CCDware

INTRODUCTION | EASY SETUP | TARGET SELECTION | MORE TOOLS | PRO FEATURES

CCDWARE WEBSITE

Click on the buttons above to explore the features of CCDAutoPilot 5

Which version is right for you?
Compare the Basic and Professional versions of CCDAutopilot 5

Learn more about CCDAutoPilot 5

DOWNLOAD TRIAL TODAY

BUY NOW

CCD AutoPilot 5

Your Complete Imaging Automation Solution

Full Disclosure

- I have no financial interest in CCDWare
  - That’s not to say they don't have a financial interest in me

Automation Software

- CCD Commander - $99
- ACP Observatory Control Software - Basic $695
- CCDAutoPilot - $95-295
- Orchestrate (Software Bisque) - $99
- Prism (Hyperion Astronomy) - $149 – 499
- Sequence Generator Pro 3 (Main Sequence Software) - $99

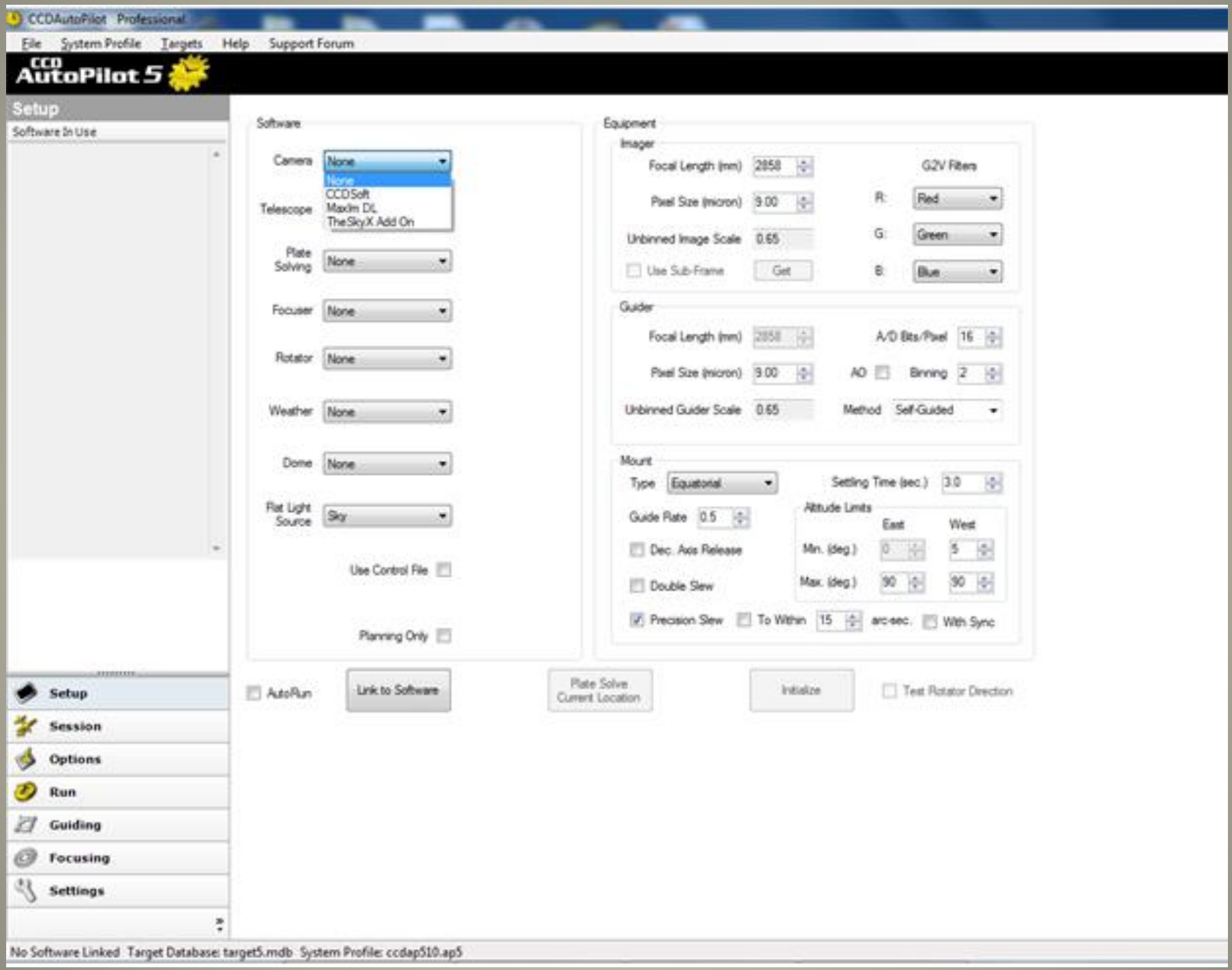
CCDWare Products

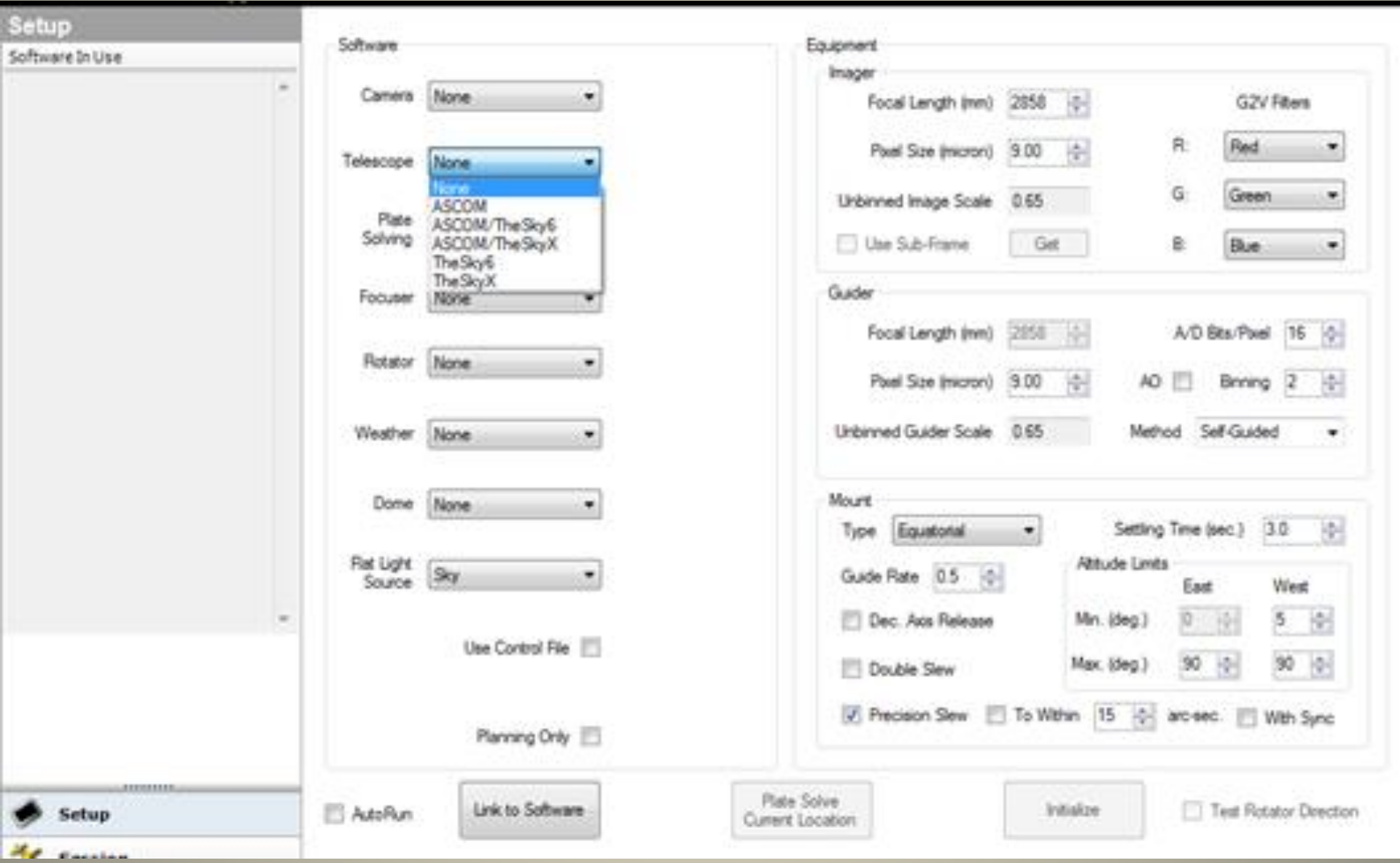
- CCDStack
- CCDNaviator
- PEMPro
- CCDInspector
- CCDAutoPilot
- Focus Max V4

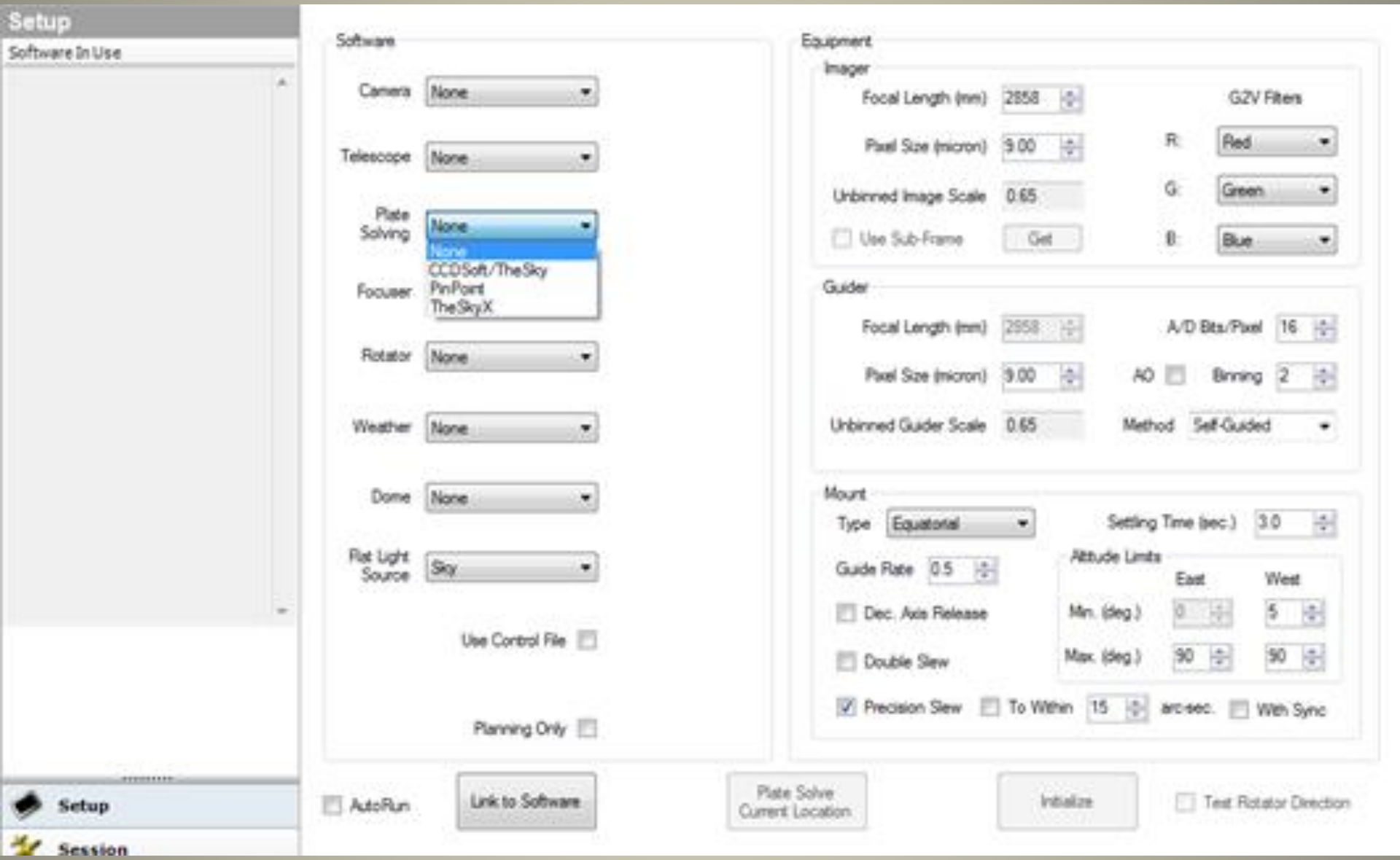
CCDAutopilot 5.0 Basic	$95
CCDAutopilot 5.0 Pro	$295
CCDAutopilot 5.0 Renewal	$75
CCDWare Suite	$841

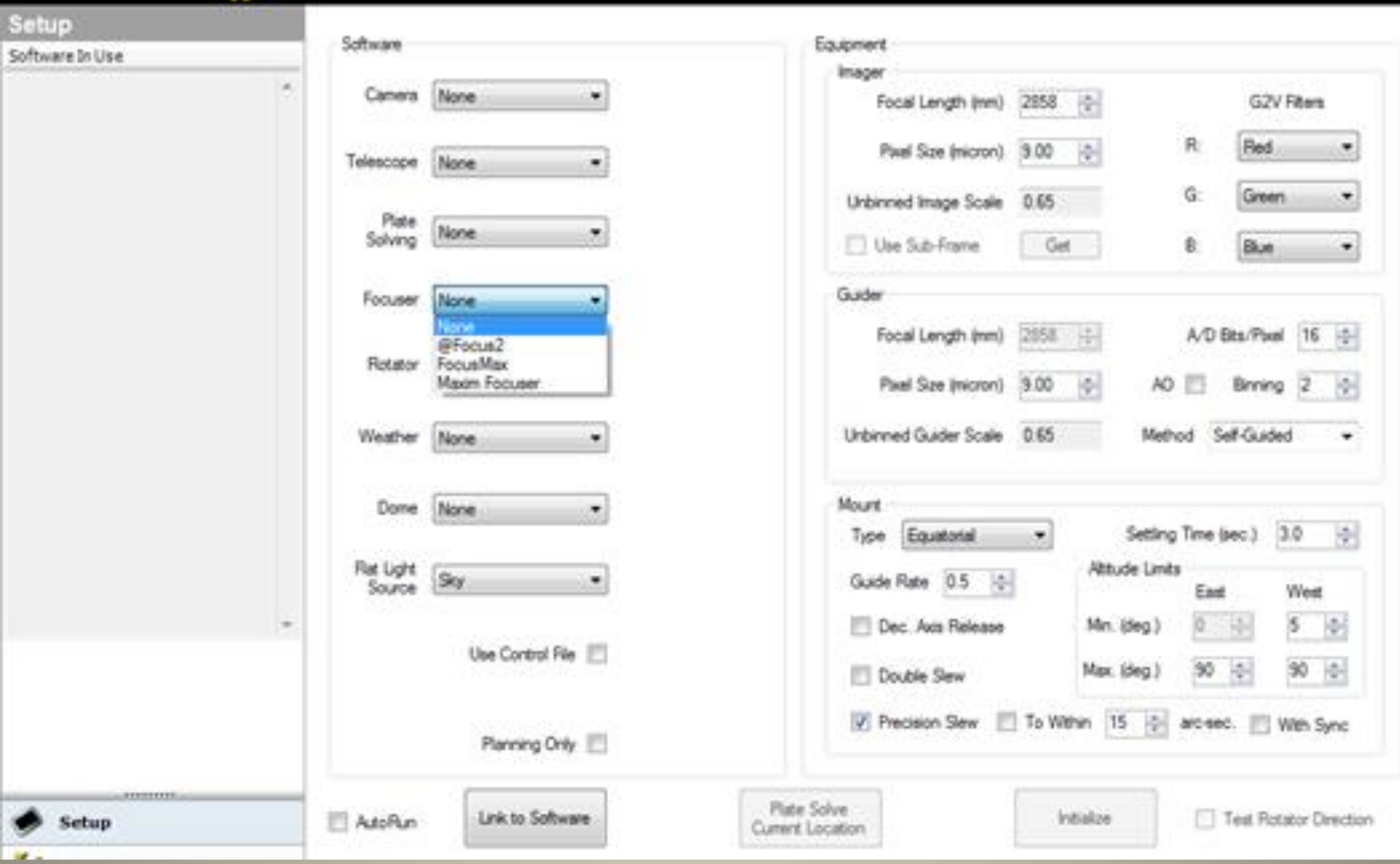
Automation Software

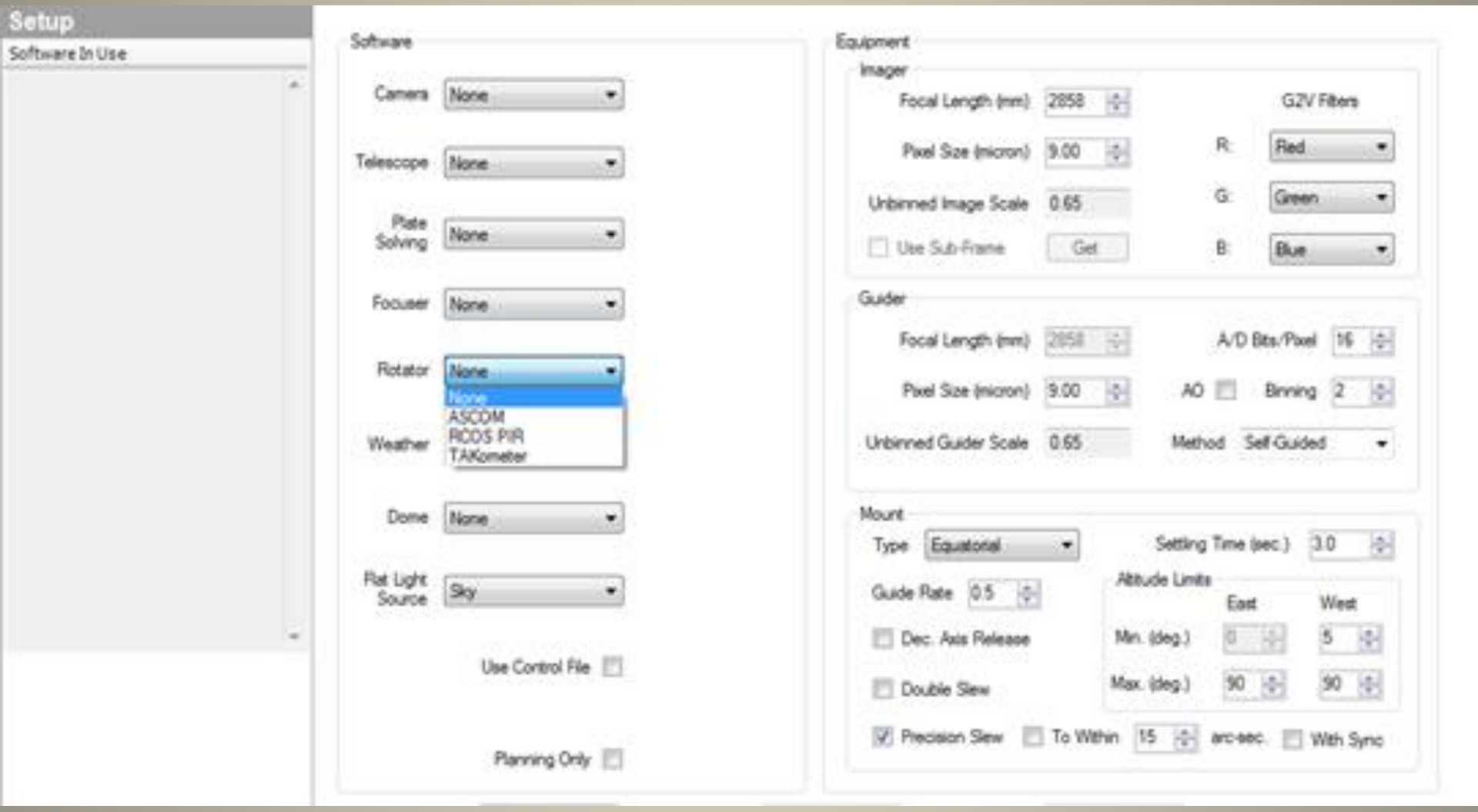
- Controls and integrates existing programs
  - Planetarium Software - The Sky
  - Camera Control – Maxim, CCDSoft
  - Focus Control – Focus Max
  - Plate solve software – The Sky, Pinpoint
  - *Optional - Dome, Weather*

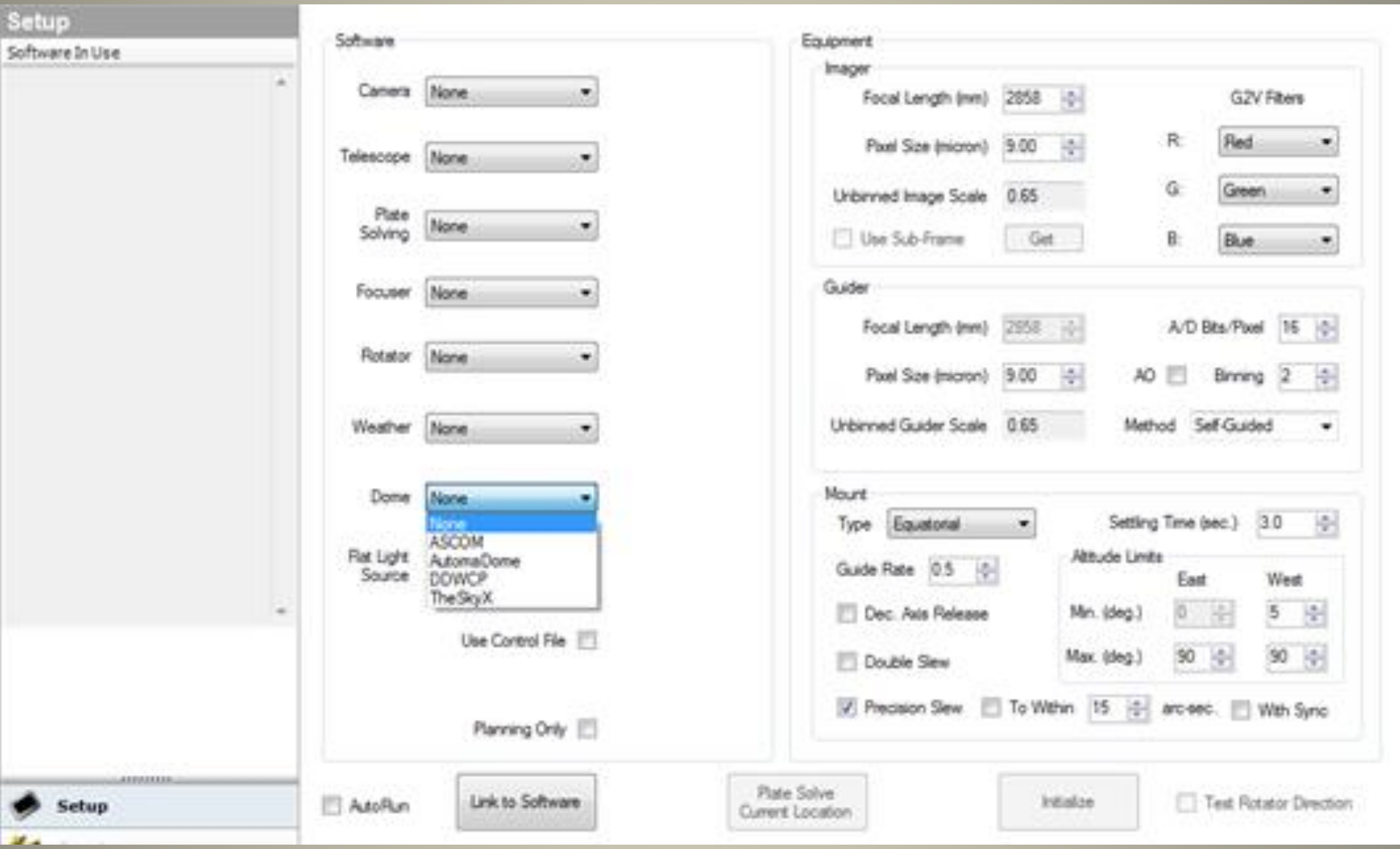

CCDAutoPilot Professional
File System Profile Targets Help Support Forum
CCD AutoPilot 5
Setup
Software In Use
Software
Camera None
None
CCDSoft
MaxIm DL
TheSkyX Add On
Telescope
Plate Solving None
Focuser None
Rotator None
Weather None
Dome None
Flat Light Source Sky
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm) 2858
Pixel Size (micron) 9.00
Unbinned Image Scale 0.65
Use Sub-Frame Get
G2V Filters
R: Red
G: Green
B: Blue
Guider
Focal Length (mm) 2858
Pixel Size (micron) 9.00
Unbinned Guider Scale 0.65
A/D Bits/Pixel 16
AO Binning 2
Method Self-Guided
Mount
Type Equatorial
Setting Time (sec.) 3.0
Guide Rate 0.5
Dec. Axis Release
Double Slew
Altitude Limits
East West
Min. (deg.) 0 5
Max. (deg.) 90 90
Precision Slew To Within 15 arc-sec. With Sync
AutoRun
Link to Software
Plate Solve Current Location
Initialize
Test Rotator Direction
Setup
Session
Options
Run
Guiding
Focusing
Settings
No Software Linked Target Database: target5.mdb System Profile: ccdap510.ap5

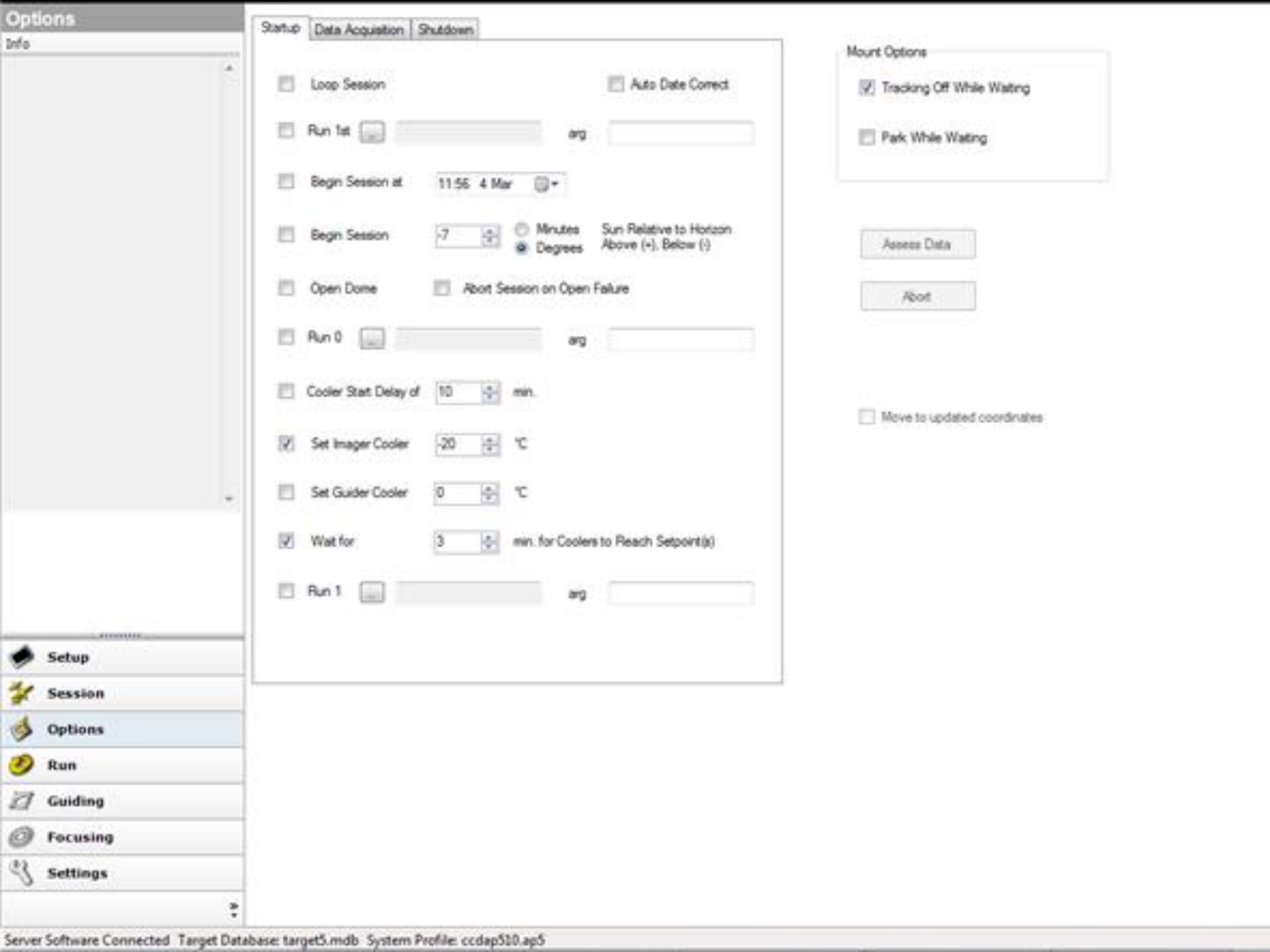

Setup
Software In Use
Software
Camera
None
Telescope
None
None
ASCOM
ASCOM/TheSky6
ASCOM/TheSkyX
TheSky6
TheSkyX
Plate Solving
Focuser
None
Rotator
None
Weather
None
Dome
None
Flat Light Source
Sky
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Image Scale
0.65
Use Sub-Frame
Get
G2V Filters
R:
Red
G:
Green
B:
Blue
Guider
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Guider Scale
0.65
A/D Bits/Pixel
16
AO
Binning
2
Method
Self-Guided
Mount
Type
Equatorial
Setting Time (sec.)
3.0
Guide Rate
0.5
Dec. Axis Release
Double Slew
Altitude Limits
East
West
Min. (deg.)
0
5
Max. (deg.)
90
90
Precision Slew
To Within
15
arc-sec.
With Sync
Setup
AutoRun
Link to Software
Plate Solve Current Location
Initialize
Test Rotator Direction

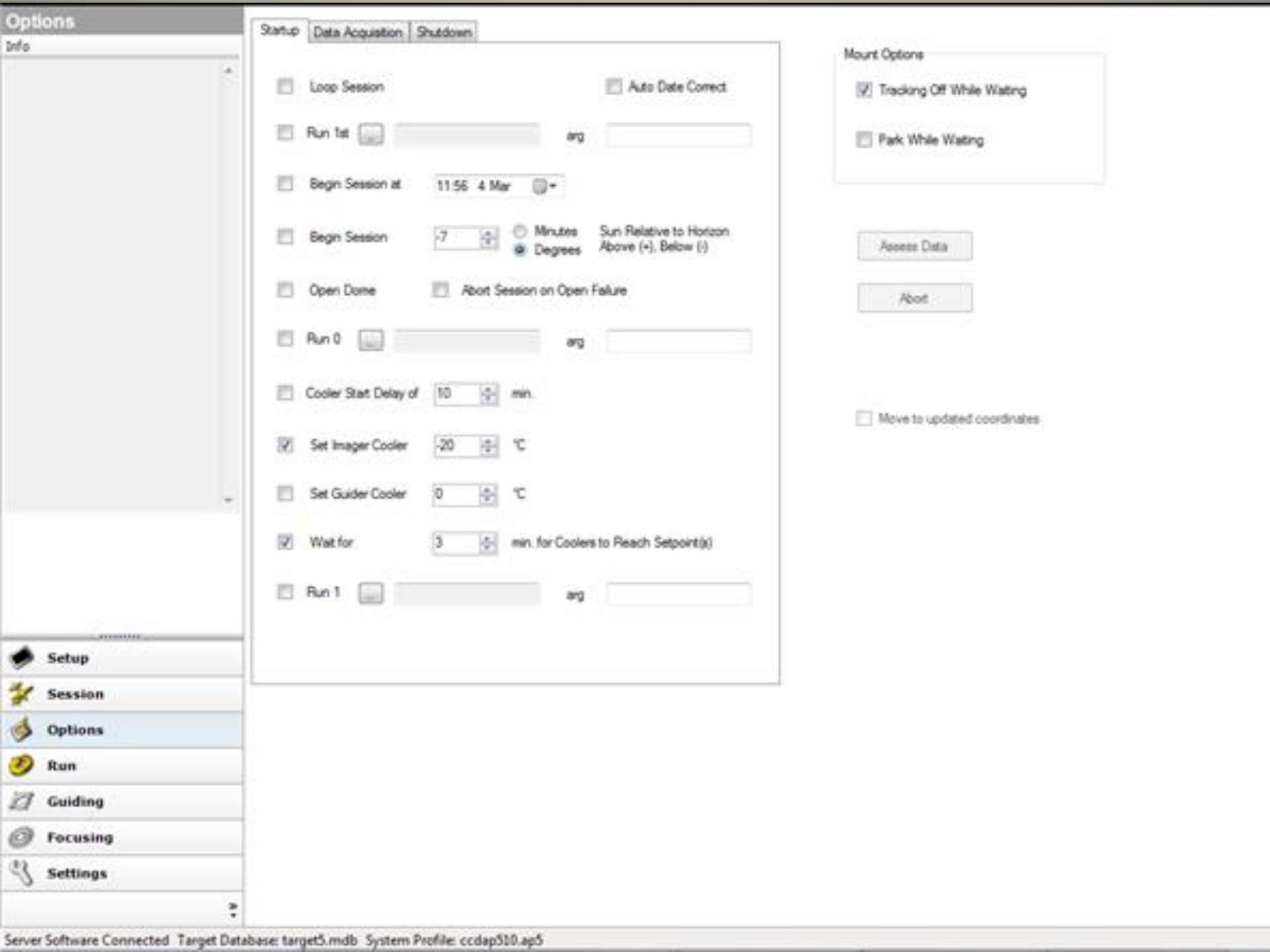

Setup
Software In Use
Setup
Session
Software
Camera
None
Telescope
None
Plate Solving
None
None
CCDSoft/TheSky
PinPoint
TheSkyX
Focuser
Rotator
None
Weather
None
Dome
None
Flat Light Source
Sky
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Image Scale
0.65
Use Sub-Frame
Get
G2V Filters
R:
Red
G:
Green
B:
Blue
Guider
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Guider Scale
0.65
A/D Bits/Pixel
16
AO
Binning
2
Method
Self-Guided
Mount
Type
Equatorial
Settling Time (sec.)
3.0
Guide Rate
0.5
Dec. Axis Release
Double Slew
Altitude Limits
East
West
Min. (deg.)
0
5
Max. (deg.)
90
90
Precision Slew
To Within
15
arc-sec.
With Sync
AutoRun
Link to Software
Plate Solve Current Location
Initialize
Test Rotator Direction

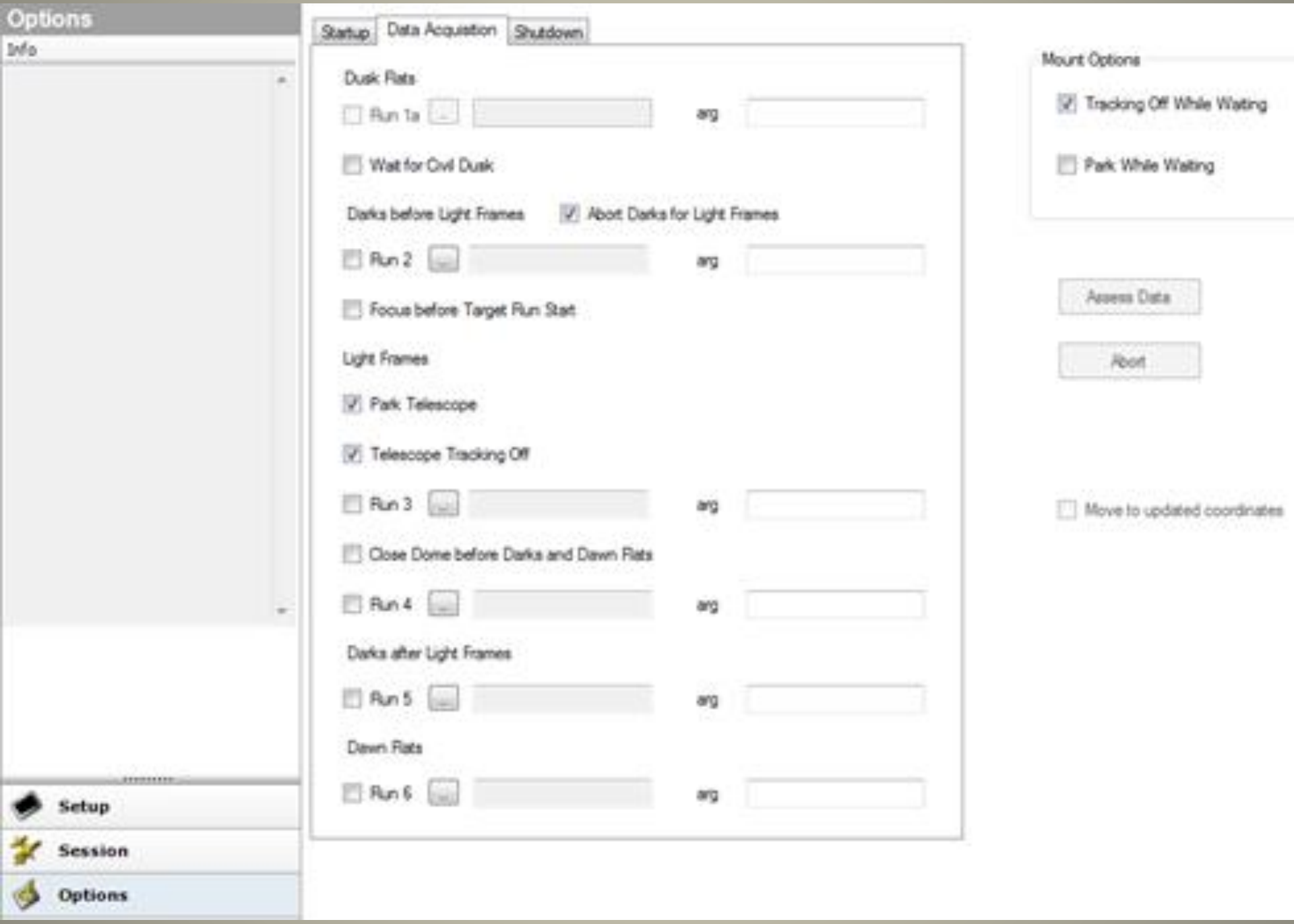

Setup
Software In Use
Setup
Software
Camera
None
Telescope
None
Plate Solving
None
Focuser
None
None
@Focus2
FocusMax
Maxim Focuser
Rotator
Weather
None
Dome
None
Flat Light Source
Sky
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Image Scale
0.65
Use Sub-Frame
Get
G2V Filters
R:
Red
G:
Green
B:
Blue
Guider
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Guider Scale
0.65
A/D Bits/Pixel
16
AO
Binning
2
Method
Self-Guided
Mount
Type
Equatorial
Setting Time (sec.)
3.0
Guide Rate
0.5
Dec. Axis Release
Double Slew
Altitude Limits
East
West
Min. (deg.)
0
5
Max. (deg.)
90
90
Precision Slew
To Within
15
arc-sec.
With Sync
AutoRun
Link to Software
Plate Solve Current Location
Initialize
Test Rotator Direction

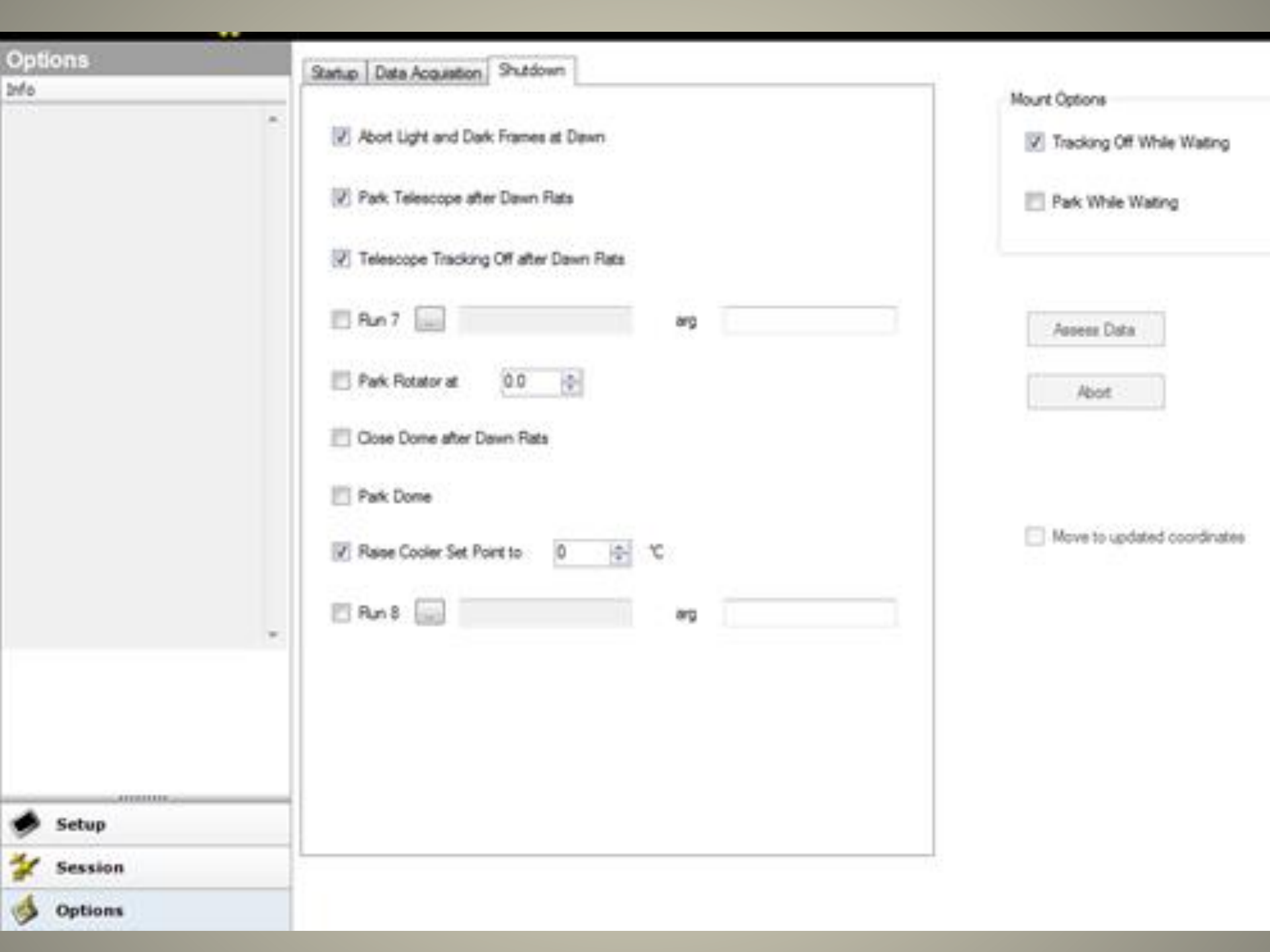

Setup
Software In Use
Software
Camera
None
Telescope
None
Plate Solving
None
Focuser
None
Rotator
None
None
ASCOM
RCOS PIR
TAKometer
Weather
Dome
None
Flat Light Source
Sky
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Image Scale
0.65
Use Sub-Frame
Get
G2V Filters
R:
Red
G:
Green
B:
Blue
Guider
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Guider Scale
0.65
A/D Bits/Pixel
16
AO
Binning
2
Method
Self-Guided
Mount
Type
Equatorial
Settling Time (sec.)
3.0
Guide Rate
0.5
Dec. Axis Release
Double Slew
Altitude Limits
East
West
Min. (deg.)
0
5
Max. (deg.)
90
90
Precision Slew
To Within
15
arc-sec
With Sync

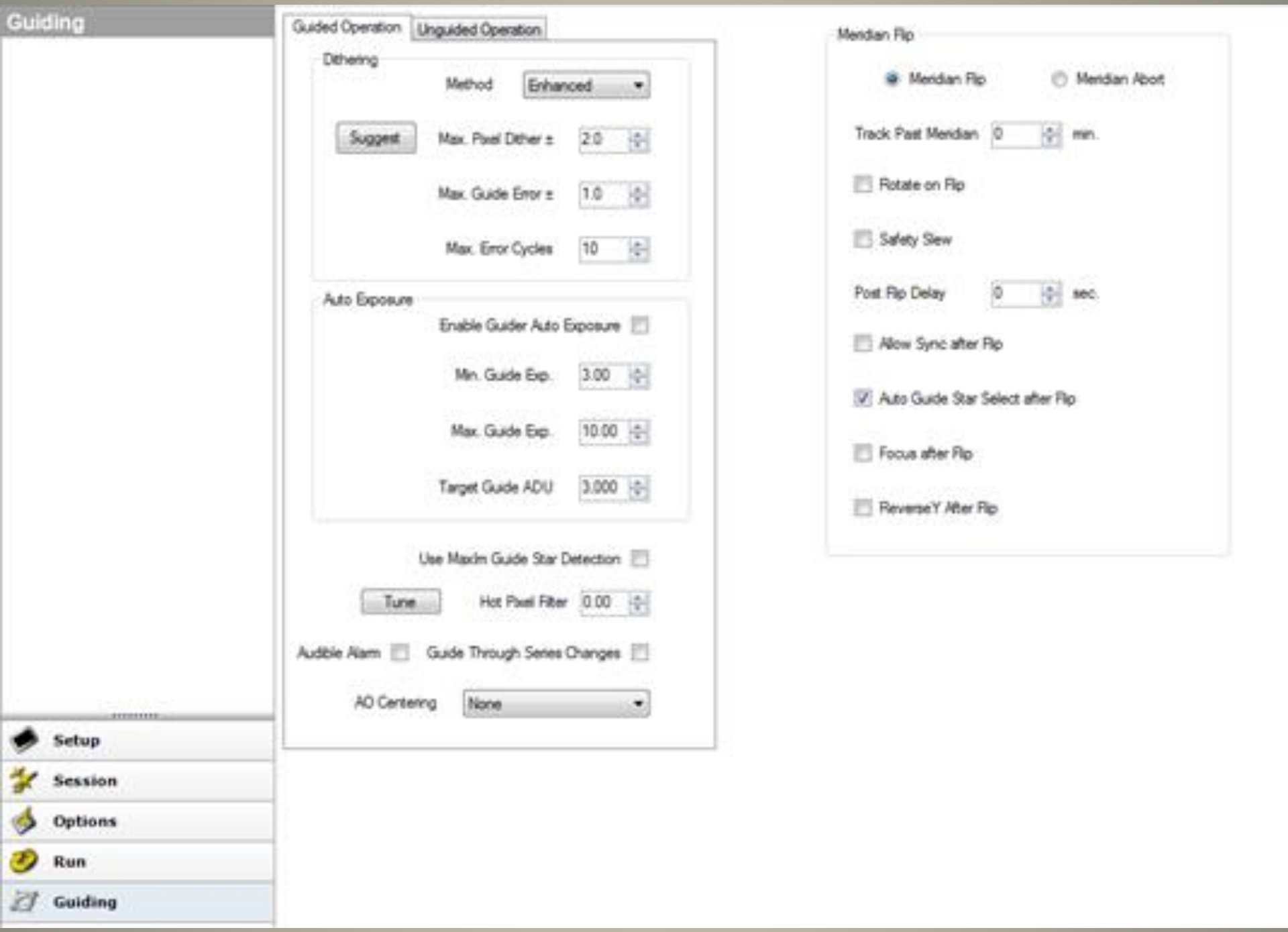

Setup
Software In Use
Setup
Software
Camera
None
Telescope
None
Plate Solving
None
Focuser
None
Rotator
None
Weather
None
Dome
None
None
ASCOM
AutomaDome
DDWCP
TheSkyX
Flat Light Source
Use Control File
Planning Only
Equipment
Imager
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Image Scale
0.65
Use Sub-Frame
Get
GZV Filters
R:
Red
G:
Green
B:
Blue
Guider
Focal Length (mm)
2858
Pixel Size (micron)
9.00
Unbinned Guider Scale
0.65
A/D Bits/Pixel
16
AO
Binning
2
Method
Self-Guided
Mount
Type
Equatorial
Settling Time (sec.)
3.0
Guide Rate
0.5
Dec. Axis Release
Double Slew
Altitude Limits
East
West
Min. (deg.)
0
5
Max. (deg.)
90
90
Precision Slew
To Within
15
arc-sec.
With Sync
AutoRun
Link to Software
Plate Solve Current Location
Initialize
Test Rotator Direction

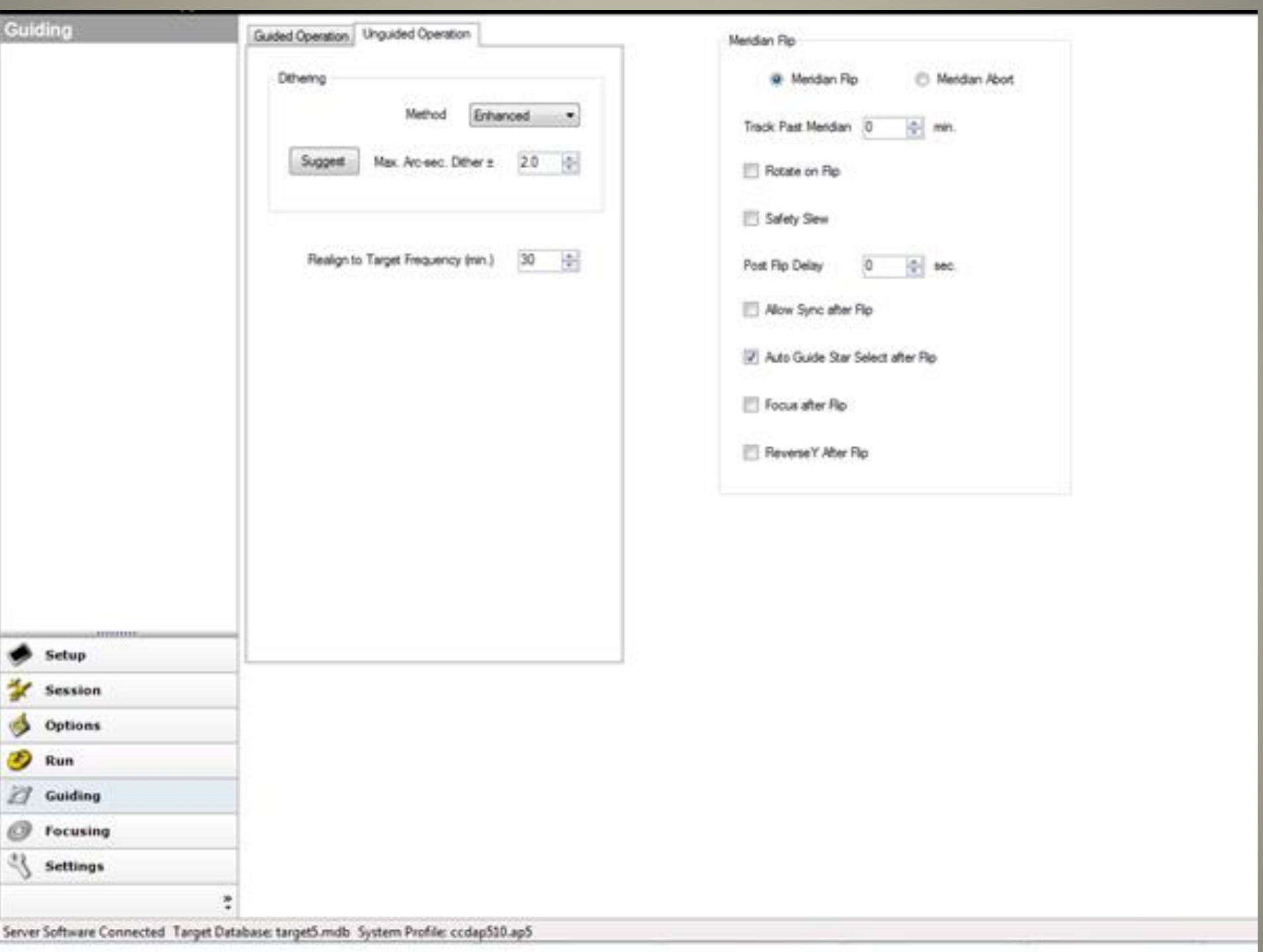

Options
Info
Setup
Session
Options
Run
Guiding
Focusing
Settings
Startup
Data Acquisition
Shutdown
Loop Session
Auto Date Correct
Run 1st
arg
Begin Session at
11:56 4 Mar
Begin Session
-7
Minutes
Degrees
Sun Relative to Horizon
Above (+), Below (-)
Open Dome
Abort Session on Open Failure
Run 0
arg
Cooler Start Delay of
10
min.
Set Imager Cooler
-20
°C
Set Guider Cooler
0
°C
Wait for
3
min. for Coolers to Reach Setpoint(s)
Run 1
arg
Mount Options
Tracking Off While Waiting
Park While Waiting
Assess Data
Abort
Move to updated coordinates
Server Software Connected Target Database: target5.mdb System Profile: ccdap510.ap5

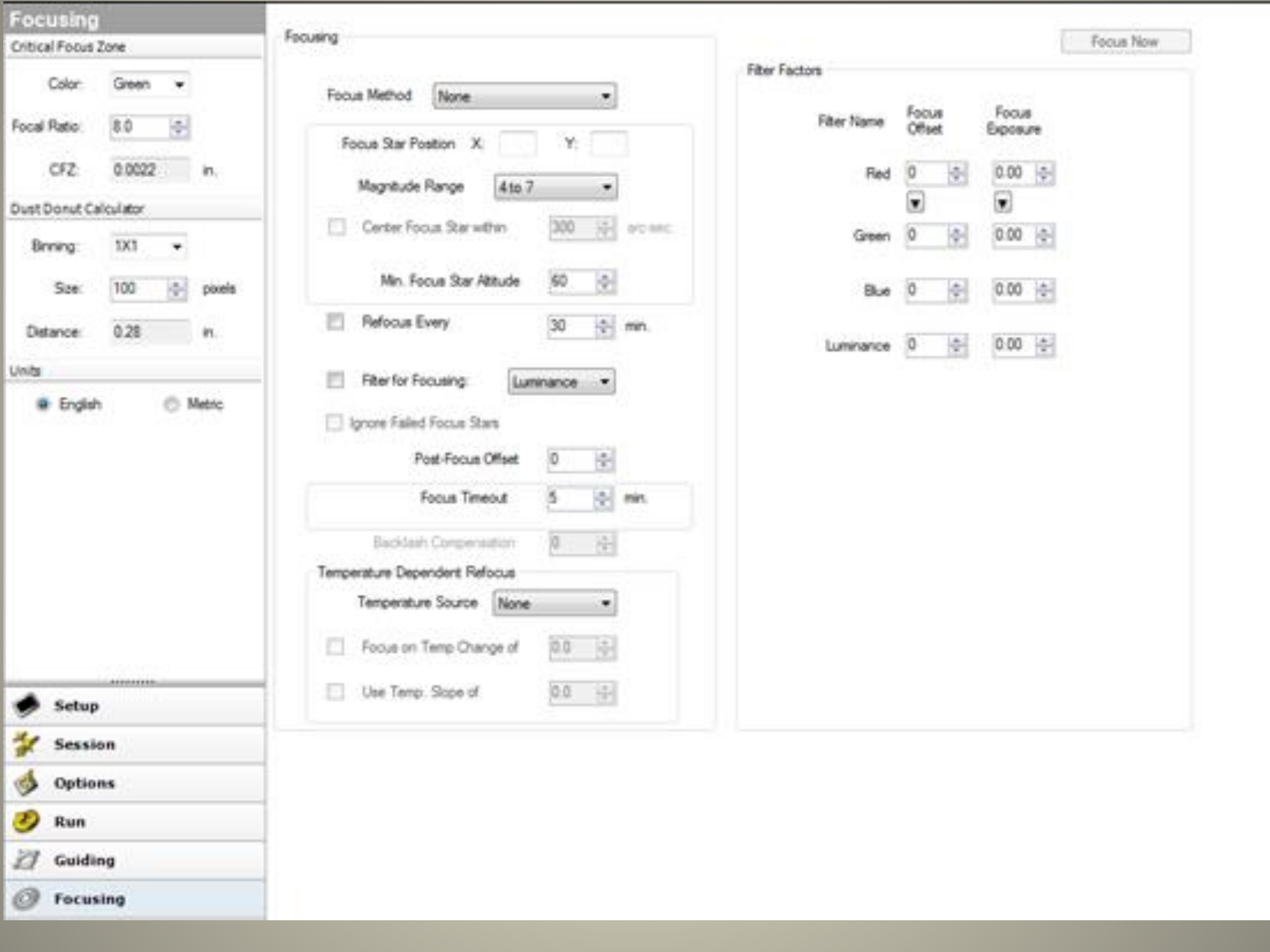

Options
Info
Startup
Data Acquisition
Shutdown
Loop Session
Auto Date Correct
Run 1st
arg
Begin Session at
11:56 4 Mar
Begin Session
-7
Minutes
Degrees
Sun Relative to Horizon
Above (+), Below (-)
Open Dome
Abort Session on Open Failure
Run 0
arg
Cooler Start Delay of
10
min.
Set Imager Cooler
-20
°C
Set Guider Cooler
0
°C
Wait for
3
min. for Coolers to Reach Setpoint(s)
Run 1
arg
Mount Options
Tracking Off While Waiting
Park While Waiting
Assess Data
Abort
Move to updated coordinates
Setup
Session
Options
Run
Guiding
Focusing
Settings
Server Software Connected Target Database: target5.mdb System Profile: ccdap510.ap5

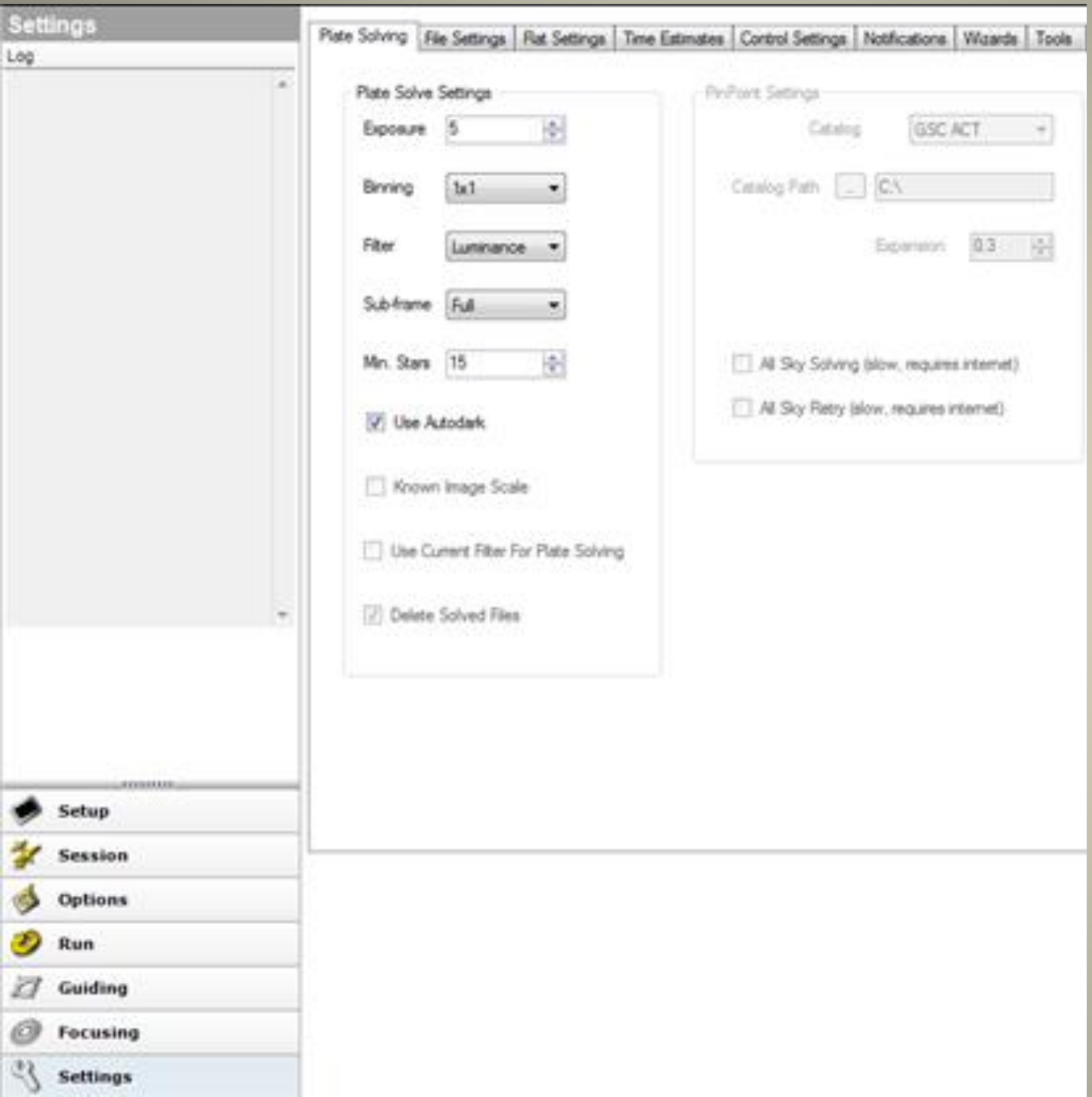

Options
Info
Setup
Session
Options
Startup
Data Acquisition
Shutdown
Dusk Flats
Run 1a
arg
Wait for Civil Dusk
Darks before Light Frames
Abort Darks for Light Frames
Run 2
arg
Focus before Target Run Start
Light Frames
Park Telescope
Telescope Tracking Off
Run 3
arg
Close Dome before Darks and Dawn Flats
Run 4
arg
Darks after Light Frames
Run 5
arg
Dawn Flats
Run 6
arg
Mount Options
Tracking Off While Waiting
Park While Waiting
Assess Data
Abort
Move to updated coordinates

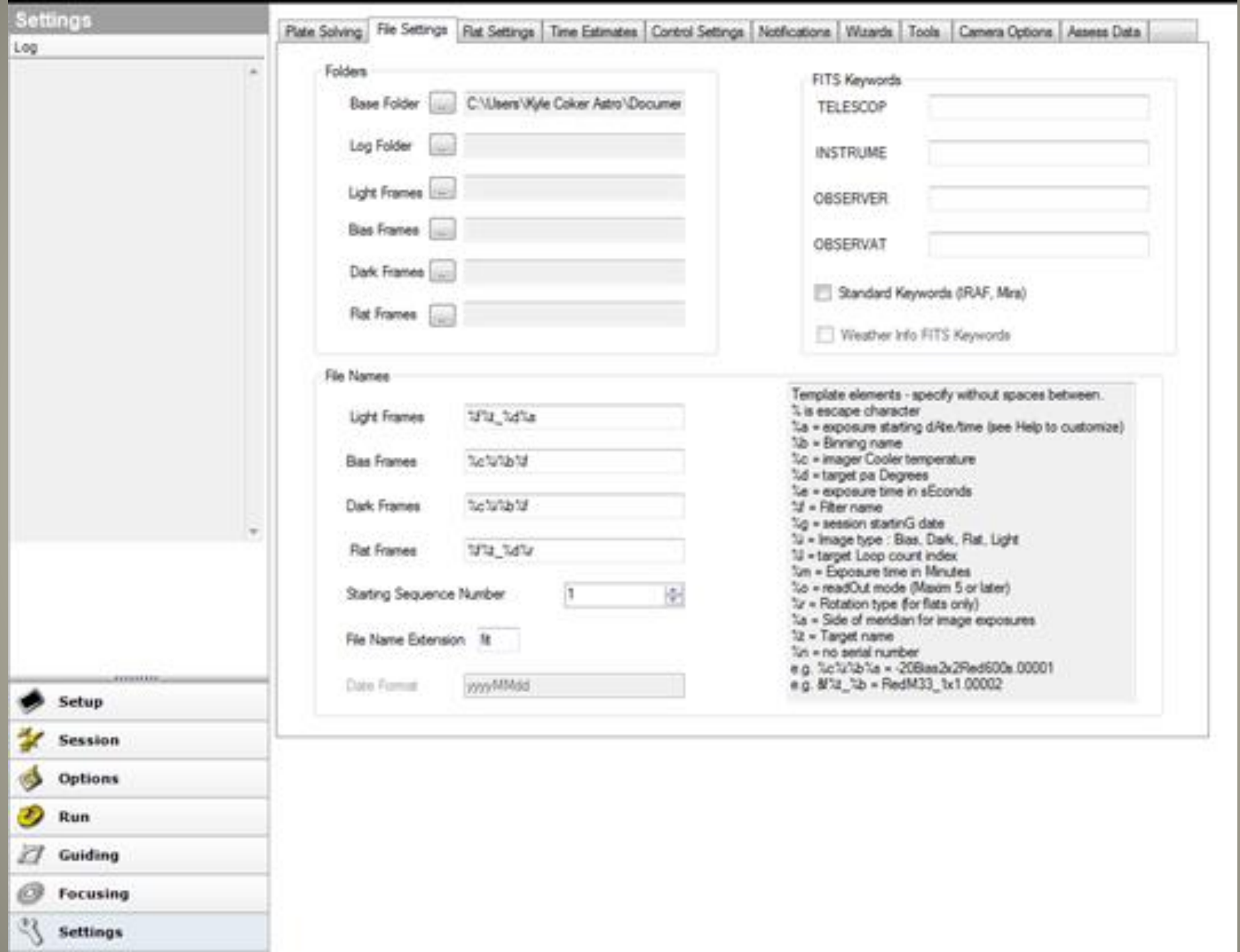

Options
Info
Startup
Data Acquisition
Shutdown
Abort Light and Dark Frames at Dawn
Park Telescope after Dawn Rats
Telescope Tracking Off after Dawn Rats
Run ?
arg
Park Rotator at
0.0
Close Dome after Dawn Rats
Park Dome
Raise Cooler Set Point to
0
°C
Run 8
arg
Mount Options
Tracking Off While Waiting
Park While Waiting
Assess Data
Abort
Move to updated coordinates
Setup
Session
Options

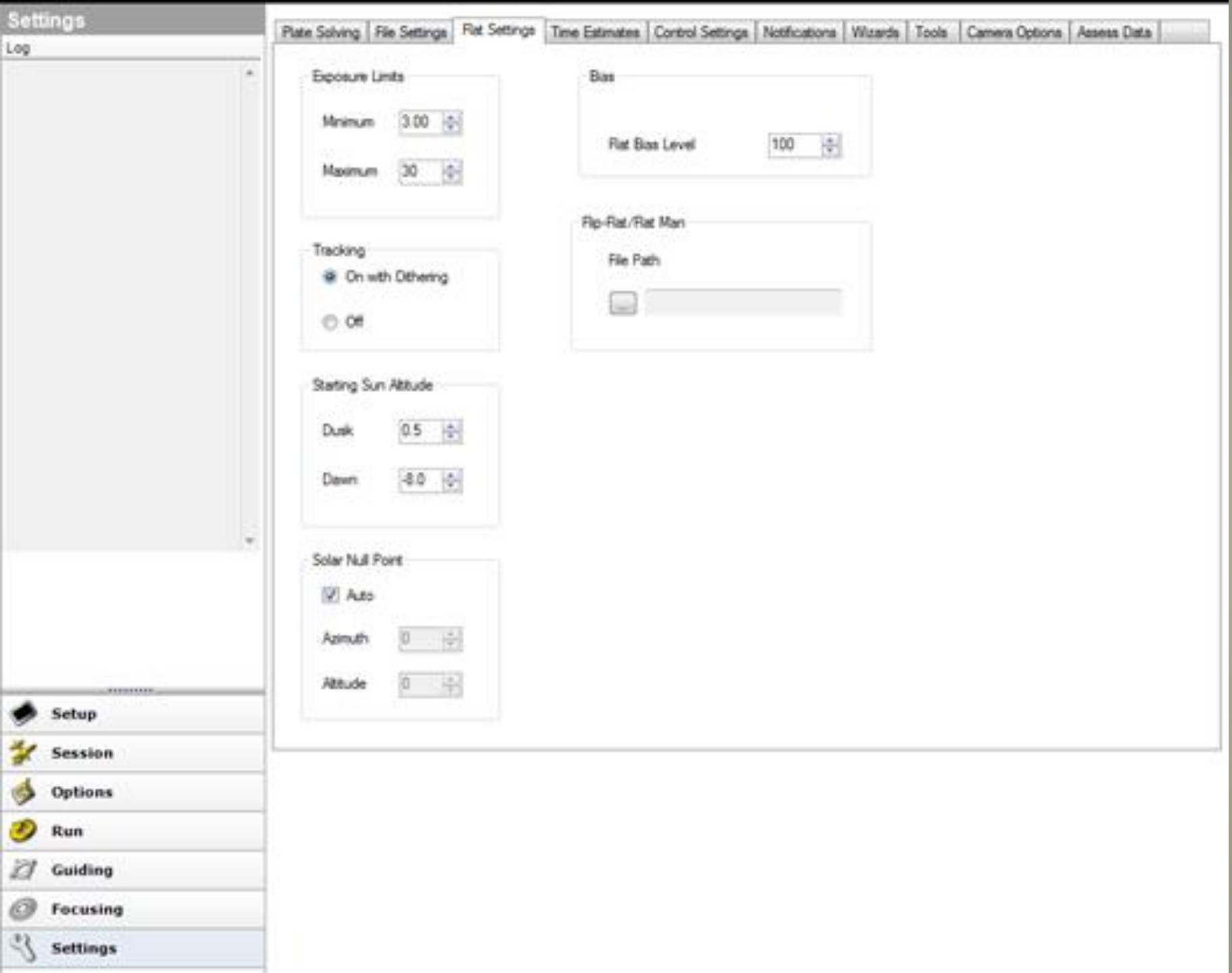

Guiding
Guided Operation
Unguided Operation
Dithering
Method
Enhanced
Suggest
Max. Pixel Dither ±
2.0
Max. Guide Error ±
1.0
Max. Error Cycles
10
Auto Exposure
Enable Guider Auto Exposure
Min. Guide Exp.
3.00
Max. Guide Exp.
10.00
Target Guide ADU
3.000
Use MaxIm Guide Star Detection
Tune
Hot Pixel Filter
0.00
Audible Alarm
Guide Through Series Changes
AO Centering
None
Meridian Flip
Meridian Flip
Meridian Abort
Track Past Meridian
0
min.
Rotate on Flip
Safety Slew
Post Flip Delay
0
sec.
Allow Sync after Flip
Auto Guide Star Select after Flip
Focus after Flip
ReverseY After Flip
Setup
Session
Options
Run
Guiding

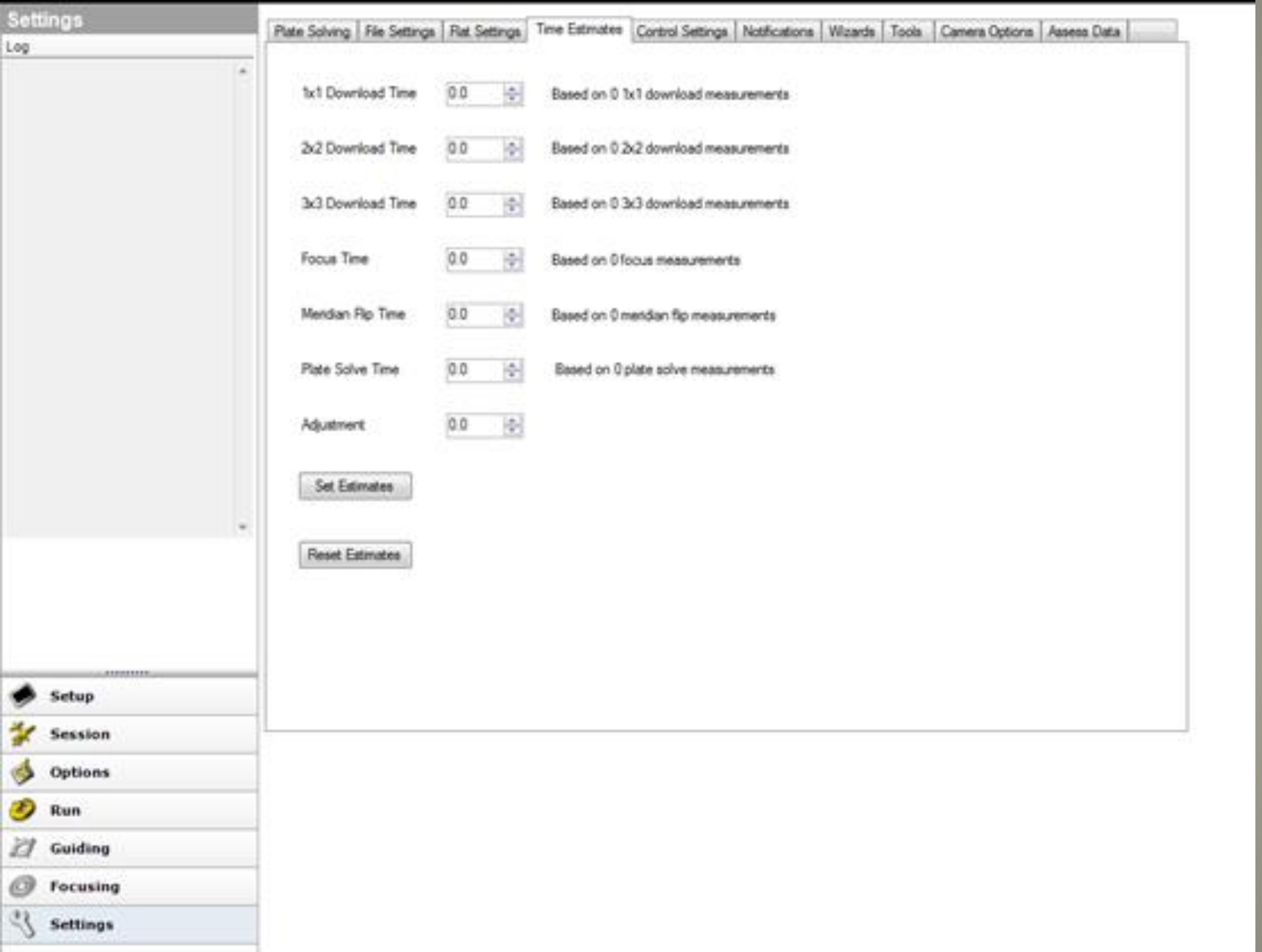

Guiding
Guided Operation
Unguided Operation
Dithering
Method
Enhanced
Suggest
Max. Arc-sec. Dither ±
2.0
Realign to Target Frequency (min.)
30
Meridian Flip
Meridian Flip
Meridian Abort
Track Past Meridian
0
min.
Rotate on Flip
Safety Slew
Post Flip Delay
0
sec.
Allow Sync after Flip
Auto Guide Star Select after Flip
Focus after Flip
ReverseY After Flip
Setup
Session
Options
Run
Guiding
Focusing
Settings
Server Software Connected Target Database: target5.mdb System Profile: ccdap510.ap5

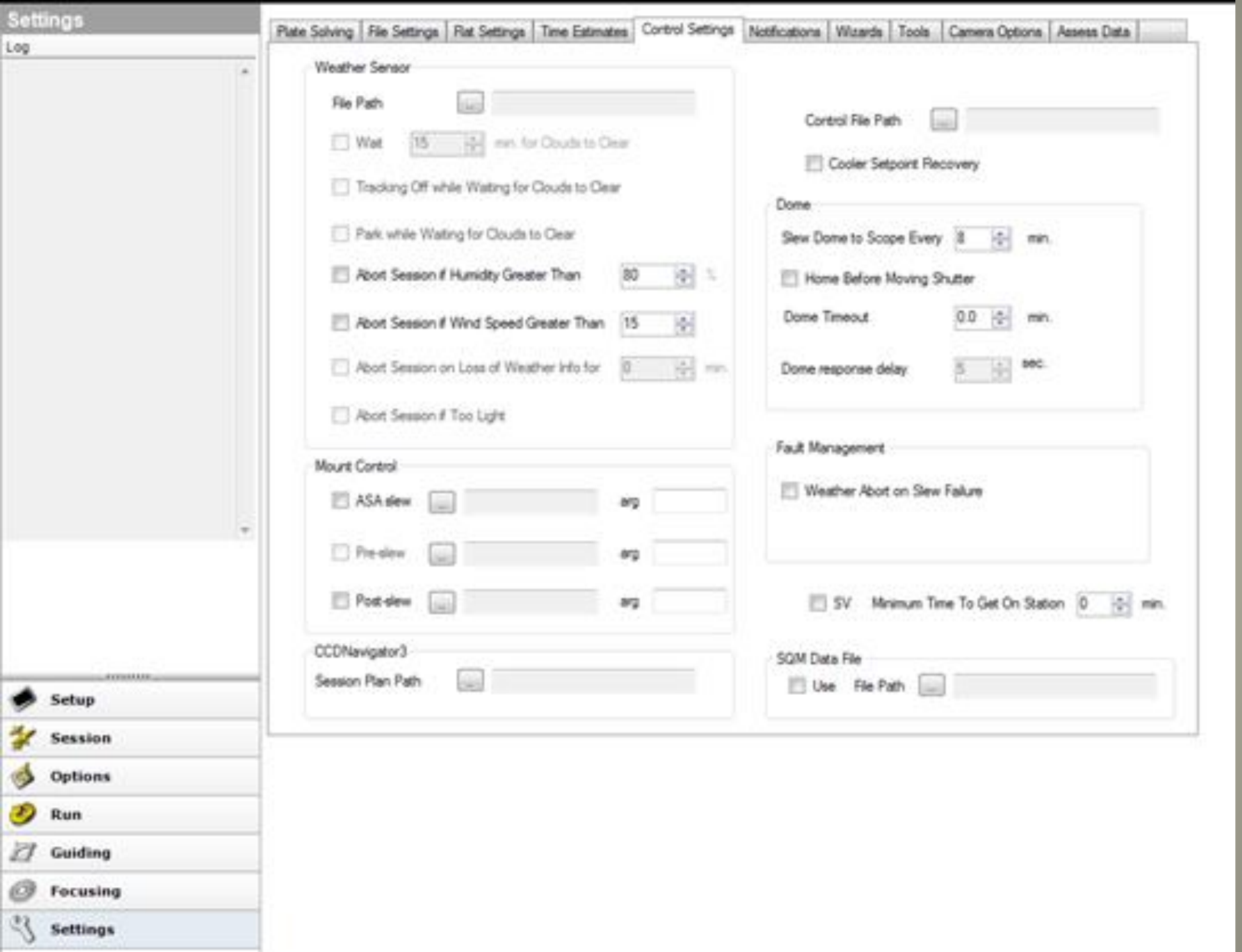

Focusing
Critical Focus Zone
Color: Green
Focal Ratio: 8.0
CFZ: 0.0022 in.
Dust Donut Calculator
Binning: 1X1
Size: 100 pixels
Distance: 0.28 in.
Units
English
Metric
Setup
Session
Options
Run
Guiding
Focusing
Focusing
Focus Method: None
Focus Star Position X: Y:
Magnitude Range: 4 to 7
Center Focus Star within: 300 arc sec
Min. Focus Star Altitude: 60
Refocus Every: 30 min.
Filter for Focusing: Luminance
Ignore Failed Focus Stars
Post-Focus Offset: 0
Focus Timeout: 5 min.
Backlash Compensation: 0
Temperature Dependent Refocus
Temperature Source: None
Focus on Temp Change of: 0.0
Use Temp. Slope of: 0.0
Focus Now
Filter Factors
Filter Name
Focus Offset
Focus Exposure
Red 0 0.00
Green 0 0.00
Blue 0 0.00
Luminance 0 0.00

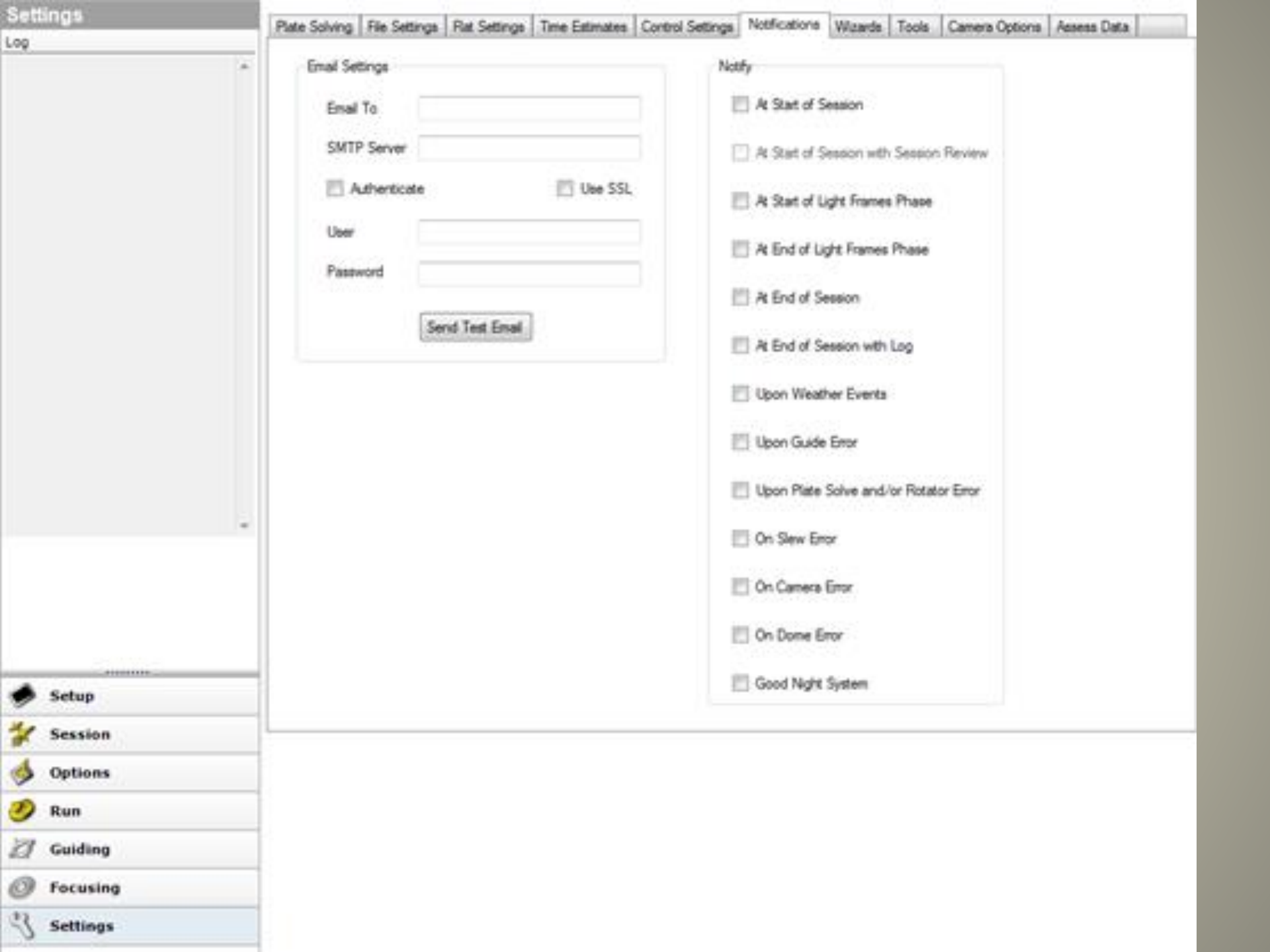

Settings
Log
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Plate Solve Settings
Exposure
5
Binning
1x1
Filter
Luminance
Sub-frame
Full
Min. Stars
15
Use Autodark
Known Image Scale
Use Current Filter For Plate Solving
Delete Solved Files
PinPoint Settings
Catalog
GSC ACT
Catalog Path
C:\
Expansion
0.3
All Sky Solving (slow, requires internet)
All Sky Retry (slow, requires internet)
Setup
Session
Options
Run
Guiding
Focusing
Settings

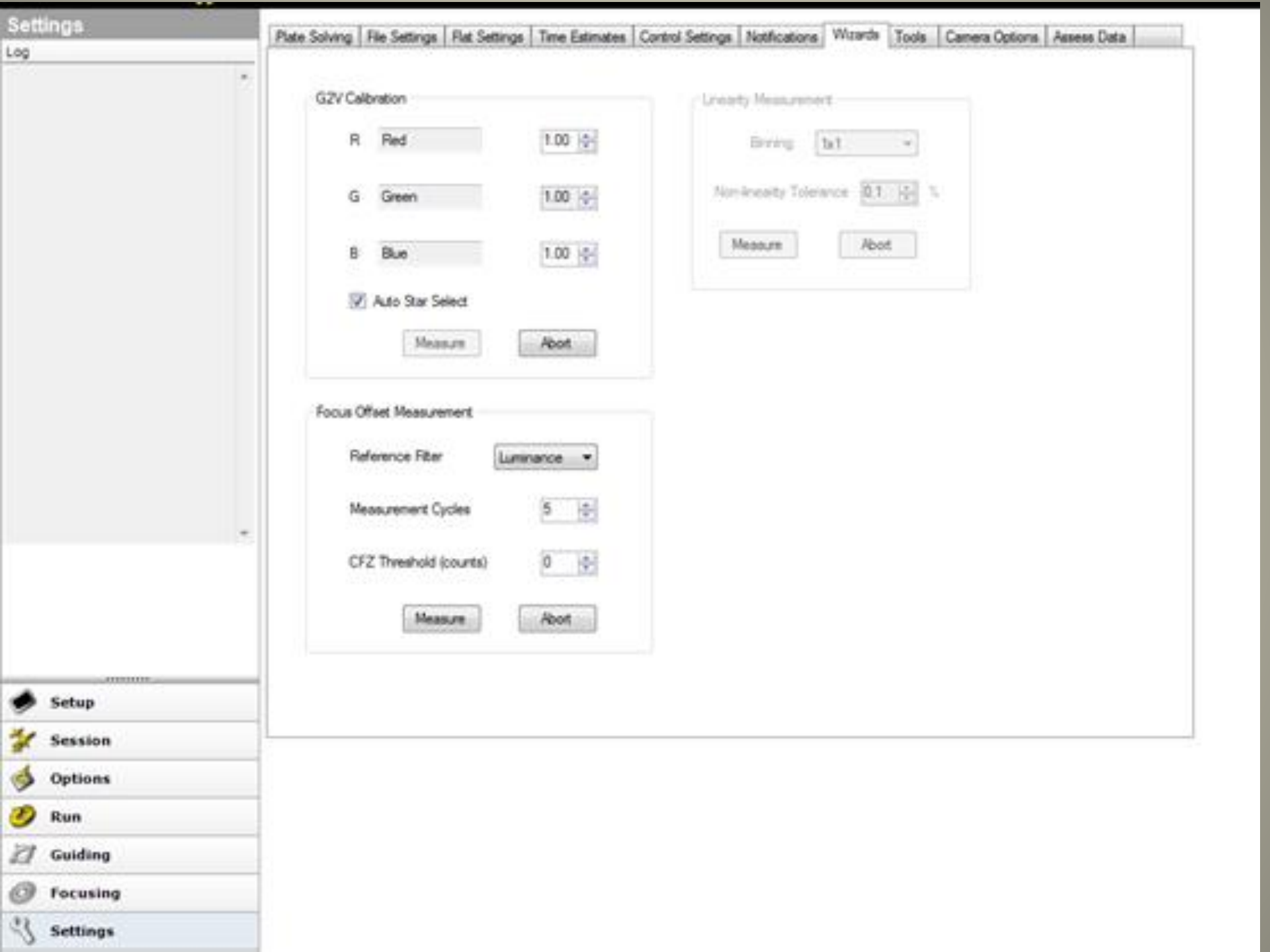

Settings
Log
Setup
Session
Options
Run
Guiding
Focusing
Settings
Plate Solving
File Settings
Flat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Folders
Base Folder
C:\Users\Kyle Coker Astro\Documer
Log Folder
Light Frames
Bias Frames
Dark Frames
Flat Frames
FITS Keywords
TELESCOP
INSTRUME
OBSERVER
OBSERVAT
Standard Keywords (IRAF, Mira)
Weather Info FITS Keywords
File Names
Light Frames
%f%t_%d%a
Bias Frames
%c%t%b%f
Dark Frames
%c%t%b%f
Flat Frames
%f%t_%d%r
Starting Sequence Number
1
File Name Extension
fit
Date Format
yyyyMMdd
Template elements - specify without spaces between.
% is escape character
%a = exposure starting dAte/time (see Help to customize)
%b = Binning name
%c = imager Cooler temperature
%d = target pa Degrees
%e = exposure time in sEconds
%f = Filter name
%g = session startinG date
%i = Image type : Bias, Dark, Flat, Light
%l = target Loop count index
%m = Exposure time in Minutes
%o = readOut mode (Maxim 5 or later)
%r = Rotation type (for flats only)
%s = Side of meridian for image exposures
%t = Target name
%n = no serial number
e.g. %c%t%b%a = -20Bias2x2Red600s.00001
e.g. %f%t_%b = RedM33_1x1.00002

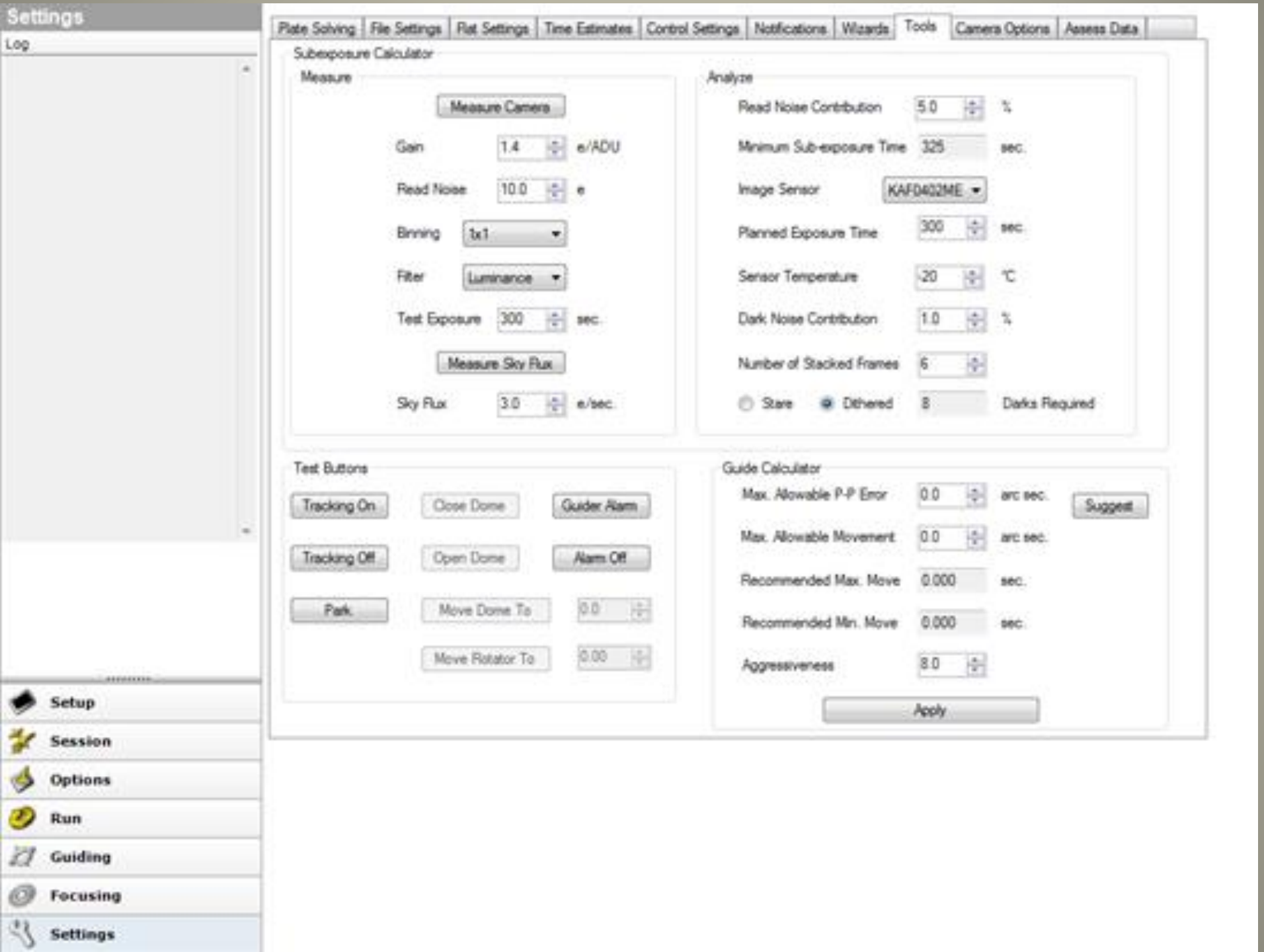

Settings
Log
Plate Solving
File Settings
Flat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Exposure Limits
Minimum
3.00
Maximum
30
Bias
Flat Bias Level
100
Flip-Flat/Flat Man
File Path
Tracking
On with Dithering
Off
Starting Sun Altitude
Dusk
0.5
Dawn
-8.0
Solar Null Point
Auto
Azimuth
0
Altitude
0
Setup
Session
Options
Run
Guiding
Focusing
Settings

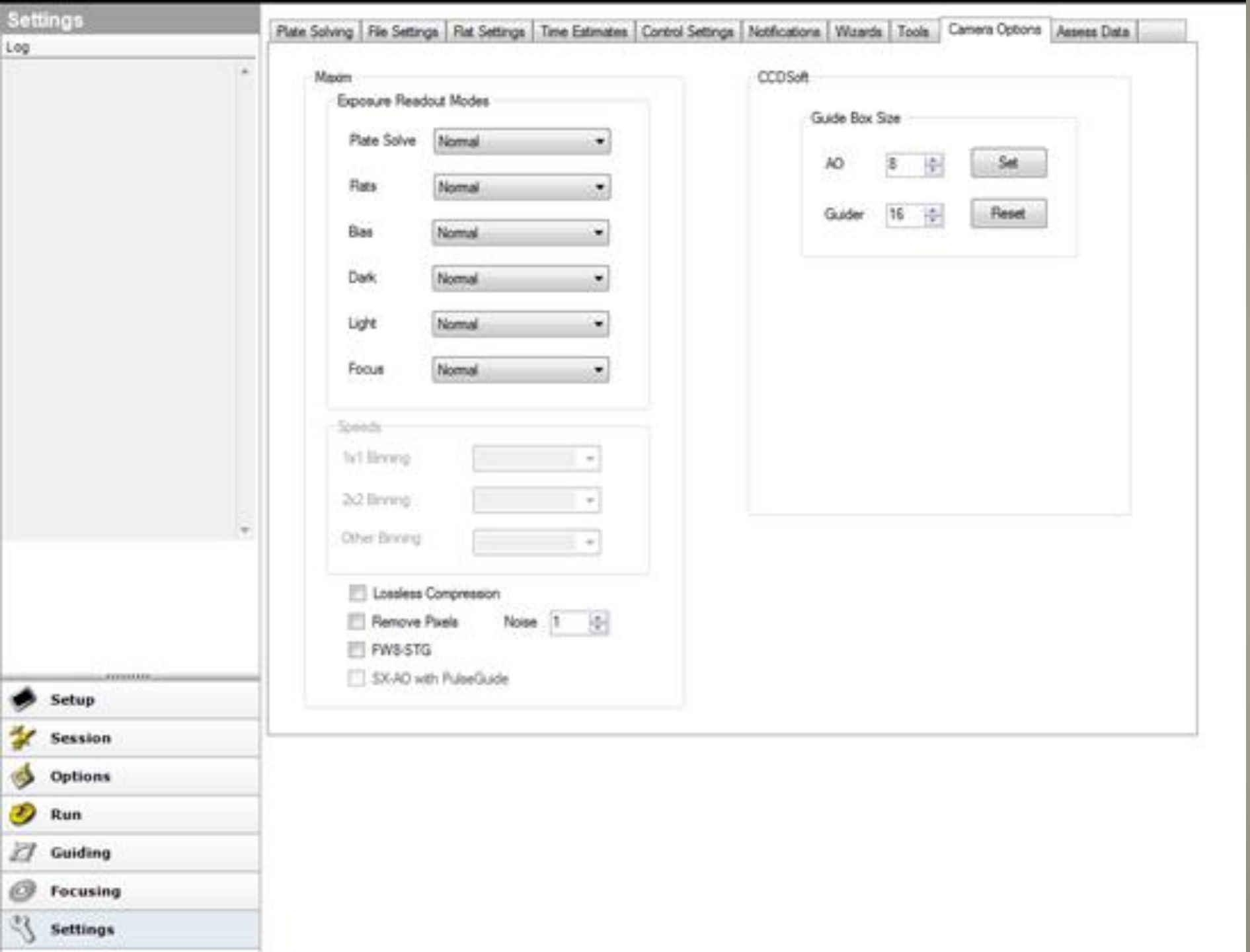

Settings
Log
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
1x1 Download Time
0.0
Based on 0 1x1 download measurements
2x2 Download Time
0.0
Based on 0 2x2 download measurements
3x3 Download Time
0.0
Based on 0 3x3 download measurements
Focus Time
0.0
Based on 0 focus measurements
Meridian Flip Time
0.0
Based on 0 meridian flip measurements
Plate Solve Time
0.0
Based on 0 plate solve measurements
Adjustment
0.0
Set Estimates
Reset Estimates
Setup
Session
Options
Run
Guiding
Focusing
Settings

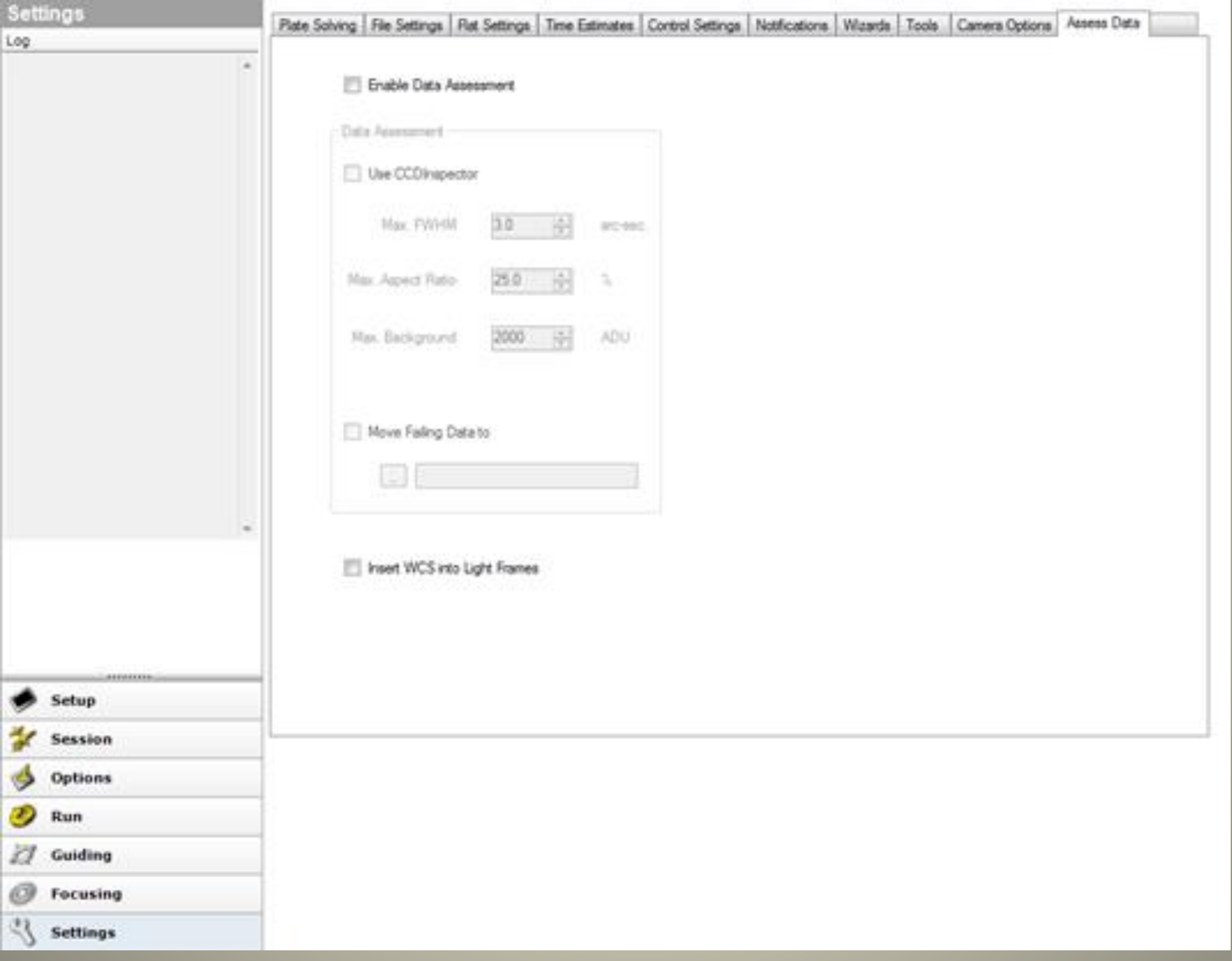

Settings
Log
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Weather Sensor
File Path
Wait
15
min. for Clouds to Clear
Tracking Off while Waiting for Clouds to Clear
Park while Waiting for Clouds to Clear
Abort Session if Humidity Greater Than
80
%
Abort Session if Wind Speed Greater Than
15
Abort Session on Loss of Weather Info for
0
min.
Abort Session if Too Light
Mount Control
ASA slew
arg
Pre-slew
arg
Post-slew
arg
CCDNavigator3
Session Plan Path
Control File Path
Cooler Setpoint Recovery
Dome
Slew Dome to Scope Every
8
min.
Home Before Moving Shutter
Dome Timeout
0.0
min.
Dome response delay
5
sec.
Fault Management
Weather Abort on Slew Failure
SV
Minimum Time To Get On Station
0
min.
SQM Data File
Use
File Path
Setup
Session
Options
Run
Guiding
Focusing
Settings

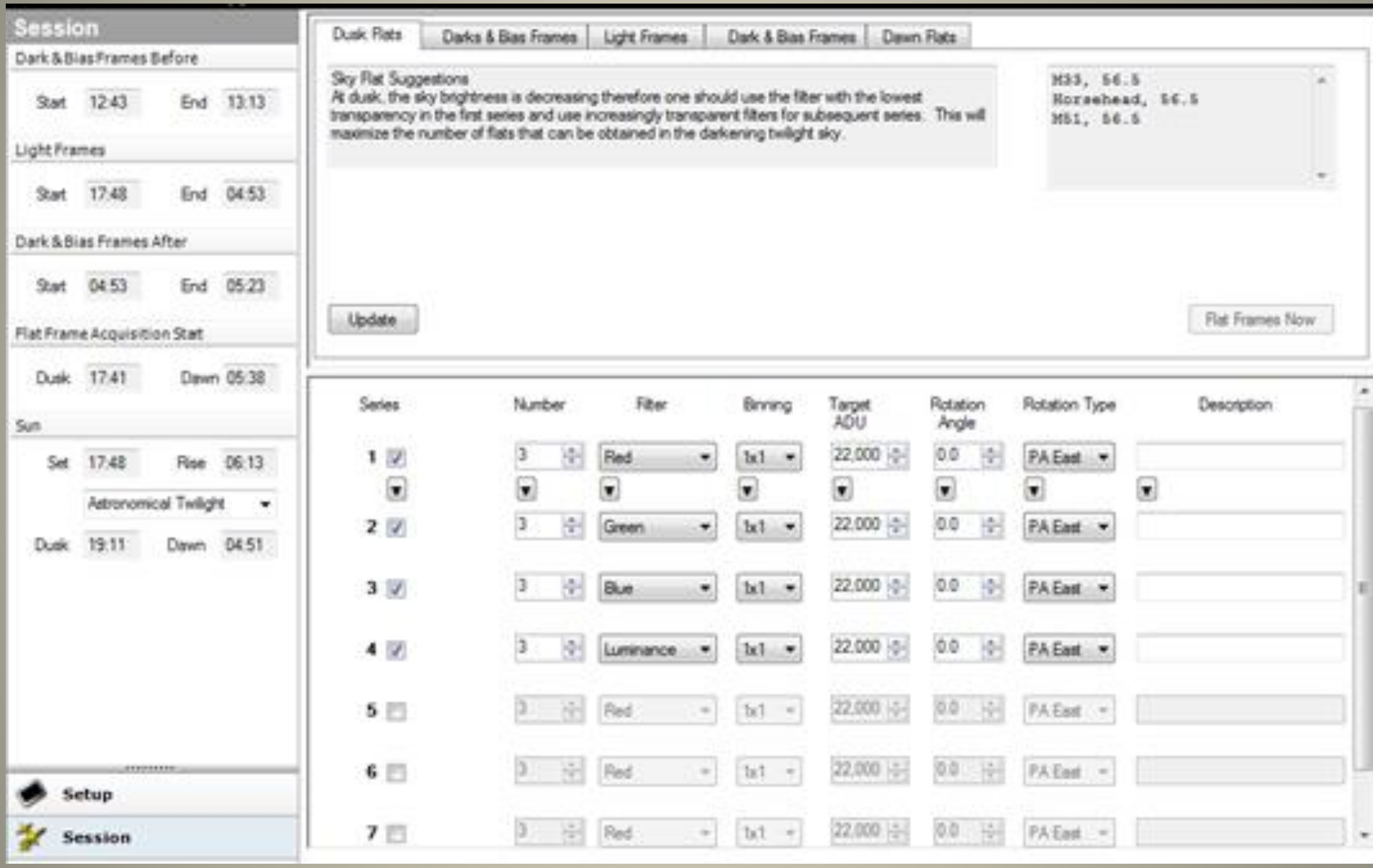

Settings
Log
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Email Settings
Email To
SMTP Server
Authenticate
Use SSL
User
Password
Send Test Email
Notify
At Start of Session
At Start of Session with Session Review
At Start of Light Frames Phase
At End of Light Frames Phase
At End of Session
At End of Session with Log
Upon Weather Events
Upon Guide Error
Upon Plate Solve and/or Rotator Error
On Slew Error
On Camera Error
On Dome Error
Good Night System
Setup
Session
Options
Run
Guiding
Focusing
Settings

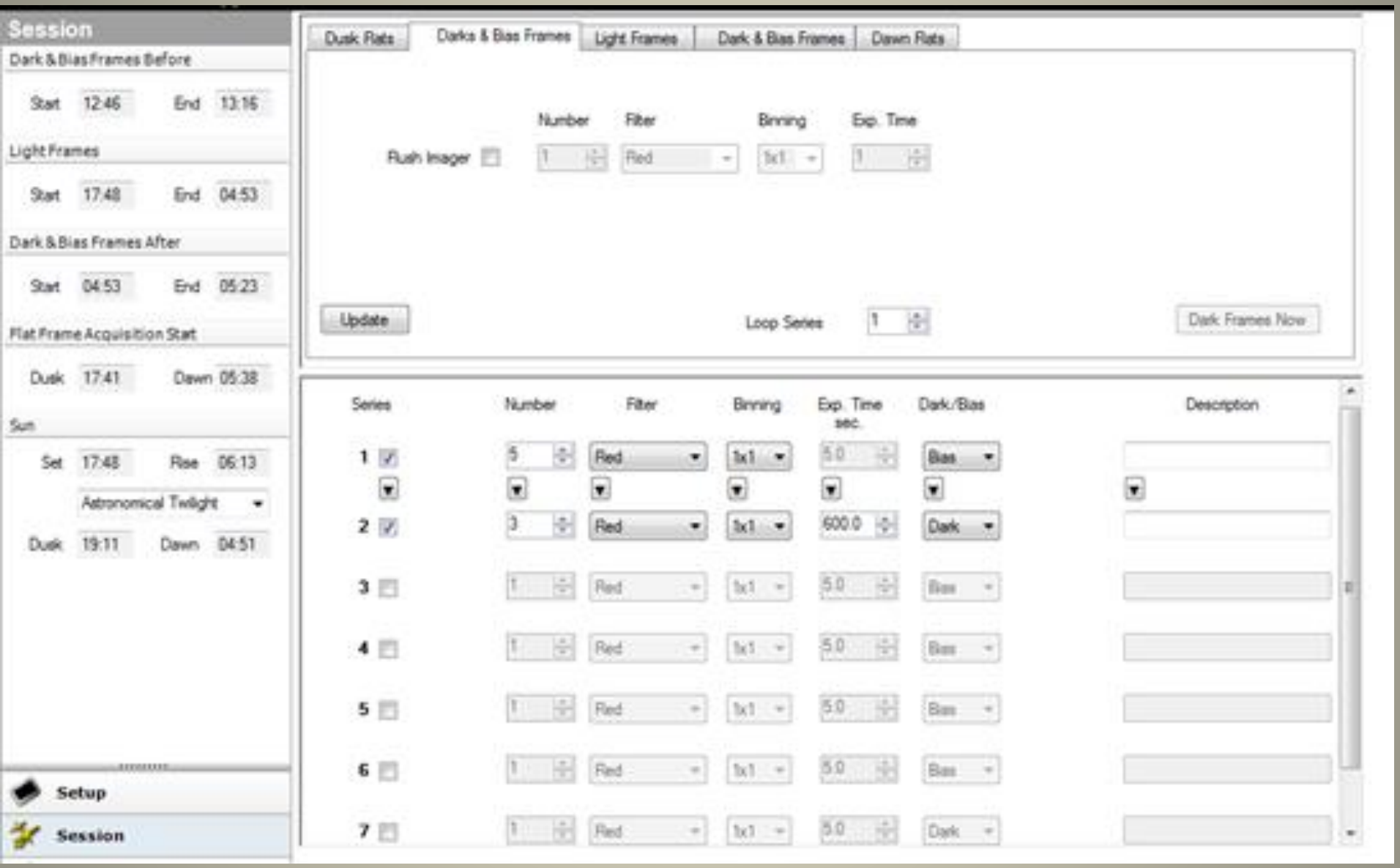

Settings
Log
Plate Solving
File Settings
Flat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
G2V Calibration
R
Red
1.00
G
Green
1.00
B
Blue
1.00
Auto Star Select
Measure
Abort
Linearity Measurement
Binning
1x1
Non-linearity Tolerance
0.1
%
Measure
Abort
Focus Offset Measurement
Reference Filter
Luminance
Measurement Cycles
5
CFZ Threshold (counts)
0
Measure
Abort
Setup
Session
Options
Run
Guiding
Focusing
Settings

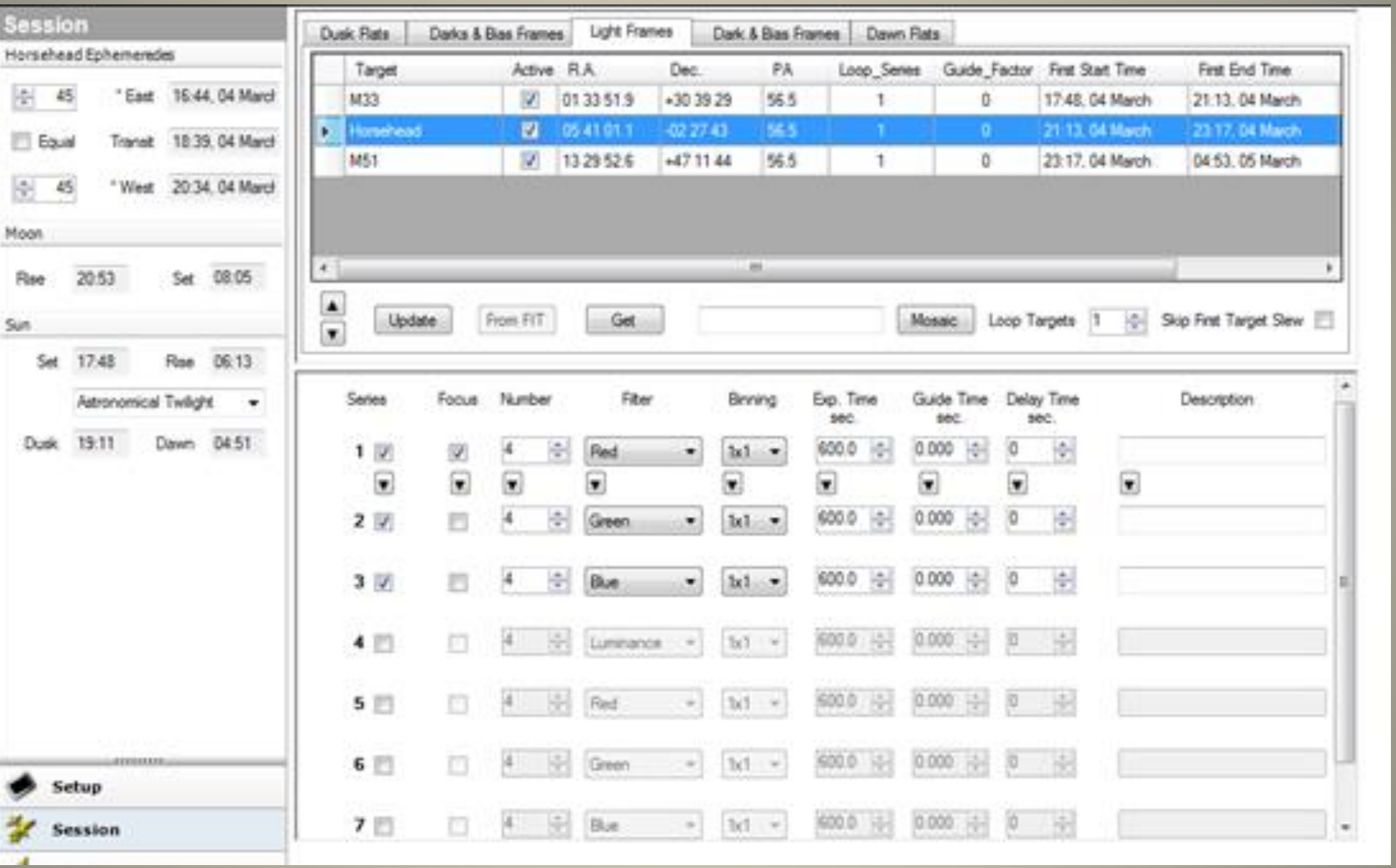

Settings
Log
Setup
Session
Options
Run
Guiding
Focusing
Settings
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Subexposure Calculator
Measure
Measure Camera
Gain
1.4
e/ADU
Read Noise
10.0
e
Binning
1x1
Filter
Luminance
Test Exposure
300
sec.
Measure Sky Flux
Sky Flux
3.0
e/sec.
Analyze
Read Noise Contribution
5.0
%
Minimum Sub-exposure Time
325
sec.
Image Sensor
KAF0402ME
Planned Exposure Time
300
sec.
Sensor Temperature
-20
°C
Dark Noise Contribution
1.0
%
Number of Stacked Frames
6
Stare
Dithered
8
Darks Required
Test Buttons
Tracking On
Close Dome
Guider Alarm
Tracking Off
Open Dome
Alarm Off
Park
Move Dome To
0.0
Move Rotator To
0.00
Guide Calculator
Max. Allowable P-P Error
0.0
arc sec.
Suggest
Max. Allowable Movement
0.0
arc sec.
Recommended Max. Move
0.000
sec.
Recommended Min. Move
0.000
sec.
Aggressiveness
8.0
Apply

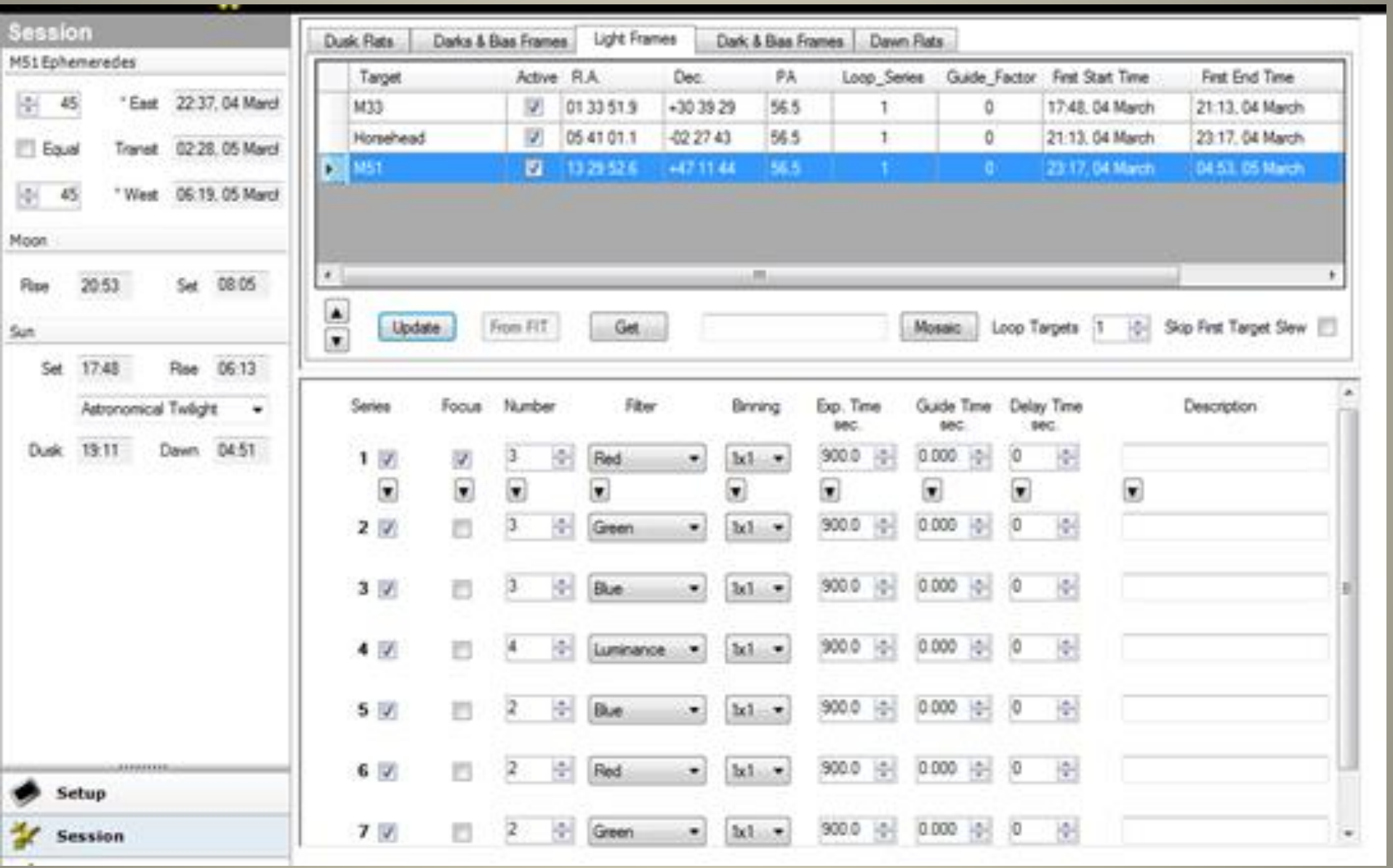

Settings
Log
Plate Solving
File Settings
Flat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Maxim
Exposure Readout Modes
Plate Solve
Normal
Flats
Normal
Bias
Normal
Dark
Normal
Light
Normal
Focus
Normal
Speeds
1x1 Binning
2x2 Binning
Other Binning
Lossless Compression
Remove Pixels
Noise
1
FW8-STG
SX-AO with PulseGuide
CCDSoft
Guide Box Size
AO
8
Set
Guider
16
Reset
Setup
Session
Options
Run
Guiding
Focusing
Settings

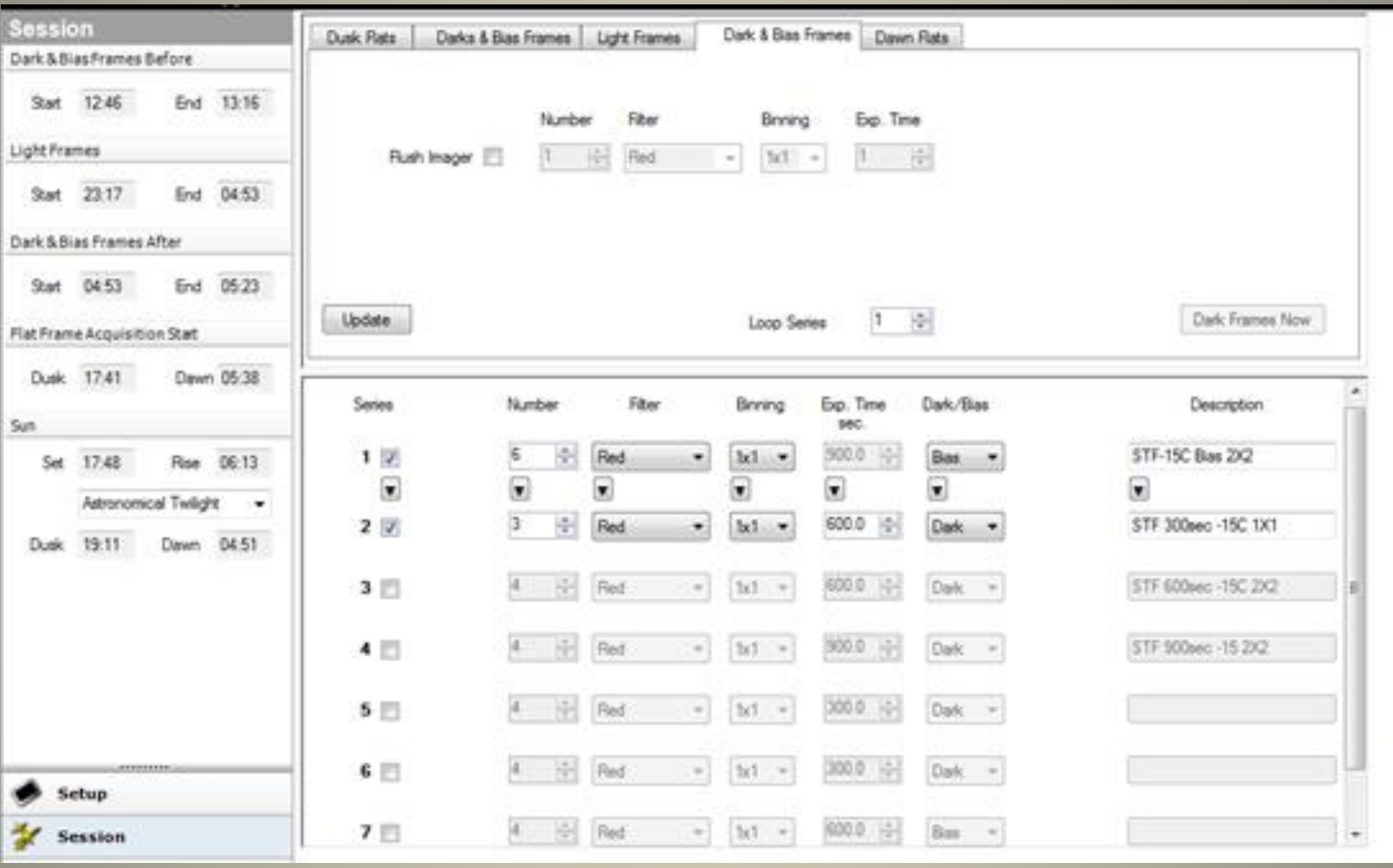

Settings
Log
Plate Solving
File Settings
Rat Settings
Time Estimates
Control Settings
Notifications
Wizards
Tools
Camera Options
Assess Data
Enable Data Assessment
Data Assessment
Use CCDInspector
Max. FWHM
3.0
arc-sec
Max. Aspect Ratio
25.0
%
Max. Background
2000
ADU
Move Failing Data to
Insert WCS into Light Frames
Setup
Session
Options
Run
Guiding
Focusing
Settings

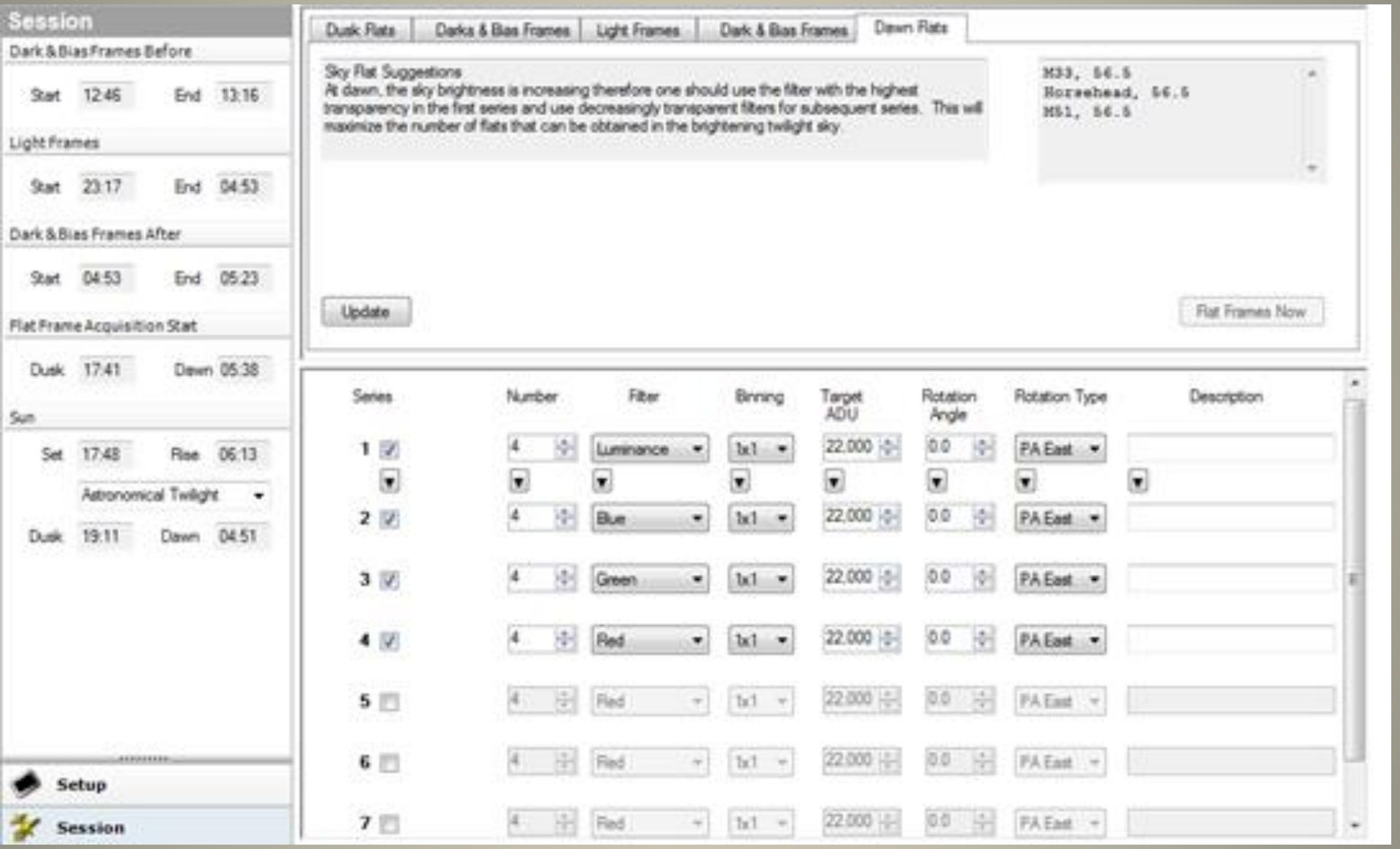

Session
Dark & Bias Frames Before
Start 12:43 End 13:13
Light Frames
Start 17:48 End 04:53
Dark & Bias Frames After
Start 04:53 End 05:23
Flat Frame Acquisition Start
Dusk 17:41 Dawn 05:38
Sun
Set 17:48 Rise 06:13
Astronomical Twilight
Dusk 19:11 Dawn 04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Sky Flat Suggestions
At dusk, the sky brightness is decreasing therefore one should use the filter with the lowest transparency in the first series and use increasingly transparent filters for subsequent series. This will maximize the number of flats that can be obtained in the darkening twilight sky.
M33, 56.5
Horsehead, 56.5
M51, 56.5
Update
Flat Frames Now
Series
Number
Filter
Binning
Target ADU
Rotation Angle
Rotation Type
Description
1 3 Red 1x1 22,000 0.0 PA East
2 3 Green 1x1 22,000 0.0 PA East
3 3 Blue 1x1 22,000 0.0 PA East
4 3 Luminance 1x1 22,000 0.0 PA East
5 Red 1x1 22,000 0.0 PA East
6 Red 1x1 22,000 0.0 PA East
7 Red 1x1 22,000 0.0 PA East

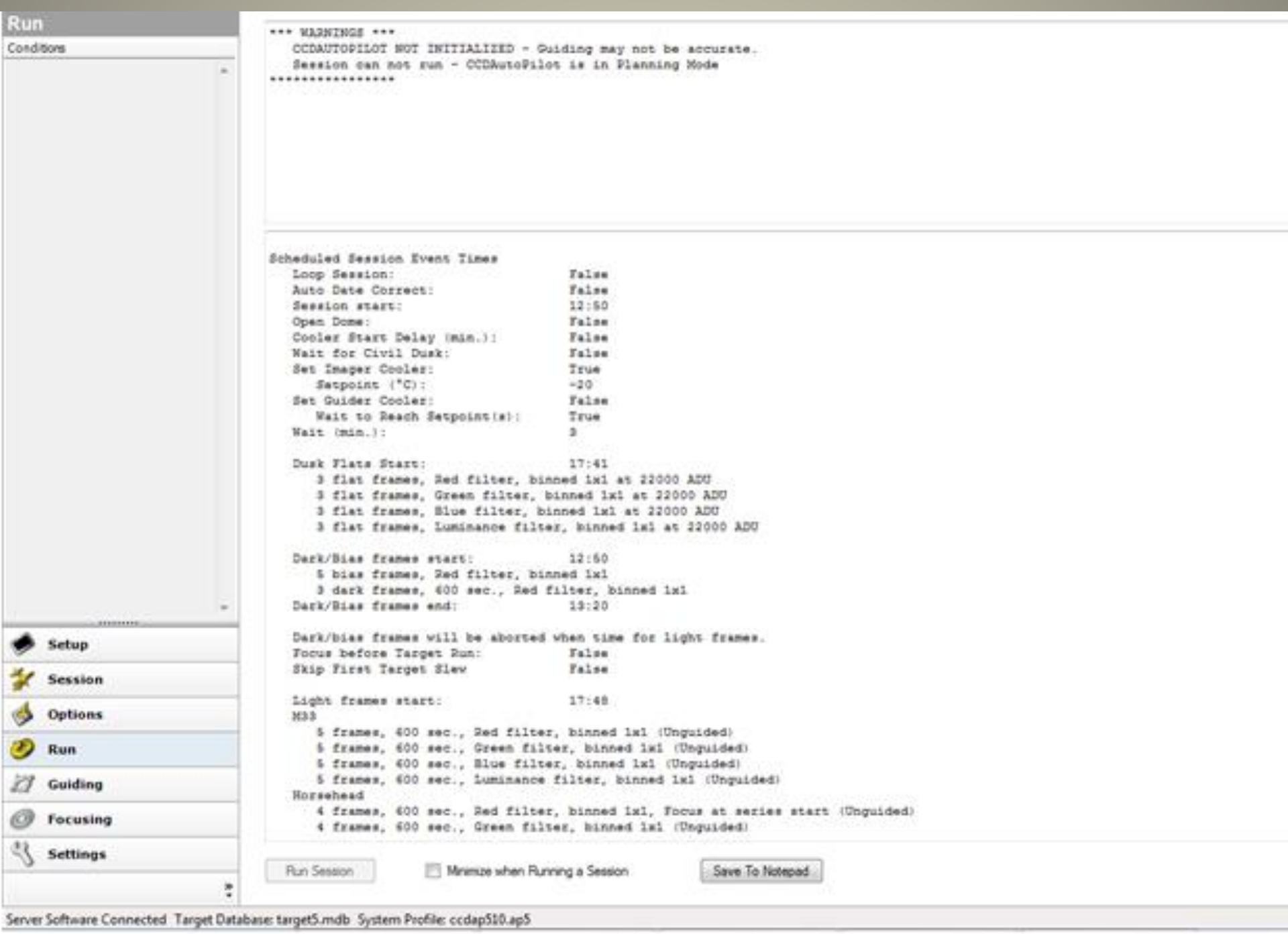

Session
Dark & Bias Frames Before
Start 12:46 End 13:16
Light Frames
Start 17:48 End 04:53
Dark & Bias Frames After
Start 04:53 End 05:23
Flat Frame Acquisition Start
Dusk 17:41 Dawn 05:38
Sun
Set 17:48 Rise 06:13
Astronomical Twilight
Dusk 19:11 Dawn 04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Number
Filter
Binning
Exp. Time
Rush Imager
Update
Loop Series
Dark Frames Now
Series
Number
Filter
Binning
Exp. Time sec.
Dark/Bias
Description
1
2
3
4
5
6
7


Session
Horsehead Ephemeredes
45
° East
16:44, 04 March
Equal
Transit
18:39, 04 March
45
° West
20:34, 04 March
Moon
Rise
20:53
Set
08:05
Sun
Set
17:48
Rise
06:13
Astronomical Twilight
Dusk
19:11
Dawn
04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Target
Active
R.A.
Dec.
PA
Loop_Series
Guide_Factor
First Start Time
First End Time
M33
01 33 51.9
+30 39 29
56.5
1
0
17:48, 04 March
21:13, 04 March
Horsehead
05 41 01.1
-02 27 43
56.5
1
0
21:13, 04 March
23:17, 04 March
M51
13 29 52.6
+47 11 44
56.5
1
0
23:17, 04 March
04:53, 05 March
Update
From FIT
Get
Mosaic
Loop Targets
1
Skip First Target Slew
Series
Focus
Number
Filter
Binning
Exp. Time sec.
Guide Time sec.
Delay Time sec.
Description
1
4
Red
1x1
600.0
0.000
0
2
4
Green
1x1
600.0
0.000
0
3
4
Blue
1x1
600.0
0.000
0
4
4
Luminance
1x1
600.0
0.000
0
5
4
Red
1x1
600.0
0.000
0
6
4
Green
1x1
600.0
0.000
0
7
4
Blue
1x1
600.0
0.000
0


Session
M51 Ephemeredes
45
* East
22:37, 04 March
Equal
Transit
02:28, 05 March
45
* West
06:19, 05 March
Moon
Rise
20:53
Set
08:05
Sun
Set
17:48
Rise
06:13
Astronomical Twilight
Dusk
19:11
Dawn
04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Target
Active
R.A.
Dec.
PA
Loop_Series
Guide_Factor
First Start Time
First End Time
M33
01 33 51.9
+30 39 29
56.5
1
0
17:48, 04 March
21:13, 04 March
Horsehead
05 41 01.1
-02 27 43
56.5
1
0
21:13, 04 March
23:17, 04 March
M51
13 29 52.6
+47 11 44
56.5
1
0
23:17, 04 March
04:53, 05 March
Update
From FIT
Get
Mosaic
Loop Targets
1
Skip First Target Slew
Series
Focus
Number
Filter
Binning
Exp. Time sec.
Guide Time sec.
Delay Time sec.
Description
1
3
Red
1x1
900.0
0.000
0
2
3
Green
1x1
900.0
0.000
0
3
3
Blue
1x1
900.0
0.000
0
4
4
Luminance
1x1
900.0
0.000
0
5
2
Blue
1x1
900.0
0.000
0
6
2
Red
1x1
900.0
0.000
0
7
2
Green
1x1
900.0
0.000
0


Session
Dark & Bias Frames Before
Start 12:46 End 13:16
Light Frames
Start 23:17 End 04:53
Dark & Bias Frames After
Start 04:53 End 05:23
Flat Frame Acquisition Start
Dusk 17:41 Dawn 05:38
Sun
Set 17:48 Rise 06:13
Astronomical Twilight
Dusk 19:11 Dawn 04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Number
Filter
Binning
Exp. Time
Flush Imager
Update
Loop Series
Dark Frames Now
Series
Number
Filter
Binning
Exp. Time sec.
Dark/Bias
Description
1 Red 1x1 Bias STF-15C Bias 2X2
2 Red 1x1 Dark STF 300sec -15C 1X1
3 Red 1x1 Dark STF 600sec -15C 2X2
4 Red 1x1 Dark STF 900sec -15 2X2
5 Red 1x1 Dark
6 Red 1x1 Dark
7 Red 1x1 Bias


Session
Dark & Bias Frames Before
Start 12:46 End 13:16
Light Frames
Start 23:17 End 04:53
Dark & Bias Frames After
Start 04:53 End 05:23
Flat Frame Acquisition Start
Dusk 17:41 Dawn 05:38
Sun
Set 17:48 Rise 06:13
Astronomical Twilight
Dusk 19:11 Dawn 04:51
Setup
Session
Dusk Flats
Darks & Bias Frames
Light Frames
Dark & Bias Frames
Dawn Flats
Sky Flat Suggestions
At dawn, the sky brightness is increasing therefore one should use the filter with the highest transparency in the first series and use decreasingly transparent filters for subsequent series. This will maximize the number of flats that can be obtained in the brightening twilight sky.
M33, 56.5
Horsehead, 56.5
M51, 56.5
Update
Flat Frames Now
Series
Number
Filter
Binning
Target ADU
Rotation Angle
Rotation Type
Description
1 4 Luminance 1x1 22,000 0.0 PA East
2 4 Blue 1x1 22,000 0.0 PA East
3 4 Green 1x1 22,000 0.0 PA East
4 4 Red 1x1 22,000 0.0 PA East
5 4 Red 1x1 22,000 0.0 PA East
6 4 Red 1x1 22,000 0.0 PA East
7 4 Red 1x1 22,000 0.0 PA East


Run
Conditions
*** WARNINGS ***
CCDAUTOPILOT NOT INITIALIZED - Guiding may not be accurate.
Session can not run - CCDAutoPilot is in Planning Mode
****
Scheduled Session Event Times
Loop Session: False
Auto Date Correct: False
Session start: 12:50
Open Dome: False
Cooler Start Delay (min.): False
Wait for Civil Dusk: False
Set Imager Cooler: True
Setpoint (°C): -20
Set Guider Cooler: False
Wait to Reach Setpoint(s): True
Wait (min.): 3
Dusk Flats Start: 17:41
3 flat frames, Red filter, binned 1x1 at 22000 ADU
3 flat frames, Green filter, binned 1x1 at 22000 ADU
3 flat frames, Blue filter, binned 1x1 at 22000 ADU
3 flat frames, Luminance filter, binned 1x1 at 22000 ADU
Dark/Bias frames start: 12:50
5 bias frames, Red filter, binned 1x1
3 dark frames, 600 sec., Red filter, binned 1x1
Dark/Bias frames end: 19:20
Dark/bias frames will be aborted when time for light frames.
Focus before Target Run: False
Skip First Target Slew False
Light frames start: 17:48
M33
5 frames, 600 sec., Red filter, binned 1x1 (Unguided)
5 frames, 600 sec., Green filter, binned 1x1 (Unguided)
5 frames, 600 sec., Blue filter, binned 1x1 (Unguided)
5 frames, 600 sec., Luminance filter, binned 1x1 (Unguided)
Horsehead
4 frames, 600 sec., Red filter, binned 1x1, Focus at series start (Unguided)
4 frames, 600 sec., Green filter, binned 1x1 (Unguided)
Setup
Session
Options
Run
Guiding
Focusing
Settings
Run Session
Minimize when Running a Session
Save To Notepad
Server Software Connected Target Database: target5.mdb System Profile: ccdap510.ap5