

ACT5101QI GUI Rev1.0 User Guidelines

Description

This document shows basic guidelines to use the Active-Semi's Graphic User Interface software (GUI) to control the ACT5101QI EVK from a Windows-based PC with an Active-Semi's USB-to-I²C dongle.

GUI Setup

Install the Active-Semi's USB-to-I²C dongle driver by following the guide on "Active-Semi GUI and Dongle Driver Installation.pdf" file.

Plug the Active-Semi's USB-to-I²C dongle into PC's USB port and I²C terminal to I²C connector on ACT5101QI EVK. Power up the EVK with an appropriate voltage, make sure the DUT started up properly.

In the GUI folder, open the "ACT5101QI GUI Rev1.0.exe" to invoke the software. Below screen would show up, make sure the USB-to-I²C dongle is recognized by PC with status as below RED circle in **Figure 1** below.

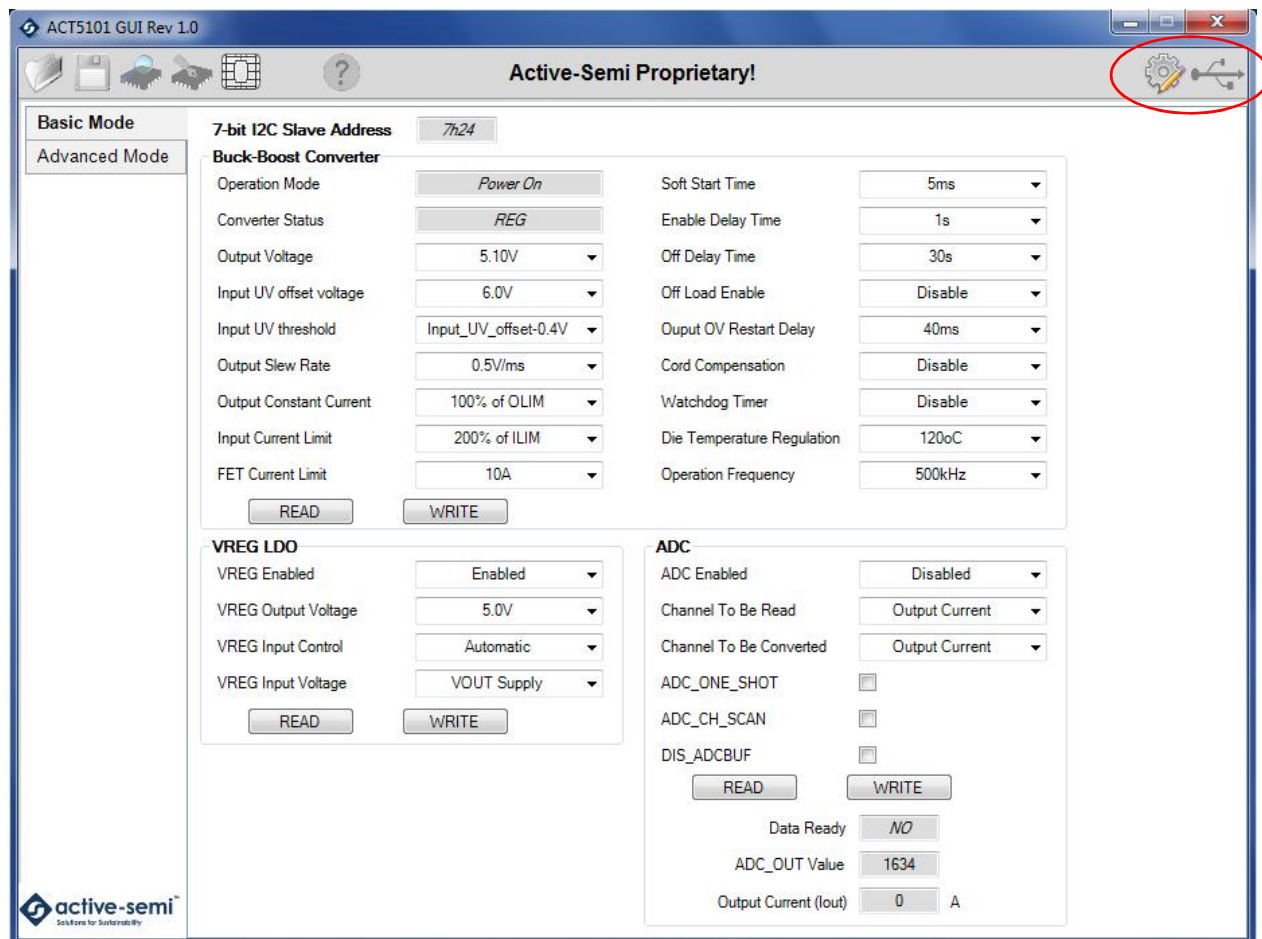


Figure 1: ACT5101QI GUI

Besides the USB indicator on the top right corner is the gear shaped button that allows the user to config the parameters for Rcs_in, Rilim, Rcs_out, Rolim. Please refer to charge current and input current circuits in the datasheet for reference design and application.

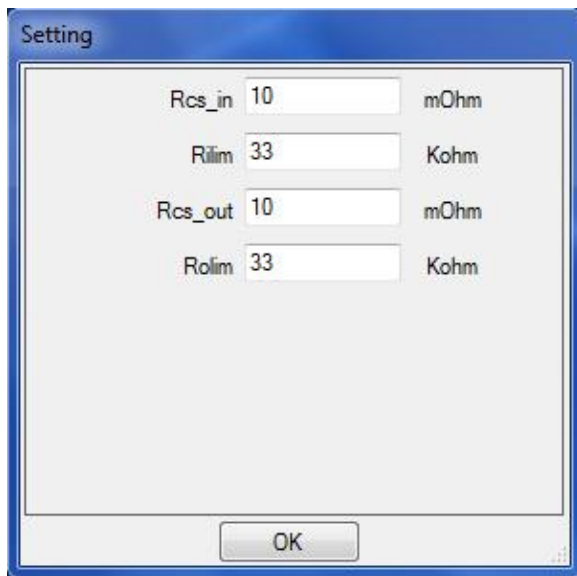


Figure 2: Setting window

Operating Functions

The GUI has 5 functional buttons displayed as icons on the top left corner, with order from left to right: Open, Save, Read, Write, Load as seen below in **Figure 3**.



Figure 3: Functional Buttons

Open Function

Open function allows user to open an ACT5101QI's register information data .iact or .xml files. The file should be either

provided by Active-Semi or saved by the same software previously.

Save Function

Save function allows user to save the ACT5101QI's register information to an .iact or .xml file. Active-Semi recommends user to save the registers read back to an .iact file before implementing any adjustments.

Read Function

Read function allows user to read all the I²C registers of the ACT5101QI under test (DUT) and update to the GUI. **Active-Semi recommend user always to click "Read" after powering up the EVK.**

Write Function

Write function will write all the setting on the GUI to a powered DUT. After changing value on the GUI, click "Write" button to transfer all settings to the IC via I²C.

Read/Write Single Register

In Advanced mode, beside the "Write" button to write all I²C registers, ACT5101QI GUI also supports write or read a single register. **Figure 6** in page 5 demonstrates how to read or write to only one register, this particular case reading or writing to register 0x02. Point the mouse to the bit and right-click, a small "Read/Write" pop-up window will appear. Select "Read" to read only this register or select "Write" to write the value of this register to the IC.

Load Function

Load function combine open and write functions, allowing user to open and write a register information data .iact or .xml to the ACT5101QI under test at one click.

Basic Mode

The GUI will startup in Basic Mode screen. In Basic Mode, user can easily change the register setting using options in drop-boxes or check/uncheck check-boxes. For check-boxes, left-click to check or uncheck check-boxes. For drop-boxes, left-click to the small arrow next to the value, a drop down list will show up to display all possible option to choose from. User may need to scroll up/down to find the target value and left-click to select it.

Example in **Figure 4** below, user click on to the drop down arrow to select the option as below for different termination voltage voltages.

Besides the read/write function on the main menu, there are options to read/write by section as shown below in **Figure 4** by clicking on Read/Write buttons under each section, namely Buck-Boost Converter, VREG LDO, and ADC.

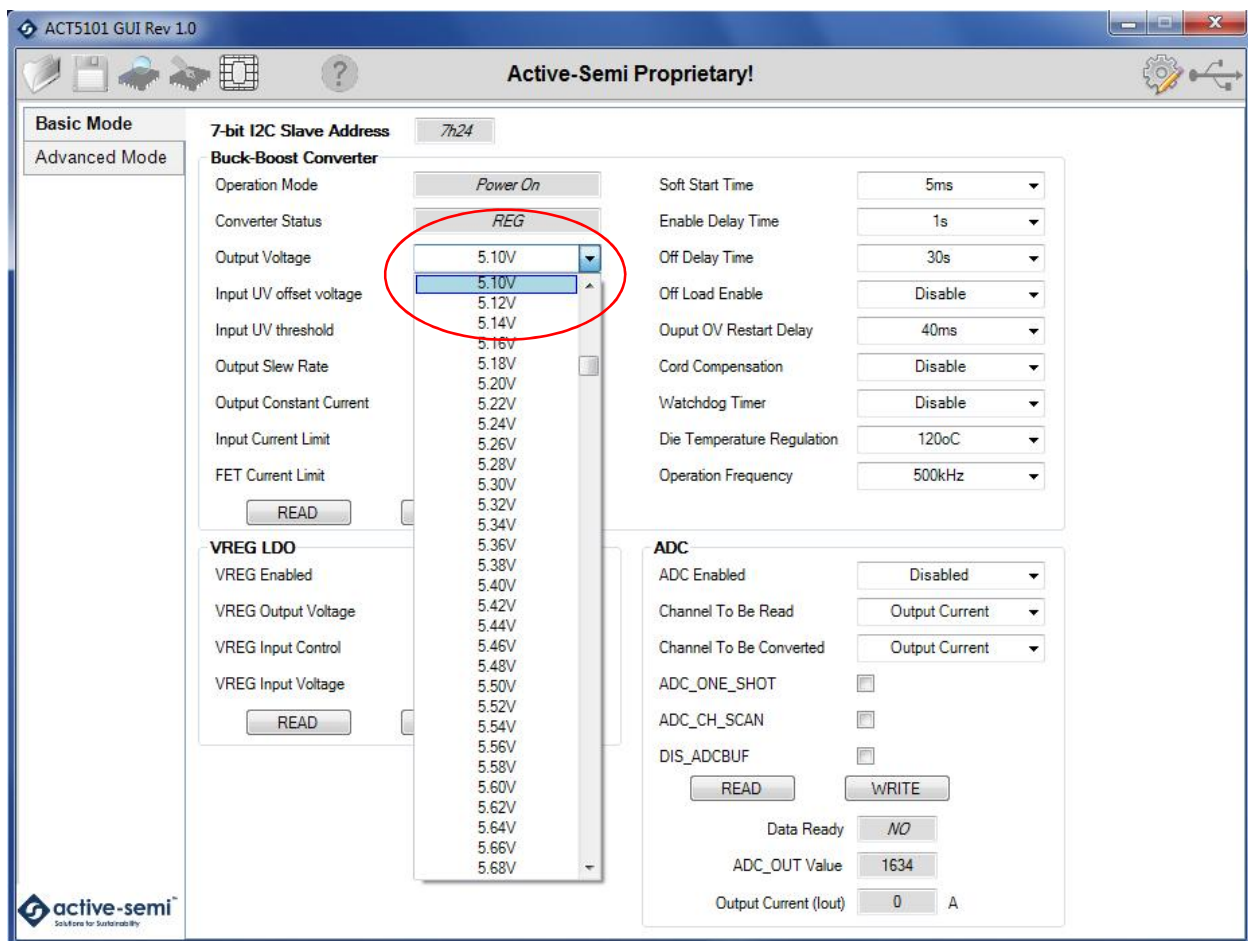
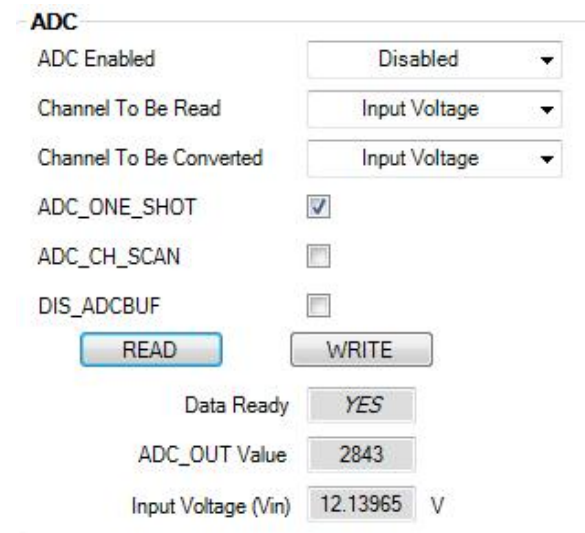


Figure 4: ACT5101QI GUI Basic Mode

The GUI for ACT5101QI also provide users with access to the ADC function. There are two options: one shot conversion and auto scanning conversion, which can be selected by ticking in ADC_ONE_SHOT or ADC_CH_SCAN boxes. DIS_ADCBUF should always be unchecked. The drop down menus allow users to enable/disable the ADC function, the channel to convert and the channel to read. The parameters that can be read are input current and voltage, output current and voltage, die temperature, ADC input and AGND. Click Write to write to I2C registers and click Read to show the results. For ADC one shot reading, the ADC Enabled parameter resets to Disabled after one reading, remember to enable it again before processing another reading. In the example shown in **Figure 5**, the user select to read a one shot conversion of the Output voltage (Vbat). Please refer to ADC function description in the datasheet for more information.

For ADC one shot reading, Channel to be read and Channel to be converted should be the same, while in ADC scan mode, all channel are converted, hence the channel to be converted is not taken into account. **Note that before reading a new parameter, it is required to click Write and Read buttons again for correct results, changing configuration without clicking write and read may result in incorrect values in the result box.**



ADC	
ADC Enabled	Disabled ▼
Channel To Be Read	Input Voltage ▼
Channel To Be Converted	Input Voltage ▼
ADC_ONE_SHOT	<input checked="" type="checkbox"/>
ADC_CH_SCAN	<input type="checkbox"/>
DIS_ADCBUF	<input type="checkbox"/>
<div> <div>READ</div> <div>WRITE</div> </div>	
Data Ready	YES
ADC_OUT Value	2843
Input Voltage (Vin)	12.13965 V

Figure 5: ADC section

Advanced Mode

User can access to all I²C register in bit level by selecting the “Advanced Mode” tab. To change the registers, left click on the “bit name” button to flip the bit value between “0” and “1”. Refer to the ACT5101QI datasheet for functionality of each bit. User is required to fully understand each bit/register function.

In the example shown in **Figure 6** below, user selects “Advance Mode” then left click the EN_OVERRIDE button to flip bit, then “right-click” to write or read this 0x0E register.

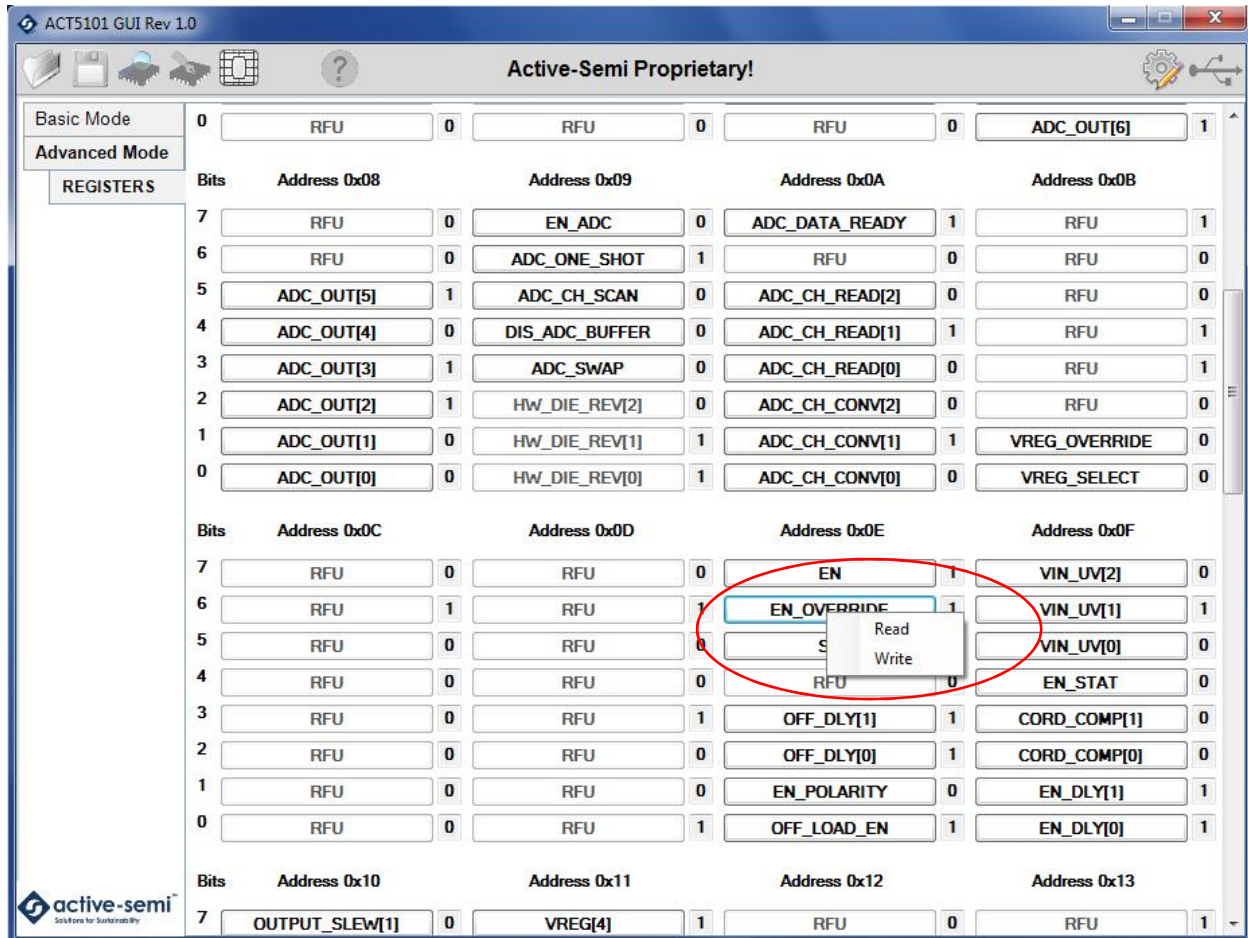


Figure 6: ACT5101QI GUI in Advanced Mode