System Manual

Ver 1.00 SEBINE Technology, Inc.

WTH_ENG_20120201.hwp

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WARNING *

- Use only 3.6V Lithium battery.(more than 2400mAh)

- Be careful with battery orientation.(See 2. Device Summary)

- Never operate the Device with each different battery.

* CAUTION * RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum separation distance of 20cm between the radiator and your body. Use only the supplied antenna.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

1. Outline

1.1 Product Introduction

WTH is a sensor to detect temperature and humidity wirelessly by using ISM 2.4GHz frequency bandwidth. WTH transmits the temperature. humidity, and smoke detection data at each user set-up period via UDP communication method. Users can configure their own setting for WTH via serial communication program.



 $\boldsymbol{\varkappa}$ Keep the filter of a sensor clean.





Product Application Examples

1.1.2 Product Application Area

- Department Store, Public Office, Gymnasium
- Museum, School, Manufacturing Factory
- Office Building, Movie Theater, Shipbuilding/Marine

1.1.3 Product Package WTH main body, USB cable, User manuel, Utility CD

1.2 Specification

Item	Specification				
Name	WTH				
Dimension	110mm(L)×80mm(W)×33mm(H)				
Housing	ABS				
Weight	300g (w/o Battery, Antenna)				
Power Supply	AA size 3.6Volt LITHIUM BATTERY 1EA or 2EA				
Current Consumption	Tx 190mA, Rx 140mA (@3.6Vdc)				
Operating Temperature	$-40^{\circ}C \sim +85^{\circ}C$				
RF Features	 Frequency : 2412 ~ 2472 MHz Standard Supported: IEEE 802.11b Transmitter Power : Max. 7mW Modulation : IEEE 802.11b : DSSS : 1Mb/s and 2Mb/s IEEE 802.11b : CCK : 5.5Mb/s and 11Mb/s Channels: Europe - 13 channels USA - 11 channels 				
Performance	• RF Data Rate: 1Mb/s to 11Mbps				
I/O Interface	• USB Connector				
Antenna Interface	SMA(Female, Reverse)Impedance 50Ω				
Sensor	Temperature • Accuracy /Humidity Humidity : ±3.0 Temperature : ±0.4 @°C				

WTH Specification

2. Device Summary



WTH inside

2.1 Power Supply

WTH operates using on or two AA size 3.6Volt LITHIUM BATTERIES. Be careful with battery orientation.

$2.2\ {\rm USB}$ communication connection

To use WTH, proper setting is necessary for wireless environment to be installed. For setting, connect PC and WTH using USB cable provided in the package. For detailed settings after USB communication connection, see section 3.2.

2.3 LED Indicator

LED turns on during operation when serially connected battery power drops below 3.4V. The WTH may malfunction under 3.4V so batteries need to be changed.

3. Wi-Fi wireless communication environmental setting

3.1 Wireless LAN(AP) setting

To use WTH, wireless LAN(AP) setting is needed for WTH connection.

3.1.1 SSID setting(required)

When WTH is connected to wireless LAN(AP), SSID is being searched. Thus, SSID must be set on AP and SSID(network) notification function should be used.

3.1.2 Password disabled setting for AP(required)

WTH does not use encrypted method for minimizing the system correct consumption. Thus, set password disabled for AP.

3.1.3 DHCP disabled(option)

WTH does not use DHCP. Wireless LAN(AP) executes or stops DHCP server setting.

3.1.4 MAC Address registration(option)

When password is disabled for wireless LAN(AP), the Mac address of WTH is registered to wireless LAN(AP) so that only the registered Mac Address is permitted. This prevents network overflow.

3.2 WTH setting

To use WTH, Wi-Fi wireless communication environment setting is necessary.

3.2.1 Connection between WTH and PC

To set the wireless communication environment for WTH, connect PC with WTH using the USB cable provided at product purchase. The connection sequence is shown below.

* Before connection, install USB driver of WTH. [See Appendix 1. USB driver installation]

Step 1. With batter inserted at WTH, set System Power SW OFF.



WTH setting - POWER SW

Step 2. Connect one port of USB cable to PC, and the other port to WTH.

Step 3. Switch Mode Selection SW to USB side.



WTH setting - Mode Selection SW

Step 4. Execute the serial communication program.

- ▶ Serial communication program setting
- Baud Rate : 115200
- Data Bit : 8
- Stop Bit : 1
- Parity Bit : None

Step 5. Set the System Power SW of WTH ON. When correctly connected, data are shown on serial communication program shown below.

🍠 www.sebinetech.com - Que_Thread_As	yncfree_232 P	rog	
- Send Data		Port Setting	
	Ascii	Port No. 5	
	Clear	Baud Rate 11520	0 💽
	Hex	Data Bit 8	•
	Clear	Stop Bit One	
Receive Ascii		Parity None	-
AT +WM=1 AT +WM=1 AT +WM=1	Clear	Open	Close
etep 1. SSID : 1. Print step 1	•	Period Ascii	Period Try
- Receive Hex		Period Hex 5000 ms	lun
41 54 28 57 40 30 31 00 00 41 54 28 57 40 30 31 00 00 41 54 28 57 40 30 31 00 00 24 24 24 24 24 24 24 24 24 24 24 24 24 2	Clear	SAVE	EXIT
75 72 61 74 63 6F 6E 20 20 20 20 00 04 24 24 24 24 24 24 24 24 24 24 24 24 24	StaticText8		빈기술(주)
		S	erial_Prog Ver1.3 Yoo.ES
Heceive and Send Lest			MODE ON/OFF MODE OFF

Data output via serial communication program

3.2.2 Wi-Fi wireless communication environment setting of WTH

Step 1. SSID setting

Insert the SSID of wireless LAN(AP) to be connected with WTH.

- ▶ Data Format : <SSID>⊡
- ► Example : sebinetech

🍠 www.sebinetech.com - Que_Thread_Asy	ncfree_232 P	rog	
Send Data sebinetech 2. SSID Input	(Ascii) Clear	Port Setting Port No. Baud Rate	5
	Hex	Data Bit Stop Bit	8 • •
Receive Ascii AT+WM=1 AT+WM=1 AT+WM=1	Clear	ParityOpen	None Close
AP Setting Comparation in Apple 1. CCID : step 1. CCID : step 2. Static Configuration of Network Parameters : 3. Print Step 2	•	Period Ascii	Timer Run
Receive Hex		5000 ms	Timer Run
2A 2	Clear	SAVESTART	EXIT
73 74 65 70 20 32 22 20 53 74 61 74 69 63 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 6E 20 6F 66 20 4E 65 74 77 6F 72 6B 20 50 61 72 61 6D 65 74 65 72 73 20 3A 20	StaticText8	SEBINE	세빈기술(주)
Receive and Send Test			MODE ON/OFF MODE OFF OF PC Mode C Device Mode

WTH setting - SSID Input

Step 2. Static Configuration of Network Parameters setting

Insert the information for WTH for connection to wireless LAN(AP).

- ▶ Data Format : <<u>Src Address</u>>,<<u>Net-mask</u>>,<<u>Gateway</u>>₽
- ► Example : 192.168.30.21,255.255.255.0,192.168.0.1

$ar{\mathcal{J}}$ www.sebinetech.com - Que_Thread_Asyncfree_232	Prog 🔲 🗖 🔀
Send Data	Port Setting
192.168.0.21,255.255.255.0,192.168.0.1	Port No. 5
4. Network Parameters Input	Baud Rate 115200
Hex	Data Bit 8
Clear	Stop Bit One 🗨
Receive Ascii	Parity None 🗨
AT+WM=1 AT+WM=1 AT+WM=1 Clear	Open Close
AP Setting Configuration	Period Ascii
step 1. SSID : step 2. Static Configuration of Metwork Parameters : step 3. Static Configuration of DNS :	5000 ms Timer Run
5. Print Step 3	Period Hex
Receive Hex	ms
20 20 41 50 20 53 65 74 74 69 6E 67 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 6E 20 20 20 20 00 04 2A 2A 2A 2A 2A 2A 2A 2	SAVE EXIT
63 67 75 72 61 74 69 6F 6E 20 6F 66 20 4E 65 74 77 6F 72 6B 20 50 61 72 61 6D 65 74 65 72 73 20 3A 20 73 74 55 70 20 33 2E 20 53 74 61 74 69 63 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 6E 20 6F 66 20 44 4E 53 20 3A 20	SEBINE 세빈기술(주)
	Serial_Prog Ver1.3 Yoo.ES
Receive and Send Test	MODE ON/OFF MODE OFF

WTH setting - Network Parameters Input

Step 3. Static Configuration of DNS setting

Insert DNS server info for WTH for connection to wireless LAN(AP).

- ▶ Data Format : <DNS1 IP>,<DNS2 IP>₽
- ▶ Example : 168.126.63.1,168.126.63.2

🦻 www.sebinetech.com - Que_Thread_Asyncfree_232 P	Prog 📃 🗖 🔀
Send Data	Port Setting Port No. 5 Baud Rate 115200
Hex Clear	Data Bit 8 💌 Stop Bit One 💌
AT+WM=1 Clear AT+WM=1 Clear	Open Close
- AP Setting Configuration	Period Ascii Forman Timer Run Period Hex 5000 Timer Run
Receive Hex	1 ms
2A 2	SAVE EXIT
73 74 65 70 20 33 2E 20 53 74 61 74 69 62 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 6E 20 6F 66 20 44 4E 53 20 3A 20 73 74 65 70 20 34 2E 20 55 44 50 20 43 6C 69 65 6E 74 73 20 3A 20	SEBINE 세빈기술(주)
People and Sand Test	Serial_Prog Ver1.3 Yoo.ES
	MODE ON/OFF MODE OFF OFC Mode O Device Mode

WTH setting - DNS Server Input

Step 4. UDP Clients setting

Insert IP and Port number of server to which WTH sends data.

- ▶ Data Format : <<u>Dest-Address</u>>,<<u>Port</u>>
- ► Example : **192.168.0.50,3030**

🧊 www.sebinetech.com - Que_Thread_Asyncfree_232 Prog					
Send Data 192.168.0.50,3030 8. UDP Clients Input	Ascii Clear	Port Setting Port No. 5 Baud Rate 115200			
	Hex Clear	Data Bit 8 Stop Bit One	.		
Receive Ascii AT-WM=1 AT-WM=1 AT-WM=1 AP Setting Configuration	Clear	Open None			
step 1. SSID : step 2. Static Configuration of Network Parameters : step 3. Static Configuration of DNS : dep 4. IUDP Cliente step 5. Period(Sec): 9. Print Step 5	 ✓ 	Period Hex 5000 ms Timer Ru 5000 ma Timer Ru	n D		
Receive Hex		, ms —			
20 53 53 49 44 20 34 20 73 74 65 70 20 32 2E 20 53 74 61 74 69 63 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 6E 20 6F 66 20 4E 65 74 77 6F 72 68 20 50 61 72 61 6D 65 74 65 72 73 20 34 20 73 74 65 70 20 33 2E 20 53 74 61 74 69 63 20 43 6F 6E 66 69 67 75 72 61 74 69 6F 0E 20 6F 66 20 44 4E 53 20 34 20	Clear	SAVESTART	EXIT		
73 74 65 70 20 34 2E 20 55 44 50 20 43 6E 69 65 6E 74 73 20 34 20 73 74 65 70 20 35 2E 20 50 65 72 69 6F 64 28 53 65 63 29 34 20	StaticText8	SEBINE Technology	!기술(주)		
- Peoply and Cand Test		Ser	ial_Prog Ver1.3 Yoo.ES		
			MODE ON/OFF MODE OFF © PC Mode © Device Mode		

WTH setting - UDP Clients Input

Step 5. Period setting

Insert a period for WTH to send data.

- ▶ Data Format : <time><time unit>⊡
 - ★ <time> must be 2 digit
- ► Example : 30s -
- ▶ s : sec
 - $m\,:\,\min$
 - $h \, : \, hour$

🕏 www.sebinetech.com - Que_Thread_Async	free_232 P	rog	
Send Data	Ascii Clear	Port Setting Port No. Baud Rate	5
	Hex Clear	Data Bit Stop Bit	8 One
Receive Ascii step 5. Period(Sec): AP Setting Confirm scoressonaussessessessessessessessessessessessesse	Clear	Parity Open	None Close
SSID : sebinetech NSET : 192.168.0.21,255.255.255.0,192.168.0.1 DNSSET : 168.126.63.1,168.126.63.2 UDP : 192.168.0.50,3030 PERIOD : 30s Please Rebooting!!! 11. Print AP Setting Confirm	•	Period Ascii	Timer Run
Receive Hex		5000 ms -	Timer Run
2A 2A 2A 2A 2A 2A 2A 0D 0A 53 53 49 44 20 3A 20 73 65 62 69 6E 65 74 65 63 68 0D 0A 4E 53 45 54 20 3A 20 31 39 32 2E 31 36 38 2E 30 2E 32 31 2C 32 55 52 E 32 55 35 2E 32 35 35 2E 30 2C 31 39 32 2E 31 36 38 2E 30 2E 31 0D 0A 44 4E 55 34 55 42 03 A 20 31 36 38 2E 31 32 36 2E 33 3 2E 31 2C 31 36 38 2E 31 32 36 2E 36 33 2E 32 0D 0A 55 44	Clear	SAVESTART	EXIT
50 20 3A 20 31 39 32 2E 31 36 38 2E 30 2E 35 30 2C 33 30 33 30 0D 0A 50 45 52 49 4F 44 20 3A 20 33 30 73 0D 0A 50 6C 65 61 73 65 20 52 65 62 6F 6F 74 69 6E 67 21 21 21 0D 0A	StaticText8	SEBINE	셰빈기술(주)
Receive and Send Test			Serial_Prog Ver1.3 Yoo.ES
			MDDE ON/OFF MODE OFF © PC Mode © Device Mode

WTH setting - Period Input

3.2.3 Disconnection between WTH and PC

When all settings are done, a message "Please Reboot!!" appears. Serial communication program is terminated. When necessary, device manager removes the device.

Step 1. Shut down the serial communication program.Step 2. Set the System Power SW of WTH off.Step 3. Remove the port to WTH at device management and remove USB cable from WTH.Step 4. Set the Mode Selection SW to MCU.

3.2.4 WTH UDP Server Execution

From user manual and utility CD in package, run WTH Setup.msi to install the demo server. [Appendix 2. See WTH UDP Server installation guide]

3.2.5 Run and check of WTH

After all settings are done, run the installed WTH UDP Server and set the System Power SW of WTH to ON. If the setting of WTH is correctly done, data appear on demo server as shown below.

WT	ΗU	DP Serv	ver		IP 192.168.0.50	Port	3030	EXIT
IP			IP	192.168	3.0.21	IP	192.168	.0.22
ID	, 		ID	W02		ID	W03	
Temp.	, 		Temp.	+25.8		Temp.	+23.2	
Humi.			Humi.	37.9		Humi.	40.1	
Smoke			Smoke	0985	04:26:2011	Smoke	0923	04:26:2011
Buttery	, 		Buttery	0983	13:53:35	Buttery	0991	13:53:37
IP	192.168	.0.23	IP	192.168	.0.20	IP		
ID	W04		ID	W05		ID		
Temp.	+23.0		Temp.	+24.5		Temp.		
Humi.	40.1		Humi.	37.2		Humi.		
Smoke	0955	04:26:2011	Smoke	0934	04:26:2011	Smoke		
Buttery	1003	13:53:26	Buttery	0988	13:53:27	Buttery	-	

WTH operation check - demo server

Appendix 1. WTH USB Driver Installation

1. Run "CP210x_VCP.exe" from user manual and utility CD in package. Install by following the procedure below.



Step 1. USB Driver Installation



Step 2. USB Driver Installation



Step 3. USB Driver Installation



Step 4. USB Driver Installation - Default folder



Step 5. USB Driver Installation



Step 6. USB Driver Installation Complete



Step 7. USB Driver Installation - Window Device Manager

Appendix 2. WTH UDP Server Installation

Run WTH Setup.msi from user manual and utility CD in package to install WTH UDP Server.



Step 1. WTH UDP Server Install



Step 2. WTH UDP Server Install



Step 3. WTH UDP Server Install

👹 WTH Setup	
WTH Setup 설치	
WTH Setup을(를) 설치하고 있습니다.	
잠시 기다려 주십시오	
취소 (위 5	2(<u>B)</u> 다음(<u>N</u>) >)

Step 4. WTH UDP Server Install



Step 5. WTH UDP Server Install

Appendix 3. Document Information

Version	H/W Version	Date	Changes
1.0	WTH-GS-SMK Ver1.2 SMK-NIS Ver1.0	2011.08.30	Initial Release Version

Appendix 4. Dimension





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