



## YORAHOME OFFLINE CONTROLLER WITH LCD TOUCH SCREEN

For Mandrill 3036, SilverBack 6060 & 1x1 CNC Routers

### USER MANUAL

Version 1.0 • June 2022



# Purpose

This manual is designed to cover the basic functionality of the YoraHome Offline Controller and software, and may not address every aspect or option present.

Before beginning usage, we recommend conducting an inventory using the Packing List to ensure all components are present. NOTE - there may be extra hardware included; this is normal, in case items get dropped or lost.

Please read these instructions carefully before using your offline controller to prevent possible damage to your machine.

# Safety

- Read and understand the entire user manual before attempting assembly or operation
- Do not use the offline controller for other than its intended use. If used for other purposes, YoraHome disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
- Always wear approved safety glasses/face shield while using offline controller or CNC router machine. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses
- Before operating offline controller or CNC router, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows.
- Do not wear loose clothing. Confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do not wear gloves.
- Wear ear protectors (plugs or muffs) during extended periods of operation. Do not operate offline controller or CNC router while tired or under the influence of drugs, alcohol or any medication.
- Make certain the switch is in the OFF position before connecting offline controller to your CNC router machine power supply.
- Make all machine adjustments or maintenance with CNC router unplugged from the power source.
- Give your work undivided attention. Looking around, carrying on a conversation and “horseplay” are careless acts that can result in serious injury.
- Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and more safely.
- Do not touch a bit immediately after use, it will be hot and may cause skin burns.
- Never leave CNC router running unattended. Turn the power off and do not leave CNC router until it comes to a complete stop.
- Remove loose items and unnecessary work pieces from the area before starting CNC router.
- Always secure workpiece to spoil board using clamps or double-sided tape. Never hold workpiece down by hand while operating.
- Make sure workpiece is free from nails or other foreign objects.
- After installing a bit, make sure collet is securely tightened. An unsecured bit may fly loose from the collet and cause injury.
- Be within reach of the Emergency Stop or pause button when the machine is in operation. In the event of an emergency, or if there are any conditions that may result in injury to yourself or others.

# Contents




Part 1: Packing List

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# Part 1 Packing List

Small Box			
Item	Size	Picture	Quantity
Offline Controller			1
8 Pin Wire Connector			1
SD Memory Card			1

# Part 2 Offline Controller Connection

## Step 1 - Connect Offline Controller to Machine's Control Board

- Connect 8 pin ribbon cable to the controller box and the offline controller
- Power on the offline controller



# Part 3 Offline Controller Usage

## Step 1 - Power on Offline Controller

- Status will show “Alarm” in upper right corner.
- Click “Setup” to enter the Control Interface.
- Click “Reset” and then “Unlock to change the status to “Idle”.

## Step 2 - Moving the Spindle 1/2

- Click “Move” to enter the Move Interface
- Click “Close” to choose step setting (4 available steps: 0.05, 0.1, 1, 10mm).  
Default step is 0, if you don't choose a step, machine will not move.





# Part 3 Offline Controller Usage

## Step 2 - Moving the Spindle 2/2

Click the direction buttons (X+/X-/Y+/Y-/Z+/Z-) to move spindle to your zero point. Click “SPN” to test the spindle on/off.



If the spindle does not come on make sure you chose a step setting other than “Close or 0”. The spindle speed is then controlled by the control box speed knob.

Click “Return” to previous menu.

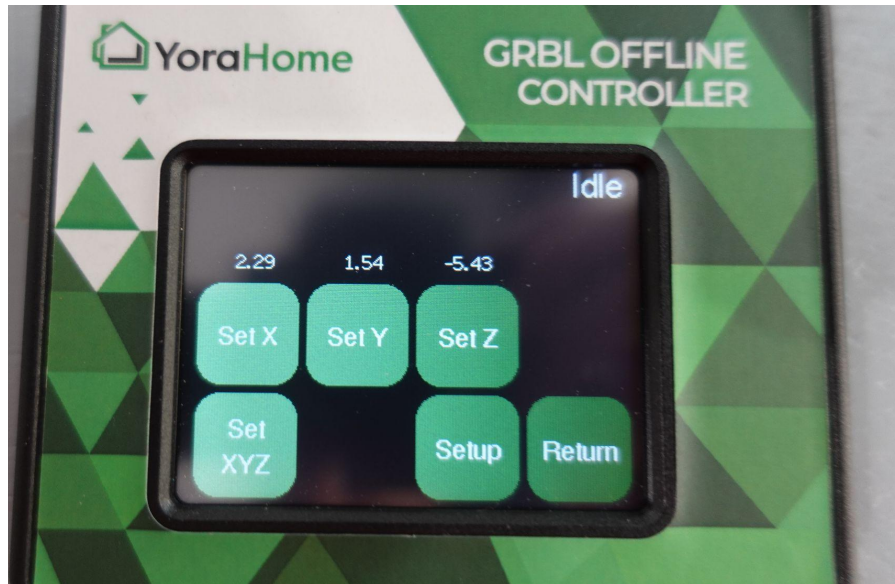
(NOTE: If the spindle still does not come on click the “Z-” button one time.)



# Part 3 Offline Controller Usage

## Step 3 - Zeroing your Machine

After you have moved your spindle to the correct location over your material, click “Set Home”.



Now click on each axis to set them to Zero. After you click each axis you should see the coordinates become 0.00.

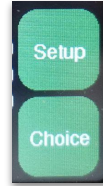
NOTE: If you want to zero all three axes at the same time you can click on “Set XYZ”.

Then click “Return”.

# Part 3 Offline Controller Usage

## Step 4 - Selecting a file

You now should be at the Home screen with two options “Setup and Choice”. Click “Choice” and then “SD Card” to select your gcode file of your project. After you select your gcode the machine will be automatically set to “Pause”. Simply click on “Resume” to start the carve.



You can click “Pause” to pause the carve again or click “Pause” and then click “More” for additional options like “Cancel” to stop the carve.

If you click “Cancel” the machine will stop running and you should be back at the main screen with the “Alarm” at the top right.



# Part 3 Offline Controller Usage

## Step 5 - How to use E-Stop

If you need to press the E-Stop to avoid damage to the machine for any reason, just press down on the red E-Stop button on the control box.

Your machine should immediately stop running and the offline controller will not have two “??” at the top right.

When you are ready to start again turn the E-Stop button clockwise until it pops up. After you release the E-Stop you should now see “Alarm” on the offline controller and its ready for you to start again from step 1.



# Part 3 Offline Controller Usage

## Step 6 - How to use the Z-Probe

First make sure your controller is not in “Alarm” state. If it is, click “Setup”, “Reset” then “Unlock”.

Next click on “Set Probe” to set the Offline Controller for the correct thickness of your probe plate. Choose “Set + / -” to set the thickness of your probe plate in mm. Our Z-Probe plates are 21mm thick.

Make sure you have your X and Y axes set and connect your probe clip to the router bit and the probe plate below the router bit.

Now click “Probe” and the Z axis should lower until it touches the probe plate then it will raise back up to the correct position.





# Part 3 Offline Controller Usage

## Step 7 - How to unlock after hitting a limit switch

If for any reason you hit the limit switch your machine will stop running and you will see “??” at the top right of the Offline Controller.

If this happens navigate back to the home screen and then click “Setup”, “Reset” then “Unlock” and the status should now be “Idle”.

**NOTE:** when coming off of a limit switch you will have to repeat the above process twice. As soon as the machine moves off the limit switch it triggers the alarm again.



# Part 4 Terminology

**CNC (Computer Numerical Control):** A CNC machine is a motorized platform controlled by a computer according to specific input instructions.

**Units (mm or inches):** It is imperative that the units match. If you tell your software to work in inches and the router works in mm, you are going to get very bad or compressed results.

**G-code:** G-code stands for “Geometric Code”. It is a programming language for CNC that instructs machines where and how to move. Most machines speak a different “dialect” of g-code, so the codes vary depending on type, make, and model.

**Control Board or Motherboard:** This is the brain of your CNC working with an Arduino microprocessor. This is the bit of electronics that controls everything: stepper motors (axis movements), spindle motor (cutting speeds), laser (power settings), jogging, G-code commands received via USB or an offline controller, etc.

**Grbl :** This is the software which runs on the motherboard. It takes the G-code and translates it into the movements and speeds needed to cut a line for example.

**Stepper motor:** A motor that is told to turn in small steps like turn clockwise  $1.7^\circ$  as opposed to a normal motor that will continue to rotate as long as the power is supplied. Each step of the motor will turn the threaded rod which will move the the axes connected to it.

**Spindle Motor:** This is the big electric motor which holds the cutting bit.

**Stock:** Whatever you are trying to engrave, cut or carve.

**Bed:** This is the flat MDF plywood or aluminium bed which holds the stock with slots in it to allow clamps to hold the stock down.



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