

SIM100 Quickstart Guide

Quick Start

The SIM100 evaluation kit is designed for use with Microsoft Windows-based systems. The evaluation kit contains the following items:

1. SIM100 module
2. Serial to CAN dongle
3. FTDI cable
4. Voltage cables

Getting Started

1. Plug the 4-pin connector on the 4-strand Serial to CAN cable into the SCD (Serial to CAN dongle). Make sure that the pin attached to the black wire is aligned with the pin labeled “GND” on the dongle.

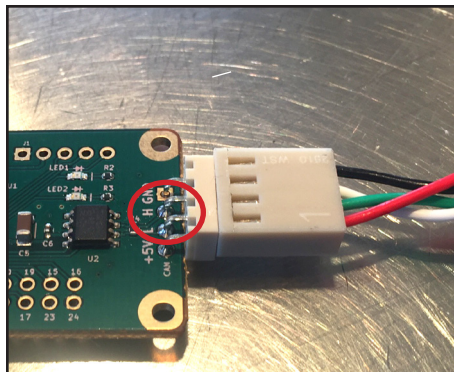


Figure 1: Connecting Serial to CAN cable to SCD

2. Plug the other end of the Serial to CAN cable into the CAN connector on the SIM100 module. You should hear a “click” sound when the connector has been properly connected.

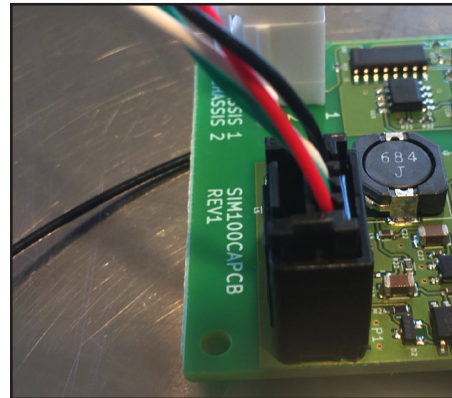


Figure 2: Connecting Serial to CAN cable to SIM100

3. Plug the 6-pin connector on the FTDI USB to Serial cable into the 6-pin header connector on the SCD. Align the black wire on the FTDI cable with “GND” on the SCD, as shown in Figure 3.

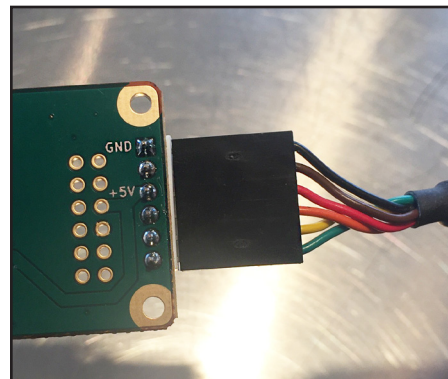


Figure 3: Connecting FTDI cable to SCD

4. Plug the USB side of the FTDI cable into the computer you will be using. Windows should auto detect the drivers and install them for this device.

The blue LED light on the SIM100 module should now be blinking. If not, please re-check steps 1-3 to ensure that all cables have been properly connected.

Voltage cables

The SIM100 evaluation kit comes with three voltage cables (red, black, and green with yellow stripes) that are to be connected from the module to be tested.

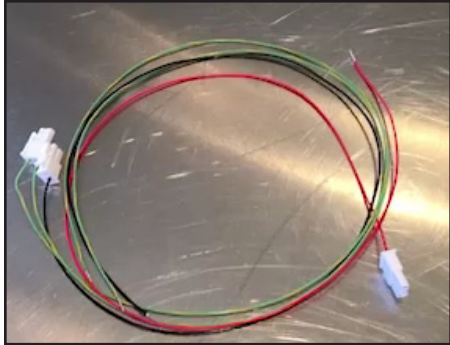


Figure 4: Three voltage cables in the SIM100KIT; colors red, black and green with yellow stripes

The red voltage cable connects to the positive terminal of the battery. Plug the connector on the red voltage cable into the connector on the SIM100 module marked Vx1. When the connector is plugged all the way in, you should hear a “click” sound.

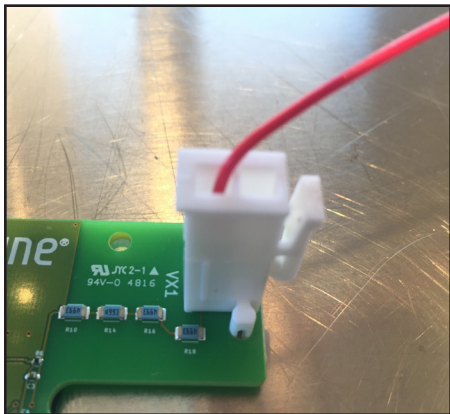


Figure 5: Red voltage cable connected to Vx1 on the SIM100 module

The black voltage cable connects to the negative terminal of the battery. Plug the connector on the black voltage cable into the connector on the SIM100 module marked Vx2. When the connector is plugged

all the way in, you should hear a “click” sound.

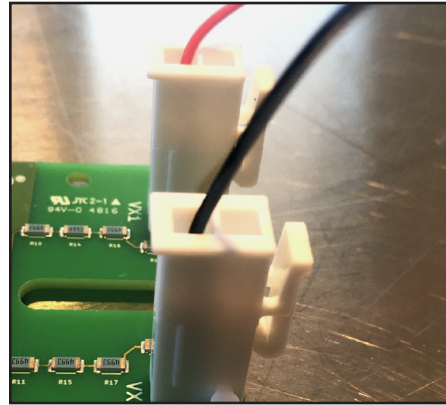


Figure 6: Black voltage cable connected to Vx2 on the SIM100 module

The green and yellow-striped voltage cable provides the two chassis connections. Plug the connector on the green and yellow striped voltage cable into the connector on the SIM100 module marked Chassis 1 / Chassis 2. When the connector is plugged all the way in, you should hear a “click” sound.

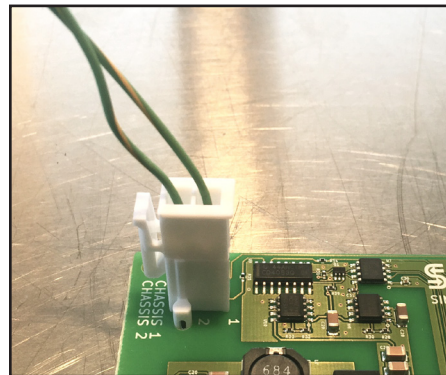


Figure 7: Green and yellow-striped voltage cable connected to Chassis 1 / Chassis 2 on the SIM100 module

SIM100 Software Quickstart Guide:

In order to exercise the SIM100 on a Windows PC, the appropriate software must be installed.

Sendyne SIM100 Quickstart Guide

Software Installation

1. First install the latest Microsoft .NET framework, available here:

<https://www.microsoft.com/net/download/framework>

2. Once the framework is installed, download the SIM100 control software SIM100_GUI_v0.9.10_Release.zip from Sendyne’s website.

Available here: <http://www.sendyne.com/Products/SIM100%20Isolation%20Monitor.html>

Scroll down to where it says “Sendyne SIM100SFT Control Software” and press “Click here to download.”

3. Extract the contents of SIM100_GUI_v0.9.10_Release.zip into the desired destination folder.

4. Double click on the GUI (graphic user interface) executable called SIM100_GUI.exe (this should be the only file with the Sendyne logo as an icon). The SIM100_GUI.exe should not be moved outside of the folder (see fig. 8).

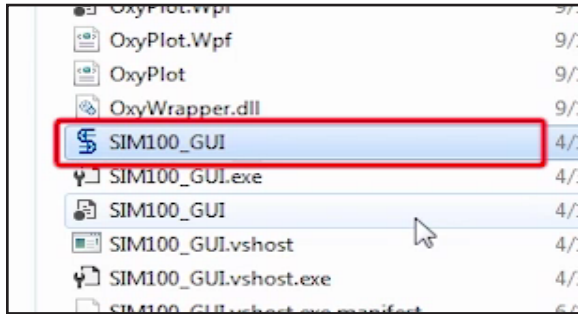


Figure 8: SIM100 GUI executable file

Once you have opened the application, the home page should be displayed (see fig. 9).

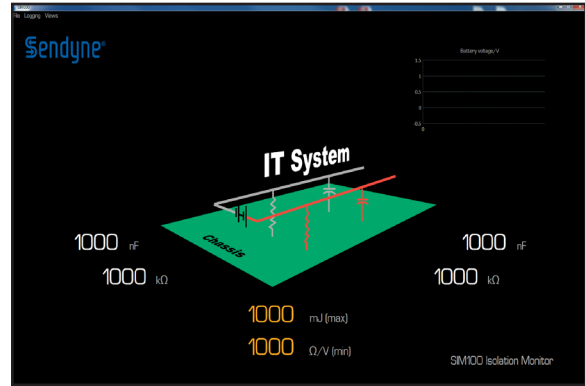


Figure 9: SIM100 GUI home screen

5. On the top left-hand corner, click on the “File” menu. On the drop-down menu, select the “Settings.” A settings window should appear on the screen (see fig. 10).

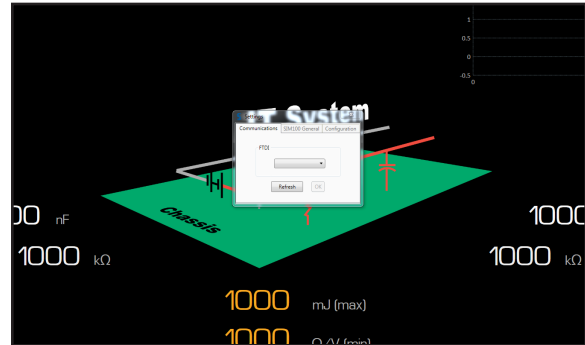


Figure 10: SIM100 GUI settings window

6. In the settings window, under the “Communications” tab, make sure to select the FTDI cable provided with your kit.

If the GUI was able to connect to the module, then the “SFP General” and “Configurations” tabs will no longer be grayed out. Otherwise, a “Failed to Connect” pop-up window will show up. In which case, please ensure that all the cables have been connected correctly and the correct FTDI has been selected.

7. Click on the “SIM100 General” tab to view device specific information, such as the module’s serial

number, firmware version, and part name of the device.

8. To start polling the device, close out of the settings window and click on the “File” tab once again. On the drop-down menu select “Start”. Now the main page of the GUI will start to show information polled from the SIM100 module.

Note: Please allow time for the SIM100 module to update its measurements. It can take approx. 6 seconds.

SIM100 GUI Software Overview

The home screen of the SIM100 GUI reports six values, and displays a graph that shows the battery voltage over time. The 6 reported values are:

1. Estimated isolation capacitance between negative terminal of the battery and chassis; unit expressed in nF,
2. Estimated isolation resistance between negative terminal of the battery and chassis; unit expressed in k Ω ,
3. Maximum energy that can be stored in the Y capacitors between the battery and the chassis at the higher value between the maximum voltage read or the working voltage saved to the module; unit expressed in mJ (max),
4. Minimum isolation resistance between IT (isolated terra) ground system and chassis; unit expressed in Ω /V (min),
5. Estimated isolation capacitance between positive terminal of the battery and chassis; unit expressed in nF,
6. Estimated isolation resistance between positive terminal of the battery and chassis; unit expressed in k Ω .

The two values on the left side of the home screen reports the polled values of the negative terminal of

the battery. The two values on the right side of the home screen reports the polled values of the positive terminal of the battery. The two values in the center of the screen (yellow text) reports the energy stored in the Y capacitors and the isolation resistance.

Error Flags and Uncertainty

To navigate to the error flags window of the SIM100 GUI, click on the “Views” tab. On the drop-down menu, select “Status”. Once “Status” has been selected, the GUI will navigate to the Status screen.

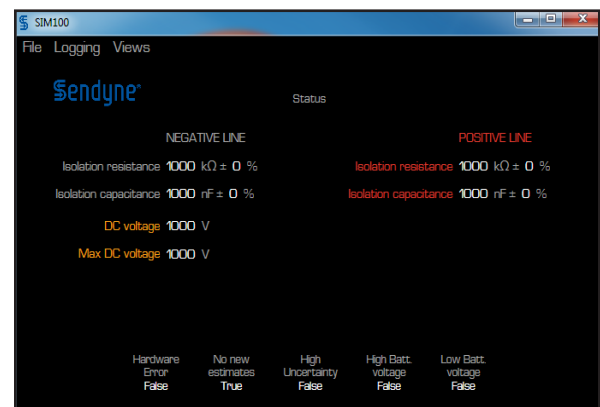


Figure 11: SIM100 GUI Status screen

The upper half of the status screen reports the estimated value of the isolation resistance and isolation capacitance of the negative and positive terminals of the battery. Next to each value, the uncertainty of each estimated value is reported; unit expressed in %.

In the case of high uncertainty, the uncertainty flag will read “true” (see below for more information). DC Voltage and Max DC Voltage on the screen refer to the current value of battery voltage and the maximum voltage observed since a SIM100 restart.

The bottom section of the status screen reports the error flags. The error flags are reported as “True” or “False”, indicating if the bit associated with the error was set or not.

The reported error flags are:

Hardware Error: Detects error in the hardware of

the system. If the hardware error flag is triggered, inspection and appropriate actions should be taken.

No New Estimates: “The No New Estimates” flag will be triggered if the SIM100 was polled for new values before the module has completed its calculations (can take up to approx. 6 seconds). In this situation, the values that are reported are the same estimates provided prior to the new request.

High Uncertainty: If the uncertainty of the reported values is higher than 5% the high uncertainty flag will be triggered.

High Battery Voltage: When the measured voltage of the systems is higher than the maximum voltage saved to the module, the high battery voltage flag will be triggered.

Low Battery Voltage: When the measured voltage of the system is below 15 V, the low battery voltage flag will be triggered.

Hardware Errors

The hardware errors screen will show the various potential errors in the hardware setup. The description of the various errors can be found in the SIM100 CAN2.0B Protocol documentation.

To navigate to the hardware errors screen, click on the “Views” tab. On the drop-down menu select “HW Errors”.

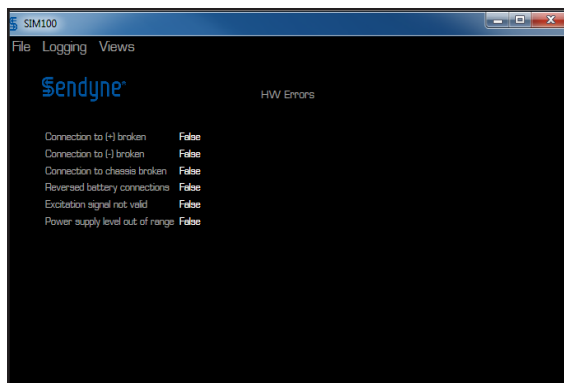


Figure 12: SIM100 GUI hardware error screen

Logging

To enable or disable logging, click on the “Logging” tab. The logging tab will open a file save dialog box, which will ask the user where to save the log file. The log file will include all values the GUI displays as a CSV (comma separated values) file.

Firmware Update

The firmware update screen shows the firmware version that is currently on the SIM100 module, the unique serial number and part number of the module.

To navigate to the firmware update screen, click on the “Views” tab. On the drop-down menu, select “FW Update”.

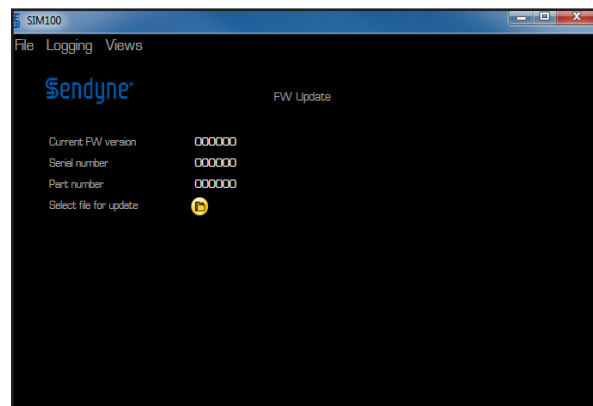


Figure 13: SIM100 GUI About pop-up window

The “About” window will show the version of the GUI that is running. To navigate to the “About” window, click on the “File” tab. On the drop-down screen, select “About.”

Revision History

Revision Table

Revision Number	Date	Comments
0.4	10/24/2017	Evaluation kit items
0.3	10/18/2017	Implementation of links in Software Guide
0.2	10/17/2017	Modification of Software Guide
0.1	4/18/2017	Preliminary; Initial release

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Patents

US Pat. 8,373,408
US Pat. 8,350,552
US Pat. 8,289,030
Other patents pending

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