

WENSHING®

# Wireless Data Radio Modem

(RS232、RS485)

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432~436MHz 5W Hi Power Radio Modem

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*Model: RD-232HI-4M5W*



## Version History

Version	Date	Changes
V1.00	Mar.22, 2013	1 <sup>st</sup> . Edition

## Content

<b>Important Event</b> .....	3
➤ Warranty.....	3
➤ Un-warranty Scope Description.....	3
➤ Contact Us.....	3
<b>Key Feature</b> .....	4
<b>Application</b> .....	4
<b>Characteristic</b> .....	4
<b>View</b> .....	5
<b>Transformer wiring</b> .....	6
<b>General Operation</b> .....	6
➤ Stand-by Installation Mode.....	6
➤ Set up Installation Mode.....	6
➤ Menu Items.....	6
<b>Command Communication Mode</b> .....	7
Modifying internal parameters through RS-485 or RS-232 interface.....	7
➤ Enter set-up mode.....	7
➤ Exit set-up mode.....	7
➤ Read product name and version.....	7
➤ Restore to default parameter.....	7
➤ Read internal parameter.....	7
➤ Setup internal parameters.....	7

## 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.

## 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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## Application

- Wireless Network
- Multi-Channel Home Automation Standard
- Wireless RS232
- Active RFID Base Station Transceiver

## Key Feature

- 432~436MHz
- UHF Band Wireless Data Transceiver
- RF Output Power up to 5W
- Sensitivity up to -126dBm (2Kbps)
- RS232、RS485 Interface
- Transceiver Data Rate 1.8Kbps~172.8Kbps

## Characteristic

Parameter	Min.	Typ.	Max.	Unit	Condition
<b>Operating Condition</b>					
Operating Temperature Range	-10		+70	°C	
Operating Supply Voltage	9	12	18	V	
<b>Current Consumption</b>					
RX Mode		45		mA	DC 12V
TX Mode (5W)		1.8		A	Peak
<b>RF Characteristic</b>					
Frequency Range	432	434	436	MHz	
Data Rate	1.8		172.8	Kbps	GFSK
TX Output Power		37	37.8	dBm	
RX Sensitivity		-126	-124	dBm	
Modulation		GFSK			
<b>Other</b>					
ESD			2000	V	
Interface Data Rate	1.2		115.2	Kbps	

View



## Transformer wiring

Please cut off the transformer plug, the Positive is connected to the V+, Negative connection to G (as following red frame):



## General Operation

### Stand-by Installation Mode

- **Set up key**

1. Press set up key shortly to view the internal parameters. It will return to stand-by mode automatically if there is no further set-up procedures done in 3 seconds.
2. Press set up key for more than 3 seconds to enter set-up mode.
3. Press set up key one-time shortly to exit RSSI monitoring mode.

- **Next key**

1. Press next key shortly to examine the present RSSI value. It will return to stand-by mode automatically if there are no further set-up procedures done in 3 seconds.
2. Press next key for more than 3 seconds to enter RSSI monitoring mode. This mode sees RSSI as the priority mode, there will be incomplete reception when receiving data at this mode.

### Set up Installation Mode

- **Set up key**

1. Press set up key shortly to switch desired adjustment modes.
2. Press set up key for more than 3 seconds to enter next menu item.

- **Next key**

1. Press next key button to modify the parameters on marked item.
2. Press next key for more than 3 seconds to save current settings and exit set-up mode.

### Menu Items

- **Connect Port Set-up**

1. Baud rate : Default 9600bps, Range 1200~115200bps
2. Port set : Default 8,1,0



- ◇ There are altogether 31 bytes allowing the modification of all parameters.
- ◇ 1<sup>st</sup> byte: The starting character, fixed value=0xFE
- ◇ 2<sup>nd</sup> byte: checksum, stop bits, interface speed rate, set up ranged 00 ~ 07;  
the default rate: 9600bps

**Bit 7:** 0~ 8bits format (8,1,N/7,1,O/7,1,E/7,2,N)  
1~9 bit format (8,1,O/8,1,E/8,1,S/8,2,N(8,1,M)

Remark: N/O/E/M/S stands for None check (None), Odd parity check (Odd),  
Even parity check (Even), 1 check (Mark) and 0 check (Space)

**Bit6~5 :** 00 None check/1 check (Mark)  
01 Odd parity check  
10 Even parity check  
11 0 check (Space)

**Bit 4~3:** fixed as 0

**Bit2 ~0:** interface rate

Value	0	1	2	3	4	5	6	7
Rate(bps)	1200	2400	4800	9600	19.2K	38.4K	57.6K	115.2K

- ◇ 3<sup>rd</sup> ~ 4<sup>th</sup> Byte: group ID (GID), set-up range: 0000~FFFF
- ◇ 5<sup>th</sup> Byte: Equipment ID (SID), set-up range: 00~FE
- ◇ 6<sup>th</sup> Byte: invalid character, fixed as 0x00
- ◇ 7<sup>th</sup> Byte: transmitting rate range: 00 ~ 07. Generally, the RF transmitting rate should be greater than interface rate to avoid data error.

Value	0	1	2	3	4	5	6	7
Rate(bps)	1800	3600	7200	14.4K	28.8K	57.6K	84K	172.8K

◇8<sup>th</sup> ~ 10<sup>th</sup> Byte: Working frequency calculation:

MHz\*1000=KHz and then transfer to Hexadecimal System.

Example:

When it is at 434MHz working frequency, 433\*1000=433000=0x06 9B 68,  
then to fill in 06 at 8<sup>th</sup> Byte, fill in 9B at 9<sup>th</sup> Byte, fill in 68 at 10<sup>th</sup> Byte. When it is  
at 434MHz working frequency, 434\*1000=434000=0x06 9F 50 then to fill in  
06 at 8<sup>th</sup> Byte, fill in 9F at 9<sup>th</sup> Byte, fill in 50 at 10<sup>th</sup> Byte.

- ◇ 11<sup>th</sup> Byte:

**Bit0~Bit2:** output power range: 0 ~ 7

Output Power		
dBm	Set Value	Hex (Bit0~Bit2)
27	0	000
29	1	001
30	2	010
32	3	011
33	4	100
35	5	101
36	6	110

37	7	111
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**Bit3 ~Bit5:** Invalid character, fixed as 000.

**Bit6~Bit7:** Device working in 4 modes as stating below:

- **Mode 1 (Long-figure data mode: setup value 00)**

In this mode, all devices with same GID value can receive data. It can employ in the situation where data capacity greater than 127Bytes.

- **Mode 2 (ID data mode 1: setup value 01)**

In this mode, all devices with the same GID value could transmit signal to specified SID to achieve one-to-multiple-transmission, but the single data should not exceed 127Bytes.

Example:

SID value is 55 from device A, SID value is 88 from device B and both of them have the same GID. During mode 2, device A is going to transmit a 5-byte data 0x1234567890 to B so A sends a 6-byte data 0x881234567890, and then B receives a 6-byte data 0x551234567890, where the first byte stands for SID of A.

- **Mode 3 (ID data mode 2: setup value 10)**

In this mode, it is allowed to transmit data to specified GID and SID device, in order to achieve one-to-multiple-transmission, but the single data including specified GID and SID should not exceed 127Bytes.

Way of transmission:

The data will be transmitted through the order of 13<sup>th</sup> byte to 32<sup>nd</sup> byte.

Example:

Device A shows GID=AAA, SID=55, device B shows GID=BBBB, SID=88, device C shows GID=CCCC, SID=99.

Device A is going to transmit a 5-byte data 0x1234567890 to B so A sends a 10-byte data 0x04FFBBBB881234567890, and then B receives a 5-byte data 0x1234567890.

Device A is going to transmit a 5-byte data 0x1234567890 to device C through device B, then device A sends a 14-byte data 0x08FFBBBB88FFCCCC991234567890, while device B will not receive anything, and then device C receives a 5-byte data 0x1234567890.

- **Mode 4 (saved ID data mode: setup value 11)**

During this mode it is allowed to pre-save the path of specified GID and SID. When sending signals the system will automatically follow the pre-saved value to transmit, it is up to 14 times of transmission and single data of pre-saved GID and SID should no greater than 127 Bytes.

✧ 12<sup>th</sup> Byte: Invalid character, fixed as 0X00

✧ 13<sup>th</sup> to 32<sup>nd</sup> Byte: Pre-saved path, it only activates in mode 4 (saved ID data mode).

✧ 13<sup>th</sup> Byte: It stands for the valid data among 14~32 bytes.

✧ 14<sup>th</sup> ~32<sup>nd</sup> Bytes format of path:

- ◆ Example 1: 04 FF 12 34 55 11 22 33 44 ~00

The 13<sup>th</sup> Byte shows the valid data is 4-Byte FF 12 34 55

FF 12 34 55, it stands for GID=1234, SID=55. This device will receive data from UR and automatically sends to device with GID=1234 and

SID=55.

- ◆ Example 2: 05 FF 12 34 55 11 22 33 44~00  
The 13<sup>th</sup> Byte shows the valid data is 5-Byte FF 12 34 55 11  
FF 12 34 55 11, it stands for GID=1234, SID=55 and 11. This device  
will receive data from UR and automatically sends to  
The device with GID=1234 and SID=11.
- ◆ Example 3: 06 FF 12 34 55 11 22 33 44~00  
The 13<sup>th</sup> Byte shows the valid data is 6-Byte FF 12 34 55 11 22  
FF 12 34 55 11 22, it stands for GID=1234, SID=55, 11 and 22. This  
device will receive data from UR and automatically sends to  
The device with GID=1234 and SID=55 and transferring to the device  
with GID=1234, SID=22.
- ◆ Example 4: 08 FF 12 34 55 FF 45 67 88 44~00  
The 13<sup>th</sup> Byte shows the valid data is 8-Byte FF 12 34 55 FF 45 67 88, it  
stands for GID=1234, SID=55, GID=4567 and SID=88. This device will  
receive data from UR and automatically sends to device with GID=1234  
and SID=55 and transferring to the device with GID=4567 and SID=88.