

# Axia80-M8 Complex Loading Detail



Axia Force/Torque sensors have 3 different indications that a sensor is being used outside of its calibrated range. The F/T measurements are not guaranteed when using the sensor outside the calibration range. They are as follows:

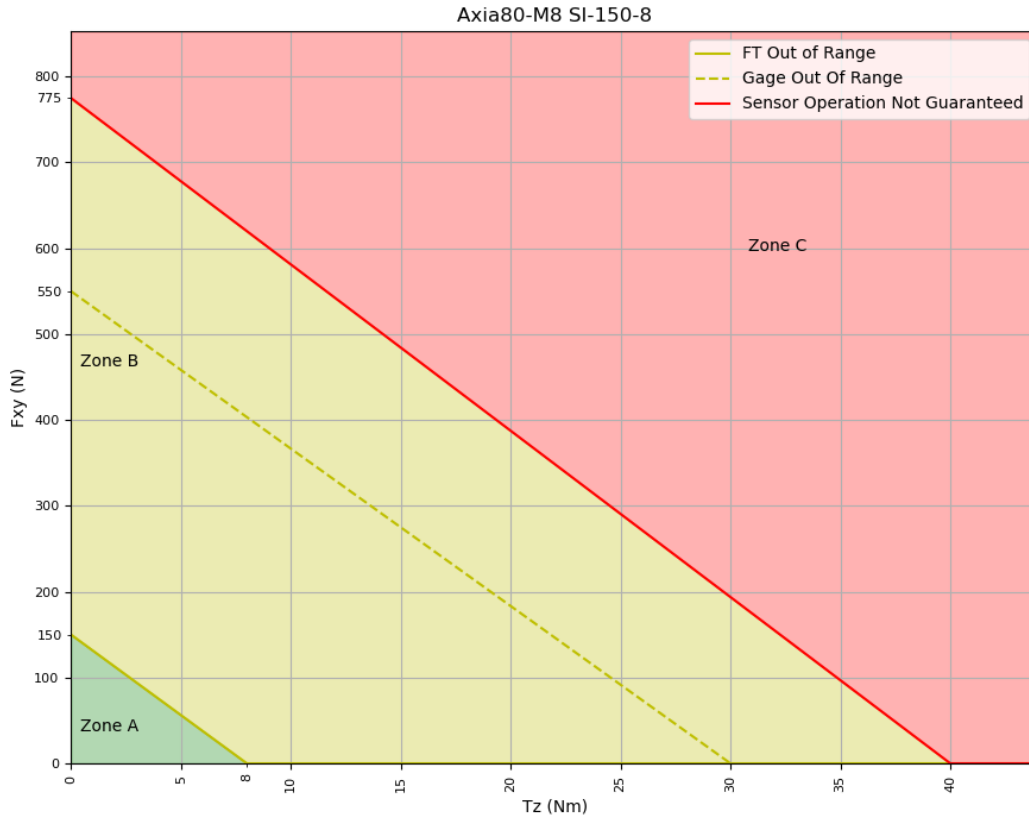
- FT Out of Range
  - This error is activated when a combination of  $F_{xy}/T_z$  or  $F_z/T_{xy}$  applied to the sensor exceeds the calibrated range of the sensor.
  - This boundary is shown on the graphs below as part of Zone B.
- Gage out of range
  - This error is activated when any single gage is excited beyond the range it experienced during calibration.
  - This error is dependent on the sum of all force and torque axes and is shown as part of Zone B.
    - Gage out of range activation is calculated as the sum of loading in all four axes:  
 $F_{xy}, F_z, T_{xy}, T_z$
    - The loads shown on the graphs only show two-axis combinations, but if the load applied is halfway to the gage out of range activation on both graphs simultaneously, then the gage out of range error will still activate.
- Sensor operation not guaranteed
  - The sensor may no longer measure an increase in applied load in its output as load continues to be added to the sensor.
  - This boundary is shown on the graphs below in Zone C.

Based on these three indicators, the following graphs have 3 zones defined on them:

- Zone A – the sensor's accuracy and fatigue life are guaranteed
- Zone B – the sensor will still output data, but accuracy and fatigue life will be negatively impacted by operating the sensor in this range
- Zone C – the sensor may not output reasonable data and will have a severely reduced fatigue life. Operation in this zone is not recommended.



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