

SKAARHOJ Blue Pill

with

Color Fly v2

For RED



USER GUIDE | June 2022

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Contents

Contents	2
Important Information	4
Legal Notice	4
Warnings	4
Maintenance Precautions	4
Regulatory Compliance	4
Overview	5
Features	5
Controller Diagram	6
Color Fly v2 Top	6
Color Fly v2 Backside	7
Blue Pill Port Sides	7
System Configuration	8
Connection	8
Power	8
Network Recommendations	9
Power over Ethernet (PoE) Specifications	9
Accessing Blue Pill	9
DHCP or Static IP	9
Wi-Fi Access Point	10
Link from SKAARHOJ Firmware Updater	10
SKAARHOJ Firmware Updater and Micro USB	11
Adding Panels	11
Auto Discover	12
Manually Added	12
Panel Details	12
Confirm Connection	13
Select Mapping	14
Adding Devices	14
Auto Discover	14
Manually Added	15
Device Details	15
Populate Constant Sets	16
Connecting UniSketch Controllers	17
Blue Pill Mode - Via Serial monitor	17
Blue Pill Mode - Via Special Key	18
Fixed Configuration	18
Controller Use	20
Color Fly v2	20

Dimensions	21
Color Fly v2	21
Blue Pill	21
Troubleshooting	21
Contact Support	22
Additional Resources	22

Important Information

Legal Notice

Attention:

The content and instructions of this document are subject to change without prior notice. Updates will be added to the manual.

Best effort have been conducted to verify the correctness of the content in this manual, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical error in this manual.

The product and graphic appearance demonstrated in this manual is for reference only, and may differ from the actual appearance of your device and associated software applications.

Use of this manual and the subsequent result shall be entirely on the user's own responsibility.

Reference to product names of other companies in this manual are the trademark or registered trademark of the respective companies.

Warnings

- If the product does not work properly, please contact your dealer. Never attempt to disassemble the controller yourself (we will not assume any responsibility for problems caused by unauthorized repair or maintenance)
- This installation should be made by a qualified service person and should conform to all the local codes
- When shipping, the controller should be packed in its original packaging
- Make sure the power supply voltage is correct before using the controller
- Do not drop the controller or subject it to physical shock

Maintenance Precautions

- If there is dust on the controller and the displays, remove the dust gently using a oil-free brush or dust blowing apparatus

- Do not use organic solvents, such as benzene or ethanol when cleaning the surface of the controller

Regulatory Compliance

For private households: Information on Disposal for Users of WEEE

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.



Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For professional users in the European Union

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

For disposal in countries outside of the European Union

This symbol is only valid in the European Union (EU). If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

Overview

This user guide is suitable for the following models

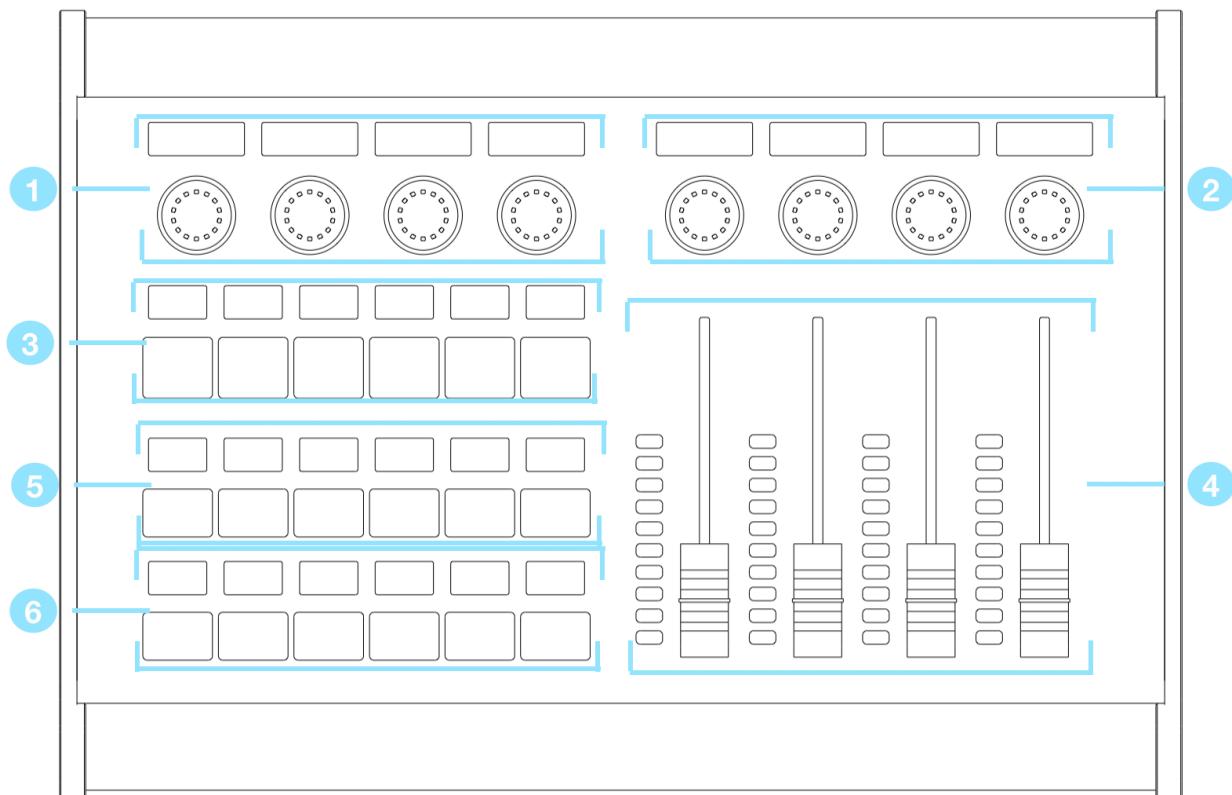
- Color Fly v2 using a Blue Pill with RED default configuration

Features

- Support for RED Protocol including
 - Focus
 - Iris
 - Color Offset Red/Blue/Green
 - White Balance
 - Auto White Balance
 - Color Temperature
 - ISO
 - Shutter Speed
 - Shutter Mode
 - Power (Gain) Red/Blue/Green
 - Color Saturation
 - Slope Red/Blue/Green
 - Tint
 - Display Preset
 - Highlight Roll-Off
 - Paint Preset
 - Record Start/Stop
 - Audio Source
- Audio Gain
- Super crisp window with large display tiles for settings
- High-quality encoders with RGB backlight for function identification
- Camera ID display with OLED technology
- Four-way buttons with OLED legends for dynamic labelling and functionality
- Motorized iris faders
- Power: DC 12V, 5W-30W PoE (+)
- PoE Standard: IEEE 802.3af/t
- Firmware Upgrade via networked connection
- DB9 (EXT I/O) connector
- Option for changing configuration layout

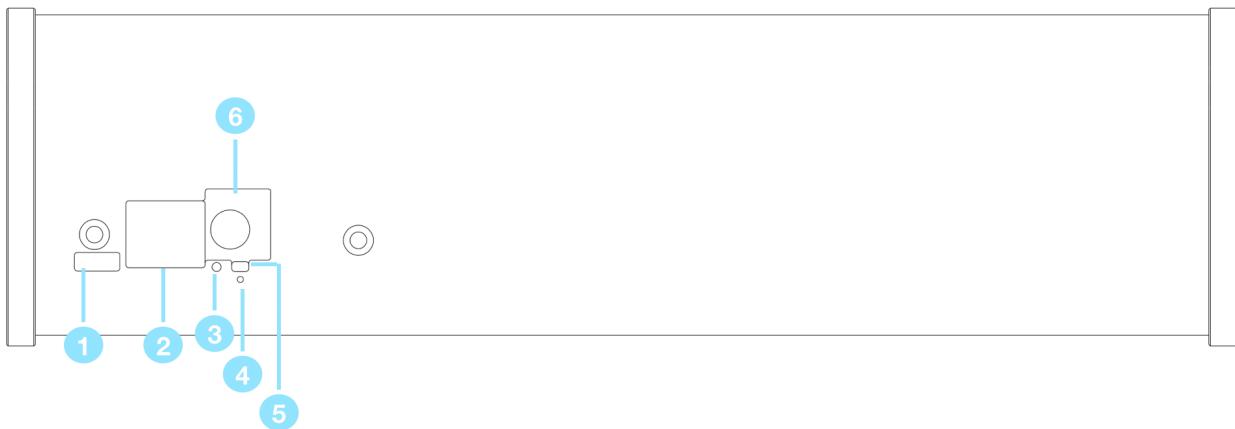
Controller Diagram

Color Fly v2 Top



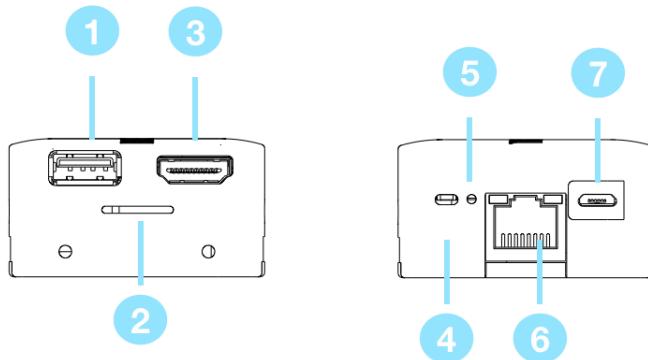
1. 4 rotary encoders with RGB backlight and OLED displays for function identification
2. 4 rotary encoders with RGB backlight and OLED displays for future variable function
3. Variable function control
4. 4 motorized faders for Iris control
5. Menu navigation buttons
6. Camera select and panel lock buttons

Color Fly v2 Backside



1. Micro USB Port for serial communication with SKAARHOJ Firmware Updater
2. IP Network RJ45 Port for IP Control and PoE Standard: IEEE 802.3af
3. Status LED for monitoring and debugging
4. Reset, use only under the guidance of SKAARHOJ support
5. Config Button, to enable WiFi Access Point
6. 12V DC Power Supply, connect the supplied DC Power adaptor

Blue Pill Port Sides



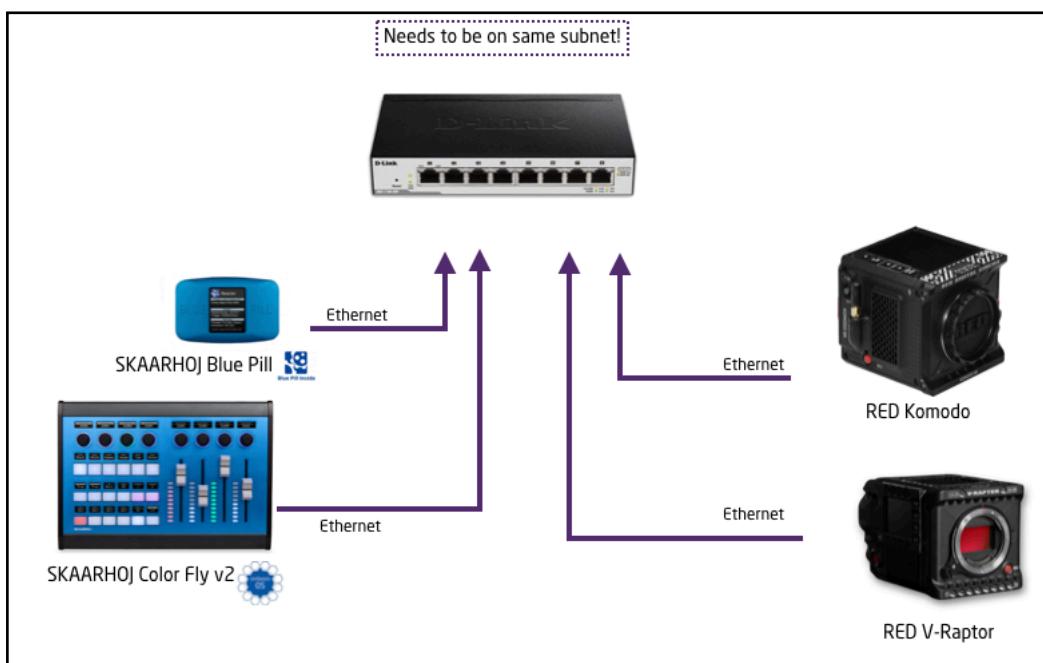
1. USB-A Port. See Blue Pill/Reactor Manual for additional information
2. SKAARHOJ Expansion Slot. See Blue Pill/Reactor Manual for additional information.
3. HDMI Port for Image Grabber. See Blue Pill/Reactor Manual for addition information.
4. Config Button to enable WiFi Access Point. See Accessing Blue Pill section
5. Status LED for monitoring and debugging
6. IP Network RJ45 Port for IP control and 5W-30W PoE(+)/PoE Standard: IEEE 802.3af/t
7. Micro USB Port for serial communication and 5V power

System Configuration

Connection

The SKAARHOJ Blue Pill communicates to camera(s) and the SKAARHOJ controllers via a networked IP connection. For the RED cameras this can be via WiFi connection in the camera to the network or RED's USB-C adaptor to ethernet adaptor is needed for the Komodo, the V-Raptor has it built in.

The layout of the configuration for the Color Fly is done towards control of multiple cameras in groups of 4. No video signal processing is done on the SKAARHOJ RCP Pro.



Power

- Use only the DC power adapter supplied with the controller. Do not use any other DC power adaptor
- The Blue Pill can be used with a PoE switch providing 5W-30W PoE (+)/PoE Standard: IEEE 802.3af/t
- The UniSketch controllers can be used with a PoE switch providing PoE Standard: IEEE 802.3af
- Ensure the PoE provider has sufficient power budget to power the controller. Otherwise it will not function properly

Network Recommendations

- SKAARHOJ controllers have a 100 mbps network interface
- Network switch must have Auto-MDI/MDIX
- Network switch must support 100 mbps
- PoE: IEEE 802.3af
- SKAARHOJ controllers only support Half Duplex mode without Auto-Negotiate

Remember a SKAARHOJ controller and client must be on the same subnet (192.168.10.* or one defined for the local network used by the controller). With multiple SKAARHOJ units connected to the same network they need to have different IP addresses!

Power over Ethernet (PoE) Specifications

We use the PoE industry standard 5W-30W PoE (+) IEEE802.3af/t. To power our controllers using PoE it is important the switch supports this standard. Please notice some manufactures such as Ubiquity have their own non-standard 24V type of PoE which is incompatible with our controllers. Especially pay attention to the standard when using a PoE injector.

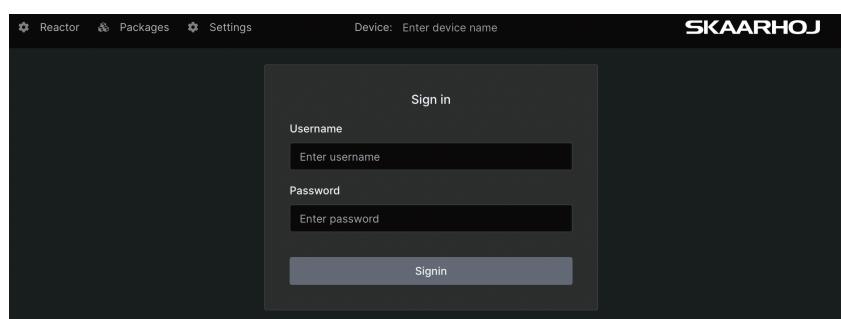
Accessing Blue Pill

DHCP or Static IP

The Blue Pill's user interface is accessed via the device's IP Address and any web browser. The IP address can be found on the display after it is plugged into a network connection with PoE or a network connection and a power supply (5V Micro USB).



Entering the IP address into the address bar of a search engine will bring up a prompt for username and password. The default is username: **admin** password: **skaarhoj**



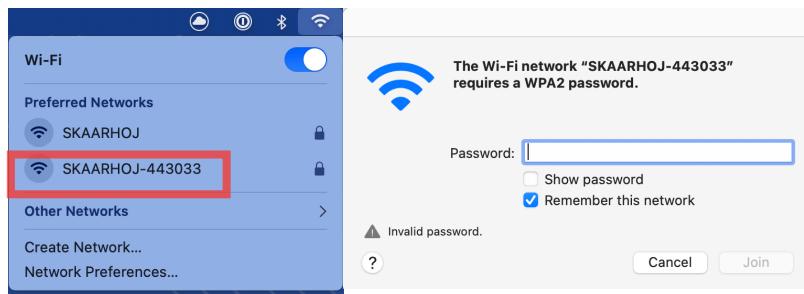
Wi-Fi Access Point

If the Blue Pill is not displaying an IP address, the web interface is accessible by enabling the internal Wi-Fi access point.

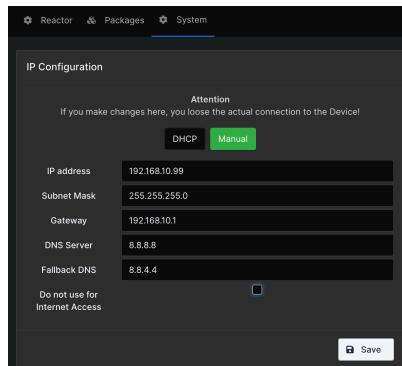
To enable the Wi-Fi access point, gently press and hold the config button on the side of the Blue Pill for about 3 seconds (Found next to the Ethernet jack. Use a flat screw driver, a paper clip or similar). When released, it will enable the internal Access Point and the LED will light up purple. It will show up in the Wi-Fi networks list as SKAARHOJ-XXXXXX (Blue Pill's serial number).

The default password is: **skaarhoj**

The web interface is then accessed at the IP address: **192.168.4.1**

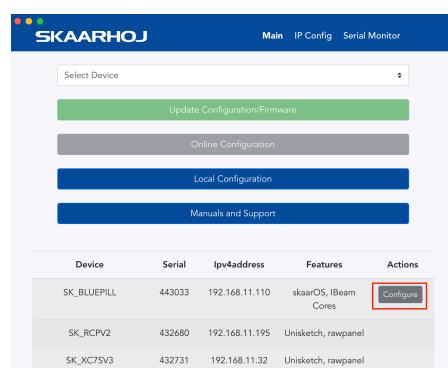


After accessing the Blue Pill it is best to navigate to the System Menu/System page to set a static IP address. Once saved, the new IP address will appear on the Blue Pill's display, it may be necessary to reboot or power cycle the device afterwards.



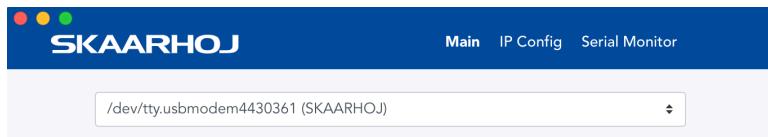
Link from SKAARHOJ Firmware Updater

If the SKAARHOJ Firmware Updater open on a computer running on the same subnet as the Blue Pill, the Blue Pill should appear below the main controller access buttons of the updater. Clicking on Configure next to the panel's information will open the web interface directly. The Blue Pill does not need to be connected to the computer via USB.



SKAARHOJ Firmware Updater and Micro USB

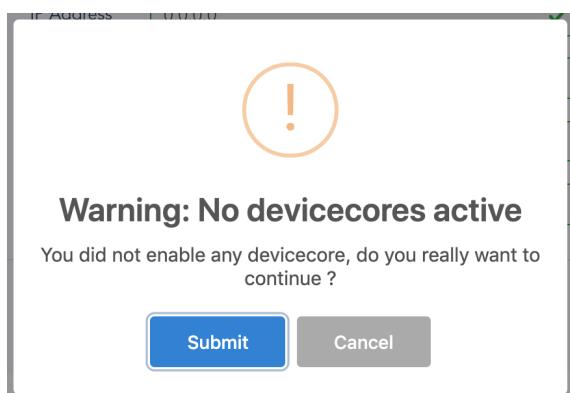
If a network connection to the Blue Pill is not available, the IP address can be set using a Micro USB cable. In this case the Blue Pill will appear in the "Select Device" dropdown and the "IP Config" tab in the Firmware Updater can be used to set the IP address (same procedure from UniSketch):



In this case it was identified as "/dev/tty.usbmodem4430361" (on MacOS) and pressing IP Config will open the IP set up page:

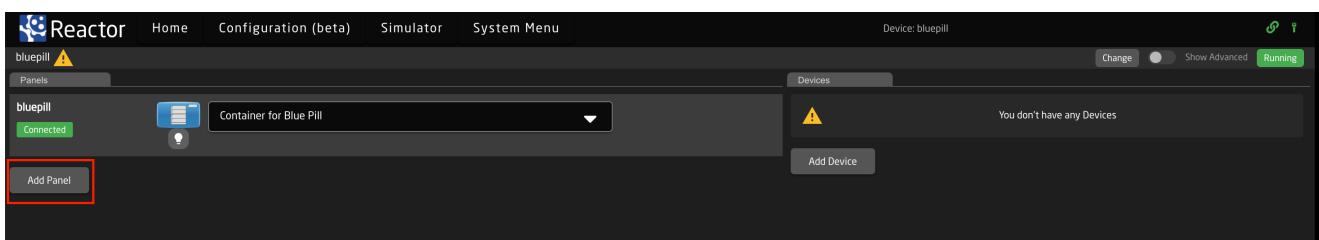


If/When the warning below appears, press "Submit" and reboot the Blue Pill:



Adding Panels

There are two ways a panel can be added, Auto Discover and Manually.



Auto Discover

Panels can easily be discovered by mDNS look ups on the same subnet the Blue Pill is on. This makes it very easy to discover and include a panel in the configuration. mDNS will usually search the current subnet, but with a correctly configured Blue Pill, panels on other subnets can easily be included too as long as the IP and port is known to the user.

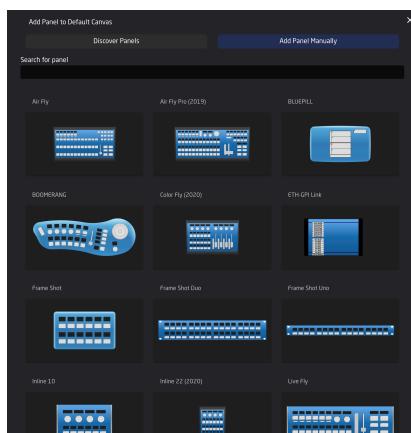
The screenshot shows a dialog box titled 'Add Panel to Default Canvas'. It has two tabs at the top: 'Discover Panels' (which is selected) and 'Add Panel Manually'. Below the tabs is a search bar labeled 'Search...'. A table lists 'Panels found on the network' with columns: Model, Serial, IP and Port, and Actions (a green 'Select' button). The table contains 11 rows of data. At the bottom of the dialog are buttons for 'Rows per page' (set to 10), a page number indicator (1-10 of 41), and navigation arrows.

Model	Serial	IP and Port	Actions
SK_BLUEPILL	443033	127.0.0.1:9923	Select
SK_FRAMESHOTDUD	434972	192.168.11.44:9923	Select
SK_RCPRO	443148	192.168.11.50:9923	Select
SK_RACKFLYTRIO	443475	192.168.11.45:9923	Select
SK_PTZPRO	440715	192.168.11.11:8000	Select
SK_MKA2	443110	192.168.11.12:9923	Select
SK_BLUEPILL	443042	192.168.11.13:8000	Select
SK_PTZFLY	443130	192.168.11.18:9923	Select
SK_PTZEXTREMEV2	440614	192.168.11.10:8000	Select
SK_RACKFUSION2	434971	192.168.11.16:9923	Select

Pressing SHIFT + the green Select button will allow for multiple panel selection.

Manually Added

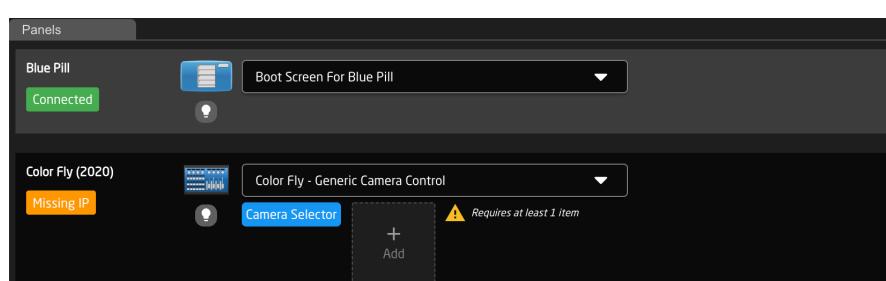
Panels can be picked from SKAARHOJs included library of products. Following a manual choice of panel, the user will have to enter the IP address himself including any constraints desired. See the Panel Details section for set up.



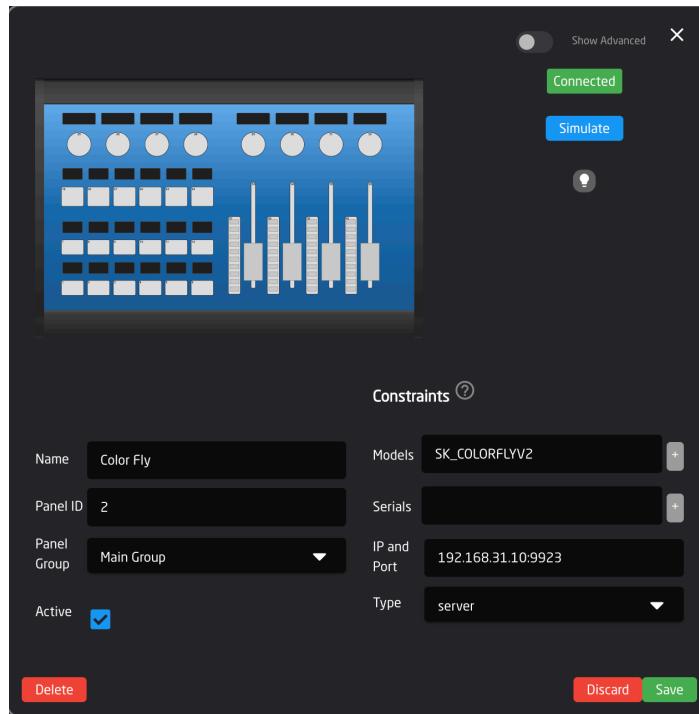
Panel Details

Panels have their status displayed clearly in the overviews on the Home screen.

There is a button for panel identification which can be used to light up the panel temporarily. This is very useful with large collections of panels.



Clicking on a panel name in the Panels section will open up the details. Here the name, ID number, and Active status of the panel can be changed. By default the controller name will be the same as the model name, the ID will be auto generated in order, and the status will be active. A controller's status needs to be active for use.



Constraints are requirements regarding the panel. Here it is determined which specific controller is connected, based on model and IP/Port.

By default our controllers connect using port 9923. It is important to include the port number, separated from the IP address by a colon (:), for example 192.168.50.236:9923

Confirm Connection

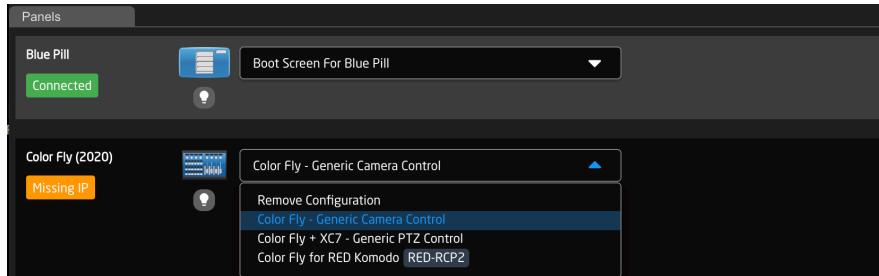
A panel that has established a connection with a blue pill will no longer display "Waiting for Blue Pill" or "Waiting for Raw Panel".



Select Mapping

The controller's layout is determined by the Mapping. For the RED Color Fly integration, the Generic mapping is all that is needed, though for some combinations of panel and device, there are specific mappings.

The mapping is chosen in the drop down next to the panel. Please note, the Color Fly for RED Komodo configuration is a more advanced dual camera mode configuration not described in this guide. This guide only covers the mapping done using the Generic configuration.



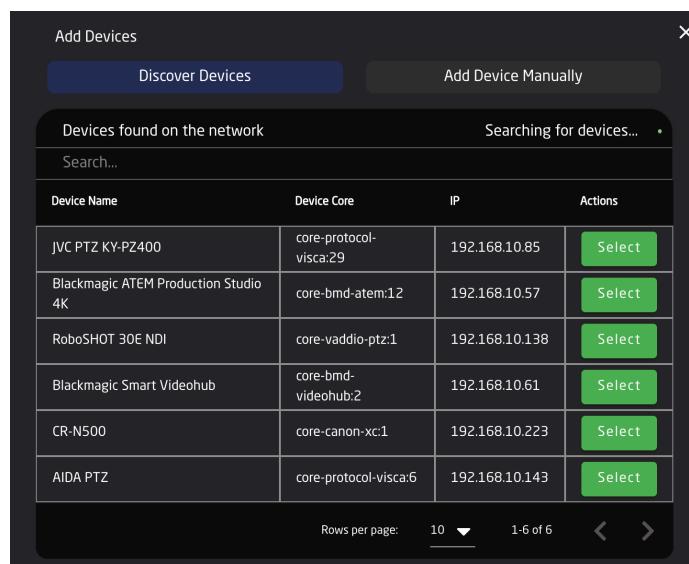
Adding Devices

There are two main ways a device can be added to a new Blue Pill, Auto Discover and Manually.



Auto Discover

Searching on the network for devices will find many types by a combination of mDNS look-ups and other methods. However, not all devices can be discovered easily, but with those that can, it's a simple click of a button to add it to the Blue Pill device collection. Following an Auto Discover some device details may still be needed to establish connectivity. See Device Details section for set up.



Pressing SHIFT + the green Select button will allow for multiple device selection

Manually Added

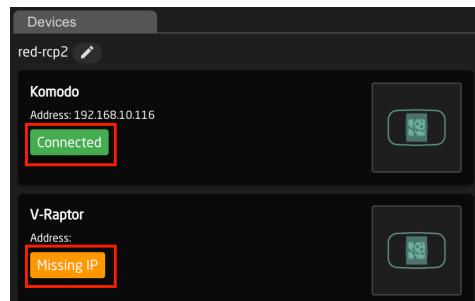
If a device must be added manually, it's easy to look it up in the list of supported models. Following a manual choice of device, the user will have to enter the IP address and other possible device detail information. See the Device Details section for set up.

Add Devices			
Discover Devices			
Add Device Manually			
Manual add devices			
Device Name	Device Core	Description	Actions
Generic Model	api-kumo	default model of the implementation	Select
KUMO 1608	api-kumo	Aja KUMO 16 Input, 8 output router	Select
KUMO 1616	api-kumo	Aja KUMO 16 Input, 16 output router	Select
KUMO 3232	api-kumo	Aja KUMO 32 Input, 32 output router	Select
KUMO 6464	api-kumo	Aja KUMO 64 Input, 64 output router	Select
Generic Model	ari-camera	default model of the implementation	Select
Ari Arria	ari-camera	Ari Arria camera	Select
Alexa Mini	ari-camera	Ari Alexa Mini camera	Select
ATEM 1M/E Production Studio 4K	bmd-stem	ATEM 1M/E Production Studio 4K	Select
ATEM Television Studio HD	bmd-stem	ATEM Television Studio HD	Select
ATEM Television Studio Pro HD	bmd-stem	ATEM Television Studio Pro HD	Select
ATEM Production Studio	bmd-stem	ATEM Production Studio	Select
ATEM Mini Pro	bmd-stem	ATEM Mini Pro	Select
ATEM Television Studio (1. edition)	bmd-stem	ATEM Television Studio (1. edition)	Select
ATEM Constellation 4K	bmd-stem	ATEM Constellation 4K	Select
ATEM 2M/E Production Studio 4K	bmd-stem	ATEM 2M/E Production Studio 4K	Select
Generic Model	bnd-stem	default model of the implementation	Select
ATEM Mini Pro 16	bnd-stem	ATEM Mini Pro 16	Select
ATEM Television Studio Pro 4K	bnd-stem	ATEM Television Studio Pro 4K	Select

Pressing SHIFT + the green Add Device button will allow for multiple device selection.

Device Details

Devices have their status displayed clearly in the overviews on the Home screen.



Clicking on a device name in the Devices section will open up the details. Here the name, ID number, and Active status of the devices can be changed. By default the controller name will be the same as the model name, the ID will be auto generated in order, and the status will be active. A controller's status needs to be active for use. When applicable to the device, the option for connecting is a specific Username and Password will also be available. Without setting a specific username and password, in most cases the core will try to connect to the device's default username and password.

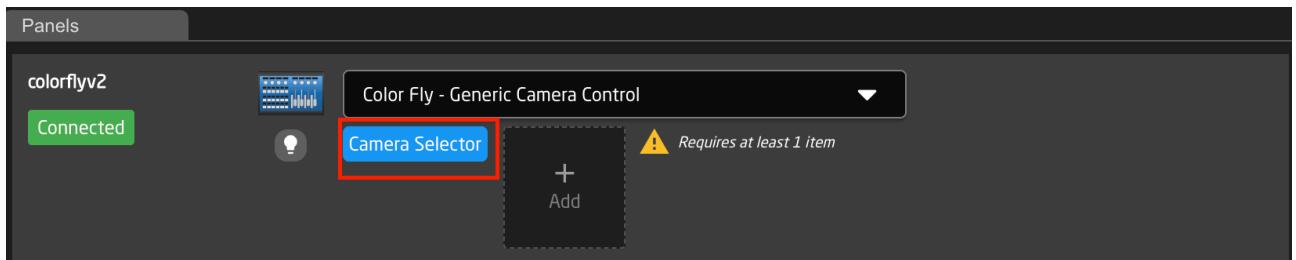
A screenshot of the 'Komodo' device details dialog. The dialog shows the following fields:

- Active: A checked checkbox.
- Name: Komodo.
- DeviceID: 1.
- ModelID: Komodo (a dropdown menu).
- Description: An empty input field.
- IP: 192.168.10.116.
- Port: 9998.

At the bottom of the dialog are 'Delete' and 'Save' buttons. To the left of the dialog, there is a preview window showing a thumbnail of the Komodo device and a green 'Connected' status indicator.

Populate Constant Sets

The final step is to fill in any constant sets. The constant sets are available based on the chosen configuration and should contain entries such as specific cameras for a controller, or the inputs for a video switcher etc. They are most common when working with PTZ cameras and routing panels, though may be available for additional device configurations.



The setup tables will auto save and quickly appear on displays and enable the function.

An example of a setup table would be a camera selector and can be seen below. These can be different depending on the selected configuration. From here the order on the camera selector row of the panel will be set as well as the desired name on the displays.

Camera Selector								
Description: This sets up the cameras using Standard Class configurations.								
Order	Mute	Binding	Device Number:	Camera Name:	Device Config:	Iris Channel Config:	Tally Index Number:	Route Index:
1	Generic Model	Generic Model	1	Generic Model	RED RCP2 - Standard Class	RED RCP2 Iris controls	EMPTY	EMPTY
2	V-Raptor	V-Raptor	2	V-Raptor	RED RCP2 - Standard Class	RED RCP2 Iris controls	EMPTY	EMPTY
3	Komodo	Komodo	3	Komodo	RED RCP2 - Standard Class	RED RCP2 Iris controls	EMPTY	EMPTY

Column	Description
Order	Allows for quick rearranging of camera order. Right clicking on drag will allow for deleting the row.
Mute	Allows for removing access to a specific camera or to leave a blank spot on the panel
Binding	Allows for the selecting of a specific connected camera
Device Number	Ties the camera selector to the specific device. This is found in the Devices section. Each device will have a unique device number per device core. This box should auto-populate when a camera is selected in binding
Camera Name	Customizable name to appear on the displays. Character limit is determined by size of display and can vary.
Device Configuration	Selects the protocol based configuration associated with camera. Needed protocol can be seen in the Devices section, each device is grouped into their native protocols. Double check the correct configuration is selected. Improper selection will effect camera control.
Iris Channel Config	Selects the needed protocol for Iris/Master Black control. For cameras without a variable lens this will follow the same protocol as the device. For cameras with a variable lens, select the protocol for the attached lens.
Tally Index	Tally Index number sets the input number to be reflected on the buttons. This is associated with the Tally Forwarding constant set, see https://wiki.skaarhoj.com/ for more information. This column does not need to be filled out for standard operation.
Route Index	Route Index number sets the input number to be reflected in the desired simultaneous route. This is associated with the Routing Trigger constant set, see https://wiki.skaarhoj.com/ for more information. This column does not need to be filled out for standard operation.
Color	Allows for the setting of a specific color to the camera select button.

Connecting UniSketch Controllers

The Blue Pill works as a wonderful add-on to connect and control UniSketch controllers like never before. There are three ways to set a UniSketch controller to allow for connection to the Blue Pill. Two of the methods will involve using the SKAARHOJ Firmware Updater available [here](https://www.skaarhoj.com/support/firmware-updater): (<https://www.skaarhoj.com/support/firmware-updater>). The controller will need to be connected to the computer by USB cable. After the controller is set to Blue Pill Mode, it will no longer need USB connection for programming. This will be done through the Blue Pill web interface.

Blue Pill Mode - Via Serial monitor

Starting with UniSketch v2.5.14, it is possible to put the panel into Blue Pill Mode with a command in the serial monitor. Using this method the controller will be assigned an IP address only via DHCP.

To enter Blue Pill mode, type in: **TakeTheBluePill** in the serial monitor. The mode will be confirmed:

```
|.Blue Pill Mode enabled! (Raw Panel Server Mode), resetting..
```

The IP address of the controller will now be confirmed in the boot up information for the controller:

```
*****
SKAARHOJ Controller Booting
*****
SK VERSION: v2.5.14
SK MODEL: SK-AEROMILYUNO
SK SERIAL: 433769
PERFORM Size: 8192
Blue Pill DIRECT MODE enabled
I2C 400 kHz mode activated
Init LEDs and buttons
Presets 1 loaded
MAC address: 02:41:43:00:71:4A
Requesting DHCP address... OK
IP address: 192.168.11.222
Subnet mask: 255.255.254.0
Gateway: 192.168.10.1
DNS: 192.168.10.1
mDNS Service started, announced for port 80
Boots Count: 191
Uptime: 250 hours, 12 minutes
Sleep Saver: 99 hours, 41 minutes
Usage Stats Flags: 01
*****
Blue Pill DIRECT MODE enabled (DHCP + Raw Panel Server Mode on port 9923)
*****
DeviceCores #1: UniSketch TCP Client0, IP = 0.0.0.0:9923
True Encoder Button Action:
UNISKETCHTCPCLIENT: Server Mode = ON
Compiled: Dec 1 2021 09:14:53
setup() Done
-----
59
.UNISKETCHTCPCLIENT: Reset sleep timer last trigger
```

The IP address will also be displayed on the panel along with "Waiting for Blue Pill"



An advantage of Blue Pill Mode is, that it will not destroy any existing configuration on the panel and can easily be exited from again by writing "**reset**" or pressing the reset button in the serial monitor. Blue Pill Mode is meant as a quick way to get in and out of Blue Pill Mode when using UniSketch panels in both ways regularly.

Blue Pill Mode - Via Special Key

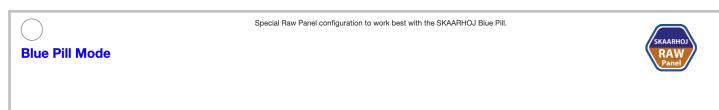
Blue Pill Mode can be enabled and disabled without the serial monitor on most UniSketch panels running firmware version 2.5.14 and above.

- *Enter Blue Pill Mode:* During power-up, when the color animation first appears across the buttons, press the button in the lower left corner of the controller twice. When the color animation completes, it should sweep across the controller with just blue color - and it will reboot Blue Pill Mode
- *Exit Blue Pill Mode:* Same procedure as above. When Blue Pill Mode is exited, the color sweep to confirm it will be white instead of blue.

The IP address will also be displayed on the panel along with "Waiting for Blue Pill" the same as when using the serial monitor to enter Blue Pill Mode.

Fixed Configuration

If a static IP is needed it is possible to do so by selecting the default configuration called Blue Pill Mode and loading it onto the controller. This uses our SKAARHOJ Raw Panel integration with the needed device core options already selected. We recommend this type of configuration for any static or long term installation.



Once it has been selected the IP address can be set either in the Network Configurations section in the Simple Configuration page before the firmware is loaded onto the controller via the Update Configuration/Firmware button on the updater.

A screenshot of the UniSketch Simple Configuration page under the "Network configuration" section. It shows a "DHCP" radio button and a "Static" radio button (which is selected). Below are input fields for IP (192.168.10.99), Subnet Mask (255.255.255.0), Gateway (192.168.10.1), and DNS (192.168.10.1). Under the "Devices" section, there is a table with one row for "UniSketch Raw Panel" with IP 192.168.10.250. A green "Save Network Configuration" button is at the bottom.

Or it can be set in the IP Config tab of the SKAARHOJ Firmware Updater.

A screenshot of the SKAARHOJ Firmware Updater interface, specifically the "IP Config" tab. It shows the "IP Configuration" section with "Use DHCP" unchecked and "Enable" checked. The IP Address is set to 192.168.10.99, Subnet Mask to 255.255.255.0, Gateway to 192.168.10.1, and DNS Server to 192.168.10.1. Below this is the "Device Cores" section, which lists "UniSketch Raw Panel" with IP 192.168.10.250 and an "Enable" checkbox checked. At the bottom are "Cancel" and "Save Settings" buttons.

Please note, in both methods, the IP address for the UniSketch Raw Panel device core does not need to be set to a specific IP as it has been set to Server Mode and is being connected to and not connecting to anything. Having it Enabled is enough.

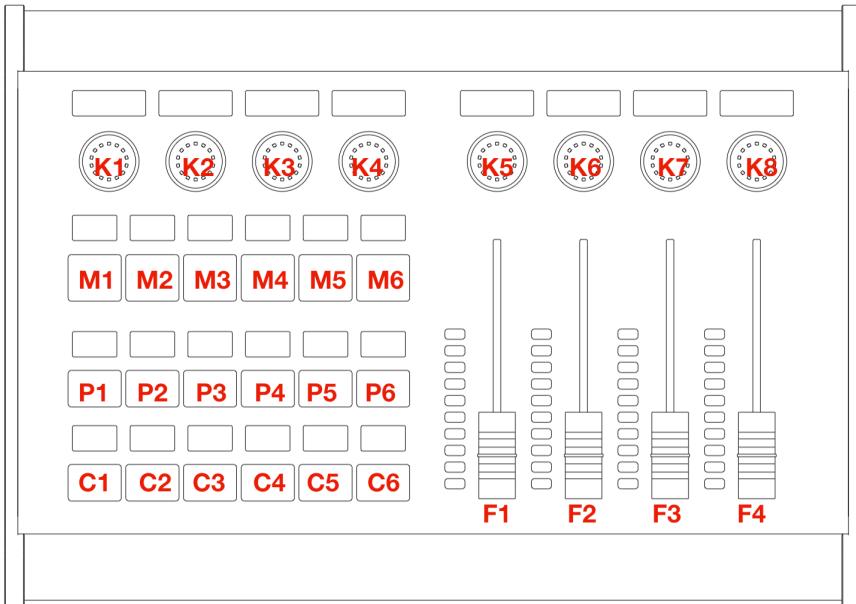
The IP address will also be displayed on the panel along with "Waiting for Raw Panel"



Controller Use

Color Fly v2

Overall the controller have eight menus. To change between the menus press M1-M6. The camera select row is dynamic to the number of cameras connected



M1-M6

	Page 1	Page 2	ENG Menu
M1	Home	Slope	Sleep
M2	Exposure	Audio	Reset Sleep
M3	Exposure 2	System	-
M4	Lift	-	-
M5	Power	-	-
M6	Menu Page	Menu Page	Expert Mode

P1-P6

P1-5	Paint Presets
P6	Presets Page

C1-C6

C1	Panel Lock
C2-5	Camera Select
C6	Camera Page/ long press opens ENG Menu

F1-F4

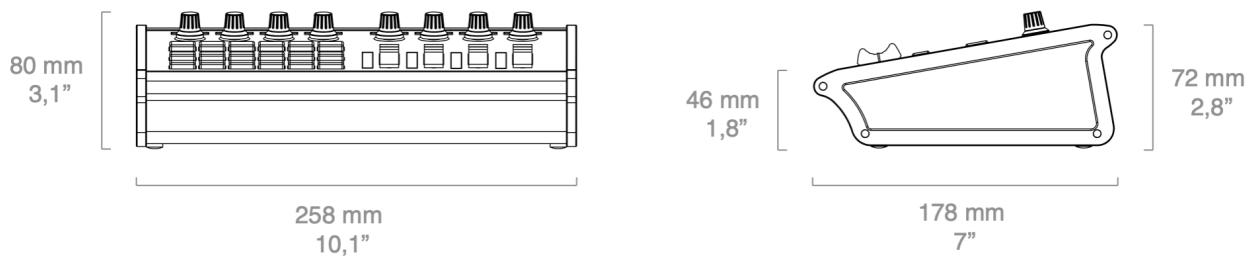
F1	Iris for C1
F2	Iris for C2
F3	Iris for C3
F4	Iris for C4

K1-K5

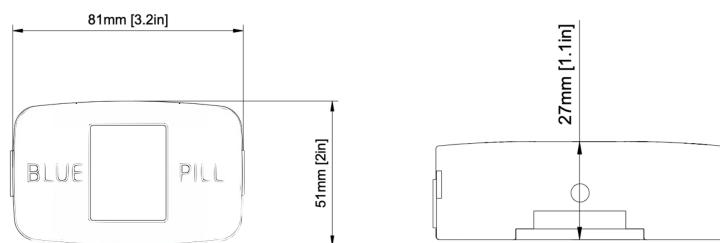
	Home	Exposure	Exposure 2	Lift	Power	Slope	Audio	System	ENG Menu
K1	Exposure Adjust	Exposure Adjust	Display Preset	Offset Red	Power Red	Slope Red	Audio Source	Calibration	Sleep Time
K2	Shutter	Shutter Speed (press=mode toggle)	Highlight Roll- off	Offset Green	Power Green	Slope Green	Link L/R Gain	Auto WB	Dim Tim
K3	Focus	Iris	Output Tone Map	Offset Blue	Power Blue	Slope Blue	Audio Gain Left	Record	Display Brightness
K4	Color Temperature (press=mode toggle)	Iso	Enable COL	Color Temperature (press=mode toggle)	Color Saturation	Tint	Audio Gain Right	Focus	LED Brightness
K5	-	-	-	-	-	-	-	-	-
K6	-	-	-	-	-	-	-	-	-
K7	-	-	-	-	-	-	-	-	-
K8	-	-	-	-	-	-	-	-	-

Dimensions

Color Fly v2



Blue Pill



Troubleshooting

Home Screen disappeared from web interface	-Check that Reactor is running in the Packages section. If it is not, restart it.
Can't find IP address	-Connect the controller to the computer via USB and use the Skaarhoj Firmware Updater to identify the IP address or set a static IP address. https://www.skaarhoj.com/support/firmware-updater
Controller not connected	-Check the IP address is correct -For Blue Pill Inside units the IP should be: host and the type should be: server
Cameras not connected	-Check their IP addresses are correct -Check the username and password are correct
Other Questions	Check out the full Blue Pill/Reactor manual available at www.skaarhoj.com/support

Contact Support

You are always welcome to contact us for support questions - write an email to support@skaarhoj.com and we will do our best to accommodate your request.

In order for us to provide the best support please state:

- Which SKAARHOJ unit it is about
- The serial number of your device (small silver label with 6 digits)
- The nature of the problem
- Which hardware device(s) you are controlling and their firmware version
- If you have successfully installed the Firmware Updater Application and made contact with your device though the Serial Monitor (you need the USB programming cable)
- Your operating system



Additional Resources

For additional information, tips, and tricks please visit our YouTube page at:

www.youtube.com/SKAARHOJ

For additional manuals, please visit our website or wiki:

<https://www.skaarhoj.com/support/manuals>

<https://wiki.skaarhoj.com/>

For additional manuals, check out our GitHub repository:

<https://github.com/SKAARHOJ/Support/tree/master/Manuals/Blue%20Pill>