



EAGLE RE-1

CONTROLLER

For Use On ALL

MotoSAT Mounts

Supported Systems

HD SL5 DirecTV
HD DP3 Dish Network

HD SC2 SHAW
HD DP3 BELL TV

EXECUTIVE 18"
DirecTV 101
Dish Network 119

MSC-60 SHAW
MD-500 Dish Network
MD-1000 Dish Network



Made in USA



17 September 2014

Index

Disclaimer	3
Parts Bill of Materials	4
Requirements for Installation	5
What you wish you had	6
Installation	7
Wiring Diagrams	8
Menus and Operation	10
Updating and Maintaining Software	11
How to Measure Focal Points	12
Assistance.....	17

Disclaimer

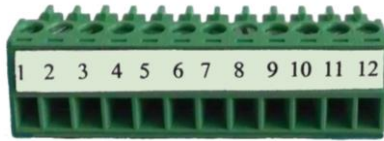
- The RF Mogul EAGLE RE-1 is designed to operate all MotoSAT mounts with the exception of the round 24" single LNB reflector.
- It will operate the DirecTV, Dish Network, SHAW and Bell TV HD systems.
- The MotoSAT mount must be mechanically sound with functional motors and count sensors.
- The antenna must not be bent "tweaked" or damaged in anyway.
- The mount should not have excessive slop or play (wobble) as this will directly affect the ability of the RF Mogul Eagle controller to peak the signal for best performance.
- The LNB must be 100% functional. If a Shaw system is being used you must have a 75E LNB for the 70cm dish and a 60E LNB for the 60cm dish. **We strongly recommend replacement of the current SHAW LNB to the new xKu version. Changing of the receiver's channel map will have to be done if you change from a dual LNB to a triple xKu LNB.**
- If your focal point on your MotoSAT mount is not within plus or minus 1/4" to the specifications in this document then correct that issue before trying to operate the system.
- Check all coax connections and cable for moisture intrusion and wear. Replace connectors and cable where necessary.
- Mount must not have excessive movement in Azimuth, Elevation or Skew
- Antenna must not be bent or "tweaked".
- The focal point of the LNB on the MotoSAT mount must be +/- 1/4" to the specification include in this document.
- When making connections to the 12 pin controller connector make sure they are clean, properly installed according to the wiring diagram included in this manual.
- **Check that the proper software for your configuration has been loaded into your controller before pressing SEARCH. If not, load the proper software and then proceed.**
- If your MotoSAT mount cannot perform to its peak capacity due to hardware issues then EAGLE RE-1 controller will not be able to correct that issue.

Most installation problems are related to configuration or connectivity.

Bill of Materials

1. 1 ea. 12 Pin Connector
2. 1 ea. GPS w/5 feet of cable
3. 1 ea. RF Mogul EAGLE RE-1 Controller
4. 1 ea. Blue Light adaptor
5. 1 ea. 12 VDC Power Supply

1. 12 Pin connector



2. GPS



4. Blue Light Adaptor



5. Power Supply



3. Eagle/MotoSAT RE-1
Controller



STOP !!!

YOU MUST CHECK AND CORRECT THE FOCAL POINT OF YOUR DISH BEFORE DOING BEGINNING YOUR INSTALL. FAILURE TO DO SO WILL CREATE PROBLEMS IN ACQUISITION!!!

(See page 13 for details)

Requirements for Installation

- Color Blind? Ask a friend or neighbor for assistance. Meet a new friend.
- Patience and attention to details will make this go smoothly. Do not rush through this document. Analyze each step and consider the implications of skipping or ignoring any of the steps or recommendations. The correct LNB must be installed for the software used. Failure to do so will result in the system not performing an automatic acquisition.
 - Shaw 60cm dish must use a 60E LNB
 - Shaw 70cm or 75cm HD dish must use a 75E LNB
- GPS must be mounted where it can best receive the signal from the GPS satellites.
- All entry holes in the roof must be sealed properly to prevent water damage from leaks.
- Do not splice the GPS cable. If longer lengths are required please request them from the factory.
- If the roof is fiberglass or rubber coated (not metal) then the GPS may be installed inside the RV. It must be unobstructed wherever it is installed.
- Do not stack electronic components because of potential heat problems. Most receivers produce a lot of heat even when turned OFF. **HEAT is a primary cause of system failure to perform properly. Do not stack the controller on top of the receiver.**

What you wish you had

Pre-installation recommendations for the RF Mogul Eagle Controller to a MotoSAT mount...

1. The ability to receive Email and download files from an Email.
2. Know how to put files on a USB Flash Drive from your computer.
3. Read and follow wiring instructions.
4. Cannot be color blind.
5. A basic Volt/Ohm Meter.
6. One small screw driver for use on the 12 position control cable connector.
7. Flashlight

Recommended Tools for the RF Mogul Eagle to MotoSAT Upgrade

1. #2 Phillips screwdriver
2. 7/16 Open End Wrench
3. Pliers
4. Knife
5. Volt Ohm Meter
6. Inside assistant

Other possible item needed for install

1. SWM DirecTV 21 Volt Power Inserter for SWM applications
2. Drill for roof GPS installation
3. 100% Silicone or Dicor roof sealant
4. Threaded Reed switches
5. 3M Scotchloks (UR2 IDC Home Depot) for wire splicing

INSTALLATION

If your system is equipped with a GPS, ***it is required*** that you bypass your existing GPS and splitter on the roof. A simple barrel connector will allow you to bypass the MotoSAT GPS and splitter. The coax cable inside the mount must go directly to the LNB from the controller.

The GPS/Splitter is located in two possible locations....

1. On the roof near the GPS or
2. Under the cover located in front of the mount as shown.

Use a threaded coax barrel connector to bypass the GPS/Splitter if required.



Note: The GPS ***may work*** inside of a RV if the RV has a non-metal roof. **Try it inside first.**

Or install the GPS on the roof of the RV near the cable entrance in the roof.

EAGLE RE-1 Controller



12 Volt power

Control cable w/GPS

To SAT Rec

To Mount

Wiring Diagram

For the Control Cable 12 Pin Connector

Pin	Wiring Color Code		How Used	
	<u>MotoSAT</u> Cable	<u>RF Mogul</u> GPS		
1.	Black	↓	Motor, Azimuth	
2.	Brown		Motor, Azimuth/Skew	
3.	Red		Motor, Elevation/Skew	
4.	Orange		Motor, Elevation	
5.	Not Used		<u>Not Used</u>	
6.	Not Used		<u>Not Used</u>	
7.	Yellow ←		Sensor Count, Azimuth	
8.	Blue ←		Sensor Count, Elevation	
9.	Purple ←		Sensor Count, Skew	
10.*	Green		Black	Ground
11.*			Red /Blue Light Adapter	Power and Blue light Connection
12.			White	GPS TXD (Data)

1. The GPS cable has a **YELLOW, GREEN and SHIELD** wire in the bundle. They will not be used and can be removed.
2. Carefully cut and remove all stranded shield
3. Inspect for small wire strand shorting across pins.

*** Note: Pins 10 and 11 have a dual function**

Pin 10 - Green (MotoSAT Cable) **Black** (GPS Cable) is used as Ground.

Pin 11 - Red (for GPS) **Blue Light Adapter** (for Blue LED) is used as for DC voltage the GPS and Blue Light.

Note: The **WHITE** wire from the existing MotoSAT control cable spliced to the "Blue Light Adapter" will maintain the blue light on your reflector at all times. To turn OFF the Blue Light, remove the power to the Eagle controller.

CAUTION---do not attach the white wire *directly* to pin #11 without the blue light adapter. Damage to the blue light on your dish will occur.

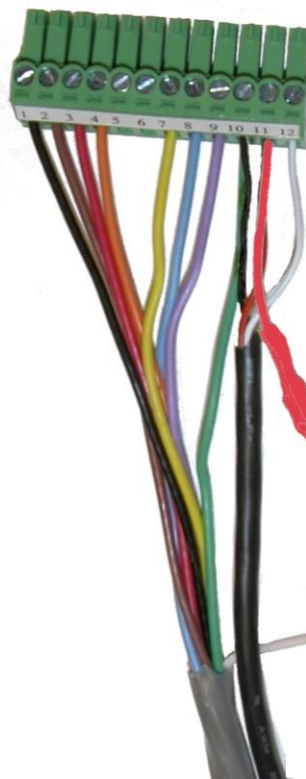


Note: If you do not wire this connector properly damage to your mount could be a result.
Double check all connections before applying power.

Blue Light adaptor

GPS Cable

Connecting the Blue Light Adaptor



Connection of Blue Light Adaptor using a snap type connector.

White wire from MotoSAT cable

For splicing, cut wire blunt before inserting into the Scotch Lock connector.

Menus and Operation

Your controller is menu driven. By selecting a particular menu you can perform many functions besides just "SEARCHING for satellite".



TO SEARCH

- Press Power button
 - Displayed will be the...
 - **System configuration (software configuration)**
 - HD Mounts**
 - ms HD **SHAW Dual & Triple** = Dual or Triple Satellite xKu LNB
 - ms HD **DirectTV SWM** = DirectTV SWM 3 LNB or 5 LNB
 - ms HD **Dish Network** = Dish Network Triple Satellite 1000.2 LNB
 - ms HD **Bell TV** = Bell TV Triple Satellite 1000.2 LNB
 - ms HD **DirectTV SL5** = DirectTV Slim Line 5 LNB
 - 18 " Mounts**
 - ms 18" **DirectTV** = DirectTV Single Satellite
 - ms 18" **Dish Network** = Dish Network Single Satellite
 - ms 18" **Bell TV** = Bell TV Single Satellite
 - **Version of software** i.e. 14-02-07
 - **Options**
 - SEARCH (up arrow)
 - STOW (down arrow)
 - MENU (press "SELECT" which is the POWER button, again to enter menu)

TO ENTER MENU

- Press the Power button again after turning ON the power to enter the "menu" portion of your system.....
 - Displayed will be the Up and Down arrows which will help you navigate through the menu. Once the portion of the menu that you want is displayed, press SELECT (power button) to "select" that option....
 - **1: shutdown** - will turn OFF your controller
 - **2: search** - will direct the mount to search for your specific satellite that is specified in your system configuration
 - **3: stow** - will cause the mount to return to its travel position
 - **4: move azimuth** - pressing and holding the appropriate button will manually move your mount in azimuth (Up arrow CLOCKWISE, Down arrow COUNTERCLOCKWISE)

- **5: move elevation** - pressing and holding the appropriate button will manually move your mount in elevation (Up arrow UP, Down arrow DOWN)
- **6: move skew** - pressing and holding the appropriate button will manually move your dish in skew (Up arrow right side DOWN, Down arrow left side DOWN)
- **7: test dish** - will move the dish in all axis for one complete cycle
- **8: temperature** - will display current operating temperature of its operating environment.
- **9: test azimuth** - will automatically do a test of the azimuth sensor
- **10: test elevation** - will automatically do a test of the elevation sensor
- **11: test skew** - will automatically do a test of the skew sensor
- **12: exit** - Selecting this option will take you back to main menu

NOTE: There is an "OVER TEMPERATURE" condition that will be displayed at the beginning of the SEARCH function if the operating environment is in excess of 136°F. It will not prevent the SEARCH routine but will warn of potential damaging heat conditions for the equipment within that operating environment.

Updating and Maintaining Software

The software can be maintained by use of a USB Flash Drive.

- Go to www.rfmogul.com and download the software that best fits your application. Make sure that it is placed in the "root directory".
- Insert your flash drive into your EAGLE RE-1 controller.
- Turn power ON
- Wait for the load status to be displayed that will indicate that the software has been successfully loaded (usually 8 seconds).
- Remove the flash drive and press SEARCH to implement acquisition.

Most "low signal" can be attributed to improper focal point. The following will assist you in determining if you have problems with your reflector or LNB arm.

If the focal point is found to be non-compliant then adjust the focal point by applying pressure to the outer lip of the dish and bending slightly upward. This will shorten the focal point. See arrows below.

HOW TO MEASURE FOCAL POINT HD SERIES MOUNTS

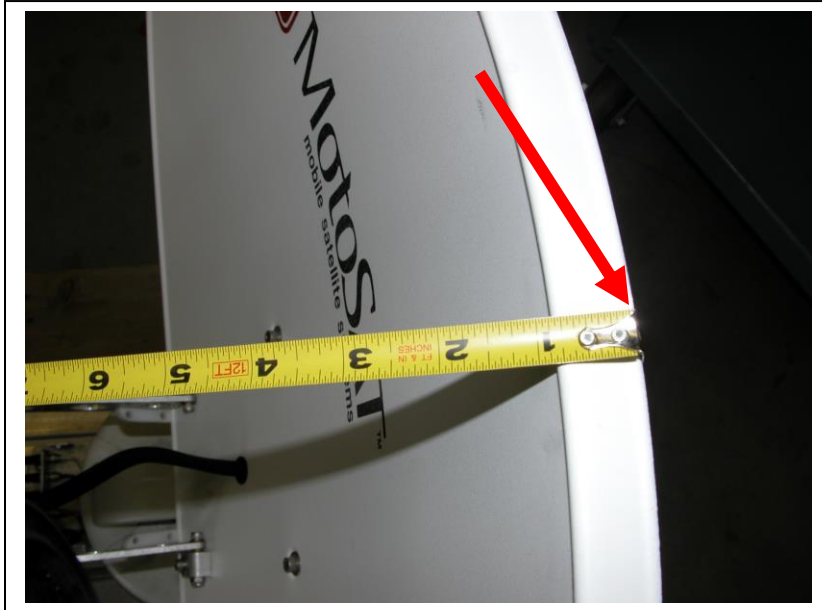


INTRODUCTION AND HOW TO MEASURE

It is important to remember that the focal point of any HD Series mount will always be measured from a specific point. Follow these simple rules and you will be able to determine the focal point of your dish. All of these measurements will be plus/minus $\frac{1}{4}$ inch.

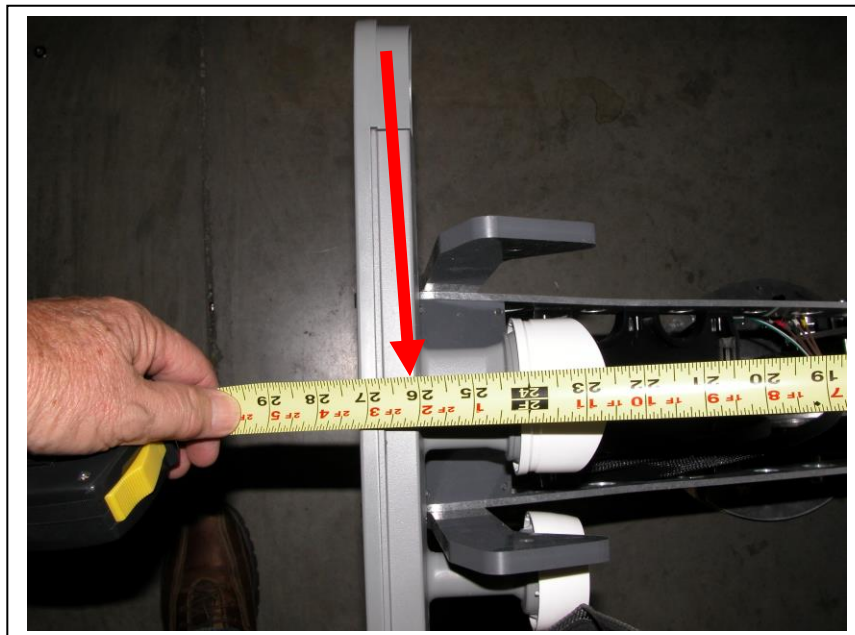
Step
#1

Place the leading edge of your measuring tape over the lip of your dish in this manner.



Step
#2

Place the trailing edge of your measuring tape to the **point specified** by your LNB type.



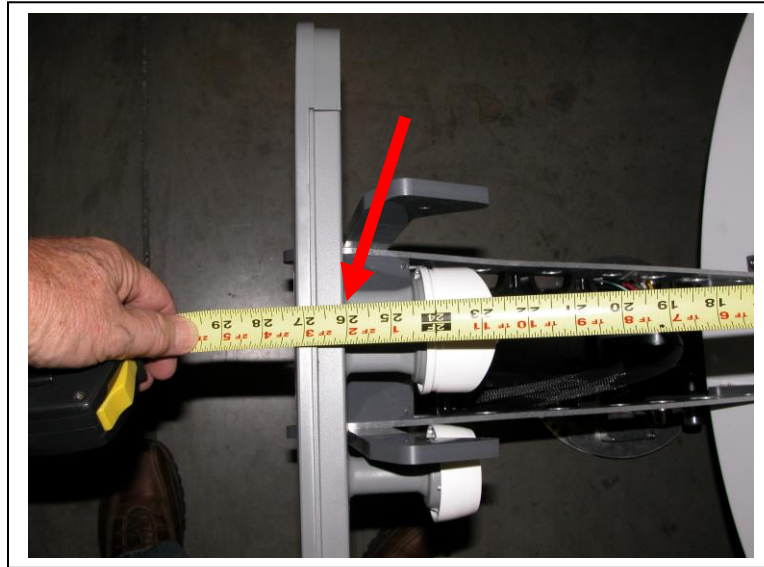
DIRECTV SL5

(Circular Polarized 99 Ka, 101 Ku, 103Ka, 110 Ku, 119 Ku)

STRAIGHT LNB

26”

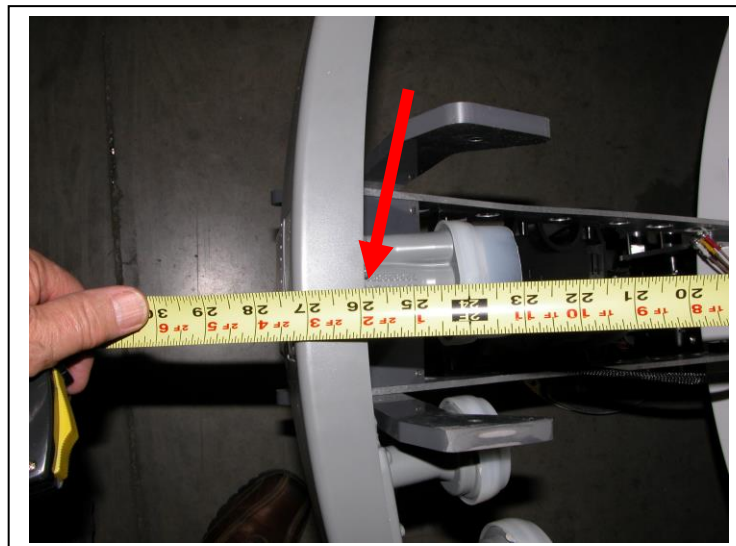
Measure to front edge of the LNB Cover.



CURVED LNB

26”

Measure to front edge of the LNB Cover.



DISH NETWORK DP3

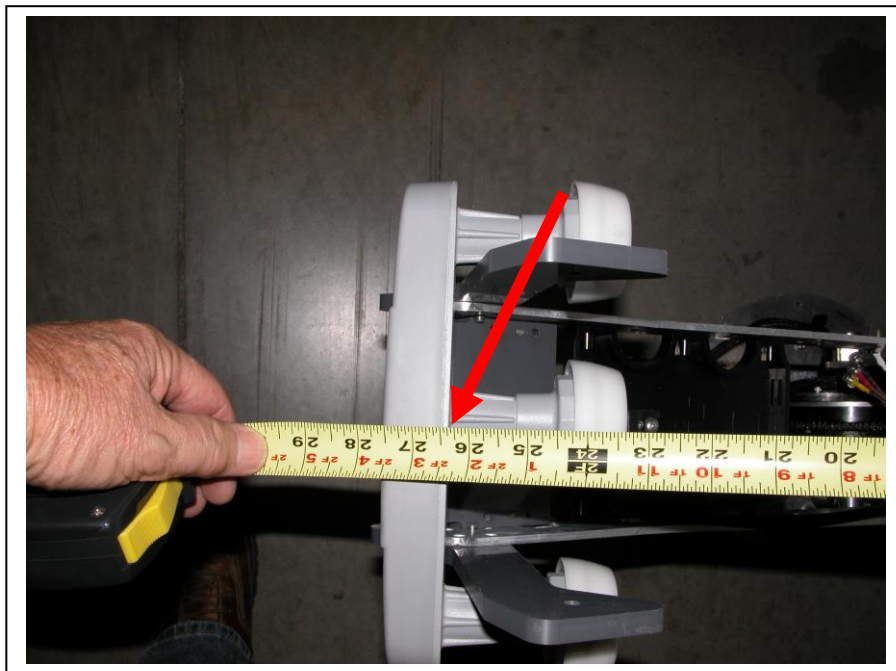
(Circular Polarized 110 Ku, 119 Ku, and 129 Ku)

BELL TV

(Circular Polarized 82 Ku and 91 Ku)

26 3/8 “

Measure to the front edge of the LNB cover.



SHAW DIRECT

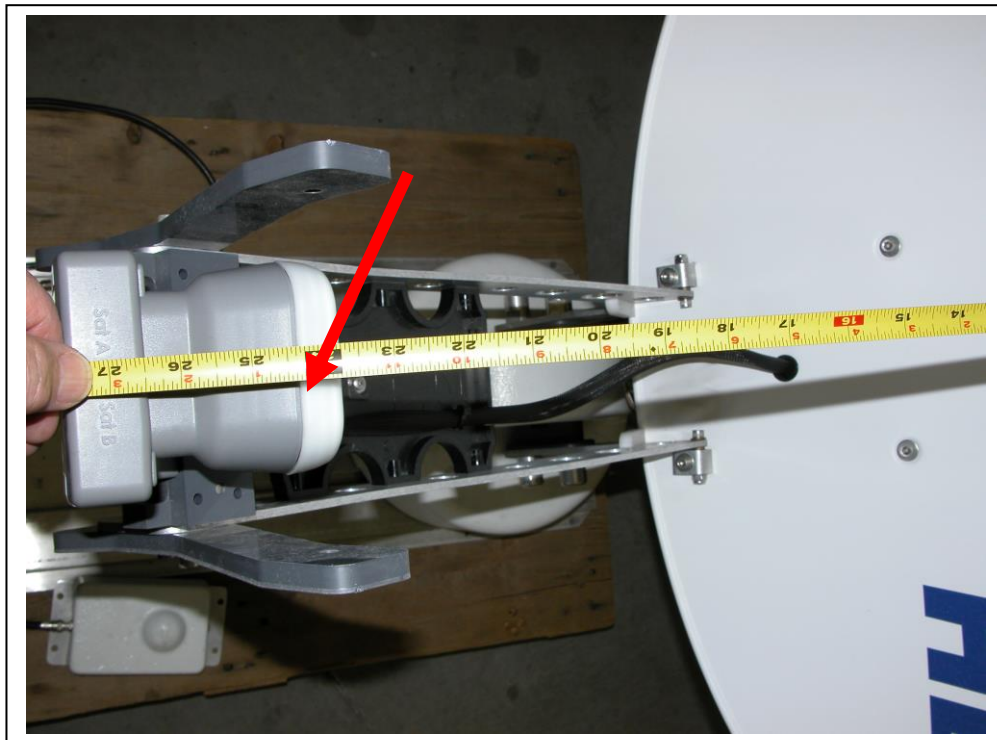
(Linear Polarized 107.3 Ku and 111.1 Ku)

For HD-SC2 Mounts

24 $\frac{3}{8}$ "

For MSC60 Mounts

21 $\frac{1}{2}$ "



ASSISTANCE

For questions or assistance concerning this product please contact your installing dealer.

For additional assistance you may contact support@rfmogul.com.

**This product was manufactured
in the
United States of America.**

RF Mogul
3604 South Via Terra
Salt Lake City, UT 84115

801-895-33908

support@rfmogul.com
sales@rfmogul.com