

CP2102_UART_for_UP_CREX_User_Guide

V1.0 2017.09.04

1. Check environment

1. OS: Ubuntu 16.04.2 (see Figure 1)

Link: <http://ftp.ubuntu-tw.org/mirror/ubuntu-releases/16.04.2/ubuntu-16.04.2-desktop-amd64.iso>

```
$ lsb_release -a
```

2. Kernel version: 4.8.0 (see Figure 1)

```
$ uname -a
```

```
aaeon@aaeon-UP-CHT01:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:   Ubuntu 16.04.2 LTS
Release:      16.04
Codename:     xenial
aaeon@aaeon-UP-CHT01:~$ uname -a
Linux aaeon-UP-CHT01 4.8.0-58-generic #63~16.04.1-Ubuntu SMP Mon Jun 26 18:08:51 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux
```

Figure 1: Ubuntu Environment

2. Check CP2102 UART

Step 1. Check device.

```
$ lsusb
```

```
aaeon@aaeon-UPC-GWS01:~$ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 007: ID 0424:2530 Standard Microsystems Corp.
Bus 001 Device 006: ID 10c4:ea60 Cygnal Integrated Products, Inc. CP210x UART Bridge / myAVR mySmartUSB light
Bus 001 Device 003: ID 0424:4603 Standard Microsystems Corp.
Bus 001 Device 005: ID 0461:0010 Primax Electronics, Ltd HP PR1101U / Primax PMX-KPR1101U Keyboard
Bus 001 Device 004: ID 046d:c52b Logitech, Inc. Unifying Receiver
Bus 001 Device 002: ID 05e3:0606 Genesys Logic, Inc. USB 2.0 Hub / D-Link DUB-H4 USB 2.0 Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

Step 2. Check UART port.

```
$ dmesg | grep -i ttyUSB
```

```
aaeon@aaeon-UPC-GWS01:~$ dmesg | grep -i ttyUSB
[ 6.194509] usb 1-7.1: cp210x converter now attached to ttyUSB0
aaeon@aaeon-UPC-GWS01:~$
```

3. Testing

Step 1. Install Minicom.

```
$ sudo apt-get install minicom
```

```
aaeon@aaeon-UP-CHT01:~$ sudo apt-get install minicom
[sudo] password for aaeon:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  lrzsz
The following NEW packages will be installed:
  lrzsz minicom
0 upgraded, 2 newly installed, 0 to remove and 271 not upgraded.
Need to get 306 kB of archives.
After this operation, 1193 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://tw.archive.ubuntu.com/ubuntu xenial/universe amd64 lrzsz amd64 0.12.21-8 [73.8 kB]
Get:2 http://tw.archive.ubuntu.com/ubuntu xenial/universe amd64 minicom amd64 2.7-1build1 [232 kB]
Fetched 306 kB in 0s (537 kB/s)
Selecting previously unselected package lrzsz.
(Reading database ... 211685 files and directories currently installed.)
Preparing to unpack .../lrzsz_0.12.21-8_amd64.deb ...
Unpacking lrzsz (0.12.21-8) ...
Selecting previously unselected package minicom.
Preparing to unpack .../minicom_2.7-1build1_amd64.deb ...
Unpacking minicom (2.7-1build1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up lrzsz (0.12.21-8) ...
Setting up minicom (2.7-1build1) ...
```

Step 2. UART test.

Test 1. RS232 Mode.

1. Jumper setting.

Jumper set to 3-5 and 2-4 (see Figure 2).

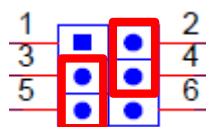


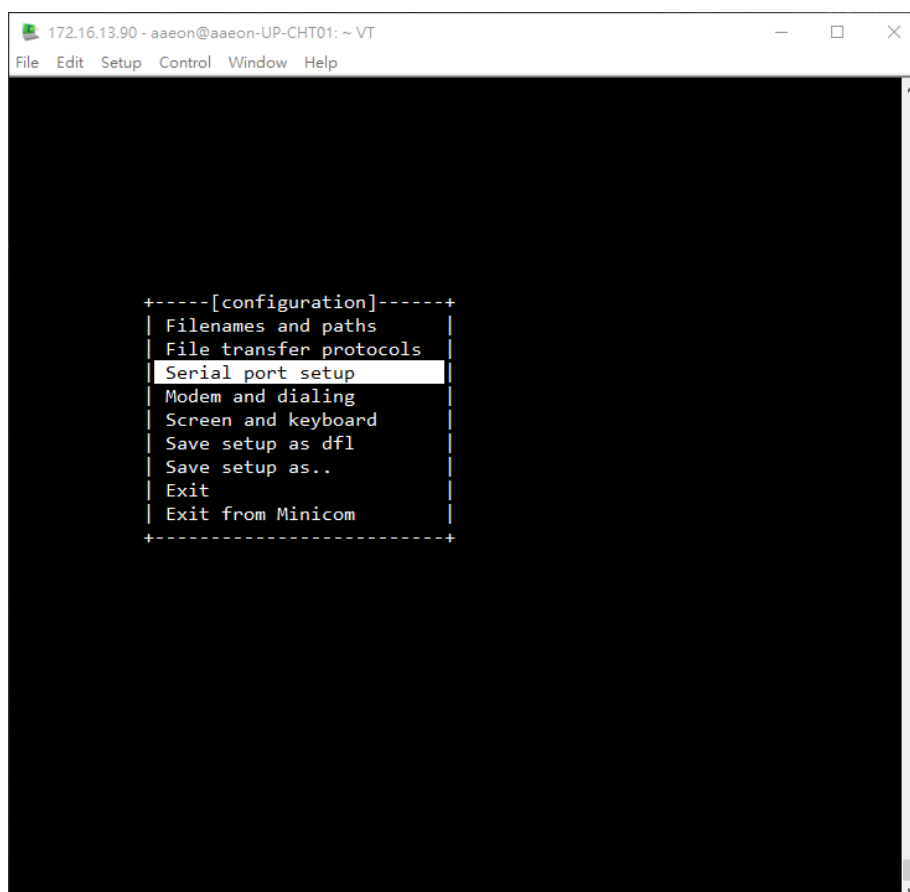
Figure 2: RS232 Mode

2. Plug loopback to UART port.

3. Loopback test with minicom.

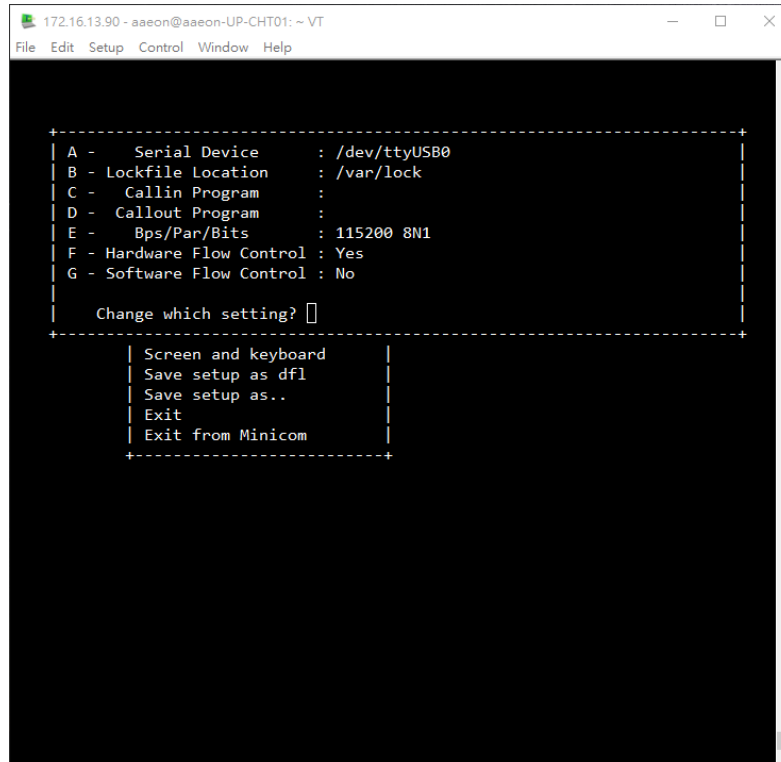
a. Setting minicom.

```
$ sudo minicom -s
```



b. Serial port setup.

Set serial port to /dev/ttyUSB0.



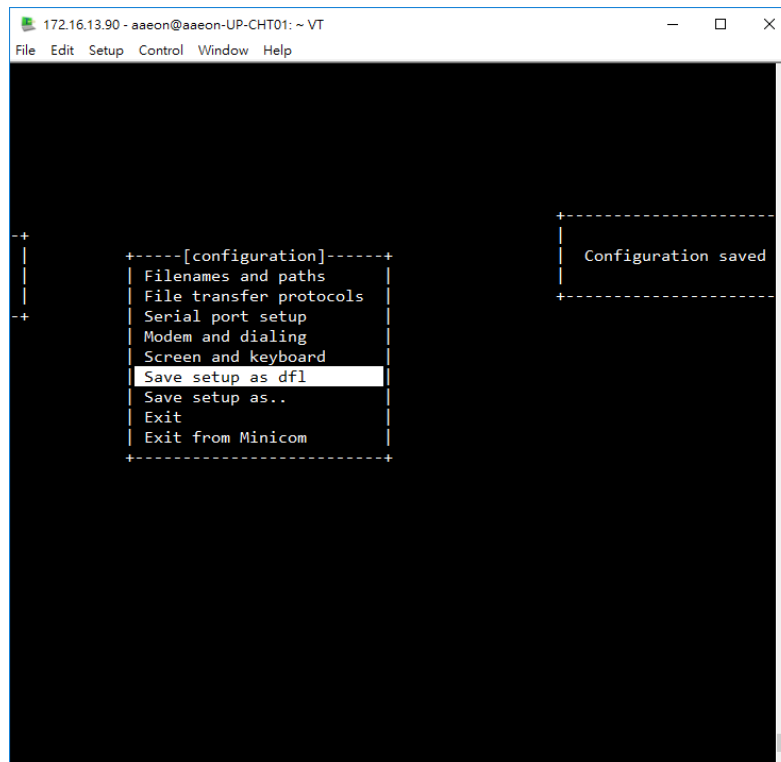
```

172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

+-----+
| A -   Serial Device       : /dev/ttyUSB0 |
| B - Lockfile Location    : /var/lock    |
| C - Callin Program       :              |
| D - Callout Program      :              |
| E - Bps/Par/Bits         : 115200 8N1   |
| F - Hardware Flow Control: Yes          |
| G - Software Flow Control: No           |
+-----+
Change which setting? ^

+-----+
| Screen and keyboard      |
| Save setup as dfl       |
| Save setup as..         |
| Exit                     |
| Exit from Minicom       |
+-----+
  
```

c. Save setup as dfl and Exit.



```

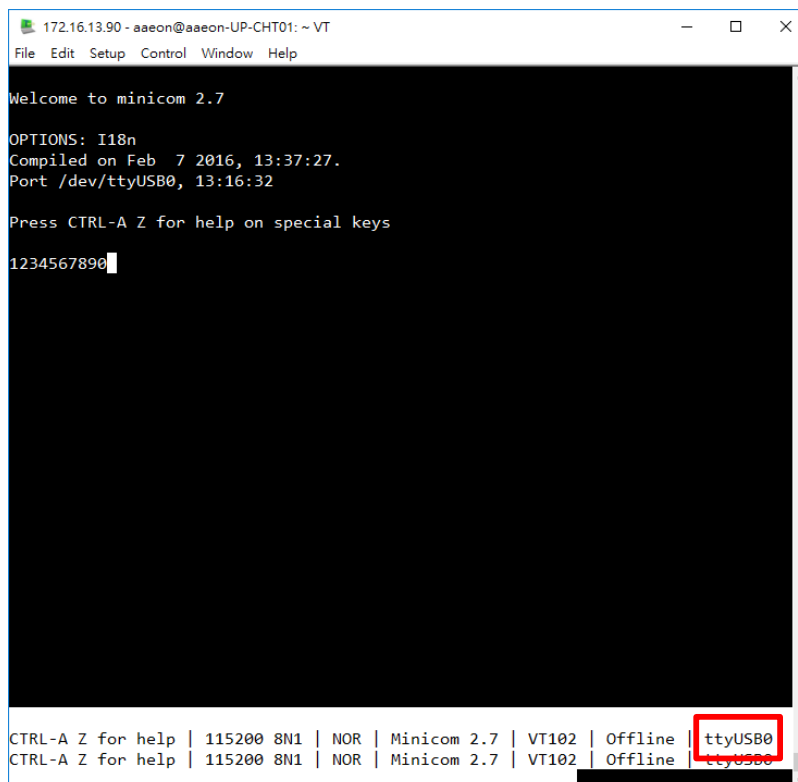
172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

+-----+
| Filenames and paths      |
| File transfer protocols  |
| Serial port setup       |
| Modem and dialing       |
| Screen and keyboard     |
| Save setup as dfl       |
| Save setup as..         |
| Exit                     |
| Exit from Minicom       |
+-----+

+-----+
| Configuration saved      |
+-----+
  
```

d. Start to test.

When you type keyboard, you can response the same words.



The screenshot shows a terminal window titled "172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT". The window contains the following text:

```

Welcome to minicom 2.7

OPTIONS: I18n
Compiled on Feb  7 2016, 13:37:27.
Port /dev/ttyUSB0, 13:16:32

Press CTRL-A Z for help on special keys

1234567890
  
```

At the bottom of the window, there is a status bar with the following information:

CTRL-A Z for help	115200 8N1	NOR	Minicom 2.7	VT102	Offline	ttyUSB0
CTRL-A Z for help	115200 8N1	NOR	Minicom 2.7	VT102	Offline	ttyUSB0

The "ttyUSB0" text in the status bar is highlighted with a red box.

Test 2. RS422 Mode.

1. Jumper setting.

Jumper set to 3-5 and 4-6 (see Figure 3).

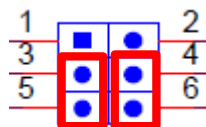


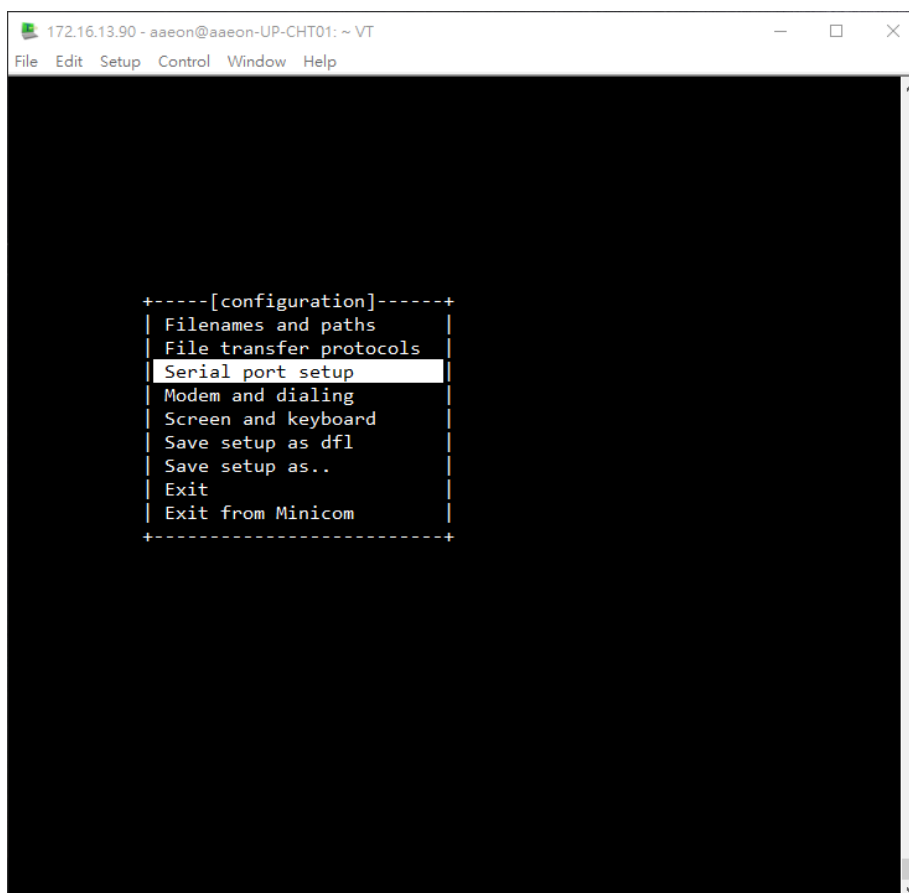
Figure 3: RS422 Mode

2. Plug loopback to UART port.

3. Loopback test with minicom.

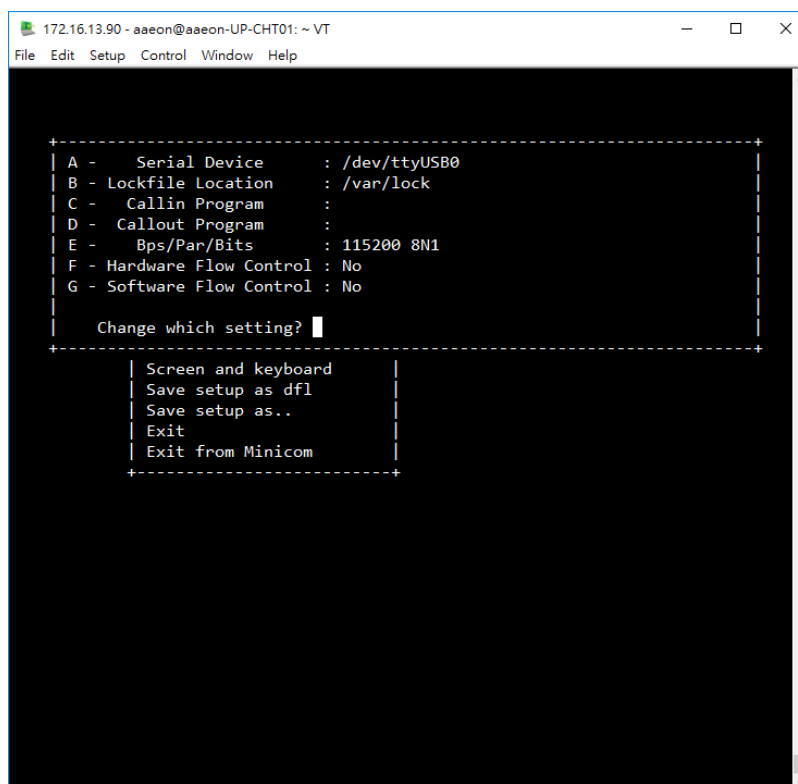
a. Setting minicom.

```
$ sudo minicom -s
```



b. Serial port setup.

Set serial port to /dev/ttyUSB0.



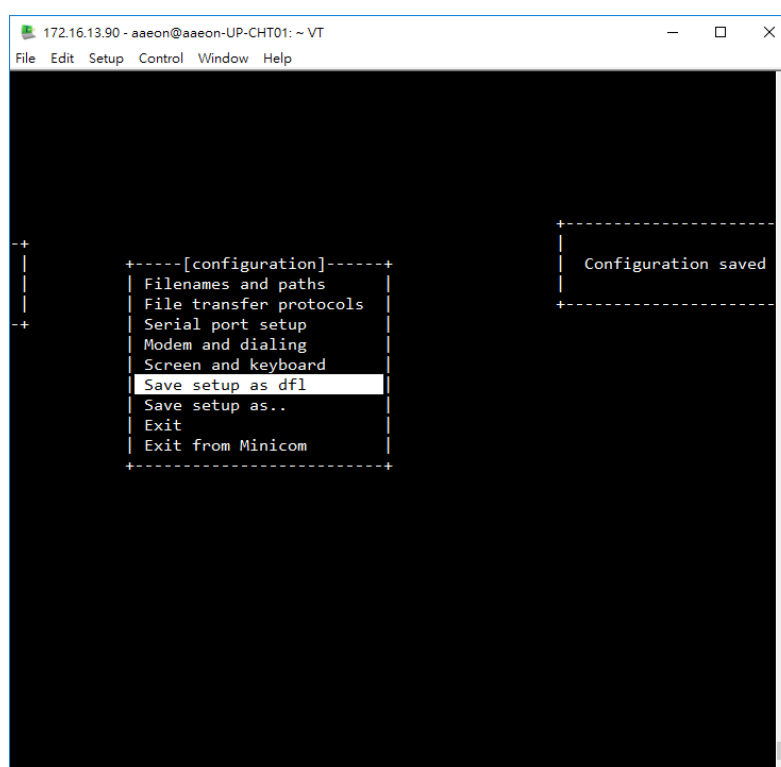
```

172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

+-----+
| A -   Serial Device       : /dev/ttyUSB0 |
| B -   Lockfile Location   : /var/lock    |
| C -   Callin Program      :              |
| D -   Callout Program     :              |
| E -   Bps/Par/Bits        : 115200 8N1   |
| F -   Hardware Flow Control : No         |
| G -   Software Flow Control : No        |
+-----+
Change which setting? █

+-----+
| Screen and keyboard |
| Save setup as dfl   |
| Save setup as..     |
| Exit                |
| Exit from Minicom   |
+-----+
  
```

c. Save setup as dfl and Exit.



```

172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

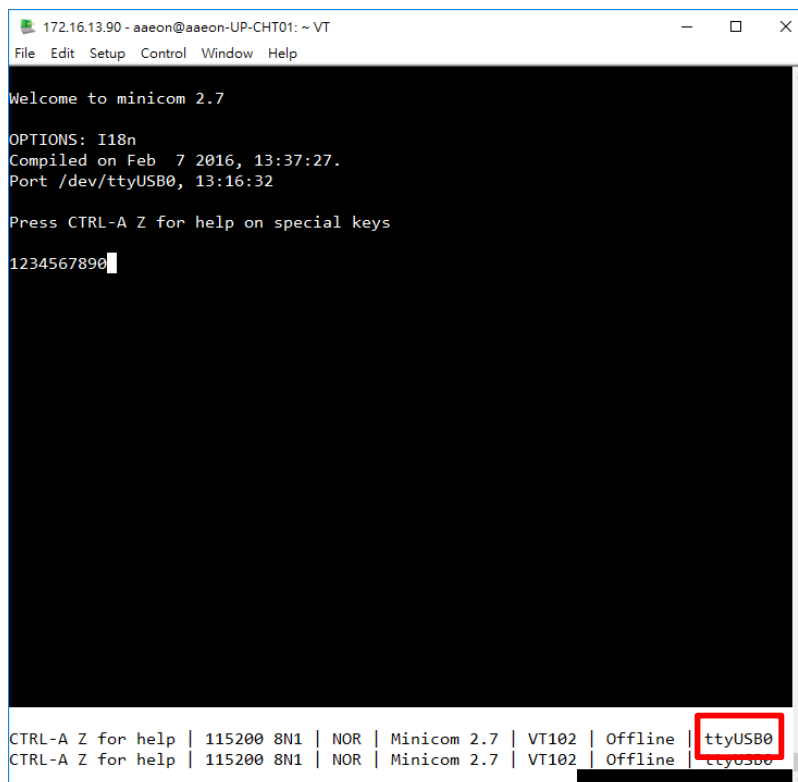
+-----+
| |
| |
+-----+

+-----[configuration]-----+
| Filenames and paths          |
| File transfer protocols      |
| Serial port setup            |
| Modem and dialing            |
| Screen and keyboard          |
| Save setup as dfl            |
| Save setup as..              |
| Exit                         |
| Exit from Minicom            |
+-----+

+-----+
| Configuration saved          |
+-----+
  
```

d. Start to test.

When you type keyboard, you can response the same words.



The screenshot shows a terminal window titled "172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT". The window contains the following text:

```

Welcome to minicom 2.7

OPTIONS: I18n
Compiled on Feb  7 2016, 13:37:27.
Port /dev/ttyUSB0, 13:16:32

Press CTRL-A Z for help on special keys

1234567890
  
```

At the bottom of the window, there is a status bar with the following information:

CTRL-A Z for help	115200 8N1	NOR	Minicom 2.7	VT102	Offline	ttyUSB0
CTRL-A Z for help	115200 8N1	NOR	Minicom 2.7	VT102	Offline	ttyUSB0

The "ttyUSB0" text in the status bar is highlighted with a red box.

Test 3. RS485 Mode.

1. Jumper setting.

Jumper set to 1-3 and 4-6 for transmit (see Figure 4).

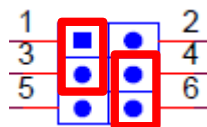


Figure 4: RS485 TX Mode

Jumper set to 1-3 and 2-4 for receive (see Figure 5).

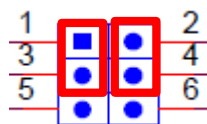


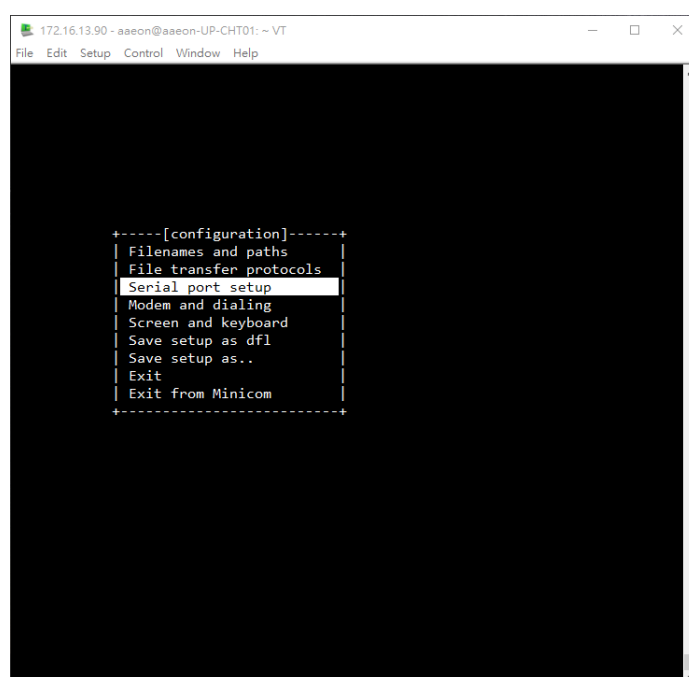
Figure 5: RS485 RX Mode

2. Connect ttyUSB0 port to another RS485 port.

3. Test with minicom.

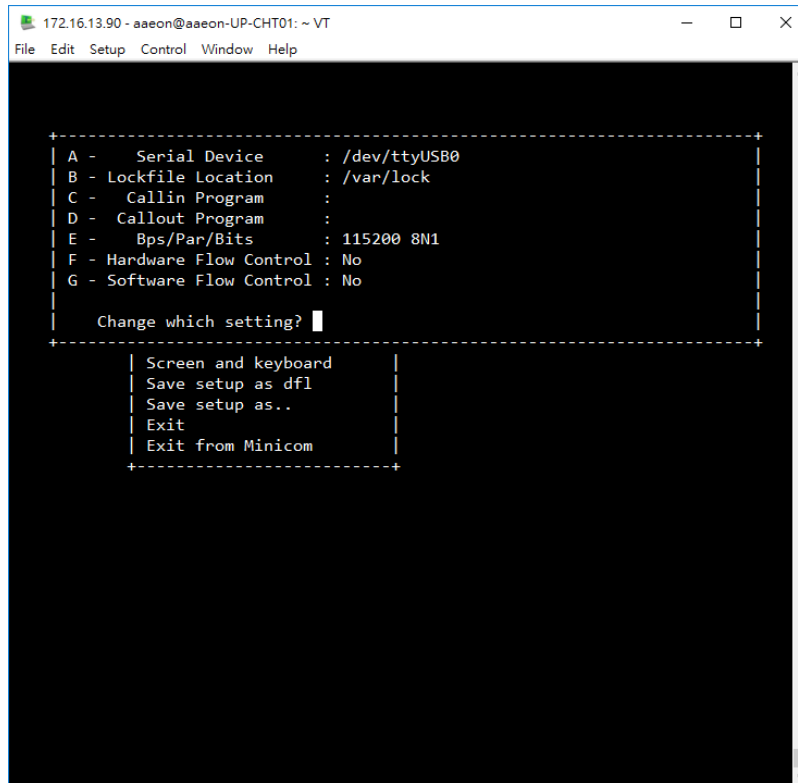
a. Setting minicom.

```
$ sudo minicom -s
```



b. Serial port setup.

Set serial port to /dev/ttyUSB0.



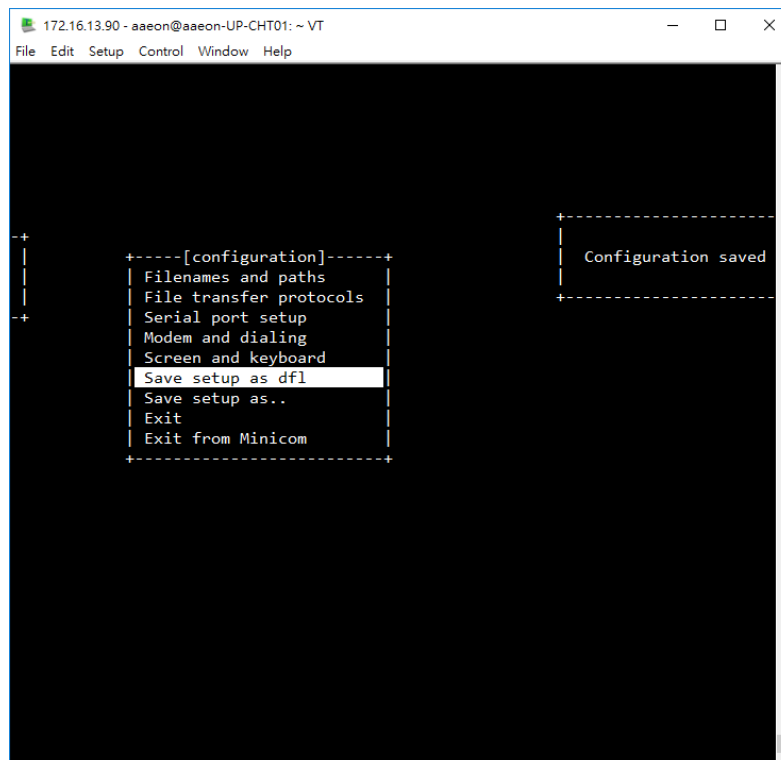
```

172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

+-----+
| A -   Serial Device       : /dev/ttyUSB0 |
| B -   Lockfile Location   : /var/lock    |
| C -   Callin Program      :              |
| D -   Callout Program     :              |
| E -   Bps/Par/Bits        : 115200 8N1   |
| F -   Hardware Flow Control : No         |
| G -   Software Flow Control : No         |
+-----+
Change which setting? █

+-----+
| Screen and keyboard |
| Save setup as dfl   |
| Save setup as..     |
| Exit                |
| Exit from Minicom   |
+-----+
  
```

c. Save setup as dfl and Exit.



```

172.16.13.90 - aaeon@aaeon-UP-CHT01: ~ VT
File Edit Setup Control Window Help

+-----+
| |
| |
+-----+

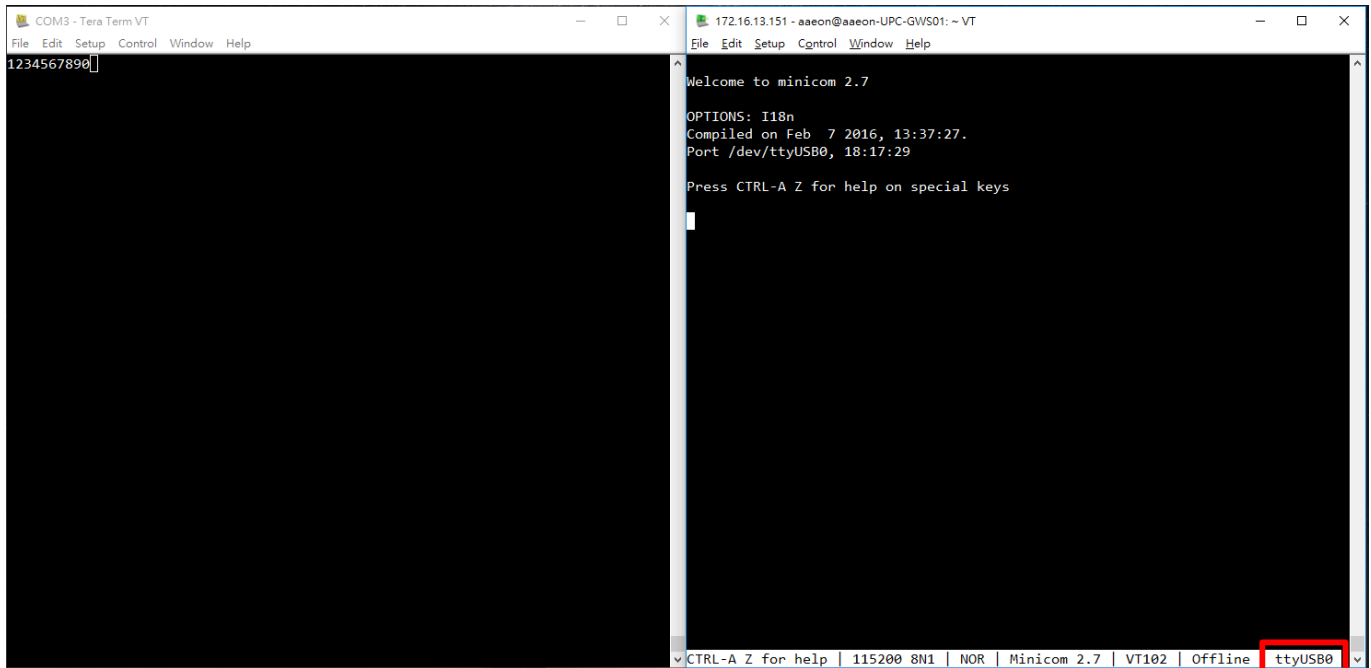
+-----[configuration]-----+
| Filenames and paths |
| File transfer protocols |
| Serial port setup   |
| Modem and dialing   |
| Screen and keyboard |
| Save setup as dfl   |
| Save setup as..     |
| Exit                |
| Exit from Minicom   |
+-----+

+-----+
| Configuration saved |
+-----+
  
```

d. Start to test.

In TX mode:

When you type keyboard on ttyUSB0, you can response the same words from RX end.

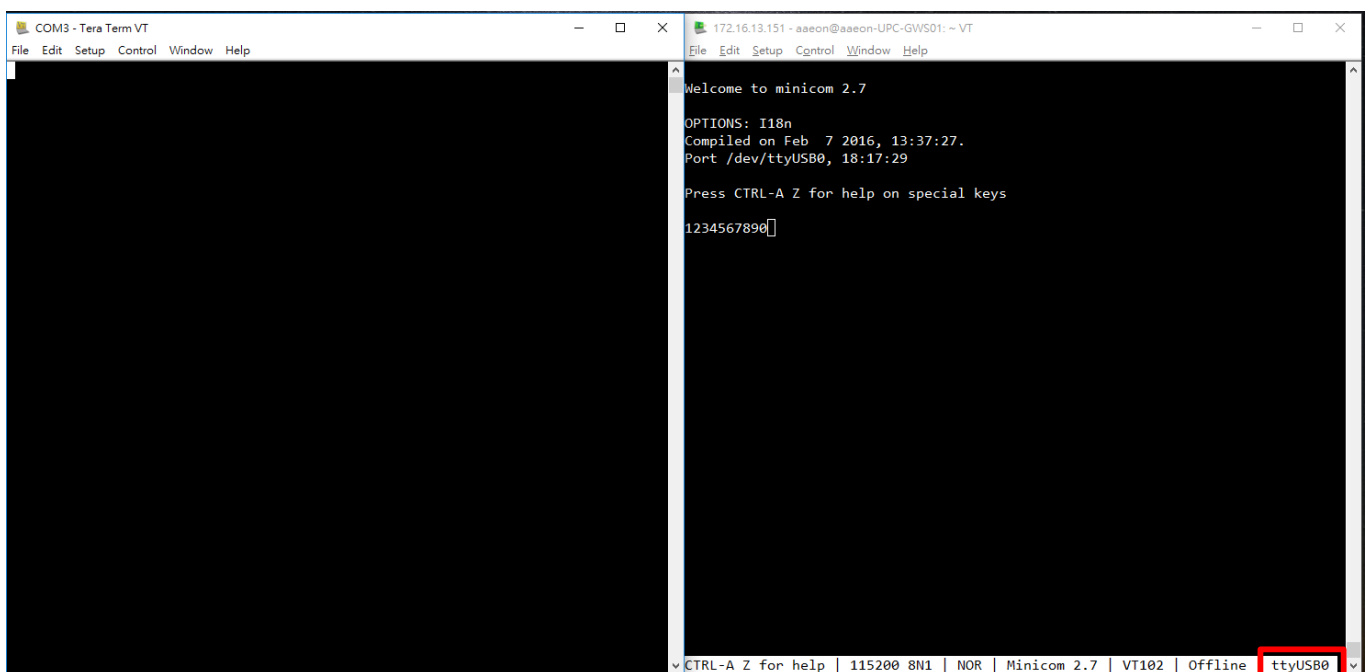


RX end

TX Mode

In RX mode:

When you type keyboard on TX end, you can response the same words from ttyUSB0.



TX end

RX Mode