

SUMMING BOX

MODEL

LCBX-4

BEFORE USE

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

If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

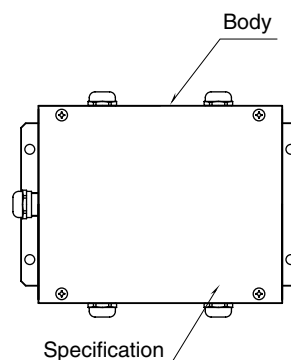
Summing box.....(1)

■ MODEL NO.

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

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation and connection.

COMPONENT IDENTIFICATION**POINTS OF CAUTION****■ GENERAL PRECAUTIONS**

- Before you remove the device or mount it, turn off the I/O signal for safety.

■ ENVIRONMENT

- Indoor use.
- Do not install the device where it is subjected to continuous vibration. Do not subject the device to physical impact.
- Environmental temperature must be within -10 to +75°C (14 to 167°F) in order to ensure adequate life span and operation.

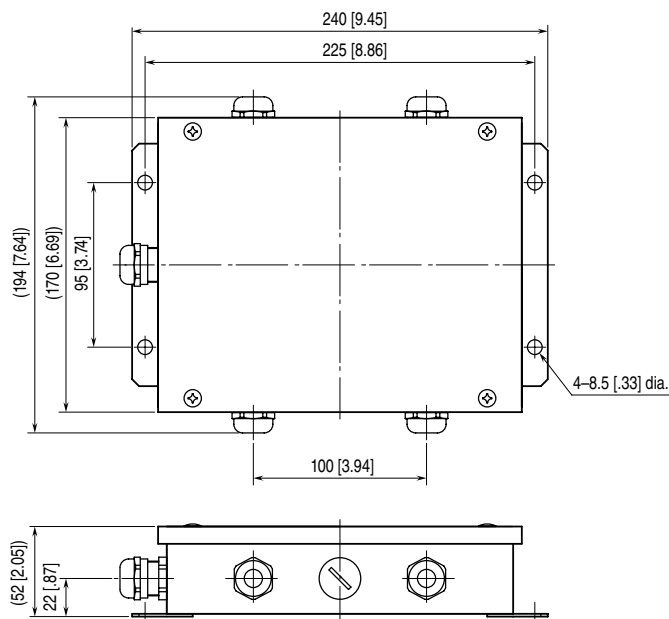
■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

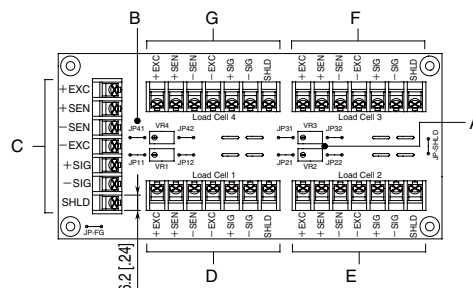
TERMINAL CONNECTIONS

Connect the device as in the diagram below.

EXTERNAL DIMENSIONS unit: mm [inch]



TERMINAL ASSIGNMENT OF THE INTERNAL BOARD



- A. Trimmer potentiometer (VR)
Used to adjust finely the output value of each load cell when load cells are summed in parallel.
- B. Jumper line (JP)
By cutting the jumper line, the potentiometer will work.
- C. Terminal for cable
Used to connect to an indicator or an amplifier.
- D. Terminal for load cell 1
- E. Terminal for load cell 2
- F. Terminal for load cell 3
- G. Terminal for load cell 4

NO.	TERMINAL	SIGNAL
1	+EXC	Excitation voltage (+)
2	+SEN	Remote sensing (+)
3	-SEN	Remote sensing (-)
4	-EXC	Excitation voltage (-)
5	+SIG	Output signal (+)
6	-SIG	Output signal (-)
7	SHLD	Shield

Note: Short bars for use between 1 and 2, and between 3 and 4 are included.

WIRING

- Select the cable gland depending on the cable.
Refer to Table 1 for relation between the rubber packing for reduction and the cable diameter.
- Refer to Figure 2 for the terminal assignment on the board.

Table 1

RUBBER PACKING FOR REDUCTION	APPLICABLE CABLE DIA.
With rubber packing	5 to 8 mm dia.
Without rubber packing	9 to 13 mm dia.

Cable gland Protective structure IP68

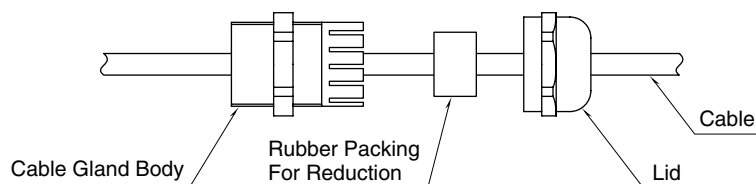


Table 2

NO.	TERMINAL	SIGNAL	INCLUDED PARTS
1	+ EXC	Excitation voltage (+)	Short bar
2	+ SEN	Remote sensing (+)	
3	– SEN	Remote sensing (–)	Short bar
4	– EXC	Excitation voltage (–)	
5	+ SIG	Output signal (+)	–
6	– SIG	Output signal (–)	–
7	SHLD	Shield	–

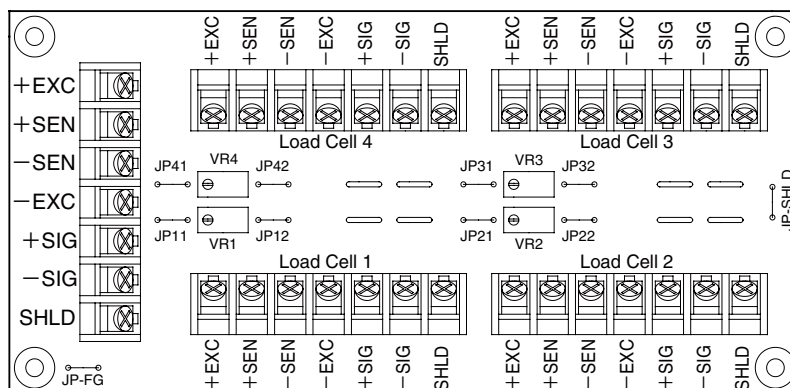


Figure 2

FUNCTION

■ REMOTE SENSING

In order to minimize the error from the load cell cable, terminals for remote sensing (SEN) are equipped.

In case of using the remote sensing function, use the indicator with remote sensing function.

In case of using the remote sensing function from the load cell, the output adjustment function of the load cell is not available.

In case of performing the output adjustment of the load cell, the remote sensing function is available only between the device and the indicator.

■ OUTPUT ADJUSTMENT OF THE LOAD CELL

The trimmer potentiometers (rotary type variable resistor) VR1 to VR4 are equipped in order to finely adjust the output of each load cell when the load cells are summed in parallel.

The trimmer potentiometers function by cutting the jumper lines on the board.

Output adjustment is performed according to the load cell with the smallest output.

LOAD CELL FOR OUTPUT ADJUSTMENT	JUMPER LINE TO BE CUT	TRIMMER POTENTIOMETER TO BE ADJUSTED	SHORT BAR ON THE BOARD
Load cell 1	JP11, 12	VR1	+EXC to +SEN, -EXC to -SEN of TM1
Load cell 2	JP21, 22	VR2	+EXC to +SEN, -EXC to -SEN of TM2
Load cell 3	JP31, 32	VR3	+EXC to +SEN, -EXC to -SEN of TM3
Load cell 4	JP41, 42	VR4	+EXC to +SEN, -EXC to -SEN of TM4

When output adjustment of the load cell is performed, the remote sensing function is available only between the device and the indicator.

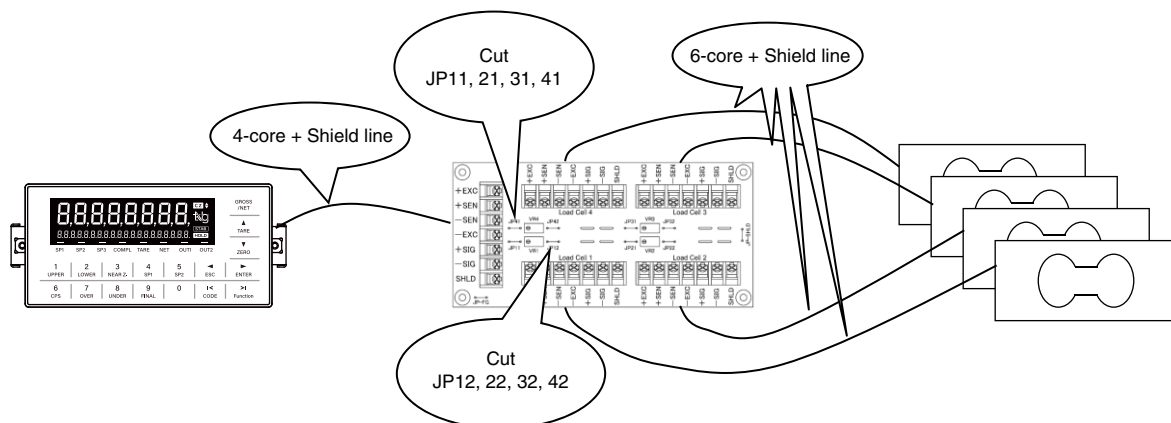
■ SETTING AT OUTPUT ADJUSTMENT

				INDICATOR SIDE CABLE	
				NO SEN (4-CORE + SHIELD LINE)	WITH SEN (6-CORE + SHIELD LINE)
LOAD CELL SIDE CABLE	NO SEN (4-CORE + SHIELD LINE)	WITHOUT OUTPUT ADJUSTMENT	Short bar	△	✓
			JP11, 21, 31, 41	✓	✓
			JP12, 22, 32, 42	△	△
		WITH OUTPUT ADJUSTMENT	Short bar	△	✓
			JP11, 21, 31, 41	×	×
			JP12, 22, 32, 42	×	×
	WITH SEN (6-CORE + SHIELD LINE)	WITHOUT OUTPUT ADJUSTMENT	Short bar	△	×
			JP11, 21, 31, 41	✓	✓
			JP12, 22, 32, 42	△	✓
		WITH OUTPUT ADJUSTMENT	Short bar	△	✓
JP11, 21, 31, 41			×	×	
JP12, 22, 32, 42			×	×	

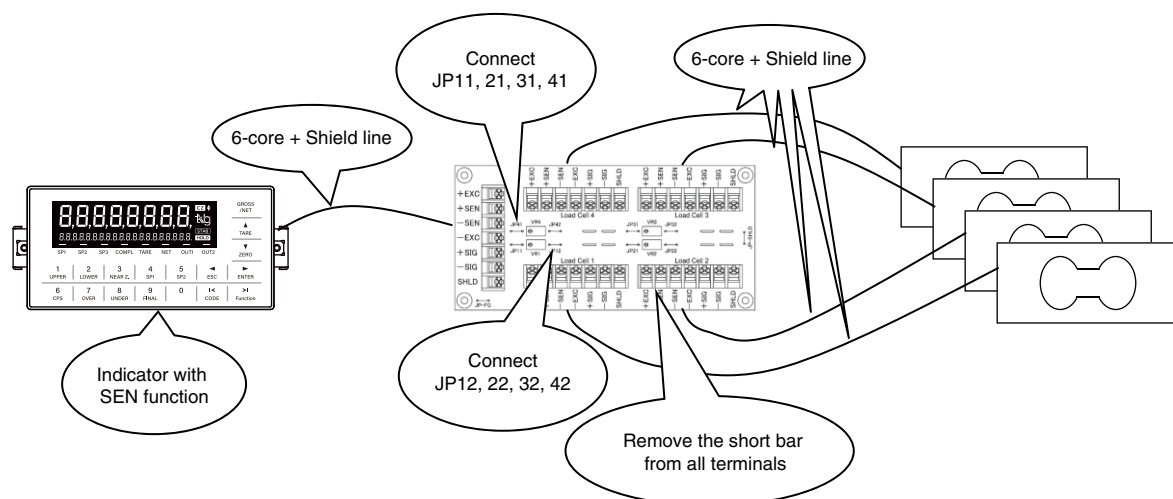
✓: short. ×: open. △: both are acceptable (short or open)

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E.g. 1) When output adjustment is performed with 6-core cable on the load cell side and 4-core cable on the indicator side
(The remote sensing function is not available.)



E.g. 2) When remote sensing function is used with 6-core cables both on the load cell side and on the indicator side
(Output adjustment of the load cell cannot be performed.)



■ SUMMING RESISTANCE

Approx. 500Ω of resistors are equipped in series on each of the output terminals for the load cell (+SIG, -SIG) at factory setting.

The resistors reduce the output effect of each load cell when eccentric load has occurred.

■ CORNER ADJUSTMENT

If the output difference of each load cell is large and prevents accurate weighing, it is necessary to adjust the output of the load cells and to maintain the balance. Perform the adjustment according to the following steps.

- (1) Connect the summing box, load cells, indicator, and platform scale.
- (2) Place a balance weight in the center of the platform scale and perform the calibration of the indicator.
- (3) Place a balance weight on each corner of the platform scale (above the load cells) and check each output value.
- (4) Adjust the output of the load cells to match the load cell with the smallest indicator value.
- (5) After adjustment, place a balance weight on each corner again and confirm that the output is equal at any corner of the platform scale.
- (6) Once the final adjustment is complete, perform the calibration of the indicator again.