carima

USER MANUAL

DM400A

DUAL ENGINE — **Dual 2K**

THE WORLD FIRST — **400 x 330 x 500mm**

The first large build size with single exposure at single layer

PIXEL SIZE (X/Y) — **Native 132µm**

Direct final production with industrial tough material.
No limitation with weight and size.
Easy to change vat system.

This manual provides instructions on how to use the "DM400A." Understand how to use "DM400A" through the manual and experience Carima's "DM400A" easily and conveniently.

Contents

Introduction

DM400A Specification

The DM400A uses a high-resolution engine to enable precise and perfect output even in a large area.

Printing Size(mm) [W x D x H]
400 x 330 x 500

Precision
132 μm

Product Size (mm) [W x D x H]
1010 x 1134 x1933

Layer Thickness
50, 100, 125, 150 μm

Weight
1000 kg / 2205 lbs
(Printer 750kg, Resin 220kg)

Using Environment
18-26 (℃) / 64-79 (℉)
20% - 50% (humidity)

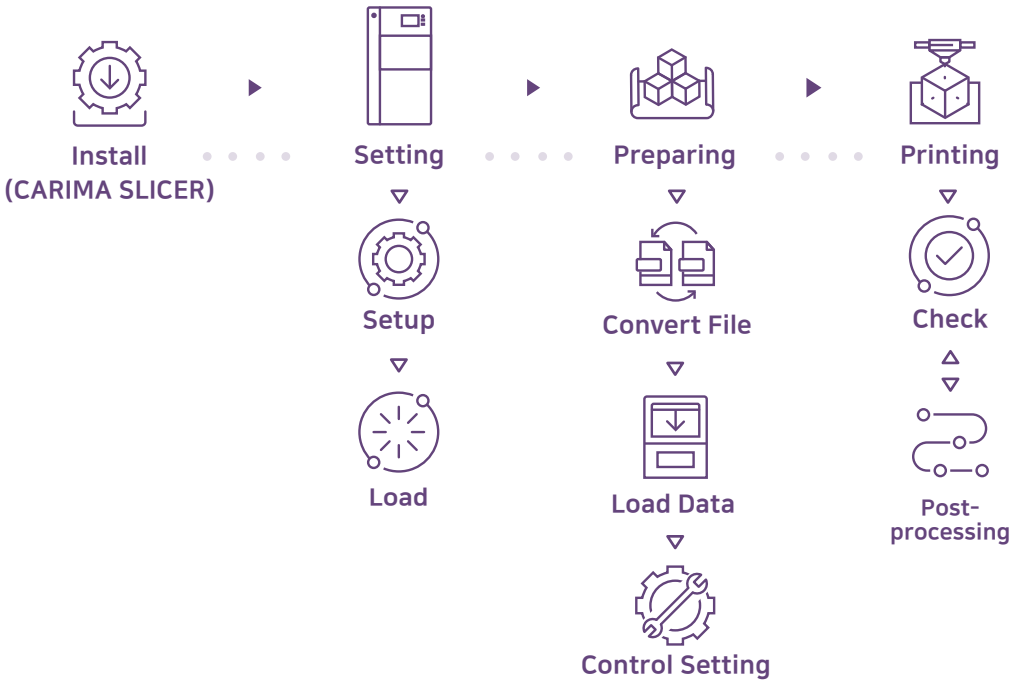
Light Source
405nm UV LED

Control Type
Embedded touch screen

Resolution
Dual 2K high 2560 x 1600

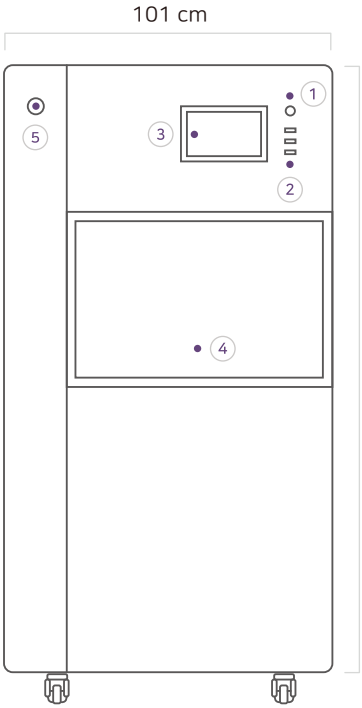
Power
AC 100-220V 50~60Hz 4A

Process Overview



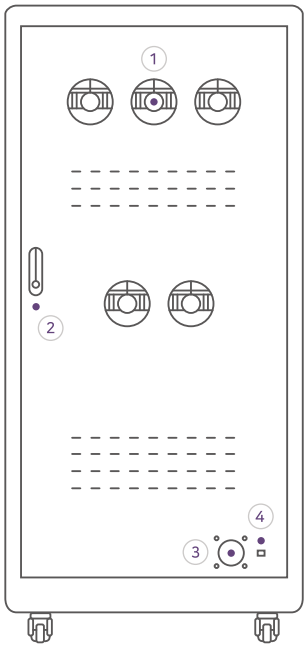
Product Overview

01 Front



1. LED Power Button
2. USB Port
3. LCD Touch Screen
4. Print Room Cover
5. Emergency Power Button

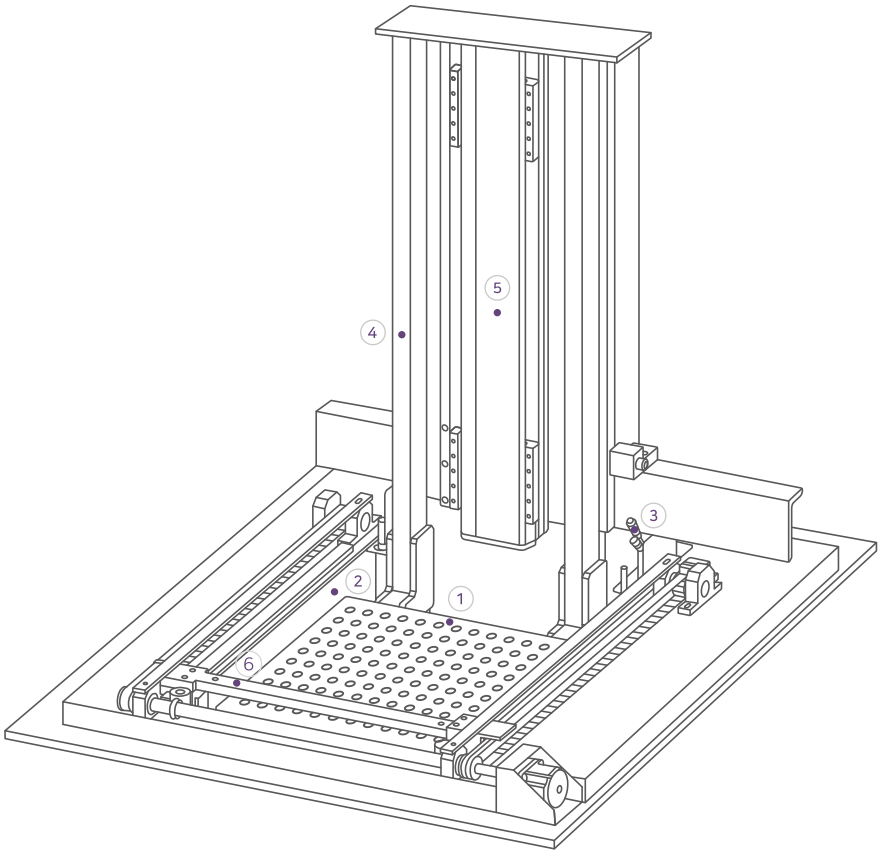
02 Back



1. Printer Cooler
2. Key Insert Lock
3. Power Cable Connector
4. Ethernet Connector

03 Internal Structure

1. Build Plate
2. Vat
3. Level Sensor
4. Level Controller
5. Actuator
6. Sweeper



Safety Warnings

This information is intended to protect your safety and prevent property damage.
Please be aware of the precautions before using, to prevent serious injuries and printer damage.

The printer should be used on a hard and flat floor.
When moving the printer, be sure to completely shut down the printer, and then remove the vat and build plate so that the resin in the vat does not overflow or leak.

When printing, put the printer in a well-ventilated place because resin may smell.

Setting up a printer in a place with a lot of moisture or temperature changes can cause deformation and malfunction of the product.

If the printer power cable and USB cable are damaged due to being pulled or stepped on the rough surface, please note that sparking or voltage malfunction may occur.
In addition, there is a risk of fire due to overheating when the power is turned off.

When the printer power is on, please do not force shutdown by pressing the emergency power button on the front of the printer. Forced shutdown shortens the life of the digital light engine and may cause mechanical failure. Please shut down the printer through a shutdown process such as power off and automatic system shutdown on the LCD panel.

If metal fragments and other types of liquid leaks into the printer, it may cause mechanical malfunction. Also, operating the printer with wet hands may cause electric shock. Use protective equipment while using the printer.
*** Latex rubber gloves can also be used in place of the nitrile gloves provided.**

Do not use volatile objects near the printer as they may cause fire or explosion.

There are potential risks to the printer in terms of chemical composition and voltage. To prevent injury on children and pets, please install the printer in a safe place.

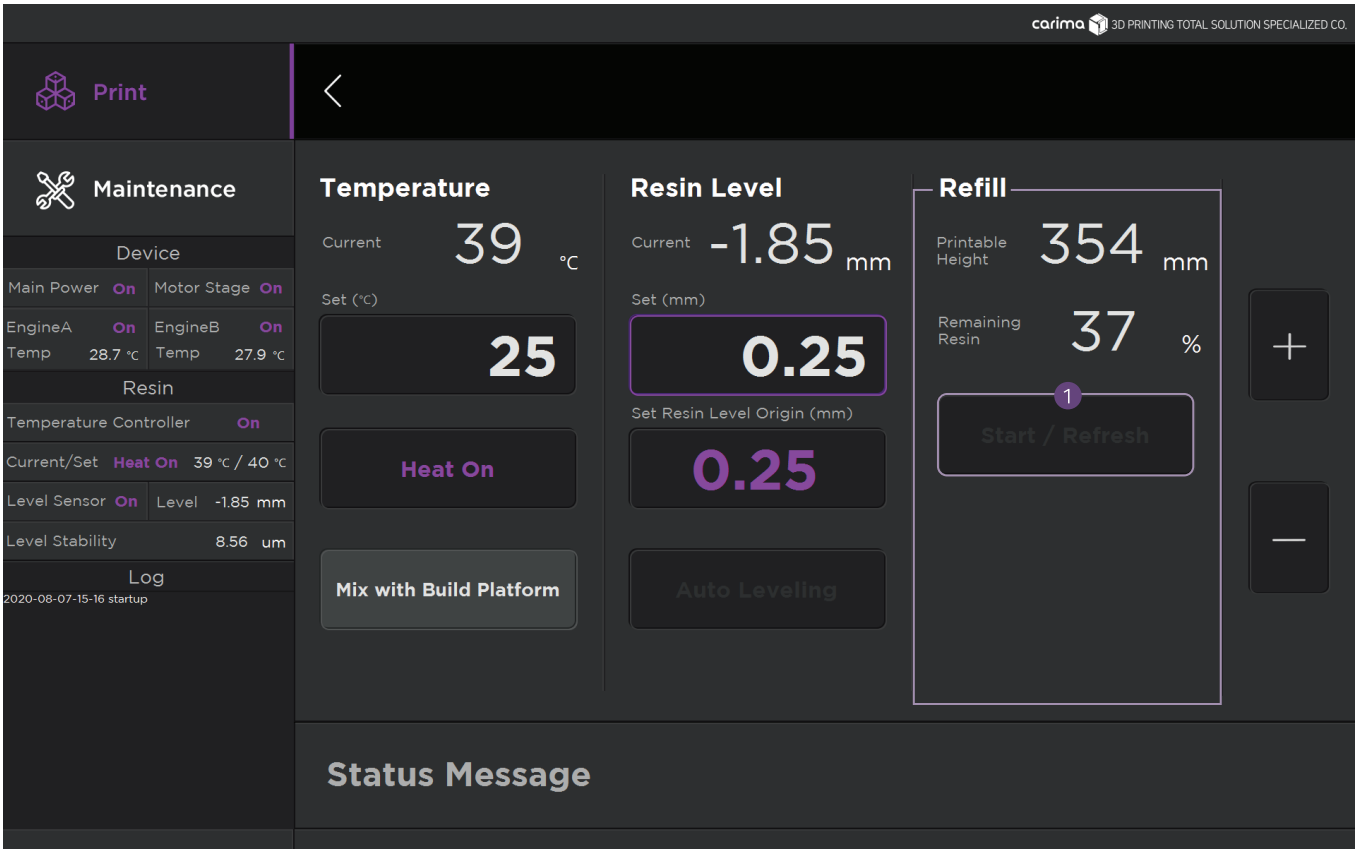
The warranty benefits of the printer will be forfeited if disassembled or modified artificially.
Carima will not be held liable for the loss caused by this.

For inquiries regarding “After Sale Service” and product warranty, please contact Team Viewer Service.

Preparation and Setup

Printing Preparation

To start printing, the resin must be sufficiently filled.
Please prepare resin, cleaned sweeper and build plate.



*** Maintenance - Resin**

Resin Refill

- When refilling the resin into the vat, it is recommended to supplement while measuring the amount of resin.

① Press the Start button, check the amount of resin available and refill the resin.

- Move the build plate to the origin position to accurately determine the amount of resin.
  Pour the resin slowly so that large waves do not occur far from the resin check sensor.
- If too much resin is filled, the printable height may be limited.

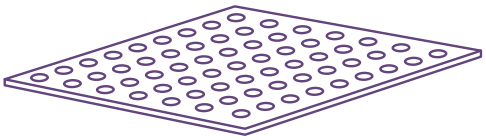
Information on the use of resin

Use protective equipment when using resin. Pour resin before printing and on inevitable occasions, press the 'Pause' button and wait for a complete stop before slowly pouring the resin into the vat.

*** Adding the resin during output can cause bubbles and adversely affect the print.**

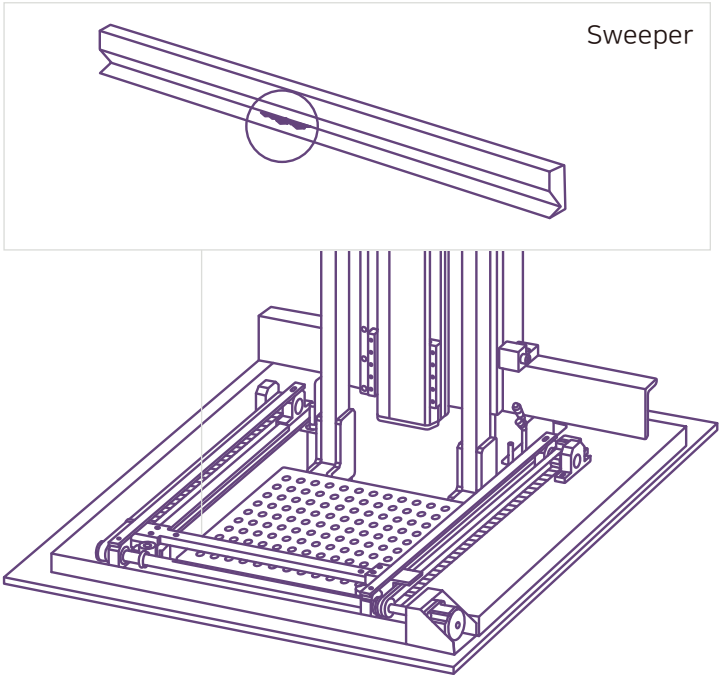
Information on maintaining the build plate

To clean the build plate, you can scrape the hardened debris attached to the build plate by a scraper or a spatula. If you want to print using other resin after printing, please wipe off the stained resin before use.



Information on the use of sweeper

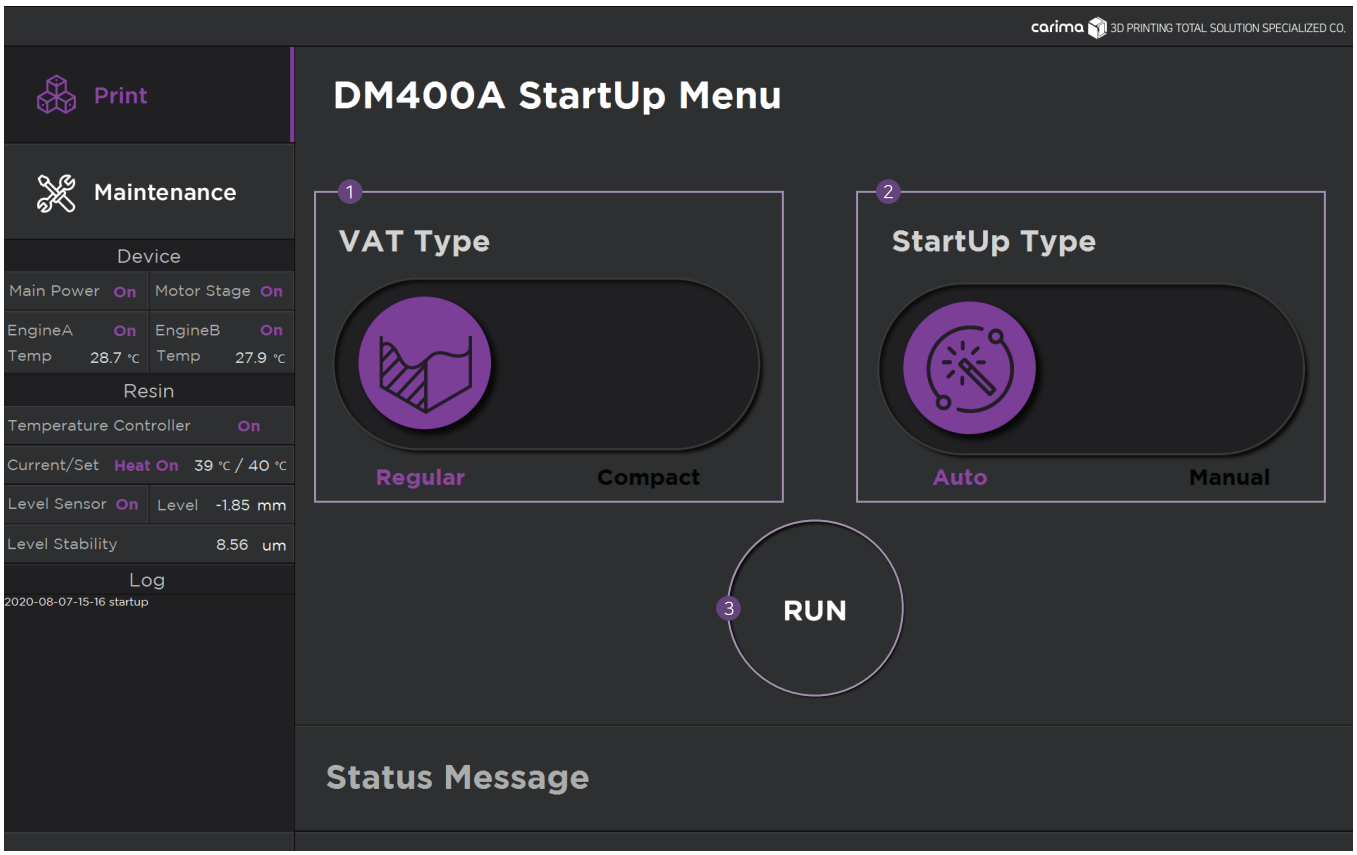
Before printing, please check if there is any debris in the gap of the sweeper and remove it before printing. Printing with foreign substances may affect the printing result.



Using the LCD Panel

Use the LCD panel to set most of the settings.

Main



① Vat type :
Select the vat to be used.

Regular :
Regular Vat (500mm depth)

Compact :
Low Capacity Vat (130mm depth)

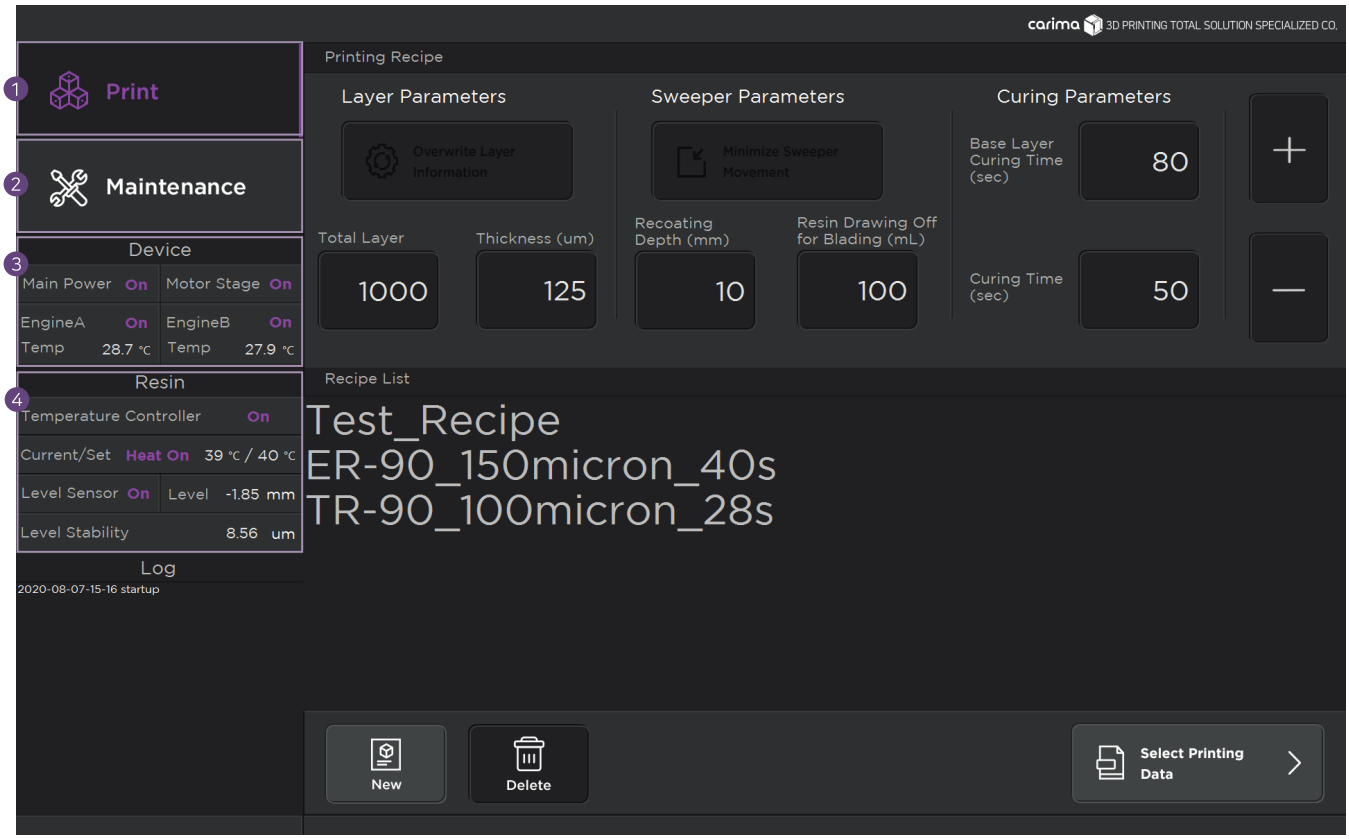
② Start Up type :
Select the mode to use.

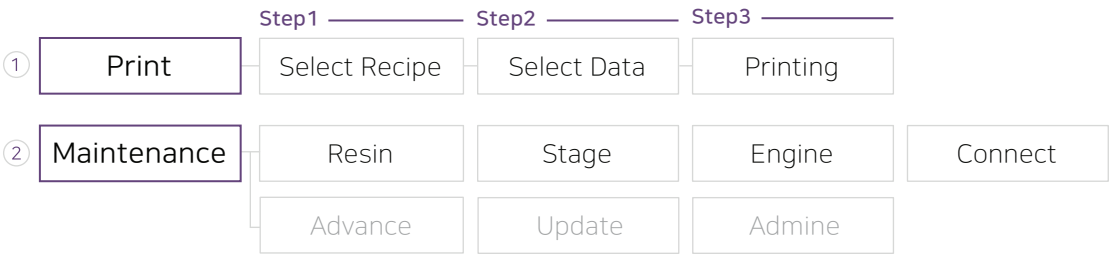
Auto :
Auto Setting Mode

Manual :
Manual Setting Mode

③ RUN :
Check the selected vat and usage mode
and start printing with "Run"

Menu & Status





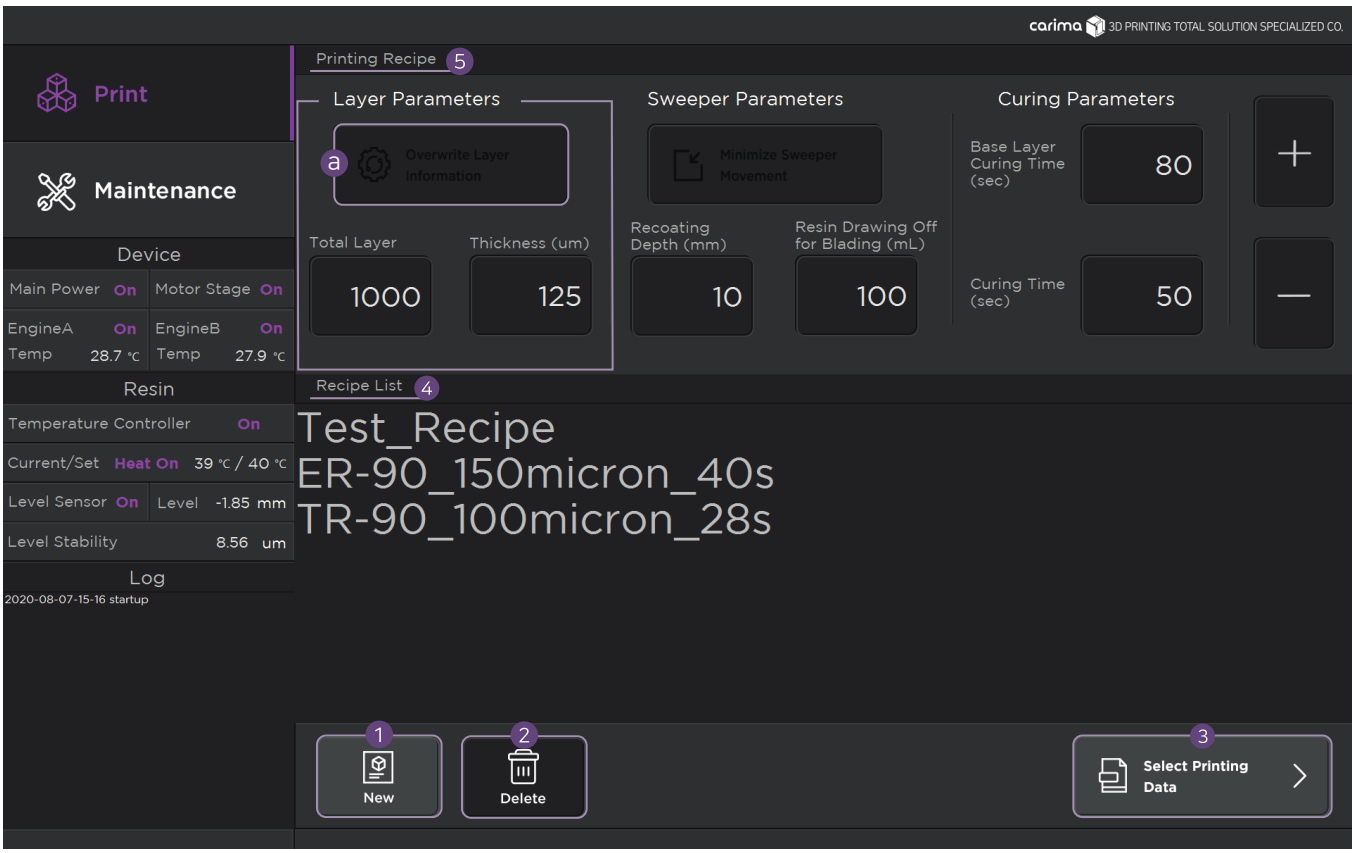
③ STATUS :
It shows printer status such as Main Power, Moter Stage, Engine, and Sensor.

④ RESIN :
It shows the resin temperature and the level settings.

01 Print

Step1

Select Recipe



① New :
Create a new recipe.
After setting the name of the recipe, set the printing parameter value.

② Delete :
Delete the recipe.

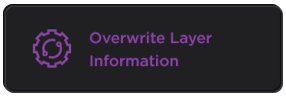
③ Printing Data Select :
After completing the recipe selection, it proceeds to the next step (output data selection).

④ Recipe List :
This is a list of recipes.
Select the recipe to be printed.

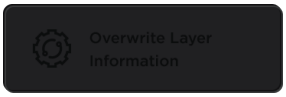
⑤ Printing Recipe :
You can change the setting value of the selected recipe.

- **Layer Parameters :**

This function ignores the value retrieved from the printing data and prints with the currently set value.
You can activate the function with the (Total Layer, Layer Thickness) ⓐ button.

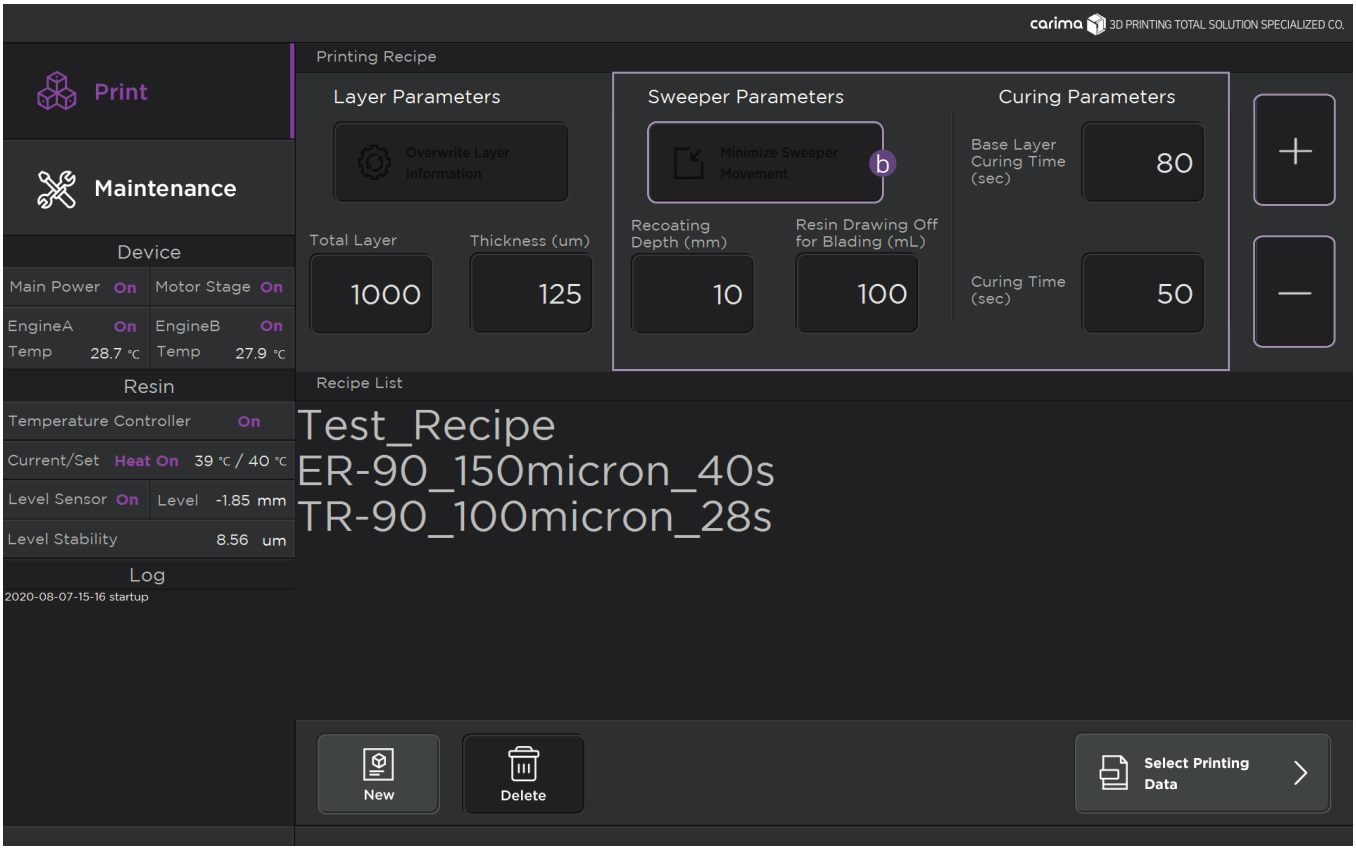


Activated



Deactivated

01 Print



Sweeper Parameters

- Minimize Recoating Movement : *** To be updated**
  Recoating movement is minimized when printing small outputs. You can activate the function with the ⓑ button.

Activated Deactivated

- Recoating Depth :
  Set the distance to move the build plate down for recoating by soaking in the resin.

- Resin Drawing Off for Blading :
  Enter the amount of the resin level control device movement before blading

*** Recoating : Applying resin to the molding surface**
*** Blading : The work to evenly arrange the unbalanced molding surface**

Curing Parameters

- Base Layer Curing Time :
  Set the initial curing time.

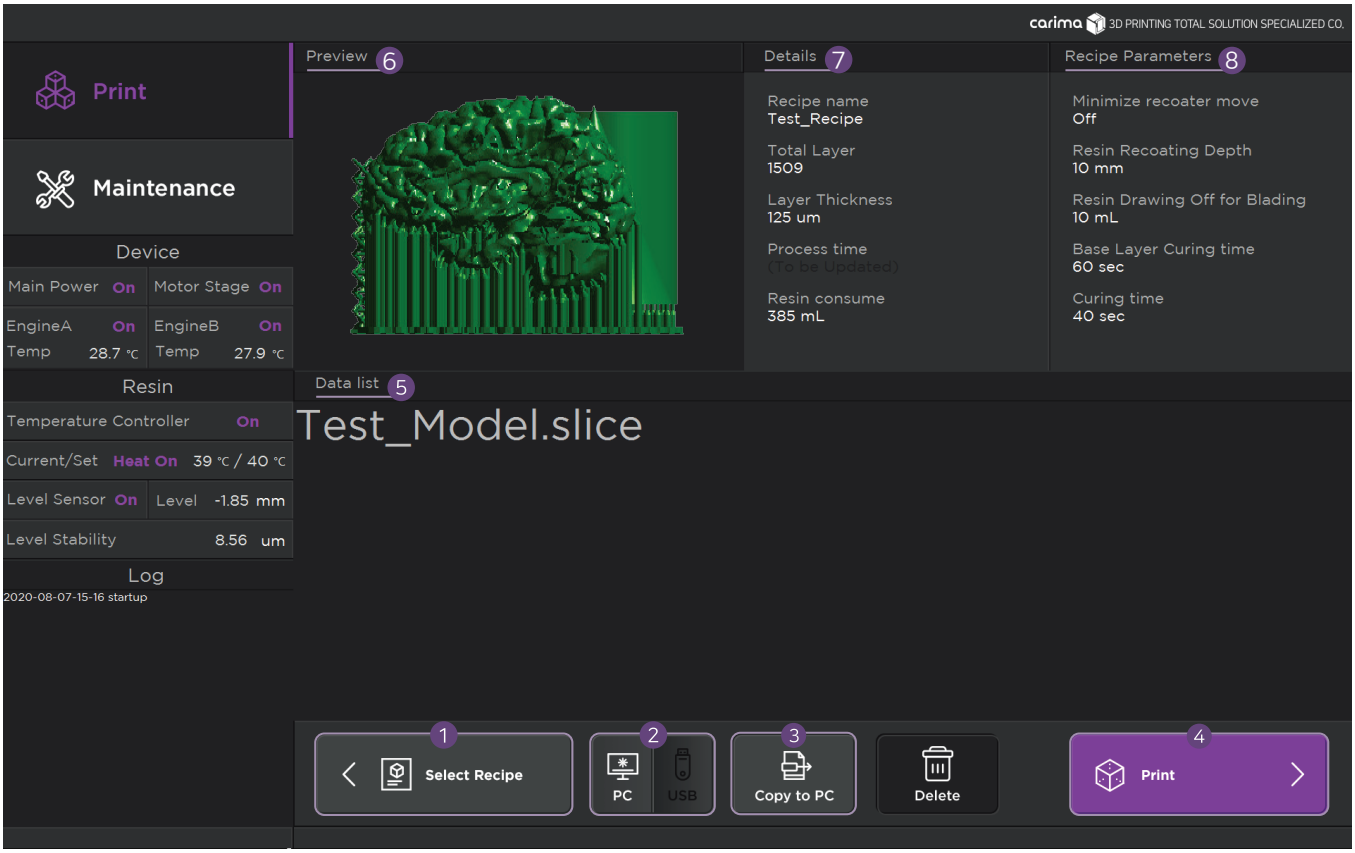
- Curing Time :
  Set the curing time.

- + / - :
  Adjust all setting values.
  Increasing the touch time can quickly increase or decrease the setting value.

01 Print

Step2

Select Data



① Selct Recipe :
Return to the previous screen (recipe selection).

② USB / PC :
Bring up the USB / PC data list.

PC Activated

USB Activated

③ Copy to PC :
Copy USB data to PC.

④ Print :
Start printing.

⑤ Data List :
List of data.
Select the data to be printed.

⑥ Preview :
Shows an image of the selected output data.

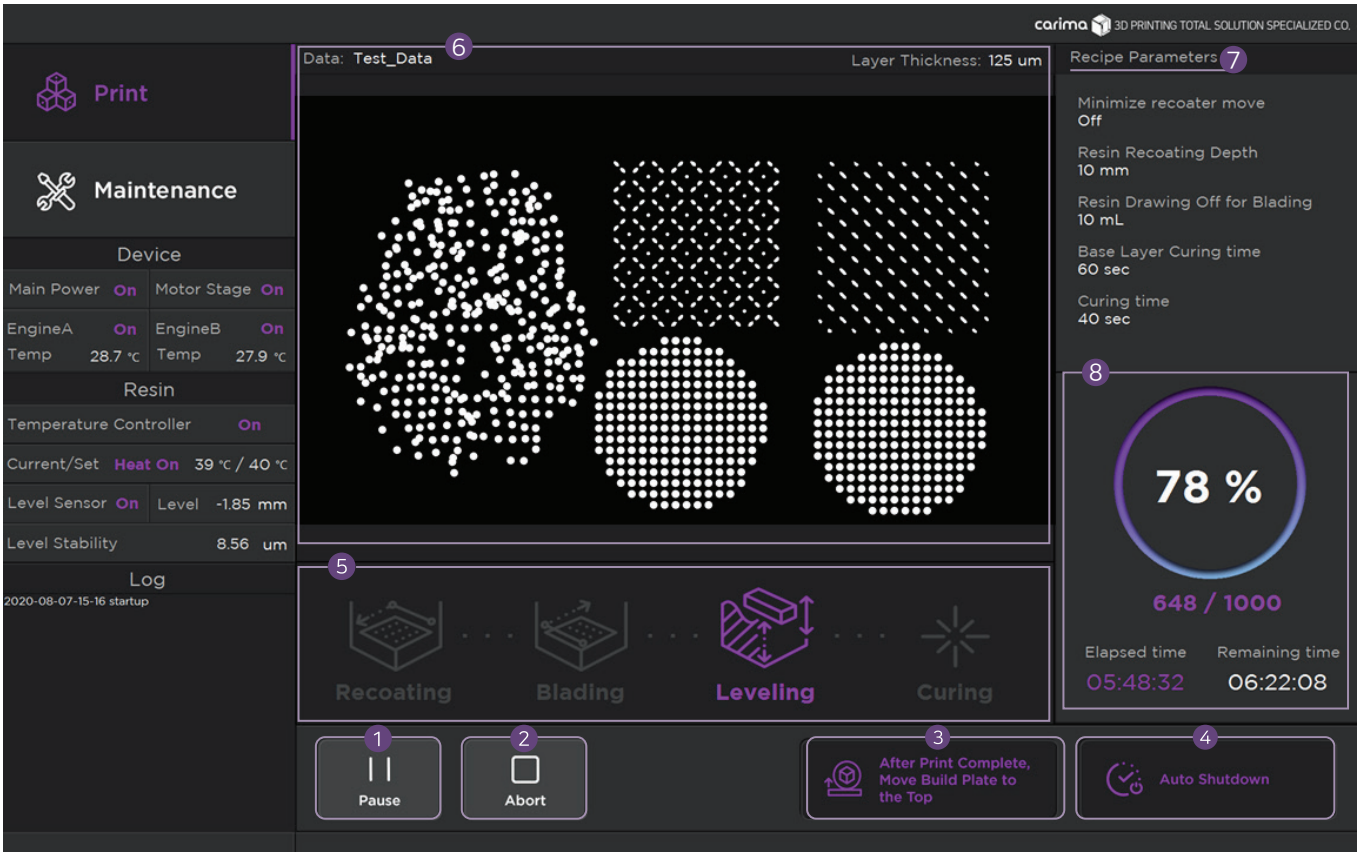
⑦ Details :
Shows detailed information of the selected output data.

⑧ Recipe Parameter :
Shows the set value of the selected recipe.

01 Print

Step2

Printing



① Pause :
Pause printing.

② Abort :
Abort printing.

③ After Print Complete, Move Build Plate to the Top:
After print complete, move build plate to the top.

④ Auto Shutdown :
Automatically shutdown when printing is complete.

⑤ Printing Process :
It shows the current output status.

⑥ Data:
Shows the output data name, layer thickness and image of the data being printed.

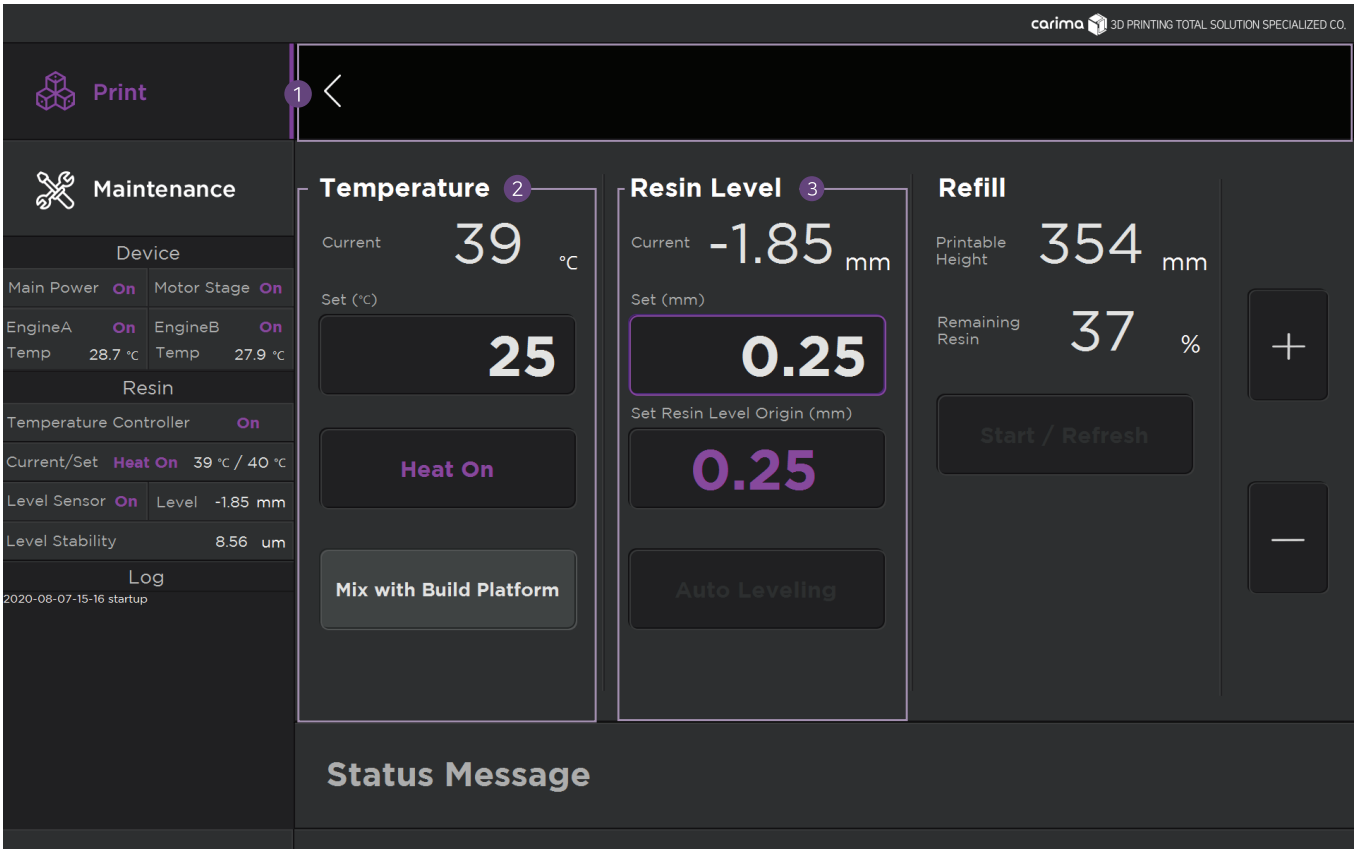
⑦ Recipe Parameters :
Shows the recipe parameters setting value.

⑧ Printing Progress :
Print progress, elapsed time, and remaining time are shown.

*** Leveling : Adjusting the resin height or stabilizing the surface wave**

02 Maintenance

Resin



① < :
Return to the previous Maintenance menu page.

② Temperature :
Run current temperature measurement, temperature setting,etc. Activate the temperature setting with the Heat On button.

Activated Deactivated

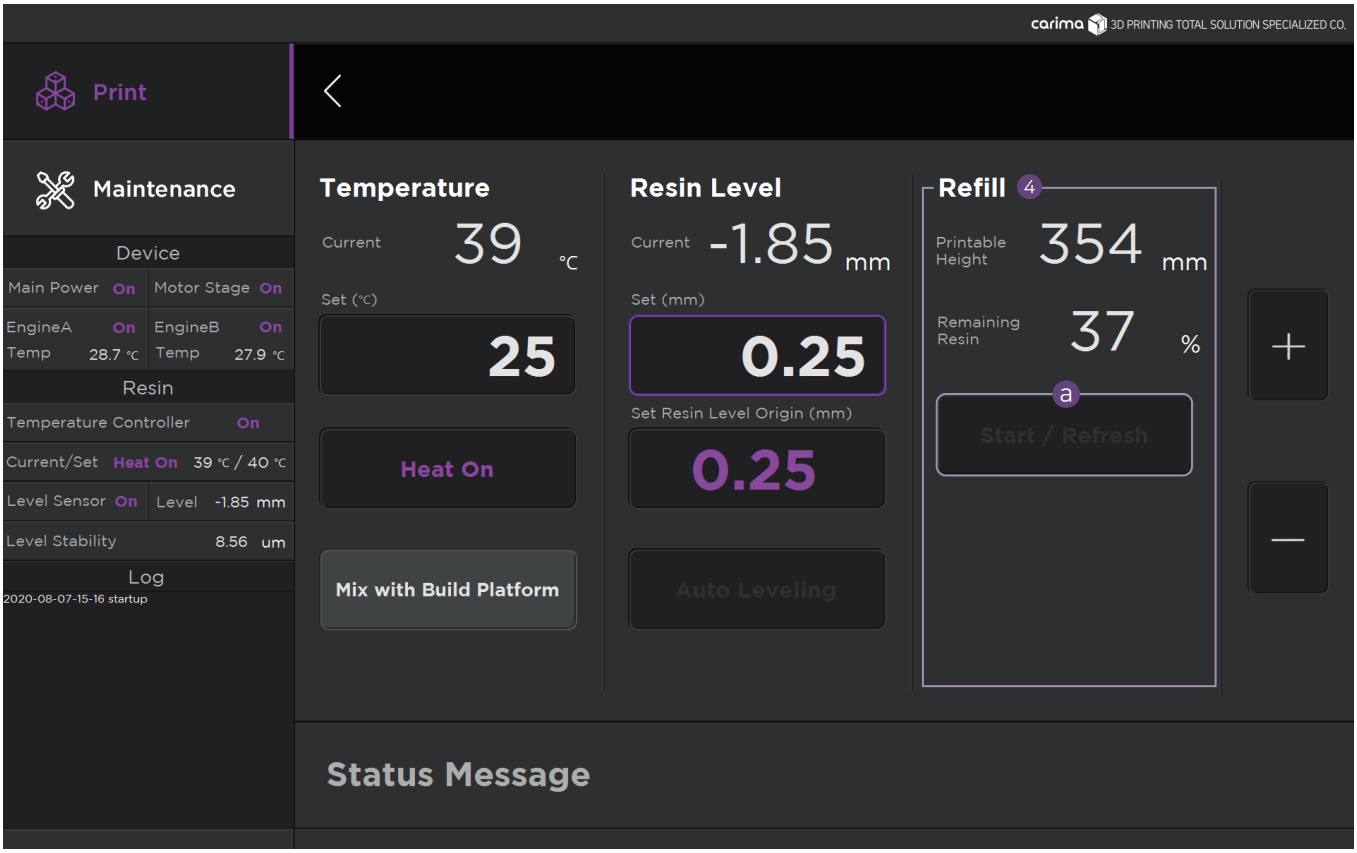
- Mix with Build Plate:
  Mix the resin using the vertical movement of the build plate.

③ Resin Level :
Check the current level and set the level position and auto Leveling.

- Current :
  Current real-time resin level amount.
- Set :
  Setting resin level
- Set Resin Level Origin :
  The origin value of the set resin level to be maintained during printing
- Auto Leveling :
  Adjust the resin level to the set value

02 Maintenance

Resin



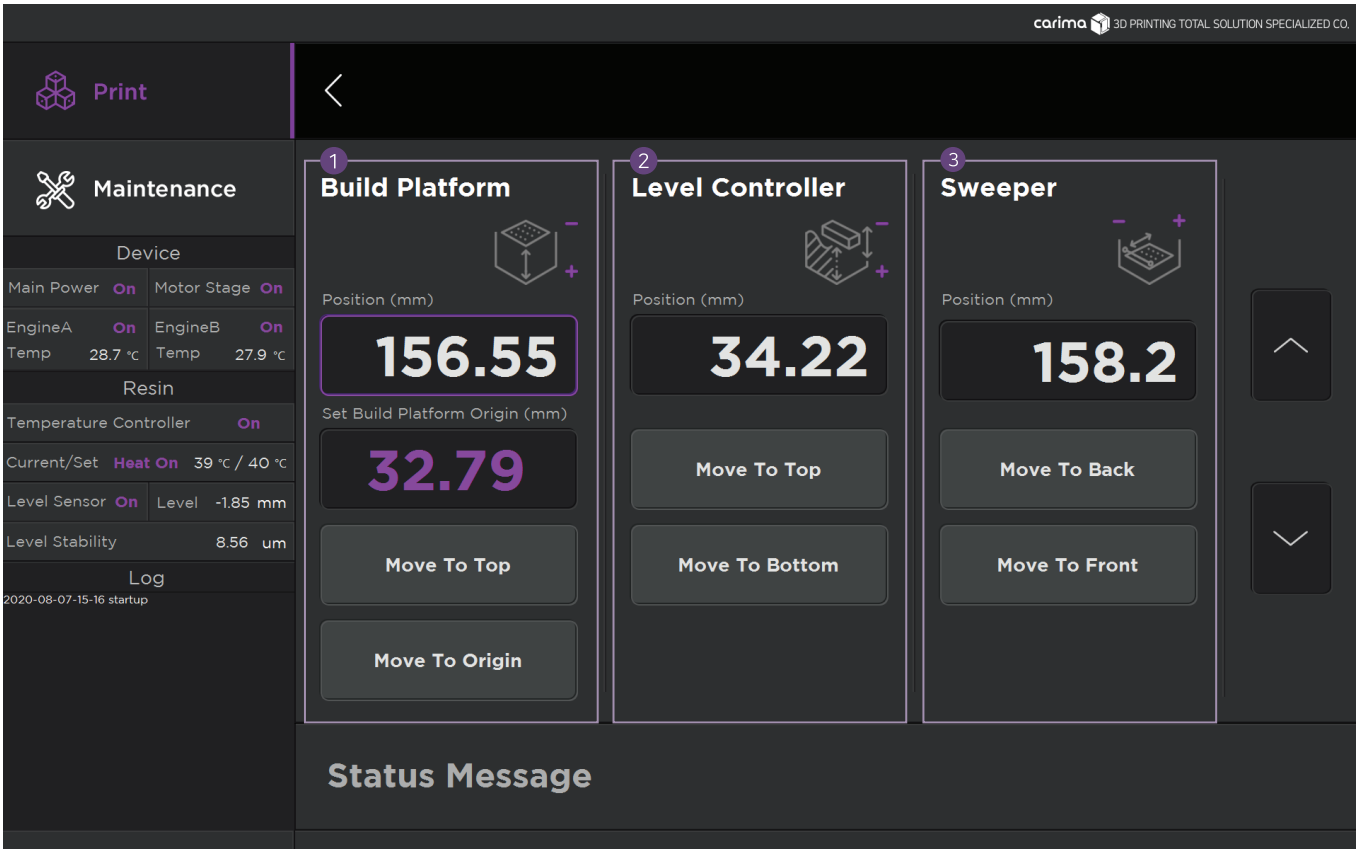
④ Refill :
When refilling the resin, it shows the amount of resin available and the height that can be printed.

ⓐ Pressing the start button and refill the resin, you can check the amount of resin available in real time.

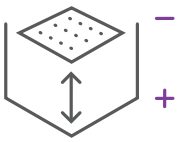
***Refilling the reasin slowly so that there is no big wave on the resin surface to accurately determine the amount of resin.**

02 Maintenance

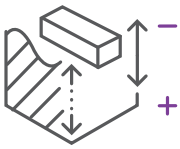
Stage



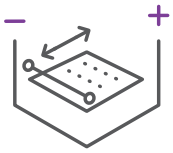
① Build Platform :
Set the position, moving speed, and default position of the build plate.
As you increase the setting value of the build plate position, the build plate goes down.



② Level Controller :
Set the position and moving speed of Level Controller.
As you increase the setting value of the Level Controller, the Level Controller goes down.

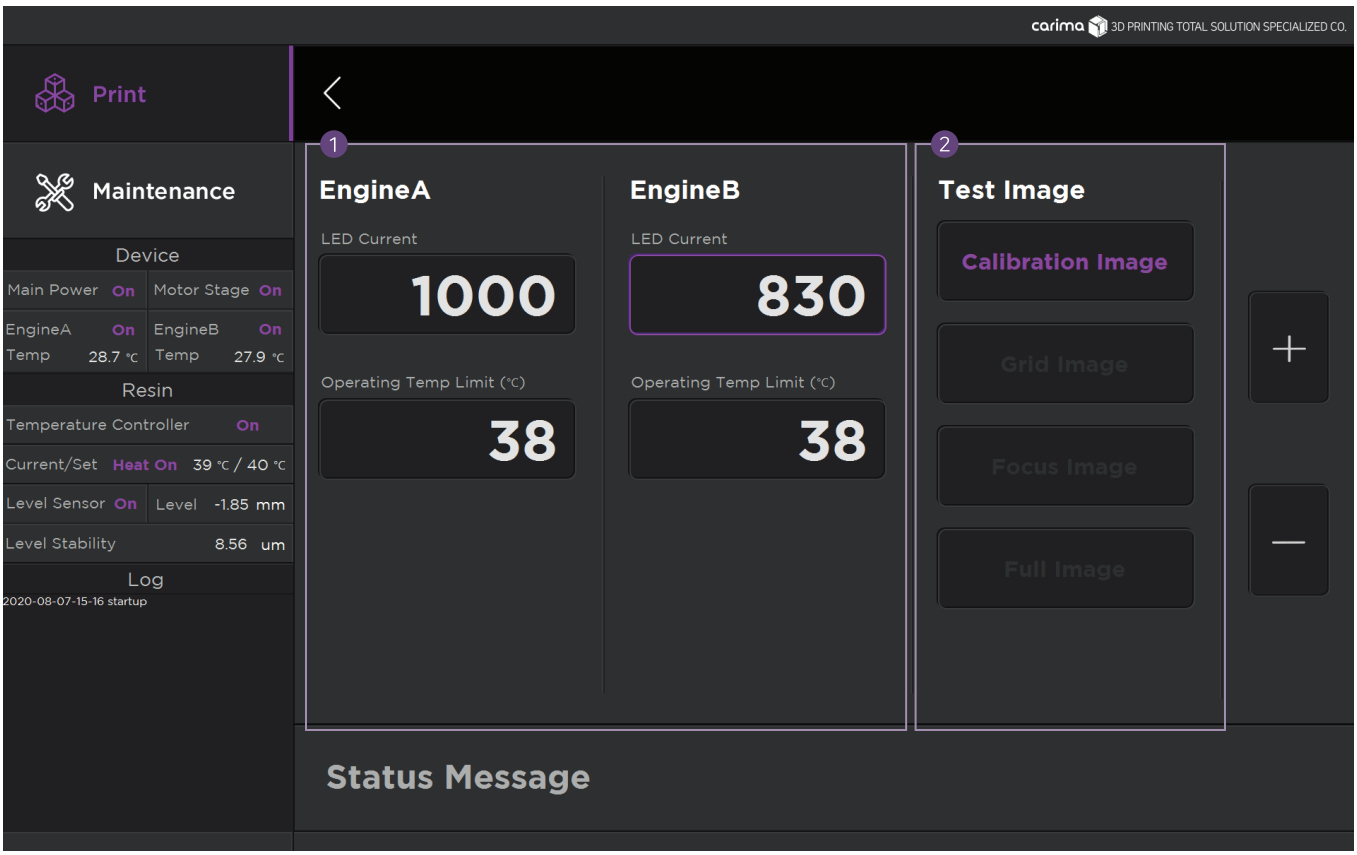


③ Sweeper :
Set the position and movement speed of the Sweeper.
As you increase the setting value of the Sweeper, the Sweeper moves back.



02 Maintenance

Engine



① Engine A / B :
Set the engine light intensity and limit temperature.

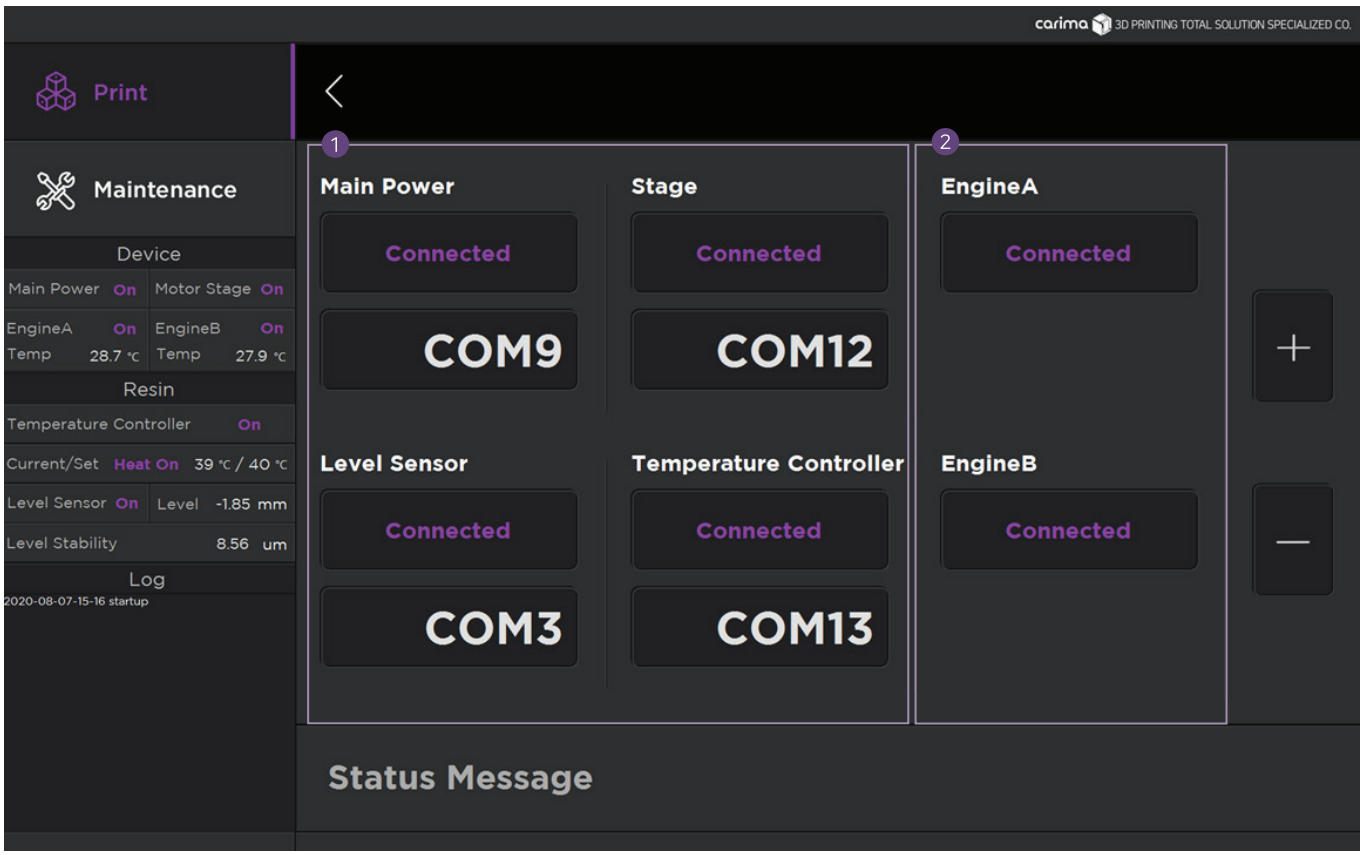
- LED Current : Set the current intensity of the light.
- Operate Temp Limit :
  Set a limit temperature to prevent damage to the engine due to overheating.
  Exposure starts only after cooling to the set temperature.

② Test Image : Check the Engine Image.

- Calibration Image :
  Images to check the engine settings.
- Grid Image : Check for distortion.
- Focus Image : Check for focus
- Full Image :
  Check the engine light is uniform everywhere.

02 Maintenance

Connect



① Power/ Stage / Level Sensor / Temperature Controller / Engine :

Connect each device. When the Power is on, you can connect the Stage, and when the Stage is connected, you can connect the Engine.

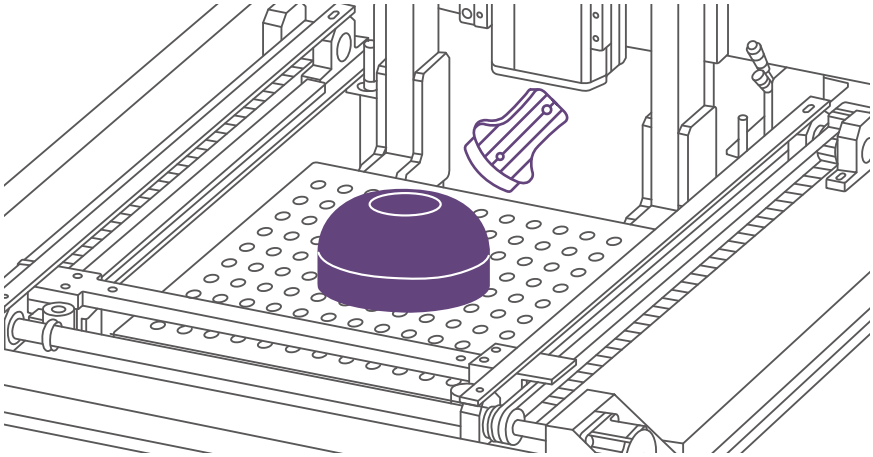
Connected Disconnected state

Finishing Prints

- Once the print is completed, remove the output from the build plate. Wear nitrile gloves when removing the output.

Demounting

When the print is complete, remove the output from the build plate.



Remove the build plate upside down, to prevent the remaining resin from falling. To prevent damages, carefully use the scraper provided to remove the output.

*** Be careful when using the cutter and scraper.**

Post-processing

After removing the output, post-processing such as washing, drying, removing the supporters and curing has to take place. Wear nitrile gloves and remove the prints.

01 Washing

- The resin remains when the output is completed. The remaining resin can be cleaned with alcohol(IPA, 95% or higher). The higher the alcohol concentration, better the wash.

*** When immersing the printout in the washing container, please be careful not to exceed 30 minutes.**

- For detailed wash, use thin brush to remove resins.

*** Use protective equipment when using toxic alcohol(IPA).**

02 Air-Drying

After cleaning with alcohol, dry the output with an air compressor or let it dry naturally.

*** The air compressor is not sold in Carima.**

*** Please note that drying the air compressor or circulator too close may cause damage to the output depending on the performance.**

03 Heat-Drying

Please proceed heat drying after air drying is complete.
It is recommended to heat dry for 60 minutes in an oven at 60°C(140°F) with an air exchange system at least 20 times per hour.

04 Removing supporters

Remove the supporter by hand from the plate after post-processing.
If cured without removing the supporters, use the nipper to remove it.

◁ **Character "Ttota"**
Source : Seoul Metro
Seoul Metro

05 Curing

*** Do not look directly into the UV when using the UV curing.**
Wear glasses or goggles to protect your eyes.

Be aware, for excessive curing affects the output.

*** The type of curing machine and time may affect the curing process.**

Curing frequently and multiple times will reduce the transformation of output than curing long period of time at one session.

Maintenance

- Please check the information on the printer and consumable management.

Maintaining the Printer

To use the printer for a long time, It is important to keep the printer in a good condition.

- If the resin leaks into the printer, wipe it with alcohol. **(* Excluding build plate and vat)**

- **If the engine lens is damaged, it can adversely affect the print quality. Contact Carima for technical help.**

Maintaining Other Accessories

01 Maintaining the Resin

- Resins are vulnerable to sunlight and other lights. Store it in a shady place to use the printer for a long time.
- Do not mix different types of resin.

*** Do not mix different types of resin when storing the resin back into the bottle.**

*** Be aware of resin getting into your eyes for the resin is composed of chemical.**

- To store the leftover resin, take the the resin-filled vat out from the printer and use the resin bottle or light-blocking item such as foil to store in it.

*** The resin has chemical odor which may affect your respiratory. Always use goggle or sunglasses, mask and gloves for protection.**

03 Disposing of Resin

Types of General Waste

Household chemicals such as used soaps, detergents, etc.

Solid wastes that have been printed

Chemical-free tissue and paper

- Disposal of Waste

  If you have a purification device, dispose in it, otherwise, **it should be entrusted to the waste disposal company.**

- Disposal of Output

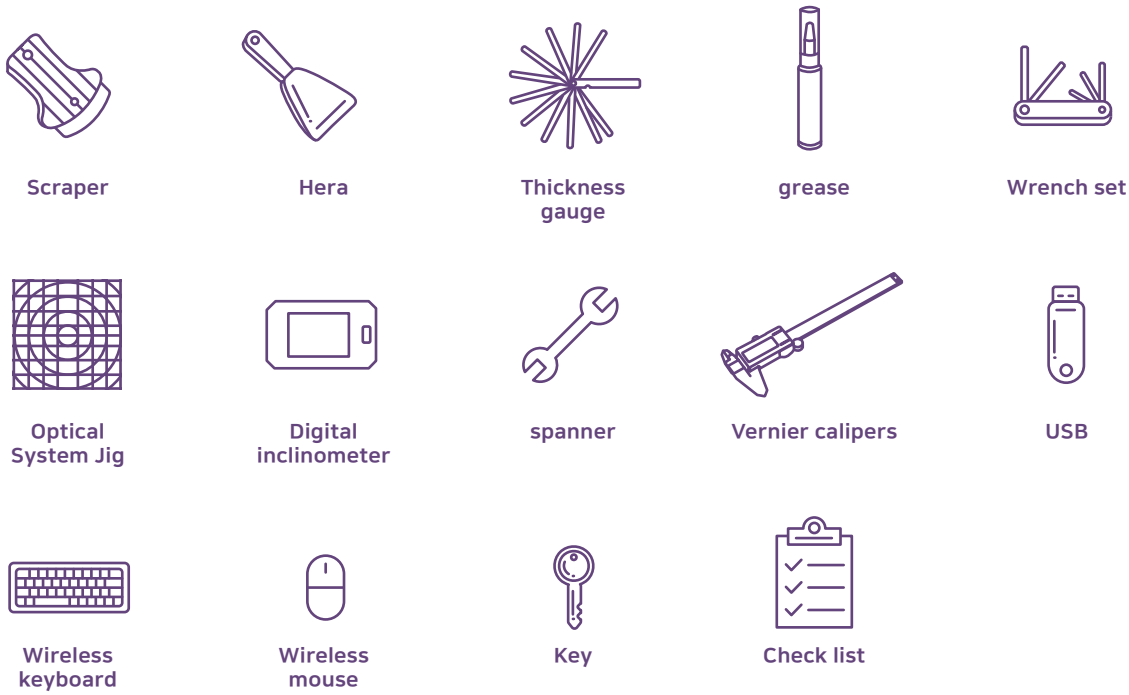
  If it corresponds to general waste, it is treated as general waste without being entrusted to the waste disposal company.

- **⚠ Disposal of Hazardous Waste ⚠**

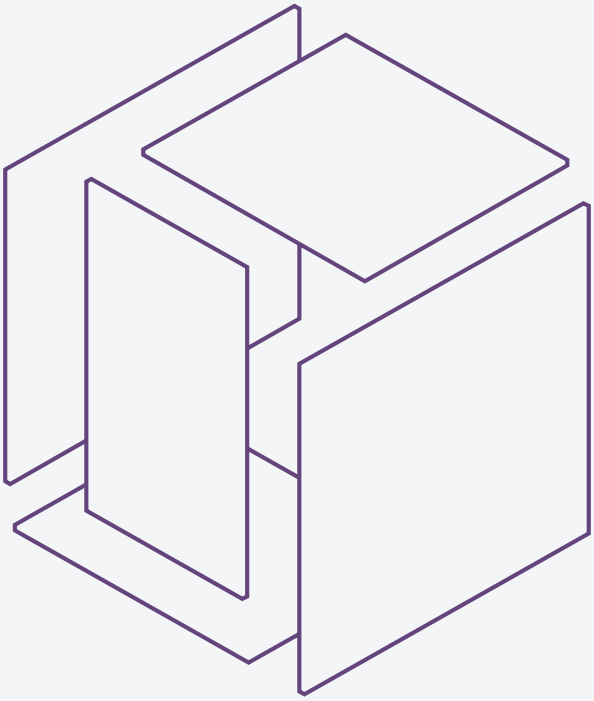
  Must be entrusted to waste disposal company.

04 DM400A Tool Set

DM400A Tool Set will be available when DM400A is purchased.
These set of tools will be useful when using the printer.



***Components and tools may be changed or replaced by other items.**



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Products and other inquiries

9:00 – 18:00 UTC+09:00 (Mon - Fri)
Tel. 82-2-3663-8877 I sales@carima.com

1301, 551-17, Yangcheon-ro, Gangseo-gu,
Seoul, Republic of Korea