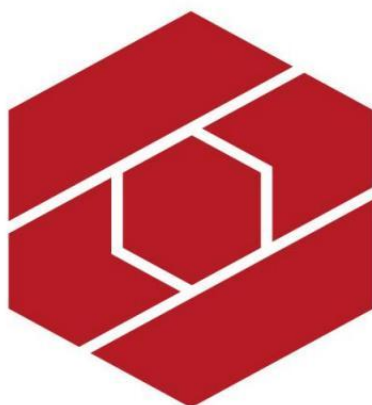


YFPN-200-GR-LN03031

Green Fiber Laser User Manual



GZTECH

Company Introduction

Wuhan Guangzhi Technology Co., Ltd. was established in May 2018 in Optics Valley of Wuhan. The Chairman, Dr. Huang Zhihua, is a graduate of Tsinghua University, and the founding team boasts profound expertise in theoretical design, technology development, and product engineering. The company specializes in the research and development, production, and sales of pulsed lasers, as well as offering laser process development and customized laser solutions. The products are primarily applied in fields such as new energy, hard and brittle material processing, surface marking, and cleaning. Based on fiber laser technology and solid-state laser technology, and integrating high-speed electronic control software and thermal control structure technology, the company has successively launched a series of industrial laser products including fiber MOPA, QCW, fiber infrared picosecond and green lasers, as well as solid-state nanosecond ultraviolet lasers. Additionally, it possesses OEM/ODM development capabilities for other special wavelength research and customization-type lasers.

GZTECH is named after a passage in *Mozi's Explanations of the Classics*, which reads, “Jing (shadow), when guang (light) arrives, jing vanishes; if guang exists, jing will never arise.” The 21st century is the Photonics Century, and GZTECH is dedicated to illuminating traditional manufacturing fields by utilizing advanced laser technology, thereby creating incremental value for society.

GZTECH is headquartered in Wuhan, with sales and service centers established in Shenzhen, Suzhou, and Jinan, as well as a Foreign Trade Department responsible for overseas business. Guided by the mission of “Promoting lasers to be a fundamental productivity tool in intelligent manufacturing”, GZTECH is committed to relentless technological innovation and continuous improvement of laser performance, aiming to make lasers a fundamental productivity tool in the field of future intelligent manufacturing.

GZTECH will proceed with utmost sincerity on the path to long-term success, growing and developing together with customers.

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Chapter 1 Safety Information

1. Safety warning signs and classifications

The following safety warning sign requirements must be strictly observed during the operation of lasers:

Sign type	Descriptions and requirements
	Warning: There is potential harm to the human body, and operations must be carried out following established procedures. Violation may result in personal injury. During operation: It is mandatory to wear qualified protective glasses at all times; direct viewing of or exposing skin to the laser beam is strictly prohibited.
	Attention: There is potential harm to the equipment, and operations must be carried out following established procedures. Violation may result in equipment damage. During operation: Avoid touching optical lenses or high-precision components; ensure that grounding and power supply meet specifications.
	Caution laser: This sign is posted at the laser output port. It indicates the presence of Class IV visible light, invisible light, and ultraviolet radiation from the laser. Direct exposure can cause permanent retinal damage.

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2. Laser safety protection requirements

Laser Class: Green fiber lasers all belong to Class IV lasers (with output power greater than 500mw). In China, they are also classified as Class 4 according to GB 7247.1-2012.

Protective equipment: Specialized protective glasses must be selected and worn throughout the entire operation process.

Operation prohibitions: Direct contact with the laser output head or mirror-reflected areas is prohibited; installing cameras or optical instruments while the laser is in operation is prohibited; disassembling the enclosure or adjusting internal components without powering off is prohibited.

3. General safety regulations

Mirror reflection risk: Secondary radiation may be generated after the main laser beam is reflected by a flat surface. Although the energy is relatively low, it may still cause damage to the eyes or material surfaces. It is necessary to avoid the reflection path during operation.

Key points for optical operation: Before operating the laser, be sure to remove the dust-free tape or any other obstructions at the laser outlet. When the laser is in normal operation, avoid direct contact of your eyes or skin with the laser beam emitted directly or scattered from the output end. Do not look directly into the laser output head. When operating the laser, ensure that you are wearing appropriate laser safety glasses.

Electrical safety: Before using the laser, please refer to the product technical specifications to select a power supply with the appropriate specifications. Check the power supply voltage as well as the positive and negative poles to ensure correct connections before applying power. Incorrect connection methods may result in damage to the laser.

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4. Operating environment and maintenance

Environmental requirements: Temperature: 10°C - 35°C; Humidity: 20% - 70% (no condensation). The equipment must be placed inside a ventilated and dust-proof cabinet, away from high-temperature or humid environments. The cooling fan should be kept at a distance of 5 cm or more from obstacles to ensure unobstructed airflow.

Daily maintenance: Do not collide with the scanning table or optical components. In case of a malfunction, shut down the equipment immediately and contact professional personnel. Regularly clean the dust from the equipment surface and keep the work area clean and tidy.

5. Protection commitments and government-required safety assurances

Please read this manual thoroughly and sign the safety confirmation form before operation. Improper operation may lead to irreversible consequences! Although the laser itself is safe, necessary protective measures still need to be taken during use. Both equipment manufacturers and end-users should strictly adhere to laser safety standards, which is a fundamental prerequisite for ensuring safe production. In usage situations, it is imperative to commit to installing laser protection devices with isolation and blocking functions, even when the laser is in an activated state. Relevant safety requirements can be referred to in the national standard GB 7274.1-2012.

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Chapter 2 Product Introduction

GZTECH pulsed green fiber lasers feature adjustable pulse width, adjustable repetition rate, excellent beam quality, high average power, and a compact structure. It serves as a reliable laser source for applications such as metal marking, cutting and welding of highly-reflective materials, glass drilling, and laser cleaning. This product adopts standard industrial control interfaces, making it adaptable to various user environments.

1. Configuration list

No.	Name	Quantity	Unit
1	Green fiber laser	1	Set
2	Laser user manual	1	Piece
3	Test report	1	Sheet
4	Aviation connector cable	1	Cable
5	Serial port cable	1	Cable
6	532nm 3X beam expander	1	/

2. Optical characteristics

No.	Characteristics	Parameter value	Unit
1	Central wavelength	532	nm
2	Spectral width	< 1	nm
3	Maximum single pulse energy	0.3	mJ

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4	Maximum peak power	13	kW
5	Average power	200	W
6	Power adjustment range	0 - 100	%
7	Frequency adjustment range	10 - 5000	kHz
8	Laser switching ON/OFF time	< 100	μs
9	Pulse width	5 - 100	ns
10	Output power instability	< 3%	RMS
11	Beam quality M ²	< 1.2	/
12	Spot ellipticity	> 90	%
13	Polarization direction	Linear polarization	/
14	Anti-high reflection	Yes	/
15	Collimated beam diameter (1/e ²)	2.5 ± 0.5	mm
16	Delivery cable length	3	m

3. Electrical characteristics

No.	Characteristics	Parameter value	Unit
1	Power supply voltage	48	VDC
2	Working current	< 25	A
3	Power consumption	< 1200	W
4	Recommended power supply	≥ 1200	W

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4. Environmental requirements

No.	Characteristics	Parameter value	Unit
1	Operating temperature	5 - 40	°C
2	Storage temperature	-10 - 60	°C
3	Cooling method	Water cooling	/
4	Water cooling temperature	23 ± 0.1	°C
5	Cooling water flow rate	> 12	L/min
6	Water pipe diameter	12	mm
7	Chiller cooling capacity	≥ 1600	W

5. Structural characteristics

No.	Characteristics	Parameter value	Unit
1	Laser dimension	520*318*82	mm ³
2	Output head dimension	392*220*106	mm ³
3	Net weight	30	kg

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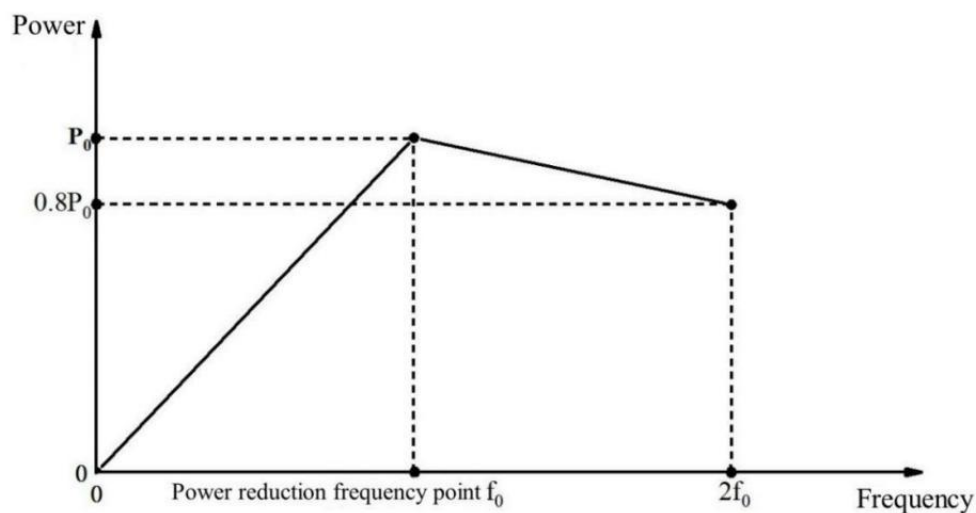
6. The pulse width corresponds to the power reduction frequency point and the maximum single pulse energy

No.	Pulse width (ns)	Power reduction frequency (kHz)	Upper frequency limit (kHz)	Max single pulse energy (mJ)
1	5	4000	5000	0.05
2	10	2000	4000	0.1
3	20	1000	2000	0.2
4	30	800	1500	0.25
5	40	700	1500	0.3
6	60	700	1500	0.3
7	80	700	1500	0.3
8	100	700	1500	0.3

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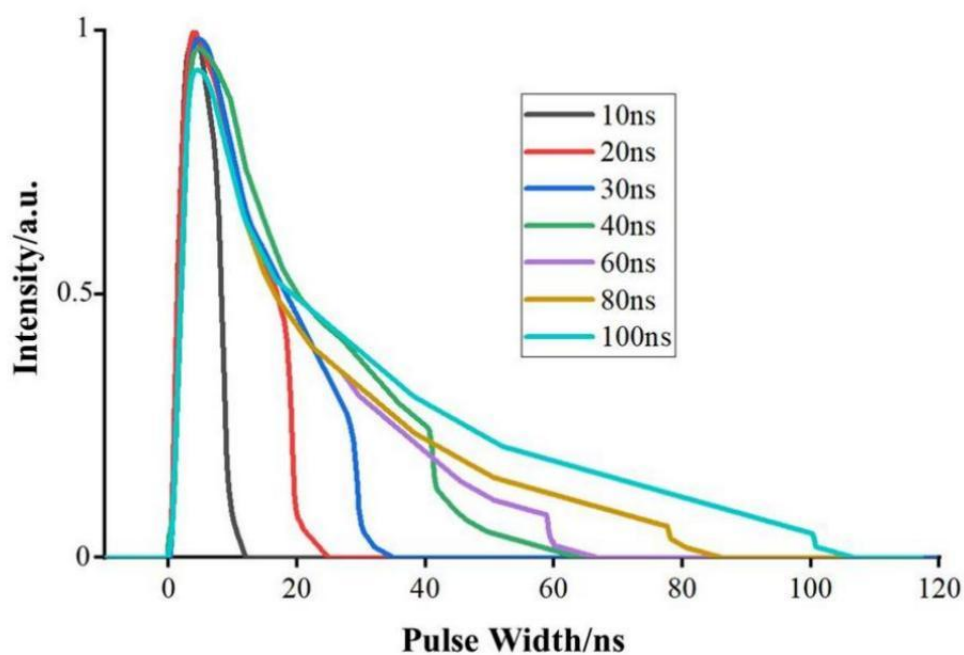
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The relationship between laser output power and frequency

7. Pulse width waveform

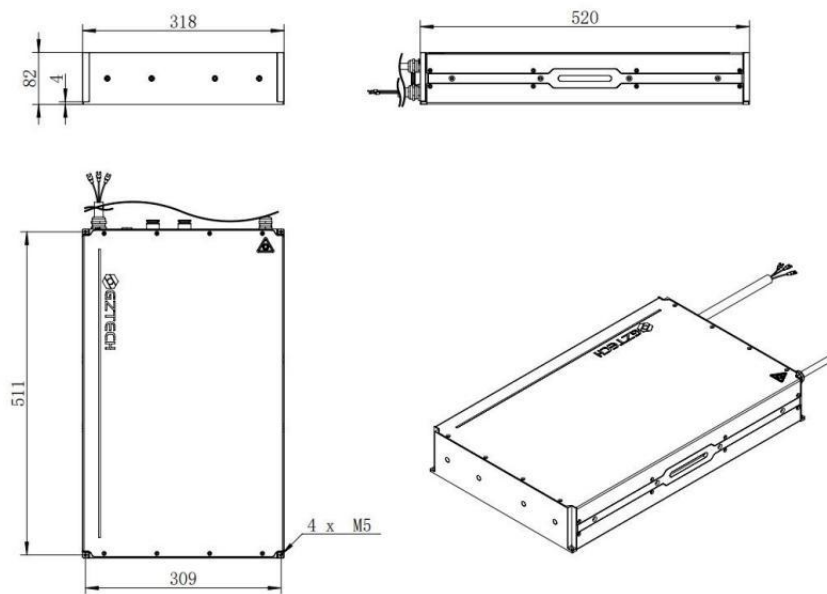


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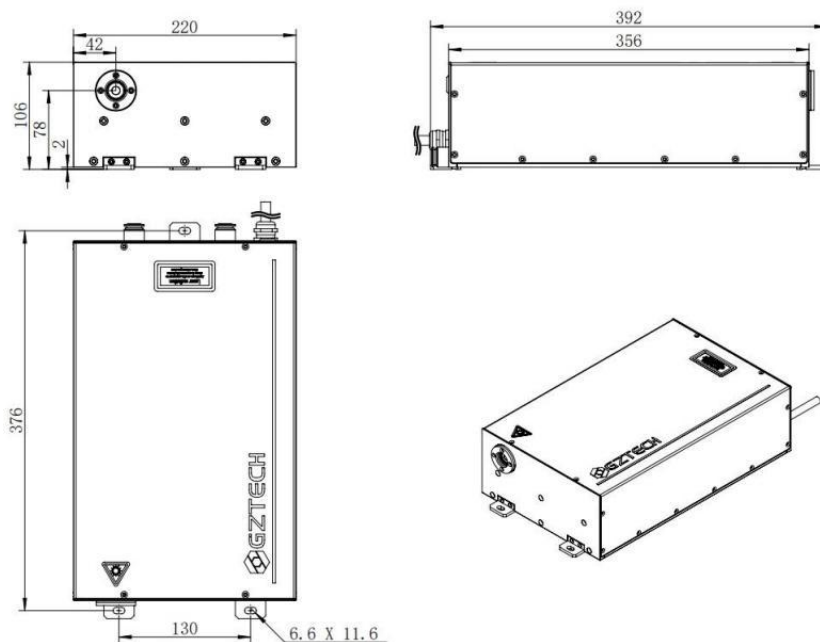
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8. Dimension



Laser dimension



Output head dimension

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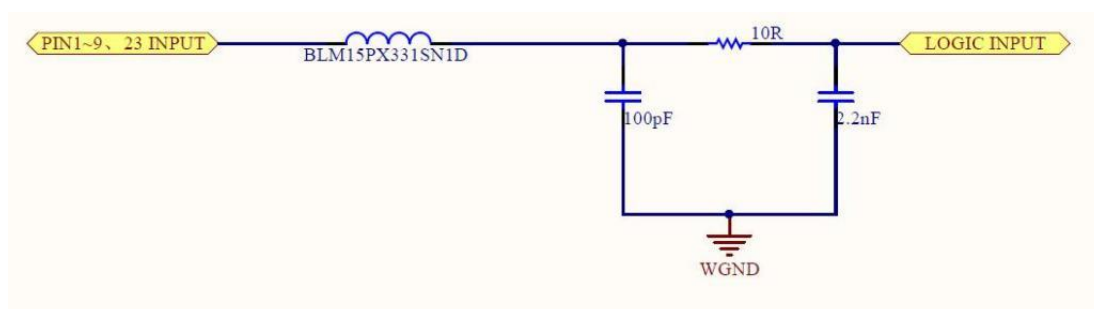
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Chapter 3 Laser Interface Description

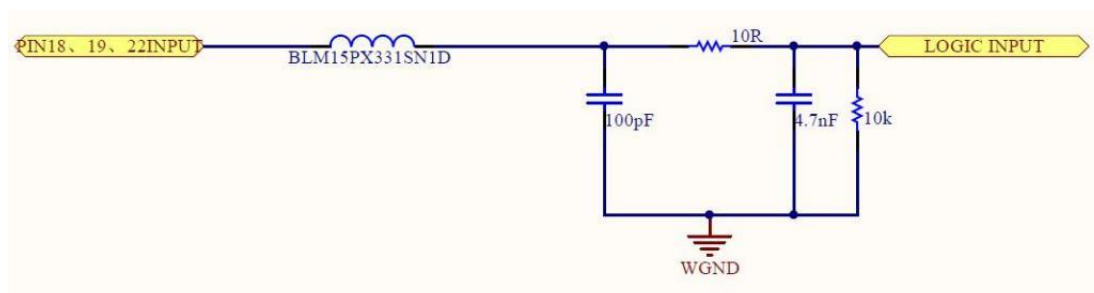
1. Electrical input-output characteristics

DB25 interface for digital signal input



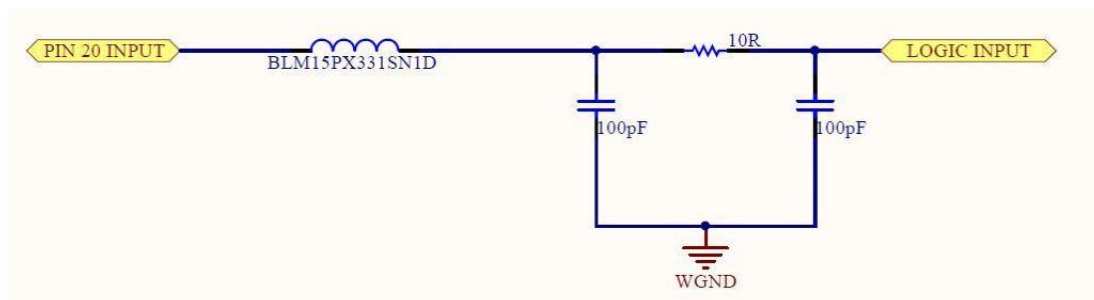
Maximum input voltage: 5.5V; Minimum operating input current: 8mA

Pin 1–9 and Pin 23 Input



Maximum input voltage: 5.5V

Pin 18, Pin 19, and Pin 22 Input



Maximum input voltage: 5.5V; Minimum operating input current: 8mA

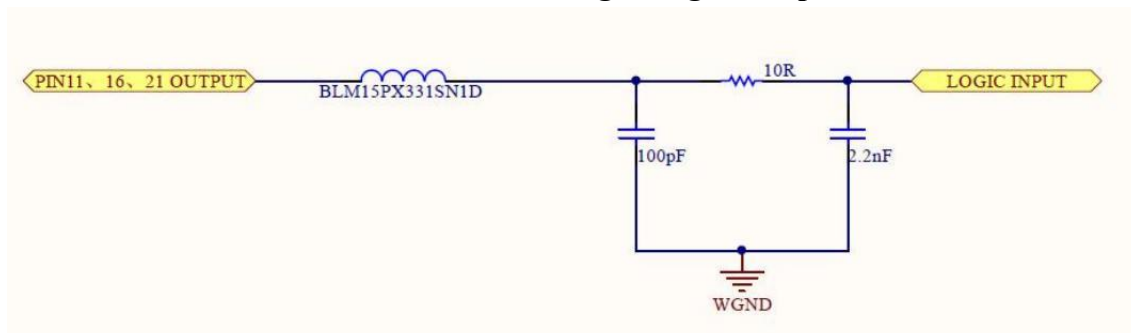
Pin 20 Input

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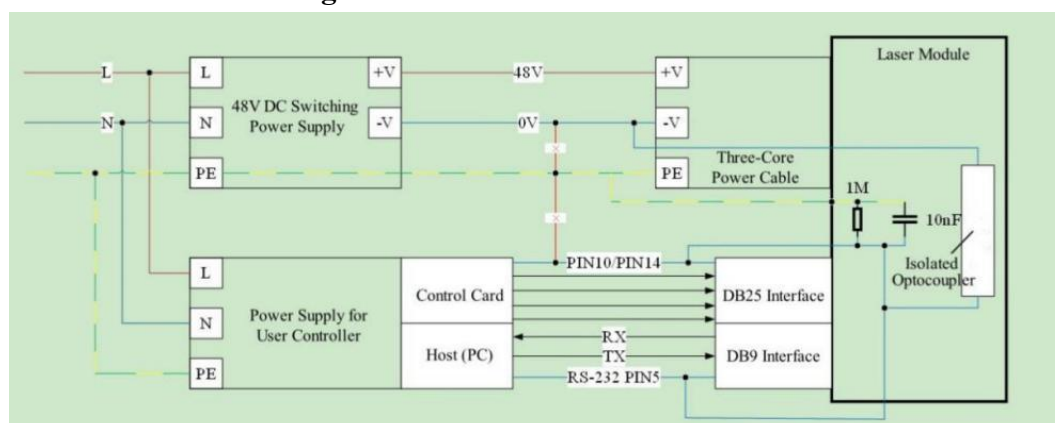
DB25 interface for digital signal output



Pin 11, Pin 16, and Pin 21 Output

Maximum output: 5V; Maximum output driving current: 10mA

2. Electrical connection diagram



3. Power interface definitions

The definitions for the laser power interface are shown in the following table:

Table 1 Power interface definitions

Line ID	Color	Definition
PE / GND	Yellow-green	Grounding
0 V	Blue	48V-, negative pole
+48 V	Brown	48V+, main power supply 48V

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Note: The DC power supply voltage may vary depending on the laser model, being either 24V or 48V. For models with a power rating of 500W and above, a 220V AC power supply is required. For detailed information, please refer to the electrical characteristics -- power supply voltage section in the product specification sheet.

4. DB9 interface definitions

Table 2 DB9 interface definitions

Pin	Definition	I/O Characteristics	Electrostatic Discharge (ESD) Protection Level
2	RXD	Input	3B
3	TXD	Output	3B
5	GND	N/A	
1,4,6-9	No connection	N/A	

5. DB25 interface definitions

Table 3 DB25 interface definitions

Pin	Definition	Note
1-8	Power setting, 8-bit bus, with pins 1-8 corresponding to data bits D0...D7. A value ranging from 0 to 255 represents the power from minimum to maximum.	Input with isolation
9	Power latch signal, active on the rising edge.	Input with isolation
10,14	GND	

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11,16,21	Alarm status	Output with isolation
18	EE signal - Pre-amplifier switch control signal, active high. High level is greater than 3.5V; Low level is either unconnected or less than 0.8V.	Input with isolation
19	EM signal - laser switching on/off control signal, active high. High level is greater than 3.5V; Low level is either unconnected or less than 0.8V.	Input with isolation
20	PRR synchronous pulse control signal	Input with isolation
22	Red light indication control signal	Input with isolation
23	Emergency stop control signal	Input with isolation
12,13,15, 17,24,25	Reserved	

Remarks: For DB25 signals, the high-level range is greater than 3.5V and less than 5.4V; the low-level is less than 0.8V. If DB25 control is used with standard marking software, set the laser type to “Fiber” in the parameter settings, and the Fiber type should be “IPG_YLPM (EZCAD 2)” or “GZ_YFPN (EZCAD 3)”.

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The laser output control via DB25 is illustrated as shown in the following figure:

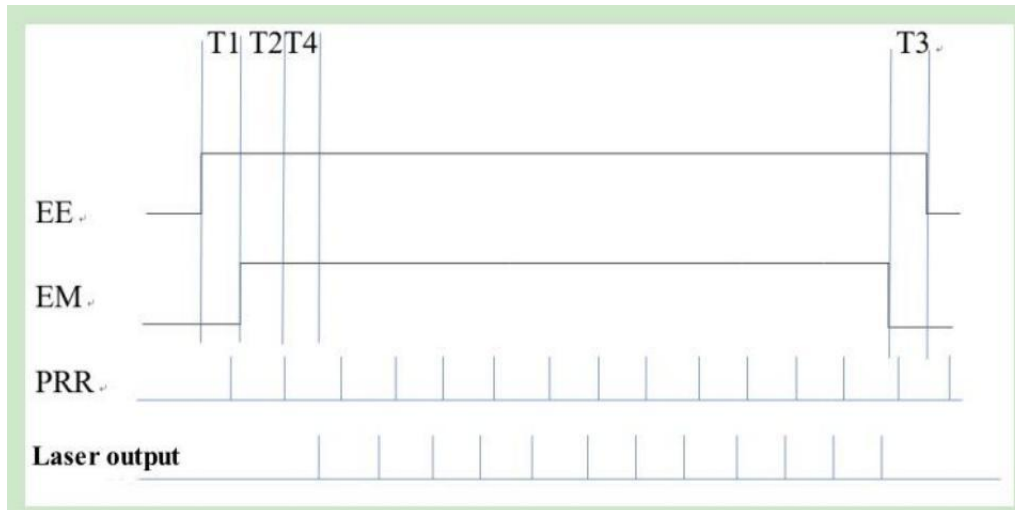


Figure 1 DB25 control timing

T1 is the pump charging time, which is greater than 8ms. Under the condition where EE is active and EM is inactive, there is laser leakage from the laser.

T2 is the delay between the EM signal and the PRR, generated by the control card.

If PRR leads the EM signal by 3 cycles, the external frequency-locking mode should be selected. If PRR does not lead the EM signal by 3 cycles, the internal frequency-locking mode should be selected.

T3 just needs to be greater than 0.

T4 is the delay time between the PRR frequency signal and the laser output, which ranges from 0 to 50 microseconds depending on the pulse width.

The laser output always follows the PRR signal, with a delay of T4 in between.

At the start of each laser emission (or marking process), EE becomes active first, and after a delay of approximately 8ms, the EM signal becomes active, at which point the laser device outputs laser. If there is a need to turn off the laser midway (<1ms), EM can be made inactive, at which point the laser outputs 0~100mW (depending on power, mode, and simmer settings). After each processing is completed, the EM and EE signals can be turned off, and the laser will have no laser leakage output.

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The PRR signal has a minimum frequency of 1kHz and a maximum frequency corresponding to the maximum frequency of the pulse width. When PRR is below this frequency, the laser automatically outputs at 1kHz. When it is above the maximum frequency of the pulse width, it automatically outputs at the maximum frequency.

In the power latch mode, when changes occur at Pins 1-8 and a rising edge appears at Pin 9, the laser's output power will change within 10 to 300 microseconds. The values at Pins 1-8, ranging from 0 to 255, correspond to an output power range of 0% to 100%. In the power tracking mode, when changes occur at Pins 1-8 (with Pin 9 being ignored), the laser's output power will also change within 10 to 300 microseconds.

Table 4 Laser status output table

The status of Pin11, Pin16, and Pin21 is as follows:			
Pin11	Pin16	Pin21	Status introduction
LOW	LOW	LOW	Temperature alarm, laser temperature exceeds operating range.
HIGH	LOW	LOW	Power supply abnormality
LOW	LOW	HIGH	Normal operation
HIGH	LOW	HIGH	Laser self-checking in progress, not ready
LOW	HIGH	LOW	Anti-laser alarm
HIGH	HIGH	LOW	Reserved
LOW	HIGH	HIGH	System failure
HIGH	HIGH	HIGH	Reserved

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Chapter 4 Software Instructions

1. Installation of USB serial port driver

- 1) Run PL2303_Prolific_DriverInstaller_v1.12.0.exe;
- 2) Install by default.

As shown below:

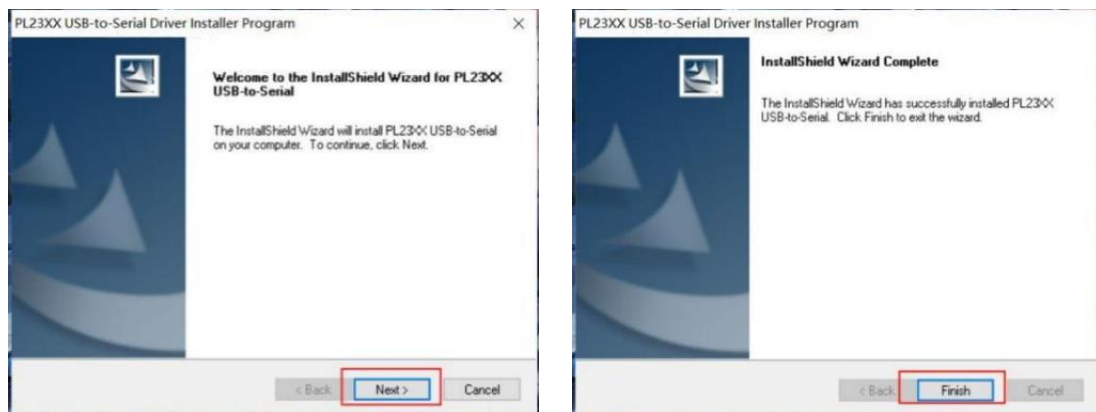


Figure 2 USB to RS232 driver installation

After the installation is complete, use a serial port cable to connect the computer and the laser, and check the serial number. Open the Device Manager, as shown below:



Figure 3 Inquiry of serial port number

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2. GUI interface

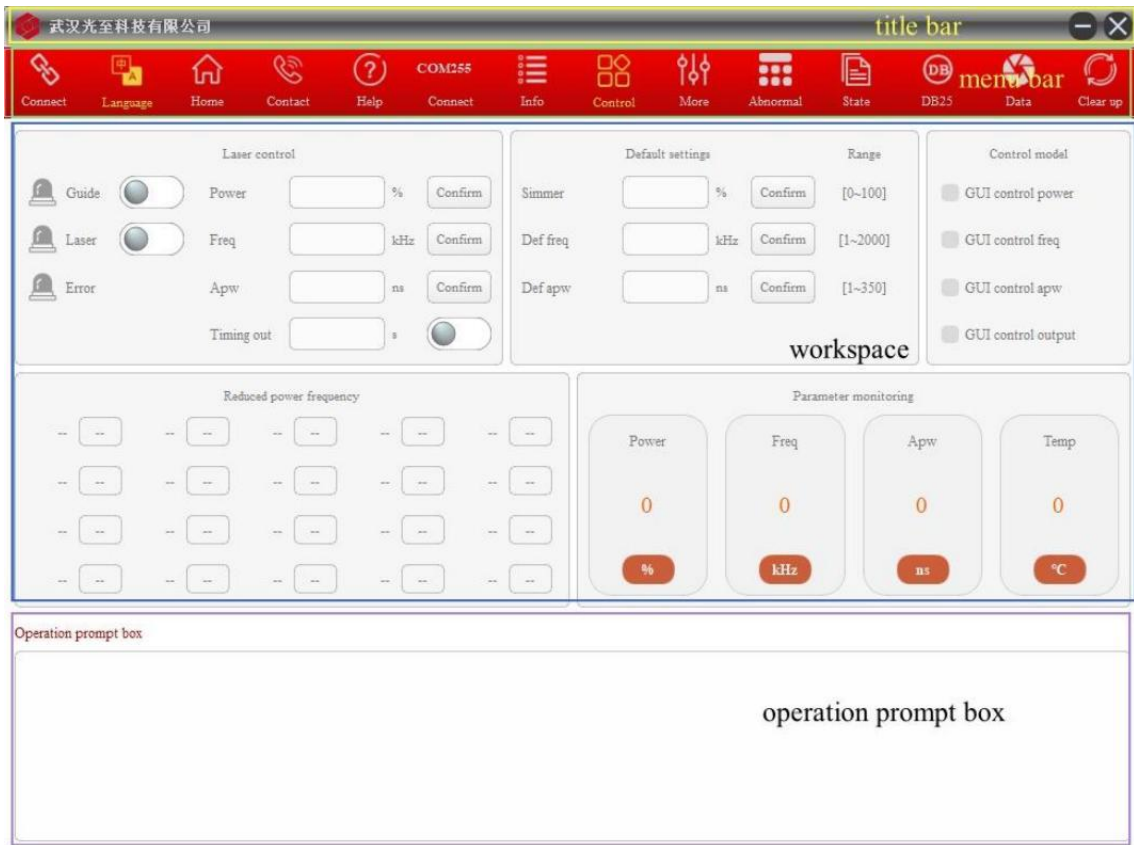


Figure 4 GUI interface

The GUI interface consists of a title bar, menu bar, workspace, and an operation prompt box.

2.1. Title bar

The title bar is located at the very top of the GUI interface.

It includes: 1) Left: the company's LOGO and company name; 2) Right: minimize and close buttons.

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2.2. Menu bar

The menu bar is situated below the title bar.

It includes the following options: 1) Connect; 2) Language; 3) Home; 4) Contact; 5) Help; 6) Manual Connect; 7) Information; 8) Control; 9) More; 10) Abnormal; 11) State; 12) DB25; 13) Data; 14) Clear up.

2.3. Workspace

The workspace is located below the menu bar.

Among the options in the menu bar, Information, Control, More, Abnormal, State, DB25, and Data each have corresponding workspace. The remaining options do not have dedicated workspaces. By default, when the GUI is opened, the basic control workspace is displayed.

2.4. Operation prompt box

The operation prompt box is located below the workspace, displaying a timeline and readback information.

2.5. Menu bar function

- 1) **Connect:** After powering on the laser and connecting it to the control computer via a serial port cable, click the “Auto Connect” button. The system will automatically iterate through available serial ports until a successful connection is established, or if all ports have been iterated without a successful connection, a pop-up box will appear indicating the failure.
- 2) **Language:** Switch between Chinese and English language interfaces.
- 3) **Home, Contact, Help:** Options to navigate to the official website, contact, or help. Clicking these will open the corresponding interface links.

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- 4) **Manual Connect:** After powering on the laser and connecting it to the control computer via a serial port cable, select the appropriate COM port and click the “Manual Connect” button to directly establish a connection.
- 5) **Information:** Upon clicking, the workspace will display basic information, including the laser’s PN, the laser’s SN, software version, hardware version, and GUI version.
- 6) **Control:** Upon clicking, the workspace will display basic control information.
- 7) **More:** Upon clicking, the workspace will display advanced control modes.
- 8) **Abnormal:** Upon clicking, the workspace will display up to 20 sets of recorded information during abnormal alarms, including control status, PD average value, PD peak value, PD flag bits, frequency, pulse width, etc.
- 9) **State:** Upon clicking, the workspace will display status monitoring information.
- 10) **DB25:** Upon clicking, the workspace will display the status information of each pin on the DB25 connector.
- 11) **Data:** Upon clicking, the workspace will display advanced control information, which requires a password for access.
- 12) **Clear up:** Upon clicking, this function will clear errors or mask error operations and restart the laser.

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3. GUI software connection

Double-click to open the “GZTECH MOPA Laser Control Software V4.0.2” (Software upgrades will not be notified separately. Please check the company’s website for downloads.). Click the “Connect” button (either “Auto Connect” or “Manual Connect” as shown in Figure 4) to initiate the laser connection. A progress bar will appear; simply wait for it to complete. Once done, the operation prompt box in Figure 4 will display “Connection Successful !” The COM port dropdown menu on the “Manual Connect” button will show the currently connected serial port. The two connection buttons can be toggled on and off mutually. The “Auto Connect” process will display a progress bar, while the “Manual Connect” will show a pop-up notification indicating success or failure.

If the laser feedback indicates a connection failure, the possible reasons are as follows:

- 1) The serial port driver was not installed successfully.
- 2) The laser is not powered on.
- 3) The serial port cable is not connected to the laser.
- 4) The serial port cable is being occupied by other software.
- 5) Connecting to the laser within 30 seconds after it is powered on may result in a connection failure. It is recommended to wait for 30 seconds after powering on the laser before attempting to connect.
- 6) The serial port is unresponsive (frozen). Reinsert the serial port or restart the computer.
- 7) When connecting the computer to the serial port, there is a chance that the Device Manager will not refresh the serial port status, indicating that the serial port is unresponsive (frozen). If reinserting the cable still does not refresh the status, it is recommended to restart the computer.

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4. GUI mode selection

The laser mode can be controlled via either DB25 or GUI (DB9). It is possible to have some parts controlled via DB9, while others are controlled via DB25. The interface is shown in Figure 5 below.

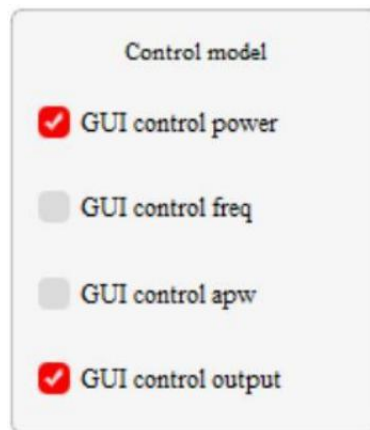


Figure 5 Control mode

- 1) Only after selecting the mode control can the GUI modify parameters such as power, frequency, pulse width, and control the laser on/off function.
- 2) The laser is factory-set to control pulse width, power, frequency, and laser on/off function via DB25, meaning none of the above options are selected by default.
- 3) The default pulse width, default frequency, and simmer settings of the laser take effect immediately after modification, regardless of the control mode.
- 4) The laser is set to DB25 control by default. Selecting the GUI option only ensures control during the current session. If GUI control of a parameter needs to be maintained after shutdown, it becomes effective after selecting “More”→ “Interface Mode Selection” → “Custom Mode”.
- 5) GUI control of pulse width refers to whether the laser pulse width setting is configured via DB25 or GUI; selecting it means GUI control, otherwise, it is DB25 control.

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- 6) GUI control of power refers to whether the laser power setting is configured via DB25 or GUI; selecting it means GUI control, otherwise, it is DB25 control. Under DB25 control, the EZCAD software can optimize power linearity. Please refer to the control card manual for details.
- 7) GUI control of frequency refers to whether the laser frequency setting is configured via DB25 or GUI; selecting it means GUI control, otherwise, it is DB25 control. Under DB25 control, the EZCAD software imposes range limitations. Please refer to the control card manual for details.
- 8) GUI control of laser on/off function refers to whether the laser output setting is configured via DB25 or GUI; selecting it means GUI control, otherwise, it is DB25 control.

5. Operation and feedback

After the laser is connected and powered on, a dialog box displaying the connection progress will pop up. Once the connection is complete, all operations performed on the laser will be displayed in the “Operation Prompt” section, and the laser will provide feedback in the “Operation Prompt” to indicate whether the operation was executed correctly. Please refer to the prompt information after setting parameters to ensure that the laser executes the operations correctly!

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Chapter 5 Product Usage

1. Laser startup procedure

- 1) Check whether the appearance of the laser is abnormal, whether the shell is concave, and whether the output armor cable is bent, detached or damaged;
- 2) Secure the laser and install the external optical path, ensuring that there are no obstructions in the entire optical path.
- 3) Check the cleanliness of the laser's window, beam expander, and mirrors in the external optical path.
- 4) Connect the water inlet and outlet of the laser to the water tank, and set the water tank to operate at the specified cooling temperature and flow rate.
- 5) Connect the signal cables (DB9, DB25, aviation connector cable) between the device and the laser, and check if they are securely locked in place;
- 6) Install the serial port assistant software and the laser GUI software, then connect to the serial port;
- 7) Connect the laser to a 24V/48V switched-mode power supply and power it on.

Note: Refer to the power interface definitions and product specifications. Incorrect power connection methods may cause damage to the laser.

- 8) Wait until the laser's self-check progress reaches 100%. The normal self-check time is approximately 20 seconds, and the warm-up time is about 3 minutes;
- 9) After the device is turned on, check the laser's status. Taking a marking machine as an example;

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- 10) Once the marking machine starts up normally, for the initial test of the laser, first set the marking machine's power to 0%. Then, draw a simple pattern in the marking machine software and drive the laser to mark. If the laser output is normal, stop marking. Increase the marking power in the marking machine software settings and drive the laser to mark again. Repeat this process. Under normal laser operation, observe that the corresponding laser output becomes stronger, and the marking effect also improves. Otherwise, shut down the system for inspection and only proceed with subsequent operations after it is confirmed to be normal;
- 11) Set the laser parameters or control mode through the GUI according to your requirements.

2. Precautions

- 1) Wear laser safety glasses during operation.
- 2) Before shutting down, stop the laser operation first, then cut off the power, and finally turn off the cooling water tank.
- 3) In case of any uncontrollable and dangerous situation, you can directly unplug the power plug to forcibly cut off the power.

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Chapter 6 Serial Port Command Instructions

1. Interface definitions

The DB9 interface definitions are shown in the table below.

The RS232 interface type is DB9 male connector. The specific pin definitions are as outlined in the following table. When connecting to a computer, a crossover cable is required.

Table 5 DB9 interface definitions

Pin	Definition	I/O Characteristic	Electrostatic Discharge (ESD) Protection Level
1,4,6-9	No connection	--	--
2	RXD	Input	3B
3	TXD	Output	3B
5	GND	--	--

2. Serial communication settings

Baud Rate: 115200

Data Bits: 8 bits

Stop Bits: 1 bit

Parity Bits: None

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3. Character stream protocol

Table 6 Protocol format

Command (in lowercase)	Space	Parameter	New line
'string'	' '	'xxx'	'\n'

Example: To set the repetition rate to 100kHz; send: 'freq100\n';

The laser will return 'freq:100(kHz)\n' within 50ms;

If 'Input instruction error:100\n' is received, it indicates a setting error.

4. Laser parameter list

Table 7 Laser command parameter table

Command	Parameter	Remarks	Data type
freq	Sets PRR (Pulse Repetition Rate), only valid when PRR control is set to serial port.	kHz	int
apw	Sets pulse width, only valid when pulse width control is set to serial port.	ns	int
pws	Sets pulse width control 0 – DB25 control 1 – Serial port control	--	int
gtps	Sets frequency 0 – DB25 control 1 – Serial port control	--	int
pp	Sets power percentage, only valid when power control is set to serial port.	Percentage 0~100	int

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out	Sets laser output, only valid when laser output control is set to serial port. 0 – Turn off output 1 – Turn on output	--	int
outputsw	Sets output control 0 – DB25 control 1 – Serial port control	--	int
powersw	Sets power percentage control 0 – DB25 control 1 – DB9 control	--	int
guide	Sets red light 0 – Turn off output 1 – Turn on output	--	int
cnmode	0 – Normal mode: After power-off, PRR, pulse width, power percentage, and output control modes switch to DB25 control; 1 – Custom mode: PRR, pulse width, power percentage, and output control modes can be saved.	Not lost after power-off	int
getstatus	0 – Reads current real-time frequency, pulse width, and power		int
modbus	0 – Lost after power-off, character stream protocol; 1 – Lost after power-off, modbus protocol; 207 – Not lost after power-off, character stream protocol; 208 – Not lost after power-off, modbus protocol.		

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5. Operation procedure

- 1) Send pre-control commands: “print0\n”, ”uartfeedback0\n”
- 2) Wait for self-check to complete; approximately 18 seconds.
- 3) Control the pulse repetition rate (PRR) via the serial port by sending the command “gtpsw1\n”, then set the PRR, for example, “freq100\n” (set PRR to 100kHz).
- 4) Control the pulse width via the serial port by sending the command “pwswh1\n”, then set the pulse width, for example, “apw100\n” (set pulse width to 100ns).
- 5) Control the power percentage via the serial port by sending the command “powerswh1\n”, then set the power percentage, for example, “pp10\n” (set power to 10%).
- 6) Control the laser output via the serial port by sending the command “outputsw1\n”, then turn on the output, for example, “out1\n” (turn on laser output).
- 7) After power-off, the following four controls will automatically switch to DB25 control. (If you need to save the control state, please send the command “cnmodel\n”).

Note: We can also set the serial communication to control the laser parameters through MODBUS protocol. Please contact us if you need.

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Chapter 7 Troubleshooting Guide for Common Product Issues

1. Common product issues and solutions

Table 8 Troubleshooting table for common issues

Issue No.	Issue Description	Solutions
1	The indicator light does not turn on after the laser is powered on.	1) Check if the power connection is normal; 2) Replace the power supply.
2	Abnormal noise from the laser	1) Check for foreign objects on the rear cover of the laser; 2) Check if the abnormal noise is due to improper installation of the laser.
3	No laser emitting	1) Please ensure that the laser has completed the warm-up process and that the optical path is unobstructed. 2) Please verify that the hardware connections are properly made, including the DB9 or DB25 connectors. 3) Please confirm that the input voltage is normal and that the water cooling system is correctly connected. 4) Please ensure that the software settings are correct. For the marking machine, select “Fiber” as the type, and choose either “IPG_YLPM” (EZCAD2) or “GZ-YFPN” (EZCAD3). 5) Check if the software is generating any alarm messages. Please connect to our company’s “GUI” software to control the laser emission. If the laser device does not emit laser, an alarm message will be displayed.

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4	Low laser power	1) Check if the laser parameters are set correctly; 2) Check if the power meter is functioning properly for testing; 3) Check if the laser output head is contaminated. Use our company's "GUI" software to control the laser emission and test its power output.
5	Abnormal laser spot	1) Observe if the lens on the output head of the laser is clean and undamaged while the laser is powered off; 2) Check if the lenses on the marking machine are normal.
6	Reduced marking capability	1) Check if the laser parameters are appropriate; 2) Check the status of the marking machine table, adjust the lifting rod, check if the laser spot is blocked, if the output spot is circular, and if the galvanometer and field lens are contaminated; 3) Check if the output power of the laser is normal.
7	Laser parameters not adjustable	1) Check if this model is an adjustable parameter model. Control it using our company's GUI software; if control is possible, please check if the DB25 cable is functioning properly. 2) Check if the DB25 cable is normal and replace it if necessary. If the above methods do not resolve the issue, please contact our company's technical personnel.

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8	No “Pulse width” adjustment option in the marking machine software	1) Please select the correct control method, choose “Fiber”, “IPG_YLPM” (EZCAD2) or “GZ-YFPN” (EZCAD3). 2) Please confirm that this model is an adjustable model.
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If the above solutions do not resolve the issue, please contact our company’s after-sales personnel.

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Chapter 8 Warranty Statement

Damage to personnel or equipment caused by failure to operate in accordance with this manual is not covered by the warranty;

Users are prohibited from disassembling or assembling the equipment by themselves, and repairs must be carried out by authorized technicians from GZTECH.

Do not open the laser. If you encounter any malfunctions or have questions, please contact Wuhan Guangzhi Technology Co., Ltd. If the label is torn off or damaged, the company will not provide a warranty.

Warranty Terms for Fiber Laser Products: The free warranty period for fiber lasers starts from the date of the sales contract and varies from 24 months to 36 months depending on the model, with the specific period subject to the contract agreement;

Warranty Terms for Solid-State Laser Products: The free warranty period for solid-state lasers starts from the date of the sales contract and is 18 months, with the specific period subject to the contract agreement. For wear-and-tear components exposed to the user's operating environment, including beam expanders and window mirrors, the warranty period is 6 months.

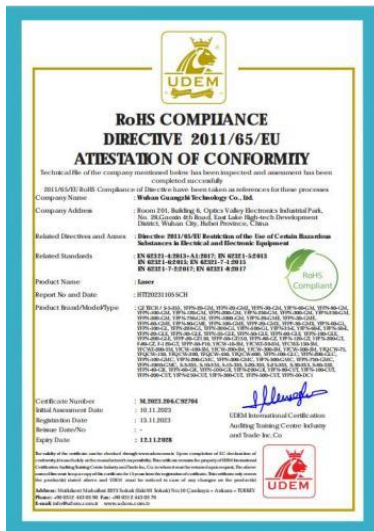
Extended Warranty Service: After the laser warranty expires, to ensure post-sales service quality, customers can purchase extended warranty services. For specific pricing, please consult the business department.

Remote Service: For laser malfunction issues, please call our after-sales service hotline tel: 400-863-9698. We promise to respond within 24 hours.

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Certificates

RoHS Certification



FCC Certification



FDA Certification



CE Certification



For more detailed certification source documents,
please visit GZTECH official website: <https://en.gzlasertech.com/>

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