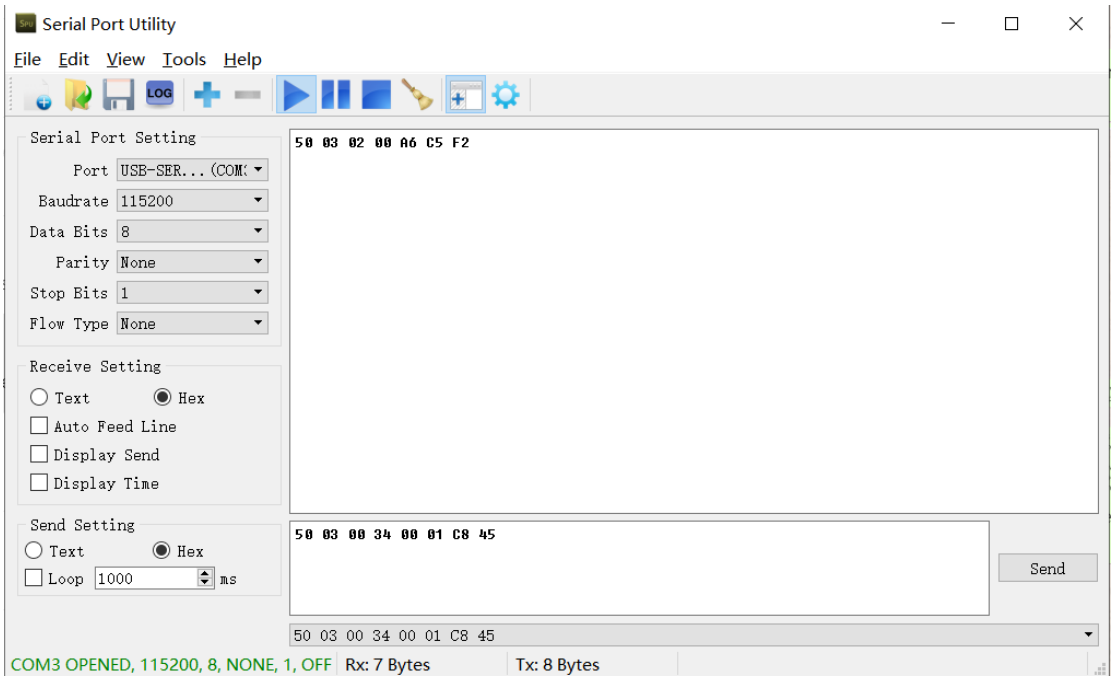
1 WT53R-485 Datasheet

1.1 Serial port mode description

The sensor returns data as shown below:



Example: d: 490mm

State: 7, No Update

d: 490mm means measuring distance

State: 7, No Update indicates the status bit of the measurement data

Modbus protocol description

The sensor adopts the industry standard Modbus protocol, and the specific read and write format is as follows:

Modbus communication, the command number is divided into two kinds of read command and write command, 0x03 (read command) reads the corresponding register data, 0x06 (write command) writes data to the corresponding register.

PC software sends data frame

ID	Command number	Register address high	Register address low	Read length high	Low bit of read length	CRC check high bit	CRC check low bit
ID	CMD	RegH	RegL	LenH	LenL	CRCH	CRCL

Example: The module address is 0x50 (default), the read command is 0x03, the register 0x34 (measurement distance), the length is one bit.

Command: 50 03 00 34 00 01 C8 45

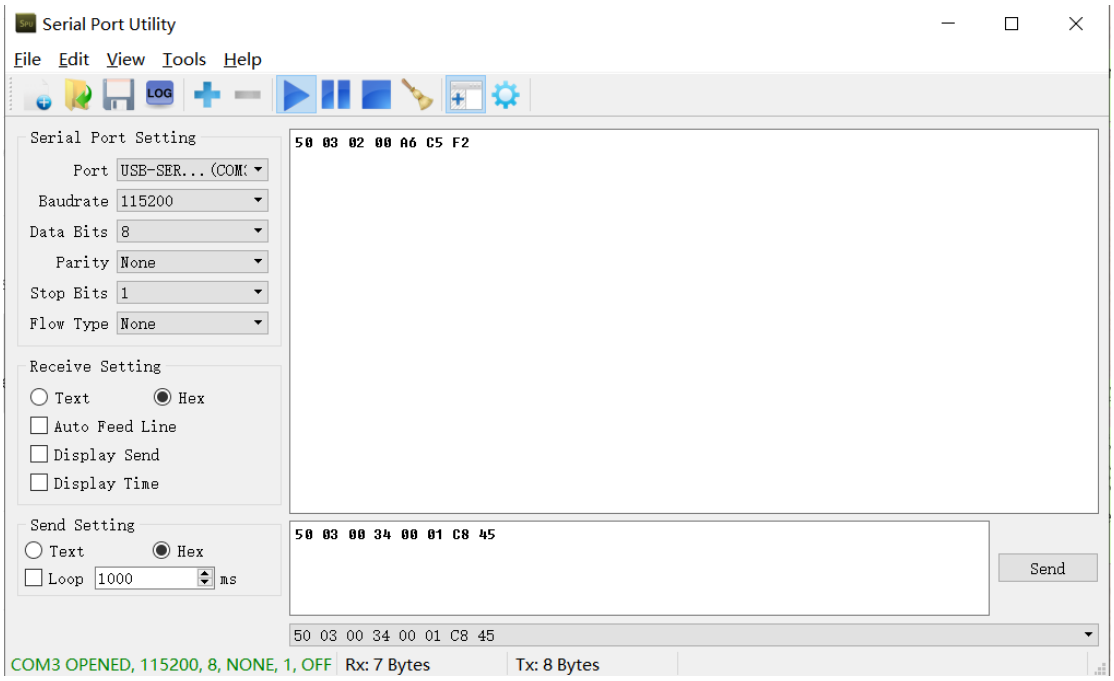
Module reply frame

ID	Command number	Data length	Data bit 1	Data bit 2		CRC check high bi	CRC check low bit
ID	CMD	LenH	DataH	DataL	.....	CRCH	CRCL

Example: The module address is 0x00, the read command is 0x03, and the length is 2 bits. replied as below

Command: 50 03 02 00 1C 44 41

Example: Read the measured distance, as shown in the figure below:



Send command: 50 03 00 34 00 01 c8 45

Accepted data: 50 03 02 07 0B 06 7F

Data analysis 0x50 is Modbus address, 0x03 read command, 0x02 data length, 0x07 0x0B measurement data corresponding to 0x070B is decimal 1803, measuring distance is 18036mm, 0x06 0x7F is CRC check bit.

1.2 Modbus register document

Register name	Register address	Send format	Explanation
System recovery	0x00	MODADDR 06 00 00 00 01 CRCH CRCL	Write 0x01, the sensor restores the default setting
Return rate	0x03	MODADDR 06 00 03 00 00 CRCH CRCL	Write 0x00, the return speed is 0.1Hz
		MODADDR 06 00 03 00 01 CRCH CRCL	Write 0x01, the return speed is 0.2Hz
		MODADDR 06 00 03 00 02 CRCH CRCL	Write 0x02, the return speed is 0.5Hz
		MODADDR 06 00 03 00 03 CRCH CRCL	Write 0x03, the return speed is 1Hz
		MODADDR 06 00 03 00 04 CRCH CRCL	Write 0x04, the return speed is 2Hz
		MODADDR 06 00 03 00 05 CRCH CRCL	Write 0x05, the return speed is 5Hz
		MODADDR 06 00 03 00 06 CRCH CRCL	Write 0x06, the return speed is 10Hz
		MODADDR 06 00 03 00 07 CRCH CRCL	Write 0x07, the return speed is 20Hz
		MODADDR 06 00 03 00 08 CRCH CRCL	Write 0x08, the return speed is 50Hz
Baud rate setting	0x04	MODADDR 06 00 04 00 00 CRCH CRCL	Write 0x00, baud rate 2400
		MODADDR 06 00 04 00 01 CRCH CRCL	Write 0x01, baud rate 4800
		MODADDR 06 00 04 00 02 CRCH CRCL	Write 0x02, the baud rate is 9600
		MODADDR 06 00 04 00 03 CRCH CRCL	Write 0x03, the baud rate is 19200
		MODADDR 06 00 04 00 04 CRCH CRCL	Write 0x04, the baud rate is 38400
		MODADDR 06 00 04 00 05 CRCH CRCL	Write 0x05, baud rate 57600

		MODADDR 06 00 04 00 06 CRCH CRCL	Write 0x06, baud rate 115200
		MODADDR 06 00 04 00 07 CRCH CRCL	Write 0x07, baud rate 230400
		MODADDR 06 00 04 00 08 CRCH CRCL	Write 0x08, baud rate 460800
		MODADDR 06 00 04 00 09 CRCH CRCL	Write 0x09, the baud rate is 921600
WT53R timing preset time (it is not recommended to modify the default value 200)	0x07	MODADDR 06 00 07 TIMEBUDGETH	TIMEBUDGET: 20-1000 milliseconds can be changed to 0x0014-0x03e8
WT53R measurement interval (it is not recommended to modify the default value of 50)	0x08	MODADDR 06 00 08 PERIODH PERIODL CRCH CRCL	PERIOD: 1-1000 milliseconds can be changed 0x0001-0x03e8
ID setting	0x1A	MODADDR 06 00 1a 00 MODADDRL CRCH CRCL	Write 0x00~0xFE
Measurement data	0x34	MODADDR 03 00 34 00 01 CRCH CRCL	Read, distance high 8 bits and distance low 8 bits
Output state	0x35	MODADDR 03 00 35 00 01 CRCH CRCL	Read: 0x07, sensor No Update
			Read: 0x00, sensor Range Valid
			Read: 0x01, sensor Sigma Fail
			Read: 0x02, sensor Signal Fail
			Read: 0x03, sensor Min Range Fail
			Read: 0x04, sensor Phase Fail
			Read: 0x05, Sensor Hardware Fail
Measurement mode	0x36	MODADDR 06 00 36 00 00 CRCH CRCL	Write 0x00, short distance (Up to 1.3m, better environmental immunity)
		MODADDR 06 00 36 00 01 CRCH CRCL	Write 0x01, middle distance (Up to 3 meters)
		MODADDR 06 00 36 00 02 CRCH CRCL	Write 0x02, long distance mode

			(Up to 4 meters)
Calibration Mode	0x37	MODADDR 06 00 37 00 04 CRCH CRCL	Write 0x04, enter the calibration state
		MODADDR 03 00 37 00 01 CRCH CRCL	Read: 0x01, start calibration
			Read: 0x02, calibration failed
			Read: 0x03, calibration is complete
System mode	0x38	MODADDR 06 00 38 00 00 CRCH CRCL	Write 0x00, sensor normal mode, automatic return
		MODADDR 06 00 38 00 01 CRCH CRCL	

2 Application

Drone

Robot

Smart device