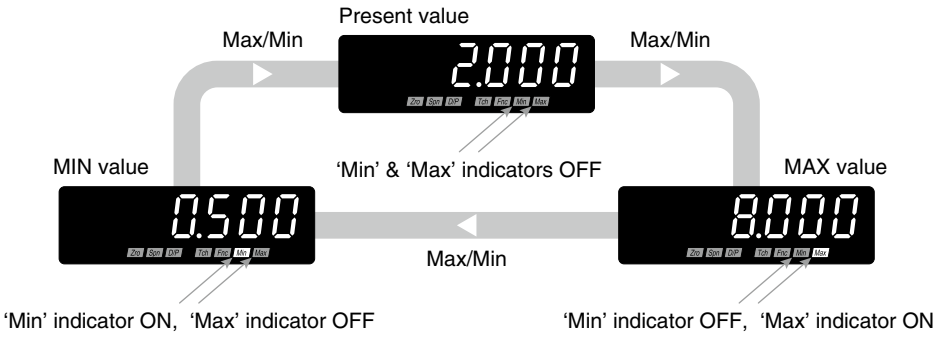


(1) The internal memory is reset for approx. 3 seconds after the power is on, and the unit starts to measure MAX and MIN values.
(2) Hold down Max/Min button for 1 second or more to reset the MAX and MIN values and then the unit starts to measure MAX and MIN values again.
(3) The internal memory is reset for approx. 3 seconds after the power is off and on again, and then the unit starts to measure MAX and MIN values again.

■ **PROCEDURE TO CONFIRM MAX OR MIN VALUE**

(1) Each time pressing Max/Min button during Measuring Mode, the indication is changed from the present value to MAX value, MIN value, and back to present value.

(2) Hold down Max/Min button for 1 second or more to reset the MAX and MIN values and indicate new MAX and MIN values. The MAX and MIN values are reset when the power is turned off.



*1 Display depends on the specifications, settings and input.

NOTE

- The MAX and MIN values are not reset even when the Forced Zero is executed or canceled.
- MAX and MIN values are not indicated while 'S.ERR' is indicated. Increase or decrease the input signal within the measurable range and then press Max/Min button again.

10.3 LIMITING BUTTON OPERATION

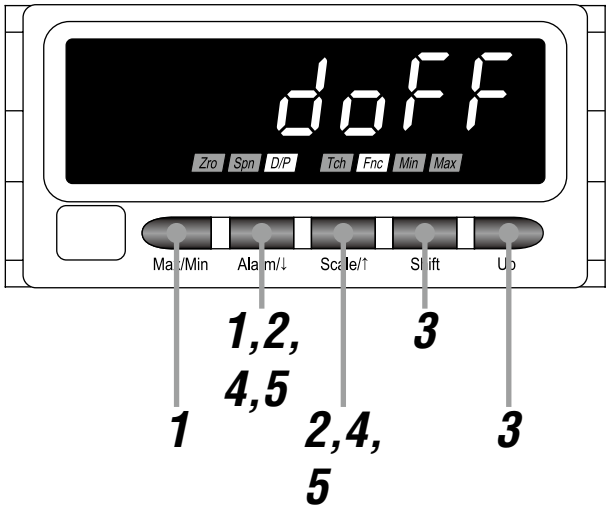
Transition from Measuring Mode to each setting mode can be limited. With this setting, the transition to each mode by holding down the buttons will be disabled. In Lockout Setting Mode, the lockout per mode is selectable.

■ LOCKOUT SETTING

Following 3 lockout settings are available.

PARAMETER	INDICATORS	DISPLAY	FUNCTION	DEFAULT VALUE
Scaling setting lockout	D/P, Fnc	SoFF	Unlock Scaling Setting Mode	SoFF
		S on	Lock Scaling Setting Mode	
Advanced setting lockout		doFF	Unlock Advanced Setting Mode	doFF
		d on	Lock Advanced Setting Mode	
Forced zero lockout		FoFF	Unlock (Enable) Forced Zero operation	FoFF
		F on	Lock (Disable) Forced Zero operation	

10.3.1 OPERATING PROCEDURE



NOTE

- Procedures to lock the advanced setting mode are described here. The procedures to lock other setting modes are same. Select your desired mode to lock in Step 2.
- To cancel the limitation, select 'xOFF' in Step 3.

1 **Hold down Max/Min and Alarm/↓ buttons at once for a preset time duration to move on to Lockout Setting Mode.**

- The scaling setting lockout is indicated.
- 'D/P' and 'Fnc' indicators turn on.

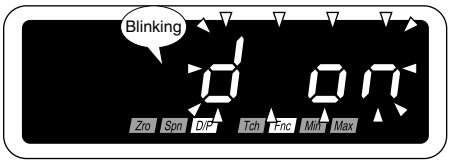
NOTE

'SOFF' or 'S ON' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the advanced setting lockout setting.**

- 'DOFF' is indicated.
- 'D/P' and 'Fnc' indicators turn on.

3 **Press Shift or Up button to select 'D ON'.**



4 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

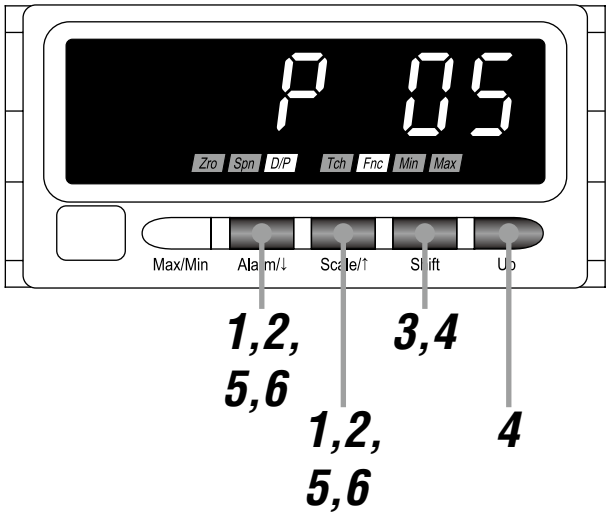
• Press Alarm/↓ button, and the forced zero lockout 'ZOFF' or 'Z ON' will be indicated depending on the setting.
• Press Scale/↑ button, and the scaling setting lockout 'SOFF' or 'S ON' will be indicated depending on the setting.

5 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

10.4 TRANSITION TIME TO LOCKOUT SETTING MODE

Time duration to hold down the buttons for transition to Lockout Setting Mode can be set within the range of 0 to 99 seconds. The default value is 5 seconds.

10.4.1 OPERATING PROCEDURE

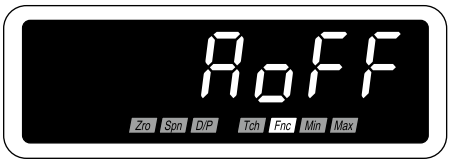


NOTE

The following figures are display examples. The displays depend on the settings.

1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

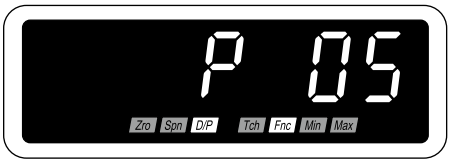


NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the setting of the transition time to Lockout Setting Mode.**

- The transition time to Lockout Setting Mode is indicated.
- 'D/P' and 'Fnc' indicators turn on.

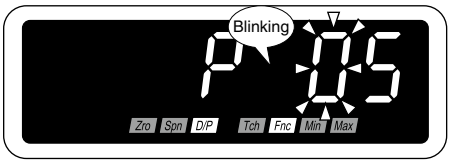


NOTE

The transition time is indicated within the range of 'P 00' to 'P 99' depending on the setting.

3 **Press Shift button to shift the display into the setting standby mode.**

- The second digit starts blinking, to which you can apply changes.



4 **Press Shift and Up buttons to set the transition time to Lockout Setting Mode.**

• Set within the range of 'P 00' to 'P 99'.

5 **Press Alarm/↓ or Scale/↑ button to apply the new setting.**

• And the next parameter setting is indicated.

NOTE

• Press Alarm/↓ button, and the version indication will be indicated.
• Press Scale/↑ button, and the automatic return time to Measuring Mode will be indicated within the range of 'R 00' to 'R 99' depending on the setting.

6 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

11. USER CALIBRATION

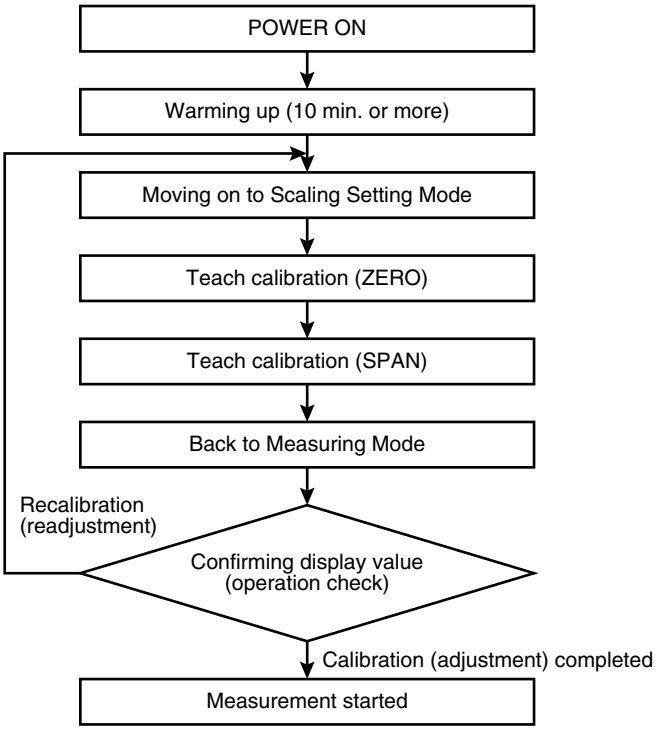
User calibration is calibration by a customer using customer's measuring instruments and standards.
To calibrate (adjust) the input signal, use "Teach Calibration" function.
The unit is calibrated correctly at shipment and therefore there is normally no need for customers to calibrate it.

11.1 TEACH CALIBRATION

You can calibrate the input signal by the Teach Calibration function if you need calibration.
Input scaling value A and B can be adjusted by applying actual input signals.
Please note that we does not warrant the result of your own calibration (adjustment).
The internal calibration data is overwritten every time the unit is calibrated and it is stored even if the power is turned off.
However the data will be lost after an initialization.
Prepare measuring instruments and equipment for calibration by yourselves. Refer to each manual carefully for the instruments and equipment for information on handling them.

11.1.1 TEACH CALIBRATION FLOW

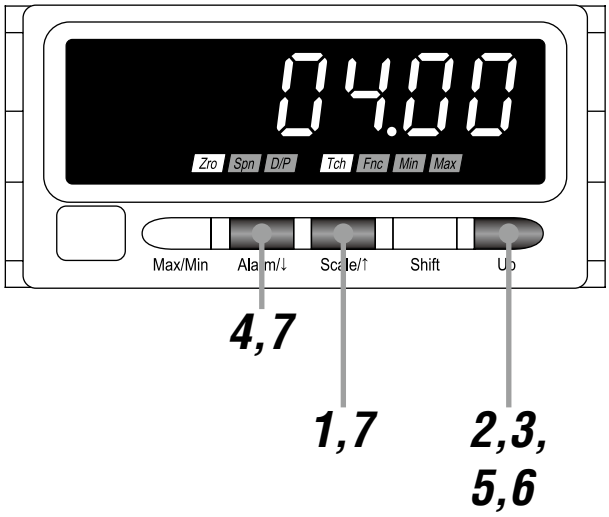
The Teach Calibration is carried out as shown in the following flowchart.



IMPORTANT

- Warm up measuring instruments, equipment and other devices on site for the time specified in each manual, and operate the unit in a stable condition.
- In setting the input scaling values using actual inputs, carry out the Teach Calibration within the setting range per input code. Do not set 'input scaling value A ≥ input scaling value B' in carrying out the Teach Calibration.

11.1.2 OPERATING PROCEDURE



NOTE

The following figures are display examples. The displays depend on the specifications and settings.

1 **Hold down Scale/↑ button for 3 seconds or more to move on to Scaling Setting Mode.**

- The input scaling value A is indicated.
- 'Zro' and 'Tch' indicators turn on.

IMPORTANT

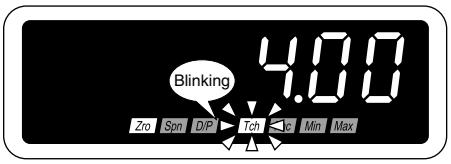
Warm up the unit for 10 minutes or more before carrying out the Teach Calibration.

NOTE

Skip to Step 4 when the teach calibration (ZERO) is not necessary.

2 **Press Up button to go to the teach calibration (ZERO) setting.**

- The present input is indicated.
- 'Tch' indicator starts blinking.



3 **Apply 0% input and press Up button to register the value.**

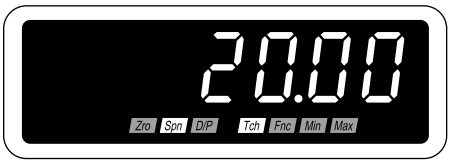
- The teach calibration (ZERO) is registered.
- 'Tch' indicator turns ON.

IMPORTANT

Confirm that the input signal is stable before pressing Up button.

4 **Press Alarm/↓ button twice to go to the input scaling value B setting.**

- The input scaling value B is indicated.
- 'Spn' and 'Tch' indicators turn on.

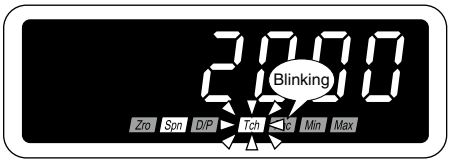


NOTE

Skip to Step 7 when the teach calibration (SPAN) is not necessary.

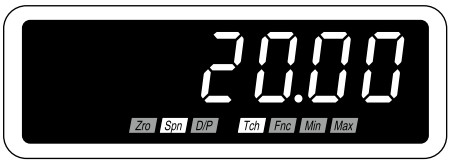
5 **Press Up button to go to the teach calibration (SPAN) setting.**

- The present input is indicated.
- 'Tch' indicator starts blinking.



6 **Apply 100% input and press Up button to register the value.**

- The teach calibration (SPAN) is registered.
- 'Tch' indicator turns ON.



IMPORTANT

Confirm that the input signal is stable before pressing Up button.

7 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

12. INSPECTION / CLEANING

To use the unit in the normal and best conditions, inspect and clean the unit routinely or periodically.

- When the display and the buttons have dirt, wipe them with wet soft cloth. Do not use organic solvent such like benzine, thinner and alcohol. Doing so may result in deformation or discoloration of the unit.
- Make sure that abnormality such like smokes, unusual smell or abnormal noises is not found. Using the unit continuously with such abnormality may result in a fire or electric shock.
- Check the terminal screws periodically. In checking the screws, for safety, interrupt electricity to the power and input.
- Check the terminal block screws periodically. In checking the screws, for safety, interrupt electricity to the power and input.
- Make sure periodically that the mounting brackets are fixed tightly. Loosened brackets may cause drop of the unit.

13. TROUBLESHOOTING

13.1 ERROR MESSAGES

MAIN DISPLAY	ERROR MESSAGE	WHAT TO DO
SErr	Input error, Out of the measuring range	Increase/decrease the input signal until it is back within the measuring range.
i.Err	Non-volatile memory error (reading)	While the error message is on the display, press Up button for 3 seconds or more, go to the lockout setting mode and initialize the unit to its factory default status.*1
uErr	Non-volatile memory error (writing)	

*1 If the unit does not recover its function after the initialization, repairing in the factory may be required.

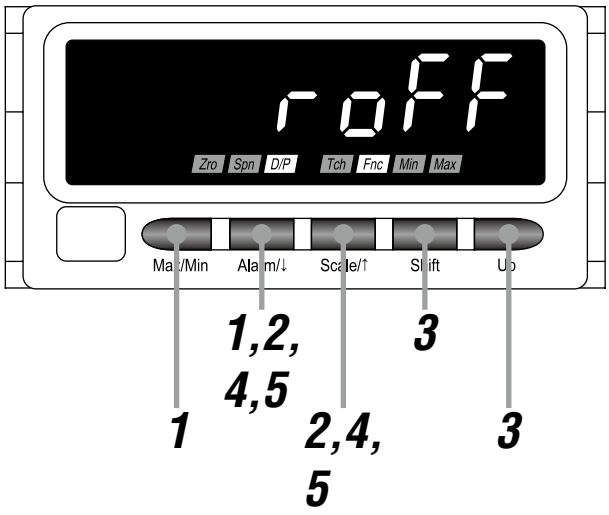
13.2 INITIALIZING SETTING VALUES

To restart setting from the default state, initialization can be used. Refer to attached 14.3 PARAMETER LIST for the default values.

IMPORTANT

- Currently set parameters will be lost after an initialization. It is recommended to record the parameters before initialization.
- Even if the unit is shipped with the specified parameters with the option code '/SET', such parameters will be lost after an initialization. Be careful that the initialization does not recover the ex-factory settings.

13.2.1 OPERATING PROCEDURE



1 **Hold down Max/Min and Alarm/↓ buttons at once for a preset time duration to move on to Lockout Setting Mode.**

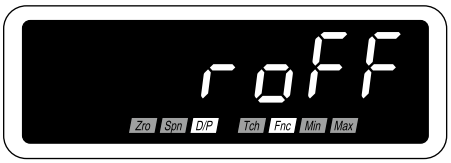
- The scaling setting lockout is indicated.
- 'D/P' and 'Fnc' indicators turn on.

NOTE

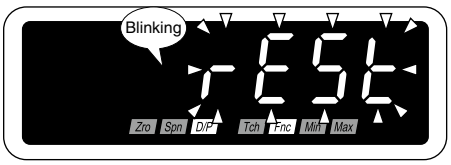
'SOFF' or 'S ON' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the initialization.**

- 'ROFF' is indicated.
- 'D/P' and 'Fnc' indicators turn on.

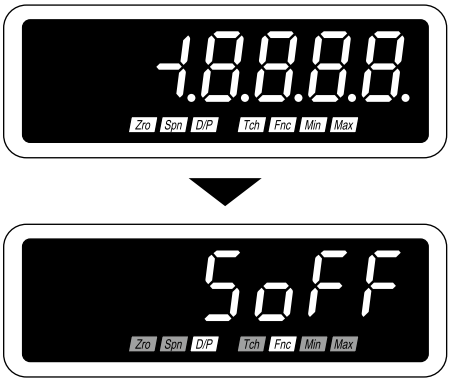


3 **Press Shift or Up button to select 'REST'.**



4 **Press Alarm/↓ or Scale/↑ button to execute the initialization.**

- All the indications turn on for approximately 4 seconds and then the next parameter setting is indicated.



NOTE

- Press Alarm/↓ button, and the scaling setting lockout 'SOFF' will be indicated.
- Press Scale/↑ button, and the forced zero lockout 'ZOFF' will be indicated.

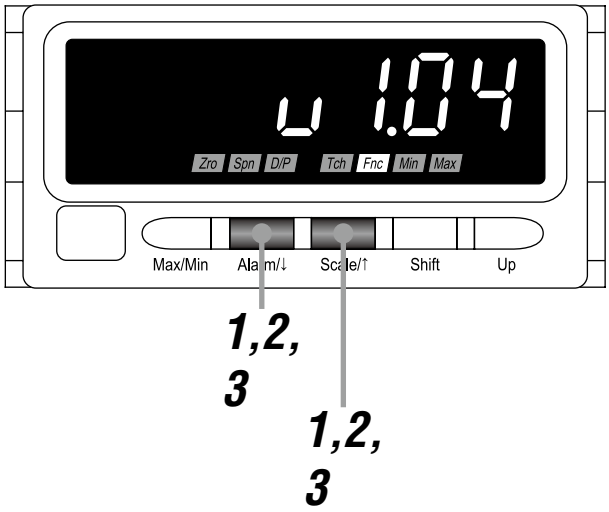
5 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

13.3 CONFIRMING FIRMWARE VERSION

The firmware version of the unit can be confirmed.
Confirm the version in the following cases:

- The display is different from the one described in the operating manual.
- The firmware version is necessary to consult us for troubles.

13.3.1 OPERATING PROCEDURE



1 **Hold down Alarm/↓ and Scale/↑ buttons at once for 3 seconds or more to move on to Advanced Setting Mode.**

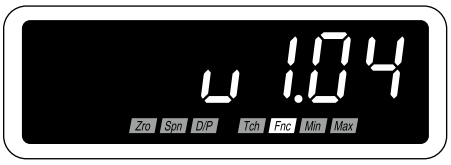
- The moving average sampling No. is indicated.
- 'Fnc' indicator turns on.

NOTE

'AOFF', 'A 2', 'A 4' or 'A 8' is indicated depending on the setting.

2 **Press Alarm/↓ or Scale/↑ button to go to the version indication.**

- The firmware version number is indicated.
- 'Fnc' indicator turns on.



NOTE

The displays depend on the firmware version number.

3 **Hold down Alarm/↓ or Scale/↑ button for 1 second or more to return to Measuring Mode.**

14. APPENDICES

14.1 SPECIFICATIONS

■ GENERAL SPECIFICATIONS

Construction		Panel flush mounting
Degree of protection		IP66; Applicable to the front of the panel meter mounted according to the specified panel cutout.
Connection		M3 separable screw terminal (torque 0.6 N·m)
Screw terminal		Nickel-plated steel (standard) or stainless steel
Housing material		Flame-resistant resin (gray)
Isolation		Input to power
Setting (front button)	Scaling setting mode	Input scaling value A, input scaling value B, display scaling value A, display scaling value B, decimal point position
	Advanced setting mode	Moving average, low-end cutout, low-end cutout value, brightness, automatic return time to Measuring Mode, transition time to Lockout Setting Mode, version indication
	Lockout setting mode	Scaling setting lockout, advanced setting lockout, forced zero lockout, initialization
Read rate		40 times/sec. (25 msec.)
Averaging		None or moving average
Lockout setting		Prohibiting certain operations; protecting settings

■ DISPLAY

Display	16 mm (.63) high, 4 ½ digits, 7-segment LED
Display range	-19999 to 19999
Decimal point position	10^{-1}, 10^{-2}, 10^{-3}, 10^{-4}, or none
Zero indication	Higher-digit zeros are suppressed
Over-range indication	'-19999' or '19999' blinking for display values out of the display range 'S.ERR' and 'Min' or 'Max' blinking when the input signal is out of the usable range
Function indicators	Zro, Spn, D/P, Tch, Fnc, Min, Max Display mode status and operation status, amber ON or blink

■ INPUT SPECIFICATIONS

Measuring range	Current	Input code: A	4 – 20 mA DC
		Input code: D	0 – 20 mA DC
	Voltage	Input code: 5	0 – 5 V DC
		Input code: 6	1 – 5 V DC
		Input code: 4W	-10 – +10 V DC
		Input code: 5W	-5 – +5 V DC
Measurable range		-10 – +110%	
Input resistance	Current	Input code: A	Approx. 10 Ω
		Input code: D	Approx. 10 Ω
	Voltage	Input code: 5	1 MΩ minimum
		Input code: 6	1 MΩ minimum
		Input code: 4W	1 MΩ minimum
		Input code: 5W	1 MΩ minimum

■ INSTALLATION

Power consumption	AC power	100 – 240 V AC	Operational voltage range 85 – 264 V AC, 50/60 Hz Approx. 4 VA
	DC power	24 V DC	Operational voltage range 24 V DC ±10% Ripple 10% p-p max. Approx. 2 W
		110 V DC	Operational voltage range 85 – 150 V DC Ripple 10% p-p max. Approx. 2 W
Operating temperature		-10 to +55°C (14 to 131°F)	
Operating humidity		30 to 90% RH (non-condensing)	
Mounting		Panel flush mounting	
Weight		250 g (0.55 lb)	

■ PERFORMANCE

Accuracy	±0.1% ±1 digit
Temp. coefficient	±0.015%/°C (±0.008%/°F)
Input resolution	Max. 16 bits
Line voltage effect	±0.1% over voltage range
Insulation resistance	≥ 100 MΩ with 500 V DC
Dielectric strength	2000 V AC @ 1 minute (input to power to ground)

■ STANDARDS & APPROVALS

EU conformity	EMC Directive EMI EN 61000-6-4 EMS EN 61000-6-2 Low Voltage Directive EN 61010-1 Installation Category II Pollution Degree 2 Input to power: Reinforced insulation (300 V) RoHS Directive
Protection against access to the terminal blocks	Finger protection (VDE 0660-514)

14.2 MODEL NUMBERING

Code number: **47LYV–[1][2]–[3][4]**

[1] INPUT

Current

A: 4 – 20 mA DC (input resistance approx. 10 Ω)

D: 0 – 20 mA DC (input resistance approx. 10 Ω)

Voltage

5: 0 – 5 V DC (input resistance 1 MΩ min.)

6: 1 – 5 V DC (input resistance 1 MΩ min.)

4W: -10 – +10 V DC (input resistance 1 MΩ min.)

5W: -5 – +5 V DC (input resistance 1 MΩ min.)

[2] DISPLAY COLOR

R: Red

YR: Orange

[3] POWER INPUT

AC Power

M2: 100 – 240 V AC (operational voltage range 85 – 264 V, 50/60 Hz)

DC Power

R: 24 V DC (operational voltage range 24 V ±10%, ripple 10% p-p max.)

P: 110 V DC (operational voltage range 85 – 150 V, ripple 10% p-p max.)

[4] OPTIONS

Blank: None

/Q: With options (specify the specification)

■ SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)

Moving parts and indicators are not coated.

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet (No. ESU-9514)

14.3 PARAMETER LIST

MODE	PARAMETER	SETTING RANGE	INDICATOR	DISPLAY	DEFAULT VALUE	DECIMAL POINT POSITION	UNIT
Measuring	Present value	-19999 – 19999	----	----	----	*1	User-defined
	MAX value	-19999 – 19999	Max	----	----	*1	User-defined
	MIN value	-19999 – 19999	Min	----	----	*1	User-defined
	Forced zero	-19999 – 19999	Zro, Fnc	----	----	*1	User-defined
Scaling setting	Input scaling value A	A: 4.00 – 20.00	Zro, Tch	04.00 to 20.00	04.00	----	mA DC
		D: 0.00 – 20.00		00.00 to 20.00	00.00		
		5: 0.000 – 5.000		0.000 to 5.000	0.000		V DC
		6: 1.000 – 5.000		1.000 to 5.000	1.000		
		4W: -10.000 – 10.000		-10.000 to 10.000	10.000		
		5W: -5.000 – 5.000		-5.000 to 5.000	-5.000		
	Display scaling value A	-19999 – 19999	Zro, DP	-19999 to 19999	A: 04.00	*1	User-defined
					D: 00.00		
					5: 0.000		
					6: 1.000		
					4W: 10.000		
					5W: -5.000		
	Input scaling value B	A: 4.00 – 20.00	Spn, Tch	04.00 to 20.00	20.00	----	mA DC
		D: 0.00 – 20.00		00.00 to 20.00	20.00		
		5: 0.000 – 5.000		0.000 to 5.000	5.000		V DC
		6: 1.000 – 5.000		1.000 to 5.000	5.000		
		4W: -10.000 – 10.000		-10.000 to 10.000	10.000		
		5W: -5.000 – 5.000		-5.000 to 5.000	5.000		
	Display scaling value B	-19999 – 19999	Spn, DP	-19999 to 19999	A: 20.00	*1	User-defined
					D: 20.00		
					5: 5.000		
					6: 5.000		
					4W: 10.000		
					5W: 5.000		
	Decimal point position	No decimal point, or 10^{-1} to 10^{-4}	DP	19999, 19999, 19999, 19999, 19999	A: 20.00	----	----
					D: 20.00		
					5: 5.000		
					6: 5.000		
					4W: 10.000		
					5W: 5.000		
	Teach calibration (ZERO)	----	Zro, Tch	----	----	----	----
	Teach calibration (SPAN)	----	Spn, Tch	----	----	----	----

*1 Conforms to decimal point position setting.

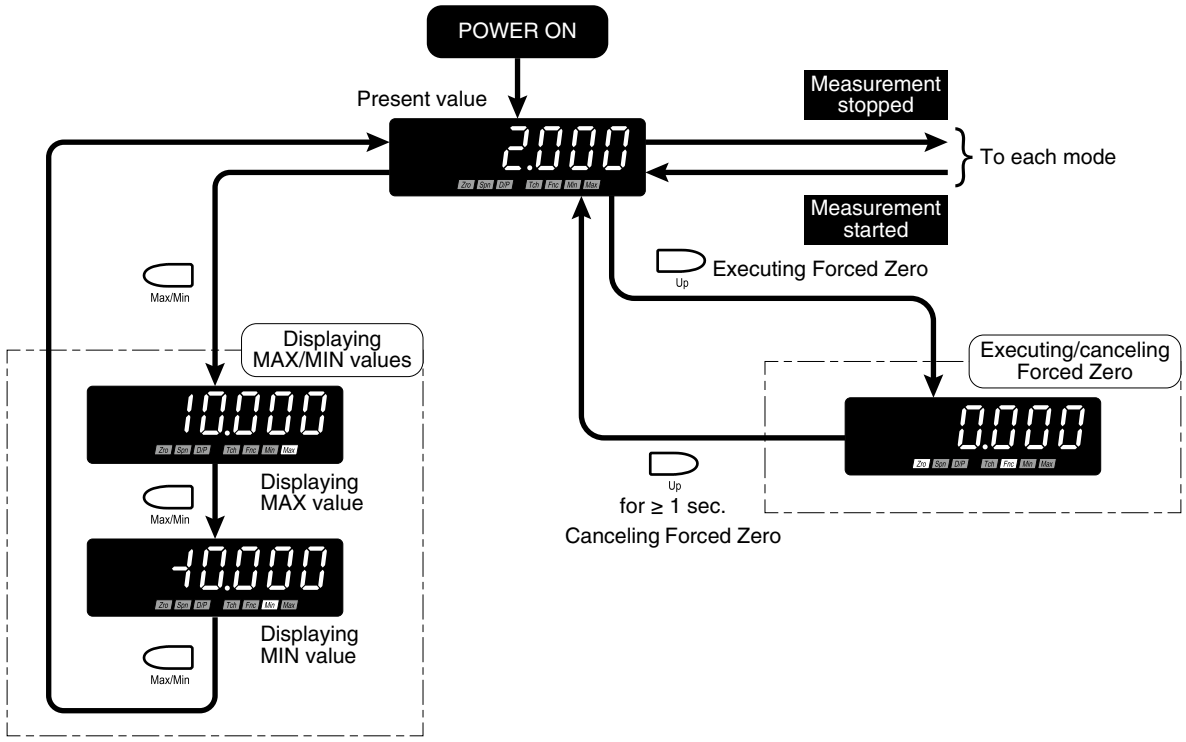
NOTE 1: INDICATOR: □ = ON, [ ] = Blinking
NOTE 2: A, D, 5, 6, 4W and 5W in the columns of SETTING RANGE and DEFAULT VALUE in Scaling Setting Mode show input codes.

MODE	PARAMETER	SETTING RANGE	INDICATOR	DISPLAY	DEFAULT VALUE	DECIMAL POINT POSITION	UNIT
Advanced setting	Moving average	None, 2, 4, 8	Fnc	AoFF, A 2, A 4, A 8	AoFF	----	Sample
	Low-end cutout	OFF, ON	Fnc	LoFF, L on	LoFF	----	----
	Low-end cutout value	00 – 99	Zro, Fnc	L 00 to L 99	L 00	----	User-defined
	Brightness	1 (dark) to 5 (bright)	D/P, Fnc	C 1, C 2, C 3, C 4, C 5	C 3	----	----
	Automatic return time to Measuring Mode	00 (automatic return disabled) 01 – 99	D/P, Fnc	r 00 to r 99	r 15	----	Second
	Transition time to Lock-out Setting Mode	00 – 99	D/P, Fnc	P 00 to P 99	P 05	----	Second
	Version indication	----	Fnc	----	----	----	----
Lockout setting	Scaling setting lockout	OFF, ON	D/P, Fnc	SoFF, S on	SoFF	----	----
	Advanced setting lockout	OFF, ON	D/P, Fnc	doFF, d on	doFF	----	----
	Forced zero lockout	OFF, ON	D/P, Fnc	ZoFF, Z on	ZoFF	----	----
	Initialization	OFF, initialization	D/P, Fnc	roFF, rESt	roFF	----	----

NOTE 1: INDICATOR: ☐ = ON, ▯ = Blinking

14.4 PARAMETER MAP

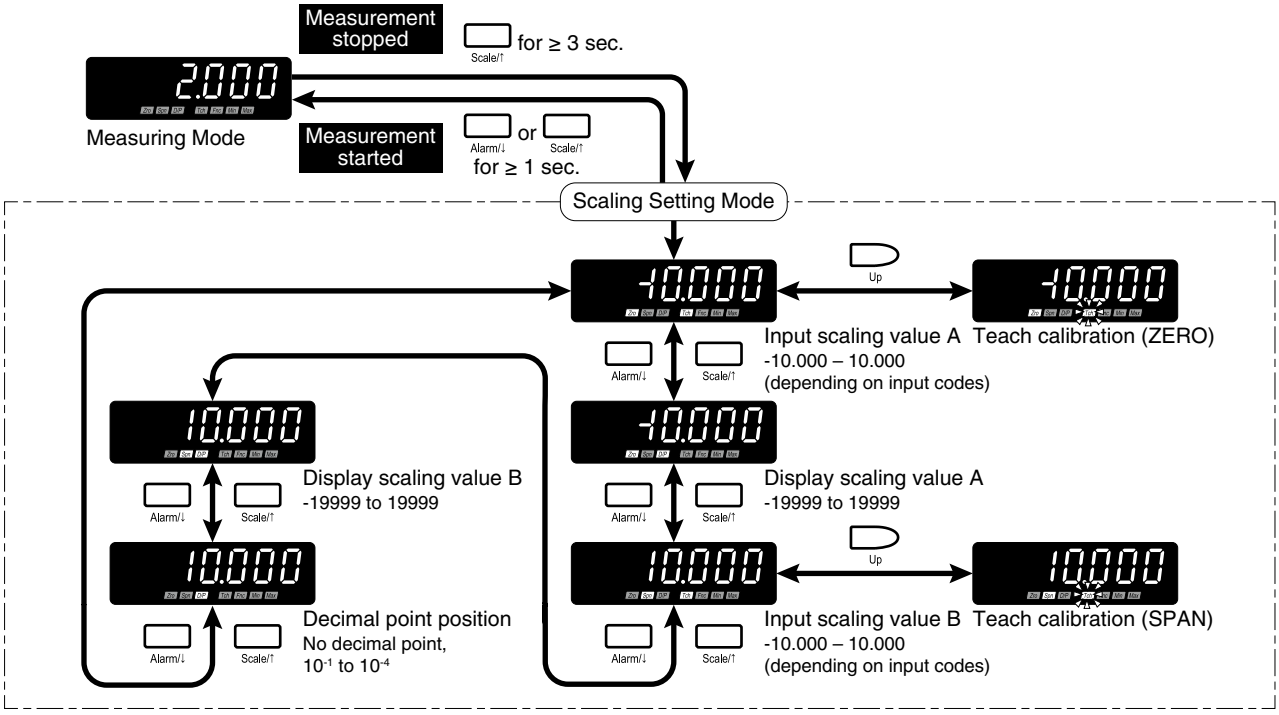
14.4.1 OPERATION IN MEASURING MODE



NOTE

- The display depends on the specifications, settings and input.
- Forced zero cannot be executed or canceled when the operation is disabled with the forced zero lockout setting.

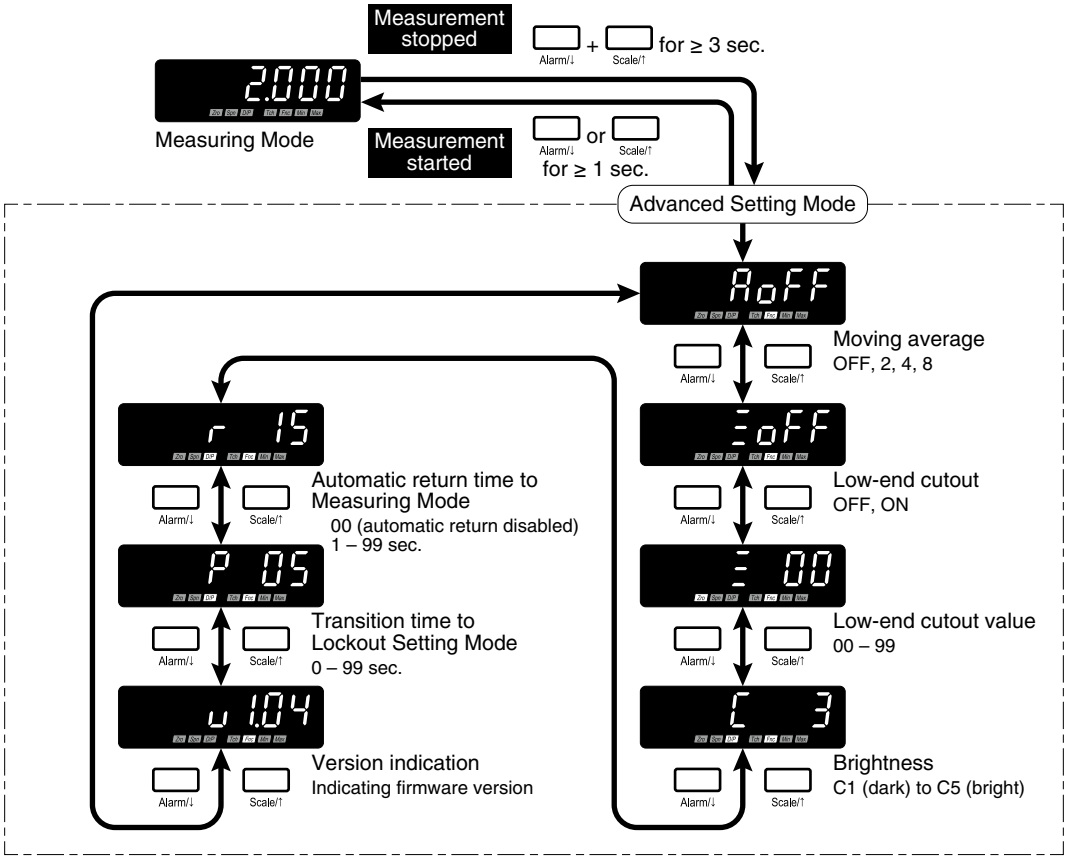
14.4.2 SCALING SETTING MODE



NOTE

The display depends on the specifications, settings and input.

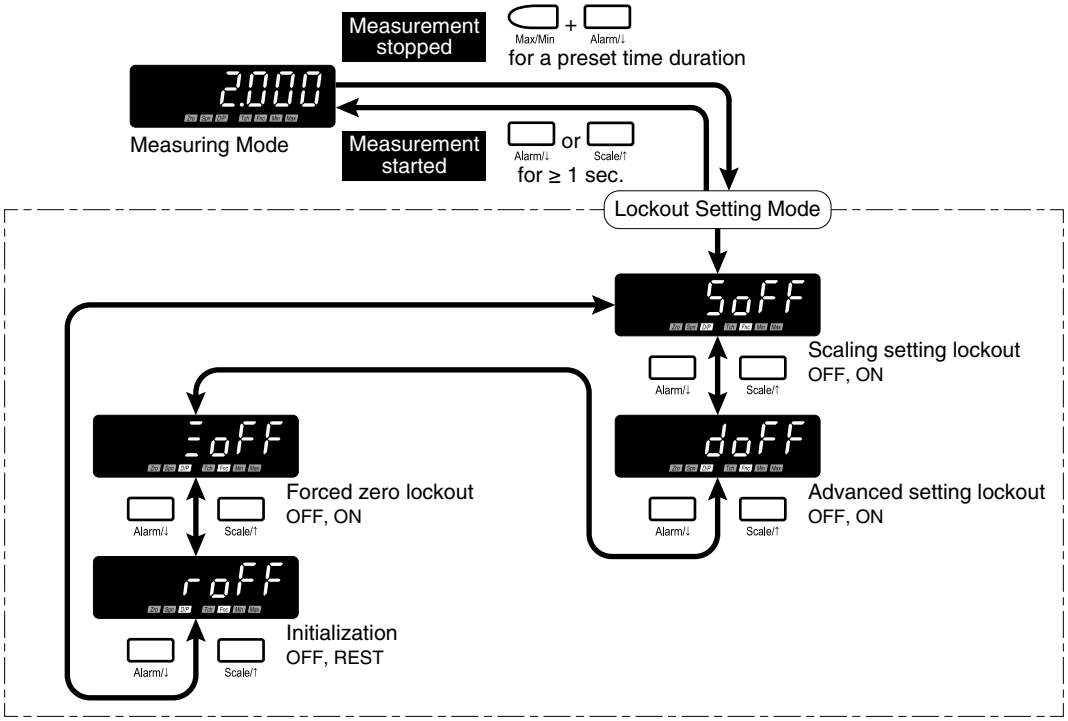
14.4.3 ADVANCED SETTING MODE



NOTE

- The display depends on the specifications, settings and input.
- With the low-end cutout set to OFF, the low-end cutout value setting is locked.
- Version indication is for indication only, not for setting.

14.4.4 LOCKOUT SETTING MODE

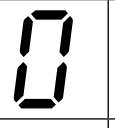
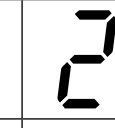
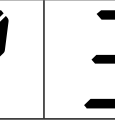
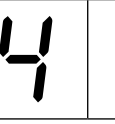
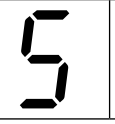
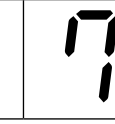


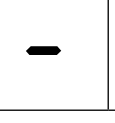
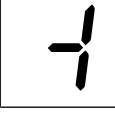
NOTE

The display depends on the specifications, settings and input.

14.5 CHARACTER SET

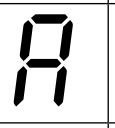
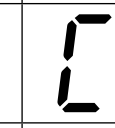
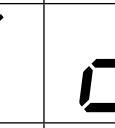
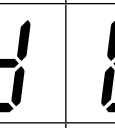
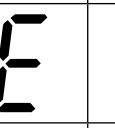
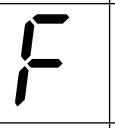
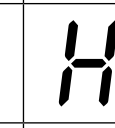
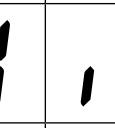
■ NUMERALS AND NEGATIVE SIGN

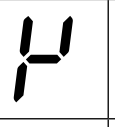
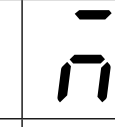
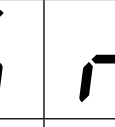
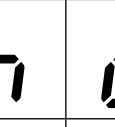
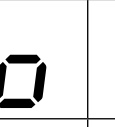
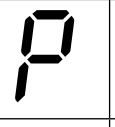
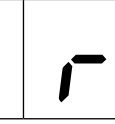
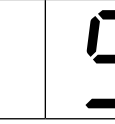
0	1	2	3	4	5	6	7	8	9
									

-	-1*1
	

*1 Indication when the fifth digit is '-1'.

■ ALPHABET

A	B	C	D	E	F	G	H	I	J
									

K	L	M	N	O	P	Q	R	S	T
									

U	V	W	X	Y	Z