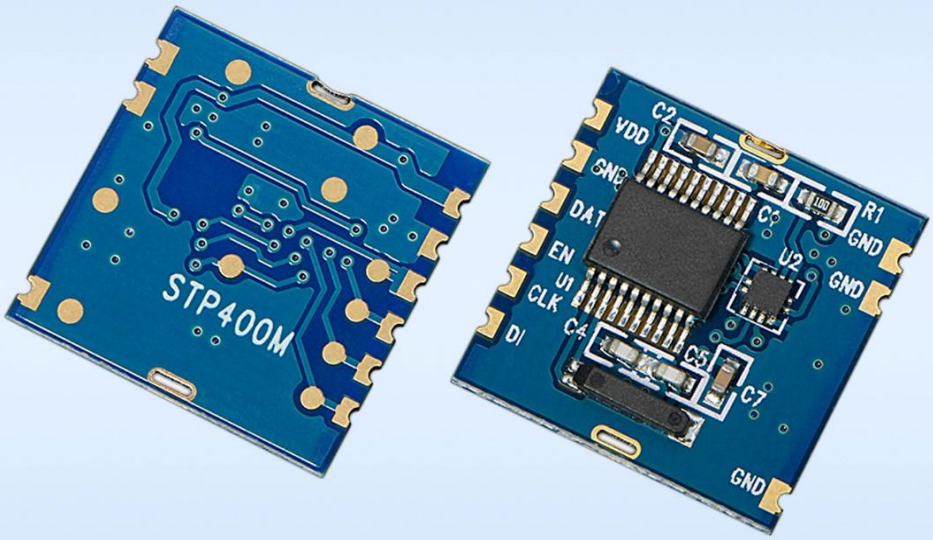
Product Specification



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Note: Revision History

Revision	Date	Comment
V1.0	2021-1-21	First release

1. Description

STP400M is a set of pedometer module integrated with cow motion algorithm. It adopts SPI interface output, the module uses acceleration sensor and low-power microprocessor chip, combined with high-precision step counting algorithm, can effectively record the movement of dairy cows, and is applied to pasture dairy cows and other livestock breeding management.

★ Note: The company's pedometer algorithm can be adjusted according to the customer's application. It can provide pedometers for shoes, watch pedometers worn on the hands, bracelet pedometers, and pedometers placed on the waist, The pedometer in the handbag. Please specify clearly when purchasing.

2. Features

- Recording 24hours pedometer data
- Highly accurate pedometer algorithm
- Ultra small size
- Low static current
- SPI Interface

3. Parameters:

Parameter	Condition	Performance			Unit
		Min	Typ	Max	
Working voltage		2.3	3	3.6	V
Working current	@3V		20		uA
Pedometer resolution			1		Step
Working temperature		-40		85	℃

4. Data format:

Data packet format output by the module:

0x25；byte0；byte1；byte2；byte3；byte5；.....byte29；0xDataCurrent0；0xDataCurrent1；0xHour；

0xMin；0xSec；0x00；0x00；checksum0；checksum1；0x0d；0x0a

A total of 42 bytes, 0x25 is the first byte, 0x0d, 0x0a is the last byte.

byte0；byte1；byte2；byte3；byte5；.....byte29；

There are 24 sets of step counting data, stored once every hour, the data length is 10bit, 240/8=30 bytes. The step data is saved by shifting, starting from byte29, 10bit data is moved in each time, and the last hour is stored in the high 2bit of byte29 and byte28, and so on. 0xDataCurrent0; 0xDataCurrent1 is the

current step data for less than one hour, 0xDataCurrent0 is the low byte, and 0xDataCurrent1 is the high byte.

0xHour; 0xMin; 0xSec is the module time. The module starts timing at 0:00:00 when it is powered on. When reading data from the module, you don't need to care about the module time data. Reading from the current time, the 30-byte data is the previous 24 hours data, which can be used to analyze the cow's movement status.

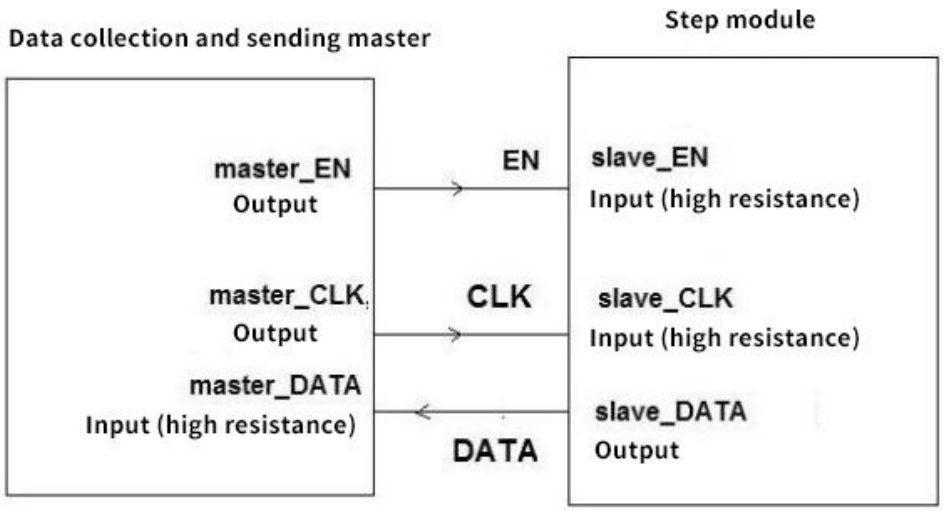
Checksum：checksum0；checksum1

(Checksum1, checksum0) = {0x25+byte0+.....0xSec}

5. Function description

SPI interface:

Communication interface：EN, DATA, CLK



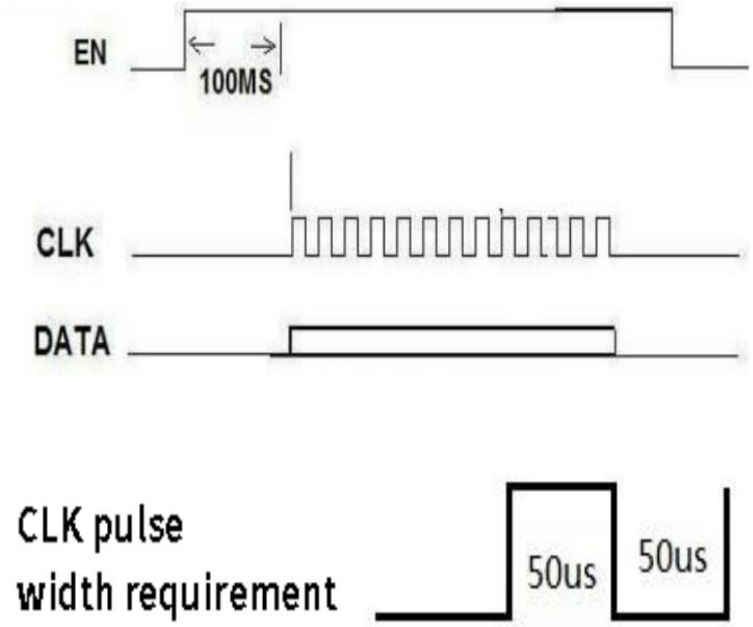
EN: Communication enabled input, high effective, usually low. After EN is high, it needs to delay 100ms to start communication.

DATA: Data output

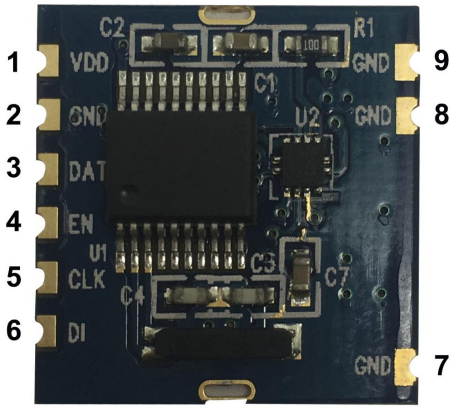
CLK: Communication clock signal input, CLK is high and DATA changes, CLK is low, the master reads DATA

Communication I/O setting requirements：The main control of data terminal is master, and the pedometer module is slave. After power-on initialization, master_EN, master_CLK are set to output mode, output is low, and master_DATA is set to high impedance input mode. Do not change the I/O mode after setting. At the pedometer module side, slave_EN, slave_CLK, are set as high-impedance

input. if the master side is also set as high-impedance input, the I/O status is unstable, which will cause the step not to be counted and the time of the pedometer module is not stable. The pedometer module may always be waiting for communication without running the timing program and accumulating steps program. The communication is processed first.



6. Pin definition:

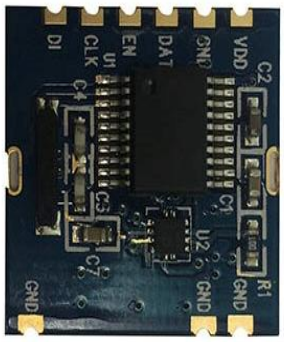


Pin number	Pin name	Description
1	VDD	Connected power supply
2,7,8,9	GND	Power ground
3.	DATA	Data output
4	EN	Communication enable input, high effective, usually low. After EN is high, it needs to delay 100ms to start communication
5	CLK	Communication clock signal input, CLK is high and DATA changes, CLK is low, the master reads DATA
6	D1	NC

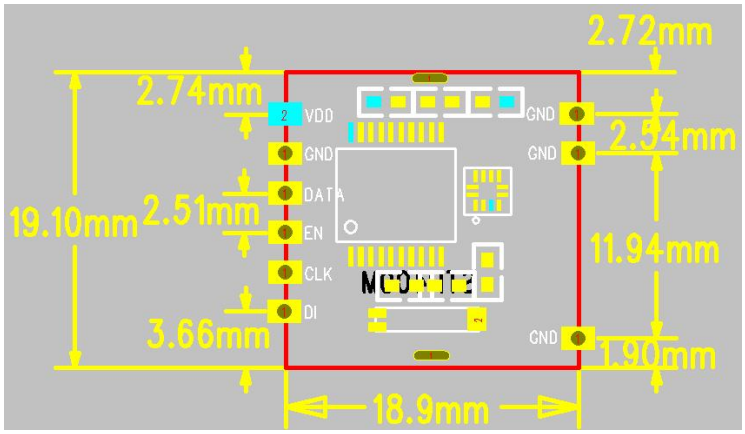
7. Module placement direction:

Module installation direction requirements:

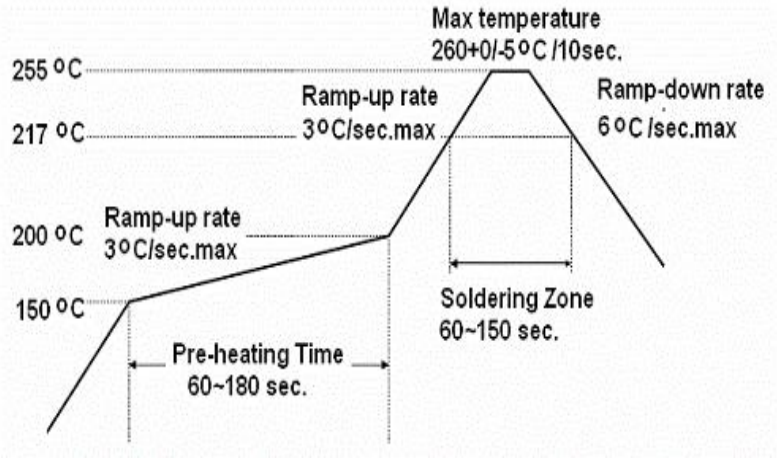
The cow collector is worn on the side of the cow's neck The position relationship of the module relative to the ground is shown on the right



8. Mechanical Dimension:



9. Soldering condition:



1) No more than two reflow soldering;

2) During the soldering process, do not apply pressure to the chip during the heating process;

3) After soldering, the circuit board cannot be bent