Micropower Data RF Module

User's Manual

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Features of the Micropower Data RF Module

1. ISM frequency band, requiring on applying of frequency point.

Carrier frequency is 433MHz, also capable of providing 868MHz/915MHz carrier frequency.

2. High anti-interference and low BER(Bit error Rate)

Based on the MSK modulation mode, the high-efficiency FEC channel encoding technology is used to enhance data's resistance to both burst interference and random interference

3. Excellent transmission performance

Within the range of visibility and the antenna height >3m, the reliable transmission distance >300m(BER=10^{-6}/2400Bps).

4.Three interface modes , convenient for setting and use

It can provide three transparent interfaces : TTL,/RS232/ RS485 ,but the user should customise only one of the above before making an order. The interface data rate is 1200/2400/4800/9600/19200Bps optional and its format is 8N1/ 8E1/ 8o1 user-defined.

5. Multi-channel

The standard configuration provides 4 channels. If the user needs, it can be extended to more channels, meeting the multiple communication combination mode of the user.

6.Large data buffer

It can transmit more than 150 bytes long data frames at one time .if the air data rate is greater than the interface rate ,It can transmit more than 200K bytes data frames.

7 . Intelligent data control and transparent data transmission.

The user doesn't need to prepare excessive programs but receive/transmit the data from the interface. The transceiver will automatically complete the other operations such as transmission/receiving conversion in the air, control, etc.

8. Low power consumption

Receiving current is <13mA, transmitting current is <80mA, and sleep current is <0.2mA.(TTL interface used)

9. High reliability, small and light convenient embedding.

Single chip RF integrated circuit and single chip MCU are used for lessened peripheral circuits, high reliability, and low failure rate.

Application of Micropower Data RF Module

The Micropower Data RF Module is suitable for:

Short distance wireless data transmission.

Wireless meter reading

Automatic data collecting system

Industrial remote control and remote measurement

Building automation, safety and security, powerhouse equipment wireless monitor, entrance control system

How to use the Micropower Data RF Module

1. Interfase sketch map

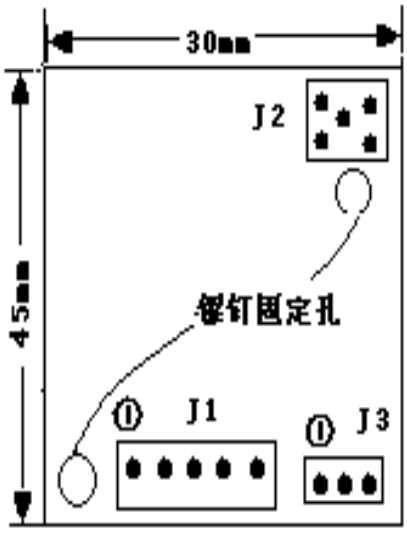

Fig. 1 Interface sketch map

2. Dimension and weight

Size：45mmX30mmX10mm ； Weight :10g（ antenna excluded）

3. Definition of Interface.

J1: User interface

Pin 1:5±0.5V

Pin 2 GND

Pin 3:RXD: serial data receiving end (RS485 A)

Pin 4:TXD: serial data transmitting end (RS485 B)

Pin 5 IDLE: power-saving mode selection (IDLE mode), Low level takes effect, hung or high level (3.5V) is for active mode.

J2: Antenna interface

J3: User interface

Pin1: Green light

Pin 2:Power supply

Pin 3: Red light

4. Connection with the terminal

It can provide TTL/RS232/RS485 interface. Please select one interface mode before making an order.

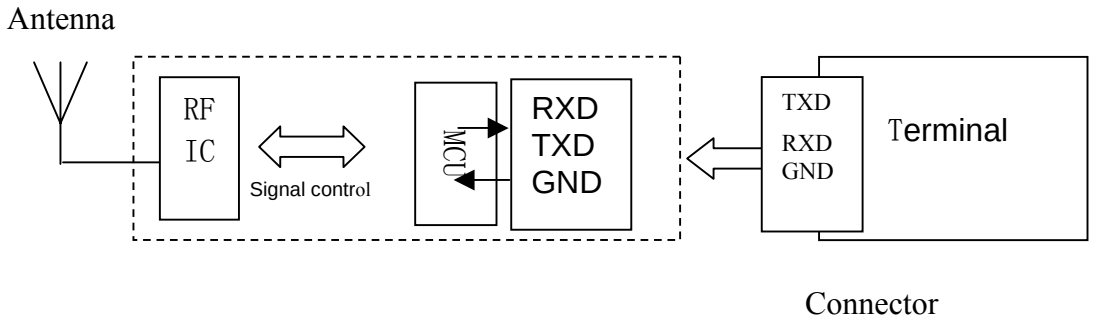

Fig 2. Application principle map

5. Setting of channel , interface and data format

1) Setting and reading of parameters

User can set or read the serial port data rate, air data rate , channel number and address code .

Parameter setting or reading can be done with software Setup.EXE in our delivered CD.

Command frame format:

Table 1.

Command frame header	Frame length	Command word	Check sum

Command frame header: 55H AAH

Frame length = Command word length +1

Command word: less than 8 bytes

Check sum (2 bytes): Frame length +command data 1+…+command data n

All of the command word expressed in hex.

Table 2.

Command type	Frame header	Frame length	Command word	Check sum	Remarks
Channel No. setting	55 AA	06	07 XX 00 00 00		XX : 01-04
Air data rate setting	55 AA	04	20 05 XX		XX= 00：2400； 20：1200； 30：4800； 40：9600： 80：19200
Address code setting	55 AA	04	32 XX XX		XXXX: 4 bytes BCD (0000-9999)
Serial port data rate	55 AA	03	28 XY		X=0: no check;

setting					X=2: odd check; X=3: even check; Y=0: 9600; Y=1: 4800; Y=2: 2400; Y=3: 1200; Y=4: 600; Y=6: 19200
Channel reading	55 AA		24 00		return: 24 XX
Air data rate reading	55 AA		23 00		return: 23 XX
Address code reading	55 AA		26 00 00		return: 26 XX XX

2) Channel and Frequency

Table3. Corresponding frequency of 1~4 channels

Channel No.	Frequency	Channel No.	Frequency
1	428.0028Mz	2	429.0012MHZ
3	433.3020Mz	4	433.9164MHZ

Low power consumption mode

Generally, It keeps in receiving state. If IDLE pin is low (<0.7V)continuously for more than 500ms, the module will go into sleep state and can not receive or transmit any data during the period. It will be active again if the IDLE pin is hung or high (>3.5V).

Technical specification

Table 4. Technical specification

1	Modulation mode	FSK	
2	Carrier frequency	428.00～433.9164MHZ	
3	RF power	≤40mW	
4	Receiving sensitivity	-107dBm	
5	Sleep current	<0.2mA/TTL, <0.3mA/RS485, <3 mA/RS232	
6	Transmitting current	<80mA/TTL, <80mA/RS485, <85 mA/RS232	
7	Receiving current	<13mA/TTL, <13mA/RS485, <16 mA/RS232	
8	Channel data rate	1200/2400/4800/9600Bit/s	Set by user
9	Interface data rate	1200/2400/4800/9600/19200/Bit/s	Set by user
10	Interfase data format	8E1/8N1/8O1	Set by user
11	Power supply	DC 5±0.5V	
12	Temperature	-25°～60°	
13	Working humidity	10%～90% RH, non- condensing	
14	Dimension	45mm×30mm×10mm	

Factory default setting and Accessories.

Factory default setting	
Channel No.	1
Interface data rate	9600bps
Air data rate	9600bps
Check	no check

Accessories	
User's manual	1 pcs
5-core port	1 pcs
433MHz/SMA antenna	optional
CD	1