

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 remotely communicate with the billing service or with an onsite technician using the TapWatch.com website or 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.

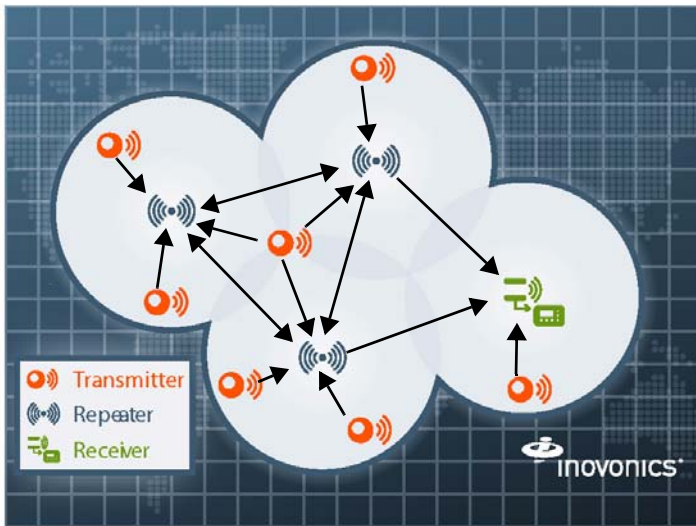


Figure 1 Sample EchoStream system

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

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: If using TapWatch.com, this is lit when the RDL8500 is initializing connection to the website; if using TapWatch 3, this is lit when the RDL8500 modem is initializing connection to the billing service.

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

remote connection: If using TapWatch.com, this is lit when the RDL8500 is connected to TapWatch.com; if using TapWatch 3, this is lit when the modem is connected to the customer's billing service.

power: Lit when the RDL8500 is receiving power.

1.4 RDL8500 Internal Components

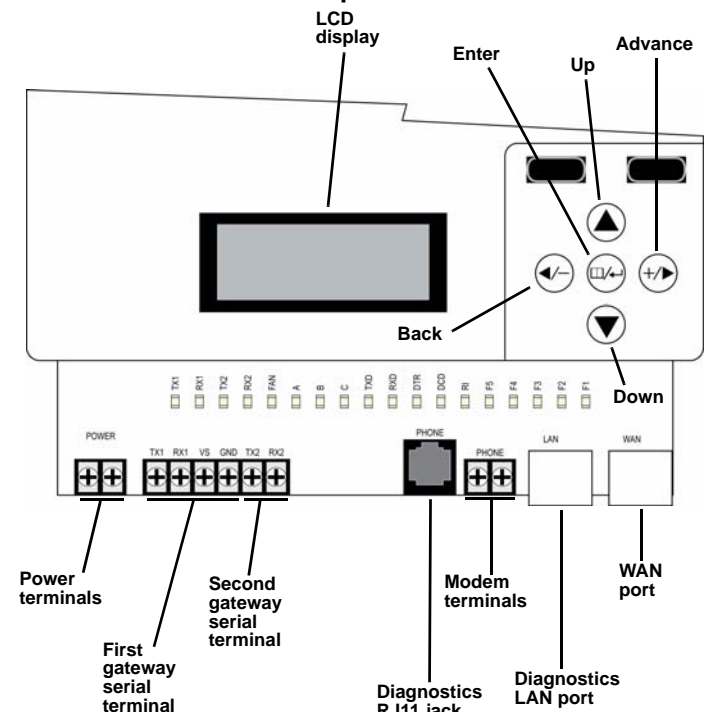


Figure 3 RDL8500 internal components

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 transformer mounting cable tie
- One power transformer mounting screw
- One power transformer
- One six-foot power cable

2 Installation and Startup

2.1 Installation Notes

- These products are designed to be maintained by authorized TapWatch service providers
- Products are tested 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 TapWatch 3, the RDL8500 must be mounted within 50 feet of a phone line
- If you are planning to use TapWatch.com, 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 housing 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.

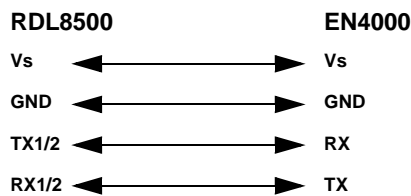


Figure 4 RDL8500 to EN4000 connections

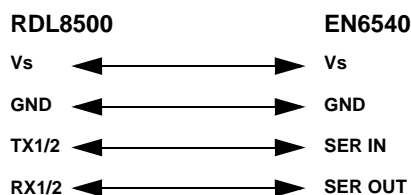


Figure 5 RDL8500 to EN6540 connections

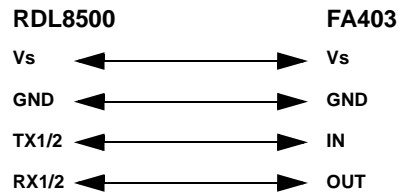


Figure 6 RDL8500 to FA403 connections

2.3 Connect Power and Ethernet or Modem 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 TapWatch.com, connect one end of an unshielded Cat 5e Ethernet patch cable to the RDL8500 WAN port (Figure 3); if you will be using TapWatch 3, 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.

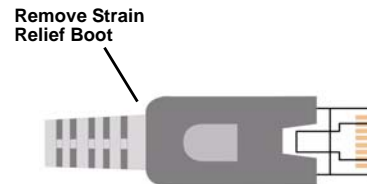


Figure 7 Remove the Cat 5e Ethernet patch cable strain relief boot

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. Using the anchors and screws provided, 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 and screw.

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.

2.5 Verify Connection to TapWatch.com

Note: If you will be using TapWatch 3, this can be skipped.

Connection to TapWatch.com is verified through the LCD display (Figure 3). The LCD display default screen provides date, time, and the firmware version. To verify connection to TapWatch.com:

11. From the default screen, press the advance button (Figure 3).
12. Use the down button to navigate to "Network Management" and press the enter button.
13. Use the down button to navigate to "Tapwatch.com" and press the enter button.
14. Ensure the "Stat:" field displays "Connected."
15. Use the down button to navigate to the "Prb:" field and ensure there is a "+" before "Ping," "DNS," and "HTTPS," and not an exclamation point.

2.6 Troubleshooting Connectivity to TapWatch.com

Note: If you will be using TapWatch 3, this can be skipped.

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
- Power cycle the router or switch
- Contact ISP representative to ensure internet service has not been interrupted

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

3 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.

4 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.

5 US Patent Numbers

- 7,154,866
- 7,554,932
- 7,746,804

6 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

Radio: Inovonics Wireless EchoStream

Operating frequency: 915-928 MHz (Australia), 921-928 MHz (New Zealand), 902-928 MHz (USA)

Booting environment: 50° to 130°F, up to 90% relative humidity, non-condensing

Operating environment: 32° to 130°F, up to 90% relative humidity, non-condensing

7 Inovonics Submetering Products Warranty

Inovonics Wireless Corporation ("Inovonics") warrants its Products ("Product" or "Products") to conform to its own specifications and to be free of defects in materials and workmanship under normal use for a period of fourteen (14) months from the date of manufacture. Within the warranty period Inovonics Corporation will repair or replace, at its option, all or any part of the warranted product. Inovonics will not be responsible for dismantling and/or reinstallation charges. To exercise the warranty, the User must be given a Return Material Authorization Number ("RMA") by Inovonics. Details of shipment will be arranged at that time.

This warranty does not apply in cases of improper installation, misuse, damage due to lightning or water, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than Inovonics.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express, or implied, including any warranty of merchantability or fitness for a particular purpose. Inovonics will not be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties.

This warranty will not be modified, varied or extended. Inovonics does not authorize any person to act on its behalf to modify, vary or extend this warranty. This warranty will apply to Inovonics Products only. All other products, accessories or attachments used in conjunction with Inovonics equipment, including batteries, will be covered solely by their own warranty, if any. Inovonics will not be liable for any direct, incidental or consequential damage or loss whatsoever caused by the malfunction of Product due to products, accessories, or attachments of other manufacturers, including batteries, used in conjunction with Inovonics Products.

This warranty does not warrant the replacement of batteries that are used to power Inovonics Products.

Inovonics does not claim that the Product may not be compromised and/or circumvented.

Caution: The User should follow all installation, operation, and maintenance instructions. Changes in environmental conditions, electric, or electronic disruptions and tampering, may cause the Product to not perform as expected.