Appendix_3

FZ760_User Environment Setup Details

Version 0.1.1

Data 2010-05-20

■ Table of Contents

1. Default Setting of the Device

Item	Default Value
Device Version	FZ760 Vx.x.x
Device Ext Address	001551xxxxxxxxxx
Device Pan ID	1234
Device Channel	14
Device Transmit Power	00
UART (baud rate, data bit, parity bit, stop bit)	38400 (8, N, 1 Fixed)
KEY Option	1(Enable)
ADC Option	0(Disable)
Count Option	0(Disable)
GPIO Option	0
GPIO Clear Option	1(Enable)
Internal Time	10
Power Mode	0
Local Device Address	0000
Target Device Address	FFFF
Link Quality Option	0(Disable)
End of Length	0
Bridge Option	0(Disable)
Bridge 1 Address	FFFF
Bridge 2 Address	FFFF
Bridge 3 Address	FFFF
Bridge 4 Address	FFFF
Start Message Option	1(Enable)
Location Option	0(Disable)
ID Option	0(Disable)
Device Name	FZ760XX

(1) If default setting values are used for the device, users can use Serial / KEY / GPIO data with no change.

(2) If default setting values are used for the device, data is sent in broadcast mode (FFFF).

(3) If default setting values are used for the device, users can not use ADC data.

(4) If default setting values are used for the device, users can not use COUNT data.

(5) If default setting values are used for the device, users can not use the Low Voltage Mode.

(6) If default setting values are used for the device, users can not use the Bridge function.

2. User Environment Setup Details

2-1. Device Version

Item	Default Value
Device Version	FZ760 Vx.x.x

- The Device Version refers to the firmware version of the device.

(1) The Device Version cannot be changed and only can be checked.

2-2. Device Ext Address

Item	Default Value
Device Ext Address	001551xxxxxxxxxx

- The Device Ext Address is the unique IEEE address of the device.

(1) The Device Ext Address cannot be changed and only can be checked.
(2) When KEY data is transmitted, the device transmits its IEEE address inside the data.
(3) When ADC data is transmitted, the device transmits its IEEE address inside the data.
(4) When GPIO data is transmitted, the device transmits its IEEE address inside the data.
(5) When COUNT data is transmitted, the device transmits its IEEE address inside the data.

2-3. Device Pan ID

Item	Default Value
Device Pan ID	1234

- The Device Pan ID is the initial ID for communication between the devices.

(1) To make the device send or receive data on the network, the same Pan ID has to be used.
(2) The Pan ID is hexadecimal and users have to enter another hexadecimal number to change it.
Ex)1234 => This means the Pan ID is 0x1234.
0A3F => This means the Pan ID is 0x0A3F.

2-4. Device Channel

Item	Default Value
Device Channel	14

- The Device Channel is a channel for data communication between the devices.

(1) To make the device send or receive data on the network, the same channel has to be used.

(2) As more devices use the same channel, data volume increases and the channel's network traffic increases.

(3) When the network traffic increases, sending and receiving of data may not be smooth.

(4) The Device Channel is shown as a hexadecimal number and users have to enter another hexadecimal number to change it.

Ex) 14 => This means that the Device Channel is 0x14.

0B => This means that the Device Channel is 0x0B.

(5) Number of usable Device Channels is fifteen.

Channel No.**11** (0x0B): 2405MHz, Channel No.**12** (0x0C): 2410MHz, Channel No.**13** (0x0D): 2415MHz, Channel No. **14** (0x0E): 2420MHz, Channel No. **15** (0x0F): 2425MHz, Channel No.**16** (0x10): 2430MHz, Channel No. **17** (0x11): 2435MHz, Channel No. **18** (0x12): 2440MHz, Channel No.**19** (0x13): 2445MHz, Channel No. **20** (0x14): 2450MHz, Channel No. **21** (0x15): 2455MHz, Channel No.**22** (0x16): 2460MHz, Channel No. **23** (0x17): 2465MHz, Channel No. **24** (0x18): 2470MHz, Channel No.**25** (0x19): 2475MHz,

2-5. Device Transmit Power

Item	Default Value
Device Transmit Power	00

- The Device Transmit Power is the strength of the wireless data transmission delivered by the device.

(1) The Device Transmit Power is shown as a hexadecimal number and users have to enter another hexadecimal number to change it.

Ex) 00 => This shows the Transmit Power is 0x00.

0B => This shows the Transmit Power is 0x0B.

(2) Number of Transmit Power levels of the device is nineteen.

Level 1 (0x00): Max. (6dBm), Level 2 (0x01): Max.-1, Level 3 (0x02): Max.-2, Level 4 (0x03): Max.-3, Level 5 (0x04): Max.-4, Level 6 (0x05): Max.-5, Level 7 (0x06): Max.-6, Level 8 (0x07): Max.-7, Level 9 (0x08): Max.-8, Level 10 (0x09): Max.-9, Level 11 (0x0A): Max.-10, Level 12 (0x0B): Max.-15, Level 13 (0x0C): Max.-17, Level 14 (0x0D): Max.-20, Level 15 (0x0E): Max.-25, Level 16 (0x0F): Max.-30,

Level 17 (0x10): Max. -40, Level 18 (0x11): Max.-50, Level 19 (0x12): Max.-60

(3) The Transmit Power is strongest in the Level 1 (0x00) and the weakest in the Level 19 (0x12).

2-6. UART

Item	Default Value
UART (baud rate, data bit, parity bit, stop bit)	38400 (8, N, 1 Fixed)

- UART is the UART communication speed between the device and the user.

(1) Number of usable UART communication speeds of the device is six.
9600bps, 19200bps, 38400bps, 57600bps, 115200bps, 230400bps

(2) Since the Data bit is fixed as 8 bit, it cannot be changed.

(3) Since the Parity bit is fixed as None, it cannot be changed.

(4) Since the Stop bit is fixed as 1 bit, so it cannot be changed.

(5) The UART communication speed is shown as a decimal number and users have to enter another decimal number to change it.

Ex) 9600 => This means the UART communication speed is 9600bps.
115200 => This means the UART communication speed is 115200bps.

2-7. KEY Option

Item	Default Value
KEY Option	1(Enable)

- The KEY Option is used to decide whether KEY data is sent wirelessly or not when the KEY data is input to the KEY Port of the device.

(1) If the device does not use the Low Voltage Mode, KEY data is sent regardless of the KEY Option when KEY data is input.

(2) If the device uses the Low Voltage Mode and the KEY Option is set to 1 (Enable), the device wakes up and sends the KEY data when KEY data is input.

(3) If the device uses the Low Voltage Mode and the KEY Option is set to 0 (Enable), the device wakes up but does not send the KEY data when KEY data is input.

2-8. ADC Option

Item	Default Value
ADC Option	0(Disable)

- The ADC Option is used to decide whether ADC data is sent wirelessly or not when the ADC data is input to the ADC port of the device.

(1) If the device does not use the Low Voltage Mode and the ADC Option is set to 1 (Enable), the device reads the value from the ADC port by the set interval at the internal timer and sends ADC data.
(2) If the device used the Low Voltage Mode (except for the Low Voltage Mode 3) and the ADC Option is set to 1 (Enable), the device wakes up by the set interval at the internal timer and reads the value of the ADC port and sends ADC data if no other data is input for about one second.
(3) If the device used the Low Voltage Mode (except for the Low Voltage Mode 3) and the ADC Option is set to 0 (Disable), the device wakes up by the set interval at the internal timer but does not sends ADC data.

2-9. Count Option

Item	Default Value
Count Option	0(Disable)

- The COUNT Option is used to decide whether COUNT data is sent wirelessly or not when the COUNT data is input to the COUNT port of the device.

(1) COUNT data is data sent instead of ADC data. Therefore, COUNT data can be sent when ADC data transmission is enabled.
(2) If ADC data transmission is enabled and the COUNT Option is set to 1 (Enable), COUNT data is sent instead of ADC data.
(3) COUNT data is sent while its value increases internally. (Except for the Low Voltage Mode 2/3)
(4) COUNT data increases from 0000(0) to C34F (49999) in hexadecimal numbers.

2-10. GPIO Option

Item	Default Value
GPIO Option	0

- The GPIO Option is used to decide the transmission method of GPIO data sent to the GPIO port.

(1) If the GPIO Option is set to 0, GPIO data is sent immediately when the GPIO data is input to the GPIO port. (Except for the Low Voltage Mode 1/2/3)

(2) If the GPIO Option is set to 1, GPIO data is sent instead of KEY data.

Ex) To send GPIO data when the GPIO Option is set to 1, users have to input KEY data after GPIO data is input to the GPIO port (and the input status is maintained). Then, GPIO data is sent instead of KEY data.

(3) If the GPIO Option is set to 2, GPIO data is sent instead of ADC data.

Ex) To send GPIO data when the GPIO Option is set to 2, ADC data transmission of the device has to be enabled.

To send GPIO data when the GPIO Option is set to 2, users have to wait until ADC data transmission is enabled after GPIO data is input to the GPIO port (and the input status is maintained).

Then, GPIO data is sent instead of ADC data.

2-11. GPIO Clear Option

Item	Default Value
GPIO Clear Option	1(Enable)

- The GPIO Clear Option is used to decide whether the output (Low) state is maintained or cleared after GPIO data is output to the GPIO port.

(1) If the GPIO Clear Option is set to 1 (Enable), the device automatically clears (High) the GPIO port about 100ms after the received GPIO data is output (Low) to the GPIO port.

(2) If the GPIO Clear Option is set to 0 (Disable), the device maintains the output (Low) state after the received GPIO data is output (Low) to the GPIO port.

Ex) If the GPIO Clear Option is set to 0 (Disable), the device that received GPIO_0 data wirelessly send (Low) the GPIO data to the GPIO_4 port. The device maintains the GPIO_4 port in the output (Low) state until it receives another GPIO data wirelessly.

※ When GPIO_0 data is received, Low (0V) is output to GPIO_4 port.

※ When GPIO_1 data is received, Low (0V) is output to GPIO_5 port.

※ When GPIO_2 data is received, Low (0V) is output to GPIO_5 port.

※ When GPIO_3 data is received, Low (0V) is output to GPIO_5 port.

.

2-12. Internal Time

Item	Default Value
Internal Time	10

- The Internal Time is the time used internally in the device.

(1) The Internal Time is used for the data transmission with intervals and for the wake-up interval after entering the Low Voltage Mode.
(2) The Internal Time is shown as decimal seconds, so users have to enter another decimal seconds to change it.
Ex) 10 => This means the Internal Time is ten seconds.
1000 => This means the Internal Time is thousand seconds.
(3) When the device does not use the Low Voltage Mode, the Internal Time setting can be made up to maximum 65,000 seconds.
(4) When the device uses the Low Voltage Mode, the Internal Time setting can be made up to maximum 255 seconds.

2-13. Power Mode

Item	Default Value
Power Mode	0

- The Power Mode is a Low Voltage Mode in which the device does not operate and enters the Sleep Mode to save current consumption.

(1) When the device enters the Low Voltage Mode using the Low Voltage Mode 1/2/3, data can be input to the device after it wakes up from the Low Voltage Mode.
(2) When the device enters the Low Voltage Mode, data cannot be received wirelessly.
(3) The device operates differently by the Low Voltage Mode used.
(4) When the device uses the Low Voltage Mode 0, it does not enter the Low Voltage Mode.

2-14. Local Device Address

Item	Default Value
Local Device Address	0000

- The Local Device Address is the device's 16bit Network Address.

(1) When wireless data is transmitted, the device transmits its 16bit Device Address inside the network packet.
(2) When the network packet is wirelessly received, the device compares the Target Device Address included in the received data packet with its 16bit Device Address.
(3) If the Target Device Address included in the received data packet matches its 16bit Device Address, the device recognizes the data packet as its own data and sends the data serially or in other forms.
(4) The Local Device Address is shown as a hexadecimal number and users have to enter another hexadecimal number to change it.
Ex) 0001 => This means the Local Device Address is 0x0001.
010C => This means the Local Device Address is 0x010C.

2-15. Target Device Address

Item	Default Value
Target Device Address	FFFF

- The Target Device Address is the 16bit Network Address of the destination of the data sent wirelessly by the device.

(1) When wireless data is transmitted, the device transmits its 16bit Target Device Address inside the network packet.
(2) When the network packet is wirelessly received, the device compares the Target Device Address included in the received data packet with its 16bit Device Address.
(3) If the Target Device Address included in the received data packet matches with its 16bit Local Device Address, the device recognizes the data packet as its own data and sends the data serially or in other forms.
(4) The Target Device Address is hexadecimal and users have to enter another hexadecimal number to change it.
Ex) 0002 => This means the Target Device Address is 0x0002.
020A => This means the Target Device Address is 0x020A.

(5) If data is wirelessly sent with the Target Device Address of FFFF, all surrounding devices receive the data. (FFFF is the broadcast address.)

(6) If data is wirelessly sent with the broadcasting Target Device Address, ACK communication is not carried out to check if the data is received normally.

(7) If data is sent to the Target Device Address that is set as a unique address on the network, ACK communication is carried out to check whether the data is received normally.

(8) If data is sent to the Target Device Address that is set as a unique address on the network, ACK communication is carried out to check whether the data is received normally and to send the data again.

Therefore, it is more stable method for communication to set a unique address as the **Target Device than to set the broadcast address as the Target Device.**

2-16. Link Quality Option

Item	Default Value
Link Quality Option	0 (Disable)

- The Link Quality Option is used to decide whether the quality of the received packet is output or not when wireless data is received by the device.

(1) If the Link Quality Option is set to 0 (Disable), the device sends the data serially or in other forms.

(2) If the Link Quality Option is set to 1 (Enable), the device does not send the wirelessly received data but outputs the Link Quality data inside the data serially

(3) The Link Quality data is output in a certain serial data format including the IEEE address of the trasmitting device.

2-17. End of Length

Item	Default Value
End of Length	0

- The End of Length sets the device to check the length of serial data input to the UART port and decide

on the length of the data packet to send wirelessly when the device receives serial data wirelessly.

(1) If the End of Length is 0, the device sends the serial data wirelessly after about 30ms when serial data is input to the UART port of the device. (The length of input serial data is not checked.)

Ex) If the End of Length is 0 and serial data from '1' to '9,' is input to the UART port of the device at an interval of 10ms, the device changes them into a data packet in a form roughly like 123/456/789 or 12/3456/789 and wirelessly sends data packets three times.

(2) If the End of Length is N and serial data is input to the UART Port of the device, the device wirelessly sends serial data 30ms after the data length becomes N. (The length of the input serial data is checked.)

Ex) If the End of Length is 9 and serial data from '1' to '9' is input to the UART port of the device at an interval of 10ms, the device changes them to a data packet in a form like 123456789 and wirelessly sends the data packet at one time.

(3) End of Length is shown as a decimal number and its input range is 0 ~ 99.

Ex) 9 => This means the End of Length is 9.

50 => This means the End of Length is 50.

2-18. Bridge Option

Item	Default Value
Bridge Option	0(Disable)

- The Bridge Option is used to decide whether the Bridge function is used or not for wirelessly received data.

(1) If the Bridge Option is set to 0 (Disable), the device outputs the wirelessly received data serially or in other forms.

(2) If the Bridge Option is set to 1 (Enable), the device outputs the wirelessly received data serially or in other forms and sends the data to the Bridge address of the device again.

(3) The bridging device performs the Bridge function using a unique address.

2-19. Bridge 1 Address

Item	Default Value
Bridge 1 Address	FFFF

- The Bridge 1 Address is the address of the receiving device of the wireless data to be sent again when

the Bridge function is used by the device.

(1) If the Bridge 1 Address of the device is FFFF, the device does not perform the Bridge function.

(2) **The Bridge 1 Address and the Bridge 2 Address are operated as a pair.**

(3) When the device performs the Bridge function, the device that received wireless data compares the Bridge 1 Address with the Local Device Address of the transmitting device included in the wireless data packet.

(4) If the Local Device Address of the transmitting device included in the wireless data packet matches the Bridge 1 Address of the device, the device sends (or bridges) the wireless data to the Bridge 2 Address again.

(5) The Bridge 1 Address is hexadecimal and users have to enter another hexadecimal number to change it.

Ex) 0002 => This means the Bridge 1 Address is 0x0002.

020A => This means the Bridge 1 Address is 0x020A.

2-20. Bridge 2 Address

Item	Default Value
Bridge 2 Address	FFFF

- The Bridge 2 Address is the address of the receiving device of the wireless data to be sent again when the Bridge function is used by the device.

(1) If the Bridge 2 Address of the device is FFFF, the device does not perform the Bridge function.

(2) **The Bridge 2 Address and the Bridge 1 Address are operated as a pair.**

(3) When the device performs the Bridge function, the device that received wireless data compares the Bridge 2 Address with the Local Device Address of the transmitting device included in the wireless data packet.

(4) If the Local Device Address of the transmitting device included in the wireless data packet matches the Bridge 2 Address of the device, the device sends (or bridges) the wireless data to the Bridge 1 Address again.

(5) The Bridge 2 Address is hexadecimal and users have to enter another hexadecimal number to change it.

Ex) 0001 => This means the Bridge 2 Address is 0x0001.

020B => This means the Bridge 2 Address is 0x020B.

2-21. Bridge 3 Address

Item	Default Value
Bridge 1 Address	FFFF

- The Bridge 3 Address is the address of the receiving device of the wireless data to be sent again when the Bridge function is used by the device.

(1) If the Bridge 3 Address of the device is FFFF, the device does not perform the Bridge function.

(2) **The Bridge 3 Address and the Bridge 4 Address are operated as a pair.**

(3) When the device performs the Bridge function, the device that received wireless data compares the Bridge 3 Address with the Local Device Address of the transmitting device included in the wireless data packet.

(4) If the Local Device Address of the transmitting device included in the wireless data packet matches the Bridge 3 Address of the device, the device sends (or bridges) the wireless data to the Bridge 4 Address again.

(5) The Bridge 3 Address is hexadecimal and users have to enter another hexadecimal number to change it.
Ex) 0002 => This means the Bridge 3 Address is 0x0002.
020A => This means the Bridge 3 Address is 0x020A.

2-22. Bridge 4 Address

Item	Default Value
Bridge 4 Address	FFFF

- The Bridge 4 Address is the address of the receiving device of the wireless data to be sent again when the Bridge function is used by the device.

(1) If the Bridge 4 Address of the device is FFFF, the device does not perform the Bridge function.

(2) **The Bridge 4 Address and the Bridge 3 Address are operated as a pair.**

(3) When the device performs the Bridge function, the device that received wireless data compares the Bridge 4 Address with the Local Device Address of the transmitting device included in the wireless data packet.

(4) If the Local Device Address of the transmitting device included in the wireless data packet matches the Bridge 4 Address of the device, the device sends (or bridges) the wireless data to the Bridge 3 Address again.

(5) The Bridge 4 Address is hexadecimal and users have to enter another hexadecimal number to change it.
Ex) 0001 => This means the Bridge 4 Address is 0x0001.

020B => This means the Bridge 4 Address is 0x020B.

2-23. Start Message Option

Item	Default Value
Start Message Option	1(Enable)

- The Start Message Option is used to decide whether the Start Message is output or not when the device is started.

(1) If the Start Message Option is set to 1 (Enable), the device outputs “FZ760 START OK\r\n” message when it is started.
(2) If the Start Message Option is set to 0 (Disable), the device does not output any message when it is started.

2-24. Location Option

Item	Default Value
Location Option	0(Disable)

- The Location Option is used to decide whether the Location function of the device is used or not.

(1) The Location function of the device is operated based on the Bridge function.
(2) When the Bridge function of the device is used and the Location Option is set to1 (Enable), the device reconfigures the received data from a moving device into Location data and bridges it.
(3) When the Bridge function of the device is used and the Location Option 0 (Disable), the device bridges the received data from a moving device.

2-25. ID Option

Item	Default Value
ID Option	0(Disable)

- The ID Option is used to decide whether the Device Name Sending function of the device is used or not.

(1) The Device Name Function sends the Device Name instead of KEY data or ADC/COUNT data.
(2) When the ID Option is set to 1 (Enable), and data is input to the KEY port when KEY data transmission

of the device is enabled, the device sends the Device name instead of KEY data.

(3) When the ID Option is set to 1 (Enable) and ADC/COUNT data transmission can be made, the device sends the Device name instead of ADC/COUNT data.

2-26. Device Name

Item	Default Value
Device Name	FZ760XX

- The Device Name is an ID for the user setting enabled device.

(1) The Device Name is fixed as 7 bytes.

(2) When users set the Device Name, they have to use 7 bytes for the Device Name.

(3) Usable IDs for the device are user selectable Device Name and unique IEEE address of the device.