DRF4432S
20dBm ISM RF Sensor Receiver Module   V1.10

Features

- GFSK receiver module
- ISM frequency band
- 81K bps data rate
- Multiple channels
- -120dBm sensitivity
- Baud rate configurable
- 256 bytes data buffer
- Standby current < 3uA
- Supply voltage 3.4~5.5V

Application

- Humidity Measurement
- Wireless data logger
- Wireless sensor network
- Home automation
- Temperature Measurement

DESCRIPTION

DRF4432S is a low-cost sub-1 GHz transceiver module designed for operations in the unlicensed ISM (Industrial Scientific Medical) and LPRD bands. GFSK (Frequency Shift Keying) modulation/demodulation, multi-channel operation, high bandwidth efficiency and anti-blocking performance make DRF4432S modules easy to realize the robust and reliable wireless link.

The receiver module DRF4432S is based on si4432 RFIC from Silicon labs and uses the same hardware platform as data transmission module DRF4432D20. It can only be used as receiver in wireless sensor application so it is incompatible with DRF4432D20. DRF4432S is used together with DRF5150S to build wireless sensor applications. It collects sensor data from sensor transmitter modules DRF5150S and transfers data at fixed format which is determined by the sensor working mode configured through DRF Tool 5150.

PIN FUNCTIONS

PIN	Name	Function	Description
1	GND	Ground	Ground (0V)
2	VCC	Power	Power supply
3	/ EN	Input	Enable pin ($\cong 0.5$): work mode; ($\cong 2.0V$): sleep mode
4	RXD	Input	UART input, TTL level
5	TXD	Output	UART output, TTL level
6	AUX	Output	Data In/Out indication
7	SET	---	Testing pin, must be floated

Table 1: DRF4432S Pin Functions

ELECTRICAL SPECIFICATIONS

Symbol	Parameter (condition)	Min.	Typ.	Max.	Units
VCC	Supply Voltage	3.4		5.5	V
Temp	Operating temperature range	-30	25	85	°C
RH	Operating relative humidity	10		90	%
Freq	Frequency range	425	434	450	MHz
Mod	Modulation type		GFSK		
I_{DD_R}	Current in receive mode @ 433Mhz		20		mA
I_{DD_S}	Current in sleep mode @ 433Mhz.		3		uA
Sen.	Receive sensitivity @ 433Mhz, 3.125K bps		-120		dBm
DR_{FSK}	GFSK data rate	3.125	50	81.25	Kbps
DR_{IN}	Serial data rate	1.2	38.4	115.2	Kbps
T_E	Evoking time from Sleep to Normal			20	uS
Z_{ANT}	Antenna Impedance		50		Ohm

Table 2: DRF4432S Electrical Specifications

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min.	Max.	Units
VCC	Supply Voltage	-0.3	5.5	V
VI	Input voltage	-0.3	VCC+0.3	V
VO	Output voltage	-0.3	VCC+0.3	V
TST	Storage temperature	-55	125	°C

Table 3: DRF4432S Maximum Ratings

SETTING PARAMETERS

1. Default Values

Parameter	Option	Default Value	Unit
Serial data rate	1.2~115.2	38.4	Kbps
Parity Check	No check, Even parity, Odd parity	No check	
Frequency	425 ~ 450MHz	434	MHz
GFSK data rate	3.125~81.25	50	Kbps
Group ID	0 ~ 255	123	

Table 4: DRF4432S Default Settings

2. Parameter Setting

Users can configure the parameters (frequency, data rate, group ID, etc.) of DRF modules with RS232 converter board DAC01 or USB converter board DAC02 by configuration tool DRF TOOL5150. Because DRF4432S shares the same configuration tool with DRF5150S, some parameters such as slave ID, Tx interval, etc are not applicable for receiver module DRF5150S.

Firstly users need to insert module into converter board, connect converter board to PC and then open DORJI RF software. In Windows XP system, the software can be run directly but in Windows Vista/7 system users should run it as administrator. After that the status column of tool should display "Found Device". Users then can read/write the module. For more details, please check the operation manuals of converter boards on accessory page.
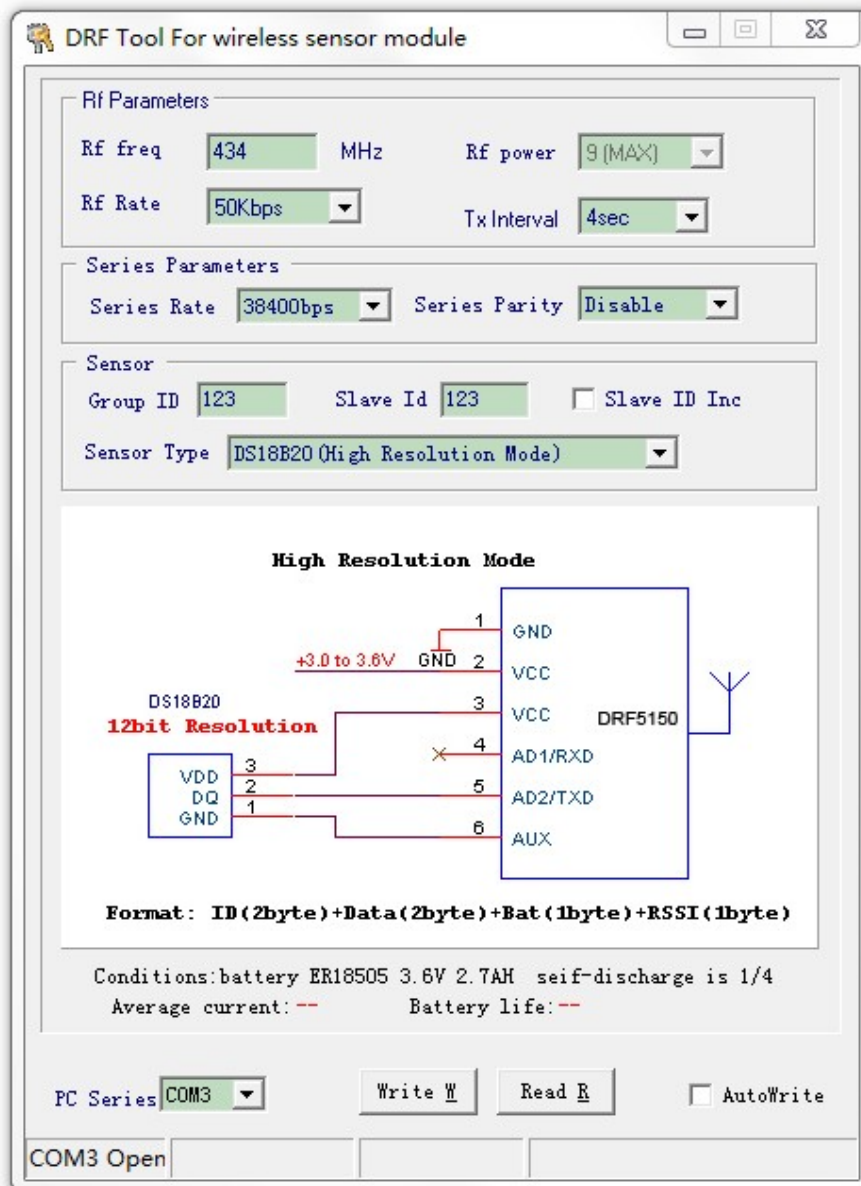
Figure 1: DRF TOOL 5150

The sleep mode of DRF4432D20 is realized through software. In sleep mode, the levels of DRF4432S module remain the same status before entering sleep mode so the module can quickly enter receive mode. The switching time from sleep mode to receive is about 20us. Please note that the DRF4432S module only can enter into sleep mode after receive process is finished and the AUX pin is kept in low.

RSSI vs Input Power

Figure 2: RSSI Value vs Input Power

MECHANICAL DATA
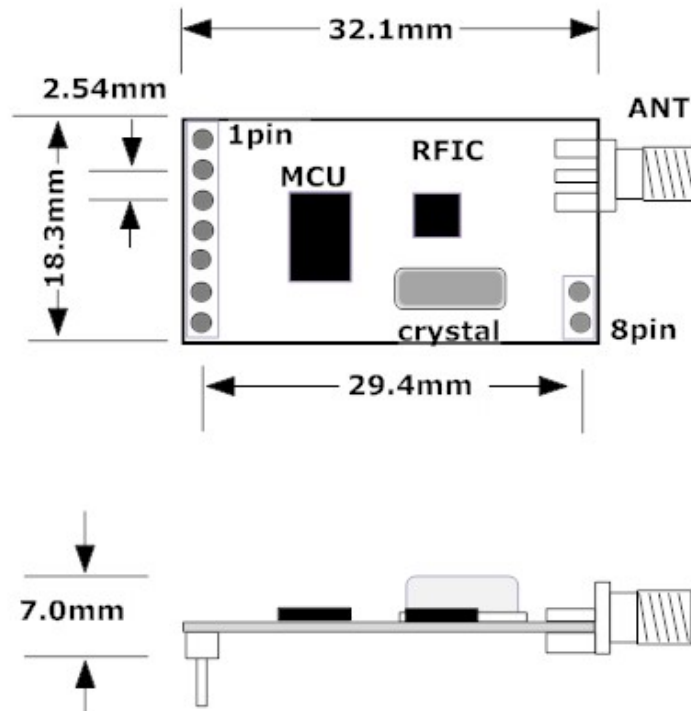
Figure 3: Mechanical Dimension

ORDERING INFORMATION

DRF 4432 S 12 — 043 A
  ①   ②   ③ ④   ⑤   ⑥

Num	Symbol	Meaning
①	RF module	DORJI RF GFSK module
②	IC Type	SI4432
③	Module Function	Data transmission
④	Sensitivity	-120dBm sensitivity
⑤	Freq. Band	043: 433MHz 086:869Mhz 091:915Mhz
⑥	Package	DIP package with SMA connector

Table 5: Ordering Information

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