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TEAC

Strain gauge load cell Instructions for Use

TU-MXR2(T)-G3

Tension/Compression Load Cell

Introduction

Thank you for purchasing the TU-MXR2(T)-G3 load cell. Please read this document completely before using this load cell to achieve its best performance and ensure safe and proper operation.

- Company names and product names in this document are the trademarks or registered trademarks of their respective owners.

Included accessories

If anything is missing or damaged, contact the retailer where you purchased the product.

Test report × 1
Jig for tightening × 1
Instructions for Use (this document) × 1

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING

If something abnormal occurs

Request repair from the retailer where you purchased the product.

Do not open the cover.

Never remove the cover from this unit. Doing so could cause malfunction. Request inspection and repair from the retailer where you purchased the product. Do not alter this unit. Doing so could cause malfunction.

Do not put foreign objects or water, for example, into the unit.

Do not place a container that holds water, for example, on top of this unit. If liquid is spilled, for example, and enters the unit, this could cause malfunction.

Do not use the unit with any power supply voltage other than that specified.

Do not use the unit with any power supply voltage other than that specified. Doing so could cause malfunction.

⚠ CAUTION

Unsuitable installation locations

Do not place the unit in the following types of locations. Doing so could cause malfunction.

- Locations where it might be exposed to smoke or steam, such as near a kitchen table or humidifier
- Unstable locations, including unsteady stands and tilted places
- Locations that are very humid or dusty
- Locations that are exposed to direct sunlight

When not using the unit for a long time

For safety, cut the power supply when not using this unit for a long time.

Do not operate a damaged unit.

Precautions for use

- This unit is not built to be water or splash resistant, and it cannot be used in conditions when the relative humidity is high. Moreover, use in atmospheres with corrosive gases should be avoided.
- Be careful to prevent water, oil and other substances from getting on the unit.
- Avoid use in conditions where condensation could occur.
- Connect cores to the load cell after discharging (eliminating) static electricity from your body.
- If the surrounding temperature changes suddenly, the values output by this device could become unstable, making accurate measurement impossible.
  (This could occur, for example, in a location blown by warm or cold air.)
- Conduct load calibrations periodically.

Installation procedures

Insert a screw into the screw hole in the center part of the load cell, and fix the screw to a flat attachment surface. (Output precision could be affected if the attachment surface is not flat.) The size of the screws used depends on the rated capacity (model name) of the load cell as shown in "Recommended tightening torques when attaching to load jigs and surfaces" below.

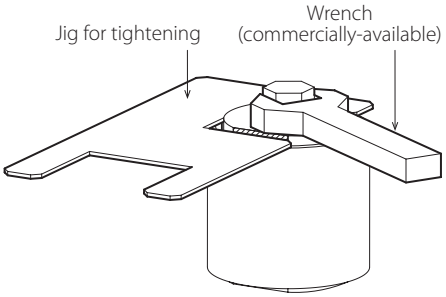
Recommended tightening torques when attaching to load jigs and surfaces

Rated capacity	Dimension of load cell screw hole	Effective screw depth	Body material	Tightening torque tolerance
10 N	M3	3.5 mm	Aluminum	0.3 N·m
20 N				0.7 N·m
50 N				1.1 N·m
100 N				1.5 N·m
200 N			Steel	6.0 N·m
500 N	M4	4.5 mm		6.0 N·m

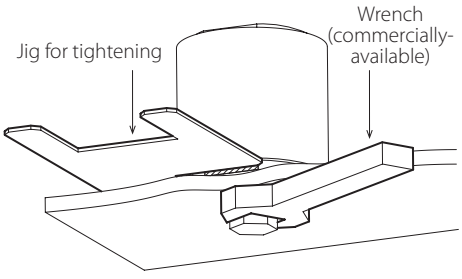
Use screws with a strength grade of 12.9.
In addition, see the "Effective screw depth" in the dimensional drawing for the length of thread engagement of the screw and the mounting part (internal threads).
Please consult with us if you are uncertain about screw selection, for example.

ATTENTION

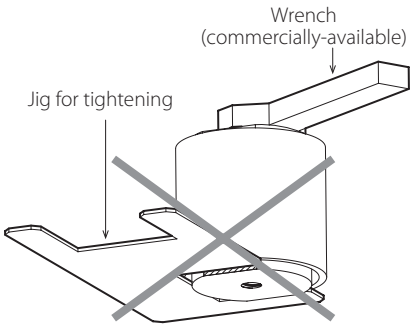
- When attaching a load button or rod end, for example, to the screw/bolt area on the top of the load cell, use the included jig to hold the area shown with diagonal lines at the top and tighten the screw or nut.



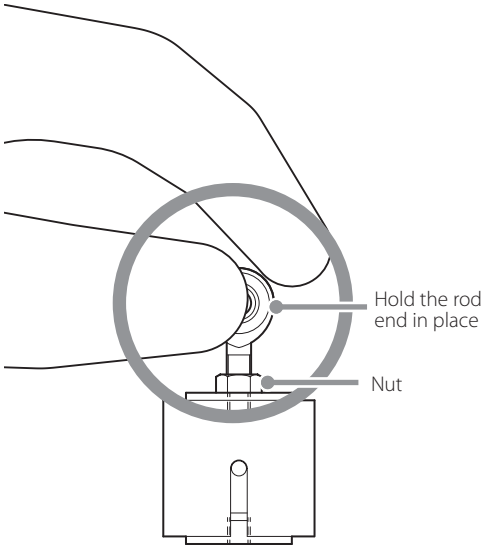
- In the same way, when attaching a rod end or base, for example, to the screw/bolt area on the bottom of the load cell, use the included jig to hold the area shown with diagonal lines at the bottom and tighten the screw or nut.

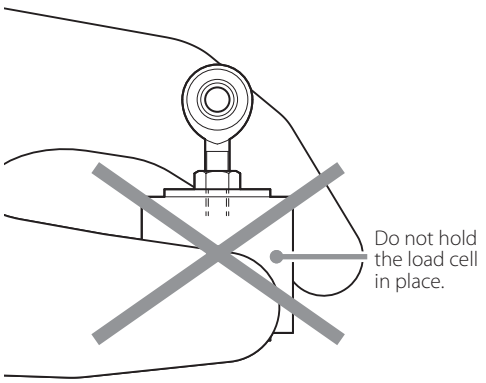


- When tightening the screw or nut attached to the load cell, holding the screw/bolt part on the opposite end (shown with diagonal lines), will cause twisting force to be applied to the gauge and break the load cell.



- When removing it, follow the attachment procedures in reverse order. On the top or the bottom side of the load cell that has 14mm width across flats, the side that has the nut, for example, to be loosened, use the jig for tightening to remove it so that force is not applied to the load cell.
- Attach a load button, for example, when using with compression.
  Tighten with the torque shown in the table above to prevent the load button from becoming loose. When removing an attached load button, be sure not to apply torque that exceeds the tightening torque shown in the table.
  A thread-locking fluid can be used on the screw, but be aware that this could prevent removal of the load button. Please prepare a load button to attach or consult with us.
- When using with a tensile load, attach a rod end or tensile load adapter.
- When attaching a rod end to a load cell, use a nut to prevent loosening. When tightening this nut for preventing loosening, secure the rod end. Do not tighten the nut by securing the load cell. If twisting force is applied between it and the central screw part, the load cell could be damaged.

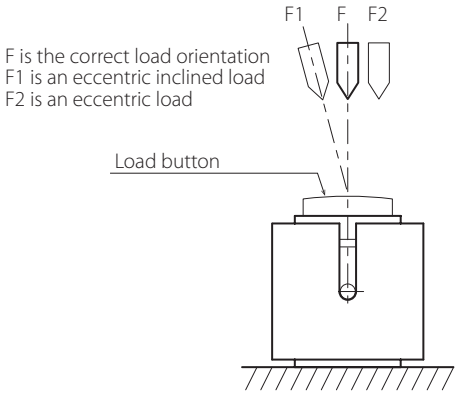




- Always use screws/bolts that are suitable for the rated capacity when attaching a base plate or tensile load adapter, for example, to the load cell. Moreover, tighten all of the attachment screws/bolts evenly.

Precautions when placing loads on the unit

- Make sure the load is perpendicular to the surface to which this unit is attached.
- Place the load so that it is centered on the center of the unit. If the load is not centered (eccentric load), twisting, for example, and measurement errors could occur. This could even result in damage.



- Refer to the following table for the allowable bending moment and allowable lateral load, and use it so that neither of these tolerances are exceeded.

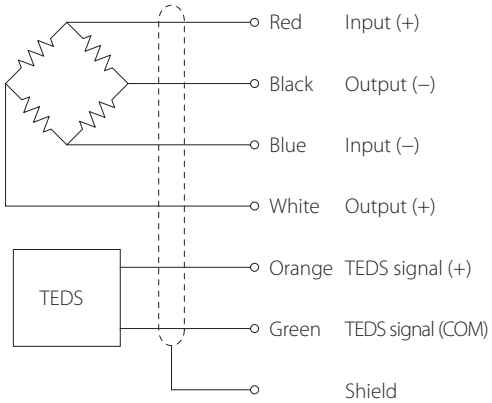
Rated capacity	Allowable bending moment (N·m)	Allowable lateral load (N)
10 N	0.4	70
20 N	0.5	90
50 N	0.9	150
100 N	1.2	210
200 N	4.9	810
500 N	6.7	1300

- If the load receiving area is contacted by something that is at a different temperature and the load is increased, the values output by this device could become unstable, making accurate measurement impossible.
  In such a case, wait until the temperature difference ceases to exist before measuring.

Electrical connection of load cell

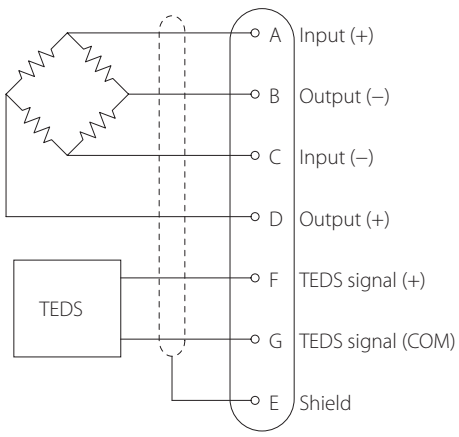
- Connect as shown in the illustration below. Incorrect connections could result in inability to balance and in errors occurring in the output voltage when loads are applied.

Using a cable with bare lead wires



- This unit has a built-in TEDS function.
- The orange and green cores in the cable and the F and G pins in the connector are wired for TEDS.
- This unit does not support remote sense.
  See the operation manuals of indicators and strain amps that support remote sense for how to connect sensors with those units.
- The shield is not connected to the main body of this product. For this reason, if grounding is necessary because of external noise or another issue, arrange to ground the shield to a part other than the body of this unit, for example.
- Since the cable is directly connected to this unit, use a specialized cable to increase the length. (Please consult with us.)
- When conducting insulation resistance tests, limit them to the red, black, blue and white cores. Do not apply to the TEDS cores (orange and green).

Using a connector (optional)



NDIS-compatible connector

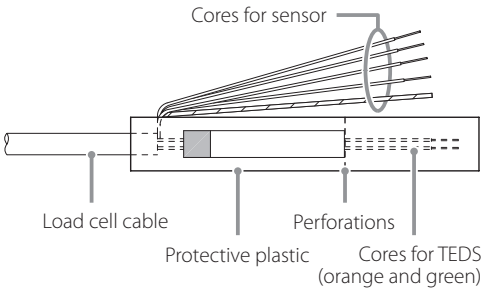
TEDS overview

TEDS (Transducer Electronic Data Sheet) is a memory chip that can electronically read and write sensor-specific data. The TEDS built into this unit has serial number, load cell rated output and manufacturer name data recorded on it. By connecting an indicator that supports TEDS, the TEDS data of the connected load cell will be automatically read and equivalent input calibration will be completed. (For details, read the operation manual of the connected indicator.)

Refer to the connection diagrams in "Electrical connection of load cell" as well as the operation manual for the indicator being connected for procedures to make connections.
TEAC indicators and signal conditioners that support TEDS include the TD-01 Portable, TD-700T, TD-260T, TD-9000T and TD-SC1. For details, inquire at the retailer where you purchased the unit.
If not using the TEDS function, do not connect the orange and green load cell cores.
Moreover, take measures to prevent the orange and green cores from touching other terminals.
Data recorded in TEDS are tested values from calibration conducted at room temperature during inspection before shipping from our company.
Load cell output will be affected by the environmental temperature where used, even when within the compensated temperature range established in the specifications. Although load cell output is calculated from the calibration value saved in TEDS, when the environmental temperature differs greatly from room temperature, the temperature impacts increase on the zero point and the output. For this reason, consideration of the effect on output voltage is necessary. Output voltage changes will be within the specification range as long as the unit is used at temperatures within the specification range.

When using the TEDS function

This product's cores for TEDS (orange and green) are protected by a plastic cover as shown in the illustration.
This is to prevent miswiring and contact with other connectors during use, for example, which could cause shorting.
To use the TEDS function, remove the tip of the plastic cover, following the perforations, from the end of the cables. Then, connect the TEDS cores (orange and green) to the indicator. Refer to "Electrical connection of load cell" for how to connect each core.



When not using the TEDS function

If not using the TEDS function, remove the entire protective plastic cover and cut off the TEDS cores (orange and green) around where the plastic cover was attached to the cable. If you use it without removing these cores, do not remove the protective plastic or make other arrangements to prevent the cores from touching other places.
Refer to "Electrical connection of load cell" for how to connect each core.

Note about the tag attached to the TEDS cable

NOTE

Explanations related to TEDS are available on our website.
https://loadcell.jp/en/info/teds.html

ATTENTION

Since the protective plastic and tag are not suitable for the entire temperature range of this unit's specifications, do not expose them to high temperatures.

Handling after use

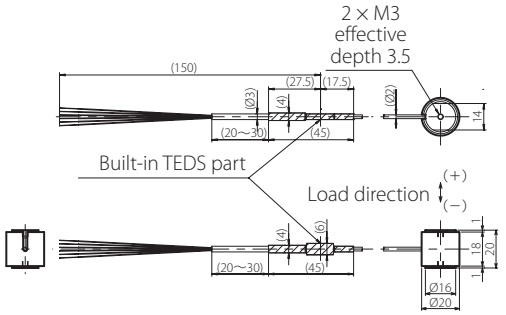
- When moving this unit while it is attached, take protective measures to prevent it from being shaken or subjected to excessive external forces.
- When storing it, keep it in a dry place where it will not be exposed to water or oil, for example.

Specifications

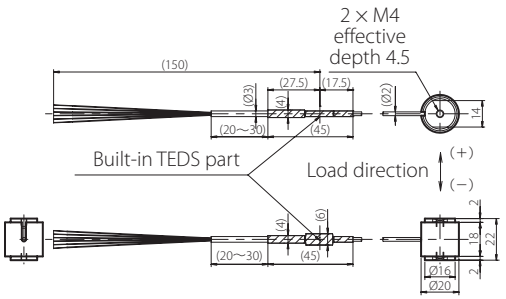
TU-MXR2(T)-G3 10N to TU-MXR2(T)-G3 500N
Rated capacity: 10 N, 20 N, 50 N, 100 N, 200 N, 500 N
Safe overload rating 120% R.C.
Ultimate overload rating: 150% R.C.
Rated output: 1.5 mV/V ±30%
Linearity: 0.1% R.O.
Hysteresis: 0.1% R.O.
Repeatability: 0.1% R.O.
Zero balance: 10% R.O.
Safe excitation voltage: AC 8 V, DC 8 V
Input terminal resistance: 350 Ω ±2%
Output terminal resistance: 350 Ω ±2%
Insulation resistance: 1000 MΩ or more (DC 50 V)
Compensated temperature range: –10 to 45°C
Permissible temperature range: –20 to 60°C
Temperature effect on zero balance: 0.5% R.O./10°C
Temperature effect on output: 0.5% R.C./10°C
Cables: 3m direct connection with bare lead wires,
Ø2 4-core shielded between this unit and TEDS,
Ø3 6-core shielded between TEDS and lead (about 15 cm)
Body material: alminum (10 N to 100 N)
stainless steel (200 N, 500 N)
Environmental compliance: RoHS (10 substances)
TEDS compatibility: inside cable lead

Dimensional drawings

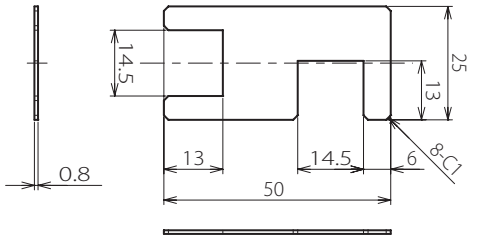
TU-MXR2(T)-G3 10 N to 200 N



TU-MXR2(T)-G3 500 N



Jig for tightening



Dimensions in millimeters (mm)

Warranty explanation

- The warranty period for this device is one year from the date of purchase.
- Be aware that repairs will require payment in the following cases even during the warranty period.
  1) Malfunction or damage due to misuse
  2) Malfunction or damage caused by modifications or repairs conducted by any party other than our company or a service person designated by our company
  3) Malfunction or damage caused by dropping, transportation or similar handling after product delivery
  4) Malfunction or damage caused by fire, earthquake, water, lightning or other natural disaster
  5) Malfunction or damage caused by external factors, including power supplies and equipment environmental conditions, that deviate from the operation requirements of this product
  6) Malfunction or damage if the product was not purchased from our company or an agent designated by our company
- We offer paid service after the conclusion of the warranty period. For details, please contact the retailer where you purchased the unit.
- Be aware that our company will bear no responsibility for any secondary damages resulting from the operation of this device or related to data.
- Information is given about products in this manual only for the purpose of example and does not indicate any guarantees against infringements of third-party intellectual property rights and other rights related to them. TEAC Corporation will bear no responsibility for infringements on third-party intellectual property rights or their occurrence because of the use of these products.

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