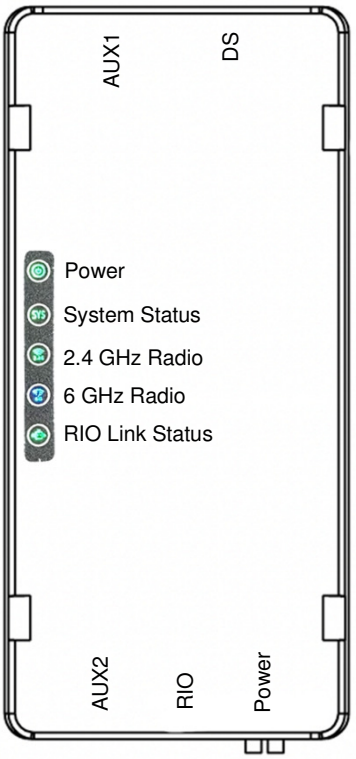
VH-109 FRC Radio



R708 requires mounting so lights are visible

R703 requires restricting the passive PoE backfeed into the RoboRio

VH-109 has a direct connection between the power bus and the passive PoE pins on the RIO port. Power backflow has been seen to cause excess heating and instability. To prevent power backflow into the Rio there are several options.

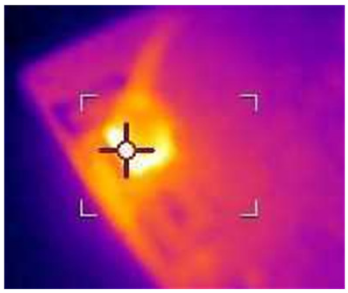
A) Use the RPM ONLY to power the radio and make the ethernet connection

B) PoE cables to make the ethernet connection (even if not used for power)

C) Make the ethernet connection to the AUX1 or AUX2 port with the corresponding dip switch set to off.

Power Light	status
on	radio has power
off	radio does not have power

System Light	Status
OFF	Radio Booting
Blinking (1Hz)	unable to ping Field IP (10.xx.yy.4)
Blinking (20hz)	Firmware Flash
Blinking (50Hz)	performing "first boot" sequence
Solid	able to ping Field IP (10.xx.yy.4)

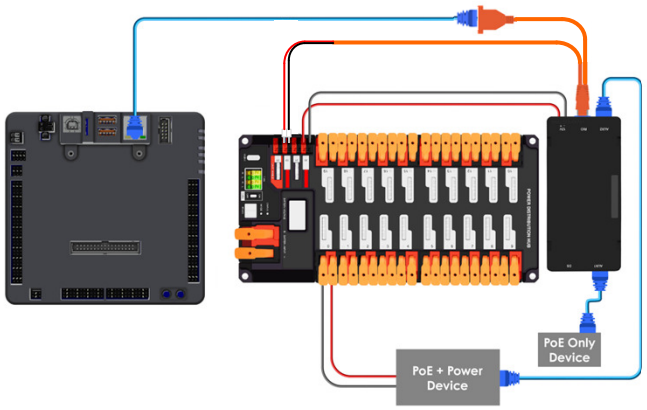


Power backfeed has been observed to raise the temperature at the RoboRio ethernet port to 150℉ (65.6℃)

Port Name	PoE Capable	Downstream Device	Port Speed
RIO	4.5-19V Input	NI roboRIO	10/100 Mbps
AUX1	Yes (Off by default)	Camera, Switch, etc.	10/100 Mbps
AUX2	Yes (Off by default)	Camera, Switch, etc.	10/100 Mbps
DS	No	Switch, Laptop, etc.	10/100/1000 Mbps

PoE + 12 VDC is the recommended method per R617
Using passive PoE cables is compliant with R703 B
This is the recommended method for redundant power

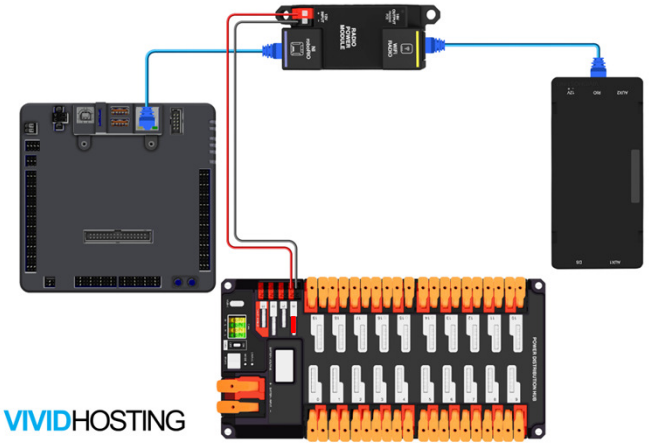
PoE + Power Device



Rule R615B requires using one of the fused ports for powering the RoboRIO

Using the RPM per R616 B
Compliant with R703 A

OM5P Replacement (RPM)

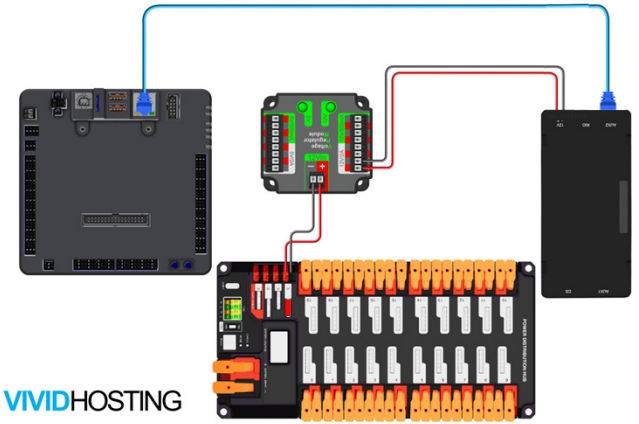


⚠ **DO NOT** use the Rev Robotics RPM with a PoE camera or device if you have enabled PoE on the VH-109 radio.

Using PoE to power devices with RPM violates R626 and will damage a limelight

Using the VRM per R616 A
R703 requires backflow prevention
Moved cable to AUX2 per 703 C

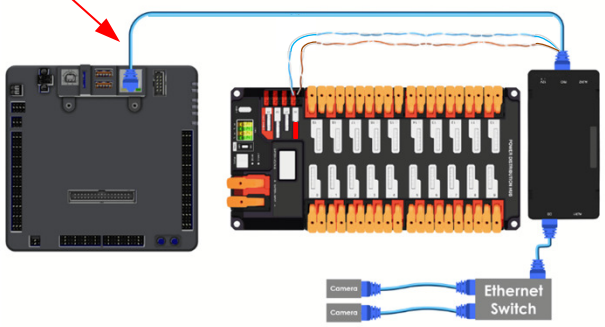
VH-109 (VRM)



Using PoE to power devices with VRM is not recommended and could violate R616A (check with LRI)

Using an Ethernet Switch

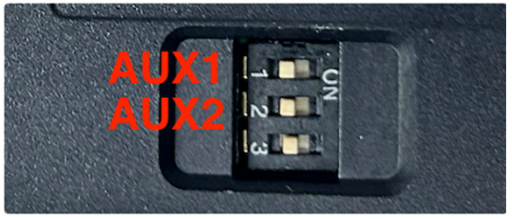
Brown and Blue and White with Brown and Blue stripes cut out (pins 4,5,7&8)



⚠ DO NOT plug a switch into the RIO port on the VH-109 radio without using a power injector like the Rev Robotics RPM or passive injection cables. Without these, power can be back fed which can damage the switch.

⚠ **DO NOT** use 12V + the Rev Robotics RPM at the same time.

Do not use the +/- 12V connections on the VH-109 and the RPM together. This will result in connecting a 19V power source to a 12V power source that will damage the RPM. This is specifically prohibited in the R616 blue box.



Switch Number	Port
1	AUX1
2	AUX2

☑ Power over Ethernet output is disabled by default

Switches are under a sticker and R626 limits cables and power draw to ≤ 2A