

INSTRUCTION MANUAL

MRS junction kit
MRS-J11B

Thank you for purchasing this KYOWA's product.
Read this document and 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 document and instruction manual.

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The contents of this instruction manual are subject to change without notice.
For the latest information, refer to the KYOWA website.
Be sure to abide by the safety precautions and other notes provided in this document and instruction manual.

Standard Accessories

The following accessories are packed with the MRS-J11B.
When unpacking, check the contents to ensure that all accessories are packed.

Name	Quantity
Cable tie *1	10
JCIS10-70 Miniature Screw (M2x4) *2	4

*1 TY-5232M (Thomas&Betts made)

*2 Attached to the MRS-J11B.

Information Service

On our website, you can check the catalogs, Instruction manuals, CAD data and update information etc.
The detailed handling method is described in the instruction manual, so please use it after reading the latest instruction manual carefully.

https://www.kyowa-ei.com/eng/product/category/acquisition/s_mrs-100_series/index.html

Safety Precautions (Be sure to read the safety precautions before use.)

This product complies with the specifications listed in "Product Specifications" on instruction manual. Avoid using the product in environments that depart from the applicable specifications. Failure to observe this precaution may result in malfunctions.

• Prior to use

To ensure safe use of this product, be sure to read the safety precautions before use. Kyowa Electronic Instruments Co., Ltd., assumes no liability for any damage resulting from the user's failure to comply with the safety precautions.
The following symbol is used to help ensure safe use of the product:



Indicates the operator must refer to an explanation in the INSTRUCTION MANUAL in order to avoid the risk of injury or death of personnel or damage to the instrument.

• Warning and Caution indicators

The following symbols are used to draw attention to important issues and to help ensure safe use of the product:



WARNING

Improper use of the system may result in death or severe injury.



CAUTION

Improper use of the system may result in injury and/or damage to the system.



WARNING

• Connecting and disconnecting cables

Before connecting/disconnecting cables, turn off the power to the instrument and connected devices. Failure to do so may cause an electric shock, performance degradation, or malfunctions.

• Concomitant use of conservation measures

If there is a possibility that a secondary disaster may occur in the system due to a failure of the instrument, be sure to use another technical conservation measure.

• Do not disassemble or modify the product.

Failure to observe this precaution can result in electric shock or malfunctions. Attempting to disassemble or modify the product will invalidate the warranty.

• Handling of batteries

- If use primary batteries, do not recharge the primary batteries.
- If use secondary batteries, If use secondary batteries, charge the battery with the charger specified for the battery to be used.
- Connect positive (+) and negative (-) terminals of the batteries correctly. It may cause Liquid leakage, fever, ignite or explosion.
- Do not heat the batteries or throw the batteries into fire. It may cause Liquid leakage, fever, ignite or explosion.
- Do not short-circuit positive (+) and negative (-) terminals of the batteries. It may cause fever or ignite due to a rush current.
- If connecting batteries in parallel, use diodes or other means to prevent the batteries from being inadvertently charged.
- Using the batteries at temperatures outside of the manufacturer's specified range, may lower the performance and/or the life and cause liquid leakage, fever, or explosion.

• Binding cable tie

- Use the cable ties attached as standard accessories "TY-5232M (made by Thomas&Betts)". If not, it may cause damage to the battery holder and/or the battery may fly off.
- Be sure to use two cable ties for binding. If not, it may cause damage to the battery holder and/or the battery may fly off.
- Use cable ties that are not deteriorated and/or damaged. If not, it may cause damage to the battery holder and/or the battery may fly off.
- When binding cable ties, confirm that there is no looseness and/or no gaps in the ties. If not, it may cause damage to the battery holder and/or the battery may fly off.

• Installation

- If installing the product, place it on a flat surface. If not, it may cause in damage to the product.
- In an environment where vibration, shock, and/or centrifugal acceleration is to occur, confirm that the screws are no looseness and/or that the cable ties are no looseness and/or gaps before installation or testing. If not, it may cause damage to the battery holder and/or the battery may fly off.
- When installing this product on a rotating body, install a safety cover to secure safety from flying debris.



CAUTION

• Use the product in a temperature range of the specified range.

Using the product at temperatures outside of the specified range, may lower product performance or result in malfunctions.

Also, using batteries at temperatures outside of the manufacturer's specified range, may lower the performance and/or the life and cause liquid leakage, fever, or explosion.

• Use the product in a relative humidity range of 20% to 85 %.

Using the product in environments in which the relative humidity falls outside the specified range, may degrade product performance or result in malfunctions.

- **Take care of condensation after an abrupt change in the environment.**
Abrupt changes in ambient temperature, such as during transportation, may cause condensation, which can degrade performance or cause malfunctions. Make sure that there is no condensation before using the instrument.
- **Avoid exposing the product to liquid.**
The product is not waterproof or drip-proof. Make sure no liquids come into contact the product; otherwise, electrical leakage or malfunctions may result.

- **Take care when operating the product in locations where the product may be subject to severe impact or vibration.**
Continuous vibration or severe impact may result in performance degradation or malfunctions. Also, when using in an environment with impact or vibration, please fix the chassis and connection cable.
- **Avoid using the product in the presence of strong electromagnetic fields.**
Use the product only in environments in which magnetic fields will not disrupt computer operations. Performance degradation, erratic operation, or malfunctions may occur if the product is used near radio equipment, microwave ovens, electric furnaces, or other equipment generating strong electromagnetic fields.

- **Pay attention to static electricity.**
It may cause damage due to static electricity. Before touching the equipment, touch a metal object to discharge static electricity.
- **Avoid using the product under poor power supply conditions.**
Failure to observe this precaution may result in performance degradation, erratic operations, or malfunctions. Be sure to use a power supply that does not emit noise or produce risk of instantaneous power outages.
- **Avoid installing sensors near a welding machine or performing measurements near a welding machine.**
Failure to observe this precaution may result in output abnormalities, erratic operations, or malfunctions.



CAUTION

- **When using or storing in an environment exposed to dust or corrosive gas, protect the opening with a connector cap.**
It may cause performance degradation or malfunctions. If dust gets inside, performance decreases. Make sure that dust does not enter during use as well as during storage.

- **If the product is used or stored in a place near the sea, take appropriate measures to protect the product from exposure to outside air.**
Failure to observe this precaution may result in performance degradation or malfunctions.

- **Take care when operating this product in high or low pressure environments.**
Failure to observe this precaution may result in malfunction, performance degradation, or failure.

- This product is designed to be used under pressure of the standard atmosphere.

- **After power is turned OFF, wait at least 5 seconds before turning ON power once again.**

If power is turned on again within 5 seconds or if the power is repeatedly turned ON and OFF, the product may cause performance deterioration or failure due to the inrush current generated by the product being turned on.

- **Allow the product to warm up before use.**

After the power ON, always preheat the product for approximately 1 hour.

- **Do not pull on or apply excessive tension to the cables.**

Lay the cables with a certain safety margin of length to avoid subjecting the connections to excessive force. Applying excessive tension to a cable may result in abnormal output, conductor damage, or connector damage.

- **Clean the product as needed.**

When the product becomes dirty, clean with a soft, dry cloth.

Notations used in the Manual

The following notations are used in the manual for convenience.

• Names described on the panel surface

Names described on the panel surface are expressed in double quotation mark " ".

• Cautionary and reference notes

The notations below are used to attract your attention to important cautionary and reference notes when handling the product.

Examples of cautionary notations



CAUTION

Describes cases where incorrect handling could result in physical damage (product malfunctions, etc.).



NOTE

Describes important information pertaining to product usage.

Example of a reference note

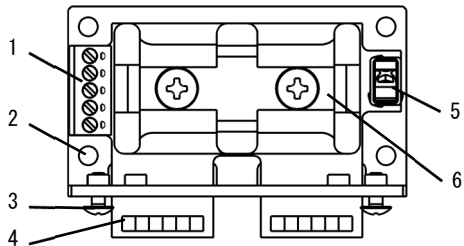


Describes information useful for product usage

Outline of product

This product is a 1ch-strain transmitter, 1ch-voltage transmitter or 1ch-thermocouple transmitter connection unit. Simply connect the sensor and you can easily measure without soldering.

Controls and Indicators



1. Sensor terminal
Screw-type Terminal for connecting a measuring target.
Connect the measuring target that supports the transmitter.

Transmitter Model name	Measuring Targets
MRS-101B-S	Strain gages (Full-bridge system), Strain-gage transducers
MRS-101B-V	Voltage
MRS-101B-T	Thermocouple



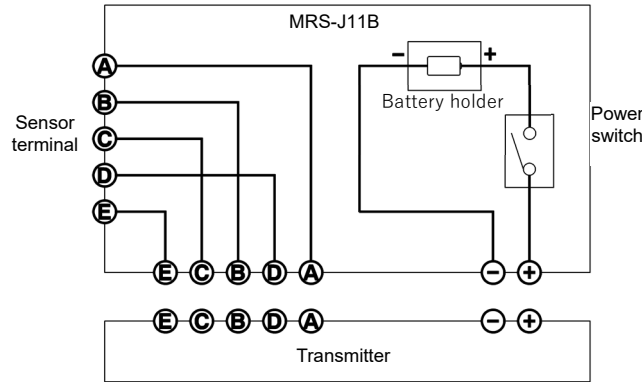
NOTE

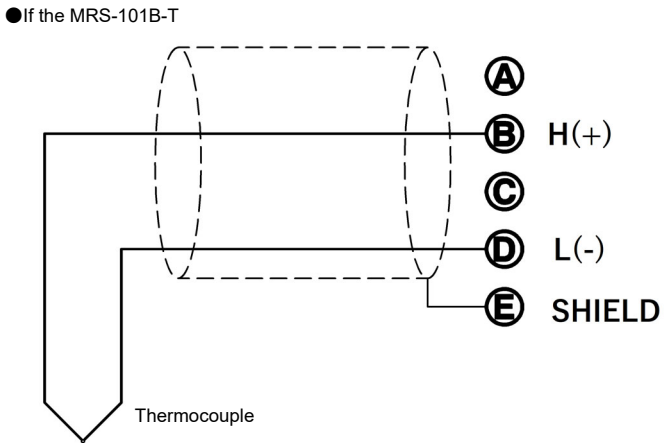
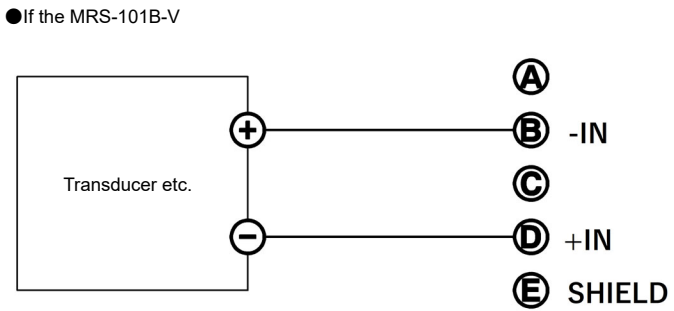
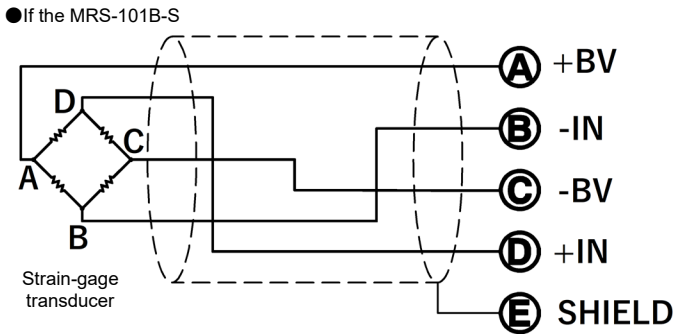
The functions of terminals A to E differ depending on the transmitter to be connected. For details, please refer to the instruction manual of the transmitter to be used.

2. Fixing screw hole for this product (φ1.4x4)
Hole for fixing this product to the table.
3. Fixing screw hole for the telemeter (M2.5x2)
Screws for fixing the telemeter to this product.
4. Transmitter terminal
Terminal for connecting a transmitter.
Power and signals are input to the transmitter through this terminal block.
5. Power SW
Switch for turning on / off the power of the connected transmitter.
6. Battery holder
Battery holder for the CR2 battery used to power the connected transmitter.

Connection

Wire as shown below.



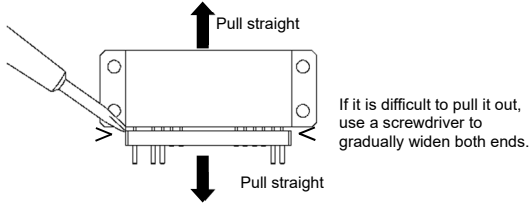


Connection

1.. Removing the transmitter and adapter

Remove the adapter connected to the transmitter. When removing the adapter from the transmitter body, remove the machine screws and then pull out the adapter straight. Note that the pins on the transmitter are very easy to bend. If it is difficult to pull it out, insert a flat-blade screwdriver, etc. between the transmitter and the adapter, and gradually widen both ends to remove it.

Flat-blade screwdriver

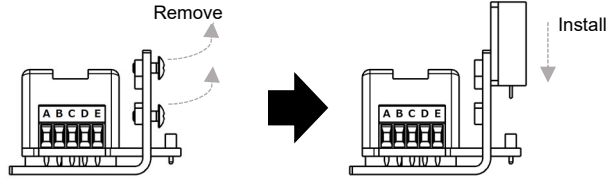


CAUTION

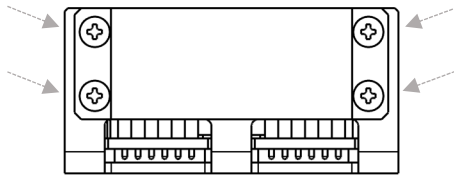
If the pin is bent, straighten it with tweezers before using it. Assembling in a bent state may damage the pins of the transmitter. Please handle with care.

2. Transmitter installation

Remove the transmitter fixing screw of this unit and insert the transmitter straight into the transmitter terminal block.



Secure the instrument and transmitter with the removed transmitter fixing screw.



NOTE

Use the screws shown in the following table for fixing the transmitter and the product and for installing the product. Install the product with the specified torque. If exceeding the maximum torque, it may cause damage in the body of the product.

Mounting object	Transmitter	Fixing surface
Screw	M2	M2.5
Max. Torque	0.09 N·m	0.18 N·m

CAUTION

- The above is the torque when there is no-load of vibration, impact, or centrifugal acceleration. When used in an environment with vibration, impact, and/or centrifugal acceleration, it may cause damage, cracking, and/or failure of the product due to the screw hole fatigue when screwed in at the specified torque.
- Confirm that the screws are no looseness before installation or testing.
- When installing this product on a rotating body, install a safety cover to secure safety from flying debris.

3. Battery installation

Make sure that the power switch is OFF (◐ side), and insert the battery into the battery holder.

Insert a cable tie in the space between the battery holder and the transmitter.

Tighten the cable tie and cut off the excess.



CAUTION

If the cable ties are not sufficiently binding, it may cause damage to the battery holder and/or the battery fly off. Take care of the following when binding the cable ties.

- Use the cable ties attached as standard accessories "TY-5232M (made by Thomas & Betts)".
- Be sure to use two cable ties for binding.
- Use cable ties that are not deteriorated and/or damaged.
- When binding cable ties, confirm that there is no looseness and/or no gaps in the ties.
- In an environment where vibration, shock, and/or centrifugal acceleration is to occur, confirm
- That the screws are no looseness and/or that the cable ties are no looseness and/or gaps before installation or testing.

Installation

The product can be fixed to a stand, etc. by using the fixing screw holes for the instrument. Please refer to the external view for the hole dimensions.

NOTE

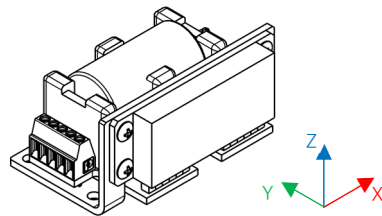
If installing this product, place it on a flat surface.

CAUTION

Be sure to follow the vibration resistance, shock resistance, and centrifugal acceleration resistance values indicated in the MRS-J11B specifications. If the specified value is exceeded, it may cause damage to the battery holder, severed cable ties, and/or the battery may fly off and be lost. Please confirm the following before installation.

- Use the cable ties attached as standard accessories "TY-5232M (made by Thomas&Betts)".
- Be sure to use two cable ties for binding.
- Use cable ties that are not deteriorated and/or damaged.
- In an environment where vibration, shock, and/or centrifugal acceleration is to occur, confirm that the screws are no looseness and/or that the cable ties are no looseness and/or gaps before installation or testing.
- When installing this product on a rotating body, install a safety cover to secure safety from flying debris.

In addition, if centrifugal acceleration is applied in the longitudinal direction (X axis direction) of the battery as shown in the figure below, the battery-holder electrodes might separate from the battery, which will prevent power from being supplied, so consider this during installation.



Specifications

Model	MRS-J11B
Product Name	MRS Junction Kit
Compatible transmitter	MRS-101B-S*, MRS-101B-V, MRS-101B-T * Full-bridge system (Strain gages, Strain-gage Transducers)
Channels	1
Input Terminals	Screw-fixed terminal block * Compatible lead wire 0.14 to 0.5 mm ²
Operating Temperature, Humidity	-10 to 60 °C, 20 to 85 % (Non condensing)
Vibration Resistance *1, *2	98.07 m/s ² (10 G) , 5 to 55 Hz
Shock Resistance *1, *2	490.3 m/s ² (50 G) , 11 ms or less, Half sine wave
Centrifugal Acceleration Resistance *1, *2, *3, *4	4903 m/s ² (500 G)
Compatible Battery	CR2 Lithium battery
Dimensions	50 (W) x 24.5 (H) x 34 (D) mm (Excluding protrusions)
Weight	Approx. 23 g
Combination Measuring Accuracy	MRS-101B-S Within ±0.15%FS * The above specifications apply to a stable temperature after warm up at 25 ±5 °C for 30 minutes. MRS-101B-V Within ±0.15%FS * The above specifications apply to a stable temperature after warm up at 25 ±5 °C for 30 minutes. MRS-101B-T

Ambient temperature	Measuring temperature	Measuring Accuracy (Combination With Transmitter and Receiver)
20 to 30 °C	Below -50 °C	Within ±0.4 %rdg ±3.0 °C
	-50 °C or more	Within ±0.1 %rdg ±2.5 °C
0 to 50 °C	Below -50 °C	Within ±0.4 %rdg ±3.8 °C
	-50 °C or more	Within ±0.1 %rdg ±3.5 °C
-10 to 60 °C	Below -50 °C	Within ±0.4 %rdg ±4.8 °C
	-50 °C or more	Within ±0.1 %rdg ±4.5 °C

- * the input terminal temperature is in equilibrium
- * The above specifications apply to a stable temperature after warm up for about 60 minutes

- *1 Do not exceed the specification range of the transmitter to be combined.
- *2 Fix a battery by using the provided cable ties.
- *3 Exclude the longitudinal direction (X axis direction) of the battery. Use a shatterproof cover for safety.
- *4 Based on the results of an 8-hour continuous demonstration test.

* This product does not contain the 10 restricted substances beyond the maximum concentration limit under RoHS Directive (2011/65/EU, (EU)2015/863). * Excluding exemptions allowed under RoHS Directive (2011/65/EU, (EU)2015/863)

Outside drawing

