

## HM-TRS Series Transparent Wireless Data Link Module

### General

HM-TRS series transparent wireless data link module is developed by Hope microelectronics Co. Ltd, dedicated for applications that needs wireless data transmission. It features high data rate, longer transmission distance. The communication protocol is self controlled and completely transparent to user interface. The module can be embedded to your current design so that wireless communication can be set up easily. It is an ideal choice for wireless applications.

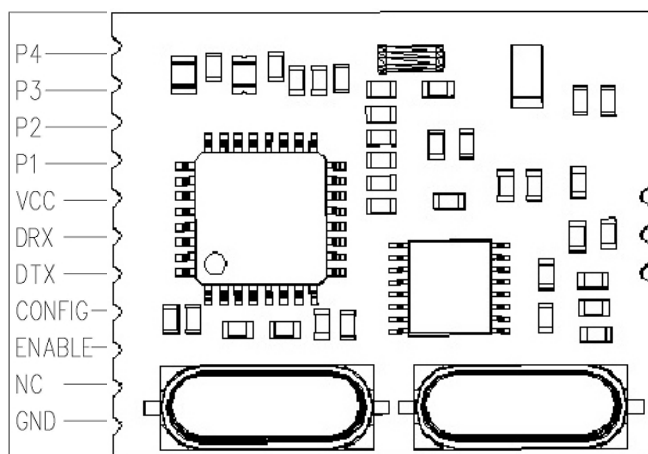
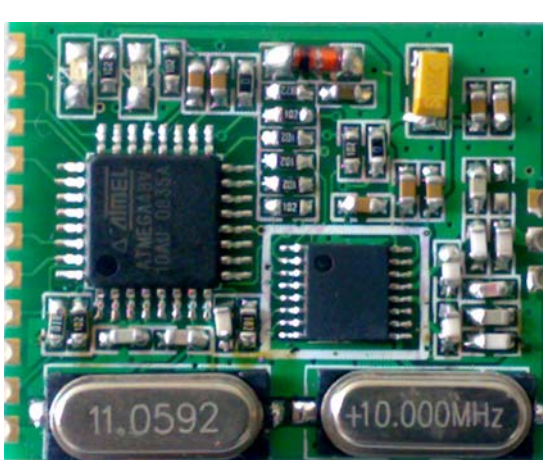
### Features

1. FSK technology, half duplex mode, robust to interference
2. ISB band, no need to apply frequency usage license
3. Operation frequency can be configured and can be used in FDMA applications
4. Transmitted frequency deviation and receiver bandwidth can be selected.
5. Protocol translation is self controlled, easy to use.
6. Data rate can be select from a wide range.
7. Provide ENABLE pin to control duty-cycle to satisfy different application requirements
8. High sensitivity, long transmission range.
9. Very reliable, small size, easier mounting.
10. No tuning in producing

### Application Areas

1. Remote control, remote measurement system
2. Wireless metering
3. Access control
4. Identity discrimination
5. Data collection
6. IT home appliance
7. Smart house products
8. Baby monitoring

### Mechanical and Pin Definition



### Pins description

Pin	Function	Note
P4	Reserved	Not used, keep floating
P3	Reserved	Not used, keep floating
P2	Reserved	Not used, keep floating
P1	Reserved	Not used, keep floating
VCC	Power supply	Supply voltage (2.2-3.8V)
DRX	Data reception	Module data output
DTX	Data transmission	Module data input
CONFIG	Configure enable	If this pin is hi at power on, module will enter configure mode, or the module enter normal mode
ENABLE	Work enable	If this pin is low in normal mode, the module will enter sleep mode immediately; if this pin is hi, the module will enter normal work mode.
NC	Pin Testing	Keep floating
GND	Ground	Power ground

### Basic Parameters

	Condition/note	Min.	Typ.	Max.	Unit
Power supply		2.2	3.3	3.8	V
Temperature		-35	25	80	°C
Frequency	3 bands	430.24	-	929.27	MHz
Power output	Pmax differs	Pmax-21	Pmax	Pmax	dBm
Frequency dev		15		240	kHz
Receiver bandwidth		67		400	kHz
Serial data rate		300	9600	19200	bps
Serial data bit		5	8	9	bit
Serial check	No check, odd/even check				
Serial stop bit		1	1	2	bit

### Frequency(detailed)

Model	Condition/note	Min.	Typ.	Max.	Unit
HM-TRS433		430.24	434	439.75	MHz
HM-TRS868		860.48	869	879.51	MHz
HM-TRS915		900.72	915	929.27	MHz

### Max power out(Pmax)

Model	Condition/note	Min.	Typ.	Max.	Unit
HM-TRS433		4	6		dBm
HM-TRS868		2	3		dBm
HM-TRS915		2	3		dBm

### Sensitivity

Model	Condition/note	Min.	Typ.	Max.	unit
HM-TRS433		-97	-100		dBm
HM-TRS868		-95	-97		dBm
HM-TRS915		-95	-97		dBm

### Power Consumption @ TXing

Model	Condition/note	Min.	Typ.	Max.	unit
HM-TRS433	VCC=3.3V		28		mA
HM-TRS868			30		mA
HM-TRS915			30		mA

### Power consumption @ RXing

Model	Condition/note	Min.	Typ.	Max.	unit
HM-TRS433	VCC=3.3V		20		mA
HM-TRS868			22		mA
HM-TRS915			22		mA

### Power consumption @ sleep

Model	Condition/note	Min.	Typ.	Max.	单位
HM-TRS433	VCC=3.3V		0.5		uA
HM-TRS868			0.5		uA
HM-TRS915			0.5		uA

### Reference communication range

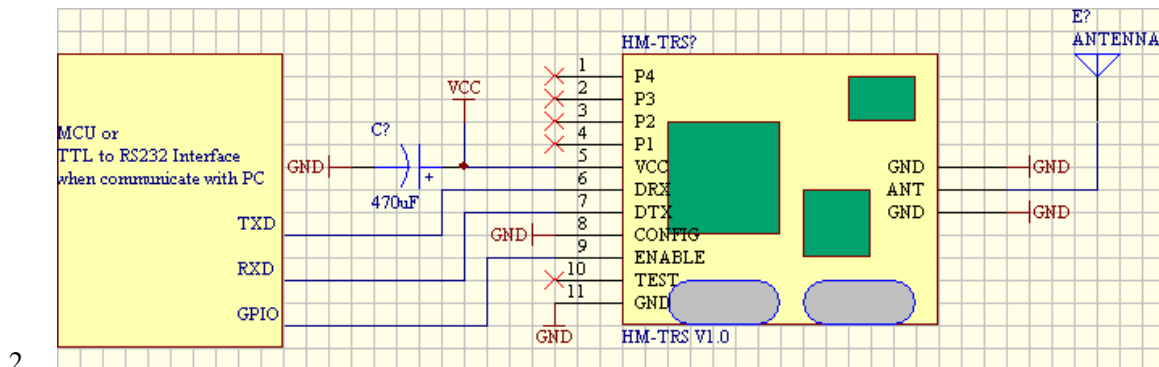
Model	Condition/note	Min.	Typ.	Max.	Unit
HM-TRS433	In open area, antenna is of 1m above ground.		200		m
HM-TRS868			200		m
HM-TRS915			200		m

### Module Use

Connect the RS232 connector with PC or TTL level with MCU directly, apply power supply and the module is ready for your application. If CONFIG pin is low at power on, module will enter normal mode for data transmission, or enter configure mode to setup work parameters

#### 1. Communication mode

When CONFIG is low at power on, the module enters into normal communication mode.



#### 2. Normal communication mode connection

The use of default setting offers data communication (the serial default setting is 9600, 8, N, 1). It can be setup via HM-TR SETUP TOOL.

When the serial data rate is less than 9600bps, the module supports continuous transmission, the max can be over 1,000,000 bytes at a time. When the rate is more than 9600bps, it should be less than 32 bytes at a time of transmission.

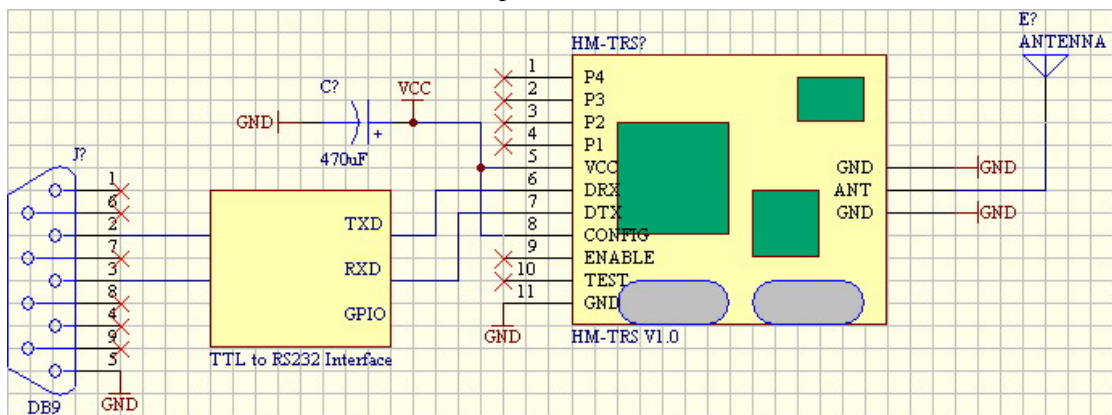
The module work mode is half duplex mode. The data will be immediately transmitted as soon as it accumulates 32 bytes in the serial port. When the data is less than 32 bytes, it will transmit again after 30ms. If the data is required to be sent out immediately, make sure it is at least 32 bytes.

Every time it finishes transmitting, the module will automatically shift into reception mode. The shift time is about 5ms.

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

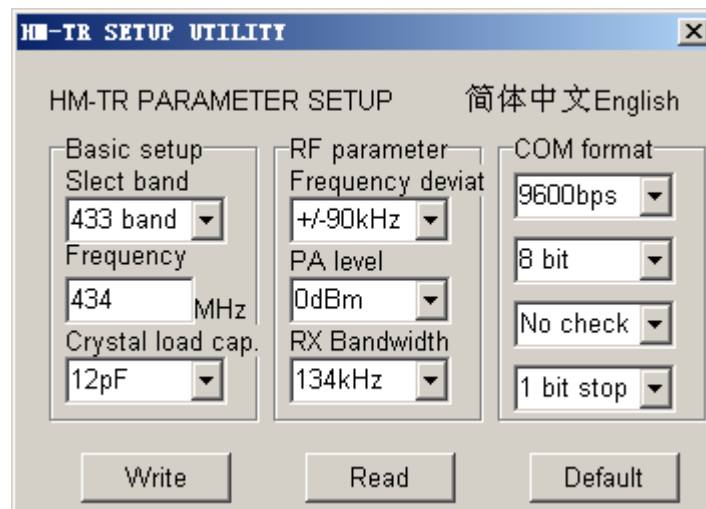
### 3. Configure Mode

When CONFIG is high at power on, the module enters into configure mode. In configure mode, the module work parameters can be setup via HM-TR setup tool on computer side and the communication format between module and computer is fixed: 9600, 8, N, 1.



**Configure mode connection**

### HM-TR SETUP TOOL



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

“Write” button: Write new configuration to module;

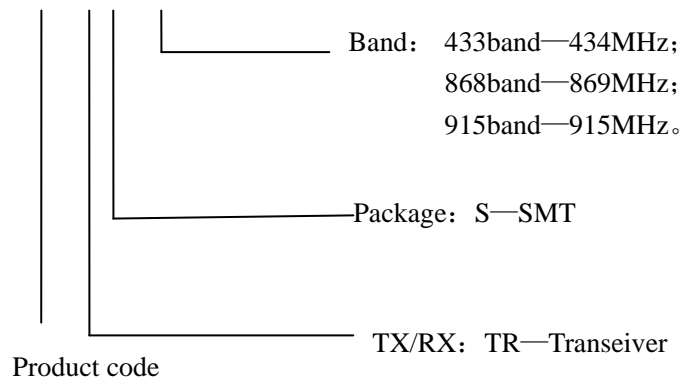
“Default” button: Recover module parameters as default value

## Ordering Information

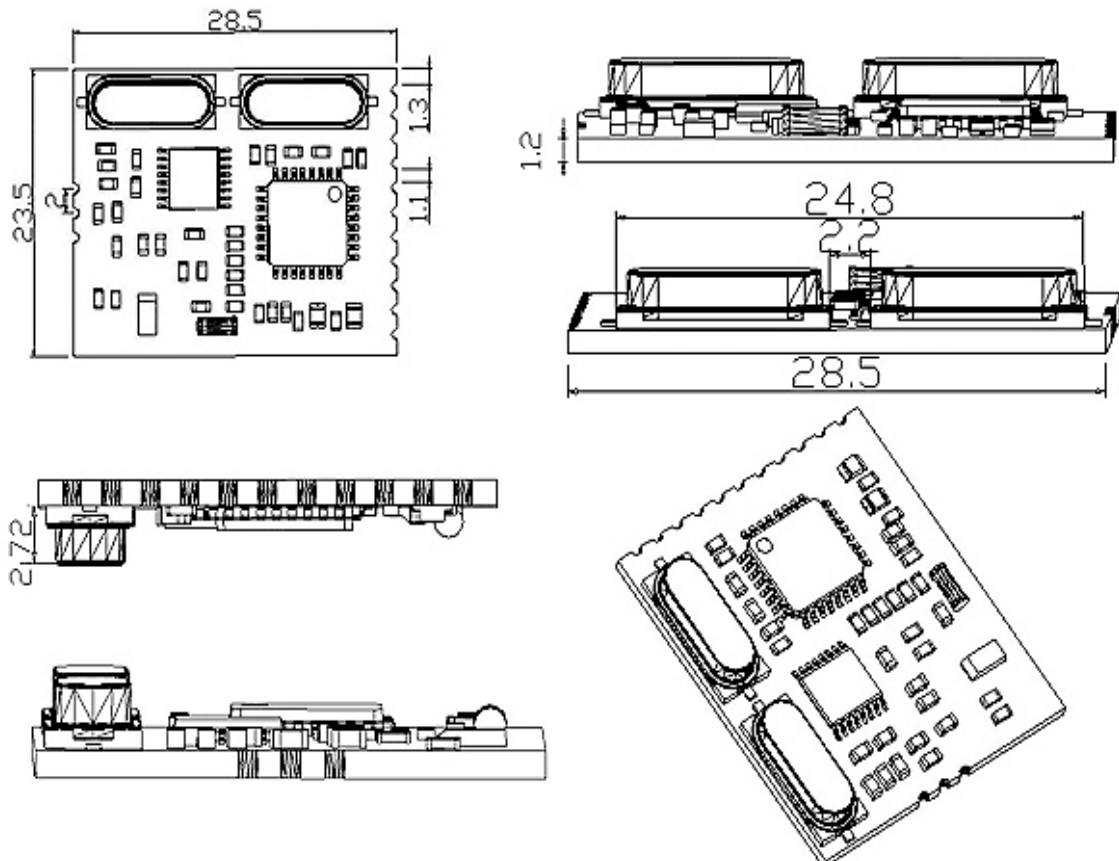
型号	Interface level
HM-TRSxxx	TTL

## Module Naming Rule

HM-TR S 433



## Mechanical:



<p><b>HOPE MICROELECTRONICS CO.,LTD</b> Add:4/F, Block B3, East Industrial Area, Huaqiaocheng, Shenzhen, Guangdong, China Tel: 86-755-82973805 Fax: 86-755-82973550 Email: <a href="mailto:sales@hoperf.com">sales@hoperf.com</a> <a href="mailto:trade@hoperf.com">trade@hoperf.com</a> Website: <a href="http://www.hoperf.com">http://www.hoperf.com</a> <a href="http://hoperf.en.alibaba.com">http://hoperf.en.alibaba.com</a></p>	<p>This document may contain preliminary information and is subject to change by Hope Microelectronics without notice. Hope Microelectronics assumes no responsibility or liability for any use of the information contained herein. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Hope Microelectronics or third parties. The products described in this document are not intended for use in implantation or other direct life support applications where malfunction may result in the direct physical harm or injury to persons. NO WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MECHANABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE OFFERED IN THIS DOCUMENT.</p> <p>©2006, HOPE MICROELECTRONICS CO.,LTD. All rights reserved.</p>
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