How a 2d barcode scan engine to be integrated with your Kiosk, POS terminal or others system?

By RTscan,   June 2014

We have been often asked by our customers about "how to integrate the 2d barc ode scan engine ? " or "what's the interface of the bar code scan engine module ?" , so here we try to explain in details:

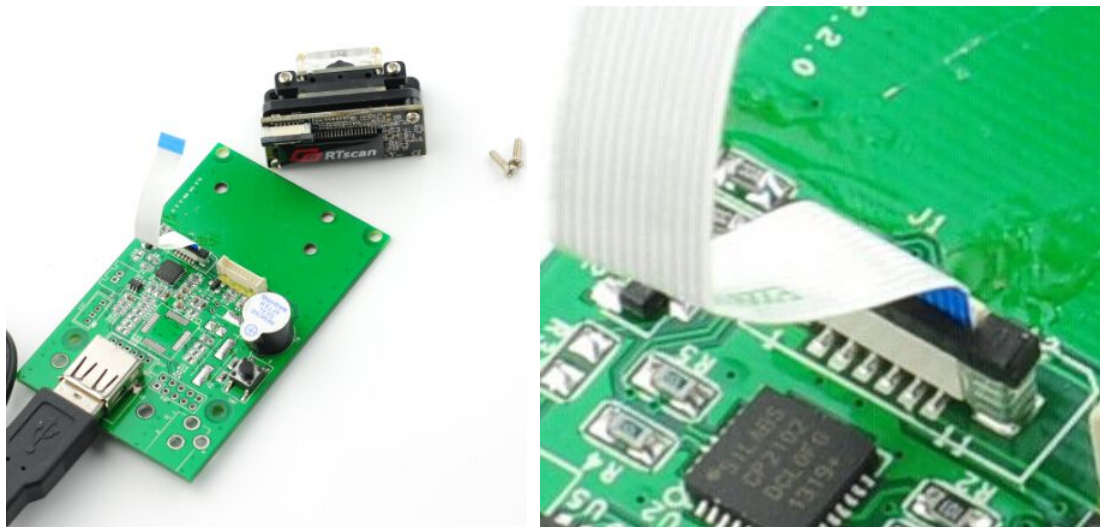RTscan 2d imager scan engine RT200 provides 4 types of interface:

I. TTL serial
II. USB-VCOM(USB virtual com port)
III. USB-HID(keyboard simulation)
IIII. RS232

I. The imager engine itself with TTL serial interface :

TTL is a kind of signal. The 2d scan engine RT200 output with TTL signal, to work with PC terminal, usually we need to design electronic circuit that:
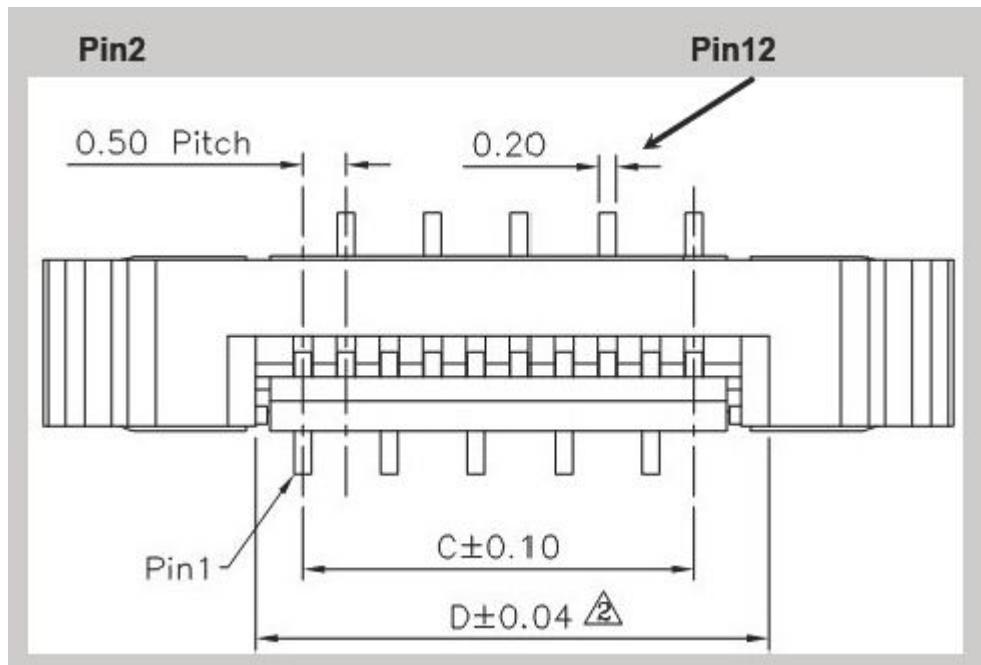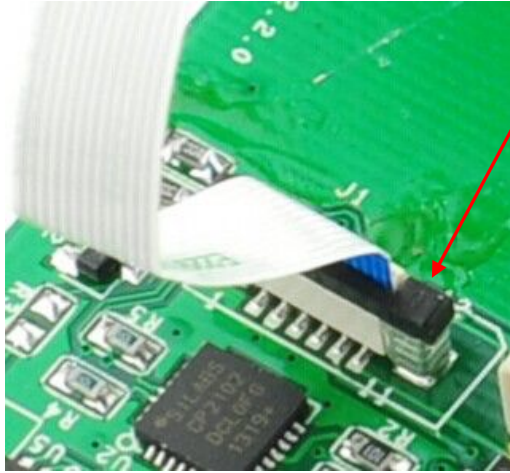
TTL -> TTL to RS232 adaptor -> PC
TTL -> TTL to USB adaptor -> PC
Or if you wanted bluetooth wireless, get a TTL to Bluetooth adapter, or if you want Ethernet, get a TTL to Ethernet adaptor, etc.

We also provide emulation kit board which already includes TTL to RS232 or TTL to USB adaptor, so as to work with PC directly via USB or RS232 cable, for details, please read section II, III,IIII below.

Connector (if necessary, we can provide the connector together with the scan engine):

12 pins connector

Pin definition:

PIN	input/output	defintion	description
PIN 1	—	—	—
PIN 2	source	VCC	+3.3V-5.5V
PIN 3	ground	GND	ground
PIN 4	input	RX	RS232 receiver, TTL. This pin should be pulled high by a 10 k resistor.
PIN 5	output	TX	RS232 transmit, TTL
PIN 6	—	NC	—
PIN 7	—	NC	—
PIN 8	—	NC	—
PIN 9	output	BUZ	Beep control. Drive circuit should be used if using beeper.
PIN10	output	LED	Indication led. Drive circuit should be used if using LED.
PIN11	input	POWERDOWN	pull up to Vin; active low, the signal can be used to bring the engine out of Power Down
PIN12	input	TRIG	Trigger signal.Keep low at least 20 ms. This pin should be pulled high through a 10k resistor.

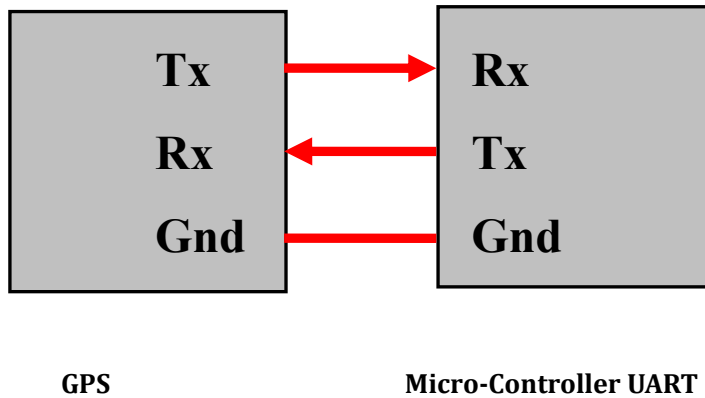We also provide circuit design reference, please refer to user guide of RT200.

Special tips:

1. Tx and Rx

As you probably know, Tx represents transmit and Rx represents receive. The transmit pin always transmits data, and the receive pin always receives it. Sounds easy, but it can be a bit confusing . . .

For example, suppose you have a POS device that transmits a TTL signal and you want to connect this GPS to your micro-controller UART. This is how you would do it:

UART Communication

Tx	**Rx**
Rx	**Tx**
Gnd	**Gnd**

GPS   Micro-Controller UART

Notice how Tx is connected to Rx, and Rx is connected to Tx. If you connect Tx to Tx, they will not transmit data.

And remember to make your ground connection common!

2. Baud Rate

Baud is a measurement of transmission speed in asynchronous communication. The computer, any adaptors, and the UART must all agree on a single speed of information - 'bits per second'.

For example, your robot would pass sensor data to your laptop at 38400 bits per second and your laptop would listen for this stream of 1s and 0s expecting a new bit every 1/38400bps = 26us (0.000026 seconds). As long as the robot outputs bits at the pre-determined speed, your laptop can understand it.

Remember to always configure all your devices to the same baud rate for communication to work!

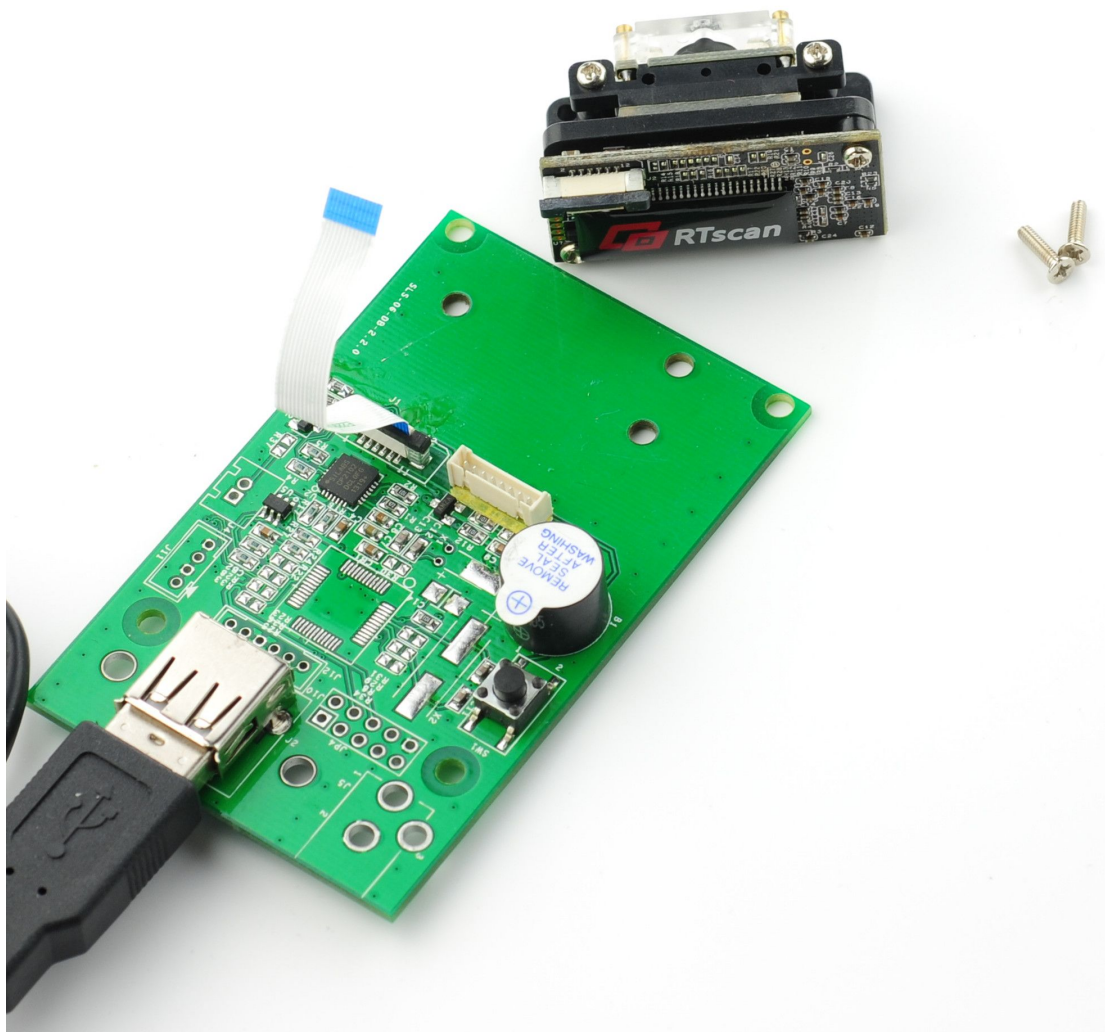# II. USB-VCOM (USB COM port emulation, or called"USB virtual com port")

RTscan provides a emulation Kit with USB interface, fix the barcode scan engine RT200 in the emulation Kit ,and connect the emulation Kit (together with the RT200) to your system via USB cable.

Its requires drivers for USB-COM, and it follows communication protocol of serial port, so we call it virtual com port.

Under USB-VCOM, the RT200 supports: Full Windows OS (Window XP, Window7, Window8...) Linux , Android

III. USB-HID (Keyboard simulation)

Same as USB-VCOM that need to use a emulation Kit which with USB interface, and the scan engine RT200 fixed in this emulation Kit, and you connect the emulation Kit (together with the RT200) to your system via USB cable.

<u>With this interface :</u>

No need any extra driver and we often called it"plug and play", just plug in and the decoded data will be show up wherever that we place the cursor, so any common software can work with it, for example: MS Words, Excel, Notepad, ... And this just looks like input from a keyboard, so we call it keyboard simulation.

With USB-HID, the RT200 currently supports: Full Windows OS (Window XP, Window7, Window8...)

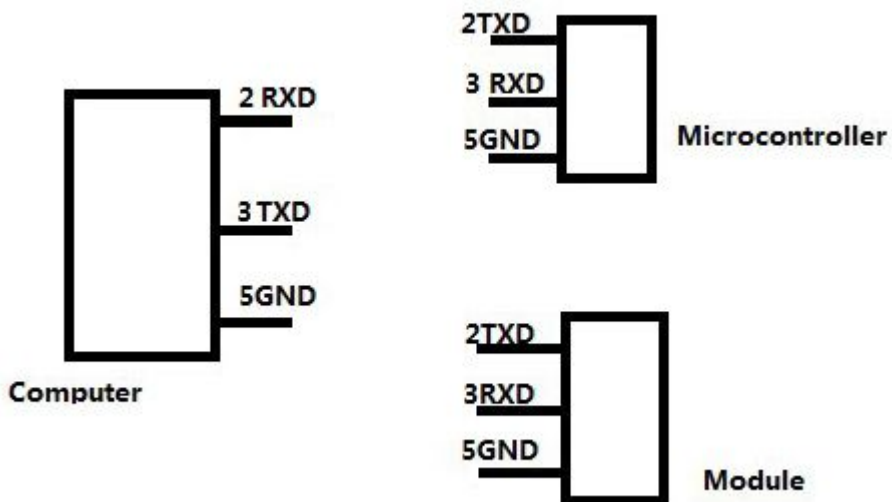# IIII. RS232(9 pins standard RS232 interface)

RTscan provides a emulation Kit with 9 PINs RS232 interface, fix the barcode scan engine RT200 in the emulation Kit , and connect the emulation Kit (together with the RT200) to your system via RS232 cable.
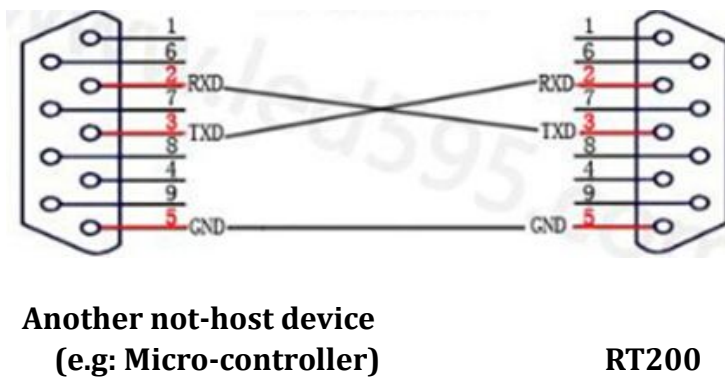
With this interface :

No need any driver and supports any OS, full Windows OS (Window XP, Window7, Window8...) Linux , Android. Requires your terminal with RS232 port, and need extra power supplier (power adaptor) .

Tip again ：
If you use a micro controller between RS232 emulation Kit and your PC terminal, then remember to connect by: " Tx(RT200) to Rx(micro controller) " and " Tx(micro controller) to Rx(RT200) " .

Computer

Microcontroller

Module

PC HOST   **RT200**

when PC HOST to RT200 directly,connect like this.

**Another not-host device
(e.g: Micro-controller)**   **RT200**

when another device (not PC host),connect with RT200, then connect like this.

Note: Definition of the 9 pin RS232 of RT200 emulation Kit:

2---Tx

3---Rx

5---Gnd

...

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