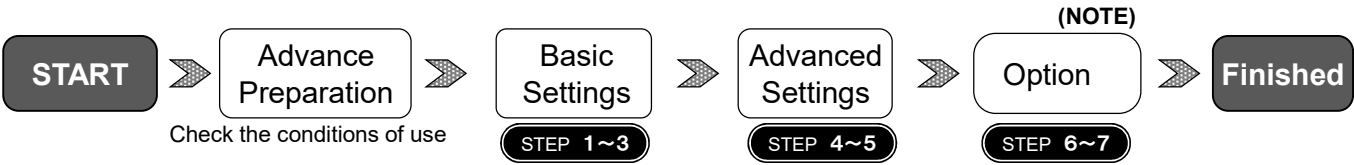


LY71

Initial Setup Manual



INITIAL SETUP FLOW



NOTE: Not required if the option is not used

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Preparations before making the initial settings (1/3)

By confirming the conditions of use in advance, the setting operation can be performed easily.
Let's start with the basic settings.

Basic Settings Items

Items	Indication default	Description	Settings
Master calibration 		When the power is turned on, the system automatically waits for the home position detection and automatically reproduces the reference position of the master block. It is necessary to adjust the reference position of the master block once before the power is turned on.	OFF: Useless ON : Effective:
Input axis 		Select how to display the number of scale axes to be connected. When you select " 2-axes addition / subtraction function ", select the polarity (+/-) of each axis as well. (NOTE)	1: 1st axis 1 Add 2: 1st axis + 2nd axis 1 Add -2: 1st axis-2nd axis -1 Add 2: 2nd axis-1st axis -1Add-2: -1st axis-2nd axis
Destination country 		Please select the region to be used. (Displayable units)	STD: General Area  US: U.S.A.  JPN: Japan 
Measuring unit resolution 		Set the resolution output from the measurement unit to be used for each axis. The resolutions that can be selected are length and angle. Expanded selections increase the number of options.	Length: 0.05 to 100μm *See Table 1,2 and 3 or Angle: 1 second to 1 degree *Angular resolution (1sec to 1 degree) when using a rotary scale

NOTE: When the comparator unit (LZ71-KR) is connected, the 1st and 2nd axes cannot be displayed independently.
When using 2 axes, the display will be added.

Table1: Length scale output resolution

Measuring Unit	Output resolution	connection cable	Adapter *
SR-1711 SR-1711R	0.5μm	HK-**C HK-**CR	SZ05-T01
SR801/ MSS-101 SR801R	0.5μm	HK-1**C HK-2**C	SZ05-T01
SR801/ MSS-101 SR801R	0.5μm	CE07-**C	SZ51-MS01 + SZ70-1
SR10 / SR30 / SR50 SR50-R	0.5μm	HK-4**C HK6-**CR	SZ05-T01
SR118	0.5μm	CE05-**C CH02-**	DZ51 + SZ70-1
SR108 SR107	0.5μm		SZ51-MS01 + SZ70-1
SR128	0.5μm	CH01-**C	SZ70-1
SR128 / SR127	0.5μm	CH01-LW**C	SZ51-MS01 + SZ70-1
SR138R(GB-ER)	0.5μm	CH04-03C	

Table 2: Digiruler output resolution

Measuring Unit	Output resolution	Adapter/ conversion cable	Adapter *
SL110 SL130	10μm	PL20B	SZ70-1
SL110 SL130	10μm	PL20C	
SJ300	1μm	CH33-**CPD/CED	
SJ700	5μm		SZ70-1
SJ700A	5μm		

Table3: Digital gage output resolution

Measuring Unit	Output resolution	Adapter/ conversion cable	Adapter *
DG	0.5μm		SZ05-T01
DG-B	0.5μm	DZ-51	SZ70-1
DL310B/330B	10μm	DZ-51	SZ70-1
DK series	0.1μm or 0.5μm	CE29-**	

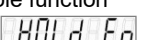
* For adapter information, refer to Appendix 2 Adapter Connection in this Manual

Preparations before making the initial settings (2/3)

Check the usage conditions for Advanced Settings.

(Since the setting conditions can be changed later, use the default values to skip items for which the conditions have not been confirmed)

Advanced Settings Items

Items	Indication default	Description	Settings
Display at Power-ON 		You can select the display when the power is on. If you select "LY", "LY" appears on the display when the power is momentarily cut off.	COUnT: count display LY: "LY" display
Display resolution and polarity 		Sets the resolution to be displayed for each axis. A value lower than the input resolution cannot be set. Selects the value for each axis, including the polarity (+/-). * The initial value is the measurement unit resolution set in the basic settings.	Length: 0.05 to 100μm or Angle: 1 second to 1 degree
Display axis and display data 	A axis  B axis  C axis 	Set the display contents of the upper axis and middle axis when the power is turned on (current value, maximum value, minimum value, P-P) * Addition display can be used when 2 axes are connected. Also, when the comparator unit (LZ71-KR) is connected, the 1st and 2nd axes cannot be displayed independently. Also, when using 2 axes, only the addition display is displayed.	Input axis: 1: No.1, - 2: No.2 Add : (addition ⇒ No.1.+No.2) - --: Do not display Displayed data: Current value Maximum value Minimum value P-P value
Scaling 		Displayed by multiplying the measured value by the magnification	0.1 times to about 10 times
Linear compensation 		Linear compensation value per meter of length	±600μm/m *Expanded selections ±1000μm/m
Hole function 		Select a function for hold operation (operation key or external input).	LATCH: Latch function PAUSE: Pause function
General-purpose input 		One external signal input is assigned to display A, B and C axes. Several functions can be operated by external signals, but only one function can be operated, so it is necessary to select the function to be operated externally beforehand.	Hold Restart Display switching Origin Road
General-purpose output 		Two external signal outputs can be assigned to each of the display A and B axes. Select which function or which state to set.	Alarm default Display mode default Home passage signal Reference point Alarm INC zero point passing signal
Key lock 		This function stops the acceptance of key operations to prevent accidental operation. After setting this function, only certain keys can be used. A password (1793) is required to disable this function.	OFF: No key lock ON: Key lock
Current value store 		Select whether to display the previous value when the power is turned on. When using the master calibration function in the basic settings, it does not work even if it is turned on.	OFF: Don't save the current value ON: Save the current value
Flicker control 		Flickering of the smallest displayed digit can be suppressed. Set the level of flicker suppression. NOTE: Use "OFF" when using BCD output.	OFF: Function stop 1: Weak 2: Strong
Sleep 		The display turns off when there is no movement of the length measurement unit or key operation for a certain period of time while the power is on. It will return when the length measurement unit is moved or the Key operation is performed again.	OFF: Do not put to sleep 1: 1 minute later 5: 5 minutes later 10: 10 minutes later 30: 30 minutes later 60: 60 minutes later

NOTE 3: When a comparator unit(LZ71-KR) is connected, the first and second axes cannot be displayed independently.

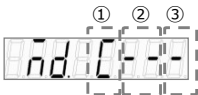
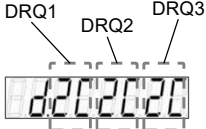
Preparations before making the initial settings (3/3)

Check the detailed settings for the optional I/O (BCD unit and comparator unit).
You do not need to make Advanced settings for the optional I/O (A/B phase output).

Advanced Settings Items

◆BCD unit (LZ71-B)



Items	Indication default	Description	Settings
Output mode 		BCD output mode selection ① Always output, latch, and 3-state can be selected. Customers who have been using the LY51 should select Data Overwrite Update. ② Output delay time can be set (1 to 20ms, none) ③ Output ON/OFF at alarm and power ON	①:BCD output mode C : Continuous output C.: Continuous output (Data Overwrite Update) d : Latch (BCD output only) d.: Latch (BCD output only) (Data Overwrite Update) L : Latch (BCD and display) L.: Latch (BCD and display) (Data Overwrite Update) T :3-state ②:Output delay time 01 to 20 (ms) -- (none) ③Output data status when an alarm occurs and when the power is turned on o: output -: OFF
Output logic 		BCD output logic selection ①The positive logic and negative logic of BCD data can be set. Positive logic: 1 ⇒ H(OFF) 0 ⇒ L(ON) Negative logic: 1 ⇒ L(ON) 0 ⇒ H(OFF) ②The logic of the sign can be set. Positive logic: "-" ⇒ H(OFF) "+" ⇒ L(ON) Negative logic: "-" ⇒ L(ON) "+" ⇒ H(OFF) *The READY signal is fixed in negative logic. Enable: L(ON) Disable: H(OFF)	LGC: Logic ① The logic of BCD data P: Positive logic n:Negative logic ② The logic of the sign P: Positive logic n: Negative logic
Output data 	 	BCD output data can be set for the three data request signals (DRQ1, DRQ2, and DRQ3). You can select an axis and display data for each DRQ signal. * Be sure to set the data request signal. <u>The initial value is set to the second axis</u>	Axis selection 1: No.1 2: No.2 A: Add (add No.1+No.2) Data selection C: Current value A: Maximum value I: Minimum value P: P-P value

◆ Comparator Unit (LZ71-KR)

Items	Indication default	Description	Settings
Output mode 		Comparator output mode setting • Display output: Comparable output for the displayed value • Latch: Latch the comparator output • Positioning: Not a comparator function, but outputs a signal for 0.5 seconds when it matches the set data value	MODE: Output Mode C : Display output L : Latch P : Positioning
Subject to judgment 		Setting the judgment target ① Target axis information (1: 1st axis, A: Addition of 2 axes) ② Target of comparison function (Current value, maximum value, minimum value, PP value)	① Axis selection 1: 1 st axis A: Addition of 2 axes ② Data selection C : Current value R : Maximum value I : Minimum value P : P-P value
Display switching 		The method of displaying the comparator value can be selected. Manual: You can check the setting values manually. Manual: You can check the set values manually. Automatic: The setpoint is displayed automatically according to the movement of the current value.	dSP: Display switching L: Manual A: Automatic

NOTE: When the comparator unit is connected, the first and second axes cannot be displayed independently.

◆ A/B-phase output unit (LZ71-HT01)

The minimum phase difference (**Tw**) of the output signal is the same as the connected scale unit signal.

Example) GB-ER: Tw=200ns Standard for DK812SA: Tw=50ns DK812SB: Tw=100ns

How to set up Basic Settings (1/3)

Step 1

Configure the basic settings.
Choose one of the following methods of operation.

NOTE:

If you change the basic settings,
Detailed Settings will be reset to the factory defaults.

When the power is turned on for the first time after shipment from the factory

Connect the AC adapter and turn the primary power "on".

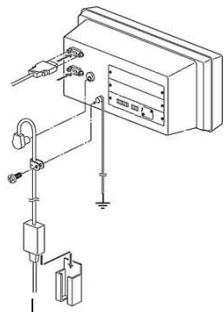
When you want to change the basic settings

AC adapter is energized.

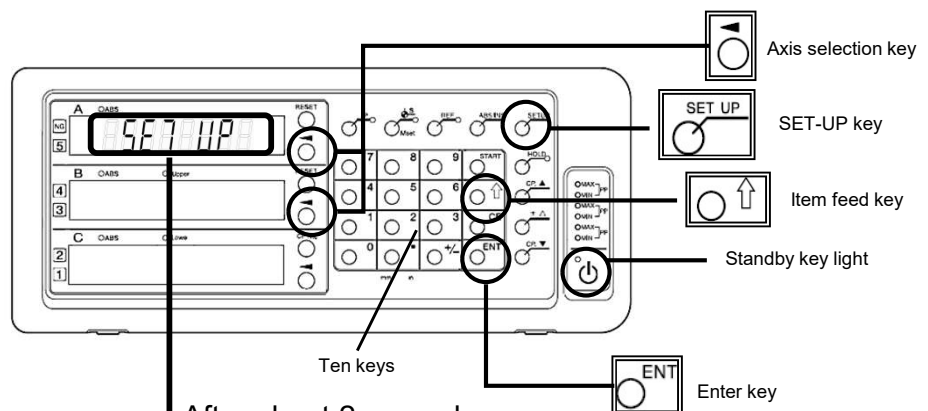
Turn on  key, the LED light changes from "blinking" to "off" and then press  and hold  key for 3 seconds.

The following display appears

Connecting the AC Adapter



AC primary power source



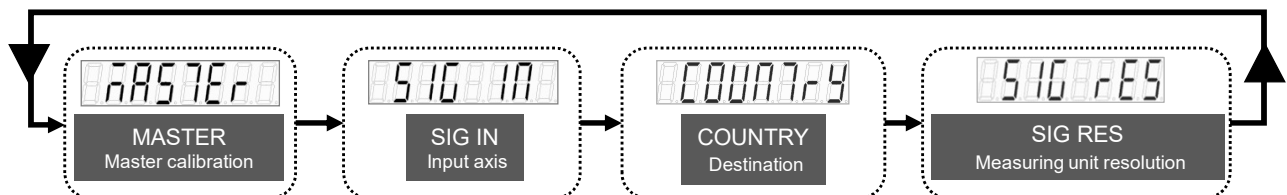
After about 2 seconds



"Master Alignment" setting display

Continued on next page

Pressing  key changes the basic settings mode in the order in which it is set.



MASTER (master calibration function):
Select whether to start with the master block or other dimensions every time the power is turned on.

SIG IN (input axis):
Sets the display for the first and second axes. (Independent display, 2-axes addition / subtraction function display, etc.)

COUNTRY (destination country):
Please select your region

Signal resolution (measuring unit resolution):
Sets the output resolution of the scale to be connected. Supports the input of length and angle display units.

COUNTRY (Destination)

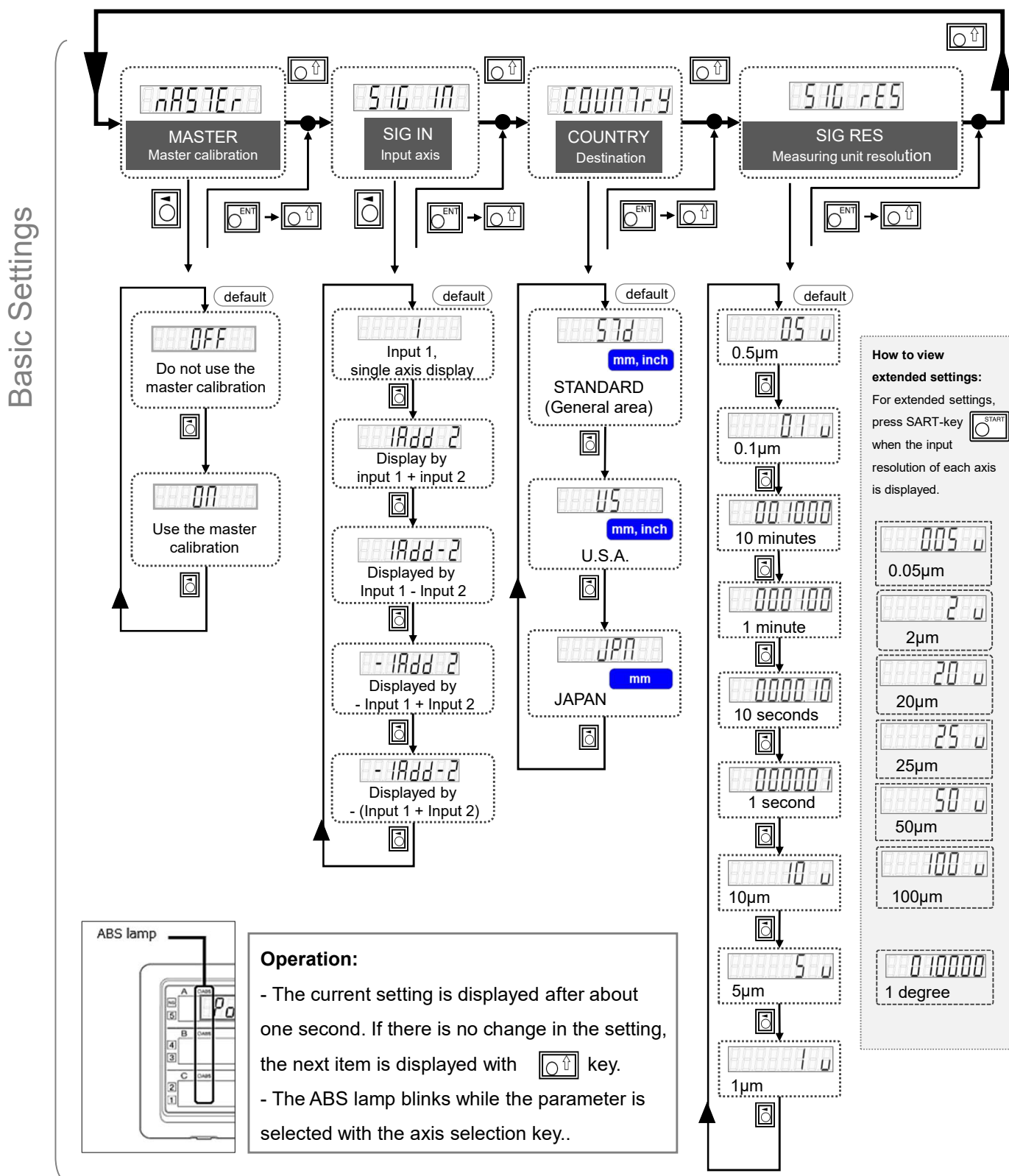
Symbol	Destination	Unit
STD 	General area	
US 	U.S.A.	
JPN 	Japan	

How to set up Basic Settings (2/3)

Step 2

Enter the settings confirmed in "Preparations before making initial settings (1/3)". Repeat steps (1), (2), and (3) to make the basic settings.

- (1) Use  key(Item feed key) to change the basic settings item.
- (2) The setting selection can be switched with  key(Select axis key) on the right side of the counter display.
- (3) To define the new value, press  key(Enter key).

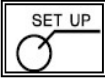


How to set up Basic Settings (3/3)

Step 3

Once you have completed the basic settings, exit this mode and move to the advanced settings mode.

How to Exit Basic Settings Mode

- ① Press  key or  key.
- ② The display changes to .
- ③ Pressing  key displays .
- ④ Press  key.

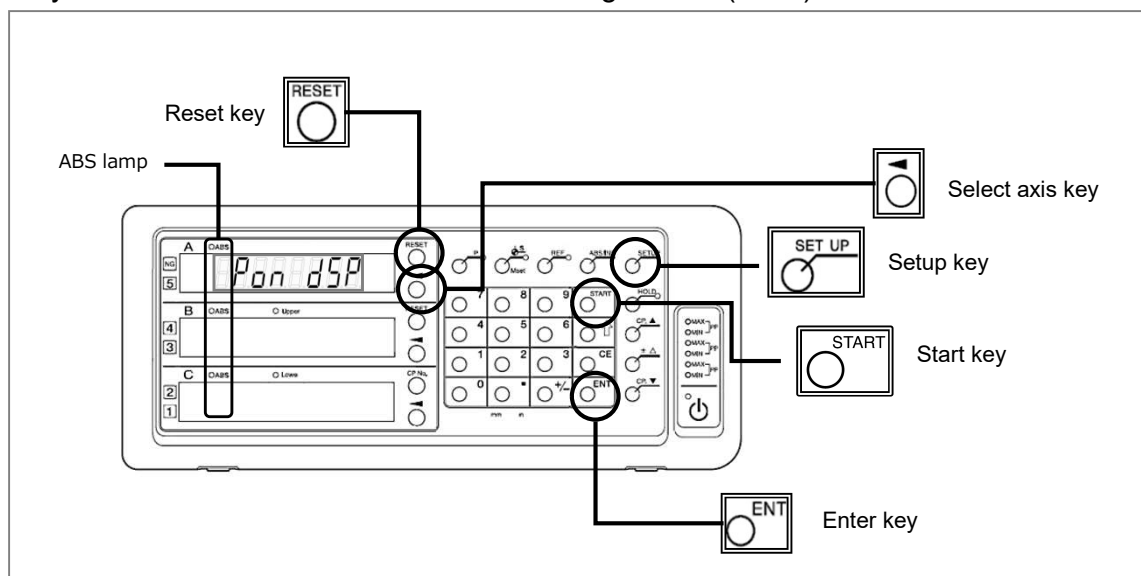
If this is the first time you have made basic settings after shipping, the display will be .

After the second time, the screen is displayed when the power is turned on.

- ⑤ Press  key. The display returns to normal.

This completes the basic settings.

Key to be used at the end of the basic settings mode (LY71)

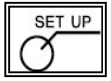


How to set up Advanced Settings (1/4) (continued from Basic Settings)

Step 4 Make the advanced settings.

*If you have already completed the basic settings and want to reconfigure only the advanced settings, you can do the same.

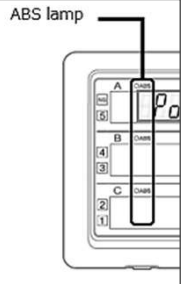
Basic Settings



Press the setup key in the normal count display state.

Operation:

- The current setting is displayed after about one second. If there is no change in the setting, the next item is displayed with key.
- The ABS lamp blinks while the parameter is selected with the axis selection key..



Power On Display
Display at power-on

Power On Display

Counting Display

"LY" display (default)

The display at power-on

* If you select the count display, you cannot make basic settings.

Display resolution

Display resolution

Press keys for each axis to set the display resolution for each axis.

After setting, use key to set the resolution for each axis.

Change polarity with key

NOTE 1: The selection of the value smaller than the input resolution of the basic settings is not displayed.

NOTE 2: The angle display can be selected when the angle resolution is selected in the basic settings.

Length display

(NOTE 1)

100 u

50 u

25 u

20 u

2 u

Angle display

(NOTE 2)

00.1000

000.100

0000.10

00000.1

Extended selection by

100 u

50 u

25 u

20 u

2 u

005 u

0.10000

INPUT CHANGE
Display axis and display data

INPUT CHANGE

Display axis and display data

Selection of display format when power is turned on for each display axis (A / B / C)

1. Press the display axis key to set to select the axis, then select the input axis, and when confirmed, press key to set.
2. Continue to press key to select the display data, and when confirmed, set with key

* You need to restart the main unit for the settings to take effect.

* When the comparator (LZ71-KR) is connected, only the upper axis can be set. Furthermore, when two axes are connected, the addition is automatically displayed.

2-axis connection, no comparator connected

Upper 1 Cr

Middle 2 Cr

Lower - - -

Input axis Display data

1: 1st axis

2: 2nd axis

Ad: Addition (1st + 2nd)

Display data

Cr Current value of input axis

MAV Maximum value of input axis

MIN Minimum value of input axis

P-P P-P value of input axis

- - - Display off

SCALING
(scaling function)

SCALING

(scaling function)

Scaling factor

Enter numerical values on a numeric keypad.

default 1x

0.100000 ≤

magnification ≤

9999999

Liner Error
(Linear compensation)

Liner Error

(Linear compensation)

Enter a correction value of ± 0.600 mm per 1m of distance Input up to ± 1.0000 mm with expansion selection.

default 000000

Enter numerical values on a numeric keypad.

Normal

- 06000 ~ 06000

06000

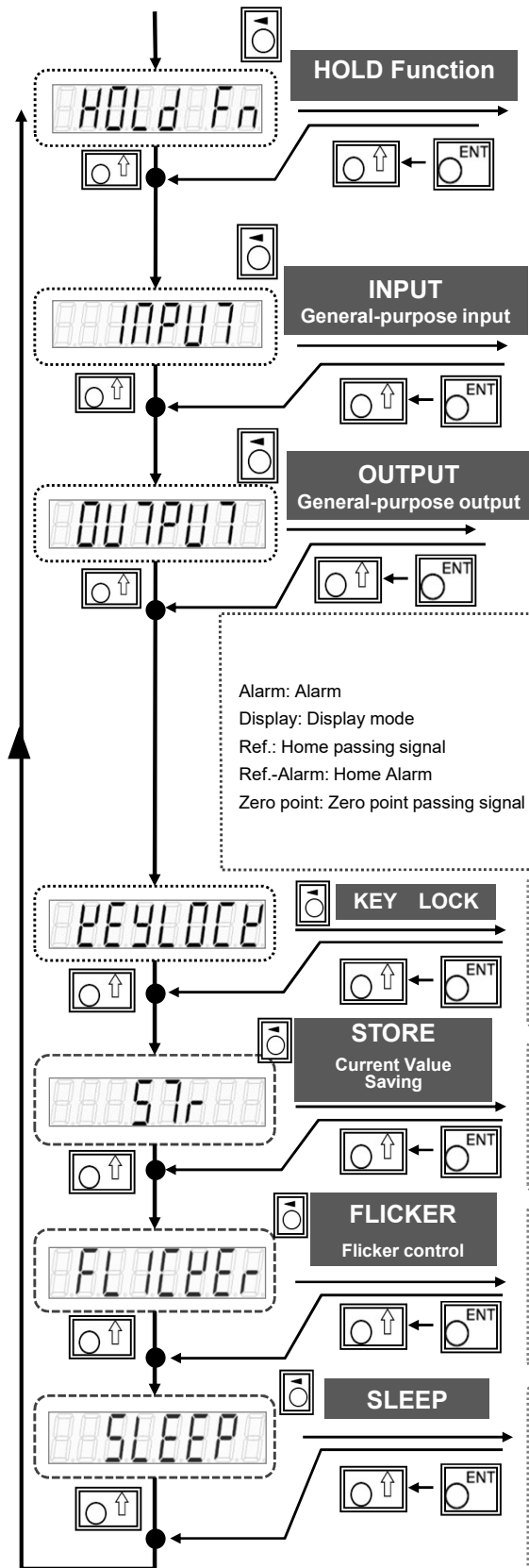
Extended selection

- 10000 ~ 10000

10000

How to set up Advanced Settings (2/4)

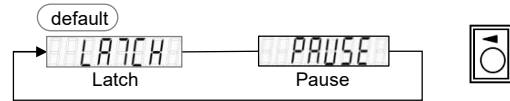
Advanced Settings



Alarm: Alarm
 Display: Display mode
 Ref.: Home passing signal
 Ref.-Alarm: Home Alarm
 Zero point: Zero point passing signal

The hold function can be selected.

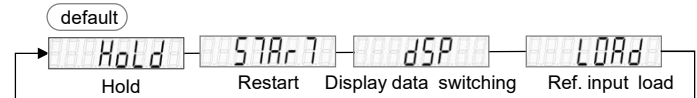
LATCH: Internal operations are not interrupted, and the displayed data is fixed
 PAUSE: Suspend the operation of maximum and minimum values, etc.



Display A, B axis

Function selection of general-purpose input (1 circuit each) for display A and B axes

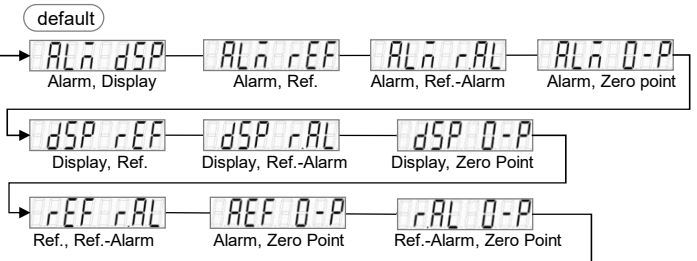
key for the axis to change
 key to decide the selection



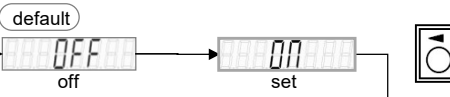
Display A, B axis

Function selection of general-purpose output (2 circuits each) for display A and B axes

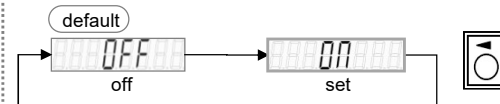
key for the axis to change
 key to decide the selection



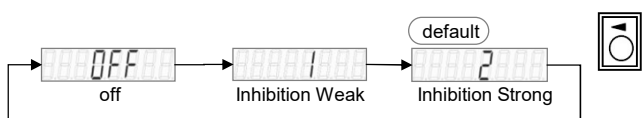
Key lock function can be set (to prevent accidental operation)



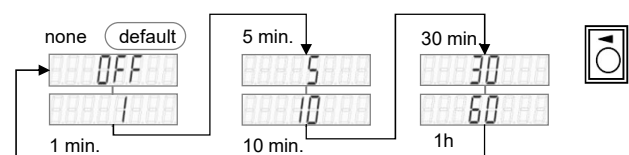
It is possible to save the display at power-off and display the value at power-on.



Flickering of the smallest digits can be suppressed in two stages



If no operation or scale movement is performed for a certain period of time, the display will turn off.



Step 5

When the advanced settings are complete, switch to the normal display.

Press key.

This completes the initial settings.

If the option I/O (BCD unit, comparator unit) is connected, continue setting.

How to set up Advanced Settings (3/4)

If you don't use LZ71-B, you don't need it.

Step 6

It is necessary to make these settings when using the BCD unit (LZ71-B).

Settings: ◆Output mode, ◆Output signal logic, ◆Data request signal

Continued from Advanced Settings

Option Unit Settings

BCD BCD unit

About a second later

Axis A: Axis B: Axis C:

Press the axis selection keys for each axis to set the functions.

◆BCD output mode can be set.

A-axis

key to select
Setting in key

- Continuous output
- Continuous output (Data Overwrite Update)
- Latch (BCD output only)
- Latch (BCD output only) (Data Overwrite Update)
- Latch (BCD and display)
- Latch (BCD and display) (Data Overwrite Update)
- 3-state

Output data state when an alarm occurs and when the power is turned on

Output OFF

Output Delay Time (ms)

~

No delay

◆You can set the logic of the output signal.

B-axis

key to select
Setting in key

The logic of BCD data

positive logic negative logic

The logic of sign

positive logic negative logic

◆BCD output data can be set for data request signals (DRQ1, DRQ2, DRQ3).

C-axis

key to select
Setting in key

DRQ1 DRQ2 DRQ3

Left side

- Axis 1
- Axis 2
- additive axis

Right side

- current value
- maximum value
- minimum value
- P-P value

NOTE: Be sure to set the data request signal. The initial value is set to the second axis.

NOTE: When two BCD units are used, BCD1 is fixed to the first axis and BCD2 to the second axis.

Step 7

When the setting is complete, switch to the normal display.

Press key.

This completes the initialization process.

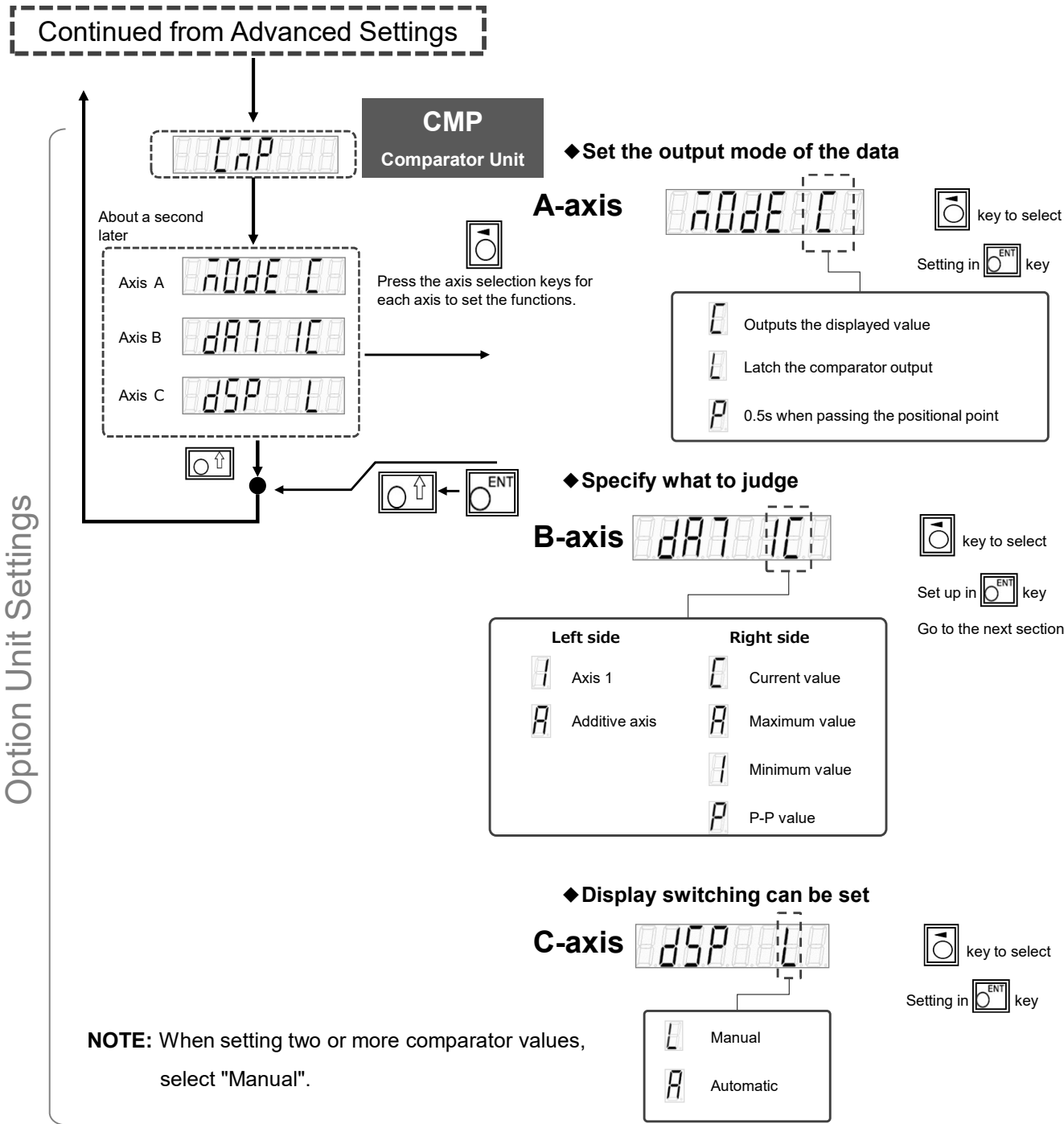
How to set up Advanced Settings (4/4)

If you don't use LZ71-KR, you don't need it.

Step 6

This setting is necessary when using the comparator unit (LZ71-KR).

Settings : ♦ Output Mode, ♦ Judgment Target, ♦ Display Switching



Step 7

When the setting is complete, switch to the normal display.

Press  key.

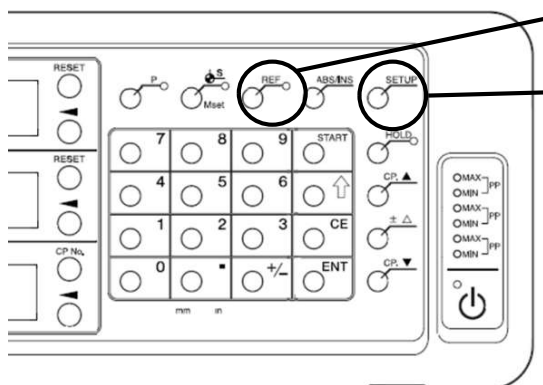
This completes the initialization process.

Factory setting (All clear)

To set the factory settings (all clear), perform the following operations.
Make preparation such as taking notes in advance for necessary items.
Also, do not perform any operation other than the explanation.

CAUTION: IF YOU DO THIS, ALL SETTINGS WILL BE THE FACTORY DEFAULT SETTINGS.

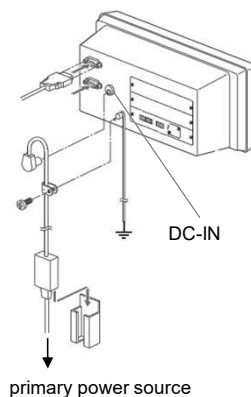
Mainly used keys



Reference key

Setup key

Connecting the AC Adapter



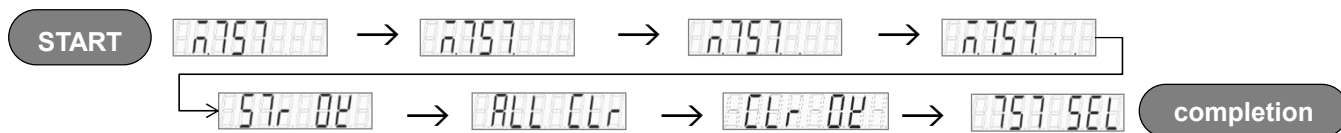
1. Hold down  key and  key at the same time to start the power supply.

⇒ The model name of the counter is displayed 

Connect the AC adapter to the DC-IN input on the back of the counter and turn on the primary power supply.

2. When you press  key,  is displayed,
followed by .

3. Pressing  key changes the display as shown below.



4. Turn off the primary power supply to the AC adapter.

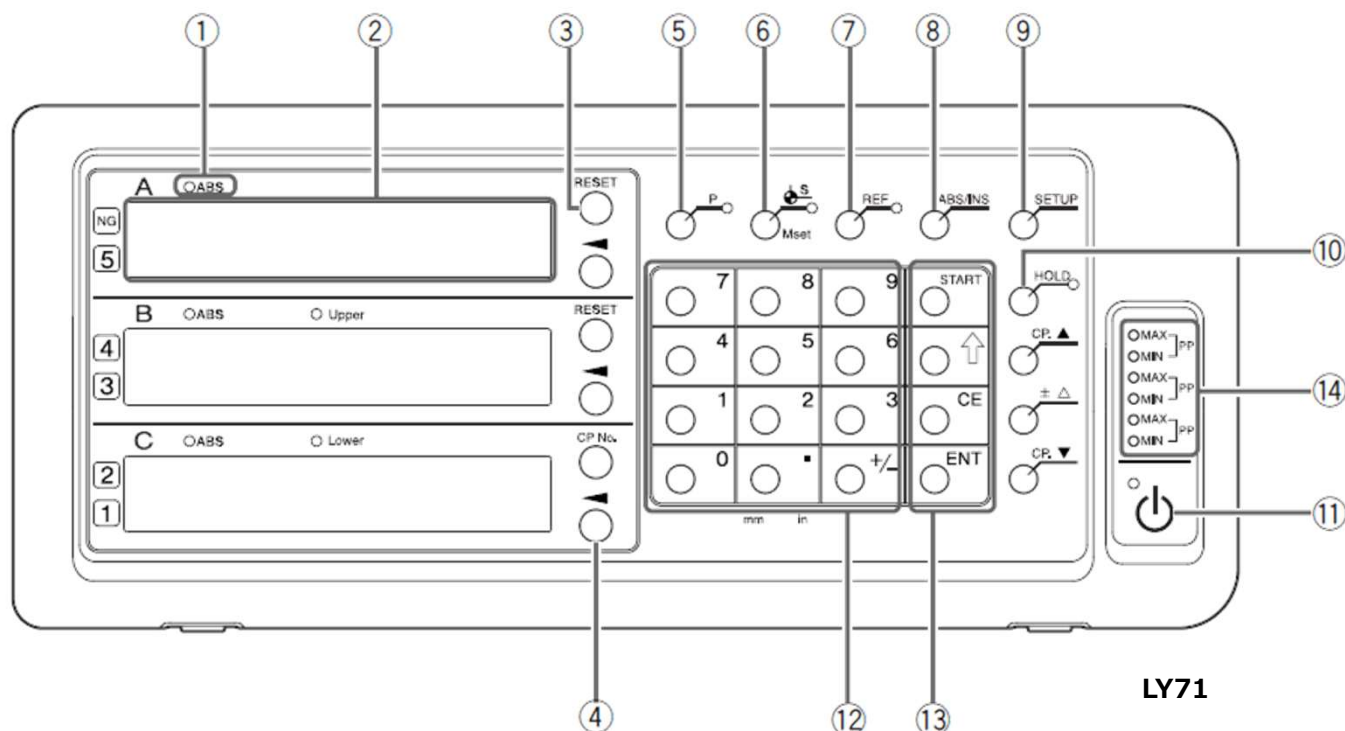
How to check the software version:

Power ON → Display LY →  Key → Version

Press any key to return to the LY display.

Appendix 1

Front panel



No.	Name	No.	Name	No.	Name
①	ABS lamp	⑦	REF key	⑬	Function key
②	Counter display	⑧	ABS/INC key	⑭	Peak value lamp
③	RESET key	⑨	SETUP key		
④	Axis select key	⑩	HOLD key		
⑤	P key	⑪	Standby key		
⑥	Datum point value/Master combination value setting key	⑫	Numeric key		

Alarm indication

Display	Status	Display	Status
	Measurement unit not connected		Storage data error
	Speed over (NOTE)		Reference point detection error
	Overflow		
	Power failure		

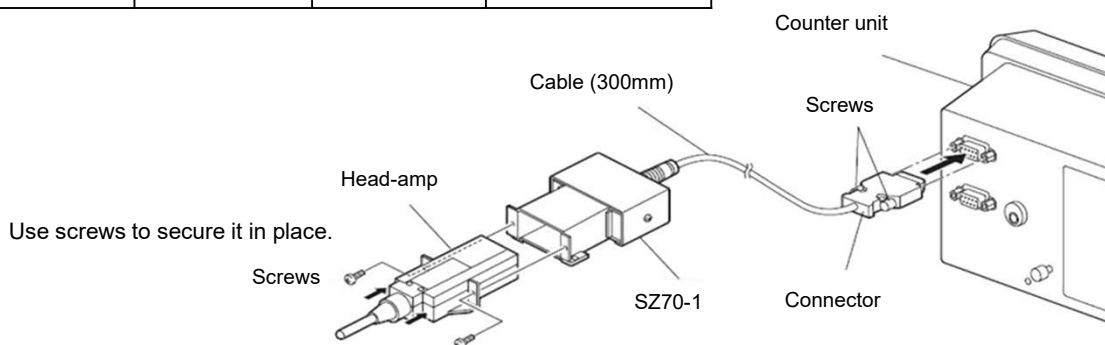
NOTE: When using an adapter connection (SZ**), no speed override indication is shown, but rather an error message.



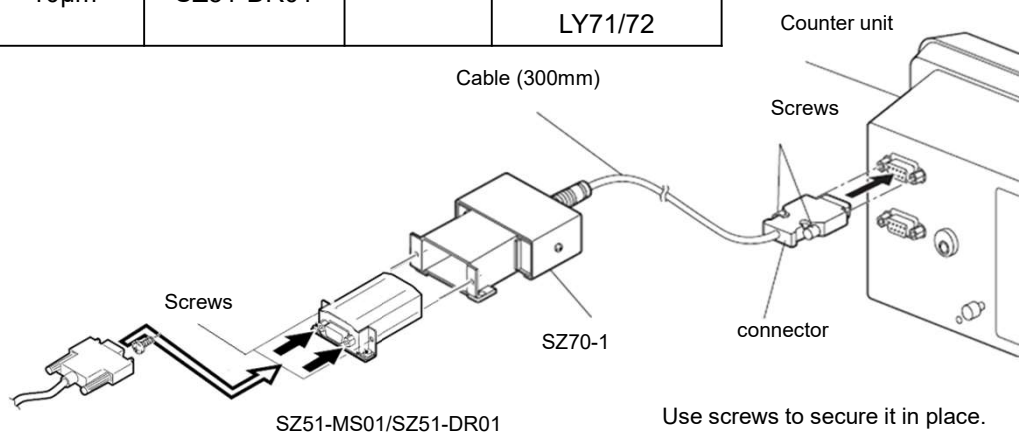
Appendix 2-1

Adapter connection (Length scale)

Scale/ Head	Resolution	Adapter	Counter
SR128(GB-A)	0.5μm	SZ70-1	LG20
PL20B	10μm		LH70/71/71A/72
SJ700	5μm		LY71/72

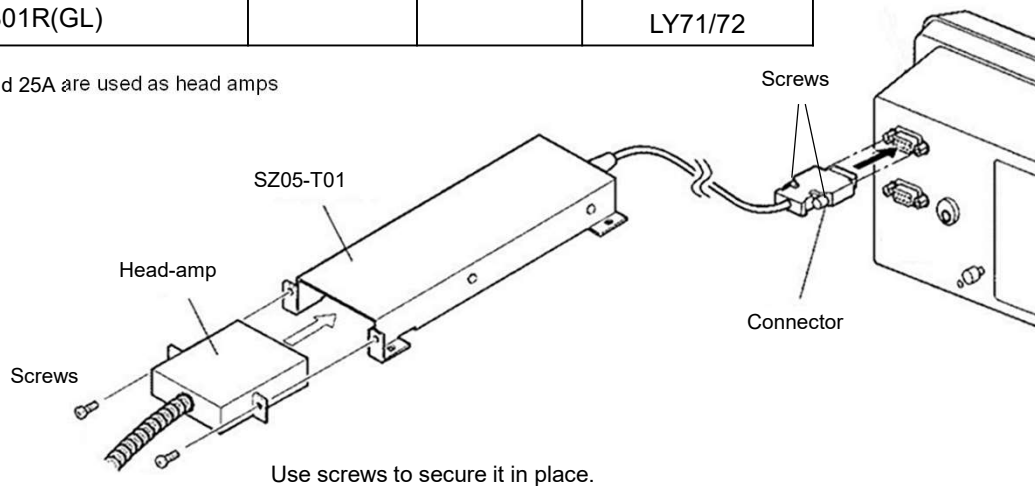


Scale/ Head	Resolution	Adapter 1	Adapter 2	Counter
SR108(GB)	0.5μm	SZ51-MS01	SZ70-1	LG20
PL20A	10μm	SZ51-DR01		LH70/71/71A/72 LY71/72



Scale	Resolution	Adapter	Counter
SR-1711(GP), SR10A/741(GS), SR50A(GF,GF-R), SR30A(GM), SR801/801R(GL)	0.5μm	SZ05-T01	LG20 LH70/71/71A/72 LY71/72

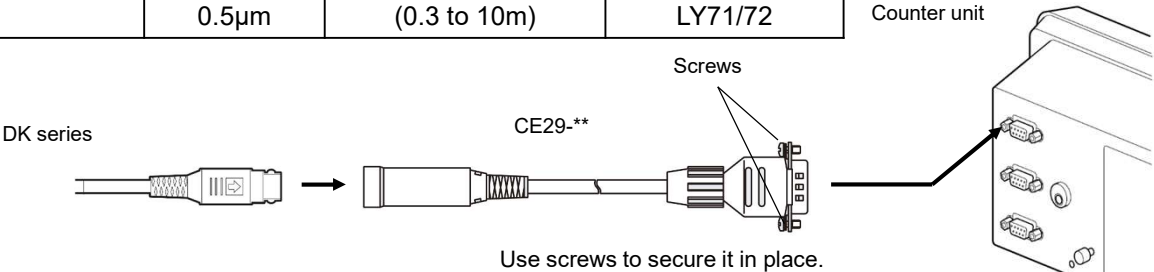
* HA13A, 15A, 23A and 25A are used as head amps



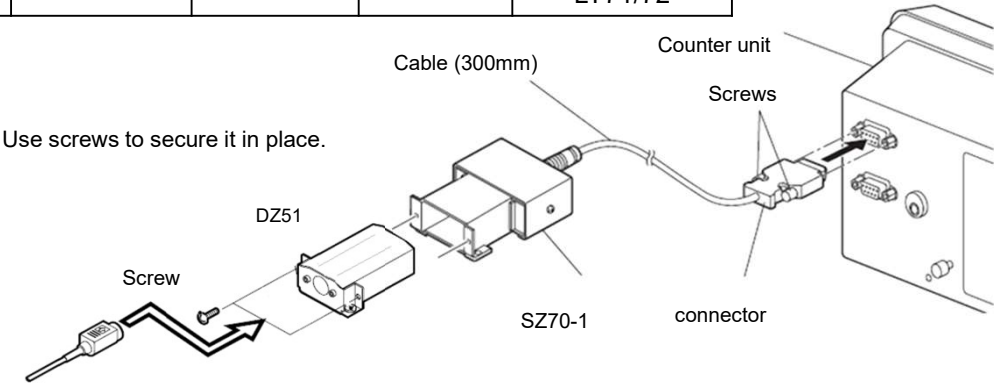
Appendix 2-2 Adapter connection (Digital gauge)



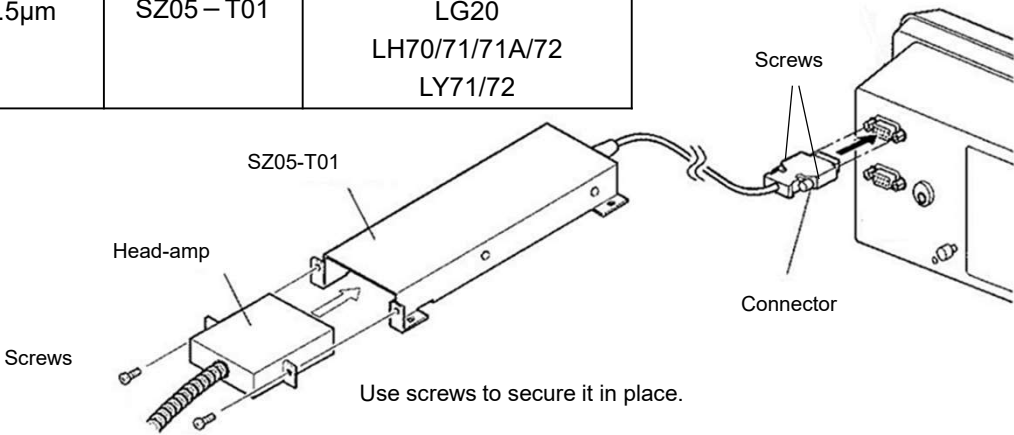
Gauge	Resolution	Connection cable	Counter
DK-**	0.1µm or 0.5µm	CE29-** **: 003/01/03/05/10 (0.3 to 10m)	LG20 LH70/71/71A/72 LY71/72



Gauge	Resolution	Adapter 1	Adapter 2	Counter
DG-B	0.5µm	DZ51	SZ70-1	LG20
DL310B/330B	10µm			LH70/71/71A/72 LY71/72



Gauge	Resolution	Adapter	Counter
DG	0.5µm	SZ05 – T01	LG20 LH70/71/71A/72 LY71/72



Gauge	Resolution	Adapter	Counter
DE12BR/30BR	0.1µm	SZ70-1	LG20 LH70/71/71A/72 LY71/72

