OpenGizmo

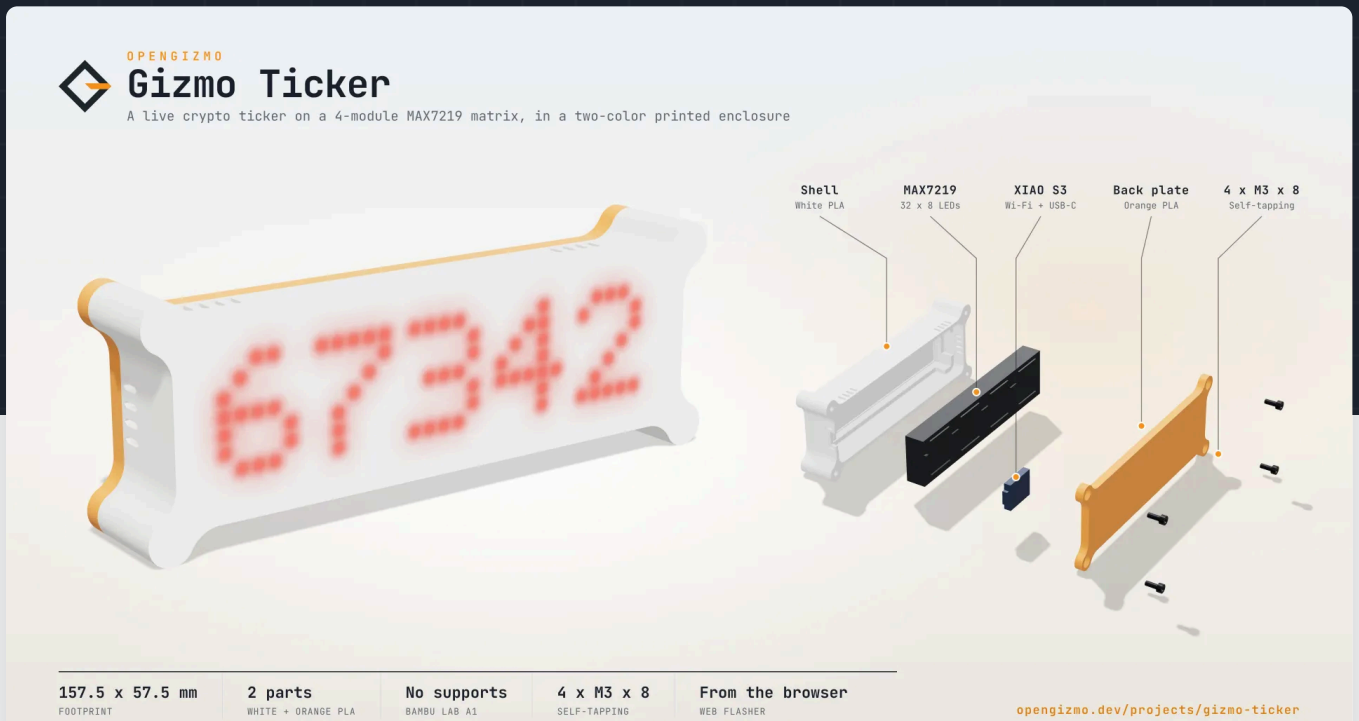
DATASHEET

XIAO ESP32-S3 · LED MATRIX DISPLAY

Gizmo Ticker

A Wi-Fi crypto ticker that scrolls live market data across a MAX7219 LED matrix, set up from your phone.

XIAO ESP32-S3 | MAX7219 LED matrix | Wi-Fi setup hotspot | Web app | Open source



BOARD
XIAO ESP32-S3
PlatformIO board seeed_xiao_esp32s3

DISPLAY
MAX7219
FC-16 modules, 4 to 32

MARKET DATA
Live prices
Fetched over Wi-Fi

SETUP
Browser
Hotspot, then gizmo-ticker.local

01 Overview

Gizmo Ticker is a small always-on crypto display that feels more like a compact appliance than a demo board. The XIAO ESP32-S3 keeps pulling live market data, and the MAX7219 matrix turns it into a readable scrolling output.

A web app embedded in the firmware configures everything from the browser, so changing the coin, the sections or the brightness never needs a reflash.

- Live price and market data of the coin you choose, in the sections you pick
- A choice of coins and number formats
- Wi-Fi setup from a hotspot with a captive portal, no credentials in the firmware
- Settings kept in flash, adjustable brightness and scroll speed
- A warning on the matrix when the prices get old
- Prebuilt firmware, flashed from the browser on opengizmo.dev

02 Specifications

CONTROLLER

Board	**Seeed Studio XIAO ESP32-S3 (seeed_xiao_esp32s3)**
Settings	**Kept in flash (Preferences)**

DISPLAY

Driver	**MAX7219**
Modules	**FC-16 8 × 8, 4 to 32 in boards of 4, set in the web app**
Brightness	**Adjustable, 16 levels**
Scroll speed	**Adjustable**

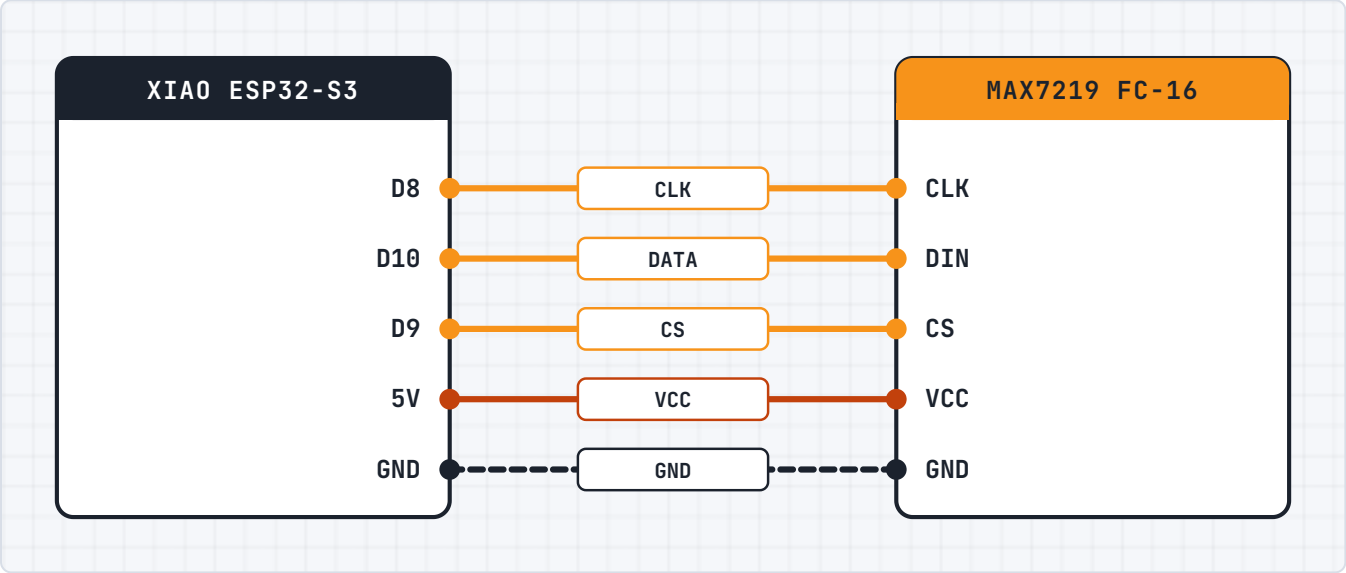
CONNECTIVITY AND SETUP

Wi-Fi	**2.4 GHz (ESP32-S3), with its FPC antenna**
Setup hotspot	**Gizmo-Ticker**
Web app	**http://gizmo-ticker.local**

03 Pinout and wiring

The matrix connects to the pads next to 5V and GND, in the order of its input header, so a flat cable runs straight across (skip 3V3). Chain more FC-16 boards from the DOUT side of the first one.

Pins checked against the firmware v1.3.0 (commit af9a796) when this datasheet was generated.



SIGNAL	BOARD PIN	MODULE PIN	NOTES
CLK	D8	CLK	SPI clock (SCK), GPIO7
DATA	D10	DIN	SPI data (MOSI), GPIO9
CS	D9	CS	Chip select, GPIO8
VCC	5V	VCC	The MAX7219 modules run on 5 V
GND	GND	GND	Common ground

04 Parts list

QTY	PART	NOTES
1	**Seeed Studio XIAO ESP32-S3**	With its FPC antenna (it has none on the board)
1-8	**MAX7219 FC-16 LED matrix, 4-in-1 block**	Up to 32 modules in a chain; one fits the OpenGizmo enclosure
1	**6-wire flat cable**	Soldered to the XIAO pads and the module input pads (one wire, for 3V3, left unused)

1	**USB cable and 5 V USB power supply**	Powers the board and the matrix

05 Setup

01 Flash the firmware

Connect the XIAO over USB, open the project page on opengizmo.dev, and press Flash firmware.

02 Join the setup hotspot

Without a saved network, the ticker opens the Gizmo-Ticker Wi-Fi. Join it from your phone: the setup page opens by itself.

03 Pick your Wi-Fi

Choose your network and type its password. The ticker connects and closes the hotspot.

04 Open the web app

On your network, open http://gizmo-ticker.local, or the IP address shown during the setup.

05 Add your API key

Paste the API key of the market data service: the ticker fetches the prices right away.

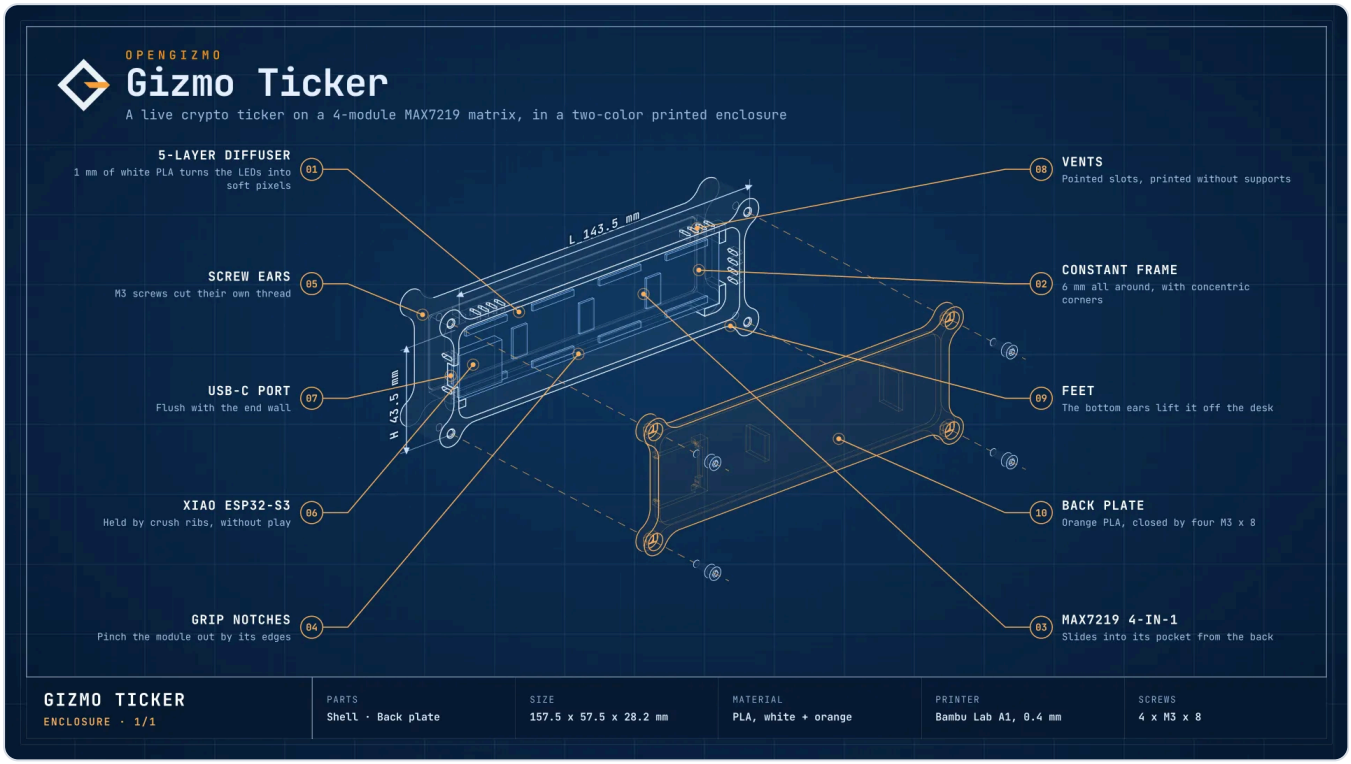
06 Tune the display

Pick the coin, the sections, the number format, the brightness and the scroll speed.

06 Troubleshooting

The matrix powers on but shows no text	Check the wiring against the pinout (D10, D9, D8), that the modules are FC-16 ones, and that the number of modules in the settings matches the display.
The web app does not open after the Wi-Fi setup	Make sure your phone or computer is on the same network, and use the IP address if your router does not support gizmo-ticker.local.
The prices never update	Check the Wi-Fi and the API key in the web app.
The matrix says the prices are old	The last fetches failed, and the rest of the message says why. Check the Wi-Fi and the API key: saving a new key fetches again right away.
The setup hotspot never appears	Power-cycle the ticker: the hotspot opens when there is no saved network, or when the saved one fails to connect.

07 Enclosure



Every detail of the enclosure, from the 5-layer diffuser to the screw ears, on a 157.5 x 57.5 mm footprint.

Gizmo Ticker is an open-source OpenGizmo project

Project page: **https://opengizmo.dev/projects/gizmo-ticker**

Source code: **https://github.com/open-gizmo/gizmo-ticker** · MIT license