

Technical parameters:

interface: 3.3V -5V / TTL 232 three-wire serial interface (ie, the microcontroller UART port, **please do notDirect connection RS232** interface) . Baud rate: 30hz Version 1 15 .2khz, other version 19.2khz.

1 start bit + 8 data bits + 1 stop bit, no parity, no flow control.

Supply voltage: . DC2V-3 3 V; (recommendation 3V power supply)

Power flow: when DC3V, standby <2mA, measure: 40 Version ° C <120mA, 60 version ° C <1 4 0mA

Range: From the front-end module, 0.03-60 m; (can be customized to 100 meters)

Measurement speed: 0.1s, 0.3s, 0.3s-4S , 4S ; version 30hz 30hz increase continuous measurement;

Typical error: (**typical measurement conditions** : 40 ° C Version: 0-40 ° C, 60 ° C version: 0 50 ° C, interior white walls, **still Measured** from the front of the module **15cm to 20 meters** .)

F / D / M command < ± 3mm, through the correction of up to ± 1.5 mm; (15cm-10cm from the front of the module Range, error < ± 3.3 mm; range 10 cm-3cm error is about ± 3.3 ~ ± 5 mm)

H / V command < ± 4 mm; (supported mobile measurement error is estimated to be 5-20mm) ;

Storage temperature: -20--60 ° C

Temperature: 40 ° C version: - 2 0 - 40 ° C, 60 ° C version: - 20 - 6 0 ° C;

Maximum size: 75mm * 50mm * 20 mm thick. (Removing the buzzer thickness 18mm)

Measurement error Description:

Mainly includes the following aspects:

1. **Random error:** namely measurement error caused by random fluctuations, the unit in **typical conditions** under static measurement fluctuation is:

H instruction $< \pm 1.5\text{mm}$; F / D command $< \pm 0.8\text{mm}$; M instruction $< \pm 0.5\text{mm}$.

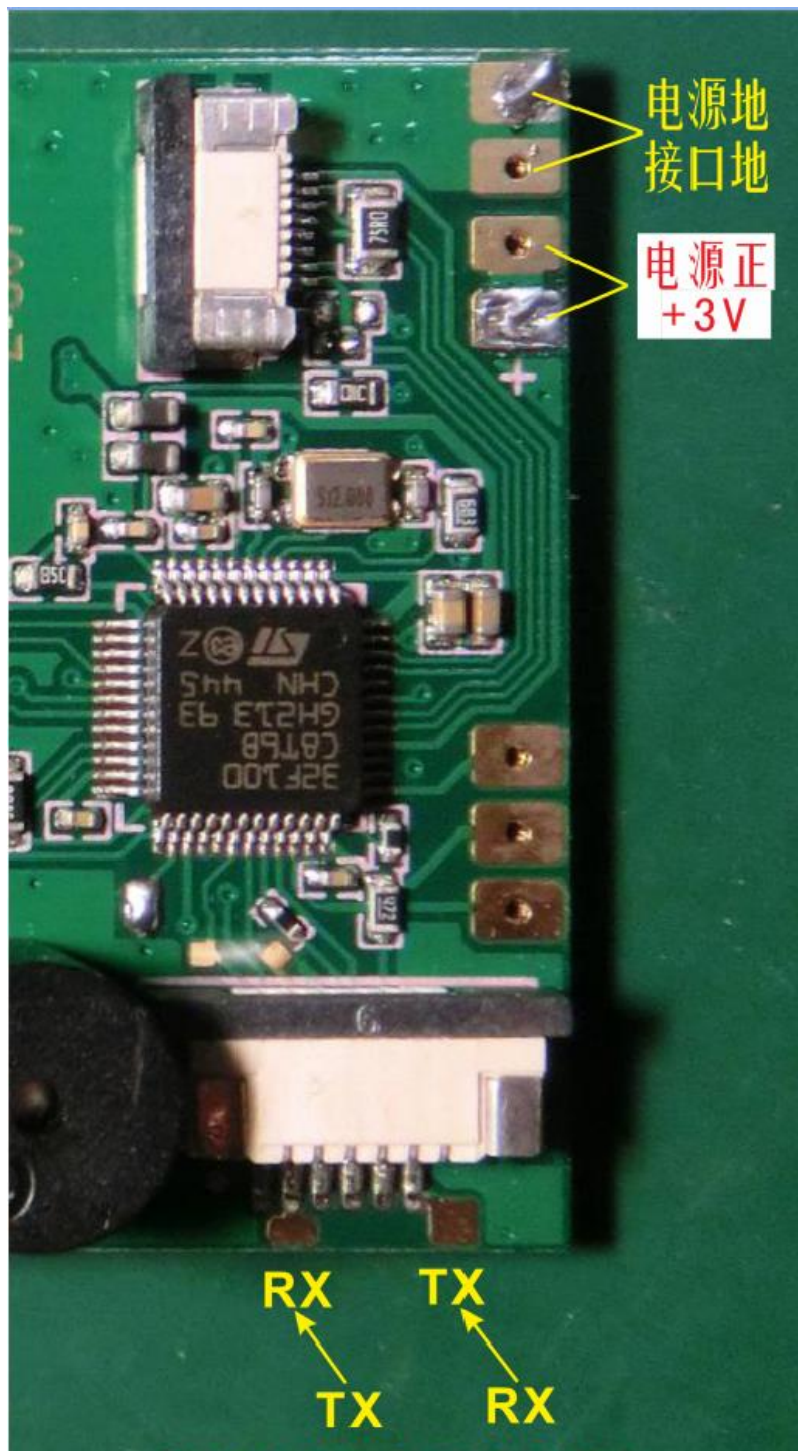
2. **Non-linear error:** the equivalent of a ruler scale error caused by uneven. This machine is $< \pm 0.7\text{mm}$.

3. **Temperature error:** namely change under different temperature measurement values when using the unit $< \pm 0.1 \text{ mm} / ^\circ \text{C}$.

4. **Interference error:** light interference, error electromagnetic interference, power supply instability and other external factors.

(Some people even put random fluctuation range of numerical resolution called accuracy, please pay attention to identify.)

hardware connection diagram:



hardware installation

1 , Do not loosen the four screws of the board, can not be used for fixing the module, it is precise focus after commissioning fixed, loose and force are likely to cause irreparable out of focus problem!

Fixing the module can only be used out of two holes extending ears, and you want to avoid in the compression screw for two ears forming torque. Note the assembly to avoid another screwdriver lever vigorously to the circuit board edge.

Do not add the obvious external to the circuit board or extruded, twisted optical structure. End of the circuit board solder pin holes and do not be hard-wired with other boards, because the relative position of two fixing holes of each module is not consistent with the circuit board, and the tail swing range maximum. Preferably direct wire leads.

Modules should not be long-term use in high vibration environments. If you install in a significant vibration environment, the front head should also have a certain soft fixed .

2, the circuit board part of the hardware connection diagram shown in the photo to the left is not as sensitive areas. Wherein the front portion can not have metal objects close to the circuit board inside the 15mm, and avoid 100M ~ 1GHz range of electromagnetic radiation; the back part of the pulse of radiation (such as switching power supplies) 1MHZ less sensitive.

Therefore, if the module is equipped with a user-circuit board assembled together, and that the user and the discharge circuit board is preferably placed behind the rear end modules. If you have to

overlap, the **front** should not overlap in the sensitive area above 15mm, **the back** can not overlap with sensitive areas, or overlap can not have a circuit or component, only no current or blank panels.

outdoor use

1, **the module decreased daytime outdoors in measurement capability, especially under the sun.** So mobile measuring more than 10 meters

(F / H instructions), or 20 m above the static measurement (D / M command) , it should be with a dedicated reflector plate or Reflective film. But **when measured within 10 meters reflective film may cause signal is too strong.**

2, **sunlight** module lens section, or the laser beam exit direction angle of less than 45 degrees to direct the reflective surface , are likely Cause can not be measured. **Rain barrier** will cause can not be measured.

3, both indoor and outdoor, avoid reflective surface of **the mirror translucent or transparent** , unless special use.

4, excluding 2,3 Restrictions situation, with special reflective plate, outdoor 60 m away from the stationary measurement accuracy up 4 ~ 6mm (D instruction, speed 1 ~ 2s, or M command).

5, phase ranging is accomplished by measuring the accumulation phase information, so **both indoor and outdoor** , for the phase of the laser Ranging, interference light, the stronger, the faster the speed, the greater the change during a distance measurement, the measurement

is not conducive, It will lead to reduced accuracy or can not be measured, and may even measured error value.

Explanations:

(Transceiver are all ASCII character format, **blue characters** to command, to be capitalized, character module postback received, and respond to instructions, "\\\" as described later.reply at the end of both hex "0D 0A " carriage return line feed)

, OK!

: Er02 ! \\ power module when the detected temperature voltage normal unsolicited OK , it is not normal hair Er + error code .

 \\ because just on electricity, easy pass turnover. **Power is not sent to the address version.**

C , OK! \\ turn off the laser, it can also be used to test the serial port is normal.

D : 0.3319m, 0095, 28.4`C, \\ adaptive measure, 0.3s ~

4S . 19.2k communication about the need 1 6 ms .

 \\ reply reads: ": distance, **the signal quality of the reference**, the internal temperature ."

 \\ distance value is less than 10 meters from the top of the display space.

 \\ signal quality value **the smaller the better** . 304 within a file at the fastest 0.3sconduct

 \\ measure, 2500 or more, the data should be checked using.

\\ by a large number of measured to determine the specific use of the normal range, so that

\\ to monitor and address abnormal situations.

D : ER0 8 ! \\ measurement error, ": Er + error code! "

F : 1.6378m, 0101, 29.0`C, \\ forced 0.3s measurement. Respond with command **D** .

H : 1.6381m, 0263, 29.0`C , \\ forced 0.1s measurement. Reply format with instruction **D** .

\\ reply reads: ": distance from the reference signal strength, the temperature inside the machine, "

\\ signal strength value the bigger the better . 15 The following principle for this directive.

\\ by a large number of measured to determine the specific use of the normal range, in order to

\\ anomalies for monitoring and treatment.

M : 0.3317m, 0103, 28.7`C, \\ fixing the maximum measured length 4s measured. The other with the instruction **D** .

O , OK! \\ open laser.

C , OK! \\ off the laser.

S : 28.5`C, 3.0V \\ view the state ": internal temperature, supply voltage "

V instruction only 30hz version has, for the continuous measurement, start the first measuring approximately 0.1s , after the second about 30 times:

V : 1.5128m, 0240, 29.4`C, \\ 30hz continuous measurement. Reply format and content with instructions **H** .

: 1.5126m, 0238, 29.5`C,

: 1.5127m, 0237, 29.5`C,

, OK!

\\ C instruction to end measurement.

Note:

1. reply, the **temperature** is negative then the first is "-", a time when compared to space.
2. The **temperature, voltage gauge**, except "S" command to query the status, receive any other characters will reply received character and Er + error code;
3. **Address version** shall be provided after the address can be used, after setting the address and select address in order to perform the aforementioned directive.

Referring specifically address Edition documentation.

4. **F instruction** for needs of a given good situation reflected signal measuring speed, or slow-moving target, and.

V / H instruction is estimated to support non-hopping movement speed of 2 m / s, suitable for indoor and outdoor within 20 meters or within eight meters, the reflected signal is very good, and the need for rapid measurement accuracy is not so high in the case (error of about 5-20mm) . (With special reflective film, it is possible to increase the accuracy and application of distance, but the distance is less than 10 meters may signal is too strong.)

The accuracy and reliability of the mandatory instructions on many factors related to the specific use of the environment, the above is just a rough estimate, if the conditions are close to, **users can simulate actual use conditions to determine the suitability measured** .

When a measurement period is greater than 3cm from the mutation , on erroneous measurements may occur. So the user software must signal quality and measured values are sufficient to monitor and analyze filtering. Rapid measurement using instruction, the key can be extracted to meet the needs of the information, rather than requiring each measured value pairs.

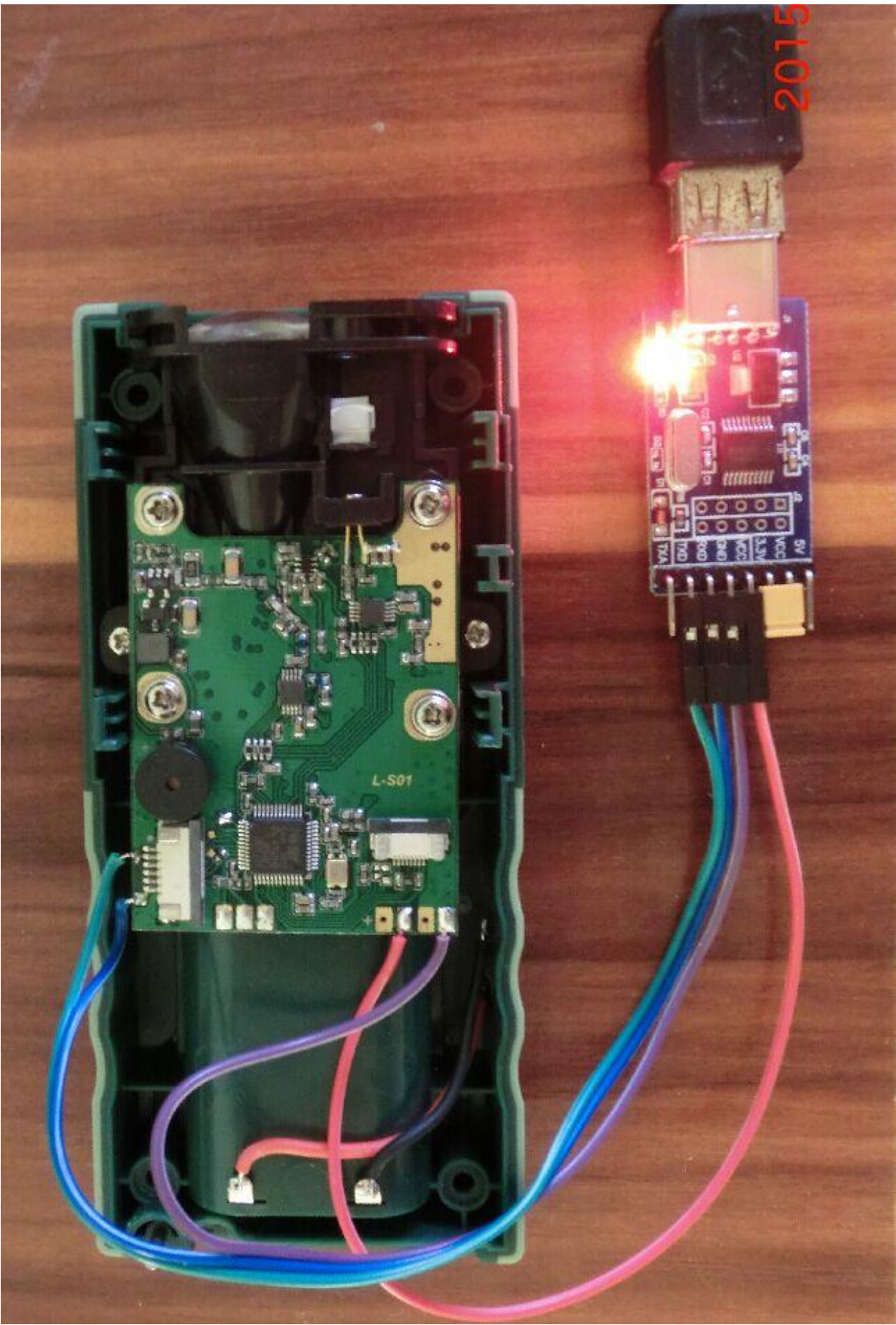
5. D / M command for static measurements. D instruction will make their own determination based on the measurement of length measurement of the signal quality, poor quality is being given, combined with user software for signal quality value judgments, can get more reliable measurements.

Error Code Description:

01 : power supply voltage is low; $<2V$, can not open the laser and measurement ;
02 : High power supply voltage; $>3.3V$, can not open the laser and measurement ;
03 : Temperature too low: $<-20^{\circ}C$, can not open the laser and measurement ;
04 : temperature: $>+41^{\circ}C$ ($60^{\circ}C$ Version $>+61^{\circ}C$) , can not open the laser and measurement ;
05 : Data overflow;
06 : Data Error;
07 : incident light is too strong;
08 : The signal is too weak;
09 : signal is too strong;
10-14 : hardware error;
15 : shaking too large;
16 : Internal voltage is too low;
17 : Internal voltage is too high;
18 : a short distance: the distance from the front of the module $<3cm$;
19 : Distance-range;

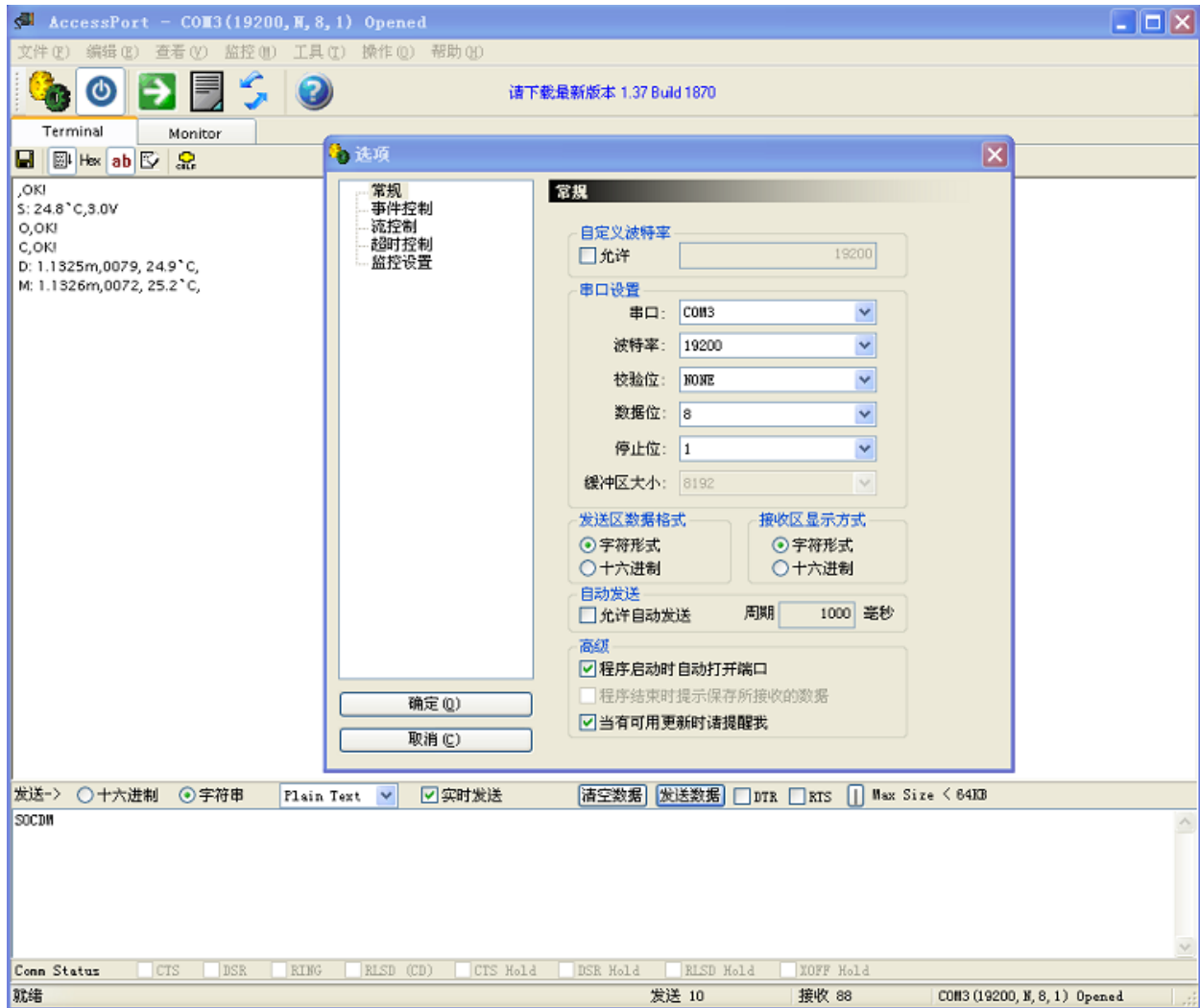
connected to the computer by giving converters for testing:


If your computer has a USB port more than 250mA load capacity, and you are willing to take the risk of direct power supply converter may damage the computer port, giving the converter according to the following figure may be connected to the computer for testing. Converter board and no separate power chip tantalum electrolytic converter should not be used to block power converter, but with the 5th two alkaline batteries or 3V DC power supply, this time must not be connected to VCC line (shown in red line). Official product is not recommended to use 3.3V power supply, and the use of 2.8V-3.1V power supply voltage.



serial debugging assistant settings Illustration:

(version 30hz should be set to 115200 baud)




Point  to open the 'Options' menu, when you direct a computer RS232 serial port to TTL232 serial port, then the election corresponding COMx;

if it is with USB transfer TTL232 serial words , you must first install the converter chip driver options inside 'serial' general Option COM3 (see the specific numbers can plug the converter in the computer after the

"Device Manager" which above ) ;

baud / parity bit / data bits / stop bits as shown in settings, sending area and receiving area selected 'character in the form of' After setup is complete click 'OK'. Emitting region lower right corner should display the serial port parameters and 'Opened' , display 'Closed' is the serial port is not open,

click  Open . Open normal before you can continue testing . Click on the lower part of the send area 'string' and 'sent in real time', and then start typing the command character to be tested.

AccessPort - COM3 (115200, N, 8, 1) Opened

文件(F) 编辑(E) 查看(V) 监控(M) 工具(T) 操作(O) 帮助(H)



请下载最新版本 1.37 Build 1870

Terminal Monitor



M: 1.5128m,0090, 29.6`C,
M: 1.5128m,0086, 29.7`C,
V: 1.5128m,0240, 29.4`C,
: 1.5126m,0238, 29.5`C,
: 1.5127m,0234, 29.5`C,
: 1.5119m,0236, 29.5`C,
: 1.5131m,0242, 29.5`C,
: 1.5139m,0236, 29.5`C,
: 1.5126m,0231, 29.5`C,
: 1.5130m,0249, 29.5`C,
: 1.5130m,0248, 29.5`C,
: 1.5128m,0234, 29.5`C,
: 1.5138m,0252, 29.5`C,
: 1.5121m,0230, 29.5`C,
: 1.5127m,0247, 29.5`C,
: 1.5127m,0232, 29.5`C,
: 1.5137m,0245, 29.5`C,
: 1.5128m,0236, 29.5`C,
: 1.5125m,0234, 29.5`C,
: 1.5125m,0235, 29.5`C,
: 1.5124m,0238, 29.5`C,
: 1.5128m,0248, 29.5`C,
: 1.5131m,0241, 29.5`C,
: 1.5123m,0249, 29.5`C,
: 1.5136m,0242, 29.4`C,
: 1.5127m,0240, 29.5`C,
: 1.5124m,0247, 29.5`C,
: 1.5130m,0231, 29.5`C,
: 1.5130m,0233, 29.5`C,
: 1.5128m,0248, 29.5`C,
: 1.5127m,0237, 29.5`C,
OK!

发送-> ☐ 十六进制 ☒ 字符串 Plain Text ☒ 实时发送 清空数据 发送数据 ☐ DTR ☐ RTS ☐ Max Size < 64KB

CSSDDDDDDDDDDFFFFFFFFFFFFFFFFGGGGGGGGGGMMMMMMMMMMVCVCVCsSSOCOC

Comm Status ☐ CTS ☐ DSR ☐ RING ☐ RLSD (CD) ☐ CTS Hold ☐ DSR Hold ☐ RLSD Hold ☐ XOFF Hold

就绪 发送 114 接收 3537 COM3 (115200, N, 8, 1)