3DM-GX5-25
Attitude Heading Reference System (AHRS)

The 3DM-GX5-25 is a high-performance, industrial-grade Attitude Heading Reference System (AHRS) that combines micro inertial sensors for use in a wide range of industrial grade applications, such as unmanned vehicle navigation, platform stabilization, and vehicle health monitoring.

The 3DM-GX5-25 utilizes the strengths of an integrated multi-axis gyroscope, accelerometer, and magnetometer in combination with temperature, and pressure readings to provide highly accurate position, velocity, attitude (including heading), and inertial measurements.

The 3DM-GX5-25 communicates through a serial connection and is monitored by a host computer. Sensor measurements and computed outputs can be viewed and recorded with the LORD Sensing MIP Monitor software that is available as a free download from the LORD Sensing website. Alternatively, users can write custom software with the open source data communication protocol. The data is time-aligned and available by either polling or continuous stream.

Figure 1 - 3DM-GX5-25 Sensor

The 3DM-GX5-25 Inertial Sensor can be purchased by itself or with a Connectivity Kit.

Item	Description	Quantity
	Included with Sensor Purchase	
A	3DM-GX5-25 Inertial Sensor	1
--	MIP Monitor Software Suite download here: http://www.microstrain.com/software	1
--	Calibration Certificate	1
	USB Connectivity Kit	
B	USB Communication Cable	1
--	Easy Start card	1
	RS232 Connectivity Kit	
C	RS232 Communication Cable	1
	RS232 Power Supply and Plug Adapters	1
--	Easy Start card	1

Best in Class Inertial Measurement

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The 3DM-GX5-25 sensor interface includes a communications and power input connector . The sensor is installed using the mounting and alignment holes as needed.

The indicators on the 3DM-GX5-25 include a device status indicator and the device information label. Table 1 - Indicator Behaviors describes the basic status indicator behavior. The device information label includes the sensor frame diagram (axis orientation), which will be critical during device installation.
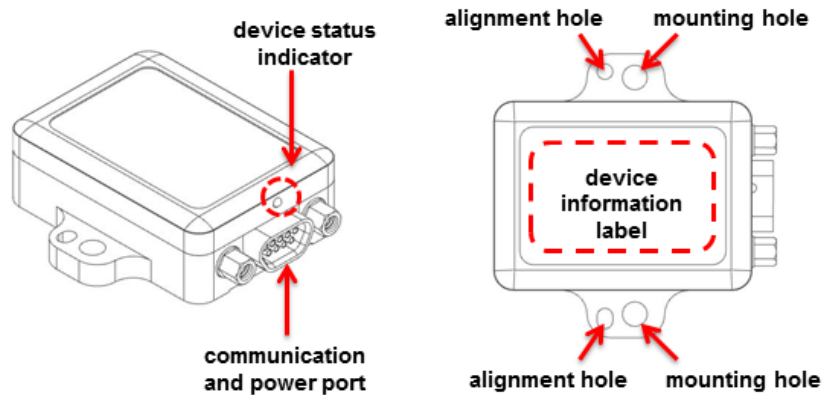

Figure 2 - Interface and Indicators

Indicator	Behavior	Device Status
device status indicator	OFF	no power applied
	rapid flash	streaming data
	slow pulse	idle mode, awaiting commands

Table 1 - Indicator Behaviors

NOTICE

Do not put the 3DM-GX5-25 in contact with, or in close proximity to, magnets. Magnets may disrupt operation and cause magnetization of internal components, which can affect magnetometer performance. If magnetization is suspected, use a degaussing tool to demagnetize.

1. **Install Software**

   1. Launch the MIP Monitor software installation menu at: https://www.microstrain.com/software.

   2. Download and open the MIP Monitor zip file.

   3. Run the **setup.exe** file, and follow the on-screen prompts to completion.

   4. Download and open the Inertial Drivers zip folder to install the hardware drivers required for operating the sensor.

   5. Run the **msi** file, and follow the on-screen prompts to completion.

   6. If the sensor has internal magnetometers, download and open the Iron Calibration zip file to facilitate magnetometer field calibration.

   7. Run the **setup.exe** file, and follow the on-screen prompts to completion. If prompted, reboot the computer when complete.
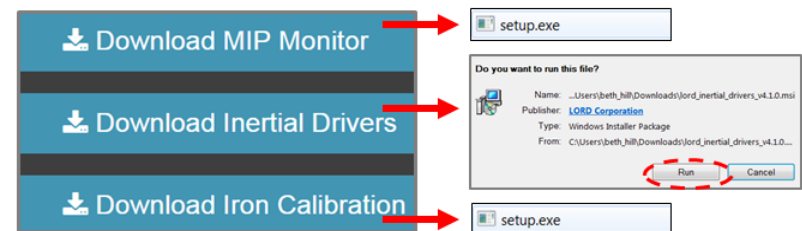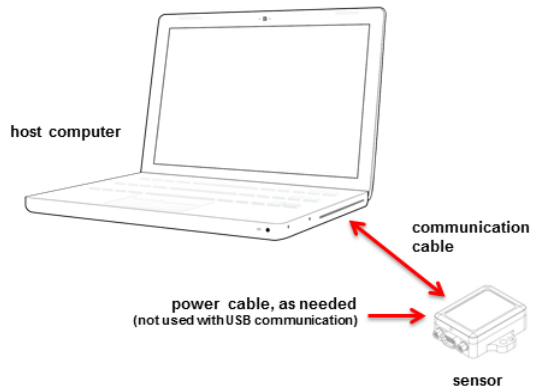

Figure 3 - Software Installation Menu

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2. Make System Connections

To acquire sensor data the following components are needed: 3DM-GX5-25 sensor, communication cable, power cable (as applicable for RS232 communications), and a host computer with LORD Sensing MIP Monitor installed.

Figure 4 - System Connections

3. Software Interface

The MIP Monitor software includes a main window with system information and menus, a device settings window, and several data monitoring windows.
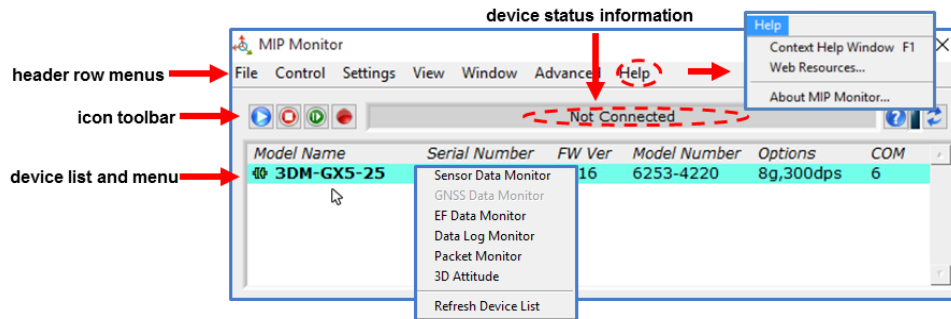
Figure 5 - Main Window

4. Establish Sensor Communication

Once power has been applied to the sensor, it is functional. The sensor selects the appropriate serial communication (USB or RS232) on power-up based on which cable is connected. If the hardware drivers have been installed, communication can be established using the MIP Monitor software interface.

1. Verify the sensor device status indicator is on.

2. Open the MIP Monitor software.

3. The sensor should appear in the device list automatically when the software is running. The list includes the device information and communication port assignment. If the sensor is not automatically discovered, use the refresh button.
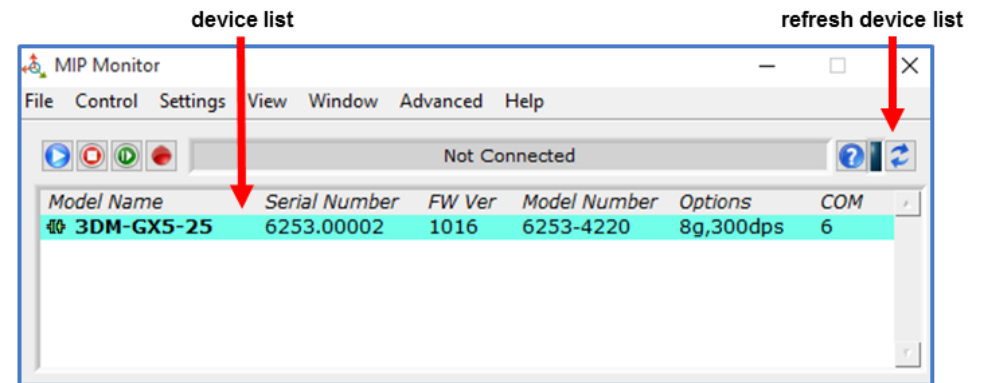
Figure 6 - Sensor Communication

5. Select Sensor Settings

Device settings are stored in the sensor memory. Only the configuration options that are available for the type of sensor being used will be available in the configuration menus.
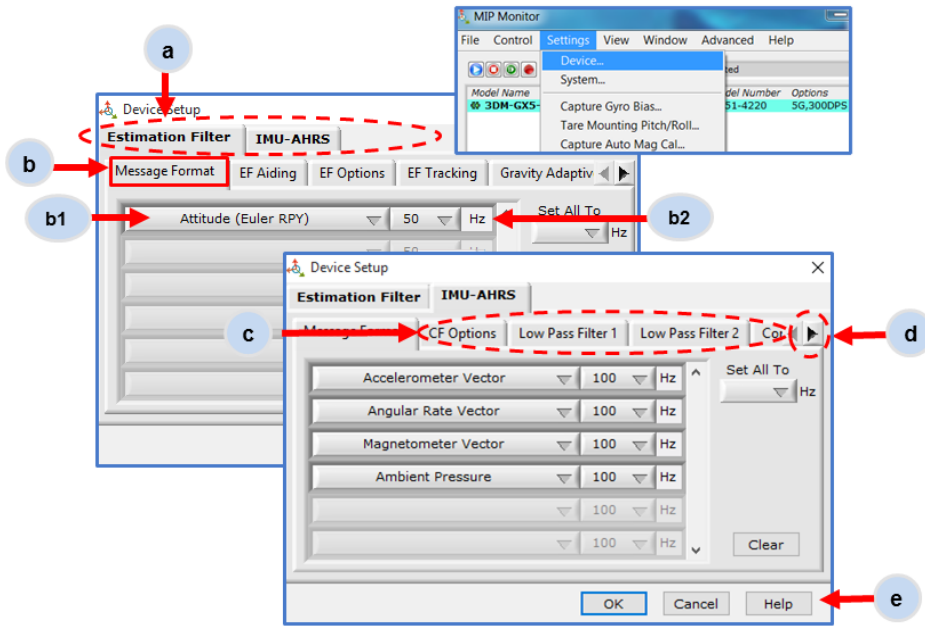
Figure 7 - Device Settings Menu

6. Save Sensor Configuration

Sensor settings are saved temporarily by selecting the OK button in the Device Setup window after configuration, but they are lost when the device is powered off. To save current settings so they are automatically restored the next time the device is powered on, select Settings > Save Current Settings.

7. Start Data Streaming and Recording

Throughout the MIP Monitor menus the same icons are used to control data streaming (sampling) and recording.
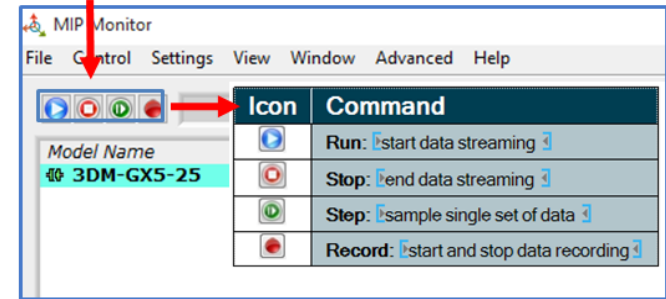

Figure 8 - Sampling and Recording Controls

1. Right-click on the device in the MIP Monitor software main window, and select Sensor Data Monitoring.

2. Press the blue Start Streaming icon to start sampling.

Figure 9 - Data Streaming

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8. View Recorded Data

Recorded data is stored in either Binary (.bin) or Comma Separated Values (.CSV) format, depending on what was selected at the initiation of data recording. The files can be found in the directory specified at that time or in the default directory on the host computer desktop.

CSV files can be viewed with Microsoft Excel, Quattro Pro, Open Office, or other CSV editors and spreadsheet programs.

Data recorded in Binary format requires a translation program utilizing the LORD Sensing MIP Data Communications Protocol to make it user-readable.