WDAS

Wireless Data Acquisition and Control System

W310A

User's Manual

Ver 2.0

SEBINE Technology, Inc.

CONTENTS

1. Summary

1.1 Product Introduction

W310A is one of WDAS(Wireless Data Acquisition and Control System) products and it acquires the digital input data from the actual field. It is a wireless data transmitter-receiver which receives digital output data for controlling signal by using 433MHz RF frequency bandwidth. W310A allows users to set PC MODE, DEVICE MODE, and communication channels via environment setting. Usable frequency number, channel number, and serial number are printed in shipping products.

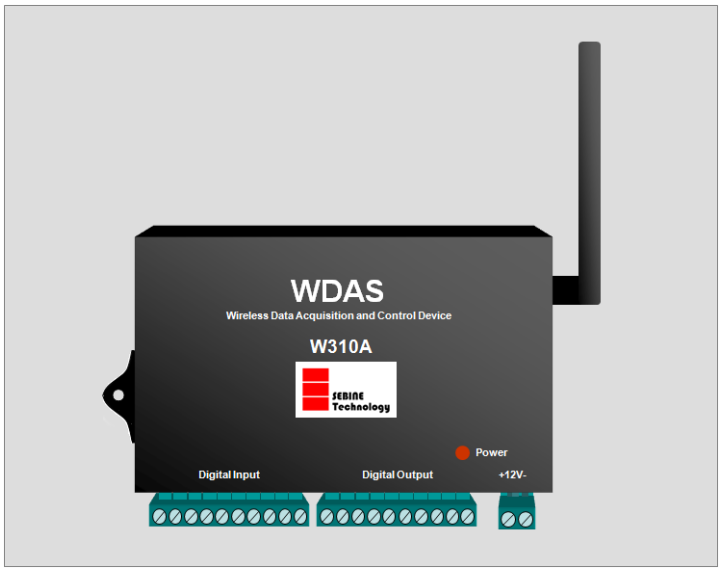


Figure 1. W310A

1.1.1 Application examples

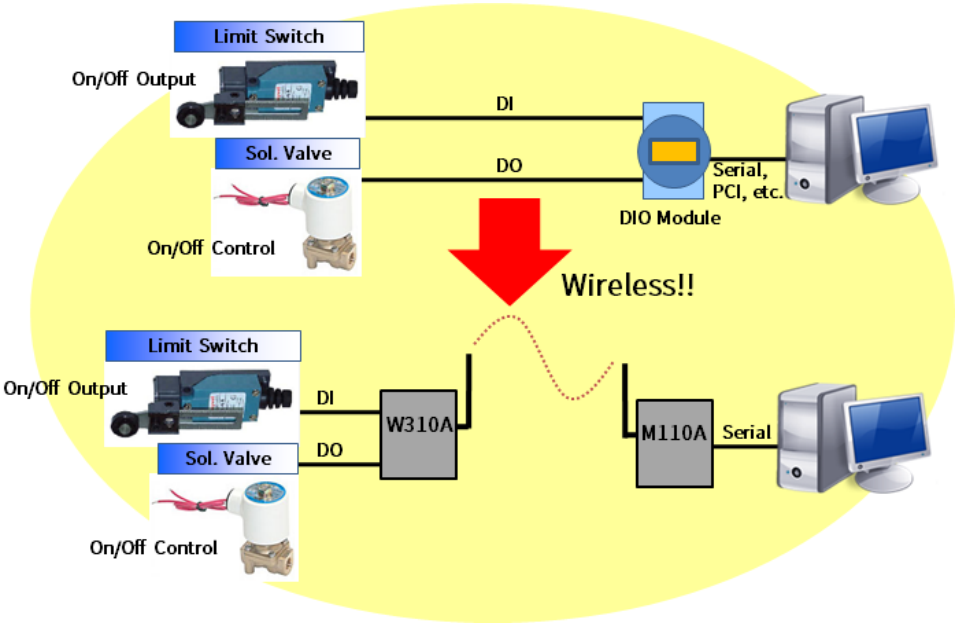


Figure 2. On/Off Status Wireless Transmission, Wireless On/Off Control by W310A and M110A

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
- Poison gas detection and monitoring system
- Weather data (rainfall, wind direction, wind velocity, humidity, temperature) monitoring system

1.1.4 Product parts

W310A main body, one λ/4 dipole antenna, one power connector, each one Digital Input/Output connector

1.2 Specification

Item	Specification	
Name	W310A	
Dimension	133mm(L)×72.4mm(W)×19.6mm(H) (w/o Antenna, Connector)	
Housing	Aluminum	
Weight	220g (w/o Antenna)	
Power Supply	+12Vdc ±10%, Reverse Power/Overvoltage/Overcurrent Protection	
Current Consumption	Rx 120mA Tx 124.5mA WDT Reset 130mA (@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	Digital Input	8Ch. Opto-Isolated Input : Up To 2500Vrms Max. 50mA for Each Channel
	Digital Output	8Ch. NPN Open Collector Output Max. 50V and 500mA for Each Channel
Antenna Interface	. SMA Connector . Impedance 50Ω	

Table 1. W310A Specification

2. Operation Mode

W310A 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, W310A execute the command when valid Function Code is received.

- Valid receiver Function Code : WRITE, READ, STATUS_READ

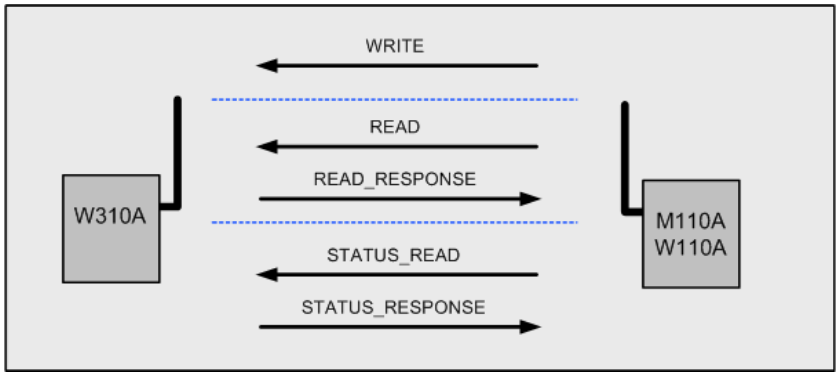


Figure 3. PC MODE of W310A

2.1.2 Function Code available at PC MODE

- WRITE : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, digital output signal is generated when W310A receives digital output Function Code.
- READ : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, current digital input status is read when W310A receives Function Code of inquiry of digital input status.
- READ_RESPONSE : Function Code of READ_RESPONSE is used when READ Function Code is received and current digital input status is transmitted.
- STATUS_READ : Through M110A(PC MODE), W110A(Only PC MODE) with serial port, W310A reads current data output status when W310A 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 digital output status is transmitted.

2.1.3 Environment setting list before PC MODE use

- Select PC MODE at PC/DEVICE MODE Setting

2.2 DEVICE MODE

2.2.1 Definition of DEVICE MODE

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

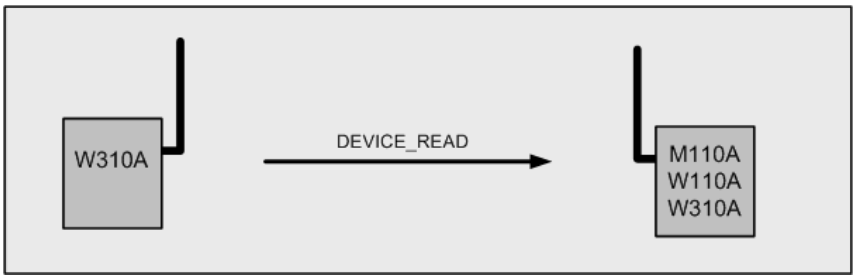


Figure 4. DEVICE MODE of W310A

2.2.2 Function Code available at DEVICE MODE

- DEVICE_READ : When the established DESTINATION device transmits current digital 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

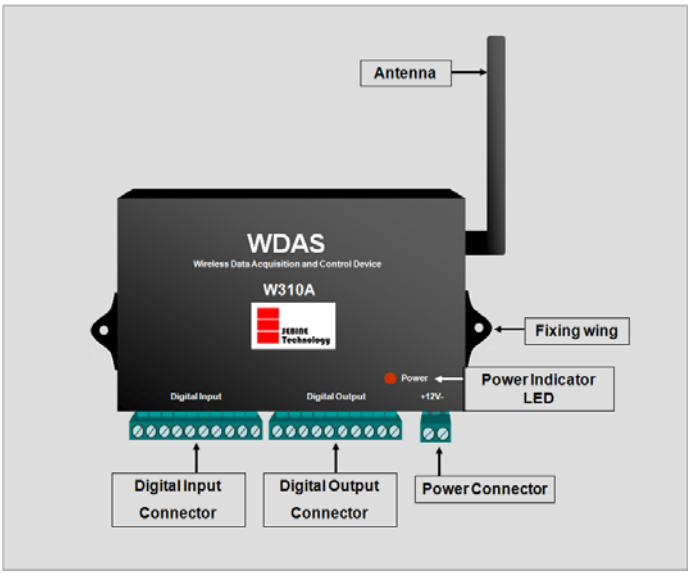


Figure 5. W310A Outer

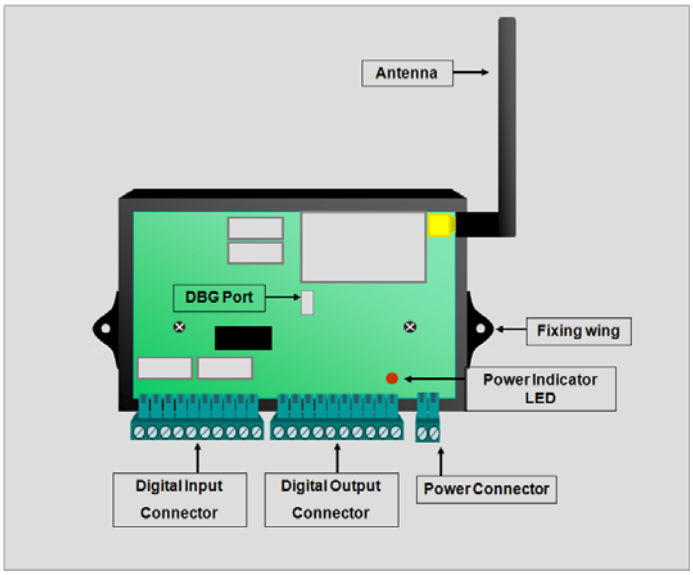


Figure 6. W310A Inner

3.1 Power Supply

W310A 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. W310A 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 W310A, Make sure the direction is exact as shown in Figure 9.

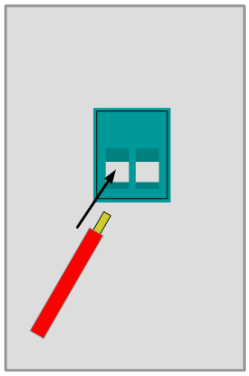


Figure7. Power Supply-1

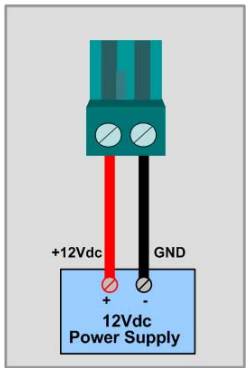


Figure8. Power Supply-2

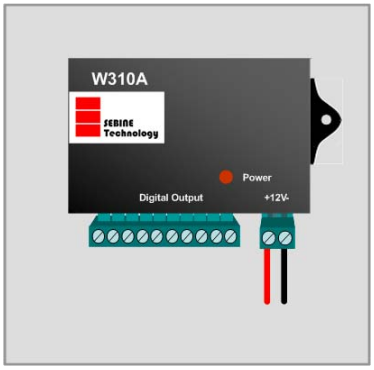


Figure9. Power Supply-3

※ Notice

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

3.2 Digital Input/Output Connection

W310A supports 8 channel digital input, 8 channel digital output. For use of digital input/output function, Digital Input/Output connector is used shown in Figure 5.

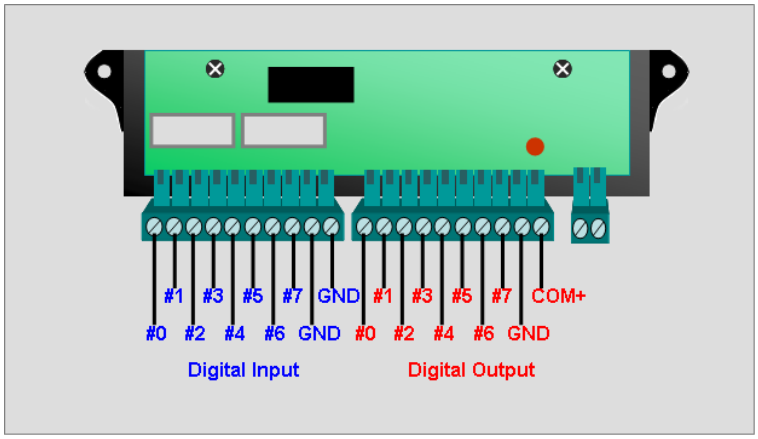


Figure 10. W310A connector

3.2.1 Digital input channel connection

Digital input circuit of W310A is shown in Figure 11. Refer the circuit below for digital input channel connection.

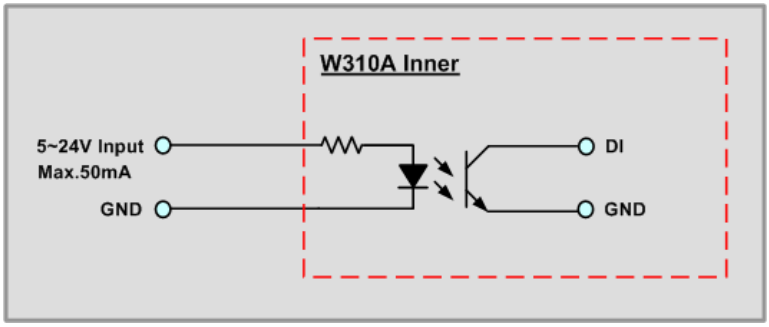


Figure 11. Digital input channel concept

2.2.2 Digital output channel connection

Digital output circuit of W310A is shown in Figure 12. Refer the circuit below for digital output channel connection.

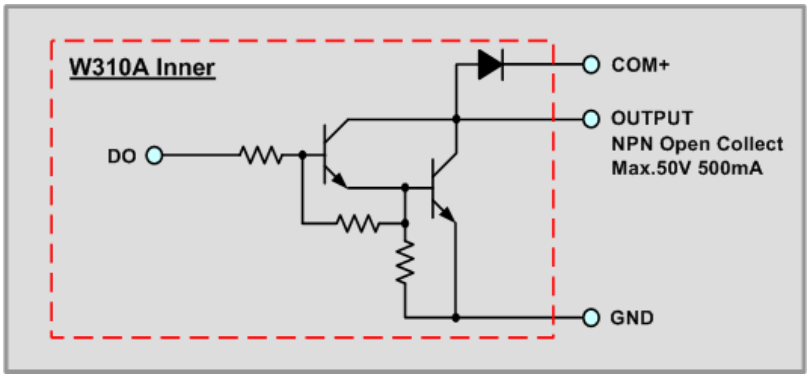


Figure 12. Digital output channel concept

3.3 Antenna connection

Connect the SMA-P(male) connector antenna to SMA-J(Female) connector of W310A. At purchase, λ/4 dipole antenna is provided.

Figure 13. 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 6.

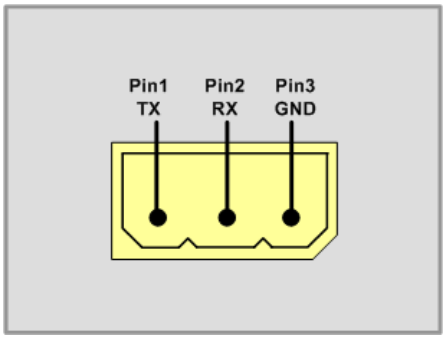


Figure 14. Hardware connection-1(W310A)

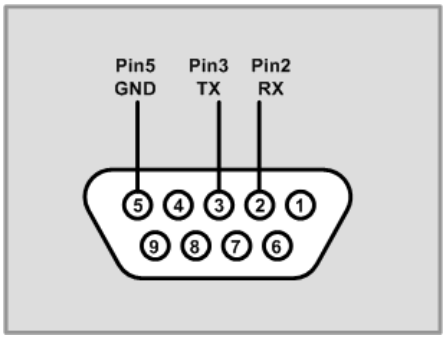


Figure 15. Hardware connection-2(PC)

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

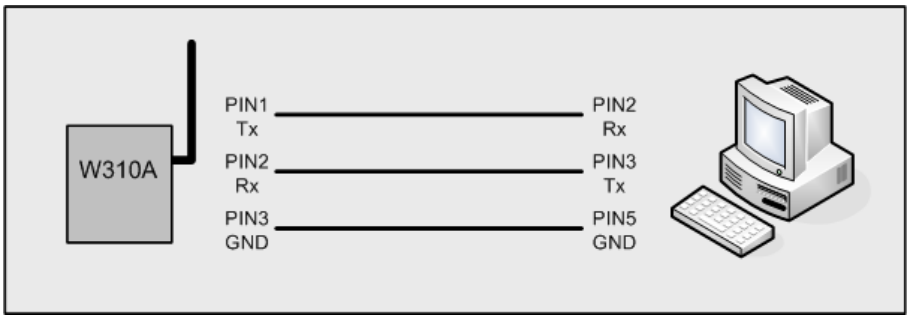


Figure 16. Hardware connection-3

The hardware connection between W310A and PC can be done as shown in Figure 16.

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)

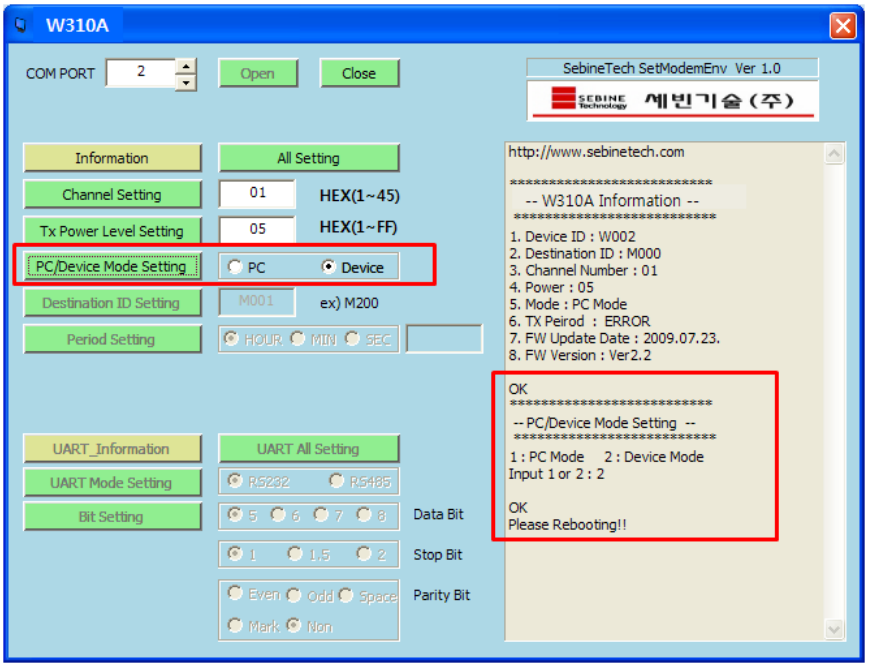


Figure 17. Environment Setting Program-MODE Setting

2) Channel Setting(Communication Frequency Setting)

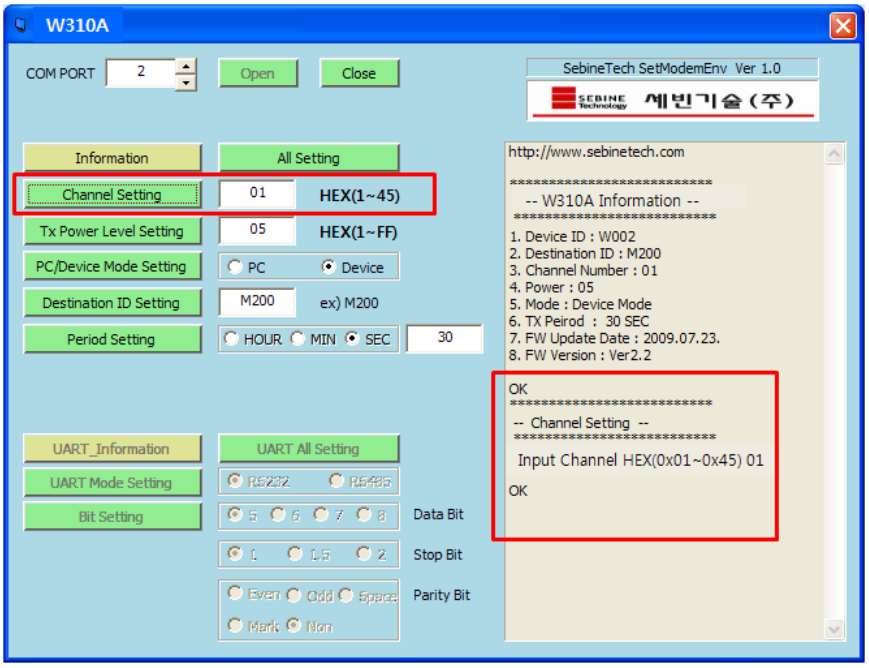


Figure 18. Environment Setting Program-Channel Setting Setting

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

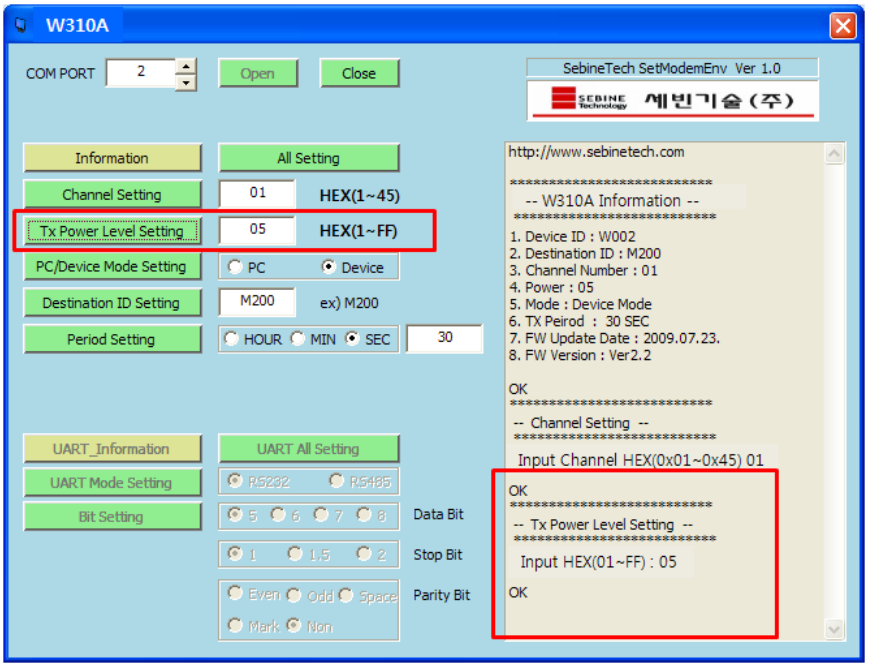


Figure 19. Environment Setting Program-Tx Power Level Setting Setting

4) DESTINATION ID Setting(DESTINATION ID Setting)

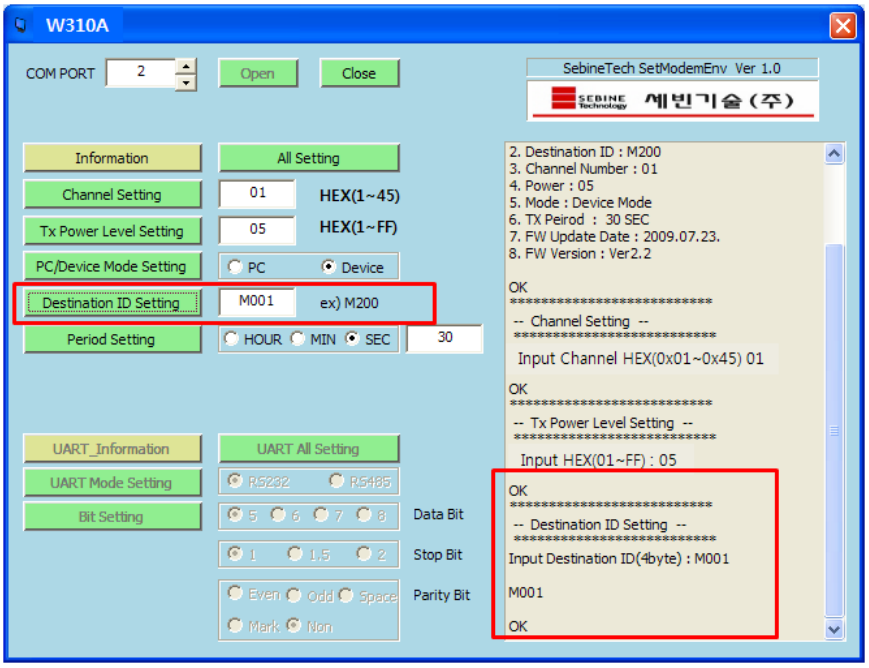


Figure 20. Environment Setting Program-DESTINATION ID Setting Setting

5) Period Setting(TX Period Setting)

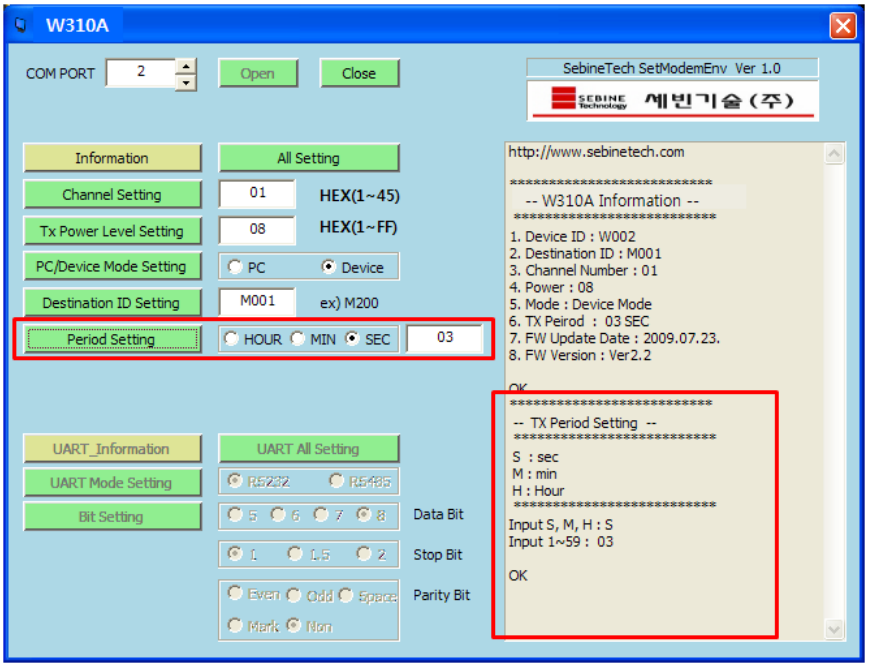


Figure 21. Environment Setting Program-Period Setting Setting

5. Example

(EX 1) W310A(PC MODE/DEVICE MODE) to M110A(PC MODE) Communication

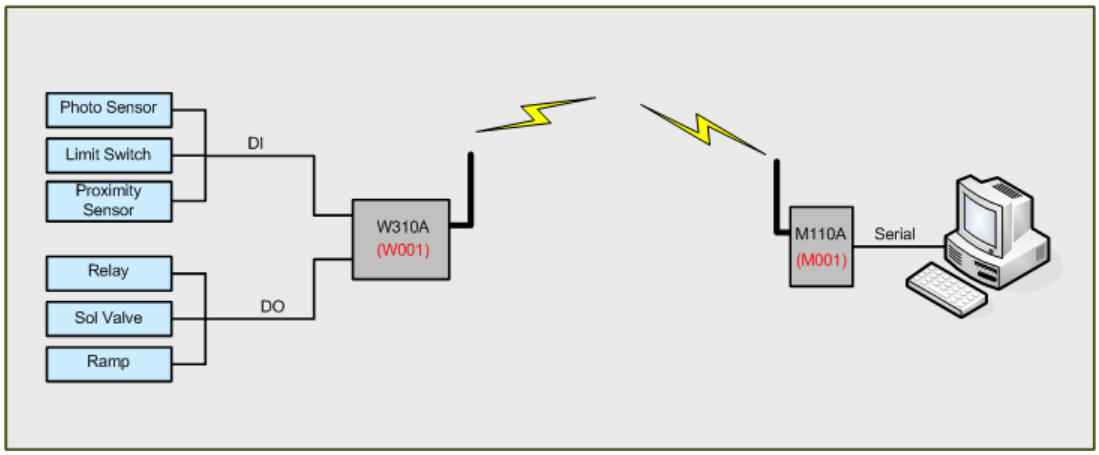


Figure 22. W310A to M110A Communication Example

(EX 2) W310A(DEVICE MODE) to W310A(PC MODE) Communication

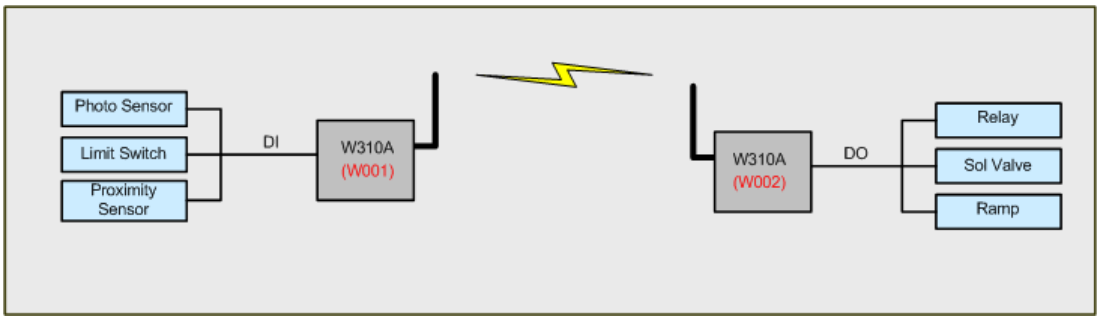
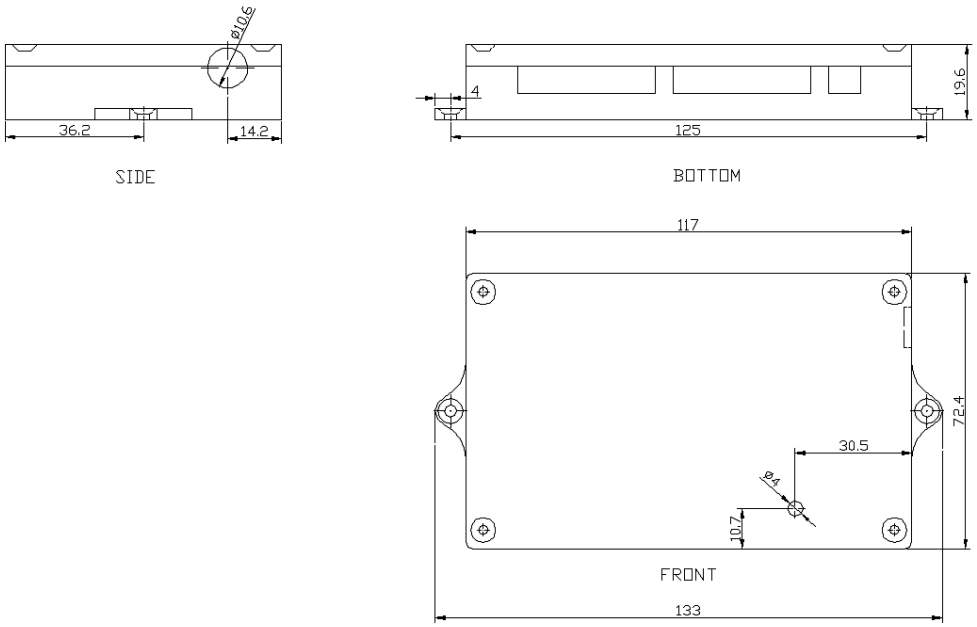


Figure 23. W310A to W310A Communication Example

Appendix 1. Dimension



Appendix 2. R&TTE

Hereby, SEBINE Technology, Inc. declares that this device(M/N:W310A) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Appendix 3. Document Information

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

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