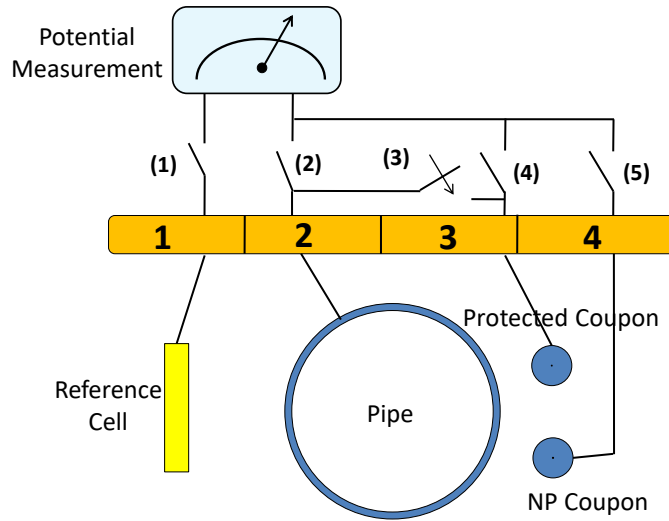


Patriot Test Station Monitor



The Patriot has a 75V Gas Discharge Tube (GDT) installed to prevent damage to the electronic circuitry due to voltage spikes occurring during interruption operations. The GDT should remain in place during and after installation.

Activating the Patriot:

The Patriot is shipped in 'Ship' mode. This is a very low power mode designed to conserve battery power as much as possible. Starting up the Patriot is a three step process.

1. Hold the Patriot vertically, looking down at the LED display; place the magnet on the outside of the housing near the little bull's eye next to the 'REF CELL' terminal. The magnet may need to be moved or rotated a bit, but eventually you will hear the relays close, and after a few seconds, the LED will show signs of life. Once the 'chasing' sequence begins,



alternating with a '1', remove the magnet. The Patriot will now display an "r"



This indicates the radio being powered up. After the radio completes power-up, a series of numbers will be displayed. These numbers are the unique radio and SIM card ID and are only needed if the Tech Support personnel ask for them. Once the numbers begin to show, move to **step 2**.

2. Place the magnet back on the Patriot until the 'chasing' sequence is displayed alternating with a '2'. Remove the magnet. The Patriot will display an "A" followed by the signal level as a series of negative numbers, such as -082 db. The signal level should be -93 db or better (smaller negative number) for the Patriot to operate reliably. Once the signal level numbers begin to show, move to **step 3**.

If you do not proceed to step 3, the unit will move back to the step 1, then eventually back to a sleep mode, NOT the "ship" mode. The unit will wake and report as it was programmed to do.

3. Place the magnet back on the Patriot until the 'chasing' sequence is displayed alternating with a '3'. Remove the magnet. The LED will show a series of letters, beginning with a 'C'.

The letters stand for:

- C= Clock setting (from the time on the OmniMetrix® server)
- E= Establish connection to the server
- F= Finish the log in process

Finally, a repeating 'OL' is displayed. This stands for 'On Line'. The unit is now fully functional and the installation may be completed.

Putting the Patriot into SHIP Mode:

To put the unit back into ship mode after it has reached operational status, place the magnet back into position. The unit will show three dashes for a few seconds, HOLD THAT POSITION! The "chasing" sequence alternating with "1" will appear. Continue to hold the magnet in position until the letters S-H-I-P appear. Once the SHIP starts to appear, remove the magnet. When the unit goes into SHIP Mode, it will spell S-H-I-P, quickly, several times and turn off.

Patriot Operation

In operation, the Patriot “sleeps” most of the time to conserve battery power and wakes and records measurements at a programmed interval. The collected data is reported to the Omnimetrix server at a different programmed interval.

Referring to the diagram at the front of this document, the measurement process is:

- Close (1) and (2), and record the pipe-to-soil voltage. Open (2).
- Close (5) and record the native (NP) coupon voltage. Open (5).
- Open (3), then, after a programmable delay - typically 500mS, close (4) and record the protected coupon voltage. This is the Coupon Instant Off Voltage. Open (4).
- Close (3) (unless in Aging Mode) and open (1).

Data View

All data and commands are accessed using the Omnimetrix OmniView website. For login credentials and general operating instructions for the website, contact Omnimetrix Technical Support at 770-209-0012.

The data page can be configured to display a variety of operating parameters. It typically will show the following values:

- Lithium Battery (Volts DC)
- Pipe-to-Soil (Volts DC)
- Instant Off (Volts DC)
- Native Coupon (- mV)
- Other Parameters

Below is a typical Data Page.

Index	Unit ID	Unit Description	MSG	Alarm	Fault	Lithium Battery (Volts DC)	Pipe-to-Soil (Volts DC)	Instant Off (Vdc)	Native Coupon (Vdc)	Pipe AC Volts (Vrms)	AC Current Density (A/m ² - rms)	Code (Rev)	Age of Last Data
(Inactive) 1	22415	22415	OFF	✓	✓	6.4	-0.012	-0.012	-0.012	--	--	12236	1 day 15 minutes ago


Connectivity Offline
Messaging
Command Buttons:

Protected Coupon Depolarization: (Remote Command)

This function remotely disconnects the Protected Coupon from Corrosion Protection for an extended period of time (one to seven days), so that it depolarizes. Then, the Patriot measures the depolarized voltage and reconnects the Protected Coupon to the pipe. The Patriot will take a set of readings, disconnect the Protected Coupon for the desired period, then take a reading of the depolarized value of the Protected Coupon, and report all of the measurements.

Instant Off Measurements

There are four types of Instant Off Measurements possible with the Patriot:

1. Instant Off Field Test.
 - a. Attach Fluke Clips to terminals #1 & #2; take P/S measurement.
 - b. Attach Fluke Clips to terminals #1 & #4; take Native Coupon measurement.
 - c. Attach Fluke Clips to terminals #1 & #3.
 - d. Touch the magnet to the unit. Three 'bars'  will display. Remove the magnet. (3 is open while the 'bars' are displayed (10 seconds.) During this time, record the Fluke reading (across terminals #1 & #3) for the Protected Coupon Voltage.
2. Coupon Instant Off Single Data Point.

Every time the Patriot wakes up and records data, it performs an "instant-off" measurement on the Protected Coupon. To do this, the Coupon is disconnected from the Pipe for a programmed time delay and then the voltage on the Coupon is measured. The Command to set the measurement delay time is "Write Coupon Disconnect in Milliseconds".
3. Coupon Instant Off ScopeView.

A command can be issued to the Patriot that will record the voltage versus time on the Protected Coupon after the Coupon is disconnected from the Pipe. This gives an oscilloscope-like view of the voltage versus time. The start of data recording is delayed by the Coupon Disconnect Delay. The command is "Send View Scope Command" from the main menu with "Test Station Channels" and "Instant Off" selected.
4. Direct Pipe Instant Off ScopeView.

This requires interruption of the cathodic protection voltage on the pipe from the rectifier. The command is Send View Scope command from the main menu with "Test Station Channels" and "Pipe to Soil" selected.

Wake and Report Timing

The Wake and Report modes are programmable using the “Write Wake Mode” and “Write Report Mode” commands under the “Command/Send Command” items on the main menu. The valid modes are:

WAKE MODE

- 0 - wake & record data every minute
- 1 - wake & record data every 5 minutes
- 2 - wake & record data every 15 minutes
- 3 - wake & record data this minute every hour
- 4 - wake & record data this minute every 4 hours
- 5 - wake & record data this minute every 8 hours
- 6 - wake & record data this minute every 12 hours
- 7 - wake & record data this minute every 24 hours
- 8 - wake & record data this hour and minute every preprogrammed day of the week
- 9 - wake & record data this minute/this hour/this day of the month (1-28)
- 10 - wake & record data this minute every 23 hours

REPORT MODE (minutes)

- 0 – 1 (NOT RECOMMENDED DUE TO SEVERELY REDUCED BATTERY LIFE)
- 1 - 5
- 2 - 15
- 3 – 60 1 Hour
- 4 – 240 4 Hours
- 5 – 480 8 Hours
- 6 – 720 12 Hours
- 7 – 1440 24 Hours, 1 Day
- 8 – 10080 168 Hours, 1 Week
- 9 – 43805 730 Hours, 30.42 Days, 1 month
- 10 – 1380 23 Hours

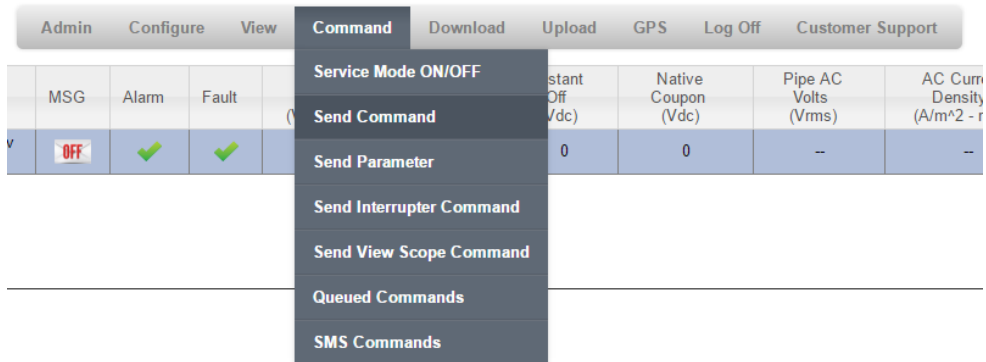
If Report mode is set to be more frequent than Wake mode, it will be reset to the same frequency as Wake mode.

Commanding the Patriot

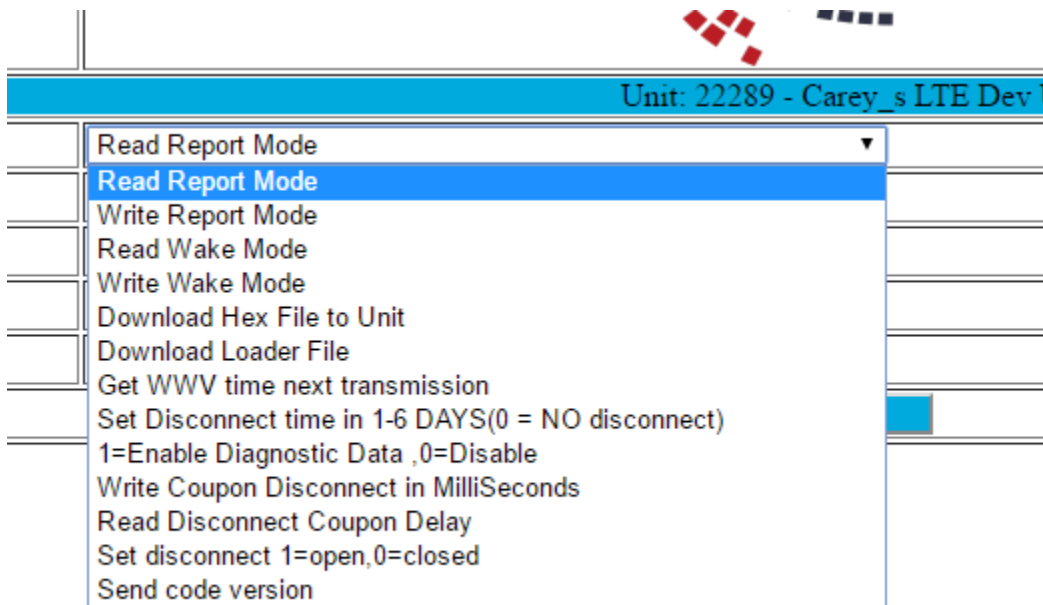
Since the Patriot spends most of its time asleep, it is necessary to “queue” up commands to be delivered to the unit next time it wakes up. This happens automatically.

Commands:

The command list is accessed from the main menu with the Command/Send Command selection.



The available commands are:



The Mode commands were explained previously. Of the remaining commands, the following are ones that will be used:

Set Disconnect time in 1-6 Days (0=No Disconnect). This command is used to age the Coupon when desired.

Write Coupon Delay in Milliseconds.

This command sets the time between disconnecting the Coupon from the pipe and measuring the voltage on the Coupon for the Coupon Instant-Off measurement.

Set Disconnect 1=open, 0=closed.

This is a manual method of connecting the Coupon to the pipe.