



Intel® Integrated Sensor Solution Diagnostic Tool

User Guide

Version 0.1

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Revision History

Version	Details
0.1	First release

Terms & Abbreviations

Abbreviation	Definition
DUT	Device Under Test
OEM	Original Equipment Manufacturer
ODM	Original Design Manufacturer

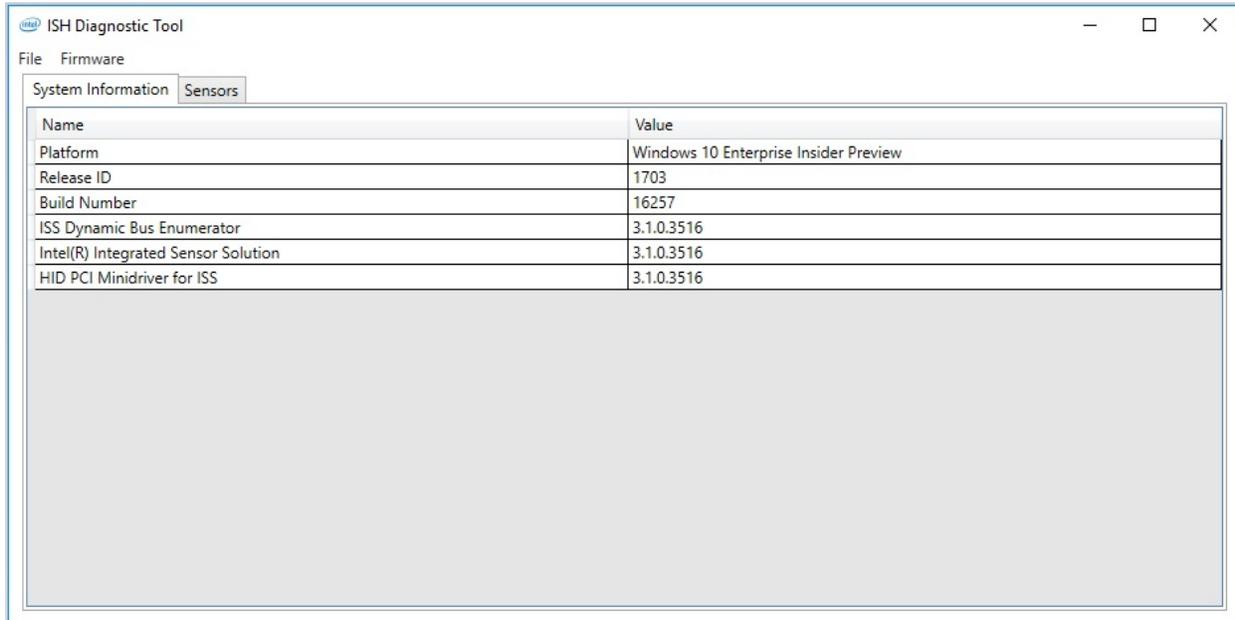
1 Overview

The Intel® Integrated Sensor Solution Diagnostic Tool is a stand-alone tool to diagnostic system for use by OEMs and ODMs.

2 GUI Operation Overview

The following section describes the operations available from windows of ISH Diagnostic user interface.

2.1 System Information



The screenshot shows a window titled "ISH Diagnostic Tool" with a menu bar containing "File" and "Firmware". Below the menu bar are two tabs: "System Information" (selected) and "Sensors". The main content area displays a table with two columns: "Name" and "Value".

Name	Value
Platform	Windows 10 Enterprise Insider Preview
Release ID	1703
Build Number	16257
ISS Dynamic Bus Enumerator	3.1.0.3516
Intel(R) Integrated Sensor Solution	3.1.0.3516
HID PCI Minidriver for ISS	3.1.0.3516

The system information could show the windows platform version, release ID and build number. It will also show the ISH related drivers' version.

2.2 Sensors Information

The screenshot shows the 'ISH Diagnostic Tool' window with the 'Sensors' tab selected. The interface is divided into two main sections: 'Physical Sensors' and 'Virtual Sensors', each containing a table of sensor data.

Sensor Name	Sensor Type	Sensor Manufacturer	Sensor Model	LUID	State
Physical Accelerometer Ser	115	BOSCH	BMI160 Sensor	0073000900080002	Ready
Physical Gyrometer Sensor	118	BOSCH	BMI160 Sensor	0076000900080002	Ready
Physical Magnetometer Ser	527	AKM	AK09916 Sensor	020F000800060002	Ready
Physical Accelerometer Ser	115	BOSCH	BMA422 Sensor	0073000900070102	Error
Ambient Light Sensor	65	AMS	TMG4903 Sensor	0041001400010002	Ready
Sar Sensor	614	SEMTECH	SX9310 Sensor	0266000E00010002	Error
Hall Presence Sensor	609	ROHM	BU52012HFV Sensor	0261001300010002	Ready

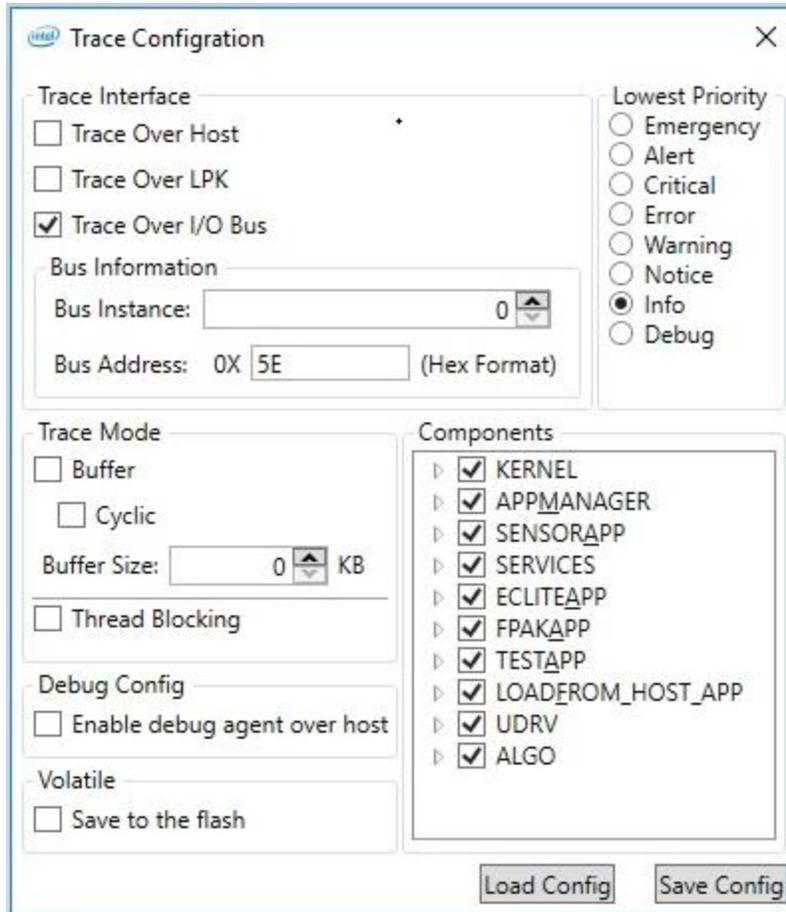
Sensor Name	Sensor Type	Sensor Manufacturer	Sensor Model	LUID	State
Device Movement Sensor	516	INTEL	dmd v0 Sensor	0204000000000000	Ready
Shake Gesture Sensor	563	INTEL		0233000000000000	Ready
Gyrometer Sensor	118	BOSCH	BMI160 Sensor	0076000000000001	Ready
Magnetometer Sensor	527	AKM	AK09916 Sensor	020F000000000001	Ready
Accelerometer Sensor	115	BOSCH	BMI160 Sensor	0073000000000000	Ready
Uncalib Gyrometer Sensor	577	INTEL		0241000000000000	Ready
Uncalib Magnetometer Ser	578	INTEL		0242000000000000	Ready
Orientation Sensor	138	INTEL		008A000000000000	Ready
Inclinometer Sensor	134	INTEL		0086000000000000	Ready
Compass Sensor	131	INTEL		0083000000000000	Ready
Hinge Sensor	523	INTEL		020B000000000000	Error
Lift and look Sensor	536	INTEL		0218000000000000	Ready
Dead Reckoning Sensor	561	INTEL		0231000000000000	Ready

The sensors tab page will show below sensor information of sensors on DUT:

- Sensor Name
- Sensor Type
- Sensor Manufacturer
- Sensor Model
- LUID
- State

2.3 Trace Configuration

To set trace configuration, go to Firmware->Trace Config in the ISH Diagnostic main window. The trace configuration window will open.



2.3.1 Trace Interface

Choose the connections over which you want to transmit trace information:

- Trace over Host: Your trace tool is located on the same device that is running the Intel Integrated Sensor Solution, and will be using HECI to access the information.

- Trace over LPK: LPK is the Little Peak hardware connection that is only available on the Broxton platform. It provides a mechanism by which trace data is transmitted to a USB port. You can connect another to that USB port is another device, on which an appropriate trace tool is running. This option enables you to avoid having to make physical changes to the internal hardware of the device under test.
- Trace over I/O bus: You have physically connected the device running the trace tool directly to one of the available I2C buses on the device under test.

2.3.2 Trace Mode

- Buffer information:

The trace module supports the use of a buffer that will store trace messages in advance of sending them, ensuring that they are not lost if messages are arriving too quickly to be sent. If you want to use the buffer, select the Buffer checkbox. You will need to provide the size of the desired buffer in bytes.

If the buffer is completely full and another message arrives, the default behavior is to simply discard the new message. If you prefer that the buffer instead discard the oldest message and preserve the new one, select the Cyclic checkbox.

- Thread blocking:

If thread blocking is enabled, the message queue (which is where all other components in the firmware send messages that are bound to the trace module) will be handled synchronously. Any component that attempts to send a trace message that the trace module is unprepared to handle (due to a full message queue) will halt running its code until the message has entered the queue, after which it will continue. This is used to ensure that every single trace message is processed by the trace module, compensating for the low priority that is given to the trace module's thread.

2.3.3 Debug Config

This checkbox indicates that the debugging agent, which has read and write access to the entire firmware, should begin running and be made available to programs located on the host. On some Cherryview platforms, this checkbox alone is enough to activate the debugging agent. On most other platforms another, more secure setting must also be enabled, so malicious programs cannot take advantage of this feature. In Cherryview, this secure setting is located in the BIOS, and reverts to disabled upon each reboot; on Skylake, Kaby Lake, Broxton, Gemini Lake or Cannon Lake platforms, a secure token is used to activate the secure setting.

Note: that the secure setting will do nothing on its own if the Enable debug agent over host checkbox in this window is not activated.

2.3.4 Volatile

Specify if the trace configuration will be saved in the firmware after the Integrated Sensor Solution is reset. If you want to save the trace configuration, select the Save to flash checkbox.

2.3.5 Priority

Each message that is generated by the firmware is labeled with a priority level. In descending order of importance, these are Emergency, Alert, Critical, Error, Warning, Notice, Info, and Debug. When a priority level is selected in the Trace Configuration window, the Sensor Core discards any messages that are below that level. Your trace tool will only receive messages at the selected level or higher.

2.3.6 Component

Each message that is generated by the firmware is labeled with the component that either created the message or is most closely related to the message's content. A list of available components and subcomponents is presented in the lower right quarter of the Debug Configuration window; use the checkboxes to select all of the ones whose debug prints you want to see, and to deselect all of the ones whose messages should be discarded.

2.3.7 Load Config button

The load config button support user to get the current trace configuration in the firmware.

2.3.8 Save Config button

The save config button support user to save configuration to firmware.