



English

Camera Link↔Optical Signal Converter **CL-OPT100T/R**

Product Specification & Operation Manual

CIS Corporation

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1. Scope of Application

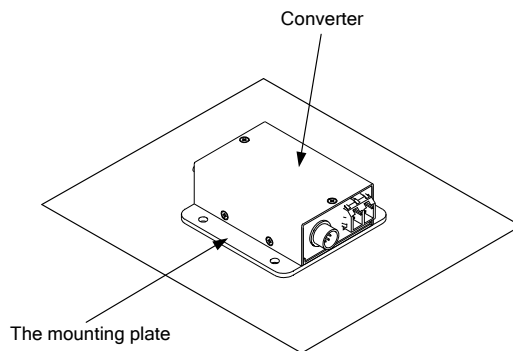
This is to describe CL-OPT100T/R signal converters enable CIS camera link cameras to connect with frame grabber boards via optical fiber cables. All specifications contained herein are subject to change without prior notice. Reproduction in whole or in part is prohibited.

2. Handling Precautions

The signal converters must not be used for any nuclear equipments or aerospace equipments with which mechanical failure or malfunction could result in serious bodily injury or loss of human life. Our warranty does not apply to damages or defects caused by irregular and/or abnormal use of the product. Please observe all warnings and cautions stated below.

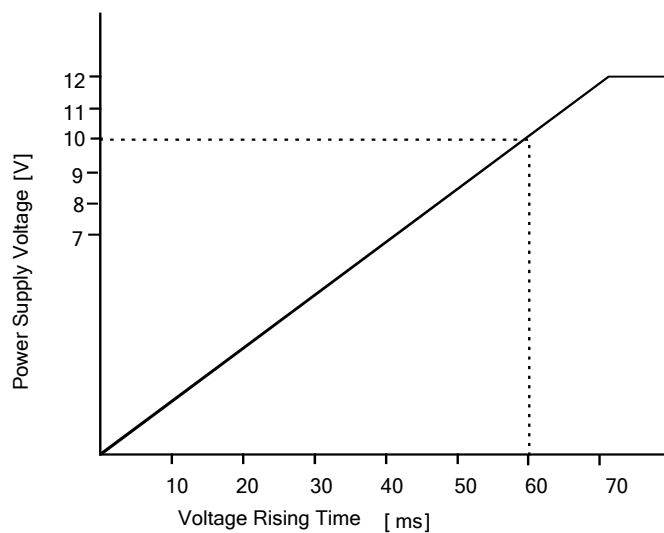
Our warranty does not apply to damages or malfunctions caused by neglecting these precautions.

- CL-OPT100T can be used only with CIS camera link cameras. Output CLK of CL-OPT100R is 81MHz fixed. To capture the images, please use a frame grabber board corresponds to 85MHz.
- The provided mounting plate is designed for heat dissipation. Please use the provided mounting plate, or use a metallic frame equivalent to the provided mounting plate, when directly installing the CL-OPT100T/R. (The size of the mounting plate: H:2mm W:60mm D:60mm)



- Do not use or store the converter in the following extreme conditions:
 - Extremely dusty or humid places.
 - Extremely hot or cold places (operating temperature -5°C to $+45^{\circ}\text{C}$)
- Do not apply excessive force or static electricity that could damage the converter.
- Follow the instructions in Chapter 6, "External connector interface" for connecting. Improper connection may cause damages not only to the converter but also to the connected devices.

- Confirm the mutual ground potential carefully and then connect the converter to monitors or computers. AC leaks from the connected devices may cause damages or destroy the converter.
- Do not apply excessive voltage. (Use only the specified voltage.) Unstable or improper power supply voltage may cause damages or malfunction of the converter.
- The voltage ripple of converter input power DC +12V \pm 10% shall be within \pm 50mV.
- The rising time of converter input power supply voltage shall be less than +10V, Max 60ms. Please avoid noises like chattering when rising.



In case of abnormal operation, contact the distributor from whom you purchased the product.

3. Product Outline

CL-OPT100T and CL-OPT100R are signal converters enable CIS camera link cameras to connect with frame grabber boards via optical fiber cables. With optical fiber cables, data can be transmitted up to 300m length.

Please be noted that only CIS cameras can be connected to CL-OPT100T/R.

Key Features

- With optical fiber cables, data can be transmitted up to 300m length.
- Owing to optical fiber cable connection, no radio interference or grand noise would occur.
- Only CIS camera link non-PoCL, PoCL, and PoCL-Lite cameras can be connected.
- As to PoCL, there are some limitations. (Please refer to page 10 for the details.)

3.1. Product Configuration

- CL-OPT100T (Camera Link → Optical Signal Converter)
- CL-OPT100R (Optical Signal → Camera Link Converter)
- Mounting Plate
- Mounting Screws (4pcs)

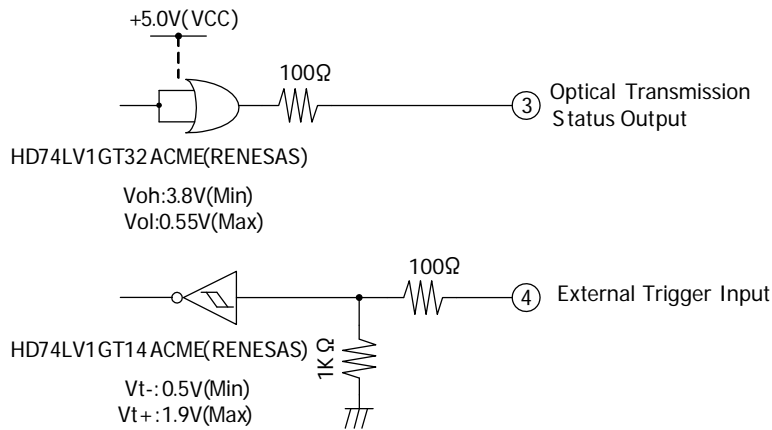
4. Specifications

4.1. General Specifications

(1) Power Requirements	DC+12V±10% (Max voltage not to exceed 15V) 6pins circular connector or PoCL Input (with limitation).
(2) Power Consumption	CL-OPT100T : 3.0W / CL-OPT100R : 3.0W
(3) Dimensions	Refer to overall dimension drawing (H:20mm W:40mm D:60mm without protruding portion) (For both CL-OPT100T/R)
(4) Weight	Approx. 110g (For both CL-OPT100T/R)
(5) Camera Link Input/Output Connector	CL-OPT100T/R (For both CL-OPT100T/R) 12226-1100-00PL mini Camera Link connector (SUMITOMO 3M) CL-OPT100T Camera Link non-PoCL, PoCL, or PoCL-Lite Input Camera Link input CLK frequency: Driver IC rated 20MHz ~ 80MHz Base Configuration CL-OPT100R Camera Link Output Camera Link output CLK frequency: 81MHz fixed (Please connect with a frame grabber board corresponds to 85MHz.) Base Configuration
(6) Optical Connector	LC duplex connector AFBR-59R5LZ(AVAGO) Optical Module Rated: 4.25 Gb/s Light wavelength: 850nm
(7) Optical Fiber Cable Length	Max. 300m
(8) Supported Cameras	CIS tested Camera Link, non-PoCL, and PoCL cameras. VCC-G22/F22 series, G32/F32 series, F51/52, G33, G60, GC20, and GC60 CIS tested PoCL-Lite cameras. VCC-GC10 series. (Cameras other than the above can not be connected.)
(9) Trigger Delay	Referenced Value (measured value with AIM Electronics Co. AFT-DLC/DLC-50 Optical cable) 450ns (Circuit Fixed delay) + (5ns x Optical cable length (m))
(10) Video Delay	Less than 1Line (Refer to the spec of camera to be connected.)
(11) Safety/Quality Standards	UL: Conform to UL Standard including materials and others. CE: To be applied RoHS: Conform to RoHS FCC: To be applied
(12) Durability	Vibration Acceleration : 98m/s ² (10G) resistance Frequency : 20~200 Hz Direction : X,Y, and Z, 3 directions Testing time : 120min for each direction Shock No malfunction shall be occurred with 980m/s ² (100G) for resistance ±X, ±Y, and ±Z, 6 directions. (without package)
(13) Operation Environment	Operation - 5 ~ +45°C With RH 20~ 80% With no Tempeprature condensation
(14) Storage Environment	-25 ~ +60°C with RH20 ~ 80% with no condensation

4.2. External Input/Output Signals

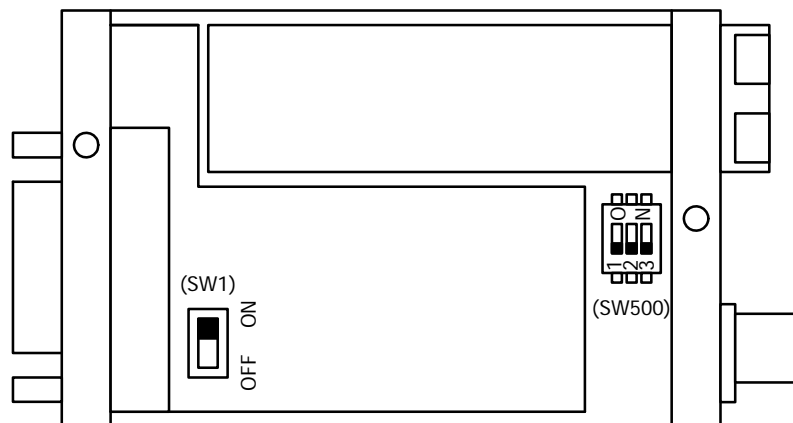
(1)GPIO Optical transmission :No.3pin } 6pins circular connector L: unlock H: lock
 Status output (LVTTTL output)
 External Trigger input :No.4pin



IO Interface of 6pins circular connector at rear

5. Function Settings

With internal dip switch, trigger signals input and Camera Link/PoCL-Lite input can be selected.

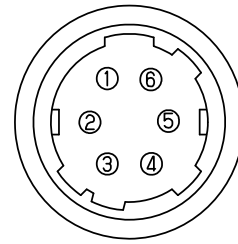


(1)	SW500-1	Trigger input selection	...	ON	: 6pins circular connector	
				OFF	: Camera Link (CC1) input	(Initial Setting)
(2)	SW500-2	Camera Link input selection	...	ON	: PoCL-Lite input	
				OFF	: Camera Link input	(Initial Setting)
					▪ Only for CL-OPT100T.	
					▪ CL-OPT100R is fixed to OFF.	
(3)	SW500-3		...	ON	: Not used	
				OFF	: Not used	(Initial Setting)

6. External Connector Interface

6.1. 6pins circular connector HR10-7R-6PA (HIROSE) or equivalent (for both CL-OPT100T/R)

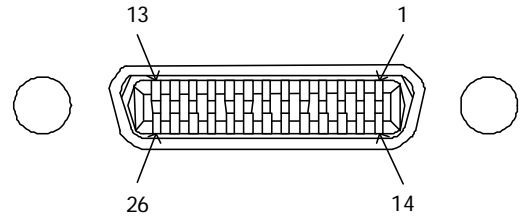
Pin No.	
1	Power Input (DC+12V)
2	Power Input (DC+12V)
3	Optical transmission Output Status
4	External Trigger Input
5	GND
6	GND



6.2. Camera Link Connector 12226-1100-00PL (SUMITOMO 3M)

CL-OPT100T

Pin No.		Pin No.	
1	GND/ +12V(PoCL)	14	GND
25	X0-	12	X0+
24	X1-	11	X1+
23	X2-	10	X2+
22	Xclk-	9	Xclk+
21	X3-	8	X3+
20	SerTC+	7	SerTC-
19	SerTFG-	6	SerTFG+
18	CC1- (Trigger IN -)	5	CC1+ (Trigger IN +)
17	(Not used)	4	(Not used)
16	(Not used)	3	(Not used)
15	(Not used)	2	(Not used)
13	GND	26	GND/ +12V(PoCL)



CL-OPT100R

Pin No.		Pin No.	
1	NC/ +12V(PoCL)	14	GND
2	X0-	15	X0+
3	X1-	16	X1+
4	X2-	17	X2+
5	Xclk-	18	Xclk+
6	X3-	19	X3+
7	SerTC+	20	SerTC-
8	SerTFG-	21	SerTFG+
9	CC1- (Trigger IN -)	22	CC1+ (Trigger IN +)
10	(Not used)	23	(Not used)
11	(Not used)	24	(Not used)
12	(Not used)	25	(Not used)
13	GND	26	NC/ +12V(PoCL)

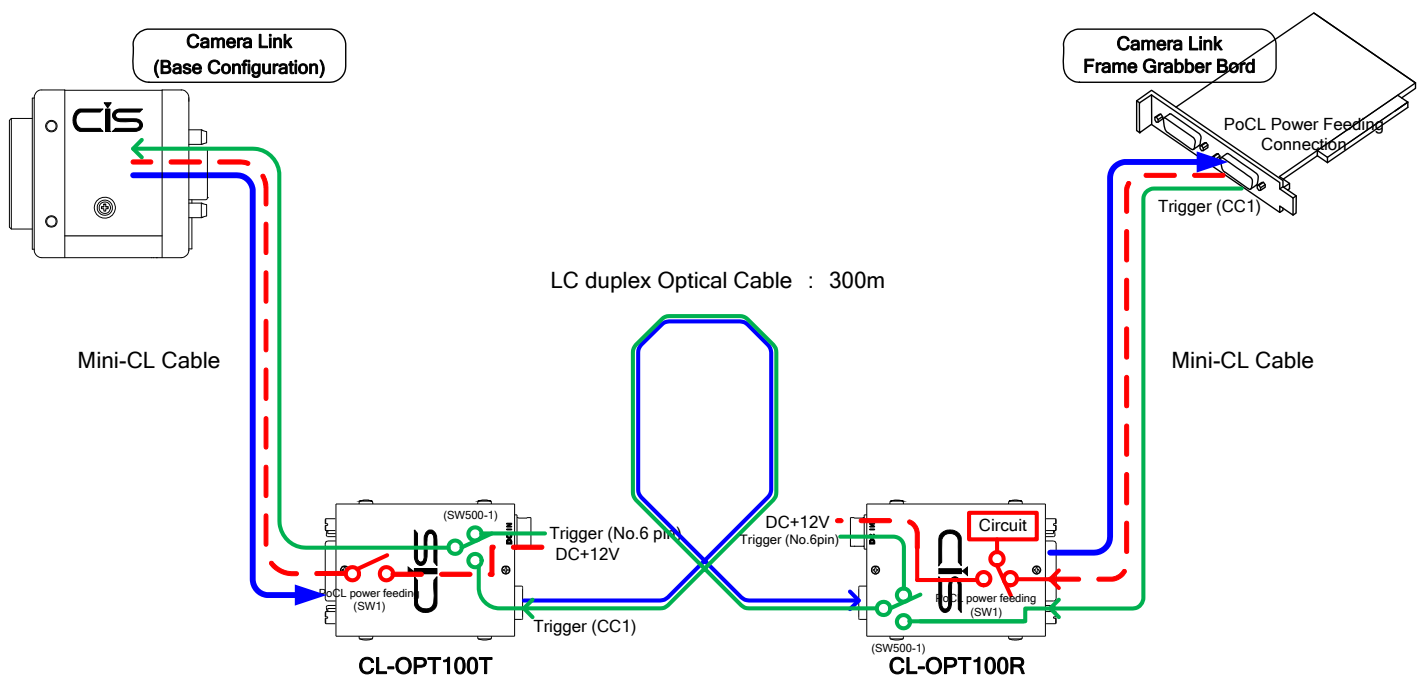
9. Precautions for Power Over Camera Link (PoCL) and PoCL-Lite

CL-OPTR (Receiving unit) can operate with power fed via the frame grabber board, but the following specification does not meet PoCL standard.

When feeding the power via PoCL, please confirm with the power feeding specifications of the frame grabber board.

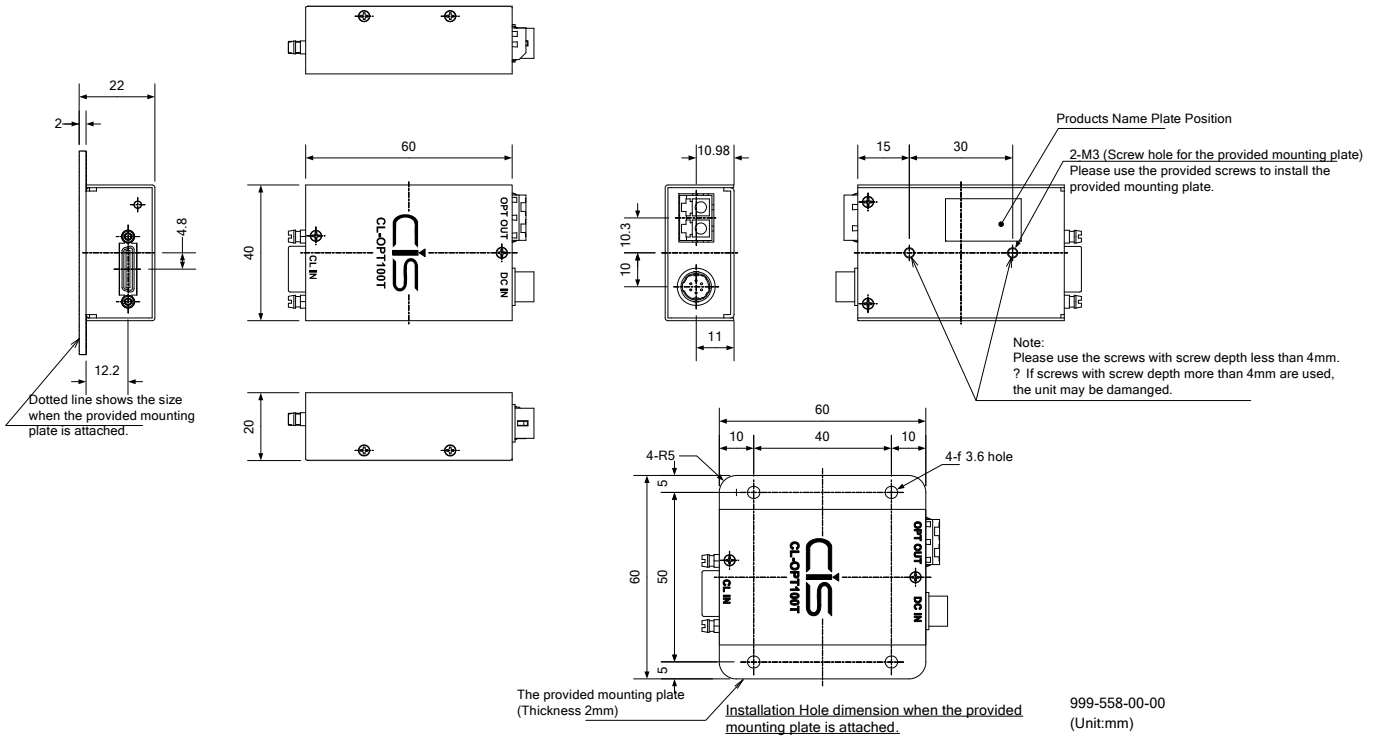
- (1) The normal output timing of CLK output from the CL-OPT100R to the frame grabber board shall be maximum 10s (typ. 2.5s) after the last power input for the camera, the CL-OPT100T, or the CL-OPT100R.
- (2) The intermittent CLK or LVAL/FVAL from the CL-OPT100R may be output to the frame grabber board, while the camera, the CL-OPT100T, and CL-OPT100R are connected.

10. Connection Example

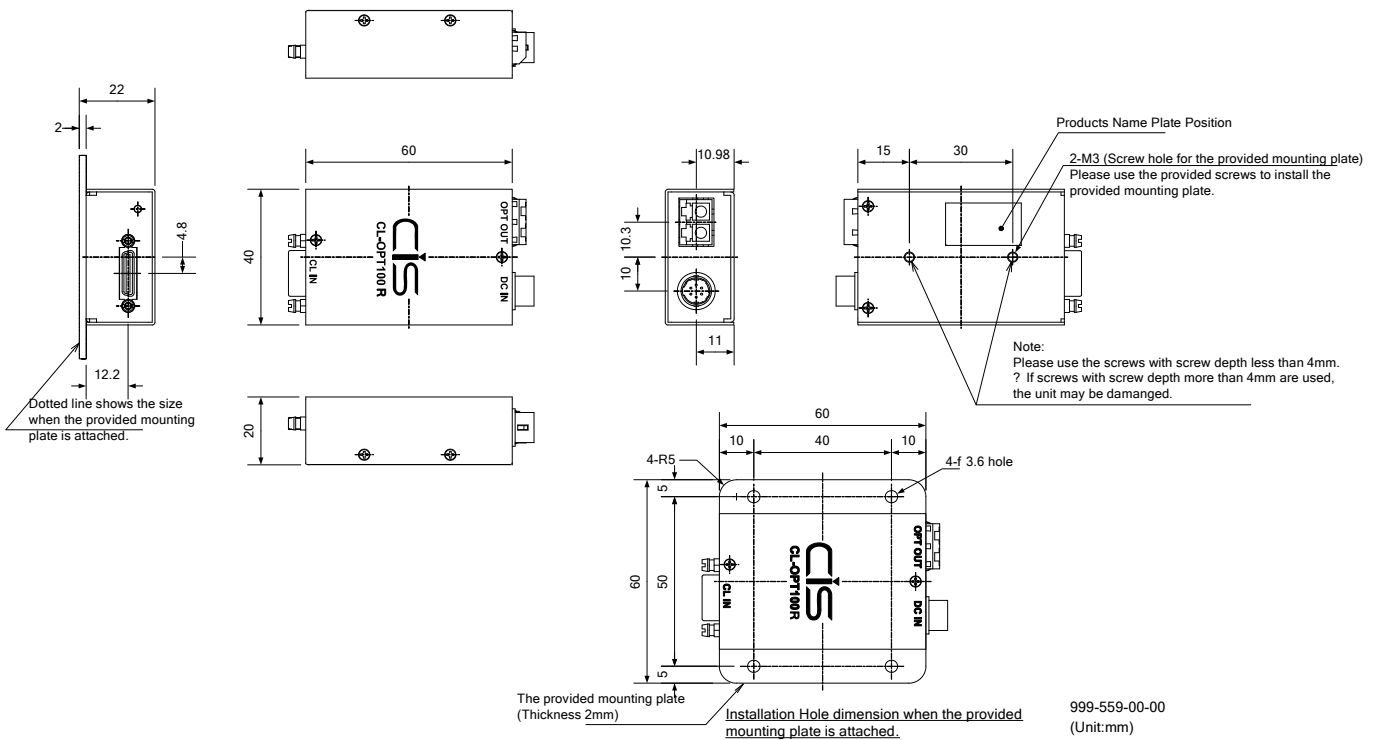


11. Dimensions

CL-OPT100T Dimensions



CL-OPT100R Dimensions



12. Cases for Indemnity (Limited Warranty)

We shall be exempted from taking responsibility and held harmless for damage or losses incurred by the user in the following cases.

- In case damage or losses are caused by fire, earthquake, or other acts of God, acts by third party, deliberate or accidental misuse by the user, or use under extreme operating conditions.
- In case indirect, additional, consequential damages (loss of business interests, suspension of business activities) are incurred as result of malfunction or non-function of the equipment, we shall be exempted from responsibility for such damages.
- In case damage or losses are caused by failure to observe the information contained in the instructions in this product specification & operation manual.
- In case damage or losses are caused by use contrary to the instructions in this product specification & operation manual.
- In case damage or losses are caused by malfunction or other problems resulting from use of equipment or software that is not specified.
- In case damage or losses are caused by repair or modification conducted by the customer or any unauthorized third party (such as an unauthorized service representative).
- Expenses we bear on this product shall be limited to the individual price of the product.

13. Product Service

In case of abnormal operation, contact the distributor from whom you purchased the product.