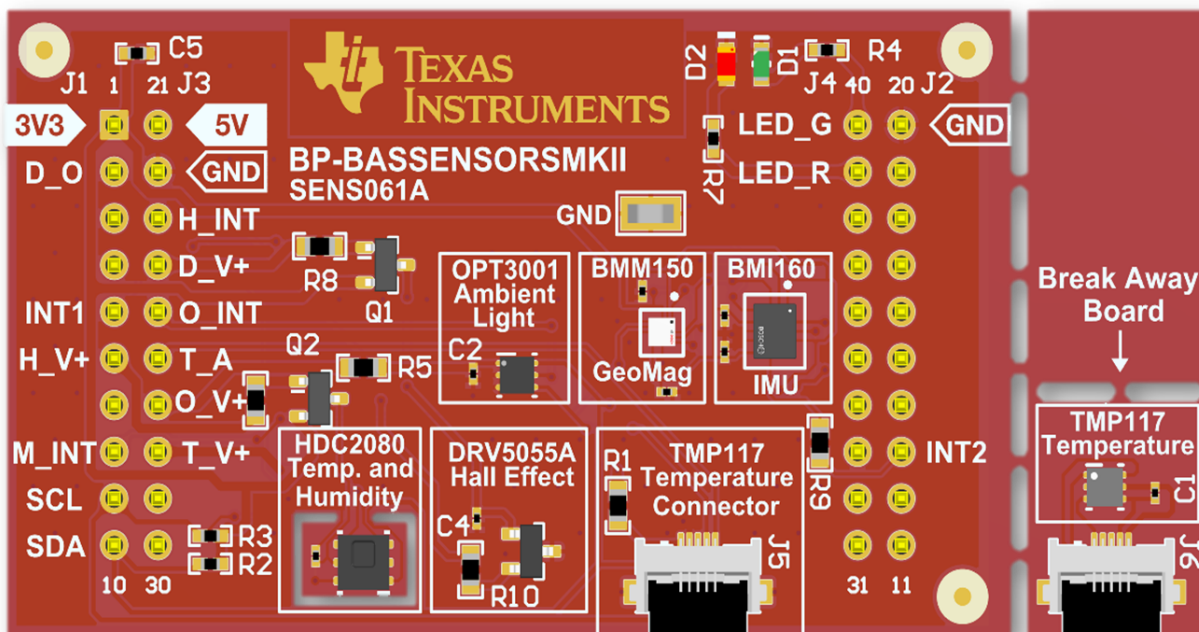


## BP-BASSENSORSMKII user's guide

The Building Automation Systems Sensors MKII BoosterPack™ Plug-in Module kit ([BP-BASSENSORSMKII](#)) is an easy-to-use module for adding digital sensors to your LaunchPad™ development kit design. SimpleLink™ microcontroller (MCU) LaunchPad development kit developers can use this BoosterPack plug-in module to start developing sensor applications using the onboard temperature, humidity, ambient light, and magnetic flux sensors, as well as the included inertial measurement unit (IMU) and magnetometer.



**Figure 1. BP-BASSENSORSMKII BoosterPack Plug-in Module**

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BoosterPack is a trademark of others.

## 1 Getting Started

### 1.1 Introduction

The Building Automation Systems Sensors MKII BoosterPack Plug-in Module kit ([BP-BASSENSORSMKII](#)) is an easy-to-use module for adding digital sensors to the LaunchPad development kit design. For these SimpleLink MCU LaunchPad development kits, engineers can use this BoosterPack plug-in module to start developing sensor applications using the onboard temperature, humidity, ambient light, and magnetic flux sensors, as well as the included inertial measurement unit (IMU) and magnetometer.

### 1.2 Key Features

- High-Accuracy Temperature Sensor (TMP117)
- Combined Temperature and Humidity Sensor (HDC2080)
- Ambient Light Sensor (OPT3001)
- Hall Effect Sensor (DRV5055-Q1)
- Bosch BMI160 Inertial measurement Unit, and BMM150 Magnetometer
- Works With TI LaunchPad Development Kits

### 1.3 What's Included

#### 1.3.1 Kit Contents

- 1x [BP-BASSENSORSMKII](#) BoosterPack plug-in module
- 1x 3" Breakout Ribbon Cable

### 1.4 Next Steps: Looking Into the Provided Code

The next steps after reviewing the EVM features are to open an integrated development environment (IDE) and start looking at the code examples. [Section 3](#) describes the example projects available for the user to understand the provided software.

## 2 Hardware

Figure 2 shows an overview of the BoosterPack plug-in module.

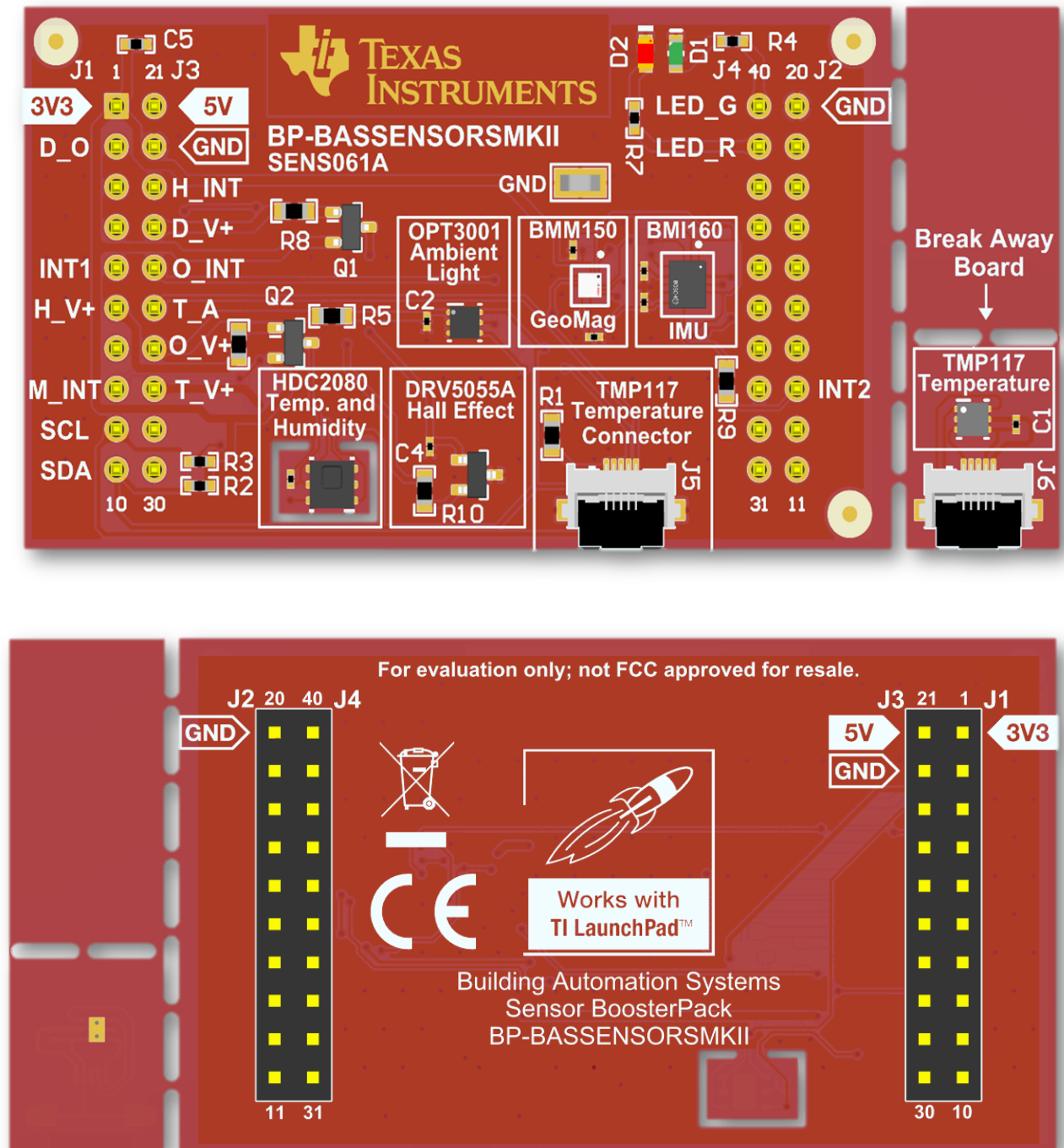


Figure 2. BP-BASSENSORSMKII Overview

## 2.1 Hardware Features

### 2.1.1 BoosterPack™ Plug-in Module Pinout

Figure 3 shows the pinout of the BoosterPack plug-in module.

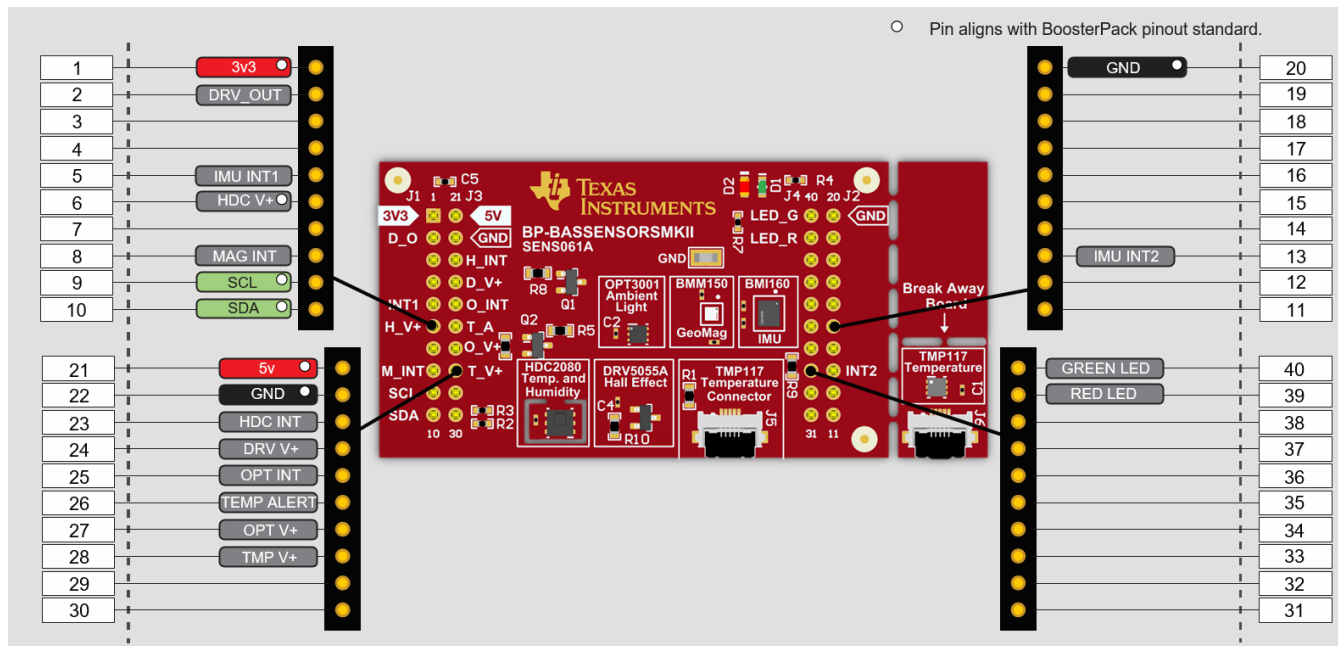


Figure 3. BoosterPack™ Plug-In Module Pinout

The Building Automation Systems Sensors MKII BoosterPack plug-in module adheres to the 40-pin LaunchPad development kit and BoosterPack plug-in module pinout standard. A standard was created to aid compatibility between LaunchPad development kits and BoosterPack plug-in modules across the TI ecosystem.

The 40-pin standard on the [BP-BASSENSORSMKII](#) is compatible with the 20-pin standard that is used by other LaunchPad development kits like the [MSP-EXP430G2](#) LaunchPad development kit. This compatibility allows for 40-pin BoosterPack plug-in modules to be used with 20-pin LaunchPad development kits.

The [BP-BASSENSORSMKII](#) BoosterPack plug-in module has both male and female headers to support stacking on top. The user must carefully consider stacking other BoosterPack plug-in modules near the BASSensors MKII BoosterPack plug-in module as heat, shade, and electromagnetic fields can adversely affect the sensors readings.

For more information on EVM compatibility with TI LaunchPad development kits, refer to [www.ti.com/launchpad](http://www.ti.com/launchpad).

### 2.1.2 I2C Addresses

Device	7 bit Address	Hex (7 bit)
OPT3001	1000100	44
TMP117	1001000	48
HDC2080	1000000	40
BME150	0001101	13
BME160	1101001	69

### 2.1.3 TI OPT3001 Light Sensor

The OPT3001 is a digital ambient light sensor (ALS) that measures the intensity of light as visible by the human eye. Covering the sensor with a finger or shining a flashlight on it changes the output of the OPT3001. The digital output is reported over an I<sup>2</sup>C- and System Management Bus (SMBus)-compatible, 2-wire serial interface. The reference designator for the OPT3001 is U2. [Table 1](#) lists the pin connections of the OPT3001.

For more information on the OPT3001 light sensor, refer to the [OPT3001](#) product folder.

**Table 1. OPT3001 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.9 <sup>(1)</sup>	I <sup>2</sup> C SCL
J1.10 <sup>(1)</sup>	I <sup>2</sup> C SDA
J1.27	OPT3001 V+ Supply Pin
J1.25	OPT3001 INT Pin

<sup>(1)</sup> I<sup>2</sup>C Pins are shared amongst the TMP117, HDC2080, BMI160, and OPT3001.

### 2.1.4 TI TMP117 Temperature Sensor

The TMP117 is a 16-bit digital local temperature sensor that measures the ambient temperature or the temperature of an object in direct contact. Despite being a contact sensor, the sensitivity and accuracy of the TMP117 is high enough to detect a change in temperature from a hand placed near the sensor. The digital output is reported over an I<sup>2</sup>C- and SMBus-compatible, 2-wire serial interface. The reference designator for the TMP117 is U6. [Table 2](#) lists the pin connections of the TMP117.

In order to use the TMP117, the included ribbon cable must be connected. The metal contacts of the cable must face down in the connector to make electrical contact. The black tab on the cable should be face up.

For more information on the TMP117 temperature sensor, refer to the [TMP117](#) product folder.

**Table 2. TMP117 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.9 <sup>(1)</sup>	I <sup>2</sup> C SCL
J1.10 <sup>(1)</sup>	I <sup>2</sup> C SDA
J1.28	TMP117 V+ Supply Pin
J1.26	TMP117 ALERT Pin

<sup>(1)</sup> I<sup>2</sup>C Pins are shared amongst TMP117, HDC2080, BMI160, and OPT3001.

### 2.1.5 TI HDC2080 Humidity Sensor

The TI HDC2080 is an integrated temperature and humidity sensor that measures ambient temperature and relative humidity in RH%. The sensor can detect moisture in the surrounding environment as it saturates the polymer sensing element on top side of the device. The digital output is reported over an I<sup>2</sup>C- and SMBus-compatible 2-wire serial interface. The reference designator for the HDC2080 is U3. [Table 3](#) lists the pin connections of the HDC2080. Note that Pin J1.28 must drive a Logic Low or zero to enable gate Q2 and power HDC2080.

For more information on the HDC2080 humidity sensor, refer to the [HDC2080](#) product folder.

**Table 3. HDC2080 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.9 <sup>(1)</sup>	I <sup>2</sup> C SCL
J1.10 <sup>(1)</sup>	I <sup>2</sup> C SDA
J1.6	Enable HDC2080 3.3V Supply (Inverted)
J1.23	HDC2080 INT Pin

<sup>(1)</sup> I2C Pins are shared amongst TMP117, HDC2080, BMI160, and OPT3001.

### 2.1.6 TI DRV5055-Q1 Hall Effect Sensor

The TI DRV5055-Q1 Hall Effect sensor measures the strength of magnetic fields in one axis. Placing a magnet near the sensor increases the sensor output. The output of the sensor is an analog voltage which must be sampled by an ADC and converted to milliTesla. The reference designator for the DRV5055-Q1 is U4. [Table 4](#) lists the pin connections of the DRV5055-Q1. Note that Pin J1.24 must drive a Logic Low or zero to enable gate Q1 and power DRV5055.

For more information on the DRV5055-Q1 hall effect sensor, refer to the [DRV5055-Q1](#) product folder.

**Table 4. DRV5055-Q1 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.2	DRV5055-Q1 Analog Output
J1.24	Enable DRV5055-Q1 3.3-V Supply (Inverted)

### 2.1.7 Bosch® BMI160 Inertial Measurement Sensor

The Bosch BMI160 inertial measurement unit is a 6-axis digital accelerometer and gyroscope sensor that measures gravitational forces exerted on the device, as well as the speed of rotation in degrees per second. The BMI160 can synchronize its own accelerometer and gyroscope data as well as with an external device such as a geomagnetic sensor. Rotating the board about its axis increases the gyroscope output of the sensor, and changing the orientation of the board with respect to the earth changes its accelerometer output. The BMI160 has a secondary I<sup>2</sup>C interface for connecting additional Bosch sensors such as the BMM150 geomagnetic sensor. The digital output of both sensors is reported over an I<sup>2</sup>C- and SMBus-compatible 2-wire serial interface. The reference designator for The BMI160 is U1.

More information on The BMI160 inertial measurement unit can be found at <https://www.bosch-sensortec.com/products/motion-sensors/imus/bmi160.html>.

**Table 5. BMI160 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.9 <sup>(1)</sup>	I <sup>2</sup> C SCL
J1.10 <sup>(1)</sup>	I <sup>2</sup> C SDA
J1.5	BMI160 INT1
J2.13	BMI160 INT 2

<sup>(1)</sup> I2C Pins are shared amongst TMP117, HDC2080, BMI160, and OPT3001.

### 2.1.8 Bosch BMM150 Geomagnetic Sensor

The Bosch BMM150 geomagnetic sensor is a 3-axis digital magnetometer sensor that measures the strength of the magnetic fields in microtesla for e-compass applications. The BMM150 can be used in combination with the BMI160 for 9-axis sensing. Placing a magnet near the sensor increases the sensor output. The BMM150 is connected to the BMI160 as a secondary I<sup>2</sup>C device, and all of its sensor data is passed to the BMI160 to be reported out over an I<sup>2</sup>C- and SMBus-compatible, 2-wire serial interface. The reference designator for the BMM150 is U5.

More information on the BMM150 geomagnetic sensor can be found at <https://www.bosch-sensortec.com/products/motion-sensors/magnetometers-bmm150/>.

**Table 6. BMM150 Pinout**

BoosterPack™ Plug-in Module Header Connection	Pin Function
J1.8	BMM150 INT

## 2.2 Power

The board is designed to be powered by the attached LaunchPad development kit.

### 2.2.1 LaunchPad™ Development Kit Default Power

Power is provided through the 3V3 (J1.1) pin on the BoosterPack plug-in module headers. The 3V3 pin powers everything on the BASSensors BoosterPack plug-in module.

## 2.3 Design Files

### 2.3.1 Hardware

Schematics can be found in [Section 5](#). All design files including schematics, layout, bill of materials (BOM), Gerber files, and documentation are available on the BP-BASSENSORSMKII Hardware Design Files on the [download page](#).

### 2.3.2 Software

All design files including software example projects, and documentation are available in the software folders that are specific to each LaunchPad development kit.

## 2.4 Hardware Change Log

[Table 7](#) lists the hardware revision history.

**Table 7. Hardware Change Log**

PCB Revision	Description
Rev 1.0	Initial release



### 3 Software Examples

The following software examples are included with the Sensor and Actuator Plugin for SimpleLink MCU SDKs (see [Table 8](#)). These examples can be found in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#), which is commonly installed as C:\ti\sail. Note that the SimpleLink SDK for your MCU must be installed alongside the SAIL plugin. Within the sail folder, the software examples are located in examples/rtos/[LaunchPad]/sail/. The software examples are compatible with the following LaunchPads:

- CC1310\_LAUNCHXL
- CC1352R\_LAUNCHXL
- CC2640R2\_LAUNCHXL
- CC3220S\_LAUNCHXL
- CC3220SF\_LAUNCHXL
- MSP\_EXP432E401Y
- MSP\_EXP432P401R

**Table 8. Software Examples**

Demo Name	LaunchPad™ / BoosterPack™ Required	Description	More Details
adcdrv5055	SimpleLink MCU / BP-BASSENSORSMKII	Samples voltage from DRV5055-Q1 using MCU Onboard ADC, convert voltage to milliTesla and report using UART.	<a href="#">Section 3.1</a>
i2cHDC2080	SimpleLink MCU / BP-BASSENSORSMKII	Sample data from HDC2080 using I2C, convert to temperature/humidity and report using UART.	<a href="#">Section 3.2</a>
i2copt3001	SimpleLink MCU / BP-BASSENSORSMKII	Sample data from OPT3001 using I2C, convert to lux and report using UART.	<a href="#">Section 3.3</a>
i2cTMP117	SimpleLink MCU / BP-BASSENSORSMKII	Sample data from TMP117 using I2C, convert to temperature and report using UART.	<a href="#">Section 3.4</a>
i2cbmi160	SimpleLink MCU / BP-BASSENSORSMKII	Sample data from BMI160 and BMM150 and report 9 DoF (Degrees of Freedom) data using UART.	<a href="#">Section 3.5</a>

To use one of the software examples with the LaunchPad development kit, the user must have an integrated development environment (IDE) that supports the SimpleLink MCU devices (see [Table 9](#)).

**Table 9. IDE Minimum Requirements**

Code Composer Studio™ IDE	IAR Embedded Workbench® for ARM® IDE	ARM® Keil® µVision® IDE
v7.1.0	v7.80.3	MDK-ARM v5

For more details on how to get started quickly, and where to download the latest CCS, IAR, and Keil IDEs, see [Section 4](#).

### 3.1 DRV5055-Q1 Software Example

This section describes the functionality and structure of the adcdrv5055 demo that is included in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#). The example files are located in `ti/sail_x_xx_xx_xx/examples/rtos/[LaunchPad]/sail/adcdrv5055`

#### 3.1.1 Source File Structure

The project is split into multiple files (see [Table 11](#)). This makes it easier to navigate and reuse parts of it for other projects. On select LaunchPads, FreeRTOS examples are available in addition to the TI-RTOS shown here. Look for the freertos folder adjacent to the tirtos folder and reference the files inside there instead.

**Table 10. Source File and Folders**

Name	Description
tirtos/ccs	CCS project files used for importing this Software Example into Code Composer Studio software
tirtos/gcc	CCS project files used for importing this Software Example into Code Composer Studio software using the gcc compiler
tirtos/iar	IAR project files used for importing this Software example into IAR Embedded Workbench
adcdrv5055.c	Contains MainThread for RTOS application and function which queries ADC connected to DRV5055-Q1
Board.h	Definitions for this LaunchPad development kit and BoosterPack plug-in module combination
[LaunchPad].c	Initialization for the selected LaunchPad development kit
[LaunchPad].h	Definitions for the selected LaunchPad development kit
ccfg.c	Customer Configuration file
README.html	Information about using and running the example software

## 3.2 **HDC2080 Software Example**

This section describes the functionality and structure of the i2cHDC2080 demo that is included in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#). The example files are located in `ti/sail_x_xx_xx_xx/examples/rtos/[LaunchPad]/sail/i2cHDC2080`

### 3.2.1 **Source File Structure**

The project is split into multiple files (see [Table 11](#)). This makes it easier to navigate and reuse parts of it for other projects. On select LaunchPads, FreeRTOS examples are available in addition to the TI-RTOS shown here. Look for the freertos folder adjacent to the tirtos folder and reference the files inside there instead.

**Table 11. Source File and Folders**

<b>Name</b>	<b>Description</b>
tirtos/ccs	CCS project files used for importing this Software Example into Code Composer Studio software
tirtos/gcc	CCS project files used for importing this Software Example into Code Composer Studio software using the gcc compiler
tirtos/iar	IAR project files used for importing this Software example into IAR Embedded Workbench
i2cHDC2080.c	Contains MainThread for RTOS application and function which queries HDC2080 using I2C
Board.h	Definitions for this LaunchPad development kit and BoosterPack plug-in module combination
[LaunchPad].c	Initialization for the selected LaunchPad development kit
[LaunchPad].h	Definitions for the selected LaunchPad development kit
ccfg.c	Customer Configuration file
README.html	Information about using and running the example software

### 3.3 OPT3001 Software Example

This section describes the functionality and structure of the i2copt3001 demo that is included in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#). The example files are located in `ti/sail_x_xx_xx_xx/examples/rtos/[LaunchPad]/sail/i2copt3001`.

#### 3.3.1 Source File Structure

The project is split into multiple files (see [Table 11](#)). This makes it easier to navigate and reuse parts of it for other projects. On select LaunchPads, FreeRTOS examples are available in addition to the TI-RTOS shown here. Look for the freertos folder adjacent to the tirtos folder and reference the files inside there instead.

**Table 12. Source File and Folders**

Name	Description
tirtos/ccs	CCS project files used for importing this Software Example into Code Composer Studio software
tirtos/gcc	CCS project files used for importing this Software Example into Code Composer Studio software using the gcc compiler
tirtos/iar	IAR project files used for importing this Software example into IAR Embedded Workbench
i2copt3001.c	Contains MainThread for RTOS application and function which queries OPT3001 using I2C
Board.h	Definitions for this LaunchPad development kit and BoosterPack plug-in module combination
[LaunchPad].c	Initialization for the selected LaunchPad development kit
[LaunchPad].h	Definitions for the selected LaunchPad development kit
ccfg.c	Customer Configuration file
README.html	Information about using and running the example software

### 3.4 **TMP117 Software Example**

This section describes the functionality and structure of the i2cTMP117 demo that is included in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#). The example files are located in `ti/sail_x_xx_xx_xx/examples/rtos/[LaunchPad]/sail/i2cTMP117`.

#### 3.4.1 **Source File Structure**

The project is split into multiple files (see [Table 11](#)). This makes it easier to navigate and reuse parts of it for other projects. On select LaunchPads, FreeRTOS examples are available in addition to the TI-RTOS shown here. Look for the freertos folder adjacent to the tirtos folder and reference the files inside there instead.

**Table 13. Source File and Folders**

<b>Name</b>	<b>Description</b>
tirtos/ccs	CCS project files used for importing this Software Example into Code Composer Studio software
tirtos/gcc	CCS project files used for importing this Software Example into Code Composer Studio software using the gcc compiler
tirtos/iar	IAR project files used for importing this Software example into IAR Embedded Workbench
i2cTMP117.c	Contains MainThread for RTOS application and function which queries TMP117 using I2C
Board.h	Definitions for this LaunchPad development kit and BoosterPack plug-in module combination
[LaunchPad].c	Initialization for the selected LaunchPad development kit
[LaunchPad].h	Definitions for the selected LaunchPad development kit
ccfg.c	Customer Configuration file
README.html	Information about using and running the example software

### 3.5 BMI160/BMM150 Software Example

This section describes the functionality and structure of the i2cbmi160 demo that is included in the [SIMPLELINK-SDK-SENSOR-ACTUATOR-PLUGIN](#). The example files are located in `ti/sail_x_xx_xx_xx/examples/rtos/[LaunchPad]/sail/i2cbmi160`.

#### 3.5.1 Source File Structure

The project is split into multiple files (see [Table 14](#)). This makes it easier to navigate and reuse parts of it for other projects. On select LaunchPads, FreeRTOS examples are available in addition to the TI-RTOS shown here. Look for the freertos folder adjacent to the tirtos folder and reference the files inside there instead.

**Table 14. Source File and Folders**

Name	Description
tirtos/ccs	CCS project files used for importing this Software Example into Code Composer Studio software
tirtos/gcc	CCS project files used for importing this Software Example into Code Composer Studio software using the gcc compiler
tirtos/iar	IAR project files used for importing this Software example into IAR Embedded Workbench
i2cbmi160.c	Contains Main thread for RTOS application and function which queries BMI160 and BMI150 using I2C.
i2cbmi160_support.c	Support driver for communicating with the BMI160 and BMI150.
Board.h	Definitions for this LaunchPad development kit and BoosterPack plug-in module combination
[LaunchPad].c	Initialization for the selected LaunchPad development kit
[LaunchPad].h	Definitions for the selected LaunchPad development kit
ccfg.c	Customer Configuration file
README.html	Information about using and running the example software

## 4 Additional Resources

### 4.1 TI LaunchPad™ Development Kit Portal

More information about LaunchPad development kits, supported BoosterPack plug-in modules, and available resources can be found at:

- [TI's LaunchPad portal](#): Information about all LaunchPad development kits from TI, for all microcontrollers

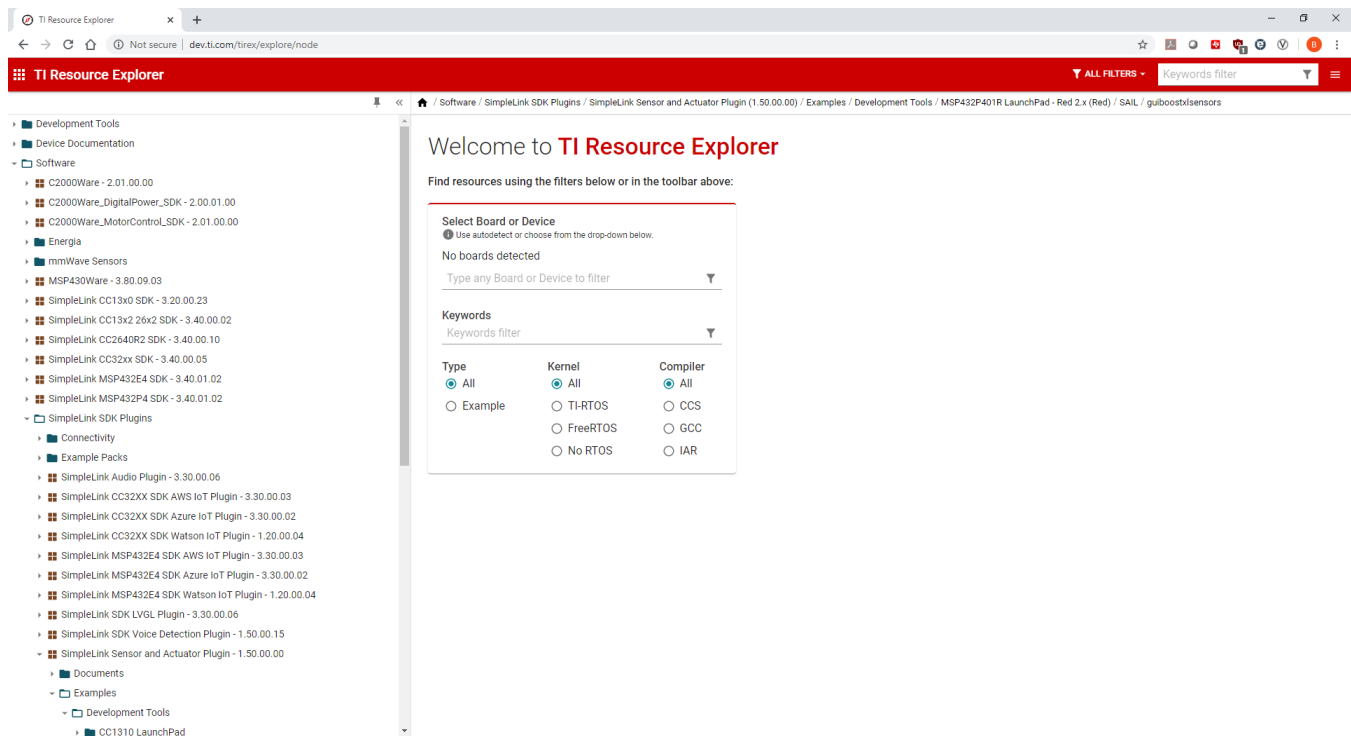
### 4.2 TI Cloud Development Tools

TI's Cloud-based software development tools provide instant access to SimpleLink SDK content and a web-based IDE.

#### 4.2.1 TI Resource Explorer Cloud

TI Resource Explorer Cloud provides a web interface for browsing examples, libraries, and documentation found in the SimpleLink SDK without having to download files to the local drive (see [Figure 4](#)).

Learn more about TI Resource Explorer Cloud at <https://dev.ti.com/>.



**Figure 4. TI Resource Explorer Cloud**

## 4.2.2 Code Composer Studio™ Cloud IDE

Code Composer Studio Cloud (CCS Cloud) IDE is a web-based IDE that lets you quickly create, edit, build, and debug applications for the LaunchPad development kit (see [Figure 5](#)). There is no need to download and install large software packages. You simply connect the LaunchPad development kit and begin. The user can choose to select from a large variety of examples in the SimpleLink MSP432 SDK and Energia or develop their own application. CCS Cloud IDE supports debug features such as execution control, breakpoints, and viewing variables.

A full comparison between CCS IDE Cloud and CCS Desktop is available [here](#).

Learn more about Code Composer Studio Cloud IDE at <https://dev.ti.com/>.

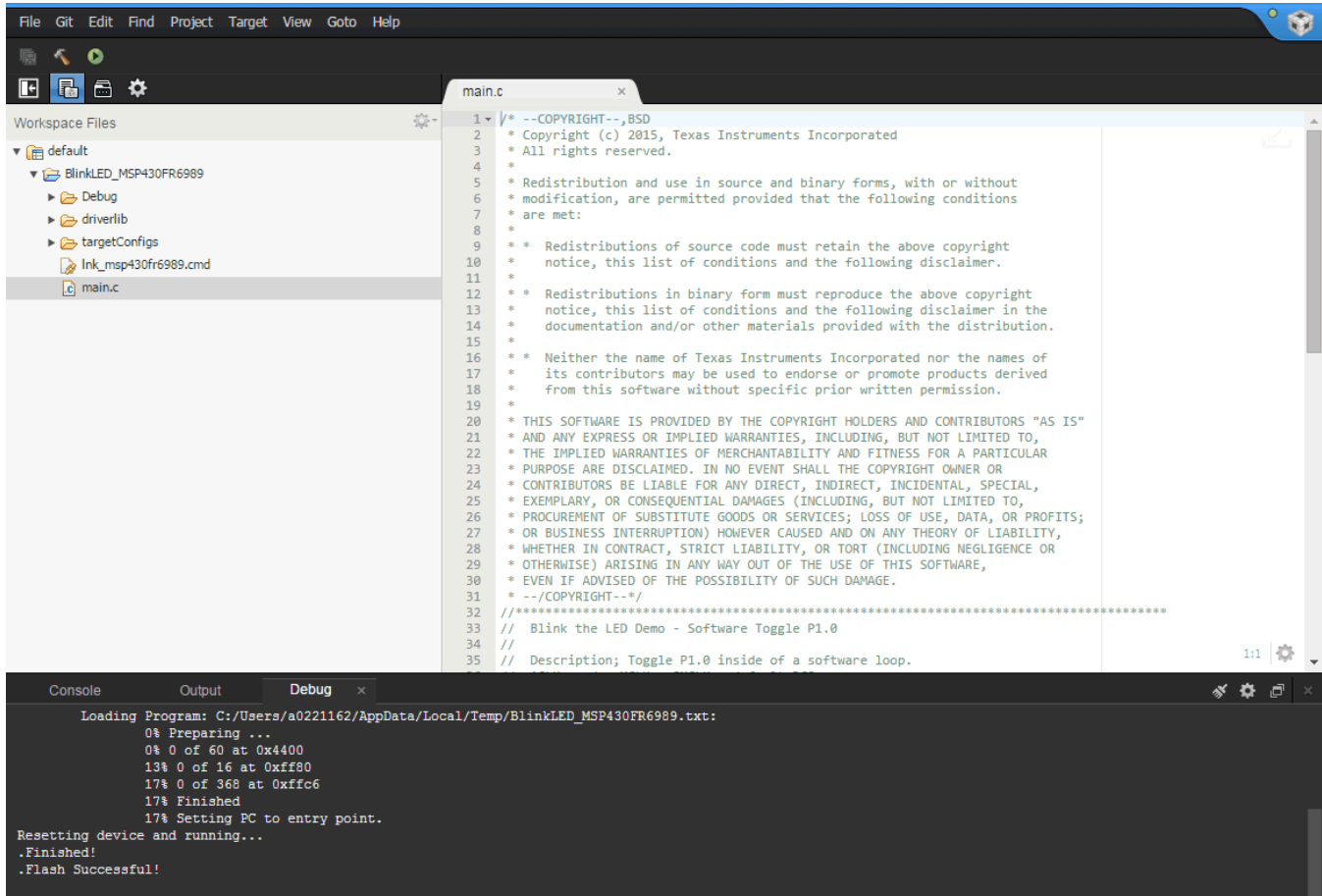


Figure 5. CCS Cloud

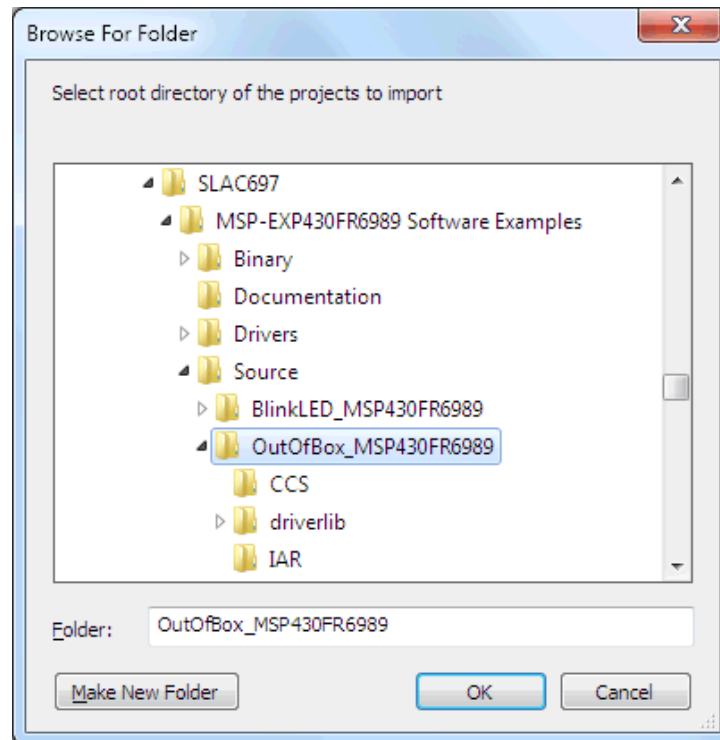


### 4.3 Code Composer Studio™ IDE

Code Composer Studio IDE Desktop is a professional integrated development environment that supports TI's microcontroller and Embedded Processors portfolio. Code Composer Studio IDE comprises a suite of tools used to develop and debug embedded applications. It includes an optimizing C/C++ compiler, source code editor, project build environment, debugger, profiler, and many other features.

Learn more about CCS IDE and download it at [www.ti.com/tool/ccstudio](http://www.ti.com/tool/ccstudio).

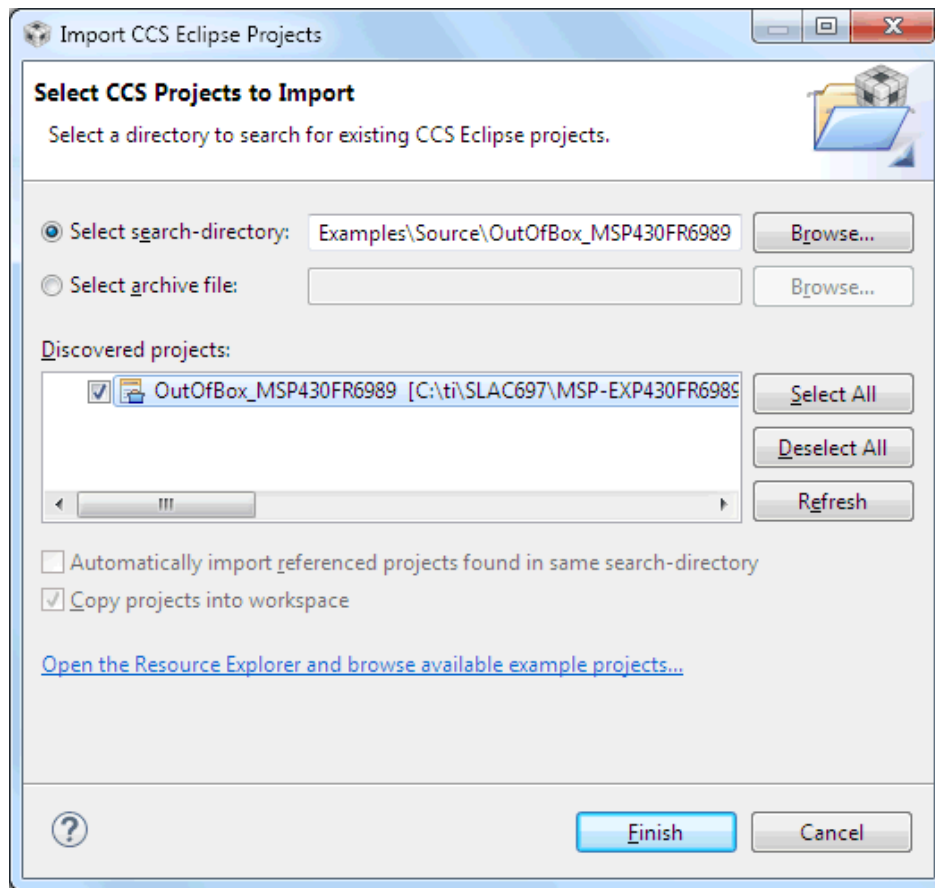
CCS IDE v6.1 or higher is required. When CCS has been launched, and a workspace directory chosen, use Project>Import Existing CCS Eclipse Project. Direct it to the project directory that contains the main.c of the desired demo (see [Figure 6](#)).



**Figure 6. Directing the Project>Import Function to the Demo Project**

The user can also select the \CCS subdirectory. The CCS-specific files are located there. When the user clicks OK, the CCS recognizes the project and allows the import.

The project appears in the Import CCS Eclipse Projects window and has a checkmark to the left of it if the CCS found the project (see Figure 7).



**Figure 7. When CCS Has Found the Project**

Sometimes the CCS IDE finds the project but does not show a checkmark. This may mean that the workspace already has a project by that name. The user can either rename or delete that project to fix this issue. If the project does not appear in the CCS IDE workspace, make sure to check the workspace directory on the file system.

#### 4.4 IAR Embedded Workbench® for TI MSP430™ MCUs

IAR Embedded Workbench for MSP430™ MCUs is another very powerful integrated development environment that allows you to develop and manage complete embedded application projects. IAR Embedded Workbench integrates the IAR C/C++ Compiler, IAR Assembler, IAR ILINK Linker, editor, project manager, command line build utility, and IAR C-SPY® Debugger.

Learn more about the IAR Embedded Workbench for MSP430 MCUs and download the software at [www.iar.com/](http://www.iar.com/).

IAR 6.10 or higher is required. To open the demo in IAR, click File>Open>Workspace..., and browse to the \*.eww workspace file inside the \IAR subdirectory of the desired demo. All workspace information is contained within this file.

The subdirectory also has an \*.ewp project file. This file can be opened into an existing workspace by clicking Project>Add-Existing-Project....

Although the software examples have all of the code required to run them, IAR users may download and install MSP430Ware™ software that contains MSP430 MCU libraries and the TI Resource Explorer. These are already included in a Code Composer Studio IDE installation unless the user selected otherwise.

## 4.5 Energia

Energia is a simple, open-source, and community-driven code editor that is based on the [Wiring](#) and [Arduino](#) framework. Energia provides unmatched ease of use through very high-level APIs that can be used across hardware platforms. Energia is a lightweight IDE that does not have the full feature set of Code Composer Studio IDE or IAR Embedded Workbench IDE. However, Energia is great for anyone who wants to get started very quickly or who does not have significant coding experience.

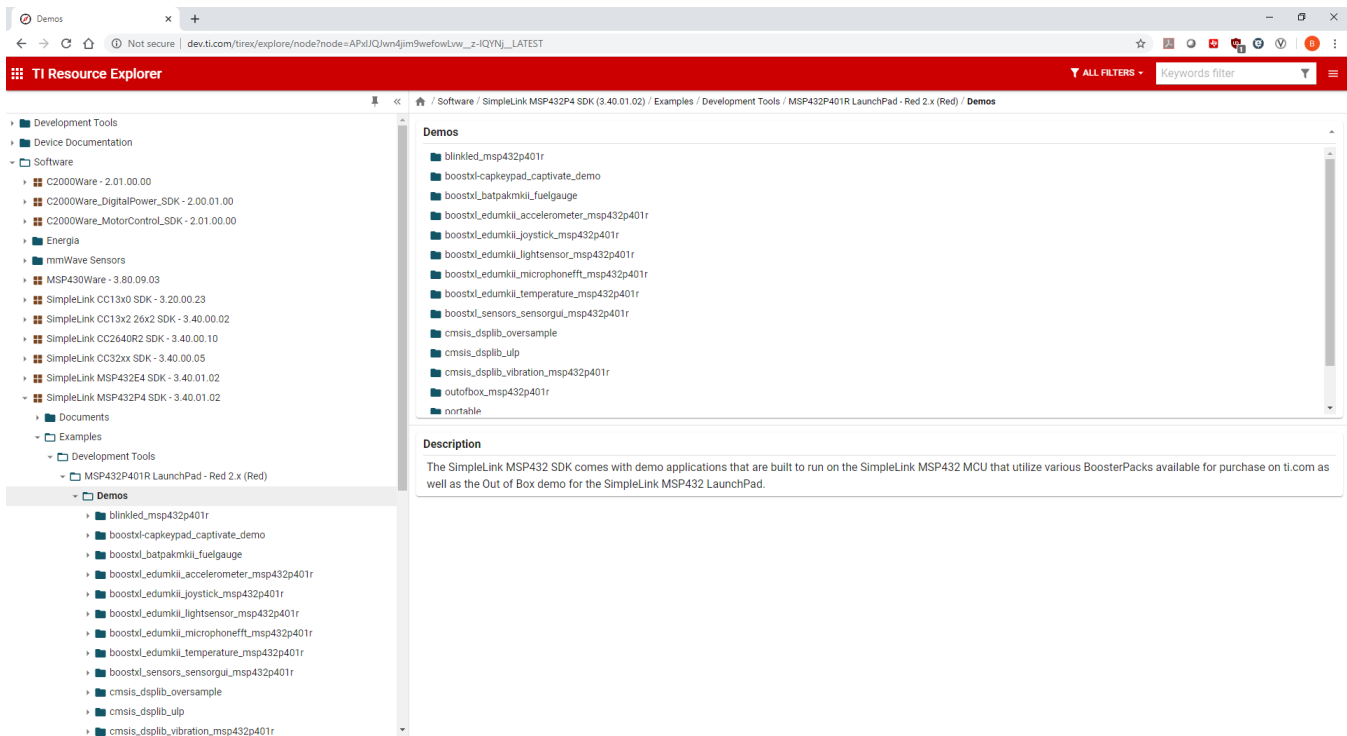
Learn more about Energia and download it at [www.energia.nu](http://www.energia.nu).

## 4.6 SimpleLink™ MSP432 SDK, MSP430Ware™ Software, and TI Resource Explorer

The MSP432 device is part of the SimpleLink microcontroller (MCU) platform, which consists of Wi-Fi®, Bluetooth® low energy, Sub-1 GHz, and host MCUs. All share a common, easy-to-use development environment with a single core software development kit (SDK) and rich tool set. A one-time integration of the SimpleLink platform lets you add any combination of devices from the portfolio into your design. The ultimate goal of the SimpleLink platform is to achieve 100 percent code reuse when your design requirements change. For more information, visit [www.ti.com/simplelink](http://www.ti.com/simplelink).

For the 16-bit MSP430 MCUs, the MSP430Ware software package is used. MSP430Ware software is a complete collection of libraries and tools. It includes a driver library (driverlib) graphics library (glib), and many other software tools. MSP430Ware software is optionally included in a Code Composer Studio IDE installation or can be downloaded separately. IAR users must download it separately.

Both the SimpleLink MSP432 SDK and the MSP430Ware software are included in the TI Resource Explorer for easily browsing tools, documents, examples, and more (see [Figure 8](#)).



**Figure 8. TI Drivers Software Examples in TI Resource Explorer**

Inside TI Resource Explorer, these examples and many more can be found and easily imported into Code Composer Studio IDE with one click.

## 4.7 The Community

### 4.7.1 TI E2E™ Online Community

Search the forums at [e2e.ti.com](https://e2e.ti.com) for helping building your EVM boards. If you cannot find the answer, post a question to the community.

### 4.7.2 Community at Large

Many online communities focus on the LaunchPad development kit and BoosterPack plug-in module ecosystem like [www.43oh.com](https://www.43oh.com). You can find additional tools, resources, and support from these communities.

## 5 Schematics

Figure 9 shows the schematic. Hardware design files can be found in the [BP-BASSENSORSMKII Hardware Design Files](#).

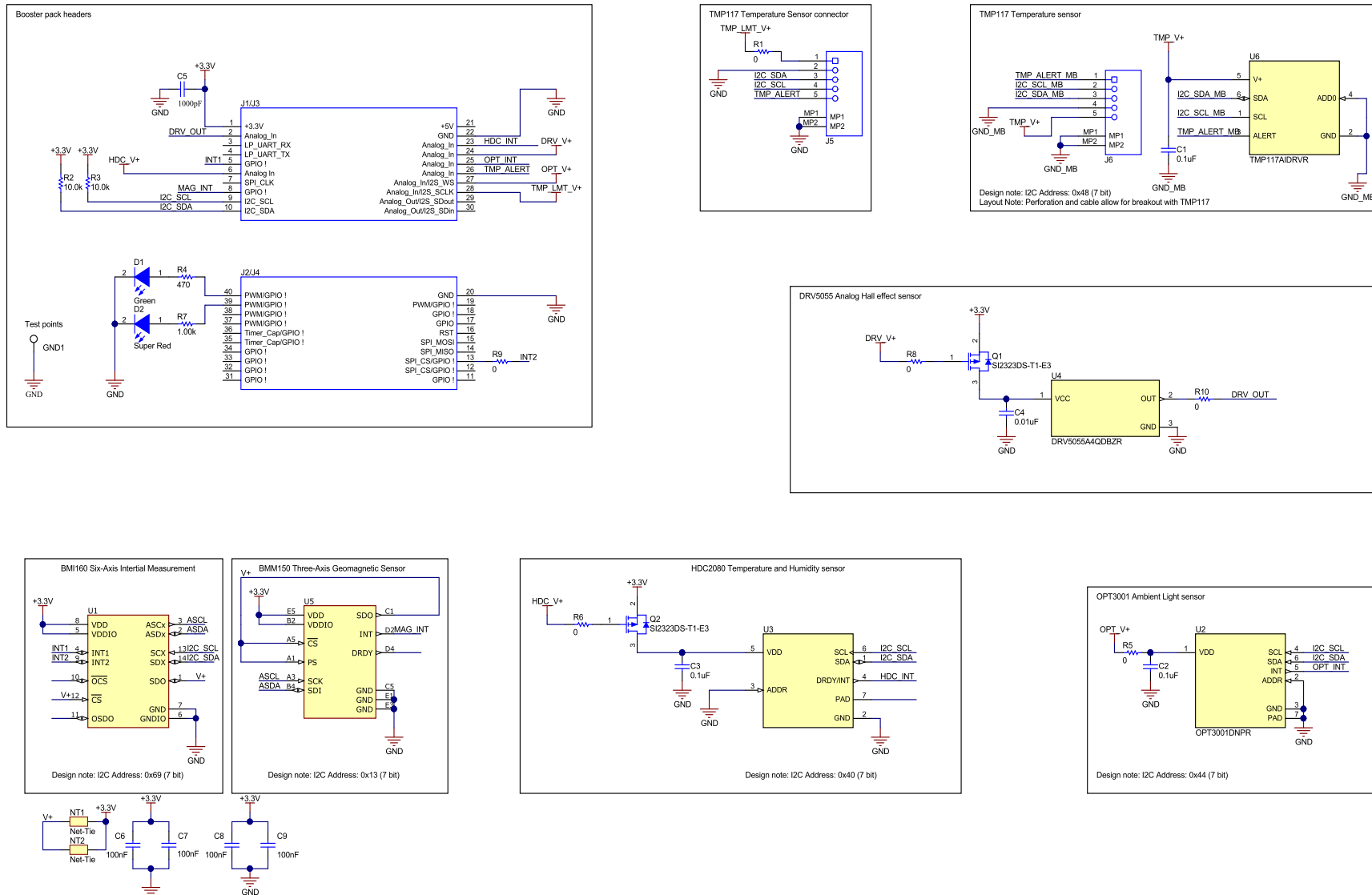


Figure 9. Schematic

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