ONYX User Manual

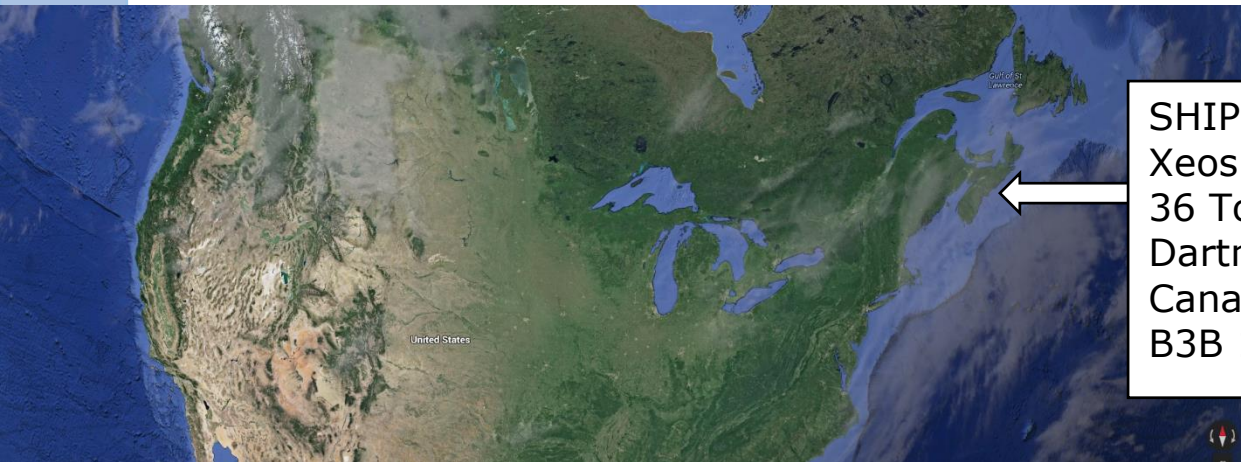## Miniature Iridium Asset Tracker with Relay Function

Version 3.8

Feb 2016

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Table of Contents

Version History

Version	Date	Description
1.0	Jun 2013	Original document
2.0	Aug 2014	Updated format, included relay instructions
3.0	Nov 2014	Updated commands
3.1	Jan 2015	Updated with ONYX-R and I information
3.2	Feb 2015	Added information regarding In-Motion mode
3.3	Mar 2015	Compiled adv. config. options in appendices
3.4	Mar 2015	Corrected error in appendix B
3.5	Apr 2015	Added OEM information
3.6	Nov 2015	Added LV OEM info to appendix D
3.7	Dec 2015	OEM drawings added to appendix
3.8	Feb 2016	Added Onyx M information

General Description

The ONYX is a miniaturized asset tracking beacon which continuously monitors for asset location and reports location and sensor information via the Iridium satellite network. ONYX makes use of the bi-directional, global, real time Iridium satellite Short Burst Data (SBD) network in combination with GPS position location. ONYX's extremely small size and form factor make it easy to install quickly for overt installations or hide in a wide variety of locations for covert tracking or custom concealments.

Inside the ONYX is a 9603 Iridium satellite Short Burst Data core radio transceiver, a specialized low power Xeos digital controller with GPS, Iridium antenna, GPS antenna, and complex accelerometer for motion detection.
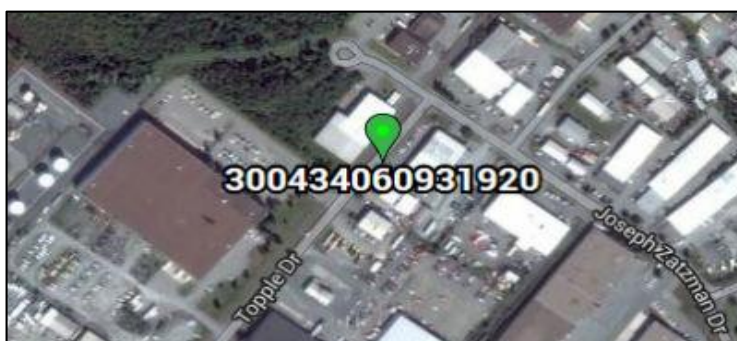
ONYX is intended for both covert and overt mobile deployments. Xeos Technologies Inc. (Xeos) manufactures other products for fixed location monitoring and remote tracking and surveillance.

The ONYX also features a built in relay function for the remote control and retrieval of serial devices, such as sensors or cameras.

See www.xeostech.com for details or call (902) 444 7650.

ONYX Variants

The ONYX is available with three separate power sources. The standard ONYX, the ONYX-I, and the ONYX-R.

ONYX

The standard ONYX, pictured on the cover, has no internal power source. It requires an external power supply of 7 to 24 Volts.

ONYX-I

The ONYX-I has an internal power source, consisting of four C-123 non-rechargeable batteries. This model has larger profile than the standard ONYX.

ONYX-R

The ONYX-R also has an internal power source, consisting of a rechargeable 3.6 Lithium-Ion battery pack. This model also has a larger profile than the standard ONYX as well as charging indicator LED's.

ONYX-LV OEM

The ONYX-LV OEM includes ONYX LV board. Customers must supply their own power supply of between 3.3 and 5.5 Volts. Serial communication is possible with the supplied programming cable. See Appendix D: OEM LV Programmer.
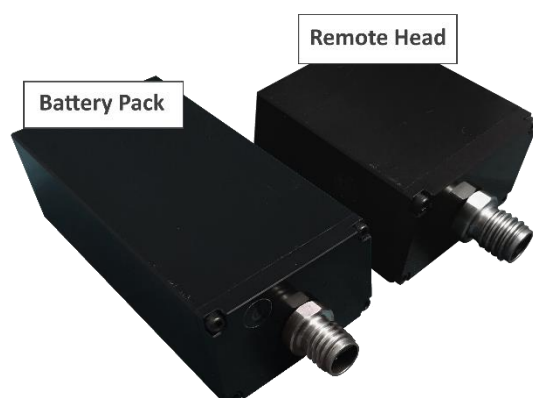
Onyx-M

The ONYX-M is the marine variant of the ONYX and is submersible to 10m. The Remote-Head and Battery pack are both waterproof, but cables should remain attached while underwater to prevent pin corrosion.

The ONYX-M Remote-head can be treated identically to an ONYX when considering installation. Like the ONYX, the ONYX-M's programming cable can power the unit when connecting serially to your PC.

The magnet cups on the bottom of the Remote-head and Battery pack are designed for 5/8" diameter magnets, which are not included.

Theory of Operation

The ONYX is intended for continuous and/or periodic monitoring of high value assets globally. The ONYX is able to facilitate instant and accurate location of assets for recovery or monitoring purposes. The internal GPS determines location which is stored on board the ONYX. An Iridium modem provides two way communications for retrieval of data, live tracking and sending commands to the remote tracker. The deployment is facilitated by the miniature device which has both GPS and Iridium antennas on board.

Operators can communicate with the ONYX via Iridium using Xeos Online or via email commands appropriately configured. Status information can be obtained, including the health of the GPS system and battery voltage. Timings are settable remotely and can be modified as the nature of the tracking or monitoring operation changes.

The internal relay function allows the onyx to be piggy backed to an external serial device and used as a communications interface for that device. For

instance, you may wish to send commands to a remote camera or receive data from a temperature sensor.

Operating Instructions

Setting up your Iridium Account

ONYX makes use of the Iridium satellite system's (www.iridium.com) Short Burst Data (SBD) service for the 9603 transceiver. This service is a global, two-way, real-time, email-based data delivery service that has a maximum outbound (from beacon) message size of 340 bytes and a maximum inbound (to beacon) message size of 270 bytes.

ONYX end users must set up an approved data delivery account with their preferred service provider. Xeos is an Iridium VAR and can provide Iridium service if you wish. Using our web form is a quick and easy way to setup service. It can be found at www.xeostech.com and selecting Iridium Service from the Product menu.

Setting up service requires the International Mobile Equipment Identity (IMEI) number. Each 9603 has a unique IMEI number that must be registered with a preferred service provider. Xeos will make these numbers available when the product is delivered.

Each IMEI number is capable of being associated with up to five (5) unique email addresses. This may vary between service providers. When registering your IMEI number, please provide the service provider with the temporary Xeos testing account email address. This account is: **xeostesting@gmail.com.** Setting up this email address allows for better technical support during the initial learning period for the product. Once service is activated, please notify the technical support team.

While any email application can be used to send and receive messages to the ONYX, Xeos Online is the easiest way to manage and monitor multiple ONYX devices. The messages contain a lot of information and Xeos Online presents the information in a readable format and displays it on street level maps.

You are now ready to test the ONYX tracker and prepare it for deployment.
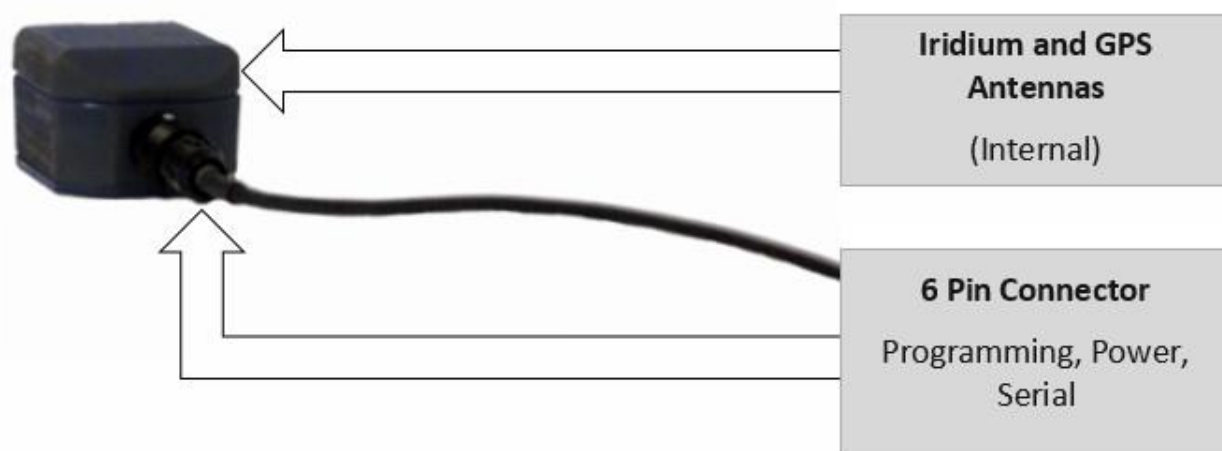
Deployment of the ONYX

The ONYX contains GPS and Iridium antennas. The only external requirement is a power source. In order to deploy the ONYX you need the following:

1. An ONYX with Iridium service activated (using IMEI provided by Xeos)

2. An external power source from 7 – 24 VDC (Standard ONYX only)

3. (optional) An external serial device to be managed via the ONYX

Antennas

To deploy the ONYX, ensure that the surface with the beveled edge, which is where the antennas are located, has a clear view of the sky. For a covert deployment, the antenna surface must not be obstructed by metal or wood. Thick amounts of other materials may also cause interference. Testing of covert installation locations is strongly recommended.

ONYX-R Indicator LED's

Charging LED

LED	Charging Status
Off	Not Charging
Red	Battery Fault
Green	Normal Charging

Charging LED
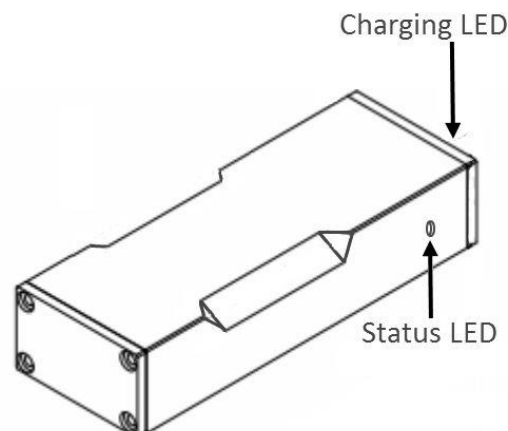
Status LED

Unit Status LED

Turn On	Swipe Magnet back and forth across topside until LED is solid green
Turn Off	Swipe magnet back and forth across topside until LED is solid red
Status	Swipe magnet once across topside (red is off, green is on)

ONYX-I Indicator LED's

The ONYX-I uses a non-rechargeable battery pack, and therefore does not have a **Charging LED** next to the connector. The **Unit Status LED** functions identically to the Onyx-R.

ONYX-M Indicator LED's

The ONYX-M's **Charging LED** is located on the battery pack, while the **Status LED** is on the side of the ONYX-M's head.

Recharging the Onyx

The ONYX-R and ONYX-M both come with charging cables with power and ground leads. The power supply used should be 12V

Standard Onyx Power

While the power source can be between 7 & 24 VDC, it is recommended that you not use a power source very close to either extreme. Once the power supply dips below 7 V, you may not be able to communicate with it or receive messages from it. If the power supply is subject to power surges, it may not be advisable to use a power supply with an average current of 24 VDC for fear of damaging the internal circuitry of the ONYX.

To create a custom battery pack or make your own flying lead assembly, please refer to the pin-out diagram below. You may also contact 902-444-7650 and speak to our Technical Support team for assistance.

ONYX Pin-out Diagram HR-30 (PN HR30-6R-6PD)
(View into ONYX connector)
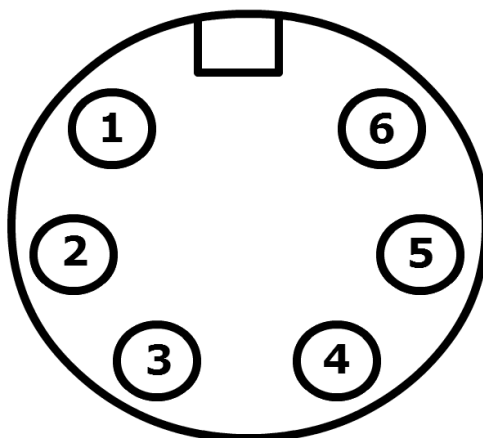
1. **Ground (-) battery input**
2. **Digital IO**
3. **Data output from ONYX**
4. **Data input to ONYX**
5. **5V USB power input**
6. **Positive (+) battery input (12V DC Nominal)**

The battery pack will use pins 6 (V+) and 1 (V-). **Reversing the polarity on the pins could cause damage to the unit**. The remaining pins are for use with a serial device but are not required for the battery pack.

Programmer

Pins 4 and 3 are used by the serial programmer provided with the ONYX. This programmer is used for uploading new firmware or direct connection.

OEM Programmer cable

The LV OEM programming cable differs from the standard Onyx cable, see Appendix D: OEM LV Programmer for more information.

Serial Interface

To connect the ONYX to an external serial device, you will need a Y cable. One branch of the Y connects the power connections to a power source. The other branch of the Y will connect the serial device to the ONYX. The ONYX will be able to send commands and receive data through this connection.

Pre-Deployment Configuration

Pre-programming of the ONYX is not required since it is pre-configured for most tracking scenarios and configurable settings can be changed over the Iridium link. For details, read the section on **Configuration**.

Things to Remember

- The configuration of the ONYX is saved in flash memory and any changes you make will be saved, even if the power is removed and reapplied later.

- As soon as power is applied to the ONYX, it will attempt to get a GPS fix and transmit a report. Once it successfully makes that report, it will go to "sleep" for 1 hour according to the default settings. If you need to apply power prior to getting it into position and with a view of the sky during a covert installation, you need to do one of two things:

  1. Trigger the motion sensor once power is applied by continuously shaking the device for 1 minute. The interval will change to taking location fixes every 20 seconds and reporting every 1 minute. It will stay in this mode for one hour which will give you time to finalize the install and test it.

  2. **Before** installing the device, send it a message via Xeos Online to change the normal operating parameters to a shorter time frame, for instance, GPS fix and SBD report every 1 minute. Then you will be able to quickly confirm the installation once you have finished. Just don't forget to set the parameters for your preferred *no motion* mode.

- Some types of installation will **not** trigger the motion sensor since it senses vibration. Installation in a padded cushion, on a person or in a non-

structural location on a vehicle may not register motion and requires that you change the reporting parameters according to your operational needs.

Testing Your Installation

Test the installation by checking the email addresses to which the Iridium account is sending notifications or Xeos Online. Xeos Online will display the last known position of the device as well as the time stamp of the GPS position.
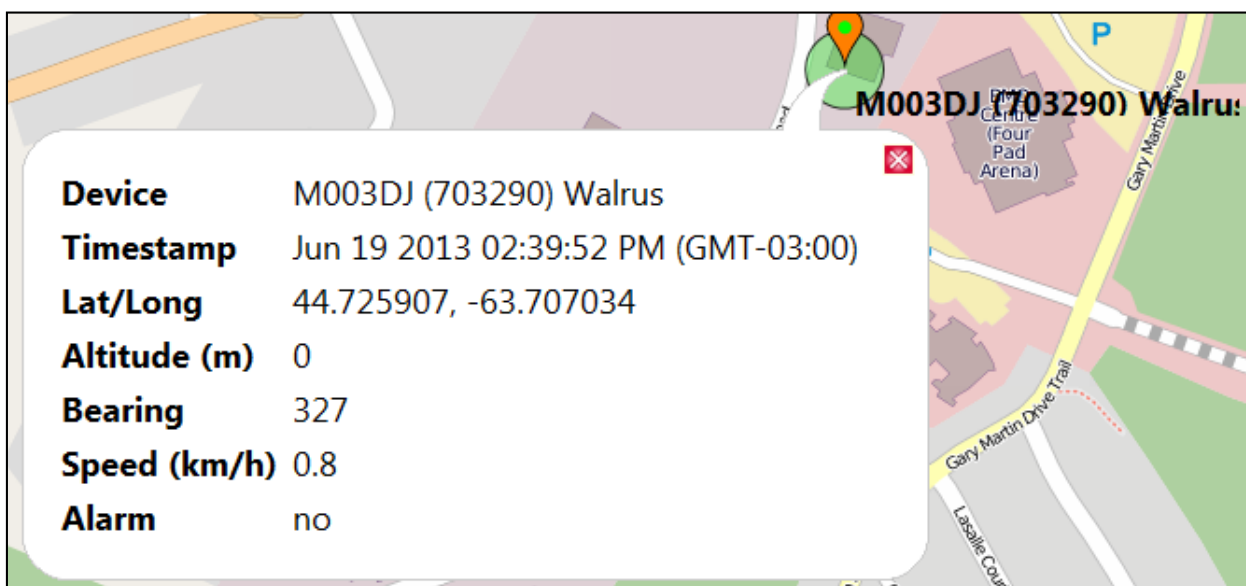
Configuration of the ONYX

The ONYX has a combination of preset behaviors and configurable parameters. Here is an outline of its normal behavior:

ONYX Mode Diagram:
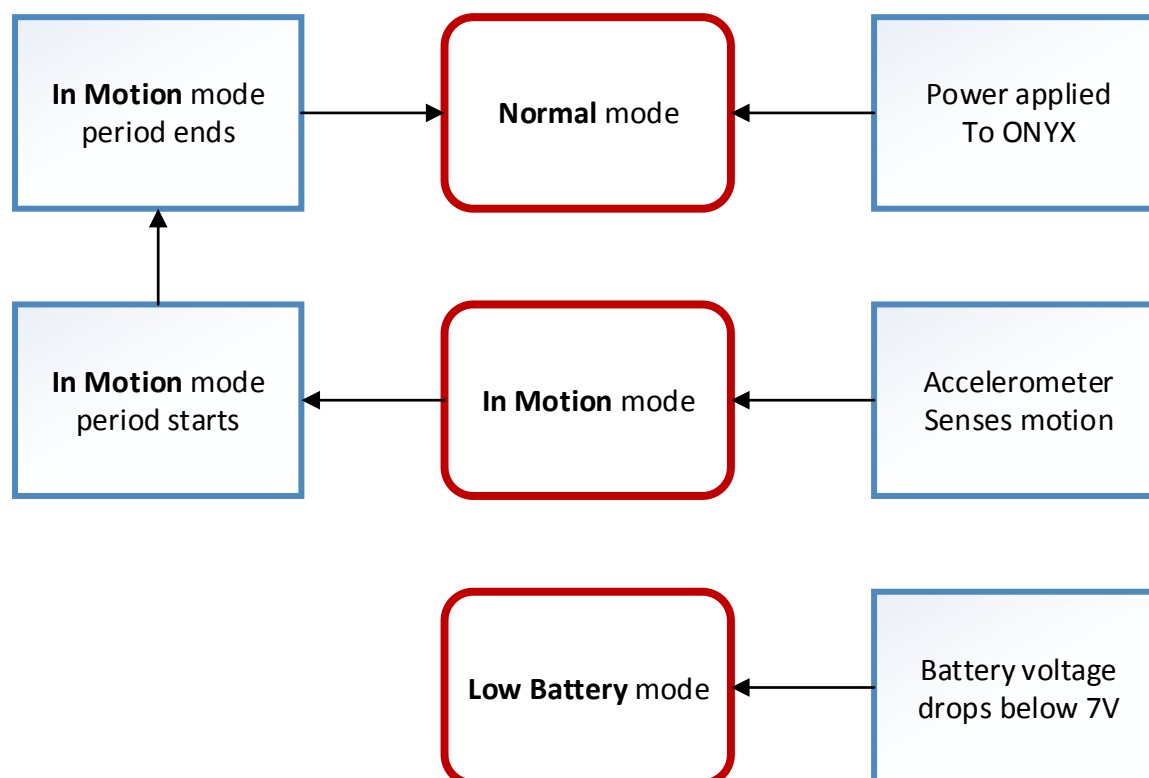
Summary:

- When the ONYX starts up (has power applied to it), it goes into **Normal** mode

- **Normal** mode lasts until the ONYX accelerometer senses motion (vibration)

- Once Motion is sensed, it enters **In Motion** mode and stays there for a set period of time, even if motion stops

- If motion has stopped and the **In Motion** mode period ends, the ONYX reverts to **Normal** mode

- If motion is still occurring and the **In Motion** mode period ends, the ONYX remains **In Motion** mode and restarts the **In Motion** mode period

- If the battery voltage drops below 7 VDC, the unit will change to **Low Battery** Mode to conserve power until the device can be retrieved

Parameter Table:

Timer	<T0>	T1	T2	T3	T4	T5	T6	T7	Min - Max
SBD	1h	3m	1m	1m	1h	2h	1h	1h	1m – 1d
GPS	1h	3m	20s	20s	2h	2h	1h	1h	20s – 1d
ACP	1h	1h	1h	1h	1h	1h	1h	1h	5m – 1d
ACS	2s	2s	2s	2s	2s	2s	2s	2s	1s - 1m

Legend

SBD: SBD (Iridium) transmission interval.
GPS: GPS acquisition interval.
ACP: Acceleration Period
ACS: Acceleration Sample Rate
T0 – T7: Timer number.
<T#>: Timer currently in use.
#s: Interval in seconds.
#m: Interval in minutes.
#h: Interval in hours.
#d: Interval in days.
Min: Minimum allowed interval for this timer.
Max: Maximum allowed interval for this timer.

ONYX Timers

Timer 0: Normal timer. This is used if none of the following modes are triggered.
Timer 2: In-motion timer. This is used when the ONYX detects motion.
Timer 3: Live Tracking Timer. This is used when the Live Track command is issued
Timer 4: No GPS Fix: This is used when the unit cannot get a GPS location.
Timer 5: Low Battery. This is used when the unit has low battery.
Timers 1, **6**, and **7** are unused in the ONYX.

To change the preset parameters, see *Remote Configuration of the ONYX*.

Setting timers

$timer (timer number) (value in s, m, h, or d)

Examples
To set the surfaced mode SBD and GPS timer to a 10 minute interval issue the following two commands:

$timer SBD 2 10m
$timer GPS 2 10m

To set the normal mode SBD timer to a 1 day interval, and the normal mode GPS timer to a 1 hour interval, issue the following two commands:

$timer SBD 0 1d
$timer GPS 0 1h

The configuration above will result in the unit acquiring a GPS position every hour, and sending all 24 GPS positions in a single SBD transmission once daily.

In-Motion Timer

The motion detection functionality can be adjusted or disabled. By default, once motion is detected, the ONYX will continue to check for motion every two seconds until no motion is measured for a period of several minutes.

This motion check timer can be adjusted through the ACS timer

Example
To set the motion check to a 10 second interval during normal mode, issue the following command:

$timer ACS 0 10s

In-Motion Threshold

The magnitude of motion required to enter In-Motion mode can also be adjusted with the **$athrs** command. The default threshold is 100. Increasing this value will make the ONYX less likely to enter In-Motion mode

Example:
$athrs 200

Motion detection can also be disabled or enabled

Example

The following command will disable motion detection:

$switch m 0

To re-enable motion detection if it has been disable, issue the command:

$switch m 1

IMPORTANT NOTE:

It is recommended that **$athrs** <u>not</u> be set to below 100. The ONYX is very sensitive to movement by default.

Setup Relay Function

Connecting to the Relay

The ONYX Relay requires a separate firmware than the ONYX tracker. This functionality must be requested prior to purchasing the unit or the firmware can be installed with a firmware update.

The ONYX relay can receive and transmit serial to a remote device in the field. To do so, the ONYX requires a Y-cable, with an attachment for both power and serial.

See section on [Power](#) for detailed pin-out

Relay Configuration

All of the settings on the ONYX relay can be configured either by connecting to the serial diagnostic port to a serial port terminal, or by sending configuration commands from a remote location over the Iridium Satellite Network. Diagnostics must be enabled with the **$diag 1** command for serial configuration. Diagnostics must be disabled with **$diag 0** to re-enable relay functionality. Relay mode is enabled by default.

To set the Baud Rate, issue the command: **$baudrate XXXXX Y**, where XXXXX is your chosen Baud Rate and Y is stop bits (0 or 1).

See section on [Configuration](#) for more options.

Serial Relay

After the device is configured to your specifications, you can now use it to relay data to and from a connected serial device over the Iridium Satellite Network. To send data to or from the connected serial device, connect a device to the serial port on the ONYX. The ONYX will use a baud rate of 57.6K by default.

Mobile Originated SBD

To send a payload of data from your connected device in a remote location, your device will send the payload in the following format:

$$sendSBD
payload line 1
payload line 2
payload line 3
$finished

IMPORTANT NOTE:

The ONYX relay uses a slightly different format than other Xeos relay products. There are **two** $ symbols at the beginning of the first command to open up the COM port.

All lines are terminated with either a carriage return, line feed, or both. It is important to note, that the "$$sendSBD" line must be directly followed by a line terminator, and the "$finished" line must have a line terminator both before, and after.

For example, using a carriage return as the line terminator (represented with "\R"):

$$sendSBD\Rpayload goes here and\R can be multi-line if necessary!\R$finished\R

Mobile originated messages will be transmitted over the Iridium satellite network and arrive as an   e-mail attachment. The first line in the e-mail attachment will have the following format:

devData X/S/N/Y

Where X is the alphabetic representation of the port the device is connected to, S is the sequence number which would be incremented with each new $$sendSBD command, N would be the message part number and Y the number of parts to the complete message.

Following the "devData" line will be all or part of the payload, depending on the size of the payload.
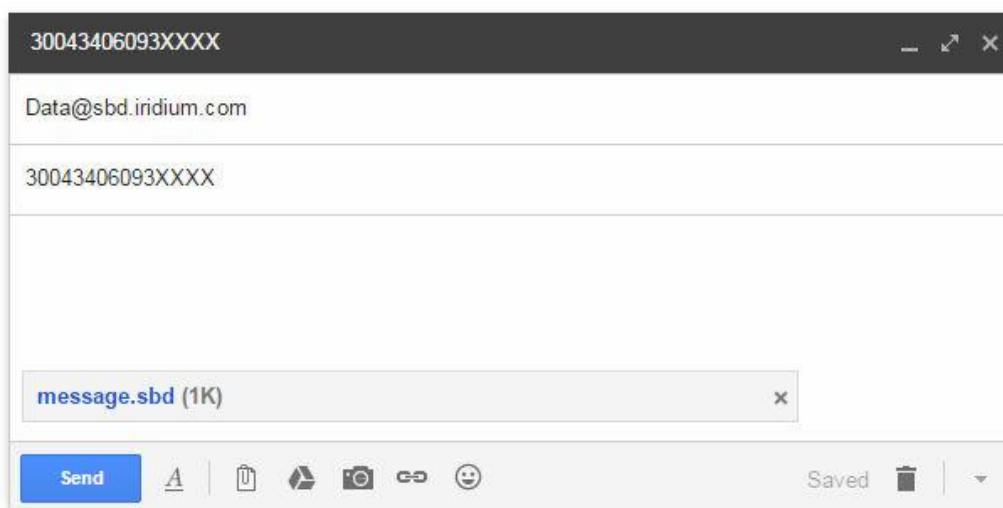
Mobile Terminated SBD

To send a payload of data to your connected serial device create a file with the extension ".sbd" with its contents adhering to the following format:

$unlock 12345
$outPort A (where 'A' is the alphabetic port number of the connected device)
payload line 1
payload line 2
payload line 3
payload line 4

Once again, all lines are terminated with either a carriage return, line feed, or both. The unlock line will be a numerical code, unique to each unit. Its purpose is to prevent accidental or malicious commands from being processed by either the ONYX, or your connected device.
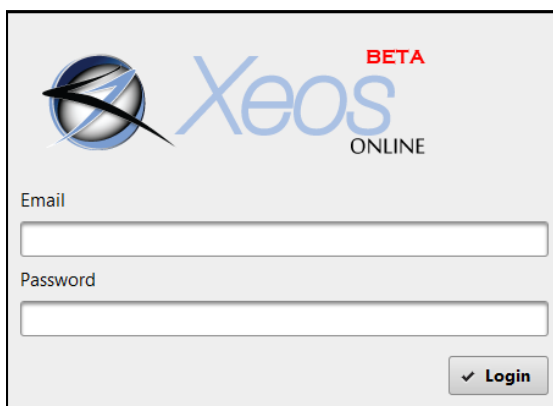
After the SBD file is created, compose an e-mail to data@sbd.iridium.com , the subject line should contain only the IMEI of the device. Send the SBD file as an attachment to this e-mail.

All lines after the $outPort line will be delivered to the connected serial device the next time the ONYX is scheduled to contact the Iridium satellites.

Tracking with Xeos Online

Setting up your company, usernames and devices in Xeos Online is covered in the Xeos Online User Manual, available at www.xeostech.com if you do not already have a copy.

1. Using your web browser, go to online.xeostech.com

2. Login to Xeos Online

3. If you have not already setup your ONYX as a device in Xeos Online, click on the Admin tab and then devices to proceed.

4. From the map view, click on your ONYX in the left side column. The last known location will appear on the map.
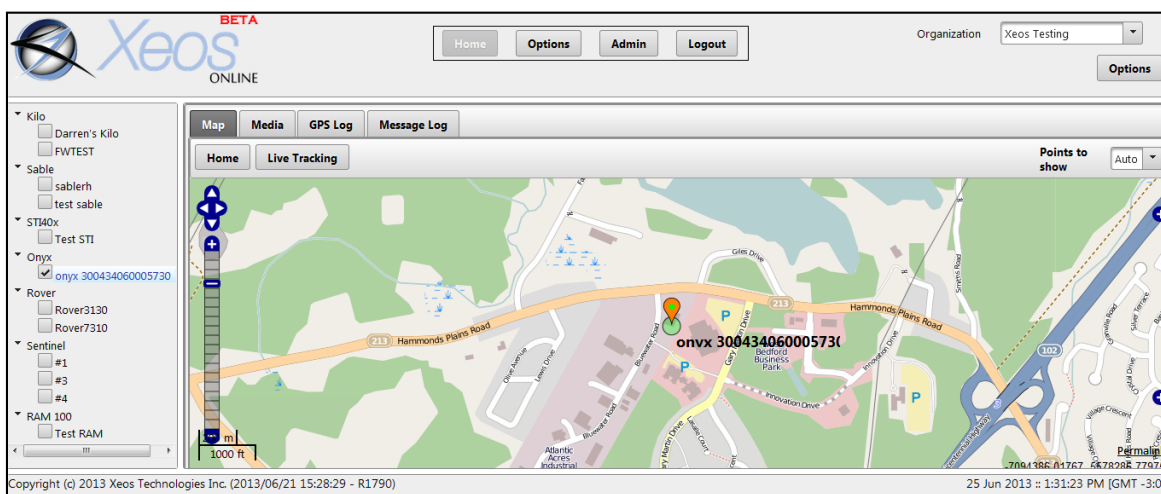
5. To view messages, click on the GPS Log or Message Log tabs above the map

6. Multiple targets can be viewed on the map simultaneously. Just click on all the devices you wish to monitor on the left hand list. To keep them all in view on the map as they update, click on the **Live Tracking** button
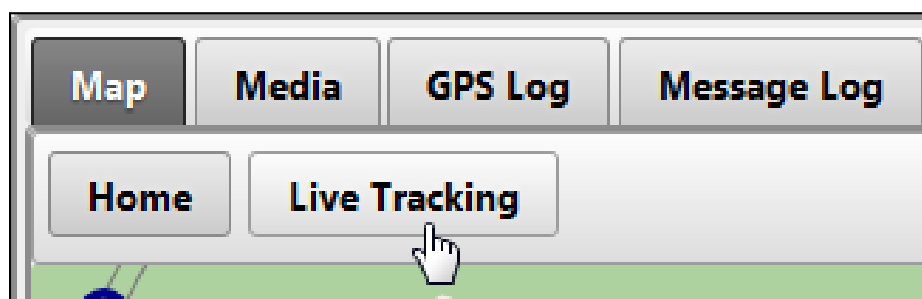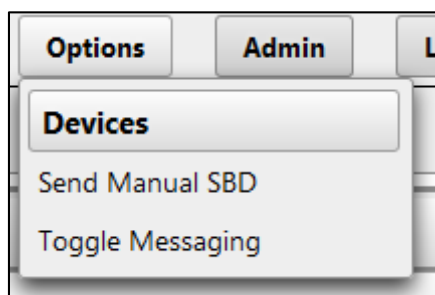

> **IMPORTANT NOTE:**
>
> Position reports are sent based on the scheduled interval for Iridium calls **but** if the GPS interval is shorter, up to 24 GPS position locations can/will be sent in a single message from the ONYX

Remote Configuration of the ONYX

1. To send a command to the remote ONYX, click on the messaging tab in the top right center of the window.
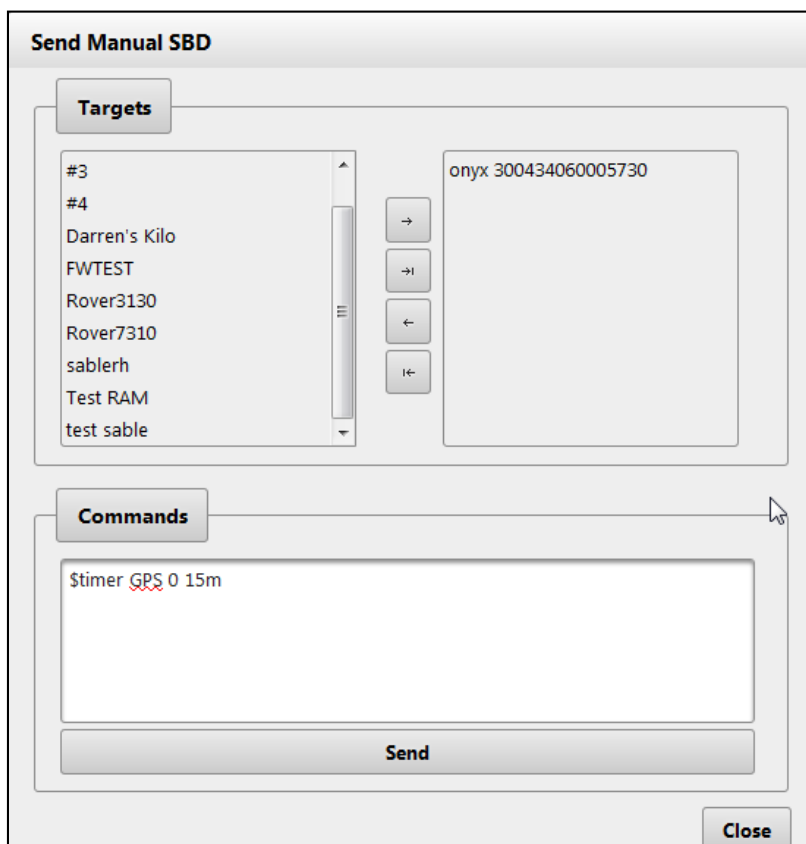

2. Select **Send Manual SBD,** after which the target selection window will appear.
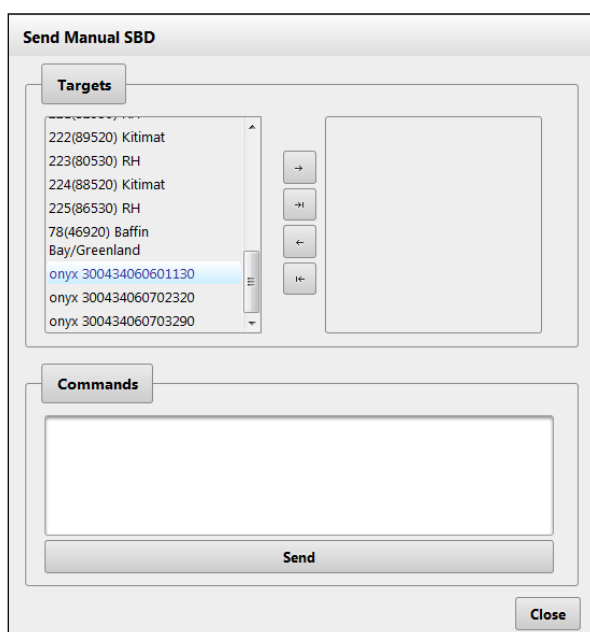
3. Select the ONYX (or multiple ONYX's) which should receive the message from the **Target** list. To select more than one, hold down the CTRL button while clicking on the appropriate devices.

4. Click on [→] to move them into the list box on the right.

5. Once you have the correct list of devices to receive the message, you need to format the command to change the parameter you are interested in.

6. For configurable parameter options, see Configuration of the ONYX

7. Enter the command into the **Commands** text box and press **Send**.

Send Manual SBD

Targets

#3		onyx 300434060005730
#4	→	
Darren's Kilo	→|	
FWTEST		
Rover3130	←	
Rover7310		
sablerh	|←	
Test RAM		
test sable		

Commands

$timer GPS 0 15m

Send

Close

IMPORTANT NOTE:

Changes to configuration only takes place once the ONYX **receives** the message. Therefore, if the ONYX is set to check messages hourly, it will not change its operational behavior until it has checked for messages at its scheduled time..

Appendix A: Firmware Update Procedure

Introduction

If you have been notified that the firmware in your ONYX needs to be updated, please use the instructions below. Please note, the ONYX must be removed from the field.
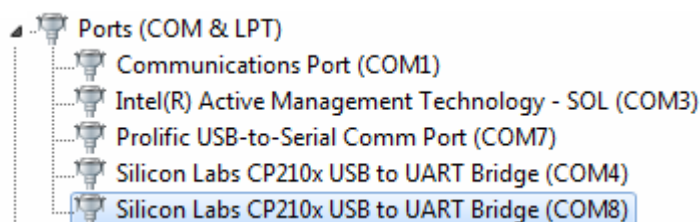
Process

- Remove unit from field
- Update ONYX firmware
- Test ONYX's ability to transmit
- Once transmission is confirmed, safe to redeploy
- Notify Xeos of successful update

Requirements

- Use of a computer running some version of Windows OS
- ONYX to USB cable
- Device driver for the USB port
- ONYX firmware package
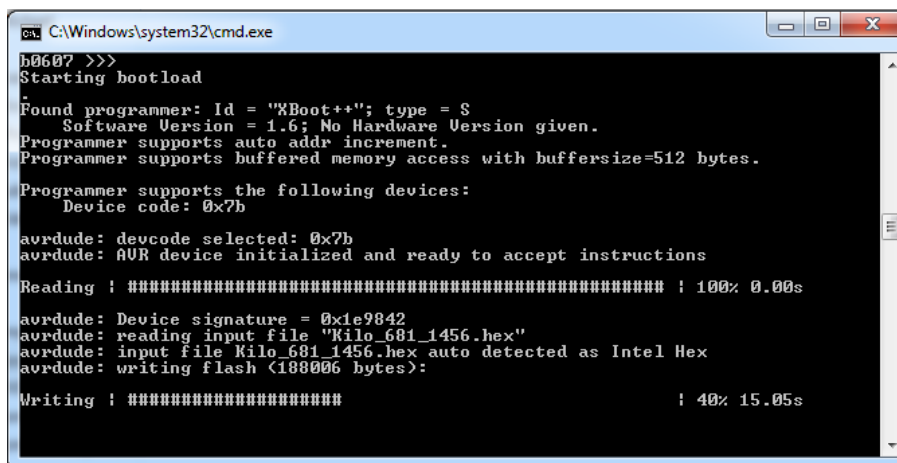- Tools for disassembly

Loading Firmware into the ONYX

1. Connect the ONYX to your PC via the ONYX to USB cable.
2. Take not of the COM port number in Control Panel → Device Manager

   ⊿ ···💻 Ports (COM & LPT)
       ···💻 Communications Port (COM1)
       ···💻 Intel(R) Active Management Technology - SOL (COM3)
       ···💻 Prolific USB-to-Serial Comm Port (COM7)
       ···💻 Silicon Labs CP210x USB to UART Bridge (COM4)
       ···💻 Silicon Labs CP210x USB to UART Bridge (COM8)

   In this case: COM8

3. If the Silicon Labs CP210x does not appear in the device manager under Ports, see Installing the Serial to USB Driver

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4. Extract the zipped folder from the Xeos website containing the firmware update to your desktop.
5. Navigate to the folder and double-click the **xeos_updater.cmd** file
6. Enter the COM port previously noted, in our case **8** and press **Enter**.
7. The firmware will begin updating right away. Firmware update should take approximately 90 seconds. If the window closes immediately upon executing the file, the firmware update has failed.
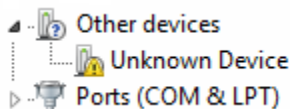

8. The ONYX update progress will be shown in the command prompt window. When it has completed successfully it will say: **"avr dude done. Thank You."**

Testing the ONYX

1. Once the ONYX firmware has been updated, please test its ability to transmit.
2. Make sure the ONYX has an active Iridium account. Xeos can setup an account for you if you do not currently have one. Ensure you have access to one of the email addresses to which messages are sent.
3. Place the ONYX outside in a location where it has a clear view of the sky and connect it to an external power source.
4. Check the email account to see if a transmission has been received. If no message is received within 20 minutes, please check operating manual to ensure it is setup as required.

5. If no message is received, please contact Xeos for assistance in troubleshooting.
6. DO NOT redeploy the ONYX until you have confirmed Iridium transmission.

Installing the Serial to USB Driver

1. Navigate to: **Control Panel → Device Manager**
2. The Serial to USB device should be present as an unknown device:

   ◢ ▷ Other devices
   └── Unknown Device
   ▷ Ports (COM & LPT)

3. Right click the **Unknown Device**, select **Update Driver Software**.
4. In the new window, click **Browse my computer for driver software**.
5. Click on the **Browse** button and navigate to folder containing the Silicon Labs device driver.
6. Click **Next** and the driver should install.
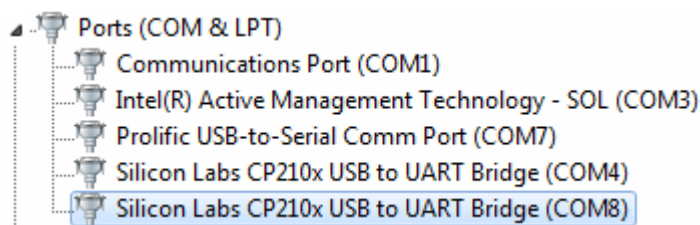
Appendix B: Using Encryption

The ONYX has some security features enabled by default, such as an unlock codes for receiving commands. Users can also enable end-to-end 256bit AES encryption between their device and Xeos Online for an additional layer of security.

Generating your Key

The first step is to provide the ONYX with a passphrase over its serial connection.

Getting Your COM Port
1. Connect the ONYX to your PC via the ONYX to USB cable.
2. Take not of the COM port number in Control Panel → Device Manager

   ◢ Ports (COM & LPT)
   ├── Communications Port (COM1)
   ├── Intel(R) Active Management Technology - SOL (COM3)
   ├── Prolific USB-to-Serial Comm Port (COM7)
   ├── Silicon Labs CP210x USB to UART Bridge (COM4)
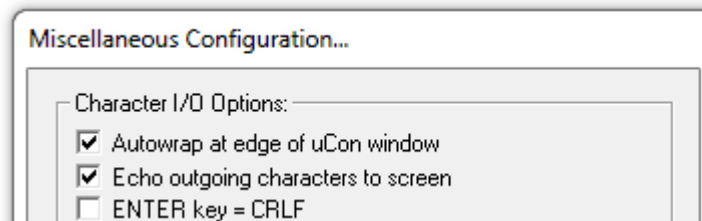   └── Silicon Labs CP210x USB to UART Bridge (COM8)

   In this case: COM8

Connect Using uCon
1. Download the uCon Serial Console software

2. Install uCon and open the program
3. Connect to the Onyx using the following settings, use the COM port from the previous section.
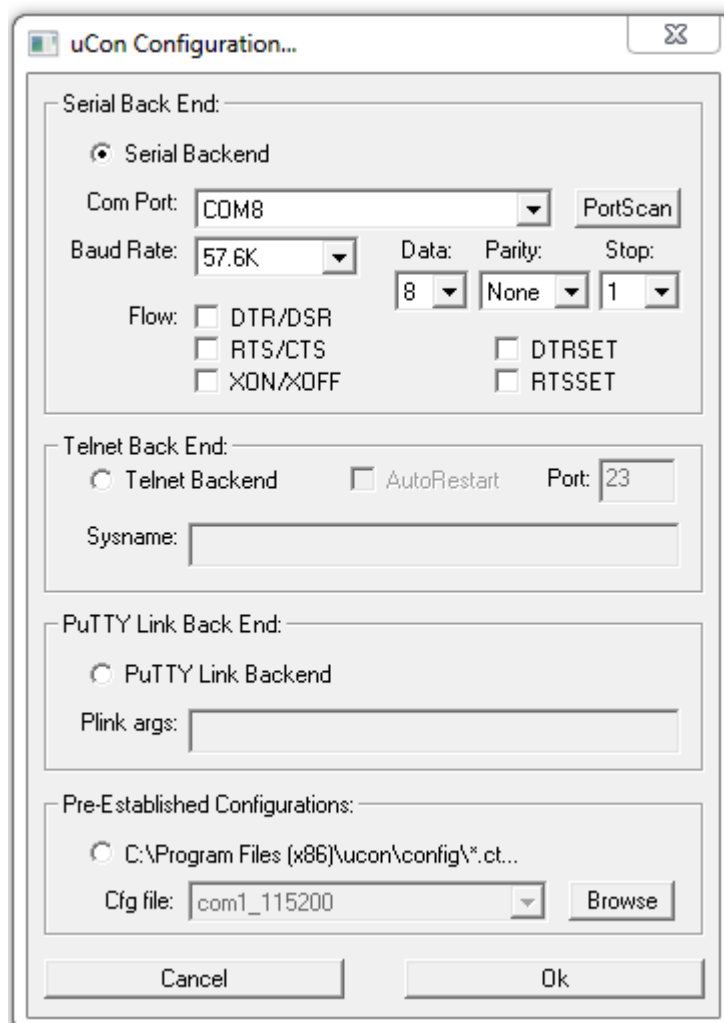
4. Press Ok. Turn on echo by going to Config → Miscellaneous

5. Enter your encryption passphrase by entering **$aky <pass phrase>** The pass phrase must be exactly 32 characters long. **Note:** This step cannot be done through Iridium.

Enabling Encryption

1. Using Xeos Online or an SBD email message, send the unit the following command: **$aenbl 1**
2. To disable encryption send the command: **$aenbl 0**

Setting Up Encryption on Xeos Online

1. Log in to Xeos Online and click on the Admin button at the top of the screen.

Home	Options	Admin	Logout

2. Ensure that your organization is selected in the Organization List
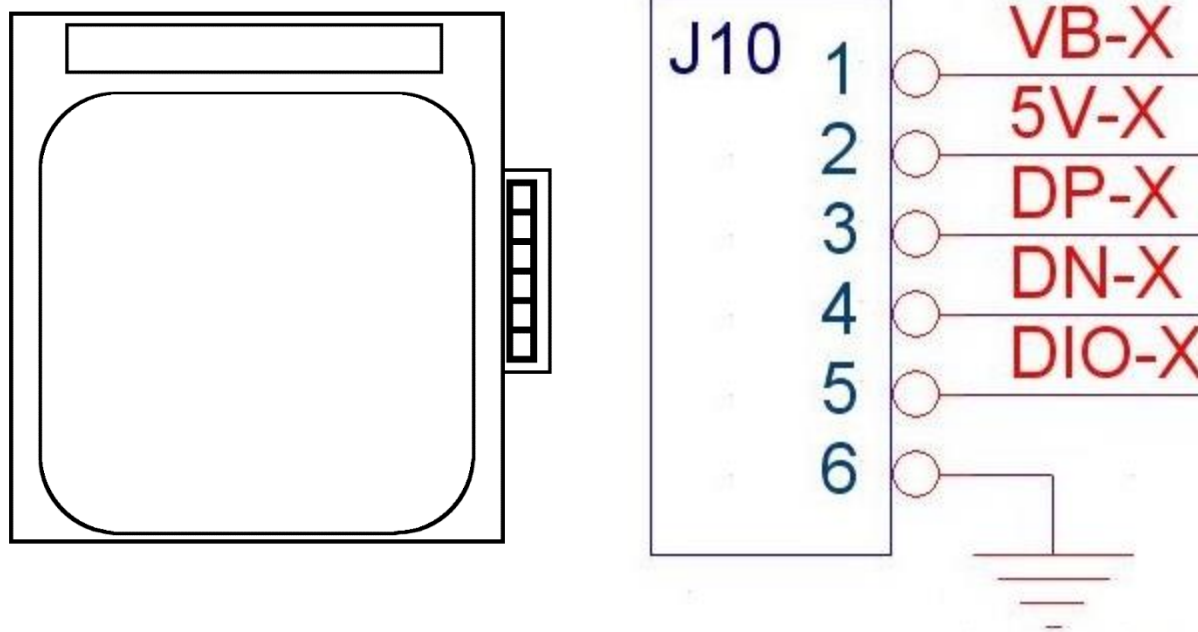
Organization	Xeos Testing ▼
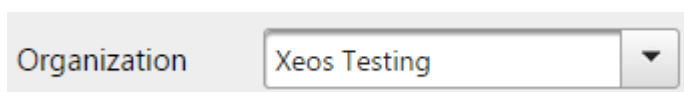
3. Find your device and click the edit device button 🔧

4. Enter your passphrase into the appropriate text boxes and press **Save**

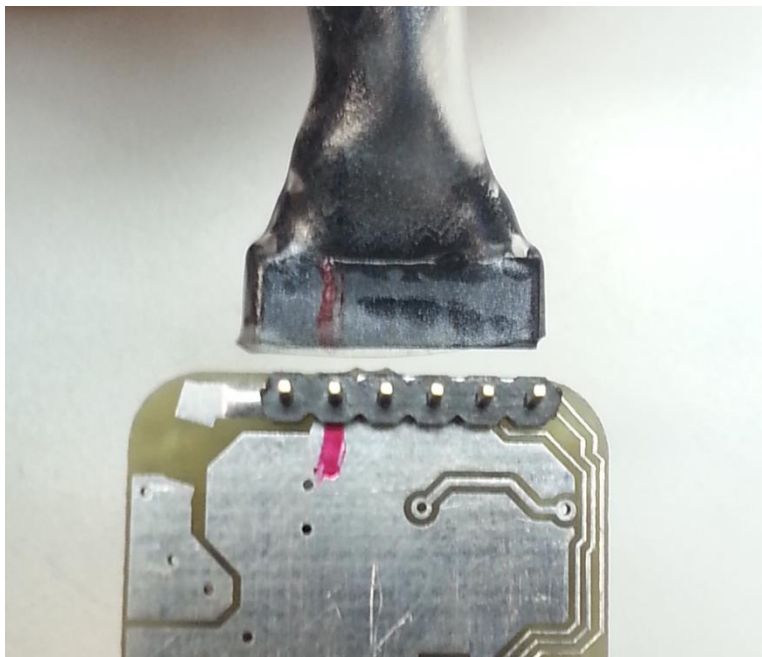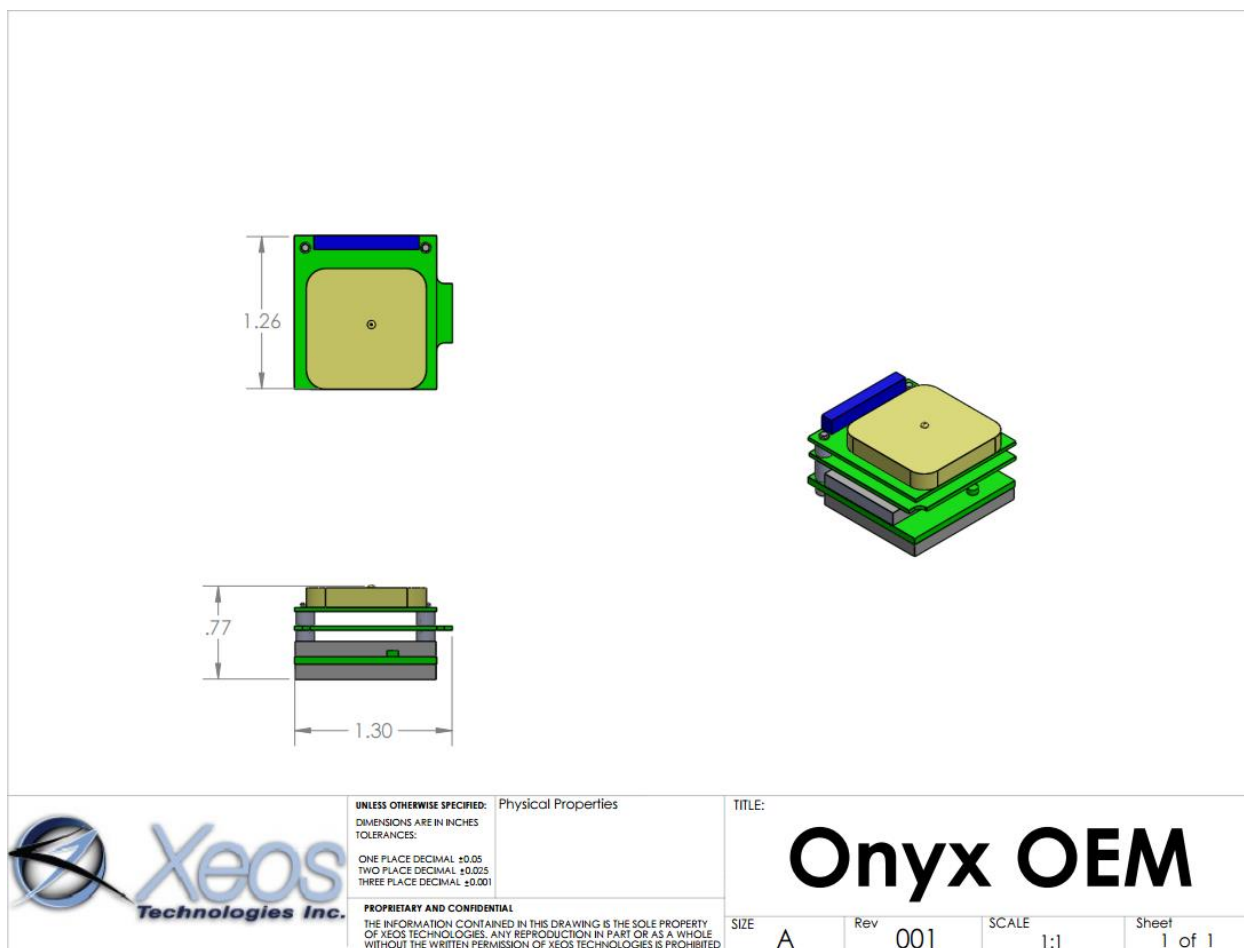| Encryption Key	XXXXXX00000000000000000000000000
Decryption Key	XXXXXX00000000000000000000000000

Appendix C: OEM Pinout

Diagram

Appendix D: OEM LV Programmer

When connecting the Serial Cable to the Onyx LV OEM, you must align the red lines, otherwise the Onyx may be damaged.

Appendix E: Mechanical Drawings

ONYX OEM Drawing

ONYX Low Voltage OEM Drawing

ONYX-M Drawing

Interconnect Cables available in custom lengths
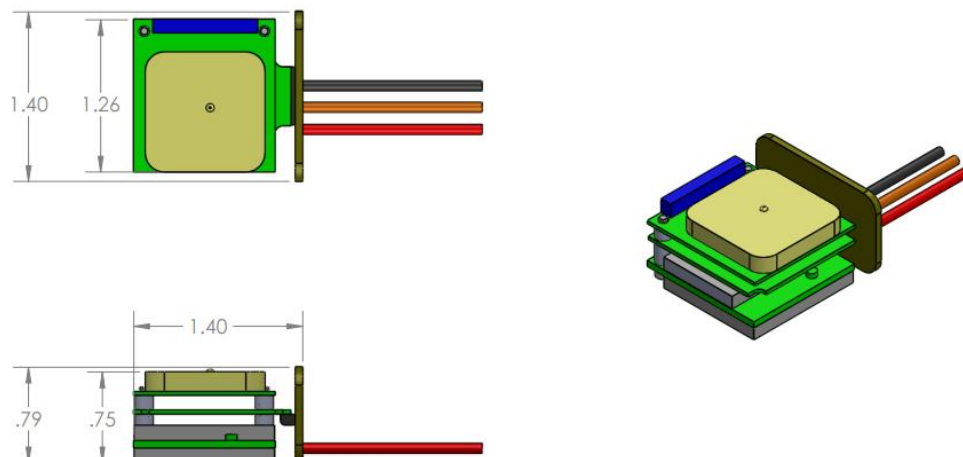
UNLESS OTHERWISE SPECIFIED:	Physical Properties	TITLE:				
DIMENSIONS ARE IN INCHES TOLERANCES: ONE PLACE DECIMAL ±0.05 TWO PLACE DECIMAL ±0.005 THREE PLACE DECIMAL ±0.001		**Onyx-M RH**				
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF XEOS TECHNOLOGIES. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF XEOS TECHNOLOGIES IS PROHIBITED		SIZE A	Rev 001	SCALE 1:1	Sheet 1 of 1

Specifications
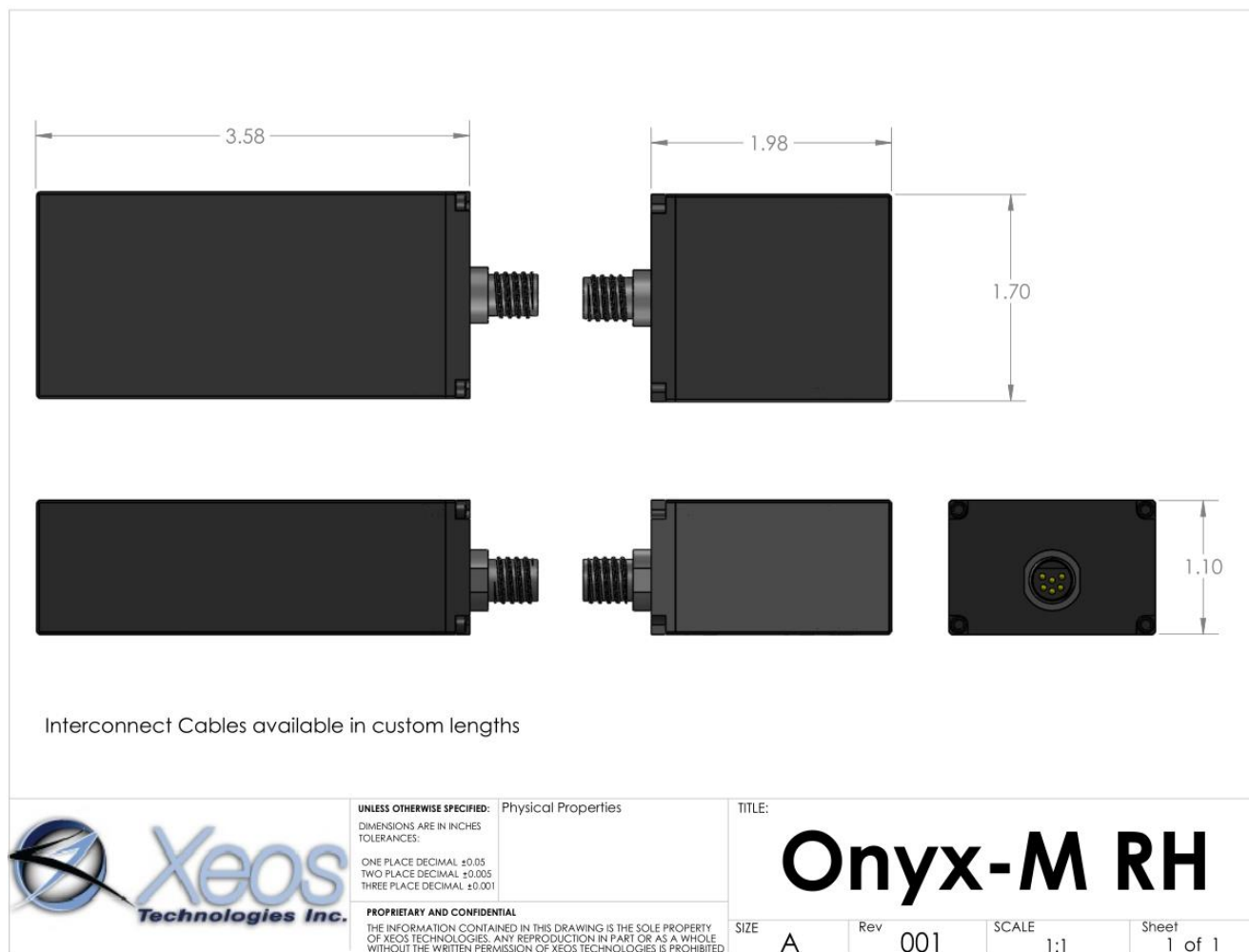
Mechanical (Standard ONYX)

Material	ABS
Dimensions	47.5mm x 36.6mm x 27.9mm (1.87" x 1.44" x 1.10")
Dimensions (OEM)	31.75mm x 31.75mm x 19.05mm (1.25" x 1.25" x 0.75")
Packaging	Standard format: Packaged for hardwire with a single external power connector. Available in multiple configurations – call for details.

Electrical (Standard ONYX 12V)

Sleep Current	< 60 µA
Transmission	~50 mA (avg. 30 sec)

Connector

Power	Hirose 6 pin, HR-30 series

Communications

Iridium	9603 Iridium Transceiver
Antenna	Integrated
Message Format	Binary Compressed Format, Decoding with Xeos Online

GPS Receiver

Type	Xeos Technologies 48 channel GPS
Antenna	Integrated
Time to First Fix	Cold start – 40 sec Warm start – 1 sec

Environmental

Temperature	-40°C to +60°C

Warranty, Support, and Limited Liability

Xeos Technologies Inc. warranties the ONYX to be free of defects in material or manufacturing for a period of one year following delivery. Liability is limited to repair or replacement of the defective part and will be done free of charge.

LIMITED WARRANTY: Xeos Technologies Inc. warrants that the product will perform substantially in accordance with the accompanying written materials for a period of one year from the date of receipt.

CUSTOMER REMEDIES: Xeos Technologies Inc. entire liability and your exclusive remedy shall be at Xeos Technologies Inc. option, either (a) return of the price paid or (b) repair or replacement of the product that does not meet Xeos Technologies Inc. Limited Warranty and that is returned to Xeos Technologies Inc. with a copy of your receipt. This Limited Warranty is void if failure of the product has resulted from accident, abuse, or misapplication. Any replacement product will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer.

NO OTHER WARRANTIES: Xeos Technologies Inc. disclaims all other warranties, either express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the product or the accompanying written materials. This limited warranty gives you specific legal rights. You may have others, which vary from state to state.

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