RCP02 V11 Release Notes

These notes cover changes made to the RCP02 code since release V10 of 8 July 1998. If you are upgrading from an earlier release, please read those notes also.

Bug Repairs

1. Repaired bug in which the reply to the question ”Enable logic override of control lines” was forced to ”NO” on powerup, regardless of the saved value.

New Features

1. There are two new control variables ”shut1” and ”shut2” defined in the ”Control Logic” menu. A TRUE assignment to either of these variables will result in an RCP02 user induced shutdown. Thus, you may now write logic equations that force a shutdown of the RCP02 when certain conditions are present. The two types of shutdowns are provided in case there is a need to distinguish among different causes.

2. Along with the above, the new status variable ”shutdown” may also be used in logic equations. It returns a TRUE value whenever the RCP02 is shutdown. For example, adding the equation “CSERVO = CSERVO & !SHUTDOWN” will force the servo power off whenever the RCP02 is shutdown.

3. The ”Monitor SIO” command now supports a live display of the data records that are being received by and transmitted to the host computer. Use the new ”Ri” and ”Ro” subcommands from within the SIO monitor to watch the incoming and outgoing traffic. The I/O records are displayed on separate lines in hexadecimal format, beginning with their SYNC byte and ending with their END (0xFF) byte. This new display is very useful for verifying that the driver software in the host computer is functioning properly.

4. The maximum number of sectors that can be checked for trigger blanking has been increased from six to eight.

5. The current additive angle offsets are now included in the ”Help View” printout. This allows the offsets to be checked in cases where they are being automatically updated (e.g. for the Andrew–Kintec pedestal controller).

6. The RCP02 now supports the Andrew-Kintec “Weatherseeker SLP13” antenna/pedestal unit via a serial link. The “Site Custom” menu now includes the following questions.

Use Andrew–Kintec serial pedestal interface: YES
Slot for IP–SERIAL interface module: IP–D
Baud rate of Andrew interface: 19200
ID of Andrew BITE status packets: 1(decimal)
Map Andrew status into S[29:63] variables: NO
Apply boresite offsets to parallel angles: YES
Offsets are subtracted from angles: NO

Select this option if the RCP02 is attached to an Andrew-Kintec Antenna Control Unit (ACU) via a serial interface. You must supply the RCP02 with an additional IP–SERIAL card, half of which will be used for this function. Status information from the ACU is retransmitted to the host computer via a special BITE packet defined below. The following notes apply to the RCP02 interface with the ACU.

- The BITE packet bits may optionally be mapped into numbered status bits S29 through S63. This opens the possibility of incorporating ACU status in custom logic equations within the RCP02.
- The RCP02 sends antenna command blocks to the ACU at the rate of 5Hz. Each block conveys the current set of servo requests from the host computer. The ACU responds to each command block with status from the pedestal. Thus, the status updates from the ACU are paced at the same 5Hz rate.
- The ACU must provide 16-bit parallel single-ended TTL angles to the RCP02. These may be wired to the positive sides of the RS422 output drivers in the ACU. Fixed offsets in these hardwired angles are not corrected by the ACU. Therefore, use one of the following two methods to receive them properly. In either case, the RCP02 applies the offset only to the parallel input angles; not to the angles that are transmitted and received on the serial interface to the ACU. This is consistent with how angle corrections are performed within the ACU.
  - Use the normal RCP02 angle offset correction via the “Axis AZ” and “Axis EL” commands. This requires that you manually type in the correct values whenever there is a change.
  - Request that the RCP02 read the offsets from the ACU and apply them automatically. The RCP02 will read the ACU offsets once on startup, and then every minute thereafter (in case they are changed by the handheld terminal). The current offset angles may be monitored in the “Help View” printout.
- Since there is no tachometer input, velocities are computed from the position inputs using the RCP02’s Virtual Tachometer. Use the “Axis” command to configure each axis for the desired full scale speed, differentiation window of 0.50 sec, minimum travel of 0.05 deg/window, and no antenna model prediction. Also, use the “Vservo” command to set the maximum absolute velocity on each axis to 100 T–Units. Note that the velocities computed by the RCP02 are used only for monitoring purposes by the host computer.

- RCP02 “Servo Power” control is sent to the ACU via its Active/Standby bit. Likewise, the ACU Active/Standby state is mapped into RCP02 “Servo Power” status.
- The ACU Host/Local state maps into the RCP02 “Local” status bit.
- RCP02 elevation limit switch contact (both high and low) is triggered by the ACU “Elevation Limit” state.
- RCP02 “Interlock” status is set whenever the ACU pedestal system interlock, pedestal interlock switch, or radiation interlock switch are in their “safe” mode.
- All control and status functions that are not mentioned as special cases above are handled via the backpanel in the usual way.
- The “Monitor SIO” command supports an additional alternate display when the Andrew-Kintec interface is enabled. The received character and record counts, received error counts, and hexadecimal contents of the most recent 18-byte received record are printed.
- Since the RCP02 is not in direct control of the antenna, all antenna safety checks fall under the responsibility of the Andrew ACU. Therefore, in the RCP02 you must disable shutdowns based on: 1) soft limits of position travel, 2) shutdown limits of position travel, 3) shutdown for unresponsive antenna, 4) limit switch contact.

The RCP02 will generate the following BITE packet whenever the Andrew-Kintec ACU pedestal interface has been enabled. The identification byte is selectable, so that conflicts with other BITE packets can be avoided. The “S” number appearing after each table entry is the numbered status variable that can optionally be driven by the respective bit. Most bits in the BITE packet are merely copies of their ACU counterparts. However, S29, S30, and S31 are supplied by the RCP02 itself.

Char	**Function**	
1	SYNC Byte (C0 Hex)	
2	Identification byte (User Choice)	
3	Status and Fault Conditions	
	D6 = Pedestal system interlock safe	(S35)
	D5 = Elevation brake applied	(S34)
	D4 = Azimuth seeking (else achieved)	(S33)
	D3 = Elevation seeking (else achieved)	(S32)
	D2 = Spare	(S31)
	D1 = Spare	(S30)
	D0 = ACU serial reception is okay	(S29)
4	Status and Fault Conditions	
	D6 = EL PWM RAM fault	(S42)
	D5 = EL PWM MTR Resolver fault	(S41)

	D4 = EL PWM PWR Bridge fault	(S40)
	D3 = Reserved	(S39)
	D2 = Azimuth timeout error	(S38)
	D1 = Elevation timeout error	(S37)
	D0 = Command denied (else accepted)	(S36)
5	Status and Fault Conditions	
	D6 = Elevation drive fault	(S49)
	D5 = Elevation stow fault	(S48)
	D4 = AZ PWM Watchdog fault	(S47)
	D3 = AZ PWM RAM fault	(S46)
	D2 = AZ PWM MTR Resolver fault	(S45)
	D1 = AZ PWM PWR Bridge fault	(S44)
	D0 = EL PWM Watchdog fault	(S43)
6	Status and Fault Conditions	
	D6 = EL PWM bus voltage fault	(S56)
	D5 = Reserved	(S55)
	D4 = Azimuth drive fault	(S54)
	D3 = Azimuth temperature fault	(S53)
	D2 = Azimuth stow fault	(S52)
	D1 = Elevation temperature fault	(S51)
	D0 = Elevation limit fault	(S50)
7	Status and Fault Conditions	
	D6 = Oil level low	(S63)
	D5 = Pedestal interlock safe	(S62)
	D4 = Radiation interlock safe	(S61)
	D3 = Supply voltage fault	(S60)
	D2 = AZ R/D converter fault	(S59)
	D1 = EL R/D converter fault	(S58)
	D0 = AZ PWM bus voltage fault	(S57)
13	END OF MESSAGE (FF Hex)	