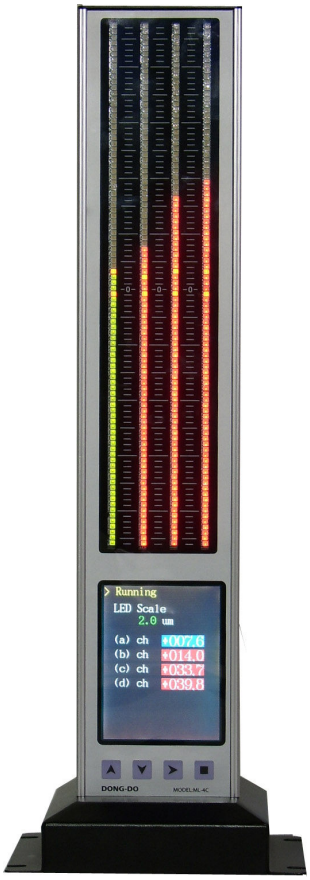
4 Channel Column User's Manual



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TO START

Immediately after turning on the power switch at the lower parts of the Instrument, following displays will appear on the screen breifly, then the graphic measure display will appear. Choose ■ **Key(ESC)**, then **>Main Menu** display will be shown.

※ There are no "HiLoInput" and "Cali-Gain" menu in case of probe type.

Figure 1.

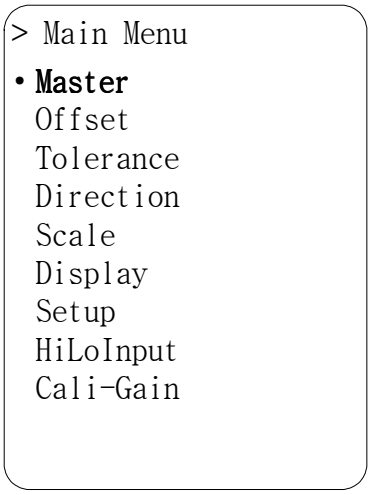

Figure 2.

There are four types of push buttons at the front side switch board, namely, **▲(UP)**, **▼(DOWN)**, **▶(SELECT)**, **■(ESC)**.

☞ Basic Functions

▲ ▼ : To move to a menu or an item

▶ : To select a menu or an item

■ : To move to a upper menu, or to escape from an item
(In the main menu, it is used for switching to a measurement mode, or to call up the main menu)

☞ Expansion Functions

▶ + ▲ : To enter and increase the values of correction, tolerance and others by a notch of 10.

▶ + ▼ : To enter and decrease the values of correction, tolerance and others by a notch of 10.

▶ + ● : To enter "0" values for correction, tolerance and others.

ABOUT THE MASTER SETTING METHODS

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Master**, and press ▶ Key, then **>> Master** display will show up as follows.

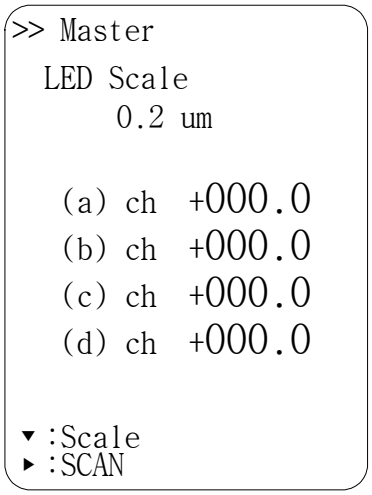

Figure 3.

Data shown at this time are the absolute values of measured probe, which has been master-set previously. When you wish to master-set again, press **▶key(SCAN)** to confirm the status of measure probe(within ± 100um), and then press **▶key(ZERO)** to enter "0" for present measure probe value. This completes the master-setting.

The function of **▼key(Scale)** as shown on Fig.3, is the same as that will be explained later but it is valid in this menu only.

ABOUT THE MASTER OFFSET

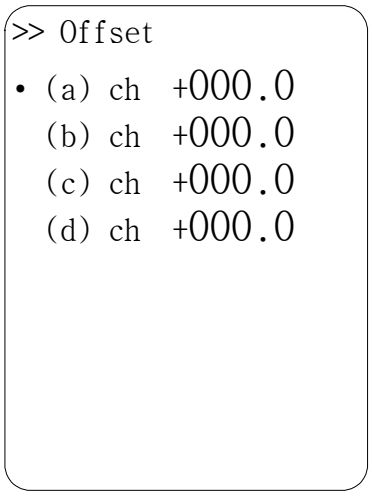

Figure 4.

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Offset**, and press ▶ key, then **>> Offset** display will show up as follows.

The data displayed at this time are the OFFSET data, which have been set up previously.

As shown on the left side display, move ▶ to the desired item and press ▶ key to change the offset values. For offset set-up, **▲(Up)** and **▼(Down)** keys are used. Every time when they are pressed, they are increased or decreased by one. After the correction, press ▶ key to complete. If the wanted offset values are large, hold ▶ key down, and press **▲(Up)** or **▼(Down)** keys, then values will increase or decrease by large values.

ABOUT THE SETTING-UP OF TOLERANCE VALUES

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Tolerance**, and press ▶ key, then **>> Tolerance** display will show up as follows.

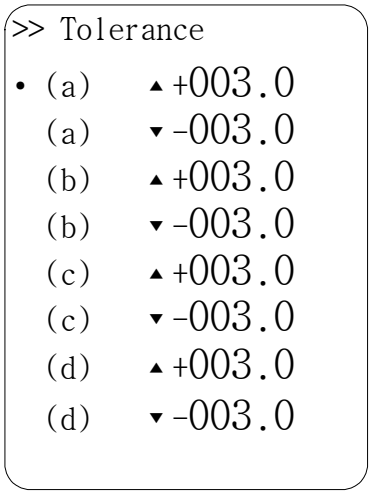

Figure 5.

As shown on the left side display, move ▶ to the desired item and press ▶ key to change the tolerance values. For tolerance set-up, **▲(Up)** and **▼(Down)** keys are used. Every time when they are pressed, they are increased or decreased by one. After the correction, press ▶ key to complete. If the wanted correction values are large, hold ▶ key down, and press **▲(Up)** or **▼(Down)** keys, then values will increase or decrease by large values.

ABOUT THE ELECTRIC DIRECTION OF PROBE

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Direction**, and press ▶ key, then **>> Direction** display will show up as follows.

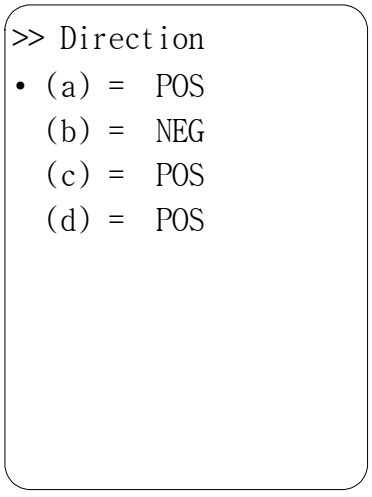

Figure 6.

As shown on the left side display, by using **▲(Up)** and **▼(Down)** keys, move • mark to the desired item, and press ▶ key, then **POS** will change to **NEG**, and **NEG** to **POS**.

※Note : If they are changed, the master-setting has to be done again.

ABOUT THE SCALE

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Scale**, and press ▶ key, then **>> Scale** display will show up as follows.

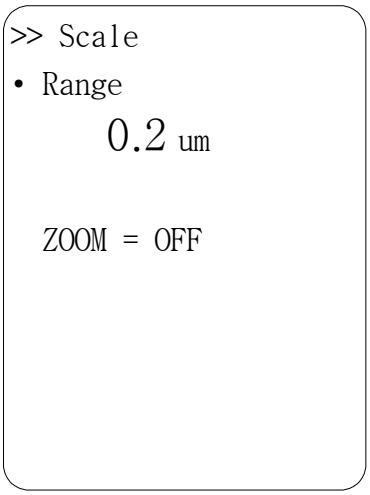

Figure 7.

As shown on the left side display, move • mark to the front of **Range** and press ▶ key to change the Scale Range values. Every time when it is pressed, they are increased as following sequence, 0.1, 0.2, 0.4, 1.0, 2.0, 4.0, 10.

A scale on LED BAR indicates 1um when **Range** value is ±1.0um, if Range value is ±0.2, a scale indicates 0.2um.

When **ZOOM** is **OFF** the LED bar will show it's measured value with previously set range. When **ZOOM** is **ON** the Range will be variable to show its measured value on LED bar.

ABOUT THE DISPLAY MODE OF LED BAR

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Display**, and press ▶ key, then **>> Display** display will show up as follows.

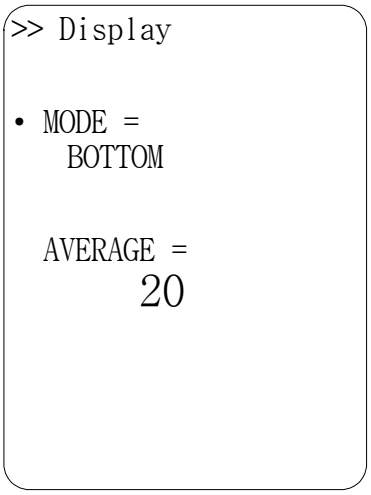

Figure 8.

As shown on the left side display, by using **▲(Up)** and **▼(Down)** keys, move • mark to the desired item, and press ▶ key, then content will change.

There are two **MODE**s which are **CENTER**(the way goes out to the edge from the center) and **BOTTOM**(the way fills from the bottom to up).

AVERAGE determines the times of measurement to display result value. For example, LCD display average value that be measured 20 times internally when average is 20.

ABOUT THE TIME SETUP

As shown on Fig.2, by using **Up/Down** keys, move • mark to the front of **Setup**, and press ▶ key, then **>> Setup** Menu display will show up as below.

Then move • mark to **Time**, and press ▶ key, then **>>> Time** display will show up as below.

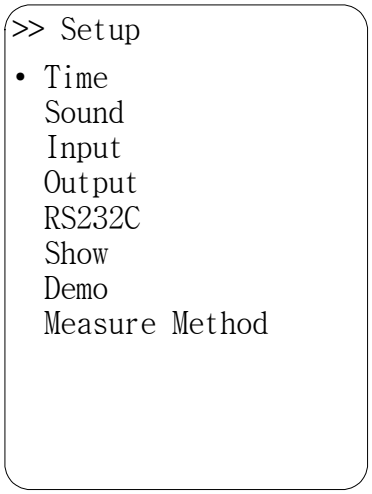

Figure 9.

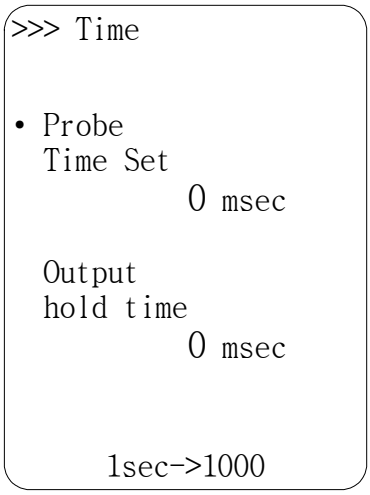

Figure 10.

Here, **Probe Time Set** is the waiting time needed until the values of measure probe can be read after it is started by external input, such as PLC, and **Output hold time** is the value which determines the output pulse width of external output signals(**OK,NG**) after measuring is completed.

The meaning of each default value, "**100 500**" is that the probe stable time is 100msec, and that the output pulse width is 500msec.

If Output hold time is 0, output signal will be kept on.

ABOUT THE SOUND

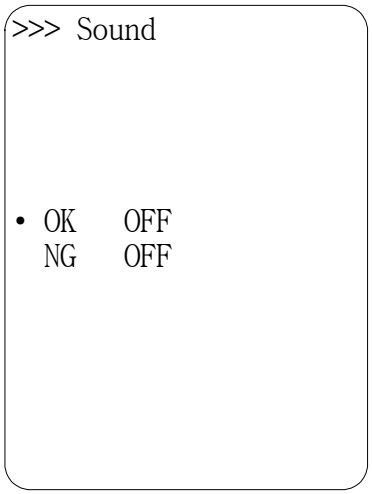

Figure 11.

As shown on Fig.9, by using **Up/Down** keys, move ▶ to **Sound**, then press ▶ key to display **>>> Sound** screen, as shown on the left.

As shown on the left display, by using **▲(Up)** and **▼(Down)** keys, move • mark to the desired item, and press ▶ key, then **ON** will change to **OFF**, and **OFF** to **ON**.

ABOUT THE INPUT MODE

As shown on Fig.9, by using **Up/Down** keys, move • mark to **Input**, and press ▶ key, then **>>>Input** display will show up as follows.

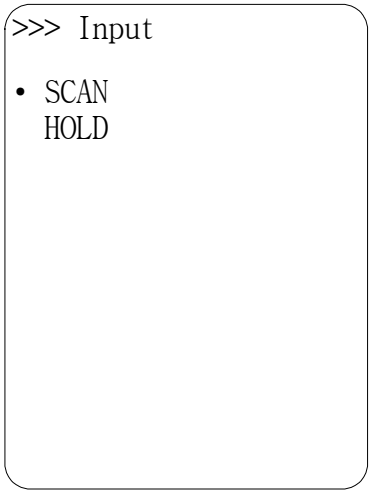

Figure 12.

If **SCAN** is selected, values of PROBE will be displayed on the LCD screen and on the LED BAR regardless of measure START signal. Also, the measure OK/NG output signal will be operating continuously.

In case that **HOLD** is selected, it will measure only when START signal is received and LCD display measured value only.

At this point OK/NG output signal will be changed by Output hold time. If it is zero, output signal will be kept such as scan. If it is nonzero, output signal will be off after OK/NG signal be maintained until output hold time.

ABOUT THE OUTPUT MODE

As shown on Fig.9, by using **Up/Down** keys, move • mark to **Output**, and press ▶ key, then **>>>Output** display will show up as follows.

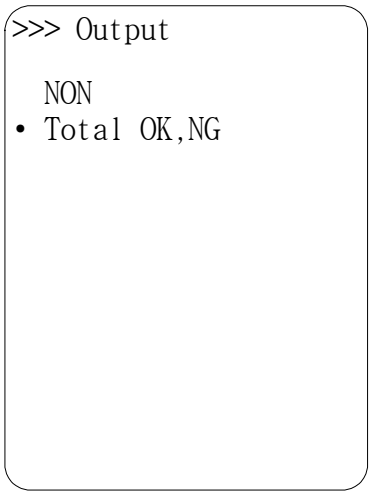

Figure 13.

Fig.14 shows the items for setting up the external output methods, and **NON** means that there is no output.

The theory of **Total OK, NG** is four channels are all ouput okay is **OK**, one of them is NG is **NG**

ABOUT THE RS232C MODE

As shown on Fig.9, by using **Up/Down** keys, move • mark to **RS232C**, and press ▶ key, then **>>>RS232C** display will show up as follows.

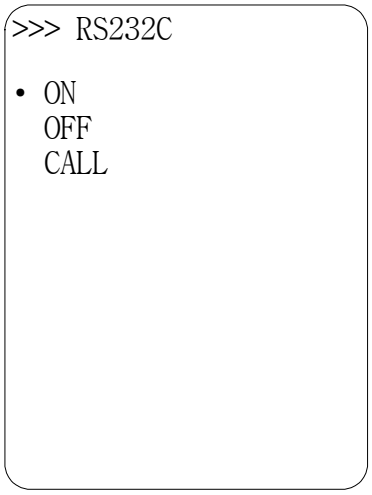

Figure 14.

In case of serial communication mode is **ON**, the serial output is dependent on input mode.

For example, when input mode is **SCAN**, sending serial output continuously. When input mode is **HOLD**, sending serial output when outer input start signal is active high.

Also, in case of communication mode is **OFF**, not sending serial output and serial communication mode is **CALL**, without input mode, sending serial output when outer input Start signal is active high.

ABOUT THE SHOW MODE

As shown on Fig.9, by using **Up/Down** keys, move • mark to **Show**, and press ▶ key, then **>>>Show** display will show up as follows.

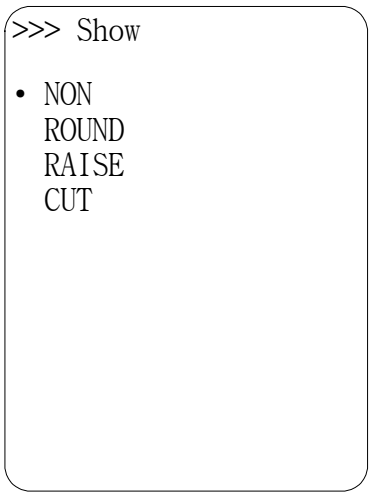

Figure 15.

When it needs to be calculated the average values which have been measured continuously three of four times, the treatment of values below decimal point can be determined externally. You can select from **NON**(for calculation as is), **ROUND**, **RAISE**, or **CUT**.

ABOUT THE SETTING-UP OF MEASUREMENT MODE

As shown on Fig.9, by using **Up/Down** keys, move • mark to **Measure Method**, and press ▶ key, then **>>> Measuring** display will show up as follows.

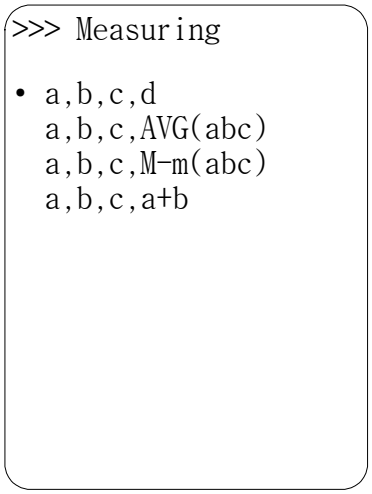

Figure 16.

Move • mark to the desired item and press ▶ key.

a,b,c,d : Measure channel 1~4 separately.

a,b,c,AVG(abc) : Measure channel 1~3 and channel 4 indicates average value of channel 1~3.

a,b,c,M-m(abc) : Measure channel 1~3 and channel 4 indicates difference between max. and min. value among channel 1~3.

a,b,c,a+b : Measure channel 1~3 and channel 4 indicates sum of channel 1, channel2.

MASTER SETTING WHEN USING A/E UNIT

As shown on Fig.2, by using **Up/Down** keys, move • mark to **HiLoInput**, and press ▶ key, then **>> InputHiLo** display will show up as follows.

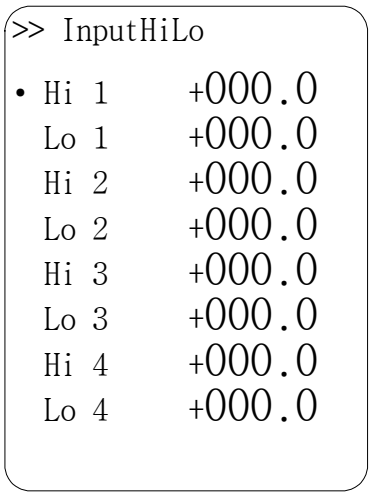

Figure 17.

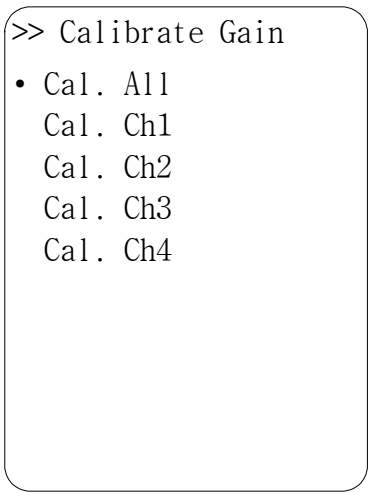

Figure 18.

As shown on the left side display, move • mark to the desired item(**Hi** or **Lo**), then setup the wanted value.

Master setting is not complete when the values of Master(**Hi** and **Lo**) are equal. And also value of **Lo** Master must be smaller than value of **Hi** Master.

As shown on Fig.2, by using **Up/Down** keys, move • mark to **Cali-Gain**, and press ▶ key, then **>> Calibrate Gain** display will show up as follows.

This is the automatic gain evaluation function which displays the difference between the internal scanned master values and user's input value in the same ratio.

Therefore, in order to gain the output value "Y" from the equation 'Y=aX+b', even if 'X' changes, 'a' and 'b' can still compensate.

Cal.All is using master setting of all channels at once, **Cal.Ch1~4** is using master setting of each channel separately.

※ *There are no master setting of two cases.*

1. In HiLoInput menu, Hi and Lo master is zero.
2. Lo master is greater than Hi master.

In state, Ch.1 is master setting in zero, if you choose **Cal.All**, you can't see setting value of Ch.1. Choosing **Cal. Ch1**, there is a message appeared, setting Hi, Lo master value.

Confirm the checkpoint and process the next stage.

Push **▲(Up)** key after insert a probe into High Master then the value of High Master will be recognized with buzzer. Low Master is similar to the High Master. Push **▼(Down)** key after insert a probe into Low Master then the value of Low Master will be recognized with buzzer.

Confirm several times, master value is indicate rightly. If thare is no error, push ■ button and escape menu. It is wrong master setting, if you push the ■ button, red warnig message is appeared in screen below. This case, you push the ▶ key, erase master value and push ■ button escape menu.