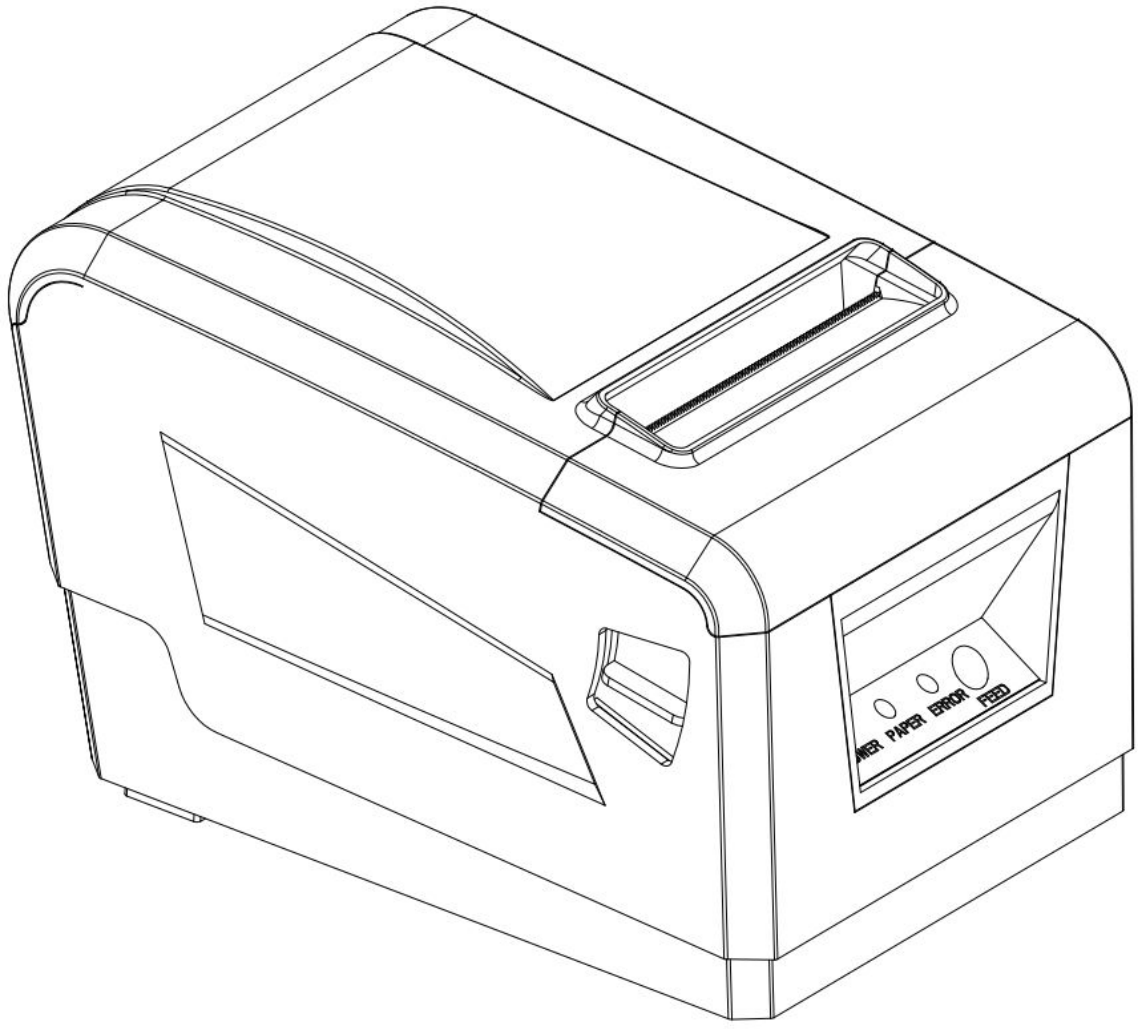
RG-P80A
User Manual



V1.00

Beijing RuiGong Tech Co.,Ltd.

Record

Version	Date	Revision
V1.00	2015.08.12	The first version

Precautions

Please read the user manual carefully and strict compliance with use of following instructions before operating the printer.

Safety Precautions

Warning: Do not touch the cutter of printer.

Warning: The print head is heating element; do not touch it and its peripheral parts during the printing process or the print just ended.

Warning: Do not touch the surface of print head and its connections to avoid damage it.

Operation Precautions

The printer can not be immersed in water, and do not expose it to rain, it may cause damage to the printer

When printing by USB interface, you can not disconnect the USB cable, otherwise, it may cause incomplete data. When using the Bluetooth mode printing in the printing process no more than 10 meters, it may cause printing garbled or not print.

Although the printer can operate stably at 0 ℃ to 50 ℃, however, the high ambient temperature (45 ℃) or low temperature (5 ℃) will result in poor print quality.

High ambient humidity (above 85% relative humidity) or low humidity (20% relative humidity or less) will result in reduced print quality.

Use inferior paper or printing paper stored too long may cause the print quality to reduce, or even damage to the printer.

When the printer is working under black mark detection mode (when printing black mark paper), pls. refer to 4.2 Black Mark Detection Description Instructions. Otherwise, it may cause the printer inaccurately detected the black mark

Using out of batteries before charge them, in this case you can effectively ensure the battery life. Battery life is generally: ≥ 300 times charge and discharge times, battery performance will decrease based on the increase of charging.

Storage Precautions

The printer should be stored at a temperature of -40 ℃ to 70 ℃, relative humidity of 10% to 95% of the environment.

Ordinary thermal paper storage time is shorter, if you want to print long-term preservation of documents, please use the long-term thermal paper.

Do not put the thermal paper in direct sunlight or high temperature storage, if you have opened the paper, please save it at dark place.

If want to prolonged storage printer, users need to make sure to remove the printer batteries stored separately, otherwise it may lead to battery failure, even leakage and damage the printer.

If the battery is stored for more than three months, it needs to be installed on the printer and charge it one time to avoid damage due to self-discharge.

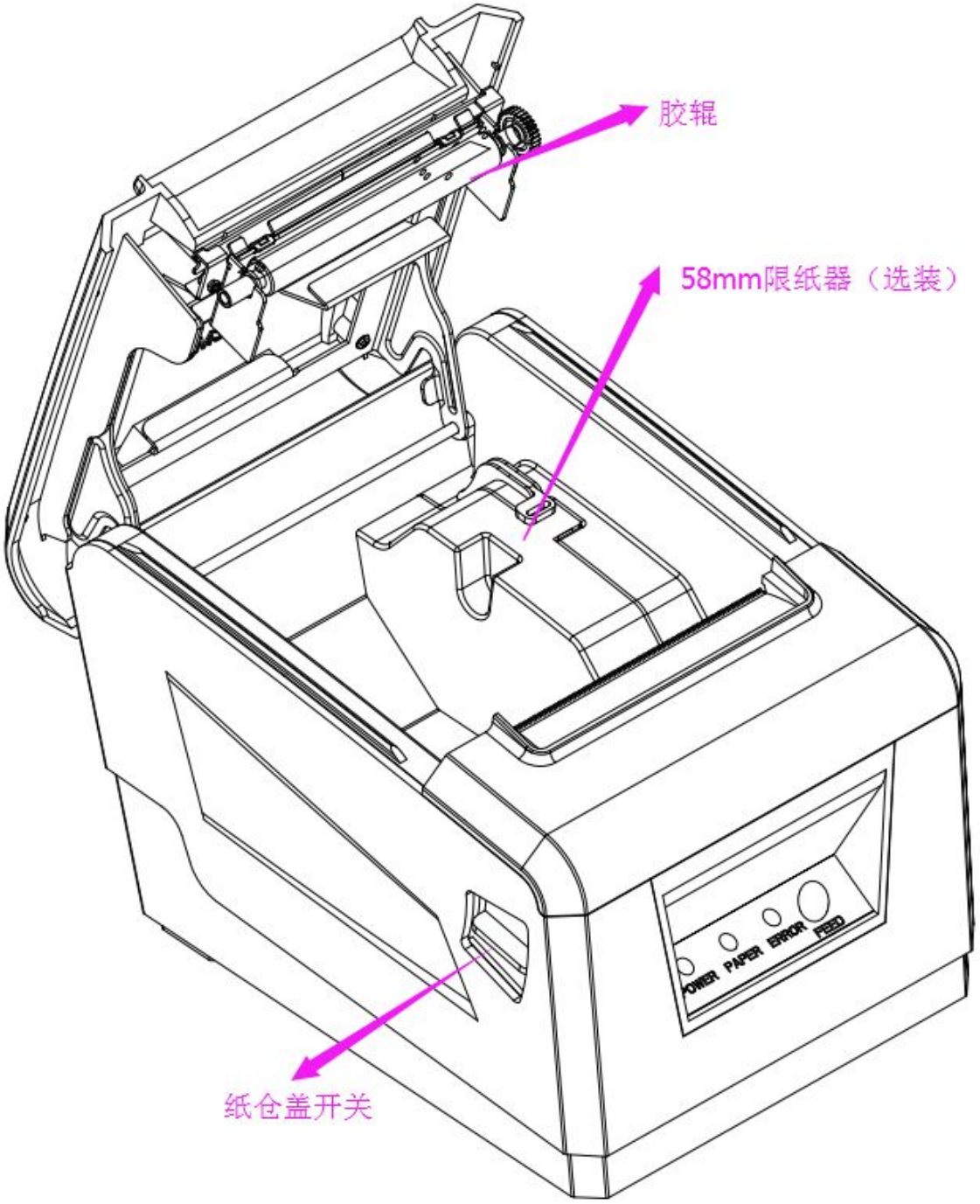
Statement

This product is Class A. In a normal environment, this product may cause radio interference. In this case, users may be required to take practical measures against interference.

Manufacturer reserves the right to modify the contents of the specification without prior notice!

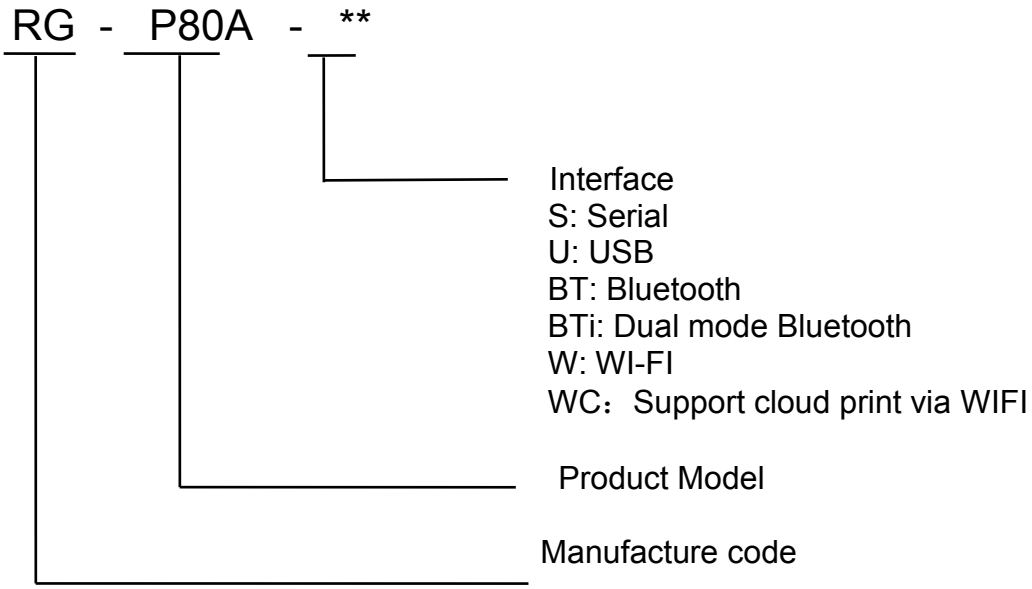
Chapter I Appearance and Model

1.1 Appearance



【MODE】：Wireless mode indicator，
【PAPER】: Lack of paper light, 【EROR】:Error light, 【FEED】:Feed key.

1.1 Model



RG-P80A-SU	Support serial and USB
RG-P80A-SUBT	Support serial, USB and Bluetooth 2.0
RG-P80A-SUBTi	Support serial, USB and dual mode Bluetooth
RG-P80A-SUW	Support serial, USB and Bluetooth 2.0

Chapter II Features

2.1 Print Performance

Printing method: Direct thermal line
Paper width: 58mm
Printing effective width: 48mm
Resolution: 8 dots/mm(203dpi)
Dots/line: 576 dots
Printing speed: Max 250mm/s
Paper thickness: 60~80μm
Font: GB18030-2000 and BIG5 (16*16 and 24*24),
ASCII, codepage, defined character (12*24 and 9*17)
1D barcode: UPCA, UPCE, EAN13, EAN8, CODE39, ITF25, CODABAR, CODE93, CODE128
2D barcode: PDF417, QR CODE, DATA Matrix

2.2 Power Supply

DC 24V/2A；

2.3 Interface

Serial, USB, Bluetooth, WI-FI；

2.4 Cash drawer port

Support two cash drawer (24V);

2.5 Physical Parameters

Outer Dimension:180(L)X130(W)X110(H) (mm);
Weight: 510g (without paper roll);
Paper roll diameter:≤40mm;

2.6 Environmental Parameters

Working temperature: 0℃~50℃
Working Humidity:10%~80%
Storage temperature: -40℃~70℃
Storage Humidity: 10%~95%

2.7 Others

Loading method: Clamshell paper loading, pls. refer to the details 3.1.2
Black mark positioning: Available (details see 4.2 black mark descriptions)
Paper ending detection: When running out of paper, the printer's ERROR LED has been lit. If set to allow Beep alarm, the internal buzzer will beep and stops printing.
Printing commands: ESC/POS compatible with command set (Details see REGO thermal printer commands manual)
Power supply: DC 24V2A

Chapter III Operation Method

3.1 Preparation before Use

3.1.1 Loading Paper Roll

1. Hold the cover on both sides, open the paper warehouse cover
2. Put a new roll in. Please take a notice that use a valid print surface on the outside of the paper
3. Pull out the end part of the paper, put the paper in the machine paper-out center.
4. Close the paper cover torn off the excess paper.

3.2 Basic Function Operation

3.2.1 Power on

Connecting the power supply, turn on the power and then start.

3.2.2 Feeding Paper (Feeding manually)

In the normal working status, press 【FEED】, the printer start feeding paper, release 【FEED】, the printer stop feeding paper. In black mark mode, press 【FEED】, the printer start feeding paper, when passed the black mark it will stop feeding. If the paper is not black mark paper, the printer stops feeding automatically after feeding 30cm.

3.2.3 Self-Test

Self-test: in power off mode, hold 【FEED】, power on, after printer beep tone, release 【POWER】 and 【FEED】, the printer will print a receipt about printer status and configuration.

3.2.4 Hex Printing

Hex printing function: print the data from host by hex and corresponding character in order to easy debug application programming.

Hex printing:
In power off mode, first hold FEED button, then power on the printer, ERROR LED flashing, holding FEED button more than 3 seconds, then release FEED button, printer enter hex printing mode, and print the entrance hex printing mode prompt message.
ESC hex printing: Power off or press FEED button 3 times, printer will exit hex printing mode, and print exit hex printing prompt message.

3.2.5 Enter The Program Upgrade Mode

Fast entrance the program upgrade mode: In power off mode, first hold FEED, then power on the printer, when ERROR LED lights, release FEED button

immediately. Printer enter program upgrade mode. At this time ERROR LED flash each 2 seconds
If users want to upgrade program by USB and serial, they need to use the professional software which can be download on our website: www.regotek.com.

3.2 Printer Parameter Settings

By “Tool set”, printer can configure parameter by computer, such as setting language, character, printing density, default code-page, printer bluetooth name and password etc. Details see “Tool set” help file. This help file will be available along with software.

3.3 Printer Connection and Print

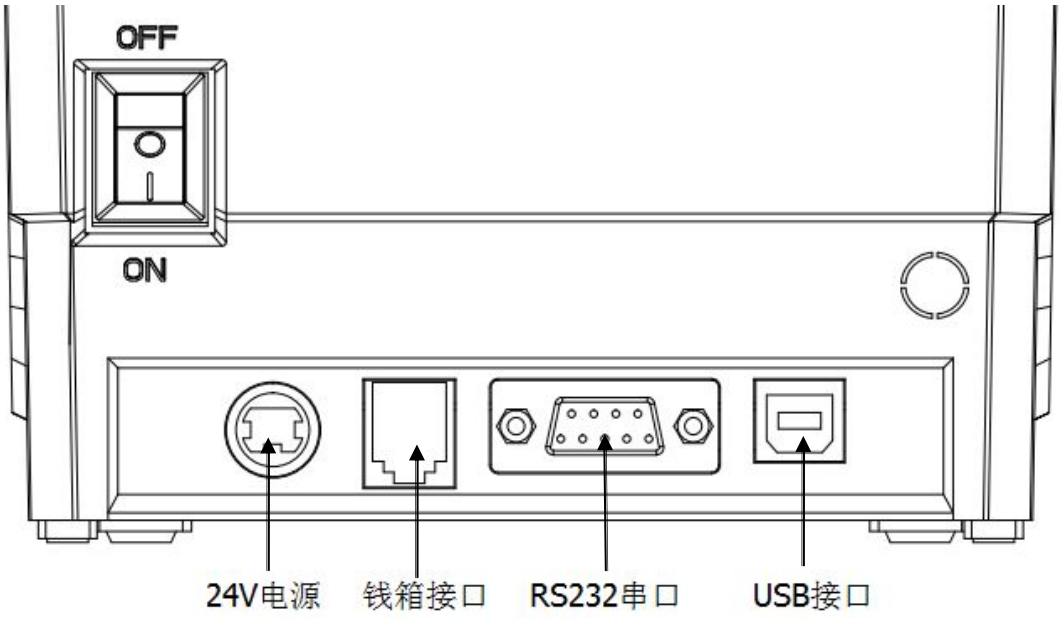


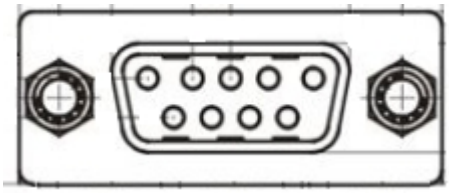
图 3.4

3.4.1 USB Connection

RG-P80A printer USB interface standard is USB-B. Follow the USB printer protocol.

3.4.2 Serial Connection

RG-P80A printer serial interface is compatible with RS232C. Support RTS/CTS and XON/XOFF handshaking protocol, connection interface model is serial. See Pic..3-1 below



Pic. 3-1 Serial interface socket pin no.

Serial interface socket pin no. Define as table 3-1 below:

Pin no.	Signal	Signal direction	Specification
2	TXD	Out	The printer will be sent XON/XOFF to PC when operating the XON/XOFF handshake protocol.
3	RXD	In	Printer received the data from PC.
8	RTS	Out	This signal reflect the printer status. SPACE indicates printer is ready, and can receive data. MARK indicates printer is busy, can receive data
GND	5	—	Signal ground

Table 3-1 Serial interface pin no.definition

Note: ①Source means the source of the signal emitted
In serial connection, set baud rate and data structures by “Tool set”. Default setting is 9600bps, 8 bits of data, data structure is no parity, and 1 stop bit

There are 2 types of handshaking optional. 1. Hardware control, 2.X-ON / X-OFF protocol. The description of two type handshaking is as follows Table 3-2

Handshaking	Data direction	RS-232C interface signal
Hardware control	Data can be access	RTS and DTR in Space status
	Data can be access	RTS and DTR in Mark status
X-ON/X-OFF control	Data can be access	Send X-ON 0x11 based on TXD
	Data can not be access	Send X-OFF 0x13 based on TXD

Table 3-2 Two types of handshaking

3.4.3 Bluetooth Connection

Hand terminal, notebook and other intelligence terminal drive to printer through bluetooth. There are two versions of RG-P80A bluetooth, 2.0 and 4.0.

Compatible with bluetooth 2.0 and bluetooth 4.0 standard bluetooth, power lever is CLASS 2. Effective distance is 10m. Bluetooth of printer is guest device. The initial device name for RG-P80A, the initial password is "1234" or "123456" (4.0 Bluetooth). Users can use the "tool set" to modify the device name and password. Changing the device name and password method described in "setting tool" in the help file as needed.

The mobile printer need to pair with bluetooth host device first, the pairing initiated by the master device before RG-P80A working. The pairing is as follows:

1. Power on the printer
2. Host device search external bluetooth device
3. If there are many external bluetooth device, choose RG-K628 printer
4. Input password: 1234
5. Finish pairing

Pls. refer to the host device bluetooth manual with the detailed pairing method.

Note:
a. When pairing, printer RG-P80A must keep power on
b. When the bluetooth of printer and host device are well-paired, printer bluetooth will not be available for other host device bluetooth searching. Till the printer bluetooth disconnected from the paired host device
c. After well-pairing, printer MODE LED flash 2 times

3.4.4 WI-FI Connection

With WI-FI hand terminal, notebook and other intelligence terminal drive to printer through WI-FI

Printer RG-P80A WI-FI support AP, STA, AP+STA.

RG-P80A Printer default parameter （restored factory）as below:
AP SSID: RG-P80A_XXXX (XXXX: last 2 bytes of MAC address)
AP Encryption: OPEN, NONE;
AP IP address: 192.168.1.1;
AP Port: 9100

AP mode:

The printer RG-P80A as a wireless access point, the other device as a wireless information terminal is connected to the printing.

STA mode:

The printer RG-P80A as a wireless terminal through a wireless access point connects with other devices.

In the first use of WI-FI interface, you need to set WI-FI module. The details see chapter V

3.5 Set wireless module to restore factory

Bluetooth or WIFI restore factory: In power off mode, first hold FEED button, then power on the printer. After the light of “ERROR” flashes 4 times, release FEED button and it will restore factory after about 3 seconds.

3.6 WIFI version Enter configuration mode

WIFI version supports a key configuration to set SSID、KEY、IP parameters.

WIFI version enters configuration mode: In power off mode, first hold FEED button, then power on the printer. After about 1s, the light of “ERROR” starts to flash 2 times, and please release FEEDbutton, the printer will enter the mode of a key configuration. If it would be turned off or set successfully, it quits automatically. Please refer to the the chapter V.

3.7 Indicator Light and Buzzer Description

Printer has three indicator lights: Red **【PAPER】LED,**Green**【MODE】LED ,** Red**【ERROR】LED.**

The definition of the indicator light:

【PAPER】LED:

Long lit: printer is out of paper
Off:Work well

【MODEL】LED:

Error type	Error description	
Wireless module is in connecting	Flash in 1.5s / time	
Connected to Cloud server	Flash in 800ms / time	
In stand-by mode	Long lit	
Received wireless data	Constant flashing	

【ERROR】LED:

Long lit: printer is out of paper

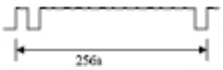
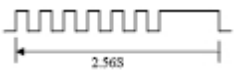
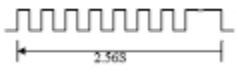
Flash: Printer appears error. Different flashes, different errors

.

1. Automatic recoverable error, LED light continuous flashing. Such as print head temperature error

Error type	Error description	ERROR flashing way
Automatic recoverable error	LED continuous flashing: print head over-heated	

2. Unrecoverable error. After flash several times, LED light is on for a period, and then cycling. The number of flashes indicates the type of error

Error type	Error description	ERROR flashing way
Unrecoverable error	LED flash 1 time: Memory read and write errors	
	LED flash 2 times: Overvoltage	
	LED flash 3 time: voltage shortage	
	LED flash 4 times: CPU Execution errors (wrong address)	
	LED flash 5 times: UIB error	
	LED flash 6 times: FLASH write error	
	LED flash 7 times: Parameter write error	
	LED flash 8 times: Temperature detecting circuit errors	

The printer has a buzzer,which can give us useful inforamtion,pls see the following descriptions for buzzer:

In error mode,the buzzer sounds in different way,it has the same function with 【ERROR】LED.

Also,you could set the buzeer for paper cut to show us the ticket is finished.

3.8 Key Description

Open the paper box,hold on the FEED and power on the printer,then MODEL light,
Printer will turn to different work mode by pressing FEED for different times:

KEY Press Number	Function	Description
0 times	Hexadecimal printing	
1 times	Self-test mode	
2 times		Reserve
3 times	WIFI one-key configure mode (only for WIFI version)	Setup parameters like IP etc.
4 times	Restored factory parameters	Only for WIFI / Bluetooth Vesrion
5 times	Upgrade mode	ERROR Led will flash 1 s/time

Chapter IV Other Settings

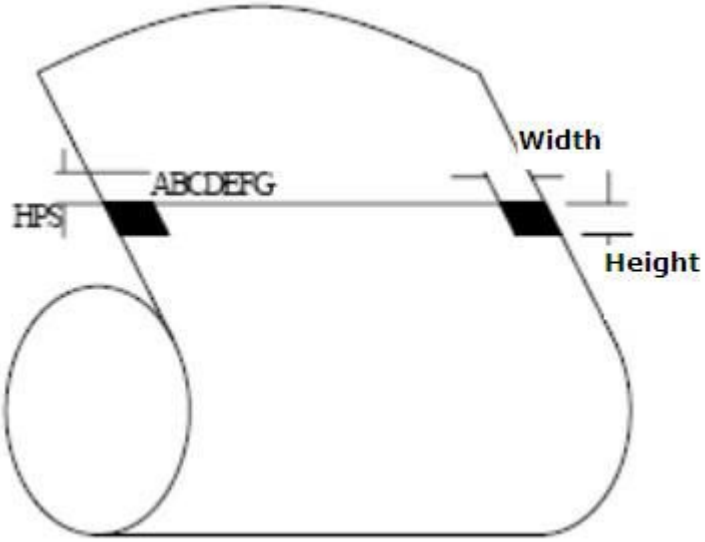
4.1 Programming Command Manual

“RG Thermal Printer Programming Command Manual” is a technical manual guide for users to develop REGO thermal printers, this manual can be obtained from the REGO.

This manual includes printer hardware interface technical description, printing control commands set technical document, and how to print black mark, and how to position black mark.

4.2 Pre-printed Black Mark Description

If user want to position black mark printing, pls. follow the guidelines below otherwise it may cause the printer does not recognize the black mark. Pre-printed black mark specification:



Print position: Black mark should be printed on the left or right edge of the paper, the same as the drawing above.
Width: ≥7mm
Height: 4mm≤height≤6mm
The reflectance of infrared light: <10% (The reflectance of infrared light of the rest of paper black mark width>65%)

HPS: HPS black mark from the edge of the printer to print on the edge of starting distance.4.5mm≤HPS≤6.5mm

4.3 GS (F, the calculation method of adjusting value

1. When cut/tear location to the distance from the center of the black label printing paper L is the same as the printing mechanism of intrinsic mechanical worth L0, and cut/tear paper position to the distance from the center of the loading Q with printing mechanism fixed mechanical Q0 values (in figure 1), namely to use GS (F command set offset 0.

2. When the black label printing position to the distance from the center of the cut/tear paper L is less than mechanical value L0 of printer(in figure 2) GS (F the command of the cut/tear paper position offset calculation as below）

   Cut/tear paper position offset distance=(L0－L) (mm)

   Cut/tear paper position offset distance =(L0－L)×8 (dot)

   .....（1）

3. When the black label printing position to the distance from the center of the cut/tear paper machinery value of L is greater than the printer L0 (in figure 3), GS (F the command of the cut/tear paper position offset calculation as below:

Cut/tear paper position offset distance =(L0+ Distance between two adjacent black labels－L) (mm)

Cut/tear paper position offset distance =(L0+ Distance between two adjacent black labels－L)×8 (dot) ……（2）

Note 1: When set cut/tear paper position offset, GS (F command parameters a should be 2
Note 2: For cut/tear paper position offset choose m = 0 along the feeding direction is calculated

4. When cutting/tearing or non zero offset of each single starting distance from the center of the print position to cut/tear paper machinery value of Q is greater than the printers (Q0) (as shown in figure 4), GS (F command the starting offset printing position calculation formula 3：

Deviation distance of starting print position =(Q-Q0)+ Cut/tear paper position offset records （mm）

Deviation distance of starting print position =(Q-Q0)×8 + Cut/tear paper position offset (dot） ……(3)

Note 1: When set the starting offset printing position, GS (F command parameters of a should choose 1 m = 0 along the feed direction is calculated.
Note 2: when setting the black label printing position close printing machinery worth L0, L and L < L0, if set cut/tear paper position to start print position distance Q value is small, need back paper can meet the requirements of starting print position, the calculated value is likely to happen: (Q - Q0) + cut/tear paper position offset distance < 0, only this time, requirements set in the direction shown by the paper back, see the starting offset printing position calculation formula 4:
Set m ＝ 1

Deviation distance of starting print position＝-[(Q-Q0)+ Cut/tear paper position offset distance] （mm）

Deviation distance of starting print position＝-[(Q-Q0)×8 + Cut/tear paper position offset (dot）

Note 3: when setting the black label printing position close inherent worth L0, printer and L > L0, if setting the distance from the center of the cut/tear paper position starting print Q > L feed value need to have in order to meet the requirements of starting print position, the calculated value is likely to happen: (Q - Q0) + cut/tear paper position offset distance > distance between two black mark, at this time for starting offset printing position formula for computing such as 5:

Deviation distance of starting print position＝(Q-Q0)+ Cut/tear paper position offset distance - Distance between two adjacent black labels

Deviation distance of starting print position＝[(Q-Q0)+ Cut/tear paper position offset－Distance between two adjacent black labels]×8 ……(5)

5. Printer inherent mechanical value (refer to 2.5.3)
   L0=A mm, Distance from cut/tear paper position to black label detection switch;
   Q0=C mm, Distance from the cut/tear paper position to the start printing position

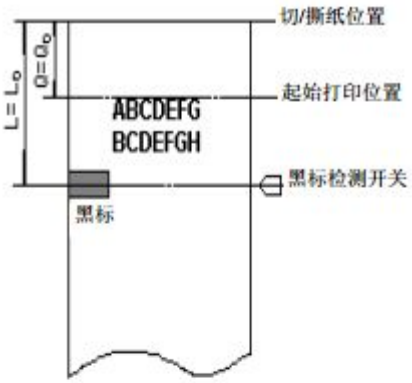


图 1

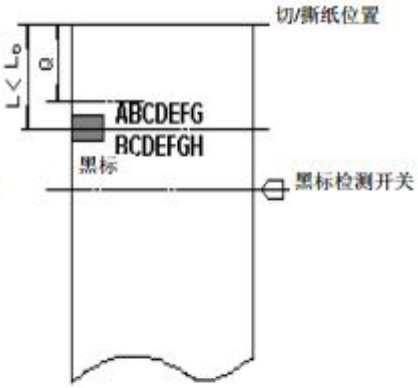


图 2

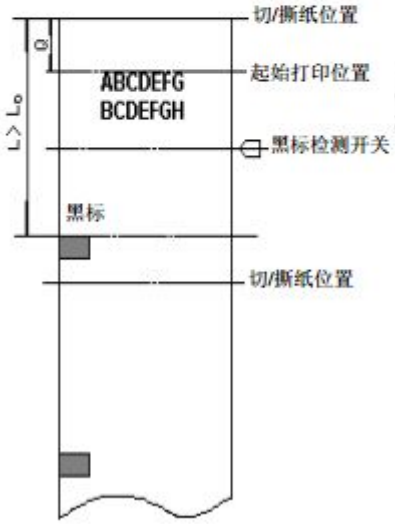


图 3

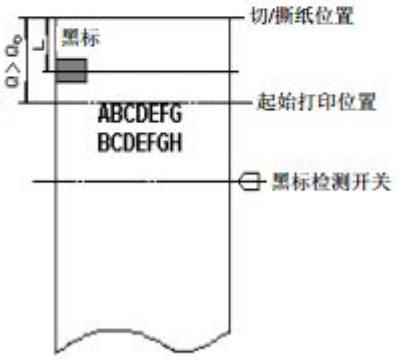
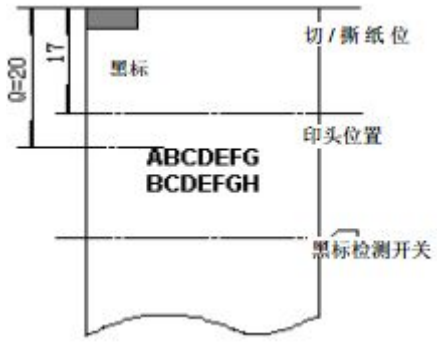


图 4

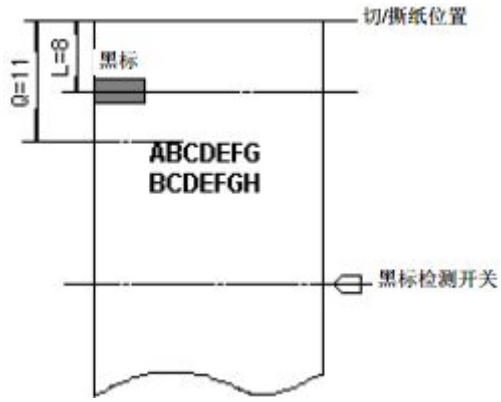
Some examples of how to use the specified print sample of black calibration control commands

以下举例假设为撕纸位置在打印机构撕纸口，即 L0=33.6mm，Q0=16mm(参看 2.5.3)。

【例 1】票样要求：切/撕纸位置在预印刷的黑标位置，
每单打印起始位置在距切/撕纸位置 20mm 处。



计算切/撕纸位置偏移量
因为黑标在切/撕纸位置，即 L＝0，所以切/撕纸位置偏移量为：
(33.6 - 0)×8 = 269 点。
使用如下命令设置切/撕纸偏移量
GS （ F <4><0><2><0><D><1>
计算起始打印位置的偏移量
(20-16)×8 + 269 = 301 点
使用如下命令设置起始打印位置偏移量
GS （ F <4><0><1><0><2D><1>
完成上述设置后,在打印每一单票据时：
用 GS FF 命令走纸到起始打印位置；
送每一单要打印的数据，并逐行打印这些数据；
用 GS V m 命令走纸到切/撕纸位置，将票据切/撕下。
【例 2】票样要求：切/撕纸位置到黑标的距离为 8mm，
起始打印位置距切/撕纸位置的距离为 11mm。



计算切/撕纸位置的偏移量
因为黑标距切/撕纸线的距离＜L0(45mm)，所以切/撕纸位置的偏移量为：
(33.6 - 8)×8 = 205 点
使用如下命令设置切/撕纸偏移量
GS （ F <4><0><2><0><205><0>
计算起始打印位置偏移量：
(11 - 16)×8 + 205 = 165 点
使用如下命令设置起始打印位置偏移量

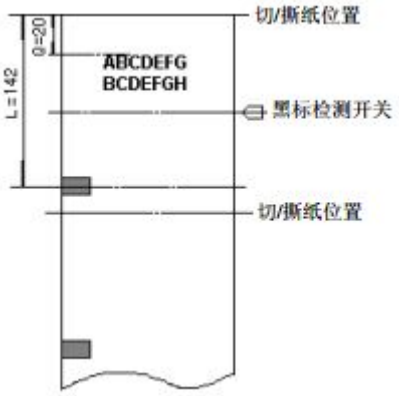
GS （ F <4><0><1><0><165><0>

完成上述设置后,在打印每一单票据时，使用的命令序列与例 1 相同。

【例 3】票样要求：票长 140mm，

切/撕纸位置到黑标距离为 132mm，

起始打印位置距切/撕纸位置的距离为 20mm。



计算切/撕纸位置的偏移量

因为黑标距切/撕纸线的偏移量＞L0(45mm)，所以起始位置的偏移量为：

(33.46 + 140 - 132)×8 = 333 点

使用如下命令设置切/撕纸偏移量

GS （ F <4><0><2><0><4D><1>

计算起始打印位置偏移量

(20 - 16)×8 + 333 = 365 点

使用如下命令设置起始打印位置偏移量

GS （ F <4><0><1><0><6D><1>

完成上述设置后,在打印每一单票据时，使用的命令序列与例 1 相同。

注意：

1. 在切/撕纸位置偏移量和起始打印位置偏移量均为 0 的情况下，只需用 GS V m 可完成每一单的定位打印。
2. 只要切/撕纸位置偏移量不为 0，就要用 GS （ F 命令分别设置切/撕纸位置偏移量(a=2)和起始打印位置偏移量(a=1)。
3. 只有在设置了起始打印位置后才能使用 GS FF 命令走纸到起始打印位置，否则可能出现定位不准或空走一张票的情况。
4. 当用 GS （ F 命令更改了上次设置的偏移量时，可能会在打印第一单票据时出现定位不准或空走一张票的情况，但以后再打印的票据是正确的。
5. 可以通过设置软件来设置切/撕纸位置偏移量和起始打印位置偏移量，这种方式设置的值保存在 FLASH 中，掉电后能保存，打印机开机初始化时，使用保存在 FLASH 的数值。出厂时，默认值均为 0。

Chapter V WI-FI Wireless Module

Setting and User guide

5.1 Setting

In the first use of WI-FI interface of RG-P80A, users need to set the WI-FI module. Users can connect PC with AP interface of RG-P80A, and set it by WEB management.

The default SSID of AP interface is RG-P80A. IP address, user name and passwords see below:

RG-P80A network default setting table

Parameter	Default configuration
SSID	RG-P80A
IP address	192.168.1.1
Subnet mask	255.255.255.0
User name	admin
Password	admin

5.1 WI-FI Interface Usage Instructions

5.2.1 Software Debugging Tools

You can use the following general procedure as a debugging tool for WI-FI interface (Users can also use other debugging tools)
Network debugging tool: TCPUDPDbg

5.2.2 Net work Connection

There are 2 kinds of connection when debugging. Users can be tested in accordance with the actual application. Use STA interface, printer and PC connected to a wireless AP respectively, shown as below:

Pic. 5-12 STA interface connection debugging

Use AP interface, PC connected with printer AP interface, shown as below:

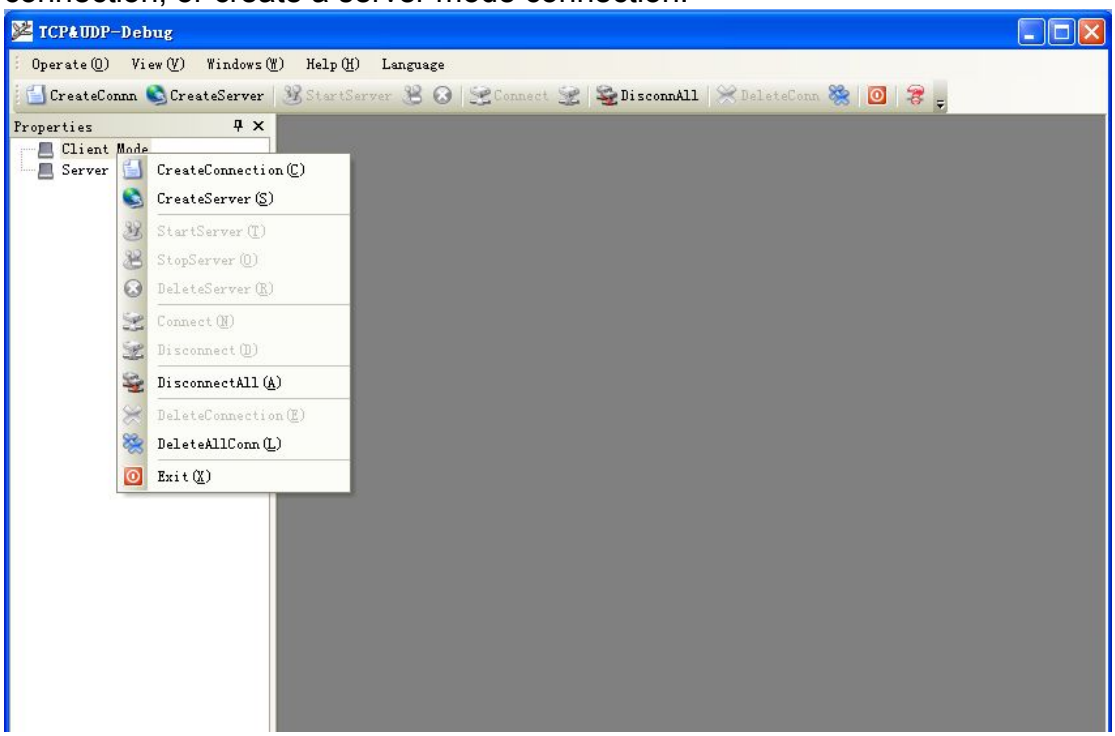
Pic. 5-13 AP interface connection debugging

5.2.3 The Initial Parameters

Printer default SSID: RG-P80A
Printer default encryption: open, none
Printer default network parameters: TCP,Server,9000,192.168.1.1；

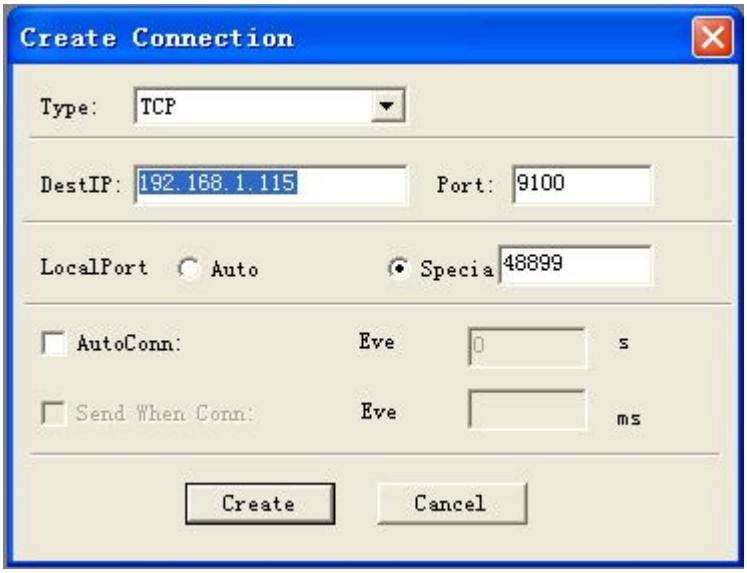
5.2.4 Printer Test

Connection shown above to open TCPUDPDbg program in PC2, create a new connection. If printer works in Server mode, users should create a client connection, or create a server mode connection.



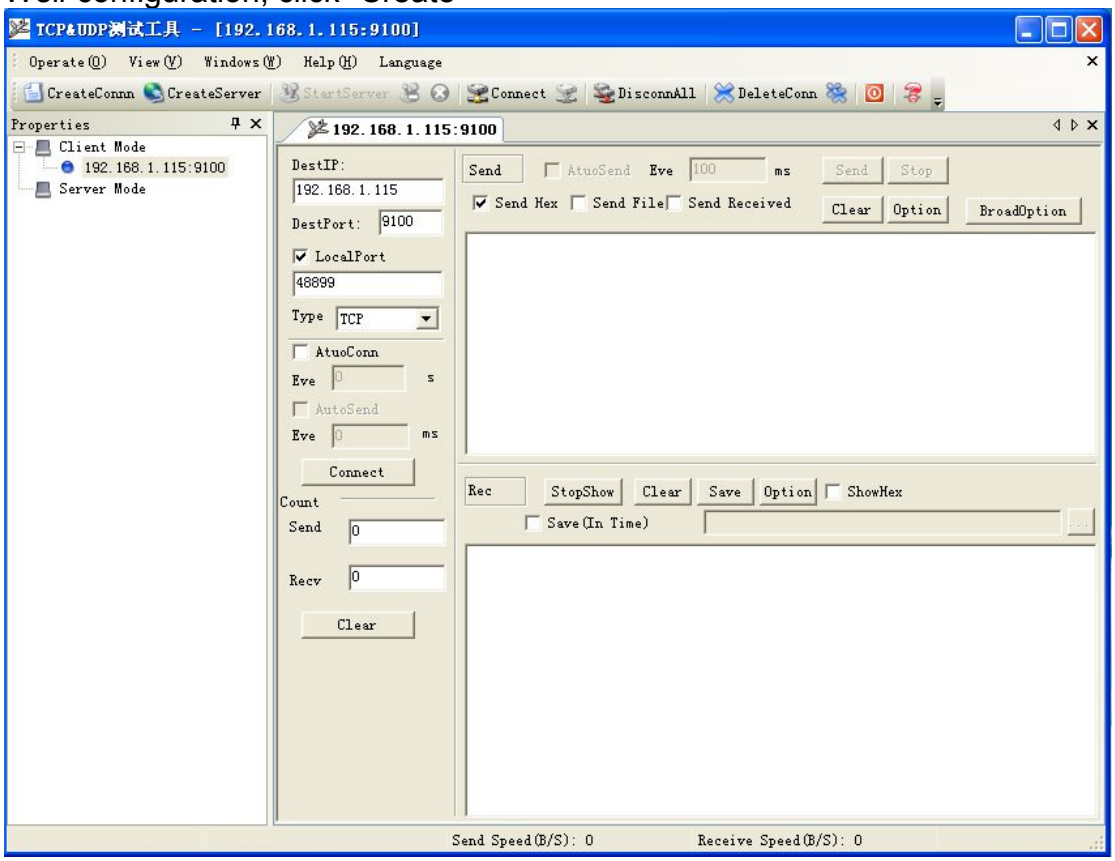
Pic. 5-14“TCPUDPDbg” Create connection

Then configure TCP/UDP connection parameter, default parameter shown as below



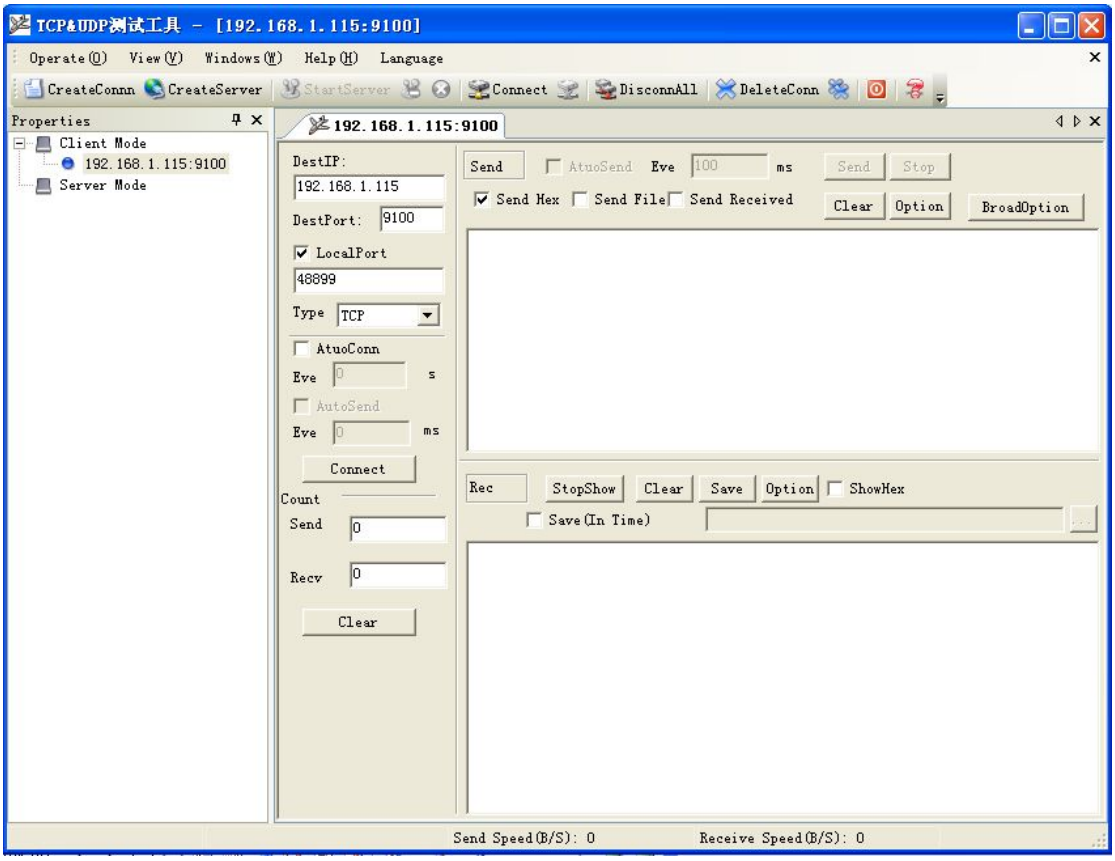
Pic. 5-15“TCPUDPDbg” configuration

Well-configuration, click “Create”



Pic. 5-16“TCPUDPDbg” connection

Then click connection button, after well-connected, users can send data via TCPUDPDbg to printer to control the printer for printing operation.



Pic. 5-17“TCPUDPDbg”connection succeed