

APPENDIX B - MOUNT SPECIFIC DATA

for the Vertex 1.2m. QDMA

Revision: 31 July 2008, Software Version 1.59

1.1 Appendix B Organization

This appendix is provided as a supplement to the baseline RC3000 User's Manual. The corresponding paragraphs in the baseline RC3000 manual are referred to when data specific to the referenced mount is described.

1.2 Mount Model

This appendix describes the RC3000 antenna controller unit variation built for use by the Vertex 1.2m QDMA antenna. This mount model type is designated as "VN".

1.3.2 System Interface Requirements

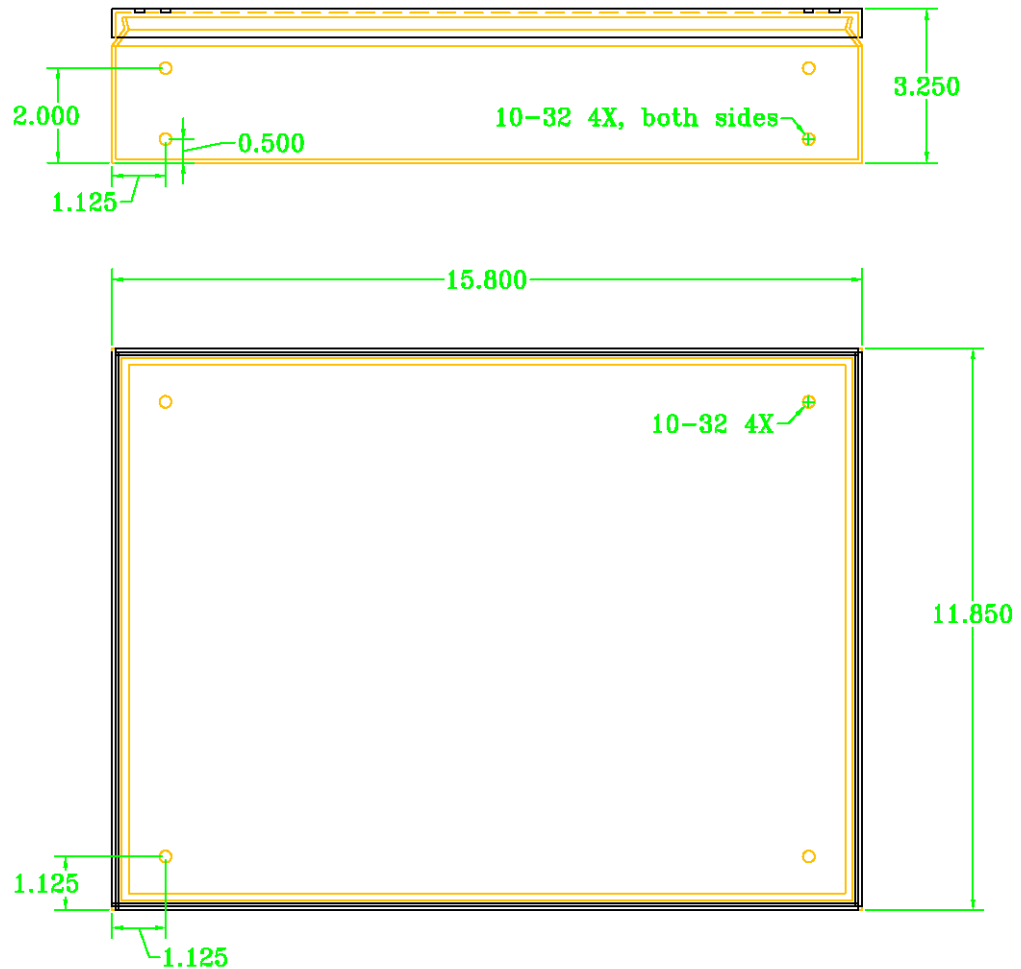
The VN mount follows the standard RC3000 interface requirements with a few exceptions:

- no azimuth STOW limit switch is utilized
- An "auxiliary down" limit switch is utilized to limit elevation movement to above 15 degrees when the azimuth axis is at angles beyond +/- 112 degrees.
- No front panel (LCD & keypad) exists for this variation of the RC3000 ACU. Front Panel control is mechanized by remote control either via a serial or Ethernet interface. See appendix REM for description of the serial interface or appendix IP for description of the Ethernet interface.
- Instead of the baseline fluxgate compass, a smaller Single Axis Compass is utilized. See appendix SAC for description of the Single Axis Compass.
- Instead of the baseline GPS receiver unit, an embedded GPS receiver with a separate smaller antenna is used.
- Interfaces are mechanized by waterproof connectors detailed in subsequent paragraphs of this appendix.

2.0 INSTALLATION

2.1.1 RC3000 Antenna Controller

For the VN mount, the ACU is mechanized as an "embedded" controller. Rather than being a rack-mounted unit, the VN ACU is contained in a weatherproof enclosure.



2.1.2 GPS

The VN controller uses an embedded GPS receiver which externally interfaces to a small GPS antenna via a TNC connector.

2.1.3 Compass

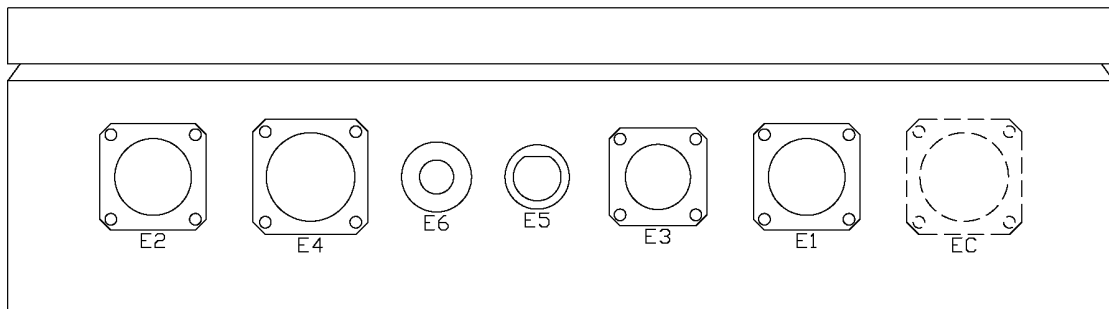
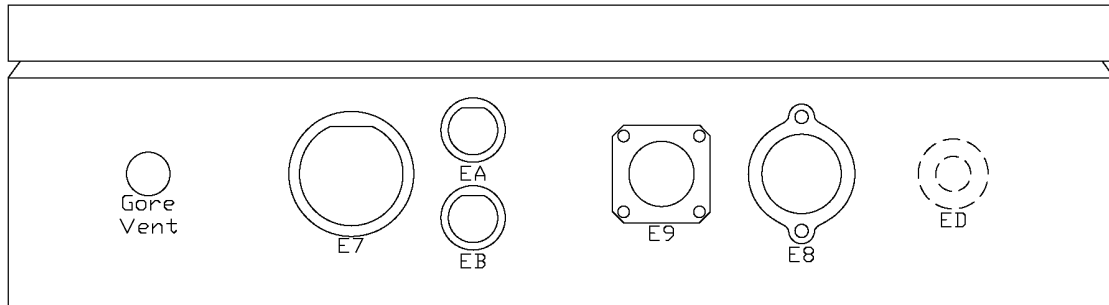
The VN controller utilizes a "single axis compass" rather than the fluxgate compass described in the baseline RC3000 manual. Please refer to appendix SAC for details concerning the single axis compass.

2.1.4 Inclinometer Orientation

The inclinometer should be rigged with the face of the reflector 45 degrees from the horizontal.

2.2 Electrical Connections

The following diagrams depict the weatherproof connectors that are mounted at either end of the embedded enclosure.

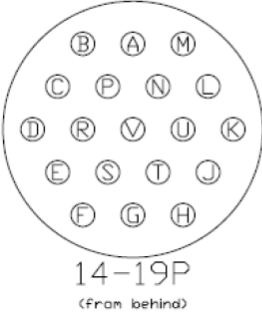
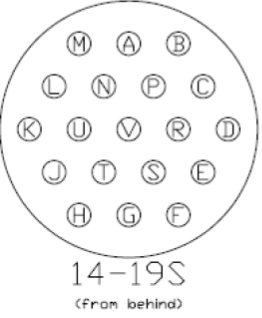
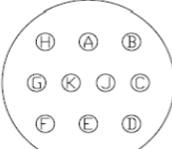


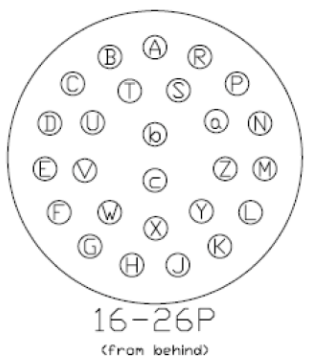
2.2.1-13 Connection Schedule

The interfaces described in sections 2.2.1 through 2.2.13 of the baseline manual are implemented through connectors E1 to ED on the embedded controller. To accommodate more efficient cabling, some interfaces have been reallocated per the following schedule.

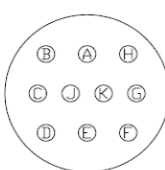
VN connector	Description	Baseline Manual Reference / Comments
E1	Az/EI Motors & Pulses	2.2.2, 2.2.10
E2	Az/EI Sensors	2.2.3, 2.2.4,
E3	Pol Motors & Sensors	2.2.2, 2.2.3, 2.2.4
E4	Antenna Accessories & Compass	2.2.7
E5	GPS Antenna	TNC connector
E6	RF In / LNB Power	F connector
E7	Ethernet	RJ45 connector
E8	Power	2.2.1
E9	Modem Accessories	
EA	Red Button	
EB	Green Button	
EC	Resolvers	2.2.13
ED	RF Out	

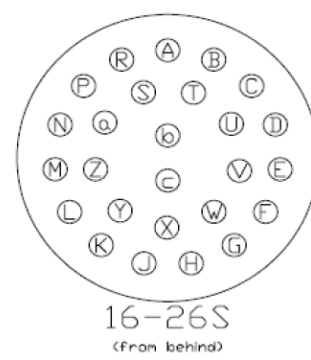
The following diagrams detail the pinouts of various connectors:

	Encl Des	Pin	Description	Notes	
 <p>14-19P (from behind)</p>	E1	A	Az Motor +		
		B			
		C	Az Encoder Ch A		
		D	Az Encoder Ch B		
		E	Az Encoder Gnd		
		F	EI Encoder Gnd		
		G			
		H	Az Motor -		
		J	EI Motor -		
		K			
		L			
		M	EI Motor +		
		N	EI Encoder Ch A		
		P	Encoder Shields		
		R	Az Motor Shield		
		S	Az Encoder +V		
		T	EI Encoder +V		
	U	EI Encoder Ch B			
	V	EI Motor Shield			
 <p>14-19S (from behind)</p>	E2	A			
		B	Inclinometer -V	Not required for ratiometric	
		C	Inclinometer Gnd		
		D	Inclinometer Signal		
		E			
		F	Inclinometer Shield		
		G	Az Pot + (CW)		
		H	Az Pot Wiper		
		J	Az Pot - (CCW)		
		K	Az Pot Shield		
		L	EI Up Limit +V		
		M	EI Up Limit In		
		N	EI Down Limit +V		
		P	EI Down Limit In		
		R	EI Stow Limit +V		
		S	EI Stow Limit In		
		T	Az Stow Limit +V		
	U	Az Stow Limit In			
	V	Inclinometer +V	+5v for ratiometric		
 <p>12-10S (from behind)</p>	E3	A	Pol Motor +		
		B	Pol Motor -		
		C	Pol Motor Shield		
		D	Pol Pot + (CW)		
		E	Pol Pot Wiper		
		F	Pol Pot - (CCW)		
		G	Pol Pot Shield		
		H	Pol CW Limit In		
		J	Pol CCW Limit In		
		K	Pol Limits +V		

 <p>16-26P (from behind)</p>	<p>E4</p> <ul style="list-style-type: none"> A Compass +V B Compass Gnd C Compass RS232 In D Compass RS232 Out E Az CW Limit In F Az CCW Limit In G Pol ID Bit D In H Pol ID Bit E In J Pol ID Bit F In K Pol ID Bit J In L Pol ID Bit R In M N P R S T Compass Shield U Compass Signal V Az Limits +V W Pol ID Bits +V X Y Z a b c <p style="margin-left: 100px;">Not currently implemented Not currently implemented</p>
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	<p>E8</p> <ul style="list-style-type: none"> 1 Neutral 2 Line 3 +VDC G Gnd <p style="margin-left: 100px;">Not used on DC input model Not used on DC input model Only for DC input model</p>
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 <p>12-10P (from behind)</p>	<p>E9</p> <ul style="list-style-type: none"> A +5v B AGC Lock C AGC In D AGC Return E AGC Offset F Contacts NO G Contacts NC H Contacts Common J GPS Gnd K GPS RS232 Loopout
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 <p>16-26S (from behind)</p> <p>Used only with resolvers</p>	<p>EC</p> <ul style="list-style-type: none"> A Az Sin + B Az Sin - C D Az Cos + E Az Cos - F El Sin + G El Sin - H J El Cos + K El Cos - L Pol Sin + M Pol Sin - N P Pol Cos + R Pol Cos - S Pol Ref- T Az Ref + U Az Drain V Az Ref - W El Ref + X El Drain Y El Ref - Z Pol Ref + a Pol Drain b c
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2.3.2 Elevation Calibration

Elevation Reference Position

From the 45 degree reflector position, the elevation reference voltage should be close to 2.5 V. The elevation displayed at this voltage will be 45.0 reflecting the mount's prime focus configuration.

3.0 Detailed Operation

The VN version of the RC3000 operates as described in the baseline RC3000 User's Manual.

3.1.2 Keypad Operation

Since no actual keypad exists for the VN version, user inputs must be made via a "Remote Front Panel" application implemented either via the serial or Ethernet remote interfaces.

3.3.1.2 Reset Defaults

The following table supplies the default configuration item values for this model of the RC3000.

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	VN Default					INSTALL VALUE
SYSTEM DEFINITION						
GPS	1					
COMPASS MOUNT	2					
MODE	4					
antenna_size_cm	120					
Waveguide	0					
ELEVATION CALIBRATION						
Zero Voltage	2.50					
Elev_offset	0.0					
Up_elev_limit	90					
Down_elev_limit	5					
Elevation_Scale_Factor	40.07					
Elevation_look_configuration	1					
AZIMUTH CALIBRATION						
Reference Voltage	2.50					
Fluxgate_offset	-90.0					
ccw_azim_limit	180					
Cw_azim_limit	180					
Azim_Scale_Factor	91.5					
POLARIZATION CAL						
Zero Voltage	2.50					
Polarization_Offset	0.0					
CW Polarization Limit	90.0					
CCW Polarization Limit	90.0					
Pol_Scale_Factor	42.16					
Polarization_type	2					
H/V_Reference	1					
Default Horizontal Position	0.0					
Default Vertical Position	90.0					
Pol_Automove_Enable	1					

CONFIGURATION ITEM	VN Default					INSTALL VALUE
SIGNAL PARAMETERS						
RF Lock Type	0					
RF Delay	0.1					
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	1					
Spiral Search AZ Limit	3					
Spiral Search EL Limit	3					
Spiral Signal Threshold	200					
Scan Range Limit	8					
Scan Signal Threshold	200					
Tilt Compensation	0					

CONFIGURATION ITEM	VN Default					INSTALL VALUE
AZIMUTH POT DRIVE						
Fast/Slow Threshold	2.5					
Maximum Position Error	0.20					
Coast Threshold	0.1					
Maximum Retry Count	3					
AZIMUTH PULSE DRIVE						
Pulse Scale Factor	1090					
CW Pulse Limit	65000					
CCW Pulse Limit	1					
Fast/Slow Threshold	50					
Maximum Position Error	1					
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	1986					
UP Pulse Limit	65000					
Down Pulse Limit	105					
Fast/Slow Threshold	50					
Maximum Position Error	1					
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	VN Default					INSTALL VALUE
TRACK						
Search Enable	0					
Max Track Error	3					
Search Width	4					
Peakup Holdoff Time	120					
Track Signal Source	2					
Signal Sample Time	2					
REMOTE CONTROL						
Remote Enabled	1					
Bus Address	50					
Baud Rate	6					
Jog Duration	20					
STOW / DEPLOY						
AZ STOW	0.0					
EL STOW	91.0					
PL STOW	0.0					
AZ DEPLOY	0.0					
EL DEPLOY	20.0					
PL DEPLOY	0.0					
PL ENABLED	2					
EL_TIME	0					
SHAKE						
AZ1	-90.0					
EL1	30.0					
PL1	-5.0					
AZ2	90.0					
EL2	40.0					
PL2	5.0					
AZ3	0.0					
EL3	80.0					
PL3	0.0					
CYCLES	5					
DELAY	0					