Strobe Power Supply Units for LED lights

STU-3000 Instruction Guide

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

1 Introduction

The STU-3000 Strobe Power Supply Unit is connected to a PD Series or PD2 Series Digital Power Supply Unit to produce strobe LED lighting. It controls LED spotlight principally used for machine vision and industrial inspections. Do not use the product for other applications, and be sure to follow the instructions below.

● Do not use the product 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.

● Installation location

Please install products to locations with following conditions. Incorrect installation location may cause the product 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.

2 Features

- By connecting the product to CCS's PD or PD2 Series digital power supplies, an ambient light can be used as a strobe light.
- The one-shot circuit in the adaptor is activated by external trigger signals, the power ON/OFF supply is controlled at a defined pulse width, and an LED light is flashed as a strobe light.
- The strobe flash time can be set between 0.01 and 99.99msec. by means of the Light pulse width setting switch.

2 Important Information for Equipment Safety - Read Before Use -

Incorrect usage of the product 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.

■ 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	These symbols indicate prohibited actions.

MANDATORY ACTIONS	UNPLUG	These symbols indicate required actions.

⚠ Warning

Do not disassemble or modify the product. Doing so may result in fire or electric shock.	DISASSEMBLY PROHIBITED	Do not touch the product with wet hands. Doing so may result in electric shock.	DO NOT TOUCH WITH WET HANDS
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 SUBJECT TO MOISTURE	Turn off the power when connecting or disconnecting the product and peripherals. Otherwise it may cause fire and/or electric shock.	MANDATORY ACTIONS
Do not touch the power cords during lightning. This may result in electric shock.	PROHIBITED	If abnormal condition occurs such as fuming, heart, smell, noise, or so on, stop using the product immediately, and turn off the power. A fire or electric shock may result if the product is kept used.	UNPLUG

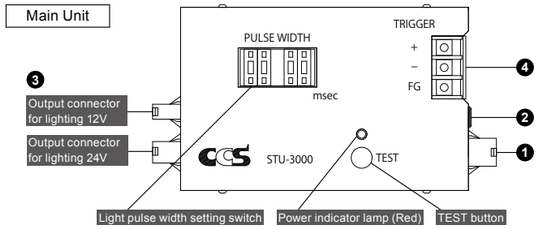
⚠ Caution

Do not place product under direct sunlight or in a high humidity environment. Doing so may result in fire due to internal temperature rise.	PROHIBITED	Always place product on a stable and flat location. Not doing so may result in the product falling or toppling, which may cause bodily injury and the product to malfunction.	MANDATORY ACTIONS
Do not bundle product cables with high-voltage lines or power lines. Doing so may cause the product to malfunction. Keep the product cables as far away from such lines as possible.	PROHIBITED	Be sure to ground the product before using it. Not doing so may cause the product to malfunction due to static change.	MANDATORY ACTIONS
Do not use lighting that is not manufactured by CCS. Doing so may cause product failure. Use of non-CCS lighting voids the warranty on the product.	PROHIBITED	Make sure that connected lighting is within the power rating of the product. Not doing so may cause product failure.	MANDATORY ACTIONS
Do not bend or jam cables when wiring product. Doing so may cause product failure.	PROHIBITED	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.	MANDATORY ACTIONS
Do not use user-made cables. Doing so may cause product failure.	PROHIBITED	Before moving product, disconnect cables. Damaging the cables may result in fire or electric shock.	MANDATORY ACTIONS
To avoid product surface discoloration or deterioration, do not wipe product with volatiles such as paint thinner or benzene.	PROHIBITED	When mount the unit in a system rack or case, the portion of the screws penetrating the case must be less than 3mm long. If this portion is longer, internal components may be short-circuited.	MANDATORY ACTIONS
Use a dry cloth to remove dust or other foreign matter from the electrode sections. Failure to do so may result in fire.	MANDATORY ACTIONS	Verify polarity of terminals before connecting cables. If polarity is reversed, it may cause fires or damage the equipment.	MANDATORY ACTIONS

Make sure that the length of the extension cable is less than 5m. If the extension cable is longer than 5m, the voltage applied to both ends of the LED light will drop due to the DC resistance of the cable. The rated voltage will not be attained for 100% radiant ability, and the radiant quantity will drop as a result.

4 Name and function of each part

Main Unit



1 Input connector

Pin No.	Description
1	24V DC
2	For the same model as the above 0V
3	12V DC
4	For the same model as the above 0V

2 ON/OFF signal input jack

Inside	Signal
Outside	GND

3 Output connector

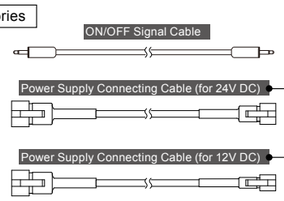
Pin No.	12V output	24V output
1	12V DC	24V DC
2	0V	NC
3		0V

1) NC=Not connect
2) Do not short circuit between output +/–

4 Terminal block for trigger input

+	Trig+
–	Trg–
FG	FG

Accessories



Pin No.	STU-3000	PD/PD2
1	24V	24V
2	0V	NC
3	NC	0V
4	NC	

Pin No.	STU-3000	PD/PD2
1	NC	12V
2	NC	0V
3	12V	
4	0V	

5 Wire Connection

⚠ Warning	Before connection, make sure that the power is turned OFF. Making connections with the power ON may result in a fire or electric shock.
⚠ Caution	Do not bundle product cables with high-voltage lines or power lines. Doing so may cause the product to malfunction. Keep the product cables as far away from such lines as possible.
⚠ Caution	Do not connect the power cable with the positive and negative terminals reversed.

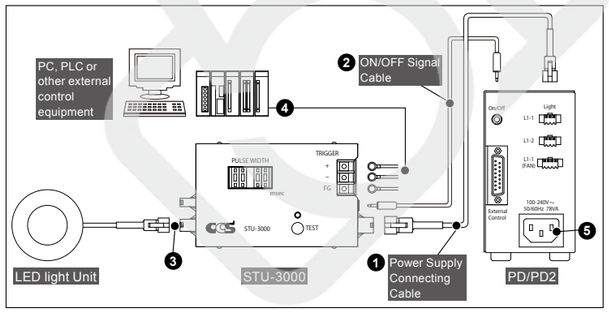
1 Connect one of the enclosed Power Supply Connecting Cables to the power input connector on the STU-3000 and to the output connector on the PD/PD2 digital power supply.
Note: Power Supply Connecting Cables are provided for 12V and 24V. Use the cable that is suitable for the power supply voltage and the ratings of the Light Unit.

2 Connect the enclosed ON/OFF Signal Cable to the STU-3000 and to the ON/OFF signal input jack on the PD/PD2 digital power supply.

3 Connect the LED Light Unit to the output connector on the STU-3000.
Note: Output of the STU-3000 varies depending on ratings of the PD/PD2 digital power supply. Make sure that the connecting LED Light Unit conforms to the power supply ratings.

4 Connect the external device (e.g., PLC or PC) to the control terminal block on the STU-3000. Also, ground the FG terminal.

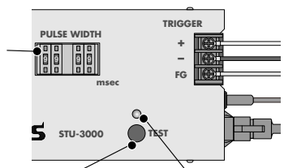
5 Connect the AC cable to the AC inlet on the PD/PD2 digital power supply and to a power outlet.



6 Operating Instructions

1 Turn on the PD/PD2 digital power supply.

2 Set the Light pulse width setting switch to the required pulse width. The pulse width can be set between 0.01 and 99.99 ms in 0.01 ms increments.



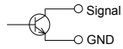
■ Light delay time

Due to a delay caused by the circuit, it takes approximately 10µs to output emission power to the LED light when triggered by an external signal.

Trigger signal

■ Example of drive-side circuits

(A) No-voltage contact output
LS05, LS06, etc.

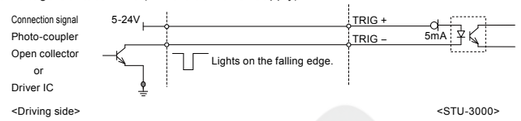


(B) Voltage output (5 to 24V)
HC04, AC04, etc. (TTL not supported)

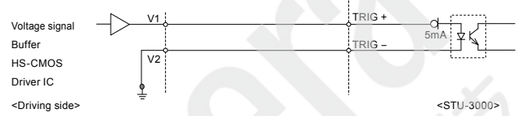
Note: LED lights up when the trigger falls in (A)'s case or rises in (B)'s case. Ensure sharp rising and falling edges of the trigger, and prevent chattering and noise interference. Otherwise, malfunction may occur.

■ Connection Examples

(1) No-voltage Contact Drive (Drive-side Power Supply)



(2) High Pulse Voltage Output Signal Drive

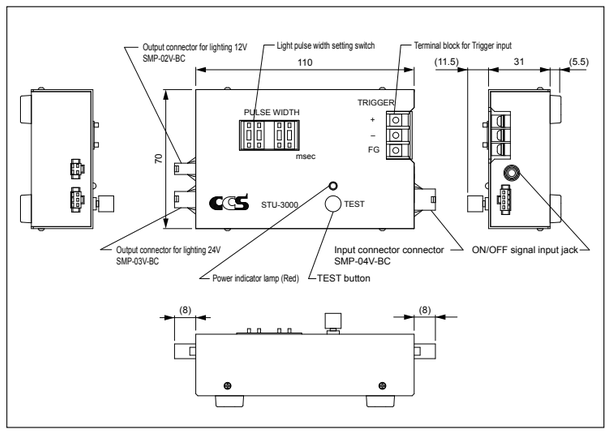


7 Main Specifications

Product name	Strobe Power Supply Units for LED lights
Model	STU-3000
Trigger	Photo-coupler input 5V to 24V DC Current: 5mA max. Pulse width: 20µs min. Rising / falling edge: 10µs max.
ON/OFF control signal	Connected to the ON/OFF signal input jack on the PD Series or PD2 Series Digital Power Supply Unit. Center: Signal line, Sleeve: GND
Light pulse width setting	Set with the 4-digit light pulse width setting switch (0.01 to 99.99ms). note)
Light delay	10µs max.
Test lighting	Use the TEST button.
Power indicator lamp	Lights when the TEST button is pressed or a trigger signal is input.
Dielectric strength (input/output-FG)	250V AC for one minute 10mA cutoff current 500V DC, 1MΩ 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)
Cooling method	Natural air cooling
CE marking	EMC standard conform to EN61000-6-4, EN61000-6-2
Environmental Regulation	RoHS compliant
Input connector	SMP-04V-BC (12V DC or 24V DC) (1 pin: 24V+, 2 pin: 24V–, 3 pin: 12V+, 4 pin: 12V–, Pins 1 and 3 are connected internally.) M3 terminal block 3P (Trigger+, –, FG)
Output connector	12V output: SMP-02V-BC (1 pin: +, 2 pin: –) 24V output: SMP-03V-BC (1 pin: +, 3: pin: –) M3.5 jack (ON/OFF signal, Center: Signal line, Sleeve: GND)
Dimensions	110 x 70 x 40 mm (WxDxH) not including protrusions such as connectors, knobs, legs, etc.
Material, coating, surface processing	Steel plate t1.0, paint color N3 (leather-tone finish)
Weight	400g max.
Accessories	Instruction guide x1, ON/OFF Signal Cable x 1, Power Supply Connecting Cables: One for 12V DC and one for 24V DC

Note: The light emission by first trigger right after changing the light pulse width is still made by the previous light pulse width setting. The new light pulse width setting is applied from 2nd trigger.

8 Dimensional Diagrams (mm)



9 EU RoHS Directive

The RoHS Directive is short for the "restriction of use of certain hazardous substances in electrical and electronic equipment." As a directive, it restricts the use of specific hazardous substances for new electrical and electronic equipment marketed in the EU on or after July 1, 2006, and restricts the use of six substances, which are (1) lead, (2) mercury, (3) cadmium, (4) hexavalent chromium, (5) polybrominated biphenyl (PBB), and (6) polybrominated diphenyl ether (PBDE).

*Standards for "RoHS Directive-Compliant Products"

Lead	Mercury	Cadmium	Hexavalent chromium	PBB	PBDE
1000ppm max.	1000ppm max.	100ppm max.	1000ppm max.	1000ppm max.	1000ppm max.

(Items that are exempted in the RoHS Directive are excluded from these standards.)

10 China RoHS Directive

China RoHS Directive is formally known as "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products", which was implemented on July 1, 2016 in China. Same as EU RoHS Directive, this regulation restricts the usage of six substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). This regulation requires electronic information products which are manufactured or imported, and sold in China, to clearly disclose contents of the 6 restricted substances listed below.

Names and contents of hazardous substances

Usage Deadline for Environmental Protection	Product name	Names and contents of hazardous substances					
		Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	PBB	PBDE
10	Power supply for LED Lights	×	○	×	○	○	○

(This table is made in compliance with SJ/T11364 regulations.)
○: Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to GB/T26572 is within the limit requirement.
×: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to GB/T26572, is over the limit requirement.
*Lead and cadmium are excluded in EU RoHS.

Usage deadline for environmental protection

The number used in this logo is based on "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products" and related regulations from People's Republic of China. It shows the product usage duration in years for environmental protection. After finishing a product usage, the product needs to be re-used or discarded appropriately following local law and regulations, complying with safety and usage caution.

产品中有害物质的名称及含量

环保使用期限	产品	有害物质的名称及含量					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
10	LED 照明专用电源	×	○	×	○	○	○

（本表格依据 SJ/T11364 的规定编制。）
○：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T26572 标准规定的限量要求以下。
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 标准规定的限量要求。
（注）铅和镉中的“×”，因欧洲 RoHS 没限定，故用“○”表示。

环保使用期限

此标志的数字是根据中华人民共和国电器电子产品有害物质限制使用管理办法以及有关标准等，表示该产品的环保使用期限的年数。
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● Warranty Information

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EXCEPT AS EXPRESSLY SET FORTH HEREIN, COMPANY MAKES NO WARRANTIES WITH RESPECT TO THE PRODUCTS.

WARRANTY PERIOD: TWO YEARS, STARTING FROM CCS Inc. SHIPPING DATE.

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION WITHIN THE SPECIFIED WARRANTY PERIOD. IF EITHER OF THESE CONDITIONS OCCURS, PLEASE TAKE THE PRODUCT TO YOUR CCS SALES REPRESENTATIVE.

WARRANTY TERMS

1 CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE INSTRUCTION GUIDE AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF TWO YEARS.

2 CCS Inc. WILL CHARGE A REPAIR FEE UNDER THE FOLLOWING CONDITIONS:
1) IF THE PRODUCT HAS BEEN SUBJECTED TO MISUSE, UNAUTHORIZED REPAIRS, OR MODIFICATION FROM ITS ORIGINAL DESIGN.
2) IF THE PRODUCT HAS BEEN DAMAGED FROM IMPACTS DUE TO INAPPROPRIATE HANDLING.
3) IF DAMAGE TO THE PRODUCT RESULTS FROM EXTERNAL CAUSES INCLUDING ACCIDENTS, FIRE, POLLUTION, RIOTS, COMMUNICATION FAILURES, EARTHQUAKES, THUNDERSTORMS, WIND AND FLOOD DAMAGE, OR ANY OTHER ACT OF PROVIDENCE, OR FROM ANY EXTRAORDINARY CONDITIONS SUCH AS ELECTRICAL SURGES, WATER LEAKAGE, CONDENSATION, OR THE USE OF CHEMICALS.
4) IF THE DAMAGE RESULTS FROM CONNECTION TO ANY POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.

3 CCS ASSUMES NO LIABILITY FOR ANY PURCHASER'S SECONDARY DAMAGE (DAMAGE OF EQUIPMENT, LOSS OF OPPORTUNITIES, LOSS OF PROFITS, ETC.) OR ANY OTHER DAMAGE RESULTING FROM A FAILURE OF OUR PRODUCT.

THIS WARRANTY INFORMATION PROVIDES THE SCOPE OF CCS'S PRODUCT WARRANTY WITHIN THE SPECIFIED PERIOD, AND DOES NOT INDICATE OR IMPLY ANY FURTHER GUARANTEE BEYOND THE WARRANTY TERMS.

CONTACT CCS FOR INQUIRIES OR INFORMATION ON REPAIRS TO THE PRODUCT AFTER THE EXPIRATION OF THE WARRANTY.

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- Instruction Guide and Dimensional Diagrams in PDF or CAD can be downloaded from the CCS website. http://www.ccs-grp.com/

Ask any product queries to the following address or to your nearest CCS representative.

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