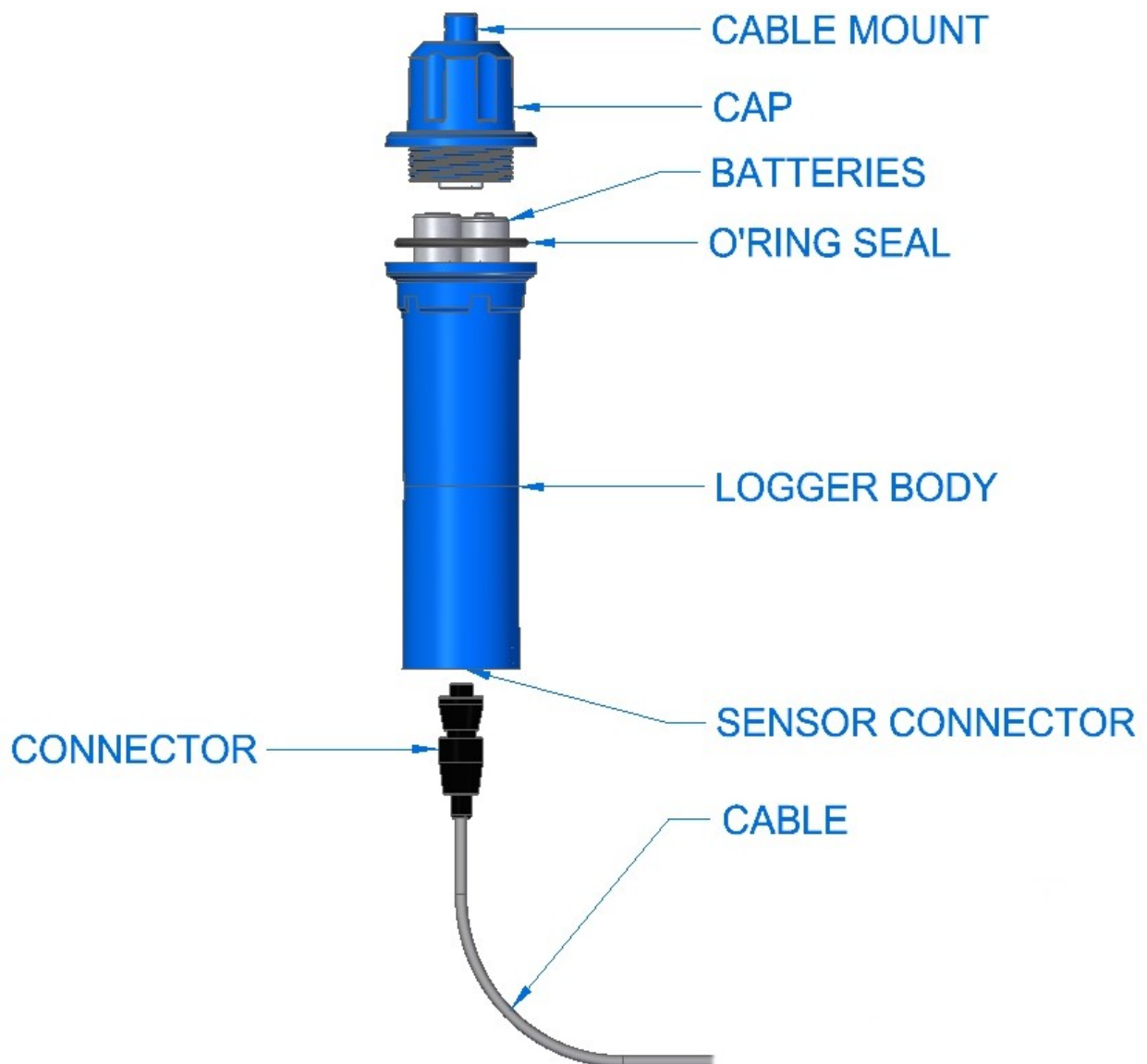


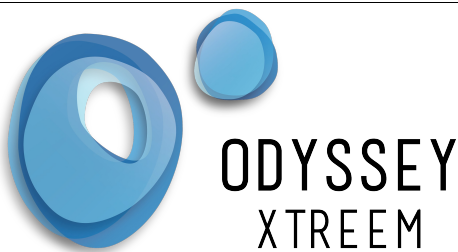


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Odyssey® Xtream Rain Gauge Logger User Manual

Xtream Rain Gauge Logger User Diagram

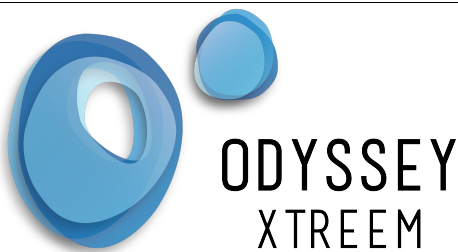




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Principal of Operation

The Xtream Rain Gauge logger can be purchased on its own or with a Davis Tipping bucket. When purchased with the rain collector, the collector can simply be plugged into the logger with the provided cable (approx 12m long). If purchased without a rain collector, a 1m two wire cable is supplied so that it can be connected to your rain collector.

The logger collects two types of data from the attached rain collector. For every tip of the collector (bucket), the logger records the total rain fall (in mm) for the set interval, even if there was no rain. The logger also records the actual time the collector bucket tipped, along with the total rain fall so far for the interval set. For every rain fall record the temperature is also stored.

Installation

Choose a location where it is least likely for debris to fall into the collector as this can stop the collector bucket from tipping. To get the best ambient temperature readings place the logger itself out of direct sunlight.

Installing the Xtract Application

Search Google Play Store or Apple App Store for the Odyssey® Xtract application and install as usual. The application must have access to Bluetooth communications and GPS location services. In the Settings screen enter your username and password provided by Dataflow Systems.

Press the green **SERVER SYNC** button to load the Odyssey® Xtream logger(s) and configuration(s) from the Xpert Web Portal.

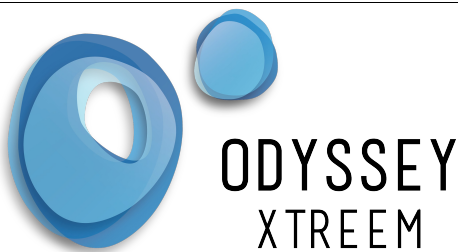
The latest Odyssey® Xtract user manual and other user manuals are available on Xpert once you have logged in.

Identifying the Logger

By default the Odyssey® Xtream logger will arrive with its name being a hexadecimal representation of its serial number. In the Xtract Application press the View button. Once scanned, the Odyssey® Xtream logger located will be shown in the list. The Xtream logger with the highest signal (also coloured green if it is very close) is the logger that is closest to the tablet / phone.

Setting Up the Logger

The first time the logger is used, unscrew the top cap and remove the battery insulation disc. All user configuration is carried out in the Xpert Web portal. The tablet / phone running the Xtract application transfers the logged data from the Odyssey® Xtream logger to the Xpert web portal and transfers the configuration into the Odyssey® Xtream logger. Using a web browser (Firefox is preferred) navigate to www.xpert.nz, then enter your username and password provided by Dataflow Systems. On the Map page (default), select Home from the drop down selection box, then select a logger from the logger selection drop down box. An icon for the selected logger will display on the Map. Click on this



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icon and an information box above it will pop up. To locate the icon for the first time, it may be necessary to zoom the Map out to find the logger.

Download the full Odyssey® Xpert user manual from Xpert web portal.

Logger Configuration

1. Select the Logger Config Tab. Enter a Logger Name that will be used to Identify the Logger from now on. The serial number can be used however this is very long and difficult to remember.
2. For most situations use continuous logging which means once the memory is full it will start overwriting the oldest data first. Start and stop time can also be entered.
3. Choose a logging Interval in Hours and Minutes. Suggest using one day.
4. In the Site box, add some brief location information to help locate the logger in the future. In the Notes box add any information that may be of use.
5. Select the Time Zone the Logger is deployed at. This is important as it may be different from the time zone where the data is viewed.
6. Press the Submit button to apply the Logger Configuration.

Sensor Configuration

1. Select the Sensor Config Tab.
2. In the box labelled Scaling Factor enter the tipping bucket collector size, Normally 0.2mm
3. Press the Submit button to apply the Sensor Configuration.

Calibration

There is no calibration required for the Xtream Rain Gauge Logger.

Collecting Data

Bring the tablet / phone with the Xtract application running within range of the logger and the application will automatically find, connect and collect the logs from the logger. This can be seen happening on the main screen of the Xtract application. If any configuration changes have been made since the logger was last connected, these will be applied at this time. If there is a firmware update for the logger this will also be sent (this takes several minutes to complete) to the logger if automatic firmware updates have been enabled (Contact Dataflow Systems to enable Automatic firmware updates).

To confirm the date of the last log that has been collected, select the History screen then tap on the logger name.

Viewing Data

Using a web browser (Firefox is preferred) navigate to www.xpert.nz then enter your username and password provided by Dataflow Systems. On the Map page (default) select Home from the drop down box then select a logger to be configured. An Icon for the logger will display on the Map. Click on the icon. (It may be necessary to Zoom the Map out to find the Logger).

ICON pop-up

This pop up shows brief data on the selected logger

Selected Logger Box

This shows the logger which has been selected on the Map tab.

Latest Information Box

This shows the latest known information about the logger.

Chart

Once the logger has been selected, choose the chart option from the menu.

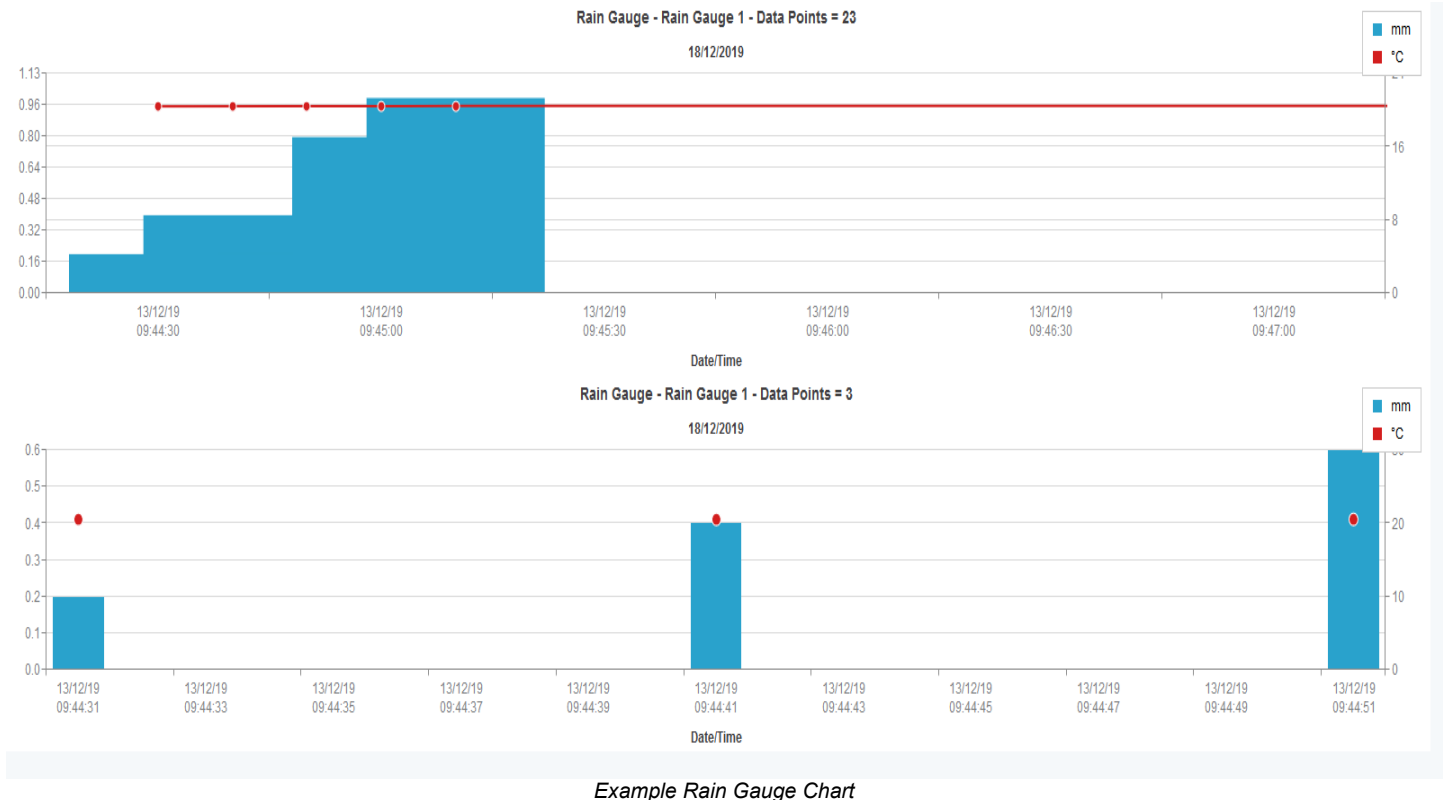
To view a graph of the logged data select a date range, then press the Go button. For a quick view press one of the Last Day, Last 7 Days, or Last 30 Days buttons. To export the data right mouse click on the graph then select the export format required. Alternately, enter a date range then press the Send Report button. A link to download the file will be sent to the registered email address. To view other data collected from the logger, in the drop down box showing 'Primary Data', select 'Diagnostic Data', then select a date range or press one of the quick Day buttons.

In the example chart below, there are two graphs. The first graph shows the total rain fall collected for each logging interval and it resets to zero at the end of each interval. The second graph shows the actual amount of rain fall collected and when it was collected over the logging interval. The red trace / dot shows the temperature in °C.



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Memory Storage Capacity

The memory is capable of recording at least 60000 records. The number of recording days before the memory is full can be calculated using the following formulae. If continuous logging is enabled the oldest will be overwritten first. If continuous logging is disabled no more data will be collected.

$$\text{Recording Days} = \frac{60000}{\text{Records per day}}$$

Examples.

Interval (hours)	Average Tips per Day (0.2mm per tip)	Records per Day	Recording Days
0.25	0	96	625
0.25	2	98	612.24
0.25	69	165	363.64
0.5	137	185	324.32
1	137	161	372.67

It is recommended to use the longest interval required as this reduces the collection time and speeds up the graphing process.



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Batteries

Life

The battery life is dependant on a number of variables, including sampling interval and operating temperature. The remaining battery life is indicated in the Xpert web portal. In typical conditions (25°C) it is expected that the battery life to be approximately 2 years.

Replacement

To replace the batteries, unscrew the cap and lift out the 2 batteries. Over time the cap can become very tight so use the special tool for opening the cap available from www.OdysseyDataRecording.com. As the batteries are non-hazardous, disposal is with your normal rubbish. We recommend with temperatures greater than 0°C to use the Energizer Max E91 with PowerSeal Technology batteries as these have been tested in our Xtream products to give the best life and are least likely to leak. At 0°C the battery life has reduced to half of its calculated life and it further reduces to 1/8th of its life at -20°C.

For temperatures below 0°C we recommend Energizer Lithium L91 batteries and these will have a life of greater than 2 years even at -20°C. Replace the batteries in the logger in the indicated orientation in the battery holder. (Note the unit will not be damaged if the batteries are inserted incorrectly). Before replacing the cap check the O-Ring seal is present, clean and free from dirt. If required apply some silicon grease (available from www.OdysseyDataRecording.com). Replace the cap and tighten by hand. Do Not use any tools to tighten the cap.

If the logger is not to be used for more than a year, then remove the batteries to prevent any chance of leaking.

Specifications

	Description
Radio	NRF52832 Bluetooth SOC from Nordic Semiconductor
Frequencies	2402 – 2480MHz
Modulation	GFSK
Bandwidth	1MHz
Output Power	+4.0dBm max
Antenna	Ceramic Chip with 0.5dB gain.Return Loss -9.5dB UFL (external)
Operating Temperature	-20 to 55°C (standard)
Relative Humidity	0% to 100%
Water Proof	IP67 (30mins submersion to 1m), IP68 on request
Dimensions	46mm Diameter, 160mm Length



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Intellectual Properties

- Bluetooth® is a registered trademark owned by Bluetooth SIG Inc.
- Odyssey® is a registered trademark of Dataflow System Limited.

Legal Information

FCC

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

Japan (MIC)

The Xtream loggers are approved for use in the Japanese market.
In Japan, certification is valid for 80 channels between 2402...2481 MHz

CE Warning

This device has been tested for compliance with the relevant standards for the EU market.
A copy of the Declaration of Conformity is available upon request to the manufacturer.
Dataflow Systems, PO Box 13672, Christchurch 8023, New Zealand

Radiation Exposure Information

This equipment complies with EU radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

Industry Canada

This device complies with ISSED's licence-exempt RSSs. 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Radiation Exposure Statement

This equipment complies with ISSED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.