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KEYENCE

96M0847

96M0847-4

LED Illumination Controller

CA-DC100

Instruction Manual



For Safe Usage

● **Manual Format**

This manual uses the following headings to display important safety information in order to prevent human injury and device damage.

⚠ WARNING

Failure to follow the instructions given under this heading may result in human injury.

⚠ CAUTION

Failure to follow the instructions given under this heading may result in product damage (product failure, etc.).

Note: This heading is used to indicate common errors made by operations in relation to device operation.

● **General precautions**

- Verify that this device is operating normally in terms of functionality and performance before the start of work and when operating the device.
- Implement safety measures as necessary to protect against possible damage that may result in the event that this product fails.
- Proceed with care when modifying or disassembling the CA-DC100, or when using it in a manner that falls outside of the ranges indicated in its specifications, since KEYENCE is unable to guarantee device functionality or performance in such situations.
- Use this product in combination with other devices only after careful consideration, since the CA-DC100 may fail to satisfy its functionality and performance capabilities as a result of the conditions and environment in which it is used.
- Do not use the CA-DC100 with the purpose of protecting human beings.

* We make every effort to ensure products reach our customers without any damage. However, if you encounter any defective, damaged, or missing parts, please contact your nearest KEYENCE sales office (listed at the end of this manual).

⚠ WARNING

Turn off the device immediately in any of the following situations:

- *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.*

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.

Proper Controller Operation

● **Power**

⚠ WARNING

Do not use the controller with anything other than a 24 VDC power supply. Doing so may result in fire, electrical shock, or device failure.

Note: Always ground the frame ground terminal or the ground terminal when using a switching regulator. KEYENCE recommends the use of separate power supplies in this situation.

● **Installation location**

Avoid locations such as the following when installing the CA-DC100:

⚠ CAUTION

- *Locations where the controller is exposed to direct sunlight.*
- *Locations where the ambient temperature range exceeds 0 to +45°C. 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 controller is exposed to splashes of substances such as water, oil, or chemical agents.*
- *Locations where the controller is subject to direct vibrations or mechanical shocks.*
- *Locations where the controller may be influenced by radiation noise or static electricity.*
- *Separate the controller's cables as far as possible from high-voltage lines and power lines. Interference from such lines may result in non-standard operation or device failure.*

● **Handling**

⚠ WARNING

- *Avoid touching the controller 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 LED for extended periods of time. Doing so may cause harm to your eyes.*

⚠ CAUTION

- *When connecting and disconnecting cables, always switch off the power to the controller and any other devices connected to it. Failure to do so may result in damage to the controller or to other connected hardware.*
- *When the controller 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 controller. Doing so may result in the discoloration or deformation of the controller case.*

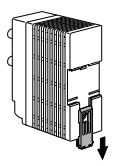
Installation

⚠ CAUTION

- *Neither the cables attached to the LED illumination area nor extension cables (sold separately) are flexible, so they are not suitable for installation on moving parts where the cables must bear a load.*
- *Extension of the cable between the illumination and the controller will result in decreased light quantity as a result of lowered voltage. Verify adequate light quantity before use.*
- *Do not use this controller in combination with a non-KEYENCE LED illumination device. Doing so may result in device failure.*

Installation method 1

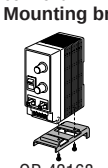
The controller may be attached to a DIN track.
When attaching or removing the controller, pull the fastener on the rear of the controller in the direction indicated by the arrow.



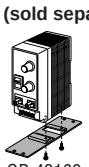
Installation method 2

You can also use the mounting bracket (sold separately) to install the controller. In this case use the screws that are provided on the controller.

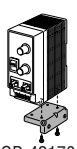
Mounting brackets (sold separately)



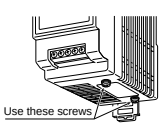
OP-42168
(Front-mounting)



OP-42169
(Bottom-mounting)



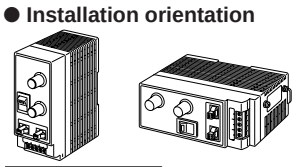
OP-42170
(Side-mounting)



⚠ CAUTION

Do not use the screws that come with the mounting brackets.

● **Installation orientation**

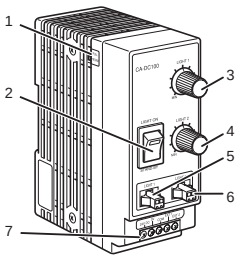


⚠ CAUTION

Do not install the controller in an orientation other than one of the 3 shown above. Leave a minimum of 20 mm of space on all sides of the controller, and use caution when installing any other heat-generating device (power supplies, etc.) to prevent the ambient temperature from exceeding +45°C.

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Part Names and Functions



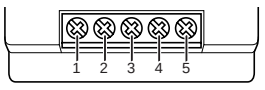
1. Power limiter switch (default setting: NORM)
   NORM Limits light adjustment range to 0 to 60% in order to protect LED element. Always use the NORM setting when operating the controller with continuous lighting.
   FULL Allows a light adjustment range of 0 to 100%.
2. Standby switch
   Used while controller is energized to manually turn illumination on or off.
3. Channel 1 light adjustment volume
4. Channel 2 light adjustment volume
5. Channel 1 output connector
6. Channel 2 output connector
7. Input terminals

⚠ CAUTION

LED elements are subject to a limited service lifetime. Because high temperatures lead to degraded performance or damage, always use a setting that generates the least amount compatible with application requirements. Take precautions in order to avoid heat buildup, such as the use of a cooling fan, installation using metal brackets, and intermittent LED activation by means of external control input.

Note: The amount of light generated is unstable when the light adjustment volume is set near 0%. This is normal and does not indicate a problem with the controller. When using the controller with continuous lighting, delay use after turning on the controller until the amount of light generated stabilizes (this should take about 30 minutes).

● Input terminals



Compatible cables: AWG #14 to #22

1. 24 VDC (max. 1.8 A)
   Power supply connection terminal
2. OV Power supply input OV terminal
3. COM External control input common terminal
4. EXT1 External control input 1
   Deactivates channel 1 when shorted with COM
5. EXT2 External control input 2
   Deactivates channel 2 when shorted with COM

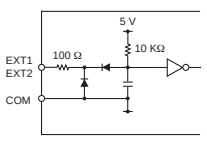
⚠ CAUTION

The power supply input OV and COM terminals are common with a shared choke coil, so take care to avoid the generation of any potential difference between them. Any such potential difference may result in device failure.

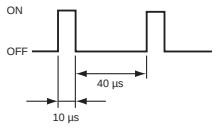
● Input circuit diagram

Terminal name: EXT1, EXT2
ON voltage: 0.46 V or less
ON current: 0.36 mA or more
OFF voltage: 3.45 V or more
OFF current: 0.15 mA or less

Circuit diagram



Minimum input time

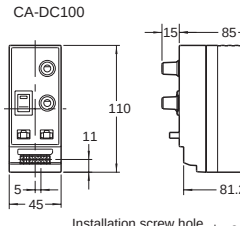


⚠ CAUTION

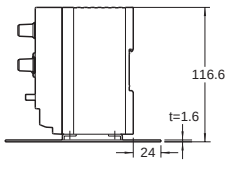
Input uses no-voltage contact inputs. Use of voltage input may result in damage to the controller.

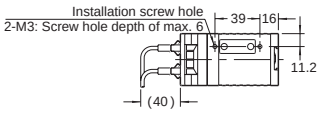
Dimensions

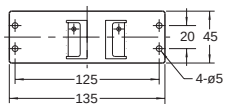
CA-DC100



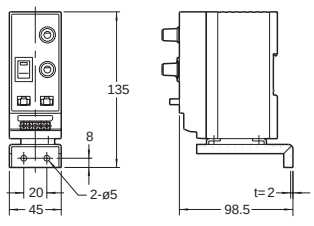
Bottom-mounted



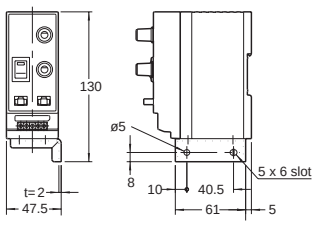




Front-mounted



Side-mounted



Specifications

● Controller

Name		LED Illumination Controller
Model		CA-DC100
Output	Light adjustment system	Light emission frequency: 100 kHz Pulse width modulation
	No. of connections	2 ch.
	Voltage	12 VDC
	Capacity	Max. 30 W (but 20 W / 1 ch.)
Input		2 external control inputs (EXT) using no-voltage contacts
Ratings	Power supply voltage	24 VDC±10 %
	Power consumption	1.8 A (at maximum load)
Environment*	Ambient temperature	0 to +45 °C
	Relative humidity	35 to 85 % RH (no condensation)
Weight		Approx. 220 g

* The LED illumination unit (sold separately) is designed for use in an environment characterized by an ambient temperature of 0 to +40 °C and relative humidity of 35 to 65% RH (no condensation).

⚠ CAUTION

- *Environmental considerations differ for the controller and the LED illumination unit. Make sure that each unit is installed in an appropriate operating environment.*
- *Condition for compliance with CE markings (EMC Directive: EN61326-1) All cables connected to the controller (illumination unit, power supply, external control input) should be less than 30 m in length. Be sure to use the controller and illumination unit made by KEYENCE in combination with each other.*

● Precautions for LED

The CA-D, LED illumination device uses an LED light source. Abide by the following precautions when using the unit.

⚠ CAUTION

- *Do not look at the LED light source for a long period of time. The LED used as the light source is classified into class 1 according to IEC60825-1 standards. Basically the light beam of the LED is safe, but do not look at the LED for a long time.*
- *Do not disassemble the unit. The unit does not incorporate a mechanism to stop the emission of the LED when the unit is disassembled. Never attempt to disassemble the unit, otherwise you will be exposed to LED light.*

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