Satellite TV

Nomad | User Guide

v.7 **MotoSAT**

LM-05.18.05

NOMAD UNIVERSAL CONTROLLER
USER INSTRUCTIONS MANUAL

The NOMAD Universal Controller gives all new meaning to the word simplicity with its easy one step process this revolutionary product will bring satellite TV technology to new heights.

Table of Contents:

NOMAD Universal Controller Bill of Materials:

The NOMAD Universal Controller Systems (when shipped with a mount of choice) are shipped with the following components:

Components shipped with NOMAD Controller:
- NOMAD Universal Controller
- 12 VDC 4 AMP Power Supply
- NOMAD Universal Controller User Manual

Components shipped with your mount of choice:
- 30' Control Cable
- 30' Coax Cable


NOMAD Universal Controller Specifications:

- 10 7/8" Wide by 9 ¾" Deep by 1 1/16" Height
- Voltage Requirements: 12VDC 4 AMP power supply (supplied)

Using the NOMAD Universal Controller

- **Dish Pro 500 (300,500,800) Series Receiver(s) are a required component when using the Model MD500.**

First Time Installation:

1- Plug in all necessary cable connections to the back of the NOMAD (see pg 6).
Note: Plugging the receiver and NOMAD controller into an independent power strip is recommended.

2- Connect coax from NOMAD to Mount.

Mount Base Connections

Control Cable

Coax 1

Coax 2 [Covered]

Connect Coax Here
(Labeled "To Nomad)
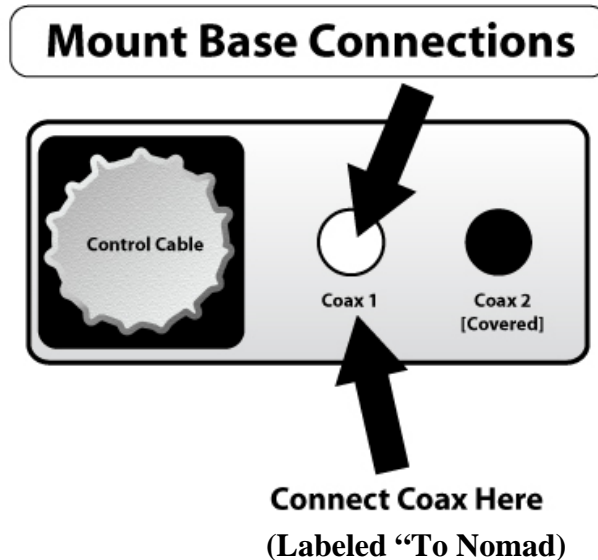
3- Set the dip switches to match your specific mount model whether it is a Skewable or Non-Skewable (see pg. 8-9 for specific settings.)

4- To run the **"MANDATORY"** Test Dish function, set dip switch #1 to the ON or UP position, (**Note:** For non-skewable single LNB dishes, 1 and 3 must be "ON") then turn the Power Switch to the ON position on the NOMAD controller. There will be an approximate 15 second delay and the Stow LED will begin to flash, indicating that the dish is moving. At the completion of the Test, the Stow LED will go steady. The total Test Time is up to 3 minutes. During the test cycle the Nomad will run the mount to all extremes and then return it to the stowed position.

"CAUTION" – TEST DISH ON A _NON-SKEWABLE_ MOUNT MUST HAVE SWITCH # 3 IN THE _ON_ POSITION.

The purpose of the **"MANDATORY"** test dish:

> **A-** Automatically determines if the non-skewable mount is a Dome or Open Face dish. (See pg 8, 9 for **"specific"** dish switch settings)

> **B-** Checks to ensure proper working order of all (Elevation, Azimuth, Skew) motor functions.

5- Upon successful completion of the Test Dish function, turn "OFF" the Power Switch and set the dip switches to identify your specific mount (skewable or non-skewable) and satellite service settings such as, Dish Network, Dish 500 (2 LNB), DirecTV, Direct HDTV (3 LNB), Bell ExpressVu (2 LNB) or Star Choice. (See pg. 8, 9 Dish Services: Options & Configurations.)

6- After properly setting the dip switches for your application, turn "ON" the Power Switch on the rear panel of the NOMAD Universal Controller. Start up will take approximately 5 seconds. **Note:** When the Power Switch is turned "ON" the PWR (power), LNB and STOW LEDS will be lit.

NOMAD UNIVERSAL CONTROLLER "FRONT" PANEL

BUTTONS:

FIND: (Find Satellite)
Pressing the Find button will begin the dish "search" to locate and lock onto the "main" satellite.
For non-skewable single LNB dishes pressing the Find button, while on satellite enables you to switch between multiple satellites. For example: (Pressing the find button while locked onto
- Dish Network will toggle between satellites 119 and 110.
- DirecTV will toggle between satellites 101, 110 and 119.
- Bell ExpressVu will toggle between satellites 91 and 82.
- Star Choice will toggle between satellites 107 and 111.*

*Coming soon

<div style="border:1px solid black; padding:10px;">

Dish Services and their Assigned Satellites

1. Dish Network – Can use satellite(s) 119 & 110
2. DirecTV – Can use satellite(s) 101, 110 & 119
3. Bell ExpressVu – Can use satellite(s) 91 & 82
4. Star Choice – Can use satellite(s) 107 & 111

</div>

REPEAK – *Skewable Mounts ONLY* **-** Pressing the Find button, when "on satellite" and the signal strength shows weakness, will re-peak the dish for a higher signal quality when using the twin LNB skewable dish model(s) MD500 or triple LNB MDHDTV **ONLY**. (**Note:** Single LNB non-skewable dishes "re-peak" during satellite transition.)

STOW: (Stowing the Dish)
Pressing this button returns the dish to its stowed or travel position.

LED'S:

LNB: When lit, this LED indicates the coax cable from the receiver has been correctly connected to the NOMAD Universal Controller, and the receiver has power. (**Note:** The LNB LED is illuminated once the coax cable of the receiver has been connected, but does **NOT** indicate the Controller has power).

LOCK: When lit, this LED indicates the "strongest" or "highest" signal strength of the satellite has been achieved.
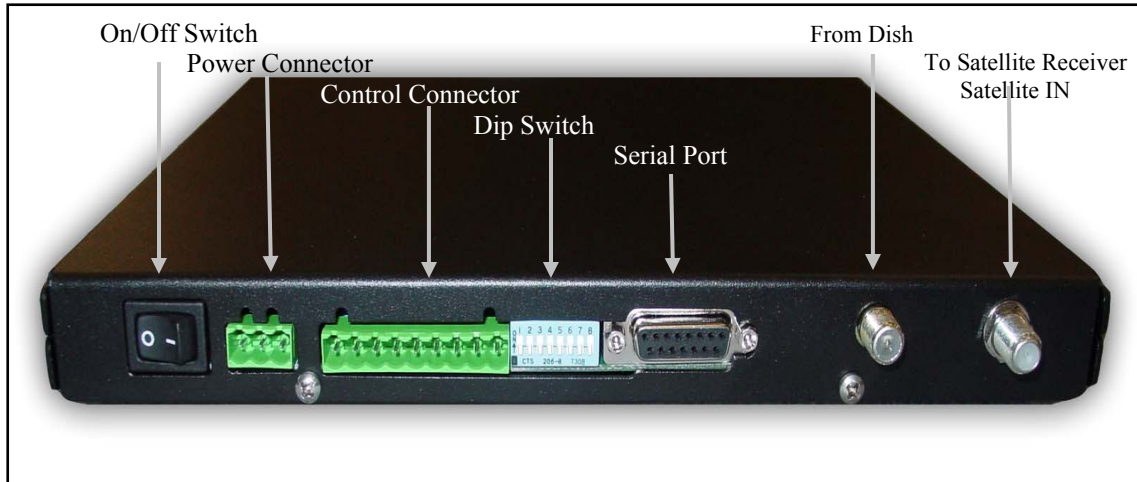
PWR: When lit, this LED indicates the NOMAD Universal Controller power has been turned on.

PEAK: When lit, this LED indicates the dish has found a signal and is adjusting for the "strongest" or "highest" signal strength of the satellite.

FIND: When the "Find" button has been pressed, the Find LED will blink until a satellite has been identified and can establish a connection. Once the satellite has been identified, the Find LED will remain solid. (The Stow LED also blinks indicating motor movement.) If the Nomad is locked on the satellite, pressing the "Find" button again will activate a re-peak routine which will verify the dish alignment to the satellite for optimum signal level for skewable dishes (MD500 and MHDTV). Pressing the Find button on non-skewable dishes (Dome and Executive) allows you to switch between satellites.

STOW: When the "Stow" button has been pressed, the Stow LED will blink indicating motor movement as the dish is being stowed. Once the dish has been stowed, the Stow LED will remain solid.
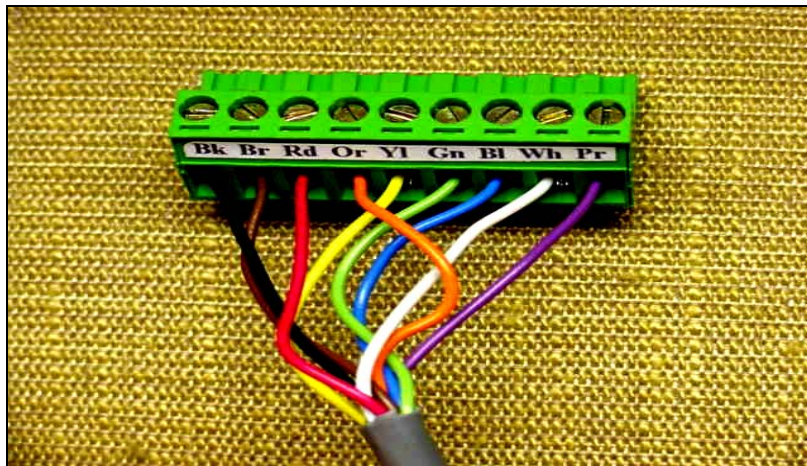
NOMAD UNIVERSAL CONTROLLER "REAR" PANEL

On/Off Switch
Power Connector
Control Connector
Dip Switch
Serial Port
From Dish
To Satellite Receiver
Satellite IN

Power Switch: Depressed, the "**1**" indicates the controller is in the "**ON**" position. Depressed, the "**0**" indicates the controller is in the "**OFF**" position.

Power Supply Interface: Is used to connect the 12 VDC **4 AMP** power supply to provide power to the NOMAD Universal Controller. (**Note:** Only use the power supply provided by MotoSAT or a power source known to have at least a 4 Amp min.)

P1   P2   P3
+12V   -GND   Unused
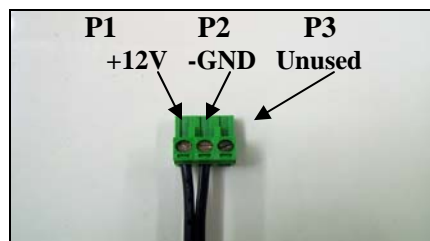
Control Cable Interface: Connects the mount by way of a 9 pin conductor cable to the NOMAD Universal Controller. The cable is color coordinated for exact connection configuration. (See Figure Below)

> **Wiring to 9 Pin Control Connector**
> Black-Brown-Red-Orange-Yellow-Green-Blue-White-Purple
> (Purple is only used on Skewable Mounts, and not required on Non-Skewable Mounts)


Serial Port: Used to provide software upgrades.

From Dish: Coax connection from the dish to the NOMAD Universal Controller.

To Satellite "IN" on Receiver: Coax connection used to connect the NOMAD Universal Controller to the satellite/LNB connection on the satellite receiver.

Dip Switches: Will provide precise configuration of the NOMAD Universal Controller to specific satellite TV configurations.

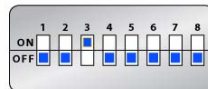> **"Caution"** - **Power must be turned off before changing Dip Switch settings!**

Dip Switches

Dish Services: Options & Configuration

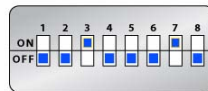## Dip Switch Guide

NOMAD
UNIVERSAL CONTROLLER
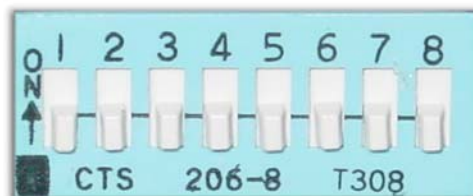
Non-Skewable Dish Services [3 Must be Always ON]
These settings are used for specific services using a
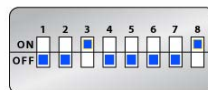non-skewable dish only [i.e. MiniDome, Executive, Etc]

Dish Network [3 ON]
Use this setting to run Dish Network on a
non-skewable dish.
[Dish Network is Sat. 119 for a single LNB system]
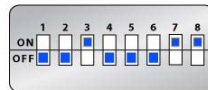
Bell ExpressVu [3 & 7 ON]
Use this setting to run Bell ExpressVu
on a non-skewable dish.
[Bell ExpressVu is Sat. 91 for a single LNB system]

DirecTV [3 & 8 ON]
Use this setting to run DirecTV on a non-skewable dish.
[DirecTV is Sat. 101 for a single LNB system]

COMING SOON
Star Choice [3, 7 & 8 ON]
Use this setting to run Star Choice on a non-skewable dish.
[Star Choice is Sat. 107 or 111 for a single LNB system]

Skewable Dish Services
These settings are used for specific
services using a skewable dish only
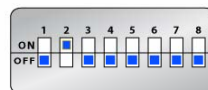
**Dish Network 500
[2 ON]**
Use this setting to run Dish Network on a
skewable dish.
[Dish Network is Sat. 110 &119]

Bell ExpressVu [2, 7 ON]
Use this setting to run Bell ExpressVu
on a skewable dish.
[Bell ExpressVu is Sat. 82 & 91]

DirecTV HDTV [2 & 8 ON]
Use this setting to run DirecTV HDTV service, on a skewable dish.
[DirecTV HDTV is Sat. 101, 110, and 119]

COMING SOON
Star Choice [7 & 8 ON]
Use this setting to run Star Choice on a skewable dish.
[Star Choice is Sat. 107 & 111]

MotoSAT
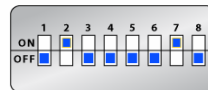Advanced Mobile Satellite TV/ Internet Solutions

Dipswitch Operation: Options & Configuration

Dip Switch Guide

ⓞ N O M A D
UNIVERSAL CONTROLLER

Options & Configuration
These specific settings may be used together and in conjunction with the service settings

Test Dish Once [1 ON]
Use this setting to run a test dish.
NOTE: The 3rd switch must be ON for non-skewable dish tests!

Test Dish Continuously [1 & 2 ON]
Use this setting to run a continuous test dish. [Dish will continually run the test dish until power is off and the setting is changedafter a complete test and stow].
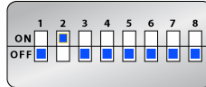**NOTE: The 3rd switch must be ON for non-skewable dish tests!**

Show Mode [4 ON]
Use this setting to run a fake find satellite. Good for display purposes.
NOTE: The 3rd switch must be ON for non-skewable dish tests!

Disable Auto Stow [2 ON]
Use this setting to disable the auto stow features

Single LNB Non-Skewable Switch [3 ON]
Use this setting to run the Nomad on non-skewable single LNB dishes.
[Also necessary for non-skewable dish tests]

Example Configurations
These are examples of various types of configurations for the Nomad
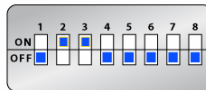
Executive-Dish Network
This is a non-skewable Dish Network dish that has disabled the Auto-Stow feature
[2, 3, ON]
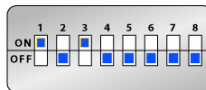
Dome-Test Dish
This is a non-skewable dish that is being tested
[1, 3, ON]

MD500-Bell Express Vu
This is a skewable Bell Express Vu dish that has disabled the Auto-Stow feature
[2, 7, ON]

MotoSAT
Advanced Mobile Satellite TV/ Internet Solutions

TROUBLESHOOTING

> **"CAUTION"** – The dish needs to be STOWED and the Power Switch has to be in the OFF position before switching any of the dip switches.

LED ERROR CODES
- Probable Cause and/or Resolution:

NOMAD
Universal Controller

Error Code Matrix

LED Lights Flashing

Power	Peak	Lock	Find	Stow	Cause of Error
X					Invalid Dip Switch. Skewable vs Non-Skewable mount
X		X			Invalid Network ID
X	X				Motor time out. No counts with Azimuth motor.
X	X	X			Limit error - Elevation movement
X			X		Limit error - Skew movement
X		X	X		No DVB power but DVB connected
X	X		X		Main satellite not found but secondary satellite found / ALSO _NO_ SATELLITES FOUND
X	X	X	X		Signal lost, or no LNB power
X				X	Over temperature on NOMAD (NOMAD too hot. Cool it down)

X		X		X	Coax cables reversed on NOMAD
X	X			X	Satellite signal too strong
X	X	X		X	Could not find main satellite after skewing dish
		X			Invalid Dip Switch, Improper identification of Dome or Skewable mount
	X				Motor Time Out. No counts on Elevation motor.
	X	X			Motor Time Out. No counts on Skew motor.
			X		Limit Error - Azimuth movement
		X	X		No Receiver (or LNB) power
	X		X		Only main satellite found
	X	X	X		Signal lost but LNB power present
				X	Azimuth, Elevation or Skew motor active (This is not an error but a Motor is active)
	X			X	Dish did not raise minimum height
	X			X	DVB Board has failed
X	X			X	Not enough satellite signal
			X	X	Lost Code - Call Customer Service for Upload Module (SOLID LED, NOT FLASHING)

NOTE: Before calling Technical Support please perform a "Test Dish" and press "Find" one more time before calling.

Technical Support

- **MotoSAT Customer/Technical Service** – (1-800-247-7486) - Available Mon-Fri 9:00 a.m. to 5:00 p.m. Mountain Standard Time.

> ● Please have your MotoSAT Model # and Satellite Receiver Brand prior to calling Customer/Technical Support.

MotoSAT Products that use the Nomad Controller

Non-Skewable Mounts

Dome

Executive [1 LNB]

Skewable Mounts

MD500 [2 LNB]

MHDTV [3 LNB]

Special Notes

Stowing the dish when all else fails.

If you are able to go onto the roof -
1. Unplug the "Green" 9 pin connector from the back of the NOMAD.
2. Go to the roof where you can apply a slight amount of force to move the dish into an acceptable position for traveling.
3. Call Tech Support when you get to a location that you can perform trouble shooting.

If you are unable to go onto the roof –
The dish can be manipulated by applying 12 volt DC power to specific wires in the control cable located in the back of the NOMAD. The 12 Volts going to your NOMAD controller (3 pin "green" connector) can be used as this source.
1. **ELEVATION** - Orange and Red wires (reversing polarity will change direction.)
2. **AZIMUTH**   - Black and Brown (reversing polarity will change direction.)

If a chain or motor/gearbox assembly is broken, the dish will have to be stowed by hand.

Dish Network receivers

NON-SKEWABLE Dome or Open Faced mounts.
If your satellite receiver is a Dish 500 or Dish Pro and you remove it from your home to your RV, you will need to perform a "Check Switch" **while the non-skewable dish is in the _STOWED POSITION_.** Your screen upon completion of the "Check Switch" should have 8 X's in the check boxes meaning that the "Check Switch" failed. This procedure must be accomplished **_before_** you "FIND" satellite. **Failure to do so will result in improper operation of the receiver.**

RAIN FAID ON DOME SYSTEMS

Read all about it………….

Subject: **Rain fade on Domed (Covered) Systems**

What is rain fade? Rain fade is signal degradation due to the interference of rain droplets. Rain can affect performance as well as heavy water content thunder clouds. Satellite frequencies have a great deal to do with degradation. C band satellite frequencies have the best resistance to rain fade, KU band satellite frequencies have the next best performance, and KA band frequencies are the most susceptible to rain fade. Rain fade is also known as *rain attenuation*.

There are quiet a few examples of rain fade or degradation.
1. There is heavy rain (large droplets); it can block the uplink channels for reception.
2. There is heavy rain that can block the receive signal to the satellite.
3. There is also moisture build-up on the dome or cover.

Unfortunately, all these examples are caused by acts of nature, that with a domed system you will always experience all of the symptoms in varying degrees. There are things you can do to reduce degradation.
1. If you live in Seattle, move to Arizona.
2. Get a big fan, point it towards the sky and blow the clouds away.
3. KEEP YOUR DOME CLEAN- Soap and water are the most efficient methods. Some harsh or abrasive cleaners can be harmful to the outside of the dome as well as signal interference. NOTE: Some types of cleaners as well can eventually collect dirt. Be sure to select one that will work for you.
4. After rain, wipe the water droplets off the Dome.
5. A bigger dish size and superior surface accuracy reduces rain fade problems.

All domes on the market are susceptible to rain fade. MotoSAT's Dome (aka Mini Dome) as well as the T2 AutoMotion are the two domed satellite television systems that have the lowest rain degradation on the market. Because of size and surface accuracy of our dish, MotoSAT can offer the best performance in rain fade situations.
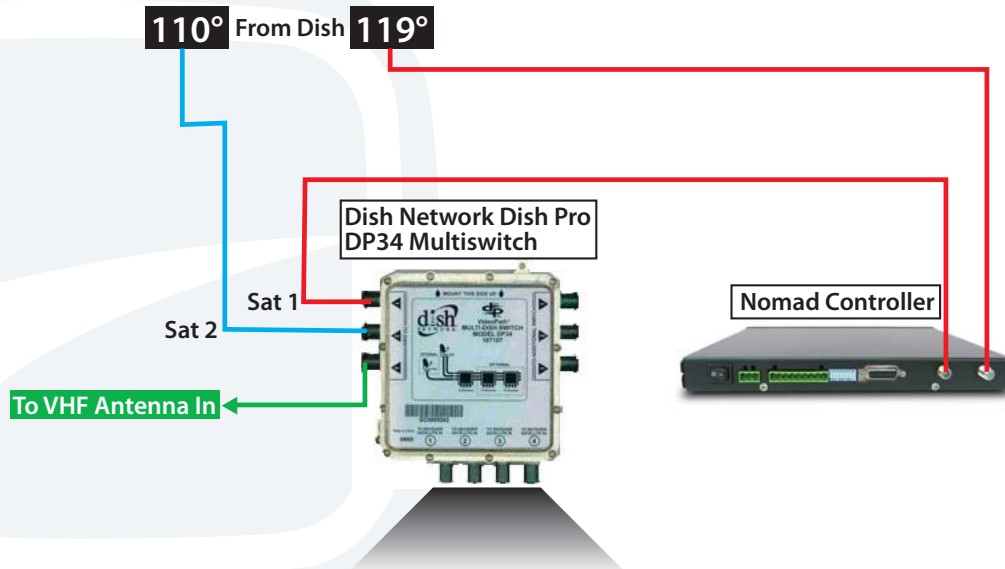
Your Staff at MotoSAT

DUAL RECEIVER DIAGRAM FOR THE MD500

This diagram shows a setup of equipment for using a MD500 with dual receivers or a PVR receiver.

IIIMD500™

110° From Dish **119°**

Dish Network Dish Pro DP34 Multiswitch

Nomad Controller

Sat 1

Sat 2

To VHF Antenna In

Two DishPro Receviers

OR

DishPro PVR

Please call MotoSAT for information on this or any other technical subject contact MotoSAT at:
1-800-247-7486

MotoSAT