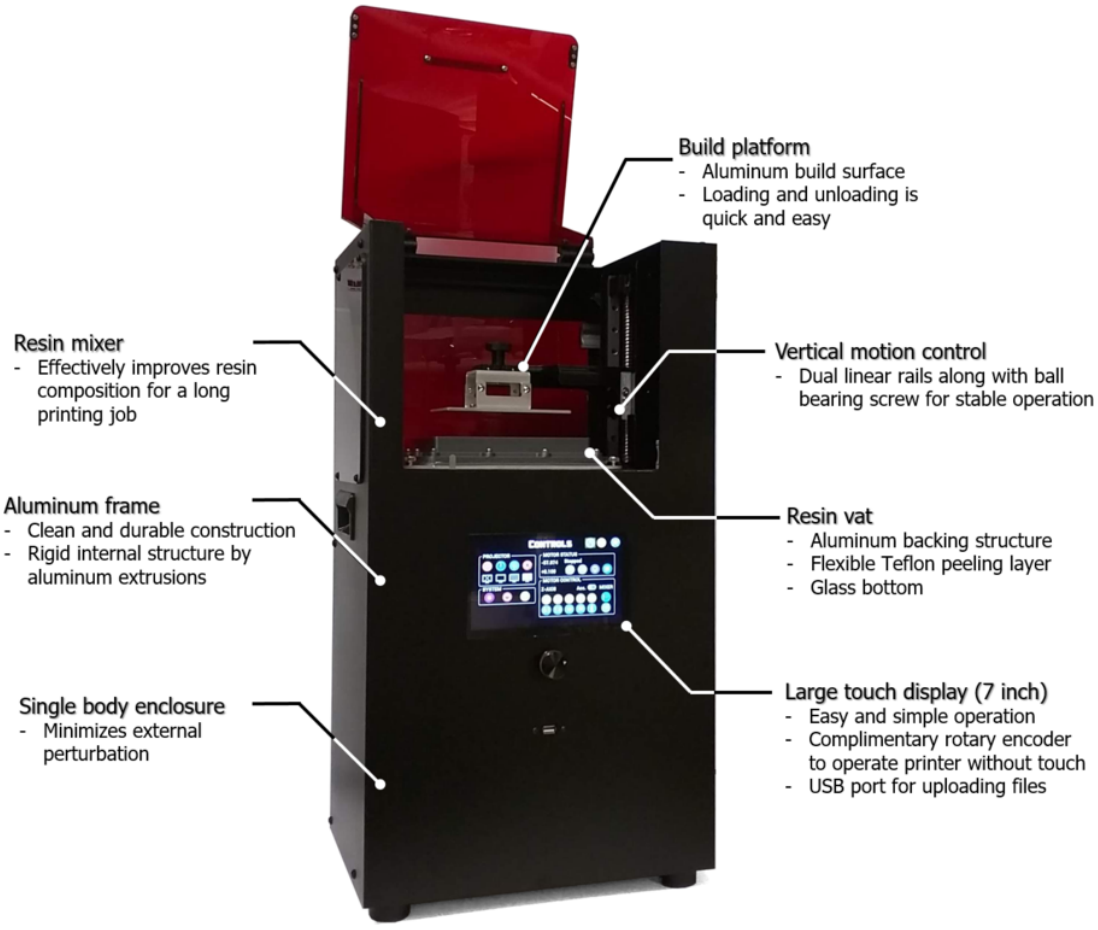
Mono3 3D Printer

Mono3 is a resin printer that uses a385 or 405 nm LED projector to polymerize the resin. It uses a proprietary software called Monoware to slice your object and interface with the printer. On Monoware one can upload an STL file from any CAD software and adjust the settings so the software slices the part automatically.

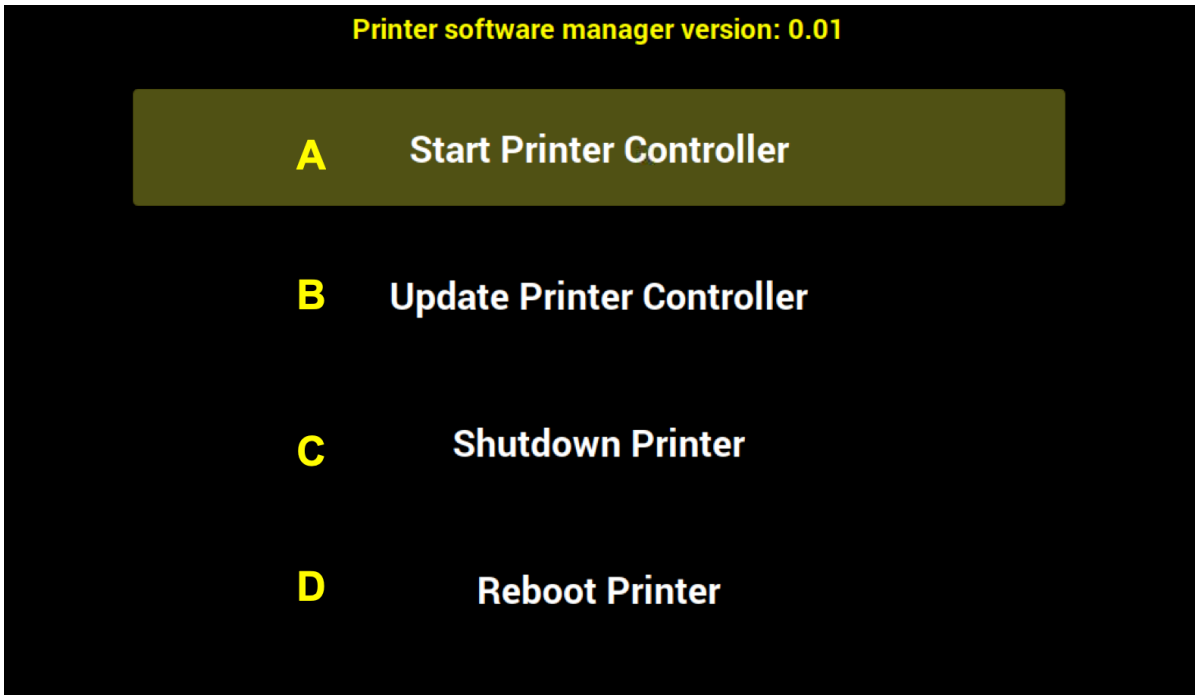
Specifications



3D print technology	manufacturer	resolution (µm)	layer thickness (µm)	print speed	print volume	excitation (nm)
DLP	Mono3	XY: 30-70	5 – 100	420 µm/min	134 x 76 x 125 mm (~1.3 mL)	385 and 405

Mono3 Controller Manual

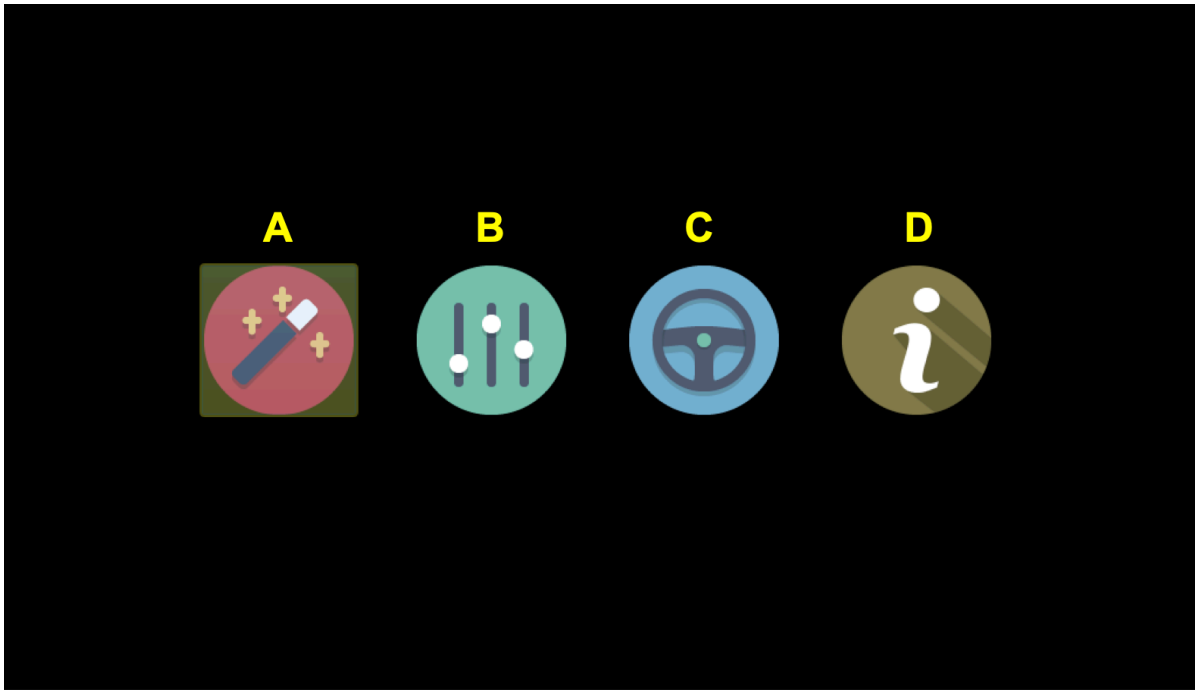
Printer controller manager screen



Initial screen shows four simple menus each explains itself.

A. Start Printer Controller: This will launch the printer controller software.
B. Update Printer Controller: If you need to update the printer controller, you may put a USB stick on the printer with an update file (*.mpi). Only single update file on the USB root will be used for updating the printer controller
C. Shutdown Printer: This will shut down the printer. Shutting down will take about 1 minute. Please turn off the power after couple of minutes.
D. Reboot Printer: This will reboot the printer.

Main menu of the printer controller



A. New print: This will guide you to select a printing file, to confirm printing parameters, and then to monitor printing status.
B. Setting: You can set printer parameters that generally affect all printing processes such as lift speed, down speed, hold times between steps, etc.
C. Control: You can check printer status, and confirm if the printer is ready for printing. General control such as moving a mixer and z-axis will be done here.
D. Information: You can check printer software and firmware versions here. IP address or wireless network connection is done here

File selection

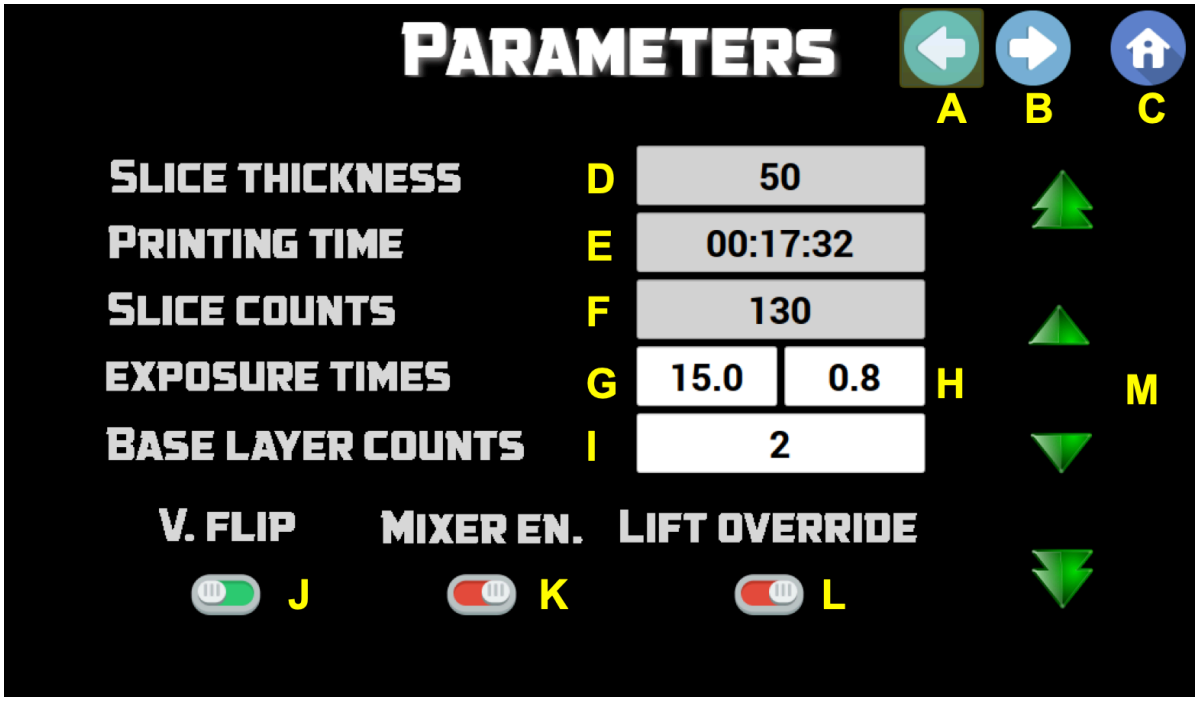
Once you push the new print button on the main menu, you will see FILES screen as above.

This page shows a file list on the left and preview images on the right.

A. Move to next page for printing parameters
B. Move to main menu
C. Folder view
D. File view
E. Change to main storage
F. Change to USB drive storage
G. Copy the selected file from USB to main storage or vice versa
H. Delete the selected file from USB or main storage
I. Thumbnails of the selected file. Left and right buttons change 5 thumbnails with different view points.

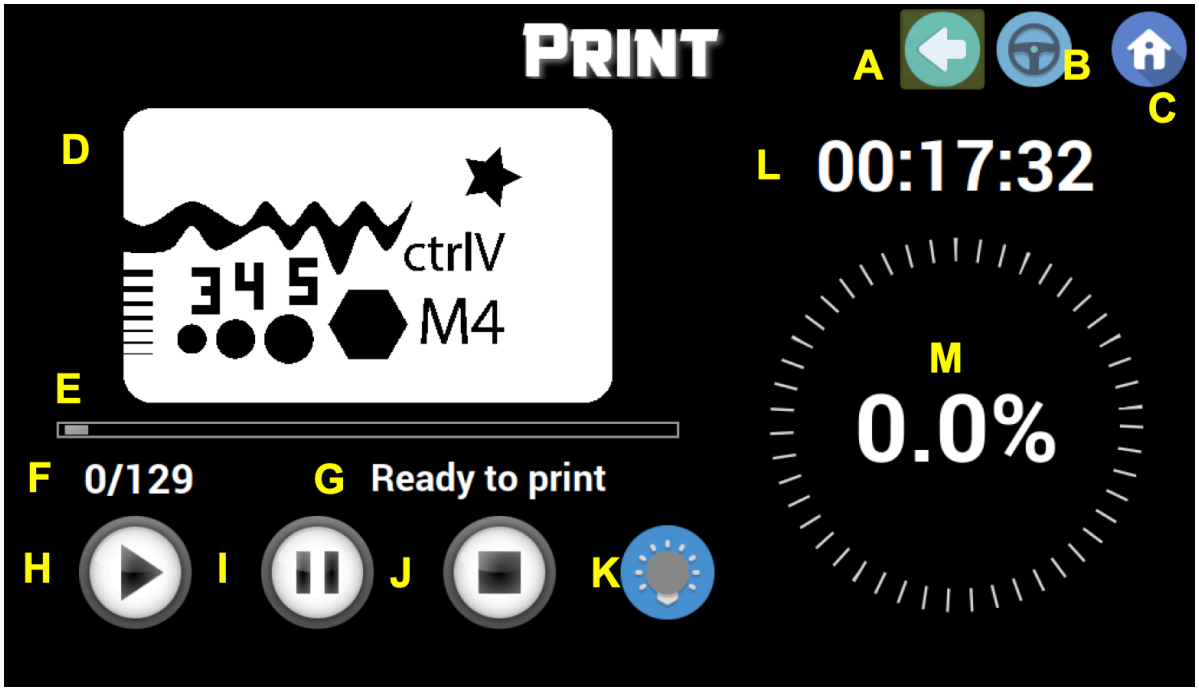
Printing file format (.MNF) will be displayed on the file list (D). When you use a rotary encoder to select the file, you need to push for longer than 1 second to step into the file list. If you want to get out of the file list, you neeed to do the same.

Printing parameters



A. Move to previous page, FILES
B. Move to next page, Printing status
C. Move to main menu
D. Slice thickness in microns
E. Estimated printing time in hh:mm:ss
F. Total number of slices
G. Base layer exposure time in seconds
H. Normal layer exposure time in seconds
I. Number of base layer. If you need multiple steps to reach into normal layers, the number of base layers in here only shows the first step counts.
J. Vertical flip: Normally ON to obtain a print without mirroring
K. Mixer enable: If your Mono3 has a mixer, this will help to maintain print quality for a long printing job
L. Lift distance override: If you want to set a minimum lift distance instead of using a predetermined lift distance inside a MNF file, you can turn on this option and set a minimum lift distance on Setting page.
M. Value change buttons: To change the values, you select the items and then push one of these buttons. Printing time will be automatically re-calculated.

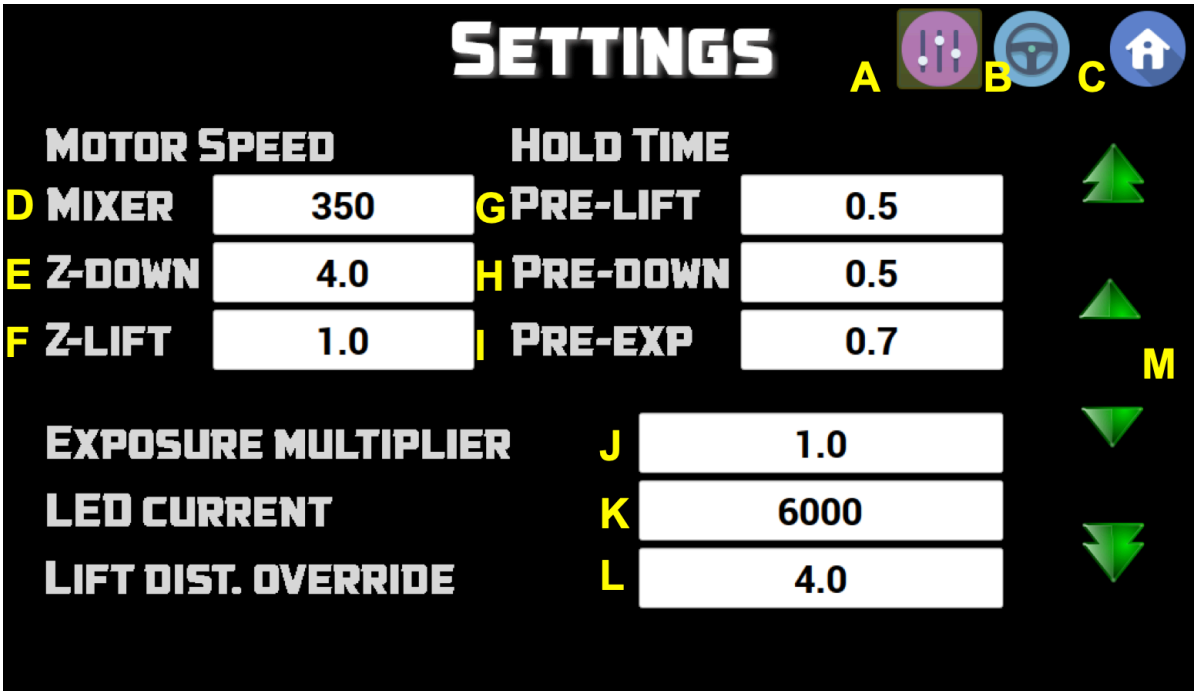
Printing status



A. Move to previous page, Printing parameters
B. Move to Control page
C. Move to main menu
D. Preview of a current slice
E. Slide bar of slices
F. Current slice number and total number of slices
G. Current printer action
H. Start printing
I. Pause / Resume printing
J. Abort printing
K. LED status
L. Estimated remaining time in hh:mm:ss
M. Percentage of printing status

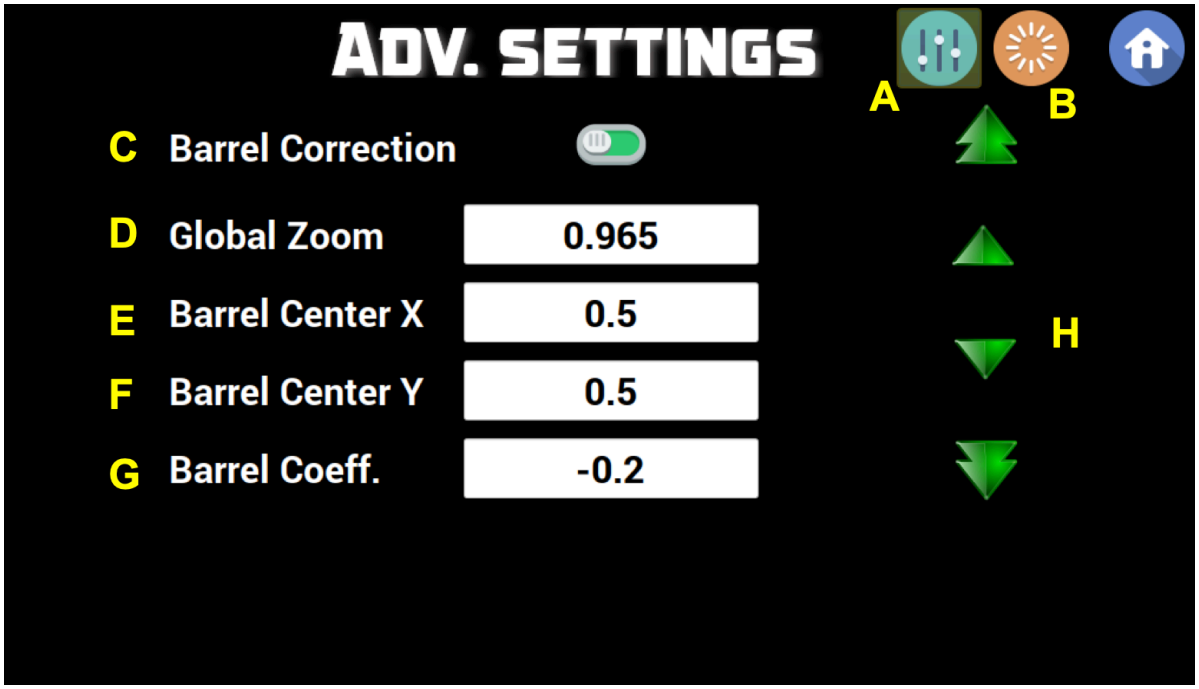
*Homing: if you have not done homing before the print started, the printer will warn you to home or accept the current position. Software will automatically show you the control page to perfom homing or position confirming.

Setting menu



A. Move to Advanced Setting page
B. Move to Control page
C. Move to main menu
D. Mixer speed. (default: 350)
E. Z-axis moving down speed in mm/sec. This speed is also applied when you move the axis on idle state (off printing state). (default: 4.0)
F. Z-axis moving up speed in mm/sec. (default: 1.0)
G. Hold time after exposure before lifting in seconds.
H. Hold time after lifting before moving down.
I. Hold time after moving down before next exposure
J. Global multiplier for exposure times. Please change this value when you need to increase the exposure time for all resins. We will update the software to guide you when or how much you need to increase.
K. Minimum lift distance for overriding in mm. 4.0 is recommended for xy 70 um setting or 2.0 for xy 30 setting.
L. Value change buttons.

Advanced settings

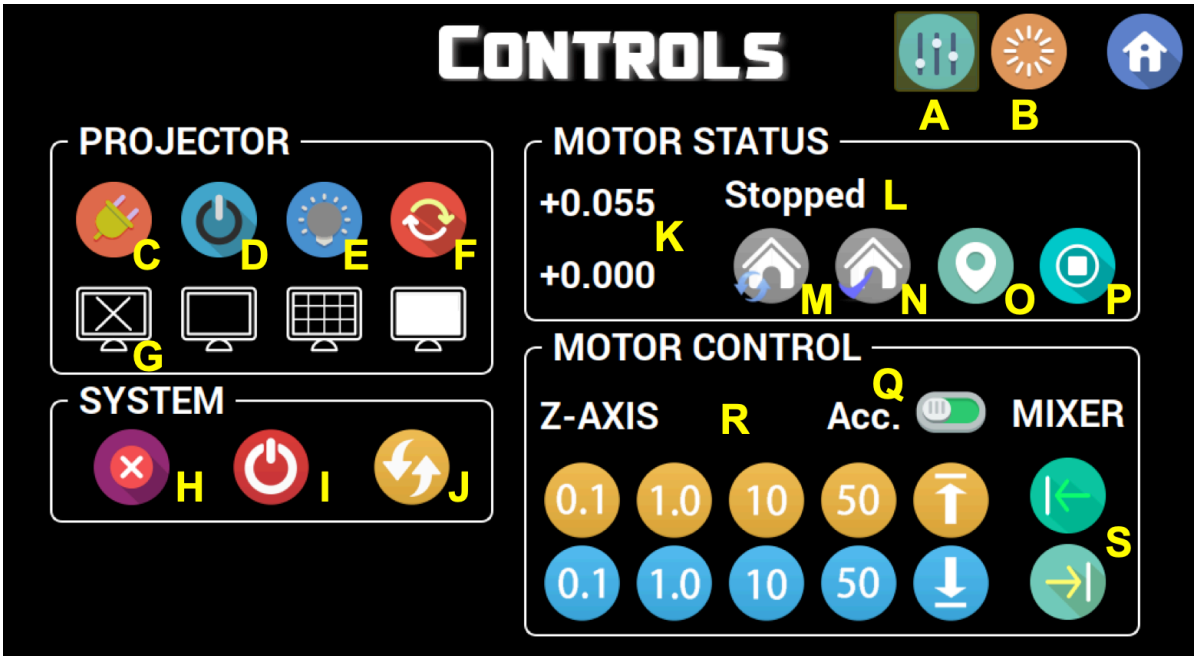


A. Move to Setting page
B. Move to Printing status page
C. Enable/disable barrel correction. The combined optics of the DLP projector causes some barrel distortion on build area, which means the corner pattern is slightly off position. To make it correct, use the barrel correction by default.
D. Global zoom: Default value is between 0.96 ~ 0.97.
E. Barrel correction center X: default is 0.5
F. Barrel correction center Y: default value is 0.5 ~ 0.7
G. Barrel coefficient: default is -0.2 ~ -0.1. This should be negative. The barrel correction is sensitive to this value, so change it slightly and check actual barrel corrected grid.

*To check the barrel correction, you can put a paper with a correct gid on the empty resin tank. Then turn on the grid image that will be explained on Control page. This will project a matched grid pattern on the paper. Then you can adjust above parameters to obtain the best barrel correction.

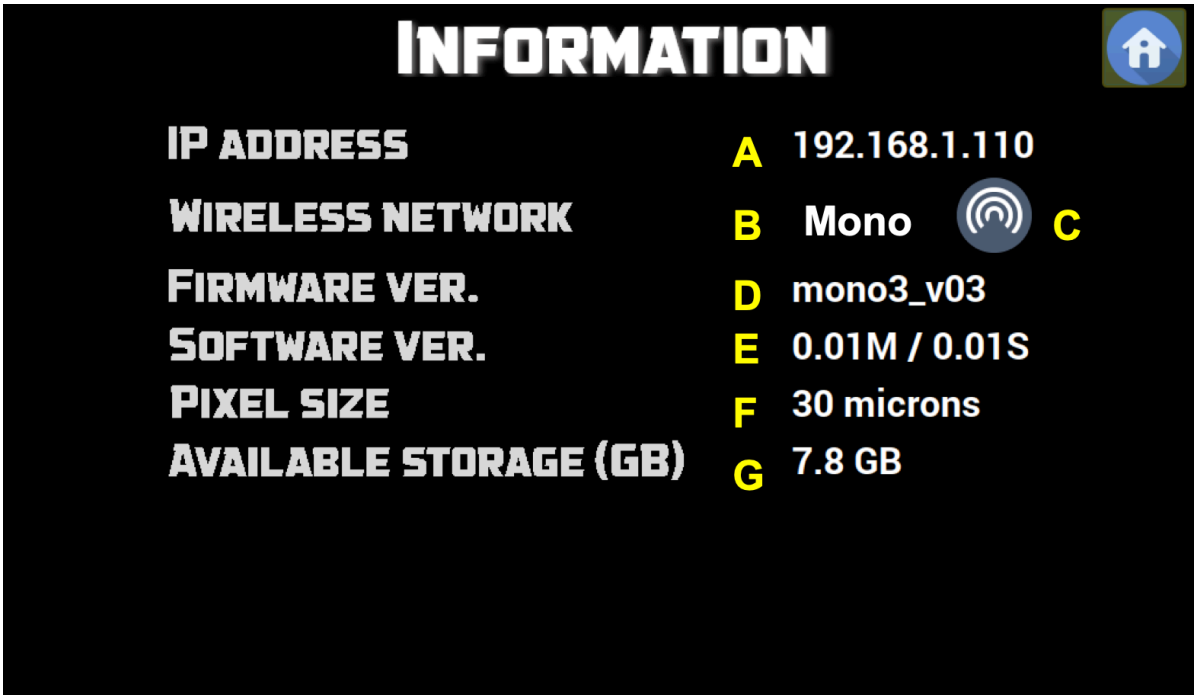
* By default these parameters are set when the printer is assembled and configures.

Control page



A. Move to Setting page
B. Move to Printing status page
C. Projector connection status
D. Projector power status
E. LED power status
F. Refresh three status indicators
G. Test projections (from left to right) close projection, black screen, grid screen, all white screen. These buttons automatically turn on LED power when pressed.
H. Close printer controller
I. Shut down the printer
J. Reboot the printer
K. Z-axis and mixer position values
L. Motor status
M. Homing: This will do homing both mixer and z-axis.
N. Move to home positions.
O. Confirm current positions as corrected ones. When you reboot printer or restart printer controller, printer needs to know current position is correct, or homing is needed. If you know the current position is correct, use this button to let the printer know current position is correct.
P. Stop motor. This does not work during accelerated movement.
Q. Enable/disable motor acceleration: Only effective to z-axis.
R. Move z-axis with the shown distance or move to up and down position.
S. Move mixer to left or right position.

Information page



A. Connected IP address
B. Connected SSID
C. Scan wireless network
D. Firmware version
E. Printer controller version for master and slave boards
F. Configured pixel size
G. Available storage in main storage