

APPENDIX B - MOUNT SPECIFIC DATA

For

DH 5.0 m Fixed Base Antenna

This appendix describes RC3500 operations unique for the DH 5.0 m. fixed-based antenna. Differences between this version and the operation described in the "baseline" RC3500 manual are noted on a paragraph by paragraph basis.

REVISION HISTORY

26 November 2013, Software Version 1.60

1.1 Manual Organization

This appendix is provided as a supplement to the baseline RC3500 manual. The corresponding paragraphs in the baseline RC3500 manual are referred to when data specific to the DH 5.0 m. mount are described.

1.2 Mount Model

All basic features of the RC3500 are utilized to provide the operations for this mount. Some features have been modified (as described below) to customize operations for this antenna.

Hardware Configuration.

A RC3500A version of hardware is utilized for this mount. The "A" version of hardware is used to provide low voltage DC drive signals to the antenna.

Software Configuration.

The mount model will be designated as **D3**. Software will be designated as RC3K-**D3**-abcd.

1.3.2 System Interface Requirements

The D3 interface differs from baseline RC3500 interface requirements as follows:

1) Azimuth and elevation range of motion will be limited by UP/DOWN and CW/CCW limit switches and/or by software (resolver-based) limits.

2.0 INSTALLATION

2.2 Electrical Connections

The following subparagraphs describe any unique items with respect to the D3 system.

2.2.4 Limit Switches.

As shown in the baseline manual, the elevation UP limit switch is connected to pin 10 & 14 of J3. Also the DOWN limit switch is connected to pins 5 & 6.

The azimuth CCW limit switch is connected to pins 2 & 14 of connector J5. Azimuth CW is connector to pins 12 & 25 of J5.

The four limits mentioned above will activate with actuation of their applicable limit switch. Each of the four limits of motion will also be triggered by the applicable resolver count going beyond the resolver limit described in the azimuth and elevation pulse configuration screens (sections 3.3.1.3.3 & 3.3.1.3.6).

No azimuth stow or elevation stow switches exist for this antenna type.

2.3 Initial Configuration, 2.4 Final Calibration

Details of calibration actions are provided in the baseline RC3500 manual.

The following list summarizes an efficient sequence of calibration steps for the D3 antenna and references the applicable section in the baseline manual. This list may be thought of as a “quick start” for basic antenna operations.

1 – System Definition. The RC3500 should come from the factory with all configuration items at their default settings. It is suggested that the user enter the ACU’s serial number as described in section 3.3.1.2 of the baseline manual. Doing this will allow easy access to the serial number later.

2 – Mount Lat/Lon. Enter the antenna’s latitude and longitude per section 3.3.2.9 of the baseline manual. After “saving” the position, this lat/lon will be used for all subsequent calculations required for automatic LOCATEs, inclined orbit tracking, etc.

3 – Initial Azimuth Resolver Setup. As described in section 2.3.3 of the baseline manual, position the azimuth axis as close to true South (when in the Northern Hemisphere) or true North (from the Southern Hemisphere) as possible. Adjust the azimuth resolver to near its center of travel. Enter an initial azimuth resolver offset (section 3.3.1.2.3, typically close to -180.0) and confirm that MANUAL mode shows a true heading pointing towards the arc of geosynchronous satellites (180.0 in Northern Hemisphere, 0 in Southern).

4 – Initial Elevation Resolver Setup. As described in section 2.3.2 of the baseline manual, position the elevation axis in a known elevation reference position. Adjust the elevation resolver to a position that guarantees the resolver will not “wrap around” during normal elevation range of travel. Adjust the elevation resolver offset (section 3.3.1.2.2) to make the elevation reading in MANUAL mode match the actual elevation RF look angle (true elevation).

5 – Pickup on Known Satellite. Steps 3 & 4 should calibrate the azimuth and elevation sensors well enough that an initial LOCATE to a known satellite should place the antenna close to actual satellite position. Using the best signal strength measuring device (spectrum analyzer, modem signal strength readout, etc.) manually peak on the satellite via the MANUAL mode. Any offsets from the true heading and true elevation targets predicted by the LOCATE should be used to bias the initial azimuth and elevation resolver offsets entered in steps 3 & 4. NOTE: after entering new offset values the displayed TRUE azimuth heading and true ELEV angles displayed in the MANUAL mode should match the target angles predicted by the LOCATE.

After entering the correct resolver offsets, subsequent LOCATEs should result in the antenna moving to within a small angular difference from the predicted target location.

6 – Movement Limit Checkout. The antenna should be moved throughout its range of motion to confirm that the applicable limits (azimuth CW/CCW, elevation UP/DOWN and polarization CW/CCW) are set correctly to ensure that the antenna will not accidentally move to an unsafe position.

3.0 Detailed Operation

There are no operational modes of operation unique to the D3 mount. Refer to the baseline RC3500 manual.

3.3 Programming Group

All programming group modes described in the baseline manual are provided.

3.3.1.2 Reset Defaults

The following table supplies the default configuration item values for this mount. Space has also been provided to record installation specific changes to the configuration items. Note: recording of installation specific changes to defaults may prove valuable when trying to restore system configuration.

CONFIGURATION ITEM	D3	COMMENTS	INSTALL VALUE
SYSTEM DEFINITION			
GPS_present	0		
Compass_present	0		
Initial_mode	2		
antenna_size_cm	500		
Waveguide_present	0		
ELEVATION CALIBRATION			
Zero Voltage	1.69	N/A for RC3500	
Elev_offset	0.0		
Up_elev_limit	90		
Down_elev_limit	0		
Elevation_Scale_Factor	50.00	N/A for RC3500	
Elevation_look_configuration	1		
Elevation_resolver_reversed	0		
Elevation_resolver_offset	-180.00	Set during calibration	
AZIMUTH CALIBRATION			
Fluxgate_offset	0.0	N/A for RC3500	
ccw_azim_limit	180		
Cw_azim_limit	180		
Azimuth_resolver_reversed	0		
Azimuth_resolver_offset	-180.00	Set during calibration	
Initial_Display	4	Displays TRUE heading	
POLARIZATION CALIBRATION			
Zero Voltage	2.50		
Polarization_Offset	0.0		
CW Polarization Limit	90.0		
CCW Polarization Limit	90.0		
Pol_Scale_Factor	51.04		
Polarization_type	2		
H/V_Reference	1		
Pol_Automove_Enable	1		
SIGNAL PARAMETERS			
Channel 1 Polarity	1		
Channel 1 Threshold	100		
Channel 1 Delay	0.1		
Channel 1 Lock Type	0		
Channel 2 Polarity	1		
Channel 2 Threshold	100		
Channel 2 Delay	0.1		
Channel 2 Lock Type	0		
AUTOPEAK			
Autopeak Enabled	0		
Signal Source	1		
RF Band	4		
Spiral Search AZ Limit	5		
Spiral Search EL Limit	5		
Spiral Signal Threshold	200		
Scan Range Limit	8		
Scan Signal Threshold	200		

CONFIGURATION ITEM	D3	COMMENTS	INSTALL VALUE
AZIMUTH POT DRIVE			
Fast/Slow Threshold	2.5		
Maximum Position Error	0.1		
Coast Threshold	0.1		
Maximum Retry Count	3		
AZIMUTH PULSE DRIVE			
Pulse Scale Factor	10431		
CW Pulse Limit	64000		
CCW Pulse Limit	100		
Fast/Slow Threshold	50		
Maximum Position Error	0		
Coast Threshold	3		
Maximum Retry Count	3		
AZIM DRIVE MONITORING			
Jam Slop	1		
Runaway Slop	200		
Fast Deadband	1000		
Slow Deadband	500		
ELEV POT DRIVE			
Fast/Slow Threshold	3.0		
Maximum Position Error	0.2		
Coast Threshold	0.4		
Maximum Retry Count	3		
ELEV PULSE DRIVE			
Pulse Scale Factor	10431		
UP Pulse Limit	64000		
Down Pulse Limit	100		
Fast/Slow Threshold	50		
Maximum Position Error	0		
Coast Threshold	3		
Maximum Retry Count	3		
ELEV DRIVE MONITORING			
Jam Slop	1		
Runaway Slop	200		
Fast Deadband	1000		
Slow Deadband	500		
POL POT DRIVE			
Fast/Slow Threshold	2.0		
Maximum Position Error	0.5		
Coast Threshold	0.3		
Maximum Retry Count	3		
POL DRIVE MONITORING			
Jam Slop	1		
Runaway Slop	200		
Fast Deadband	1000		
Slow Deadband	500		

CONFIGURATION ITEM	D3	COMMENTS	INSTALL VALUE
TRACK			
Search Enable	0		
Max Track Error	3		
Search Width	4		
Peakup Holdoff Time	120		
Track Signal Source	1	2=SS1	
Signal Sample Time	2		
REMOTE CONTROL			
Remote Enabled	1		
Bus Address	50		
Baud Rate	6		
Jog	20		
STOW / DEPLOY			
AZ STOW	0.0		
EL STOW	0.0		
PL STOW	0.0		
AZ DEPLOY	0.0		
EL DEPLOY	45.0		
PL DEPLOY	0.0		
PL ENABLED	2		