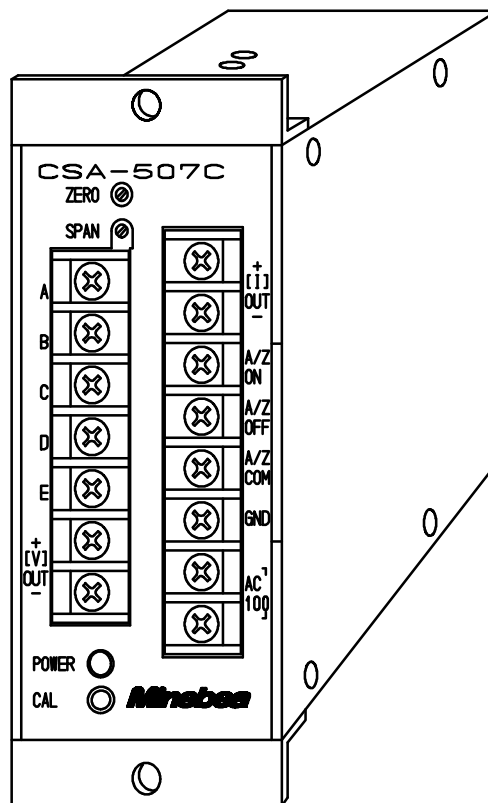


# Minebea

MINEBEA CO., LTD.

## INSTRUCTION MANUAL

### TRANSMITTER CSA-507C



Note : Please read this Instruction Manual carefully before use.

Be sure to follow the items that require attention described in the manual.  
Keep the manual at hand so that you can pick it up and read it as soon as  
necessity requires.

## **FORWARD**

Thank you very much for your purchasing Minebea's Transmitter CSA-507C.

This manual explains installation procedures and connecting method and also operating method for Transmitter CSA-507C. Make use of it properly after reading through the manual carefully.

Be sure to deliver the manual to the end user. Moreover, the end user should keep the manual at hand after reading it over.

This manual is intended for technical experts to read.

The contents of the manual may subject to change for improvement without notice.

# Marks and arrangements used in this manual

The following symbols are attached to the explanation on the matters that alert “Do not do this.”, “Take care.” and “For reference”.

Be sure to read these items where these marks are attached.



Warning

Precaution which must be followed to prevent the possibility of accident or serious injury to the operators.  
To avoid possible hazard, do not perform any procedure described here.



Precautions and important informations for safe operation and service personnels.  
Be sure to read the item to prevent from malfunction.

Mark during operation



Press the switch.

## For safe operation

Be sure to read this manual before use.

### 1. Installation place



Use the instrument where the temperature/humidity specifies within the range as follows:

Environmental temperature : - 10 ~ 50

Environmental humidity : Less than 85 %RH(Non condensing.)

(1) Location where installation is not allowed.



**Warning** Do not locate the instrument on the places such as follows:  
It may cause an unexpected faulty in the instrument.

- Do not expose the instrument in direct sunlight and/or high temperature area.
- Do not use the instrument in a high humid area.
- Do not install the instrument where there is high mechanical vibration or shock.
- Do not use the instrument where there are excess of dusts and fine particles.
- Do not install the instrument where there includes any corrosive gas or any salty atmosphere.
- Do not install the instrument where there is rapid change on temperature and humidity.
- Do not install the instrument near the devices that are magnetized or generate an electromagnetic field.
- Do not install the instrument where there may suffer radioactivity or radioactive rays.
- Avoid the location where chemical reaction may take place such as in a laboratory.

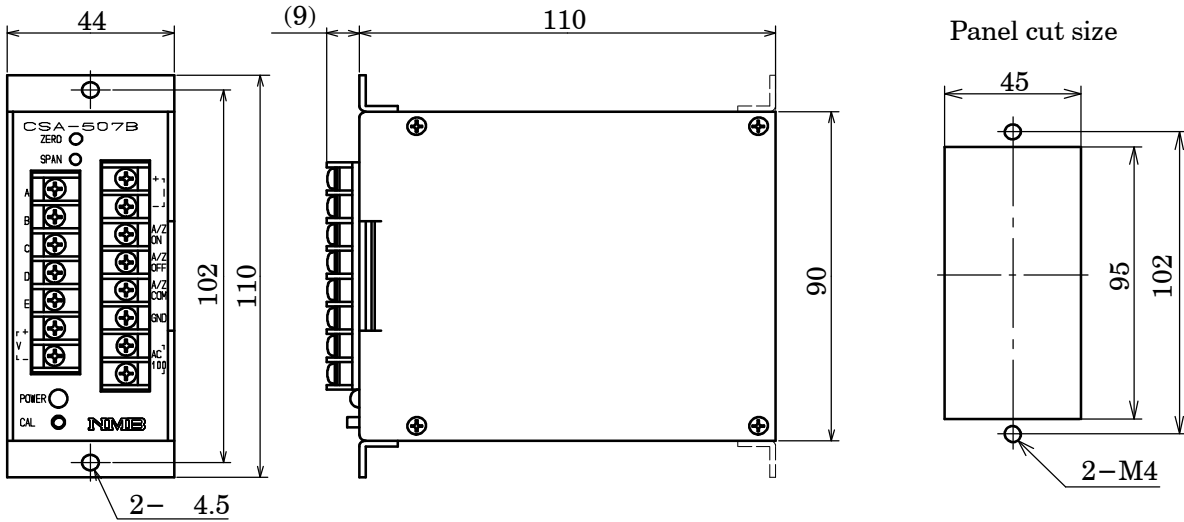
## (2) Installation



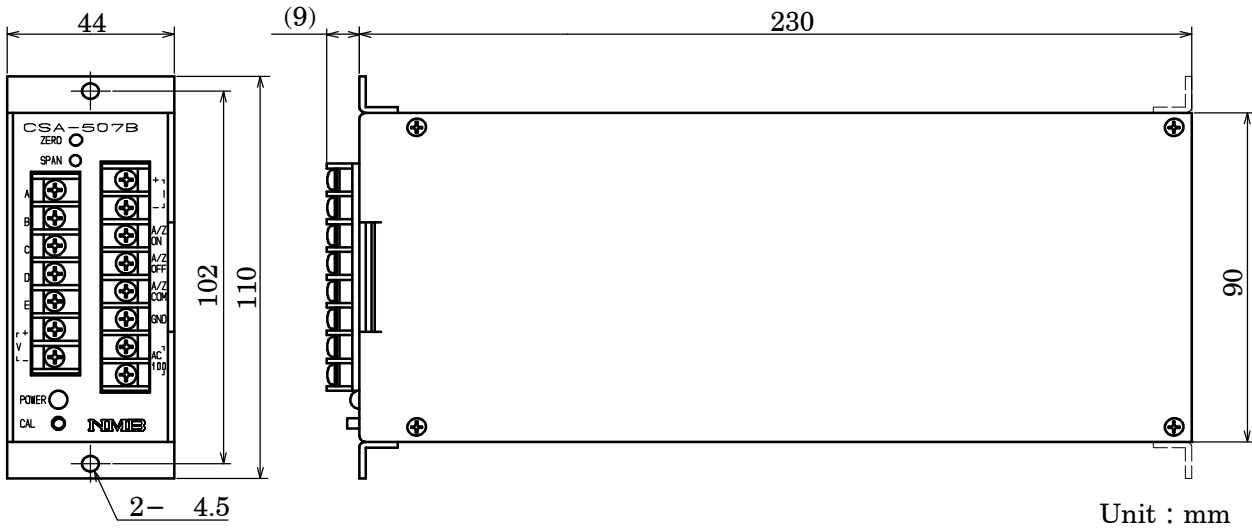
When installing the instrument, install as referring to the following dimensions and secure the space around the instrument.

Each dimensions of the instrument and required dimensions for the environmental spaces are as follows:

### Dimensions for installation



Dimensions when the optional Auto zero unit(CSA507C-P99) is installed.



Unit : mm

## 2. Power supply



Warning

Be sure to check that power supply is off when installing each cable. If the work is done with the power fed, there may have the possibility of electric shock to the operator or even the possibility of destroying the instrument.



Before supplying the power, check that the indication of power supply voltage/specifications for the instrument and the power going to supply should be the same. If they are not equal, contact with Minebea. If you use the instrument without checking them, it may cause a damage in the instrument or electric shock to the operator.



Grounding wire should be connected securely. When grounding wire is not connected, it may cause a malfunction of the instrument or electric shock to the operator.

## 3. Application note



Warning

Before using a new instrument or exchanging the strain gage applied transducer for a new one, be sure to make calibration. If calibration shall not be made, correct measured results may not be obtained nor it may cause a malfunction in the instrument and there may exist damage in peripheral equipments. Besides, even though calibration had been made, there may occur the similar case when the result is not correct, so make calibration again.




Warning

In case of using the instrument, check that the connections are executed properly. If not connected properly, correct measured result will not be obtained, nor it may cause malfunctions of the instrument, damage to the peripheral equipments or even worse serious accidents.



Warning

When change of setting is made carelessly on the instrument during measurement, it may cause malfunction in the instrument and also possibility of damage in peripheral equipments.

 **Warning** Do not shock the instrument such as throwing something on it.  
It may cause the damage to the case and also may cause the damage to the instrument in resisting to environment.



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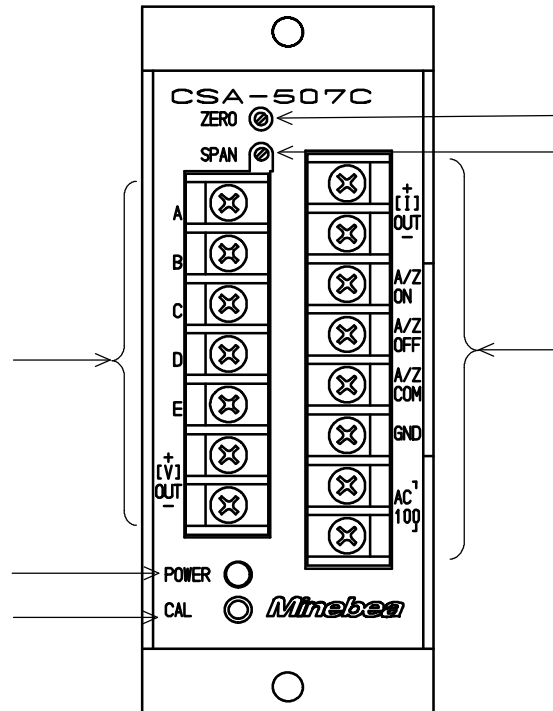
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# 1. General

The instrument is a transmitter for the application of strain gage applied transducers.

It obtains analog output corresponding to load, pressure, torque, and so on by amplifying output from various kinds of strain gage applied transducers.

# 2. Each function and name



① “POWER” LED

Lights on when the power is turned on.

② “CAL” switch

Used when it will turn ON/OFF of the CALIB value.

③ “ZERO” trimmer

Zero adjustment trimmer.

④ “SPAN” trimmer

Amplitude adjustment trimmer.

⑤ Terminals No.1

Terminals to connect with various kinds of strain gage applied transducers such as load cell, and so on, and cable for voltage output signals.

⑥ Terminals No.2

Terminals to connect with the cables for current output signal(Option), external control input for “A/Z ON” and “A/Z OFF”, grounding wire and AC power cable.

### 3. Installation procedure

#### 3-1. Installation place



Use the instrument where the temperature/humidity specifies within the range as follows:

Environmental temperature : - 10 ~ 50

Environmental humidity : Less than 85 %R.H.(Non condensing.)

#### 3-2. Location where installation is not allowed.



Warning

Do not locate the instrument on the places such as follows:  
It may cause an unexpected faulty in the instrument.

- Do not expose the instrument in direct sunlight and/or high temperature area.
- Do not use the instrument in a high humid area.
- Do not install the instrument where there is high mechanical vibration or shock.
- Do not use the instrument where there are excess of dusts and fine particles.
- Do not install the instrument where there include any corrosive gas or any salty atmosphere.
- Do not install the instrument where there is rapid change of temperature and humidity.
- Do not install the instrument near the devices that are magnetized or generate an electromagnetic field.
- Do not install the instrument where there may suffer radioactivity or radioactive rays.
- Avoid the location where chemical reaction may take place such as in a laboratory.

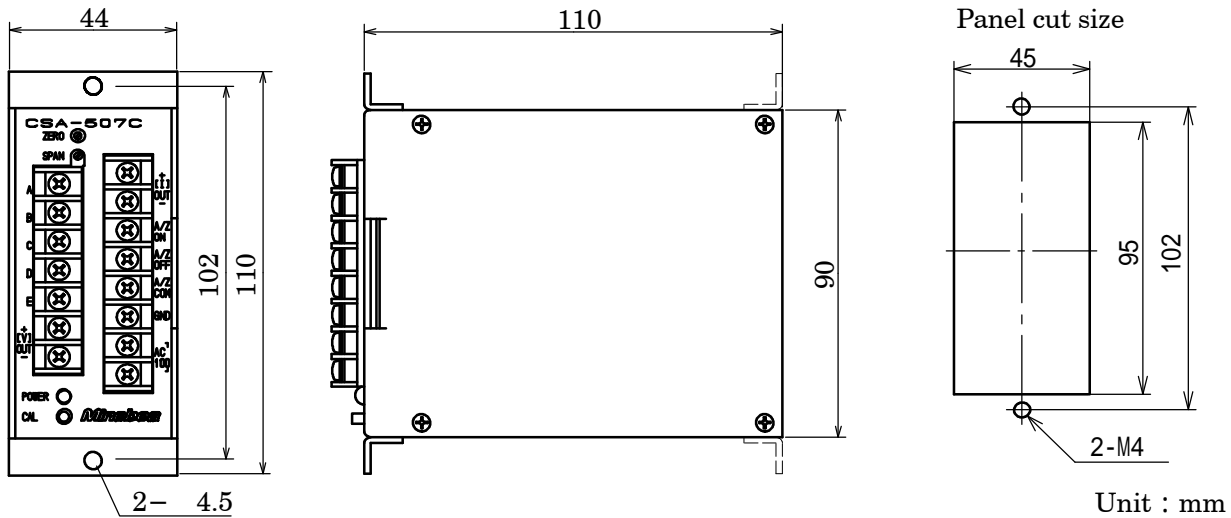
### 3-3. Installation



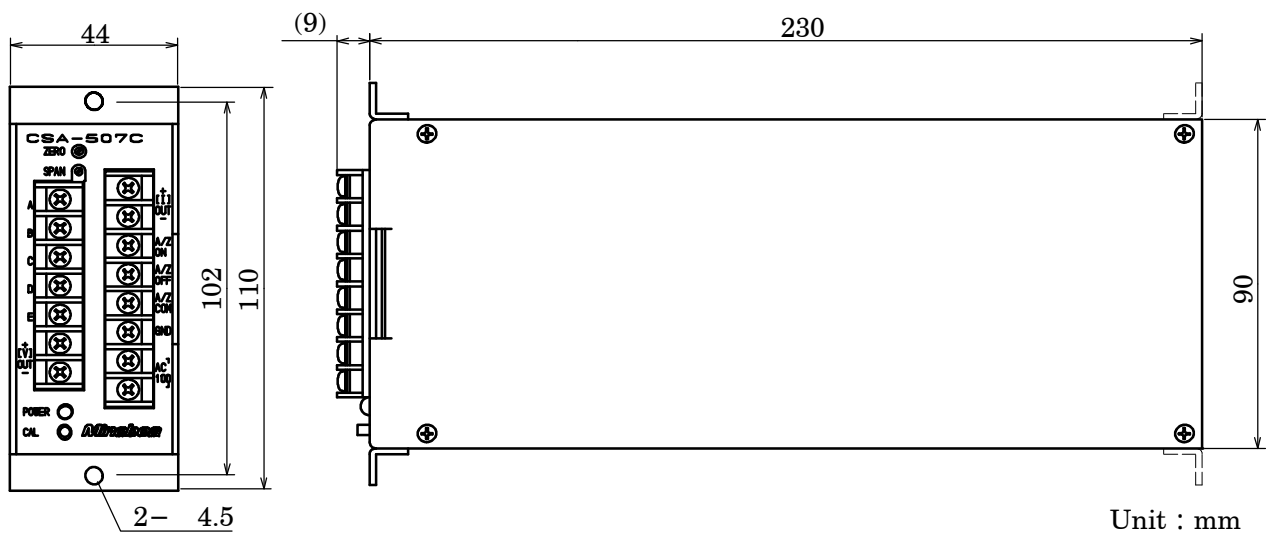
When installing the instrument, install as referring to the following dimensions and secure the space around the instrument.

Each dimensions of the instrument and required dimensions for the environmental spaces are as follows:

Dimensions for installation



Dimensions when the optional Auto zero unit(CSA507C-P99) is installed.



## 4. Connecting method

### 4-1. Layout of terminals

There are 2 pieces of terminals connector, one has 7 points of terminals connector(Terminals No.1) and the other has 8 points of terminals connector(Terminals No.2).

Layout of the terminals are shown in the following figure.

- Terminals

	Terminal name	Description	Application
Terminals No.1	A	Bridge power supply( + )	Strain gage applied transducer
	B	Amplifier input( - )	
	C	Bridge power supply( - )	
	D	Amplifier input( + )	
	E	Shield	
	[V]OUT +	Voltage output terminal( + )	Voltage output
	[V]OUT -	Voltage output terminal( - )	
Terminals No.2	[I]OUT +	Current output terminal( + )	Current output (Option)
	[I]OUT -	Current output terminal( - )	
	A/Z ON	Auto zero control terminal	External control input (Option)
	A/Z OFF	Auto zero control terminal	
	A/Z COM	Auto zero control terminal	
	GND	Grounding terminal	Power supply
	AC100	Power supply input terminal	
	AC100	Power supply input terminal	



“[V]OUT - ” for voltage output terminal and “[I]OUT - ” for current output terminal are connected internally.

#### 4-2. Note on connections



Warning

Keep strictly to the following items in the connection with the instrument. If neglected, it may cause an unexpected faulty or a damage in the instrument.

- Turn the power supply OFF when connection is made.
- Since the terminals at the front side of the instrument is made of resin, take care not to drop it down nor apply strong impact.
- Recommended torque to tighten the terminal screws for terminals is  $0.8 \text{ N}\cdot\text{m}$  at maximum.
- The crimp-type terminal lugs for the terminals of the instrument are to be applied as follows :

Width of crimp-type terminal lugs	Suitable crimp-type terminal lugs
6.0 mm or less	1.25-3 or Y type 1.25-3.5

- Keep the connecting cable with the instrument away from the noise source like power supply line and I/O line for control as far as possible.
- Conduit wiring should be the type of exclusive one, and avoid using with another line together.
- All of the connections should be executed securely according to the Instruction manual.

## 4-3. Connections

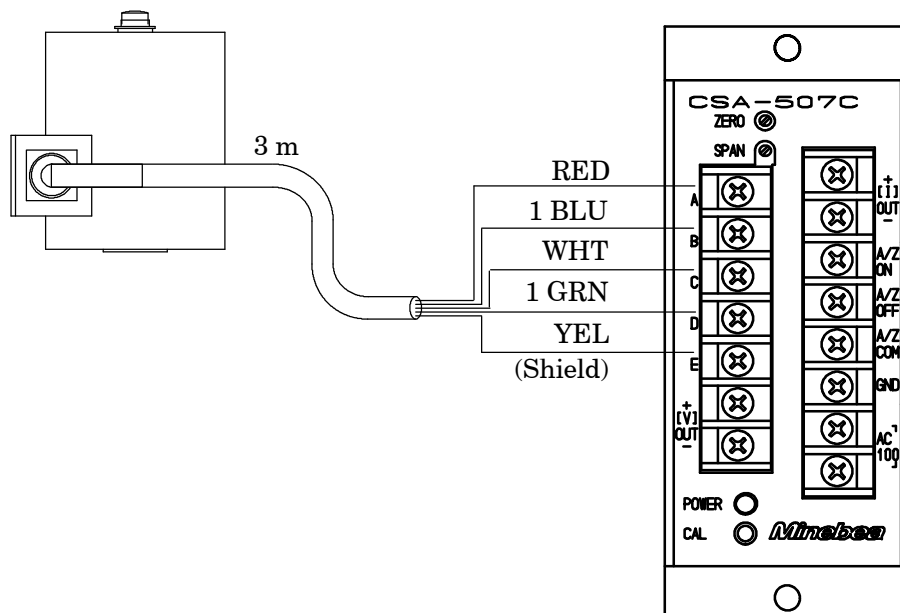
### 4-3-1. Connection with strain gage applied transducers

The instrument can connect with strain gage applied transducers, such as load cell, pressure transducer and so on. Here, we will describe the example of connections with load cell, so connect with another type of strain gage applied transducers in the same way.



- 1 When tension is applied with the application of tension type or universal(compression/tension) type of load cell, and output of “ + ” direction is required, connect “Green” with B terminal, and “Blue” with D terminal individually. As there is a case which standard wiring color is different, please confirm the inspection data sheet of the load cell being used.
- 2 When the total length of CAB-502 specifies more than 30 m, the accuracy may be out of warranty because the resistance of cable makes the input voltage of the instrument decreased.
- 3 When the length of CAB-502 cable is applied more than 10 m, or when the system is using the zener barrier, the CALIB is not applicable.

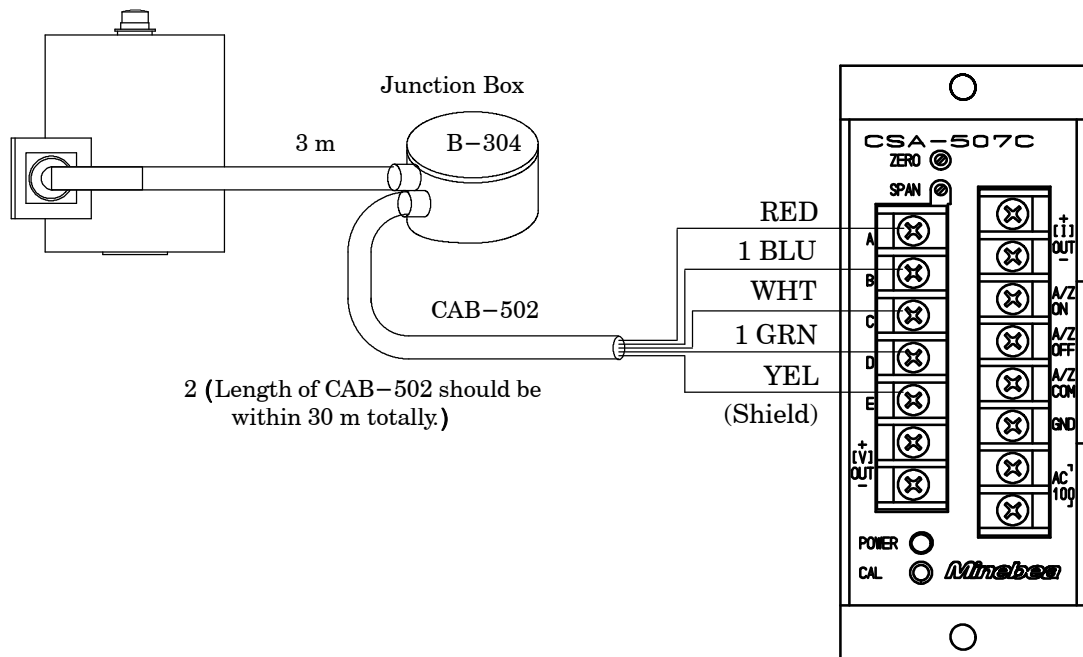
#### ① Connection with one set of load cell and CSA-507C



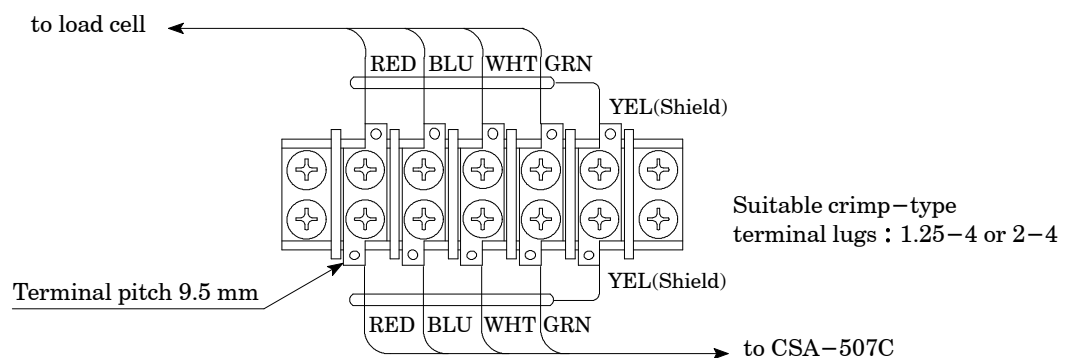


- 1 When tension is applied with the application of tension type or universal(compression/tension) type of load cell, and output of “ + ” direction is required, connect “Green” with B terminal, and “Blue” with D terminal individually. As there is a case which standard wiring color is different, please confirm the inspection data sheet of the load cell being used.
- 2 When the total length of CAB-502 specifies more than 30 m, the accuracy may be out of warranty because the resistance of cable makes the input voltage of the instrument decreased.
- 3 When the length of CAB-502 cable is applied more than 10 m, or when the system is using the zener barrier, the CALIB is not applicable.

② Connection with one set of load cell and junction box for extension use B-304 and CSA-507C



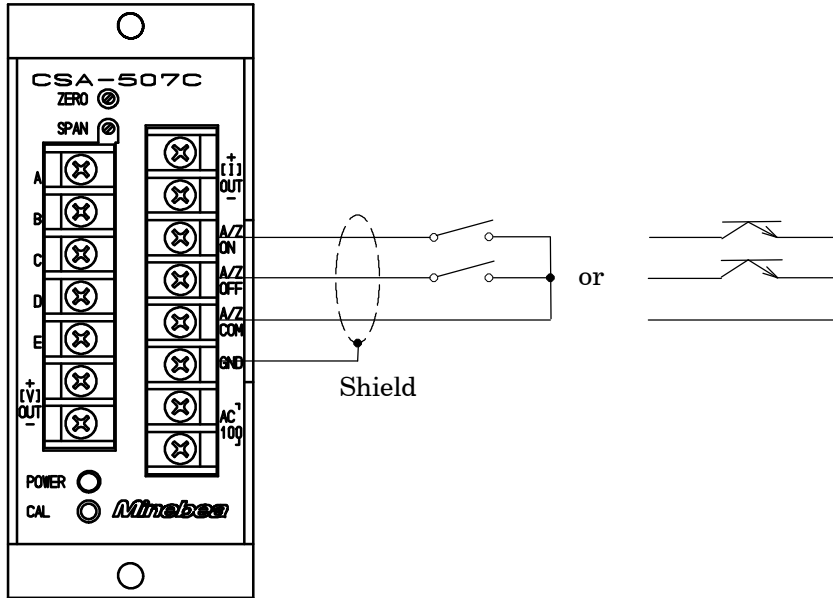
#### B-304 internal terminal connection





#### 4-3-2. Connection with external control input

Connection of external control input of “A/Z ON”, “A/Z OFF” should be made by using contact or open collector as below figure.(Effective only when optional Auto zero unit(CSA507C-P99) is installed.)

Refer to the paragraph 7-2 for each input function.



 **Warning** Connection with external control input should be made securely as the figure indicated. If neglected, it may cause an unexpected trouble or malfunction on the instrument.

 For the connection with external control input, be sure to apply shielded cable, and that shield should be connected with GND terminal. If not connected, it may cause malfunction due to the effect from external noises and so on.

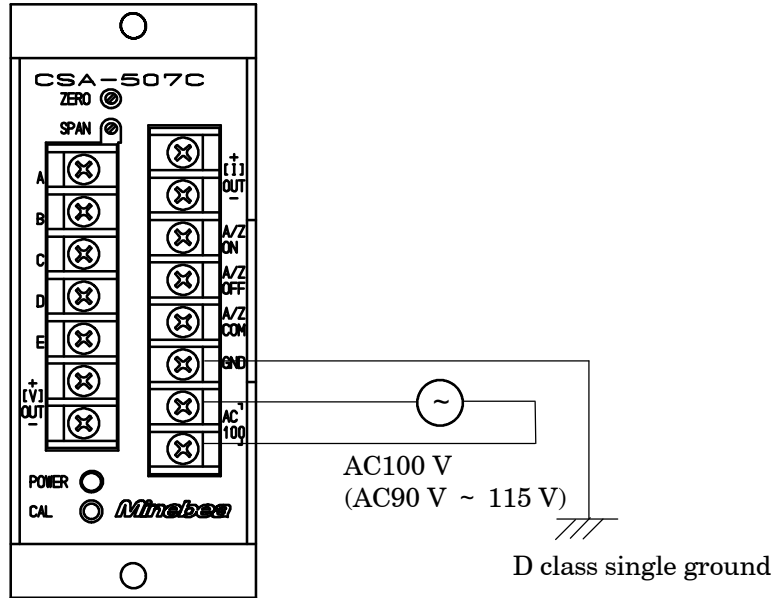
### 4-3-3. Connection with power supply and ground

Connection with power supply and ground should be made as follows:  
Beside, grounding should be the D class with single ground.

Power supply voltage AC100 V (AC90 V ~ AC115 V)

Power supply frequency 50/60 Hz

Power consumption Approx. 5 VA ( without any options at AC100 V )



When the power supply is AC200 V(CSA507C-P63), refer to the paragraph 7-3.



**Warning**

Connection with power supply and ground should be made securely as the figure indicates and also should be used within the specified condition of power supply.  
If neglected, it may cause an unexpected failure.



Grounding for the instrument should be the D class with single ground. If neglected, it may cause an unexpected malfunction due to the effects of noise from the other equipments.

GND terminal is connected with the frame of the instrument.

## 5. Calibration procedures



### Warning

Before using the new instrument or after exchanging the strain gage applied transducer with a new one, be sure to make calibration. If calibration is not made, correct measured results may not be obtained, or it may cause malfunction to the instrument and it may damage the peripheral equipment.

Moreover, even if calibration has made, there may occur the similar case as above when the result is not correct. So, make precise calibration again.

Make calibration with shorted between A/Z OFF and A/Z COM when optional Auto zero function(CSA-507C-99) is attached.

### 5-1. Preparation

According to the section 4. Connecting method, connect the instrument and strain gage applied transducer properly and then supply the power.

### 5-2. Calibration method

There are following 2 kinds of load calibration procedures for the instrument.

- ① Calibration with actual load
- ② Electrical calibration by the CALIB input.



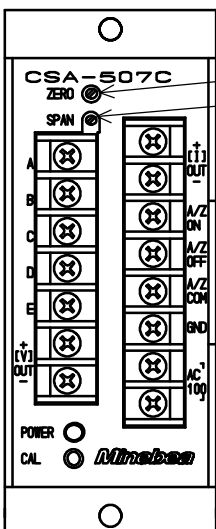
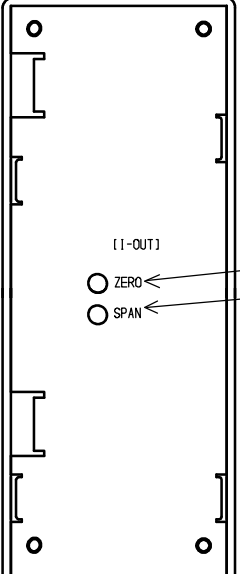
The accuracy of calibration obtained from is 1/500 or so.


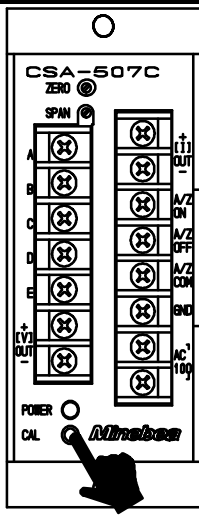
In the following paragraphs, we will describe each calibration procedure by showing the examples with load cell applied.


5-2-1. Calibration with actual load

Procedures		
1	<p>Make the condition of applying the initial load (Tare weight) on the load cell.</p> <p>When the initial load (Tare weight) is exceeding <math>\pm 0.25</math> mV/V in input conversion, cancel the initial load (Tare weight) according to the paragraph 5-3.</p>	<p>ZERO trimmer SPAN trimmer</p> <p>current output</p> <p>ZERO trimmer SPAN trimmer</p>
2	<p><b>Zero adjustment</b></p> <p>Adjust the voltage output value to 0.000 V, or adjust the current output value(option) to 4.000 mA by using the “ZERO” trimmer.</p> <p>When both the voltage output and the current output will be used together, adjust the output voltage by using above procedure at first, then adjust the current output by using the trimmer on the top face.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Warning</b> : Make calibration with shorted between A/Z OFF and A/Z COM when optional auto zero function (CSA-507C-99) is attached.</p> </div>	
3	<p><b>SPAN Adjustment</b></p> <p>Apply the standard weight on the load cell (use the one near the maximum load as possible.) and adjust the value to the output voltage value or output current value(option) to be set by using the SPAN trimmer.</p> <p>When both the voltage output and the current output will be used together, adjust the output voltage by using above procedure at first, then adjust the current output by using the trimmer on the top face.</p>	
4	<p><b>Zero adjustment</b></p> <p>Remove the standard weight applied in the step 3, then confirm if the voltage output value becomes to 0.000 V, or if the current output value becomes to 4.000 mA, otherwise return the procedure to step 2.</p>	
5	<p>Now, calibration has completed.</p>	

5-2-2. Electrical calibration with CALIB input.

	Procedure	
1	<p>Make the condition of applying the initial load (Tare weight) on the load cell.</p> <p>When the initial load (Tare weight) is exceeding <math>\pm 0.25</math> mV/V in input conversion, cancel the initial load (Tare weight) according to the paragraph 5-3.</p>	 <p>ZERO trimmer SPAN trimmer</p>
2	<p><b>Zero adjustment</b></p> <p>Adjust the voltage output value to 0.000 V, or adjust the current output value(option) to 4.000 mA by using the “ZERO” trimmer.</p> <p>When both the voltage output and the current output will be used together, adjust the output voltage by using above procedure at first, then adjust the current output by using the trimmer on the top face.</p> <div data-bbox="119 1198 742 1355" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Warning</b> : Make calibration with shorted between A/Z OFF and A/Z COM when optional auto zero function (CSA-507C-99) is attached.</p> </div>	 <p>current output</p> <p>ZERO trimmer SPAN trimmer</p>

Procedures		
3	<p>SPAN adjustment Set ON the "CAL" switch. The output equivalent to the CALIB value of 1 mV/V <math>\pm</math> 0.002 mV/V is obtained. (at the time of standard specifications)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  "CAL" switch is effective only while it is pressed.         </div> <p>The voltage output value or the current output value equivalent to the CALIB value is calculated from the rated load value and rated output value, and also maximum load value of the load cell connected with the instrument and voltage output value or current output value at that time.</p> <p>Adjust the voltage output value or current output value to become the calculated value by using the "SPAN" trimmer.</p> <p>When both the voltage output and the current output will be used together, adjust the voltage output by using above procedure at first, then adjust the current output by using the trimmer on the top face.</p>	

3	<p>Calculation example ) This is the calculation example for using 1 point load cell with rated capacity of 1 t and rated output of 3 mV/V, make the voltage output of 10.000 V for the maximum load of 0.34 t</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p> Warning : The rated output value applied on calculation should be the same value as described on the inspection data of each load cell.</p> </div> <p>Rated load value of load cell      1 t Rated output value of load cell      3 mV/V The maximum load value              0.34 t Voltage output value at the maximum load                                                             10.000 V CALIB value                                  1 mV/V (Load cell output value at the maximum load)   (Rated output value of load cell)                                                             × (The maximum load value) = <math>\frac{\hspace{10em}}{\hspace{10em}}</math> = <math>\frac{3 \text{ mV/V} \times 0.34 \text{ t}}{1 \text{ t}}</math> = 1.02 mV/V (Voltage output value equivalent to CALIB value)   (Voltage output value at the maximum load)                                                             × (CALIB value) = <math>\frac{\hspace{10em}}{\hspace{10em}}</math> = <math>\frac{10.000 \text{ V} \times 1 \text{ mV/V}}{1.02 \text{ mV/V}}</math> = 9.804 V Consequently, the voltage output value in turning ON the “CAL” switch should be adjusted to 9.804 V by using “SPAN” trimmer.</p>	
4	<p>Zero adjustment Turn OFF the CAL switch, then confirm the voltage output value at 0.000 V, or the current output value(option) at 4.000 mA. Otherwise, return to the step 2.</p>	
5	<p>Now, calibration has completed.</p>	

### 5-3. Zero adjustment by external resistance.

#### 5-3-1. Installation of external resistance

Zero adjustment range of the instrument is  $\pm 0.25 \text{ mV/V}$  ( $\pm 500 \times 10^{-6}$  strain) with the input conversion.

Therefore, when the initial value is exceeding the range, the instrument will not be adjusted. In this case, connect the resistance  $R_z$  on the terminals No.1 shown as below, and cancel the portion of the initial load.

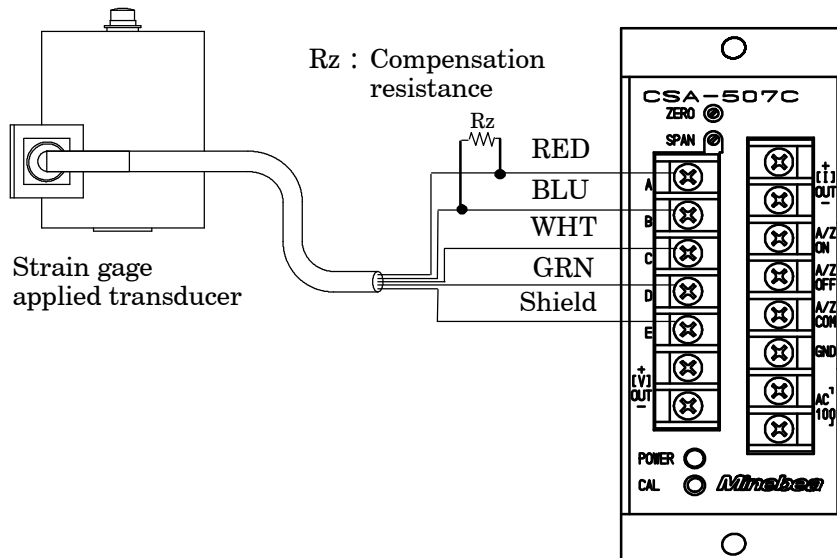
Moreover, since the resistance applied will produce effects on accuracy directly, we recommend the type that specifies 50 ppm/ or better for temperature coefficient in resistance.

In case of applications in the circumstance of large temperature variations, effects on accuracy by temperature will decrease if more excellent type of temperature coefficient in resistance value is prepared. The list of resistance value for compensation corresponding to INPUT conversion strain is as follows :

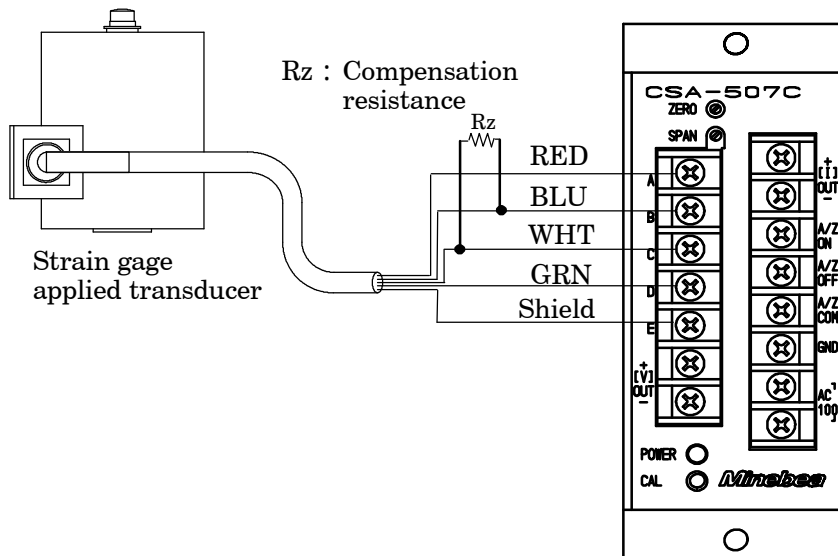
However, these resistance values are theoretical ones, so there may cause errors due to variations of input/output resistance for the strain gage applied transducer used actually.

In due course, just think them as an aim.

When the initial load is plus, connect  $R_z$  between A and B on the terminals



When the initial load is minus, connect  $R_z$  between B and C on the terminals.



		Resistance value(Rz)	
Strain for INPUT conversion		When the bridge resistance is 350 .	
$\times 10^{-6}$ strain	mV/V	Calculated value	Approximate value(E96)
200	0.1	875 k	866 k
400	0.2	437 k	442 k
600	0.3	291 k	294 k
800	0.4	219 k	221 k
1000	0.5	175 k	174 k
1200	0.6	146 k	147 k
1400	0.7	125 k	124 k
1600	0.8	109 k	110 k
1800	0.9	97.0 k	67.6 k
2000	1.0	87.7 k	86.6 k
2200	1.1	79.4 k	78.7 k
2400	1.2	72.7 k	73.2 k
2600	1.3	67.1 k	66.5 k
2800	1.4	62.3 k	61.9 k
3000	1.5	58.2 k	57.6 k
3200	1.6	54.5 k	54.9 k
3400	1.7	51.3 k	51.1 k
3600	1.8	48.4 k	48.7 k
3800	1.9	45.9 k	46.4 k
4000	2.0	43.6 k	43.2 k
4200	2.1	41.5 k	41.2 k
4400	2.2	39.6 k	39.2 k
4600	2.3	37.9 k	38.3 k
4800	2.4	36.3 k	36.5 k
5000	2.5	34.8 k	34.8 k

### 5-3-2. Confirmation of initial value

When the initial load(tare weight) is unclear, confirm it by the following procedures :

- ① Prepare the digital volt meter which can read 0.1 mVDC.
- ② Measure the voltage(bridge power supply voltage) between A and C(C is minus) of the instrument.
- ③ Measure the voltage(input voltage) between D and B(B is minus) of the instrument.
- ④ Calculate the input conversion value at the initial load through the below formula.

If the calculated value is “ + polarity”, the initial load will be plus, otherwise if the calculated value is “ - polarity”, the initial load is minus.

Referring to the paragraph 5-3-1, apply the external resistance.

$$(\text{Input conversion value of the initial load}) = \frac{(\text{Input voltage})}{(\text{Bridge power supply voltage})}$$

Calculation example)

This is the example of the calculation method when the bridge power supply voltage is 5.000 V, and the input voltage is 2.0 mV in the condition that initial load(tare weight) is applied as follows :

Bridge power supply voltage : 5.000 V  
Input voltage : 2.0 mV

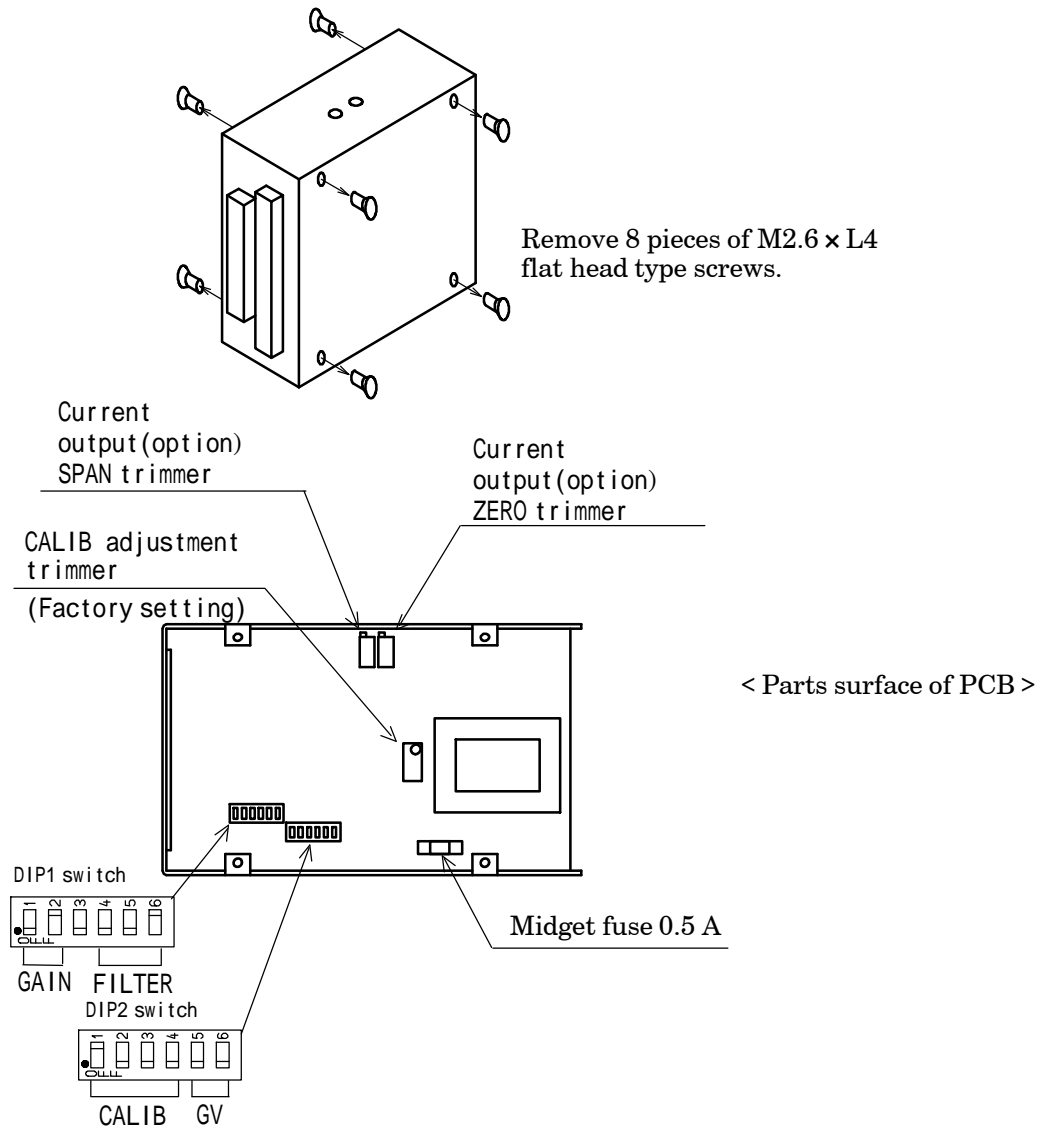
$$(\text{Input conversion value of the initial load}) = \frac{2.0 \text{ mV}}{5.000 \text{ V}} = 0.4 \text{ mV/V}$$

Therefore, according to the paragraph 5-3-1, Rz will be at 219 k .

## 6. Function and Operation

After 8 pieces of screws are removed from the side panel, the protecting cover can be open, and the switches on the PCB will appear.

In this condition, each setting described in the paragraph 6-1, 6-2, and 6-3 will be available to use.



**Warning**

Be sure to check that power supply is off when you will install and/or remove the protecting cover.

If the work is done with the power fed, there may have the possibility of electric shock to the operator or even the possibility of destroying the instrument.


Do not touch the trimmers and switches for CALIB adjustment because those have been adjusted at the shipment from the factory. In case of touching them wrongly, the CALIB value may be changed. If the calibration or measurement is made by the input of CALIB value with the above condition, correct measured results may not be obtained nor it may cause a malfunction in the instrument and there may exist damage in peripheral equipment.

When the CALIB value has changed, request to our sales office or representative to make the readjustment on CALIB value.

**6-1. Setting of sensitivity**

Sensitivity is selectable from “1 000 times”, “2 000 times” and “3 000 times”. Standard setting at the shipment is selected as “1 000 times”

Setting of sensitivity		1 000 times	2 000 times	3 000 times
DIP1	1	OFF	ON	OFF
	2	ON	OFF	OFF

 section : Standard specifications at the shipment



When sensitivity has changed, execute the calibration again.

**6-2. Setting of frequency response**

Frequency response is selectable from “1 Hz”, “10 Hz”, “100 Hz” and “1 kHz”. Standard setting at the shipment is selected as “10 Hz”

Frequency response		1 kHz	100 Hz	10 Hz	1 Hz
DIP1	4	ON	OFF	OFF	OFF
	5	OFF	ON	OFF	OFF
	6	OFF	OFF	ON	OFF

 section : Standard specifications at the shipment




When frequency response range has changed, apply the calibration again.

### 6-3. Setting of bridge power supply voltage

Bridge power supply voltage is selectable from “10 V”, “5 V” and “2.5 V”.  
Standard setting at the shipment is selected as “10 V”

Bridge power supply voltage		10 V	10 V	5 V	2.5 V
DIP2	5	OFF	OFF	ON	ON
	6	OFF	ON	OFF	ON

 section : Standard specifications at the shipment



When bridge power supply voltage has changed, apply the calibration again.

## 7. Option

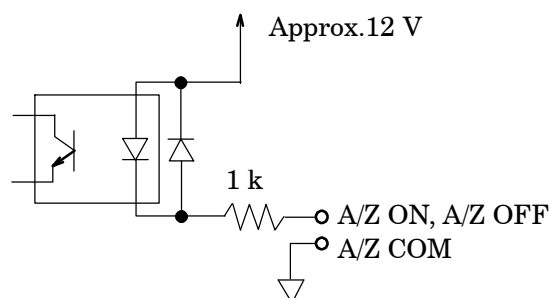
### 7-1. Current output (Parts No.CSA507C-P07)

- (1) Output Output : DC4 mA ~ 20 mA  
Standard : DC4 mA ~ 20 mA with the output voltage at DC0 V ~ 10V
- (2) Load resistance : 500 or less
- (3) Non-linearity : 0.05 %F.S.

### 7-2. Auto zero (Parts No.CSA507C-P99)

- (1) Auto zero operation range : Within  $\pm 10$  V
- (2) Auto zero required time : Within approx. 1 s
- (3) Accuracy of auto zero : Within  $\pm 5$  mV
- (4) Temperature coefficient : Zero point Within  $\pm 0.005$  %F.S./  
Sensitivity Within  $\pm 0.005$  %F.S./
- (5) Backup time of battery : Approx. 5 years in the room temperature  
(Lithium battery is used.)

#### 7-2-1. Equivalent circuit of input section



#### 7-2-2. Function

##### (1) Auto zero ON :

Auto zero (tare weight cancellation) function will apply when short between A/Z ON and A/Z COM in the terminals No.2 is made for approx. 10 ms or more, so that voltage output value or current output value will become zero. The voltage output value or the current output value will become the output value at net weight portion.

##### (2) Auto zero OFF :

Auto zero clear (tare weight cancellation clear) will work while short between A/Z OFF and A/Z COM in the terminals No.2 is made. The voltage output value or the current output value will become the output value at gross weight portion.



The operation of Auto zero ON will be performed after the input signal is short for about 10 ms or more.

The operation of Auto zero OFF will be performed while the input signal is short.

Please confirm the timing when it changes with an actual instrument, and match timing if necessary by the timer processing when the state changes because of an external control.

### 7-3. Power supply voltage AC200 V (CSA507C-P63)

#### 7-3-1. Layout of the terminals

- Terminals

	Name of terminal	Description	Application
Terminals No.1	A	Bridge power supply( + )	Strain gage applied transducer
	B	Amplifier input( - )	
	C	Bridge power supply( - )	
	D	Amplifier input( + )	
	E	Shield	
	[V]OUT +	Voltage output terminal( + )	Voltage output
[V] - OUT	Voltage output terminal( - )		
Terminals No.2	[I]OUT +	Current output terminal( + )	Current output(Optional)
	[I]OUT -	Current output terminal( - )	
	A/Z ON	Terminal for Auto zero control	External control input(Optional)
	A/Z OFF	Terminal for Auto zero control	
	A/Z COM	Terminal for Auto zero control	
	GND	Terminal for grounding	Power supply
	AC200	Power supply input terminal	
	AC200	Power supply input terminal	



Refer to the note on connection in the paragraph 4-2.

The supply voltage is AC200 V(AC180 V ~ 231 V) 50/60 Hz.

## 7-3-2. Connection with power supply and ground

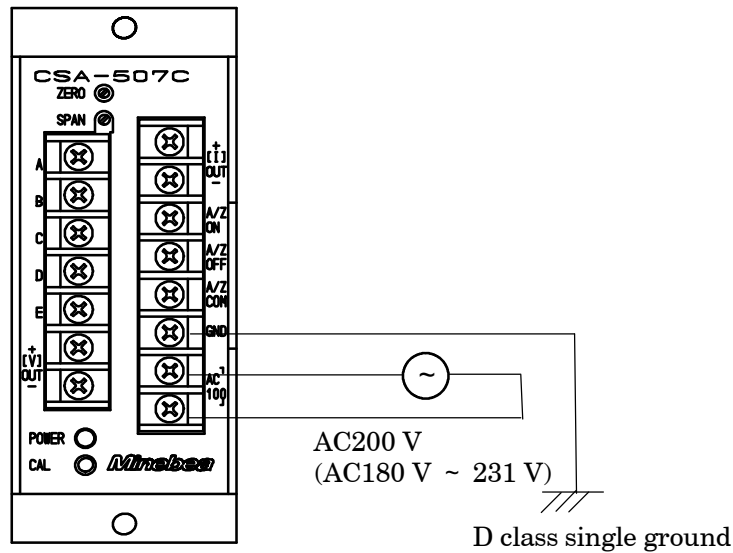
Connection with power supply and ground should be made as follows :


Beside, grounding should be the D class with single ground.


Power supply voltage AC200 V(AC180 V ~ 231 V)

Power supply frequency 50/60 Hz

Power consumption Approx.5 VA (without options at AC200 V)

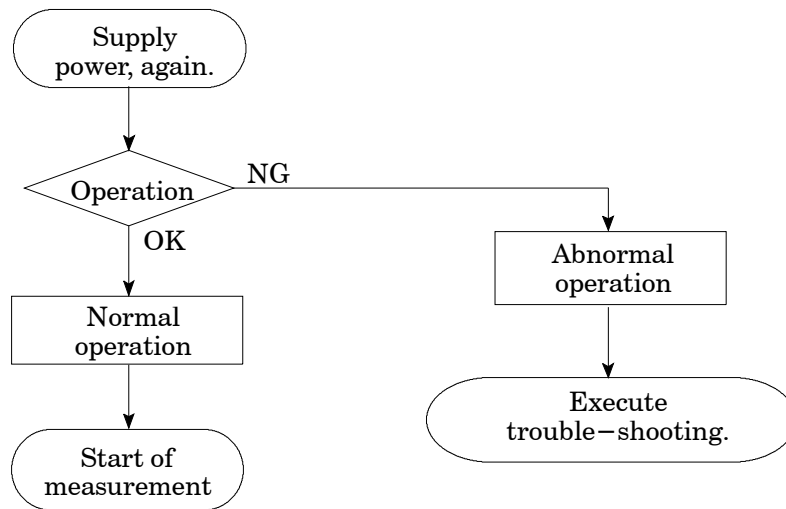


 **Warning** Connection with power supply and ground should be made securely as above figure, and also should be made within the specified condition of power supply.  
If neglected, it may cause an unexpected failure.

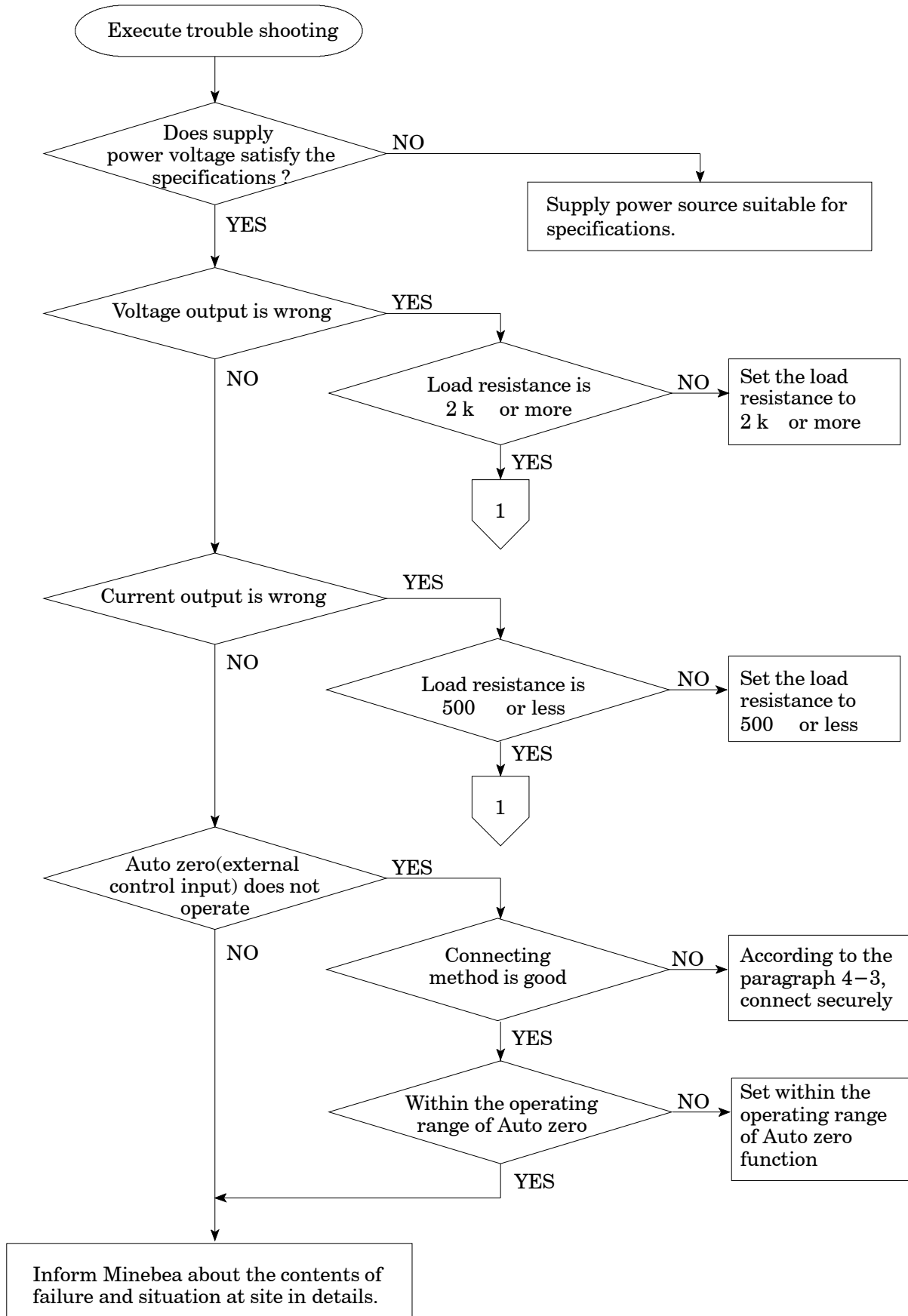
 Grounding for the instrument should be the D class with single ground. If neglected, it may cause an unexpected malfunction due to the effects of noise from the other equipment.  
GND terminal and the frame of the instrument is connected.

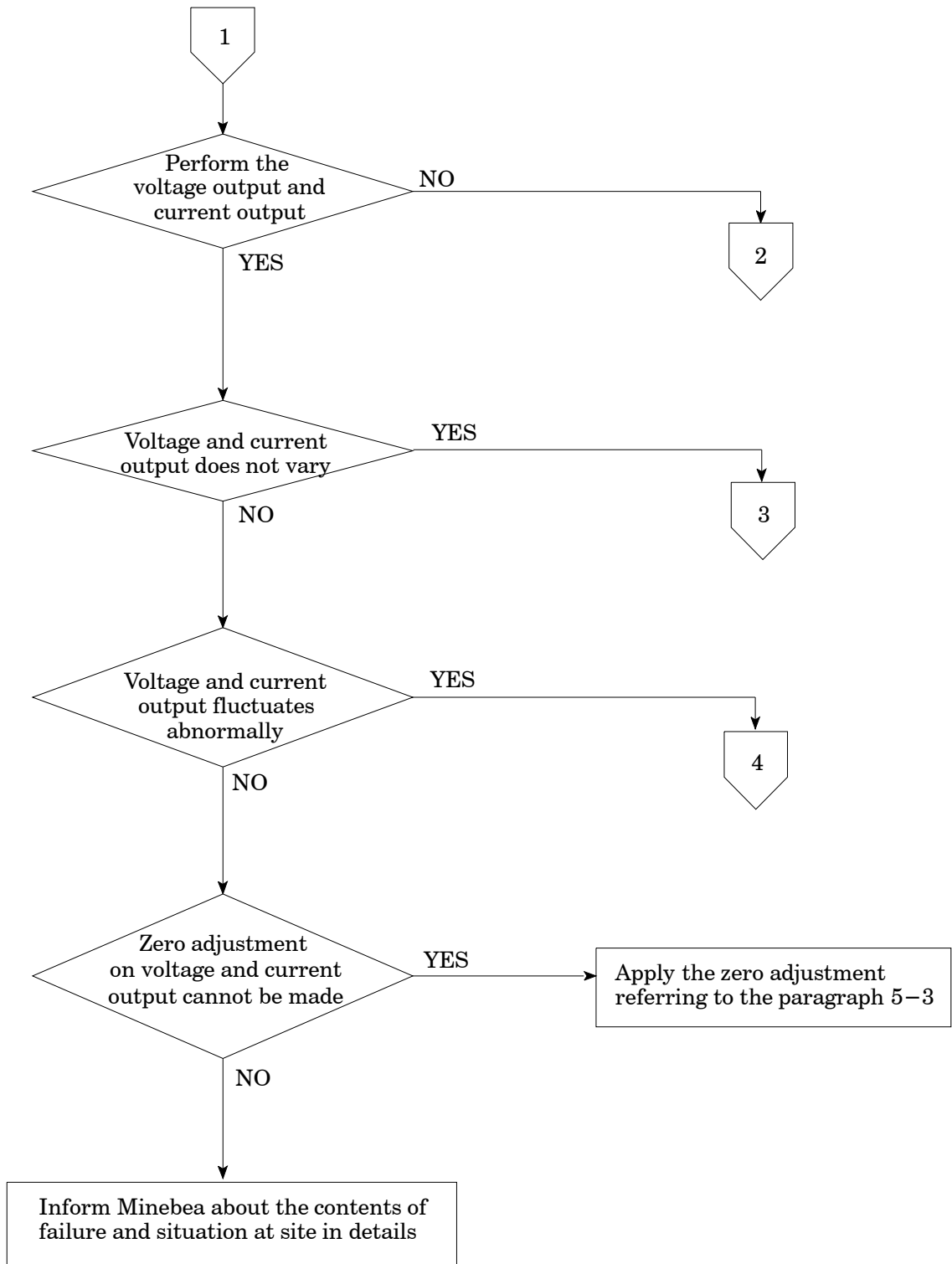
## 8. Trouble shooting

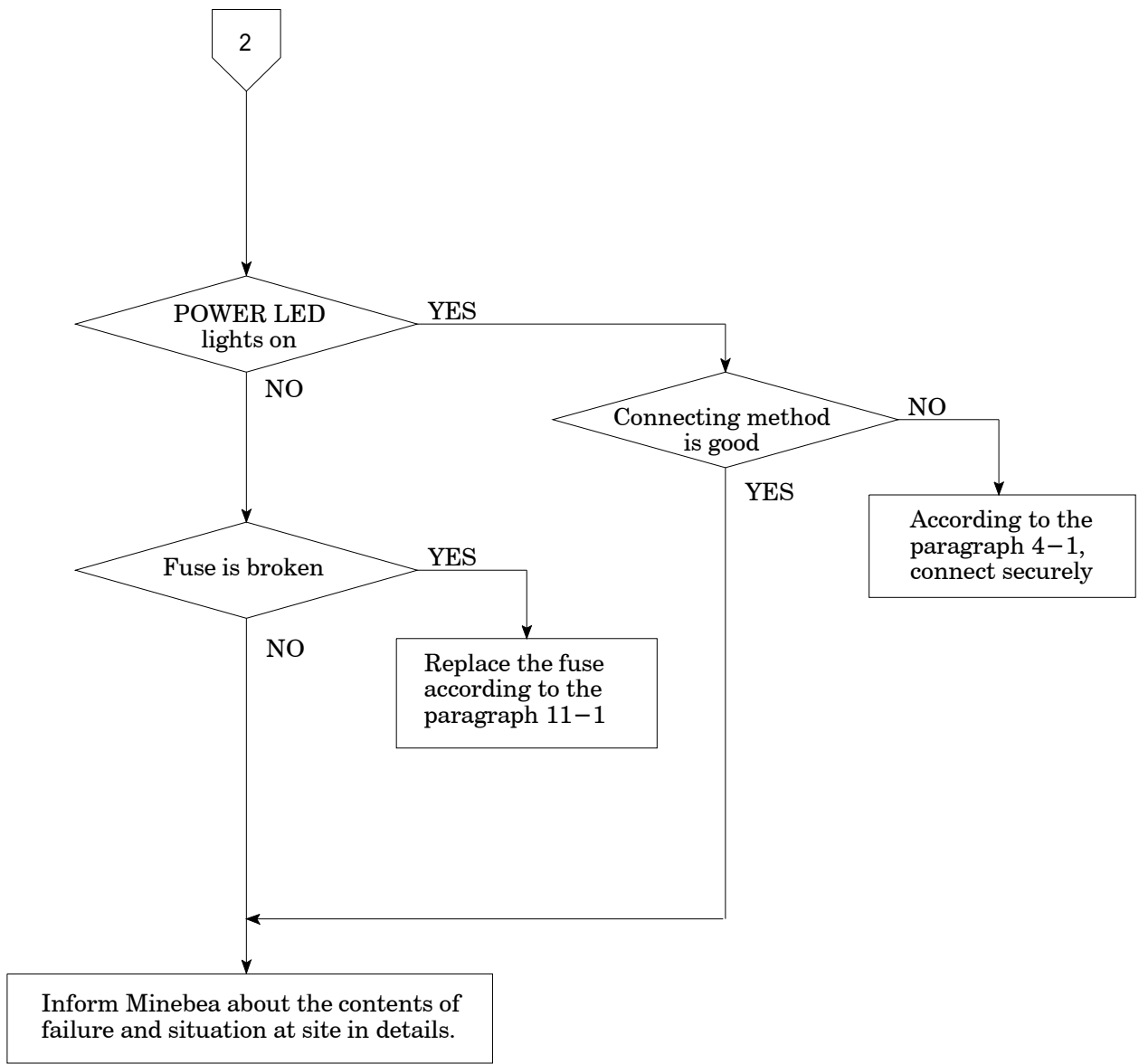
When abnormal point(s) is/are found during the operation of the instrument, check it/them by the following procedures. However, when you cannot find any applicable items nor you cannot solve the symptom of trouble even after you have taken some measures, contact with Minebea.

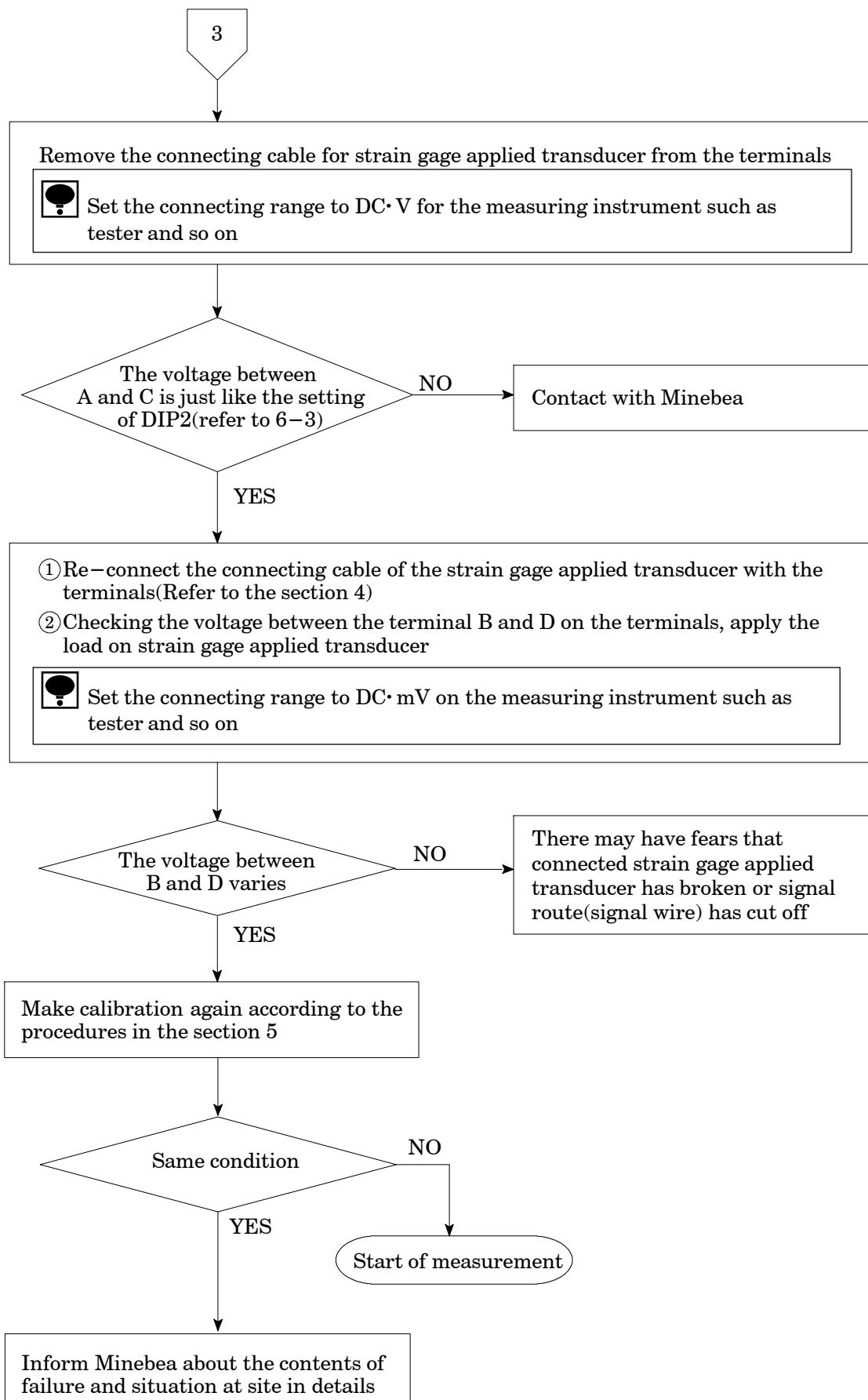


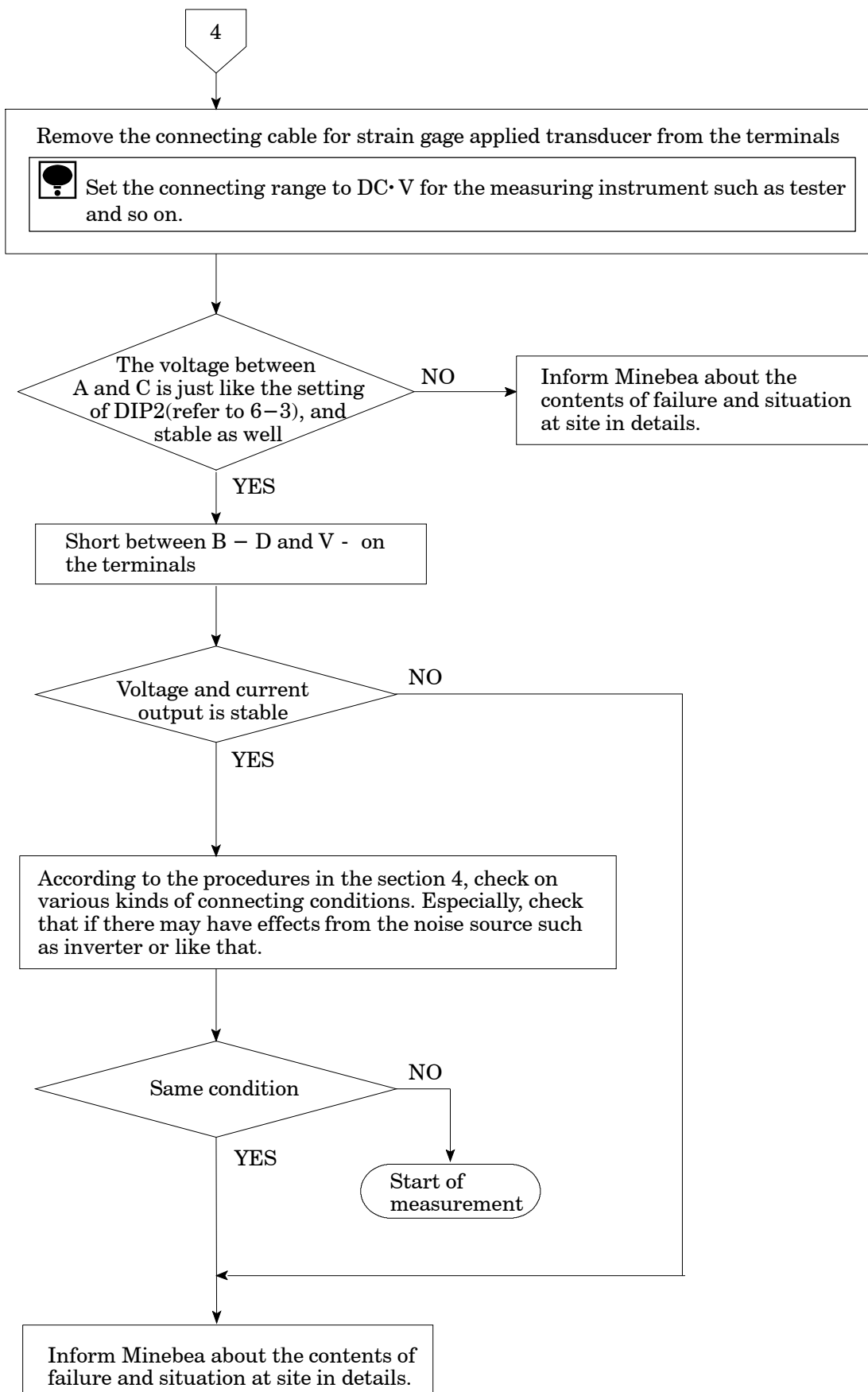
## 8-1. Execute trouble shooting











## 9. Specifications

### 9-1. Specifications

Bridge power supply	DC10 V $\pm$ 0.3 V within 30 mA (DC5 V, DC2.5 V changeable)
Applicable transducer	1 piece of strain gage applied transducer(350 ) can be connectable
Input range	0.5 mV/V ~ 3 mV/V
Sensitivity adjustment range	1 000 times, 2 000 times, 3 000 times (changeable by internal dip-switch) Adjust 1/1 to 1/4 against the each setting
Output	DC $\pm$ 10 V output (non isolation)
Output load resistance	2 k or more
Zero adjustment range	$\pm$ 0.25 mV/V Adjust the tare weight compensation by applying the resistance outside.
Non-linearity	0.02 %F.S.
Temperature coefficient	
Zero point	$\pm$ 1 $\mu$ V/ (Input conversion)
Sensitivity	within $\pm$ 0.01 %F.S./
CALIB	1 mV/V $\pm$ 0.002 mV/V (Changeable 0.5 mV/V $\pm$ 0.001 mV/V or 0.25 mV/V $\pm$ 0.000 5 mV/V when order is issued.)
Frequency response range	1 Hz, 10 Hz, 100 Hz and 1 kHz(changeable by internal dip-switch)

### 9-2. General specifications

Operating temperature and humidity range	
Temperature	- 10 ~ 50
Humidity	85 %RH or less (Non condensing)
Power supply	
Power supply voltage	AC 100 V (AC90 V ~ AC115 V)
Power supply frequency	50/60 Hz
Power consumption	Approx.5 VA (at AC100 V)
Insulation resistance	100 M or more at DC500 V (AC power supply $\leftrightarrow$ Main body)
Withstand voltage	AC1 500 V 1 min(AC power supply $\leftrightarrow$ Main body)
Outline dimensions(W $\times$ H $\times$ D)	
CSA-507C	: 44 mm $\times$ 90 mm $\times$ 110 mm (excluding protrusion)
CSA-507C-99	: 44 mm $\times$ 90 mm $\times$ 230 mm (excluding protrusion)
Weight	
CSA-507C	: Approx.650 g
CSA-507C-99	: Approx.1 150 g

### 9-3. Standard specifications at the shipment

Bridge power supply	DC10 V
Sensitivity	1 000 times output of DC10 V at the input of 1 mV/V (4 mA to 20 mA when P07 is applied)
Frequency response range	10 Hz
CALIB	1 mV/V
Power supply	
Power supply voltage	AC100 V (AC90 V ~ AC115 V)
Power supply frequency	50/60 Hz

## 9-4. Accessories

Instruction manual	1 piece
Midget fuse (0.5 A)	1 piece
Minus driver	1 piece
Terminal block cover	2 pieces

## 9-5. Options

### 9-5-1. Current output

P/N	CSA507C-P07
Output	DC4 mA ~ 20 mA (Non isolation)
Load resistance	500 or less
Non-linearity	0.05 %F.S.

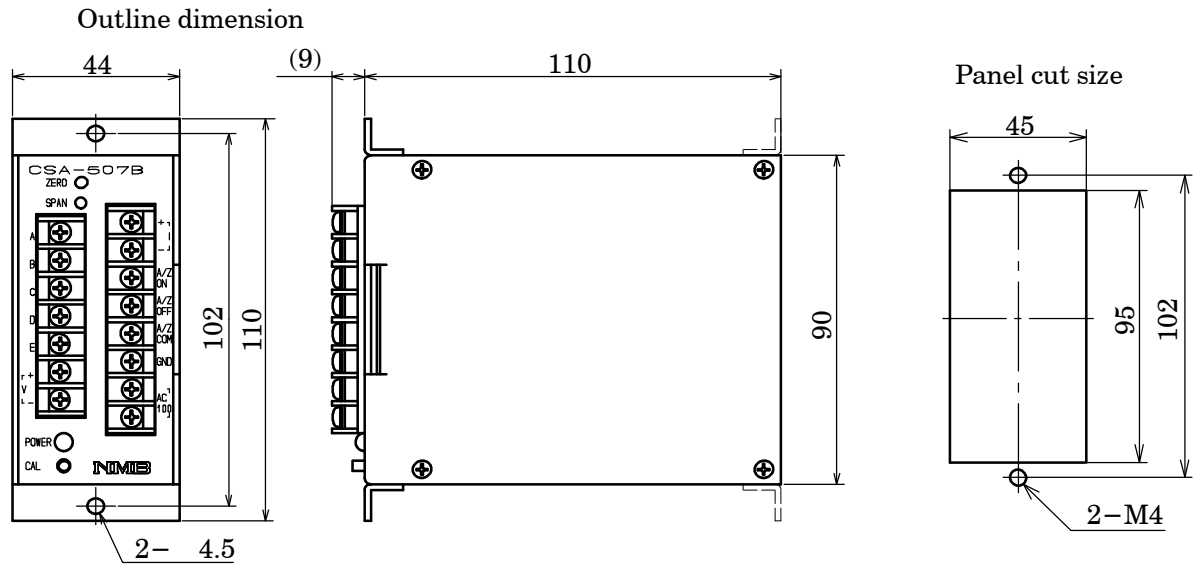
### 9-5-2. Auto zero

P/N	CSA507C-P99
Auto zero operating range	within $\pm 10$ V
Auto zero required time	within approx. 1 s
Auto zero accuracy	within $\pm 5$ mV
Temperature coefficient	
Zero point	within $\pm 0.005$ %F.S./
Sensitivity	within $\pm 0.005$ %F.S./
Backup time of battery	Approx. 5 years in the room temperature (Using lithium battery)

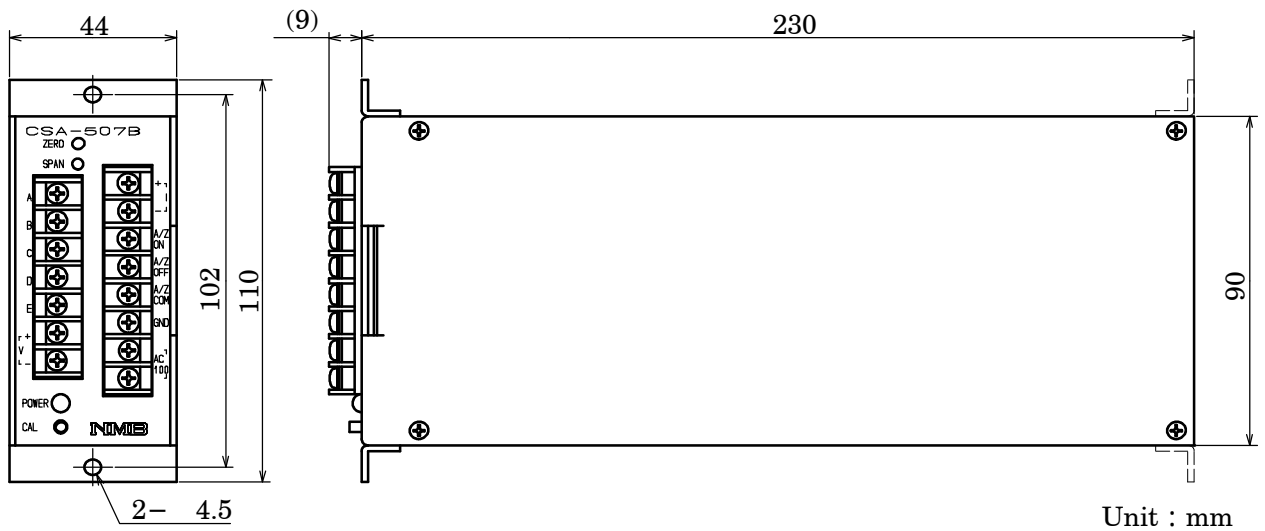
### 9-5-3. Power supply voltage

P/N	CSA507C-P63
Power supply voltage	AC200 V (AC180 V ~ 231 V)

# 9-6. Outlines



Outline dimensions when auto zero(Optional CSA507C-P99) is installed.



## 10. Warranty

### 10–1. Warranty

- The instrument is covered by a warranty for a period of one year from the date of delivery.
- As for repairs and/or after service is required during the period of warranty, contact with Minebea's sales office or sales agency from which you have purchased.

### 10–2. Repair

Before asking repairs, make checks once again that the connection, setting and adjustment for the instrument have finished properly by referring to 8. Trouble–shooting.

Especially, make checks whether the connections of sensor are disconnected or cut off.

After that, still there may be found some defects in the instrument, contact with Minebea's sales office or sales agency from which you have purchased.

# 11. Appendix

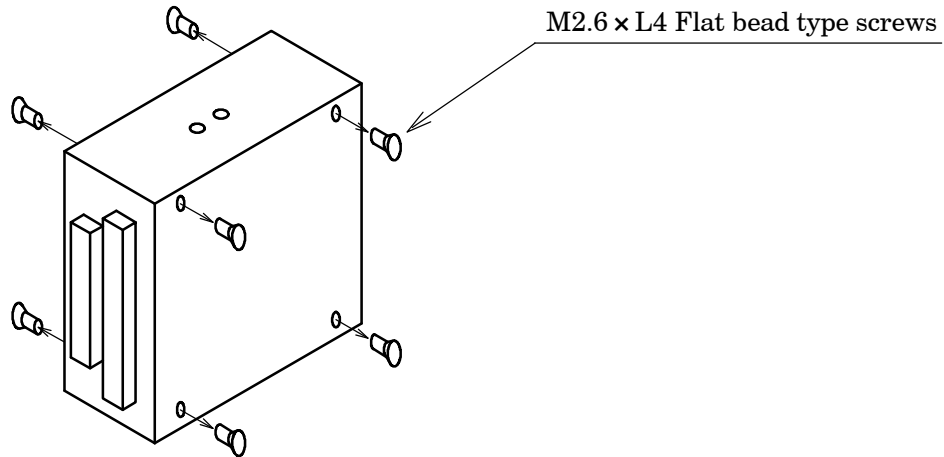
## 11-1. Replacement of fuse



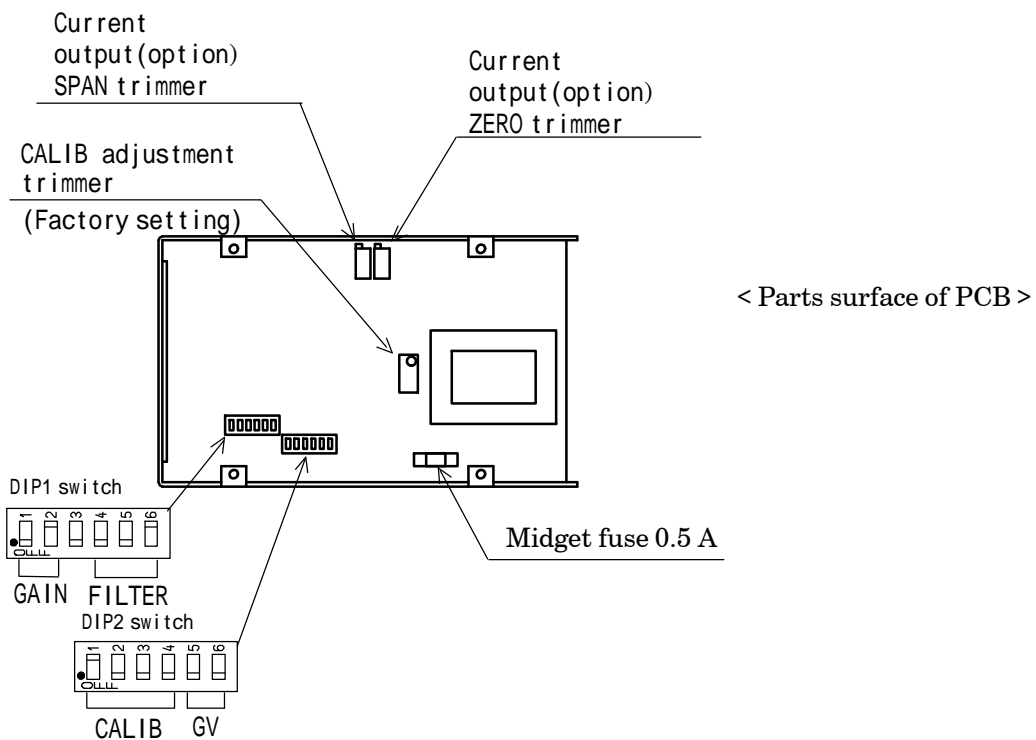
Warning

When installation method for fuse is wrong and/or capacity of installed fuse is inadequate, it causes an unexpected faulty of the instrument.

- ① Set OFF the power supply for the instrument.
- ② Remove the 8 pieces of screws, then remove the protecting cover.



- ③ Replace the fuse on the parts surface of PCB.



- ④ Install the protect cover, then apply 8 pieces of screws at the side.

- The contents of this manual may subject to change without notice.

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