

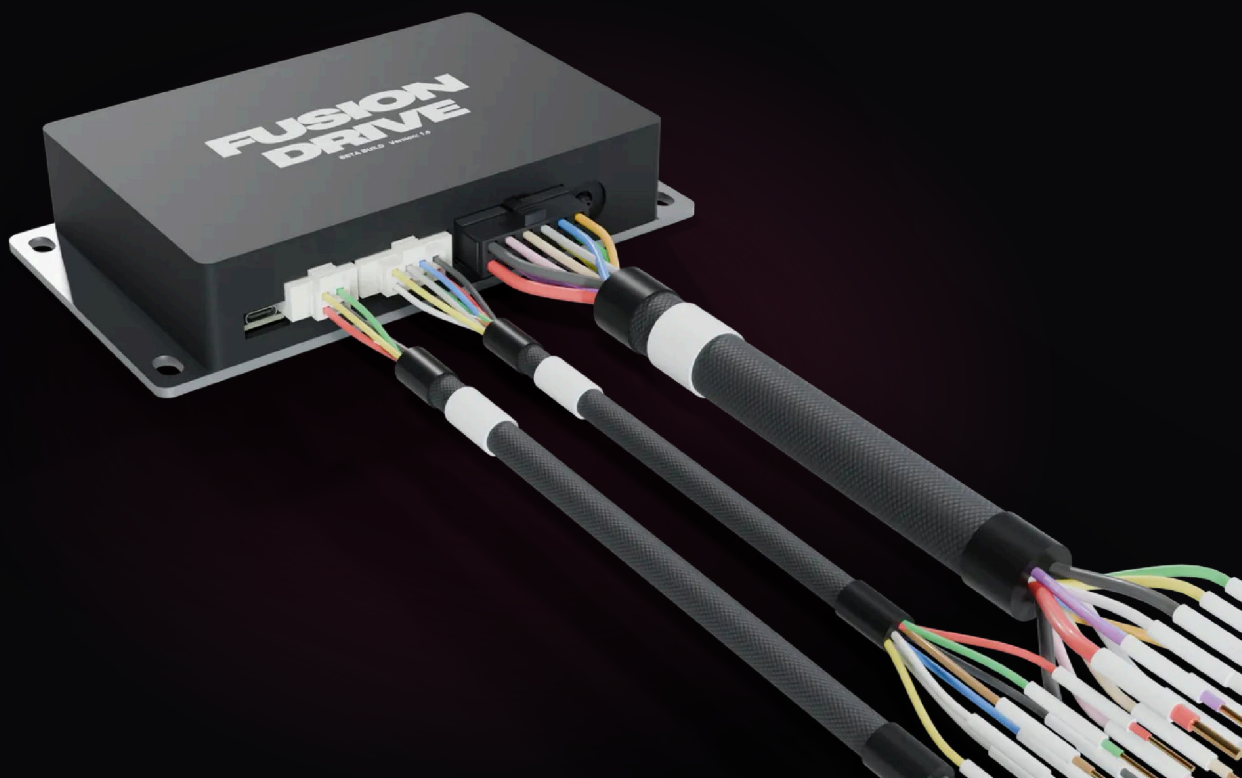


— EXACT-MODEL INSTALLATION GUIDE

AEM 30-2014

Intake 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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Identify the sensor and its present owner

The **AEM 30-2014** air-temperature kit contains the **35-2014** open-tip sensor, two-contact Deutsch connector parts and a 1/8 NPT bung. It is distinct from the fluid-temperature 35-2013 pictured in the same manufacturer sheet. Record its exact installation location: before the turbo, before/after an intercooler, or inside the intake manifold. These locations answer different tuning questions.



Identification photograph: exact 35-2014 open-tip air-temperature sensor extracted from AEM instruction 10-2013 p1; the adjacent fluid sensor is intentionally not used.

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.

This sensor is a passive thermistor. It changes resistance with temperature; it does not supply a self-contained 0–5 V temperature signal. Its existing ECU or gauge provides excitation and converts the nonlinear response. Keeping that owner intact is the first-choice integration when the sensor already informs the engine tune.

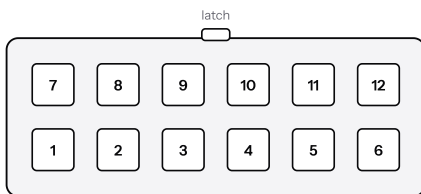
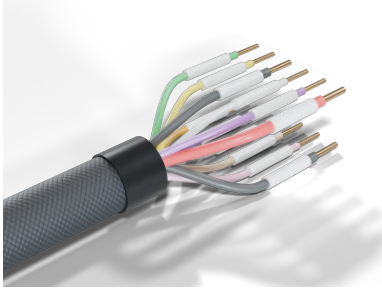
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Wiring diagrams

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

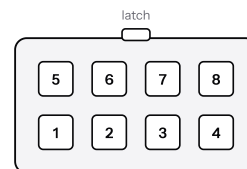
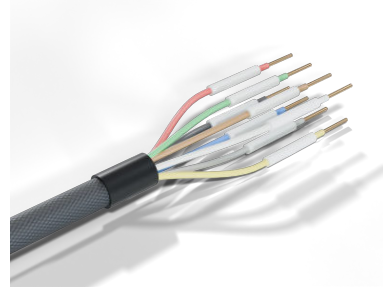


Bottom row, left to right: 1 BATT+ · 2 AUX1 · 3 IGN · 4 GND · 5 CAN2 H · 6 CAN2 L
Top row, left to right: 7 GND · 8 AUX2 · 9 OUT4 · 10 OUT3 · 11 OUT2 · 12 OUT1

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

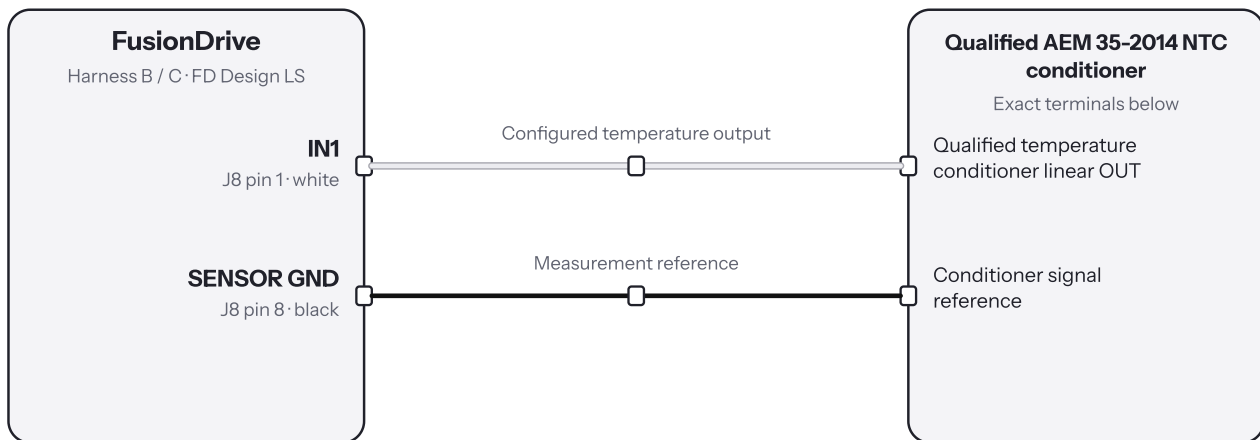
Looking into the plug's mating face with the latch at the top

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 30-2014: dedicated thermistor through matching conditioner

2.1

W1 • AEM 30-2014: dedicated thermistor through matching conditioner

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.

AEM 30-2014: dedicated thermistor through matching conditioner

Terminal-to-terminal wiring schedule

From	To	Signal / electrical condition
Qualified temperature conditioner linear OUT	FD IN1 / J8 pin 1	Configured temperature output 0–5 V bounded
Conditioner signal reference	FD sensor ground / J8 pin 8	Measurement reference ground

OFF / released: Conditioner/source absent: temperature unavailable; no healthy permission

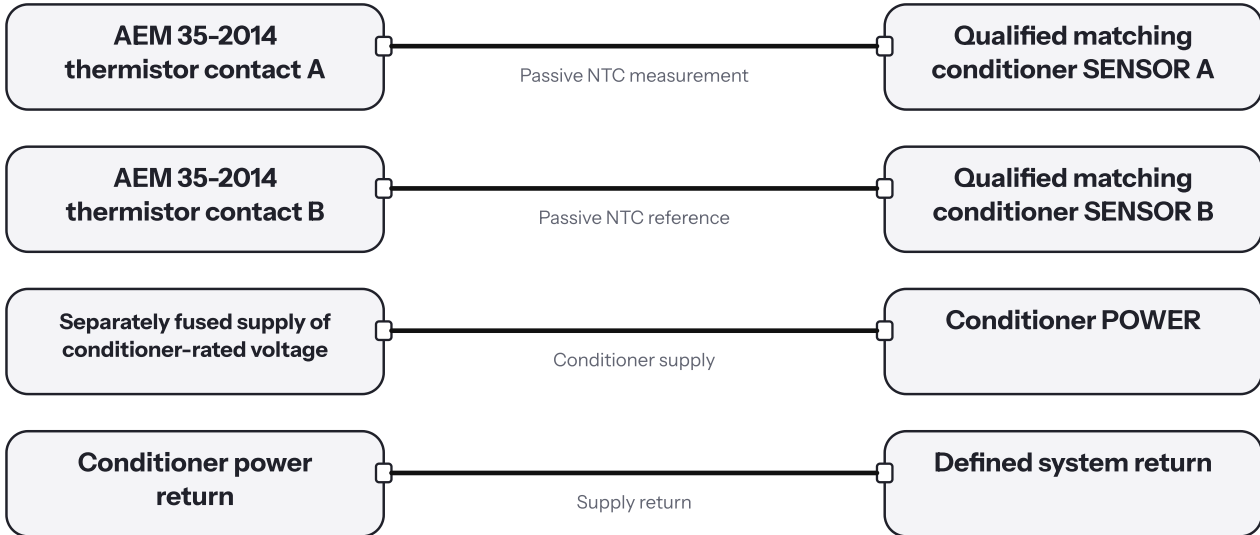
ON / active: Conditioner excites and linearizes sensor; FD reads only its output

Qualification: Functional terminal names only: select and document a conditioner for this exact NTC curve before assembly. Not a direct-to-ADC wiring recipe.

Accessory-side connections - 1

AEM 30-2014 Intake 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.

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Route A - keep the sensor on its existing ECU or gauge

Preserve both original sensor leads and the receiver's pull-up/reference. Obtain a documented linear logging output or published CAN signal from that receiver, then feed that interface into FD. The AEM sensor sheet itself contains no universal ECU CAN identifier, logger output wire or permission to add another pull-up.

Native connection	What to preserve
First thermistor contact to existing temperature-input circuit	Existing receiver excitation and resistance measurement
Second contact to existing sensor reference	Original low-noise reference
Existing receiver power and ground	Original fused supply and returns
Documented receiver logging output, if available	A separate output suitable for FD; not the raw thermistor node
Documented receiver CAN signal, if available	Exact bus, ID, format, scaling, unit and validity from that receiver's specification

The contact letters in the schematic are functional identifiers for the two leads, not manufacturer cavity numbers. The passive element is not a 12 V power input. Confirm physical cavity markings and receiver-side wiring from its own manual. Where no compatible data output exists, keep the original measurement and install a separate dedicated temperature sensor/conditioner for FD. An independent sensor avoids perturbing the ECU's fuelling input.

3.1 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.

Do not use an average ADC voltage or a two-point temperature map as a shortcut. The AEM sheet gives different voltages for the same sensor when the receiver uses 2, 200 ohm versus 2, 490 ohm pull-ups. A second pull-up changes what the ECU reads, potentially changing the engine's compensation. Even a high-impedance parallel tap needs loading and fault-injection qualification and still does not provide the missing nonlinear conversion in the current FD input screen.

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Route B - dedicate the sensor to FD through conditioning

A complete conversion is possible only when the required temperature electronics have an owner. Select a conditioner that explicitly supports the AEM curve or accepts its full resistance table, provides a bounded linear 0–5 V output, and declares its sensor-open/short behaviour. Its exact part number, supply, terminals and output map are installation hold points. The schematic names functional terminals without pretending an unselected module has a universal pinout.

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

- 1 Record the existing owner's calibration and warnings. If the ECU still needs this temperature, leave its sensor alone and use a second sensor for FD.
- 2 For a genuinely migrated sensor, disconnect both old input/reference leads and insulate them. Do not parallel the old receiver excitation with the new conditioner.
- 3 Connect the two thermistor leads to the chosen conditioner's documented sensor pair, supply that conditioner as specified, and connect its linear output/reference to FD IN1 / J8 pin 1 and sensor ground/J8 pin 8.
- 4 Do not feed FD +5 V directly into the thermistor. If a conditioner requires 5 V, its total load, regulation and noise must fit the sensor supply; otherwise use its specified separately protected supply.
- 5 Enter the manufacturer's full curve into the conditioner if it is programmable. AEM reference points include 0°C=9,319 ohm, 20°C=3,476 ohm, 40°C=1,466 ohm, 80°C=332 ohm and 120°C=97 ohm. Use the full source table, not only these spot checks.
- 6 Verify open/short indications and low/middle/high temperatures with a controlled reference. Recreate necessary independent warnings before removing a gauge.

For a worked configuration only, ask the selected conditioner to provide **0.5–4.5 V = –20 to 150°C** if it supports that exact span. This is a proposed conditioner output assignment, not a native output of the AEM thermistor. If the chosen hardware has another transfer, replace every endpoint below with its documented values.

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Configure this measurement in FD

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 real device mode with the ESP connected. These are the current controls in Sensors, not a proposed future setup screen.

- 1 Tap the empty **IN1 / J8 pin 1** card. Select **0–5 V Generic**, Type **Analog**, name **Intake temperature - AEM 30-2014 conditioned**, and tap **Create**. The plus button selects the first free slot automatically, so use the named empty card when following this wiring assignment.
- 2 Open **Edit**. Set Unit **°C** and **Additional voltage scale = 1**. The hardware input divider is already compensated.
- 3 Under **Calibration**, set Voltage Range **0.5 to 4.5 V** and Value Range **-20 to 150 °C**. Display Range controls presentation; it does not change electrical validity or protect the input.
- 4 Enable **Show on Dashboard** if wanted. Save, wait for device acknowledgement, refresh and reopen the card to verify stored endpoints, unit and slot.
- 5 Compare **Connector voltage**, **Current Value** and **Acquisition age** with a reference instrument and the original gauge at several stable points. Save the actual readings and tolerances.
- 6 Reboot FD with loads disconnected and read the configuration back. Remove the phone and test any intended local rule independently. A saved setting can continue locally; a phone that is absent cannot create a new phone log.

FD currently provides a linear two-point calibration. A plausible on-screen value does not certify that a source is healthy. A raw thermistor, RTD, pulse train or proprietary serial port does not become a supported analogue sensor by selecting a temperature or ethanol label.

At the proposed conditioner endpoints the arithmetic midpoint is 2.5 V=65°C. The original thermistor's own voltage does not follow that relationship. Qualify sensor tolerance, conditioner error, mounting heat soak and response time before interpreting small temperature differences.



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Native functions and migration consequences

Keeping the sensor on the ECU preserves its temperature compensation and native diagnostics. Removing that sensor without replacing the ECU's required input can create faults or change fuelling. Removing a separate gauge loses its local indication, alarms and peak memory. FD can provide a named viewport, logging and rules after the interface is valid, but the phone is not always present and the retained stock ECU continues to own its tune.



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Automations and a useful tuner recording

Compare pre- and post-intercooler temperatures only when both locations have suitable matched measurements. A high intake reading may reflect heat soak, flow, placement or calibration; correlate it with load and repeatable conditions before changing a tune.

Start with a disabled rule called **Intake temperature - AEM 30-2014 conditioned - 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 **Intake temperature - AEM 30-2014 conditioned**, raw voltage and age where exposed, then add RPM, MAP/boost, ambient temperature where actually measured and WMI request/state, 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.



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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.



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Sources and review scope

[M1] AEM Pro air/fluid temperature kits 30-2013/30-2014, instruction 10-2013,3 December 2014, p1.

https://documents.aemelectronics.com/techlibrary_30-2014_air_temp_sensor_kit.pdf

Identification photograph: exact 35-2014 open-tip air-temperature sensor extracted from AEM instruction 10-2013 p1; the adjacent fluid sensor is intentionally not used.

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.