

**W210A**



---

Esis Pty Ltd [www.esis.com.au](http://www.esis.com.au)

# **WDAS**

**Wireless Data Acquisition and Control Device**

## **W210A**

### **User's Guide**

**Ver 3.0**

**Sebine Technology Co., Ltd.**

# W210A

---

## Content

### 1. Overview

1.1 Product Overview

1.2 Specifications

### 2. Operation Mode

2.1 PC Mode

### 3. Device Connection

3.1 Power Supply

3.2 Analog Input Connection and Configuration

3.3 Antenna Connection

### 4. Configuration Settings

4.1 Hardware Connection

4.2 Configuration Setting as per Operation Mode

### 5. Carrier Sensing

### 6. Examples

Appendix 1. Plan View

Appendix 2. Version Update History

# W210A

---

## 1. Overview

### 1.1 Product Overview

W210A, one of the WDAS (Wireless Data Acquisition and Control Device) products, wirelessly transmits analog input data acquired on the field. Using W210A, a user can set a communication channel through a configuration setting program. When shipped, such data as bandwidth, channel number and serial number are written on the product.



Figure 1. W210A

# W210A

---

## 1.1.1 Product Application Cases

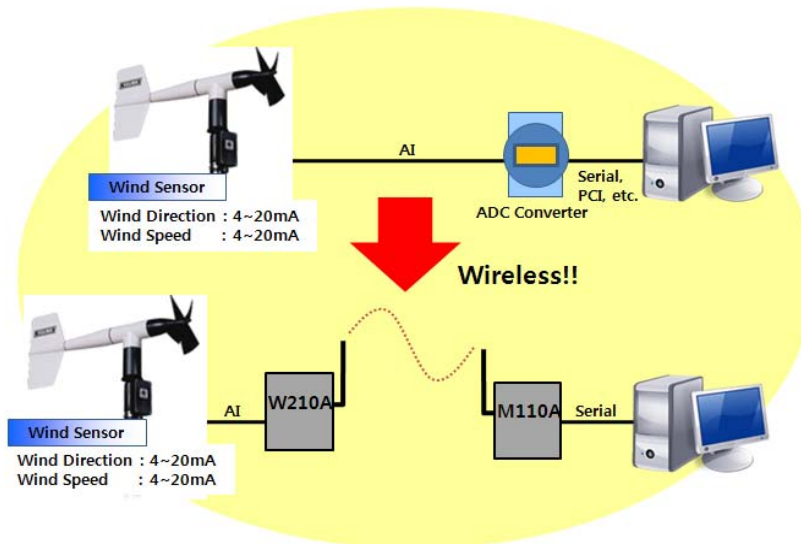


Figure 2. Wireless Transmission of Sensor Value through W210A and M110A

## 1.1.2 Product Uses

- Replacement with existing wired systems : Solution for difficult maintenance related to complex cable connection
- Conditions where cable connection is problematic : Long cables, etc
- Conditions where wired data gathering is troublesome : Volume monitoring on an outdoor water storage tank, etc

## 1.1.3 Product Application Scope

- Pump, pipeline, fluid monitoring system
- Tank level, temperature monitoring system

## 1.1.4 Product Components

W210A mainframe,  $\lambda/4$  dipole antenna 1, power connector 1, analog input connector 1

# W210A

## 1.2 Specifications

Item	Specification	
Model	W210A	
Size	109mm(L)×69mm(W)×18.6mm(H) (Antenna excluded)	
Case	Aluminum case	
Weight	150g (Antenna excluded)	
Power Supply	+12Vdc ±10%, Embedded with circuit breaker against backward voltage, over-voltage and over-current	
Power Consumption	Fl, \$a 5`H , *a 5`K 8H`FYgYh, , a 5`f# %&J XV	
Operation Temperature	-10°C ~ +*0°C	
RF Features	<ul style="list-style-type: none"> <li>• Frequency : 4' '\$) \$A &lt;n'r `(' ("+- \$A &lt;n`</li> <li>• Transmitter Power : 10mW</li> <li>• Receiver Sensitivity : !%%`r `!&amp;\$X6a fl%%*X6a `md`</li> <li>• Modulation : FSK</li> <li>• Bandwidth : &lt;`% KHz</li> </ul>	
Performance	<ul style="list-style-type: none"> <li>• Expected Line-Of-Sight Range : Up To 1.5km with λ/4 Dipole Antenna</li> <li>• RF Data Rate : `(" , ?`6U Xž +"&amp;?`6U X`</li> </ul>	
I/O Interface	Analog Input	2 Channel Analog Input <ul style="list-style-type: none"> <li>• Data Splitting : 16 bit</li> <li>• Analog Input Type Jumper Setting Option : Current / Voltage</li> <li>• Range Selection Option through Jumper at Voltage Inputting : 0~5V, 0~10V, 4~20mA</li> </ul>
Antenna Interface	<ul style="list-style-type: none"> <li>• SMA connector</li> <li>• Impedance 50Ω</li> </ul>	

Table 1. W210A Specifications

# W210A

---

## 2. Operation Mode

W210A enables a user to select PC mode or device mode in accordance with his or her needs and confines a function code and function for the selected mode. Please refer to the Programmer Guide for detailed protocol and function code.

### 2.1 PC Mode

#### 2.1.1 Definition of PC Mode

Data shall be transferred via a serial port at a designated function protocol and then transmitted.

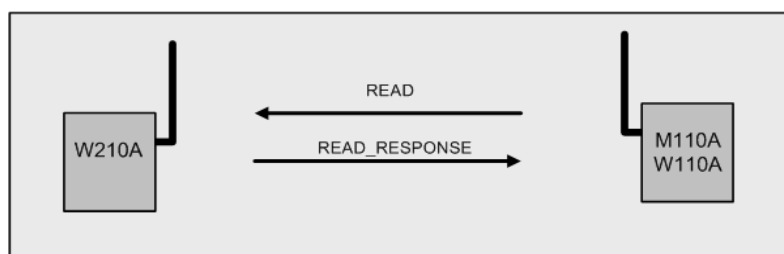


Figure 3. W210A in PC Mode

#### 2.1.2 Function Codes used in PC mode

- READ : Instructs WDAS device to read status of DI[Digital Input] and AI[Analog Input]
- READ\_RESPONSE : Used when WDAS device receives READ function code and transmits current input status

#### 2.1.3 Configuration Items to be set prior to Use of PC Mode

- Selection of PC mode at PC/device mode setting

# W210A

---

## 2.2 Device Mode

### 2.2.1 Definition of Device Mode

If you set a device installed with usable serial port for PC mode or device mode as destination and input data to the serial port at once, then the data shall be automatically transmitted.

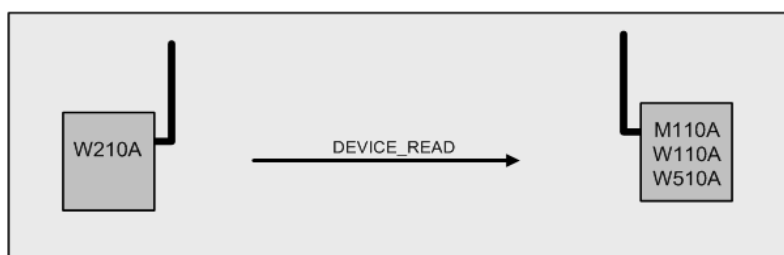


Figure 4. W210A in Device Mode

### 2.2.2 Function Codes used in Device Mode

- DEVICE\_READ : Receives data of DI[Digital Input] and AI[Analog Input] from WDAS in device mode and outputs the data to a serial port

### 2.2.3 Configuration Items to be set prior to Use of Device Mode

- Selection of device mode at PC/device mode setting
- Selection of destination ID at destination ID setting

# W210A

---

## 3. Device Connection

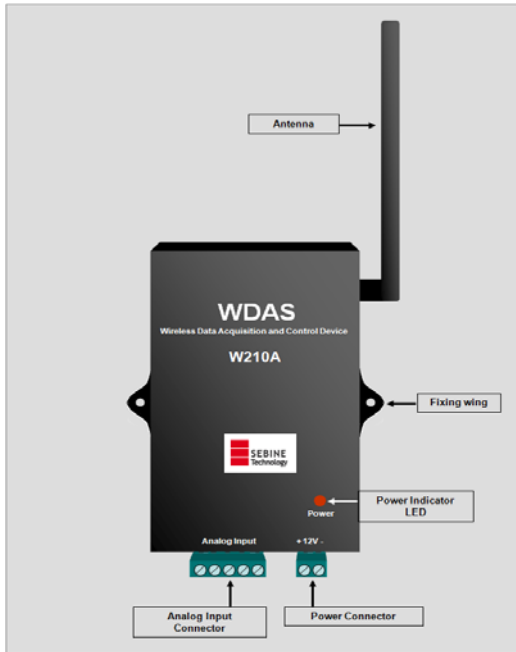


Figure 5. Exterior of W210A

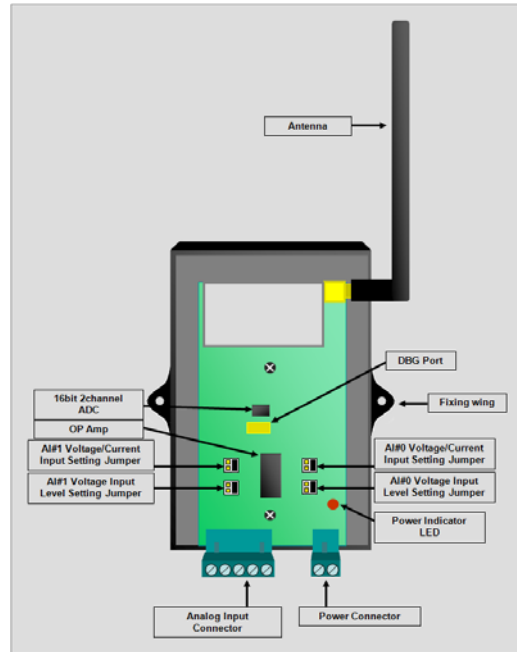


Figure 6. Interior of W210A



# W210A

---

## 3.1 Power Supply

W210A operates at +12Vdc and is embedded with a circuit breaker against backward voltage, over-voltage and over-current. Power is supplied through power connector as depicted in the figures below. W210A does not have a separate power switch so that it will be in operation mode soon after power is supplied through power connector. Power supply indicator LED will twinkle when power supply is normal.

- ① As depicted in Figure 7, peel off sheath of cable about 7mm, place it on the socket and fasten upper screw.
- ② Connect to the power supply as depicted in Figure 8.
- ③ Connect the socket to W210A's power unit as described in Figure 9.

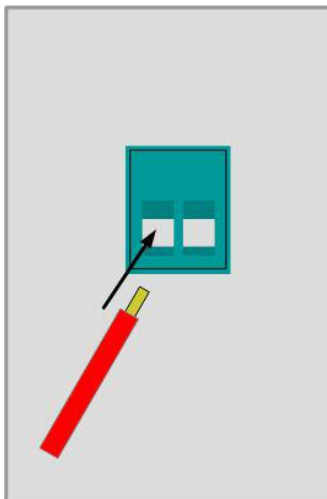


Figure 7. Power Supply-1

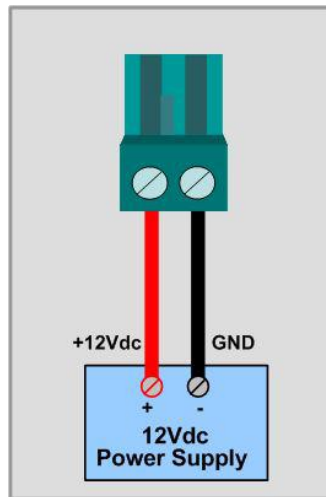


Figure 8. Power Supply-2

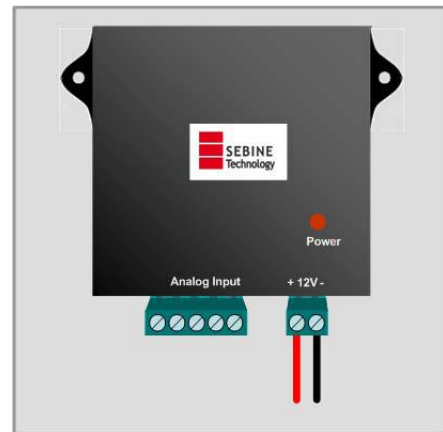


Figure 9. Power Supply-3

# W210A

---

## 3.2 Analog Input Connection and Configuration

W210A is compatible with 2 channel analog input. To use analog input function, analog input connector shown in Figure 10 shall be used. Analog input connector shall be included in the product package, and its connection is same as that of power supply connector.

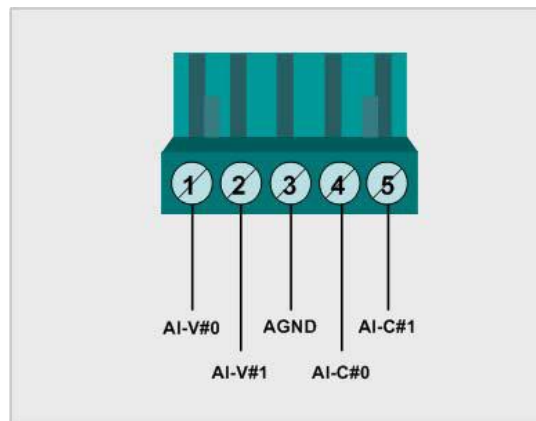


Figure 10. W210A Analog Input Connector

### 3.2.1 Analog Input Connection

Analog input channel is measured by the difference between AGND and relevant analog input channel pins. Therefore, each side of a device for analog inputting is connected to relevant channel pins and AGND, respectively.

### 3.2.2 Analog Input Channel Setting

In order to use analog input, it is required for AI#0 voltage input level setting jumper, AI#1 voltage input level setting jumper, AI#0 voltage/current input setting jumper and AI#1 voltage/current input setting jumper to be set.

# W210A

---

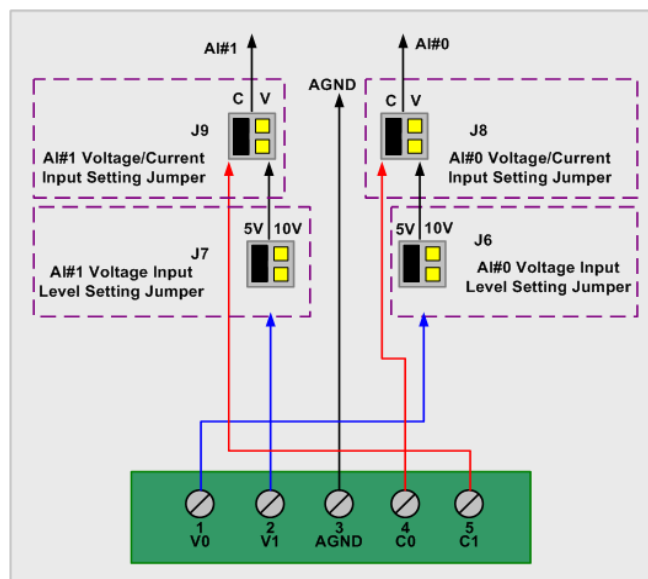


Figure 11. W210A Analog Input Channel Setting Diagram

AI#0 : AI#0 is capable of selecting voltage or current input. For voltage input, set J8 jumper at V, use J6 jumper for voltage input range setting, and input voltage through analog input connector's #1 pin. For current input, set J8 jumper at C and input current through analog input connector's #4 pin.

AI#1 : AI#1 is capable of selecting voltage or current input. For voltage input, set J9 jumper at V, use J7 jumper for voltage input range setting, and input voltage through analog input connector's #2 pin. For current input, set J9 jumper at C and input current through analog input connector's #5 pin.

# W210A

---

## 3.3 Antenna Connection

Connect SMA-J(Female) connector attached to W210A to SMA-P(Male) connector antenna. Default antenna is  $\lambda/4$  Dipole Antenna.



Figure 12. SMA-J Antenna Connector

# W210A

---

## 4. Configuration Settings

Configuration settings for device shall be implemented through SetModemEnv.exe program. Refer to the corresponding manual for details.

### 4.1 Hardware Connection

Use DBG port in Figure 13 for PC connection.

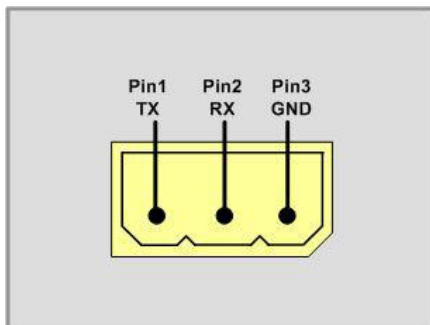


Figure 13. Hardware Connection-1(W210A)

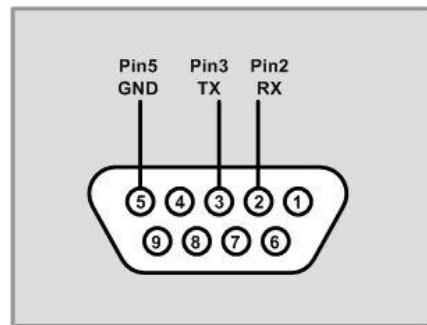


Figure 14. Hardware Connection-2(PC)

For communication frequency setting, the port in Figure 13 and PC should be connected through serial communication program.

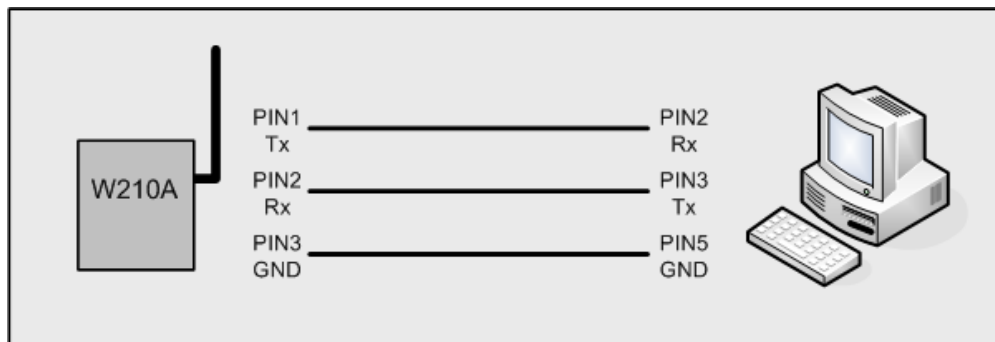


Figure 15. Hardware Connection-3

Hardware connection between W210A and PC shall be completed as depicted in Figure 15.

# W210A

---

## 4.2 Configuration Setting as per Operation Mode

### 4.2.1 PC Mode

- PC/DEVICE MODE Setting : PC MODE Setting
- Channel Setting : Communication Frequency Setting
- Tx Power Level Setting : Communication Output Level Setting
- UART Configuration : Selection of RS232/RS485 & Setting of Data Bit, Parity Bit, Stop Bit

### 4.2.2 Device Mode

- PC/DEVICE MODE Setting : DEVICE MODE Setting
- Channel Setting : Communication Frequency Setting
- Tx Power Level Setting : Communication Output Level Setting
- DESTINATION ID Setting : DESTINATION ID Setting
- UART Configuration : Selection of RS232/RS485 & Setting of Data Bit, Parity Bit, Stop Bit

### 4.2.3 Configuration Setting Program

#### 1) PC/Device Mode Setting (Mode Setting)

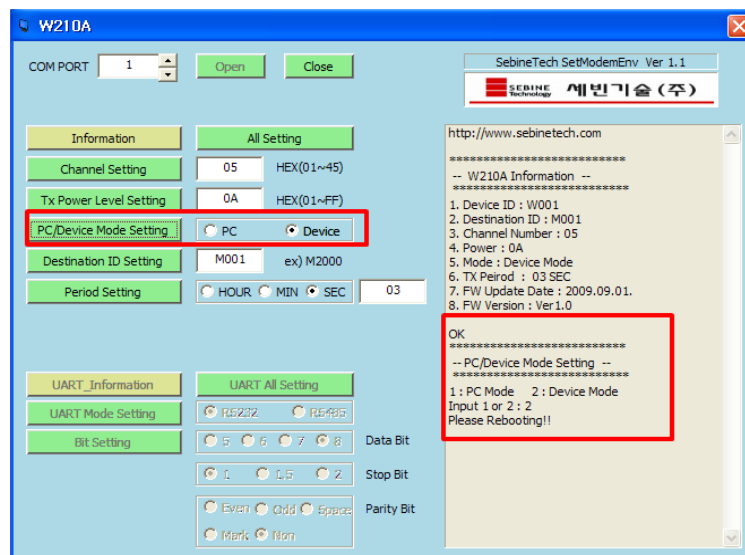


Figure 16. Configuration Setting Program – Mode Setting

# W210A

## 2) Channel Setting (Communication Frequency Setting)

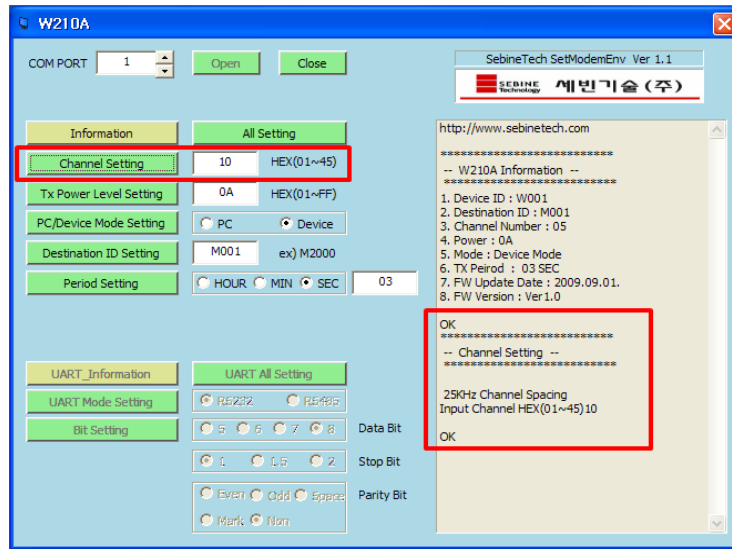


Figure 17. Configuration Setting Program – Channel Setting

## 3) Tx Power Level Setting (Communication Output Level Setting)

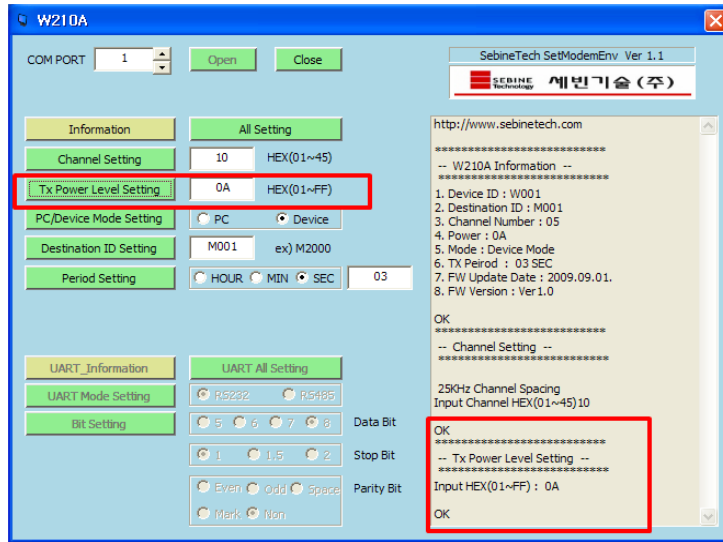


Figure 18. Configuration Setting Program – Tx Power Level Setting

# W210A

## 4) DESTINATION ID Setting

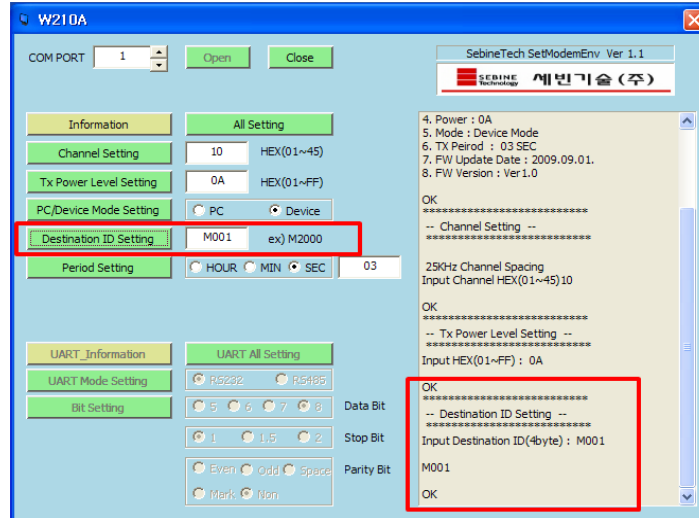


Figure 19. Configuration Setting Program – DESTINATION ID Setting

## 5) Period Setting (Transmission Cycle Setting)

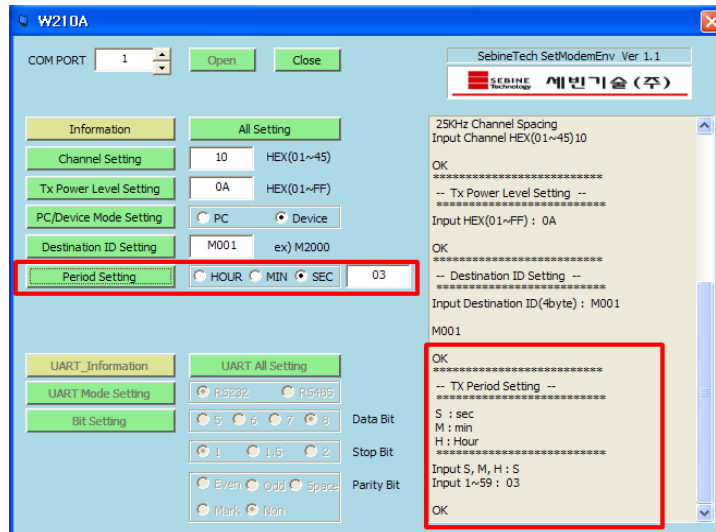


Figure 20. Configuration Setting Program – Period Setting



# W210A

---

## 5. Carrier Sensing

To avoid a collision with other RF systems using the same communication channel, W210A attains Received Signal Strength Indication (RSSI) prior to RF transmission and checks if there is a carrier in the channel. Standard for RSSI prescribed in the Radio Wave Laws and Regulation is 2uV, which is equivalent to -101dBm if converted into dBm. If  $RSSI > 2\mu V$ , then W210A shall not transmit any data through RF communication.

# W210A

---

## 6. Examples

(Example 1) Communication between W210A (PC MODE/DEVICE MODE) and M110A (PC MODE)

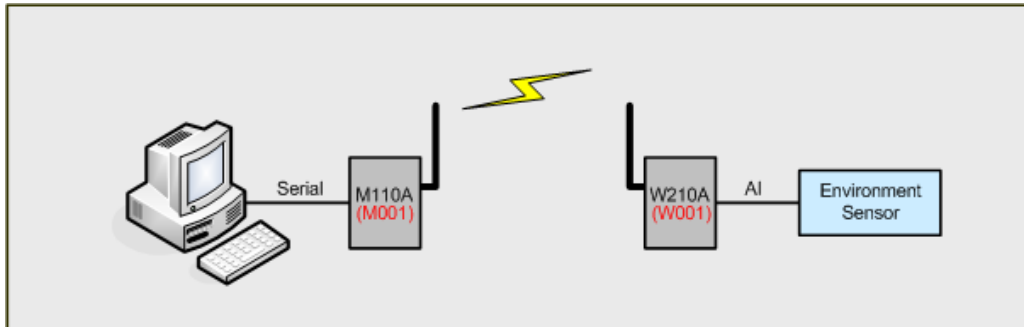


Figure 21. Communication between W210A & M110A

(Example 2) Communication between W210A (DEVICE MODE) and W510A (PC MODE)

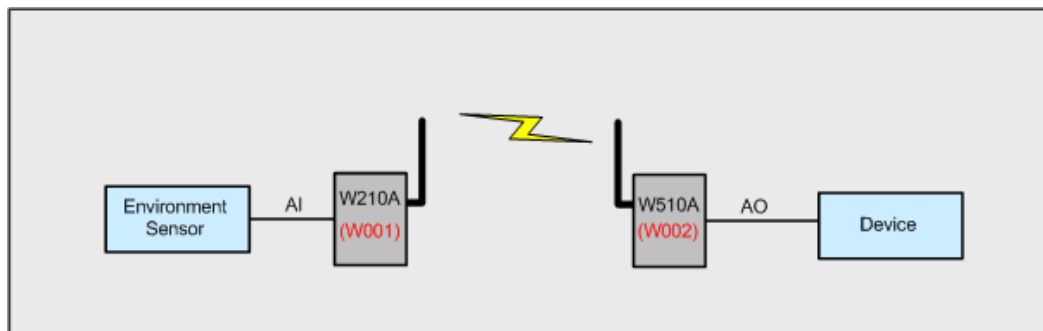
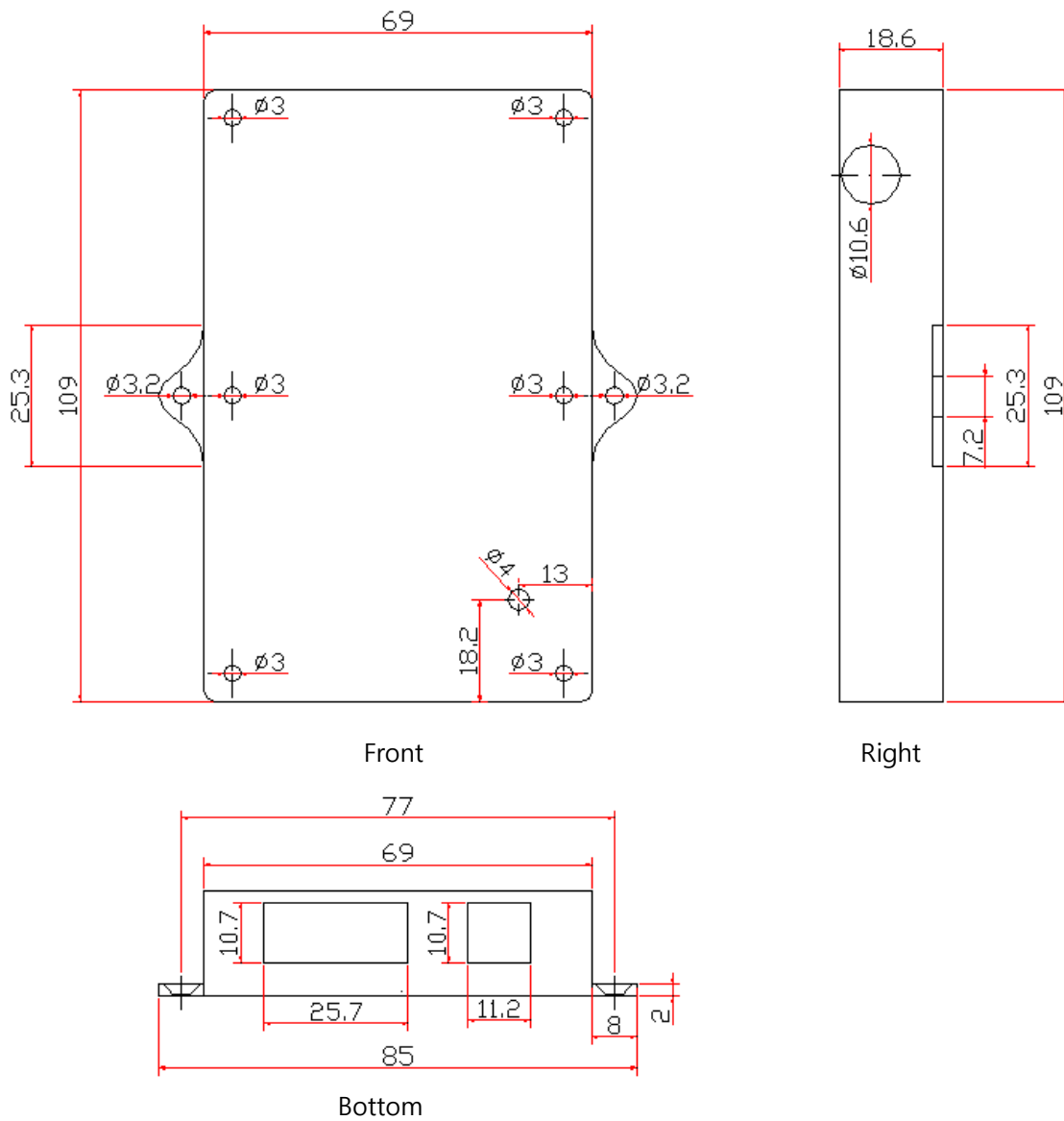


Figure 22. Communication between W210A & W510A

# W210A

---

## Appendix 1. Plan View



# W210A

---

## Appendix 2. Version Update History

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

## W210A

---

**Sebine Technology Co., Ltd.**

Homepage : <http://www.sebinetech.com>

E-mail : [tech@sebinetech.com](mailto:tech@sebinetech.com)

Room #202, Daedeok Radio Engineering Center, 694, Tamnip-dong, Yuseong-gu, Daejeon, Korea 305-510

Tel : 82-42-935-2084, 2085

Fax : 82-42-935-2088

