9 TIPS TO IMPROVE YOUR ALT-AZ MOUNT ASTROPHOTOS

Alt-Az telescope mounts are great imaging platforms if you know how to use them. If you follows the tips on this infographic you are on the way to take great astrophotos. Good luck under the dark sky.

FIND THE DARKEST SKY

Exposure time is limited so the best results are achieved under a dark sky. Keep away from local lightning, but if possible, go to a dark rural area. Check the light pollution here: https://www.lightpollutionmap.info/

PRECISELY BALANCE AND ALIGN YOUR MOUNT

Level the pier precisely (needed for most mounts except the TTS-160 Panther Mount). Balance telescope.
Use camera live view to precisely center alignment stars. Use 2 or 3 alignment stars.

PRECISELY FOCUS YOUR CAMERA

Point the telescope/camera to a bright star. Use live view on camera screen or on PC. Never trust camera lens markings.

CHECK YOUR MOUNT TRACKING ACCURACY

Point telescope/camera towards south approximately 30 degrees up in the sky. Take exposures of 5 sec, 10 sec, 20 sec, 30sec and 40 sec. Inspect the images. Zoom in at stars near the center of the image and find the longest possible exposure time, where the stars are not too elongated.

Maximum Exposure time with Basic Alt-Az Mount
Observers Latitude: +30 to + 50 degrees or -30 to -50 degrees

Object position in the sky		Altitude in degrees			
Azimuth in degrees	**Compass**	**20**	**40**	**60**	**80**
0/180	N/S (north/south)	17	14	9	3
30/330	NNE/NNW	19	16	10	4
60/300	ENE/WNW	34	27	18	6
80/280	Close to E/W	97	79	52	18
90/270	E/W	964	786	513	178
120/240	ESE/WSW	34	27	18	6
150/210	SSE/SSW	19	16	10	4
Azimuth in degrees	**Compass**	Exposure time in seconds			

How to read table:
- Find the approximate Azimuth direction of the target in the left blue column
- Find the approximate Altitude of the target in the green row
- Read the max exposure time in seconds in the matching yellow field

See more about field rotation here: https://telescopemount.org/short-exposure-alt-az-astrophotography-learn-how-to-get-great-results/

FIND THE OPTIMAL EXPOSURE TIME

The exposure time is limited by either the mount accuracy or the field rotation.
Mount accuracy limit exposure time you found above.
Field rotation limit exposure time depends on the target position in the sky. See table left.

USE FAIRLY HIGH ISO/GAIN SETTINGS

It is an advantage to use relative high ISO/gain settings because exposure times are short. Test what works best with your camera. ISO 1600 – ISO 6400 is good.

TAKE AS MANY SUB FRAMES AS POSSIBLE

Now take the pictures. Take many sub frames to increase signal-to-noise ratio.

USE NOISE REDUCTION WHEN STACKING

Having many subs allows for good noise reduction when stacking. Use Average or Median stacking and use “winsorized sigma clipping” noise reduction. Remember the images are automatically dithered by field rotation.

IMPROVE RESULTS BY GETTING A MOUNT THAT ALLOWS LONGER EXPOSURE TIMES

Using a field derotator device allows for long exposure time improving results. Read more about field rotators here: https://telescopemount.org/alt-az-mounts-for-long-exposure-astrophotography-telescope-rotators/

Enjoy this fantastic hobby. Being out under a real dark sky is a wonderful experience. Remember to enjoy every moment of it. Taking great astrophotos can be hard and quite technical but using an alt-az mount can make it a little easier and give time to enjoyment.

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