KVH IMU –
High-Speed Binary Reader

54-1105 Rev. A

Table of Contents

1   Introduction

This document explains how to install and use the KVH IMU and/or FOG High-Speed Binary Reader (HSBR). The HSBR is an executable software program that can read, decode, and display the output from a KVH-branded IMU (1725, 1750, or 1775 IMU), as well as KVH's DSP-1760 FOGs, (hereinafter referred to as "the unit"), allowing you to verify its operation. The HSBR can also log and convert the decoded binary information to an ASCII text file viewable in most text editors or spreadsheets.
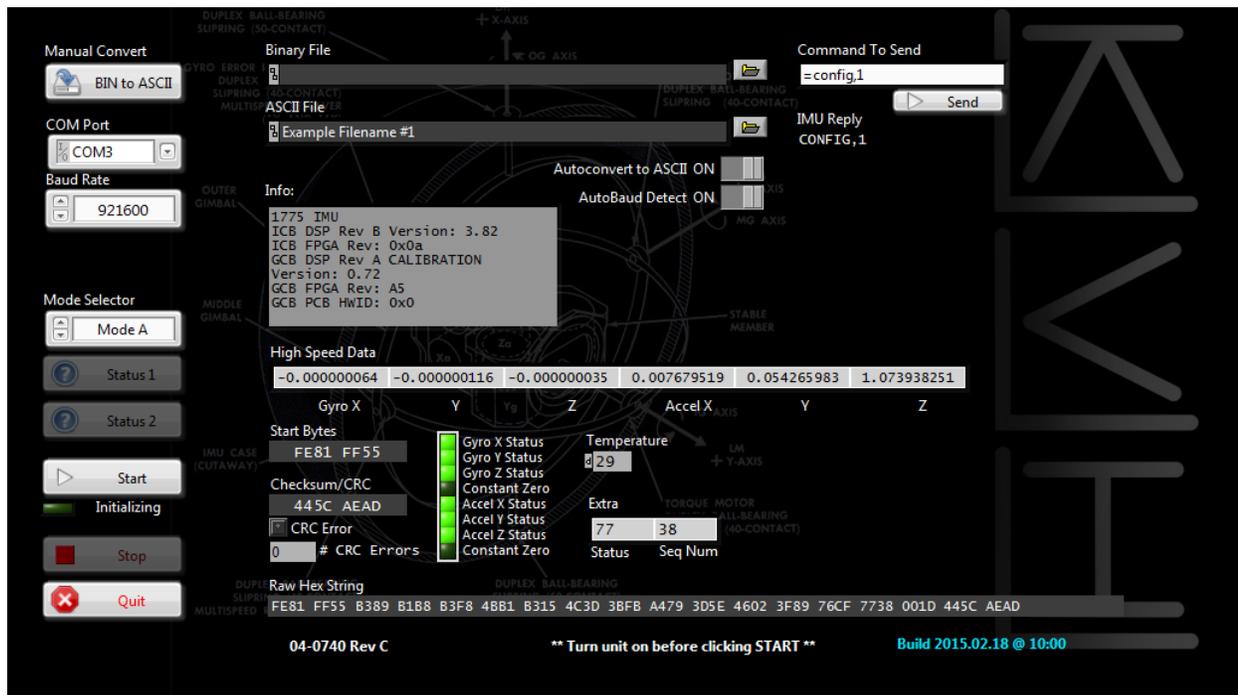
Note: The program runs on any Windows 7 or later PC (32-bit or 64-bit environment). This document uses a 1775 IMU and a PC running 64-bit Windows 7 with High-Speed Binary Reader software version 04-0740 Rev. C as an example.

2   Equipment Required

The High-Speed Binary Reader requires the following items:

- Windows XP, 7, or 8 PC with an RS-422 serial port capable of transmitting/receiving at the baud rate to which the unit is configured (default is 921.6 kBd). KVH recommends using the StarTech ICUSB422 USB-to-Serial adapter, available for purchase online from a number of resellers. If needed, update any drivers for your serial port.
- Power supply capable of sourcing 8 W with a voltage output between 9 and 36 VDC.
- Interface cable (KVH part no. 32-1173-02 or equivalent).

3   Installing the High-Speed Binary Reader

To install the HSBR program on your PC, follow these steps:

1. Save and extract the .zip file to a destination folder of your choice.

2. Go to the setup.exe file (**Installer** > **Volume** > **setup.exe**) and double-click it.
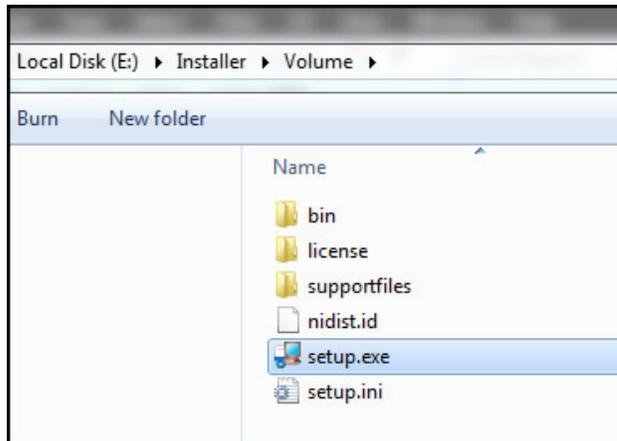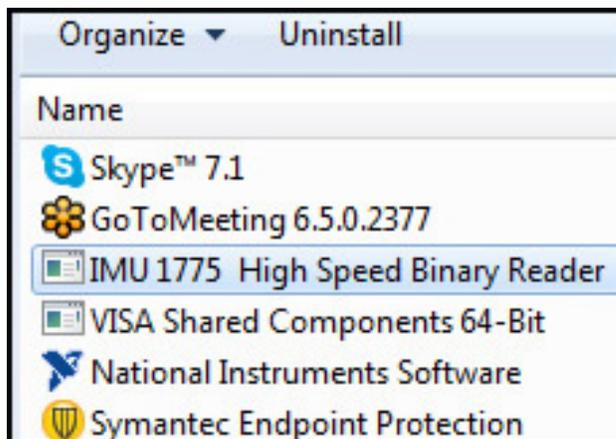

3. Follow the on-screen prompts to install the program.

3.1   Uninstalling the High-Speed Binary Reader

To uninstall the HSBR program, follow these steps:

1. Go to **Control Panel** > **Programs and Features**.

2. Click **IMU 1775 High Speed Binary Reader** from the list of installed programs.

3. Click **Uninstall** and follow the on-screen prompts to uninstall the program.

4   Running the High-Speed Binary Reader

To run the HSBR and begin processing data from a unit, follow these steps:

1. Connect the unit to your PC via a COM port or through a USB-powered virtual COM port, adhering to the guidelines in the table below.

| Connector	Color Code	Function	422 Converter	Power Source
1	White/red	TX+	RX+	NC
2	White/black	TX-	RX-	NC
3	White/orange	RX-	TX-	NC
4	White/yellow	RX+	TX+	NC
9	Gray	Power return	NC	Power return
10	White	Power input	NC	9-36 VDC
15	Green	Signal ground	Ground	NC

2. Apply power to the unit. (The unit must be powered on before starting the HSBR.)
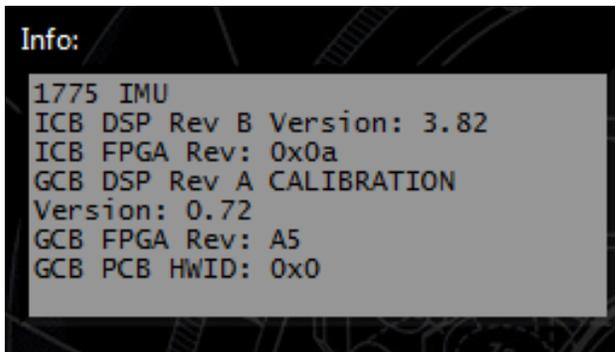
3. Launch the HSBR.

4. Manually enter the correct COM port, to which the unit is connected, and the unit's baud rate. If the unit's baud rate is unknown, you can set up the HSBR to automatically detect its baud rate as shown in Section 5.
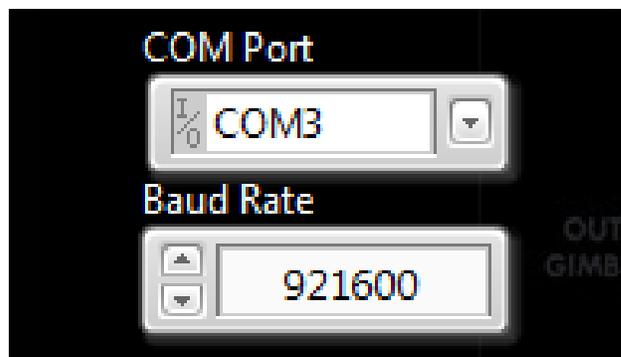
5. Click **Start** to start high-speed data acquisition.
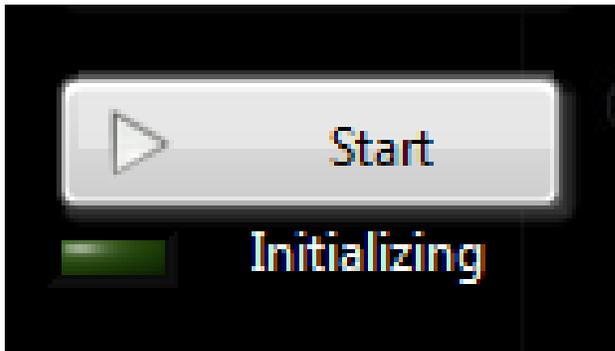
6. The HSBR will first identify the unit and display pertinent information, such as the unit's model number and firmware version, in the **Info** text box.

Info:

1775 IMU
ICB DSP Rev B Version: 3.82
ICB FPGA Rev: 0x0a
GCB DSP Rev A CALIBRATION
Version: 0.72
GCB FPGA Rev: A5
GCB PCB HWID: 0x0

7. Once the HSBR has identified the unit, it will begin reading, decoding, and displaying the binary output in the High-Speed Data fields in real time. As each data packet is decoded, a status validity bit will indicate good sensor status with a green indicator. Received packet CRC is compared to the received CRC data field. Any CRC failure is reported in the CRC Errors text box. To troubleshoot status errors, please contact KVH Technical Support at fogsupport@kvh.com.
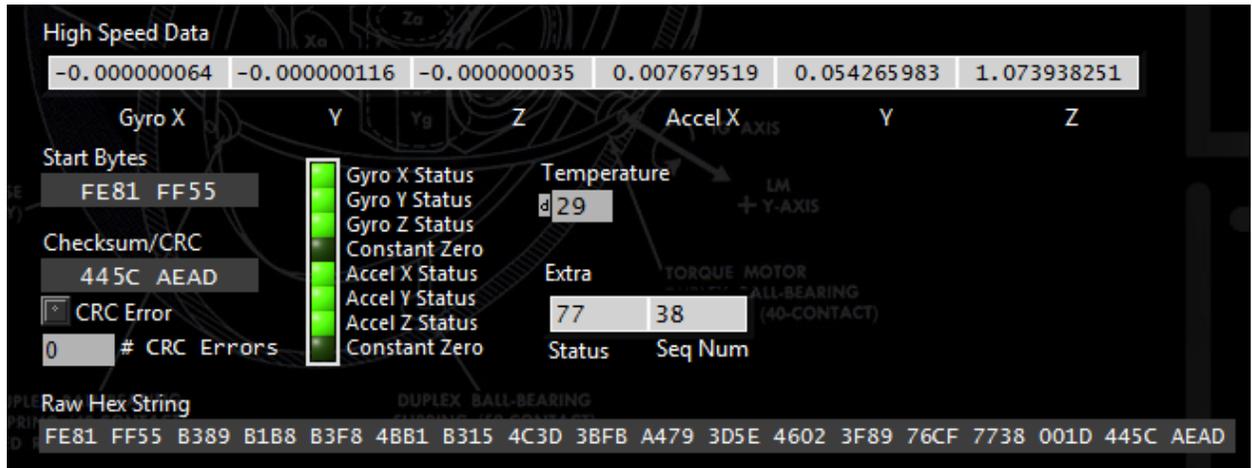
Note: KVH uses a variant of the CRC-32 standard. Incoming bits are not mirrored, nor is the outgoing CRC value. The final CRC is left unmodified after the polynomial division and no exclusive OR (XOR) operation needs to be performed.

Definition of the KVH CRC-32 Variant	
Name	KVH-CRC-32
Width	32
Poly	04C11DB7
Init	FFFFFFFF
RefIn	False
RefOut	False
XorOut	00000000
Check	null

5 Settings

There are several settings that can be adjusted within the HSBR, as described below.

5.1 Auto Baud Rate Detection

If the baud rate of the unit is unknown, the HSBR can auto-detect the baud rate by setting the **AutoBaud Detect** setting to **ON**.
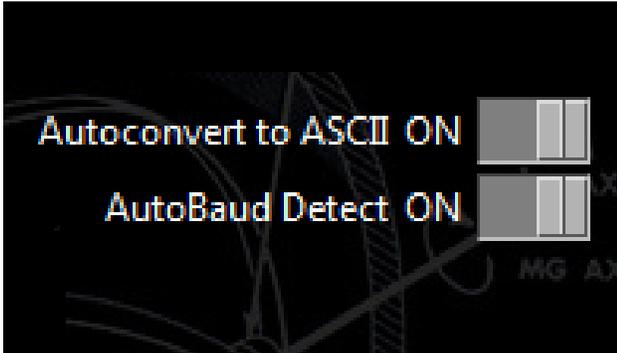
**Note**: If the unit's baud rate is known, it should be entered manually at the location shown in Section 4.

5.2 Output Mode

The HSBR can output a specific data format, depending on the unit model, by selecting an alternative mode. For details, refer to the ICD (KVH part no. 56-0298).
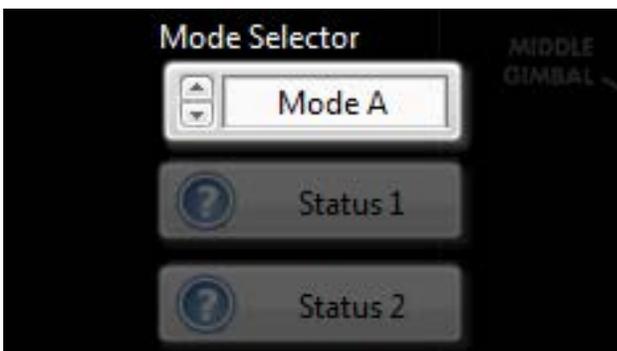
5.3 File Logging

The HSBR can output a data file containing acquired unit data as either a binary or ASCII file. To select an output format, enter a desired filename in the text box. If no filename is entered, a data file will not be generated. If ASCII is selected, the HSBR will convert the binary data to ASCII. KVH recommends choosing binary data output for extended logging (>30 sec) to minimize data file size.
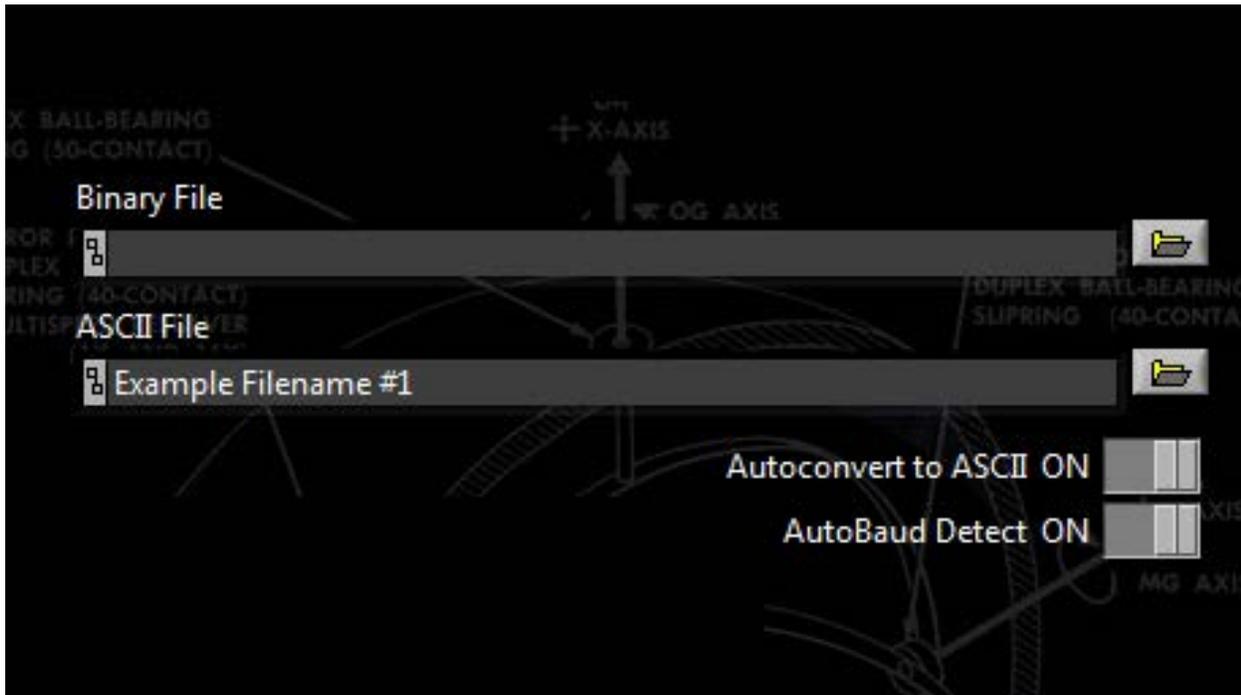

Alternatively, the data file can be automatically generated and converted into ASCII during acquisition by setting **Autoconvert to ASCII** to **ON**.
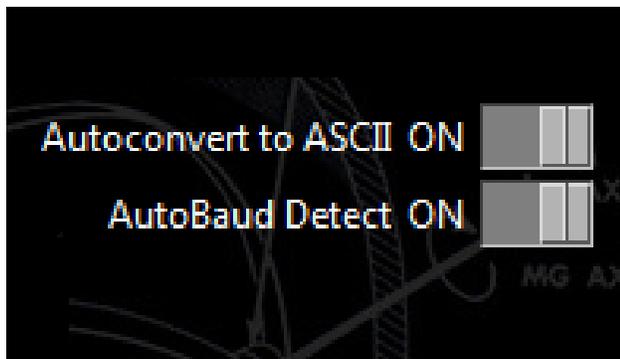
CAUTION: The unit will output a large volume of data, which may impact PC performance if adequate storage is unavailable. Ensure there is at least 10 GB of disk space on your computer's hard drive.
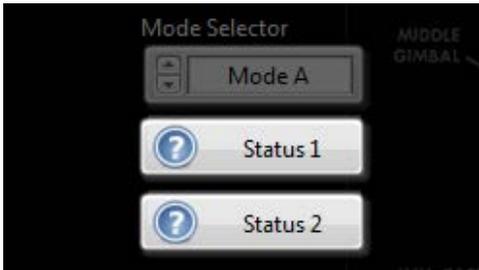
6 Commands

To send a user command to the unit, enter it in the **Command To Send** text box then click **Send**. For details, please see the relevant technical manual for user commands.
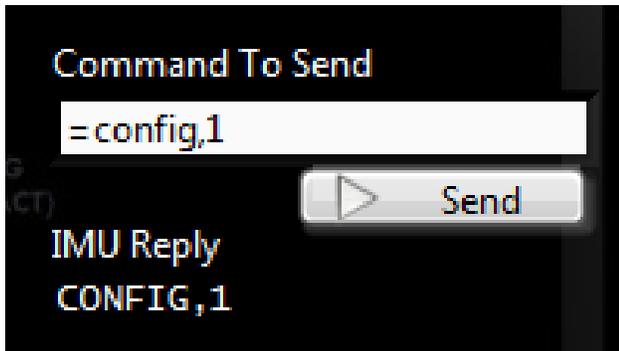
7 Built-in Self Test

To initiate a Built-in Self Test (BIT) while the HSBR is acquiring data, click **Status 1**.

The HSBR will decode the BIT test results and display the resulting data as shown below. Green indicators represent good status responses and red indicators represent an error. To troubleshoot status errors, please contact KVH Technical Support at fogsupport@kvh.com.

8 Turning Off the High-Speed Binary Reader

To power off the HSBR, click **Stop** to end real-time acquisition and ensure the data file is successfully logged. Then click **Quit** to terminate the program.

9 Technical Support

If you have any questions about the HSBR, please contact KVH Technical Support at fogsupport@kvh.com.