FC-302 PC Software

Instructions

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The content

1. Introduction

Functions of PC (Personal Computer) software, hereafter called "FC-302ConfigToolInstaller", will be illustrated. Main goal of this instruction is to save time for user by supporting exact usage of the software, at the same time, give a help to user who wants to utilize the radio for another applications. This programming software enables the various parameters of FC-302 to be read or modified.

2. Hardware Installation

To apply PC software to radio application, FC-302ConfigToolInstaller, AC to DC power supply, programming board and PC are needed. In this chapter, instruction for connection of the equipment will be illustrated.

2.1 Interface Description of Programming board
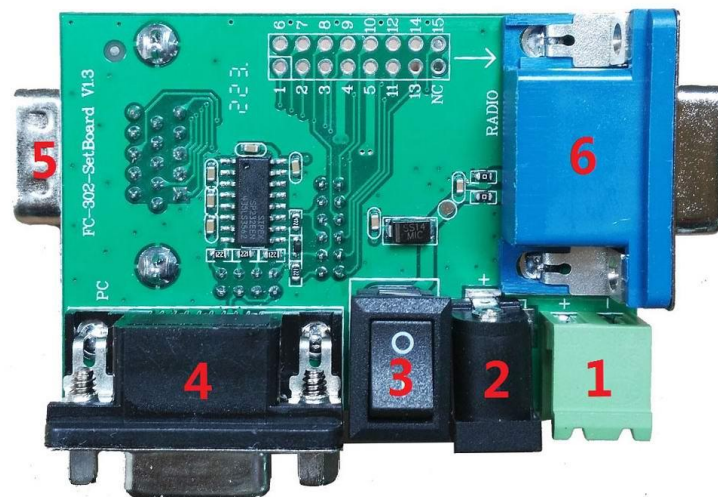
| No.	Description	Note
1	power supply terminals, 12V DC, pay attention to positive and negative electrodes	1 and 2 are used for power supply, you can use any one based on your situation
2	DC socket，12V DC，5*2.1mm	
3	Power switch	
4	DB9 female， for connection to PC serial port	
5	DB15 male connector， used for connecting DB15 female connector of FC-302	To connect different connectors of FC-302, pay attention to the radio configuration, select the appropriate jumper method.
6	DB15 female connector， used for connecting DB15 male connector of FC-302 (previous version)	

2.2 The jumper and connection methods

Data Radio with **DB15 female connector**, there are two cases:

1) **Data radio with FSK Modem or without Modem**, at this moment you could operate data radio parameters setting or radio program upgrading, the serial port data rate is fixed: **19200bps**, data format: **8N1**, the jumper and connection method is as below:
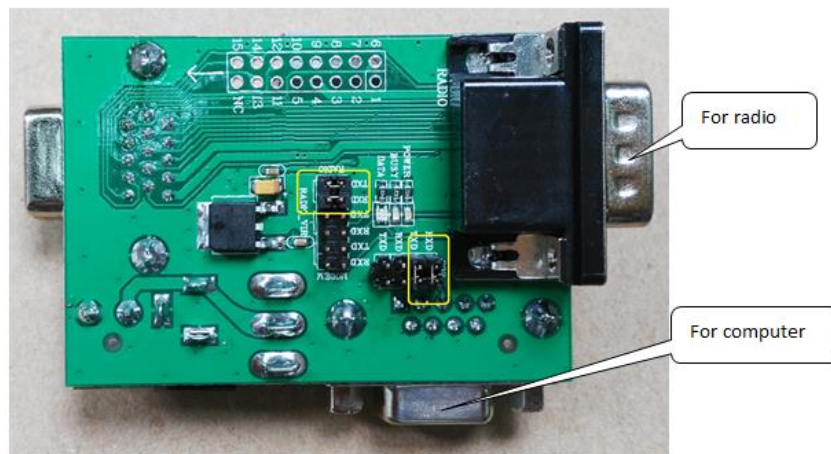

2) **Data radio with GMSK Modem or 4FSK Modem**, at this moment you could operate data radio parameters setting, MODEM parameters setting, MODEM program upgrading or used for data radio's data transmission test, the serial port data rate is the same as embedded Modem rate (**9600bps** or **19200bps**) .
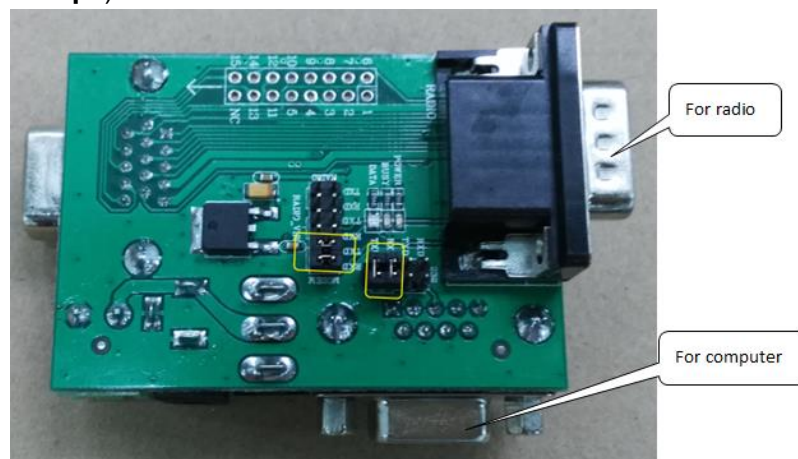
3. Software Installation

| Software name(Before unzip)	FC-302ConfigToolInstaller v1.4.7z
Software name(After unzip)	302ConfigToolInstaller.exe
Operating system requirement	Microsoft Windows XP & Windows 7 & Windows 10

Unzip the "FC-302ConfigToolInstaller v1.4.7z" on your hard drive. Please double-click "302ConfigToolInstaller.exe" to install the application, clicking "next" to complete the installation. After the installation is complete, initially click on the shortcut of PC software and then the following window shows up:
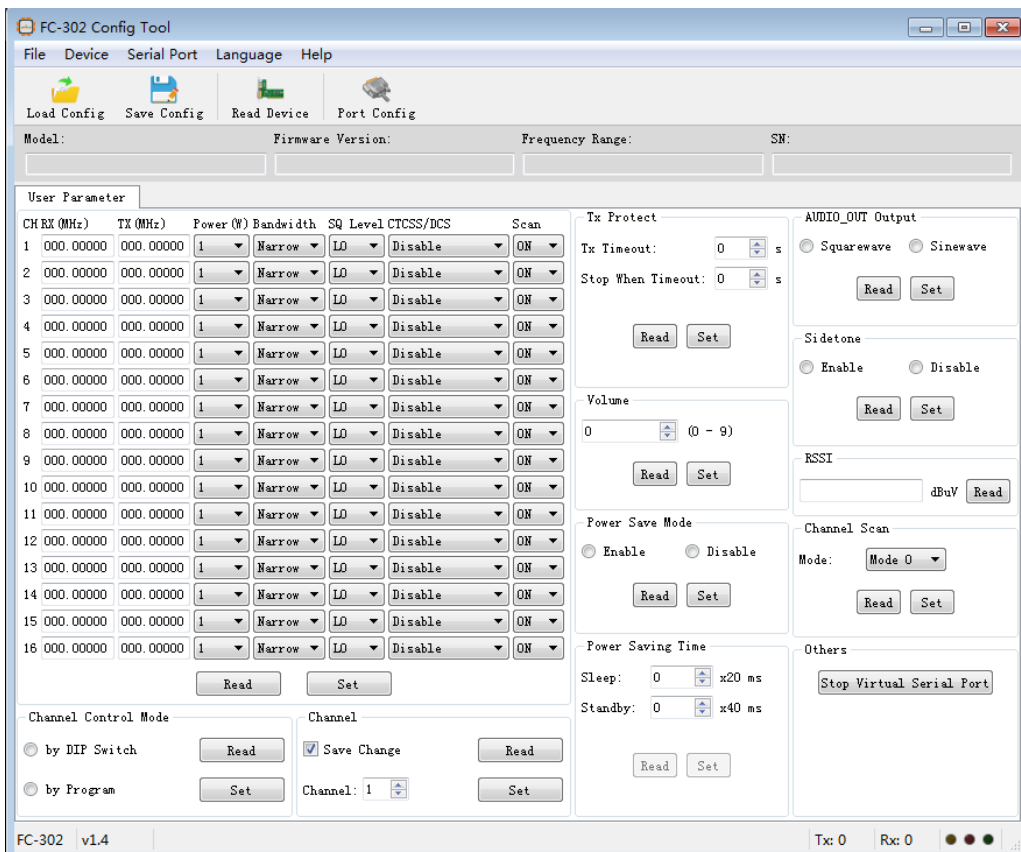
4. Connecting to Data Radio

Communication Port	One available serial communication port
Hardware Accessories	Programming board
	Serial port cable
	AC to DC power supply (Input: 12V@2A)
	USB to RS232 cable (If the computer does not have a serial port)

Connection between the PC and the radio for parameter setting, the programming kit is used for connection as shown below.
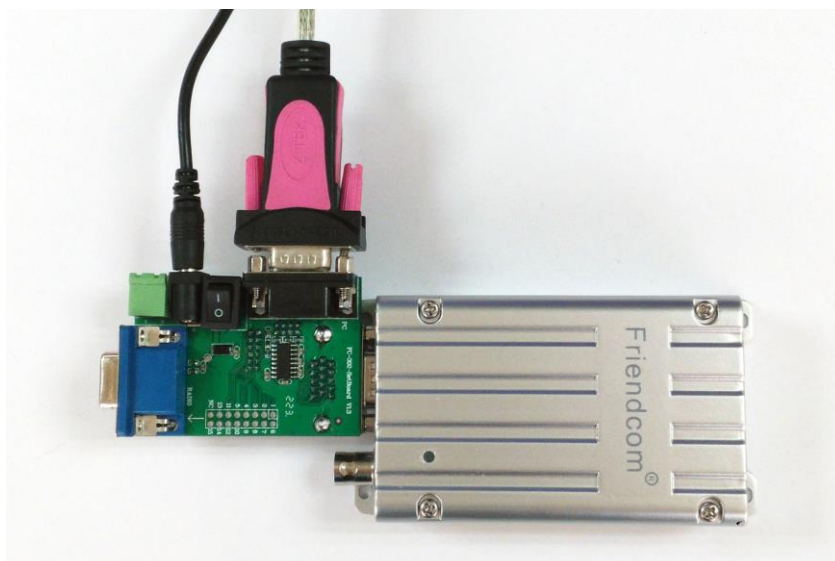
5. Explanation of Operations

Detailed instruction for channel data and system options is described. Especially, in input channel data, data input method for RX or TX frequency; channel option such as Power, Bandwidth, SQ Level, CTCSS / DCS and scan is explained specifically. In addition, system option such as channel control mode, data value setting for power saving mode, TX time out time and scan option is detailed.

5.1 Overview

First of all, open the serial port. The baud rate of serial port is 9600bps or 19200bps (please refer to 2.2 about baud rate.), 8N1 and click "Open Port" as picture shows.
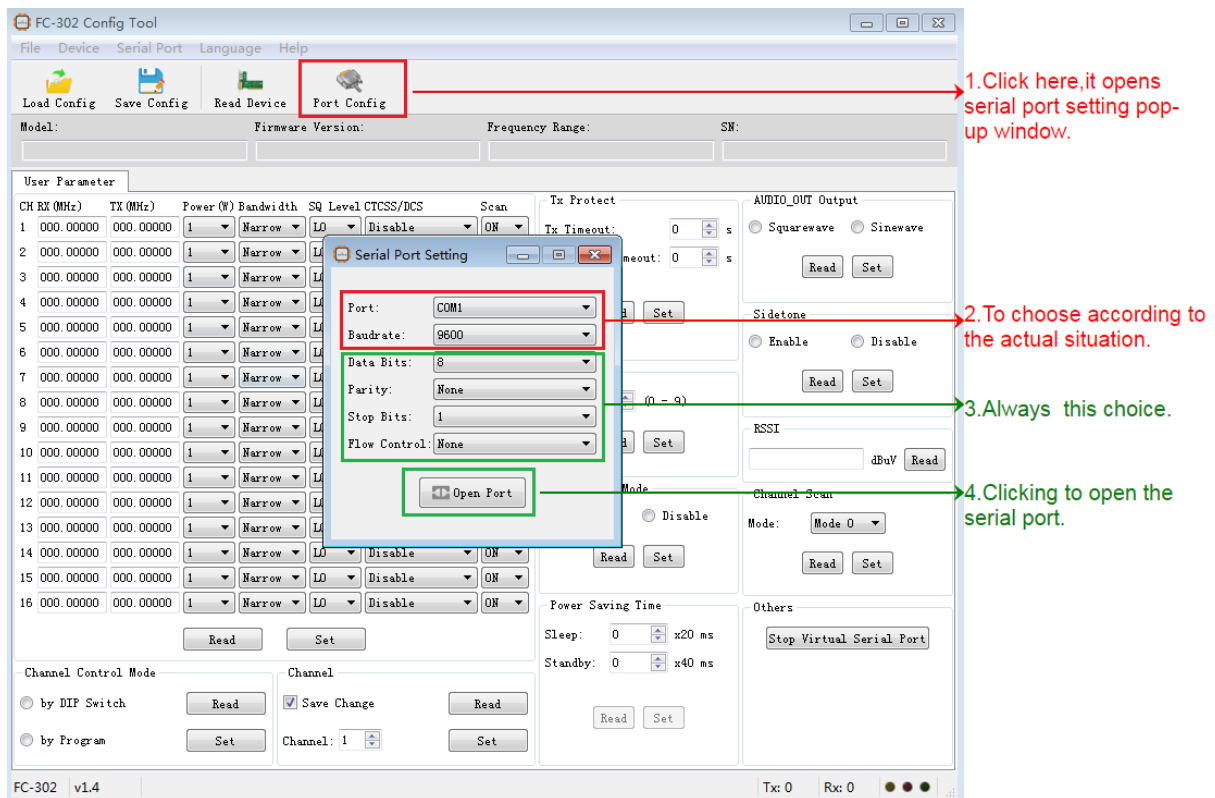

Remark:

1. There are several "Read" and "Set" buttons in the software. To click on "Read" button for reading corresponding parameter of FC-302. If users need to modify the parameters, to click the corresponding "Set" button after modifying the parameters.
2. Users can export yourself parameters to a json file by "Save Config" button,and import it by "Load Config" button when next time operation.

5.2 Read Device

Power on the radio, click on the "Read Device", Radio information can be read. As the following picture:
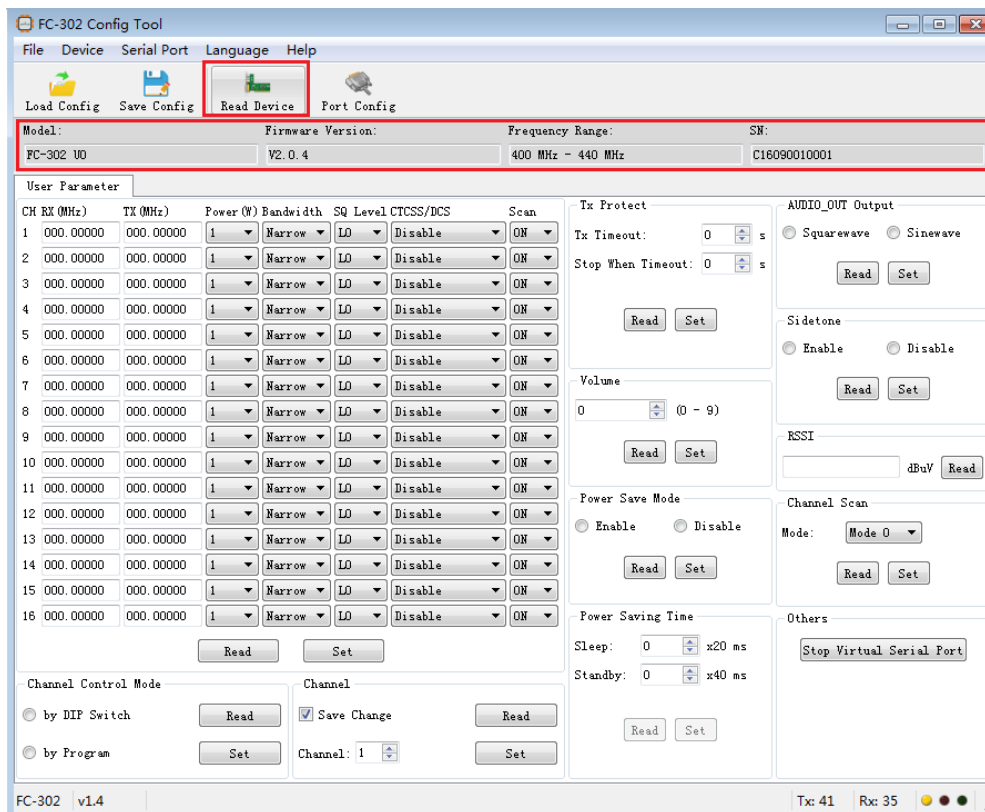
5.3 Input Channel Data

5.3.1 TX and RX frequency

In this option part, users can input TX and RX frequency for channel 1 to 16, and choose output power, Bandwidth, SQ Level, CTCSS / DCS, and SCAN list for each channel. To click "Read" button for reading above parameters.
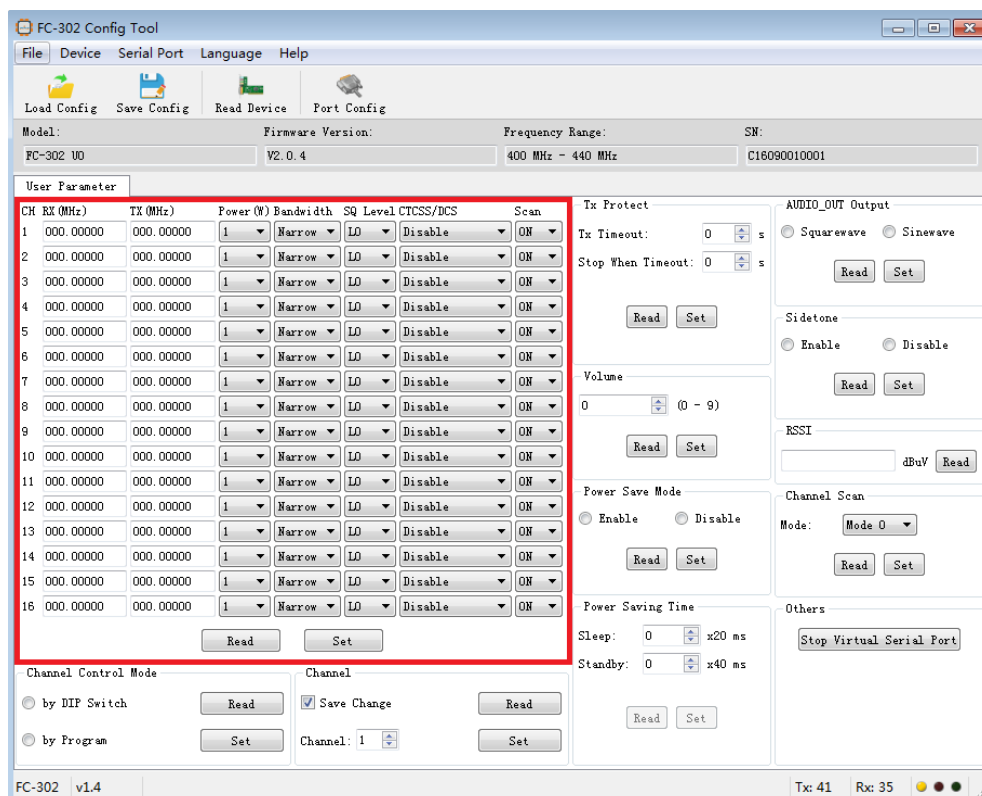
5.3.2 TX and RX frequency

Users can read or set the TX and RX frequency for each channel.

Please note that the frequency should meet two conditions:

1. within the limits of the radio frequency range.

2. It can be exact division by 6.25 KHz.

CH	RX (MHz)	TX (MHz)
1	000.00000	000.00000
2	000.00000	000.00000
3	000.00000	000.00000
4	000.00000	000.00000
5	000.00000	000.00000
6	000.00000	000.00000
7	000.00000	000.00000
8	000.00000	000.00000
9	000.00000	000.00000
10	000.00000	000.00000
11	000.00000	000.00000
12	000.00000	000.00000
13	000.00000	000.00000
14	000.00000	000.00000
15	000.00000	000.00000
16	000.00000	000.00000

5.3.3 Power

1-5W output power can be programmable for each channel.

Power (W)

1

1
2
3
4
5
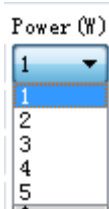
5.3.4 Bandwidth

Users can decide the channel spacing in this feature with optional 12.5KHz (Narrow) or 25KHz (Wide) channel spacing.

Bandwidth
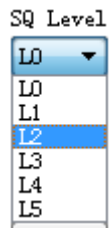
Narrow

Narrow
Wide

5.3.5 SQ level

Five SQ levels can be select in our radio. Level 0 is for fully open mute.
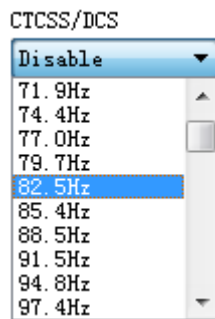
The audio signal will continuously transmit. Other levels with corresponding strength are shown as below:

L1：0.15uV
L2：0.25uV
L3：0.35uV
L4：0.45uV
L5：0.55uV

SQ Level

5.3.6 CTCSS/DCS

Users can encode tones with CTCSS/DCS according to options shown in the picture. The feature is not available for high speed data transmission.

5.3.7 Scan

This feature allow user to decide scan mode and establish channel scan list. Radio will start to detect channels and stay on each channel for at least 200ms according to the established scan sequence. If a signal or conversation is detected on any channels in scan list, the radio will stop on that channel and you will monitor the signal or hear the conversation. When the signal or conversation is disappeared, the radio continues to scan.
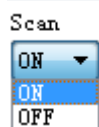
6 System Options

6.1 Channel Control Mode

Radio's channel can be selected by inner Dip(4) switch(HW) or serial command inputted from our PC software(SW). Only in SW control mode, channel can be selected in "Channel" column.
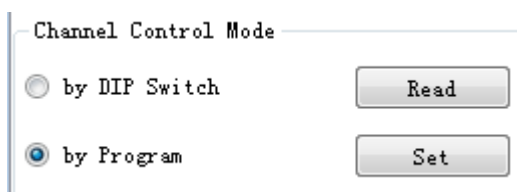
6.2 Working Channel

In this column, user select current channel for working.

6.3 Second Column Features

6.3.1 TX Protection

This feature, when enabled, limit the amount of time that user can continuously transmit. The time can be set from 1 second to 60 seconds. When timeout, radio will release PTT pin. If users want to transmit again, he or she have to wait delay time (set by "stop when timeout") after the radio released PTT.

6.3.2 Volume

FC-302 radio output voice via SPK Pin with 10 levels volume (0-9). User is able to select appropriate volume for the connected external speaker in this feature.

6.3.3 Power save Mode

Here, you can enable Power save mode or disable. When enabled, radio will automatically switch between Sleep and Standby to lower power consumption. The time of Sleep and Standby can be set in "Power save time".
However, for supporting fast attack time between TX and RX, the radio will keep in RX mode and the PLL keep working even in power save mode. Only the intermediate frequency circuit is off.

6.3.4 Power Saving Time

When Power save is enable, sleep time can be programmed from 20 to 500 ms in 20ms increment with 1~25 optional values. That means 1 equals to 20 ms, 2 equals to 40ms .... 25 equal to 500ms Standby time can also be programmed from 40 to 600 ms in 40ms increment with 1 to 15 optional values. That means 1 equals to 40ms, 2 equals to 80, and 15 equals to 600ms.

6.4 Third Column Features

6.4.1 AUDIO-OUT output

Output wave for" AUDIO-OUT output" can be selected as square wave or sin wave.

6.4.2. Side Tone

When enabled, user can hear his own voice while transmitting voice. The side tone volume is fixed at level 2 volume.

6.4.3 RSSI

To detect the air signal strength over the air (Unit：dBuv).

6.4.4 Channel Scan

Scan modes are set up in "Option" and shown as below

0 ---------normal scan with carry only

1 ---------normal scan, carry with tone

2 ---------priority scan, carry only

3 ---------priority scan, carry with tone

If normal scan is enabled, radio will scan from initial channel to channel 16 sequentially. If priority scan is enabled, radio will scan the prioritized channel with more times. Prioritized channel is the working channel before the scan. For example, if prioritized channel is CH10 and initial channel is

CH8, then the scan sequence is CH8, CH10, CH9, CH10, CH10, CH10, CH11, CH10.....CH16, CH10.

6.4.5 Others

This item is reserved; it is compatible for the previous versions.