

X2 Environmental Data Logger Manual

The NexSens X2 Environmental Data Logger offers the latest in real-time monitoring technology with wireless communication, large plug-and-play sensor library, and ultra-low power consumption. The unit includes Integral Wi-Fi and smartphone connectivity with options for radio, cellular & satellite telemetry. WQData LIVE web datacenter provides instant access on any web browser.



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Unboxing

What's included:

- X2 environmental data logger
- Quick Start Card with WQData LIVE Device Claim Code
- (3) Sensor port plugs
- (1) Power port plug
- (1) Magnetic screwdriver
- (1) Wireless antenna (telemetry units only)

Apply Power

Connect SP-Series Solar Power Pack or UW6-PW AC Power Adapter



SP6



UW6-PW

Configure Telemetry

Most cellular and iridium systems will be pre-configured by NexSens for plug-and-play transmissions to WQData LIVE. Wi-Fi and user-configured data accounts may require set up.

Direct Connect –Establish permanent wireless data transmission for standard X2s.

Wireless Network Setup process

Cellular- a 4G Compliant Mini-SIM card is required for installation on cellular models of the X2. Factory-installation is recommended, but user installation is possible.

[SIM Installation process](#)

[Configure Network APN](#)

Iridium- Factory-installed Iridium satellite modems allow for communication in the most remote deployment locations.

[Iridium Setup process](#)

Connect Sensors

All sensor cabling connected to the X2 must be configured with one of the following:

- NexSens factory installed UW plug connector.
- NexSens UW-FWP series field wireable plug.



UW-FWP



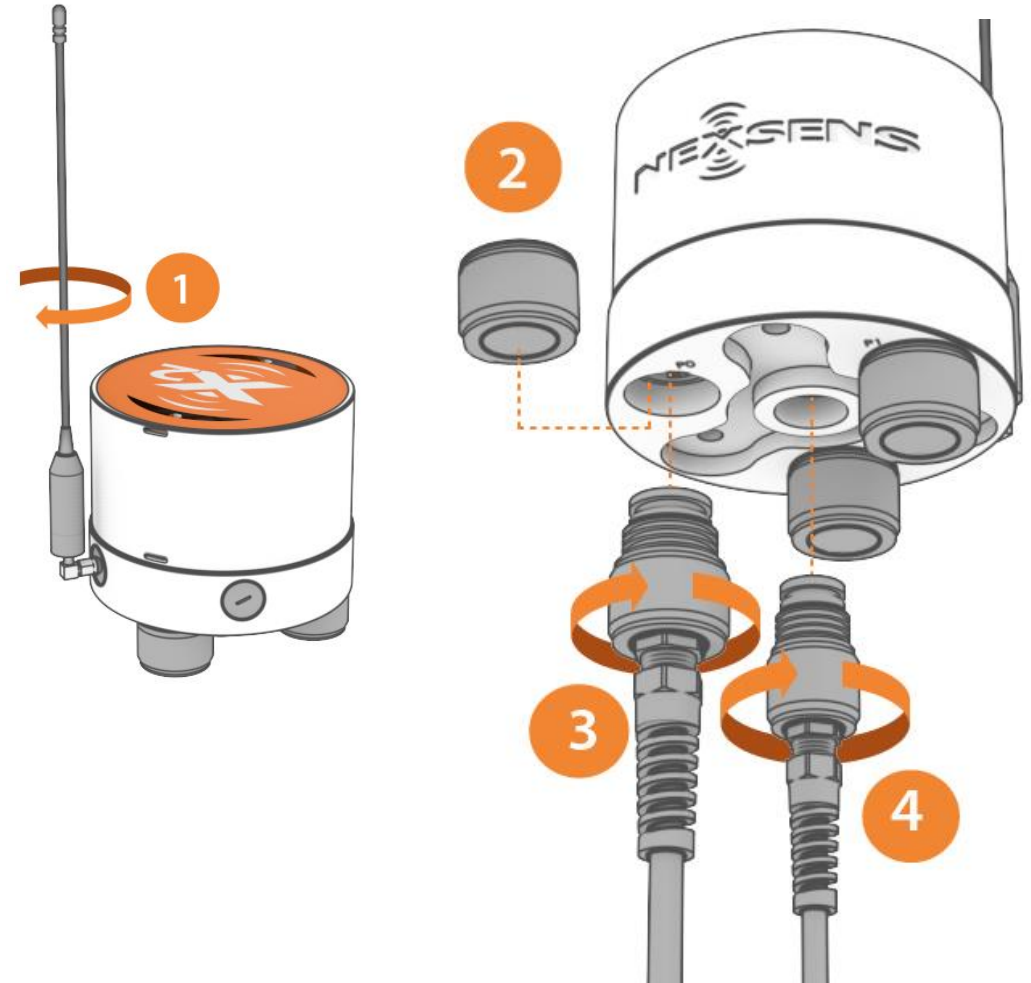
UW-plug connector

Refer to the NexSens sensor listing at <https://www.nexsens.com/support/product-manuals> for sensor-specific wiring and configuration information prior to integration with an X2 system.

Connect Sensors

Connect the antenna, power and sensors to the X2

- 1 Connect the system antenna (if equipped) and move into an area with strong signal coverage.
- 2 Remove the center power plug and required outer port plugs (1 for each sensor to connect)
- 3 Connect sensors to any outer port (8 pin). ***Record** the port number (P0, P1, or P2) occupied by each sensor.
- 4 Connect power (5 to 24VDC) to the center port (6 pin)



Sensor Auto-Detection

Following the configuration of the logger telemetry (if required) and the connection of all sensors to the X2, disconnect and re-apply power to the X2.

Following power-up, the logger will automatically begin to scan through a list of common sensors to build the deployment sensor list. Sensors discovered during this process will automatically be updated on WQData LIVE via the X2's on-board telemetry.

Sensor detection will take approximately 10 minutes. Leave the full system connected and powered while proceeding through the WQData LIVE setup. Following detection, sensor readings will be logged and uploaded at a 10-minute interval until adjusted by the user.

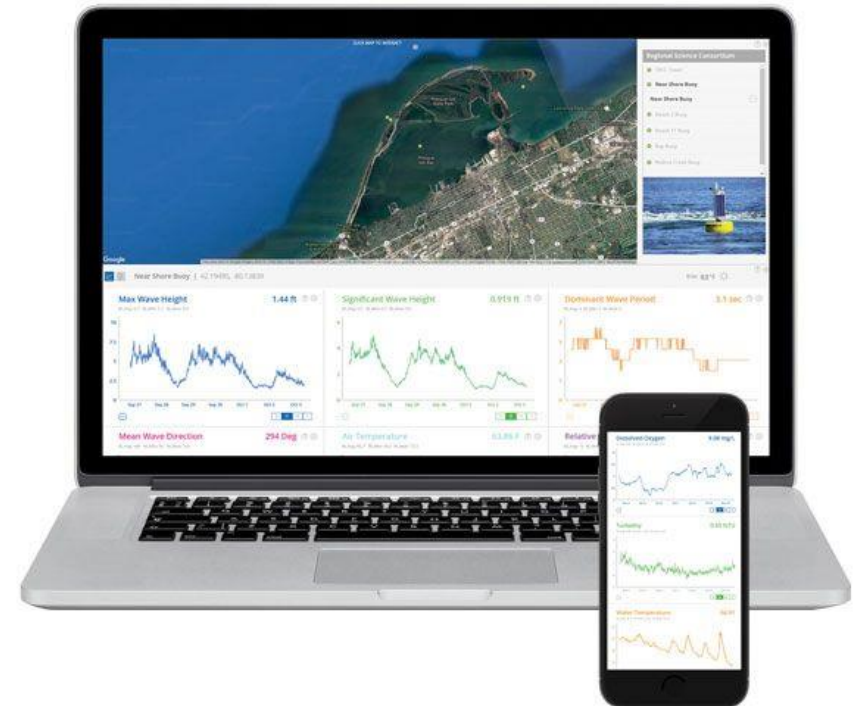
WQData LIVE Overview

WQData LIVE is a Cloud Data Center used in conjunction with the X2 data logger line for the following functionality:

Data Collection- automatic X2 data upload to the web

Data Export

Remote System Configuration



WQData LIVE Setup

To begin accessing sensor data from the X2 logger online, proceed through the following walkthrough:

<https://www.nexsens.com/pdf/WQData-Live-Getting-Started.pdf>

The guide covers the three main prerequisites for setting up the Data Center:

- Creating a free WQData LIVE account
- Creating a new project on the WQData LIVE Datacenter
- Using the Claim Code provided with each X2 to add the logger profile to the project

Review X2 Project Configuration

Once the logger has been claimed into the project and it is visible on WQData LIVE, check the 'Last Contact' time located in the lower right corner of the Project Dashboard page. The last successful data transmission from the X2 is denoted by this parameter.

Provided more than 10 minutes has elapsed since the last power cycle, the parameter lists from the detected sensors as well as the logger's internal diagnostic parameter set (shown below) will automatically be updated.

Diagnostic Data			
✓	Last Contact		2018-09-14 16:10:13
✓	Primary Power (V)	13.0	2018-09-14 16:10:00
✓	Internal Pressure (mBar)	988.6	2018-09-14 16:10:00
✓	Internal Temperature (C)	24.18	2018-09-14 16:10:00
✓	Internal Humidity (%)	-1.5	2018-09-14 16:10:00
⚠	Cell Signal Strength (dB)	0	2018-09-14 16:10:00
✓	Cell Status ()	0	2018-09-14 16:10:00

Customize Logger Settings

Adjustments to the X2 such as those listed below can be made remotely from the [Remote Device Configuration Menu](#) on WQData LIVE.

- Change Data Upload/Transmit Frequency
- Change Individual Sensor Logging Intervals
- Set offsets for parameters
- Queue additional Sensor Detections if new instrumentation has been connected to the system

Generate/Review Reports

CSV or PDF Reports can be manually generated, or configured to send automatically on a user-defined schedule from WQData LIVE.

Information on the Report tool for the WQData LIVE datacenter can be found [here](#).

Technical Information

Mount: (3) 3/8-16 bolt holes on bottom

Material: Anodized aluminum

Weight: 3.5 lbs.

Dimensions: 4.9" Diameter, 4.77" Height

Power Requirements: 5-24 VDC +/-15% (Reverse polarity protected)

Current Draw (Typical @ 12VDC): Low power sleep: 200uA; Logger Active: 20mA; Wi-Fi Transmitting: 43mA; Cellular Transmitting: 200mA

Peak Current: Power supply must be able to sustain a 500mA 1-second peak current (@ 12V)

Operating Temperature: -20C to 70°C

Rating: IP67 (Standalone); IP65 (With telemetry)

Wi-Fi Communications: 802.11b/g/n (Direct to X2 or Connect X2 to an existing network)

Wi-Fi Antenna: Internal to device

Wi-Fi Range: 250 ft. maximum¹

User Interface: RS-485 direct to PC software, Wi-Fi-Enabled embedded web, WQDatalive Web Datacenter, Magnet trigger for Wi-Fi enable, Status LEDs

Data Logging: 64MB internal flash*, 256MB microSD card (expandable up to 32GB)

Data Processing: Parameter level polynomial equation adjustment; Basic & Burst Averaging (min, max, standard deviation, and raw data available)

Real Time Clock (RTC): <30sec/month drift²; Auto-sync weekly³; Internal backup battery

Log Interval: User configurable from 1 second (10 minute default)⁴; Unique interval per sensor

Transmission Trigger: Time-based, parameter threshold*; Selective parameter upload option

Sensor Interfaces: SDI-12, RS-232 (3 Channels), RS485

Sensor Power: (3) 12V regulated switch channels with 1.5A capacity^{5,6}

Built-in Sensors: Temperature (-40C to 85C, 0.002C resolution, ±2C accuracy); Pressure (300 mbar to 1100 mbar, 0.016 mbar resolution, ±2 mbar accuracy); Humidity (0% to 100%, 0.04% resolution, ±5% accuracy); Battery voltage

Sensor Ports: (3) 8-Pin for Sensor Interface (RS-232, RS-485, SDI-12, 5V, 12V, GND)

Power Port: (1) 6-Pin for Power and Communication (Primary/Secondary/Backup Input, RS-485 Host, GND)

Telemetry Options

Cellular: CDMA 800,1900MHz, GSM 850, 900, 1800, 1900 MHz, UMTS/HSPA 850, 900, 1700, 1900, 2100 MHz

Radio*: 900MHz Mesh Network (902-928MHZ Frequency)

Iridium*: Short Burst Data (SBD) transceiver

Bridge*: Radio to Wi-Fi, Radio to Cellular, and Radio to Iridium

Antenna Port: SMA (Cellular and Iridium) and RP-SMA (Radio)