DSOP Stacker User's Manual

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1. initial setup

At first , click "Setting" tab and do configration for stacking.

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	Setting Target List Stack Oth	her												
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	delete selected row													
	camera	width	height	gain	cooler	temp fran	me count	stack in	nages					
	Scan folder & add library list													
3	Dark Library :													
	delete selected row													
	camera	width	height	gain	exposu	ire coo	oler temp	frame o	count stack in	nages]			
	Scan folder & add library list													
4	Flat library :													
	delete selected row													
	telescope	camera			width	height	gain		exposure	cooler temp	filter	frame count	stack images	
	Scan folder & add library list													

1. Change "setting save location", "stack result save location", and "work file location" if you need.

* In "setting save location", DSOP Stacker save configration files for stacking, bias/dark/flat library.

 \ast In "stack result save location" , DSOP Stacker save stack result image and files.

* In "work file location" , DSOP Stacker save work file made while stacking.

If you have high speed strage(M.2 SSD , etc.) , stacking speed may be faster than default.

2. Regist bias library.

By clicking "Scan folder & add library list" and selecting folder that contains bias frames , bias library is made. You can select folder contains only bias frames , and can select upper folder of the folder contains bias frames. After operating , DSOP Stacker scan all FITS files in selected folder and all sub folders automatically and show all pattern is shown identified by "camera name", "width of image", "height of image", "gain", "cooler templature" as below.

Bia: de	s Library : lete selected row						
	camera	width	height	gain	cooler temp	frame count	stack images
	ZWO ASI294MM Pro	4144	2822	0	-10	120	select
	ZWO ASI294MM Pro	4144	2822	0	-20	60	select
	ZWO ASI294MM Pro	4144	2822	120	-10	60	select
	ZWO ASI294MM Pro	4144	2822	120	-20	60	select
	ZWO ASI294MM Pro	4144	2822	200	-10	60	select
	ZWO ASI294MM Pro	4144	2822	300	-10	60	select
	ZWO ASI294MM Pro	4144	2822	50	-10	60	select

If you shot images with "FRAMETYP" FITS header by DSOP Shooter , N.I.N.A. and so on , no bias frames is not included in this list.

If FRAMETYP" FITS header is not exist in images , all images are loaded in this list,

so deletion of non-bias rows by selecting rows to delete and click "delete selected row" button.

You can show images by clicking "select..." in each row.

3. Regist dark library.

By same process as "2. Regist bias library", you can regist dark library.

Difference from "2. Regist bias library" is below :

- In case of dark library , "exposure time" is added to identification items.
- If FRAMETYP" FITS header is exist in images, DSOP Stacker checks header value is for dark, and non-dark images are not included in list

4. Regist flat library.

If you have reusable flat images , you can regist it as flat library by same process as "2. Regist bias library". Difference from "2. Regist bias library" is below :

- In case of flat library, "exposure time", "telescope name", "filter name" are added to identification items.
- If FRAMETYP" FITS header is exist in images , DSOP Stacker checks header value is for dark , and non-dark images are not included in list

2. regist stack targets

- After initial setup and shotting images , click "Target List" to regist stack targets to DSOP Stacker.



By clicking "Scan folder & add target list" and selecting folder that contains target images , target list for stacking is created. You can select folder that contains target images to add , and can select upper folder of the folder contains several/all target images. After operating , DSOP Stacker scan all FITS files in selected folder and all sub folders automatically and show all pattern is shown identified by "target name", "telescope name", "camera name", "width of image", "height of image", "gain", "cooler templature" as below.

If you shot images with "FRAMETYP" FITS header by DSOP Shooter , N.I.N.A. and so on , no light frames is not included in this list. If FRAMETYP" FITS header is not exist in images , all images are loaded in this list,

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	ligh	,															
<u> </u>	del	ete selected row									7	5	3				
1		telescope	camera	width	height	filter	exposure	gain	cooler temp	frames	stacked	stack images	bias	dark	flat	bias flat	dark flat
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		RedCat51	ZWO ASI294MM Pro	4144	2822	Ha	180	300	-10	150	0	select	From Library	From Library	From Library	From Library	From Library
		RedCat51	ZWO ASI294MM Pro	4144	2822	ι	180	120	-10	183	0	select	From Library	From Library	From Library	From Library	From Library
		RedCat51	ZWO ASI294MM Pro	4144	2822	R	180	120	-10	189	0	select	From Library	From Library	From Library	From Library	From Library
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so deletion of non-bias rows by selecting rows to delete and click "delete selected target" button.

- Next , check and configure of each target you want to stack.

- 1. Each stack frames of shot target are displayed. Stack result image & files is made per row.
- 2. If unnecessary frames are exist in 1, select rows to delete and click this button for deleting unnecessary frames.
- 3. Set bias/dark/flat frames.

If bias/dark/flat frame are found from initial settings, "From Library" is displayed bias/dark/flat frame are already set automatically.

If "Not Set" is displayed , click "Not Set" and select "Manually" , and select folder required image contains.

After do it, click "..." button and check imaged , if you need select images for stacking.

- 4. Show all image and select image used as stacking base images when DSOP Stacker execute position matching of each frames. (Brighter image (not R/G/B/NallowBand filter, but L filter, etc) & sharp image(not foggy & cloudy) is recommended) You can also select images that is stacked or not.
- 5. If you need , confirm images by click here and select images that is stacked or not.

6. [Pro Edition Only]

If you shot flat images by sky flat and remains a little stars , stars can be deleted from flat frames.

* Deletable stars are only not too bright and not big. Too bright star or bigger star can't be deleted.

After finishing stack,

7. You can confirm frame counts stacked. If non stackable image exists, this value is lower than "frames" left.

8. You can confirm stack result of each image. If non stackable image exists, non stackable reason is displayed in each image.

3. stack targets

After "2. regist stack targets" ,

- Select stacking targets by clicking reft side square of target row, and click "set selected target for stacking"

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s	etting	g Target List St	tack Other										
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		RedCat51	ZWO ASI294MM Pro	4144	2822	G	180	120	-10	170	0	select	From Library
		RedCat51	ZWO ASI294MM Pro	2822	Ha	180	300	-10	150	0	select	From Library	
		RedCat51	ZWO ASI294MM Pro	4144	2822	L	180	120	-10	183	0	select	From Library
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		telescope	camera	width	height	filter	exposure	gain	cooler temp	frames	stacked	stack images	bias

* In Free Edition , only 1 row is selected for stacking.

(Repetition of "select one -> do stacking as below" is required)

In Pro Edition , any rows are selected for stacking , so you can stack automatically by using long time(nightly,in working,etc).

- Stack parametters and targets is shown as below. If you need , edit parameter and stack target.

* You don't need to stack parameters from default(written in below image), because default parameter is tested by many targets and succeeded stacking.

S DSOP Stacker															- (×
Setting Target List Sta	ack Other															
Stack Parameter																
- Kappa-Sigma Stacking:	Auto frame selection:						Optional	paramete	r:							
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kappa : 2	use PHD2 quide log for	finding non-sta	ick frame		3		position	n matching	g paramete	er : 1	6					
iteration count : 5	guide error ratio for non-st	tacking frame :	0.1			4										
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	[Pro Edition only]non-st	tack frame inclu	ding bad sta	rs(foggy/	guide error/out	t of focus)										
Stack largets Start Stackin	ng															
target name : M81M82_rec	dcat	RA:9 h 5	5 m 43 s		Dec: 69 ° 27	7 ' 8 "	🔳 [Pro	Edition o	only]delete	stars from stack	ing flat frames					
light frames :																
delete selected row								1.								
telescope	camera	width	height	filter	exposure	gain	cooler temp	frames	stacked	stack images	bias	dark	flat	bias flat	dark flat	
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RedCat51	ZWO ASI294MM Pro	4144	2822	G	180	120	-10	170	0	select	From Library	From Library	From Library	From Library	From Library	
RedCat51	ZWO ASI294MM Pro	4144	2822	Ha	180	300	-10	150	0	select	From Library	From Library	From Library	From Library	From Library	
RedCat51	ZWO ASI294MM Pro	4144	2822	Ľ	180	120	-10	183	0	select	From Library	From Library	From Library	From Library	From Library	
RedCat51	ZWO ASI294MM Pro	4144	2822	R	180	120	-10	189	0	select	From Library	From Library	From Library	From Library	From Library	
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- 1. Execute Kappa-Sigma clipping for deleting satellite lines etc, check here.
 - If not deleted after stacking , reduce kappa from default and add iteration count from default.
 - * Reducing and adding may cause low image quality. If doint them , stacked image becomes more noisy than default.
- 2. In position matching by using stars of each image, DSOP Stacker do not stack image that horizontal or vertical position shift is bigger than this value to ensure FOV.
- 3. If you want to PHD2 guide log for checkgin each image can stack or not, check here.
- 4. If you need to change thresold for checking PHD2 guide log , change values from default.
- 5. Change memory usage ratio of OS for DSOP Stacker can use.
- 6. If position matching failed, matching may be succeeded by changing bigger value as default.

But too much value cause incorrect position matching, so changing base frame in target is better than chenging here.

7. Confirm and edit target information , as same as "2. regist stack targets".

- After checking and editing stack parameter and target information, click "" button to start stacking.

Setting Target List Stack Other Stack Parameter Auto frame selection: unstacking threshold pixels of stack position shift: 200 Optional parameter: Kappa-sigma Stacking: Auto frame selection: unstacking threshold pixels of stack position shift: 200 max memory usage ratio of OS : 0.9 guide error ratio for non-stacking frame : [0.1] threshould count of too much PHD2 move (or non-stacking frame : [3] threshould move volume for checking too much PHD2 move(DEQ : [500] If Pro Edition onlyInon-stack frame including bad stars(foggy/guide error/out of focus) If Pro Edition onlyIdelete stars from stacking flat frames Inght frames : Idelete selected row RA : 9 h 55 m 43 s Dec : 69 ° 27 * 8 " [Pro Edition onlyIdelete stars from stacking flat frames																	
Setting Target List Stack Other Stack Parameter	×	DSOP :	Stacker														
Stack Parameter Kappa-Sigma Stacking: Auto frame selection: unstacking threshold pixels of stack position shift: 200 iteration count : 5 Use PHD2 guide log for finding non-stack frame guide error ratio for non-stacking frame : 0.1 threshould count of too much PHD2 move for non-stacking frame : 3 threshould move volume for checking too much PHD2 move(PA) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould move volume for checking too much PHD2 move(DEC) : 500 Threshould to too much PHD2 move for non-stacking flat frames target name : M81M82_redcat RA : 9 h	s	etting	Target List	Stac	k Other												
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After finishing stack , stack result images are saved into

[stack result save location]¥[target name folder]

as FITS file.

Please use stacked images as input of making final image by Pixinsight , Photoshop , etc.

4. others

If you have already purchased Pro Edition License, click "Register Pro Edition License" to enable license. If you want to try trial license, click "Publish Trial License".

SOP :	S DSOP Stacker										
Setting Target List Stack Other											
License Management											
Register P	Register Pro Edition License										
Publish Tri	Publish Trial License * Internet connection required										