

WTI Part No. 14553
Rev. A

REM Series

Edge Managers

Products Covered

REM-4R4 Combo Models

REM-4R0 Console Models

REM-OR4 Power Models

Hardware Guide



Power & Console Solutions | wti.com



Warnings and Cautions: Installation Instructions



Secure Racking

If Secure Racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered.

1. The ambient within the rack may be greater than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 60°C. Consideration should be given to the maximum rated ambient.
2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

Input Supply

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

Grounding

Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

- **Shock Hazard - Do Not Enter**
- **Lithium Battery**
CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.
2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

Restricted Access

REM Series units are intended for installation in Restricted Access Location.

Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

Agency Approvals

FCC Part 15 Regulation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

EMC and Safety Directive Compliance

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

- **Council Directive 2014/30/EU of 26 February 2014 on the approximation of the laws of Member States relating to electromagnetic compatibility;**
- and
- **Council Directive 2014/35/EC of 26 February 2014 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.**

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1. Introduction

This Hardware Guide covers hardware set-up and installation for our REM Series Edge Managers. REM Series units are designed to simplify the process of remotely managing vital network elements located at off-site facilities by providing secure remote access to console ports on distant network equipment and remotely controlled power switching and reboot functions at network equipment sites.

Note: *For instructions regarding configuration and operation of the WTI Device, please refer to the REM User's Guide.*

Model Numbers Covered

This Hardware Guide discusses all WTI REM Series products. Throughout this Hardware Guide, all of these units are referred to as the "REM."

2. Unit Description

2.1. REM-4R4 Combo Models - Front Panel

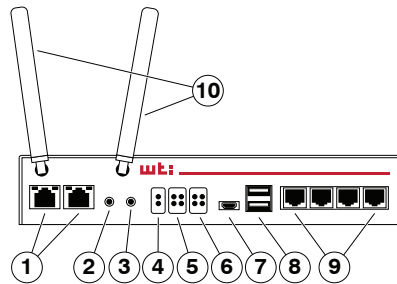


Figure 2.1: REM-4R4 Combo Models - Front Panel

As shown in Figure 2.1, REM-4R4 Combo Models include four RJ45 Console Ports, two USB Console Ports and four switched AC Outlets. The REM-4R4 front panel includes the following components:

1. **Network Port(s):** RJ45 Ethernet port(s) for connection to your 10/100/1000 Base-T, TCP/IP network(s.) Each Network Port also includes two, small LED indicators for Link and Data Activity. For information on Network Port configuration, please refer to the REM User's Guide.

Notes:

- *Some REM series units include an optional, secondary Ethernet port. This allows the REM to be connected to both a primary network and secondary network.*
 - *When connecting only one network cable to a REM series unit that includes the Dual Ethernet Ports option, make certain to connect to Port ETH0.*
2. **DEF (DEFAULT) Button:** Switches all plugs Off or sets plugs to default values as described in [Section 2.7](#).
 3. **RST (RESET) Button:** Restarts the REM as described in [Section 2.7](#).
 4. **Unit Status Indicators:** Two LED lamps that light to indicate unit status:
 - **RDY Indicator:** (Ready) Flashes to indicate the unit is ready to receive commands.
 - **CEL Indicator:** Indicates cellular activity. The CEL Indicator lights when connected to a tower, and blinks when a PPP connection to the carrier is established.
 5. **Plug Activity Indicators:** Four LED indicators which light when power is applied to the corresponding switched outlet.

6. **RJ45 Port Activity Indicators:** Four LEDs, which will light when a CTS signal is detected and flash during data transmission to indicate activity at the corresponding RJ45 Console Port.
7. **USB Mini SetUp Port:** The USB Mini SetUp Port can be connected to a PC or laptop in order to provide local access to REM command mode functions. When connecting a device to the USB SetUp Port, please refer to [Section 4.3](#). When configuring the USB SetUp Port, please refer to the REM User's Guide.
Note: *RJ45 Serial Port 1, on the REM front panel can also provide local access to the REM command mode.*
8. **USB Console Ports:** For connection to console ports on target devices. For more information on connecting devices to the serial ports, please refer to [Section 4.5](#), plus [Appendix B](#) and [Appendix C](#).
9. **RJ45 Serial Console Ports:** For connection to console ports on target devices. REM Series units include Straight Pinned Serial Ports. For more information on connecting devices to the serial ports, please refer to [Section 4.3](#), plus [Appendix B](#) and [Appendix C](#).
10. **Cellular Antennae and Connectors (Optional):** When the Cellular Modem Option is present, the REM front panel will include two screw-on connectors for the Cell Antennae. For information on setting up the optional Cellular Modem hardware, please refer to [Section 4.7](#).

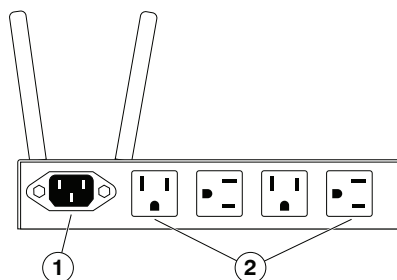


Figure 2.2: REM-4R4 Combo Models - Back Panel

2.2. REM-4R4 Combo Models - Back Panel

As shown in Figure 2.2, the back panel of REM-4R4 Combo Models includes the following components:

1. **AC Power Inlet:** An IEC-60320-C14 inlet. Also includes cable keeper (not shown.)
 - **REM-4R4-1 Series:** 100-120V AC, 50/60Hz.
 - **REM-4R4-2 Series:** 100-240V AC, 50/60Hz.
2. **Switched AC Outlets:** Four Switched AC outlets.
 - **REM-4R4-1 Series:** Four (4) each, NEMA 5-15R Outlets.
 - **REM-4R4-2 Series:** Four (4) each, IEC320-C13 Outlets.

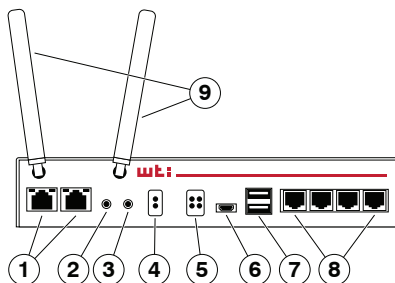


Figure 2.3: REM-4R0 Console Models - Front Panel

2.3. REM-4R0 Console Models - Front Panel

As shown in Figure 2.3, REM-4R4 Console Models include four RJ45 Console Ports and two USB Console Ports. The REM-4R0 front panel includes the following components:

1. **Network Port(s):** RJ45 Ethernet port(s) for connection to your 10/100/1000 Base-T, TCP/IP network(s.) Each Network Port also includes two, small LED indicators for Link and Data Activity. For information on Network Port configuration, please refer to the REM User's Guide.

Notes:

- Some REM series units include an optional, secondary Ethernet port. This allows the REM to be connected to both a primary network and secondary network.
 - When connecting only one network cable to a REM series unit that includes the Dual Ethernet Ports option, make certain to connect to Port ETH0.
2. **DEF (DEFAULT) Button:** Switches all plugs Off or sets plugs to default values as described in [Section 2.7](#).
 3. **RST (RESET) Button:** Restarts the REM as described in [Section 2.7](#).
 4. **Unit Status Indicators:** Two LED lamps that light to indicate unit status:
 - **RDY Indicator:** (Ready) Flashes to indicate the unit is ready to receive commands.
 - **CEL Indicator:** Lights to indicate cellular activity.
 5. **RJ45 Port Activity Indicators:** Four LEDs, which will light when a CTS signal is detected and flash during data transmission to indicate activity at the corresponding RJ45 Console Port.
 6. **USB Mini SetUp Port:** The USB Mini SetUp Port can be connected to a PC or laptop in order to provide local access to REM command mode functions. When connecting a device to the USB SetUp Port, please refer to [Section 4.3](#). When configuring the USB SetUp Port, please refer to the REM User's Guide.

Note: RJ45 Serial Port 1, on the REM front panel can also provide local access to the REM command mode.

7. **USB Console Ports:** For connection to console ports on target devices. For more information on connecting devices to the serial ports, please refer to [Section 4.5](#), plus [Appendix B](#) and [Appendix C](#).
8. **RJ45 Serial Console Ports:** For connection to console ports on target devices. REM Series units include Straight Pinned Serial Ports. For more information on connecting devices to the serial ports, please refer to [Section 4.5](#), plus [Appendix B](#) and [Appendix C](#).
9. **Cellular Antennae and Connectors (Optional):** When the Cellular Modem Option is present, the REM front panel will include two screw-on connectors for the Cell Antennae. For information on setting up the optional Cellular Modem hardware, please refer to [Section 4.7](#).

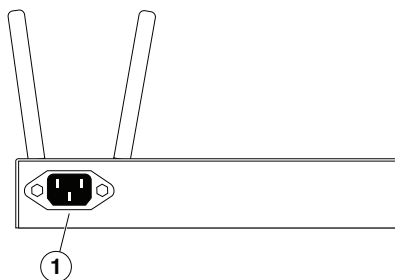


Figure 2.4: REM-4R0 Console Models - Back Panel

2.4. REM-4R0 Console Models - Back Panel

As shown in Figure 2.4, the back panel of REM-4R0 Console Models includes the following components:

1. **AC Power Inlet:** An IEC-60320-C14 inlet. Also includes cable keeper (not shown.)
 - **REM-4R0-1 Series:** 100-120V AC, 50/60Hz.
 - **REM-4R0-2 Series:** 100-240V AC, 50/60Hz.

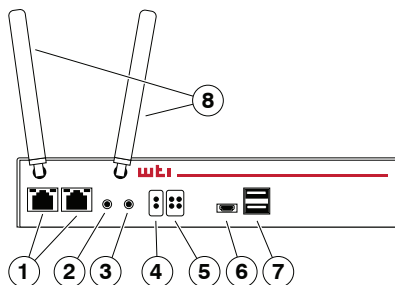


Figure 2.5: REM-0R4 Power Models - Front Panel

2.5. REM-0R4 Power Models - Front Panel

As shown in Figure 2.5, REM-0R4 Power Models include four switched AC Outlets and two USB Console Ports. The REM-0R4 front panel includes the following components:

1. **Network Port(s):** RJ45 Ethernet port(s) for connection to your 10/100/1000 Base-T, TCP/IP network(s.) Each Network Port also includes two, small LED indicators for Link and Data Activity. For information on Network Port configuration, please refer to the REM User's Guide.

Notes:

- Some REM series units include an optional, secondary Ethernet port. This allows the REM to be connected to both a primary network and secondary network.
 - When connecting only one network cable to a REM series unit that includes the Dual Ethernet Ports option, make certain to connect to Port ETH0.
2. **DEF (DEFAULT) Button:** Switches all plugs Off or sets plugs to default values as described in [Section 2.7](#).
 3. **RST (RESET) Button:** Restarts the REM as described in [Section 2.7](#).
 4. **Unit Status Indicators:** Two LED lamps that light to indicate unit status:
 - **RDY Indicator:** (Ready) Flashes to indicate the unit is ready to receive commands.
 - **CEL Indicator:** Lights to indicate cellular activity.
 5. **Plug Activity Indicators:** Four LED indicators which light when power is applied to the corresponding switched outlet.

Note: Providing that power is still present at the secondary power inlet for a given branch, the Plug Activity indicators for that branch will blink on and off when the primary power source for that branch is lost or disconnected.

6. **USB Mini SetUp Port:** The USB Mini SetUp Port can be connected to a PC or laptop in order to provide local access to REM command mode functions. When connecting a device to the USB SetUp Port, please refer to [Section 4.3](#). When configuring the USB SetUp Port, please refer to the REM User's Guide.
Note: *RJ45 Serial Port 1, on the REM front panel can also provide local access to the REM command mode.*
7. **USB Console Ports:** For connection to console ports on target devices. For more information on connecting devices to the serial ports, please refer to [Section 4.5](#), plus [Appendix B](#) and [Appendix C](#).
8. **Cellular Antennae and Connectors (Optional):** When the Cellular Modem Option is present, the REM front panel will include two screw-on connectors for the Cell Antennae. For information on setting up the optional Cellular Modem hardware, please refer to [Section 4.7](#).

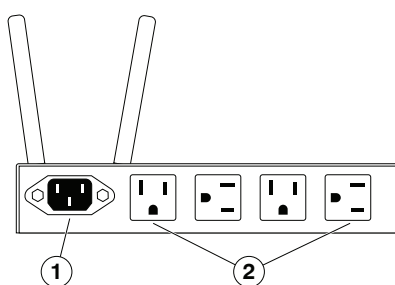


Figure 2.6: REM-OR4 Power Models - Back Panel

2.6. REM-OR4 Power Models - Back Panel

As shown in Figure 2.6, the back panel of REM-OR4 Power Models includes the following components:

1. **AC Power Inlet:** An IEC-60320-C14 inlet. Also includes cable keeper (not shown.)
 - **REM-4R4-1 Series:** 100-120V AC, 50/60Hz.
 - **REM-4R4-2 Series:** 100-240V AC, 50/60Hz.
2. **Switched AC Outlets:** Four Switched AC outlets.
 - **REM-4R4-1 Series:** Four (4) each, NEMA 5-15R Outlets.
 - **REM-4R4-2 Series:** Four (4) each, IEC320-C13 Outlets.

2.7. Front Panel Button Functions

The front panel buttons can be used to perform several functions described below:

Notes:

- *Front Panel button functions can also be disabled via the System Parameters menu, as described in the REM User's Guide.*
- *When the REM is reset to factory defaults, all user-defined configuration parameters will be cleared and the default "super" user account will also be restored.*
- *When the REM is reinitialized, all ports will be disconnected.*
- *During the reboot procedure, all port activity LEDs will flash once.*

1. Reboot Operating System - Keep User-Defined Parameters:

- a) Press and hold the CLEAR (or RESET) button for five seconds, and then release.
- b) The REM operating system will reboot; all user-defined parameters will be retained.

2. Reboot Operating System - Reset All Parameters to Factory Defaults:

- a) Simultaneously press both the SET (or DEFAULT) button and the CLEAR (or RESET) button, hold them for five seconds, and then release.
- b) The REM operating system will reboot; all user-defined parameters will be reset to factory default settings.

Note: *The RDY Indicator will continue to blink for about 45 seconds while parameters are being erased and keys are rebuilt. The RDY Indicator will stop blinking when the reboot is executed.*

3. Getting Started

This section describes a simplified bench test procedure for REM Series products, which will allow you to communicate with the unit in order to demonstrate basic features and check for proper operation.

- For more information regarding installing the REM hardware in a working network environment, please refer to [Section 4](#).
- For instructions regarding configurations options and advanced operating features, please refer to the REM User's Guide.

3.1. Apply Power to the REM

First, check the safety precautions listed at the beginning of this Hardware Guide, and refer to the power rating label on the unit regarding power requirements and maximum load and then connect the REM to an appropriate power source. When power is applied to the REM, the RDY LED should begin to flash within 90 seconds. This indicates that the unit is ready to receive commands.

3.2. Connect Your Computer to the REM

In the default state, communication with the REM via Telnet, HTTP and HTTPS are disabled. Although communication via Telnet, HTTP and/or HTTPS can be enabled as described in the REM User's Guide, during this bench test procedure, the REM will be controlled via the Command Line Interface (CLI) using a local PC, connected to either the Mini USB Port, RJ45 Console Port Number 1 or the Network Port:

- **Mini USB Port:** Use a standard USB-to-Mini-USB Cable. In the default state, the Mini USB Port is configured for 9600 bps.
- **RJ45 Console Port Number 1:** Refer to [Appendix B](#) and then use an appropriate adapter and cable to connect your PC COM port to the first RJ45 Console Port. In the default state, the RJ45 Console Ports are configured for 9600 bps.
- **Network Port:** Use a standard Ethernet Cable. The default IPv4 address for the Network Port is 192.168.168.168.

Notes:

- *If your REM includes the dual Ethernet Port option and you only intend to connect to one of the two available Network Ports, connect to eth0*
- *For cable recommendations and other information regarding the procedure for connecting network elements and other equipment to the REM, please refer to [Appendix B](#) and [Appendix C](#) in this Hardware Guide.*

3.3. Communicating with the REM

Notes:

- *Default serial port parameters are set as follows: 9600 bps, RTS/CTS Handshaking, 8 Data Bits, One Stop Bit, No Parity. Although these parameters can be easily redefined, for this bench test procedure, it is recommended to configure your communications program to accept the default parameters.*
 - *The REM features a default IP Address (192.168.168.168) and a default Subnet Mask (255.255.255.0.) This allows network IPv4 access to the Command Line Interface, providing that you are contacting the REM from a node on the same subnet.*
1. **Access the User Interface:** Start your communications program and (e.g., Tera Term, Putty, etc.) then press **[Enter]**. Note that when viewed by a PC running Windows 10 or later, the Serial COM Port menu will list the USB Mini Port as, “USB to Serial.”
 2. **Username / Password Prompt:** A message will be displayed, which prompts you to enter your username (Login) and password. The default username is “**super**” (all lower case, no quotes), and the default password is also “**super**”. If a valid username and password are entered, the REM will display either the Main Menu (Web Browser Interface) or the Port Status Screen (Text Interface.)

3.4. Connecting Ports and Switching Outlets

If you wish to verify that the REM is operating properly before deploying the unit in a working network environment, proceed as follows to connect ports and switch outlets:

1. **Review the Help Menu:** At the Text Interface command prompt, type `/H` and press **[Enter]** to display the Help Menu.
2. **Creating Connections Between Ports:** Commands issued via the Command Line Interface (CLI) can be used to create a connection between two other ports.
 - a) **RJ45 Console Ports:** To connect Port 3 to Port 4, type `/C 3 4` **[Enter]**.
 - i. While Ports 3 and 4 are connected, your resident port will still recognize commands. Type `/S` **[Enter]** to display the Status Screen. The “STATUS” column should now list Ports 3 and 4 as connected and other ports as “Free”.
 - ii. Issue a Disconnect command; type `/D 3` **[Enter]**. The unit will display the “Are you Sure (y/n)?” prompt. Type `y` and press **[Enter]** to disconnect.
 - iii. Type `/S` **[Enter]** to display the Status Screen. The “STATUS” column should now list Ports 3 and 4 as “Free”.
 - b) **USB Console Ports:** To connect RJ45 Console Port 2 to USB Console Port 1, type `/C 2 U1` **[Enter]**.
 - i. While RJ45 Console Port 2 and USB Console Port 1 (U1) are connected, your resident port will still recognize commands. Type `/S` **[Enter]** to display the Status Screen. The “STATUS” column should now list RJ45 Console Port 2 and USB Console Port 1 (U1) as connected and other ports as “Free”.
 - ii. Issue a Disconnect command; type `/D 2` **[Enter]**. The unit will display the “Are you Sure (y/n)?” prompt. Type `y` and press **[Enter]** to disconnect.
 - iii. Type `/S` **[Enter]** to display the Status Screen. The “STATUS” column should now list RJ45 Console Port 2 and USB Console Port 1 as “Free”.
3. **Controlling Outlets:** You may wish to perform the following tests in order to make certain that the switched outlets are functioning properly.
 - a) **Reboot Outlet:** At the command prompt, type `/BOOT 1` and press **[Enter]**. The status indicator for Plug 1 should go Off, pause for a moment and then go back On, indicating that the boot cycle has been successfully completed.
 - b) **Switch Outlet Off:** At the command prompt, type `/OFF 1` and then press **[Enter]**. The status indicator for Plug 1 should go Off, indicating that the command has been successfully completed. Leave Plug 1 in the “Off” state, and then proceed to the next step.
 - c) **Switch Outlet On:** At the command prompt, type `/ON 1` and press **[Enter]**. The status indicator for Plug 1 should then go back On, indicating that the command has been successfully completed.
4. **Exit from User Interface:** To exit the user interface, type `/X` and press **[Enter]**.

4. Hardware Installation

This section describes the installation procedure for the REM hardware.

Notes:

- *For a detailed description of configurations options and advanced operating features, please refer to the REM User's Guide.*
- *If your REM Series unit includes the Cellular Modem Option, it is recommended to install the cellular antennae and SIM card as described in [Section 4.7](#) prior to performing this Hardware Installation procedure.*

4.1. Connecting the Power Supply Cables

4.1.1. Connect the REM to Your Power Supply

Refer to the cautions listed below and at the beginning of this Hardware Guide. Connect the power supply cable(s) to the unit's power inlet(s), snap the Cable Keepers into place as described in [Section 4.1.2](#), and then connect the cable to an appropriate power supply.

Please refer to the power rating label on the unit concerning power requirements and maximum load. When power is applied to the REM, the ON LED on the instrument front panel should light, and the RDY LED should begin to flash within 90 seconds. This indicates that the unit is ready to receive commands.



CAUTIONS:



- ***Before attempting to install this unit, please review the warnings and cautions listed at the front of the user's guide.***
- ***This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.***
- ***Reliable earthing (grounding) of this unit must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than directly to the branch circuit.***

4.1.2. Installing the Power Supply Cable Keeper(s)

REM Series units includes cable keepers, which are designed to prevent the AC power supply cables from being accidentally disconnected from the unit. When attaching power supply cables to the unit, first swing the cable keeper out of the way, then plug the power cable securely into the power input. When the cable is in place, snap the cable keeper over the plug to secure the cable to the unit.

4.2. Connecting the Network Cable

The Network Port is an RJ45 Ethernet jack, for connection to a TCP/IP network. Connect your 10/100/1000Base-T cable to the Network Port. Some REM series units include an optional, secondary Network port in addition to the primary network port. When installing the REM in a working network environment, it is recommended to define network parameters as described in the REM User's Guide.

Notes:

- *When connecting only one network cable to a REM unit that includes two Ethernet ports make certain to connect to Port ETH0.*
- *The REM features a 10/100/1000Base-T auto-negotiating Interface; speed and duplex mode will be automatically negotiated. When connecting to an Ethernet interface, most router switches will autosense to determine if the device is 1000Base-T, 100Base-T or 10Base-T, and then configure the network interface accordingly. If your router switch does not autosense, the REM will auto negotiate speed and duplex mode.*

4.3. Connection to the SetUp Port(s)

In order to select configuration parameters and review unit status, commands are issued to the REM via either the Network Port, RJ45 Console Port Number 1 or the USB Mini Port. Note that it is not necessary to connect to all three ports. Connect your PC COM Port to the SetUp Port or USB Mini Port. For a description of the port pinouts, please refer to [Appendix B](#).

- **RJ45 Console Port Number 1:** When connecting to the RJ45 SetUp Port, refer to [Appendix B](#) and then use an appropriate adapter and cable to connect your PC COM port to the REM (RJ45 Console Port 1.)
- **USB Mini SetUp Port:** When connecting to the USB Mini Port, use a standard USB Mini Port cable.

4.4. Connection to Switched Outlets (REM-4R4 and REM-0R4 Only)

Connect the power cables from your switched devices to the AC Outlets located on the REM-4R4 or REM-0R4 Series back panel. Note that when power is applied to the REM, the AC Outlets will be switched "ON" by default.

4.5. Connecting Devices to the REM Console Ports

REM-4R4 Combo Managers and REM-4R0 Console Managers units feature both four (4) RJ45 Console Ports and two (2) USB Console Ports. REM-0R4 Power Managers feature two (2) USB Console Ports. In the default state, the RJ45 ports are configured for 9600 bps, no parity, 8 data bits, 1 stop bit. For a description of the port interface, please refer to [Appendix B](#).

When properly configured, the Console Ports can be connected to almost any device that includes an RS232 console port. In addition, the serial ports can also be used to allow local users to configure and control the REM; Serial Port 1 is designated as a “Set Up Port”, and accordingly cannot be reconfigured as a buffer mode or passive mode port in order to ensure the port’s availability for local communication with the REM.

Notes:

- *REM Series products include Straight Pinned RJ45 Serial Ports.*
- *For cable recommendations and other information on connecting devices to the REM unit, please refer to [Appendix B](#) and [Appendix C](#).*
- *To connect external modems, router switches, or other DTE and DCE devices to the REM Console Ports, please refer to [Appendix C](#) for information regarding cables and adapters.*

After connecting new devices to REM Console Ports, access the REM command mode and select communication parameters for each serial port as described in the REM User’s Guide.

4.6. Emergency Shut Off Function

REM series units also include an Emergency Shut Off function, that can be used to immediately shut off all power outlets in case of emergency. For more information regarding the Emergency Shut Off feature, please contact WTI Tech Support at service@wti.com.

4.7. The Cellular Modem Option

This section provides a basic overview of the procedure for installing and setting up WTI's Cellular Modem option on REM series products.

Notes:

- *It is recommended to install the Cellular Antennae and SIM card before connecting cables to the REM power outlets and serial ports.*
- *For instructions regarding configuring the Cellular Modem and defining the Static Route, please refer to the REM User's Guide.*

In order to communicate with your REM device via the Cellular Modem Option, you will first need to purchase a cellular plan. When choosing a cellular plan, WTI recommends that the plan should provide the following:

- A Static IP Address
- A VPN (Virtual Private Network)

4.7.1. Attach the Cellular Antennae

Attach the two Cellular Antennae, (included with the unit,) to the two threaded connectors on the REM face plate.

4.7.2. Install the SIM Card

Once you have purchased a cellular plan, the next step is to install the SIM card, (provided with your cellular plan,) in your REM device. To install the SIM card, proceed as follows:

Note: *Prior to installing the SIM Card, make certain that the WTI REM series unit is powered Off and disconnected from the power source.*

1. Remove the SIM Card cover panel on the left hand side of the WTI unit, located adjacent to the cellular antenna. Note that the panel is held in place by a small Phillips Head screw.
2. Carefully slide the SIM card into the SIM Card Slot with the keyed/notched corner of the card facing towards the unit's faceplate (see diagram on cover plate.) Make certain the SIM Card is firmly seated, but do not apply excess pressure that might damage the card.
3. Replace the panel that covers the SIM Card Slot, reinstall the retaining screw and restore power to the REM unit.
4. For instructions regarding configuring the SIM card, defining Static Route parameters, enabling web access and setting up the firewall/IP tables, please refer to the REM User's Guide.

This completes the REM Hardware Guide. Prior to placing the unit into operation, it is recommended to refer to the REM User's Guide for important information regarding advanced configuration options, security functions and more detailed operation instructions. If you have further questions regarding the REM unit, please contact WTI Customer Support as described in [Appendix D](#).

Appendix A. Specifications

Power Input/Output:

Voltage:

REM-4R4-1 and REM-4R0-1 Series: 100 - 120 VAC, 50/60 Hz

REM-4R4-2 and REM-4R0-2 Series: 100 - 240 VAC, 50/60 Hz

AC Input Feed: 1 (15 Amp)

AC Inlet: One (1) IEC 60320-C14, (15 Amp)

AC Outlets:

REM-4R4-1 Series: (4) NEMA 5-15R

REM-4R4-2 Series: (4) IEC 60320 C13

Console Port Interface:

Connectors:

REM-4R4 and REM 4R0 Series: Four (4) RJ45 connectors, plus Two (2) USB Type A

Coding: 7/8 bits, Even, Odd, No Parity, 1, 2 Stop Bits.

Data Rate: 300 bps to 230 kbps (all standard rates).

Physical/Environmental:

Width: 9" (22.8 cm)

Depth: 7.3" (18.5 cm)

Height: 1.74" (4.4 cm), 1 Rack U

Operating Temperature: 32F to 140F (0C to 60C)

Humidity: 10 - 90% RH

Agency Approvals: UL, cUL, CE, FCC Class A

Venting: Side vents are used to dissipate heat generated within the unit. When mounting the unit in an equipment rack, make certain to allow adequate clearance for venting.

Control Ports:

Ethernet Port: 10/100/1000Base-T, RJ45, multi-session.

(Optional Secondary 10/100/1000Base-T Ethernet Port Also Available.)

Internal Cellular Modem Port: (Optional) 4G LTE for North America (AT&T, Verizon)
or World (Various Carriers)

USB Mini SetUp Port: USB Mini Port for Local Access

Appendix B. Serial Interface Description

Note: For examples of the cables and/or adapters needed to connect various devices to the REM Console Ports, please refer to [Appendix C](#).

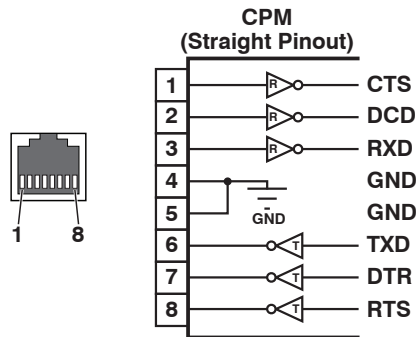


Figure B.1: REM Series RS232 Console Port Interface (RJ45 - Straight Pinout)

DCD and DTR hardware lines function as follows:

1. **When connected:**
 - a) If either port is set for Modem Mode, the DTR output at either port reflects the DCD input at the other end.
 - b) If neither port is set for Modem Mode, DTR output is held high (active).
2. **When not connected:**
 - a) If the port is set for Modem Mode, upon disconnect DTR output is pulsed for 0.5 seconds and then held high.
 - b) If the port is not set for Modem Mode, DTR output is controlled by the DTR Output option (Serial Port Parameters Menu, Option 23). Upon disconnect, Option 23 allows DTR output to be held low, held high, or pulsed for 0.5 seconds and then held high.

When connecting devices to RJ45 Console Ports, please refer to Figure B.1 and the table below. For examples, please refer to [Appendix C](#):

Target Device End	Adapter	Cable	WTI Device End
RJ Serial Console Ports: Cisco Routers, Juniper Routers and Other Network Devices with RJ45 Serial Console Port	(None Required)	RJ45 Patch Cable: RJX-7 (7 Feet) RJX-25 (25 Feet) RJX-25 (25 Feet) RJX-50 (50 Feet)	WTI REM Series - RJ45, DTE Serial Console Port
DB9M Serial Console Ports: Linux PC or Linux Laptop, WTI RSM Series Units, WTI MPC Series Units and Other Devices with a DB9M Serial Console Port	DX9F-NULL-RJ Snap Adapter	RJ45 Patch Cable: RJX-7 (7 Feet) RJX-15 (15 Feet) RJX-25 (25 Feet) RJX-50 (50 Feet)	

Appendix C. Connecting Devices to RJ45 Serial Ports

This Appendix describes the cables and adapters that are used to connect common devices to RJ45 Console Ports on REM-4R4 and REM-4R0 Series devices.

C.1. Connecting DB-9M DTE Devices

The DX9F-NULL-RJ Snap Adapter can be used with an RJ45 Patch cable to attach the following DB-9M DTE devices to the REM's RJ45 Console Ports:

- PCs and Laptops
- Console Ports on WTI RSM Series Products
- Other Devices with a DB-9M DTE Console Port

When connecting a DB-9M DTE device to an RJ45 Console Port on a REM-4R4 or RSM-4R0 Series unit, please refer to Figure C.1:

Note: For a description of the RJ45 Port Pinout, please refer to [Appendix B](#).

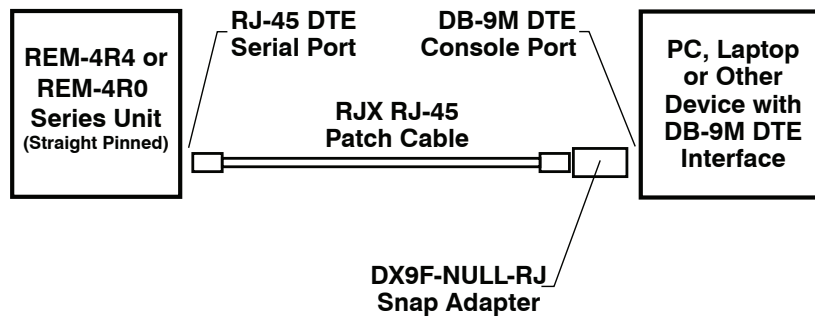


Figure C.1: Connecting DB-9M DTE Devices to REM Series Units

C.2. Connecting RJ45 DCE Devices

An RJ-X Patch Cable can be used to connect the following RJ45 DCE devices to the REM's RJ45 Console Ports:

- Cisco Routers with RJ45 DCE Console Port
- Sun Routers with RJ45 DCE Console Port
- Other Devices with RJ45 DCE Console Port

When connecting an RJ45 DCE device to an RJ45 serial port on an REM-4R4 or REM-4R0 Series unit, please refer to Figure C.2 below:

Note: For a description of the Straight Pinout, please refer to [Appendix B](#).

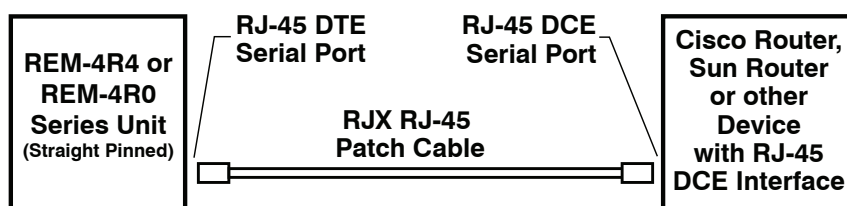


Figure C.2: Connecting RJ45 DCE Devices to REM Series Units

Appendix D. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST, Monday through Friday. When calling, please be prepared to give the name and make of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

WTI Customer Service
5 Sterling
Irvine, California 92618

Local Phone: (949) 586-9950
Toll Free Service Line: 1-888-280-7227
Service Fax: (949) 583-9514

Email: service@wti.com

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