ACMER S2

Manual V 1.3

Shenzhen Titan International Development Technology Co., Ltd.1

Thank you for choosing our product and placing your trust in our brand. We are committed to offering top-tier quality products and unparalleled customer service. Your support is invaluable to us.

To ensure you get the most out of your product, we offer a range of support solutions:

Tutorials:
Your ACMER machine arrives with an in-depth manual, but we also understand the value of visual learning. Scan the QR code below to access video and document tutorials tailored to your specific machine model. Stay connected with ACMER for expert guidance:

For ongoing updates and insights, don't hesitate to engage with us directly or follow our social media channels. Stay informed about the latest news, expert advice, and engaging events.

Email Support:
For personalized assistance, our after-sales service team is just an email away. Reach out to us at support@acmerlaser.com for any queries or concerns you may have.

We're here to help you make the most of your ACMER experience. Thank you again for your trust and support.

CONTENTS

1. Disclaimer and Safety Guidelines

1. Laser engraving machine will produce laser light, it is strictly prohibited to point the laser at any living body.

2. When using the laser engraving machine, the operator and the personnel in its vicinity must wear laser safety glasses, please do not operate the laser without wearing protective glasses (laser goggles)!

3. Minors (especially children over 14 years old) must use the machine under the supervision of an adult throughout!

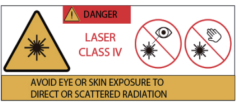
4. Engraving machine work will produce a lot of smoke, please place the machine in a ventilated environment before work, and ensure that there is no other flammable materials near the engraving machine, it is recommended to place a metal mat under the machine.

5. When the machine is running, please do not touch the laser beam to avoid personal injury.

6. During the engraving and cutting process, please ensure that the machine is within the visual range of the operator.

7. Do not engrave highly reflective materials to avoid laser damage.

8. This machine is not recommended for commercial use.



2.Machine Parameters

Machine Size	490*500*182mm
Engraving Size	300*300mm
Machine Weight	3kg/3.8kg
Focal Length	4W，7W：23mm/12W：31mm
Laser Power	4W/7W/12W
Laser Wavelength	450±5nm
Power Input	DC 24V
Communication Method	USB
Compatible Software	LaserGRBL / Lightburn
Compatible Systems	MAC, Windows
Engraving Material	Wood, Bamboo, Paper, Plastic, Leather, PCB board, Aluminium oxide, Non-reflective coating and Lacquered metal, Ceramic, Glass
Engraving File Format	NC, DXF, BMP, JPG, PNG, etc

3.Accessories

Front profile X1

rear profile X1

Left profile（with limiter）X1

Right profile X1

X-axis componentX1

Optical axis assembly X1

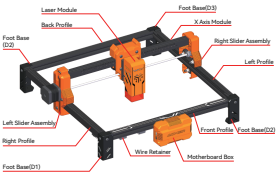
left slider componentX1

Right slider component X1

PARTS LIST

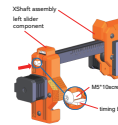
 motherboard box X1	 foot base X4	 Laser moduleX1
 board X2	 protective glasses X1	 Adapter x1
 USB data cable X1	 focus columnX1	 Wire holderX2
 tool kitX1	 screw bag X1	

4.Machine Introduction



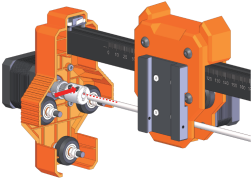
5.Assembly steps

STEP1.Assemble the X-axis module

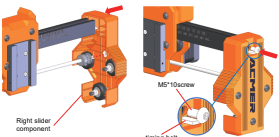


Tools

① Insert the left slider assembly into the left side of the X-axis assembly and secure it with screws. (The synchronous belt needs to pass through the square hole of the left slider)



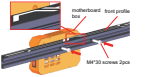
② On the side where the optical shaft does not have a synchronizer wheel, insert it into the coupling of the left slide (Plug it in to the bottom) and lock the screws of the coupling to fix the optical shaft.



③ Insert the right slider assembly into the profile, and make sure the optical axis is aligned with the bearing hole; then fix it with screws to complete the X-axis module assembly. (The synchronous belt needs to pass through the square hole of the right slider)

STEP2.Frame before assembly

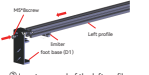
Note: Before proceeding to this step, go to the next page and see "Tips" to learn the differences between the feet.



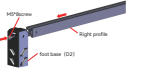
Tools

① Use two screws to connect the motherboard box to the front profile from the back,note the orientation of the pattern on the profile in the view.

② Press firmly to lock the cable holder into the groove at the bottom left of the front profile. Be careful not to get too close to the edge of the profile and the edge of the motherboard box when installing.

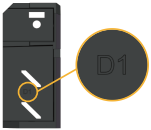


③ Insert one end of the left profile stopper into the foot (D1), and use screws to connect the foot and profile together. Note that after installation, the stopper should be at the bottom of the profile, and the screws should be on the side of the foot with the square hole.

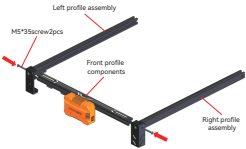


④ Insert the end of the right profile with the T-nut into the foot (D2), with the T-nut on top. Use screws to connect the foot and profile together. The screws are on the side of the foot with the square hole.

Tips:
You can distinguish different foot sockets by the markings inside the foot sockets, as shown below.

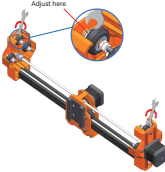


⑥ Use two screws to connect and fix the previously pre-assembled left, right and front profile components together to complete the front frame assembly.



STEP3. Assembling the machine frame

① Use an open-end wrench to adjust the eccentric wheels at the bottom of the left and right sliders until they are slightly loose.



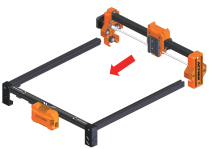
Tools

Large hexagon wrench

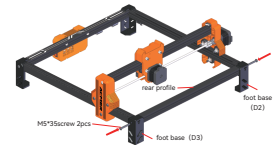
open-end wrench

STEP3 screw package

② Insert the X-axis module into the front frame. Pay attention to the direction of the X-axis module and do not insert it in reverse.



③ Assemble the rear profile, foot (D3) and foot (D2) onto the pre-assembled frame as shown.



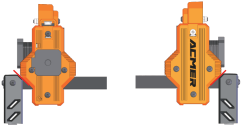
④ According to the steps demonstrated in the picture above, wind the left and right synchronous belts of the Y-axis onto the machine correctly (left and right synchronous belt winding step 1).

1 Pass the timing belt on the left/right profile around the front pulley from the bottom.

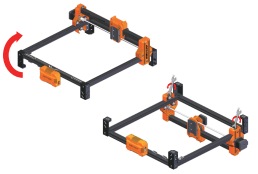
2 After passing the pulley, put it on the synchronous wheel as shown in the figure, and pass it through the pulley behind.

3 Pass the synchronous belt through the square hole of the foot, pull it upwards and tighten it with screws.

⑭ Manually move the X-axis module to the rear end of the machine in the direction of the rear profile, making sure that the left and right slides fit the feet as shown in the picture.

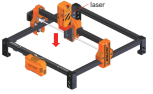


⑮ Turn the machine 180° so that the bottom is facing up, and use an open-end wrench to adjust the eccentric wheel that was previously loosened to a tighter position.



STEP4.Laser installation and wiring

① Take out the laser and insert it into the slider of the X-axis assembly. Then tighten it with the hand screws.



② Cut the ties.

③ Connect the corresponding wires according to the label.

④ Follow the steps in the picture above to secure the wires to the machine.

1. Place the wire into the retainer of the front profile.

2. Snap the wire into the slot in the foot base(D1) along the front profile.

3. Secure the wire to the underside of the left slider with a tie wrap.

4. Secure the wire to the top of the left slider with a tie wrap.

5. Bend the thread of the "LASER" label in the opposite direction and place it in the holder.

6. Lock the retainer to the two holes on the back of the X-axis slider with screws.

6.Important usage tips

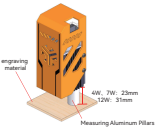
Focus tips:

1. The focal length of the ACMER laser module is fixed and cannot be changed.

2. The focus position of the 4W/7W laser module is 23mm from the lower end of the laser module aluminum profile, and the focus position of the 12W laser module is 31mm from the lower end of the laser module aluminum profile.

3. We will provide ACMER users with a 23/31mm measuring aluminum column to help find the laser focus.

4. When the laser is focused on the surface of the engraved object, it will exert its maximum engraving effect.



Adjust pulley:

1. The gap between the pulley and the track can be adjusted by turning the hexagonal eccentric nut. The state after adjustment should be: when the machine is tilted 45°, the slider slides smoothly and there is no shaking of the slider.

7.Software Tutorials

ACMER laser engraver supports the most popular engraving software LaserGRBL and LightBurn.

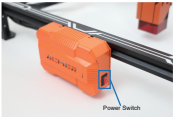
LaserGRBL is an open source, easy to use and powerful software that is perfect for novice users to use, but LaserGRBL only supports Windows systems (Win XP/Win 7/Win 8/ Win 10/Win 11). For Mac users, you can choose to operate LightBurn, which is also an excellent engraving software, but it costs $60 (with a free one-month trial for the first installation), and this software also supports Windows systems.

If you want to download and install LaserGRBL，you can visit the official website of LaserGRBL（www.lasergrbl.com）to download; for LightBurn users, you can visit LightBurn official website（www.lightburnsoftware.com ）to download.

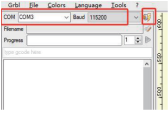
Note:
If you are using this software for the first time, please download the CH340 driver from our official website www.acmerlaser.com.

7.1 LaserGRBL Tutorials

7.1.1 Use the USB cable to connect the computer to the machine and power on the machine.

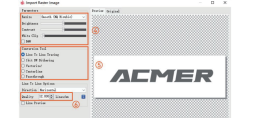


7.1.2 Select the correct COM and Baud, then click "Connect".



7.1.3 Start engraving

① Click the "Open File" button.
② Select the engraving file.
③ Click "OPEN".



④ Brightness, contrast, black and white limit adjustment.

⑤ Select the engraving mode.

⑥ Adjust the engraving quality

⑦ Click "NEXT".

⑧ Select the engraving speed.(suggest to refer to the engraving parameter table).

⑨ Select "Laser Mode", "M4" for engraving and "M3" for cutting.

⑩ Set the engraving power, 1000 is the maximum power.

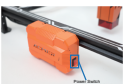
⑪ Set the engraving size.

⑫ Click "Create".

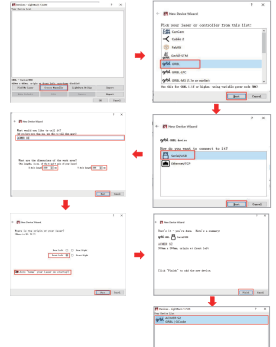
⑦ Click "Frame" to preview the engraving boundary.
⑧ Click "Run Program" to start engraving.

7.2Lightburn Tutorials

7.2.1 Use the USB cable to connect the computer to the machine and power on the machine.

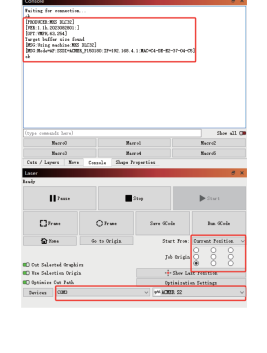


7.2.2 Importing Devices

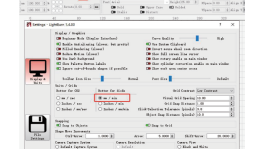


7.2.3 Connecting the machine

Note: Job Origin needs to be set to lower left



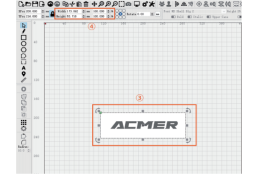
7.2.4 Software Settings



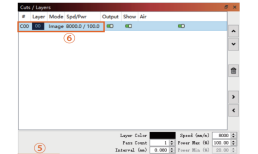
7.2.5 Start engraving

① Click "OPEN" to select the engraving file.

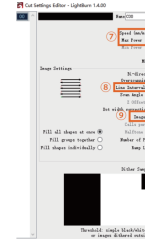
② Click "Open".



③ Click on the picture area.
④ Adjust the engraving size.



⑤ Select "Cuts/Layers".
⑥ Double-click the red box area.

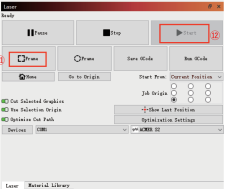


⑦ Adjust the carving speed and carving power (suggest to refer to the carving parameter table).

⑧ Set the engraving quality.

⑨ Set the engraving mode.

⑩ Click "OK".



① Click "Frame" to preview the engraving area.
② Click "Start" to start engraving.

8.Engraving parameters

ACMER S2-4W Engraving Parameters					
Material	Line Interval	Speed (mm/min)	Power (%)	Engraving Effect	Note
Basswood	0.04mm	7000	100		
Leather	0.04mm	7000	70		
Kraft paper	0.04mm	7000	50		
MDF	0.04mm	7000	90		
Anodized aluminum	0.04mm	6000	100		
Glass	0.04mm	1000	100		Engraving is done after the material is blackened or color paper is applied to the surface.
Ceramics	0.04mm	1000	100		The engraving is done after the color paper is applied to the surface of the material.
Black Acrylic	0.04mm	5000	100		

ACMER S2-4W Cutting Parameters					
Material	Thickness	Speed (mm/min)	Power (%)	Cutting Effect	Passes	Note
Basswood	2mm	150	100		1	
Basswood	3mm	100	100		1	
Black Acrylic	2mm	100	100		1	
Black Acrylic	4mm	100	100		3	
Warm Tips	1. Please note the above units of speed and power and convert them in Lightburn and LaserGRBL by yourself. 2. For some materials with low burning point, it is not recommended to set the cutting speed below 100mm/min, otherwise there may be a risk of burning! 3. Even for the same material, the effect will be different for different surface treatment or different colors, so you need to adjust the speed and power according to different objects. In addition, please adjust the focal length to the best, to have better effect. 4. Can't engrave or cut directly on glossy metal plates, transparent materials, reflective materials, some white or translucent materials, etc. You need to blacken it with a marker or use the color paper to cover the surface to carve.					

ACMER S2-7W Engraving Parameters					
Material	Line Interval	Speed (mm/min)	Power (%)	Engraving Effect	Note
Basswood	0.06mm	10000	80		
Leather	0.06mm	10000	70		
Kraft paper	0.06mm	10000	60		
MDF	0.06mm	10000	80		
Anodized aluminum	0.06mm	8000	100		
Glass	0.06mm	2000	100		Engraving is done after the material is blackened or color paper is applied to the surface.
Ceramics	0.06mm	2000	100		The engraving is done after the color paper is applied to the surface of the material.
Black Acrylic	0.06mm	8000	100		

ACMER S2-7W Cutting Parameters						
Material	Thickness	Speed (mm/min)	Power (%)	Cutting Effect	Passes	Note
Basswood	2mm	300	100		1	
Basswood	3mm	200	100		1	
Basswood	4mm	100	100		1	
Black Acrylic	3mm	100	100		3	
Warm Tips	1. Please note the above units of speed and power and convert them in Lightburn and LaserGRBL by yourself. 2. For some materials with low burning point, it is not recommended to set the cutting speed below 100mm/min, otherwise there may be a risk of burning! 3. Even for the same material, the effect will be different for different surface treatment or different colors, so you need to adjust the speed and power according to different objects. In addition, please adjust the focal length to the best, to have better effect. 4. Can't engrave or cut directly on glossy metal plates, transparent materials, reflective materials, some white or translucent materials, etc. You need to blacken it with a marker or use the color paper to cover the surface to carve.					

ACMER S2-12W Engraving Parameters					
Material	Line Interval	Speed (mm/min)	Power (%)	Engraving Effect	Note
Basswood	0.08mm	10000	70		
Leather	0.08mm	10000	60		
Kraft paper	0.08mm	10000	40		
MDF	0.08mm	10000	70		
Anodized aluminum	0.08mm	10000	100		
Glass	0.08mm	3000	100		Engraving is done after the material is blackened or color paper is applied to the surface.
Ceramics	0.08mm	3000	100		The engraving is done after the color paper is applied to the surface of the material.
Black Acrylic	0.08mm	10000	100		

ACMER S2-12W Cutting Parameters						
Material	Thickness	Speed (mm/min)	Power (%)	Cutting Effect	Passes	Note
Basswood	7mm	100	100		1	
Basswood	12mm	100	100		5	
MDF	6mm	100	100		8	Air assist
Black Acrylic	3mm	100	100		1	
Black Acrylic	10mm	100	100		4	Air assist
Warm Tips	1. Please note the above units of speed and power and convert them in Lightburn and LaserGRBL by yourself. 2. For some materials with low burning point, it is not recommended to set the cutting speed below 100mm/min, otherwise there may be a risk of burning! 3. Even for the same material, the effect will be different for different surface treatment or different colors, so you need to adjust the speed and power according to different objects. In addition, please adjust the focal length to the best, to have better effect. 4. This machine is not suitable for engraving metal plates, transparent materials, reflective materials, and white or translucent materials, etc. You need to blacken it with a marker or use the color paper to cover the surface to carve.					

9. After-Sales

To ensure high-quality after-sales support, we recommend visiting ourofficial website (acmerlaser.com) for detailed information onafter-sales and warranty.

Additionally, our Frequently Asked Questions (FAQs) page provides answers to common questions to help you better utilize the product.

If you have any questions or need further assistance, please feel free to contact us via email at support@acmerlaser.com. Our support team will provide you with prompt assistance to ensure timely resolution of your issues.

https://acmerlaser.com

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