Menu

The Menu features six different Tabs:

1. "RAs" for Right Ascension coordinates
2. "DEC" for Declination coordinates
3. "HA" for input of the hour angle time in hours and minutes
4. "POL" for automatic positioning to Polaris
5. "HEAT" to toggle heating
6. "CAL" to calibrate tracking speed

You can cycle through the tabs with the RIGHT button, only in one direction: left to right

Menu RAs:

`>RAs<DEC HA POL`
`>23h 59m 59s`

In this menu, you can put in Right Ascension coordinates of an object. With the LEFT button you can cycle through hours, minutes and seconds. The UP and DOWN buttons in- or decrease the values.

Menu DEC:

`RAs>DEC<HA POL`
`>89 59' 59"`

This menu works the same as the RA menu, just for Declination coordinates.

The coordinates for both RA and DEC should be put in the J2000 format. For example: for M31, the Andromeda Galaxy you would put 0h 42m 44s in the ALT menu and 41° 16' 07" in the DEC menu.

Pressing the SELECT button will move both axis to the desired coordinates.

Menu HA

`RAs DEC>HA<POL`
`0h 00m`

Input your HA time here (explained later). This works the same as the RA/DEC inputs, with LEFT switching between h and m and UP increasing value. You can only increase values here, because for some reason counting down caused errors.
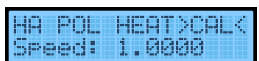
Menu POL:

`HOM TRK HA>POL<`
`Sel for Polaris`

Press SELECT to center Polaris in the middle of the camera. More on this later.

Menu HEAT

`DEC HA POL>HEAT`
`RA>OFF< DEC: ON`

Keeps the coils of the steppers powered when not moving. Helps in cold weather. LEFT to switch between the steppers, SELECT to toggle ON/OFF

Menu CAL

`HA POL HEAT>CAL<`
`Speed: 1.0000`

Used to calibrate the tracking speed. UP/DOWN to de- or increase the value. SELECT to save. Don't save values greater than +/- 0.0255

Setup:

1. Move the RA wheel until its centered well. Move the DEC wheel until the camera is pointing 90° from the RA wheel. One of the struts on the DEC wheel will line up.
2. Place the device with the camera mounted on a flat and stable surface, like a table
3. Point the camera/wide side of the mount roughly north
4. Turn your camera on and turn your ISO to the highest possible value. Try to find Polaris and place it in the middle of the camera screen. Do this only by moving the base of the mount, do not turn the RA or DEC axis.
   Most cameras have diagonal grid overlays that help a lot here. If yours doesn't, you can try and mark the center of your screen with a (NON PERMANENT) marker. It is important to get this as precise as possible.
5. Give power to the Arduino and the steppers and enter your HA time.
6. Press RIGHT to go to the POL menu and then SELECT. Polaris should move out of center now. Watch closely where it goes
7. With the Arduino and the steppers still on, carefully move the base only until Polaris is centered again. Do not move the RA/DEC wheels.
8. The mount is now aligned and you can start to input coordinates in the RA and DEC menus.

How to get your HA time:

After powering on the Arduino, the first tab will be "HA". You have to put in the current HA time of your location. You can get this in multiple ways, the easiest is through an app like "Simple Astro Tools". In the App click on "-Polar Finder", let the App get your device time and GPS coordinates and put in your timezone. Click Calculate and put that time into the "HA" menu of the Arduino.

If for any reason you don't have a phone with you or cant install the app, you can use the free PC/MAC/Linux Program "Stellarium". Install it, find Polaris, click on it and find "HA/DEC" in the appearing menu. Make sure Stellarium is using your current time and date and location.