Elfin-EW1X

RS232/RS485 to Wi-Fi

User Manual

V 1.0

Overview of Characteristic

- ✧ **Support 802.11bgn Wireless Standard**
- ✧ **Support TCP/UDP/Telnet /Modbus TCP Protocol**
- ✧ **Support RS232/RS485 to Ethernet/Wi-Fi Conversion, Serial Speed Upto 460800 bps**
- ✧ **Support STA/AP/AP+STA Mode**
- ✧ **Support Smartlink V8 Smart Config(Provide APP)**
- ✧ **Support Easy Configuration Through Web Interface or PC IOTService Tool**
- ✧ **Support Security Protocol Such As TLS/AES/DES3**
- ✧ **Support Web OTA Wirelss Upgrade**
- ✧ **Support Internal PCB Antenna**
- ✧ **Wide DC Input 5~18VDC**
- ✧ **Size: 61 x 26 x 17.8 mm (L x W x H)**
- ✧ **FCC/CE/SRRC Certificated**

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1. PRODUCT OVERVIEW

1.1. General Description

The Elfin-EW1X provides RS232/RS485 interface to Wi-Fi connectivity. The Elfin-EW1X integrate TCP/IP controller, memory, high-speed serial port and integrates a fully developed TCP/IP network stack and mbed OS.The Elfin-EW1X also support remotely configure, monitor with IOTService.

The Elfin-EW1X 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 Elfin-EW1X integrates all serial to Ethernet functionality with 61 x 26 x 17.8mm size.

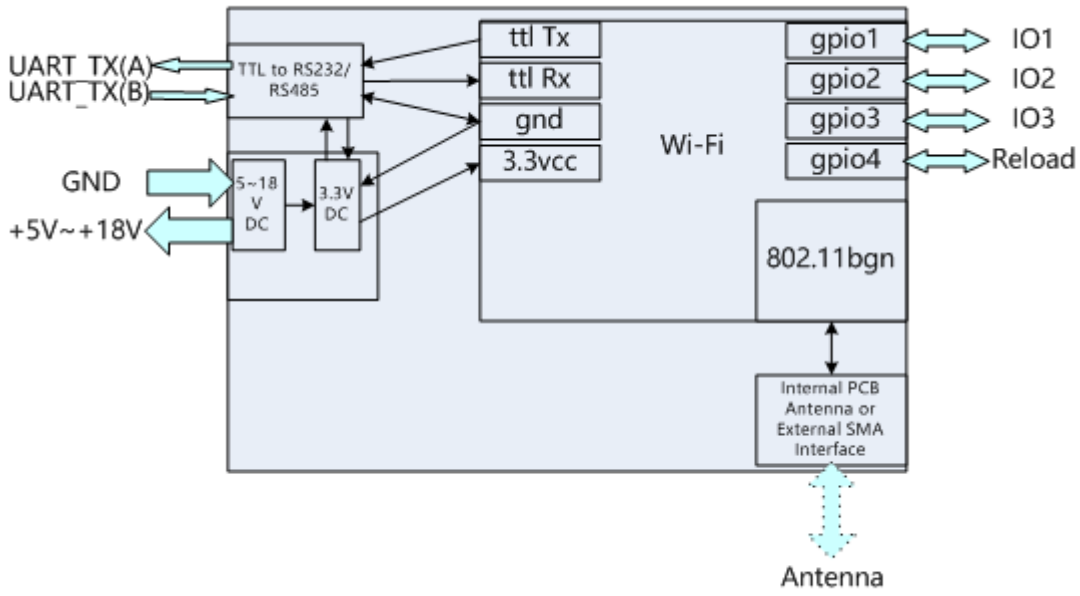

Figure 1. Elfin-EW1X Internal Structure

1.2. Device Paremeters

Table 1. Elfin-EW1X Technical Specifications

Item	Parameters
System Information	
Processor/Frequency	160MHz
Flash/SDRAM	2MB/448KB
Operating System	mbed
网络协议	
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
Wi-Fi Interface	
Standard	802.11 b/g/n
Frequency	2.412GHz-2.484GHz
Network Mode	STA/AP/STA+AP
Security	WEP/WPAPSK/WPA2PSK
Encryption	WEP64/WEP128/TKIP/ AES
Tx Power	802.11b: +18dBm(Max.) 802.11g: +16dBm(Max.) 802.11n: +15dBm(Max.)
Rx Sensitive	802.11b: -89dBm 802.11g: -81dBm 802.11n: -71dBm
Antenna	Internal:PCB
Serial Port	
Port Number	EE10：1 RS232 EE11：1 RS485
Data Bits	7,8
Stop Bit	1,2
Check Bit	None,Even,Odd
Baud Rate	TTL: 600 bps~460800 bps
Flow Control	No Flow control 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
Basic Parameter	
Size	61 x 26 x 17.8 mm
Operating Temp.	-40 ~ 85°C

Storage Temp.	-45 ~ 105°C, 5 ~ 95% RH（no condensation）
Input Voltage	5~18VDC
Working Current	~200mA
Power	<700mW
Other Information	
Certificate	FCC/CE/SRRC/RoHS

1.3. Key Application

The Elfin-EW1X 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 Elfin-EW1X unit is a complete solution for serial port device connecting to network. This powerful device supports 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.
Elfin-EW1X serial server for data transfer via Wi-Fi, which makes the data transformation very simple.

Figure 1. Elfin-EW1X Appearance

Figure 1. Elfin-EW1X Appearance

2.1. Elfin-EW10 Pins Definition

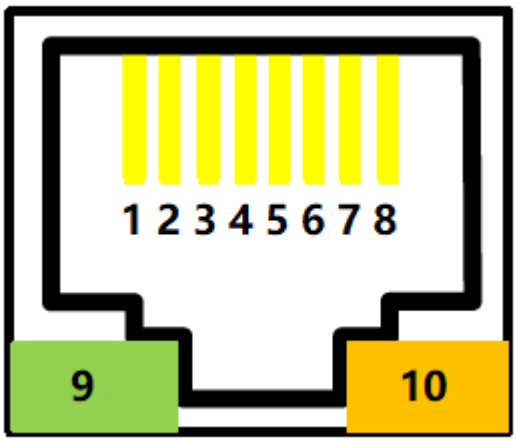

Figure 2. Elfin-EW10 RJ45 Interface Pin

Table1. Elfin-EW10 Interface Definition

Pin	Description	Net Name	Signal Type	Comment
1	GPIO	GPIO	IO	Reserved
2	GPIO	GPIO	IO	Reserved
3	GPIO	GPIO	IO	Reserved
4	Restore to Factory	nReload	I	**Default pulled-high.** **Detailed functions see <Notes>**
5	UART1_TXD	UART1_TXD	O	RS232
6	UART1_RXD	UART1_RXD	I	RS232
7	Power VCC	VCC	Power	5～18VDC
8	Power GND	GND	Power	
9	Data Transfer LED	Active	O	Off: No data transfer 0.3s Off -> 1.5s On: UART to Socket: 0.3s Off -> 0.3s On: Socket to UART On: Both direction.
10	Net Status LED	Net	O	On:Bootup OK. 0.3s Off -> 0.9s On:Smartlink Config Mode 0.3s Off -> 3s On: STA mode connect to router or AP mode being connected by other STA. 0.3s Off ->0.3s On: Communication socket has been established.

2.2. Elfin-EW11 Pins Definition

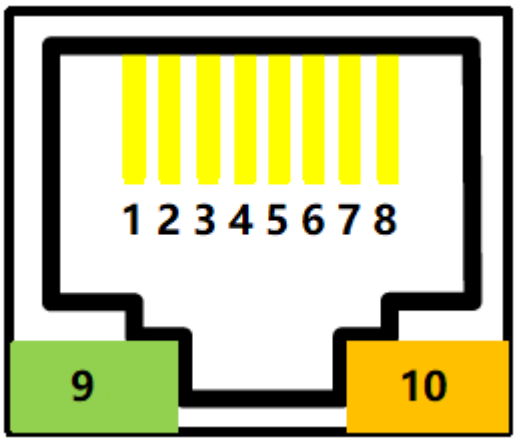

Figure 3. Elfin-EW11 RJ45 Interface Pin

Table2. Elfin-EW11 Interface Definition

Pin	Description	Net Name	Signal Type	Comment
1	Debug TX	UART2_TXD	O	TTL voltage

Pin	Description	Net Name	Signal Type	Comment
2	Debug RX	UART2_RXD	I	TTL voltage
3	GPIO	GPIO	IO	Reserved
4	Restore to Factory	nReload	I	**Default pulled-high.** **Detailed functions see <Notes>**
5	UART1_TXD	RS485_A+	IO	RS485 A+
6	UART1_RXD	RS485_B-	IO	RS485 B-
7	Power VCC	VCC	Power	5～18VDC
8	Power GND	GND	Power	
9	Data Transfer LED	Active	O	Off: No data transfer 0.3s Off -> 1.5s On: UART to Socket: 0.3s Off -> 0.3s On: Socket to UART On: Both direction.
10	Net Status LED	Net	O	On:Bootup OK. 0.3s Off -> 0.9s On:Smartlink Config Mode 0.3s Off -> 3s On: STA mode connect to router or AP mode being connected by other STA. 0.3s Off ->0.3s On: Communication socket has been established.

<Notes>

I — Input; O — Output; I/O: Digital I/O; Power—Power Supply

nReload Pin (Button) function：

1. **After module is powered up, short press this button ("Low" < 1.5s) and loose to make the module go into "Smart Link " config mode, waiting for APP to set password and other information. (See Appendix to download SmartLink APP)**
2. **After module is powered up, long press this button ("Low" > 4s) and loose to make the module recover to factory setting.**

UART1 Debug ：

1. **Is used for debug log or firmware program. Baud Rate is 921600.**

2.3. RS232 Interface

Device RS232 does not support hardware flow control. The physical voltage is about ±7V.

2.4. 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.

2.5. Mechanical Size

The dimensions of Elfin-EW1X are defined as following picture (mm):

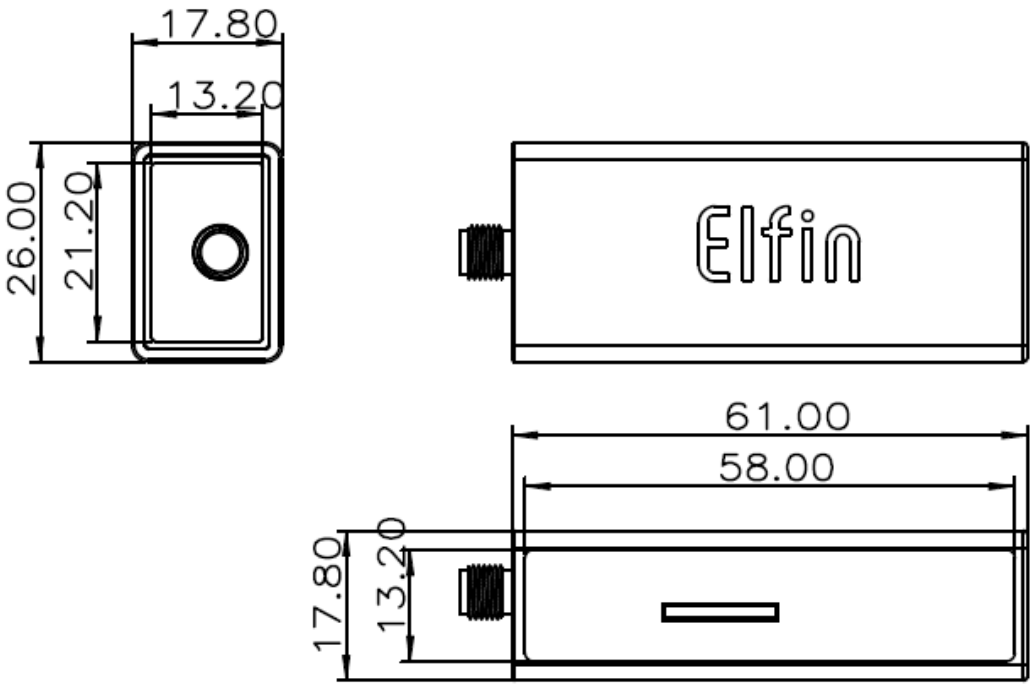

Figure 7. Elfin-EW1X Mechanical Dimension

2.6. Order Information

Base on customer detailed requirement, Elfin-EW1X provide different configuration version, Details as below:

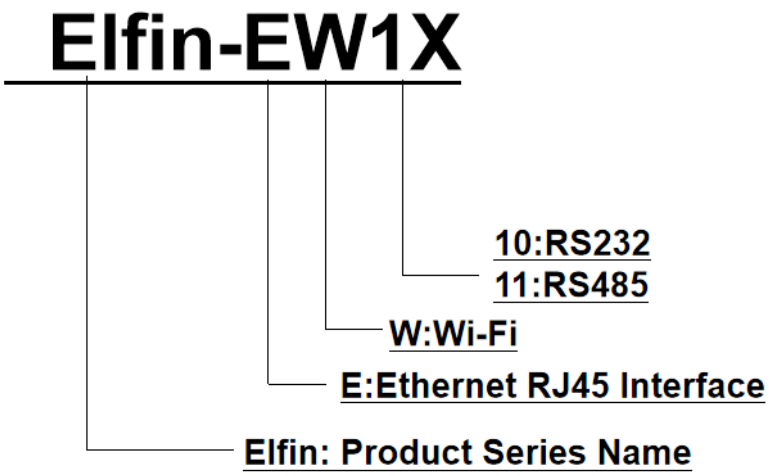

Figure 9. Elfin-EW1X Product Order Information

2.7. RJ45 Transform Connector

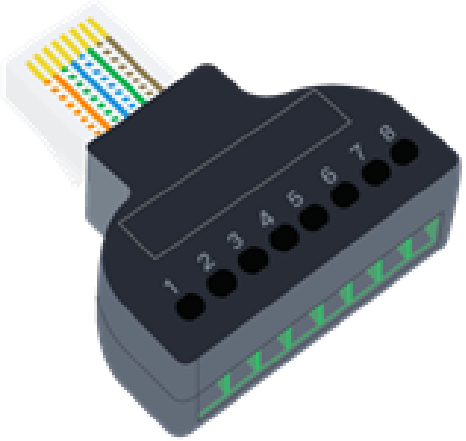

Figure 4. RJ45 Transform Connector

2.8. Product Connection

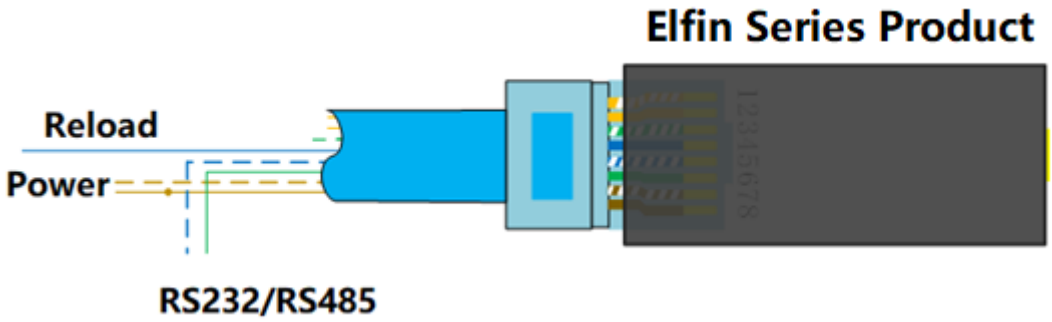

Figure 5. Product Connection

2.9. Product Installation

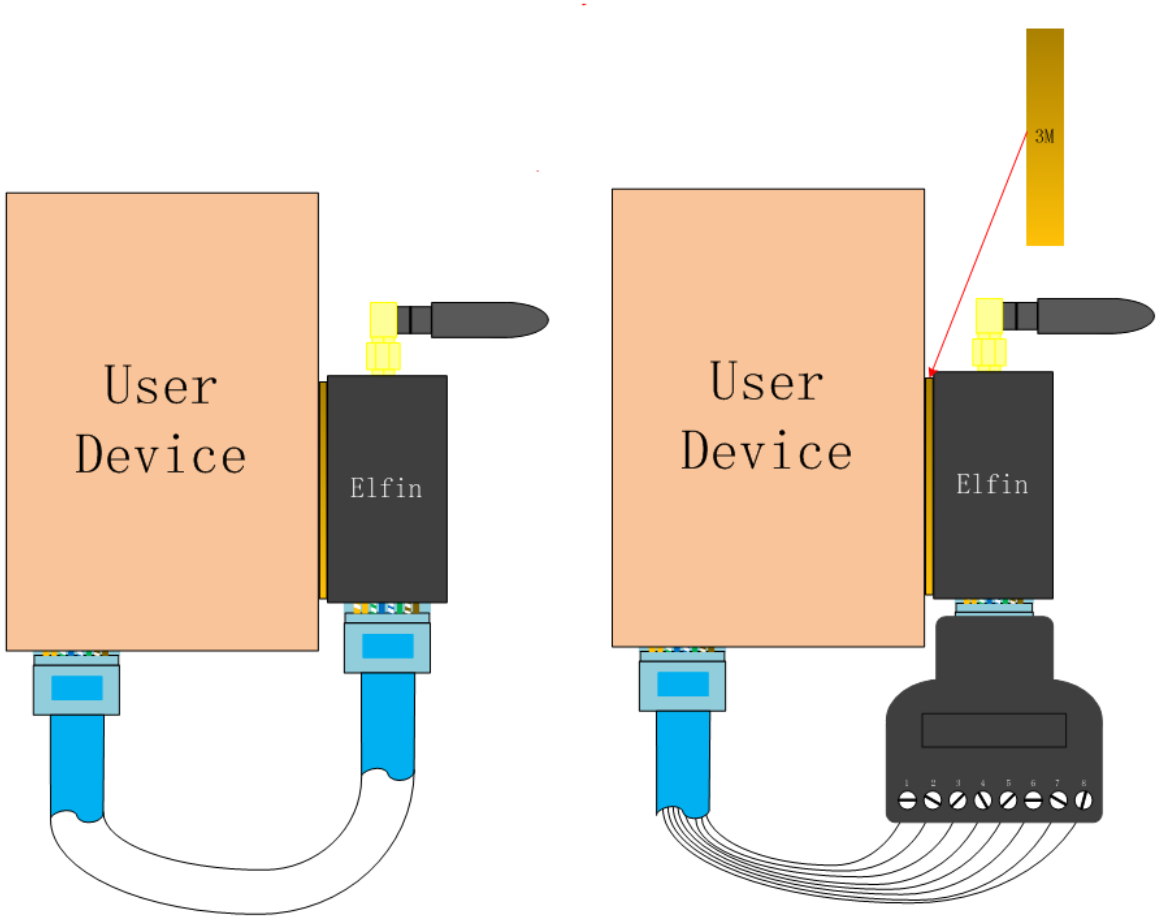

Figure 6. Product Installation

APPENDIX A: CONTACT INFORMATION

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