Eport Pro-EP20/EP20-PIN
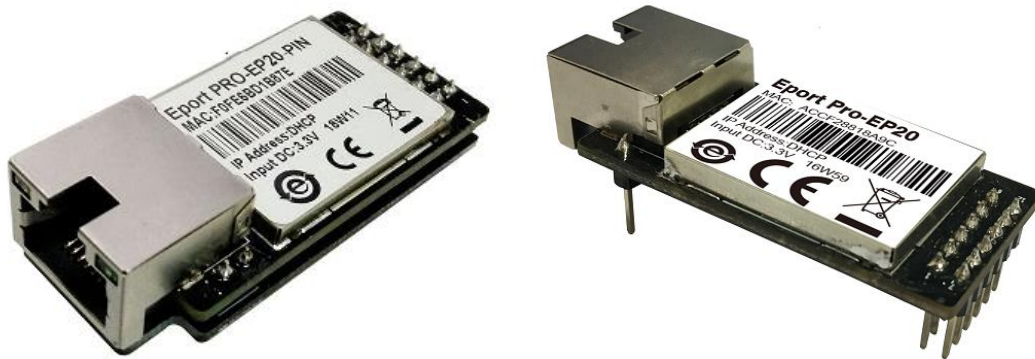
Super Port User Manual

V 1.3

Overview of Characteristic

✧ **MIPS MCU with 16MB Flash and 32MB SRAM**

✧ **Use Linux Operation System**

✧ **Support TCP/IP/Telnet/Modbus TCP Protocol**

✧ **Support Serial To 10/100M Ethernet Conversion, Serial Speed Upto 460800 bps**

✧ **Support 10/100M Ethernet Auto-Negotiation**

✧ **Support Easy Configuration Through a Web Interface**

✧ **Support Security Protocol Such As TLS/AES/DES3**

✧ **Support Web OTA Wirelss Upgrade**

✧ **Single +3.3V Power Supply**

✧ **Size: 50 x 23 x 11 mm (L x W x H)**

✧ **FCC/CE/RoHS Certificated**

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HISTORY

Ed. V1.0 10-24-2016   First Version

Ed. V1.1 03-03-2017   Add auto-ip, heartbeat,ntp,UART fast config function(Firmware 1.07c
Version)

Ed. V1.2 04-23-2018   Add EP20-PIN type.

Ed. V1.3 04-16-2019   Update software function to another document.

1. PRODUCT OVERVIEW

1.1. General Description

The Eport Pro-EP20 Series is a fully self-contained small form-factor, most compact, integrated solution, which provide a serial interface to Ethernet connectivity to web enable any device. The Eport Pro-EP20 Series Series integrate TCP/IP controller, memory, 10/100M Ethernet transceiver, high-speed serial port within a compact RJ45 package and integrates a fully developed TCP/IP network stack and Linux OS.The Eport Pro-EP20 Series Series also includes an embedded web server used to remotely configure, monitor, or troubleshoot the attached device.

The Eport Pro-EP20 Series Series 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. By simply adding an Eport Pro-EP20 Series Series unit to a product Design, device manufacturers can reduce their Design cycle and speed up Time-To-Market with very low risk.

The Eport Pro-EP20 Series integrates all serial to Ethernet functionality into a low-profile, 50 x 23 x 11mm standard RJ45 module package that can be easily mounted on main PCB with application specific circuits and even not change your original Design.

Eport Pro-EP20-PIN is Eport Pro-EP20 with PIN transformation board. The function is the same.

1.2. Device Paremeters

Table1.   Eport Pro-EP20 Series Module Technical Specifications

Item	Parameters
System Information	
Processor/Frequency	MIPS/320MHz
Flash/SDRAM	16MB/32MB
Operating System	Linux
Ethernet Port	
Port Number	1 RJ45 with LED
Interface Standard	10/100 Base-T Auto-Negotiation
Protection	2KV Isolation
Transformer	Integrated
Network Protocol	IP，TCP，UDP，DHCP，DNS，HTTP Server/Client，ARP, BOOTP, AutoIP，ICMP，Web socket, Telnet, FTP,TFTP, uPNP, NTP, SNMP,Modbus TCP
Security Protocol	SSL v3 AES 128Bit DES3
IPV6 Support	Support(SDK)
Serial Port	

Port Number	1 + 1 debug
Interface Standard	3.3V TTL: 2 wire（TX,RX）
Data Bits	8
Stop Bit	1,2
Check Bit	None,Even,Odd,Space,Mark
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
Log	Remote Realtime Log,
Configuration	Web CLI XML import Telnet IOTService PC Software UART Fast Config
Firmware Upgrade	Web, IOTService
SDK For Dev.	Support
Basic Parameter	
Size	50 x 23 x 11 mm
Operating Temp.	-25 ~ 70°C
Storage Temp.	-45 ~ 105°C, 5 ~ 95% RH（no condensation）
Input Voltage	3.3V
Working Current	~200mA
Power	<700mW

1.3. Key Application

The Eport Pro-EP20 Series 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 Eport Pro-EP20 Series unit is a complete solution for serial port device connecting to network. Packageed into a RJ45 connector, 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 Eport Pro–EP20 serial server for data transfer, which makes the electromechanical integration very simple. Eport Pro-EP20 Series meet EMC Class B security level,It can pass every countries relevant certification test

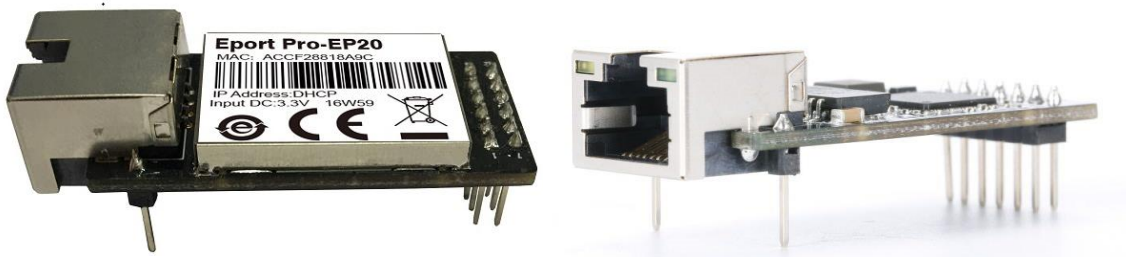## 2.1. Appearance

Figure 1.   Eport Pro-EP20 Appearance

Figure 2.   Eport Pro-EP20-PIN Appearance

2.2. Pins Definition

Figure 3.   Eport Pro-EP20 Series Pins Map

Table2.   Eport Pro-EP20 Series Pins Definition

Pin	DES3cribtion	Net Name	Signal Type	Comments
1	GPIO	GPIO1	I/O	Can be configured to UART1:TXD2
2	GPIO	GPIO2	I/O	Can be configured to UART1:RXD2
3	UART0	CTS	O	Can be configured to GPIO
4	External Reset In	nRST	I, PU	"Low" effective reset input.
5	UART0	RTS	I	Can be configured as RS485 control pin
6	Multi-Function Pin	nReload	I,PU	Detailed functions see <Notes>
7	LED indicator	LED2_Data	O	Detailed functions see <Notes>
8	UART0	RXD	I	3.3V, TTL.
9	UART0	TXD	O	3.3V, TTL.
10	Ground	GND	GND	Power Ground
11	+3.3V Power	DVDD	Power	+3.3V
12	LED indicator	LED1_Link	O	Detailed functions see <Notes>
EGND	EGND	EGND	EGND	Earth GND, Used to shield EMC signal. Connect to Ethernet Metal Shell Internally. It is not allowed to connect to GND.

<Notes>

nReload Pin function:

1. Put this pin low before the device powered on (or Reset), This device works in mass production mode to upgrade its firmware, this mode is used for upgrade customized firmware. The corresponding PC tools can be download on High Flying website.

2. After device is powered up, If put this pin to low more than 3 seconds and then put to High, It will restore the product parameters to factory setting.

We strongly suggest user to fan out this pin.

LED2_Data Pin

1. When there are data transmiting and receiving, This LED will flashing. If there is no data transmit and receive, It will output High.

LED1_Link Pin

1. When Ethernet connected normal, It will output Low, If there is no Ethernet connection, It will output High.

2.3. Eport Pro-EP20-PIN Pins Definition

Figure 4. Eport Pro-EP20-PIN Pins Map

Table3. Eport Pro-EP20-PIN Pins Definition

Pin	Describtion	Net Name	Signal Type	Comments
1	Ground	GND	GND	Power Ground
2	Ground	GND	GND	Power Ground
3	External Reset In	nRST	I, PU	"Low" effective reset input.
4	UART0	TXD	O	3.3V, TTL.
5	UART0	RXD	I	3.3V, TTL.
6	UART0	RTS	I	Can be configured as RS485 control pin
7	Multi-Function Pin	nReload	I,PU	Detailed functions see <Notes>
8	UART0	CTS	O	Can be configured to GPIO
EGND	EGND	EGND	EGND	Earth GND, Used to shield EMC signal. Connect to Ethernet Metal Shell Internally. It is not allowed to connect to GND.

<Notes>

nReload Pin function: Same as above.

2.4. Electrical Characteristics

Table4.   Absolute Maximum Ratings:

Parameter	Condition	Min.	Typ.	Max.	Unit
Storage Temperature Range		-45		125	°C
Maximum Soldering Temperature	IPC/JEDEC J-STD-020			260	°C
Supply Voltage		0		3.8	V
Voltage on any I/O pin		0		3.3	V
ESD (Human Body Model HBM)	TAMB=25°C			2	KV
ESD (Charged Device Model, CDM)	TAMB=25°C			1	KV

Table5.   Power Supply & Power Consumption:

Parameter	Condition	Min.	Typ.	Max.	Unit
Operating Supply Voltage		3.1	3.3	3.6	V
Operating Temperature Range		-25		70	°C
Supply Current (10BASE-T activity)@ 96MHz	Without date transmit and receive		150		mA
Supply Current (100BASE-T activity)@ 96MHz	5KB/S data		200		mA
Input Leakage Current	Ii	-10		10	uA
Output high voltage	@IOH=2mA	2.8			V
Output Low Voltage	@IOL=2mA			0.3	V
Input High Voltage		1.6		3.6	V
Input Low Voltage		-0.3		1.4	V
GPIO Input pull-up resistor			200		kΩ
GPIO Input pull-down resistor			200		kΩ

2.5. Ethernet Interface

The 10/100 Ethernet magnetics, network status LEDs, and RJ45 connector are all integrated into the Eport Pro-EP20 Series unit.

Table6.   Ethernet Interface Definition

Pin	DES3cribtion	Net Name	Signal Type
1	Transmit Data +	TX+	O
2	Transmit Data -	TX-	O
3	Receive Data +	RX+	I
4	NC		
5	NC		
6	Receive Data -	RX-	I
7	NC		
8	NC		
9	Case Ground	SHIELD	

2.6. Ethernet LED Interface

The device contains two bi-color Ethernet LED indicator (Detailed postion is in dimension drawing .)

Table7.   LED Interface Definition

Link LED (Left Side)		Activity LED (Right Side)	
Color	Meaning	Color	Meaning
Off	No Connection	Off	No Data
Yellow	10/100Mbps	Green	Have Data

2.7. Eport Pro-EP20 Mechanical Size

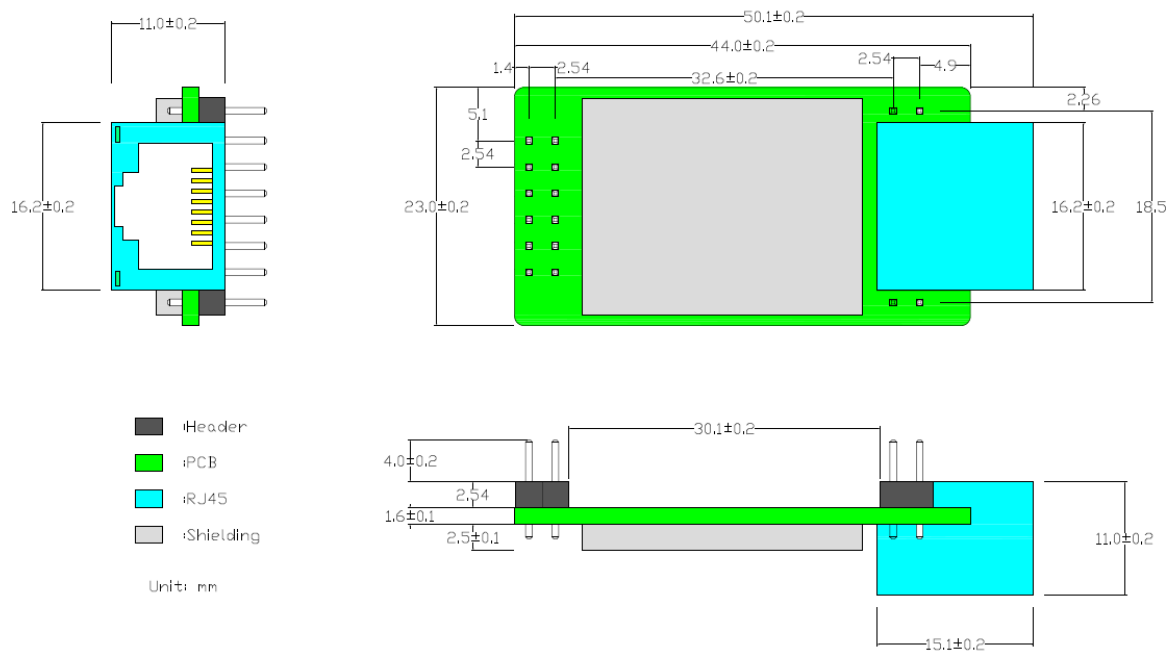The dimensions of Eport Pro-EP20 Series are defined as following picture (mm):

Figure 5.   Eport Pro-EP20 Series Mechanical Dimension

2.8. Eport Pro-EP20-PIN Mechanical Size

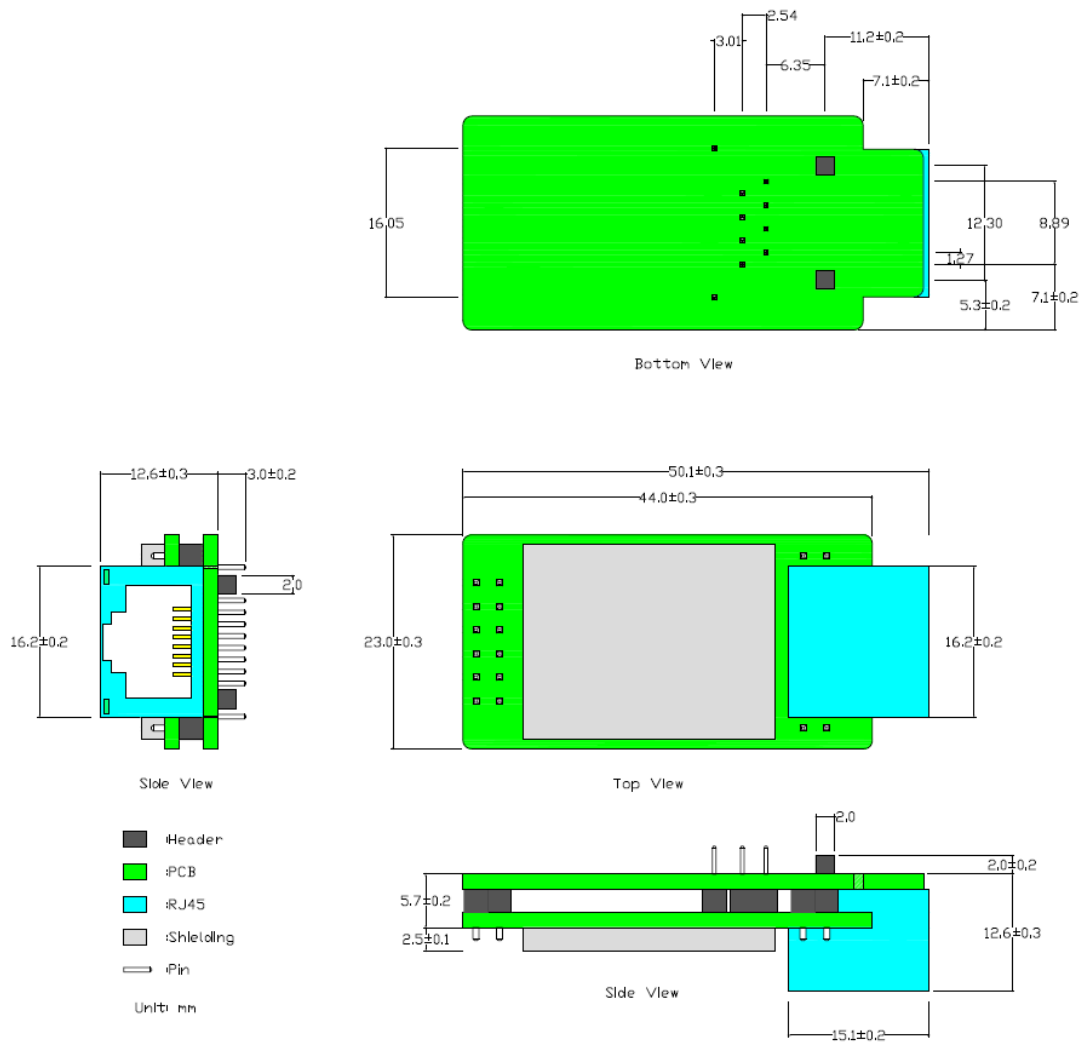The dimensions of Eport Pro-EP20-PIN are defined as following picture (mm):

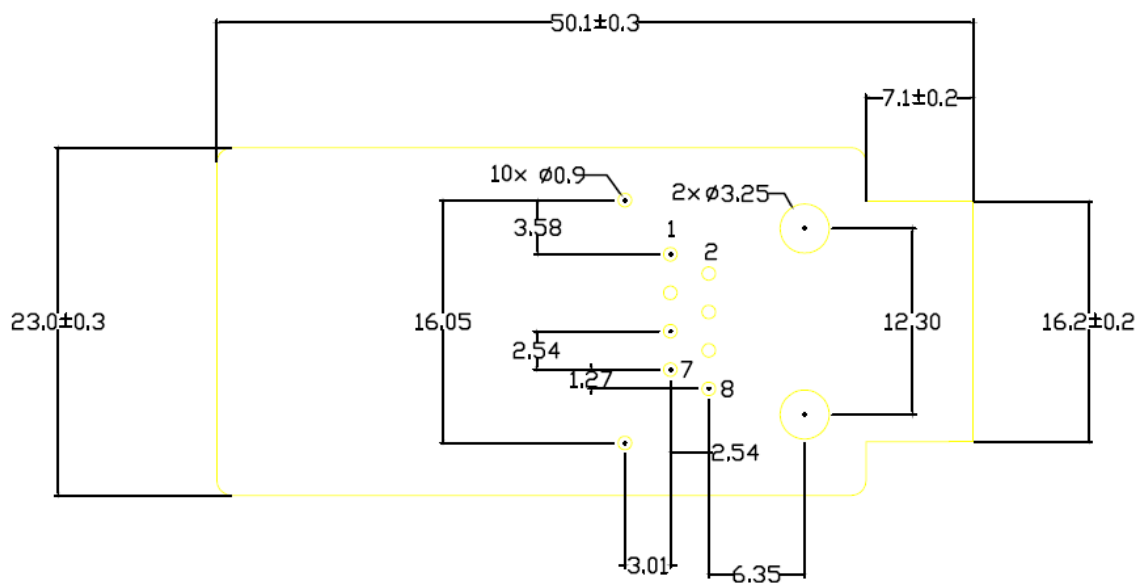Figure 6.   Eport Pro-EP20-PIN Mechanical Dimension

Figure 7.   Eport Pro-EP20-PIN recommended PCB layout

2.9. Evaluation Kits

We provide evaluation kit for user to learn to use Eport Pro-EP20 Series. Evaluation kit picture is as following, User can use RS232, USB Serial or Ethernet interface to configure parameters, manage equipment and do some function test. (onboard FT232R chip switch, its driver can be download from high flying website, When using USB Serial, the top right corner jumper need to all jump to the left side). .
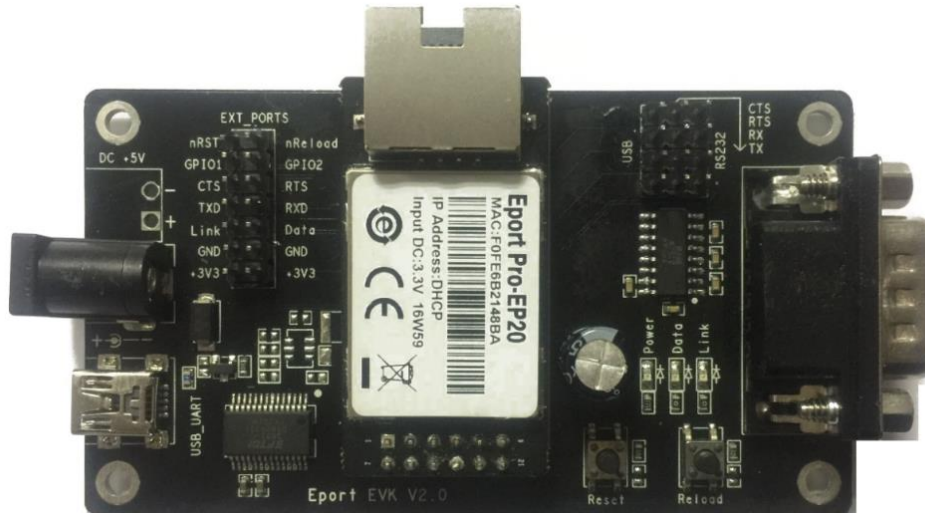

Figure 8.   Eport Pro-EP20 Series EVK

Evaluation kit interface details as following:

Table8.   Eport Pro-EP20 Series EVK Interface

Function	Name	Describe
External Interface	COM	Main data/command RS-232 interface
	USB_UART	UART to USB debug interface（Used for PC debug envirement which without RS232 interface, Need load drivers to use）, Can be power supply port
	DC5	DC 5V input
	EXT PORT	GPIO Pin interface
	JMP	4Pin USB or RS232 jumper. All jump to left choose USB Serial.. All jump to right choose RS232
LED	Power	3.3V Power Indicate
	Link	Network indicator, **Detailed functions see** LED1_Link Pin**<Notes>**
	Data	Communication indicator, **Detailed functions see** LED2_Data Pin**<Notes>**
Button	Reset	"Reset" Button
	Reload	Press down the button more than 3s and then loose to restore factory setting

2.10. Order Information

Base on customer detailed requirement, Eport Pro-EP20 Series provide different configuration version, Details as below:
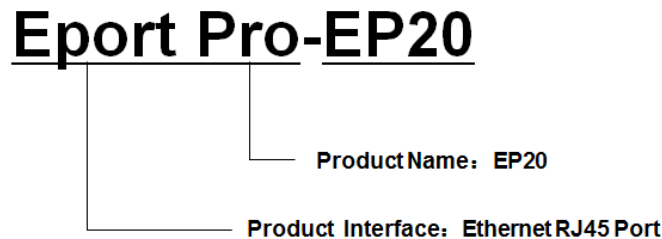

Figure 9.   Eport Pro-EP20 Series Product Number Defination
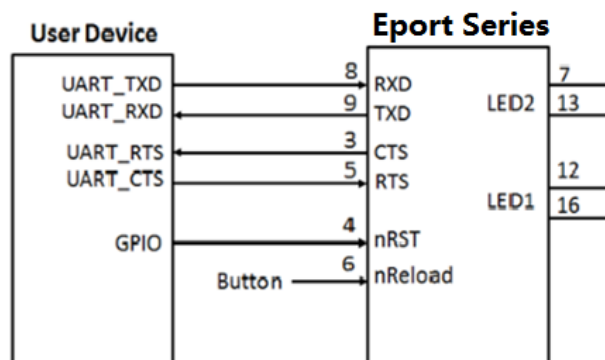
2.11. Typical Application

Figure 10.   Eport Pro-EP20 Series Hardware Typical Application

Notes:

nRST- Input.Hardware reset signal. Effective Low.

There is internal pull-up resistor to 3.3V and no external pull-up resistor needed. MCU put nRST signal to low for at least 10ms if need to reset the device.

nReload- Input.Device restore to factory default configuration. Effective Low; （**Recommend this pin to connect button or jumper header, Used for batch upgrade and configuration**）

Can connect with external button or chip pin, When press nReload button, pull the pin to Low level more than 3s, then loose, device will restore to factory default setting and restart itself. If nReload function is not required, Can leave this pin open, Don't need any connection.

TXD/RXD- UART port data transmit and receive signal.

2.12. Software Function

Refer to "IOT_Device_Series_Software_Funtion" document for detailed usage.
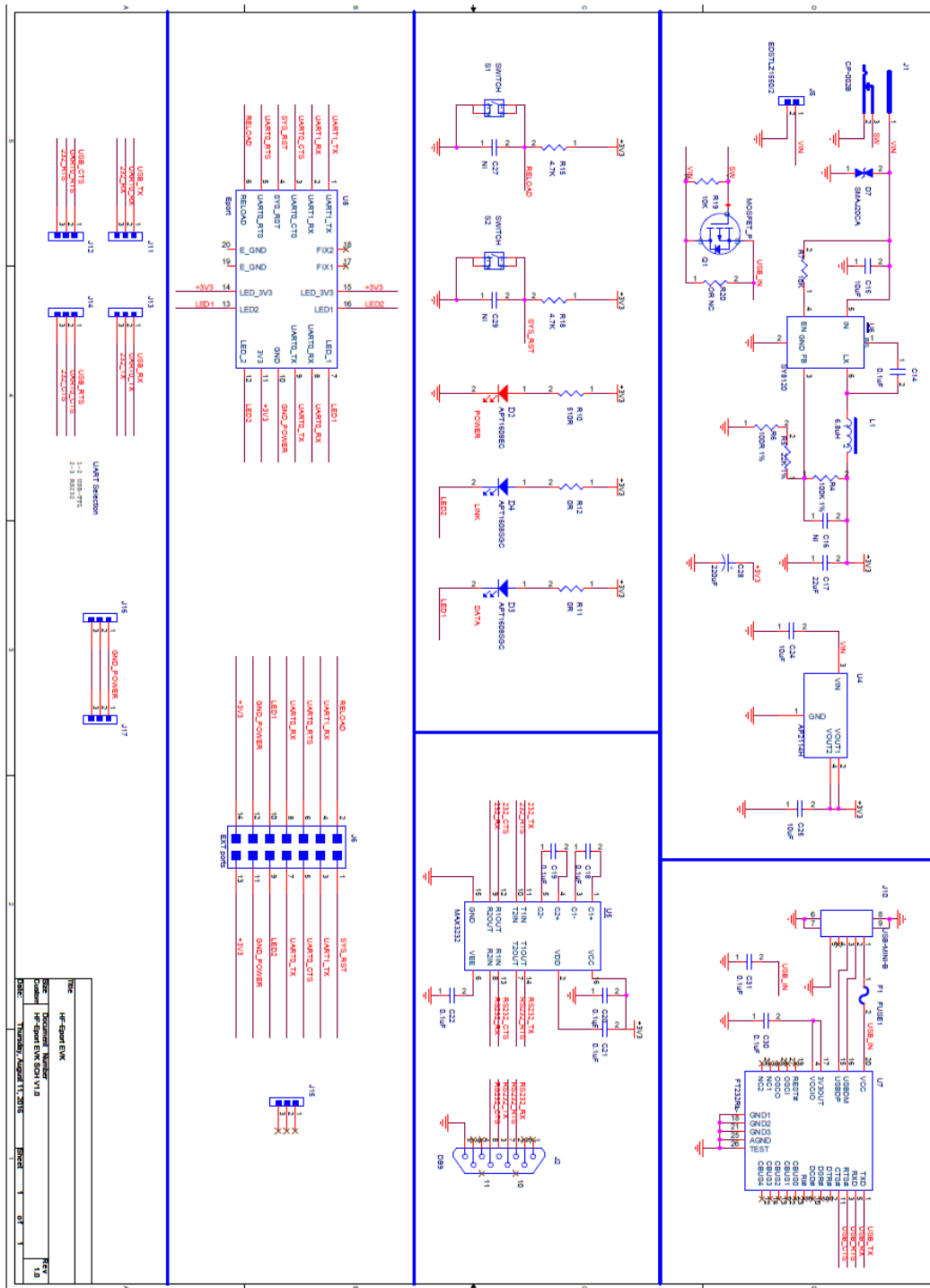
APPENDIX A: HW REFERENCE DESIGN

Figure 11.   HW REFERENCE DESIGN

Detailed Eport Pro Series Evaluation Board Design source files, pls access IOTworkshop or High-Flying web download page or contact with High-Flying technical support people to acquire.

APPENDIX B: CONTACT INFORMATION

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Area,Shanghai,China,201203
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