MINIATURE S-BEAM JR. LOAD CELL

LSB200 MANUAL

PREFACE

For specifications, dimension, and capacities, please refer to the LSB200 spec sheet:
http://www.futek.com/files/pdf/Product%20Drawings/lsb200.pdf

PRECAUTIONS

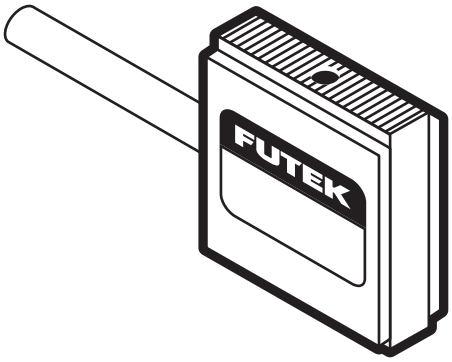
Remove the shunt before applying any load.

Make sure the cover is not touching the measuring end of the load cell.

Install the LSB200 in a dry, clean environment for optimum performance and to prevent short circuiting the sensor.

MEASURING END

The top of the sensor is the measuring end.



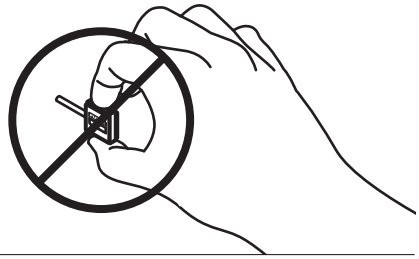
DISCLAIMER

This documentation was generated and completed to the best ability of FUTEK's Engineering Team. The information and recommendations on this document are presented in good faith and believed to be correct however, FUTEK Advanced Sensor Technology makes no representations or warranties as to the completeness or accuracy of the information.

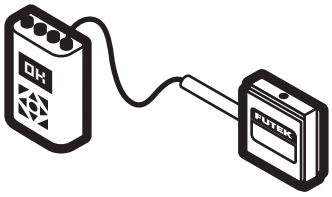
DO NOT USE these products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury. Failure to comply with these instructions could result in death or serious injury.

INSTALLATION GUIDE

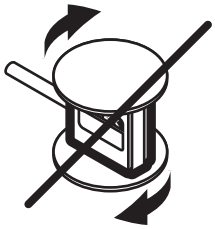
When handling the sensor, do not pinch the ends where the load is applied.



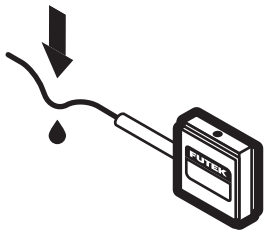
When installing the sensor, connect it to an instrument and monitor the output to prevent possible overload.



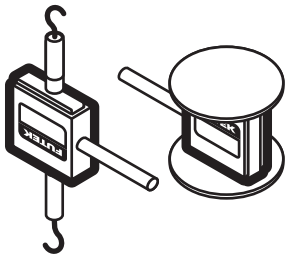
Do not apply excessive torque or create a torque through the sensor when attaching the fixtures.



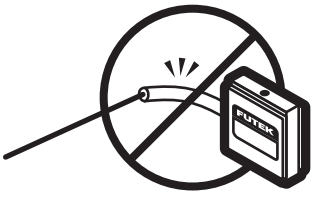
In an environment with a high amount of moisture or humidity, create a drip loop on the cable to prevent any water from flowing into the sensor.



For compression, install the sensor right side up for best results (reference the label). For tension, install the sensor upside down so the load is being applied to the measuring end.



When routing the cable to an instrument, you want to create a service loop in the cable so it is not taut or stretched. (Cable bend radius of 0.80" should be maintain where possible.)



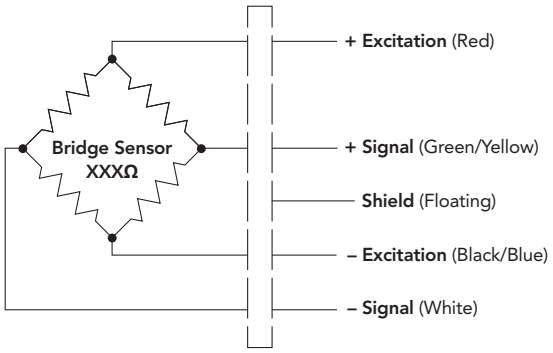
TROUBLESHOOTING GUIDE

NO OUTPUT

If there is no output or the output isn't changing when applying a load, check the following points to troubleshoot the sensor.

Is the sensor wired properly?
Make sure the power is applied between red and black, and the signal is measured between green and white.

WC1: Standard 4-Wire



Is there any sign of damage to the cable?
Any damage to the cable can lead to discontinuity in the wire. Carefully check the cable to make sure no damage has been done. If the cable will experience continuous flexing, please consider a cable bend radius at least 10x the cable diameter for bend relief. Examples of possible ways the cable can be damaged are listed here:

- Cuts/nicks
- Sharp bends
- Excessive twisting
- Too much tension
- Crushed under weight

ZERO SHIFT

If the zero has an offset before applying any load, check the following points to troubleshoot the sensor.

Is the load cell mounted upside down?
The load cell has been calibrated in its optimal direction and has taken into account the measurement end. Reference the label when mounting the sensor. (see installation guide)

Does the sensor respond to a shunt?
A load can be simulated on the sensor through the use of an external resistor connected on the –Signal and –Excitation wires. Shunting can provide for a way to test a sensor's functionality. Note that a shunt is performed with no load on the sensor. You can find a Shunt calculator online at http://www.futek.com/shuntcalc.aspx.

Is the sensor preloaded in either direction?
Having a preload, such as a fixture weight, on the sensor will create an offset in the zero. This will reduce the load that can be applied. o Ex. If a 10 lb sensor is mounted with 2 lb fixtures, the remaining weight that can be applied is 8 lbs. Even if the instrument is tared to zero, the sensor cannot take more than a 10 lb load.

Does the bridge need to be rebalanced?
The zero balance calculator can be used to compensate for this high zero by selecting a resistor to be used as a zero shunt. http://www.futek.com/zerocalc.aspx

TROUBLESHOOTING GUIDE

INCORRECT OUTPUT

If the output of the sensor is incorrect when applying a known load, check the following points to troubleshoot the sensor.

Is there any sign of damage to the load cell?
Any damage to the load cell can lead to an incorrect output or even no output at all. Carefully check the load cell to make sure no damage has been done. Examples of possible ways the load cell can be damaged are listed here:

- Overloading
- Fractures
- Collapsed

Is the cover making contact with the load cell?
If the cover is touching the active end of the load cell, it could affect the accuracy of the output. The active end of the load cell is defined as the end where the load is applied, or the top in reference to the label (see installation guide). Make sure the cover is not pinched in or making any contact with the inside of the load cell.

Is the sensor hot?
An excessively high excitation voltage will heat up the sensor. This may damage the sensor's bridge. Check the excitation voltage to make sure it is set properly.

Is the bridge resistance correct?
Check the resistance between +E and –E to make sure it is correct compared to the value on the infosheet. http://www.futek.com/files/pdf/Product%20Drawings/lsb200.pdf

Have any of the settings on the instrument changed?
Check the instrument that the load cell is connected to, to make sure the settings have been set correctly and nothing has been changed unintentionally.

Has there been any power surge to the instrument?
A power surge to the instrument may damage it leading to incorrect readings of the signal from the load cell.

Has the load cell been subjected to any type of water or spray?
If the load cell has been in contact with any conductive fluids, the bridge may be subject to short circuiting. Make sure to work in a dry environment to prevent short circuiting.

Is the load cell in a dusty or harsh environment?
If the load cell is being used in dirty or harsh environments, there could be residual build up on the load cell or in the overload protection cutout that may prevent the load cell from being loaded properly. Keep the load cell in a clean environment for optimal performance.

Has the load cell been subjected to a high change in temperature?
The LSB200 has a temp. shift zero of ±0.01% of R.O./°F, and a temp. shift span of ±0.02% of Load/°F. If the temperature in the testing environment has a high fluctuation, this may lead to unstable readings. To get stable readings, keep the load cell in an environment with a steady temperature.

Is the load cell properly aligned/mounted to the fixture?
Misaligning the load cell can cause an off center load. For accurate readings, make sure the load cell is properly mounted.

Has the sensor been damaged during installation or handling?
Make sure to follow the installation guide to prevent any damage to the sensor. Also make sure to handle the sensor with care. The lower the capacity, the more susceptible the sensor is to being damaged.

TROUBLESHOOTING GUIDE

INCORRECT OUTPUT

If the output of the sensor is incorrect when applying a known load, check the following points to troubleshoot the sensor.

Has the wiring and power to the sensor been confirmed?
Check to ensure the sensor wiring pattern from page 4 has been observed and that power is on to the sensor. It can be helpful to confirm the power supply to the sensor with an instrument such as a multi-meter.

Has the sensor been tested outside of the application on its own?
A lot of items can be eliminated in the troubleshooting by completely removing the sensor from the application, and fixtures, and test the sensor on its own with an instrument such as a multi-meter. The output is specified with a mV/V rating found on the sensor's calibration certificate. This means the output of the load cell at full capacity will be the sensor's mV/V rating for every volt supplied to the sensor. Here expect to see a linear output range from about zero millivolts to your full mV output as the sensor is loaded from zero to full capacity.