

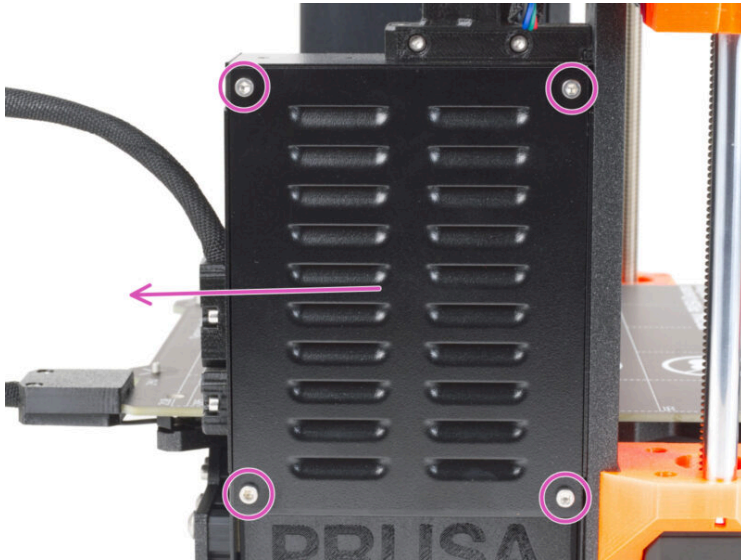
# Table of Contents

## How to replace the xBuddy board

<b>(MK4/MK3.9/MK3.5)</b> .....	3
Step 1 - Introduction .....	4
Step 2 - Tools necessary for this chapter .....	5
Step 3 - Preparing the printer .....	6
Step 4 - Opening the xBuddy box .....	7
Step 5 - xBuddy cable management .....	8
Step 6 - Removing the covers and ESP Wi-Fi .....	9
Step 7 - Removing the Heatbed & Ext. cables .....	10
Step 8 - Removing all the other cables .....	11
Step 9 - Removing the xBuddy board .....	12
Step 10 - New xBuddy board: parts preparation .....	13
Step 11 - Applying the thermal pads .....	14
Step 12 - Attaching the new xBuddy box .....	15
Step 13 - Attaching the zip ties .....	16
Step 14 - Installing the PE cable .....	17
Step 15 - Installing the power cables .....	18
Step 16 - Installing the cables .....	19
Step 17 - Installing the motor cables .....	20
Step 18 - Installing the extruder cable bundle .....	21
Step 19 - MK3.5: Connecting the adapter .....	22
Step 20 - Installing the heatbed cable bundle .....	23
Step 21 - Wi-Fi & cable covers .....	24
Step 22 - Covering the xBuddy box .....	25
Step 23 - Firmware update (part 1) .....	26
Step 24 - Firmware update (part 2) .....	27
Step 25 - Wizard - Selftest .....	28



# How to replace the xBuddy board (MK4/MK3.9/MK3.5)

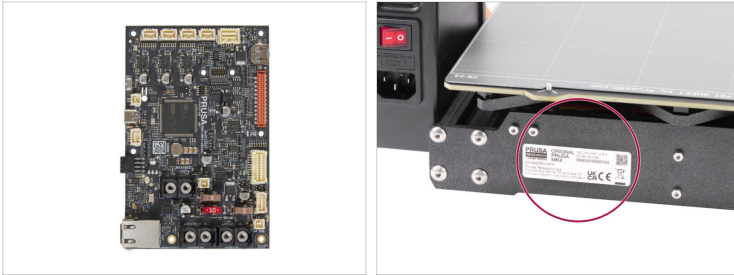


[help.prusa3d.com/g638639](https://help.prusa3d.com/g638639)

Scan the QR code to  
display the latest  
version of this  
chapter.

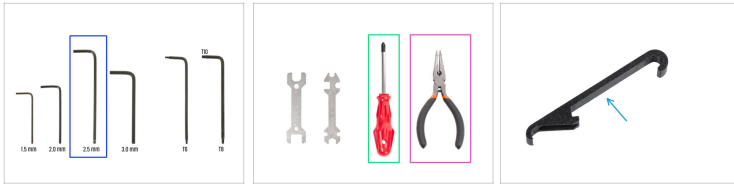


## STEP 1 Introduction



- ◆ This guide will take you through the replacement of the **xBuddy board** on the **Original Prusa MK4** and **MK3.9**.
- ◆ Although the procedure is almost identical, some steps are slightly different for MK4 and MK3.9. The easiest way is to look at the serial label on the back of the printer and check what printer model you have.
- ◆ All necessary parts are available in our eshop [prusa3d.com](https://prusa3d.com).
- ⓘ Note that you have to be logged in to have access to the spare parts section.
- ⚠ **Do not remove any fasteners or parts unless instructed to do so.**

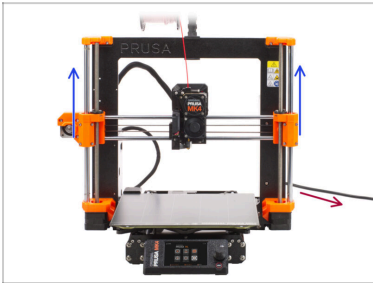
## STEP 2 Tools necessary for this chapter



● **For this chapter, please prepare:**

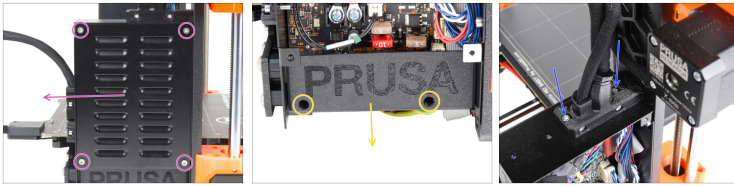
- 2.5mm Allen key
- PH2 Philips screwdriver
- Needle-nose pliers
- X-holder (optional) - a *helpful printable tool that can make inserting the zip-ties easier. This part can be download on [Printables.com](https://www.printables.com).*

## STEP 3 Preparing the printer



- ◆ Move the Z-axis all the way up. Go to *Control* -> *Move Axis* -> *Move Z* and turn the knob clockwise to move the axis up.
- ⓘ **Use a smart shortcut** - Press and hold the LCD button for one second, then release. This will bring up the Z-axis move menu. Rotate the knob to move the axis.
- ◆ If this cannot be done through the menu, turn the printer OFF, disconnect the power cable and move it up by turning both Z-axis threaded rods at the same time.
- 📌 In this case, **don't forget to calibrate the Z axis after replacing the xBuddy**: *Control* -> *Calibrations & tests* -> *Z alignment calibration* and wait for the printer to finish calibrating.
- ⚠ **Before you start, make sure that the printer is switched OFF and the power cord is disconnected from the printer (power supply unit)!**

## STEP 4 Opening the xBuddy box

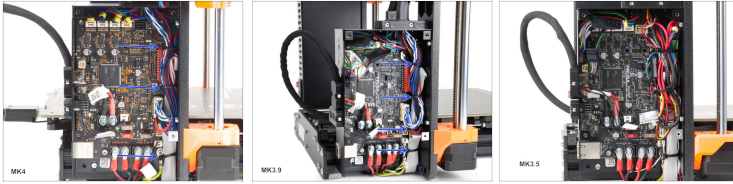


- ◆ From the left side of the printer, loosen four M3 screws on the xBuddy box cover and remove it from the printer.
- ◆ Release two M3 screws securing the xBuddybox-cover (printed part) and remove it from the printer.
- ◆ Release the two M3x10 screws holding the ext-cable holder on top of the xBuddy box.



This way, we can move the cable bundle later on, to provide us with some more space on the inside of the box.

## STEP 5 xBuddy cable management



- ◆ Cut off each zip tie securing the cables.



**Be extra careful! Avoid cutting cables!!!**



The cable management is different between the factory-built MK4, the MK4 built as an upgrade of an earlier printer model, and the MK3.9 / MK3.5.

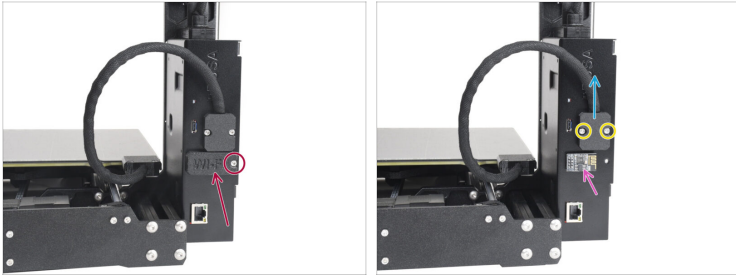
For example, some versions of the printer might be utilizing cable adapters for some of the motor cables. See the two pictures for a comparison.

There are yellow collets on each motor cable, denoting which axis is driven by a given motor.



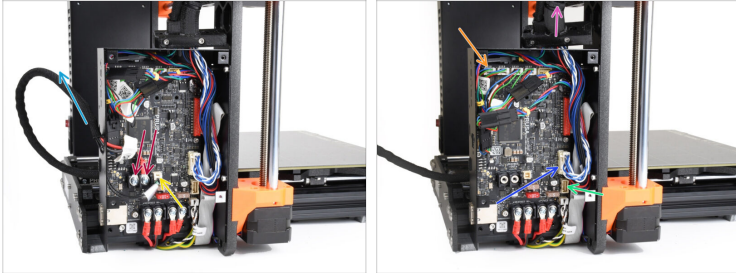
However, the xBuddy board replacement process is the same for all the versions of the MK4/MK3.9/MK3.5.

## STEP 6 Removing the covers and ESP Wi-Fi



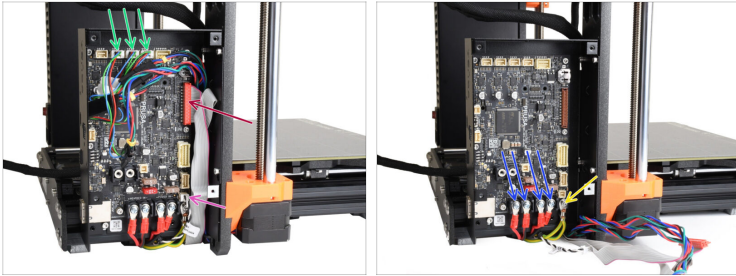
- ◆ From the rear of the printer, release the M3x6 screw holding the ESP-Wi-Fi module cover. Remove the cover.
- ◆ Remove the **ESP Wi-Fi module**.
  - ⚠ Handle the module by its sides. Do not touch the individual components on the PCB itself to avoid damaging it. Use ESD gloves to prevent a damage to the electronics.
- ◆ Release the two M3x6 screws holding the heatbed cable cover.
- ◆ Remove the heatbed cable cover.

## STEP 7 Removing the Heatbed & Ext. cables Ext. cables



- ◆ Using the Phillips screwdriver, remove the two **heatbed power** terminal screws and disconnect the cables.
- ◆ Disconnect the **heatbed thermistor** cable. Note there is a small safety latch on the connector, which must be pushed in, while you pull the connector out, in order to disconnect it.
  - ⚠ Note there is a small safety latch on the connector, which must be pushed in, while you pull the connector out, in order to disconnect it.
- ◆ Remove the **heatbed cable bundle** from the xBuddy box.
- ◆ Disconnect the **extruder main cable**. Note there is a safety latch on the connector.
- ◆ Disconnect the **X-axis motor** cable. Note there is a safety latch on the connector.
- ◆ Lift the X-axis and **extruder cable bundle** on top to remove it from the xBuddy box.
- ◆ On **MK3.5** printer, remove the MK3.5 adapter connector on the right side too.

## STEP 8 Removing all the other cables



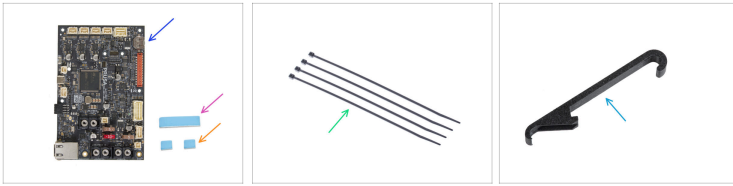
- ◆ Remove the Y-axis and the two Z-axis **motor connectors**. Note there are safety latches on the connectors.
  - ◆ Remove the **xLCD connector** by gently pulling it out.
  - ◆ Remove the **power panic connector**. The cable might look differently, depending on the printer version.
  - ◆ Using the Philips screwdriver, remove the four **power terminal screws**.
  - ◆ Using the 2.5mm Allen key, remove the M3x6 screw holding the **PE cable connector** and remove it.
- ⚠ **Note there is a washer above the connector. Keep the washer for later use.**

## STEP 9 Removing the xBuddy board



- Remove the five M3x6 screws holding the xBuddy board.
- Lift the xBuddy board on the right side to loosen the sticky thermal pads below that might hold it in place.
- Slide the xBuddy board towards the front of the printer to detach the connectors at the back of the box. Then, remove the xBuddy board entirely.
- If there are any thermal pad leftovers on the inside of the xBuddy box, remove them.

## STEP 10 New xBuddy board: parts preparation



◆ For the following steps, please prepare:

◆ New xBuddy board (1x)

⚠ **Always touch the sides of the electronics board while manipulating it. Avoid touching the individual components on the board to prevent a damage.**

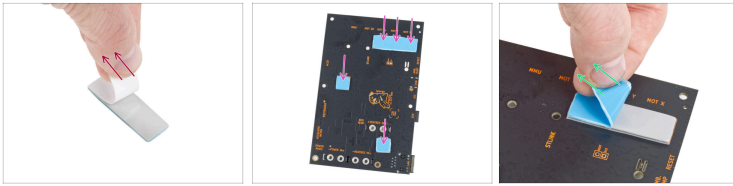
◆ Thermal pad 40x12x2.2 mm (1x)

◆ Thermal pad 12x12x2.2 mm (2x)

◆ Zip tie (4x)

◆ X-holder (1x) *optional*

## STEP 11 Applying the thermal pads



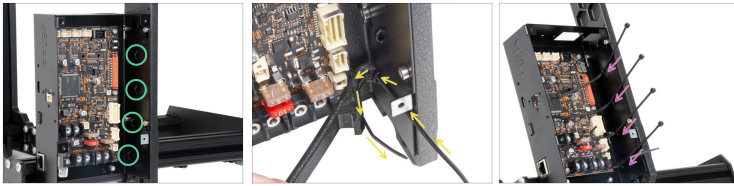
- ◆ Peel off the white protective layer from all thermal pads.
  - ⚠ **Always touch the sides of the electronics board while manipulating it. Avoid touching the chips, capacitors and other parts of the electronics.**
- ◆ Attach the pads onto the back of the xBuddy board. There are markings that indicate the correct size and positions.
  - ⓘ The surface to which the pads are stuck must be cleaned of grease. This will ensure better adhesion.
  - ⚠ **For the protection of the board's electronic components, we strongly recommend placing the xBuddy board on the soft pad. You can use the original xBuddy bubble wrap package.**
- ◆ Peel off the blue protective layer from all thermal pads.

## STEP 12 Attaching the new xBuddy box



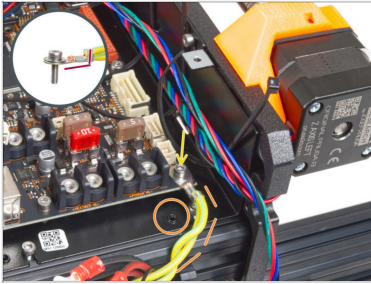
- ◆ Insert the new **xBuddy board** into the box. First, align the connectors on the back so that they fit the openings in the box.
- ◆ Before attaching it fully, align the holes in the board with the threaded openings (columns) in the xBuddy box.
- ◆ Fix the xBuddy board in place using five M3x6 screws in the marked spots. Do not fully tighten the screws yet. A few turns are enough for now.
  - ⚠ **Put aside your instinct and leave the hole on the bottom right empty.**
- ◆ Fully tighten all five screws **very carefully**, otherwise you can damage the electronics board.

## STEP 13 Attaching the zip ties




- ◆ Take a closer look at to the xBuddy box. There are four hooks on the metal case We will need to install the zip-ties into them.
- ⚠ **Proceed very carefully. Be careful not to damage the components on the xBuddy board.**
- ◆ The X-holder can be used as a zip tie guidance. Place the X-holder behind the lowest hook as in the picture. Push the zip tie through the protrusion towards the X-holder. Keep 3 - 5 cm of the zip tie protruding out.
- 📌 Note the correct orientation of the zip tie. The teeth on the zip tie must be on the visible side.
- ◆ Using the same technique, install the zipties into all four protrusions.

## STEP 14 Installing the PE cable

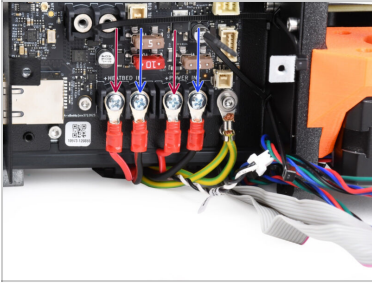


- Attach the PE cable connector to the right lower screw hole in the xBuddy board. Secure the cable with the M3w washer and the M3x6 screw. Tighten the screw firmly.

 **Note the correct orientation of the PE connector.**

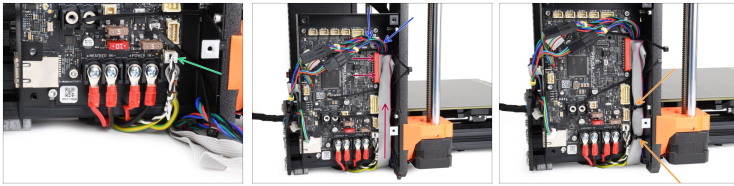
- Guide the PE cable so that it doesn't interfere with the threaded opening below the xBuddy board. While doing the cable management, make sure the opening is unobstructed so that a cover can be fitted in, later on.

## STEP 15 Installing the power cables



- **Connect the PSU cables into the xBuddy board in this order (starting from the left with the first pair of the PSU cables):**
  - Red power cable (positive)
  - Black power cable (negative)
  - Red power cable (positive)
  - Black power cable (negative)
- Secure all power cable connectors with the terminal screws. **Tighten the screws firmly.**
- ⚠ **Verify the correct placement of the cables comparing it to the picture. This is crucial!**  
Incorrect wiring may cause damage to your printer!
- In case you have a silver version of the PSU, the connectors might differ slightly, see this guide: [Securing the PSU cables](#)

## STEP 16 Installing the cables



- Connect the **power panic cable** to the white connector on the bottom right of the xBuddy board.



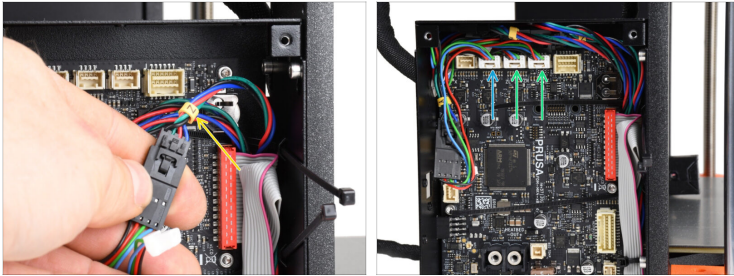
Your power panic cable might look slightly different, depending on the version of the printer.

- Guide the **motor cables** from below, to the top part of the xBuddy box.
- Guide the **xLCD cable** over the motor cables and connect it to the marked corresponding plug on the xBuddy board.
- Fix the cable bundle in place using just the two zip-ties on the bottom. Tighten the zip-tie just so that the cables hold in place. Carefully cut off the leftover zip-tie.



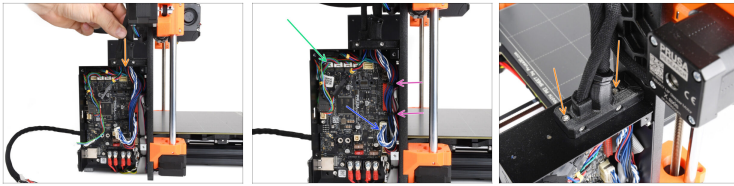
**Do not overtighten the zip-ties. Otherwise, you will damage the cables.**

## STEP 17 Installing the motor cables



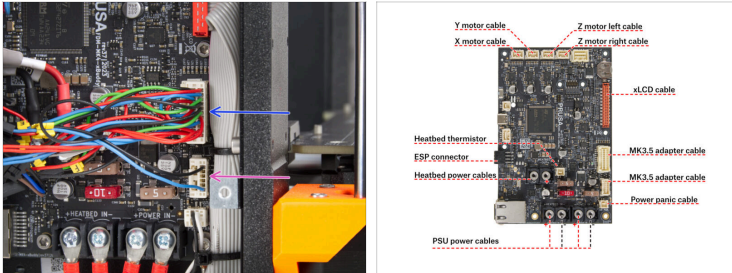
- ◆ In this step, we will be connecting the motor cables. All of the motor cables should have a yellow collet denoting the axis driven by a given motor.
- ⓘ On some versions of the printer there are cable adapters for some of the motor cables.
- ◆ Connect the **Y-axis motor** into the corresponding connector.
- ◆ Connect the **Z-axis motors** into the two corresponding connectors. Orientation of the left and right motor connectors doesn't matter.
- 📌 Position of the left and right motor connectors doesn't matter.

## STEP 18 Installing the extruder cable bundle





- ✿ Insert the cable bundle from the extruder and the X-axis motor back into the xBuddy box. Re-install the cable holder back onto the top of the xBuddy box. Make sure none of the cables get pinched.
- ✿ Connect the **X-axis motor** cable into the corresponding connector in the top-left corner.
- ✿ Connect the **Extruder main cable** into the corresponding connector.
- ✿ Tighten the two zip-ties just so that the cable bundle holds in place. Carefully cut off the leftover zip-tie.
  - ⚠ **Do not overtighten the zip-ties. Otherwise, you will damage the cables.**
- ✿ Fix the Ext-cable-holder on top of the xBuddy box, using two M3x10 screws. Make sure no cables are getting pinched underneath.
  - ⚠ **Make sure no cables are getting pinched underneath.**

## STEP 19 MK3.5: Connecting the adapter

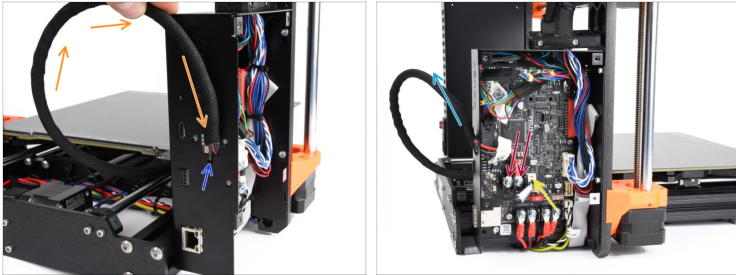


 This step is valid only for the **MK3.5 printer**.

-  The MK3.5 printer utilizes a cable adapter connected to the extruder-main connector on the xBuddy.
-  The MK3.5 cable adapter also splits into a smaller connector that needs to be connected into the xBuddy board just below the main one.

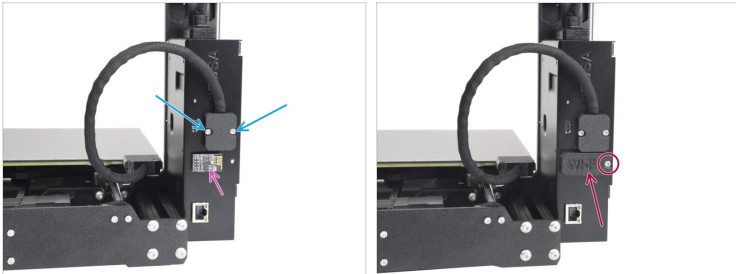
 Refer to the **MK3.5 Upgrade guide** to verify everything is connected correctly.

## STEP 20 Installing the heatbed cable bundle



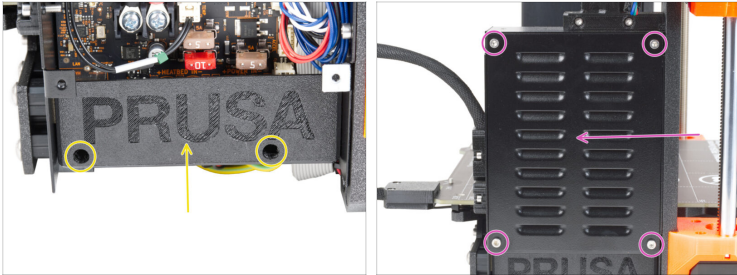
- On the back of the printer, guide the **heatbed cable bundle** into the opening in the xBuddy box.
- The heatbed cable bundle also consists of a nylon filament reinforcement. Guide the filament into the small opening just below where the cables go.
- The nylon filament should hold the cable bundle pointing upwards.
- Re-install the the two **heatbed power cables** into the terminals. Note that the positive (+ / red) cable goes into the terminal on the right. Using the Phillips screwdriver, fully tighten the terminals.
- Connect the **heatbed thermistor** cable.

## STEP 21 Wi-Fi & cable covers cable covers



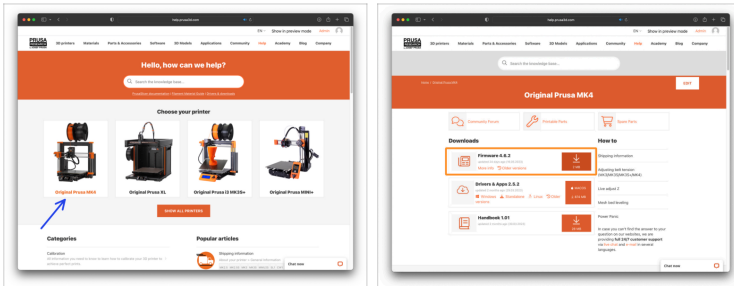
- ◆ Reinstall the **heatbed cable cover** and attach it to the xBuddy box using two M3x6 screws.
- ◆ Reinstall the **ESP Wi-Fi module** back into place.
  - ⚠ Handle the module by its sides. Do not touch the individual components on the PCB itself to avoid damaging it. Use ESD gloves to prevent a damage to the electronics.
- ◆ Re-install the **Wi-fi cover** and attach it to the xBuddy box using an M3x6 screw.

## STEP 22 Covering the xBuddy box



- Re-install the **xBuddybox-cover** (printed part) and fix it in place using two M3 screws.
- Re-install the **xBuddy box cover** and fix it in place using the four M3x6 screws.

## STEP 23 Firmware update (part 1)



- i** All shipped xBuddy boards should have the latest firmware version. However, it is recommended to check and possibly update it.
- 🛒** Visit the [help.prusa3d.com](https://help.prusa3d.com) page.
- 🔍** Navigate to the corresponding page for your printer model.
- 📄** Save the latest firmware file (.bbf) onto the bundled USB drive.

## STEP 24 Firmware update (part 2)



- ◆ Insert the USB drive with the latest firmware file into the printer.
- ◆ Connect the power cable and connect the printer into a wall outlet.
- ◆ Turn the printer on using the switch on the back.
- ◆ If the "New firmware available" screen appears, hit **FLASH** by pressing the rotary knob to upgrade to the latest firmware.
- ◆ If no such message appears, the printer is running the latest firmware already. Proceed to the next step.

## STEP 25 Wizard - Selftest



- After the printer starts up, the setup wizard will show up - requiring a self-test. Select **CONTINUE** to start.
- The wizard will test all important components of the printer. The whole process takes a few minutes. Some parts of the wizard require direct user interaction. Follow the instructions on the screen.
- Once the Selftest Wizard finishes up, you can start using your printer.



---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

---

---