

*W510A*

---

# WDAS

Wireless Data Acquisition and Control System

## W510A

### User's Manual

Ver 2.0

SEBINE Technology, Inc.

# W510A

---

## CONTENTS

1. Summary
    - 1.1 Product Introduction
    - 1.2 Specification
  2. Operation Mode
    - 2.1 PC MODE
  3. Device Connection
    - 3.1 Power Supply
    - 3.2 Analog Output Connection and Setting
    - 3.3 Antenna Connection
  4. Environment Setup
    - 4.1 hardware Connection
    - 4.2 Setup List of Each Mode
  5. Examples
- 
- Appendix 1. Dimension
  - Appendix 2. R&TTE
  - Appendix 3. Document Information

# W510A

---

## 1. Summary

### 1.1 Product Introduction

W510A is one of WDAS(Wireless Data Acquisition and Control System) products and it is a wireless data transmitter-receiver which receives analog output data for controlling signal by using 433MHz RF frequency bandwidth. W510A allows users to set communication channels via environment setting. Usable frequency number, channel number, and serial number are printed in shipping products.



Figure 1. W510A

# W510A

---

## 1.1.1 Application examples

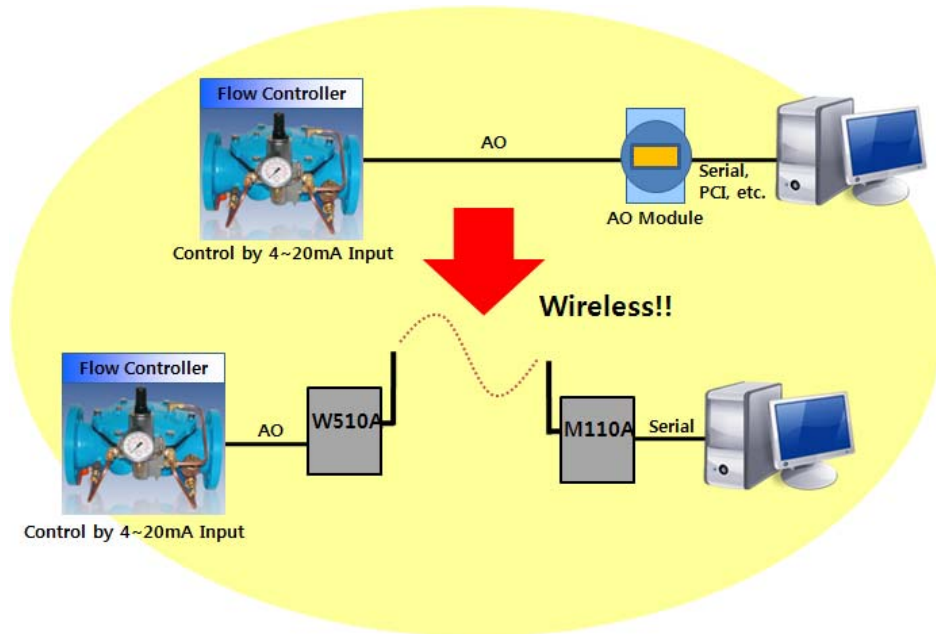


Figure 2. On/Off Status Wireless Transmission by W510A and M110A

## 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

W510A main body, one  $\lambda/4$  dipole antenna, one power connector, one Analog Output connector

# W510A

## 1.2 Specification

Item	Specification	
Name	W510A	
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°C ~ +60°C	
RF Features	<ul style="list-style-type: none"> <li>. Frequency : 433.050MHz ~ 434.790MHz</li> <li>. Channel Spacing : 25KHz</li> <li>. Transmitter Power : 10mW</li> <li>. Receiver Sensitivity : -116 ~ -120dBm(-116dBm typ.)</li> <li>. Modulation : FSK</li> <li>. Bandwidth : &lt; 14KHz</li> </ul>	
Performance	<ul style="list-style-type: none"> <li>. Expected Line-Of-Sight Range : Up To 1.5km with <math>\lambda/4</math> Dipole Antenna</li> <li>. RF Data Rate : 4.8K Baud, 7.2K Baud</li> </ul>	
I/O Interface	Analog Output	2Ch. Analog Output, with 16Bit Resolution (0~5V, 0~10V, 0~20mA) User Selectable Output Type : Current or Voltage User Selectable Output Voltage Range : 0~5V or 0~10V
Antenna Interface	<ul style="list-style-type: none"> <li>. SMA Connector</li> <li>. Impedance 50Ω</li> </ul>	

Table 1. W510A Specification

# W510A

---

## 2. Operation Mode

W510A can use only PC 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, W310A execute the command when valid Function Code is received.

- Valid receiver Function Code : WRITE, STATUS\_READ

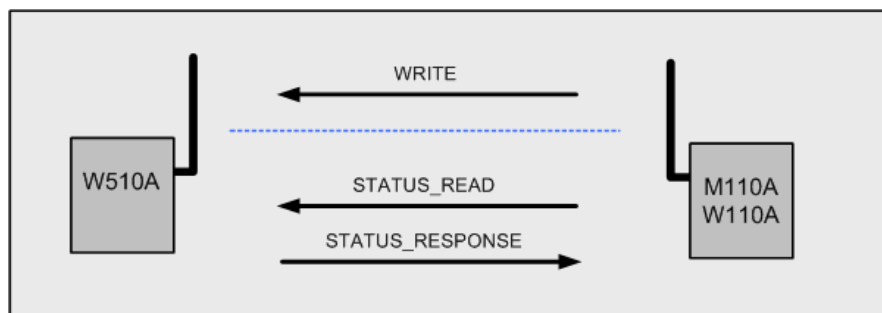


Figure 3. PC MODE of W510A

#### 2.1.2 Function Code available at PC MODE

- WRITE : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, analog output signal is generated when W510A receives digital output Function Code.
- STATUS\_READ : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, W510A reads current data output status when W510A receives Function Code of inquiry of digital output status.
- STATUS\_RESPONSE : Function Code of STATUS\_RESPONSE is used when STATUS\_READ Function Code is received and current analog output status is transmitted.

#### 2.1.3 Environment setting list before PC MODE use

- None

# W510A

## 3. Device Connection

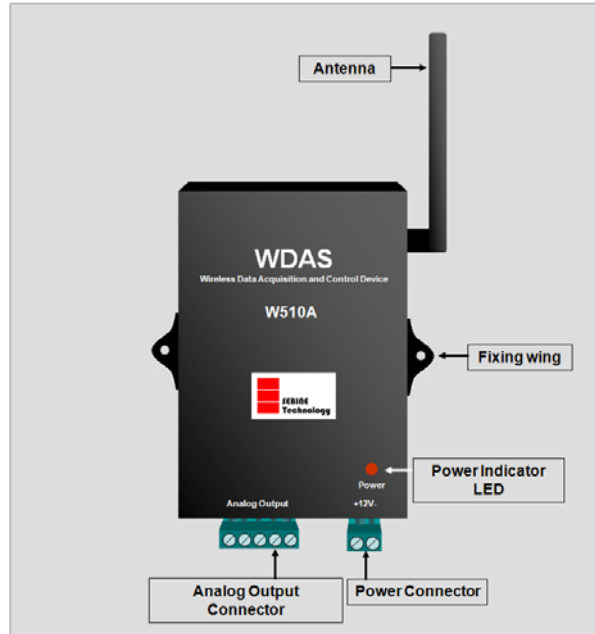


Figure 4. W510A Outer

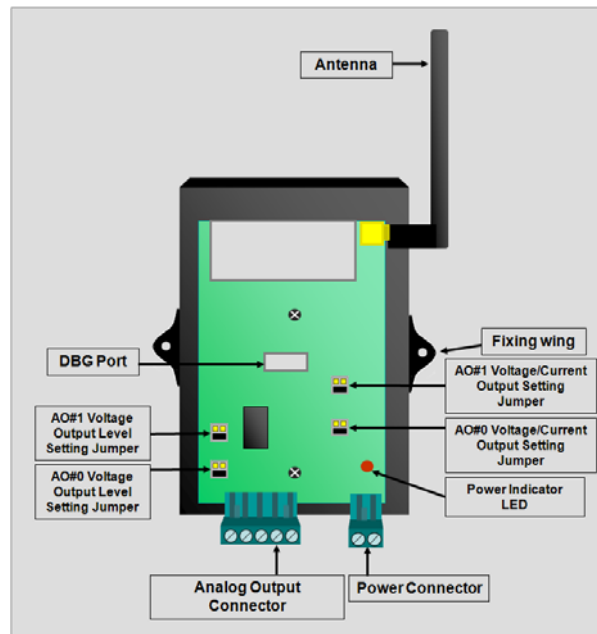


Figure 5. W510A Inner

# W510A

---

## 3.1 Power Supply

W510A 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. W510A 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.

- As shown in Figure 6, remove the skin of wire about 7mm and put it into the terminal and tighten it by turning the left screw using screwdriver.
- As shown in Figure 7, connect it to power.
- As shown in Figure 8, connect the terminal to power port of W510A, Make sure the direction is exact as shown in Figure 9.

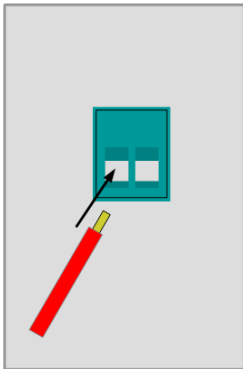


Figure6. Power Supply-1

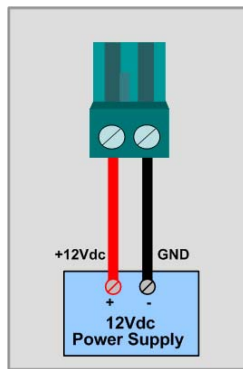


Figure7. Power Supply-2

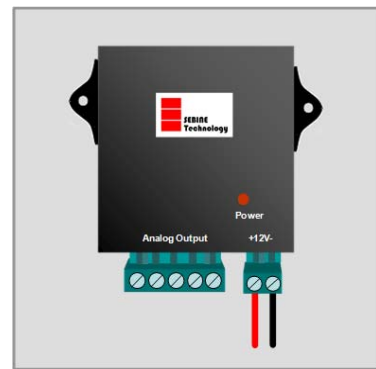


Figure8. Power Supply-3

### ※ Notice

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



# W510A

---

## 3.2 Analog Output Connection and Setting

W510A supports 2 output channel. For analog output function, use Analog Output connector in Figure 9. Analog Output connector is included in product purchase. Connection method is same as power supply connection method.

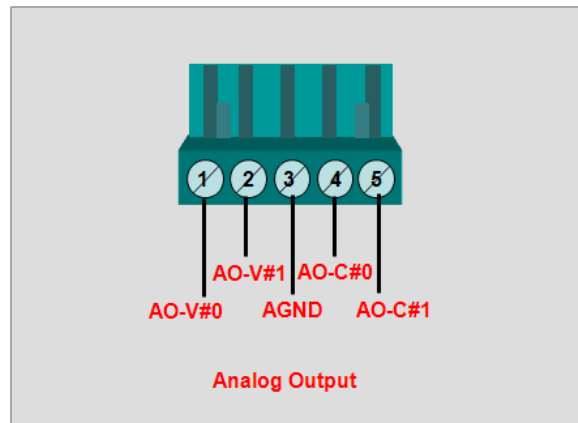


Figure 9. W510A connector

### 3.2.1 Analog output connection

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

### 3.2.2 Analog output channel setup

For use of analog output, AO#0 voltage output level setting jumper, AO#1 voltage output level setting jumper, AO#0 voltage/current output setting jumper, AO#1 voltage/current output setting jumper adjustments are needed as shown in Figure 9.

# W510A

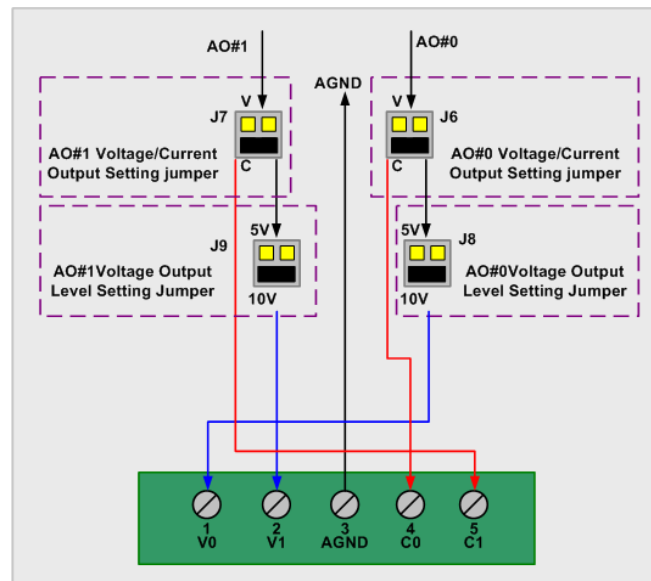


Figure 10. W510A analog output channel setting concept

AO#0 : AO#0 can select voltage/current generation. When generating voltage, set the jumper of J6 as V and adjust the voltage output range, then generate voltage via pin 1 of Analog Output connector. When generating current, set the jumper of J6 as C, then generate current via pin 4 of analog output connector.

AO#1 : AO#1 can select voltage/current generation. When generating voltage, set the jumper of J7 as V and adjust the voltage output range, then generate voltage via pin 2 of Analog Output connector. When generating current, set the jumper of J7 as C, then generate current via pin 5 of analog output connector.

# *W510A*

---

## 3.3 Antenna connection

Connect the SMA-P(male) connector antenna to SMA-J(Female) connector of W510A. At purchase,  $\lambda/4$  dipole antenna is provided.



Figure 11. SMA-J Antenna connector

# W510A

## 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 5.

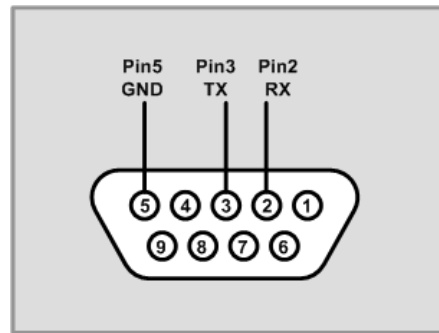
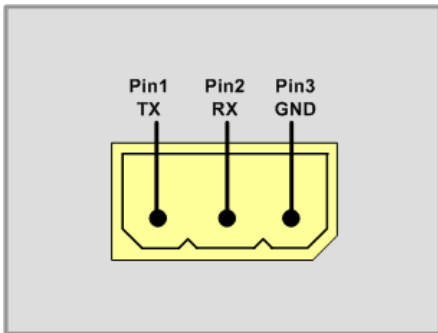


Figure 12. Hardware connection-1(W510A)

Figure 13. Hardware connection-2(PC)

For communication frequency adjustment, port and PC must be connected via serial communication program as shown in Figure 14.

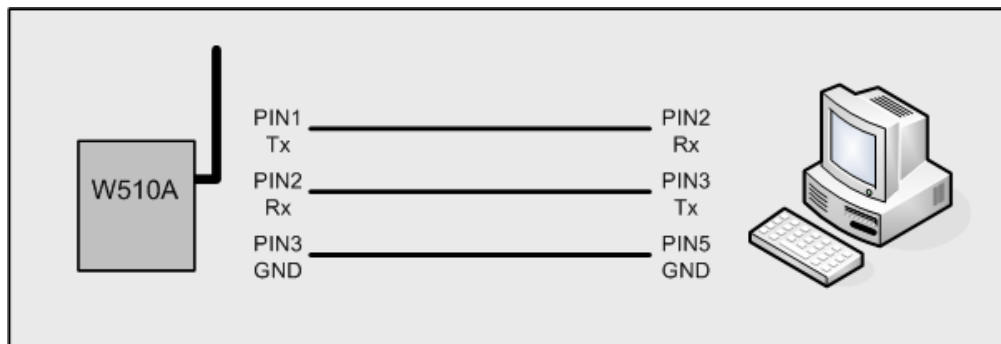


Figure 14. Hardware connection-3

The hardware connection between W510A and PC can be done as shown in Figure 14.

# W510A

## 4.2 Setup list of each mode

### 4.2.1 PC MODE

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

### 4.2.2 DEVICE MODE

- None

### 4.2.3 Environment Setting Program

#### 1) Channel Setting(Communication Frequency Setting)

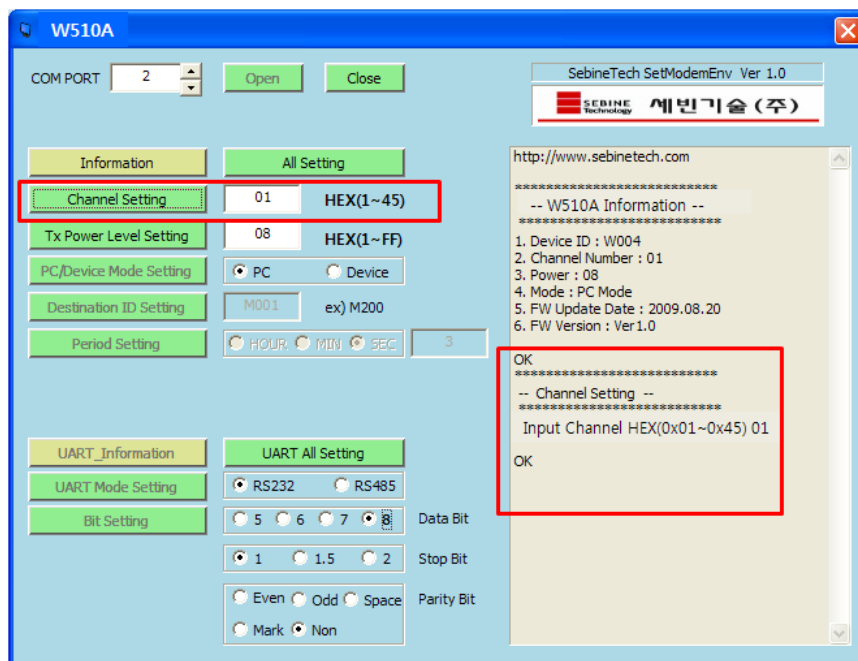


Figure 15. Environment Setting Program-Channel Setting

# W510A

## 2) Tx Power Level Setting(Communication RF Power Level Setting)

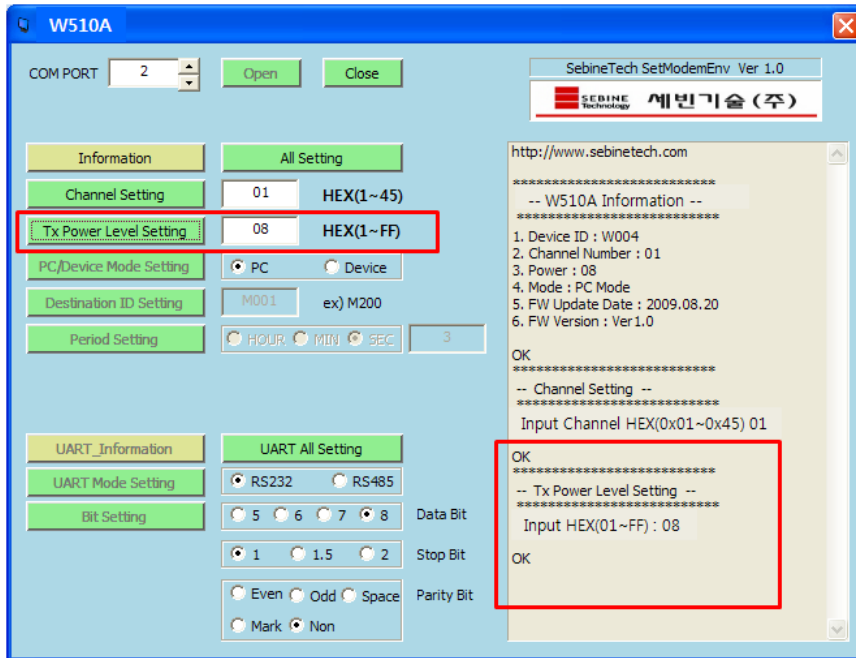


Figure 16. Environment Setting Program-Tx Power Level Setting

# W510A

---

## 5. Examples

(EX 1) M110A(PC MODE) to W510A(PC MODE) Communication

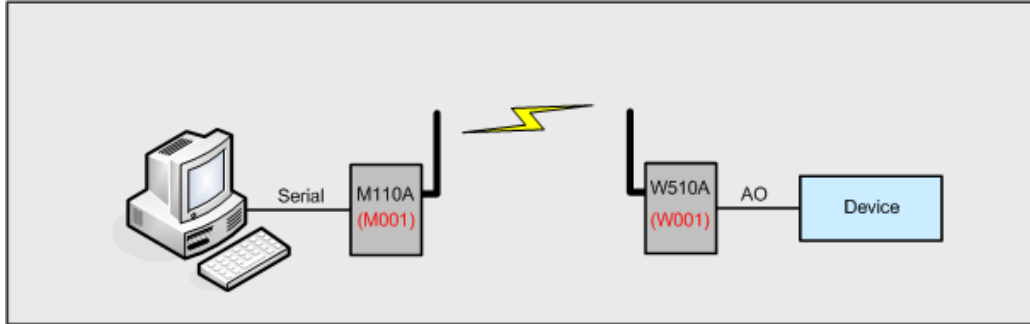


Figure 17. M110A to W510A Communication Example

(EX 2) W210A(Device MODE) to W510A(PC MODE) Communication

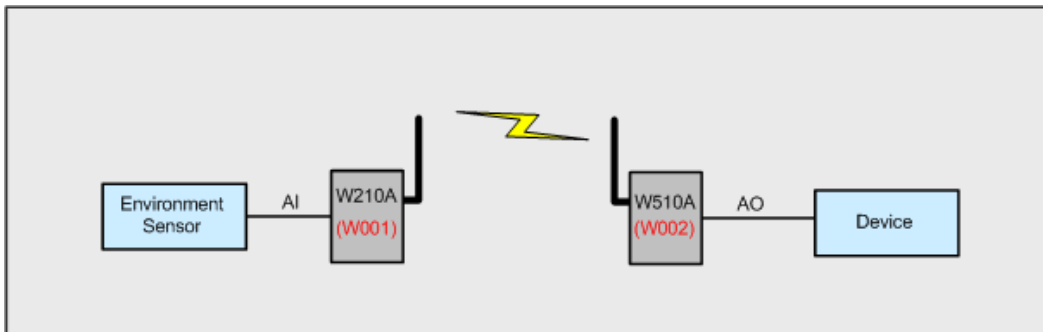
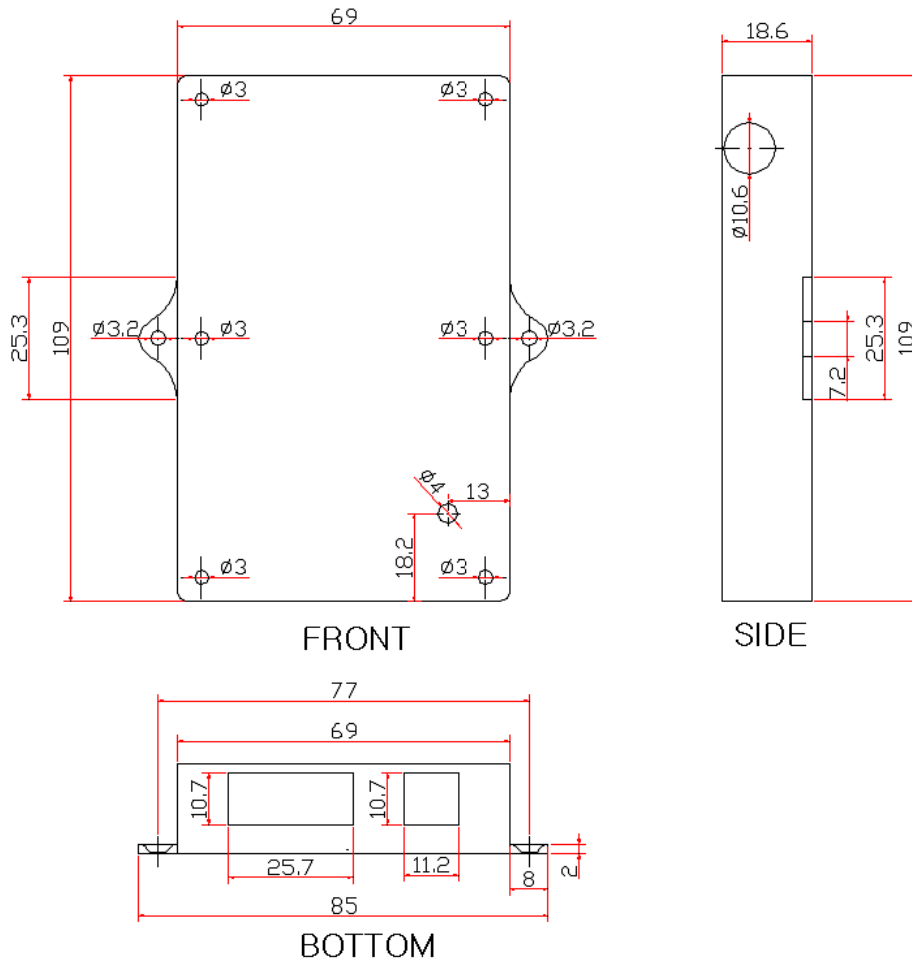


Figure 18. W210A to W510A Communication Example

# W510A

## Appendix 1. Dimension





# *W510A*

---

## **Appendix 2. R&TTE**

Hereby, SEBINE Technology, Inc. declares that this device(M/N:W510A) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

# W510A

---

## Appendix 3. Document Information

Revision	H/W Version	Description
1.0	RF1-AE-AO Ver1.1	03/30/2009 - Initial Release Version
2.0	RF1-AE-AO Ver1.1	09/14/2009 - Modified

# *W510A*

---

## SEBINE Technology, Inc.

Homepage : [www.sebinetech.com](http://www.sebinetech.com)

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

#8-116, 187, Techno 2-ro, Yuseong-gu, Daejeon, Republic of Korea 34025  
(Migun Technoworld 2, Yongsan-dong)

Tel : 82-42-935-2084, 2085

Fax : 82-42-935-2088