HOUSTON MEDIA SYSTEMS

# *Owner's Manual*

## HMS90

Please have the following information available when contacting Tech. Support.

Router Serial # _____

ACU-1 Controller Serial #_____

Antenna Serial # _____

Date of Purchase: _____

Installer's Name: _____

The HMS90 Auto-Acquire Antenna System provides a true High-Speed Internet experience from the comfort & mobility of your RV. Check your email, surf the internet and stream your favorite TV and video content from a favorite spot in your home on wheels!

The system is designed specifically for RVs, trucks, and various emergency vehicles.

Please take the time to read this manual in its entirety before installing or operating your new TV Satellite antenna.



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# Table of Contents





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# Safety and Warnings

1. Do not stand in front of an antenna during operation. This area is a radio frequency hazard.
2. Follow all Instructions and Warnings. Set up and operate Houston Media Systems products in accordance with the instructions.
3. Tighten all coax cables by hand only. If you over tighten with a wrench you may damage your equipment.
4. Do not attempt to install this system in the rain or under any wet conditions. Moisture may affect electronics and void your warranty.
5. Do not paint this antenna. Painting the antenna will void your warranty.
6. Power must be disconnected or unplugged prior to disconnecting or connecting any cables.
7. Vehicle construction varies greatly. If you are unsure of how to safely drill through your vehicle roof obtain a professional installation.
8. **Prior to installing the antenna system verify there is enough operating space. The antenna rotates in a 360-degree circle projecting 45 inches from the center of the circular antenna base.**
9. Pay attention to protrusions from the roof such as air conditioning units, rack structures or other antennas before installing this antenna.
10. Pay attention to the pinch points as the antenna raises and stows.
11. While transporting equipment on rough terrain move slow to prevent excessive vibration or shock to mounted electronic equipment
12. Our interconnecting cables are 30 feet. Ensure that there will be no more than 30 feet between electronics and the antenna on the roof.
13. The antenna weight should be distributed over support or cross beams. A mounting surface that is not strong enough to support the weight of the antenna may cause structural damage to your vehicle.
14. If not using an HMS antenna for long periods of time, and the antenna system is kept out in the elements of the outdoors, it is recommended that you operate the system every 6 months and at a minimum once a year to keep all moving parts in good working order and to keep the modem software updated.



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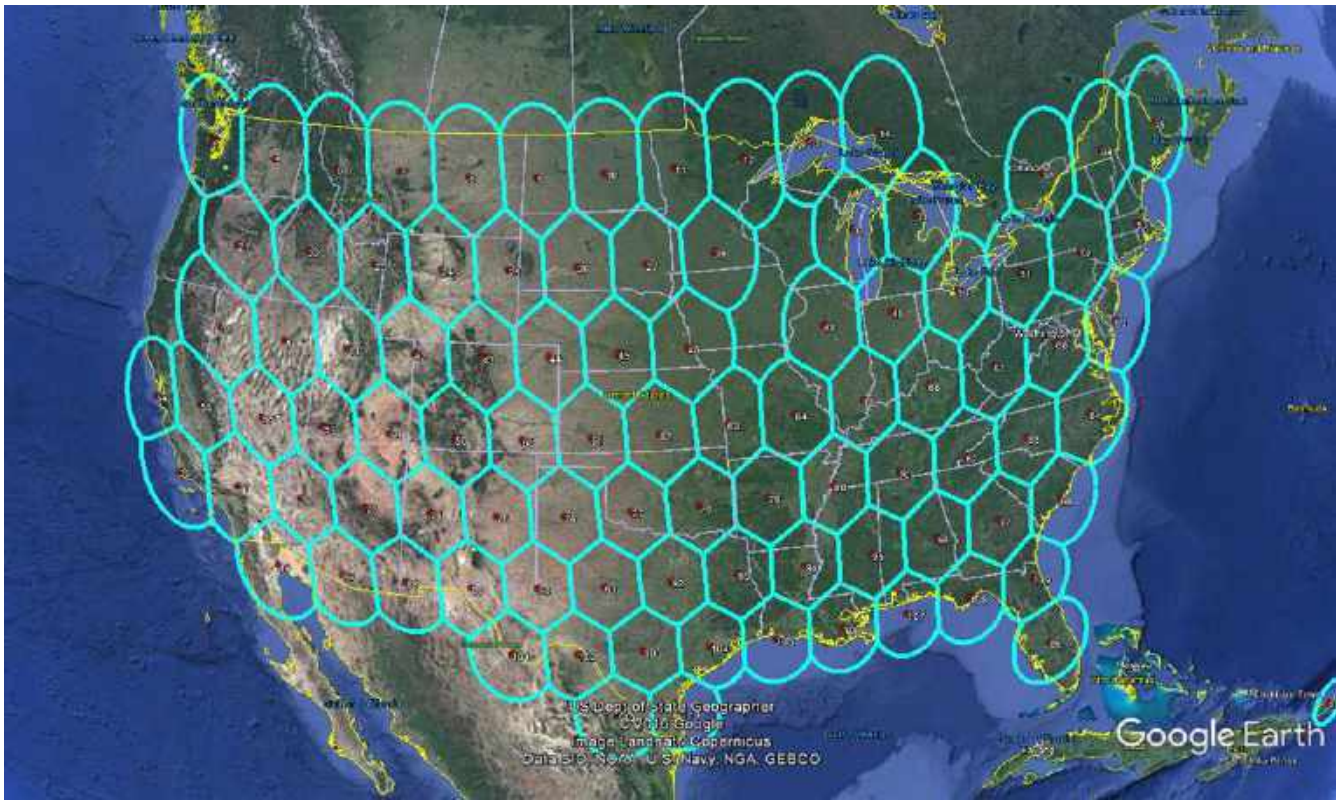
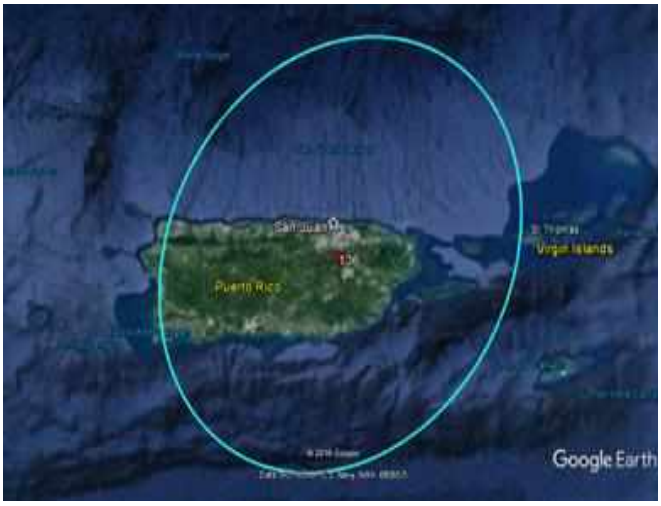
# Gen5 Coverage Map







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# Gen5 Bandwidth Package Pricing

| | BUSINESS 35 | BUSINESS 50 | BUSINESS 75 | BUSINESS 100 | BUSINESS 150 | BUSINESS 200 | BUSINESS 250 |
|---|---|---|---|---|---|---|---|
| SERVICE FEE | $89.99/MO | $119.99/MO | $169.99/MO | $219.99/MO | $289.99/MO | $389.99/MO | $489.99/MO |
| Plan Speeds | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload |
| Modem | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W |
| Antenna Size & Radio | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka |
| Download Threshold | Business Period 25 Gb<br>Anytime Allowance 10 Gb<br>Total per Month 35 Gb | Business Period 25 Gb<br>Anytime Allowance 25 Gb<br>Total per Month 50 Gb | Business Period 25 Gb<br>Anytime Allowance 50 Gb<br>Total per Month 75 Gb | Business Period 25 Gb<br>Anytime Allowance 75 Gb<br>Total per Month 100 Gb | Business Period 50 Gb<br>Anytime Allowance 100 Gb<br>Total per Month 150 Gb | Business Period 50 Gb<br>Anytime Allowance 150 Gb<br>Total per Month 200 Gb | Business Period 50 Gb<br>Anytime Allowance 200 Gb<br>Total per Month 250 Gb |
| Dynamic IP Address | Included | Included | Included | Included | Included | Included | Included |
| Static IP Address | $20/month | $20/month | $20/month | $20/month | $20/month | $20/month | $20/month |

| | BUSINESS 300 | BUSINESS 350 | BUSINESS 400 | BUSINESS 450 | BUSINESS 500 | BUSINESS 550 | BUSINESS 1TB |
|---|---|---|---|---|---|---|---|
| SERVICE FEE | $589.99/MO | $689.99/MO | $789.99/MO | $889.99/MO | $989.99/MO | $1089.99/MO | $1999.99/MO |
| Plan Speeds | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload | 25 Mbps Download / 3 Mbps Upload |
| Modem | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W | HT2000W |
| Antenna Size & Radio | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka | .98m & 1W Ka |
| Download Threshold | Business Period 50 Gb<br>Anytime Allowance 250 Gb<br>Total per Month 300 Gb | Business Period 50 Gb<br>Anytime Allowance 300 Gb<br>Total per Month 350 Gb | Business Period 50 Gb<br>Anytime Allowance 350 Gb<br>Total per Month 400 Gb | Business Period 50 Gb<br>Anytime Allowance 400 Gb<br>Total per Month 450 Gb | Business Period 50 Gb<br>Anytime Allowance 450 Gb<br>Total per Month 500 Gb | Business Period 50 Gb<br>Anytime Allowance 500 Gb<br>Total per Month 550 Gb | Business Period 50 GB<br>Anytime Allowance 1 TB<br>Total per Month 1074 GB |
| Dynamic IP Address | Included | Included | Included | Included | Included | Included | Included |
| Static IP Address | $20/month | $20/month | $20/month | $20/month | $20/month | $20/month | $20/month |

| Extra GB | 1 GB | 2 GB | 3 GB | 5 GB | 10 GB | 20 GB | 25 GB | 30 GB | 40 GB | 50 GB |
|---|---|---|---|---|---|---|---|---|---|---|
| Price (Each) | $3.00 | $6.00 | $9.00 | $15.00 | $30.00 | $60.00 | $75.00 | $90.00 | $120.00 | $150.00 |



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# HMS90 Specifications

## MECHANICAL

| | |
|---|---|
| Reflector | **90cm** |
| Band | **Ka** |
| Elevation | **0-80°** |
| Azimuth | **370˚** |
| Polarization | **Auto** |
| Stowed Height | **9”** |
| Stowed Length | **52.5”** |
| Stowed Width | **37”** |
| Deployed Height (Max) | **49”** |
| Weight | **57 lbs.** |

## ANTENNA OPERATIONAL SPECS

| | |
|---|---|
| Wind Deployed | **45 mph** |
| Temperature | **-25˚ to 120˚F** |

## ANTENNA SURVIVAL SPECS

| | |
|---|---|
| Wind Deployed | **100 mph** |
| Wind Stowed | **140 mph** |
| Temperature | **-40˚ to 150˚F** |

## ELECTRICAL

| | |
|---|---|
| Control Cable | **30’ (100’ OPT)** |
| Controller Temp Range | **30˚ to 70˚F** |
| AC Requirements | **100-240 VAC** |

## AUTO-ACQUIRE SENSORS

GPS

## INTERNET PERFORMANCE

| | |
|---|---|
| Download Speed | **25MBps** |
| Upload Speed | **3MBps** |
| Data Plans | **35GB - 1TB** |



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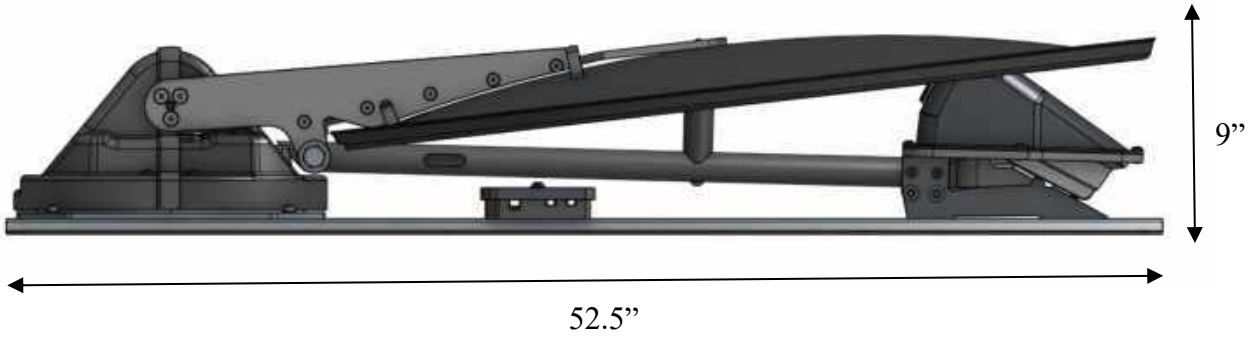
# Clearance Requirements

The antenna rotates in a 360-degree circle projecting 45 inches from the center of the circular antenna base.

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# HMS90 Parts and Movement Definitions


**Items Included with the System:**

| | |
|---|---|
| 1 ea. | ACU-1 Controller |
| 1 ea. | Mount base assembly |
| 1 ea. | Reflector |
| 1 ea. | XCVR Arm Assembly w/Transceiver |
| 2 ea. | Stow Brackets |
| 1 ea. | XCVR Landing Plate |
| 25 ft. | Control Cable |
| 1 ea. | Clam Shell |
| 1 ea. | Weather Cover |
| 6 ea. | 1/4x20x3/4 screws |
| 1 ea. | Connector, green, 12 pins |
| 1 ea. | Power Supply, 12 VDC 7 amp |
| 1 ea. | Owner's Manual |
| 1 ea. | HT2000 Modem |
| 1 ea. | WiFi Router |
| 2 ea. | (color coded) Ethernet Cable |
| 1 ea. | 25 ft. Coax |

## Mount Movements

**Elevation (EL)**
**Raises Up and Down**

**Azimuth (AZ)**
**Rotates CW and CCW**

**Skew (SK)**
**Reflector Tilt Up and Down**

**Stowed (travel position)**



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# HMS90 Installation

## *Roof Mounting and Sealing*

### *Materials Provided*

1. *Gen5 Antenna*
2. *Mounted 3 wire connector box*
3. *Antenna control unit with power supply*
4. *Pre-terminated control cable for controller*
5. *Coax cables*

### Materials Not Provided

1. *9 V DC Battery*
2. *7/16" wrench*
3. *¼ inch nut driver*
4. *Small diameter drill bit long enough to go through the roof of your coach*
5. *Small standard (jewelers) screwdriver*
6. *1" hole saw*
7. *1 power strip or uninterruptible power supply suitable for your application*
8. *20 Mounting screws #14 1" self-tapping screws or #12 pan head screws (stainless steel recommended for strength and to limit corrosion)*

   ***Caution:*** *Make sure the screws will not be too long and penetrate the interior structure of the vehicle. Screws too short may not be adequate to hold the antenna on to the roof.*

9. *Appropriate bit for the mounting screws selected*
10. *1-2 tubes of DICOR self-leveling sealer (available at most RV dealerships)*
11. *1 tube of dielectric compound (Boss Products Accumetric, LLC www.bossproducts.com)*
12. *1 tube clear silicone #315 (Boss Products www.bossproducts.com )*
13. *Approximately 20-25 black wire ties*
14. *20 black wire clips PN GCD12BLK or cable/tubing clamps SKU: STC-50-SS @ www.theclampco.com*

    ***Caution: Do NOT use white clips or wire ties as they become brittle when exposed to UV light***

15. *Split loom cable wrap*

**Identify the install location and verify the area is clean and clear of debris.**



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**Caution**: Mounting surface must be clean for the antenna to properly seal to the roof. This will help prevent water penetration and allow the antenna to sit level.

**Caution:** The antenna base must be oriented toward the front of the vehicle **(the antenna reflector will face the rear of vehicle it's being installed on, see photo after step 13)** to prevent damage to the antenna system due to wind forces while the vehicle is in motion.

1) If you would like to test your system prior to installation, do so now.
2) Identify a cabinet location in the vehicle where the electronics (Controller, Modem & Wifi Router) will be housed and where the pass thru hole to the roof will be cut.
3) Verify at minimum, 2 of the mounting feet or 4 bolts on the mount plate, are over support beams on the vehicle.

**Caution:** A mounting surface that is not strong enough to support the weight of the antenna may cause structural damage to your vehicle.

4) Inspect the interior structure for existing wires or tubing where the screws will penetrate the roof of the vehicle.

**Caution:** Screws that penetrate any existing wires or tubing in the vehicle may cause damage to existing equipment or be a hazard to personnel.

5) Carefully lift the Antenna on to the roof of the vehicle and to the area of install.

**Caution: 2 MAN LIFT IS RECCOMENDED TO PREVENT INJURY**.

6) Elevate the antenna using a 9 Volt DC battery or a power source to make the system maneuverable for installation and so that you can have access to the drill holes on the feet or on the mounting plate.
    a. Touch the RED and ORANGE wires to the Plus and Minus poles on your 9 Volt battery or Power source.
    b. Upon touching the DC power source, if the mount arms do not move upward, then reverse the wires on the contacts of the DC voltage source.
7) Trace the holes where you will insert the screws on the roof to help as a guide.

**Caution: As a bare minimum you must put a screw in all pre-drilled holes on the mount feet/pan. In the event the pre-drilled holes do not align with your support structure, it is highly recommended that you drill extra holes as needed prior to using Dicor sealer**.



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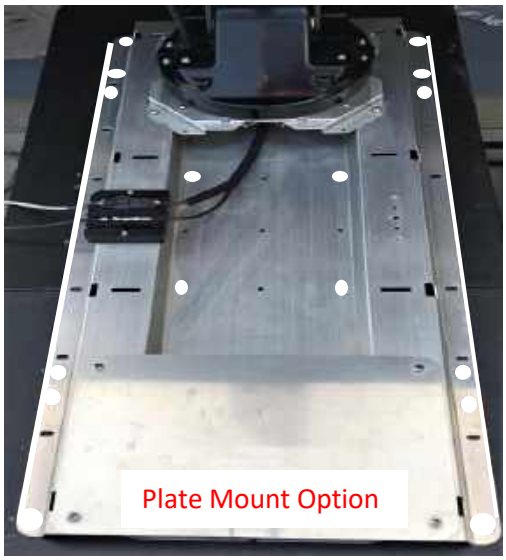
8) Put Dicor sealer over the locations of the predrilled holes on the mounting feet or the predrilled holes on the mounting plate.
9) Lift the antenna over the location where the antenna screws will penetrate the mounting surface (including any extra drilled screw locations) and lower the antenna mount feet/plate onto the mounting surface.
10) Secure the mount feet/plate to the roof using the mounting screws you selected.
11) Liberally coat the screw heads and around the mount feet/plate with Dicor to prevent water penetration, as shown below.


12) Install the <u>Transceiver Landing plate</u> (if not installing a Mount Plate Option) where the Transceiver Arms and transceiver will stow on the roof (Approximately 10-12 inches in front of the antenna base) with screws. (Use the photo in step 13 as a reference) Dicor around the plate and on the screw heads.
13) Using a small diameter drill bit make a small pilot hole in the roof where the cabling will pass through into the control cabinet in the vehicle.


14) Drill the larger 1-inch hole using the 1-inch drill bit or hole saw.



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**Caution: Proceed slowly, 1 layer at a time, verifying after each layer is removed that no cables or other critical components will be damaged by the hole.**

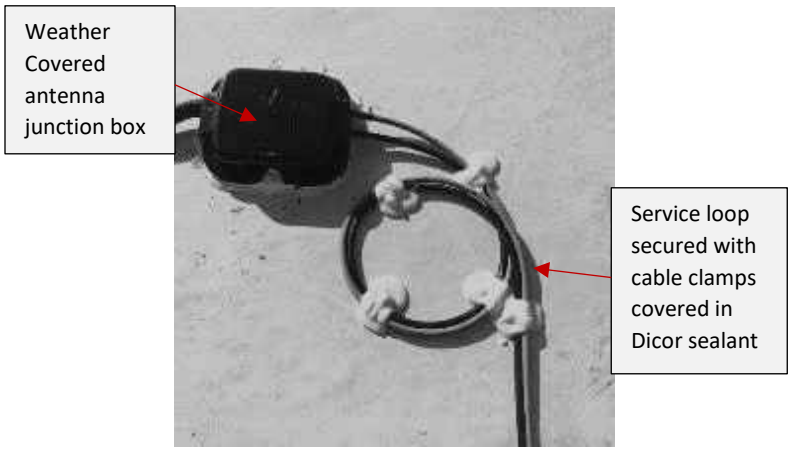
15) Remove the green molex connector (use the small jewelers screwdriver to remove the small screws) from the **Control Cable** if you have already installed it to the end of your control cable in order to pass the cable through the hole. If you haven't connected it but have spliced it and striped the wires, you may cut the end off to have a clean edge then pass the control cable through the hole, resplice and strip the ends again, then add the green molex connecter (shown in photo below) connect it to the controller and place it in a cabinet. You will also pass the coax cable(s) through the roof entry hole into the vehicle. Do not pull the cables taut! Leave 2-3 foot of cable on the roof for the next steps.

**Caution:** Wires for the control cable should be stripped back 1/2" from the end and bent back to make a 'V' with the cable and then insert into the green molex connecter.

**(Attach the Green 12 Pin Connector in accordance with instructions on the bottom of the ACU-1 Controller). If the wires are placed too far into the connector, it will clamp down on the outer plastic shielding, and will not make a good connection to the wire. Failure to do this correctly will cause your satellite system to malfunction or cause erratic behavior.**

**Caution:** Use Dielectric compound grease in both exterior coaxial cable connections to detour water penetration.

15) Mount the **Weather Covered antenna junction box (in 'clearance zone' 45" from the <u>center</u> of the antenna)** with screws near the cable connections for the satellite. Connect the controller cable and coax cables (follow instructions below) and store the connectors inside the weather cover junction box. Make a 1-2 foot 'Service loop' with the cable wires and secure the looped wires on the roof with wire clips or cable clamps.



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**A. Antenna Control Cable Connection. Snap together Male (33482-1201 Molex) Antenna Side and Female (33472-1201 Molex) Control Cable to ACU-1 Antenna Controller.**
**B. RX/TX Cable to HT2000 Modem. RG-6 Coax Cable.**


16) Secure the cable wires with cable clamps every 10-12 inches from the antenna junction box working towards the cable entry hole into the vehicle.
17) Coat all cable clamps and screws with Dicor to prevent water leakage.
18) Put ***silicone*** in the cable hole (**NOT** Dicor as it is self-leveling and will seep into the hole) to fill the void and help prevent water penetration. Once the silicone has set use the Dicor around the silicone to water seal the cable penetration area.
19) Pull any excess cables through the pass-through entry hole and then screw the Clam Shell cover over the hole. This will prevent water entry. Cover the outer seam of the cover and all screws with Dicor.

**Caution: It is advisable to place the open end of the Clam Shell towards the rear end of the vehicle to prevent pressure on the opening while driving.**

20) Cut your Control and Coax cables to length inside the vehicle. Insert the cables into split loom cable wrap. Leave enough length of both cables to be able to remove the ACU-1 Controller from the cabinet with ease should the occasion arise. Wrap excess cable into a coil and secure to the back of the cabinet.
21) **Securely fasten** the electronics into the selected storage location to prevent damage during travel. **Attach all cables in accordance with your diagramed instructions. (shown on Page 16)**
**Double check *all* electrical and coax connections from the controller to the mount and transceiver BEFORE applying power.**

**DO NOT stack electronic equipment as it will cause excessive heat buildup and potentially cause damage to some or all equipment.**



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# ACU-1 Controller Operations

## *FRONT VIEW*


There is a total of 6 connections that must be connected correctly between the Satellite Antenna Controller, HT2000 Modem, the 90CM Antenna Mount, Wifi Network Router, and the Power supplies that are included with the satellite.

1. Power Supplies as shown (3 each supplied with Electronic Device).
2. Antenna Control Cable to 90CM Antenna Mount (30 feet approximate).
3. LAN port to External Router LAN port input.
4. HNS90 Modem to WAN Port on Router.
5. Laptop/PC direct LAN wire to Router (or Wifi Option).
6. HNS90 SAT port to 90CM Mount (30 feet RG6 Coax approximate).

See simplified wire diagram on the next page.



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# ACU-1 - Router – HT2000 Modem Connections


## Defined Wiring Instructions

1. **Power Supplies as shown (3 each supplied with Electronic Device).**
2. **Antenna Control Cable to 90CM Antenna Mount (30 feet approximate).**
3. **LAN port to External Router LAN port input.**
4. **HNS90 Modem to WAN Port on Router.**
5. **Laptop/PC direct LAN wire to Router (or Wifi Option).**
6. **HMS90 SAT port to 90CM Mount (30 feet RG6 Coax approximate).**



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# ACU-1 Quick Network Connection Setup

***A Dynamic (DHCP) Network Connection can be completed from the Front Panel LCD Display.***

Re-enter Network Settings and Scroll down with Up/Down Arrows to show the new Controller IP Address.


The Antenna Controller is now connected to the router and should also be connected to the HT2000 Modem.

Open a browser on your Laptop or PC to the IP Address displayed on the LCD Network Settings to confirm all Network Settings and Pathways are correct or make changes as required.


Use the **Power Button** to turn on the Satellite Antenna Controller.

The following displays should appear.




The Display above shows you the HMS Satellite and the Beam your system will connect to.



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Press **Search Button** (Green Left) and the Controller will begin Searching for the Satellite.

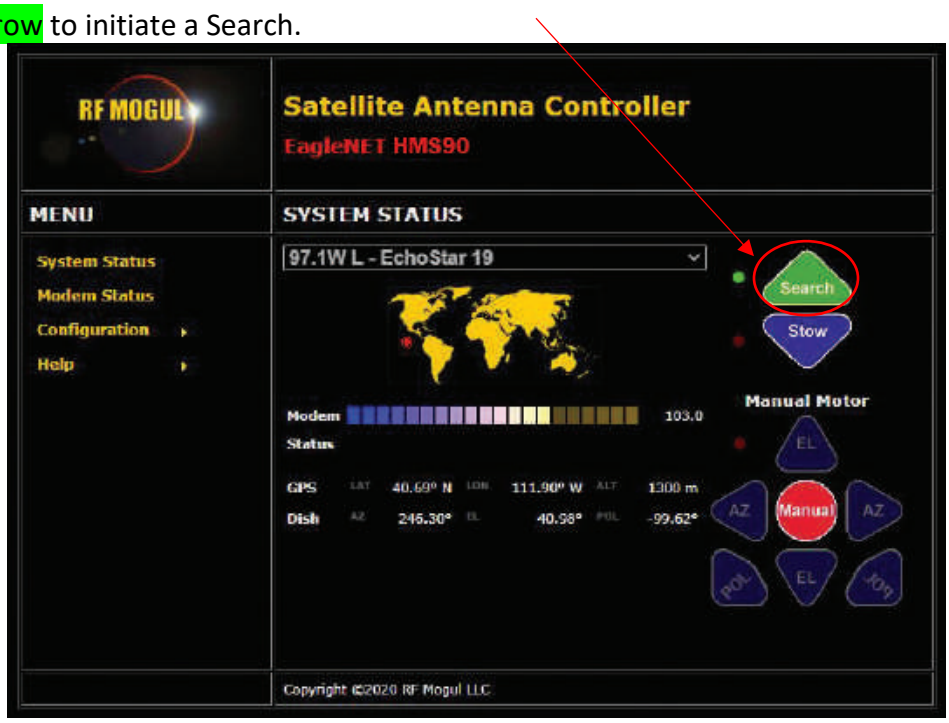

When the Satellite Antenna Controller shows Locked it will also display the total Search Time on the Top Right of the LCD Display.

Line 2 will display the Satellite, Beam, Polarity, and the Signal Quality of Peak (SQF).

**If all Modem Indicators are Lit, you should be able to Browse the internet at this time.**

# Searching for Satellite – Browser

Open a Web Browser to the correct IP Address of the Satellite Antenna Controller.
Select Search Arrow to initiate a Search.



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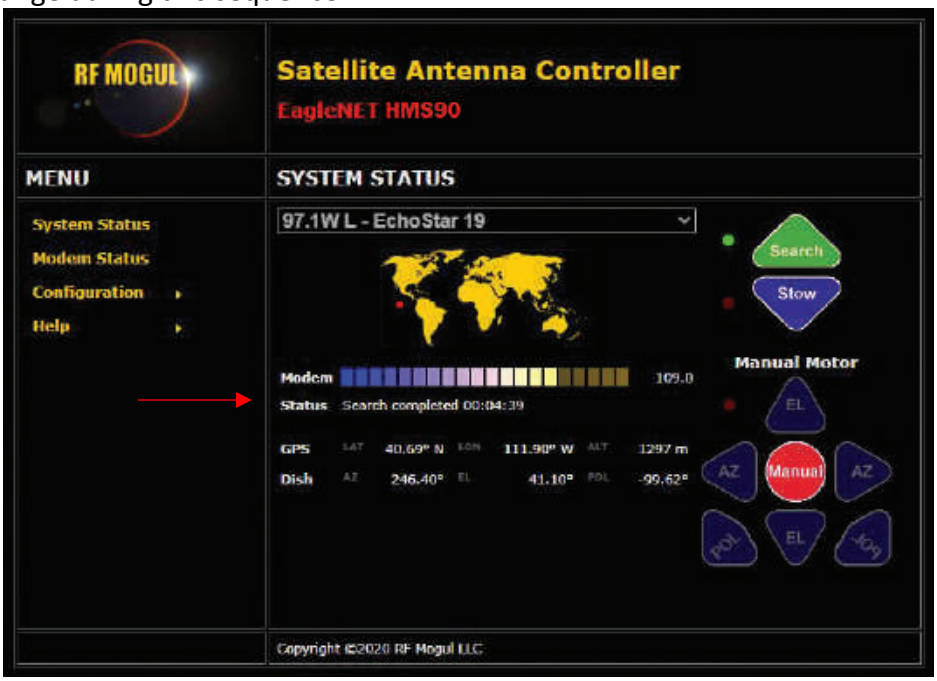
The Controller/Antenna will begin search and peaking routines. This process will take several minutes, and Status will change during this sequence.

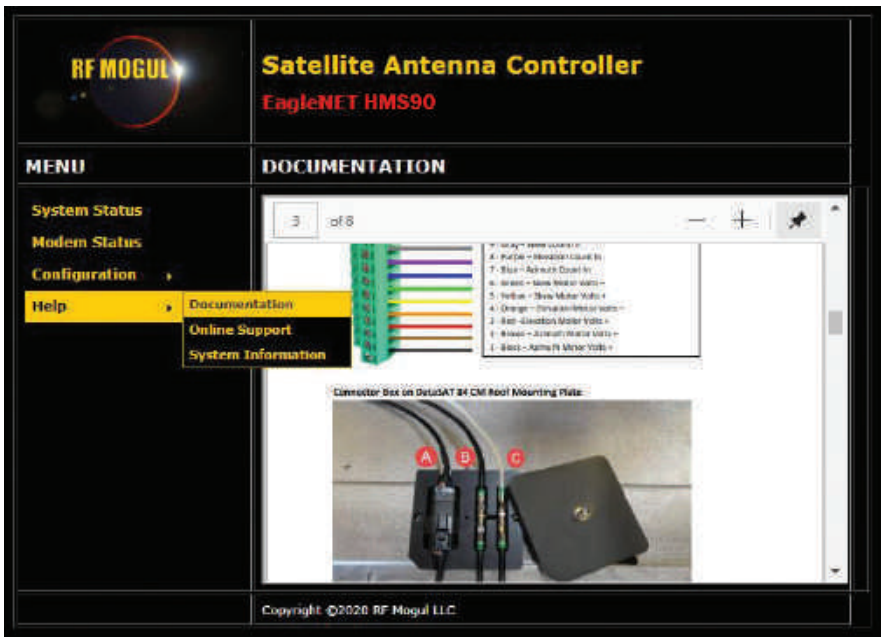



**When complete, Search Time and Signal Quality (SQF) will Display.**

**If all Modem Indicators are Lit, you should be able to Browse the internet at this time.**

# Detailed Setup Information

For additional Information concerning Installation, Setup, Configuration, Networking, Wiring, Troubleshooting, or other Features, please check our Help Section on our Menu Page.



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***This document was created using a Router and setting the Modem into the WAN Port.***

**If using a Switch, follow setup instructions below.**

Leave the Modem, PC and Satellite Antenna Controller connected to the Switch.

**To change this, you will need to:**

- Set PC IP Address to 192.168.10.10
- Open NETWORK SETTINGS page
- Change Controller IP Address to 192.168.0.250
- Change Gateway to 192.168.0.1

**Update Settings:**

- Set PC IP Address to 192.168.0.10
- Set PC Subnet to 255.255.255.0
- Set PC Gateway to 192.168.0.1

**Update and Close**
**Cycle power to Modem and Controller**

**Wait 2+ minutes for Modem to reset and come up**

- Open Controller using IP address 192.168.0.250
- Open Modem Status Page and check for Modem Information
    - This make take several minutes.
- If no connection check that Search Settings Modem IP is 192.168.0.1

# Stowing the system for travel

1) Press the stow button on the front panel of the Satellite Antenna Controller.
2) Verify the system is stowed by physically inspecting it.

**⚠ Caution: It is critical to physically inspect your antenna dish prior to moving the vehicle as traveling with the dish up will result in destruction of the antenna.**



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# Appendix

Figure 1)

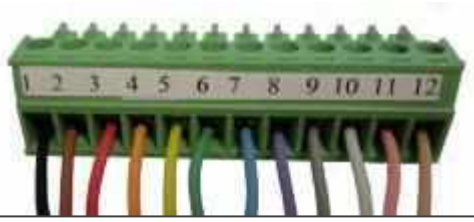
## HOW TO RAISE THE MOUNT WITH A BATTERY

Touch the following wires from the control cable directly to a drill battery, 9 Volt or any 12 VDC source and it will result in movement of the ODU. To reverse the direction, reverse the wires to your battery.

- **ELEVATION** ***Red and Orange*** will raise and lower the dish.
- **AZIMUTH** ***Black and Brown*** will rotate the mount clockwise and counterclockwise
- **SKEW** ***Yellow and Green*** will tilt dish to the right and left.

| Wire Color | Wire Function |
|---|---|
| **BLACK** | +AZ |
| **BROWN** | -AZ |
| **RED** | +EL |
| **ORANGE** | -EL |
| **YELLOW** | - SKEW |
| **GREEN** | +SKEW |

Figure 2)




| Pin | Color | How Used | Where Used |
|---|---|---|---|
| 12 - | Tan | GPS | RX Data In |
| 11 - | Pink | GPS | 16 VDC out |
| 10 - | White | GPS | Counter Input Common (Ground) |
| 9 - | Gray | Not used in HNS90 | |
| 8 - | Purple | Elevation | Count In |
| 7 - | Blue | Azimuth | Count In |
| 6 - | Green | Skew | Motor Volts – |
| 5 - | Yellow | Skew | Motor Volts + |
| 4 - | Orange | Elevation | Motor Volts – |
| 3 - | Red | Elevation | Motor Volts + |
| 2 - | Brown | Azimuth | Motor Volts – |
| 1 - | Black | Azimuth | Motor Volts + |

Figure 3)

If your GPS will not find Coordinates this is a temporary fix until GPS issue is resolved:

- Obtain GPS coordinates (Latitude/Longitude) Example… You can use Google Search "lat/lon of reno" if you are in the city of Reno. This will provide you with information needed. Only the whole number is required.
- Select menu #14 and enter those coordinates.
- Exit the Menu and press "Search" to find satellite.
- Call RF Mogul support to have the GPS error resolved



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