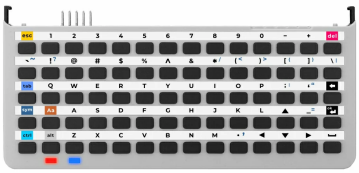
Tab5 Keyboard

SKU:A164



Description

Tab5 Keyboard is a 70-key physical keyboard input expansion module designed specifically for Tab5. It connects directly to the host via Tab5 Ext.Port1, enabling a plug-and-play input experience. The module integrates an STM32F030C8T6 main control chip, responsible for keyboard matrix scanning and communication processing. The preloaded firmware supports three operating modes: **Normal**, **HID**, and **Character**, adapting to different interaction requirements. The keyboard adopts a 14 x 5 matrix design, supports multiple simultaneous key presses, and provides a complete set of letters, numbers, symbols, and commonly used function keys such as Aa, Ctrl, Sym, Alt, Tab, Esc, and arrow keys. The device communicates with Tab5 via I2C and provides an independent interrupt pin for low-latency real-time reporting of key events. Two onboard RGB LEDs can be used for full-color status indication. With a compact structure and simple connection method, it is suitable for text input, command interaction, and various portable applications that require a physical keyboard.

Tutorial

User Demo Tutorial

This tutorial introduces user demo for using the Tab5 Keyboard with the Tab5, including firmware flashing methods, USB HID output, register display, and other features.

Features

- Uses STM32F030C8T6 as the main control chip
- Designed for Tab5, plug and play via direct connection to the expansion port
- Three operating modes to meet diverse requirements
- 14 x 5 matrix, supports multiple simultaneous key presses
- Complete key layout with various commonly used function keys
- I2C communication with low-latency reporting through an interrupt pin
- Onboard dual RGB LEDs for colorful status indication
- Side latches securely lock onto Tab5; two M3 screw mounting holes reserved on the back
- Compact structure with strong adaptability for portable scenarios

Includes

- 1 x Tab5 Keyboard

Applications

- Text input
- Command interaction
- Portable application scenarios
- Educational programming and maker projects

Specifications

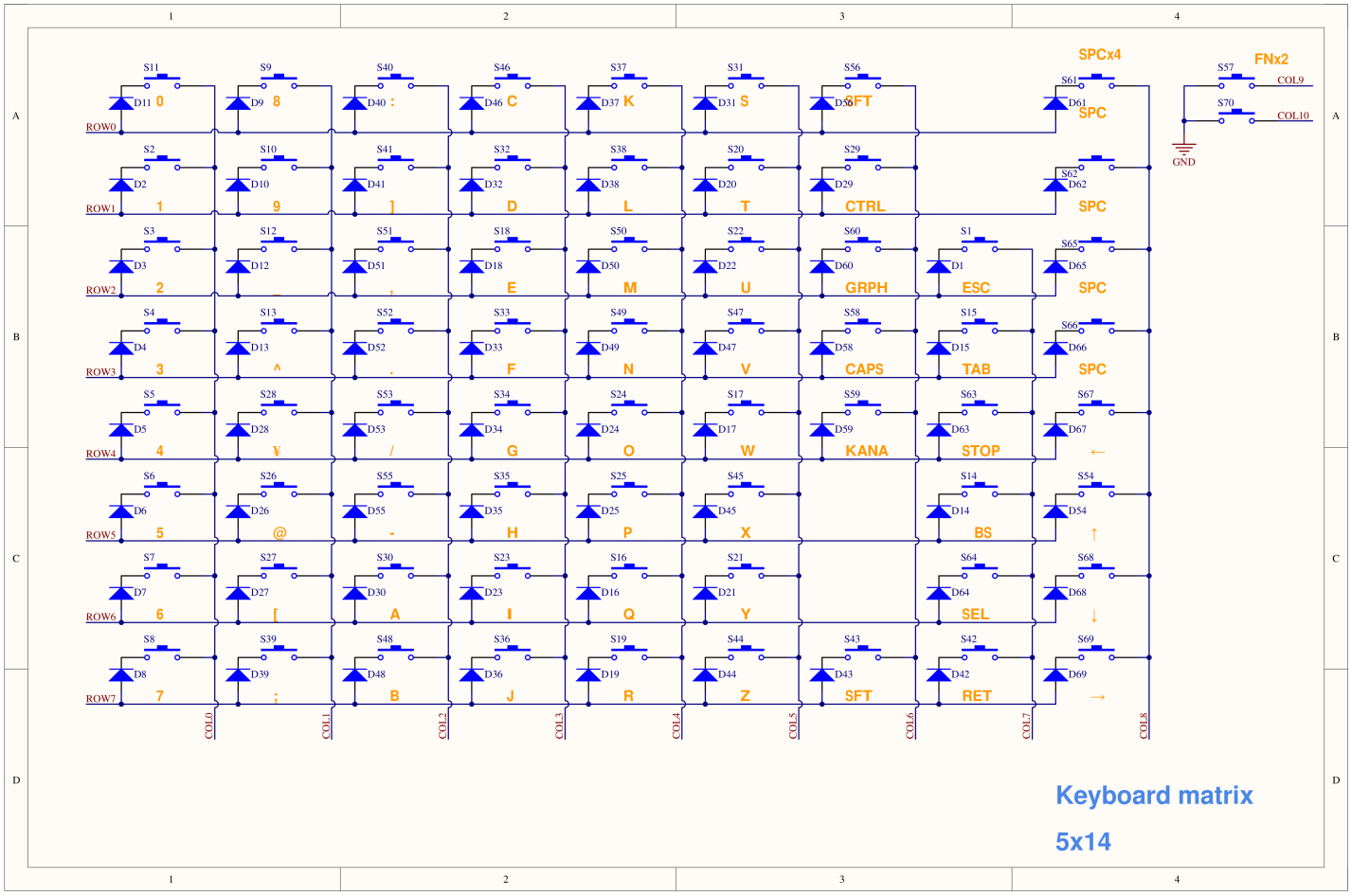
Specification	Parameter
MCU	STM32F030C8T6
Keys	70-key keyboard
I2C Address	0x6D (default)
RGB LED	2 x WS2812E-1313
Interface	2 x 5 PIN header, 2.54mm pitch
Standby Power	DC 3.3V@14.5mA
Operating Power	RGB (white) maximum brightness: 3.3V@21.5mA Input (RGB off): 3.3V@14.5mA
Product Size	128.0 x 59.4 x 13.1mm
Product Weight	65.2g
Package Size	147.0 x 82.0 x 16.5mm
Gross Weight	97.4g

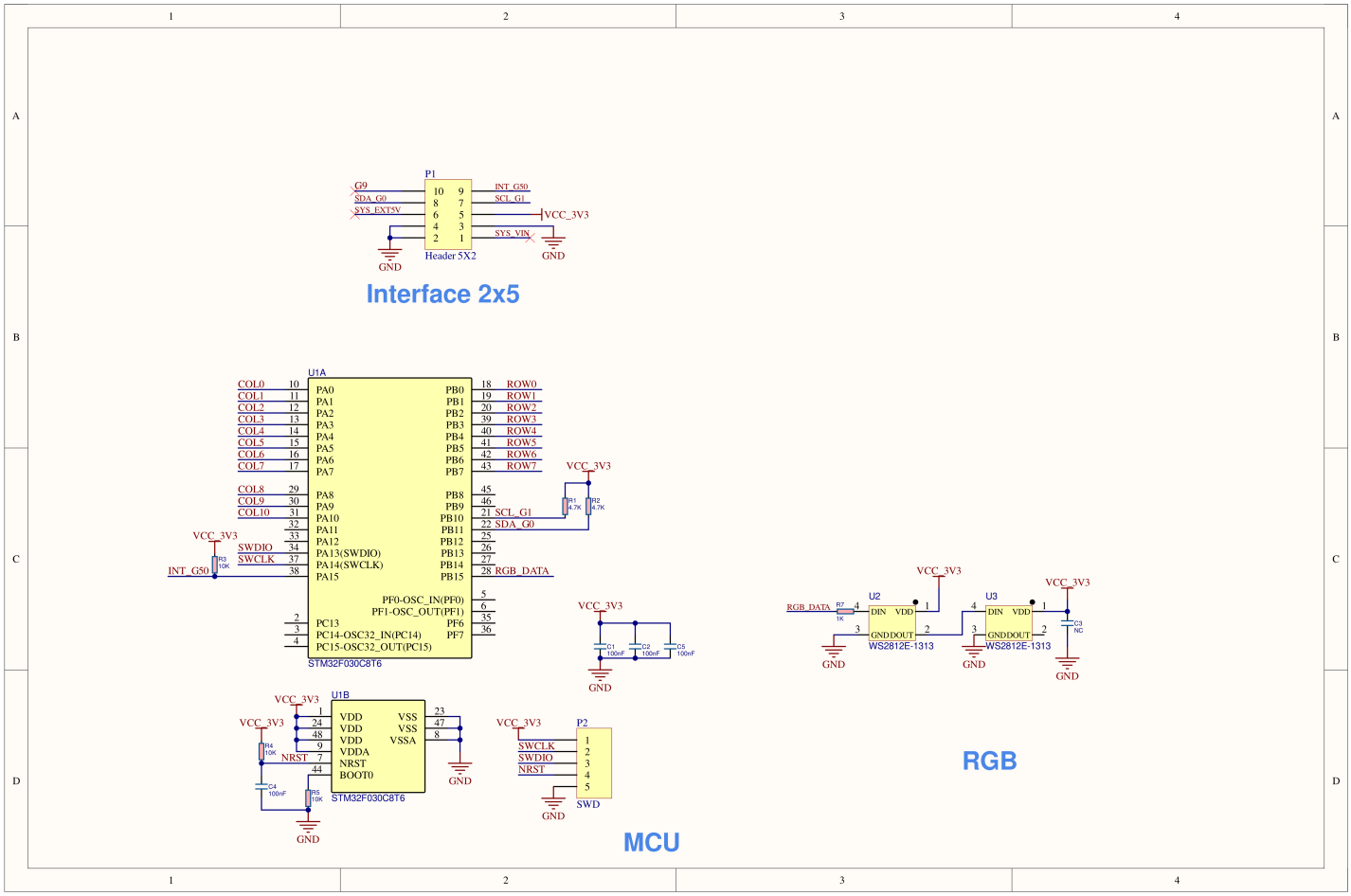
Learn

Device Connection Diagram

Schematics

- Tab5 Keyboard Schematics PDF


SPCx4
FNx2
S11 D11 0 ROW0
S9 D9 8
S40 D40 :
S46 D46 C
S37 D37 K
S31 D31 S
S56 D56 SFT
S61 D61 SPC
S57 COL9
S70 COL10
GND
S2 D2 1 ROW1
S10 D10 9
S41 D41]
S32 D32 D
S38 D38 L
S20 D20 T
S29 D29 CTRL
S62 D62 SPC
S3 D3 2 ROW2
S12 D12 _
S51 D51 ,
S18 D18 E
S50 D50 M
S22 D22 U
S60 D60 GRPH
S1 D1 ESC
S65 D65 SPC
S4 D4 3 ROW3
S13 D13 ^
S52 D52 .
S33 D33 F
S49 D49 N
S47 D47 V
S58 D58 CAPS
S15 D15 TAB
S66 D66 SPC
S5 D5 4 ROW4
S28 D28 ¥
S53 D53 /
S34 D34 G
S24 D24 O
S17 D17 W
S59 D59 KANA
S63 D63 STOP
S67 D67 ←
S6 D6 5 ROW5
S26 D26 @
S55 D55 -
S35 D35 H
S25 D25 P
S45 D45 X
S14 D14 BS
S54 D54 ↑
S7 D7 6 ROW6
S27 D27 [
S30 D30 A
S23 D23 I
S16 D16 Q
S21 D21 Y
S64 D64 SEL
S68 D68 ↓
S8 D8 7 ROW7
S39 D39 ;
S48 D48 B
S36 D36 J
S19 D19 R
S44 D44 Z
S43 D43 SFT
S42 D42 RET
S69 D69 →
COL0
COL1
COL2
COL3
COL4
COL5
COL6
COL7
COL8
Keyboard matrix
5x14

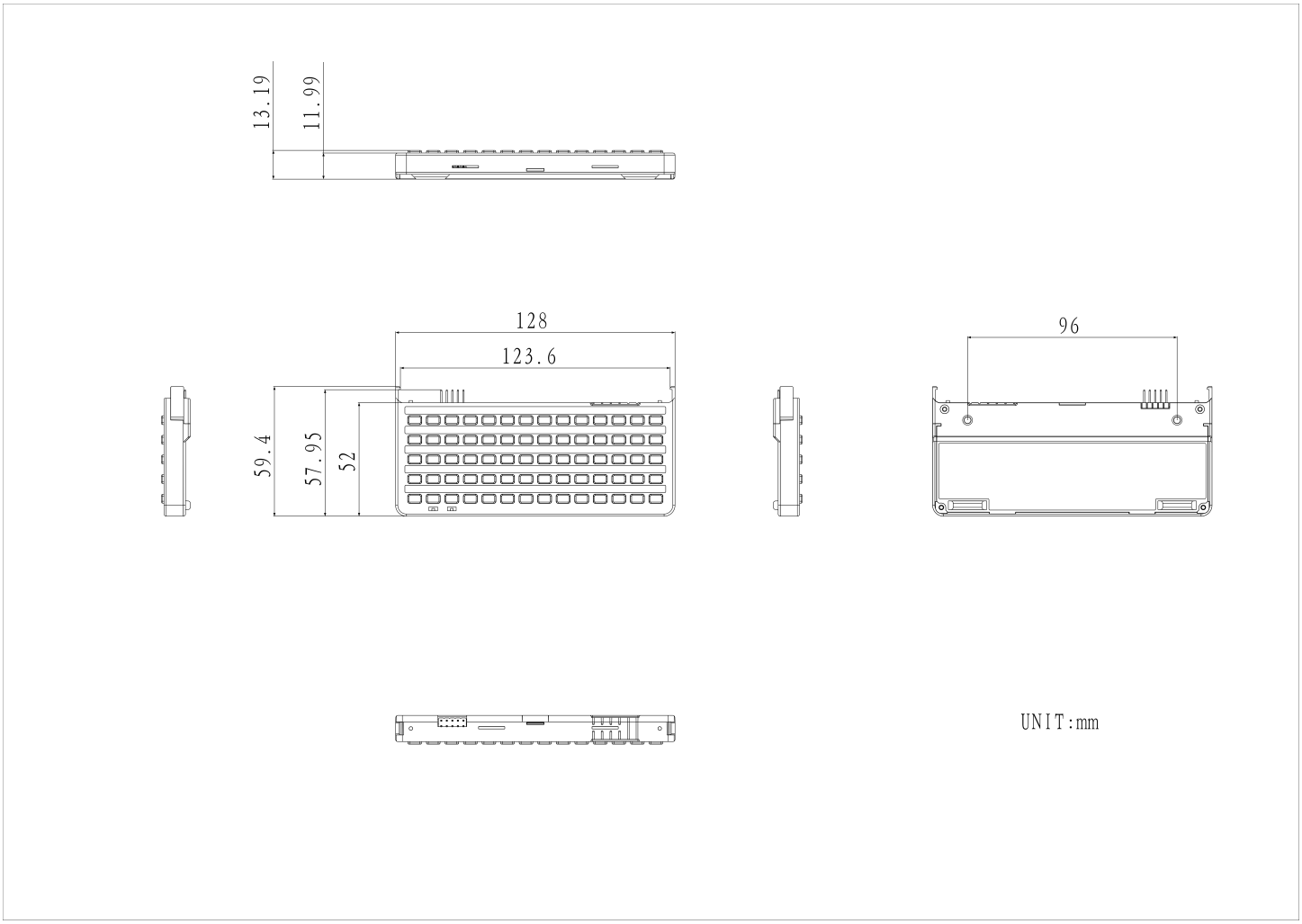

P1
G9
SDA_G0
SYS_EXT5V
INT_G50
SCL_G1
SYS_VIN
VCC_3V3
GND
Header 5X2
Interface 2x5
U1A
COL0
COL1
COL2
COL3
COL4
COL5
COL6
COL7
COL8
COL9
COL10
SWDIO
SWCLK
INT_G50
SCL_G1
SDA_G0
RGB_DATA
ROW0
ROW1
ROW2
ROW3
ROW4
ROW5
ROW6
ROW7
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13(SWDIO)
PA14(SWCLK)
PA15
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10
PB11
PB12
PB13
PB14
PB15
PC13
PC14-OSC32_IN(PC14)
PC15-OSC32_OUT(PC15)
PF0-OSC_IN(PF0)
PF1-OSC_OUT(PF1)
PF6
PF7
STM32F030C8T6
U1B
VDD
VSS
VSSA
NRST
BOOT0
P2
SWCLK
SWDIO
NRST
SWD
MCU
RGB_DATA
U2
U3
DIN
VDD
GND
DOUT
WS2812E-1313
RGB

PinMap

Tab5	G0	G1	G50
Tab5 Keyboard	SDA	SCL	INT

Model Size

- Tab5 Keyboard Model Size PDF



Structure

- Tab5 Keyboard Structure Files

Datasheets

- STM32F030C8T6
- WS2812E

Softwares

Quick Start

- Tab5 Keyboard User Demo Introduction

Arduino

- Tab5 Keyboard Arduino Library
- Tab5 Keyboard Arduino Quick Start

ESP-IDF

- Tab5 Keyboard User Demo

Internal Firmware

- Tab5 Keyboard Internal Firmware

Protocol

- Tab5 Keyboard User Manual
- Tab5 Keyboard Protocol

Tab5 Keyboard supports three data packet modes to adapt to different application scenarios.

Normal Mode: Returns the key status and its row/column coordinates HID Mode: Returns HID reports. Combined with Tab5 USB / BLE forwarding, it can implement HID input device functionality Character Mode: Returns the name string of the pressed standard key and the Ctrl/Alt modifier status, while Sym/Aa directly implement the corresponding functions.

M5Stack Tab5 Keyboard I2C Protocol																	5/6/2026
REG MAP (Addr: 0x6D)		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	note
Sys Config	0x00 R/W	INT_CFG	INT_STAT	EVENT_NUM	Brightness													INT_CFG: Interrupt enable configuration [7:3]: Reserved [2]: Character mode interrupt enable bit [1]: HID mode interrupt enable bit [0]: Normal mode interrupt enable bit default: 0x07 Note: 1 in the corresponding position indicates enabled, 0 indicates disabled INT_STA: Interrupt trigger status [7:3]: Reserved [2]: Character mode interrupt trigger flag [1]: HID mode interrupt trigger flag [0]: Normal mode interrupt trigger flag Note: Write 0 is allowed. Writing 0 releases the interrupt signal and clears the status EVENT_NUM: Length of the queue in the current mode 0~32 default: 0 Note: This register will automatically decrement by 1 after reading a queue event. Write 0 is allowed. Writing 0 clears the queue in the current mode and releases the interrupt signal Brightness: RGB brightness 0~100 default: 20
Config Mode	0x10R /W	Keyboard	RGB															Keyboard: Key working mode 0: Normal mode 1: HID mode 2: Character mode default: 0 Note: Switching modes will clear the queue of the previous mode and release the interrupt signal. RGB: RGB working mode 0: Binding mode 1: Custom mode default: 0
KEY_EVENT	0x20 R	Event																Normal mode events: [7]: Press state, 1 = Press, 0 = Release [6:4]: Row (0~4) [3:0]: Column (0~13) Note: Event length is 1 byte, the data returned when the queue is empty is 0xFF
HID_EVENT	0x30 R	Modifier	Key_code															HID Mode Events: Modifier (modifier) Key_code (key code) Note: Event length is 2 bytes; if the queue is empty, the returned data is 0xFF.
CHAR_EVENT_LENGTH	0x40 R	Length																The string pattern is the length of the string at the head of the queue. Returns 0 if the queue is empty.
CHAR_EVENT	0x50 R	Modifier	Char0	Char1	Char2	Char3	Char4	Char5	Char6	Char7	Char8							Character mode events: Modifier (bit 0 = 1 indicates Ctrl pressed, bit 2 = 1 indicates Alt pressed) Character for the event, maximum possible character length is 9. Note: The event length needs to be read from register 0x40 first. The event includes 1 byte of modifier + string length. The actual length to be read should be the value read from register 0x40 + 1.
RGB Color	0x60 R/W	RGB1_B	RGB1_G	RGB1_R		RGB2_B	RGB2_G	RGB2_R										RGB: Color value: 0~255 default: 0 Note: User-defined RGB buffer, only valid in RGB custom mode.
Firmware Version	0xF0 R															Version		Version: Software Version
I2C Address	0xF0 R/W																Address	Address: I2C Address 0x08~0x77 default: 0x6D

Notes:
1. The I2C address register is used to set the I2C device address. The new address takes effect immediately after being set and is stored in the internal Flash memory, remaining valid even after a power outage and restart.
2. Flash memory must be erased before writing, a time-consuming process that takes approximately 20ms.
3. To extend the lifespan of the Flash memory, please avoid frequent write operations.
4. If the value to be written is the same as the currently stored value in the Flash memory, no actual write operation will be performed, thus reducing unnecessary Flash erasure and further extending its lifespan.

Video

- Tab5 Keyboard Product Introduction and Feature Demonstration

A164_Tab5_keyboard_video_EN.mp4