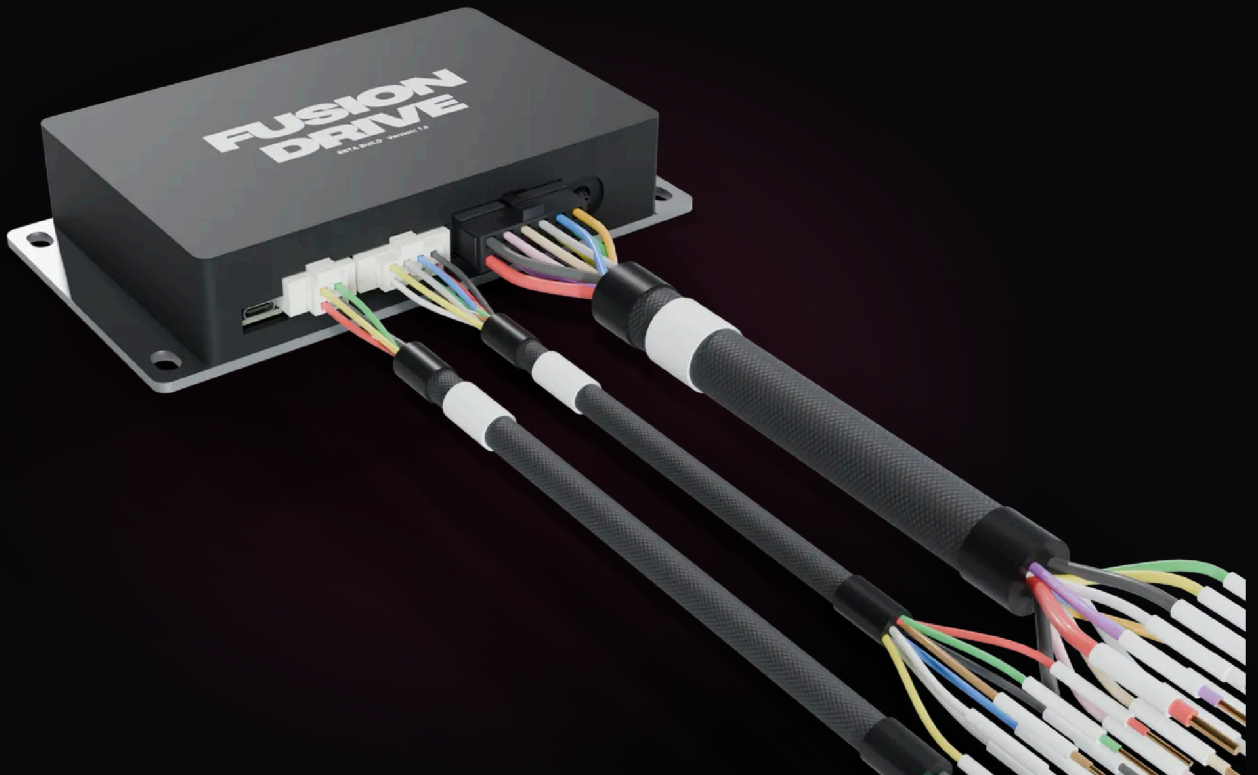




— EXACT-MODEL INSTALLATION GUIDE

Innovate MTX-D 39040 Ethanol + fuel temperature

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



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1

— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Identify the exact MTX-D

This guide covers the **Innovate MTX-D 39040 complete ethanol-content/fuel-temperature gauge kit**. The 39120 package excludes the sensor. The archived shared manual contains legacy 3912/ECF-1 wording; use the current 39040 product identity and verify the actual supplied sender/harness before applying its shared wiring instructions. The useful FD interface is the gauge's **two programmable analogue outputs**, not a guessed sensor pulse input.



Identification photograph: Innovate official 39040 complete-kit product image, archived from its matching product page. Native harness stays intact; the photo is not a connector pinout.

This is a researched FD Design LS installation design for local review; physical compatibility has not been bench/vehicle verified. Match the exact model, manual revision and connector orientation before assembly. The drawings show electrical nets, not universal mating-face views.

FD adds shared visibility, local rules and phone logging. It does not alter the stock ECU tune through a logging connection. The ESP stores device settings; phone and portal are views/configurators. Phone recordings and optional cloud backup are separate.

Keeping this gauge is a direct way to put ethanol content and fuel temperature beside stock-ECU data in FD. The original display, temperature alarm and sensor conditioning remain available even if the phone is absent. FD does not alter the ECU's ethanol compensation or fuel map through these logging wires.

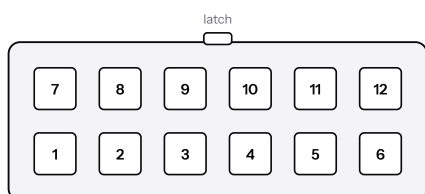
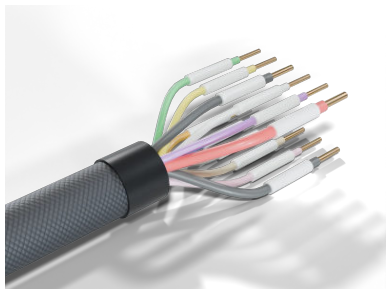
2

— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

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

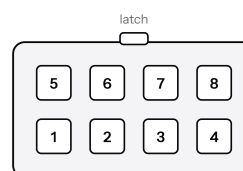
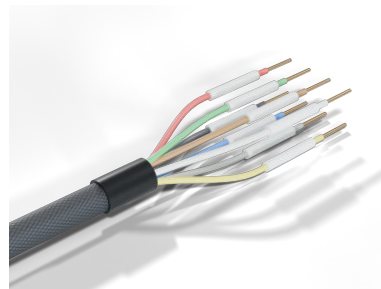


Bottom row, left to right: 1 BATT+ · 2 AUX1 · 3 IGN · 4 GND · 5 CAN2 H · 6 CAN2 L
Top row, left to right: 7 GND · 8 AUX2 · 9 OUT4 · 10 OUT3 · 11 OUT2 · 12 OUT1

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

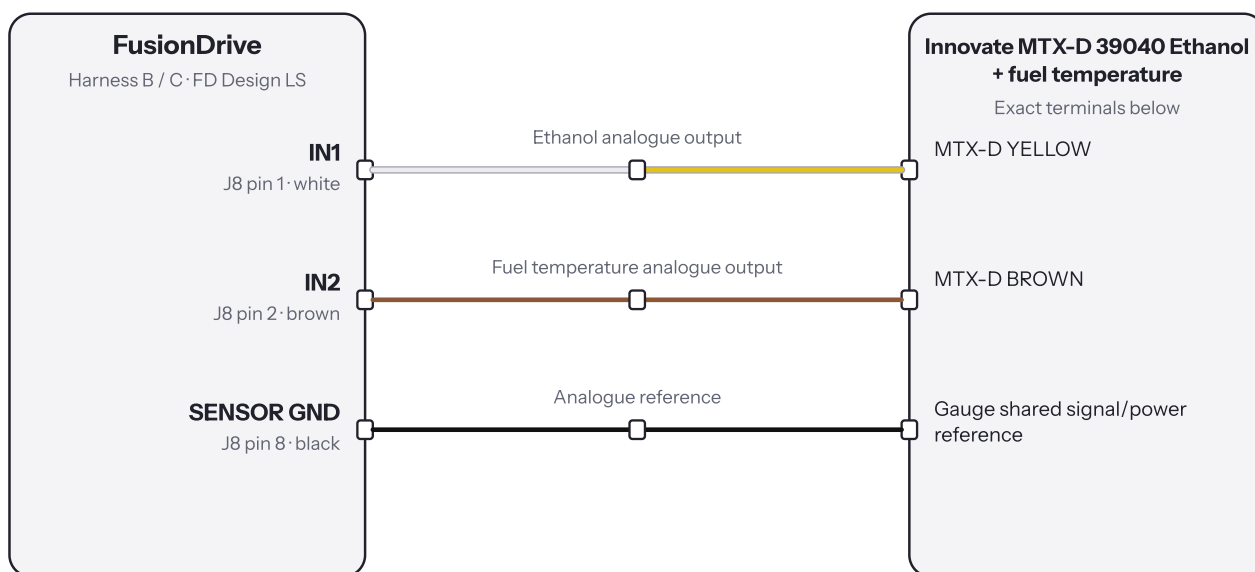
Original FusionDrive harness reference. Look into the plug mating face with the latch at the top. Wire drawings show logical terminal positions.

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 • Innovate 39040 native sensor loom plus two FD analogue outputs

2.1

W1 • Innovate 39040 native sensor loom plus two FD analogue outputs



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.

Innovate 39040 native sensor loom plus two FD analogue outputs

Terminal-to-terminal wiring schedule

From	To	Signal / electrical condition
MTX-D YELLOW	FD IN1 / J8 pin 1	Ethanol analogue output 0–5 V
MTX-D BROWN	FD IN2 / J8 pin 2	Fuel temperature analogue output 0–5 V
Gauge shared signal/power reference	FD sensor ground / J8 pin 8	Analogue reference ground

OFF / released: Gauge absent: outputs may be zero or unqualified; zero ethanol is not automatic proof of failure

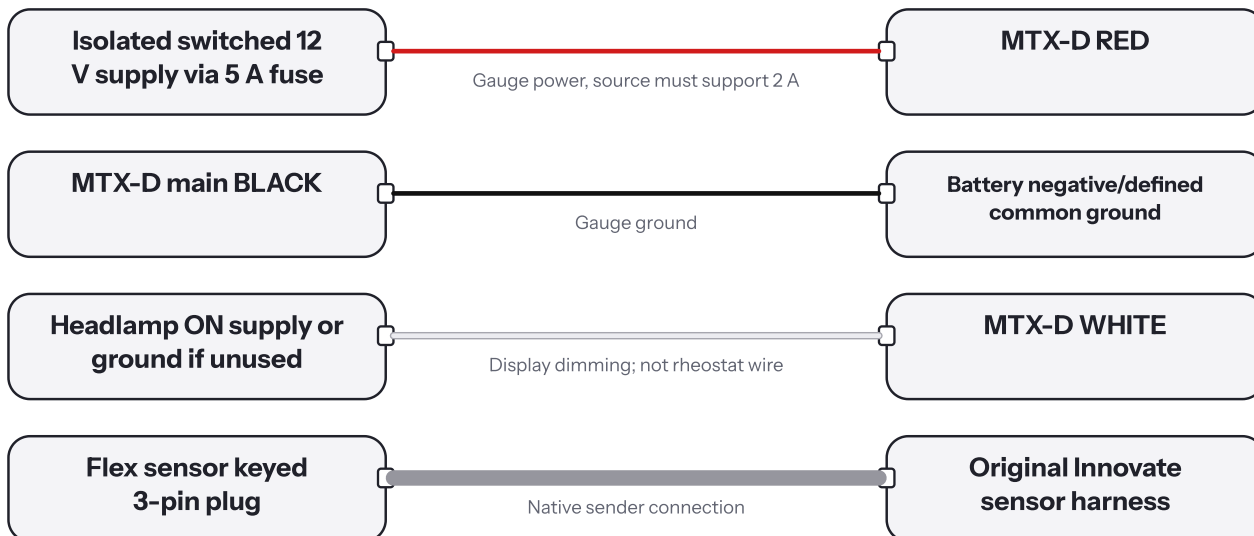
ON / active: Gauge retains sensing/display; FD reads ethanol and temperature independently

Qualification: Do not confuse WHITE dimming input with an analogue output. Verify live programmed curves; native 4-pin loom is retained without invented cavity assignments.

Accessory-side connections - 1

Innovate MTX-D 39040 Ethanol + fuel temperature • accessory-side connections

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



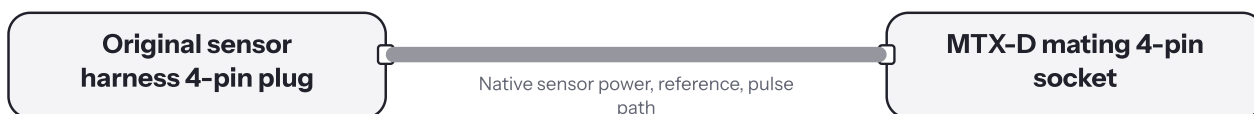
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

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

Innovate MTX-D 39040 Ethanol + fuel temperature • 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.

3

— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Route A - retain the gauge and flex-fuel sensor

3.1 Native and FD wire schedule

Wire/connector	Function and exact route
RED	Isolated switched 12 V supply through 5 A fuse; supply circuit supports 2 A
Main BLACK	Clean common ground, preferably battery negative
WHITE	Headlamp-ON dimming supply; ground if unused; never the variable rheostat dimmer
Original 4-pin gauge/sensor loom	Retain keyed mating connectors and original sensor connection
YELLOW	Ethanol analogue output → FD IN1 / J8 pin 1
BROWN	Fuel-temperature analogue output → FD IN2 / J8 pin 2
Common reference	Planned gauge/FD reference; FD J8 pin 8 is signal ground

The manufacturer provides the sensor connection as a preassembled 4-pin to 3-pin harness; it does not publish a free cavity-by-cavity reassignment in this manual. Retain that harness. Do not apply the AEM sensor's pin numbers to an Innovate loom by connector appearance. FD J8 pin 4 is unused: the gauge already powers/reads its sender.

3.2 Before terminating wires

- 1 Record model, sender, connector orientation, settings and existing receivers. Save a baseline log, verify native warnings and isolate power/loads.
- 2 Reserve the illustrated inputs. J8-8 is sensor ground; J8-4 is 5 V and stays unused unless specified. Never parallel active supplies.
- 3 Preserve power returns. Keep motor/heater current out of sensor ground; insulate, strain-relieve and separate wires from heat/ignition.
- 4 Check unpowered continuity. Meter operating and fault voltages against FD sensor ground before attaching IN.

The gauge output is ground-referenced. Measure offset between the gauge reference and FD J8 pin 8 with accessories off and on. Join the planned low-current reference without diverting gauge or pump power return through an FD IN connector. An intact display can coexist with an inaccurate remote log if ground offset is ignored.

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Preserve and read the native configuration

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.

Before entering FD endpoints, connect the gauge's OUT programming port to the specified serial programming cable and a suitable computer adapter. Follow the manual's LM Programmer connection procedure; this is a configuration link, not a CAN bus. Download/read the existing settings and record **Ethanol% Output**, **Fuel Temp Output**, display scale and temperature alarm.

The factory YELLOW output is 0 V=0% and 5 V=100%. The factory BROWN output is 0 V=-40°F and 5 V=257°F, equivalent to -40°C and 125°C. Both outputs are programmable. Save the actual programmed endpoint values in the installation record. If somebody has already changed them, match FD to those values or deliberately restore/reprogram the gauge and verify it; do not silently assume factory defaults. Use the native Program action so changes reach the gauge.

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— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Configure both channels in FD

- 1 In **Sensors**, tap empty **IN1 / J8 pin 1**. Choose **0–5 V Generic**, Type **Analog**, name **Ethanol content - MTX-D 39040**, and Create.
- 2 Edit IN1 to Unit **%**, **Additional voltage scale 1**, Voltage Range **0–5 V**, Value Range **0–100** for factory output. Configure Display Range and Show on Dashboard.
- 3 Tap empty **IN2 / J8 pin 2**, create **Fuel temperature - MTX-D 39040**, then Edit to Unit **°C**, scale **1**, Voltage Range **0–5 V**, Value Range **–40–125** for factory output. Use °F and –40–257 only if that is your deliberate logging convention.
- 4 Save each channel, wait for ESP acknowledgement, refresh and reopen to verify stored slot, unit and endpoints. The plus action uses the first free input; it is not an explicit slot picker.
- 5 Compare Connector voltage and Current Value against the gauge and a known electrical test stimulus. For ethanol, 0/2.5/5 V gives 0/50/100%; for fuel temperature it gives –40/42.5/125°C. These are arithmetic checks, not a declaration that an actual fuel sample has that composition.
- 6 Reboot FD and read back the settings. Verify original gauge behaviour with FD disconnected, then local FD rules with the phone absent. Check achieved recording timestamps separately.

5.1 A limitation of the factory output range

Because legitimate 0% ethanol uses 0 V, a zero-voltage output is not inherently a fault code. Gauge power loss or some wiring failures can resemble a real reading. Review the error-code table and deliberately test unplugged sensor, gauge power loss and each output/reference open. If needed, program an allowed non-rail output span and use qualified voltage limits, plus an independent source-ready signal where available. Do not assert that such programming creates a fault flag unless the installed unit's fault output behaviour has been measured.



— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Route B - remove the gauge and keep its sensor function

There is no direct sensor-to-FD replacement for the gauge electronics in this build. The sender produces a pulse-based composition/temperature measurement; FD analogue IN does not decode it. To remove the gauge entirely, positively identify the sender model and select a decoder that supports its voltage, frequency, pulse width, pull-up and failure behaviour. The original 4-pin loom is not a new universal pinout.

A qualified decoder may provide two linear analogue outputs or a documented CAN signal to FD. Replace the gauge's excitation only after disconnecting it; keep any ECU that relies on the sender supplied with the required valid data. Use the chosen decoder's exact pins and transfer functions, then repeat the FD setup with its values. Without that part-specific evidence, keep the MTX-D as the controller, possibly relocated to an accessible protected position, and use Route A.

Removing it loses the local display, programmable warning, serial-programming interface and original output conditioning. Recreate essential no-phone indication and source-fault handling before release. If the ECU was separately tuned for fixed fuel, adding FD ethanol visibility alone does not make that tune safe across arbitrary blends.



— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Automations and a useful tuner recording

A useful first recording follows a refuel and a controlled warm-up, correlating measured ethanol and fuel temperature with lambda and load. Transport delay and low return flow can postpone what the sender sees. Do not enable an ethanol-dependent power mode solely because an in-range analogue number appears on screen.

Start with a disabled rule called **Ethanol content - MTX-D 39040 - review threshold** and an isolated indicator or dummy load. Use **ALL conditions (AND)**: the named measurement crosses an installer-approved test threshold, its **Valid** field is ON, and its **Acquisition age** is within a tested limit. For an analogue channel, also qualify **Connector voltage** against the accepted source range. These fields appear under the sensor's configured name. CAN freshness and physical validity are different: repeated frames can contain a failed sensor value.

Use a qualified indicator/interface: AUX1 / J6 pin 2 and AUX2/J6 pin 8 sink current; they do not supply 12 V. For a binary AUX test, start at 0, request 100% when true, and enable **Restore Previous Value When False** only with prior value 0 and one output owner. Do not omit required gates to fit rule limits. Independently test source-loss release and latency.

In **Data Log** settings select **Ethanol content - MTX-D 39040**, raw voltage and age where exposed, then add fuel temperature, lambda, RPM, MAP/boost and relevant fuel-pressure/nitrous signals, relevant controller request/state and automation transitions. Choose active/idle rates and inspect achieved timestamps after leaving the live screen. A source's published update rate is not a promise of that phone recording rate; a 50 Hz request cannot produce new measurements from a 20 Hz source.

Label commands as requests. Record sender location, model, units, calibration and wiring revision. Overlay modification and vehicle traces to investigate events; Cloud/Intelligence can suggest trends, not prove flow or guarantee engine safety from a command.



— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Commissioning and failure-state acceptance

Use isolated loads and an independent reference first. These are required checks, not recorded test results.

Test	Required observation
FD disconnected	Original display, controller and warnings remain correct
Low/middle/high reference stimulus	Calibration matches within agreed tolerance
Source power absent	Missing data does not grant a healthy permission
Signal and reference individually open	Each fault identified; plausible false values documented
Source fault/warm-up	Error is not accepted as a healthy reading
Dummy accessories switching	No ground-noise false trigger
ESP reboot / phone absent	Saved settings return; local actions behave correctly
Logging outside live screen	Achieved timestamps and gaps recorded

An endpoint-clamped analogue value can conceal a failed source. If a required fault is indistinguishable, retain independent native protection or qualify another status source. An unresolved failure state is a hold point.

Record vehicle, FD serial/board, firmware/iOS build, accessory identity/revision, connector photos, occupied IO, calibration, retained/lost functions, test-log files, installer and date. Reconnect accepted loads only, then repeat a controlled functional run. Keep the original configuration and reversal procedure.



— INNOVATE MTX-D 39040 ETHANOL + FUEL TEMPERATURE

Sources and review scope

[M1] Innovate MTX-D Ethanol Content/Fuel Temperature manual 11-0146, pp 3–7,10.

https://www.innovatemotorsports.com/wp/content/uploads/2022/05/MTXD_Ethanol.pdf [P1] Innovate complete kit 39040 product identification, Product page. <https://www.innovatemotorsports.com/mtx-d-ethanol-content-percentage-fuel-temp-gauge-kit.html>

Identification photograph: Innovate official 39040 complete-kit product image, archived from its matching product page. Native harness stays intact; the photo is not a connector pinout.

FD implementation checked against HardwareMap.swift, SensorsView.swift, SensorManager.swift, CANBusConfigurationView.swift, CANDecodeEditorView.swift, AutomationEditorView.swift and DataLog/LogSettingsView.swift in the local FD project. Electrical interfaces and native operating facts above come from the named manufacturer sources. Any extra interface remains conditional until its actual part, wiring, range and fault behaviour are recorded and tested. No live website publication or physical compatibility certification is implied.



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.