

# MDS Mercury™ Series



## Wireless IP/Ethernet Transceiver Covering all AP and Remote Units including Mercury 900, 3650, and Option Set 1 Remotes

MDS 05-4558A01, Rev. C

December 2008



GE MDS  
industrial wireless networks

Start-Up Guide

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The center of this guide contains a chart with a summary of installation procedures. Refer to the Mercury Reference Manual (05-4446A01) for additional warnings, cautions, and notes.

## PRODUCT DESCRIPTION

MDS Mercury™ Series transceivers provide an easy-to-install wireless network service with long range and secure operation at adaptive data rates approaching 12 Mbps. The transceiver is ideally suited for demanding applications in mobile or fixed environments, where reliability and range are paramount.

The product is commonly used to send text documents, graphics, email, video, voice over IP (VoIP), and a variety of other application data between mobile, fixed-point, and LAN-based entities.

The transceiver comes in two primary models—Access Point and Remote, each with unique hardware profiles. Both models support Ethernet and serial services. An Access Point (AP) is a wireless hub that usually provides connectivity into a wired Ethernet LAN/WAN. Remotes associate over the air with an Access Point and are typically connected to an Ethernet or Serial device via a cable.

## INSTALLATION OVERVIEW

There are three main requirements for installing the transceiver—adequate and stable primary power, a good antenna system, and the correct interface between the transceiver and the data device. The Installation Setup Chart (center of this guide) shows a typical Remote installation. Access Point and mobile Remote stations typically use omnidirectional antennas whereas fixed-site Remotes typically use directional antennas such as a Yagi or panel type. Otherwise, both installations are similar.

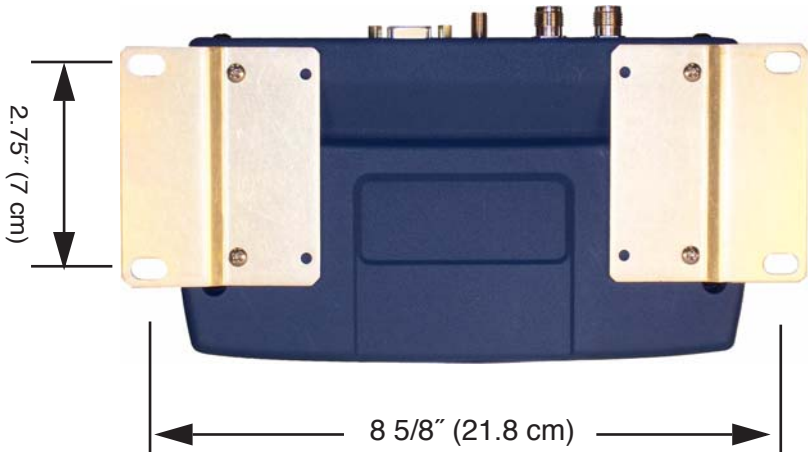
## INSTALLATION STEPS

A typical shipment consists of a transceiver, a power connector and this start-up guide. Below are the basic steps for installing a transceiver. Refer to the *Mercury Reference Manual* for detailed information. You will also find support information at the GE MDS Web site: [www.GEmds.com](http://www.GEmds.com). Our Technical Services Team is available to assist with any difficulties that may be encountered. Refer to the back of this guide for contact information.

It is highly recommended that the Access Point unit be installed *first* so that you can quickly check the operation of each associated Remote as it is placed on the air.

## Step 1 – Mount the Transceiver

Use the supplied 6-32 x 1/4 inch (6 mm) screws to attach the mounting brackets to the bottom of the radio. **Figure 1** shows the mounting dimensions of the unit. Mount the radio to a stable surface. (Fasteners not normally supplied.)



**Figure 1. Transceiver Mounting Dimensions**  
(Dimensions for AP and Remotes identical)

**CAUTION**  
POSSIBLE  
EQUIPMENT  
DAMAGE

Use only the supplied mounting bracket screws. Screws extending farther than 1/4 inch (6 mm) into the case may cause internal PC board damage.

## Step 2 – Install the Antenna

To minimize RF interference, the antenna should be mounted at least nine inches (> 23 cm) from the connected device(s), sensors and other external components of the system. Additional information on antenna selection and installation is provided in the *Mercury Reference Manual*.

### Install GPS Antenna

Install the GPS antenna in accordance with the manufacturer's instructions, and connect the antenna cable to the SMB-type connector on the transceiver's front panel.

## Step 3—Measure & Connect Primary Power

The DC input power to the transceiver must be within 10–30 Vdc and capable of continuously providing at least 2.5 Amperes. A power connector with screw-terminals is provided with each unit. Strip the wire leads to 6 mm (1/4 inch). Be sure to observe proper polarity as shown in [Figure 2](#) with the positive lead (+) on the left side; negative on the right side.



**Figure 2. Power Connector**  
(Polarity: Left +, Right –)

### CAUTION

POSSIBLE  
EQUIPMENT  
DAMAGE

The transceiver must be used with negative-ground systems only. The power supply should be equipped with overload protection (NEC Class 2 rating), to protect against a short circuit between its output terminals and the radio's power connector.

**NOTE:** Typically, it takes about 30 seconds for the transceiver to fully power up, and may take several minutes to associate with another unit, especially if GPS is required for time synchronization.

## Step 4—Review the Transceiver's Configuration

There are two key settings that must be known before placing the unit into service:

- **Network Name**—Common identifier used by all of the units, that are part of the same network. The Network Name must be programmed to enable Remote units to associate with the Access Point unit. (Default name is **MDS-Mercury**.)
- **IP Address**—Must be a unique address to allow for IP access through the LAN port or over-the-air. (Default is **192.168.1.1**)

Other parameters commonly needing review or adjustment are:

- **RF Output Power Level** (AP Only)—Check and adjust as necessary for compliance with regulatory limits. (Default power is +30 dBm for 900 model, +20 dBm for 3650 model.) Note that Remotes “auto-adjust” power output based on target receive signal set at the Access Point.
- **Password**—Used for remote access and Menu System features.
- **Frequency Mode** (900 model only)—This is found under **Radio Configuration Menu>Frequency Control**. The following modes are available:
  - Single Channel**—Where AP and Remote link up using one frequency channel of the 14 possible channels in the 900 Mhz band. This is the default frequency mode.
  - Static Hopping**—Where an AP and Remote link up using FHSS based on a Hop Pattern.
  - Hopping with Hand-offs**—(Used with Remotes only.) Based on AP locations file, which contains GPS coordinates to pre-determine or preselect which AP to hop with.
- **Frequency** (3650 model only)—Operating frequency in MHz.
- **TDD Sync Mode** (AP only)—Selections are: **Free Run**, **Prefer GPS**, and **GPS Required**.

For single channel operation, the TDD Sync Mode can be set to **Free Run** or **GPS Required**. Using **GPS Required** synchronizes the AP’s transmissions to the GPS timing. When the frequency mode is **Static Hopping** the TDD Sync Mode must be set to **GPS Required**.

**Free Run** allows for rapid configuration in most systems. Note that **Free Run** only works on single channel frequency mode (the default mode).

**GPS Required** is only needed on the 3650 model to synchronize multiple Access Points.

**NOTE:** The default password for *all* units is **admin**. The default username is **admin**.

A unique IP address and subnet are required to access the Menu System, either through the LAN port, or remotely over-the-air.

A summary of selected operating parameters’ range and default values is included in the Installation Setup Chart at the center of this guide.

### **Log-in and Configuration Procedure**

The following is an overview of the local log-in and configuration procedure using the COM1 serial port. For detailed instructions on this, and other methods of control, refer to the *Mercury Reference Manual*.

- a. Connect a computer's serial port to the COM1 Port of the radio.
- b. Launch a terminal communication program, such as HyperTerminal, on the computer. (Configure terminal to: 115,200 bps/8N1/no handshaking/VT100.)
- c. Press the **ENTER** key. A login prompt will be displayed that requires a username and password.
- d. Enter the username and password (default entries are **admin**).
- e. Change the radio's network name from the default entry of **MDS-Mercury**. This can be changed under the **Radio Configuration Menu** for both AP and Remote.
- f. Review other settings and make changes as necessary, such as the unit password, IP address, and security.
- g. Under the Radio Configuration Menu at the Access Point, set/verify the following:
  - Transmit Power**—Settable from: -30 dBm to +30 dBm (AP); 0 dBm to +30 dBm (Remote); +20 dBm for 3650 models.
  - Receive Power**—Target receive signal of the AP which Remotes will have to adjust based on distance.
- h. Under the **Frequency Control** Menu of the **Radio Configuration** Menu set/verify the following:
  - Frequency Mode**—Single Channel
  - Single Frequency**—Channel (0 to 13)
  - Frame Duration**—for a 1.75 Mhz channel, use either 10 or 20 milliseconds.
- i. Ensure that the Remote's radio parameters are consistent with the AP's network name and the Frequency Control Parameters.

*Repeat above steps for each unit in the network.*

**NOTE:** Using **Configuration Scripts** under the **Maintenance/Tools** menu will aid in uniformly configuring multiple units. See the *Mercury Reference Manual* for details.

## Step 5—Connect the Data Equipment

Connect Ethernet-compatible data equipment to the unit's LAN port (10/100 BaseT), or one of the serial ports, depending on the capability of your transceiver.

Use a straight-through Ethernet cable to connect the LAN port to a hub or switch, and a crossover cable to connect it directly to an Ethernet station (PC, PLC, RTU).

## Step 6—Check for Normal Operation

This step verifies the proper operation of wireless communications between an Access Point and its associated Remotes.

### **At All Units...**

Observe the transceiver's LED panel (See *Installation Setup Chart*) for the proper indications. In a normally operating system, the radio will typically become associated in about two minutes from start-up.

### **At the Access Point...**

- a. If the Access Point unit is the first unit you are installing, send a **PING** command to it through the LAN port. This verifies basic LAN connectivity.
- b. If you have already installed a Remote unit, try sending a **PING** to that unit through the Menu System **PING** utility or a device connected to the unit on the same subnet.

### **At Remotes...**

- a. Look for the LINK LED to turn on and stay on. This indicates the unit has successfully associated with the network's Access Point. (The association process may take up to 30 seconds.)
- b. Check the **Starting Information** screen for the **Device Status** (also known as Connection Status). It will show one of the following:

**Initializing**—This is the first phase after boot-up.



**Scanning**—The unit is looking for an Access Point beacon signal.

**Ranging**—Unit is adjusting power, timing, and frequency with an AP.

**Connecting**—Unit has an RF connection with the AP.

**Authenticating**—(When Device Authentication is in use) The Remote is authenticating itself to the network to obtain security clearance.

**Associated** —The unit has successfully synchronized and associated with an Access Point. This is the normal status.

**Alarmed**—The unit is has detected one or more alarms that have not been cleared.

- c. When the network is operating properly based on observation of the unit's LEDs, connect a computer to the transceiver's data port that will be used by the local terminal equipment. Send the **PING** command to verify communications link integrity with the Access Point.
- d. After the **PING** is successful, connect the terminal equipment to the radio's data port and verify normal operation.

*If all checks are OK, you are finished with the installation at this site.*

## Resetting to Factory Defaults (Use with Caution)

Selecting **Maintenance/Tools>Reset to Factory Defaults** sets all transceiver parameters back to their factory defaults. This may be useful when several parameters have been modified and there is no track of changes. It causes the transceiver to return to a known factory state. Use this function with care, as *all* user-customized settings will be cleared.

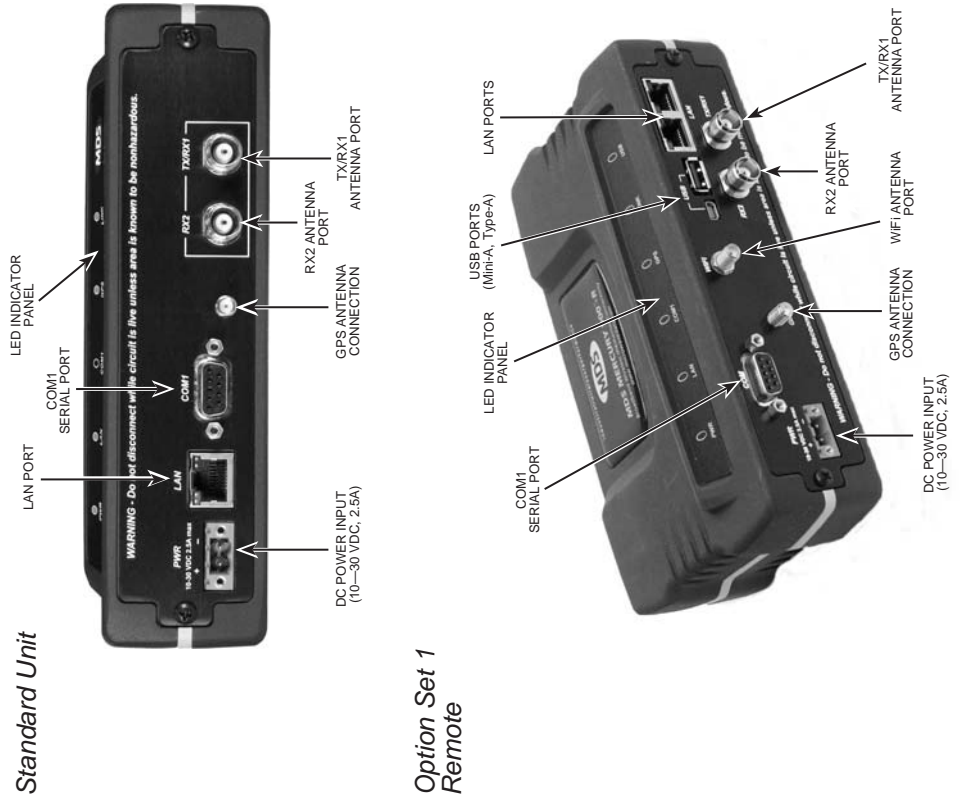
## AIMING DIRECTIONAL ANTENNAS

Directional antennas usually require some fine-tuning of their bearing to optimize the received signal strength. The unit has a built-in received signal strength indicator (RSSI) that can be used to optimize the received signal level. It is available under the **Performance Information** menu.

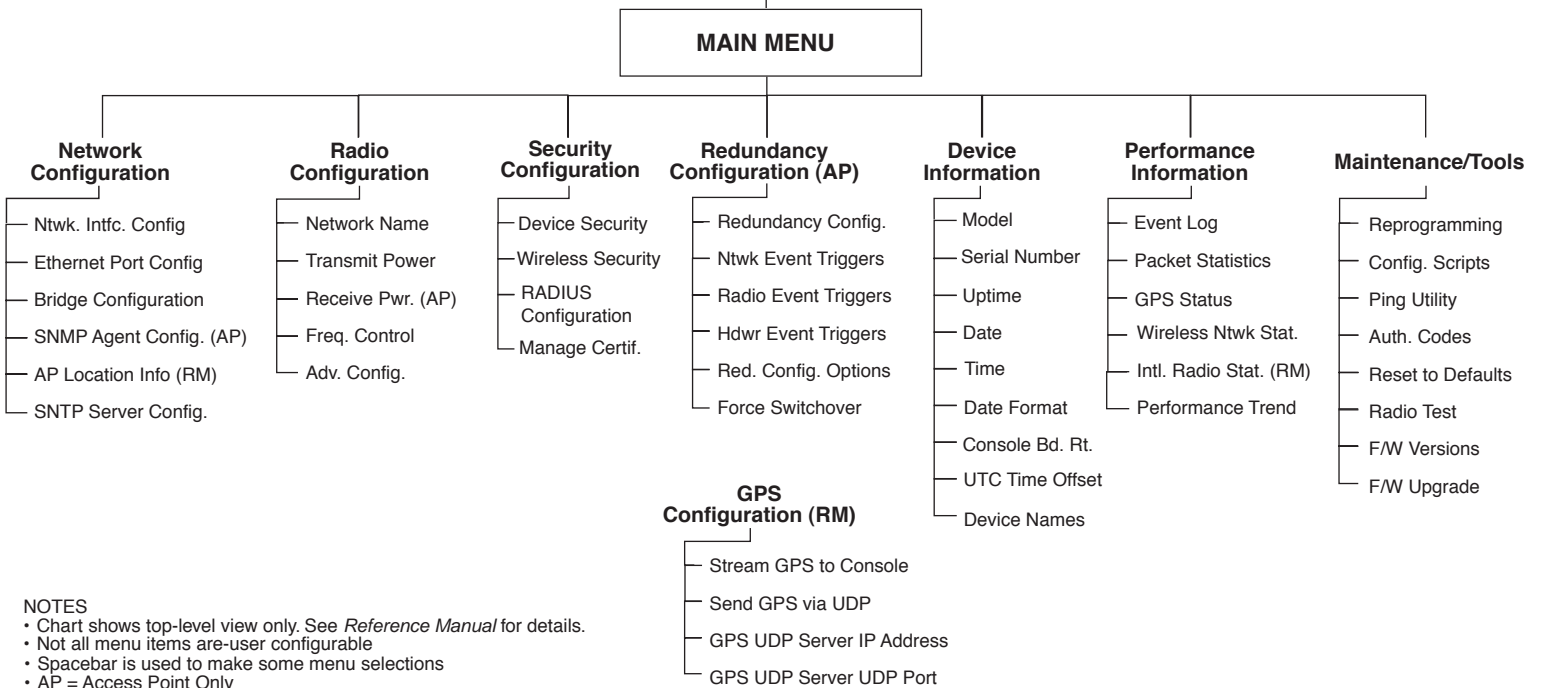
## LED FUNCTIONS & INDICATIONS

<b>PWR</b> ..... ON ..... Primary power (DC) present Flashing ..... Alarm present OFF ..... Primary power (DC) absent	<b>Access Point</b> <b>LINK</b> ..... ON ..... Default state Flashing ..... Data Tx/Rx
<b>LAN</b> ..... ON ..... LAN detected Flashing ..... Data TX/RX OFF ..... LAN not detected	<b>Remote Gateway</b> <b>LINK</b> ..... ON ..... Associated to AP Flashing ..... Data Tx/Rx OFF ..... Not Associated with AP
<b>COM1</b> ..... Flashing ..... Data TX/RX Activity OFF ..... No data activity	
<b>GPS</b> ..... ON ..... Has satellite fix Flashing ..... Synchronizing OFF ..... No satellite fix	

## CONNECTORS AND INDICATORS



### Starting Information Screen (Read-Only Status)



NOTES  
 • Chart shows top-level view only. See *Reference Manual* for details.  
 • Not all menu items are user-configurable  
 • Spacebar is used to make some menu selections  
 • AP = Access Point Only  
 • RM = Remote Only

## MENU SYSTEM Flowchart



GE MDS  
 industrial wireless networks

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 www.GEmds.com

Insert to P/N 05-4458A01

# INSTALLATION REFERENCE CHART

Detailed instructions are contained in the Reference Manual, P/N 05-4446A01

## INSTALLATION SUMMARY

### Step 1 – Mount the Transceiver

### Step 2 – Install the Antennas

### Step 3 – Measure & Connect Primary Power (10–30 Vdc)

### Step 4 – Review the Transceiver's Configuration

**Network Name**—Unique name for each radio network. Required for Remotes to associate with the Access Point. (Default name is **MDS-Mercury**.)

**IP Address**—Must be a unique number to allow for IP access through the Ethernet Port.

**NOTE:** A unique IP address is essential to access the web browser-based Management System.

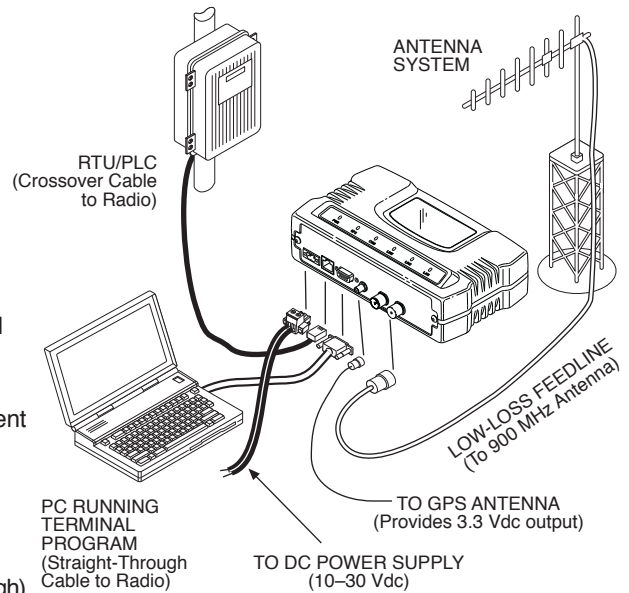
**RF Output Power**—Adjust as necessary for regulatory compliance.

**Username/Password**—Used for remote access and some Management System features. (Username and Password default = **admin**)

### Step 5 – Connect the Data Equipment

Connect the data equipment to data port(s):

- LAN—10/100BaseT Ethernet-compatible equipment: Ethernet PLC (Crossover cable); Ethernet switch (Straight-Through)
- COM1—RS/EIA-232 compatible equipment (Crossover cable to serial PLC/RTU)



**TYPICAL INSTALLATION—Remote Shown**

### Step 6 – Check for Normal Operation

Observe the transceiver LED status panel for the proper indications. In a normally operating system, the following LED indications should be seen within 30 seconds of power-up:

WR—Lights continuously    AN—On or blinks intermittently    LINK— On or blinks intermittently (Remotes: if associated)

Use PING command to test basic data link integrity between Access Point and Remotes.

If the PING command is successful, connect the RTU/data equipment to the data port and verify normal operation.

If the LINK LED on Remotes is not on after 2 or 3 minutes, the unit has failed to associate with the Access Point. It may be necessary to reposition or redirect the radio's antenna for better reception/signal strength. Check also GPS antenna system.

Check connected data equipment for normal operation.

## BASIC CONFIGURATION DEFAULTS

The Management System can be accessed through the COM1 Port using a terminal emulator. The basic items listed below, and many other parameters and tools can be accessed through this tool. HTTP, Telnet access, and changing parameters are controlled by password.

ITEM	MGT SYSTEM MENU	DEFAULT	VALUES/RANGE
Username/Password	Device Information	admin (lower case)	<ul style="list-style-type: none"> <li>• 1–8 alphanumeric characters</li> <li>• Case-sensitive; can be mixed case</li> </ul>
Network Name	Network Configuration	MDS-Mercury	<ul style="list-style-type: none"> <li>• 1–16 alphanumeric characters</li> <li>• Case-sensitive; can be mixed case</li> </ul>
IP Address	Network Configuration	192.168.1.1	Contact your Network Administrator
RF Output Power	Radio Configuration	+30 dBm (900 model) +20 dBm (3650 model)	AP: -30 to +30 dBm    RM: 0 to +30 dBm

In general, signal levels stronger than  $-80$  dBm will provide reliable communication in the network. RSSI measurements and Wireless Packet Statistics are based on multiple samples over a period of several seconds. The average of these measurements is displayed by the RSSI screen.

In the steps below, the path to the Menu System item is shown in bold text.

## Procedure

1. Verify the Remote is associated with an Access Point unit by observing the LINK LED. It should be on or blinking.
2. View and record the **Wireless Packets Dropped** and **Received Error** rates. This information will be used later.

### **Main Menu>Performance Information>Packet Statistics**

3. Read the RSSI level at the Remote.

### **Main Menu>Performance Information>Internal Radio Status**

4. Optimize RSSI by slowly adjusting the direction of the antenna. Watch the RSSI indication for several seconds after making each adjustment so that the RSSI accurately reflects any change in the link signal strength. The less negative the number, the stronger the signal.
5. View the **Wireless Packets Dropped** and **Received Error** rates at the point of maximum RSSI level. They should be the same or lower than previously noted.

### **Main Menu>Performance Information>Packet Statistics**

If the RSSI peak results in an increase in the **Packets Dropped** and **Received Error** numbers, the antenna may be aimed at an undesired signal. Try a different antenna heading.

**NOTE:** Access Points and Remote stations must use the same antenna polarity (vertical or horizontal) or signal strengths will be attenuated by 20 dB or more.

## TRANSMITTER POWER & ANTENNA TEST

The following procedure may be used to measure the transmitter's RF power output and SWR "match" of the antenna system. A directional wattmeter is required for the test, such as a Bird Model 43, with an appropriate element installed.

Before you start, keep in mind that using the Test Mode will disrupt network operation.

### Procedure

1. Connect a directional wattmeter between the ANTENNA port and the antenna system.
2. Place the transceiver into the Radio Test Mode.  
**Main Menu>Maintenance/Tools Menu>Radio Test>Radio Mode>Test**

**NOTE:** The Test Mode has a 10-minute timer, after which it will return the transceiver to normal operation. The Test Mode can also be terminated manually, via the menu.

3. Set the transmitter RF output power to +28 dBm.

**Main Menu>Radio Configuration>Transmit Power**

**NOTE:** The Test Mode RF power setting does not affect the output level during normal operation

4. Activate (key) the transmitter.

**Main Menu>Maintenance/Tools>Radio Test>Test Mode>TxKey> Enable**

Use the spacebar to key and unkey the transmitter ON and OFF (Enable/Disable).

5. Using the wattmeter, measure the forward and reflected power into the antenna system and calculate the SWR. The ratio should be less than 2:1. Higher levels may indicate a problem with the antenna or feedline.
6. Turn off Test Mode at the Access Point and Remote radio.

**Main Menu>Maintenance/Tools>Radio Test>Radio Mode>Normal**

## TROUBLESHOOTING

It is best to begin troubleshooting at the Access Point, as the rest of the system depends on it for network synchronization and configuration. If the Access Point has problems, the operation of the entire network will be affected.

All radios in the network must meet these basic requirements:

- Adequate and stable primary power
- An efficient and properly aligned antenna system
- Secure connections (RF, data & power)
- Proper programming of the unit's operating parameters, especially Frequency Mode Selection, Network Name, and IP Address
- The correct interface between the radio and the connected data equipment (proper cable wiring, data format and timing)

**Table 1** provides suggestions for resolving common system difficulties using the radio's LEDs as a guide. **Table 2 on Page 13** provides guidance for using the Menu System as a tool.

If problems cannot be resolved using the guidance provided here, review the GE MDS web site's technical support area for recent software/firmware updates, general troubleshooting help, and service information. Additional help is available through our Technical Support Department.

**Table 1. Troubleshooting Using LEDs**

Symptom	Problem/Recommended Checks
PWR LED not lit.	<ol style="list-style-type: none"><li>a. Voltage too low—Check for proper supply voltage at the power connector (10–30 Vdc).</li><li>b. Indefinite Problem—Cycle the power and wait (≈ 30 seconds) for the unit to reboot. Then, recheck for normal operation.</li></ol>
PWR LED is blinking.	<ol style="list-style-type: none"><li>a. Blinking indicates the presence of an alarm condition.</li><li>b. View Current Alarm List and Error Log and correct the problem if possible.</li><li>c. Blinking continues until the fault is corrected, for example, a valid IP address is entered, etc.</li></ol>

**Table 1. Troubleshooting Using LEDs (Continued)**

Symptom	Problem/Recommended Checks
LINK LED not lit.	<ul style="list-style-type: none"> <li>a. Network Names of APs and Remotes do not match. They must be identical for association to occur—Also, verify that the system has a unique Network Name.</li> <li>b. Remote not yet associated with an Access Point with the same Network Name.  Check the “Status” of the unit’s process of associating with the Access Point. Use the Menu System.</li> <li>c. Poor Antenna System—Check the antenna, feedline and connectors. Reflected power should be less than 10% of the forward power reading (SWR 2:1 or lower).</li> <li>d. Wrong Frequency Mode parameters where units need to be time synchronized. Frequency Mode parameters are channel, bandwidth and pattern offset.</li> <li>e. Wrong encryption settings—The <b>Encryption Enable</b> and <b>Encryption Phrase</b> must match on the AP and Remote.</li> <li>f. Wrong device authentication settings—Verify settings match on AP and Remote.</li> </ul>
LAN LED not lit.	<ul style="list-style-type: none"> <li>a. Verify the Ethernet cable is connected at both ends.</li> <li>b. Verify that the appropriate type of Ethernet cable is used: straight-through, or crossover as required.</li> <li>c. Verify setting of parameter <b>Eth Port Follows Association</b> if selected or enabled. If enabled, LED does <i>not</i> light when Remote is not associated.</li> </ul>
GPS LED not lit	<p>Indicates no GPS fix has been obtained. This only applies when GPS operation is desired.</p> <ul style="list-style-type: none"> <li>a. Check connection of GPS antenna cable and the antenna itself. Is there a clear “view” to satellites?</li> </ul> <p>Note: Blinking LED indicates establishing TDD Sync.</p>

## Table 2. Troubleshooting with the Menu System

Symptom	Problem/Recommended System Checks
Cannot Access the Remote or AP through COM1	<p>Only occurs in three possible scenarios:</p> <ul style="list-style-type: none"> <li>—COM1 is damaged or the Unit is faulty.</li> <li>—COM1 is being used for Streaming GPS information to Console terminal.</li> <li>—COM1 is being used for serial data.               <ol style="list-style-type: none"> <li>a. Connect to unit via Telnet or Web browser</li> <li>b. Disable the serial mode for COM1 (<b>Serial Gateway Configuration&gt;Com1 Serial Data Port&gt;Status&gt;Disabled</b>) or, if you know the unit's data configuration...</li> <li>c. Connect to COM 1 via a terminal set to VT100 and the port's data baud rate to xxxx bps (4800 for GPS) 8N1.</li> <li>d. Port in Data mode. Enter escape sequence “+++”.</li> </ol> </li> </ul>
Cannot pass IP data to WAN.	<ol style="list-style-type: none"> <li>a. Verify your IP settings.</li> <li>b. Use the PING command to test communication with units in the local radio system.</li> <li>c. If successful with local PING, attempt to PING an IP unit attached to another radio.</li> <li>d. If successful with the LAN PINGs, try connecting to a known unit in the WAN.</li> </ol>
Excessive Wireless Retries.	<p>Possible Radio Frequency Interference (RFI)—</p> <ol style="list-style-type: none"> <li>a. If omnidirectional antennas are used, consider changing to directional antennas. This will often limit interference to and from other stations.</li> <li>b. Try skipping channels where persistent interference is known or suspected.</li> <li>c. The installation of a filter in the antenna feedline may be necessary. Consult the factory for further assistance.</li> </ol>
Password forgotten.	<ol style="list-style-type: none"> <li>a. Connect to the unit using a terminal through the COM1 Port.</li> <li>b. Consult the factory. Get a password-resetting Authorization Key.</li> <li>c. Enter the Authorization Key at the login prompt as a password. Use login name <b>authcode</b>.</li> </ol>



# SPECIFICATIONS

## GENERAL

Temperature Range: -40° C to +70° C (-40° F to 158° F)  
 Humidity: 95% at +40° C (104° F); non-condensing  
 Primary Power: 10–30 Vdc  
 External Power Supply Options: 48 Vdc; 110–120/210–220 Vac  
 Typical Current Consumption (assumes 1 Watt RF Output):

Mode	DC Power	13.8 Vdc	24 Vdc
AP Transmit	25 W	1.8 A	1.0 A
AP Receive	8 W	579 mA	333 mA
RM Transmit	25W	1.8 A	1.0 A
RM Receive	6.5W	471 mA	270 mA

Size (without mtg. hardware): 5.72 H x 20 W x 12.38 D cm  
 (2.25 H x 7.88 W x 4.88 D in.)  
 Mounting Options: Flat surface brackets, DIN rail, 19" rack  
 Weight: 1kg / 2.2 lb.  
 Case: Die Cast Aluminum

## RADIO CHARACTERISTICS

### GENERAL:

Frequency Band: Mercury 900: 902–928 MHz  
 Industrial, Scientific & Medical (ISM) Band  
 Mercury 3650: 3650–3700 MHz  
 FCC Registered Band

### TRANSMITTER:

RF Output @ connector: Mercury 900: -30 to +30 dBm  
 Mercury 3650: 0 to 20 dBm  
 Increments of 1.0 dB, set *by user*  
 Duty Cycle: Continuous  
 Output Impedance: 50 Ohms

### RECEIVER:

Type: Double conversion superheterodyne  
 Sensitivity and Data Rate: Dependent on modulation and bandwidth.  
 See *Reference Manual* Specifications.

<b>PHYSICAL INTERFACE:</b>	Ethernet: 10/100BaseT, RJ-45 Serial: (COM1) RS-232, DB-9F
<b>APPROVALS:</b>	FCC Part 15.247 (DTS) CSA/US Class 1, Div. 2 Industry Canada RS-210
<b>PROTOCOLS:</b>	Ethernet: IEEE 802.3, Spanning Tree (Bridging), VLAN, IGMP  TCP/IP: DHCP, ICMP, UDP, TCP, ARP, Multicast, SNMP, TFTP  Serial: Encapsulation over IP (tunneling) for serial async multidrop protocols including Modbus, DNP.3, DF1, BSAP
<b>MANAGEMENT:</b>	HTTP, HTTPS, TELNET, SSH, local console  SNMPv1/v2/v3, MIB-II, Enterprise MIB, SYSLOG, MDS NETview MST <sup>™</sup> compatible

## TECHNICAL ASSISTANCE

Technical assistance is available from our Technical Support Department during business hours (8:30 A.M.–7:00 P.M. Eastern Time). When calling, please give the complete model number of the radio, along with a description of the trouble symptom(s) that you are experiencing. In many cases, problems can be resolved over the telephone, without the need for returning the unit to the factory.

Phone: 585 241-5510    E-Mail: [TechSupport@GEmds.com](mailto:TechSupport@GEmds.com)

FAX: 585 242-8369    Web: [www.GEmds.com](http://www.GEmds.com)

## FACTORY SERVICE

If return of the equipment is necessary, please contact our Technical Support Team. You will be issued a Service Request Order (SRO) number. The SRO number will help expedite the repair so that the equipment can be repaired and returned to you as quickly as possible. Please be sure to include the SRO number on the outside of the shipping box, and on any correspondence relating to the repair. *No equipment will be accepted for repair without an SRO number.*

A statement should accompany the radio describing, in detail, the trouble symptom(s), and a description of any associated equipment normally connected to the radio. It is also important to include the name and telephone number of a person in your organization who can be contacted if additional information is required.

The radio must be properly packed for return to the factory. The original shipping container and packaging materials should be used whenever possible. All factory returns should be addressed to:

GE MDS  
Customer Service Department  
(SRO No. XXXX)  
175 Science Parkway  
Rochester, NY 14620 USA

When repairs are complete, the equipment will be returned by the same shipping method used to send it to the factory. Please specify if you wish to make different shipping arrangements. To inquire about an in-process repair, contact our Product Services Group using the telephone, Fax, or E-mail information given above.



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