

7 Printing

Make sure that the nozzle and the bed are heated to the desired temperature. If you forget to preheat the printing nozzle and the bed before printing, the printer will automatically check the temperatures of the nozzle and the bed; printing will start when the desired temperature is reached - that can take several minutes. However, we recommend preheating the printer beforehand as described in chapter [6.3.8 Loading the filament into the extruder](#).



Do not let the preheated printer idle. When a printer is preheated and non-printing, material in an extruder degrades over time - it may cause the nozzle to jam up.

- **Watch the first few printed layers to be sure filament has attached to the bed properly (5 to 10 minutes).**
- Press the LCD-knob and choose the **Print from SD** option from the menu, press to confirm and pick the desired model **file_name.gcode**. The printer will start printing the object.



The **filename (.gcode) must not contain any special characters** otherwise the printer is not able to display the file on the LCD.

7.1 Removing objects from the printer

Removing prints from the build plate is much easier because of the ability to remove and bend the build plate. Different thermal expansion of the steel sheet and plastics used in 3D printing also helps with detaching prints after the plate has cooled down.

- When the printing is finished, let both nozzle and heatbed cool down before removing the printed object. Always handle the printed objects when the temperature of the bed and nozzle drop to room temperature. When the bed is hot, objects are very hard to remove. Remove the steel sheet from the printer and bend it slightly; prints should pop off.
- If you experience any troubles removing the object (especially the small ones), you can use a flat tool like a spatula **with rounded corners** to prevent damage to the PEI. Slide the spatula under the corner of the object and gently push until the print pops off.



Pict. 13 - Removing the model from the PEI print surface by bending the steel sheet.

i If the prints still do not want to get loose or you need to bend the sheet too much (which you should not do), try to bend the sheet **inwards**.

7.2 Printer Control

There are two ways to control the printer. You can use the LCD panel integrated with the printer, or you can connect your computer via the USB cable. We suggest the **LCD panel** because of its speed and reliability, and moreover you do not have to rely on a computer.

7.2.1 LCD screen

The main screen is an **information screen** displaying the most important details. They are the temperature of the nozzle and the heatbed (1, 2), printing time (3) and the actual Z-axis position (5).

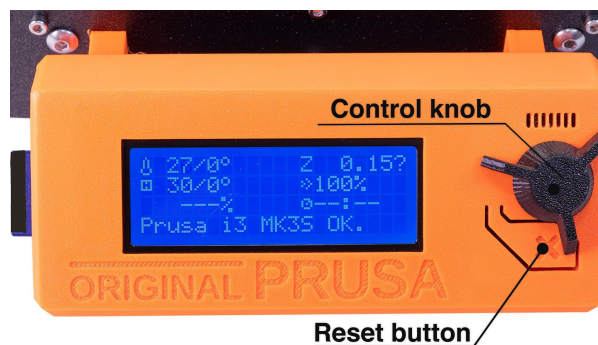


Pict. 14 - LCD layout

1. Nozzle temperature (actual / desired temperature)
2. Heatbed temperature (actual / desired temperature)
3. Progress of printing in % - shown only during the printing
4. Status bar (Prusa i3 MK3S+ ready. / Heating / file_name.gcode, etc.)
5. Z-axis position
6. Printing speed
7. Remaining time estimation

7.2.2 Controlling the LCD screen

Controlling the LCD screen is done by a single control element: a rotational knob that you press to confirm the selection.



Pict. 15 - LCD screen and control buttons

By single pressing the control button on the information screen, you enter the main menu.

The reset button is placed directly under the control knob. Pressing the reset button equates to quickly toggling the power switch. It is useful when the printer exhibits weird behavior or you see a failed print that requires immediate cancellation.

During some LCD functions like Calibration Wizard, you may encounter special symbols in the bottom right corner.

∨ ∨ Double down arrow informs you that the message contains more screens that automatically switch and you should wait.

⏏ Tick sign informs you that you need to press the control knob to continue.



Shortcut: Quick access to Move Z-axis function - press and hold the Control knob for 3 seconds

7.2.3 Print statistics

The printer tracks printing statistics. When you access this option during a print, you will see statistics for the running print. If you do so while the printer is idle, you will see the lifetime statistics. Both filament usage and print time are tracked.

```
Total filament :  
                    5.94 m  
Total print time :  
    0d : 1h :58 m
```

Pict. 16 - Print statistics

7.2.4 Fail stats

The printer keeps statistics about the failures it experienced and recovered from during the last print. It is useful for assessing a long print, for example over a night or a weekend, if everything ran smoothly. Fail stats are placed at the bottom of the LCD menu.

Failures which are detected:

- Filament runout
- Power panic
- Lost steps / shifted layers