**HF5111B**

**Serial Server Device User Manual**

**V 1.2**



**Overview of Characteristic**

* **Cortex-M3 MCU with 2MB Flash and 128KB SRAM**
* **Use FreeRTOS Operation System**
* **Support TCP/IP/Telnet /Modbus TCP Protocol**
* **Support Serial To 10/100M Ethernet Conversion, Serial Speed Upto 921600 bps**
* **Support 10/100M Ethernet Auto-Negotiation**
* **Support Easy Configuration Through a Web Interface or PC IOTService Tool**
* **Support Security Protocol Such As** **TLS/AES/DES3**
* **Support Web OTA Wirelss Upgrade**
* **Support Industrial Temperature: -40 to +85˚ C**
* **Wide DC Input 5~36VDC**
* **Size: 94 x 65 x 25 mm (L x W x H)**
* **FCC/CE/RoHS Certificated**

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History

**Ed. V1.0**  11-08-2016 First Version

**Ed. V1.1**  02-10-2017 Add Auto-IP, heartbeat, ntp and UART fast config function(Firmware version:1.07c)

**Ed. V1.2**  04-16-2019 Software function move to another document.

# Product Overview

## General Description

The HF5111B provides a serial interface to Ethernet connectivity to web enable any device. The HF5111B integrate TCP/IP controller, memory, 10/100M Ethernet transceiver, high-speed serial port and integrates a fully developed TCP/IP network stack and FreeRTOS OS. The HF5111B also includes an embedded web server used to remotely configure, monitor, or troubleshoot the attached device.

The HF5111B using highly integrated hardware and software platform, it has been optimized for all kinds of applications in the industrial control, smart grid, personal medical application and remote control that have lower data rates, and transmit or receive data on an infrequent basis.

The HF5111B integrates all serial to Ethernet functionality with 94 x 65 x 25mm size.

## Device Paremeters

1. HF5111B Technical Specifications

|  |  |
| --- | --- |
| **Item** | **Parameters** |
| **System Information** | |
| Processor/Frequency | Cortex-M3/96MHz |
| Flash/SDRAM | 2MB/128KB |
| Operating System | FreeRTOS |
| **Ethernet Port** | |
| Port Number | 1 RJ45 |
| Interface Standard | 10/100 Base-T Auto-Negotiation |
| Protection | 8KV Isolation |
| Transformer | Integrated |
| Network Protocol | IP，TCP，UDP，DHCP，DNS，HTTP Server/Client，ARP, BOOTP, AutoIP, ICMP，Web socket, Telnet, uPNP, NTP, Modbus TCP |
| Security Protocol | TLS v1.2  AES 128Bit  DES3 |
| **Serial Port** | |
| Port Number | 1 RS232/RS485/RS422 |
| Interface Standard | RS232: DB9  RS485/RS422: 5.08mm connector |
| Data Bits | 5,6,7,8 |
| Stop Bit | 1,2 |
| Check Bit | None,Even,Odd |
| Baud Rate | TTL: 600 bps~460800 bps |
| Flow Control | No Flow control  Hardware RTS/CTS、DSR/DTR  Software Xon/ Xoff flow control |
| **Software** | |
| Web Pages | Http Web Configuration  Customization of HTTP Web Pages |
| Configuration | Web  CLI  XML import  Telnet  IOTService PC Software  UART Fast Config |
| Firmware Upgrade | Web, IOTService Tools |
| **Basic Parameter** | |
| Size | 94 x 65 x 25 mm |
| Operating Temp. | -45 ~ 85°C |
| Storage Temp. | -45 ~ 105°C, 5 ~ 95% RH（no condensation） |
| Input Voltage | 5~36VDC |
| Working Current | ~100mA |
| Power | <400mW |

## Key Application

The HF5111B device connects serial device to Ethernet networks using the TCP/IP protocol:

* Remote equipment monitoring
* Asset tracking and telemetry
* Security Application
* Industrial sensors and controls
* Medical devices
* ATM machines
* Data collection devices
* Universal Power Supply (UPS) management units
* Telecommunications equipment
* Data display devices
* Handheld instruments
* Modems
* Time/attendance clocks and terminals

# Hardware Introduction

The HF5111B unit is a complete solution for serial port device connecting to network. This powerful device supports a 10/100BASE-T Ethernet connection, a reliable and proven operating system stored in flash memory, an embedded web server, a full TCP/IP protocol stack,and standards-based (AES) encryption.

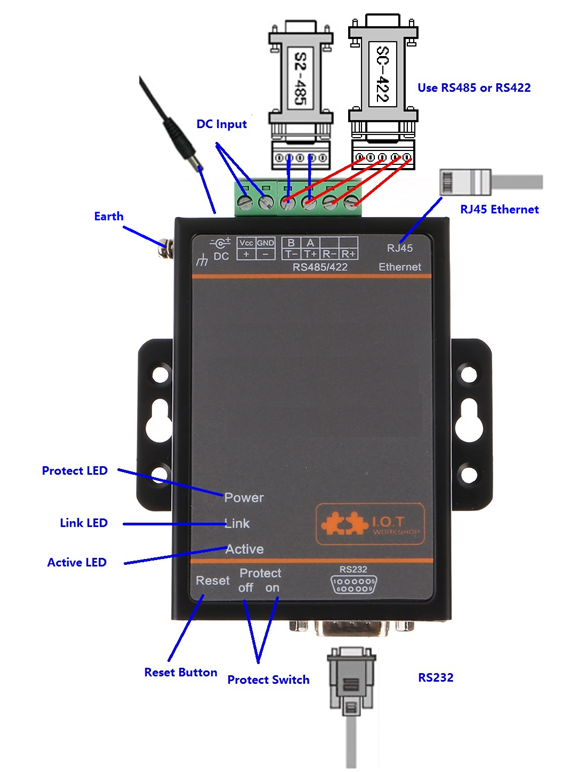
Through Ethernet cable connect router with HF5111B serial server for data transfer, which makes the data transformation very simple. HF5111B meet EMC Class B security level,It can pass every countries relevant certification test



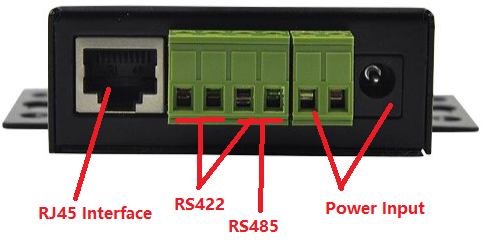
1. HF5111B Appearance

## 

## Pins Definition



1. HF5111B Interface



1. HF5111B Side View
2. HF5111B Interface Definition

| **Function** | **Name** | **Description** |
| --- | --- | --- |
| External Interface | RJ45 Ethernet | 10/100M Ethernet |
| RS232 | RS232 Communication |
| RS485/RS422 | RS485/RS422 Communicaton |
| Earth | Protect Earth |
| DC Input | DC Power 5~36V Input or 9~50VDC |
| LED Indicator | Power | Internal Power Supply Indicator  On：Power is OK  Off：Power is NG |
| Link | Connection Indicator  On: Ethernet connection is OK  Off: No Ethernet connection |
| Active | Data transfer Indicator  On：Data is transfering.  Off：No data transfer |
| Button | Reset | Reset device |
| Switch | Protect | Device parameter protect  On: Enable protect, working parameter can not be modified.  Off: Disable protect. |

## RS232 Interface

Device serial port is male(needle), RS232 voltage level(can connect to PC directly), Pin Order is cosistent with PC COM port. Use cross Cable connected with PC(2-3 cross, 7-8 cross, 5-5 direct, 7-8 no connection), see the following table for pin defination.



1. RS232 Pin Defination(Male/Needle Type)
2. RS232 Interface

| Pin Number | Name | Description |
| --- | --- | --- |
| 2 | RXD | Receive Data |
| 3 | TXD | Send Data |
| 5 | GND | GND |
| 7 | RTS | Request to Send |
| 8 | CTS | Clear to Send |

## RS485 Interface

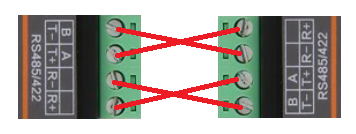
RS485 use two wire links, A(DATA+), B(DATA-). Connect A(+) to A(+), B(-) to B(-) for communication.

The RS485 interface support maximum 32 485 device, special hardware version can support max 255 device. The cable maximum length is 1200 meters. Need to add 120Ohm terminal resistor for over 300 meters.

## RS422 Interface

RS422 interface use T+/T-/R+/R-, cross connect to device as the following picture.

| **Name** | **Description** |
| --- | --- |
| TX+ | Transfer Data+ |
| TX- | Transfer Data- |
| RX+ | Receive Data+ |
| RX- | Receive Data- |



1. HF5111B RS422 Connectioin

## RJ45 Interface

Ethernet port is 10M/100M adaptive, support AUTO MDI/MDIX which means it support direct connecting to PC with Ethernet cable.



1. RJ45 Pin Defination
2. RJ45 Interface

| **Pin Number** | **Name** | **Description** |
| --- | --- | --- |
| 1 | TX+ | Transfer Data+ |
| 2 | TX- | Transfer Data- |
| 3 | RX+ | Receive Data+ |
| 4 | PHY-VCC | Transformer Tap Voltage |
| 5 | PHY-VCC | Transformer Tap Voltage |
| 6 | RX- | Receive Data- |
| 7 | N.C. | None Connect |
| 8 | N.C. | None Connect |

## Mechanical Size

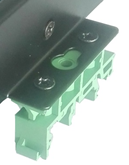
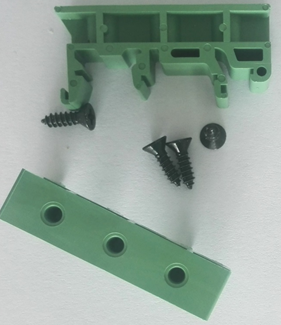
The dimensions of HF5111B are defined as following picture (mm):



1. HF5111B Mechanical Dimension

## Rail Mounting

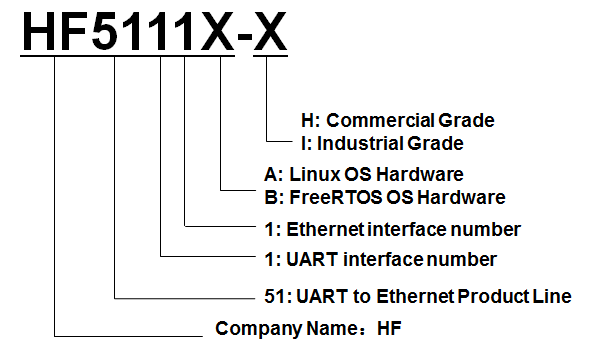
We support to provide rail for mounting as the following picture.

1. HF5111B Rail

## Order Information

Base on customer detailed requirement, HF5111B provide different configuration version, Details as below:



1. HF5111B Product Order Information

## Software Function

Refer to “IOT\_Device\_Series\_Software\_Funtion” document.

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# Appendix a: Contact Information

**------------------------------------------------------------------------------------------------------------**

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