

# FREEDOM



## Operation and Installation Manual



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**Congratulations** on your purchase of the most advanced Stationary Automatic Domed Satellite Television System ever designed. The Freedom offers "TRUE" One button operation with no catches! Simply set the DIP Switches on the back of the Freedom to type of satellite service (satellite that you wish to find) and you are ready to find satellite and watch TV.

The Freedom is designed for use when the RV is parked. This is not intended as an Inmotion (watch while driving) system.

Let's get started.

**SYSTEM SPECIFICATIONS**

- ◆ One Button Operation
- ◆ Active LED (Status Indicators)
- ◆ Set it and Forget it Dip Switch Configuration (Install Only)
- ◆ Dish Network, DirecTV, and Bell ExpressVu ready
- ◆ Automatic Dry Camp Mode (Always turns off after finding satellite)
- ◆ True DVB Satellite Identification
- ◆ Field Software Upgradeable
- ◆ Simple Connections
- ◆ Manufactured from aluminum parts with stainless steel hardware (rust proof)

**SYSTEM DIMENSIONS**

**Dome**

- Height 15 "
- Diameter 29"
- Weight 29 lbs.
- Dual output LNB
- Cable output
  - 1ea 9 Pin twist lock Control Cable
  - 2ea RG6 Connectors



**Controller**

- Width 5"
- Length 9"
- Height 1"
- Weight 2 lbs.
- 12V DC 4amp (Power Supply)
- LED Status Display



**Cable input**

- 1ea 9 Pin green connector connected to the 9 pin Control Cable
- 1ea RG6 connector

**Cable output**

- 1ea RG6 connector which is used to connect the Controller to the Satellite Receiver

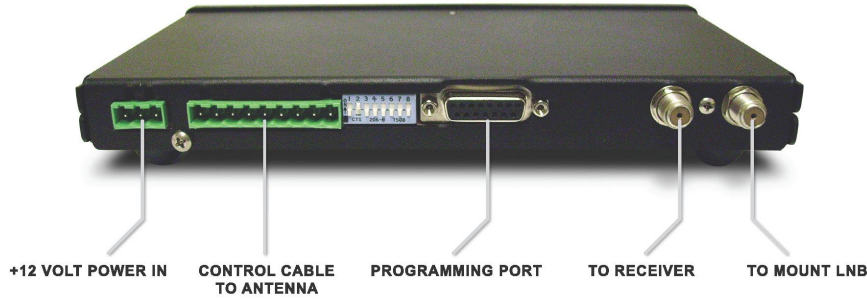
**System Supplied with**

- 1ea Dome
- 1ea 30' Control Cable
- 1ea 30' RG6 Coax Cable
- 1ea Plastic Clam Shell (used for roof entry cover)
- 1ea RG6 Connector
- 1ea Freedom Controller
- 1ea 12V DC 4amp Power Supply
- 1ea 24" Coax jumper (from Controller to Satellite Receiver)
- 1ea Setup and Operation Manual

**Shipping Weight 38 lbs./Dim Weight 70 lbs.**

**Shipping Box: 30 x 30 x 17**

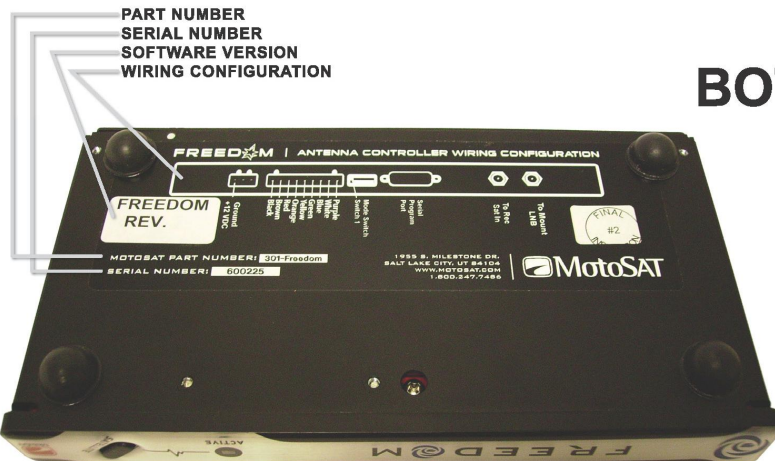
### BACK VIEW



### FRONT VIEW



### BOTTOM VIEW



## INSTALLATION

### DOME

- ◆ Position the dome so that the coax(s) and the control cable connection point to the rear of the RV.
- ◆ Position the dome away from anything that could obstruct the view of the dish.
- ◆ Locate a position on the roof that will provide a solid attachment point.
- ◆ Seal all holes and screws with the proper sealant recommended for the roof of your RV.
- ◆ Use a dielectric grease to protect all electrical connections.
- ◆ Use supplied 9 conductor cable for dome to controller connection
- ◆ If operating more than one receiver, run two (2) coax cables.

### CONTROLLER

- ◆ Place the controller in a location that is accessible for ease of operation.
- ◆ Always use the 110V AC to 12V DC 4 Amp Power Supply provided.
- ◆ Firmly tighten (do not over tighten) all coax connectors to insure good connection.
- ◆ Make sure that all screws are tight on the 9 pin green connector on the back of the controller. Wiring color code is on the bottom of the controller and on the green connector.
- ◆ Check for any stray strands of wire which could cause a short.

### CABLE ROUTING

#### Control Cable

- ◆ From the Dome to the back of the Freedom Controller

#### Coax Cable (RG6)

- ◆ The system will not perform a search for the satellite without a coax connected to the Controller.

#### First Coax (RG6)

- ◆ From the Dome to the back of the Freedom Controller
- ◆ From the Freedom Controller to the Satellite Receiver (sat in)
- ◆ From the Satellite Receiver to an optional Distribution switch to the TV or...
- ◆ From the Satellite Receiver to the TV

#### Optional Second Coax (RG6) (not supplied)

- ◆ From the second (2<sup>nd</sup>) coax connection on the Dome to the second (2<sup>nd</sup>) Satellite Receiver
- ◆ From the second (2<sup>nd</sup>) Satellite Receiver to the second (2<sup>nd</sup>) TV

For any questions or comments please contact our  
**Technical Support Department** at 1-800-247-7486.

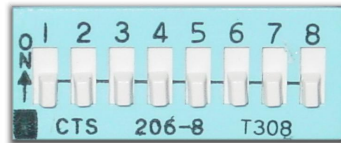
## SYSTEM SET UP

Locate the Configuration (DIP) Switches on the Rear Panel and set the proper configuration based on your type of service that you intend to use.

### Procedure

When facing the Dip Switches, the switch to the left end is position 1, then continuing 2, 3, 4, etc. to switch 8 on the right.

### Dip Switches



If switches are in down position then the value is **0 = Off**  
 If switches are in up position then the value is **1 = On**

Function	Dip Switch								Comments
	1	2	3	4	5	6	7	8	
Test Dish*	1	0	0	0	0	0	0	0	required on initial Install
Dish Network 119	0	0	0	0	0	0	0	0	Single Mode
Dish Network 119/110	0	1	0	0	0	0	0	0	Dual Mode
Bell ExpressVu 91	0	0	0	0	0	1	0	0	Single Mode
Bell ExpressVu 91/82	0	1	0	0	0	1	0	0	Dual Mode
DirecTV 101	0	0	0	0	0	0	1	0	Single Mode
DirecTV 101/119	0	1	0	0	0	1	1	0	Dual Mode
Show mode	0	0	0	1	0	0	0	0	Dish will run constant cycles*

\* Coax connection from the Controller to the mount is required.

## Test Dish

**Test Dish**, Is a function that tests the AZ and EL maximum limits, this function is only necessary on the initial install or during trouble shooting, Before performing a test dish Make sure that all connections to the Freedom are secured and correct. Connect the +12 Volt Power Supply to the Freedom Controller, then press the **“Satellite”** button.

- ◆ With the 1 dip switch is up the Freedom system will perform a test dish before each satellite search (We suggested that after initial test dish, put the 1 switch down for normal operation)
- ◆ With the 1 switch down the Freedom system will go into a satellite search pattern without performing a test dish

The **Active LED** will begin to blink for 1 to 2 minutes while the dish runs through a functional check.

- ◆ **If the dish passes** - the **Active LED** will shut off and the Freedom Controller is ready for use. Simply press the **“Satellite”** button to find satellite.
- ◆ **If the dish fails** – the **Active LED** will blink a series of blinks indicating a specific error. Count the number of blinks and refer to Message Codes on page 8. Correct the issue and run a **Test Dish** again.

## OPERATION

**Press the “Satellite” Button (after initial setup.)  
THAT IS ALL THERE IS!!!**

**Important!!** The Freedom Controller’s DIP switches must be preset (at installation time) for the satellite service (satellite that you wish to find) before use. See System setup.

### SINGLE SATELLITE MODE

Once your RV is parked and stabilized, press the “**Satellite**” button on the Freedom Controller. The Freedom Antenna on the roof of your RV will begin to search for the configured satellite. This typically takes 2 to 3 minutes. During this search the “**Active LED**” on the Freedom Controller will blink indicating that the dish is moving and finding satellite. When the configured satellite is found the “**Active LED**” will go out and the Freedom Controller will shut off. You can now watch TV.

Simply repeat the above instruction every time you move to a new RV site. Just press the “**Satellite**” button and let the system find your satellite programming.

### DUAL SATELLITE MODE

The Freedom is capable of switching between two satellites for either Dish Network or Bell ExpressVu when configured properly.

Once your RV is parked and stabilized, press the “**Satellite**” button on the Freedom Controller. The Freedom Antenna on the Roof of the RV will begin to search for the **Primary** Satellite. This typically takes 2 to 3 minutes. During this search the **Active LED** on the Freedom Controller will blink. When the configured satellite is found the **Active LED** will go out and the Freedom Controller will shut off. You can now watch TV on the selected satellite. If you want to switch between satellites, i.e. see below, then simply press the Satellite Button again (when on satellite) and the Freedom Controller will begin a search for the **Secondary** Satellite. This typically takes 1 to 2 minutes. During this search the **Active LED** on the Freedom Controller will blink. When the **Secondary** Satellite is found the **Active LED** will go out and the Freedom Controller will shut off. You are now on the second satellite for the Dish Network or Bell ExpressVu Configuration.

<u>Satellite Type</u>	<u>Primary</u>	<u>Secondary</u>
DIRECTV	101	119
Dish Network	119	110
Bell ExpressVu	91	82

**IMPORTANT!** Some Dish Network and Bell ExpressVu receivers are not capable of obtaining the Program Guide to the secondary satellite without re-powering your satellite receiver. If you have one of these receivers, it is recommended that you connect your satellite receiver to a switched AC Power Strip to assist you with this process.

You can now switch between the Primary and Secondary satellite by pressing the **Satellite** Button (when on satellite.) The move time between satellites is typically 1 to 2 minutes. To return to previous satellite, simply repeat the above instructions.

**Note:** In the **Dual Satellite Mode** if the system does not detect a satellite when the “**Satellite**” button is pressed it will search and find the Primary satellite. This will be the case when you move your RV to a new site.

## Message Codes

The Active light will flash at ½ second intervals and then wait 2 seconds before repeating the code. This will go on for approx 4-6 minutes and then simply turn off. Correct the issue and perform a **Test Dish**. (See page 6)

The number of times the light flashes is the code.

Number of Flashes	Error Code	Corrective Action
2	Invalid Mode	Check and correct DIP switch setting
3	Invalid Mode	Check and correct DIP switch setting
4	Motor Time Out. No Counts. Elevation	Check for shipping screws and cabling
5	Motor Time Out. No Counts. Azimuth	Check for shipping screws and cabling
6		
7	Limit Error-Elevation	Check for shipping screws and cabling
8	Limit Error-Azimuth	Check for shipping screws and cabling
9		
10	Tuner Failure	Call Technical Support
11	AGC Won't Lock	Call Technical Support
12		
13	Main Sat. not found but some other Sat. found.	Check for line of sight obstruction
14		
15		
16	No Satellites found	Check for line of sight obstruction
17*	Over Temperature 135 Degrees F	Receiver temp reaching critical level
18	Dish did not raise high enough	Check elevation motor And run Test Dish
19	Coax cables on backward	Reverse Coax on Freedom Controller
20		
21		
22		
23		
24	EEPROM Failure	Call Technical Support
25	AGC Control Failure	Call Technical Support

**\*Note: This pertains to the temperature within the electronic enclosure and is message is provided as a warning when the temperature reaches a critical level for the Satellite Receiver and not the Freedom Controller.**

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## WIRING TABLE TV Mounts

The Control Cable, 9 conductors, colored coded, 22Awg stranded that connects to the mount with a twist lock connector is configured in the following manner:

Color Code	Pin Designation	Mount Destination	Counts per Degree
Black	1	Motor, Azimuth Positive	
Brown	2	Motor Azimuth Negative	
Red	3	Motor Elevation/Positive	
Orange	4	Motor Elevation Negative	
Yellow	5	Sensor, Count Azimuth	3.408
Green	6	Sensor, Ground Azimuth/Elevation	
Blue	7	Sensor Count Elevation	5.034
White	8	Power, Mount LED	
Purple	9	Not Used	

The Mount is coil wrapped inside with the following cables and wire:

- ◆ 2 ea RG179 Teflon coated coax cables
- ◆ 1 ea Control Cable, 9 conductor cable, colored coded, 22Awg stranded.  
This cable is molded with a twist lock connector on one end and manually terminated at the other with a 9 pin connector.

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# !!!!ATTENTION!!!!

## RAIN FADE ON DOME SYSTEMS

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

What is rain fade? Rain fade is signal degradation due to the interference of rain droplets. It can affect the signal quality by the amount of moisture on the dome. Light moisture may have little effect while a lot of moisture can prevent total satellite signal reception. 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*. It is caused by moisture adhering to the dome which prevents satellite signal reception.

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. If you experience signal outage after a rain storm, wipe the water droplets off the Dome.
5. A bigger dish size and superior surface accuracy reduces the effect of rain fade.

All domes on the market are susceptible to rain fade. Because of size and surface accuracy of our dish our Dome has the lowest rain degradation of any domed system on the market. MotoSAT can offer the best performance in rain fade situations.

You're Staff at MotoSAT