

CMIS GUI Software

User Manual
(Release Software 2.20 and Later)



WILDER
TECHNOLOGIES

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CMIS Software

Introduction

The included Software (SW) operates the Wilder Technologies MCB via a USB connection from a PC. The User Interface (UI) provides Screens that allow interaction with the MCB Hardware and the Module CMIS Memory Map. The SW will run on most PCs with Windows 8, 10 or 11. This Manual is for Software Version 2.20 and later. For full operation of the SW the HOST/PASS-THROUGH switch must be set to HOST.

CMIS GUI Software File List

These files are included in the Flash Drive.

Wilder_CMI.exe	The Wilder CMIS UI Executable
LibFT260.dll	.dll file. Required to run Wilder_CMI.exe
Scripts/Script.txt	A txt file that can be executed by the program to activate data paths.
Scripts/Script2.txt	A txt file that can be executed by the program to activate data paths.
Release_Notes_2_20.txt	General information on the software changes made as compared to the previous revision.
910-0070-000 Rev G CMIS GUI V2.20 Software User Manual 4-21-2023.pdf	Documentation Files v2.20 (910-0070-000 Rev. G)

Software Installation

The Microsoft C++ 2010 Redistributable x86 is required. Some computers may not have this installed. It may be downloaded at

<https://www.microsoft.com/en-us/download/details.aspx?id=26999>.

The security vulnerability shown does not apply to this Wilder Software (not built with Visual Studio 2010). Select `vc_redist_x86.exe` (this is the 32-bit version) for download and follow the instructions.

Extract the software distribution files from the Flash Drive to a new destination on the PC from which the CMIS GUI Software will be run. The .exe, .dll, folders, and .txt files should remain together, but this User Manual can be moved elsewhere.

CMIS Software Version 2.20 Capabilities and Features

The displays and controls are on one screen (window). The top of the screen has displays and controls for the module, the center has tab pages for displays and controls for the Module, Applications, Lanes and individual CMIS Register Access and the bottom shows text logs of the results and errors from various operations.

CMIS Software Displays

- Presents module information
 - Module Type, Media Type
 - Electrical Interface, Media Interface
 - CMIS Revision
 - Vendor Name, Vendor Part Number, Vendor Serial Number
 - MCB Voltage, Current, Power
 - Temperature, 3.3V supply if supported by the Module
- Module Warnings and Alarms for High/Low Temperature and Voltage
- Module Status
- Data Path Lane States
- MCB/Module Outputs (OSFP, QSFP-DD, and SFP-DD)
- MCB/Module Input controls (OSFP, QSFP-DD, and SFP-DD)
- Monitors, Warnings, and Alarms for Tx and Rx Optical Power
- Application Advertisements and Data Path Configuration

CMIS Software Alarms

Alarms and Warnings are displayed for Module Temp, Module Vcc and Optical Power Tx and Rx for each Lane. These are determined by Polling Latched Flags in CMIS Memory Map.

The displays are round (LED simulations) with these colors:

- | | |
|-------------------|--|
| Light Blue | Alarm is NOT implemented or can NOT be Read. |
| Green | The associated Measurement is within thresholds |
| Orange | The associated Measurement is above or below the <u>Warning</u> thresholds |
| Red | The associated Measurement is above or below the <u>Alarm</u> thresholds |

The MCB Voltage, Current and Power Measurements are updated to the Display every two seconds as long as the MCB is powered up and Connected to the USB.

The 'Module Temp' and 'Module Vcc' Measurements and Alarms are updated every two seconds as long as the Module is installed to the MCB.

CMIS Software Controls

- 'Set Module Ready'
- Force Module Statue to Low Power
- 'Refresh' 'Global Module Status' and 'Data Path State'
- 'Refresh Optical Power'
- 'Auto Refresh Optical Power'
- Margin controls Up/Down/Neutral
- 'Get Application Descriptors'
- 'Get Data Path Configuration'
- Read/Write bytes for Bank, Page, and Data (data at specified Offset)
- Execute scripts to Read/Write multiple bytes
- Interprets register values (only page 0 fully implemented)
- Dump all registers (0-255) of a page and has description
- Dump all registers (0-255) of a page in a configuration for copying
- Compares all registers (0-255) of a page to a saved .csv file
- Debug Tool
 - Test MCB modules without the need for a CMIS capable module
 - Change I2C address

CMIS Software Operation

Run the `Wilder_CMI.exe` program.

The Control Screen will come up. Version information and several navigation tabs will appear.

There are two controls to the right of the Log. Pushing [Clear] clears the Log. Pushing [Snapshot Pop-up] puts the current contents of the log (including what is not visible) into a full scrollable pop-up window. The contents of this window are not updated when the Log updates.

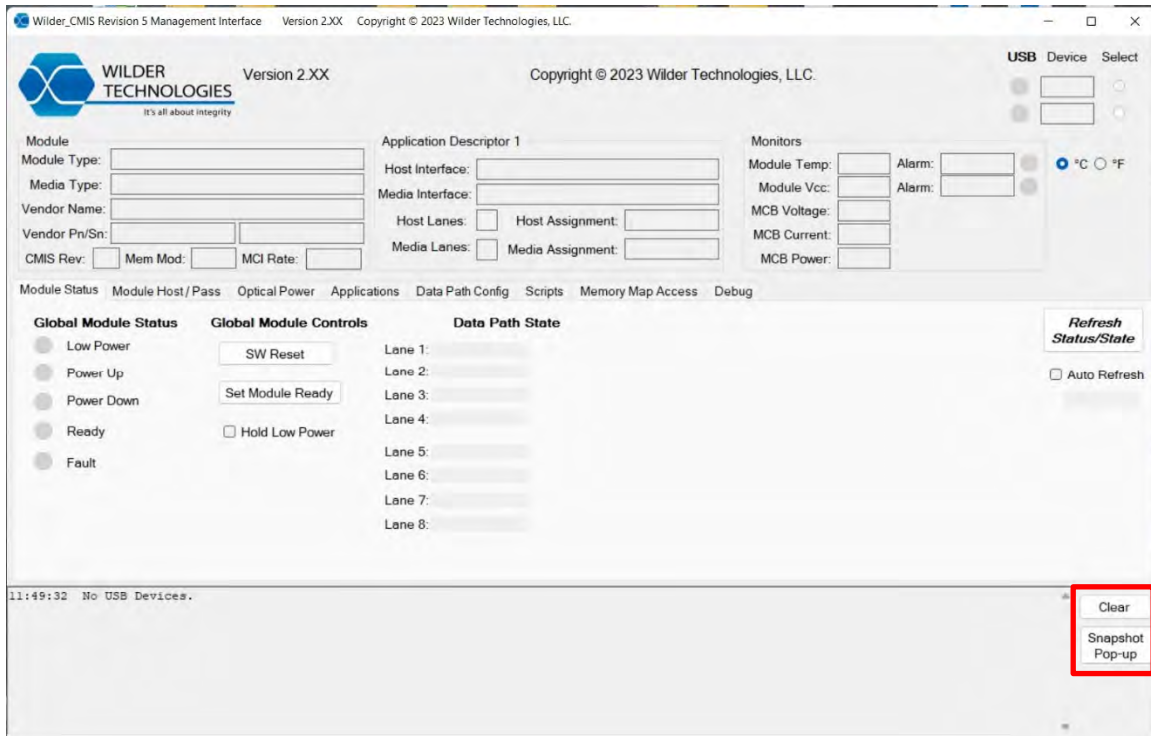


Figure 1. CMIS Start Screen

CMIS Software Connection to MCB Hardware

Note: USB controls on Earlier Versions of the software are deprecated and are replaced with new controls on the Screen Top Right

To operate the MCB, the Software must connect to the MCB Hardware.

- Connect the HW to the 12 Volt power adapter.
- Connect the USB Type-A to micro-USB cable to the USB port on the MCB.
- Under the “USB Device Select” see the Blue LED, ‘MCB 1’ and the Radio Button. (If a Second MCB is connected to USB controls below ‘MCB1’ will show Blue LED, ‘MCB 2’ and a Radio Button.)
- Click the Radio Button and the MCB will be connected to the software.
- Note: When a Module is NOT connected or is disconnected the displays on the top of the Screens are blanked. When a Module is connected the CMIS displays are restored.

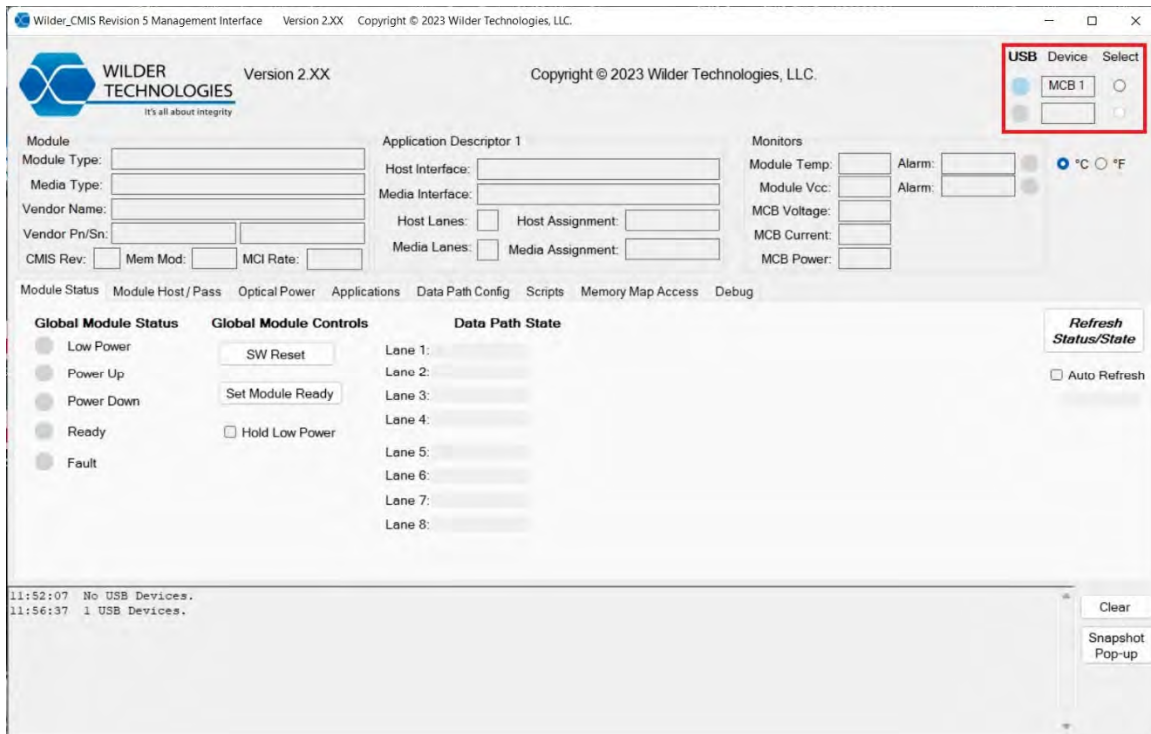


Figure 2. Device Select

After a Module is inserted the following fields will be populated; CMIS Revision, Module Type, Electrical Interface, Media Interface, Media Type, Vendor Name, Vendor Part Number, Vendor Serial Number, Advertised Application 1, Voltage, Current, Power, Temperature (if active cable), 3.3V Supply (if active cable), Global Module Status.

Application 1 displays elements of the first Advertised Descriptor (CMIS Registers 86 to 89). This is usually the Descriptor Active in the Module. See below 'Applications' and 'Data Path Configuration'.

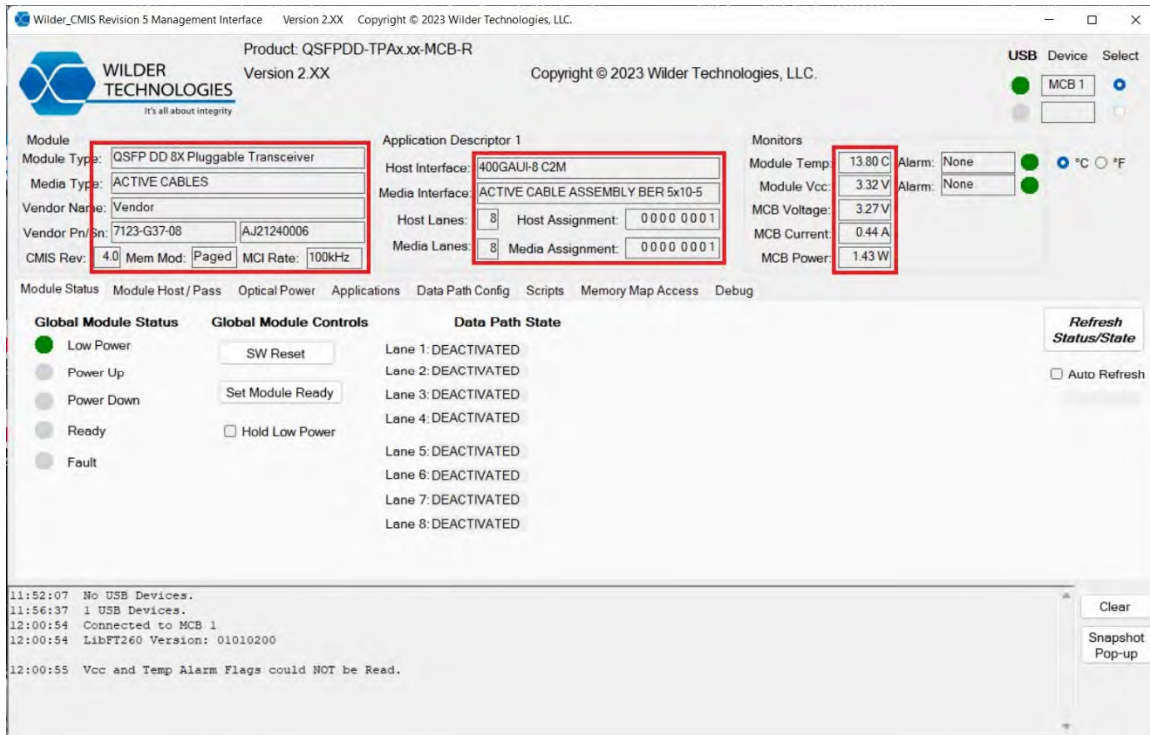


Figure 3. Module Information Populated

CMIS Advertising Bits

Some Bits in the Registers of the CMIS Memory Advertise the presence of specific functions and (for example: Temperature Monitor). The CMIS GUI Software checks these bits and only enables functions for which the Advertisement Bits are set. Modules may have 'Flat' memory in which only Page 0x00 is implemented or have 'Paged' Memory for which at least Pages 0x00, 0x01, 0x02, 0x10 and 0x11 must be supported. Page 0x01 has many Advertisement Bits.

In some Modules Page 0x01 is not properly implemented and every address reads 0xFF. This means many functions are detected to be present that are not actually NOT present. If this is the case the Software will Log:

Page 0x01 is BLANK (All Registers Read 0xFF)

The Software will, however, operate as if Page 0x01 is correctly implemented.

Operating Two Modules

Two Modules can be operated from one computer.

Connect both MCBs USB cables to the computer.

There two methods to operate:

1. Run the Software. Note that both LEDs under “USB” are Blue. To connect USB to each MCB:

- Click the Radio Button to the right of ‘MCB 1’. Note the information put into the Screen Top displays.
- Click the Radio Button to the right of ‘MCB 2’. Note the information put into the Screen Top displays (replacing the info from ‘MCB 1’).

The MCB to be controlled is Selected by the same method. Note that although the Top Screen displays are updated by selection, some of the data on the Tab Pages are NOT unless their ‘Auto Refresh’ is On. For other Tab Pages the [Get ...] buttons must be pushed. Information will be displayed only from the Selected MCB.

2. Run two Instances of the Software. Each will be in its own Window.

- Click the Radio Button to the right of ‘MCB 1’ on the first instance. Note the information put into the Screen Top displays.
- Click the Radio Button to the right of ‘MCB 2’ on the second instance. Note the information put into the Screen Top displays.

To control an MCB select its Screen / Window for Focus.

If a second MCB is connected to USB after the Software has been run, it must be restarted.

The 'Module Temp' and 'Module Vcc' are read from the CMIS Memory. The 'MCB Voltage', 'MCB Current', and 'MCB Power' readings come from the INA219 power monitor in the MCB.

These measurements and Alarms are updated to the Screen every two seconds. An Orange LED will indicate if a warning has activated while a Red LED will indicate if an alarm has activated. The label will indicate if the Temperature/Voltage is High or Low.

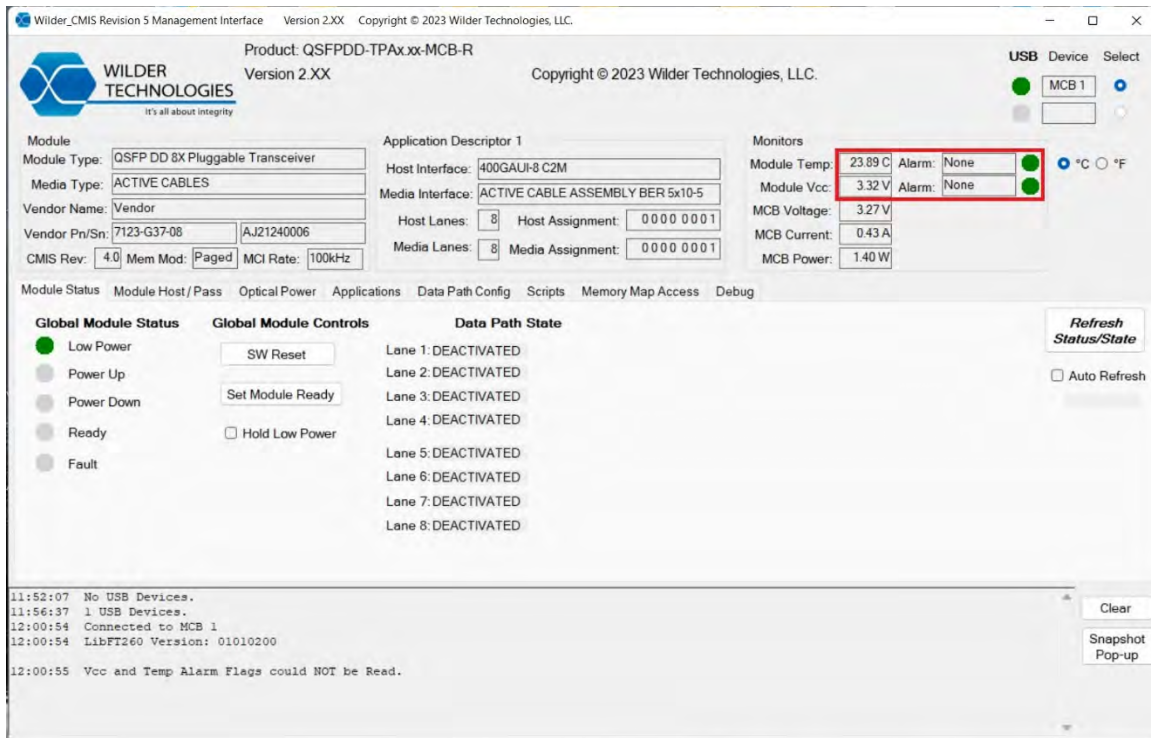


Figure 4. Alarms and Auto Refresh

'Module Information' Tab Page

If the connected cable is an Active Cable press the [Module Ready] button to change the module into the Module 'Ready' state. The 'Global Module Status' and 'Data Path State' will update. It may take a few seconds.

Press the [SW Reset] button to attempt return the device to the Low Power state. The Status and State Displays will update.

Check the [Hold Low Power] checkbox to force the module into low power until the checkbox is unchecked.

If the cable is a Flat Memory Module, it will always display the Module Ready state. Pressing the SW Reset button with Flat Memory Modules will display an error message.

The [Refresh Status/State] button will refresh the Status and State Displays.

Checking 'Auto Refresh' will cause the Status and State to be updated every two seconds.

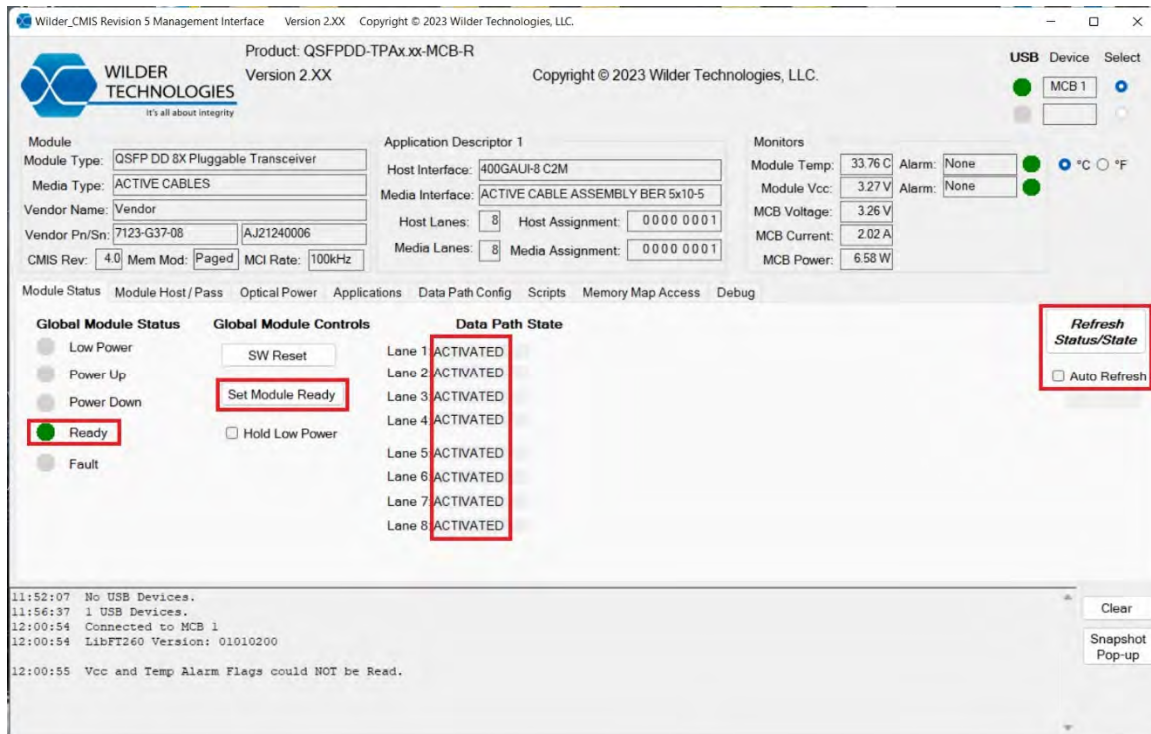


Figure 5. Module Ready and Data Path Status

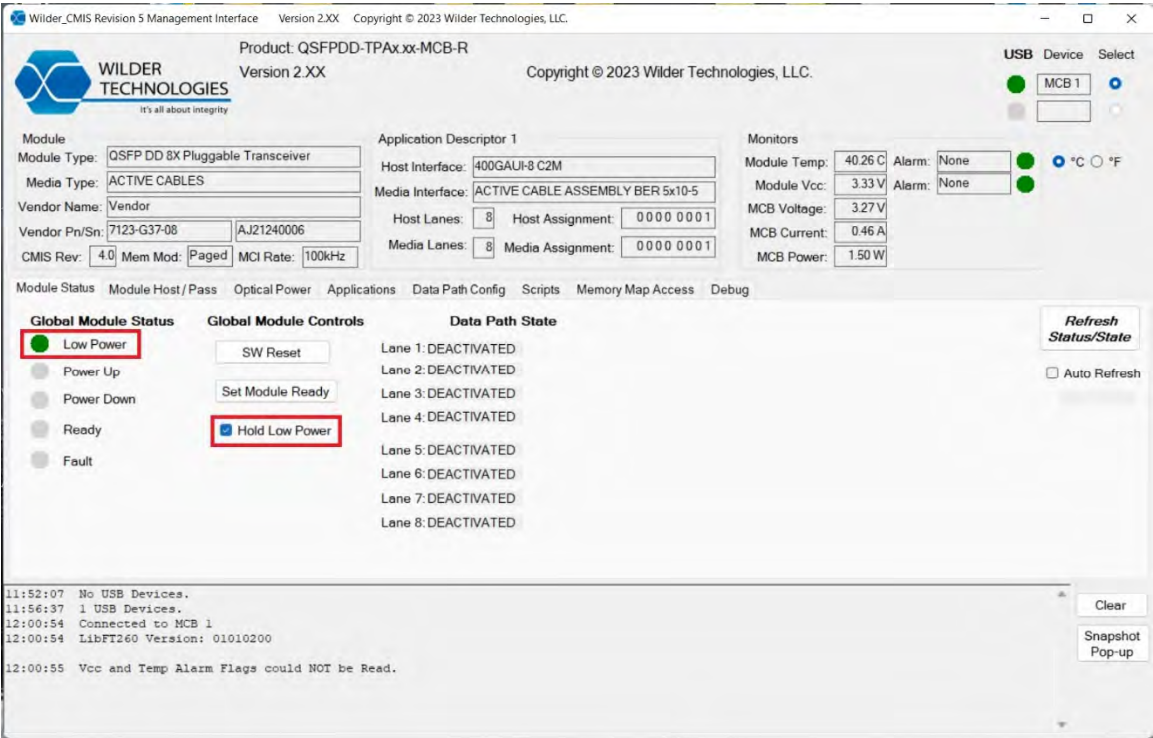


Figure 6. Hold Low Power

'Module Host/Pass' Tab Page

After pushing [Refresh], the Module Host/Pass tab will update to display relevant information or be disabled if the module does not have controls (V2.0 OSFP, QSFP-DD, and SFP-DD supported). The Module Output will show the state for low-speed controls that apply to the specific module type. The Module Input Control will do the same as the Module Output, but you can change the state by Checking the checkbox.

The margin radio buttons will margin the voltage up, down, or back to neutral. The buttons will margin at a set percentage and only one option can be selected at a time.

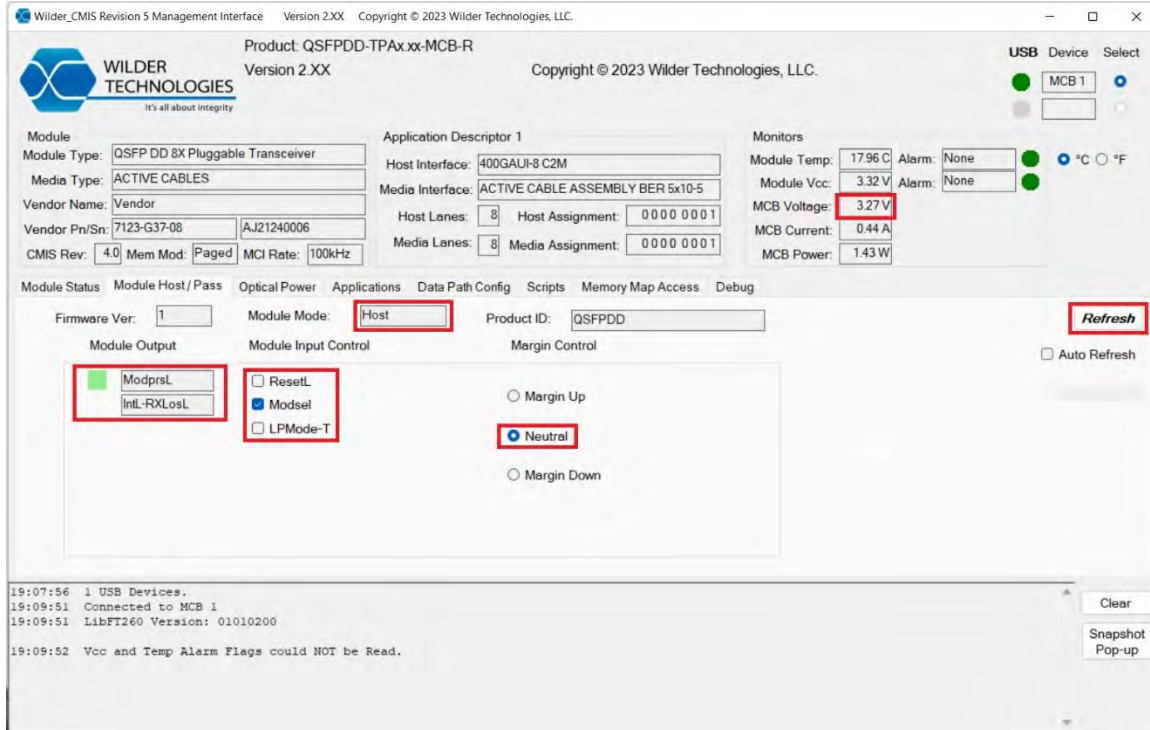


Figure 7. Module Output Display/Input Controls and Margin Neutral

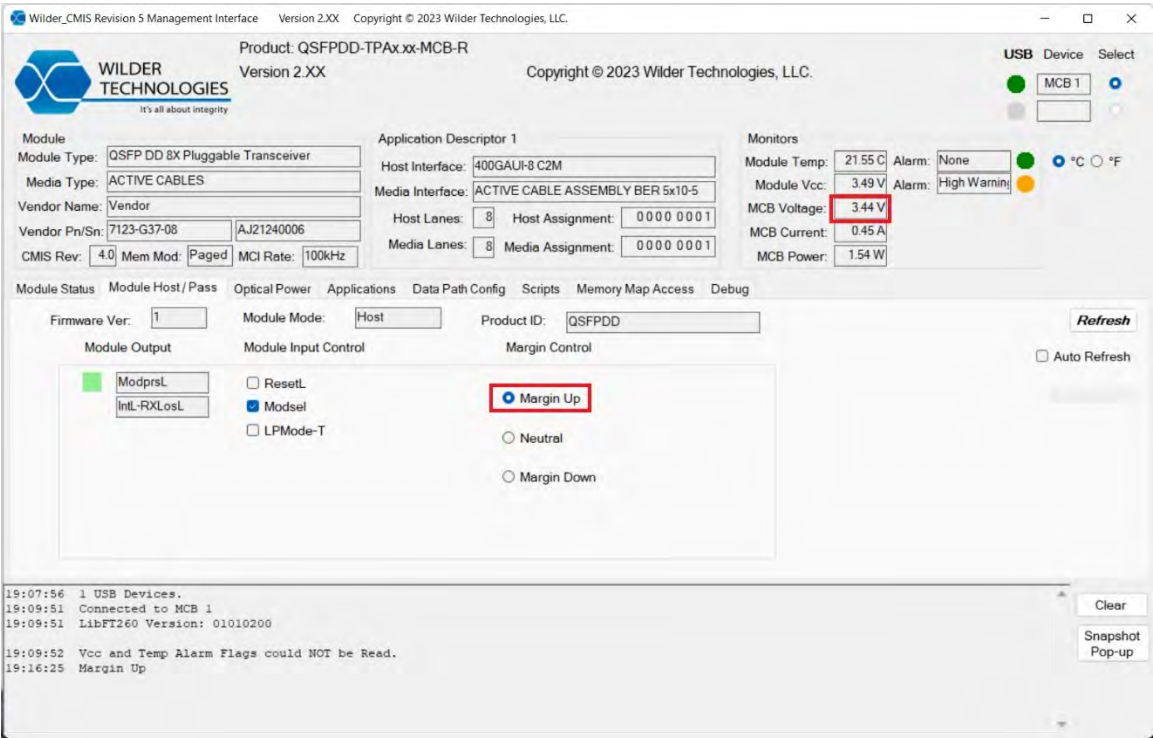


Figure 8. Margin Up

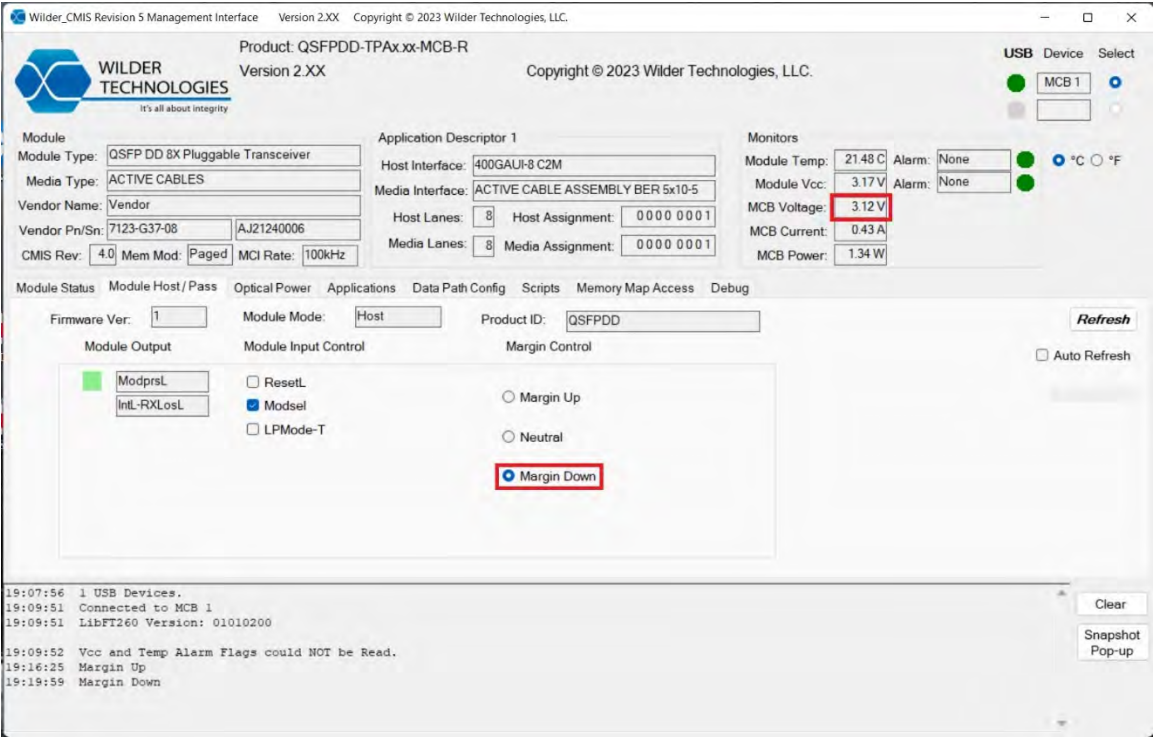


Figure 9. Margin Down

'Optical Power' Tab Page

The Optical Power displays Tx and Rx optical power monitor values and Warning/Alarm thresholds. Each Tx and Rx Lane has an Alarm that will become Orange when the warning threshold is met or exceeded or Red when the alarm threshold is met or exceeded.

The displays are disabled if the module does not have optical power monitors.

Push [Refresh Optical Power] to Update the displays.

While [Auto Refresh Optical Power] is Checked the displays update automatically every two seconds.

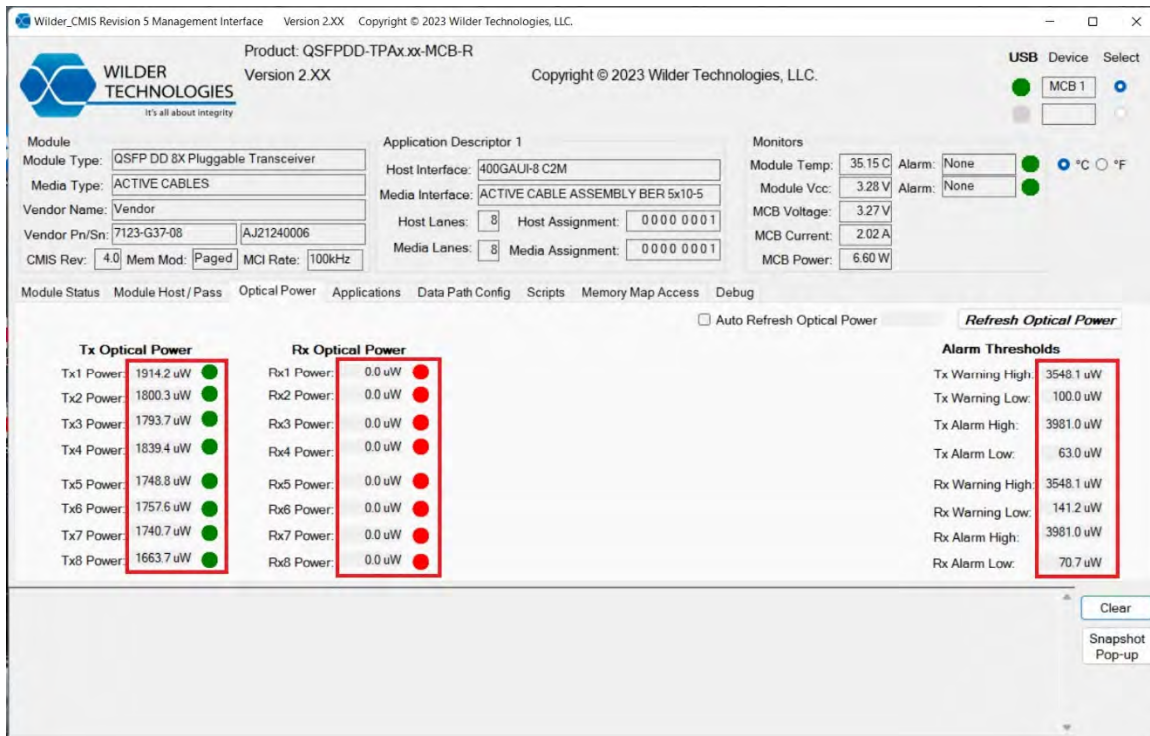


Figure 10. Optical Power

Applications' Tab Page

This Page shows the Applications Advertised in the Module. Press [Get Application Descriptors] to get them.

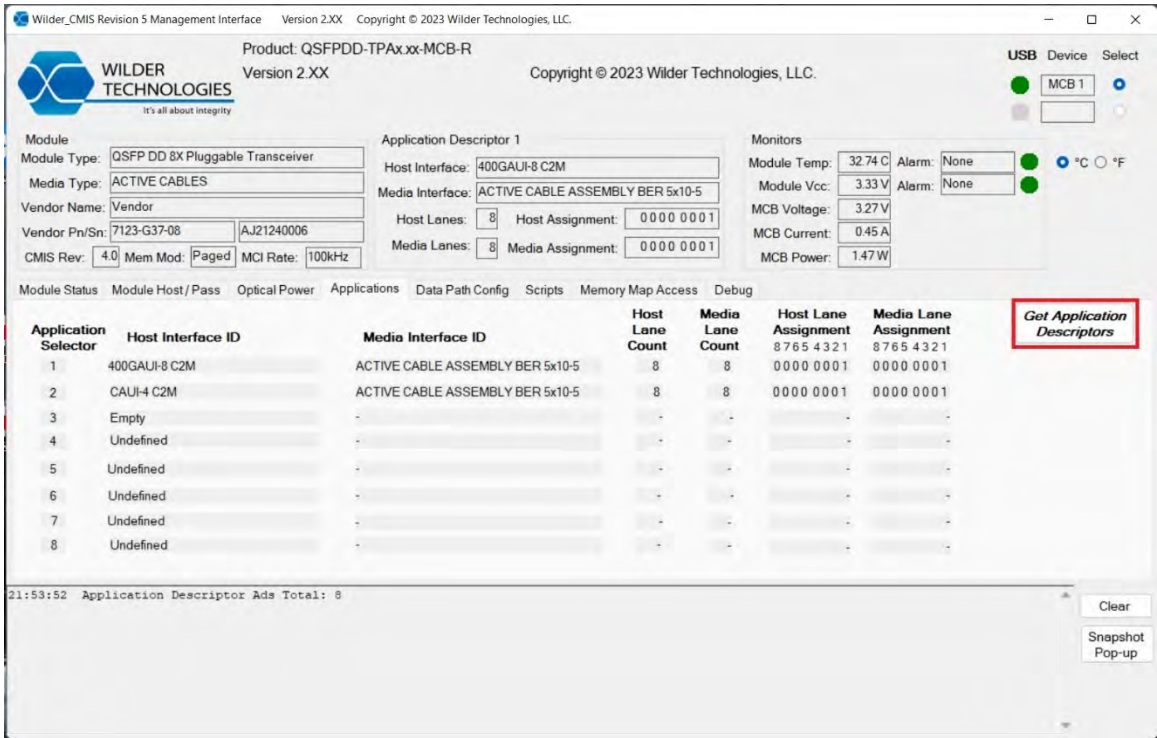


Figure 11. Applications Advertised

‘Data Path Configuration’ Tab Page

This Page shows which Applications (indexed by Application Selector) are programmed into each Lane. ‘SCS0’ is Staged Control Set 0. ‘ACS’ is the Active Control Set. Press [Get Data Path Configuration] to get them.

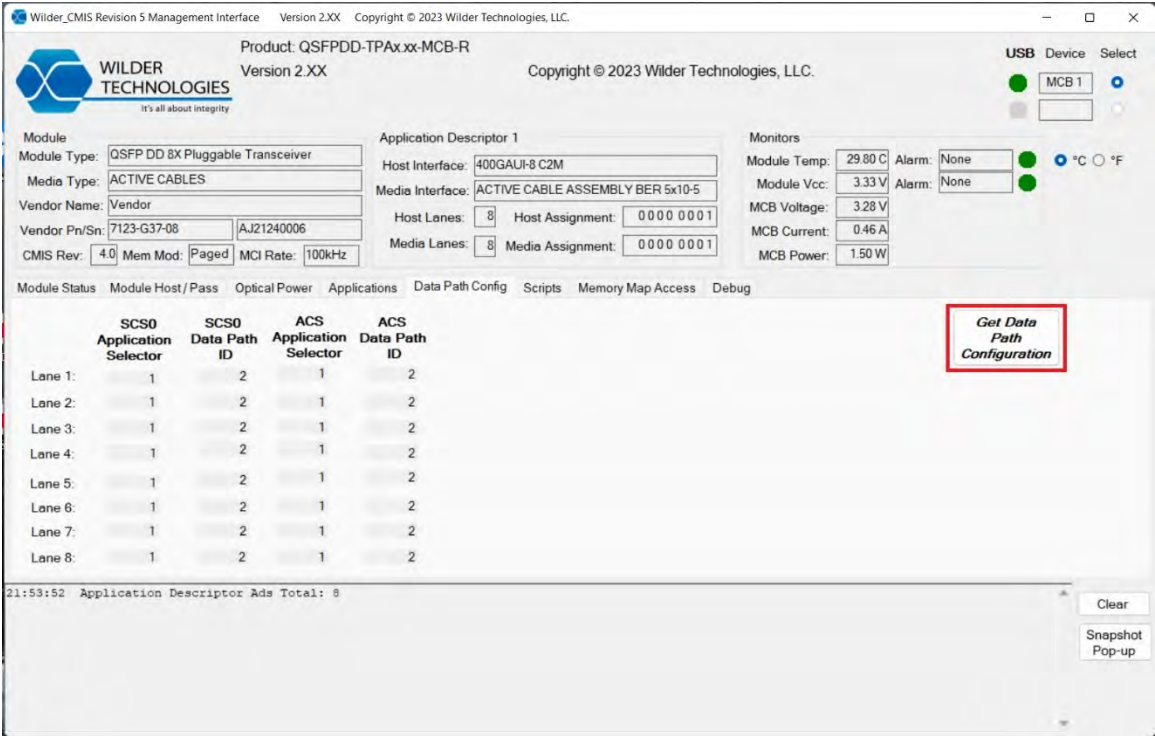


Figure 12. Data Path Configuration

'Scripts' Tab Page

Pushing the [Refresh Script List] to load the names of all the Script Files in 'Scripts' folder into the 'Script Select' Dropdown List. To run a Script it is selected from the Dropdown list and the [Run Script] button pushed.

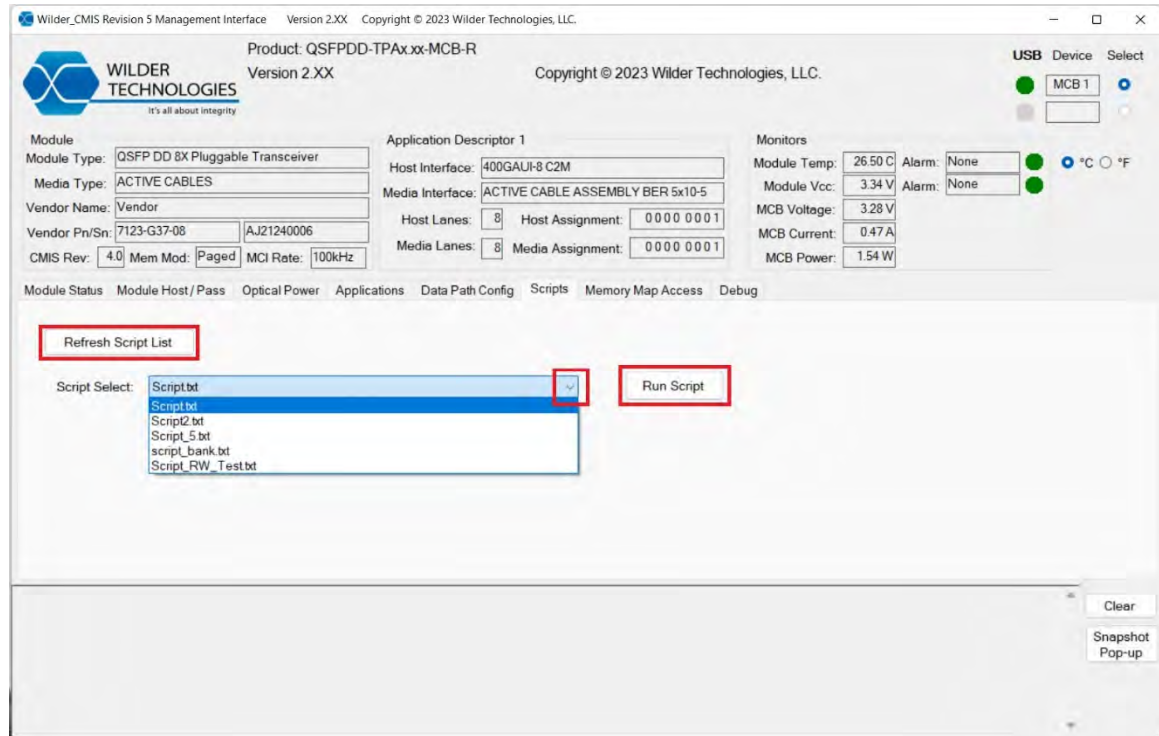


Figure 13. Scripts Controls

To run a Script, select it and press the [Run Script] button. This will execute the script and the series of reads and writes will be displayed in the log. All scripts should be placed in the `Scripts` folder. To create a new script, create a `.txt` file in the `Scripts` folder.

While the script executes it will display what was written (bank, page, data), if a line has no command, if a line has executed, and when the whole script has executed in the log. An error message will display if a script command could not be read or if the file is empty.

When writing a script use "b" for bank, "p" for page, "o" for offset, "d" for data, "l" for length, and "r" for read. Use a "," to separate the commands. When writing data for an offset a "-" must be used to connect offset, data, and length. When reading data for an offset a "-" must be used to connect offset and length. When reading data, a "-" must be used after "r" to have the next set of commands be reads instead of writes. When reading data, a "-" can be used to run multiple read commands in a row. "0x" can be used after a letter to write the value in hex instead of decimal.

An example command: `p0x10,b11,o128-d0xff-l1`. This will set the page to hex 10, bank to decimal 11, offset to decimal 128 data to hex ff and length of decimal 1. Another example command: `r-p0x11-l1-o128`. This will read page hex 11, offset 128 length 1.

There are two scripts already created in the scripts folder. Both scripts will set the registers to activate the data path lanes if the module is in the module ready state.



```
Script2.txt - Notepad
File Edit Format View Help
r-p0x10-o128-11
p0x10, r-p0x10
o143-11-d0xff, o144-d0xff-11, r-p0x11-o128-11
```

Figure 14. Script2.txt

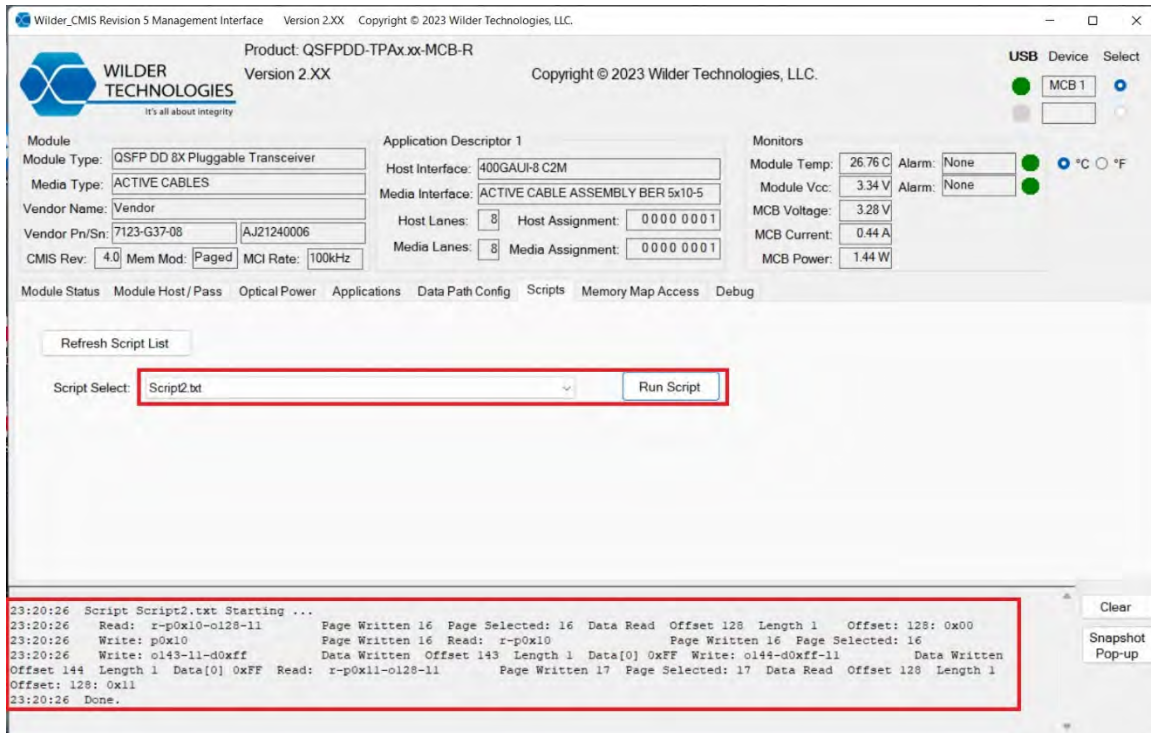


Figure 15. Script2 Run

'Memory Map Access' Tab Page

Type in a binary or hex value into the Bank/Page textbox. Press the [Set] button to write the inputted value into the register. Press the [Read] button to see what Bank/Page the module is currently in. Writing and Reading will show up in the log.

Type in a binary or hex value into the Offset, Length, and Data textboxes. Press the [Write] button to input that value into the register. Type in a binary or hex value into the Offset and Length textboxes. Press the [Read] button to see what data is in that register. Writing and Reading will show up in the log.

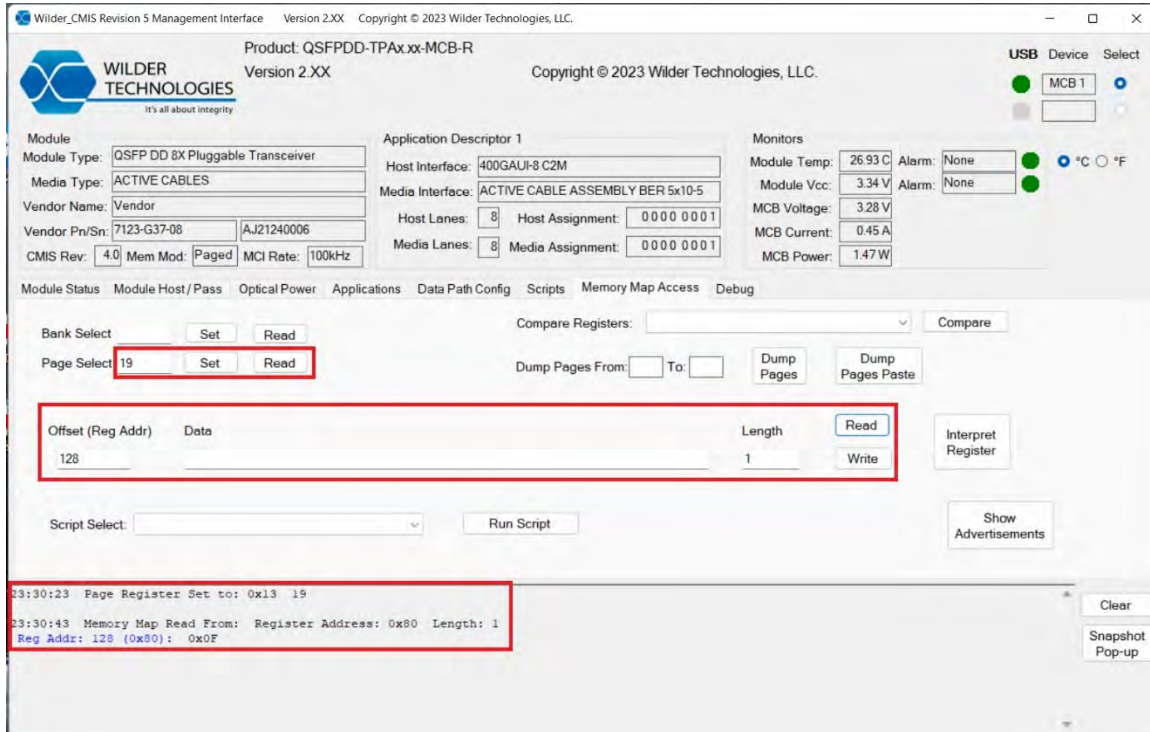


Figure 16. Page and Data Read/Write

Interpret Register

Type in a binary or hex value into the Page textbox. Press the [Set] button to write the inputted value into the register. Type in a binary or hex value into the Offset textbox. Press the [Interpret Register] button to interpret the register value into human readable information. If the function for the selected register isn't implemented an error will be displayed in the log.

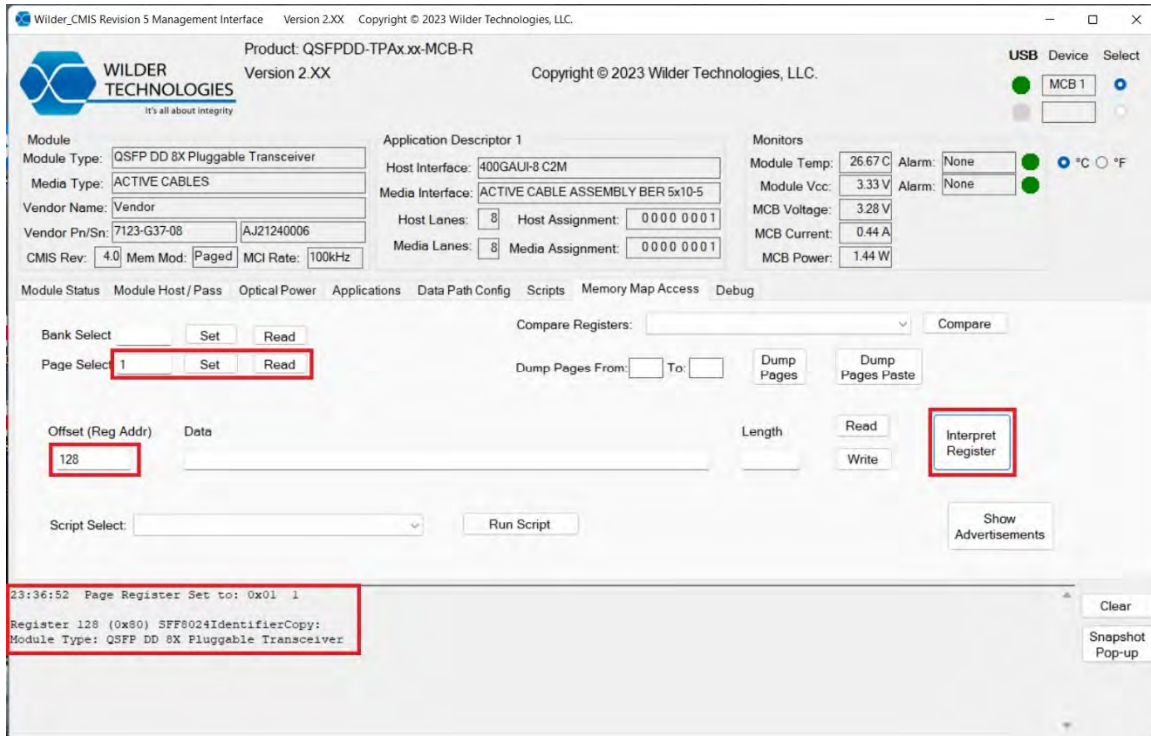


Figure 17. Interpret Register

Dump Pages / Dump Pages Paste

Type in a binary or hex value into the Dump Page textbox. Press the [Set] button to write the inputted value into the register. Press the [Register Dump] button to dump all registers (0-255) from the selected page into a csv file in the `Register Dump` folder. It will be displayed with Register Number in column 1, Register Values in column 2, and Register Description in column 3. Press the [Register Dump Paste] button to dump all registers (0-255) from the selected page into a csv file in a 16x16 format in the `Register Paste` folder.

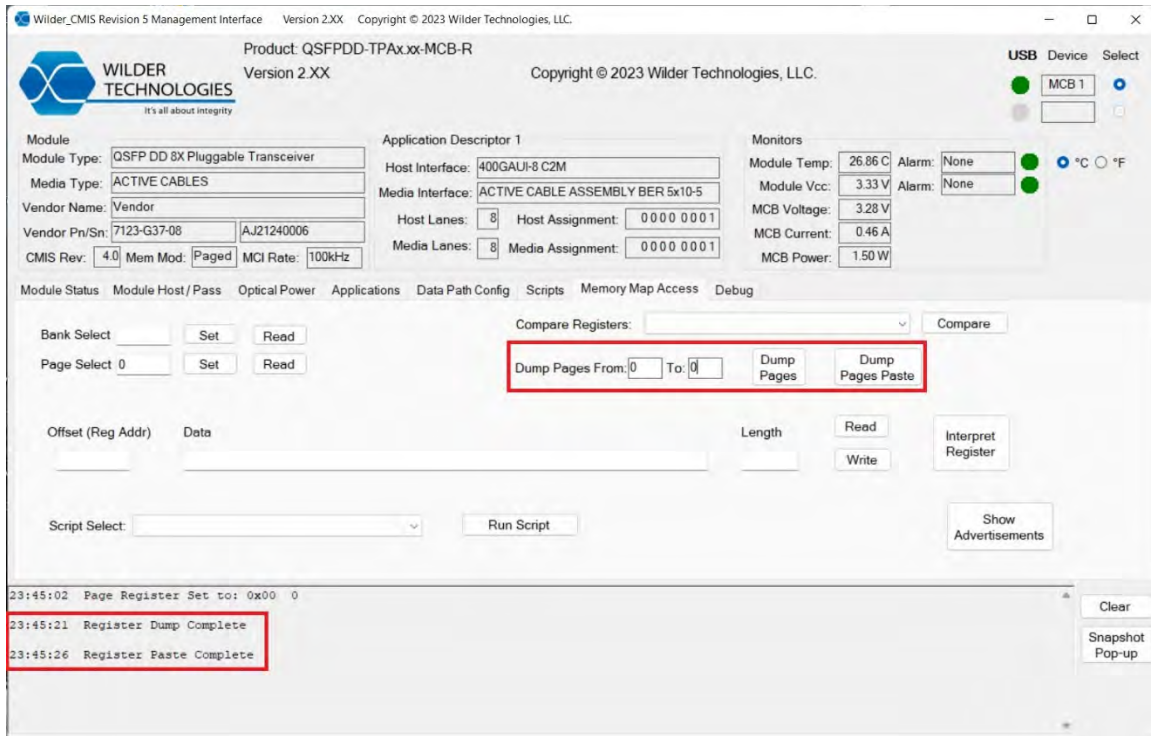


Figure 18. Register Dump and Paste

0x18
0x40
0x00
0x03
0x00
0x00
0x00
0x00
0x00
0x01
0x00
0x00
0x00
0x00
0x00
0x00
0x1D
0x58
0x81
0xBF
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x40
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00
0x00

Figure 21. Compare File

Compare Registers

Place a .csv file into the Expected Values folder. The format should have register values in column 1, ex. Figure 16. Type in a binary or hex value into the Page textbox. Press the [Set] button to write the inputted value into the register. Select a .csv file from the dropdown box. Press the [Compare] button to compare all registers (0-255) from the selected page against the .csv file. The result be displayed with Register Number in column 1, Expected Values in column 2, Actual Values in column 3, Register Description in column 4, and Pass Fail in column 5. The .csv file will be placed in the Register Compare folder. Any non-matching values will be displayed in the log. If the pages don't match an error message will appear in the log.

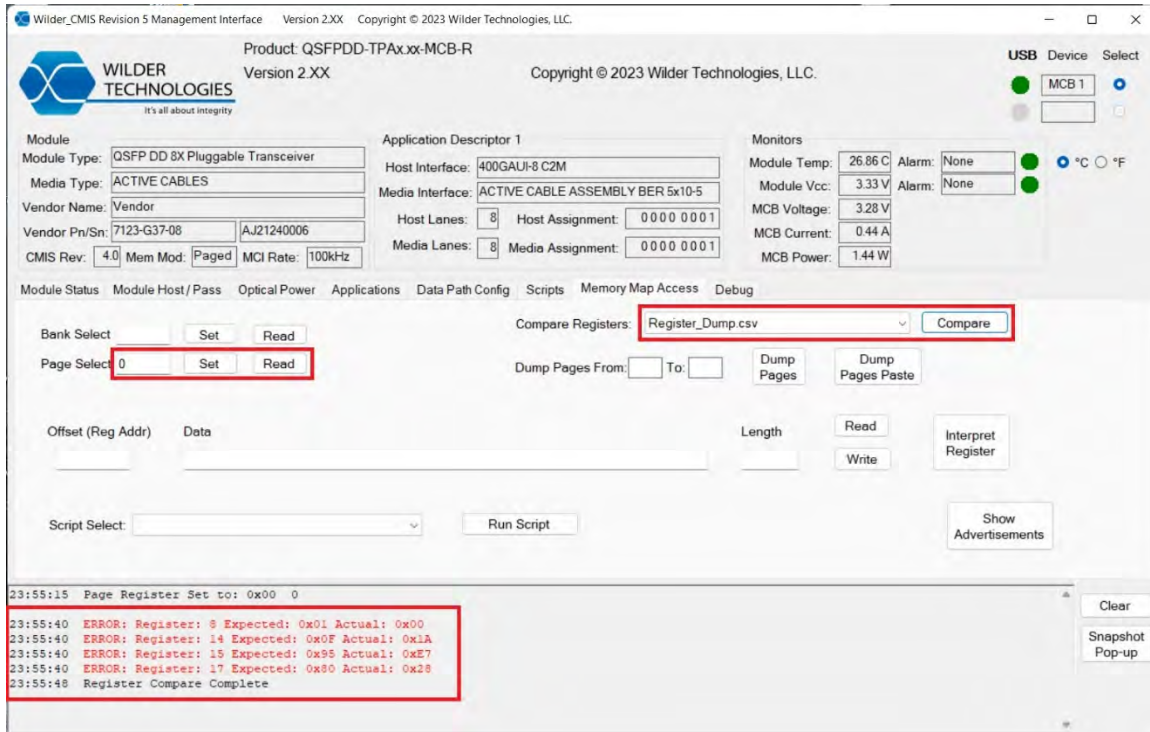


Figure 22. Compare Register

Page	0x00			
Register	Expected	Actual	Description	Pass/Fail
0	0x18	0x18	Module identifier	Pass
1	0x40	0x40	CMIS revision identifier	Pass
2	0x00	0x00	Status flat/paged memory	Pass
3	0x03	0x03	Module state	Pass
4	0x00	0x00	Bank 0 lane flag summary	Pass
5	0x00	0x00	Bank 1 lane flag summary	Pass
6	0x00	0x00	Bank 2 lane flag summary	Pass
7	0x00	0x00	Bank 3 lane flag summary	Pass
8	0x01	0x00	Module flags	Fail
9	0x00	0x00	Temperature/Supply voltage alarm/warning	Pass
10	0x00	0x00	L-Aux 1/Aux 2 monitor alarm/warning	Pass
11	0x00	0x00	L-Aux 3/Vendor defined monitor alarm/warning	Pass
12	0x00	0x00	Reserved	Pass
13	0x00	0x00	Custom	Pass
14	0x19	0x1E	Temperature monitor MSB	Fail
15	0xFA	0x80	Temperature monitor LSB	Fail
16	0x81	0x82	Supply voltage monitor MSB	Fail
17	0xBF	0x54	Supply voltage monitor LSB	Fail
18	0x00	0x00	Aux 1 monitor MSB	Pass
19	0x00	0x00	Aux 1 monitor LSB	Pass
20	0x00	0x00	Aux 2 monitor MSB	Pass
21	0x00	0x00	Aux 2 monitor LSB	Pass
22	0x00	0x00	Aux 3 monitor MSB	Pass
23	0x00	0x00	Aux 1 monitor LSB	Pass
24	0x00	0x00	Custom monitor MSB	Pass
25	0x00	0x00	Custom monitor LSB	Pass
26	0x40	0x40	Global monitor/Squelch mode controls	Pass
27	0x00	0x00	Reserved	Pass
28	0x00	0x00	Reserved	Pass
29	0x00	0x00	Custom	Pass
30	0x00	0x00	Custom	Pass
31	0x00	0x00	Module flag masks	Pass
32	0x00	0x00	Temperature/Supply voltage alarm/warning flag mask	Pass
33	0x00	0x00	L-Aux 1/Aux 2 alarm/warning flag mask	Pass

Figure 23. Compare Paste

List of Folders used by 'Memory Map Access' Tab Page

File Used For	Folder (in the folder with the .exe)	File Extension	Created By / Placed By
Scripts	Scripts	.txt	Created by User
Dump Pages	Register Dump	.csv	Created by SW
Dump Pages Paste	Register Paste	.csv	Created by SW
Compare Registers	Expected Values	.csv	Placed by User
Compare Registers	Register Compare	.csv	Created by SW

'Debug Tool' Tab Page

Selecting the 'Debug' Tab Page will reveal a box like the memory map page, but you will now be able to change the I2C address value. You will also be able to use the GUI without needing a CMIS capable module inserted.

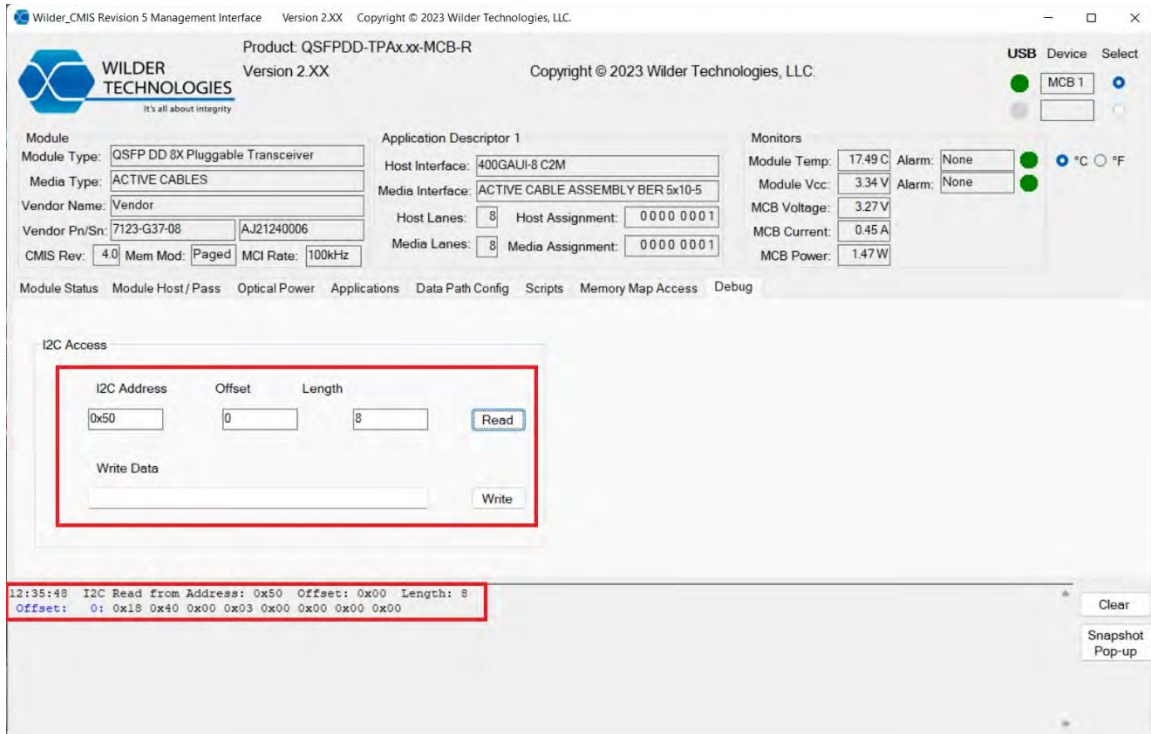


Figure 24. Debug Tool

Troubleshooting

- If the Software Crashes or reports an Exception:

Ensure the `LibFT260.dll` is in the same directory as the `.exe`.

- Both USB LEDs are Grey.

The USB is NOT properly connected to the computer.

- 'MCB Voltage' and 'MCB Current' values displayed are not reasonable

The MCB 'MODULE SOURCE SWITCH' switch may be in the wrong position.

- **"ERROR: MCB Product Name Can NOT be Read."**

The MCB might NOT be powered up or NOT operating.

➔ This Error must be Cleared before other Errors can be Cleared.

- FOR QSFP-DD MCB in 'PASS THROUGH' requires jumper (supplied with MCB fixture, Wilder P/N 415-0143-100) connecting MSL and GND.

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