



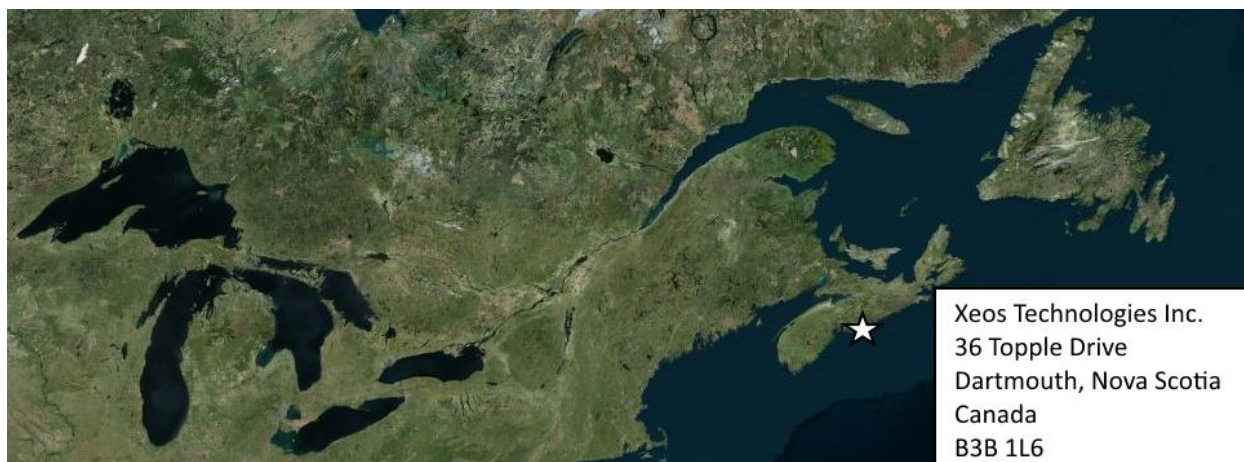
RAM-100 User Manual

Embedded Iridium Proximity System



Version 2.2
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Shipped From



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Version History

Version No.	Date	Description
2.0	October 2017	Document Overhaul
2.1	March 2018	Changed diagnostic and LED timeout values, new CP-3 sensor
2.2	August 2020	New CP-4 sensor

Regular checks for the latest manual are suggested. Be sure to check [Xeos Technologies' manuals page](#) to compare versions and download the latest version.

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Introduction

The RAM-100 is a satellite-monitored alarm device designed to notify users of vehicle movements in remote areas. Alarms are generated from sensor triggers connected to the device and sent via satellite transmitter to orbiting Iridium satellites and relayed via email. In conjunction with the Xeos Technologies' Xeos Online web service, email alarm notifications can be forwarded quickly to operational personnel in the field via mobile SMS (Short Message Service) for possible immediate response.

Designed for use with up to four sensors, the RAM-100 device can be configured using the RAM Console software to create unique, user defined alarm events. The four contacts can be set up to work with the supplied Cartell magnetic sensors or other analog and contact closure sensors.

The device can be powered by either an internal or external battery pack and can operate for extended periods of time before needing battery replacement. The power source supplies power to all sensors as well as the satellite communication unit itself.

Included Equipment/Software

- RAM-100 Device
- Cartell CP-1 (CP-3 beginning March 2018) Magnetic Sensors
- RAM Console Software

Configuring the RAM-100 Included Equipment/Software

The RAM-100 the device must be initially configured, deployed and activated before use. Included with the package is the Xeos Technologies Inc. RAM Console software to configure the alarm systems. Once the alarm conditions have been created, the device will be ready for deployment in the field. This requires attaching the sensors to the device and arranging the unit and sensors for optimum reception.

Although the alarm configuration can be performed in the field, it is recommended to define the alarm settings before connecting the sensors and locating the unit. To accomplish this, connect the RAM-100 unit to a personal computer and utilize the RAM Console software.

Installation of RAM Console

To install the RAM Console application on a Windows system:

- Remove any previous installation of the RAM Console application (Use the Windows Start> Control Panel> Add/ Remove Programs option).
- Ensure Microsoft .NET 2.0 Framework has been installed (.NET installation application is included with RAM Console).

- Locate the RAMSetup.exe program. The two files for the installation may have been sent via email or USB.

If you do not have access to the RAM Console, the program is available by contacting support@xeostech.com

- Double click the RAMSetup.exe file to begin the installation process.
- Click Next.
- Select the location for the program to be installed (default is C:\Program Files\Xeos Technologies\RAM Console).
- Choose whether the application will be installed for all users of the computer or user currently logged in (default is “Everyone”).
- Click Next.
- Click Next.

Connecting the RAM to PC

The installation procedure should begin and a message will appear to confirm the installation process was successful when completed. If there are installation errors, please contact Xeos Technologies Inc. for support.

To connect your RAM-100 unit to the RS-232 serial port of your PC:

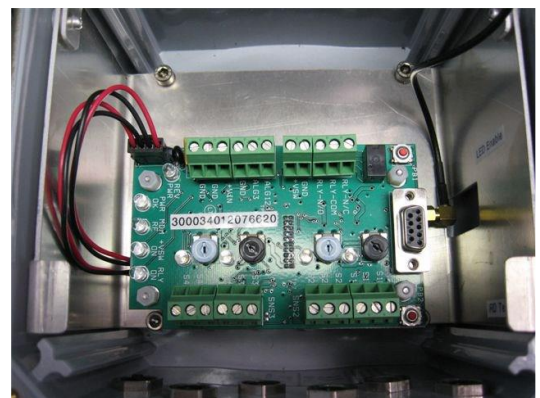
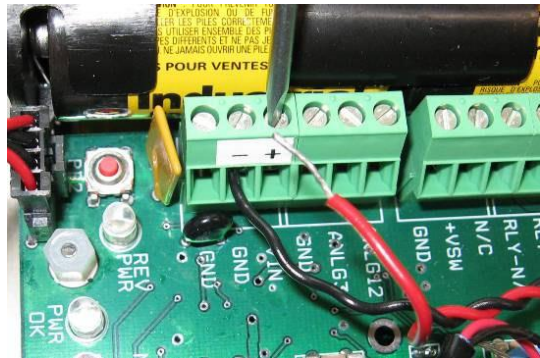
- Remove the four screws from the top of the unit housing.

Note: Care must be taken when opening and closing the top as it contains a silicone seal. Ensure the seal is kept clean and free of any dirt or debris.

- Remove and place the cover in a clean dry location.



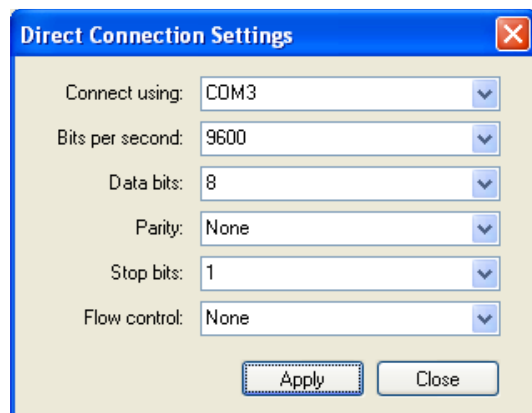
- Lift the Antenna plate to expose the terminal blocks below.
- Attach power leads to - (black) and + (red) terminals. Supplied power should be **at least 12VDC and must not exceed 22VDC**.
- Attach a straight-through serial cable between the unit and the computer.
- Open the RAM Console software on your computer by choosing it from: Start> Programs> Xeos Technologies> RAM Console.
- Click the **Direct Setup** button on the main screen to bring up the Direct Connection Settings screen.
- Select the Com. Port ID to match the port connected to your RAM-100 device.



Note: The other configuration settings should not need to be changed. The defaults are:

- Bits per second: 9600
- Data Bits: 8
- Parity: None
- Stop Bits: 1
- Flow Control: None

Click **Apply** to save the settings and return to the main screen.



On the RAM-100 unit, press the **Enable LED button** (labeled PB1). All unit LEDs will flash briefly and permit serial communication for the next fifteen minutes.

Note: The unit will enter sleep mode to conserve power after fifteen minutes. If the device does not communicate with the RAM Console software, it may be necessary to press the Enable LED button to 'wake' the RAM-100 unit and re-initialize communications for another fifteen minutes.

Click on the **Open** option button to open communication between the software and the device.



Click the **Get Info** Button.



If the link is connected, the status bar at the top right of the main screen will display '**OPEN**', the type of device, serial number and firmware version number. The RAM-100 unit is now prepared for communication, including alarm configuration.

Activating the RAM's Iridium Service

The RAM-100 uses email to send and receive messages to the remote device. In order to use the device with the Iridium satellite network, it is necessary to activate the RAM-100 system before use.

To activate the RAM-100 on the Iridium satellite network:

- Record the IMEI number. This same number is found in any one of three places on the RAM-100 unit:
 - On the bottom of the RAM-100 Enclosure
 - On the Iridium Antenna Plate
 - On the Interface board



- Contact your Iridium service provider and give them the following information:
 - The unit IMEI number
 - Provisioning addresses to receive messages (There can be up to 5 addresses associated with one IMEI number)

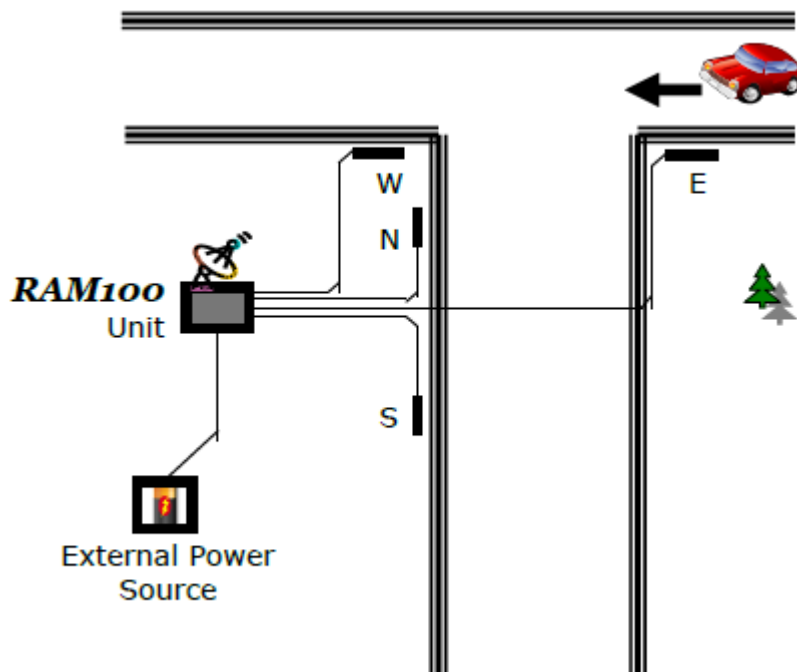
Should you require any further assistance or service please contact Xeos Technologies.

Configuring Alarms

The RAM-100 unit is designed to accept up to 4 trigger inputs at once. As a result, sophisticated alarm configurations can be designed with various trigger combinations. The examples below show how alarms can be de-signed to create messages to indicate the direction of travel.

Example: The vehicle below moving from East to West would trigger the East sensor first then the West Sensor shortly thereafter. This could be configured to create an alarm condition called 'Moving West'.

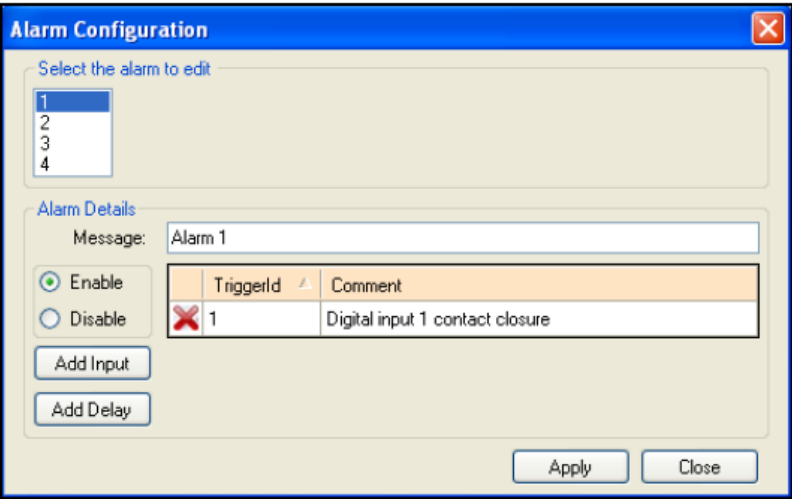
Another alarm could be created to detect if the vehicle turns the corner by configuring another alarm setting to detect the East trigger first, followed by the North sensor.



Note: Alarms can only be created through a direct serial connection to the RAM-100

To create alarms:

- Open the RAM Console software
- Connect to the unit via the serial cable.
- Click the **Open** option button in the Direct Connection box on the main screen.
- Click the **Alarm Setup** button on the main screen to bring up the **Alarm Configuration screen**
- Click on an alarm number in the **Select the Alarm to edit** box.



The **Alarm Configuration** dialog box has a blue title bar with a close button. It contains a section titled "Select the alarm to edit" with a list box showing numbers 1, 2, 3, and 4. Below this is the "Alarm Details" section. It includes a "Message:" label followed by a text box containing "Alarm 1". There are two radio buttons: "Enable" (selected) and "Disable". Below these are two buttons: "Add Input" and "Add Delay". At the bottom right are "Apply" and "Close" buttons. A table is displayed with the following content:

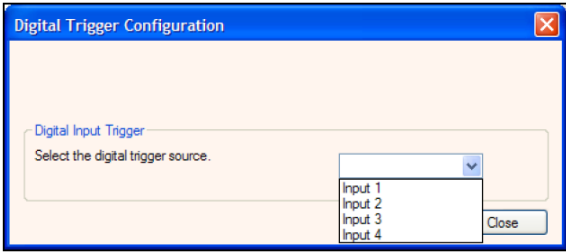
TriggerId	Comment
1	Digital input 1 contact closure

- Enter text for the alarm message. This message will be displayed in the email from Iridium when the alarm is triggered.
- Click the Enable option button to confirm this alarm will be activated in the unit.
- Click the Add Input button to bring up the Digital Trigger Configuration screen.
- Select a trigger to be used with the alarm from the drop down list.
- Click the Apply button to add the trigger ID to the list of triggers that must be activated before an alarm condition is raised.
- Repeat steps 8-10 to add more triggers to the alarm condition.

Display Configuration Screen

To create a delay between triggers to ensure false alarms or multiple vehicles do not trigger an alarm, a delay condition can be created.

- Click the Add Delay button on the Alarm Configuration screen.
- Select the first trigger that must be activated.

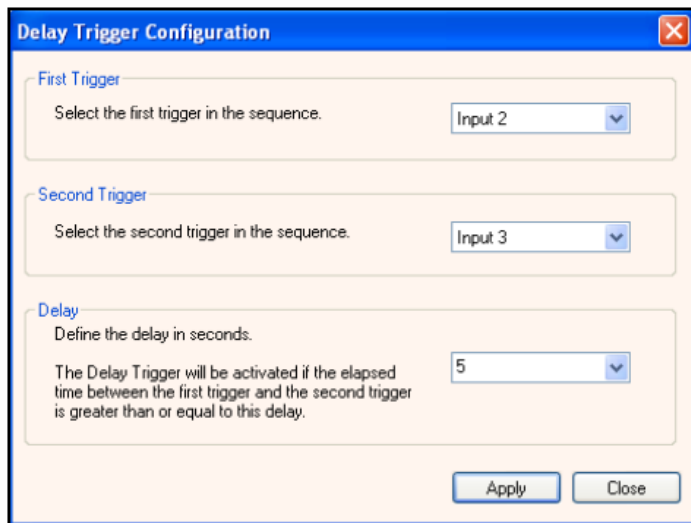


The **Digital Trigger Configuration** dialog box has a blue title bar with a close button. It contains a section titled "Digital Input Trigger" with the text "Select the digital trigger source." Below this is a dropdown menu showing a list of options: "Input 1", "Input 2", "Input 3", and "Input 4". A "Close" button is located at the bottom right.

- Select the second trigger that must be activated.

- Choose an amount of time that must elapse between the first and second trigger before an alarm condition is created from the Delay drop down list.

- Click the Apply button to add the delay trigger to the list of triggers on the Alarm Configuration screen.



- To remove a trigger from the list of triggers currently associated with the alarm, click the  next to the trigger ID to be removed.
- Repeat all steps to create all alarms.
- Click the Apply button on the Alarm Configuration screen to accept all alarm configurations.
- Click the Close button to return to the main screen.
- Click the **Upload to Target** button on the main screen to transmit the new alarm configurations to the RAM-100 unit.

After alarms have been created and uploaded to the device, clicking the **Download from Target** button, while the direct serial communication is open, will retrieve the current alarm configuration from the device and will be displayed on the **Alarm Configuration** screen.

Note: The pre-defined delay time values from the drop down menu can be overwritten by typing your own custom value in the box.

Note: The delay time and the re-trigger time work together to define an alarm. The re-trigger time must always be greater than the delay time.

Connecting the Sensors

It is highly recommended that the alarm programming be done and all other configuration be performed before the sensors are connected and before the unit is installed at its planned location.

To connect sensors to the RAM-100 unit:

- Locate the sensor inputs at the bottom of the RAM-100 unit.

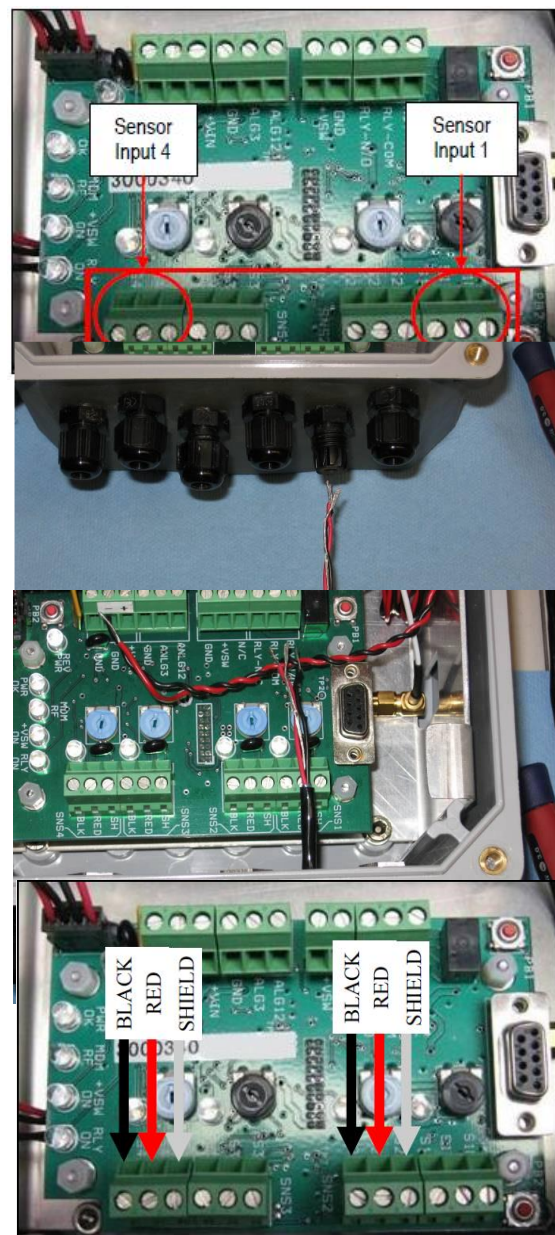
Note: If not using seismic sensors for black potentiometers, ensure jumper wires are installed on sensor inputs 1 and 3 between pins A and B (S1A to S1B and S3A to S3B on the board).

- Feed the sensor cables through the RAM-100 enclosure gland nuts and then through the gland seals
- Allow enough of the cable jacket to penetrate inside the enclosure to ensure the gland is fully acting on the cable jacket
- Tighten the screw terminal for each individual wire.
- For Cartell magnetic sensors (inputs with blue potentiometers):
 - Shield to S2C or S4C
 - Red to S2B or S4B
 - Black to S2A or S4A

Note: See the end of the manual for other sensor wiring layouts.

Note: Un-used gland seals are blocked with a Delrin plug. Ensure that all glands are tight against installed cables or supplied plugs for a water-tight seal to prevent damage to the RAM-100 unit.

The Gland seals are designed to give a water tight seal when used properly. The seal internal to the gland compresses radially around the cable as well as axially inside the gland. Special care must be taken to avoid pushing the gland seal out of its seat. The internal gland seal should be pushed in as far as it can go and the gland nut threaded on in such a way that a good tight seal is maintained.



Note: Accidentally pulling a cable with a gland seal can result in water ingress and possible failure of the device. If you suspect that a cable was pulled during the installation, remove the gland nut, push the seal back in and re-install the nut.

Care with Seals

The RAM-100 uses synthetic rubber seals to ensure watertight integrity of its enclosure. Care must be taken when removing the top or installing cables in the gland seals to ensure no dirt makes contact with the seals. Wiping the top seal before the cover goes on as well as the cables before they are installed in the glands will ensure that good seal contact is maintained



Deploying the RAM

Once the unit is programmed and the sensors have been installed in the RAM-100 unit, it is ready to deploy into the field. Careful planning should be prepared in advance of placing the unit to ensure optimum functionality and communication.

Cables and Sensors

Cartell sensors should be deployed parallel to the direction of target travel and should be buried 2-3 inches. Follow the included directions for specific installation instructions for your sensors.

Trench the cable from the sensors back to the main unit and the unit itself. Extra cable can be buried in the same hole as the unit or alter-natively, can be cut down to size or bundled and buried in another location. Make sure cable bundles are not put on top of the RAM-100 as this may interfere with the satellite antenna.



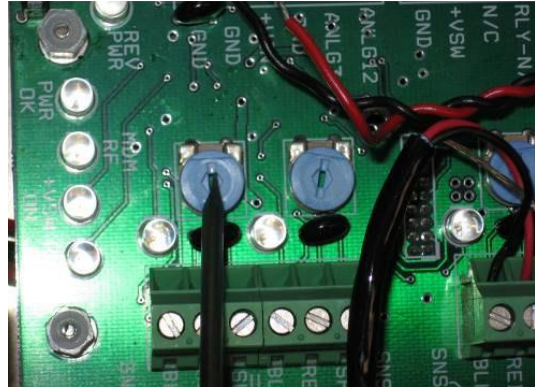
The sensitivity of the sensors can be adjusted slightly by turning the associated blue trim pot inside the RAM-100 unit. The least sensitivity is when the “pot” is rotated counter-clockwise. The most sensitive is when the pot is set just a bit over half-way (12:00 position). All settings past half-way result in the same maximum sensitivity.

Note: CP-3 and CP-4 sensors operate regardless of orientation of the potentiometers.

It is advised at this point to press the **IRD Test button** on the right side of the device to send a test message through the Iridium satellite network to confirm signal strength and other configuration information is correct in the device (see **Reviewing Operational Status**).

Covering the RAM

The satellite antenna is located on the plate in the top of the unit underneath the polycarbonate cover. It is a square ceramic patch style antenna. The RAM-100 is designed to be covered by light earth material and still communicate with the satellite. However, for best performance minimize the amount of material covering the antenna. In addition, the unit should be installed in a location that has a clear view of the sky. The unit should not be obstructed by nearby objects such as buildings or rocks.



Note: The RAM-100 should be buried with the mini-mum amount of material covering the unit. In addition, the unit should be positioned so there is a clear view of the sky for optimum satellite reception.

Reviewing Operational Status

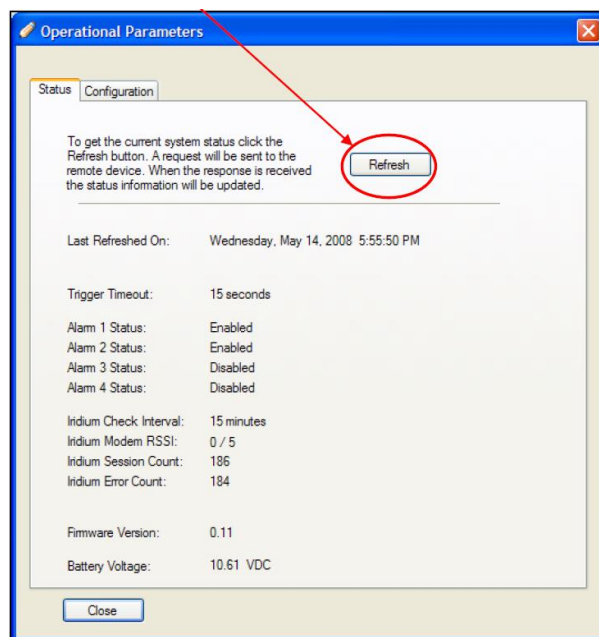
While connected to the RAM-100 the current settings and unit status can be retrieved for viewing in the RAM Console. If the direct serial connection is open, the information will be retrieved automatically and displayed in the Operational Setup screen. However, if using email communication, the status request must be sent and retrieved using the iridium satellite system which could result in an extended delay.

To retrieve the RAM-100 operational status:

- Open the RAM Console software.

For direct serial communication, connect the serial cable between the unit and the computer, and click the Open option button in the Direct Communication box and confirm the link between the unit and the PC.

- Click the **Operational Setup** button on the Menu to open the **Operational Parameters** screen.



Note: Status updates and configuration under Operational Parameters can also be achieved remotely via email. This is the case when you are not connected via serial cable and your email account is properly configured. When the Refresh button is pressed, the console will send an email to the RAM-100 asking for an update to these parameters. A message box will ask for confirmation that the re-request should be made via Iridium satellite system. Once confirmed, the Status tab page will display:

*****Waiting for update*****

When the system retrieves the status from the unit, the **Status** tab page will be updated to display the following information:

Trigger Timeout is the length of time (in seconds) after an initial trigger before all triggers reset.

Alarm Status shows the current configuration of the alarms (Enabled/ Disabled)

Iridium Check Interval is the period of time between Iridium mail box checks. When this is set at 15 minutes, the RAM-100 will wake up every 15 minutes and check to see if it has any command messages waiting for it. To conserve battery power, this number should be set to once or twice per day (i.e., 24 hours or 12 hours).

Iridium Modem RSSI (Received Signal Strength Indicator) is a measure of the satellite signal strength for the last communication attempt. This is a value between 0 and 5 that can be used for a relative indication of antenna health.

Iridium Session Count is a rolling counter since reset of the number of attempts made to communicate with the Iridium satellite.

Iridium Error Count is the number of failed attempts to initiate communication with a satellite. It is normal for this number to be about half (or more) than the Iridium Session Count. The RAM-

100 has a built in protocol to retry several times if it cannot communicate with a satellite on the first try.

Firmware Version is the current firmware of the RAM-100. Future firmware updates can be made by using the RAM-100 'Bootloader Console' program. Contact Xeos Technologies for these files.

Battery Voltage is the actual voltage of the battery connected to the terminal blocks as recorded on the last status update.

Overall RAM Unit Configuration

While alarms are set using the Alarm Configuration screen, other settings for triggers and alarms can be configured using the Configuration tab page on the Operational Parameters screen.

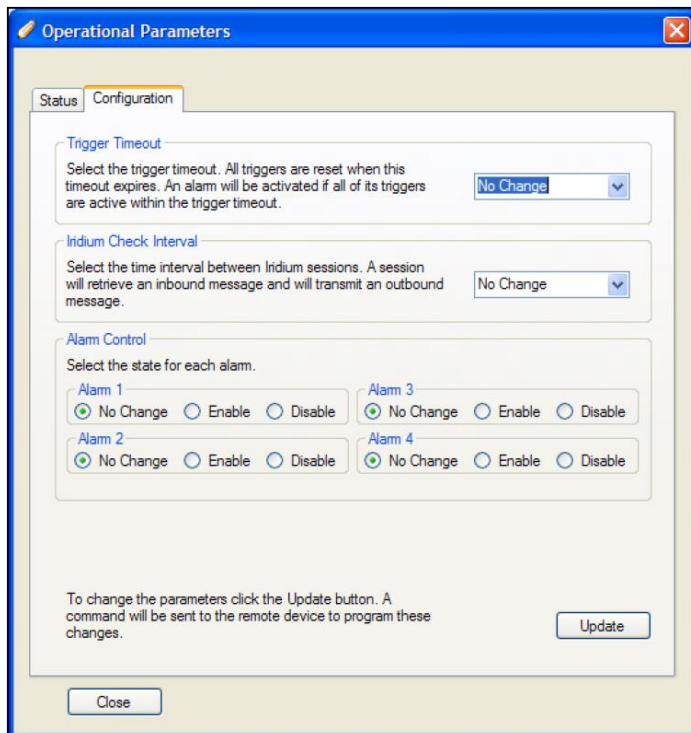
These overall system settings can be set either by direct serial communication or using the Iridium satellite email system before or after the RAM-100 unit has been deployed.

The overall unit settings are:

Trigger Timeout—set the amount of time all activated triggers will wait for another trigger before being de-activated.

Iridium Check Interval—set the amount of time the unit will stay in hibernation mode before automatically waking to check for incoming email messages from the Iridium satellite system.

Alarm Control—enable or disable individual alarms or no change to leave the existing setting.



The screenshot shows the 'Operational Parameters' window with the 'Configuration' tab selected. It contains three main sections: 'Trigger Timeout', 'Iridium Check Interval', and 'Alarm Control'. Each section has a description and a 'No Change' dropdown menu. The 'Alarm Control' section has four sub-sections for Alarm 1, Alarm 2, Alarm 3, and Alarm 4, each with three radio buttons: 'No Change' (selected), 'Enable', and 'Disable'. At the bottom, there is an 'Update' button and a 'Close' button. A note at the bottom states: 'To change the parameters click the Update button. A command will be sent to the remote device to program these changes.'

Quick start Instructions

Although this section will guide you through a quick setup tutorial, it is highly recommended that the full instructions should be read first.

Initial Hardware Setup

- 1) Unpack the supplied RAM-100 package
- 2) Ensure the following items are available:
 - RAM-100
 - RAM Console Software
 - 2 Cartell Sensors (other sensors not included)
 - RS-232 Cable (Not included)
 - Power Supply, 12 - 22VDC
- 3) Note the IMEI identification number of the RAM-100 unit for Iridium activation
- 4) Open the RAM-100 unit by unscrewing the four screws at the top
- 5) Flip up the antenna plate to expose the terminal board below
- 6) Connect the RS-232 serial cable to the device
- 7) Connect the other end of the serial cable to the PC
- 8) Connect the power supply to the terminals on the terminal circuit board
- 9) Install the RAM Console software on the PC
- 10) Press the Enable LED button (labeled PB1 on the terminal circuit board)
- 11) Start the RAM Console software on the PC
- 12) Configure the settings on the Direct Connection Setting screen (Com port, 9600, 8, None, 1, None)
- 13) Click the Open option button to confirm communication with the device

Configuring Alarms

- 1) Click the Alarm Setup button on the RAM Console to open the Alarm Configuration screen
- 2) Select an alarm number to configure from the list of alarms
- 3) Click the Add Input button to add a new trigger to the alarm
- 4) Select a trigger from the drop down list on the Digital Trigger Configuration screen
- 5) Click the Apply button to add the selected trigger to the list of triggers on the Alarm Configuration screen.
- 6) If you wish to add a trigger delay component, click the Add Delay button to add a delay time between two triggers for the selected alarm
- 7) Click the Apply button on the Alarm Configuration screen to save the selected alarm configuration
- 8) Repeat steps 2 through 7 to configure other alarms (up to 4 total)

- 9) Click the Close button to exit the Alarm Configuration screen and return to the main screen
- 10) Ensure the RAM-100 unit PWR OK light is lit (if not, click the LED Enable button)
- 11) Click the Open option button to enable communications with the device
- 12) Click the Upload to Target button to send the alarm configurations to the RAM-100 unit
- 13) Verify the alarm configuration settings by clicking the Download from Target button
- 14) Click the Close option button to disconnect link to the RAM-100 unit
- 15) Close the RAM Console software
- 16) Disconnect the RS-232 serial communications cable from the RAM-100 unit

Installing Sensors

- 1) Open the RAM-100 unit (remove the 4 screws at the top)
- 2) Flip up the antenna plate to expose the terminal board below
- 3) Remove the gland nut on the side of the RAM-100 unit for each sensor to be added to the system
- 4) Feed each sensor cable through a gland nut
- 5) Feed each sensor cable into one of the RAM-100 enclosure gland seals allowing enough of the cable jacket to penetrate inside the enclosure to ensure the gland is fully acting on the cable jacket
- 6) Attach each individual wire on the sensor to the appropriate sensor screw terminal (See the appropriate attached wiring diagram for your sensor)
- 7) If not using seismic sensors, ensure the jumper wires are installed on sensor inputs 1 and 3 between pins A and B (S1A to S1B and S3A to S3B on the board)
- 8) Replace each gland nut ensuring a good seal is made around each sensor cable

Deploying the RAM

- 1) Trench each Cartell sensor parallel to the direction of target travel, approximately 2-3 inches in the ground and place other sensors in appropriate locations
- 2) Trench the cable from the sensors back to the proposed main unit location
- 3) Press the IRD Test button to send a test message via the Iridium network
- 4) Flip down the antenna plate
- 5) Replace the top of the RAM-100 unit (replace the 4 screws)
- 6) Trench the unit with the top approximately 2-3 inches under the ground ensuring the antenna has an unrestricted view of the sky for communication with the Iridium satellite network

Communicating with the RAM

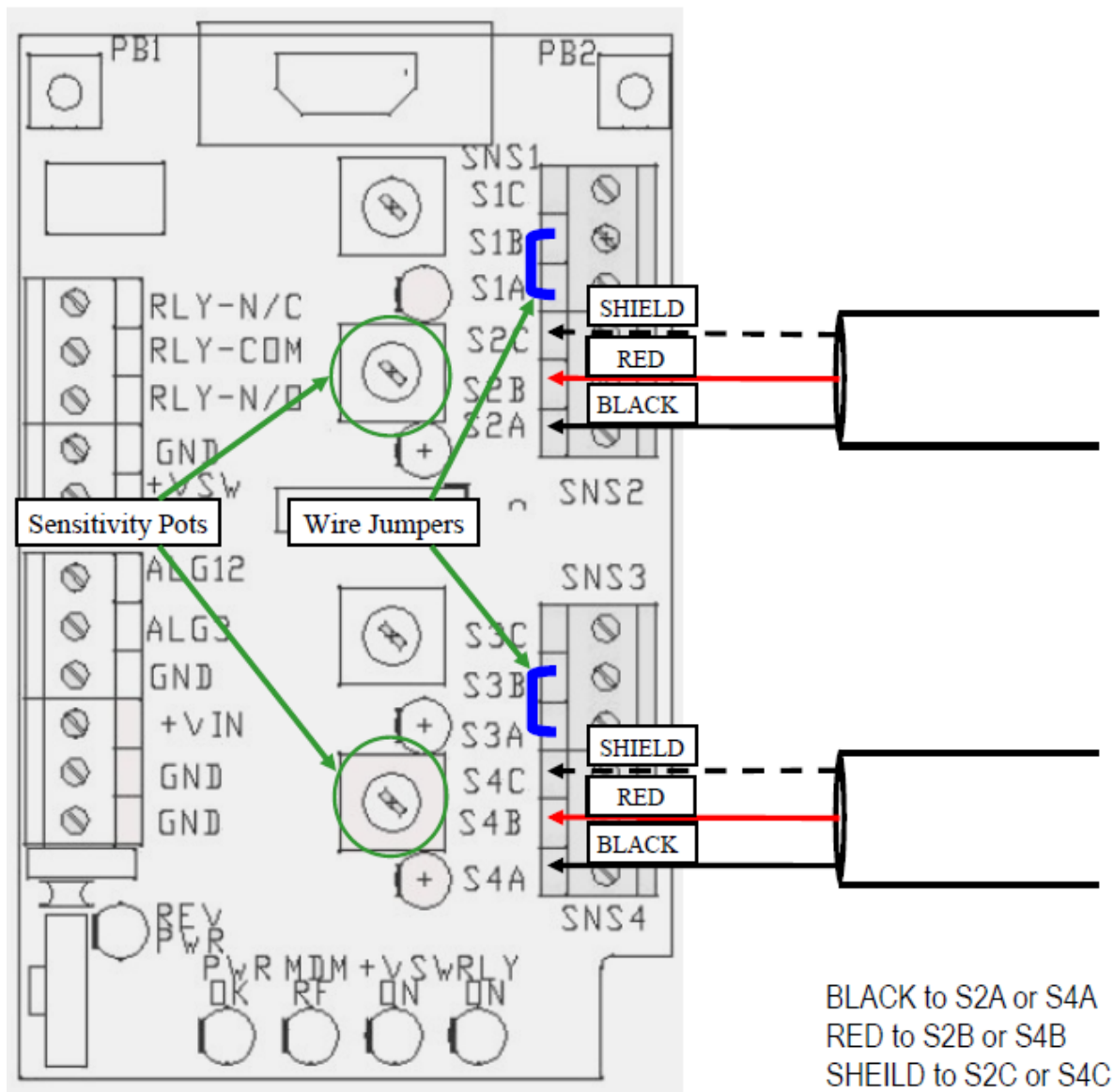
- 1) Activate the RAM-100 device with the Iridium satellite network using the IMEI number on the unit by contacting your Iridium service provider
- 2) Pass on your provisioning information to your Iridium service provider. These are the locations you wish to receive RAM messages. A maximum of five provisioning addresses are possible, along with the ability to forward messages to additional users using Xeos Online
- 3) Click the Operational Setup button on the main screen to open the Operational Parameters screen
- 4) Click the Configuration tab page
- 5) Enter trigger timeout and Iridium check interval times
- 6) Select Enable for each alarm, created in Configuring Alarms to activate
- 7) Click Update button to send the message to the device via email
- 8) Click the Status tab page
- 9) Click the Refresh button to send a message to the device to retrieve operational status
- 10) When the device retrieves the message (based on Iridium Check Interval set in step 9), confirm the device and alarm status on the Status tab page

Cartell CP-1 and CP-3 Magnetic Sensors – Blue Pots

CP-1 and -3 sensors use inputs with blue potentiometers.

For CP-1 sensors, adjust the sensitivity of the trigger by using a screwdriver to turn the appropriate “pot”. Counter-clockwise increases the sensitivity while clockwise decreases it. CP-4 sensors will trigger no matter the sensitivity level of the pots.

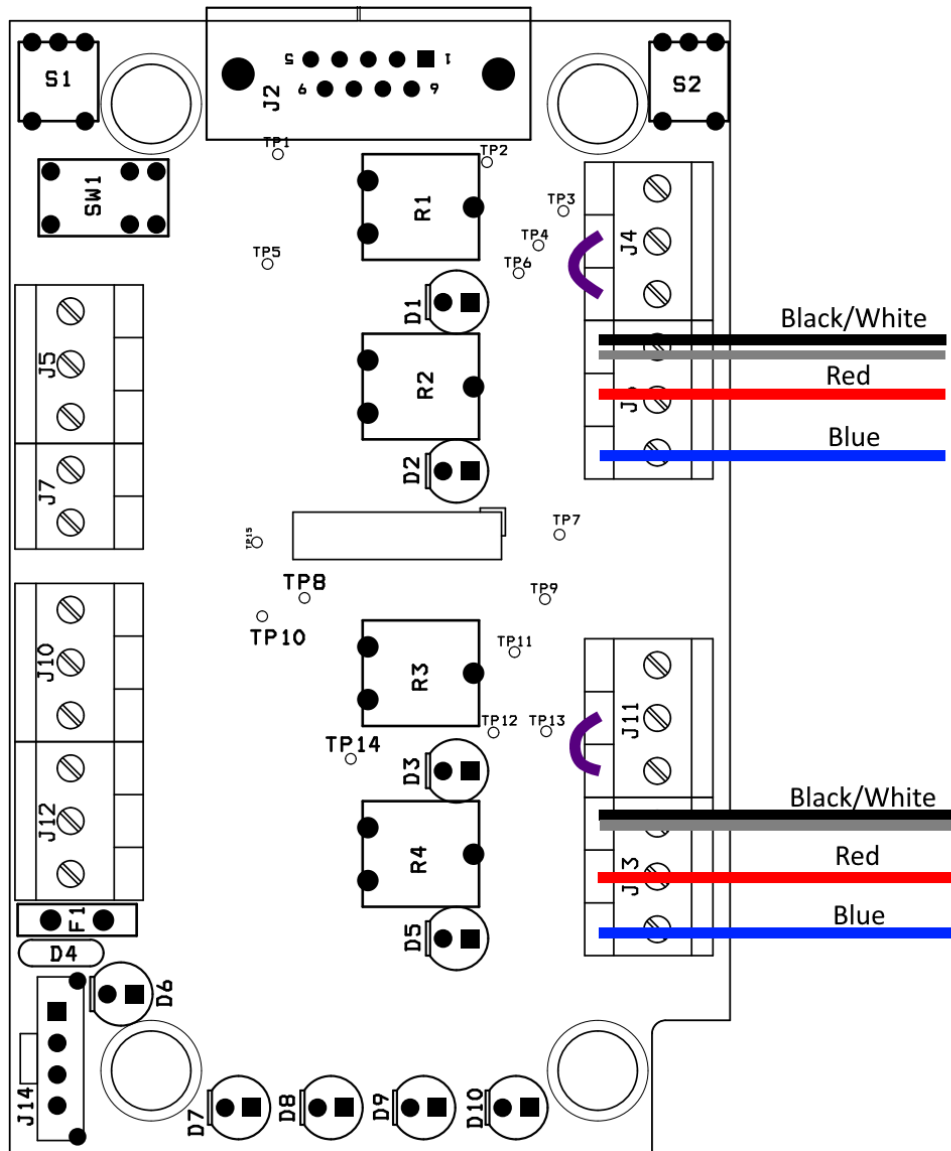
Ensure jumper wires are connected to A and B terminals on any sensor inputs designed for seismic sensors (black potentiometers).



Cartell CP-4 Magnetic Sensors – Blue Pots

Cartell CP-4 sensors use inputs with blue potentiometers, though CP-4 sensors will trigger no matter the sensitivity level of the pots. The yellow wire on the CP-4 is not used.

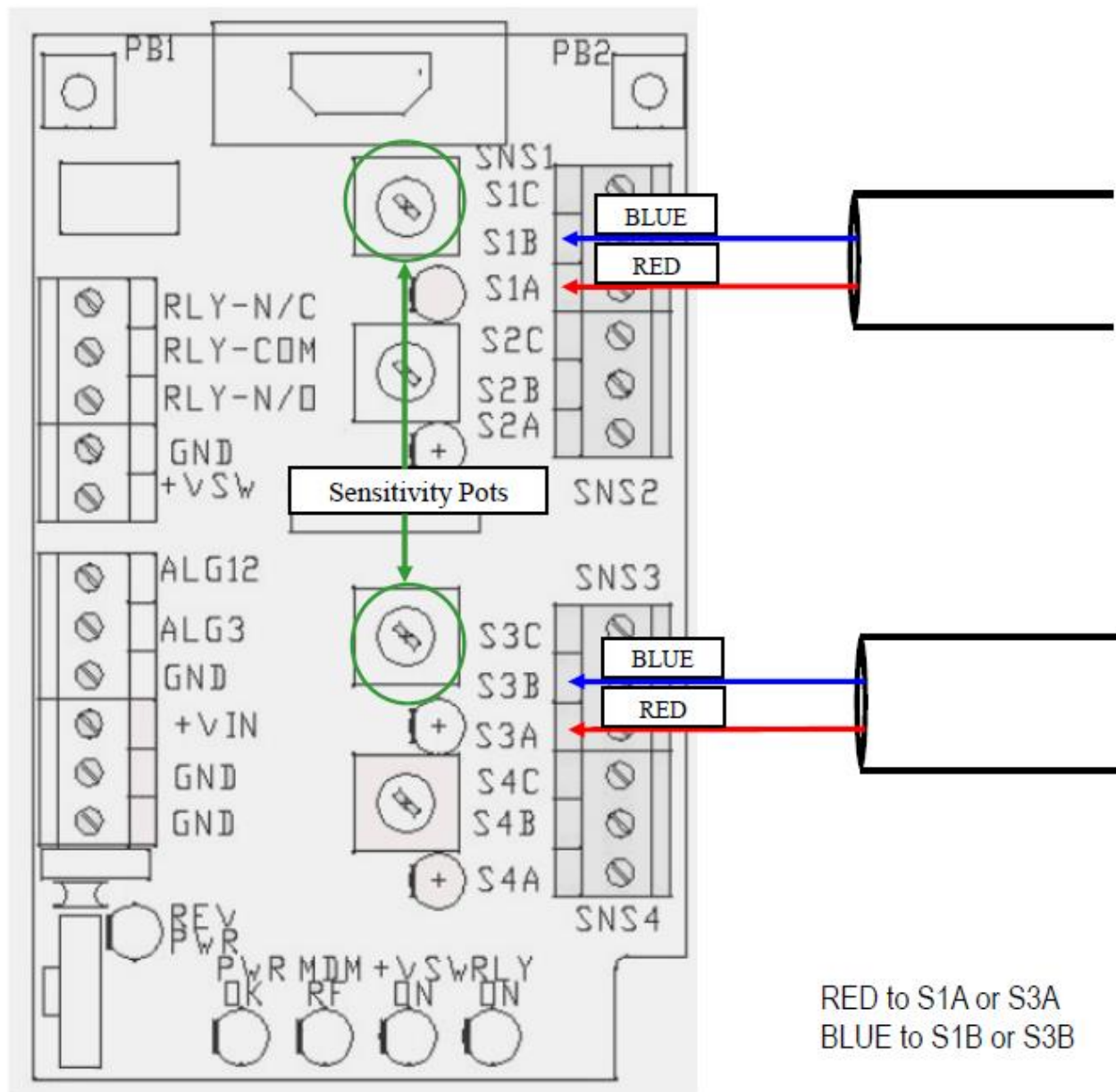
Ensure jumper wires are connected to A and B terminals on any sensor inputs designed for seismic sensors (black potentiometers).



Seismic Sensors – Black Pots

Standard seismic sensors use inputs with black potentiometers. Adjust the sensitivity of the trigger by using a screwdriver to turn the appropriate “pot”. **Clockwise increases** the sensitivity while **counter-clockwise decreases** it.

Remember to completely remove the wire jumpers between the A and B terminals. Blue pot inputs do not need to be jumpered.

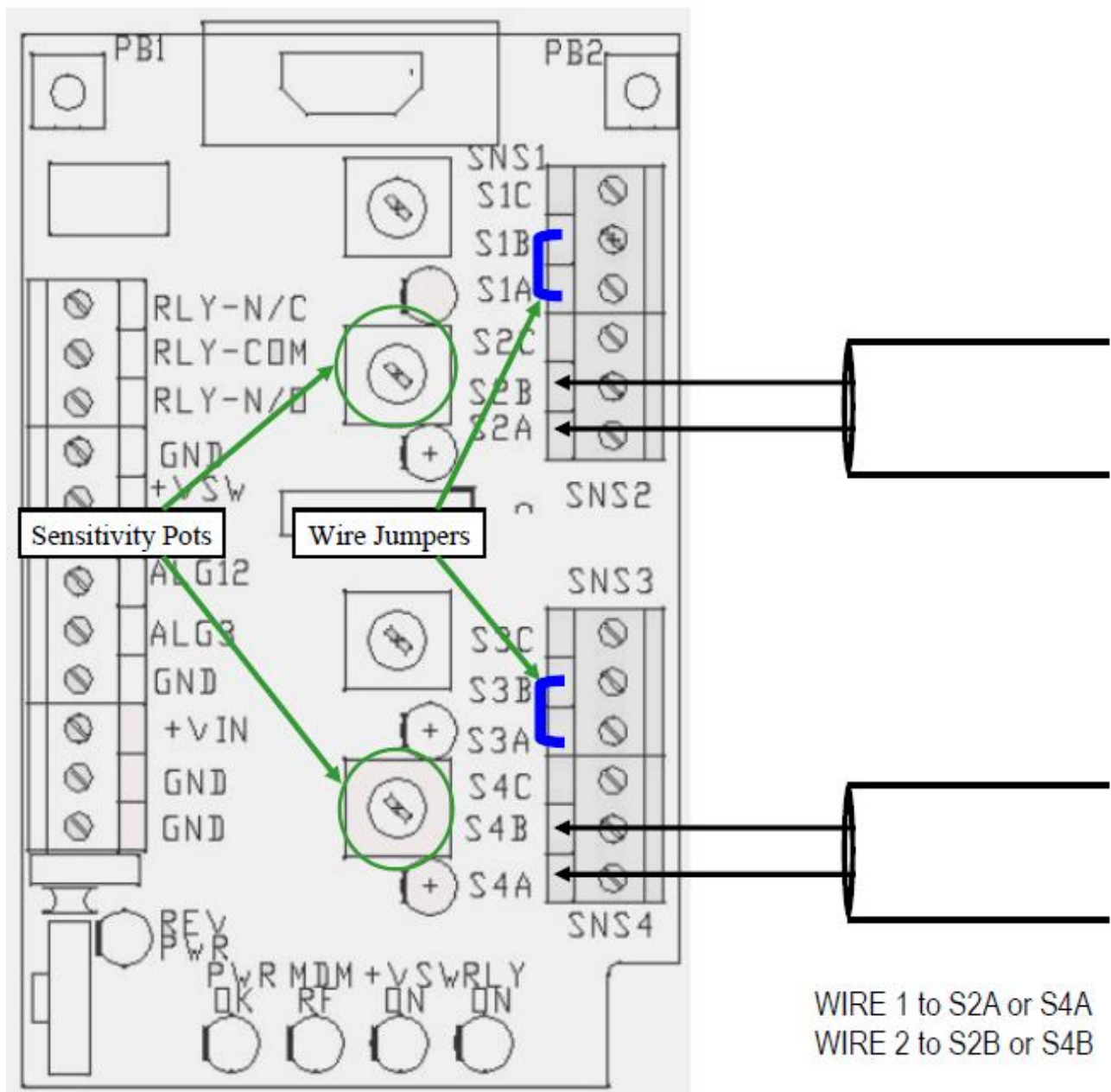


Contact Closure Sensors – Blue Pots

For standard contact closure sensors, only use sensor inputs with blue potentiometers.

Adjust the sensitivity of the trigger by using a screwdriver to turn the appropriate “pot” to the full **counter-clockwise** position. Contact closure sensors do not require polarity and so connecting specific wires to terminals A or B is not important.

Ensure jumper wires are connected to A and B terminals on any sensor inputs designed for seismic sensors (black potentiometers).



Appendix A: RAM Console Specifications

Processor:	Intel or AMD 1.6GHz or greater
Serial Port:	RS-232 serial port or USB port with USB-to-serial adapter
Operating System:	Microsoft Windows XP or greater
Microsoft .NET Framework 2.0	
Memory:	256MB RAM
Disk Space:	10 MB Hard Disk Space

Appendix B: Technical Specifications

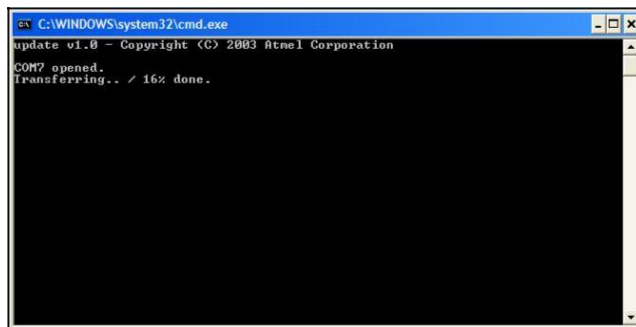
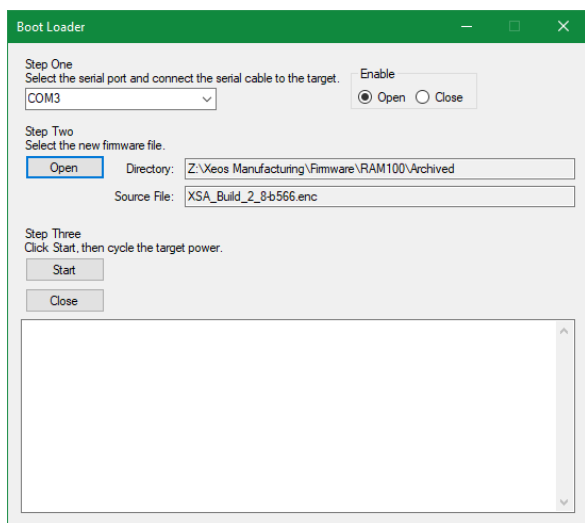
Material:	Polycarbonate
Size:	6"x 6"x4"
Satellite Modem:	Iridium 9602 Modem
Satellite Antenna:	Internal Iridium Patch antenna
Environmental:	IP68-rated
Connectors:	6 cable glands (IP68 rated)
Input/ Output (Digital):	4 Sensor Inputs
Communication Ports:	1 Internal RS-232 port
Power:	Internal Battery Pack
External Power Supply (optional)	
12 to 22 VDC	
Quiescent Current:	0.45 mA (all 4 sensors connected)
Test Mode:	Sensor and satellite LEDs activated by push button
Operational Temp:	-20°C to +50°C
Storage Temp:	-30°C to +60°C

Appendix C: Updating Firmware

Firmware updates may periodically be available from Xeos Technologies Inc. as improvements are made to the product. In order to install these updates to the RAM-100, it is necessary to utilize a Boot Loader application supplied with any firmware update.

To use the boot loader to install a firmware update:

- Make sure a serial cable is connected to the RAM-100 and there is serial communication (need to press the LED Enable button)
- Open the Bootloader Console by clicking on the icon for the BootLoaderConsole.exe in the folder where the file has been downloaded to.



- Click the Open button.
- Select the firmware file to load as provided by Xeos Technologies Inc.
- Click the Start button.
- Cycle the power to the RAM-100 by disconnecting the red power cord from the + terminal on the RAM-100 circuit board below the Antenna plate.

The boot-loader application will automatically start the upgrade process, displaying a command line screen with progress and completion. This screen can be closed when the upgrade is complete. Click the Close button on the Bootloader application to exit.

Warranty, Support and Limited Liability

Xeos Technologies Inc. warrants the RAM-100 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 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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