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› DWEII WT32-ETH01 ESP32 Module User Manual

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Ethernet WiFi Bluetooth Development Board

1. PRODUCT OVERVIEW

The DWEII WT32-ETH01 is a versatile ESP32-based development board designed for embedded applications requiring Ethernet, WiFi, and Bluetooth connectivity. It functions as an embedded serial port to Ethernet converter and a serial to WiFi & Bluetooth MCU module, offering robust communication capabilities for various industrial and IoT projects.

Key features include:

- **Dual-Core Xtensa32-bit LX6 MCU:** Integrated with 3.32Mbit SPI flash and 520KB SRAM for powerful processing.
- **Multiple Working Modes:** Supports TCP Server, TCP Client, UDP Server, and UDP Client modes.
- **Flexible Data Transmission:** Enables transparent data transmission between serial port, WiFi, Ethernet, and Bluetooth.
- **Firmware Upgrade:** Supports firmware upgrades via wired network or WiFi.
- **Network Connectivity:** Connects to the Internet or LAN via router (WiFi) to establish TCP/UDP connections and access designated servers. Also supports direct wired network access.
- **User Development:** Designed to support secondary development by users.
- **Industrial Grade:** Operates reliably in temperatures ranging from -40°C to +85°C.
- **High Baud Rate:** Serial port baud rate from 80 to 5,000,000.
- **Security:** Supports AES/RSA/ECC/SHA software encryption.

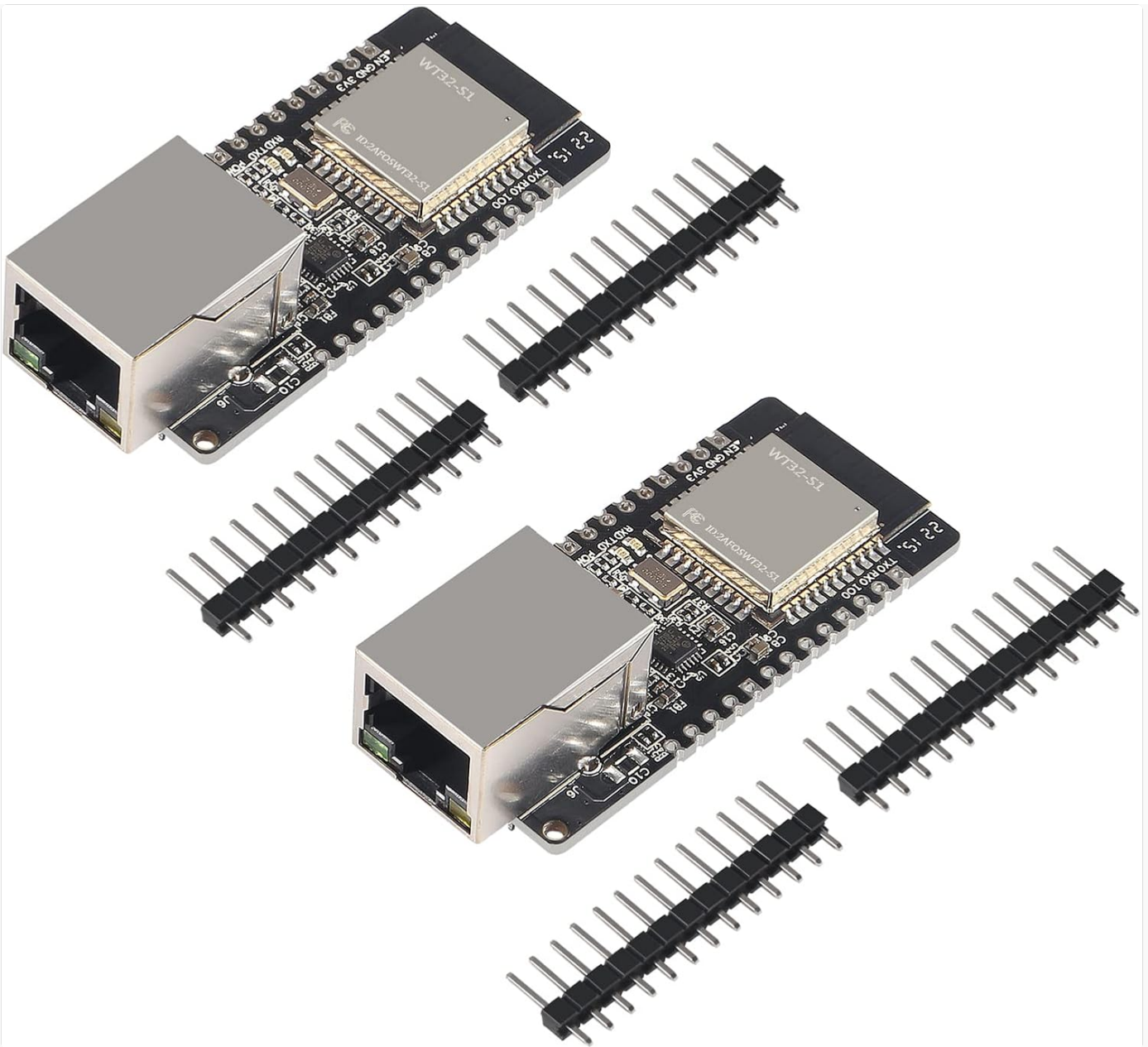


Figure 1: Two DWEII WT32-ETH01 ESP32 Modules with unwelded header pins, showcasing their compact design and Ethernet port.

2. SETUP AND CONNECTIONS

This section details the physical setup and pin descriptions for the WT32-ETH01 module. Please ensure proper power supply and pin connections before operation.

2.1 Pin Description

The WT32-ETH01 module features various pins for power, data, and debugging. Refer to the table below for a detailed description of the debugging and programming interface pins.

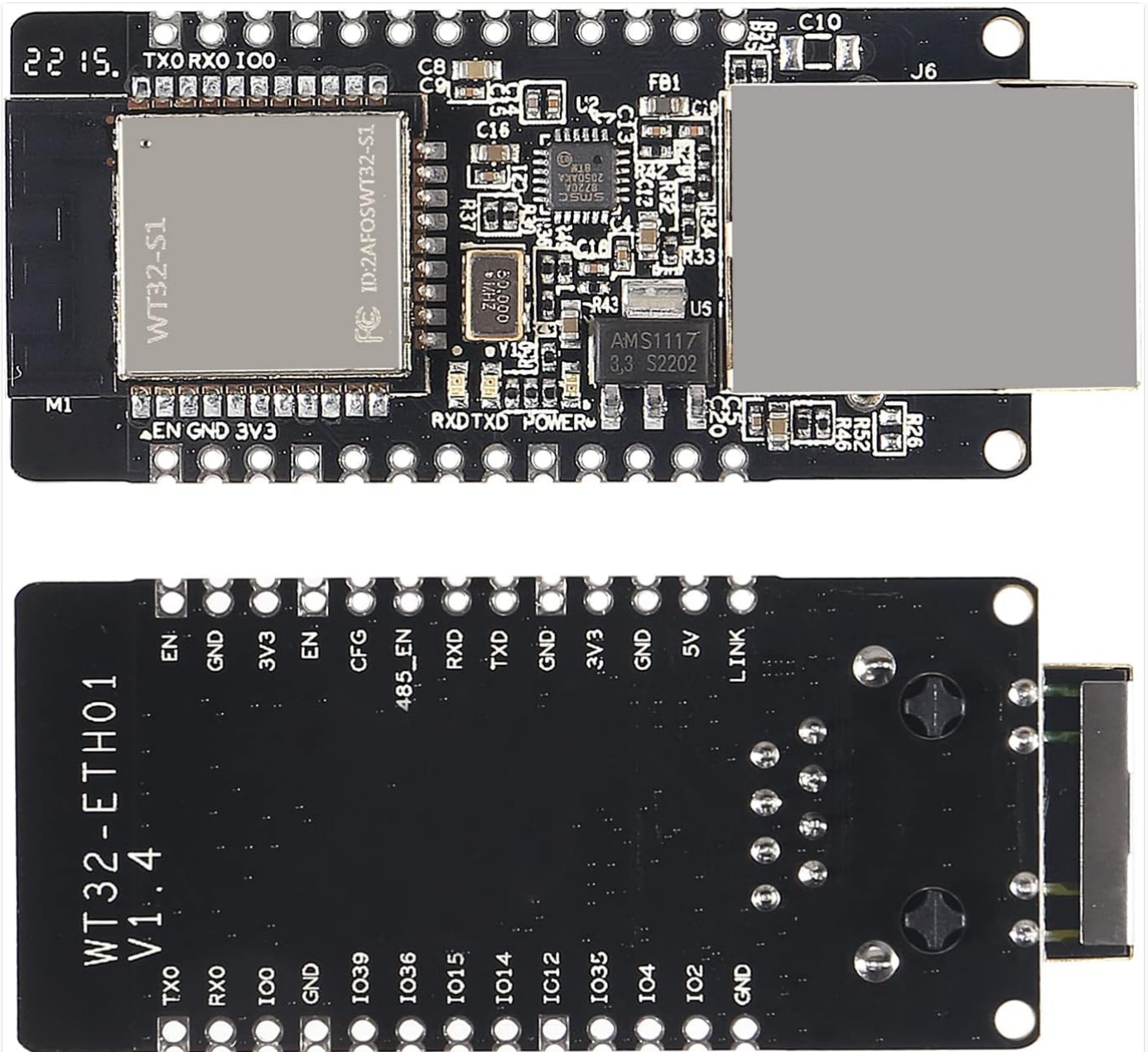


Figure 2: Top view of the WT32-ETH01 module, highlighting the ESP32 chip, Ethernet port, and various pin labels for connection.

Table 1: Debugging and Programming Interface Pinout

Pin Name	Description
EN1	Reserved debugging and programming interface; enabled, high level is effective.
GND	Reserved debugging and programming interface; Ground.
3V3	Reserved debugging and programming interface; 3.3V power supply.
TXD	Reserved debugging programming interface; IO1, TXD0 (Transmit Data).
RXD	Reserved debugging programming interface; IO3, RXD0 (Receive Data).
IO0	Reserved for debugging and programming interface; IO0.

Important Notes:

- The module enables high level by default.

- You must choose either 3.3V or 5V for power supply; do not supply both simultaneously.
- GPIO pins IO39 and IO36 only support input operations.

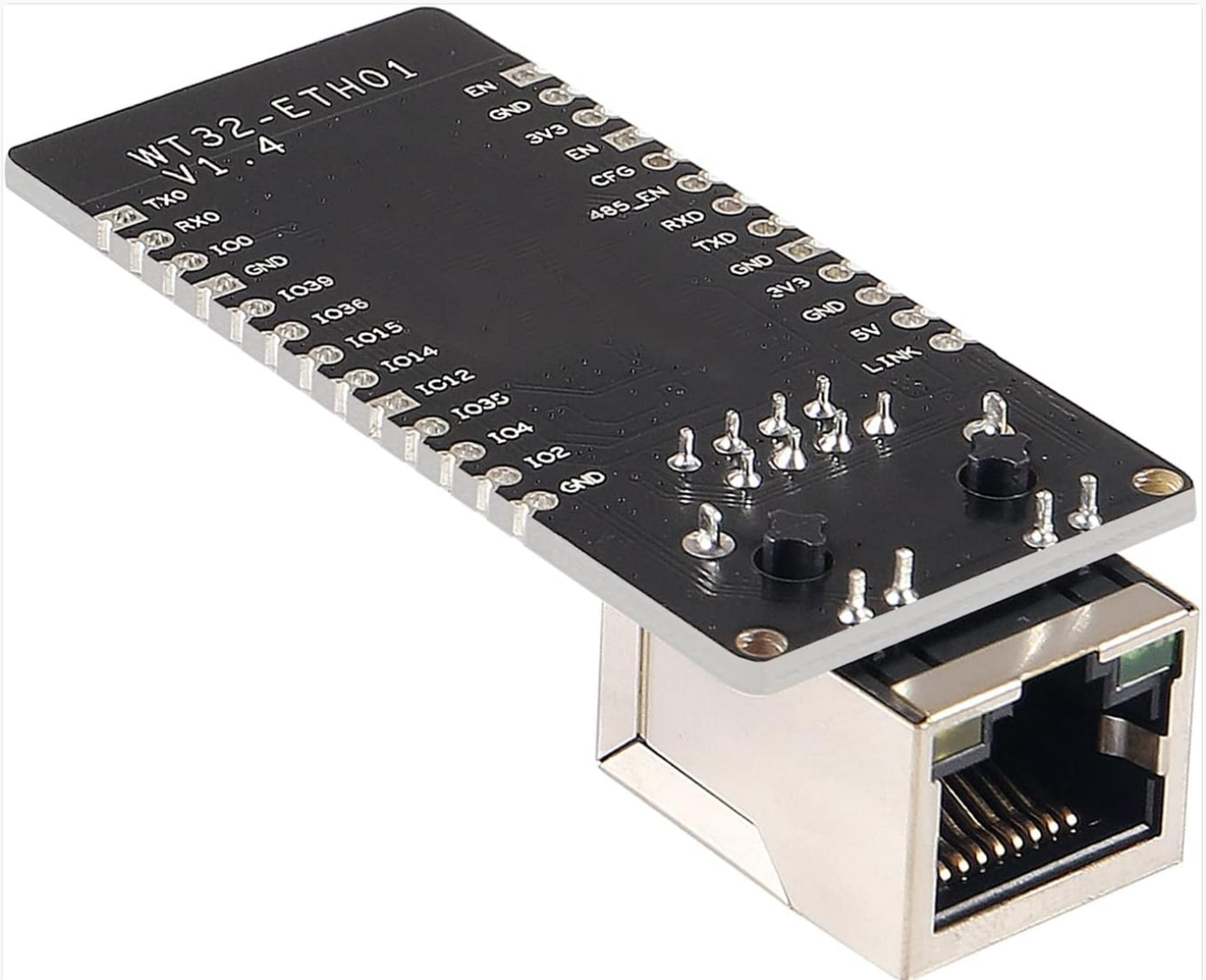


Figure 3: Bottom view of the WT32-ETH01 module, clearly showing the pin labels for easy identification during connection.

3. OPERATING INSTRUCTIONS

The WT32-ETH01 module offers various modes of operation for network and serial communication. This section provides general guidance on utilizing its core functionalities.

3.1 Network Communication

The module supports both wired Ethernet and wireless WiFi connectivity. It can operate as a TCP Server, TCP Client, UDP Server, or UDP Client.

1. **Ethernet Connection:** Connect a standard RJ45 Ethernet cable to the module's Ethernet port. Ensure your network infrastructure (router/switch) is properly configured to assign an IP address or use a static IP if preferred.
2. **WiFi Connection:** The module can connect to an existing WiFi network (router) to access the internet or a local area network. Configuration typically involves setting the SSID and password of the target WiFi network through software or a web interface if available.
3. **TCP/UDP Communication:**
 - **Server Mode:** The module listens for incoming connections on a specified port. Clients can connect to the

module's IP address and port to exchange data.

- **Client Mode:** The module initiates a connection to a remote server's IP address and port. Once connected, data can be sent and received.

3.2 Serial Data Transmission

The WT32-ETH01 facilitates transparent data transmission between its serial port and network interfaces (WiFi, Ethernet, Bluetooth). This allows traditional serial devices to gain network capabilities.

- Connect your serial device (e.g., microcontroller, sensor) to the module's TXD and RXD pins.
- Configure the serial port baud rate (80-5,000,000) and other parameters (data bits, parity, stop bits) to match your serial device.
- Through software configuration, map the serial data stream to the desired network protocol (TCP/UDP) and destination (IP address/port) or Bluetooth connection.

3.3 Bluetooth Functionality

The integrated Bluetooth dual-mode allows for wireless communication with other Bluetooth-enabled devices. Specific implementation details will depend on the user's secondary development and application.

3.4 Firmware Upgrades

The module supports over-the-air (OTA) firmware upgrades via either a wired Ethernet connection or WiFi. Refer to the specific firmware update utility or development environment documentation for detailed steps.

4. MAINTENANCE AND CARE

To ensure the longevity and reliable operation of your WT32-ETH01 module, follow these general maintenance guidelines:

- **Handle with Care:** Avoid dropping the module or subjecting it to excessive physical shock.
- **Power Supply:** Always use a stable and appropriate power supply (either 3.3V or 5V, but not both simultaneously). Incorrect voltage can damage the module.
- **Environmental Conditions:** Operate the module within its specified industrial temperature range (-40°C to +85°C). Avoid exposure to extreme humidity, dust, or corrosive environments.
- **Static Discharge:** Take precautions against electrostatic discharge (ESD) when handling the module, especially when making connections. Use an anti-static mat and wrist strap if possible.
- **Cleaning:** If necessary, gently clean the module with a soft, dry, lint-free cloth. Do not use liquid cleaners or solvents.
- **Storage:** When not in use, store the module in an anti-static bag in a cool, dry place.

5. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with the WT32-ETH01 module.

5.1 Power Issues

- **Module not powering on (no indicator lights):**
 - Verify your power supply voltage (3.3V or 5V) is correct and stable.
 - Ensure you are only supplying power through one voltage input (either 3.3V or 5V, not both).
 - Check power connections for proper polarity and secure contact.

5.2 Network Connectivity Issues

- **Cannot connect to Ethernet:**
 - Ensure the Ethernet cable is securely plugged into both the module and the network device.
 - Check the status of the Ethernet link indicator lights on the module and your network switch/router.
 - Verify your network configuration (IP address, subnet mask, gateway) is correct for the module.
 - Confirm your router/switch is functioning correctly.
- **Cannot connect to WiFi:**
 - Double-check the WiFi SSID and password configured on the module.
 - Ensure the WiFi network is within range and has a strong signal.
 - Verify that your router is broadcasting the SSID and allows new connections.
 - Check for any MAC address filtering on your router that might block the module.
- **Data transmission errors:**
 - Confirm the correct TCP/UDP server/client settings (IP address, port).
 - Check for firewall rules on your network or server that might be blocking communication.
 - Ensure the serial port baud rate and other parameters match between the module and the connected device.

5.3 Programming and Firmware Issues

- **Programming/Flashing errors:**
 - Ensure your programming adapter (e.g., FTDI) is correctly connected and drivers are installed.
 - Verify the correct GPIO pins are used for flashing (e.g., IO0 for boot mode).
 - Check the programming software settings (COM port, baud rate, flash mode).
 - Ensure the module is properly powered during the flashing process.

6. TECHNICAL SPECIFICATIONS

Detailed technical specifications for the DWEII WT32-ETH01 module:

Feature	Specification
MCU	Dual-core Xtensa32-bit LX6
Flash Memory	3.32Mbit SPI flash
SRAM	520KB
Wireless Connectivity	2.4GHz Wi-Fi (802.11 b/g/n), Bluetooth dual-mode
Wired Connectivity	Ethernet (RJ45 port)
Operating Modes	TCP Server, TCP Client, UDP Server, UDP Client
Serial Port Baud Rate	80 - 5,000,000 bps
Network Protocols	IPv4, TCP/UDP
Software Encryption	AES/RSA/ECC/SHA

Feature	Specification
Operating Temperature	-40°C to +85°C
Dimensions (Package)	4.65 x 3.15 x 0.83 inches
Item Weight	1.13 ounces
Operating System (Supported)	Linux (for development)

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For further support, please refer to the official DWEII website or contact customer service.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question