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KEYENCE

96M13841

96M13841-3

LED Illumination Expansion Unit
CA-DC50E

Instruction Manual

Read this manual before using the product in order to achieve maximum performance.
Keep this manual in a safe place after reading it so that it can be used at any time.

Checking the Package Contents

The CA-DC50E is supplied with the following items. Check that all are included in the package.

☐ CA-DC50E 1
☐ Instruction Manual (this document)

Introduction

This product is a dedicated illumination expansion unit for KEYENCE image processing controllers. To use this unit safely, carefully read this manual, the notes on use and instruction manual for the device to which to connect this unit.

■ Symbols

This manual uses the following symbols so that you can recognize important messages at a glance. Please read it in its entirety.

DANGER	**It indicates a hazardous situation which, if not avoided, will result in death or serious injury.**
CAUTION	**It indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**
NOTICE	**It indicates a situation which, if not avoided, could result in product damage as well as property damage.**
Important	**It indicates cautions and limitations that must be followed during operation.**
Point	**It indicates additional information on proper operation.**
Reference	It indicates tips for better understanding or useful information.

Safety Information for the CA-DC50E

■ General precautions

DANGER	• **Do not use this product for the purpose of protecting a human body or a part of a human body.** • **This product is not intended for use as explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.**
CAUTION	• **You must verify that this product is operating correctly in terms of functionality and performance before the start and the operation of this product.** • **We recommend that you take substantial safety measures to avoid any damage in the event of an assumed problem occurring.** • **Turn off the device immediately in any of the following situations. Continuing to operate the device despite such a problem may result in fire, electrical shock, or device failure. Contact your nearest KEYENCE sales office for repairs.** **- When there is a foreign object or liquid such as water, oil, or a chemical agent inside the device.** **- When the device has been subject to excessive mechanical shock or when the case has been damaged.** **- When the controller emits smoke, an unusual smell, or a strange noise.**
NOTICE	• **Do not modify this product, or use it in any way other than described in the specification.** • **When this product is used in combination with other instruments, functions and performance may be degraded, depending on the operating conditions and surrounding environment.**

■ Power

CAUTION	**Do not use the device with anything other than a 24 VDC power supply. Doing so may result in fire, electrical shock, or device failure.**
Important	**Always ground the frame ground terminal or the ground terminal when using a switching regulator.**

■ Installation location

Avoid locations such as the following when installing the CA-DC50E:

CAUTION	• **Locations where the unit is exposed to direct sunlight.** • **Locations where the surrounding air temperature exceeds the range listed in the specifications. Locations prone to rapid temperature changes.** • **Locations with poor ventilation.** • **Locations where relative humidity exceeds 35 to 85% RH. Locations subject to condensation.** • **Locations where corrosive or flammable gasses are present.** • **Locations where there is excessive dust, salt, or iron powder.** • **Locations where the unit is exposed to splashes of substances such as water, oil, or chemical agents.** • **Locations where the unit is subject to direct vibrations or mechanical shocks.** • **Locations where the unit may be influenced by radiation noise or static electricity.** • **Separate the unit and the cables as far as possible from high-voltage lines and power lines. Interference from such lines may result in nonstandard operation or device failure.**

■ Handling

CAUTION	• **Avoid touching the light-emitting unit directly with your hands during or immediately after use, since it may become hot at these times. Doing so may result in burn injuries.** • **Do not operate the unit after disassembling or modifying it. Doing so may result in fire, electrical shock, or device failure.** • **Do not look directly at the light-emitting unit for extended periods of time. Doing so may cause harm to your eyes.**
NOTICE	• **Be sure to stop the supply of power to this device before connecting cables to and disconnecting cables from the illumination connectors. Connecting cables to and disconnecting cables from the illumination connectors while power is supplied may lead to malfunctions of and damage to the illumination expansion unit and the light-emitting unit.** • **When the unit becomes excessively dirty, apply a weak, neutral detergent to a cloth and wipe away the dirt, then wipe the unit dry with a soft cloth. Do not use benzene, thinners, or alcohol to clean the unit. Doing so may result in the discoloration or deformation of the unit case.**

Precautions on Regulations and Standards

■ CE and UKCA Markings

Keyence Corporation has confirmed that this product complies with the essential requirements of the applicable EU Directive(s) and UK regulations, based on the following specifications. Be sure to consider the following specifications when using this product in the Member States of European Union and in the United Kingdom.

EMC Directive (CE) and Electromagnetic Compatibility Regulations (UKCA)

• Applicable Standard (BS)EN61326-1, Class A

Remarks: These specifications do not give any guarantee that the end-product with this product incorporated complies with the essential requirements of EMC Directive and Electromagnetic Compatibility Regulations. The manufacturer of the end-product is solely responsible for the compliance on the end-product itself according to EMC Directive and Electromagnetic Compatibility Regulations.

■ FCC Regulations

This product complies with the following regulations specified by the FCC.

• Applicable regulation FCC Part 15 Subpart B Class A
• This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
• FCC CAUTION

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

■ KC mark (Republic of Korea)

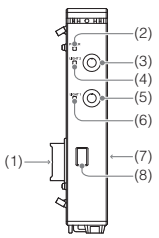
Class A device

This device is a commercial electromagnetic wave generating device (Class A) and is intended for use in locations outside residences.
Dealers and users should be aware of this point.

A 급 기기 (업무용 방송통신기자재)

이 기기는 업무용 (A 급) 전자파적합기기로서 판매자또는 사용자는 이 점을 주의하시기 바라며 , 가정외의 지역에서 사용하는 것을 목적으로 합니다 .

Part Names and Functions



(1) Controller connector
(2) Power supply LED
(3) Illumination 2 output connector
(4) Illumination 2 status LED*
(5) Illumination 1 output connector
(6) Illumination 1 status LED*
(7) Expansion unit connector
(8) Power supply connector

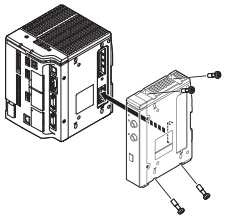
* The status LEDs indicate the status of each illumination as shown below.
Green: The illumination has been enabled by the controller-side settings and is operating normally.
Off: Power is not being supplied to the controller or illumination expansion unit or the illumination has been disabled by the controller-side settings.
Red: A light-emitting unit malfunction or a cable breakage has been detected or the voltage is not being output correctly due to an illumination expansion unit malfunction.

NOTICE	**If the light connector is to be removed or attached, shut off the power supply to the illumination expansion unit. If the light connector is removed or attached while power is being supplied, this may cause the illumination expansion unit and the light emitter to malfunction or become damaged.**

Reference
- Turn on the power to the CA-DC50E at about the same time as turning on the power to the connected controller.
- If the light-on time of the connected illumination unit is too long compared with the light-off time, an error occurs due to overload. In such a case, adjust the trigger intervals or shutter speed on the controller so that the light-off time of the unit is three times or longer than the light-on time.

Installation

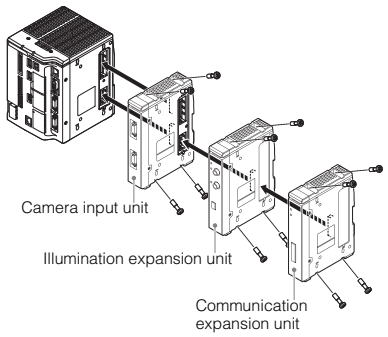
When controlling the illumination from the controller, up to two CA-DC50E units (four illumination units) can be connected.
Remove the protection label from the expansion unit connector on the right side of the controller, and then connect the CA-DC50E as shown in the following figure.



NOTICE	• **Stop supplying the power to the CA-DC50E and to the controller when connecting or disconnecting the CA-DC50E. Connecting or disconnecting the CA-DC50E with the power being supplied may cause damage to the controller or peripheral devices.** • **Remove the protection label from the connector only when connecting the illumination expansion unit. Using the CA-DC50E with the connector exposed may cause damage to the CA-DC50E.**

Reference The CA-DC50E can be connected together with the LED illumination expansion unit CA-DC40E and CA-DC60E. The total number of units that can be connected in this situation is 8 (16 individual lighting units), but, among these units, the maximum number of CA-DC50E and CA-DC60E units that can be connected is 2 for each of these units (4 individual lighting units).

When using the CA-DC50E, the camera input unit and the communication expansion unit at the same time
Connect the camera input unit directly to the controller, and then connect the CA-DC50E and the communication expansion unit to the right side of the camera input unit.



Point **You cannot install any expansion unit between the camera input unit and the controller.**

■ Terminal block interface

Power connector



(1) (1) 24VDC + power supply (24 VDC) input
(2) 0V - power supply (0 V) input
(3) (3) FG Connect to a Class D ground.
- Applicable wire: AWG16 to 28
- Terminal block screw torque: 0.25 Nm or less

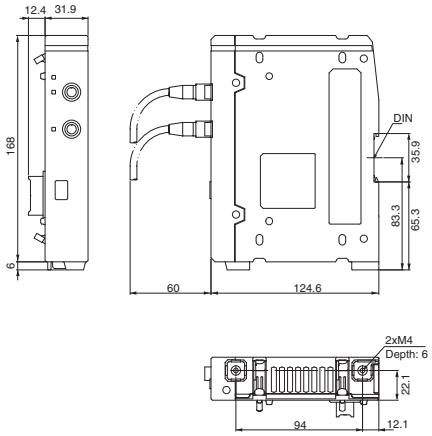
Specifications

Output	Light adjustment system	Constant current control
	Tone	Digital 1024 levels [Selectable with controller]
	No. of connections	2 ch. (Six-pole circular connector for RayTrax LED illuminations)
	Synchronism	Synchronized with trigger applied to camera and with shutter speed (continuous lighting not supported)
	Light adjustment responsiveness	Within 1 ms
Display	LED display	Power display Illumination status display (2 ch. separate)
Rating	Power voltage	24 VDC ±10%
	Current consumption	5.0 A
Environmental resistance *1	Surrounding air temperature	0 to 45°C (when installed on a DIN rail), 0 to 40°C (when installed on a surface)
	Surrounding air humidity	35 to 85% RH (No condensation)
Weight		Approx. 500 g

*1 The environmental resistance for the light-emitting unit is surrounding air temperature: 0 to 40°C, and surrounding air humidity: 35 to 65% RH (No condensation).

Dimensions

CA-DC50E



Unit: mm

Warranties and Disclaimers

(1) KEYENCE warrants the Products to be free of defects in materials and workmanship for a period of one (1) year from the date of shipment. If any models or samples were shown to Buyer, such models or samples were used merely to illustrate the general type and quality of the Products and not to represent that the Products would necessarily conform to said models or samples. Any Products found to be defective must be shipped to KEYENCE with all shipping costs paid by Buyer or offered to KEYENCE for inspection and examination. Upon examination by KEYENCE, KEYENCE, at its sole option, will refund the purchase price of, or repair or replace at no charge any Products found to be defective. This warranty does not apply to any defects resulting from any action of Buyer, including but not limited to improper installation, improper interfacing, improper repair, unauthorized modification, misapplication and mishandling, such as exposure to excessive current, heat, coldness, moisture, vibration or outdoors air. Components which wear are not warranted.
(2) KEYENCE is pleased to offer suggestions on the use of its various Products. They are only suggestions, and it is Buyer's responsibility to ascertain the fitness of the Products for Buyer's intended use. KEYENCE will not be responsible for any damages that may result from the use of the Products.
(3) The Products and any samples ("Products/Samples") supplied to Buyer are not to be used internally in humans, for human transportation, as safety devices or fail-safe systems, unless their written specifications state otherwise. Should any Products/Samples be used in such a manner or misused in any way, KEYENCE assumes no responsibility, and additionally Buyer will indemnify KEYENCE and hold KEYENCE harmless from any liability or damage whatsoever arising out of any misuse of the Products/Samples.
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13841E 2072-3a 96M13841 Printed in Japan

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