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TR3D-B-1K/4K/16K Cross-Talk and Bending Moment Specifications

Our specifications for allowable cross-talk state that the transducer cross-talk values due to loads without moments will be 2% or less of the full-scale load. If pure bending moments are applied, the cross-talk values into any channel will be 5% or less of the full-scale load for that channel. The cross-talk values are generally repeatable for each individual load cell, and the cross-talk due to non-moment loads can easily be corrected for in the data-acquisition stage.

The TR3D-B-* series load-cells were not designed to withstand high bending moments. The maximum bending moment that we recommend applying about any given axis is 500 in-lb, 4,000 in-lb and 32,000 in-lb for the 1K, 4K and 16K models, respectively. In addition, when a bending moment is applied about an axis, the load capacity in each perpendicular axis is reduced by an amount equal to the magnitude of the moment, divided by the moment arm, which is 0.5 in, 1.0 in and 2.0 in for the 1K, 4K and 16K models, respectively. Please note that more than one bending moment may act to reduce the load capacity in any given axis. As an example: a pure bending moment of 50 in-lb, applied about the X-axis of a 1K model, will reduce the Z-axis load carrying capacity by 100 lbs (50 in-lb/0.5 in). Furthermore, the Z-axis load carrying capacity will be reduced by another 100 lbs if a bending moment of 50 in-lb is applied about the Y-axis at the same time.

For situations where large moments are expected, we recommend the use of two or three load-cells attached together in a single fixture. Not only does this allow you to design a system that will tolerate arbitrarily large moments (by increasing the moment arm distance between the load-cells), but it also makes it possible to actually measure the applied moments directly.

Please feel free to contact Michigan Scientific if you have any questions regarding the use or application of TR3D-B-* Three Directional Load Cells.

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