



PHISON PCIe Gen6 REDRIVER CARD

PCI6-AD-x16-2xMCIO-RD-PH

User's Manual

REV: 1.0

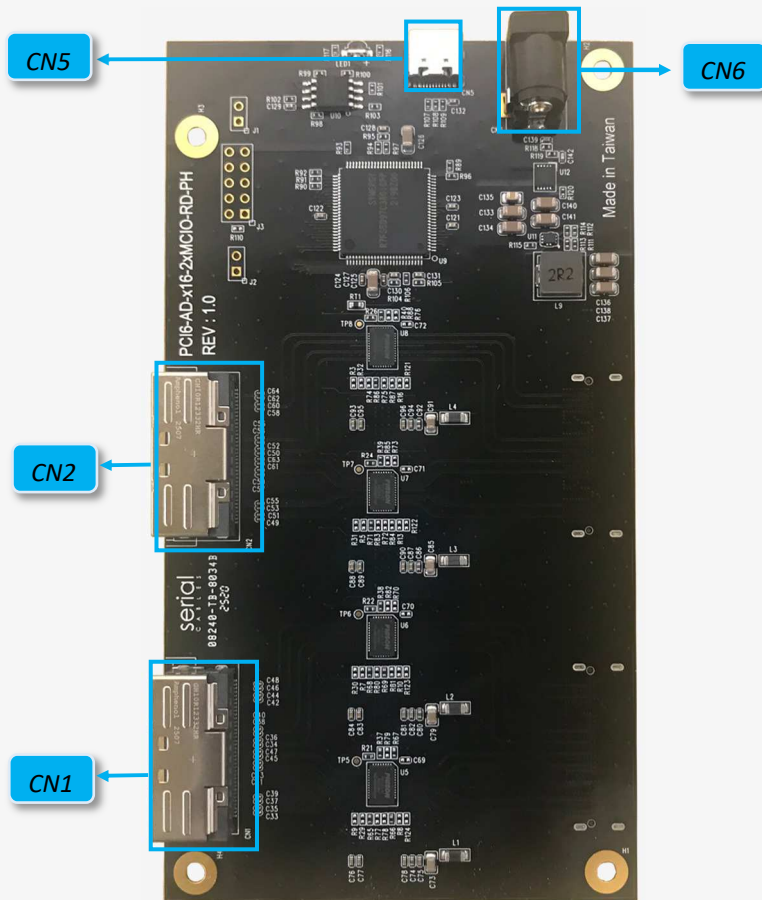
July. 2025



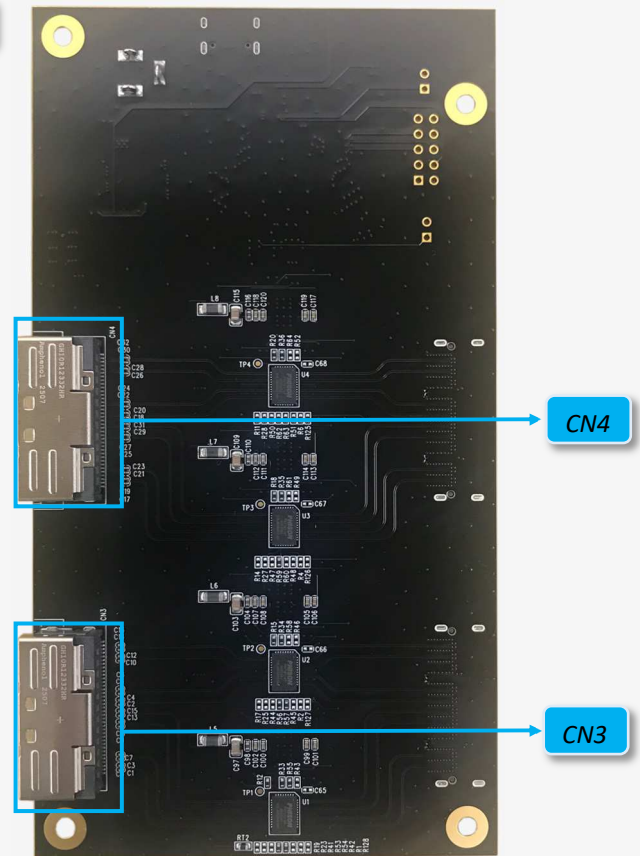
Dimensions	76 x 140 x 16mm (W*L*H) Height includes top and bottom side MCIO connectors
Connectors	1x 12V DC JACK 4x MCIO SFF-TA-1016 connectors 1x 1R4P 2.54mm FAN connector
Redriver IC	Phison PS7161 *8pcs Four-channel linear pure PCIe Gen6 Redriver IC Adjustable output linear swing, flat gain, and equalization via Pin control and I 2 C EQ boosting up to 20 dB at 16 GHz Package: FCLGA40, 6 mm x 4 mm
Power	Maximum 8.4W 12V@0.7A
Operating Temperature	0 C to +40 C
Storage Temperature	-40 C to 85 C
Operating Humidity	10% to 90% relative humidity non-condensing
Storage Humidity	5% to 95% relative humidity non-condensing
Drivers / Software	Requires no software / driver installation



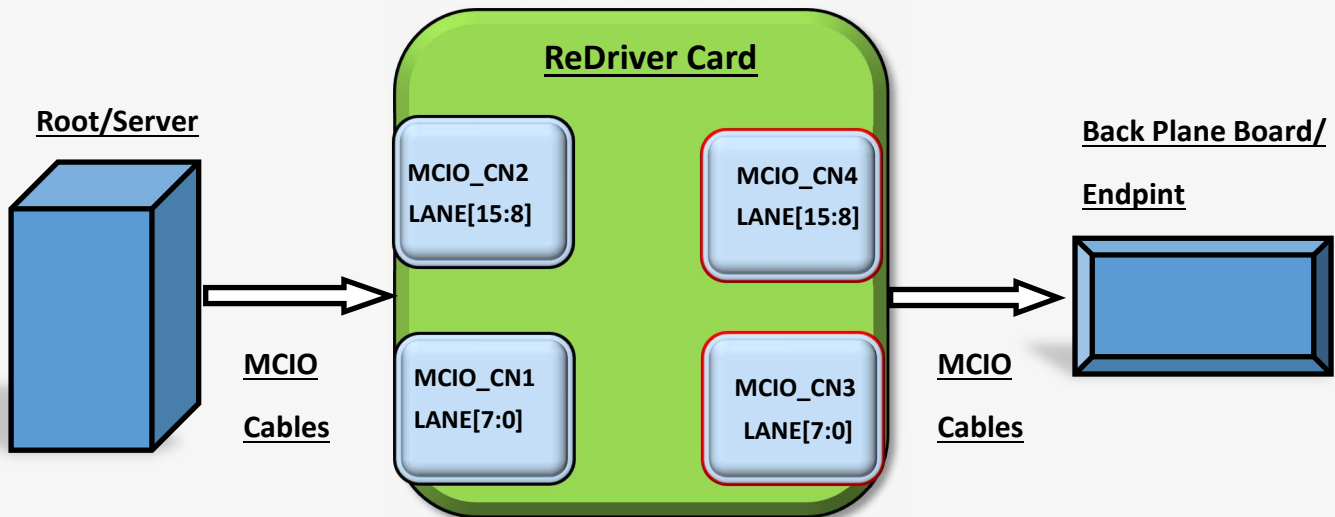
Top View



Bottom View



Location	Descriptions
CN1 CN2	MCIO X8 Connectors in SFF9402 Endpoint pinout
CN3 CN4	MCIO X8 Connectors in SFF9402 Root pinout
CN5	Type-C USB connector for running CLI commands.
CN6	DC Jack for P12V AC adapter



CN1 and CN2 are SFF9402 Endpoint pinout.

They are used to connect the MCIO connectors in host side.

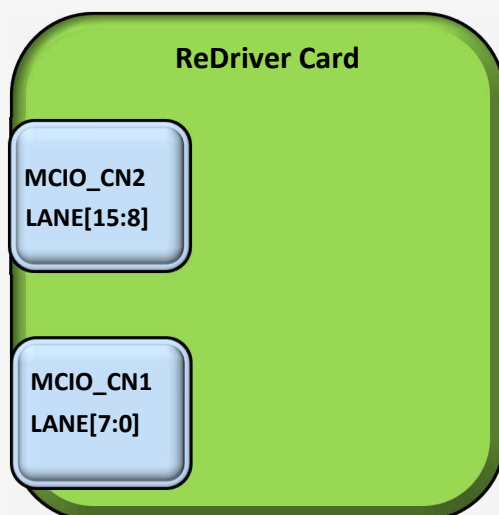
CN3 and CN4 are SFF9402 Root pinout.

They are used to connect the MCIO connectors in back plane board or PCIe endpoint devices



MCIO Pins Definition

Top View



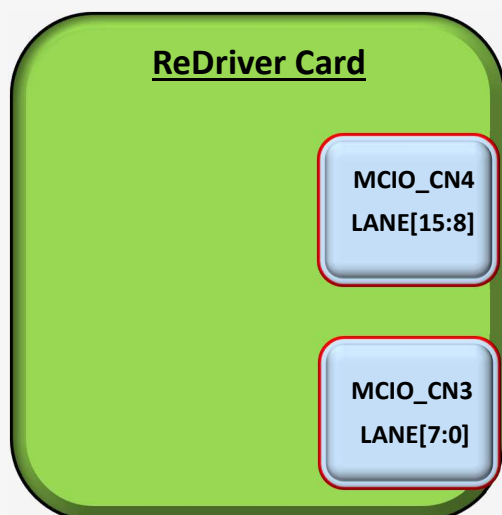
CN1	2		3		5		6		8		9	
	A	A_PERN7	A_PERP7	A_PERN6	A_PERP6				MCIO_SCL_A0		MCIO_SDA_A0	
	B	B_PETN7	B_PETP7	B_PETN6	B_PETP6				MCIO_BPTYPE_A0		MCIO_CWAKEB_A0	
	14		15		17		18		11		12	
	A	A_PERN5	A_PERP5	A_PERN4	A_PERP4				MCIO_PERSTB_A0		MCIO_CPRSNTB_A0	
	B	B_PETN5	B_PETP5	B_PETN4	B_PETP4				MCIO_CLKA_P0		MCIO_CLKA_N0	
	20		21		23		24		26		27	
	A	A_PERN3	A_PERP3	A_PERN2	A_PERP2				MCIO_SCL_B0		MCIO_SDA_B0	
	B	B_PETN3	B_PETP3	B_PETN2	B_PETP2				MCIO_BPTYPE_B0		MCIO_CWAKEB_B0	
	32		33		35		36		29		30	
	A	A_PERN1	A_PERP1	A_PERN0	A_PERP0				MCIO_PERSTB_B0		MCIO_CPRSNTB_B0	
	B	B_PETN1	B_PETP1	B_PETN0	B_PETP0				MCIO_CLKB_P0		MCIO_CLKB_N0	

CN2	2		3		5		6		8		9	
	A	A_PERN15	A_PERP15	A_PERN14	A_PERP14				MCIO_SCL_A1		MCIO_SDA_A1	
	B	B_PETN15	B_PETP15	B_PETN14	B_PETP14				MCIO_BPTYPE_A1		MCIO_CWAKEB_A1	
	14		15		17		18		11		12	
	A	A_PERN13	A_PERP13	A_PERN12	A_PERP12				MCIO_PERSTB_A1		MCIO_CPRSNTB_A1	
	B	B_PETN13	B_PETP13	B_PETN12	B_PETP12				MCIO_CLKA_P1		MCIO_CLKA_N1	
	20		21		23		24		26		27	
	A	A_PERN11	A_PERP11	A_PERN10	A_PERP10				MCIO_SCL_B1		MCIO_SDA_B1	
	B	B_PETN11	B_PETP11	B_PETN10	B_PETP10				MCIO_BPTYPE_B1		MCIO_CWAKEB_B1	
	32		33		35		36		29		30	
	A	A_PERN9	A_PERP9	A_PERN8	A_PERP8				MCIO_PERSTB_B1		MCIO_CPRSNTB_B1	
	B	B_PETN9	B_PETP9	B_PETN8	B_PETP8				MCIO_CLKB_P1		MCIO_CLKB_N1	



MCIO Pins Definition

Bottom View



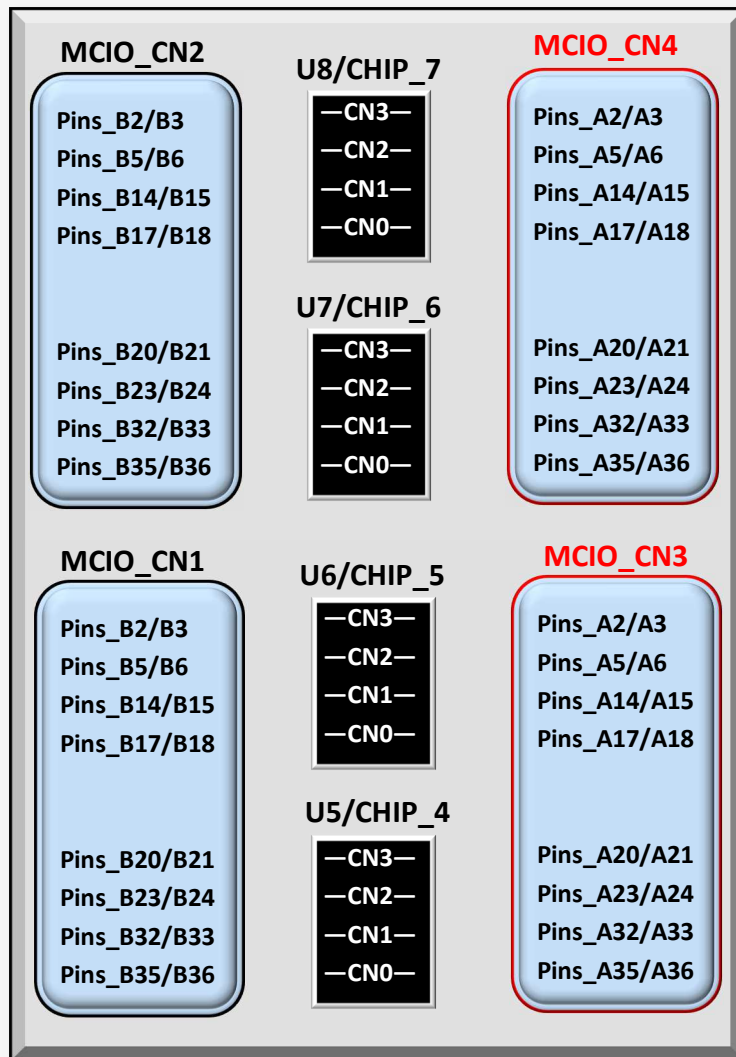
CN3	2		3		5		6		8		9	
	A	B_PERN7	B_PERP7	B_PERN6	B_PERP6	MCIO_BPTYPE_A0		MCIO_CWAKEB_A0				
	B	A_PETN7	A_PETP7	A_PETN6	A_PETP6	MCIO_SCL_A0		MCIO_SDA_A0				
	14		15		17		18		11		12	
	A	B_PERN5	B_PERP5	B_PERN4	B_PERP4	MCIO_CLKA_P0		MCIO_CLKA_N0				
	B	A_PETN5	A_PETP5	A_PETN4	A_PETP4	MCIO_PERSTB_A0		MCIO_CPRSNTB_A0				
	20		21		23		24		26		27	
	A	B_PERN3	B_PERP3	B_PERN2	B_PERP2	MCIO_BPTYPE_B0		MCIO_CWAKEB_B0				
	B	A_PETN3	A_PETP3	A_PETN2	A_PETP2	MCIO_SCL_B0		MCIO_SDA_B0				
	32		33		35		36		29		30	
	A	B_PERN1	B_PERP1	B_PERN0	B_PERP0	MCIO_CLKB_P0		MCIO_CLKB_N0				
	B	A_PETN1	A_PETP1	A_PETN0	A_PETP0	MCIO_PERSTB_B0		MCIO_CPRSNTB_B0				

CN4	2		3		5		6		8		9	
	A	B_PERN15	B_PERP15	B_PERN14	B_PERP14	MCIO_BPTYPE_A1		MCIO_CWAKEB_A1				
	B	A_PETN15	A_PETP15	A_PETN14	A_PETP14	MCIO_SCL_A1		MCIO_SDA_A1				
	14		15		17		18		11		12	
	A	B_PERN13	B_PERP13	B_PERN12	B_PERP12	MCIO_CLKA_P1		MCIO_CLKA_N1				
	B	A_PETN13	A_PETP13	A_PETN12	A_PETP12	MCIO_PERSTB_A1		MCIO_CPRSNTB_A1				
	20		21		23		24		26		27	
	A	B_PERN11	B_PERP11	B_PERN10	B_PERP10	MCIO_BPTYPE_B1		MCIO_CWAKEB_B1				
	B	A_PETN11	A_PETP11	A_PETN10	A_PETP10	MCIO_SCL_B1		MCIO_SDA_B1				
	32		33		35		36		29		30	
	A	B_PERN9	B_PERP9	B_PERN8	B_PERP8	MCIO_CLKB_P1		MCIO_CLKB_N1				
	B	A_PETN9	A_PETP9	A_PETN8	A_PETP8	MCIO_PERSTB_B1		MCIO_CPRSNTB_B1				



Mapping For Redrive ICs

Top Side



Root/Server



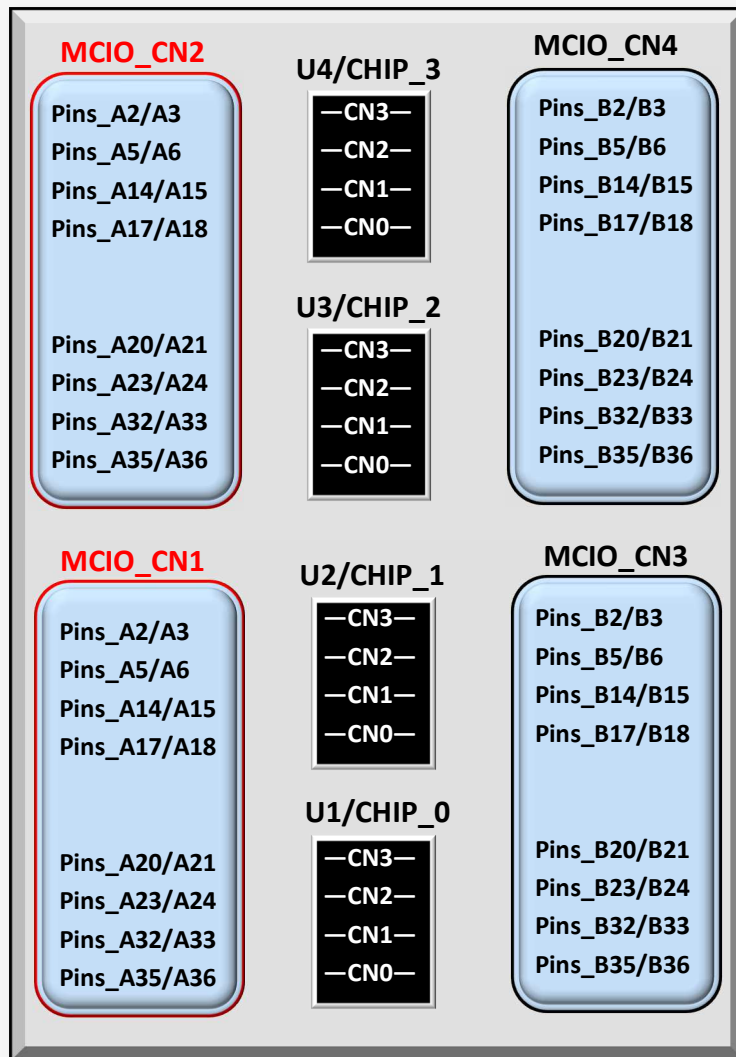
Back Plane Board/

Endpoint



Mapping For Redrive ICs

Bottom Side



Root/Server



Back Plane Board/

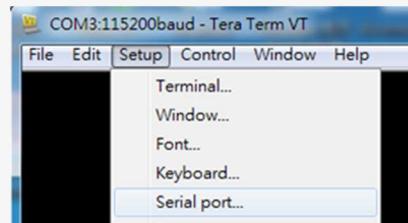
Endpoint



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:

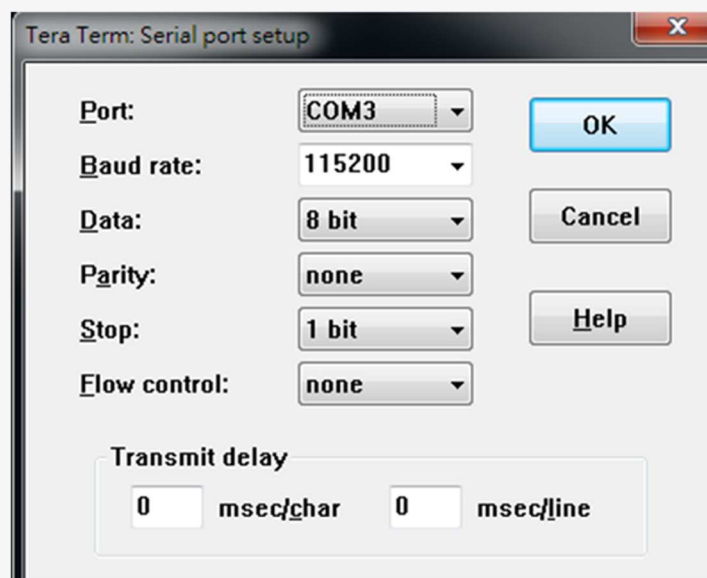
For "Port", select COM3 in this example. (Depend on which COM port used on Host)

For "Baud rate", select 115200.

For "Data", select 8 bit. For "Parity", select none.

For "Stop", select 1 bit. For "Flow control", select: none.

Click OK when you have finished your selections.





Commands	Description
fdl	MCU FW upgrading
lsd	Shows board temperatures.
eq	PS7161 Redriver receive EQ setting.
fg	PS7161 Redriver receive flat gain setting.
sw	PS7161 Redriver transmit swing setting.
tune	PS7161 Redriver EQ, flat gain and swing setting step by step.
load	Load default setting of EQ, flat gain and swing in redriver ICs.
save	Save current EQ, flat gain and swing applied in all redriver IC and channels.
bist	Check the status for all of redriver ICs.
ver	Shows P/N, S/N and MCU FW revision.
sysinfo	Show all of information in redriver cards.
reset	MCU FW reset.



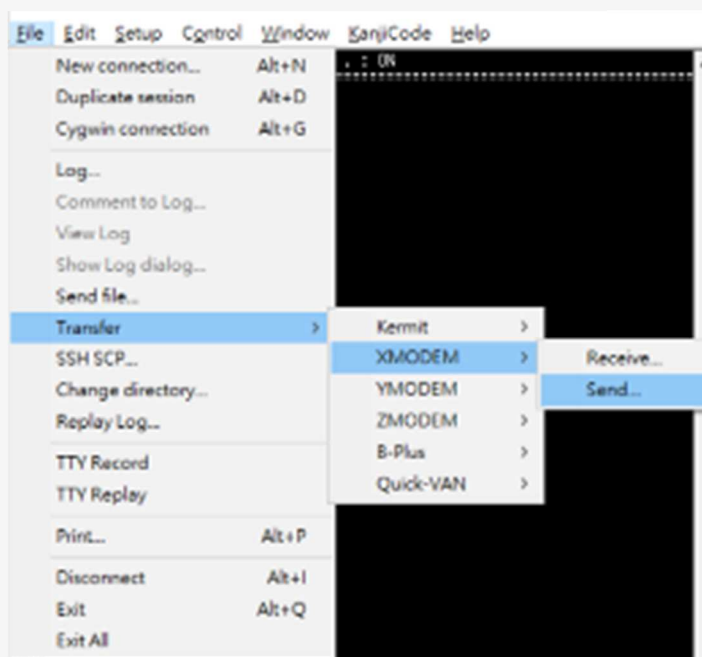
Command [fdl]

Descriptions	MCU FW upgrading
usage	fdl mcu

File Edit Setup Control Window KanjiCode Help

```
fdl :  
Xmodem download image.  
- mcu : update fw into MCU.
```

Sending updated file via XMODEM





MCU CLI Commands [lsd]

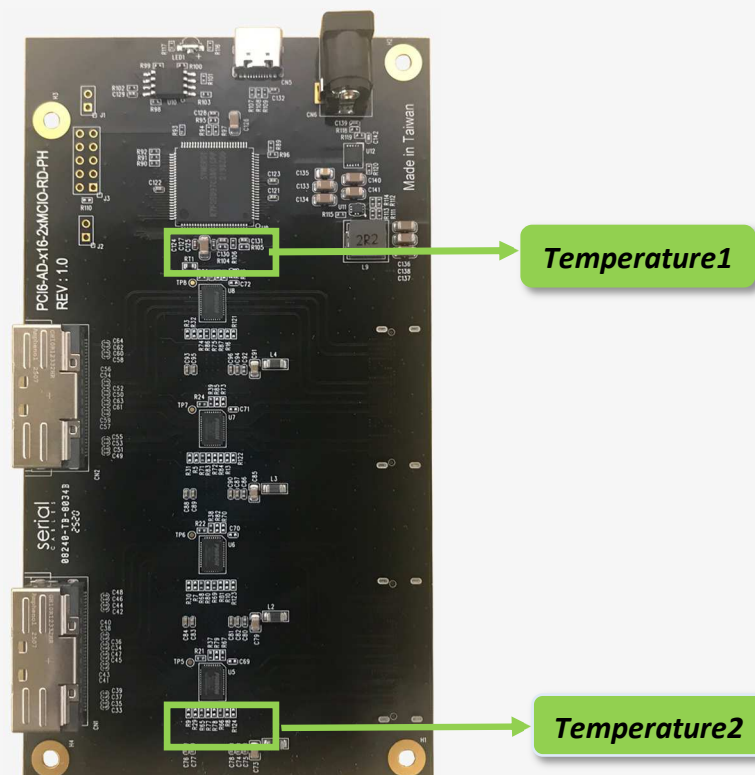
Command [lsd]

Descriptions	Shows board temperatures
usage	lsd

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

=====
★ Board Information ★
=====

[ Thermal ]
· Temperature 1      : 25° C
· Temperature 2      : 25° C
```





Command [eq]

Descriptions	PS7161 Redriver receive EQ setting
usage	eq <chip(D) all> <value(D)> eq help chip(D) : chip number should be 0 ~ 7 value(D): value should be 0 ~ 15 Ex: eq all 1 Ex: eq 1 1

Show all EQ setting

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

===== Chip0 info =====
Chip0 CH=0 EQ= 8.2 dB
Chip0 CH=1 EQ= 8.2 dB
Chip0 CH=2 EQ= 8.2 dB
Chip0 CH=3 EQ= 8.2 dB
===== Chip1 info =====
Chip1 CH=0 EQ= 8.2 dB
Chip1 CH=1 EQ= 8.2 dB
Chip1 CH=2 EQ= 8.2 dB
Chip1 CH=3 EQ= 8.2 dB
===== Chip2 info =====
Chip2 CH=0 EQ= 8.2 dB
Chip2 CH=1 EQ= 8.2 dB
Chip2 CH=2 EQ= 8.2 dB
Chip2 CH=3 EQ= 8.2 dB
===== Chip3 info =====
Chip3 CH=0 EQ= 8.2 dB
Chip3 CH=1 EQ= 8.2 dB
Chip3 CH=2 EQ= 8.2 dB
Chip3 CH=3 EQ= 8.2 dB
===== Chip4 info =====
Chip4 CH=0 EQ= 8.2 dB
Chip4 CH=1 EQ= 8.2 dB
Chip4 CH=2 EQ= 8.2 dB
Chip4 CH=3 EQ= 8.2 dB
===== Chip5 info =====
Chip5 CH=0 EQ= 8.2 dB
Chip5 CH=1 EQ= 8.2 dB
Chip5 CH=2 EQ= 8.2 dB
Chip5 CH=3 EQ= 8.2 dB
===== Chip6 info =====
Chip6 CH=0 EQ= 8.2 dB
Chip6 CH=1 EQ= 8.2 dB
Chip6 CH=2 EQ= 8.2 dB
Chip6 CH=3 EQ= 8.2 dB
===== Chip7 info =====
Chip7 CH=0 EQ= 8.2 dB
Chip7 CH=1 EQ= 8.2 dB
Chip7 CH=2 EQ= 8.2 dB
Chip7 CH=3 EQ= 8.2 dB
```



Show supported EQ setting

```
File Edit Setup Control Window KanjiCode Help
Cmd>eq help
EQ 0: 2.3 dB
EQ 1: 3.2 dB
EQ 2: 4.3 dB
EQ 3: 5.4 dB
EQ 4: 7.2 dB
EQ 5: 8.2 dB
EQ 6: 9.5 dB
EQ 7: 10.3 dB
EQ 8: 12.0 dB
EQ 9: 13.0 dB
EQ 10: 13.9 dB
EQ 11: 14.6 dB
EQ 12: 16.3 dB
EQ 13: 18.6 dB
EQ 14: 19.9 dB
EQ 15: 20.8 dB
```

Set EQ to setp1, 3.2dB for all redriver ICs.

```
File Edit Setup Control Window KanjiCode Help
Cmd>eq all 1
Set all chip EQ: 3.2 dB
```

Set EQ to setp1, 3.2dB in redriver1 and Channel

```
File Edit Setup Control Window KanjiCode Help
Cmd>eq 1 1
Set chip 1 EQ: 3.2 dB
```



Command [fg]

Descriptions	PS7161 Redriver receive flat gain setting
usage	Usage: fg <chip(D) all> <value(D)> Usage: fg help chip(D) : chip number should be 0 ~ 7 value(D): value should be 0 ~ 3 Ex: fg all 1 Ex: fg 1 1

Show all flat gain setting

```
File Edit Setup Control Window KanjiCode Help
Cmd>fg
===== Chip0 info =====
Chip0 CH=0 FG= 0.2 dB
Chip0 CH=1 FG= 0.2 dB
Chip0 CH=2 FG= 0.2 dB
Chip0 CH=3 FG= 0.2 dB
===== Chip1 info =====
Chip1 CH=0 FG= 0.2 dB
Chip1 CH=1 FG= 0.2 dB
Chip1 CH=2 FG= 0.2 dB
Chip1 CH=3 FG= 0.2 dB
===== Chip2 info =====
Chip2 CH=0 FG= 0.2 dB
Chip2 CH=1 FG= 0.2 dB
Chip2 CH=2 FG= 0.2 dB
Chip2 CH=3 FG= 0.2 dB
===== Chip3 info =====
Chip3 CH=0 FG= 0.2 dB
Chip3 CH=1 FG= 0.2 dB
Chip3 CH=2 FG= 0.2 dB
Chip3 CH=3 FG= 0.2 dB
===== Chip4 info =====
Chip4 CH=0 FG= 0.2 dB
Chip4 CH=1 FG= 0.2 dB
Chip4 CH=2 FG= 0.2 dB
Chip4 CH=3 FG= 0.2 dB
===== Chip5 info =====
Chip5 CH=0 FG= 0.2 dB
Chip5 CH=1 FG= 0.2 dB
Chip5 CH=2 FG= 0.2 dB
Chip5 CH=3 FG= 0.2 dB
===== Chip6 info =====
Chip6 CH=0 FG= 0.2 dB
Chip6 CH=1 FG= 0.2 dB
Chip6 CH=2 FG= 0.2 dB
Chip6 CH=3 FG= 0.2 dB
===== Chip7 info =====
Chip7 CH=0 FG= 0.2 dB
Chip7 CH=1 FG= 0.2 dB
Chip7 CH=2 FG= 0.2 dB
Chip7 CH=3 FG= 0.2 dB
```



Show supported fg setting

```
File Edit Setup Control Window KanjiCode Help
Cmd>fg help

FG 0: -2.8 db
FG 1: -2.0 db
FG 2: -0.8 db
FG 3: -0.2 db
```

Set fg to setp1, -2dB for all redriver ICs.

```
File Edit Setup Control Window KanjiCode Help
Cmd>fg all 1
Set all chip FG: -2.0 dB
```

Set fg to setp1, -2dB in redriver1 and Channel 1

```
File Edit Setup Control Window KanjiCode Help
Cmd>fg 1 1
Set chip 1 FG: -2.0 dB
```



Command [sw]

Descriptions	PS7161 Redriver transmit swing setting
usage	Usage: sw <chip(D) all> <value(D)> Usage: sw help chip(D) : chip number should be 0 ~ 7 value(D): value should be 0 ~ 7 Ex: sw all 1 Ex: sw 1 1

Show all swing setting

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

===== Chip0 info =====
Chip0 CH=0 SW= 1050 mv
Chip0 CH=1 SW= 1050 mv
Chip0 CH=2 SW= 1050 mv
Chip0 CH=3 SW= 1050 mv
===== Chip1 info =====
Chip1 CH=0 SW= 1050 mv
Chip1 CH=1 SW= 1050 mv
Chip1 CH=2 SW= 1050 mv
Chip1 CH=3 SW= 1050 mv
===== Chip2 info =====
Chip2 CH=0 SW= 1050 mv
Chip2 CH=1 SW= 1050 mv
Chip2 CH=2 SW= 1050 mv
Chip2 CH=3 SW= 1050 mv
===== Chip3 info =====
Chip3 CH=0 SW= 1050 mv
Chip3 CH=1 SW= 1050 mv
Chip3 CH=2 SW= 1050 mv
Chip3 CH=3 SW= 1050 mv
===== Chip4 info =====
Chip4 CH=0 SW= 1050 mv
Chip4 CH=1 SW= 1050 mv
Chip4 CH=2 SW= 1050 mv
Chip4 CH=3 SW= 1050 mv
===== Chip5 info =====
Chip5 CH=0 SW= 1050 mv
Chip5 CH=1 SW= 1050 mv
Chip5 CH=2 SW= 1050 mv
Chip5 CH=3 SW= 1050 mv
===== Chip6 info =====
Chip6 CH=0 SW= 1050 mv
Chip6 CH=1 SW= 1050 mv
Chip6 CH=2 SW= 1050 mv
Chip6 CH=3 SW= 1050 mv
===== Chip7 info =====
Chip7 CH=0 SW= 1050 mv
Chip7 CH=1 SW= 1050 mv
Chip7 CH=2 SW= 1050 mv
Chip7 CH=3 SW= 1050 mv
```



Show supported swing setting

File Edit Setup Control Window KanjiCode Help

```
Cmd>sw help
```

```
SW 0: 1050 mv
SW 1: 1150 mv
SW 2: 1270 mv
SW 3: 1380 mv
SW 4: 1460 mv
SW 5: 1490 mv
SW 6: 1600 mv
SW 7: 1630 mv
```

Set swing to setp1, 1150mV for all redriver ICs.

File Edit Setup Control Window KanjiCode Help

```
Cmd>sw all 1
```

```
Set all chip SW: 1150 mv
```

Set swing to setp1, 1150mV in redriver1 and

File Edit Setup Control Window KanjiCode Help

```
Cmd>sw 1 1
```

```
Set chip 1 SW: 1150 mv
```



Command [tune]

Descriptions	PS7161 Redriver EQ, flat gain and swing setting step by step.
usage	tune

Set the EQ, flat gain and swing to step 0 in channel 0 of redriver IC 0.

```
File Edit Setup Control Window KanjiCode Help
Cmd>tune
1. Please enter chip ID (0-7), or type 'q' to quit. :0
2. Please enter channel ID (0-3), or type 'q' to quit. :0
3. Please enter eq value (0-15), or type 'q' to quit. :0
4. Please enter fg value (0-3), or type 'q' to quit. :0
5. Please enter sw value (0-7), or type 'q' to quit. :0
Chip0, CH:0, EQ: 2.3 dB, FG: -2.8 dB, SW: 1050 mv
```



MCU CLI Commands [load]

Command [load]

Descriptions	Load default setting of EQ, flat gain and swing in redriver ICs.
usage	load

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

Load default values into PS1761
Yes[y/Y] or Any key quit?yes
```



The load command is used to load all of EQ, flat gain and swing setting to factory default



Command [save]

Descriptions	Save current EQ, flat gain and swing applied in all redriver IC and channels.
usage	save

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

Save configuration
Yes[y/Y] or Any key quit?yes
```



The new setting will be applied automatically in next time redriver card boot up.



MCU CLI Commands [bist]

Command [bist]

Descriptions	Check the status for all of redriver ICs.
usage	bist

```
File Edit Setup Control Window KanjiCode Help
Cmd>bist
Channel Device Address Status
-----
CHO PS7161-1 0x3A OK
CHO PS7161-2 0x5A OK
CHO PS7161-3 0x62 OK
CHO PS7161-4 0x64 OK
CHO PS7161-5 0x8E OK
CHO PS7161-6 0x6E OK
CHO PS7161-7 0x66 OK
CHO PS7161-8 0x60 OK
```



MCU CLI Commands [ver]

Command [ver]

Descriptions	Shows P/N, S/N and MCU FW revision.
usage	ver

```
File Edit Setup Control Window KanjiCode Help
Cmd>ver
----- Product Info -----
Company      : Serial Cables
Model        : GEN6 MCIO REDRIVER CARD
Serial No.   : PHDG62507010001
----- App Info -----
Version      : 0.0.1
Build Time   : Jul 16 2025 17:06:38
```



Command [sysinfo]

Descriptions	Show all of information in redriver cards.
usage	sysinfo

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

=====
                        System Version
=====

----- Product Info -----
Company   : Serial Cables
Model     : GEN6 MCIO REDRIVER CARD
Serial No. : PHDG62507010001

----- App Info -----
Version   : 0.0.1
Build Time : Jul 16 2025 17:06:38

=====
                        LSD - Board Info
=====

=====
                ★ Board Information ★
=====

[ Thermal ]
· Temperature 1      : 25° C
· Temperature 2      : 25° C

=====
                        BIST - Device Map
=====

Channel  Device      Address  Status
-----
CHO      PS7161-1      0x3A    OK
CHO      PS7161-2      0x5A    OK
CHO      PS7161-3      0x62    OK
CHO      PS7161-4      0x64    OK
CHO      PS7161-5      0x8E    OK
CHO      PS7161-6      0x6E    OK
CHO      PS7161-7      0x66    OK
CHO      PS7161-8      0x60    OK
```



MCU CLI Commands [reset]

Command [reset]

Descriptions	MCU FW reset.
usage	reset

File Edit Setup Control Window KanjiCode Help

```
Cmd>reset
System Reset...
```



The reset command affected for MCU only, it won't reset any redriver IC.