

Sitrus Technology

橙科微电子

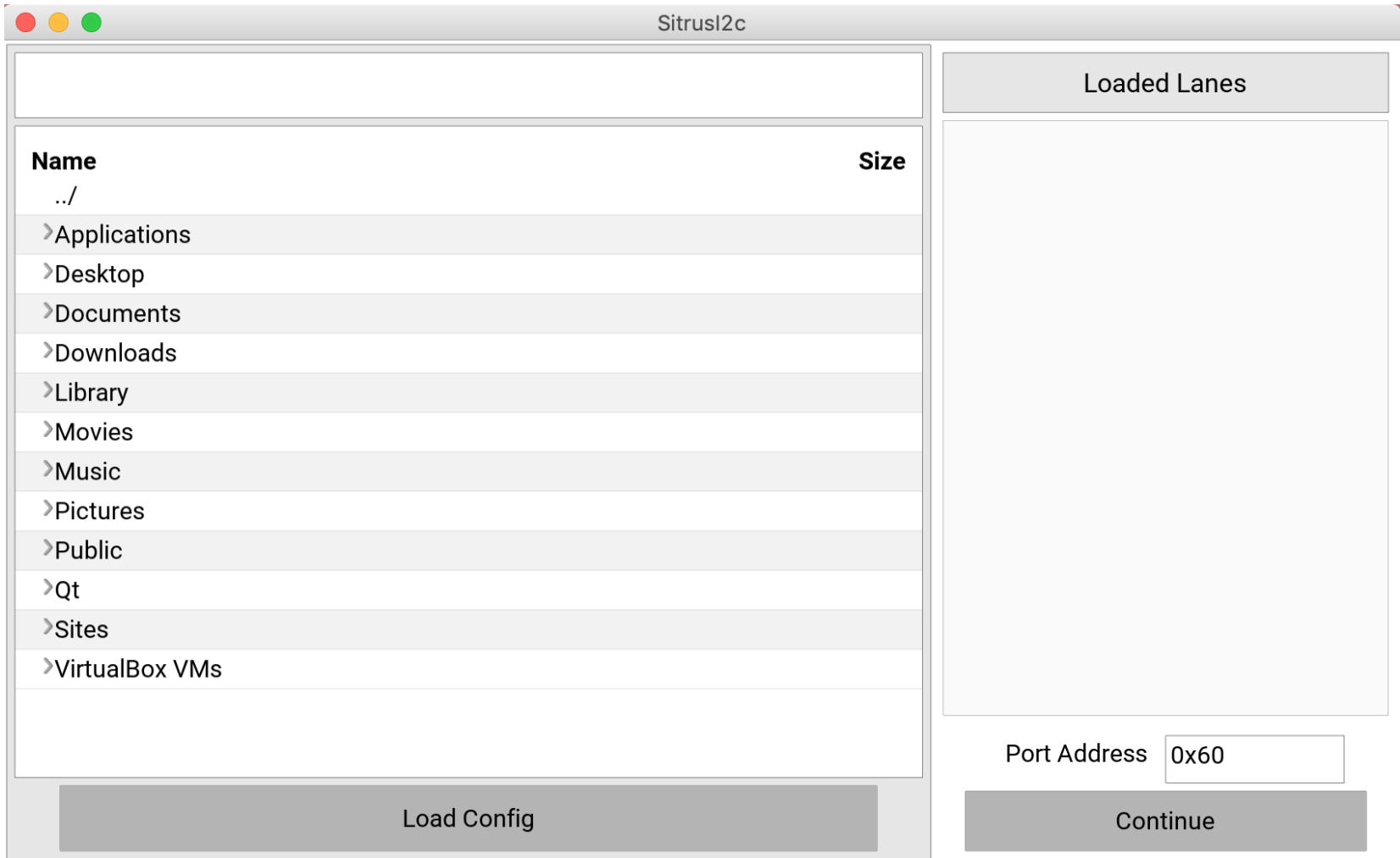
“芯”联天下

Connected by Sitrus

I2C Tool



Menu Screen



The screenshot shows a window titled "SitrusI2c" with a menu screen. The window has a standard macOS-style title bar with red, yellow, and green buttons. The main area is divided into two panes. The left pane contains a list of items with columns for "Name" and "Size". The items are: ../, >Applications, >Desktop, >Documents, >Downloads, >Library, >Movies, >Music, >Pictures, >Public, >Qt, >Sites, and >VirtualBox VMs. The right pane is titled "Loaded Lanes" and is currently empty. At the bottom of the window, there are two buttons: "Load Config" on the left and "Continue" on the right. Above the "Continue" button, there is a "Port Address" label and a text input field containing "0x60".

Name	Size
../	
>Applications	
>Desktop	
>Documents	
>Downloads	
>Library	
>Movies	
>Music	
>Pictures	
>Public	
>Qt	
>Sites	
>VirtualBox VMs	

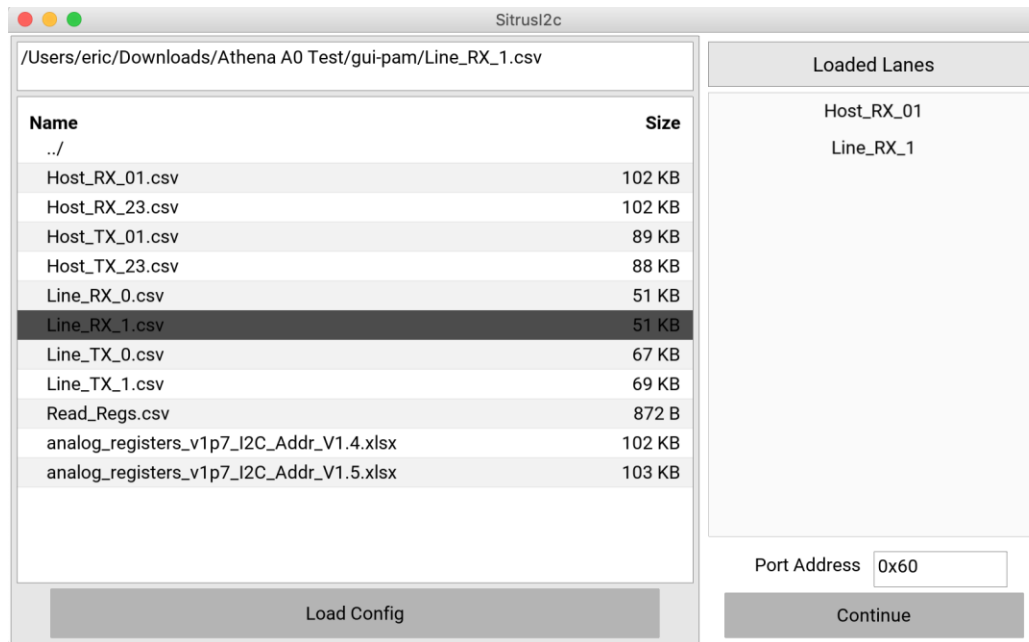
Loaded Lanes

Port Address 0x60

Load Config Continue

Menu Screen: Load Config Files

- Select the file to load, or type the file path in the box above the file chooser
- Press the “Load Config” button to load the file if it is of valid format
- Successfully loaded config files will be displayed under “Loaded Lanes”



- Enter the 7-bit I2C port address -defaults to “0x60”-

I2CScreen

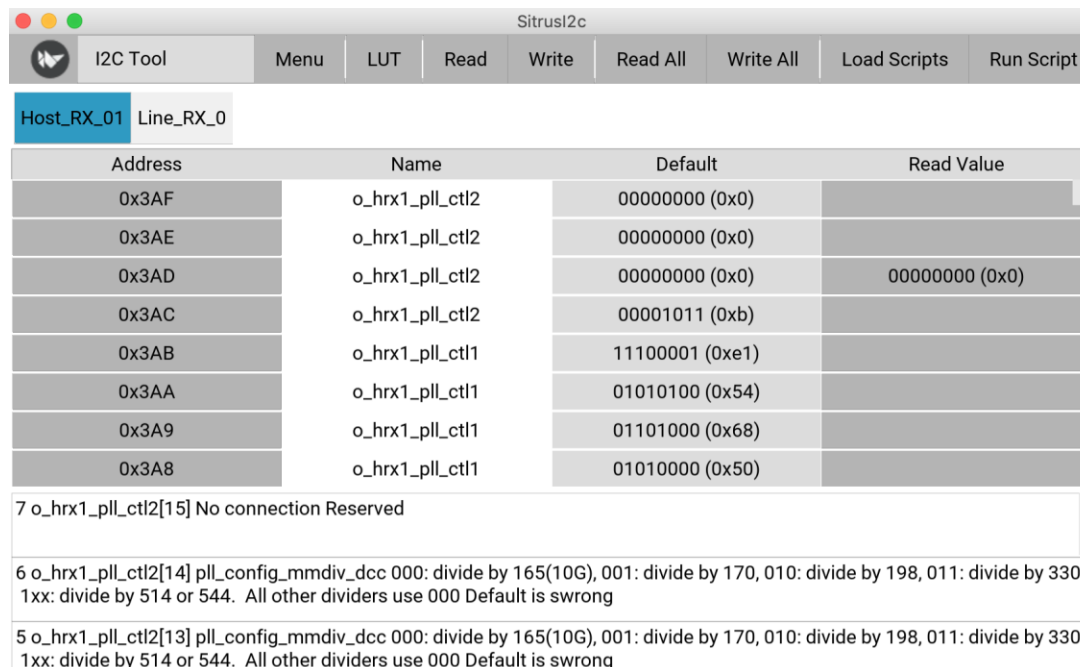
- Pressing continue will bring up the i2c screen
- The loaded config files will be shown as individual tabs

The screenshot displays the SitrusI2c application window. The title bar reads 'SitrusI2c'. Below the title bar is a menu bar with the following items: I2C Tool, Menu, LUT, Read, Write, Read All, Write All, Load Scripts, and Run Script. Below the menu bar, there are two tabs: 'Host_RX_01' (selected) and 'Line_RX_1'. The main content area contains a table with four columns: Address, Name, Default, and Read Value. The table lists eight I2C registers with their addresses, names, default values, and read values.

Address	Name	Default	Read Value
0x3AF	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AE	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AD	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AC	o_hrx1_pll_ctl2	00001011 (0xb)	
0x3AB	o_hrx1_pll_ctl1	11100001 (0xe1)	
0x3AA	o_hrx1_pll_ctl1	01010100 (0x54)	
0x3A9	o_hrx1_pll_ctl1	01101000 (0x68)	
0x3A8	o_hrx1_pll_ctl1	01010000 (0x50)	

I2C Screen: Tabs

- Each tab will display a list of registers addresses, the chip pin name of the address, the default value and the read value via i2c -defaults to blank until read-
- Pressing an address will read the value and display it in the "read value" column, as well as display the bit description of the address at the bottom of the screen



The screenshot shows the SitrusI2C tool interface. At the top, there's a menu bar with options: I2C Tool, Menu, LUT, Read, Write, Read All, Write All, Load Scripts, and Run Script. Below the menu bar, there are two tabs: Host_RX_01 (selected) and Line_RX_0. The main area displays a table of I2C registers. The table has four columns: Address, Name, Default, and Read Value. The data is as follows:

Address	Name	Default	Read Value
0x3AF	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AE	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AD	o_hrx1_pll_ctl2	00000000 (0x0)	00000000 (0x0)
0x3AC	o_hrx1_pll_ctl2	00001011 (0xb)	
0x3AB	o_hrx1_pll_ctl1	11100001 (0xe1)	
0x3AA	o_hrx1_pll_ctl1	01010100 (0x54)	
0x3A9	o_hrx1_pll_ctl1	01101000 (0x68)	
0x3A8	o_hrx1_pll_ctl1	01010000 (0x50)	

Below the table, there are three lines of text providing bit descriptions for the registers:

7 o_hrx1_pll_ctl2[15] No connection Reserved

6 o_hrx1_pll_ctl2[14] pll_config_mmdiv_dcc 000: divide by 165(10G), 001: divide by 170, 010: divide by 198, 011: divide by 330, 1xx: divide by 514 or 544. All other dividers use 000 Default is swrong

5 o_hrx1_pll_ctl2[13] pll_config_mmdiv_dcc 000: divide by 165(10G), 001: divide by 170, 010: divide by 198, 011: divide by 330, 1xx: divide by 514 or 544. All other dividers use 000 Default is swrong

I2C Screen: Tabs

- Pressing a read value will open a prompt to write to the corresponding address –only allows for single byte write-

The screenshot shows the SitrusI2C application window. The title bar is 'SitrusI2C'. The menu bar includes 'I2C Tool', 'Menu', 'LUT', 'Read', 'Write', 'Read All', 'Write All', 'Load Scripts', and 'Run Script'. Below the menu bar, there are tabs for 'Host_RX_01' and 'Line_RX_0'. The main area displays a table of I2C registers. A 'Write' dialog box is open over the table, showing a 'Data(HEX):' field with the value '0x00' and 'Cancel' and 'Write' buttons.

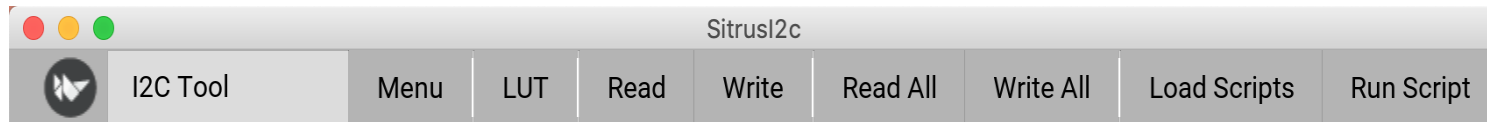
Address	Name	Default	Read Value
0x3AF	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AE	o_hrx1_pll_ctl2	00000000 (0x0)	
0x3AD			00000000 (0x0)
0x3AC			
0x3AB			
0x3AA			
0x3A9			
0x3A8	o_hrx1_pll_ctl1	01010000 (0x50)	

7 o_hrx1_pll_ctl2[15] No connection Reserved

6 o_hrx1_pll_ctl2[14] pll_config_mmdiv_dcc 000: divide by 165(10G), 001: divide by 170, 010: divide by 198, 011: divide by 330, 1xx: divide by 514 or 544. All other dividers use 000 Default is swrong

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I2C Screen: Action Bar



The Action Bar at the top of the screen supports the following:

- **Menu:** return to the menu screen
- **LUT:** generate a look up table and create scripts to write the generated values
- **Read:** read an arbitrary address
- **Write:** write to an arbitrary address (single byte)
- **Read All:** read all addresses in selected tab
- **Write All:** write the default values to all addresses in selected tab
- **Load Scripts:** load a script
- **Run Script:** choose and run loaded scripts

I2C Screen Action Bar: LUT

- To create the look up table, enter all variables and select “Calc Look Up Table”
- To make a script to write the values, enter the LSB starting address and select “Make LUT Script”
- A script will be added to the “Run Scripts” section of the I2C Screen (covered in later slide)

LUT

PAM Inner Binary Weights		Coefficients			Scale Factor						
1:	<input type="text" value="1"/>	2:	<input type="text" value="2"/>	A:	<input type="text" value="0"/>	B:	<input type="text" value="1"/>	C:	<input type="text" value="0"/>	(0 to 1):	<input type="text" value="1"/>
Calc Look up Table		Make LUT Script		LSB Address:		<input type="text" value="0x018e"/>					
00001111 00001111 00001111 00001111 00001111 00001111 00001111 00001111											
00000000 11111111 00000000 11111111 00000000 11111111 00000000 11111111											
00001111 00001111 00001111 00001111 00001111 00001111 00001111 00001111											
00000000 11111111 00000000 11111111 00000000 11111111 00000000 11111111											
00001111 00001111 00001111 00001111 00001111 00001111 00001111 00001111											
00000000 11111111 00000000 11111111 00000000 11111111 00000000 11111111											

I2C Screen Action Bar: Read/Write

- To read an arbitrary address: enter the address and press “Read”
- To write to an arbitrary address: enter the address and the value and press “Write”

Read

Address:	<input type="text" value="0x00"/>
00000000 (0x0)	
Close	Read

Write

Address:	<input type="text" value="0x00"/>
Value(HEX):	<input type="text" value="0x00"/>
0x0x00 has been written to 0x0 Read value: 0x0	
Close	Write

Note

- Address format [0xN] or [N]
- Value format [0xM] or [M]
- Where N is a 2-4 digit hex value
- Where M is a 2 digit hex value

I2C Screen Action Bar: Read All

- Pressing “Read All” will immediately read all the values in a currently selected tab and bring up a prompt displaying the information

Read Lane

Host_TX_01

```
0x1BD: 00000000 (0x0)
0x1BC: 00000000 (0x0)
0x1BB: 01000101 (0x45)
0x1BA: 00100000 (0x20)
0x1B9: 00100000 (0x20)
0x1B8: 00111011 (0x3b)
0x1B7: 01000110 (0x46)
0x1B6: 00000010 (0x2)
0x1B5: 00000000 (0x0)
0x1B4: 00000000 (0x0)
0x1B3: 00000000 (0x0)
0x1B2: 00000000 (0x0)
0x1B1: 00000010 (0x2)
0x1B0: 00000000 (0x0)
0x1AF: 00001000 (0x8)
0x1AE: 10001110 (0x8e)
0x1AD: 00000101 (0x5)
0x1AC: 00000000 (0x0)
```

I2C Screen Action Bar: Write All

- Pressing “Write All” will prompt you to confirm the operation. If so, the default values to all the addresses in the currently selected tab will be written. A notification will appear to indicate if the operation was successful.

Write All to Default

All addresses have successfully been written to default values

Okay

I2C Screen Action Bar: Load Script

- To load a script, select it in the file chooser or type the file path in the box above it and press “Load”
- This will add the script to the “Run Script” section of the I2C Screen

Load Script

/Users/eric/Downloads/Athena A0 Test/cmd/Enable_HTX01.csv

Name	Size
../	
Adapt_Line_RX_0.csv	2 KB
Adapt_Line_RX_1.csv	2 KB
Commands_Enable_Analog_Macros_V1.xlsx	27 KB
Commands_Enable_Analog_Macros_V2.xlsx	27 KB
Commands_Enable_Analog_...3_HTX1_01_pattern_tao.xlsx	31 KB
Enable_CLKMON.csv	1 KB
Enable_HTX01.csv	5 KB
Enable_HTX23.csv	627 B

Cancel

Load

I2C Screen Action Bar: RunScript

- To run a loaded script: select the script and a preview of it should be displayed;
- select "Run"
- The script generated by the LUT prompt will be labeled as "LUT_Script"

Run Script

Enable_HTX01.csv	Script:
LUT_Script	<pre> Write 1 to bit(s) 3 in 0x0146 Write 001 to bit(s) [6:4] in 0x0147 Write 011 to bit(s) [7:5] in 0x0140 Write 11 to bit(s) [7:6] in 0x0141 Write 1 to bit(s) 1 in 0x0141 Write 1 to bit(s) 4 in 0x0141 Write 0 to bit(s) 5 in 0x0141 Write 1 to bit(s) 5 in 0x062b Write 00 to bit(s) [1:0] in 0x062c Write 111 to bit(s) [7:5] in 0x0145 Write 1 to bit(s) 0 in 0x0622 Write 0 to bit(s) 1 in 0x062c Write 0x011 to bit(s) [7:0] in 0x018e Write 0xff to bit(s) [7:0] in 0x018f Write 0x0 to bit(s) [7:0] in 0x0190 Write 0xff to bit(s) [7:0] in 0x0191 Write 0x0 to bit(s) [7:0] in 0x0192 Write 0xff to bit(s) [7:0] in 0x0193 Write 0x0 to bit(s) [7:0] in 0x0194 </pre>

Close
Run

Run Script

Enable_HTX01.csv	LUT_Script
	<pre> 0xff written to bit(s) [7:0] in 0x01b5 0x0 written to bit(s) [7:0] in 0x01b6 0xff written to bit(s) [7:0] in 0x01b7 0x0 written to bit(s) [7:0] in 0x01b8 0xff written to bit(s) [7:0] in 0x01b9 0x0 written to bit(s) [7:0] in 0x01ba 0xff written to bit(s) [7:0] in 0x01bb 0x0 written to bit(s) [7:0] in 0x01bc 0xff written to bit(s) [7:0] in 0x01bd 0x4b written to bit(s) [7:0] in 0x01db 0x00 written to bit(s) [7:0] in 0x180 0x2c written to bit(s) [7:0] in 0x01d1 0x01 written to bit(s) [7:0] in 0x01e0 00100 written to bit(s) [4:0] in 0x0143 1 written to bit(s) 7 in 0x0142 1 written to bit(s) 1 in 0x0151 0 written to bit(s) 0 in 0x0151 Waiting 500ms Read 0x014d: 00000000 (0x0) </pre>

Close
Run

End Script

Python Requirements

The following version of python and python libraries are needed to run this program:

- **Python:**
 - version ≥ 3.7
- **Native Libraries:**
 - libusb (needed to find ftdi driver)
- **Python Libraries:**
 - pyftdi (i2c api)
 - kivy (UI librarires)

Python Requirements

Python 3.7 can be found at: <https://www.python.org/downloads/>

The python libraries can be installed using:

```
>>> pip3 install pyftdi
```

```
>>> pip3 install kivy
```

The Native Library libusb can be installed using homebrew

```
>>> brew install libusb
```

Note: If using Anaconda3 for python, libusb can be installed in a similar manor to the python libraries, otherwise it is best to use the above method

If homebrew is not installed, install from: <https://brew.sh/>

Running the Program

To Download the Program:

```
>>> git clone https://github.com/Ericqle/SitrusI2C.git
```

To Update to the Latest Version:

```
>>> cd /path/to/inside/program/directory
```

```
>>> git pull
```

To Run the Program

```
>>> python3 /path/to/Driver.py
```