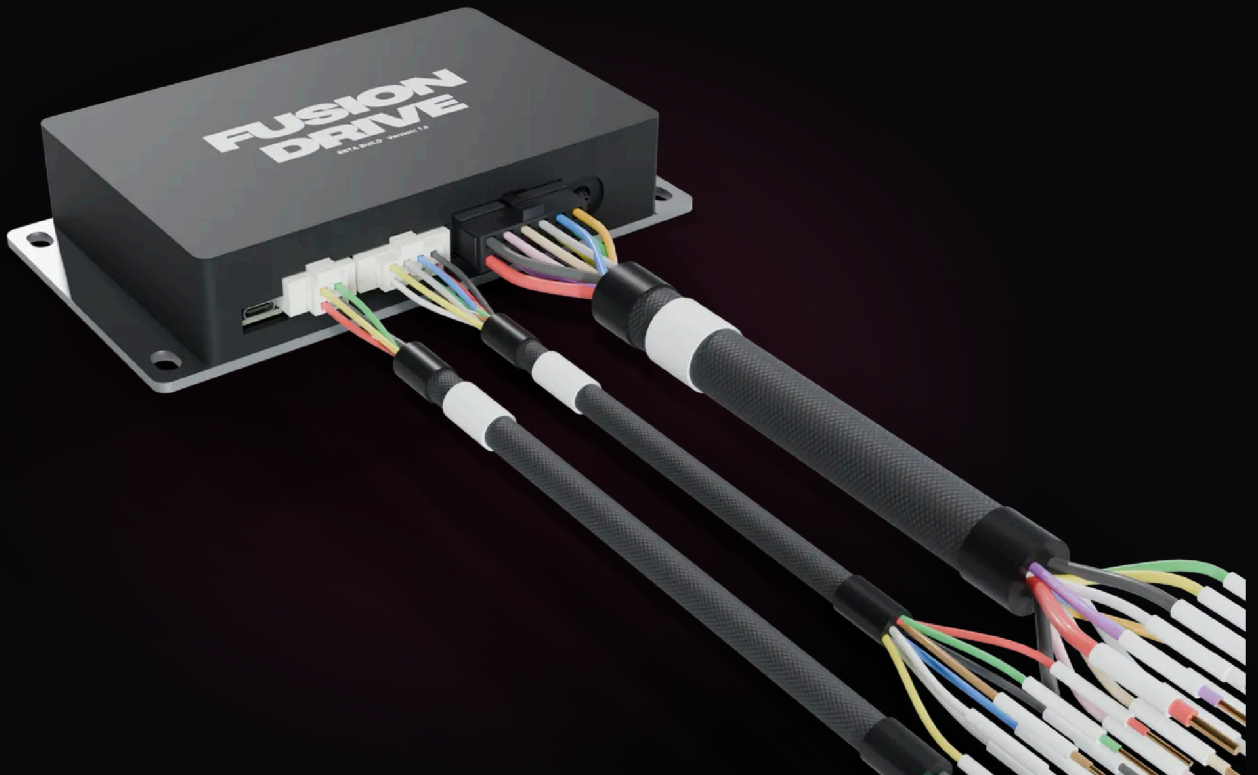




— EXACT-MODEL INSTALLATION GUIDE

CoolBoost Stage 2 V2

Connect this exact accessory to FusionDrive. Wiring diagrams, app setup, logging and a clear assessment of what can be retained or replaced.



Contents

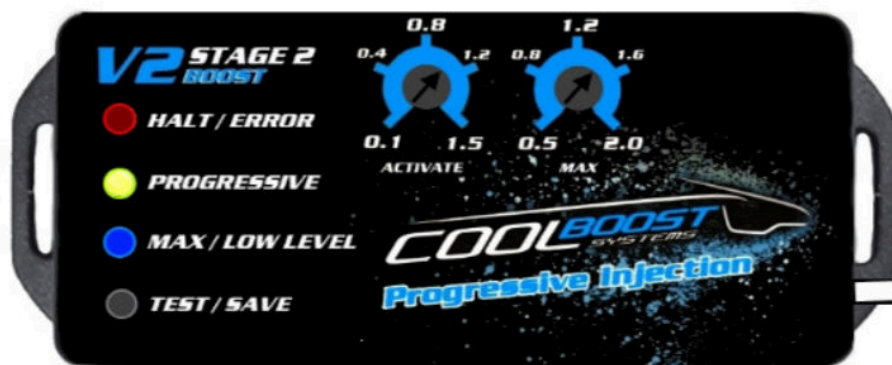
1	Identify this exact product	2
2	Wiring diagrams	3
	W1 · Route A · measured water/meth data · W2 · Route A · boost-based V2 ground pause · W3 · CoolBoost Stage 2 V2 · direct FD pump wiring	
3	Original wiring and controller setup	12
4	FD hardware and installation record	14
5	Route A — retain the injection system	15
	Sensor and monitoring setup · Optional ground-pause request — boost variant only	
6	Route B — assess the replacement architecture	17
	Direct FD output and saved configuration	
7	Commissioning, faults and recovery	19
8	Automations and tuner logs	20
9	Sources and release record	21

1

— COOLBOOST STAGE 2 V2

Identify this exact product

Match the Stage 2 V2/SNS controller and Rev 3B harness. This retained-control route applies ONLY to the boost-based variant. On the voltage-based variant the WHITE wire is the MAF/TPS/MAP command input, not a clutch-pause input. Confirm the exact variant before assigning any AUX output; the same colour is not the same function across both products.



Actual CoolBoost Stage 2 V2 controller illustration isolated from manufacturer Rev 3B wiring sheet.

Route A — keep it: Boost-variant ground-pause plus independent WMI measurements; release is not fail-safe inhibit.

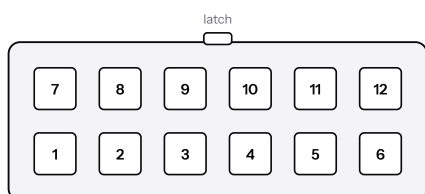
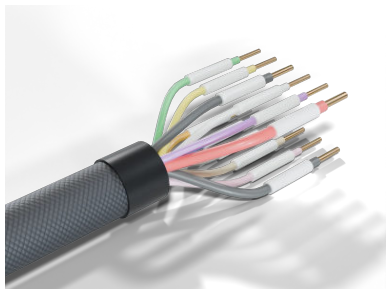
Route B — replace it: Conditional new FD installation; match the FD output, load and sensors and commission every required function.

2

— COOLBOOST STAGE 2 V2

Wiring diagrams

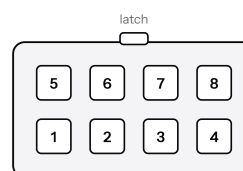
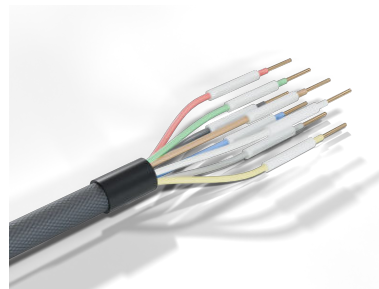
Start here for the actual wire connections. First locate the FD leads, then choose the drawing for the route you are installing.

Harness B • J6 • 12-way

Bottom row, left to right: 1 BATT+ · 2 AUX1 · 3 IGN · 4 GND · 5 CAN2 H · 6 CAN2 L
Top row, left to right: 7 GND · 8 AUX2 · 9 OUT4 · 10 OUT3 · 11 OUT2 · 12 OUT1

Looking into the plug's mating face with the latch at the top

Original FusionDrive harness reference. Look into the plug mating face with the latch at the top. Wire drawings show logical terminal positions.

Harness C • J8 • 8-way

Bottom row, left to right: 1 IN1 · 2 IN2 · 3 IN3 · 4 +5V OUT
Top row, left to right: 5 IN4 · 6 IN5 · 7 IN6 · 8 GND

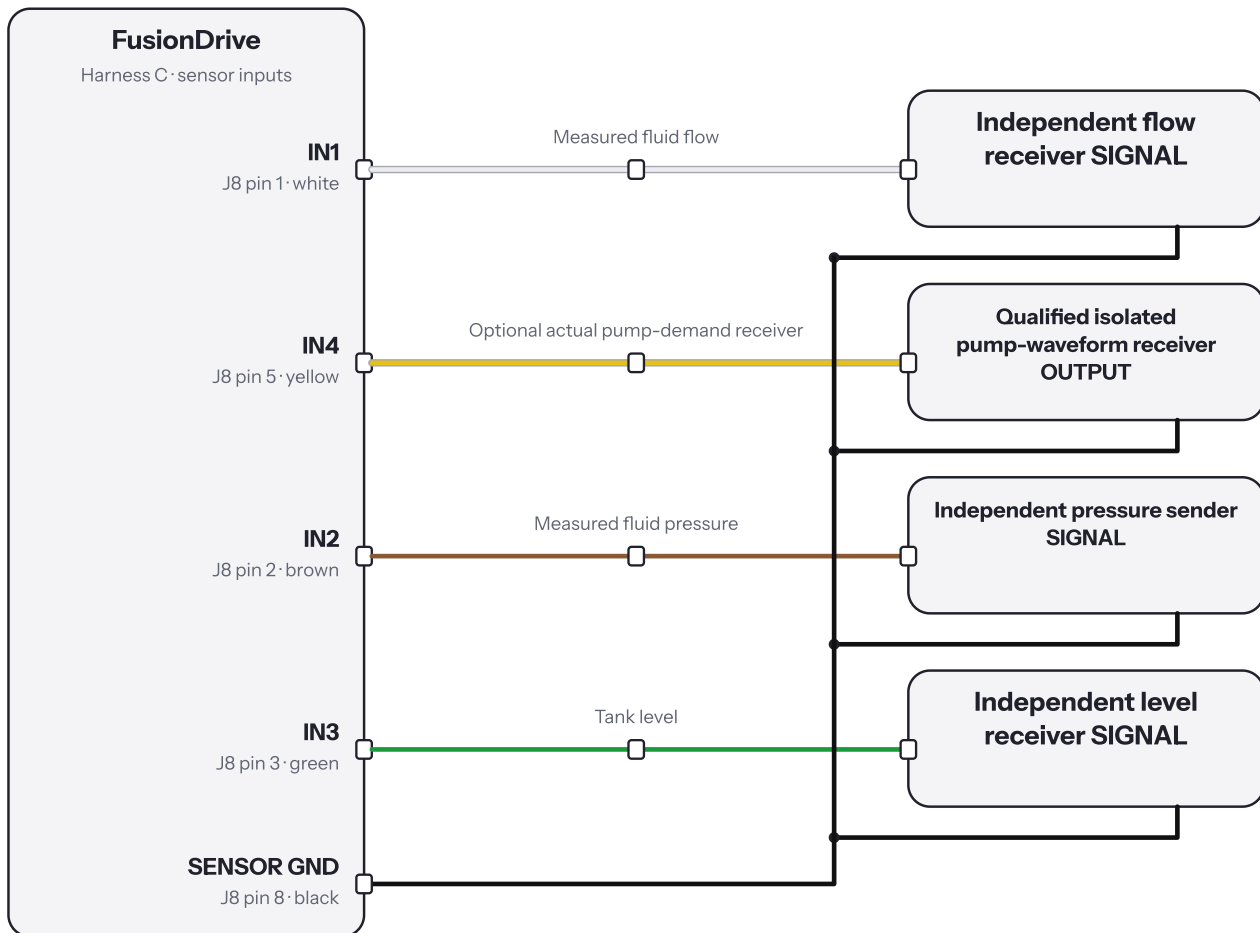
Looking into the plug's mating face with the latch at the top

Original FusionDrive harness reference. Look into the plug mating face with the latch at the top. Wire drawings show logical terminal positions.

Wire colours match the FD flying leads; the accessory segment uses its documented colour where known. A small sleeve marks an insulated splice. Match the lead label and cavity number. Harness B AUX1/AUX2 are low-side ground sinks. OUT1–4 supply positive voltage from the dedicated feed. Harness C inputs accept conditioned 0–5 V signals. Never join competing supplies or output drivers.

1. **W1 • Route A • measured water/meth data**
2. **W2 • Route A • boost-based V2 ground pause**
3. **W3 • CoolBoost Stage 2 V2 • direct FD pump wiring**

2.1 W1 • Route A • measured water/meth data



Power each sender from its specified supply. Do not connect two 5 V supplies together.

No pump or solenoid current through J8 sensor ground. Calibrate each measurement separately.

Original WMI wiring stays connected. Separate independent pressure/level senders do not share native safety-switch loops.

Terminal-to-terminal wiring schedule

From	To	Signal / electrical condition
Independent flow receiver SIGNAL	FD IN1 · J8 pin 1	Measured fluid flow Qualified 0–5 V transfer
Independent flow receiver GROUND	FD sensor GND · J8 pin 8	Flow reference Signal reference only
Qualified isolated pump-waveform receiver OUTPUT	FD IN4 · J8 pin 5	Optional actual pump-demand receiver Verified 0–5 V; not raw pump voltage
Independent pressure sender SIGNAL	FD IN2 · J8 pin 2	Measured fluid pressure Qualified 0–5 V transfer
Independent level receiver SIGNAL	FD IN3 · J8 pin 3	Tank level Qualified 0–5 V transfer
Independent sensor/receiver signal GROUND	FD sensor GND · J8 pin 8	Signal references No pump/valve power return
Each added sensor/receiver rated SUPPLY	Its specified regulated/fused supply	Sensor power Use exact maker voltage; never join two 5 V rails

OFF / released: Native controller remains responsible for injection. Mark missing/stale observations.

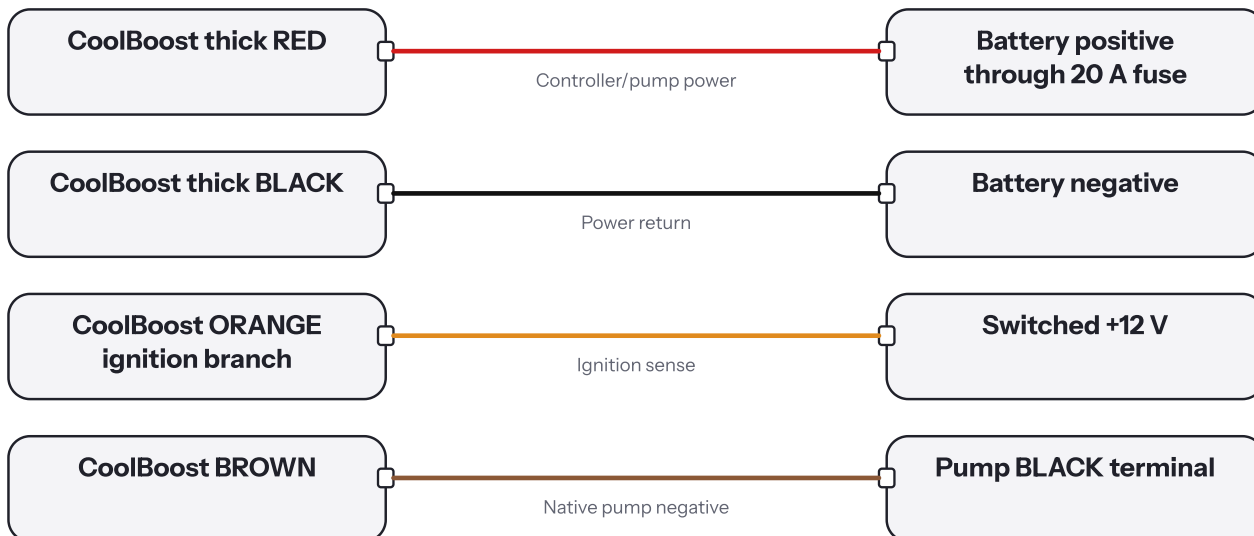
ON / active: FD records physical flow/pressure and a qualified command source.

Qualification: Verify installed transfers, output loading, common-mode range and all unplugged states before connecting J8.

Accessory-side connections - 1

CoolBoost Stage 2 V2 · accessory-side connections

Accessory connections for the selected route. Grey bands are complete looms; blue dashes are pressure hoses.



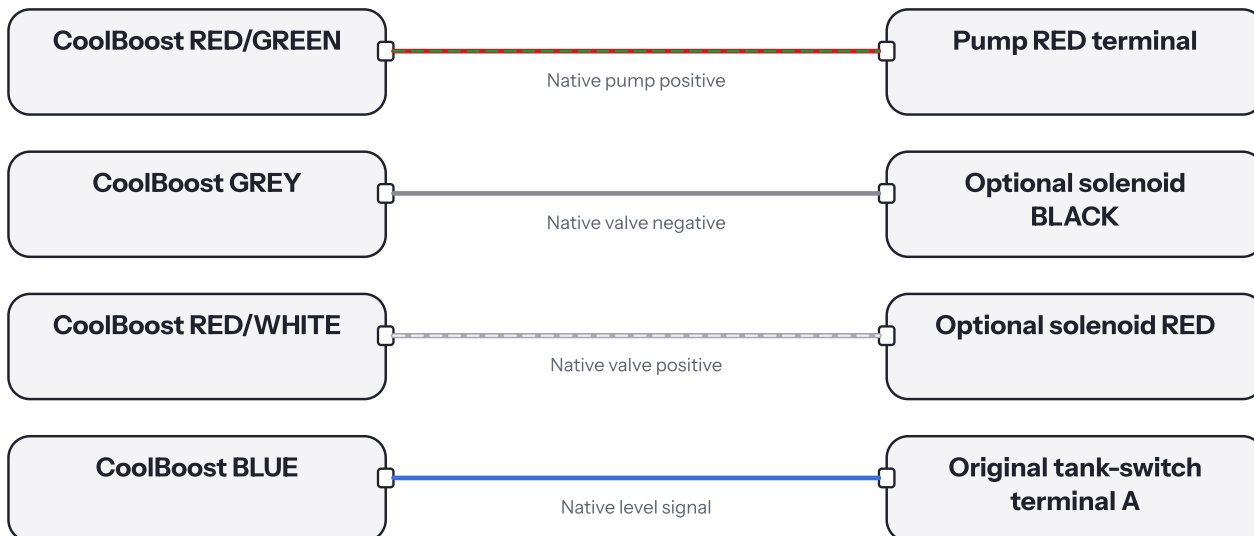
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

Complete the accessory-side circuit for the selected route. Retain or transfer connections as specified in the installation steps; do not join competing supplies or output drivers.

Accessory-side connections - 2

CoolBoost Stage 2 V2 · accessory-side connections

Accessory connections for the selected route. Grey bands are complete looms; blue dashes are pressure hoses.



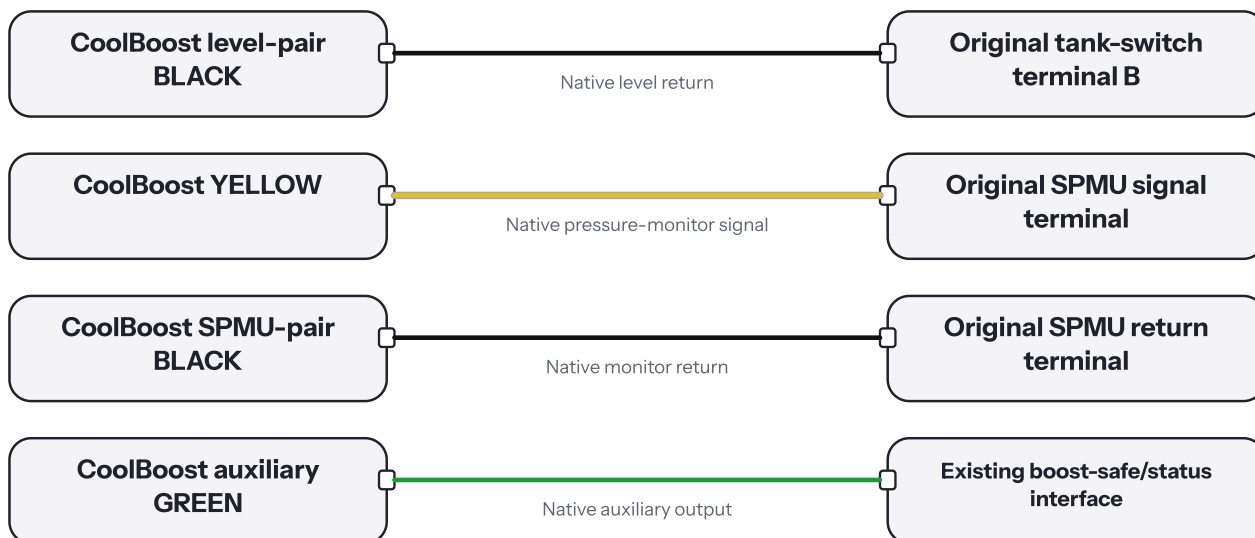
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

Complete the accessory-side circuit for the selected route. Retain or transfer connections as specified in the installation steps; do not join competing supplies or output drivers.

Accessory-side connections - 3

CoolBoost Stage 2 V2 · accessory-side connections

Accessory connections for the selected route. Grey bands are complete looms; blue dashes are pressure hoses.



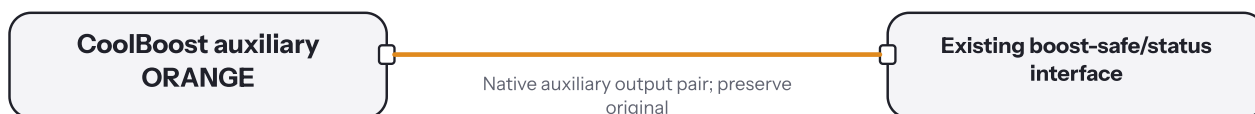
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

Complete the accessory-side circuit for the selected route. Retain or transfer connections as specified in the installation steps; do not join competing supplies or output drivers.

Accessory-side connections - 4

CoolBoost Stage 2 V2 · accessory-side connections

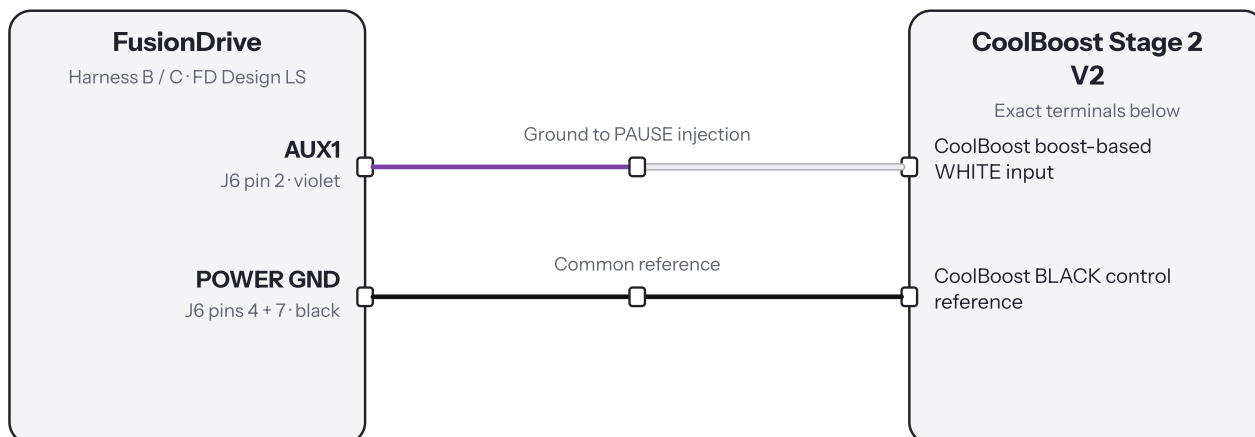
Accessory connections for the selected route. Grey bands are complete looms; blue dashes are pressure hoses.



Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

Complete the accessory-side circuit for the selected route. Retain or transfer connections as specified in the installation steps; do not join competing supplies or output drivers.

2.2 W2 • Route A • boost-based V2 ground pause



Wire colours: FD loom at left; documented accessory wire at right. Small sleeve = insulated splice.

Connector positions here are logical; use the mating-face drawings to locate FD cavities.

WHITE is a pause input only on the boost-based V2; never use this connection on voltage-based V2.

Terminal-to-terminal wiring schedule

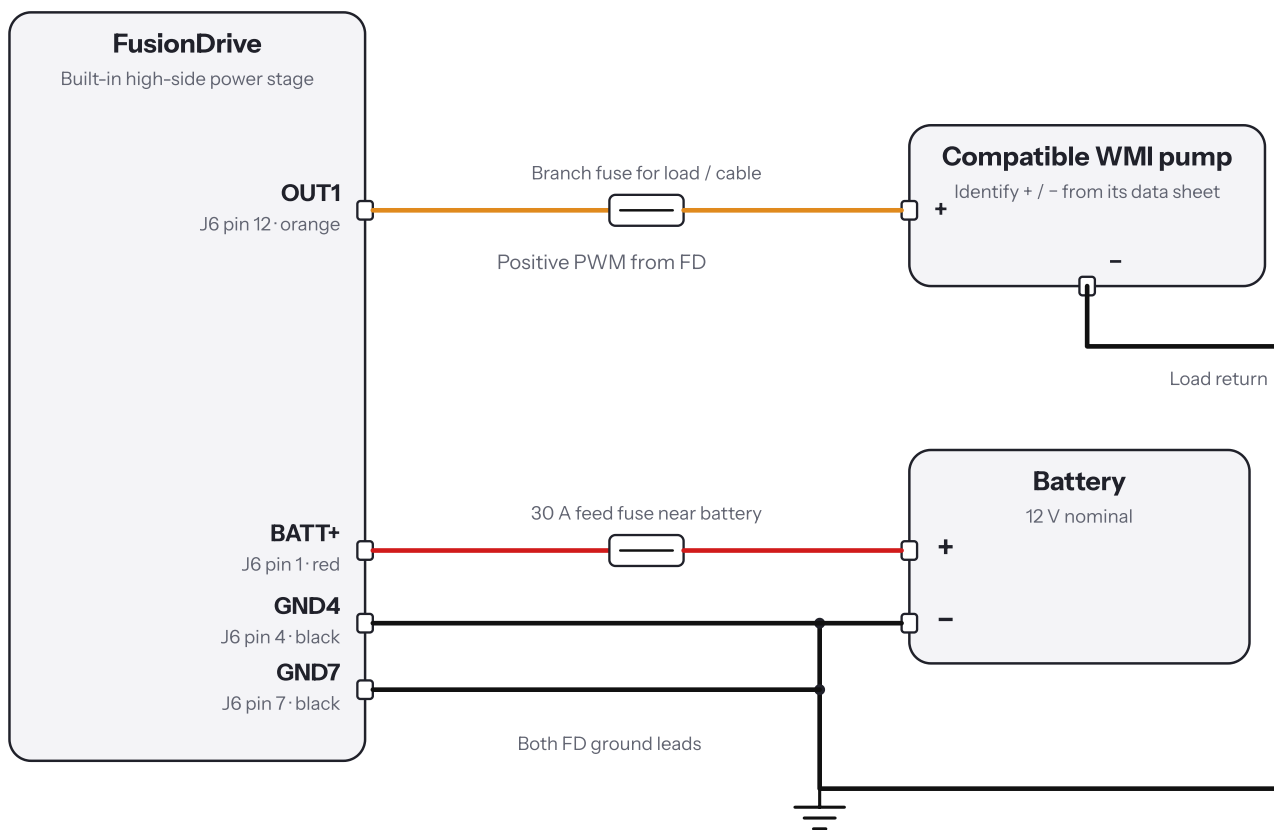
From	To	Signal / electrical condition
FD AUX1 • J6 pin 2	CoolBoost boost-based WHITE input	Ground to PAUSE injection Released permits native operation; ground inhibits
FD GND • J6 pin 4 / 7	CoolBoost BLACK control reference	Common reference No pump current in J8

OFF / released: FD off/input released: native injection may resume.

ON / active: Grounded: injection paused while original protections stay active.

Qualification: Only a controller-side input isolated from vehicle ECU/clutch wiring; verify voltage/current and release behaviour.

2.3 W3 • CoolBoost Stage 2 V2 • direct FD pump wiring



OUT1-4: designed 10 A each, shared 30 A fused feed. Verify actual running / start current and heat.

Disconnect both old controller/load wires. Use the load maker's required suppression and PWM frequency.

Disconnect both original driver-to-load conductors. FD supplies the load positive side from its dedicated fused feed; the load negative returns to rated power ground. Use an external power interface only when this load exceeds FD capacity or requires a different electrical drive.

Terminal-to-terminal wiring schedule

From	To	Signal / electrical condition
Battery positive through suitable fuse (30 A maximum shared feed)	FD BATT+ · J6 pin 1 · red	Dedicated load supply Positive 12 V
FD GND · J6 pin 4 · black	Rated common power ground	First FD ground Ground
FD GND · J6 pin 7 · black	Rated common power ground	Second FD ground Ground
FD OUT1 · J6 pin 12 · orange via suitable branch fuse	Compatible WMI pump positive	PWM load supply High-side positive
Compatible WMI pump negative	Rated power ground	Load return Ground

OFF / released: FD output off removes its sourced load command. Verify the load is inactive, no alternate feed/backfeed remains, and the installation retains its required mechanical or independent protection.

ON / active: The saved FD controller or automation drives the assigned output only when its configured conditions permit. A duty request does not prove measured flow, valve movement or fan speed.

Qualification: FD has four high-side PWM power outputs designed for 10 A each, sharing a 30 A fused feed. A compatible load connects directly to an OUT; no additional driver is needed within its current, inrush, voltage and switching requirements. AUX1/2 are separate 1 A-class low-side sinks. Verify the complete installation on the delivered board; four simultaneous 10 A loads exceed the shared budget. Match load polarity, frequency, suppression, return wiring and physical OFF response; a manufacturer kit name does not establish those values.

3

— COOLBOOST STAGE 2 V2

Original wiring and controller setup

Current app workflow: Configure this installation from its function in Settings. Controls provides live actions and the Dashboard provides glance controls; use a card's edit menu to return to setup. A configured output remains visible even when disabled. Enabled rules operate their assigned enabled outputs automatically; there is no extra output mode to select. Live Off, On or duty takes over a generic output until you choose Resume automation. Setup keeps the electrical limits, calibration and response settings. Assigned boost, WMI and nitrous outputs use their controller-specific actions, preserving sensor protections and any paired fuel/stage logic. Nitrous Arm allows its configured activation conditions to operate; it is not an unconditional spray command.

Setup and vehicle data: Starting presets remain editable; Add Sensor includes calibration and fine tuning before Create. Use dedicated IGN, fresh running-engine OBD evidence, or both for vehicle activity; a dedicated IGN wire is optional when valid OBD evidence is available. If the pressure hose is unused, explicitly select OBD pressure in setup. A valid atmospheric sensor reading cannot identify a disconnected hose. These app choices do not change the product-specific electrical compatibility or limitations described below.

These are the original circuits that remain connected in Route A. They are not extra FD wires. Match the exact manual and photograph the working loom before changes. A keyed harness assembly is retained intact; unspecified cavities are not invented.

Original connection	Original destination	Purpose
CoolBoost thick RED	Battery positive through 20 A fuse	Controller/pump power
CoolBoost thick BLACK	Battery negative	Power return
CoolBoost ORANGE ignition branch	Switched +12 V	Ignition sense
CoolBoost BROWN	Pump BLACK terminal	Native pump negative
CoolBoost RED/GREEN	Pump RED terminal	Native pump positive
CoolBoost GREY	Optional solenoid BLACK	Native valve negative
CoolBoost RED/WHITE	Optional solenoid RED	Native valve positive
CoolBoost BLUE	Original tank-switch terminal A	Native level signal
CoolBoost level-pair BLACK	Original tank-switch terminal B	Native level return
CoolBoost YELLOW	Original SPMU signal terminal	Native pressure-monitor signal
CoolBoost SPMU-pair BLACK	Original SPMU return terminal	Native monitor return
CoolBoost auxiliary GREEN	Existing boost-safe/status interface	Native auxiliary output

Original connection	Original destination	Purpose
CoolBoost auxiliary ORANGE	Existing boost-safe/status interface	Native auxiliary output pair; preserve original

Record the native start/full settings, boost-based variant, tank-level circuit, pressure-monitor option and any pre-pressure setting. Pre-pressure is a valve-system feature that must match the actual plumbing; it is not permission to run against a closed valve without qualification. Keep both pump leads, the optional solenoid and every original sensor/failsafe connection as shown on the matched sheet.

Manufacturer wiring and settings: one-page circuit.

4

— COOLBOOST STAGE 2 V2

FD hardware and installation record

This design uses **FD Design LS**. J8 inputs are conditioned 0–5 V: IN1/2/3 are pins 1/2/3; IN4/5/6 are pins 5/6/7. J8-4 supplies 5 V sensors and J8-8 is sensor ground. Never join two 5 V regulators or put pump current through sensor ground. Direct pulse/frequency sensors need a documented receiver; these inputs are not pulse counters.

AUX1/J6-2 and AUX2/J6-8 are nominal 1 A-class ground sinks, not voltage supplies or DACs. Grounds are J6-4/7. OUT1-4 are high-side channels J6-12/11/10/9, supplied from J6-1. The outputs are designed for 10 A each within the shared 30 A fused feed. Reserve channels after checking all boost, WMI, nitrous and automation assignments. Drawings show terminal roles, not an invented mating-face pinout.

Record the installed harness revision, sensor transfers, units, channel map and fuse/driver details. This is an installation-design review, not a claim that the paired products have been electrically tested together. A conditional driver drawing remains conditional until its exact hardware has passed commissioning.

5

— COOLBOOST STAGE 2 V2

Route A — retain the injection system

The boost-based auxiliary-input note documents WHITE as a clutch-pause input: it normally floats at approximately 1–5 V and grounding it pauses injection. FD can therefore make a bounded pause request through AUX1/J6-2 after verifying actual sink requirements. This request inhibits injection; it does not arm or force injection. Use only a controller-side input isolated from vehicle clutch/ECU circuits. If WHITE is already shared with the vehicle, engineer an isolated interface first rather than letting FD ground the ECU circuit.

5.1 Sensor and monitoring setup

Use wiring diagram W1 in the Wiring diagrams chapter for the exact connections. Return here for the installation and app setup steps.

Use IN1/J8-1 for measured flow, IN2/J8-2 for independent line pressure, IN3/J8-3 for independent tank level and IN4/J8-5 for a qualified actual command/duty source. Each receiver must remain inside 0–5 V at J8 under normal, unplugged and power-loss conditions. Do not connect a 12 V lamp, raw pump terminal, injector wire or unconditioned pulse sensor. Added sensors use their own specified supply; only suitably rated 5 V sensors may use J8-4.

In **Sensors**, name each channel, enter the actual transfer and units, save and reload from ESP. Compare physical zero and known points. A voltage is not a flow calibration until the installed sender/map has been characterized. Flow upstream of a branch does not establish delivery to each nozzle; pressure alone does not establish flow. A verified CAN source may substitute only with its actual decoder, units, freshness and failure behaviour.

Dashboards and logging work without a command receiver. For dedicated monitoring, use **WMI Control > Keep my controller > Monitor only**, with **Connection** showing **No WMI output required**. This mode requires a fresh genuine external-demand source; do not substitute boost, RPM or measured flow. Bind demand in percent, flow in mL/min, pressure in psi and level in percent, using $\text{source} \times \text{scale} + \text{offset}$. A verified 0–5 V/0–100% receiver uses scale 20 only if the source is still in volts; an already calibrated percent source uses scale 1.

For binary activity use 0/100%, disable Expected flow by duty and commission an active envelope. For actual percentage command, measure minimum/maximum expected flow at each 10% interval, including idle. Set Maximum input age, startup grace, debounce and healthy-OFF recovery from actual hydraulic and source response. Save with **Save WMI Settings**, acknowledge and **Reload saved values**. Monitor-only cannot stop an untouched original pump or replace its engine fallback.

5.2 Optional ground-pause request — boost variant only

Use wiring diagram W2 in the Wiring diagrams chapter for the exact connections. Return here for the installation and app setup steps.

Configure **More > Outputs > AUX1** as **WMI pause request**, with initial duty zero. Use only binary zero/released or 100%/grounded states. Leave external-EBC ownership unassigned. A manual bounded request or a single automation may pause this input; use a finite Hold and verify its restored value is zero. Do not apply progressive PWM.

FD OFF releases WHITE and permits the native controller to resume whenever its own conditions request injection. This is therefore not a failsafe-by-power-loss permit circuit. Commission loss of FD power and pause release explicitly; an automation must never imply that a pause is latched after the sink has released. Retain all original low-level, pressure and boost-safe protections.

If an independent safety design requires injection inhibited whenever FD is unpowered, a separately engineered relay/interface and safety case is needed. It is not supplied by changing a label in the app. The voltage-based V2 variant has no pause route in this guide.

6

— COOLBOOST STAGE 2 V2

Route B — assess the replacement architecture

The V2 harness actively connects to both pump terminals (BROWN to pump black; RED/GREEN to pump red). Disconnect both before using a new driver. Its separate solenoid output and optional pressure-monitor/level circuits must also be reassigned explicitly. Do not transfer the GREY solenoid negative onto an FD high-side output or use a tank-switch loop as a progressive command.

Native start/full calibration, optional pre-pressure, clutch-pause semantics, its pump/solenoid driver, level/pressure checks and boost-safe/status signalling are no longer provided by the removed controller. FD supplies new boost-based control and measured protections only after the replacement driver and sensors have been fitted, saved and commissioned. Existing hydraulic hardware still requires fluid, voltage and duty suitability checks.

6.1 Direct FD output and saved configuration

Use wiring diagram W3 in the Wiring diagrams chapter for the exact connections. Return here for the installation and app setup steps.

FD has four high-side PWM power outputs designed for 10 A each, sharing a 30 A fused feed. A compatible load connects directly to an OUT; no additional driver is needed within its current, inrush, voltage and switching requirements. AUX1/2 are separate 1 A-class low-side sinks. Verify the complete installation on the delivered board; four simultaneous 10 A loads exceed the shared budget.

Disconnect both old pump leads. Connect OUT1/J6-12 to the compatible pump positive and its negative to rated power ground, with J6-1 fused power and both FD grounds connected. Match frequency, suppression and branch protection to the actual pump. With a dummy load, prove OFF on FD power loss and boot, then verify fluid collection and anti-siphon behaviour. Aquamist FAV/injector-synchronous metering and proprietary pump/valve arrangements do not become generic FD loads; use a new compatible fluid-control design or retain their native electronics.

In **More > Outputs**, enable/name the command, enter its qualified frequency. In **WMI Control > Your WMI installation**, choose **FusionDrive WMI** and the same **Connection > Pump output**. Assign one owner; avoid a generic ramp unintentionally compounding WMI smoothing.

WMI pump progression uses the configured shared boost-pressure source, even when Fusion Boost actuation is disabled. Open **WMI Control → Connection → Shared boost pressure**. Select the intended onboard, analog, OBD or decoded CAN pressure source supported by the app, verify gauge-pressure units and freshness against a reference, then use **Save shared pressure source** and **Reload saved source**. This saves only the shared measurement selection; it does not enable either controller or prepare an output. Flow, line pressure, tank level and external-demand bindings in WMI Protection serve different roles; they do not choose pump boost demand. Prove missing or stale pressure prevents injection before tuning the curve.

Choose **Injection > Linear ramp** for start/full boost or **Injection > Boost table** for Pump Duty by Boost at 5 psi intervals. Calibrate Minimum/Maximum Duty, Off Below, Smoothing Up/Down and real flow envelopes. Set maximum source age, debounce and startup grace. Grace delays only low-flow/pressure minimum checks, never missing/stale assigned-source faults. Use Prime Duty/Default Prime Duration for controlled collection and prove Stop Prime and WMI OFF physically stop delivery.

Save WMI Settings, acknowledge and **Reload saved values**; save/reload sensors and outputs too. Keep WMI OFF until commissioning passes, then prove saved ESP operation without the phone. This mode does not recreate a removed controller's electrical diagnostics or injector-related metering.

7

— COOLBOOST STAGE 2 V2

Commissioning, faults and recovery

Keep all nozzles outside the engine during collection tests. Record fluid mixture, jets, flow, pressure, voltage/current, configuration and actual reaction time. Native pump test and FD Prime are different controls for different routes.

Condition	Retained system	New FD pump system
FD unpowered	Native operation unchanged; any pause releases	FD output off, pump physically OFF
Phone absent	Original controller and saved ESP rules continue	ESP retains configuration and control
Zero command	No unexpected flow or siphoning	Pump OFF; no unintended valve opening
Healthy demand	Native response matches collected delivery	Measured flow/pressure match envelope
Missing/stale measurement	Mark fault; native failsafe remains independent	Assigned-source fault prevents/cuts injection
Empty/low tank	Original warning and independent FD indication checked	Configured threshold prevents injection
Blockage/leak simulation	Use safe collection rig; verify original fallback	Physical delivery fault trips and latches
Fault clears while demand remains	Do not bypass original protection	Keep WMI OFF and demand removed
Power cycle	Check native settings and FD separately	Reload ESP settings and repeat OFF test

Before **Clear WMI Fault**, switch WMI OFF, remove demand, restore fresh healthy sources and wait the configured healthy-OFF interval. Clearing is not an OFF command; operation may resume immediately if left enabled. Repeat the failed test before reconnecting nozzles and validating the tune under controlled load.



— COOLBOOST STAGE 2 V2

Automations and tuner logs

Record real flow, pressure, tank, verified command, controller output, WMI faults, automation events, boost, RPM, throttle and available lambda. Compare command onset with physical flow onset, and distinguish missing samples from zero delivery. Requested recorder frequency does not improve a slow OBD source.

A delivery-fault rule may switch **WMI Enable = OFF** for an FD-owned controller and request a separately commissioned reduction from boost equipment FD actually controls. It does not stop an untouched third-party boost controller. Avoid competing output writers or automatic re-enable from one recovered sample. Save/reload the rule and prove its missing-source and recovery behaviour without the phone.



— COOLBOOST STAGE 2 V2

Sources and release record

- [CoolBoost SNS Stage 2 V2 progressive wiring Rev 3B](#). Reviewed one-page circuit.
- [CoolBoost Stage 2 V2 auxiliary input note](#). Reviewed one-page boost/voltage variant distinction.
- [CoolBoost Stage 2 V2 controller operation](#). Reviewed pages 1–5.
- FD basis: `local V1_LS_HARDWARE_LIMITATIONS.md`, input/output configuration and the matching boost/WMI views and protocol, reviewed 12 September 2026. This establishes intended configuration and terminal roles; it does not replace electrical testing.
- Manufacturer image provenance and SHA256: `local expansion-control/image-manifest.json`. The identification image is not a connector pinout.

Installer release record: vehicle, exact controller/serial, FD firmware and LS board revision, sensors and transfers, channel ownership, driver/load/fuse selections, native settings, protective limits, measured response, test date and responsible installer. Mark each truth-table row with a real result. Unqualified components or missing transfers remain open work; they are not permission to assume compatibility.



Questions?

Documentation · fusiondrive.io/docs

Support · in the app: [More](#) → [Settings](#) → [Device & firmware](#) → [Report an Issue](#)

Review library · [Local FD V3](#) / [accessory-integration](#) / [model-guides](#)

FusionDrive switches real current to real loads and can control boost, water/methanol injection and nitrous. Fuse every feed and every load, respect the ratings in the specifications, and set failsafes before you drive. Configure and tune with the vehicle stationary. The installer is responsible for compliance with local vehicle regulations. Independent local review draft. Exact-model electrical compatibility and the commissioning tests in this guide have not received physical sign-off. Product photographs and manufacturer names identify equipment only; no manufacturer endorsement is implied. Follow the matching original manual and the qualification requirements for each proposed interface. No universal replacement or load-rating approval is given.