Fiber Laser Operating Software

User Manual

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Content

1. Introduction 1
2. Software Installation 1
3. Software Operation 2
3.1. Home Screen 2
3.2. Service Diagnostic Screen 4
3.3. Password Expiration Reminder 7
3.4. PD alarm locker and reminder 7
3.5. Output Power Curve Setting 8
4. Precautions 10
4.1. Software Version Compatibility 10
4.2. PC Protection System Defense 11

Figures Reference

Figure 1 Operating software installation program 1
Figure 2 Software installation guidance 2
Figure 3 Operating software icon 2
Figure 4 laser RS232 is not well connected. 2
Figure 5 Home screen 3
Figure 6 Alarm message 4
Figure 7 Service diagnostic screen 4
Figure 8 Changing the fault output signal 5
Figure 9 Red light control mode 6
Figure 10 Drop-down list of red light control 6
Figure 11 Changing red light control mode 7
Figure 12 Password input dialog 7
Figure 13 PD alarm locking dialog 8
Figure 14 Curve 0 8
Figure 15 Curve 1 9
Figure 16 User-defined curve 9
Figure 17 Selecting the user-defined curve 10
Figure 18 Running the user-defined curve 10
Figure 19 Incompatible software reminder 11
Figure 20 Protection system defense dialog 11
Figure 21 Windows defender to allow the software running 12

1. Introduction

BWT fiber laser operating software can read the laser status (like laser beam outputting, alarm, etc) as well as laser information including SN, product ID, set power, frequency, duty cycle, etc. The alarm message also can be checked through the software when there is some alarm. The power curve setting function provides reference curves that operator can select to use. Also the operator can define new curve according to the specific application. The service diagnostics screen helps troubleshooting.

This manual can be used for single module fiber laser with model code of BFL-CW-XX or BDL-CW-XX.

2. Software Installation

This section describes the installation of operating software (Win 10, 64 bit system as an example). The latest version software can be downloaded through official source.

Download the “BWT laser” program on the PC, right click and select “operating as administrator”, as Figure 1. Select the folder that you want to install the software to and follow the guide to complete the installation, and then reboot the PC.



Figure 1 Operating software installation program



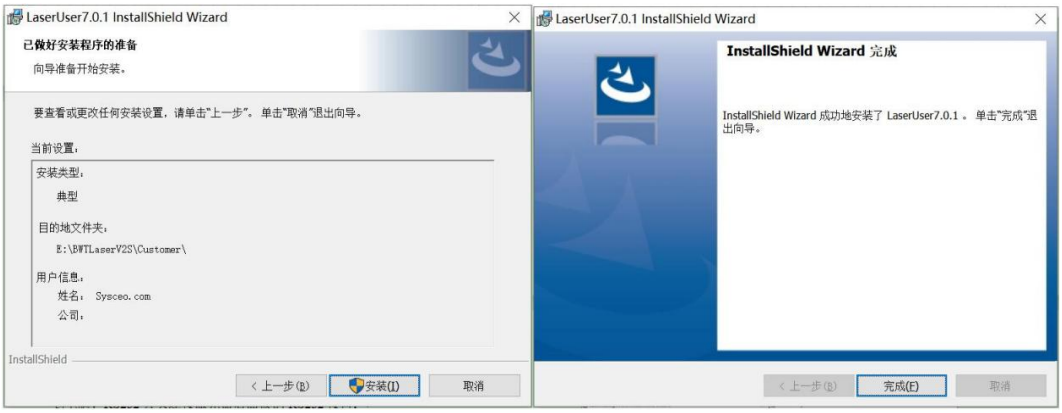


Figure 2 Software installation guidance

Find the USB to RS232 male wire and connected the PC with USB while RS232 to laser.

Power on the laser, and double click the “LaserUser.exe” in the installation folder selected.



Figure 3 Operating software icon

If the dialog in Figure 4 pops up, it means the PC cannot find the right serial port or the laser is not powered on. Please close this dialog, and check the serial port connection and laser power, and then re-start the software.



Figure 4 laser RS232 is not well connected.

3. Software Operation

3.1. Home Screen

After starting the software, the home screen displays as in Figure 5.

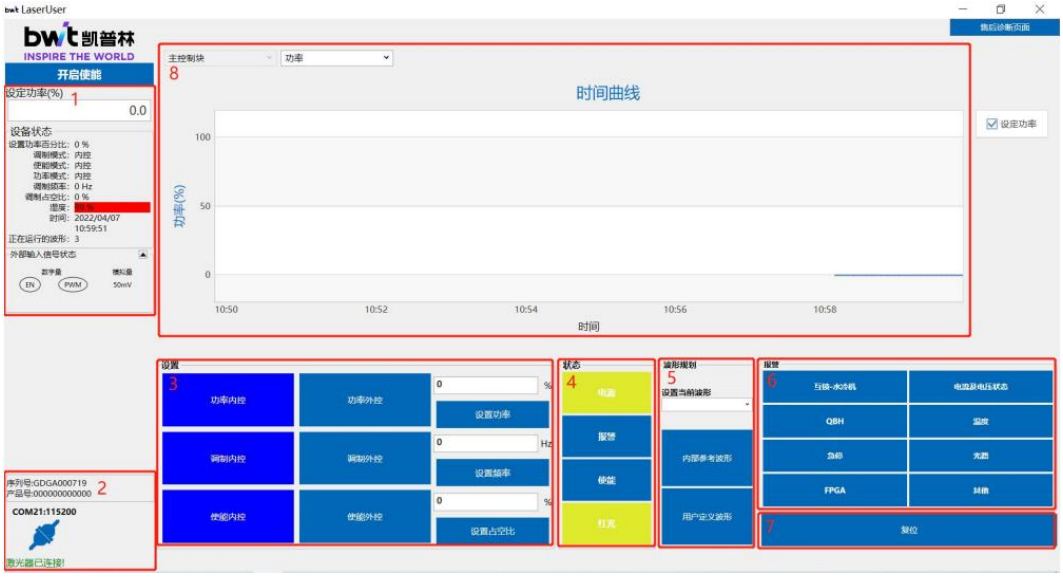


Figure 5 Home screen

1) Frame 1: enable button as well as device status including set power percentage, modulation, enable mode, power mode, frequency, duty cycle, humidity, time, running no. and extra input signal status.

2) Frame 2: click the blue serial port icon to connect or disconnect the laser and show the product ID, SN, serial port number and baud rate.

3) Frame 3: Setting, including modulate external and internal control, enable external and internal control, power external and internal control, and set power (%), set frequency (Hz), set duty cycle (%). Set the power, frequency and duty cycle under internal control mode.

Note: the parameters should be setting again after laser rebooting.

4) Frame 4. Status, displaying the status of power supply, warning, enable and red light. When there is an alarm, the alarm indicator lights up. It is red for alarm (cannot enable laser under alarm status) and yellow for warning. As in Figure 5, enable the laser output when the power supply and red light are ready, and then the red light button change back to blue, and the enable button becomes yellow.

5) Frame 5: power curve setting, which controls the output power through adjusting the analog signal. The client can select the power curve based on the application. More information please refer to *3.5 Power Curve Setting*.

6) Frame 6: alarms, showing the alarm status of interlock-water cooling, QBH, emergency stop, voltage & current status, optical path, temperature, etc. Click each button will pop up the

detailed alarm message, as in Figure 6. Check the user manual for solution.



Figure 6 Alarm message

7) Frame 7: Reset button. It can reset the 2nd level alarm.

8) Frame 8: Curve of power or temperature. It can select power or temperature to display. When selecting temperature, different modules can be selected to show the temperature curve.

3.2. Service Diagnostic Screen

The operator can modify fault output signal status. Click the checkbox in Figure 7, and then the dialog box pops up as in Figure 8. Click the enter or cancel button to save the change or not.

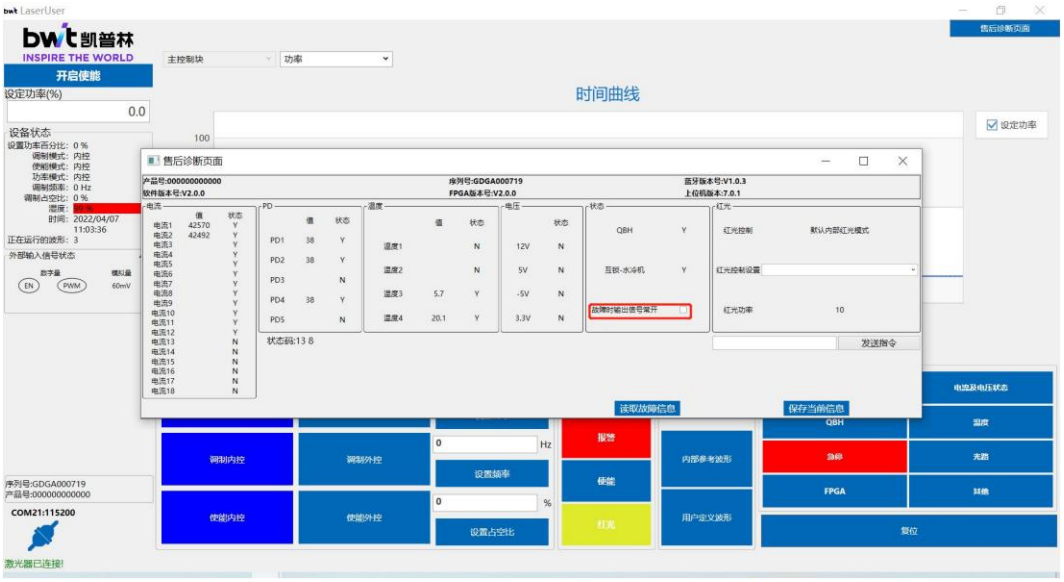


Figure 7 Service diagnostic screen

If the checkbox is clicked, when the laser has some fault, the “Fault+” and “Fault-” of external control cable is open. They are closed when the laser works normally. If the checkbox is

not clicked, the status of “Fault+” and “Fault-” is opposite.

	Laser works normally	Laser is in fault status
Checkbox is clicked	Closed between “fault+” and “fault-”	Open between “fault+” and “fault-”
Checkbox is not clicked	Open between “fault+” and “fault-”	Closed between “fault+” and “fault-”



Figure 8 Changing the fault output signal

The operator can also change the control mode of red light through click the drop-down list in Figure 9. The red light options are shown in Figure 10. Click one of the options, and dialog box in Figure 11 pops up. Click the enter or cancel to save the change or not.

1) When selecting the “default red light mode”, the red light and laser beam cannot output simultaneously. When the key position is “ON”, the laser outputs red light. when enabling the laser, the red light is off.

2) When selecting the “external signal higher than red light mode”, add high level (18-24VDC) on “red light control+” and “red light control-” to control red light output signal. When the laser beam is output, the red light signal will not be off.

3) When selecting the “external signal lower than red light mode”, add low level (<5VDC) on “red light control+” and “red light control-” to control red light output signal. When the laser beam is output, the red light signal will not be off.

Note: when selecting red light control through external signal, laser beam output will accelerate the aging of red LD.

	Red light output	Red light status when outputting laser beam
Default red light mode	Key position is “ON”	Off
External signal higher than red light mode	High level (18-24VDC) on “red light+” and “red light-” of external control cable	ON
External signal lower than red light mode	low level (<5VDC) on “red light+” and “red light-” of external control cable	ON

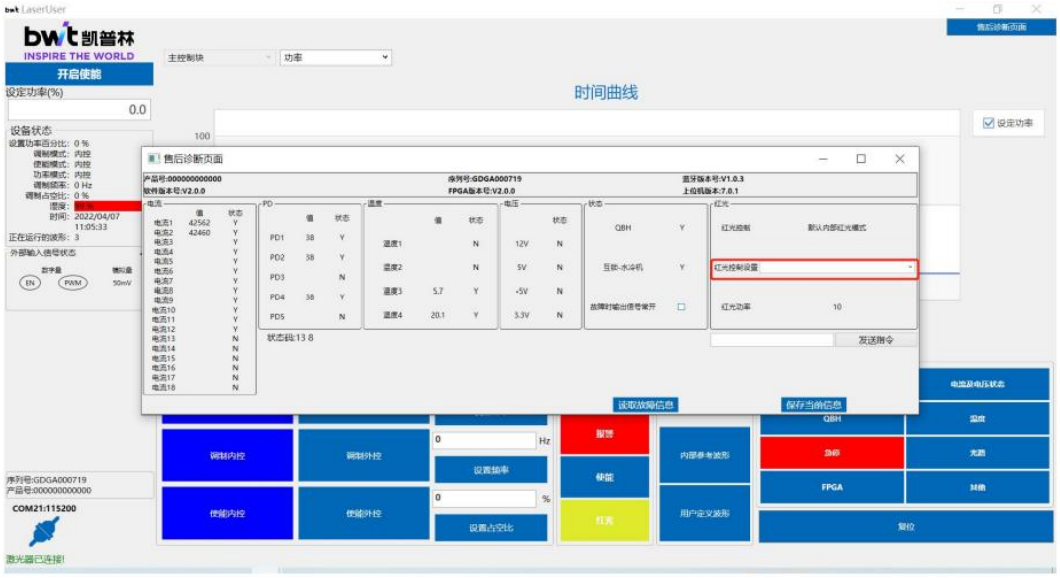


Figure 9 Red light control mode



Figure 10 Drop-down list of red light control



Figure 11 Changing red light control mode

3.3. Password Expiration Reminder

There is a password expiration reminder in frame to show the operator remaining days to use the laser. The operator can click the remaining days and input the password in pop-up dialog for continuously using the laser, as in Figure 12.



Figure 12 Password input dialog

If you need a new password, please contact BWT representative and provide the absolute date and product SN. BWT representative will then provide the password, which the operator can use to unlock this time locker.

3.4. PD alarm locker and reminder

When PD alarm occurs continuously for times over the setting, the optical path locking

reminding box pops up, as in Figure 13. Please contact BWT representative to check the status of laser and solve it.

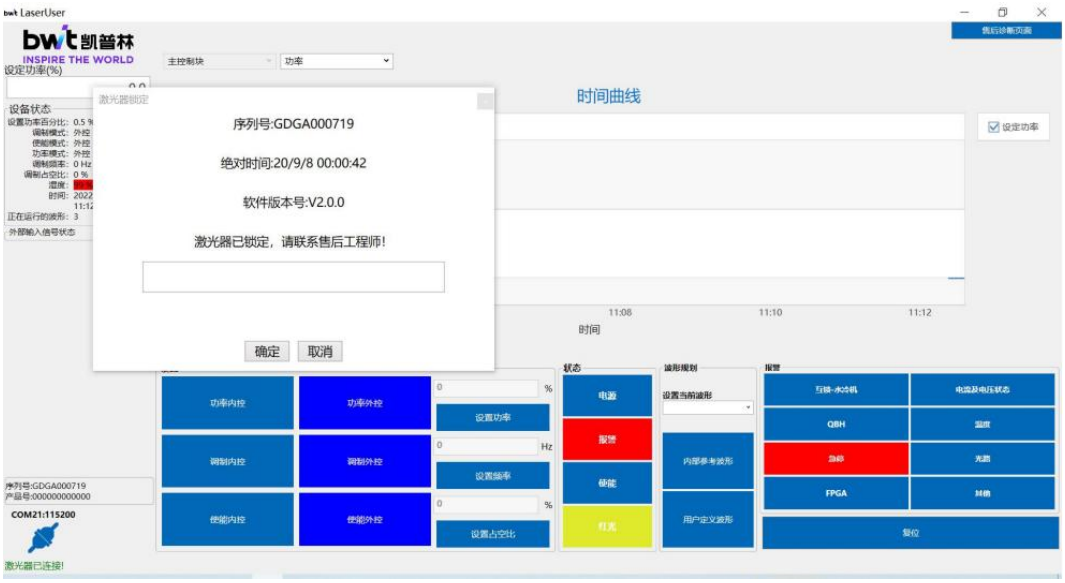


Figure 13 PD alarm locking dialog

3.5. Output Power Curve Setting

1) Reference Curve

The operator can select the reference curves in terms of the application. Click the “reference curve”, the operator can select the number to see the curve, select the curve you want and click “save and run”, as in Figure 14. The laser beam enable is controlled by the curve selected. When the curve laser output completes, the power will be keeping the same as the last point of the curve. Note: After laser is reboot, enable is controlled by the curve selected before.

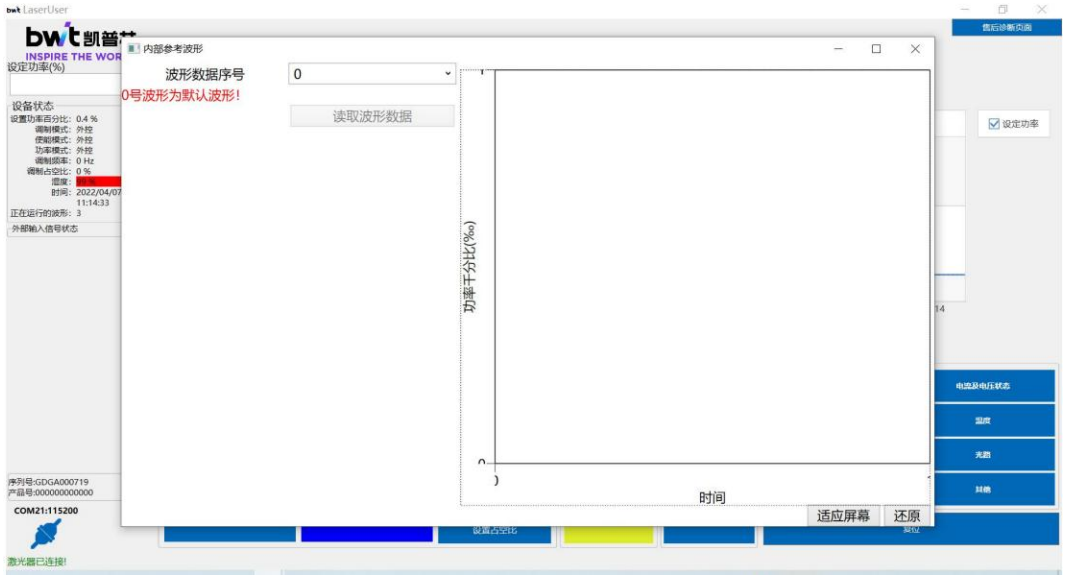


Figure 14 Curve 0

Two types of reference curve are introduced here

① Curve 0: it is the default curve, and the enable is controlled by the external PWM signal, as Figure 14.

② Curve 1: it is for drilling application. After enabling the laser, the laser output power starts from 1065‰ of the set power and decrease slowly to 1000‰ within 50ms. Then the output power keeps the 1000‰ of set power. See Figure 15.

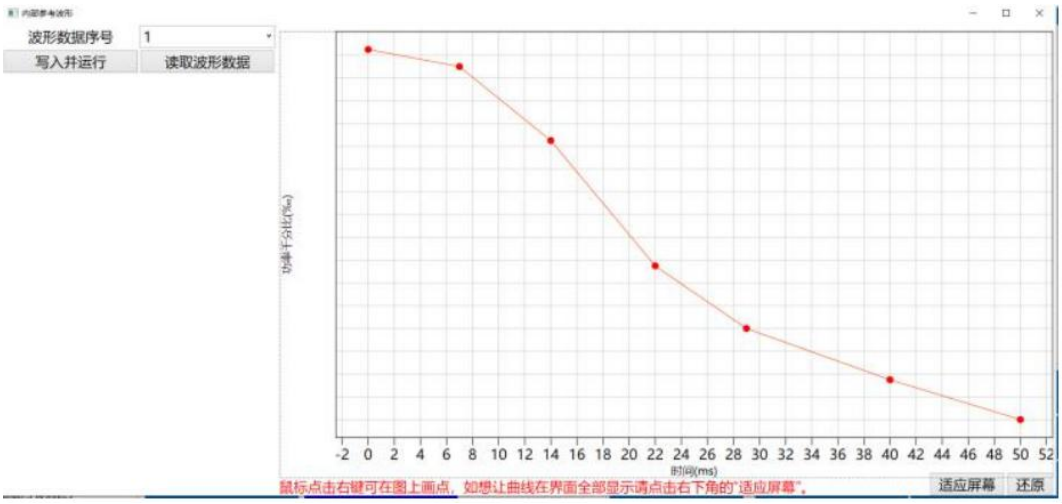


Figure 15 Curve 1

2) User-defined curve

Click the "User-defined curve", and the screen in Figure 16 is shown. The operator can define the curve according the specific requirements and then save it. The curve run will not be changed after the laser is rebooted.

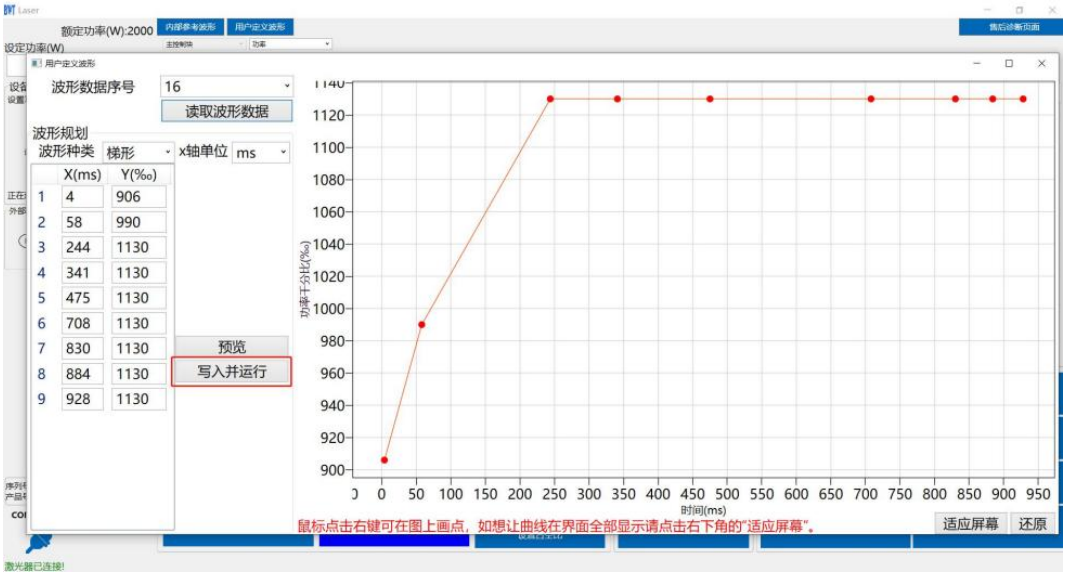


Figure 16 User-defined curve

Method to define the curve: horizontal axis is time, and vertical axis is output power percentage. The user can move the power-time points in the coordinates. When all the points have been set, click “read-in”, and then select this curve in the “set current curve” drop-down menu, as in Figure 17. Enable the laser and then run this user-defined curve, as in Figure 18.



Figure 17 Selecting the user-defined curve

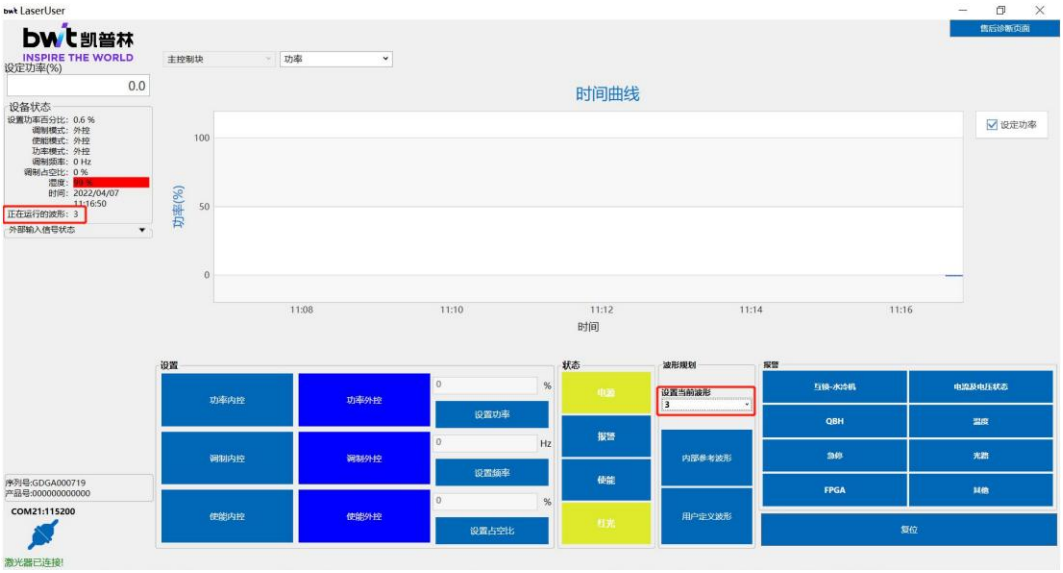


Figure 18 Running the user-defined curve

4. Precautions

4.1. Software Version Compatibility

If the dialog in Figure 19 pops up when the operator connects PC to laser for the first time after software installation, please contact BWT representative to ask for compatible PC software with your laser.

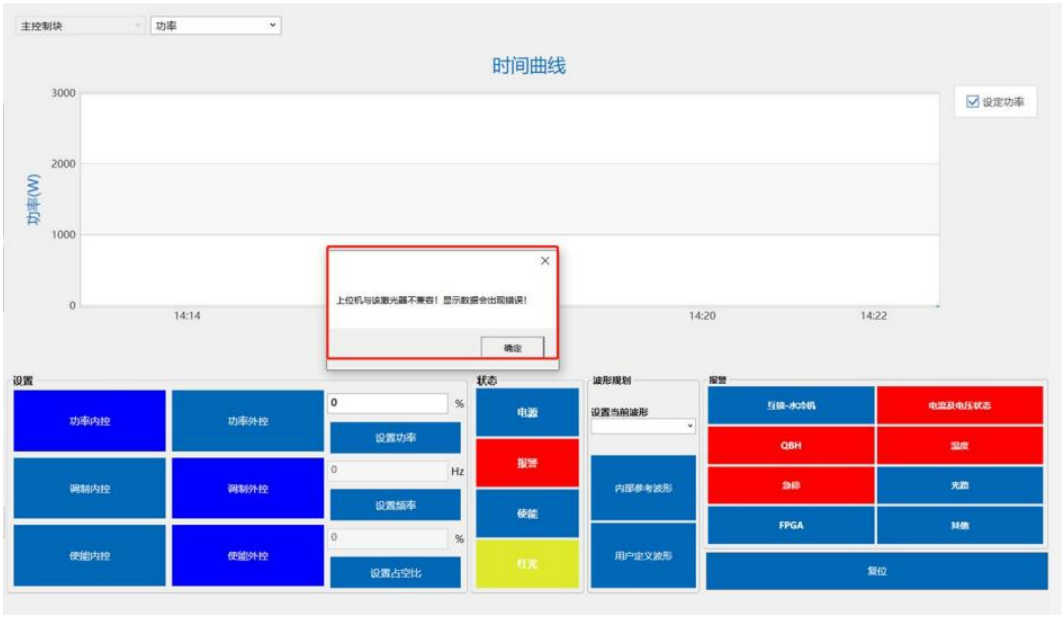


Figure 19 Incompatible software reminder

4.2. PC Protection System Defense

If the dialog in Figure 20 pops up during laser software installation or running, please open the PC protection system and allow the laser software running on PC, as shown in Figure 21 (Windows defender as an example). User data will not be acquired during the software installation and running.

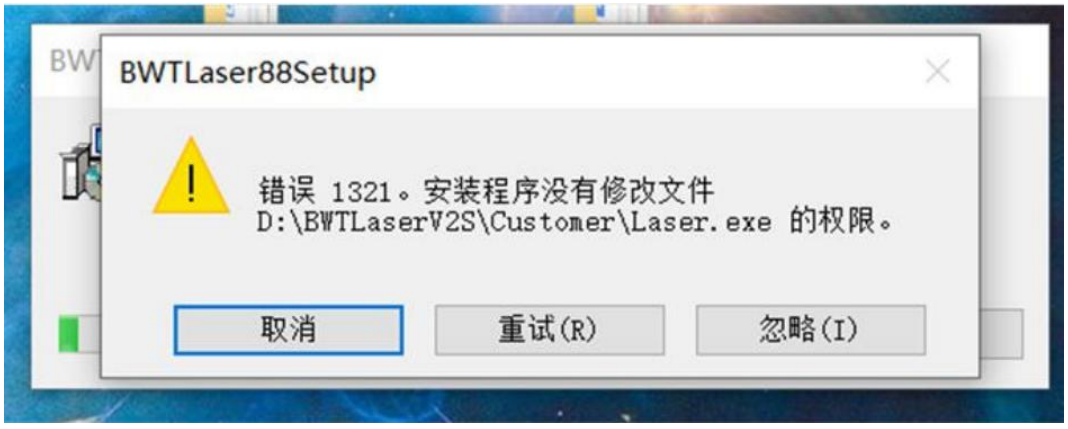


Figure 20 Protection system defense dialog



Figure 21 Windows defender to allow the software running

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