

# QUICKSTART-MANUAL

## for setting-up 10Micron HPS-Mounts

All functions for setting-up and operating a 10Micron HPS-Mount can be accessed via the Keypad, you do NOT need a laptop/computer



4-line display

Direction Keys North-West-South-East to move RA and DEC-axes

Scroll keys for the menu lists. During operation, they can change the motor speed

Confirm inputs or execute functions

Use this key to manually abort Goto-processes if there is a risk of collisions or disrupted cables.

ESC-key, takes you back to a higher level in the menu

Menu-key

## 1. SETUP / PREPARATIONS (if possible, do this during daylight)

### 1.1 SET UP THE MOUNT

Attach the mount head onto the tripod. Roughly align the mount with a compass in such a way that the telescope faces north. Set the altitude with the scale at the side to your geographical latitude. Connect mount and keypad with the control-box. Connect the control-box to the 24V power supply or two optional Powertanks which are connected together with the special connector cable. Take a crosshair-eyepiece and do not use a star diagonal, even if looking through the telescope this way is uncomfortable for the alignment mentioned in step 2.

### 1.1 MOUNT AND BALANCE TELESCOPE AND ACCESSORIES

Attach all instruments and accessories to the telescope (incl. camera and finderscope). If you use a reflecting (catadioptric) telescope, make sure that the main mirror is locked; make also sure that the focuser is locked. Now you can start to balance both axes of the mount precisely. Use the mounts balancing function to achieve this. Once both axes are in balance, fix them by hand.

Menu > Drive > Balance > Balance RA

Menu > Drive > Balance > Balance Dec

### 1.3 BASIC SETTINGS OF THE KEYPAD

Please enter the current values for the following settings into the keypad exactly in this order:

- a) Activate or deactivate daylight-savings time.

Menu > Local Data > Clock >: Daylight SavON oder Daylight SavOFF

- b) Enter your timezone (Central Europe: +01:00)

Menu > Local Data > Clock > Local Timezone

- c) Enter the current date and time accurate to the second.

Menu > Local Data > Clock > Date and Time

- d) Enter the coordinates of your location and save the data.

Menu > Local Data > Site > Enter

**For example:** Geographic Longitude: Lon E007 20' 30". Geographic Latitude: Lat N49° 14' 55"  
E/W: East/West (Longitude), N/S: North/South (Latitude)

- e) During the alignment, Dual Axis Tracking must be turned off. There must be no asterisk \* at this option.

Menu > Drive > Dual tracking

**Please note:** Alternatively at step c) the time can be synchronized via PC and the Tool „ClockSync“, at step d) you can connect a GPS-Module (#1454105), to automatically import time and coordinates.

## 2. ALIGNMENT (Polar Alignment and final pointing model, to be done at night)

### 2.1 POLAR ALIGNMENT

- a) Adjust the finderscope by pointing the telescope at a bright star, focussing and centering it in the eyepiece and then adjusting the finderscope onto that star.

- b) Move the mount to the Park-Position. The telescope must point north.

Menu > Alignment > Park (do not use the option Park Position !)

- c) Use the finderscope to adjust azimuth and elevation of the polar axis manually so that it points to the celestial pole, if it is visible.

- d) Delete all previous alignment data which may still be stored in the mount.

Menu > Alignment > Clear align

- e) Do a 3-Star-Alignment. Point the telescope at the stars and center them with the direction keys of the keypad in a crosshair eyepiece. If the star is not visible in the eyepiece, use the finderscope first. The precision of the alignment depends on the precision with which you center the star in the eyepiece. You will achieve the best results if you use a camera and a digital cross-aim on a computer display instead of a crosshair eyepiece.

**Please note:** The first three Alignment-Stars should be on the same side of the meridian, so that you don't have to move the mount from east to west over the meridian. The stars should be at least 30° above the horizon and form a very large triangle. This way, you avoid the influence of atmospheric refraction.

**Please note:** Do not use the pole star for alignment.

Menu > Alignment > 3-stars

- f) Now you need to adjust the R.A. axis. Select a star (you will achieve best results, if the star is inside of the triangle of alignment stars), confirm and center it in the crosshair by manually adjusting azimuth and elevation of the mount's head.

Menu > Alignment > Polar Align

- g) Take a look at the values for the achieved precision of the alignment:

Menu > Alignment > Align info

» If the value Polar align err. is larger than 2' (minutes of arc), you need to repeat the steps d) to g) – incl. deleting the alignment data!

» If the value is smaller than 2' (minutes of arc), proceed with step 2.2 Refine Alignment

**Remember:** The smaller the value is, the better is the polar alignment of your mount. If you want to work without and autoguider (UNGUIDED) with large focal lengths (> ~1.000mm) and cameras with small pixels (< 6 Micron), the value should be closer to 1,5'.

### 2.2 FINAL POINTING MODEL: 3-STAR-ALIGNMENT AND REFINEMENT

Now you need to improve the adjustment of the alignment by adding further stars to the pointing model. This is done with the function **REFINE**.

- a) Delete all alignment data, which are still stored in the mount.

Menu > Alignment > Clear Align

- b) Do another 3-Star-Alignment.

Menu > Alignment > 3-stars

- c) Add further stars to the pointing model with the Refine-function.

Menu > Alignment > Refine Stars

» If you use a guiding system, you should add at least three more stars by repeating the function **REFINE** three times. Always use an odd number of stars.

» If you are imaging without an autoguider (UNGUIDED), you should add at least 11 more stars – 21 would be better. Always use an odd number of stars.

- d) Now you have to activate Dual Tracking for both axes, then you can start

Menu > Drive > Dual Tracking

e) e)Make sure that you are using the correct tracking speed. For Deep Sky, you must select sidereal:  
**\*Sidereal**

**Menu > Drive > Tracking Speed**

**With this proven and tested method you should be able to take**

- » *images with an autoguider (GUIDED) for up to 20 minutes of exposure time.*
- » *images without an autoguider (UNGUIDED) with focal lengths of ~1.000mm with exposure times of up to 10 minutes.*



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