

# 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

<b>Ed. V1.0</b>	11-08-2016	First Version
<b>Ed. V1.1</b>	02-10-2017	Add Auto-IP, heartbeat, ntp and UART fast config function(Firmware version:1.07c)
<b>Ed. V1.2</b>	04-16-2019	Software function move to another document.

# 1. PRODUCT OVERVIEW

## 1.1. 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.

## 1.2. Device Parameters

Table1. HF5111B Technical Specifications

Item	Parameters
<b>System Information</b>	
Processor/Frequency	Cortex-M3/96MHz
Flash/SDRAM	2MB/128KB
Operating System	FreeRTOS
<b>Ethernet Port</b>	
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
<b>Serial Port</b>	
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
<b>Software</b>	
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
<b>Basic Parameter</b>	
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

### 1.3. 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

## 2. 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



Figure 1. HF5111B Appearance

## 2.1. Pins Definition

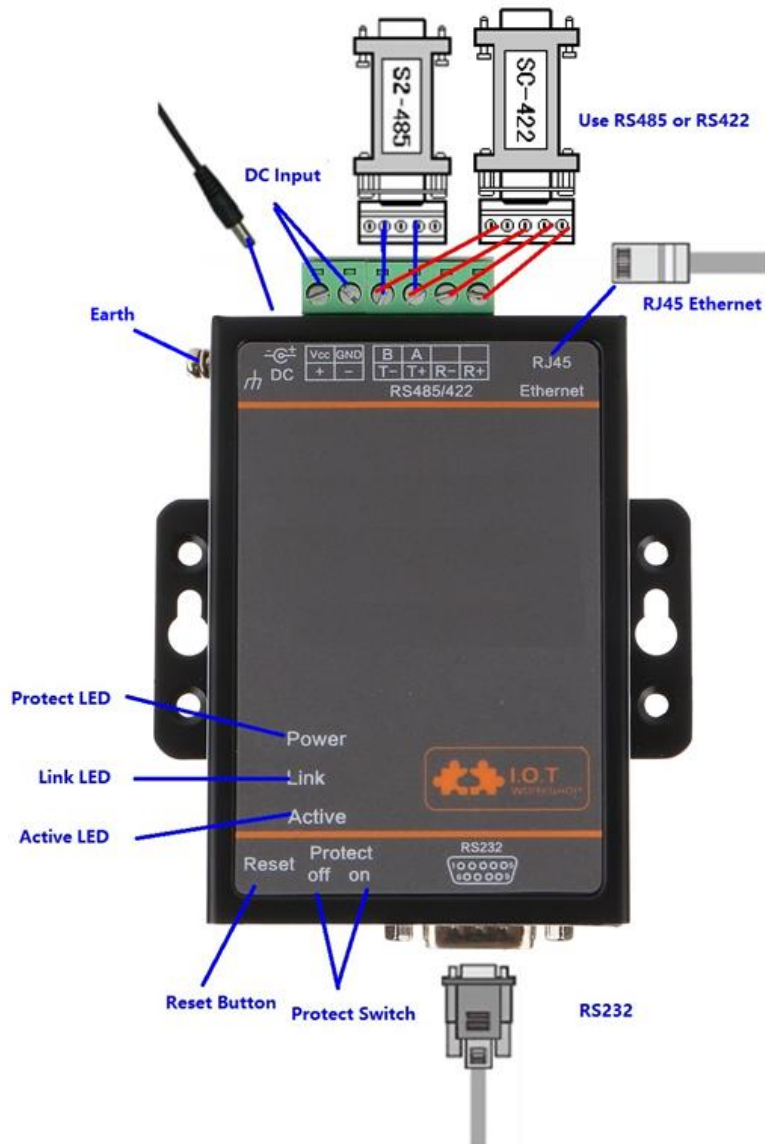


Figure 2. HF5111B Interface

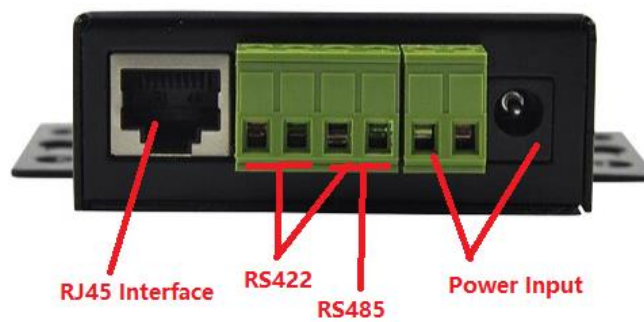


Figure 3. HF5111B Side View



Table2. 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 transferring. 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.

## 2.2. 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.



Figure 4. RS232 Pin Defination(Male/Needle Type)

Table3. RS232 Interface

Pin Number	Name	Description
2	RXD	Receive Data
3	TXD	Send Data
5	GND	GND

Pin Number	Name	Description
7	RTS	Request to Send
8	CTS	Clear to Send

### 2.3. 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.

### 2.4. 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-

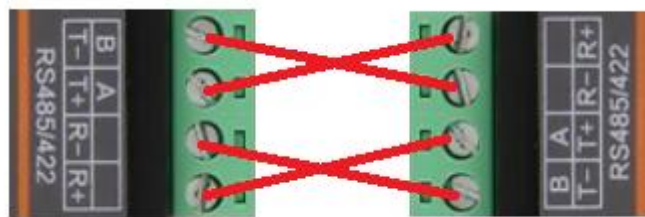


Figure 5. HF5111B RS422 Connection

### 2.5. RJ45 Interface

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

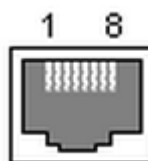


Figure 6. RJ45 Pin Definition

Table4. 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

## 2.6. Mechanical Size

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



Figure 7. HF5111B Mechanical Dimension

## 2.7. Rail Mounting

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

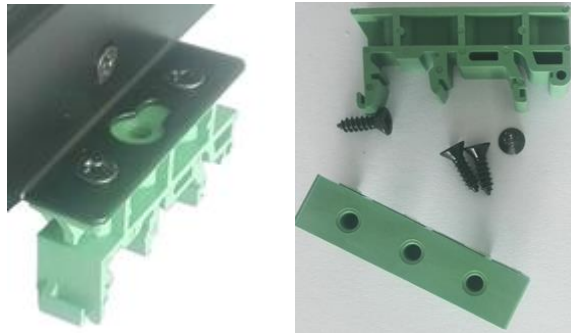


Figure 8. HF5111B Rail

## 2.8. Order Information

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

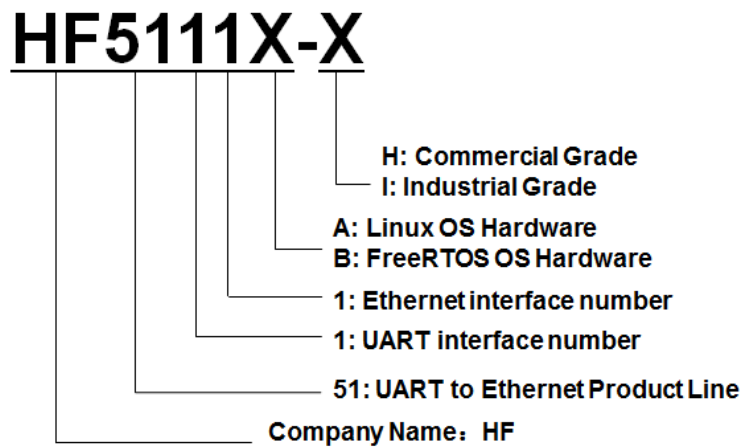


Figure 9. HF5111B Product Order Information

## 2.9. Software Function

Refer to "IOT\_Device\_Series\_Software\_Funtion" document.

## APPENDIX A: CONTACT INFORMATION

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**Address:** Room 1002,Building 1,No.3000,Longdong Avenue,Pudong New Area,Shanghai,China,201203

**Web:** [www.iotworkshop.com](http://www.iotworkshop.com) or [www.hi-flying.com](http://www.hi-flying.com)

**Contact:**

Sales: [sales@iotworkshop.com](mailto:sales@iotworkshop.com)

Support: [support@iotworkshop.com](mailto:support@iotworkshop.com)

Service: [service@iotworkshop.com](mailto:service@iotworkshop.com)

Business: [business@iotworkshop.com](mailto:business@iotworkshop.com)

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