

SC Pixel Mini B

User manual [EN]

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Safety

General instructions

The controller must be installed and configured by a qualified person. Applicable safety regulations, accident prevention rules and project requirements must be followed.

Safety instructions



CAUTION!

The device operates from a low-voltage 12-24 V DC power supply. Work on the controller is allowed only when the complete assembly is disconnected from power.

Warning!

- Always switch off the power supply before wiring and verify that the assembly is de-energized.
- Observe the VCC and GND polarity.
- Protect the electronics against water, humidity and short circuits.
- When installed in a profile, ensure electrical insulation from metal parts.
- Do not cover the ESP32 antenna with metal.

Description

SC Pixel Mini B is a miniature Spectoda controller for addressable LED strips. It is designed for integration directly on an LED strip without a separate enclosure, or for heat-shrink installation. Variant B uses a 12 to 24 V DC supply and wireless communication in the decentralized Spectoda network.

Main features:

- compact design for placement directly on an LED strip,
- LED data output with a data-signal level shifter,
- ESP-Now wireless communication in the 2.4 GHz band,
- status LED and service test points,
- external antenna variant,
- configuration through Spectoda Studio.

Connector interface

Connector / pad	Function	Note
VCC	Power supply	12 V to 24 V DC
GND	Reference ground	Common ground for power and data
PIX1	LED data output 1	Data output for the LED strip

Technical overview

- Input supply: 12 V to 24 V DC
- Microcontroller: ESP32 (ESP32-PICO-MINI)
- Wireless communication: ESP-Now 2.4 GHz
- The device is equipped with an external antenna
- LED data output: 3.3V logic with a data-signal level shifter
- Supported LED ICs: WS2811, WS2812, WS2812B, WS2813, WS2815, Neopixel, SK6812 RGB, SK6812 RGBW, GW6205, UCS1903, UCS1903B, UCS2904, CS8812
- PCB dimensions: 32.2 × 11.6 mm
- PCB thickness: 0.8 mm FR-4

Use and operating modes

SC Pixel Mini B is intended for addressable LED strips and compact lighting installations. Typical applications:

1. ambient lighting,
2. accent and effect lighting,
3. small luminaires and LED profiles,
4. installations in the Spectoda ecosystem.

Installation

Preparation before installation

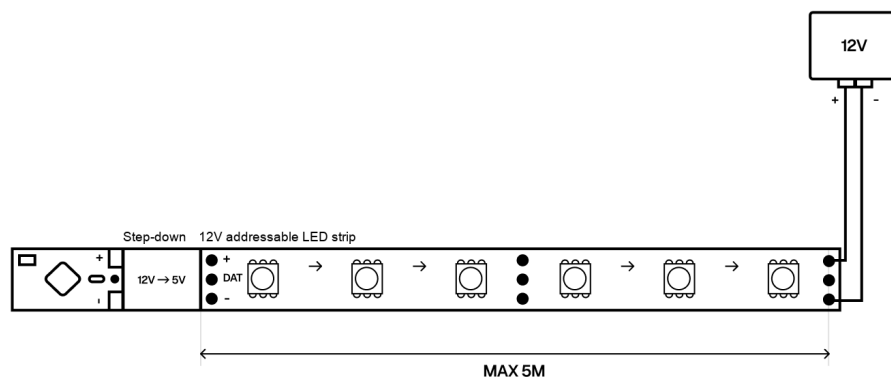
1. Verify that the LED strip and power supply are within the 12 to 24 V DC range.
2. Check that the environment matches the operating conditions of the device.
3. Plan the placement so the module is in a dry and non-conductive space.
4. Prepare a short wire run between PIX1 and the first LED.

Step-by-step installation

1. Disconnect the power supply of the complete assembly.
2. Place the module in the LED profile or installation space.
3. Connect VCC power and common GND ground.
4. Connect the PIX1 output to DIN of the first LED segment.
5. Check polarity, common ground and mechanical securing of the joints.
6. Switch on the power supply and perform a basic test in Spectoda Studio.

Wiring diagram

Directly connected to 12V LED strip



Operation

Commissioning in the Spectoda ecosystem

1. Add the device to a project in Spectoda Studio.
2. Set the LED IC type, pixel count and output configuration.
3. Verify the wireless connection in the Spectoda network.
4. Run a test scene and check the behavior of the LED strip.

Recommendations for stable operation:

- Keep the data wire between PIX1 and the first LED short.
- When installing in aluminum profiles, take the effect of metal on the wireless signal into account.
- Always disconnect the power supply before service work.

Troubleshooting

Symptom	Possible cause	Recommended solution
LED strip does not respond	Incorrect power supply, polarity or missing common ground	Check VCC, GND and the 12 to 24 V DC range.
Flashing or random colors	Long data wire or incorrect strip orientation	Shorten the PIX1 → DIN wire and check the LED strip direction.
Weaker wireless connection	The antenna is shielded by metal	Move the antenna area away from direct contact with the metal profile.

Disposal information

This electrical/electronic equipment is placed on the market in accordance with applicable legislation on end-of-life products.



Do not dispose of with municipal waste

The device is marked with the crossed-out wheeled bin symbol. This symbol means that, at the end of its service life, the product must not be disposed of together with normal municipal waste.

Electrical equipment contains materials that can be recycled, but it may also contain substances potentially hazardous to the environment and human health if handled incorrectly.

Take-back and recycling

The user must hand over end-of-life equipment for separate collection. The device can be returned free of charge:

- at the collection yard of the relevant municipality,
- at an electrical equipment take-back point,
- at a shop when buying a new device of a similar type.

The manufacturer fulfills its obligations through an authorized collective system providing collection and recycling of electrical waste.

Batteries and accumulators

If the device is part of an assembly with a battery or accumulator, the battery must be removed before disposal, if possible, and handed over separately at a place designated for collecting used batteries.

Personal data protection

Before handing the device over for recycling or service, we recommend removing it from the project and performing a factory reset, if the installation allows it.

Visualization

All visualizations are available in the Spectoda documentation.

