



D3



Mobile Satellite Internet Controller



Operation and Configuration Manual

Firmware Version 3.9.1

The DataStorm D3 Satellite Internet Controller

Don't let the Simple Design and Connectivity fool you!

The **MotoSAT DataStorm D3 Controller** is one of the most advanced Satellite Antenna Controllers available. Simple to Configure, Simple to Operate.

The **MotoSAT DataStorm D3 Controller** is a Satellite Internet Antenna Positioner with advanced features that allow the user the flexibility they need to operate any Satellite Internet System in any worldwide environment.

The **D3 Controller** is designed to be a "Stand Alone" Satellite Antenna Controller for use with all MotoSAT Internet Satellite Antenna Mounts.

The **MotoSAT D3** can Locate, Peak, and Cross Pol a MotoSAT Antenna Mount with no connection to a router, Computer, or Satellite Modem. The **D3** connects to a MotoSAT Antenna using one Cable (9wires) and 2 RG6 Cables.

Even though the D3 can be configured for extremely complex requirements it is simple to operate. The D3 can be accessed through a standard HTML viewer or set up to operate from the three button front panel.

The D3 Controller is approved by many satellite network providers to perform stand alone cross pols without NMC or NOC intervention.

The **D3 Mobile Satellite Internet Controller** is designed to allow the user the worlds most "Advanced Simple Interface".

After the D3 has been properly wired to a DataStorm Mount and connected properly to a LAN Switch or router this controller will be ready to configure and operate.

Features

Front Panel Search, Stow, and Power Commands

LED (Status Indicators)

TCP/IP-LAN Interface

HTML Configuration and Operation Pages

Telnet Commands for Diagnostics

No Software Required on PC

True DVB Satellite Identification

Field Firmware Upgradeable

Simple Electrical Connections

This is a preliminary document containing current information for the D3 using Firmware Version 3.9.1

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D3 Front Panel



The Front Panel has three switches, Power, Search, and Stow.

The **Power Button** is used to turn the D3 Controller On and Off. When Powered on the Green LED to the Left of the Power Button will illuminate.

The **Search Button** will cause the dish to raise from the stowed position and search for the configured Satellite. Usually the LNB, LAN and GPS Lights need to be illuminated before a “Search” will begin. The Ready and Busy LEDs will blink during search.

The **Stow Button** when selected will Stow the Dish to the Travel Position. When the Dish is stowing the Busy and Stow Light will Blink. When Dish is Stowed the Stow Light will be on Solid.

Power Light (Green) is illuminated when ever the D3 is powered on.

LNB Light (Blue) will illuminate when a Modem is connected to the D3 and power is applied to the Modem. If the D3 is configured to Generic Mode then the LNB LED will illuminate when Search is initiated.

LAN Light (Blue) is illuminated when a network connection is detected.

GPS Light (Blue) will illuminate when GPS has detected a valid Latitude and Longitude location.

READY Light (Blue) will illuminate when the Target Satellite has peaked and a network connection has been detected.

BUSY Light (Red) illuminates under many conditions. Typically when the dish is moving will be the common reason. See Advanced Lights for additional details on all Front Panel LEDs.

STOW Light (Red) is on Solid when the Dish is Stowed, and Blinks while the Dish is Stowing.

See **Advanced Lights** for additional functions for all LEDs.

D3 Rear Panel



Power > 3 Pin Terminal Block > allows the D3 to connect to different types of DC Power Supplies. Input Voltage range is 12VDC to 16VDC up to 12 Amps. See D3 Wiring for additional information on specific Power Supplies.

Antenna > 9 Pin Terminal Block > connects the D3 Controller to the DataStorm Satellite Antenna usually mounted on the vehicle roof. This connector supplies Motor Power, Antenna Position Information, and two way communications to the Satellite Antenna Mount. See D3 Wiring for additional information concerning specific connections or functions

LAN > RJ45 > is the Network Interface to communicate to a Local Computer, Router, and Satellite Modem. This Port has configuration tools that make it extremely flexible for almost any user requirement. See D3 Configuration for additional information.

RX Out > F Type > connects to the Satellite Modem/Router. When connected the D3 Controller can monitor the DC Voltage supplied to the LNB and also allows the LNB located on the Satellite Antenna Mount to be shared by both the D3 Controller and the Satellite Modem at the same time with no external splitters or switches required.

RX In > F Type > connects the LNB located on the Satellite Antenna to the D3 Controller. This input receives L Band Signals (950-1450 MHz) and detects signal level and DVB Data which is used for locating and identifying Geosynchronous Satellites for internet or SNG use.

D3 Normal Operation

IMPORTANT! Before the D3 is ready for normal use the system must be wired and configured correctly. Go to **D3 Wiring** and **D3 Configuration** for setup.

The D3 Controller can be operated through either **Front Panel Controls** or via the **HTML Interface** built into the Controller.

To use the **HTML Interface** you must access the D3 by using a standard Web Browser such as Internet Explorer, Netscape, or Mozilla Firefox. Open the Browser as you normally would then type into the address bar the IP Address of the D3 Controller. The default IP address of the D3 is set to **192.168.0.250** but this may/can be changed in the D3 Configuration "Network Settings" to work with any router/network configuration.



MotoSAT MOBILE SATELLITE SYSTEMS

DATASTORM D3

Standard Functions

[System Status](#)
[Configuration](#)
[About](#)
[Modem Status](#)

LNB LAN GPS READY BUSY STOW

Signal Quality  10
Signal Strength  384
TX Status Transmitter unavailable due to receive signal problems. (TxCode 6)
RX Status Receiver not locked to a signal. (RxCode 3)
System Status System initialized.

Advanced Functions

[Manual Motor Control](#)
[Calibrate Dish](#)
[Upgrade Firmware](#)

SENSORS		SATELLITE	
Dish Elevation	-1.230469	Target Elevation	109.8388
Dish Azimuth	0.1004464	Target Skew	65.62314
Dish Skew	-101.4992	Satellite Longitude	89W
GPS Longitude	111.9643W	Sat Elevation	37.33876
GPS Latitude	40.72916N	Sat True Azimuth	146.9993
Motor Current	0	Sat Polarization	-24.37687

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Opening page http://192.168.0.250/refstatus.htm?Action=Refresh... Internet

Find Satellite (Search)

Note: Before the System will begin a search the LNB, LAN, and GPS lights should be illuminated.

Using either the Search Command on the HTML System Status Page or the Search Button on the Front Panel of the D3 Controller will initiate a search for the Target Satellite.

The System will begin to search and the D3 Front Panel will show Ready and Busy Lights flashing. The HTML Status Screen will show current status.

The **Target Satellite** is the Satellite that was configured in the **D3 Configuration Satellite Longitude**. The Longitude of the Satellite you want to locate is represented by a numerical value from 0 to 180 followed by an E or W for the correct Hemisphere.

When initiated the DataStorm Mount will move elevation to a calculated elevation position, perform a tilt sensor adjustment by moving azimuth 180 degrees then return azimuth to zero, adjust the Skew to the calculated Skew Angle, then begin an Azimuth Search of the sky looking for any valid satellite.

Once any satellite is located the D3 will attempt to identify this satellite by testing the DVB data. If the data matches the Target Satellite then the system will begin a final peaking routine. If the data matches a different satellite then this becomes the Reference Satellite and the location of the Target Satellite is calculated and the DataStorm Mount will move to the correct location.

Once the Target Satellite is located the D3 Controller will perform a final peak and then adjust skew for Final Isolation Peak. When finished the **D3 Controller** will show the **Ready Light** on. The HTML Screen will show **Search Operation Complete**.

The System Modem should be ready for use. Operation complete.

Stow Dish (Stow)

Stowing the Dish puts the antenna back into a travel position where the Antenna is in a Face Down position on the roof of the vehicle pointing toward the rear of the vehicle.

To Stow the dish use either the Stow Command on the HTML System Status Page or the Stow Button on the Front Panel of the D3 Controller.

The System will begin to stow and the D3 Front Panel will show Stow and Busy Lights flashing. The HTML Status Screen will show **Stowing Dish**.

The typical stow routine will cause the antenna to first move elevation to a full back position, then rotate Skew fully clockwise (when behind the RF Assembly facing the dish), then rotate Azimuth fully counterclockwise, and finish stowing Elevation to a full down position.

When stowed the **D3 Controller (powered On)** will show the **Stow Light** on. The HTML Screen will show **Stow Dish Operation Complete**.

When the dish is “Stowed” it is recommended the D3 Controller is powered Off while traveling.

Power

The Power function is only available on the front panel of the D3. The D3 Controller can not be powered on thru the HTML screen.

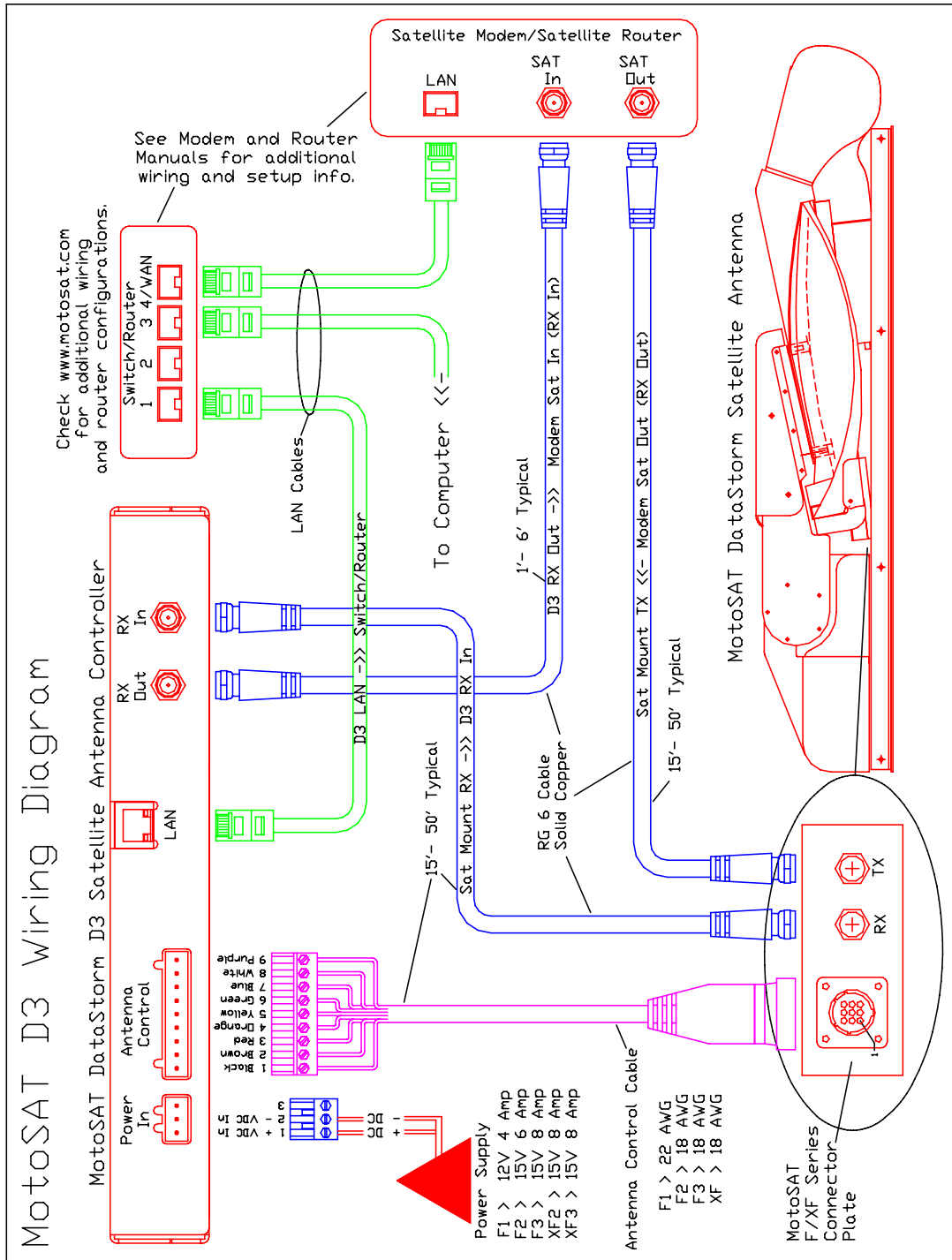
When Power to the D3 is **ON**, the Search and Stow Buttons are operational. The HTML Screens are only available when the D3 Power is On.

When Power is ON the Green LED to the left of the Power Button is illuminated.

It is recommended that when the D3 is not in use and the Dish is Stowed that the D3 Controller be left in the **Off** Mode.

End of D3 Normal Operation

D3 Wiring Diagram



DataStorm D3 Wiring Diagram

Wiring the system

The D3 has Five Connections on the back of the Controller.

- **RX In** F Type Connector > Use Solid Copper Center/Braid RG6 from this connection to the dish mounted on the roof. If possible keep this cable a minimum of 15 feet long to a maximum of 50 feet.
- **RX Out** F Type Connector > Use Solid Copper Center/Braid RG6 from this connection to the Satellite Modem Sat In or RX In Port.
- **LAN** RJ45 Connector > Use Standard LAN Cable to any available LAN port on Switch or Router. NOTE: If using a Router the WAN Port can not be used for this connection.
- **Antenna** 9 Pin Terminal > Use supplied MotoSAT Antenna Control Cable and wire as shown to the DataStorm Satellite Antenna Circular Connector (9 or 14 Pin). It is important to use the cable supplied.

F1 Mount Uses	Gray 9 Conductor 22 AWG Cable
All other Mounts	Black 9 Conductor 18 AWG Cable

Pin 1	Black	AZ Motor - Output
Pin 2	Brown	AZ Motor + Output
Pin 3	Red	EI Motor + Output
Pin 4	Orange	EI Motor - Output
Pin 5	Yellow	Halt/Count Input
Pin 6	Green	Antenna System Ground
Pin 7	Blue	CAN Bus I/O
Pin 8	White	CAN Bus I/O
Pin 9	Purple	Antenna Power (+12 to +15 Volts DC)

Note: Skew is powered through Pin 2 Brown Az Motor + and Pin 3 Red EI Motor + connections

- **Power** 3 Pin Terminal > Use Power Supply that was shipped with the system.

F1	12V 4 to 6 Amp
F2	15V 6 to 8 Amp
F3	15V 6 to 8 Amp
XF	15V 8 Amp Only

Pin 1	+DC Volts (12 or 15) (Max 16 Volts)
Pin 2	-DC Volts (Ground)
Pin 3	Not Used

Do not connect the Power Supply to the D3 Controller until all other connections are completed.

MotoSAT DataStorm Satellite Antenna

Wire the Antenna Control Cable and RX connections as described in the D3 Controller wiring above.

The TX (F Type Connector) port must be wired directly to the Satellite Modem using Solid Copper Center/Braid RG6. It is recommended that this cable be 15 to 50 Feet whenever possible. A longer cable may affect the performance of the Modem due to power loss through the extend cable length.

Ethernet Router and Satellite Modem

Use DataStorm D3 Wiring Diagram (page 9) as an example of a typical configuration.

For more detail in wiring the Router and Modem see the Installation Manuals supplied with these components.

You may also go to www.motosat.com for several common configurations used by our customers. MotoSAT is not responsible for the accuracy or performance of these configurations and you should consult a Networking Professional for assistance in setting these components properly.

After Completing Wiring...

Using the Manuals supplied with the Switch/Router and Satellite Modem, configure these items as directed.

D3 Configuration

Connection and Configuration! Nearly 95% of all technical support calls are due to either improper wiring, or incorrect configurations. Please be sure to review these two items before contacting technical support for assistance.

The D3 must be configured properly before it can be used in normal operation.

Before proceeding insure that all wiring to the D3 Controller is correct. This would include any connections to the DataStorm Mount. See DataStorm D3 Wiring Diagram (page 9).

Verify proper Power Supply

Note: Check to see that you are using the correct power supply for the model of DataStorm Mount.

F1	12 Volt 4-6 Amp
F2	15 Volt 6-8 Amp
F3	15 Volt 6-8 Amp
XF2	15 Volt 8 Amp
XF3	15 Volt 8 Amp

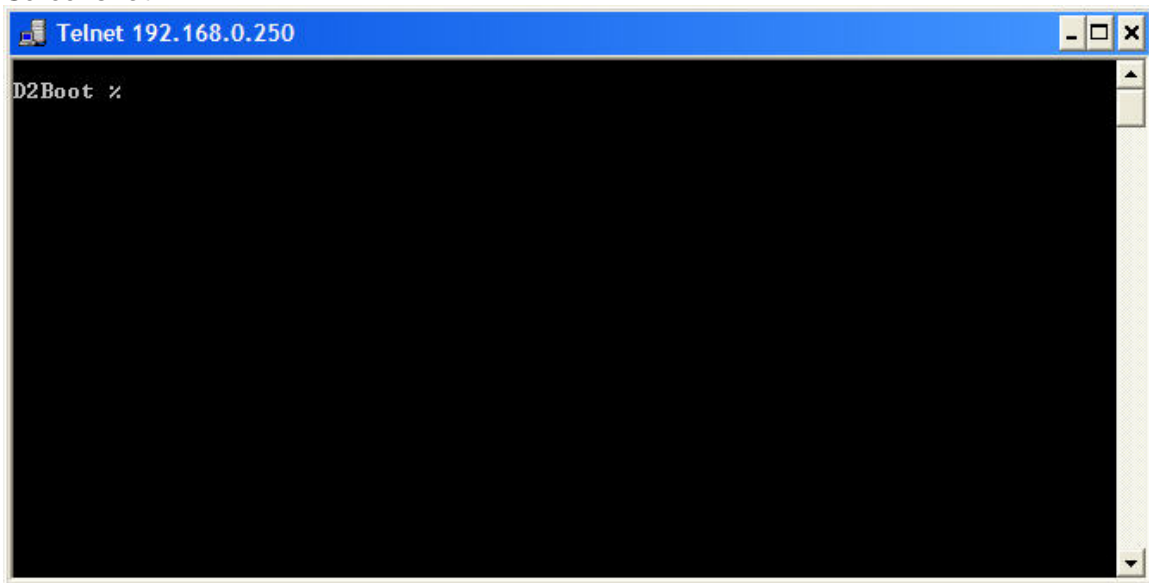
First Steps;

Proceed only if all wiring to the D3, Computer, router/switch, and mount has been completed and checked. The computer must be configured properly to allow communications with the D3 IP address of 192.168.0.250 to complete the D3 setup and configuration.

D3 Version 3.9.1 requires performing an initial NVClear and Test Dish before configuring the D3 Controller. Even if your system has Version 3.9.1 installed if this is a new install it must be done.

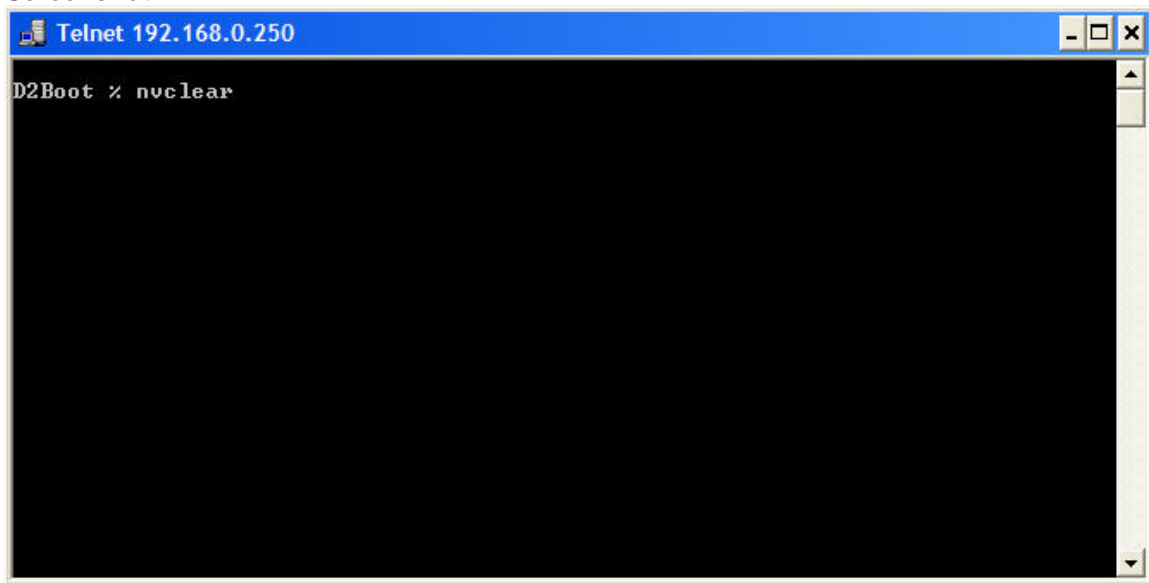
- Press *Search and Stow Buttons* at the same time on the front of D3 Controller and then press Power until all LEDs on Front Panel Illuminate. This is known as Boot Mode.
- Open Telnet Session (192.168.0.250)

Screenshot 1



- Type ***nvclear*** after D2Boot Prompt Note: Case sensitive.
D2Boot % or D3Boot % may appear either display is acceptable.

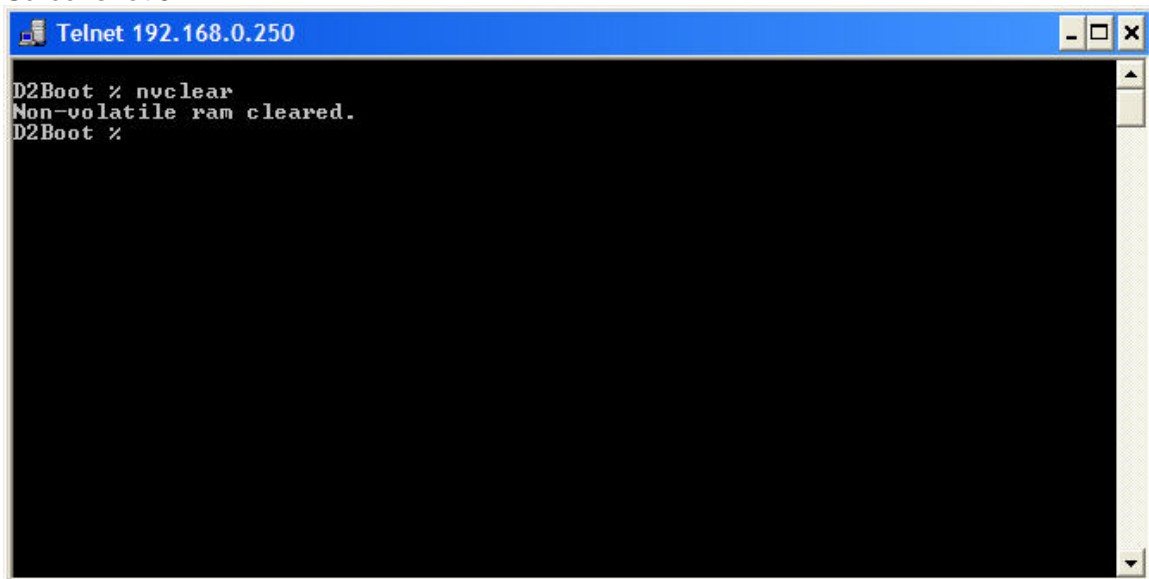
Screenshot 2



```
Telnet 192.168.0.250
D2Boot % nvclear
```

- This will clear all user configurations to factory default. **Always recommended on new installs.**

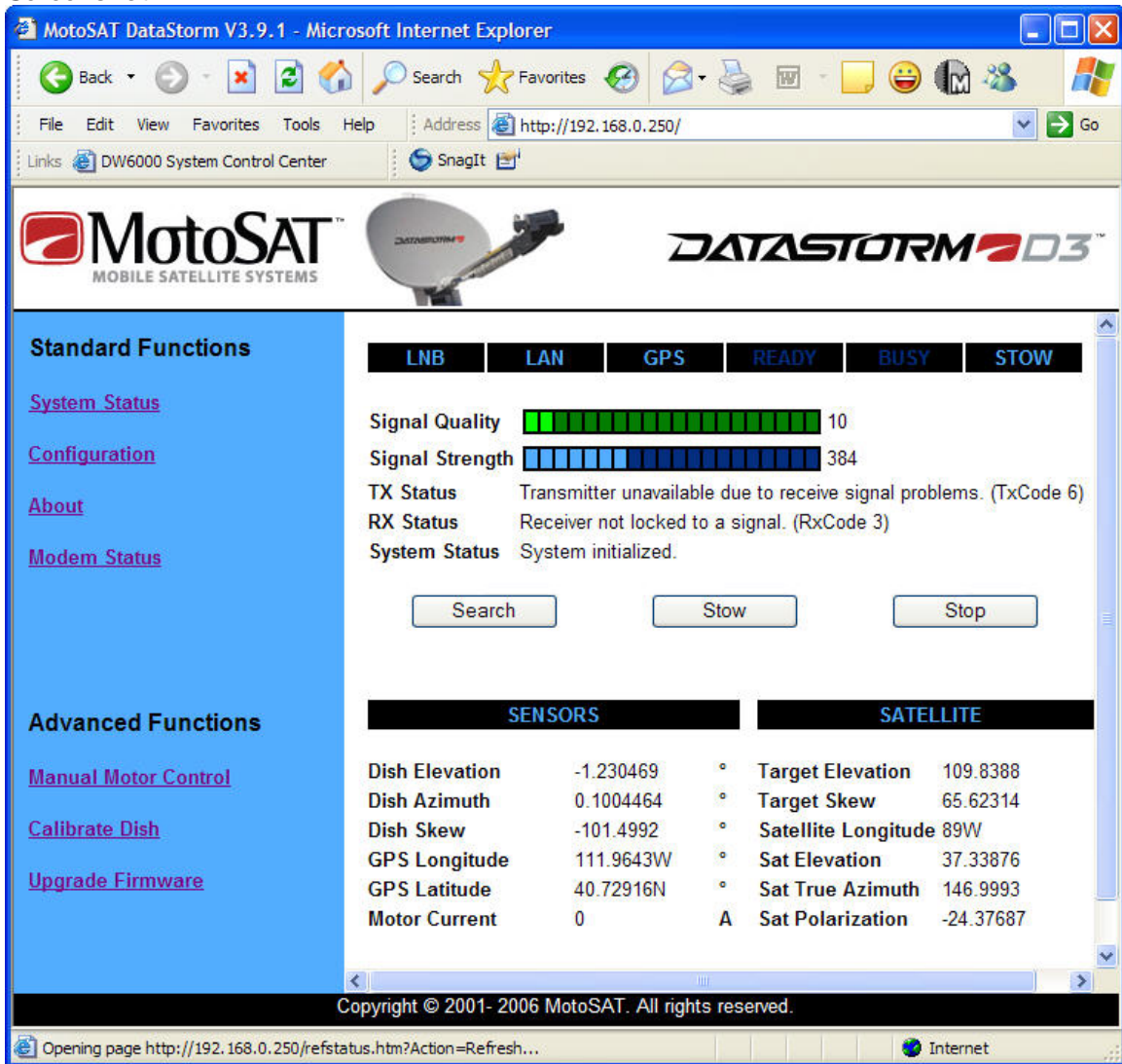
Screenshot 3



```
Telnet 192.168.0.250
D2Boot % nvclear
Non-volatile ram cleared.
D2Boot %
```

- Turn off power to the D3 Controller, and then re-apply power. The Green LED Power indicator to the Left of the Power Button will illuminate.
- Open Web Browser i.e. Internet Explorer to access the D3 HTML Status Page.
- The D3 default page address after an NVClear is always 192.168.0.250, enter this address into the Browser. The following page should appear if the Computer and Router are configured properly.

Screenshot 4



- In the Blue Field on the left side of this page under *Standard Functions* click on **Configuration**. This will send you to the D3 Configuration Page.

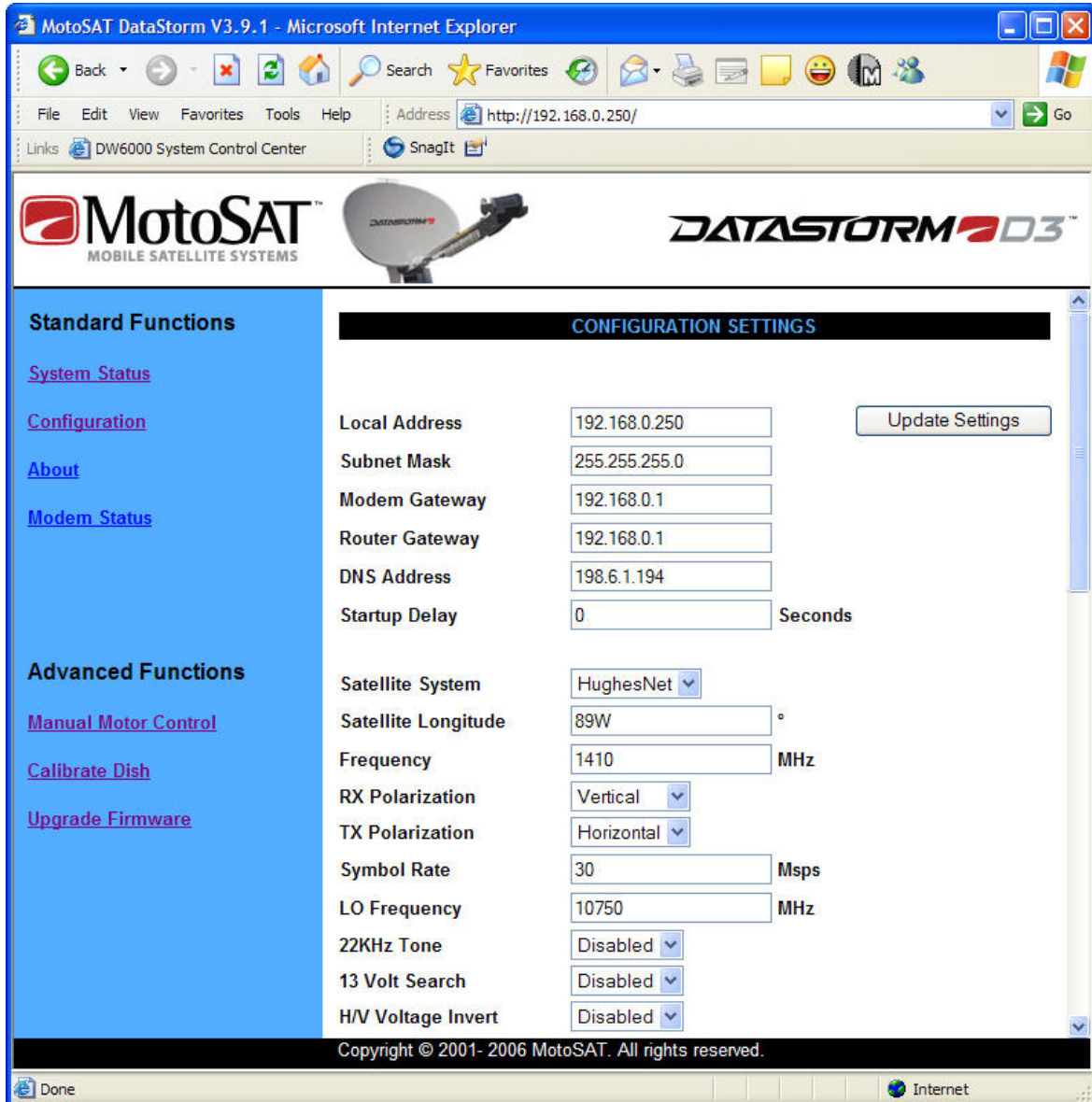
The Screen below only shows the top part of the Configuration Screen. This is the area we are going to set the communications between the D3, Router or Switch, and Modem.

It is important that these are configured properly or the system will not work.

- For more information on how to set the (**Network Configurations**), Local Address, Subnet Mask, Modem Gateway, Router Gateway, DNS Address, and Startup Delay go to **D3 Configuration Definitions** in this Manual

- After setting the Network Configurations click on the Update Settings Button to the right of the Screen to save these values.
 - Note: If the Local Address is changed then the D3 will reset this page, and you will now need to open the Browser using the new Local Address i.e. 192.168.1.250. Then re-enter the configuration page to complete the D3 Configuration.

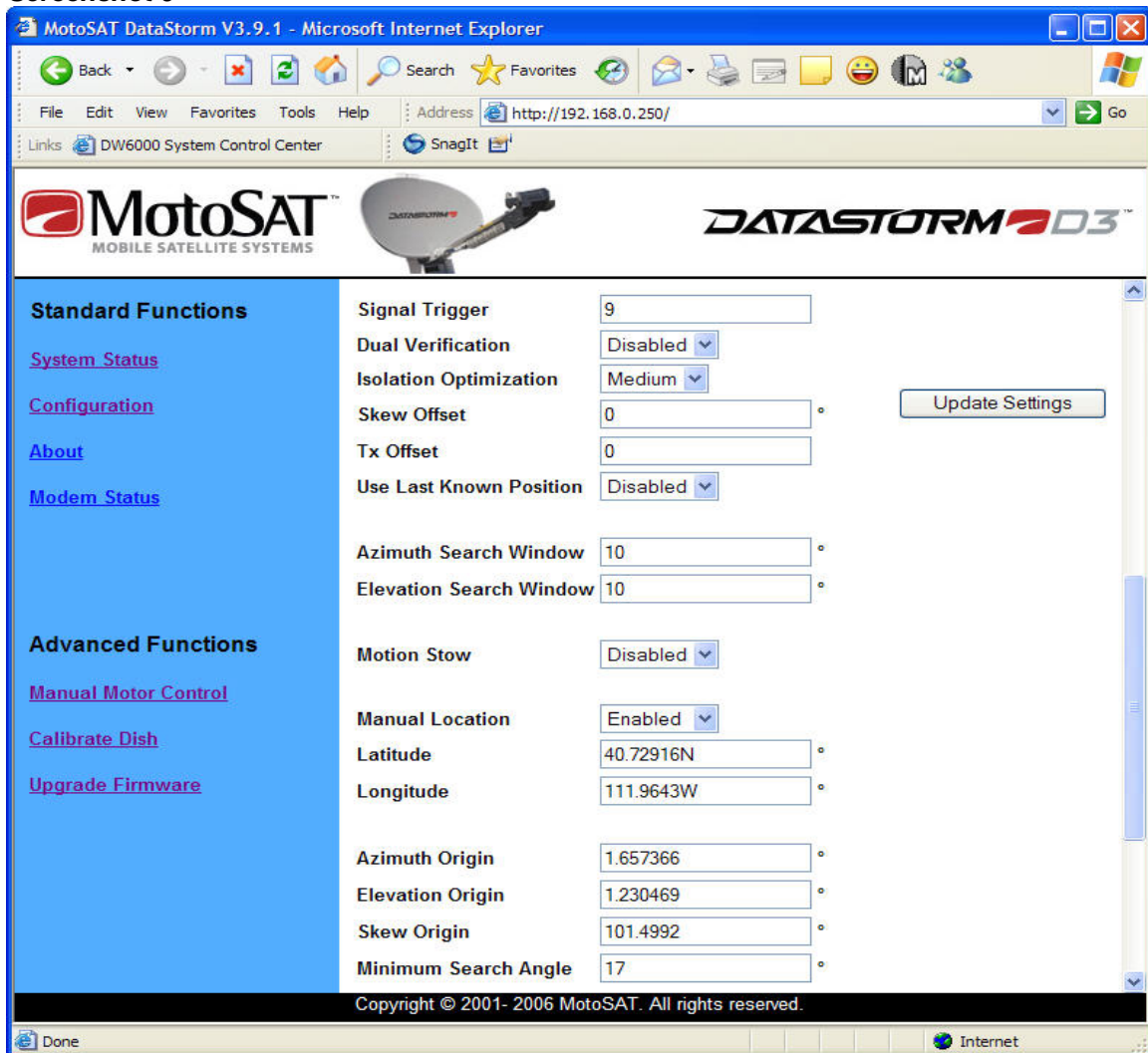
Screenshot 5



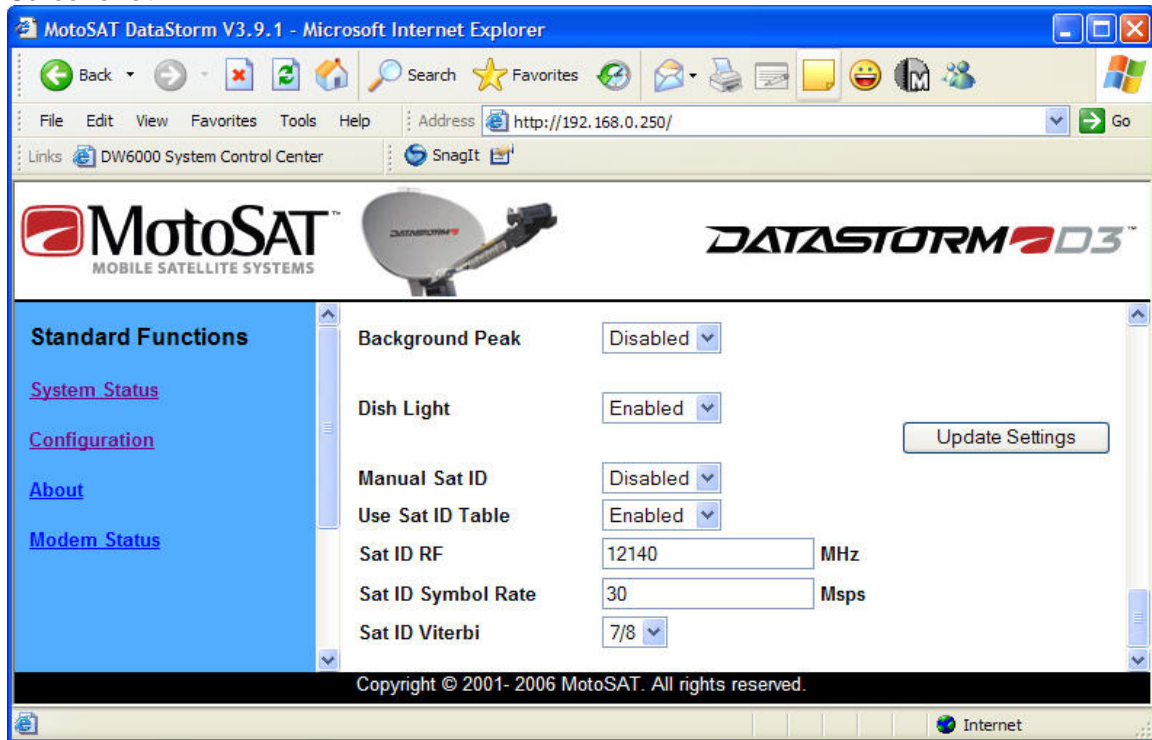
- Satellite System, Satellite Longitude, Frequency, RX Polarization, and TX Polarization must be set for the D3 to operate properly. Get these settings from your VAR or ISP provider.

- The Satellite System has several options currently available. Use the light blue down arrow to select the correct system type.
- Once these 5 settings are input, click on the Update Settings Button to the right of the Screen to save these values.
- *Symbol Rate* (below) currently is only used in HughesNet mode. This value is typically set to 30, but it is important to confirm this value with your ISP.
- *LO Frequency* (below) is typically set to 10750 MHz. Most Continental US Satellites use this LO in their LNB's. Only change this value if the LNB LO Frequency is different.
- For all other configuration settings go to **D3 Configuration Definitions** in this Manual for additional information.

Screenshot 6



Screenshot 7



!!! Important !!! Modifications to D3 Configurations are important but must be correct. If you are not sure of a specific configuration please contact Technical Support for additional information.

D3 Configuration Definitions

This document describes the function and typical use of each configuration item. See Screenshots 5, 6, and 7 for visual details.

Config Name (Default)

Local Address (192.168.0.250)

The Local Address is the internal Ethernet Address of the D3 Controller. This address is set at 192.168.0.250 from the factory but can be changed based on the customer network requirements.

Subnet Mask (255.255.255.0)

Default to 255.255.255.0, see your IT manager if changes to this value are necessary.

Modem Gateway (192.168.0.1)

This value is set to the modem address. See Modem manual for more information.

Router Gateway (192.168.0.1)

This value is set to the Router address. If a LAN switch is used then setting this to the modem address is typical. See Router or Modem manuals for more information.

DNS Address (192.168.0.1)

This value is set to the modem address. See manuals or white papers for more information.

Startup Delay (0)

Startup Delay sets a time delay from D3 Power On to active LAN connection. This time period is displayed in seconds (0 to 999). This time delay is used to allow the Router and or Modem time to configure properly and communicate after AC power has been applied to these devices. The D3 will attempt to communicate with the modem after the delay time has expired.

Example; a Linksys router typically requires 20 seconds before it has set DHCP and accessed the WAN port before it is ready. So setting the Startup Delay to 30 seconds should resolve this for the D3 to see the modem. Network Switches do not require a delay.

Satellite System (Generic)

Satellite System sets Modem or ISP type. Setting this value for the proper modem type will allow the D3 to integrate at different levels with specific modems.

Currently the D3 integrates closely with the HughesNet and iDirect Modems allowing the D3 to confirm correct Satellite Identification, Signal Quality level, set TX ranging values, etc. The D3 may soon integrate with other Modem suppliers.

Other Modems currently displayed in the Satellite System drop down box are; UnaSAT, Aloha, and Generic. These currently function in Generic mode.

Important Note: It is extremely important that when using HughesNet mode that many of the following configurations are set correctly. Just being close will not work.

Satellite Longitude(89W)

Satellite Longitude is a numerical value that sets the Target Satellite Location. I.E. 89W

If inputting a Satellite Longitude in the western hemisphere then you would place a W after the numerical longitude value. It is not necessary to add the W as the western hemisphere is set to default.

If inputting a Satellite Longitude in the eastern hemisphere then you would place a E after the numerical longitude value.

IF Frequency (1430)

HughesNet Required! This value is set from 950 to 1450 MHz. Check with the Hughes configurations to insure accuracy.

For all other Modems including Generic this value is not necessary.

RX Polarization (Vertical)

This is a critical setting. For the D3 to set the Satellite System properly for correct modem operation the Receive Polarization must be correct.

[Contact your ISP for the proper RX Polarization setting.](#)

TX Polarization (Horizontal)

HughesNet Required! Sets the TX Polarization value for Hughes. Not required for all other systems. Check with the Hughes configurations to insure accuracy.

[Note: When using the DataStorm F1 Mount TX Polarization must be Horizontal Only! When using F2, F3, XF2, and XF3 mounts the TX Polarization must be set to the opposite field of the RX Polarization.](#)

Symbol Rate (30)

HughesNet Required! The symbol rate is entered in Msps (Mega Symbols per Second). Again this value is only needed in HughesNet mode.

Example; 30,000,000 symbols per second is entered as 30 Msps.

LO Frequency (10750)

LO Frequency is used in the LNB to mix with the incoming RF signal to produce an IF Frequency in the 950 to 2150 MHz range. Check with the Modem supplier to see what IF Frequency is needed for your specific application.

The Default LO Frequency is 10750 MHz. This value is usually set between 9750 to 11300 MHz. It is extremely important this value is set correctly for proper D3 operation.

22Khz Tone (Disabled)

The *22Khz Tone* can be used to switch the LO Oscillator from one frequency to another. Some Modems may require 22Khz tone for other reasons. Check with your Modem Hardware supplier or ISP to see if 22Khz tone is necessary for your application.

13 Volt Search (Disabled)

The *13 Volt Search* locks the LNB Voltage to 13 Volts. Typically the D3 Controller will follow the Modem LNB voltage and output the same DC Voltage Level as the Modem. When 13 Volt Search is Enabled the D3 will continuously output 13Volts until the Search Operation is completed. Usually 13 Volts correlates to Vertical Polarity.

H/V Voltage Invert (Disabled)

The *H/V Voltage Invert* is used when the LNB on the system is attached to the Feed Assembly in such a way that when 13 Volts supplied to the LNB is actually looking at the Horizontal Receive Field. When this happens the D3 Controller will need this configuration Enabled to operate properly.

Signal Trigger (9)

Signal Trigger is a numerical value that represents a change of Signal Strength Level during a small time period. When this value is triggered the D3 will initiate a Signal Identification Peak.

The Signal Trigger Value is set to Default 9. It can be adjusted from 0 to 40. The lower this value can be set the wider view of the sky for a quicker search. If this value is set too low the D3 will begin to stop on false targets such as trees, lights, and buildings. The higher this value is set the narrower the sky view search angle.

Dual Verification (Disabled)

Dual Verification is used in areas where high RF Reflectivity could cause the D3 to Lock to a mirror image. When Enabled the D3 must verify two satellites in the proper orbital locations before completing the Search Operation. A typical example of this would be when parked close to metal buildings.

Isolation Optimization (Medium)

Isolation Optimization is used to set Cross Polarization (Cross Pol) of the antenna Transmitter to an acceptable Isolation level.

Low

When set to *Low* the skew Cross Pol value is determined by calculating the proper skew rotation of the RF Assembly using GPS. If Skew has ever been set to Medium or High mode for initial Cross Pol to Optimize the Isolation then setting Isolation Optimization to low should offer a minimal acceptable isolation for TX use.

Medium

When set to *Medium*, Cross Pol is initially set similar to the *Low* setting. The D3 will then test DVB and Dish Sensors to adjust the DataStorm Mount for optimized Cross Pol. Some initial settings in Skew Offset and TX Offset will need to be adjusted for Medium to function properly.

High

When set to *High*, initializes like *Medium*. When in HughesNet mode the ACP routine will maximize Hughes Isolation to maximum value.

Skew Offset (0)

The D3 Controller use GPS Location to calculate the correct Horizontal and Vertical Skew Angles of a specific satellite based upon the Dish location on earth. However, some Satellites in the Clarke Orbit are Skewed off several degrees from what should be a true H/V based upon their Longitudal position.

Your ISP or NOC should provide you with a Skew Offset in this case which you can add as a positive or negative value in **Skew Offset**. This will correct the initial search skew angle.

Tx Offset (0)

Tx (Transmitter) Offset allows the installer /user the ability to correct the mechanical error of the RF Assembly so when the DataStorm Mount is peaked on Satellite the Transmitter pointing at the Satellite will be properly Cross polled for maximum Isolation.

This one time setup requires the system to first be peaked on satellite in Medium Mode. Go to Manual Motor Screen and write down the Skew Count and Degree Values. Call NOC/NMC and perform a Isolation Peaking Test where the NOC steps you through the Skew field and noting when you have hit the maximum Isolation value. Not just a minimum pass value. Read the new Skew Count and Angle values. Add or subtract the difference and place this Angle value in **Tx Offset**.

Note when you repeak the system the Skew Angle Value will display what your original Skew Angle Reading was, but your Skew Count Value will display the new Count Value.

See **Setting TX Offset (Xpol)** in this manual.

Use Last Known Position (Disabled)

Disabled (Default)

When *Use Last Known Position* is disabled the D3 reads the current location values (Latitude and Longitude) from the GPS and begins a new search from this location when "Search" has been initiated.

Enabled

When Enabled the D3 Controller will return the Dish to the last known location a "Search" has been initiated.

If the Target Satellite is not found then the Dish will begin a normal search routine.

Azimuth Search Window (10)

The *Azimuth Search Window* is the horizontal search area of the Mount after a Reference Satellite has been located. The D3 will determine the calculated relative location of the Target Satellite from the Reference Satellite Location. The D3 Controller will begin a search for the Target Satellite from the low side of the *Azimuth Search Window* and continue to move the Dish Azimuth higher from this location until it reaches the end of the *Azimuth Search Window*. Elevation will then move either up or down and then Azimuth will return to the other end of the window. This will continue until the Target Satellite has been found or the entire search window has been searched. A value of 10 in this window will allow the azimuth to search 5 degrees above and below the calculated Target location.

The Default value for *Azimuth Search Window* is 10. This value can be narrowed if the vehicle is always very level, but not recommended. If the Mount/Dish is placed on a Skid or Pallet and the ground is not level increasing this value may be necessary.

Elevation Search Window (10)

The *Elevation Search Window* is the vertical search area of the Mount after a Reference Satellite has been located. The D3 will determine the calculated relative location of the Target Satellite from the Reference Satellite Location. The D3 Controller will begin a search for the Target Satellite in the middle of the *Elevation Search Window* and continue to move the Dish Elevation higher and lower from this location at the end of every Azimuth pass until the total Value set in this window has been searched. I.E. a value of 10 in this window will allow the elevation to search 5 degrees above and below the calculated Target location.

The Default value for *Elevation Search Window* is 10. This value can be narrowed if the vehicle is always very level, but not recommended. If the Mount/Dish is placed on a Skid or Pallet and the ground is not level increasing this value may be necessary.

Motion Stow (Disabled)

Motion Stow is initiated when the Tilt (accelerometer) Sensors detect motion other than mild rocking caused by wind. The D3 Controller **must** be on for Motion Stow to work.

NOTE: It is important to know that some vehicles may disable the AC power when the ignition has been turned on. If the DC Power Supply that runs the D3 is on this AC Power circuit then Motion Stow can not work.

Manual Location (Disabled)

Disabled

When ***Manual Location*** is disabled the D3 reads the Location values (Latitude and Longitude) from the GPS module installed on the Mount/UCB.

NOTE: If a *Search* has been initiated and it has been 3 minutes with GPS not acquiring valid latitude and longitude, the D3 will use the current values displayed in *Latitude* and *Longitude* and begin a search for the target satellite. These values may be from a previous location and not valid for Skew and Ranging information in some modems.

Enabled

When Enabled the D3 Controller will use the current Latitude and Longitude values located in the Latitude and Longitude fields.

Latitude

Latitude values can be entered manually if GPS is not able to deliver valid data to this field. But even if *Manual Location* has been *Enabled* once GPS can deliver a valid Latitude it will overwrite the current value in this field.

Longitude

Longitude values can be entered manually if GPS is not able to deliver valid data to this field. But even if *Manual Location* has been *Enabled* once GPS can deliver a valid Longitude it will overwrite the current value in this field.

Azimuth Origin (2.5)

After a Dish Calibrate the D3 will set Azimuth Origin on an F1 to 0 (zero) degrees. On an F2, F3 and XF mounts this value is set for about 2.5 degrees.

The primary reason for Azimuth Origin on the F2 and F3 is to allow the dealer to set the mechanical Azimuth Stow location to a true physical Azimuth Zero position relative to the mounting plate. Even though this adjustment is not necessary on most F2 and F3 mounts some dealers like the ability to set this stow zero position.

The XF mounts actually have both Electronic Azimuth Zero sensors and mechanical Azimuth Stall position. The XF Electronic Zero position is very close to where mechanical stowed zero location is on the mounting plate. The XF allows the Dish to search and peak at Electronic zero because the mechanical stall is -2.5 degrees lower. It is not necessary to make any adjustments to this setting on the XF mounts.

Elevation Origin (3)

After a Dish Calibrate the D3 will set Elevation Origin to approximately 3 degrees.

What this means is when the motor counts reach zero the F1, F2, or F3 have seen a mechanical stall in the Stowed position. From this stalled position the mount is about 3 degrees higher than a level (horizontal) stow.

After a Search and Peak on the Target Satellite this value may change +/- several degrees. This automatic adjustment will now set the true horizontal stow value of the mount. This now means that when a search elevation value is determined by the D3, the D3 will move very close to the correct value to find the Target Satellite on the first search pass.

It is recommended that this value not be adjusted after a successful Target Satellite Search and Peak.

Skew Origin (0) F1 (-96) F2/3 XF2/3

This value is different on all mounts. On the F1 it is approximately 468 Counts for Zero degrees Skew after a Dish Calibrate is performed. On an F2 or F3 mount 0 Counts is approximately -96 degrees after a Dish Calibrate is performed.

However once a Dish has found and peaked the Target Satellite and the Ready Light has illuminated this value will be corrected automatically after ACP has completed. (ACP must be in Medium or High Mode.)

It is recommended that this value not be adjusted if ACP Isolation was performed in Medium or High mode.

Minimum Search Angle (17)

This is the lowest Satellite Look Angle allowed by the D3 Controller when in search mode. From the factory the D3 is set with an angle of 17 degrees. Seventeen degrees on the F1 and F3 mounts allows the Dish to rotate 360+ degrees in azimuth without the LNB Arm Assembly hitting objects on the roof of the vehicle.

Once the Dish has been mounted on the roof or platform this value can be lowered as necessary as long as full Azimuth Rotation will not cause the LNB to hit objects in this rotation. Typically 17 degrees will work for most of US and Southern Canada.

Background Peak (Disabled)

Disabled

When disabled the dish remains pointed in a fixed position. Any movement caused by wind or vehicle repositioning is ignored.

Enabled

When Enabled the D3 Controller will monitor DVB Signals and/or Modem Signal Data to try to maintain a peak at the Target Satellite. This will usually mean fine adjustments of Azimuth and Elevation to the Dish.

Note: This is NOT an "Inmotion" routine and may not keep up positioning in a real time situation. There may be some signal degradation if movement of the Dish is too rapid.

Dish Light (Enabled)

Enabled

Under normal use when the *Dish Light* is *Enabled* the DataStorm Dish will have a glowing Blue reflection off of the Dish surface when the dish is deployed. When the Dish is stowed this light will be off.

Disabled

If the user chooses to have this light off all the time simply disable this feature.

Manual Sat ID (Disabled)

Disabled

If the D3 Satellite ID Table is current (valid) and the Target Satellite (Satellite Longitude) is valid in this table then *Manual Sat ID* should be **Disabled**.

Enabled

If there is not a Valid Target Satellite in the current D3 Sat ID Table this feature can be enabled. When *Enabled* the user must input valid data in the Sat ID RF, Sat ID Symbol Rate, and the Sat ID Viterbi.

Another condition where *Manual Sat ID* would be *Enabled* could happen if a Reference Satellite recently had changes where it would ID the same as the Target Satellite. Under this condition the user would need to change the Target Satellite *Manual Sat ID* values.

Use Sat ID Table (Enabled)

The D3 has an internal Satellite ID Table which covers most of the Ku Band Satellites around the world. This table is updated by firmware periodically. The D3 uses this table to ID any reference satellite in the sky that is within approximately +/- 45 degrees of the "Satellite Longitude", Target Satellite or Target Longitude. Once a reference Satellite within this range has been identified the D3 will calculate the correct azimuth distance to the Target Satellite.

Terms; Reference Satellite is any satellite that can be used to determine the correct location of the Target Satellite.

Target Satellite is the Satellite that the D3 has been configured to search and Peak. This is selected by inputting a valid Satellite Longitude in Configuration. Target Satellite, Target Longitude, and Satellite Longitude are synonymous in this document.

Enabled

If the D3 Satellite ID Table is current (valid) the "Use Sat ID Table" should be **Enabled**. A current Satellite ID Table allows the D3 to perform faster searches.

Disabled

If it has been a year or more since the last use of the D3 it is possible that there will be several or many errors in the Satellite Table. The more errors in this table the more likely the search time for the Target Satellite will increase. It is also possible that a Reference Satellite may now have the same ID information as the Target Satellite. Under these conditions a user may want to Disable the *“Use Sat ID Table”* and Enable the *“Manual Sat ID”* to be able to find the Target Satellite to download a current Firmware Upgrade with a current Satellite ID Table.

Sat ID RF

This value is displayed in Megahertz (MHz) (million cycles per second). This value must be input correctly when Manual Sat ID is **“Enabled”**.

The Ku Band RF Receive Frequency range is from 10650 to 12950 MHz.

Example; 12,140,000,000 Hertz (cycles per second) would be entered

As 12140 MHz

Sat ID Symbol Rate

This value is displayed in Mega symbols per second. This value must be input correctly when Manual Sat ID is **“Enabled”**. The D3 controller can read values from 2 to 45 Msps. Examples; *26,015,000 symbols per second must be entered as 26.015 Msps, or 10,000,000 symbols per second can be entered as 10.*

Sat ID Viterbi

Viterbi or FEC are used to describe the Error Correction Ratio. This ratio must be input correctly when Manual Sat ID is **“Enabled”**. This value can be from 1/2, 2/3, 3/4, 5/6, or 7/8

Upgrading Firmware (software)

Occasionally MotoSAT will make changes to the D3 Firmware (software). Most of these changes are to enhance existing features or to add new features requested by a customer. When this happens this firmware is offered to all MotoSAT customers and at the customer's option can update their D3 Controller. There are times when the changes to the firmware are significant and the performance of the system is greatly improved MotoSAT will strongly recommend that these upgrades take place.

If your system is experiencing a problem our technical support team will typically suggest the D3 Firmware be updated first before continuing support. Many times customer issues can be resolved by upgrading their firmware to the newest version of firmware.

Software Upgrades can be found on the MotoSAT Website <http://www.motosat.com/downloads/>, download the latest version of software/firmware and place it in a folder on your PC. (File will need to be uncompressed as a .hex file before performing upgrade.

Follow steps below to upgrade firmware.

- On Main System Status Screen select the *Upgrade Firmware* command located in blue field to the left. The following screen appears.
- A Screen with “*Launching firmware upgrade utility...*” will momentarily appear then the **DataStorm Firmware Upgrade Utility** Screen will load.
- Use the **Browse** command to find the new version D3 Software you want to load into the D3 Controller. This will be a .hex file.
- Once the proper file has been selected press the **Upgrade** Command to begin Firmware Upgrade.
- The upgrade will take approximately five minutes and you should not interrupt this upgrade until complete. The Bar in the center of the screen will show the upgrade status.

- Once Firmware Upgrade is complete the D3 should return to the Main System Status Screen. If it does not, refresh the browser or recycle power on the D3 Controller.
- If the D3 Mount (UCB) requires new firmware, the D3 Controller will automatically begin programming mount.

See Screen Shots below as examples.

The screenshot shows the MotoSAT web interface. At the top, there are logos for MotoSAT (MOBILE SATELLITE SYSTEMS), a satellite dish, and DATASTORM D3. The left sidebar is blue and contains the following menu items: Standard Functions (System Status, Configuration, About, Modem Status), and Advanced Functions (Manual Motor Control, Calibrate Dish, Upgrade Firmware). The main content area has a black header with 'UPGRADE FIRMWARE' in blue. Below the header, the text reads: 'DataStorm must shutdown in order to launch the firmware upgrade utility. This will be done automatically if you choose to continue. Click next to continue or cancel to quit.' At the bottom of the main area are three buttons: '< Back', 'Next >', and 'Cancel'. The footer contains the text: 'Copyright © 2001- 2006 MotoSAT. All rights reserved.'

It is extremely important to not power down the D3 Controller while this is happening. The HTML Page will show a Status Bar with approximate progress. Upgrade must NOT be interrupted!

See Firmware upgrade screens below as examples

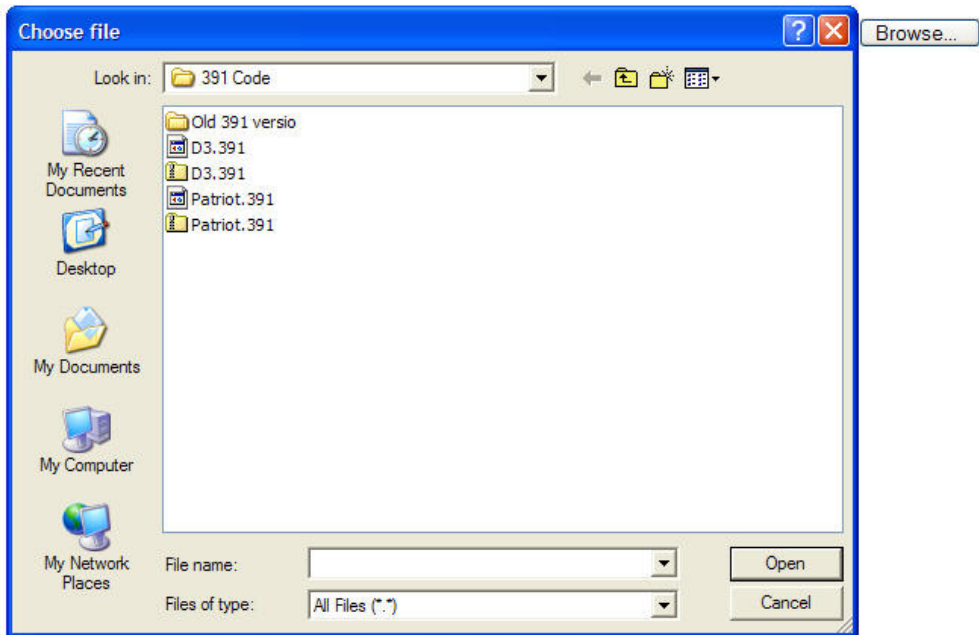
DataStorm Firmware Upgrade Utility

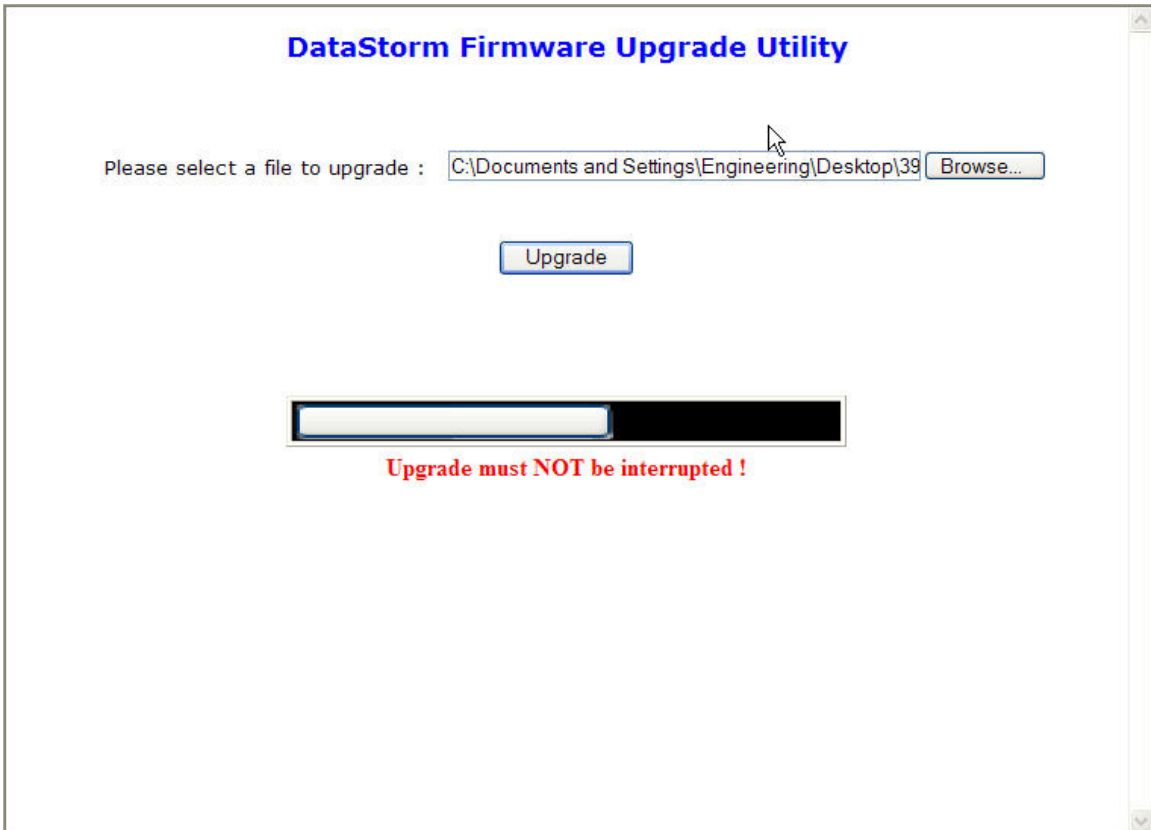
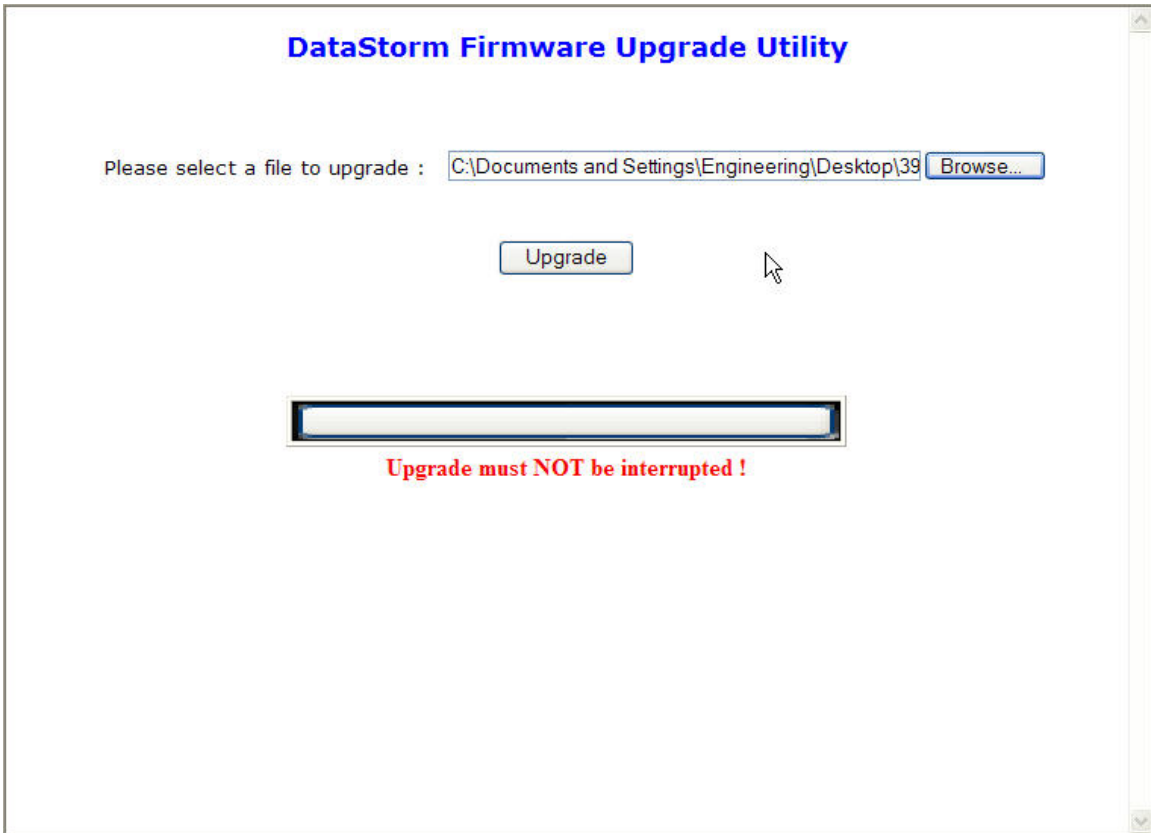
Please select a file to upgrade :



Upgrade must NOT be interrupted !

DataStorm Firmware Upgrade Utility





DataStorm Firmware Upgrade Utility




Please select a file to upgrade :

Please wait! Setup will take a few minutes ____ _

Upgrade must NOT be interrupted !

Upgrade Firmware Complete

The system firmware was successfully upgraded. Please turn off the D3 and turn it back on.



Standard Functions

[System Status](#)
[Configuration](#)
[About](#)
[Modem Status](#)

Advanced Functions




[Manual Motor Control](#)
[Calibrate Dish](#)
[Upgrade Firmware](#)

LNB | **LAN** | **GPS** | **READY** | **BUSY** | **STOW**

Signal Quality  n/a
Signal Strength  679
TX Status Transmitter unavailable due to receive signal problems.
RX Status The receiver is not locked to a signal.
System Status System initialized.

SENSORS		SATELLITE	
Dish Elevation	0	Target Elevation	109.8388
Dish Azimuth	0	Target Skew	65.62312
Dish Skew	-101.848	Satellite Longitude	89W
GPS Longitude	111.9643W	Sat Elevation	37.33876
GPS Latitude	40.72916N	Sat True Azimuth	146.9993
Motor Current	0	Sat Polarization	-24.37688

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Standard Functions

[System Status](#)
[Configuration](#)
[About](#)
[Modem Status](#)

Advanced Functions




[Manual Motor Control](#)
[Calibrate Dish](#)
[Upgrade Firmware](#)

LNB | **LAN** | **GPS** | **READY** | **BUSY** | **STOW**

Signal Quality  n/a
Signal Strength  0
TX Status Transmitter unavailable due to receive signal problems.
RX Status The receiver is not locked to a signal.
System Status Programming mount. (0 percent)

SENSORS		SATELLITE	
Dish Elevation	0	Target Elevation	n/a
Dish Azimuth	0	Target Skew	n/a
Dish Skew	-101.848	Satellite Longitude	89W
GPS Longitude	n/a	Sat Elevation	n/a
GPS Latitude	n/a	Sat True Azimuth	n/a
Motor Current	0	Sat Polarization	n/a



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Standard Functions

[System Status](#)
[Configuration](#)
[About](#)
[Modem Status](#)

LNB LAN GPS READY BUSY STOW




Signal Quality  n/a
Signal Strength  0
TX Status Transmitter unavailable due to receive signal problems.
RX Status The receiver is not locked to a signal.
System Status Programming mount. (28 percent)

Advanced Functions

[Manual Motor Control](#)
[Calibrate Dish](#)
[Upgrade Firmware](#)

SENSORS		SATELLITE	
Dish Elevation	0	Target Elevation	n/a
Dish Azimuth	0	Target Skew	n/a
Dish Skew	-101.848	Satellite Longitude	89W
GPS Longitude	n/a	Sat Elevation	n/a
GPS Latitude	n/a	Sat True Azimuth	n/a
Motor Current	0	Sat Polarization	n/a



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Standard Functions

[System Status](#)
[Configuration](#)
[About](#)
[Modem Status](#)

LNB LAN GPS READY BUSY STOW

Signal Quality  n/a
Signal Strength  0
TX Status Transmitter unavailable due to receive signal problems.
RX Status The receiver is not locked to a signal.
System Status Programming mount. (74 percent)

Advanced Functions

[Manual Motor Control](#)
[Calibrate Dish](#)
[Upgrade Firmware](#)

SENSORS		SATELLITE	
Dish Elevation	0	Target Elevation	n/a
Dish Azimuth	0	Target Skew	n/a
Dish Skew	-101.848	Satellite Longitude	89W
GPS Longitude	n/a	Sat Elevation	n/a
GPS Latitude	n/a	Sat True Azimuth	n/a
Motor Current	0	Sat Polarization	n/a

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The screenshot displays the MotoSAT web interface. At the top, there are logos for MotoSAT (MOBILE SATELLITE SYSTEMS) and DATASTORM D3. Below the logos is a satellite dish image. The interface is divided into two main sections: Standard Functions and Advanced Functions. The Standard Functions section includes a status bar with LNB, LAN, GPS, READY, BUSY, and STOW indicators. Below this, there are signal quality and strength indicators, and status messages for TX (Transmitter unavailable due to receive signal problems), RX (The receiver is not locked to a signal), and System (Programming mount. (96 percent)). There are buttons for Search, Stow, and Stop. The Advanced Functions section includes Manual Motor Control, Calibrate Dish, and Upgrade Firmware. Below this, there are two tables: SENSORS and SATELLITE. The SENSORS table shows Dish Elevation (0), Dish Azimuth (0), Dish Skew (-101.848), GPS Longitude (n/a), GPS Latitude (n/a), and Motor Current (0). The SATELLITE table shows Target Elevation (n/a), Target Skew (n/a), Satellite Longitude (89W), Sat Elevation (n/a), Sat True Azimuth (n/a), and Sat Polarization (n/a). At the bottom, there is a copyright notice: Copyright © 2001- 2006 MotoSAT. All rights reserved.

NOTE: When A firmware update is complete you must ***ALWAYS*** perform an “***nvclear***” operation which was explained earlier in this manual. Failure to perform the “***nvclear***” after a firmware upgrade will result in unusual errors and operation.

Also be sure to document all configurations before performing a new NVClear.

Setting TX Offset (Xpol)

Every Mobile Satellite Internet System should perform an initial Cross Polarization Isolation Test with the HUB/NOC to insure Compliance.

The DataStorm Mounts with the D3 Controller have the ability to set Proper Antenna Skew if the following procedures are followed.

- First insure you are connected and configured correctly to the Router and Modem.
- Isolation **MUST** be set to ***Medium***.
- Let the D3 Find and Peak the Proper Satellite.

After the system has properly peaked on the correct Satellite then go to the Manual Motor Screen and record;

Skew Count (whole Count) (Old Skew Count)
Skew Angle (including decimals) (Old Skew Angle)

Contact the HUB or NOC and request a **MAXIMUM Cross Pol Test** to find the Peak Isolation Value. This peak is very important for Mobile Systems.

While in Manual Motor Movement you usually only need to adjust Skew Movement Only.

- Adjust Skew Motor Only.
- Begin with .5 Degree Motor Angle Steps.
- Have NOC confirm Value of Isolation and repeat Skew Steps
- When NOC finds MAX Isolation then STOP!

Record the new values for;

Skew Count (whole Count) (New Skew Count)
Skew Angle (including decimals) (New Skew Angle)

Find the difference of the Old and New Skew Values and Record them.

- $\text{New Skew Angle} - \text{Old Skew Angle} = \text{Difference Angle}$

Go to the D3 Configuration Screen

In the TX Offset Field enter the Skew Difference Angle (including minus sign if applicable)

Update Configuration.

To Test TX Offset;

- Stow Dish, let system Stow
- Find Satellite again and let Peak

Once System has finished Peaking go to Manual Motor Screen and check that Skew Angle is approximately the same value as the “**Old Skew Angle**” but the Skew Count should be approximately the same value as the “**New Skew Count**”

TX Offset and Isolation Setup Complete.

D3 Technical Assistance

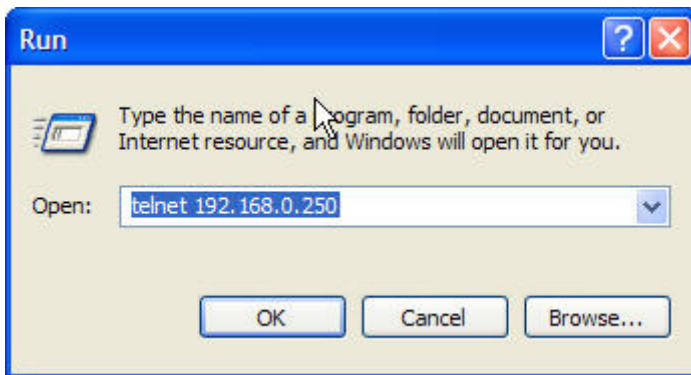
Abbreviated troubleshooting and Technical Assistance.

!!! Warning !!! Telnet commands should only be used by certified installers or under the direction on MotoSAT Technical Support.

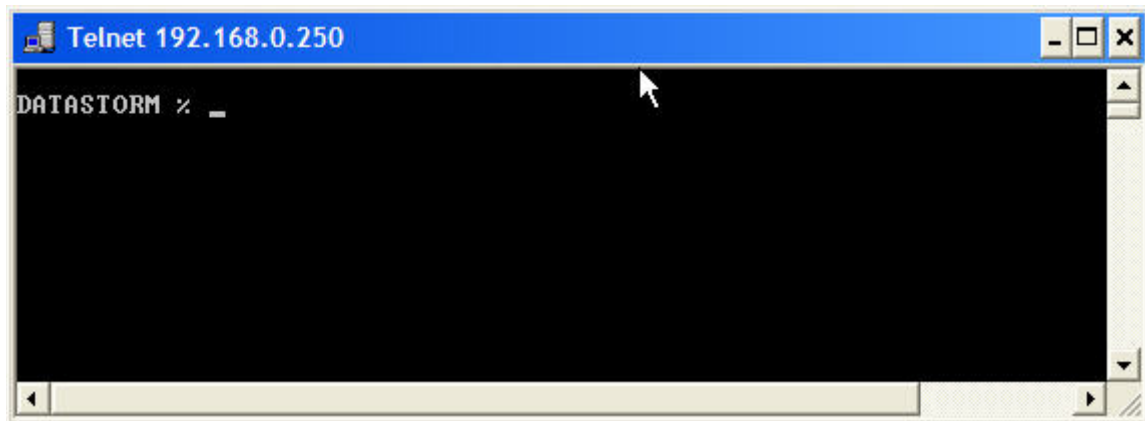
Using Telnet Commands

To access the D3 Telnet Commands go to the *Windows Start Command, Run*, and enter the Local IP Address of the D3 Controller in the *Open:* field as shown below. Even though the D3 default Local IP Address is 192.168.0.250 check with the IT Manager to find the actual IP address of this controller.

Enter *OK*



If the Local IP Address is correct the *DataStorm %* prompt should appear.



Type "*help*" all in lower case. Remember that Telnet Commands are case sensitive. All of the available Telnet Commands for the D3 Controller Firmware Version 3.9.1 will display.


```

Telnet 192.168.0.250

DATASTORM % help
Commands are:
13volts          18volts          ?                arp
autocompasscal  bkgpeakrate      bpool            calcsat
calibrate        clearlastpos     conf             date
demodish         devs             dg               duboff
dubon            echo             exit             findsat
getvalue         gps              gsn              hang
help             ifstat           igmp             kill
lanrequired      lnboff           lnbon            lnvolts
mem              mixrate          motorspeed       moveaz
moveazang        moveel           moveelang        movesk
moveskang        netstat          ns               peakazel
peakisolation    peakrate         picregs          pictest
ping             port             ps               reboot
route            routes           scansat          sem
sensors          setserial        setvalue         showdebug
showmessages     showmotors       showsattable     sleep
stopdish         stowdish         testdish         testhalt
time             timerq           triggerfilter    tunerregs
tunerreset       tunershowagc     tunerstatus      uchupdate
udplisten        udpping

DATASTORM %

```

The following screens below are used commonly for Troubleshooting. For additional information or assistance using these commands contact Technical Support at 1-800-247-7486.

```

Telnet 192.168.0.250

DATASTORM % gsn
checking: name = Intelsat 8 89W U, freq = 12160, ifreq = 1410
locked: symrate = 30031, viterbi = 5 (7/8)
match!
DATASTORM % _

```

```

Telnet 192.168.0.250

DATASTORM % scansat 950 1450 U 1 1
scansat Tue, 19 Feb 2069 04:08:49 GMT LO = 10750
locked: rf = 11752, if = 1002, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 732
locked: rf = 11753, if = 1003, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 730
locked: rf = 11754, if = 1004, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 730
locked: rf = 11755, if = 1005, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 730
locked: rf = 11756, if = 1006, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11757, if = 1007, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11758, if = 1008, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 726
locked: rf = 11759, if = 1009, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11760, if = 1010, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11761, if = 1011, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11762, if = 1012, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11763, if = 1013, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11764, if = 1014, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11765, if = 1015, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11766, if = 1016, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11767, if = 1017, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728
locked: rf = 11768, if = 1018, sr = 26031, lnb = 0 (U), fec = 0 (1/2), ss = 728

```

```
Telnet 192.168.0.250
DATASTORM % showmotors
DEFINED LIMITS
AZ: 7267 EL: 1649 SK: 1089
MEASURED LIMITS
AZ: 7264 EL: 1624 SK: 1166
ORIGIONS
AZ: 33 EL: 14 SK: 581
STOWS
AZ: 33 EL: 0 SK: 0
RESOLUTIONS
AZ: 19.91111 EL: 11.37778 SK: 5.734033
OFFSETS
AZ: 0 EL: 72.5 SK: 90
STATE OF MOTOR FLAGS
RF Signal: LOW
Over Current: LOW
Motor Limit: LOW
Motor Over Current Spike: LOW
Motor Stall: LOW
Motor Stopping: LOW
Motor Aborted: LOW
UCBSTATE: 0000
FLAGS: 0000
MOTOR: 0
MaxCurrent: 7.1756e+16. Time Over Current 0.
Current Timeout: 0
The dish is stowed: TRUE
Motor Active: FALSE
Count is Ualid: TRUE
AZ: Count: 35 Stow: 33 Tolerance 5 In Tolerance: TRUE
EL: Count: 0 Stow: 0 Tolerance 3 In Tolerance: TRUE
SK: Count: 0 Stow: 0 Tolerance 2 In Tolerance: TRUE
DATASTORM %
```

```
Telnet 192.168.0.250
DATASTORM % testhalt
Halt line set to High.
Line HIGH.
Halt Line set to Low.
Line LOW.
```



```
Telnet 192.168.0.250
DATASTORM % gps
    version = 8
    # sats = 6
    max # sats = 7
first sat time = 17 sec
    lock time = 17 sec
    temp = 73.39999
1 of 1000
    version = 8
    # sats = 6
    max # sats = 7
first sat time = 17 sec
    lock time = 17 sec
    temp = 73.39999
2 of 1000
    version = 8
    # sats = 6
    max # sats = 7
first sat time = 17 sec
    lock time = 17 sec
    temp = 73.39999
3 of 1000
    version = 8
    # sats = 6
    max # sats = 7
first sat time = 17 sec
    lock time = 17 sec
    temp = 73.39999
4 of 1000
    version = 8
    # sats = 6
    max # sats = 7
first sat time = 17 sec
    lock time = 17 sec
    temp = 73.39999
5 of 1000
-
```

```
Telnet 192.168.0.250
DATASTORM % sensors

Mount Sensors:

[HARDWARE]
  tuner version = 5
  hardware version = 8
  XF2 or XF3 mount.
  Mount Limits EL: 1 0 1  AZ: 1 1 1

[GPS and COMPASS]
  visible satellites = 4
  longitude = -111.9643
  latitude = 40.72929
  altitude = 4267.389
  velocity = 0.06213712
  error -43 while getting ' heading'
  heading = 211.6

[A2D]
  error -43 while getting ' vmon33'
  vmon5 = 5.000488
  vmon12 = 8.347982
  temp = 68

[TILT]
  skew = 0.005833685
  elevation = 0.1736678
  Skew Tilt Compensation = 0.4451058

[SWITCHES]
  heater = off
  vs33 = on

[Sat Monitor]

  The Sat Monitor is working properly.
  Modem State 4.

[Lower Control Board Info]

  ADC0      386
  ADC + Gain 402
  Volts In   15.09238
  Tuner Volts 11.73047
  Tuner Amps 0.2461913
  Rec Volts  12.6457
  LNB Volts  16.99629
  LNB chip   4C
1 of 1
DATASTORM % _
```

```

Telnet 192.168.0.250
DATASTORM % showsattable

Dynamic Satellite Table Entries.
LO = 10750 Vertical
LONG      RF      IF      S RATE  NAME
89.00W    12160  1410   30000  Intelsat 8 89W U
91.00W    12060  1310   26700  Galaxy 11 91W U
87.00W    11820  1070   10000  AMC 3 87W U
87.00W    11736  986    6109   AMC 3 87W U
93.00W    12076  1326   8687   Intelsat 6 93W U
95.00W    12057  1307   30000  Galaxy 3C 95W U
83.00W    12140  1390   30031  AMC 9 83W U
97.00W    12115  1365   22425  Intelsat 5 97W U
99.00W    12100  1350   30000  Galaxy 4R 99W U
79.00W    11743  993    11125  AMC 5 79W U
101.00W   12120  1370   30000  AMC 4 101W U
103.00W   11940  1190   20000  AMC 1 103W U
74.00W    11884  1134   13250  SBS 6 74W U
105.00W   11840  1090   26000  AMC 15 105W U
72.00W    11840  1090   25343  AMC 6 72W U
71.80W    11975  1225   17910  Nahuel 1 71.8W U
111.09W   11870  1120   10007  Anik F2 111.1W U
111.09W   11830  1080   7304   Anik F2 111.1W U
113.00W   11820  1070   20015  SatMex 6 113.0W U
116.80W   11977  1227   30000  SatMex 5 116.8W U
61.00W    12132  1382   30000  AMAZONAS 61W U
61.00W    11860  1110   20400  AMAZONAS 61W U
118.80W   11720  970    26031  AMC 16 118.8W U
58.00W    11860  1110   30000  PAS 9 58W U
58.00W    11980  1230   30000  PAS 9 58W U
121.00W   11899  1149   20000  EchoStar 9 121W U
123.00W   11800  1050   26700  Galaxy 10R 123W U
127.00W   12140  1390   30000  Horizons 1 127W U
129.00W   11880  1130   30000  Intelsat 7 129W U
45.00W    11788  1038   10000  PAS 1R 45W U
43.00W    12583  1833   27500  PAS 6B 43W U
30.00W    12270  1520   27531  Hispasat 1C 30W U
30.00W    12591  1841   30000  Hispasat 1C 30W U
15.00W    12524  1774   26500  Telstar 12 15W U
8.00W     12649  1899   27531  Atlantic Bird 2 8W U
5.00E     11820  1070   24531  Sirius 3 5E U
10.00E    12631  1881   5640   Eutelsat W1 10E U
13.00E    12266  1516   27531  Hotbird 1 13E U
169.00E   12281  1531   27531  PAS 2 169E U
166.00E   12644  1894   28060  PAS 8 166E U
19.20E    12286  1536   27531  Astra 1C 19.2E U
160.00E   12519  1769   22500  Optus B1 160E U
23.50E    12526  1776   27531  Astra 1D 23.5E U
156.00E   12367  1617   27800  Optus C1 156E U
28.20E    12090  1340   27531  Astra 2A 28.2E U
152.00E   12407  1657   30000  Optus B3 152E U
36.00E    12561  1811   3254   Eutelsat Sesat 36E U
122.19E   12428  1678   20015  AsiaSat 4 122.2E U
105.50E   12596  1846   30000  AsiaSat 3S 105.5E U
95.00E    12715  1965   5003   NSS 6 95E U
DATASTORM %

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