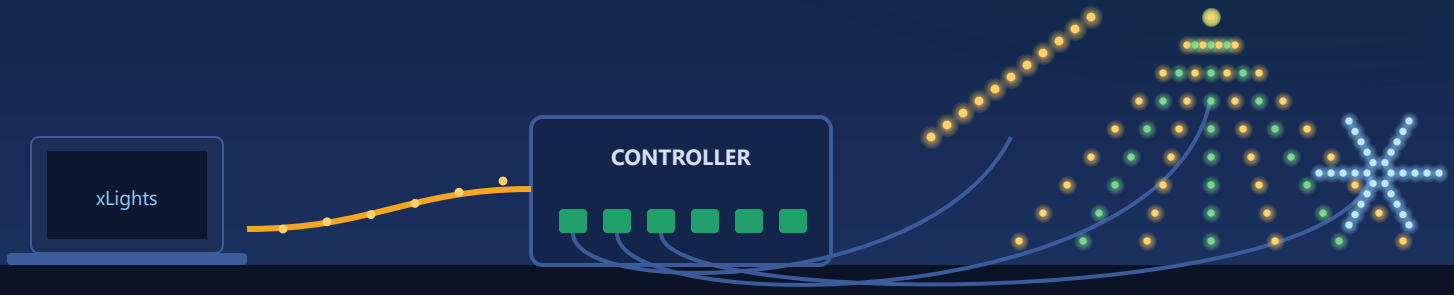
Connect Your Controller in xLights

Get xLights talking to the box that drives your pixels, tell it which prop is plugged into which port, and light every prop to test it. No networking experience needed.

⏱ About 45 minutes the first time | 🔌 Ethernet controllers | 💻 Written for xLights 2026



The whole journey at a glance

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Menu and button names come from xLights 2026 and can shift a little between versions. Every controller brand has its own web page for settings; this guide tells you what to look for, and your controller's manual shows exactly where. Pictures are simplified drawings.

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Before you start

Your layout says **what** lights you have. This guide tells xLights **how to reach them**: through which controller, and which socket on it.

Your layout is built

Your props are drawn on the Layout tab with the right pixel counts. If not, start with *Build Your Display in xLights*.

A pixel controller

An Ethernet (network) controller, such as a Falcon, Kulp, HinksPix or FPP-based board, with its **manual** handy.

A network cable & router

The controller plugs into your home router (or a network switch) with a cable, the same network your computer is on.

Safe power

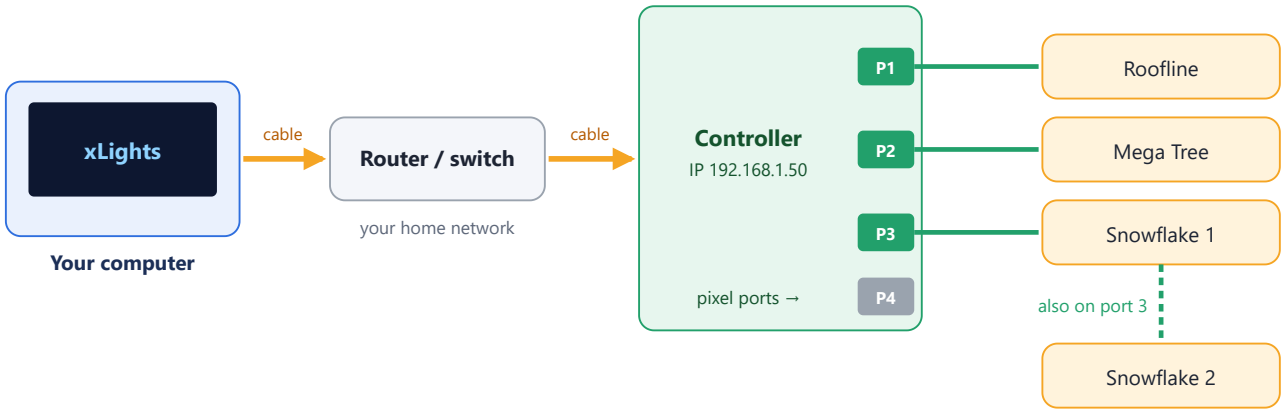
The controller's power supply is wired correctly and fused as its manual describes. If you're unsure about mains wiring, ask a qualified person.

Words you'll see in this guide

Word	What it means, in plain English
Controller	The box that receives the show over your network and sends it down the wires to your pixels.
Port	One pixel socket on the controller. Each port drives one string of pixels, which can run through one prop or several props wired one after another.
IP address	The controller's "house number" on your network, like `192.168.1.50`. xLights uses it to find the controller.
Protocol	The "language" xLights and the controller speak over the network. The common ones are **DDP** and **E1.31** (also called sACN).
Channel	One brightness value. A colour pixel uses 3 channels: red, green and blue.
Universe	A bundle of channels (usually 510, so 170 pixels) used by E1.31. With **Auto Size** on, xLights works these out for you.
Smart receiver	A small add-on box that extends one port out to several more, out where your props are. Optional.
Upload	xLights writing the port setup (which props, how many pixels) straight into the controller, so you don't have to type it on the controller's web page.
FPP	Falcon Player: a small computer (often a Raspberry Pi) that plays your show on its own, so your PC doesn't have to stay on all season.

How it fits together

Show data travels from xLights, over your home network, to the controller, and out of each port to the props wired to it.



One port, one string of pixels. A string can run through several props in a row.

From xLights to your props: computer → network → controller → port → props.

What xLights needs to know

1. **Where the controller is**: its IP address (Steps 2 and 3).
2. **What kind it is**: its make and model, so xLights knows how many ports it has (Step 3).
3. **What's on each port**: which props, in the order they're wired (Step 4).

> ✓ **Let xLights do the maths**
> With **Auto Layout** and **Auto Size** turned on (Step 3), you never have to work out channel numbers or universes yourself. You say "this prop is on port 2" and xLights does the rest.

STEP ONE

1 Plug in and power up

1. Plug the controller's **network port** into your router or network switch with a network cable.
2. Turn on the controller's power supply. Its lights should come on as the manual describes.
3. Leave the pixels **unplugged** for now. You'll connect them once xLights knows what's on each port.

> **Power off before plugging in pixels**
> Always switch the power off before connecting or disconnecting pixel strings. Plugging in "live" can damage the first pixels or the controller port.

STEP TWO

2 Give it an address that never changes

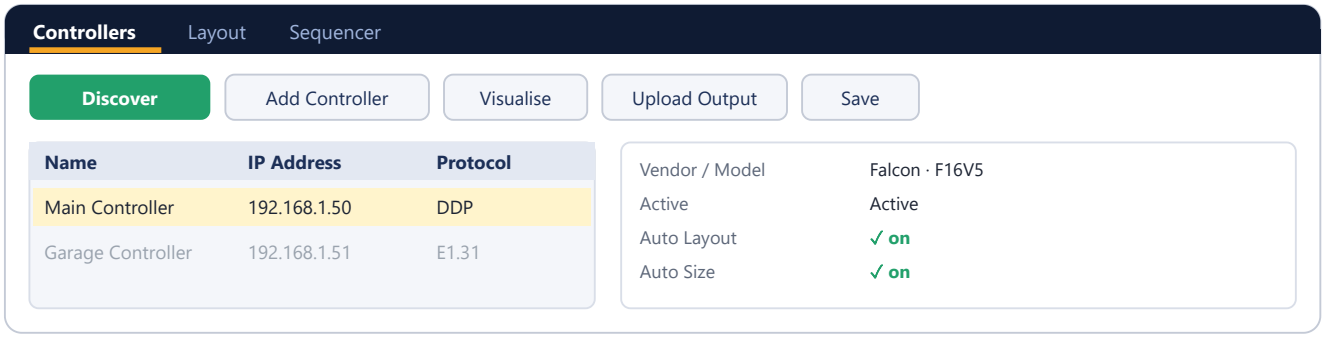
Your router hands out addresses automatically, and they can change after a power cut. A show needs the controller at the **same** address every night.

1. **Find its address.** Your controller's manual explains how: many show it on a small screen, and your router's list of "connected devices" shows it too.
2. Type that address into a web browser on your computer. The controller's own settings page opens.
3. Find its **network** settings and set a **static** (fixed) IP address, for example `192.168.1.50`. Use one outside the range your router hands out, or ask your router to always give the controller the same one ("reserved address").
4. **Write the address down.** You'll type it into xLights next.

> **The first three numbers must match your network**
> If your computer's address starts `192.168.1.`, the controller's must too (for example `192.168.1.50`). Otherwise they can't see each other.

STEP THREE

3 Add the controller to xLights



The Controllers tab, simplified: the buttons along the top, your controllers listed below.

The easy way: Discover

1. Open the **Controllers** tab and click **Discover**.
2. xLights searches your network. Many controllers (FPP-based boards, Falcon, WLED and others) answer and appear in the list with their address, make and model already filled in.

If it isn't found: add it by hand

1. Click **Add Controller** and choose **Ethernet** (older versions have an **Add Ethernet** button instead).
2. Fill in the settings below.

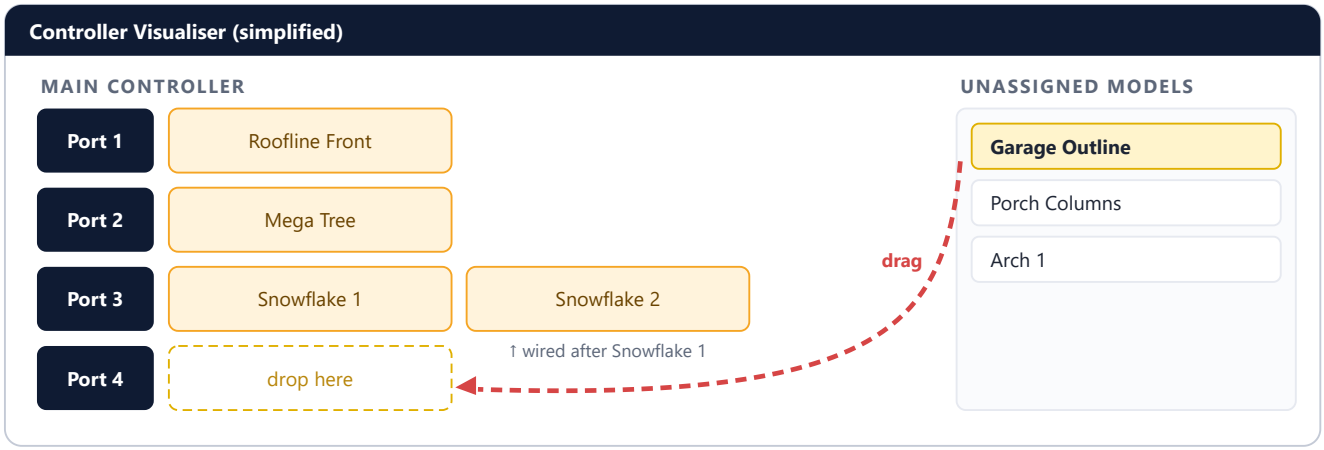
Name	`Main Controller` — any name you'll recognise
IP Address	The fixed address from Step 2, e.g. `192.168.1.50`
Vendor, Model, Variant	Your controller's make and model. This tells xLights how many ports it has and lets it upload the setup
Protocol	`DDP` or `E1.31`: use what your controller's manual recommends
Active	`Active` so xLights sends it the show
Auto Layout, Auto Size	Tick both. xLights then works out channels and universes for you

3. Click **Save**.

STEP FOUR

Put your props onto ports

Now tell xLights which props are wired to which port. The **Controller Visualiser** lets you do it by dragging.



Ports on the left, props still to place on the right. Drag each prop onto its port.

1. On the **Controllers** tab, select your controller and click **Visualise**.
2. **Drag** each prop from the model list onto the port it's wired to.
3. Two props on one string? Drop the second **after** the first on the same port, in the order the wire runs through them.
4. Close the window. xLights saves these changes as you go.

Prefer typing? Same result.
On the **Layout** tab, select a prop and open **Controller Connection** in its Properties. Pick the controller and type the **Port** number.

Using smart receivers?
Each prop on a receiver gets a **Smart Remote** letter (A, B, C...) in its Controller Connection, matching the ID set on the receiver box.

STEP FIVE

5 Upload the setup to the controller

1. On the **Controllers** tab, select your controller and click **Upload Output**. xLights writes each port's pixel count and settings into the controller.
2. Using **E1.31**? Also click **Upload Input**, which tells the controller which universes to listen to. (DDP doesn't need it.)
3. Click **Save**.

> **Upload greyed out?**
> It only works for controllers xLights knows how to set up, so check the Vendor and Model in Step 3. If yours isn't supported, type the same port setup into the controller's own web page instead.

STEP SIX

6 Test every prop

1. **Power off**, plug your pixel strings into their ports, then power on again.
2. Make sure **Output to Lights** is switched on in xLights (the toolbar button that sends data to your lights).
3. Open **Tools** → **Test**. On the **Models** tab, tick one prop.
4. Choose **RGB Cycle**: the prop should go red, then green, then blue. Then try **Chase** to check the lights run in the right direction.
5. Work through every prop. Close the Test window when you're done.

Wrong colours	Red shows as green? Change the prop's **Color Order** (e.g. RGB → GRB) in its Controller Connection
Too bright	Lower the prop's **Brightness** in its Controller Connection. Easier on the eyes and the power supply

If something isn't right

What you see	Why, and what to do
Discover finds nothing	The controller and computer aren't on the same network, or the controller is off. Check the cable and the first three numbers of both addresses (Step 2), or add it by hand.
Nothing lights in the Test	Check **Output to Lights** is on, the controller is **Active**, its IP address is right, and you uploaded (Step 5).
Only part of a prop lights	The pixel count in xLights doesn't match the real string, or the prop is on the wrong port. Fix it and **Upload Output** again.
The second prop on a port lights wrongly	The props on that port are in the wrong order, or the first prop's pixel count is off by a few. Re-order them in **Visualise**.
Colours are mixed up	Set the right **Color Order** for that prop (Step 6).
Lights flicker or show random colours	Often a loose data connection or a very long cable run to the first pixel. Power off and check the plugs; the controller's manual lists maximum distances.
xLights says the controller is "unmanaged"	Two controllers in your list share the same IP address. Give each its own address.

✓ Controller checklist

- [ ] Controller on the network, powered up
- [ ] Fixed IP address set and written down
- [ ] Added in xLights (Discover or Add Controller)
- [ ] Make & model chosen, Active, Auto Layout + Auto Size on
- [ ] Every prop dragged onto its port
- [ ] Upload Output (and Upload Input for E1.31)
- [ ] Saved
- [ ] Every prop tested: colours and direction right

What's next

Load a sequence. Follow *Your Light Show, Step by Step* to put a purchased show on your layout.

Play it all season. An FPP player can run the show on its own. xLights' **Tools** → **FPP Connect** sends your sequences to it.

Questions? Email microcyb@gmail.com. xLights is a separate, free program made by its own volunteer team and is not affiliated with MicroCyb.com. Follow your controller maker's instructions for wiring and power.