

Technical manual

How to update the firmware

At BCN3D Technologies we want you to have a great printing experience, and to achieve it, we are continually working to create new firmware upgrades for our printers. In fact, most of the evolutions deployed on the Sigma and Sigmax newest versions R19 are compatible with the older printer versions.

Use the software BCN3D Cura to get the latest firmware version (2.0.2 or newer) and take profit of the new R19 features.

1. Use the USB cable to connect the Sigma / Sigmax to the computer.

2. Open BCN3D Cura. Go to *Settings --> Printer --> Manage Printers*

G BCN3D	Cura	-	_	-		
File Edit	: View	Settings Extensions Plugin	ns Pre	efere	nces Help	
	D	Printer	•	۲	Sigma	
	Pre	Extruder Left	•		Sigmax	
-		Extruder Right	•		Add Printer	
		Configure setting visibilit	ty		Manage Printers	
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3. Select Upgrade Firmware



4. Click *Automatically upgrade Firmware* to download and install the latest version available (2.0.2 or newer).
6. Once the process is completed, a window will prompt. It informs it is necessary to update the files of the printer's LCD screen. Either follow the link to open the manual or continue this document.

Upgrade Firmware			\times
Upgrade Firm	ware		
Firmware is the piece of s regulates the temperature	oftware running directly on your 30 a and ultimately makes your printer	D printer. This firmware controls the step motors work.	te.
The firmware shipping wit improvements.	h new printers works, but new ve	rsions tend to have more features and	
Current Version: 01-1.2.1 Latest Version: 01-2.0.2 <u>View all release notes</u>			
	Automatically upgrade Firmware	Upload custom Firmware	
The latest firmware versio Click 'Automatically upgrad	n requires an LCD files update. e Firmware' and, after the installat	ion, follow the instructions.	
		Close	

5. Wait until the firmware is installed. The process may take a few minutes to complete.







To change the micro SD card files, first, let's check the LCD version installed on your printer. Follow the steps of the corresponding section according to the printer version you have.



BCN3D Sigma Original



Sigma R17 / BCN3D Sigmax Original

For the BCN3D Sigma Original

7.1. The Sigma original LCD has a white frame, and the micro SD card can be easily accessed.7.3. Remove the small cover over the LCD and press on the micro SD. (You don't have to disassemble the screen from the printer).

7.2. Turn off and disconnect your printer from the power outlet. Also make sure that the USB cable is not connected to the printer.





7.4. Go to step 10 to continue the process.

For the Sigma R17 version

8.1. The Sigma R17 LCD has a black frame.

8.2. To remove the micro SD rise your printer's bed, **turn it off and disconnect it from the power outlet.** Also make sure that the USB cable is not connected to the printer.

8.3. First, remove the screw under the extruder in order to remove the lower teflon tube and work comfortably. Remove the central and right side cover to have full access to the LCD's micro SD slot.





For the BCN3D Sigmax Original

9.1. The Sigmax Original LCD has a black frame.

9.2. To remove the micro SD rise your printer's bed, **turn it off and disconnect it from the power outlet.** Also make sure that the USB cable is not connected to the printer.

9.3. Remove the lower teflon tube by pressing up the grey piece (cupling collet) and then pull out the tube. This will allow you to work more comfortably. Then, remove the central and right side cover to have full access to the LCD's micro SD slot.Go to step 8.4 to continue the process.





8.4. Once the covers are removed, you can easily access the micro SD behind the screen. The micro SD socket has two positions: up (unlocked) and down (locked). To remove the micro SD, drag the socket up as shown in the pictures. (It's not necessary to detach the screen from the printer's frame).

*Be careful when removing the micro SD to avoid causing any damage to the mechanism.



8.5. Go to step 10 to continue the process.

10. Format and replace files from the micro SD

Once we have removed the micro SD, we will proceed to install the new files.

In the next link you can find the files to install in the folder:

• Sigma: <u>https://github.com/BCN3D/BCN3DSigma-Firmware/releases/tag/01-2.0.2</u>

For the Sigma R17 (Download the files from the Folder SD.files.v202-LCD-SIGMA-R17-R19.zip)

These files are valid for firmware versions 2.0.2 or higher.

For the BCN3D Sigma Original (Download the files from the Folder SD.files.v202-LCD-SIGMA-R16.zip) These files are valid for firmware versions 2.0.2 or higher.

 BCN3D Sigmax Original : <u>https://github.com/BCN3D/BCN3DSigmax-Firmware/releases/</u> <u>tag/02-2.0.2</u>

(Download the files from the Folder SD.files.v202-LCD-SIGMAX.zip) These files are valid for firmware versions 2.0.2 or higher. **10.1.** Before install the files, format the micro SD: you have to connect the card to the computer and follow these steps:

Google Chrome CAPTURAS GUIAS PDF RDWorksV8 RDWorksV8Set	Organizar Reprod Favoritos Favoritos Escritorio Sitio recientes Bibliotecas Documentos Inágenes Musica Videos Fequipo Equipo Equipo Equipo Red	tucción automática Exputsar Propiedades Propiedades del sistema ≫ 🕃 ▼ 🔝 🖗 • Unidades de disco duro (1) Disco local (Cc) → 127 GB disponibles de 148 GB • Dispositivos con almacenamiento extraíble (2) ↓ LCD (E) ↓ LCD (E) ↓ Abrir en ua ventana nueva Abrir Reproducción automática Compartir con Abrir como dispositivo portáli Ahadir a "Archive.rar" Ahadir a "Archive.rar" Ahadir a "Archive.rar" y enviar por email @ Ahadir a "Archive.rar" y enviar por email @ Sinconización de carbita compartidas > Formater
Google Chrome CAPTURAS Gilds PDF	LCD (E) Disco extraible Organizat • neproor Fevoritos Descargas E scritorio Stois Bibliote Capacida	Espacio usado: Tamaño total Espacio disponible: 3,62 GB Sistema de archivos auccion aucomatica espuisar propresadoes propresadoes de sostema " Sir " III espuisar • Unidades de disco duro (1) Disco local (C:) I 27 GB disponibles de 148 GB LCD (E:) d: LCD (E:)
RDWorksV8 RDWorksV8Set	Could 3,70 GB Music Video Video Video LCD (Restaura LCD (Restaura	a solutione a segneción tes ar valores predeterminados del volumen

Tamaño total: 3,70 GB Sistema de archivos: EAT

Opciones de format V Formato rápido



10.2. The micro SD card has to be formated in FAT format. If this option doesn't appear, follow the steps on this link:

https://github.com/BCN3D/BCN3D-Cura-Windows/wiki/Updating-the-SD-Files-from-the-LCD-Display

10.3. Once formated, drag and drop the files downloaded in the in the SD card, place it again in the micro SD socket and put the cover back (for Sigma R17 and Sigmax Original users remember to put also back the lower teflon tube).

Switch on the printer and an Setup Assistant will appear in the screen to properly set up the physical configuration of the Sigma or Sigmax. It will be asked to:

 \cdot Choose the hotend sizes installed.

 \cdot Select the extruder installed (only in Sigma).

Contact us if you have any questions about this process: support@bcn3dtechnologies.com

11. CONSUMABLES TO ENJOY A FULL R19 EXPERIENCE

Calibration gauge:

https://www.bcn3dtechnologies.com/en/3d-printer/calibration-gauge-z-offset-bcn3d-sigma-sigmax/

Besides the internal improvements to make the Printer Calibration process more accurate, it is recommendable to use a Calibration Gauge instead of a piece of paper to adjust the Z height of the hotend. The use of a steel gauge reduces the subjectivity of the process and provides an unambiguous feedback.



Z Axis - Left Extruder			< (i) Information			
^	Move the calibration gauge back and forth between the nozzle and the platform without pressing the platform. Raise the platform until you feel some resistance while sliding. Go to (i) for some tips. Accept				\otimes	
			Slight or no contact. Raise the platform.	Firm contact. Press ACCEPT.	No clearence. Low the platform.	
\sim						

· R19 upgrade kit:

Available in November

The installation of the new mechanical components equipped on the new R19 version is not compulsory to upgrade the firmware to the R19 version, but it is recommendable. The upgrade kit contains:

· Filament Runout Sensor: This device is required to enable the prevention of running out of filament.

· Bondtech Extruders (only for Sigma): Increased torque and reliability.

 \cdot Hotends by E3D: Increased thermal behaviour, conferring better performance and higher reliability.

· Shims:

https://www.bcn3dtechnologies.com/en/3d-printer/shims-mirror-duplication-modes-bcn3d-sigma-sigmax/

The firmware for the Sigma R19 now supports Mirror and Duplication modes, previously only available for Sigmax. In these printing modes both toolheads work simultaneously, so it is key important to make sure both nozzles are exactly at the same height. However, due to manufacturing and assembly tolerances the offset between tips can be up to 0.5mm. A key factor to obtain consistent and accurate prints over the time is keeping the printer properly lubricated and maintained. Consequently, the new firmware version includes maintenance alerts to remind the user to properly lubricate the axes of the printer with recommended products.

For this reason, it is recommended to install shims to mechanically correct the Z offset when it is suggested during the *Printer Calibration* process. As a result, it will be possible to avoid any geometrical distortion of the part or additional consumption of time and material. The installation of shims is specially important for those planning to use frequently Mirror or Duplication modes.





Z Axis Calibration





· Lubrication kit:

https://www.bcn3dtechnologies.com/en/3d-printer/lubrication-kit-3d-printer-bcn3d-sigma-sigmax/





Notification: Maintenance recommended

The printer has run over 250 km.

It's recommended to lubricate the axes. Learn how at bcn3dtechnologies.com/lubricate

Main menu



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