ACEIRMC WT32-ETH01

ACEIRMC WT32-ETH01 ESP32 Ethernet WiFi Bluetooth Module User Manual

Model: WT32-ETH01

1. Introduction

The ACEIRMC WT32-ETH01 is an ESP32-based development board designed for versatile connectivity, integrating Ethernet, WiFi, and Bluetooth capabilities. This module functions as an embedded serial port to Ethernet converter, enabling transparent data transmission across various interfaces. It is suitable for a wide range of applications requiring robust networking and communication.
Key features of the WT32-ETH01 module include:

- Support for transparent data transmission across serial port, WiFi, Ethernet, and Bluetooth interfaces.
- Equipped with an ESP32 series SoC, offering 2.4GHz Wi-Fi and Bluetooth dual-mode with high radio frequency performance, stability, and ultra-low power consumption.
- Enables WiFi connectivity to the internet or local area networks via a router, facilitating TCP/UDP connections to designated servers.
- Compact industrial-grade design ensures stable performance and reliable networking functions, meeting integrated project requirements such as power monitoring.
- Features solderless pins for convenient integration.

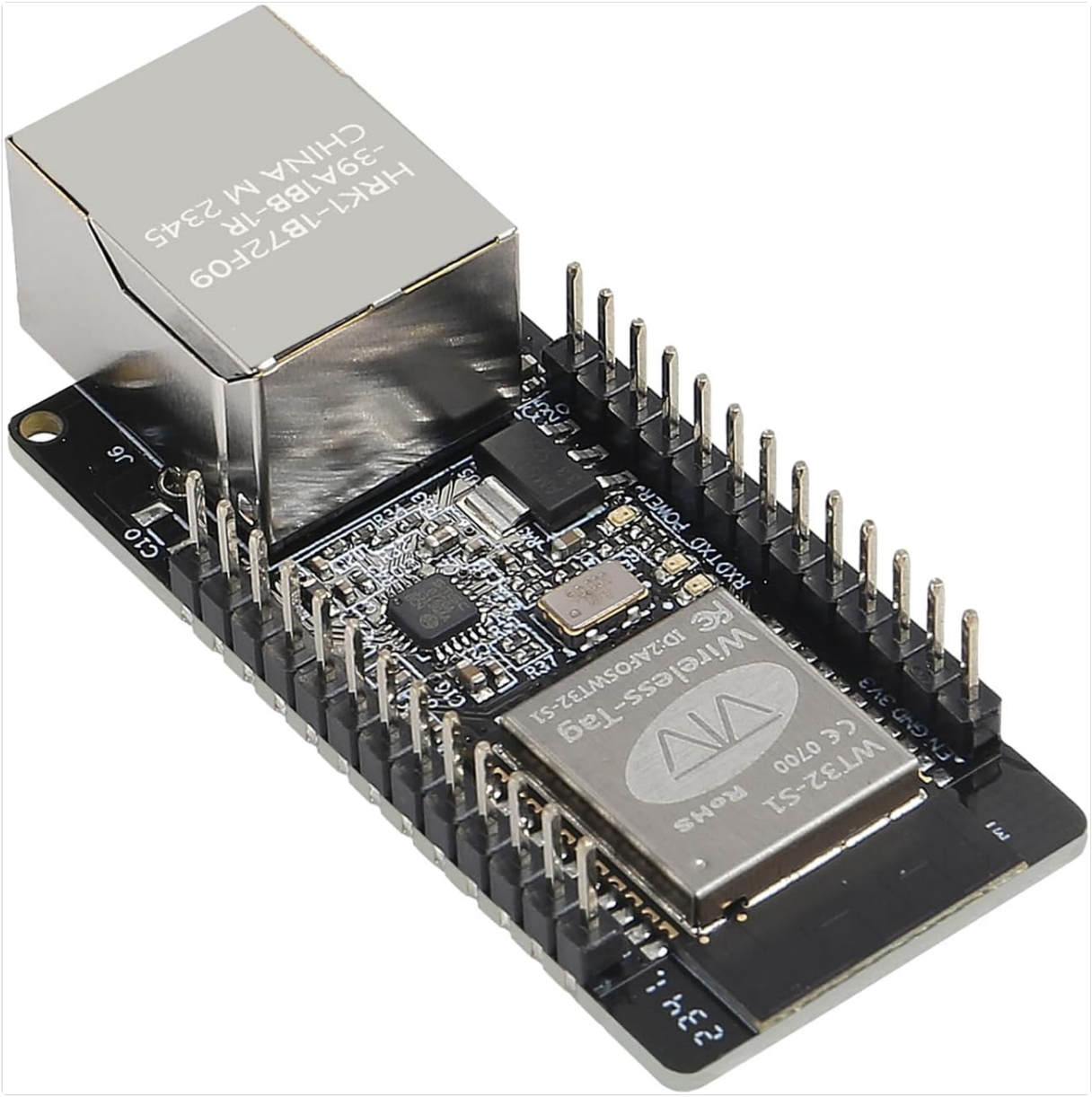

Figure 1: Top-down view of the ACEIRMC WT32-ETH01 ESP32 Module, showcasing the integrated Ethernet port and pin headers.

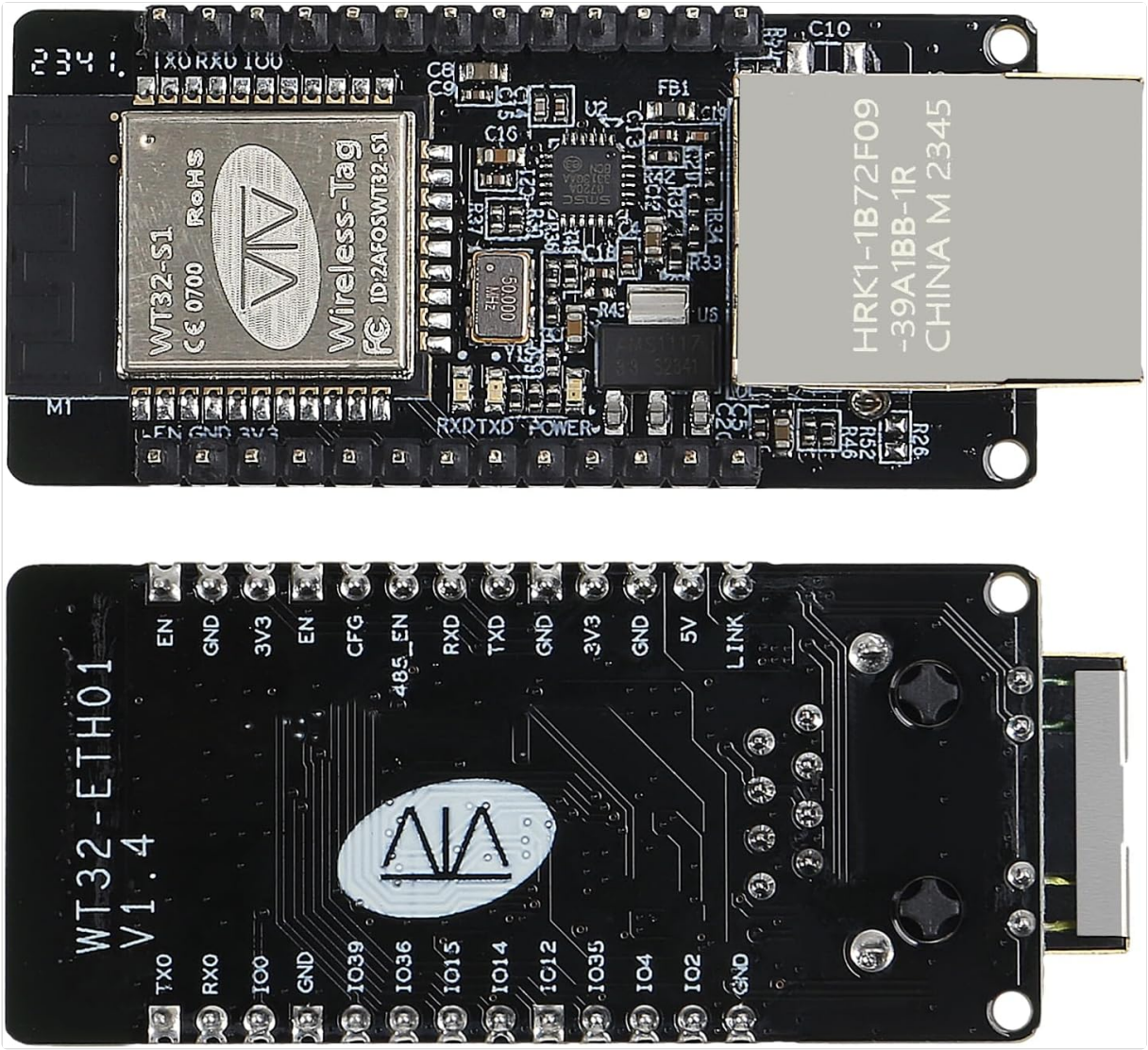

Figure 2: Detailed top and bottom views of the WT32-ETH01 module, highlighting component placement and pin labels.

2. Setup and Initial Connection

2.1 Powering the Module

The WT32-ETH01 module requires a 3.3V power supply. Ensure that the power source connected to the module provides the correct voltage to prevent damage. Incorrect voltage (e.g., 5V directly) can harm the ESP32 chip. If using a 5V source, a voltage regulator or level shifter is necessary.

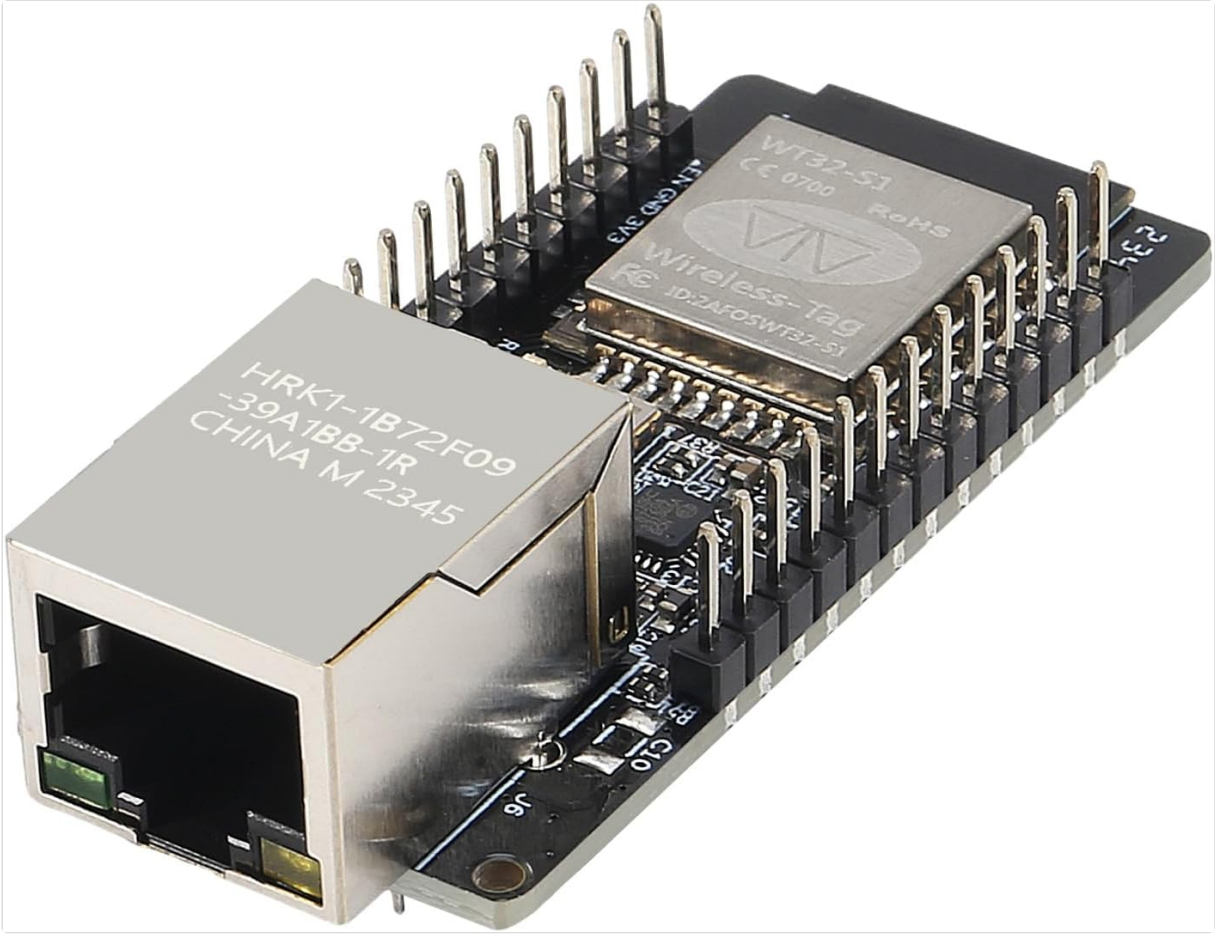

Figure 3: Dimensions of the WT32-ETH01 module, showing its compact size for integration into projects.

2.2 Serial Communication Connection

To communicate with the module for programming or sending AT commands, a USB-UART converter is required. Connect the TX, RX, GND, and 3.3V pins from the USB-UART to the corresponding pins on the WT32-ETH01 module. For initial programming, it may be necessary to connect the IO0 pin to GND to enter bootloader mode.

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Video 1: Demonstrates the physical connection of the WT32-ETH01 module to a power source and serial communication wires. This video shows the process of connecting the module for initial setup and programming.

2.3 Pin Map and Definitions

Understanding the pin layout is crucial for proper integration. Refer to the pin map for detailed definitions of each pin, including GPIOs, power, and communication interfaces. It is recommended to print the pin map in equal proportions and attach it to the top of the module for easy reference.

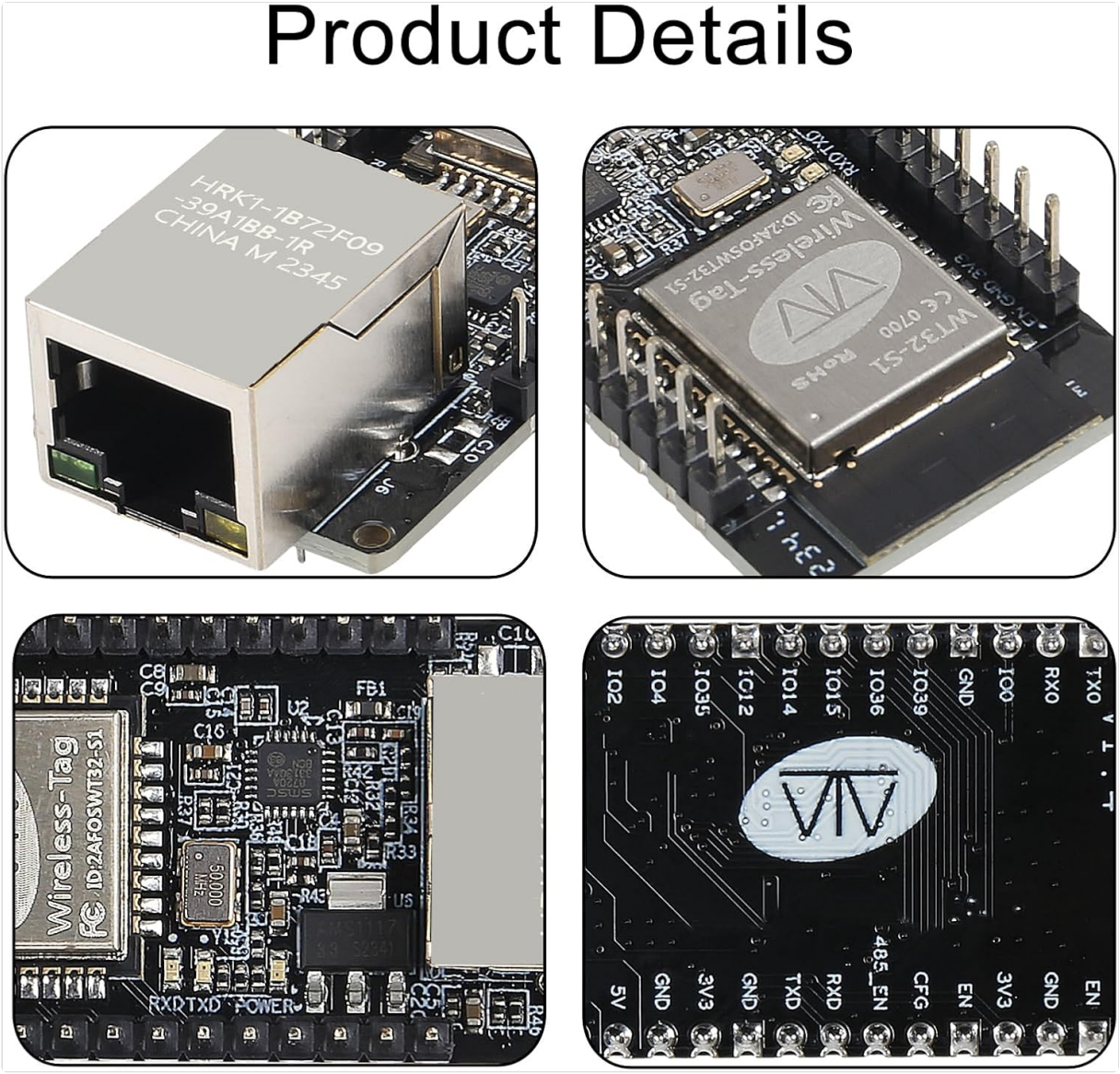

Figure 4: Close-up views of various components on the WT32-ETH01 module, including the Ethernet port, ESP32 chip, and pin headers.

3. Operating the WT32-ETH01 Module

3.1 AT Command Control

The WT32-ETH01 module can be controlled using AT commands via a serial terminal. This allows for configuration of network settings, WiFi and Bluetooth parameters, and other module functionalities. Ensure your serial terminal is configured with the correct baud rate (e.g., 115200) and serial port settings.

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Video 2: Illustrates the use of a serial terminal (COM Assistant) to send AT commands to the WT32-ETH01 module. This demonstrates how to interact with the module for configuration and testing.

3.2 ESPHome Configuration (Advanced)

For advanced users, the WT32-ETH01 module can be integrated with ESPHome for seamless automation and control, particularly for wired Ethernet applications. A typical ESPHome YAML configuration for the WT32-ETH01 includes specifying the board type, Ethernet type (LAN8720), and relevant GPIO pins for MDC, MDIO, CLK mode, PHY address, and power control.

> **Example ESPHome YAML Configuration Snippet:**

```
esp32:
  board: wt32-eth01
  framework:
    version: recommended
ethernet:
  type: LAN8720
  mdc_pin: GPIO23
  mdio_pin: GPIO18
  clk_mode: GPIO0_IN
  phy_addr: 1
  power_pin: GPIO16
```

When programming with ESPHome, a USB-UART is needed. Ensure the USB-UART is set to 3.3V. To enter bootloader mode, connect pin IO0 to GND. Command-line ESPHome can then be used to flash the firmware via the COM port.

4. Specifications

Feature	Detail
Brand	ACEIRMC
Model	WT32-ETH01
Connectivity	Ethernet, WiFi (2.4GHz), Bluetooth (Dual-mode)
Processor	ESP32 series SoC
Operating Temperature	-40 to +85 °C (Industrial Grade)
Serial Port Baud Rate	80-5000000
Network Protocol	IPv4, TCP/UDP
Software Encryption	AES/RSA/ECC/SHA
Item Weight	0.16 ounces
Package Dimensions	0.1 x 0.1 x 0.1 inches
UPC	687117752574

5. Maintenance

To ensure the longevity and optimal performance of your WT32-ETH01 module, follow these maintenance guidelines:

- **Handle with Care:** Avoid dropping or subjecting the module to physical shock.
- **Static Discharge:** Always handle the module in an anti-static environment or use appropriate grounding measures to prevent electrostatic discharge (ESD) damage.
- **Cleanliness:** Keep the module free from dust, dirt, and moisture. Use a soft, dry cloth for cleaning. Avoid using liquids or abrasive cleaners.
- **Storage:** When not in use, store the module in its original anti-static packaging in a cool, dry place.
- **Power Supply:** Always verify the correct voltage and current of your power supply before connecting

it to the module.

6. Troubleshooting

If you encounter issues with your WT32-ETH01 module, consider the following troubleshooting steps:

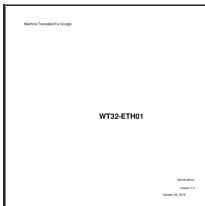
- **No Power/LEDs Off:**
  - Check all power connections. Ensure the power supply is providing the correct 3.3V.
  - Verify the power supply is functional.
- **Module Not Responding to AT Commands:**
  - Confirm the USB-UART converter is correctly connected (TX to RX, RX to TX, GND to GND).
  - Check the serial port settings in your terminal software (baud rate, data bits, parity, stop bits). The default baud rate is often 115200.
  - Ensure the module is powered on.
- **Programming Issues (e.g., with ESPHome):**
  - Make sure the IO0 pin is connected to GND when entering bootloader mode for flashing.
  - Double-check that your USB-UART is supplying 3.3V, not 5V, to the module's logic pins.
  - Verify the correct COM port is selected in your programming environment.
- **Ethernet Connectivity Problems:**
  - Ensure the Ethernet cable is securely connected to both the module and the network device.
  - Check network settings in your firmware (IP address, gateway, DNS).
  - Confirm the Ethernet PHY is correctly initialized in your code (e.g., LAN8720 type, correct MDC/MDIO pins).
- **WiFi/Bluetooth Issues:**
  - Verify WiFi SSID and password are correct in your configuration.
  - Ensure the module is within range of the WiFi access point or Bluetooth device.
  - Check for any conflicting GPIO usage if you are using custom firmware.

7. Warranty and Support

ACEIRMC products are designed for reliability and performance. For specific warranty details, please refer to the product's packaging or the official ACEIRMC website. Technical support and additional resources may be available through the manufacturer's support channels.
For further assistance or to explore other products, visit theACEIRMC Store on Amazon.

Related Documents - WT32-ETH01

	ESP32-WT32-ETH01 Embedded Serial to Ethernet Module Specification This document provides detailed specifications for the ESP32-WT32-ETH01, an embedded serial port to Ethernet module based on the ESP32 series. It covers features, hardware specifications, pin descriptions, power characteristics, usage instructions, and various functions including TCP/IP, UDP, AT commands, Bluetooth, and Wi-Fi.

	[WT32-ETH01 Embedded Serial-to-Ethernet Module Specifications] Technical specifications for the WT32-ETH01 embedded serial-to-Ethernet module, featuring ESP32, Wi-Fi, Bluetooth, and Ethernet connectivity. Includes hardware details, functions, and usage instructions.
	[WT32-ETH01 Embedded Serial to Ethernet Module Datasheet] Datasheet for the WT32-ETH01, an embedded serial to Ethernet module based on the ESP32 series, featuring Wi-Fi and Bluetooth connectivity, TCP/IP stack, and various network functions.
	[WT32-ETH02 Embedded Serial-to-Ethernet WiFi Module Datasheet] Technical datasheet for the WT32-ETH02 embedded serial-to-Ethernet development board by Wireless-Tag Technology Co., Limited, featuring ESP32, WiFi, and Bluetooth BLE capabilities. Includes hardware specifications, features, instructions, and FCC compliance information.
	[WT32-SC01 Datasheet: ESP32-WROVER-B Development Board] Technical datasheet for the WT32-SC01 development board featuring an ESP32-WROVER-B module, 3.5-inch LCD touch screen, and extensive hardware resources for custom platform development. Includes specifications, power-on instructions, schematics, and firmware burning guide.
	[Smart Panlee ZX4D30NE01S-UR-4827 Smart Serial LCD Display Datasheet] Technical datasheet for the Smart Panlee ZX4D30NE01S-UR-4827 Smart Serial LCD Display, detailing hardware interfaces, specifications, firmware burning instructions, and contact information.