

LL-Series

400nm·650nm·780nm·830nm·1300nm
1200MHz E/O CONVERTER



Please read this manual carefully before use

Gravizon INC

https://www.gravizon.co.jp/index_En.html

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!!! DANGER !!!

This Unit is Class 1 LASER (LL-400GI is Class3B, LL-650GI is Class 2, LL-780GI is Class3R) Product. Please read and handle this product carefully to avoid eye damage.

◇Do not the power switch on till both ends of the fiber cable and the power cable are connected properly.

◇Always keep the protect cap attached to the Optical Signal Output Connector when not in use.

◇Do not observe inside of the Optical Signal Output Connector directly. It may result permanent damage on eyes.

◇Do not observe optical signal output directly through an optical instrument such as magnifier etc.

◇Do not observe optical signal from the end of the optical cable, if the signal is emitted into open air.

◇Do not disassemble and/or modify this unit.

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Introduction

Thank you for purchasing LL Series E/O Converter. (LL-400GI, LL-650GI, LL-780GI, LL-830GI, LL-1300GI)

LL Series is Electric to Optical signal converter and has following feature.

- Very compact size and more than 0.25[mW] CW optical power at fiber end with no modulation. (With 1[m] length 50/125 fiber)
- Wide frequency range
100kHz~1200MHz Flatness ± 2 [dBe]
- Standard FC optical connector
(Optional SC and ST connector are also available.)
- Standard BNC plug
Able to connect directly to a sweep generator or a network analyzer etc.
- Able to get DC power from instruments through included Power Cable Assembly. It is not guaranteed that power cable corresponds to all instruments.
- Able to use for instrumentation of lightwave products, optical links or other various applications.

Please read this user's manual carefully and use it appropriately according to this manual, will make this product useful for development of light wave equipments, lightwave communication converter or other various applications.

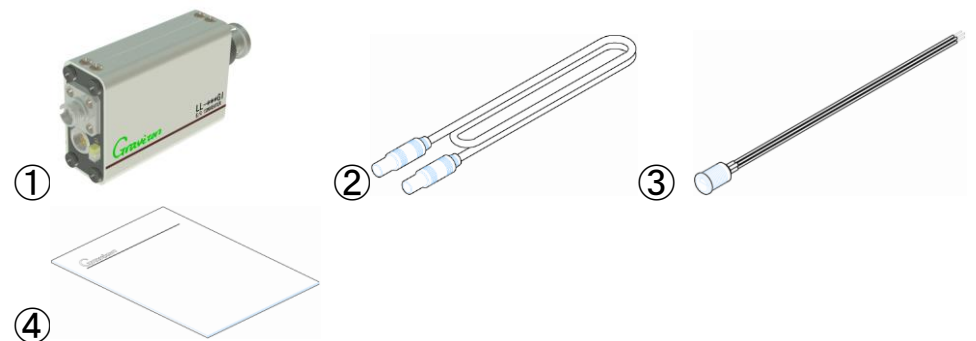
- ◇Do not re-produce or re-publishing a part or all this manual without written permission from Gravizon Inc.
- ◇This manual is subject to change without notice.
- ◇Please follow exporting regulations/rules in individual countries when exporting this product to other countries.

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Contents of this package

The contents of this package are listed below.

Please contact immediately the shop you purchased this product, if there is any missing items found.

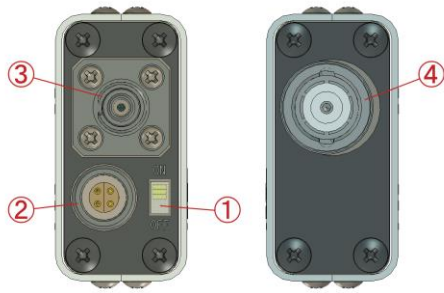


- ① E/O Converter
- ② Power Cable Assembly
- ③ Auxiliary Power Connector
- ④ User's Manual (This Manual)

◇Please keep original packaging, in case of re-shipping.

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Front and rear panel view



① Power switch

This switch is for controlling power. Please on/off this switch after connecting power cable assembly to power connector (2) and keep this switch off when not in use.

② Power input connector

The power can be supplied from probe power connector that equipped with an instrument through the Power Cable Assembly. Or, alternately, external regulated power supply (not included) can be used through the Auxiliary Power Connector. Power supply voltage for LL series is $\pm 15[V]$ (+15V only for LL-650GI). **Applying over and/or wrong polarity may cause permanent damage.**

③ Optical signal output connector

Light signal comes out from this FC connector. Optional SC and ST connector models are also available. **Please keep protect cap attached with this unit, to this connector to avoid light emission inadvertently when not in use.**

④ Electrical modulation signal input connector

Modulation signal is supplied through this BNC connector and this unit has $50[\Omega]$ input impedance. The modulation frequency range is $100[\text{kHz}] \sim 1200[\text{MHz}]$.

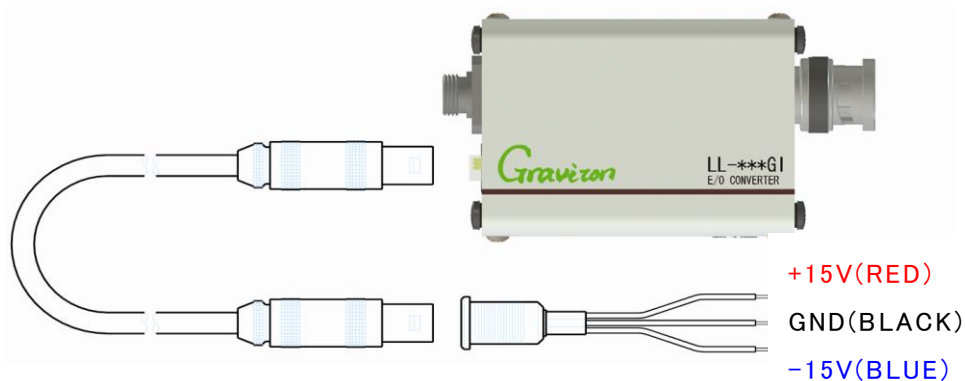
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Applying higher than twice of the conversion sensibility may cause permanent damage.

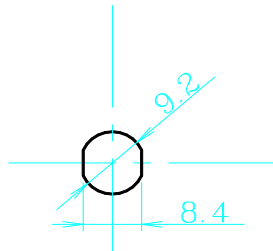
Connecting External Power Supply

1. An external power supply is necessary, if an instrument going to use has no probe power output. The requirements for the power supply are regulated $+15[V] \pm 5[\%]$ (LL-400GI is $\pm 15[V] \pm 5[\%]$, LL-1300GI is $-15[V] \pm 5[\%]$) and capable of supplying more than $120[\text{mA}]$ current with low ripple and noise. And connect as following figure.

Wrong power supply connection may cause permanent damage on the E/O converter. Please make sure the connection as **RED Cable for Positive terminal**, Black Cable for Ground Terminal and **Blue Cable for Negative Terminal**.

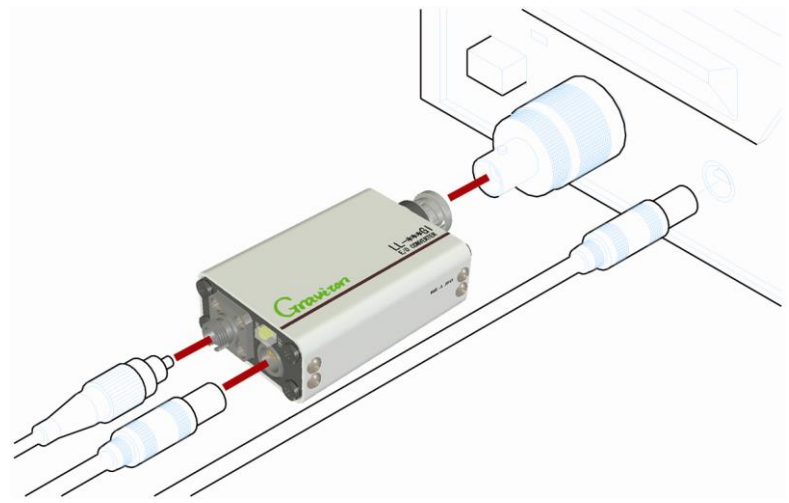


2. Panel cutout size is as following to mount the Auxiliary Power Connector on a panel, if necessary. Maximum allowable thickness of the panel is 5mm.



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Setup



1. First of all, connect the E/O converter to output connector of an instrument. Conversion connector may be required, if the instrument has no BNC jack.

2. Confirm power switch on the E/O converter is off then connect Power Cable Assembly supplied. Other side of the Power Cable can be connected to the instrument, if probe power connector is equipped. Please refer page 7 for connecting external power supply, if the instrument has no probe power connector.

3. Connect fiber connector to optical signal output connector. CW optical power at fiber end with no modulation is more than $0.25[\text{mW}]$.

4. Turn on the power switch. **Do not the power switch on with out optical fiber cable connected both ends properly.**

5. Adjust modulation level and frequency. Appropriate P-P modulation level is approximately 1/3 of conversion sensibility that is on the data sheet. Beyond this level makes the optical output signal lower than threshold level of Laser device causes clipping of the optical output signal.

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Specifications

	LL-400GI	LL-650GI	LL-780GI	LL-830GI	LL-1300GI
Laser Device	InGaN	AlGaInP	GaAlAs	GaAlAs	InAlGaAs/InP
Wavelength	$405 \pm 10[\text{nm}]$	$658 \pm 10[\text{nm}]$	$780 \pm 10[\text{nm}]$	$830 \pm 10[\text{nm}]$	$1310 \pm 30[\text{nm}]$

• Output power with no modulation	More than $0.25[\text{mW}]$ @ end of the fiber. (50/125G Fiber 1[m] length)
• Optical Output Connector	FC receptacle (JIS F01)
• Modulation signal input connector	BNC Plug, Optionally SMA is available
• Input impedance	$50[\Omega]$
• Modulation Sensibility	High than $0.25[\text{mW/V}]$
• Modulation signal frequency range	$100[\text{kHz}] \sim 1200[\text{MHz}]$
• Frequency response	$\pm 2[\text{dB}]$ within the frequency range above ($100[\text{MHz}]$ is reference point)
• Power supply voltage	$+15[V] \pm 5[\%]$ (LL-400GI is $\pm 15[V]$, LL-1300GI is $-15[V]$)
• Current consumption	Maximum $120[\text{mA}]$
• Operational temperature	$5[^\circ\text{C}] \sim 35[^\circ\text{C}]$
• Storage temperature	$-20[^\circ\text{C}] \sim 50[^\circ\text{C}]$
• Dimension	L 93[mm], W 44[mm], H 21[mm] (Including the protect cap etc.)
• Weight	110[g]
Optional	
• OP01	SC or ST optical connector equipped model (Specification of these model may change without notice.)

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