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User's Guide for Reference Applications for the Xtrinsic Intelligent Sensing Framework 1.1

on the FXLC95000 Intelligent Motion-Sensing Platform

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1 Overview of ISF Reference Applications

To demonstrate selected functionality of ISF, a few example reference applications are provided. These applications are packaged as CodeWarrior projects and include pre-built binary images ready to run on the FXLC95000 intelligent motion-sensing platform. They can be downloaded and run using any of the available FXLC95000 Development Board Hardware (includes KITFXLC95000EVM, FXLC95000MAG, or KITFXLC95000-10AXIS). (Refer to the Software and Tools Section for the FXLC95000 Xtrinsic Intelligent Motion-Sensing Platform web page for details.)

The following reference, or example applications, showcasing several Xtrinsic products in addition to the FXLC95000, can be located via the Microsoft Windows

Start Menu –> All Programs –> Xtrinsic ISF v1.1 –> Prebuilt Applications Folder

as well as the **Downloads** tab of the Xtrinsic ISF website:

- **ISF1P195K ACCELMAG S19**—Binary image as a S19 file using the FXLC95000CL accelerometer and the MAG3110 magnetometer.
- **ISF1P195K GETACCELDATA S19**—Binary image as a S19 file using the FXLC95000CL accelerometer that demonstrates a simple accelerometer application.

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- **ISF1P195K ECOMPASS S19**—Binary image as a S19 file using the MAG3110 (magnetometer) to produce eCompass.
- **ISF1P195K FXAS21000 S19**—Binary image as a S19 file using the FXAS21000 (gyroscope).
- **ISF1P195K FXOS8700 ACCELMAG S19**—Binary image as a S19 file using the FXOS87000 (accelerometer and magnetometer).
- **ISF1P195K MMA865X ACCEL S19**—Binary image or S19 file using the MMA865X family of accelerometers.
- **ISF195K VIRTUAL GYRO S19**—Binary image or S19 file using the MAG3110 (magnetometer) to produce a virtual gyroscope.

Other examples will be provided as they become available.

Using the ISF1P1 installer ensures that all of the items required to run these applications are available. If downloading them individually yourself, ensure that the following are installed properly on the PC:

- CodeWarrior 10.4 or newer
- FSL_MQX_3.7_FXLC95K
- ISF 1.1 core library

Refer to the ISF 1.1 Installation Instructions document available on the **Documentation** tab of the Xtrinsic ISF website for the proper installation procedure for CodeWarrior and ISF.

NOTE

CodeWarrior projects (that do not include pre-built binaries) with complete source code of these applications are also provided for users already familiar with ISF concepts and API. Refer to the Xtrinsic ISF website for details.

NOTE

The term Application board is used in this document to refer to the board supplied with the KITFXLC95000EVM, FXLC95000MAG, or FXLC95000-10AXIS.

2 Importing a S19 Binary (Reference Application) onto the FXLC95000

NOTE

ProjectName_S19 is the generic name used throughout this document to represent one of the specific FXLC95000 S19 binaries provided with the ISF release. Substitute the name of a specific project (for example, ISF1P195K GETACCELDATA S19) when following the instructions provided.

1. Connect the Application board.

   NOTE

   The Application Board power switch should be OFF.

   a. Power on the Application Board by moving its power switch to ON.
   b. Verify that the hardware is connected properly; the single LED on the Application board is lit.
2. Locate the **Intelligent Sensor Mailbox Tool**. If you used the ISF1P1 automated installer, the Intelligent Sensor Mailbox Tool is located from the Windows **Start Menu –> All Programs –> FXLC95000 Mailbox Tool –> FXLC95000 Mailbox Tool**. Otherwise, it can be downloaded from the **Downloads** tab on the Xtrinsic ISF website.

   NOTE

   The Intelligent Sensor Mailbox tool can be used for any of the Freescale S19 files provided with the release.

3. Open the **Intelligent Sensor Mailbox Tool** (*FXLC95000 MailboxTool.exe*).
4. In the **ComPort** tab, click **Open Comm**. If the **List of hints to solve Communication issues** window appears, try each of the steps below. If the window does not appear, proceed to the next step.

a. Verify that all the wires are properly connected and then retry.
b. If that doesn't work, power cycle the board and then retry.
c. If that doesn't work, check the **Com Port Name** using the **Windows Device Manager** and set the Port Number manually (baudrate is usually 460.800 kps).
d. Finally, verify the bridge software is current. You may launch the previous version of the MailBox Tool by clicking **OK**.

5. Return to the Intelligent Sensor Mailbox tool, move to the **Flash Utility** tab, and then begin by clicking **Erase Flash**.
6. Click **Program Flash** and select one of the S19 files located from the Windows **Start Menu –> All Programs –> FXLC95000 Mailbox Tool –> Prebuilt Applications folder**.
7. Wait while the S19 binary image is loaded onto the device.
8. Execute the image on the FXLC95000 by selecting **Boot to Flash**.

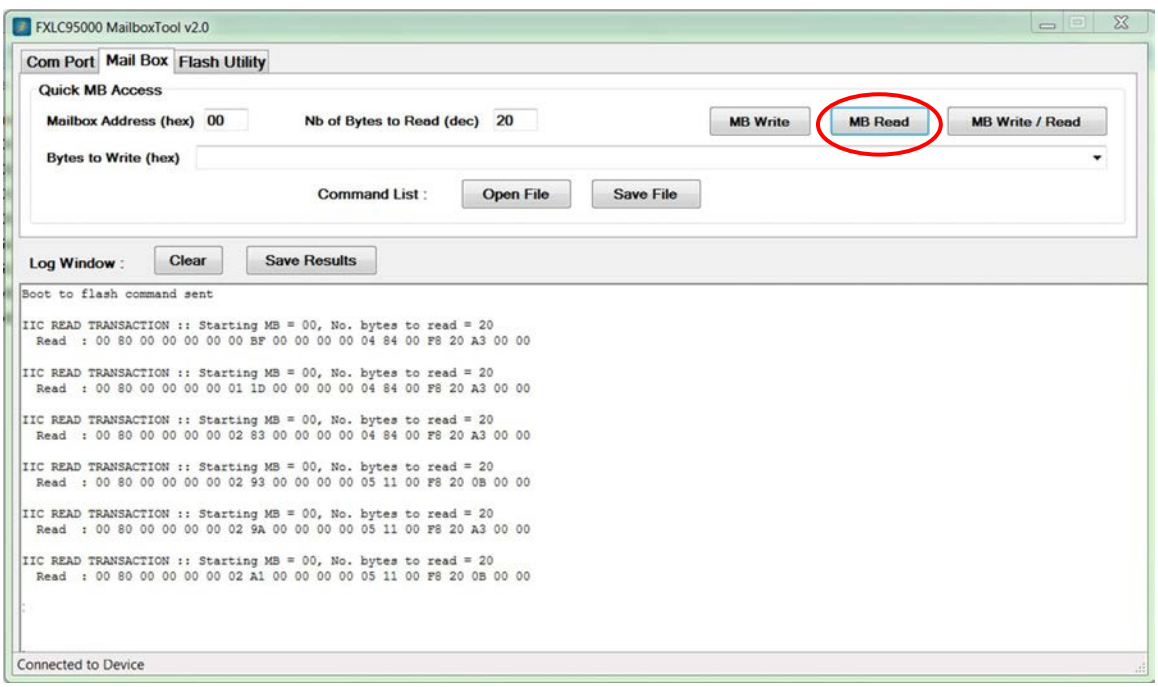
3 Running a S19 Binary (Reference Application) Project

1. The sample application is now running on the Application board. Data and commands can be sent to the application board from the Mailbox Tool and data can be received from the application.

   To read the contents of the mailboxes, in the **Mailbox Tool** select **MB Read**.

   Note

   Do not expect the same values shown in the following figure. The left-most pair of hexadecimal numbers is Mailbox 0.



2. Some applications also require you to write bytes via the Mailbox Tool in order to properly configure the device.

   To write bytes via the Mailbox Tool, enter the command into the **Bytes to Write** field, and then click **MB Write**.

   For more information, refer to the *README.txt* file of the relevant CodeWarrior project located via the Windows Start Menu under **All Programs –> Freescale –> Xtrinsic ISF v1.1 –> Example Applications Folder**.

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