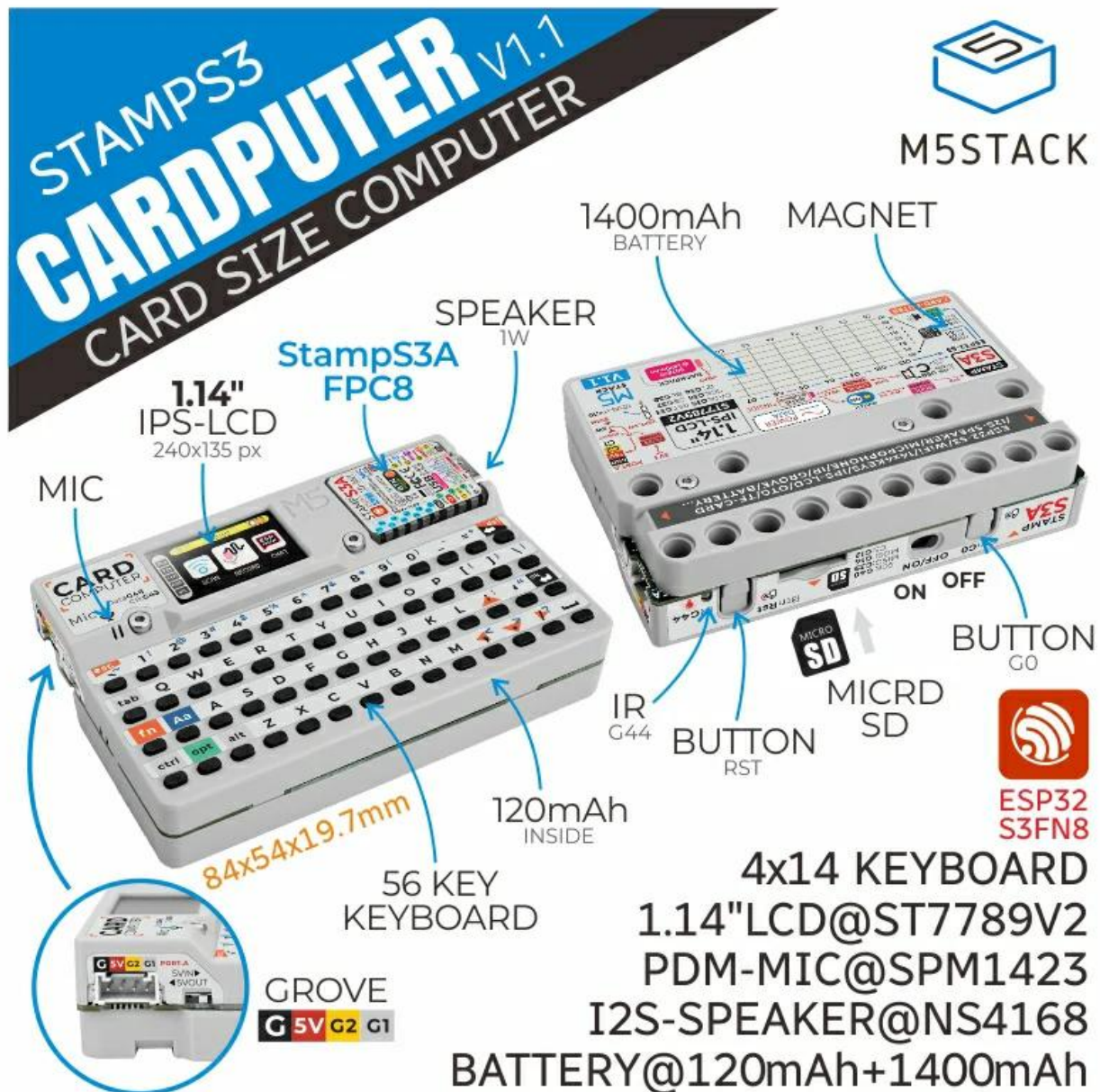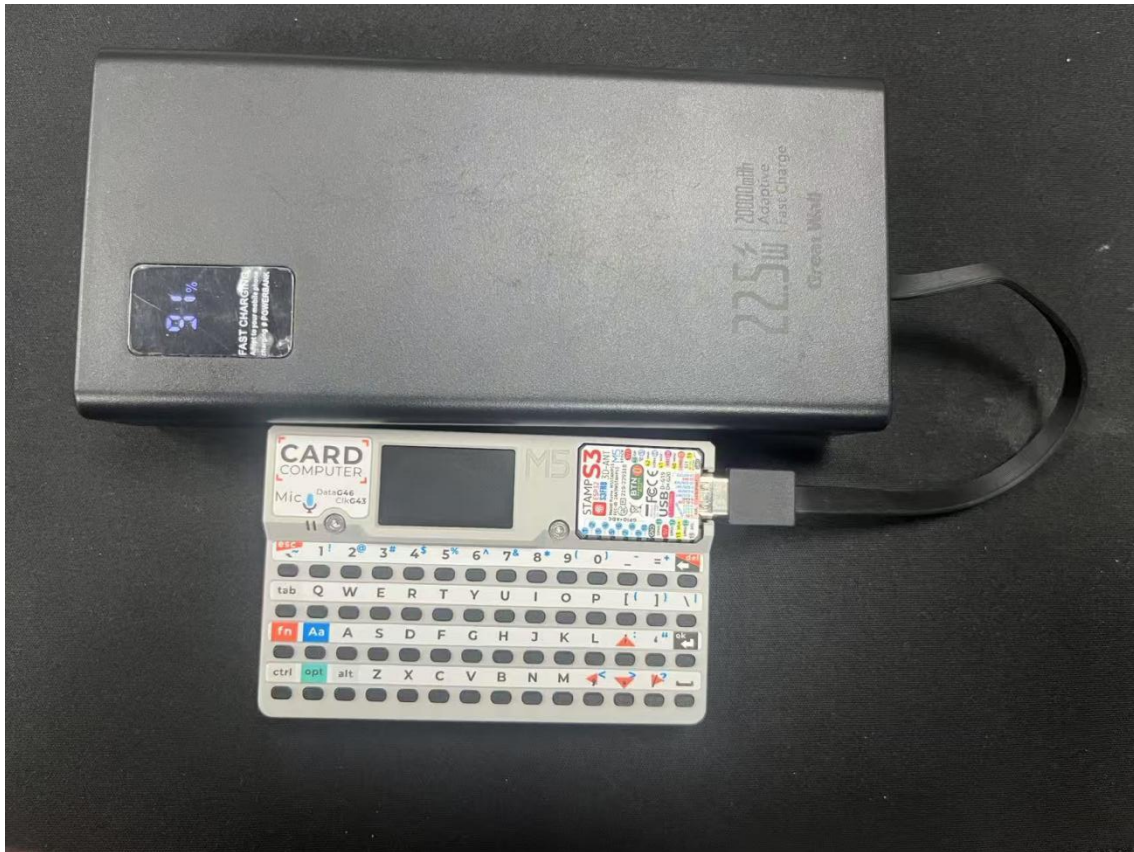# M5Stack Cardputer V1.1

Factory Firmware

When the device encounters operational issues, you can try re-flashing the factory firmware to check if there is any hardware malfunction. Refer to the following tutorial. Use the M5Burner firmware flashing tool to flash the factory firmware onto the device.
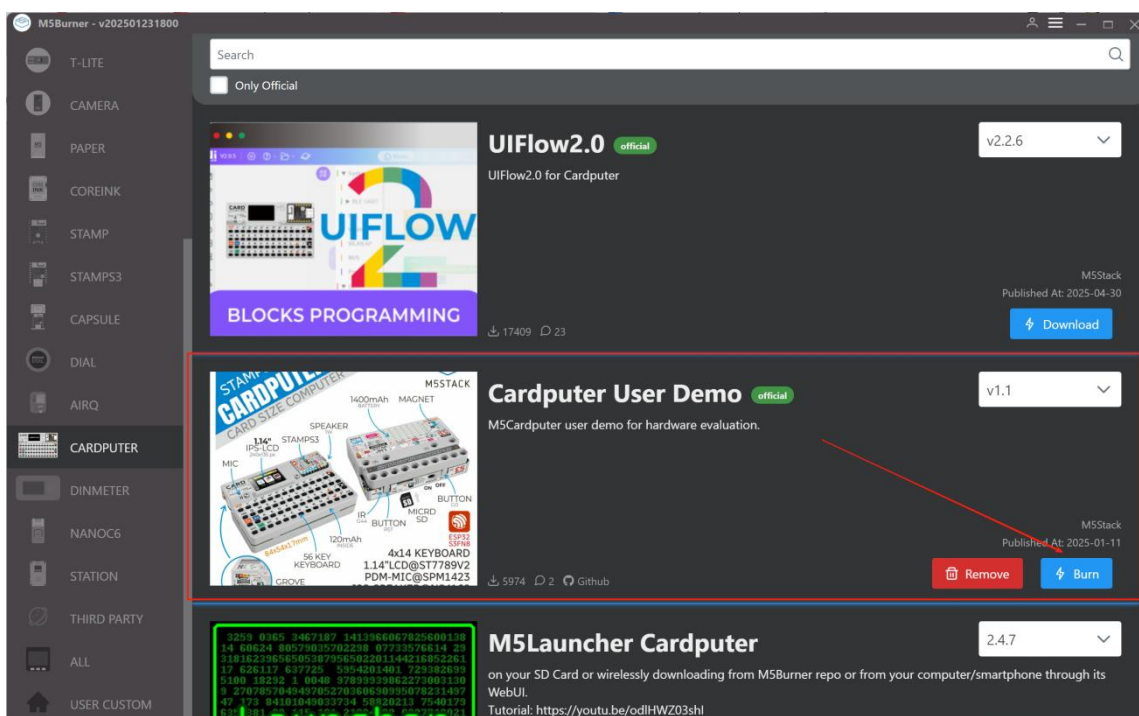
FAQ

Q1: Why is my Cardputer v1.1 black screen/won't boot?

Solutions: **M5Burner Burn** **official** **Factory Firmware** "Cardputer User Demo"

Q2: Why it working time only 3 hours? Why does it 100% charge in 1 minute, remove the charging cable it will turn off?

Solutions: **"Bruce for Cardputer"** **This is an unofficial firmware.Flashing unofficial firmware can void your warranty,** cause instability, and expose your device to security risks. Proceed with caution.

Please Burn back **official firmware.**

1. Preparation

- o   [Refer to the M5Burner tutorial](#) to complete the firmware flashing tool download, and then refer to the image below to download the corresponding firmware.

Download link: https://docs.m5stack.com/en/uiflow/m5burner/intro
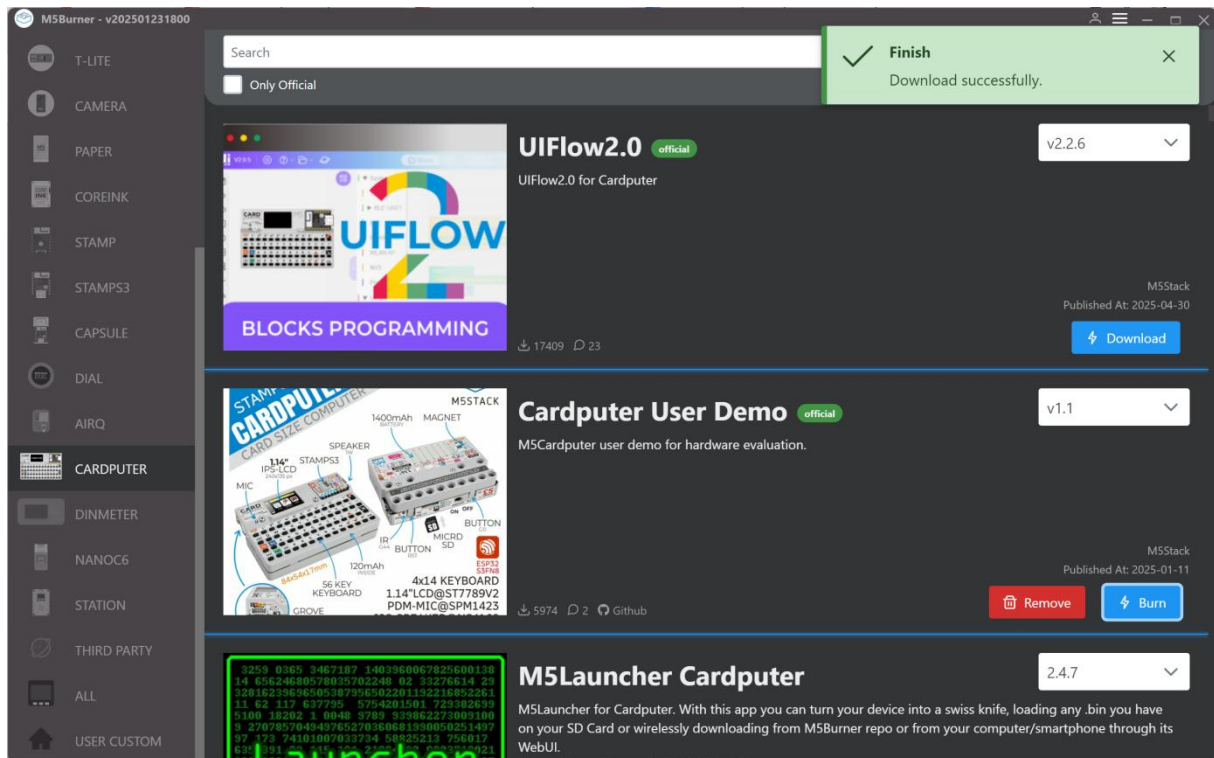
2. USB Driver Installation

Driver Installation Tip

Click the link below to download the driver matching your operating system. The driver package for the CP34X (for the CH9102 version) can be downloaded and installed by selecting the installation package corresponding to your operating system. If you encounter issues with program download (such as timeout or "Failed to write to target RAM" errors), try reinstalling the device driver.

CH9102_VCP_SER_Windows
https://m5stack.oss-cn-shenzhen.aliyuncs.com/resource/drivers/CH9102_VCP_MacOS_v1.7.zip

Port Selection on MacOS

On MacOS, there may be two available ports. When using them, please select the port named wchmodem.

3. Port Selection

Connect the device to the computer via a USB cable. After the driver installation is complete, you can select the corresponding device port in M5Burner.
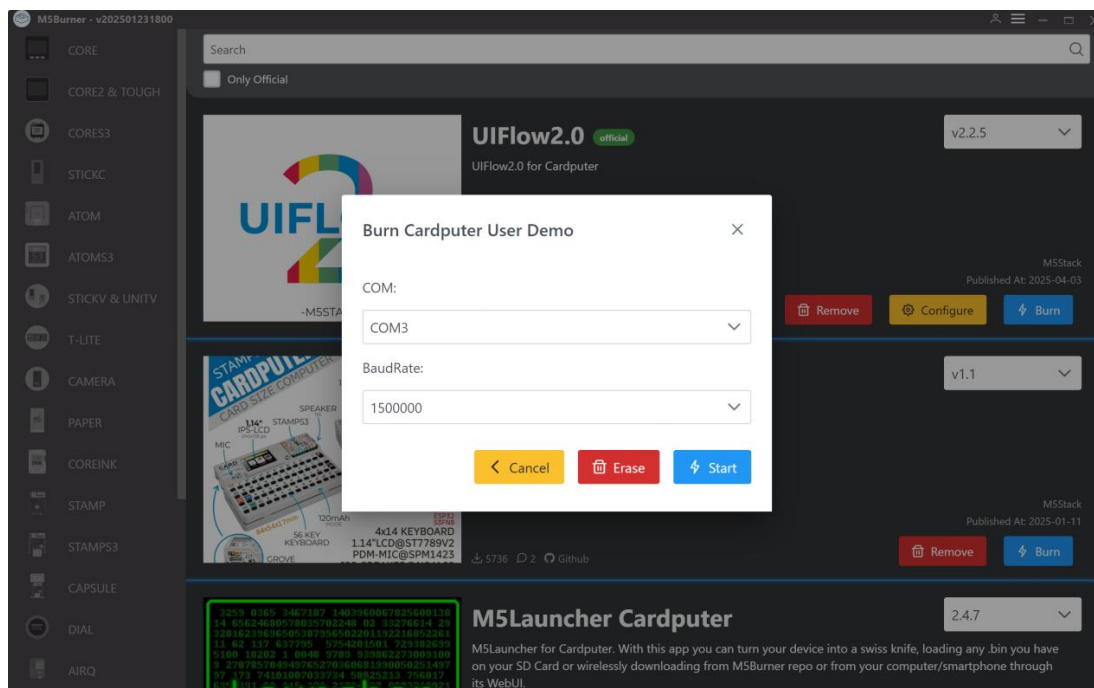
4. Burn

Click "Burn" to start the flashing process.
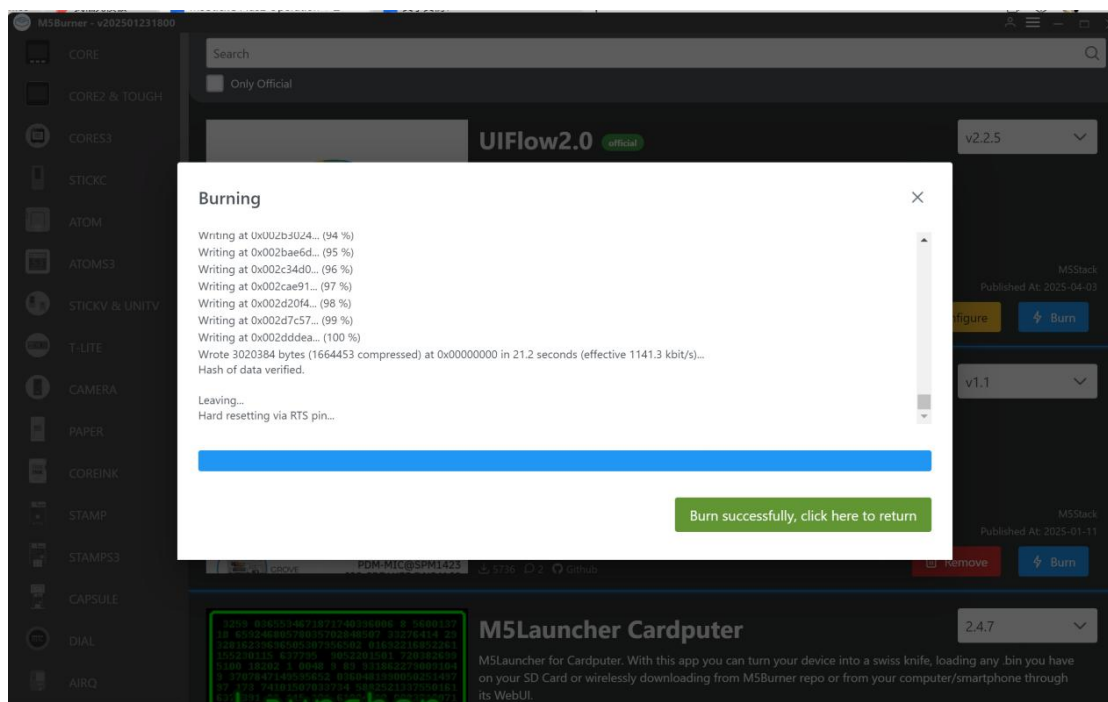
Cardputer v1.1

SKU:K132-V11
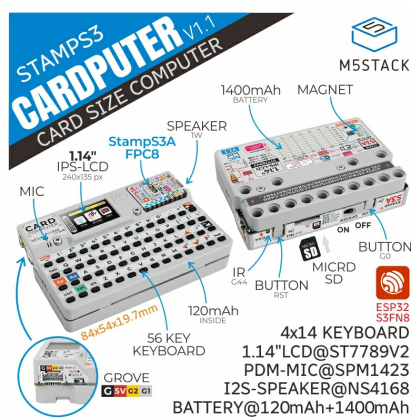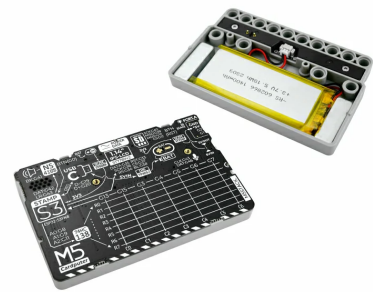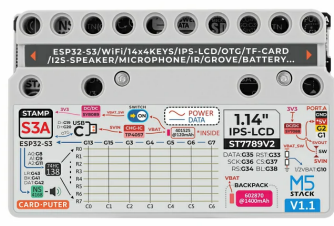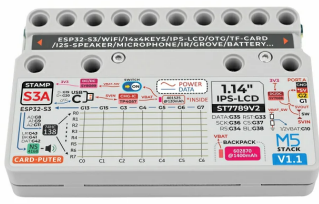
Description

Cardputer v1.1 is a high-performance card computer designed for engineers, offering a comprehensive upgrade over the original Cardputer. The new version features the brand new **StampS3A** main controller, with optimized antenna and button design for the core module, significantly enhancing system stability and user experience. In terms of control interaction, the product is equipped with a **56-key** keyboard and a 1.14-inch **TFT** screen for efficient display and operation; it includes an onboard SPM1423 digital MEMS **microphone** supporting recording and wake-up functions, and outputs audio through a cavity **speaker**. Additionally, an infrared emitter provides external **infrared** control interaction capabilities. For expansion, the built-in Grove interface facilitates custom sensor expansion; for storage, a Micro **SD** card slot is available for easy storage expansion. The power system uses an internal 120mAh and a base 1400mAh **lithium battery** power solution, integrating lithium battery charging and boost-buck circuits, greatly enhancing battery life. Structurally, the base includes magnets for metal attachment and is compatible with LEGO hole expansion. This product is widely applicable in various scenarios such as rapid function verification for engineers, industrial control, and home control systems.

Tutorial

Arduino IDE

This tutorial will introduce how to program and control the Cardputer v1.1 device using the Arduino IDE

UiFlow2

This tutorial will introduce how to control the Cardputer v1.1 device through the UiFlow2 graphical programming platform

Note

LCD and RGB LED Usage Precautions

Since the RGB and LCD backlight share a power source, when the LCD backlight brightness is below 100%, the RGB cannot be powered properly. Please use the RGB function with the backlight brightness fully on.

Features

- StampS3A Microcontroller
- 56-key keyboard
- 1.14-inch TFT screen
- Cavity speaker and SPM1423 digital MEMS microphone
- Infrared emitter for infrared control interaction
- HY2.0-4P interface
- microSD card slot
- Built-in 120mAh and 1400mAh lithium battery in the base

- Base with magnets
- Compatible with LEGO hole expansion
- Development Platform
    - UiFlow2
    - Arduino IDE
    - ESP-IDF
    - PlatformIO

Includes

- 1 x Cardputer V1.1
- 1 x L-shaped hex wrench 1.5mm (for M2 screws)

Applications

- Rapid function verification and prototyping
- Industrial control and automation
- Home control systems
- Data collection and sensor monitoring
- Embedded system development and learning
- Wireless communication and IoT projects

Specifications

Specification	Parameter
SoC	ESP32-S3FN8 (Xtensa LX7), 8MB Flash, Wi-Fi, OTG, CDC
Flash	8MB
Storage	SD Card
Keyboard	56 keys (4 x 14)
Buttons	1 x Reset button + 1 x User button
Grove	1 x HY2.0-4P
Battery Capacity	120mAh + 1400mAh (in base)
Screen	ST7789V2@1.14 Inch, 240 x 135px
Cavity Speaker	8Ω@1W I2S@NS4168
Microphone	MEMS Microphone@SPM1423
Infrared Distance	∠0° Infrared emission distance (straight line): 410cm ∠90° Infrared emission distance: 66cm ∠45° Infrared emission distance: 170cm
Sleep Current	DC 4.2V@0.15uA
Working Current	IR emission mode: DC 4.2V/148.07mA Keyboard mode: DC 4.2V/138.93mA
Operating Temperature	0 ~ 40℃
Product Size	84.0 x 54.0 x 19.7mm
Product Weight	90.0g
Package Size	145.7 x 95.0 x 20.7mm
Gross Weight	106.8g

Learn

Download Mode

To enter download mode, hold the `G0` button on the side of the Cardputer v1.1 before powering on, then release after the device is powered on to enter download mode.
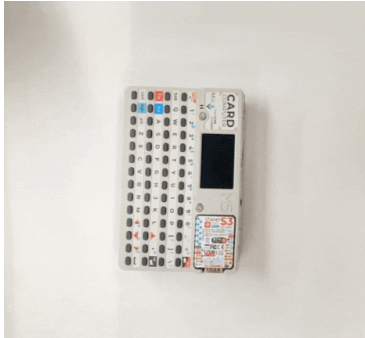
Charging Precautions

When charging the Cardputer v1.1, please switch the power to "ON".

Disassembly Precautions

If you need to remove the StampS3A from the panel, be careful with the FPC cable and connector on the back, gently pull it out to avoid damaging the screen connector. Refer to the operation video in the Cardputer Accessory Kit.

Schematics

- Cardputer V1.1 Schematics PDF
- Cardputer V1.1 Base Schematics PDF
- Stamp-S3A Schematics PDF

A B C D

1 2 3 4

ESP32

ANT1

L6 L1 2.7nH ESP_LNA
C19 4.3nH C20 NC C1 2.2pF L7 0R ESP_EN
GND GND

U1 ESP32-S3FN8

LNA_IN 1
CHIP_PU 4
VDD_SPI 29

GPIO0 ... GPIO14
SPIHD SPIWP SPICS0 SPICLK SPIQ SPID
XTAL_32K_P XTAL_32K_N
GPIO15...GPIO21 SPICS1
USB_DU_N USB_DU_P SK_DIN
VDD3P3
SPICLK_N SPICLK_P
GPIO33 DISP_RST
GPIO34 DISP_RS
GPIO35 DISP_MOSI
GPIO36 DISP_SCK
GPIO37 DISP_CS
GPIO38 DISP_BL
GPIO39 GPIO40
MTCK MTDO
MTDI MTMS
U0TXD TX
U0RXD RX
GPIO45 GPIO46

FLASH_VCC
C26 100nF/25V C4 1uF/10V
3pF

L3 10nH
X1 40Mhz
C9 12pF C14 12pF 12pF
GND

XTAL_40M_P 54 XTAL_P
XTAL_40M_N 53 XTAL_N

VDD3P3 2,3
VDD3P3_RTC 20
VDD3P3_CPU 46
L2 2nH
VDD_3V3
C5 10uF/10V C6 1uF/10V C7 100nF/25V C8 3pF/25V
GND

VDDA1 55 VDDA2 56
C10 100nF/25V C11 100nF/25V C12 1uF/10V C13 1nF/25V
GND

R5 510R/1%

LCD

VIN_5V J1 HDGC/0.5K-HX-12PWBNC
GPIO18 GPIO17 GPIO16
12 11 10 9 8 7 6 5 4 3 2 1

VDD_3V3 U2 AW35122FDR
VIN VOUT
EN
GND
C3 100nF/25V
GND
BL_3V3
DISP_BL

J3 HDGC/0.5K-HX-8PWB/NC
PIN8 PIN7 PIN6 PIN5 PIN4 PIN3 PIN2 PIN1
8 7 6 5 4 3 2 1
DISP_RST DISP_RS DISP_MOSI DISP_SCK DISP_CS
VDD_3V3
GND

RGB LED

BL_3V3
C17 10uF/10V
GND
U3 WS2812
SK_DIN DI GND
BL_3V3 VDD DO SK_DOUT

BTN-USER

VDD_3V3
R4 10K/1%
GPIO0 S1 SMT_SW_1TS026A
PESD5V0C2BSF
GND

M1 STAMP-S3M

GPIO1 1 G1
GPIO2 2 G2
GPIO3 3 G3
GPIO4 4 G4
GPIO5 5 G5
GPIO6 6 G6
GPIO7 7 G7
GPIO8 8 G8
GPIO9 9 G9
GND 10
GPIO10 11
GPIO11 12 G11
GPIO12 13 G12
GPIO13 14 G13
GPIO14 15 G14
GPIO15 16
GPIO15 17 G15

3V3 28 GPIO46
G46 27 TX
G43/Tx 26 GPIO42
G42/MTMS 25 RX
G44/Rx 24 GPIO41
G41/MTDI 23 GPIO40
EN 22 GPIO0
21 GPIO40
G40/MTDO 20 GPIO00
G0/Boot 19 GPIO39
G39/MTCK 18

VIN_5V 5V EN
VDD_3V3
PESD3V3D5VB
GND

DCDC IOUT: 0~0.6A

VDD_3V3
R7 10K/1%
ESP_EN EN
C23 1uF/10V
GND
VIN_5V
C16 10uF/10V C18 100nF/25V

U4 JW5712
EN SW
R16 100K/1%
VIN VOS
GND VSEL1 VSEL2 VSEL3
C1 D1 D2

MWTC201608S2R2
L4
VDD_3V3
C15 1nF/25V C21 10uF/10V C22 10uF/10V C25 10uF/10V
GND

Type-A USB

JP3
USB_DU_P USB_D_P
USB_DU_N USB_D_N
L5
JP2
PHD1 phd_3mm
GND

J2 USB-TYPEC
DP1 VCC
DP2 CC1
DN1 CC2
DN2GND
SHELL
D3 PESD5V0C2FD3V3B D4 PESD5V0C2FD3V3B
GND

R1 5.1K/1%
R2 5.1K/1%
F1 6V/1A/PPTC
VIN_5V
D14 PESD5V0C2FD5VB
GND

P1 section (top):

P1 2P@1.25
1 2
F1 Fuse 0805 6V 2A
VBAT JP1
JP3 VBAT JP4 GND
JP2 GND
GND

PinMap

SPM1423 MIC

ESP32-S3FN8	G46	G43	3.3V	GND
SPM1423	DAT	CLK	VCC	GND

microSD Socket

ESP32-S3FN8	G12	G14	G40	G39
microSD Socket	CS	MOSI	CLK	MISO

ST7789V2 & RGB LED

ESP32-S3FN8	G38	G33	G34	G35	G36	G37
ST7789V2	DISP_BL	RST	RS	DAT	SCK	CS
RGB LED	VDD					

Keyboard & Battery Detect

ESP32-S3FN8	G10	G7/G6/G5/G4/G3/G15/G13	G11/G9/G8
Battery Detect(ADC)	ADC		
74HC138		Y7~Y0	A2/A1/A0

Speaker & IR

ESP32-S3FN8	G41	G42	G43	G44
NS4168 (Speaker)	BCLK	SDATA	LRCLK	
IR				TX

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.CUSTOM	GND	5V	G2	G1

Model Size

UNIT:mm

Datasheets

- SPM1423
- NS4168
- ST7789V2

Softwares

Arduino

- Cardputer v1.1 Arduino Quick Start
- Cardputer v1.1 Arduino Driver Library

UiFlow2

- [Cardputer v1.1 UiFlow2 Quick Start](#)

PlatformIO

```
[env:m5stack-stamp-s3]
platform = espressif32
board = esp32-s3-devkitc-1
framework = arduino
upload_speed = 1500000
build_flags =
    -DESP32S3
    -DCORE_DEBUG_LEVEL=5
    -DARDUINO_USB_CDC_ON_BOOT=1
    -DARDUINO_USB_MODE=1

lib_deps =
    M5Unified=https://github.com/m5stack/M5Unified
```

ESP-IDF

- [Cardputer v1.1 User Demo](#)

Easyloader

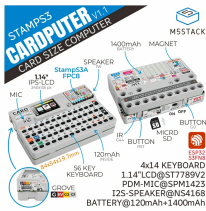| Easyloader	Download Link	Note
Cardputer v1.1 User Demo Easyloader	[download](#)	/

Video

- Cardputer v1.1 Product Introduction and Case Demonstration

[K132 Cardputer.mp4](#)

Product Comparison
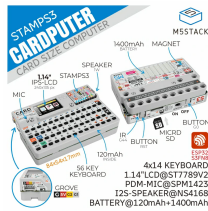
Comparison Item	Cardputer v1.1	Cardputer
Core Module	StampS3A	StampS3
RGB LED Control Logic	RGB LED shares power with screen backlight, optimized control logic	Power supplied when powered on
Antenna Design	Optimized antenna design for better signal reception	Standard antenna design
StampS3 module Boot button	Optimized button feel, buttons are 4.0 x 3.0 x 2.0mm	Button specifications 2.6 x 1.6 x 0.55mm
Power Consumption	Optimized for lower power consumption	Standard design