

## **XBIB-C development boards**

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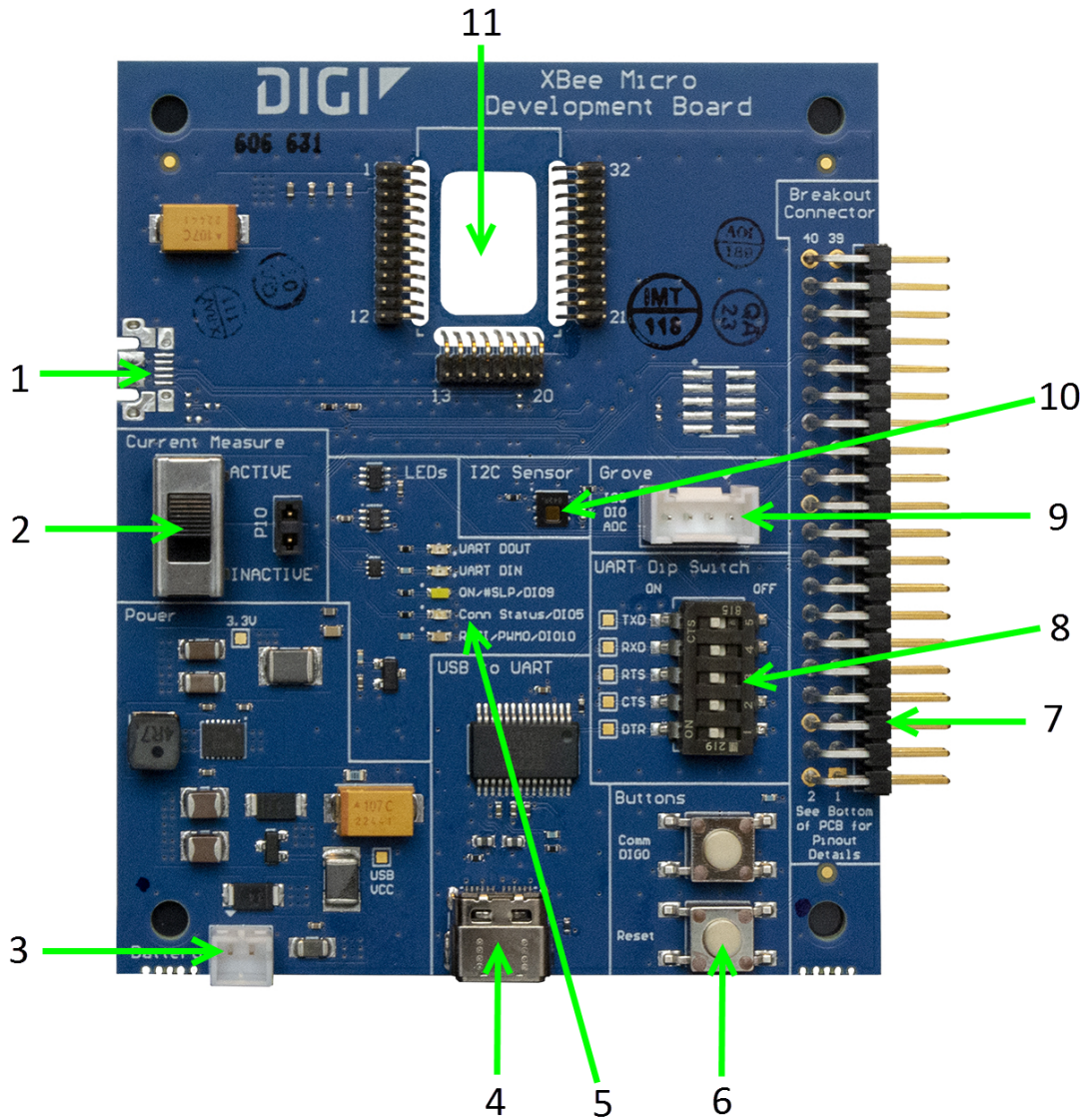
This section describes the XBIB-C development boards and how to interact with them.

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## XBIB-C Micro Mount reference

This picture shows the XBee-C Micro Mount development board and the table that follows explains the callouts in the picture.

**Note** This board is sold separately.

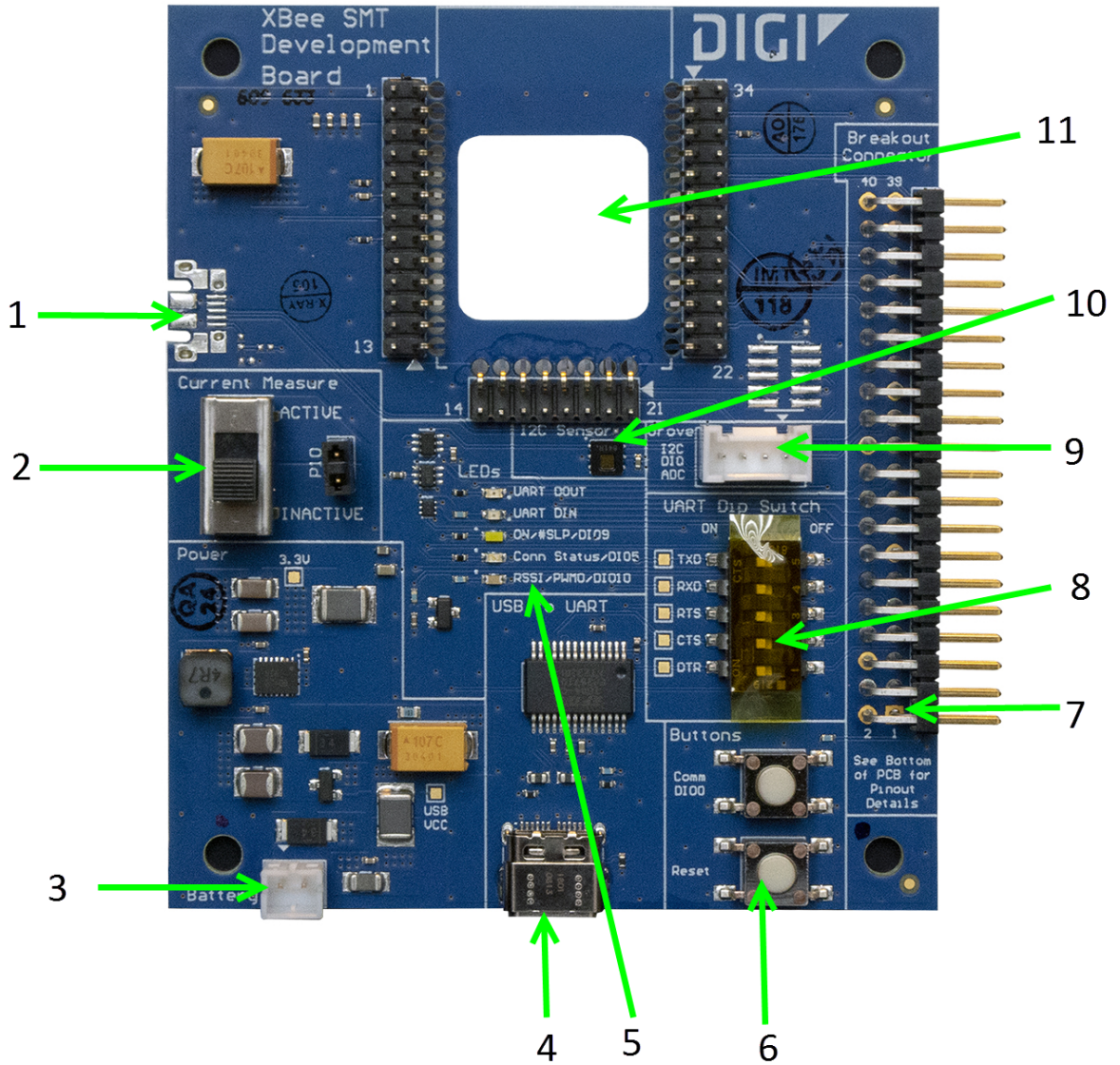


Number	Item	Description
1	Secondary USB (USB MICRO B)	Secondary USB Connector for possible future use. Not used.
2	Current Measure	Large switch controls whether current measure mode is active or inactive. When inactive, current can freely flow to the VCC pin of the XBee. When active, the VCC pin of the XBee is disconnected from the 3.3 V line on the development board. This allows current measurement to be conducted by attaching a current meter across the jumper P10.
3	Battery Connector	If desired, you can attach a battery to provide power to the development board. The voltage can range from 2 V to 5 V. The positive terminal is on the left.
4	USB-C Connector	Connects to your computer. This is connected to a USB to UART conversion chip that has the five UART lines passed to the XBee device. The UART Dip Switch can be used to disconnect these UART lines from the XBee.
5	LED indicator	Red: UART DOUT (modem sending serial/UART data to host) Green: UART DIN (modem receiving serial/UART data from host) White: ON/SLP/DIO9 Blue: Connection Status/DIO5 Yellow: RSSI/PWM0/DIO10
6	User Buttons	Comm DIO0 Button connects the Commissioning/DIO0 pin on the XBee Connector through to a 10 Ω resistor to GND when pressed.  RESET Button Connects to the RESET pin on the XBee Connector to GND when pressed.
7	Breakout Connector	This 40-pin connector can be used to connect to various XBee pins as shown on the silkscreen on the bottom of the board.
8	UART Dip Switch	This dip switch allows the user to disconnect any of the primary UART lines on the XBee from the USB to UART conversion chip. This allows for testing on the primary UART lines without the USB to UART conversion chip interfering. Push Dip switches to the right to disconnect the USB to UART conversion chip from the XBee.
9	Grove Connector	This connector can be used to attach I2C enabled devices to the development board. Note that I2C needs to be available on the XBee in the board to use this functionality. Pin 1: I2C_CLK/XBee DIO1 Pin2: I2C_SDA/XBee DIO11 Pin3: VCC Pin4: GND
10	Temp/Humidity Sensor	This as a Texas Instruments HDC1080 temperature and humidity sensor. This part is accessible through I2C. Be sure that the XBee that is inserted into the development board has I2C if access to this sensor is desired.
11	XBee Socket	This is the socket for the XBee (Micro form factor).

## XBIB-C SMT reference

This picture shows the XBee-C SMT development board and the table that follows explains the callouts in the picture.

**Note** This board is sold separately.

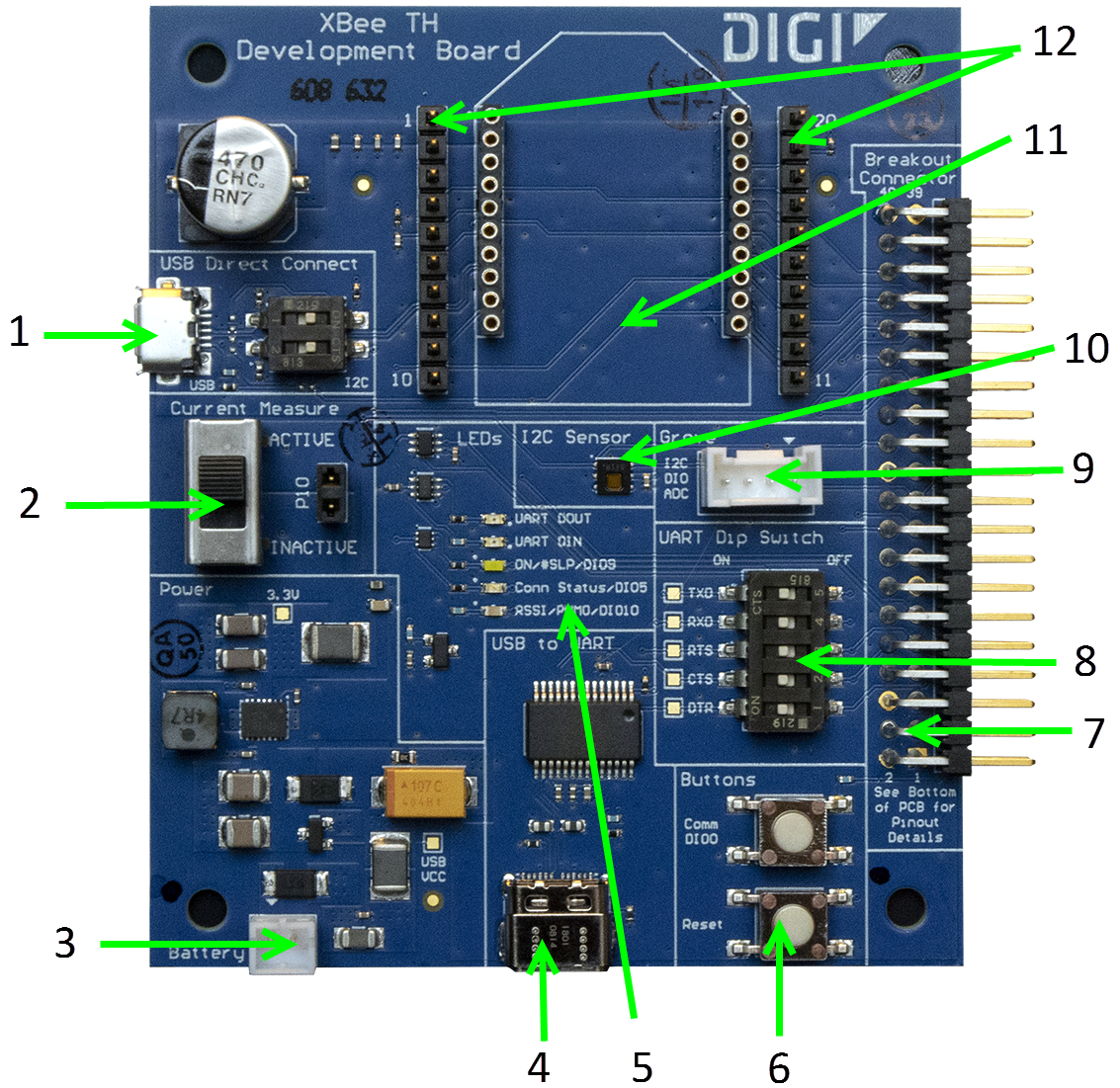



Number	Item	Description
1	Secondary USB (USB MICRO B)	Secondary USB Connector for possible future use. Not used.
2	Current Measure	Large switch controls whether current measure mode is active or inactive. When inactive, current can freely flow to the VCC pin of the XBee. When active, the VCC pin of the XBee is disconnected from the 3.3 V line on the dev board. This allows current measurement to be conducted by attaching a current meter across the jumper P10.
3	Battery Connector	If desired, you can attach a battery to provide power to the development board. The voltage can range from 2 V to 5 V. The positive terminal is on the left.
4	USB-C Connector	Connects to your computer. This is connected to a USB to UART conversion chip that has the five UART lines passed to the XBee. The UART Dip Switch can be used to disconnect these UART lines from the XBee.
5	LED indicator	Red: UART DOUT (modem sending serial/UART data to host) Green: UART DIN (modem receiving serial/UART data from host) White: ON/SLP/DIO9 Blue: Connection Status/DIO5 Yellow: RSSI/PWM0/DIO10
6	User Buttons	Comm DIO0 Button connects the Commissioning/DIO0 pin on the XBee Connector through to a 10 Ω resistor to GND when pressed.  RESET Button Connects to the RESET pin on the XBee Connector to GND when pressed.
7	Breakout Connector	This 40-pin connector can be used to connect to various XBee pins as shown on the silkscreen on the bottom of the board.
8	UART Dip Switch	This dip switch allows the user to disconnect any of the primary UART lines on the XBee from the USB to UART conversion chip. This allows for testing on the primary UART lines without the USB to UART conversion chip interfering. Push Dip switches to the right to disconnect the USB to UART conversion chip from the XBee.
9	Grove Connector	This connector can be used to attach I2C enabled devices to the development board. Note that I2C needs to be available on the XBee in the board to use this functionality. Pin 1: I2C_CLK/XBee DIO1 Pin2: I2C_SDA/XBee DIO11 Pin3: VCC Pin4: GND
10	Temp/Humidity Sensor	This as a Texas Instruments HDC1080 temperature and humidity sensor. This part is accessible through I2C. Be sure that the XBee that is inserted into the Dev Board has I2C if access to this sensor is desired.
11	XBee Socket	This is the socket for the XBee (SMT form factor)

## XBIB-CU TH reference

This picture shows the XBee-CU TH development board and the table that follows explains the callouts in the picture.

**Note** This board is sold separately.



Number	Item	Description
1	Secondary USB (USB MICRO B) and DIP Switch	<p>Secondary USB Connector for direct programming of modules on some XBee units. Flip the Dip switches to the right for I2C access to the board; flip Dip switches to the left to disable I2C access to the board. The USB_P and USB_N lines are always connected to the XBee, regardless of Dip switch setting. This USB port is not designed to power the module or the board. Do not plug in a USB cable here unless the board is already being powered through the main USB-C connector. Do not attach a USB cable here if the Dip switches are pushed to the right.</p> <hr/> <div style="display: flex; align-items: center;">  <p><b>WARNING!</b> Direct input of USB lines into XBee units or I2C lines not designed to handle 5V can result in the destruction of the XBee or I2C components. Could cause fire or serious injury. Do not plug in a USB cable here if the XBee device is not designed for it and do not plug in a USB cable here if the Dip switches are pushed to the right.</p> </div> <hr/>
2	Current Measure	Large switch controls whether current measure mode is active or inactive. When inactive, current can freely flow to the VCC pin of the XBee. When active, the VCC pin of the XBee is disconnected from the 3.3 V line on the development board. This allows current measurement to be conducted by attaching a current meter across the jumper P10.
3	Battery Connector	If desired, a battery can be attached to provide power to the development board. The voltage can range from 2 V to 5 V. The positive terminal is on the left. If the USB-C connector is connected to a computer, the power will be provided through the USB-C connector and not the battery connector.
4	USB-C Connector	Connects to your computer and provides the power for the development board. This is connected to a USB to UART conversion chip that has the five UART lines passed to the XBee. The UART Dip Switch can be used to disconnect these UART lines from the XBee.
5	LED indicator	<p>Red: UART DOUT (modem sending serial/UART data to host)                      Green: UART DIN (modem receiving serial/UART data from host)                      White: ON/SLP/DIO9                      Blue: Connection Status/DIO5                      Yellow: RSSI/PWM0/DIO10</p>
6	User Buttons	<p>Comm DIO0 Button connects the Commissioning/DIO0 pin on the XBee Connector through to a 10 Ω resistor to GND when pressed.</p> <p>RESET Button Connects to the RESET pin on the XBee Connector to GND when pressed.</p>
7	Breakout Connector	This 40 pin connector can be used to connect to various XBee pins as shown on the silkscreen on the bottom of the board.

Number	Item	Description
8	UART Dip Switch	This dip switch allows the user to disconnect any of the primary UART lines on the XBee from the USB to UART conversion chip. This allows for testing on the primary UART lines without the USB to UART conversion chip interfering. Push Dip switches to the right to disconnect the USB to UART conversion chip from the XBee.
9	Grove Connector	This connector can be used to attach I2C enabled devices to the development board. Note that I2C needs to be available on the XBee in the board for this functionality to be used. Pin 1: I2C_CLK/XBee DIO1 Pin2: I2C_SDA/XBee DIO11 Pin3: VCC Pin4: GND
10	Temp/Humidity Sensor	This as a Texas Instruments HDC1080 temperature and humidity sensor. This part is accessible through I2C. Be sure that the XBee that is inserted into the development board has I2C if access to this sensor is desired.
11	XBee Socket	This is the socket for the XBee (TH form factor).
12	XBee Test Point Pins	Allows easy access for probes for all 20 XBee TH pins. Pin 1 is shorted to Pin 1 on the XBee and so on.

## XBIB-C-GPS reference

This picture shows the XBIB-C-GPS module and the table that follows explains the callouts in the picture.

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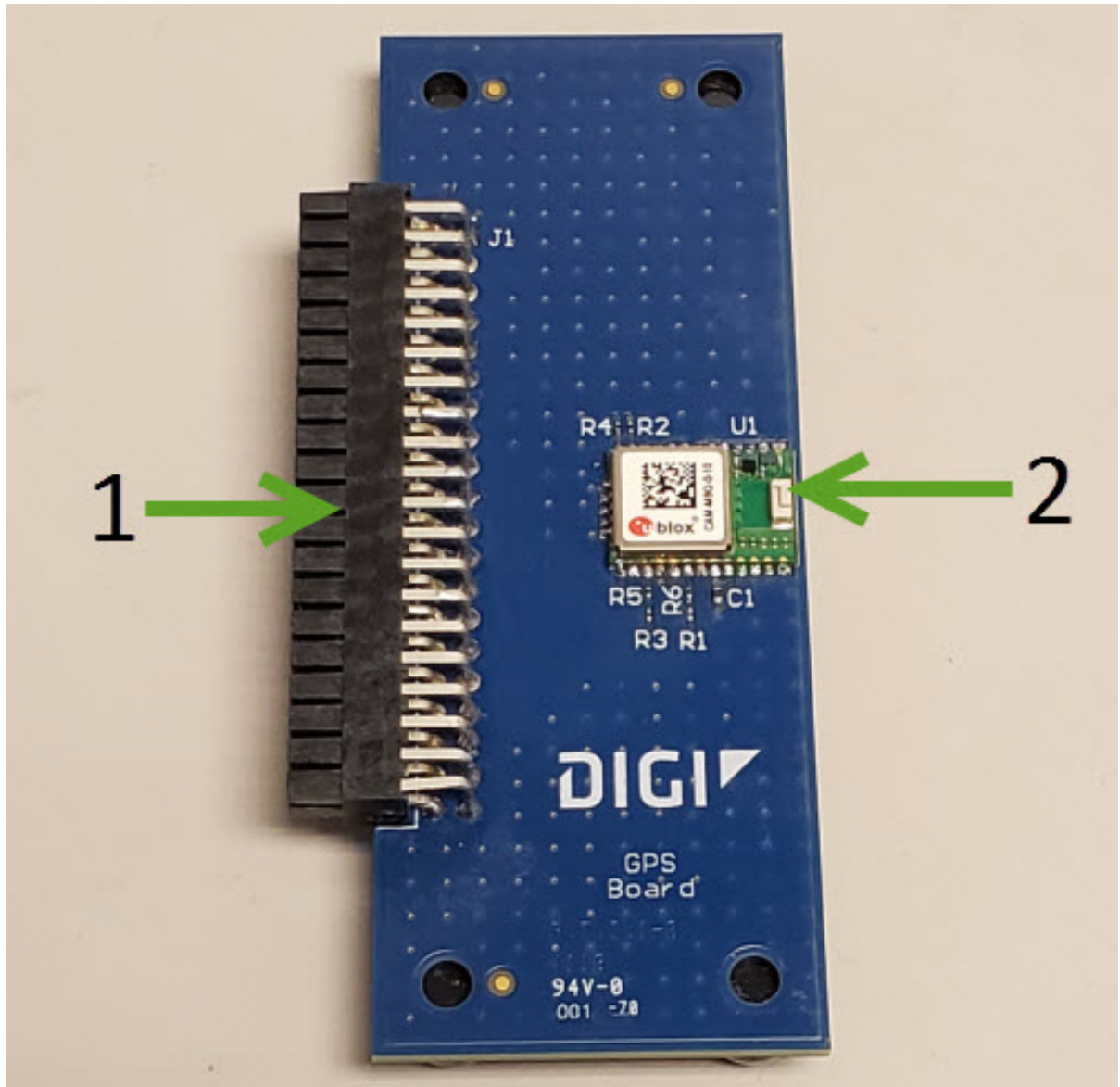
**Note** This board is sold separately. You must also have purchased an XBIB-C through-hole, surface-mount, or micro-mount development board.

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**Note** For a demonstration of how to use MicroPython to parse some of the GPS NMEA sentences from the UART, print them and report them to Digi Remote Manager, see [Run the MicroPython GPS demo](#).

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Number	Item	Description
1	40-pin header	This header is used to connect the XBIB-C-GPS board to a compatible XBIB development board. Insert the XBIB-C-GPS module slowly with alternating pressure on the upper and lower parts of the connector. If added or removed improperly, the pins on the attached board could bend out of shape.
2	GPS unit	This is the CAM-M8Q-0-10 module made by u-blox. This is what makes the GPS measurements. Proper orientation is with the board laying completely flat, with the module facing towards the sky.

## Interface with the XBIB-C-GPS module

The XBee3 RF Module can interface with the XBIB-C-GPS board through the large 40-pin header. This header is designed to fit into XBIB-C development board. This allows the XBee3 RF Module in the XBIB-C board to communicate with the XBIB-C-GPS board—provided the XBee device used has MicroPython capabilities (see [this link](#) to determine which devices have MicroPython capabilities). There are two ways to interface with the XBIB-C-GPS board: through the host board’s Secondary UART or through the I2C compliant lines.

The following picture shows a typical setup:



## I<sup>2</sup>C communication

There are two I2C lines connected to the host board through the 40-pin header, SCL and SDA. I2C communication is performed over an I2C-compliant Display Data Channel. The XBIB-C-GPS module operates in slave mode. The maximum frequency of the SCL line is 400 kHz. To access data through the I2C lines, the data must be queried by the connected XBee3 RF Module.

For more information about I2C Operation see the **I2C** section of the [Digi Micro Python Programming Guide](#).

For more information on the operation of the XBIB-C-GPS board see the [CAM-M8 datasheet](#). Other CAM-M8 documentation is located [here](#).

## UART communication

There are two UART pins connected from the XBIB-C-GPS to the host board by the 40-pin header: RX and TX. By default, the UART on the XBIB-C-GPS board is active and sends GPS readings to the connected device's secondary UART pins. Readings are transmitted once every second. The baud rate of the UART is 9600 baud.

For more information about using Micro Python to communicate to the XBIB-C-GPS module, see [Class UART](#).