

# Elfin-EW1X

## RS232/RS485 to Wi-Fi

### User Manual

V 1.1



## Overview of Characteristic

- ✧ Support 802.11bgn Wireless Standard
- ✧ Support TCP/UDP/Telnet /Modbus TCP Protocol
- ✧ Support RS232/RS485 to Wi-Fi Conversion, Serial Speed Up to 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 Webpage 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/IC Certificated

## TABLE OF CONTENTS TABLE OF CONTENTS

<b>TABLE OF CONTENTS TABLE OF CONTENTS .....</b>	<b>2</b>
<b>LIST OF FIGURES.....</b>	<b>3</b>
<b>LIST OF TABLES .....</b>	<b>4</b>
<b>HISTORY.....</b>	<b>4</b>
<b>1. PRODUCT OVERVIEW.....</b>	<b>5</b>
1.1. General Description .....	5
1.2. Device Parameters .....	6
1.3. Key Application .....	7
<b>2. HARDWARE INTRODUCTION .....</b>	<b>8</b>
2.1. Elfin-EW10 Pins Definition .....	8
2.2. Elfin-EW11 Pins Definition .....	9
2.3. RS232 Interface .....	10
2.4. RS485 Interface .....	10
2.5. Mechanical Size .....	11
2.6. RJ45 8PIN Connector .....	11
2.7. RJ45 4PIN Connector .....	12
2.8. Interface Conversion Cable .....	13
2.9. Fixed Bracket .....	14
2.10. Rail Bracket .....	14
2.11. Bracket.....	15
2.12. Product Installation .....	16
2.13. EVK.....	16
2.14. Order Information .....	17
<b>APPENDIX A: CONTACT INFORMATION .....</b>	<b>18</b>

## LIST OF FIGURES

Figure 1.	Elfin-EW1X Internal Structure .....	5
Figure 2.	Elfin-EW10 Appearance.....	8
Figure 3.	Elfin-EW11 Appearance.....	8
Figure 4.	Elfin-EW10 RJ45 Interface Pin .....	9
Figure 5.	Elfin-EW11 RJ45 Interface Pin .....	9
Figure 6.	Elfin-EW1X Mechanical Dimension .....	11
Figure 7.	RJ45 8PIN Connector.....	11
Figure 8.	EW10 +8PIN Connector .....	12
Figure 9.	EW11+8PIN Connector .....	12
Figure 10.	RJ45 4PIN Connector.....	12
Figure 11.	EW10 +4PIN Connector .....	13
Figure 12.	EW11+4PIN Connector .....	13
Figure 13.	Interface Conversion Cable .....	14
Figure 14.	Cable Manufacture Guide.....	14
Figure 15.	Fixed Bracket.....	14
Figure 16.	Rail Bracket .....	15
Figure 17.	Bracket Size.....	15
Figure 18.	Bracket Install Picture .....	15
Figure 19.	Product Installation .....	16
Figure 20.	EVK Package.....	17
Figure 21.	Elfin-EW1X Product Order Information .....	17

## LIST OF TABLES

Table1.	Elfin-EW1X Technical Specifications .....	6
Table2.	Elfin-EW10 Interface Definition .....	9
Table3.	Elfin-EW11 Interface Definition .....	9

## HISTORY

<b>Ed. V1.0</b>	07-04-2018	First Version
<b>Ed. V1.1</b>	09-18-2018	Fix LED description. Add more attachment description.

# 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. 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 Wi-Fi functionality with 61 x 26 x 17.8mm size.

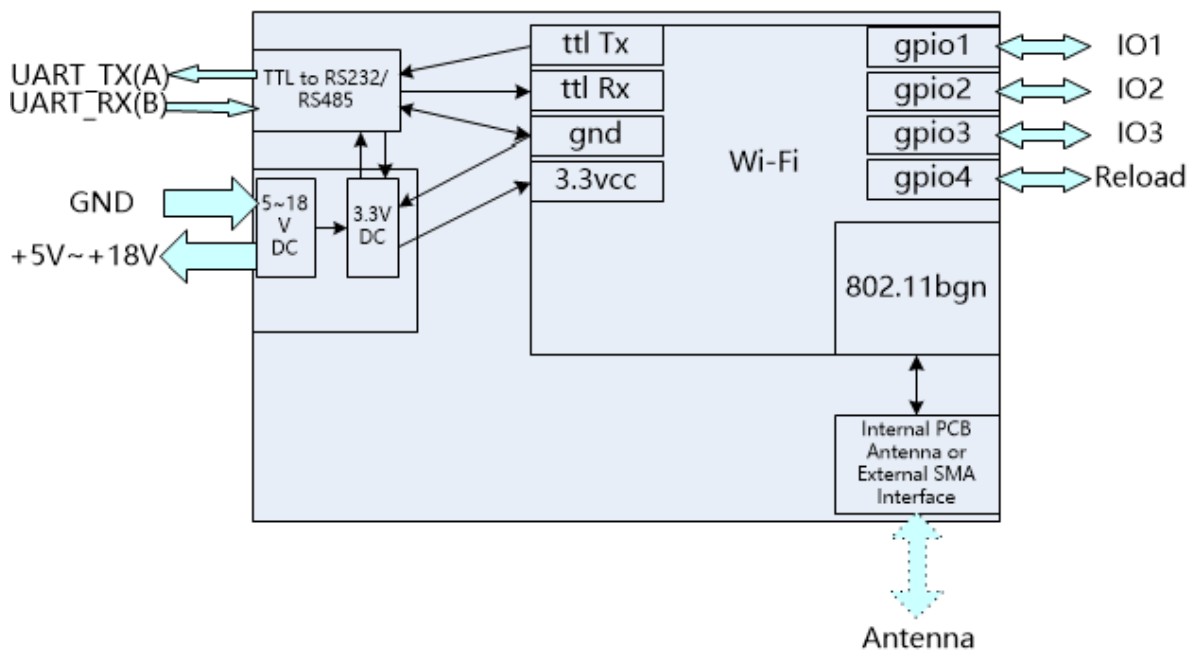


Figure 1. Elfin-EW1X Internal Structure

## 1.2. Device Parameters

Table1. Elfin-EW1X Technical Specifications

Item	Parameters
<b>System Information</b>	
Processor/Frequency	160MHz
Flash/SDRAM	2MB/352KB
Operating System	mbed
<b>网络协议</b>	
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>Wi-Fi Interface</b>	
Standard	802.11 b/g/n
Frequency	2.412GHz-2.484GHz
Network Mode	STA/AP/STA+AP
Security	WEP/WPA/PSK/WPA2/PSK
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
<b>Serial Port</b>	
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 Half Flow Control (RS485) 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
<b>Basic Parameter</b>	
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
<b>Other Information</b>	
Certificate	FCC/CE/SRRC/RoHS

### 1.3. Key Application

The Elfin-EW1X device connects serial device to 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 2. Elfin-EW10 Appearance



Figure 3. Elfin-EW11 Appearance

### 2.1. Elfin-EW10 Pins Definition

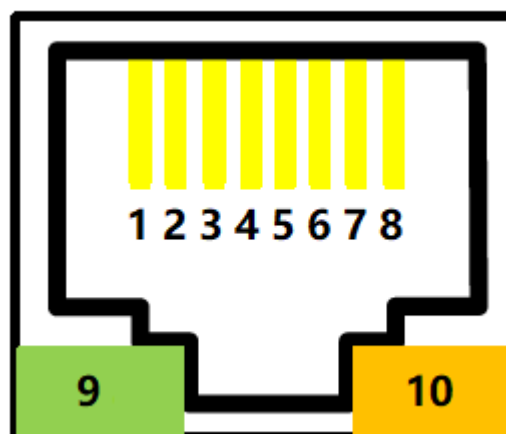




Figure 4. Elfin-EW10 RJ45 Interface Pin

Table2. 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 Voltage
6	UART1_RXD	UART1_RXD	I	RS232 Voltage
7	Power VCC	VCC	Power	5~18VDC
8	Power GND	GND	Power	
9	Green LED Net Status	Net	O	Boot On: Power is OK. 0.1s Off -> 0.1s 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: No Wi-Fi Connection
10	Amber LED Data Transfer	Active	O	Off: No data transfer 0.3s Off -> 0.9s On: UART TX Output 0.3s Off -> 0.3s On: UART RX Receive On: UART bidirection.

## 2.2. Elfin-EW11 Pins Definition

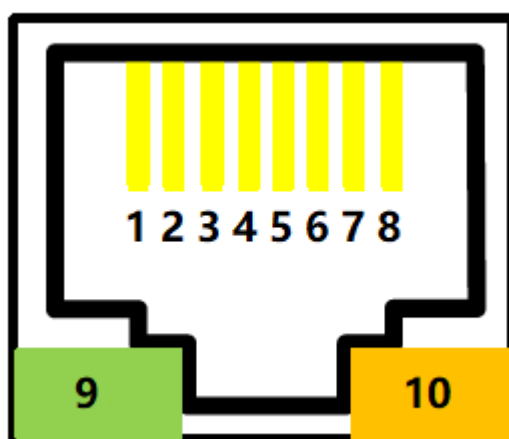


Figure 5. Elfin-EW11 RJ45 Interface Pin

Table3. 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	Green LED Net Status	Net	O	Boot On: Power is OK. 0.1s Off -> 0.1s 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: No Wi-Fi Connection
10	Amber LED Data Transfer	Active	O	Off: No data transfer 0.3s Off -> 0.9s On: UART TX Output 0.3s Off -> 0.3s On: UART RX Receive On: UART bidirection.

## &lt;Notes&gt;

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 (0.2< “Low” <1.5s) and loose to make the module go into “SmartLink” 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  $\pm 7V$ .

## 2.4. RS485 Interface

RS485 use two wire links, A(DATA+), B(DATA-). Connect A(+) to A(+), B(-) to B(-) for communication. Suggest to connect GND together when interference is very severe.

The RS485 interface support maximum 32 485 device, 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):

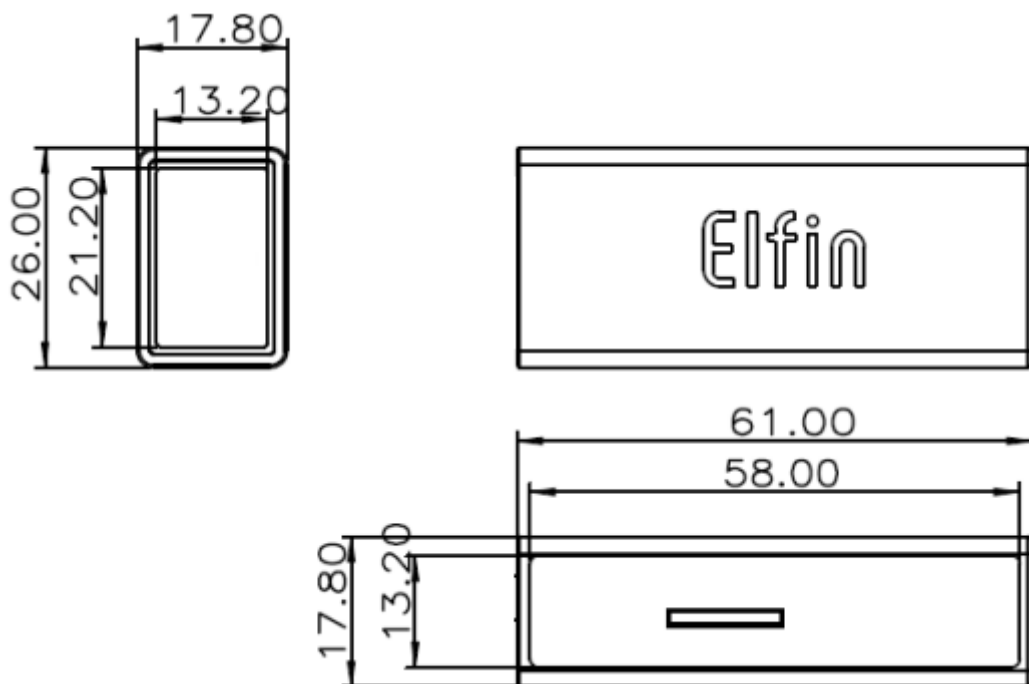


Figure 6. Elfin-EW1X Mechanical Dimension

## 2.6. RJ45 8PIN Connector

RJ45 8PIN Connector Type Order: 10810001001



Figure 7. RJ45 8PIN Connector



Figure 8. EW10 +8PIN Connector



Figure 9. EW11+8PIN Connector

## 2.7. RJ45 4PIN Connector

RJ45 4PIN Connector Type Order: 10810001002



Figure 10. RJ45 4PIN Connector



Figure 11. EW10 +4PIN Connector



Figure 12. EW11 +4PIN Connector

## 2.8. Interface Conversion Cable

Cable Type Order: 10A01SJ0008

Cable Specification: Crystal head to button, DB9 female header, 3PIN RS485(A+/GND/B-), DC Adapter Interface (5.5mm x 2.1mm hole), 500mm length.



Figure 13. Interface Conversion Cable

May also make cable according to the following picture.

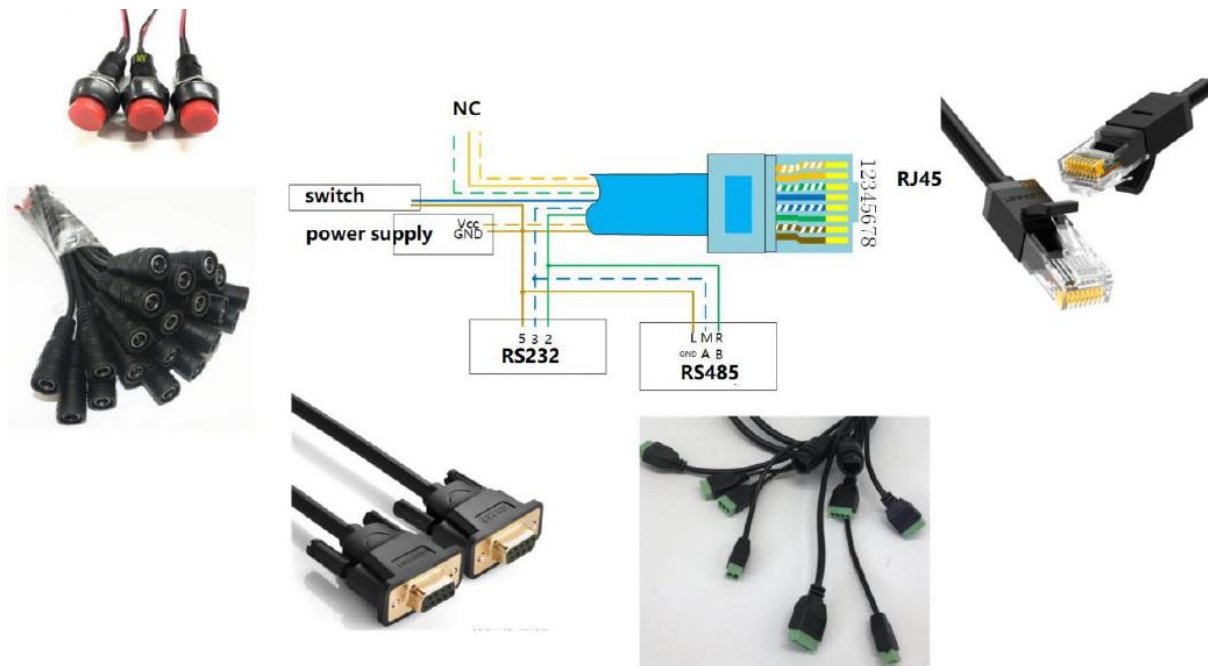


Figure 14. Cable Manufacture Guide

## 2.9. Fixed Bracket

Bracket Type Order: 10810003001



Figure 15. Fixed Bracket

## 2.10. Rail Bracket

Bracket Type Order: 10703000003



Figure 16. Rail Bracket

## 2.11. Bracket

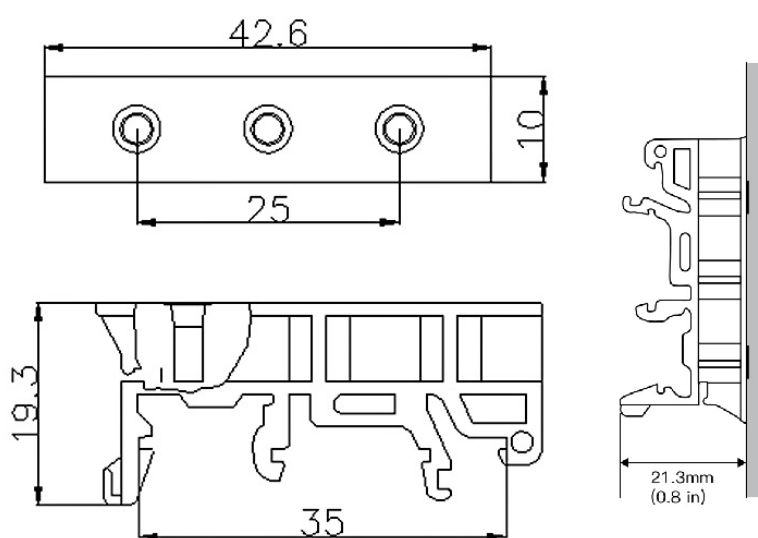


Figure 17. Bracket Size

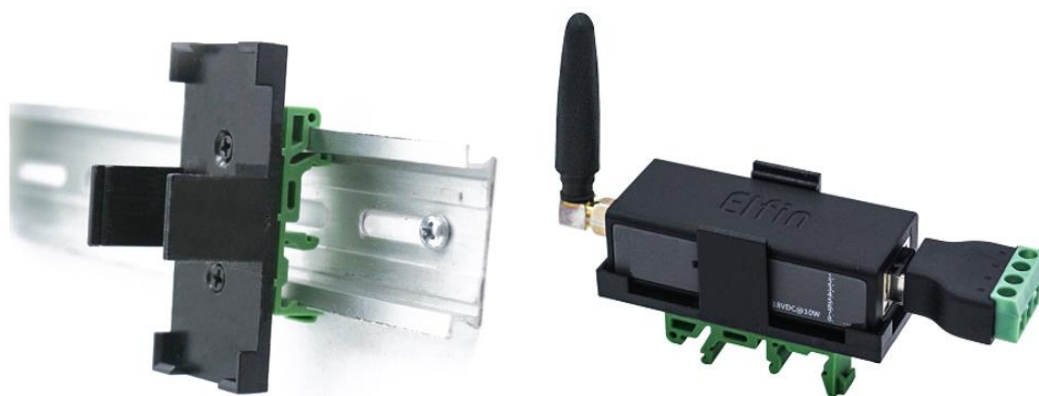


Figure 18. Bracket Install Picture

## 2.12. Product Installation

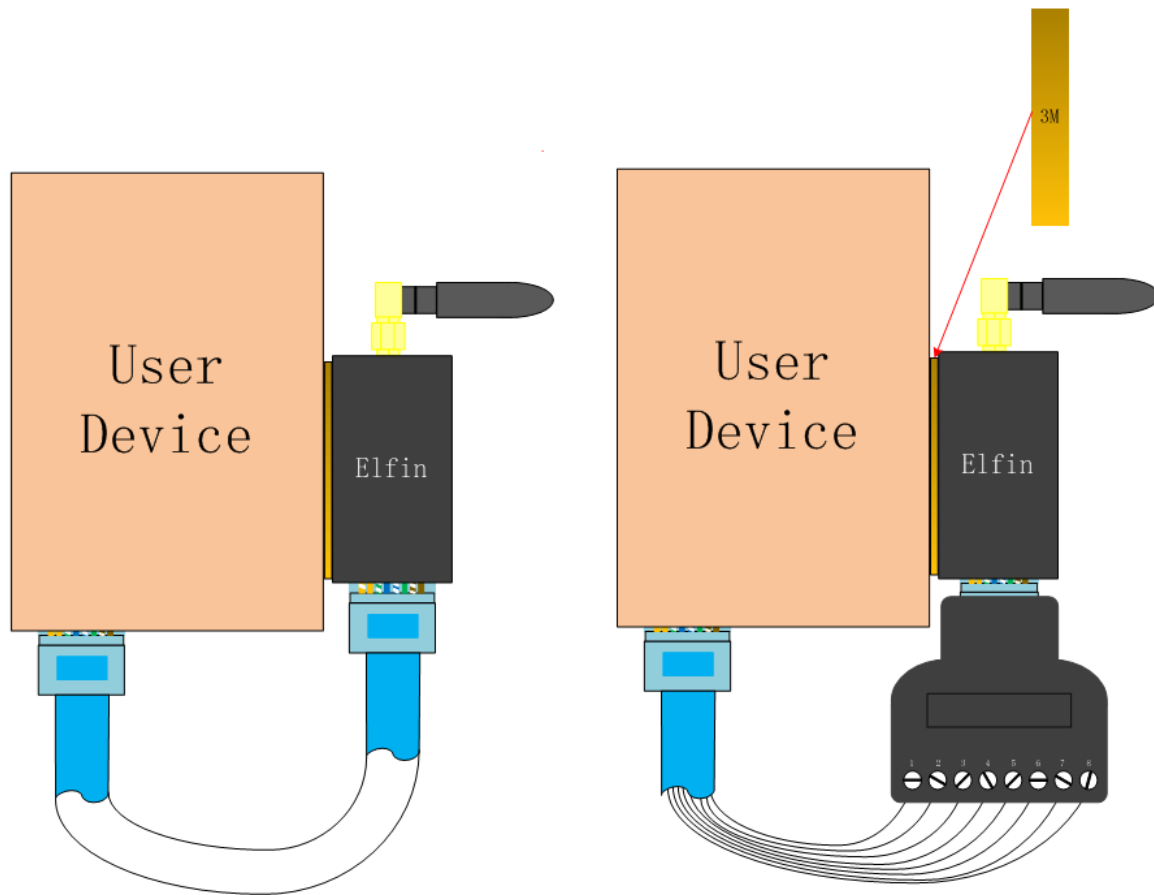


Figure 19. Product Installation

## 2.13. EVK

EVK include one Elfin device, one RJ45 Connector and one screw driver.





Figure 20. EVK Package

## 2.14. Order Information

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

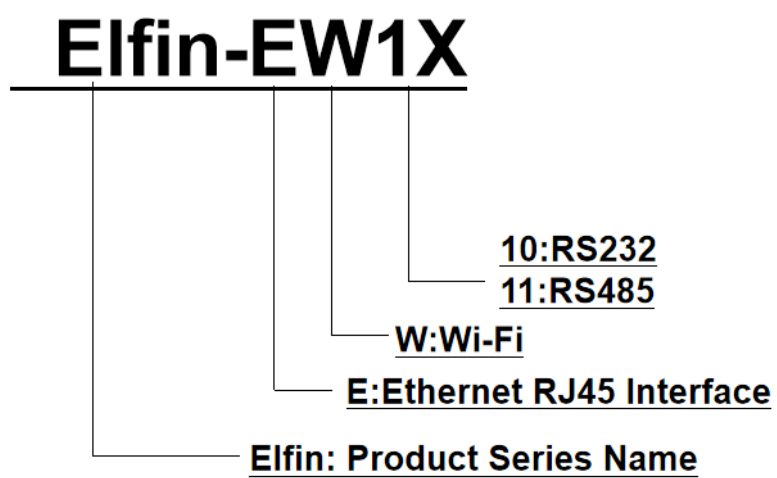


Figure 21. Elfin-EW1X Product Order Information

## APPENDIX A: CONTACT INFORMATION

---

**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

Support: support@iotworkshop.com

Service: service@iotworkshop.com

Business: business@iotworkshop.com

---

For more information about IOTworkshop modules, applications, and solutions, please visit our web  
site [www.iotworkshop.com](http://www.iotworkshop.com)

**<END OF DOCUMENT>**