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New Satellite Based Commissioning

What is Satellite based commissioning? Simply put it’s the ability to connect, communicate, download, and ‘turn on’ your DirecWay modems via your satellite uplink. The case used to be that modem setup had to be done via a land based communication line like a telephone connection or a home broadband network. This was not an issue until the advent of the DataStorm Internet Anywhere system. The DataStorm provided total mobility to mainly people in RV’s who needed high-speed Internet access on the road wherever they went. Finding a land based communications line was a large problem based on this situation; this has now changed completely.

The D2 and DW6000 combination provides a complete ‘wire free’ environment. This is the first solution of its kind to give absolute control and expandability to mobile users everywhere. Please refer to this information often as a thorough DataStorm reference. This guide will also show you how to setup and commission your D2 and DW 6000 modem through your DataStorm system.

*[Apple, Linux, and other tutorials will soon follow with detailed instructions on how to do this]*

MotoSAT is excited and confident about this new step in the DataStorm’s evolution. Mobile Satellite based Commissioning is the future of the DataStorm system. MotoSAT acknowledges and thanks the efforts of you; all the DataStorm users in the field. Welcome to Satellite based Commissioning.

This is the new MotoSAT.
Setting Up Your Computer for Satellite Based Commissioning

Satellite based commissioning is now the most common way of setting up your DW6000 modem. This section involves setting up your computer for satellite based commissioning. Refer to it often for any questions you may have.

* [Apple, Linux, and other tutorials will soon follow with detailed instructions on how to do this]

Step 1 - Click the ‘Start’ button, then ‘Control Panel’

Step 2 - Click the ‘Switch to Classic View’ option to show all options in the Control Panel [IF NOT DONE ALREADY]
Step 3- Double Click the ‘Network Connections’ icon

Step 4- Right click your network connection that you have hooked into your switch or router and click on ‘Properties’
Step 6 - You now must input addresses so that your computer can talk to the DW6000 & D2. Make sure that the ‘Use the following IP addresses is selected in order to input settings.
• The IP address must be; 192.168.0.2
• The subnet will be 255.255.255.0;
• The Gateway will be 192.168.0.1
• The DNS portion will be: 66.82.4.8, 66.82.4.12

Click ‘OK’ when the changes are made in order for the computer to make the changes. It might take a minute for the computer to change so be patient.

Click ‘OK’ again and then close all open windows.

YOU NOW MUST OPEN A BROWSER WINDOW TO CONNECT TO THE D2
Setting the D2 to Connect to a Satellite for Commissioning

The D2 must now be setup to find a satellite for the DW6000 to be commissioned on. The following table and steps will show you how to setup for this process:

**Step 1**- Open your browser and type in the address of the D2: 192.168.0.250. Upon bringing up the D2’s main page, click the ‘CONFIGURATION’ link to go to the configuration page to setup the satellite settings.

This is the satellite commissioning table you may use as a guide for choosing which satellite to connect to. IT DOES NOT MATTER WHICH SATELLITE YOU CHOOSE TO CONNECT TO. THIS PORTION IS ONLY FOR CONNECTING AND DOWNLOADING YOUR SPECIFIC SETTINGS WHICH ARE PRESET BASED ON YOUR SAN NUMBER.

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<td>SM5 - 117°W</td>
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<td>30000000</td>
<td>Vertical</td>
<td>Horiz.</td>
<td>31</td>
<td>Partial</td>
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</tbody>
</table>
Setting the D2 to Connect to a Satellite for Commissioning

The D2 must now be setup to find a satellite for the DW6000 to be commissioned on. The following table and steps will show you how to setup for this process:

**Step 2**- Using the Satellite Commissioning Table, apply the following settings by placing the settings of the table into the the appropriate boxes below.

1. **Leave the Satellite System as ‘GENERIC’**
2. **Choose any Satellite Longitude from the table**
3. **Using the table choose the corresponding frequency based on your satellite longitude choice**
4. **Leave the symbol rate as the default value**
Setting the D2 to Connect to a Satellite for Commissioning

The D2 must now be setup to find a satellite for the DW6000 to be commissioned on. The following table and steps will show you how to setup for this process:

**Step 2-** Using the Satellite Commissioning Table, apply the following settings by placing the settings of the table into the the appropriate boxes below.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RX Polarization</td>
<td>Vertical</td>
</tr>
<tr>
<td>TX Polarization, Signal Quality Threshold, and Isolation Optimization</td>
<td>Defaulted values</td>
</tr>
<tr>
<td>Azimuth Search Window</td>
<td>0</td>
</tr>
<tr>
<td>Elevation Search Window</td>
<td>0</td>
</tr>
<tr>
<td>Motion Slow</td>
<td>Disabled</td>
</tr>
<tr>
<td>Manual Compass</td>
<td>Enabled</td>
</tr>
<tr>
<td>Compass</td>
<td>265</td>
</tr>
</tbody>
</table>

Choose ‘Vertical’ for the RX Polarization for ANY satellite choice.

Leave the TX Polarization, Signal Quality Threshold, and Isolation Optimization as their defaulted values.

Because calibrations have not yet been done, enable the D2’s manual compass heading and give it a value based on a heading in degrees [North=360° & 0°; East=90°; South=180°; West=270°]

After double checking your new settings with your chosen satellite on the Satellite Commissioning Table, click ‘UPDATE SETTINGS’ to make all your changes take effect. Then click ‘SYSTEM STATUS' in the left hand blue function bar to go to the main system status screen.

YOU NOW MUST OPEN ANOTHER BROWSER WINDOW TO CONNECT TO THE DW6000
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 1-** You should already have your D2 windows open to the ‘System ‘Status’ page and all the settings applied. If not, please refer to the previous section. If you do need to get to the D2 type 192.168.0.250 into a browser window. Now open another browser and type 192.168.0.1 to get into the DW6000 main page. Your computer screen should somewhat like the image below at this point with two browser windows open:

The DW6000 has software on it you can communicate with like you are doing here. The purpose of this software is to confirm settings, commissioning, connectivity, and many other things. The DW6000 also has many settings reserved for installing and satellite based commissioning. When performing commissioning via a satellite uplink you MUST access these functions. The next step involves all this and more
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 2** - With the DW6000 page open you now must access its commissioning functions. On the DW6000 status page type the following into the address bar: http://192.168.0.1/fs/advanced/advanced.html

This will bring up the Advanced Options page

This advanced page is the satellite based commissioning 'heart' of the DW6000. Many statistics are found here as well as special installer functions.

Now click the ‘Setup’ link towards the bottom of this advanced options page
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 3**- Upon clicking on the ‘Setup’ link, another window will appear showing 5 link options. These options are in a descending order with the first item to complete at the top. Click the first link at the top ‘Registration-Installer’ to start the process:

---

**DON’T FORGET THE D2!** The main purpose of this portion of commissioning is to pull up a special ‘Signal Strength’ meter in order to find the satellite. The D2 in its ‘Generic’ mode is not able to see the necessary Signal Quality to peak up and connect to any satellite. In generic mode the D2 will peak on ANY signal for 1-3 minutes then automatically keep searching. This Signal Strength meter you are attempting to open will assist you on stopping the D2 when the meter’s color goes into a green color. If you don’t stop the D2, it will pass up the correct satellite and continue searching.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

Step 4- After click the ‘Registration-Installer’ link, another process will start in the following order below to collect information about your location and desired satellite you wish to connect to. Remember this process was designed for a FIXED non-mobile location. DirecWay’s business consists of primarily stationary fixed systems and their software reflects this. All the DataStorm needs a bit of tweaking to get this all to work:

Enter your CURRENT zip code and click ‘Next’

The Latitude and Longitude based on your zip you gave are shown here. Click Next.

This is the option where you choose the satellite you want to commission on. Choose the satellite from this list that matches the satellite you choose from the satellite commissioning table. This is the satellite you also entered into the D2. You may just switch to the open D2 page and click ‘Configuration’ to double check the Satellite Longitude and Frequency. For example if the D2 says its satellite longitude is 91W and frequency is 1350, simply switch back to this DirecWay option page and choose G11_1350_20K as your choice here. Now click ‘Next’.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

Step 4 Cont. - After click the ‘Registration-Installer’ link, another process will start in the following order below to collect information about your location and desired satellite you wish to connect to. Remember this process was designed for a FIXED non-mobile location. DirecWay’s business consists of primarily stationary fixed systems and their software reflects this. All the DataStorm needs a bit of tweaking to get this all to work:

Confirm you satellite choice here and click ‘Next’

This page is where you can now pull up the Signal Strength Meter. This page will also be where you must ‘Cross-Pol’ in order to connect to the satellite after finding it via the D2. At this point click the ‘Display Signal Strength’ button. When this little window appears it will look very familiar. This is the meter you will use to stop the satellite via the D2 when you have sufficient signal strength. Now go ahead and minimize the main DirecWay browser windows leaving only the D2 and small Signal Strength meter windows open as shown below:
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 5** – With these two windows your main focus, you’re now ready to find the satellite via the D2. Make sure you keep both the D2 window and the Signal Strength BOTH in full view in order to find the satellite. On the D2 page click ‘Search’ on the System Status page to launch the DataStorm.

**Step 6** – The DataStorm will now search the sky for your configured satellite. This process may take anywhere from 4 minutes up to 10 minutes to find the appropriate satellite. You will know when the satellite is found because the Signal Quality meter will go from red to green as shown below. You can let the signal peak for 15-20 seconds then use the D2 screen to stop the satellite using the ‘Stop’ button.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 7** – With the DataStorm locked and stopped on signal, you can now ‘Cross-Pol’ to connect to the satellite and complete the commissioning. From the D2 page you have to now switch to the DirecWay options page.

**Step 8** – On the DirecWay options page where you opened the Signal Strength bar, now click ‘Next’ to perform an automatic Cross-Pol.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 9** – On the automatic cross-pol page, click the ‘Automatic’ button. This will initiate and open a smaller window where an ‘Auto Cross-Pol’ will be performed.

Cross-Pol is the means whereby the DataStorm connects to the satellite. They’re two options on the DirecWay page for cross-pol: Manual and Automatic. The manual option is a way to test the connection to the satellite for cross-pol. A manual test will test over and over with a pass/fail grade after a completed test. The automatic option is the method the DataStorm actually connects to the satellite via cross-pol. If an automatic test comes back with a ‘Pass’ result grade a connection will be established.

**Step 10** – Once cross-pol is passed, close the Cross-Pol Test window and click ‘Next’. You will now start the software commissioning of the DW600. To connect to the registration server simply leave all options at default here and click ‘Next’. This will start the download of keys and software to the DW6000.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 11** – After the preliminary downloads are complete a subscriber agreement will appear that will need to be agreed upon by having the end-user click the ‘I Agree’ button at the bottom of the agreement.

**Step 12** – After having clicked the ‘I Agree’ button, you will be taken to the official Registration page. Here, you will enter your acquired SAN Number and Pin number you have received from your ISP. After entering these numbers and clicking the ‘Continue’ button, another download will take place.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 11** – After the preliminary downloads are complete a subscriber agreement will appear that will need to be agreed upon by having the end-user click the ‘I Agree’ button at the bottom of the agreement.

**Step 12** – After having clicked the ‘I Agree’ button, you will be taken to the official Registration page. Here, you will enter your acquired SAN Number and Pin number you have received from your ISP. After entering these numbers and clicking the ‘Continue’ button, another download will take place.
Commissioning the DW6000

With your Computer and the D2 setup, you can now start the DW6000 commissioning process. You will need to have TWO browser windows open in order to complete the commissioning. The following steps will outline this process:

**Step 13** – Upon the completion of the Registration portion, you will receive a confirmation page where vital settings will be given to you regarding the setup and configuration of your computer and the D2. This SAN confirmation page is necessary for everything you do from this point on. We recommend you print or write down the information on this page. Clicking ‘Continue’ will show a confirmation page explaining you have completed registration.

Please refer to the Appendix for information on how to perform an ‘NVLCEAR’. This will default all the settings on the D2 back to their previous state.

Please continue on to setting up your computer to talk to the D2.

STOW THE DISH & CLOSE ALL BROWSER PAGES
Setting Up Your Computer to Talk with the DW6000

Your computer must have specific settings to not only ‘talk’ to the DW6000, but also surf the internet after finding and connecting to the satellite. Follow these steps in order to be able to do this.

Step 1- Click the ‘Start’ button, then ‘Control Panel’

Step 2- Click the ‘Switch to Classic View’ option to show all options in the Control Panel [IF NOT DONE ALREADY]
Setting Up Your Computer to Talk with the DW6000

Step 3- Double Click the ‘Network Connections’ icon

Step 4- Right click your network connection that you have hooked into your switch or router and click on ‘Properties’
Step 6 - You must now add an IP address to access the 6000 and the internet. Refer to your SAN confirmation sheet and enter an IP ONE ABOVE the IP on your SAN confirmation sheet (i.e., if the IP given is 55.77.43.123, the IP you should enter here is 55.77.43.124). The IP on the confirmation sheet is also the IP address on your DW6000 modem. The subnet will be 255.255.255.252.

Open up your browser and type in the DW6000’s IP address to access the DW6000 information page and to test your settings changes.

If you cannot connect, simply run through and confirm these steps and double check your SAN confirmation sheet.
Connecting the D2 & Your Computer

To initially talk to the D2 you must make sure both your computer and the D2 are on the same page. This requires a bit of configuration on your computer. The following steps will guide you through how to make this change using Microsoft Windows*.

*Apple, Linux, and other tutorials will soon follow with detailed instructions on how to do this

**Step 1**- Click the ‘Start’ button, then ‘Control Panel’

**Step 2**- Click the ‘Switch to Classic View’ option to show all options in the Control Panel

[IF NOT DONE ALREADY]

**Step 3**- Double Click the ‘Network Connections’ icon

**Step 4**- Right click your network connection that you have hooked into your switch or router and click on ‘Properties’
Connecting the D2 & Your Computer

**Step 5** - Click the ‘Internet Protocol [TCP/IP]’ option, then click ‘Properties’

**Step 6** - Now click the ‘Advanced’ Button

**Step 7** - Click the ‘Add’ button under IP Address to add another IP address

**Step 8** - You now must input address’ the enable the D2 and your computer to talk. Make sure that the ‘Use the following IP address is selected in order to input settings.
- The IP address will be 192.168.0.10;
- The subnet will be 255.255.255.0;
- There will not be a Gateway;

Click ‘OK’ when the changes are made in order for the computer to make the changes. It might take a minute for the computer to change so be patient.

Click ‘OK’ again and then close all open windows.
Connecting the D2 & Your Computer

**Step 9-** You do not need to add an extra Gateway

**Step 10-** After confirming all changes click the ‘ok’ button to set the changes. Click it once more on the TCP/IP window to accept all setting changes. Now click close on the main connections window to have the computer make the changes.

**NOW PLEASE TURN OFF YOUR D2 POSITIONER, WAIT 10-30 SECONDS, AND TURN BACK ON**

Now open up your browser and type in the D2’s address [192.168.0.250] to access the D2 status page and to test you settings changes.

If you cannot connect, simply run through and confirm these steps.
Connecting the DW6000 & The D2

After commissioning the DW6000, the D2 must now be setup to ‘talk’ with the 6000 in order to find satellite and connect to the internet. First let’s setup the D2.

**Step 1**- Open up your Internet Browser and push the ‘Stop’ button. Now type in ‘192.168.0.250’ and click the ‘Go’ button or Enter on the keyboard.

**Step 2**- A webpage from the D2, like the one below, will then appear.

**Step 3**- Click the ‘CONFIG’ link on the functions bar at the left.
Connecting the DW6000 & The D2

**Step 4** - The ‘Configuration’ screen has many options. Simply follow this outline to setup a connection with the DW6000

- **The IP Address of the D2** must be 192.168.0.2
- **The subnet of the D2** must be 255.255.255.0
- **The satellite system of the D2** must be DirecWay
- **The Gateway must be left as 192.168.0.1**; the DNS can be left alone
- **The satellite longitude of the D2** must be what satellite your DW 6000 is commissioned to [Refer to the SAN confirmation page you received upon receiving you SAN Number]
Connecting the DW6000 & The D2

Step 4 Cont.- The ‘config’ screen has many options. Simply follow this outline to setup up a connection with the DW6000.

1. **Frequency**: Must be the frequency of the satellite you are commissioned to. [Refer to the SAN confirmation page you received upon receiving your SAN Number]

2. **RX Polarization**: Must be either Horizontal or Vertical depending on your satellite and frequency. [Refer to the SAN confirmation page you received upon receiving your SAN Number]

3. **When finished**, click the ‘Update Settings’ Button.

4. **YOU MUST NOW TURN ‘OFF’ THE D2, WAIT 10-30 SECONDS, AND TURN IT BACK ON FOR THESE SETTINGS TO TAKE EFFECT**
Connecting the DW6000 & The D2

**Step 5**- When the D2 has turned back on simply go to your internet browser, type 192.168.0.2 [the D2’s new updated IP address], and your new screen should look like this:

- **Signal Quality** instead on an ‘N/A’ rating should now show signal quality. If not please refer to the **Troubleshooting** section of this manual.

- **Under ‘Satellite’, all you settings should be reading actual ratings and not ‘N/A**

- **Under ‘System’ the Type should now say DirecWay instead of Generic**

**CALIBRATIONS MUST NOW BE DONE IN ORDER TO FIND THE SATELLITE**
Perform a Stow Dish

With the D2, the DW6000, and your computer now talking in unison, you need to perform a quick stow dish in order to start the DataStorm calibrations. Follow the steps below to perform a Stow Dish:

**Step 1**- Open your internet browser, and type 192.168.0.2. Click the Stow button to start the Stow dish routine.

This is the light combination you will see when the dish is stowing.

**Step 2**- When the dish has stowed, the ‘Stow’ light will come on. This indicates you are now ready to find satellite.

YOU ARE NOW READY TO PERFORM CALIBRATIONS
Calibrating Your Dish

With the setup and settings all complete, you must calibrate your DataStorm. The following steps will walk you through this process.

**Step 1** - Open up your Internet Browser and push the ‘Stop’ button. Now type in ‘192.168.0.2 and click the ‘Go’ button or Enter on the keyboard.

**Step 2** - A webpage from the D2, like the one below, will then appear.

**Step 3** - The calibrations are shown in order at the left. This manual will outline each of these individually. Click the ‘Calibrate Compass’ link on the functions bar at the left with it being the first calibration.
Calibrating Your Compass

With the setup and settings all complete, you must calibrate your DataStorm. The DataStorm reads compass by converting magnetic directions to incremental degrees [i.e. North=0° & 360°; East=90°; South=180°; West=270°]. Make sure you have a way to turn your vehicle 180°, keep you computer and dish powered while driving, and have a straight line for a point of reference The following steps will walk you through this process.

**Step 1** - Position your vehicle in a parking lot where you can find a straight line for a point of reference. Click Next.

**Step 2** - When you have lined your vehicle up parallel to your line of reference, make sure you have the ability to do a 180° turn. Click Next to take the first data measurement.

**Step 3** - After turning your vehicle 180° and aligning it parallel with your line of reference, click Next.

**Step 4** - Click Finish when you have completed the operation. Return to the System Status screen to confirm correct compass calibrations/perform another calibration.
Calibrating Tilt Sensors

There are **TWO** types of calibrations depending on the style of DataStorm F1 you may have. The first style involves the upper control board directly behind the dish face beneath the plastic cover between the mount’s arms. This board is about 1’ long and has many screws in it. The second style involves both the F1 & the F3 with a new design having the upper control board sitting directly on the base plate of the mount beneath the lower round cover. Each has a different way of calibrating the tile sensors.

**First Style Upper Control Board** - Behind the dish face

**Step 1** - Position your vehicle so that is as level as possible. Click Next.

**Step 2** - With the dish level, click Next to save the level position of the dish.

**Step 3** - Click finish once you have completed the operation and click Calibrate Dish to perform the final calibration.
Calibrating Tilt Sensors

There are TWO types of calibrations depending on the style of DataStorm F1 you may have. The first style involves the upper control board directly behind the dish face beneath the plastic cover between the mount’s arms. This board is about 1’ long and has many screws in it. The second style involves both the F1 & the F3 with a new design having the upper control board sitting directly on the base plate of the mount beneath the lower round cover. Each has a different way of calibrating the tile sensors.

Second Style Upper Control Board- On the base plate

Step 1- Position your vehicle so that is as level as possible. Click Configuration

Step 2- Scroll to the bottom of the Configuration page to the elevation origin

Step 3- Put 200 in as the number so the elevation origin now reads 200 counts

Step 4- Click ‘Update Settings’ to confirm this new setting and then click ‘Calibrate Dish’ to run the final calibration
Calibrating the Dish

The new D2 Positioner stores many functions that the previous D1 controller did not. A calibrate dish is not required except at installation. A calibrate dish is only needed to test motor functionality and integrity and not necessary for find satellite routines. If needed or if motor functionality needs to be tested, the following steps outline a Calibrate Dish.

**Step 1** - Position your vehicle so that is as level as possible. Click Next.

**Step 2** - With the dish level, click Next to start the dish calibration process.

**Step 3** - Click finish once you have completed the dish calibration operation and return to the System Status screen.

YOU ARE NOW READY TO FIND SATELLITE
Perform a Find Satellite

You are now ready to find satellite. Follow the steps below and watch for the lights combinations on the D2 and modems for a successful find satellite attempt.

**Step 1** - Open your internet browser, and type 192.168.0.2. Make sure your Signal Quality is showing [anything other than n/a]. Also the LNB, LAN, GPS, and STOW lights need to be on [Double check the D2 front panel to confirm this]. **Click** **FIND SATELLITE**

**Step 2** - When the dish is in the search mode, the ‘Ready’ and ‘Busy’ lights will blink. This indicates you are now finding satellite.
Perform a Find Satellite

Below are hardware descriptions of light combinations on the DW6000 and D2 that indicate stages of satellite connectivity.

- **On Signal**
- **Ranging**
- **Internet Enabled**

- **Search Mode**
- **Internet Enabled**
Perform a Find Satellite

When the Satellite is found and you connect, these are some of the status’ you will see:

<table>
<thead>
<tr>
<th>Standard Functions</th>
<th>Advanced Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status</td>
<td>Manual Motor Control</td>
</tr>
<tr>
<td>Configuration</td>
<td>Calibrate Compass</td>
</tr>
<tr>
<td>Product Registration</td>
<td>Calibrate Tilt Sensors</td>
</tr>
<tr>
<td>About DataStorm</td>
<td>Calibrate Dish</td>
</tr>
</tbody>
</table>

**Status Display**

- Signal Quality
- Signal Strength
- TX Status
- RX Status
- System Status

**Search**

**System**

- License: Not Licensed
- Type: DirectWay
- Gateway: 192.168.9.1
- ESN: 429496729

**GPS Information**

- Satellite Longitude 91W
- Magnetic Azimuth 137.908
- True Azimuth 151.275
- Target Azimuth 41.7584
- Target Skew 40.14581

**SENSORS**

- Dish Elevation: -2.95948
- Dish Azimuth: 0
- Dish Skew: 0
- Motor Current: 0
- GPS Altitude: 4172.698
- GPS Latitude: -49.71571
- GPS Longitude: 111.5482W
- GPS Heading: n/a
- GPS Velocity: n/a mph
- Elevation Tilt: 2.620161
- Skew Tilt: 0.3308312
- Magnetic Compass 265
- True Compass: 278.269
- Dish Temperature: 66.48402°F

**Internet Enabled**

- Internet Enabled
- Internet Enabled
Current Know Beta Issues [3.5.1 Beta]

• On instances when the D2 Cross-Pol’s [Connects] to the satellite, it can lock up and not respond

SOLUTION: POWER CYCLE THE D2 [TURN OFF FOR 10-30 SECONDS AND THEN TURN BACK ON]

• The D2 will turn off suddenly without warning and then turn back on by itself

SOLUTION: THERE ARE TWO PROBLEMS THIS COULD BE:
  • INSUFFICIENT POWER
    - MAKE SURE YOU ARE USING THE PROVIDED 12 VOLT 4 AMP POWER SUPPLY; THE 12 VOLT 2 AMP WILL CAUSE THE D2 TO TURN ITSELF OFF & ON INDICATING A INADEQUATE POWER PROBLEM
  • WRONG TCP/IP SETTINGS
    - THE D2 IS IN DIRECWAY MODE AND THE NETWORK SETTINGS YOU HAVE IN THE D2 ARE NOT COMMUNICATING WITH YOUR DIRECWAY MODEM. DO AN ‘NVCLEAR’ TO RESET THE D2 AND PLACE IN NEW NETWORK SETTINGS. REFER TO THIS MANUAL FOR HOW TO SETUP THE D2 CORRECTLY.

SOLVED BETA ISSUES

ISSUE • There is a power issue with some hardware components on the circuit board where the board may hold power from anywhere of 10 Seconds- 5 Minutes [THE BOARD WILL NOT TURN BACK ON AFTER BEING TURNED OFF.

SOLVED BY LOADING NEW CODE INTO THE D2. THIS PROCEDURE CAN ONLY BE DONE BY RETURNING YOUR CURRENT D2 FOR A RELOADED D2. PLEASE CONTACT MOTOSAT TO RETURN YOUR D2 AND RECEIVE AN UPDATED D2.
Troubleshooting the D2

• I cannot connect to the D2
Have You:
- Checked all wire connections?
- Checked your power plugs?
- Gone through the ‘Setting Up Your Computer to Talk with the D2’ section of this manual?

-Ping via the Command Line- This can determine if you have a computer problem or a wire problem.

Step 1- Go to the Start Button and go to the ‘Run’ command [or hit the windows key on your keyboard & the ‘R’ key]

Step 2- Type ‘cmd’ into the run line and click ‘ok’

Step 3- Type in’ ping 192.168.0.[250 if no changes have been made to the D2 yet, 2 if you have made the IP change to talk to the modems] and hit ‘Enter’ on the keyboard. A response should appear in 4 lines. If so, reboot your computer and try to connect again to the D2. If the response gives a ‘Timeout’ check through the above lists and double check your settings.
Troubleshooting the D2

- I cannot connect to the D2
  - NVCLEAR-Clear all the D2’s settings and start from scratch-
  - DO THIS ONLY IF NO OTHER OPTION PRESENTS ITSELF. THIS WILL
  NECESSITATE YOU TO GO BACK THROUGH THE MANUAL AND REDO ALL OF
  THE SETTINGS AND ADDRESSES.

Step 1- Turn off the D2 [if on]. Hold both the
Search and Stow buttons on the front together.
While still holding these buttons with one hand
toggle on the power. Now let go of the buttons
after toggling the power on. All indicator lights will
appear on the D2 through this process. All lights
staying on indicate an ‘nvclear’ is possible.

Step 2- Go to the Start Button and
go to the ‘Run’ command [or hit the
windows key on your keyboard &
the ‘R’ key]

Step 3-Type ‘telnet’ into the run line
and click ‘ok

Step 4-Now type ‘ open 192.168.0.250 and hit ‘enter’
Troubleshooting the D2

- **I cannot connect to the D2**
  - **NVCLEAR-Clear all the D2’s settings and start from scratch**
  - Do this only if no other option presents itself. This will necessitate you to go back through the manual and redo all of the settings and addresses.

**Step 5** - It should bring up a blank screen with a blinking line. Now hit the ‘enter’ key once or twice to bring up the ‘eth1%’ command line. You may type ‘help’ for a list of commands [ALL COMMANDS WILL BE DOCUMENTED AT A LATER DATE]. There should only be 6 options. One of those should be a command called ‘nvclear’. **NVCLEAR will erase all setting changes if executed!**

**Step 6** - Upon typing ‘nvclear’ and pressing ‘enter’ on the keyboard, the following message will appear confirming the successful clearing of all settings:

```
eth1 % nvclear
Non-volatile ram cleared.
eth1 %
```

**Step 7** - Now turn off the D2 for 10-30 seconds, then turn it back on [If the D2 will not turn back on please refer to the BETA ISSUE LIST for help on how to rectify this problem].

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THIS GUIDE IS A PRELIMINARY BETA TROUBLESHOOTING GUIDE AND WILL BE UPDATED AS NEW STEPS TO RECTIFY PROBLEMS ARE TESTED.
DW6000, D2, and Computer IP Guide [Single Computer]

• DW6000 Settings [Single IP]
  WAN
  IP-i.e. 67.44.88.60 [See your SAN confirmation sheet for actual IP's]
  SUBNET-255.255.255.252
  LAN
  IP-192.168.0.1
  SUBNET-255.255.255.252

• D2 Settings
  LAN
  IP-Starting IP[Commissioning]-192.168.0.250 [Default; also IP after ‘nvclear’] Changed IP[After Commissioning]-192.168.0.2
  SUBNET-255.255.255.0
  [The Gateway and DNS is not necessary]

• Your Computer’s Settings
  1st IP Configuration [for Internet access and DW6000 access]
  IP-i.e. 67.44.88.61 [One IP Above the DW6000 Address; See your SAN confirmation sheet for actual IP’s]
  SUBNET-255.255.255.252
  GATEWAY-i.e. 67.44.88.60 [the WAN IP of the DW6000]
  2nd [Advanced] IP Configuration [for D2 access]
  IP-192.168.0.10 [any number in-between]
  SUBNET-255.255.255.0
  GATEWAY-Not needed

PLEASE REFER TO YOUR INSTALLER OR SAN CONFIRMATION SHEET FOR ACTUAL IP SETTINGS ON YOUR MODEM DEVICE
DataStorm D2 Feature Definitions

**Control Cable**
- The LNB light is only active when attached to a modem. The system will not let you "Search" [find satellite] without the LNB active.
- [Solid]

**Power Supply**
- The LAN light is active when a LAN connection is detected.
- [Solid]

**Receive Cable to Modem**
- The GPS light is active when a GPS signal is received from the dish. (This light becomes active usually within 1-3 min. after turning on the D2)
- [Solid]

**Receive Cable from Dish**
- The READY light is active during a search routing [blinking], and when the system has cross-poled and is online [Solid].

**Power On/ Off Switch**
- The BUSY light is technically the light that denotes any kind of activity or communications with the D2. Its functions times are listed below:
  - During a Upper Control Board update [Blinking]
  - During a Search routine [Blinking]
  - During a Stow routine [Blinking]
  - This light should NEVER be solid

**Ethernet Port**
- The STOW light is active during a stow routine [blinking], and when the system has completely stowed [Solid].

**MotoSAT**
DataStorm D2 Installation

DataStorm D2/ DW6000 Hardware Setup Diagram

- Control Cable
- Receive Cable
- Transmit Cable
- Ethernet Cable
- Power Connection

Connection Plate at dish base

D2

Receive Cable

 Transmit Cable

DW6000 Modem

Receive Cable

Switch or Router*

Ethernet Cable

Computer

On/Off Switch

Control Cable

D2

Receive Cable

Transmit Cable

Ethernet Cable

Computer

*Router

Do not use the ‘WAN’ or ‘INTERNET’ port on a router when setting up the DW6000
DataStorm D2 Installation

DataStorm D2/ DW4020 Hardware Setup Diagram

Wireless Internet Options
Please contact a local wireless solution service for more information on wireless networking

- Control Cable
- Receive Cable
- Transmit Cable
- Ethernet Cable
- Power Connection