Team Update 08

General

VH-109 Revised Wiring Requirements

FIRST and Vivid-Hosting have received reports of roboRIO Ethernet ports heating up significantly when connected to a VH-109 radio powered only through the 12V input terminals. While some heating is expected, these reports indicate heating significantly beyond what was observed in multiple long-term tests at *FIRST* and Vivid-Hosting. The changes to R703 mitigate this issue by requiring configurations that will not result in 12V power being applied to the roboRIO Ethernet port. The *FIRST* wiring documentation has been updated to reflect this change and Vivid-Hosting is working on a tutorial for making appropriate adapter cables.

Game Manual

6.5.1 SCORING ELEMENT Scoring Criteria

A CORAL is scored in the trough (L1) of the REEF if it is not in contact with a ROBOT, not scored on any other level of the REEF, and

A. contacting the trough, or
B. fully or partially supported by a CORAL in contact with the trough.

7.4.3 ROBOT

G419 **ANCHORS are off-limits.** A ROBOT may not contact the ANCHORS. Exceptions are granted for actions that are MOMENTARY and inconsequential.

Violation: MAJOR FOUL and ~~the ALLIANCE is ineligible for the BARGE RP if a Qualification MATCH~~ the ROBOT is ineligible for CAGE points.

8.6 Power Distribution

R622 ***Use appropriately sized wire.** All circuits shall be wired with appropriately sized insulated copper wire (SIGNAL LEVEL cables don't have to be copper):

Table 8-4 Breaker and wire sizing

Application	Minimum Wire Size
VRM 2A circuits **≤2A fuse protected circuit** **VH-109 Passthrough per R626**	24 AWG (24 SWG or .25 mm2) Cat5e/6/7/8 cable, 2 pairs
roboRIO PWM port outputs **≤1A fuse protected circuit**	26 AWG (27 SWG or 0.14 mm2) Cat5e/6/7/8 cable, single pair

R626 ***VH-109 PoE passthrough.** The VH-109 PoE output may be used only under the following conditions:

A. The device being powered is a COTS device or COTS adapter connected to a single COTS device with current draw ≤ 2A at 12V.
B. The connection is made using standard Cat5e/6/7/8 cable.
C. The VH-109 is powered using the 12V input terminals with 18AWG wire or larger (it may additionally be powered using the PoE input if desired).

R703 ***Use specific Ethernet port for roboRIO**. The roboRIO Ethernet port must be connected to

A. the wireless bridge port labeled ~~"RIO" for VH-109 radios or~~ "18-24v PoE" for OpenMesh radios (either directly, via a network switch, via an RPM, or via a Cat5 Ethernet pigtail).
B. the port labeled "RIO" of a VH-109 radio via an RPM, passive PoE injector cable or adapter (whether or not it is used to power the radio), or an Ethernet cable with the appropriate wires removed on the roboRIO end. All wires or adapters used must be fully insulated.
C. the port labeled "AUX 1" or "AUX 2" of a VH-109 radio with the corresponding DIP switch in the off (default) position.

> Note: Placing a switch between the roboRIO and radio may impede the ability for FIELD STAFF to troubleshoot roboRIO connection issues on the FIELD. Teams may be asked to connect directly between the radio and the roboRIO as part of troubleshooting efforts.
>
> If not using the "RIO" port of the VH-109, it is strongly recommended to cover the port to prevent accidental damage to devices such as laptops which may occur if attached to this port.

10.6.3.2 BACKUP POOL

T611 ***Be there to be a BACKUP TEAM.** A team must be present after ALLIANCE Selection to accept the ~~REFEREE'S~~ lead queuer's invitation to join the BACKUP POOL.

Violation: Team is ineligible to be a BACKUP TEAM.

14.6 Practice Areas

FIRST Robotics Competition Practice Areas are intended to allow teams to interact with representative FIELD elements and to test their starting AUTO modes, they are not designed for multiple SCORING ELEMENT ~~autonomous~~ AUTO modes or full ~~field~~ FIELD play. Although some Practice Fields may provide more space for additional strategy development, ample space for long full FIELD interaction should not be expected. *FIRST* provides a recommended layout, but events may need to tweak exact placement depending on the space available in the venue. Teams should not relocate elements from their original locations. The layout is specifically intended to discourage testing of complex AUTO routines.

Practice Fields are tether-only except for some District Championships and *FIRST* Championship which may choose to run a full Field Management System on a Practice Field. For events that have full FIELDS but are using tether, teams should expect that 2 teams are allowed on half the field at a time. Practice Field Attendants may allow additional teams provided teams are a safe distance from one another.

FIRST is providing a small set of production run AprilTags for the Practice Field. The tags provided for the 2025 Practice Field will include tags 1, 3, 5, and 6. Teams that wish to use other AprilTag IDs for the Practice Fields may print copies of other tags to bring with them to events but should not remove the provided tags. Printable copies of the field AprilTags can be found on the 2025 Playing FIELD webpage.

FIRST is also providing a minimum of one "crosshatch" pattern ALGAE which is representative of the ALGAE used on the competition FIELD. Teams may not damage or remove it from the Practice Areas, as the supply is limited. Additional crosshatch ALGAE may be available depending on supply. CORAL is not provided and if a team wishes to practice with CORAL, they must bring their own.

HUMAN PLAYERS are welcome to practice throwing ALGAE into the Practice Field NET as long as the area around the BARGE is clear of other ROBOTS and humans to avoid missed shots hitting people or interfering with ROBOT testing. Priority is given to ROBOT practice over HUMAN PLAYER practice. Teams choosing to practice throwing ALGAE must bring their own ALGAE; the provided ALGAE are for ROBOT use only.