

Table of Contents

How to replace an optical sensor (SL1)	3
Step 1 - Introduction	4
Step 2 - Tools necessary for this chapter	5
Step 3 - Preparing the printer	5
Step 4 - Removing the cover	6
Step 5 - New vs old version of the optical sensor mount	7
Step 6 - Removing the touchscreen (new version)	8
Step 7 - Removing the optical sensor (new version)	9
Step 8 - Optical sensor parts preparation (new version)	9
Step 9 - New optical sensor installation (new version)	10
Step 10 - Optical sensor alignment (new version)	11
Step 11 - Mounting the touchscreen (new version)	12
Step 12 - Removing the touchscreen (old version)	12
Step 13 - Removing the optical sensor (old version)	13
Step 14 - Disconnecting the optical sensor cable (old design)	14
Step 15 - Removing the optical sensor (old version)	14
Step 16 - Removing the tilt motor assembly (old version)	15
Step 17 - Optical sensor parts preparation (old version)	16
Step 18 - Preparing the tilt motor parts (old version)	16
Step 19 - New connecting rod installation (old version)	17
Step 20 - The tilt motor assembly (old version)	17

Step 21 - The tilt motor assembly (old version)	18
Step 22 - Aligning the optical sensor (old version)	19
Step 23 - Connecting the optical sensor cable (old version)	20
Step 24 - Mounting the touchscreen (old version)	20
Step 25 - Assembling the cover	21
Step 26 - Assembling the cover	22
Step 27 - It is done!	23

How to replace an optical sensor (SL1)



help.prusa3d.com/g129183

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

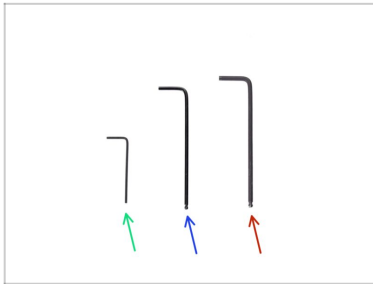






STEP 1 Introduction



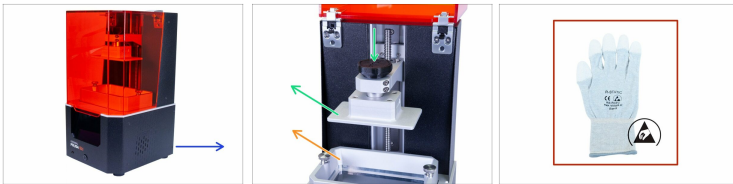
- i** This guide will take you through the replacement of the **optical sensor** on the **Original Prusa SL1**.
- All necessary parts are available in our eshop shop.prusa3d.com
- i** Note that you have to be logged in to have access to the spare parts section.
- ⚠** **WARNING:** This device utilizes UV light, which can harm your eyesight or skin. Do not turn the device ON until it is fully reassembled with all the covers installed!!!

STEP 2 Tools necessary for this chapter








-  2.0mm Allen key
-  2.5mm Allen key (ball-end recommended)
-  3.0mm Allen key (ball-end recommended)
-  Bowl or box for the screws

STEP 3 Preparing the printer

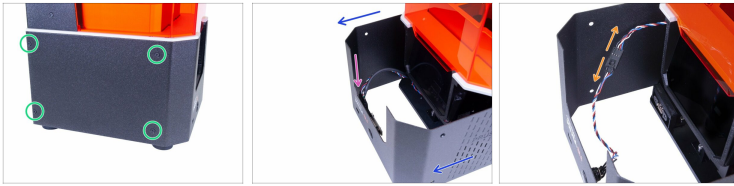



Before you start, make sure that:








-  the printer is plugged off
-  the resin tank is removed
-  the print platform is removed
-  you use ESD gloves (recommended)

 ESD gloves are anti-static (prevent damage to the electronics).

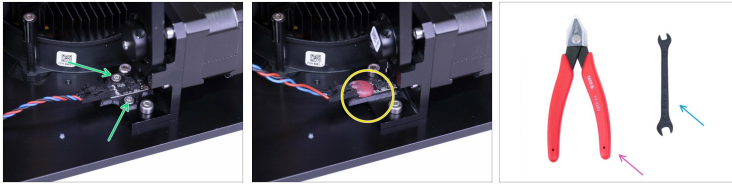
STEP 4 Removing the cover



 **Proceed carefully with these screws, preferably use an Allen key with straight sharp edges, there is a risk of stripping the screw's head.**

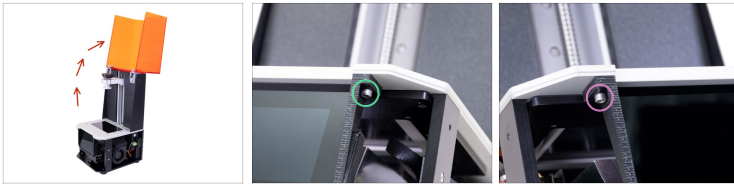
-  Turn the left side of the printer towards you.
-  Locate, release and remove four screws.
-  Turn the printer to the other side (180 °) and again release four screws.
-  Slide the cover just a few cm/inches out.
-  **There are two designs of USB and power button:**
 -  **NEW DESIGN:** The USB and the power button have the same connector. Disconnect the cable and remove the cover completely.
 -  **OLD DESIGN:** The USB and the power button are separated. Disconnect the power button cable from the extension cable and remove the cover completely.

STEP 5 New vs old version of the optical sensor mount



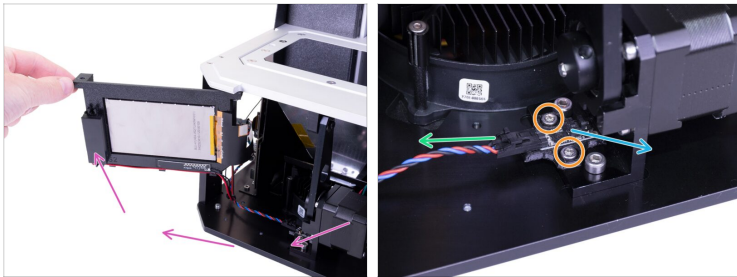
- There are two versions of the optical sensor mount. **Look closer to see which version you have and follow the appropriate steps:**
 - **NEW VERSION:** Optical sensor + optical sensor gate mounted with two screws on the tilt motor holder. Skip to Removing the touchscreen (new version).
 - **OLD VERSION:** Optical sensor + optical gate (without screws) glued on the tilt motor assembly. Skip to Removing the touchscreen (old version).
- **For the OLD VERSION, you will need extra tools. Please prepare:**
 - Pliers
 - Wrench 5.5 mm

STEP 6 Removing the touchscreen (new version)



- ◆ Open the lid all the way up.
- ◆ Look from below and locate the screw on the right side of the touchscreen frame. Release the screw.
- ◆ Slightly loosen the screw on the left side of the frame. Do not remove it.

STEP 7 Removing the optical sensor (new version)



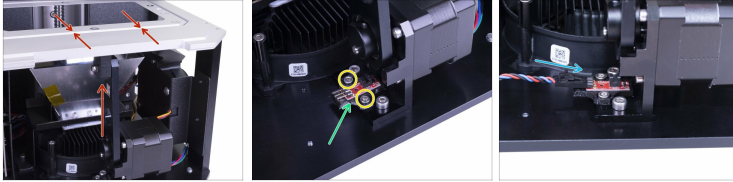
- ◆ Carefully rotate the touchscreen all the way to the left.
- ⓘ If you can't rotate the screen easily, loosen the left screw a little more.
- ◆ Disconnect the optical sensor cable.
- ◆ Release two M3x5 screws on the optical sensor gate.
- ◆ Remove the optical sensor gate with optical sensor from the tilt motor assembly.

STEP 8 Optical sensor parts preparation (new version)



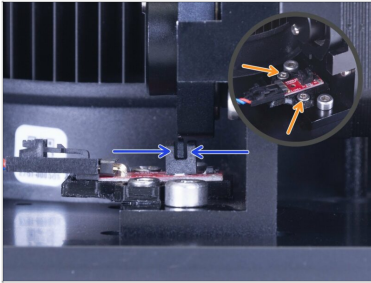
- ◆ **For the following steps, please prepare:**
- ◆ New optical sensor (1x)

STEP 9 New optical sensor installation (new version)



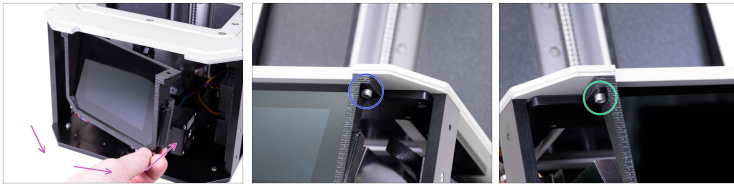
- ◆ **For the following steps, it is necessary to move (rotate) the connecting rod up.** Make sure that the top surface of the tilt with the display is flush with the frame of the printer.
- ◆ Place the new optical sensor on the tilt motor holder.
- ◆ Secure the optical sensor by two M3x5 screws. For now, tighten the screws just slightly. We need to align the sensor first.
- ◆ Connect the cable to the sensor, ensure you aren't using the side with the yellow marker. While inserting the connector on the pins of the sensor, the connector has to be slightly inclined. See the picture.

STEP 10 Optical sensor alignment (new version)



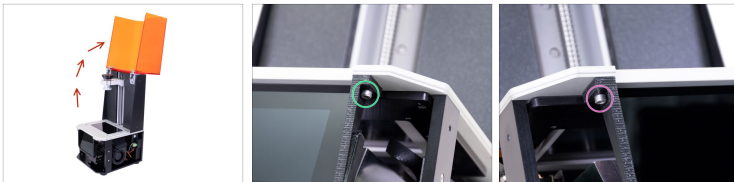
- ◆ Push the connecting rod down, so that the notch on the rod reaches the optical sensor.
 - ◆ Align the optical sensor according to the steel notch of the connecting rod. It has to be within the brackets, ideally in the middle.
 - ◆ Hold the sensor and tighten the screws.
- ⚠ Double-check the entire tilt mechanism to comply with the instructions above and if necessary adjust any part!**

STEP 11 Mounting the touchscreen (new version)



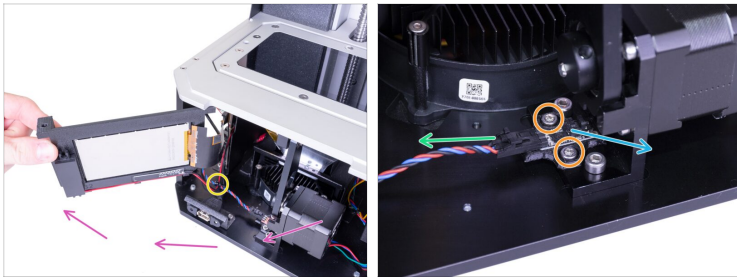
- ◆ Carefully rotate the touchscreen back to its original position.
- ◆ Insert the M4x10 screw back into the hole on the right side of the touchscreen frame and tighten the screw.
- ◆ Tighten the screw on the left side of the frame.
- ◆ Now skip to Assembling the cover

STEP 12 Removing the touchscreen (old version)



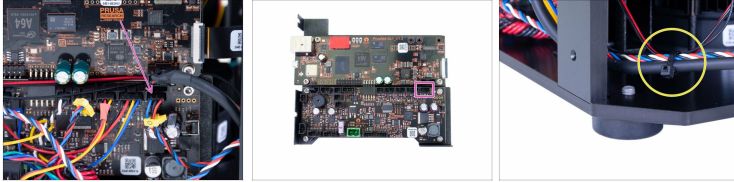
- ◆ Open the lid all the way up.
- ◆ Look from below and locate the screw on the right side of the touchscreen frame. Release the screw.
- ◆ Slightly loosen the screw on the left side of the frame. Do not remove it.

STEP 13 Removing the optical sensor (old version)



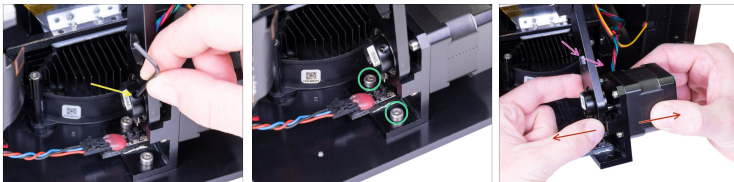
- ◆ Carefully rotate the touchscreen all the way to the left.
- ⓘ If you can't rotate the screen easily, loosen the left screw a little more.
- ◆ Cut the zip tie securing the USB, Power, optical, and touchscreen cables.
- ◆ Disconnect the optical sensor cable.
- ◆ Release two M3x5 screws on the optical sensor gate.
- ◆ Remove the optical sensor gate with optical sensor from the tilt motor assembly.

STEP 14 Disconnecting the optical sensor cable (old design)



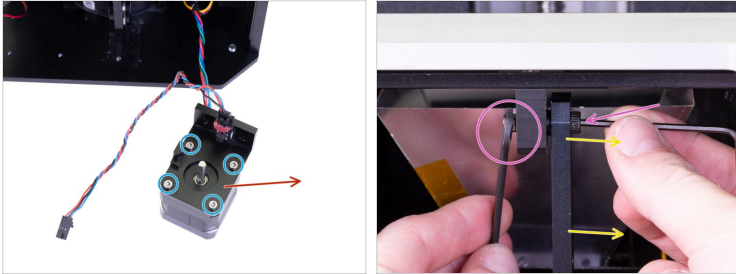
- ◆ Disconnect the optical sensor cable (labelled "O") from the electronics.
- ⓘ Some older units may be without the yellow cable marking.
- ◆ Cut the zip tie on the cables from the USB & Power, optical sensor and touchscreen.

STEP 15 Removing the optical sensor (old version)



- ◆ Loosen the grub screw in the connecting rod. **Do not remove the screw!**
- ◆ Release both screws on the tilt motor holder.
- ◆ Slightly tilt the connecting rod out of the printer.
- ◆ Pull out the tilt motor from the connecting rod.

STEP 16 Removing the tilt motor assembly (old version)



- Place the tilt motor in front of the printer, make sure that the motor cable isn't stretched.
- Release four screws from the tilt motor holder.
- Remove the tilt motor holder from the tilt motor.
- Using the 5.5mm wrench and 2.0mm Allen key release the fitted screw with the connecting rod from the tilt assembly.
- Remove the connecting rod from the printer.

STEP 17 Optical sensor parts preparation (old version)



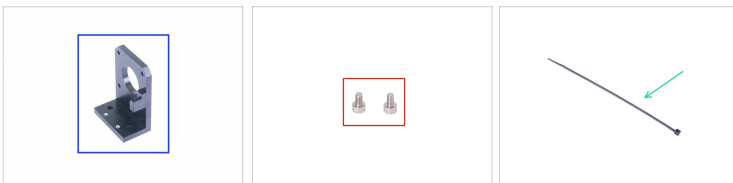
◆ For the following steps, please prepare:

- ◆ New connecting rod (1x)
- ◆ New optical sensor cable (1x)
- ◆ New optical IR-sensor (1x)

⚠ **The connectors of the optical sensor cable differ in wiring! Make sure you follow the instructions and connect it correctly! The side marked with the red arrow must be connected to the optical sensor.**

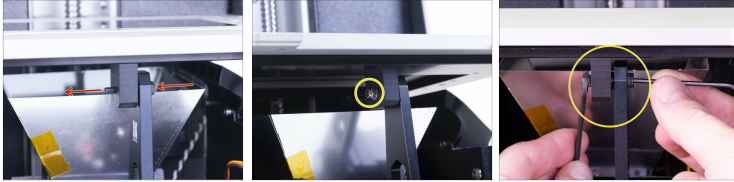
ℹ The list continues in the next step...

STEP 18 Preparing the tilt motor parts (old version)



- ◆ New tilt motor holder (1x)
- ◆ M3x5 screw (2x)
- ◆ Zip tie (1x)

STEP 19 New connecting rod installation (old version)



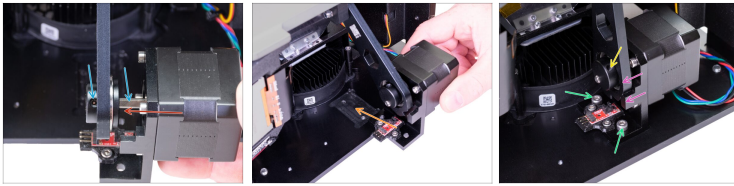
- Slide the fitted screw through the tilt holder.
- Place the M3w washer on the screw together with the M3nN nyloc nut and carefully tighten the nut to ensure direct contact between both parts. It is recommended to use the 5.5mm wrench to hold the nut and an Allen key from the other side.

STEP 20 The tilt motor assembly (old version)



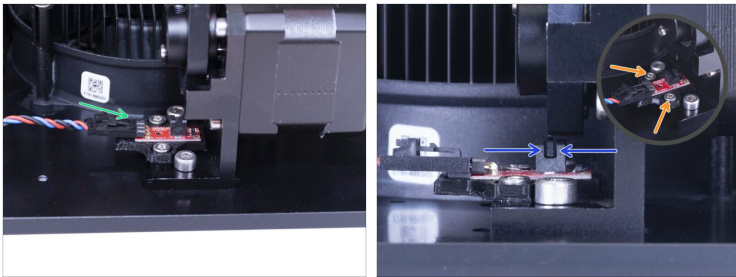
- Place the tilt motor holder on the tilt motor and secure it with four M3x10 screws. See the picture for the correct orientation. Use the motor cable as a guide.
- Check the tilt motor holder for mounting points, which will be used for the optical sensor.
- Place the optical sensor on the holder and secure it using two M3x5 screws. Don't tighten the screws, we need to adjust the position of the sensor.

STEP 21 The tilt motor assembly (old version)



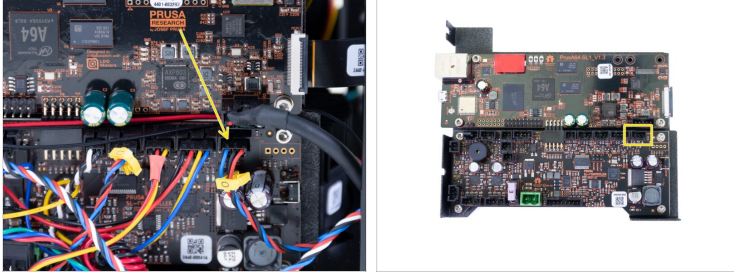
- ◆ Rotate the flat part of the shaft against the grub screw in the connecting rod as you see in the picture.
- ◆ Slide the tilt motor shaft in the connecting rod.
- ◆ Place the tilt motor assembly into the groove in the bottom plate. And make sure the tilt motor holder is aligned with the groove.
- ◆ Secure the tilt motor holder with two M4x8 screws.
- ◆ **IMPORTANT:** Align the connecting rod with the protrusion on the holder. Both surfaces should be flush. This will ensure the rod will be vertical.
- ◆ Tighten the grub screw in the connecting rod.

STEP 22 Aligning the optical sensor (old version)



- ◆ Connect the cable to the sensor, ensure you aren't using the side with the yellow marker. In the beginning, while connecting the cable the connector has to be slightly inclined.
- ⚠ **Make sure the connector is all the way in.**
- ◆ Push the connecting rod down, so that the notch on the rod reaches the optical sensor.
 - ◆ Align the optical sensor according to the steel notch of the connecting rod. It has to be within the brackets, ideally in the middle.
 - ◆ Hold the sensor and tighten the screws.
- ⚠ **Double-check the entire tilt mechanism to comply with the instructions above and if necessary adjust the position of the sensor!**

STEP 23 Connecting the optical sensor cable (old version)



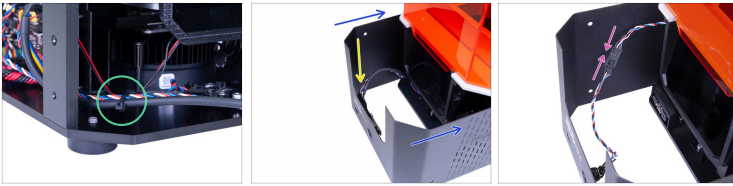
- Connect the new optical sensor cable (labelled "O") to the first connector from the right on the Motion Controller.

STEP 24 Mounting the touchscreen (old version)



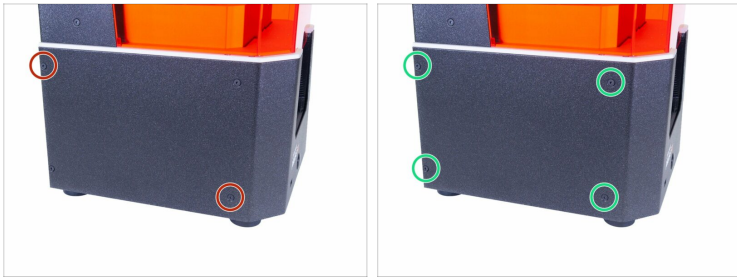
- Carefully rotate the touchscreen back to its original position.
- Insert the M4x10 screw back into the hole on the right side of the touchscreen frame and tighten the screw.
- Tighten the screw on the left side of the frame.

STEP 25 Assembling the cover



- Tie together the USB, Power, optical, and touchscreen cables. (old version only)
- Slide the cover half-way to the printer and stop, we need to connect the front USB and power button first.
- **NEW DESIGN:** Look from above in the front cover and connect the USB & Power cable. Make sure the safety pin "clicks".
- **OLD DESIGN:** Connect the power cable button to the extension cable. Make sure the safety pin "clicks".

STEP 26 Assembling the cover



- ◆ Slide the cover on the printer and secure it on one side using two M3x5b countersunk screws. Don't tighten them firmly and move on the other side, repeat the procedure.
- ◆ As soon as the cover is aligned and partly secured, add the remaining screws and tighten them all.
- ◆ Turn the printer over (180 °) and use the same procedure.

STEP 27 It is done!



- ◆ Now, please read the **3D Printing Handbook** and follow the instructions to **calibrate the printer**. The latest version is always available at prusa3d.com/3dhandbookSL1
- ◆ **Great job!** Your optical sensor is replaced.
