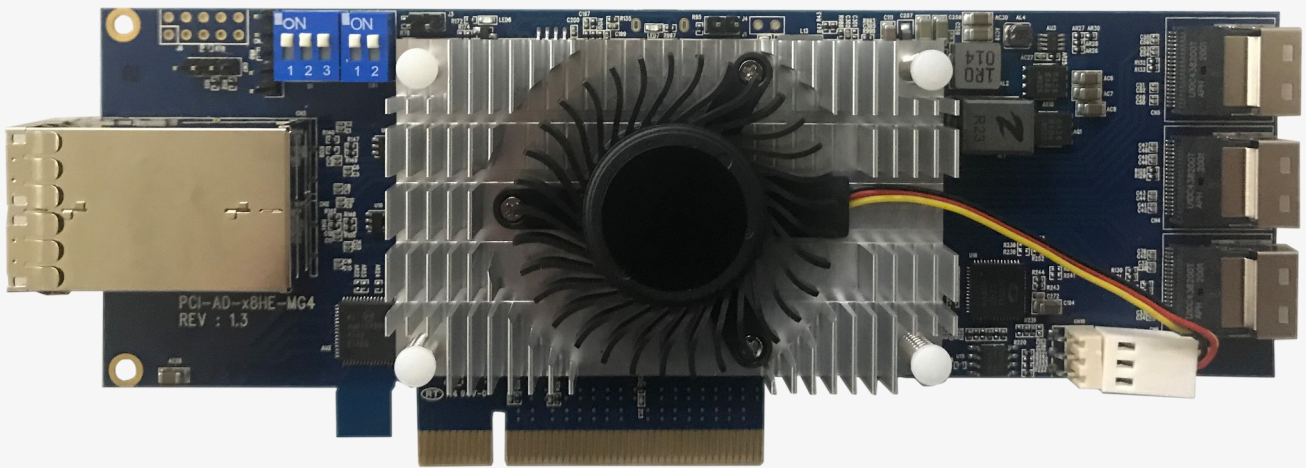




serial
C A B L E S

MS Slim Host Adapter Card



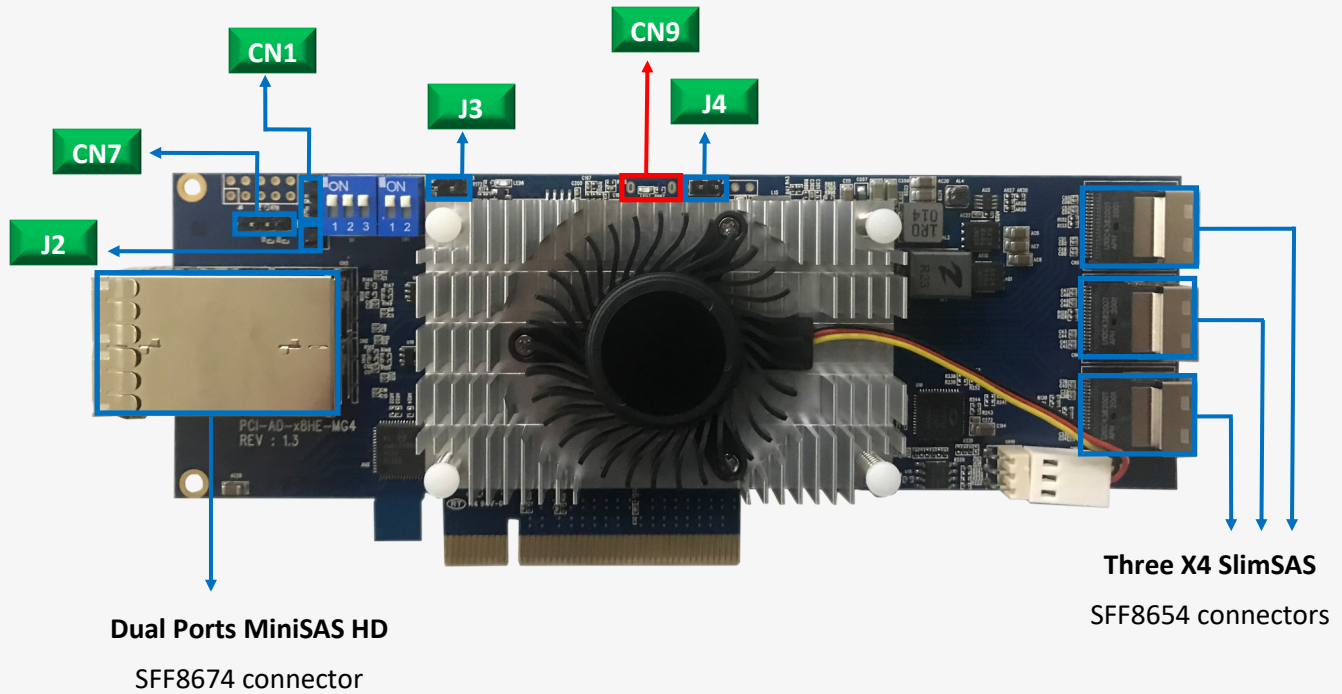
User's Manual

REV: 1.1

Sep. 2020



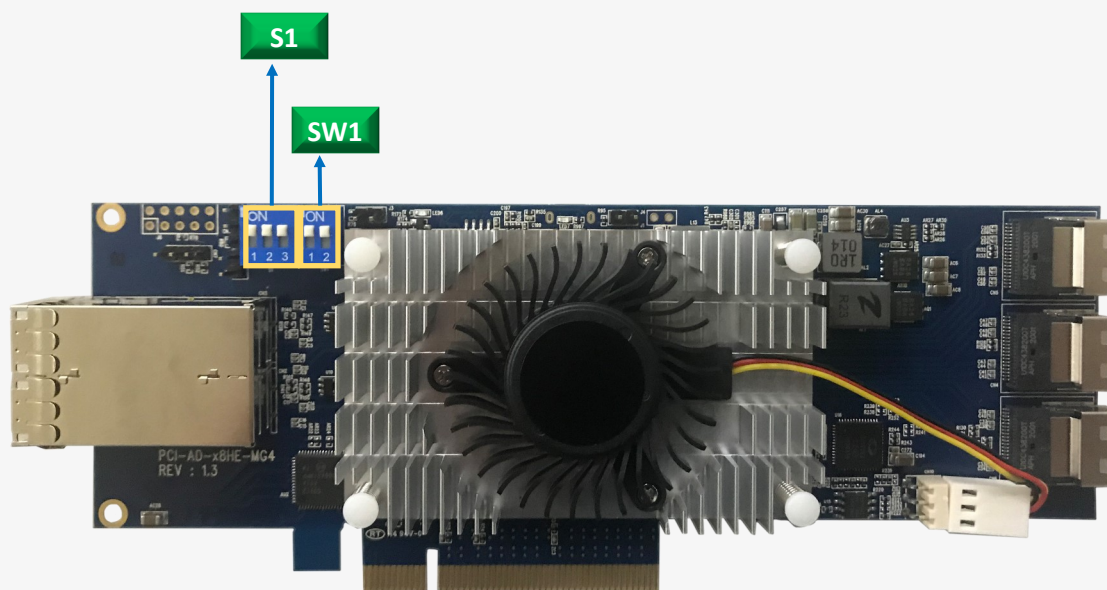
Headers And Connectors



| Headers | Description | Pinout |
|---------|---|-----------------|
| J3 | ON: ISP mode for uP FW programming OFF: uP in normal operation (default) | |
| CN7 | Reserved I/F for uP FW debugging UART with 3.3V TTL signals level | GND/RX/TX |
| CN1 | Switchtec UART I/F. UART with 3.3V TTL signals level | GND RX TX |
| J2 | ON: Force Switchtec entering boot recovery 1 OFF: Switchtec loading default FW image as normal operation (default) | |
| CN9 | MicroUSB port for executing uP CLI commands | |
| J4 | ON: uP in FW upgrading mode OFF: uP in normal operation mode (default) | |



Side-band And Bifurcation Modes



Switch Slide SW1



ON: Select Side-band mode to PCI-SIG in SFF8674 connectors



OFF: Select Side-band mode to SC in SFF8674 connectors



Switch 1 ON: Target Mode

| Side-band mode | | |
|----------------|------------|----------|
| | PCI-SIG | SC |
| A1 | CADDR | CLK_O_N |
| A2 | CABLE_INT# | CLK_O_P |
| B1 | VCT(NC) | CLK_1_N |
| B2 | CABLE_PRE# | CLK_1_P |
| C1 | CMI_SCL | CMI_SCL |
| C2 | CMI_SDA | CMI_SDA |
| D1 | VACT | PERST#_0 |
| D2 | VMAN | PERST#_1 |

Slide S1

Mode 1 SRNS: Set SFF8674 to one x8 link, each SFF8654 to one x4 link

Mode 2 SRNS: Set SFF8674 to Two x4 link, each SFF8654 to one x4 link

Mode 3 SRNS: Set SFF8674 to Four x2 link, each SFF8654 to Two x2 link

Mode 4 SRIS: Set SFF8674 to one x8 link, each SFF8654 to one x4 link

Mode 5 SRIS: Set SFF8674 to Two x4 link, each SFF8654 to one x4 link

Mode 6 SRIS: Set SFF8674 to Four x2 link, each SFF8654 to Two x2 link

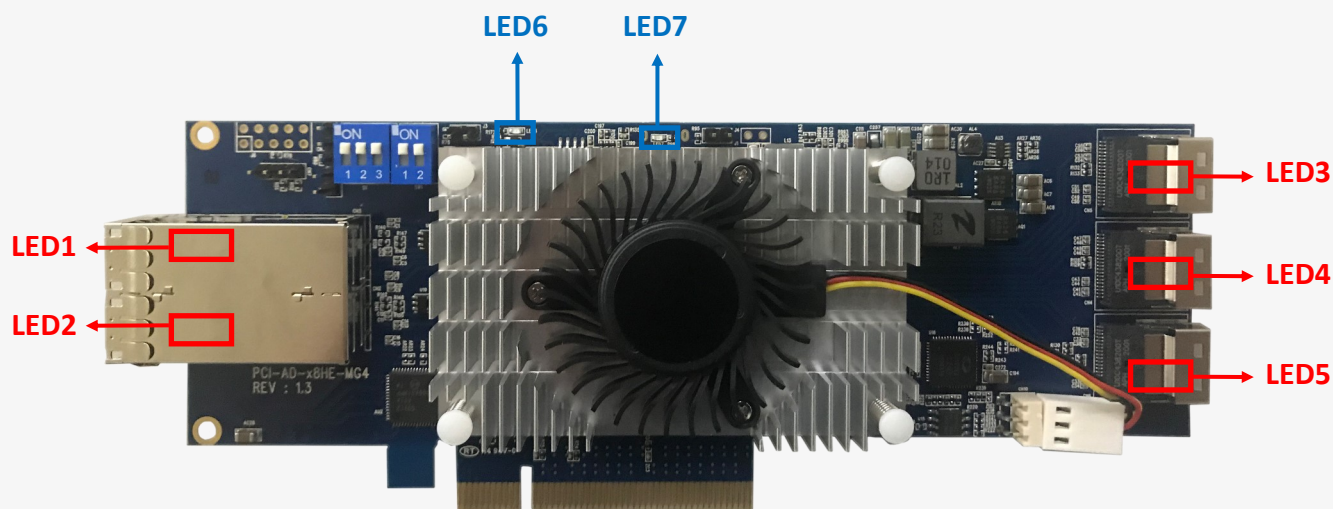
Target Mode

Mode 7 SRIS: Set SFF8674 to one x8 link, each SFF8654 to one x4 link

Note: For Target mode, set S1 to mode 7 and SW1 to Target mode.



Function Description For LEDs



| Location | Color | Description |
|-----------|-------|--|
| LED6 | Blue | <u>Switchtec Heartbeat LED</u> Blinking: Indicates Switchtec loading firmware successfully and working correctly |
| LED7 | Green | <u>System Healthy LED</u> 0.5Hz blinking for system good 2Hz blinking if any failure events detected, etc. voltages, FAN, and temperatures failed |
| LED 1/2 | Red | <u>Link matching LED for ports in SFF8674 connectors</u> Case 1: set in mode 1, 4 or 7 LED1 lights when port in SFF8674 not link at x8. Case 2: set in mode 2, 3, 5 or 6 LED1 or/and LED2 light when ports in SFF8674 not link at x4 or 2x2 |
| LED 3/4/5 | Red | <u>Link matching LED for ports in SFF8654 connectors</u> Case 1: set in mode 1 to mode 7 LED3,LED4 or/and LED5 light when ports in SFF8654 not link at x4 or 2x2 |



SlimSAS Pin Definition

| SlimSAS Connector | | | | |
|-------------------|------------|--|--------|-----------|
| Pin No | Pin Names | | Pin No | Pin Names |
| A2 | RX_P0 | | B2 | TX_P0 |
| A3 | RX_N0 | | B3 | TX_N0 |
| A5 | RX_P1 | | B5 | TX_P1 |
| A6 | RX_N1 | | B6 | TX_N1 |
| A8 | REF_CLK_P1 | | B8 | I2C_SCL |
| A9 | REF_CLK_N1 | | B9 | I2C_SDA |
| A11 | REF_CLK_P0 | | B11 | PERST#0 |
| A12 | REF_CLK_N0 | | B12 | PERST#1 |
| A14 | RX_P2 | | B14 | TX_P2 |
| A15 | RX_N2 | | B15 | TX_N2 |
| A17 | RX_P3 | | B17 | TX_P3 |
| A18 | RX_N3 | | B18 | TX_N3 |

SFF8674 Pin Definition (PCI-SIG Mode)



| | ROW | Column | | | | | |
|------|-----|-----------|--------------|-------|-------|-------|-------|
| | | 1 | 2 | 4 | 5 | 7 | 8 |
| CON1 | A | CADDR_1 | CABLE_INT#_1 | PERP0 | PERN0 | PERP3 | PERN3 |
| | B | VCT_1(NC) | CABLE_PRE#_1 | PERP1 | PERN1 | PERP2 | PERN2 |
| | C | CMI_SCL_1 | CMI_SDA_1 | PETP0 | PETN0 | PETP3 | PETN3 |
| | D | VACT_1 | VMAN_1 | PETP1 | PETN1 | PETP2 | PETN2 |
| CON2 | A | CADDR_2 | CABLE_INT#_2 | PERP4 | PERN4 | PERP7 | PERN7 |
| | B | VCT_2(NC) | CABLE_PRE#_2 | PERP5 | PERN5 | PERP6 | PERN6 |
| | C | CMI_SCL_2 | CMI_SDA_2 | PETP4 | PETN4 | PETP7 | PETN7 |
| | D | VACT_2 | VMAN_2 | PETP5 | PETN5 | PETP6 | PETN6 |

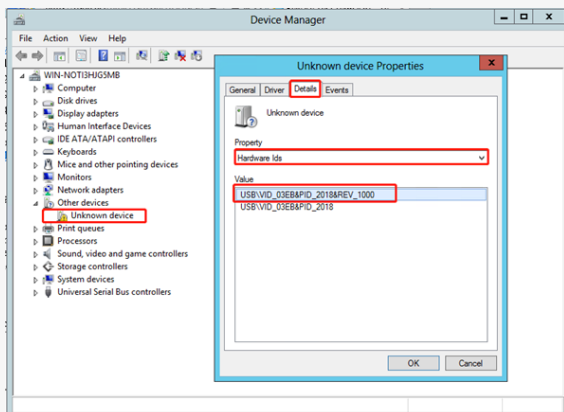


Install USB Driver

Download and install the CDC driver for unidentified device (VID_03EB&PID_2018)

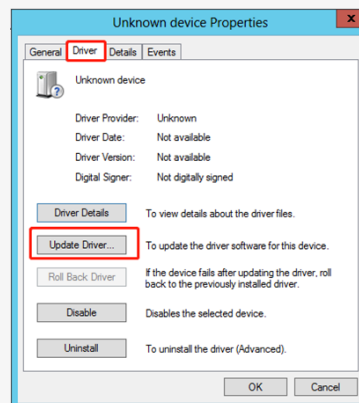
Available at:

https://www.serialcables.com/wp-content/uploads/2018/11/SynergyUSBCDC_20180518.rar



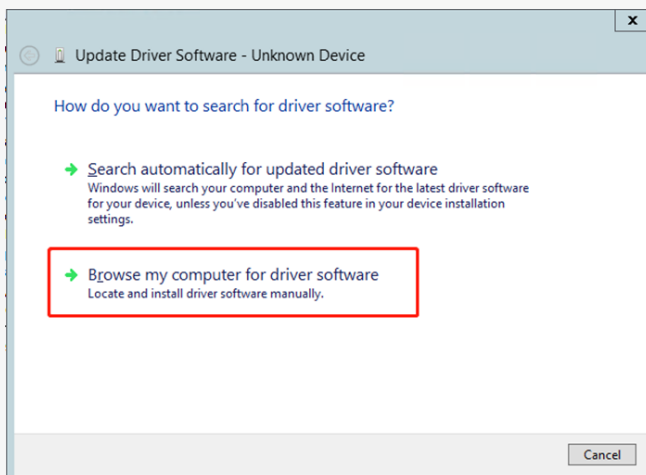
[Figure 1]

Note:

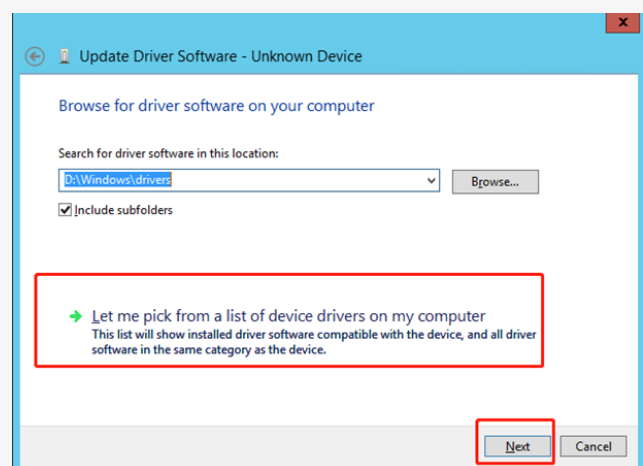


No USB driver is

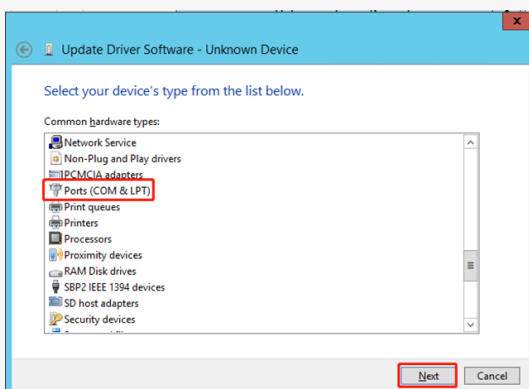
[Figure 2]



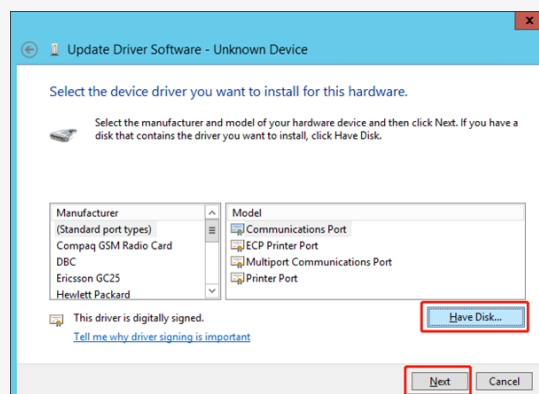
[Figure 3]



[Figure 4]



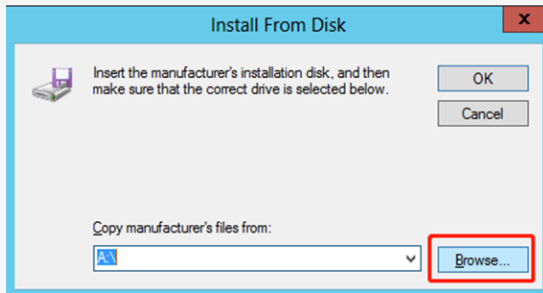
[Figure 5]



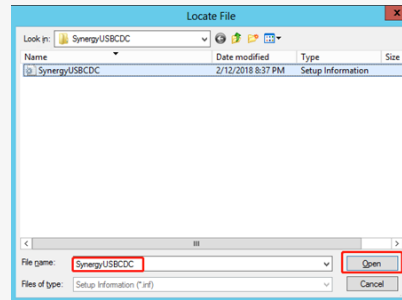
[Figure 6]



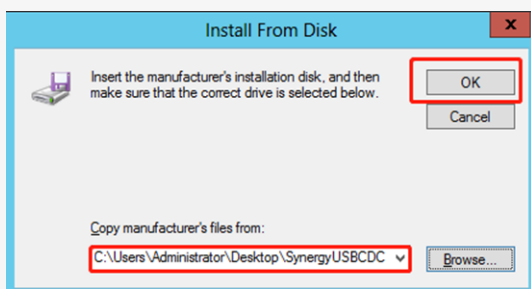
MS Slim Host Adapter Card



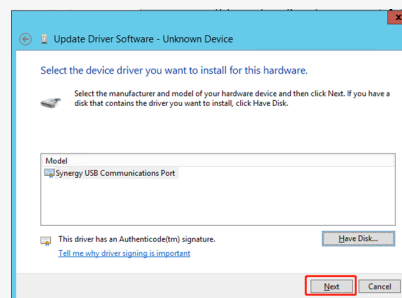
[Figure 7]



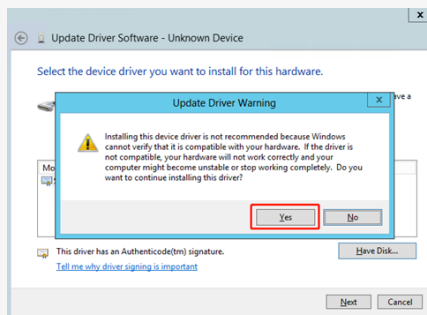
[Figure 8]



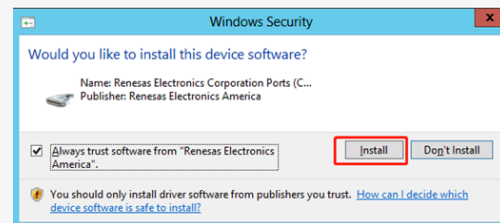
[Figure 9]



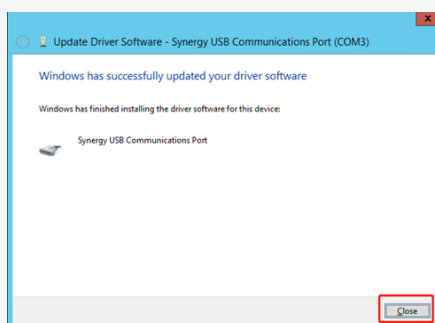
[Figure 10]



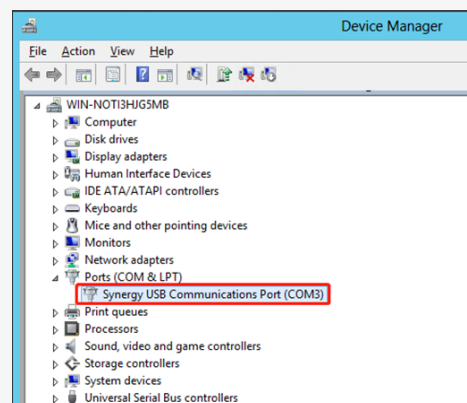
[Figure 11]



[Figure 12]



[Figure 13]



[Figure 14]

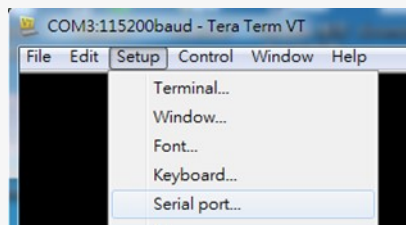


CLI Setup

Step 1. Install and launch Tera Term application



Step 2: To ensure proper communications between MS slim host adapter card and the VT100 Terminal emulation, please configure the VT100 Terminal emulation settings to the values shown below:



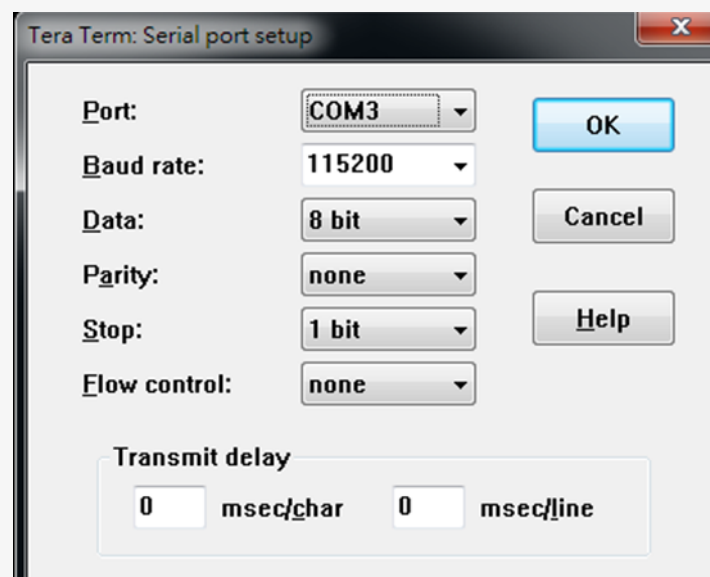
Step 3:

For “Port”, select COM3 in this example. (Depend on which COM port used on Host)

For “Baud rate”, select 115200.

For “Data”, select 8 bit. For “Parity”, select none.

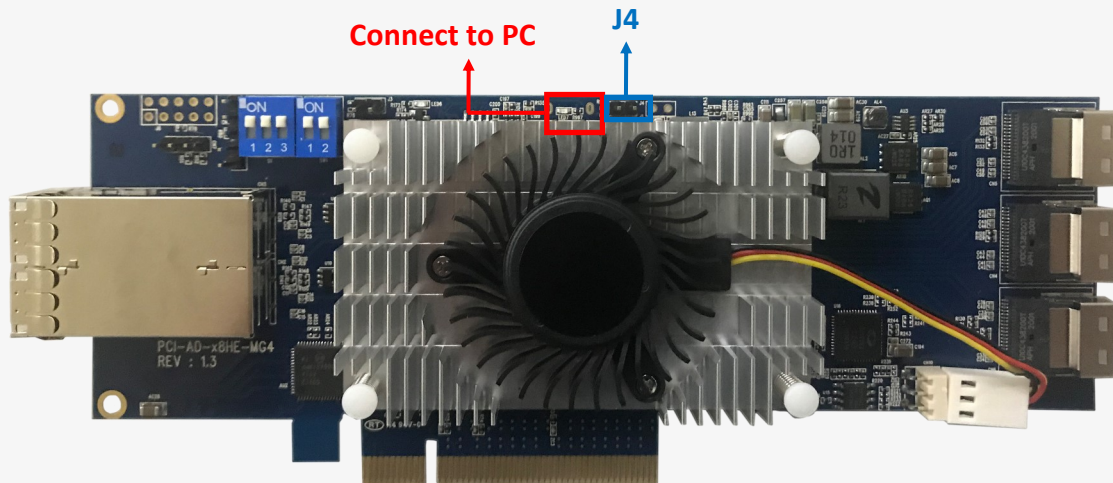
For “Stop”, select 1 bit. For “Flow control”, select: none.





FW Upgrading

Step 1. Have jumper J4 ON to force uP enter FW upgrading mode.



Step 2: Install MS host adapter card into PCIe slot of server, and connect Micro USB port to PC which used for FW upgrading, then power on the PC.

Step 3.

- a.) it will show an added USB device in PC or laptop.
- b.) Put upgrading FW(i.e `us_ms_slim_host_card_v003.srec`) into the folder of FW.
- c.) Put update.txt in the root folder.

| 名稱 | 日期 | 類型 | 大小 | 時間 |
|-----------------|-------------------|-------|------|----|
| Config | 2017/1/1 上午 12:00 | 檔案資料夾 | | |
| FW | 2017/1/1 上午 12:00 | 檔案資料夾 | | |
| Web | 2017/1/1 上午 12:00 | 檔案資料夾 | | |
| device_info.txt | 2017/1/1 上午 12:00 | 文字文件 | 1 KB | |
| update.txt | 2018/2/9 下午 06:02 | 文字文件 | 1 KB | |

Step 4. Power cycle host card to apply the new FW.



Commands List

```
File Edit Setup Control Window KanjiCode Help
Cmd>help
Cmd Help Menu
fdl :
  Xmodem download image.
  - Usage: fdl <fw>
  - fw : update fw into switch.

lsd :
  Show environmental conditions information.
  - Usage: lsd

ssdrst :
  Reset con.
  - Usage: ssdrst <con(D)|all> [channel(C)]
  - con(D) : con number should be 0 ~ 5
  - channel(C) : channel should be a or b
  - Ex: ssdrst 1
  - Ex: ssdrst 1 a
  - Ex: ssdrst all
  - Ex: ssdrst all a

showport :
  Display link speed and link width information.
  - Usage: showport

showmode :
  Show mode information of Switchtec port bifurcation.
  - Usage: showmode

scan :
  Scan device of i2c bus.
  - Usage: scan

clk :
  Set PCIe clock output enable.
  - Usage: clk [en|dis]

iicwr :
  iicwr <Addr(H)> <Con(D)> <ReadByte(D)> <WriteData(H)>
  - Addr(H) : Device address
  - Con(D) : Con should be 1 ~ 5
  - ReadByte(D) : Max read byte is 32 byte
  - WriteData(D) : Max write byte is 32 byte
  - Ex : iicwr d4 1 8 0

iicw :
  iicw <Addr(H)> <Con(D)> <WriteData(H)>...
  - Addr(H) : Device address
  - Con(D) : Con should be 1 ~ 5
  - WriteData(D) : Max write byte is 32 byte
  - Ex : iicw d4 1 ff

ver :
  Show microcontroller firmware version.
  - Usage: ver

reset :
  System reset.
  - Usage: reset
```



fdl Command

Update the configuration file or firmware for Microchip Switchtec switch.

Usage: fdl fw

```
File Edit Setup Control Window KanjiCode Help
fdl :
  Xmodem download image.
  - Usage: fdl <fw>
  - fw : update fw into switch.
```

Note: The host card must be reset in every time FW or configuration file upgrading.

It will show error message if no reset after 1st time and continue to have 2nd upgrading.

```
File Edit Setup Control Window KanjiCode Help
Cmd>
Cmd>
Cmd>fdl fw
=====
  Xmodem upload a new firmware image to flash
=====
Use Q Or q to quit Download
Send data using the -Xmodem- protocol from terminal emulator now!
Cancel file transfer because there is some error when program image or write memory!
Cmd>
```

lsl Command

Shows temperatures, FAN speed, voltages, and side-band mode support.

Usage: lsl

```
File Edit Setup Control Window KanjiCode Help
Cmd>lsl
Thermal:
  Board Temperature 1:  48 degree
  Switchtec Temperature 2: 48 degree
Fan Speed:
  Switch Fan : 4036 rpm
Voltage Sensor:
  12V Voltage : 12089 mV
  1.8V Voltage : 1808 mV
  0.84V Voltage 1 : 838 mV
  0.84V Voltage 2 : 848 mV
Side-Band Mode: SC
```



ssdrst Command

Issue PERST# from uP to device

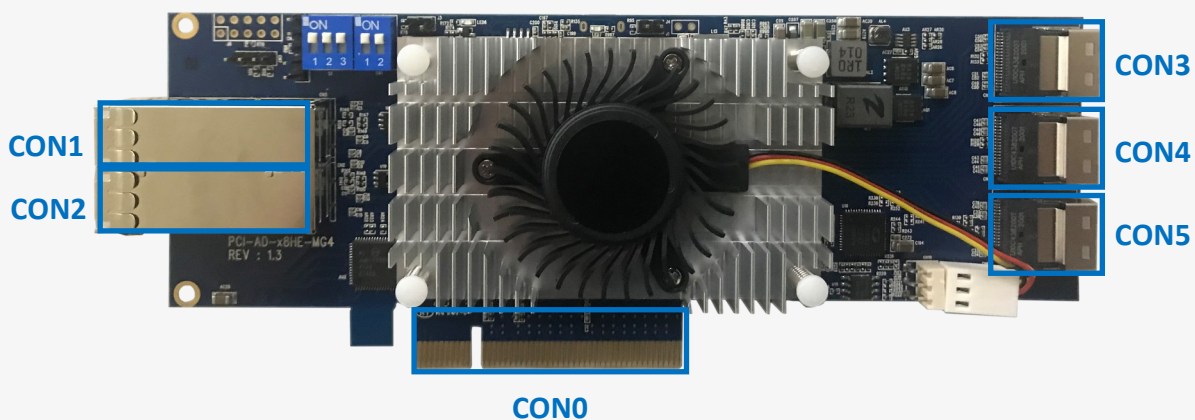
-Usage: ssdrst <con(D)|all> [channel(C)]

con(D) : con number should be 0 ~ 5

channel(C) : channel number should be a or b

Channel a: The 1st PHY of dual port drive

Channel b: The 2nd PHY of dual port drive



```
File Edit Setup Control Window KanjiCode Help
Cmd>ssdrst 1
Reset con 1 success
Cmd>
```

```
File Edit Setup Control Window KanjiCode Help
Cmd>ssdrst 1 a
Reset channel a of con 1 success
Cmd>
```

```
File Edit Setup Control Window KanjiCode Help
Cmd>ssdrst all
Reset all con success
Cmd>
```

```
File Edit Setup Control Window KanjiCode Help
Cmd>ssdrst all b
Reset channel b of all con success
Cmd>
```



showport Command

Shows ports link speed and link width information.

Usage: showport

Mode 1 or 4

```
File Edit Setup Control Window KanjiCode Help
Cmd>showport

Host mode
=====
UPS: Con 0: speed = Gen3, width = 8, max_width = 8
=====
DSP: Con 1: speed = Gen1, width = 0, max_width = 8
DSP: Con 3: speed = Gen1, width = 0, max_width = 4
DSP: Con 4: speed = Gen1, width = 0, max_width = 4
DSP: Con 5: speed = Gen1, width = 0, max_width = 4
```

Mode 2 or 5

```
File Edit Setup Control Window KanjiCode Help
Cmd>showport

Host mode
=====
UPS: Con 0: speed = Gen3, width = 8, max_width = 8
=====
DSP: Con 1: speed = Gen1, width = 0, max_width = 4
DSP: Con 2: speed = Gen1, width = 0, max_width = 4
DSP: Con 3: speed = Gen1, width = 0, max_width = 4
DSP: Con 4: speed = Gen1, width = 0, max_width = 4
DSP: Con 5: speed = Gen1, width = 0, max_width = 4
```

Mode 3 or 6

```
File Edit Setup Control Window KanjiCode Help
Cmd>showport

Host mode
=====
UPS: Con 0: speed = Gen3, width = 8, max_width = 8
=====
DSP: Con 1_A: speed = Gen1, width = 0, max_width = 2
DSP: Con 1_B: speed = Gen1, width = 0, max_width = 2
DSP: Con 2_A: speed = Gen1, width = 0, max_width = 2
DSP: Con 2_B: speed = Gen1, width = 0, max_width = 2
DSP: Con 3_A: speed = Gen1, width = 0, max_width = 2
DSP: Con 3_B: speed = Gen1, width = 0, max_width = 2
DSP: Con 4_A: speed = Gen1, width = 0, max_width = 2
DSP: Con 4_B: speed = Gen1, width = 0, max_width = 2
DSP: Con 5_A: speed = Gen1, width = 0, max_width = 2
DSP: Con 5_B: speed = Gen1, width = 0, max_width = 2
```

Mode 7

```
File Edit Setup Control Window KanjiCode Help
Cmd>showport

Target mode
=====
DSP: Con 0: speed = Gen4, width = 4, max_width = 8
=====
UPS: Con 1: speed = Gen4, width = 8, max_width = 8
DSP: Con 3: speed = Gen1, width = 0, max_width = 4
DSP: Con 4: speed = Gen1, width = 0, max_width = 4
DSP: Con 5: speed = Gen1, width = 0, max_width = 4
```



Showmode

Shows port bifurcation mode, support up to 6 modes.

Usage: showmode

```
File Edit Setup Control Window KanjiCode Help
Cmd>showmode
PCIe switch mode 3
```

Scan Command

Scan all I2C devices in MS Slim host card

Usage: scan

```
File Edit Setup Control Window KanjiCode Help
Cmd>scan

Scan I2C channel 0 devices ....
Device address:0x42 found
Device address:0x48 found
Device address:0xa2 found
Device address:0xd2 found
```

clk Command

Show the clock output status or disable the clock output for all downstream ports.

Usage: clk

```
File Edit Setup Control Window KanjiCode Help
Cmd>clk
Con 1_A clk output enable
Con 1_B clk output enable
Con 2_A clk output enable
Con 2_B clk output enable
Con 3_A clk output enable
Con 3_B clk output enable
Con 4_A clk output enable
Con 4_B clk output enable
Con 5_A clk output enable
Con 5_B clk output enable
```

Usage: clk dis/en

Clock output disable/enable feature is dynamically changing, without card reset or power cycle.

```
File Edit Setup Control Window KanjiCode Help
Cmd>clk dis
OK, clock output disable
Cmd>
```




iicwr Command

Data read for drives from SMBus

Usage: iicwr <Addr(H)> <Slot(D)> <ReadByte(D)> <WriteData(H)>

- Addr(H) : Device address
- con(D) : con should be 1 ~ 5
- ReadByte(D) : Max read byte is 32 byte
- WriteData(D) : Max write byte is 32 byte
- Ex : iicwr d4 1 8 0

```
File Edit Setup Control Window KanjiCode Help
Cmd>iicwr d4 1 8 0
Data [0] = 6
Data [1] = 7b
Data [2] = 1f
Data [3] = 1a
Data [4] = 0
Data [5] = 0
Data [6] = 0
Data [7] = 26
```

iicw Command

Byte or page write data to drives from SMBus

Usage: iicw <Addr(H)> <Slot(D)> <WriteData(H)>

- Addr(H) : Device address
- con(D) : con should be 1 ~ 5
- WriteData(D) : Max write byte is 32 byte
- Ex : iicw d4 1 ff

```
File Edit Setup Control Window KanjiCode Help
Cmd>iicw d4 1 ff
Write Data [0] = ff
```



ver Command

Shows card information, S/N, uP FW and PCIe switch Switchtec FW version.

Usage: ver

```
File Edit Setup Control Window KanjiCode Help
Cmd>ver
SN      :
Company : Serial Cables
Model   : MS SLIM HOST CARD
Version : 0.0.3   Date : Sep 18 2020 23:54:20
=====
Switchtec Firmware Revision Information:-
=====
Name           Active After Reset   Running Now   Version
-----
DATA0:         *                   *             03.50.00.3e
DATA1:         *                   *             03.50.00.3e
IMG0  :         *                   *             03.50.00.3e
IMG1  :         *                   *             03.50.00.3e
```

reset Command

Reset uP FW

Usage: reset

```
File Edit Setup Control Window KanjiCode Help
Cmd>reset
System Reset...
Cmd>
```