

<b>S B - 4 A</b>	Load cell Summing Box	<b>Operation Manual</b>
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### § 1. Outline

This Summing box can sum in parallel up to max. 4 pieces of load cells.  
 The output of each load cell can be finely adjusted by the interior potentiometer.  
 It is also equipped with Remote sensing terminal.

### § 2. Specification

- Structure : Leak proof structure
- Material : Stainless steel
- Outside treatment : Stainless hair line
- Temperature safe :  $-10^{\circ}\text{C} \sim 75^{\circ}\text{C}$
- Summing points : Max. 4 points
- Weight : Abt. 1.8kg
- Dimension : 1.240 x W170 x H (57)
- Suitable cable dia. :  $\phi 5 \sim \phi 13\text{mm}$
- Output adjustment function : Adjustment possible by Trimmer potentiometer after cut off of jumper line.  
 ( At time of delivery : Output adjustment function will not function )
- Summing resistance :  $500\Omega$  of resistance is included directly in each of the terminals of load cell output side.

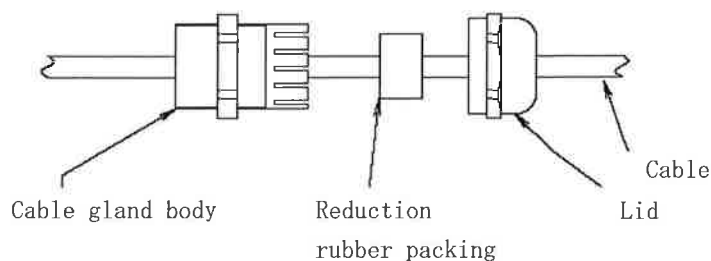
### § 3. Wiring

- Please select suitable cable gland to match with the conforming cable.  
 Please refer to Table-1 for relation between Reduction rubber packing and cable diameter.
- Please refer to Table-2 for Terminal arrangement on the terminal board.

Table-1

Reduction rubber packing	Conforming cable diameter
With rubber packing	$\phi 5 \sim \phi 8\text{mm}$
Without rubber packing	$\phi 9 \sim \phi 13\text{mm}$

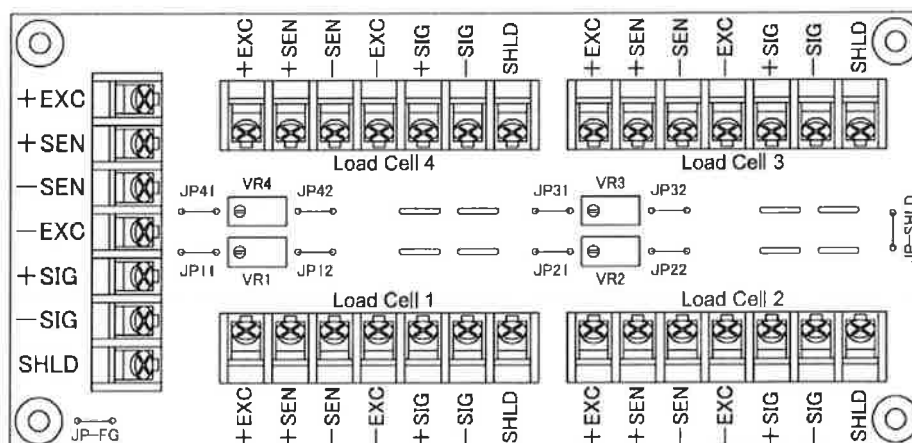
Cable gland Protective structure IP68



Drawing-1

Table-2

Number	Terminal	Signal	Spare 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	



Drawing-2

## § 4. Functional Description

### 4-1. On Remote Sensing

In order to minimize the error from the load cell cable, Remote Sensing terminal is attached.

In case of using the Remote Sensing function, please use the indicator with Remote Sensing function. In case of utilizing the Remote Sensing function from the load cell, you cannot use the Output Adjustment function.

In case of using the Output Adjustment of the load cell, you can use the Remote Sensing function between the main unit and the indicator only.

### 4-2. On Output Adjustment of the Load cell

When you sum the load cell in parallel, a potentiometer (Rotating type transform resistance machine)

VR1~4 is equipped to finely adjust the output value of each load cell.

Potentiometer will function by cutting the jumper line on the terminal board.

Output adjustment will match the load cell with the smallest output.

Output adjustment Load cell	Cut Jumper line	Adjustment Volume	Terminal board Short bar
Load Cell 1	JP11, 12	VR1	+EXC~+SEN, -EXC~-SEN of TM1
Load Cell 2	JP21, 22	VR2	+EXC~+SEN, -EXC~-SEN of TM2
Load Cell 3	JP31, 32	VR3	+EXC~+SEN, -EXC~-SEN of TM3
Load Cell 4	JP41, 42	VR4	+EXC~+SEN, -EXC~-SEN of TM4

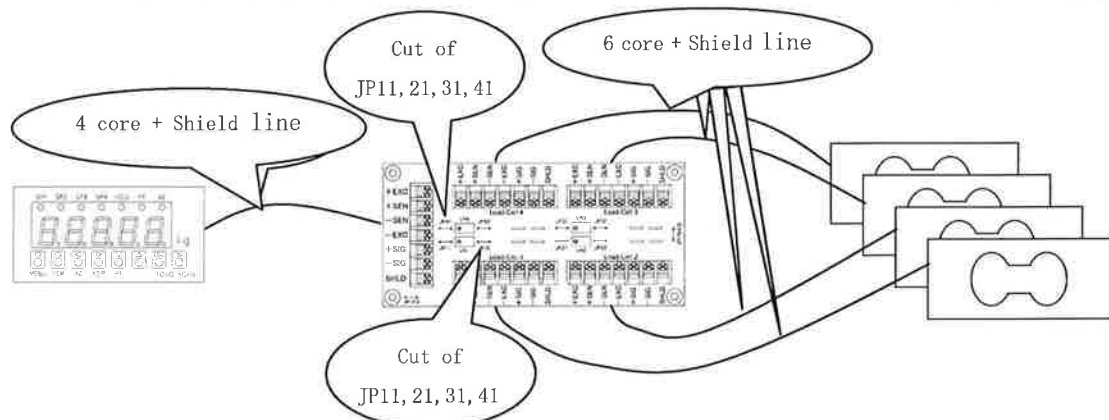
In case of performing Output adjustment of the load cell, you can use the remote sensing function just between the main unit and the indicator.

### 4-3. Setting at Output adjustment time

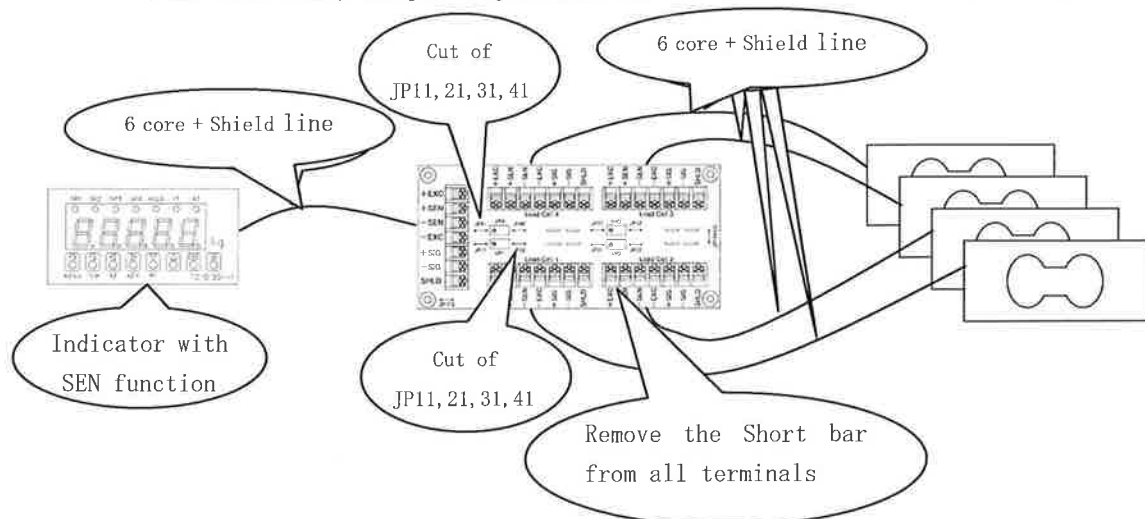
				Indicator side cable	
				No SEN (4 core + Shield line)	With SEN (6 core + Shield line)
Load cell side cable	No SEN (4 core + Shield line)	Without Output adjustment	Short bar	△	○
			JP11, 21, 31, 41	○	○
		With Output adjustment	Short bar	△	○
			JP11, 21, 31, 41	×	×
		With Output adjustment	Short bar	△	○
			JP11, 21, 31, 41	×	×
	With SEN (6 core + Shield line)	Without Output adjustment	Short bar	△	×
			JP11, 21, 31, 41	○	○ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Ex. 2</span>
		With Output adjustment	Short bar	△ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Ex. 1</span>	○
			JP11, 21, 31, 41	×	×
With Output adjustment		Short bar	×	×	
		JP12, 22, 32, 42	×	×	

○=in puts(short)、×=doesn't puts(open)、△=both are acceptable (short or open)

Example 1) In case of Output adjustment by Load cell side 6 core and Indicator side 4 core cable ( In this case, Remote sensing function cannot be used )



Example 2) In case of using Remote sensing function by 6 core cable on both the load cell and indicator side. ( In this case, Output adjustment of the load cell cannot be done )



#### 4-4. On Summing resistance

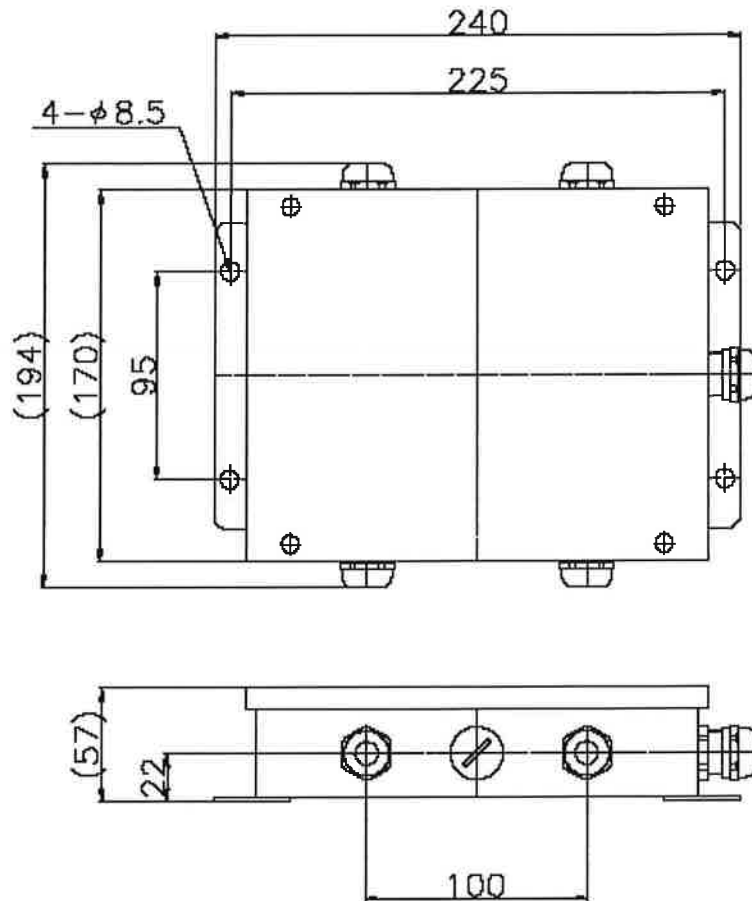
About 500 Ohm of resistance is lined up in series on each of the output side terminals (+SIG, -SIG) of the load cell at time of delivery.

In case unbalanced load is applied, this will reduce the output effect of each load cell.

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#### § 5. Exterior dimension drawing

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