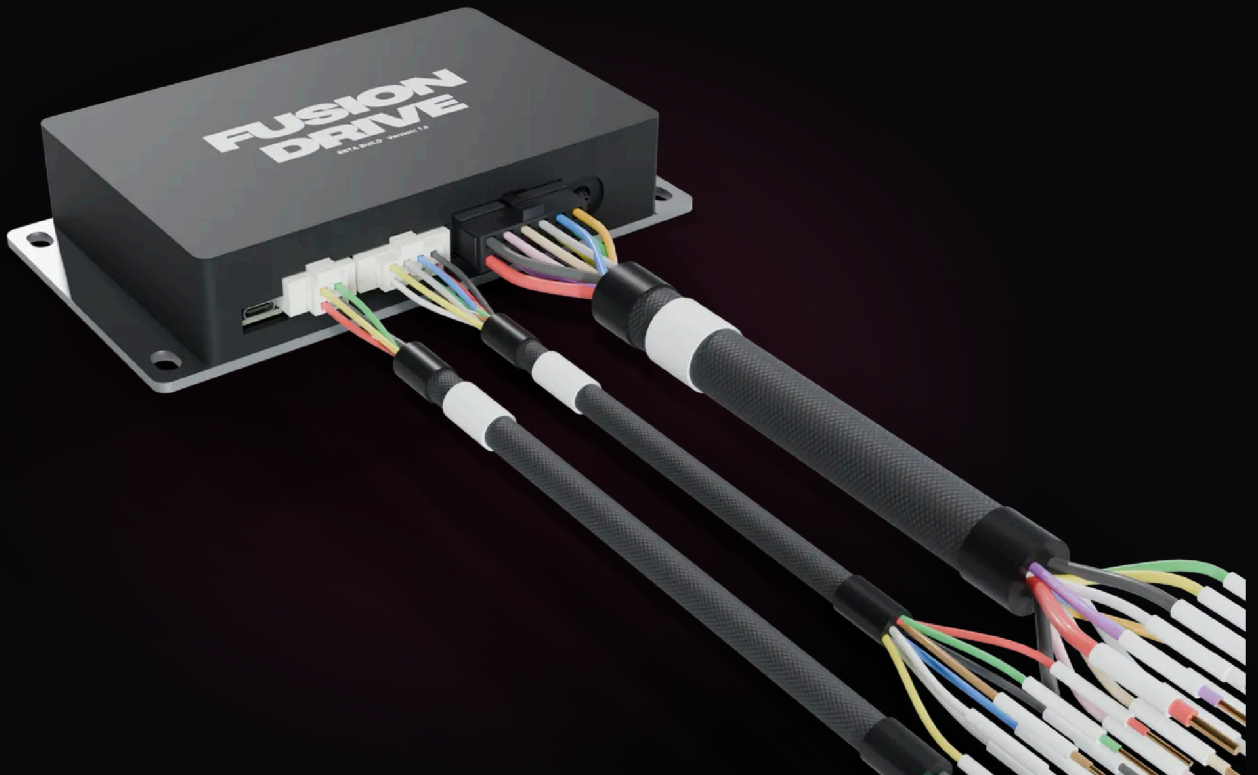




— EXACT-MODEL INSTALLATION GUIDE

AEM 30-0334

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



Contents

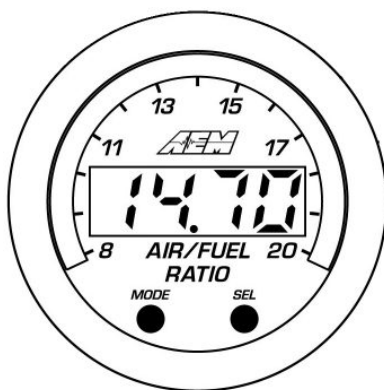
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Identify the exact product and choose the result

Match the 30-0334 gauge, the 35-3459 OBDII pass-through harness and the Bosch LSU4.9 sensor. The OBD version has a different CAN harness from the 30-0300 gauge. Several optional output cavities are unpopulated in the supplied harness. A similar X-Series face is not sufficient identification.



AEM 30-0334 X-Series OBDII wideband gauge — Bosch LSU4.9 — manufacturer identification image; verify physical revision and connector labels.

Retain the gauge and its established OBD tuning-tool connection, then add a separate conditioned analog measurement to FD. This keeps the tuner's existing tool workflow while allowing FD to overlay mixture with its inputs, controller states and OBD channels. The worked integration deliberately uses the documented analog output, which is independent of scanner-specific support for the gauge's auxiliary ECU emulation.

This independent FD Design LS guide is a researched connection design for local review, not a passed physical test. Manufacturer references establish interfaces; FD steps are checked against local implementation. Identify both ends before wiring.

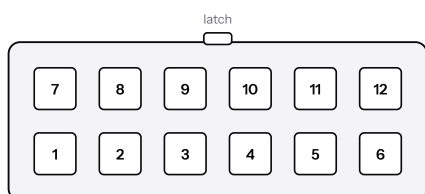
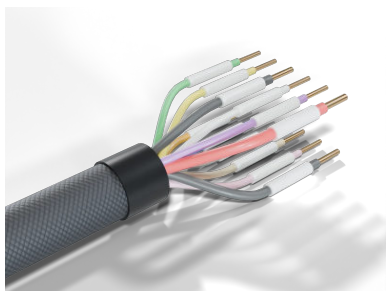
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Wiring diagrams

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

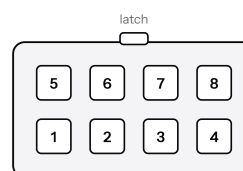
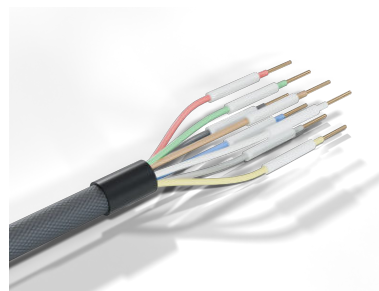


Bottom row, left to right: 1 BATT+ · 2 AUX1 · 3 IGN · 4 GND · 5 CAN2 H · 6 CAN2 L
Top row, left to right: 7 GND · 8 AUX2 · 9 OUT4 · 10 OUT3 · 11 OUT2 · 12 OUT1

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

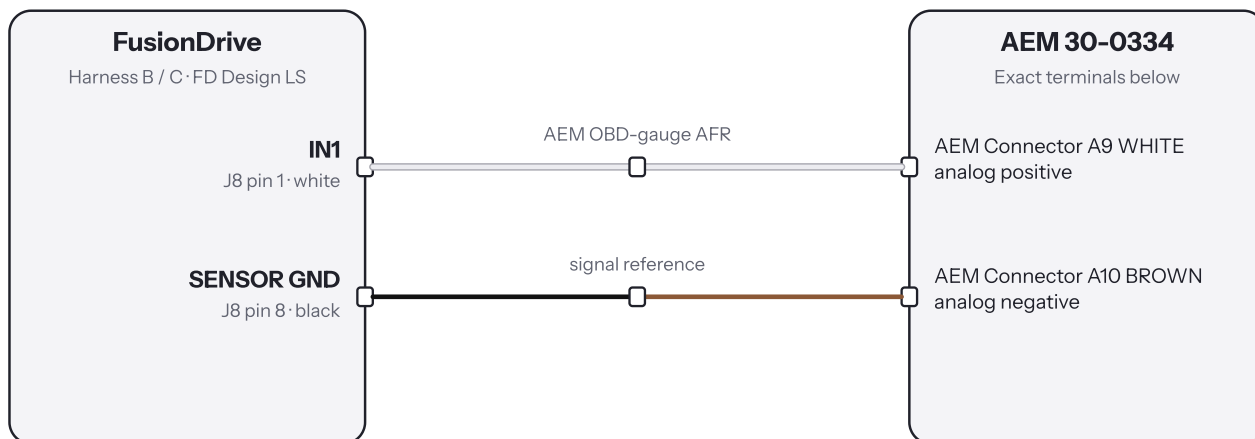
Looking into the plug's mating face with the latch at the top

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 • AEM 30-0334 conditioned analog outputs to FD

2.1 W1 • AEM 30-0334 conditioned analog outputs to FD



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.

Retain the manufacturer controller; connect only its documented logging output and reference to FD.

Terminal-to-terminal wiring schedule

From	To	Signal / electrical condition
AEM Connector A9 WHITE analog positive	FD J8 pin 1 IN1	AEM OBD-gauge AFR 0–5 V conditioned output
AEM Connector A10 BROWN analog negative	FD J8 pin 8 GND	signal reference no heater, pump or solenoid return current

OFF / released: Missing power, readiness or signal: qualify the resulting voltage and block dependent permissions.

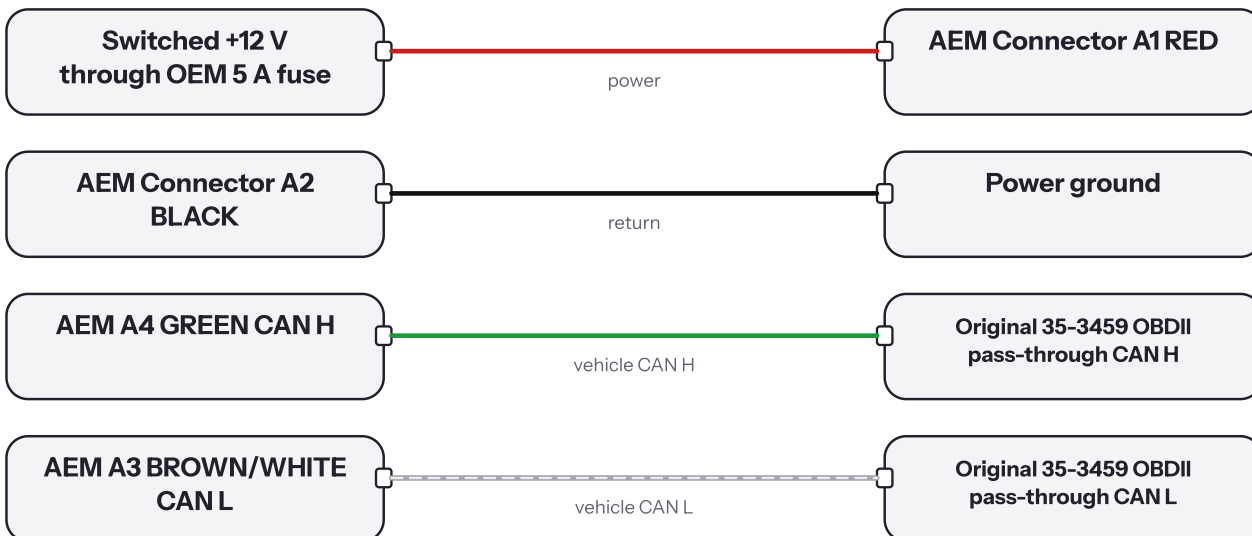
ON / active: FD converts documented connector voltage to the named engineering unit.

Qualification: Leave J8 pin 4 unconnected: the accessory retains its own supply and sensor conditioning. Never connect a raw wideband or thermocouple lead to J8.

Accessory-side connections - 1

AEM 30-0334 · accessory-side connections

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



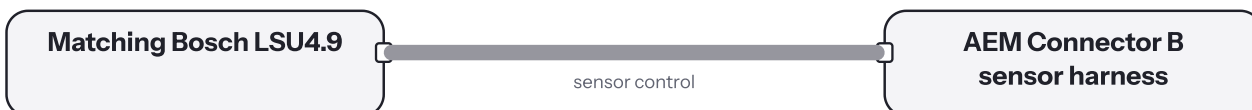
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

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

AEM 30-0334 · 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.

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Prepare the installation

- 1 Save the native configuration, photographs and a baseline log. Record product revision, FD LS serial and firmware/iOS build.
- 2 Isolate power and controlled loads. Check connector cavity markings and the manufacturer view: mating views can mirror pin order.
- 3 Keep the original sensor/controller supply, fuse and power-return path. A signal-reference lead must not become a replacement high-current return.
- 4 Reserve the named FD inputs or CAN2 signals. If a physical input is occupied, assign another free input and update the harness label, app name and acceptance record together.
- 5 Route CAN as a twisted trunk with short branches and exactly two appropriate end terminators. Check existing termination before adding parts. About 60 Ω across an unpowered complete bus is a useful two-120 Ω check, not proof of correct wiring.
- 6 Keep vehicle OBD/CAN1 separate from accessory CAN2. Never join their H/L pairs simply to make an accessory visible in both places.
- 7 Use proper terminals, insulation and strain relief. First test with isolated loads and an independent instrument.

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Route A — retain the OBD system and add a separate measurement

Photograph and record the gauge's obd2 settings before changing wiring: ECU number, O2/PID selection, identifier width and bitrate. The native defaults are ECU #6, O2 #1 / PID 0x24, 11-bit and 500 kbit/s. A second gauge and some factory-wideband vehicles require different addressing/PID choices. The manual's ECU #6 table lists 0x7E6 for 11-bit and 0x18DA28F1 for 29-bit; those are not a generic continuously broadcast AEMnet lambda frame. Keep EF1/EF2 choices only for the documented EFILive workflow. A compatibility claim for one tuner's scan tool does not prove FD can independently poll the same emulated ECU correctly.

4.1 Native electrical schedule

Native terminal or wire	Documented function	Installation decision
A1 RED / A2 BLACK	Switched +12 V / power ground	Keep 5 A fused supply and original ground
A3 BROWN/WHITE / A4 GREEN	OBD CAN L / CAN H	Keep the 35-3459 pass-through path
A9 WHITE	Optional analog positive	Populate correctly; connect to FD IN1 / J8-1
A10 BROWN	Optional analog negative	Populate correctly; connect to FD J8-8
A5 BLUE	Optional RS-232 output	Not used here; not a CAN2 connection
A6-A8	Not used	Do not repurpose spare cavities

Do not apply the 30-0300/30-0310 extended 0x180 recipe to this gauge. This product answers an OBD diagnostic integration and has selectable emulated ECU/PID behavior. The present manual does not establish an FD-specific multi-ECU request/response test, so direct OBD acquisition from the gauge remains a separate qualification item. The analog route below is fully specified. Never connect the gauge's vehicle OBD CAN pair to the accessory CAN2 pair as a bridge.

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Conditioned analog connection and FD 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.

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

For an unused input card, open Sensors and tap that exact card. The floating plus chooses the first free input automatically; it does not offer a later pin picker. Confirm the slot/header, choose Sensor type 0–5 V Generic, Type Analog, temporary Unit V, enter the physical signal name and tap Create. Open the card's Edit action, enter the required free-text unit and keep Additional voltage scale at 1. FD already compensates its input divider.

Enter the voltage and engineering endpoints below, save to the device and reload. Reopen Edit and compare Connector voltage with a meter referenced to J8-8, then compare mapped value with the native source. Use several intermediate values and record tolerances. Display Range and Show on Dashboard affect presentation, not electrical validity. Leave J8 pin 4 +5 V unconnected for all conditioned-output routes in this book. Never parallel an accessory output with another active driver.

Signal	FD input	Unit	Min V	Max V	Min value	Max value
AEM OBD-gauge AFR	IN1 / J8-1	AFR	0.5	4.5	8.5	18

Use SPUD-001T-P0.5 terminals for the optional A9/A10 cavities and the wire size stated by AEM (22–26 AWG for those terminals). Check cavity numbers from the official connector view; do not guess a mirrored mating view. At 2.5 V expect 13.25 AFR. Below 0.5 V is not-ready and above 4.5 V is error. Preserve the separate A2 heater/power return; A10 is the analog reference.

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Route B — replace a display or migrate the measurement

FD may replace the visible gauge role only while a compatible wideband controller remains. If hiding the 30-0334, mount it in a serviceable dry position with access to its diagnostic display and MODE/SEL controls. Its OBD-emulation role still requires this powered gauge. Replacing the gauge with an inline controller also removes that OBD behavior unless the new controller explicitly supplies it; use the new model's manual and recalibrate FD.

- 1 Prove Route A, then identify the exact receiver being removed.
- 2 Assign an owner for sensing, excitation/heater, calibration, faults, ECU feedback, warnings and logging.
- 3 Preserve required feedback/protection. Never join driven outputs or parallel supplies.
- 4 Repeat calibration, startup/fault and read-back tests; retain service access.
- 5 Provide a verified physical indication for warnings needed without the phone.

6.1 Functions and limits to record

The optional analog terminals are not guaranteed to be present in the retail harness. The product's pass-through connector must remain strain-relieved and must not obstruct driving. FD reading its analog output does not alter ECU fuelling, create a standalone ECU or reproduce every supported third-party scanner feature.



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Automations, logging and useful comparisons

Use the configured analog source, Valid = ON and qualified connector-voltage bounds in an ALL/AND bench rule. Since no native readiness bit is brought through this analog route, any actuator permission needs independently qualified ready/fault evidence. Do not let the ECU/PID name printed by a scanner stand in for that evidence.

Start with the rule disabled and an isolated dummy output. Choose ALL conditions (AND) where health gates must accompany a measurement threshold. Use the actual configured source name and unit; require valid/fresh data and the documented accessory status. For analog inputs, the app offers the configured name's Valid, Connector voltage and Acquisition age fields. Valid is an ON/OFF condition; age is in milliseconds. Source communication validity is not the same as a healthy sensor.

For a qualified AUX permission, establish its off value 0 and exclusive ownership first. Test Duty 100% with Restore Previous Value When False, captured previous value 0, and release delay 0. Prove missing-source release physically. Respect the reported condition limit; never omit necessary gates.

In Data Log settings select measurements, source status and relevant RPM, throttle, MAP/boost, controller states and automation transitions. Commanded duty or permission is different from measured pressure, flow, mixture or temperature.

Check achieved timestamps, gaps and repeated values after leaving live screens. CAN broadcast rate does not guarantee phone storage rate. Note calibration, location, native settings and firmware. Cloud and Intelligence support comparisons and trends; they cannot guarantee diagnosis from uncertain measurements.

Verify ESP rules/configuration survive reboot and phone disconnection. The phone/portal are viewports and editors. An absent phone cannot record new samples even while local control continues.



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Commission and record the actual result

First prove the original tuning tool still identifies the gauge and the vehicle ECUs after the FD analog connection. Compare FD connector voltage, original gauge reading and the tuner's logged mixture at several stable points. Record warm-up, over-range and gauge-power loss separately; a frozen plausible AFR is a failed acceptance result.

Check	Required result	Record
Baseline before FD	Original display/ECU/ABS or logger behavior recorded	Project file, photos, native log
Low/middle/high reference	Correct unit, polarity, transfer and physical channel	Reference and FD readings
Startup and readiness	Warm-up is not accepted as a healthy measurement	Native state and FD trace
Sensor loss/fault	Dependent permission releases or remains unqualified	Actual status/voltage and time
Controller/CAN power loss	Last value cannot masquerade as fresh data	Missing-source trace
FD reboot / phone absent	Saved definitions and local behavior confirmed	Read-back and dummy-output result
Existing receivers	Their function remains correct after connection	Comparison and fault scan

Record vehicle, serials/revisions, sensor location, pins/IDs, calibration, reference, response time, software builds and installer/date. Mark retained, replaced and omitted functions. Unresolved behavior stays out of actuator permissions.



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Sources and image attribution

[OEM] AEM 10-0334, 17 July 2017; pages/sections 2–7, 13–15.

<https://documents.aemelectronics.com/75736d42d0fcec1e4d6b2c9a5912a14fc94d1a4a.pdf>

Product image: manufacturer photograph or manual identification detail. Source, extraction and SHA256: image-manifest.json. Verify connector orientation and PCB revision independently.

FD implementation evidence: ios/FusionDrive/Models/HardwareMap.swift;
Features/Sensors/SensorsView.swift; Features/OBD/CANDecodeEditorView.swift and
CANBusConfigurationView.swift; Features/Automations/AutomationEditorView.swift;
ESP/FusionDrive/modules/can/CANSignalDecoder.h; docs/V1_LS_HARDWARE_LIMITATIONS.md. These are
implementation references, not completed electrical qualification records.



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.