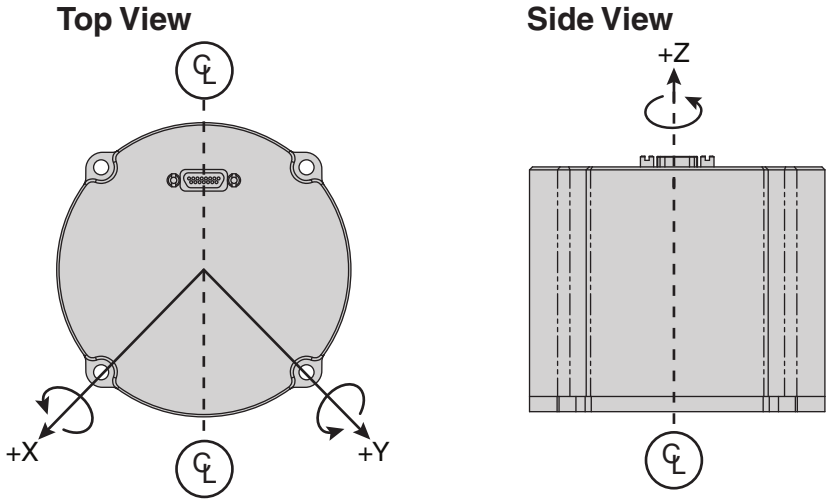
Output Orientation

The 1775 IMU senses acceleration and angular velocity on three physical axes, as shown in Figure 3. You may configure a rotation matrix to set the output axes relative to the physical orientation of these measurement axes, allowing the IMU to measure motion in three arbitrarily orthogonal axes (see "Configuration Options" on page 13). These settings are saved and reapplied on restart. You may revert to the factory default settings at any time (see "Resetting Parameters to Factory Defaults" on page 15).

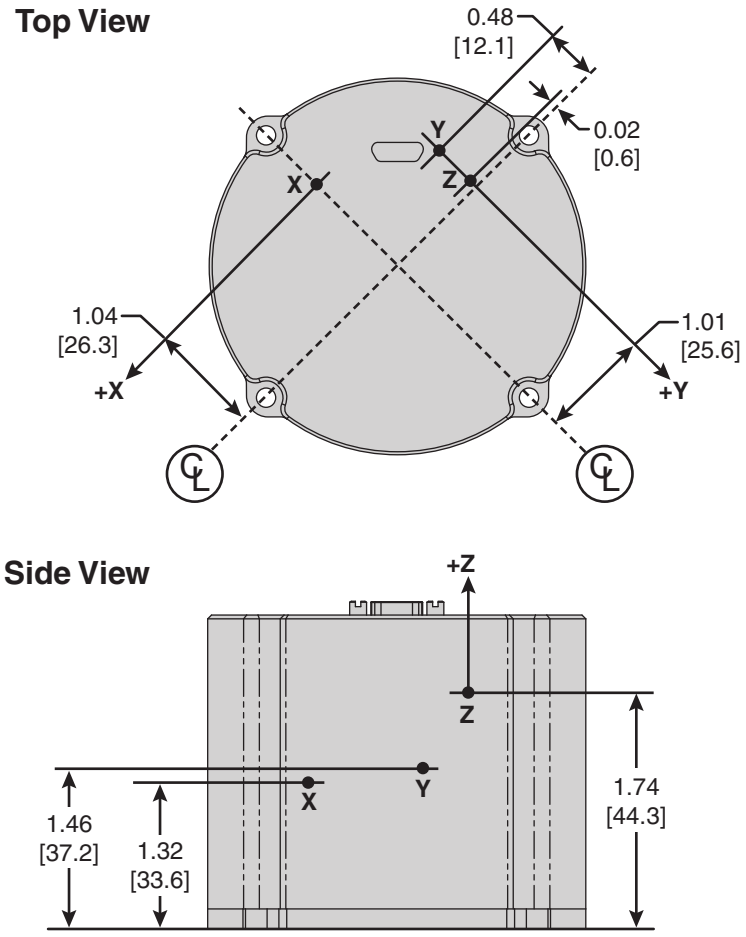
Figure 3: Gyro Measurement Axes Orientation



NOTE: *The three axes of rotation are coincident with the linear acceleration axes. Positive rotation is a counterclockwise rotation about an axis when viewed from +∞ along that axis. Linear acceleration polarity is such that the IMU will report +1 G due to Earth gravity when its + axis is up. The rotation matrix only applies to gyro and accelerometer data. Magnetic data in output Format C is not affected.*

Figure 4 below shows the physical locations of the accelerometer axes and the location of the sensing point on each axis.

Figure 4: Accelerometer Axes and Sensing Points



Mounting the IMU

The 1775 IMU is easily mounted to a structure using the four ∅0.173" (∅4.39 mm) mounting holes on the base of the enclosure (see Figure 20). An alignment hole ∅0.198" (∅5.03 mm) and an alignment slot 0.218" x 0.198" (5.54 mm x 5.03 mm) are provided at the middle edge of the enclosure for alignment purposes. They are designed for ∅5.004-5.012 mm dowel pins with 0.1" (2.5 mm) protrusion.

NOTE: *To ensure precise alignment, rotate the IMU clockwise before tightening the mounting screws.*

The IMU base material is aluminum with a clear chromate finish per MIL-DTL-5541, class 3. To ensure optimal heat transfer (conductive cooling) and electrical grounding through the chassis, mount the IMU base to a clean, flat, unpainted metal surface.

Also be sure to orient the IMU with the desired measurement axes. As an alternative, you may configure a rotation matrix to set the output axes relative to the physical orientation of the measurement axes (see "Configuration Options" on page 13).

NOTE: *All dimensions are shown in inches [millimeters] format.*

Figure 20: Mounting Holes (Bottom View)