Solar Plug-UWB1

RS232 To Wi-Fi+BLE Collector

User Manual

V 1.1

Product Features

✧ **Supports WiFi 802.11b/g/n wireless standards**

✧ **Adopting RISC architecture SOC chip, with a maximum frequency of 160MHz, 276KB RAM, 2MB Flash, based on FreeRTOS system**

✧ **Support BLE 5.0 for diagnostic or local Bluetooth debugging and data collection functions**

✧ **Supports RS232 to WiFi data transmission, with a maximum serial port speed of 460800bps**

✧ **Support photovoltaic energy management platforms, web pages or apps to monitor energy data**

✧ **Power supply: 5-12VDC**

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V 1.0 2023-08-16 first edition

V 1.1 2023-11-28 Update appearance, size, add UWB1-50 and UWB1-51 type

1. PRODUCT OVERVIEW

1.1. Overview

The Solar Plug-UWB1 acquisition rod adopts a WiFi+BLE data transmission method, which facilitates the collection and monitoring of data from inverters, energy storage devices, and other devices.

Solar Plug-UWB1 is equipped with rich network protocols and an integrated RS232 data transmission interface, without the need for any driver, making it convenient for traditional serial devices to connect and use, and is suitable for photovoltaic energy management. It is suitable for the photovoltaic energy industry.

1.2. Product Parameters

Table1.   Solar Plug-UWB1 Product Technical Parameters

Classification	Parameters
System Information	
Processor/Main Frequency	RISC 160MHz
Flash	2MB
RAM	276KB
Operating System	FreeRTOS
Wi-Fi Interface	
Wireless Standards	802.11 b/g/n
Frequency Range	2.412GHz ~ 2.472GHz
Network Mode	STA/AP/STA+AP
Security Type	WEP/WPA-PSK/WPA2-PSK/WPA3-SAE
Encryption	WEP64/WEP128/TKIP/AES
Transmitting Power	802.11b: +17dBm ± 1.5dBm (@11Mbps) 802.11g: +15dBm ± 1.5dBm (@54Mbps) 802.11n: +14dBm ± 1.5dBm (@HT20, MCS7)
Receiving Sensitivity	802.11b: -96dBm (@1Mbps) 802.11b: -89dBm (@11Mbps) 802.11g: -91dBm (@6Mbps) 802.11g: -76dBm (@54Mbps) 802.11n: -91dBm (@MCS0) 802.11n: -73dBm (@MCS7)
Antenna Option	PCB Internal Antenna
BLE Interface	
Wireless Standards	BLE5.0
Frequency Range	2.402GHz ~ 2.480GHz
Transmitting Power	Max 15dBm
Receiving Sensitivity	-97dBm

Serial Port	
Number of Port	1
Interface Standard	RS232
Data Bit	7，8
Stop Bit	1，2
Check Bit	None，Even，Odd
Baud Rate	TTL：1200 bps~460800 bps
Flow Control	No flow control
Software	
Collocation Method	APP
Firmware update	Serial port or OTA network upgrade
Basic Parameters	
Size	60.7mm x 19.1mm x 11.4mm
Working Temperature	-40 ~ 85°
Storage Environment	-45 ~ 105°C，5 ~ 95% RH (No condensation water)
Input Voltage	5~12VDC
Average Current	<30mA@9V
Average Power Consumption	180mW

1.3. Main Application Areas

The Solar Plug-UWB1 connects serial devices to the Internet and transmits serial data in accordance with the TCP/IP protocol.

● Monitoring of photovoltaic solar energy and energy storage;

2. HARDWARE INTRODUCTION

The Solar Plug-UWB1 is a WiFi+BLE solution for serial device networking, which enables data transmission through routers, making product integration very easy.

2.1. Product Appearance Diagram

The appearance diagram of the product is as follows.

Figure 1.   Product Appearance Diagram

2.2. Solar Plug-UWB1 Interface Pin Definition

The USB pin labels are shown in the following figure. The product sub models support different wire sequence types, and corresponding wire sequence models need to be selected according to actual needs.

Solar Plug UWB1 uses RS232 level format by default. If the actual product requires the use of RS485 or TTL electrical interface, please contact our company for further details.
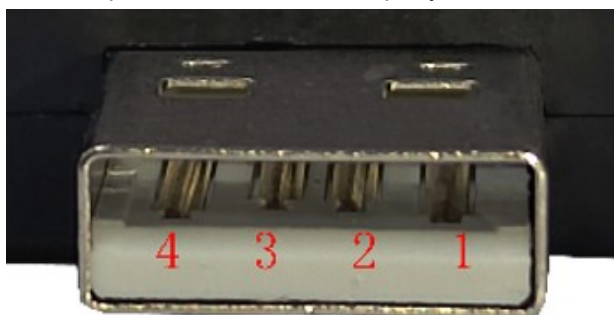

Figure 2.   Pin Label

Table2.   Interface Sub Models and Pin Definition Diagram

Sub Model Code	Interface Form	Serial Port Type	Line Sequence A/T/+	Line Sequence B/R/-	Line Sequence VCC/+	Line Sequence GND/-	Remarks
-01	USB	RS232	VCC	RXD	TXD	GND	
-02	USB	RS232	VCC	TXD	RXD	GND	
-50	USB	RS485	VCC	A+	B-	GND	
-51	USB	RS485	VCC	B-	A+	GND	

Table3.   Solar Plug-UWB1 Pin Description

Signal Description	Signal Type	Description
VCC	P	5~12VDC power supply input
GND	P	GND Ground
TXD	O	RS232 level serial port output
RXD-	I	RS232 level serial port input

<Description>:

I — Input; O — Output; Power—Power supply

2.3. **Solar Plug-UWB1 Indicator Light And Button Functions**

This product has 4 LED indicator lights.

Figure 3.   Front Indicator Light And Reset Button Of The Product

Table4.   Solar Plug-UWB1 Indicator Light And Key Definition

Pin	Description	Network Name	Signal Type	Note
PWR	Power indicator light	PWR	O	On: Power supply is normal Off: Abnormal power supply
COM	Serial port transmission indicator light	COM	O	Off: No data interaction Off for 0.3 seconds, on for 0.9 seconds: serial port outputs data Off for 0.3 seconds, on for 0.3 seconds: serial port receives data On: Bidirectional sending and receiving.

Pin	Description	Network Name	Signal Type	Note
NET	Network status indicator light	NET	O	Off for 0.3 seconds, on for 3 seconds: Connect to the router in STA mode Off for 0.3 seconds, on for 0.3 seconds: STA is not connected to the router
SRV	Server connection indicator light	SRV	O	On: Connected to server Off: Not connected to the server

2.4. Internal Antenna

When using a built-in antenna in the product, the following precautions for built-in antennas must be observed:

✓ The antenna should be kept away from metal and should not be placed inside products wrapped in metal;

Figure 4.   PCB Antenna Area

2.5. Solar Plug-UWB1 Mechanical Dimensions

The dimensions of different sub models of Solar Plug-UWB1 are defined as follows (in millimeters).

Figure 5.   Solar Plug-UWB1 Mechanical Dimensions

2.6. Product Number

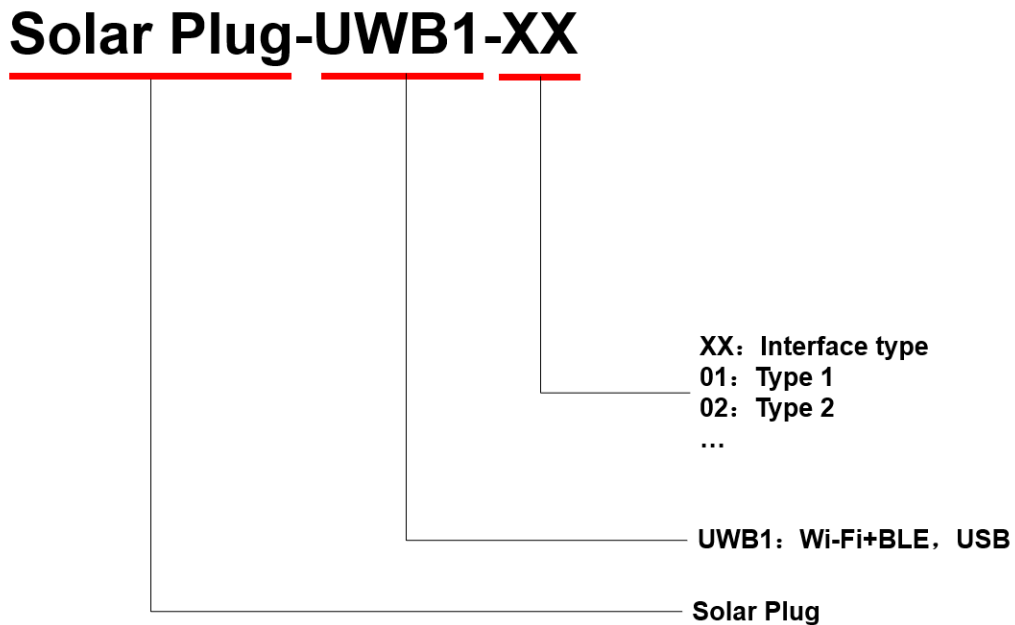According to customer requirements, Solar Plug-UWB1 provides different configuration versions, as follows:

Figure 6.   Solar Plug-UWB1 Product Number Definition

APPENDIX A: CONTACT INFORMATION