

DEEP SKY DAD FP1 MANUAL V4



Making flats can be quite cumbersome, especially if you stride towards automation and simplification of the process. Our flap panel makes making flat frames with your refractor telescopes part of an automated routine, without hacks like lcd screens, sky with t-shirt etc.



Intro

Deep Sky Dad Flap Panel enables automation of making flats, protecting your optics from unwanted dust when not imaging and (optionally) preventing dewing issues of LED panel with built in heater.

Features



- Compact, lightweight design, tailored for your telescope
- Easy installation (no bolts, 1x hand tightening knob)
- Dimmable LED light
- Servo motor with 270 degrees of motion
- Manual control with button
- Built in magnets, which snap the panel nice and tight when opened/closed
- ASCOM support
- INDI support
- ASIAIR support (optional)
- Built-in LED heater to prevent dew accumulation on the LED surface (optional)
- PC connectivity: micro USB cable (included)
- Power requirements: 12V 3A (not included)



Dimensions

We are currently offering the following 5 different categories of flap panels:

Category	Dimensions (W x H x D in mm)	Min. dewshield diameter (mm)	Max. dewshield diameter (mm)	Effective LED diameter (mm)
FLAP100	133 x 188 x 100	40	103	75
FLAP125	159 x 213 x 100	104	128	100
FLAP150	184 x 238 x 100	129	154	125
FLAP170	204 x 258 x 100	155	175	145
FLAP194	229 x 282 x 100	176	202	169
FLAP260	296 x 348 x 100	203	268	235







FLAP125











FLAP170

















Installation

Installation of the flap panel is simple. Open the panel, slide it on so that the front is in line with the dew shield edge. Secure the flap in place with a hand tightening bolt, <u>do not overtighten</u>, or plastic <u>may crack!</u> After that, close the panel before powering it.



FAQ

Basics

What kind of power adapter can I use?

We recommend using a 12V DC power adapter, as the units are fine-tuned for this specific voltage. The socket specification is tip positive, 5.5mm x 2.1mm. If you don't have a 12V adapter available, the units can also operate within a voltage range of 12V to 14V without any issues. The current output of the power adapter should be around 3A, but higher outputs will not damage the unit.

When I connect the flap to the computer, Windows does not recognize it. What can I do?

If you are using Windows 10, the driver will self install. If you are using Windows 7, please install a 32 or <u>64</u> bit driver. Should you experience any problems with detection (COM port not visible, no USB device connected chime), try:

- different micro USB cable
- direct connection (without USB hub)
- using USB 2.0 port (instead of 3.0)
- reconnecting the power while USB is already connected



Flap panel does not open/close all the way, what can I do?

Gravity can affect the opening and closing action by counteracting motor movement or flexing 3D printed components. That is why it is important to position the flap panel correctly according to its size. There are 3 general mounting positions: TOP (flap opens above the opening of OTA), SIDE (flap opens to the side of the telescope opening) and BOTTOM (flap opens below the telescope opening). **These are positions relative to the ground, so telescope mount position has to be taken into account.**



TOP

SIDE

BOTTOM

Choosing the correct position ensures that the magnets can properly reach the LED ferromagnetic sticker or bolts when opening and closing. It is also advisable to always open and close in the same telescope position (e.g. mount parked) so the movement is repeatable and components are not overstrained due to improper orientation. Below is a table of positions in relation to the flap size:

Category	ТОР	SIDE	воттом
FLAP100	YES	YES	YES
FLAP125	YES	YES	YES
FLAP150	YES	YES	NO
FLAP170	YES	NO	NO
FLAP194	YES	NO	NO
FLAP260	YES	NO	NO

If you have chosen the closing position correctly and the flap is still not fully opening/closing, please try to perform range calibration. You will have to upgrade the flap firmware to v1.0.6 before performing this procedure.

Before connecting the power to the flap, press and hold the manual button. Now connect the power and keep on holding the button. Once the LED panel starts flashing, release the button. Now the flap will move and stop in the default open position. By short pressing the button, the flap will now move



a few degrees beyond the default open position. You can work like this incrementally until it reaches the desired open position. After you are happy with it, press and hold the button for 2 seconds. When you release the button, the flap will go towards the closed position and stop at the default closed position. The process of calibration is the same as for the open position - single press moves a a few degrees beyond default position with each single press. When it reaches the magnets, just save the position by pressing the manual button for 2 seconds.

You can also check the range calibration demonstration in our <u>Youtube video</u>.

How can I upgrade the firmware?

Firmware upgrade is a simple yet delicate procedure. That is why I have put together simple and straightforward step-by-step instructions for installing the latest firmware.

disclaimer

Please follow upgrade instructions very carefully. Deviating from the instructions could cause bootloader issues or in worse case unresponsive unit, for which we are not responsible.

- 1. Connect the unit directly to the computer (do not use a USB hub). In Device Manager, note the assigned COM port. If the unit is not recognized, refer to the FAQ above for details.
- 2. Download FP1 Control Panel from and the latest firmware from our website (**software** tab of the product page)

DESCRIPTION IN THE BOX SOFTWARE / DOCUMENTS REVIEWS (0)
SOFTWARE / DOCUMENTS
Micro USB Serial driver (Windows 7)
.NET 5 runtime (for our control panel)
16.02.2024
FP1 Control Panel v1.0.5 (ASIAIR control configuration, button brightness presets)
FP1 Firmware v1.0.5 (ASIAIR cable support, button brightness presets)
14.11.2022
FP1 ASCOM driver v1.0.2 (2 connections on same PC)
22.10.2022
FP1 ASCOM driver v1.0.2 (2 connections on same PC) 22.10.2022 FP1 Firmware v1.0.4 (FT button support)

- 3. Start control panel as administrator and enter following settings
 - a. COM port choose com port that you have written down



DSD FP1 CONTROL PA	NEL V1.0.2.0
COM port	COM17 -

b. Click »FW UPGRADE« and select .dsd file

DSD FP1 CONTROL PA	NEL V1.0.2.0	×
COM port		
Elan position:	I FD brightness: Heater mode:	

c. Click upload and the process will begin. After upload is finished, you will get a confirmation popup

	Firmware upgrade	Firmware upgrade
COM port File Status	COM17 D:Projects\DeepSkyDad.FP1\DeepSkyDad.FP1Arduino\build\v1.0.2\D! Ready	Success Uploaded version: Board=DeepSkyDad.FP1, Version=1.0.2
UP		UPLOAD SAVE LOG BACK

4. If the upload fails, an error message will appear. For example, if you are connected to the unit in another program and try to upload the firmware, you will receive an "Access is denied" message. If you encounter a timeout error, try unplugging the power and then retrying the upgrade process.



USB cable remote control

When you connect the flap panel to your PC via USB cable, you can remotely control it via ASCOM (SGPro, N.I.N.A, Voyager, APT,...), INDI or FP1 Control Panel.

ASCOM (Windows)

In Windows, we recommend you to use the ASCOM Cover Calibrator driver for control. This requires ASCOM Platform 6.5, which introduced the Cover Calibrator device. This way, you can automate our flap in any of the popular astronomy softwares (N.I.N.A, APT, SGPro, Voyager,...). We will use N.I.N.A. for a short demonstration below.

Basic usage

- 1. Download, unzip and install latest version of ASCOM driver from our website
- 2. Open N.I.N.A, navigate to Equipment -> Flat Panel
- 3. Select ASCOM Driver for DeepSkyDad.FP1

🧐 N.I.N.A N	Nighttime Im	aging 'N' Astronomy 1.11 NIGHTLY #061 - Default		! PREVIEW VERSION !
ø		Flat Panel	ASCOM Driver for DeepSkyDad.F 🔻	\$
Equipment	Camera	Name		
		Description	No Flat Panel ASCOM	
Sky Atlas		Driver Info	ASCOM Driver for DeepSkyDad.FP1. ASCOM Coverdalibrator Simulator	Version: 6.5
	⊢ ⊥ Focuser	Driver Version	AllPro Software AllPro Spike-a-Flat Panel	
Framing	.5	Flat panel light	Alnitak Astrosystems Flip-Flat Simulator	
Elat Mirand	Rotator	Currently	Alnitak Flat Panel Artesky	
that wizard		Brightness	Artesky Flat Box Pegasus Astro	0.0 % _Set
쇼===_ 쇼==	Telescope		FlatMaster	
Sequencer		Currently	0%	
	Guider	Cover	Open Close	
imaging	†‡†	Flat Panel Settings		
Options	Switch	Open cover for dark flats in flat wizard	OFF	
	Θ	Settle Time	0	
	Flat Panel	Settle finite	U ms	
	\sim			

4. Open ASCOM settings and select correct COM port

DeepSkyDad FP1 Setup			×
General sett	ings		A
COM Port	COM1	•	ASCOM
Trace on			
			2
OK Cancel	Advanced >>		-0



5. Click OK and connect to the flap



6. And you are ready to automate your flaps! You can open/close the panel, control LED brightness etc.

Built in heater (optional)

If you also purchased optional built in heater to prevent dewing, you can choose heating mode and power in advanced ASCOM settings

- 1. Open ASCOM settings, click Advanced
- 2. On the right side you have 2 sections. Heater and System. We are currently interested in Heater, which contains 2 input fields:
 - a. Heater mode
 - i. Off heater is off at all times
 - ii. **On** heater is on at all times*
 - iii. On if flap open/LED active heater is on when flap is opened or LED light is on*
 - b. Heater power power of heater output. We recommend you leave this setting at default (255 maximum).

Heater*		
Mode	On if flap open/LED active	•
Power (1-255)**	255	÷
*above settings apply only when h **internal thermistor prevents over	eater is installed heating	

3. Selected heater settings are applied when you connect to the flap next time.



*heater contains built in thermistor, which constantly measures temperature and prevents overheating, should you forget to turn heater off

System controls

- 1. Open ASCOM settings, click Advanced
- 2. On the right side you have 2 sections. Heater and System. We are currently interested in System, which contains 4 buttons:
 - a. Reboot FP1 resets the unit
 - b. Firmware version currently installed firmware vesion (in case you have ASCOM connectivity issues, click this button)
 - c. Reset EEPROM resets unit settings to factory defautls
 - d. Check heater checks whether heater is present

System		
Reboot FP1	Firmware version	
Reset EEPROM	Check heater	



INDI (Linux)

In Linux, you can control our flap panel with Deep Sky Dad FP1 INDI driver.

Basic usage

Select the correct ttyUSB device (e.g. ttyUSB0) and click connect. You can park/unpark the flap and control the LED brightness (0-4096). Statuses are displayed below the button interface.

INDI Control Pane	el — KStars (a	s superuse	r)		0 0 8
Deep Sky Dad <u>F</u> P1					
<u>Main Control</u> <u>Conne</u>	ction Op <u>t</u> ion				
Connection	Connect	Disconnect			
Dust Cover	Park	Unpark			
Flat Light	<u></u> n	Off			
Brightness	Valu	Je	1000	1000	Set
Heater mode	Off	0 <u>n</u>	On <u>i</u> f flap open/LED active		
	Cov	er	Ope	'n	
Status	Ligi	ht	Off		
	Mot	or	Stopp	bed	
	Heal	ter	Conne	cted	
Firmware	Vers	ion	(Board=DeepSkyDad.	FP1, Version=1.0.1)	
2021-04-13T16:41:13: [INFO] Deep Sky	Dad FP1 is c	online.		
				Clear	Clos <u>e</u>

Built in heater (optional)

If you also purchased optional built in heater to prevent dewing, you can choose heating mode in INDI Main Control tab:

- a. **Off** heater is off at all times
- b. **On** heater is on at all times*
- c. On if flap open/LED active heater is on when flap is opened or LED light is on*



*heater contains built in thermistor, which constantly measures temperature and prevents overheating, should you forget to turn heater off

FP1 Control Panel (Windows)

If you wish to control our panel without 3rd party software, you can do so in Deep Sky Dad FP1 Control panel:

FP DSD FP1 CONTE	ROL PANEL V1.0.6	.0 ×
COM port COM3		FW VERSION FW UPGRADE BUTTON CONFIG ASIAIR CONTROL CONFIG DEBUG
Flap position: Opened	LED bright Off	Iness:Heater status:Heater mode:Connected (30,6C)On if flap open/LED active
OPEN	CLOSE	0 + On if flap open/LED active SET BRIGHTNESS SET HEATER MODE

You can control flap position, LED brightness (0 is off), heater mode and configure brightness presets for manual button and ASIAIR control.

ACTION BUTTON CONFIG		-		×		
CYCLE THROUGH BRIGTNESS VALUES:						
Preset #1:			4096 -	+ -		
Preset #2:			0 -	+ -		
Preset #3:			0 -	+ -		
Preset #4:			0 -	+ -		
Preset #5:			0 -	+ -		
Preset #6:			0 -	+ -		
Preset #7:			0 -	+ -		
				SAVE		

ASIAIR CONTROL CONFIG	- 🗆 ×
Enable 'Shutdown ASIAIR' mode (?):	
OFF: (?)	LID OPENED, LED OFF
5%: (?)	LID CLOSED, LED OFF
10% (?)	1 + -
15% (?)	2 + -
20%: (?)	3 + -
25%: (?)	4 + -
30%: (?)	6 + -
35%: (?)	8 + -
40%: (?)	10 + -
45%: (?)	20 + -
50%: (?)	30 + -
55%: (?)	50 + -
60%: (?)	100 + -
65%: (?)	200 + -
70%: (?)	500 + -
75%: (?)	1000 + -
80%: (?)	2000 + -
85%: (?)	3000 + -
90%: (?)	4096 + -
	SAVE



ASIAIR cable remote control

ASIAIR cable is an accessory designed to seamlessly integrate with the ZWO ASIAIR (**ASIAIR PRO and ASIAIR PLUS only**) for effortless control of your Deep Sky Dad FP1 flap panel directly from the ZWO ASIAIR app. You can also check our demonstration in our <u>Youtube video</u>.

Basic usage

Your FLAP must use firmware version v1.0.5 or higher for ASIAIR control cable compatibility. You can download firmware and Control panel here:

- FP1 Control Panel v1.0.6 (ASIAIR control configuration, button brightness presets)
- FP1 Firmware v1.0.5 (ASIAIR cable support, button brightness presets)

If you haven't been using our Control panel before you might also need following:

- Micro USB Serial driver (Windows 7)
- .NET 5 runtime (for our control panel)

Brief Explanation of Control Behavior via ASIAIR cable (we highly recommend you check out our demonstration <u>Youtube video</u>):

Behavior	Main power DC port	ASIAIR cable DC port
Flap closed, LED on (DC port slider brightness control)	ON	ON
Flap opened, LED off	ON	OFF
Flap off	OFF	ON/OFF



In case you are experiencing problems with your ASIAIR cable, please perform the tests listed below and send us the results to info@deepskydad.com

- Unplug the ASIAIR cable and check main flap panel power is connected to DC input
- Short press manual button on the flap panel. Does LED brightness change? (It should)
- Long press the manual button on the flap panel. Does the flap panel open/close? (It should)
- Plug in the ASIAIR cable DC plug to the control port on ASIAIR and audio jack plug to the flap panel. Push the audio jack connector all the way in (this is crucial, if the connector is not pressed all the way in, connection with ASIAIR will not be established)



- Short press manual button on the flap panel. Does LED brightness change? (It should not)
- Long press the manual button on the flap panel. **Does the flap panel open/close? (It should not)**
- Change value of control port on ASIAIR to 100%. Does the flap panel close and LED turn on? (It should)

If above tests fail to resolve the issues, connect the flap panel via USB cable to the Windows PC (while leaving ASIAIR cable connected). Run <u>Deep Sky Dad FP1 control panel v1.0.6</u> or higher. Connect to the flap panel COM port and click "DEBUG" button in the upper right corner. **Copy the debug long and include it into the troubleshooting email.**

FP DSD FP1 CONTROL PANEL V1.0.6.0 ×		DEBUG	-	×				
			EEPROM EEPROM size: 256 current sliding address: 132					
Flap position: LED brightness: Heater status: Heater mode: Opened 100/4096 Connected (100,0C) Unknown				sliding slots count: 21 maxPosition: 800000 stepMode: 2 stepModeManual: 2 speedMode 2				
OPEN	CLOSE	STOP	0 + -	Off SET HEATER MODE	•	settleBufferMs: 0 idleGepromWriteMs: 180000 reverseDirection: 0 motor/HoldMultiplier: 90 motor/HoldMultiplier: 40		
	-	-	-			position: 507235 targetPosition: 507235 checksum: 1537371 MOTOR Motor Ful current (mA): 240 TMC CRC error: 0 PERIP HC/TP pin voltage: 1022 Temperature: 127.00 HC connected: 0		



Manual control

Manual operation is possible via a built-in button.

- Single press of button iterates through brightness presets
- Long press opens/closes the panel
- If you press the button again while moving, the flap stops at current position

Warranty and returns

All our products have a 2 years warranty. We will replace any malfunctioning units in this period free of charge. Warranty does not apply to any malfunction caused by improper usage (wrong power supply,) or physical damage to the unit.

The customer covers return shipping costs when sending back the unit for repair or replacement. If the unit was purchased via dealer, the dealer is responsible for customer service.