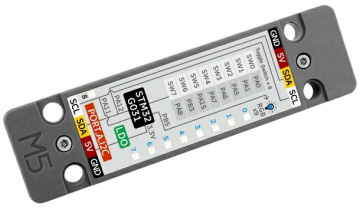
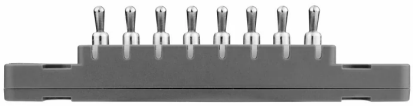
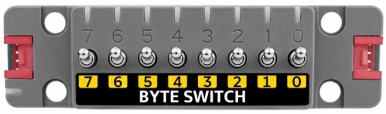
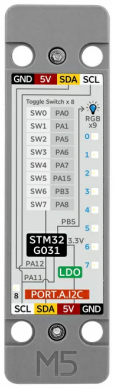
Unit ByteSwitch

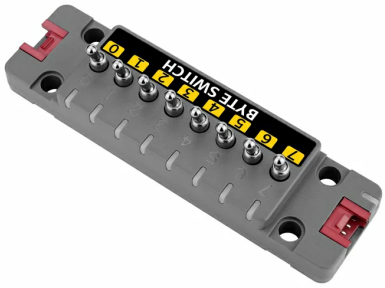
SKU:U191











Description

Unit ByteSwitch is an 8-channel toggle switch input unit, equipped with 8 toggle switches and 9 WS2812C RGB LEDs. It adopts STM32 as the main controller, supports I2C communication, and has two onboard **Port A** I2C interfaces. Multiple Unit ByteSwitch units can be **cascaded** to meet the needs of complex systems. It can detect toggle switch inputs and provide dynamic light status feedback, suitable for smart home control, gaming entertainment devices, educational development platforms, industrial status displays, and interactive exhibitions.

Features

- 8-channel toggle switch inputs
- 9 WS2812C RGB LEDs
- STM32 main controller
- I2C communication interface
- Development Platform
  - UiFlow1
  - UiFlow2
  - Arduino IDE

Includes

- 1 x Unit ByteSwitch
- 1 x HY2.0-4P Grove Cable (20cm)
- 1 x DIY Sticker

Applications

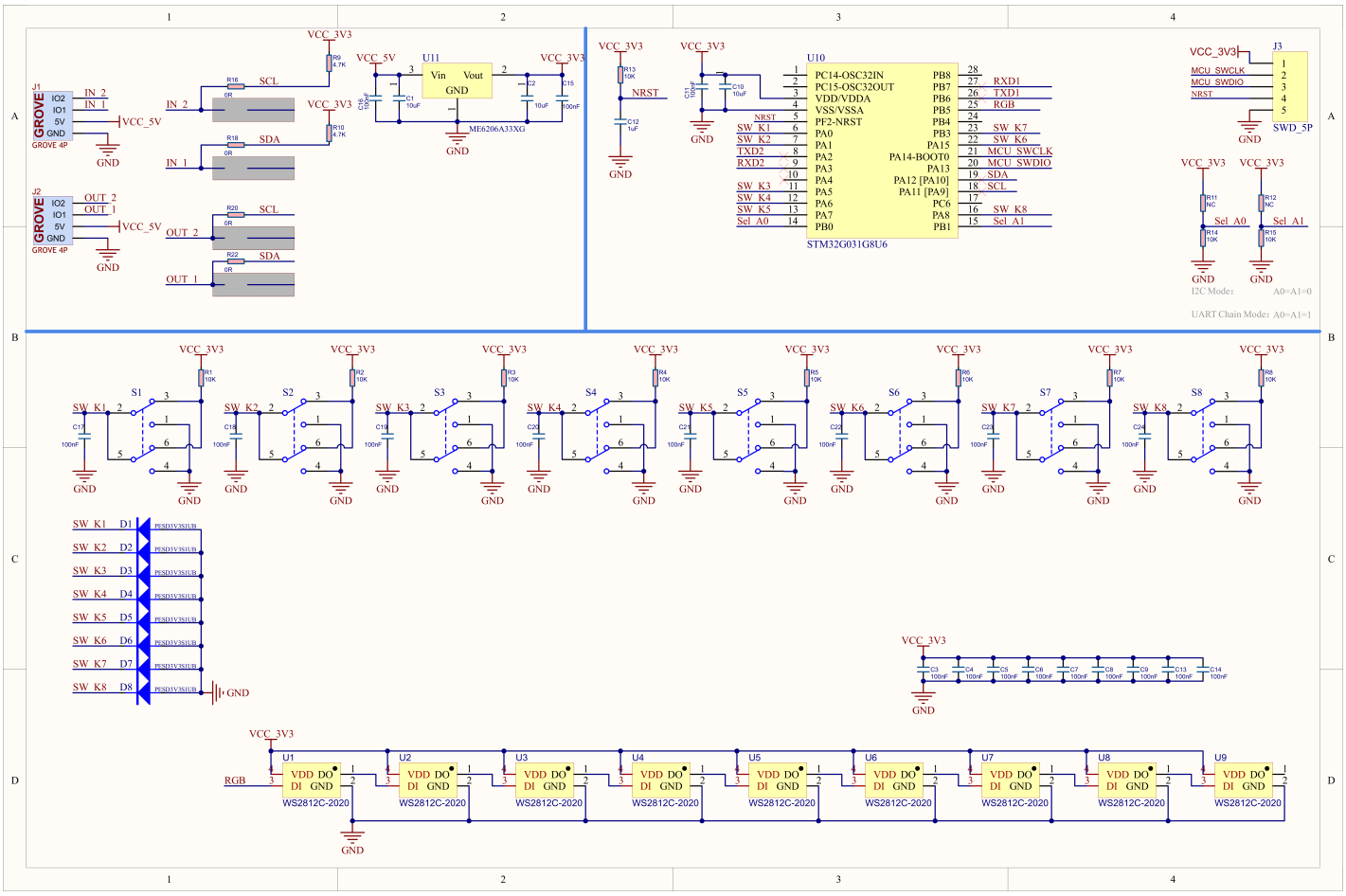
- Smart home control panel
- Game or entertainment device controller
- Educational and laboratory development platform
- Status control and feedback devices
- Portable device debugging tools
- Interactive exhibitions or scene control
- User interface for small instruments

Specifications

Specification	Parameter
MCU	STM32G031G8U6, 32-bit ARM Cortex-M0+ core, 64 MHz
Toggle Switch	8 independent toggle switches (DPDT)
RGB LED	WS2812C-2020 (9 pcs)
Interface	I2C @0x46
Grove Port	2 (I2C bus cascading expansion)
Standby Power	DC 5V@9.03mA
Operating Temp	0 ~ 40°C
Product Size	88.0 x 24.0 x 19.6mm
Product Weight	12.2g
Package Size	170.0 x 120.0 x 20.6mm
Gross Weight	29.3g

Schematics

- Unit ByteSwitch Schematics PDF



PinMap

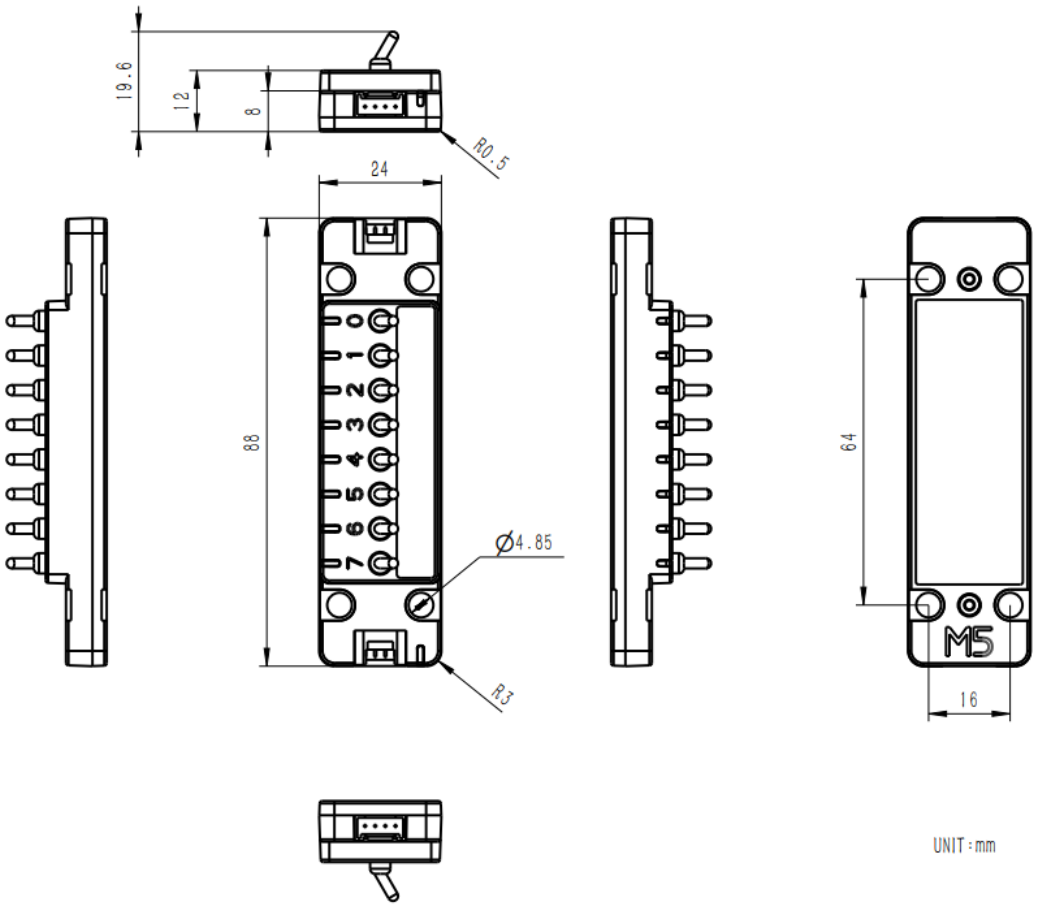
Unit ByteSwitch

HY2.0-4P	Black	Red	Yellow	White
PORT.A	GND	5V	SDA	SCL

STM32

STM32	PA0	PA1	PA5	PA6	PA7	PA15	PB3	PA8	PB5
KEY	SW_K0	SW_K1	SW_K2	SW_K3	SW_K4	SW_K5	SW_K6	SW_K7	RGB

Model Size



Structure

- Unit ByteSwitch Structure Files

Softwares

Arduino

- Unit ByteSwitch Arduino Driver Library
- Unit ByteSwitch Arduino Tutorial

UiFlow2

- Unit ByteSwitch UiFlow2 Docs

Internal Firmware

- Unit ByteSwitch Internal Firmware

Protocol

- Unit ByteSwitch I2C Protocol PDF

M5Stack Unit Byte Switch I2C Protocol

V1 (FW Version)
6/19/2024

REG MAP (Addr:0X46)			0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	note
Read	Byte of Switch Value (Each switch value is combined into one byte)	0x00 R	Byte of Switch Value																Byte of Switch Value: bit0: switch 0; bit1: switch 1; bit2: switch 2; bit3: switch 3; bit4: switch 4; bit5: switch 5; bit6: switch 6; bit7: switch 7;
	Switch Value (Each switch value is a separate byte)	0x60 R	Switch0	Switch1	Switch2	Switch3	Switch4	Switch5	Switch6	Switch7									SwitchX: 0~1
LED	LED Brightness & LED Show Mode	0x10 W/R	LED0 Brightness	LED1 Brightness	LED2 Brightness	LED3 Brightness	LED4 Brightness	LED5 Brightness	LED6 Brightness	LED7 Brightness	LED8 Brightness	LED Show Mode (Can be save to flash)							LED Brightness: 0~255 LED Show Mode: 0: Self define 1: Sys define
LED Self define	RGB888 (Self define)	0x20 W/R	LED0_ RGB-B	LED0_ RGB-G	LED0_ RGB-R		LED1_ RGB-B	LED1_ RGB-G	LED1_ RGB-R		LED2_ RGB-B	LED2_ RGB-G	LED2_ RGB-R		LED3_ RGB-B	LED3_ RGB-G	LED3_ RGB-R		
		0x30 W/R	LED4_ RGB-B	LED4 RGB-G	LED4_ RGB-R		LED5_ RGB-B	LED5_ RGB-G	LED5_ RGB-R		LED6_ RGB-B	LED6_ RGB-G	LED6_ RGB-R		LED7_ RGB-B	LED7_ RGB-G	LED7_ RGB-R		
		0x40 W/R	LED8_ RGB-B	LED8_ RGB-G	LED8_ RGB-R														
	RGB233[1](Self define)	0x50 W/R	LED0	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8								RGB233: bit6-bit7:R bit3-bit5:G bit0-bit2:B
LED Sys define	RGB888 Switch=0 define (Can be save to flash)	0x70 W/R	LED0_ RGB-B	LED0_ RGB-G	LED0_ RGB-R		LED1_ RGB-B	LED1_ RGB-G	LED1_ RGB-R		LED2_ RGB-B	LED2_ RGB-G	LED2_ RGB-R		LED3_ RGB-B	LED3_ RGB-G	LED3_ RGB-R		
		0x80 W/R	LED4_ RGB-B	LED4 RGB-G	LED4_ RGB-R		LED5_ RGB-B	LED5_ RGB-G	LED5_ RGB-R		LED6_ RGB-B	LED6_ RGB-G	LED6_ RGB-R		LED7_ RGB-B	LED7_ RGB-G	LED7_ RGB-R		
	RGB888 Switch=1 define (Can be save to flash)	0x90 W/R	LED0_ RGB-B	LED0_ RGB-G	LED0_ RGB-R		LED1_ RGB-B	LED1_ RGB-G	LED1_ RGB-R		LED2_ RGB-B	LED2_ RGB-G	LED2_ RGB-R		LED3_ RGB-B	LED3_ RGB-G	LED3_ RGB-R		
		0xA0 W/R	LED4_ RGB-B	LED4 RGB-G	LED4_ RGB-R		LED5_ RGB-B	LED5_ RGB-G	LED5_ RGB-R		LED6_ RGB-B	LED6_ RGB-G	LED6_ RGB-R		LED7_ RGB-B	LED7_ RGB-G	LED7_ RGB-R		
System	Flash write back	0xF0 W	Flash write back																write 1 save to flash
	IRQ Setup[2] (Can be save to flash)	0xF0 R/W		IRQ Setup															0: Disable; 1: Enable need to restart
	Firmware Version	0xF0 R															Version		Version: firmware version number
	I2C Address (Can be save to flash)	0xF0 R/W																Address	Address: 1~127

[1] RGB888->RGB233

```
uint8_t rgb888_to_rgb233(uint32_t color)
{
  uint8_t r_led, g_led, b_led, rgb_233;

  r_led = ((color >> 16) & 0xff);
  g_led = ((color >> 8) & 0xff);
  b_led = (color & 0xff);

  rgb_233 = ((r_led & 0xC0) | ((g_led & 0xE0) >> 2) | ((b_led & 0xE0) >> 5));

  return rgb_233;
}
```

[2] IRQ Setup = 1, SWDIO(PA13) will become IRQ pin. When the switch state changes, the IRQ pin is pulled low. After reading register 0H, IRQ will be pulled high again (high level when idle)
IRQ Setup = 0, IRQ Disable.

Video

- Unit ByteSwitch product introduction and case demonstration

U191 BYTESWITCH UNIT Video.mp4