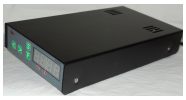
Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



Alfa ROT1Prog Controller

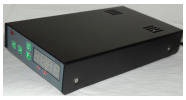
Revised 15 SEP 2022
http://www.alfaradio.ca

This manual is for use with units sold by Alfa Radio Ltd. of Edmonton, Alberta, Canada. on or after March 1, 2022. Units sold by others may have different firmware and may operate using different voltages.

Table of Contents

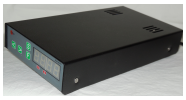
Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



1 Introduction

The ROT1Prog is an electronic controller used for turning rotators. The Controller may be connected to a single rotator and operates with a direct current motor.

The ROT1Prog is designed to work with Alfa RAU, RAK, BIG-RAK and RAEL rotators. With modified firmware, it can work with the Alfa Ring Rotators.

1.1. Features of the ROT1Prog Controller

Manual and/or computer control modes.

Digital readout with 1 degree resolution.

Large, easy to read, soft green LED display.

Supply voltage of 13.8 to 18 VDC. @ 3 to 8 Amps.

Can be zeroed at any position, to allow for installation inaccuracy or antenna mount slippage.

Generous over travel (+/- 180) with electronic limits. Total of 720 degree travel.

Programmable limits ideal for side mount applications.

Small front panel simplifies stacking several units - takes less valuable space.

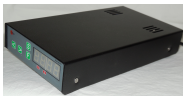
1 x USB port for Computer control

1 port to interface with a custom built mouse (** not a computer mouse) to control the motors, as well as buttons for up to 6 Preset azimuth settings.

Interfaces with most commonly used logging programs.

Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



1.3 Photos and description

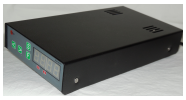
1.3.1 Front ROT1Prog

1. Left and Right rotation keys
2. Setup and Function Keys
3. 4 digit display
4. Overlap Indicator
5. Not used

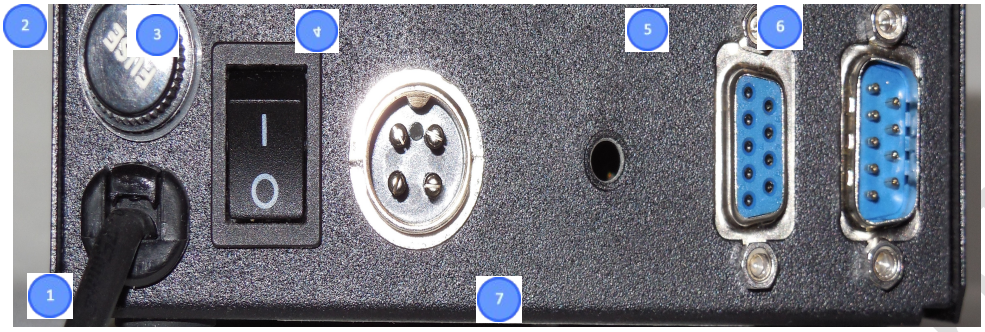
1.3.2 Back ROT1Prog – USB Version

Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



1.3.3 Back ROT1Prog – Serial Version



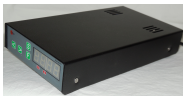
Note: This version of the ROT1Prog is no longer made. This information is provided for customers who already have one of these units.

1. Power Cord – Connected to 13.8 to 18 Volts AC or DC
   - The Polarity of the Blue and Brown wires does not matter
2. Fuse Holder – 8 Amp fuse
3. Power Switch
4. 4 pin Connector to connect cable from Rotator

   Pin 1 - Motor Drive
   Pin 2 - Motor Drive
   Pin 3 - Impulse Sense
   Pin 4 - Impulse Sense
5. Connector to connect cable from Computer
6. Connector for optional RAK Mouse - section 2.2
7. Ground Connection

Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca

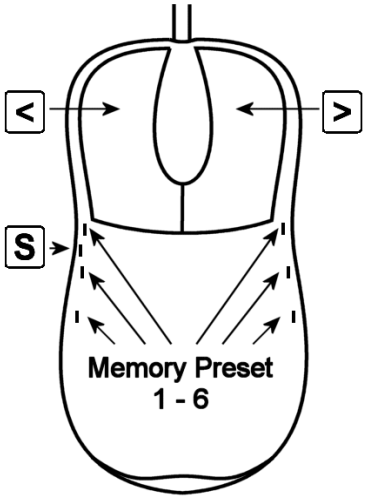


2 INSTALLATION ROT1Prog

2.1 Wiring for BIG-RAK, RAK, RAU or RAEL

Refer to applicable Alfa Radio Rotator Manual

2.2 Mouse Controller (Optional)



The optional mouse controller allows easy desktop access to the most commonly used front panel controls. These buttons are functionally equivalent to the corresponding front panel controls.

> ⚠ The mouse controller is a highly modified computer mouse. You cannot use a regular mouse with the Alfa rotator nor vice-versa.

< - Left (Decrease)

> - Right (Increase)

S - Stop (also the wheel between left and right buttons)

In addition to the above controls, you will find 6 programmable Preset buttons on the mouse. Programmable Preset buttons are only available with the optional mouse controller. Preset headings are programmed with the Setup Mode.

The mouse ball serves no function; the mouse simply provides an ergonomically pleasing case in which to mount the controls.

3 SETUP ROT1Prog controller

3.1 ROT1Prog controller configuration

S Setup Mode

The [S] button steps through the setup menu. The display cycles through each of the setup menu items.

1.00 or 0.50 ratio setting (Default is 1.00)

1.00 or 0.80 ratio setting in Ring version

PH88 - Programmable High Limit, Default “DOT” flashing 180

PL88 - Programmable Low Limit, Default “DOT” not flashing 180

P.B.0 - Programmable Reset Value 0 or 180

P.B.1 - Preset 1

P.B.2 - Preset 2

P.B.3 - Preset 3

P.B.4 - Preset 4

P.B.5 - Preset 5

P.B.6 - Preset 6

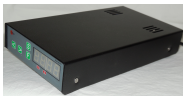
PS.S - Program Simulation

8.8.8.0 - Heading Adjust (numbers blinking)

PH88 - **Programmable High Limit**

The Programmable High Limit is a user adjustable, clockwise travel limit value. By reducing this value, the maximum clockwise rotation travel can be restricted. Use the [<] and [>] buttons to adjust the value.

PL88 - **Programmable Low Limit**



The Programmable Low Limit is a user adjustable counter-clockwise travel limit value. By increasing this value, the minimum counter-clockwise rotation travel can be restricted. Use the [<] and [>] buttons to adjust the value.

> These limits can be used when side mounting the rotator to keep the antenna from colliding with the tower.

P.8.8.0 - **Programmable Reset Value**

The Programmable Reset Value can be set to either 0 degrees, or 180 degrees. This is the beam heading set point when a power on reset event is triggered. If you wish to reset your rotator to south, set this value to 180.

P.8.8.1 - **Preset 1**

P1 Thru P6

P.8.8.6 - **Preset 6**

These 6 Presets are user adjustable values that map to the 6 Preset buttons on the optional mouse controller. You can set each Preset to a commonly used beam heading, allowing rapid single button heading selections.

P.S.8.S - **Program Simulation**

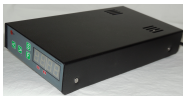
Program Simulation allows the user to set the serial communication protocol used by the controller. When set to emulate another brand of rotator, the Alfa will respond to commands, and send responses back to the computer as if it were the rotator brand selected. If your favourite software supports a rotator, chances are, the Alfa will be able to interface to your software. There are 4 modes available. Note: some programs may not support the 1200 Baud requirements of the controller in simulation mode.

P.S.8.S - Spid Recommended

P.S.8.0 - Orion

P.S.8.H - Hygain

> Alfa Radio does not support the use of the Orion, Hygain or Yaesu protocols when used with the ROT1Prog Controller.



 - Yaesu

 - **Heading Adjust (numbers blinking)**

This setting can be used to make minor heading adjustments without causing the rotator to turn. If you notice that the heading displayed on the controller to a known signal source is out by a few degrees, you can change the heading displayed on the LED readout to match the known heading, rather than having to turn back to North and reset the controller.

3.2 Computer Communications:

ROT1Prog controllers sold prior to January 2015 were equipped with a DB9 Female connector. This connector can be connected to a PC or a USB to RS232 adapter, using a standard straight through serial cable.

ROT1Prog controllers sold after January 2015 are equipped with a USB connector. This connector can be connected to a PC using an A to A USB cable.

Most operating systems (Windows 7 and up, OS X and Linux) have drivers already installed or drivers that will install automatically when the USB cable is plugged in. The Controller is equipped with a FTDI FT232RL USB to Serial chip. If the operating system used does not have a driver installed or automatically loaded, it will be the user's responsibility to load the appropriate driver and get it to work.

Install Guidelines are available from FTDI at http://www.ftdichip.com/Support/Documents/InstallGuides.htm. Drivers can be obtained at http://www.ftdichip.com/Drivers/VCP.htm

To determine the communications port on the PC:

Windows: Open the Device Manager and expand the "Ports(COM & LPT)" to find out the comm port assigned to the Controller.

Linux: Open the terminal program.

Type "ls /dev/ttyUSB*". A list of ports will appear. The Controller port will appear like this, "/dev/ttyUSBX" where X is digit starting at 0

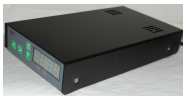
Mac OSX: Open the terminal in the utilities directory.

Type "ls /dev/tty.*". A list of ports will appear. The Controller port will appear like this, "/dev/tty.usbserial-XXXXXXXX" where XXXXXXXX is an 8 Alphanumeric serial number of the FTDI chip.

Comm Port settings are 1200-8-n-1.

3.3 Rotator Testing

Refer to Applicable Alfa Radio Rotator Manual



3.4 Resetting the Controller

Since there are no mechanical limits in the rotator, it may be installed with the antenna pointing in any direction. There is no reason to locate "TRUE NORTH" until you are ready to calibrate the control box. Use the controller to position the antenna to physically point north, then reset the controller as follows:

Turn the unit OFF. Then while holding the F button depressed turn control unit back on. This will now show 8888 on the display. The controller is now set for North.

Note: Resetting the controller using this process does not reset the Limits or the preset settings.

Display calibration:

Press the S button to cycle through to the display after P5 X, (X is the mode for computer interface). It will be blinking. The display shows the normal degree reading i.e. 30 degrees. With the left or right arrows, the display reading can be changed without turning the rotator in this mode. This feature can be used if, for any reason, the direction of the antenna becomes incorrect. This may be caused by antenna to mast slippage or incorrect initial alignment. The Rotator to mast will not slip unless there is improper installation. See Heading Adjust (numbers blinking) else where in this document.

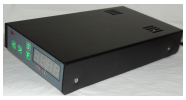
IMPORTANT:

The Alfa rotator is now set at the counter-clockwise end of its normal rotation range. Normal rotation range is in a clockwise direction for 360 degrees.

From the reset position, you can rotate counter-clockwise an additional 180 degrees in over-travel, as well 360 degrees clockwise, plus an additional 180 degrees into clockwise over-travel.

Counter-clockwise over-travel is indicated by a steady dot above the over-travel icon. <-> Rotation past 359 degrees into the clockwise over-travel is indicated by a blinking dot above the over-travel icon. <->

Technical Note:



You will need to leave sufficient coax length to accommodate the additional 180 degrees of over-travel on each end of normal rotation (720 degrees total). Failure to do so can cause damage to your coax and/or antennas.

3.5 Rotator Troubleshooting

Refer to Alfa Radio Rotator Manual

3.6 Alfa Radio Rotator 208 Condition.

On occasion, the Alfa Radio ROT1Prog controller will send a rotator to an azimuth of 208 degrees without any apparent command from the User or Computer.

The Controller is powered by an 8 bit Microcotroller running at 16 Mhz. Sending commands to the Controller, via the front panel and/or Computer, in quick succession, can cause the Microcontroller to become overloaded, resulting in the 208 condition.

To reduce this problem, ensure that commands to the controller are sufficiently spaced out.

4 Operation

The Alfa controller has multiple modes of operation. You will need to become familiar with these modes to be able to make full use of your rotator.

F Function Mode

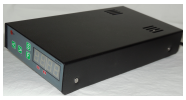
The F button steps through the function menus. The leftmost character on the display indicates the function mode you are currently in.

8880 - Normal Operations Mode

A880 - Half Auto Mode

A880 - Auto Mode

⚠ The 0 in the displays to the left will be replaced by your actual beam



P880 - Preset Mode

8880 - **Normal Operations Mode**

In Normal Operations Mode, the [<] and [>] buttons cause rotation as long as the buttons are pressed. Pressing [S] while in normal operations mode will take you to setup mode.

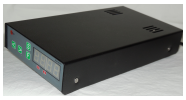
H880 - **Half Auto Mode**

In Half Auto Mode, the [<] and [>] buttons can be used to pre-select the desired beam heading. The heading displayed on the controller will rapidly change in the direction of desired rotation. Once the desired beam heading is shown on the display, release the key. Approximately 0.5 seconds after no key presses have been detected, the display will revert back to the actual beam heading, and rotation towards the desired heading will take place. Pressing any key while in transit to the desired heading will cancel the action.

A880 - **Auto Mode**

In Auto Mode, the controller will respond to commands from control software running on an attached computer. The [<] and [>] buttons can still be used as a manual override.

P880 - **Preset Mode (requires optional mouse)**



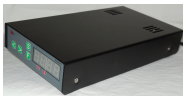
In Preset Mode, the [<] and [>] buttons cause rotation as long as the buttons are pressed. With the optional mouse attached, the six preset buttons can be used to select a desired beam heading. Preset beam heading values are set in Setup Mode

NOTE:

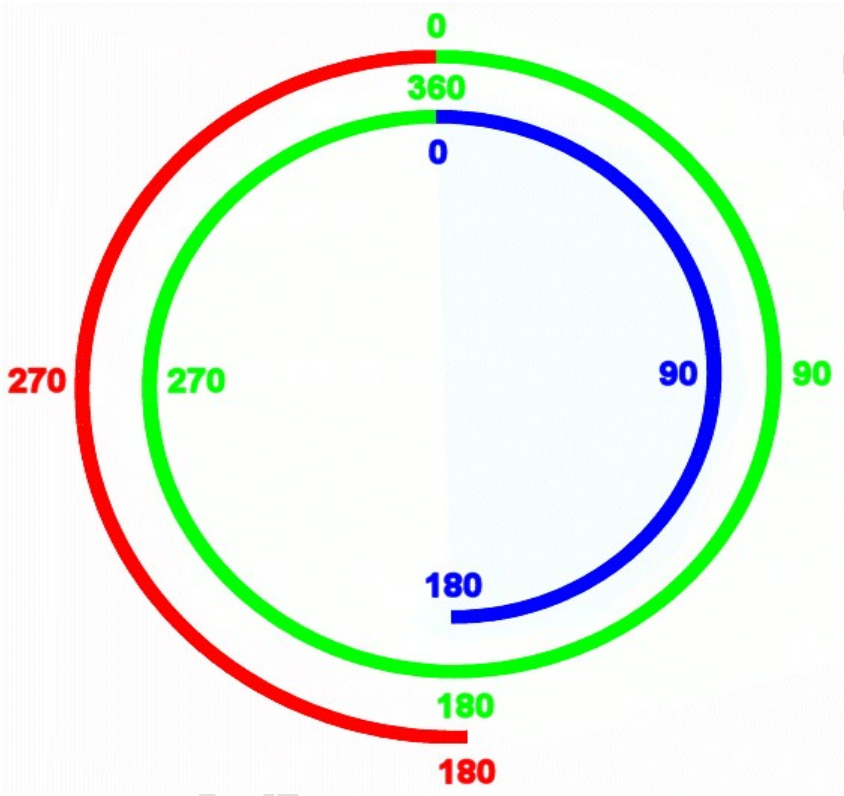
Part of the overload protection circuitry involves cutting power to the motor, if the controller does not receive a sense indication. If the motor turns for a few seconds and then stops, the motor has either stalled or there is a problem in the reed switch sense wiring.

Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



5 Typical travel of an Alfa Rotator

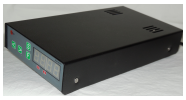


Blue 0 to 180 is the dot (flashing) PH over travel (Right 180 side of diagram)

Red 0 to 180 is the dot(non flashing) PL over travel (Left 180 side of diagram)

Alfa Radio Ltd.

11211 - 154 St. Edmonton, Alberta, Canada T5M 1X8
sales@alfaradio.ca 780-466-5779 www.alfaradio.ca



12 MONTH LIMITED WARRANTY

Alfa Rotators and controllers

Alfa Radio Ltd. warrants to original purchaser of the product, that the product will be free from defects in material and workmanship for the following periods after such date of purchase: Material - 12 months Workmanship - 12 months.

Alfa Radio Ltd. will, at its discretion, repair or replace free of charge such defective products subject to the following conditions:

1. Delivery of the product **prepaid** to **Alfa Radio Ltd.** or its authorized dealer.
2. Determination by **Alfa Radio Ltd.** that a defect exists and is covered by the limited warranty.
3. Defects due to alteration, repair by an unauthorized person, misuse, accidental damage, lightning strikes, use of the equipment for purposes other than those for which it was designed, and the like, are NOT COVERED by this limited warranty. Repairs in these cases will be subject to normal service charges.
4. Damage to a Alfa rotator or controller caused by using said rotator or controller with a rotator or controller manufactured by any other manufacturer will NOT BE COVERED by this limited warranty.
5. Repairs and replacement parts are covered under this limited warranty only for the remaining term of the original limited warranty.
6. Under no circumstances is **Alfa Radio Ltd.** liable for consequential damages to person(s) or property by the use of this product.
7. **Alfa Radio Ltd.** reserves the right to make changes or improvements in design or manufacture without incurring any obligations to install such changes in any of the products previously manufactured.
8. All claims of defect or shortage should be sent prepaid to:

Alfa Radio Ltd.
11211 - 154 Street, Edmonton, Alberta, T5M 1X8, CANADA

and must be accompanied by a letter describing the problem in detail along with a copy of your proof-of-purchase.

Contact **Alfa Radio Ltd.** before sending.