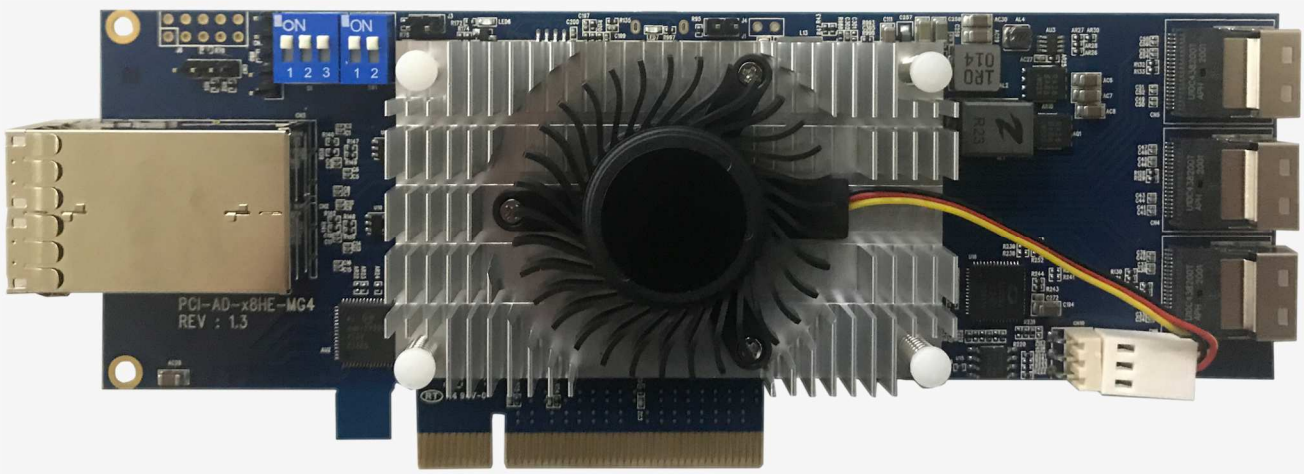
MS Slim Host Adapter Card



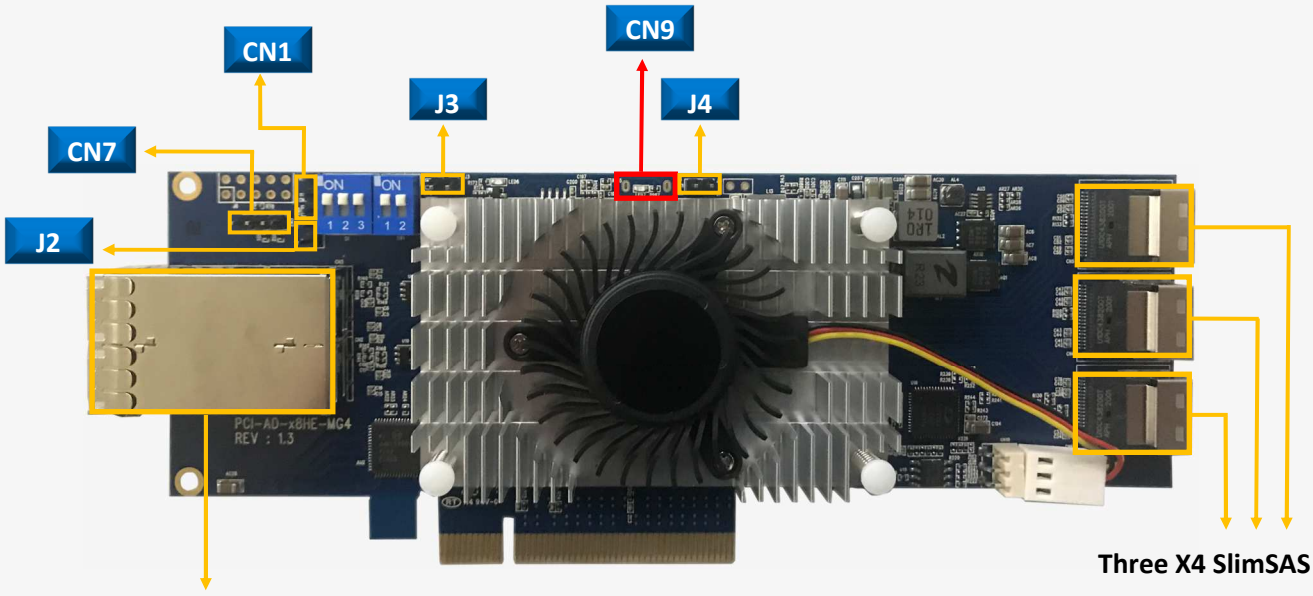
User's Manual

REV: 1.2

Feb. 2021

MS Slim Host Adapter Card

Headers And Connectors



Dual Ports MiniSAS HD

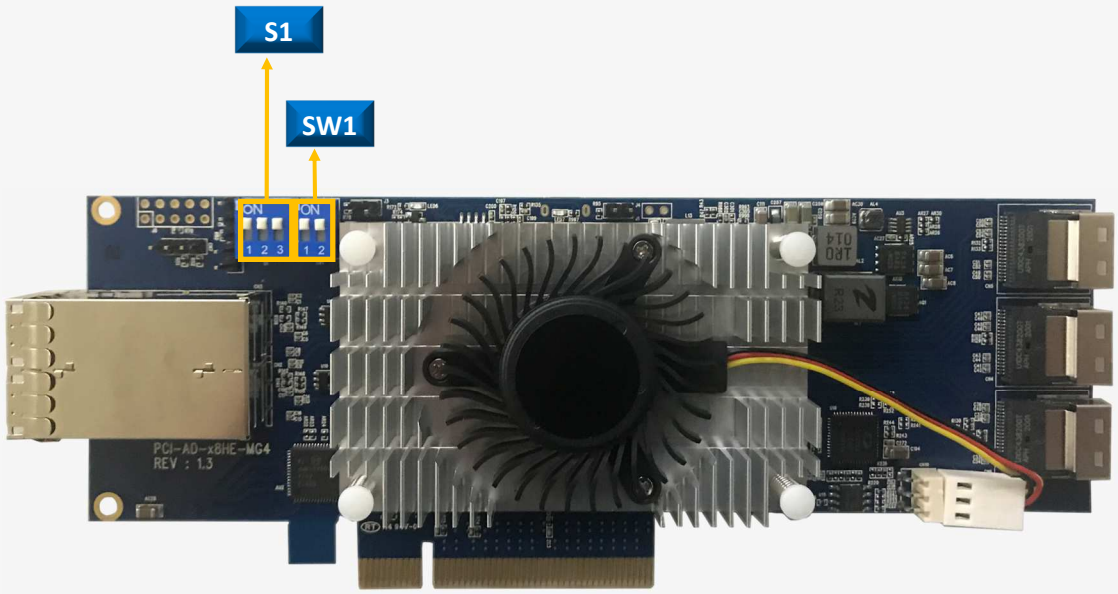
SFF8674 connector

Three X4 SlimSAS

SFF8654 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

POS	Description
	Target mode and select Side-band mode to PCI-SIG in SFF8674 connectors (*)
	Host mode and select Side-band mode to PCI-SIG in SFF8674 connectors
	Host mode and select Side-band mode to SC in SFF8674 connectors

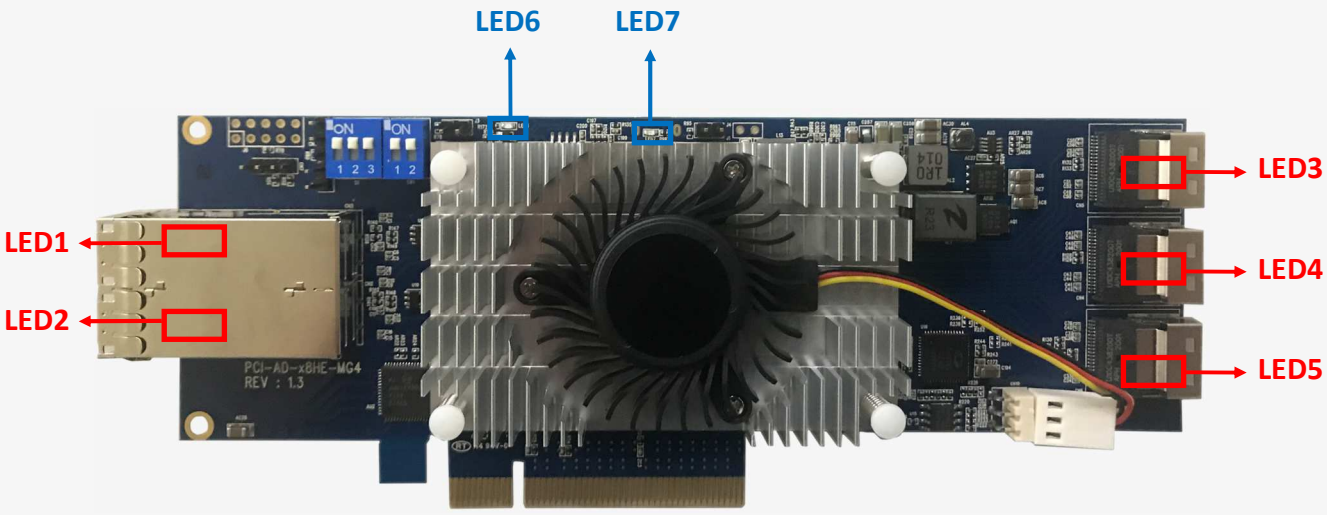
Side-band mode		
	PCI-SIG	SC
A1	CADDR	CLK_0_N
A2	CABLE_INT#	CLK_0_P
B1	VCT(NC)	CLK_1_N
B2	CABLE_PRE#	CLK_1_P
C1	CMI_SCL	CMI_SCL
C2	CMI_SDA	CMI_SDA
D1	VACT	PERST#_0
D2	VMAN	PERST#_1

Switch Slide S1

POS	Modes	Host/ Target	Description
	1	Host	**SRNS**: Set SFF8674 to one x8 link, each SFF8654 to one x4 link
	2		**SRNS**: Set SFF8674 to Two x4 link, each SFF8654 to one x4 link
	3		**SRNS**: Set SFF8674 to Four x2 link, each SFF8654 to Two x2 link
	4		**SRIS**: Set SFF8674 to one x8 link, each SFF8654 to one x4 link
	5		**SRIS**: Set SFF8674 to Two x4 link, each SFF8654 to one x4 link
	6		**SRIS**: Set SFF8674 to Four x2 link, each SFF8654 to Two x2 link
	7	Target	**SRIS**: Set SFF8674 to one x8 link, each SFF8654 to one x4 link

*Note: Target mode supports in Port bifurcation mode 7 with PCI-SIG side band mode.

Function Description For LEDs



Location	Color	Description
LED6	Blue	**Switchtec Heartbeat LED** Blinking: Indicates Switchtec loading firmware successfully and working correctly
LED7	Green	**System Healthy LED** 0.5Hz blinking for system good 2Hz blinking if any failure events detected, etc. voltages, FAN, and temperatures failed
LED 1/2	Red	**Link matching LED for ports in SFF8674 connectors** 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	**Link matching LED for ports in SFF8654 connectors** 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 (SC Mode)

CON1

CON2

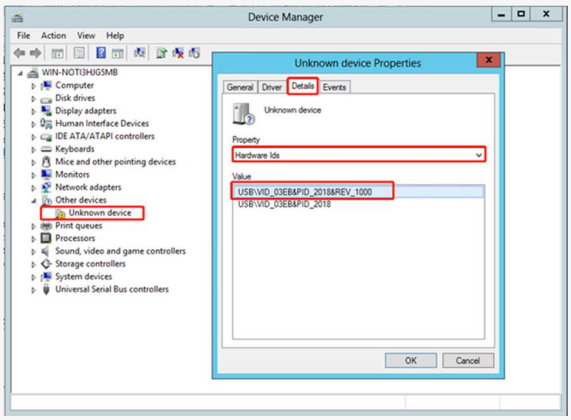
	ROW	Column					
		1	2	4	5	7	8
CON1	A	CLK_0_N	CLK_0_P	PERP0	PERN0	PERP3	PERN3
	B	CLK_2_N	CLK_2_P	PERP1	PERN1	PERP2	PERN2
	C	I2C_SCL_1	I2C_SDA_1	PETP0	PETN0	PETP3	PETN3
	D	PERST#_0	PERST#_1	PETP1	PETN1	PETP2	PETN2
CON2	A	CLK_1_N	CLK_1_P	PERP4	PERN4	PERP7	PERN7
	B	CLK_3_N	CLK_3_P	PERP5	PERN5	PERP6	PERN6
	C	I2C_SCL_2	I2C_SDA_2	PETP4	PETN4	PETP7	PETN7
	D	PERST#_2	PERST#_3	PETP5	PETN5	PETP6	PETN6

Install USB Driver

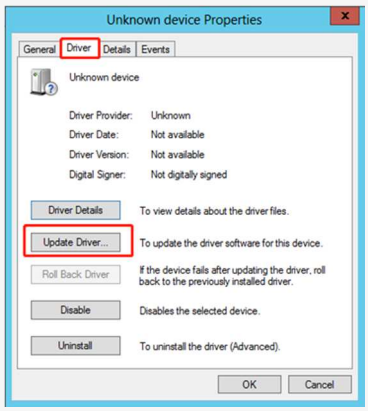
Download and install the CDC driver for unidentified device (VID_03EB&PID_2018)

Available at:

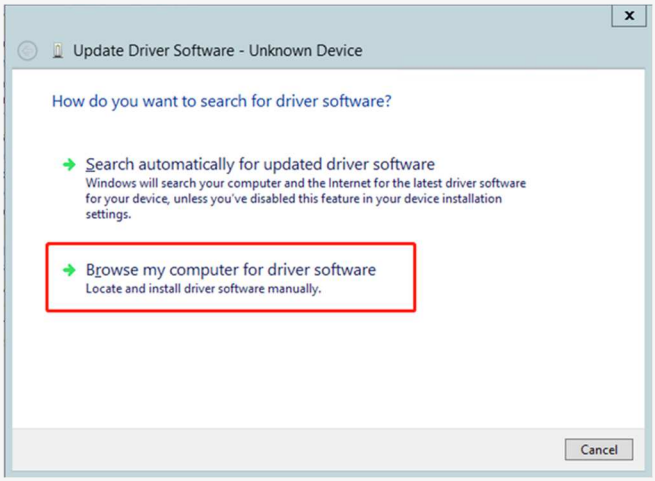
https://www.serialcables.com/wp-content/uploads/2018/11/SynergyUSBCDC_20180518.rar



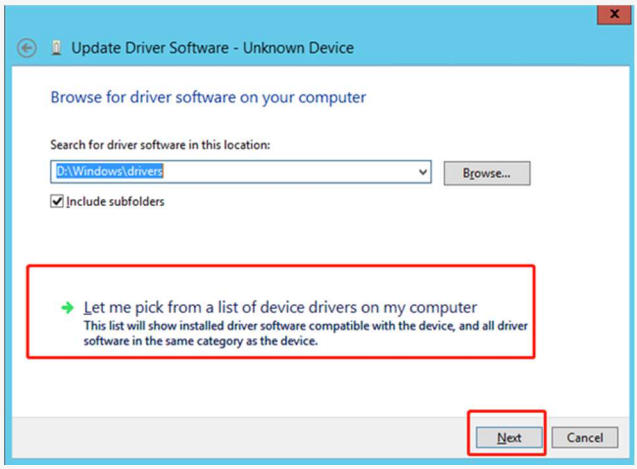
[Figure 1]



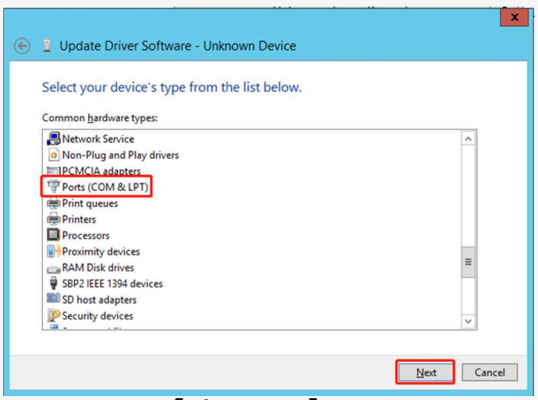
[Figure 2]



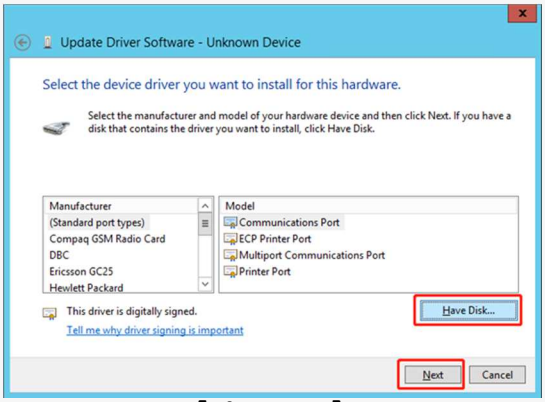
[Figure 3]



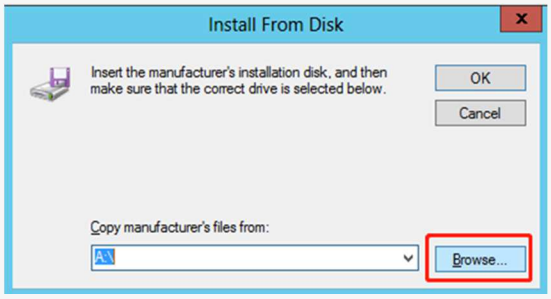
[Figure 4]



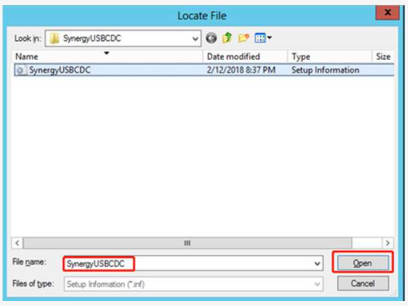
[Figure 5]



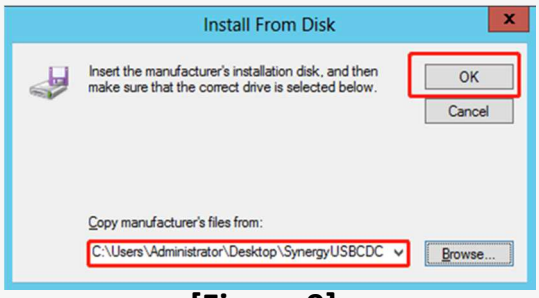
[Figure 6]



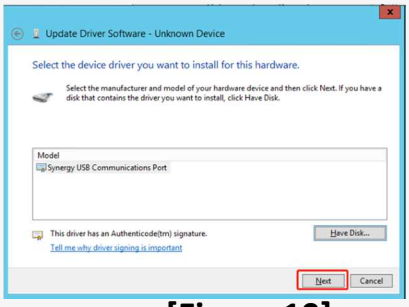
[Figure 7]



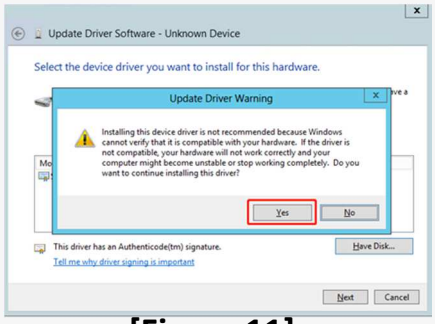
[Figure 8]



[Figure 9]

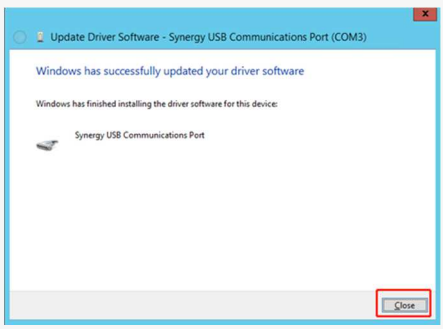


[Figure 10]

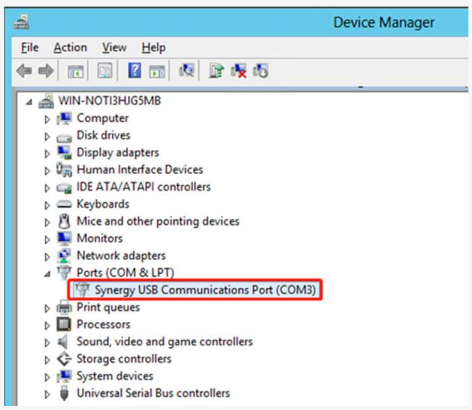


[Figure 11]

[Figure 12]



[Figure 13]

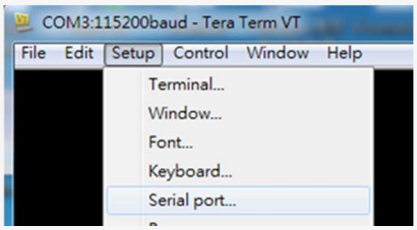


[Figure 14]

CLI Setup

Step 1. Install and launch Tera Term application

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



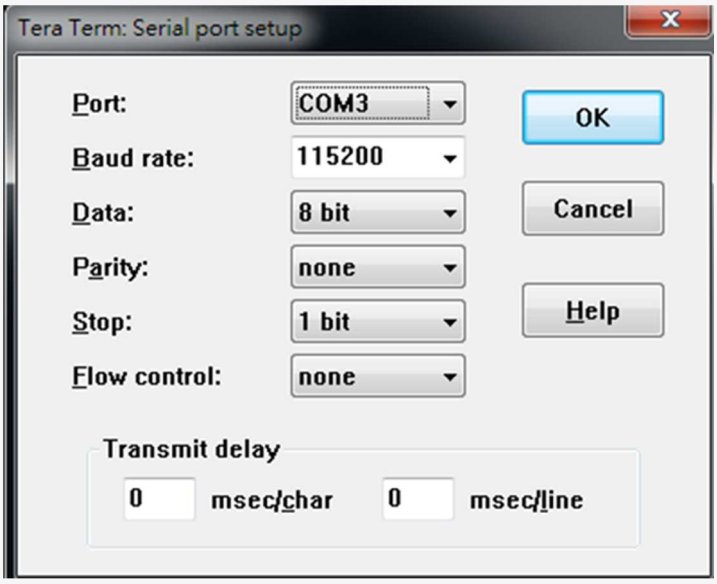
Step 3:

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

For “Baud rate”, select 115200.

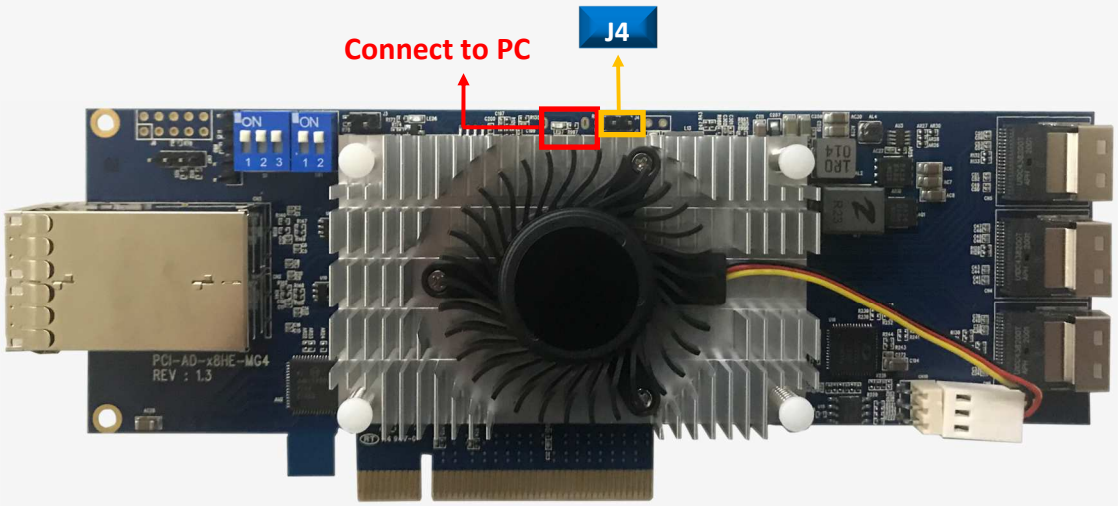
For “Data”, select 8 bit. For “Parity”, select none.

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



FW Upgrading

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



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

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.

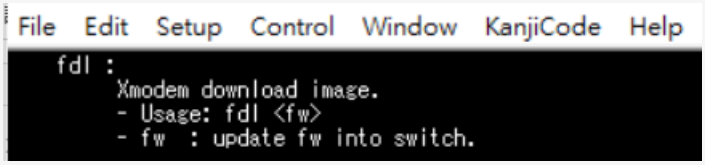
Step 4. Power cycle host card to apply the new FW.

Commands List

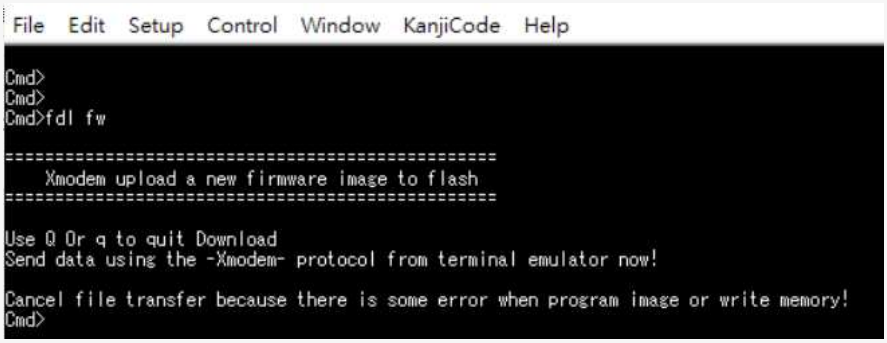
```
File  Edit  Setup  Control  Window  KanjiCode  Help
Cmd>help
  Cmd Help Menu
    fdl :
         Xmodem download image.
         - Usage: fdl <fw>
         - fw  : update fw into switch.

    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

    toggle :
         Toggle firmware and config partitions.
         - Usage: toggle

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

fdl Command

Update the configuration file or firmware for Microchip Switchtec switch via XMODEM.
Usage: fdl fw

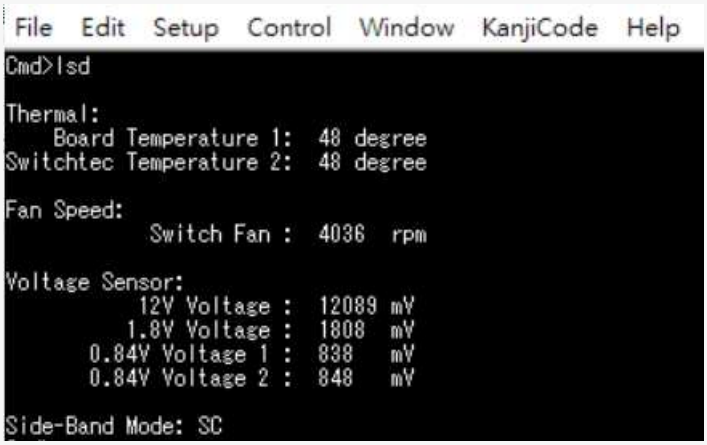


Note: The host card must be reset in every time FW or configuration file upgrading.
It will show error message if no reset after 1st time and continue to have 2nd upgrading.



lsd Command

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



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>
```

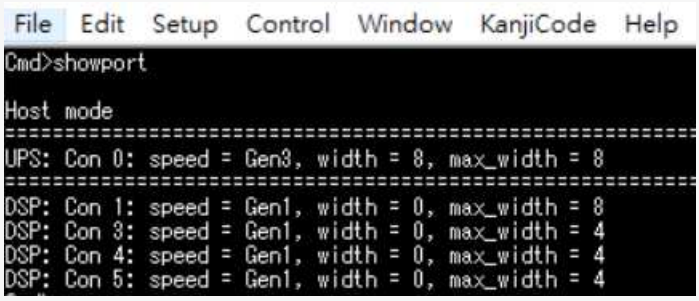
```
File  Edit  Setup  Control  Window  KanjiCode  Help
Cmd>ssdrst all
Reset all con success
Cmd>
```

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

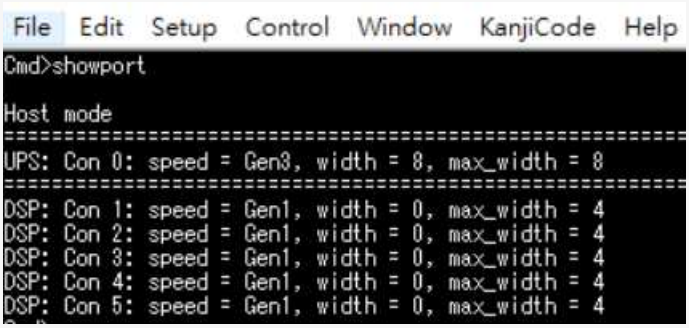
showport Command

Shows ports link speed and link width information.
Usage: showport

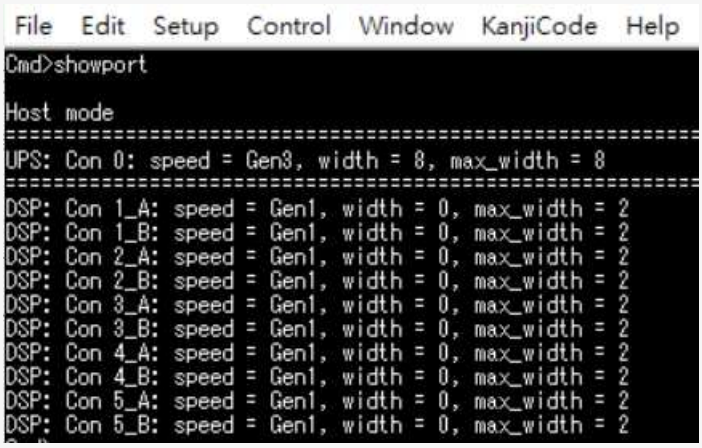
Mode 1 or 4



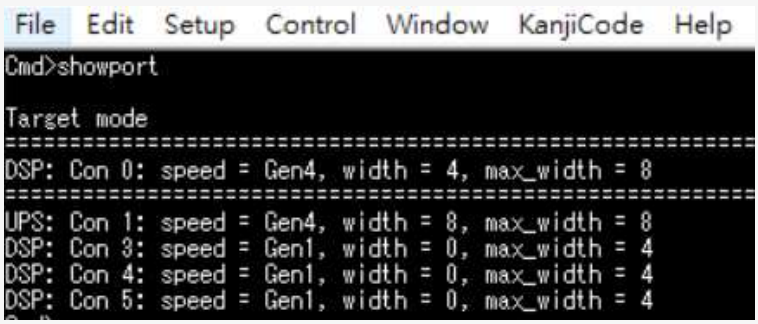
Mode 2 or 5



Mode 3 or 6

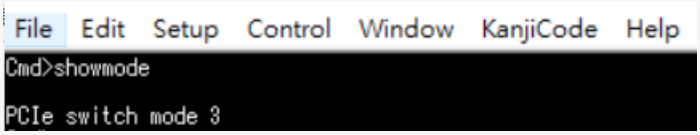


Mode 7



Showmode

Shows port bifurcation mode, support up to 7 modes.
Usage: showmode

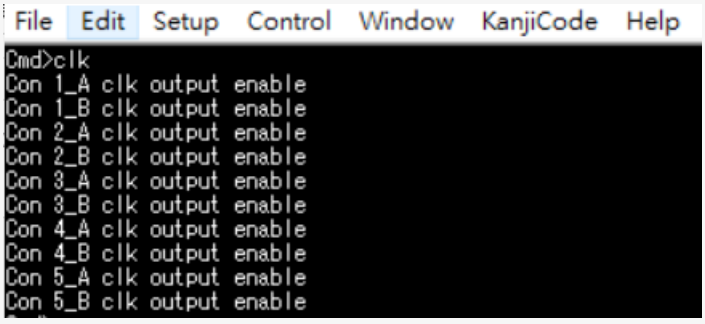


Scan Command

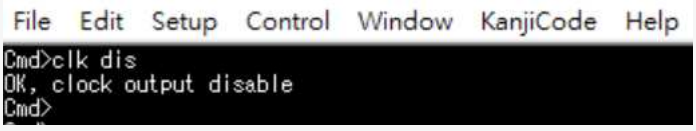
Scan all I2C devices in host card
Usage: scan

clk Command

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



Usage: clk dis/en
Clock output disable/enable feature is dynamically changing, without card reset or power cycle.

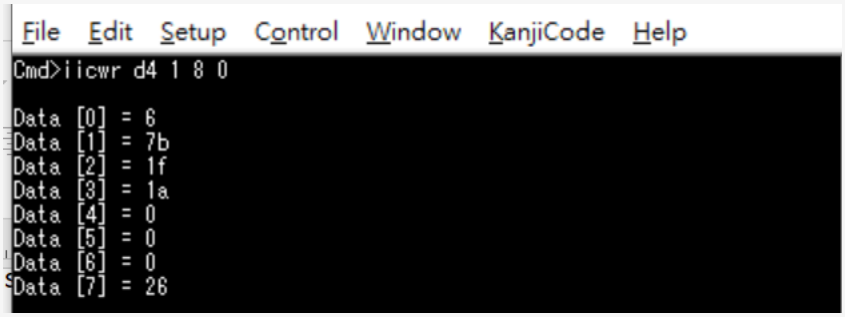


iicwr Command

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

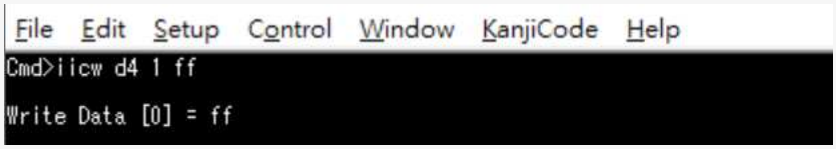


iicw Command

Byte or page write data to drives from SMbus

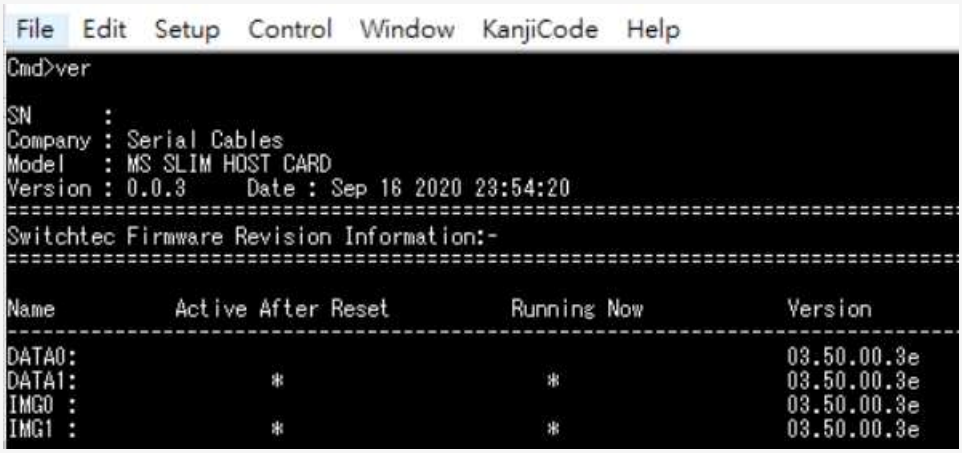
Usage: iicw <Addr(H)> <Slot(D)> <WriteData(H)>

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



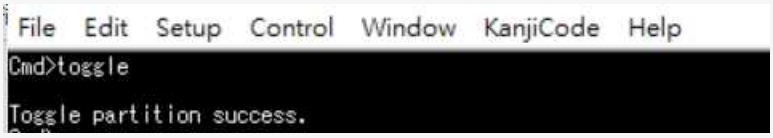
ver Command

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



toggle Command

Toggle firmware and config partitions
Usage: toggle



reset Command

Reset uP FW
Usage: reset