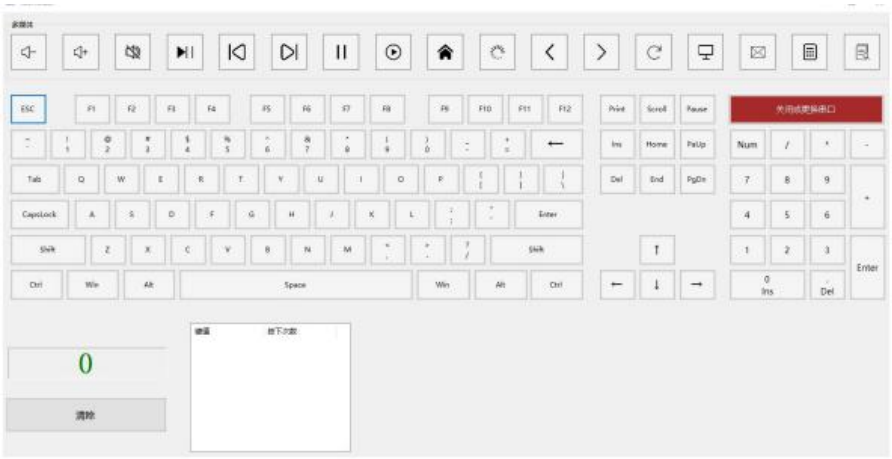
KMtester Product Manual

KMtester is a test module for detecting the key actions of a USB keyboard. When in use, connect the keyboard to be tested to this module, and then connect the module to the computer. It has two modes: serial port mode and HID printing mode. Toggle the switch to the side of the USB male header for HID printing mode, and to the side of the USB female header for serial port mode. In serial port mode, the device will virtualize a serial port. When there is a key action on the tested keyboard, the module will upload the key state of the keyboard through the serial port. The following figure shows the software interface of KMtester. This software can display the state (pressed or released) of each key in real time and also count the number of presses for each key.



The explanation for serial port data parsing is as follows. You can develop the parsing software yourself:
Serial Port Configuration
Baud rate: 115200bps
Data bits: 8
Parity bit: None
Stop bit: 1
Data Format
01 04 14 media_key[3] 00 fun_code key_code[15] 0D
media_key[3]: Each function occupies one bit. A bit value of 1 indicates a key press, and 0 indicates a key release. It is sorted according to the following table. For example, media_key[0] = 0x01 means the volume - down key is pressed; media_key[0] = 0x03 means both the volume - down and volume - up keys are pressed simultaneously.
0x01 -> Volume Down
0x02 -> Volume Up
0x03 -> Mute
0x04 -> Play/Pause
0x05 -> Previous Track
0x06 -> Next Track
0x07 -> Stop
0x08 -> Open Player
0x09 -> Open Homepage

0x0a -> Interrupt the loading webpage
0x0b -> Return to the previous browsed webpage
0x0c -> Go to the next browsed webpage
0x0d -> Refresh the webpage
0x0e -> Open My Computer
0x0f -> Open Mail
0x10 -> Open Calculator
0x11 -> Open Search File Window

//
fun_code: Function key code. Each function occupies one bit. The functions are as follows
#define L_CTRL 0x01
#define L_SHIFT 0x02
#define L_ALT 0x04
#define L_WIN 0x08
#define R_CTRL 0x10
#define R_SHIFT 0x20
#define R_ALT 0x40
#define R_WIN 0x80

key_code[15]: Each key occupies one bit. Sorted starting from the key code of the A key. Refer to the following table.
For example, key_code[0] = 01 means the A key is pressed, key_code[0] = 0 means the B key is pressed, and key_code[0] = 03 means both the A and B keys are pressed simultaneously.

```
#define Keyboard_a               4   // Keyboard a and A
#define Keyboard_b               5   // Keyboard b and B
#define Keyboard_c               6   // Keyboard c and C
#define Keyboard_d               7   // Keyboard d and D
#define Keyboard_e               8   // Keyboard e and E
#define Keyboard_f               9   // Keyboard f and F
#define Keyboard_g               10  // Keyboard g and G
#define Keyboard_h               11  // Keyboard h and H
#define Keyboard_i               12  // Keyboard i and I
#define Keyboard_j               13  // Keyboard j and J
#define Keyboard_k               14  // Keyboard k and K
#define Keyboard_l               15  // Keyboard l and L
#define Keyboard_m               16  // Keyboard m and M
#define Keyboard_n               17  // Keyboard n and N
#define Keyboard_o               18  // Keyboard o and O
#define Keyboard_p               19  // Keyboard p and P
#define Keyboard_q               20  // Keyboard q and Q
#define Keyboard_r               21  // Keyboard r and R
#define Keyboard_s               22  // Keyboard s and S
#define Keyboard_t               23  // Keyboard t and T
#define Keyboard_u               24  // Keyboard u and U
```

```
#define Keyboard_v                  25  // Keyboard v and V
#define Keyboard_w                  26  // Keyboard w and W
#define Keyboard_x                  27  // Keyboard x and X
#define Keyboard_y                  28  // Keyboard y and Y
#define Keyboard_z                  29  // Keyboard z and Z
#define Keyboard_1                  30  // Keyboard 1 and !
#define Keyboard_2                  31  // Keyboard 2 and @
#define Keyboard_3                  32  // Keyboard 3 and #
#define Keyboard_4                  33  // Keyboard 4 and $
#define Keyboard_5                  34  // Keyboard 5 and %
#define Keyboard_6                  35  // Keyboard 6 and ^
#define Keyboard_7                  36  // Keyboard 7 and &
#define Keyboard_8                  37  // Keyboard 8 and *
#define Keyboard_9                  38  // Keyboard 9 and (
#define Keyboard_0                  39  // Keyboard 0 and )
#define Keyboard_ENTER              40  // Keyboard ENTER
#define Keyboard_ESCAPE             41  // Keyboard ESCAPE
#define Keyboard_Backspace          42  // Keyboard Backspace
#define Keyboard_Tab                43  // Keyboard Tab
#define Keyboard_KongGe             44  // Keyboard Spacebar
#define Keyboard_JianHao            45  // Keyboard - and _(underscore)
#define Keyboard_DengHao            46  // Keyboard = and +
#define Keyboard_ZuoZhongKuoHao     47  // Keyboard [ and {
#define Keyboard_YouZhongKuoHao     48  // Keyboard ] and }
#define Keyboard_FanXieGang         49  // Keyboard \ and |
#define Keyboard_Reserve            50  // Keyboard Non-US
#define Keyboard_FenHao             51  // Keyboard ; and :
#define Keyboard_DanYinHao          52  // Keyboard ' and "
#define Keyboard_BoLangXian         53  // Keyboard `(Grave Accent) and ~(Tilde)
#define Keyboard_Douhao             54  // Keyboard, and <
#define Keyboard_JuHao              55  // Keyboard . and >
#define Keyboard_XieGang_WenHao     56  // Keyboard / and ?
#define Keyboard_CapsLock           57  // Keyboard Caps Lock
#define Keyboard_F1                 58  // Keyboard F1
#define Keyboard_F2                 59  // Keyboard F2
#define Keyboard_F3                 60  // Keyboard F3
#define Keyboard_F4                 61  // Keyboard F4
#define Keyboard_F5                 62  // Keyboard F5
#define Keyboard_F6                 63  // Keyboard F6
#define Keyboard_F7                 64  // Keyboard F7
#define Keyboard_F8                 65  // Keyboard F8
#define Keyboard_F9                 66  // Keyboard F9
#define Keyboard_F10                67  // Keyboard F10
#define Keyboard_F11                68  // Keyboard F11
```

```
#define Keyboard_F12                69  // Keyboard F12
#define Keyboard_PrintScreen        70  // Keyboard PrintScreen
#define Keyboard_ScrollLock         71  // Keyboard Scroll Lock
#define Keyboard_Pause              72  // Keyboard Pause
#define Keyboard_Insert             73  // Keyboard Insert
#define Keyboard_Home               74  // Keyboard Home
#define Keyboard_PageUp             75  // Keyboard PageUp
#define Keyboard_Delete             76  // Keyboard Delete
#define Keyboard_End                77  // Keyboard End
#define Keyboard_PageDown           78  // Keyboard PageDown
#define Keyboard_RightArrow         79  // Keyboard RightArrow
#define Keyboard_LeftArrow          80  // Keyboard LeftArrow
#define Keyboard_DownArrow          81  // Keyboard DownArrow
#define Keyboard_UpArrow            82  // Keyboard UpArrow
#define Keypad_NumLock              83  // Keypad Num Lock and Clear
#define Keypad_ChuHao               84  // Keypad /
#define Keypad_ChengHao             85  // Keypad *
#define Keypad_JianHao              86  // Keypad -
#define Keypad_JiaHao               87  // Keypad +
#define Keypad_ENTER                88  // Keypad ENTER
#define Keypad_1_and_End            89  // Keypad 1 and End
#define Keypad_2_and_DownArrow      90  // Keypad 2 and Down Arrow
#define Keypad_3_and_PageDn         91  // Keypad 3 and PageDn
#define Keypad_4_and_LeftArrow      92  // Keypad 4 and Left Arrow
#define Keypad_5                    93  // Keypad 5
#define Keypad_6_and_RightArrow     94  // Keypad 6 and Right Arrow
#define Keypad_7_and_Home           95  // Keypad 7 and Home
#define Keypad_8_and_UpArrow        96  // Keypad 8 and Up Arrow
#define Keypad_9_and_PageUp         97  // Keypad 9 and PageUp
#define Keypad_0_and_Insert         98  // Keypad 0 and Insert
#define Keypad_Dian_and_Delete      99  // Keypad . and Delete
#define Keyboard_Reserve_1          100 // Keyboard Non-US
#define Keypad_Application          101 // Keypad Application
```

HID Printing Mode:

The characters printed by the keyboard key actions are as follows:

ESC DOWN	P DOWN	PRINT DOWN
ESC UP	P UP	PRINT UP
F1 DOWN	[DOWN	SCROL DOWN
F1 UP	[UP	SCROL UP
F2 DOWN	] DOWN	PAUSE DOWN
F2 UP	] UP	PAUSE UP
F3 DOWN	\ DOWN	INSERT DOWN
F3 UP	\ UP	INSERT UP
F4 DOWN	CAPS DOWN	HOME DOWN
F4 UP	CAPS UP	HOME UP
F5 DOWN	A DOWN	PAGEUP DOWN
F5 UP	A UP	PAGEUP UP
F6 DOWN	S DOWN	DELETE DOWN
F6 UP	S UP	DELETE UP
F7 DOWN	D DOWN	END DOWN
F7 UP	D UP	END UP
F8 DOWN	F DOWN	PAGEDOWN DOWN
F8 UP	F UP	PAGEDOWN UP
F9 DOWN	G DOWN	UARW DOWN
F9 UP	G UP	UARW UP

F10 DOWN	H DOWN	LARW DOWN
F10 UP	H UP	LARW UP
F11 DOWN	J DOWN	DARW DOWN
F11 UP	J UP	DARW UP
F12 DOWN	K DOWN	RARW DOWN
F12 UP	K UP	RARW UP
` DOWN	L DOWN	CAL DOWN
` UP	L UP	CAL UP
1 DOWN	; DOWN	PREV DOWN
1 UP	; UP	PREV UP
2 DOWN	' UP	PLAY DOWN
2 UP	' DOWN	PLAY UP
3 DOWN	ENTER DOWN	NEXT DOWN
3 UP	ENTER UP	NEXT UP
4 DOWN	LSHIFT DOWN	NUM DOWN
4 UP	LSHIFT UP	NUM UP
5 DOWN	Z DOWN	DIVIDE DOWN
5 UP	Z UP	DIVIDE UP
6 DOWN	X DOWN	MULTIPY DOWN

6 UP	X UP	MULTIPY UP
7 DOWN	C DOWN	SUB DOWN
7 UP	C UP	SUB UP
8 DOWN	V DOWN	KEYPAD 7 DOWN
8 UP	V UP	KEYPAD 7 UP
9 DOWN	B DOWN	KEYPAD 8 DOWN
9 UP	B UP	KEYPAD 8 UP
0 DOWN	N DOWN	KEYPAD 9 DOWN
0 UP	N UP	KEYPAD 9 UP
- DOWN	M DOWN	ADD DOWN
- UP	M UP	ADD UP
= DOWN	, DOWN	KEYPAD 4 DOWN
= UP	, UP	KEYPAD 4 UP
BACKSPACE DOWN	. DOWN	KEYPAD 5 DOWN
BACKSPACE UP	. UP	KEYPAD 5 UP
TAB DOWN	/ DOWN	KEYPAD 6 DOWN
TAB UP	/ UP	KEYPAD 6 UP
Q DOWN	RSHIFT DOWN	KEYPAD 1 DOWN
Q UP	RSHIFT UP	KEYPAD 1 UP
W DOWN	LCTRL DOWN	KEYPAD 2 DOWN
W UP	LCTRL UP	KEYPAD 2 UP
E DOWN	LWIN DOWN	KEYPAD 3 DOWN
E UP	LWIN UP	KEYPAD 3 UP
R DOWN	LALT DOWN	KEYPAD ENTER DOWN
R UP	LALT UP	KEYPAD ENTER UP
T DOWN	SPACE DOWN	KEYPAD 0 DOWN
T UP	SPACE UP	KEYPAD 0 UP
Y DOWN	RALT DOWN	DOT DOWN
Y UP	RALT UP	DOT UP
U DOWN	RWIN DOWN	
U UP	RWIN UP	
I DOWN	MENU DOWN	
I UP	MENU UP	
O DOWN	RCTRL DOWN	
O UP	RCTRL UP	