

Instruction Guide

Thank you for purchasing product. To ensure proper use of the product, please read this instruction guide before use and keep it for your future reference.

Introduction

These products are dedicated Control Units to control the LED Spot Lights HLV3/HLV2/HLV Series. They are mainly used to control LED Spot Lights that are used for machine vision or industrial inspections. Do not use the Control Units for other applications, and be sure to follow the instructions below.

- Do not use the Control Unit in the following situations.
 - Under conditions or in an environment not described in this instruction guide.
 - In nuclear energy control systems, railroad systems, aviation systems, vehicles, combustion equipment, medical equipment, amusement machines, or safety equipment.
 - In applications involving serious risk to life or property, particularly applications demanding a high level of safety.

Features

- AC input models operate with 100 to 240 VAC. DC power input models operate with 24 VDC.
- Models are available for either 2 channels or 3 channels.
- The light intensity is controlled using a variable current control method.
- The light intensity can be manually controlled by adjusting the intensity volume, or can be externally controlled using a PLC or image processing device.
- The light intensity and lighting ON/OFF are controlled through external control.
- The L1 range switch can be used for fine adjustment of the light intensity even in a low intensity range. (Applicable only for the Spot Light connected to L1)

Important Information for Equipment Safety

- Read Before Use -

Incorrect usage of the Control Unit may result in fire, electric shock, or other serious damages. Please ensure to follow the conditions below.

- The following symbols are used in this instruction guide to indicate and classify the relative importance of warnings and cautions.

	Warning Indicates that incorrect usage may result in serious injury or death.		Caution Indicates that incorrect usage may result in injury or property damage.
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- The following symbols in the instruction guide indicate and classify the precautions.

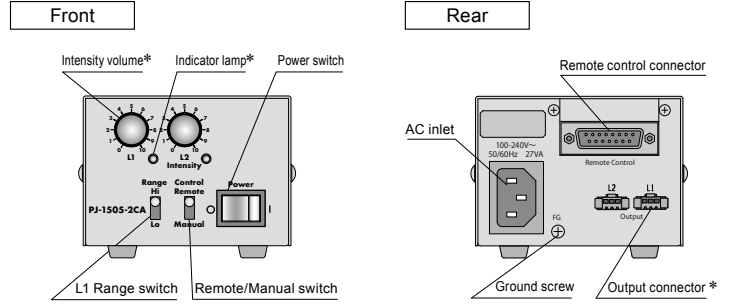
PROHIBITED	DISASSEMBLY PROHIBITED	DO NOT TOUCH WITH WET HANDS	DO NOT SUBJECT TO MOISTURE	MANDATORY ACTIONS	UNPLUG
These symbols indicate prohibited actions.				These symbols indicate required actions.	

Warning						
Items common to all equipment	Do not disassemble or modify the Control Unit. Doing so may result in fire or electric shock.		Do not touch the Control Unit with wet hands. Doing so may result in electric shock.		Make sure that the product is free of moisture or any liquid. Exposure to water may result in fire, electric shock, or product failure.	
	Do not touch the power cords during lightning. This may result in electric shock.		Turn off the power when connecting or disconnecting the Control Unit and peripherals. Otherwise it may cause fire and/or electric shock.		If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the Control Unit immediately, and turn off the power. A fire or electric shock may result if the Control Unit is kept used.	

Caution						
Items common to all equipment	Do not place the Control Unit under direct sunlight or in a high humidity environment. Doing so may result in fire due to internal temperature rise.		Be sure to ground the Control Unit before using it. Not doing so may cause the Control Unit to malfunction due to static charge.			
	Always place the Control Unit on a stable and flat location. Not doing so may result in the Control Unit falling or toppling, which may cause bodily injury and the Control Unit to malfunction.		Please use designated power sources with stable voltage. Sharing a power source with inverters, motors, etc. may cause malfunction.			
	Do not connect the Control Unit to the Spot Lights other than the applicable illuminators. Otherwise an over current may result in heating or fire. For information on the applicable illuminators, refer to 5. Main Specifications.		Make sure that connected Spot Light is within the power rating of the Control Unit. Not doing so may cause Control Unit failure.			
	Do not bend or jam cables when wiring the Control Unit. Doing so may cause Control Unit failure.		Make sure that the length of the extension cable is less than the specified length. For information on the cable length, refer to 5. Main Specifications. However, if the cable is too long, the light intensity will decrease due to voltage drop caused by the DC resistance of the cable.			
	Do not use user-made cables. Doing so may cause Control Unit failure.		Do not bundle the cables with high-voltage lines or power lines. Doing so may cause the Control Unit to malfunction. Keep the Control Unit cables as far away from such lines as possible.			
	To avoid Control Unit surface discoloration or deterioration, do not wipe the Control Unit with volatiles such as paint thinner or benzene.		Make sure to hold and pull from the plugs when disconnecting the cables. Not pulling from the plugs may damage the cable and result in fire or electric shock.			
	Use a dry cloth to remove dust or other foreign matter from the plug electrodes. Failure to do so may result in fire.		Before moving the Control Unit, disconnect cables. Damaging the cables may result in fire or electric shock.			
	When mount the unit in a system rack or case, the portion of the screws penetrating the case must be less than 5 mm long. If this portion is longer, internal components may be short-circuited.					
	AC Input	Before use the power cord, make sure it satisfies the specification of the region where you are going to use. 100 to 120V range: SVT type or SJT type, AWG18, length: 3m max., dielectric strength: 125V min. 200 to 240V range: H05VV-F type, AWG18, length: 3m max., dielectric strength: 250V min.				
		Plug the power cord directly into the wall socket. Please use the Control Unit within electricity voltage/current specifications. Otherwise it may cause fire and/or electric shock.		Keep metal objects, such as screwdrivers, away from the power cord plug. Otherwise, fire or an electric shock may result.		

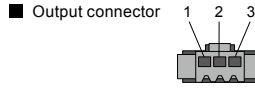
DC Input	Do not damage or place heavy objects on power cord. There are risks of damaging the cord, which may result in fire or electric shock.		Do not use the Control Unit if the plug on the cord is damaged or the wall socket is loose. Otherwise, fire or an electric shock may result.		
	Verify polarity of terminals before connecting cables. If polarity is reversed, it may cause fires or damage the equipment.				

1 Name and Function of Each Part



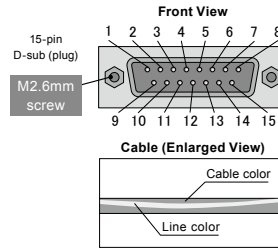
* The illustration shows the PJ-1505-2CA. The number of the intensity volumes, indicator lamps and output connectors depends on the number of the channels.

Connector



Pin No.	Signal
1	Input (Sense)
2	Output+ (+5.5 V)
3	Output-
Connector	SMP-03V-BC

Remote control connector



An optional external control cable EXCB2-B3 (a 3 m long cable with a connector on one end) is sold separately. The external control cable is a shielded cable.

If you use a self-made cable, use a shielded cable whose length is 3 m or less.

Pin No.	Signal	Optional cable	
		Cable color	Line color
1	L1 Lighting ON/OFF control input (Turned OFF for +5 V input)	Black	-
2	GND *2	White	-
3	L2 Lighting ON/OFF control input (Turned OFF for +5 V input)	Red	-
4	L2 External potentiometer input	Green	-
5	L3 Lighting ON/OFF control input (Turned OFF for +5 V input) *1	Yellow	-
6	L3 External intensity control analog input (0 to 5 V) *1	Brown	-
7	L2 External intensity control analog input (0 to 5 V)	Blue	-
8	GND *2	Purple	-
9	L1 External potentiometer input	Gray	-
10	L1 External intensity control analog input (0 to 5 V)	Pink	-
11	GND *2	White	Black
12	L3 External potentiometer input *1	Red	Black
13	Power supply for external potentiometer (+2.5 V, 3 mA max.)	Green	Black
14	+5.5 V output (20 mA max.)	Yellow	Black
15	GND *2	Brown	Black
-	Not connected	Blue	Black

*1: NC (No-connection) is applied to the 2-channel unit.
*2: Internal common GND

2 Installation

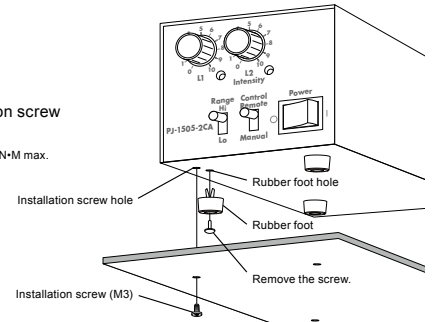
Caution Please install the Control Unit in locations with following conditions. Incorrect installation location may cause Control Unit failure.

- In a flat and stable location with minimal vibration.
- Well-ventilated places with minimal dust.
- Places that are not subject to sudden temperature changes.
- Places free from any water, oil, liquid, chemical or steam.
- Places free from corrosive or combustible gas.
- Places away from water faucets, boilers, humidifiers, air conditioners, heaters or stoves.

Securing the Bottom

- Remove all of the rubber feet.
- Insert M3 screws* into the installation screw holes and secure them.

*Insert depth of 5 mm max., Tightening torque: 0.3 N·M max.

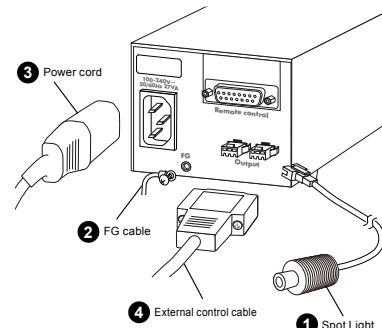


3 Wire Connection

Warning Make sure that the power source is turned OFF, and then connect the Control Unit. Making connections while the power source is turning ON may result in a fire or electric shock.

Caution Do not bundle the cables with high-voltage lines or power lines. Doing so may cause the Control Unit to malfunction. Keep the cables as far away from such lines as possible.

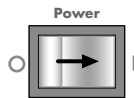
- Connect the Spot Light to the Control Unit output connector.
- Ground the FG terminal. (Ground the FG terminal if the ground wire in the power cord is not grounded.) Use a wire of approximately 0.5 to 1.25 mm² (AWG20 to AWG16) for the FG terminal.
- Connect power cord to the AC inlet and wall socket.
- Connect the external control cable if you perform the external control.



4 Operating Instructions

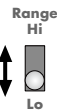
Power On

Turn the power switch to the ON position.
Note: Power switch lamp will light



Range Changeover (L1 only)

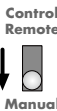
Set the L1 range switch to the Hi position for higher light output.
Set the L1 range switch to the Lo position for fine adjustment of the light intensity in low output range with maximum current of 30 mA (typ).



Manual Control

1 Remote/Manual Changeover

Set the Remote/Manual switch to the Manual position.



2 Light Control

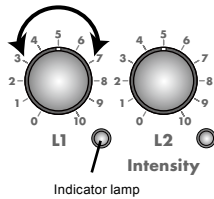
Turn the intensity volume clockwise to make the light brighter, and turn it counterclockwise to make the light dimmer.

Indicator Lamp

This lamp monitors the status of the Spot Light.

Indicator Lamp	Condition
Lit*	Applicable illuminators are connected.
Not lit	No connect
Blinks (1/2 Hz)	Illuminator distinction error (Reset by turning the power OFF and ON.)
Blinks (1 Hz)	Overcurrent error (Reset by turning the power OFF and ON.)

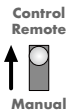
*The Spot Lights and indicator lamps will be turned OFF for a second and then will be turned ON. This allows the Control Unit to identify the Spot Lights. (This occurs only when the Control Unit is turned ON and when the Spot Lights are connected.)



Remote Control

1 Remote/Manual Changeover

Set the Remote/Manual switch to the Remote position.



2 Light Control

External intensity control analog input

An analog voltage input can be used to control the light intensity from an external device.

Note: The signal is pulled-down internally, so that the Spot Light will be turned OFF when the circuit is open.

Pin 6: L3 External intensity control analog input (0 to 5 V)*
Pin 7: L2 External intensity control analog input (0 to 5 V)*
Pin 10: L1 External intensity control analog input (0 to 5 V)*
Pins 2, 8, 11 and 15: GND (Internal common GND)

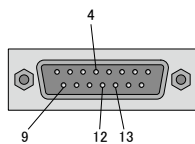
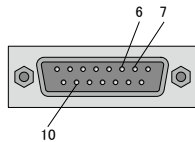
* No-connection is applied depending on the number of channels.

External potentiometer input

Use an external variable resistor.

Pin 4: L2 External potentiometer input*
Pin 9: L1 External potentiometer input*
Pin 12: L3 External potentiometer input*
Pin 13: Power supply for external potentiometer (+2.5 V, 3 mA max.)
Pins 2, 8, 11 and 15: GND (Internal common GND)

* No-connection is applied depending on the number of channels.



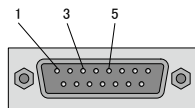
3 Lighting ON/OFF Control

You can turn OFF the Spot Light with an ON/OFF control signal input.

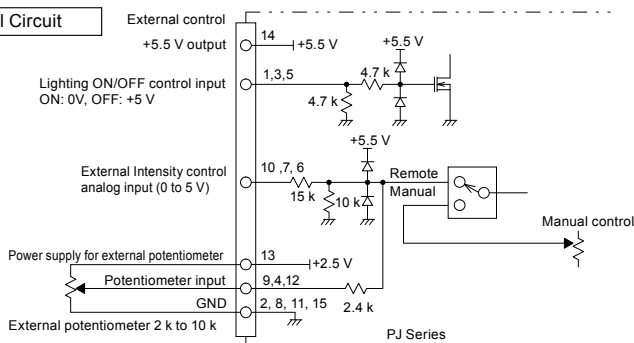
If you turn OFF the unused Spot Light, heat generation of the Spot Light will be suppressed and the service life will be prolonged.

Pin 1: L1 Lighting ON/OFF control input*
Pin 3: L2 Lighting ON/OFF control input*
Pin 5: L3 Lighting ON/OFF control input*
Pins 2, 8, 11, 15: GND (Internal common GND)

* No-connection is applied depending on the number of channels.



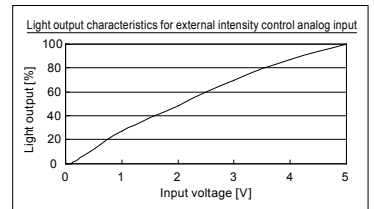
Internal Circuit



External analog intensity control and external potentiometer may not be used simultaneously.

Light Control Characteristics

In order to steadily turn OFF the Spot Light with input voltage of 0 V through the external intensity control, there is a range in which the Spot Light does not emit. Maximum input voltage which does not allow the Spot Light to emit (typ.)
= HLV3-14 (150 mV)
HLV3-22-1 (210 mV)
HLV3-22-2, HLV3-22-2-1220 (100 mV)
HLV2-14, HLV-14PJ (140 mV)
HLV2-22, HLV-24 (110 mV)
HLV2-22-3W, HLV-24-3W (50 mV)



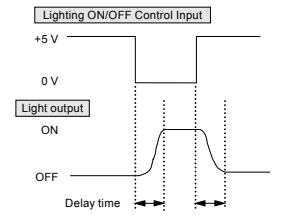
ON/OFF Delay Time

Delay time varies depending on the light output.

Light output [%]	Delay time [μs]					
	HLV3-14 HLV2-14 HLV-14-PJ		HLV3-22-1 HLV2-22 HLV-24		HLV3-22-2 HLV3-22-2-1220 HLV2-22-3W HLV-24-3W	
	ON	OFF	ON	OFF	ON	OFF
20	330	80	230	80	135	55
40	170	60	120	50	75	40
60	110	50	80	40	50	25
80	80	40	60	30	40	10
100	70	40	50	25	35	10

(When the cable length is 5 m.)

Light output and delay time (typ.)

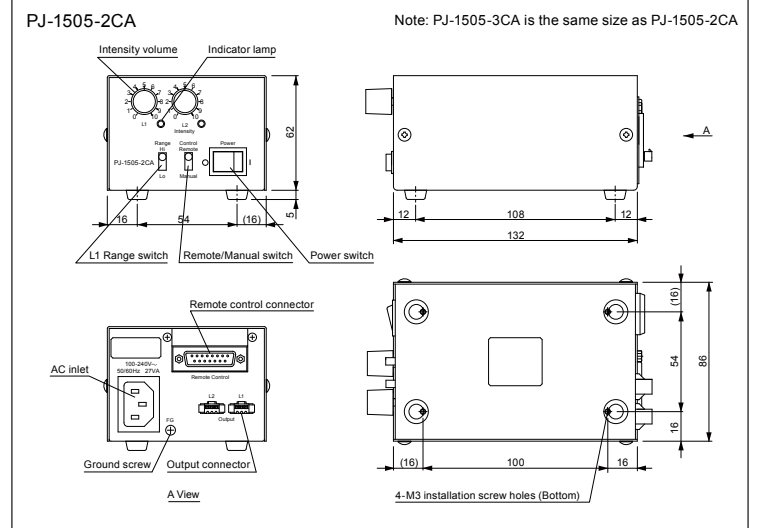


The data included is for reference only. Actual values may vary.

5 Main Specifications

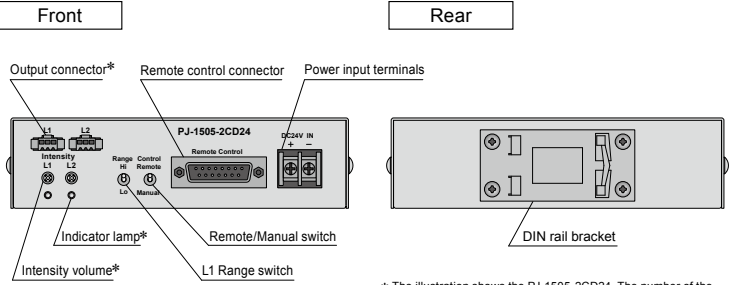
Product name	Control Unit for LED Light Units	
Model	PJ-1505-2CA	PJ-1505-3CA
Lighting method	Constant lighting	
Drive method	Constant-current system	
Light control method	Variable current control	
Number of channels	2 channels	3 channels
Applicable illuminators	HLV3-14, HLV3-2-1/2, and HLV3-22-2-1220 Series; HLV2-14, HLV2-22, and HLV2-22-3W Series; HLV-14-PJ, HLV-24, and HLV-24-3W Series	
Light control	Manual: Front panel intensity volume, Remote: Analog input voltage 0 to 5 V (5.25 V max.)	
Lighting ON/OFF control	Light OFF: 2.5 to 5.0 V (24 V max.), Light ON: 0.8 to 0 V (Pulled down with 4.7 kΩ.)	
Automatic changing the maximum output current (range)	The maximum output current is changed by detecting the model. (The indicator lamps on the front panel will be light if the model was detected normally.)	
Error detection display	Spot Light distinction error: The indicator lamp on the front panel will start blinking. (1/2 Hz) Overcurrent error: The indicator lamp on the front panel will start blinking. (1 Hz)	
Over current protection	The output will be turned OFF if the output current exceeds 105% of the rated output current.	
Cable length	5.0 m max.	
Input voltage (rating)	100 to 240 VAC	
Input voltage (range)	85 to 264 VAC	
Power consumption (typ.)	27 VA	37 VA
Frequency	50/60 Hz	
Inrush current (typ.)	15 A (at 100 VAC), 30 A (at 240 VAC) Note: From a cold start	
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Output voltage (maximum rating)	5.5 VDC	
Output current (rating)	L1(Lo Range) : 0 to 30 mA L1(Hi Range), L2, and L3 (Only for the PJ-1505-3CA): 0 to 700 mA	
External control (input)	Lighting ON/OFF control input, External intensity control analog input, External potentiometer input	
Dielectric strength (input-output) (input-FG)	1500 VAC for one minute 10 mA cutoff current 500 VDC, 20 MQ min.	
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (No condensation)	
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (No condensation)	
Vibration resistance	Acceleration: 19.6 m/s ² , frequency: 10 to 55 Hz, cycles: 3 minutes, for 1 hour each in X, Y, and Z directions	
Cooling method	Natural air cooling	
Altitude	2000 m max.	
Protective ground	Class I	
Pollution level	Pollution level II	
Over voltage category	Category II	
CE marking	Safety standard: Conformity with EN 61010-1	
	EMC standard: Conformity with EN61000-6-4/61000-6-2, Class A	
PSE	Specified Electrical Appliance and Material (DC power supply units), Conformity to Technical Standards	
Output connector	2xSMP-03V-BC(JST) 1: Sense, 2: Output+, 3: Output- 3xSMP-03V-BC(JST) 1: Sense, 2: Output+, 3: Output-	
Dimensions	86x132x62 mm (WxDxH) not including protrusions such as connectors, knobs, legs, etc.	
Material, coating, surface processing	Steel plate 11.0, N3(leather-tone finish), T75-70L(5PB7/6)	
Weight	640 g max.	660 g max.
Accessories	Power cord, instruction guide	

6 Dimensional Diagrams (mm)



Using Models with a DC Input

1 Name and Function of Each Part



* The illustration shows the PJ-1505-2CD24. The number of the intensity volumes, indicator lamps and output connectors depends on the number of the channels.

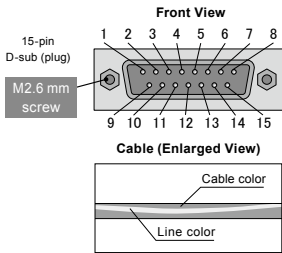
Connector

Output connector



Pin No.	Signal
1	Input (Sense)
2	Output+ (+5.5 V)
3	Output-
Connector	SMP-03V-BC

Remote control connector



An optional external control cable EXCB2-B3 (a 3 m long cable with a connector on one end) is sold separately. The external control cable is a shielded cable. If you use a self-made cable, use a shielded cable whose length is 3 m or less.

Pin No.	Signal	Optional cable	
		Cable color	Line color
1	L1 Lighting ON/OFF control input (Turned OFF for +5 V input)	Black	-
2	GND *2	White	-
3	L2 Lighting ON/OFF control input (Turned OFF for +5 V input)	Red	-
4	L2 External potentiometer input	Green	-
5	L3 Lighting ON/OFF control input (Turned OFF for +5 V input) *1	Yellow	-
6	L3 External intensity control analog input (0 to 5 V) *1	Brown	-
7	L2 External intensity control analog input (0 to 5 V)	Blue	-
8	GND *2	Purple	-
9	L1 External potentiometer input	Gray	-
10	L1 External intensity control analog input (0 to 5 V)	Pink	-
11	GND *2	White	Black
12	L3 External potentiometer input *1	Red	Black
13	Power supply for external potentiometer (+2.5 V, 3 mA max.)	Green	Black
14	+5.5 V output (20 mA max.)	Yellow	Black
15	GND *2	Brown	Black
-	Not connected	Blue	Black

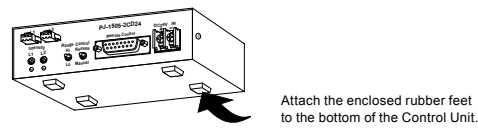
*1: NC (No-connection) is applied to the 2-channel unit.
*2: Internal common GND

2 Installation

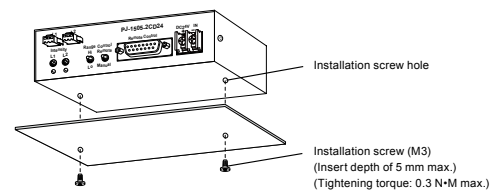
Caution Please install the Control Unit in locations with following conditions. Incorrect installation location may cause Control Unit failure.

- In a flat and stable location with minimal vibration.
- Well-ventilated places with minimal dust.
- Places that are not subject to sudden temperature changes.
- Places free from any water, oil, liquid, chemical or steam.
- Places free from corrosive or combustible gas.
- Places away from water faucets, boilers, humidifiers, air conditioners, heaters or stoves.

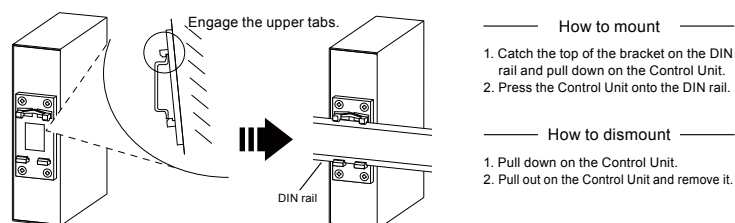
Attaching the Rubber Feet



Securing the Bottom



Mounting to DIN Rail



3 Wire Connection

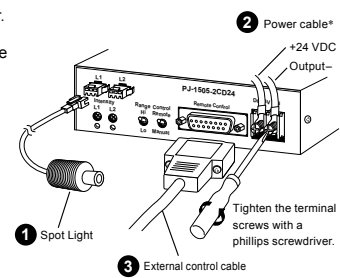
Warning Make sure that the power source is turned OFF, and then connect the Control Unit. Making connections while the power source is turning ON may result in a fire or electric shock.

Caution Do not bundle the cables with high-voltage lines or power lines. Doing so may cause the Control Unit to malfunction. Keep the cables as far away from such lines as possible.

- 1 Connect the Spot Light to the Control Unit output connector.
- 2 Connect a 24 V power cable from the power source to the input terminals.
- 3 Connect the external control cable if you perform the external control.

Caution Do not connect the power cable with the positive and negative terminals reversed.

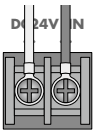
***Power cable**
Be sure to connect properly with insulated crimp terminals.
Recommended crimp terminal:
NICHIFU M3 crimp terminals with insulating sheath Ring or "Y" TMEV 1.25-3



4 Operating Instructions

Power On

The Spot Lights which are connected to the Control Unit will be turned ON when a power is supplied.
Note: There is no power switch on the Control Unit.



Range Changeover (L1 only)

Set the L1 range switch to the Hi position for higher light output. Set the L1 range switch to the Lo position for fine adjustment of the light intensity in low output range with maximum current of 30 mA (typ).



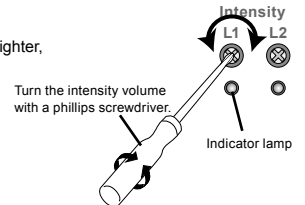
Manual Control

- 1 Remote/Manual Changeover
Set the Remote/Manual switch to the Manual position.



- 2 Light Control

Turn the intensity volume clockwise to make the light brighter, and turn it counterclockwise to make the light dimmer.



Indicator Lamp

This lamp monitors the status of the Spot Light.

Indicator Lamp	Condition
Lit*	Applicable illuminators are connected.
Not lit	No connect
Blinks (1/2 Hz)	Illuminator distinction error (Reset by turning the power OFF and ON.)
Blinks (1 Hz)	Overcurrent error (Reset by turning the power OFF and ON.)

* The Spot Lights and indicator lamps will be turned OFF for a second and then will be turned ON. This allows the Control Unit to identify the Spot Lights. (This occurs only when the Control Unit is turned ON and when the Spot Lights are connected.)

Remote Control

- 1 Remote/Manual Changeover
Set the Remote/Manual switch to the Remote position.



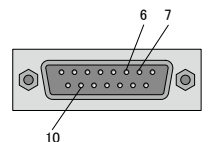
- 2 Light Control

External intensity control analog input

An analog voltage input can be used to control the light intensity from an external device.

Note: The signal is pulled-down internally, so that the Spot Light will be turned OFF when the circuit is open.

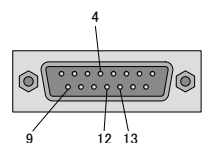
Pin 6: L3 External intensity control analog input (0 to 5 V)
Pin 7: L2 External intensity control analog input (0 to 5 V)
Pin 10: L1 External intensity control analog input (0 to 5 V)
Pins 2, 8, 11 and 15: GND (Internal common GND)
* No-connection is applied depending on the number of channels.



External potentiometer input

Use an external variable resistor.

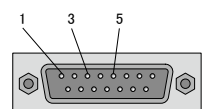
Pin 4: L2 External potentiometer input*
Pin 9: L1 External potentiometer input
Pin 12: L3 External potentiometer input*
Pin 13: Power supply for external potentiometer (+2.5 V, 3 mA max.)
Pins 2, 8, 11 and 15: GND (Internal common GND)
* No-connection is applied depending on the number of channels.



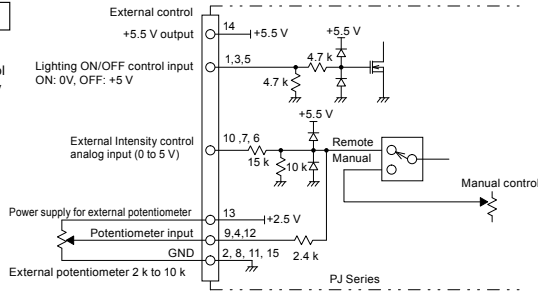
- 3 Lighting ON/OFF Control

You can turn OFF the Spot Light with an ON/OFF control signal input.
If you turn OFF the unused Spot Light, heat generation of the Spot Light will be suppressed and the service life will be prolonged.

Pin 1: L1 Lighting ON/OFF control input
Pin 3: L2 Lighting ON/OFF control input*
Pin 5: L3 Lighting ON/OFF control input*
Pin 2, 8, 11 and 15: GND (Internal common GND)
* No-connection is applied depending on the number of channels.

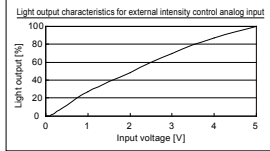


Internal Circuit



External analog intensity control and external potentiometer may not be used simultaneously.

Light Control Characteristics



In order to steadily turn OFF the Spot Light with input voltage of 0 V through the external intensity control, there is a range in which the Spot Light does not emit.

Maximum input voltage which does not allow the Spot Light to emit (typ.)

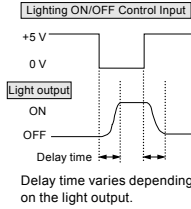
- = HLV3-14 (150 mV)
- HLV3-22-1 (210 mV)
- HLV3-22-2, HLV3-22-2-1220 (100 mV)
- HLV2-14/HLV-14PJ (140 mV)
- HLV2-22/HLV-24 (110 mV)
- HLV2-22-3W/HLV-24-3W (50 mV)

ON/OFF Delay Time

Light output [%]	Delay time [μs]					
	HLV3-14		HLV3-22-1		HLV3-22-2	
	ON	OFF	ON	OFF	ON	OFF
20	330	80	230	80	135	55
40	170	60	120	50	75	40
60	110	50	80	40	50	25
80	80	40	60	30	40	10
100	70	40	50	25	35	10

(When the cable length is 5 m.)

Light output and delay time (typ.)



The data included is for reference only. Actual values may vary.

5 Main Specifications

Control Unit for LED Light Units	
Product name	PJ-1505-2CD24
Model	PJ-1505-3CD24
Lighting method	Constant lighting
Drive method	Constant-current system
Light control method	Variable current control
Number of channels	2 channels
Applicable illuminators (rating)	HLV3-14, HLV3-2-1/2, and HLV3-22-2-1220 Series; HLV2-14, HLV2-22, and HLV2-22-3W Series; HLV-14-PJ, HLV-24, and HLV-24-3W Series
Light control	Manual: Front panel intensity volume, Remote: Analog input voltage 0 to 5 V (5.25 V max.)
Lighting ON/OFF control	Light OFF: 2.5 to 5.0 V (24 V max.), Light ON: 0.8 to 0 V (Pulled down with 4.7 kΩ.)
Automatic changing the maximum output current (range)	The maximum output current is changed by detecting the model. (The indicator lamps on the front panel will be light if the model was detected normally.)
Error detection display	Spot Light distinction error: The indicator lamp on the front panel will start blinking. (1/2 Hz) Overcurrent error: The indicator lamp on the front panel will start blinking. (1 Hz)
Over current protection	The output will be turned OFF if the output current exceeds 105% of the rated output current.
Cable length	5.0 m max.
Input voltage (rating)	24 VDC
Input voltage (range)	10 to 24 VDC
Power consumption (typ.)	10 W
Output voltage (maximum rating)	5.5 VDC
Output current (rating)	L1(Lo Range): 0 to 30 mA L1(Hi Range), L2, and L3(Only for the PJ-1505-3CA): 0 to 700 mA
External control (input)	Lighting ON/OFF control input, External intensity control analog input, External potentiometer input
Dielectric strength (input/output-FG)	230 VAC for one minute 10 mA cutoff current 500 VDC, 20 MΩ min.
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (No condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (No condensation)
Vibration resistance	Acceleration: 19.6 m/s ² , frequency: 10 to 55 Hz, cycles: 3 minutes, for 1 hour each in X, Y, and Z directions
Cooling method	Natural air cooling
CE marking	EMC standard: Conformity with EN61000-6-4/61000-6-2 ClassA
Output connector	2xSMP-03V-BC(JST) 1: Sense, 2: Output+, 3: Output- 3xSMP-03V-BC(JST) 1: Sense, 2: Output+, 3: Output-
Dimensions	42 x 75 x 38 mm (WxDxH) not including protrusions such as connectors, knobs, legs, etc.
Material, coating, surface processing	Steel plate t1.0, N3(leather-tone finish), T75-70L(5PB7/6)
Weight	380 g max.
Accessories	Rubber feet, Instruction guide

6 Dimensional Diagrams (mm)

