



TouchDot User Guide and Technical Reference

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Department of Research, Innovation, and Development

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Note: This documentation is actively evolving. For the latest updates and revisions, please visit the project's GitHub repository.

TERMS, ACKNOWLEDGMENTS, AND LICENSES

1.1 Terms and Conditions

By using, modifying, or distributing the documentation, firmware, or hardware designs included in this repository, you agree to the following terms:

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1.2 Acknowledgments and Contributors

This project builds upon the work of several open-source developers and projects:

1.2.1 CMSIS-DAP (DAPLink Firmware for CH552)

- **Stefan Wagner** Project: [CH552-DAPLink](#) License: Creative Commons BY-SA 3.0 Description: CMSIS-DAP firmware and hardware design
- **Ralph Doncaster** Source: [nerdralph/ch554_sdcc](#) Description: Original CMSIS-DAP firmware implementation for CH554 (SDCC)
- **Deqing Sun** Source: [CH55xduino](#) Description: CH552/CH554 Arduino-compatible toolchain

1.2.2 USB-Blaster Firmware (CH552G)

- **Vladimir Duan** Project: [CH55x-USB-Blaster](#) License: MIT Description: USB-Blaster JTAG emulation for CH55x
- **Blinkinlabs** SDK Source: [ch554_sdcc](#) Description: SDK for CH552/CH554 (SDCC)
- **Doug Brown** Blog: [Fixing a Knockoff Altera USB Blaster](#) Description: Insights into compatibility and firmware flashing

1.3 Hardware License

All hardware designs (schematics, layouts, and design files) in this repository are released under the **MIT License**, allowing unrestricted use, modification, and distribution, provided the original license and attribution are retained.

1.4 Resources and References

Table 1.1: Source URLs

Project / Tool	Source URL
CH552 DAPLink	https://github.com/wagiminator/CH552-DAPLink
picoDAP	https://github.com/wagiminator/CH552-picoDAP
CH55xDuino	https://github.com/DeqingSun/ch55xduino
CMSIS-DAP Handbook	https://os.mbed.com/handbook/CMSIS-DAP
CH55x USB-Blaster	https://github.com/VladimirDuan/CH55x-USB-Blaster
SDCC Compiler	https://sdcc.sourceforge.net/
CH554 SDK	https://github.com/Blinkinlabs/ch554_sdcc

1.5 Licenses

1.5.1 Documentation & Visual Content

This user guide and its visual content are licensed under:

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1.5.2 Firmware Projects

- **CH552-DAPLink:** Creative Commons BY-SA 3.0 — © Stefan Wagner
- **CH55x-USB-Blaster:** MIT License — © Vladimir Duan
- **CH55x SDK / Tools:** MIT License — © Blinkinlabs

1.5.3 Hardware Repository

- All PCB designs and schematics are released under the **MIT License**.

Note: If you distribute this product with third-party firmware (e.g., CMSIS-DAP), you are responsible for ensuring license compliance. Only firmware developed by Unit Electronics and released under the MIT license is supported for commercial redistribution.

1.5.4 Preloaded USB-Serial Firmware

This product may include preloaded firmware based on the project by **Kongou Hikari**: “USB to Serial Converter firmware for CH552T”. Original source: [\[https://github.com/diodep/ch55x_dualserial/tree/master\]](https://github.com/diodep/ch55x_dualserial/tree/master)
License: MIT

Under the terms of the MIT License, users are free to modify or replace the firmware. Unit Electronics provides this firmware for convenience only and does not offer performance guarantees.

MAIN PIN MAP

Table 2.1: Main Pin Map – ESP32-S3 LilyPad S3

Ar-duino Lily-PAD	UNIT Lily-Pad S3	ESF S3 GPI	GPI	GPIO Function	Type
D13 (SCK)	D13/SCK/T7	GPI0		RTC_GPIO7, GPIO7, TOUCH7, ADC1_CH6	I/O/T
3.3V	3.3V	3.3V		Power supply	P
AREF
A0 (Analog)	A0/T1	GPI0		RTC_GPIO1, GPIO1, TOUCH1, ADC1_CH0	I/O/T
A1 (Analog)	A1/T2	GPI0		RTC_GPIO2, GPIO2, TOUCH2, ADC1_CH1	I/O/T
A2 (Analog)	A2/T3	GPI0		RTC_GPIO3, GPIO3, TOUCH3, ADC1_CH2	I/O/T
A3 (Analog)	A3/T4	GPI0		RTC_GPIO4, GPIO4, TOUCH4, ADC1_CH3	I/O/T
A4 (SDA)	A4/(SDA)/T5	GPI0		RTC_GPIO5, GPIO5, TOUCH5, ADC1_CH4	I/O/T
A5 (SCL)	A5/(SCL)/T6	GPI0		RTC_GPIO6, GPIO6, TOUCH6, ADC1_CH5	I/O/T
.	A6/D13/SCK	GPI0		ADC1_CH5, LP_UART_TXD, LP_GPIO5, MTDI, FSPIWP, SDIO	I/O/T
.	A7/D12/MISO	GPI0		WS2812B-2020 OUT (DO)	I/O/T
.	A8/D11/MOSI	GPI0		WS2812B-2020 OUT (DO)	I/O/T
5V	5V	5V		Power supply	P
RE-SET	RST	EN		High: ON, enables the chip. Low: OFF	I
GND	GND	GND		GND	GND
D0 (RX)	D0/RX	GPI0		U0RXD, GPIO44, CLK_OUT2	I/O/T
D1 (TX)	D1/TX	GPI0		U0TXD, GPIO43, CLK_OUT1	I/O/T
D2	D2/T11	GPI0		RTC_GPIO11, TOUCH11,	I/O/T

HOW TO GENERATE AN ERROR REPORT

This guide explains how to generate an error report using GitHub repositories.

3.1 Steps to Create an Error Report

1. Access the GitHub Repository

Navigate to the [GitHub repository](#) where the project is hosted.

2. Open the Issues Tab

Click on the “Issues” tab located in the repository menu.

3. Create a New Issue

- Click the “New Issue” button.
- Provide a clear and concise title for the issue.
- Add a detailed description, including relevant information such as:
 - Steps to reproduce the error.
 - Expected and actual results.
 - Any related logs, screenshots, or files.

4. Submit the Issue

Once the form is complete, click the “Submit” button.

3.2 Review and Follow-Up

The development team or maintainers will review the issue and take appropriate action to address it.