FORCE MEASUREMENT SOLUTIONS.

INTERFACE 6-AXIS LOAD CELL CHEAT SHEET

COMMON ABBREVIATIONS

pound force-inch	lbf-in	**Volts**	V
pound-force	lbf	**Millivolt per Volt**	mV/V
newton-meter	Nm	**Full Scale**	FS
newtons	N	**Ohm**	Ohm
Hertz	Hz	**Megohm**	Mohm
Milliampere	mA	**Degree Fahrenheit**	°F
Rated Output	RO	**Degree Celsius**	°C

ACCURACY

Nonlinearity	The deviation from a perfectly straight calibration curve, expressed as a percentage of full scale
Hysteresis	The difference in output when approaching the same load from increasing vs. decreasing directions, as a percentage of full scale
Nonrepeatability	The variation in output when the same load is applied repeatedly under identical conditions, expressed as a percentage of rated output
Creep	The change in load cell signal occurring with time while under load and with all environmental conditions and other variables remaining constant

TEMPERATURE PERFORMANCE

Compensated Range	The range of ambient temperatures over which the load cell is guaranteed to maintain its specified accuracy
Operating Range	The full range of ambient temperatures over which the load cell can safely function without physical or electrical damage
Effect on Zero	How much the zero output, the output signal when no load is applied, changes with temperature
Effect on Output	Describes how the sensitivity or output signal changes as temperature varies, while under load

ECCENTRICITY AND MOMENT

Allowable Moment	The maximum torque or bending force it can safely withstand without damaging the sensor or affecting measurement accuracy
Influence of Eccentric load	The effect caused when a force is applied off-center from a load cell's intended axis, creating bending moments or uneven stress

Forces

- **Fx** – Force along the **X-axis** (horizontal, left–right direction)
- **Fy** – Force along the **Y-axis** (horizontal, forward–backward direction)
- **Fz** – Force along the **Z-axis** (vertical, up–down direction)

These measure linear forces applied to the sensor.

Moments (Torques)

- **Mx** – Moment (torque) about the **X-axis** (rotation around the left–right axis, like pitching forward/backward)
- **My** – Moment (torque) about the **Y-axis** (rotation around the forward–backward axis, like rolling side-to-side)
- **Mz** – Moment (torque) about the **Z-axis** (rotation around the vertical axis, like twisting or yawing)

ELECTRICAL

Rated Output	Signal level at full load
Excitation Voltage	Max power supply allowed
Input Resistance	The resistance of the load cell circuit measured at the excitation terminals with no load applied and with the output terminals open-circuited
Tolerance Input Resistance	The acceptable range of variation in a circuit's input resistance due to manufacturing or environmental factors
Output Resistance	The resistance of the load cell circuit measured at the SIGNAL terminals with no load applied and with the excitation terminals open-circuited
Tolerance Output Resistance	The allowable variation in a circuit's output resistance from its nominal value
Zero Balance	The signal of the load cell in the no load condition
Crosstalk›	The way loading one axis effects the other axis
Allowable Moment	The maximum amount of bending or twisting force that can be applied to the load cell

MECHANICAL

Safe Overload	Max load it can handle without permanent damage
Ultimate Overload	Max load that can be applied without causing structural failure of the sensor
Rated Capacity	The maximum load a load cell is designed to accurately and safely measure
Dimensions	Physical size details
Deflection	The spot where the load is applied moves along the main axis when the load increases from the starting weight to the maximum weight
Calibration	Verified output under known loads
Total Weight	How much the load cell itself totally weighs
Material	What the load cell is made of

CALIBRATION

System Calibration	Verifies the performance of the torque sensor and entire system, ensuring accuracy and reliable performance

AVAILABLE OPTIONS

Cables	Various lengths, gauges, and configurations available
Connectors	Type of electrical interface or connection method

*Characteristics define the maximum forces and torques the sensor can accurately and safely measure, as well as its physical dimensions, construction, and resilience to the operating environment factors that are crucial for proper mechanical integration.

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