

# **User Manual and Test Guide**

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UART Fast Config

Rev1.0

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**History :**

2017-02-09 First Version

# 1. DEVELOPMENT KIT INTRODUCTION

Eport-E10 development kit is provided to help customer rapidly get used to how to develop the product. The following figure is to show its appearance. Customers are able to use RS232 UART interface or USB-invert-TTL interface for parameter configure, product management and function Test .etc.

Development Kit List:

- Eport-E10 Product : 1 Pcs
- Eport EVB : 1 Pcs
- Cable : 1 Pcs
- USB : 1 Pcs

			
1pcs Eport EVB	1~5pcs Eport-E10	1pcs USB线	1pcs 网线

Package box :



## 2. UART FAST CONFIG FUNCTION

Hardware Require: E10, EP10, EP20, HF5111A, HF5111B, HF2211

Software Require: E10/HF5111B : 1.07c

### 2.1. UART Fast Configure Command

Data packet is defined as following:

	Header	Command Type	Start Address	Content Length	Content
Length	11	1	1	1	n

- Header: Fixed "IOTWORKSHOP". Hex Format: 49 4F 54 57 4F 52 4B 53 48 4F 50
- Command Type:

Command Type	Function
0x00	Read Basic Parameters
0x01	Write Basic Parameters
0x02	Read Extended Parameters
0x03	Write Extended Parameters
0x04	Read NTP Parameters
0x05	Write NTP Parameters
0x06	Read Wi-Fi Parameters(Only for HF2211)
0x07	Write Wi-Fi Parameters( Only for HF2211)
0xXX	Reserved
0x20	Execute Reboot
0x21	Execute Restore to Factory Setting

- Read/Write Position: It stands for which byte to start read. Please refer to the parameter list, the position must read from the start position.
- Data Length: Length of the data during reading and writing.
- Data Content: During the read operation, there is no content. However, it represents writing content during write operation.

Device response:

1. According to read commands, device only responses the parameter content. If the read command is incorrect, no feedback.
2. According to write or execute commands, it suggested that at least one second or waiting until next writing command response, then send the next command. The response packet contain total packet protocol (header etc.) .When the data is one, which means writing successfully. Otherwise, it is incorrect.

a) Basic Parameter

Standard						
Directory	Address DEC	Address HEX	0 Byte	1 Byte	2 Byte	3 Byte
SYS/Network	0	0x00	ipaddr			
	4	0x04	gateway			
	8	0x08	dns			
	12	0x0C	dhcpen	pad		
UART	16	0x10	baudrate			
	20	0x14	databits	stopbits	parity	pad
	24	0x18	fcEn	swFcEn	xon	xoff
	28	0x1C	proto	tagEn	tagHead	tagTail
SOCK	32	0x20	proto	pad		
	36	0x24	desServerIP			
	40	0x28	desServerDomain(40)			
	...		...			
	80	0x50	remotePort		localPort	
	84	0x54	connectMode	security	keyLen	pad
	88	0x58	key(24)			
	...		...			
	112	0x70	keepalive			
	116	0x74	timeout			
	120	0x78	stopSerial(10)			
	124	0x7C	...			
	128	0x80	stopSerial		stopSerialLen	pad

The upper table is the format of parameter, high bits in front, each byte is explained specifically as follow:

- Pad: fixed 0x00

✧ SYS/Network Catalog

- Ipaddr: IP address, such as "0xC0 0xA8 0x00 0x64"(192.168.0.100)
- Gateway: Gateway address, such as"0xC0 0xA8 0x00 0x64"(192.168.0.100)
- DNS: DNS address, such as"0xC0 0xA8 0x00 0x64"(192.168.0.100)
- Dhcpen: DHCP client function, (0) disable, (1) enable

✧ UART Catalog

- Baud rate: 115200 default, the specific setting range is in Cli UART part.
- Databits: 8 bits default([EP\\_UART\\_DATABITS\\_8](#)), the setting range is as follow:

```
enum EP_UART_DATABITS
```

```
{
```

```

        EP_UART_DATABITS_5 = 0,
        EP_UART_DATABITS_6,
        EP_UART_DATABITS_7,
        EP_UART_DATABITS_8,
    };

```

- Stopbits: one bit default([EP\\_UART\\_STOPBITS\\_1](#)), setting range is as follow:

```

enum EP_UART_STOPBITS
{
    EP_UART_STOPBITS_1 = 0,
    EP_UART_STOPBITS_1_5,
    EP_UART_STOPBITS_2,
};

```

- parity: none default([EP\\_UART\\_PARITY\\_NONE](#)), setting range is as follow:

```

enum EP_UART_PARITY
{
    EP_UART_PARITY_NONE = 0,
    EP_UART_PARITY_EVEN,
    EP_UART_PARITY_ODD,
};

```

- fcEn: flow control, disable default, (0)disable,(1)enable hardware flow control,(2)enable half-duplex 485 function
- swFcEn: software flow control, disable default, (0)disable,(1)enable
- xon: enable data,0x11 default, range from 0 to 255
- xoff: disable data,0x13 default, range from 0 to 255
- proto: serial protocol, no protocol default([EP\\_UART\\_PROTO\\_NONE](#)), range is as follow

```

enum EP_UART_PROTO
{
    EP_UART_PROTO_NONE = 0,
    EP_UART_PROTO_MODBUS,
};

```

- tagEn: enable/disable tag function, disable default, (0)disable,(1)enable
- tagHead: tag header, 0x55 default, range from 0 to 255
- tagTail: tag tail, 0xAA default, range from 0 to 255

✧ SOCK catalog(Only according to created netp default, other customized socket cannot use quick config function)

- Proto: socket protocol, 0 default([EP SOCK\\_PROTO\\_TCPSERVER](#)), setting range is as follow:

```

enum EP SOCK_PROTO
{
    EP SOCK_PROTO_TCPSERVER= 0,
    EP SOCK_PROTO_TCPCLIENT,
};

```

```

    EP SOCK_PROTO_UDPSERVER,
    EP SOCK_PROTO_UDPCLIENT,
    EP SOCK_PROTO_HTTPC,
    EP SOCK_PROTO_TELNETD,
};

```

- destServerIP: destination IP address, it is invalid when the protocol is TCP Server(itself IP address is communication IP), IP address and domain name alternative. When set IP address, the content of domain is all zero. Otherwise, the IP data is zero
- desServerDomain: socket destination domain name. Either Domain name or IP address.
- remotePort: remote port
- localPort: local port
- connectMode: connect mode, zero default([EP SOCK\\_CONNECTMODE\\_ALWAYS](#)), introductions in Cli relative commands.

```

enum EP SOCK_CONNECTMODE
{
    EP SOCK_CONNECTMODE_ALWAYS    = 0,
    EP SOCK_CONNECTMODE_BURST,
};

```

- security: Encryption option types, zero default([EP SOCK\\_SECURITY\\_NONE](#)),16 bytes(AES), 24 bytes(DES)

```

enum EP SOCK_SECURITY
{
    EP SOCK_SECURITY_NONE    = 0,
    EP SOCK_SECURITY_AES,
    EP SOCK_SECURITY_DES,
    EP SOCK_SECURITY_TLS
};

```

- KeyLen: password length, 24 bytes maximum
- Keepalive: heartbeat time in TCP protocol,60 seconds default.
- Timeout: TCP timeout, 300 seconds default.
- stopSerial: TCP BURST mode stop bit
- stopSerialLen: TCP BURST mode , the length of stop bit

## b) Extended Parameter



Extended						
Directory	Address DEC	Address HEX	0 Byte	1 Byte	2 Byte	3 Byte
SYS/Network	0	0x00	user(30)			
	...		...			
	28	0x1C	user	pad		
	32	0x20	password(30)			
	...		...			
	60	0x3C	password	pad		
	64	0x40	hostname(30)			
	...		...			
	92	0x5C	hostname	pad		

✧ SYS/Network Catalog

- User: Show/Set webpage login or Telnet Cli command username(Appendix), 1~29 characters
- Password: Show/Set webpage login or Telnet Cli command password(Appendix), 1~29 characters
- Hostname: device hostname, hostname is the name appealed in router's DHCP list, 1~29 characters.

c) NTP Parameter

NTP Function						
Directory	Address DEC	Address HEX	0 Byte	1 Byte	2 Byte	3 Byte
NTP	0	0x00	ntpen	ntpport	ntptz	pad
	4	0x04	pad		pad	
	8	0x08	ntpserver(40)			
	...		...			
	48	0x30	pad (8)			
	...		...			
	56	0x38	YY	MM	DD	
	60	0x3C	HH	II	SS	WW

- Ntpen: NTP enable, disable default, (0)disable,(1)enable.
- Ntpport: NTP server port number, 123 default, range from 0 to 127

- Ntpztz: NTP time zone, zero default
- ntpServer: NTP server
- YY MM DD HH II SS WW: time information, specific information please see as follows, it only allows search not write.

YY YY MM DD HH II SS WW		
Data HEX Format		
1 <sup>st</sup>	YY	Year, high byte
2 <sup>nd</sup>	YY	Year, low byte
3 <sup>rd</sup>	MM	Month, 1~12
4 <sup>th</sup>	DD	Day,0~31
5 <sup>th</sup>	HH	Hour, 0~23
6 <sup>th</sup>	II	Minute, 0~59
7 <sup>th</sup>	SS	Second, 0~59
8 <sup>th</sup>	WW	Week, 1~7
For example, 2016-12-7 16:17:25 Wed		
The data is as follow:		
07 E0 12 07 10 11 19 03		

d) Wi-Fi Parameter

WIFI Function						
Directory	Address	Address	0	1		
	DEC	HEX	Byte	Byte	2 Byte	3 Byte
WIFI	0	0x00	mode	RSSI	AP entryption	STA entryption
	4	0x04	AP SSID(32)			
	36	0x24	AP KEY(64)			
	100	0x64	STA SSID(32)			
	132	0x84	STA KEY(64)			

#### ✧ WIFI Catalog

- Mode: AP mode default
- RSSI: signal strength connecting to router, read only.
- AP encryption: type of AP encryption
- STA encryption : type of STA encryption
- AP SSID: AP SSID
- AP KEY: 63 bytes maximum
- STA SSID: STA SSID
- STA KEY: 63 bytes maximum

## 3. UART FAST CONFIG EXAMPLE

### 3.1. Restart Command

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 20 00 00

49 4F 54 57 4F 52 4B 53 48 4F 50: Protocol Header IOTWORKSHOP

20: Command

00: Read Position 0

00: Data Length 0

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 20 00 01 01

01: Data Length 1

01: Data Content 1, execute successfully

### 3.2. Reload Command

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 21 00 00

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 21 00 00

### 3.3. Write/Read Baud Rate

- a) Read baud rate

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 00 10 04

Response: 00 01 C2 00 (115200)

- b) Write 9600 baud rate

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 10 04 00 00 25 80

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 10 01 01

- c) Write 115200 baud rate

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 10 04 00 01 C2 00

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 10 01 01

### 3.4. Write/Read Baud Rate

a) Read serial flow control

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 00 18 04

Response: 02 00 11 13

b) Write serial flow control, enable software flow control, xon is 0X11, xoff is 0x13

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 18 04 01 01 11 13

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 18 01 01

### 3.5. Write/Read UART Protocol

a) Read serial protocol

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 00 1C 04

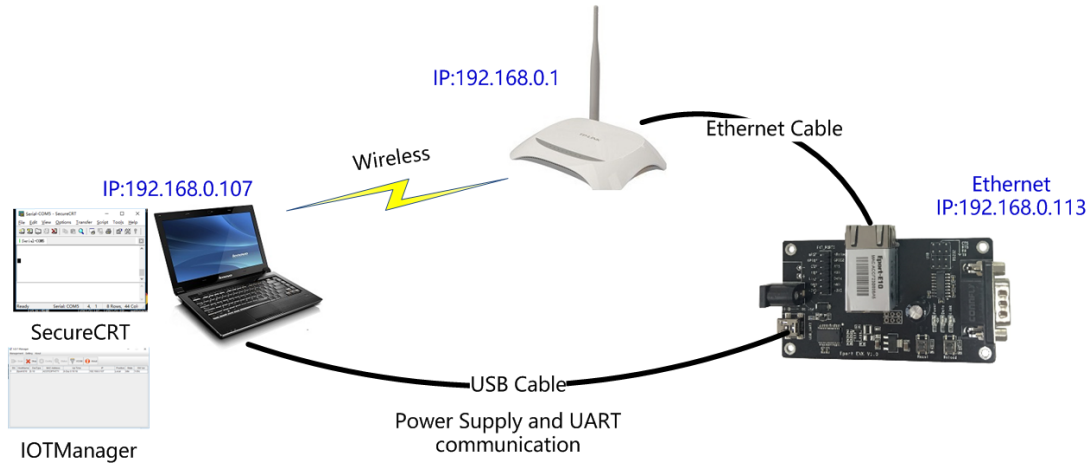
Response: 00 00 00 00

b) Enable Modbus function

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 1C 04 01 00 00 00

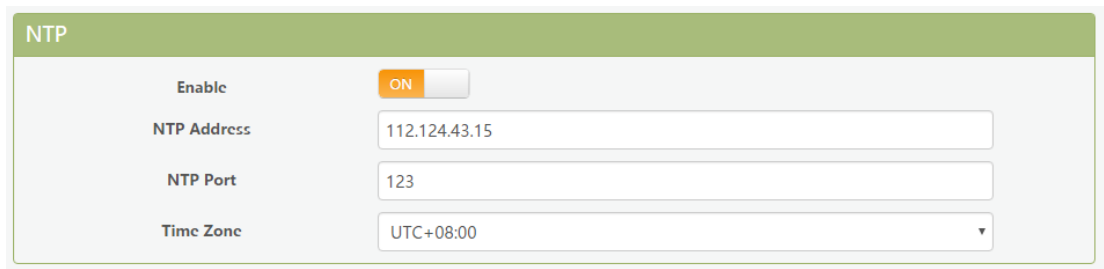
Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 01 1C 01 01

## 4. EVK TEST TOPOLOGY AND NTP FUNCTION



### 4.1. Open NTP Function

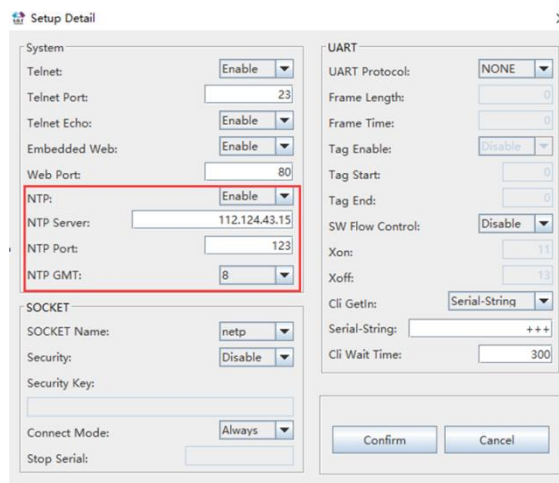
Solution 1: Input device IP(192.168.0.113) to open setting page, and click NTP function in "System Settings". Configure parameters as follow(The IP address is test NEP server)



The screenshot shows the 'NTP' configuration page. The 'Enable' toggle is turned 'ON'. The 'NTP Address' is set to '112.124.43.15', the 'NTP Port' is '123', and the 'Time Zone' is 'UTC+08:00'.

Field	Value
Enable	ON
NTP Address	112.124.43.15
NTP Port	123
Time Zone	UTC+08:00

Solution 2: IOTManager tool



The screenshot shows the 'Setup Detail' dialog box with the 'System' tab selected. The 'NTP' section is highlighted with a red box, showing the following configuration: 'NTP' is 'Enable', 'NTP Server' is '112.124.43.15', 'NTP Port' is '123', and 'NTP GMT' is '8'. Other sections like 'SOCKET' and 'UART' are also visible.

Section	Field	Value
System	Telnet	Enable
	Telnet Port	23
	Telnet Echo	Enable
	Embedded Web	Enable
	Web Port	80
	NTP	Enable
	NTP Server	112.124.43.15
	NTP Port	123
	NTP GMT	8
	SOCKET	SOCKET Name
UART	UART Protocol	NONE
	Frame Length	0
	Frame Time	0
	Tag Enable	Disable
	Tag Start	0
	Tag End	0
	SW Flow Control	Disable
	Xon	11
	Xoff	13
	Cli GetIn	Serial-String
Serial-String	+++	
Cli Wait Time	300	

Solution 3: Enter Cli command, config server information as follow

```
EPORT/SYS>NTP
Enable
Server:112.124.43.15
Port:123
GMT:8
EPORT/SYS>NTP Enable
Input NTP Server Address[112.124.43.15]:
Input NTP Server port[123]:
Input GMT[8]:
SET-OK
Try to connect NTP...
Success!
```

Solution 4: Serial quick setting

a)Read NTP relatively setting

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 04 00 40

Response: 00(NTP disable) 00(Port 0) 00(Time Zone 0) 00 00 00 00 00 00 00 00 00 00 00 00

00 00

00 00 00 00 00(NTP Server address) 00 00 00 00 00 00 00 00 07 B2(Year) 01(Month)

01(Day) 00(Hour) 00(Minute) 00(Second) 04(Week)

b)Set NTP relatively setting, enable NTP function, server address 112.124.43.15, port 123, time zone 8

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 05 00 30 01 7B 08 00 00 00 00 00 00 31 31 32 2E 31

32 34 2E 34 33 2E 31 35 00

00 00 00 00 00 00

Response: 49 4F 54 57 4F 52 4B 53 48 4F 50 05 00 01 01

## 4.2. Acquire NTP Time

Send: 49 4F 54 57 4F 52 4B 53 48 4F 50 04 38 08

Response: 07 E1 02 09 11 2D 34 04

The format is as follow:

YY YY MM DD HH II SS WW

Data HEX format

1 <sup>st</sup>	YY	Year, high byte
2 <sup>nd</sup>	YY	Year, low byte
3 <sup>rd</sup>	MM	Month, 1~12
4 <sup>th</sup>	DD	Day,0~31
5 <sup>th</sup>	HH	Hour, 0~23
6 <sup>th</sup>	II	Minute, 0~59
7 <sup>th</sup>	SS	Second, 0~59
8 <sup>th</sup>	WW	Week, 1~7

Response : 07 E1 02 09 11 2D 34 04

Real time is 2017-2-9 17:45:52 Thur



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## APPENDIX: 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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