

WARRANTY

Rainwise, Inc. warrants this RainLog against defects in materials and workmanship for a period of two years from the date of purchase, and agrees to repair or replace any defective product without charge.

This warranty does not cover damage resulting from accident, misuse or abuse, lack of reasonable care, the fixing of any attachment not provided with the product or damage due to a lightning strike. Rainwise will not reimburse for take down or reinstallation charges. Rainwise will not pay for any warranty service performed by a non-authorized repair service and will not reimburse the consumer for damage resulting from warranty service performed by a non-authorized repair service. No responsibility is assumed for any special, incidental or consequential damages. No other warranty, written or oral is authorized by Rainwise, Inc. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Some states do not allow the exclusion, incidental or consequential damages, so the above exclusions and limitations may not apply to you.

To return a unit under warranty call 1-800-762-5723. Rainwise will only pay for return shipping charges using the method of their choosing. If expedited shipping is requested, the excess cost must be paid by the customer. Make sure that the equipment is properly packed. . . preferably in the original box, damage incurred in shipping is not covered by this warranty.

CUSTOMER SERVICE

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RainLog™

Annual Rainfall Data Logger

Instruction Manual

RainWise Inc. 
P.O. BOX 443 - BAR HARBOR, MAINE 04609-0443 - (207) 288-5169

INTRODUCTION

The RainLog in combination with the Rainwise Rain Collector constitutes a stand alone rainfall measuring and recording system. The RainLog has a large, non-volatile memory that is capable of recording one year of rainfall with a one minute resolution. A single CR2447N lithium battery powers the unit and in most cases will last one year. Data stored in memory will not be lost during a battery change.

The RainLog continually monitors for rainfall events and at the end of each minute stores the minute rainfall to non-volatile memory. The RainLog makes efficient use of the available memory by only storing information when an event has occurred.

INSTALLING THE BATTERY

One CR2477N lithium battery is supplied separately with each RainLog. Please contact Rainwise for additional replacement batteries.

1. Lift the RainLog's cover up from the serial port side as illustrated below and insert the battery as shown.



2. Close the cover and turn the RainLog upside down. You should see a red LED glow for 8 seconds. After 8 seconds the LED will switch off, it will then flash faintly once every 8 seconds. This indicates that the logger is running.

Date sequence error.

A date sequence error occurs when the RainLog has logged information and then had its clock set to an earlier date. To reduce the risk of this happening, it is advised that you download the data from the RainLog, save it to file, set the clock and then clear it.

The RainLog is not recording rainfall.

Verify that the rain collector is clean and that the drain hole in the center is not blocked. If you remove the screen, make sure that you bend the cotter pin legs back up when you put it back. Leaving the legs down will stop the tipping bucket from tipping.

If the collector is not blocked, verify that the RainLog can read the mechanism. Set the RainLog's clock and clear its memory using the RL-Loader application. Connect the RainLog to the tipping bucket and tip it by hand 5 times. Wait 1 minute and then download the data. A new record should appear with 5 counts. If no records appear, disconnect the RainLog from the collector and short the two rainfall input terminals on the RainLog with a small screw driver several times. Wait 1 minute and download again. If you see new records, then there is likely a fault with the collector. A continued absence of records may indicate a RainLog failure. Contact Rainwise Support for further assistance.

downside to this method is that it makes graphing more difficult as the time interval is random.

Exporting Graphs:

Make sure that the graph window is the active window.

Copy the graph using the Copy button or click the right mouse button and select Copy.

The graph is copied as a Windows Meta File. This offers the advantage over the Bitmap format in that the object may be scaled in the destination application.

The graph can now be pasted into any application that supports wmf cutting and pasting (Microsoft Word).

TROUBLESHOOTING

The computer won't detect the RainLog.



The RL-Loader must connect to a free available serial port. If you get the "No devices found!" message within a couple of seconds after clicking the Auto detect button, then chances are there are no free ports available. The computer will scan all available ports looking for the RainLog. The scanning window will indicate which ports is being scanned.

Check the following:


- Certain programs like Palm Hot Sync can hold serial ports open, make sure they are not running.
- If you are using a USB-to-Serial adapter make sure that it is installed correctly. Use the Windows Device Manger to verify that a com port has been created.
- Make sure that the LED on the RainLog is flashing every 8 seconds, this indicates that the RainLog is running.
- Check the serial cable connections.

CONFIGURING THE RAINLOG

The RainLog must be configured prior to use. This is done by connecting it to a PC and running the RL-Loader software provided with the unit. A serial RS-232 cable is provided with the RainLog. This cable must be used to connect the RainLog to the computer. A USB-to-Serial adapter may be required if your PC is not equipped with a serial port. These adapters can be purchased from Rainwise.

1. Install the RL-Loader software by inserting the RL-Loader CD-ROM. The install should begin automatically. If it does not, run "setup.exe" on the CD.
2. Make sure the RainLog is correctly attached to the PC and then run the RL-Loader application.
3. From the "Settings" menu select the appropriate type of collector. The 0.25 mm/tip setting is the metric equivalent of the 0.01 in/tip collector (standard).
4. Connect to the RainLog by clicking the "Auto Detect" button  or select "Auto Detect" from the "Logger" menu. RL-Loader will begin scanning available ports for the RainLog.
5. Once connected, the "Device Info" window will show the status of the RainLog. Click the "Set Logger Clock" button  or select "Set Clock" from the "Logger" menu. The RainLog's clock and calendar will be set to match the PC.
6. You may assign the RainLog a text ID. This ID helps manage

data from multiple RainLog's. Click the "Set ID" button or select "Set ID" from the "Logger" menu. Enter a name **ID** when prompted. The "Device Info" window will update.

7. Clear the RainLog's memory by clicking the "Clear Ram" button  or select "Clear Ram" from the "Logger" menu.
8. Close the RL-Loader application and disconnect the RainLog. The logger is now configured and can be connected to the rain collector.

INSTALLING THE RAINLOG

The RainLog is now ready to be installed in the rain collector. Make sure that the collector has already been securely mounted and is level. Readings will not be accurate if the collector is not level.

1. Loosen the 4 screws securing the top of the collector to its base.
2. Twist the collector top counter clockwise to free the tabs. Lift the top off and set it aside.
3. Remove the blue cap on the base and carefully pull the connector out of the tube.
4. Connect the RainLog to the connector and place the RainLog in the tube. Replace the blue cover.



Data and graphs can be exported to other Windows applications using the clipboard. The new export feature in version 2.1 uses OLE to export data directly into Microsoft Excel.

Exporting Data :

Data may be exported directly into Microsoft Excel. Excel must be installed for this feature to work.

Click the Export button or select Export from the File menu.

Data can be exported in three different ways:

Report by Day:

This will export daily rainfall totals into Excel. The range of data can be specified using the begin and end date selectors.

Report by Minute:

Data will be exported by minute. Minutes with zero rainfall will also be exported. Depending on the selected time span this method can create a very large spreadsheet. Excel is limited to 65535 rows which equates to approximately 45 days of one minute data. Before exporting, you will be prompted to first confirm that you wish to proceed. Second, you will be asked if you wish to remove inactive data. If you elect to use this inactive data removal feature, then all periods of 3 hours or more that had no rainfall will not be exported. The first rainfall record after this inactive period will be flagged with a comment "New rainfall event". The advantage of using this feature is the elimination of large portions of data that contain no rainfall while still maintaining true one minute resolution for each rainfall event.

Report Events:

This method exports one minute rainfall events without any padding. No zero rainfall records will be exported. This makes the output very compact and only contains relevant rainfall data. The

Daily data in the Text window. By default, all of the data in the Daily text window is displayed. The graph can be customized to show different ranges.

To graph a specific range of data, select (highlight) the desired Daily data in the Text window. Right click your mouse and select Graph from the pop-up menu. The graph will update showing only the select data.

The graph can be copied and pasted into other applications. The graph is copied as a Windows Meta File image.

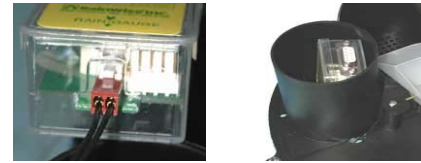
Working With Saved Data

Data from the RainLog can be saved to disk. The saved file can be loaded back into RL-Loader at any time for analysis and for creating reports. When saving data to file you can either create a new file or append the data to an existing file. Appending data is useful for keeping track of rainfall from one particular logger for extended periods. If you are working with multiple RainLog's, it is recommended that you save data to files using the same name as the loggers ID. This way it is easy to keep track of what data belongs to what logger. If you are using two RainLog's with one collector, give the RainLog's unique ID's and save data to a common file. For Example, call the loggers "City Hall 1" and "City Hall 2". Save the data to a common file "City Hall".

Important for Version 2.0 Users:

Version 2.0 saved data to files by default with the extension ".csv". This has been changed to ".dat" in version 2.1. You can still load version 2.0 files, but you must change the file type in the window that prompts you for a file name.

Exporting Data



5. Re-attach the collector top and tighten the four screws.

INSTALLING THE RAINLOGGER (If Applicable)



The RainLogger package consists of a RainLog data logger, rain collector and mounting post.

1. The mounting post is shipped in two sections. Screw the sections together by hand.
2. The post should be buried to a depth of 16 inches.
3. Remove the top of the collector by loosening the 4 securing screws.

To ensure accuracy, the bubble level inside the collector should be used to level the gauge.

RETRIEVING DATA FROM THE RAINLOG

The system is now ready to collect data. After removing the RainLog from the collector, connect it to a PC using the serial cable provided.

1. Run the RL-Loader application. Click the “Auto Detect” button  or select “AutoDetect” from the “Logger” menu.
2. Click the “Download” button  or select “Download” from the “Logger” menu. The text and graph windows will update once the download is complete.
3. The downloaded information should be saved to disk. Select “Save As..” from the file menu. Select a meaningful file name and save the file. This file can be opened again at a later time. You also have the option of appending data to this file. This means that you can maintain one file per RainLog.

RL-LOADER SOFTWARE

Overview

RL-Loader is a Windows based application that was designed to easily extract and manage rainfall data collected by the RainLog data logger. Data can be viewed in a text or graphical format.

The basic methods for connecting and extracting data from the Rainlog are covered in previous sections of this manual. Three primary windows are available in RL-Loader. The following sections explain each in detail.

The Device Info Window:

This window provides information about the status of the RainLog. The information displayed is only valid when a RainLog is connected. The following information is presented:

Name: ID string (user configurable).

Status: Connection status, "Connected" or "Not Connected".
Time: Device time.
Date: Device date.
Version: Device version.
Memory: Device memory size in kilobytes
Capacity: Amount of memory used.

The Text Window:

The text window displays rainfall data in a sequential list. There are two modes, Event and Daily:

Event shows individual rainfall event records. This is the format used by the RainLog. When data is downloaded from the RainLog, a final entry is added that contains the current PC time/date with a 0 rainfall count. This is used to set the end of logging for reports and graphing.

Daily shows rainfall by the day and includes days when there was no rainfall. This data is computed from the event records. All graphs are based on the daily data. The first entry is based on the date when the unit was last cleared. This is assumed to be the start of logging. Error messages are appended to records when there is a calculated date/time sequence error. All or part of the text data can be copied using the Windows Clipboard. Use the menu options under “Edit” to select and copy data. Once the data is in the clipboard it can be pasted into any Windows application that supports cutting and pasting.

Important: *Right click in the text window to get a pop-up menu that will allow you to copy, select and graph selected portions of data.*

The Graph Window:

The Graph window provides a graphical representation of the