FASTCAM Multi
LED Light Option

Hardware Manual

Rev. 1.06 E

Photron

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the users will be required to correct the interference at their own expense.

CAUTION:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Introduction

Thank you for your purchase of Photron's high-speed camera system, the "FASTCAM Multi LED Light Option" (referred to below as the system).

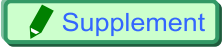This manual contains the operating instructions and warnings necessary for using the system.

Before using the system, please read the entire manual.

If any part of this manual is unclear, contact Photron using the contact information printed at the back of the manual.

After you finish reading the manual, store it in a safe place along with the warranty card and refer back to it when necessary.

Manual Notation

The following icons and symbols are used in the explanations in this manual.

Icon/Symbol	Description
🔒 Important	This symbol indicates content that should always be read.
❗ Caution	This symbol indicates instructions that should always be followed when using the software, or things to be careful of when using the software.
✏ Supplement	This symbol indicates supplementary items to be aware of when using the system.
📖 Reference	This symbol indicates the location of a reference.
❋ MEMO	This symbol indicates a space for you to make notes.
" "	This symbol is used to indicate the names of items on a screen, references, dialog names, and connectors.
[ ]	This symbol is used to indicate menu names, and sub-menu names.

Using the Manual

This section explains the layout of the manual. For other options, please refer to each manual

◆ Introduction

The introduction explains the manual and safety precautions.

◆ Chapter 1. Overview

This chapter gives an overview of the system and an explanation of its features.

◆ Chapter 2. Functions

This chapter explains the system's functions. Refer to the "Photron FASTCAM Viewer User's Manual" for additional details on using a PC to control the system.

◆ Chapter 3. Specifications

This chapter explains the system's specifications.

◆ Chapter 4. Warranty

This chapter explains about the warranty.

◆ Chapter 5. Contacting Photron

This chapter lists the contact information to use when contacting Photron if the system malfunctions or if a portion of the manual is unclear.

Using the System Safely and Correctly

In order to prevent injury to yourself and others, and to prevent damage to property, carefully observe the following safety precautions.

Photron has given its full attention to the safety of this system. However, the extent of damage and injury potentially caused by ignoring the content of the safety precautions and using the system incorrectly is explained next. Please pay careful attention to the content of the safety precautions when using the system.

⚠️ **Warning**   This symbol indicates actions that carry the risk that a person could receive a serious injury.

⚠️ **Caution**   This symbol indicates actions that carry the risk that a person could receive a moderate injury, or that damage to physical property might occur.

◆ The safety precautions to be observed are explained with the following symbols.

⚠️   This symbol indicates actions that require caution.

🚫   This symbol indicates actions that are prohibited and must be avoided.

❗   This symbol indicates actions that must always be performed.

⚠️ **Warning**

🚫	■ Do NOT try to look directly at the laser beam or look into the laser emission port. If you do, your eyesight can be seriously damaged.
🚫	■ Do NOT try to look directly at the laser beam using an optical equipment (such as a telescope or binoculars). If you do, your eyesight can be seriously damaged.
🚫	■ When pointing the laser beam to a reflecting object (such as a mirror, prism or metal surface), do NOT look directly at the reflected laser beam. If you do, your eyesight can be seriously damaged.
🚫	■ Do NOT point the laser beam at other persons.

🚫	■ Do not perform actions that will damage the cable or plug.
	  (Do not damage the cable, modify it, use it near a heater, excessively bend, twist or pull on it, place heavy objects on it, or bundle it.)
	  Using the cable when damaged can cause fire, electric shock, or a short circuit.

🚫	■ Do not insert metallic objects inside, or pour liquids such as water on, the system. Doing so can cause fire, electric shock, or malfunction from short circuit or heat.
🚫	■ Do not disassemble or modify the system. There are high voltages inside the system that can cause electric shock.
🚫	■ Do not plug in or unplug the LED Light Option Cable Connector with wet hands. Doing so can cause electric shock.
❗	■ Not fully plugging in the LED Light Option Cable Connector can cause fire from electric shock or heat.

🔌	■ When something is wrong with the system, unplug the Main Unit's power cable immediately.
	  - When a foreign substance or liquid, such as metal or water, gets inside.
	  - When the outer case is broken or damaged, such as from a fall.
	  - When the system produces smoke, a strange smell, or strange sound.
	  Using the system in these conditions might cause a fire or electric shock.

⚠ Caution

■ Always unplug the system when cleaning it or when it is unused for a long period of time. Leaving or storing the system connected to the power source might cause fire from insulation deterioration or electrical discharge.

■ Do not set the system in a location where the temperature gets unusually hot.

The trunk and inside of a car can get especially hot in summer.

Doing so can cause the outer case and internal components to deteriorate or cause a fire.

■ Do not place the system in a location prone to oily smoke or steam, or in a location with a lot of humidity or dust.

Oil, moisture, and dust conduct electricity, which can cause a fire or electric shock.

■ Ambient temperature 0-45° C, humidity 85% RH or lower, maximum altitude 2,000m or lower.

In addition, if exceeding these limits, use in a condensation-free environment.

Doing so can cause malfunction.

■ Do not store the equipment in a location where the temperature goes below -20°C or higher than 60°C. Also, prevent condensation from forming during shipment.

■ When shipping, remove the connecting cable and use the original packaging or a dedicated carrying case.

Do not ship the equipment in an environment where the temperature goes below

-20°C or higher than 60°C. Also, prevent condensation from forming during shipment.

⚠️ European Union (and EEA) only

"CE" mark indicates that this product complies with the European requirements for safety, health, environment and customer protection. "CE" mark equipments are intended for sales in Europe.

These symbols indicate that this product is not to be disposed of with your household waste, according to the WEEE Directive (2002/96/EC), the Battery Directive (2006/66/EC) and/or your national laws implementing those Directives.

This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE) and batteries and accumulators. Improper handling of this type of waste could have a possible impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. Your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources.

For more information about the recycling of this product, please contact your local city office, waste authority, approved scheme or your household waste disposal service or visit www.photron.com.

(EEA: Norway, Iceland and Liechtenstein)

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU (Class A) on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

About the Laser
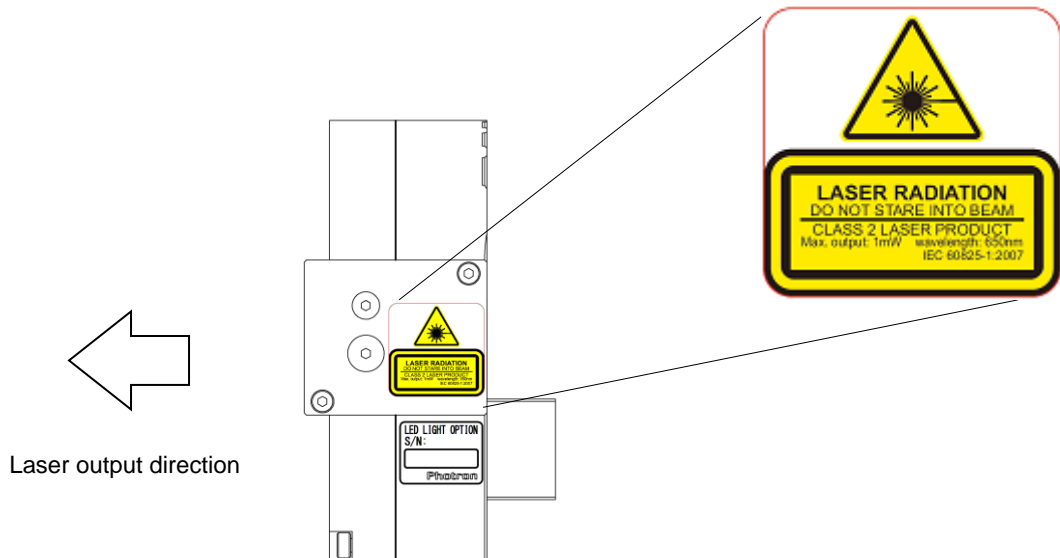
Conforming Standard

This product is categorized as Class 2 laser equipment by the following standard. It emits visible laser light from the ports located in its front.

EN60825-1:2007

Laser Specifications

For the specifications of the laser, refer to Section 3.1.1. Product Specifications (Laser Pointer).

Laser Caution Label

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
Max. output: 1mW   wavelength: 650nm
IEC 60825-1:2007

Laser output direction

Side view

⚠️ **Caution**	Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Table of Contents

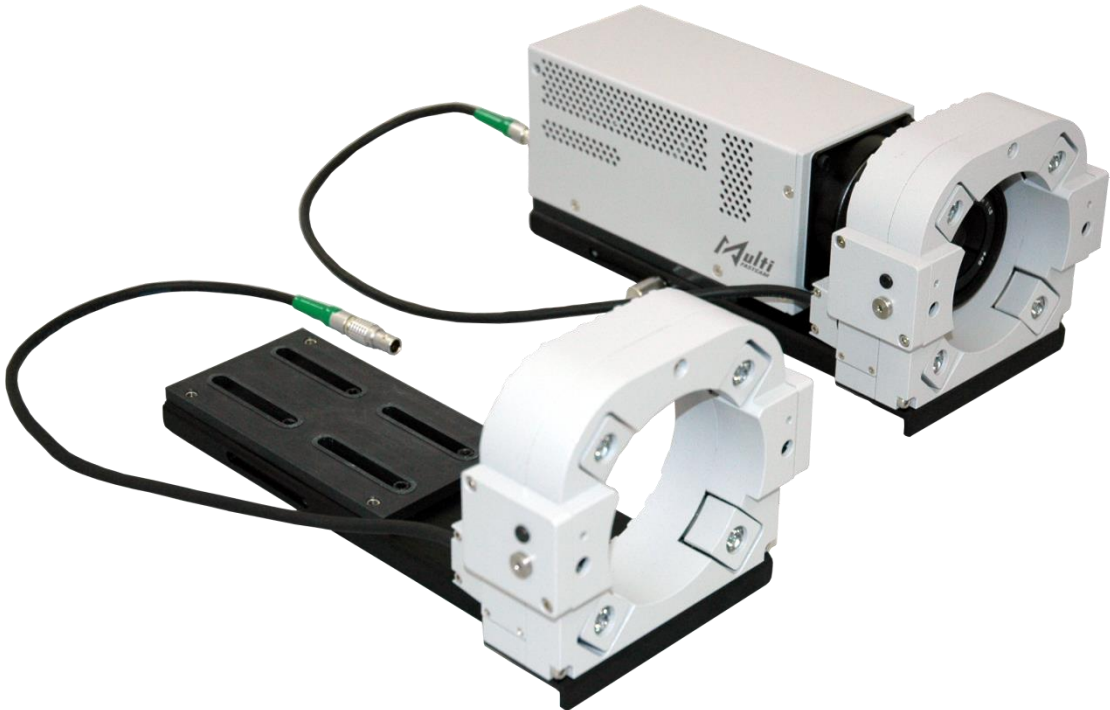# Chapter 1.   Overview

1.1. **Product Overview and Features**

   This product is an LED light option for the FASTCAM Multi Camera Head HS-01 (hereinafter referred to as HS-01).

   The LED light will supplement the amount of light during recording of high-speed video with 4 high-brightness LED powered by the HS-01 camera head. With built-in laser pointers, the recording angle and position can be easily adjusted.

FASTCAM Multi LED Light Option

1.2. **Components and Accessories**

1.2.1. Components

Refer to the attached packing list for this product's standard components and accessories.

1.2.2. Accessories/Options

This product is connected to FASTCAM Multi camera head for actual operation. In addition, the following optional items are offered for the FASTCAM Multi camera system (as of March 2015).

1. FASTCAM Multi Camera Head HS-01 type 750K-M (Monochrome) (102479)
2. FASTCAM Multi Camera Head HS-01 type 750K-C (Color) (102480)
3. FASTCAM Multi Camera Head HS-01 type 200K-M (Monochrome) (102829)
4. FASTCAM Multi Camera Head HS-01 type 200K-C (Color) (102830)
5. FASTCAM Multi Camera Cable 5m (102481)
6. FASTCAM Multi Camera Cable 10m (102482)
7. Micro Four Thirds Lens Option For FASTCAM Multi (102484)

Supplement

- Many more optional items (lenses and lighting devices) are available to choose from. For details, ask your local sales representative or refer to Section 5.1. Contacting Information.
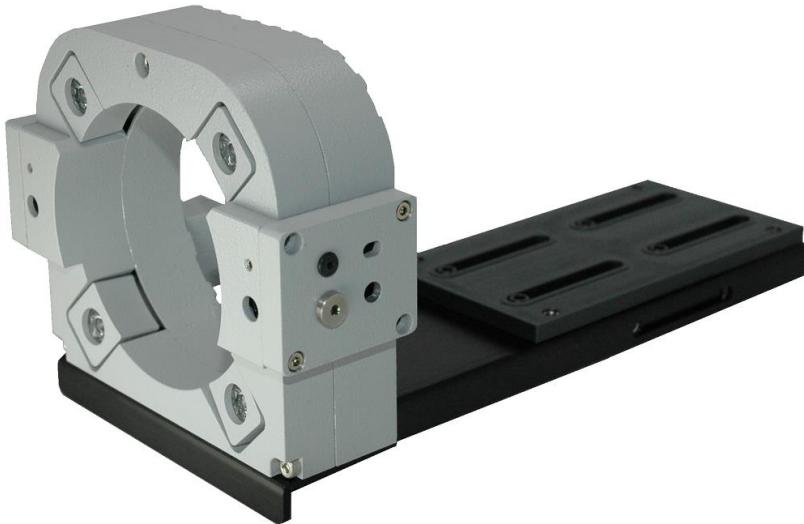
1.3. **Part Names**

🚫 For each of the system components.

- Do not expose to shock.

- Do not use in an area where flammable gas or dust is present.

- Do not place in an unstable location such as on an unstable platform or an incline.

- Do not disassemble or modify.

- Do not expose to liquids such as water.

- Do not subject to excessive force.
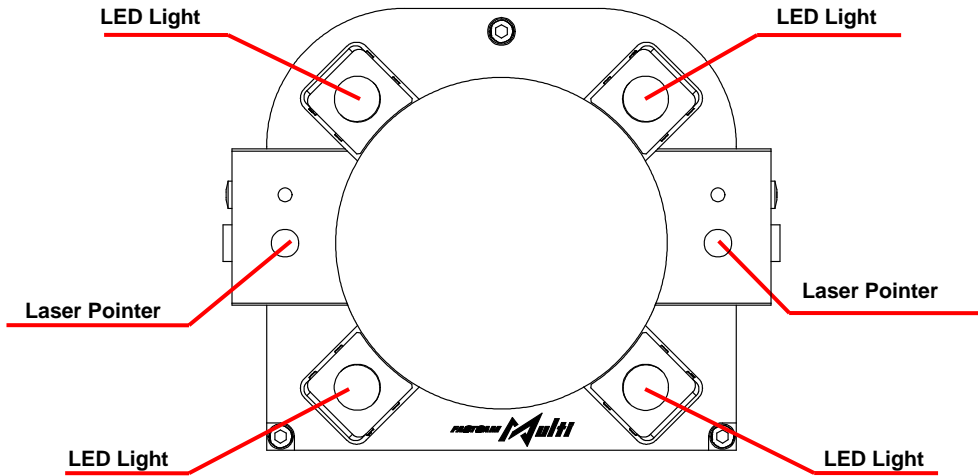
1.3.1.　LED Light Option

   The unit comprises four LED light sources and two laser sources. The LED is used as supplementary light for recording and the laser pointer is used to correctly aiming at the object being recorded.
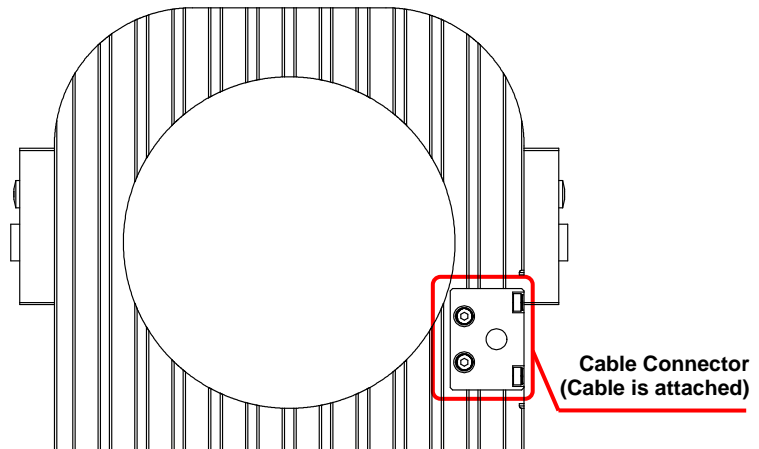
FASTCAM Multi LED Light Option

1.3.2.　LED Light Option Part Names

FASTCAM Multi LED Light Option

LED Light LED Light

Laser Pointer Laser Pointer

LED Light LED Light

Front

Cable Connector
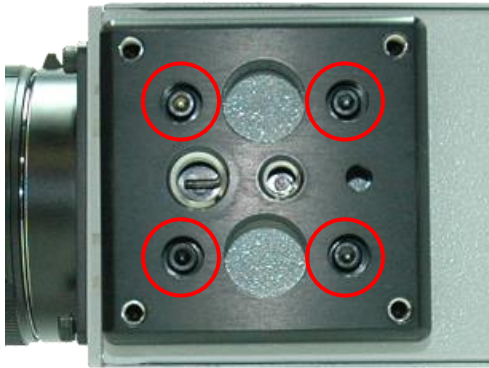(Cable is attached)

Rear

1.4. **Connection**

1.4.1.　Mounting to HS-01 camera head

Connect this product to the camera head using the provided cable.

Follow the below procedure to connect between this product and the camera head.

1. Make sure the camera cable is away (disconnected) from the camera head.

2. Remove the four screws, shown in the below picture, and remove the tripod adapter from the camera head.

3. Mount the camera head on the LED Light Option chassis and fasten with four screws from underneath the bottom.
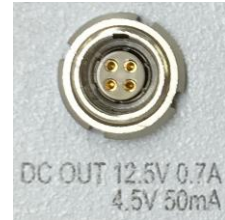

> **! Caution**
>
> - The inside diameter of the LED Light Option body is 72mm. Make sure the lens body's diameter is smaller than that.
> - At some lenses, the manual operation of iris, focus and/or zoom is difficult.

1.4.2. Connection of cable

1.   Make sure the camera cable is away (disconnected) from HS-01 camera head.

2.   Connect the LED Light Option cable to the dedicated connector on the camera head. First confirm the position of connector on HS-01 camera head and then insert the connector aligning the angle to the red mark.
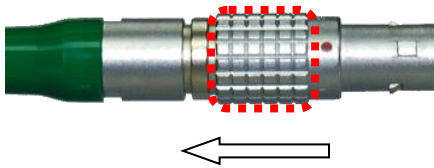

LED Light Option Cable Connector

Camera Head HS-01 Connector

3. To disconnect, first turn off the main unit. Remove the cable by pulling back the connector sliding the part with dotted line along the arrow.

LED Light Option Cable Connector

> Before power-on, without fail, make sure the cable connector has been firmly engaged.
>
> When connecting or disconnecting the LED Light Option cable, be sure to remove the camera cable from the camera head or turn off power to the main unit. Otherwise, a trouble may result.

Chapter 2. Functions

2.1. LED Light

2.2. Laser Pointer

2.3. Slider

2.1. **LED Light**

This product has four high-intensity LED light sources built in it, which are used for illuminating the object to be framed.
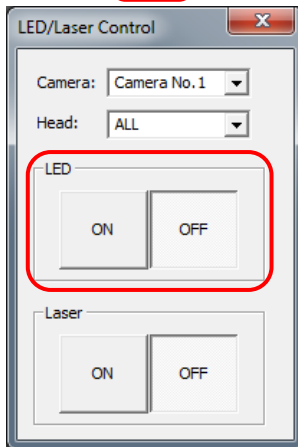
2.1.1.　Button operation on Camera Head HS-01

LED Light is turned ON or OFF by the black button on the back panel of Camera Head HS-01. Press the black button for longer than 1 second to turn on the Light. Press the button again to turn off the Light.
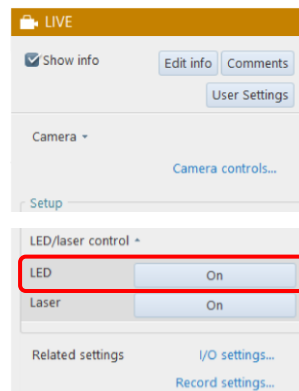

2.1.2.　Operation from PFV

Light is turned ON or OFF by the plug-in button on PFV.

PFV3　　　　　　　　　　　　　　　　PFV4

📖 Reference

- For detailed operation, refer to "Using LED Light Option" section in PFV3 User's Manual.
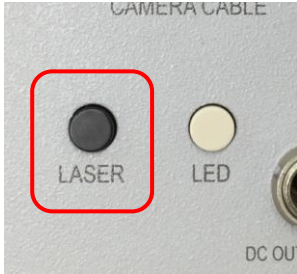
✏ Supplement

- Depending on the particular setting of frame rate, shutter speed and lens iris, there may be a case where a satisfactory exposure is not obtained while using LED Light Option. In such a case, use additional lighting equipment.
- When using with PFV4, connect the LED light option before starting the camera.
  When connected correctly, LED/laser control pane automatically appears in the function panel.

2.2. **Laser Pointer**

This product has two red laser sources built in it, which are used for aiming at the object to be framed.
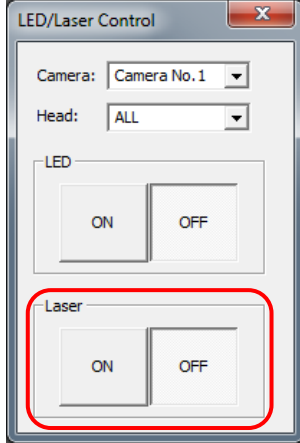
2.2.1. Button operation on Camera Head HS-01

Laser Pointer is turned ON or OFF by the white button on the back panel of Camera Head HS-01. Press the white button for longer than 1 second to turn on the Laser Pointer. Press the button again to turn off the Laser Pointer.

2.2.2. Operation from PFV
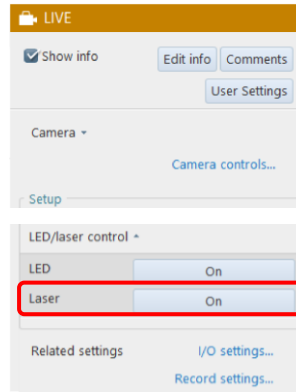
Laser Pointer is turned ON or OFF by the plug-in button on PFV.

PFV3   PFV4

Reference

- For detailed operation, refer to PFV3 User's Manual.

Supplement

- When using with PFV4, connect the LED light option before starting the camera.
  When connected correctly, LED/laser control pane automatically appears in the function panel.

2.3. **Slider**

The camera mount can be adjusted to fit the lens's length.

Loosen the screw at the slider's side, and then slider its position. The adjustable length is 40mm as maximum.

⚠ **Caution**

● Keep tighten up the screw of the slider except for adjusting.

Chapter 3.　Specifications

3.1. Specifications

3.2. Dimensions

3.1. **Specifications**

3.1.1.　Product Specifications (LED)

LED	White Power LED (4 of)
Luminance	Approx. 18,000 Lx (Distance: 500mm, Measured at center)
Color Temperature	Approx. 6,500K
Lens	Collimator Lens (4 of)
Expected Lifetime	Approx. 25,000 to 30,000 hours *

* Denotes the average time lapse for the light to decrease to 70 % of the initial light output under continuous operation. Be sure to understand this is NOT a guaranteed time but an expected service life.

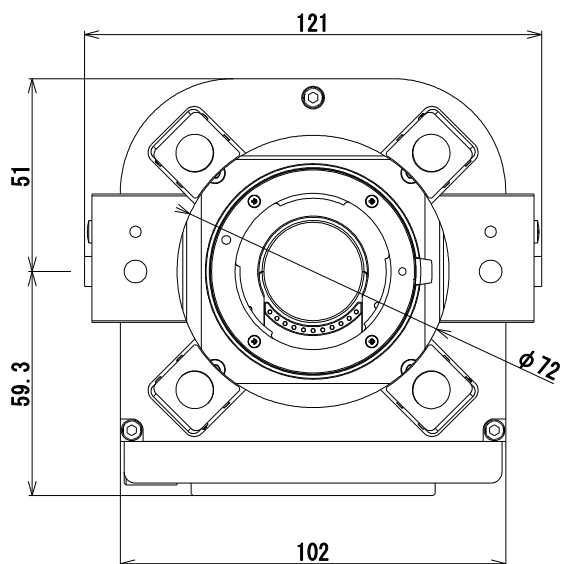### 3.1.2.　Product Specifications (Laser Pointer)

Laser	Red Laser Diode (2 of)
Wavelength	650nm
Output	0.5 ~ 0.99mW

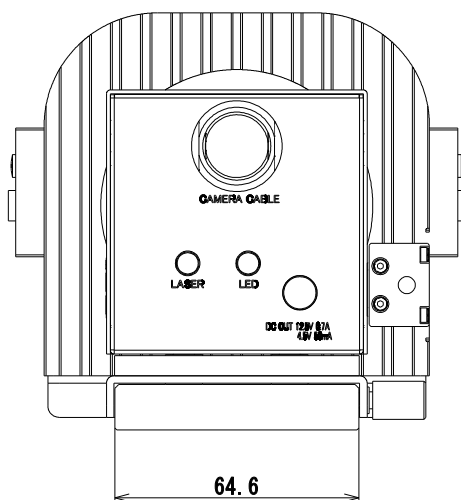### 3.1.3.　General Specifications

Environment Conditions	
Storage Temperature	-20°C to 60°C (No Condensation) -4ºF to 140ºF (No Condensation)
Storage Humidity	85% or less (No Condensation)
Operating Temperature	0 to 45°C (No Condensation) 32ºF to 113ºF (No Condensation)
Operating Humidity	80% or less (No Condensation)
Pollution degree	Degree 2 according to IEC60664-1
Overvoltage category	Category II according to IEC60664-1
Maximum use altitude	2,000m or lower
External Dimensions	
Body	121 (H) x 110 (W) x 226 (D) mm, excluding protrusion 4.8" (H) x 4.3" (W) x 8.9" (D)
DC Power Supply	
LED Voltage/Current	12.5V, 0.7A
Laser Voltage/Current	4.5V, 50mA
Weight	
Body	0.75kg, 1.65lb

3.2. **Dimensions**

(mm)

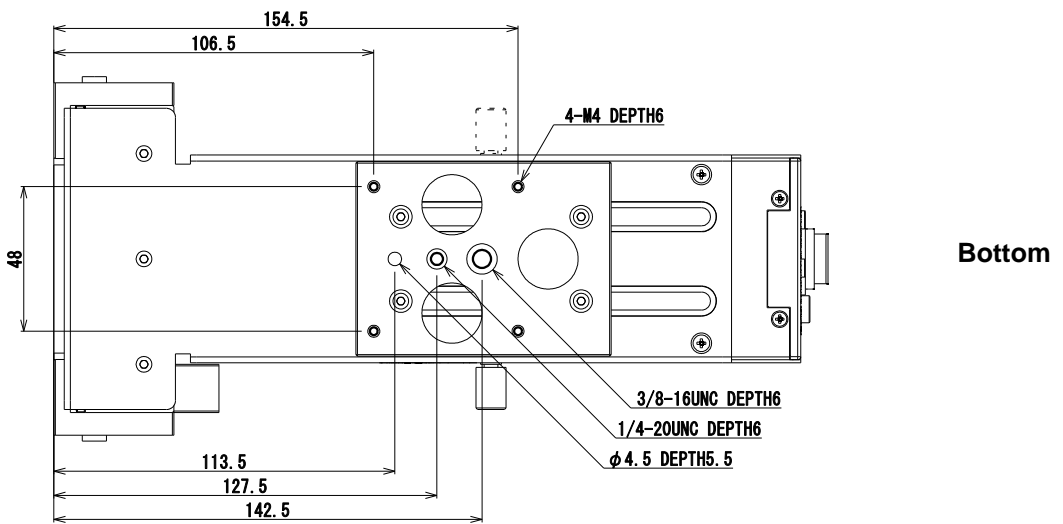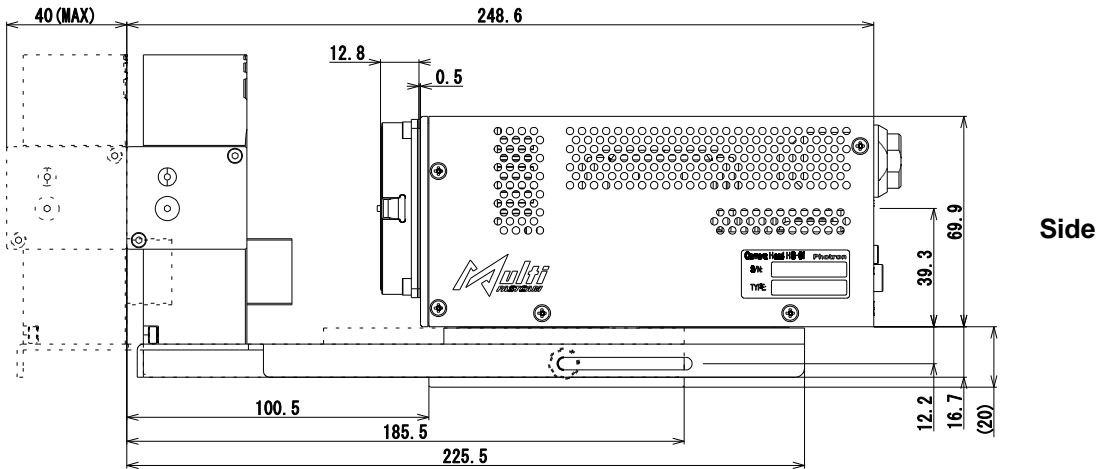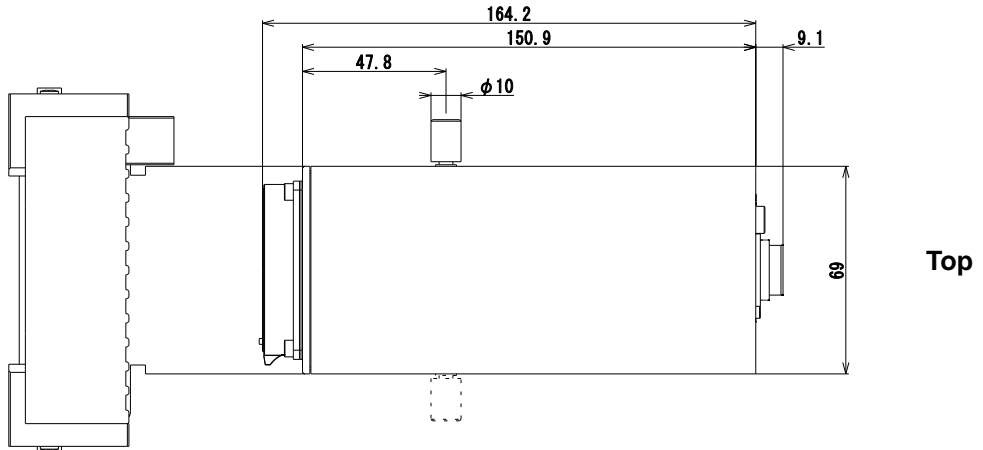**Front**

Rear

※Caution

If installing a longer screw than the specified

depth (in mm), its screw hole or the camera

may be damaged.

Top

Side

Bottom

4-M4 DEPTH6

3/8-16UNC DEPTH6

1/4-20UNC DEPTH6

φ4.5 DEPTH5.5

Chapter 4.　Warranty

4.1. About the Warranty

4.1. **About the Warranty**

This system has been shipped having undergone rigorous testing. However, in the unlikely event that it malfunctions due to a manufacturing defect, it will be repaired, at no charge, within the warranty period.

◆ Warranty Exceptions

The following exceptions will result in fee-based repair, even within the warranty period.

1. Damage or malfunction as a result of fire, earthquake, water damage, lightning, other natural disasters, pollution, or the effects of abnormal voltage.

2. Damage or malfunction as a result of dropping or mishandling during shipment or when moving after purchase or misuse.

3. Consumable goods (cables)

4. When repair, adjustment, or alternation done by an entity other than Photron service has been performed on the system, or damage or malfunction that is determined to be attributed to a fault in the use the product.

For inquires related to malfunction, contact the dealer where the product was purchased, or the nearest Photron office.

📖 Reference

- For inquires related to our product, refer to "5.1. Contact Information" page 20.

Chapter 5.   Contacting Photron

5.1. Contact Information

5.1. **Contact Information**

For inquires related to FASTCAM Multi LED Light Option, contact Photron at the contact information listed below.

Additionally, the following items will be verified when inquiring, so please prepare them in advance.

Items Verified	Concrete Example
Contact Information	Company, school or organization name, customer contact name, contact phone number, contact e-mail address.
Product Name	FASTCAM Multi LED Light Option
Serial Number	Check on the nameplate seal.
Condition of the system and what is known about it.	

Contact Information	
In Americas and Antipodes	**PHOTRON USA, INC.** 9520 Padgett Street, Suite 110, San Diego, CA 92126-4426, USA Phone: +1 (800) 585 2129 or +1 (858) 684 3555 Fax: +1 (858) 684 3558 E-mail: image@photron.com Web: www.photron.com
In UK, Africa and India	**PHOTRON (EUROPE) LIMITED** The Barn, Bottom Road, West Wycombe, Buckinghamshire HP14 4BS, U.K. Phone: +44 (0) 1494 48 1011 Fax: +44 (0) 1494 48 7011 E-mail: image@photron.com Web: www.photron.com
In Europe outside the UK	**Photron Deutschland GmbH** Ziegelweg 3, 72764 Reutlingen, Germany Phone: +49 (0) 7121 699 7950 Fax: +49 (0) 7121 699 7943 E-mail: image@photron.com Web: www.photron.com
In China	**PHOTRON (SHANGHAI) LIMITED** Room 20C Zhao-Feng World Trade Building, No. 369 Jiangsu Road Chang Ning District, Shanghai 200050, China Phone: +86 (21) 5268 3700 Fax: +86 (21) 5268 3702 E-mail: info@photron.cn.com Web: www.photron.cn.com
In other areas	**PHOTRON LIMITED** 21F, Jinbocho Mitsui Bldg., 1-105 Kanda Jimbocho, Chiyoda-Ku, Tokyo 101-0051, Japan Phone: +81 (3) 3518 6271 Fax: +81 (3) 3518 6279 E-mail: image@photron.co.jp Web: www.photron.co.jp

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