

A quick guide to set up Ekos and INDI to have Meridian Flip working with a OnStep mount

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Introduction

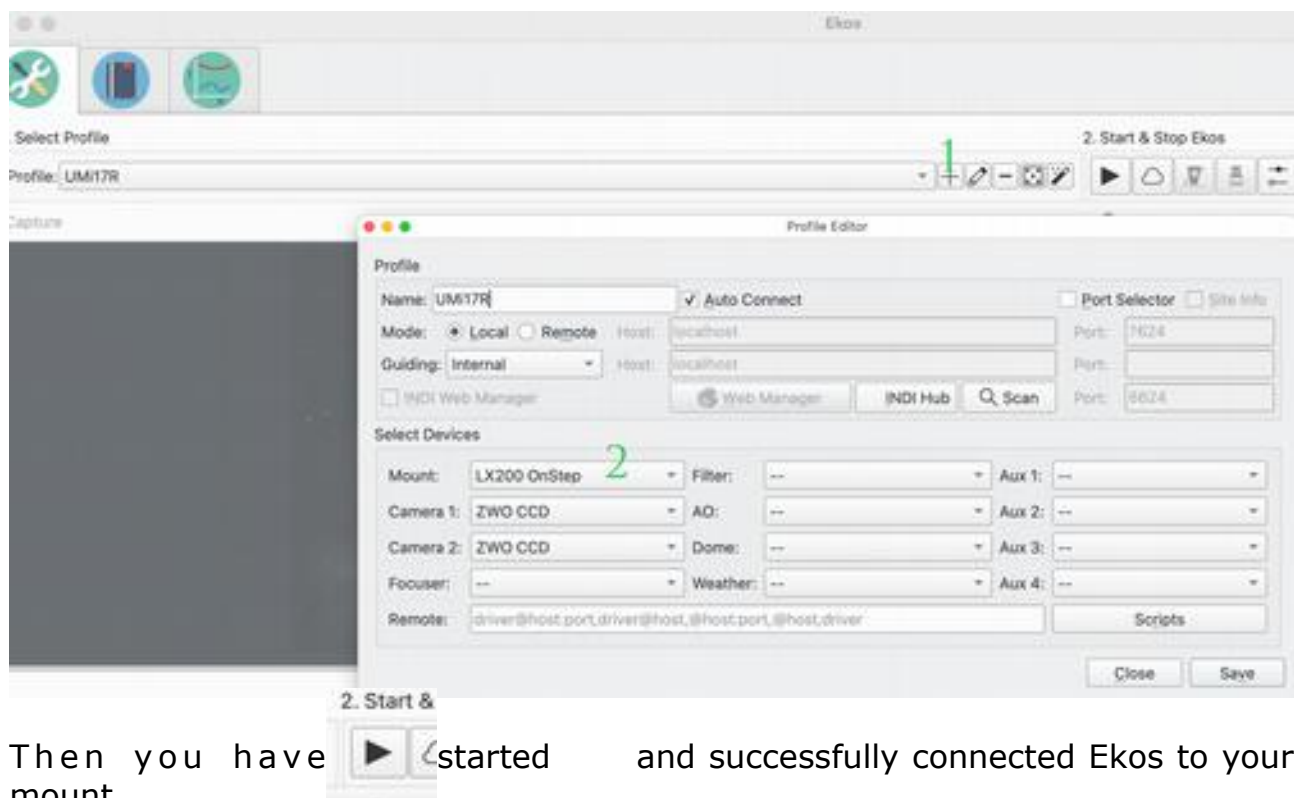
This tutorial is intended to **Ekos/Indi** users using a **OnStep** based mount (Like ProxySky, Juwei, WD... mounts for example).

If you own such a mount and if you intend to do successful overnight imaging sessions (or even visual observing), without risking any damages to your equipment caused by collision with tripod, you need to configure properly both OnStep mount parameters (through INDI control panel) and Kstars/Ekos software.

Here are some setting that have been testing to work fine.

Prerequisite

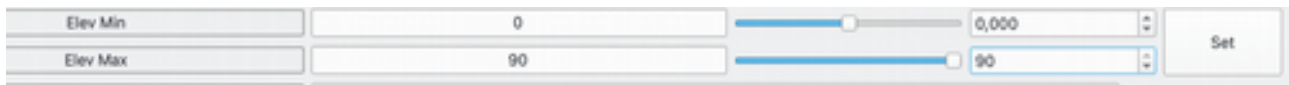
First, we assume that you have configured a profile in Ekos with a OnStep/LX200 mount :



Then you have started and successfully connected Ekos to your mount.

From there, open the INDI control panel if not yet open.

In the first tab (*Main Control*) set the Elevation limits. 0/90° will do. Don't forget to click SET to make the setting effective.

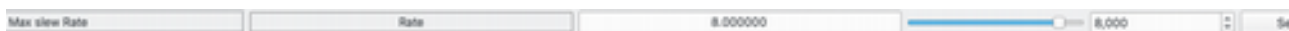


Elev Min	0	0,000
Elev Max	90	90

Set

Then, change to the *Motion Control* tab.

Check the value of *Max Slew Rate*. The default is 5, but this rate is so slow that it would take hours to Slew, Align, Polar Align... 8 Seems a good value. Don't put it to the mask to not damage your mount.



Max Slew Rate	Rate	8.000000	8,000
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Important note : if your mount stop tracking because it has hit some limits, or in some circumstances, it is possible that this *Max Slew Rate* got changed to -1. As a security measure. Making it impossible to slew. Change it back to 8 if this happen.

Lazy configuration of Meridian Flip

If you have a reasonably short telescope, you can save time and try the following parameters that will be fine in most case.

If you have bigger instrument, if you don't use a pier extension and want to ensure you won't experiment collision with your particular setup, see next chapter *Making a safer evaluation of Meridian Limits*.

Configuring OnStep mount parameters with INDI control panel.

Open the *Motion Control* tab.

- Let *Meridian Auto Flip* to OFF (default) We don't want 2 guys to be in charge of the same job...
- Let *Pause at Home* as is.
- Change Preferred Pier side to **EAST** (very important)



Meridian Auto Flip	AutoFlip: ON
Pause at Home	HomePause: ON HomePause: Continue
Frequency Adjust	Frequency - Frequency + Reset Sidereal Frequency
Preferred Pier Side	West East
Minutes Past Meridian	East a 180 12 12
	West a 180 12 12

Finally, we need to set the *Minutes Past Meridian* values for *East* and *West*.

Watch out ! In INDI those value are actually in **minute**. While they are set in degree in ASCOM, your phone App... Don't me miss-led by the label ± 180 next to *East* and *West*, it is a GUI bug.

Those limits tells your mount how far it is allowed to go past the meridian before it stops tracking.

East means "when the mount is on the East side of the pier, pointing west".

West means "when the mount is on the West side of the pier, pointing east".

Those are security parameters in case something goes wrong. You don't want to hit those limits. You just want this time window to be wide enough to let Ekos do its job : finish current capture, stop guiding, perform meridian flip (MF), but straight enough not to risk colliding the tripod and damaging equipment.

12 or 8 minutes East and West are reasonable values. That is 3 or 2 degrees. Not much risk to hit tripod, but sufficient time to finish a long capture and do MF.

Configuring Ekos

Finally, in Ekos Mount Tab :

- Check that *Time* and *Location* sources at set to Kstars.
- Check *Flip if HA* and let a value of 0 degree.
- Do not enable *Alt* nor *HA limit*, as those are already set in INDI to be managed by OnStep (we don't want to have 2 guys in charge of the same job).



You are good to go.

You can make some test during daytime. Goto an object close to meridian in East hemisphere (like 15 minutes ago). And look the countdown until MF.

Do not use the slew command to slew closer to the MF point. If you do so, when MF time comes, the mount will go to your last Goto Target, not to the position you have reached with slewing !.

This is another set of values that would do the job:

INDI

Minutes past meridian EAST : 12 WEST : 4

EKOS

Flip If HA>1 degree

Other parameters equal to previous example.

Making a safer evaluation of Meridian Limits.

If you want to ensure that the *East* and *West* limits are safe with your specific setup, you can :

- set those limits to large values (60/60)
- slew carefully your mount to the zenith and approach meridian from on side and then from the other.
- stop before colliding (with a good margin of security).
- Take note of the 2 values of Hour Altitude (Coming from West and East)
- Use those values for *Limit Past Meridian* in INDI *Motion Control* Tab.

Known Issue

If you try to point and track an object that is north and below the North Pole (respectively South and below South Pole if you live in south Hemisphere), there's a bug preventing MF to work properly. You will notice that Ekos and INDI display a false information about Pier Orientation (East and West reversed).

Don't know at this time if the bug comes from OnStep, INDI, Ekos...

Maybe setting *Prefered Pier Side* to *WEST* instead of *EAST* in INDI would help...? Anyway, it is rather rare to track object in this area.