Starter settings for the Robospot Station: Restore Default Settings
- "Settings > Ethernet Settings > Ethernet Mode" set to sACN Mode
- "Settings > Ethernet Settings > IP Address/Net Mask" set to the same range as your console
- "Settings > Ethernet Settings > Ethernet Output" set the "Output sACN Universe" to "Off"

Starting settings for Fixture: Restore Fixture Defaults
- Ethernet Mode Disabled
- Address and mode as normal.

IP Addresses Notes: in a standard multicast configuration, you can use the default IP configuration without any issues. However, we recommend setting the IP Address of the Robospot Station to match the console's network, so direct communication is possible. Multicast generally works well, but in certain configurations it can be helpful to Unicast from the Console to the Robospot Station, in which case both devices would need to be on the same subnet. If the console is set to 192.168.0.1/24 (or 255.255.255.0), then the Robospot Station should be something like 192.168.0.171 and 255.255.255.0

Wiring notes: using the Ethernet input on the Fixture is not covered in this guide and not recommended currently. Generally the Fixture connects to the Robospot Station via the Camera line and a 5-Pin DMX. The Robospot Station connects to the console via the ethernet line.

Addressing notes: For simplicity, use a different universe for each fixture and address each fixture to Address 1. This helps avoid any sACN merge issues, simplifies RDM discovery, and avoids MDC issues.

VLAN separation notes: At minimum the Cameras and sACN data should be separated by VLANs, to avoid network congestion. You can also separate Fixtures and Stations further, which complicate your network but stops any potential data or camera mix-ups. Creating a separate VLAN just for the sACN nodes for the Robospots lets you use any universe without worrying about other consoles or venue sACN networks. Separating each camera into it's own VLAN stops any camera confusion and certain network issues.

Protocols, sACN vs MA2 vs Artnet: sACN is normally the default, however in certain situations you may want to change protocols. MA2 is only usable when using MA2 software, but works well. Artnet works well also but has issues with large numbers of devices. If there is some issue with sACN (lag or merge conflicts) then switching to yet another VLAN and using Artnet is a common solution.

Robospot Station To Fixture - No Console Control

DMX IN/OUT ———— DMX IN/OUT

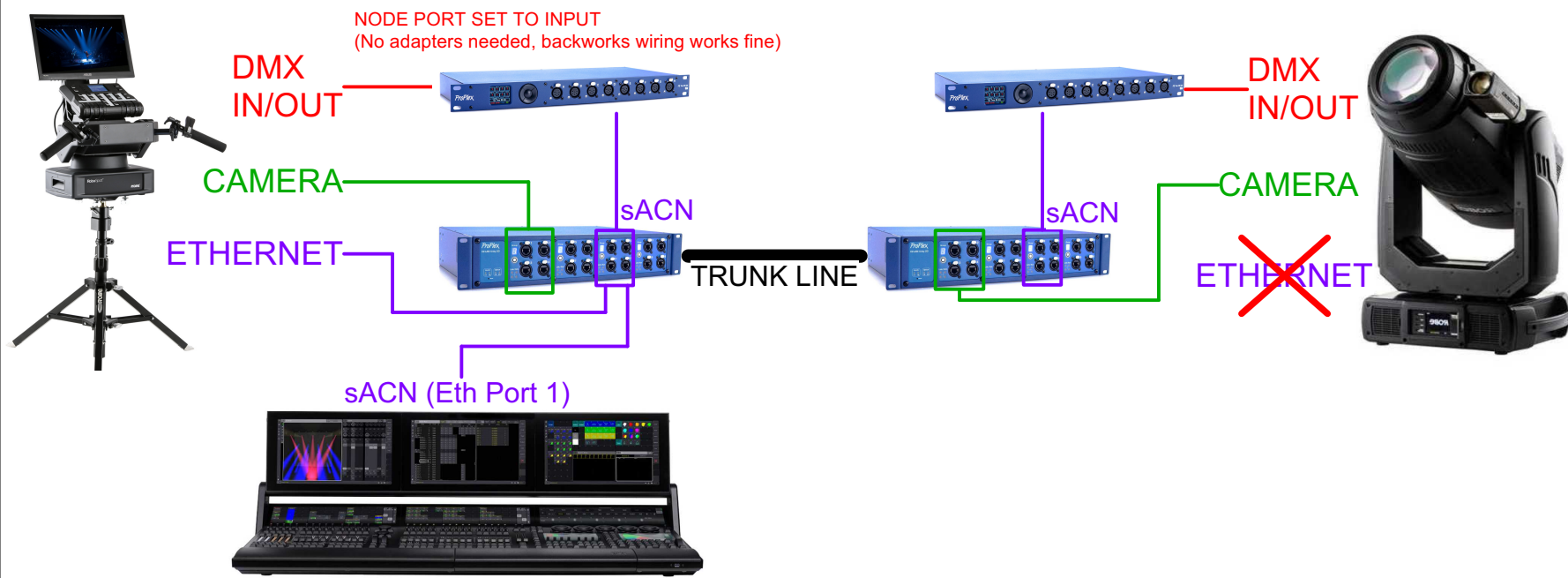CAMERA ———— CAMERA

ETHERNET ✗   ETHERNET ✗
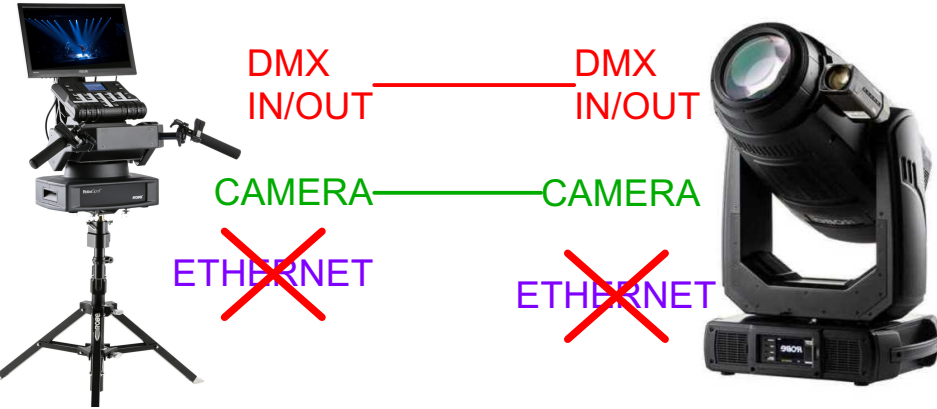
Simplest Setup, Robospot Station controls Fixture with no input from the console. Address the fixture to channel 1 (or any other valid address). Once the Fixture and the Station are connected, the RDM discovery feaure of the station will find the fixture.

Robospot Station To Fixture - Console Control

DMX IN/OUT ———————— DMX IN/OUT

CAMERA ———————— CAMERA

ETHERNET ┐   ETHERNET ✗

sACN (Eth Port 1)
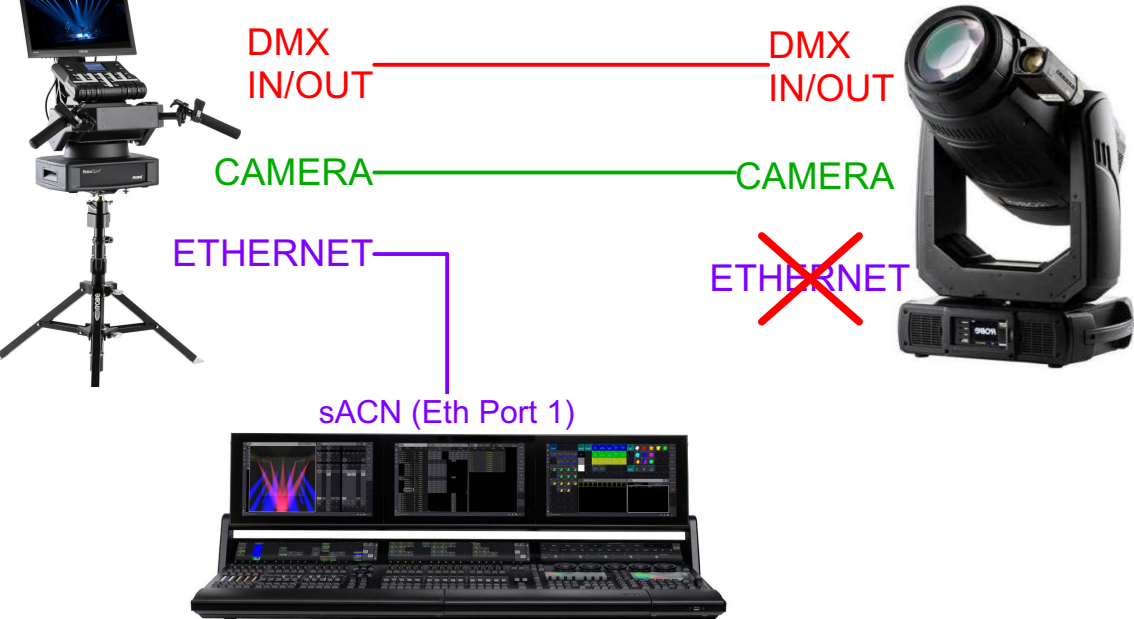
To add console control, plug the Robospot Station into the sACN network of the console (can be direct or thru the standard network switches). Patch the fixture on the console as normal. Remember patching each Robospot Fixture on it's own universe at address 1 can avoid several issues.
On the Robospot Station, navigate to "Settings > Ethernet Settings > Ethernet Mode" and select "sACN Mode" (note MA1/MA2 and Artnet mode work just as well with the proper network changes, and may be better options based on your network). Use "Settings > Ethernet Settings > IP Address/Net Mask" to either pick a default IP address, or set your own, and to set the Net mask. Go to "Settings > Ethernet Settings > sACN Universe" and set the universe to match your console patch. Test for full control and output with the Ethernet cable unplugged from the Robospot Station, then plug in the Ethernet line after you've verified that everything works. Note that the console can overwrite and disable the Robospot Station, and that the output is "Lowest Takes Precedent": If the Robospot Station is Active and the Dimmer is set to zero, the fixture will not output regardless of the console dimmer level. The inverse is the same, if the console is sending zero for the dimmer level, the Fixture will not output regardless of the Robospot Station level.

Running thru networks and nodes, or over long distances

NODE PORT SET TO INPUT
(No adapters needed, backworks wiring works fine)

DMX IN/OUT

CAMERA

ETHERNET

sACN

TRUNK LINE

sACN

DMX IN/OUT
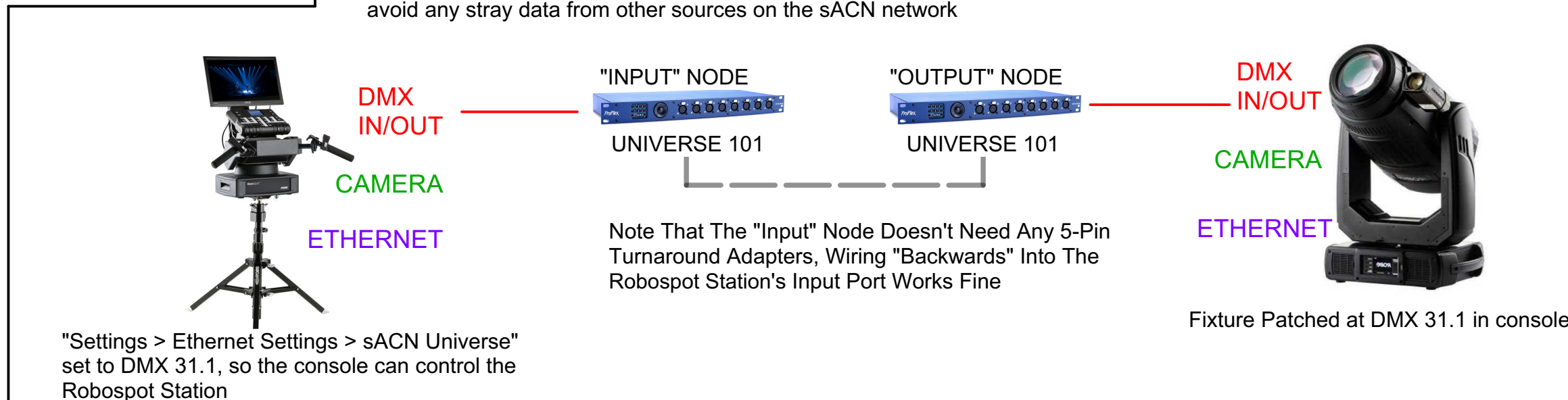
CAMERA

~~ETHERNET~~

sACN (Eth Port 1)

To run Robospot fixtures from further than 300ft away, or to use avoid running DMX and Camera homeruns for multiple Fixtures, you can run the 5-Pin DMX and Camera lines thru sACN nodes and network switches. Extend the lighting control network to include the lighting positions and Robospot Station areas, and use VLAN capable network switches. Extra sACN nodes are also needed, at least one node per lighting position with enough ports to connect each RoboSpot fixture, and at least one node in the Robospot Station area, with enough ports to connect each Robospot Station. Create a VLAN for sACN as normal, and a separate VLAN for cameras. In the RoboControl Station area plug all the cameras into the the camera VLAN, and at the lighting position plug all the Fixture Camera ports into the same VLAN. Every Station can see every Fixture's camera with this setup, so some time is needed to select the correct camera for each Robospot Station. For the 5-Pin DMX, plug the added nodes into the sACN network at both the Robospot Station side and the Fixture side. In the Robospot Station area set the required number of ports to INPUT, and set each port to an unused universe, something outside the output range of the consoles. On the Fixture side, leave the node ports in output mode. Enable RDM on all ports on both sides, if possible. For example, with 5 fixtures and 5 stations, and a lighting rig that is using universe 1 thru 70, set your nodes for universes 101 thru 105 on both ends. The point is to use empty universes so the Stations can't interefere with the Console, and the Console doesn't interfere with the Stations. A Fixture plugging into a node set to universe 101 will only see DMX from a Station plugged into universe 101. No other special configuration is required, as above set the sACN Universe on the Robospot Station to match the patch in the console.

Note about RDM Compatibility and RDM Discovery (a.k.a. One Weird Spare Fixture Trick):
The Robospot Stations use RDM to find fixtures connected to the 5-pin XLR, and to update any settings on the fixtures. For standard control the Stations send send normal DMX. Some sACN Nodes don't support RDM or don't support the non-standard RDM used by the Robospot Stations. To get around RDM discovery issues, setup a spare fixture in the Robospot Station area, power it up, and address it to the same address as the fixture you'd like to control. Run a 5-pin XLR between the spare Fixture and the Robospot Station and run "RDM discovery" on the Robospot Station to find the spare Fixture. Unplug the Station from the spare Fixture and plug the Station back into the proper port on the sACN node. The Robospot Station will send standard DMX thru the node to the address that it found on the spare, allowing you to control the target fixture.

Example:
On the console, Fixture #1 is patched at 31.1, Fixture #2 is patched at 32.1
Fixture #1 is addressed to 1, Fixture #2 is addressed to 1
Station #1 and #2 Camera ports plug into the Camera VLAN (VLAN2)
Fixture #1 and #2 Camera ports plug into the Camera VLAN (VLAN2)
Station Node ports set to input. one port at U101 and another at U102, RDM On
Fixture Node ports set to output, one port at U101 and another at U102, RDM On
Both nodes are plugged into the sACN VLAN (VLAN1)
Both Stations are set to Default Settings, then "Settings > Ethernet Settings > Ethernet Mode"
    is set to sACN, and "Settings > Ethernet Settings > sACN Universe" set to 31 for Station #1
    and 32 for Station #2, IP Address is set if desired
Station #1 5-Pin DMX is plugged into the node, whichever port is universe 101
Station #2 5-Pin DMX is plugged into the node, whichever port is universe 102
Fixture #1 5-Pin DMX is plugged into it's node, whichever port is universe 101
Fixture #2 5-Pin DMX is plugged into it's node, whichever port is universe 102
Run RDM Discovery, or use the Spare Fixture trick to discover the Fixtures from the Stations
Verify that you have full control of the fixtures from the stations
Connect the Robospot Station's Ethernet connectors to the sACN network, verify that the
    console and stations have proper joint control.

When using sACN Nodes to extend DMX thru the network, you must separate the sACN data from any other sACN data. Set the input port on the sACN node at the Robospot Station to an unused universe, outside of the output range set in the console. Set the output port on the sACN node sending 5-pin to the fixture to the same unused DMX. You could also use another VLAN, separate from the VLAN used by the console, to avoid any stray data from other sources on the sACN network

DMX IN/OUT

CAMERA

ETHERNET

"INPUT" NODE

UNIVERSE 101

"OUTPUT" NODE

UNIVERSE 101

DMX IN/OUT

CAMERA

ETHERNET

Note That The "Input" Node Doesn't Need Any 5-Pin Turnaround Adapters, Wiring "Backwards" Into The Robospot Station's Input Port Works Fine

"Settings > Ethernet Settings > sACN Universe" set to DMX 31.1, so the console can control the Robospot Station

Fixture Patched at DMX 31.1 in console

Troubleshooting

No connection between the station and the fixture, even with homerun 5-Pin DMX and swapping cables
- On the fixture, check "Ethernet Settings > Ethernet Mode" is disabled. This setting is automatically enabled in certain cases and needs to be turned off

Lag only when controlling the fixture from the console
- Check the IP addresses of the stations for overlaps
- Switch from Multicast to Unicast from the console if using sACN
- If using sACN, switch to Artnet

No control from the console
- Check the "Settings > Ethernet Settings > Ethernet Mode" to confirm the mode is correct (sACN, Artnet, MA2)
- Check the "Settings > Ethernet Settings > sACN Universe" to confirm it matches the console patch
- Confirm the console and stations are on the same VLAN/Network/Subnet (VLAN1, 192.168.0.1 and 192.168.0.101, mask 255.255.255.0)

No output from the Fixture when connected to the console
- Check the console patch and confirm it matches the universe in "Settings > Ethernet Settings > sACN Universe" and the fixture address
- Make sure both the Robostation and Console intensity are up

Fixture will only pan/tilt in one direction
- Usually an indication that the console and station are fighting over control, or another source is on the network
- Check that the sACN nodes used to extend the DMX data across the network are using an empty universe, not set to the same universe as the console patch
- Check that node ports aren't set to duplicate universes, putting two stations on the same universe.
- Make sure "Settings > Ethernet Settings > Ethernet Output > Output sACN Universe" is set to OFF

Fixture gets weird data after the station is plugging into the console's sACN network
- Verify the patch of the console matches the expected patch for the fixture
- If the "Spare Fixture Trick" was used, check the settings on the fixture to ensure the address and mode are correct (the station won't be able to set
       the mode remotely, you'll need to check the settings manually or thru another tool)
- Make sure "Settings > Ethernet Settings > Ethernet Output > Output sACN Universe" is set to OFF

Station can't discover the fixture
- RDM is off on the sACN nodes between the fixture and the station
- Universes are mismatched on the nodes between fixture and station
- Nodes are incompatible with Robostations (use the "Spare Fixture Trick")

Tools:
DMX Tool: to check the fixture is receiving valid DMX
Spare port on a Node: Set an unused port on a node to the same universe used to extend the data between the station and the fixture, to double check the station and input node are working properly together
sACNViewer, ArtNetominator: Software used to view sACN and Artnet signals on a network. They'll confirm that the console is outputting data on the right universe, the INPUT node is outputting data on a
       separate universe, there are no other sources of data on the network.