

Minebea

TRANSMITTER
CSA-522B

Instruction Manual

Forward

Thank you very much for purchasing the transmitter, model CSA-522B. This manual explains installation procedures and connecting method and also operating method for the transmitter. Make use of it properly after reading through the manual carefully. This manual is intended for the technical experts to read.

Marks and arrangements used in this manual

The following marks are put to the explanation on the matters that indicate “Don’t do this.”, “Take care” and “For reference”.

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



Warning

**When you are operating the instrument, you have to pay cautions or restrictions related with this description.
Be sure to read to prevent from malfunction.**



Caution

Descriptions that may cause injury or physical damage to operators and such as occurrences of physical damage.



**When you are operating the instrument, you have to pay cautions or restrictions related with this description.
Be sure to read to prevent from malfunction.**

For safe operation

Be sure to read this instruction manual before use.

1. Installation place



Caution

Use the Instrument under the following conditions.

- Environmental temperature : $-10\text{ }^{\circ}\text{C}$ to $50\text{ }^{\circ}\text{C}$
- Environmental humidity : 85 %RH or less (Non condensing)



Caution

Do not install the Instrument in following places. It may cause damage to the Instrument.

(1) Place to be avoided.

- Hot locations or locations exposed to direct sunlight.
- Damp locations
- Locations subject to vibration or impact.
- Dusty locations.
- Environments containing corrosive gases or salt, etc.
- Locations subject to sudden temperature or humidity fluctuations.
- Close to equipment that generates magnetic or electromagnetic radiation.
- Locations subject to radioactivity and radiations.
- Locations such as laboratories where chemical changes may occur.

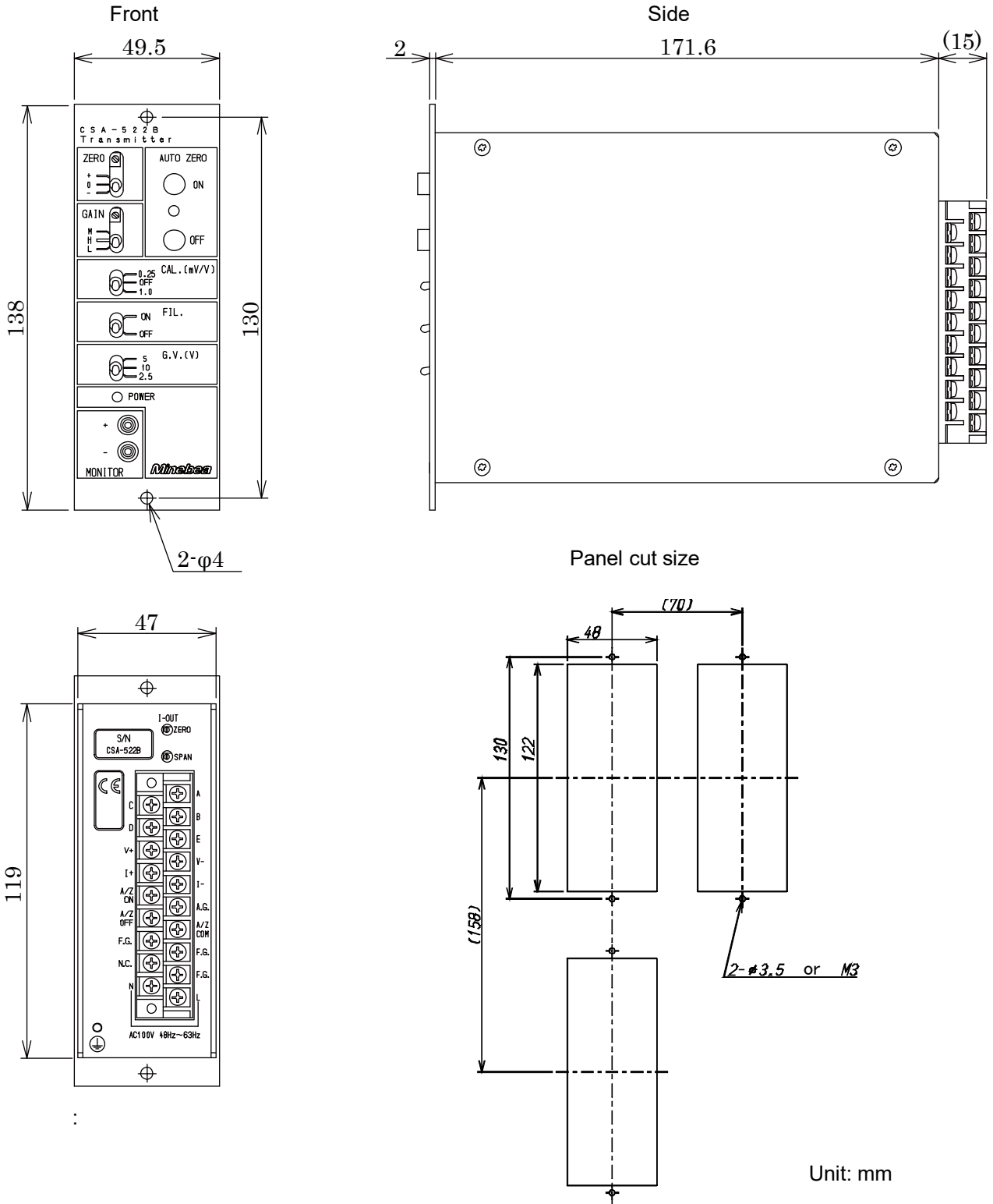
(2) When you set up this instrument



Caution

Please secure and set up the spaces between this instrument and the devices.

Followings are the dimensions of the Instrument and for environmental spaces required:



Unit: mm

2. Power supply

Warning

Be sure to check that power supply is OFF when installing each cable. If an operator works with power ON, he/she may have an electric shock or the instrument may be destroyed.

Warning

Before supplying power, check the indication of power voltage/specifications to be identical with supplied power. If they are not identical, contact us. Without checking the above, operation may cause damage to the instrument or electric shock.

Caution

Be sure to ground a grounding wire. If a grounding wire is not grounded, it may cause malfunction of the instrument or an electric shock to an operator.

3. Instructions for use

Caution

Before using a new instrument, or when exchanging a strain gage applied transducer for a new one, be sure to make calibration. If neglected, it may cause incorrect results in measurement or malfunction in the instrument and moreover may cause damage to peripheral equipments. When similar trouble occurs after calibration, be sure to make calibration again, even if calibration has completed.

Caution

When using the instrument, check that wires are connected properly. If neglected, correct measurement cannot be obtained and it may cause malfunction in the instrument or cause damage to peripheral devices or a critical accident.

Caution

Improper change of setting during operation may cause incorrect measurement or malfunction, or cause damage to peripheral equipments.

Caution

Do not give the instrument such a shock as throwing something at it. It may cause damage or destroy electrical circuits and even have loose resistance to environment or operability.

4. Conformity standard

This instrument has suited the following standard.

·EN61326-1:2013

“Electrical equipment for measurement, control, and laboratory use – EMC requirements”
“Immunity test requirements for equipment intended for use in industrial locations”

·EN61010-1:2010

“Safety requirements for electrical equipment for measurement, control and laboratory use”

·RoHS compliant

The operating condition to conform this standard is as follows:



Caution

**Please observe the following conditions strictly when this instrument suits the below.
If neglected, it may not conform to the above standard.**

4-1. Place of installation

- Please set up this instrument in the shielded case or control panel where EMC measures are given.

4-2. Wiring

(1) Shield processing

- Please make sure to shield all the signal cable by using the shielded cable or using the conduit piping including the storage case and control panel.
- Please make sure to shield the power cable by using the conduit piping including the storage case and control panel.

(2) Grounding

- Please make sure to apply the grounding through the case and control panel where EMC measures are given with protective earth terminal.

History of revision

Date	Manual No.	Revision reason (Contents)
2007/06	DRW. NO.EN294-1348	First version
2009/06	DRW. NO.EN294-1348-A	Due to ECN.FN09-02035 Changed CE conformity standard EN61326-1:2006 -Addition- “Immunity test requirements for equipment intended for use in industrial locations”
2016/10	DRW. NO.EN294-1348-B	Due to ECN.FN10-02121A •Change length of terminals (15) to (20) •Minebea logo is changed Due to ECN.FN16-02057 •「MINEBEA Co., Ltd. Measuring Components Business Unit」 on the cover is deleted
2016/10	DRW. NO.EN294-1348-C	Due to ECN.FN10-02121B •Delete the extra page number .「next page of cover and table of contents page number II」 •Repair the position of word .「Warning」、 「 ! 」 •Delete the extra white page .「next page of history of revision」 •Add the white page .「next page of table of contents」
2016/10	DRW. NO.EN294-1348-D	Due to ECN.FN10-02121C •Delete the extra white pages . 「next page of History of revision」 「next page of Index」
2017/10	DRW. NO.EN294-1348-E	Due to ECN FN17-02017 •Delete the company name in the contents.
2018/01	DRW. NO.EN294-1348-F	Due to ECN FN18-02010 Change the MS-Word style including font and settings. Correct miswriting in English words/sentences. Due to ECN No.FN17-02066D 4. Conformity standard Change from [EN61326-1:2006] to → [EN61326-1:2013] Change from [EN61010-1:2001] to → [EN61010-1:2010] Add [EN50581:2012] (RoHS Directive)
2021/12	DRW. NO.EN294-1348-G	Due to ECN FN21-0676 2-4.Connection with power supply and ground Add the following text to the Caution item. “Since CSA-522B does not have a power switch, install a circuit breaker, etc. if necessary.”
2022/05	DRW. NO.EN294-1348-H	Due to ECN FN22-0197 For safe operation 4.CE Conformity standard RoHS directive notation change <Before the change> EN50581:2012 "Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances" (RoHS Directive) <After the change> RoHS compliant

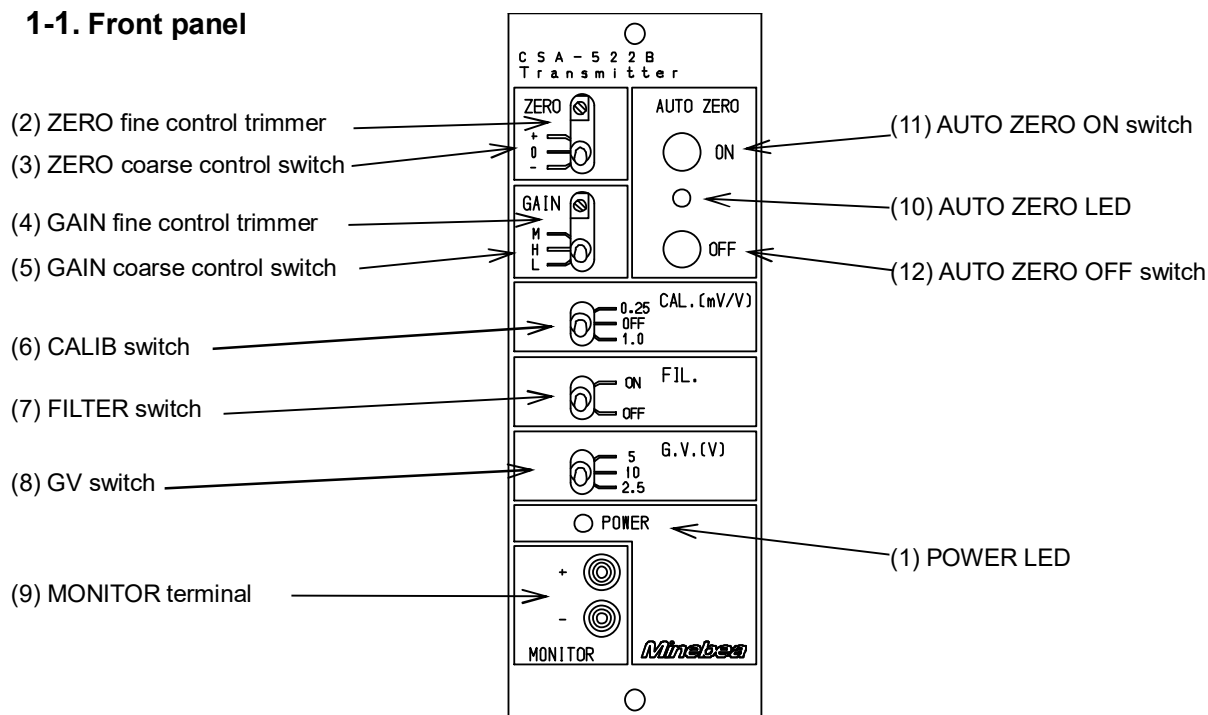
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1. Each function and name

1-1. Front panel



(1) POWER LED

It lights by turning on the power supply (POWER switch ON).

(2) ZERO Fine control trimmer

It is a trimmer for the fine control of zero.

(3) ZERO Coarse control switch

It is a switch for the coarse control of zero. Some $\pm 0.3\text{mV/V}$ input is shifted.

(4) GAIN Fine control trimmer

It is a trimmer for the fine control of amplification degree.

(5) GAIN Coarse control switch

It is a trimmer for the coarse control of amplification degree. It is 1000 times in L, 2000 times in M, and 3000 times in H.

(6) CALIB switch

It is a switch that turns the CALIB value on and off.

(7) FILTER switch

It is a switch that changes the frequency response.

It is 25 kHz in OFF, and 1 Hz or 30 Hz in ON. (Change with the DIP switch on the circuit board.)

(8) GV switch

The power supply voltage of the bridge to the strain gage applied transducer is selected.

(9) MONITOR terminal

It is a terminal to monitor the output voltage value.

(10) AUTO ZERO LED (Options)

LED lights while auto zero executions

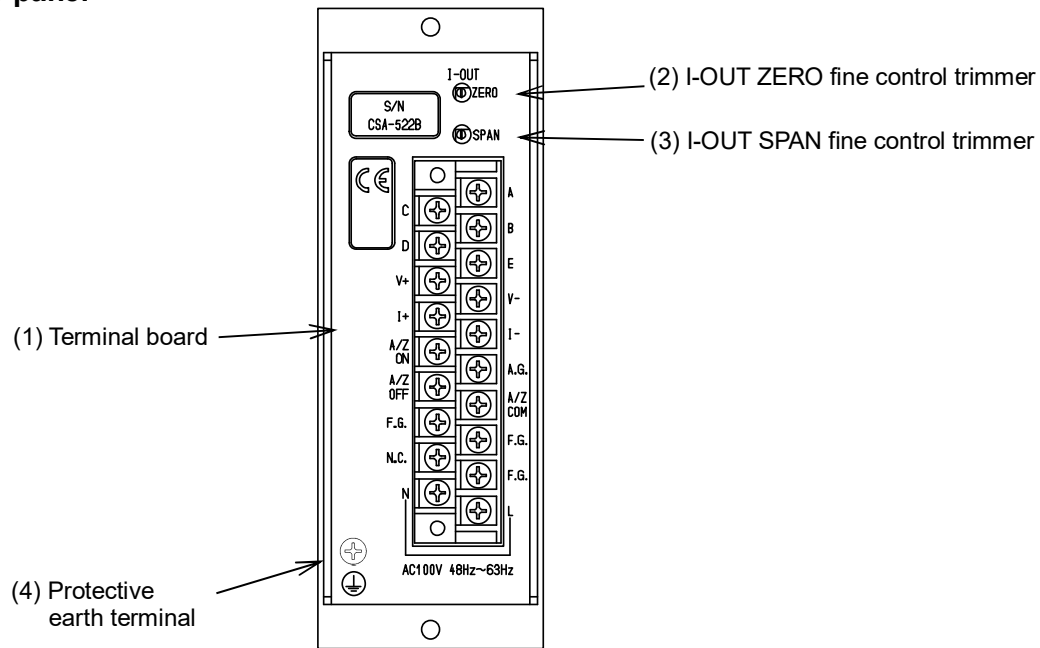
(11) AUTO ZERO ON switch (Options)

The analog output when pushing is adjusted to 0 volt.
Please release the auto zero when you calibrate.

(12) AUTO ZERO OFF switch (Options)

Auto zero is released.

1-2. Rear panel



(1) Terminal board

The various strain gage applied transducers like load cell, etc., voltage output, current output, external control input (Option), grounding wire and AC power supply are connected.

(2) I-OUT ZERO fine control trimmer

It is the fine control trimmer of the current output (DC4 mA).

(3) I-OUT SPAN fine control trimmer

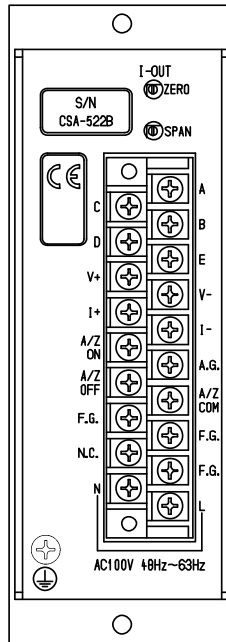
It is the fine control trimmer of the current output (DC20 mA).

(4) Protective earth terminal

Connect the grounding line to suit the CE Conformity Standard.
Do not connect excluding the grounding wire.

2. Connecting method

2-1. Allocation of the terminals



Name of terminal	Description	Usage
A	Bridge power supply(+)	Strain gage applied transducer
C	Bridge power supply (-)	
D	Amplifier input (+)	
B	Amplifier input (-)	
E	Shield	
A.G.	Analog ground	For check
F.G.	Frame ground	
F.G.	Frame ground	
F.G.	Frame ground	
V +	Voltage output terminal(+)	Voltage output
V -	Voltage output terminal (-)	
I +	Current output terminal (+)	Current output
I -	Current output terminal (-)	
A/Z ON	Terminal for AUTO ZERO ON control	External control input (Option)
A/Z OFF	Terminal for AUTO ZERO OFF control	
A/Z COM	Common for controlling auto zero	
N.C.	No use	Do not use.
L	Power supply input terminal (L)	Power supply
N	Power supply input terminal (N)	
⊕	Protective earth terminal	



- The terminal F.G. and the terminal E are connected internally.
- The terminal A.G. and the terminal V-OUT (-), the terminal I-OUT (-) are connected internally.

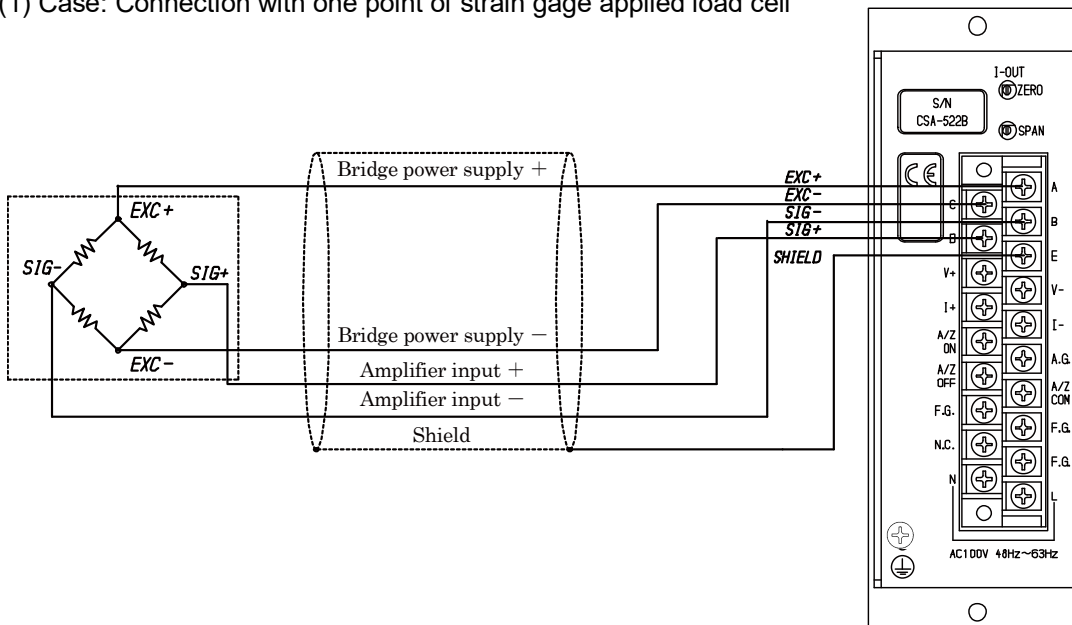
2-2. Notes on connections

- Please go after turning off the power supply without fail when you connect wires.
- Please do not energize the power supply until the installation is completed.
- 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.
- Please connect the grounding cable securely. The grounding should be D class with single earth. Don't share with the ground of power supply system.
- The crimp type terminal lugs that suits the terminals of this instrument is as shown in the table below.

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

2-3. Connection with strain gage applied transducer

(1) Case: Connection with one point of strain gage applied load cell

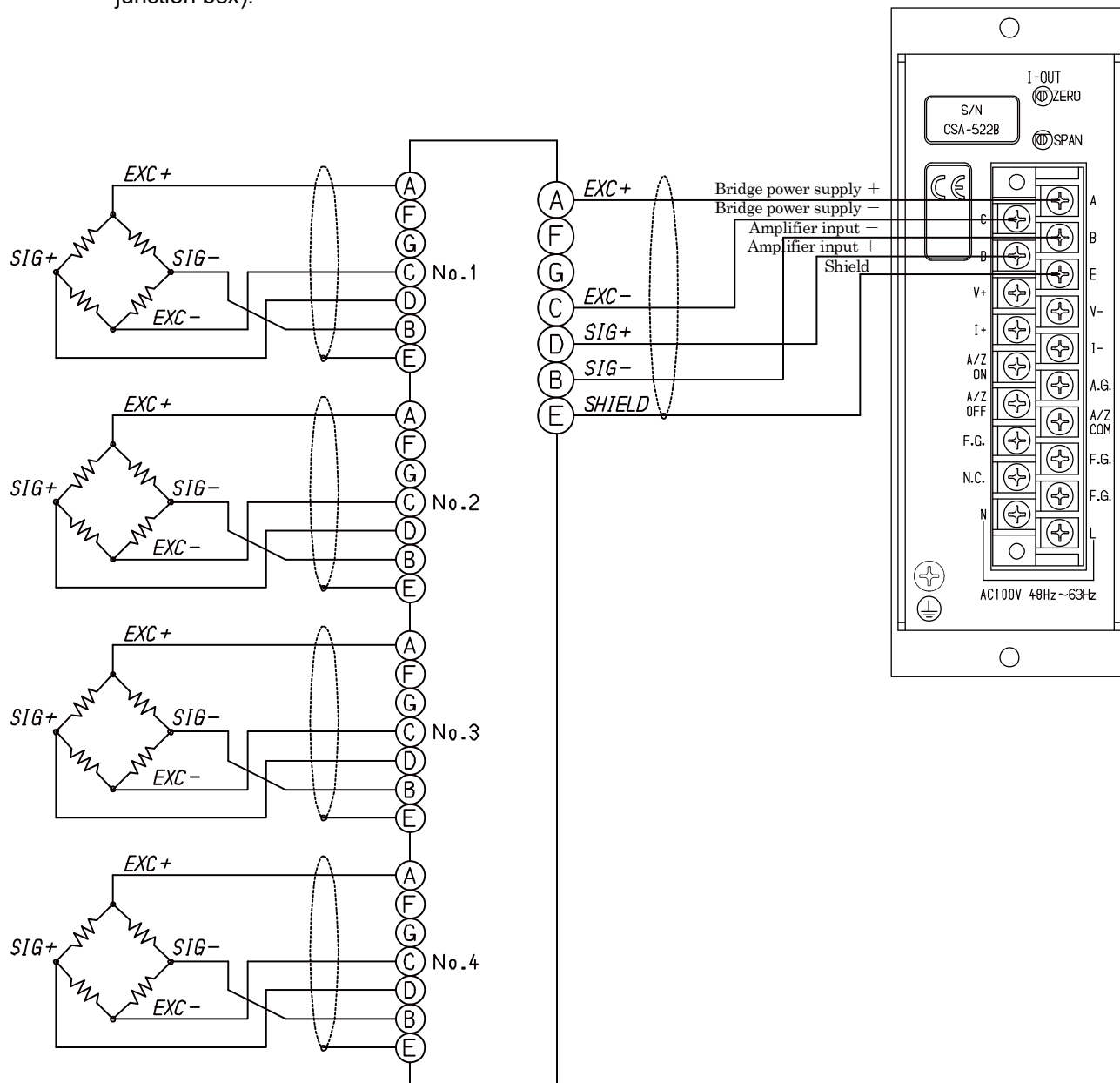


- When tension load is applied with the application of tension type or universal (compression / tension) type of load cell, and output of [+] direction is required, please replace and connect [Amplifier input +] and [Amplifier input-].
- When the total length of cable specifies more than 30 m, the accuracy may be out of warranty because the resistance of cable makes the input voltage of the instrument decreased.
- When the length of cable is applied more than 10 m, or when the system is using the zener barrier, the CALIB value is not applicable.
- When this instrument suits the CE standard, please make sure to shield the signal cable by mounting this in the storage case or control panel where EMC measures are given with protective earth terminal.

(2) Case: Connection with 2 to 4 points of strain gage applied transducers.

Plurality of the strain gage applied transducers might be connected parallel.

The parallel connection can be easily done by using optional SB-310 and SB-320 (Summing type junction box).



- When tension load is applied with the application of tension type or universal (compression / tension) type of load cell, and output of [+] direction is required, please replace and connect [Amplifier input +] and [Amplifier input -].
- When the total length of cable 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.
- When the length of cable is applied more than 10 m, or when the system is using the zener barrier, the CALIB value is not applicable.
- When this instrument suits the CE standard, please make sure to shield the signal cable by mounting this in the storage case or control panel where EMC measures are given with protective earth terminal.

2-4. Connection with power supply and ground

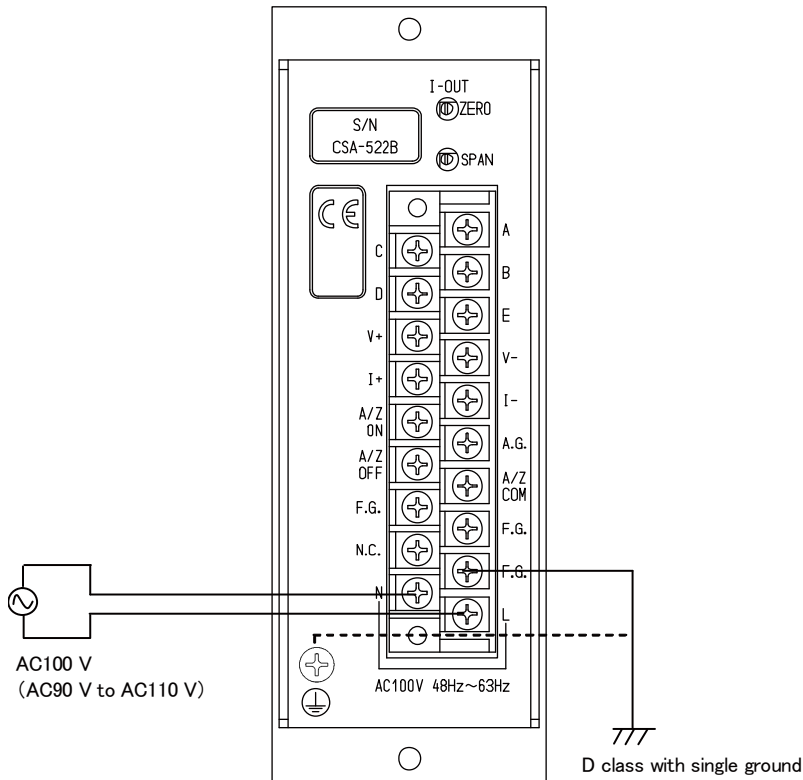
The connection with power supply and ground should be made as follows:

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

Power supply voltage AC100 V (Permissible variable range AC90 V to AC110 V)

Power supply frequency 50/60 Hz

Power consumption Approx. 15 VA (without any options at AC100 V)



* When the power supply is AC110 V (CSA522B-P61), AC200 V (CSA522B-P63) or AC220 V (CSA522B-P64), please refer the paragraph 6-2, 6-3 and 6-4.



Caution

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.

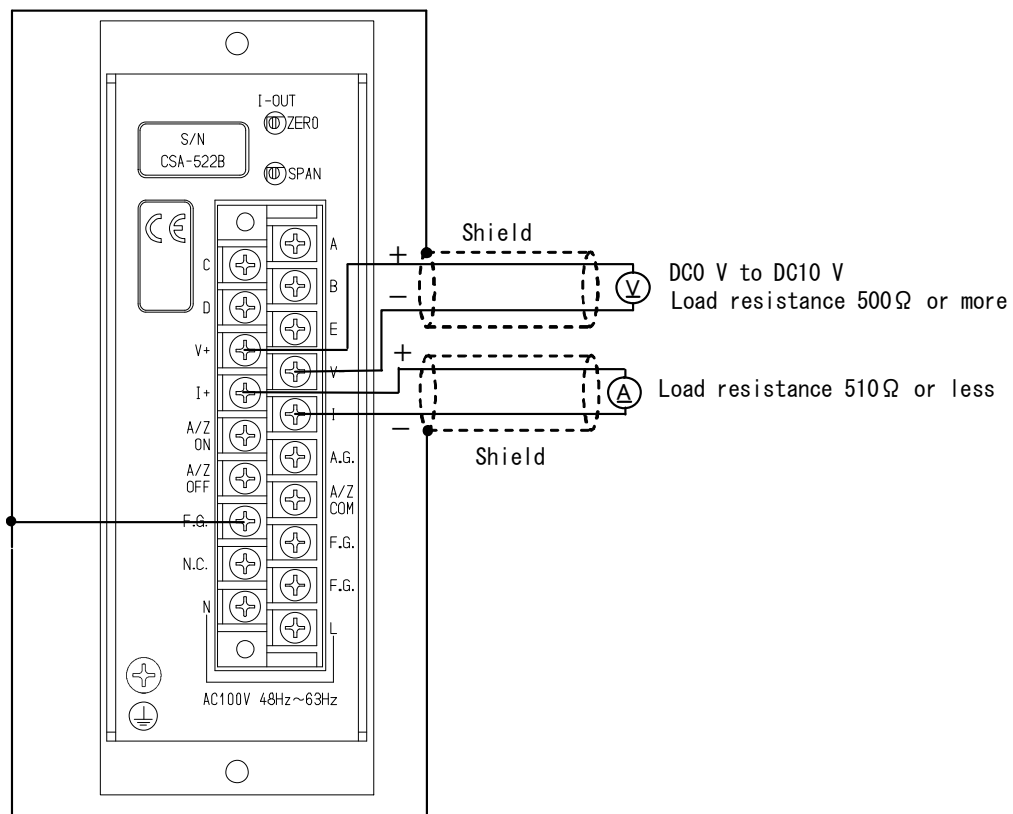
Since CSA-522B does not have a power switch, install a circuit breaker, etc. if necessary.



- The 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 F.G. terminal is connected with the frame of the instrument.
- When this instrument suits the CE standard, please execute the single ground with protective earth terminal.

2-5. Connection with analog output

The connection with analog output should be made as follows:

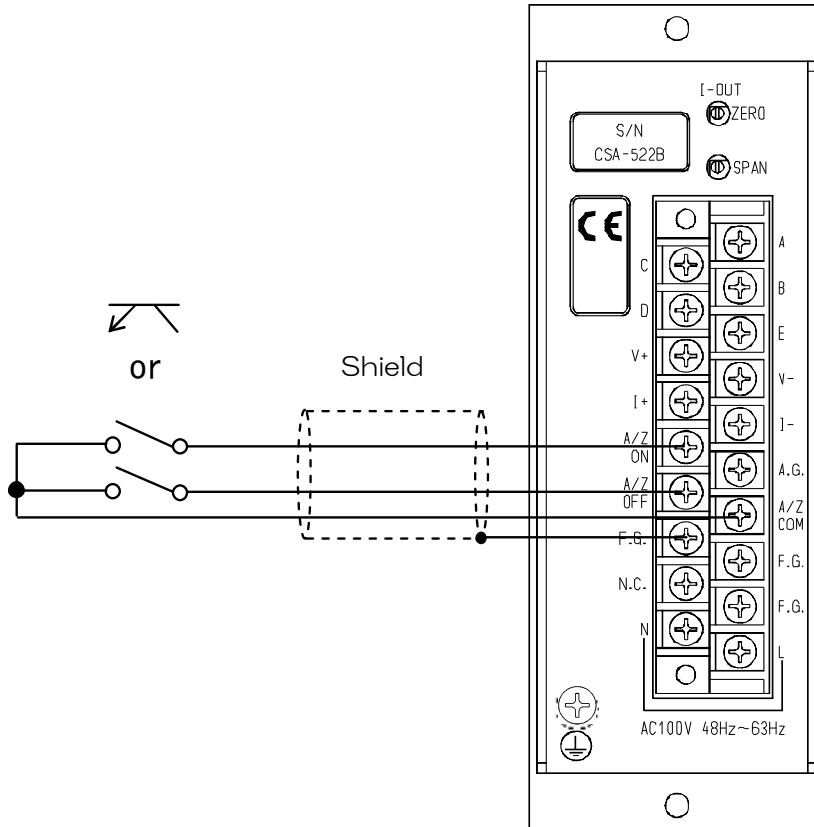


- Please use the shielded cable for the connection with analog output, and connect the shield with F.G. terminal of the terminal block. There is a possibility of causing the malfunction by the influence of the exogenous noise etc. when not connecting it.
- When this instrument suits the CE standard, please make sure to shield the signal cable by mounting this in the storage case or control panel where EMC measures are given with protective earth terminal.

2-6. Connection with the auto zero by the external control input

[A/Z ON] and [A/Z OFF] of the external control input are connected with [COM] terminal by using the point of contact or open collector connection as shown in the figure below. (Effective when the optional CSA522B-P99 is installed.)

Please refer the paragraph 6. for the function of each input



- Please use the shielded cable for the connection with analog output, and connect the shield with F.G. terminal of the terminal block. There is a possibility of causing the malfunction by the influence of the exogenous noise etc. when not connecting it.
- When this instrument suits the CE standard, please make sure to shield the signal cable by mounting this in the storage case or control panel where EMC measures are given with protective earth terminal.

3. Calibration

3-1. Calibration method

The load calibration method of this instrument has two kinds of the following.

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



Caution

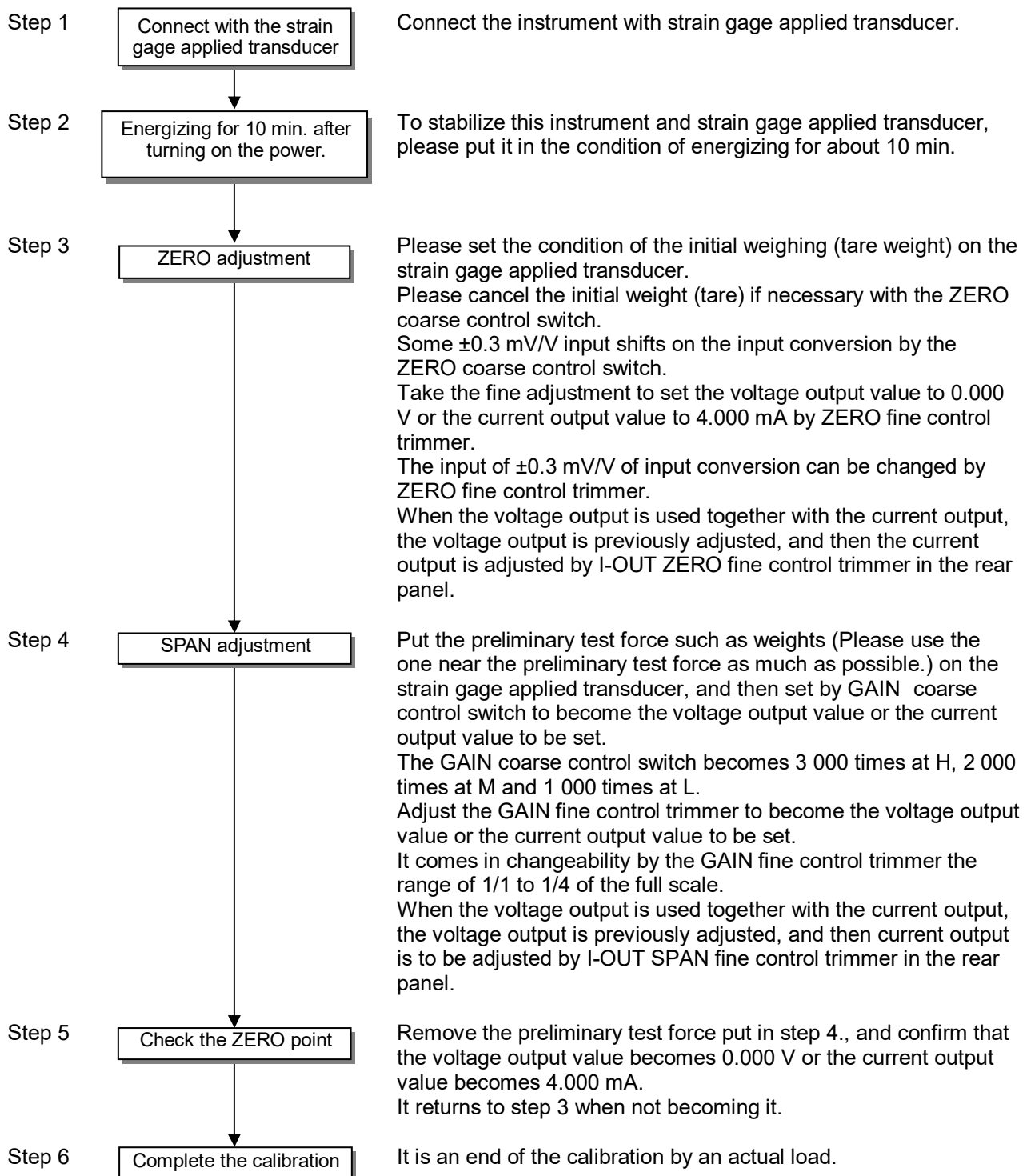
- Please execute the calibration before using the new instrument or after exchanging the strain gage applied transducer with a new one. If calibration is not made, the correct measurement results may not be obtained, or it may cause malfunction to the instrument and it may damage the peripheral equipment. 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.
- When the auto zero option (CSA-522B-99) is applied, please calibrate with pushing the A/Z OFF switch, or shorten between A/Z OFF and A/Z COM for about 100 ms or more.
- Please make the calibration while the CALIB switch turns off.



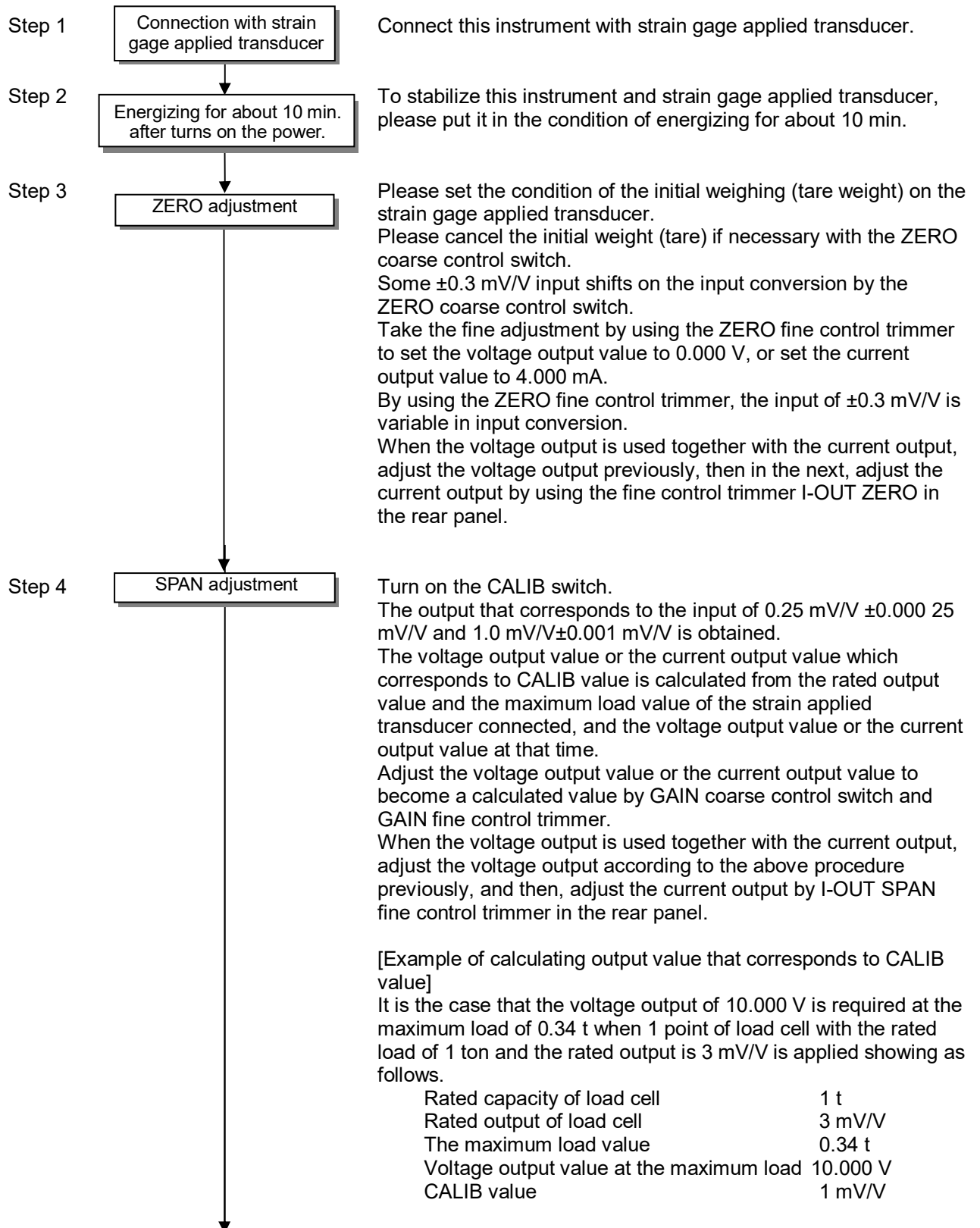
The accuracy of calibration by CALIB input is 1/500 or so.

3-2. Calibration procedure

3-2-1. Calibration by actual load



3-2-2. Calibration by CALIB input



$$\begin{aligned}
 & \text{(Load cell output value at the maximum load)} \\
 & = \frac{\text{(Rated output value of load cell)} \times \text{(The maximum load value)}}{\text{(Rated load value of load cell)}} \\
 & = \frac{3 \text{ mV/V} \times 0.34 \text{ t}}{1 \text{ t}} \\
 & = 1.02 \text{ mV/V}
 \end{aligned}$$

$$\begin{aligned}
 & \text{(Voltage output value corresponding to CAL value)} \\
 & = \frac{\text{(Voltage output value at the maximum load)} \times \text{(CALIB value)}}{\text{(Load cell output value at the maximum load)}} \\
 & = \frac{10.000 \text{ V} \times 1 \text{ mV/V}}{1.02 \text{ mV/V}} \\
 & \doteq 9.804 \text{ V}
 \end{aligned}$$

Accordingly, the voltage output value at turning on the CALIB switch is adjusted to 9.804 V by GAIN fine control trimmer.

Step 5

Confirm ZERO point

Turn of the CALIB switch.
Confirm to the voltage output value becomes 0.000 V or the current output value becomes 4.000 mA.
Otherwise, it returns to step 3

Step 6

Completing calibration

The calibration by CALIB input is completed.



Caution

Please make the rated output value of the load cell used in the calculation with the value written in the individual inspection data sheet.

4. Function and operation

4-1. Setting of ZERO adjustment

Zero point can be changed by ZERO coarse control switch and ZERO fine control trimmer.

ZERO coarse control switch	Variable range by ZERO fine control trimmer
+	Approx.0.3 mV/V to Approx.0.6 mV/V
0	Approx. -0.3 mV/V to Approx.0.3 mV/V
—	Approx.-0.6 mV/V to Approx.-0.3 mV/V

4-2. Setting of GAIN adjustment

Sensitivity can be changed by GAIN coarse control switch and GAIN fine control trimmer.

GAIN coarse adjustment switch	Variable range by GAIN fine control trimmer	Sensitivity
M	0.5 mV/V to 2.0 mV/V	Approx. 500 times to Approx. 2 000 times
H	0.35 mV/V to 1.4 mV/V	Approx. 750 times to Approx. 3 000 times
L	1.0 mV/V to 4.0 mV/V	Approx. 250 times to Approx. 1 000 times

The variable range above mentioned is input conversion to get the output of DC10V.
(When the bridge power supply voltage is set as DC10V.)

4-3. Setting of CALIB value

The voltage or the current corresponding to the CALIB set value (input conversion value) is output.

CALIB switch	Input conversion value to be output
0.25 mV/V	0.25 mV/V \pm 0.000 25 mV/V
OFF	0 mV/V
1.0 mV/V	1.0 mV/V \pm 0.001 mV/V

4-4. Setting of frequency response

Frequency response can be selectable.

FILTER switch	Frequency response	Attenuation rate
ON	1 Hz or 30 Hz	-12 dB/oct Bessel type
OFF	25 kHz	-6 dB/oct

The changeover of 1 Hz and 30 Hz at FILTER ON is selected by DIP switch on circuit board.
When both 1 and 2 of DIP1 on the printed circuit board turns OFF, 1 Hz is selected.
(The standard is 30 Hz. The setting is that both 1 and 2 of DIP1 turns ON.)

4-5. Setting of bridge power supply voltage

The bridge power supply voltage is selectable.

Please select the voltage value less than the maximum rated voltage of a strain gage applied transducers.

G.V. switch	Bridge power supply voltage
5 V	5 V \pm 0.15 V
10 V	10 V \pm 0.3 V
2.5 V	2.5 V \pm 0.075 V



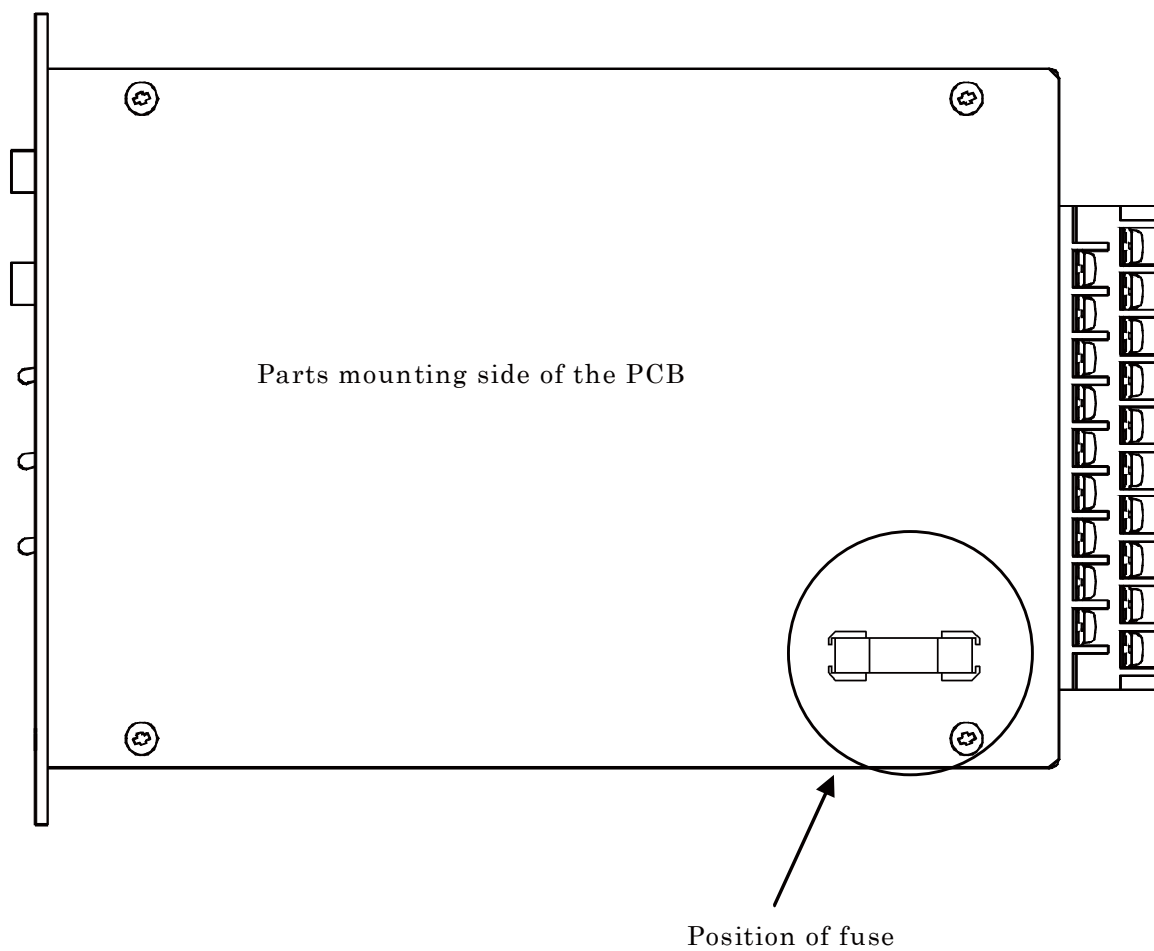
Please execute the calibration again when the bridge power supply voltage is changed.

5. How to change the Fuse

Caution

When the procedure of installing the fuse and the capacity of installed fuse is improper, it will cause an unexpected failure.

- (1) Turn off the power supply to the terminal of this instrument.
- (2) Detach the screw (M2.6 x 5) of 4 points at the right side of the front panel, and remove the cover.
- (3) Replace the fuse (1 A) attached at the parts mounting side of PCB showing as follows.
- (4) Put the cover, and install the screw to 4 points.

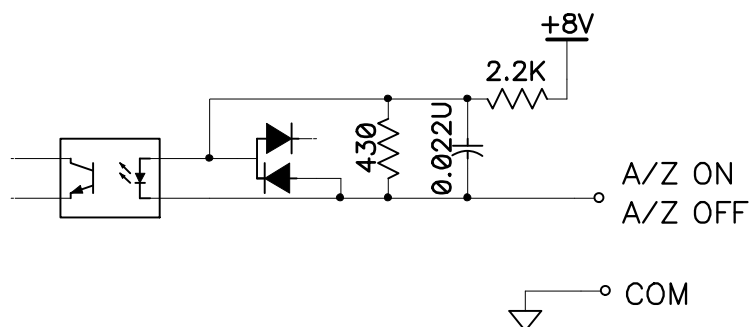


6. Option

6-1. Auto zero (CSA522B-P99)

- | | |
|--------------------------------|---|
| (1) Input range of auto zero | within ± 2.4 mV/V |
| (2) Range of auto zero | within ± 10 V |
| (3) Required time of auto zero | within approx. 1 s |
| (4) Accuracy of auto zero | within ± 5 mV |
| (5) Back-up time | Approx. 10 years (under the usage of Lithium battery) |
| (6) Temperature effect | |
| Zero point | within ± 0.005 %F.S./ $^{\circ}$ C |
| Sensitivity | within ± 0.005 %F.S./ $^{\circ}$ C |

6-1-2. Equivalent circuit of external input



6-1-3. Explanation of the function

(1) A/Z ON

When [A/Z ON] switch at the front panel is pressed, or shorten the terminal between A/Z ON and COM for about 100 ms or more, auto zero (tare weight cancellation) is executed, and the voltage output value and the current output value becomes zero. The voltage output value or the current output value becomes the output for net weight.

(2) A/Z OFF

When pressing the [A/Z OFF] switch, or shorten the terminal between A/Z OFF and COM for about 100 ms or more, the function of auto zero clear (tare weight cancellation clear) will work. The voltage output value or the current output value becomes the output of gross weight.



Caution

Don't press the A/Z ON switch in the condition of pressing the A/Z OFF switch. It enters the adjustment mode for our maintenance, and it becomes a fixed output of DC0 V compulsorily, and AUTO ZERO LED blinks.

Please push the A/Z ON switch with the A/Z OFF switch pushed again, and make clear the adjustment mode when it enters the adjustment mode by mistake.



- The operation of A/Z ON and A/Z OFF by the external control input is started when the input signal is shorten for about 100 ms or more.
- Don't execute the A/Z OFF during the 1 second executing the A/Z ON by the external control input and the switch at the front panel.
- When the optional auto zero is attached, the temperature effect of auto zero is added on the standard temperature effect.
- When the condition changes by the external control input, please confirm the timing of the changeover, and adjust the timing by processing the timer if necessary.

6-2. Power supply voltage AC110 V (CSA522B-P61)

Power supply voltage AC110 V (Permissible variable range AC99 V to AC127 V)
Power supply frequency 50/60 Hz
Power consumption Approx. 15 VA

6-3. Power supply voltage AC200 V (CSA522B-P63)

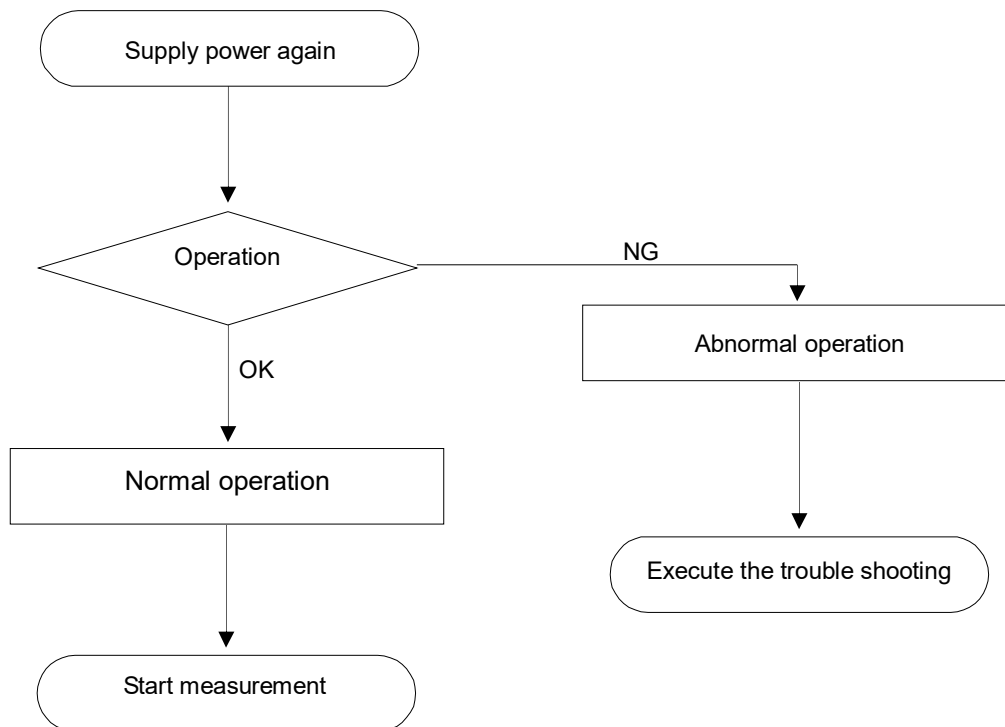
Power supply voltage AC200 V (Permissible variable range AC180 V to AC220 V)
Power supply frequency 50/60 Hz
Power consumption Approx. 15 VA

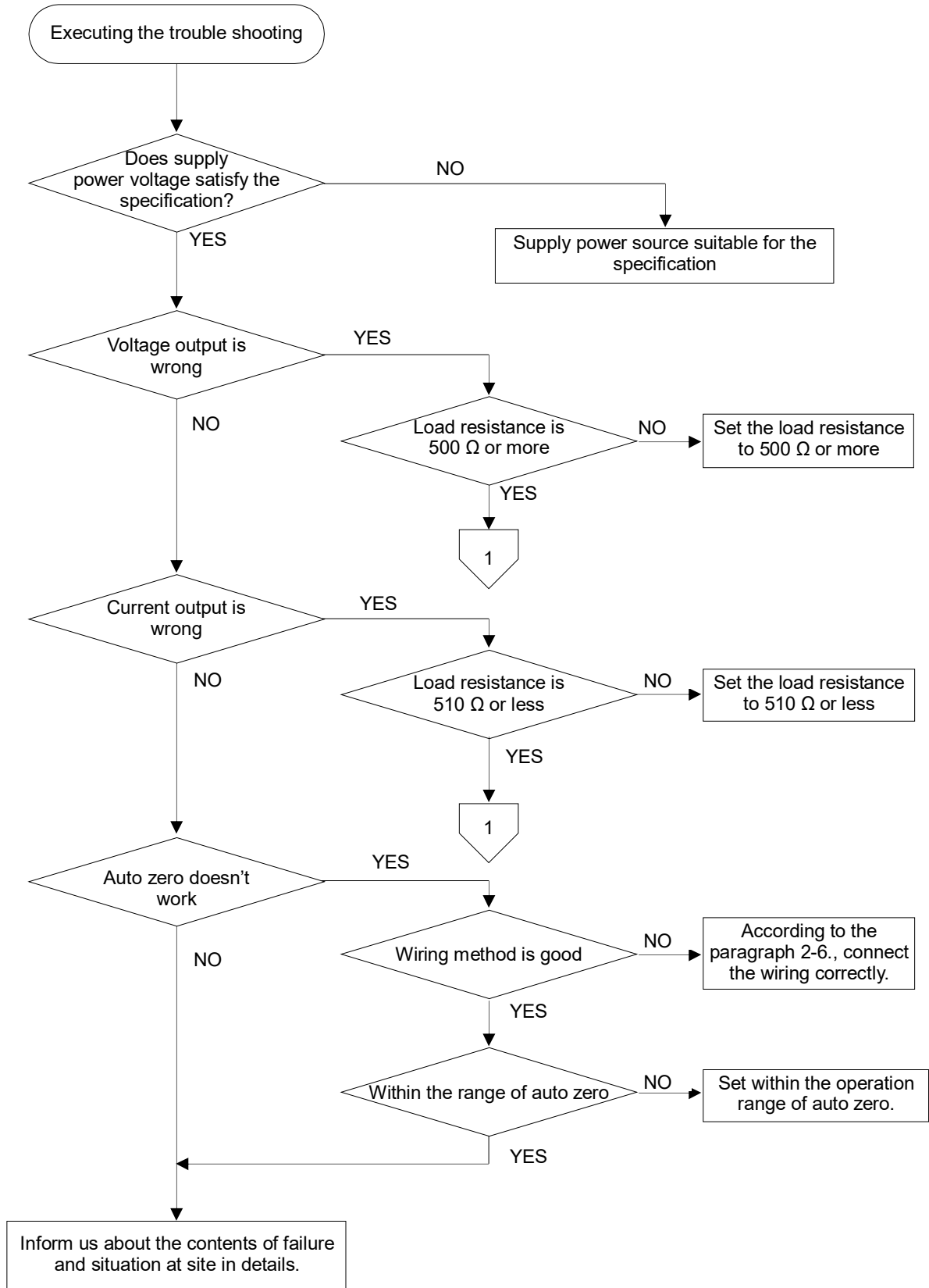
6-4. Power supply voltage AC220 V (CSA522B-P64)

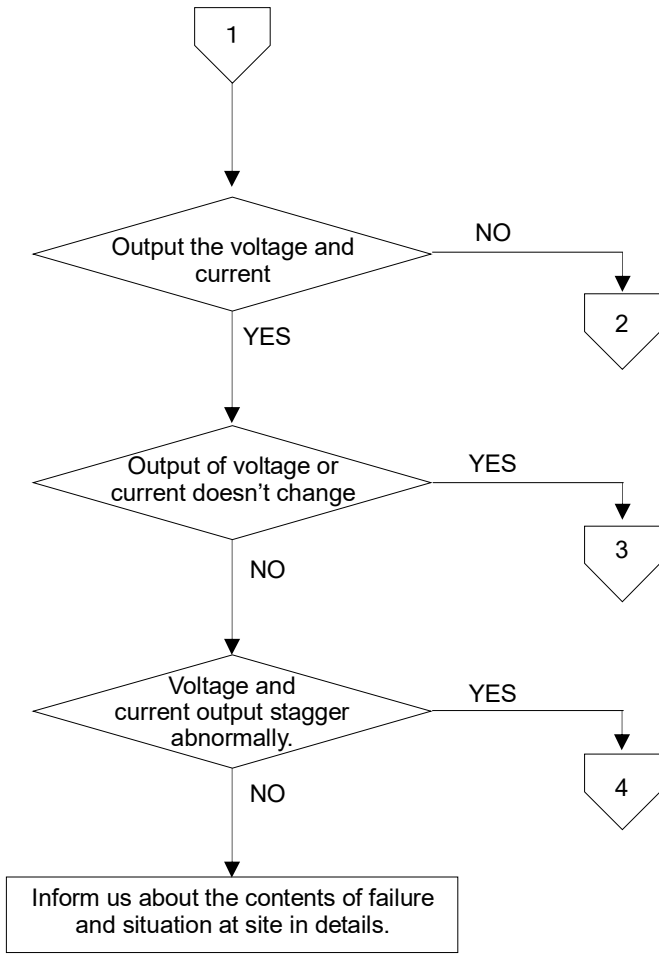
Power supply voltage AC220 V (Permissible variable range AC198 V to AC253 V)
Power supply frequency 50/60 Hz
Power consumption Approx. 15 VA

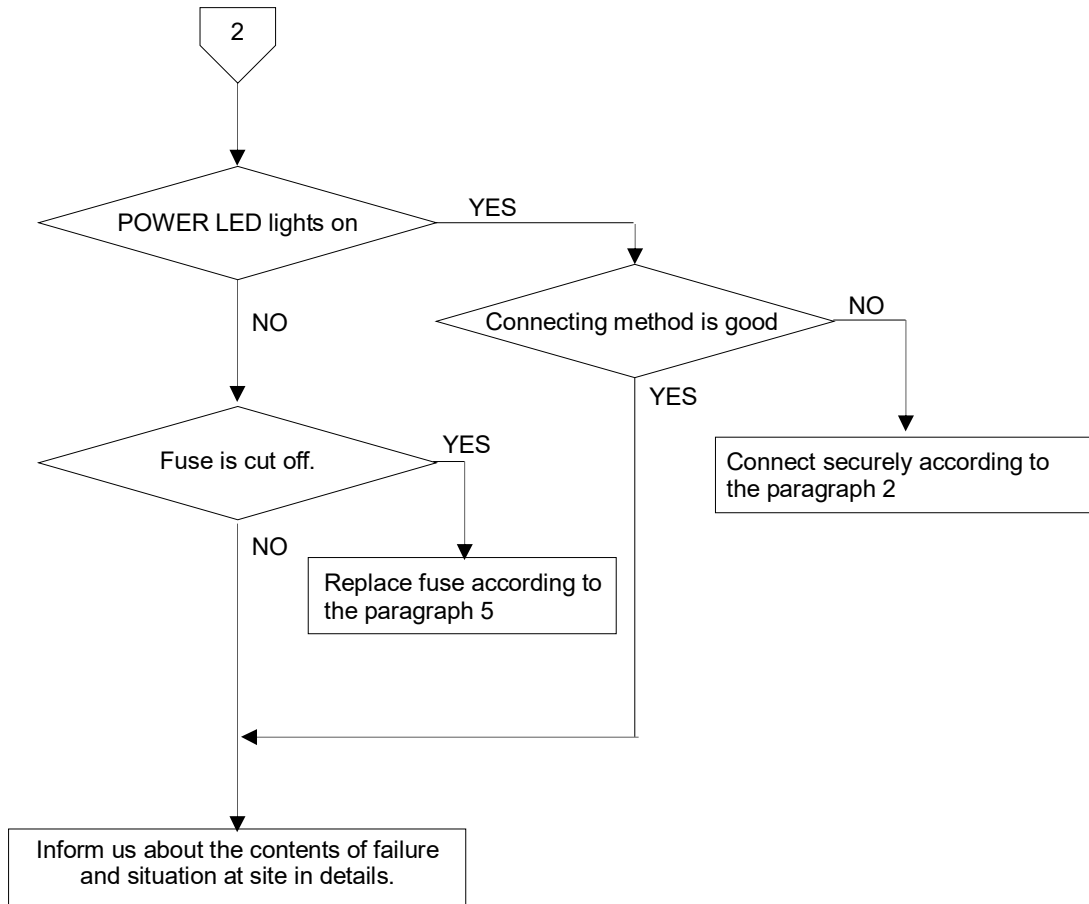
7. Trouble shooting

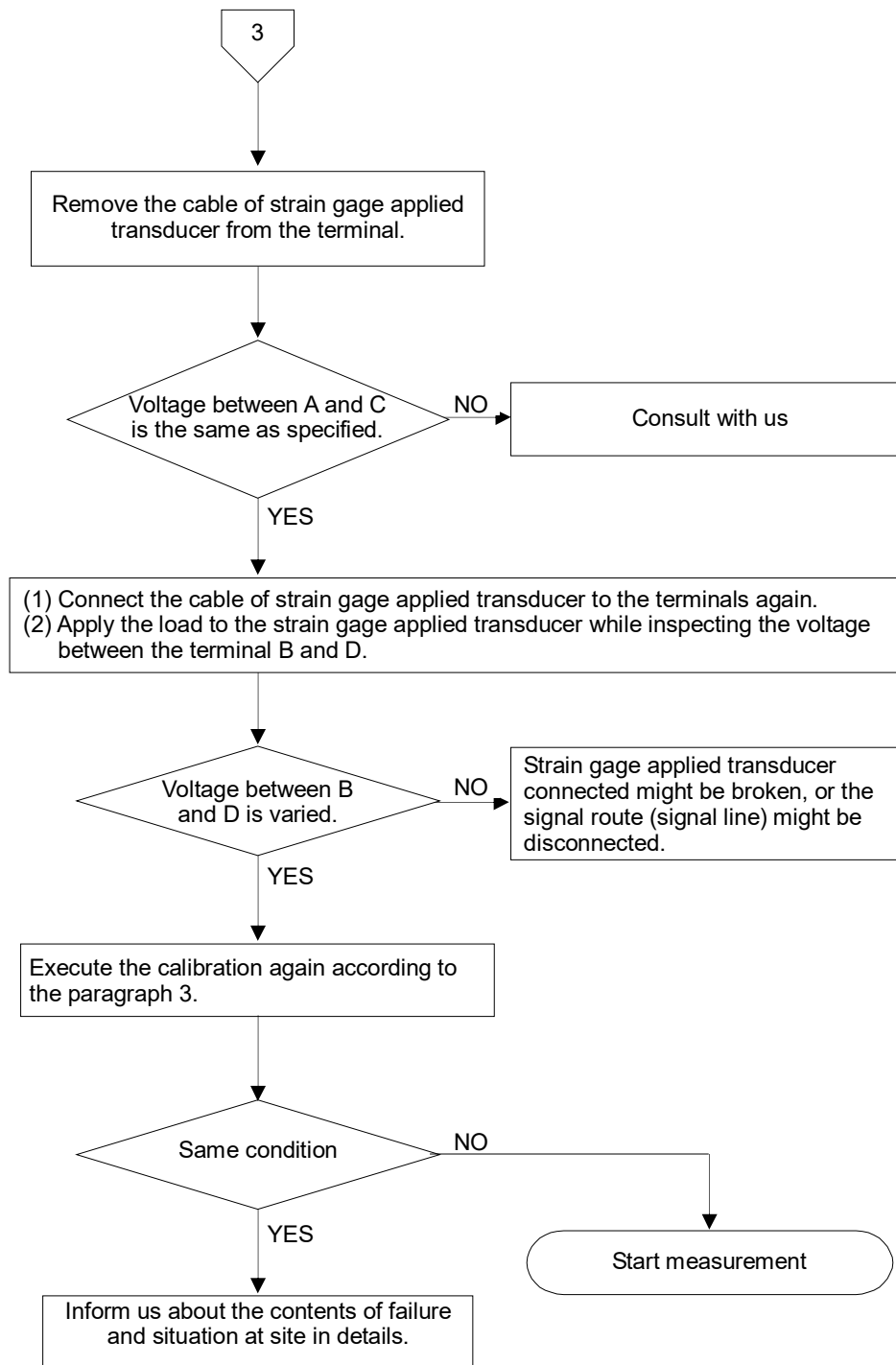
Please check the instrument according to the following procedures when abnormality is found in operation. Moreover, please contact with us when there is no corresponding item, and the symptom does not disappear even if the solution is done.



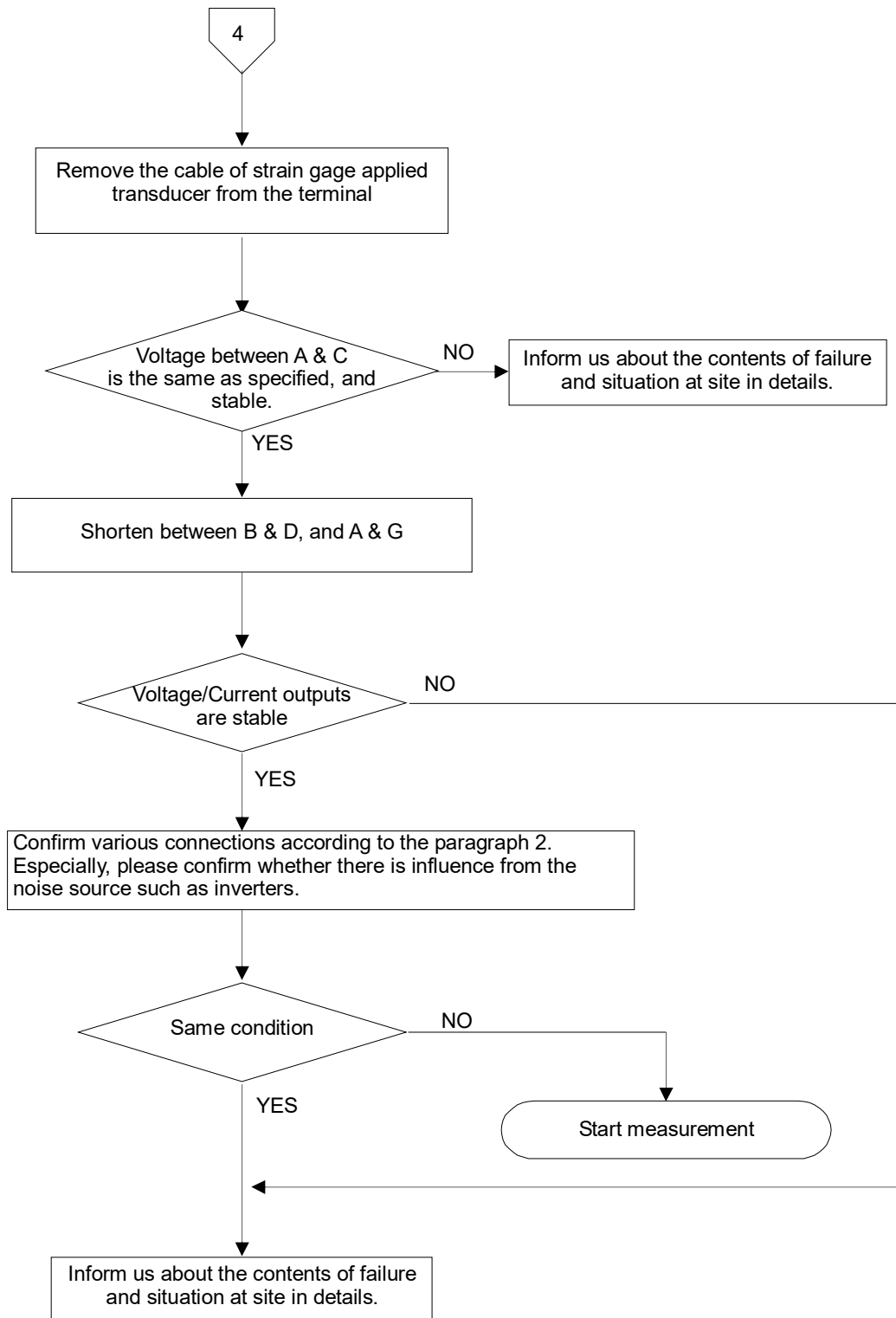








- In confirming the voltage between A and C, please set the connection range of the measuring instrument such as tester to DC·V.
- In confirming the voltage between B and D, please set the connection of the measuring instrument to DC·mV. Please execute the calibration again when the bridge power supply voltage is changed.



- In confirming the voltage between A and C, please set the connection range of the measuring instrument such as tester to DC·V.
- In confirming the voltage between B and D, please set the connection of the measuring instrument to DC·mV.

8. Specifications

8-1. Specifications

Bridge power supply		DC10 V \pm 0.3 V within 120 mA (Changeable to DC2.5 V and DC5 V)
Applicable transducer		Strain gage applied transducer from 60 Ω to 2 k Ω
Input range		0.35 mV/V to 3.5 mV/V
Output		\pm 10 V, \pm 20 mA(Non-isolation)
Load resistance on output		500 Ω or more
Adjustable range on sensitivity		L: 1 000 times, M: 2 000 times, H: 3 000 times Adjusted 1/1 to 1/4 against each setting
Adjustable range on zero point		\pm 0.6 mV/V
Non-linearity		0.005 %F.S.
Temperature coefficient (voltage)	Zero point	\pm 0.2 μ M/ $^{\circ}$ C(Input conversion)
	Sensitivity	\pm 0.005 %F.S./ $^{\circ}$ C
CALIB		0.25 mV/V \pm 0.000 25 mV/V and 1 mV/V \pm 0.001 mV/V
Frequency response		1 Hz or 30 Hz (-12 dB/oct) Bessel type (Selectable by dip-switch on P.C. board) and 25 kHz (-3 dB)
Current output		DC4 mA to 20 mA (Non-isolation, at the output of DC0 V to 10 V)
Load resistance on current output		510 Ω or less
Non-linearity on current output		0.05 %F.S. or less
Temperature coefficient (Current)	Zero point	\pm 0.01 %F.S./ $^{\circ}$ C
	Sensitivity	\pm 0.01 %F.S./ $^{\circ}$ C

8-2. General specification

Operating temperature /humidity range	temperature	-10 $^{\circ}$ C to 50 $^{\circ}$ C
	humidity	85 %RH or less (Non condensing)
Power supply	Supply voltage	AC100 V (Permissible variable range AC90 V to AC110 V)
	Frequency	50/60 Hz
	Consumption	Approx.15 VA
Insulation resistance		DC500 V 100 M Ω or more between the power supply line and case
Withstand voltage		AC1 500 V in 1 min. between the power supply line and case
Outline dimensions(W \times H \times D)		49.5 mm \times 138 mm \times 173.6 mm (Excludes protruding parts.)
Weight		Approx.1.2 kg

8-3. Accessories

Instruction manual	1 piece
Time lag fuse	1 piece (1 A)
Minus driver	1 piece

8-4. Options

8-4-1. Auto zero

P/N	CSA522B-P99	
Input range of auto zero	within ± 2.4 mV/V	
auto zero range	within ± 10 V	
Required time for auto zero	within approx. 1 s	
Accuracy of auto zero	within ± 5 mV	
Back-up time	Approx. 10 years (with the usage of Lithium battery)	
Temperature coefficient	Zero point	± 0.005 %F.S./ $^{\circ}$ C
	Sensitivity	± 0.005 %F.S./ $^{\circ}$ C

8-4-2. Power supply voltage

P/N	CSA522B-P61	
Power supply voltage	AC110 V (Permissible variable range AC99 V to AC127 V)	
Power supply frequency	50/60 Hz	
Power consumption	Approx. 15 VA	

P/N	CSA522B-P63	
Power supply voltage	AC200 V (Permissible variable range AC180 V to AC220 V)	
Power supply frequency	50/60 Hz	
Power consumption	Approx. 15 VA	

P/N	CSA522B-P64	
Power supply voltage	AC220 V (Permissible variable range AC198 V to AC253 V)	
Power supply frequency	50/60 Hz	
Power consumption	Approx. 15 VA	

8-5. Standard specification at the shipment

Bridge power supply	DC10 V	
Sensitivity adjustment	1 000 times (DC10 V output at 1.0 mV/V input)	
Range of frequency response	30 Hz (-12 dB/oct) Bessel type, and 25 kHz (-3 dB)	

9. Warranty

9-1. 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 our sales office or sales agent from which you have purchased.

9-2. Repair

Before asking repairs, make checks once again that the connection, setting and adjustment for the instrument have finished properly by referring to 9. Trouble shooting.

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

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

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

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