

HandyPort

Extended Command Set

Wireless Solutions in your Hand

User's Manual

Version 1.1



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1. Introduction

1.1. About this document

This document contains a description of extended command set that is supported in HandyPort and HandyCore. It also contains information on how to use the extended command set¹.

1.2. Configuration changing for HandyPort and HandyCore

To change the configuration of HandyPort and HandyCore, you can use the extended command set at the target devices or terminal emulator.

1.3. Communication Mode

There are two different communication modes for HandyPort and HandyCore (hereafter “adapter”). One is a data mode. The other is a command mode. If two adapters are in the data mode, two devices can send and receive data each other via adapters. If an adapter is in the command mode, you can send commands to the adapter.

1.4. Mode Switching after being connected

In order to support switching between the modes after adapters are being connected, you must change a stream connection policy (SCP) bit and button (BUT) bit to clear (0), and a simple (SIM) bit to set (1) first.

1.4.1. A 16-bit flag for mode setting

Bit Positions															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
TBD	NPS	TBD	FLC	BUT	SIM	QoS	AuC	MOD	MOD	MOD	MOD	MOD	MOD	HEL	SCP

Bit 15: TBD - N/A, should be set to 0.

Bit 14: NPS (No Page Scan) – 1 (Disable Page Scan) / 0 (Enable Page Scan: Default)

Bit 13: TBD – N/A, should be set to 0.

Bit 12: FLC (Flow Control) – 1 (Enable Function) / 0 (No Flow Control) => depends on model

Bit 11: BUT (Button) - 1 (Use a command mode button) / 0 (No button) => depends on model

Bit 10: SIM (Simple) – 1 (Short form response) / 0 (Long form response) => depends on model

Bit 9: QoS (Quality of Service) – 1 (Enable QoS: Default) / 0 (Disable QoS)

Bit 8: AuC (Authentication) – 1 (Enable Function: Default) / 0 (Disable Function)

Bit 7 - 2: MOD (Model Identity) – **Don't modify. It is for factory setting only.**

¹ **The extended command set is required software version 2.0 and above.**

Bit 1: HEL (HELP) – 1 (Use help: Default) / 0 (No help)

Bit 0: SCP (Stream Connection Policy) – 1 (Auto Connection: Default) / 0 (Flexible connection)

1.4.2. Command “[AT+Z]<L><W>”

You can change a stream connection policy (SCP) bit, button (BUT) bit and simple (SIM) bit with a command, “[AT+Z]<L><W>”, as follows¹:

Step 1: Verify that your adapter is not connected.

Step 2: Set the communication mode to command mode (refer to 1.5).

Step 3: Read the current mode setting with a “[AT+Z]<L><R>” command.

Step 4: Set the mode setting flag (4 hexadecimal-digit) with a “[AT+Z]<L><W>” command.

1.4.3. Stream Connection Policy

We provide two stream connection policies. One is an auto connection that isn't supporting the escape mode sequence. But you can maximize the RF link performance in term of throughput and delay. The other is a flexible connection that is supporting the escape mode sequence. You may lose some of the RF link performance in the flexible connection.

1.5. Switching between communication modes

1.5.1. Initial Setting (Not connected)

- Having a command mode button: The initial setting for this model is the data mode. If you want to change the mode from data mode to command mode, you have to push the button first.
- No button for the modes: The initial setting for this model is the command mode. If an adapter is connected to the other end, it will be in the data mode.

1.5.2. Mode Switching after being connected

If you want to switch between the modes after being connected each other, you can use an escape mode sequence and a command “AT+ZR”.

- Switch to the command mode: You can use an escape mode sequence. The default escape mode sequence is “+++” (‘+’ is 0x2B in HEX). You can use the escape mode sequence in the data mode.
- Return to the data mode: You can use an “AT+ZR” command. You can use this command in the command mode.

¹ **Don't play with the mode setting flag. If you set it improperly, your adapter will not be working.**

Ex. HPS-120 (default: “1B43”): LW1742 (Change to “1742”)

HPS-110 (default: “0B23”): LW0722 (change to “0722”)

HCS-100 (default: “0707”): AT+ZLW0706 (change to “0706”)

1.6. Command Format

1.6.1. Having a command mode button

The command format for this model is as follows:

```
<Command1><Data Type><CR>
<Command><Data Type>[Data Type]<CR>
<Command><Data Type><','><Data Type>[Data Type]<CR>
<Command><Data Type>[<','>Data Type]<CR>
<Command><'?'>[Command]<CR>
<Command><Data Type>
<Command>
```

1.6.2. No button for the modes

The command format for this model is as follows:

```
<Command Sequence2><Command><Data Type><CR>
<Command Sequence><Command><Data Type>[Data Type]<CR>
<Command Sequence><Command><Data Type><','><Data Type>[Data Type]<CR>
<Command Sequence><Command><Data Type>[<','>Data Type]<CR>
<Command Sequence><Command><'?'>[Command]<CR>
<Command Sequence><Command><Data Type>
<Command Sequence><Command>
```

1.6.3. Data type

- HEX (Hexadecimal): '0', '1', '2', '3', '4', '5', '6', '7', '8', '9', 'A', 'B', 'C', 'D', 'E', 'F' in ASCII
- Addr (BD_ADDR): Bluetooth Device Address. It consists of 12 HEX.
- DEC (Decimal): '0', '1', '2', '3', '4', '5', '6', '7', '8', '9' in ASCII.
- CH (Character): A displayable character in ASCII.
- STR (String): A sequence of displayable characters.

1.6.4. Notation

- <>: Mandatory Parameter
- []: Optional Parameter
- <CR>: Carriage Return, 0x0D
- <','>: 0x2C

¹ Command: 'A' to 'Z' in ASCII

² Command Sequence: "AT+Z" in ASCII

2. Command Set

The command set is as follows:

Item	Syntax	Description	Remarks
1. Remote Address	AT+Z A <u>Addr</u> <CR>	Set a remote device address for a connection.	Connection Mode '0' & '2' only.
2. Baud rate	AT+Z B <u>BR</u> [<u>D</u>]<CR>	Set the baud rate 'D': Change default baud rate (Optional). Button mode only.	'0': 1200, '1': 2400, '2': 4800, '3': 9600, '4': 19200, '5': 38400, '6': 57600, '7': 115200
3. COM port	AT+Z C <u>COMPort</u> <CR>	Set a serial port. COMPort: '1' ~ '7'	Connection mode '2' only.
4. Disconnect	AT+Z D <CR>	Disconnect the current connection.	It must execute in the command mode.
5. PIN code	AT+Z E <u>PIN</u> <CR>	Set the authentication. On: Type up to 11 characters Off: Type <CR> only.	Paired adapters must have a same PIN code.
6. Flow Control	AT+Z F <u>FC</u> [<u>D</u>]<CR>	Set the Flow control. FC: '0' ~ '2' 'D': Change default flow control (Optional). Button mode only.	Flow control settable model only. '0': None, '1': CTS/RTS, '2': DTR/DSR
7. Timer for Search	AT+Z G <u>TO</u> <CR>	Set the default search timeout TO (timeout): ASCII '0' ~ "999"	Connection mode '3' only. Default: 10 sec.
8. Number of Search	AT+Z H <u>NO</u> <CR>	Set the default number of search NO (#): ASCII '0' ~ "999"	Connection mode '3' only. Default: 10
9. Inquiry	AT+Z I <u>TO</u> . <u>NO</u> [<u>L</u>]<CR>	Execute an inquiry. TO: ASCII '0' ~ "999" NO: ASCII '0' ~ "999" L: Display CoD & Name/Optional	Connection mode '3' only
10. Inquiry Scan	AT+Z J <u>E</u> / <u>D</u> <CR>	Set Inquiry Scan Mode 'E': Enable 'D': Disable	Connection mode '1' only
11. LPM	AT+Z K <u>E</u> / <u>D</u> <CR>	Set Low Power Mode 'E': Enable 'D': Disable	Low Power Mode

Item	Syntax	Description	Remarks
12. Mode	AT+Z <u>M</u> Mode<CR>	Set Connection Mode. Mode: '0' ~ '3' '0'/'2': Required a remote addr. '2': Required a request COM port	'0': 1:1 Connection Mode '1': Wait Mode '2': Register & Connect Mode '3': Wait Command Mode
13. Friendly Name	AT+Z <u>N</u> Name<CR>	Set a friendly name. Name: up to 11 ASCII	
14. OTA ON	AT+Z <u>O</u> <u>O</u> <CR>	Enter remote configuration via OTA.	Connected state only. Printed with "RmON".
15. OTA OFF	AT+Z <u>O</u> <u>F</u> <CR>	Exit remote configuration.	Connected state only.
16. OTA Reset	AT+Z <u>O</u> <u>R</u> <CR>	Reset the remote adapter.	Connected state only.
17. OTA Usage	AT+Z <u>O</u> ?<CR>	Usage for remote configuration.	Connected state only.
18. Parity Bit	AT+Z <u>P</u> <u>P</u> A[D]<CR>	Set the parity bit. 'D': Change the default parity bit (Optional). Button mode only.	0: None, 1: Odd 2: Even
19. Connection Timeout	AT+Z <u>Q</u> <u>T</u> O<CR>	Set the connection timeout. TO (timeout): ASCII '0' ~ "999"	Connection mode '3' only.
20. Return	AT+Z <u>R</u>	Return to the data mode.	Connected state only
21. Stop Bit	AT+Z <u>S</u> <u>S</u> T[D]<CR>	Set the stop bit. 'D': Change the default stop bit (Optional). Button mode only.	0: 1 Stop, 1: 2 Stop
22. Connecting	AT+Z <u>T</u> <u>A</u> ddr[,T <u>O</u>]<CR>	Make a connection. Addr: BD_ADDR for target. [,TO] (timeout): ASCII '0' ~ "999" / Optional	Connection mode '3' only. ';': ASCII 0x2C
23. Undo	AT+Z <u>U</u>	Cancel a search command.	Connection mode '3' only.
24. View	AT+Z <u>V</u>	View the current settings.	
25. CoD	AT+Z <u>W</u> <u>C</u> oD<CR>	Set the class of device. CoD: 6 Hex-digit	Default: "001F00"
26. Exit	AT+Z <u>X</u>	Exit the command mode.	Reboot.
27. Esc character	AT+Z <u>Y</u> <u>E</u> SC<CR>	Set an escape mode character. ESC: 1 ASCII character	Default: '+'

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Item	Syntax	Description	Remarks
28. State	AT+ZZ	Display the current state. State: 'S'/'P'/'C'/'A'/'I'	'S': Idle / 'P': Pairing / 'C': Connecting / 'A': RF on / 'I': Inquiring
29. Esc Sequence	+++	Change mode from the data mode to command mode.	Escape Mode Sequence Default: "+++"
30. Help	AT+Z? C <CR>	Display the command list and usage.	AT+Z?<CR>: command list AT+Z?A<CR>: usage of 'A'

Note 1) If you change the default setting (factory setting), you must remember it.

Note 2) If you mistype 5 consecutive commands, you must power cycle for using the command set.

3. Command Syntax

3.1. Set a remote device address for a connection

Syntax	Description
AT+Z A <Addr><CR>	<p>Set a remote device address for a wireless connection¹.</p> <ul style="list-style-type: none"> - Addr: an address of remote adapter, 12 HEX - Validation: Execute "AT+ZV" and verify the "Remote BD_ADDR: " field. <p>It is valid in connection mode '0' & '2' only.</p> <p>- Ex: AT+ZA000278017F0A<CR></p>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Error in address for remote or connection mode

3.2. Set the baud rate

Syntax	Description
AT+Z B <DEC>[CH]<CR>	<p>Set the baud rate.</p> <ul style="list-style-type: none"> - <DEC>: '0': 1,200, '1': 2,400, '2': 4,800, '3': 9,600, '4': 19,200, '5': 38,400, '6': 57,600, '7': 115,200bps - [CH]: An optional parameter, 'D'. If you use this option, the default baud rate (factory setting) will be changed. <p>- Ex: AT+ZB3<CR></p>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

¹ A local address and remote address must be different.

3.3. Set a Serial Port

Syntax	Description
AT+Z C <DEC><CR>	Set a request serial port. - <DEC>: '1' – '7' <i>It is valid in connection mode '2' only.</i> - Ex: AT+Z C 1<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.4. Disconnect the current connection.

Syntax	Description
AT+Z D <CR>	Disconnect from the current connection. It must execute in the command mode. - Ex: +++AT+Z D <CR>
Response	Description
DSC	Success
NOK<ST>	Error (No connected state) - <ST> (state): 'S': Idle, 'P': Pairing, 'C': Connecting, 'A': Active, 'I': Inquiring

3.5. Set the authentication

Syntax	Description
AT+Z E <STR><CR>	Set the authentication and encryption ¹ . - <STR>: Up to 11 characters - Ex (Activation): AT+Z E 1234<CR> - Ex (Deactivation): AT+Z E <CR>
Response	Description
<CR><LF>OFF<CR><LF>	Successful Inactivation.
<CR><LF>ON: <PIN><CR><LF>	Successful Activation.
<CR><LF>OK<CR><LF>	Success

¹ To make a connection between two adapters, they have to have the same PIN code.

3.6. Set the Flow control

Syntax	Description
AT+Z F <DEC>[CH]<CR>	Set the Flow control. - <DEC>: '0': None, '1': CTS/RTS, '2': DTR/DSR - [CH]: An optional parameter, 'D'. If you use this option, the default flow control (factory setting) will be changed. - Flow control settable model only. - Ex: AT+Z F 0<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error or no flow control function.

3.7. Set the default search timeout

Syntax	Description
AT+Z G <DEC><CR>	Set the default inquiry timeout. - <DEC>: '0' ~ "999" - Default: 10 sec - Connection mode '3' only. - Ex: AT+Z G 10<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.8. Set the number of inquiry responses

Syntax	Description
AT+Z H <DEC><CR>	Set the number of inquiry responses. - <DEC>: '0' ~ "999" - Default: 10 responses - Connection mode '3' only. - Ex: AT+Z H 10<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.9. Execute an inquiry

Syntax	Description
AT+Z I DEC1 <><DEC2>[L]<CR>	Execute the search devices. - <DEC1, 2>: '0' ~ "999", DEC1: Timeout, DEC2: A number of responses - [L] (optional): Display CoD and Friendly Name. - Connection mode '3' only. - Ex: AT+Z I 10,1<CR>
Response	Description
<CR><LF>BD_ADDR[,CoD,Name]	Success
<CR><LF>EOI<CR><LF>	End of Inquiry
<CR><LF>ERR<CR><LF>	Input range error

3.10. Set Inquiry Scan Mode

Syntax	Description
AT+Z J <CH><CR>	Set the inquiry scan mode ¹ . - <CH>: 'E': enable, 'D': disable - Default: Enable - Ex: AT+Z J E<CR>
Response	Description
ON/OFF	The Result of Setting
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.11. Set Low Power Mode

Syntax	Description
AT+Z K <CH><CR>	Set the low power mode. - <CH>: 'E': enable, 'D': Disable (Default) - Ex: AT+Z K D<CR>
Response	Description
ON/OFF	The Result of Setting
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

¹If you disable the inquiry scan, other devices will not see it.

3.12. Set Connection Mode

Syntax	Description
AT+Z M <DEC><CR>	Set the connection mode ¹ . - <DEC>: '0': 1:1 Connection Mode '1': Wait Mode '2': Register & Connect Mode '3': Wait Command Mode (You can use the extended command set related to connection in this mode.) - Default: 1:1 Mode - Ex: AT+Z M 3<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.13. Set a friendly name

Syntax	Description
AT+Z N <STR><CR>	Set a friendly name. - <STR>: Up to 11 characters - Ex: AT+Z N HandyWave<CR>
Response	Description
2LN	Apply 11 characters only
<CR><LF>OK<CR><LF>	Success

¹ Mode '0' and '2': Required a remote address.

Mode '2': Required a request serial port

3.14. Enter remote configuration via OTA

Syntax	Description
AT+Z O <O><CR>	<p>Enter the remote configuration mode via OTA. You can change the configuration of remote adapter at the local adapter with this command.</p> <ul style="list-style-type: none"> - Connected state only. - Command mode only. Must execute “+++” (escape mode sequence) first. - Display with “RmON”. - Ex: AT+ZOO<CR>
Response	Description
<CR><LF>RmON<CR><LF>	State of remote control
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.15. Exit remote configuration

Syntax	Description
AT+Z O <F><CR>	<p>Exit the remote configuration mode via OTA.</p> <ul style="list-style-type: none"> - Connected state only. - Command mode only. Must execute “+++” (escape mode sequence) first. - Ex: AT+ZOF<CR>
Response	Description
<CR><LF>RmOFF<CR><LF>	State of remote control
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.16. Reset the remote adapter

Syntax	Description
AT+Z O <R><CR>	Reset the remote adapter via OTA. - Connected state only. - Command mode only. Must execute “+++” (escape mode sequence) first. - Ex: AT+Z O R<CR>
Response	Description
<CR><LF>RmRST<CR><LF>	State of remote device
<CR><LF>DSC<CR><LF>	Disconnect the current connection.
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.17. Usage of remote configuration

Syntax	Description
AT+Z O <?>	Display the usage of remote configuration via OTA. - Connected state only. - Ex: AT+Z O ?
Response	Description
<CR><LF>AT+ZO: ...<CR><LF>	Display usage
<CR><LF>ERR<CR><LF>	Not a connected state.

3.18. Set the parity bit

Syntax	Description
AT+Z P <DEC>[CH]<CR>	Set the parity bit. - <DEC>: '0': None, '1': Odd, '2': Even - Default: None - [CH]: An optional parameter, 'D'. If you use this option, the default parity bit (factory setting) will be changed. - Ex: AT+Z P 0<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.19. Set the connection timeout

Syntax	Description
AT+Z Q <DEC><CR>	Set the connection timeout. - <DEC>: '0' – "999" - Default: 10 sec - Connection mode '3' only. - Ex: AT+Z Q 10<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.20. Return to the data mode

Syntax	Description
AT+Z R	Return to the data mode from command mode. - Connected state and command mode only. - Ex: AT+Z R
Response	Description
<CR><LF>OK<CR><LF>	Success

3.21. Set the stop bit

Syntax	Description
AT+Z S <DEC>[CH]<CR>	Set the stop bit. - <DEC>: '0': One, '1': Two - Default: One - [CH]: An optional parameter, 'D'. If you use this option, the default stop bit (factory setting) will be changed. - Ex: AT+Z S 0<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.22. Make a connection

Syntax	Description
AT+Z T <Addr>[,<DEC>]<CR>	Make a connection to a specific remote adapter. - <Addr>: an address of remote adapter, 12 HEX - [,<DEC>]: Optional parameter. Timeout. '1' – "999". Default: 10 sec - Ex: AT+Z T 000278013F2E<CR>
Response	Description
<CR><LF>CON<CR><LF>	Successfully Connected
<CR><LF>CTO<CR><LF>	Connection Timeout

3.23. Cancel a command

Syntax	Description
AT+Z U	Cancel the executing commands. - Connection mode '3' only. - Ex: AT+Z U
Response	Description
<CR><LF>OK<CR><LF>	Success

3.24. View the current settings

Syntax	Description
AT+Z V	Display the current settings. - Ex: AT+Z V
Response	Description
SOFTWARE VERSION ...	Success

3.25. Set the class of device

Syntax	Description
AT+Z W <HEX><CR>	Set the Class of Device. - <HEX>: 6 HEX-digit - Default: "001F00" - Ex: AT+Z W 001F00<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.26. Exit the command mode

Syntax	Description
AT+Z X	Exit the command mode and reboot. - Ex: AT+Z X
Response	Description
<CR><LF>RST<CR><LF>	Success

3.27. Set an escape mode character

Syntax	Description
AT+Z Y <CH><CR>	Set an escape mode character. - <CH>: an ASCII character - Default: '+' - Ex: AT+Z Y +<CR>
Response	Description
<CR><LF>OK<CR><LF>	Success
<CR><LF>ERR<CR><LF>	Input range error

3.28. Display the current state

Syntax	Description
AT+Z Z	Display the current state. - Command mode only. - Ex: AT+Z Z
Response	Description
<CR><LF><State><CR><LF>	Success - <State>: 'S': Idle, 'P': Pairing, 'C': Connecting, 'A': Active, 'I': Inquiring

3.29. Change mode from data mode to command mode

Syntax	Description
+++	Switch from the data mode to the command mode. - Escape mode sequence has to support. - Ex1: +++AT+ZD<CR> - Ex2: +++
Response	Description
N/A	

3.30. Display the command list and usage

Syntax	Description
AT+Z?[command]<CR>	Display the command list and usage of a command. - Ex1: AT+Z?<CR> - Ex2: AT+Z?A<CR>
Response	Description
Command List	Display command list
AT+ZA<BD_ADDR><CR>: Set ...	Display the usage of command