

# **Wireless Data Transceiver**

# **UHF1601D**

User Manual

Version: V1.0

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## Antenna Installation Warning

1. Any antenna only can be installed and maintained by professional technician. Please make sure that the radio station is closed when you maintain or work nearby the antenna.
2. In general, radio will be connected to a directional (high-gain) antenna, and fixed to the edge or top of a building or top of tower. According to the application and antenna gain, total hybrid power may exceed 90W(ERP). Under normal circumstance, only the professional technicians can close to the antenna area, anyone can't touch the antenna or close to 2.3m in diameter range of the antenna.

**Antenna Gain vs Safe distance recommended**

	Antenna Gain (HX-U101)		
	0-5 dBi	5-10 dBi	10-16.5 dBi
The minimum safe distance	0.6m	1.06m	2.3m

# 1、 Summary

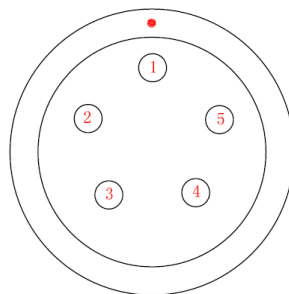
1601D is an external Receipt &Transmission 1W radio modem, waterproof to IP67、 Durable structure, which can apply to all outdoor weather conditions.

1601D has 4 pieces of LED、 1 piece of nixie tube and 3 pieces of push-button, for user's convenience of booting、channel switching、power rating、low voltage alarming and indicating the current operation channel.



# 2、 Interface

## 2.1 Serial data line interface



Interface type: asynchronous serial communication standard of RS232

Pin definitions:

Pin 1-----Power, 9-16V DC;

Pin 2-----power grounding, Power GND;

Pin 3-----serial data receiver, RXD;

Pin 4-----serial signal grounding;

Pin 5-----serial data transmission, TXD.

## **2.2 RF interface**

1601D RF interface is TNC female connector of 50Ω.

# **3、 Function and operating instruction**

## **3.1 Booting**

Press the button of ON/OFF to boot. LED indicator of ON is green, which means the voltage is normal, and the machine can work normally; if LED indicator of ON is red flash, which means the voltage is too low, please turn on the low voltage protection; if LED indicator of ON is red, which means the voltage is too high, please turn on the overvoltage protection.

## **3.2 Low power switching**

Pressing the button of PWR for switching between high power and low power. If you choose high power, LED indicator of PWR will turn red; if you choose low power, LED indicator of PWR will turn green.

Default value: high power.

## **3.3 Transmitting channel switching**

Pressing the button of CHANL, 8 channels of “1-8” will be switched within each other, keep

pressing for fast forward, digital tube display the current channel number.

### 3.4 Channel Display

Operation Mode: Display the channel number of “1-8” transmitting rate.

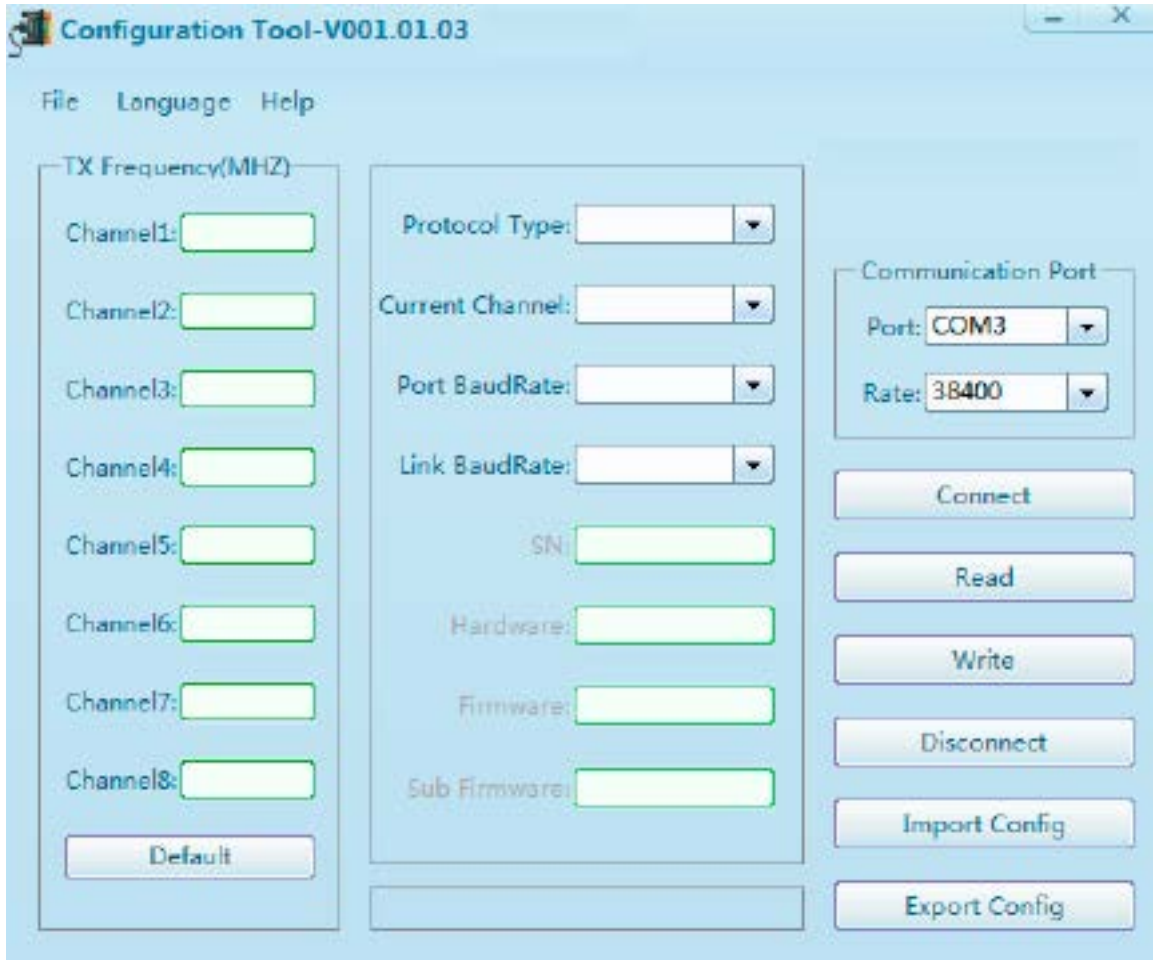
### 3.5 Low voltage indicator

While transmitting data, TX/RX LED indicator of ON will be red flash; While receiving data, TX/RX LED indicator show green.

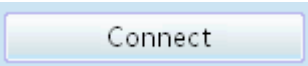
## 4、 Radio model setting

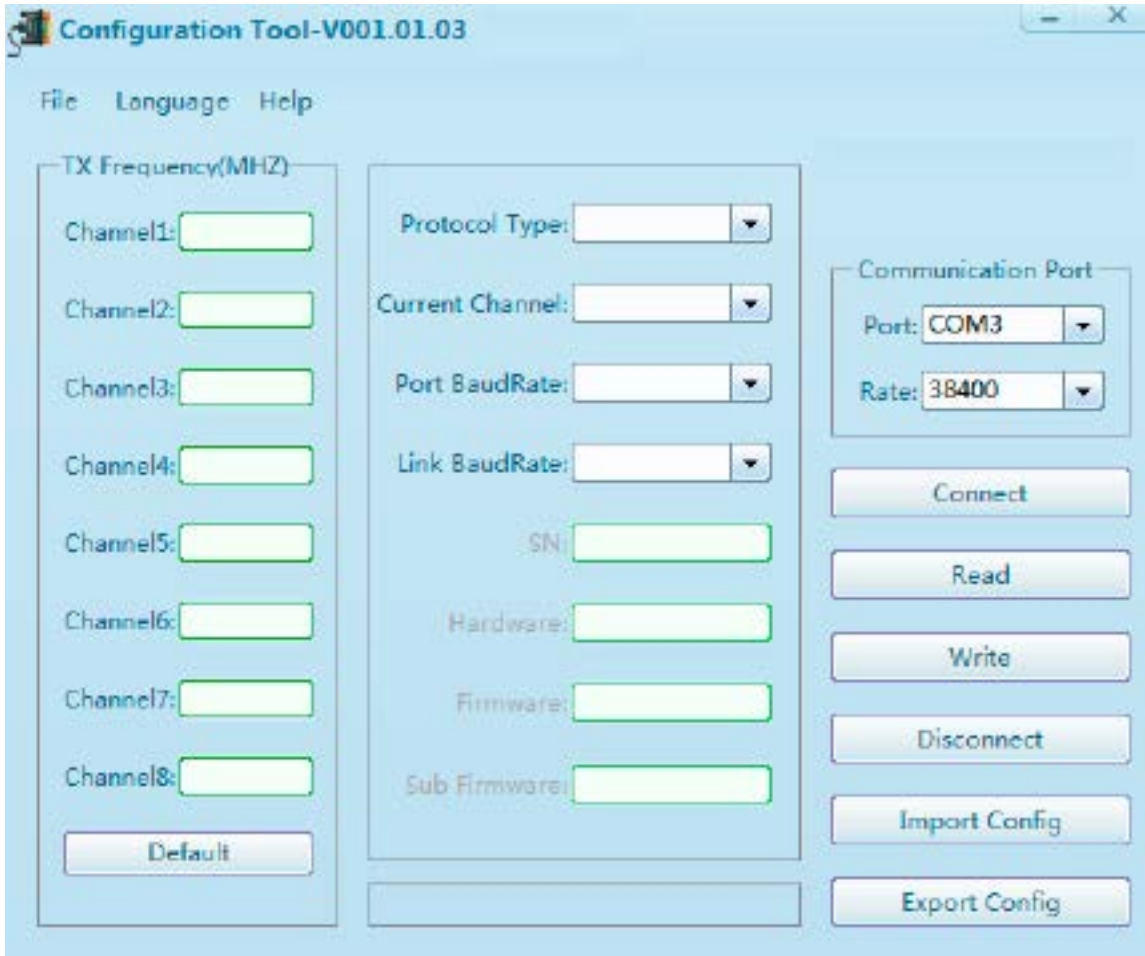
### 4.1 Open ports

Open the configured software,  , choose the corresponding port, baud rate defaulted as 38400, click the port .



## 4.2 Make radio modem enter the configuration mode

Connecting the power line and serial port line, which confirmed to be connected correctly, repower, press the button of “ON/OFF” for booting, LED indicator of ON show green. Within 3 seconds, click the butto  to make the radio modem enter configuration mode, reading and saving the information of configured radio modem (shown as the chart below), button of “load” failure and turn gray. Digital tube of radio modem show “C”, radio modem will enter the configuration mode.



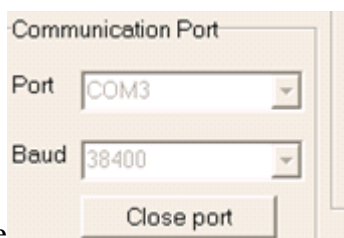
### 4.3 Configuring the parameter radio modem

#### 4.3.1 Configuring the customized rate, defaulted rate as:

There are two groups of defaulted rate value (transmitting and receiving frequency) , click " default " below, Will set all the frequencies in the corresponding column.

#### 4.3.2 Configuring the serial baud rate

Serial baud rate optional 9600,19200,38400,57600,115200 bps. (Note: if you want to reconnect radio modem after modifying the baud rate of serial port, you have to modify the serial baud rate

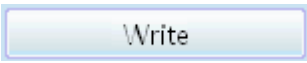


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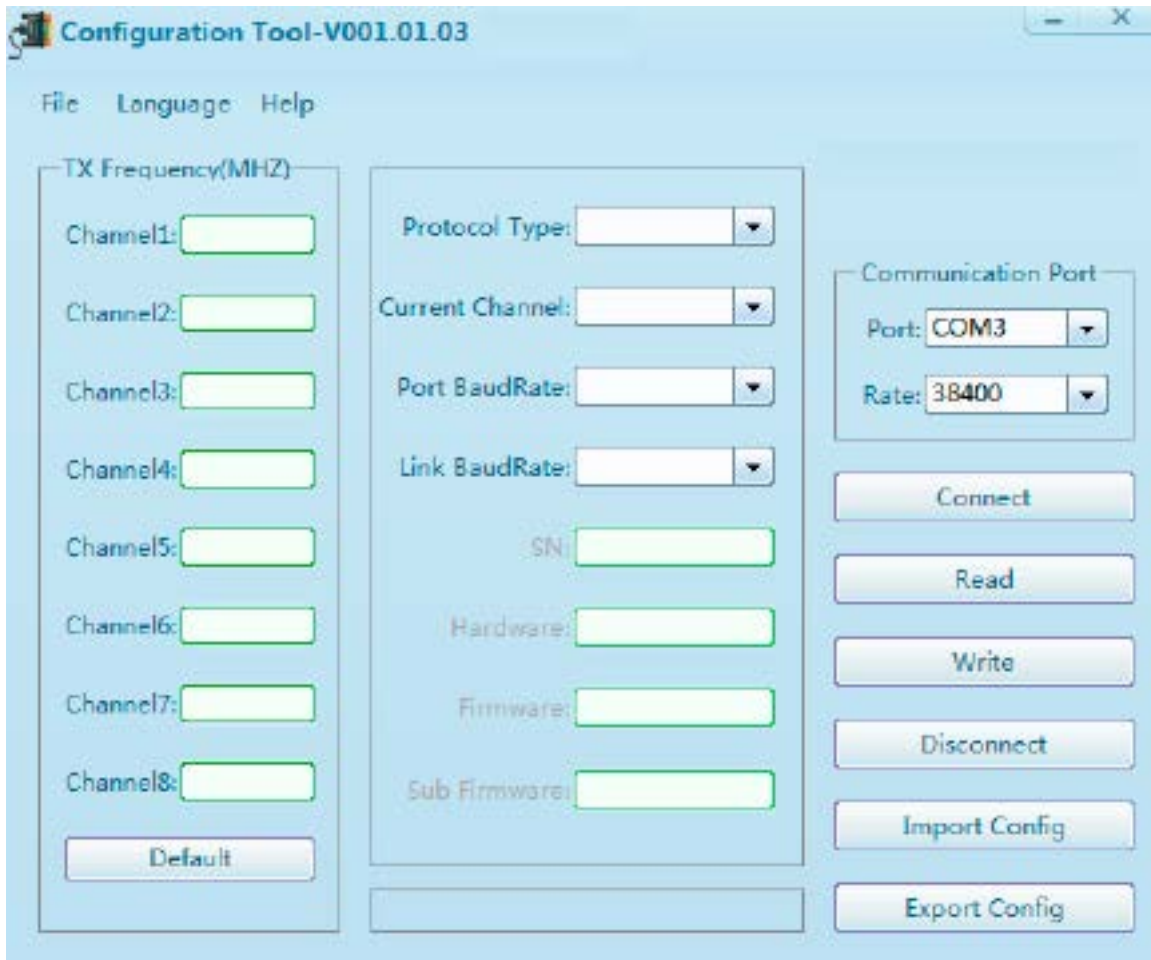


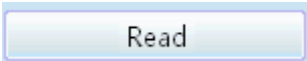
### 4.3.3 Configuring the current channel ch1-ch8

You can choose one channel as the current communication channel in the 1-8 channel, click

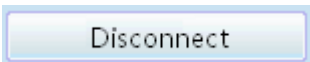


button, Configuring Radio Parameters;



Noted: Before Configuring Radio Parameters, click “Read”  Button, First read all the configuration parameters of the machine, and then make the appropriate parameter modification;

### 4.4 Finish to exit the configuration mode

Click the button  to exit configuration mode, the digital tube of radio modem will show the current channel number.

## 5、 Software upgrading

Fault description	Cause analysis	Solution
Cannot boot	Power cable connection is not reliable or positive and negative reversed	Correctly connect power cable
Unable to enter configuration mode	Serial port configuration is not correct, improper operation	Correctly configured serial baud rate and related parameters, click the "Connect" button Boot within 3 seconds
Unable to transmit and receive data	Frequency, protocol, air baud rate, the baud rate and other parameters configured incorrectly	Correctly configured transmitter and receiver parameters and serial port parameters

## 6、 Technical Specifications

Total Performance Specifications		
Name	Specifications	
Frequency Range	410~470MHz	
Operating Mode	half-duplex	
Channel Spacing	25KHz or 12.5KHz	
Operating Voltage	9-20V	
Power Consumption (typical value)	High power transmitter	5W @ DC 12V
	Low power transmitter (5W)	3W @ DC 12V
	Reception	1.2W @ DC 12V

Frequency Stability	$\leq \pm 1.0\text{ppm}$	
Dimension	148×76×30mm	
Operating Temperature	-30°C~+60°C	
Storage Temperature	-55°C~+85°C	
Antenna Interface	TNC-Female	
Antenna Interface Impedance	50ohm	
Data Power Interface	LEMO , HGG.1B.305	
<b>Transmitter Performance Specifications</b>		
<b>Name</b>	<b>Specifications</b>	
RF output power	High power ( 1W )	30±1dBm@DC12V
	Low power ( 0.5W )	27±1dBm@DC12V
RF Power Stability	±1dB	
Adjacent Channel Power Restrain	>50dB	
<b>Receiver Performance Specifications</b>		
<b>Name</b>	<b>Specifications</b>	
Sensitivity	>-115dBm@BER 10 <sup>-3</sup> , 9600bps	
Adjacent Channel Selectivity	>50dB@25KHz	
<b>Modem</b>		
<b>Name</b>	<b>Specifications</b>	
Air Rate	9600bps	
Modulation	GMSK	