===== DC5V3W-XX Controller User Manual =====

Overview:

Thank you for choosing our product. To ensure proper use, please read this user manual before operation and keep it for future reference.

1. Technical Specifications

1.1 Controller Specifications

Model	
Number of Output Channels	2 or 4 channels
Baud Rate	19200
Brightness Adjustment Levels	256 levels
Brightness Adjustment Method	Button adjustment; PC communication control
Drive Mode	Constant-current
External Trigger Voltage	Pulse-width trigger; high level of 5-24 V is active
External Trigger Frequency	1kHZ
External Trigger Response Time	200us
Communication Interface	RS232
Normally ON / Normally OFF Mode Switching	Supported
Save Function	Supported
Overcurrent Protection	Supported
Input Voltage	AC 100-240V
Input Frequency Range	50/60Hz
Standby Power Consumption	3W
Operating Environment	Humidity: 20%-85% RH (non-condensing); Temperature: -5°C to 60°C

Storage Environment	Humidity: 20%-85% RH (non-condensing); Temperature: -5°C to 60°C

1.2 Controller Function Overview

(1) Light brightness can be adjusted manually or via software.
(2) Flexible operation; each channel can be adjusted independently.
(3) Simple operation with an intuitive display. The 4-digit display clearly shows the brightness level of the current channel.
(4) Supports external triggering for flexible control and fast response.
(5) The controller can communicate with a PC through the serial port.
(6) The constant-current design provides high stability and consistency and helps extend the service life of the light source.

1.3 CPL0512B-XX Controller Output Power Table

Type	Model	Output Current Range	Max. Output Current per Channel	Total Output Current	Ch.
Digital Controller Series		0-1000mA	1000mA	3A	2
		0-1000mA	1000mA	3A	4

1.4 Standard Package Contents

(1) 1 controller
(2) 1 x 1.8 m power cable
(3) 1 x 1.5 m serial cable
(4) 1 set of external trigger terminals

2. Operating Instructions

2.1 Controller Operating Panel Example

Note: Because there are multiple models, the DC5V3W-4T is used here as an example. The operating panels of other controller models are similar.

Figure

No.	Panel Item	Description
1	4-digit Digital Display	The first digit from the left shows the currently selected channel; the last three digits show the brightness level of that channel.
2	Button Adjustment	Press CH to switch channels. Press + to increase the brightness level and - to decrease it; H = Normally ON, L = Normally OFF.
3	Light Output Connector	Four output channels in total; each channel is controlled independently.
4	External Trigger Input	Connect an external trigger source for synchronized strobe operation. A 5-24 V high-level trigger signal is active.
5	RS232 Serial Port	Connect the controller to a PC through the RS232 serial port.
6	Power Switch	Turns the controller ON/OFF.
7	AC Input	Input: 110-240 VAC, 50/60 Hz

2.2 Connection Procedure

Step 1: Connect the light source to the controller (refer to Figure 2.1).

Step 2: If external trigger control is required, connect the external trigger signal source to the controller trigger port.

Step 3: Connect the power supply (AC 110-240 V, 50/60 Hz) and press the red power switch. The indicator and digital display will light up and show the channel value, indicating that the controller is powered on, indicating that the controller is powered on. If a PC is required to control light-source brightness, connect the PC to the controller with an RS232 cable while the controller is powered off, then use the supplied Demo program or your own software for control. When operating via RS232, the parameters of each channel can still be adjusted manually; both the host computer and the controller controls can be used to set parameters.

2.3 Brightness Setting

Manual Adjustment:

1. Connect the light sources to the controller CH1-CH4 output terminals and switch on the power so that the light sources operate in Normally ON mode.

Press CH to switch channels. Each press of the "+" button increases the brightness level by 1; press and hold to increase continuously until 255. Each press of the "-" button decreases the brightness level by 1; press and hold to decrease continuously until 0.

2. The channel indication and brightness display have a memory function and are retained after power-off. Each time the controller is switched on, the digital display shows the output state from the previous shutdown for Channel 1.

Software Adjustment:

Connect the light sources to the controller CH1-CH4 output terminals and switch on the power so that the light sources operate in Normally ON mode.

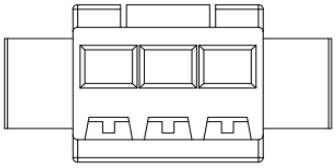
With the controller powered off, connect it to the PC using an RS232 cable, then use the supplied Demo program or your own software for control. When operating via RS232, the parameters of each channel can still be adjusted manually; both the host computer and the controller controls can be used to set parameters.

2.4 Trigger Port Example

Port	Port Definition
TR1/TR2/TR3/TR4	Positive (+) trigger-signal input terminals for Channels 1-4

GND	Common Terminal

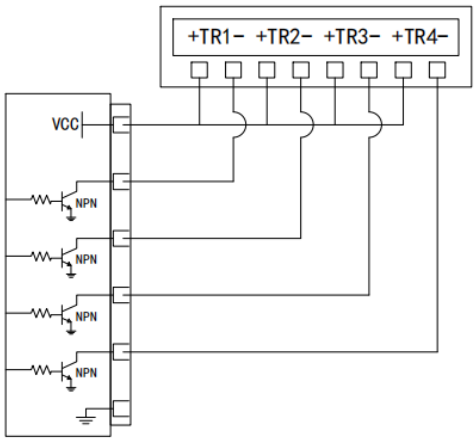
2.5 Light Output Connector Description



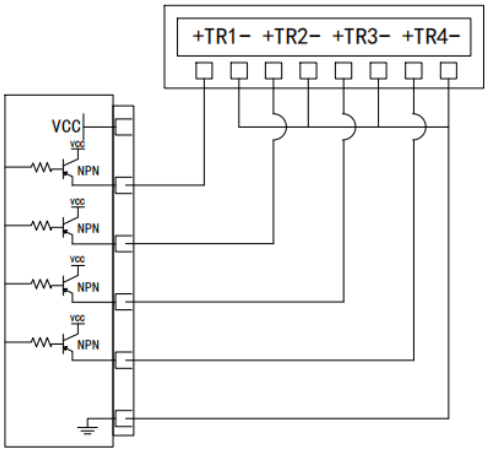
① ② ③

Port	Port Definition
②+	Connect to the light source positive (+) terminal
③-	Connect to the light source negative (-) terminal

2.6 Trigger Reference Wiring Diagram



NPN Drive

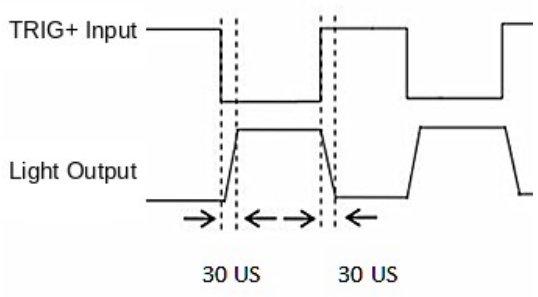


PNP Drive

Note: Do not use a mechanical switch as the external trigger drive method. The negative (-) terminal is the GND common terminal.

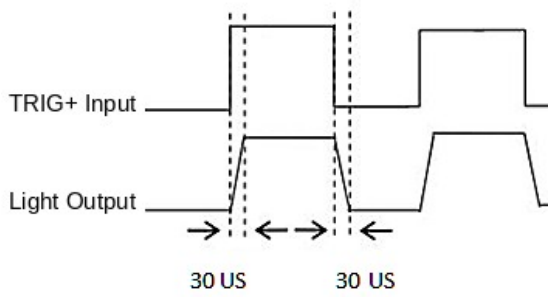
2.7 Trigger Reference Timing Diagram

Timing Diagram in Normally ON Mode



Description: The controller has two operating modes: Normally ON (H) and Normally OFF (L). In Normally ON (H) mode, the light turns off when a trigger voltage is applied to the corresponding channel trigger input. External triggering requires a 5-24 V supply; GND is the common terminal for the trigger voltage. Maximum trigger frequency: 1 kHz. Trigger delay: 200 us.

Timing Diagram in Normally OFF Mode



Description: The controller has two operating modes: Normally ON (H) and Normally OFF (L). In Normally OFF (L) mode, the light turns on when a trigger voltage is applied to the corresponding channel trigger input. External triggering requires a 5-24 V supply; GND is the common terminal for the trigger voltage. Maximum trigger frequency: 1 kHz. Trigger delay: 200 us.

3. Demo Software Operation

Note: Run the Demo software on the computer. The following interface will appear.

3.1Software Interface

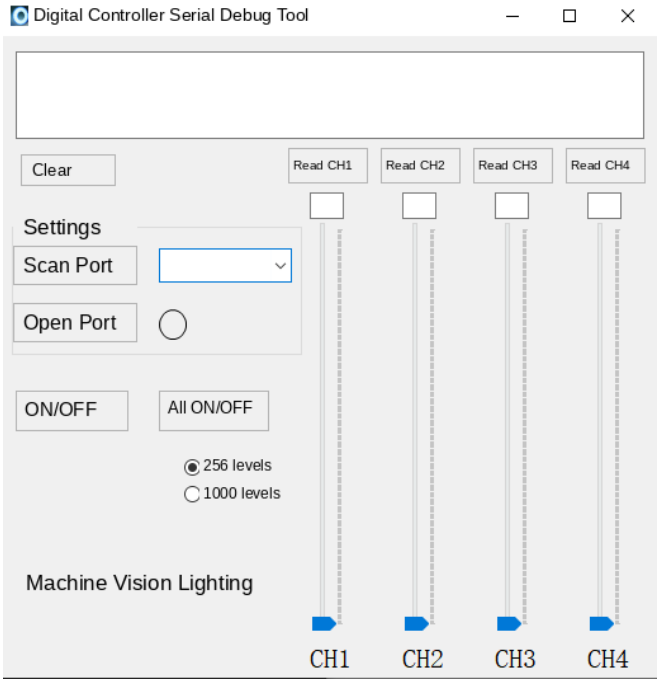


Figure 3.1 Software Interface

Interface Description:

1. Communication Status Area

Scan Port: Select the serial port connected to the controller, then click "Open Port".

2. Brightness Control Area

Drag the slider for the corresponding channel to adjust the brightness level. You can also enter a brightness value from 0 to 255 directly, then click Update to set the light source to the corresponding brightness level.

3.2 Controller Communication Protocol

Serial communication parameters (as shown below):

Protocol	RS232
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	None

Light Brightness Setting

Set	S	X	XXXX	#	Return
Desc.	Start	A: Channel 1 B: Channel 2 C: Channel 3 D: Channel 4	0000-0255	End	A B C D
Read	S	X	#		xXXXX
Desc.	Start	A: Channel 1 B: Channel 2 C: Channel 3 D: Channel 4	End		a: Channel 1 b: Channel 2 c: Channel 3 d: Channel 4 XXXX: Brightness

Normally ON / Normally OFF Setting

Set	S	X	#		Return
Desc.	Start	H/L	End		H/L

1. The brightness-value command for each channel must be a four-digit decimal number.
2. Brightness control commands for all four channels can be sent at the same time.

Example: SA0168# sets the brightness value of Channel 1 to 168. SA0168#SB0123#SC0255# sets Channel 1 to 168, Channel 2 to 123, and Channel 3 to 255.

SH# sets the controller to Normally ON mode; SL# sets the controller to Normally OFF mode.

SA# reads back the brightness value of Channel A; Channels B, C, and D are read in the same way.

6、Controller Outline Dimensions