唯传科技
WINEXT TECHNOLOGY

M300C
LoRaWAN Module

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IOT 低功耗广域网与服务平台方案商
LPWAN OPERATOR PLATFORM FOR IOT

1. Product Brief

The M300C LoRaWAN module is a wireless communication module deeply developed based on ST's latest SOC LoRa chip. It has the characteristics of long distance, low power consumption, strong anti-interference ability and rich interfaces. This product is widely used in the Internet of Things industry. Under typical conditions, users can quickly deploy their application requirements by simply configuring through the serial port.

2. Major Characters

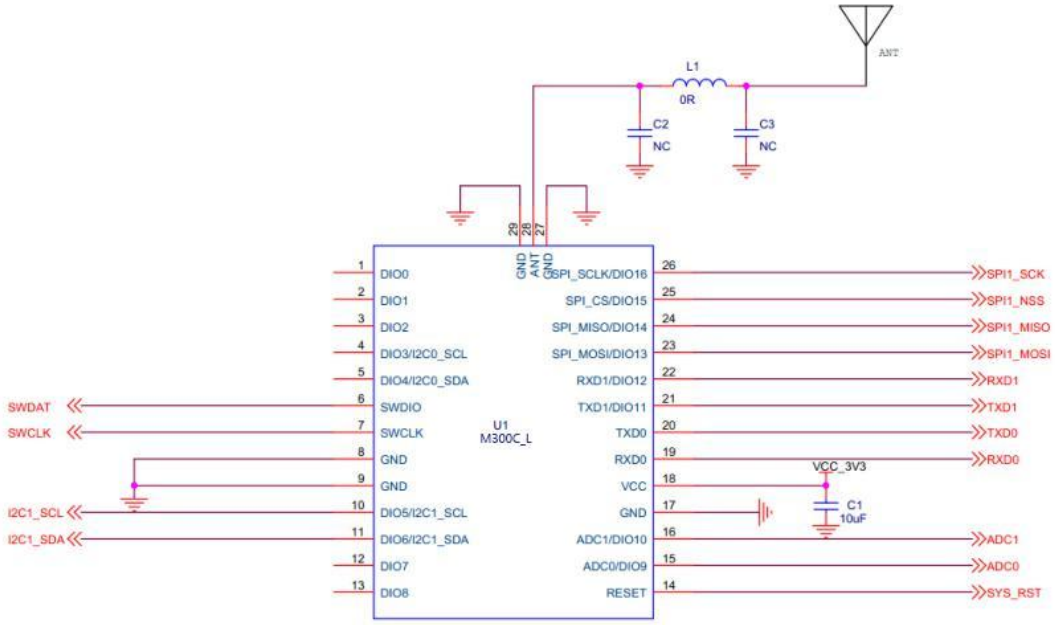
Software Features:

- Integrate standard LoRaWAN communication protocol, optional custom private protocol and Airnode protocol;
- The module adopts the interactive mode of AT command to configure, and the operation is simple. For the control of the peripheral interface of the module, only a few or even one command is needed to configure the peripheral interface function of the module;
- The serial port data is transparently transmitted. After configuring the transparent transmission mode, the data sent by the serial port can be directly transparently transmitted to the cloud.;
- Rich peripheral interfaces Provide Uart, SPI, I2C, GPIO, ADC interfaces ;
- The use of LoRa spread spectrum modulation technology has extremely high sensitivity, and the communication distance is up to 1KM - 10KM ;
- Adopt low-power serial port, can send and receive data normally in sleep mode, no need to wake up;
- Support serial port upgrade, wireless upgrade;
- Support serial port baud rate adjustable, output power adjustable and multiple communication rates;

Hardware Features:

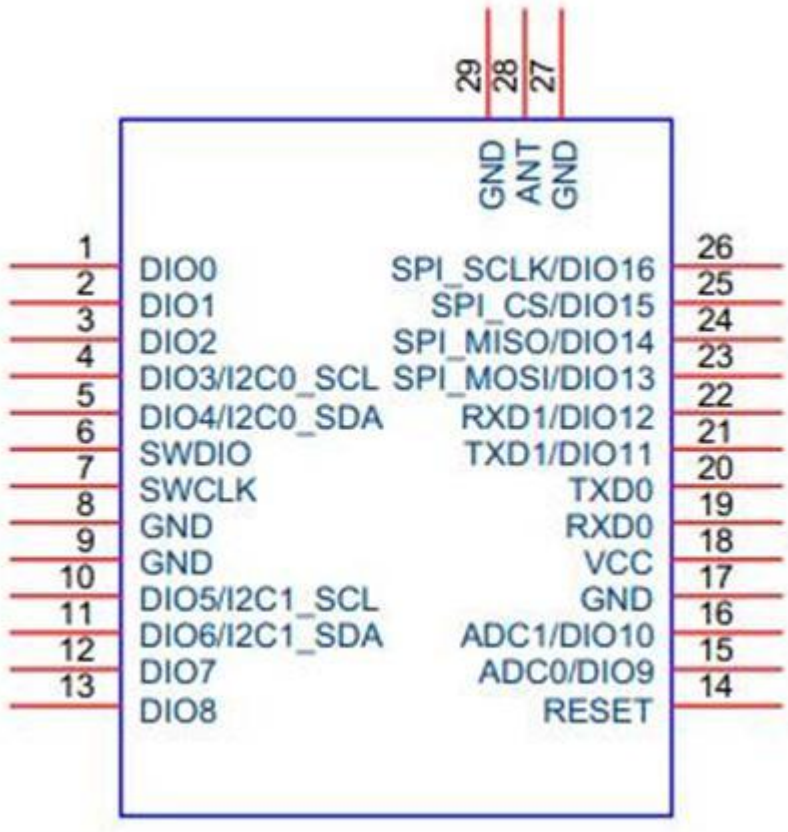
- Use the world's smallest package SOC chip: STM32WL, ARM Cortex-M4 core, built-in SX1262 function;
- LoRa spread spectrum modulation technology, receiving sensitivity up to -138dBm (BW = 125 kHz, SF = 12);
- Built-in high-efficiency PA, lower power consumption, maximum support 22dBm output, and can be configured in the range of 0~22dBm;
- The world's leading LoRa communication security guarantee, supports 128/256-bit AES hardware encryption, PCROP read and write protection, public key encryption using elliptic curve encryption engine;
- Comply with major global regulatory requirements: ETSI EN 300 220, EN 300 113, EN 301 166, FCC CFR 47 Part 15, 24, 90, 10, Japan ARIB STD-T30, T-67, T-108, and China regulatory requirements Wait;
- Support global frequency bands, covering domestic and foreign mainstream frequency bands: CN470-510MHZ, EU863-870 MHz, US902-928 MHz and all major sub-GHzISM frequency bands around the world;
- Excellent wireless spurious performance. Compared with the traditional SIP chips authorized by semtech wafers, the in-band spurs are small, the adjacent channel suppression ratio is high, and the mutual interference is small, which is suitable for large-scale equipment communication;
- Very low sleep current, working current as low as 3.0uA in sleep state ;
- Support scalable dual-core design, open a full-featured MCU for customer function development, facilitate user integration and reduce costs;
- Small size, industrial-grade design, good stability

3.Application Schematic



4.Module pin interface

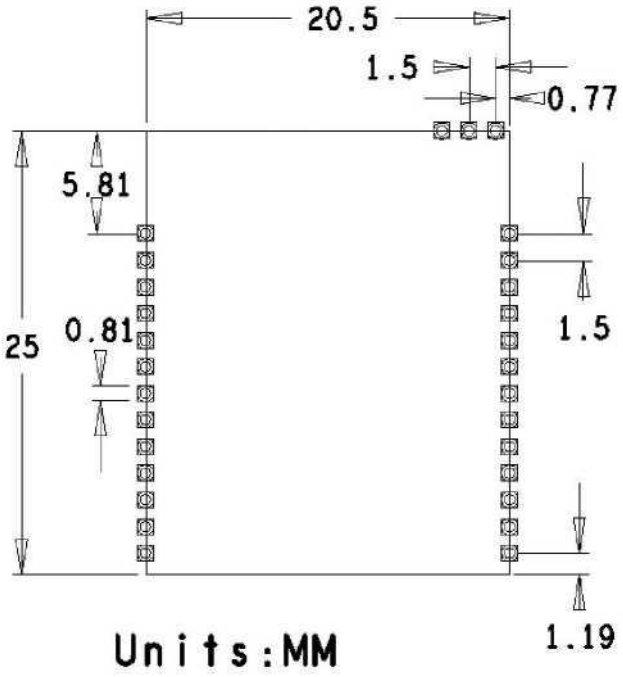
The M300C module provides a wealth of peripheral interfaces, including SPI, UART, ADC, GPIO, I2C, etc., as shown in the following figure:



M300C pin description

Item	Name	Other functions	DESC
1	DIO0	LED	Digital IO port 0, can be used for LED indication
2	DIO1	LED	Digital IO port 1, can be used for LED indication
3	DIO2	LED	Digital IO port 2, can be used for LED indication
4	DIO3	I2C0_SCL	Digital IO port 3, can be used as SCL of I2C0
5	DIO4	I2C0_SDA	Digital IO port 4, can be used as SDA of I2C0
6	SWDAT		Program download port
7	SWCLK		Program download port
8	GND		
9	GND		
10	DIO5	I2C1_SCL	Digital IO port 5, can be used as SCL of I2C1
11	DIO6	I2C1_SCL	Digital IO port 6, can be used as SDA of I2C1
12	DIO7	485DIR	Digital IO port 7, can do 485 direction control
13	DIO8	485DIR	Digital IO port 8, can do 485 direction control
14	RESET		reset, low level reset
15	DIO9	ADC0/485DIR	Digital IO port 9, can be used as ADC input port 0 or 485 direction control
16	DIO10	ADC1/485DIR	Digital IO port 10, can be used as ADC input port 1 or 485 direction control
17	GND		
18	VCC		Power supply, 3.3V power supply, place a 10uF capacitor nearby
19	RXD0		Serial 0 data input
20	TXD0		Serial port 0 data output
21	DIO11	TXD1	Digital IO port 11, can be used as serial port 1 data output
22	DIO12	RXD1	Digital IO port 12, can be used as serial port 1 data input
23	DIO13	SPI_MOSI	Digital IO port 13, can be used as MOSI of SPI
24	DIO14	SPI_MISO	Digital IO port 14, can be used as SPI MISO
25	DIO15	SPI_CS	Digital IO port 15, can be used as SPI CS
26	DIO16	SPI_SCLK	Digital IO port 16, can be used as SPI SCLK
27	GND		
28	ANT		The antenna port is connected with a 50 ohm microstrip line, and the PI type matching circuit matches the antenna.
29	GND		

5. Module Dimensions



6. Product Specifications

Symbol	DESC	Condition	Minimum	Standard	Max	Unit
VCC	Working Current	-	1.8	3.3	3.6	V
Top	Working Temp	-	-40	26	85	□c
Isleep	Sleep Cur	Stop2+RTC lower power mode	-	3.0	-	uA
Imcu	MCU Work Cur		-	5.4	-	mA
Itx	Emission Cur	RF Power=22dBm	-	118	-	mA
Irx	Receive current	MCU in receive mode	-	6.3	-	mA
Freq	Freq	Domestic	470	-	510	MHz
		Overseas	863	-	870	MHz
			902	-	928	MHz
Po	RF Output rate	软件设置 RF Power=22dBm	-	22.0	-	dBm
RX Sensetivity	Receive sensitivity	SF=12,BW=125KHz	-	-138	-	dBm
ACR	Adjacent Channel Suppression Ratio	SF=7	-	60	-	dB
		SF=12	-	72	-	dB
SIZE	Size	L*W	-	25*20.5	-	mm

7. Main application

• Smart Agriculture

Monitoring of water quality, carbon dioxide concentration, temperature, humidity, pests and diseases;

• Environmental monitoring

Real-time data transmission of temperature, wind speed, water level, flow, sediment and other data, giving full play to the characteristics of low power consumption, long distance and low cost;

• Smart meter reading

The monthly electricity consumption information of each household can be transmitted to the LoRa module, and the LoRa module can transmit the data to the remote control center through the gateway.

In addition, there are also a wide range of fields such as intelligent parking, intelligent irrigation, and photovoltaic array detection.