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# Gen6 Trackpad Development Kit

## User Guide

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This document describes how to use Cirque's Gen6 Trackpad Development Kit.

## Document Revision History

Date	Version Number	Description
August 2023	1.0	Initial Document Creation

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## Table of Contents

1.	Overview and Set Up.....	4
1.1.	Prerequisites .....	4
1.2.	Installing the Development Environment .....	5
1.3.	Setting up the Hardware.....	6
1.3.1.	<i>Connection Details</i> .....	7
2.	Running the Trackpad Sketch .....	9
3.	Appendix A – Development Board Schematic .....	14
4.	Appendix B – Teensy 4.0 Pin Diagram .....	16
5.	Contact Information .....	18

# 1. Overview and Set Up

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This document describes how to get up and running with the Cirque circle sensor development kit. This kit utilizes a hardware platform based on Arduino<sup>1</sup> for easy development.



*Figure 1: Cirque Gen6 Trackpad Development Kit fully assembled.*

## 1.1. Prerequisites

At a minimum, the following components are required:

- PC (Windows, Mac OS, or Linux) with available USB port.
- Cirque GlidePoint Dev Board (p/n: 02-000620-00). This board should have the Teensy 4.0 Arduino compatible module pre-mounted.
- Cirque trackpad modules with 6-pin connector (for example, the TM035035 Gen6 Circle Trackpad).
- USB-micro cable for connecting the Teensy 4.0 to the computer.
- 6-pin flat flex cable for connecting the trackpad to the dev board.
- Optional circle sensor holder.

Certain development kits from Cirque, such as the Circle Trackpad Dev Kit (p/n: DK-000023), provide a complete package with these components. Contact a Cirque sales representative for details on how to obtain a development kit.

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<sup>1</sup> Arduino is a trademark of Arduino AG.

## 1.2. Installing the Development Environment

1. If not already installed, you must download and install the Arduino IDE:
  - a. Arduino IDE Download Link: <https://www.arduino.cc/en/software>
  - b. The Arduino IDE does not support the Teensy development board by default. It will be necessary to install a plug-in called “Teensyduino” for Teensy support.
    - i. Teensyduino set up instructions: [https://www.pjrc.com/teensy/td\\_download.html](https://www.pjrc.com/teensy/td_download.html). Follow the instructions on this page for the installation of Teensyduino for your operating system.
    - ii. **NOTE:** The Teensyduino installer modifies the Arduino IDE installation, which may cause some anti-virus programs to flag it as malicious. It may be necessary to disable anti-virus software prior to this installation.
2. Download the example code for the trackpad you are using. Cirque makes example code available at GitHub (<https://github.com/cirque-corp>). For a direct link to the specific project you are working on, consult the documentation or the web page for that trackpad. The Gen6 Circle Trackpad GitHub sample code can be found in the Circular\_Trackpad folder in the project at [https://github.com/cirque-corp/Cirque\\_Gen6](https://github.com/cirque-corp/Cirque_Gen6).
  - a. From the GitHub page for the project, click the Code button and choose your download method. If you’re not sure, use the Download ZIP option.
  - b. Within the downloaded sample code, locate and open the specific .ino file for the trackpad project you are working on. Arduino uses the file extension “.ino” for source files. These files are text-only and contain C/C++ source. These are called “sketches” in Arduino terminology.

### 1.3. Setting up the Hardware

1. If your dev kit came with a trackpad holder, you may attach it to the development board for ease of use. The holder attaches to the mounting holes in the corner of the dev board. There may be a second smaller piece that connects to the other side to help level the board (see Figure 2). The use of this holder is optional, but it will assist with the orientation of the trackpads during development.

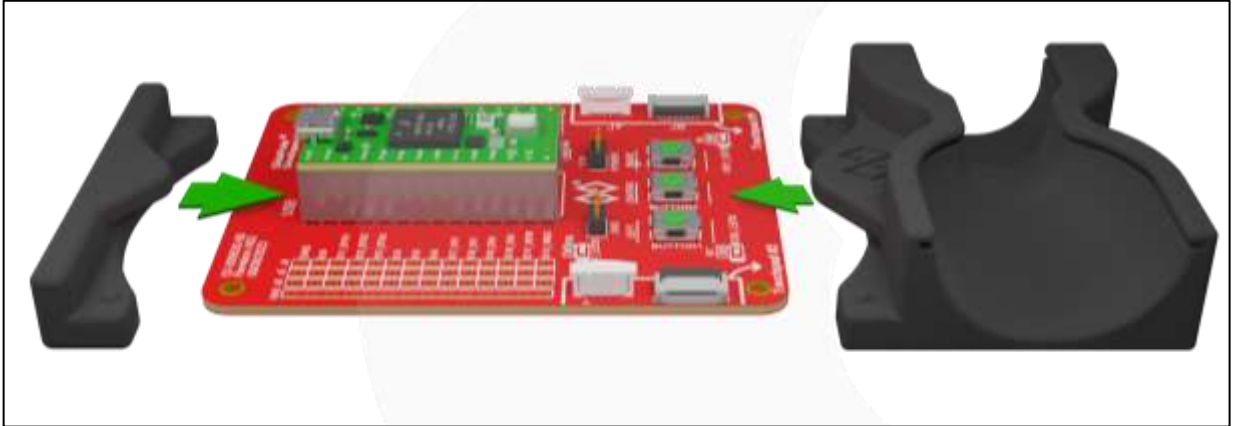


Figure 2: Slide the holder so that it clips into the corner mounting holes as shown above.

2. On the desired touchpad(s) (see Figure 3):
  1. Lift the lock on the 6-pin connector housing
  2. Insert the 6-pin flat flex cable (FFC) into the connector with the cable conductors facing away from the curved edge of the lock
  3. Then push the lock down to secure the connection.

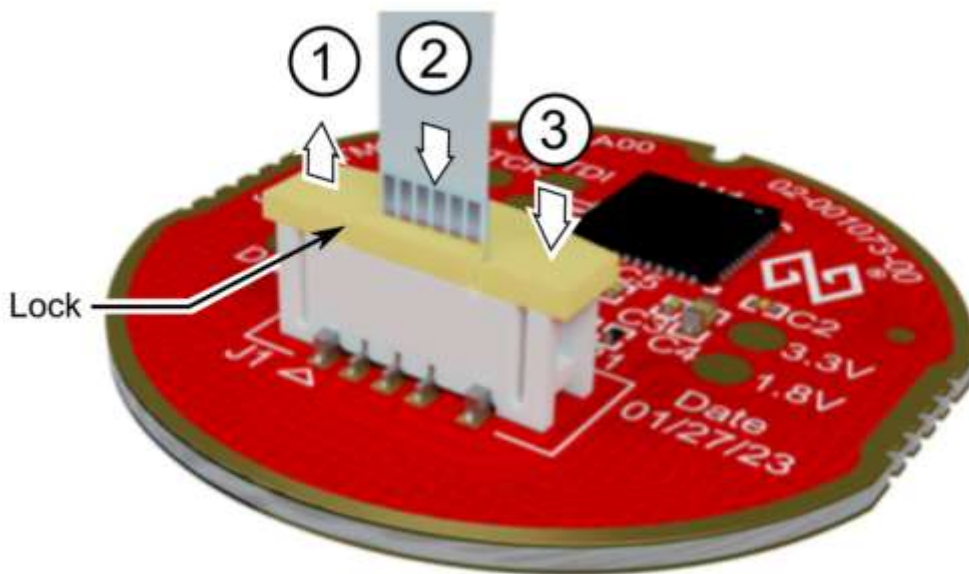


Figure 3: Note the orientation of the exposed FFC conductors.

3. On the development board, follow the same procedure to connect the other end of the FFC into the 6-pin connector. If using only 1 touchpad, be sure to connect it on the Touchpad #1 side (see Figure 4).

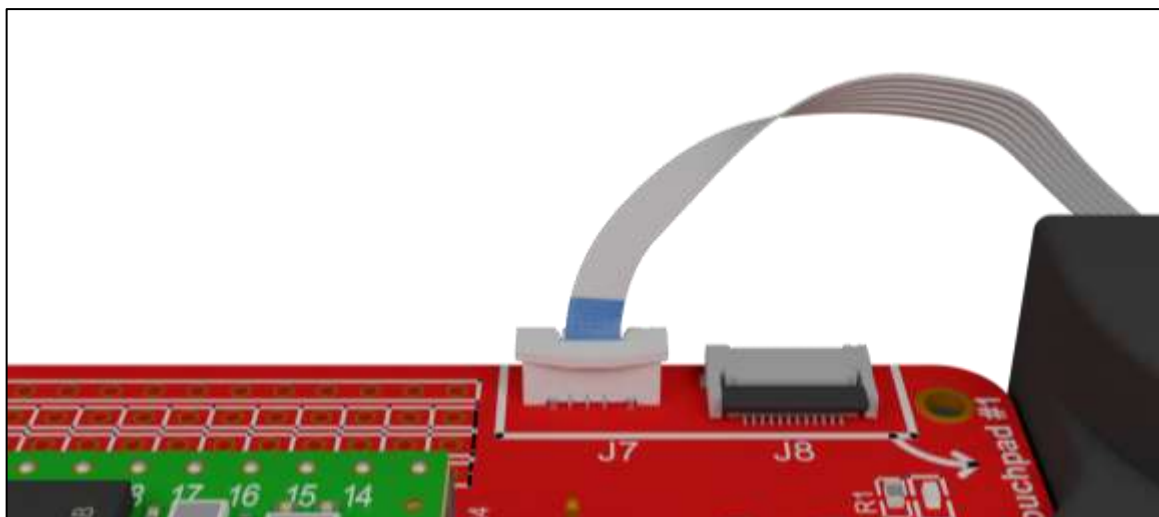


Figure 4: Connection to the development board.

### 1.3.1. Connection Details

The full schematic for the development board can be found in Appendix A. Key details can be found below. The 6-pin connectors support I2C. The 12-pin connectors provide support for both SPI and I2C and the 3 external buttons on the development board.

Table 1: Touchpad #1 6-pin Connector Pin Out (J7)

1	2	3	4	5	6
DR0	VDDIO	SCL0	GND	SDA0	VDD

Table 2: Touchpad #1 12-pin Connector Pin Out (J8)

1	2	3	4	5	6	7	8	9	10	11	1
DD	V	G	SD	SC	BT	BT	M	DR	CS	MI	S
	ND	A0	L0	N1	N3	N2	OSI	0*	0*	SO	CK

Table 3: Touchpad #2 6-pin Connector Pin Out (J9)

1	2	3	4	5	6
DR1	VDDIO	SCL1	GND	SDA1	VDD

Table 4: Touchpad #2 12-pin Connector Pin Out (J10)

1	2	3	4	5	6	7	8	9	10	11	1
DD	V	G	SD	SC	BT	BT	M	DR	CS	MI	S
	ND	A1	L1	N1	N3	N2	OSI	1*	1*	SO	CK

**\*NOTE:** Pins 9 and 10 are used (DATA READY and CHIP SELECT) to identify the correct interface. It will be necessary to target the correct module (either 0 or 1) in the sample code. (This applies only to touchpad projects that support the 12-pin connector.)



## 2. Running the Trackpad Sketch

Once the hardware is assembled and the Arduino software has been installed you are ready to connect the hardware to a computer to begin communicating with the trackpad.

The example below will use a sketch that outputs touch data and other information over a serial port monitor to the computer.

1. Connect the dev board to the computer using a USB to Micro USB cable.
2. Open the Arduino IDE.
3. Open the example code “sketch” (.ino file) you want to load.
4. Check to make sure that the Teensy 4.0 is selected under the “Tools > Boards” menu. (See Figure 5)

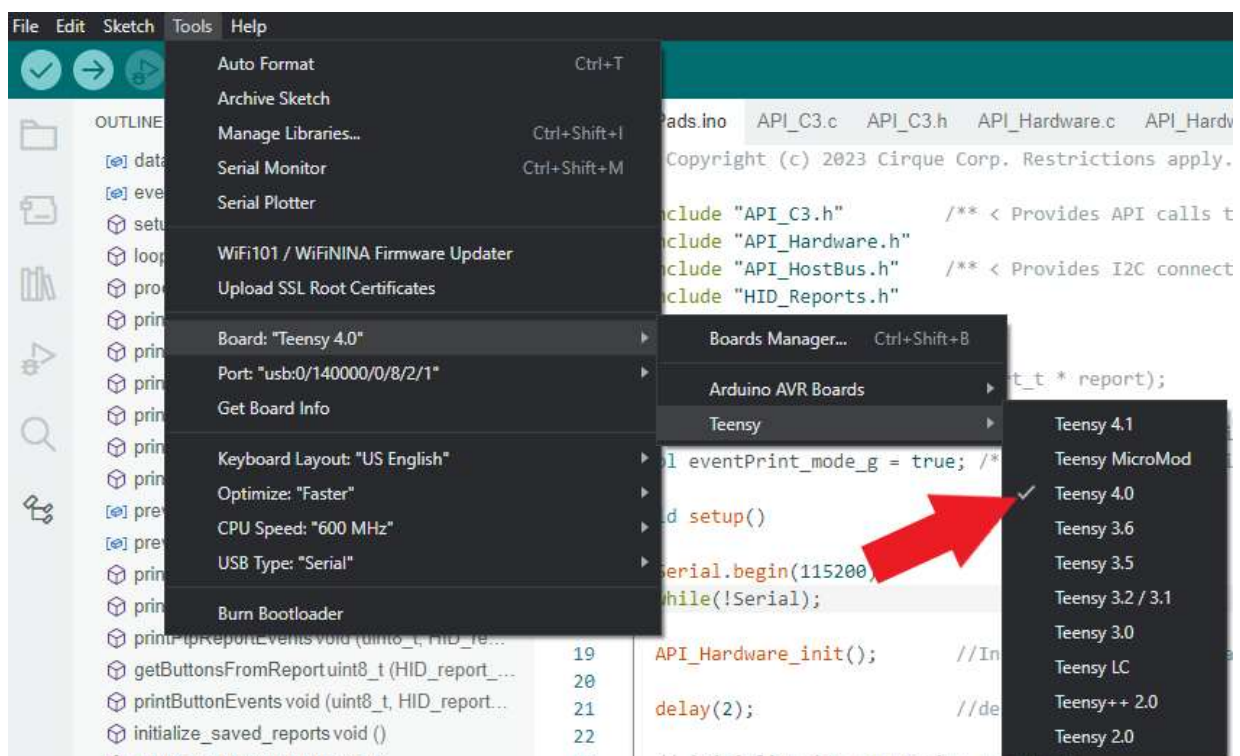


Figure 5: Select Teensy 4.0 as the target board.

5. Click the “Verify” button to check the code and compile it. Then select “Upload” to program the Teensy board (see Figure 6). Once the upload is complete, press the white button on the Teensy 4.0 module to force a program-load (this is the only way to ensure new code is uploaded) (See Figure 7) NOTE: the first time compiling the code may take a while. Subsequent compilations are much faster. Also note that an additional window will open showing the TeensyLoader window which will also direct you to push the white button on the Teensy module (See Figure 8).

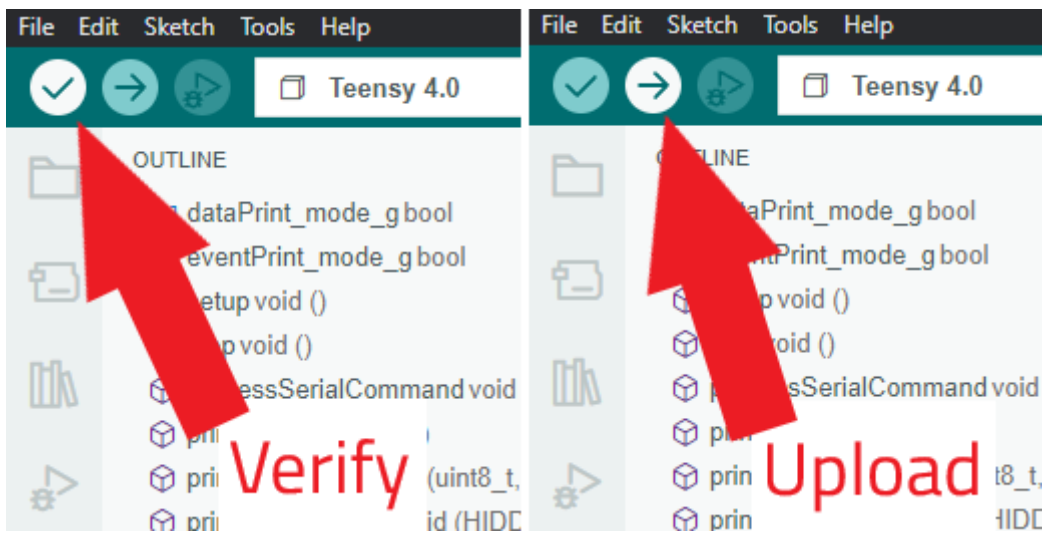


Figure 6: Verify and Upload buttons in the Arduino IDE.

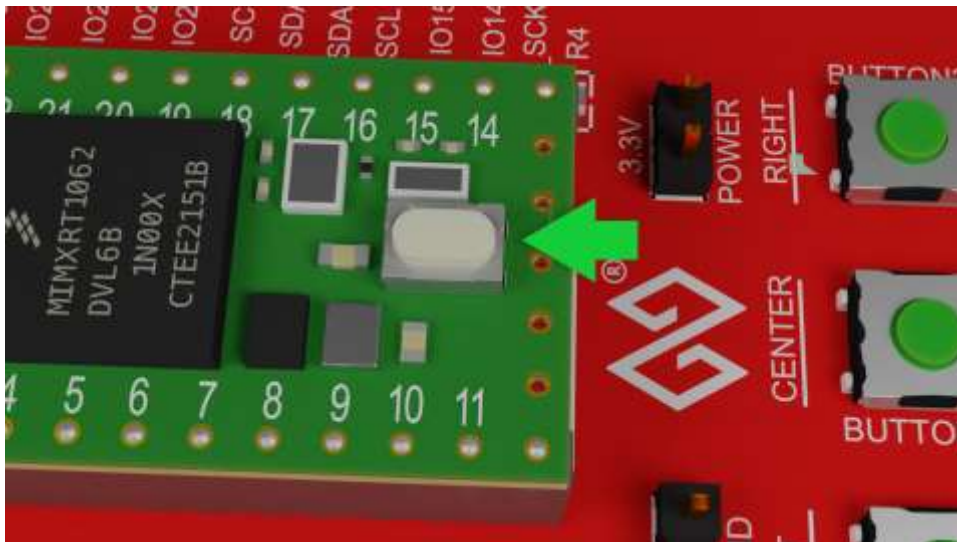


Figure 7: Press the white button on the Teensy to program.



Figure 8: The TeensyLoader window.

6. Once the loading is complete, select Tools > Port and make sure that the Teensy is selected as the serial port. If the port is listed more than once, select the option under “teensy ports” (See Figure 9).

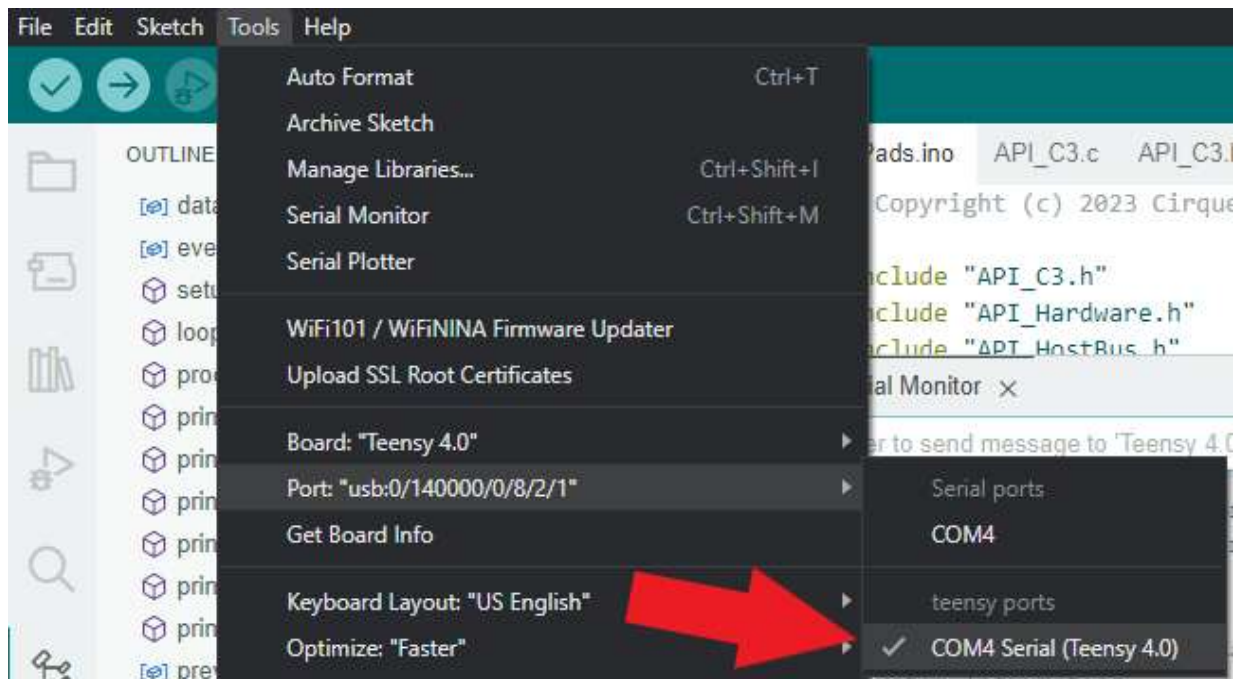


Figure 9: Select the proper port under “teensy ports”.

7. Next, select Tools > Serial Monitor (See Figure 10).

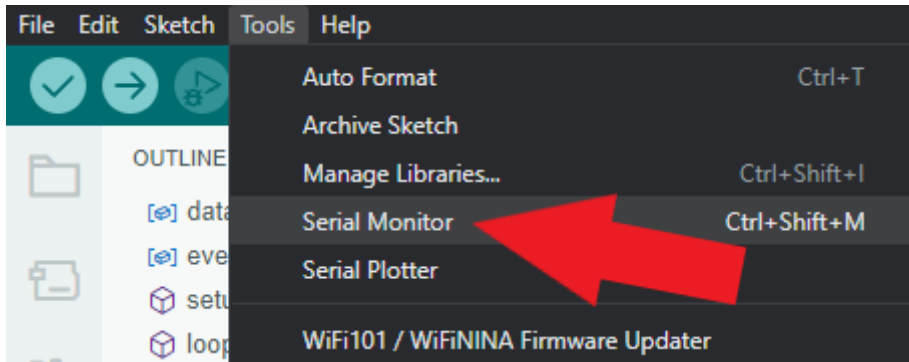


Figure 10: Open Serial Monitor.

8. This will open the serial monitor window. In the example sketch, data packets and other information are displayed in this window (See Figure 11). You may want to select “Autoscroll” so that the most current information is always displayed in the window.  
NOTE: any serial monitor software should work. Because this device enumerates as USB CDC, the “baud rate” settings have no effect.

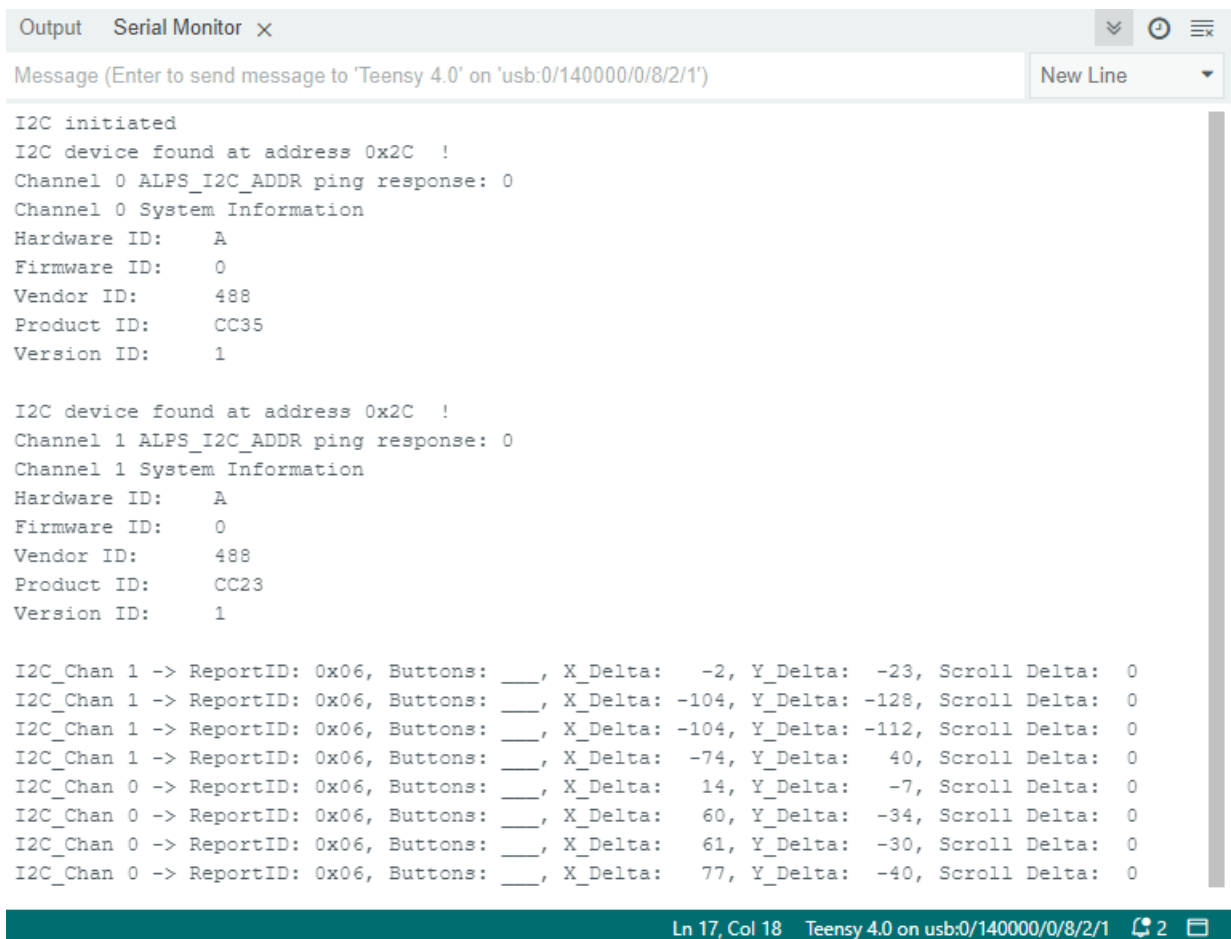


Figure 11: Data packets and other information output in the Serial Monitor.

This example sketch provides the fundamentals for connecting and reading data from the trackpad. Additional example sketches are available from [cirque.com](http://cirque.com) or the Cirque GitHub repository.

The dev board also supports additional hardware experimentation via a “breadboard” style structure. Using this, it is easy to connect and develop with other hardware components for your project as well as connect a logic analyzer to see how SPI and I2C communication is handled. See the schematic in Appendix A for more information. A pin diagram for the Teensy module is also provided in Appendix B.

If additional support is needed, please contact us at our website or via your Cirque sales representative.

### 3. Appendix A – Development Board Schematic

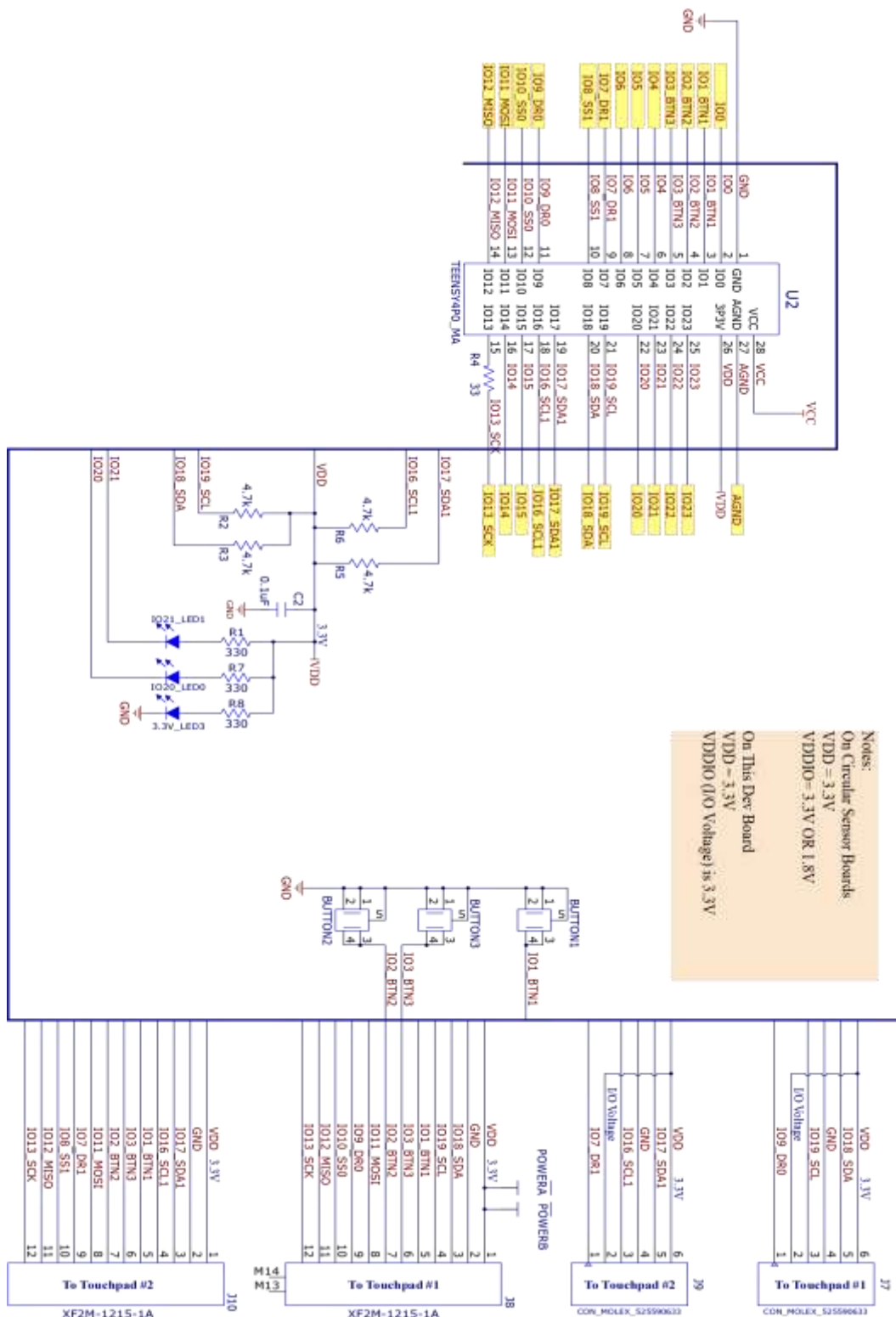


Figure 12: Development Board Schematic part 1.



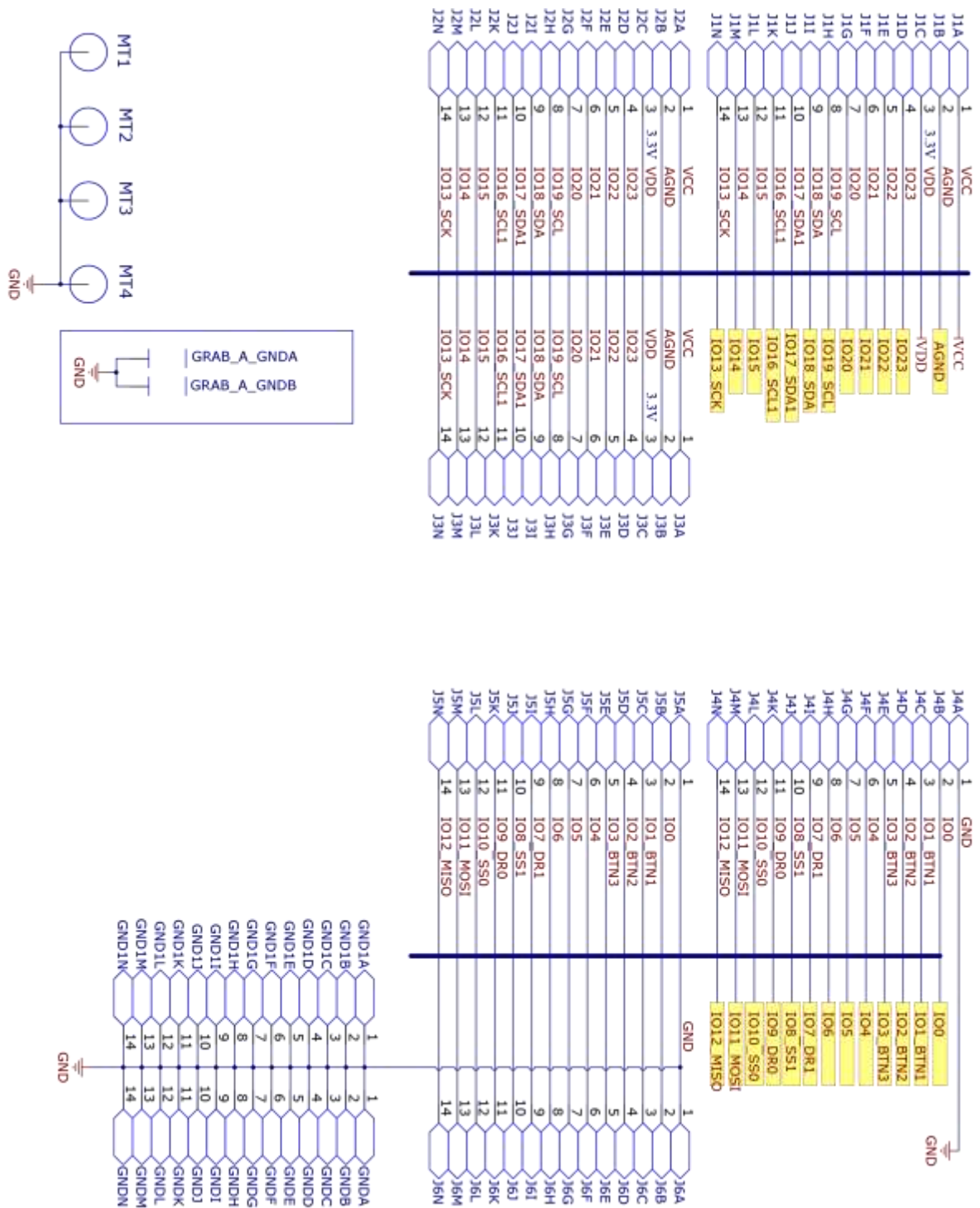


Figure 13: Development Board Schematic part 2.







## 5. Contact Information

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Contact a Cirque sales representative for a complete list of Cirque's OEM products.

In United States & Canada: (800) GLIDE-75 (454-3375)

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