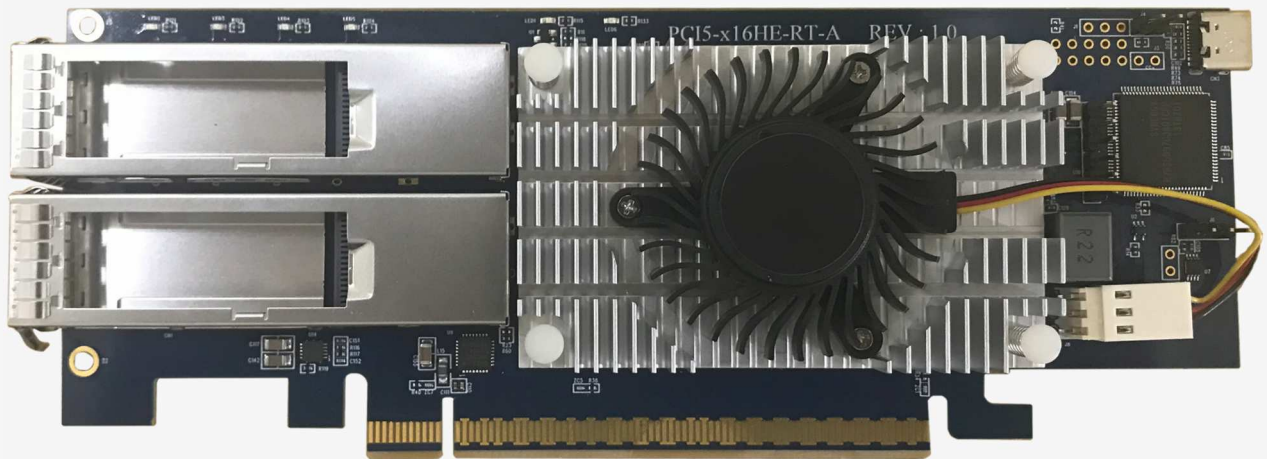




serial
C A B L E S

PCIe/CXL Retimer Host Card



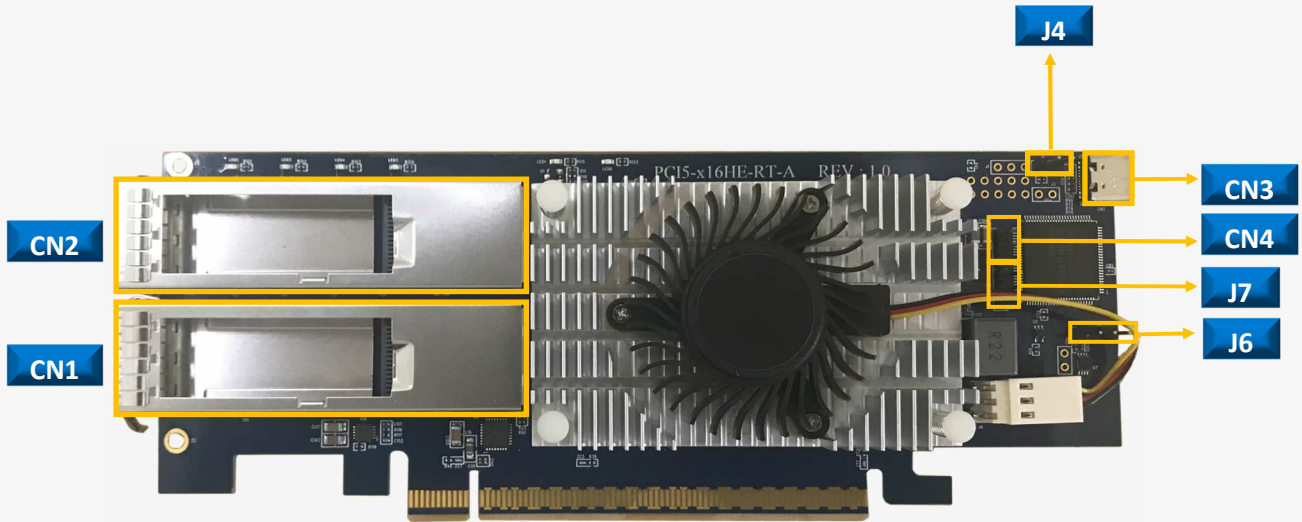
User's Manual

REV: 1.0

June. 2023



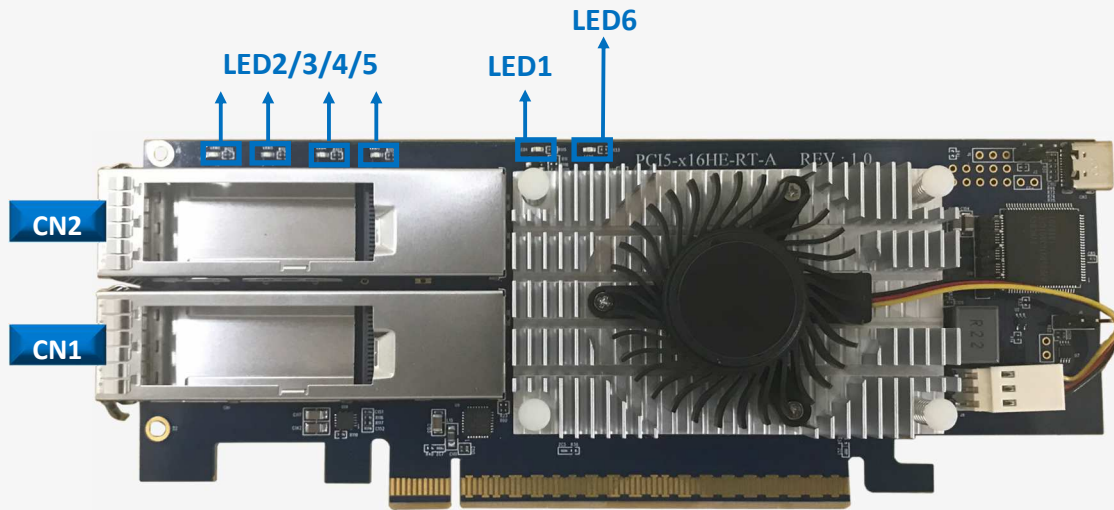
Function Description For Headers And Connectors



Location	Descriptions	Pinout
J4	Reserved I/F for retimer I2C accessing permission	
J6	Retimer I2C slave I/F. 3.3V signal level	SCL/SDA/GND
J7	Retimer I2C master I/F (Also connected to retimer EEPROM)	GND SDA SCL
CN4	Reserved I/F for MCU boot-loader mode	GND RX TX
CN3	Type-C USB connector for CLI commands	
CN1/CN2	QSFP-DD Connectors	



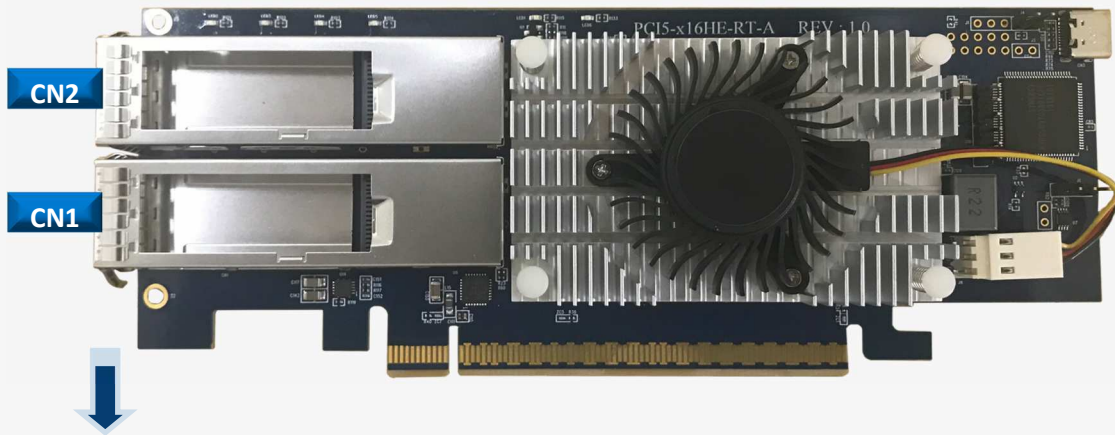
Function Description For LEDs



Location	Color	Description
LED6	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.
LED1	Blue	<u>Retimer Heartbeat LED</u> Blinking: Indicates the retimer in normal operation. Solid ON: Indicates the some error detected in retimer.
LED2/3/4/5	Red	<u>QSFP-DD Port link matching LEDs</u> LED2 and LED3 for CN1, LED4 and LED5 for CN2 will implement the LED functions based on different bifucation.



QSFP-DD Pin Definition



CN1 for PCIe Lane 0:7							
				CN2 for PCIe Lane 8:15			
Pin	Name	Pin	Name	Pin	Name	Pin	Name
2	Tx2n	21	Rx2n	40	Tx6n	59	Rx6n
3	Tx2p	22	Rx2p	41	Tx6p	60	Rx6p
5	Tx4n	24	Rx4n	43	Tx8n	62	Rx8n
6	Tx4p	25	Rx4p	44	Tx8p	63	Rx8p
8		27		46	CLKP0	65	
9	PERST#0	28		47	CLKN0	66	
10		29		48		67	
11		30		49		68	
12		31		50		69	
14	Rx3p	33	Tx3p	52	Rx7p	71	Tx7p
15	Rx3n	34	Tx3n	53	Rx7n	72	Tx7n
17	Rx1p	36	Tx1p	55	Rx5p	74	Tx5p
18	Rx1n	37	Tx1n	56	Rx5n	75	Tx5n

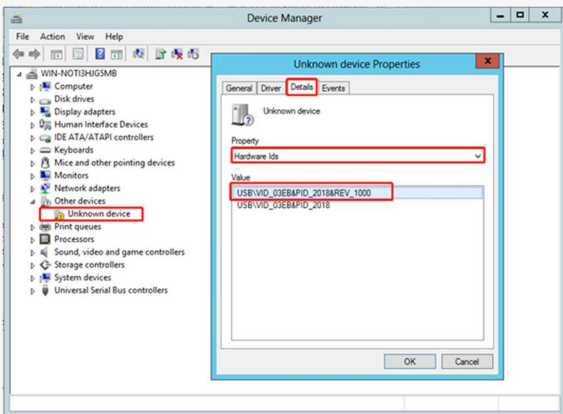


Install USB Driver

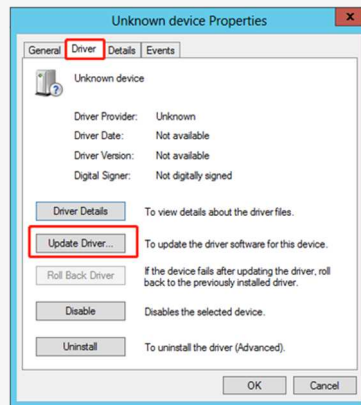
Download and install the CDC driver for unidentified device (VID_03EB&PID_2018)

Available at:

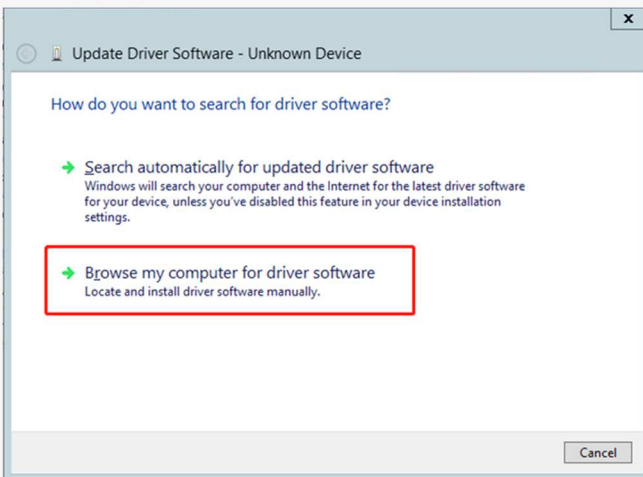
https://www.serialcables.com/wp-content/uploads/2018/11/SynergyUSB CDC_20180518.rar



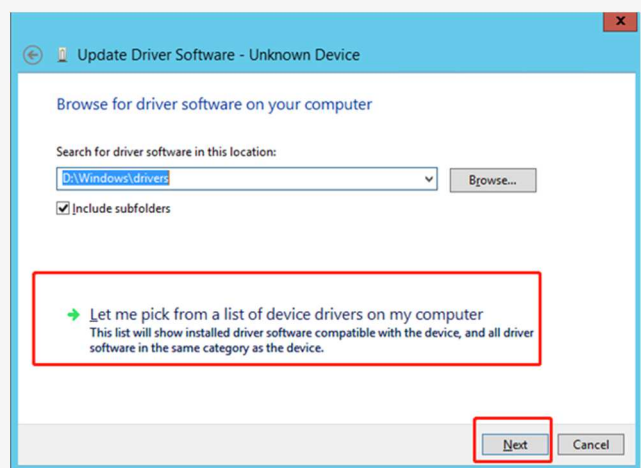
[Figure 1]



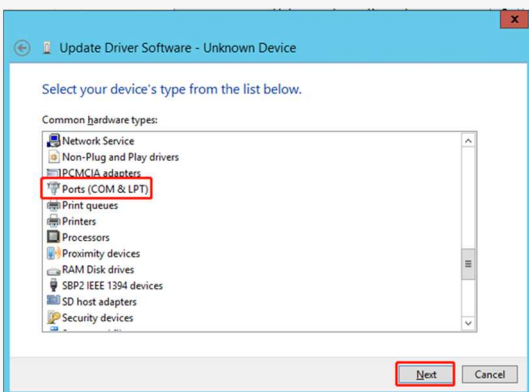
[Figure 2]



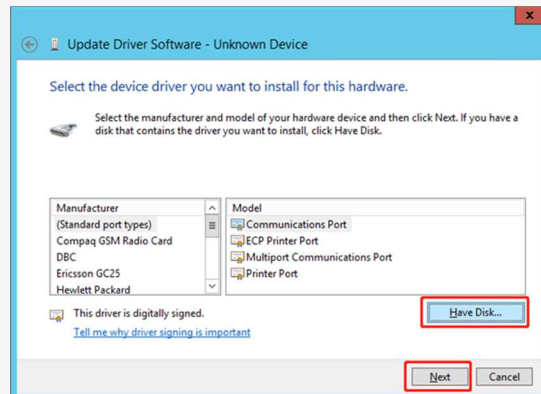
[Figure 3]



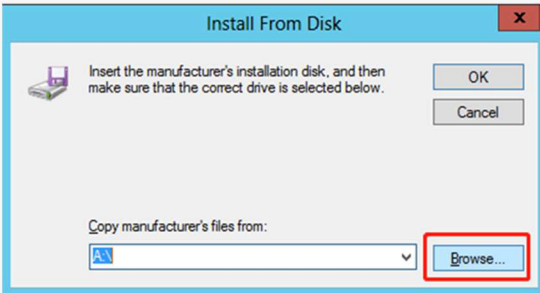
[Figure 4]



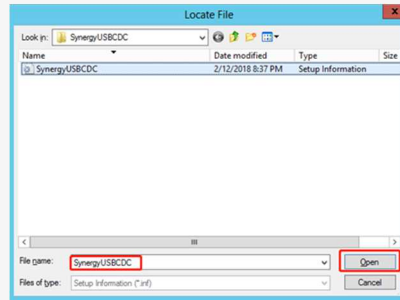
[Figure 5]



[Figure 6]



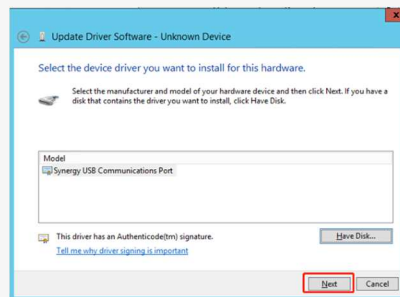
[Figure 7]



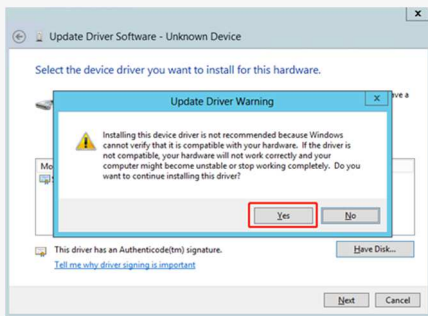
[Figure 8]



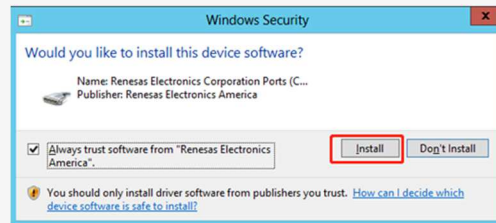
[Figure 9]



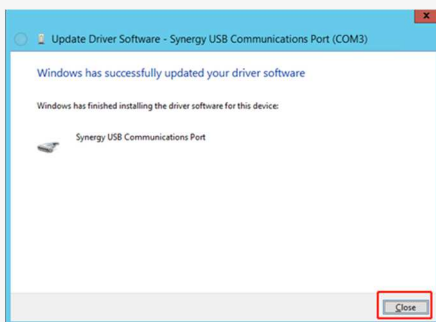
[Figure 10]



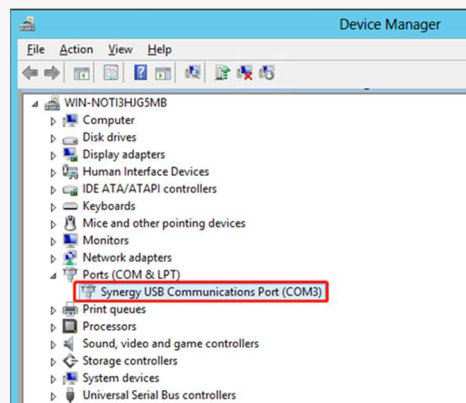
[Figure 11]



[Figure 12]



[Figure 13]



[Figure 14]

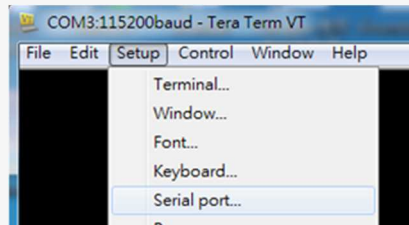


CLI Setup

Step 1. Install and launch Tera Term application
(or Hyper Terminal requires version 3.0 or higher).



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:



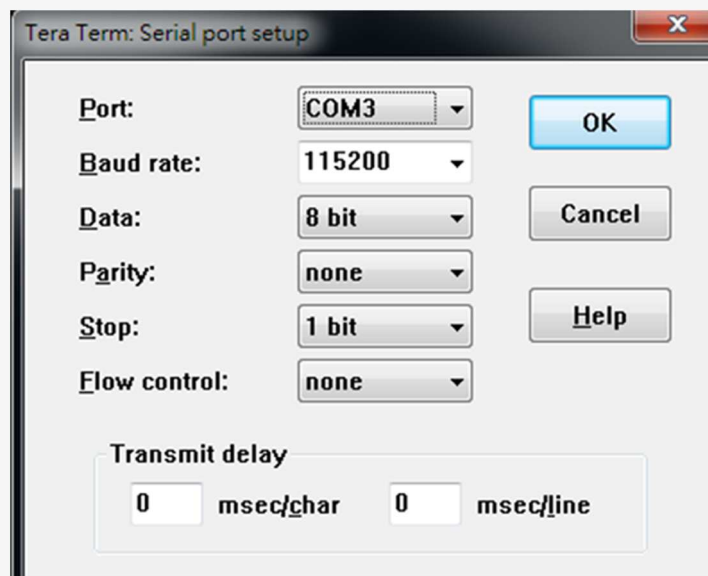
Step 3:

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.





MCU Commands List

Commands	Description
fdl	Retimer and on-board MCU FW upgrading
lsd	Shows Retimer IC temperature, FAN speed, and critical voltages.
ssdrst	send 300ms duration PERST# to attached devices in QSFP-DD connector.
showport	Show link status in retimer host card.
sdb	Permission setting for MCU accessing to retimer IC
bist	On-board I2C devices diagnostic.
ver	Shows retimer card information, MCU and retimer FW version.
sysinfo	Show retimer card information
reset	MCU FW reset (not including retimer IC)



fdl Command

Update retimer and on-board MCU FWs.

-Usage: fdl sbr|fw|mfg

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

fw=program or upgrade FW into retimer IC.

mcu=on-board MCU FW upgrding

```
Dad>fdl mcu
=====
Xmodem upload a new firmware image to flash
=====
Use 0 Or q to quit Download
Send data using the -Xmodem- protocol from terminal emulator now!
```

Update MCU FW.

```
File Edit Setup Control Window KanjiCode Help
New connection... Alt+N
Duplicate session Alt+D
Cygwin connection Alt+G
Log...
Comment to Log...
View Log
Show Log dialog...
Send file...
Transfer >
  Kermit >
  XMODEM > Receive...
  YMODEM > Send...
  ZMODEM >
  B-Plus >
  Quick-VAN >
SSH SCP...
Change directory...
Replay Log...
TTY Record
TTY Replay
Print... Alt+P
Disconnect Alt+I
Exit Alt+Q
Exit All
```

Sending the new FWs via XMODEM.

It will take few seconds for MCU FW upgrading



Isd Command

Shows retimer IC temperature, FAN speed and voltages reading.

-Usage: Isd

```
File Edit Setup Control Window KanjiCode Help
Thermal:
  Aries Temperature : 40 degree
Fans Speed:
  Aries Fan : 4061 rpm
Voltage Sensors:
  12V Voltage : 12277 mV
  1.8V Voltage : 1827 mV
  1.2V Voltage : 1222 mV
  0.9V Voltage : 917 mV
```

Thermal: The temperature reading from retimer Aries IC.

Fan Speed: The TACH value reading for FAN.

Voltage sensors: Main voltages monitoring in retimer host card.



ssdrst Command

Send a 300ms duration PERST# in Pin9 of QSFP-DD connectors.

- Usage: ssdrst <con(D)|all>
- con(D) : con number should be 0 ~ 1
- Ex: ssdrst 1
- Ex: ssdrst all

```
File Edit Setup Control Window KanjiCode Help  
Cmd>ssdrst 1  
Reset con 1 success  
Send PERST# signals to CON1
```

```
File Edit Setup Control Window KanjiCode Help  
Cmd>ssdrst all  
Reset all con success  
Send PERST# signals to both of CON1 and CON2
```

CON Mapping





showport Command

Show link status in retimer host card.

-Usage: showport

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

=====
Retimer Link state
=====
Con0: port 0, speed = Gen1, width = 0, max_width = 4, linkOkay = No, state = 5
Con0: port 1, speed = Gen1, width = 0, max_width = 4, linkOkay = No, state = 5
Con1: port 2, speed = Gen1, width = 0, max_width = 4, linkOkay = No, state = 5
Con1: port 3, speed = Gen4, width = 4, max_width = 4, linkOkay = No, state = 6
```

It indicates that retimer card set in 4x4 bifurcations. It with Gen4x4 link in CON1 2nd ports

Refer to page 11 for CON number mapping.



sdb Command

Permission setting for MCU accessing to reitmer IC.

- Usage: sdb [en|dis]

```
File Edit Setup Control Window KanjiCode Help
Cmd>sdb
SDB status: Enable:
```

Shows the SDB permission.

“Enable”: on-board MCU with the permission to access the I2C slave of reitmer IC.

“Disable”: on-board MCU won't access the I2C slave of reitmer IC.

(used when connecting an I2C master and to access reitmer IC directly.)

```
File Edit Setup Control Window KanjiCode Help
Cmd>sdb dis
Set SDB disable success
```

Disable SDB permission



bist Command

On-board I2C devices diagnostic.

- Usage: bist

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

Scan I2C channel 0 devices ....
Device address:0x40 ok.

Scan I2C channel 1 devices ....
Device address:0xa0 ok.
```

Show all of on-board I2C devices for debug purpose.



ver Command

Shows host card information, S/N, company and model names. On-board MCU FW version, also the reitmer IC FW revision.

-Usage: ver

```
File Edit Setup Control Window KanjiCode Help
Cmd>ver
S/N      : ASR012305010001
Company  : Serial Cables
Model    : ARIES QDD RETIMER CARD
Version  : 0.0.3      Date : May  4 2023 13:57:28
=====
Aries Firmware Revision Information:-
=====
SDK Version: 2.13.1
FW Version: 1.31.0
```




sysinfo Command

Show host card information.

Sysinfo command is for reitmer host card diagnostic, it combines ver, lsd, showport and bist commands.

- Usage: sysinfo

```
File Edit Setup Control Window KanjiCode Help
Cmd>sysinfo
=====
ver
=====
S/N      : ASR012305010001
Company  : Serial Cables
Model    : ARIES QDD RETIMER CARD
Version  : 0.0.3      Date : May  8 2023 14:46:54
=====
Aries Firmware Revision Information:-
=====
SDK Version: 2.13.1
FW Version: 1.31.0
=====
lsd
=====
Thermal:
  Aries Temperature : 37 degree
Fans Speed:
  Aries Fan : 4024 rpm
Voltage Sensors:
  12V Voltage : 12089 mV
  1.8V Voltage : 1835 mV
  1.2V Voltage : 1222 mV
  0.9V Voltage : 921 mV
=====
showport
=====
Retimer Link state
=====
Con0: port 0, speed = Gen1, width = 0, max_width = 8, linkOkay = No, state = 5
Con1: port 1, speed = Gen1, width = 0, max_width = 8, linkOkay = No, state = 5
=====
bist
=====
Scan I2C channel 0 devices ....
Device address:0x40 ok.

Scan I2C channel 1 devices ....
Device address:0xa0 ok.
```



reset Command

MCU FW reset (won't reset reitmer IC)

-Usage: reset

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