

DUAL ROTATOR CONTROLLER

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VERSION 2.5 SOFTWARE 2009

General Description:

This controller was designed to interface with the most common antenna rotators including AC, DC, single or dual winding motors. It also includes brake release control. The power supply required to operate the rotator is supplied from a separate source. Many rotators operate on 24v or 26v some on DC, some on AC. Some will operate sufficiently well on 12v DC. Two rotators can be controlled separately using different motor power supplies if required. The method used to measure the rotator heading utilizes resistance potentiometers within the rotator motor and so is only suitable for use with this type of rotator. Most popular rotators are of this type.

The Rotator Controller displays the current heading of the rotator in degrees on the top line plus the desired or new heading in degrees on the bottom line. If the rotator has moved to a position beyond 360 degrees, a + sign will be displayed as well as the heading in degrees beyond the 360 degree position. (ie +006). If the rotator has moved to a position less than 0 degrees, a – sign will be displayed as well as the heading in degrees counting backwards from 360. (ie -354). This will indicate to the user that the rotator is in the overlap area of its rotation. The controller will only allow a “New” position up to 40 degrees in either direction of overlap however the rotator may not travel that far.



ROTATOR CONTROLLER USER GUIDE.

When power is applied to the controller, the “New” heading will be set to 180 degrees. The “Power” LED will light when power is applied to the controller.

Press the A or B button to select which rotator is to be controlled.

Note that wind and loading at the top of the rotator will affect the speed of rotation and accuracy of the final heading. Strong winds may cause the rotator to “windmill” and not remain at the heading it was set to. This is due to either the high loading of the rotator by large antennas or the brake (if fitted) not locking the rotator.

The rotator controller has switching contacts to control a brake (if fitted)

When rotating, the brake is released shortly before the motor power is applied and operated again shortly after the power has been removed from the motor.

The controller will not work correctly until the rotator has been calibrated as described in the Program Mode section.

Normal Mode:

This is the usual or standby mode.

Rotate the dial until the desired direction is indicated in degrees.

Press the dial button once. The rotator will begin to move to the desired heading.

To stop the movement at any time, press the dial button once.

To resume, press the dial button once again. When the rotator is within approximately 3 degrees of the desired heading, power is removed from the motor.

The final heading when the motor stops will depend on the wind and amount of loading at the top of the rotator but will be within 3 degrees of the desired heading.

Follow the Dial Mode:

To enter the Follow the Dial Mode, press the dial button twice. The rotator will begin to move to the desired heading. At any time, the dial may be moved to a new heading. The rotator will begin to move to that heading. When the rotator is within approximately 3 degrees of the desired heading, it will stop rotating. A new heading may be dialed and the rotator will begin to move to that heading automatically.

If the dial is not changed in 90 seconds, the controller will switch back from Follow the Dial to Normal Mode.

Park Position Memories:

To set the rotator to one of four preset Park position headings in memory, press the dial button 3 times. Rotate the dial to the required Park position memory then press the dial button. The rotator will move to within several degrees of that heading.



Program Mode:

Program Mode can be entered when the display shows either Rotator A or Rotator B. Several settings can be changed in Program Mode.



Storing Park Position Heading Memories.

Four preset headings can be stored into the controller. Press and hold the dial button until "Program Mode" is displayed on the LCD. Rotate the dial until the memory location desired is shown.

Follow the instructions on the LCD screen.

To cancel without saving, press and hold the dial button until the screen shows “Program Mode”. To switch back from Program Mode to Normal Mode, press and hold the dial button again.

Calibrating the rotator.

Calibrating of a rotator should only be required once for each rotator as the settings are stored in non volatile memory. This sets the limits of rotation for the rotator and allows the controller to calculate the limits in degrees. Some rotators will overlap beyond 0 or 360 degrees and this can be allowed for in the controller’s set up.

Buttons “A” and “B” will act as manual rotate Left and rotate Right respectively when calibrating.

To set the calibration of each rotator, go to Program Mode as described previously.

(i.e. Press and hold the dial button until “Program Mode” is displayed on the LCD.)

Rotate the dial until “Rotator A, 360 degree position” is displayed.



Press the dial button once. The screen will now display “Press button to save”.

At this time you may press the “A” or “B” buttons to cause the rotator to move to the 360 degree position (by moving the rotator through 90 to 180 to 270 then to 360 = north) as indicated by using a compass. Once the rotator has moved to the 360 degree position, press the dial button once to save that position. The controller will store that position into its memory. The controller will reinitialize its calculations and restart. Next the 0 degree position must be set.

Set the controller in Program Mode as before (press and hold the dial button).

Rotate the dial until “Rotator A, 0 degree position” is displayed on the LCD.



Press the dial button once. The screen will now display “Press button to save”.

At this time you may press the “A” or “B” buttons to cause the rotator to move to the 0 degree position (by moving the rotator through 270 to 180 to 90 then to 0 = north) as indicated by using a compass. Once the rotator has moved to the 0 degree position, press the dial button once to save that position. The controller will store that into its memory. The controller will reinitialize its calculations and restart. The controller now knows where north is when the rotator has moved in one direction or the other and will know where any heading in between those two positions will be. The positions are stored in non-volatile memory so it does not matter if the power is disconnected. If you have a rotator “B” installed also, the above procedure is repeated using Rotator B settings in Program Mode.

At any time, changes may be cancelled prior to saving by pressing and holding the dial button. This will switch back to Program Mode. Press and hold the dial button again to switch back to Normal Mode.

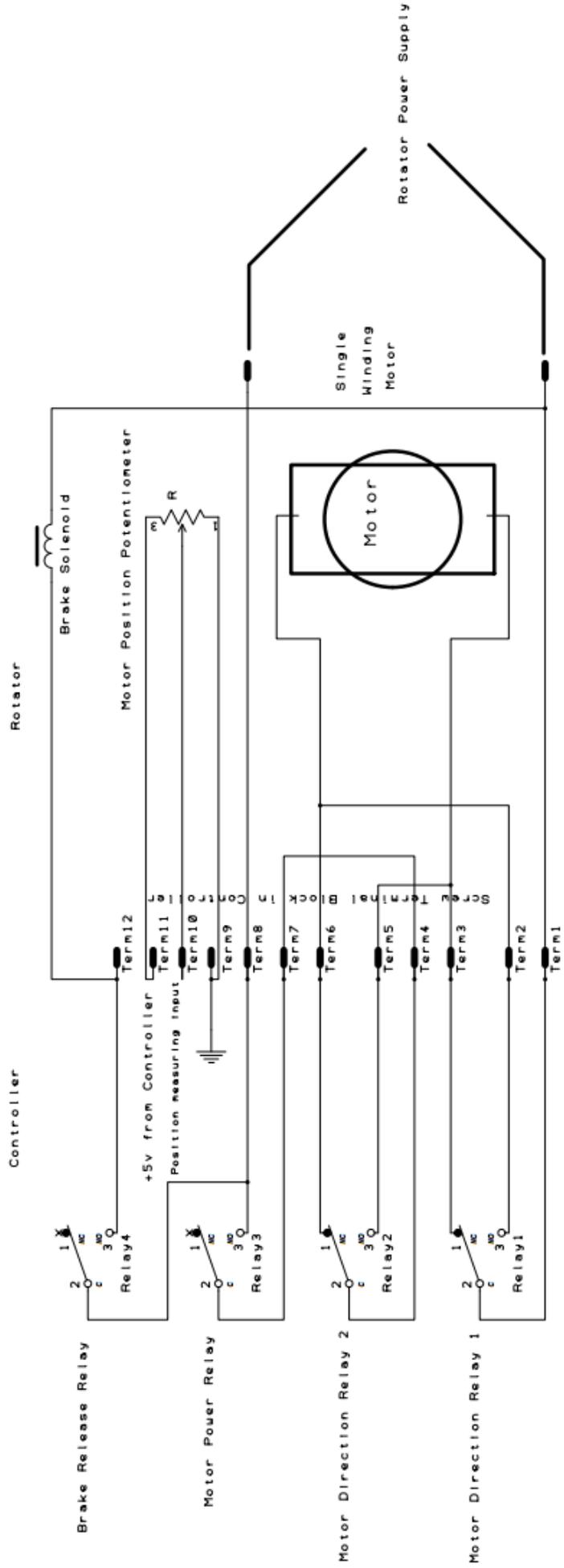
Due to updating of features, this User Guide may not be accurate for newer versions of software.

Safeguards.

When rotating, the controller checks the current bearing of the rotator and if this has not changed in 5 seconds will switch off the power to the motor. This will prevent the motor from burnout should the wind or other physical obstruction stop the rotation. This also applies to the over rotation past 0 or 360 degrees.

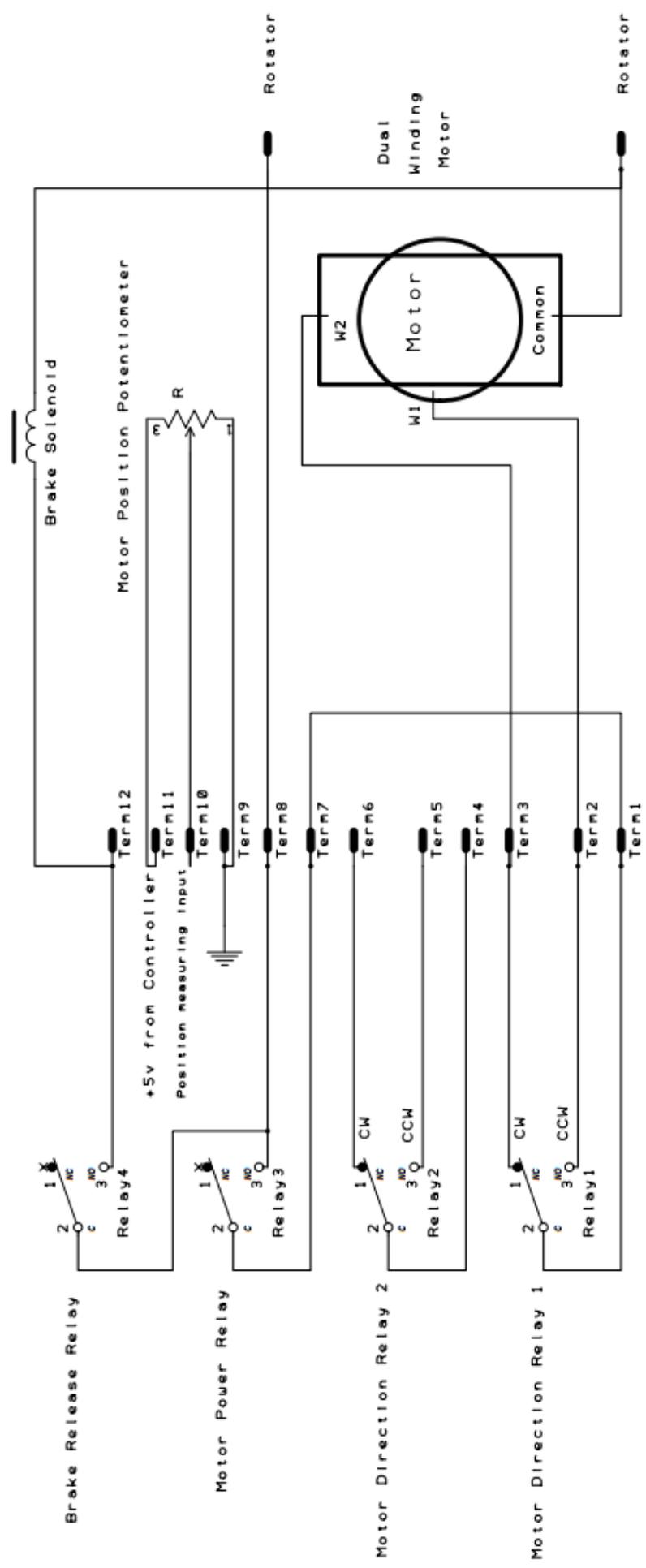
Wiring of the Controller to the Rotator.

Connections to the Rotator are made by pluggable screw terminals on the Controller PCB. Wiring diagrams below show connection for a DC powered polarity reversed motor and an AC powered dual winding motor. Brake release wiring can be used if required. Appendix A shows a typical connection diagram when using a DC powered rotator. Appendix B shows a typical connection diagram when the rotator is powered by AC or has two motor windings.



Wiring of Rotator to Controller for single winding motor.

Appendix A



Wiring of Rotator to Controller for dual winding motor.