Setting up 'ScopeDog Lite'

ScopeDog Lite is a new variant that drives the scope without needing a Nexus DSC and its encoders. It uses plate-solving to determine telescope position and in between solves keeps track of where the scope is via stepper motor count.

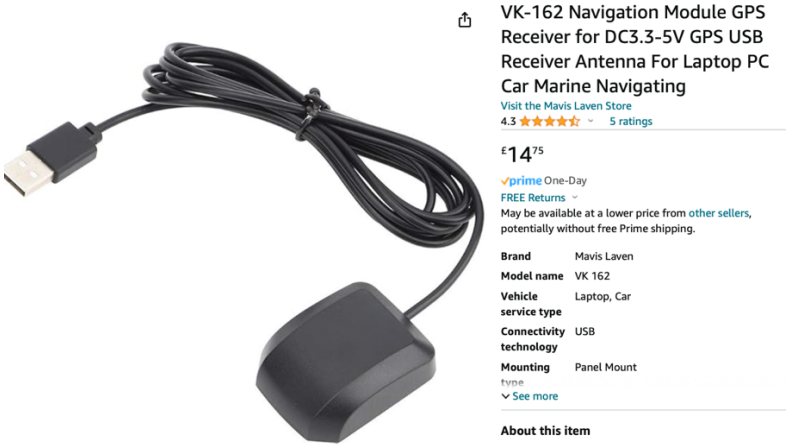
It can be used three ways.

1. As the primary variant, automatically starting at boot.
   Just rename `scopedog_lite_ef.py to scopedogmk3.py`
2. Automatically starting if the ScopeDog full variant fails to find a Nexus DSC.
   Requires `scopedogmk3_16_5ef.py` or later.
3. Manually started from the command line.
   Make sure no other instances of ScopeDog are running. Then execute ...
   `venv-scopedog/bin/python scopedog_lite_ef.py`

If not doing a fresh install, the following changes must be manually done.

1. Copy the following files from the repository to `/scopedog`
   `scopedogmk3_16_5ef.py` (or later version)
   `scopedog_lite_ef.py`
   `Coordinates_lite.py`
   `Location_64.py`
   Replace your version of `Nexus_64.py` with the new one in the repository
2. Backup your old `scopedogmk3.py`
3. Rename `scopedogmk3_16_5ef.py` or `scopedog_lite_ef.py` to `scopedogmk3.py`
4. Install GPSD and GPS3 support ...
   `sudo apt-get install gpsd`
   `venv-scopedog/bin/python venv-scopedog/bin/pip install gps3`

You will need a gps usb dongle. Ideally a cable connected version such as ...



Mount the antenna where it has maximum view of the sky.

Using ScopeDog Lite

SkySafari Setup

Most users will want to connect to SkySafari. This will allow scope position to be displayed and the scope controlled by a Goto, or the arrow keys on SkySafari.

First, in SkySafari telescope setup, select Goto Altaz, Meade LX200 Classic protocol, port 4060 and IP address 10.42.0.1, readout rate 4. The IP address is assigned by the ScopeDog Pi and there is a chance if other devices have connected in the past that it is any one of 10.42.0.x where x is 1,2,3 etc. Many devices (iOS certainly) allow you to find the assigned IP address from the setup wifi info pages.

Observing

If visible point the scope at Polaris. Start ScopeDog. ScopeDog initially thinks it is pointing at the pole. As normal perform an offset measurement using Polaris (or other bright star).

Note: ScopeDog will start once a gps fix has been obtained. This may take a while for some dongles and their positioning.

Connect telescope in SkySafari. The Serial comms LED that pulses at 2Hz on full ScopeDog, will now flicker at the readout rate set on SkySafari. Note the wifi range of the Raspberry Pi in ScopeDog isnt great – about 5m can be expected.

Navigate to the ScopeDog Align screen and hit OK. This triggers a plate-solve and initialises the virtual encoder model within ScopeDog.

The scope can now be controlled from SkySafari (goto or move) and the joystick. The displayed position of the scope on the handset and SkySafari will in general be approximate, largely due to any mount tilt, and gear ratio inaccuracy. At any time the ‘align’ function can be commanded which will correct any error. This is automatically performed during a goto if goto++ is enabled.

The normal ‘long press OK repeats the last goto. ‘Set Goto’ is not available.

The ‘Align’ function on SkySafari is not enabled.