



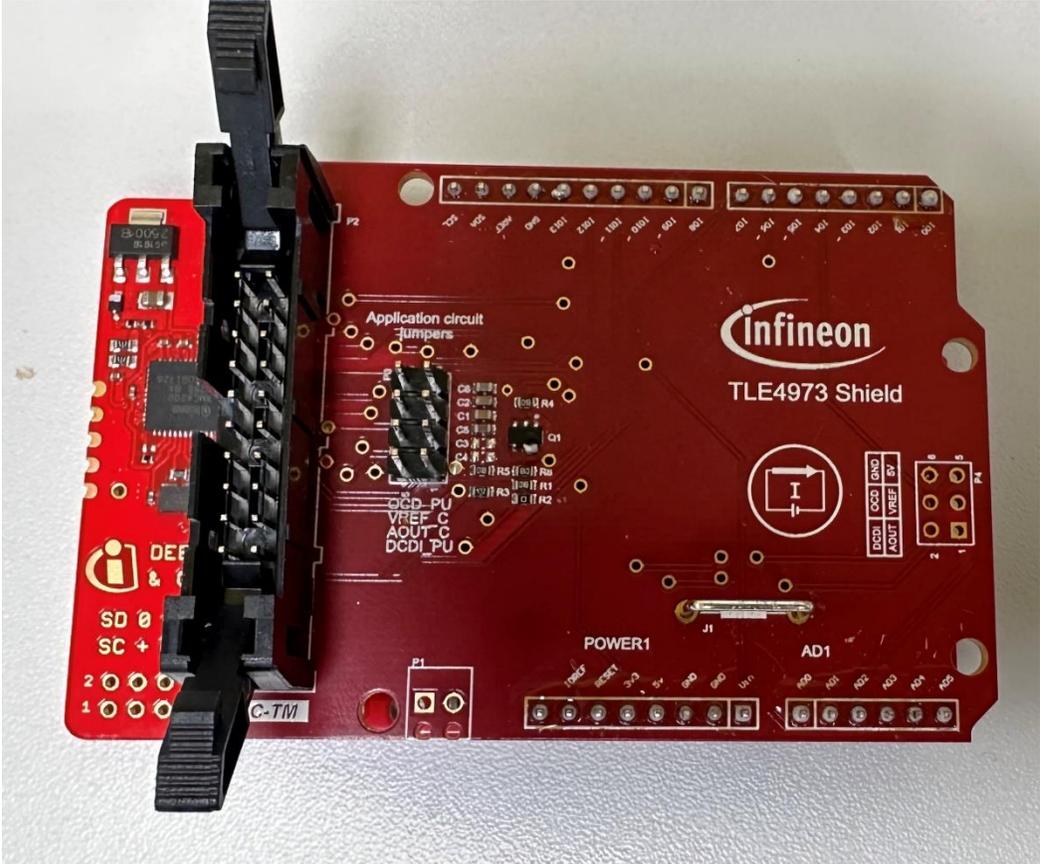
# TLE4973 Bootkit Evaluation Kit Getting Started

2023.06.12



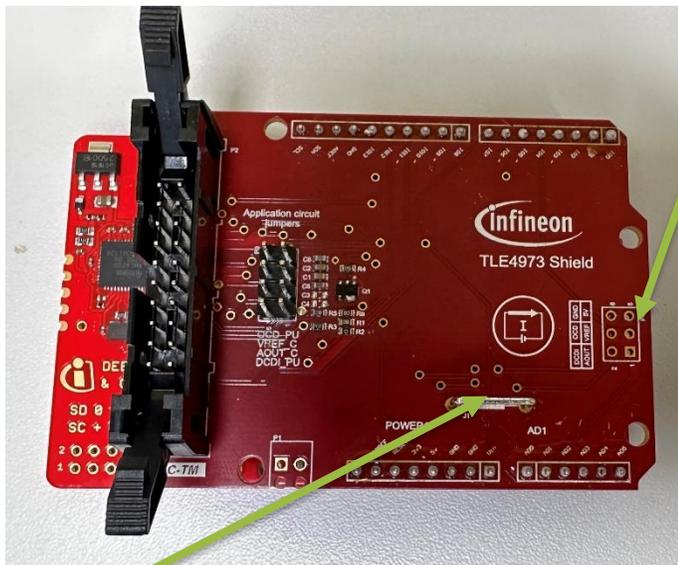
# Content

- The TLE4973 Bootkit is a kit that enables the evaluation of the TLE4973 current sensors.

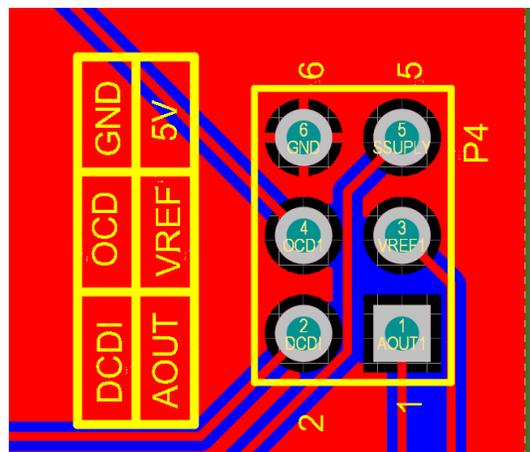


# Content – TLE4973 Bootkit

– TLE4973 Bootkit pin connection:



Connector for single sensor

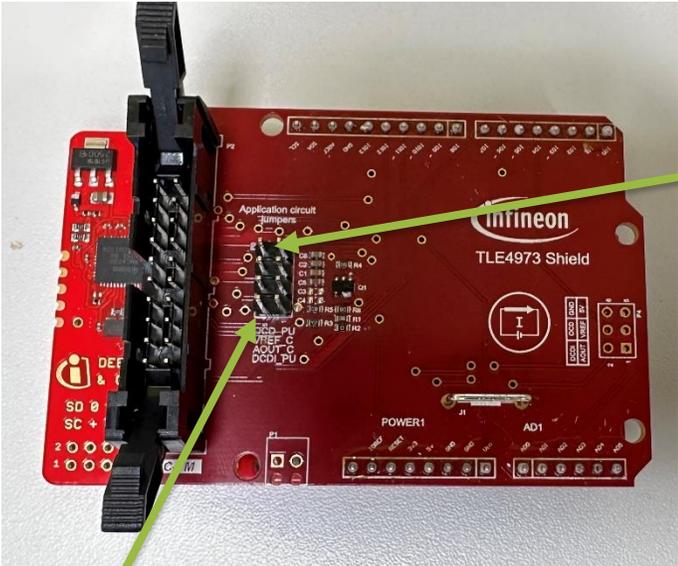


GND Connector for external measurements

Pin	Signal	Pin	Signal
6	GND	5	SSUPPLY
4	OCD1	3	VREF1
2	DCDI	1	AOUT1

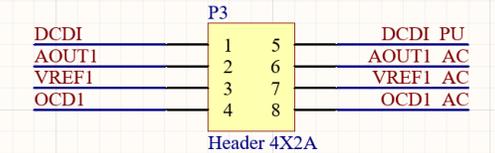
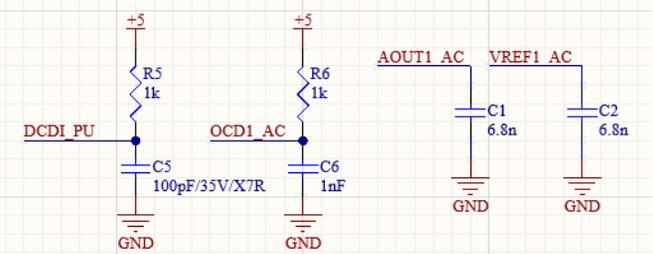
# Content – TLE4973 Bootkit

- TLE4973 Bootkit pin connection:
  - Application circuit connection:
    - If the evalkit is used with standalone sensor you can connect jumpers to include the application circuit for the sensor



Jumper 1

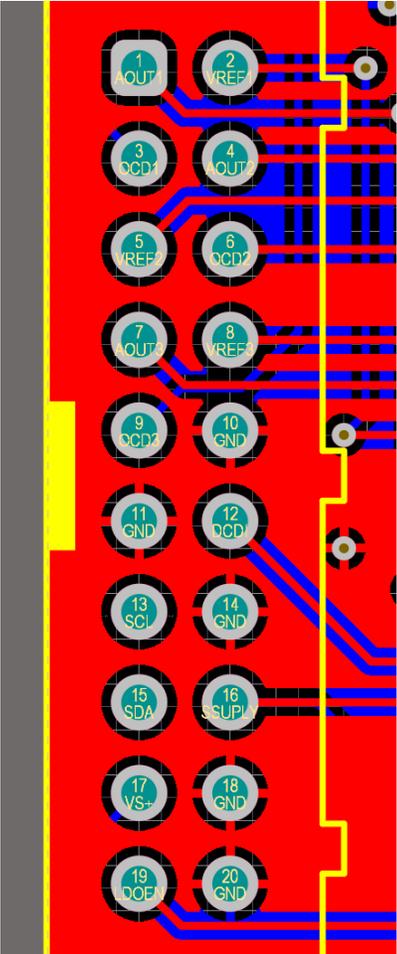
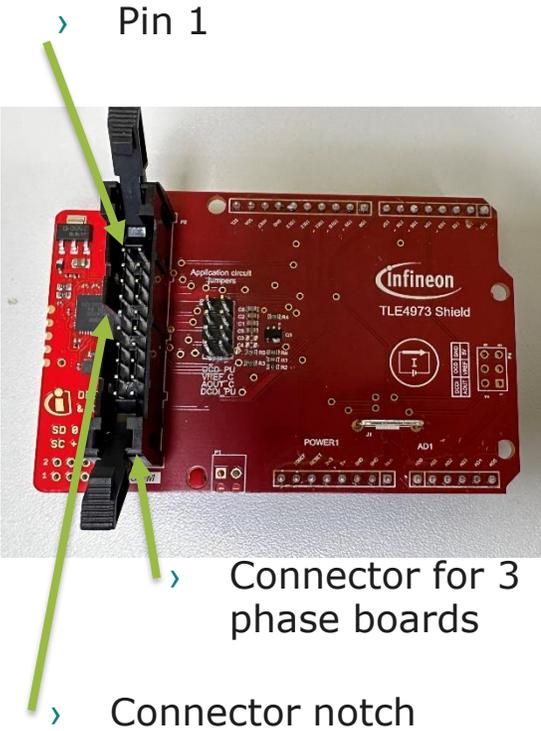
Application circuit jumper connection



Jumper	Function
1	DCDI App Circuit
2	AOUT1 App Circuit
3	VREF1 App Circuit
4	OCD1 App Circuit

# Content – TLE4973 Bootkit

– TLE4973 Bootkit pin connection:



Pin	Signal	Pin	Signal
1	AOUT1	2	VREF1
3	OCD1	4	AOUT2
5	VREF2	6	OCD2
7	AOUT3	8	VREF3
9	OCD3	10	GND
11	GND	12	DCDI
13	SCL	14	GND
15	SDA	16	SSPULY
17	VS+	18	GND
19	LDOEN	20	GND

# Usecase: TLE4973 Bootkit:

- It can be used as independent evaluation kit by connecting sensor board + MCU board together. The provided GUI is plug & play
- It can be used as Arduino shield by plugging the sensor board together with the shield board.

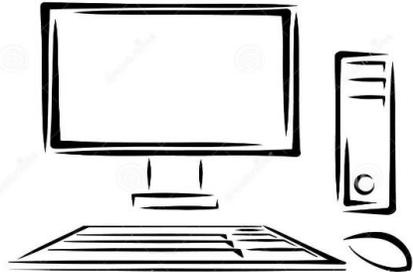


+



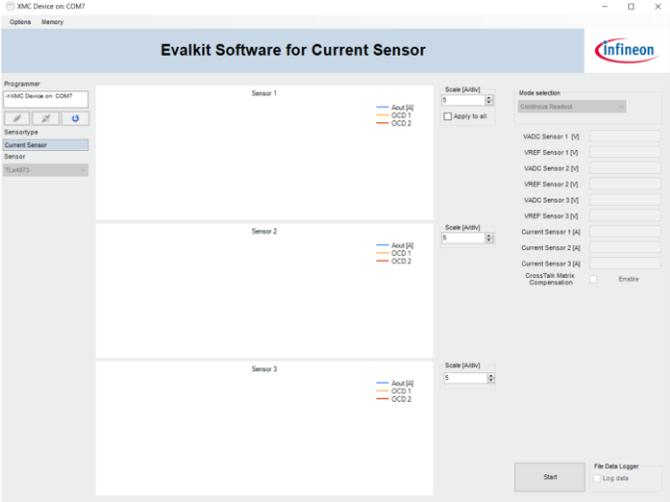
(cable not included)

+



PC running Windows 7 or newer)

→



GUI provided by Infineon

# Usecase: Software -> EEPROM Map View

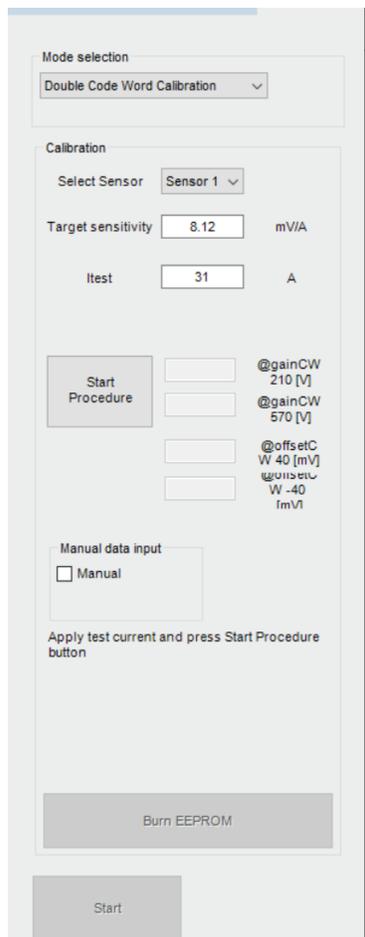
The screenshot shows the 'Eeprom Mapping' window with the following data in the grid:

Address	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Address 64	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0
Address 65	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1
Address 66	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Address 67	1	1	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Address 68	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	1
Address 69	0	0	0	0	1	0	1	1	1	0	0	0	1	0	0	1
Address 70	0	1	0	0	1	1	1	1	0	0	1	0	1	0	1	1
Address 71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address 72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Address 73	0	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1
Address 74	1	1	1	0	0	1	1	1	0	0	0	0	1	1	0	1
Address 75	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
Address 76	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Address 77	0	1	0	0	1	1	0	0	1	1	0	0	1	1	1	0
Address 78	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Address 79	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Address 80	1	0	1	1	1	0	1	1	0	1	1	0	0	0	0	0
Address 81	0	1	0	0	1	1	1	1	1	0	0	0	0	0	1	1
Address 82	0	0	0	0	1	1	1	1	0	0	1	0	1	0	1	1
Address 83	0	0	0	0	1	1	1	1	0	0	1	0	1	0	1	1

- › View EEPROM Map content
- › Change EEPROM Map content
- › Store/Load EEPROM Map content
- › Select each sensor out of the 3 phase boards (dropdown menu contains only sensors detected as connected)
- › Each memory address contains brief description of fields

# Usecase: Software -> Double code word calibration

- › Double code word calibration procedure
  - › Automatic (Manual checkbox is unchecked; left picture)
    - › Select sensor that needs calibration
    - › Fill target sensitivity textbox with desired sensitivity value
    - › Fill Itest textbox with the value of the current used for calibration
    - › Follow pop-up instructions
    - › At the end of the procedure, new gbase and obase values will be provided in the lower textbox
    - › Press Burn EEPROM button to burn new values in sensor eeprom
    - › Select a different sensor and restart calibration
  - › Manual (Manual checkbox is checked; right picture)
    - › Select sensor that needs calibration
    - › Fill target sensitivity textbox with desired sensitivity value
    - › Fill Itest textbox with the value of the current used for calibration
    - › Fill VDD textbox with sensor VDD value (measured with multimeter)
    - › Press Start Procedure button
    - › Popup will appear and ask for multimeter readout of sensor Aout
    - › 6 measurements are needed during calibration
    - › At the end of the procedure, new gbase and obase values will be provided in the lower textbox.
    - › Press Burn EEPROM button to burn new values in sensor eeprom



Mode selection  
Double Code Word Calibration

Calibration  
Select Sensor: Sensor 1

Target sensitivity: 8.12 mV/A

Itest: 31 A

Start Procedure

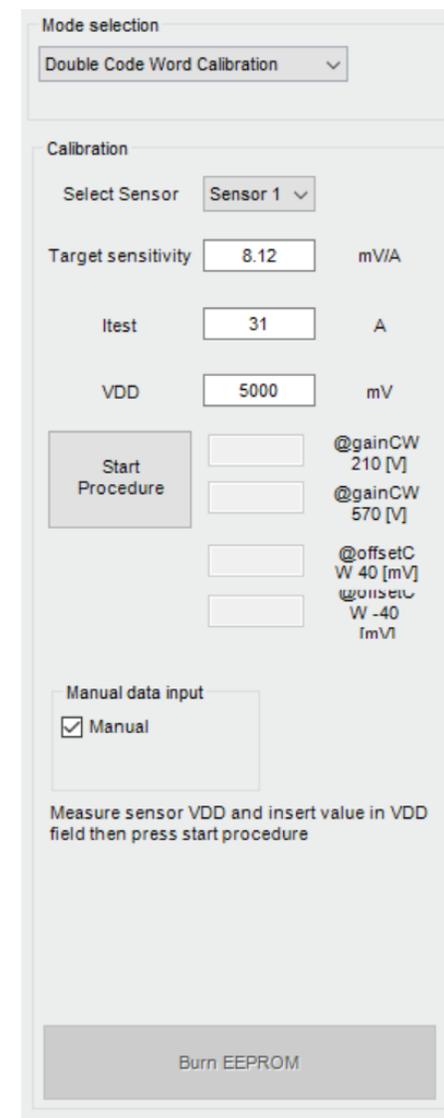
@gainCW 210 [V]  
@gainCW 570 [V]  
@offsetCW 40 [mV]  
@offsetCW -40 [mV]

Manual data input  
 Manual

Apply test current and press Start Procedure button

Burn EEPROM

Start



Mode selection  
Double Code Word Calibration

Calibration  
Select Sensor: Sensor 1

Target sensitivity: 8.12 mV/A

Itest: 31 A

VDD: 5000 mV

Start Procedure

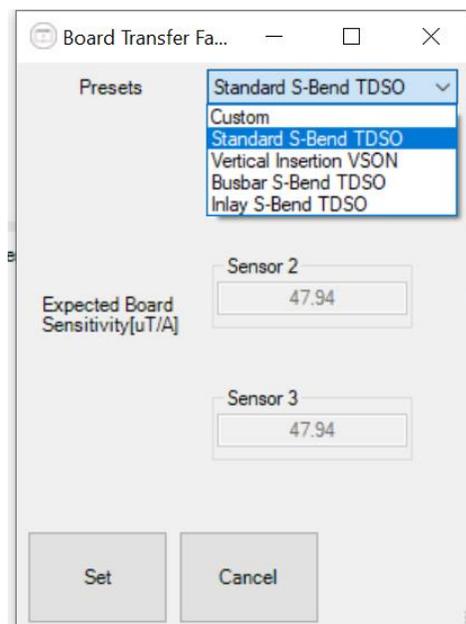
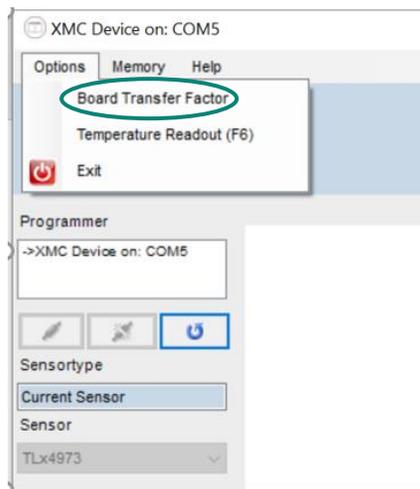
@gainCW 210 [V]  
@gainCW 570 [V]  
@offsetCW 40 [mV]  
@offsetCW -40 [mV]

Manual data input  
 Manual

Measure sensor VDD and insert value in VDD field then press start procedure

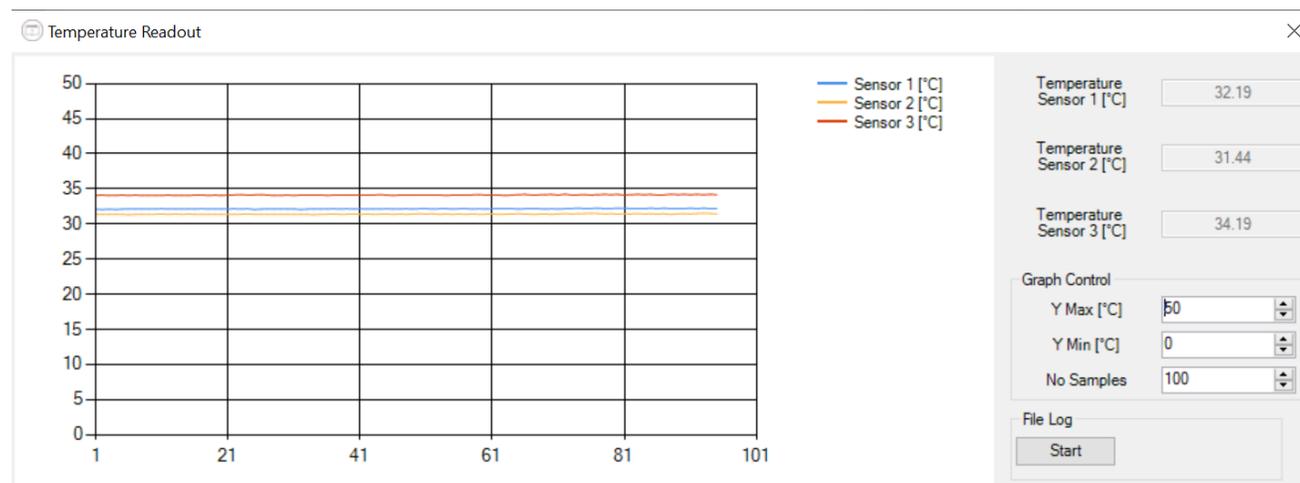
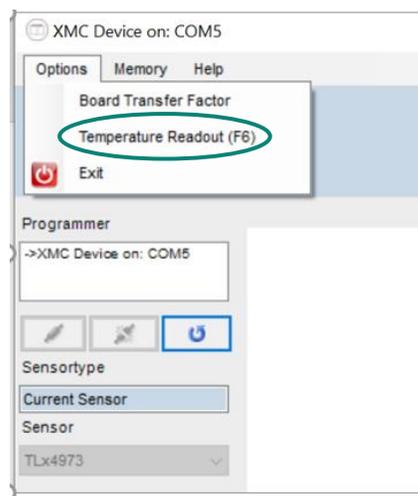
Burn EEPROM

# Usecase: Software -> Board transfer factor



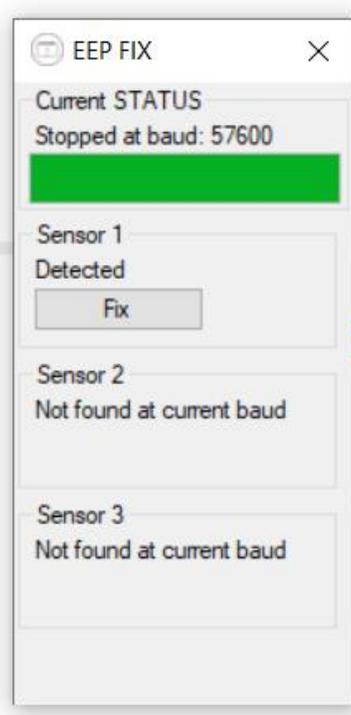
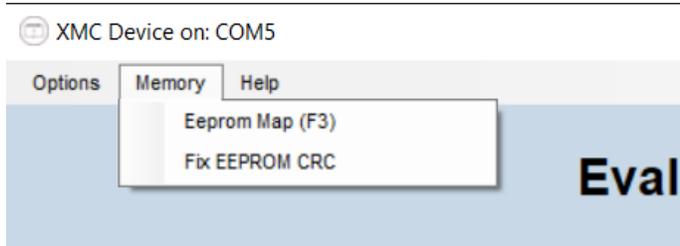
- › Options -> Board transfer factor menu item
- › In order for the evalkit to calculate the current in amps, the board transfer factor has to be known
- › 5 Items available
  - › Custom
    - › For user custom setup. Value has to be known/calculated
  - › 4 Presets for Infineon provided boards

# Usecase: Software -> Temperature / registers Readout



- › Options -> Temperature /registers readout
- › Internal temperature / registers value

# Usecase: Software -> EEPROM fix



- › In case that the EEPROM is programmed with a wrong EEPROM CRC, the sensor doesn't load the EEPROM content at startup. That leads to communication errors on the DCDI line. In this state, it is impossible to communicate with the sensor and restore the correct EEPROM content
- › The Evalkit software provides a tool to identify sensors with communication issues and fix the wrong EEPROM CRC, allowing the sensor to communicate again through DCDI
- › Memory -> Fix EEPROM CRC
- › Click on "Fix" under detected sensors

