

## HM-TR Series UHF Wireless Transparent Data Transceiver

### General

The HM-TR series UHF wireless transparent data transceiver, developed by Hope Microelectronics Co. Ltd, is designed for applications that need wireless data transmission. It features high data rate, longer transmission distance, programmable frequencies, configurable UART formats and low sleep current make it ideal choice. The communication protocol is self controlled and completely transparent to users. The module can be embedded to your existing design so that low cost high performance wireless data communication can be utilized easily.

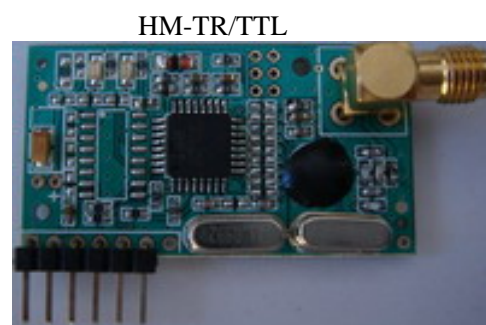
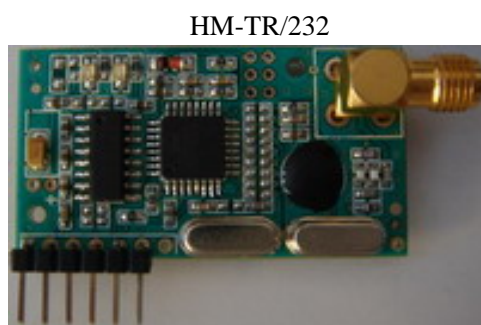
### Features

1. FSK (Frequency Shift Keying) modulation, high interference immunity
2. 2-way half-duplex communication
3. 315/433/868/915MHz ISM band, globally license free.
4. Programmable frequencies, allowing be used in FDMA (Frequency Division Multiple Access) applications
5. Self controlled RF to UART protocol translation, reliable and easy to use.
6. Configurable UART format, with data rate from 300~19200bps
7. Using ENABLE pin to control duty-cycle to satisfy different application requirements
8. High performance, long transmission range. >300m in open area
9. Standard UART interface, with TTL or RS232 logic level available
10. Compact size, standard 0.1" pinch SIP connector and SMA antenna socket
11. No RF tuning needed in application

### Application Areas

- |  |                                    |
|--|------------------------------------|
| 1. Remote control, remote measurement system | 5. Data collection                 |
| 2. Wireless metering                         | 6. IT home appliance               |
| 3. Access control                            | 7. Smart house products            |
| 4. Identity discrimination                   | 8. Data store and forward repeater |

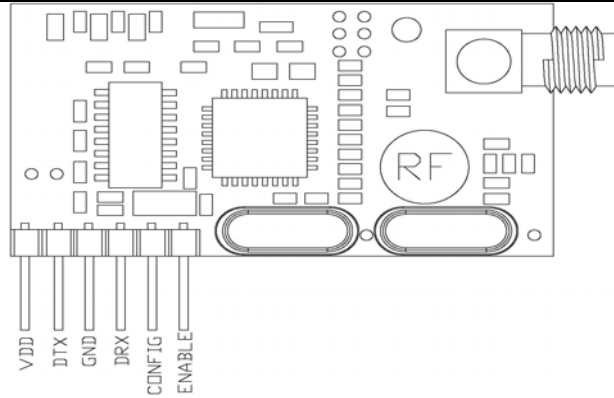
### Overview and Pin assignment



Note: The '232' version has a on-board MAX232CSE converter, which is not fitted on the 'TTL' version

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Pin	name	note
1	VDD	Power supply
2	DTX	Data output from module
3	GND	Ground
4	DRX	Data input to module
5	CONFIG	If this pin is high at power on, module will enter configure mode, while it communicates if set low
6	ENABLE	If this pin is low in normal mode, the module will enter sleep mode immediately. Assert high will awaken

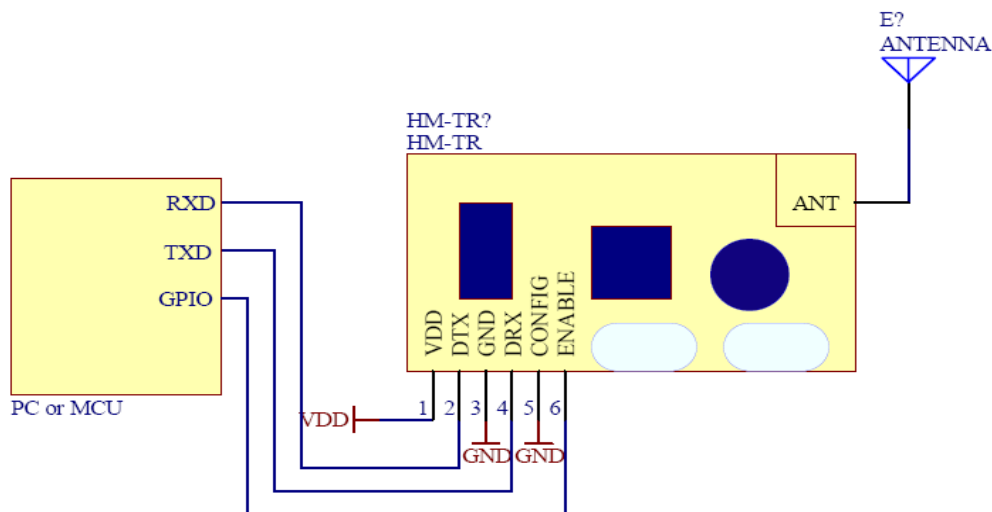
### Parameters

parameter	condition	min	typical	max	
Power supply		4.5	5.0	5.0	V
Operate temperature		-35	25	80	°C
Operate frequency	HM-TR433	<b>430.24</b>	<b>434</b>	<b>439.75</b>	MHz
	HM-TR868	<b>860.48</b>	<b>869</b>	<b>879.51</b>	
	HM-TR915	<b>900.72</b>	<b>915</b>	<b>929.27</b>	
Max output power	HM-TR433	<b>3</b>	<b>5</b>		dBm
	HM-TR868	<b>-2</b>	<b>0</b>		
	HM-TR915	<b>-2</b>	<b>0</b>		
Transmitting power		Pmax-21	Pmax	Pmax	dBm
Receive sensitivity	HM-TR433		<b>-105</b>	<b>-100</b>	dBm
	HM-TR868		<b>-102</b>	<b>-95</b>	
	HM-TR915		<b>-102</b>	<b>-95</b>	
TX current	HM-TR433			<b>26</b>	mA
	HM-TR868			<b>28.5</b>	
	HM-TR915			<b>30</b>	
RX current	HM-TR433			<b>15</b>	mA
	HM-TR868			<b>16</b>	
	HM-TR915			<b>17</b>	

continued					
Sleep current	HM-TR433/TTL			1	uA
	HM-TR868/TTL			1	
	HM-TR915/TTL			1	
Reference distance	HM-TR433/TTL			330	m
	HM-TR868/TTL			220	
	HM-TR915/TTL			230	
Modulate deviation		15		240	kHz
Receiver bandwidth		67		400	kHz
UART data rate		300	9600	19200	bps
UART data bits		5	8	9	bit
UART parity check		None	Odd	Even	
UART stop bits		1	1	2	bit
ANT connector					SMA female
Module size					24×43mm

### Quick Setup

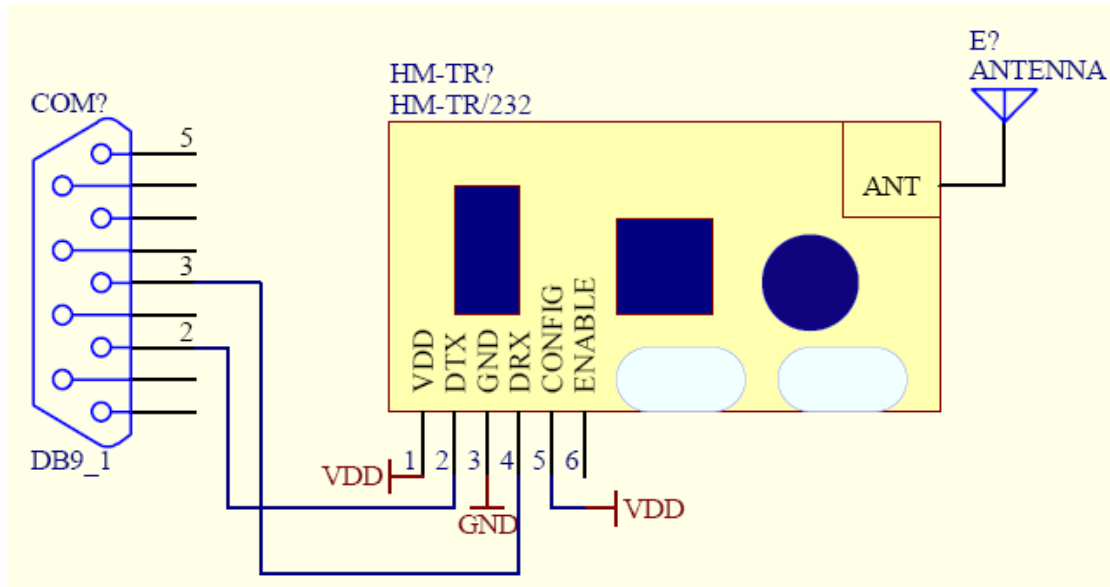
Connect HM-TR/232 to the RS232 connector of serial fitted PC or connect HM-TR/TTL to MCU(micro controller unit)'s UART directly, apply power supply, both RED and GREEN status LED will blink 3 times to indicate it is ready for your application. If CONFIG pin is low at power on, module will enters normal mode for data transmission, or CONFIG is high the module enters configure mode to setup work parameters



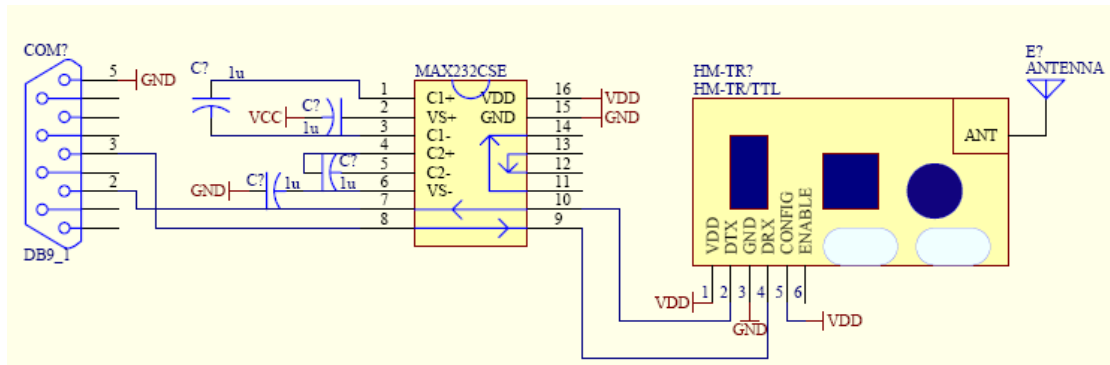
Note: MCU=Micro Controller Unit, PC=Personal Computer, GPIO=General Purpose Input/Output

### Normal mode connection

In normal mode, the ENABLE pin controls the module work or sleep, module will enter sleep mode as soon as the pin is low level.



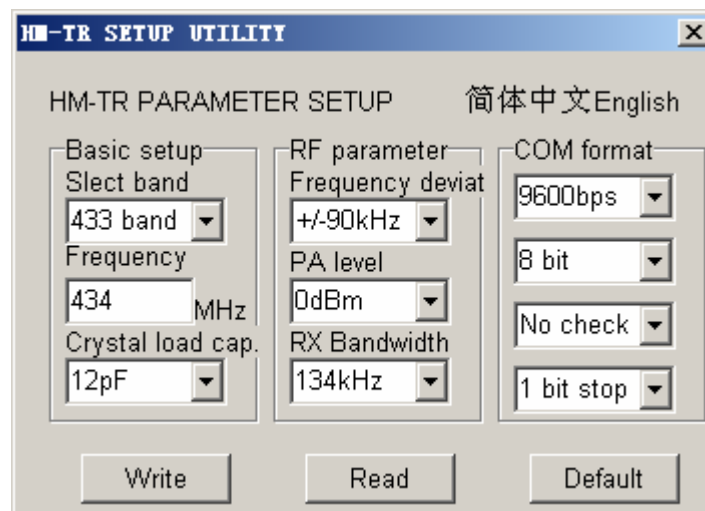
**Configure mode connection (HM-TR/232)**



**Configure mode connection (HM-TR/TTL)**

In configure mode, the module work parameters can be setup via the HM-TR setup utility, with the communication format between module and computer fixed at: 9600, 8, N, 1. see below:

## HM-TR SETUP UTILITY



“Read” button: Read the parameters the module currently use;

“Write” button: Write new configuration to module;

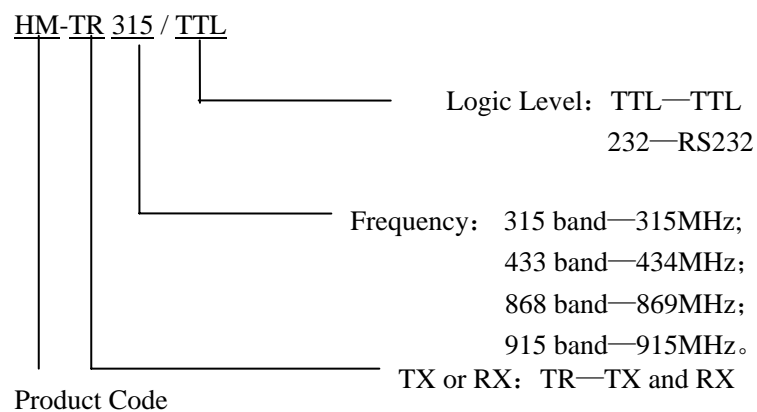
“Default” button: Recover module parameters as default value

## Ordering Information

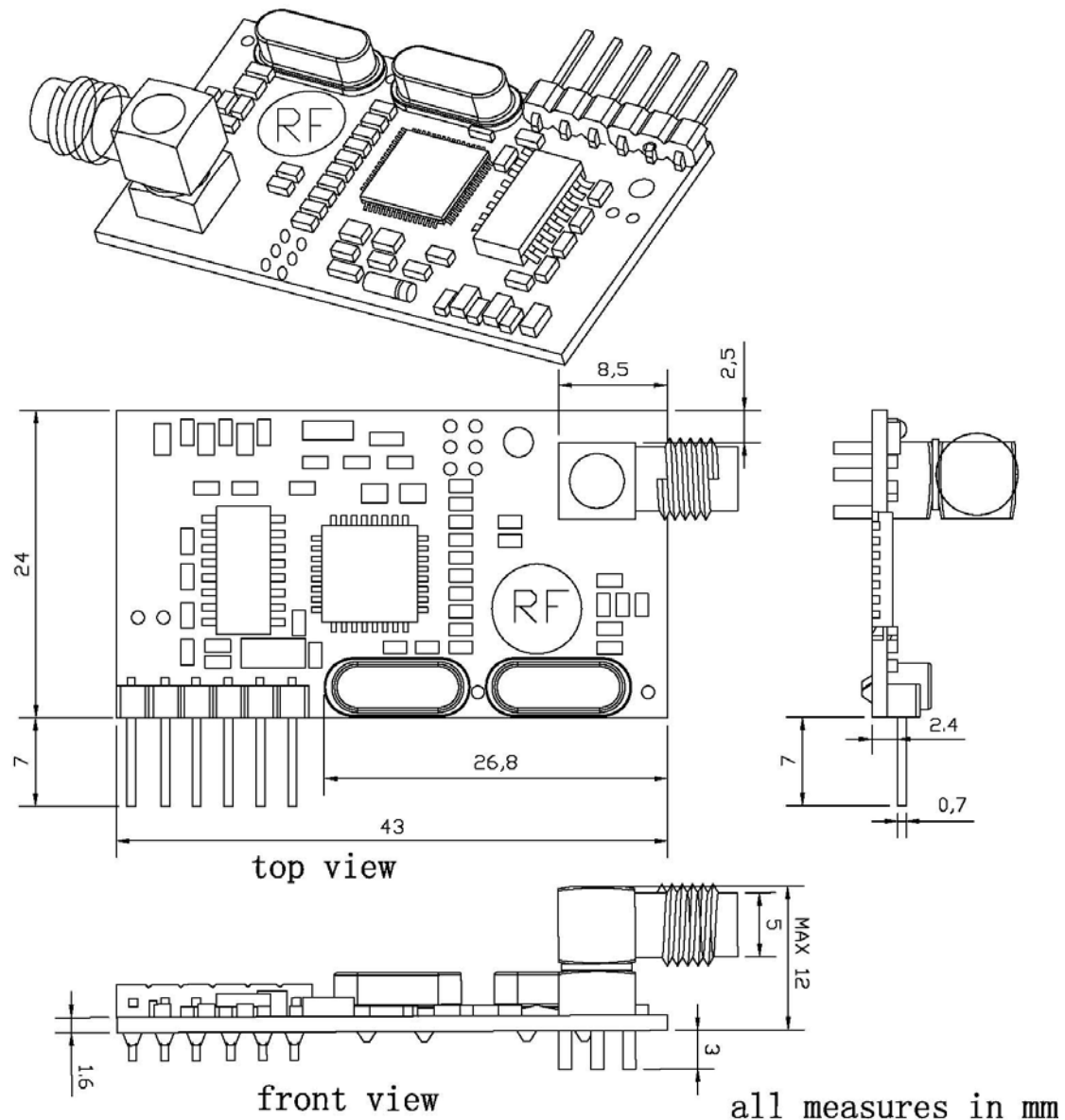
Model	Logic Level
HM-TRxxx/TTL	TTL
HM-TRxxx/232	RS232

**232** versions usually are used in PC or equivalent, **TTL** version suited for simple 5V MCU system.

## Module Naming Rule



### Mechanical outline:



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