FOG/IMU Developer's Kit Quick Start Guide

<u>KINH</u>

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Getting Started

This guide describes how to setup and test a KVH fiber optic gyro (FOG) or inertial measurement unit (IMU) using the KVH FOG/IMU Developer's Kit.

Connect the Interface Box

Follow the steps below to connect the interface box to your PC.

- IMPORTANT!

To avoid damaging the unit, do not connect or disconnect the Y-cable from the FOG or IMU while the Y-cable is powered.

1. Using the USB cable (*supplied in kit*), connect your PC to the interface box. The Power LED will illuminate to verify successful connection (see Figure 1).

NOTE: Verify that the Y-cable is unplugged and the power switch is set to the "Off" position (see Figure 1).

- 2. Using the Y-cable (*supplied in kit*), connect your FOG/IMU (15-pin connector) to the interface box (either 9-pin connector) as shown in Figure 1.
- **3.** To supply power to the interface box, attach a power plug adapter (*supplied in kit*) to the Y-cable. If necessary, remove the current power plug adapter by squeezing the latch and sliding the adapter out in the direction shown in Figure 2. Then plug the Y-cable into an available power outlet.
- **4.** Set the Y-cable power switch to the "On" position (see Figure 1).

Figure 1: Connected FOG/IMU Interface Box with Y-Cable



Figure 2: Power Plug Adapters



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Install the Software

Follow the steps below to install the FOG/IMU Interface Software on your PC.

- 1. Run the ImuMainInstaller.msi file.
- **2.** Complete the Setup Wizard to select your installation directory, set permissions, and install the software (see Figure 3).
- 3. Load PC drivers, if necessary.
- **4.** Double-click on the KVH desktop icon to run the software.

Verify FOG/IMU Connection

Follow the steps below to verify that your FOG/IMU is connecting to the interface software and that the software can stream live data from your FOG/IMU.

- 1. At the Dashboard (default view) tab, click Connect to System to connect to your FOG/IMU and begin streaming live data (see Figure 4).
- **2.** Once connected, verify that the system's status is "Good" as shown in Figure 4.

NOTE: Green indicates a "good" status.

3. Move your FOG/IMU in various directions to verify that the FOG/IMU is streaming accurate data.

NOTE: Click Reset to refresh the yaw reference.

Figure 3: Complete the Setup Wizard



Figure 4: Connect At the Dashboard Tab (Default View)



Software Features

This section provides an overview of the software features and basic functions.

Overview

When you start the FOG/IMU interface software, you will see the Dashboard page and several tabs (see Figure 5). Below is a list of the major functions of each tab that will help you to operate and view/capture data from your FOG/IMU.

- Dashboard (Default View) Connect to your FOG/IMU and view data
- **Data Logging** Stream or capture live data, and export saved binary data to ASCII hex files
- Settings Display or change the configuration of your FOG/IMU (e.g., sampling rate, filtering, units, etc.)
- **Installation** Display or change rotation matrix and transform sensor reference frame into user-defined reference frame
- **Sensors** Plot streaming live data or display saved log files
- Diagnostics Run built-in tests
- About/Help Reference the FOG/IMU user manual and an interface control drawing (ICD)

Figure 5: Interface Tabs (Dashboard View)



Basic Functions

This section provides an overview of the basic functions you can perform with the FOG/IMU interface software.

Stream and View Live Data

Follow the instructions below to stream live data and view select streams.

Streaming Live Data

At the Dashboard (Default View) tab, click **Connect to System** to connect to your FOG/IMU and begin streaming live data (see Figure 6).

Alternatively, at the Data Logging, Installation, or Sensors tab, under Page Controls, click **Start** to connect to your FOG/IMU and begin streaming live data (see Figure 7).

Viewing Select Data Streams

1. If live data is not already streaming, at the Sensors tab, under Page Controls, click **Start** to begin streaming live data (see Figure 7).

NOTE: Within ten seconds of connecting, live data should begin streaming.

2. Select which sensor streams to display (see Figure 8).

Figure 6: Stream Live Data (Dashboard Tab)







Figure 8: Select Sensors Streams



Record and Playback Live Data Streams

Follow the instructions below to record live data files, convert binary files to ASCII Hex, or play back recorded files.

Recording Data

- **1.** At the Data Logging tab, under Page Controls, click **Stop** to halt live data streaming, if necessary (see Figure 9).
- **2.** Navigate to the directory where you would like to save the recorded data.
- **3.** At Start Download, click **Start** to begin logging data.
- 4. Click **Stop** to stop logging data.

Converting Data

- 1. Under Convert Binary to ASCII Hex, navigate to the saved binary data stream file that you wish to convert to ASCII Hex (see Figure 10).
- **2.** Click **Start** to convert your saved binary data stream file to a **.csv** file that can be played back at the Sensors tab.

Play Back Saved Data Files

- 1. At the Sensors tab, under File Controls, click Playback Recorded Data (see Figure 11).
- 2. Navigate to the saved data stream **.csv** file that you want to play back. Then double-click the file to begin playback (see Figure 11).

Figure 9: Record Live Data Streams

Page Controls Start Live Data Stream	
Start Stop Time elapsed 0	
File Controls Record Data	
2 1. Save File:	Browse
2. Start Download Start Stop File Size	I 0

Figure 10: Convert Saved Data Files

Convert Binary To A	ASCII Hex:	
1. Select File to convert:		Browse
2. Select CSV File:		Browse
2 3. Start conversion:	Start [X] Cancel	
Progress:		

Figure 11: Play Back Saved Data Files

	Page Controls	
	Start Live Data Stream	
	Start Stop	
File Cont	rols	
Play ba	ack Recorded Data	

Configure Settings

Follow the instructions below to make changes to your FOG/IMU's settings or installation outputs (reference frame).

- IMPORTANT!

Some changes to your FOG/IMU settings or reference frames may impact system performance. Refer to your FOG/IMU's user manual.

FOG/IMU Settings

- 1. At the Settings tab, under Page Controls, select **Read Config** then click **Start** to display current FOG/IMU settings (see Figure 12).
- 2. Make changes, as required.
- 3. Select Save Config To Device when finished.

NOTE: Verify FOG/IMU settings have changed by navigating to the Data Logging tab or repeat step 1.

4. Click **Start** to resume live data streaming.

Installation Outputs

- 1. At the Installation tab, under Page Controls, click **Start** to begin streaming live data, if necessary (see Figure 13).
- 2. Make changes to the rotation matrix output and reference frame as required (see your FOG/IMU user manual).
- 3. Click Save to Device when finished.

Diagnostics and Built-in-Tests

To run built-in tests or see diagnostic results, follow the instructions below.

- 1. At the Diagnostics tab, under Page Controls, select **Run BIT Status Report** then click **Start** to run a built-in test and display current results (see Figure 14).
- 2. Select **Run Diag Report** then click **Start** to view a more detailed capture of the results.

NOTE: For assistance interpreting the results of a built-in test or diagnosing a problem, contact KVH Sales at fogsupport@kvh.com.

Figure 12: Configure FOG/IMU Settings

Page Controls							
Read Config	tart						
Save Config To Device 3 Pro	aress:						
Reset Factory Defaults							
Create Test Filter File							
Test File Location							
E1.0 • •			Messages				
File Controls]	NOTE: AI De	faults in CAP:	;		*
Save To File		Browse					
Load From File		Browse					
Start							
Sampling Filtering 2		Units					
Sampling	Digital Filtering	Units			Commu	inications	
		Temperature:	CELSIUS	•	Com Port:	COM4	-
Data Rate (Hz) 1000	Filter Type - Gyro: CHEBY2	Gyro Format:	DELTA	-	Baud Rate:	9600	•
Timing Trigger: IMU	Filter Type - Accels: CHEBY2	Gyrol Units:	RADIANS	•	Data Format:	A-standard	-
Final Outrint Direct FINARI ED	Cher Tune Select STANDARD	Accel Format:	ACCEL	•			
nia ouput niter. Envioleto	 mer type select STANDARD T 	Accel Units;	METERS	-			

Figure 13: Configure Installation Outputs



Figure 14: Run Diagnostics and Built-in-Tests

Page Controls 1 Sumt Image: Run Die Status Report Sumt Image: Run Dies Report 2 Progress: 1	Device Mol: 1775 RML 100 Bols Rev. // Or Weaker, 4.02 100 Bols Rev. // Or Weaker, 4.02 100 Bols Rev. // A 000 Bols Rev. // A 000 PC 41 (rht // A 000 PC 41 (rht // A) 000 PC 41 (rht // A) 00
File Controls Diagnostics File BIT Log File	Messages Save Stating BIT Deprostics Report
	Sampling Data Reta: Fiber Type Gyro. Fiber Type Accel