

Programmable Antenna Rotator Controller with Infra-Red Remote Control

Owner's Guide to Installation and Use

Model 9521 Drive and Controller, 117 VAC
Model 9521EU Drive and Controller, 230 VAC
Model 9537 Controller Only, 117 VAC
Model 9537EU Controller Only, 230 VAC



CAUTION: Read and adhere to all IMPORTANT SAFEGUARDS listed elsewhere in this booklet. Read and observe safety, installation and operating instructions supplied with this unit and with your antenna BEFORE installation or operation. Retain this booklet and all instructions for your safety and future reference.

Controller Compatibility - If purchased separately, the Model 9537 controller may be used with the following rotator drive units:

Channel Master® - Models 9500, 9510(A), 9512, 9513, 9515(A)
Radio Shack® - Model 15-1225

If you are upgrading an existing installation with Model 9537 controller, skip to "Model 9537 Programmable Controller" in this leaflet.

Drive Unit Installation

STEP 1 – Determine proper size number of rotator cable from chart. Three conductor cable is suitable, but if four conductor cable is used, connect both conductors 3 and 4 to terminal 3 of the terminal board.

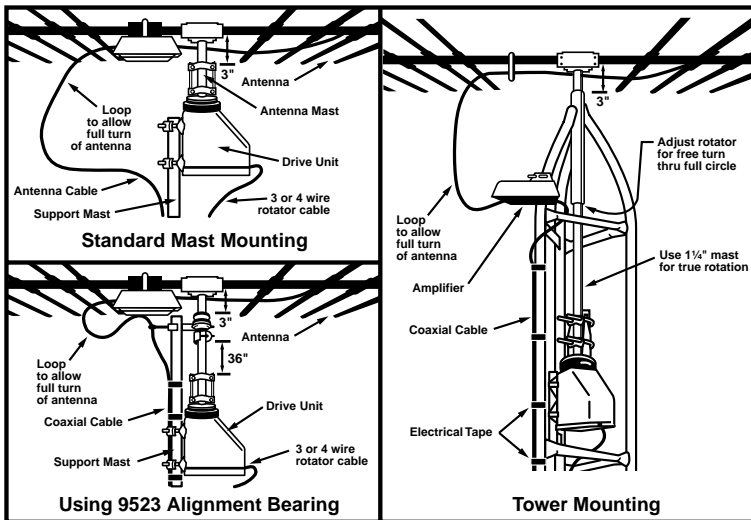
Gage		No. of Conductors	Maximum Length	
AWG	MM		Feet	Meters
22	0,6	3	180	55
22	0,6	4*	200	61
20	0,8	3	280	85
20	0,8	4*	310	95
18	1,0	3	445	136
18	1,0	4*	510	155

**Attach 3 and 4 conductors to No. 3 terminals on control and drive.*

STEP 2 – Install drive unit. On new drive units, arrow on mast support should be aligned with arrow shaped mast stop on housing. Install antenna pointing south. When desired channels are close to or on opposite sides of the north end stops, the antenna may be installed pointing north. Note, however, that the antenna will then be pointing in the opposite direction from that indicated on the control.

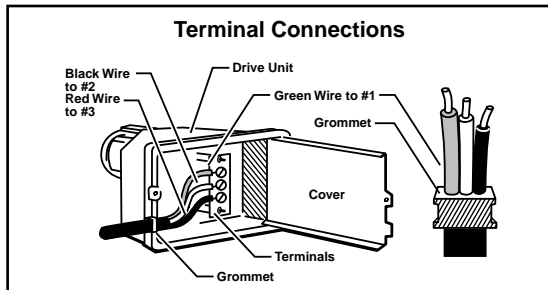
An alternative means of setting up is to perform a synchronization of the drive unit using the controller. Then set up the antenna pointing north. Ensure power is disconnected from the controller when making antenna adjustments.





Do not mount citizens band base station antennas on top of a standard mast mount drive unit. Mast support may become overloaded in high winds.

STEP 3 – Connect rotator cable to drive unit terminal board following the sketch at the right. Caution: When using jacketed cable, be sure jacket of cable passes thru the grommet to avoid moisture collecting in the cable.

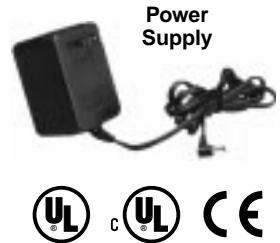
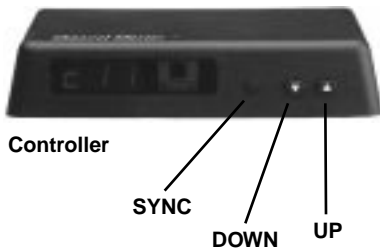


Caution – Make sure bare connectors do not touch. It is suggested that the screws and bare conductors be painted with nail polish after cable is connected. To avoid moisture collecting in the cable be sure jacket of cable passes thru the grommet.

STEP 4 – Attach rotator cable and antenna cable securely to mast or tower, and pass through building to TV or FM set. Note: See Step 2 of the Important Safeguards section regarding grounding of the control cable and lead-in cable for lightning protection.

Model 9537

Programmable Controller with Infra-Red Remote Control



Features:

- 69 Programmable Antenna Locations (01-69) - Allows location number to be same as channel number.
- Digital Compass 000-360 degrees with direct access and up/down.
- Universal Remote Control - Use with supplied handheld unit or most universal handheld controllers configured as a Pioneer® Cable Box (HH1) or Pioneer® CD Player (HH2). Compatible with most DSS®, Primestar® and Dish Network® universal handheld remote controls. (Channel Master® cannot guarantee universal handheld remote control compatibility.)
- Automatic Synchronization
- Signal Peaking - with up and down controls.
- Digital Diagnostic Display - For setup and maintenance.
- Non-Volatile Memory - Stores locations and setups during a power failure.

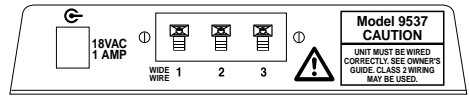
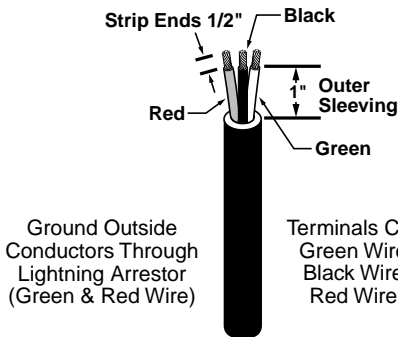


Controller Installation and Setup

Important Note! Before disconnecting old control box, make note of each wire color and the corresponding terminal connection.

Caution – To reduce the risk of electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

1. Determine the AC supply voltage and frequency in your country. The US, Canada, Japan, Taiwan and South America are generally 117 VAC 60 Hz. Europe, Africa, Australia and Asia (except above mentioned) are generally 230 VAC 50 Hz. Your power company will advise. Ensure the supplied wall plug power supply voltage has the same input voltage as your household supply ($\pm 10\%$). If not, contact your dealer.
2. Plug the power supply into the controller and the household supply. Observe the digital diagnostic display. It should display:
60H (or 50H in 50 Hz countries)
HH1 (to use with the supplied handheld remote control)
If the above are not correct refer to Appendix A to change.
3. Disconnect the wall plug supply at the wall outlet. Connect the cables between the controller and drive unit.



The exclamation point indicates the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

4. Reconnect the AC supply to the controller. After 5 seconds it will switch off. Switch back on by pressing any key on the front panel or handheld remote control. Perform a synchronization by pressing the sync button on the front panel. This takes slightly over one minute. The unit may now be operated from the front panel using the up and down controls.
5. Digital Compass. This feature operates as follows:
The display is 000 to 360 degrees where
000 is North (fully CCW viewed by a bird)
090 is East
180 is South
270 is West
360 is North (fully CW viewed by a bird)



Operation From The Supplied Handheld Remote

1. Install 2 AAA batteries in the handheld remote.
2. Check operation by pressing the POWER button and observing the display. If it does not function, check for HH1 in power up diagnostic display. If the display is HH2, refer to Appendix A to change.
3. The UP and DOWN controls will move the antenna position (the same as the front panel controls). Alternatively, a location may be accessed directly using a 3 digit compass location. Example, press 090 for East, 225 for South-West, etc.

4. Programming Preset Locations

This is the most popular mode of operation. 69 preset locations (01 to 69) allow location numbers to be the same as TV channel numbers if desired.

a. Find best signal using UP and DOWN controls.

b. Decide on a memory location, eg. 27.

c. Press 27 UP 27.

(Locations 01 to 09, eg. 05 may be programmed by either 05 UP 05 or 5 UP 5.)

d. Location is now memorized.

5. Accessing a Preset Location

As an example, to access location 27, press 27. Display will flash "c27", then show compass bearing while the antenna is moving. It will become steady "c27" when it arrives. (Locations 01 to 09, eg. 05 may be accessed as either 05 or 5).

6. Displaying Memory Locations/Status

From the handheld remote control, press 99 UP. Then observe the display. Each programmed location is shown, followed by its digital compass location. Additionally settings of power frequency, handheld, autosync and timeout are shown. A typical display might be:

60H	60 Hz power
HH1	handheld 1
c05	
270	compass bearing for c05
c11	
090	compass bearing for c11
c17	
270	compass bearing for c17
c25	
180	compass bearing for c25
SYn	
on	autosync on
35	35 moves before a resync
to	
on	timeout on
888	end of diagnostics

7. Deleting Programmed Locations/Reset

Press 91 DOWN from the handheld remote control. **CAUTION - Use this command with care as ALL memory locations will be deleted. This will also set autosync off and timeout on.**



8. Synchronization

Press the SYNC key on the front panel or 00 DOWN from the handheld. A counterclockwise movement is performed to synchronize the control unit with the drive unit for proper operation. Synchronization takes slightly over one minute.

After severe storms, or an extended period of use, the rotator may appear to position the antenna incorrectly. First try pressing the SYNC key to re-synchronize the system. If this fails, the antenna or drive motor may be misaligned on the mast. You may either go to the antenna and re-orient it, or reprogram the control unit to correspond to the new antenna orientation.

9. Auto Synchronization

The unit may be set to program a sync command automatically after 50 preprogrammed moves. This feature is switched on (or reset to 50) by pressing 98 UP. It is switched off by pressing 98 DOWN. Check to see if active by pressing 99 UP (Display Status) and observing "SYn on" or "SYn OFF".

10. Timeout

The unit may be set to switch off after 8 minutes of no activity by pressing 97 UP. This feature is deactivated by pressing 97 DOWN. Check to see if Timeout is active by pressing 99 UP (Display Status) and observing "to on" or "to OFF". The unit automatically switches off 5 seconds after it is initially plugged in or after a power glitch.

Using the controller with a "Universal Remote Control"

Universal handheld remote controls are popular as they can typically control a TV, a VCR, a cable box and audio components. They are also cheap and ideal replacements for lost and broken units. The rotator controller will respond to commands from universal remote controls configured to control most Pioneer® brand cable converter boxes (HH1 mode) or most Pioneer® brand CD players (HH2 mode). See Appendix A. Refer to the instructions supplied with the universal remote control. Note: Channel Master cannot guarantee universal handheld remote control compatibility.

Appendix A

Front Panel Setup Summary

SET 60 Hz POWER ▲+ ▼	AT POWER UP
SET 50 Hz POWER ▲+ ▼+ SY	AT POWER UP
SET REMOTE HH1 ▲+ SY	AT POWER UP
SET REMOTE HH2 ▼+ SY	AT POWER UP

Example: To set for 60 Hz power:

- Disconnect the power connector at the rear of the unit.
- Press and hold UP and DOWN **in together**.
- Reconnect the power connector at the rear end of the unit.
- Release UP and DOWN

Other functions are set in a similar manner using the following buttons at b and d:

50 Hz POWER: UP, DOWN, and SYNC

Remote handheld 1 (supplied unit and most Pioneer® cable boxes): UP and SYNC

Remote handheld 2 (most Pioneer® CD players): DOWN and SYNC

Check settings are correct by removing power for a few seconds, then reconnect power.

Display will indicate:

60H (or 50H for 50 Hz)

HH1 (or HH2 for alternate remote)



IMPORTANT SAFEGUARDS

Your antenna rotator unit, consisting of a control and a drive, has been engineered and manufactured to assure your personal safety, but improper installation or abuse of this unit, or the antenna connected to it, can result in potential electrical shock or fire hazards. In order not to defeat the safeguards incorporated in this unit, observe the following basic rules for its installation, use and servicing.

1. An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
2. If the drive unit is installed on an outdoor antenna, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA70, or CSA C22.1 Sections 10, 16, and 54, of the Canadian Electrical Code, provides information with respect to proper grounding of the mast and supporting structure, grounding of the antenna lead-in wire and drive-unit to control-unit interconnecting cables to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See separate enclosed grounding code on page 26.
3. Your control is provided with ventilation openings to allow heat generated during operation to be released, if these openings are blocked, heat build-up can cause failure of the control and external damage. Therefore:
 - Never block the ventilation slots by placing it on a bed, sofa, rug, etc.
 - Never place in a "built-in" enclosure unless proper ventilation is provided;
 - Never cover the openings with cloth or other material;
 - Never place near or over radiators, heat registers, amplifiers, or other heat sources.
4. Your control may be equipped with a polarized AC line plug (one blade of the plug is wider than the other). This safety feature allows the plug to fit into the power outlet only one way. Should you be unable to insert the plug fully into the outlet, try reversing the plug. Should it still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
5. Operate the control only from an A.C. power source as indicated on the bottom of the control. Do not use D.C.
6. Overloaded AC outlets and extension cords are dangerous, and so are frayed power cords and broken plugs. They may result in a shock or fire hazard. Unplug the control and call your service technician for replacement.
7. Do not allow anything to rest on or roll over the power cord, and do not place the control where power cord is subject to traffic or abuse. Pay particular attention to the cord at the plug and the point where it exists from the control unit. This may result in a shock or fire hazard.



8. All individuals, especially children, should be cautioned about dropping or pushing objects into any openings. Some internal parts carry hazardous voltages and contact can result in electrical shock. Objects dropped into the control may also result in a fire hazard.
9. Never expose the control to rain or water. If the control becomes damp or wet, or if liquids are spilled into it, unplug the control and have it inspected by a service technician before further use. Liquids, rain or excessive moisture may cause electrical shorts which can result in fire or shock hazards. Never operate the control near water; such as a swimming pool, etc. or near a bathtub, sink, laundry tub or in a wet basement.
10. Unplug the control before cleaning. Use a slightly damp (not wet) cloth. Do not use an aerosol directly on the control since it may over spray and cause electrical shock.
11. Whenever the unit exhibits distinct change on performance unplug the control and call your dealer or service technician.
12. Any attempt to disassemble the control or drive portions of this unit may expose you to high voltage or other hazards. Observe all cautionary labels, warnings and safeguards.
13. If the control has been dropped or the case has been damaged, fire, and shock hazard may exist. Unplug the control and have it checked by a service technician before use.
14. When replacement parts are required, have the service technician verify that the replacements used have the same safety characteristics as the original parts. Unauthorized substitutions may result in a risk of fire or electric shock, or other risks.
15. Upon completion of any service or repairs to the unit, please ask the service technician to perform routine safety checks to determine that the unit is in a safe operating condition.
16. For added protection of the control during a lightning storm or when control is to be left unattended for an extended period of time, unplug it from the wall outlet and disconnect the rotator cable. This will prevent possible shock, fire hazard and damage to the control due to lightning storms or power line surges.
17. Always use extreme caution when installing a rooftop antenna and rotator system to reduce the risk of falls. Wear rubber-soled shoes and use a sturdy ladder. Do not install on a windy day or when the roof is wet or is covered with ice or snow.



Appendix B

Handheld Remote Control Command Summary

SYNC:	00▼
PROGRAM:	#▲# (# = 01-69)
DISPLAY MEMORIES/STATUS:	99▲
AUTOSYNC ON/RESET TO 50:	98▲
AUTOSYNC OFF:	98▼
TIMEOUT (8 MINUTES) ON:	97▲
TIMEOUT OFF:	97▼
DELETE MEMORIES/RESET:	91▼

Appendix C

Common Problems

HANDHELD CONTROL DOES NOT FUNCTION

Battery bad or set for wrong handheld type (Appendix A).

UNIVERSAL HANDHELD DOES NOT OPERATE CERTAIN FUNCTIONS (eg. UP/DOWN)

If supplied remote control is OK, try all available Pioneer® cable box and Pioneer® CD player codes. Universal remote may not be fully compatible.

UNIT DOES NOT TRACK CORRECTLY

Check power frequency 50/60 Hz setting (Appendix A).

POSITION ACCURACY SEEMS DEGRADED

Perform SYNC function.

ANTENNA DOES NOT MOVE, BUT CONTROLLER INDICATES MOVEMENT

Check the wiring between the controller and the drive unit.

Appendix D

Using the rotator from any room in the house.

The following methods and products are suggested though not endorsed by Channel Master®:

- a. A UHF universal remote with a UHF to infra-red converter in the same room as Model 9537.
or:
- b. An infra-red to UHF converter in each room where operation is desired, plus a UHF to infra-red converter in the same room as Model 9537.



This device complies with part 15 of the FCC rules. Operation is subject to the following two 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.

Model 9537 Controller Only:

Channel Mastr®
1315 Industrial Park Drive, Smithfield, NC 27577, USA

Model 9521 Drive and Controller/
Drive Unit Only:

Channel Master® Rotator Division
Crown, New Bremen, OH 45869, USA

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