

XI-100

User's Manual



RECORD OF CHANGES		
Version	Date	Description
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Prepared by:
Xeos Technologies Inc.
2 Bluewater Rd., Suite 213
Bedford, N.S.
B4B 1G7

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Introduction

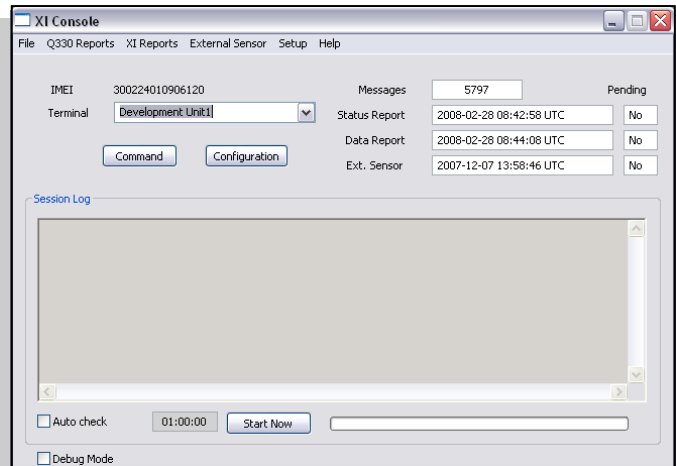
The **XI-100** project has been designed as a low power, two-way, satellite telemetry system by *Xeos Technologies Inc.* for the *Incorporated Research Institutions for Seismology* (IRIS), for deployment at remote stations in Antarctica. This project is made up of two parts; the first a terminal capable of sending data packets for state of health and seismic activity records at the recording station; and the second a Python scripted application to retrieve the data from the remote stations via the Iridium satellite network.

Using Iridium satellite transmitters for communications, the XI-100 device interfaces with the Quanterra Q330 and other external environmental sensors to transmit collected scientific data and relay the data to XI CONSOLE, downloaded using the custom Python scripted XI-100 Console. The XI Console software is also designed to send commands to remotely configure XI-100 devices, retrieve system status and data messages.

The overriding design criteria was to be for low power operation while operating in the harsh Antarctic environment. The XI-100 device implements remotely programmable functionality and heating capabilities within a rugged casing, capable of withstanding the extreme conditions of the Antarctic.

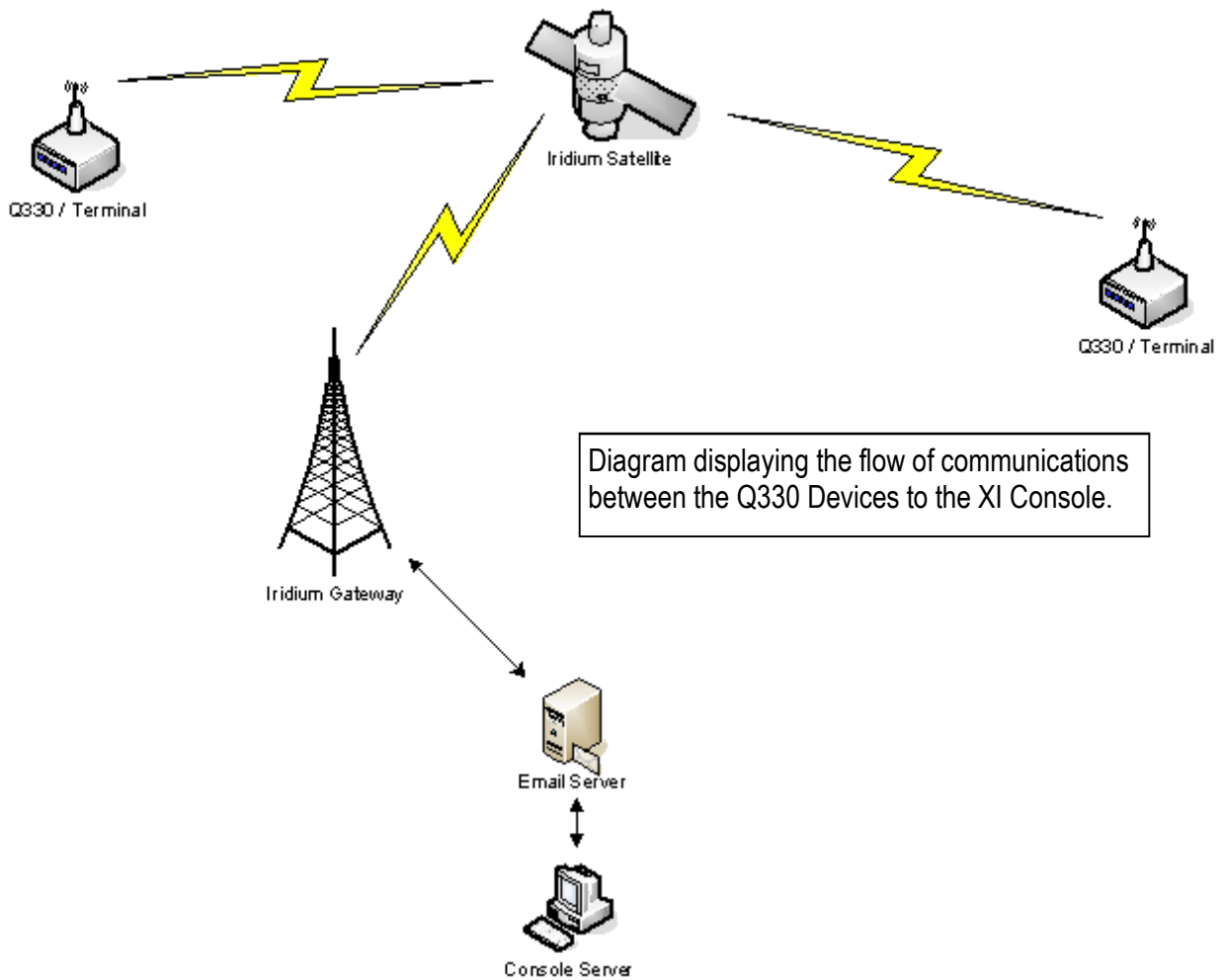


XI-100 Device



XI-Console Software

Introduction



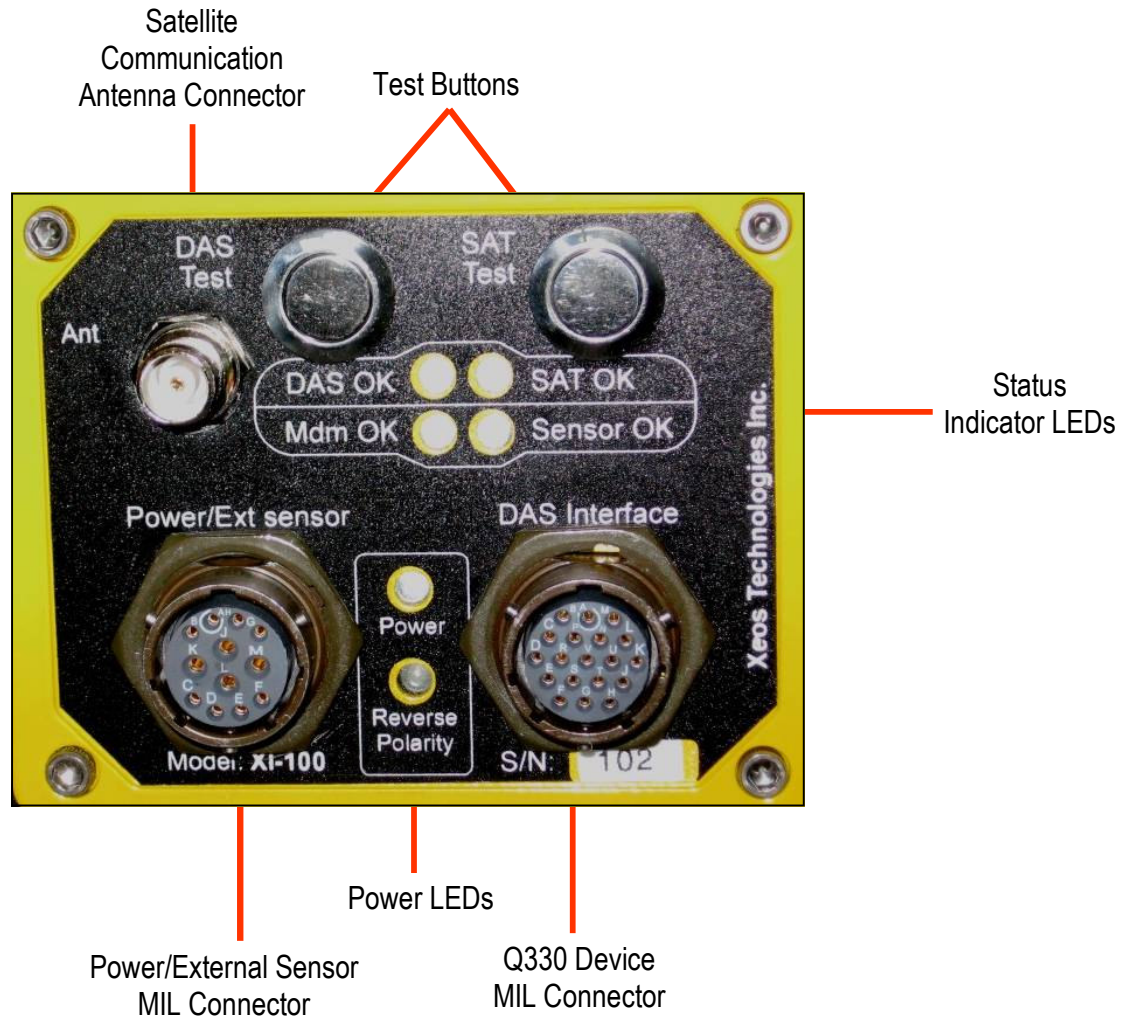
Hardware

As per the specification of IRIS, the XI-100 device has been designed to be a low-power, rugged unit capable of withstanding harsh conditions while providing a seamless interface to the Quanterra Q330 seismic data collection device to send the collected seismic data back to the XI Console. The XI-100 unit requires only three cables to be connected to the unit:

- Power/External Sensor connection.
- Q330 interface connection.
- Iridium modem antenna connection.

The interface panel includes two test buttons and six LED status lights to perform tests on-site.

XI-100 Panel Layout



XI-100 Installation

Although the cable for the connection to the Q330 has three mating connectors, only one needs to be connected between the Q330 and the XI-100 (the MIL 23-pin is recommended) as the XI-100 will perform a check to determine which mode has been selected and will adjust communications protocols automatically.

1. Connect the RF antenna cable to the **Antenna** connector on the XI-100 and place it so the antenna has a clear view of the sky to ensure a good satellite reception.
2. Connect the 19-pin MIL cable to the **DAS Interface** connector and connect one of the connectors at the other end to the Q330 (9-pin Serial, 23-pin serial or Cat 5 Ethernet).
3. Connect the 12-pin MIL cable to the **Power Interface** connector and the other end to the remote sensor device.
4. Connect the 4-pin MIL cable to the power source.

Be sure to align the connector notches properly when attaching cables.



Note: If the power anode/cathode poles are reversed, the unit will not power up and the *Reverse Polarity* LED will light. If the polarity is correct, the *Power* LED will light.

Powering Up the XI-100 Device

Once the unit has a power source connected the unit will begin its power up sequence performing internal tests and preparing for communications. After fifteen minutes, the XI-100 device will automatically power down the LEDs, disable the buttons and enter *Autonomous* mode. Once the unit enters *Autonomous* mode, interaction is only available via XI Console messages over the Iridium network. If further on-site testing is required, the power must be re-cycled to enter *Interactive* mode.

The tests are:

- **Modem** - powers up and performs Iridium modem diagnostic check.
- **Sensor** - powers up the internal interface and attempts to connect to the external device.
- **DAS** - powers up the interface for the Q330, attempts to connect via one of the three serial port connection protocols, and performs Q330 communication authorization.

Hardware

- **SAT** - attempts to send an XI status message to the Iridium satellite network.

While the Modem and External Sensor tests are automatically performed on power up, the **DAS** and **SAT** tests must be performed by pressing the respective button.

While the XI-100 device performs each test, the respective LED will flash and if the test is successful, the light will stop flashing. If the test fails, the light will turn off. After 15 minutes all test LEDs will be turned off and the unit will enter *Autonomous* mode.

XI Console Software Installation

As per the specifications of IRIS, the XI Console application has been developed in the Python scripting open source programming language. This development environment allows the software to be compatible with many different operating systems. The software requires access to an external POP Email server to send and receive messages from the Iridium network.

In order to install the XI Console, installation of supporting Python libraries, including those to support communications, graphical interfaces as well as Python itself must be completed first.

To install the libraries on a Windows OS PC:

Step 1 - Install Python 2.5

These are the primary libraries accessed by Python applications.

- a. Navigate the file system to the location of the installation packages.
- b. Open the location of the **Step 1** folder.
- c. Double click the Python-2.5.msi file to start the installation application.
- d. Choose the **Install for all users** option.



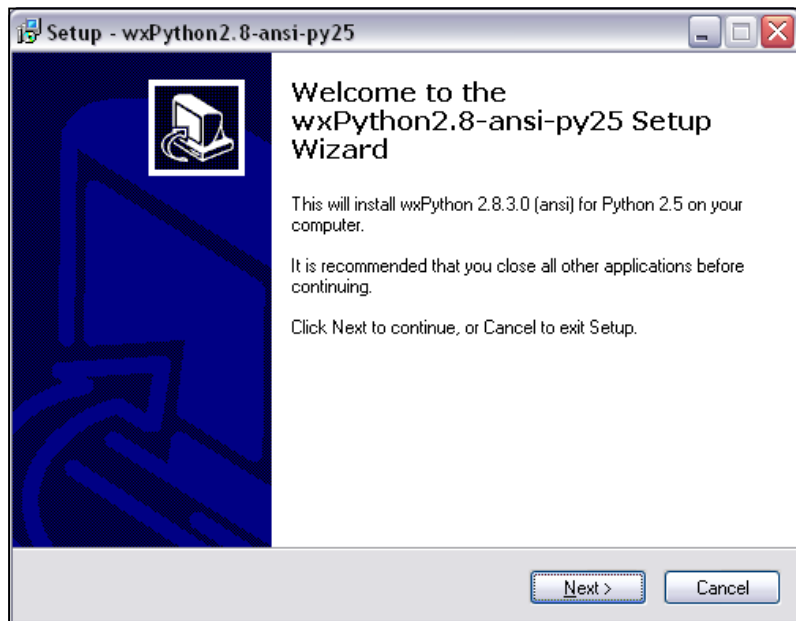
- e. Click **Next**.
- f. Select a location to install the Python libraries to (default is C:\Python25)
- g. Click **Next** to complete the installation.

Step 2 - Install wxPython 2.5

The graphical portion of Python 2.5 is handled by the wxPython libraries.

- a. Navigate the file system to the location of the installation packages.
- b. Open the location of the **Step 2** folder.
- c. Double click the wxPython2.8-win32-ansi-2.8.3.0-py25.exe file to start the installation application.
- d. Click **Next** on the **Welcome** screen.

XI Console Software Installation



- e. Select the **I accept the agreement** option on the **License Agreement** screen.
- f. Click **Next**.
- g. Click **Next**.

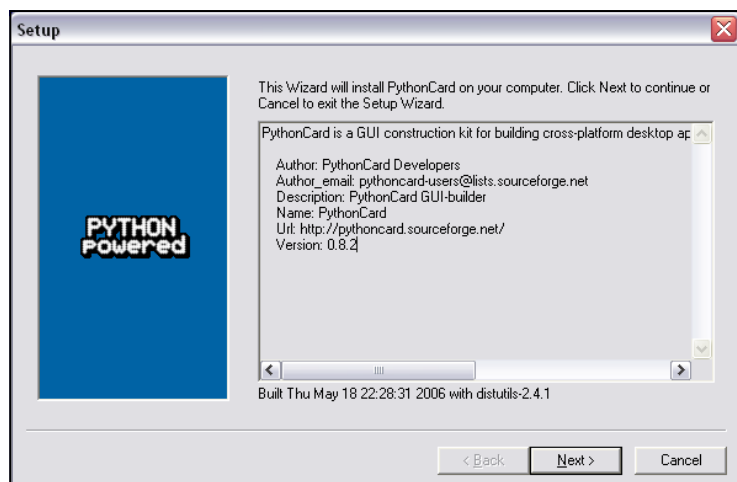
Note: *Do not change the location of the Destination Location, this must be installed in the same location as the main Python libraries.*

- h. Check all items in the list on the **Select Components** screen.
- i. Click **Next** to begin extracting the files.
- j. After the files are extracted, click the **Finish** button to complete the installation.

Step 3 - Install PythonCard

Expanding on the wxPython libraries for cross-platform graphical user interaction.

- a. Navigate the file system to the location of the installation packages.
- b. Open the location of the **Step 3** folder.
- c. Double click the `PythonCard-0.8.2.win32.exe` file to start the installation application.



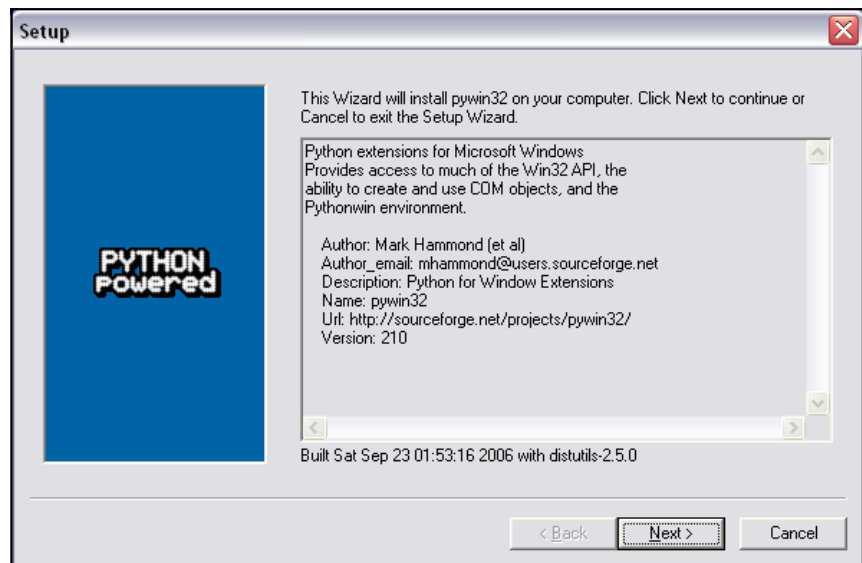
XI Console Software Installation

- d. Click **Next** on the Welcome screen.
- e. Ensure the list of Python installations includes **Python 2.5** and the directories listed below point to the folder created in Step 1.
- f. Click **Next**..
- g. Click **Next** to begin the installation.
- h. Once the install is complete, click **Finish**.

Step 4 - Install PythonWin

This package integrates Python with Windows APIs and not necessary if installation is to be performed on another operating system.

- a. Navigate the file system to the location of the installation packages.
- b. Open the location of the **Step 4** folder.
- c. Double click the `pywin32-210.win32-py2.5.exe` file to start the installation application.



- d. Click **Next** on the Welcome screen.
- e. Ensure the list of Python installations includes **Python 2.5** and the directories listed below point to the folder created in Step 1.
- f. Click **Next**..
- g. Click **Next** to begin the installation.
- h. Once the install is complete, click **Finish**.

Step 5 - Install XI Console

This is the XI application and does not require installation, it simply requires copying the files from the installation folder to the target file system.

- a. Navigate the file system to the location of the installation packages.
- b. Open the location of the **Step 5** folder.
- c. Highlight all the items in the folder.
- d. Right click and select **Copy**.
- e. Navigate to a location to create the new application folder in the file system.

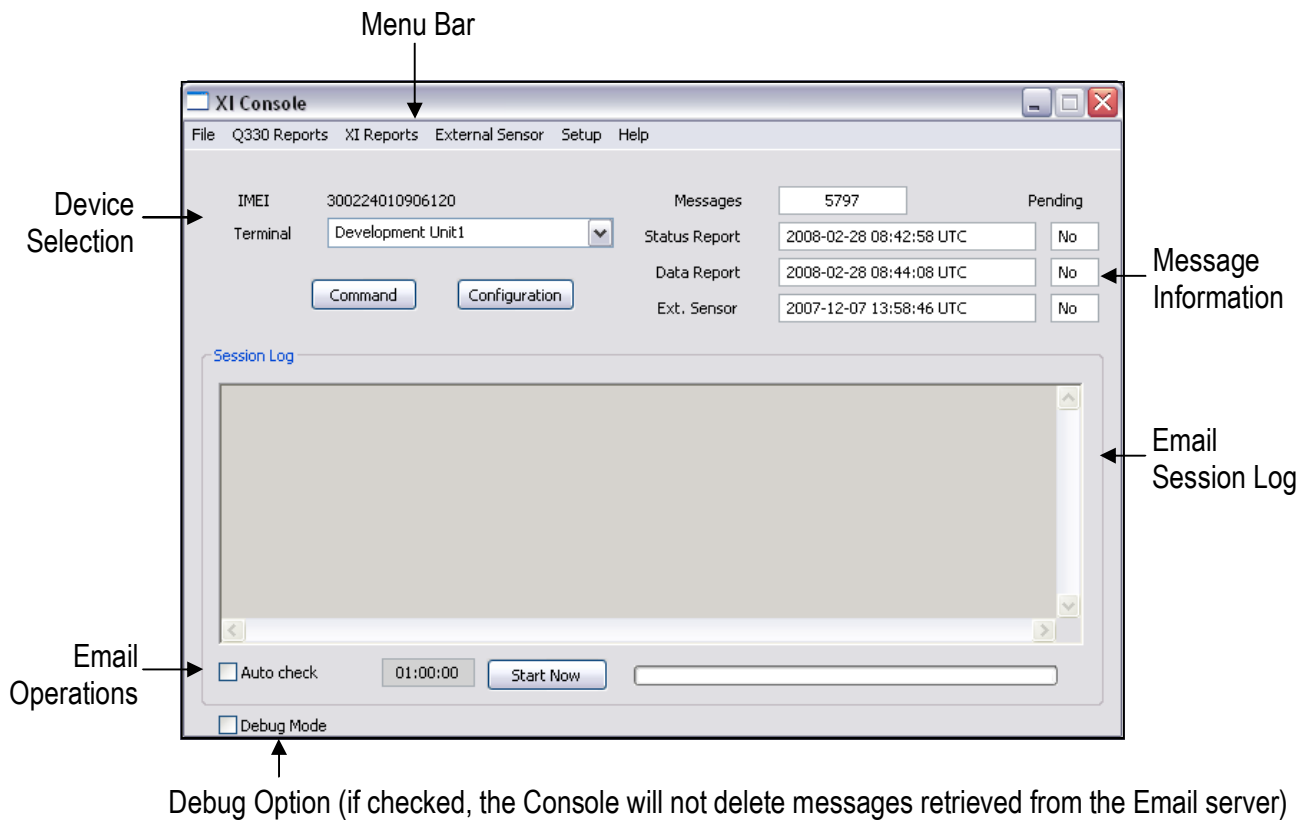
XI Console Software Installation

- a. Create a new folder for the contents giving it any name (e.g. *XI Console*).
- b. Open the new folder.
- c. Right click inside and select **Paste**.

You can create a shortcut on the *Windows* desktop for easy access to the application's main file by right clicking on the `xiconsole.py` file and select **Send To > Desktop (create shortcut)**.

XI Console Main Screen Layout

The XI Console application is made up of many Python script files accessed by one main screen performing the Email actions to connect to the Iridium network to send or retrieve information from one or more XI-100 devices. The user can add new units, configure and retrieve status information or data from the remote device all within this Console application.



There are four main aspects to the XI Console, device and Email account setup, Email transmission, data organization/storage and reports - each is covered in more detail later in this manual.

When commands are sent from the Console to the XI-100 device, the Console creates a command Email based on the parameters required by the XI-100 firmware and sends out the message to the Iridium network where it will be queued at the Iridium message gateway until the XI-100 performs its regular message check (the interval between message checks is user defined (see pg. 16—*Terminal Configuration*)). The Console can only send one command message per Email so each command will be added to the queue until retrieved and executed by the XI-100 device when it performs its check. If the XI-100 determines it has multiple command messages

Overview

queued, it will retrieve and execute all pending commands until the message queue on the Iridium gateway is empty.

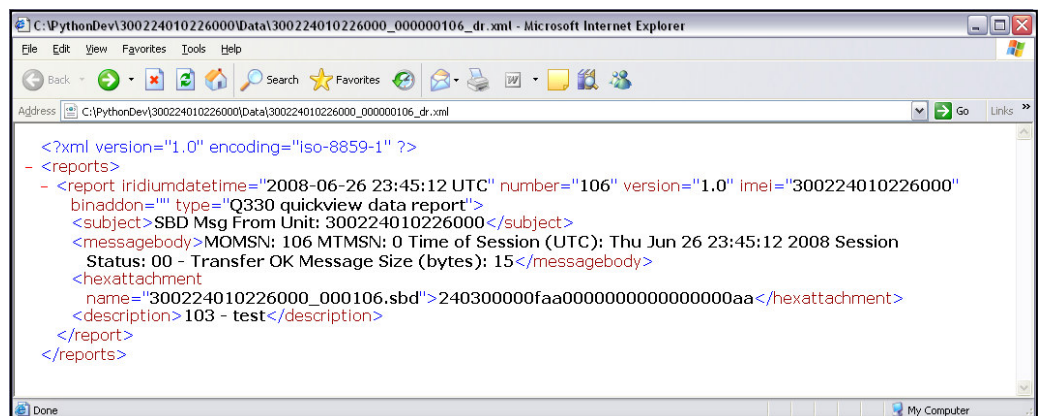
There are two ways to have the XI Console check the POP account for new Email automatically or manually. To have the Console check for Email automatically, set a **Check period** on the **Mail Account** screen (see pg. 12 *–Email Account Setup*) and check the **Auto check** box on the main screen to start a timer. To check for new Email manually, click the **Start Now** button on the main page.

As the Console connects to either the Incoming or Outgoing mail server, all connection information is logged to the **Session Log** display. This information can be used to track automatic Email checking activity or for possible troubleshooting purposes.

When new Email is retrieved for a specified device, the Console will download the Email, parse the Email to determine the type of message. There are three types of message:

- **Status**—messages containing information about the condition of either the Q330 or the XI-100 device.
- **Data**—messages containing raw data from either the Q330 or the external environmental conditions detection device.
- **Other**—messages that do not contain either status or data information. These can be: XI-100 status, Iridium gateway queue, error or other notification messages.

Once the type of message has been determined, the Console will de-code the messages and save the information to an XML-format file in folders specified by the user (see pg. 14—*Adding an XI-100 Device to the Console*). This data can then be imported into software that can parse XML data for further analysis or viewed as a read-only report within the Console (see pg. 20—*Reports*).



Example of a Data message retrieved by the XI Console as stored in XML format.

Email Account Setup

To setup an Email account to send and retrieve messages from the *Iridium* network, the account information must be configured and saved to the system. Since communication is both ways, both an incoming and outgoing mail server must be specified whether they are the same server or different. The outgoing server can be any since commands will be sent to the Iridium network regardless of which server is used to send, however, the incoming server must be a POP server set to the account associated with the XI-100 device when the Iridium account was activated.

To configure the Email account settings, select **Setup > Mail Account** from the menu bar on the main screen. This brings up the **Mail Account** screen where the settings can be entered.

The **Mail Account** window is divided into two main sections: **Logon Information** and **Server Information**.

- Logon Information:**
 - User Name:** iris.select
 - Password:** [masked]
 - Check period (minutes):** 60
- Server Information:**
 - Incoming Mail Server (POP3):** pop.gmail.com
 - Incoming Mail Server port:** 995 (with ☒ SSL)
 - Outgoing Mail Server (SMTP):** pop.gmail.com
 - Outgoing Mail Server port:** 465 (with ☒ SSL)

Annotations with arrows point to the following fields:

- User Email Account Settings:** points to the User Name field.
- Email Check Timer Interval:** points to the Check period (minutes) field.
- Email Server Settings:** points to the Incoming Mail Server (POP3) field.

Buttons at the bottom: **OK** and **Cancel**.

Logon Information

- User Name:** UserAccount | → User Name associated with the Email account.
- Password:** [masked] | → Account Password associated with the User Name.

Email Account Setup

Check period (minutes)	60	→ Amount of time between automatic checks for new mail on the incoming server.
------------------------	----	--

Some POP servers require the Secure Sockets Layer (SSL) for establishing an encrypted link between the web server and the program for protection for the incoming and/or outgoing ports. If the incoming server requires SSL, the usual port setting is 995, if un-secured, 110. For the outgoing server the usual settings is port 465 for a secure connection. For more information on Email settings, read your Email server documentation.

Server Information		
Incoming Mail Server (POP3)	pop.gmail.com → Incoming POP Mail Server name .	
Incoming Mail Server port	995	☒ SSL → Check to use SSL and enter an incoming port number.
Outgoing Mail Server (SMTP)	pop.gmail.com → Outgoing SMTP Mail Server name.	
Outgoing Mail Server port	465	☒ SSL → Check to use SSL and enter an outgoing port number.

Once the information has been entered, click the **OK** button to save the settings and close the **Mail Account** screen and return to the main screen.

Adding an XI-100 Device to the Console

Before communicating with an XI-100 device via the Iridium network, the device must be added to (or registered with) the Console's list of devices. Once added, the device can then be selected from the list of devices and communication begin. The process of adding a device will create individual folders where status and data will be stored which can be accessed using the standard operating system file system.

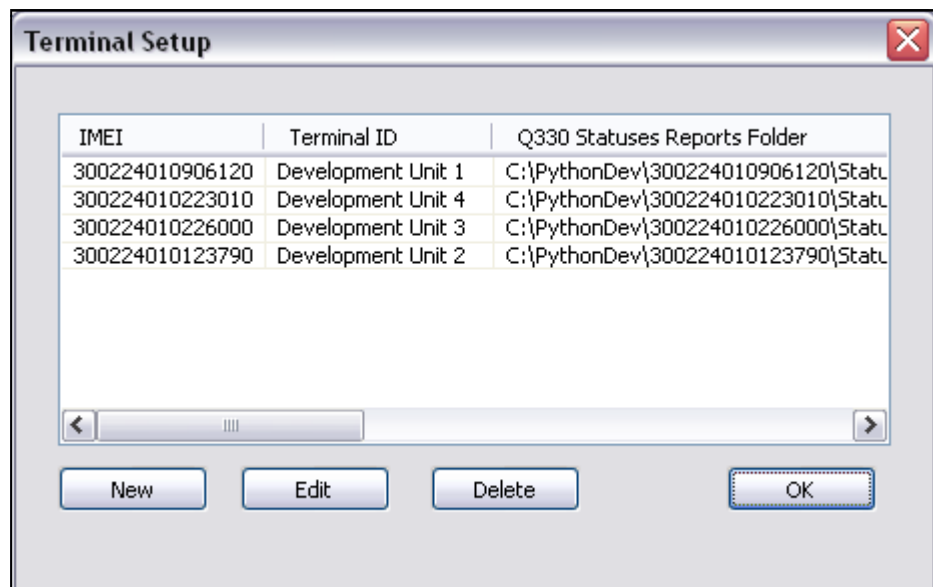
When messages are retrieved from a device, the Console parses the header of the Email to determine the type of message and, depending on the information contained in the header, will store the data contained in the message to disk. There are four types of messages that will be parsed by the Console:

- **Status Reports**—messages containing information regarding the operational status of the Q330 or the XI-100 device.
- **Data Reports**—messages containing the seismic data retrieved from the Q330.
- **External Device Reports**—messages containing data retrieved from the external sensor device connected to the XI-100.
- **Other**—any other message from Iridium. The Console will use this as a catch-all folder for messages including: XI-100 status, queue notices or error messages from Iridium.

For each type of message, the Console creates and writes to a corresponding directory on a specified disk. When the user adds a new device to the terminal list, the location for each of these folders must be specified for data retrieval. Although not required, it is recommended that each folder be contained within a master folder using the XI-100 device's IMEI number for readability and organization purposes..

To add a new XI-100 device to the Console:

1. Open the XI Console application.
2. Select *Setup > XI Terminal* from the menu bar to open the **Terminal Setup** screen.



Devices added to the Console are listed on the **Terminal Setup** screen.

Adding an XI-100 Device to the Console

3. Click the **New** button to bring up the **New Terminal** screen.
4. Enter the IMEI ID number of the device supplied by *Xeos Technologies Inc.* (found on the top of the device) in the **IMEI** box.
5. Enter a descriptive name for the device in the **Terminal ID** box.
6. Enter the path to an existing folder or click the  button next to the **Status Reports** directory box to navigate to an existing one or create a new one.
7. Enter the path to an existing folder or click the  button next to the **Data Reports** directory box to navigate to an existing one or create a new one.
8. Enter the path to an existing folder or click the  button next to the **Ext. Sensor Reports** directory box to navigate to an existing one or create a new one.
9. Enter the path to an existing folder or click the  button next to the **Other** directory box to navigate to an existing one or create a new one.
10. Click the **OK** button to save the device information and return to the **Terminal Setup** screen.
11. Click **OK** to close the **Terminal Setup** screen.



The image shows a Windows-style dialog box titled "New Terminal". It contains several input fields and a section for file folders. The "IMEI" field contains the text "300224019000000". The "Terminal ID" field contains the text "New Device". Below these is a section titled "Folders for XML files" which contains four rows, each with a label and a text box followed by a browse button (three dots in a square). The rows are: "Status Reports" with "C:\New Device\Status", "Data Reports" with "C:\New Device\Reports", "Ext. Sensor Reports" with "C:\New Device\Sensor", and "Other" with "C:\New Device\Other". At the bottom of the dialog are "OK" and "Cancel" buttons.

Use the **New Terminal** screen to add a new device to the XI Console.

Once a device has been added, it can be modified by highlighting it in the list, then clicking the **Edit** button. It can also be removed by clicking the **Delete** button on the **Terminal Setup** screen.

Terminal Configuration

The XI-100 device is configurable to send reports/status information at regular intervals from between five minutes and two weeks. When the internal timers are triggered, the XI-100 device will self-power up and send the reports through the Iridium network rather than wait for a command from the Console.

As the system can only support one configuration command at a time, changing any one of the time intervals will cause any other selected interval value to “No Change”. In order to update multiple items, click the **Send Configuration** button after each interval change. This will send the new interval setting to the Iridium gateway and added to the queue where it will be retrieved from by the XI-100 device at the next check interval.

The timer intervals that can be set using the configuration commands are:

Iridium Check Interval—amount of time between checks for incoming commands from the Iridium satellite network.

Q330 Status Report Interval—amount of time between requests for reports on the status of the Q330.

Q330 Data Report Interval—amount of time between requests for seismic data from the Q330.

External Sensor Report Interval—amount of time between requests for data reports from the external climatological device.

External Sensor Configuration—amount of time the external sensor should collect sample data for averaging for the data report.

To change an XI-100 interval:

1. Select a device from the **Terminal** drop down list.
2. Click the **Configuration** button to bring up the **Terminal Configuration** screen.
3. Select an **Interval** time to change from the associated drop down list.
4. Click the **Send Configuration** button to have the Console email the setting change to the XI-100 device.
5. Repeat steps 4 and 5 for each interval to be updated.
6. Click the **Close** button to close the **Terminal Configuration** screen and return to the main screen.

Terminal Configuration

Terminal Configuration - 300224010226000

Iridium Check Interval

Last known Interval: 30 minutes

Select the time interval for Iridium sessions. A session will retrieve an inbound (MT) message and send an outbound (MO) message.

No Change

Q330 Status Report Interval

Last known interval: 1 hour

Select the time interval for regular Q330 status reports.

20 minutes

Q330 Data Report Interval

Last known interval: 1 hour

Select the time interval for regular Q330 data reports.

No Change

External Sensor Timer Interval

Last known Interval:

Select the time interval for External Sensor.

No Change

External Sensor Configuration

Last known value:

External Sensor average/update interval

No Change

Last Update Time: 2008-07-02 13:52:41

Send Configuration

Close

To change a timer interval in the XI-100, select a new **Interval** value from the appropriate drop down list and click **Send Configuration** on the **Terminal Configuration** screen.

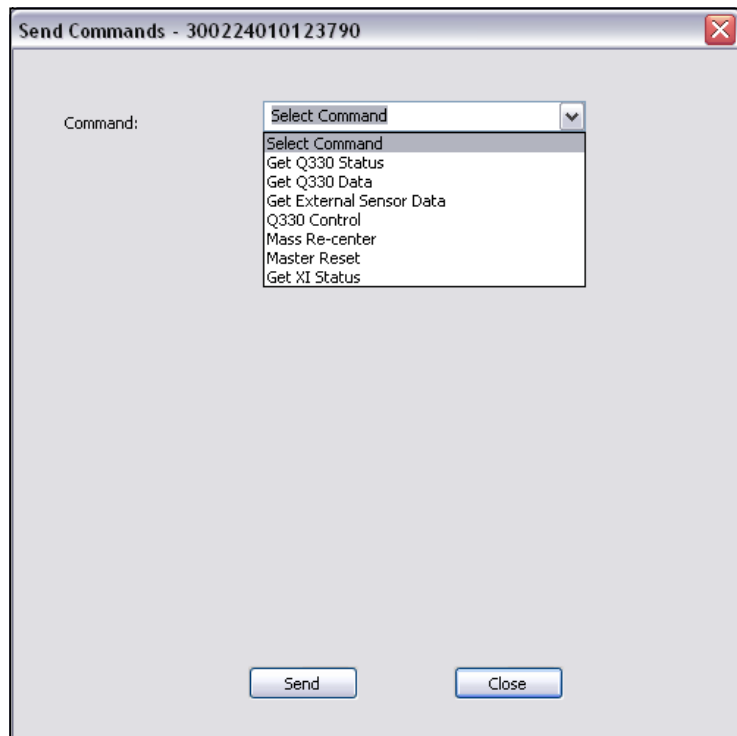
XI-100 Commands

Communications between the XI-100 device and the XI Console are initiated by the XI Console using pre-set commands. These commands sent from the Console are either requests or one-way instructions for the XI-100 device to execute. The application sends these commands via the Iridium network as messages the device will retrieve from the network at the user-specified interval.

Command	Type	Description	Parameters
Get Q330 Status	Request	Retrieve the current operation status parameters from the Q330 device connected to the XI-100 and return it to the Console.	None
Get Q330 Data	Request	Retrieve the seismic data collected by the Q330 device and return it to the Console.	<i>Duration:</i> Length of time the Q330 should collect Seismic data to be sent to the Console.
Get External Sensor Data	Request	Retrieve the data collected by the external device and return it to the Console.	None
Q330 Control	Instruction	Instructions to be passed to the Q330 for execution.	Reboot: Soft restart of the Q330 device Re-sync: Restart the Q330 GPS and its timers Turn GPS On: Power up the internal Q330 GPS. Turn GPS Off: Power down the internal Q330 GPS. Cold Start GPS: Cycle the power to the internal GPS device
Mass Re-center	Instruction	Re-calibrate the Q330 seismic sensors.	Period: 1-10 seconds
Master Reset	Instruction	Soft re-boot the XI-100 device and re-set it to default settings.	None
Get XI Status	Request	Retrieve the current operational status of the XI-100 device and return it to the Console.	None

XI-100 Commands

Select a command to send to the XI-100 device from the list on the **Send Commands** screen.



Only one command can be sent at a time—but multiple emails can be queued at the Iridium Gateway for transmission. When the XI-100 device awakens from sleep-mode, it will retrieve one command message at a time and execute it before it retrieves another command for execution.

When selecting the **Q330 Control** command, only one parameter check box can be selected, then the **Send** button must be clicked before the options will become available again, as only one command can be processed at a time by the XI-100 device.

Reports

The primary function of the XI-100 system is to communicate with the Quanterra Q330 device to retrieve status and data reports to be returned via the Iridium satellite network to IRIS. These reports contain a great deal of information outlined in the Q330 documentation so only a brief description of each report is listed here.

To retrieve a report:

1. Open the XI Console.
2. Select a device name from the **Terminal** device list.
3. Click the **Command** button to open the **Send Commands** screen.
4. Select a command from the **Command** list (For more information on commands, see pg. 18—*Commands*).
 - To retrieve a status report for the Q330, select—**Get Q330 Status**.
 - To retrieve seismic data from the Q330, select—**Get Q330 Data**.
 - To retrieve a environmental conditions report from the external device, select—**Get External Sensor Data**.
 - To retrieve a status report for the XI-100, select—**Get XI Status**.
5. Click the **Send** button to begin the request process.
6. Click the **Close** button to close the **Send Commands** screen and return to the main screen.

The Console will then update the main page to display the associated device report or data **Pending** display. The command will be sent out via the outgoing mail server (see pg. 12—*Mail Account Setup*) and queued at the Iridium message gateway. At the next wake interval, the specified XI-100 will retrieve the request from the Iridium network. The XI-100 will process the command request, execute the request, package the information and Email it back to the Iridium network where it will be forwarded to the incoming Email account for the Console (see pg. 12—*Mail Account Setup*).

Manual retrieval of the messages from the Email server by the Console can be performed by clicking the **Start Now** button on the main screen.

Automatic response retrieval can be performed by the Console by checking the Auto-check box at the bottom of the main screen. At the specified interval (see pg. 12—*Email Account Setup*) the Console will connect to the mail server and retrieve the response from the XI-100, parse it and save the attached data to disk in the appropriate folder.

Once the response has been received, the **Pending** box for the associated request will be updated from **Yes** to **No** and the update the date in the **Message Information** section of the screen for that report.

The **Message Information** area of the main screen is updated when a new report is retrieved from the XI-100.

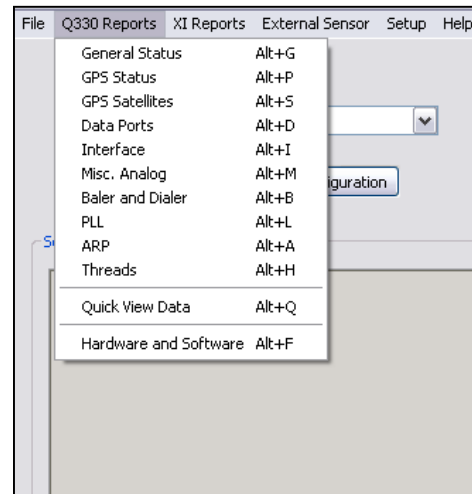
Messages	391	Pending
Status Report	2008-07-02 19:12:19 UTC	No
Data Report	2008-07-02 19:12:50 UTC	No
Ext. Sensor		

Reports

Q330 Reports

Reports or data retrieved from the Q330 device via the XI-100 can be viewed by selecting a report from the **Q330 Reports** menu, bringing up a screen displaying the related report information. For more information regarding the report information, please refer to the manual supplied with the Quanterra Q330 device.

Select a report to view from the **Q330 Reports** drop down list.



General Status:

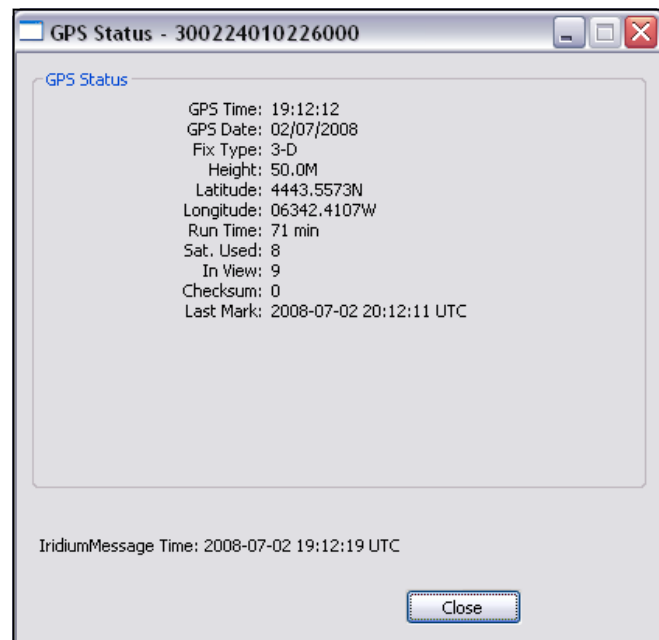
Miscellaneous information about the Q330 operating conditions.



Reports

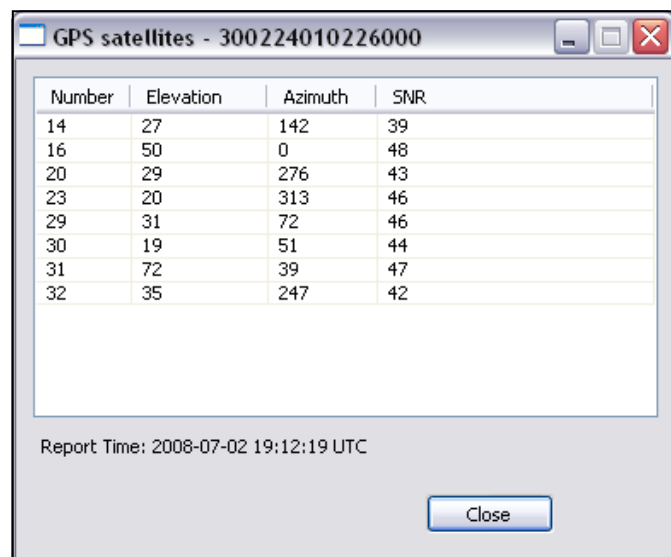
GPS Status:

Information regarding the connection and condition of the Q330 internal GPS unit.



GPS Satellites:

Information on the internal GPS unit connection to GPS satellites including direction and signal strength.



Reports

Data Port Status:

Information on networked devices connected to the Q330 device via internal data ports.

Data Port Status - 300224010226000

Data Port 1

- Data Packets Sent: 0
- Flood Packets Sent: 0
- Packets Re-Sent: 0
- Sequence Errors: 0
- Packet Buffer Used: 0
- Retran.Time: 0.0
- Interface: 0
- Packet Buffer:

Data Port 2

- Data Packets Sent:
- Flood Packets Sent:
- Packets Re-Sent:
- Sequence Errors:
- Packet Buffer Used:
- Retran.Time:
- Interface:
- Packet Buffer:

Data Port 3

- Data Packets Sent:
- Flood Packets Sent:
- Packets Re-Sent:
- Sequence Errors:
- Packet Buffer Used:
- Retran.Time:
- Interface:
- Packet Buffer:

Data Port 4

- Data Packets Sent: 0
- Flood Packets Sent: 0
- Packets Re-Sent: 0
- Sequence Errors: 0
- Packet Buffer Used: 984568
- Retran.Time: 10.0
- Interface: 4
- Packet Buffer: 12%

IridiumMessage Time: 2008-07-02 19:12:19 UTC

Close

Interface Status:

Information regarding the link to network devices.

Interface Status - 300224010226000

Ethernet

Name	Value
Redirect	0
Broadcast Frames	0
Source Quench	0
Collisions	0
Link Status/Polarity	OFF/OK
CRC Errors	0
Total I/O Errors	0
Echo Replies	0

Serial 1

Name	Value
Redirect	0
Character Overrun	0
Source Quench	0
IP Address	10.1.1.2
Framing Errors	0
Total I/O Errors	0
Echo Replies	0
Checksum Errors	0
Dest.Unreachable	0

Serial 2

Name	Value
Redirect	0
Character Overrun	0
Source Quench	0
IP Address	10.2.2.2
Framing Errors	0
Total I/O Errors	0
Echo Replies	0
Checksum Errors	0
Dest.Unreachable	0

Serial 3

Name	Value
Redirect	0
Character Overrun	0
Source Quench	0
IP Address	
Framing Errors	0
Total I/O Errors	0
Echo Replies	0
Checksum Errors	0
Dest.Unreachable	0

IridiumMessage Time: 2008-07-02 19:12:19 UTC

Close

Reports

Miscellaneous Analog:

Information on the status of the analog devices connected to the Q330.

The screenshot shows a window titled "Miscellaneous Analog - 300224010226000". It contains two main sections. The first section, "Boom Position", displays data for six channels: Channel 1: 20, Channel 2: 21, Channel 3: 20, Channel 4: 21, Channel 5: 21, and Channel 6: 21. The second section displays various system parameters: Analog Positive Supply: 5.43 V, Input Voltage: 15.6 V, System Temperature: -33 C, Main Current: 61 mA, Main Power: 0.95 W, Antenna Current: 12 mA, Sensor A Temperature: Nothing, Sensor B Temperature: Nothing, and Calibrator Timeouts: 5. At the bottom, it shows "IridiumMessage Time: 2008-07-02 19:12:19 UTC" and a "Close" button.

Boom Position	
Chanel 1: 20	Chanel 4: 21
Chanel 2: 21	Chanel 5: 21
Chanel 3: 20	Chanel 6: 21

Analog Positive Supply:	5.43 V
Input Voltage:	15.6 V
System Temperature:	-33 C
Main Current:	61 mA
Main Power:	0.95 W
Antenna Current:	12 mA
Sensor A Temperature:	Nothing
Sensor B Temperature:	Nothing
Calibrator Timeouts:	5

IridiumMessage Time: 2008-07-02 19:12:19 UTC

Close

Baler and Dialer:

Information on Data balers or Dialers connected to the Q330 device.

The screenshot shows a window titled "Baler Status - 300224010226000". It contains three sections. The first section, "Serial 1", shows: Last Power Up: Power-ups: Current Status: Not a Baler or Dialer, Time On/Off:. The second section, "Serial 2", shows: Last Power Up: Power-ups: Current Status: Not a Baler or Dialer, Time On/Off:. The third section, "Ethernet", shows: Last Power Up: Never, Power-ups: 0, Current Status: Off, Time On/Off: 71 min.. At the bottom, it shows "IridiumMessage Time: 2008-07-02 19:12:19 UTC" and a "Close" button.

Serial 1
Last Power Up:
Power-ups:
Current Status: Not a Baler or Dialer
Time On/Off:

Serial 2
Last Power Up:
Power-ups:
Current Status: Not a Baler or Dialer
Time On/Off:

Ethernet
Last Power Up: Never
Power-ups: 0
Current Status: Off
Time On/Off: 71 min.

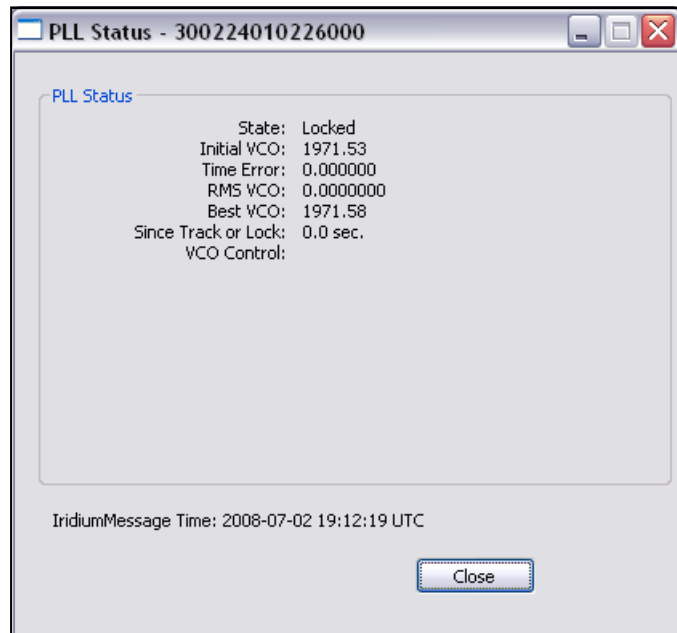
IridiumMessage Time: 2008-07-02 19:12:19 UTC

Close

Reports

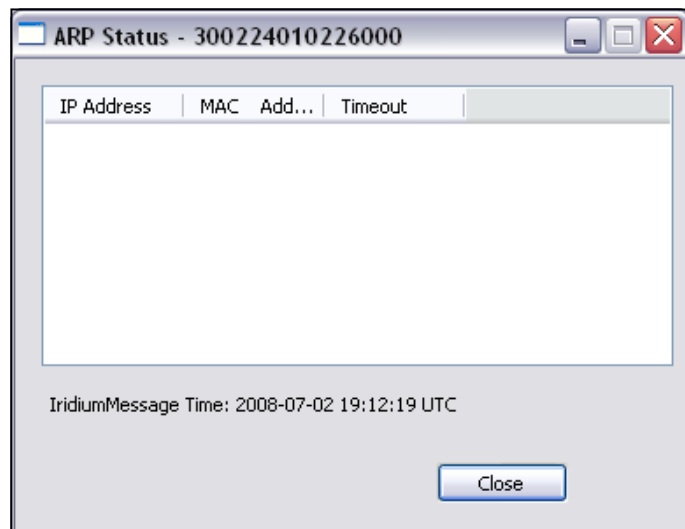
PLL Status:

Provides information regarding the Phase Locked Loop (PLL) which synchronizes the Voltage Control Oscillator (VCO).



ARP Status:

Displays all devices connected to the Q330device via Address Resolution Protocol (ARP).



Reports

Thread Status:

Displays information for all processes the Q330 performs.

Thread Status - 300224010226000								
Thread Name	Blk	Pri	Cnt	Evt	Last Run	levt	Percent	Total Time
Datatin	No	30	30	No	0.001	8	14.2097	612.527
Clock	No	20	20	No	0.025	0	0.6645	28.645
Ether	No	18	18	No	4310.639	0	0.0000	0.000
Portmon	No	17	17	Yes	0.122	0	0.0000	0.002
Logical1	Yes	16	16	Yes	4310.639	N/A	0.0000	0.000
Logical2	Yes	15	15	Yes	4310.639	N/A	0.0000	0.000
Logical3	Yes	14	14	Yes	4310.639	N/A	0.0000	0.000
Logical4	No	13	13	Yes	0.223	N/A	0.0011	0.046
Control	No	12	12	Yes	0.639	N/A	0.0000	0.000
Special	No	11	11	Yes	0.023	N/A	0.0010	0.043
Serial1	No	10	12	No	0.122	0	0.0003	0.014
Serial2	No	10	10	No	4310.639	0	0.0000	0.000
Serial3	No	10	10	No	4310.639	0	0.0000	0.000
Timers	No	9	9	Yes	0.039	N/A	0.0010	0.045
Slave	No	8	8	Yes	0.025	0	0.0024	0.105
Cal	No	7	7	Yes	0.222	N/A	0.0052	0.222
Super	No	6	6	Yes	0.222	N/A	0.0061	0.265
Irda	No	5	5	No	0.001	0	0.4346	18.733
Auth	No	3	3	Yes	0.825	N/A	0.0000	0.001
Flash	Yes	2	2	No	N/A	N/A	0.0000	0.000
Idle	No	1	1	No	0.001	N/A	48.9812	2111.404

Seconds Since Boot: 4310.639

Total Threads Percentage: 64.31

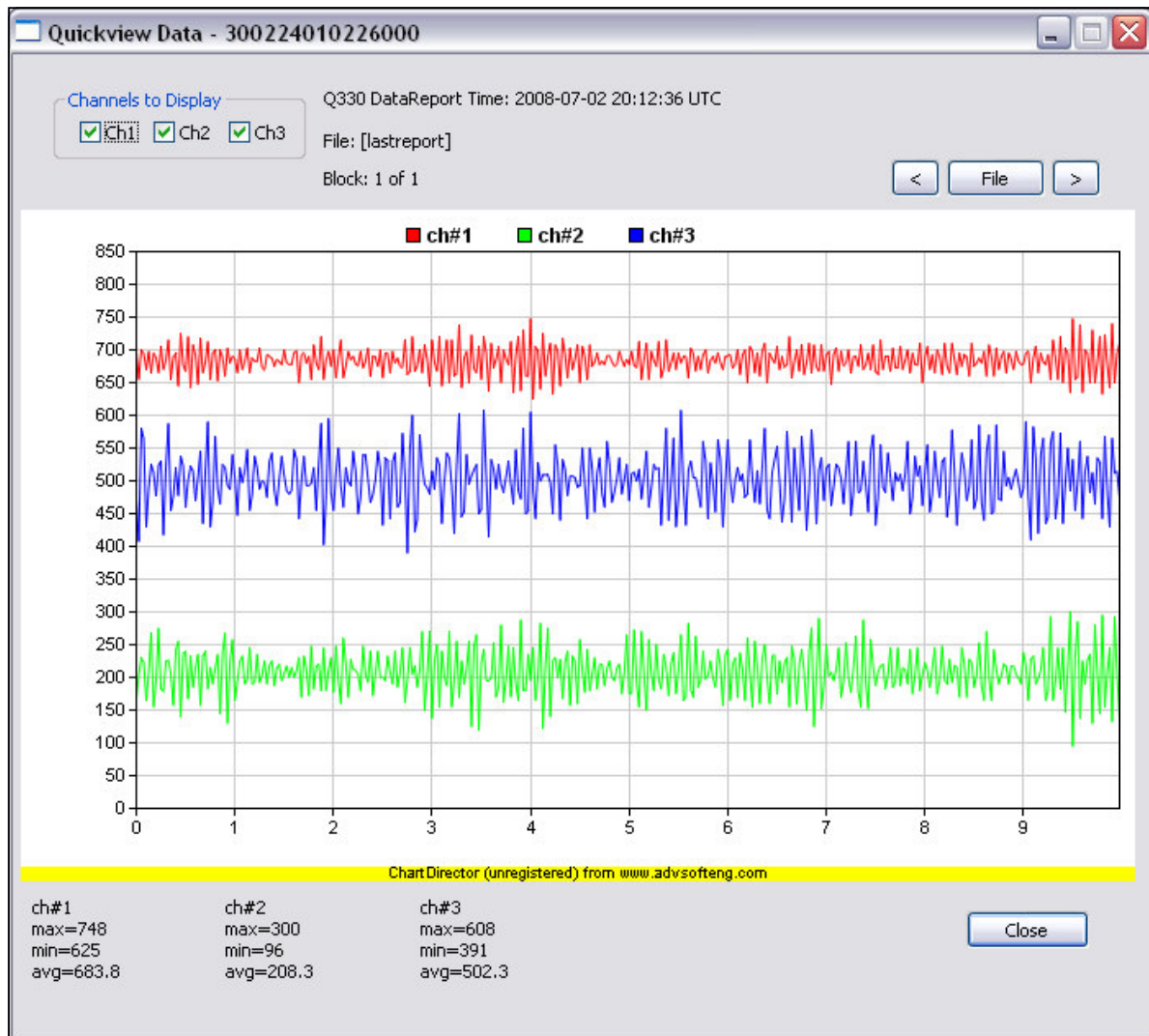
IridiumMessage Time: 2008-07-02 19:12:19 UTC

Close

Reports

Quick View Data:

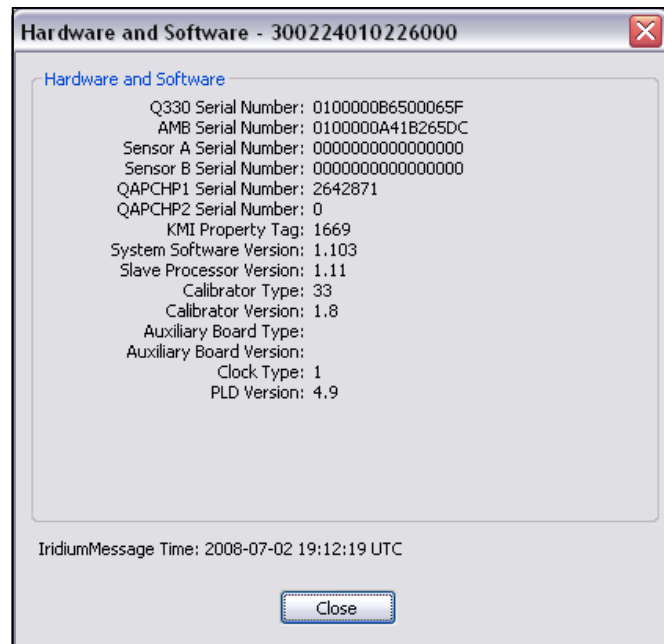
A graphical representation of the Q330 seismic activity data returned by a **Get Q330 Data** request.



Reports

Hardware and Software:

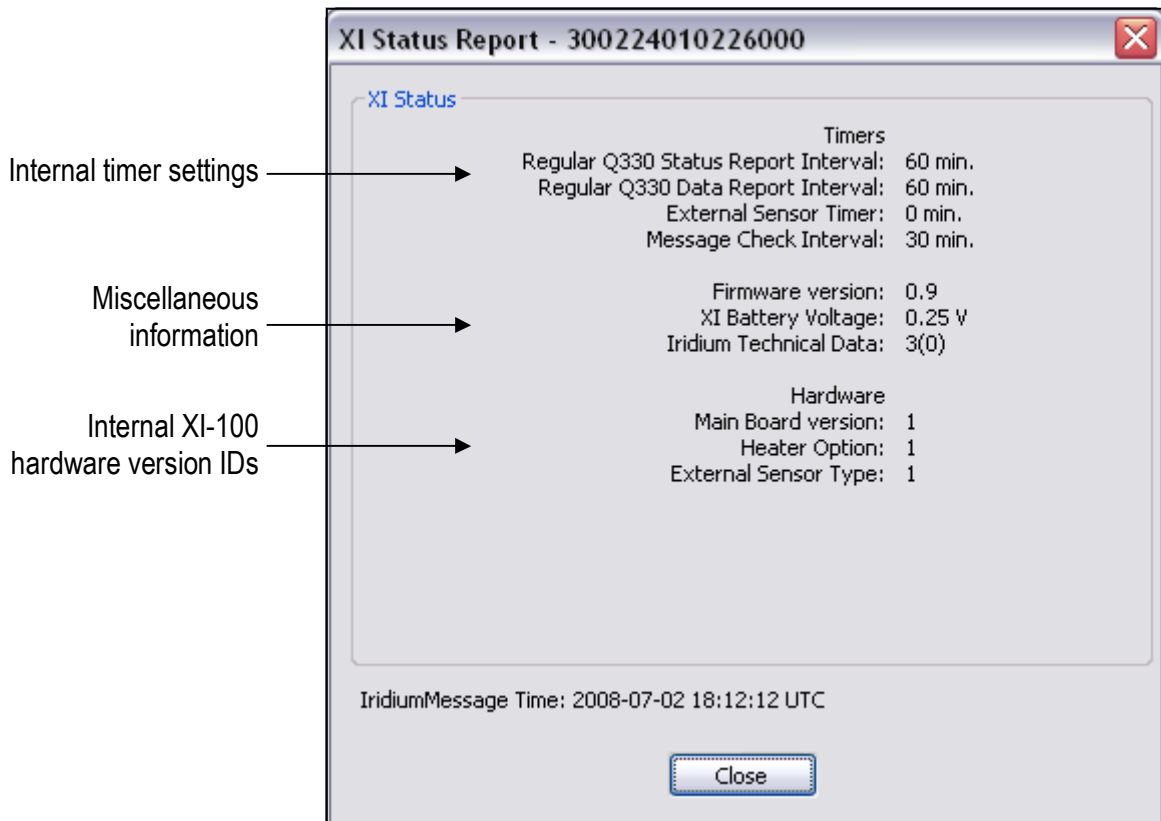
Q330 internal hardware/software versions/
revisions.



Reports

XI Reports

Similar to the Q330 reports, the *XI Report > XI Status* menu option will open the XI Status Report screen displaying the current status and configuration of the selected XI-100 device. This data is returned from the device as a response to a **Get XI Status** command (see pg. 18—*XI-100 Commands*). All returned XI status reports are stored in the **Other** folder associated with the device, but only the latest status report is displayed on the **XI Status Report** screen.



Internal Timer Settings

Regular Q330 Status Report Interval: Amount of time between automatic sending of messages containing a status report from the Q330 device.

Regular Q330 Data Report Interval: Amount of time between automatic sending of messages containing a seismologic data report from the Q330 device.

External Sensor Timer: Amount of time between automatic sending of messages containing environmental conditions data collected from the external device.

Message Check Interval: Amount of time between checks for incoming command messages.

Reports

Miscellaneous Information

Firmware revision: Current revision number for the internal device programming of the XI-100.

XI Battery Voltage: Current amount of battery power remaining for the connected XI-100 power source.

Iridium Technical Data: Current Iridium satellite connection quality (RSSI). Values range from between 1 (poor) and 5 (excellent). The second number is a count of attempts to connect in the case of a poor connection.

Hardware Version Numbers

Main Board Version: Current revision number for the main circuit board in the XI-100 device.

Heater Option: Current version of the internal XI-100 heating system.

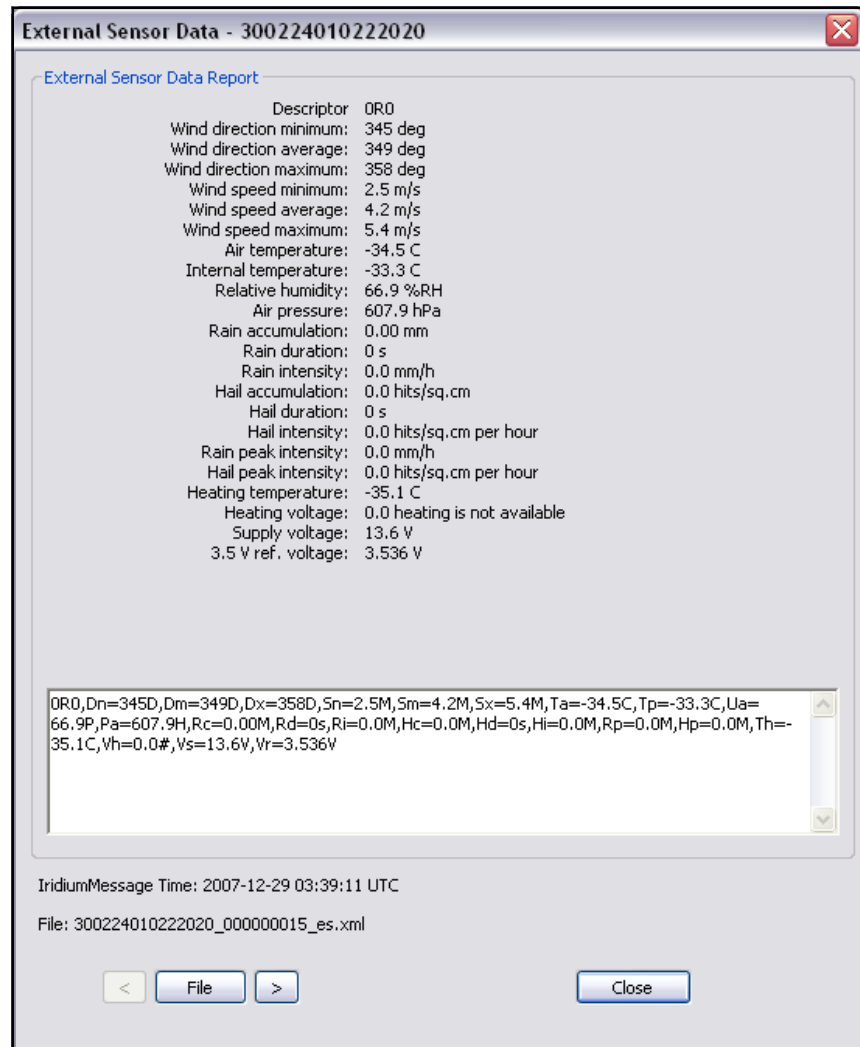
External Sensor Type: Current hardware version of the external sensor device.

Reports

External Sensor Reports

The **External Sensor Data** report displays the results of a **Get External Sensor Data** command. The current version of the External Device displays environmental conditions retrieved from a climate information collection device connected to the XI-100. When the XI Console retrieves an external sensor message, it saves the data as a file with the device ID and an incrementing number. The user can view historical climate data by navigating through these environment files using the previous (<) or next (>) buttons located at the bottom of the screen or select one for display using the **File** button.

Below the formatted descriptions and values is the original unformatted data which can be copied from the box to another application by highlighting values and selecting **Copy** to place the data in the computer clipboard.



Notes
