

# 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  $\pm 50$  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).



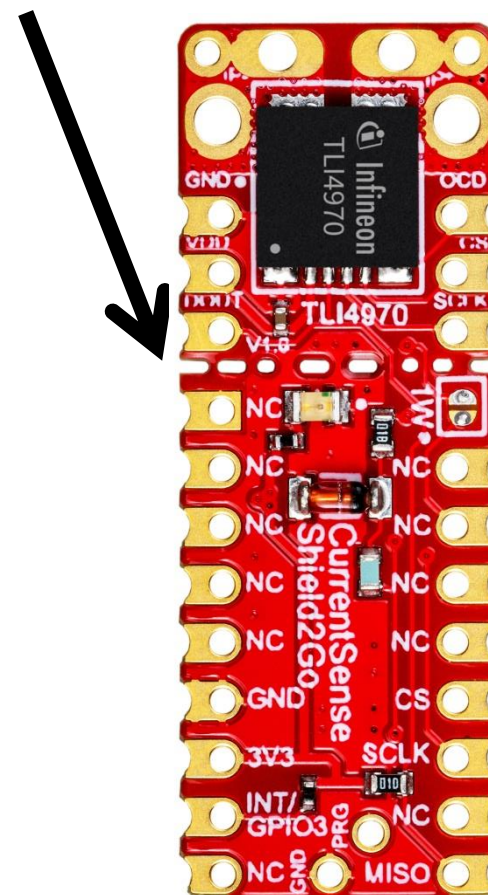
Link to [Datasheet](#) and [Product Page](#)

# 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

Breakable Head



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

Link to [Board Page](#)

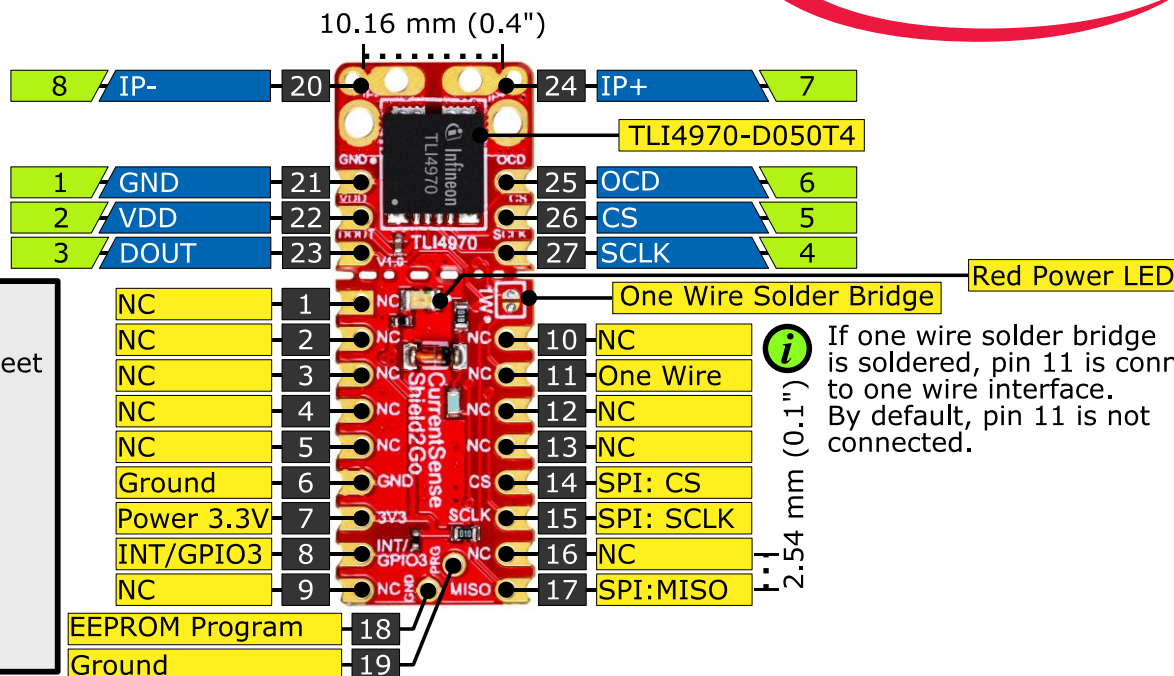
# Evaluation Board PCB Details

The

## TLI4970-D050T4 CurrentSense Shield2Go



**i** Ground pins on board are connected with each other.



### Legend

- Information
- Labelling of Pins in Datasheet
- Pin Number in Datasheet
- Physical Pin Number
- ⚠ Warning
- i Additional Information
- NC Not Connected

**i** If one wire solder bridge is soldered, pin 11 is connected to one wire interface. By default, pin 11 is not connected.

**⚠** The maximum voltage on any pin is 3.6 V.

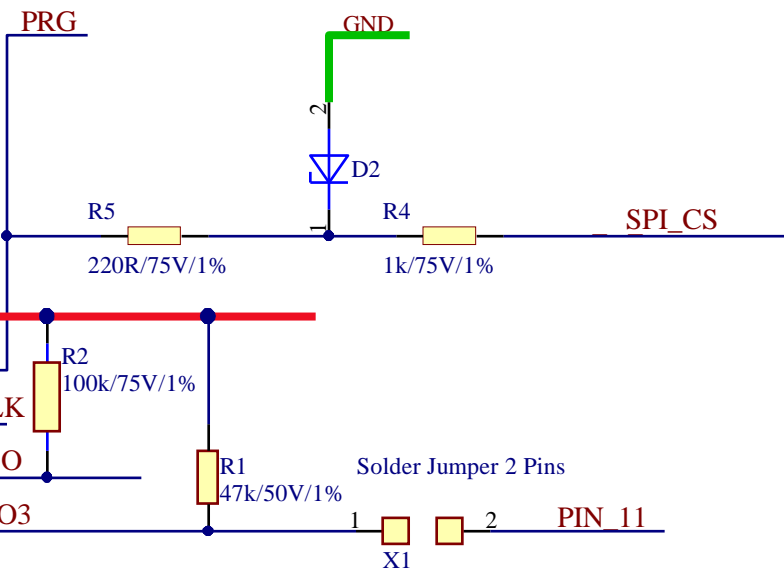
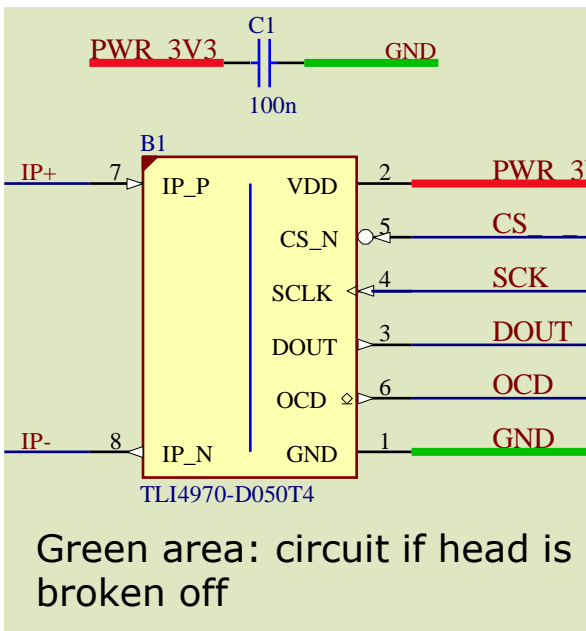
**i** To make the board compatible with the one wire interface of the Current Sensor 2GO kit, solder the one wire solder bridge.

**i** 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.

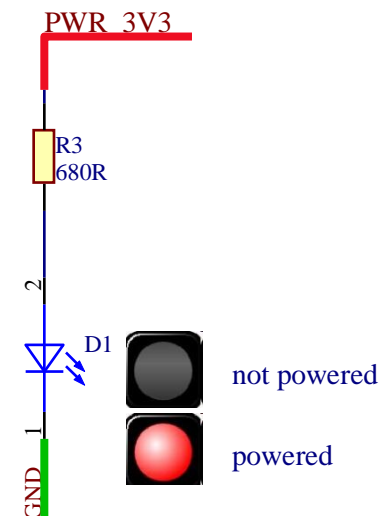
[www.infineon.com](http://www.infineon.com)

# Evaluation Board Schematic

## Current Sensor



## Power Status Indication



# Arduino: The Arduino IDE

## Arduino IDE



Arduino is a hardware-software prototyping environment IDE developed by [arduino.cc](http://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](#)

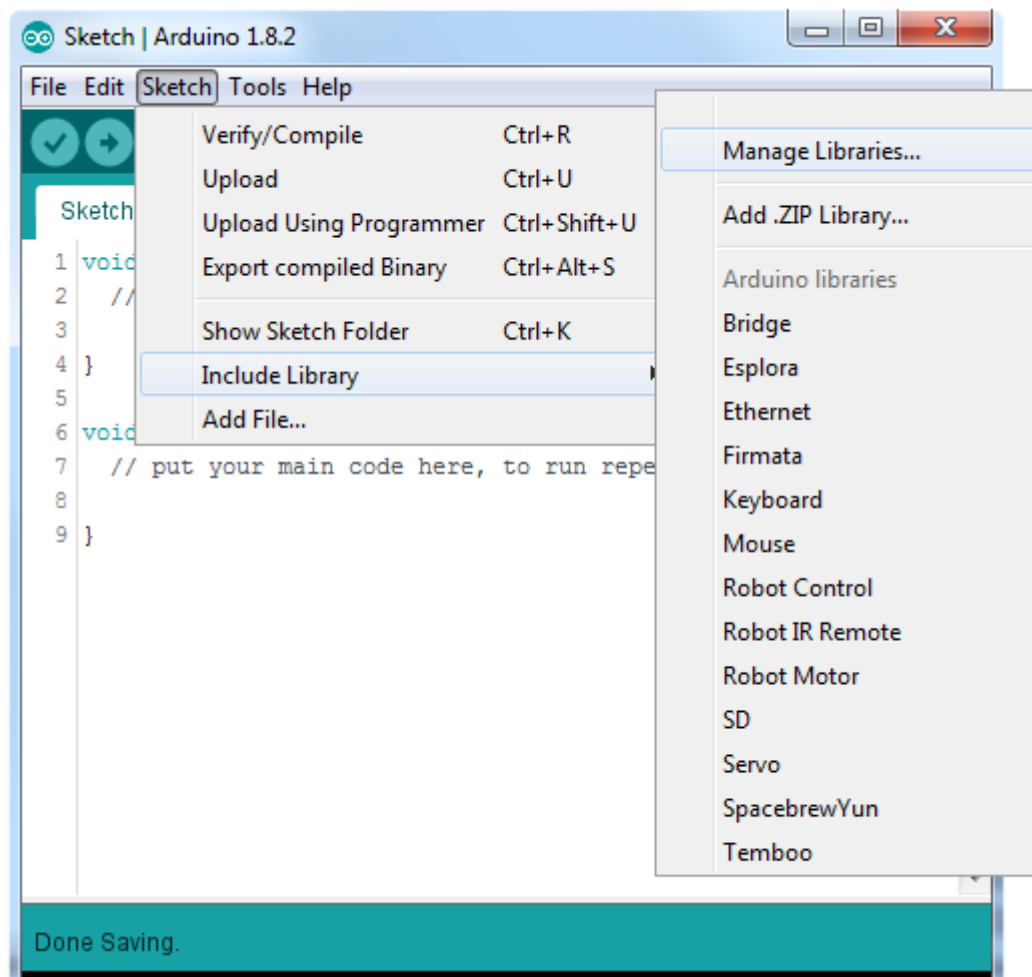
## Arduino Quick Start

- 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

# 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>

# 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



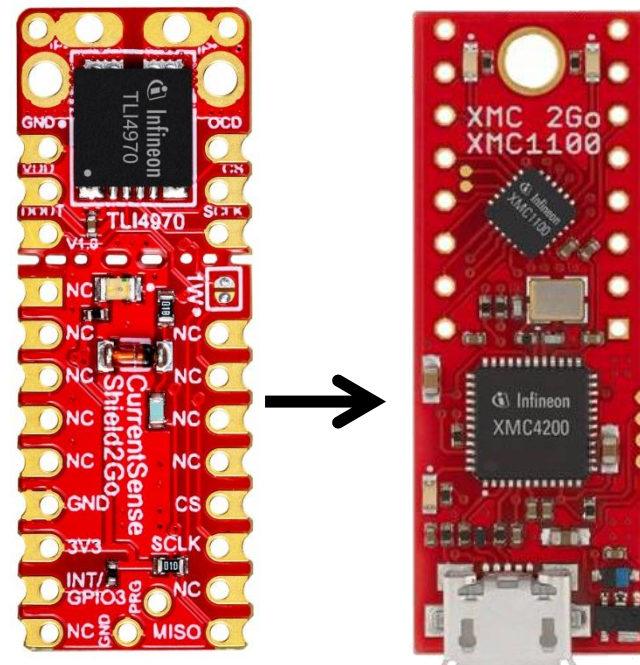
<https://github.com/Infineon/TLI4970-D050T4-Current-Sensor>



# Example with XMC 2Go

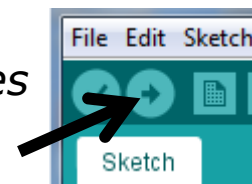
## Notes

- 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>);`);



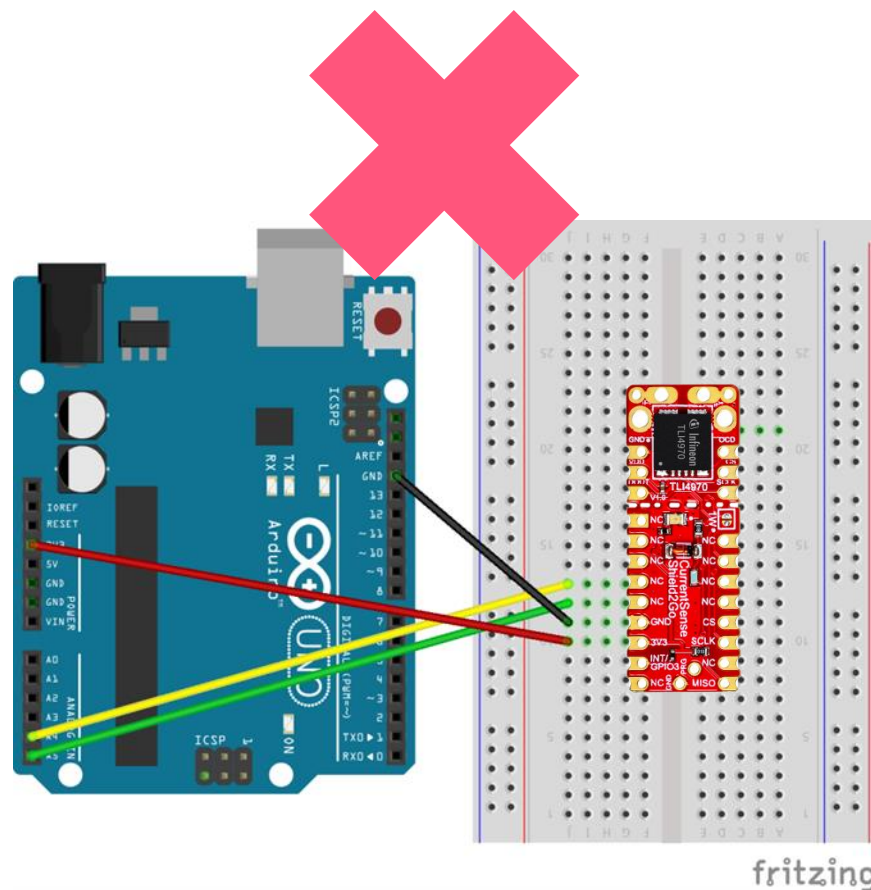
<https://github.com/Infineon/XMC-for-Arduino>

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

# 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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