

Unit Roller485-Lite

SKU:U182-Lite





Description

Unit Roller485-Lite is a brushless DC motor motion execution kit with integrated control functions, designed for efficient motion control. The product supports 6-16V DC power input (via the PWR485 interface) or 5V input (via the Grove interface), and can automatically adjust the power coefficient to ensure optimal performance. It features a built-in **FOC** closed-loop drive system, using a 3504 200KV brushless motor, with a maximum continuous phase current of 0.5A and a short-term current of 1A without forced cooling. The driver uses a magnetic encoder as feedback, supporting current, speed, and position triple-loop control to ensure precise control.

Additionally, the device is equipped with a 0.66-inch **OLED** display on the back to show real-time device status, and includes RGB indicators and function buttons for easy human-machine interaction. The product base is designed with LEGO-compatible mounting holes and M3 screw holes for quick assembly and integration. The **Unit Roller485-Lite** is fully open-source in both hardware and software, supporting motion control and parameter adjustment via **RS485** or **I2C** buses, and provides SWD and SWO debugging interfaces to further enhance developer flexibility. This product is used in robotic joints, motion control, industrial automation, and visual demonstration projects.

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Unit Roller485-Lite

This tutorial introduces how to use Unit Roller485-Lite, including device configuration, work mode settings, and wiring instructions.

Features

- Brushless DC motor control
- RS-485 communication / I2C communication control
- Integrated OLED display
- RGB indicators
- FOC closed-loop drive system

Includes

- 1 x Roller485 Lite Unit
- 1 x HT3.96-4P connector
- 1 x HY2.0-4P Grove cable (5cm)
- 6 x Friction pins
- 1 x Flange
- 1 x Bracket
- 1 x Motor Mounting Plate
- 1 x Hex key (2.5mm)
- 1 x Hex key (2mm)
- 6 x M3 nuts
- 2 x Hex socket head M3x14mm screws
- 4 x Hex socket head M3x14mm screws
- 2 x Hex socket head M3x12mm screws
- 4 x Hex socket head M3x5mm screws
- 1 x Single-ended terminal wire 5P debug cable

| Applications

- Robotic joint control
- Smart manufacturing equipment
- Visual demonstrations

| Specifications

Specification	Parameters
MCU	STM32G431CBU6@Cortex-M4, 128KB-Flash, 32KB-SRAM, 170MHz
Motor Type	D3504 200KV brushless motor@diameter: 41mm
Driver Chip	DRV8311HRRWR
Angle Sensor	TLI5012BE1000
Communication Interfaces	1x PWR-485 (HT3.96-4P interface)
	1x I2C (0x64)
Display	0.66-inch OLED display, resolution: 64 x 48, SPI communication
RGB LEDs	2x WS2812-2020
Motor Power	RS-485 (HT3.96-4P interface) power@6-16V
	Grove port DC 5V power
Load	Load: 50g, Motor speed: 2100rpm, Current: DC 16V/225mA
	Load: 200g, Motor speed: 1400rpm, Current: DC 16V/601mA
	Load: 500g (maximum load), Motor speed: 560rpm, Current: DC 16V/918mA
	No load: DC 16V/78mA
Standby Current	Grove port DC 5V power@70mA
	RS-485 (HT3.96-4P interface) power DC 16V@32mA
Noise	48dB
Output Torque	Grove port DC 5V power: 0.021N.m/0.2kgf.cm@current 350mA
	RS485 (HT3.96-4P interface) power: 0.065N.m/0.66kgf.cm@current 927mA
Operating Temperature	0 ~ 40°C
Product Size	40.0 x 40.0 x 40.0mm
Product Weight	71.0g
Package Size	105.0 x 76.0 x 54.0mm
Gross Weight	151.0g

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The main difference between Unit-Roller485 Lite and Unit-Roller485 is that Unit-Roller485 Lite does not have a slip ring expansion Grove interface or a top LEGO expansion interface.

Power Supply Voltage

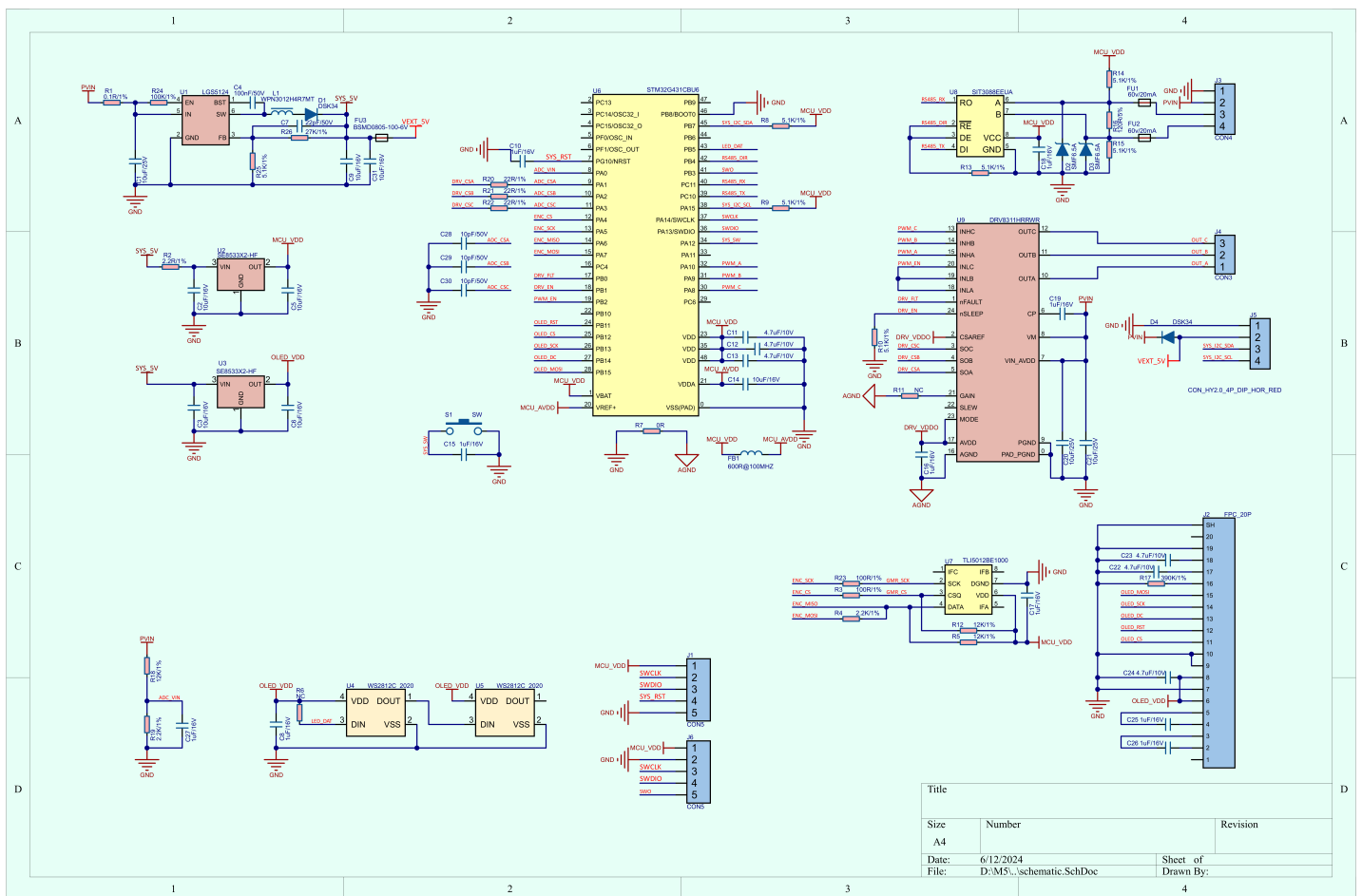
The power supply should not exceed 16V. If the voltage exceeds 18V, the motor fault code E:1 will be displayed, the motor will not work, and "Over Voltage" will be displayed with the LED light turning red.

Encoder Value and Rotation Angle

In absolute position mode, the encoder value of 36000 pos corresponds to 360°. Due to the fact that the mechanical installation angle and the encoder angle are not strictly aligned, there may be an error of approximately 2°.

Schematics

- Unit Roller485-Lite Schematics PDF



PinMap

Unit Roller485-Lite

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

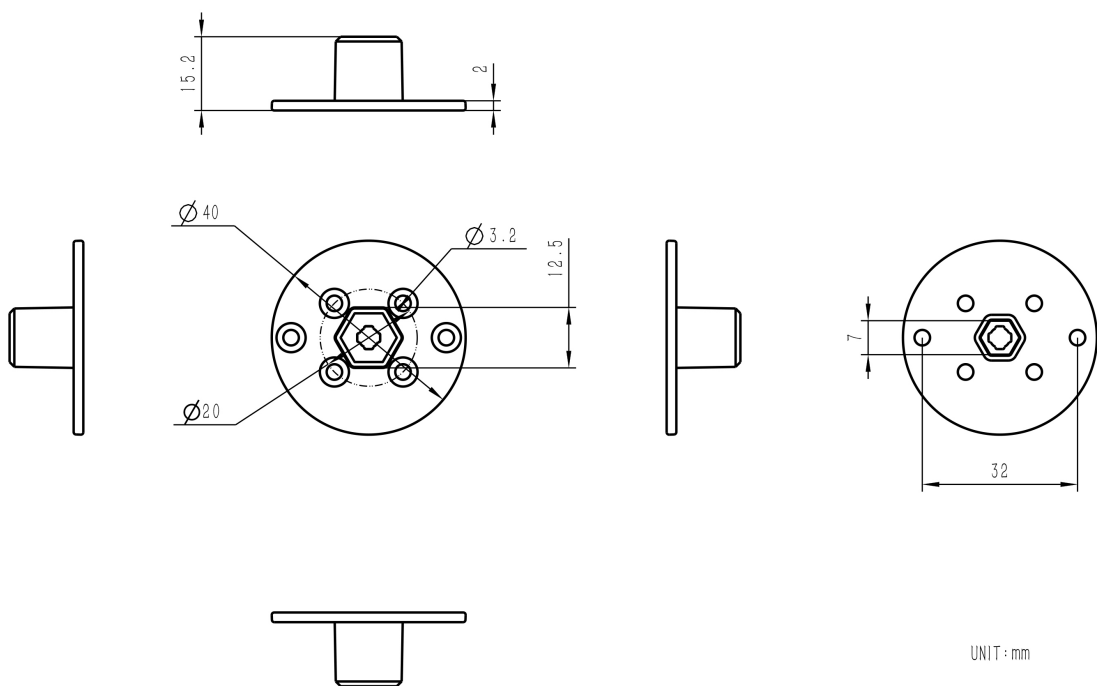
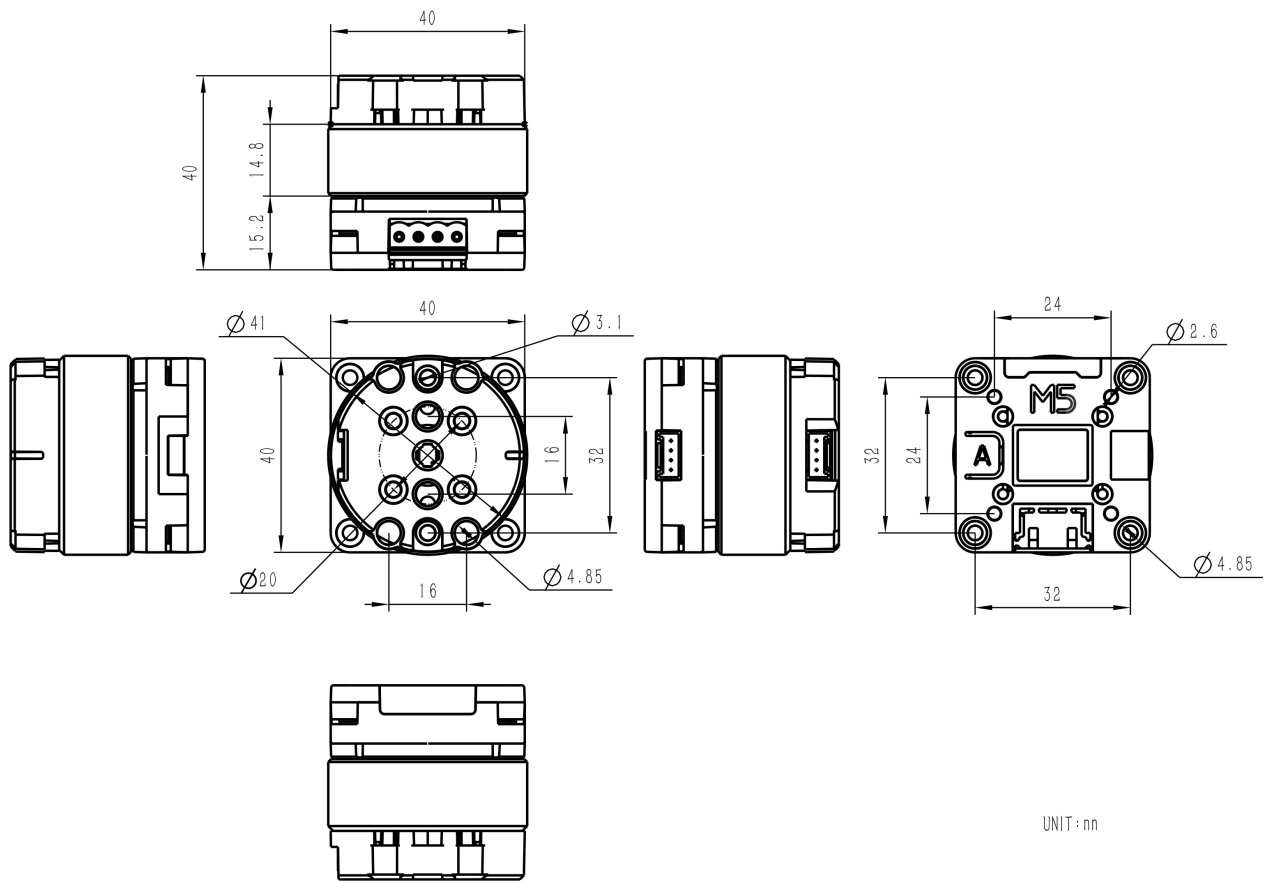
I2C, PWR485, RGB, Button

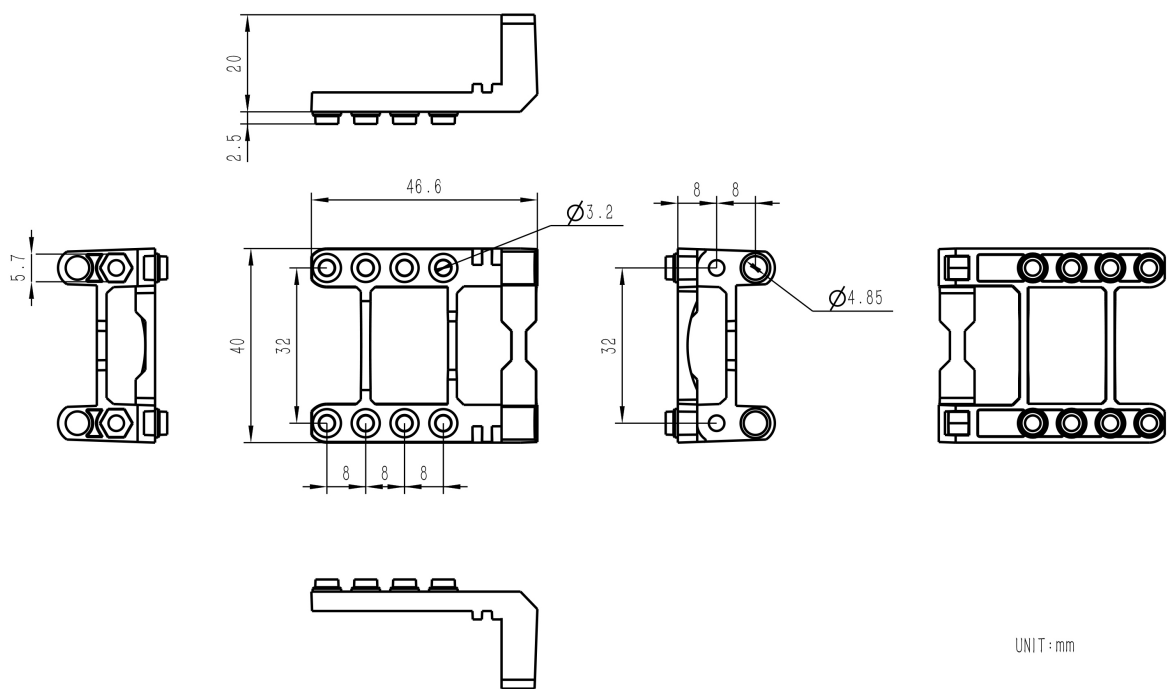
STM32G431CBU6	PA15	PB7	PC11	PC10	PB4	PB5	PA12
I2C	SYS_I2C_SCL	SYS_I2C_SDA					
PWR485			RS485_RX	RS485_TX	RS485_DIR		
WS2812C						LED_DAT	
Button A							SYS_SW

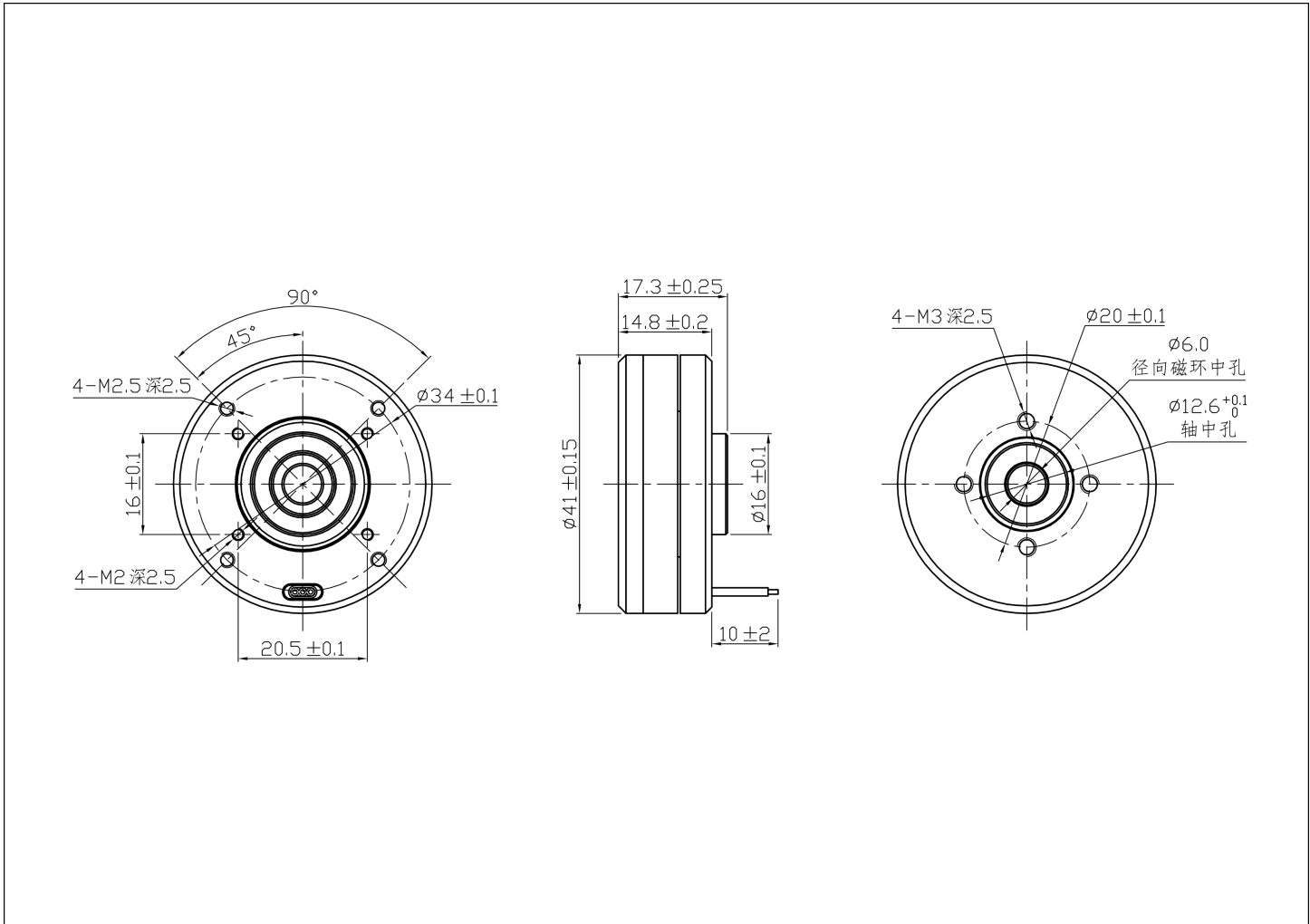
OLED

STM32G431CBU6	PB15	PB13	PB14	PB11	PB12
OLED	OLED_MOSI	OLED_SCK	OLED_DC	OLED_RST	OLED_CS

Model Size







Datasheets

- [Angle Sensor TL5012BE1000](#)
- [Motor Driver DRV8311HRRWR](#)

Softwares

Arduino

- [Unit Roller485 Arduino Library](#)

Internal Firmware

- [Unit Roller485 Internal Firmware](#)

Communication Protocols

- I2C Protocol
- [Unit Roller485-I2C Protocol](#)
- [Unit Roller485-I2C User Manual](#)
- RS485 Protocol
- [Unit Roller485-RS485 Protocol](#)

- [Unit Roller485-RS485 User Manual](#)

| Video

- Unit Roller485-Lite Product Introduction and Case Demonstration

[3e5ec07a60735d6943fa7659b7978182.mp4](#)