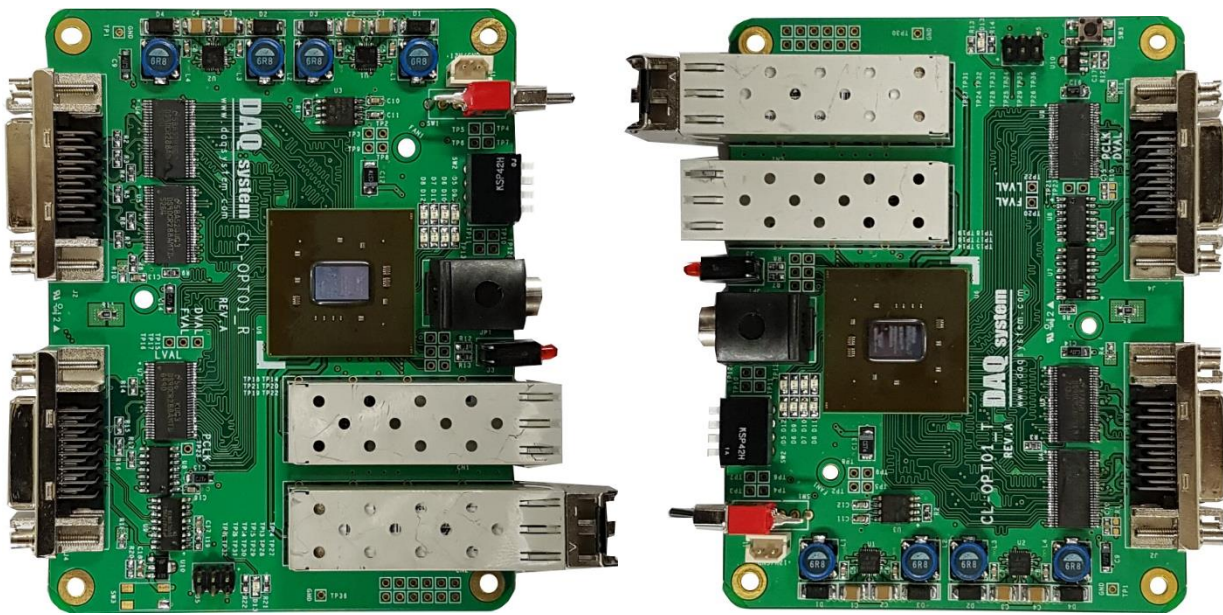


CL-OPT01_R/T

User Manual

Version 1.2



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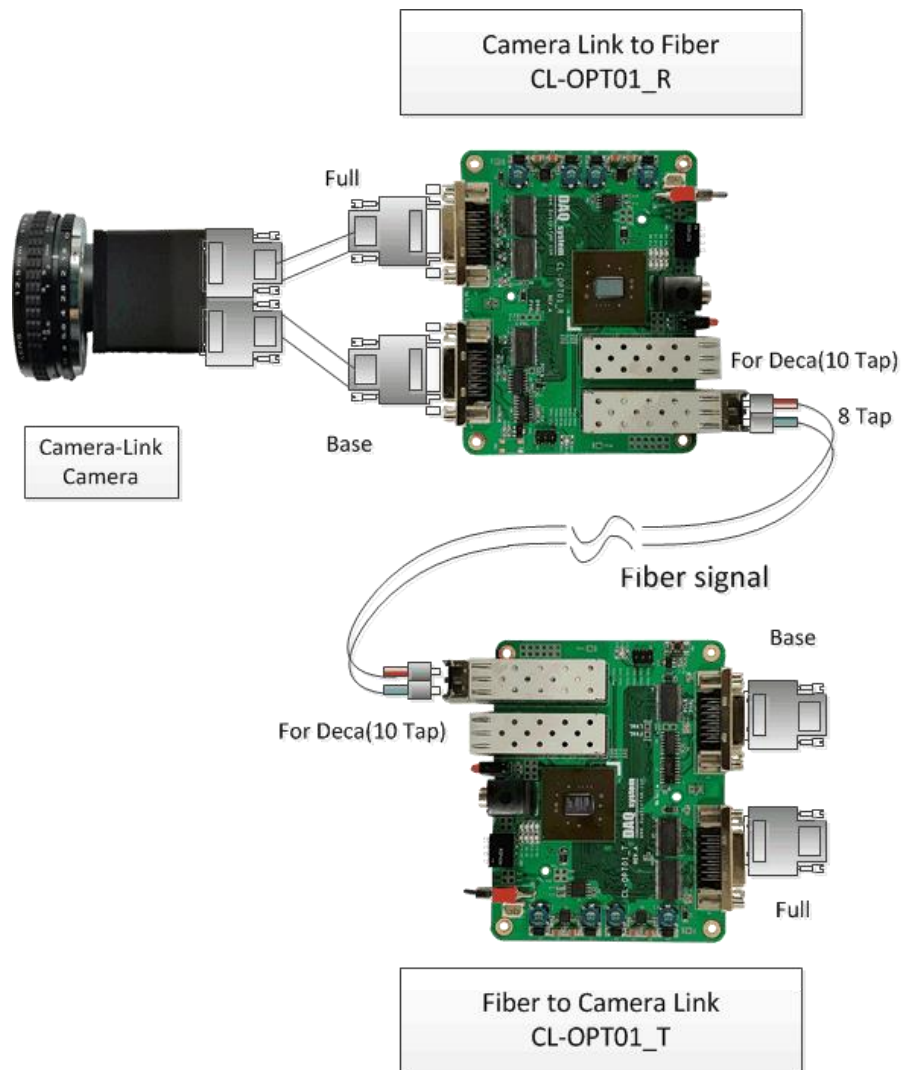
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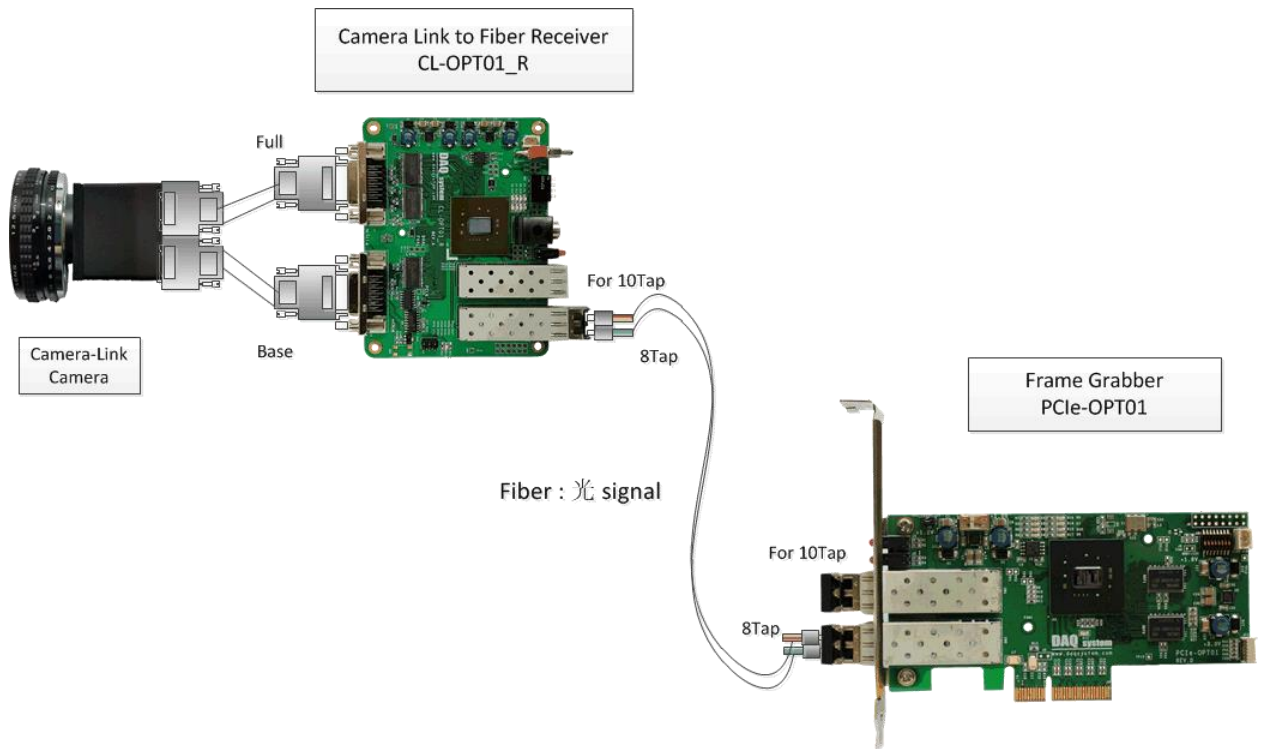
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1. CL-OPT01 Introduction

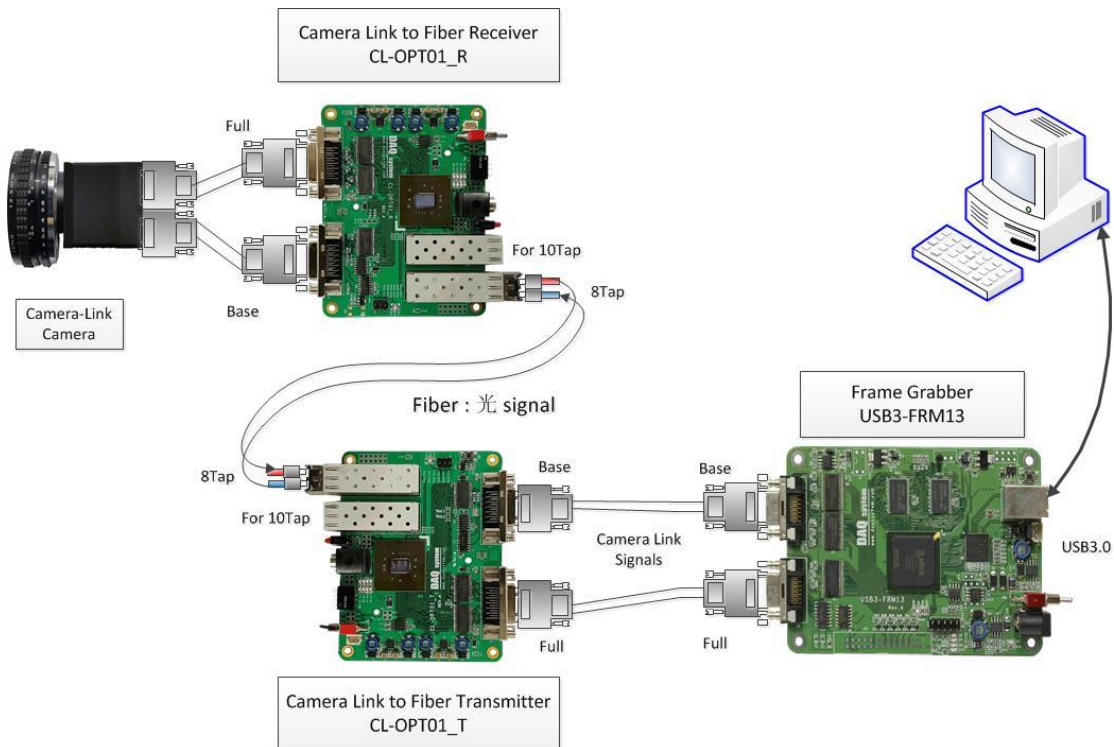
The CL-OPT01_R board converts the image signal from the Camera Link camera into light and transmits it to the CL-OPT01_T board, which is the light receiving board. The CL-OPT01_T board receives the optical signal and outputs the camera link signal to the frame grabber. [Figure 1-1] shows the optical connection between CL-OPT01_R and CL-OPT01_T board.



[Figure 1-1. CL-OPT01_R & CL-OPT01_T Connection]



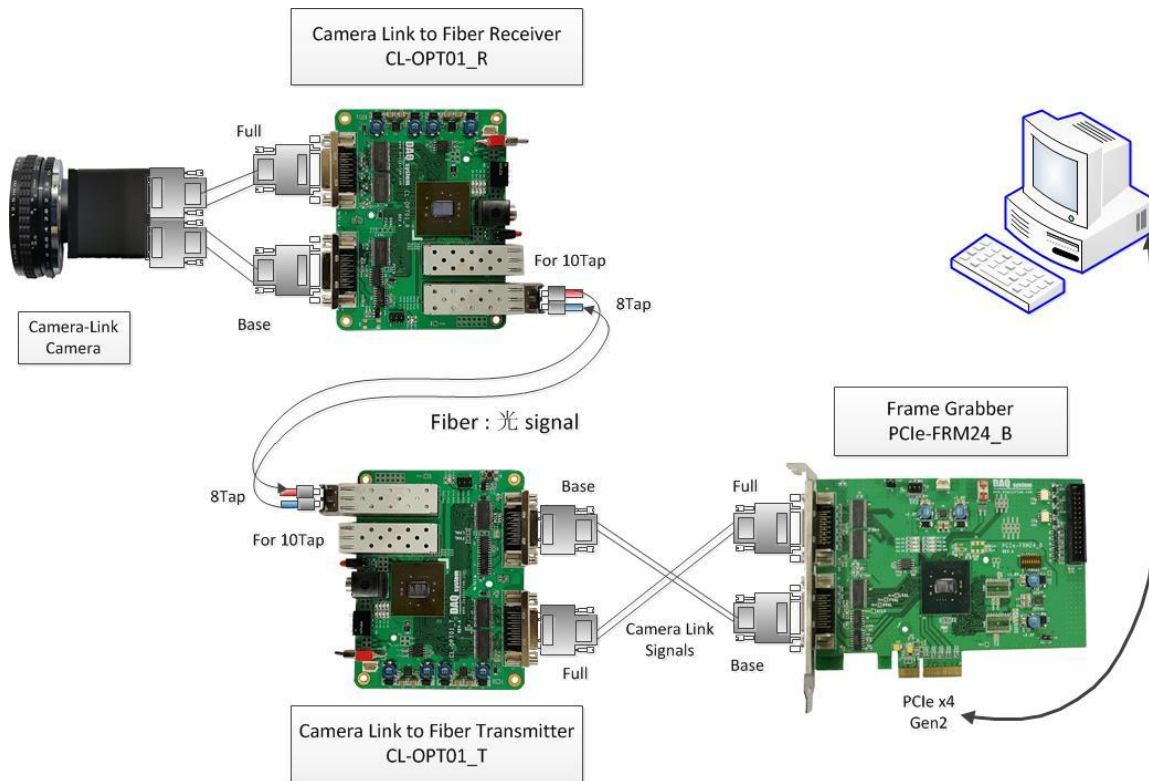
[Figure 1-2. CL-OPT01_R & PCIe-OPT01 Connection]



[Figure 1-3. CL-OPT01_R/T와 USB3-FRM13(Frame Grabber)]

[Figure 1-2] shows the direct connection of CL-OPT01_R to PCIe-OPT01, which is an optical-receiving frame grabber. Because Fiber Protocol is our standard, it cannot be used in connection with other optical boards.

[Figure 1-3] and [Figure 1-4] show the connection between the CL-OPT01_R/T board, the USB3.0 interface, the USB3-FRM13 board, and the PCI Express interface, PCIe-FRM24, our frame grabber.

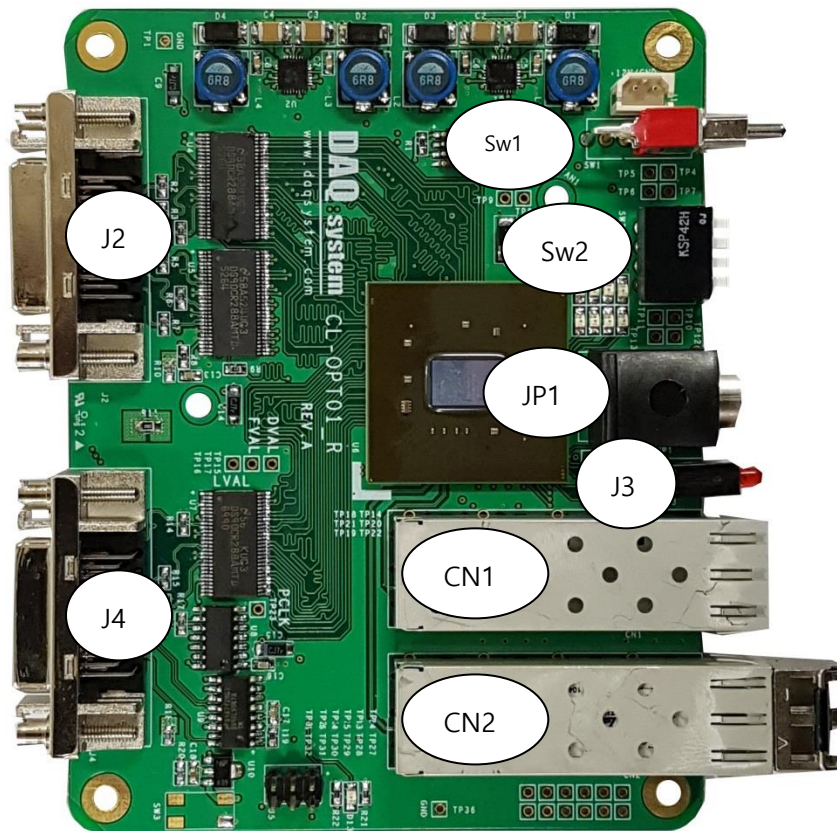


[Figure 1-4. CL-OPT01_R/T와 PCIe-FRM24(Frame Grabber)]

Note) The remaining optical port (CN1) is for 10Tap.

2. CL-OPT01_R Functions

The names and functions of the CL-OPT01_R are as follows.



[Figure 2-1. Outline drawing of CL-OPT01_R]

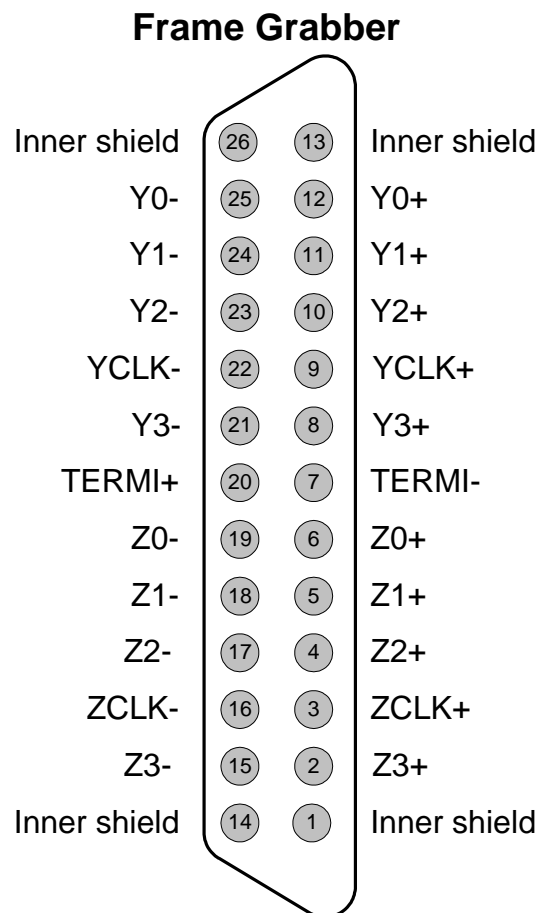
The operation of the LED is as follows.

J3 GREEN LED turns on when optical channel (# 0) is detected.

J3 RED LED turns on when optical channel (# 1) is detected.

2-1 J2 Connector (MDR-26 Connector for full/Medium)

The figure below shows the pin map of the J2 connector of the board used when using Base or Medium/Full Configuration Camera Link. All pin specifications are input/output based on the Camera Link standard, so please refer to the Camera Link standard document for details.



[Figure 2-2. CL-OPT01_R J2 Connector Pin-out]

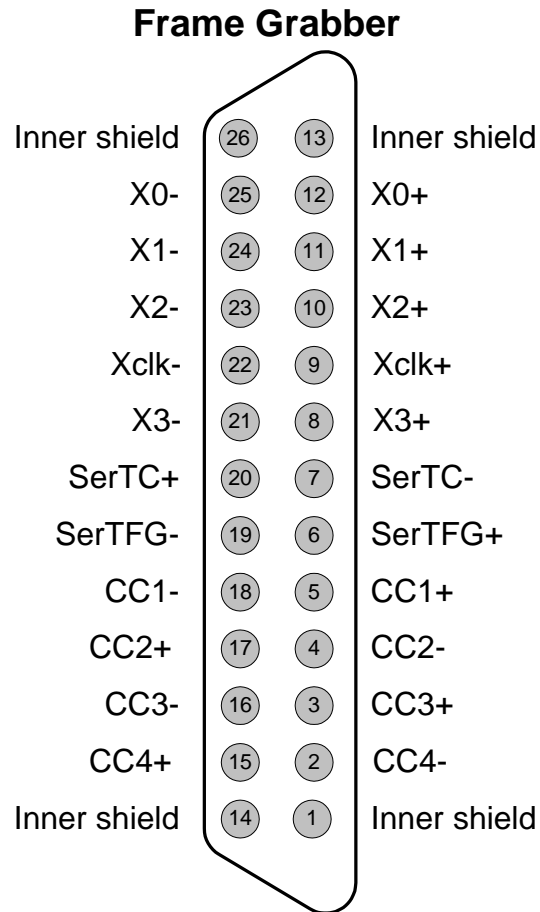
[Table 1. J2 Connector]

No.	Name	Description	Remark
1	Inner Shield	Cable shield	
2	Z3+-	Camera link LVDS receive data11+ -	
3	ZCLK+	Camera link LVDS receive clock+	
4	Z2+-	Camera link LVDS receive data10+	
5	Z1-	Camera link LVDS receive data9+	
6	Z0+	Camera link LVDS receive data8+	
7	TERMI--	Serial to Camera-	
8	Y3+	Camera link LVDS receive data7+	
9	YCLK+	Camera link LVDS receive clock+	
10	Y2+	Camera link LVDS receive data6+	
11	Y1+	Camera link LVDS receive data5+	
12	Y0+	Camera link LVDS receive data4+	
13	Inner Shield		
14	Inner Shield		
15	Z3-	Camera link LVDS receive data11-	
16	ZCLK-	Camera link LVDS receive clock-	
17	Z2-	Camera link LVDS receive data10-	
18	Z1-	Camera link LVDS receive data9-	
19	Z0-	Camera link LVDS receive data8- -	
20	TERMI+	Serial to Camera+	
21	Y3-	Camera link LVDS receive data7-	
22	YCLK-	Camera link LVDS receive clock-	
23	Y2-	Camera link LVDS receive data6-	
24	Y1-	Camera link LVDS receive data5-	
25	Y0-	Camera link LVDS receive data4-	
26	Inner Shield		

(Note) For detailed specifications, refer to the Camera Link standard document.

2-2 J4 Connector (MDR-26 Connector for Base)

The figure below shows the pin map of the J4 connector of the board used when using the Base Configuration Camera Link. All pin specifications are input/output based on the Camera Link standard, so please refer to the Camera Link standard document for details.



[Figure 2-3. CL-OPT01_R J4 Connector Pin-out]

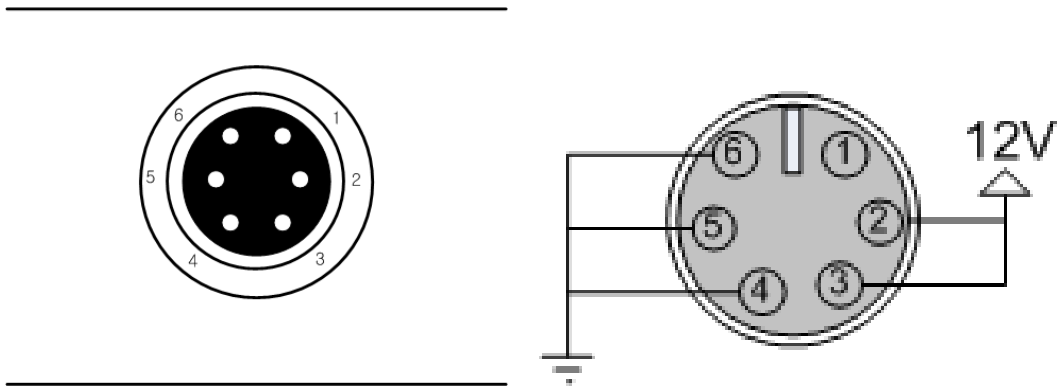
[Table 2. J4 Connector]

No.	Name	Description	Remark
1	Inner Shield	Cable shield	
2	CC4-	Camera Control output 4-	Minimum interval 6us or more
3	CC3+	Camera Control output 3+	Minimum interval 6us or more
4	CC2--	Camera Control output 2-	Minimum interval 6us or more
5	CC1+	Camera Control output 1+	Minimum interval 6us or more
6	SerTFG+	Serial to Frame grabber +	9600bps
7	SerTC-	Serial to Camera-	9600bps
8	X3+	Camera link LVDS receive data3 +	
9	Xclk+	Camera link LVDS receive clock +	
10	X2+	Camera link LVDS receive data2 +	
11	X1+	Camera link LVDS receive data1 +	
12	X0+	Camera link LVDS receive data0 +	
13	Inner Shield		
14	Inner Shield		
15	CC4+	Camera Control output 4+	Minimum interval 6us or more
16	CC3-	Camera Control output 3-	Minimum interval 6us or more
17	CC2+	Camera Control output 2+	Minimum interval 6us or more
18	CC1-	Camera Control output 1-	Minimum interval 6us or more
19	SerTFG-	Serial to Frame grabber-	9600bps
20	SerTC+	Serial to Camera+	9600bps
21	X3-	Camera link LVDS receive data3-	
22	Xclk-	Camera link LVDS receive clock-	
23	X2-	Camera link LVDS receive data2-	
24	X1-	Camera link LVDS receive data1-	
25	X0-	Camera link LVDS receive data0-	
26	Inner Shield		

(Note) For detailed specifications, refer to the Camera Link standard document.

2-3 JP1 Connector

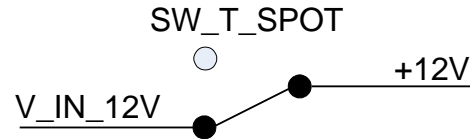
This is an external 12V DC power connector. (HR10-7R-6S-RA)



[Figure 2-4. JP1 Connector]

2-4 SW1 Switch

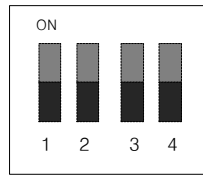
It is a 12V DV external power switch.



[Figure 2-5. SW1]

2-5 SW2 Switch

It is a camera setup mode selection switch.



[Figure 2-6. Switch SW2]

Switch #1 : 10Tap setting.

ON : 10 Tap

OFF : 8 Tap

Note) In case of setting as 10Tap, one more optical module must be inserted.

Switch #2 : Set the Baud Rate.

ON : 115200bps

OFF : 9600bps

Switch #3 : DVAL : Decide whether to use Data Valid or not.

ON : DVAL Use

OFF : DVAL No Use

Switch #4 : Reserved

2-6 CN1, CN2 (SFP) Connector

In the case of CL-OPT01_R, an SFP (Small Form Factor Pluggable) connector is used as a Fiber-Transmission Transceiver device. The SFP transceiver is designed to support various optical transmissions such as SONET, Gigabit Ethernet, and Fiber Channel. It supports hot-pluggable transceiver and can be connected to network device motherboard with fiber or copper networking cable.

SFP is connected to the module that connects to the cage and connector, and there are Tx (Transceiver) and Rx (Receiver) together.

CN1 : Fiber Channel 1 → Used for 10 taps

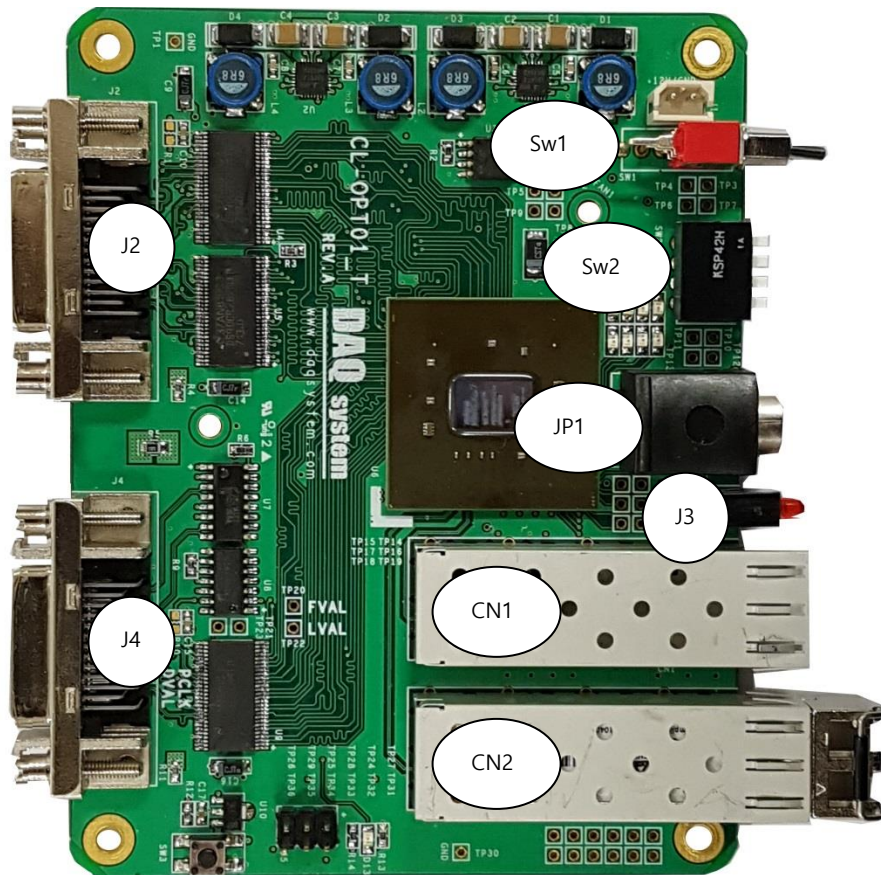
CN2 : Fiber Channel 0 → Used for 8 taps



[Figure 2-7. SFP & SFP Cage]

3. CL-OPT01_T Connector

The names and functions of CL-OPT01_T are described as follows.



[Figure 3-1. CL-OPT01_T Layout]

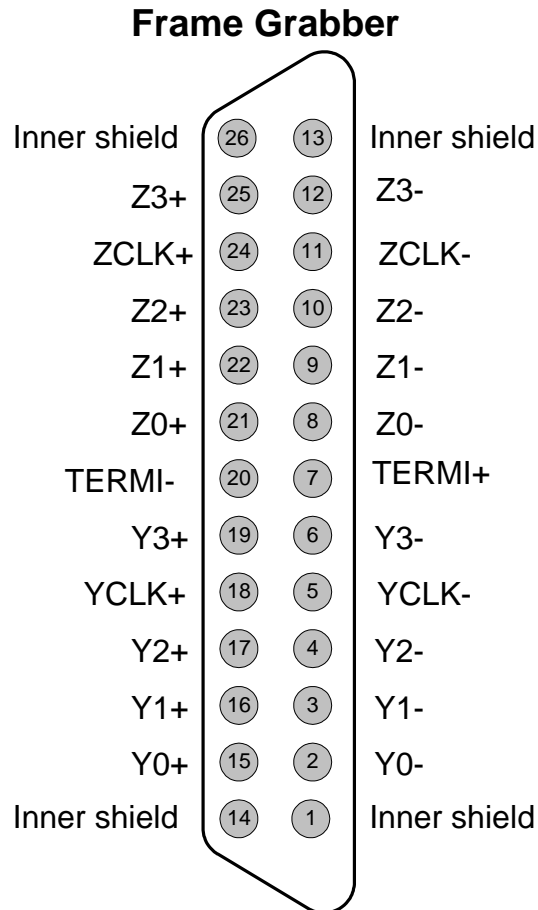
The operation of the LED is as follows.

The J3 GREEN LED turns on when a Fiber Channel (#0) is detected.

The J3 RED LED turns on when Fiber Channel (#1) is detected.

3-1 J2 Connector (MDR-26 Connector for full/Medium)

The figure below shows the pin map of the J2 connector of the CL-OPT01_T board, which is a Camera Link output board. All pin specifications are input/output based on the Camera Link standard, so please refer to the Camera Link standard document for details.



[Figure 3-2. CL-OPT01_T J2 Connector Pin-out]

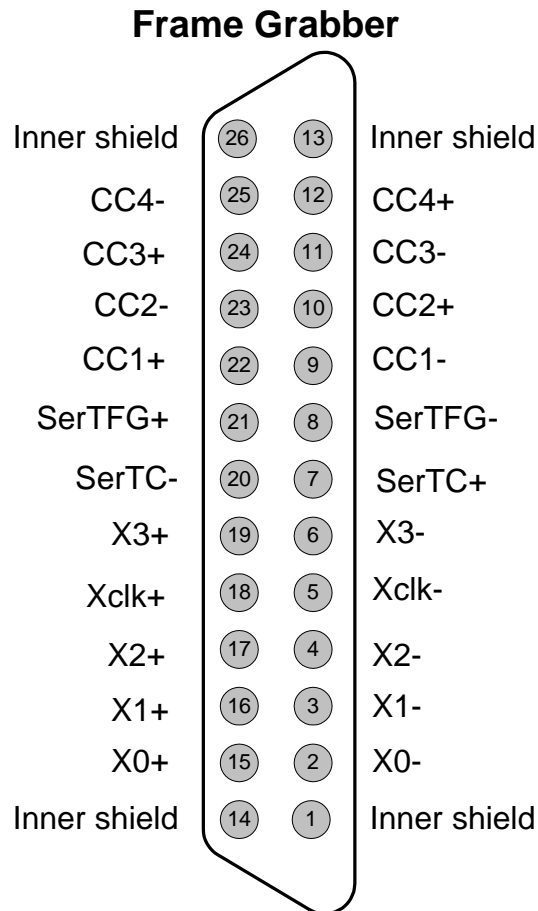
[Table 3. J2 Connector]

No.	Name	Description	Remark
1	Inner Shield	Cable shield	
2	Y0-	Camera link LVDS receive data4-	
3	Y1-	Camera link LVDS receive data5-	
4	Y2-	Camera link LVDS receive data6-	
5	YCLK-	Camera link LVDS receive clock-	
6	Y3-	Camera link LVDS receive data7-	
7	TERMI+	Serial to Camera+	
8	Z0--	Camera link LVDS receive data8-	
9	Z1--	Camera link LVDS receive data9-	
10	Z2-	Camera link LVDS receive data10-	
11	ZCLK-	Camera link LVDS receive clock-	
12	Z3-	Camera link LVDS receive data11-	
13	Inner Shield		
14	Inner Shield		
15	Y0+	Camera link LVDS receive data4+	
16	Y1+	Camera link LVDS receive data5+	
17	Y2+	Camera link LVDS receive data6+	
18	YCLK+	Camera link LVDS receive clock+	
19	Y3+	Camera link LVDS receive data7+	
20	TERMI-	Serial to Camera-	
21	Z0+	Camera link LVDS receive data8+	
22	Z1-	Camera link LVDS receive data9+	
23	Z2+	Camera link LVDS receive data10+	
24	ZCLK+	Camera link LVDS receive clock+	
25	Z3+	Camera link LVDS receive data11+	
26	Inner Shield		

(Note) For detailed specifications, refer to the Camera Link standard document.

3-2. J4 Connector (MDR-26 Connector for Base)

The figure below shows the pin map of the J4 connector of the board used when using the Base Configuration Camera Link. All pin specifications are input/output based on the Camera Link standard, so please refer to the Camera Link standard document for details.



[Figure 3-3. CL-OPT01_T J4 Connector Pin-out]

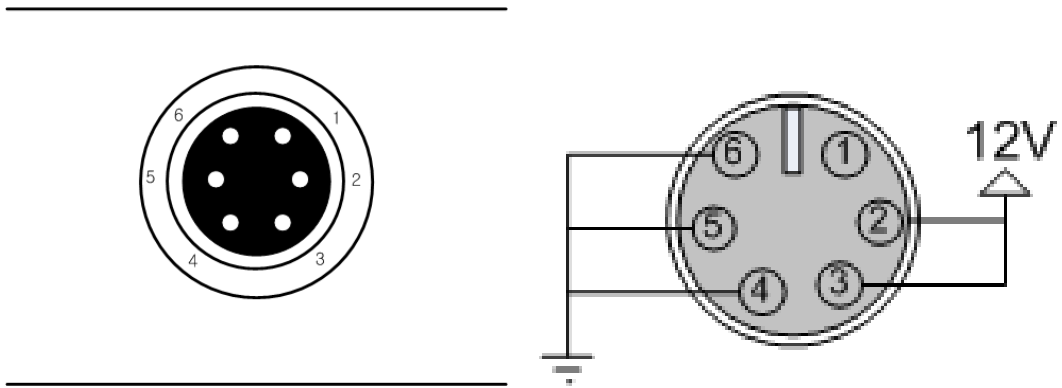
[Table 4. J4 Connector]

No.	Name	Description	Remark
1	Inner Shield	Cable shield	
2	X0-	Camera link LVDS transmit data0-	
3	X1-	Camera link LVDS transmit data1-	
4	X2-	Camera link LVDS transmit data2-	
5	Xclk-	Camera link LVDS transmit clock-	
6	X3-	Camera link LVDS transmit data3-	
7	SerTC+	Serial to Camera+	9600bps
8	SerTFG-	Serial to Frame grabber-	9600bps
9	CC1-	Camera Control input 1-	Minimum interval 6us or more
10	CC2+-	Camera Control input 2+	Minimum interval 6us or more
11	CC3-	Camera Control input 3-	Minimum interval 6us or more
12	CC4+-	Camera Control input 4+	Minimum interval 6us or more
13	Inner Shield		
14	Inner Shield		
15	X0+	Camera link LVDS transmit data0 +	
16	X1+	Camera link LVDS transmit data1 +	
17	X2+	Camera link LVDS transmit data2 +	
18	Xclk+	Camera link LVDS transmit clock +	
19	X3+	Camera link LVDS transmit data3 +	
20	SerTC-	Serial to Camera-	9600bps
21	SerTFG+	Serial to Frame grabber +	9600bps
22	CC1+	Camera Control input 1+	Minimum interval 6us or more
23	CC2-	Camera Control input 2-	Minimum interval 6us or more
24	CC3+	Camera Control input 3+	Minimum interval 6us or more
25	CC4-	Camera Control input 4-	Minimum interval 6us or more
26	Inner Shield		

(Note) For detailed specifications, refer to the Camera Link standard document.

3-3 JP1 Connector

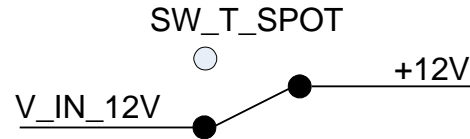
This is an external 12V DC power connector.. (HR10-7R-6S-RA)



[Figure 3-4. JP1 Connector]

3-4 SW1 Switch

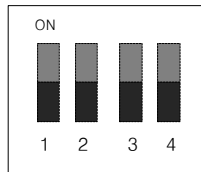
This is a 12V DV external power switch.



[Figure 3-5. SW1 switch]

3-5 SW2 Switch

It is a camera setup mode selection switch.



[Figure 3-6. SW2 switch]

Switch #1 : 10Tap setting.

ON : 10 Tap

OFF : 8 Tap

Note) In case of setting as 10Tap, one more optical module must be inserted.

Switch #2 : Set the Baud Rate.

ON: 115200bps

OFF: 9600bps

Switch #3 #4 : Set camera Link Clock.

OFF OFF(00) : 86MHz(Max) base

OFF ON(01) : 80MHz

ON OFF(10) : 60MHz

ON ON(11) : 40MHz

4-6 CN1, CN2 (SFP) Connector

In the case of CL-OPT01_T, an SFP (Small Form Factor Pluggable) connector is used as a Fiber-Transmission Transceiver device. The SFP transceiver is designed to support various optical transmissions such as SONET, Gigabit Ethernet, and Fiber Channel. It supports hot-pluggable transceiver and can be connected to network device motherboard with fiber or copper networking cable.

SFP is connected to the module that connects to the cage and connector, and there are Tx (Transceiver) and Rx (Receiver) together.

CN1 : Fiber Channel 1 → Used for 10 taps

CN2 : Fiber Channel 0 → Used for 8 taps

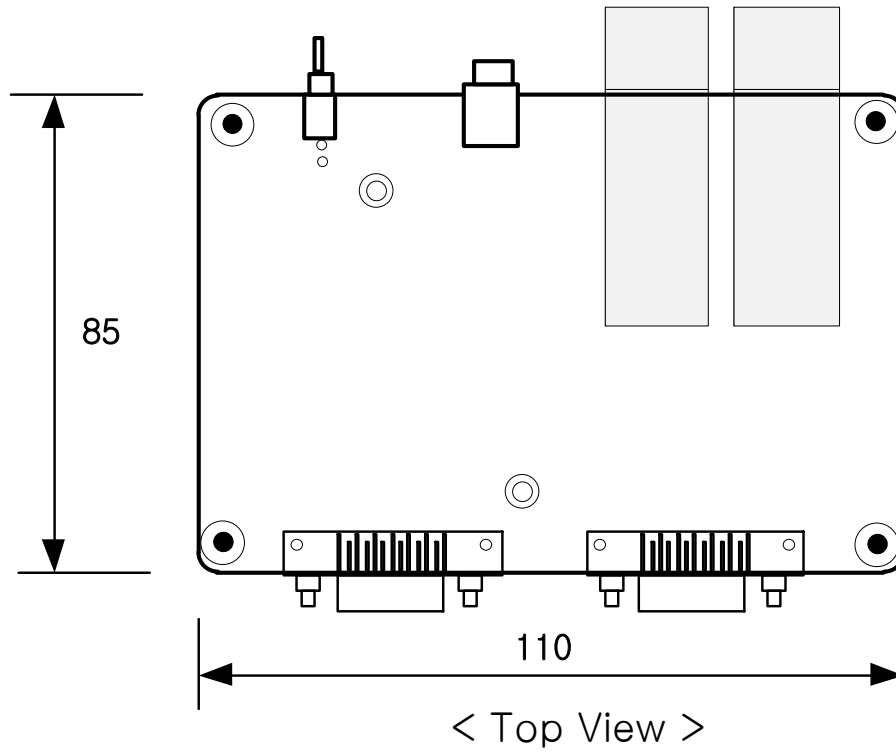


[Figure 4-7. SFP & SFP Cage]

Appendix

A-1 Board Size

The external dimensions of the CL-OPT01_R/CL-OPT01_T board are as follows.



A-2 Repair Regulations

Thank you for purchasing DAQ SYSTEM's product. Please refer to the following regarding Customer Service stipulated by DAQ SYSTEM.

- (1) Please read the user's manual and follow the instructions before using the DAQ SYSTEM product.
- (2) When returning the product to be repaired, please send it to the head office with the symptoms of the malfunction as well.
- (3) All DAQ SYSTEM products have a one-year warranty.
 - The warranty period is counted from the date the product is shipped from DAQ SYSTEM.
 - Peripherals and third-party products not manufactured by DAQ SYSTEM are covered by the manufacturer's warranty.
 - If repair is required, please contact the contact points below.
- (4) Even during the free repair warranty period, paid repairs are made in the following cases.
 - ① Failure or damage caused by not following the user's manual
 - ② Failure or damage caused by customer negligence during product transportation after purchase
 - ③ Natural phenomena such as fire, earthquake, flood, lightning, pollution, etc. or power supply exceeding the recommended range malfunction or damage
 - ④ Failures caused by inappropriate storage environment (eg, high temperature, high humidity, volatile chemicals, etc.) damaged
 - ⑤ Failure or damage due to unreasonable repair or modification
 - ⑥ Products whose serial number has been changed or intentionally removed
 - ⑦ In the event that DAQ SYSTEM determines that it is the customer's negligence for other reasons
- (5) The customer must bear the shipping cost of returning the repaired product to DAQ SYSTEM.
- (6) The manufacturer is not responsible for any problems caused by incorrect use regardless of our Warranty provisions.

MEMO

Contact Point

Web sit : <https://www.daqsystem.com>

Email : postmaster@daqsystem.com

