



Pulsed Laser Driver CM12XX-A001-XXXXA

Manual (Version: V.01)

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Gratitude

Thanks a lot for choosing Brightlaser Product!

Statement

It is appreciated to read this manual carefully before operating this product and to place this manual at hand during the operation of this product.

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Revision History

Revision History	V.01 : March 2021: First version

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I. Introduction

1.1 Operating environment:

Pulse driver CM12XX-A001-XXXXA has certain restrictions on the environment. To ensure the performance and stability of the driver, please do not measure in the following environment:

- 1.1.1 Too high temperature above +60°C or too low temperature below -20°C: The driver must operate in the range of -20~+60°C, otherwise the measured data will be inaccurate.
- 1.1.2 Too high humidity > 80% RH: Easy to cause device aging, or even short circuit.

1.2 Attentions:

- 1.2.1 The maximum voltage of the driver can reach to 100V. Those who directly touched on it will feel a slight electric shock. Beware of touching directly after power-on.
- 1.2.2 The driver is a bare board, which does not have the protection for dust and water.
- 1.2.3 Please handle the driver with care, otherwise the circuit will be damaged.
- 1.2.4 Avoid over-applied voltage during operation, otherwise the circuit will be damaged.

1.3 Daily maintenance:

- 1.3.1 Frequently check the appearance of the module and remove the dust, grease, mildew, etc. on the surface in time.
- 1.3.2 It is a high-precision driver board. It should be handled with care during operation. It is strictly forbidden to squeeze or to fall from a high place.

II. Product Description

This product is a nanosecond pulse laser driver. The output drive voltage is adjustable in the range of 20-100V. The drive power can be controlled by the drive voltage. It can be admirably adapted to a variety of high-power laser diode. The driver integrates an intelligent controller, and the corresponding pulse frequency and other parameters can be set according to customer needs, and the set parameters can be saved after power off.

Feature

- Wide operation voltage
- Overvoltage and overcurrent protection
- Parameters are adjustable
- Ns level driving pulse

Application

- Ns level Pulse laser
- Range Finder Sensor
- LiDAR
- SPAD detector

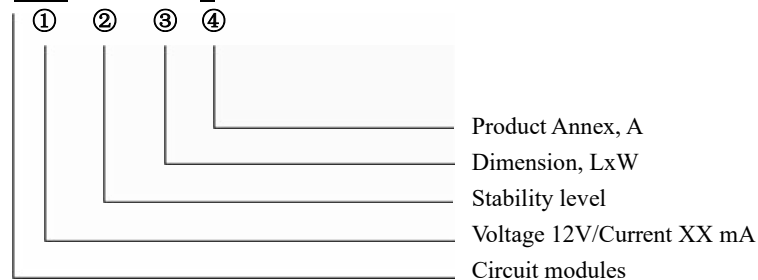


Product Code

Product Code	Description
CM12XX-A001-XXXXA	Pulsed Laser Driver, Applied Voltage 12V

Code definition

e.g. CM12XX-A001-XXXX A

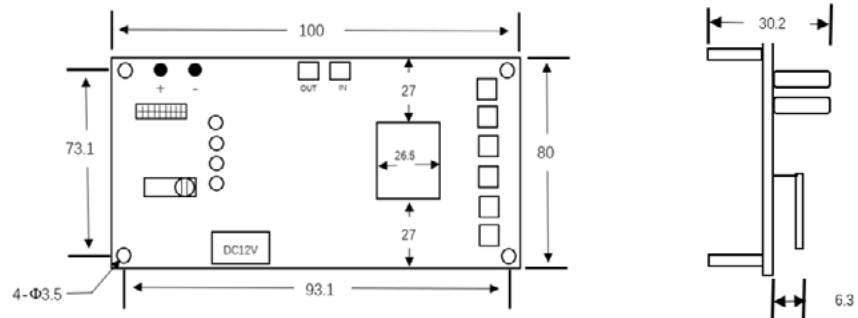


III. Specifications

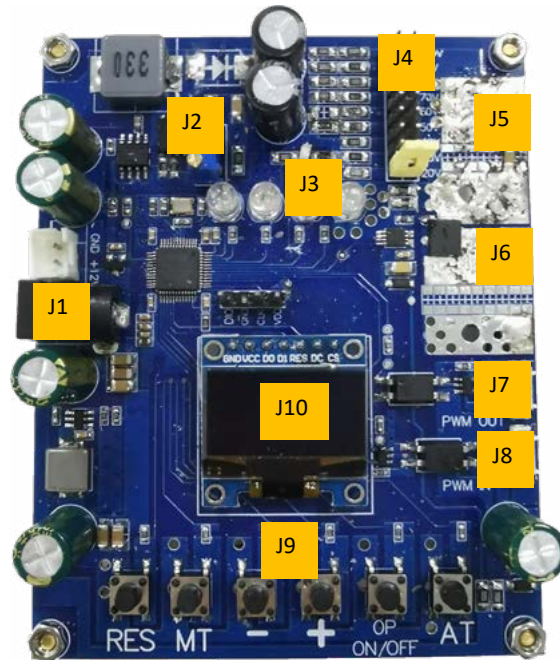
参数	参数值	单位	备注
Product Code	CM12XX-A001-XXXXA	-	-
Applied Voltage	12	V	
Output Voltage	20-100	V	Voltage transformer selection / Jumper cap selection
Power Consumption	<30	mA	No diode load
Repetition Frequency	11-200	kHz	
Output Pulse width	6-7	ns	No diode load, 280ns
Pulse Current	100	A	Adjustable
External Control	PWM		-
Control Frequency	1099-200k	HZ	-
Storage Temperature	-40 - +80	°C	-
Operation Temperature	-10 - +85	°C	-
Dimension	L100×W80×H30.2	mm	-

IV. Interface definition

4.1 Mechanical schematic



4.2 Connection interface



Power Supply interface:

Interface	Interface definition	Remark
J1	DC Connector	DC12V

Laser diode interface:

Interface	Interface definition	Remark
J5	Anode for laser diode	Diode Anode
J6	Cathode for laser diode	Diode Cathode

Other interface:

Interface	Interface definition	Remark
J2	Laser Diode Driving Voltage Adjustment	20-100V
J3	Operation indicator	Right to left: Power supply indicator, Laser diode driving indicator, PWM output indicator and external PWM Control enable indicator (Detail description on Section5.2)
J4	Alternative Voltage Adjustment	20-100V
J7	External PWM Output	
J8	External PWM Input	
J9	Keyboard operation interface	Detail description on Section5.3

J10	Display interface	Detail description on Section5.1
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V. Instruction of Operation

5.1 Operation main interface:

J1 interface connect power supply with voltage 12V. After the driver power on normally, it will display a LOGO as below and enter the main interface:

```
模式(mode): 手动 (manual)
LD:11680 HZ
EPWM:11680 HZ
Vol:50.1V
```

1. **mode:** manual mode or auto mode.
2. **LD:** Repetition Frequency on Laser diode. For instance as shown above, the repetition frequency of the driver on laser diode is 11680Hz.
3. **EPWM:** PWM output frequency; For instance, as shown above, the repetition frequency of the external PWM output frequency is 11680Hz.
4. **Vol:** Driving Voltage of Laser diode; For instance, as shown above, the driving voltage on laser diode is 50.1V. Voltage display will be updated periodically, for 1s/ time.

5.2 Operation indicator:

1. **Power Supply indicator:** the board operate normally; the light will be on.
2. **Laser Diode Driving indicator:** Laser diode give output normally; the light will be on.
3. **PWM Output indicator:** External PWM give output normally, the light will be on.
4. **External PWM control enable indicator:** Turn on external PWM control, the light will be on.

5.3 Keyboard operation interface :

At any circumstance:

1. **RES button :** The system automatically resets every time you press it.
2. **Long Press “RES button”, “-” 和 “+” of these three buttons to restore factory settings:**

```
模式(mode): 手动(manual)
LD:11680 HZ
EPWM:11680 HZ
Vol:50.1V
```

Under the main interface:

3. **MT: Start Manually Button;** short press the button once in manual mode, LD and external PWM output a driving pulse at the same time.
4. **AT: Mode Switch Button;** short press to enter automatic mode, then short press to enter manual mode, and so on. In automatic mode, drive LD and external PWM output at the set frequency.

5. **OP: Parameter setting menu;** long press to enter the parameter setting interface, then long press to exit the parameter setting interface.
6. **“-” button:** parameter setting menu to go backwards/parameters to adjust downwards
7. **“+” button:** parameter setting menu to go forwards/parameters to adjust upwards.

5.4 Parameters setting:

There are three parameter settings: LD setting -> external PWM setting -> external control setting, long press the “OP button” to enter the parameter setting interface, and you can switch the setting selection through the “-”/ “+” button.

LD Laser diode setting

LD 设置(setting)
011680 HZ

1. Short Press “OP” button to enter the selected setting
2. The currently selected digital value in the interface will flash, short press the “OP” button to switch the selected value, and short press the “+”/ “-” button to modify the value.
3. After the setting is completed, long press the “OP” button to exit the current parameter setting.

External PWM setting

外部 PWM 设置 (external PWN setting)
00011680 HZ

4. Short Press “OP” button to enter the selected setting.
5. The currently selected digital value in the interface will flash, short press the “OP” button to switch the selected value, and short press the “+”/ “-” button to modify the value.
6. After the setting is completed, long press the “OP” button to exit the current parameter setting.

External Control setting

外部控制设置 (external control setting)
关闭 (Close)

1. Short press the “OP” button to enter the selected setting.
2. The word "on/off" flashes, switch by short pressing the +/- button.
3. After the setting is completed, long press the “OP” button to exit the current parameter setting.
4. After this function is turned on, the output of the LD is controlled by the external input. The

external input high-level, LD can have an output.

After setting all parameters, continue to press the “OP” button to exit to the main interface I in the display.

VI. Service and repair

BrightIntelligence (HK) Technologies Co., Ltd. laser service policy: If consumers purchase the company's products through legal channels, if there is a performance failure that is not artificially damaged, they are entitled to BrightIntelligence (HK) Technologies Co., Ltd. "repair, return, and replacement", which is called three guarantees.

- 6.1 To protect your legal rights, please pay attention to the following information:
 - 6.1.1 When purchasing the machine, please fill in the warranty card in a complete, correct and true manner with the supplier or the company's sales.
 - 6.1.2 Please keep the warranty card and purchase invoice properly.
 - 6.1.3 Please bring the original warranty card and invoice when repairing it (invoice and warranty card must be filled out by the company or the vendor and stamped with the official seal, and must not be altered, otherwise it will be invalid);
 - 6.1.4 The warranty period is three months, calculated from the date of issuing the invoice.
 - 6.1.5 If there is no invoice or three guarantee certificates, the validity period of the three guarantees will be calculated based on the date of manufacture of the main body barcode plus 90 days.
- 6.2 During the normal use of this machine, if there is a performance failure that is not artificially damaged, you enjoy the following three guarantees:
 - 6.2.1 The warranty period of the whole laser of BrightIntelligence (HK) Technologies Co., Ltd. is one year.
 - 6.2.2 During the validity period of the three guarantees, if the laser has a performance failure that is not artificially damaged, it will enjoy free warranty service.
 - 6.2.3 Counting from the date of purchase, if the machine has a performance failure that is not artificially damaged within 7 days, you can choose to return the payment at the invoice price or replace the laser of the same model or repair it.
- 6.3 If one of the following conditions is met, the warranty is not covered, and BrightIntelligence (HK) Technologies Co., Ltd. or its authorized service center will implement reasonable maintenance fees.
 - 6.3.1 The validity period of the three packs is exceeded.
 - 6.3.2 Except for those without three guarantees certificates and valid invoices, but it can still be proved that they are within the validity period of the three guarantees.
 - 6.3.3 The warranty certificate does not match the product model identification, or the warranty certificate is altered.

- 6.3.4 Without the authorization of BrightIntelligence (HK) Technologies Co., Ltd., disassemble, repair, or modify the system software, causing damage or mal function.
- 6.3.5 Damage caused by failure to use, maintain and maintain in accordance with the instructions for use;
- 6.3.6 Soaked in water, broken or circuit board burned.
- 6.3.7 The fragile stickers are torn off or are fuzzy.
- 6.3.8 Damage caused by force majeure.

VII. Pack List

Items	Descriptions	Qty
1	Pulse Laser Driver	1
2	User's manual	1