Description of the configuration file/parameter configsun.ini

The file shown below contains all variables and constants required in the Python script sunpos\_AZI\_ELE.py. File shall be edited with a simple ASCII-Editor such as notepad.

#   
# Configuration file for python sun-tracker  
# Author: Chr. Monstein  
# Date: 2023-08-21...23  
# Do not add comments at the end of any parameter!  
#  
#------------------------------------------------------------------------------

# Location parameter

[Location]

longitude = 8.755948 # Longitude of telescope in decimal degree, positive east  
latitude = 47.20329 # Latitude of telescope in decimal degree, positive north  
elevation = 414 # Elevation of telescope above sea-level in meters  
temperature = 32 # Ambient temperature in Celsius degree to compensate refraction  
pressure = 900 # Atmospheric pressure to compensate refraction in mbar

#------------------------------------------------------------------------------

# Tracker parameter (rotors and interface)

[Tracker]

MaxRange = 77 # Maximum and fixed range of the rotor as +/-, in total 154°  
AziMin = 80.0 # Minimum azimuth to avoid obstructions in the east, such as neighbor’s house  
AziMax = 250.0 # Maximum azimuth to avoid obstructions in the west, such as neighbor’s house  
EleMin = -12.0 # Lowest elevation, usually required for ground calibration Thot of about 300 kelvin  
EleMax = 90.0 # Highest elevation which one wants to reach, usually for sleeping position in zenith  
AziPark = 180.0 # Azimuth of telescope in sleeping mode during the night. Can be used to observe the Moon or the Sun in transit mode  
ElePark = 90.0 # Elevation of telescope in sleeping mode during night. Can be used to observe the Moon or the Sun in transit mode

aziref = 165.7 # Azimuth reference, depends on observing window, usually somewhere in the south  
eleref = 42.5 # Elevation reference, depends on observing mode, usually below track of the sun

azidir = -1.0 # Direction of rotation azimuth rotor, negative to the east  
eledir = 1.0 # Direction of rotation elevation rotor, positive to the zenith

planecorr = 0.0184 # Factor to correct for tilted azimuth plane, ideally 0.0   
Correction is performed as a linear approximation:   
true\_elevation = calculated\_elevation – planecorr\*azimuth  
The factor planecorr can be found by rotating azimuth from -75° … 75° in steps of ~2° …5° and measuring elevation with a inclinometer. Then put azimuth and elevation into EXECL, add linear plot and remember gradient. If east is higher in elevation than west, then gradient planecorr is > 0.

MyComport = COM13 # Communication port via USB, use device manager to find out. Arduino driver required

#------------------------------------------------------------------------------

# Calibration related parameter

[Calibration]

CaliProc = True # True in case calibration is needed  
EleGnd = -8.0 # Position slightly below horizon to get Thot of about 300 kelvin  
dEleCali = -10.0 # Deviation from sun-tack to get cold sky for calibration of about 12 kelvin  
TimeCali = 15 # Time period for calibration, should be a multiple of 15 minutes to fit with FIT-files

#------------------------------------------------------------------------------

# Scanning parameter

[Scanning]

scanning = False # True in case one needs scanning mode to ensure getting peak value of flux  
Dazi = -1.8, -1.8, -1.2, -1.2, -.6, -.6, 0.0, 0.0, .6, .6, 1.2, 1.2, 1.8, 1.8, 0 # Deviation from calculated sun position in azimuth in degree  
Dele = 1.5, -1.5, -1.5, 1.5, 1.5,-1.5,-1.5, 1.5,1.5,-1.5,-1.5, 1.5, 1.5,-1.5, 0 # Deviation from calculated sun position in elevation in degree  
Do not add more values as it takes time to scan and we have only one minute available for the whole scan until the next scan is triggered via system scheduler ssfree.exe (or via crontab).