MonoPrinter.com

MONO3-VZ1/2 Printer Firmware

Rev. 1.0

Microfluidics for all, Inc.
24 Denby Rd, Suite 120, Allston, MA 02134
Tel: +1-617-999-4977 Email: info@monoprinter.com
Web: http://www.monoprinter.com

Revision History

Rev. 1.0	04-09-2025	Initial draft based on MONO3-2K40 Rev1.1

Please read thoroughly and contact us if you have any further questions or suggestions at info@monoprinter.com

Printer software manager

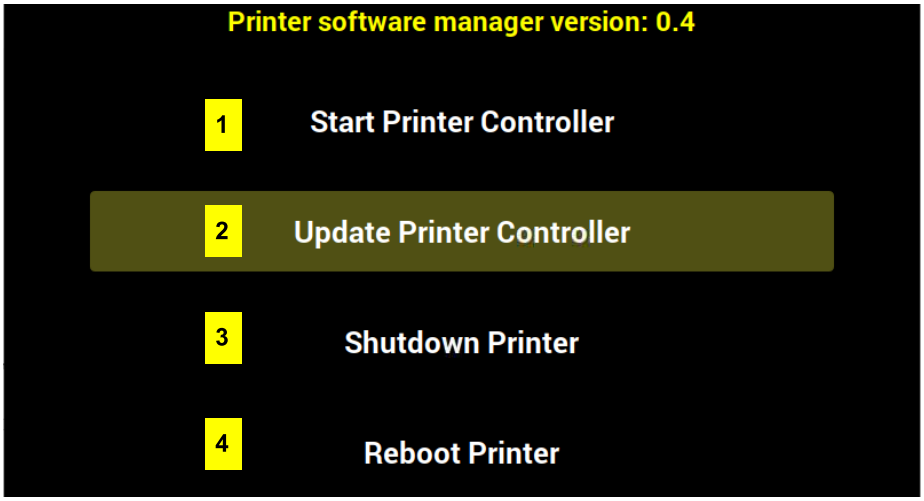

Fig. 1. Printer controller manager screen

1. Start Printer Controller: This will launch the printer controller software.
2. 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
3. Shutdown Printer: This will shut down the printer. Turn off the power after about a minute.
4. Reboot Printer: This will reboot the printer.

Printer home screen

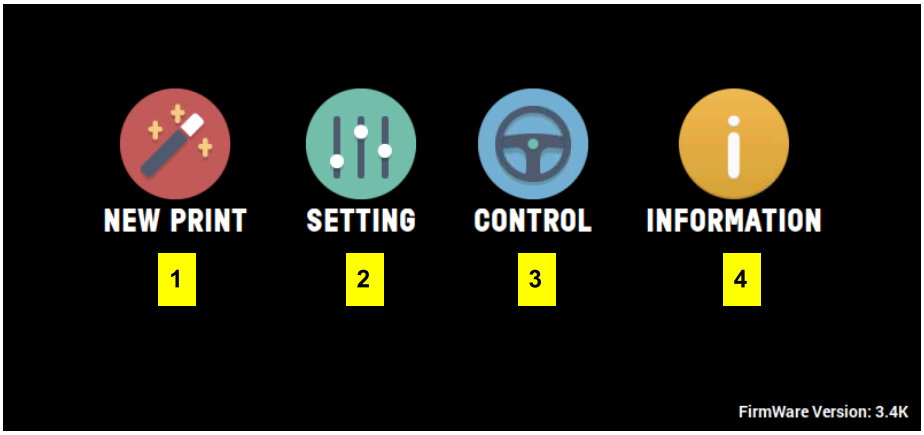

Fig. 2. Printer software main screen

1. New print: This will guide you to select a printing file, to confirm printing parameters, and then to monitor printing status.

2. Setting: You can set printer parameters that generally affect all printing processes such as lift speed, down speed, hold times between steps, etc.
3. 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.
4. Information: You can check printer software and firmware versions here. IP address or wireless network connection is done here

Files page

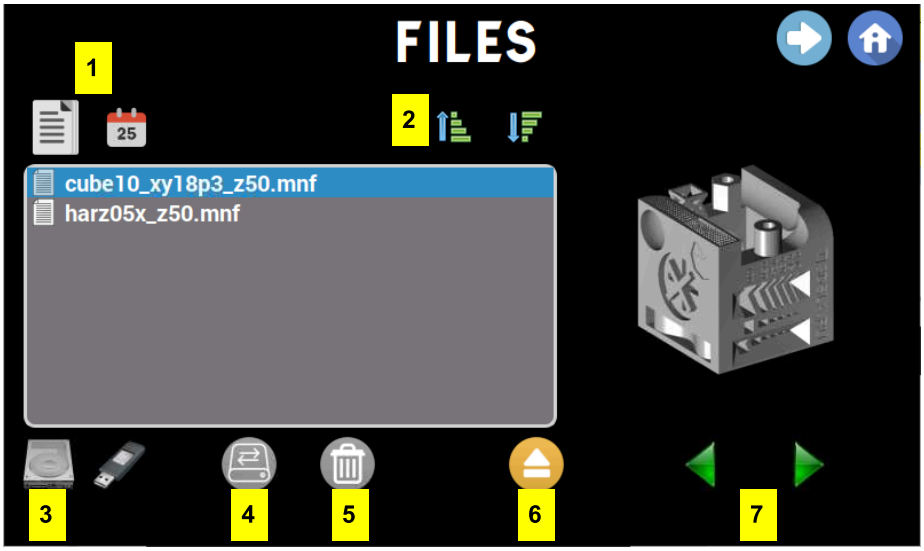

Fig. 3. File selection page

1. Sort the file list by either file names or creation dates
2. Sort the list by ascending or descending order
3. Change to main storage or USB stick
4. Copy the selected file from USB to main storage or vice versa
5. Delete the selected file from USB or main storage

   INFO Long press will delete all files
6. Eject the USB stick
7. Thumbnails of the selected file.

Parameter page

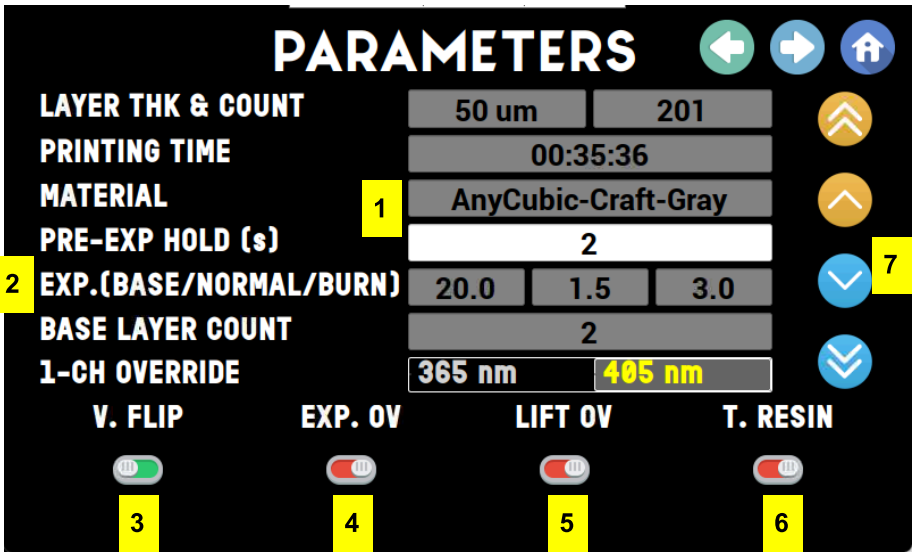

Fig. 4. Parameter page

1. Basic printing information; slice thickness, estimated printing time, layer count, and target material
2. Base layer, normal layer, and burn-in layer exposure times in seconds

   INFO Base layer: very first layers of the printing. These layers should have a sufficient exposure time to attach the print to the build platform. Burn-in layers (intersection layer between normal objects and supports) are created on the PC slicer.
3. Vertical flip: The default status of this option varies by printer models. Normally ON for DLP printers while OFF for LCD printers.
4. Exposure override: You can change exposure times and base layer count when this button is turned on.
5. Lift override: If enabled, all lift distance will be equal to or greater than the set value on Settings page.
6. Enable thick resin: This option will add extra exposure times between the base and normal layers as well as additional rest times. Additional parameter should be set under Setting/Thick resin
7. 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.

   If options are installed below buttons will be shown as well.
   - Enable wiper blade. Parameters should be set under Setting/Wiper
   - Enable heater. Parameters should be set under Setting/Heater

Printing page

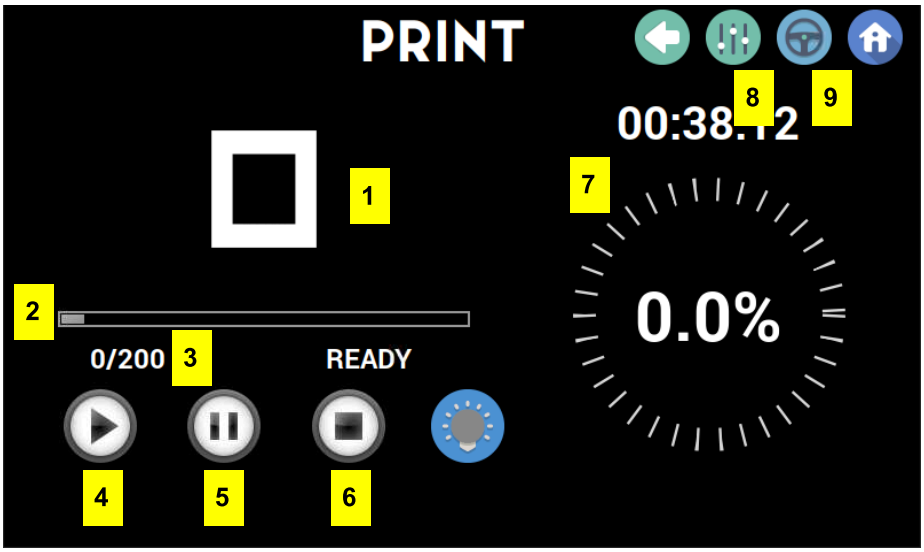

Fig. 5. Print page

1. Preview of a current slice
2. Slide bar of slices
3. Current slice number and total number of slices (first layer starts with an index of 0)
4. Start printing
5. Pause / Resume printing
6. Abort printing
7. Estimated remaining time in hh:mm:ss and percentage of printing status
8. Go to Settings page
9. Go to Control page

INFO If you have not done homing before starting printing, the printer will automatically perform homing before starting.

Setting page

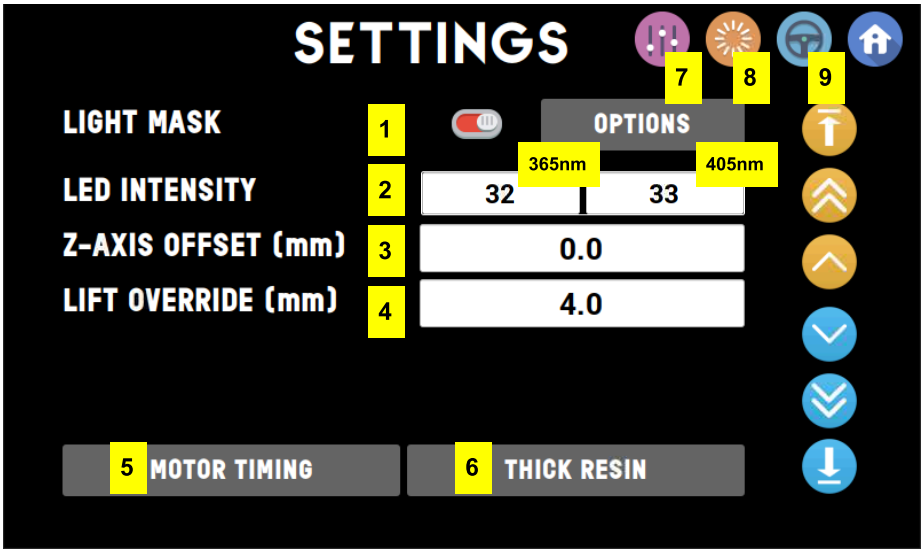

Fig. 6. Print page

1. Enable light mask and creation option. This menu will be useful to eliminate unevenness of the LED light. (By default, this option is disabled and hidden)
2. LED intensity setting. The maximum setting value is varying by a printer.

CAUTION *The maximum intensity shouldn't be used for a long time. We recommend 60% or under for a long exposure time (>60 sec).*

3. Z-axis offset: This will add or subtract a small distance from the physical z-axis distance. Consult the manufacturer to use this parameter.
4. Lift override value. This will override lift distances on the printing files.
5. Motor setting (Z-axis) options
6. Thick resin options. This option is useful when printing with a viscous resin.
7. Go to Advanced setting page
8. Go to Print page
9. Go to Control page

Advanced setting page

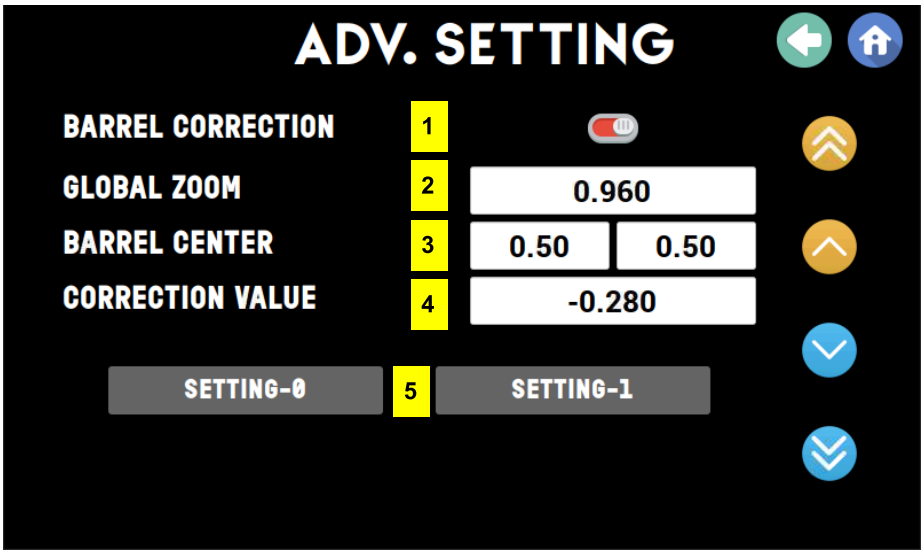

Fig. 7. Advanced setting page

CAUTION Mono3-VZ1/VZ2 do not need this setting. Keep the setting OFF unless advised otherwise.

1. 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.
2. Global zoom: Default value is between 0.96 ~ 0.97.
3. Barrel correction center X, Y: default X is 0.5, default Y is 0.5 ~ 0.7
4. 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 the actual barrel corrected grid.

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

CAUTION By default these parameters are pre-set when the printer is assembled and shipped. Do not enable this option if it's off by default.

Heater option

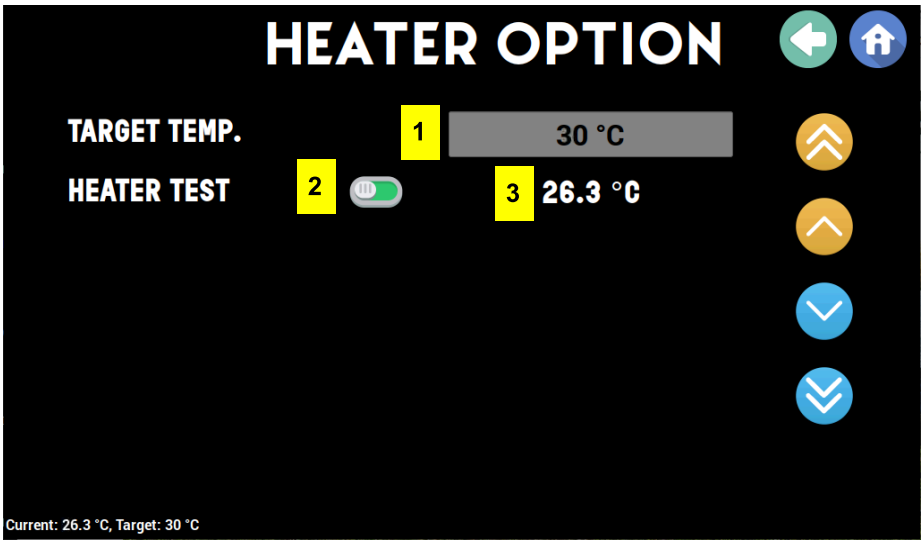

Fig. 8. Heater option

1. Target temperature setting. This will be disabled during the heater test.
2. Heater test button
3. Current temperature of the printer chamber. This is only displayed when the heater is on.

Wiper option

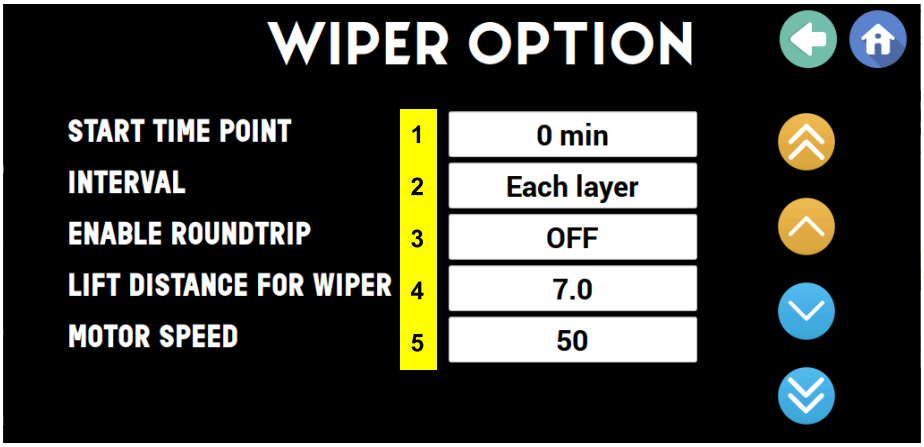

Fig. 9. Wiper option

1. Wiper start time: 0 min indicates the wiper starts without delay.
2. The interval of each wiper operation.
3. 'Roundtrip' indicates the wiper always returns to its home position per each operation.

INFO Mono3-2K40 should have this option ON all the time. (Firmware has locked it ON)

4. The total z-axis lift distance when the wiper is active.
5. Wiper motor speed. Default value is 50

Motor and timing option

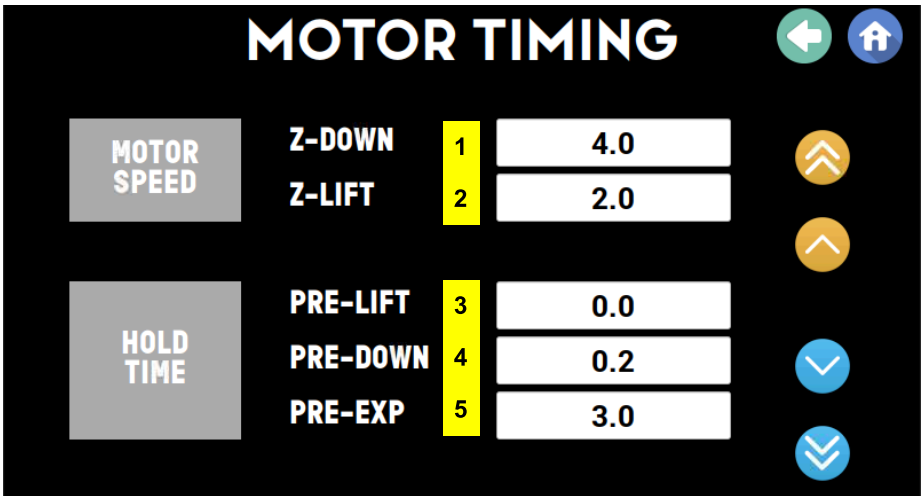

Fig. 10. Motor and timing option

1. Z-axis speed when it moves down (retract)
2. Z-axis speed when it moves up (lift)
3. Hold time between exposure and lift
4. Hold time between lift and retract
5. Hold time between retract and exposure

INFO Each layer exposure operation consists of exposure → lift → retract → next exposure → [repeat], Three hold times adjust break times between the steps. Normally '**Pre-Exp**' *hold time is used to allow stabilization of the build platform before next exposure*. *Thick resins require a longer 'Pre-Exp' hold time.*

Thick resin option

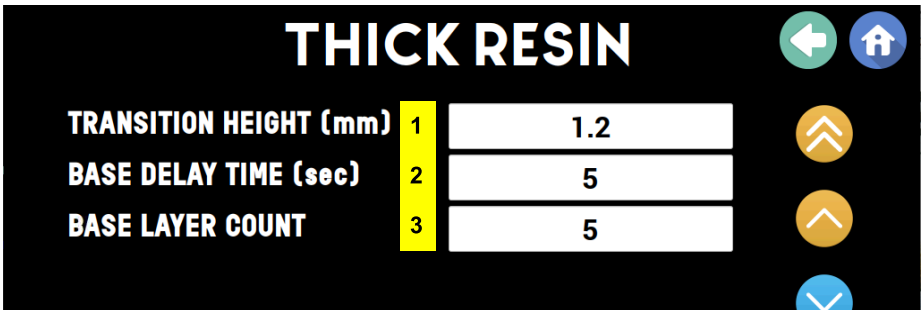

Fig. 11. Thick resin option

INFO This option is useful for high viscous resins (thick resins). If enabled, it will elongate the Pre-Exp hold time to allow build platform stabilization, and modify exposure times of lower height layers.

1. A maximum height that thick resin option is used. After this height, the option will be OFF.
2. The initial Pre-Exp hold time on top of existing Pre-Exp time.

3. The base layer count for the maximum Pre-Exp hold time specified in [D]. After these layers, the Pre-Exp time will be linearly decreased until the height specified in [C].

Control page

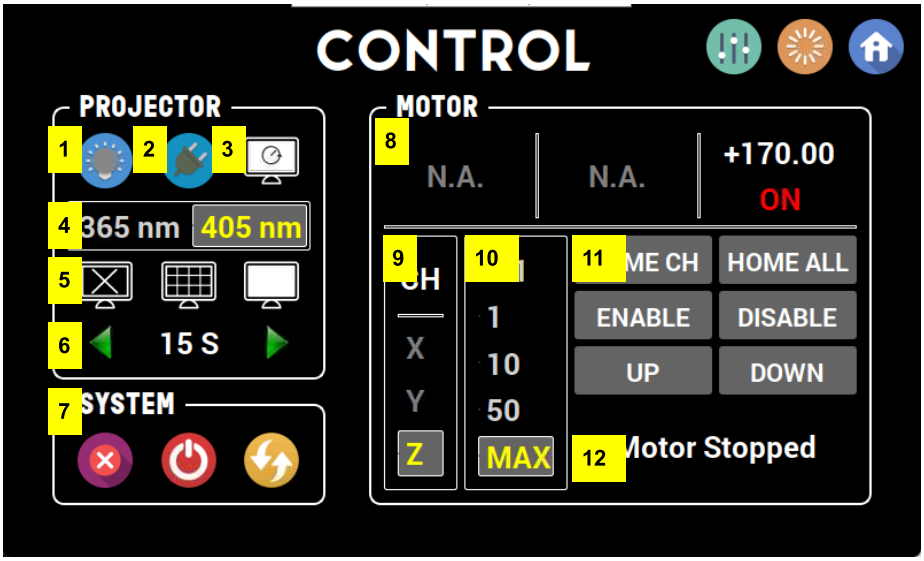

Fig. 12. Control page

1. LED enable button. This also shows LED power status.
2. Connect to the LRS-WQ Visitech projector. Once connected, use this button to disconnect or change projection mode (Video pattern vs. Pattern on the fly mode)
3. ***Exposure test menu***

   INFO You can control patterns, LED intensity, exposure time, and a certain gray scale. Find more information on the next page.
4. Select one of the LEDs (***only available on the 2Ch (VZ2) printer***)
5. Test projections (from left to right) close projection, grid screen, all white screen.
6. Timer setting
7. Close printer controller, shut down the printer or reboot the printer
8. Motor position and enable status for three axis (X, Y, and Z)
9. Channel selection.
10. Motor step selection.
11. Homing: This will homing the selected channel or all channels, move the motor up (forward) or down (backward).
12. Motor status (stopped or moving)

Exposure test

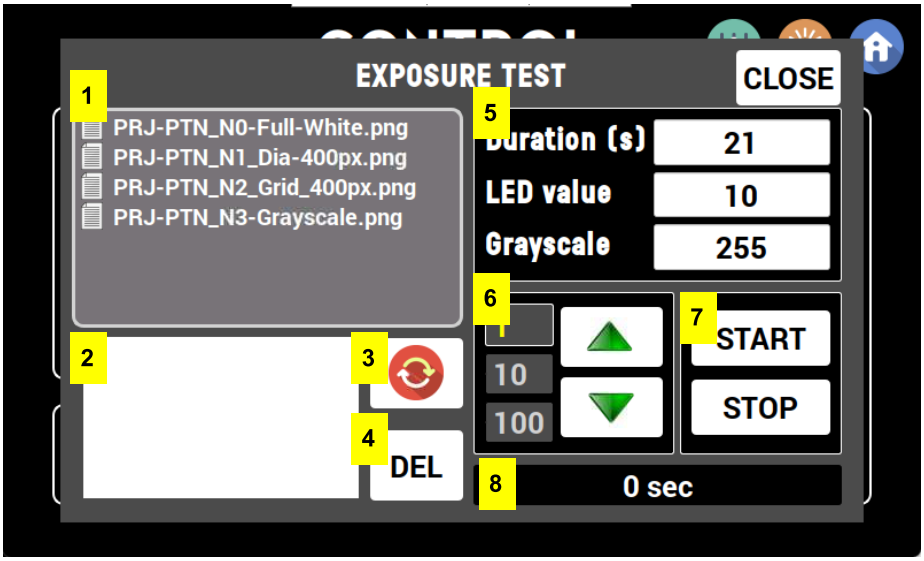

Fig. 13. Exposure test

1. Slice pattern list. The image size should be 2560 x 1600, 24 bit and the file name should start with PRJ-PTN. Otherwise, the image file won't be listed here. You can upload image files using MonoWare's upload function (Process >> Printer >> MNF upload).
2. Slice pattern preview
3. Refresh the list
4. Delete the selected file
5. Set the exposure duration, LED set value (or DAC value), and grayscale code (1-255)
6. Select the change step and increase or decrease the value for all three parameters
7. Start or stop exposure
8. Exposure status

Information page

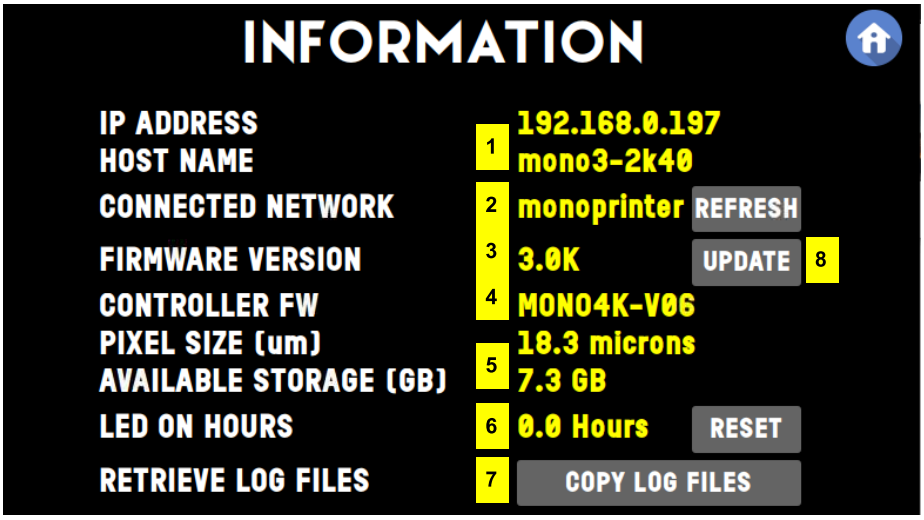

Fig. 14. Information page

1. IP address and host name of the printer.
2. Connected SSID (local wireless network name) and scan wireless network
3. Printer firmware version
4. Controller firmware version
5. Set pixel size and available storage
6. LED ON hours and reset button
7. Retrieve log files. Plug an USB stick before pressing the button.
8. Update the printer firmware. Consult us for updating the printer firmware.

Wireless network connection

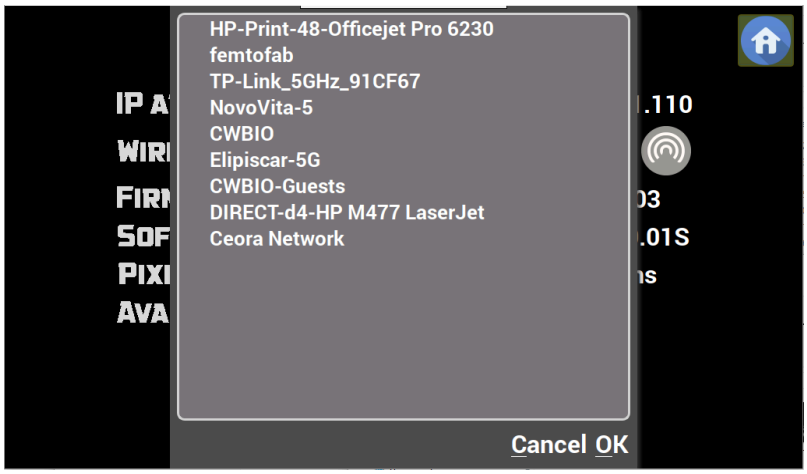

Fig. 15. List of wireless networks

1. When you push the wireless scan button, the above results will pop up after 1-2 mins. If you can't see the results, please retry.
2. Please make sure that the provided USB wifi dongle is plugged in. If you can't see any scanned results, please reconnect the wifi dongle and retry.

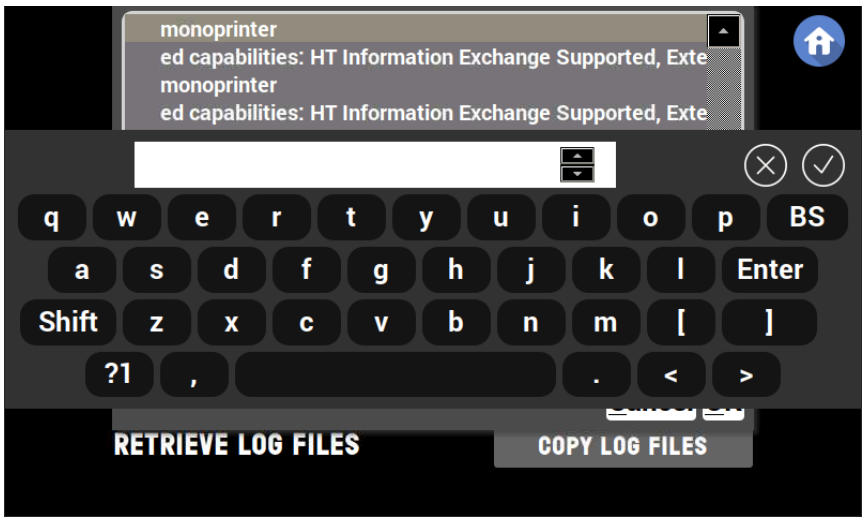

Fig. 16. Select a network and enter a passcode

3. If you select your SSID, you are prompted to enter a passcode. Type the code and press the accept button.

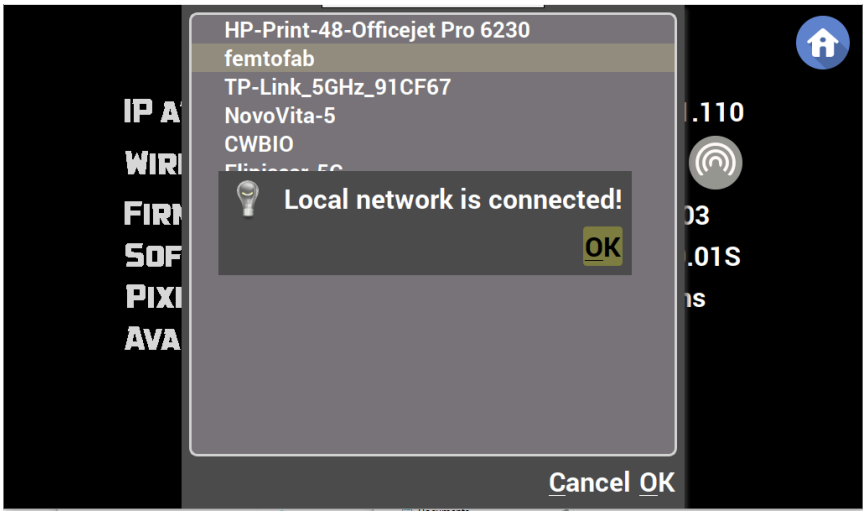

Fig. 17. Successful connection message

4. It usually takes 5 mins to connect your local network. If you fail to connect, please check the wifi dongle is working (light is blinking).

Closing remark

- If you have any issues during installation, contact us at info@monoprinter.com.