

IG-2500

Hardware Installation Guide



INSTALL GUIDE

**FOR PHYSICAL INSTALLATION OF
THE GROUND CONTROL IG-2500 MOUNT**

*Ground Control
Updated, Wednesday, October 02, 2002*



IMPORTANT INFORMATION

PLEASE READ

DANGER



The Federal Communications Commission requires professional installation of the Satellite Return antenna assembly.

CAUTION



The Satellite Return antenna assembly must be installed in a location or manner **not** readily accessible to children and at least **6** feet above ground level.

CAUTION



- This device emits radio frequency energy when in the transmit mode.
- To avoid injury, do not place head or other body parts between feed horn and satellite antenna dish when system is operational.
- Unplug indoor power connection before performing maintenance or adding upgrades to any antenna components.

INSTALLATION GUIDE

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FIRST STEP

The first step of installation is to get a special Billing ID from Ground Control. The Billing ID is used when you load the DIRECWAY software to the computer for the first time. These billing ID's are unique for the mobile satellite dish.

Please contact Ground Control at 800-773-7168 to receive your Billing ID prior to installation.

OBTAINING A BILLING ID

Make sure the customer knows which Internet Package they would like, and whether or not they desire to have the Satellite TV option. Questions like "Do they require a Static IP address?"... or "Do they plan to have more than one computer using the Internet Connection?" ...need to be known prior to getting the Billing ID.

Please get a Billing ID as soon as possible... ***Prior to Installation.***
Doing this could shorten the Installation time by hours.

GROUND CONTROL - 800-773-7168

CAUTION



- **The Satellite Return antenna assembly must be installed in a location or manner not readily accessible to children and a least 6 feet above ground level.**

MINIMUM REQUIREMENTS

ROOF SPACE MINIMUM REQUIREMENTS

The IG-2500 requires a 56" x 40" area in the center top of the vehicle to mount. Visually check to make certain that the dish arm does not hit any other mounted antenna or other device such as an Air Conditioner as it rotates on its axis.

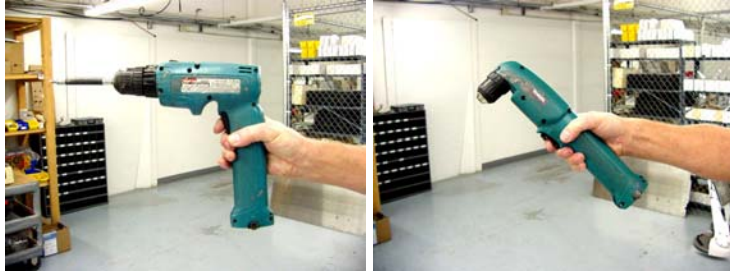


COMPUTER MINIMUM REQUIREMENTS

- Pentium III 500 MHz or Celeron at 800 MHz.
- 128 Megs RAM.
- 120 Megs hard drive space.
- CD-ROM Drive.
- Windows ME, 2000, XP.
- Available USB Port.
- Available Serial Port. **
- A working Dial-up Modem (for one time connection to activate dish)
- System Disk for Windows (if some required programs were not installed originally on your windows system).

** May use Belkin F5103 USB to Serial Adapter.

RECOMMENDED TOOLS – please see appendix A for list of tools and manufactures.



Power Screwdriver - A Short head driver is good for tight situations.



Stud Finder



Tape Measure



Volt Meter



Fish Tape



Hole Drill (different sizes)



Wire Strippers



TC-360 DLS Electronics
Coax Cable Crimping tool



Coax Cable Stripper



Long Drill Bit for
Pilot Holes



7/16 Open
Ended Wrench



Screw Driver



Mini Screwdriver

RECOMMENDED HARDWARE



Fiberglass
Roof



Rubber
Roof



Stainless Steel
Roof

USE THE PROPER SCREWS FOR THE TYPE OF ROOF YOU HAVE.

FIBERGLASS ROOFS – Must pre-drill. Self-tapping screws will chew up and damage the roof. Use non-self tapping screws.

METAL ROOF – Rubber covered metal/wood roofs may use self-tapping screws.

ALUMINUM ROOF – If your roof is aluminum, you will want to use a stainless steel self-tapping screw.

OTHER RECOMMEND HARDWARE



Cable Clamps



Zip Tie Straps



DICOR Roof Sealant



Dielectric Grease

We strongly recommend that DICOR roof sealant be used with any job where holes need to be sealed on a vehicle. Dicor has proven to be superior to other silicon sealants. DiElectric Grease is needed to create a watertight barrier for electronic connections. Please make sure that the grease you are using is di-electric, which means it does not conduct electricity.

COAX CABLE (also know as RG6)

The IG-2500 ships with enough coax cable to wire you system. If you choose to purchase additional coax cable, it **MUST** be of a high quality.

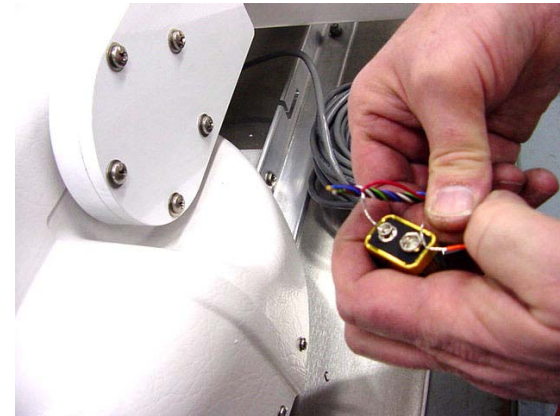
COAX CABLE CONNECTORS

Ground Control recommends that you use coax connectors that do not have a rubber washer for weatherproofing. We recommend using very high-grade connectors and sealing them with di-electric grease upon installation. These connectors are exposed to sever weather and should be treated as vital connections.

STEP 1. UNPACKING THE DISH FROM THE SHIPPING CRATE

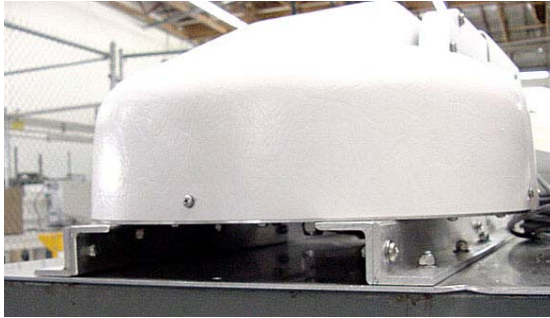
Remove the screws that hold the IG-2500 to the shipping crate and remove the IG-2500 Dish.

RAISING THE DISH MANUALLY - To raise the dish after unpacking it from the shipping crate, find the Control Cable that is connected to the mount. You'll notice two wire leads (Red & Orange) sticking out from the Control Cable. To raise the dish, connect the Red lead to a positive 12-volt or 9 volt lead, and the Orange lead to negative. (Use of a Power screwdriver battery is also recommended). Reverse the leads to lower the dish.



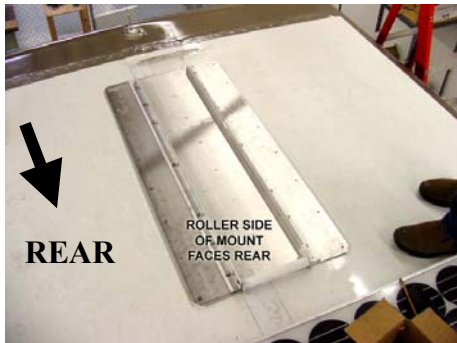
WARNING – WHEN RAISING THE DISH MANUALLY, THE CONTROL CABLE **MUST NOT BE CONNECTED TO THE MAIN CONTROLLER!** If the control cable is connected to the Main Controller when you manually move the dish, you will damage the internal circuitry. If the Control Cable is already connected to the Main Controller and you want to raise or lower the dish manually, **DISCONNECT the Control Cable from the Main Controller FIRST.**

STEP 2. REMOVING MOUNTING PLATE FROM THE DISH (OPTIONAL, you do not have to remove the mount from the mounting plate for installation. It may be helpful in some situations.)



Four screws attach the Dish Mount to the Dish Mounting Plate. Locate and remove the four screws and lift the Mount off the mounting plate.

STEP 3. FINDING A GOOD MOUNTING LOCATION



WARNING - Make sure the roller side of mount faces **the REAR** of the vehicle.

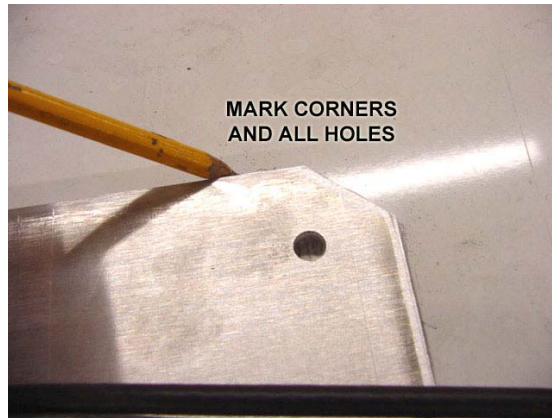


Place the Mounting plate in the center of the Roof. Use a Stud Finder to help you find cross beams that line up some of the holes. Screwing into cross beams help secure the IG-2500 to the roof.



Make certain that you have at least 7 inches between the roller bar and any item behind the bar.

STEP 4. MARKING THE POSITION OF THE MOUNTING PLATE



You will need to mark the corners of the mounting plate as well as the holes you intend to drill through for later realignment.

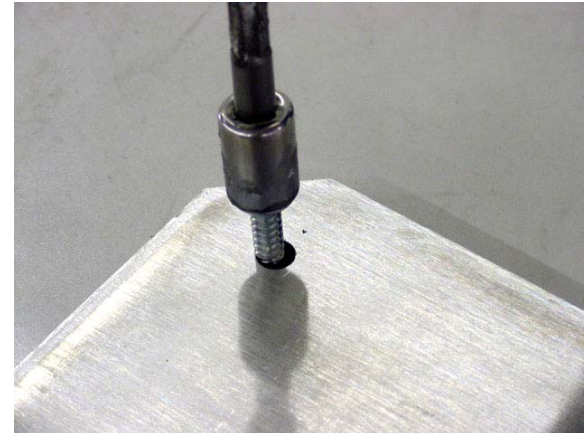
STEP 5. PRE-SEALING THE ROOF



Remove the Mounting Plate, and Pre-Fill all holes to be drilled.



STEP 6. PLACE THE MOUNTING PLATE AND SCREW INTO PLACE



CAREFULLY move the mounting plate over holes and slowly drop it into place. Center the holes over each marking and press down slightly on plate. Once centered, attach the plate to the roof with short screws.

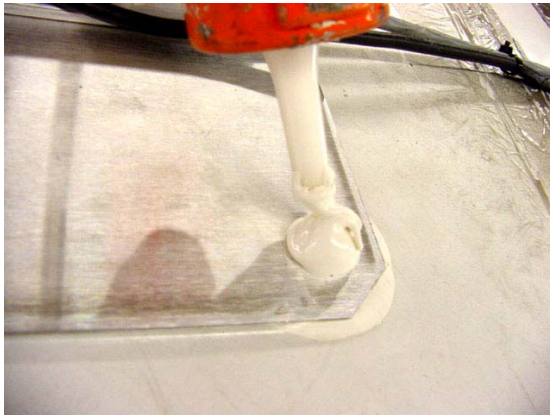
⚠ WARNING



- Verify before you drill that there are no electrical wires in the wall near where you will be drilling.
- You may be killed or seriously injured if you contact wiring while drilling.



NOTE - In this case, the roof is rubber on top of a wood ceiling. Self-tapping lag screws are okay. Self-Tapping Screws do not work on fiberglass roofs.



Cover up each screw with Dicor to prevent moisture penetration.

STEP 7. ATTACHING DISH TO MOUNTING PLATE



Drop the Dish Mechanism to the mounting plate and insert the four bolts/nuts that secure the dish to the mounting plate.

STEP 8. RUNNING WIRES

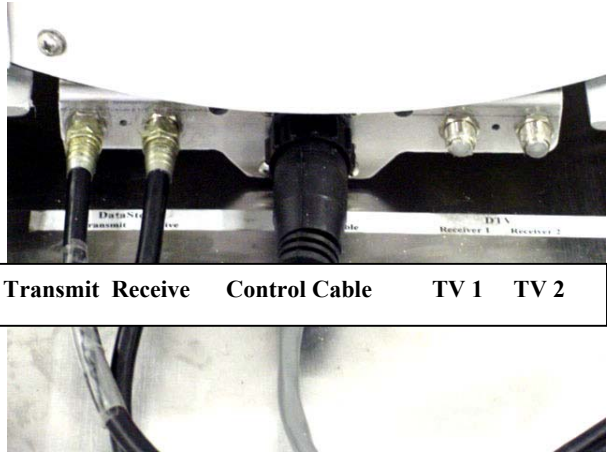
WARNING – Make sure your wire run does not parallel any AC wires in the vehicle. Doing this may cause interference into the wiring, and the dish electronic will malfunction.

The following cables are supplied:

1. Control Cable
2. Two RG6 coax cables with solid copper center conductor for the Receive and Transmit connections to the Main Controller (Commscope 5729 or equivalent)
3. RUN THE RG6 COAX TRANSMIT & RECEIVE CABLES & CONTROL CABLE – Select a location inside the vehicle close to the customer's PC for installing the DIRECWAY Receive and Transmit modems and the Main Controller.

NOTE - The modems will need to be fairly close to the computer. You can connect 2-USB cables in series using a USB connector for about a 12' **maximum** run.

FRONT OF DISH MOUNT WHERE CABLES CONNECT TO THE MOUNT



Transmit	Receive	Control Cable	TV 1	TV 2
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PREPARING WIRES – Take care in connecting coax connectors to the coax cable.
Many errors are the direct result of improper Coax Cable connections.

Cables to run....

- Transmit Modem (ITU) - 1 RG6U
- Receive Modem (IRU) - 1 RG6U
- Control Cable - 1 IG-2500
- Satellite TV - Up to 2 RG6U

Coax Connector Installation Instructions



Use a cutting tool to cut the end of a coax cable. This tool can be purchased at any Radio Shack store.

NOTE - FOLD THE STRANDS BACK OVER THE PLASTIC COVER.



It is important that you fold over the wire strands of the coax cable over the outside plastic covering so that proper grounding is made to the connector you will be attaching... Not doing this will result in systems going bad while on the road.

Also...Make certain that no metal wire strands are shorting the center wire of the coax cable.



Attach Coax Connector to end of Coax Cable



Use a crimping tool to secure the connector to the cable.

NOTE- See appendix A for list of tools and manufactures.



Finished Coax Connector



Put DiElectric Grease into the ends of each connector that is exposed to outside elements. The DiElectric grease will make sure you maintain a waterproof seal.



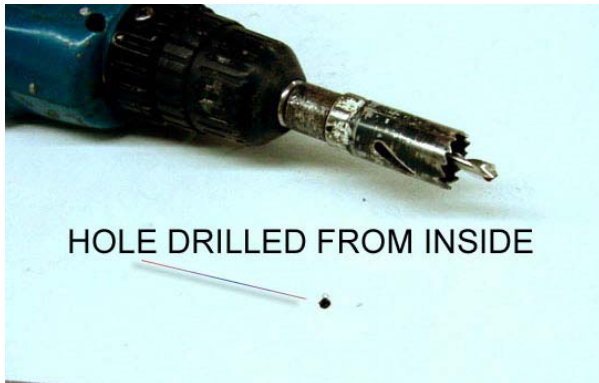
Mark the Transmit cable at both ends.

	WARNING
	<ul style="list-style-type: none">• Verify before you drill that there are no electrical wires in the wall near where you will be drilling.• You may be killed or seriously injured if you contact wiring while drilling.

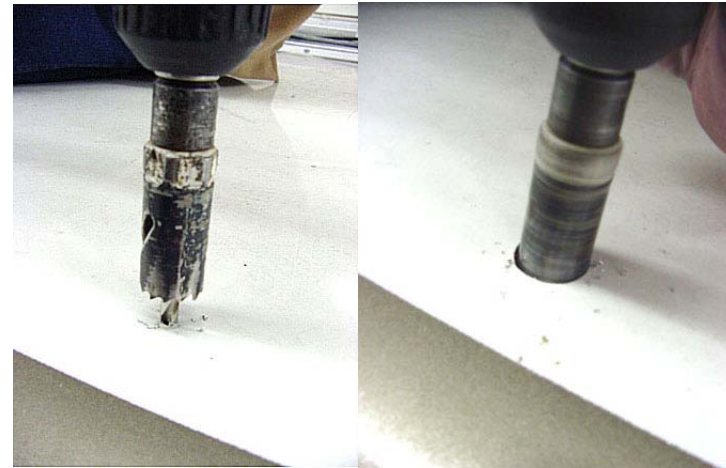


From inside the vehicle, locate where you wish the cable to drop in from, and drill a hole with a **long** narrow drill bit through to the roof. This will give a pilot hole when you drill from the top of the roof down.

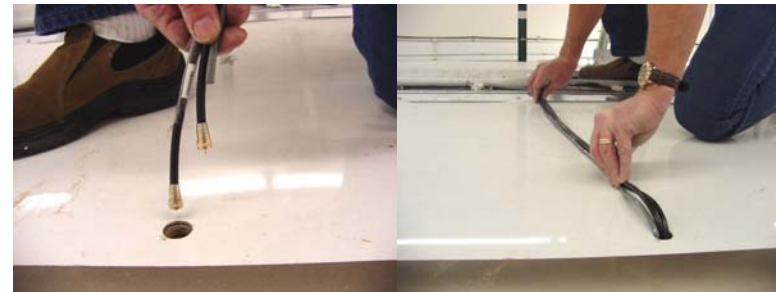
WARNING – Make sure your wire run **does not** parallel any AC wires in the vehicle. Doing this may cause interference into the wiring, causing the dish electronic to malfunction.



On top of the roof, a hole should be created from the long drill bit. Use a hole-drill bit to make a hole large enough for 2-4 coax cables and a control cable.



Drill hole in roof using the pilot hole as a guide. Drill till you are almost fully through the ceiling. Drill the last section from the inside of the vehicle up to keep the hole edges clean on both ends.

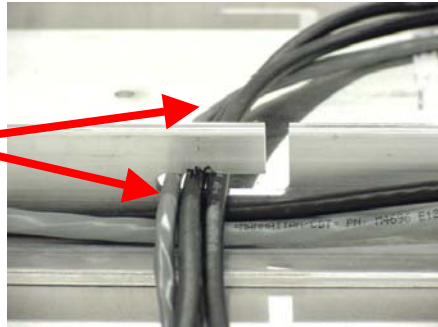


Run the wires through the hole on the ceiling.



Use a plastic sleeve around cables at the hole if sharp edges can cut through the cables.

Cable ties at these locations will keep the cables from chaffing.



Run the cable through the slot on the mount.



Spend time to assure a watertight seal where the cables enter the vehicle. Squeeze Dicor **between** the cables as well. **An optional method would be to use a stainless steel clamshell.**



Put a dab of Dicor under a plastic cable clamp before you drill a hole to secure the clamp. After it is screwed in, cover the rest of the screw with Dicor.



Use Zip ties to secure wires to each other.



Secure the cable with cable clamps inside the vehicle in inconspicuous areas.



Connect cables to dish mount to complete the install on top of roof.

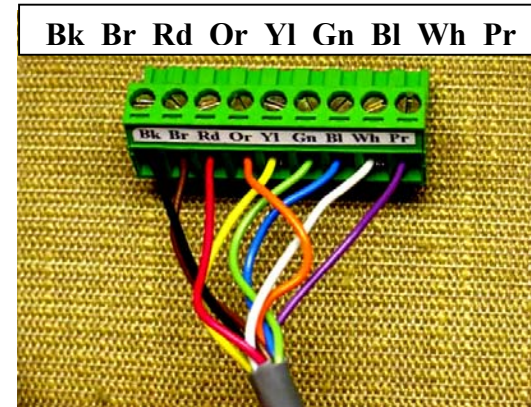
STEP 9. CONNECTING MAIN CONTROLLER & MODEMS



Cut the control cable to length once it has been pulled inside the vehicle. Remove 2" of the plastic cover to expose the wires.



Use wire strippers to remove the sleeve around each wire, and the FOLD the wire back onto the sleeve as shown. (This makes a better connection).



Using a small screwdriver, attach each wire to the green 9-Pin connector supplied with the IG-2500. The connector is color coded so that each wire has a specific location to be secured into.

RUNNING 12 VOLT - You will have to run a 2-conductor cable (supplied) from a 12-volt source (**2 Amp Minimum, 3 Amp is preferred**) to the main controller. This power line should not be connected to the ignition where it can be turned off. It should always be on (such as a cigarette lighter socket) for safety reasons. Use a voltmeter to make sure that you have found a Positive and Negative lead.

MANUALLY MOVING THE DISH

WARNING – Make sure that you remove the 9-Pin Control Cable Connector from the back of the main controller **BEFORE** you put a power source to the dish control wires or you **WILL** damage the circuitry on the main controller.

If you need to manually move the dish, you may do so by removing the 9-pin connector from the back of the main controller. Then, using a small screwdriver, remove the wires from the connector and plug in certain colors into the 12-volt power lead that powers the main controller.

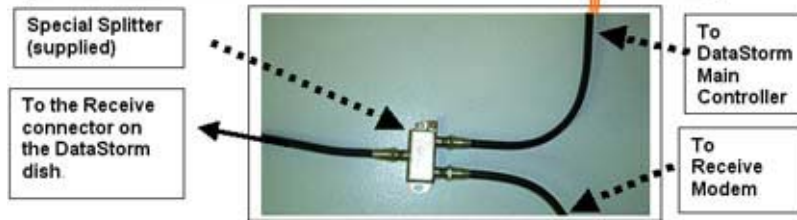
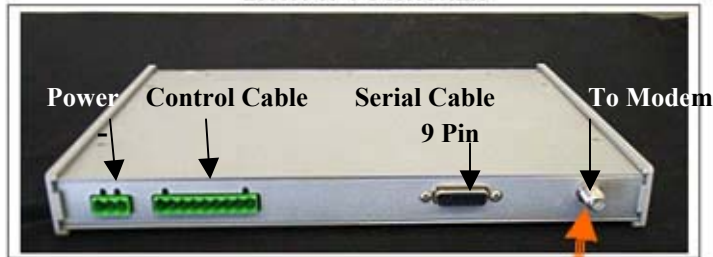
ORANGE & RED wires raise and lower Elevation.

BROWN & BLACK wires rotate the dish.

BROWN AND RED wires skew the dish face.

Simply reverse the wires to make the movement reverse.

BACK OF POSITIONER



- The Positive lead for the power line is Red and comes from a 12-volt power source such as a cigarette lighter.
- The Control Cable connects to the dish on the roof.
- The Serial Cable connects to the computer.
- The "To Modem" line goes to the splitter.



Note: Air circulation is required to prevent premature or intermittent failure due to overheating. Failure to provide proper ventilation may void warranty.

There are only 4 cables that attach to the back of the DIRECWAY modems.

- The far-left white cable is the USB cable that attaches to the computer.
- The black circular cable is the modems AC power supply.
- The top right Coax Cable is the Receive Modem that connects to the splitter (see wiring diagram).
- The bottom right Coax Cable is the Transmit cable that is connected to the DIRECWAY satellite dish.

STEP 10. CONNECTING COMPUTER



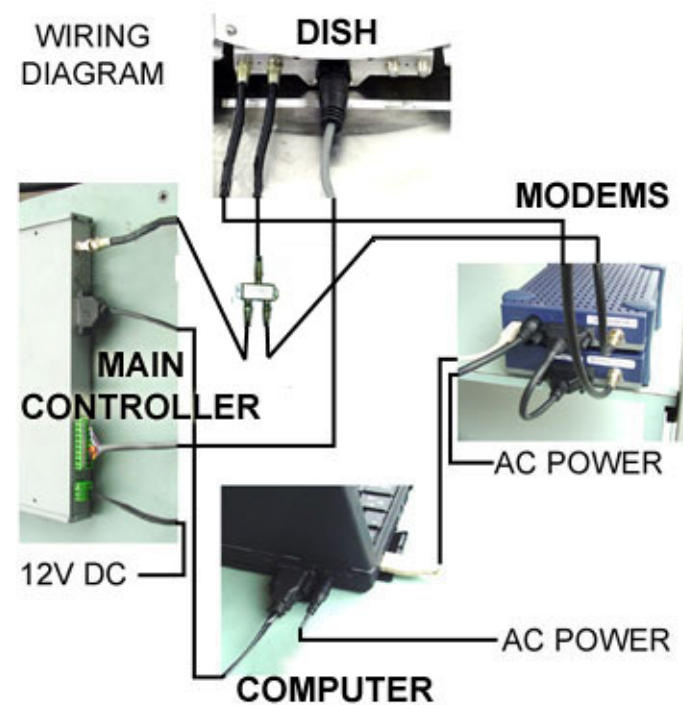
Connect the Serial cable from Main Controller and locate the USB cable from the modem. The other cable in this picture is the power cable for the laptop.

We recommend that you install a UPS (Uninterrupted Power Supply)

WARNING – KEEP THE USB CABLE UNPLUGGED TO THE COMPUTER UNTIL THE DIRECWAY SOFTWARE ASKS THAT YOU PLUG IT IN... OR ELSE THE COMPUTER MAY LOAD THE WRONG USB SOFTWARE TO THE COMPUTER.



Installation requires a phone line connection the *first time* the DIRECWAY software is installed and "Web Setup" is run. Please refer to the **Software Installation Manual** for this procedure.



FINAL INSTALL TEST – If the IG-2500 folder has been copied over to your Desktop from the CD-ROM, simply open it and run the IG-2500 software.

Once the main screen is open, click on "Test Dish" to see the dish is working.

Test dish takes approx. 10 minutes to perform. It is also calibrating Tilt Sensors, so it is wise to have the vehicle level. (Test Dish may be run again if is impossible to have the vehicle level).

For the purposes of installation, we are only concerned that the dish is receiving commands from the computer.

Test Dish should be run again during the software installation process for true calibration.

IG-2500 SPECIFICATIONS

MOUNTING PLATE DIMENSIONS

48" inches long by 21 ¾" inches wide.

DISH STOWED DIMENSIONS

**54" inches Long by 39 ½" inches wide
by 10 ½" inches tall.**

DISH FACE DIMENSIONS

39 ½" wide.

TOTAL WEIGHT OF DISH MOUNT

105 lbs.

MAIN CONTROLLER BOX

**1" inch tall, by 11" inches wide, by 9"
inches long. (located inside vehicle)**

TRANSMIT AND RECEIVE MODEMS

12" long, by 7" wide by 3 ¾" tall (Stacked). (Located inside vehicle)

OPERATING PARAMETERS

-20 degrees F to 120 degrees F

POWER

12 Volt DC 2 amp for Main Controller

120 Volt AC for Modems

NOTE:

Air circulation to the modems is required to prevent premature or intermittent failure due to overheating. Failure to provide proper ventilation may void warranty.

FCC ID: K3Y1021938

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This product is the subject of one or more U.S. or foreign patents pending.

DirecPC is a trademark of Hughes Electronics Corporation.

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