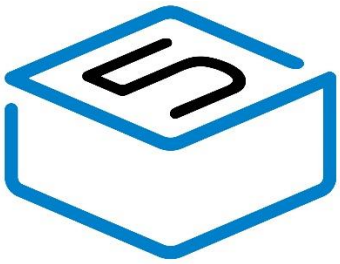

M5STACK

Tab5 Keyboard User Manual

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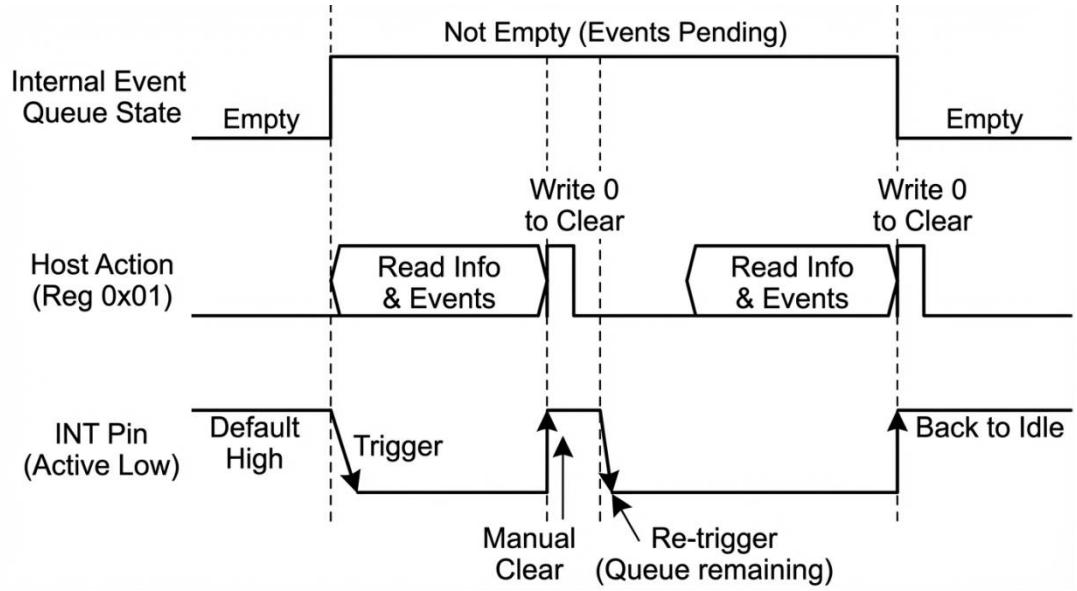
I. Interrupt Pin

The interrupt pin is high by default. When interrupt enable is enabled for the corresponding mode (configured via register 0x00), and there are unprocessed events in the event queue for the current mode, the device will actively pull the pin low to indicate an interrupt.

Once an interrupt signal is triggered, the device will not automatically release it. The user needs to read register 0x01 to obtain interrupt event information, and further read the corresponding event quantity and specific event content according to the triggered event type. After the event is processed, a 0 must be written to register 0x01 to manually clear the interrupt, thereby restoring the interrupt pin to a high level.

If there are still unprocessed events in the event queue after the interrupt is released, the interrupt pin will be pulled low again to prompt the user to continue processing.



II. RGB Mode

RGB has two working modes: bound mode and custom mode .

1. Binding Mode

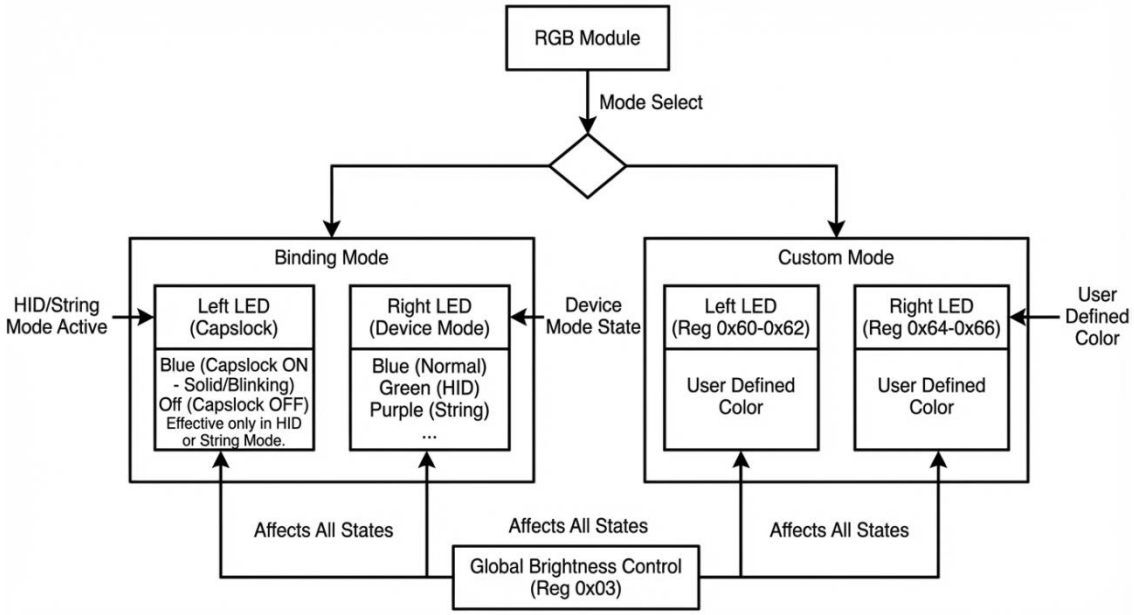
There are two indicator lights on the bottom of the device.

- The indicator light on the left is the Caps Lock indicator: a solid blue light or flashing light indicates that Caps Lock is currently in uppercase mode, and an off light indicates that Caps Lock is in lowercase mode. This indicator light is only valid in HID mode and character mode.

- The indicator light on the right is the mode indicator: blue for normal mode, green for HID mode, and purple for character mode.

2. Custom Mode

In custom mode, the display of the two RGB lights is controlled by registers `0x60 ~ 0x62` and `0x64 ~ 0x66`, which can be set to different colors respectively .



Note: Regardless of whether it is in bound mode or custom mode, the overall brightness of RGB is determined by register `0x03` .

III. Case Mode

The device's Caps Lock function is only available in HID and Character modes. The system automatically switches input modes and provides corresponding blue indicator light feedback based on different triggering methods of the Aa key .

1. Single Caps Lock Mode (Click)

Trigger action: Click the Aa key.

Light feedback: The indicator light on the left flashes blue (frequency 200ms).

Input effect: Makes the next character entered uppercase.

Automatic recovery: After character input is complete, the indicator light turns off, and the system returns to lowercase mode .

2. Temporary uppercase mode (long press)

Trigger action: Press and hold the Aa key.

Light feedback: While holding down the button, the indicator light on the left will flash blue (frequency 200ms).

Input effect: All characters entered while holding down the key will be uppercase.

Automatic recovery: After releasing the Aa key, the indicator light goes out, and the system returns to lowercase mode.

3. Caps Lock mode (double-click)

Trigger action: Quickly double-click the Aa key (500ms).

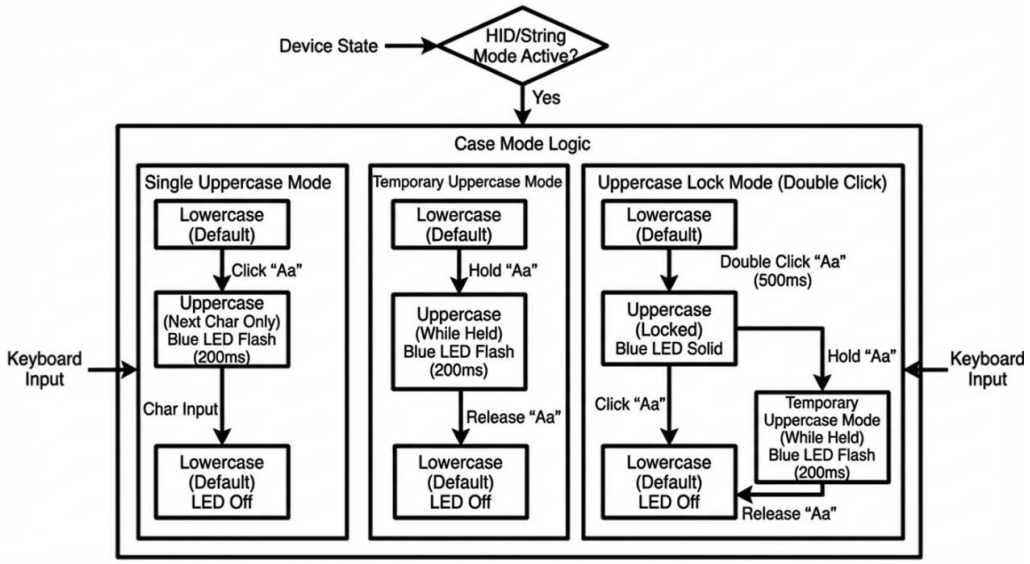
Lighting feedback: The indicator light on the left is constantly blue.

Input effect: The system enters Caps Lock mode, and all characters entered are uppercase.

Status Exit:

Single click: In the locked state, clicking the Aa key will turn off the indicator light and restore the lowercase color.

Long press: In the locked state, long press the Aa key to enter "Temporary Caps Lock Mode" (the indicator light will flash). Release the key to revert to lowercase mode and turn it off.



IV. Keyboard Mode

1 Normal mode

In normal mode, the key events read are the coordinate information of the keys. The keyboard matrix contains 5 rows and 14 columns, with row numbers ranging from 0 to 4 and column numbers ranging from 0 to 13. The coordinates of the top-left key are (0, 0), and the coordinates of the bottom-right key are (4, 13). Each key press and release generates an event. The read data is 1 byte long, where bit7 = 1 indicates a press, bit7 = 0 indicates a release, bits[6:4] represent the row number, and bits[3:0] represent the column number .

2 HID mode

The returned data is the HID code. The first byte is the modifier, and the second byte is the keycode. The device internally parses the key HID codes, and the key functions correspond one-to-one with the keyboard schematic.

Special keys include Sym, Aa, Ctrl, and Alt. These special keys require combination with other keys to function. Sym is the symbol toggle key, applicable to keys marked with two characters on keyboard layouts: when Sym is not pressed, the key outputs the left-hand character by default; pressing Sym while simultaneously pressing the corresponding key outputs the upper-right character. Aa is the Caps Lock key, used to toggle the case of all 26 English letters. Ctrl and Alt are primarily used in combination key scenarios, filling in the corresponding modifier when pressed.

The special keys mentioned above will not generate HID events when pressed or released individually. All other keys, except for the special keys, will generate HID events when pressed and released.

When a press event occurs : fill in the modifier and key code normally;

When the event is released : normal fill modifier, key code is 0.

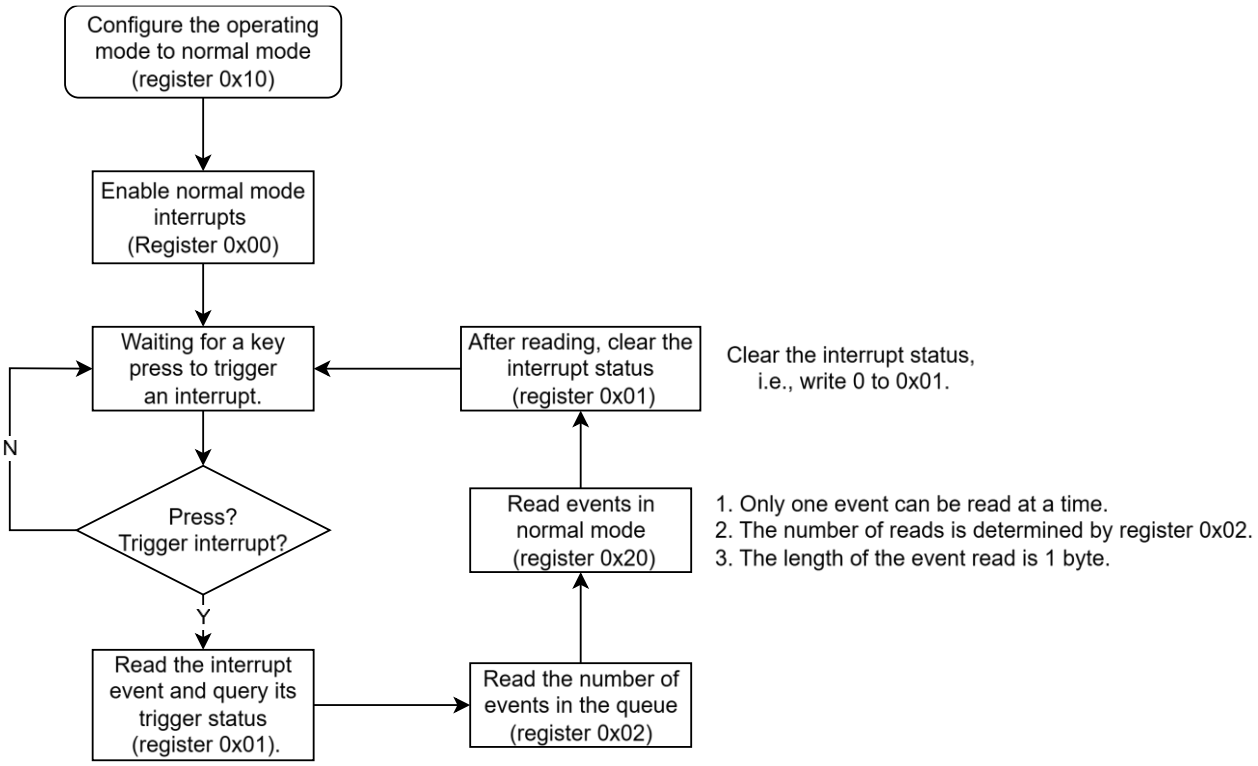
Note: HID events can be read and passed to the computer, allowing the device to be used as a keyboard. The keyboard functions are consistent with the corresponding symbols on the device.

3 character mode

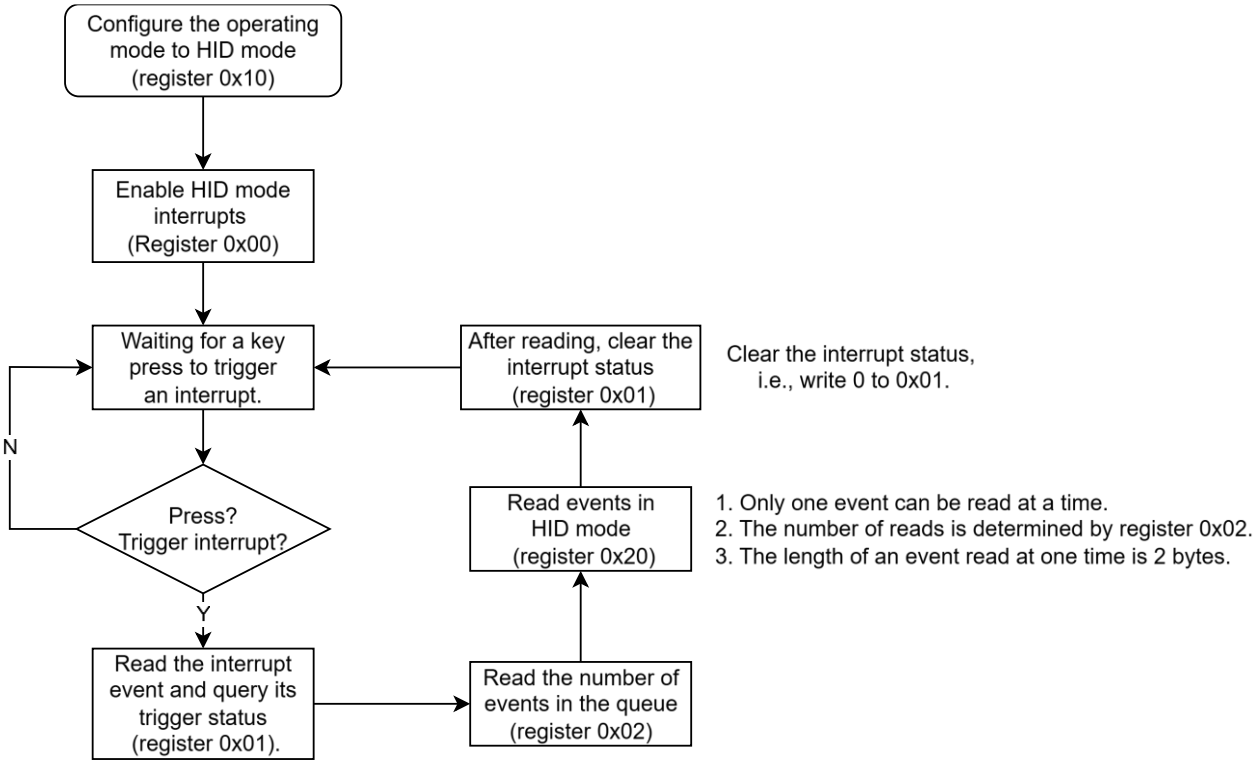
In character mode, Sym, Aa, Ctrl, and Alt are special function keys. Sym is the symbol toggle key, used for keys with two character indicators. When Sym is not pressed, the key outputs the character on the left by default; pressing Sym while pressing the corresponding key outputs the character in the upper right corner. Aa is the case toggle key, used to toggle the case of all 26 English letters and non-ASCII characters. Ctrl and Alt are modifier keys, which fill in the corresponding modifier flag when pressed or released. These special keys do not generate character events when pressed or released individually, but the modifier flag is updated in real time. Other keys generate corresponding character events when pressed, but not when released. The event data format in character mode is: modifier (1 byte) + string (n bytes) .

V. Operating procedures

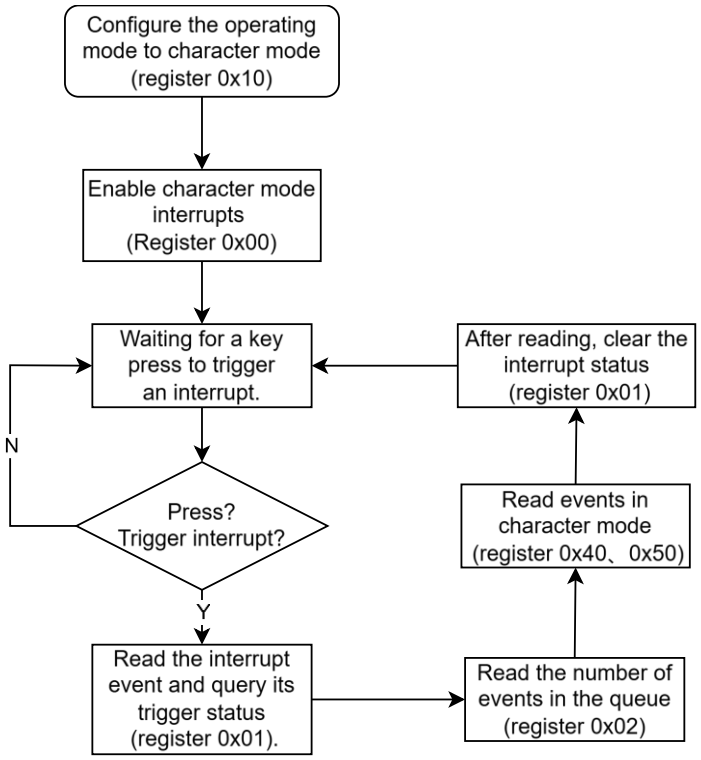
1 Normal mode



2 HID mode


Configure the operating mode to HID mode (register 0x10)
Enable HID mode interrupts (Register 0x00)
Waiting for a key press to trigger an interrupt.
Press? Trigger interrupt?
N
Y
Read the interrupt event and query its trigger status (register 0x01).
Read the number of events in the queue (register 0x02)
Read events in HID mode (register 0x20)
After reading, clear the interrupt status (register 0x01)
Clear the interrupt status, i.e., write 0 to 0x01.
1. Only one event can be read at a time.
2. The number of reads is determined by register 0x02.
3. The length of an event read at one time is 2 bytes.

3 Character mode



Clear the interrupt status, i.e., write 0 to 0x01.

1. Only one event can be read at a time.
2. The number of reads is determined by register 0x02.
3. The length of the event read is N bytes.
4. In character mode, the length of the event read each time may not be the same; register 0x40 must be read first to confirm the length of the string to be read.