

Description:

The RCWL-1603 is an open ultrasonic ranging module with 3V-5.5V power supply. It contains a variety of working modes including UART, GPIO, PWM and UART AUTO OUT. Its temperature supplement adopts MCP9700 professional temperature measuring chip.

Features:

- 1>. 3V-5.5V wide voltage power supply.
- 2>. Ultra-wide measurement range of 2cm-500cm (measurement of flat wall).
- 3>. UART, GPIO, PWM and UART AUTO OUT.
- 4>. Provide temperature output (UART mode only).
- 5>. Standby mode (UART mode only).
- 6>. Temperature compensation.
- 7>. The SWIM interface of STM8S003 is set aside for module up grade.
- 8>. Lead-free process.
- 9>. Adopt the general environmental protection probe, can customize the use of high - quality reinforced environmental probe.
- 10>. Working temperature: -20 Celsius to 90 Celsius

Parameters:

No.	Parameter	Remark	Min. value	typical value	Max. value	Unit
1	Working voltage		3		5.5	V
2	3.3V working current			11	12	mA
3	5V working current			10	11	mA
4	Maximum detection range	Flat wall	400	500	800	CM
5	Working frequency			40		KHz
6	Blind area			2	3	CM
7	Detection accuracy			± 2		%
8	Resolution			1		mm
9	Detection Angle	Maximum directional Angle		±15		Degree
10	Output interface mode		UART/GPIO/PWM/UART AUTO OUT.			
11	Working temperature	Plastic shell probe (to be customized)	-20		60	°C
12	Working temperature	Aluminum shell probe	-20		90	°C

Pin Definition:

No.	Pin	Description
1	Vcc	3.3V-5V power supply
2	Trig	The GPIO mode is Trig, trigger signal.

	RX	The UART/UART AUTO OUT mode is serial port RX.
3	Echo RX	The GPIO mode is Echo, feedback signal. The UART/UART AUTO OUT mode is serial port RX.
4	Gnd	Ground
5	Swim	Swim pin of the STM8S003
6	MD/PWM	MD: Mode selection Before power on, the module is connected to ground, and then enter into setting mode after power on; Before power on, the module suspends, and then enter into working mode after power on.
7	Gnd	Ground
8	Rst	STM8S003 reset pin

Mode Setting Operation:

Mode setting command:

No.	Command value	Return value	Description
1	0X01	0XA1	Serial Port Mode
2	0X02	0XA2	GPIO mode, the same as HC-SR04
3	0X03	0XA3	PWM output mode
4	0X04	0XA4	Automatic serial port output
5	0X0F	Version	Output version

Setting pin: MD/PWM

Baud rate: 9600 N 1

Operation:

-- set the serial port mode

1>. MD/PD is connected to ground, can be connected with the ground foot.

2>. Power on.

3>. The baud rate of the PC terminal serial port is set to: 9600 uncheckbit 1 bit stop bit.

4>. Enter command value 0X01.

5>. The serial software will receive the set successful data 0XA1.

6>. Module setting is completed.

Model Definition:

1>. Serial port mode:

The serial port is connected with the module and input different commands to measure distance and temperature parameters.

Serial port mode command:

No.	Command value	Return value	Description
1	0XC1	Distance value BYTE1+BYTE2	Hexadecimal distance value, BYTE is high pin

2	0XC2	Temperature BYTE1	Decimal temperature value
3	0XC3	0XC3	Ranging part, power off
4	0XC4	0XC4	Ranging part, power on

Operation:

--Test distance

A>. MD/PD pin suspends

B>. Module is powered on

C>. The baud rate is set to: 9600, no check digit, and 1 stop bit.

D>. Enter the command value and enter 0XC1.

E>. Serial software will receive data, such as 06,0C; the test distance is 1548mm.

--Test Temperature

A>. MD/PD pin suspends

B>. Module is powered on

C>. The baud rate is set to: 9600, no check digit, and 1 stop bit.

D>. Enter the command value and enter 0XC2.

E>. Serial software will receive data, such as 12; the test temperature is 12 Celsius.

2>. GPIO mode:

Consistent with HC-SR04 operation. Fully compatible with HC-SR04 command.

3>. PWM mode:

MD/PWM pin output with distance equal to the space ratio signal.

4>. AUTO GPIO mode:

The serial port always outputs the measured distance value, which is generally used for test modules.

5>. Version:

Serial port output version signal.