700

AWT100-AP/WFH 系列 Wi-Fi 数据转换器

AWT100-AP/WFH Series Wi-Fi Data Converter

安装使用说明书 V1.1

Installation and Operation Instructions

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申明

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safe Information

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This manual does not contain all of the safety measures for operation of the equipment(module, device),because special operating conditions, and local code requirements or regulations may necessitate further measures. However,it does contain information which must be read for your personal safety and to avoid material damages. This information is highlighted by a warning triangle and is represented as follows, depending on the degree of potential danger.



“危险”表示一种危险的情况，如果不加以避免，将导致死亡或重伤。
不遵循这些说明将导致死亡或重伤。
DANGER indicates a hazardous situation which, if not avoided, will result indeath or serious injury.
Failure to follow these instructions will result in death or serious injury.



“警告”表示一种危险的情况，如果不加以避免，可能导致死亡或重伤。
WARNING indicates a hazardous situation which, if not avoided, could resultin death or serious injury.



“小心”表示一种危险的情况，如果不加以避免，可能导致轻度或中度伤害。
CAUTlON indicates a hazardous situation which, if not avoided, could result inminor or moderate iniury.

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目 录

Contents

1 概述 1
1 Overview 1
2 型号说明 1
2 Description of Model 1
3 功能列表 1
3 List of Functions 1
4 典型应用 2
4 Typical Applications 2
5 技术参数 2
5 Technical Parameters 2
6 外形尺寸 4
6 Overall Dimensions 4
7 接线与安装 4
7 Connection and Installation 4
7.1 通讯端子 4
7.1 Communication Terminal 4
8 指示灯 5
8 Indicator lights 5
8.1 指示灯说明 5
8.1 Indicator light description 5
9 按键说明 6
9 Key description 6
10 通信说明 6
10 Communication Instructions 6
11 常见故障分析 6
11 Common Fault Analysis 6
11.1 通讯故障 6
11.1 Communication Failure 6

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1 概述

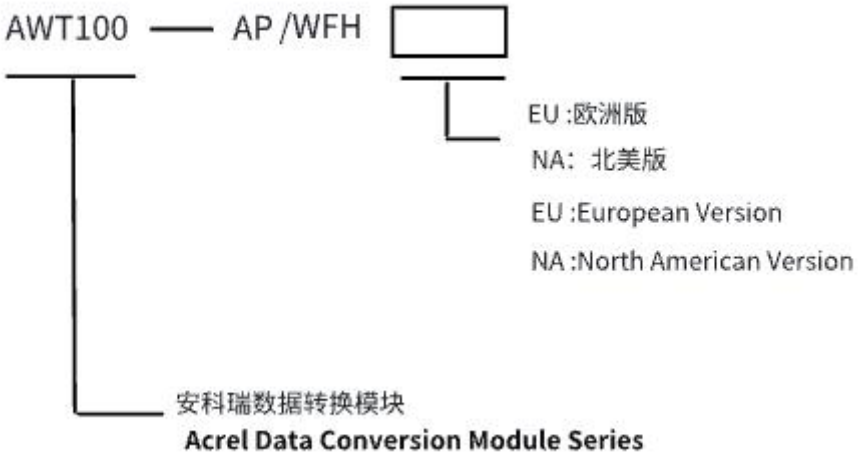
1 Overview

AWT100-AP/WFH 是一款符合 IEEE802.11 ah 标准的 Wi-Fi 数据转换模块，既可以工作在 STA 模式，也可以工作在 AP 模式，通过组网，可以实现点对点或一点到多点间的无线数据传输。其中，AWT100-AP/WFHEU 欧洲版支持 859MHZ~894MHZ，AWT00-AP/WFHNA 北美版支持 902MHZ~928MHZ;与 2.4GWiFi 相比，传输距离更远。适用于无线抄表、楼宇自动化与安防、电力负荷监控等行业领域。

AWT100-AP/WFH is a Wi-Fi data conversion module compliant with the IEEE 802.11ah standard. It can operate in both STA mode and AP mode, enabling point-to-point or point-to-multipoint wireless data transmission through networking. Among the variants, the AWT100-AP/WFHEU European version supports the frequency range of 859 MHz to 894 MHz, while the AWT100-AP/WFHNA North American version supports 902 MHz to 928 MHz. Compared with 2.4 GHz Wi-Fi, it offers longer transmission distance. This module is suitable for applications such as wireless meter reading, building automation and security, and power load monitoring.

2 型号说明

2 Description of Model



3 功能列表

3 List of Functions

- 物理吞吐量 150kbps 至 3.5Mbps，满足低速传感器到高速图像数据传输要求；

The physical throughput ranges from 150 kbps to 3.5 Mbps, meeting the data transmission requirements for applications from low-speed sensors to high-speed image data.

- 采用信道冲突评估(CCA)和载波侦听多路访问/冲突检测机制（CSMA_CD）进行信道接入避退。

Channel access backoff is implemented using Channel Conflict Assessment (CCA) and Carrier Sense Multiple Access with Collision Detection (CSMA/CD) mechanisms.

- 自动频率选择，自动频率控制；

The system utilizes Automatic Frequency Selection and Automatic Frequency Control to maintain optimal signal connectivity and stability.

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- 支持低功耗。
  Supports Low Power Consumption.
- 支持中继、漫游；
  Supports Relay and Roaming.
- 支持组播；
  Supports Multicast.

4 典型应用

4 Typical Applications

网关和始端 AWT100-AP/WFH 串口连接 (AWT100-AP/WFH 工作在 AP 模式), 仪表和终端 AWT100-AP/WFH 串口连接（AWT100-AP/WFH 工作在 STA 模式），网关抄表指令通过串口经始端 AWT100-AP/WFH 和 终端 AWT100-AP/WFH 建立的无线 WiFi HaLow 通道(以下简称 WFH)透传给终端 AWT00-AP/WFH 的串口给仪表，仪表的数据报文通过相反路径传递给网关；

The gateway is connected to the start-end AWT100-AP/WFH via serial port (with the AWT100-AP/WFH operating in AP mode), and the meter is connected to the terminal-end AWT100-STA/WFH via serial port (with the AWT100-AP/WFH operating in STA mode). The meter reading commands from the gateway are transparently transmitted through the wireless WiFi HaLow channel (abbreviated as WFH)established between the start-end AWT100-AP/WFH and the terminal-end AWT100-AP/WFH, then delivered via the serial port of the terminal-end AWT100-AP/WFH to the meter. The data response from the meter is returned to the gateway through the reverse path。

.5 技术参数

5 Technical Parameters

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项目 Item	AWT100-AP/WFHEU	AWT100-AP/WFHNA
尺寸(LxWxH) Dimensions	18mm x 125mm x70mm	
通信接口 **Communication Interface**		
串口 **Serial Interface**		
接线端子 Terminal	RJ45	
波特率 Baudrate	2400bps-115200bps	
WIFI		
天线接口 Antenna Interface	50 欧姆/SMA（母头） 50 Ohm / SMA Female	
WI-FI 协议 Protocol	802.11ah	
工作频率 Operating Frequency	859MHz-894MHz	902MHz-928MHz
安全机制 Security	WPA2-PSK	
加密类型 Encryption	AES	
通信距离 Range	200 米 Up to 200 meters	
电源要求 **Power Requirements**		
电源 Power	AC220V	
功耗 Power Consumption	<= 3W	
环境要求 Environment		
操作温度 Operating temperature range	-20℃~+55℃	
储存温度 Storage temperature	-40℃～+85℃	
湿度范围 Relative humidity	<95%RH，不结露，不适用于潮湿环境 ≤95% (without condensation) "Not suitable for damp environments"	
IP 等级 IP rating	正面：IP51（室内）；整体：IP20。 IP20 on terminal strip without protective housing and IP51 in protective housing, per IEC 60529	
污染等级 Pollution Degree	II	
UC 等级 UC Degree	III	
安装环境 Installation environment	室内 Indoor use	

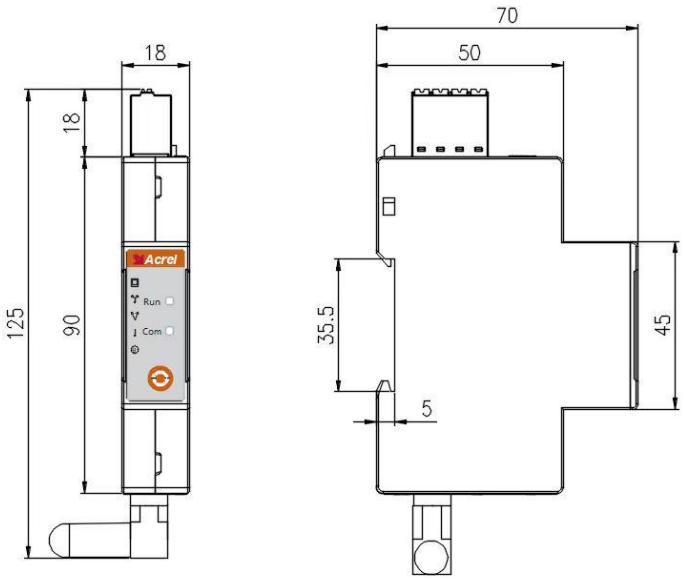
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表 2 技术参数说明
Table 2: Technical Specifications

6 外形尺寸

6 Overall Dimensions

仪表尺寸（单位：mm）
Instrument Dimensions（Unit:mm）

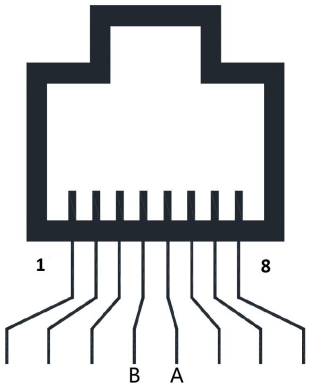


注：尺寸的公差为 1mm。
Note: The tolerance of the dimensions is 1mm.

7 接线与安装

7 Connection and Installation

7.1 通讯端子
7.1 Communication Terminal



RS485

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8 指示灯

8 Indicator lights

8.1 指示灯说明

8.1 Indicator light description

指示灯名称 Indicator name	说明 illustrate
Sta	AP 模式： 绿色慢闪 初始状态 绿色快闪 WFH 正在入网 绿色常亮: WFH 入网成功 红色快闪：变成配网状态 STA 模式： 红色慢闪 初始状态 红色快闪 WFH 正在入网 红色常亮: WFH 入网成功 绿色快闪：变成配网状态 * AP 模式/ STA 模式指示灯颜色相反 AP Mode: Green slow flash: Initial state Green fast flash: WFH connecting to network Green steady on: WFH successfully connected to network Red fast flash: Entering configuration mode STA Mode: Red slow flash: Initial state Red fast flash: WFH connecting to network Red steady on: WFH successfully connected to network Green fast flash: Entering configuration mode * The LED color logic for data flow (transmit/receive) is opposite between AP Mode and STA Mode.
COM	AP 模式： 红色闪烁：WFH 发送数据 绿色闪烁：WFH 收到数据 STA 模式： 红色闪烁：WFH 收到数据 绿色闪烁：WFH 发送数据 * AP 模式/ STA 模式指示灯颜色相反 AP Mode: Red flashing: WFH transmitting data Green flashing: WFH receiving data STA Mode: Red flashing:WFH receiving data Green flashing: WFH transmitting data * The LED color logic for data flow (transmit/receive) is opposite between AP Mode and STA Mode.

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9 按键说明

9 Key description

短按切换自动配网模式，长按切换 AP 模式和 STA 模式。

A short button press is used to enter or leave auto-provisioning mode.

A long button press is used to switch between AP mode and STA mode.

10 通信说明

10 Communication Instructions

网关的通信接口支持 MODBUS-RTU 通信协议，通信口波特率可在 1200bps、2400 bps、4800 bps、9600bps、19200 bps 和 38400 bps 之间设置，校验位为无校验。

The gateway's communication interface supports the MODBUS-RTU protocol. The baud rate for the communication port is configurable and can be set to 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, or 38400 bps, with the parity bit set to None.

网关的 RS485 通信口要求使用屏蔽双绞线连接，布线时要考虑整个网络的布局：如通信线缆的长度、走向、上位机的位置、网络末端的匹配电阻、通信转换器、网络可扩展性、网络覆盖范围、环境的电磁干扰情况等因素，都要综合考虑。

The gateway's RS-485 communication port requires a shielded twisted-pair (STP) cable for connection. When planning the cabling, the entire network layout must be comprehensively considered, factoring in elements such as cable length, routing, host computer location, terminating resistors at network ends, communication converters, network scalability, coverage area, and ambient electromagnetic interference (EMI).

RS-485 总线长度不超过 1000 米。

The RS-485 bus length shall not exceed 1000 meters.

11 常见故障分析

11 Common Fault Analysis

11.1 通讯故障

11.1 Communication Failure

(1) RS485 通讯方式通讯故障时：检查通讯接线是否正确，A、B 是否接反。

For RS-485 communication faults: Verify correct wiring and check for reversed A/B lines.

(2)WFH 通讯方式通讯故障时：检查 WFH 账号密码等参数配置是否正确。

For WFH communication faults: Verify the configuration of WFH parameters (e.g., SSID and password).

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