RAYTOOLS

VBA (Visual Beam Align) Module--WIFI Edition

User Manual

Document History

Edit date	Version	Topic, revision, action taken
2026/2/3	V1.0	First edition

Thank you for choosing our product!

This manual describes the installation and commissioning of VBA (Visual Beam Align) Module--WIFI Edition in details so that you can use this product quickly. You can consult us directly for more details.

Due to the continuous updating of product functions, the product you receive may differ from the introduction in this manual in some aspects.

If you find any errors in this document, please inform us as soon as possible. The data contained in this manual is only used to describe the product and shall not be regarded as a statement of security interest.

For the benefit of our customers, we will constantly try to ensure that the products we develop comply with the latest technology.

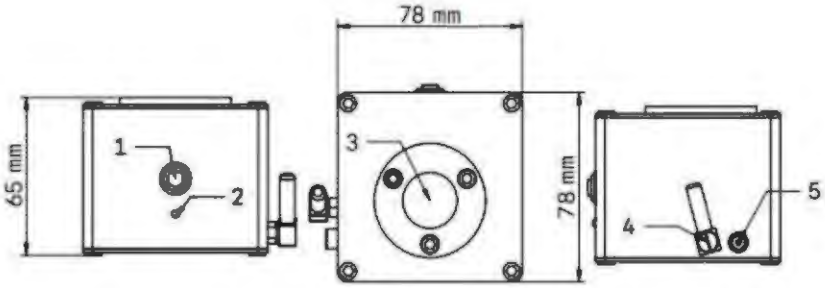
Raytools AG

Email: sales@raytools.com
Website: www.raytools.ch

Contents

1 Product Summary

1.1 View



1. Switch Button	2. Power LED	3. Cover Glass
4. WIFI Antenna	5. Power Input DC 5.5-12V	

1.2 Technical Datasheet

Common coaxial calibration is mainly performed by manual operation and operator experience, typically requiring 3–5 minutes. And human error may cause poor cutting quality, inconsistent cutting edges, and slags at the part bottom, etc.

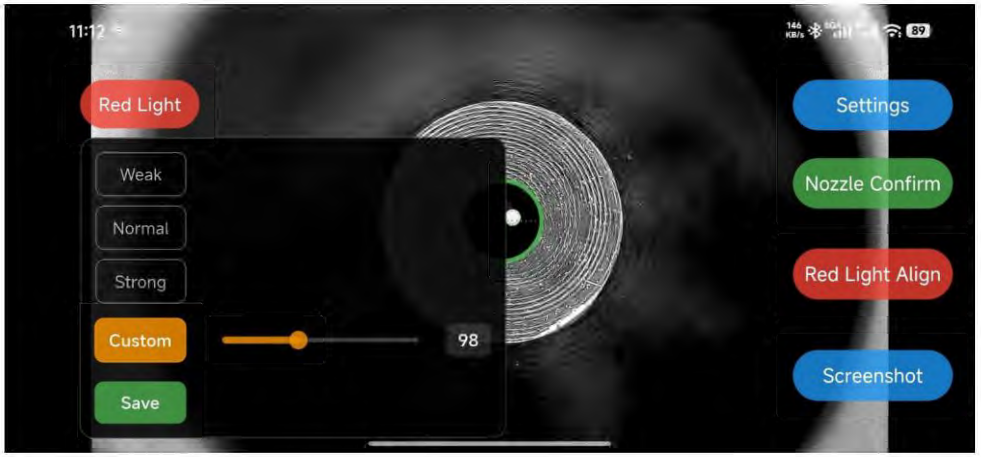
VBA (Visual Beam Align) Module--WIFI Edition utilizes AI-based vision technology combined with a high-precision circle fitting algorithm to improve calibration accuracy and efficiency.

Product Size	78mm×78mm×65mm
Product Weight	0.3kg
Calibration Method	Identify red light
Calibration Accuracy	<0.08 mm
Power Supply	Built-in lithium battery/12V Power supply
Connection Method	WiFi
C.G Specifications	ϕ25mm×1mm
Application	Various laser cutting/processing equipment
Industry APP	Android/iOS

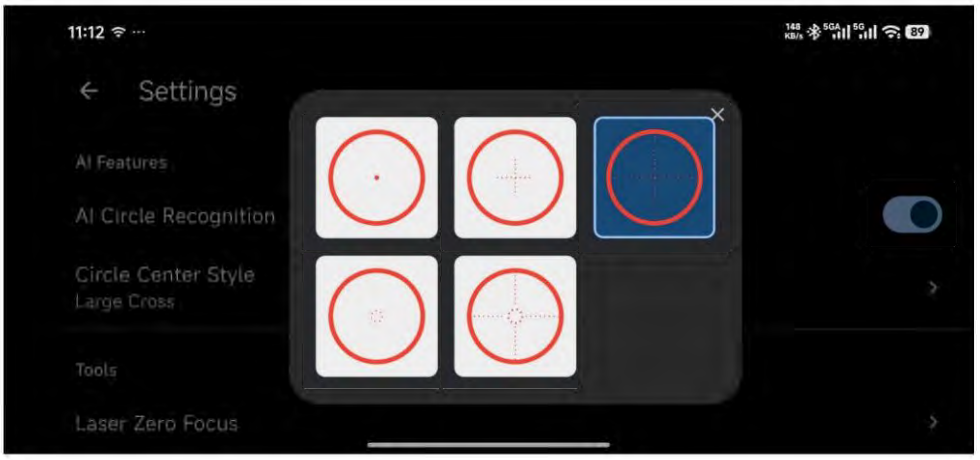
Note: If the battery-free version is selected, a 5V to 12V DC step-up cable (5.5mm) will be supplied, connecting to a power bank or a USB port to power up.

1.3 Function

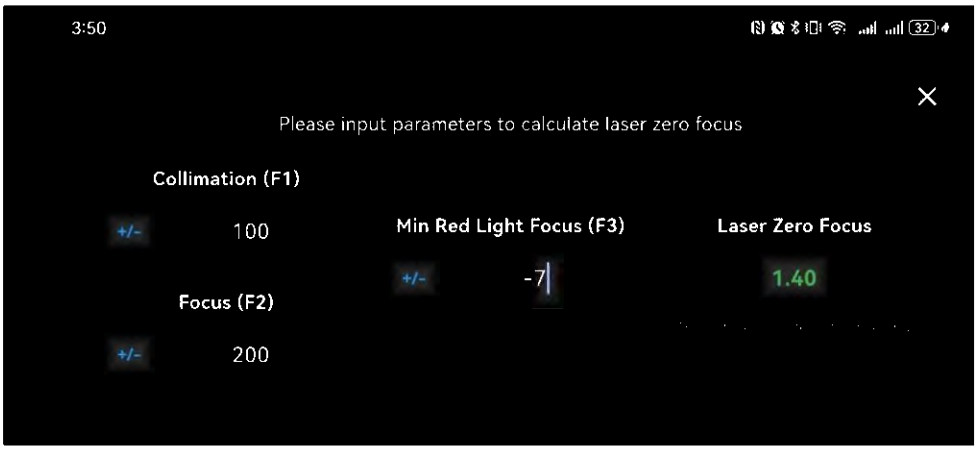
- Nozzle Confirm: The trained AI model auto identifies the nozzle center. After recognition, the image can be zoomed in or out for inspection.
- Red Light Align: Once the center is identified and marked, the red beam can be manually adjusted to align with the marked center.
- Screenshot: Capture and save the current image directly to the mobile device.
- Red Light: Select the appropriate setting based on the red beam intensity and image quality.



- AI Circle Recognition: Enable or disable the AI-based circle recognition function.
- Circle Center Style: Five built-in styles are available and can be switched according to the actual applications.



- Laser Zero Focus: After the image becomes clear, adjust the focus position until the red laser spot is at its smallest, and enter the focus value at "Min Red Light Focus". Then the value of laser zero focus can be auto calculated.

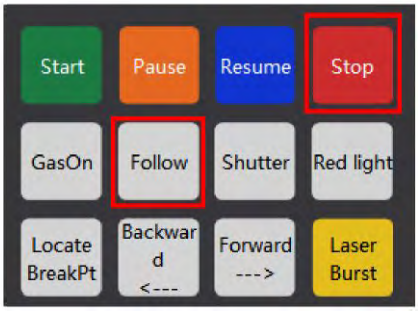


- Language: follow the system language by default. Support Simplified Chinese, English, Spanish, French, Arabic, Russian, German, Portuguese, and Italian.
- Check Model Update: support online updates of AI model files.

If any nozzles are inaccurately recognized or misidentified, please timely feedback to us. We will incorporate it into further model training and release an updated version accordingly.

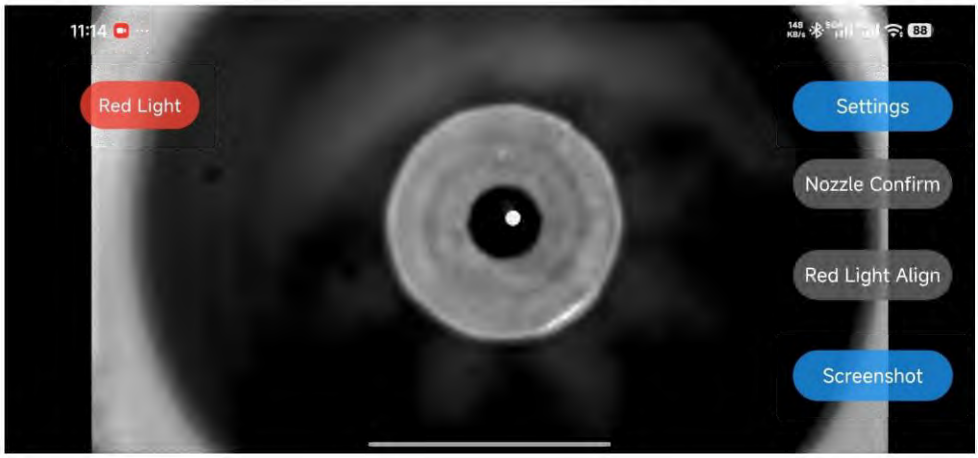
1.4 Usage Instruction

1. Turn on VBA module.
2. Place the follow tool on the plate, move the cutting head directly above it, and press "Follow" and "Stop".

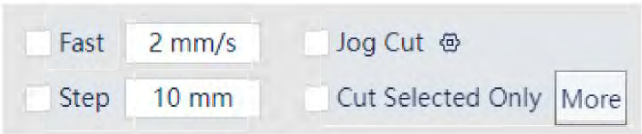


3. Remove the follow tool and replace it with VBA module. Open the dust cover of the module, and adjust the focus to the corresponding zero focus of red beam. For example: −5 (FL150), −8 (FL200), −16 (FL300).

   (Note: Because the laser wavelength is 1064nm and red wavelength is 650 nm, their actual zero focuses are different.)
4. Wait for the blue light on the lens to light up (about 35s). Turn on the mobile device and the software will auto connect the hotspot. For the first connection, please enter the WiFi password: 01234567.
5. The nozzle image is displayed, but not clear (the height of follow tool is pre-calibrated at the factory).



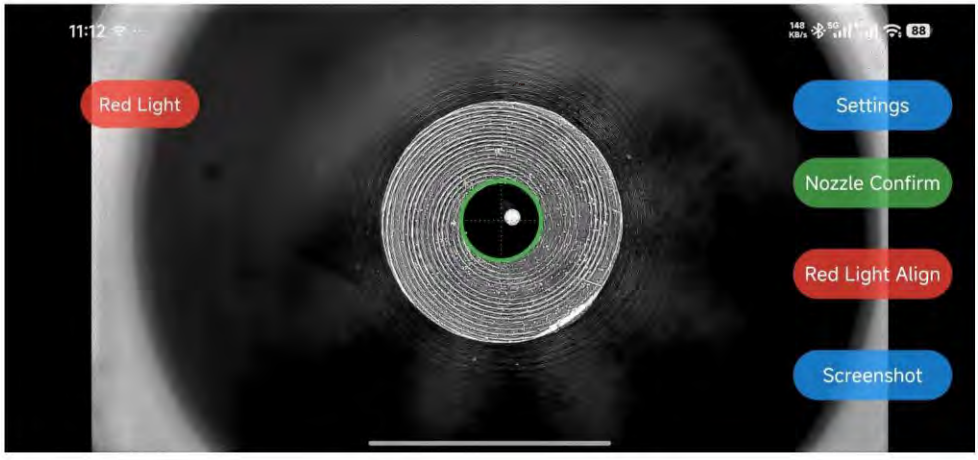
6. Modify Z-axis speed as 2mm/s.



FSCUT4000E CNC Controller

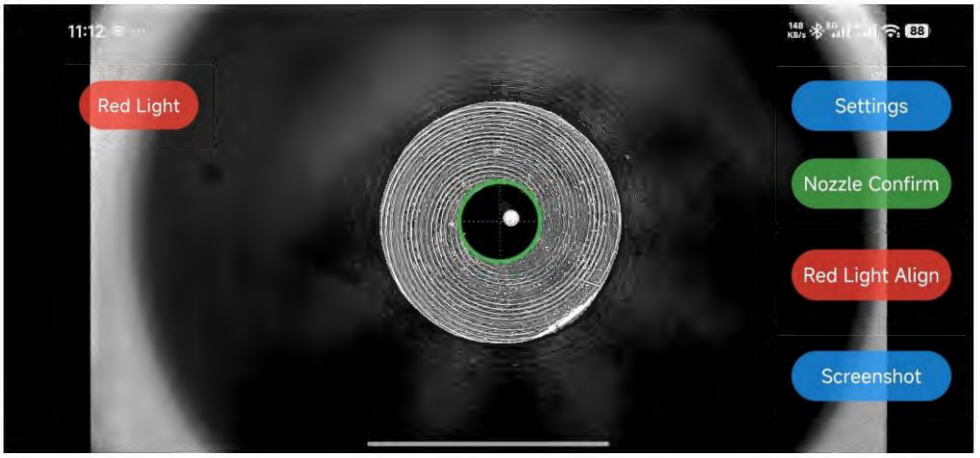
FSCUT8000 CNC Controller

7. Adjust the nozzle height until the image is clear. The Z-axis position is –60.06.



	Mechanic...	Workpiec...	Follow-up...	
X	599.58	599.66	0.00	mm
Y	160.79	160.94	0.00	mm
Y1	160.79	160.94	0.00	mm
Z	-60.06	39.99	0.00	mm

8. Press 'Nozzle Confirm' to zoom in the image. Then press 'Red Light Align' to do coaxial alignment.



9. Remove the alignment module and press "Follow" to move the laser head close to the plate. The Z-axis position is –130.42.

10. Record the difference between the two Z-axis positions.

11. After the follow height has been properly adjusted, perform Steps 1, 2, 3, 4, and 8.

Note:

- Follow function must be turned off after following to the fixed height.
- Laser shotting is strictly prohibited throughout the entire process, as it may cause damage to the device.
- Damage to the equipment caused by improper operation is not covered by the warranty.

1.5 Maintenance

12. The VBA device is equipped with cover glass and dust protection cap. When the device is not in use, please ensure the dust cap is properly installed. If the cover glass is polluted, clean it with a lint-free cloth to prevent dust from affecting visual recognition and accuracy.
13. If using the device with a built-in lithium battery, keep the battery charged to more than 50% and store the device in a cool place when it is not used for an extended period.
14. Do not disassemble the device without our authorization, as this will void the warranty.

1.6 Appendix

Item	Product ID	Remark
VBA (Visual Beam Align) Module--WIFI Edition	YM.QTZ05.0021	Standard configuration