Version 3.0, February 2023

Xtreme 8K

Operations and Maintenance Guide

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Identification

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Xtreme 8K Operations and Maintenance Guide: X8K-UG-00023-Rev03-EN, February 2023

Introduction

Note: This Operations and Maintenance Guide has been created for **version 2.0** of Xtreme 8K Control Software.

This instruction manual:

- Describes the operation and maintenance of the printer.
- Provides important information on safe and efficient handling of the printer.

Note: The operation of the Envision One RP Software is described in the Envision One RP Software Manual.

This document includes important notes and tolerances for calibration tasks. Pay attention to these notes when starting up the printer and during operation. Keep this guide close to the printer so the operator can always access it.

History of Changes

Date	Changes	Version
Mar-2022	Document creation	1.0
June-2022	Added Remote Assist section Updated Software Update section Updated Hardware Setup section Updated Operational Maintenance section	2.0
Feb-2023	Added Check Xtreme 8K Is Ready to Print section Added Clean Level Sensor section Updated Electrical Requirements section Updated Printer Components section Updated Camera section Updated Cloud section Updated Connect Shop System Drying Oven section Updated Connect Parts Curing Unit section Updated Industrial Chiller section Updated Turn On Industrial Chiller section Updated Add Material section Updated Add Coolant to Industrial Chiller section Updated the back cover Updated Legal Notice section Updated System Requirements Envision One RP section	3.0

Technical Data

Mechanical Data

Footprint	142 x 105 x 208 cm (55.91 x 41.34 x 81.89 in)
Weight	907.18 kg (2000 lb)
Build Envelope	450 x 371 x 399 mm
Projector Resolution	2560 x 1600 for each of 2 projectors
XY Resolution	150 µm
Dynamic Z Resolution	100-150 µm
Data Handling	STL, .3mf
Warranty	1-year parts and labor

Electrical Requirements

Xtreme 8K requires 208V 3ph+PE (no neutral), 60Hz, 20A, NEMA L15-20P plug.

All electrical requirements must be met to ensure a stable setup of the printer.

- Use a battery backup whenever possible.
- Ensure there is a sufficient clean electrical socket that fluctuates no more than +/- 3% from its baseline.
- Do not plug any additional equipment into the power circuit.
- Plug the printer into separate surge protectors or separate battery backups. If your electrical line is prone to spikes and dips, use a 8kVA UPS battery backup system for the printer with a switch changing time of less than 1 millisecond.
- The Xtreme 8K does not require a dedicated server. It can be hard-wired into the network, or directly connected to a computer.
- The warranty does not cover damage caused by brownouts, blackouts, or electrical surges.

System Requirements Envision One RP

Use Envision One RP software for processing models digitally for 3D printing.

Note: Envision One RP requires Windows Operating System.
The software is not compatible with macOS.

- **Operating System:** Windows 10 or higher
- **Working Memory:** >= 128GB RAM
- **Hard drive:** 400 MB Free space
- **CPU:** Multi Core Processor e.g., Core i5, >= 3GHz, >= 6MB Cache
- **Graphics:** Dedicated 3D graphics card with >= 1GB memory and OpenGL 4.3 and higher

Printer Delivery

Unbox Printer

Printer Crate

The Xtreme 8K arrives in a wooden crate. You are responsible for keeping the shipping packaging for warranty purposes. It is important to mark out a space for crate and box storage before the printer arrives. The crate is needed for:

- Relocating the printer.
- Shipping the printer back to the factory for upgrades or service needs.

The crate weighs 997,9 kg (2,200 lbs.) with the printer, and 90,7 kg (200 lbs.) without the printer. A forklift is required to move the crate. Store the crate fully assembled.

1. Before moving the packaging into storage, reinsert the padding into the crate.
2. Add the padding from accompanying boxes. See below.
3. Break down any additional boxes that arrived with the crate, fold them, and insert them into the crate.
4. Re-seal the crate using the original brackets.
5. Place the crate in storage with a “Please do not discard, this crate accompanies 3D printer” sign attached to the sides.

Projectors Crate

The Xtreme 8K’s projectors arrive in a separate wooden crate.

Accessories

If you purchased a curing unit and battery backup, they arrive in a separate crate. To store, remove the padding and place it into the crate alongside of the printer padding. Cut the tape, flatten the cardboard, and set it in the crate for safe keeping.

Printer Components

This section explains the construction of the printer. To become familiar with the printer, read the following section when you are at the printer.

Front View

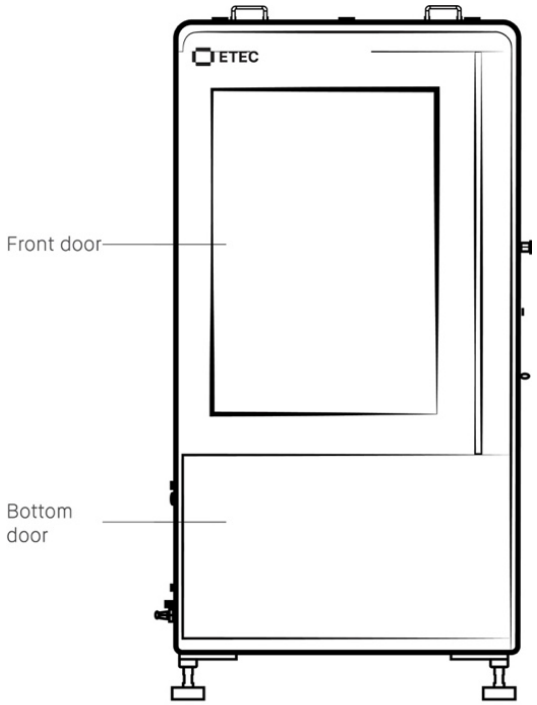


Figure 1. Front view of the printer

Top View

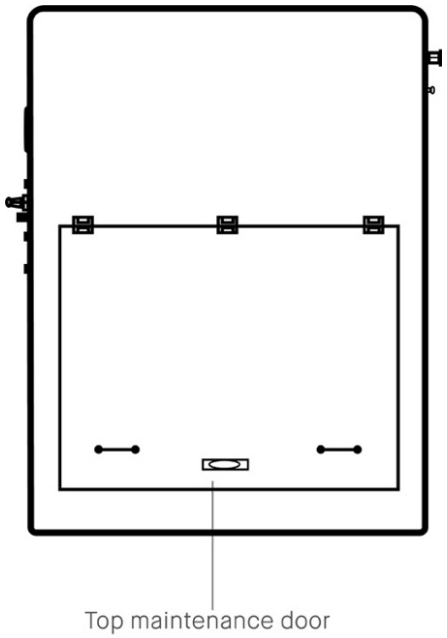


Figure 2. Top view of the printer

Back View

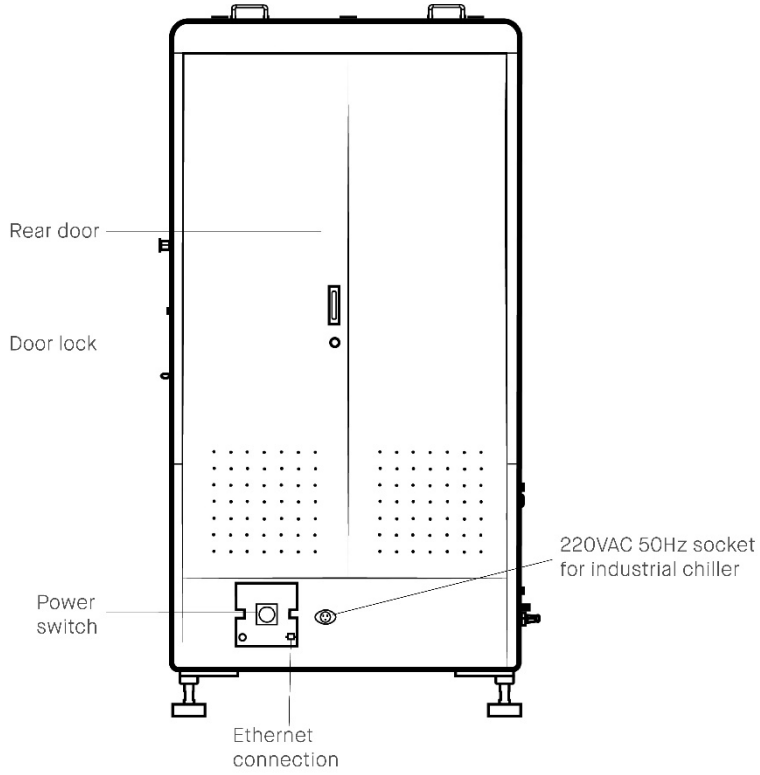


Figure 3. Back view of the printer

Right-Side View

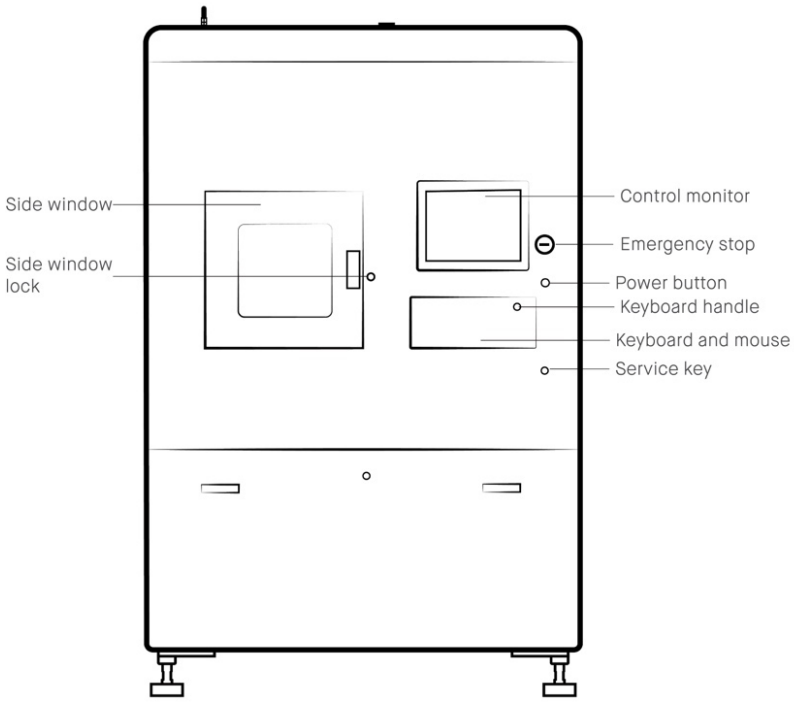


Figure 4. Right-side view of the printer

Left-Side View

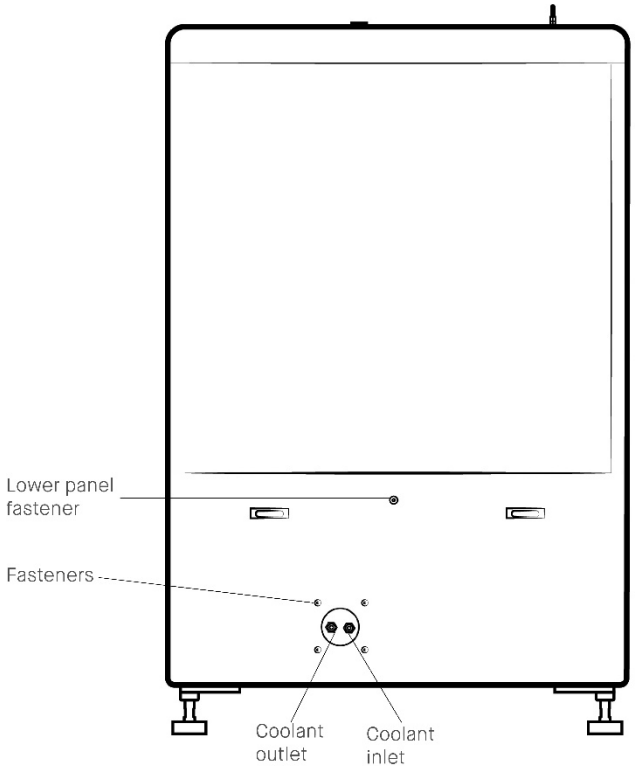


Figure 5. Left-side view of the printer

Upper Printer Compartment Open

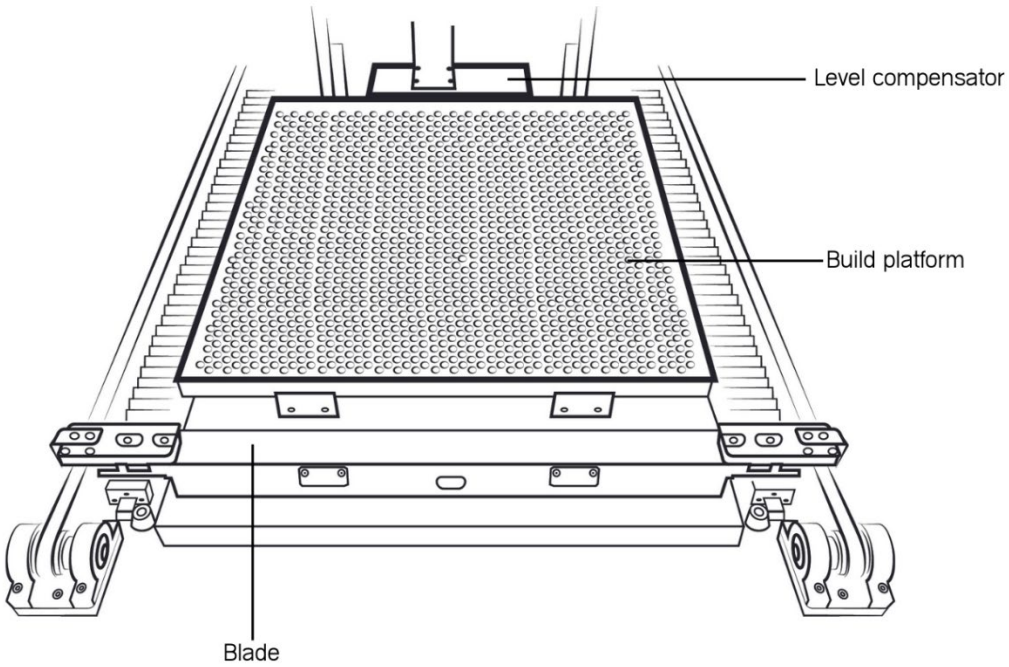


Figure 6: Upper printer compartment view (open)

Removable Material Tank with Lid

The Removable Material Tank is installed in the printer and holds the material required for the printing process. It can hold up to 140 L (36.98 gal) of material.
The Removable Material Tank allows you to quickly switch materials between prints by removing one material tank and quickly replacing it with a spare material tank. A spare Removable Material Tank is available for purchase.

- Weight: 83.46 kg (184 lb).
- Shipping weight: 96.16 kg (212 lb).
- Product dimensions (full tank): 78.31 x 71.93 x 78.61 cm (30.83 x 28.32 x 30.95 in).
- Shipping dimensions: 83.82 x 88.9 x 76.2 cm (33 x 35 x 30 in).

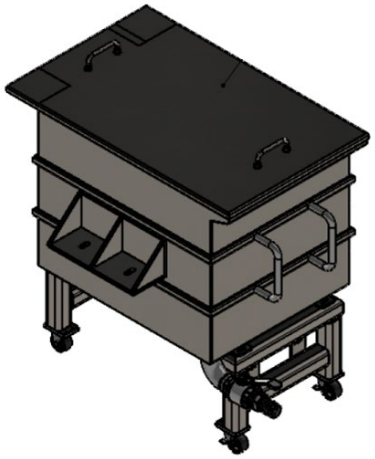


Figure 7. Material tank

Build Platform

Xtreme 8K uses a removable perforated metal build platform, see Upper Printer Compartment Open for illustration. A perforated build platform has the advantage of allowing material to flow more easily while the build platform is moving. The use of a removable platform allows for easier cleaning and part removal.

Blade

The blade is a crucial component of the printer, see Upper Printer Compartment Open for illustration. The blade moves along the Y axis over the build platform to create an even material surface. Its integrated pump sucks in surplus material and stores it in the internal reservoir of the blade. This material is then used to fill in any “holes” in the surface.

Level Compensator

With every movement of the build platform into or out of the tank, the material level increases or decreases, see Upper Printer Compartment Open for illustration. To keep the material level constant, the level compensator moves out of or into the material tank.

Industrial Chiller

The Industrial Chiller is a compressor-based refrigeration chiller that can achieve a cooling capacity of up to 1800W. The industrial chiller is required to maintain proper operating temperature for the Xtreme 8K's projectors. The chiller connects to the Xtreme 8K and must be installed within 121.90 cm (48 in) of the printer.

The industrial chiller requires coolant to operate and has a tank capacity of 10 L (2.64 gal).

- Weight: 44 kg (97 lb).
- Shipping weight: 50 kg (110.23 lb).
- Product dimensions: 59 x 38 x 74 cm (23.23 x 14.96 x 29.13 in.)
- Shipping dimensions: 67 x 51 x 93 cm (26.38 x 20.08 x 36.61 in.)

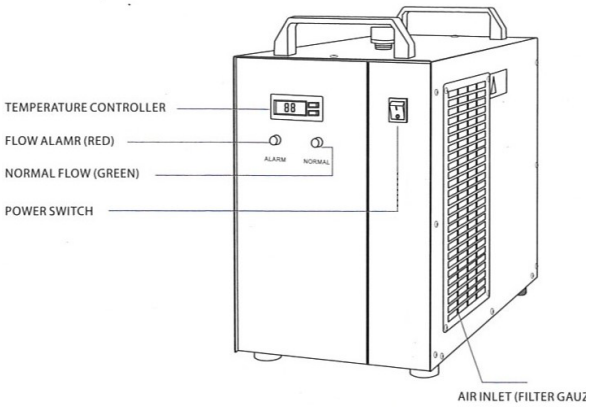


Figure 8. Industrial Chiller Front View

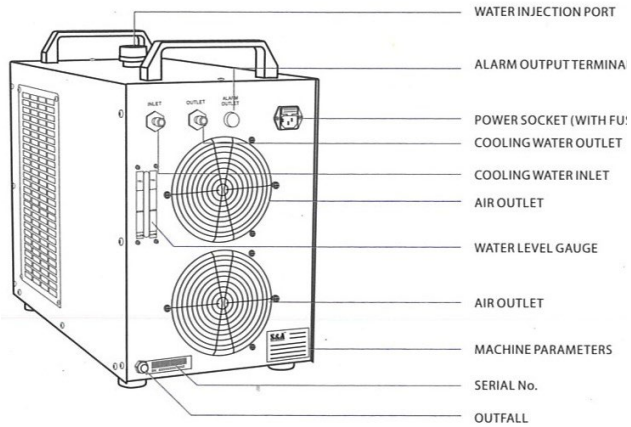


Figure 9. Industrial Chiller Back View

Hardware Setup

Connect Printer

Power Supply

CAUTION	**Risk of injury from slipping, stumbling, or falling through loose cables, objects, or liquids on the floor:** Keep the printer area clean and dry. Make sure no loose cables or objects are lying on the floor of the printer area. Place all printer cables carefully to prevent trip hazard. Inform personnel of residual risks.

CAUTION	**Risk of injury from electric shock:** Improper use of conducting components can lead to severe injuries. Always use the indicated voltage. Make sure all conducting components are in good order and condition.

NOTICE	The printer's power supply socket must be easily accessible to disconnect the power supply as needed.

To connect the printer to the power supply:

1. Locate the power cable at the back of the printer.
2. Connect the power cable to a power socket.

Turn Printer On

CAUTION	**Risk of injury from crushing caused by moving printer parts:** The printer may only be operated by instructed and specially trained personnel. The printer may only be operated if the protecting devices are working properly.

To turn the printer on:

1. Make sure the main circular switch is set to **OFF**.
2. Connect the main power cable to a power socket.
3. Make sure the industrial chiller is turned on before the projectors turn on.
4. Rotate the main circular switch to turn the printer on.
5. Press the **SYSTEM** power button to turn on the integrated computer.
   → When the computer has completed the startup procedure, the **Xtreme CS** starts.

Connect Parts Washing Unit

The recommended washing units for Xtreme 8K are the following:

- Orbital Shaker
- Ultrasonic Cleaner

Select one of the preferred options for printed parts washing.

Orbital Shaker

This washing solution for large parts has:

- RPM upper limit greater than or equal to 200.
- Amplitude greater than or equal to 20 mm.
- Platform size of at least 300 x 200 mm.

A plastic container needs to be purchased separately.

Your container size will determine the maximum allowable part size.

Note: The ELMI S-3.02 20L Analog Orbital Shaker 20mm Amplitude with Large Platform is recommended. See manufacturer for setup instructions.

Ultrasonic Cleaner

Another option for washing large parts is the Ultrasonic Cleaner with the following characteristics:

- Frequency between 37-40 kHz.
- Power/volume greater than or equal to 18W/L.
- Tank size greater than or equal to 327 x 300 x 200 mm.

The tank size determines the maximum allowable part size.

Note: The ELMA Ultrasonic Cleaner: 4.7 gal Tank Capacity, 11 51/64 in Tank Dp, 7 7/8 in Tank Ht is recommended. See manufacturer for setup instructions.

Connect Shop System Drying Oven

The **Shop System Drying Oven from Desktop Metal** is recommended for all drying, thermal curing, and annealing purposes.

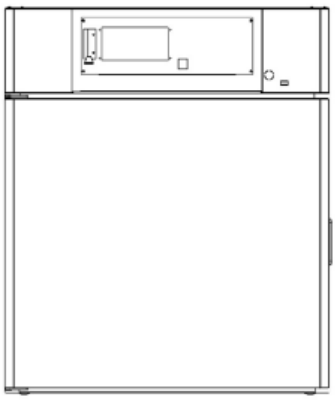


Figure 10. Shop System Drying Oven

For more information on the Shop System Drying Oven, see Shop System Drying Oven Operations and Maintenance Guide.

Connect Parts Curing Unit

The UVCA 3000 is the recommended curing apparatus for the Xtreme 8K.
The UVCA 3000 UV is the UV light flood lamp for the post-processing of UV-sensitive curing materials for industrial and consumer goods applications. This final step after 3D printing and cleaning a printed part results in higher strength and stability as well as ensuring a thorough cure. The UV Light Curing Box for Xtreme 8K includes a rotating inner table to maximize exposure of all parts of the model to the UV light.

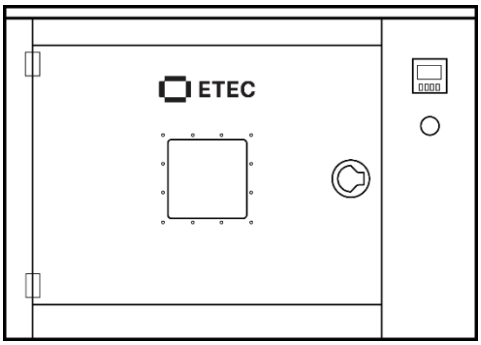


Figure 11. Parts Curing Unit

For more information on the UVCA 3000, see UVCA 3000.

Turn On Industrial Chiller

The industrial chiller is required to maintain proper operating temperature for the Xtreme 8K's projectors. The industrial chiller requires coolant and has a tank capacity of 10 l (2.64 gal).

CAUTION	**Risk of damage to the printer: T**he industrial chiller should be installed and connected only by a certified technician.

CAUTION	**Risk of damage to the printer:** Do not operate projectors or printer without the chiller turned on and fully operational.

CAUTION	**Risk of damage to the equipment:** To prevent damage to the circulation pump, make sure there is coolant in the tank before turning the chiller on. Make sure the coolant level is in the green (normal) area. Do not overfill.

The chiller is fully set up by a technician. To turn the chiller on and off, press the power switch on the front side of the chiller.

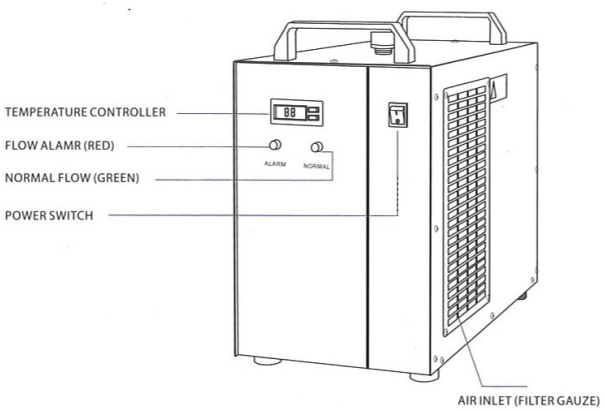


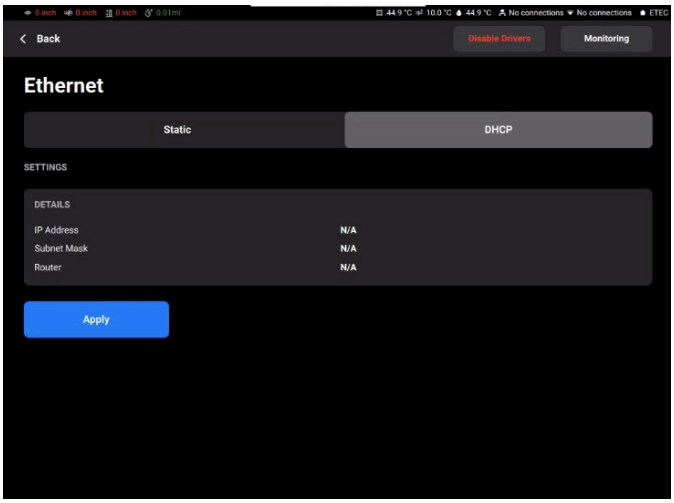
Figure 12. Industrial chiller front view

Note: Use coolant only. Replace the coolant and filters every six (6) months.

Set Ethernet

To connect the printer to your network:

1. Plug the Ethernet cable into the network connector located on the back of the printer.
2. Connect the Ethernet cable to your network.
3. Go to **Settings > Ethernet** from the main menu of the printer's Control Software.

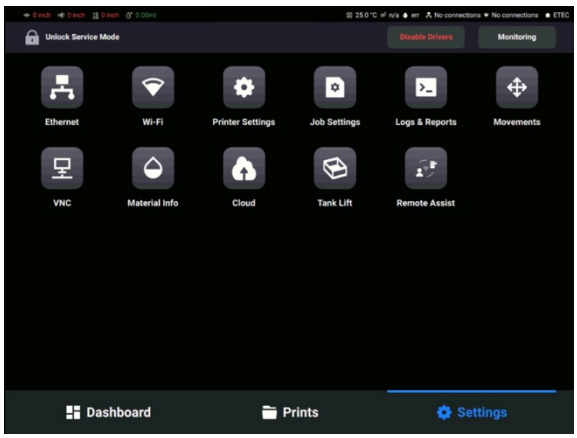


There are two types of connection:

- **Dynamic connection** or **DHCP** that assigns the printer a dynamic IP address. All the fields are greyed out.
- **Static connection** requires that you type all the necessary information in all the fields manually and confirm by pressing **Apply**.

Software Presentation

Xtreme 8K Control Software



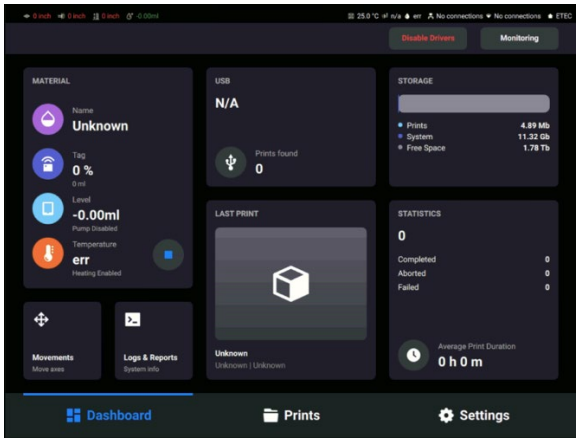
In **Xtreme 8K Control Software**, there are three main sections:

- Dashboard
- Prints
- Settings

Dashboard Menu

The **Dashboard** menu:

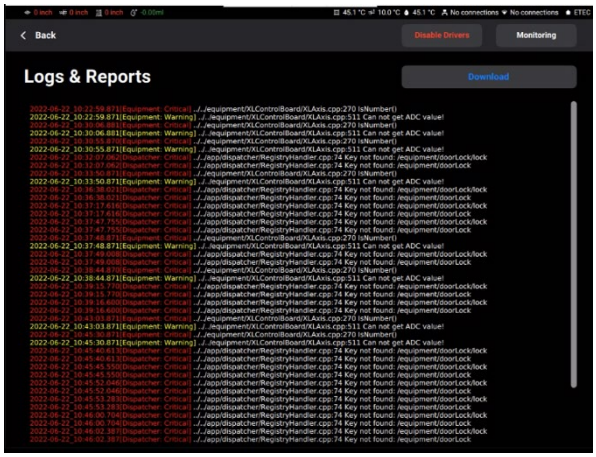
- Displays information on material usage and current material level.
- Provides information on the printing statistics.
- Allows you to start preheating.
- Allows you to review and download log reports.
- Allows you to navigate to the **Movements** menu for moving the blade, build platform, and compensator.
- Displays whether any USB drive is connected.
- Displays the information about the latest print job.
- Provides information about the available and occupied storage.
- Displays statistics on the number of failed, aborted, and successful prints.



Logs & Reports

The **Logs & Reports** tab lets you download a log report with all printer information to a connected USB drive.

1. Connect the USB drive to the printer.
2. Go to **Settings > Printer Settings > Logs & Reports** to open the tab.
   → The following window appears.



3. Make sure the USB drive is connected to the printer and press **Download** to download the report containing all information received during printer operation.
   → The report downloads successfully to the USB drive.

To send the log report to Service & Support:

1. Open the USB drive folder.
2. Find the file with the similar name: snapshot_2019-09-26T14-01.zip.
3. Send it to your personal Service & Support manager.

Material

The **Material** screen provides information about:

- Type of material used on the printer.
- Amount of material left on the material tag.
- Temperature of the material.
- Material level.

Go to **Home > Dashboard** to check the window.
To change the material tag:

1. Remove the material tag from the Tag Reader.
2. Put the new material tag on the Tag Reader.
   → The material information is updated based on your new material tag.

Storage

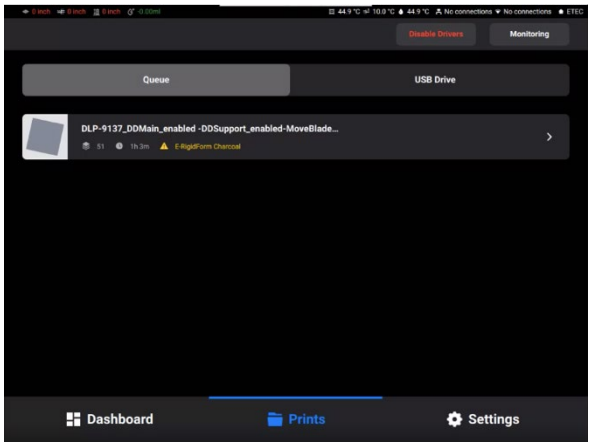
The **Storage** window provides information about the volume of the occupied storage and the total storage in the internal computer system.

Statistics

The **Statistics** window provides information on the quantity of finished jobs (completed, aborted, and failed) and the average duration of a print.

Prints Menu

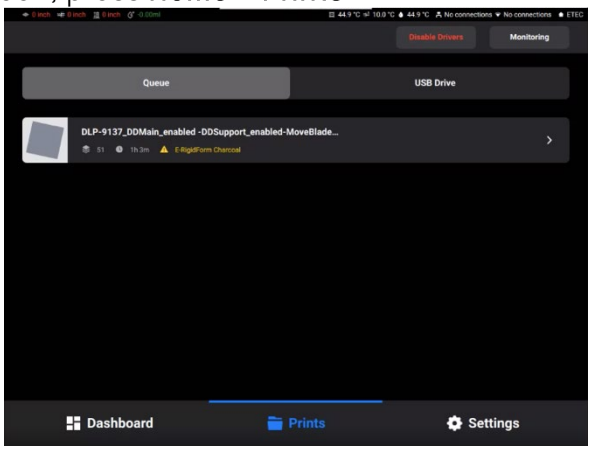
1. Press **Prints** on the main screen of the Control Software to open the tab.



2. Scroll through the list to view different jobs. The following information is provided for each job:
   - Number of layers for the job.
   - Estimated time when the job will be finished. This calculation is approximate and is updated dynamically after each exposure.
   - Name of the material.

To load the job, see Load a Job File.
To delete the job:

1. On the Home screen, press **Home** > **Prints**.

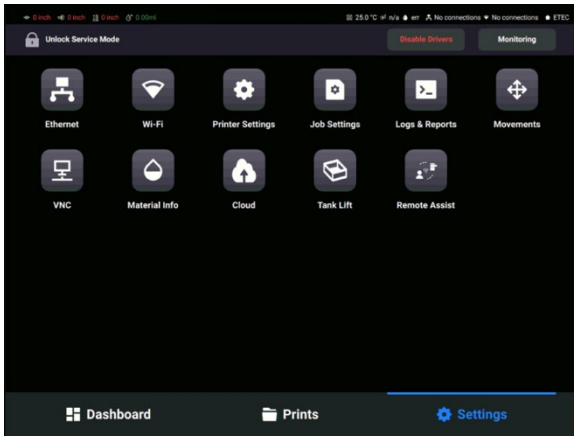


2. Select the print job folder name.
3. Press **Delete**.
   → The unwanted print job folder is now erased from the printer.

Settings Menu

The **Settings** menu:

- Allows you to change settings of the printer build parameters or the printer itself.
- Provides further information about the printer or the LAN connection.
- Allows you to turn the printer off electronically by pressing **Disable Drivers**.



Printer Settings

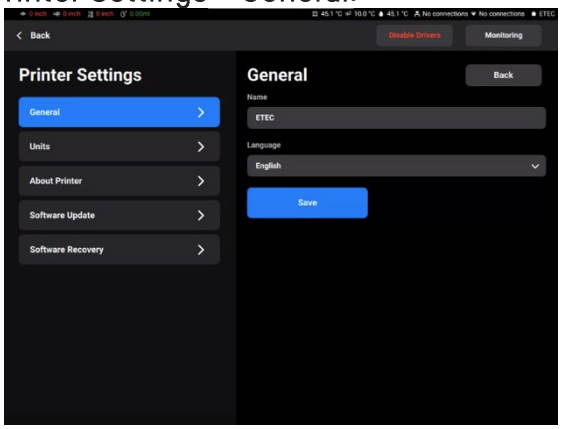
The **Printer Settings** tab:

- Provides information about the printer.
- Allows you to change the printer's name, select units of measurement, and update the software.

Printer Name

This option lets you change the name of the printer.

1. Go to **Settings** > **Printer Settings** > **General**.



2. Enter the required name of the printer into the **Name** field using the keyboard.

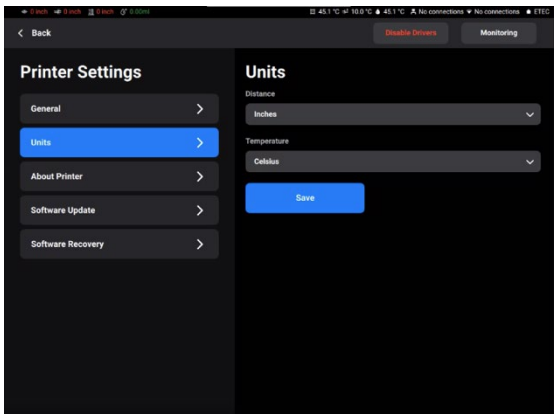
> **Note:** Printer name may contain: letters from A to Z; digits from 0 to 9; a hyphen (-). It may not: include spaces; include special characters; begin with a number or a hyphen.

3. Press **Save**.

Units

The **Units** tab allows you to select the units of measurement for the motion parameters.

1. Go to **Settings** > **Printer Settings** > **Units**.



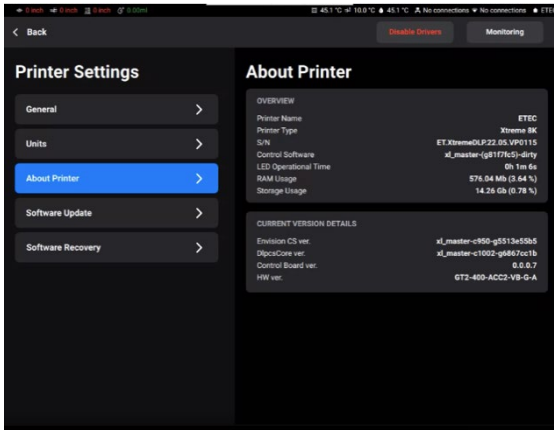
2. Select the required **Temperature** and/or **Distance** units and confirm by pressing **Save**.

   → The units of measurement are changed.

About Printer

The **About Printer** tab provides information about the printer.

Press **Settings** > **Printer Settings** > **About Printer** to open the tab.



Overview

- **Printer Name:** Name of printer.
- **Printer Type:** Type of printer.
- **S/N:** Printer's serial number.
- **Control Software:** Version of control software set on the printer.
- **LED Operational Time**: Time of LED operation.
- **RAM Usage**: Volume of occupied memory (as percentage of the total volume).
- **Storage Usage**: Volume of occupied storage (as percentage of the total storage).

Current version details

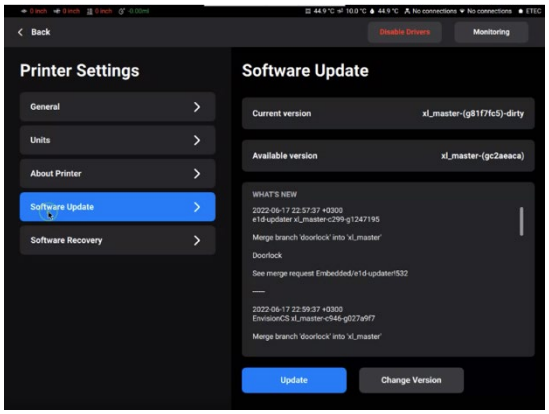
- **EnvisionCS ver.:** Version of control software set on the printer.
- **DlpcsCore ver.:** Version of the DLPCS Core.

- **Control Board ver.:** Version of control board.
- **HW version:** Version of firmware set on the printer.

Software Update

The **Software Update** tab provides information about the current applied control software, and any available new versions of software.
To update the Xtreme 8K with a new version of the software:

1. Go to **Settings > Printer Settings > Software Update** to open the tab. If the latest version of software is installed on the printer, the **Changelog** button displays, letting you check detailed information about current software version. If a new version of software is available, the **Update** button displays.



NOTICE	Do not turn the printer off during software update.

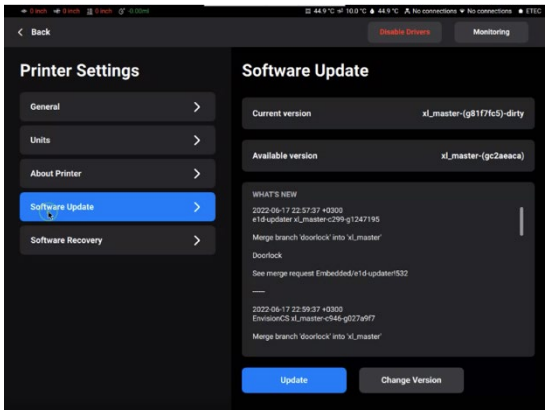
2. Press **Update**.
→ The update process starts.
→ After a successful printer update, the following screen appears.

3. To apply changes, reboot the printer. It will reboot automatically in 30 seconds. To reboot the printer manually, press **Reboot**.

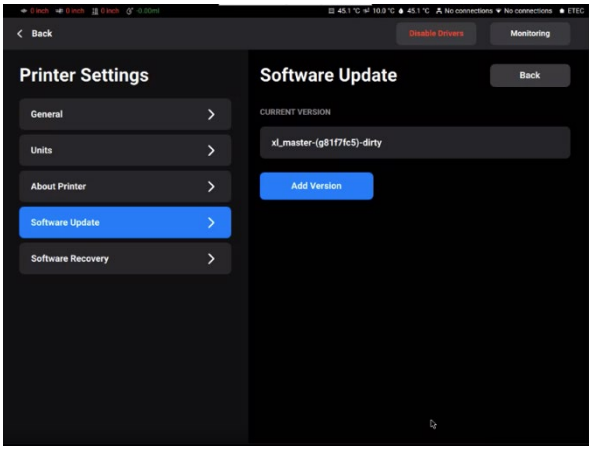
ETEC may provide a custom version of the Control Software containing special features. Once a custom Control Software version is ready, you will receive an encrypted version number and can install the custom update on the printer.

To update Xtreme 8K with the custom version:

1. Go to **Settings > Printer Settings > Software Update** to open the tab.
→ The following screen appears.

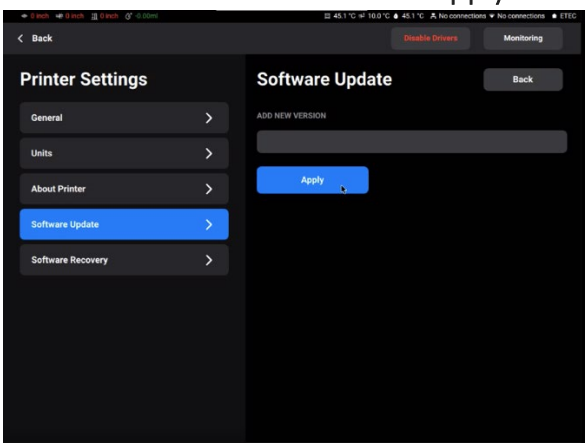


2.Press **Change version**.
→ The following screen appears.



Note: If no custom updates are installed yet, the **Apply** button will be grayed out.

3. Press **Add Version**.
4. Type the encrypted version number. Click **Add**.
5. Select the needed version from the list. Press **Apply**.



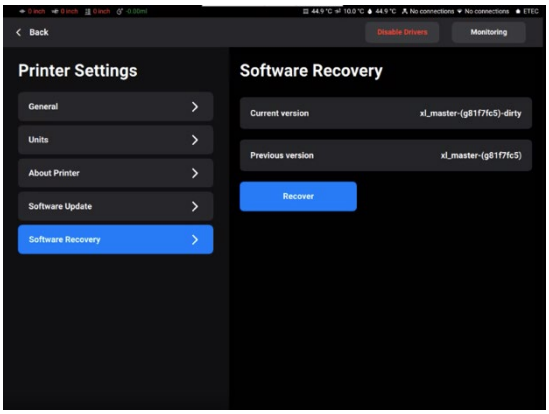
→ The system saves the previously installed Control Software version.
→ The process of printer updating starts.
→ After a successful printer update, the following screen appears.

To apply changes, reboot the printer. It reboots automatically in 30 seconds. To reboot the printer manually, press **Reboot**.

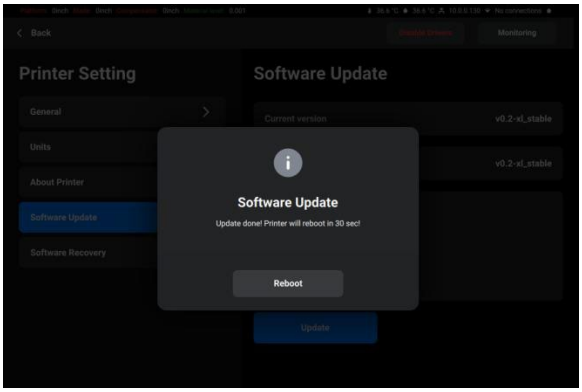
Software Recovery

The **Software Recovery** tab allows you to recover the previous version of software.

1. Go to **Settings** > **Printer Settings** > **Software Recovery** to open the tab.
   → The following screen appears.



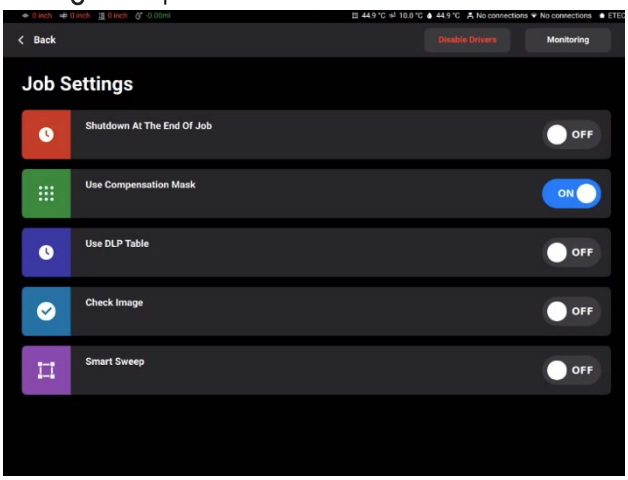
2. Press **Recover** to get back to the previous version of Control Software.
   → The process of software recovery starts.
   → After successful software recovery, the following screen appears.



3. To apply changes, reboot the printer. It reboots automatically in 30 seconds. To reboot the printer manually, press **Reboot**.

Job Settings

This tab lets you change the printer settings.
Press **Settings > Job settings** to open the tab.



The following settings are available:

- **Shutdown at the End:** Shuts down the printer when the job is finished.
  - **ON** - Printer turns off automatically after print job completion.
  - **OFF** - Printer does not turn off after print job completion.
- **Use compensation mask:** Mask application.
  - **ON** - Mask is applied to the projected image.
  - **OFF** - Mask is not applied to the projected image.
- **Use DLP Table:** DLP table application.
  - **ON** - DLP table is used.
  - **OFF** - DLP table is not used.
- **Check Image**: Image verification.
  - **ON -** All layers of the job are checked before starting the job.
  - **OFF** - Layers are not checked before starting the job.
- **Smart Sweep**: Smart blade movement reducing the print time.
  - **ON –** Function is activated during print.
  - **OFF** – Function is not activated during print.

Material Info

The **Material Info** tab provides information about:

- Type of material used on the printer.
- Amount of material left on the material tag.

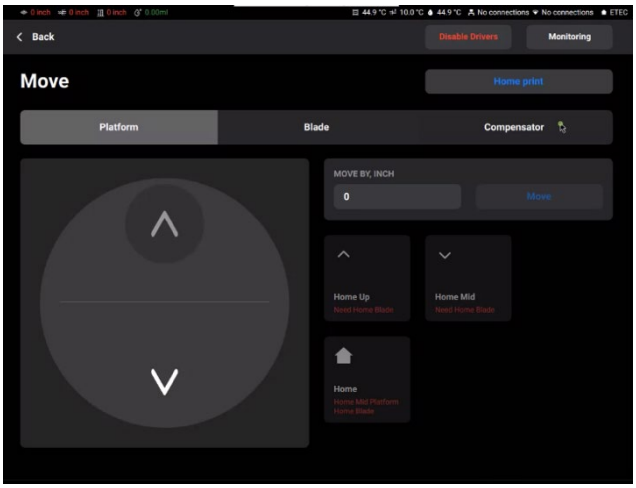
Movements

The **Movements** tab lets you move the build platform, blade, and compensator. It also contains the **Home Print** button.

By pressing the **Home Print** button:

- Platform moves to the Home position.
- Blade moves to the Home front position.
- Compensator adjusts material level if needed.

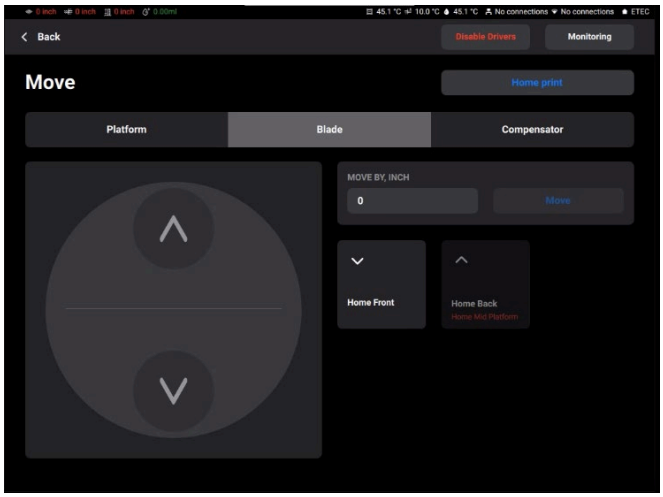
In the **Platform** tab, you can move the platform up and down or bring it to Home position.



Set the step value in the **Move By** field using the keyboard. Press **Move** to move the build platform for the specified distance towards one of the following directions:

- **Home Up** to move the platform up;
- **Home Mid** to move the platform down; or
- **Home** to move the platform to its Home position.

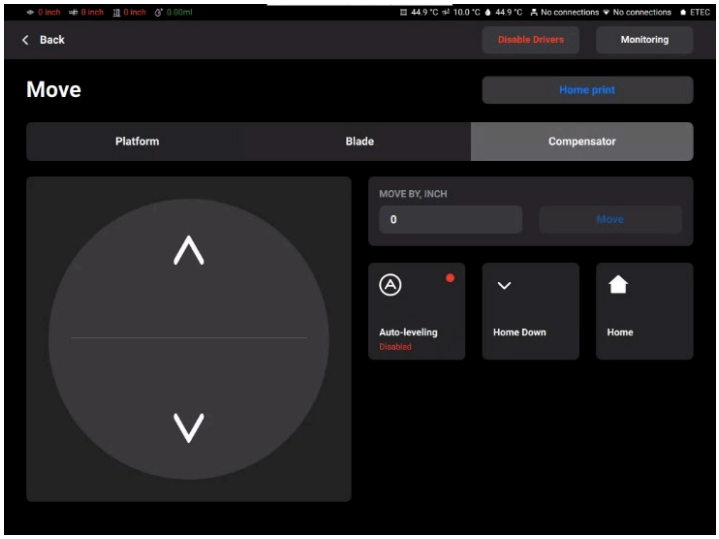
In the **Blade** tab, you can move the blade to the home front or home back position.



Set the value of one step in the **Move By** field using the keyboard. Press **Move** to move the blade for the specified distance towards one of the following directions:

- **Home Front** to move the blade to its Home front position.
- **Home Back** to move the blade to its Home back position.

In the **Compensator** tab, you can adjust the compensator position.



Set the value of one step in the **Move By** field using the keyboard. Press **Move** to move the compensator for the indicated distance towards one of the following directions:

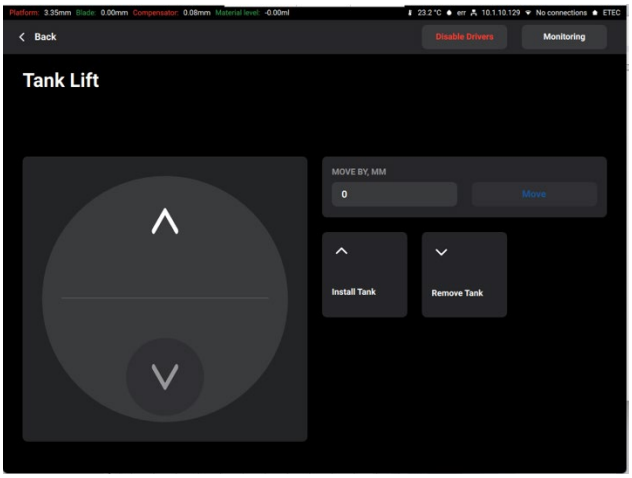
- **Home Down** to move the compensator down.
- **Home** to move the compensator to its Home position.
- **Auto-leveling** to pump the material to the required level.

Tank Lift

Note: The **Tank Lift** feature is available in some printer hardware configurations.

The **Tank Lift** feature makes removing and installing the material tank easier.
To remove the material tank:

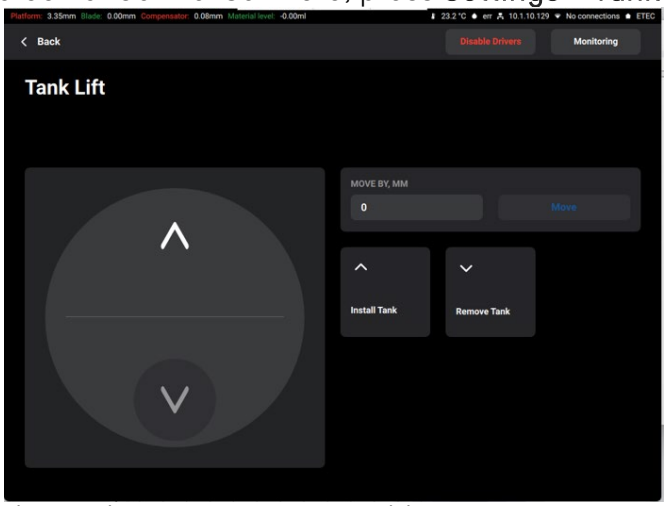
1. Press **Settings** >**Tank Lift** to open the tab.



2. Open the front door of the printer and disconnect the heater connectors to enable removing the material tank.
   → The **Remove Tank** button becomes active.
3. Press **Remove Tank**.
   → The material tank starts moving down.
4. When the material tank stops moving and is at its lowest position, roll the material tank out of the printer.

To install the material tank:

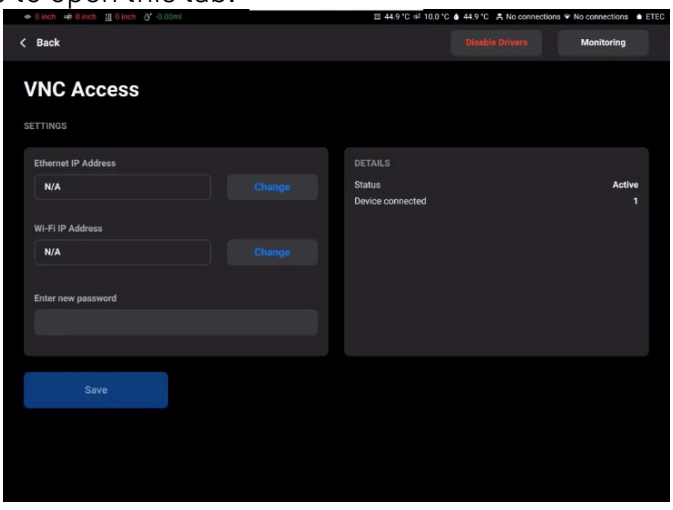
1. Roll the material tank up and push in as far as it can go. Otherwise, the sensor will not detect the material level.
2. On the main screen of Control Software, press **Settings** > **Tank Lift**.



3. Set the step value in the **Move By** input field.
4. Press **Install Tank**.
   → The material tank starts moving up.
5. When the material tank stops moving and is at its highest position, connect the heater connectors and close the front door of the printer.

VNC Connection

Go to **Settings** > **VNC** to open this tab.



To set a password:

1. Type your password in the **Enter new password** field.
2. Press **Save**.
3. Restart the printer to apply new settings.

Camera

Note: This feature is in development and will be available soon.

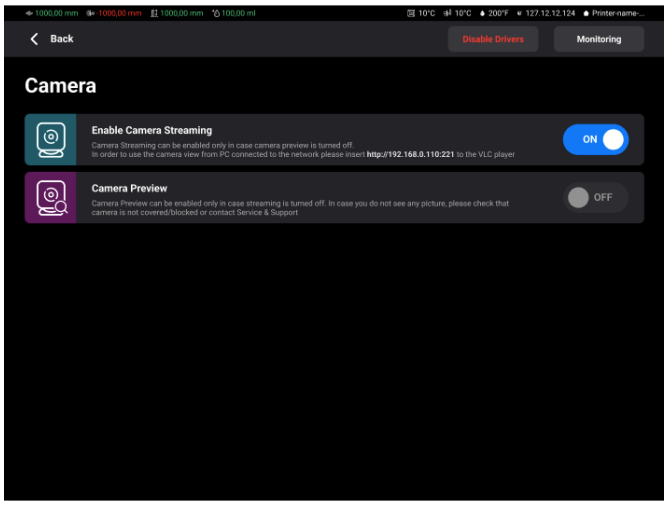
For Xtreme 8K printers with the camera installed, it is possible to enable camera streaming for observing the internal space of the printer. This provides the possibility to supervise the build envelope during printing and control the state of other components inside the printer via camera streaming.

Prerequisites:

- The workstation is on the same network as the printer.
- The VLC Player is installed on the workstation.

Step-by-step:

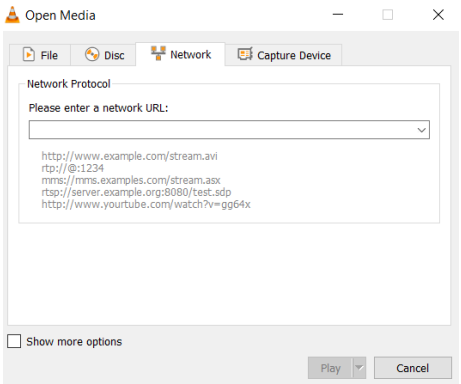
1. Go to **Settings** > **Camera**.
→ The following window appears.



2. Toggle the **Enable Camera Streaming** option to **ON**.

Note: Make sure that **Camera Preview** toggle button is set to **OFF** before enabling the camera preview.

3. Open VLC Player.
4. Go to **Media** > **Open Network Stream**.

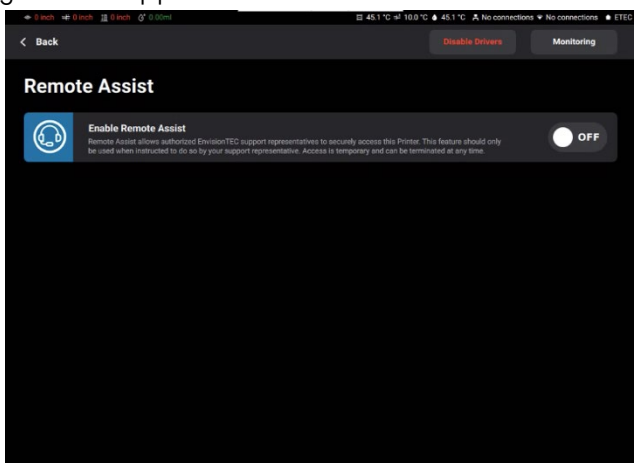


5. Type in the printer's IP address (e.g., http://192.168.0.5).
→ Camera streaming starts.

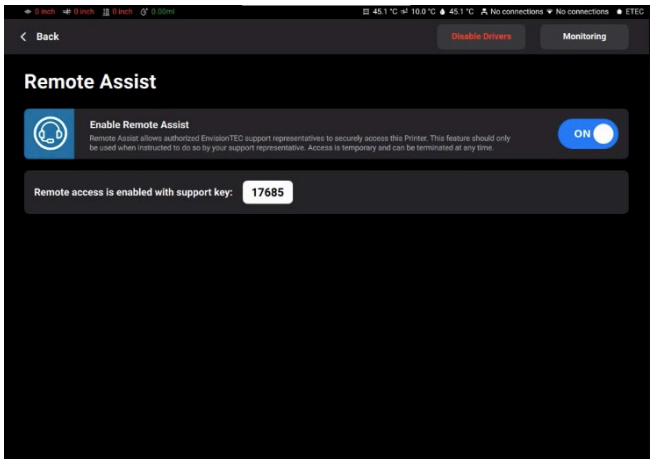
Remote Assist

This feature allows you to grant remote access to an ETEC support representative.

1. Go to **Settings** > **Remote Assist** > **Enable Remote Access**.
   → The following screen appears.



2. Switch the toggle button to **On** to enable **Remote Assist**.
   → A 5-digit code appears.



3. Provide the 5-digit support key to your ETEC support representative.
   → The remote session starts.
4. To terminate the remote session, switch the toggle button to **Off**.

Envision One RP®

All files to be printed must pass through Envision One RP software before being transferred to Xtreme 8K printer. Once the models are loaded, automatically fixed, oriented, and supported, they are transferred to the printer as a folder with a series of images and files. The printer uses this information to build three-dimensional models, see ETEC Knowledge Base.

Install Envision One RP on another computer (PC). Connect the two computers via a network to transfer the prepared job files to the printer, and make sure to meet the system requirements, see System Requirements Envision One RP.

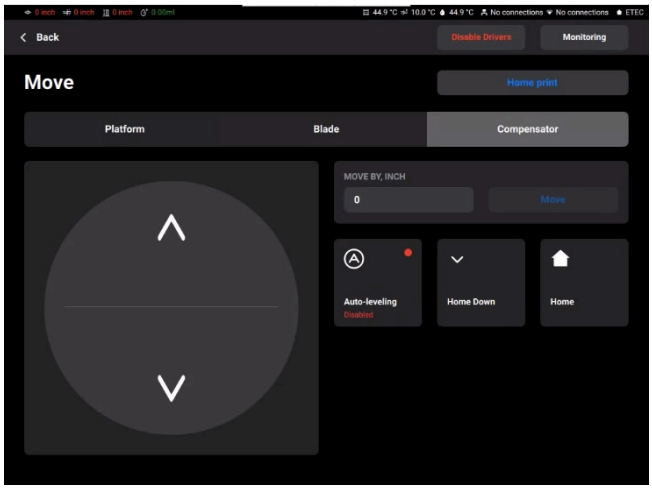
Prepare Xtreme 8K for Print

Add Material

The technician initially fills the removable material tank during printer installation.

To add material:

1. Make sure the material tank is installed correctly, see Install Removable Material Tank.
2. On the printer screen, select **Dashboard > Movements**.



3. In the **Platform** tab, press **Home**.

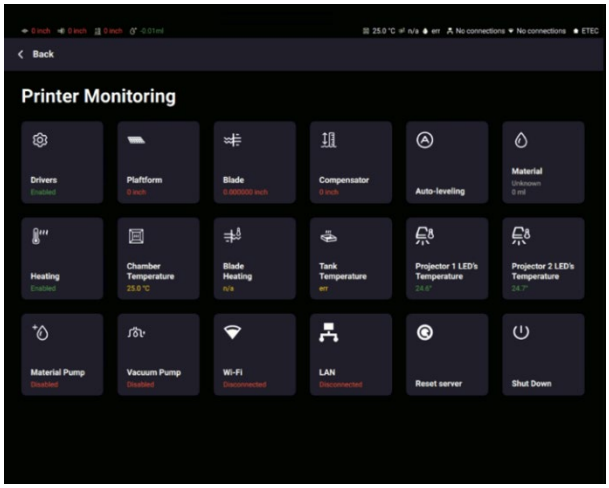
   → The build platform moves down to its Home position.
4. In the **Compensator** tab, press **Home**.

   → The compensator moves down to its Home position.
5. Carefully pour the material from the material container into the tank.
6. Go to **Dashboard > Material** and check the **Level** value. It should read as close to **0** as possible.
   - If the value is positive, remove the excess material, using the drain valve on the front bottom of the tank, see Clean Material Tank.
   - If the value is negative, add more material to the vat.

Material Heating

Temperature controllers heat the chamber, blade, and material tank inside the printer. Once the Xtreme 8K CS is started, the system initiates heating the chamber, blade, and material tank to the predefined temperatures.

Information about the temperature changes is displayed on the status bar at the top of the window and in the **Printer Monitoring** menu.



When print job starts, the system detects the required temperatures for the chamber, blade, and material tank and heats the components to the minimum required temperatures indicated in the job file. There is an option to abort the job during the printing process.

When the minimum required temperature is established, the printing begins. The printer continues to maintain the target temperature during the print job.
If the chamber, blade, and material tank do not reach the required temperature then the job will not start.

Check Xtreme 8K Is Ready to Print

NOTICE	Checking the printer ensures the highest quality of printed models and minimizes the risk of errors or printer malfunctioning.

Before beginning a print, always check the following:

- The printer door is closed.
- The surface of the build platform is clean and free of all cured material.
- The material tank is installed correctly.
- There is enough material in the material tank.
- All material handling instructions are followed for the specific material used (mixing, temperature, etc.)
- The material tag is on the material tag reader, and the tag matches the material in the tank and in the buildstyle.

Start a Print

CAUTION	**Risk of injury from crushing caused by automatically moving printer parts:** The printer may only be operated by instructed and specially trained personnel. Make sure all people stay far from the danger zone. The printer may only be operated if the protection devices are working properly.

CAUTION	**Risk of injury:** Do not use materials other than those delivered by ETEC. Observe the relevant Safety Data Sheets for the materials. Use the appropriate personal protective equipment.

Note: The execution of job preparatory activities, including date and performing operator, should be documented for reasons of traceability.

Create Print Job in Envision One RP

To create the job in Envision One RP:

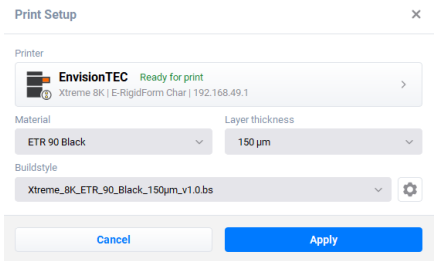
1. Open Envision One RP Software.
2. Select the printer, material, and layer thickness.
3. Add a model.
4. Orient the model and add supports as needed or use the **Autopilot** feature.
5. Save the build job to a USB or transfer directly to the printer.

Load a Job File

Once the job file is created in Envision One RP, send it directly to the printer by following the instructions below. If job file was saved on the USB drive, see Load a Job File from USB Drive. It is also possible to load a job file via the network folder.

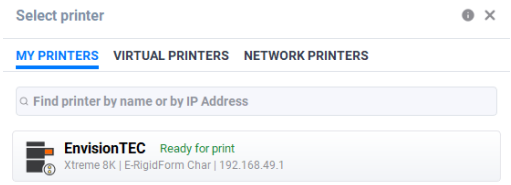
Load Job from Envision One RP

1. Open the Envision One RP.
   Requirements: At least one opened and selected 3D model.
2. Press the **Print Setup** button in the **Print Menu**.
   → The following window appears.



3. Press the **Printer** field.

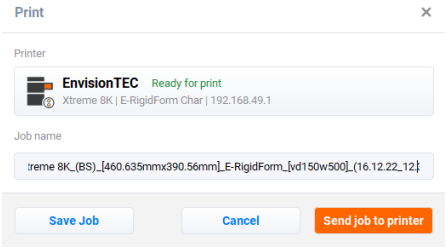
→ The following window appears.



4. Select a required printer from the list and press **Apply**.

> **Note:** Printers in the network can have the following statuses: *Ready for Print*, *Printing*, or *Offline*. You cannot send a job file to a printer with the *Offline* status.

5. Press the **Print** button in the **Print Menu**.
   → The following window appears.

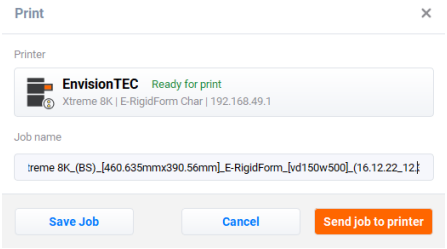


6. Press **Job Name** field to change the name of the print job.
7. Press **Send job to printer**.
   → The job file is sent to the specified printer.

Load Job from USB Drive

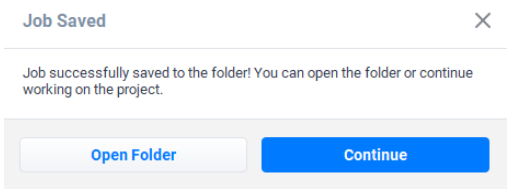
To save a job to USB drive:

1. Connect the USB drive to the PC with the installed Envision One RP.
2. Open Envision One RP.
3. Create the job you want to save.
4. Select the job you want to save.
5. Press **Print**.
   → The following window appears:



6. Press **Save job**.
   → The folder selection dialog box appears.
7. Open the USB drive folder you want to save a job to and press **Select Folder**.
   → The job folder with all the required data is saved to the selected USB drive.

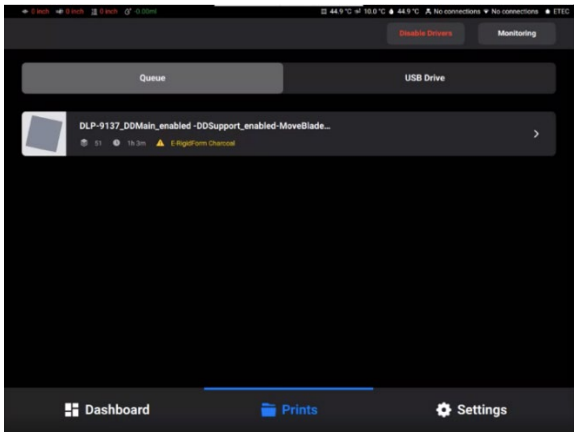
→ The following window appears.



8. Press either:
   - **Continue** to exit the **Save job** dialog box; or
   - **Open Folder** to open the Job folder.

To load a job directly from the USB drive:

1. Upload the required job to the USB drive as described above.
2. Insert the USB drive with the uploaded job into the corresponding plug of the printer.
   → The job is automatically added to the **Prints** menu of the Xtreme 8K.



Load Job via FTP

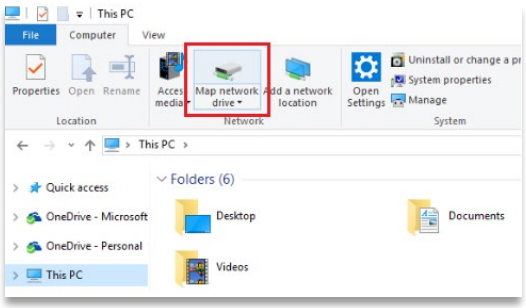
Before loading a job file via the network folder, several preparation steps need to be done.

Map Network Drive in Windows

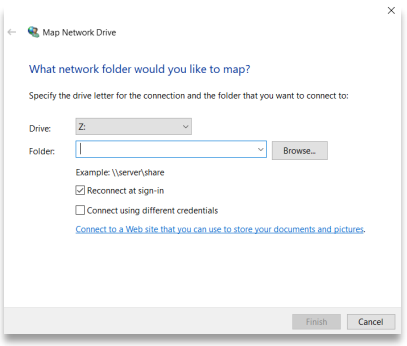
Map a network drive to access the Jobs folder from File Explorer in Windows without having to search for it or type its network address each time.

Windows 10

1. Go to **File Explorer** > **This PC**.
2. On the **Computer** menu, select **Map network drive**.



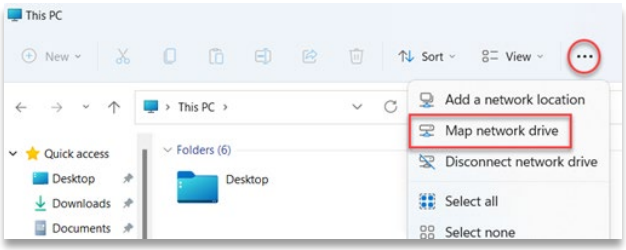
→ The following screen appears.



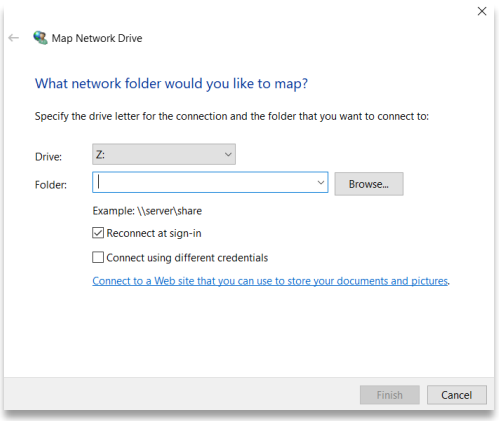
3. In the **Drive** drop-down list, select any available drive letter.
4. In the **Folder** field, type the path of the folder or computer, or select **Browse** to find the folder or computer. To connect to this drive each time you log in, select the **Reconnect at sign-in** checkbox.
5. Select **Finish**.

Windows 11

1. Open **File Explorer > This PC**.
2. On the File Explorer ribbon, select **More > Map network drive**.



→ The following screen appears.

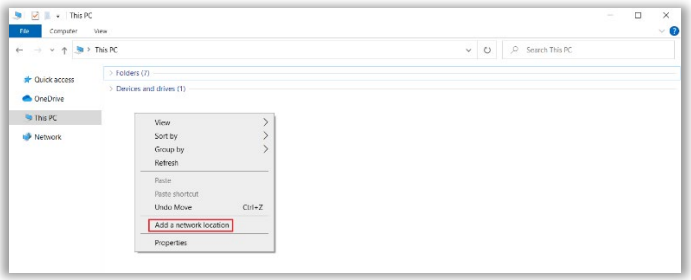


3. In the **Drive** drop-down list, select any available drive letter.
4. In the **Folder** field, type the path of the folder or computer, or select **Browse** to find the folder or computer. To connect each time you sign into your PC, check the **Reconnect at sign-in** checkbox.
5. Select **Finish**.

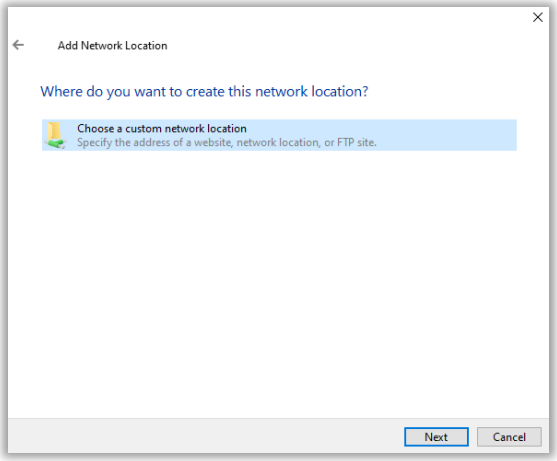
Create a Shortcut

To create a shortcut to a network place in Windows allowing you to access FTP and Windows file shares:

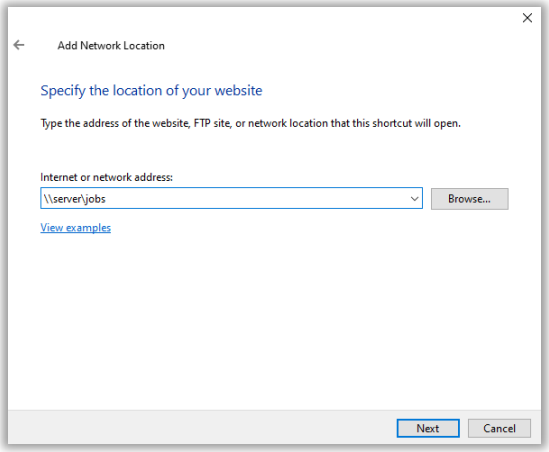
1. Open the **Start** menu. Press **This PC**.
2. Right-click on any empty space and select **Add Network Location**.



3. Press **Next** on the **Add Network Location Wizard** that opens.
4. Select **Choose a custom network location** and press **Next**.



5. Type the address, FTP site, or network location, then select **Next**.



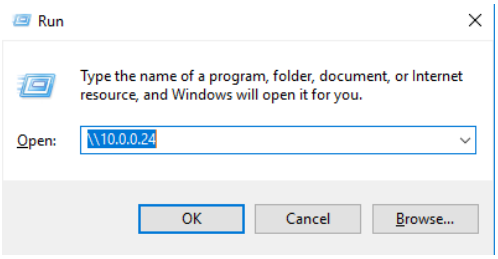
6. In the screen that appears, type a name for the network and select **Next**.
7. Press **Finish** on the **Add Network Location Wizard** screen.

   → The location is now listed under **Network Locations** tab in **This PC**.

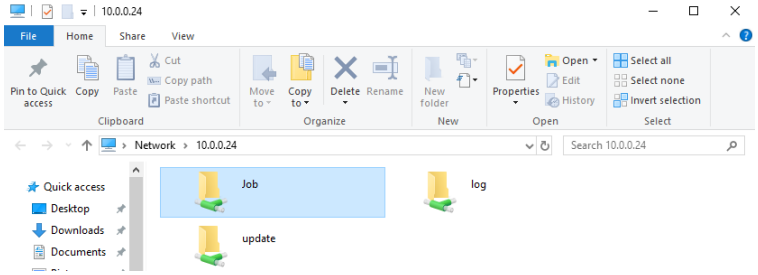
Load Job File

To load a job file to the printer via the network folder:

1. Type *Run* into the Windows search field or use the **<Windows>** + **<R>** hotkey on your computer keyboard.
   → The **Run** window opens.



2. Type the IP address of the printer, e. g.: \\10.0.0.24.
   → The Windows file explorer opens, showing the folders on the printer.



3. Open the **Job** folder.
4. Put the job files in the folder.
   → All the files are now shown in the **Prints** tab.

Start Print Job

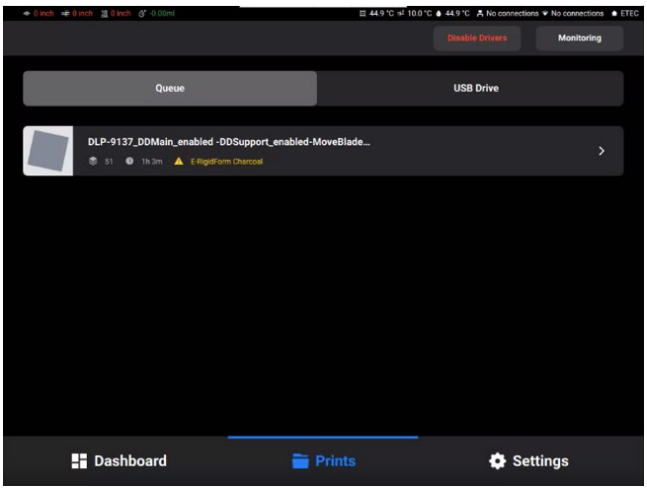
NOTICE	**Risk of damage to the equipment:** Make sure the build platform is clean, the material tank is properly installed, and there is enough material in the material tank before starting a print. Failure to do so will result in failed builds and damage to the equipment.

Note: Before starting a print, the software checks whether the buildstyle in the job matches the material tag on the printer. If they do not match, then the job will not start.

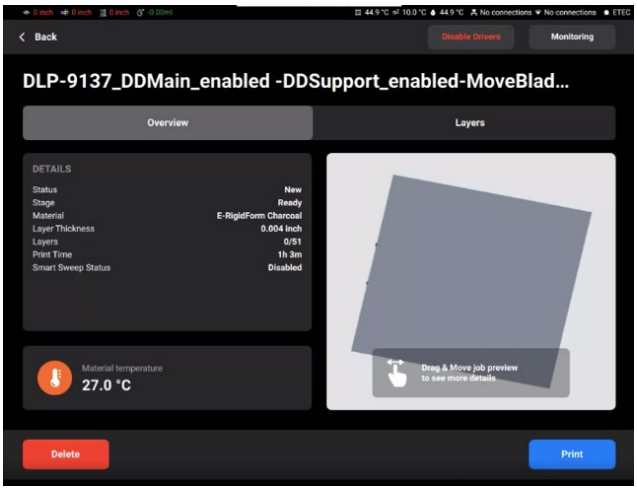
Note: To pause a job, select the **Pause Job** button. All other methods will likely result in a failed build. Proceed with caution.

To start a job:

1. Select **Prints** tab.



2. Select the job folder from the **Queue** or **USB Drive** if the required job folder is on the connected USB drive.



Note: Press **Layers** to preview the layers of your job. You can also select the layer to start your build job from.

3. Press **Print** to start a job.

Note: Once the print job has completed successfully, the build platform will move up to the upper-end switch or stay where it printed the last layer. The settings in the configuration file determine the build platform movement after the print is completed.

Complete Job

Detach Models from Build Platform

CAUTION	**Risk of injury:** As handling chemicals puts you at risk of coming into contact with corrosive chemicals, being burnt, inhaling poisonous vapors, etc., always put on suitable protective clothing (gloves, protective goggles, etc.) before working with construction substances. Take utmost care to avoid getting any chemicals in your eyes or breathing the chemical vapors in. Always wash your hands thoroughly afterwards with soap and water only. Don't use Isopropyl alcohol to wash your hands if you come in contact with materials. Take care not to spill any chemicals.

To remove the printed models from the build platform:

1. Open the printer door. The build platform should be in the raised position.
2. **Optional**: Remove the build platform with the printed parts from the printer.
3. **Optional**: Install another build platform into the printer in case there is a need to start printing right away. Otherwise, install the current build platform after part removal.
4. Carefully remove the printed parts from the surface of the build platform with the metal scraper. Look for a hole that you can put the scraper in and gently pry the part.
5. Scrape the whole platform to remove any cured material or detached supports in readiness for the following build.
6. Make sure no cured material falls into the material tank.

Reset after Print

Carefully clean the build platform after every build job.

1. Thoroughly clean the build platform with the metal scraper.
2. Make sure no cured material residue remains on the build platform.
3. Make sure no cured material falls into the material tank.

Clean Parts and Remove Supports

Note: For information on cleaning of the parts, consult the corresponding Material Best Practice.

Post-Cure Printed Models

Note: For information on post curing the parts, consult the Material Best Practice.

The UVCA 3000 is the recommended curing unit for the models printed with the Xtreme 8K printer. To cure the models using the UVCA 3000 parts curing unit, see Hardware Operations UVCA 3000.

Finish Printed Parts

Finishing is the final step in post processing a printed part. With finishing, you can remove all traces of supports and polish printed parts as needed, depending on the final part application.

1. Grind support bumps using a fine burr and rotary tool, or manually using sandpaper.
2. Remove dust particles by quickly spraying the part(s) with 99% IPA in a spray bottle, and dry immediately with compressed air.

Turn Off Printer

Note: Pulling the main cable or using the emergency stop switch during operation can damage the printer and result in loss of data.
Disconnect cable or press the emergency stop switch only in case of an emergency.

1. Shut down the internal PC in the section **Home > Monitoring**.
2. Turn the integrated computer OFF by pressing the **SYSTEM** power button.
3. Move the main switch into the OFF position.

Service and Maintenance

CAUTION	**Risk of injury:** From crushing caused by automatically moving printer parts. Body parts may be crushed by movements of the build platform. The printer may only be operated if the protecting devices are working properly.

CAUTION	**Risk of injury from slipping, stumbling, or falling of persons through loose cables, objects, or liquids on the floor:** Keep the printer area clean and dry. Make sure no loose cables or objects are lying on the floor of the printer area. Place all printer cables carefully to prevent trip hazard. After repairing the printer, place cables back carefully to prevent trip hazard. Remove tools and other objects from the printer. Inform the personnel of residual risks.

CAUTION	**Risk of injury caused by the ergonomics of the printer.** Maintain a healthy posture. Instruct the personnel accordingly.

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https://etec.desktopmetal.com/support/

Operational Maintenance

Note: Document the maintenance activities, including date and performing operator.

Clean Printer Casing

Time needed: Approximately two minutes

Maintenance frequency: As needed

Overview

The printer's metal casing protects the internal components from damage. Avoid spilling material on the casing. Once spilled, the material cures to the casing and is difficult to remove.

Step-by-step:

1. Wipe the spilled material as soon as it touches the printer before it cures.

NOTICE	**Risk of damage to equipment.** If rubbed with too much pressure or for too long, the casing becomes discolored.

2. Remove most of the spill with a dry paper towel first, then lightly spray a second paper towel with IPA and wipe away any residue.

NOTICE	**Risk of damage material contamination.** Do not spray the IPA in or near the printer.

Clean Build Platform

Time needed: Approximately two minutes

Maintenance frequency: Before and after each print

Overview

The build platform should remain as clean as possible between print jobs to keep your printer in optimal printing condition and prevent build failures. The build platform should be cleaned when:

- Before every print.
- After every print.
- Build platform becomes sticky.
- Material change occurs.

Step-by-step:

1. Clean the surface of the build platform using a metal or stiff plastic scraper.
2. Check every surface for material, buildup, or debris.
3. **Do not spray alcohol into the printer.** Clean the excessive buildup using a small amount of 99% IPA on a clean paper towel or Q-tip.

If there is a large amount of cured material on the build platform and/or in the holes (e.g., if the uncleaned build platform was exposed to sunlight), remove the build platform to clean outside of the printer:

1. Pull the platform back and up.
2. As soon as most of the material has flowed back, remove the build platform from the printer.
3. Thoroughly clean the build platform with 99% IPA.

4. If your printer uses a perforated build platform, use a Phillips head screwdriver to push remaining cured material through the holes.
   Ensure absolutely no material residue remains on the platform and in the holes.
5. Make sure there is no 99% IPA left on the build platform after cleaning.

CAUTION	**Risk of damage to the material:** Cleaning agents, especially 99% IPA, can contaminate the material in the material tank.

6. Carefully clean the parts of the platform frame that will be in contact with the build platform. Small amounts of cured material between build platform and frame can impair the parallelism of the build platform with the blade.

Note: Do not use any cleaning agents inside the printer.

7. Reinstall the build platform into its frame and secure it with its brackets.

Clean Hard Drive Space

Time needed: Approximately five minutes

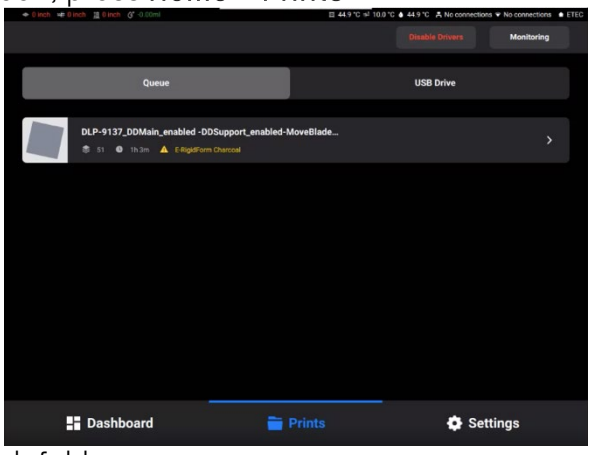
Maintenance frequency: Weekly

Overview

The Xtreme 8K has an internal PC that can store a limited amount of data. When most of the hard drive space has been used, the printer may show error messages or respond slowly to touch screen commands. Remove print job folders from the printer to free up space.

Step-by-step:

1. On the Home screen, press **Home** > **Prints**.



2. Select the print job folder name.
3. Press **Delete**.
   → The unwanted print job folder is now erased from the printer.
4. Repeat these steps until all unwanted print job folders have been removed.

Power Cycle

Time needed: Approximately five minutes

Maintenance frequency: Weekly

Overview

It is recommended to power cycle the printer under any of the following conditions:

- Printer is running slowly.
- Printer was recently updated (power cycle is automatic).
- Printer has not been powered down in a week.

Step-by-step:

1. In the **Monitoring** tab, press **Shut Down**.
2. Once the touchscreen is blank, go to the back right of the printer and turn the power breaker counterclockwise to the off position.
3. Wait 60 seconds.
4. Turn the power breaker clockwise to power on the printer.

Clean Level Sensor

CAUTION	**Risk of damage to the printer:** Do not adjust the position of the level sensor. This may result in false readings to the sensor and cause print failure.

Time needed: Approximately five minutes

Maintenance frequency: Bi-weekly

Overview

The level sensor reads and via the level compensator adjusts the material level in the vat. It is critical that the sensor is always clean and free from any dust particles and material that may have splashed or dripped on the sensor lens.
The level sensor is located on the back right side of the front main compartment. It has a red dot right under it.

Supplies Needed

- Lens Cleaner
- Clean Microfiber cloth

Step-by-step:

1. Spray some lens cleaner on the microfiber cloth and gently wipe the bottom of the sensor.
2. Wipe the bottom of the sensor again with a dry section of the microfiber cloth. Make sure to wipe away any streaks that may still be present.

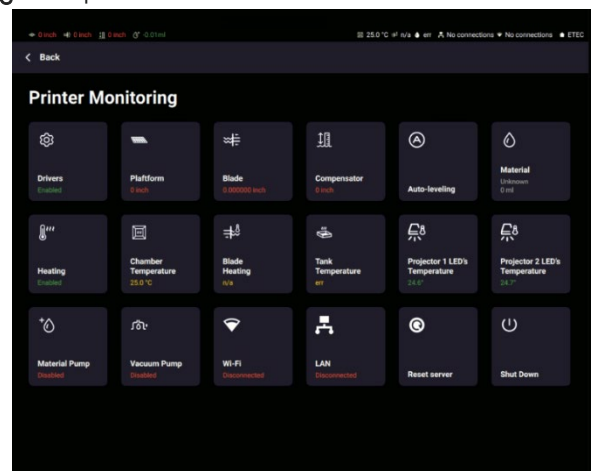
Clean Touch Screen

Time needed: Approximately five minutes
Maintenance frequency: Monthly
Overview

Sticky spots on the touchscreen can make it difficult to navigate the interface effectively.

Step-by-step:

1. In the **Monitoring** tab, press **Shut Down**.



NOTICE	**Risk of damage to equipment:** Always stand away from the printer when spraying to avoid contaminating the material and material tank.

2. Spray lens cleaner on the paper towel.
3. Gently wipe the surface of the touchscreen.

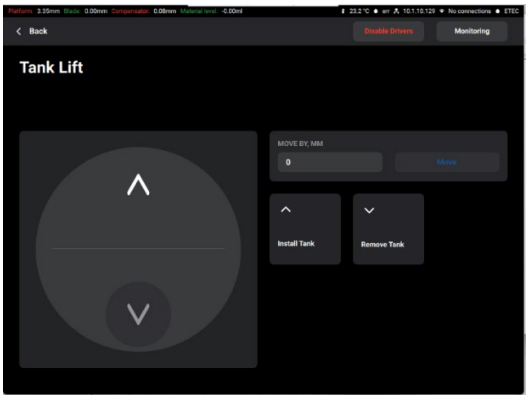
Clean Material Tank

Time needed: Approximately twenty minutes
Maintenance frequency: As needed or when changing printing material
Supplies Needed

- 2-quart plastic pitcher
- Paper towel.
- 99% IPA.
- Opaque buckets with lids.
- Personal protective equipment, including nitrile gloves.

Step-by-step:

1. Go to **Settings > Tank Lift** from the main screen of Xtreme 8K CS.
2. Click **Remove Tank.**
   → The build platform and compensator will move up. The blade will move to the home front first and then the material tank will slowly go down until the limit is reached.



3. Open the lower compartment door.
4. Unplug the wire harness.
5. Roll the material tank out of the printer.
6. Locate the drain valve on the front bottom of the tank. Place clean paper towels on the floor under the valve. Place a clean bucket under the valve.

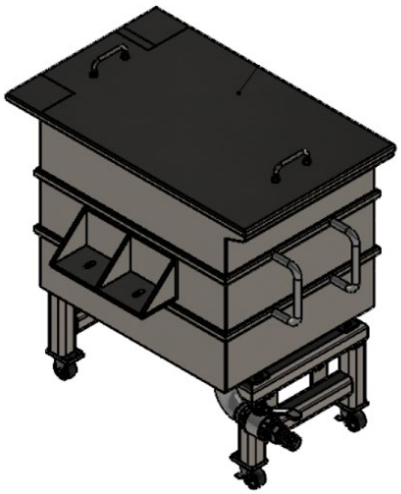


Figure 13: Material Tank and Drain Valve

7. Open the valve and allow the material to drain into the bucket.
8. Close the valve before the bucket is completely full and wait for the material to stop flowing.
9. Repeat steps 5-7 with additional buckets until the material tank is empty.
10. Clean the drain valve and empty material tank with a dry paper towel.
11. Spray the paper towel with 99% IPA and wipe the material tank. Make sure no residue of material or 99% IPA remains in the material tank, blade, platform, or anywhere else.
12. See Install Removable Material Tank Xtreme 8K to reinstall the material tank after cleaning.

Add Coolant to Industrial Chiller

Time needed: Approximately five minutes

Maintenance frequency: Every six (6) months or when the coolant level is low.

Note: Use coolant only. Replace the coolant and filters every six (6) months.

Step-by-step:

1. Open the injection port to add the coolant.
2. Add coolant carefully, observing the level gauge. The indicator must remain in the green area.

Clean Projector Lens

Time needed: Approximately five minutes

Maintenance frequency: Bi-weekly

Primary Supplies:

- Lens cleaner.
- Microfiber cloth (two pieces).

Overview

The Xtreme 8K utilizes powerful projectors receive build job information from the internal computer, or PC, and project a clear image, layer by layer, onto the build platform. The projectors cast a specific brightness during a print job, and the two projector lenses must remain clean and free of dust/debris.

Step-by-step:

1. Open the printer door.
2. Locate the two projector lenses above the material tank.
3. Facing away from the printer, spray lens cleaner on the microfiber cloth.
4. Gently wipe the first projector lens with the microfiber cloth.
5. Wipe the lens with the second, dry microfiber cloth. Make sure all streaks are removed.
6. Repeat Steps 3-5 for the second projector lens.

Note: Never spray lens cleaner or any other chemical inside or near the printer, material tank, or the material itself.

Maintain Materials

Time needed: Approximately five minutes to mix material (depending on the material).

Maintenance frequency: Before each print

To maintain the materials:

1. Protect material in the material tank from ambient light by keeping the printer door closed.
2. Mix the material before each print using a mixer paddle and a cordless drill.
3. Check the material for solids or debris. If found, filter the material. Once every 6 months the tank can be drained by removing the material from the material tank and straining it using a 5-gallon bucket paint strainer, see Clean Material Tank.

Note: For more information on handling a material, see the corresponding Material Safety Data Sheets.

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