KVH Auto-calibration and Drive & Calibrate Method Descriptions

Heading sensors used in applications requiring stringent accuracy demand a simplified auto-compensation and re-compensation capability because the magnetic signature of the platform influences the accuracy of the installed compass. On the host platform, hard iron errors, typically single-cycle, are caused by permanent magnets and current-carrying conductors; soft iron errors, typically two-cycle, are caused by the interaction of the earth's magnetic field with iron and magnetically permeable material near the compass sensor.

KVH has extensively researched and tested the effects of these magnetic anomalies on compass accuracy. As a result, we have devised unique auto-compensation algorithms that, through the use of the embedded microprocessor, compensate very precisely for host platform hard and soft iron errors and eliminate the need for a compass adjuster. The compensation procedure does not require an external reference source, is completely autonomous, and enables field users to quickly and easily ensure the required accuracy of their equipment.

KVH armored vehicle (TACNAV™) auto-calibration methods include compensation for the effects of turret rotation, hatch open/closed, and tilt, in addition to the magnetic anomalies of the hull. The KVH naval (MV103) auto-calibration method consists of continuous background compensation, including compensation for the ship's degaussing on/off condition. This naval auto-calibration process is totally automatic and requires no user intervention.

Through the use of these unique compensation capabilities, users can achieve typical installed accuracies of ±1.0°, even in applications on steel naval vessels and armored vehicles having large host platform-induced magnetic errors.

Compass calibration can be performed through a simple 360° rotation of the host platform after installing the unit.

KVH has also developed fiber optic gyro options for its TACNAV product family that eliminate the need for magnetic calibration altogether. With the T•FOG™ Fiber Optic Gyro Upgrade or TACNAV II, the operator simply drives the vehicle and the system automatically aligns and calibrates itself.