WDAS

Wireless Data Acquisition and Control System

W210A

User's Manual

Ver 2.0

SEBINE Technology, Inc.

W210A

CONTENTS

W210A

1. Summary

1.1 Product Introduction

W210A is one of WDAS(Wireless Data Acquisition and Control System) products and it is a wireless data transmitter-receiver which receives analog input data for controlling signal by using 433MHz RF frequency bandwidth. W210A allows users to set communication channels via environment setting. Usable frequency number, channel number, and serial number are printed in shipping products.

Figure 1. W210A
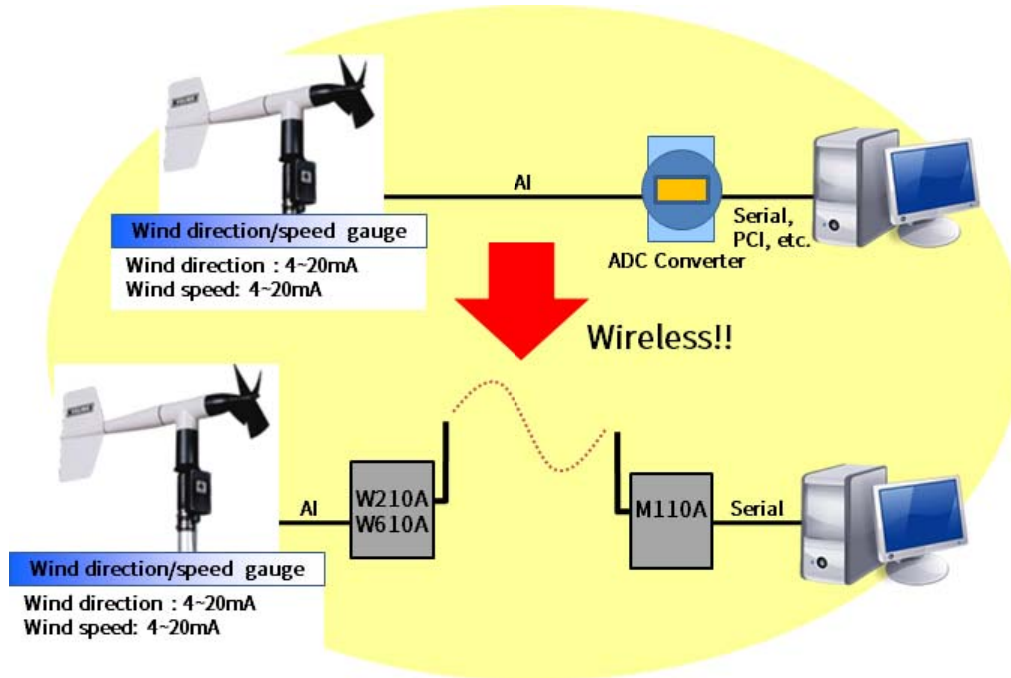
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1.1.1 Application examples

Figure 2. On/Off Status Wireless Transmission by W210A and M110A

1.1.2 Product usage
  - Cable system replacement : Maintenance difficulty with cables is solved
  - Hard environment for cable installation : Environment that requires long and complicated cable installation is solved
  - Uneasy area for data acquisition by cable : Outdoor tank monitoring system

1.1.3 Product application area
  - Pump, pipeline, liquid flow monitoring system
  - Tank level, temperature monitoring system

1.1.4 Product parts
W210A main body, one λ/4 dipole antenna, one power connector, one Analog Input connector

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1.2 Specification

Item	Specification	
Name	W210A	
Dimension	109mm(L)×85mm(W)×18.6mm(H) (w/o Antenna)	
Housing	Aluminum	
Weight	150g (w/o Antenna)	
Power Supply	+12Vdc ±10%, Reverse Power/Overvoltage/Overcurrent Protection	
Current Consumption	Rx 80mA Tx 86mA WDT Reset 88mA (@12Vdc)	
Operating Temperature	-10℃ ~ +60℃	
RF Features	. Frequency : 433.050MHz ~ 434.790MHz . Channel Spacing : 25KHz . Transmitter Power : 10mW . Receiver Sensitivity : -116 ~ -120dBm(-116dBm typ.) . Modulation : FSK . Bandwidth : 〈 14KHz	

Performance	. Expected Line-Of-Sight Range :
	    Up To 1.5km with λ/4 Dipole Antenna
	. RF Data Rate :
	    4.8K Baud, 7.2K Baud	

I/O Interface	Analog Input	2Ch. Analog Input, with 16Bit Resolution (0~5V, 0~10V, 4~20mA) User Selectable Input Type : Current or Voltage User Selectable Input Voltage Range : 0~5V or 0~10V
Antenna Interface	. SMA Connector . Impedance 50Ω	

Table 1. W210A Specification

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2. Operation Mode

W210A allows PC MODE and DEVICE MODE for users' personal need. Function Code and its functionality is restricted based upon selected mode. Refer the Programmer guide for detailed protocol and Function Code.

2.1 PC MODE

2.1.1 Definition of PC MODE
Through M110A(PC MODE), W110A(Only PC MODE) with serial port, W210A execute the command when valid Function Code is received.
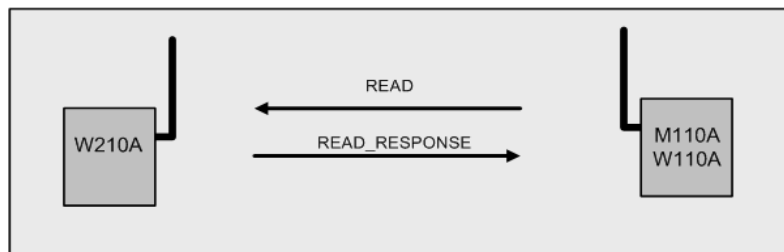- Valid receiver Function Code : READ

Figure 3. PC MODE of W210A

2.1.2 Function Code available at PC MODE
- READ : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, current analog input status is read when W210A receives Function Code of inquiry of analog input status.
- READ_RESPONSE : Function Code of READ_RESPONSE is used when READ Function Code is received and current analog input status is transmitted.

2.1.3 Environment setting list before PC MODE use
 - Select PC MODE at PC/DEVICE MODE Setting

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2.2 DEVICE MODE

2.2.1 Definition of DEVICE MODE

Established DESTINATION device transmits current analog input status according to set period.
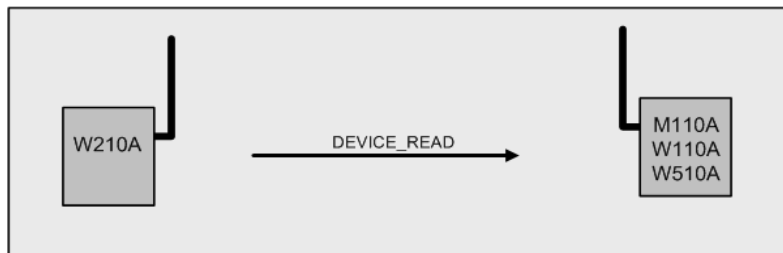

Figure 4. DEVICE MODE of W210A

2.2.2 Function Code available at DEVICE MODE

- DEVICE_READ : When the established DESTINATION device transmits current analog input status according to set period, Function Code of DEVICE_READ is used.

2.2.3 Environment setting list before DEVICE MODE use

- DEVICE MODE selection at PC/DEVICE MODE Setting
- DESTINATION ID set up at DESTINATION ID Setting
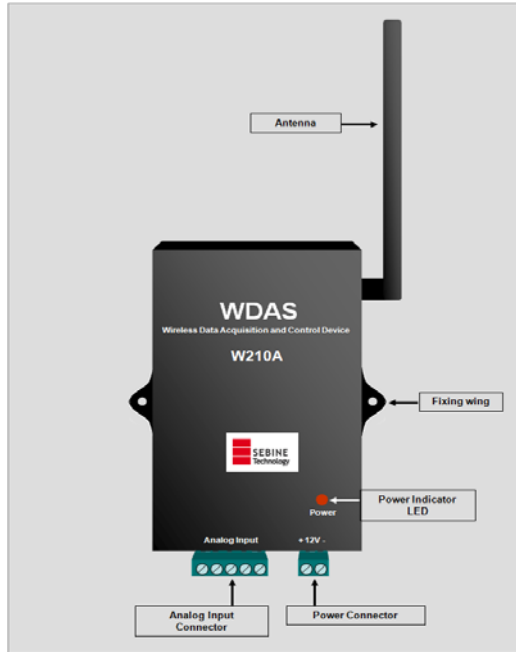- TX Period Set up at Period Setting

3. Device Connection

Figure 5. W210A Outer
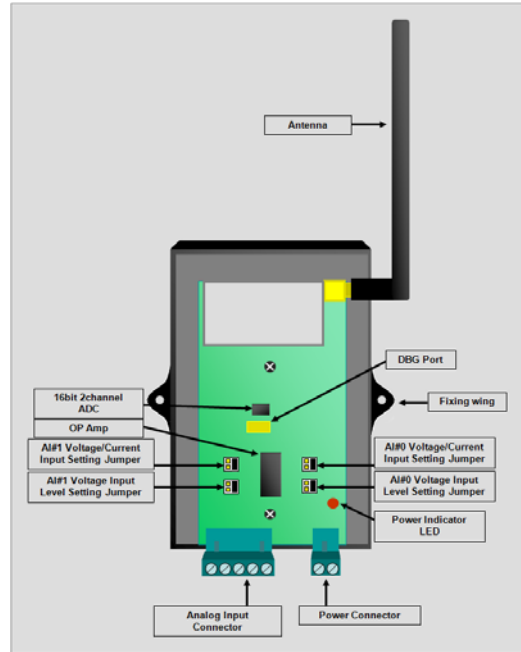

Figure 6. W210A Inner

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3.1 Power Supply

W210A works at +12Vdc and equipped with Reverse Power / Overvoltage / Overcurrent Protection circuitry. Power is supplied by power connector provided at product purchase as shown in figure below. W210A has no external power switch and it becomes in working mode when the power is supplied. If normal power is supplied, power supply indicator LED is on.

　a. As shown in Figure 7, remove the skin of wire about 7mm and put it into the terminal and tighten it by turning the left screw using screwdriver.

　b. As shown in Figure 8, connect it to power.

　c. As shown in Figure 9, connect the terminal to power port of W210A, Make sure the direction is exact as shown in Figure 9.
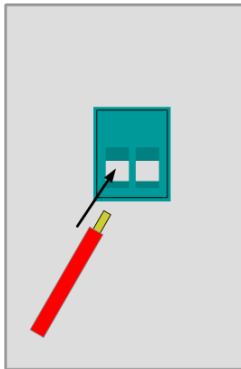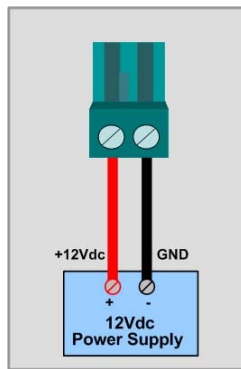
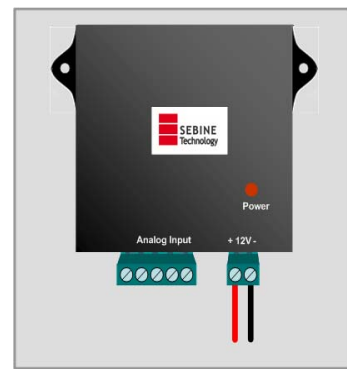

Figure7. Power Supply-1　　Figure8. Power Supply-2　　Figure9. Power Supply-3

※ Notice

Readily accessible disconnect device shall be incorporated external to the equipment.

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3.2 Analog Input Connection and Setting

W210A supports 2 input channel. For analog input function, use Analog Input connector in Figure 10. Analog Input connector is included in product purchase. Connection method is same as power supply connection method.
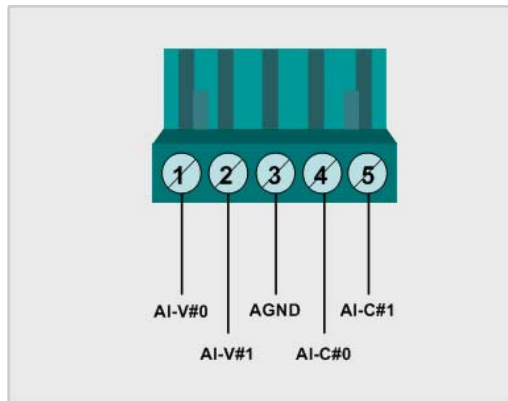

Figure 10. W210A connector

3.2.1 Analog input connection

Analog input channel generates input via the difference between AGND and corresponding analog input channel pins. Thus, the both ends of device that generates analog input should be connected to corresponding channel pins and AGND.

3.2.2 Analog input channel setup

For use of analog input, AI#0 voltage input level setting jumper, AI#1 voltage input level setting jumper, AI#0 voltage/current input setting jumper, AI#1 voltage/current input setting jumper adjustments are needed as shown in Figure 11.
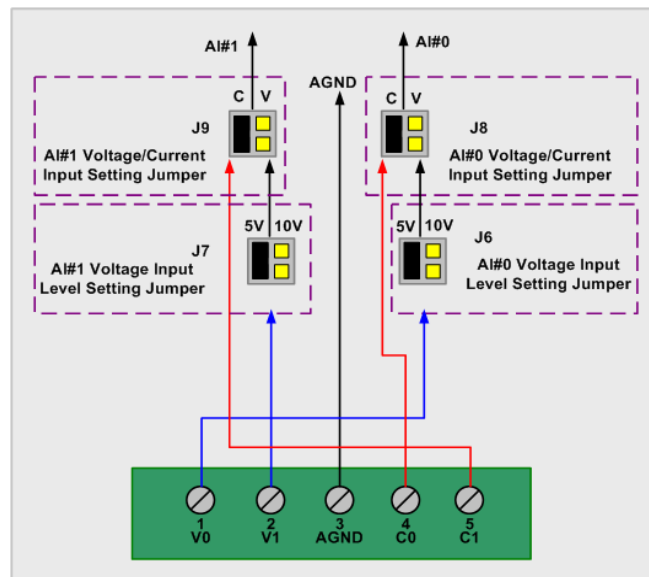
Figure 11. W210A analog input channel setting concept

AI#0 : AI#0 can select voltage/current input receipt. When receiving voltage, set the jumper of J8 as V and adjust the voltage input range, then receive voltage via pin 1 of Analog Input connector. When receiving current, set the jumper of J6 as C, then receive current via pin 4 of analog input connector.

AI#1 : AI#1 can select voltage/current input receipt. When receiving voltage, set the jumper of J9 as V and adjust the voltage input range, then receive voltage via pin 2 of Analog Input connector. When receiving current, set the jumper of J9 as C, then receive current via pin 5 of analog input connector.

3.3 Antenna connection

Connect the SMA-P(male) connector antenna to SMA-J(Female) connector of W210A. At purchase, λ/4 dipole antenna is provided.

Figure 12. SMA-J Antenna connector

4. Environment setup

Environment setup can be made through SetModemEnv.exe program. For details, consult the corresponding manual.

4.1 Hardware connection

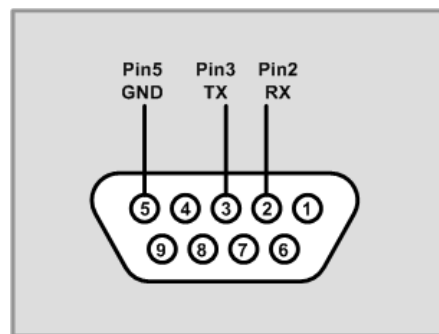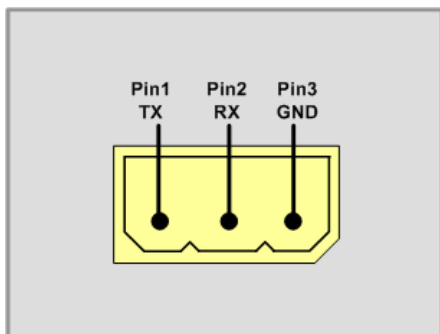Use DBG port for PC connection shown in Figure 13.

Figure 13. Hardware connection-1(W210A)   Figure 14. Hardware connection-2(PC)

For communication frequency adjustment, port and PC must be connected via serial communication program as shown in Figure 13.
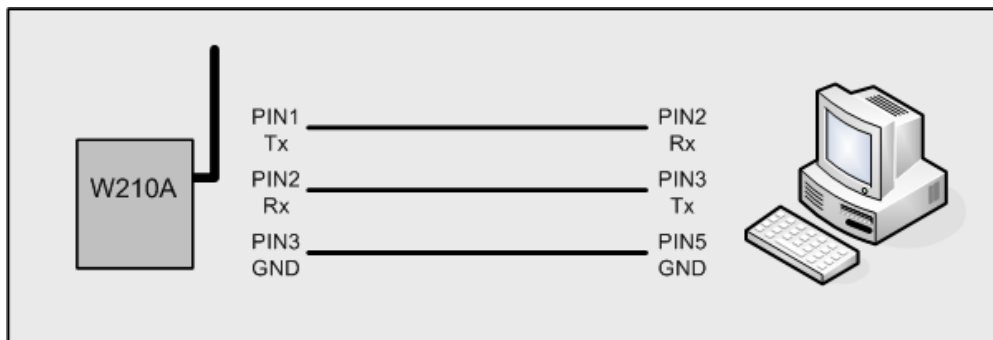

Figure 15. Hardware connection-3

The hardware connection between W210A and PC can be done as shown in Figure 15.

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4.2 Setup list of each mode

4.2.1 PC MODE
 - PC/DEVICE MODE Setting : PC MODE Setting
 - Channel Setting : Communication Frequency Setting
 - Tx Power Level Setting : Communication RF Power Level Setting

4.2.2 DEVICE MODE
- PC/DEVICE MODE Setting : DEVICE MODE Setting
- Channel Setting : Communication Frequency Setting
- Tx Power Level Setting : Communication RF Power Level Setting
- DESTINATION ID Setting : DESTINATION ID Setting
- Period Setting : TX Period Setting

4.2.3 Environment Setting Program
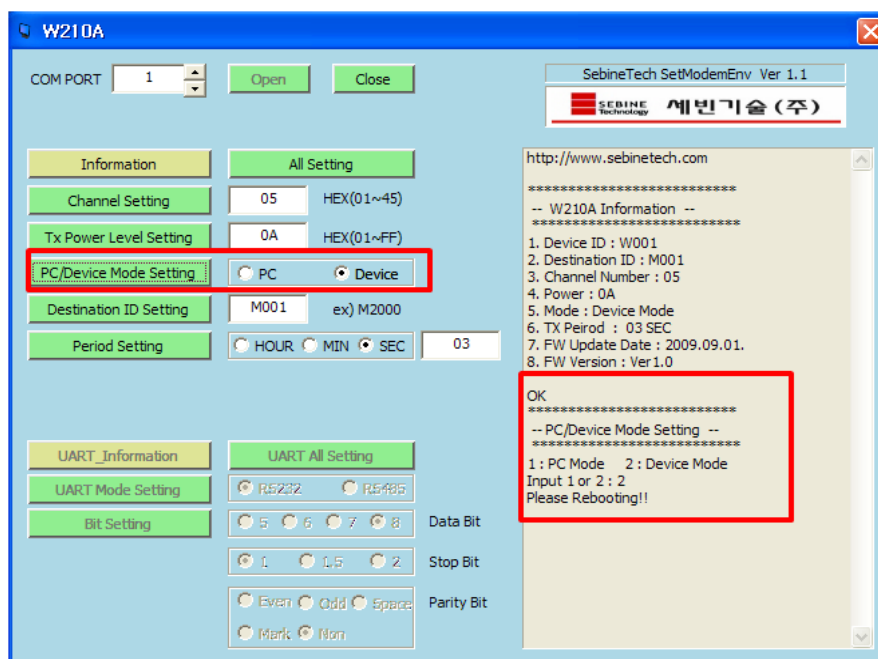1) PC/DEVICE MODE Setting(MODE Setting)

Figure 16. Environment Setting Program-MODE Setting

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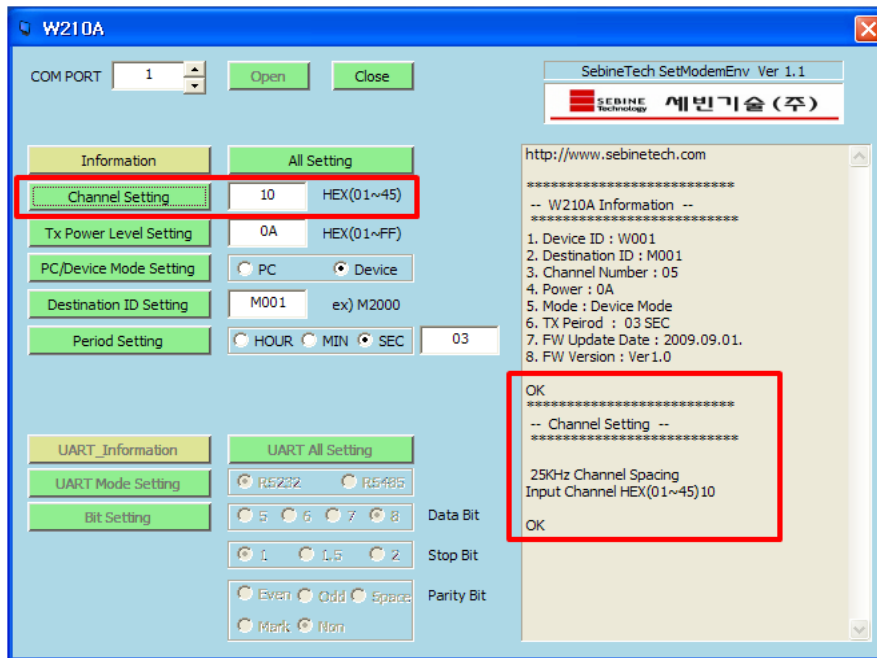2) Channel Setting(Communication Frequency Setting)

Figure 17. Environment Setting Program-Channel Setting

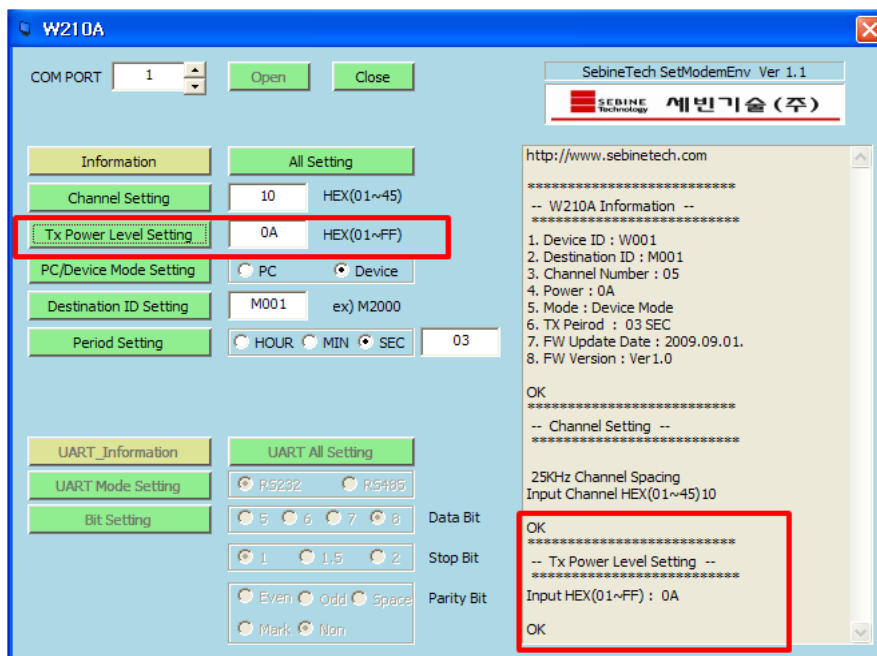3) Tx Power Level Setting(Communication RF Power Level Setting)

Figure 18. Environment Setting Program-Tx Power Level Setting

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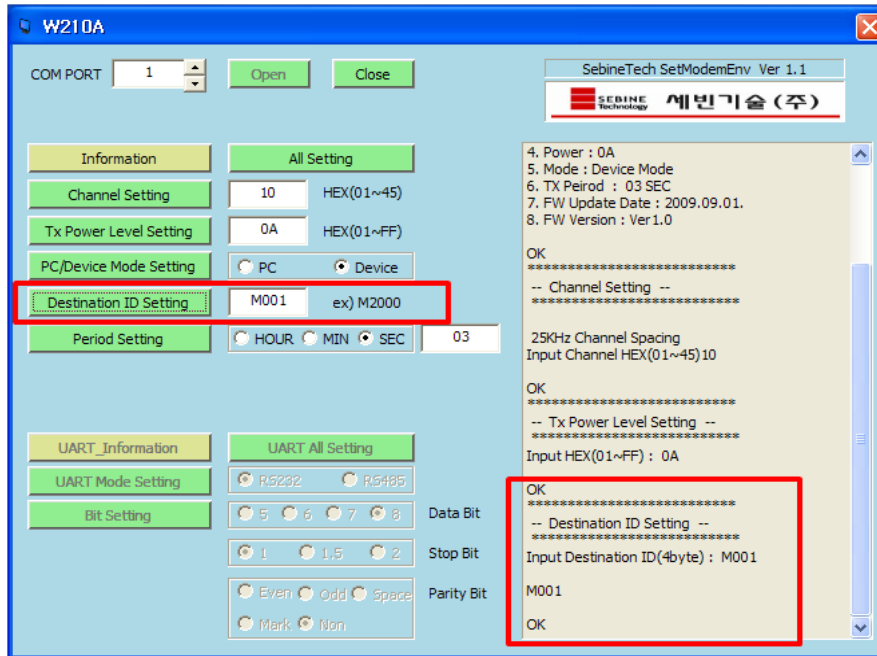4) DESTINATION ID Setting(DESTINATION ID Setting)

Figure 19. Environment Setting Program-DESTINATION ID Setting Setting
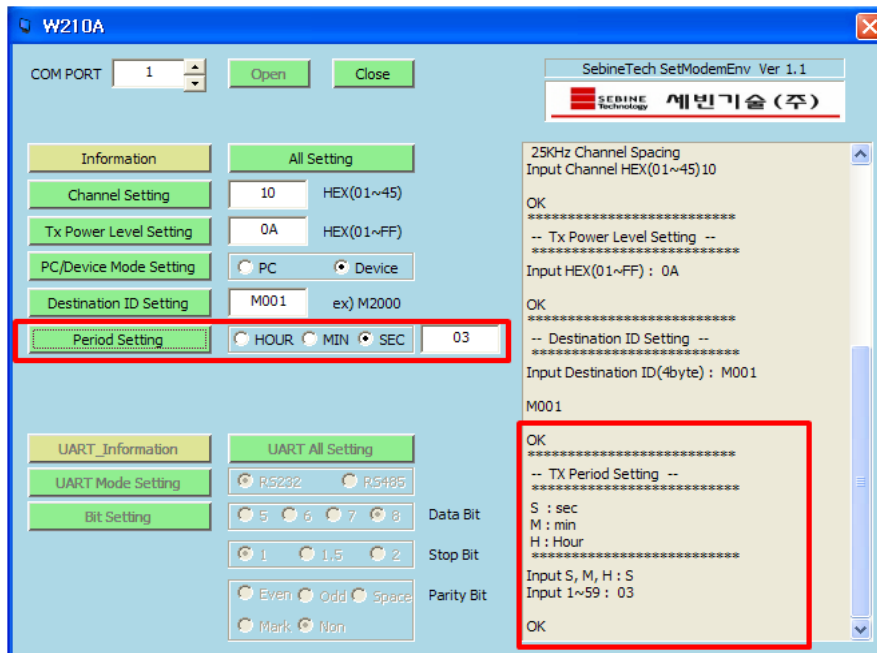
5) Period Setting(TX Period Setting)

Figure 20. Environment Setting Program-Period Setting Setting

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5. Examples

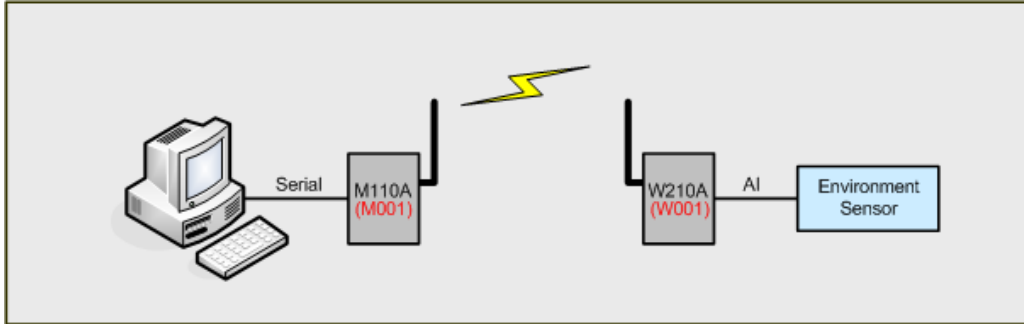(EX 1)　M110A(PC MODE) to W210A(PC MODE) Communication

Figure 21. M110A to W210A Communication Example

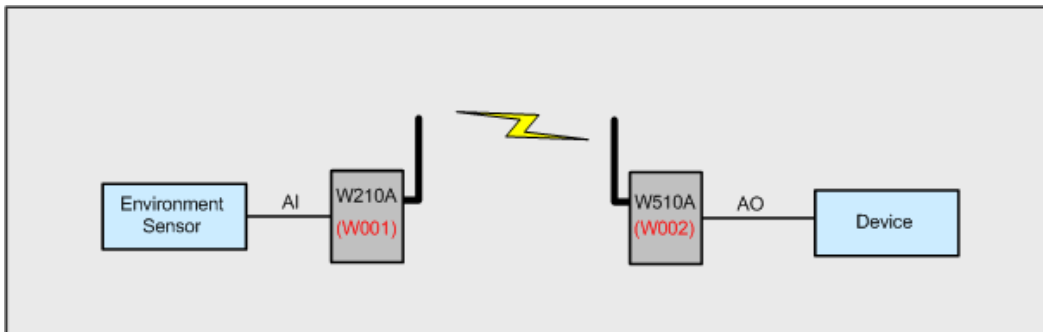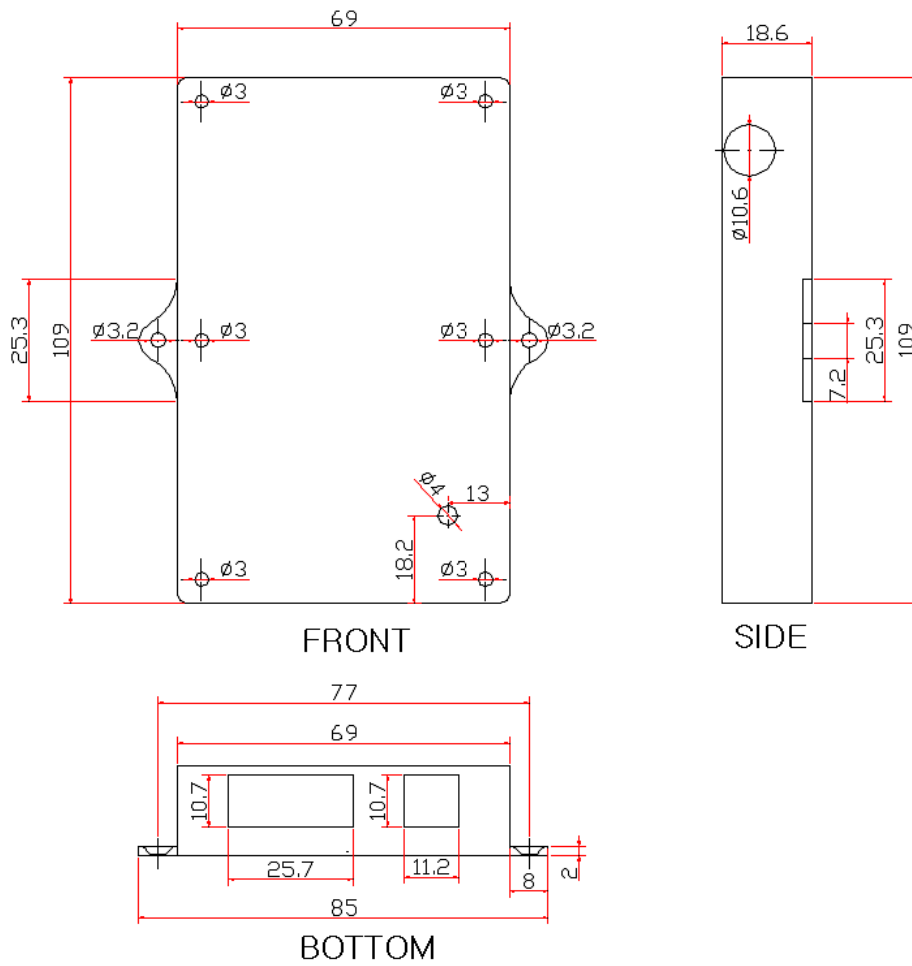(EX 2)　W210A(Device MODE) to W210A(PC MODE) Communication

Figure 22. W210A to W210A Communication Example

W210A

Appendix 1. Dimension

FRONT

SIDE

BOTTOM

Appendix 2. R&TTE

Hereby, SEBINE Technology, Inc. declares that this device(M/N:W210A) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

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Appendix 3. Document Information

Revision	H/W Version	Description
1.0	RF1-AE-AI Ver1.2	02/23/2010 - Initial Release Version
2.0	RF1-AE-AI Ver1.2	06/14/2010 - Modified

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