

SMALL-SIZED BRIDGE BOX FOR 1-GAGE SYSTEM**DBS-120B-8****DBS-350B-8****INSTRUCTION MANUAL**

Thank you for purchasing KYOWA's product Small-sized Bridge Box for 1-gage system DBS-120B-8/DBS-350B-8.

Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.

Do not use the product in methods other than described in this Manual.

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This Instruction Manual describes Small-sized Bridge Box for 1-Gage System DBS-120B-8(T/C/CT) and DBS-350B-8(T/C/CT) (hereinafter referred to as the Bridge Box).

STANDARD ACCESSORIES

The Bridge Box comes with the following standard accessories. When unpacking, check the contents to ensure that all accessories are enclosed.

Small Screwdriver	1
Rubber Foot	4
Instruction Manual.....	1
Warranty and Test Data Sheet.....	1 each

For the DBS-120B-8 and DBS-350B-8

N-104 Cable (8 NDIS connectors equipped)	1
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For the DBS-120B-8T and DBS-350B-8T

N-104 Cable (8 NDIS connectors equipped)	1
DBS-MOUNT (bridge box mounting board)	1
Cross-recessed countersunk flat head screw M3 × 6	4

For the DBS-120B-8C and DBS-350B-8C

N-105 Cable (Connector for the CDV-40B/A equipped)	1
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For the DBS-120B-8CT and DBS-350B-8CT

N-105 Cable (Connector for the CDV-40B/A equipped)	1
DBS-MOUNT (bridge box mounting board)	1
Cross-recessed countersunk flat head screw M3 × 6	4

OPTIONS

- N-104 Cable (8 NDIS connectors equipped)
- N-105 Cable (Connector for the CDV-40B/A equipped)
- DBS-MOUNT (bridge box mounting board)

SAFETY PRECAUTIONS

The Bridge Box is designed in accordance with the "5. SPECIFICATIONS."

Do not use the Bridge Box in an environment exceeding the specifications.

Or, failure of the Bridge Box may result.

PRIOR TO USE

This Instruction Manual describes detailed instructions for operating the Bridge Box.

For safe use of the Bridge Box, do not forget to read the "Safety Precautions" prior to use.

Kyowa Electronic Instruments Co., Ltd. assumes no liability for any damages resulting from the user's failure to comply with the safety precautions.

SAFETY SYMBOLS

For safety operation of the Bridge Box, the following symbol marks are used in the Instruction Manual.

 WARNING	Improper operation of the system may result in death or severe injury of the operator.
 CAUTION	Improper operation of the system may result in injury of the operator and physical damage of the system.

 WARNING
● Inflammable Gaseous Environment To prevent fire and explosion hazards, do not operate the Bridge Box where it is exposed to inflammable gases, inflammable vapors or inflammable dust. ● Do not use it in moisture, a dusty place, and the place where lamp soot is hit. ● Do not disassemble the Bridge Box. Or, deterioration or malfunction of the instrument may result. ● Protective Ground Be sure to ground the GND terminal. Or, it may cause an electric shock hazard, lower the performance, and cause trouble.

CAUTION

- Immediately stop the Bridge Box if operating environment changes abruptly.
Leave the Bridge Box as it is until it becomes adaptable to the environment.
Abrupt change in ambient temperature due to transportation, etc. may cause dew condensation result to deteriorate its performance and cause trouble.
- Do not use the Bridge Box at a location with excessive vibration and impact.
Use the Bridge Box in the specified operating range.
Or, it may deteriorate its performance and cause trouble.
Adopt vibration-proof measures such as shock absorber, etc.
- Take care not to drop it during transportation and avoid applying strong impact.
- Do not use the Bridge Box in strong electromagnetic fields.
Use the Bridge Box in a magnetic field environment where the PC may be used.
If the Bridge Box is used near devices generating strong magnetic field such as the telemetry system, microwave oven, electronic furnace, etc., its performance may be lowered and erroneous operation and trouble may result.
- Do not pull cords and cables.
Lay cords and cables with a certain allowance so that any unreasonable force is applied to the connections.
Pulling or applying unreasonable force may cause trouble or interrupt the measurement.
- Basically, the Bridge Box is designed to be used by connecting a strain gage to the input terminal.
Note that it causes the breakdown when sensors other than the strain gage are connected.

NOTATIONS USED IN THE INSTRUCTION MANUAL

Informational Notes

Certain notations are used as necessary to attract your attention to information that requires special care when handling the Bridge Box, and to information provided for reference purposes.

Examples of Notations

NOTE

Essential precautions when handling the Bridge Box.

MEMO

Reference items when handling the Bridge Box.

1. PRODUCT OUTLINE

1-1 PRODUCT OUTLINE

The Bridge Box is 8-channel type bridge box for strain gage measurement.

Set a gage mode to 1-gage 2-wire system or 1-gage 3-wire system with gage mode switch on the upper face of the Bridge Box and connect a strain gage to the one-touch type terminal board.

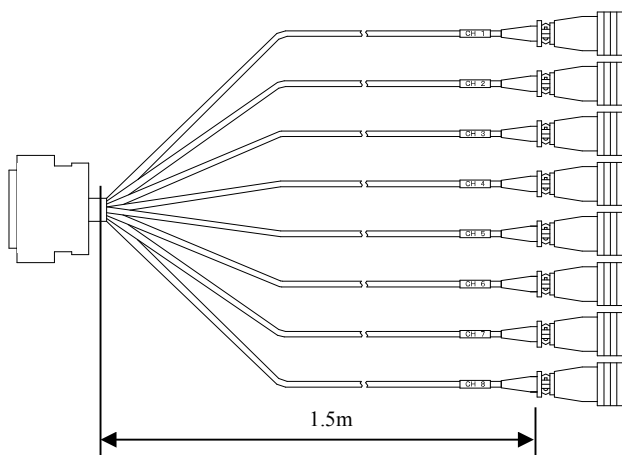
Connect the dedicated cable to an input of the strain meter for the strain gage measurement.

1-2 FEATURES

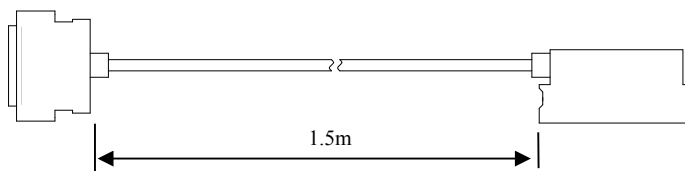
- Small-sized bridge box dedicated to the 1-gage system.
- User-friendly one-touch type terminal board is adopted.
- Capable of connecting 8-strain gage.
- 2-type connection cables to the strain meter are available.

Either one type is included and it is possible to buy these individually.

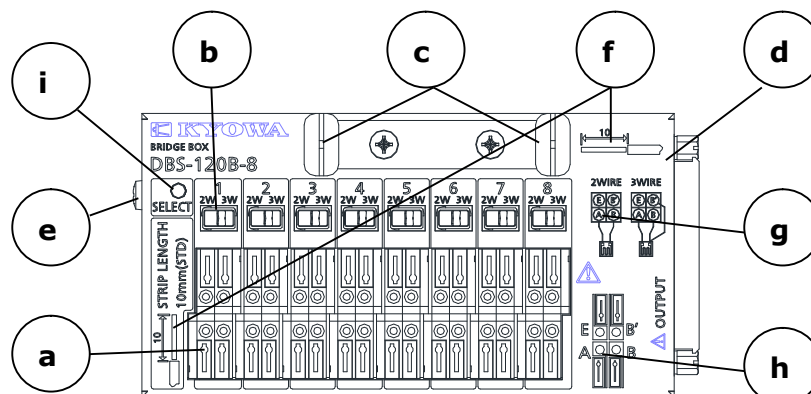
- N-104 8 NDIS connectors equipped.



- N-105 Connector for the CDV-40B/A equipped.



2. PARTS AND FUNCTIONS



(a) Terminal Board for Connecting Strain Gages

One-touch type terminal board (1-CH) for connecting the lead wire of the strain gage.

See "3-2 CONNECTING STRAIN GAGE" for the connection.

MEMO

- Applicable lead wire Solid wire: $\phi 0.4$ mm to $\phi 1.2$ mm (UL AWG16 to 26)
Stranded wire: 0.2 mm^2 to 0.75 mm^2 (UL AWG20 to 24)

NOTE

- For connecting a strain gage, do not connect gage leads (lead wires directly connected from the strain gage) directly.
- Use a gage terminal and convert the gage leads to the applicable lead wires or use a strain gage with pre-attached lead cables.
- If you connect gage leads directly, gage leads may be broken since they are too thin.

(b) Gage Mode Switch

Sets the gage mode with the switch. Turn the switch to "2W" for 1-gage 2-wire system. Turn the switch to "3W" for 1-gage 3-wire system. See "3-1 SETTING FORM OF GAGE MODE."

(c) Driver Holder

Holder for the accessory small screwdriver that is used for connecting the strain gage to the one-touch type terminal board.

(d) Cable Connecting Connector

Connects the N-104 cable or N-105 cable.
See "3-3 CONNECTING METER."

(e) GND Terminal

A screw (M3) for the GND terminal.

NOTE

- Grounding the GND terminal
Be sure to ground the “GND” terminal.
Or, it may cause an electric shock hazard, lower the performance, and cause trouble.

MEMO

- For the GND terminal
Connect the GND terminal and E terminal (gray) when noisy.
The noise may be reduced.

(f) Lead Wire Sample

Describes the actual length of peeled-off lead wire.

See "3-2 CONNECTING STRAIN GAGE."

(g) Wiring Diagram

Wiring diagrams of 1-gage 2-wire system (2WIRE) and 1-gage 3-wire system (3WIRE).

(h) Layout Drawing of Terminal Board

Layout drawings of terminal boards (A, B, B', and E) for every CH.

(i) SELECT LED

For checking the connecting status of the Bridge Box.

See "4. SELECT LED."

3. CONNECTING FORM

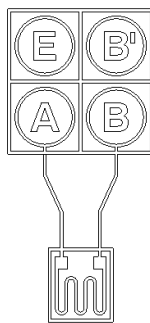
3-1 SETTING FORM OF GAGE MODE

The gage mode has 2 types: 1-gage 2-wire system and 1-gage 3-wire system.

The connecting form of the strain gage and setting of gage mode switch for every gage system are described as follows. In addition, the same figure is displayed on the upper panel of the Bridge Box.

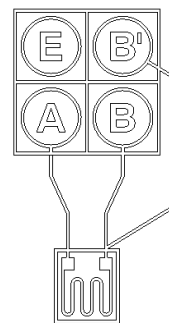
- 1-gage 2-wire system

Switch: 2W



- 1-gage 3-wire system

Switch: 3W



MEMO

- About the E terminal (gray)
Connect the shield wire to the E terminal if the shield wire is included in the gage lead wire.
The noise might become small.

NOTE

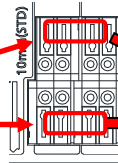
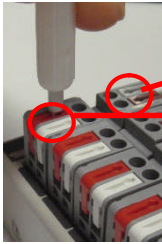
- For connecting a strain gage, do not connect gage leads (lead wires directly connected from the strain gage) directly.
- Use a gage terminal and convert the gage leads to the applicable lead wires or use a strain gage with pre-attached lead cables.
- If you connect gage leads directly, gage leads may be broken since they are too thin.

3-2 CONNECTING STRAIN GAGE

1) Push the button with the accessory small screwdriver.

NOTE

- Press the following position.
Or, the lock buttons may causes troubles such as unable to be locked.



Be sure to press the above position with the accessory small screwdriver.

- For connection, always use the accessory small screwdriver or an object with a fine head.

MEMO

- Applicable lead wire is as follows.

Solid wire: $\phi 0.4$ mm to $\phi 1.2$ mm (UL AWG16 to 26)

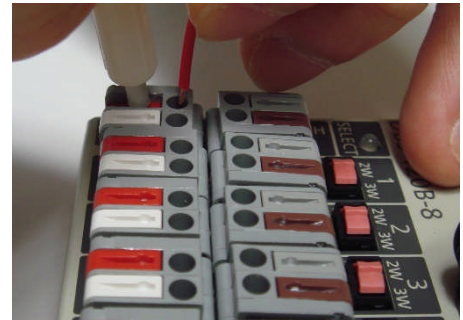
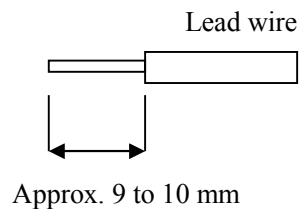
Stranded wire: 0.2 mm^2 to 0.75 mm^2 (UL AWG20 to 24)

Be sure to use the above lead wires. Or, a breaking or connection error will happen.

NOTE

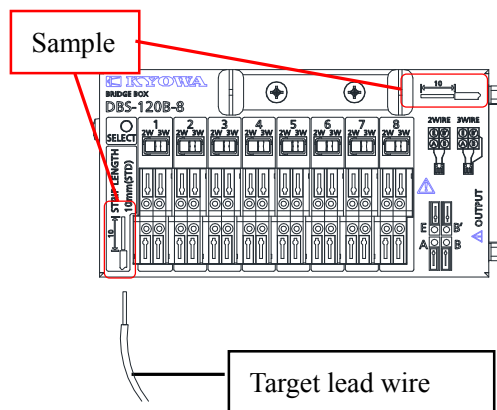
- For connecting a strain gage, do not connect gage leads (lead wires directly connected from the strain gage) directly.
- Use a gage terminal and convert the gage leads to the applicable lead wires or use a strain gage with pre-attached lead cables.
- If you connect gage leads directly, gage leads may be broken since they are too thin.

- 2) Insert the lead wire with its coating peeled off approx. 10 mm all the way to its end into the round hole of the input terminal, with the button pressed.



MEMO

- About length in which the coating of the lead is peeled off.
Sample of the applicable peeled off lead wire is described on the Bridge Box with actual size.
You can check that the actual lead wire is correctly peeled off approx. 10 mm by placing it.



- 3) Release the lock button with the lead wire held in position.
- 4) Gently pull the lead wire to check if it is securely inserted.
If the lead wire comes out of the input terminal, try to insert it again from the item 1).

3-3 CONNECTING STRAIN METER

Use the following connector to connect the strain meter.

For the strain meter with NDIS connector: N-104

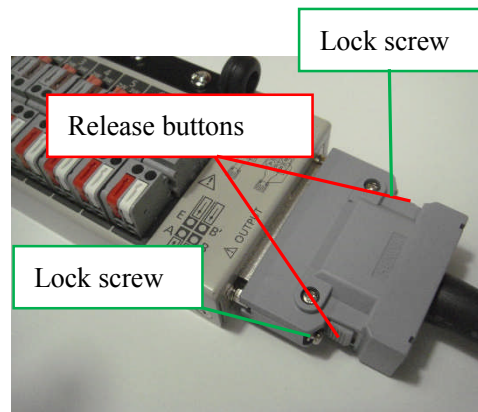
For the strain meter CDV-40B/A: N-105

Each cable length is 1.5 m.

Since the N-104 or N-105 connector has a lock function to prevent itself from falling off, the N-104 or N-105 connector is locked just by inserting it. For releasing, pull the connector with clipping the release buttons on both sides of the connector.

In addition, the lock screws are also equipped. You may fix the lock screws with a Phillips-head screw driver for M2.6.

Connector is not released if you fasten the lock screws even if the release buttons are clipped



MEMO

- About the lock screw.

Usually, the connector is not released since it attaches the lock function even if the lock screws are not fastened.

However, it is recommended to fasten the lock screws when vibration is applied or to prevent the connector from nearly falling off when you accidentally touch the release buttons.

MEMO

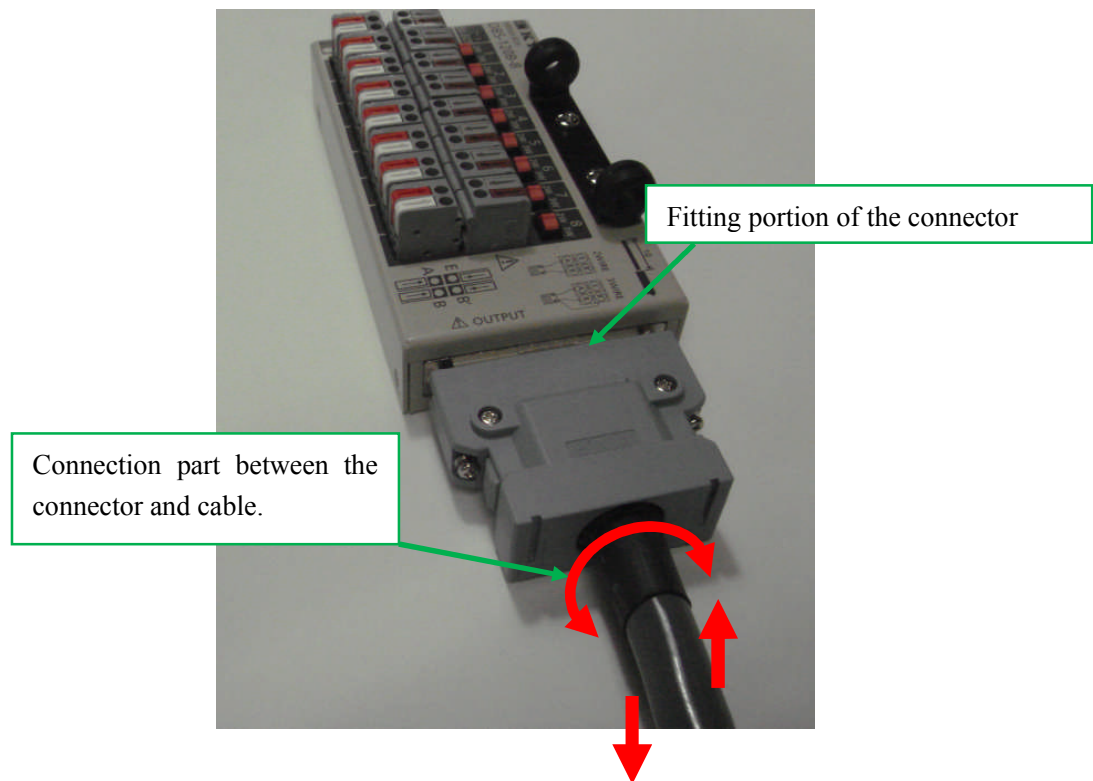
- About the connection part between the N-104 or N-105 connector and cable.

The connector having wide range of connection movement between the connector and cable is used for the cable.

Therefore, the cable moves up, down, left, or right direction at the connection part.

The is used to release the extra force that is transmitted to the fitting portion of the connector from the cable.

There's no need to worry.



4. SELECT LED

4-1 OUTLINE

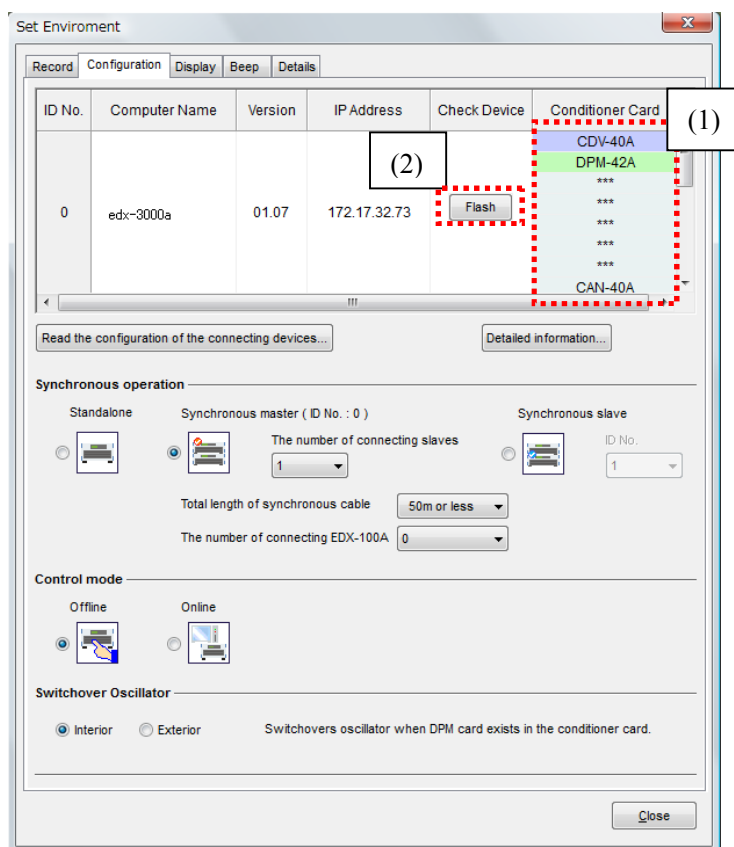
When using multiple Bridge Boxes, by lightening the SELECT LEDs, you can identify which Bridge Boxes are connected to the target CDV-40B/A.

Connect the Bridge Box to the CDV-40B/A with the N-105 cable for using the SELECT LED.

4-2 WITH THE EDX-3000A/B

Click the Environment icon and select the Configuration tab on the EDX-3000A/B. Double click the target CDV-40B/A with a Bridge Box on the Conditioner Card column (1) to light up the SELECT LED in green (the LED will light off in seconds).

Click the (2) Flash button to blink the all SELECT LEDs connected to the EDX-3000A/B in green.



5. SPECIFICATIONS

1) Model Name

Model Name	The number of Channels	Target			Accessory (Note 1)		
			Connection	Applicable Gage Resistance	*1	*2	*3
DBS-120B-8	8	Strain gage	1-gage 2-wire system	120 ohm	●		
DBS-120B-8T					●		●
DBS-120B-8C						●	
DBS-120B-8CT						●	●
DBS-350B-8			1-gage 3-wire system (Note 2)	350 ohm	●		
DBS-350B-8T					●		●
DBS-350B-8C						●	
DBS-350B-8CT						●	●

(Note 1) *1. N-104 with 8 NDIS connectors equipped at the tip

*2. N-105 with dedicated connector for the CDV-40B/A

*3. DBS-MOUNT (bridge box mounting board)

(Note 2) Turn the gage mode switch to switch the 1-gage 2-wire system between 1-gage 3-wire system.

- | | |
|-----------------------------|--|
| 2) Gage Connection Terminal | One-touch type terminal board |
| 3) SELECT LED | For checking the connecting status of the Bridge Box. |
| 4) Dimensions | 115 (W) × 22 (H) × 61.4 (D) mm (excluding protrusion) |
| 5) Weight | Approx. 250 g
Approx. 300 g (with the DBS-MOUNT) |
| 6) Applicable lead wire | Solid wire: $\phi 0.4$ mm to $\phi 1.2$ mm (UL AWG16 to 26)
Stranded wire: 0.2 mm^2 to 0.75 mm^2 (UL AWG20 to 24) |

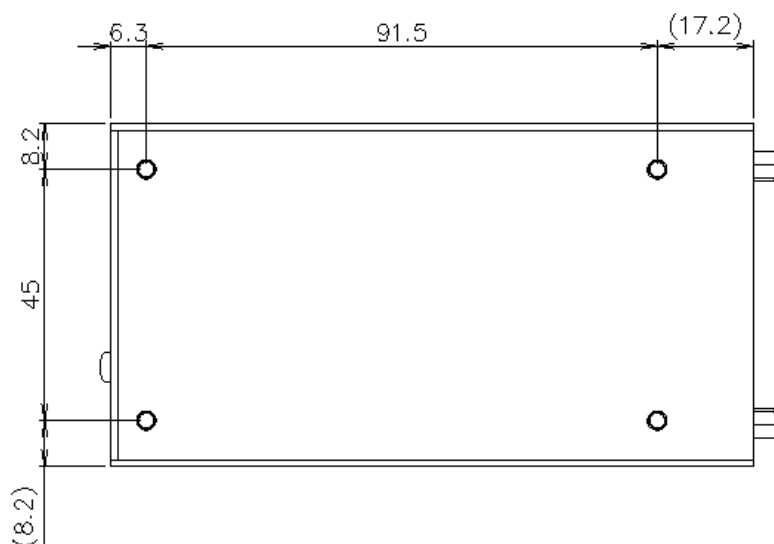
6. ABOUT SCREW HOLES ON BOTTOM PANEL

Four holes for M3 screws are arranged on the bottom panel of the Bridge Box.

The screw holes are for fixing the Bridge Box with the fixing screws.

Depth of the screw holes are 6 mm.

In addition, put the accessory rubber feet (4) when not using the holes.



MEMO

You can easily fix the Bridge Box with the optional DBS-MOUNT.

NOTE

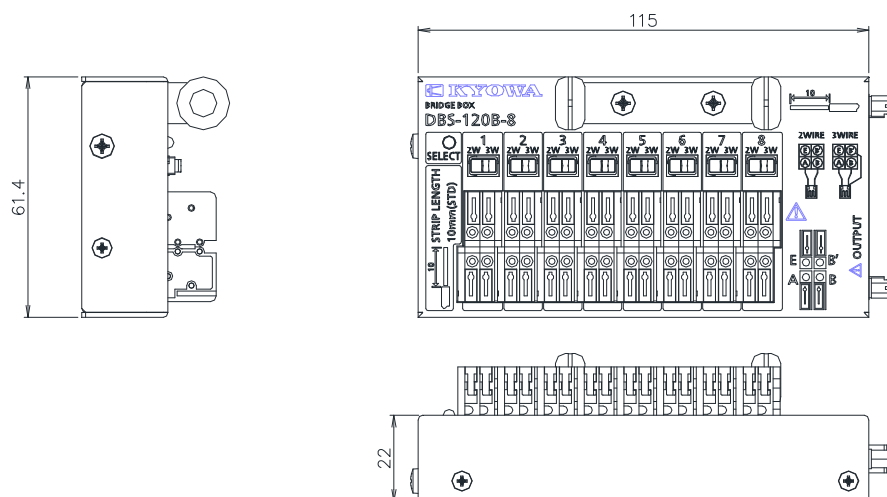
The screw hole sizes are M3, 6-mm depth.

Do not use screws longer than the recommended size.

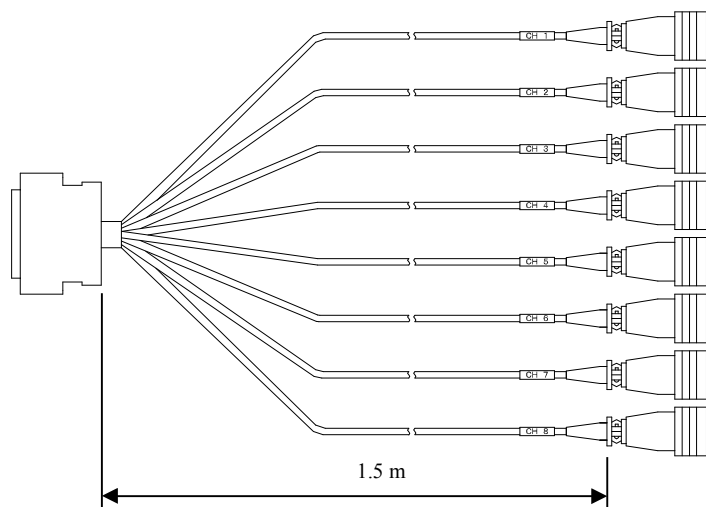
Or, it may cause trouble.

7. OUTSIDE DRAWING

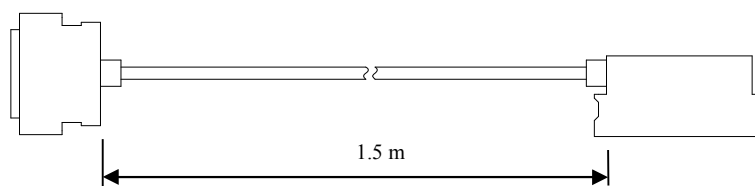
DBS-120B-8 and DBS-350B-8 (Unit: mm)



N-104 Cable

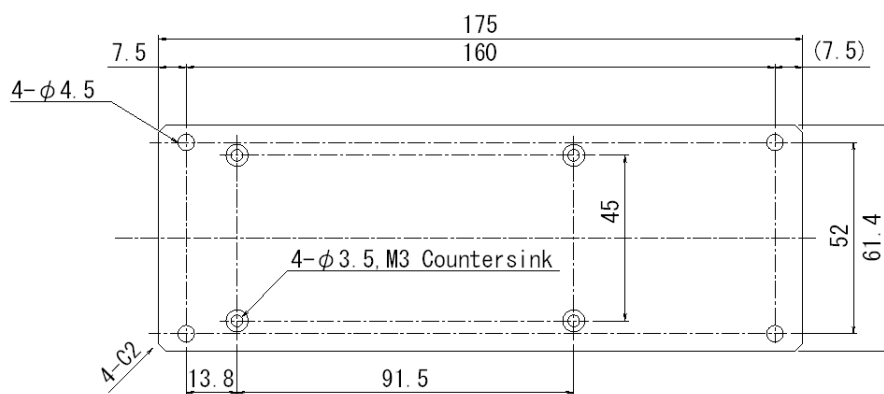


N-105 Cable



DBS-MOUNT (Unit: mm)

Plate thickness: 2 mm





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