

USER MANUAL

ENGLISH

FALCØNER



AYRTON
Digital Lighting



2 Rue de Vitruve,
91140 Villebon-sur-Yvette,
France

CONTENTS

1. SAFETY INSTRUCTIONS 3

2. FEATURES 3

3. FIXTURE OVERVIEW 4

4. DRAWINGS 4

5. CLEANING AND MAINTENANCE 5

6. INSTALLATION & NETWORK SETUP 5

7. SOFTWARE OVERVIEW & MAIN MENU 6

8. SYSTEM MENU 7

9. FIXTURES MENU & CONTROL-FIXTURE PATCHING 8

10. CAMERA 8

11. PRESETS MENU 9

12. SETTINGS MENU 9

13. CALIBRATION 10

14. ADVANCED MENU..... 11

15. CONSOLE INTEGRATION & CONTROL MODE 11

16. SYSTEM CONFIGURATION 12

17. SOFTWARE UPDATE 12

18. TROUBLESHOOTING..... 12

Keep this manual for future needs.

Errors and omissions for all information given in this user manual are possible.
All information is subject to change without prior notice.



Falconer is a remote followspot control system from Ayrton. It combines a broadcast-style fluid head with a camera-based workflow, giving operators direct, responsive control of moving lights from a dedicated base station, with the natural feel of a traditional followspot. Falconer can run a single fixture as a standalone followspot, or scale up to a multi-fixture system in which several lights track the same performer in perfect synchronisation. It works with Ayrton fixtures and with fixtures from other manufacturers, provided the camera device is an Ayrton fixture with an integrated camera or the Ayrton Horus camera.

Falconer is built for collaboration between followspot operators and lighting designers. Designers and programmers can step in at any time, taking over control of a fixture or handing selected parameters back to the operator, while operators keep the freedom to follow the action on stage. This flexible handover makes it easier to create ambitious, precise lighting in complex, large-scale productions.

Behind its advanced technology, Falconer has been designed above all to be intuitive. From unpacking to everyday operation, every step is made to get you up and running quickly, so you can concentrate on capturing every moment on stage.

1. SAFETY INSTRUCTIONS

1.1 > IMPORTANT SAFETY WARNINGS

This device has left the factory in perfect condition. In order to maintain this condition and to ensure safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.

In order to install, operate and maintain Falconer safely and correctly we suggest that the installation and operation be carried out by qualified technicians and these instructions be carefully followed.

CAUTION

	High voltage. Risk of severe or fatal electric shock.
	Always disconnect mains supply before removing any covers.
	Keep this device away from rain and moisture.
	Not suitable for household use.
	Not for residential use.
	Dry locations only

Damage caused by the disregard of this user manual is not subject to warranty. The dealer and manufacturer will not accept liability for any resulting defects or problems.

- If the device has been exposed to temperature changes due to environmental conditions, do not power on immediately. The resulting condensation could damage the device. Leave the device powered off until it has reached room temperature.

- This device falls under protection-class I. Therefore, it is essential that the device be earthed.
- Electrical connections, such as replacing the power plug, must be performed by a qualified person.
- Make sure that the available voltage is not higher than that which is stated in this manual.
- Make sure the power cord is never crushed or damaged by sharp edges. If this should be the case, replacement of the cable must be done by an authorized dealer.
- If the external flexible power cord of this device is damaged, it shall be exclusively replaced by the manufacturer or their service agent or a similar qualified person in order to avoid injury.
- When the device is not in use or before performing maintenance, always disconnect the device from the mains. Only handle the power cord from the plug. Never pull the plug out of a socket by tugging the power cord.
- When powered on for the first time, some smoke or smell may occur. This is caused by coating on metal parts when heated and is normal. If you are concerned, please contact your distributor.

CAUTION

Please be aware that damage caused by any modifications to the device are not subject to warranty. Keep away from children and non-professionals.

1.2 > GENERAL GUIDELINES

- Don't use device in extreme and/or severe environments.
- Don't expose any part of this device to open flame or smoke. Keep device away from heat sources.
- Handle the device with care avoid shaking or using force when installing or maintaining the device.
- Don't operate device if power cord is frayed crimped damaged and/or if any of the powercord connectors are damaged and do not insert into the device securely with ease. Never force a power cord connector into device. If the power cord or any of its connectors are damaged replace it immediately with a new one of similar power rating.
- Device should be operated by qualified and trained persons ONLY. Read user manual carefully to ensure normal operation and lifespan of the device.
- Please use the original packaging if the device is to be transported
- The applicable temperature for the device is between 0°C to 45°C. Do not use the device outside of this temperature range.

CAUTION

For safety reasons, please be aware that all modifications to the device are forbidden. If this device is operated in any way different to the ones described in this manual, the product may suffer damage and the warranty becomes void. Furthermore, any other operation may lead to short-circuits, burns, electric shocks, etc...

2. FEATURES

POWER SUPPLY

- AC100-240 V~, 50/60 Hz
- Auto-ranging electronic switch mode
- Maximum power consumption: 100 W
- Typical power consumption: 50 W

HARDWARE FEATURES

- 18.5" Full HD Touch Screen Display
- IP20 powerCON TRUE1 in and out
- IP20 XLR 5 pin connectors
- IP20 RJ45 connectors

CONTROL

- Fluid-head encoder with adjustable drag and detachable arms for pan and tilt
- Left & right handles: 1 motorised fader, 8 RGB-backlit preset buttons, 1 clickable encoder, 2 multifunctional buttons

- 18.5" touchscreen monitor, freely adjustable; removable sunshade included
- 2 × 10 mm (M10) mounting points
- USB-C charging port, 65 W, charge-only

CAMERA & VIDEO INPUT

- NDI Standard
- Resolution up to 3840 x 2160
- Frame rate up to 60 fps
- Latency of around 40 ms (one frame at 25 fps)
- Supported cameras:
 - 029410: Horus - Ayrton camera fixture
 - 042845: Enclosure with camera assembly to be mounted on primary fixture

FIXTURE CONTROL & POSITION PROCESSING

- Autonomous, or combined with a lighting console
- GDTF import for fixture data
- Unlimited patch, with up to 36 active fixtures recommended
- 4-point 3D calibration, manual or console-assisted

NETWORKING & CONNECTIONS

- AC power input: AC 100–240 V~, 50/60 Hz, IP20
- User interface monitor: HDMI, 12 V
- USB touchscreen out: USB-A
- Software update / show files: USB-A
- Left / Right handle interface: 5-pin XLR connector (DC 12V, handle devices only)
- NDI video (camera) in: 1× etherCON socket (100/1000 Mbit)
- Control network (sACN / PSN): 1× etherCON socket (100/1000 Mbit)

HOUSING

- IP20 protection rating

INSTALLATION

- Supplied tripod, or any standard camera support with a 100 mm half-ball receptacle

OPERATING PARAMETERS

- Maximum permitted: 45°C (113°F)
- Minimum permitted: 0°C (32°F)

COMPLIANCE

- CE, UKCA, ETL
- EMC Standard: EMC 2014/30/EU
- LVD Standard: LVD 2014/35/EU
- US (Safety & EMC): UL 1573; FCC Part 15, Subpart B: 2024
- Substance Regulations: RoHS, REACH, CP65

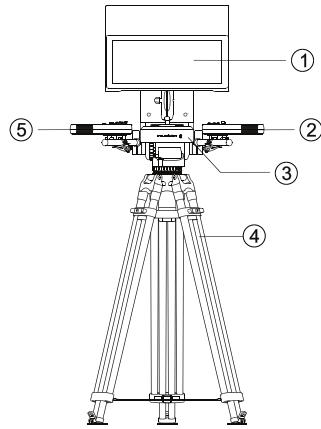
WEIGHT

- Product: 21.8 kg

SIZE

- Product: 740 x 1465 x 598 mm (l x h x d)
- Foam: 1150 x 365 x 555 mm (l x h x d)

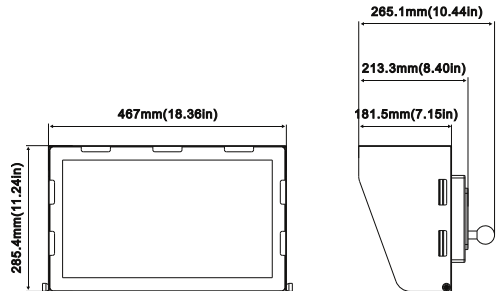
3. FIXTURE OVERVIEW



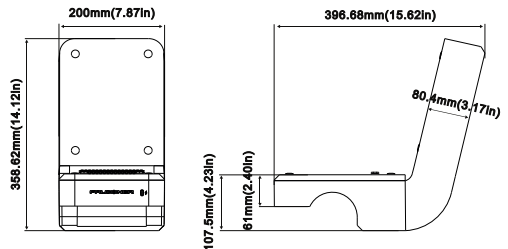
- | | |
|-------------------------|----------------|
| 1. Touch Screen Display | 4. Tripod |
| 2. Right Handle | 5. Left Handle |
| 3. Fluid Head | |

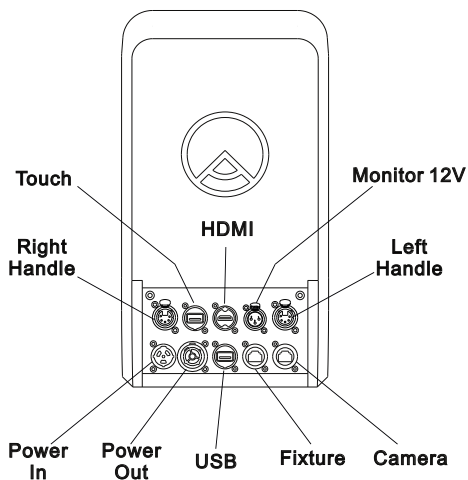
4. DRAWINGS

4.1 > TOUCH SCREEN DISPLAY DIMENSION



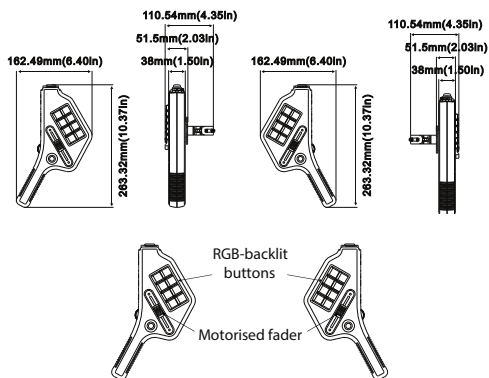
4.2 > FALCONER DIMENSION





Note: The 5 pin clamping connectors on the base, namely the Right Handle and Left Handle, provide a DC 12V power supply. These connectors are intended solely for connecting handle devices and must not be used to connect other equipment such as lighting fixtures.

4.3 > RIGHT/LEFT HANDLE DIMENSION



- **RGB-backlit buttons:** custom presets
- **Motorised fader:** mappable fixture functions

5. CLEANING AND MAINTENANCE

The following points have to be considered during inspection:

- All screws for installing the devices or parts of the device have to be tightly connected and must not be corroded.
- There must not be any deformations to the housing.
- Motorised parts must not show any signs of wear and must move smoothly without issue.
- The power supply cables must not show any damage, material fatigue or sediment.

Further instructions depending on the installation location and usage have to be adhered to by a qualified installer and any safety concerns have to be removed.

We recommend frequent cleaning of the device. Please use a moist, lint-free cloth. Never use alcohol or solvents.

Should you need any spare parts, please order genuine parts from your local dealer.

6. INSTALLATION & NETWORK SETUP

A Falconer system requires two separate networks, which must be kept physically or logically separate (e.g. on different VLANs):

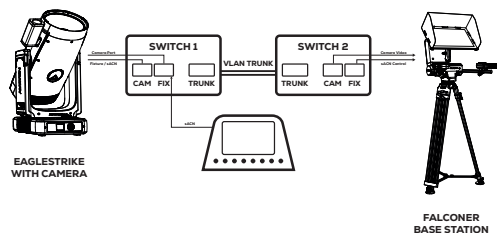
- **Control network:** carries Streaming ACN (sACN) control data between the base station and fixtures/console.
- **Camera network:** carries the NDI video feed from the camera(s) to the base station.

Both networks can run over a single trunk cable via a network switch if long cable runs make two separate lines impractical, keeping them on different VLANs preserves the separation.

CAUTION

The primary fixture (Ayrton unit with mounted camera or the Horus Camera) must always be connected via Network – this is the only hard networking requirement, since the camera feed and control data both depend on it.

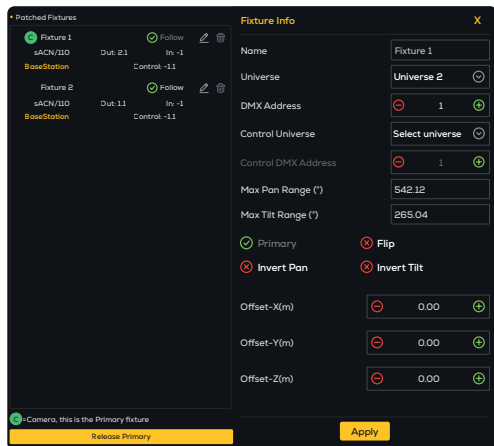
Secondary fixtures (those without a camera, following the primary fixture's target) may be linked via DMX through a node, or via the primary fixture's own DMX/network output.



6.1 LICENSE

A handshake must operate between the base station and the primary fixture. If no viable unit is set as the Primary fixture, the system will not be usable.

- To assign another unit as the Primary fixture, press **Release Primary** at the bottom of the Fixtures Tab.
- The current camera fixture will be removed as the **Primary Fixture**, and the system will search for other viable fixtures (EagleStrike or Horus).
- A new fixture can then be selected as the new Primary fixture. To do so, in the **Fixture Info** tab, tick the **Primary** checkbox, then press **Apply**. This fixture is now the active Primary fixture.



6.2 › MINIMUM ONE-TO-ONE SETUP

- One Falconer base station
- One primary fixture with a camera (an EagleStrike with a mounted camera, or a Horus camera with a calibrated fixture).
- Two network connections: control (sACN) and camera (NDI).

CAUTION

When using the Horus unit as the primary camera fixture, the following points should be respected for an accurate calibration and usage:

- In the **Settings Menu**, tick the **Reset and lock crosshair to center**.
- Zoom Out** should be at its maximum. If zoomed in, the center could shift slightly and might affect the calibration.

6.3 › ADDING A CONSOLE

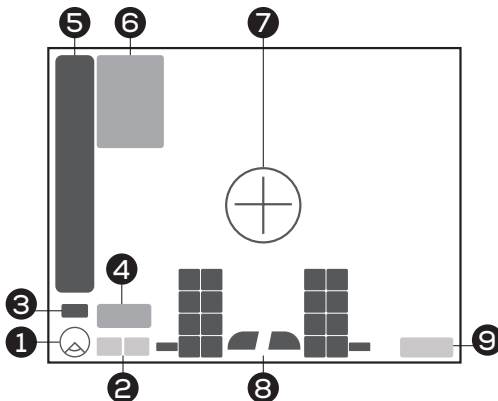
A lighting console can be included in any configuration. Patch the same fixture in the console as in Falconer, and additionally patch a dedicated control fixture in the console for each physical fixture. See Section 9 for control-fixture patching and Section 15 for console integration.

6.4 › RECOMMENDED NETWORK PRACTICES

- Use one dedicated sACN universe per primary (camera) fixture when running multiple Falconer systems, to avoid data-merging conflicts. If universes must be shared, unicast addressing to the correct fixture IP is required, which adds setup complexity.
- For the control (in/out) universe, using the same universe for In and Out is recommended: if the base station becomes disconnected, the fixture automatically reverts to console data on that universe.
- Keep the control network and the camera network on separate IP ranges/VLANs. This also allows the NDI feed to be shared into a separate multi-viewer tool if required.

7. SOFTWARE OVERVIEW & MAIN MENU

Falconer runs on Linux with custom Ayrton software and a fast boot time. The touchscreen shows a live crosshair display of where the fixture is pointing (x/y/z position) alongside dimmer and other live parameter data, and a main menu on the left.



1	Ayrton Logo	Press to display or hide the Main Menu.
	Camera Full Zoom Out	Returns the camera to its minimum zoom for the widest possible view
2	Camera Zoom Restore	Returns the camera to the zoom value that was active immediately before Camera Full Zoom out was selected).
3	Live Z offset values	Live Z offset values –shows the current Z-Height (height for all fixtures) and Z-Offset (offset for individual fixtures) values from the Pan/Tilt menu.
4	Group/ Fixture selection	The CtrlGrp dropdown and fixture list choose which group of fixtures the handles and shortcut buttons currently act on (see Section 9, Groups)
5	Main Menu	Refer to 7.1
6	P/T Menu	Refer to 7.2
7	Fixture info and Crosshair	The live crosshair readout (x/y/z position, Dimmer, Focus, Iris, Zoom). Long-press on the crosshair to move it around and pinch out with two fingers directly on it to enlarge the crosshair for easier viewing.
8	Preset buttons & Active function on faders	Labels mirroring the physical handle buttons, showing immediately which function or preset is currently assigned to each button and fader.
9	Current Show File, date and time.	

7.1 › MAIN MENU

When Falconer is first powered on, the screen may initially appear blank. Tap the Ayrton logo in the bottom-left corner of the screen to display or hide the main menu.

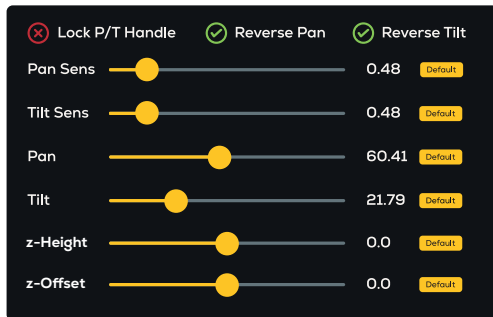
The main menu is a column of seven icons on the left-hand side of the screen:

	System	Shows, network, universes, camera selection, software updates.
	Fixture	Patch and manage fixtures, create and update groups.
	Camera	Settings for the active camera
	Preset	Create and assign beam or colours presets
	Settings	UI behaviour, encoder/fader mapping, screen lock and PIN
	Calibration	3D calibration of fixture position for tracking
	Advanced	PosiStageNet (PSN) input/output configuration

Tap an icon to open the corresponding window. The seven menus are arranged in the order they are normally used when setting up a show, so working from **System** then downwards is a reliable workflow: create/load a show, configure network and camera, patch fixtures, then move on to camera settings, presets, calibration and advanced settings as needed.

7.2 > THE PAN/TILT MENU

At the top-left of the screen is the **Pan/Tilt menu**, which stays available regardless of which of the seven main menus is open (unless hidden via **Settings > Show Pan/Tilt Menu**):



☒ Lock P/T Handle ☒ Reverse Pan ☒ Reverse Tilt

Pan Sens: 0.48 Default

Tilt Sens: 0.48 Default

Pan: 60.41 Default

Tilt: 21.79 Default

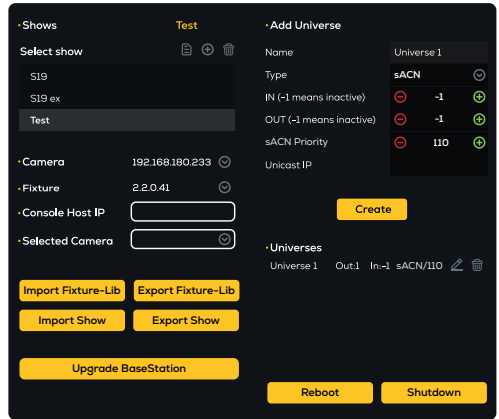
z-Height: 0.0 Default

z-Offset: 0.0 Default

- **Lock P/T Handle:** temporarily disables fixture pan/tilt control so the operator can reposition the physical handles (e.g. raising or lowering them) without moving the fixture. Untick to resume control.
- **Reverse Pan / Reverse Tilt:** independently invert the direction of pan or tilt movement.
- **Pan Sens / Tilt Sens:** movement sensitivity for pan and tilt.
- **Pan / Tilt:** current position value.
- **Z-Height:** a user-definable Z-Height (on the z-axis) lets the spot target head height or scenery rather than the floor, and can be mapped to a fader.
- **Z-Offset:** per fixture offset that gets applied to Z-Height (± 2.5 metres), can be controlled from the console
- **Default:** restores a control to its default value.

8. SYSTEM MENU

The **System** menu is the first step when setting up a show.



Shows Test ⓘ ⊕ ⊖

Select show: S19, S19 ex, Test

Add Universe

Name: Universe 1
 Type: sACN
 IN (-1 means inactive): -1
 OUT (-1 means inactive): -1
 sACN Priority: 110
 Unicast IP:

Camera: 192.168.180.233
Fixture: 2.2.0.41
Console Host IP:
Selected Camera:

Import Fixture-Lib Export Fixture-Lib
 Import Show Export Show
 Upgrade Base Station
 Reboot Shutdown

Universes
 Universe 1 Out:1 In:-1 sACN/110 ⓘ ⊕ ⊖

8.1 > SHOWS

- Create a new show, load an existing show, or delete a show using the icons above the show list.
- The currently loaded show is displayed in yellow next to **Shows**.
- Calibration data is stored inside the show file, so switching between physical stages or venues is a matter of loading a different show file.
- Autosave is enabled by default in the settings when a menu is closed.

8.2 > NETWORK & CAMERA BINDING

- **Camera & Fixture IP**: define the IP settings for the network adaptors of the base station.
- **Console Host IP**: leave empty to accept data from any console; set an address to restrict input to one console.
- **Selected Camera**: choose the active camera model/feed (e.g. "NDI-HX"). The streaming name of the camera should be unique.

8.3 > UNIVERSES

Add **Universe** fields: **Name**, **In** & **Out**, **sACN Priority**, and **Unicast IP** (leave empty for broadcast). Press **Create** to add it to the Universes list below, which shows each universe's In/Out numbers and protocol.

8.4 > FIXTURE LIBRARY & SHOW FILES

- **Import Fixture-Lib / Export Fixture-Lib**: import a GDTF fixture library, or export the current one.
- **Import Show / Export Show**: back up or transfer a complete show (patch, groups, presets, calibration, settings).

8.5 > SOFTWARE & SYSTEM MAINTENANCE

- **Upgrade Base Station**: to upgrade the base station to the latest software.
- **Reboot / Shutdown**: restart or power down the base station.

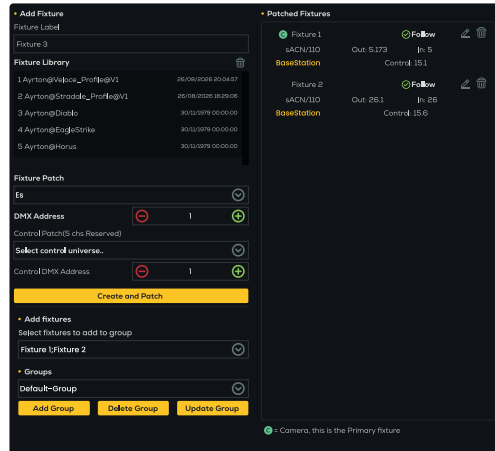
The currently installed software version is shown in the bottom-left corner of the System window.

Note: For data imports and exports, use the rear USB-A port. The front USB-C port is for charging only.

9. FIXTURES MENU & CONTROL-FIXTURE PATCHING

The **Fixture** tab lists every fixture type loaded onto the system. Fixture types are system-wide, not tied to an individual show: once a GDTF file is imported, that fixture type becomes available across every show on that unit.

By default, the fixture library contains Ayrton fixtures only. Fixtures from other manufacturers must be imported using their GDTF files.



9.1 > IMPORTING A FIXTURE TYPE

- Falconer does not require a manually built fixture library: import the fixture's GDTF file directly (**System > Import Fixture-Lib**).
- On import, Falconer converts the GDTF data into an internal XML format. This XML can be exported and hand-edited, or used as the basis for a custom fixture file, if the standard GDTF import needs correction.
- Accuracy of a fixture's pan/tilt range and resolution depends entirely on the GDTF file supplied by the manufacturer. The pan/tilt values can be corrected manually in the fixture's settings (the pencil icon in the Patched Fixtures list) if calibration results seem off or if you are using the fixture in a different pan/tilt mode.

9.2 > PATCHING A FIXTURE

To patch a fixture: choose the fixture type from the **Fixture Library** list, optionally give it a **Fixture Label** (fixtures default to a generic name such as "Fixture 1" if left blank), then complete two separate patches:

- Fixture Patch:** the fixture's normal DMX universe and address, exactly as it is patched in the lighting console.
- Control Patch** (5 channels reserved): a separate control universe and DMX address for the fixture's dedicated control channel. This is what makes the fixture's control mode (see Section 15) visible to, and switchable from, the console.

Press **Create and Patch** to commit. Every physical fixture used by Falconer needs both patches: without the control-fixture patch, the fixture defaults back to full base-station control and cannot be handed to the console.

CAUTION

An unlimited number of fixtures can be patched but a maximum of 36 active fixtures is recommended in a Multi-Spot application.

9.3 > PATCHED FIXTURES PANEL

- C** marks the camera / primary fixture.
- Follow:** tick to have this fixture track the same target as the primary fixture.
- The control status column (e.g. **Base Station** in yellow) shows which side currently has control – see Section 15 for the full list of control modes.
- Use **⚙** to edit a fixture's settings, including max pan/tilt degrees (e.g. switching an EagleStrike from 540° to a 360° continuous-pan mode for finer resolution) and X/Y/Z position offsets for fine-tuning after multi-spot calibration.
- Use **🗑** to remove a patched fixture.
- When unfolding the Channels of the chosen mode, you can modify the default values of each channel. Fixture type or mode can be changed here when using the update function.

9.4 > GROUPS

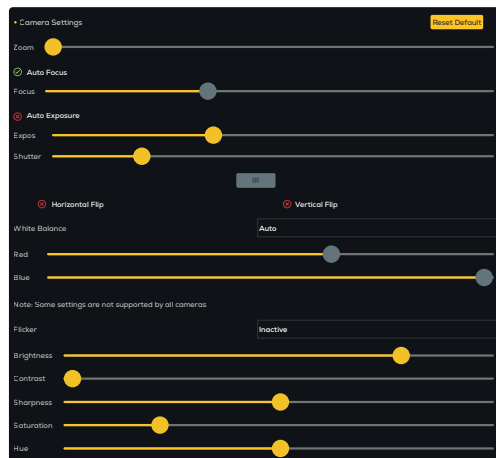
Groups determine which fixtures respond to the handles faders at any given moment, and to which fixtures a stored preset applies to. A **Default-Group** always exists. It includes all fixtures patched in the current show.

- Create additional groups with **Add Group**, name them, then select which fixtures to include via the **Select fixtures to add to group** list. A fixture can belong to more than one group.
- Update Group / Delete Group** manage existing groups.
- Pan/tilt control (while under base-station control) applies to the whole system regardless of which group is selected; group selection instead governs which fixtures a preset or handle faders function applies to.

With only one fixture patched, no group selection is necessary – it is treated as the active group automatically.

10. CAMERA

The **Camera** menu covers every setting on the camera side of the system.

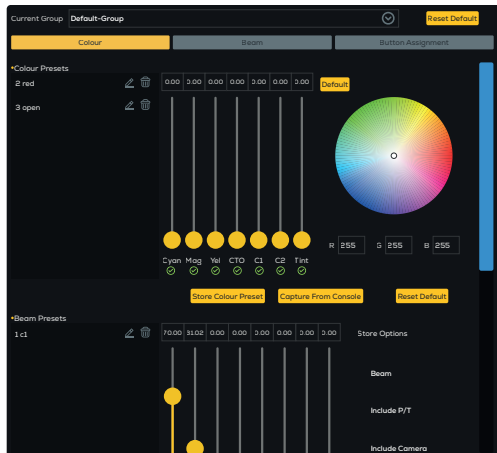


- Zoom:** camera zoom level.
- Auto Focus** (checkbox) / **Focus** (slider): manual focus is available when Auto Focus is off.
- Auto Exposure** (checkbox) / **Expos** / **Shutter:** manual exposure and shutter speed are available when Auto Exposure is off, useful for reducing on-camera flicker.
- IR:** switches the camera to black-and-white infrared mode, for blackout or very low-light situations common on large stages and in theatre.

- **Horizontal Flip / Vertical Flip:** match the image orientation to how the camera is physically mounted.
- **White Balance:** Auto, or manual with independent Red/Blue sliders.
- **Flicker:** sensor-level flicker compensation, selectable by mains frequency region (50/60 Hz) where supported.
- **Brightness, Contrast, Sharpness, Saturation, Hue:** further image adjustment.

11. PRESETS MENU

Presets are created per group, not per individual fixture; select a group (e.g. an "EagleStrike" group), adjust values, then store the preset.



11.1 › PRESET PARAMETER TABS

Two categories of Presets available:

- **Colour:** Cyan / Magenta / Yellow / CTO / Colour Wheel 1 / Colour Wheel 2 / Tint sliders, plus an RGB colour wheel and R-G-B fields.
- **Beam:** Focus / Zoom / Iris / Gobo Wheel 1 / Gobo Wheel 2 / Light Frost / Heavy Frost / Control Channel.

Note: The Colour effects and the Beam effects are separate; they cannot be stored together in a Preset.

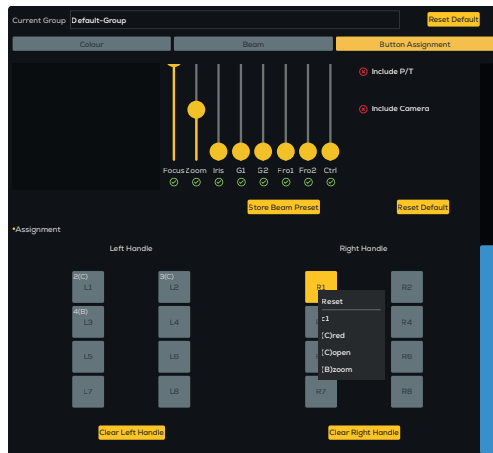
11.2 › STORING A PRESET

- **Store Colour Preset:** current colour preset will be stored.
- **Capture from Console:** under the Colour Preset section, this option allows to store as a Colour Preset the colour effects sent by the console to the current group of fixtures.
- **Reset Default:** resets colour presets to default.
- **Beam:** can be deactivated if only the P/T or camera settings should be stored.
- **Include P/T:** also store the current pan/tilt position with the preset.
- **Include Camera:** also store the current camera settings (e.g. switching to infrared for a blackout cue) with the preset. Camera values must be set via the Camera menu before storing.
- **Store Beam Preset:** current beam preset will be stored.

A preset is named on save and can include a fade-in and fade-out times. You can also choose whether to **Hold**, **Fade Out** or **Snap to Zero**, upon deactivating the preset.

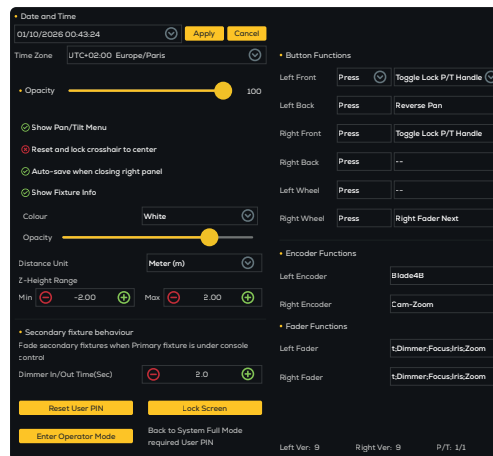
11.3 › ASSIGNING AND RECALLING PRESETS

- Assign a preset to a physical handle button or on-screen shortcut button (L1-L8 / R1-R8); the button lights in the preset's stored colour if it includes one, or plain white if not.
- Pressing the button activates the preset; the active button will be flashing while activated.
- Pressing another preset button will also disable the active preset and will take into consideration the mode.



12. SETTINGS MENU

The **Settings** menu covers overall UI behaviour, safety timing, and physical control mapping.



12.1 › DISPLAY & SAFETY BEHAVIOUR

- **Date and Time:** allows you to change Date, Time and Time Zone.
- **Opacity:** overall menu opacity.
- **Show Pan/Tilt Menu:** shows or permanently hides the Pan/Tilt menu (Section 7).
- **Reset and lock crosshair to center:** locks the on-screen crosshair to the center of the frame.
- **Auto-save when closing right-panel:** allows you to save the show when closing a menu.

- **Show Fixture Info:** toggles the on-screen live data readout, with adjustable Colour and Opacity. The crosshair itself can be repositioned by pinch/drag to compensate for camera parallax (the camera is not mounted exactly on the fixture's optical axis); it snaps back to centre once dragged close to it.
- **Distance Unit:** allows you to switch between metres and feet.
- **Z-Height Range:** allows you to define the range of the Z-Height function.
- **Secondary fixture behaviour / Dimmer In/Out Time (Sec):** if the operator loses control of the primary fixture to the console, the system automatically dims all remaining Falconer-controlled fixtures over this time, since the operator has lost their visual reference and could otherwise move a fixture blind; fixtures dim back in once the primary fixture returns to base-station control.

12.2 > BUTTON, ENCODER & FADER MAPPING

Each physical control can be mapped to a function from a list:

- **Button Functions:** No function, Save Show, Reverse Pan, Reverse Tilt, Toggle P/T Menu, Toggle Lock P/T Handle, Toggle IR, Plus PanSens, Minus PanSens, Plus TiltSens, Minus TiltSens, Dimmer Open, Dimmer Close, Minus Z-Height, Plus Z-Height, Minus Z-Offset, Plus Z-Offset, Left Fader Next, Right Fader Next.
- **Encoder Functions:** No function, Focus, Iris, Zoom, Z-Height, Z-Offset, Cam-Zoom, Cyan, Magenta, Yellow, Color1, Color2, Tint, Gobo1, Gobo2, Gobo1Rot, Gobo2Rot, Frost1, Frost2.
- **Fader Functions:** Here you can assign multiple options to a single fader. The options are: CTO, Dimmer, Focus, Iris, Zoom, Z-Height, Z-Offset, Cam Zoom, Cyan, Magenta, Yellow, color one, color two, tint, gobo one, gobo two, gobo one rotate, gobo two rotate, Frost1, Frost2.

A feature already mapped to a physical control will appear in yellow in the list of available functions.

12.3 > ACCESS CONTROL

- **Reset User PIN:** clears the current operator PIN.
- **Lock Screen:** locks the touchscreen, tap the Ayrton Logo and enter the User PIN to unlock.
- **Enter Operator Mode:** switches to a restricted control set; returning to full System mode requires the User PIN.

Note:

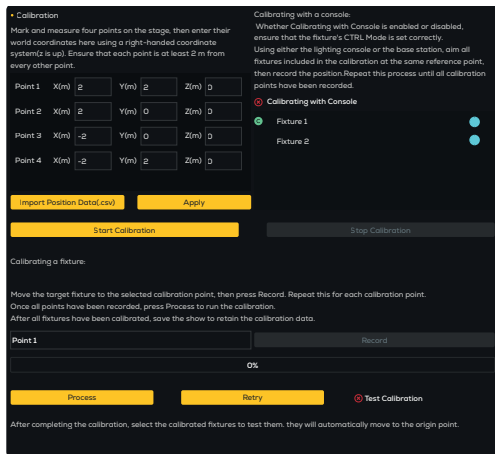
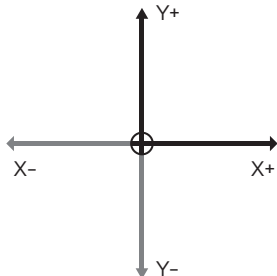
Default Pin will always be 1234 in a new show.

Master Pin is 050 to unlock station if the user pin is forgotten.

13. CALIBRATION

Falconer calibrates fixtures in a real 3D space using four measured physical reference points. This allows fixtures to track the same target correctly even when they are not square to one another or to the reference points – useful for in-the-round, thrust-stage, stadium, or multi-angle theatre rigs.

In this 3D space, a right-handed coordinates system is used. With Z being the height, X and Y are the coordinates on the floor as follow:



13.1 > BEFORE YOU CALIBRATE

- Mark and measure four physical points in the tracking area, using real-world values in metres or feet, relative to a defined origin (a fixed, memorable reference point is recommended, since it must be re-measured from if the rig is set up again in a different space).
- Each point must be at least 2 metres apart from every other point.
- The fixtures should have a tilt angle of 25 to 30 degrees or more from the default position while being calibrated. This will allow a precise value of the Pan to be registered and will guarantee a precise calibration.
- Because calculations are based on tilt values between 0 and 50%, calibration should also be done with those tilt values.
- If done with tilt values between 50 and 100%, it might cause flips when moving the fixtures. If this is the case, a flip option is available on the fixture settings to compensate.
- For best accuracy, set each fixture's zoom to its narrowest setting, focus sharp and close its iris down before calibrating.

13.2 > CALIBRATING A FIXTURE MANUALLY

- Enter coordinates (X/Y/Z) of **Points 1 to 4** in relation to your chosen origin, or use **Import Position Data (.csv)** to load them from a file.
- Select the fixture to calibrate, then click **Start Calibration**.
- Select each point in turn from the **Point** dropdown, aim the fixture at that physical point, and press **Record**. Points can be recorded in any order here.
- Once all four points are recorded for a fixture, press **Process** to calculate that fixture's real 3D position and orientation from the recorded angles.
- If the calibration isn't good, press **Retry** to do the calibration once again.
- **CAUTION! When the calibration is good, click Stop Calibration to stop the process.**
- **Test Calibration:** after calibrating, select the calibrated fixture(s) to send them automatically to the origin point as a check.
- Save the show once all fixtures are calibrated, to retain the calibration data (calibration is stored inside the show file).

13.3 > CALIBRATING WITH A CONSOLE

For larger rigs, calibration can be done faster by pointing multiple fixtures at the same four points simultaneously from the lighting console:

- To receive the Pan/Tilt values from the console, the respective fixtures should be set to **Console** mode first.

- Tick **Calibrating with Console**.
- Using console presets, aim all fixtures included in the calibration at the same physical reference point in turn, then record each point from the console side.
- Repeat for all four points. Falconer captures the pan/tilt data for each fixture directly from the console for each point, which is considerably faster than calibrating fixtures one by one from the base station.

Whichever side (console or base station) is driving calibration, each fixture's control mode switches automatically to match.

13.4 > WHAT CALIBRATION ENABLES

Two or more fixtures calibrated on the same four points will track the same target together once calibration is complete.

Calibration is required even for a single fixture if **PosiStageNet (PSN) output** is needed – without a proper 3D reference frame, PSN position data is not reliable. Falconer's PSN output is anchored to the real, measured coordinates established during calibration, in metres or feet.

A **Z-Height** allows the spot target performer head height or scenery rather than the floor plane. An individual per fixture **Z-Offset** can be added to this **Z-Height**.

Only fixtures used in genuine Multi-Spot configuration need full calibration; a single stand-alone fixture does not require it unless PSN output is needed.

CAUTION

Calibration uses four reference points. For stages with several elevation levels, such as risers or thrust stages, the Z-Height setting should be used to compensate for the difference in height. Beam size (iris, zoom and focus does not adjust automatically with the distance to the target. Set these parameters with the handle faders, encoders or presets as needed

14. ADVANCED MENU

The **Advanced** menu is used to set up PSN data.

It allows to configure **PosiStageNet (PSN)** input and output, for interoperability with third-party position-tracking and control systems. Fixtures must be calibrated (Section 13) before PSN can be used.

The screenshot shows the 'PSN' configuration screen. At the top, there's a toggle for 'Enable PSN Input' and 'Enable PSN Output'. Below this, there are fields for 'Tracker Label (Output)' and 'Tracker ID (Output, unique)'. The 'Coordinate Options (Z is UP)' section has checkboxes for 'Swap X/Y', 'Reverse X', and 'Reverse Y'. The 'Output Origin Offset (Base Basestation)' and 'Input Origin Offset (Base Basestation)' sections have input fields for X(m), Y(m), and Z(m). There are 'Apply' buttons for these sections. Below, the 'PSN Input Info' table lists columns for PSN Server, PSN Host, Tracker Name, Tracker ID, Pos(x)m, Pos(y)m, Pos(z)m, Spd(x)m/s, and Spd(y)m/s. At the bottom, the 'Configure fixtures mounted on truss with TrackerID' section has input fields for Tracker ID and Base Height(m), with an 'Apply' button.

- **Enable PSN Input / Enable PSN Output:** independent toggles for receiving or transmitting PSN data.
- **Tracker Label (Output) / Tracker ID (Output, unique):** identifies this base station's output stream to other PSN-aware systems.

- **Coordinate Options (Z is up):** Swap X/Y, Reverse X, Reverse Y, to match the coordinate convention of a third-party system.
- **Output Origin Offset / Input Origin Offset (Base station):** X/Y/Z offsets applied to align Falconer's calibrated origin with a different reference point used by an external video or tracking system.
- **PSN Input Info:** lists incoming PSN trackers by server, host, name, ID, position (PosX/Y/Z) and speed (SpdX/SpdY).
- Configure fixtures mounted on truss with **TrackerID**: associate a **PSN Tracker ID** and **Base Height** with one or more fixtures, for rigs where the truss itself is tracked.
- Press **Apply** after changing PSN settings.

15. CONSOLE INTEGRATION & CONTROL MODES

Falconer is designed to be console-agnostic. Each physical fixture is given its own control-fixture patch (Section 9), visible to the console as a small GDTF fixture profile (5 channels reserved).

15.1 > CONTROL MODES

Each fixture's control status is shown in the **Fixture > Patched Fixtures**, under the fixture's label in yellow, and can be switched (hard cut, not cross-faded) from the console via the control-fixture channel:

Mode	Behaviour
Base Station (full control)	Falconer has full control of all fixture parameters.
Pan/Tilt Only	Falconer controls pan and tilt only; all other parameters are controlled from the console.
Pan/Tilt + Mapped	Falconer controls pan/tilt plus whichever parameters are currently assigned to the handle faders (Section 12).
Full Console Control	The fixture behaves as a normal lighting fixture; Falconer has no control.

15.2 > MERGING BEHAVIOUR

When a console is connected, Falconer receives the full DMX/sACN universe from the console and resends it at a higher sACN priority, merging console and base-station data according to each fixture's control mode.

Note: Using the same universe number for a fixture's control In and Out is recommended: if the base station fails, the fixture automatically reverts to the console's data on that shared universe.

15.3 > LOSING THE PRIMARY FIXTURE TO THE CONSOLE

If the operator loses control of the primary (camera) fixture to the console, the operator has lost their visual reference. Falconer responds by automatically dimming and locking pan/tilt on all remaining Falconer-controlled fixtures (shown on the bottom left corner of the screen with a "light off / no pan-tilt" icon), rather than letting them continue moving without a visual check.

See Section 12 for the dimmer in/out time setting.

15.4 > GDTF AND FIXTURE LIBRARY STRATEGY

- Falconer allows the import of fixture data via GDTF; it does not require a manually built fixture library.
- Accuracy of a given fixture's GDTF profile, including pan/tilt range and resolution, is the responsibility of the fixture's manufacturer, since the data comes from the open GDTF format.
- Ayrton does not build or maintain GDTF libraries for other manufacturers' fixtures.

- The only requirement for a mixed-brand rig is that the primary (camera) fixture is an Ayrton fixture; secondary fixtures may be any brand.

16. SYSTEM CONFIGURATIONS

Falconer supports two levels of system complexity:

One-to-One

One Falconer controlling one Ayrton primary fixture (e.g. an EagleStrike with a mounted camera).

A Sample show file is available to make this configuration near-instant to deploy.

Multi-Spot

One Falconer controlling multiple fixtures (e.g., an EagleStrike with mounted camera or a Horus as a primary fixture, and other fixtures of any brand as secondary units).

In this configuration, an unlimited number of fixtures can be patched but a maximum of 36 active fixtures is recommended.

Note: For both configurations, a quick-start guide detailing the setup steps is available.

17. SOFTWARE UPDATE

- To upgrade the base station to the latest software version, copy the required software file to a USB stick and connect it to the USB port on the rear of the base station.
- Then in the System Menu, tap **Upgrade Base Station** to begin the update.
- Select the desired file and start the update.
- The system will reboot once the software update is done.

Note: Updating the base station will not overwrite already existing show files.

18. TROUBLESHOOTING

18.1 › FIXTURE WILL NOT RESPOND TO THE HANDLES

Check the fixture's control mode in the Fixture menu – it may currently be set to Full Console Control or Pan/Tilt Only. Check that both the fixture patch and control patch are correctly assigned (Section 9).

18.2 › SECONDARY FIXTURE DRIFTS OFF TARGET AFTER CALIBRATION

Verify the fixture's pan/tilt range in its GDTF-derived settings (pencil icon in the Fixture menu); inaccurate pan/tilt values are the most common cause.

18.3 › SYSTEM IS UNRESPONSIVE / HANDLES HAVE NO EFFECT

Confirm a cable is connected to both the Left Handle and Right Handle 5-pin XLR ports. Check you are using a 5-point wired cable.

18.4 › PSN POSITION DATA LOOKS INCORRECT

Confirm the fixture has been calibrated (Section 13) – PSN output is only reliable once a proper 3D reference frame has been established.

18.5 › FIXTURES DIM UNEXPECTEDLY DURING A SHOW

This is expected safety behaviour when the primary fixture is handed over to console control – see Section 15.3. Check the Dimmer In/Out Time in Settings if the timing is not as expected.



AYRTON

Digital Lighting

