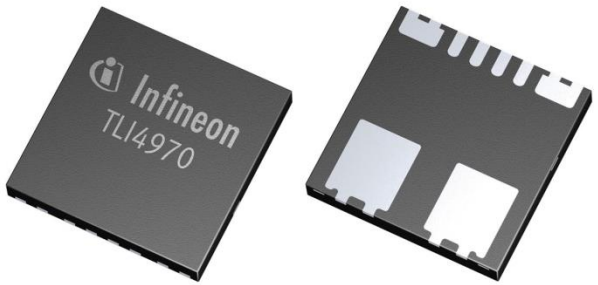
TLI4970-D050T4 CurrentSense Shield2Go

Quick Start
V1.0.0

Introduction

The TLI4970-D050T4 is a highly accurate coreless magnetic current sensor. Thus, the output signal is highly linear and without hysteresis. However, a differential measurement principle allows effective stray field suppression.
Due to the integrated primary conductor (current rail), there is no need for external calibration. Additionally, a separate interface pin (OCD) provides a fast output signal in case a current exceeds a pre-set threshold.
A small leadless package (QFN-like) allows for standard SMD assembly.

Key features are a AC & DC measurement range up to ±50 A, highly accurate over temperature range and lifetime of max. 1.0 % (0 h), 1.6 % (over lifetime) of indicated value, low offset error (max. 25 mA at room temperature) and a high magnetic stray field suppression. Additionally, the sensor has fast over current detection with configurable threshold and a galvanic isolation up to 2.5 kV max. rated isolation voltage.
The sensor has a 16 bit digital SPI output (13 bit current value).



Link to Datasheet and Product Page

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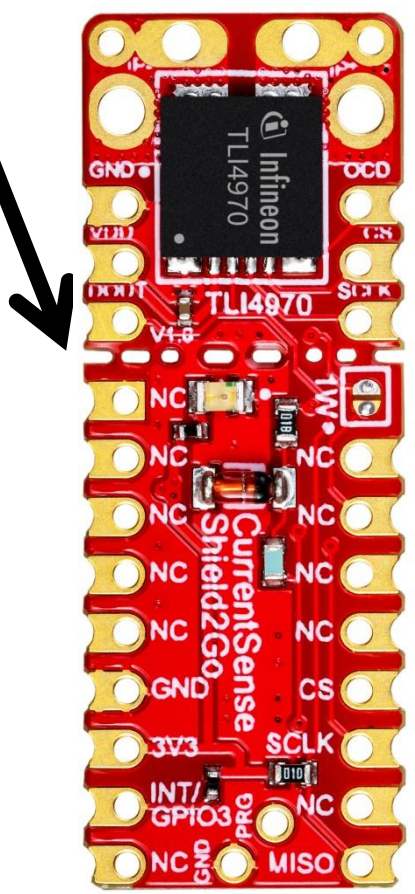
Evaluation Board Notes

Information

- Supply voltage is max. 3.6 V, please refer to the TLI4970-D050T4 datasheet for more details about maximum ratings
- Pin out on top (head) is directly connected to the pins of the TLI4970-D050T4 sensor
- If head is broken off, only one capacitor is connected to the TLI4970-D050T4 sensor
- Software compatible with Arduino and library fully integrated into the Arduino IDE
- Sales Name S2GO_CUR-SENSE_TLI4970 and OPN S2GOCURSENSETLI4970TOBO1

Ensure that no voltage applied to any of the pins exceeds the absolute maximum rating of 3.6 V

Breakable Head



Link to Board Page

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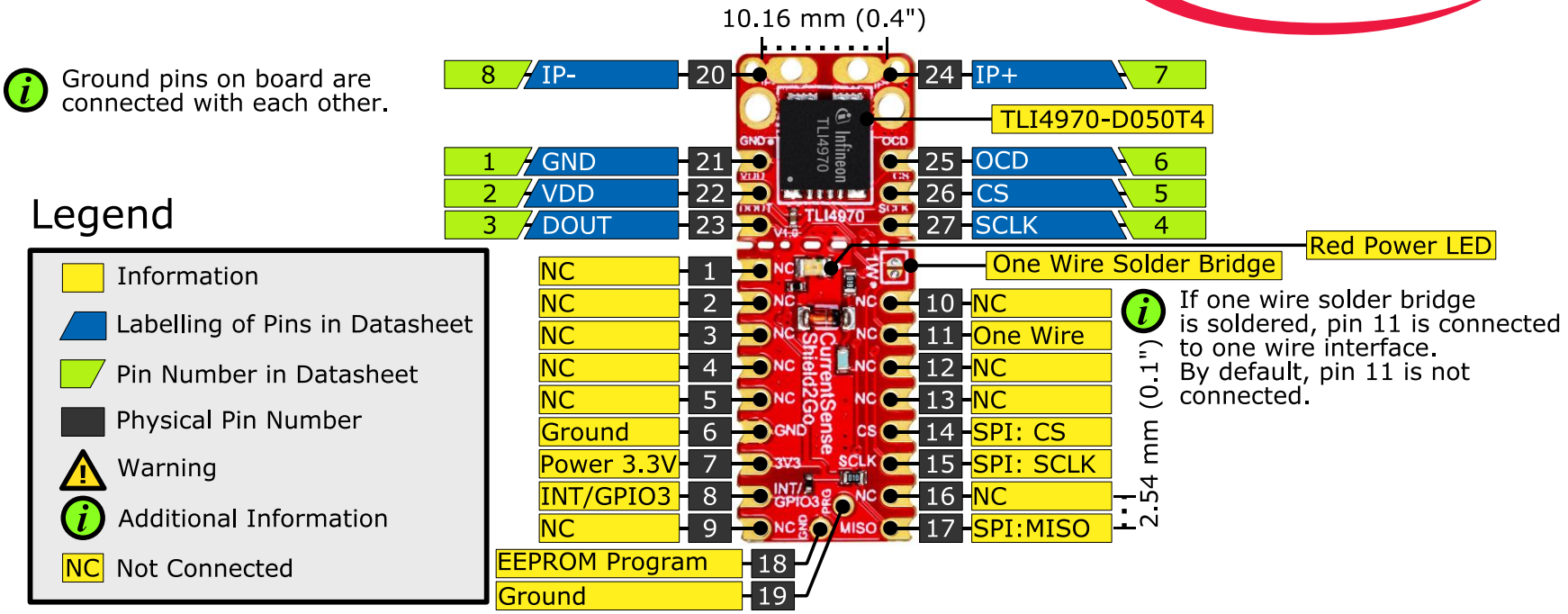
Evaluation Board PCB Details

The

TLI4970-D050T4 CurrentSense Shield2Go



The maximum voltage on any pin is 3.6 V.

To make the board compatible with the one wire interface of the Current Sensor 2GO kit, solder the one wire solder bridge.

To program the internal EEPROM of the TLI4970, apply the respective programming voltage to the PRG pin. Refer to the programming guide for additional information.

V1.0.0

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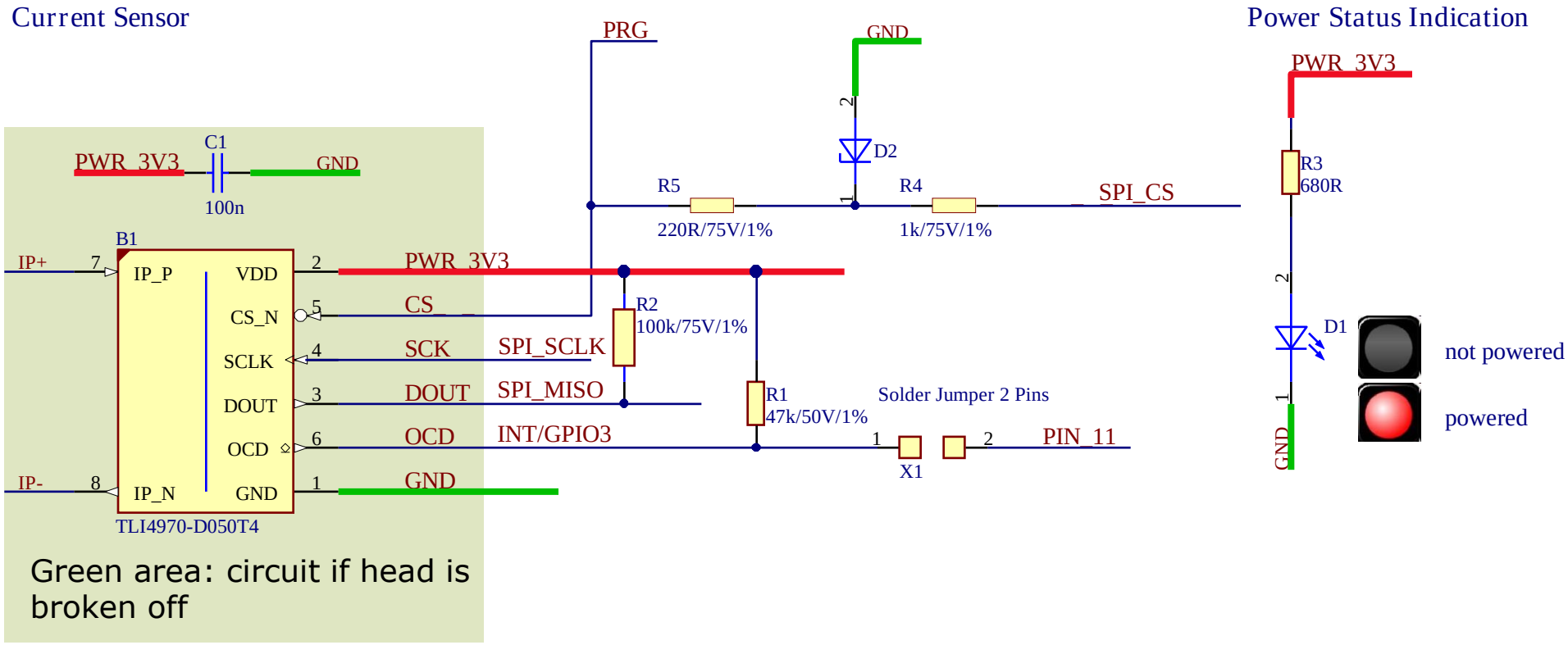
Evaluation Board Schematic



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Arduino: The Arduino IDE

Arduino IDE

Arduino is a hardware-software prototyping environment IDE developed by arduino.cc:

- Installation Details for Windows:
  Click here
- Installation Details for Linux:
  Click here
- Installation Details for Mac OS:
  Click here
- Installation Details for Portable IDE:
  Click here

Arduino Quick Start

- What is Arduino? Click here
- Extended information about the Arduino environment. Click here
- How to import libraries? Click here
- How to install additional boards? Click here
- Problems related to Arduino? Click here for troubleshooting

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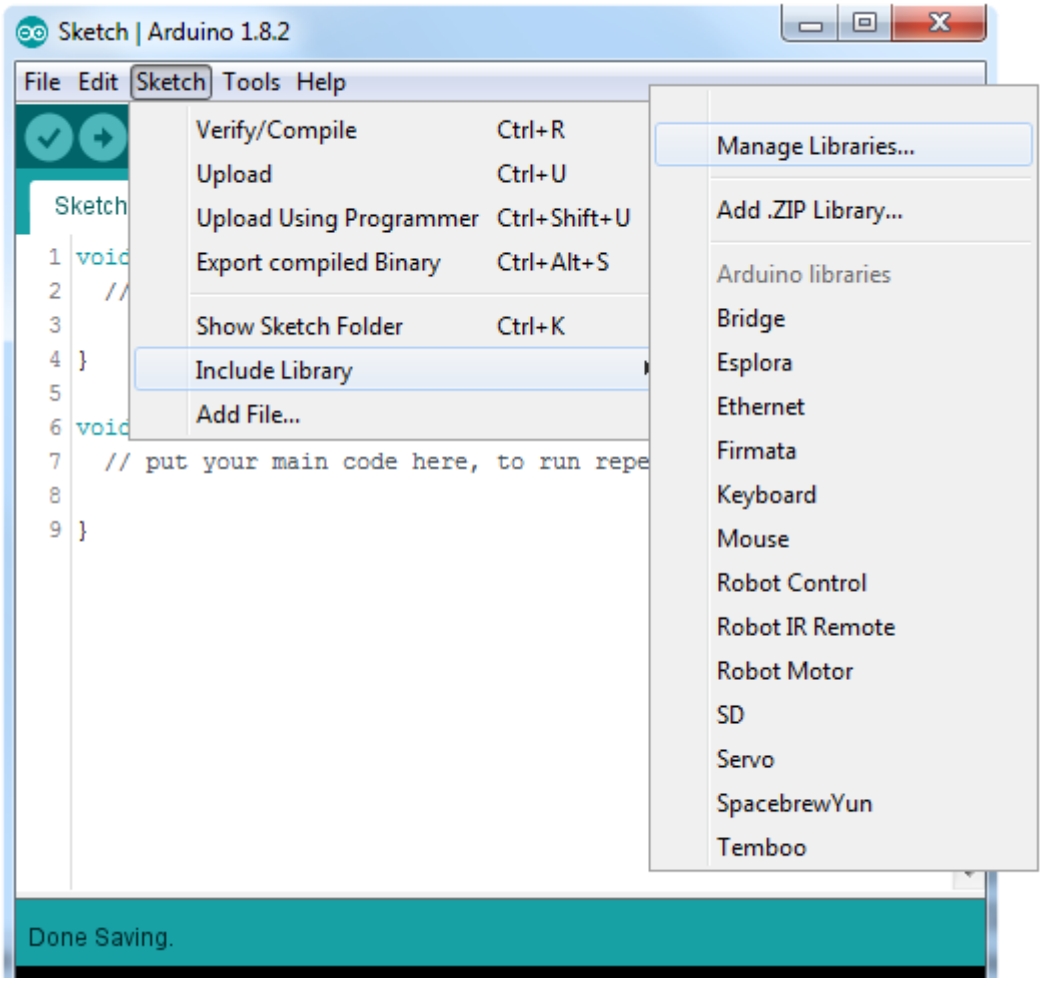
How to download the library for Arduino - 1

Notes

- Open the Arduino IDE
- Navigate to *Sketch – Include Library – Manage Libraries*
- The Arduino library manager will be opened (see next slide for further instructions)
- Additional notes for installation can be found in the GitHub , e.g. if the library manager is not used



https://github.com/Infineon/TLI4970-D050T4-Current-Sensor

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How to download the library for Arduino - 2

Notes

- The Arduino library manager is a comprehensive tool to install external libraries for Arduino
- Search for *TLI4970-D050T4* in the *Filter your seach…* field
- Select as *Type: All* and *Topic: All* when searching for *TLI4970-D050T4*
- As shown in the picture, please choose the respective library and install it
- Regularly check your installed libraries for updates
- In case of problems, please visit also our GitHub repository and open an issue to get further help

https://github.com/Infineon/TLI4970-D050T4-Current-Sensor

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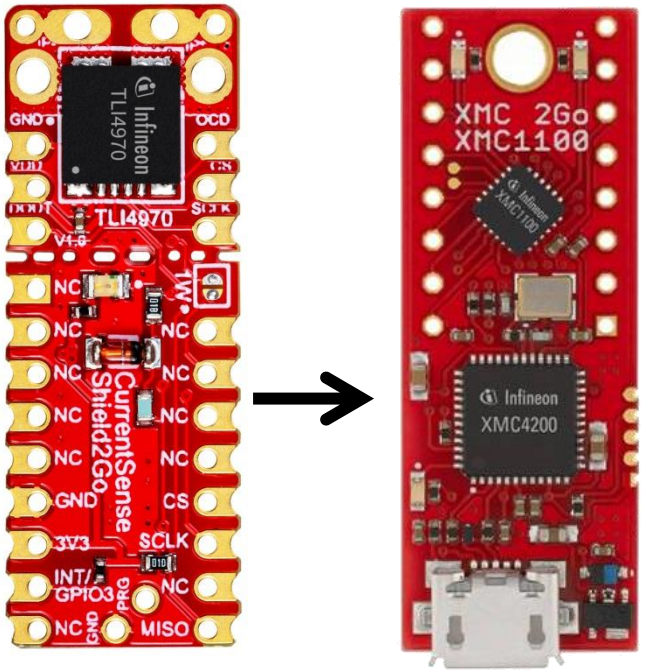
Example with XMC 2Go

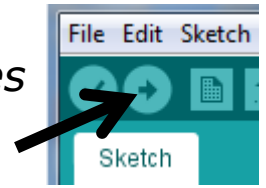
Notes

- The Shield2Go form factor of the Shield2Go evaluation board is directly compatible with the XMC 2Go board
- Stack the TLI4970-D050T4 CurrentSense Shield2Go board on top of the XMC 2Go as shown in the picture
- The additional pin on the left-top side (designated with NC) is left floating
- Using the XMC-for-Arduino Arduino integration, the Arduino library for the TLI4970-D050T4 can be directly used



Steps

- Open one of the examples for the TLI4970-D050T4 from *File – Examples* and select as board *XMC1100 XMC2Go*
- Connect the stacked boards to the PC and press the *Upload* button
- Select the related COM port from *Tools – Port* and open the serial monitor with the set baud rate (see sketch/code with Serial.begin(<BAUDRATE>);)



https://github.com/Infineon/XMC-for-Arduino
https://github.com/Infineon/TLI4970-D050T4-Current-Sensor

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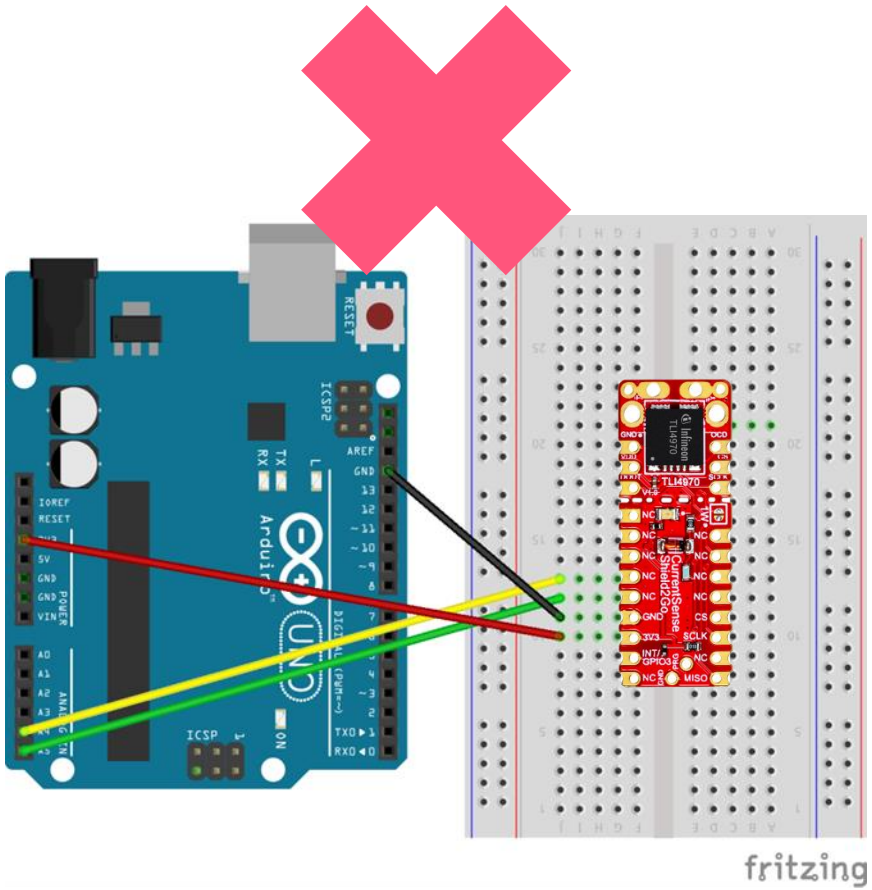
Important Warning

Important Warning

- The TLI4970-D050T4 has a maximum rating of 3.6 V on any pin
- Third party boards with 5 V logic, e.g. the Arduino Uno, cannot be connected to the TLI4970 CurrentSense Shield2Go board directly.
- Even if the power is connected to the 3.3 V pin, the interface lines, e.g. MISO, will still be driven by 5 V
- Please use appropriate level shifting for these boards



Not possible

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