UHF RFID Reader

UHF 1W (Indoor)

Model: WSUHFRFID

Version History

Version	Date	Changes
V1.01	June. 24. 2016	2st. Edition

Content

Important Event

This product is in general use for the equipment on the premise of the development, design, manufacture. Do not use that require high security purposes, such as machinery or medical, aviation equipment, machinery and transport-related deaths are directly or indirectly related to the system.
This product should be in this brochure by the instructions of the types and rated voltage power under the current proper use. If violation of this statement by the safety records of the supply operation, I am afraid our company cannot afford any of the responsibility.
Do not self-decomposition, alteration, repair of the products also will cause fire, electric shock, fault, and dangerous. In addition, their decomposition, alteration, and repair the product, failure is not within the scope of warranty.
The products are not waterproof, so please do not use and touch water. Take off and on also please note. Rain, spray, drinks, steam, sweat may be a failure.
Use of this product, please be sure to use according to the statement recorded by the use of methods to operate. Please do not violate particular attention to the matter reminded to use.
Please respect this statement recorded by the note. When consumers in contravention of this statement recorded note of the operation, I am afraid our company could not shoulder any responsibility.
Products are defective, the Company will be responsible for free to amend the flaws, or to the same flawless product or its equivalent products in exchange. However, the Company does not assume based on the requirements of the flaw and loss responsibility.
The Company reserves the right to retain without notice to users of the cases, the product of hardware / software (version upgrade) is with the right to edit.

Declaration

This product provides different frequency for user selection to meet different telecommunication regulation and FCC/CE on different countries.

Warranty

The warranty time is within one year from purchased date. The warranty scope are used in normal situation and none vandalism. (Some function harmful out of warranty scope and Vandalism are Un-warranty).

Un-warranty Scope Description

Because the natural disaster, accident or human factor to cause the bad damage.
Violate the product instruction manual to cause the damage of the products.
The improper assemble causes damage.
The products used the unsanctioned accessory to cause damaged.
Overstep the allowed used environment to cause the products damaged.

Contact Us

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Specification

Working Frequency：American standard (902~928MHz), China standard (920~925MHz)
RF power：1W (made by customization)
Passive tags identification distance：30 meters (Max.)
Modulation mode：ASK or PR-ASK
Protocol：ISO18000-6C (EPC GEN2), ISO18000-6A/B
Working power：DC 12V 1A
Working temperature：-20℃~+80℃
Storage temperature：-40℃~+125℃
Working humidity：20%~ 95% (No condensation)
Dimensions：87mm×72.5mm×26mm

Output mode

Wire protocol interface: Wiegand 26/34 or RS485
Wireless protocol interface : Bluetooth 2.1 SPP (optional)

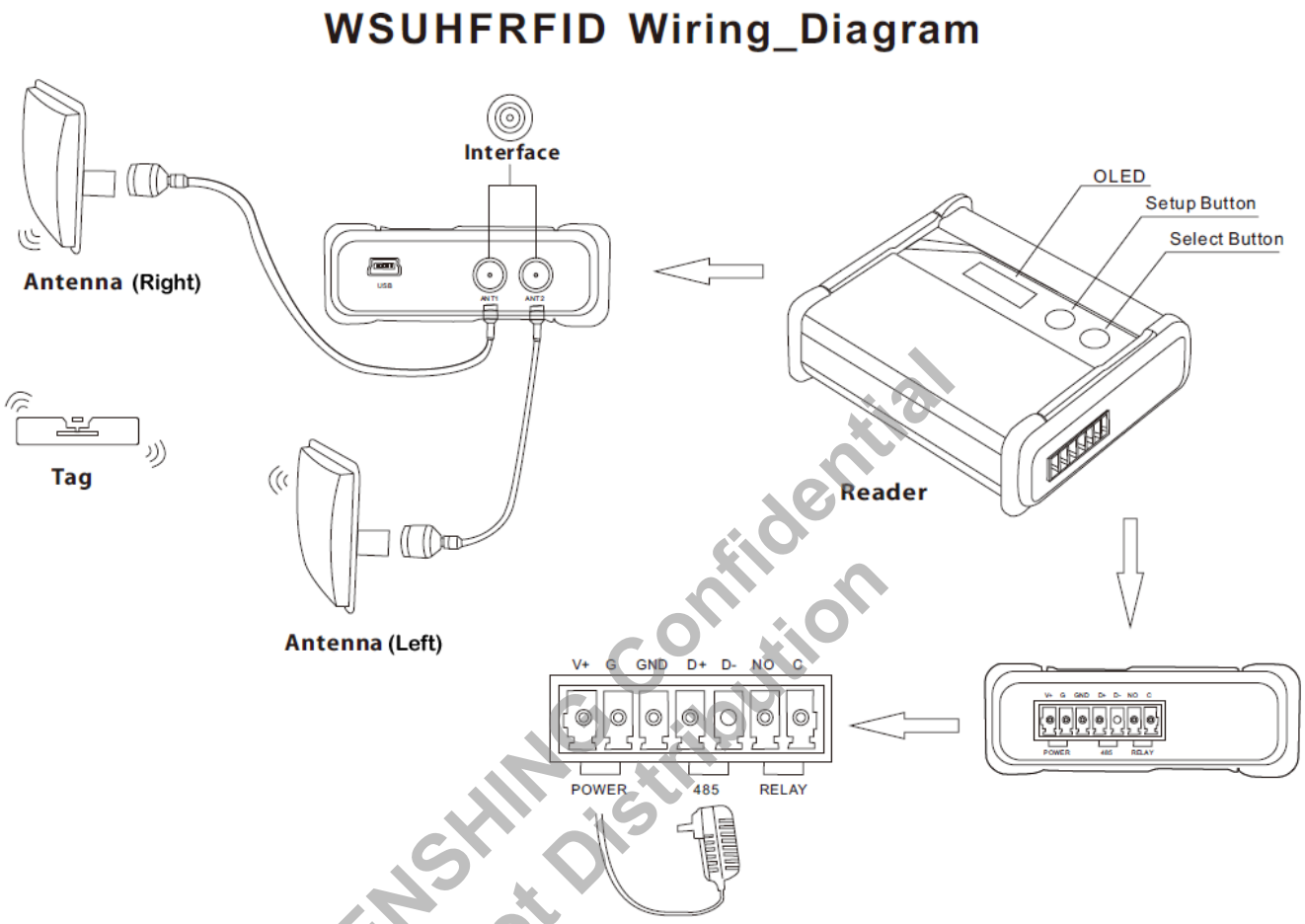
Characteristic

Parameter	Min	Type	Max	Unit	Condition
Operating Condition					
Operating Temperature Range	-30		+70	℃	
Operating Supply Voltage		12		V	
Current Consumption					
Standby mode		150		mA	
Operating mode		900		mA	Peak
RF Characteristic					
Frequency Range	902		928	MHz	
Output Power		33		dBm	1W
Read speed	10	30	50	ms	
Read distance		15		m	

Other	
Display	Monochrome light blue 104 x 16 Pixels OEL
Button	2 Buttons (Setup、Select)
Working mode	FHSS
Antenna	Double Antenna
Read prompt	Buzzer
Support Area	Taiwan、USA、China、Korea

Size View

(unit: mm)



Tag(optional)

Operating Frequency	860MHz~960MHz
International Standard	ISO 18000-6C (EPC Class 1 Gen 2)
Working Mode	Read/Write
Memory	96 bits
Read Distance	Long range (0~12M) (Relate to reader)
Programming Cycles	100000 times
Data Retention	10 years
Packaging Material	Plastic package
Size	17 mm × 70mm
Operating Temperature	-40 °C to 65 °C
Storage Temperature	-40 °C to 85 °C

Adapter

INPUT:

Input voltage range	100Vac - 240Vac
Rated voltage range	100Vac - 240Vac
Input frequency range	47Hz-63Hz
Rated input frequency	50Hz/60Hz
Input current	0.35Amax. at full load
Inrush current(cold start)	30Atyp peak,220Vac Input

OUTPUT:

Rated Output

Output Voltage (Vdc)	Output Voltage Limit (Vdc)	Output Ripple & Noise (mV)	Output Current (mA)
12	11.4-12.6	120	1000

DC Output Overshoot at Turn On & Turn Off

Output Voltage (V)	Proportion of the output voltage overshoot	
	Turn on	Turn off
12V	5%	5%

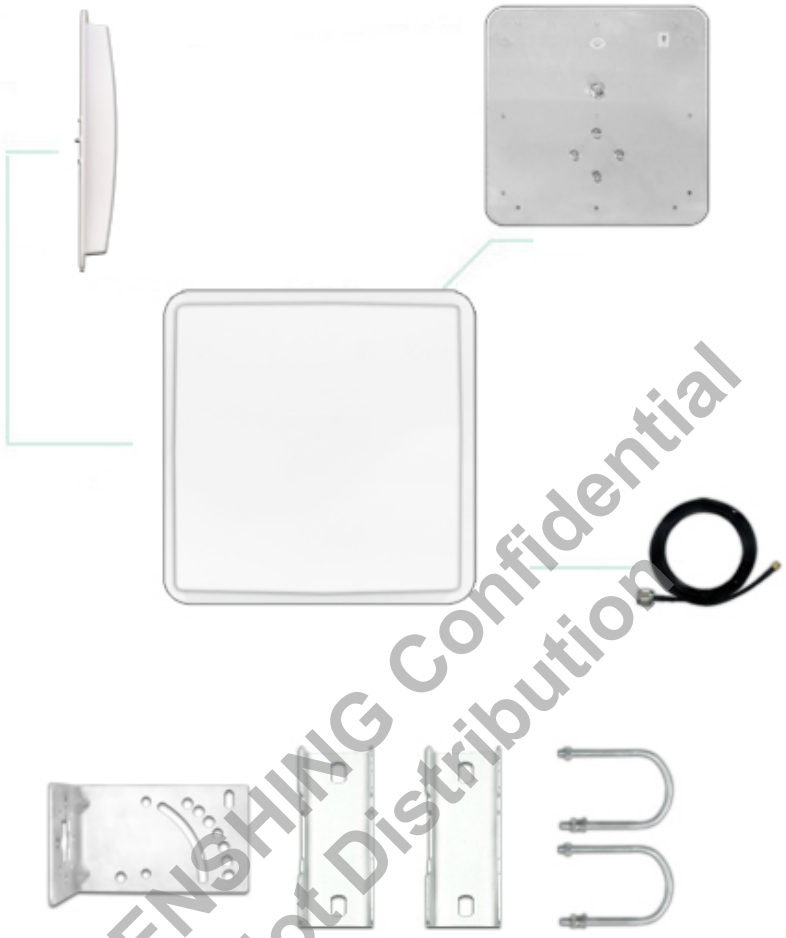
Operating Temperature: 0℃~ +40℃,Full load, Normal operation.

Storage Temperature: -40℃~+85℃（With package）

8dBi Antenna (optional)

(unit: mm)

SIZE : 255*255*30MM



Main Technical Specifications	
Frequency (MHz)	902~928
Bandwidth (MHz)	26
VSWR	≤1.4
Gain (dBi)	8
Max Input Power (W)	100
Input Impedance (Ω)	50
Polarization Type	circular polarization
Antenna Length (mm)	225*225*30
E-Plane	60
H-Plane	60
Than before(dB)	>25
Connector	SMA
Weight(kg)	0.533

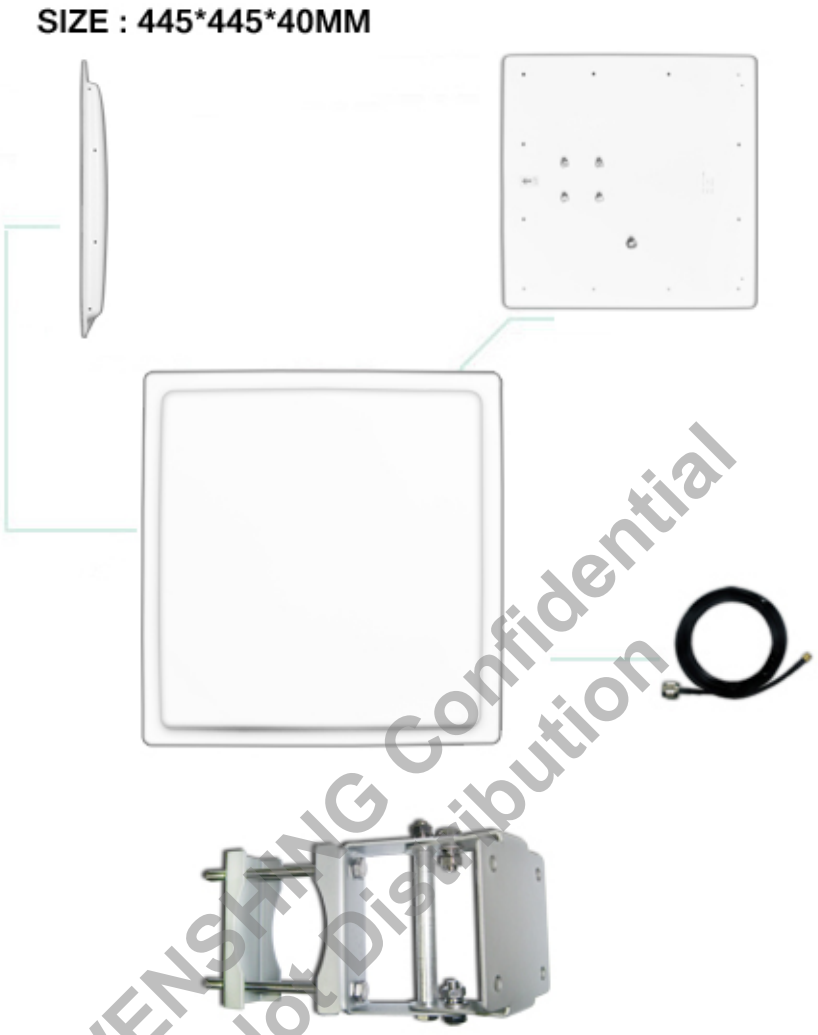
9dBi Antenna (optional)

(unit: mm)

Main Technical Specifications	
Frequency (MHz)	902~928
VSWR	≤1.3
Gain (dBi)	9
Polarization Type	Vertical/ Horizontal
Antenna Length (mm)	450*140*35
E-Plane	92
H-Plane	36
Connector	N
Weight(kg)	1.25

12dBi Antenna (optional)

(unit: mm)



Main Technical Specifications	
Frequency (MHz)	902~928
Bandwidth (MHz)	26
VSWR	≤1.3
Gain (dBi)	12
Max Input Power (W)	100
Input Impedance (Ω)	50
Polarization Type	linear polarized
Antenna Length (mm)	445*445*40
E-Plane	68
H-Plane	65
Than before(dB)	>25
Connector	SMA
Weight(kg)	2.0

Bluetooth Technical specification

Device name：BOLUTEK
Password：1234

Generation Operation

Key Operation

Normal working mode: Stop searching for TAG by pressing the any button; while automatically searching for Tag by un-pressing Tag for 10 seconds.

Setup key：Shortly press this key to view internal settings in backward order.

Press Setup key until Enter Set mode showing from OLED and un-press, it will then enter the set-up mode.

Next key：Shortly press this key to view internal settings in forward order.

Set-up mode：

Setup key：Shortly press this key to select menu items.

Press Setup key until enter set mode showing from OLED and un-press, it will then enter the menu item saving.

Next key：Shortly press this key to set up parameters.

Menu item saving mode：

Setup key：Shortly press this key to confirm.

Next key：Shortly press this key to set parameters.

Data output format：

Byte 0	Byte 1	Byte 2	~	~	~	~	Byte end
0x02	Data category	Data length	~	~	~	~	0x03

Byte 0 is fixed, defined as 0x02.
Byte 1 is fixed, defined as data category.
Byte 2 is fixed, defined as data length, which excluded Byte0~Byte2 and Byte end.
Byte end is fixed, defined as 0x03.

Item	Byte 1	Data Content	Data Output Format
1	0x50	Suggesting output data is serial number.	Hex
2	0x51	Suggesting output data is user name	ASCII
3	0x52	Suggesting output data is car number.	ASCII
4	0x53	Suggesting output data is garage number.	Hex
5	0x54	Suggesting output data is TAG EPC.	Hex
6	0x55	Suggesting output data is a defined data.	ASCII
7	0x56	Suggesting output data is left and right antenna.	ASCII
8	0x57	Suggesting output data is an external signal.	Hex
9	0x58	Suggesting output data is heartbeat.	Hex
10	0x59	Suggesting output data is external relay control.	Hex
11	0x5A	Suggesting output data is read-write TAG info	Hex

0x54 Data Format

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4～6	Byte 7	Byte 8～9	Byte 10～21	Byte 22
0x02	0x54	Length of data being read	RSSI value being received	Frequency being received	Length of PC+EPC	PC (Tag assortment)	TAG EPC	0x03

0x56 Data Format

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4
0x02	0x56	Length of data being read	Data	0x03

Byte 3 ：0x4C stands for left-sided antenna; while 0x52 stands for right-sided antenna.

Operation guide to read and write Tag

Data sent format for reading Tag：

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4～xx	Byte xx+1
0x02	0xFA	0x80 + Data storage space	Tag's EPC length	Tag's EPC data	0x03

Byte 0：Starting code
Byte 1：Command code
Byte 2：Data saving space. For instance, to read TID saving area is 0x82.
0x00：Reserve area (including password destroying area and password visiting area)
0x01：EPC saving area
0x02：TID saving area
0x03：User saving area：Reads only in front- 58 Bytes
Byte 3：Tag's EPC length
Byte 4～xx：Tag's EPC info
Byte xx+1：Ending code

Example：

Sending data as0x 02 FA 82 0C E2 00 20 75 81 18 00 42 17 10 65 97 03, suggesting the Tag's EPC length being read is 12byte, and Tag's EPC content is E2 00 20 75 81 18 00 42 17 10 65 97 in TID saving area.

Data received format for reading Tag：

Byte 0	Byte 1	Byte 2	Byte 3-xx	Byte xx+1
0x02	Data storage space	Length of data being read	Data from Tag	0x03

Byte 0：Starting code
Byte 1：Data saving space
0x00：Reserve area (including password destroying area and password visiting area)
0x01：EPC saving area
0x02：TID saving area
0x03：User saving area：Reads only in front- 58 Bytes
Byte 2：Detailing how much Byte from Tag is, excluding Byte 0, Byte 1, Byte 2 and Byte xx+1
Byte 3～xx：Tag's content being read
Byte xx+1：Ending code

Example：

Receiving data as 0x02 02 18 E2 00 34 12 01 34 F6 00 07 E3 65 96 01 09 01 2B 00 05 5F FB FF FF DC 60 03, suggesting the Tag's info being received is 24byte in TID saving area, and data content is E2 00 34 12 01 34 F6 00 07 E3 65 96 01 09 01 2B 00 05 5F FB FF FF DC 60.

To write data information：

Byte 0	Byte 1	Byte 2	Byte 3-6	Byte 7	Byte 8_xx
0x02	0xFA	Data storage space	Tag's visiting	Tag's EPC length	Tag's EPC

			password		information
Byte xx+1	Byte xx+2	Byte xx+…	Byte End		
Starting address of data being written	Length of data being written	Data content needed to be written	0x03		

Byte 0：Starting code
Byte 1：Command code
Byte 2：Data saving space. For instance, to write TID saving area is 0x82.
0x00：Reserve area (including password destroying area and password visiting area)
0x01：EPC saving area
0x02：TID saving area
0x03：User saving area：Reads only in front- 58 Bytes
Byte 3~6：Tag's visiting password (this is the last four byte from reserving area, whereas the starting address for writing shows 0x04, the fixed data length to write is 4 byte.)
Byte 7：Tag's EPC length
Byte 8 ~ xx：Tag's EPC data
Byte xx+1：Starting address being written (Both starting address and data length should be in odd number, otherwise it would unable to write in.)
Byte xx+2：Length of data being written. (Both starting address and data length should be in odd number, otherwise it would unable to write in.)
Byte xx +～：Data content needed to be written.
Byte end：Ending code
To write destroying password in reserve area (indicating the front 4-Byte at this area), the starting address to write is 0x00; whereas the fixed data length to write is 4 byte.

Example：
Sending data as 0x 02 FA 03 00 00 00 00 0C E2 00 20 75 61 13 01 14 17 10 63 5B 00 02 AA AA 03, suggesting the starting address of write-in 2 Byte is 0x00 with data as 0xAAAA. The Tag's EPC data length in between is 12 byte, whereas Tag's EPC content shows E2 00 20 75 61 13 01 14 17 10 63 5B in user's saving area.

Return：

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4
0x02	Data storage space	Length of data being written	Error information	0x03

Byte 0：Starting code
Byte 1：Data saving space.
0x00：Reserve area (including password destroying area and password visiting area)
0x01：EPC saving area
0x02：TID saving area
0x03：User saving area：Reads only in front- 58 Bytes
Byte 2：
Showing how much Byte is written in Tag. Due to the electric wave the actual length might be different from what it writes. If this occurs, it is necessary to reset the desired address and length.
Byte 3：
=00：Correct information being written.
=01：Error in length of data packets or data format.
=02：Error in starting address or length in data being written.
=03：The designated Tag may not locate in the recognizable range.
=04：Incorrect in writing or data length.
Possible cause to fail writing information：
Too long data length be written. Suggested to write in few Byte each time separately.
Error in password

Written address exceeds range.

Too far distance between Tag and Reader. It is required to put them closer as large electric wave it takes when writing data.

Byte 4：Ending code

Example: Receiving 0x02 03 04 00 03 suggests the correct inputting data of 4-Byte in user's saving area.

Table K.1 – Tag memory contents

Memory Bank	Memory Contents	Memory Addresses	Memory Values
TID	TID[15:0]	10_h–$1F_h$	$54E2_h$
	TID[31:16]	00_h–$0F_h$	$A986_h$
EPC	EPC[15:0]	50_h–$5F_h$	3210_h
	EPC[31:16]	40_h–$4F_h$	7654_h
	EPC[47:32]	30_h–$3F_h$	$BA98_h$
	EPC[63:48]	20_h–$2F_h$	$FEDC_h$
	StoredPC[15:0]	10_h–$1F_h$	2000_h
	StoredCRC[15:0]	00_h–$0F_h$	as calculated (see Annex F)
Reserved	access password[15:0]	30_h–$3F_h$	$C0DE_h$
	access password[31:16]	20_h–$2F_h$	$ACCE_h$
	kill password[15:0]	10_h–$1F_h$	$C0DE_h$
	kill password[31:16]	00_h–$0F_h$	$DEAD_h$