

## RDL8500 Remote Data Logger Installation Instructions

### 1 Introduction

The RDL8500 remote data logger is installed at a submetering site's head end location to collect data from transmitters using the EN4000, EN6540, and/or FA403 RF gateways. The RDL8500 can communicate remotely with the RBC's billing personnel or directly with an onsite technician using the Inovonics TapWatch 3 software.

#### 1.1 Installing an Inovonics Submetering System

An EchoStream survey kit should be used to establish an EchoStream system. The EchoStream survey kit measures the signal strength of high-power repeater and sensor messages to help optimize your EchoStream system.

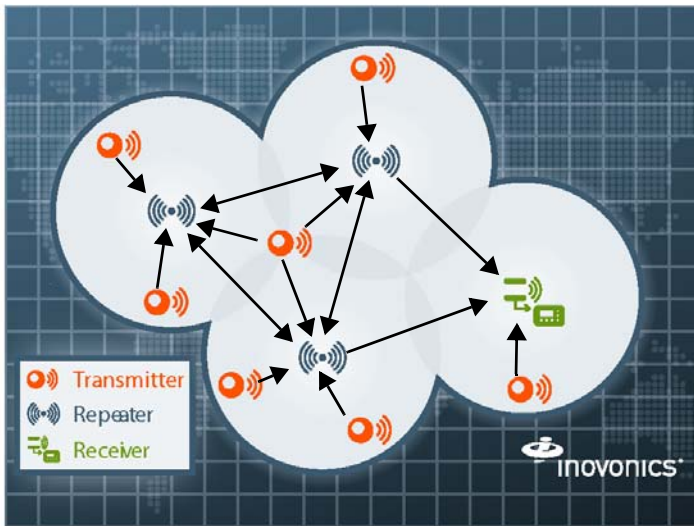


Figure 1 Sample EchoStream system

The EchoStream survey kit provides you with two signal strength measurements: signal level and signal margin.

#### Signal level

The signal level is the measurement of the overall decibel level of the message.

#### Signal margin

The signal margin is the measurement of the decibel level of the message, minus the decibel level of any interfering signals. Inovonics equipment should be placed within a facility such that all end-devices produce signal margin readings of at least 4 decibels.

Both the signal level and signal margin are measured in decibels. Because signal strength and signal margin are measured on a logarithmic scale, the difference between a decibel level of 3 (Weak) and a decibel level of 4 (Good) is a much larger difference than it would be on a linear scale.

**Note:** For more information about the EchoStream survey kit, see the *EN7016SK EchoStream® Survey Kit Installation and Operation Manual*.

### 1.2 Inovonics Contact Information

If you have any problems with this installation, contact Inovonics technical support:

- E-mail: support@inovonics.com.
- Phone: (800) 782-2709, option 2.

### 1.3 RDL8500 Remote Data Logger Front Panel



Figure 2 RDL8500 remote data logger front panel

A handshaking    B receiver message    C remote connection    D power

#### Operation LEDs

**handshaking:** Lit when the RDL8500 is initializing connection to the billing service using the modem or an IP connection.

**receiver message:** Lights when a serial data message is received from the gateway.

**remote connection:** Lit when the RDL8500 is connected to the TapWatch 3 software using the modem or an IP connection.

**power:** Lit when the RDL8500 is receiving power.

### 1.4 RDL8500 Internal Components

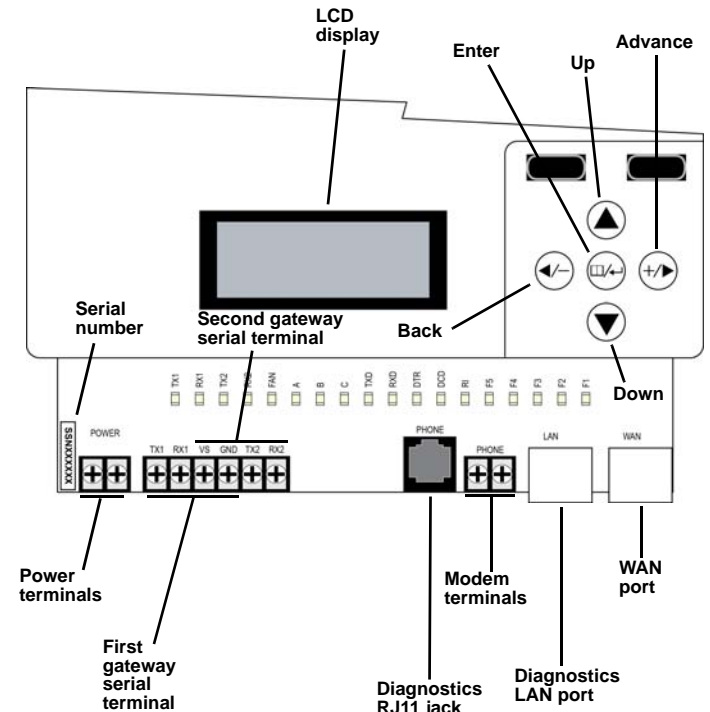


Figure 3 RDL8500 internal components

#### Internal LEDs

TX1: Lit when transmitting data to the first gateway.

RX1: Lit when receiving data from the first gateway.

TX2: Lit when transmitting data to the second gateway.

RX2: Lit when receiving data from the second gateway.

FAN: Lit when the fan is running.

TXD: Lit when the modem is transmitting data.

RXD: Lit when the modem is receiving data.

DTR: Lit when the modem is ready.

DCD: Lit when the modem is connected.

RI: Lit when the modem is ringing.

**Note:** The rest of the LEDs are reserved.

## 1.5 What's In The Carton

- Two drywall anchors.
- Two mounting screws.
- One power supply mounting cable tie.
- One power supply.
- One six-foot power cable.

## 2 Installation and Startup

### 2.1 Installation Notes

- The RDL8500 is designed to be installed and maintained by authorized TapWatch service providers.
- The RDL8500 is certified for indoor use, non-condensing environment.
- The RDL8500 must be mounted within 50 feet of where you plan to mount the gateway, in a location near a standard 120 VAC wall outlet.
- The RDL8500 and RF gateways should be mounted in a location removed from other electrical equipment.
- If you are planning to use the modem, the RDL8500 must be mounted within 50 feet of a phone line.
- If you are planning to use an IP connection, the RDL8500 must be located near an available Ethernet port with access to the internet, as close to the main router as possible; coordinate with the facility's IT representative to ensure an available port; a WiFi router is not recommended.

### 2.2 Connect the RDL8500 Remote Data Logger to RF Gateway(s)

The RDL8500 can be connected to an EN4000, EN6540, and/or FA403 in any of the following configurations:

- An EN4000, EN6540, or FA403 (conventional or enhanced) by itself.
- An EN4000 and an FA403.
- An EN6540 and an FA403.
- An enhanced FA403 and a conventional FA403.

**Note:** This procedure only provides instructions on how to connect the RDL8500 to the RF gateway. For more information about EN4000, EN6540, or FA403 installation, see their corresponding installation instructions.

1. Use a Phillips screwdriver to loosen the housing screw on the bottom of the RDL8500.
2. Lift the cover up and off of the hinges.
3. Consulting Figure 4, "RDL8500 to EN4000 connections", Figure 5, "RDL8500 to EN6540 connections", or Figure 6, "RDL8500 to FA403 connections", connect the gateway to the RDL8500 using 4-conductor, 22 gauge, unshielded wire with a maximum length of 50 feet.

**Note:** RF gateways can be connected to either TX1/RX1 or TX2/RX2. If only using one gateway, connect the RDL8500 to TX1/RX1.

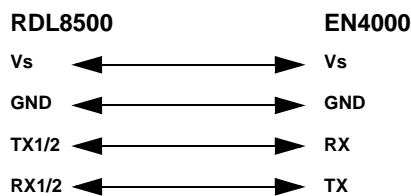


Figure 4 RDL8500 to EN4000 connections

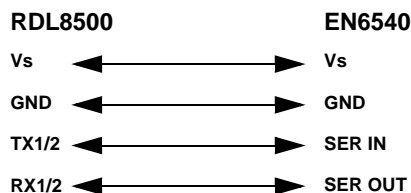


Figure 5 RDL8500 to EN6540 connections

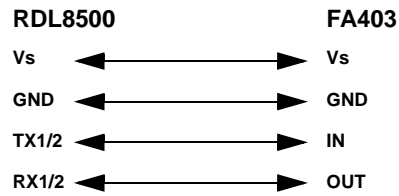


Figure 6 RDL8500 to FA403 connections

### 2.3 Connect Ethernet or Modem and Power Cabling

**Caution:** Telephone, Ethernet, and power connections should be as mechanically robust as possible, and protected from accidental disconnection.

4. If you will be using an IP connection, connect one end of an unshielded Cat 5e Ethernet patch cable to the RDL8500 WAN port (Figure 3); if you will be using a phone line, skip to step 7.
5. Connect the other end of the patch cable to a port on the network with access to the internet.
6. Some Cat 5e Ethernet patch cables are equipped with a strain relief boot. If present, remove the strain relief boot to ensure the RDL8500 housing will close properly.

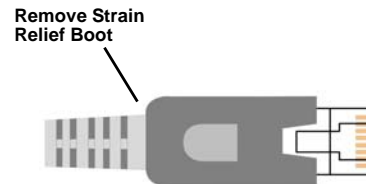


Figure 7 Remove the Cat 5e Ethernet patch cable strain relief boot

7. If using a phone line, connect the phone line from the screw terminals on a hardwired wall bracket to the terminal blocks on the RDL8500.
  - The phone line should be connected to the telephone wall outlet using the screw terminals. The RJ11 plug-in phone connector is provided for easy access to the phone line during on-site maintenance.
8. Use the provided power supply and power cable to connect power to the RDL8500.
  - Circuit protection is built into the power supply.
  - Power leads are reversible.

### 2.4 Mount the RDL8500 Remote Data Logger

9. Referring to the mounting hole template at the end of this document, use the anchors and screws provided to mount the RDL8500.

**Caution:** Neither the RF gateway or the RDL8500 should ever be installed at floor level.

10. Secure the power supply to the outlet with the provided cable tie.

**Caution:** Wiring should exit through the back of the RDL8500, be cut to length, and be stapled neatly to the wall to reduce the possibility of personal injury or equipment damage.

## 3 Connect to IP

### 3.1 Requirements

The following includes instructions for connecting the RDL8500 remote data logger to TapWatch.com using IP, connecting to IP with an existing property and connecting to IP by importing a property.

To connect to IP you will need:

- CAT 5e or CAT 6 Ethernet cable without boot.
- Ethernet router/firewall.
- Internet connection with a minimum of 512kbps up and down, and no filtering or proxying of HTTPS outgoing connections.
- RDL8500 with firmware version v2.0.10.2 or greater.
- If the RDL8500 is running firmware of less than v2.0.10.2, you will need to upgrade the RDL8500 using the ACC8500 firmware upgrade USB flash drive. Please contact Inovonics technical support for more information.
- TapWatch 3 version 2.3.7 or greater.

The router specifications needed:

- The router must assign IP addresses via DHCP.
- The DHCP lease provided by the router must be set to a non-zero and non-infinite value, and should be set to a value greater than 30 seconds.
- The router must allow outbound connections on the following ports:
  - DNS (53).
  - HTTPS (443).
  - NTP (123).

### 3.2 Connect to IP (WAN)

1. Power on the RDL8500.
2. Make sure the RDL8500 is programmed with site information. To do so:
  - a. Use the right arrow button to navigate to the Application Menu.
  - b. Use the down arrow button to navigate to TapWatch LoggerWare.
  - c. Press the enter twice button to show the Site Summary screen.
  - d. Verify that the site name displays.
3. Make sure the RDL8500 is connected. To do so:
  - a. Use the right arrow button to navigate to the Application Menu.
  - b. Use the down arrow button to navigate to Network Management.
  - c. Press the enter button.
  - d. Use the down arrow button to navigate to TapWatch.com.
  - e. Press the enter button.
  - f. Scroll down to verify the following:
    - The Stat: field displays Connected.
    - The Prb: field displays +Ping+DNS+HTTPS.

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**Note:** It may take up to 30 minutes to see the Connected status.

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4. Contact Inovonics technical support to verify that the RDL8500 is IP-connected. The RDL8500 serial number is required by Inovonics technical support.

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**Note:** To IP-enable RDL8500s, contact Inovonics technical support with the serial number of the RDL8500s. Inovonics will add the specified RDL8500s to the group.

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### 3.3 Connect TapWatch 3 to IP with an Existing Property

1. Contact Inovonics to obtain user name and set password.

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**Note:** This will be the user name and password for the entire company. The password can only be changed by contacting Inovonics technical support.

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2. Open the existing property in the TapWatch 3 software.
3. From the Site Summary tab, click the Settings tab.
4. In the DataLogger Connection Info section, change the TapWatch.com Site setting to Yes.
5. In the Advanced Options section, use the RDL Connection Method dropdown menu to select TapWatch.com Connect.
6. Click the Save button.
7. Click the Connect/Sync button.
8. Enter user name and password when prompted and click the Submit button.

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**Note:** The username (case sensitive) and password will be auto filled after this first entry.

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### 3.4 Connect to IP by Importing a Property

1. Contact Inovonics to obtain user name and set password.

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**Note:** This will be the user name and password for the entire company. The password can only be changed or retrieved by contacting Inovonics technical support.

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2. From the Property List tab, click the File menu.
3. Navigate to Import, and then to TapWatch3 Property and click.
4. Select TapWatch.com from the Connection Type dropdown menu and click the Connect button.
5. Enter the user name and password when prompted and click the Submit button.
6. Highlight the properties you want to import and click the Import button.

### 3.5 Troubleshooting IP Connectivity

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**Note:** If you will be using a phone line, this can be skipped.

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If the "Stat:" field does not read "Connected," or if there is an exclamation point in the "Prb:" field, you will need to troubleshoot the internet connection. The following are some suggestions to resolve connectivity issues.

- Check for loose/disconnected cabling.

- Ensure power to Ethernet routers and/or switches.
- Connect a laptop to the Ethernet cable going to the RDL's WAN port and attempt to open <https://www.tapwatch.com/> in a web browser.

If you are still unable to establish an internet connection, contact property management or facility IT representative.

## 4 Information Supplied to the User

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. A minimum distance of 33 feet (10 meters) is required between this equipment and any residential unit to prevent harmful interference. This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the back of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. It is designed to be connected to a compatible modular jack that is also compliant.

The REN is used to determine the number of devices which may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's, contact the telephone company. For products approved after July 23, 2002, the REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

This equipment uses an RJ-11 jack to connect to the telephone network. If another device, such as a telephone, fax or modem, is utilizing the connected phone line, this equipment will not interrupt the device previously in use.

If this terminal equipment, the RDL8500, causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, the RDL8500, please contact the following for repair and/or warranty information.

Inovonics Wireless Corporation, 397 S. Taylor Avenue, Louisville, CO 80027, Phone 800.782.2709

If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

No repairs can be performed by the customer or user.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporate commission for information.

If your facility has specially wired alarm equipment connected to the telephone line, ensure the installation of this RDL8500 does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or qualified installer.

While the RDL8500 has circuit protection built into it, like any equipment requiring power, the use of a surge arrester may help to protect against electrical surges from lightning transients.

## 5 FCC Part 15 Compliance

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.

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**Caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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## 6 US Patent Numbers

- 7,154,866.
- 7,554,932.
- 7,746,804.
- Other patents pending.

## 7 Specifications

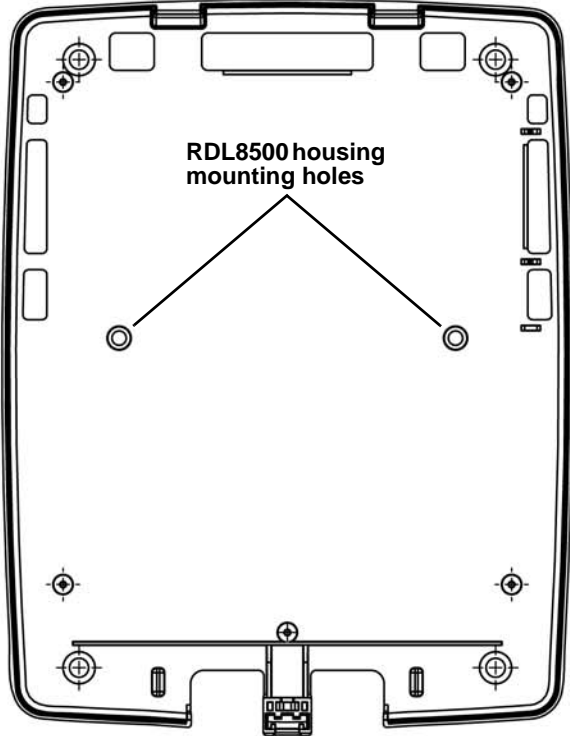
Housing dimensions: 11.5" x 8.75" x 2.25" (292 mm x 222 mm x 57 mm).

Weight: 2 lbs 7oz (1105 g).

Power requirement: 15 VDC at 2A.

Booting environment: 50° to 130°F (10° to 54.4°C), up to 90% relative humidity, non-condensing.

Operating environment: 32° to 130°F (0° to 54.4°C), up to 90% relative humidity, non-condensing.



5.29" from the center of the mounting hole to the top of RDL8500 housing.

1.83" from the center of the mounting hole to the left side of RDL8500 housing.

6.2" from the center of the mounting hole to the bottom of RDL8500 housing.

Use this scale mounting hole template to drill holes for the mounting screws.

1.83" from the center of the mounting hole the to right side of RDL8500 housing.