

BoosterPack plug-in modules plug into the header pins on the LaunchPad to allow you to explore different applications that your favorite TI MCU can enable. There is a broad range of application-specific and general purpose BoosterPacks available from both Texas Instruments and third parties. Stack multiple BoosterPacks on a single LaunchPad to greatly enhance the functionality of your design. BoosterPacks include:

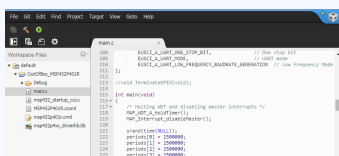
- Displays
- Wireless Connectivity
- Environmental Sensing

>> See them all @ ti.com/boosterpicks



TI Cloud Tools

Get started quickly in your web browser with TI Cloud Tools!



dev.ti.com { - Resource Explorer Cloud
- CCS Cloud IDE

Energia

A simple open-source & community-driven code editor. Easy-to-use functions for blinking LEDs, buzzing buzzers & sensing sensors.



Professional Software tools

LaunchPad is also supported by professional IDEs that provide full debug capability. Set breakpoints, watch variables & more with LaunchPad.



Code Composer Studio™ IDE

BoosterPack

Plug-in Module

Part Number: BOOSTXL-SENSORS



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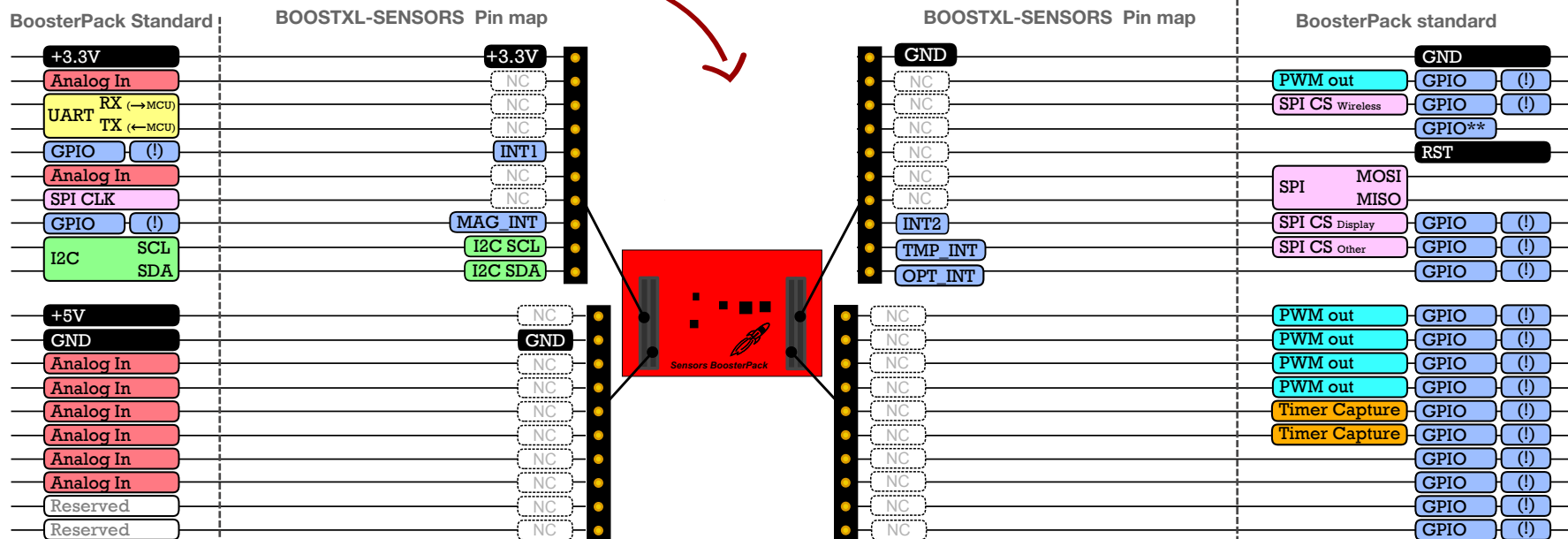
Below are the pins exposed @ the BoosterPack connector.

Also shown are functions that map with the BoosterPack standard.

Note the pins labelled NC have no connection on the BoosterPack but pass-through signals from the LaunchPad to additional BoosterPacks.

** Some LaunchPads do not 100% comply with the standard, please check your LaunchPad to ensure compatability

(!) Denotes I/O pins that are interrupt-capable.



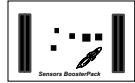
- Code examples
- Open Source Design Files
- Documentation
- Example projects
- Videos
- Tutorials

Resources
ti.com/launchpad

A closer look at your new BoosterPack Plug-in Module

What comes in the box?

BOOSTXL-SENSORS
BoosterPack



This Quick
Start Guide



Software @ [ti.com/
boostxl-sensors](http://ti.com/boostxl-sensors)



BOSCH

Invented for life

BMM150 3-Axis Geomagnetic Sensor

Interrupt J1.8

- 3-axis digital magnetic field sensor used in eCompass applications
- Magnetic field resolution of 0.3 μ T
- Magnetic field range of $\pm 1300\mu$ T (x-, y-axis) and $\pm 2500\mu$ T (z-axis)
- Low power: 170 μ A at 10 Hz with 4 programmable power modes
- 1.56 x 1.56 x 0.6 mm WLCSP size

```
bmi160_read_mag_xyz(struct)
bmi160_read_mag_xyzr(struct)
bmi160_bmm150_read_mag_compensate_xyz(struct)
```

BMI160 6-Axis Inertial Measurement

Interrupt J1.5 and J2.13

- Low-noise 16-bit Inertial Measurement Unit used for augmented reality
- 3-axis accelerometer
- 3-axis gyroscope
- Synchronize data from external devices such as geomagnetic sensors
- Configurable on-chip interrupt engine provides contextual awareness
- Low power: 950 μ A Accelerometer + Gyro enabled and 200 μ A Interrupts
- 2.5 x 3.0 x 0.8 mm package size

```
bmi160_read_gyro_xyz(struct)
bmi160_read_accel_xyz(struct)
```

BME280 Integrated Environmental Unit

- Integrated Environmental sensor including pressure, humidity and temperature
- Accuracy $\pm 3\%$ relative humidity and ± 0.12 hPa ($\sim \pm 1$ m in altitude)
- Low power: 3.6 μ A at 1Hz with humidity, pressure and temperature enabled
- 3 power modes (sleep, normal, forced), 0.1 μ A Sleep
- 2.5 x 2.5 x 0.93 mm package size

```
bme280_read_compensate_temperature_int32(struct)
bme280_read_compensate_pressure_int32(struct)
bme280_read_compensate_humidity_int32(struct)
bme280_read_pressure_temperature_humidity(struct)
```

**TEXAS
INSTRUMENTS**

OPT3001 Ambient Light Sensor

Interrupt J2.11

- Measures the intensity of visible light
- Wide dynamic range: 0.01 to 83,000 lux
- 1% IR response
- 1.8 μ A operating current
- 2.0 x 2.0 x 0.65 mm package size

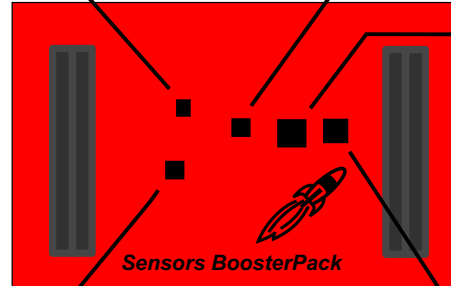
```
sensorOpt3001Init(void)
sensorOpt3001Enable(bool)
sensorOpt3001Read(*rawData)
sensorOpt3001Convert(rawData, *convertedLux)
sensorOpt3001Test(void)
```

TMP007 Contactless Temperature Sensor

Interrupt J2.12

- Infrared thermopile sensor
- Measures object temperature without contacting the object
- Integrated Math Engine
- 14-bit (0.03125 $^{\circ}$ C) resolution
- Alert Pin: Interrupt and Comparator modes
- Low power: 270 μ A Active, 2 μ A Shutdown
- 1.9 x 1.9 x 0.625 mm package size

```
sensorTmp007Init(void)
sensorTmp007Enable(bool)
sensorTmp007Read(*rawTemp, *rawObjTemp)
sensorTmp007Convert(rawTemp, rawObjTemp, *ObjTemp, *AmbTemp)
sensorTmp007Test(void)
```



Typical Sensor Hub Application

Applications
Processor



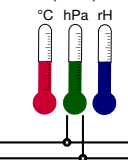
I²C/SPI

BOOSTXL-SENSORS

Sensor Type
(I²C Slave Address)

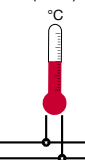


Inertial
(0x69)

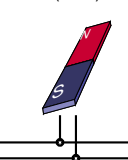


Environmental
(0x77)

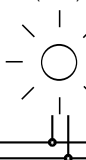
IR Temp
(0x40)



Magnetometer
(0x13)



Light
(0x47)



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