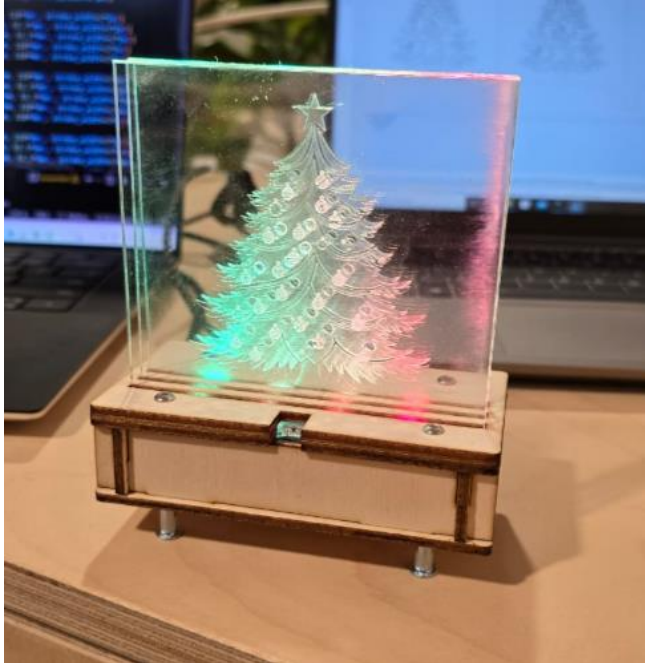# Sensemakers Christmas Project 2024
A DIY Acrylic LED Lamp

This holiday season, we're excited to share a fun and engaging project with you! We've created a unique DIY kit featuring a programmable LED lamp powered by a custom PCB built around the Seeed Xiao microcontroller line. The kit is designed to be accessible for beginners while offering plenty of creative opportunities for experienced makers.

Our project uses MicroPython and has been tested on the ESP32S3 and ESP32C6 varieties, but it should run on other ESPs too.

What's in the kit?

- Pre-cut wooden parts with nuts and bolts for assembling the case.

- Pre-cut acrylic slabs, available in two options:

    o Pre-engraved designs for instant festive flair.

    o Blank slabs for you to customize with our laser engraver in the OBA or manually using tools like a Dremel.

- Fully assembled PCB featuring:

    o 12 NeoPixel LEDs for vibrant, customizable light displays.

    o Ambient light sensor to adjust brightness or add reactive effects.

    o Four Grove connectors providing access to GPIO, I2C, SPI, or serial interfaces for easy expansion.

- A Xiao ESP32S3 microcontroller, pre-soldered and pre-programmed with our basic Christmas-themed software.

What You'll Need to Do

- Assemble the lamp: Build the case, mount the PCB, and insert the pre-engraved slabs.

- Plug it in and enjoy! A step-by-step tutorial will be available on our website to guide you through the process.

Take It to the Next Level

Once your lamp is assembled, the real fun begins!

- Engrave more slabs. With othere slabs, you can reuse the lamp for Easter and so on.

- Experiment with programming: Use MicroPython to modify the basic program included with the kit.

- Create custom light animations: Use the NeoPixels to design dynamic and colorful effects.

- Use the ambient light sensor: Explore ways to make your lamp responsive to its environment.

- Expand with Grove connectors: Add additional sensors, modules, or peripherals using GPIO, I2C, SPI, or serial interfaces.

- Connect to other devices: Use WiFi and MQTT to interact with other smart devices.

- Integrate with Home Assistant: Advanced users can incorporate the lamp into their smart home setup for enhanced functionality.

Price and Meetup Details

We're offering the complete kit for just €20, which is tremendous value for money!

We'll also be hosting a meetup at the OBA (Central Amsterdam Public Library) on Wednesday evening December 18th, where you can:

- Pick up your kit.

- Assemble the lamp together with others in a collaborative setting. And of course we'll be there to support you.

- Use our laser engraver to personalize your acrylic slabs.

Participate

If you want to participate in the meetup, you'll need to:

- **Prepay the full amount (€20).**

- You can use this link to make your [payment here](), or scan this QR.

  Alternatively you can make a manual payment to: K-Wessing,
  IBAN: NL42INGB0676219632, description: 2024 X-Mas Project <your name>.

- A detailed manual will be available on our website to guide you through the assembly process. If you'd like to program the lamp or control it over WiFi, don't forget to bring your laptop to the meetup! But the lamp will function after assembly.

- You need to bring your own USB cable to connect the lamp to your computer (or just a power supply to simply run the lamp). The lamp side is **USB C**. The computer side, you know best.

  o For USB-A to USB-C, Action sells [this cable]().

  o And if your computer has USB-C, they have [this cable]().

  o To power your lamp independently of your computer, they [sell this USB charge]()r which will work for both of the cable types above.

- If you want to tweak the MicroPython program, of course you'll also need to bring your computer.

- Finally you'll need a medium-sized Philips screwdriver and small pliers for perhaps 10 minutes during the assembly. We'll have them available for you. But when you don't like to wait, you could bring your own.

Contact and more links

For questions you can **use this form** to contact us.

To register use **the XMas event on Meetup** link. You can also find our address and read more about Sensemakers Amsterdam. Do not forget to make payment when you want to own one of these fabulous acrylic MicroPython controlled lamps.

Here is the **XMas 2025 Project Page on our website**. The manual to assemble and use the lamp, as well as a link to the source code will appear here.

This is a fantastic opportunity to learn, create, and connect with the Sensemakers community.

Happy holidays, and happy making,

Karijn, Martin, Annika, Manon and Gijs