

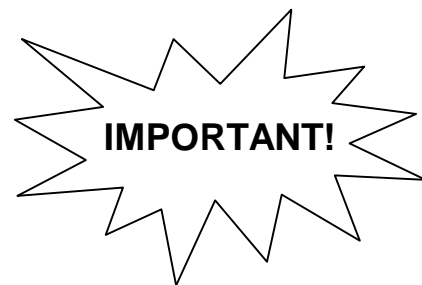


## The DBS-4500 / *Land Version* In-Motion Satellite Television System

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### User's Guide

- Includes:  
– 100 Series Antennas

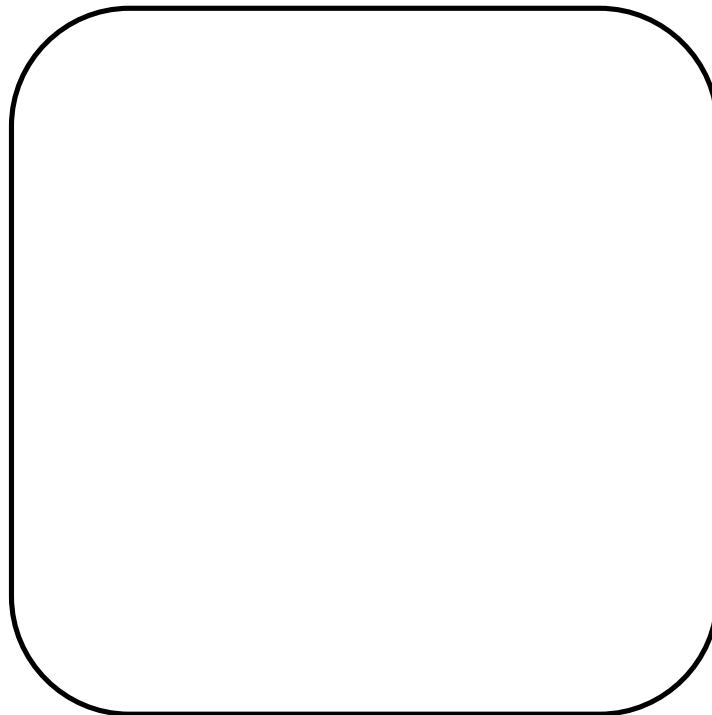


**DO NOT OPERATE THIS SYSTEM  
WITHOUT FIRST READING  
SECTIONS 3 & 7 OF THIS MANUAL.**

# NOTICE!!

## Important Warranty Information

Keep this User Guide with the Antenna System at all times.



For Customer Service, contact an Authorized Service Center nearest you, or call Datron at 1-(800)-287-5052.

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### APPENDIX A – DATRON SATELLITE SYSTEM RECEIVER COMPATABILITY MATRIX

## **1. Introduction**

Thank you for purchasing CruiseTV?, Datron's DBS-4500 Land In-Motion Satellite Television System. You now own one of the most advanced automatic satellite systems available, providing access of more than 200 channels of digital television and CD quality audio programming while your vehicle is in motion. The DBS-4500 is specially designed for Direct Broadcast Satellite (DBS) television viewing while traveling on highways and thoroughfares in the lower 48 states that have a clear view to the southern sky.

### **1.1 What to Expect While Operating the DBS-4500**

The DBS-4500 has been designed as an open road, cross-country system that works best on open stretches of road. It has not been designed to drive around town, but may surprise you with its in-town capabilities. As you drive your DBS-4500 you will learn its characteristics and how it works best for you. If you encounter any conditions that you don't expect, just contact us at 1-800-287-5052 and we will discuss them with you.

### **1.2 Features of your DBS-4500**

- ? Automatic signal acquisition from anywhere in the Continental United States on roads with an unobstructed view to the DBS satellite in the southern sky.
- ? Automatic satellite tracking and TV viewing while your vehicle is in motion
- ? Dual LNBF allowing two receivers to be used simultaneously
- ? Automatic system calibration
- ? On-screen status reporting
- ? Compatibility with most digital satellite system receivers equipped with a low speed data port
- ? Power conservation mode when vehicle is parked

This User's Guide describes the operation and use of the DBS-4500 satellite system. Operation of your satellite receiver is covered in your receiver's operating instructions.

Please take the time to read this booklet completely. Your new CruiseTV? system by Datron represents the very latest in satellite tracking technology. Therefore it is very important that you understand the proper operation of both your receiver and your satellite antenna system.

## 2. System Overview

Your Datron DBS-4500 is the first fully automatic in-motion satellite system specifically designed for use with the new high-power DBS television satellites. The satellites have revolutionized television in the United States and have made DBS television receiving systems the fastest selling consumer electronics product in history.

The DBS-4500 has been designed for simplicity of operation. The DBS-4500 incorporates the latest solid state satellite tracking technology with advanced computer software to give you, our customer, true value and years of entertainment enjoyment.

Datron has been designing and manufacturing satellite tracking systems for military and commercial customers worldwide since 1969. This experience has created this revolutionary new satellite television receiving system.

The DBS-4500 has three main parts, the Antenna/Radome Assembly, the ACU, and the Satellite Receiver. Since your DBS-4500 was probably installed by a Datron dealer, we will give you some background on the system.

### 2.1 Antenna/Radome Assembly

The DBS-4500 uses a specially designed 12" x 24" parabolic reflector (dish) and an LNBF to receive the DBS satellite's signals. The antenna and its drive motors are covered by a low-profile protective cover called a radome. The dish is automatically and continuously pointed at the satellite by the antenna control unit (ACU) while the vehicle rolls down the road. The radome is specially designed and molded from a material that is strong and light weight and must **not** be painted with metallic based paints. The metallic content of many paints will severely impair system performance.

### 2.2 Antenna Control Unit (ACU)

The ACU is located under the radome. The ACU contains the motion sensing devices that give the ACU's computer the information it needs to keep the antenna accurately pointed at the satellite as the vehicle turns, sways and rolls over bumps. Your only interface with the ACU is "ON" or "OFF" through the remote switch in your vehicle.

### 2.3 Satellite Receiver

The final main part of the system, other than your TV, is the satellite receiver. The receiver is the same type of unit you would use to view DBS television in your home. Appendix A contains a matrix of compatible receivers.

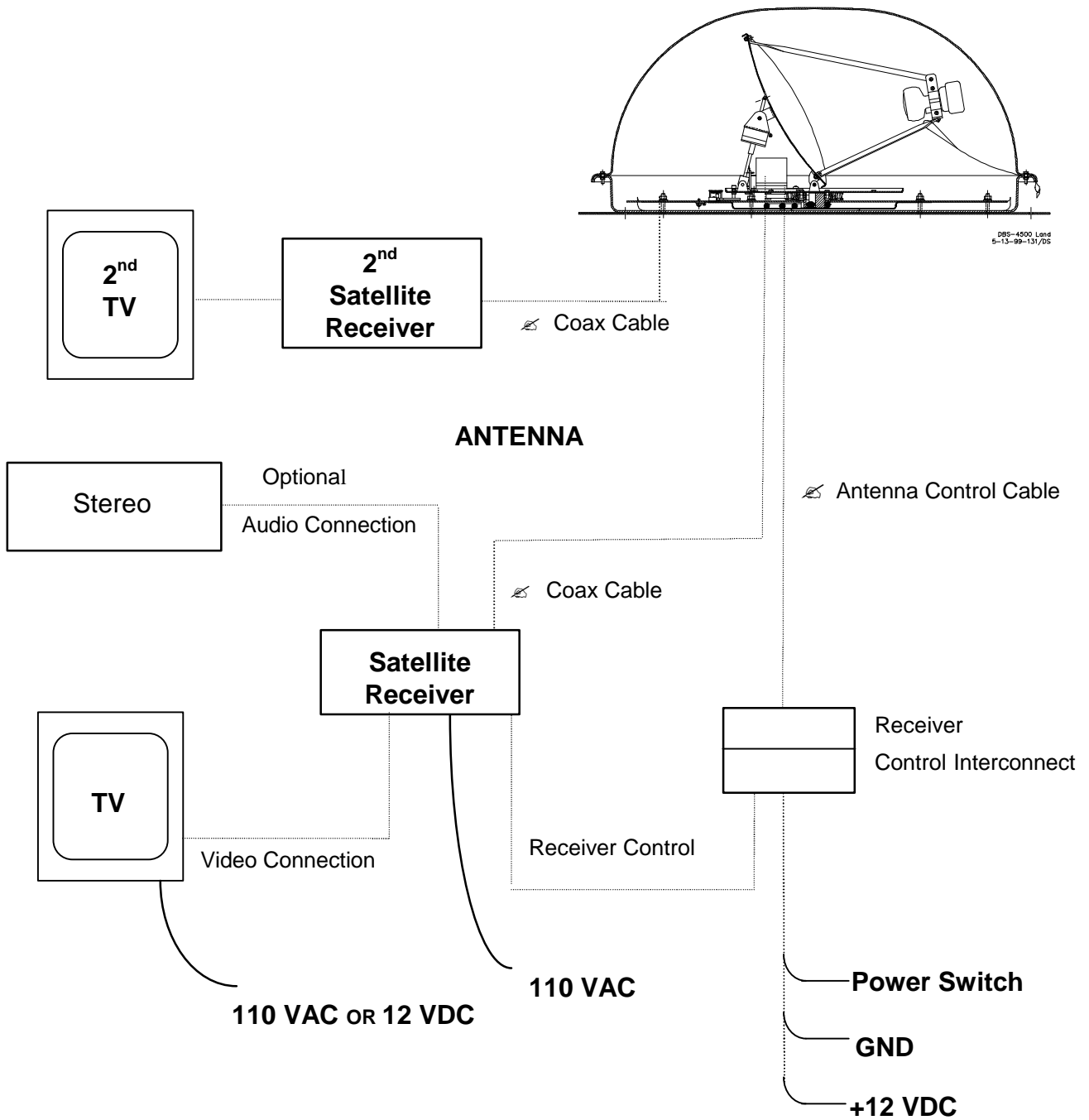


Figure 1. Diagram of DBS-4500 System Connections

### **3. System Operation**

This section describes the operation of the DBS-4500 satellite system. It does not focus on the operation of the receiver, except where it pertains directly to the operation of the DBS-4500 satellite system. For questions about your satellite receiver, refer to the receiver's operating instructions.

#### **3.1 General**

The satellite system must have an unobstructed view of the southern sky. Mountains, buildings, overpasses, dense trees and other objects can block the satellite's signal from reaching the antenna and will result in signal dropouts. If the signal is blocked, the antenna will continue to track the satellite at its last known position. Re-acquisition should occur within seconds in most cases. If blockage is sustained for long periods of time (e.g., going through a tunnel) re-acquisition may take several minutes. For situations where there is blockage or loss of satellite signal for five (5) minutes or more, the system power should be shut down, the blockage cleared, and the system restarted. This will reboot the system, and restart the initialization process. Satellite acquisition should occur within two (2) minutes. Sharp turns of the vehicle at accelerated speeds may also cause the antenna to briefly lose the satellite signal. This is normal operation.

#### **3.2 Powering On the System**

To apply power to the system, toggle the power switch to the ON position. The on-screen status message should read "INIT-REV XXXX". If the status message is not displayed on the television set, turn off the power and check to see that cable and power connections are properly engaged and secure. It is recommended that when first acquiring the signal, as indicated by the "INIT-REV XXXX" message, that your vehicle remain stationary. Drop-outs for the first few minutes may occur if the vehicle is in motion while the system is initialized.

To turn off power, return the power switch to the OFF position.

#### **3.3 First Time Start Up**

The first time the DBS-4500 is turned on after installation it may take several minutes for the unit to acquire the satellite. This initialization feature determines where you are geographically with respect to the satellite. Once the system is initialized, the unit will remember where you are and continually update your position as you move. Future start-ups will use this information to minimize acquisition time.

If the vehicle is moved great distances (approximately 100 miles), with the DBS-4500 turned off, a new location finder mode will be automatically entered and the initialization may take a little longer than normal. This new location will then be stored for all future start-ups.

### **3.4 Automatic Satellite Signal Acquisition and Tracking**

Satellite signal acquisition and tracking is fully automatic. No action on your part is necessary. It is recommended that the initial signal acquisition of the satellite be done when the vehicle is not moving. Acquisition will occur in less than two (2) minutes.

The rest of this section describes what to expect during the acquisition and tracking process.

Immediately after the system is turned on the message "INIT-REV XXXX" will appear during which time the vehicle should be kept stationary. "Searching for satellite signal" will appear after "INIT-REV XXXX" is complete.

When a signal has been located, your receiver will begin displaying the programming for the selected channel and the DBS-4500 will automatically begin tracking the satellite.

During the tracking process, you may experience a momentary loss of picture. This behavior is normal. Your picture will return within a few seconds.

### **3.5 Power Conservation Mode**

If the vehicle has remained stationary for approximately five (5) minutes with the unit on, it will automatically enter a reduced power mode and the antenna will stop moving. Once the vehicle is placed in motion the unit will automatically revert back to its tracking mode.

You may also turn power off and continue to watch television if the vehicle is stationary. The unit will re-initialize when power is reapplied. With the power turned off, the antenna may eventually lose the satellite signal and re-initializing will be required.

### **3.6 Operating Tips**

- ? To minimize signal dropouts in the first few minutes of use it is best to allow the DBS-4500 to warm up for five (5) minutes before placing the vehicle in motion.
- ? The antenna may be started while the vehicle is in motion. However, the vehicle should be moving in a straight path for best results. Allow approximately three (3) minutes to locate the signal while the vehicle is in motion. You may acquire the signal while traveling up or down a grade as long as the vehicle is moving in a straight path.



- ? When stopping in an area where the antenna will be blocked from the satellite (i.e., gas stations, parking structures, heavy foliage, etc.) it is recommended the antenna be turned off and restarted when the antenna's line of sight to the satellite is clear.
- ? When the vehicle is stationary for long periods of time, turn antenna system off after acquiring signal. Turning system off will reduce power drain and extend operating life of antenna and vehicle battery.
- ? If the antenna loses track for approximately two (2) minutes, it will automatically re-initialize, as indicated by the "INT-REV XXXX" message. The vehicle should be kept in a straight path during this re-initializing mode.
- ? If there is excessive vehicle motion during the initializing process, the system will remain in the initializing mode until motion has reduced to an acceptable level, or until five (5) minutes has elapsed.
- ? If the antenna loses track for five (5) minutes or more switch the power off and on again to reboot the system.
- ? The antenna can move 360° from the center position in either direction. The word "repositioning" will appear when the antenna unwraps the wiring bundle. When the antenna repositioning is complete, the system will start tracking the satellite again. This process will take approximately five (5) seconds.
- ? Sharp turns or curves at high acceleration may result in brief signal loss. This is normal operation. Signal should reappear in a few seconds.
- ? Do not attempt to remove the radome (cover). Contact with the internal components may cause serious damage to the unit and void any warranties.
- ? Clean the outside radome surface of bugs, debris and other contamination with water and a mild detergent periodically.
- ? In heavy dew conditions operation can be optimized by wiping the excess moisture from the radome or just spraying the unit off with a water hose. The vehicle may be driven to blow the moisture from the radome. The antenna radome may be treated with rain repellent to minimize moisture buildup.

## 4. Regular Service and Preventive Maintenance

CruiseTV? has been designed for trouble-free operation. You can enhance the life of your equipment by having an authorized Datron dealer inspect and service your antenna system once a year. To locate the authorized dealer nearest you, contact Datron/Transco Inc. at 1-800-287-5052.

## 5. Specifications

### 5.1 Mechanical

Antenna (Elliptical)	.....	12" X 24"
Operating Temperature	.....	0°F - 125°F
Operating Wind Level	.....	No Limit
Radome Height	.....	15.0"
Radome Diameter	.....	33.0"
Antenna Movement	.....	22° to 66° Elevation, 720° Azimuth
Weight on Roof	.....	35 lbs.
Mounting Footprint	.....	34.5" Circle

### 5.2 Electrical

Operating Voltage	.....	12VDC Nominal
Operating Current	.....	2.0 Amps DC Nominal
	.....	3.0 Amps DC Maximum

## 6. Troubleshooting

Error conditions are described in Table 1 and possible solutions are indicated for each symptom. If you have trouble and cannot resolve it with this guide, contact your Datron dealer or Datron/Transco Inc. at 1-800-287-5052.

<b>Table 1. Error Conditions and Solutions</b>			
<b>Symptom</b>	<b>Indication</b>	<b>Cause</b>	<b>Possible Solution</b>
Does not acquire	No screen display	? Switch not turned on	? Turn on switch
		? Battery dead	? Recharge/replace battery
		? Power not connected to battery	? Connect power to battery
		? Antenna not connected	? Connect missing/loose cable
		? Bad switch	? Replace switch
		? Monitor not turned on	? Turn on/plug in monitor
		? Receiver not turned on	? Turn on/plug in receiver
	"INIT-REV XXXX" does not display on monitor	? ACU not connected	? Connect missing/loose cable
		? Receiver not connected	? Connect missing/loose cable
	"INIT-REV XXXX" continuously displayed on monitor	? Excessive motion	? Normal operation; reduce vehicle motion
	"Searching for Satellite" continuously displayed on monitor	? View is obstructed	? Move vehicle to new location
		? Antenna coax not connected	? Connect all cables
		? Radome covered with debris	? Clean radome
		? Initialized during excessive motion	? Stop motion during initialization
		? Radome covered with dew	? Spray radome with hose, or wipe excess moisture from radome, or drive vehicle to remove moisture coating

**Table 1. Error Conditions and Solutions**

Symptom	Indication	Cause	Possible Solution
Picture drops out	Momentary freeze frame	? View obstructed ? Large vehicular motion	? Normal operation
	Continuous freeze frame	? Receiver malfunction	? Turn receiver off and on
	Picture pixeling	? View obstructed ? Large vehicular motion	? Normal operation
	“Searching for satellite” displayed on monitor	? Long time view obstruction or ? Very large vehicular motion	? Normal operation; picture should return within three minutes ? Reboot system
	“Repositioning” displayed on monitor	? Vehicle turned past limits	? Normal operation; picture should return within 30 seconds
	“INIT-REV XXXX” displayed	? Re-acquisition not successful	? Normal operation; picture should return within three (3) minutes
	“Cal. Required” displayed on monitor	? Displays when calibration reset required	? Calibration performed by turning power off and on every ten seconds, five times
NVROM INITZD	? System reset to factory defaults	? Normal operation during reset calibration	

## 6.1 Failure Messages

Failure messages are described in Table 2. If any of these messages are displayed, contact your nearest Authorized Service Center or call Datron directly at (800) 287-5052.

Table 2. Failure Messages		
Failure Messages Displayed on Screen	Reason for Message Display	Possible Solution
CODE: 01 AZ & EL	Both AZ and EL index switches/motors failed.	Contact nearest Authorized Service Center or call Datron at (800) 287-5052
CODE: 02 AZIDX	AZ index switch/motor failed.	
CODE: 03 ELIDX	EL index switch/motor failed.	
CODE: 04 A2D	Fault in the analog-to-digital converter.	
CODE: 05 XRATE	X gyro rate sensor failed.	
CODE: 06 YRATE	Y gyro rate sensor failed.	
CODE: 07 ZRATE	Z gyro rate sensor failed.	
CODE: 08 PLEVL	Pitch level sensor failed.	
CODE: 09 RLEVL	Roll level sensor failed.	
CODE: 10 LNBFV	Failure of the R-hand/L-hand polarity of the LNBF.	

## 7. Precautions

- ? Do not open or remove any part of the antenna control unit or the antenna/radome assembly. There are no user serviceable parts inside.
- ? Operate the antenna system on a clean, continuous 12 VDC supply only. Fluctuations in voltage can degrade performance. **OBSERVE PROPER POLARITY ON THE POWER CONNECTION.**
- ? To locate the authorized dealer nearest you, if you are in need of assistance, contact Datron/Transco Inc. Customer Service Department at 1-800-287-5052.
- ? Turn antenna system OFF after acquiring signal if vehicle is to be stationary for a long time. Power off will reduce power drain and extend operating life of antenna and vehicle battery.

## 8. Glossary

The following is a glossary of terms used both within this User Guide and when talking about digital satellite television systems and DIRECTV<sup>®</sup>.

**Azimuth** – refers to the azimuth axis, indicating the rotating movement of the antenna about an axis perpendicular to the surface. Looking down on the antenna from above, the azimuth movement is either clockwise or counterclockwise.

**Azimuth Angle** – the angle from true north or from the vehicle's fore and aft center line, in a plane parallel with the surface, to which the antenna is pointing. In general, the angle increases as the antenna turns clockwise, as viewed from above.

**Cable Wrap** – a method of securing the cable, yet allowing the antenna to rotate freely. The DBS-4500 has 720° of rotation. When the limit is reached the antenna will unwind.

**DBS** – Direct Broadcast Satellite. A special high power TV satellite that broadcasts to 18" dishes.

**Satellite Receiver** – an electronic device which decodes and processes the DBS data. Usually, this data produces a viewable picture which can be displayed on a television set.

**Elevation** – usually refers to the elevation axis, indicating a rotating movement of the antenna about an axis parallel to the surface.

**Elevation Angle** – the angle between the surface and the antenna's pointing angle. The values can range from 0° (parallel with the surface) to 90° (straight up in the sky) to 180° (parallel with the surface again, but in the opposite direction from 0°.)

## 9. Warranty

Datron/Transco Inc. (DTi) warrants this product to be free from defects in material and workmanship for two (2) years' parts and one (1) year labor. Proof of purchase in the form of a bill of sale or invoice indicating the product installation date must be presented to obtain warranty service.

Datron/Transco Inc. liability hereunder is limited to cost of parts for two (2) years and labor costs for one (1) year to replace or repair, at its discretion, any part or parts determined to be defective in material or workmanship. Parts manufactured other than by Datron/Transco Inc. are warranted separately by the applicable parts manufacturer.

This warranty does not cover cosmetic damage of a non-functional nature or damage due to acts of God (including but not limited to lightning, windstorm, hail). This warranty also does not cover damage caused by improper voltage regulation. This warranty does not apply if the product has been improperly installed or subjected to misuse, neglect, or accidental damage.

This warranty is invalid if the factory-applied serial number has been altered or removed from the product.

Repair or replacement as provided under this warranty is the exclusive remedy of the consumer. Datron/Transco Inc. shall not be liable for any incidental or consequential damages for breach of any expressed or implied warranty of this product. In no event will Datron/Transco Inc. liability, if any, exceed the purchase price paid for the product. **THERE ARE NO WARRANTIES EXPRESSED OR IMPLIED EXCEPT AS STATED HEREIN.**

To locate the authorized dealer nearest you, contact Datron/Transco Inc. Customer Service Department at: **1-800-287-5052.**

***Appendix A***  
***Datron Satellite System***  
***Receiver Compatibility Matrix***





**Datron Satellite System Receiver Compatibility Matrix**

<b>Receiver</b>	<b>DIRECTV/DISH Compatible</b>
<b>SONY</b>	
SAT-B1	Not Compatible
SAT-B2	Not Compatible
SAT-B3	OK - DIRECTV
SAT-A1	OK - DIRECTV
SAT-A2	OK - DIRECTV
SAT-A3	OK - DIRECTV
SAT-A4	OK - DIRECTV
SAT-A50	OK - DIRECTV (6)
<b>RCA</b>	
DRD122RW	Not Compatible
DRD102RW	Not Compatible
DRD203RW	Not Compatible
DRD303RA	Not Compatible
DRD403RA	OK - DIRECTV (5)
DRD703RA	OK - DIRECTV (5)
DRD505RB	OK - DIRECTV (5)
DRD523RB	OK - DIRECTV (5)
DRD515RB	OK - DIRECTV (5)
DRD203RB	OK - DIRECTV (5)
<b>HNS</b>	
HIRD-A33	OK - DIRECTV (5)
<b>ECHOSTAR</b>	
ISD2350	OK - DISH (4)
ISD4000	OK - DISH (4)
ISD5000	OK - DISH (4)
ISD3350	OK - DISH (4)
ISD4500	OK - DISH (4)
All Others	Not Compatible



## Datron Satellite System Receiver Compatibility Matrix

### NOTES:

**3** HNS Receivers: Requires special ACU/Satellite Receiver Interface Cable - Datron Part Number: 128649-006

**4** ECHOSTAR Receivers: Reference Technical Bulletin #11

Echostar Receivers requires special interface cable:

DBS-4500-100 Datron Part Number: 130742-101

**5 FOR OPTIMUM PERFORMANCE OF THE DBS-4000 AND DBS-4500 "CRUISE TV" IT IS SUGGESTED THAT THE SONY SAT-A1, SAT-A2, SAT-A3 or SAT-A4 RECEIVERS BE USED.**

**6** Compatible with software revision D or above.

### ADDITIONAL NOTES:

No models of the Uniden receivers are compatible with Datron products.

Hitachi and Toshiba receiver compatibility pending

Call Datron Technical Support 1-800-287-5052 if you have questions regarding this data.