

APAC Opto Electronics Inc.

AO-150X ZB Module Setting Tool

User Manual

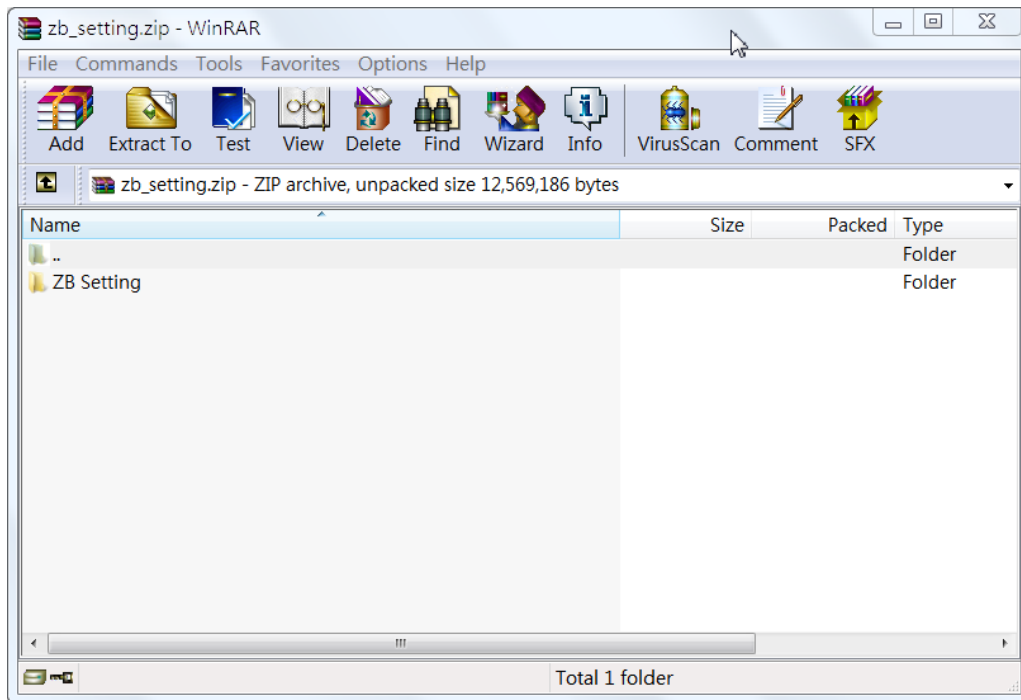
2012/12/05

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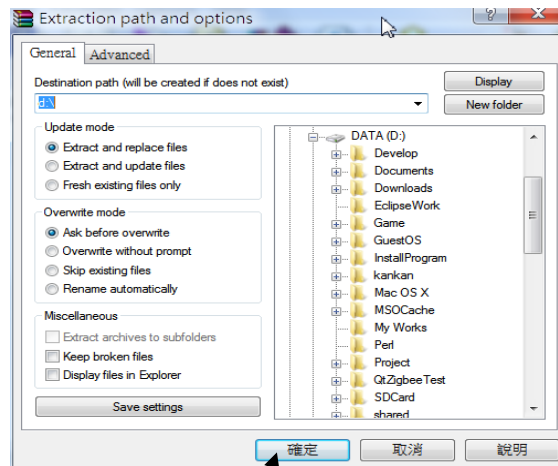
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Software Contents

1. Referring to the following figure. when a user gets a compressed file called “zb_setting.zip”, he has to decompress the file by using the compressing/decompressing program such as WinRAR.



Then, by pressing the menu icon “Extract To”, the following window which shows the destination path such as “D:\” will appear. The compressed file will be decompressed after pressing the “OK” button.



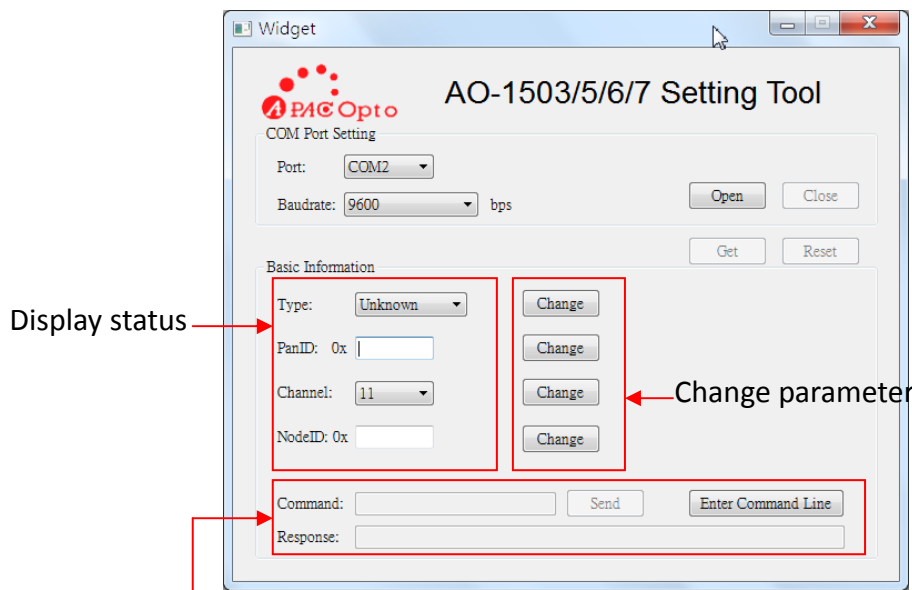
OK



2. The software package includes the following files.
 - (1) Dynamic Libraries (libgcc_s_dw2-1.dll, mingwm10.dll, QtCore4.dll, QtGui4.dll)
 - (2) Main executing program (ZB_Setting.exe)
3. These package files are placed in the same directory to execute the ZB module setting program, such as <Drive:/>ZB_Setting.

Software Functions

The setting software can indicate and set various parameters of the network, such as ZigBee device type, pan ID, wireless channel, and node ID, as shown in the following figure.

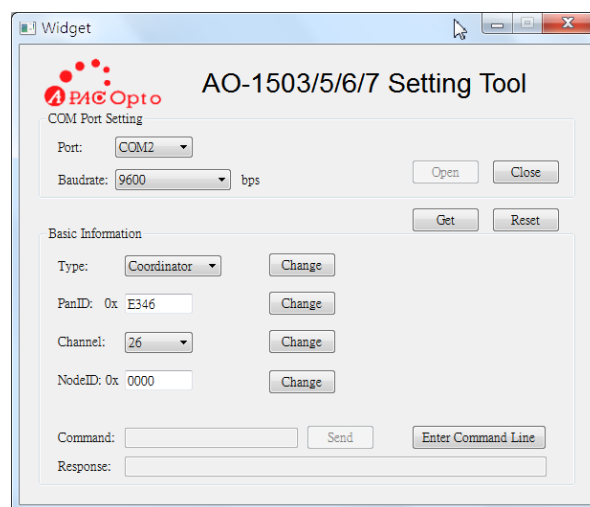


Use AT command (refer to AO-1503 / AO-1505 / AO-1506 / AO-1507 user guideline) in the command mode to set parameters or to query

Operation Descriptions

Follow the following steps to carry out the specific operations:

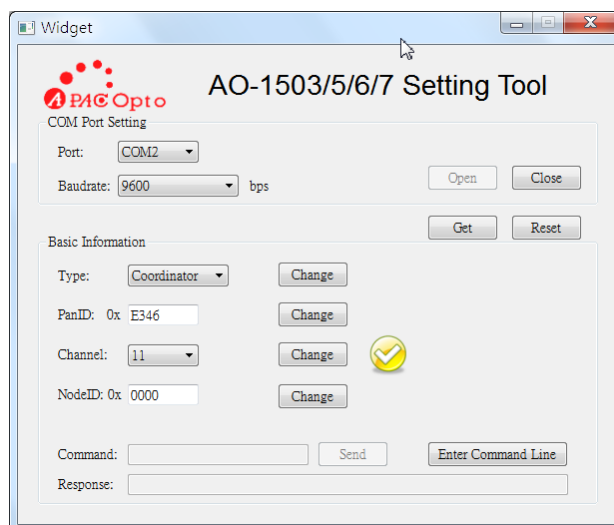
1. Execute the setting software from the D:\zb_setting directory. Select the port and data baud rate. Then, press the “Open” button to open the connection COM port to the ZB module as shown below.



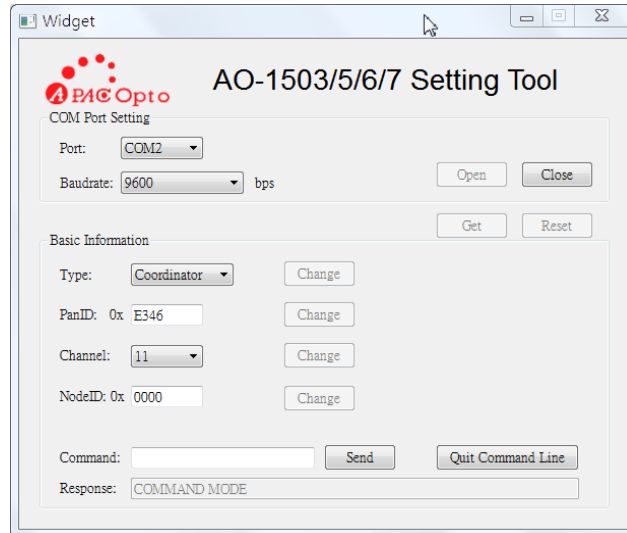
2. If the COM port is connected, then the “Open” button is disabled. In this condition, the “Close”,

“Get” and “Reset” buttons are enabled. Otherwise, these three buttons can not be enabled. Users have to check which COM port is correctly connected to your computer.

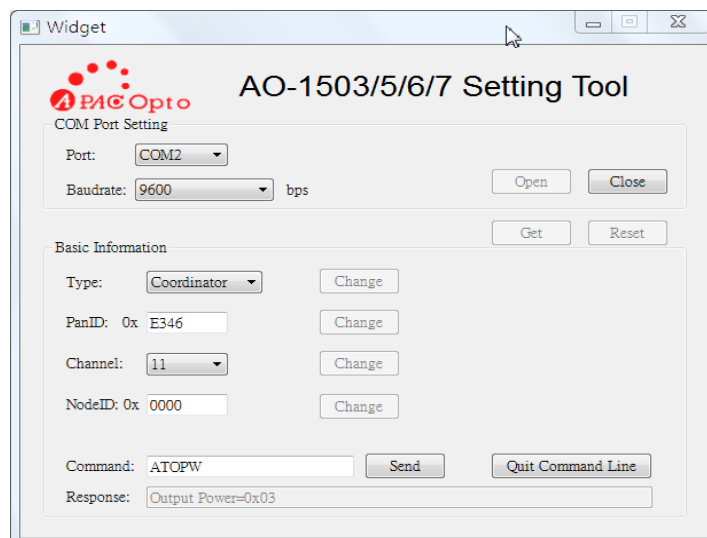
3. By using the “Get” button, users can acquire basic information immediately from the connected ZigBee module and show the window(?). The “Reset” button indicates the software reset function. These two buttons will be disabled if “command mode” is used.
4. When the COM port performs properly, basic system information including ZigBee device type, pan ID, wireless channel and device node ID will be displayed, as illustrated below.
 - (1) ZigBee device type: Coordinator / Router.
 - (2) Pan ID: Values from 0000 to FFF0 based on HEX format.
 - (3) Wireless channel: Values from 11 to 26.
 - (4) ZigBee device node ID: Values from 0000 to FFF0 based on HEX format.
5. Users can modify the basic system information using the “Change” button. For example, by following the following steps, wireless channel 26 can be changed to channel 11.
 - (1) Press the combo box component to select the “11” item.
 - (2) Press the “Change” button to modify the parameter.
 - (3) If modified successfully, the “√” icon will appear as shown below.
 - (4) Modification of other parameters can be similarly executed by following Step (1) to Step (3).



6. If the “command mode” is used, all active buttons except the “Send”, “Quit Command Line”, and “Close” buttons will be disabled.



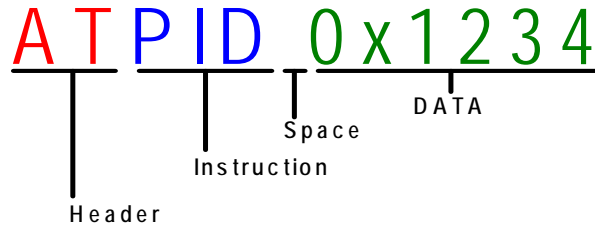
- (1) Press the “Enter Command Line” button to enter the command mode.
- (2) Type AT command in the “Command” filed and press the “Send” button.
- (3) If the AT command is valid, the “Response” filed will respond with a message. For example, we can query the output power in a ZigBee module by the following steps.
 - Type “ATOPW” in the command filed.
 - Press the “Send” button.
 - The response filed will show “Output Power=0x03”.



(4) Press the “Quit Command Line” button to exit the command mode.

AT commands

1. Format:



2. Instruction Lists (S: Send Command, R: Response Message, <CR>: Carriage Return)

Inst	Function	Range of Values	Examples
PID	Set or query PAN ID	0x0000~0xFFFF0 default= 0xFFFF(auto assigned)	S: ATPID<CR> Query PAN ID R: PANID=0x5680<CR> S: ATPID 0x1234<CR> Set PAN ID=0x1234 R: OK<CR>
NID	Set or query NODE ID	0x0001~0xFFFF0 default=auto generation	S: ATNID<CR> query NODE ID R: NODEID=0x6AB6<CR> S: ATNID 0x000F<CR> Set NODE ID=0x000F R: OK<CR>
CHL	Set or query RF channel	0x0B~0x1A (ch11~ch26) default=0x1A (ch26)	S: ATCHL<CR> Query RF channel R: Channel=26<CR> S: ATCHL 0x0C<CR> Set RF channel=ch12 R: OK<CR>
OPW	Set or query RF output power ^{*1}	0x00~0x0F default=0x03 (-0.5dBm)	S: ATPOW<CR> Query RF output power R: Output Power=0x03 <CR> S: ATPOW 0x00<CR>

			Set RF output power=0dBm R: OK<CR> AO-1507
RES	Restore factory settings ^{*2}	POWER=0dbm , RF Channel=26 Baud=9600bps Clean PAN ID, NODE ID (P11=0 CLEAR ID)	S: ATRES<CR> R: Clear all setting and software reboot
MAC	Query 64-bit MAC address ^{*2}	default=auto generation	S: ATMAC<CR> Query 64-bit MAC address R: MAC=00:12:4B:00:01:36:8A:4A<CR> S: ATMAC 1122334455667788<CR> Set MAC address=1122334455667788 (The total length is 8 bytes) R: OK<CR>
BPS	Set or query data baud rate ^{*3}	0x01~0x07 default=0x03	S: ATBPS<CR> Query data baud rate R: Baud=9600 bps <CR> S: ATBPS 0x04<CR> Set baud rate=14400bps R: OK<CR>
TYE	Software setting ^{*4}	Coordinator=0x00 Router=0x01	S: ATTYE<CR> Query device type R: Coordinator or Router<CR> S: ATTYE 0x01<CR> Set device type to Router , R: Software reset Note: from “Coordinator” changes into “Router” device, when reboot, Router will search a Coordinator automatically. If not found, Router will not display current status.
PAR	Set or query parent node	Coordinator: only query Router: set and query	S: ATPAR<CR> R: Parent ID=0x0000<CR> S: ATPAR 0xNNNN<CR>

			set parent NODE ID =NNNN of the Router device R: OK<CR>
VER	Query firmware version	None	ATVER<CR> Firmware version=1.2.17<CR>

*1 RF output power mapping table (dBm)

Setting value	Output Power	Setting value	Output Power	Setting value	Output Power	Setting value	Output Power
0x00	4.5	0x04	-1.5	0x08	-8	0x0C	-16
0x01	2.5	0x05	-3	0x09	-10	0x0D	-18
0x02	1	0x06	-4	0x0A	-12	0x0E	-20
0x03	-0.5	0x07	-6	0x0B	-14	0x0F	-22

*2 Restore factory setting without restoring the 64-bit MAC address

Setting value	Baud rate	Setting value	Baud rate
---	---	0x04	19200
0x01	2400	0x05	38400
0x02	4800	0x06	57600
0x03	9600	0x07	115200

*3 Data baud rate mapping table (bps)

*4 Use the software to set working condition with the “ATTYE” instruction. Before booting the ZigBee device, P13 is set to 0 first.