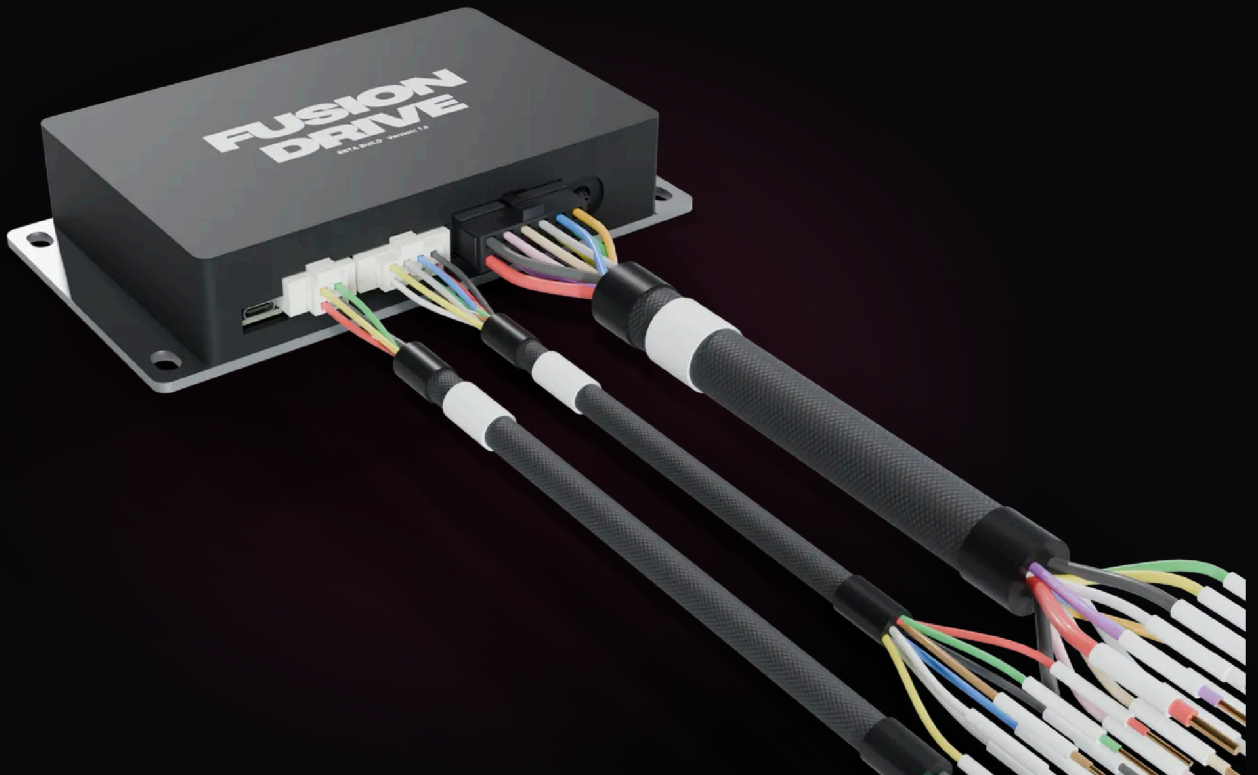




— EXACT-MODEL INSTALLATION GUIDE

# Derale 16795 Fan control

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



# Contents

|          |                                                                                                                               |           |
|----------|-------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>Identify the exact fan controller</b>                                                                                      | <b>2</b>  |
| <b>2</b> | <b>Wiring diagrams</b>                                                                                                        | <b>3</b>  |
|          | W1 · Derale 16795 native fan wiring plus isolated FD positive override · W2 · Derale 16795 Fan control · direct FD fan wiring |           |
| <b>3</b> | <b>Route A · retain Derale's full thermal and power system</b>                                                                | <b>9</b>  |
|          | Native harness schedule · Add the isolated FD request                                                                         |           |
| <b>4</b> | <b>Configure FD's request and temperature sources</b>                                                                         | <b>11</b> |
| <b>5</b> | <b>Route B · replace the Derale controller</b>                                                                                | <b>12</b> |
| <b>6</b> | <b>Request truth table and useful logging</b>                                                                                 | <b>13</b> |
| <b>7</b> | <b>Commissioning and failure-state acceptance</b>                                                                             | <b>14</b> |
| <b>8</b> | <b>Sources and review scope</b>                                                                                               | <b>15</b> |

## 1

This guide covers **Derafe 16795**, instruction revision **08292018**, with the adhesive aluminium sensor installed on the **cold/outlet side of the radiator**. Do not substitute instructions for 16797 or a different replacement-probe revision. The archived file has six PDF pages; its quick-reference drawing is on PDF page 5 despite the printed page label.



Identification image: the actual 16795 controller and supplied kit components reconstructed from the original split photographic objects in the official 08292018 instruction sheet, PDF p1. Only the product-photo region is shown, not a manual-page image. No 16797 product is substituted.

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.

The strongest retention route is to keep Derale's own temperature control and use FD to request additional fan operation through its documented positive override. That gives FD automation without removing the independent thermal controller. This input is a request for at least 60% running speed, not an arbitrary 0-100% fan-duty command and not a way to force the fan off against native temperature demand.

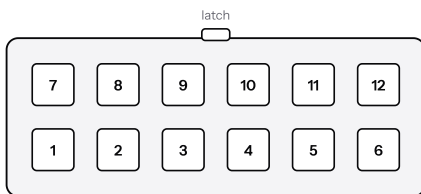
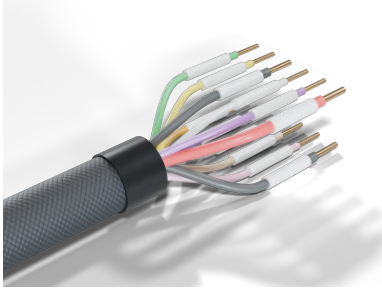
## 2

## — DERALE 16795 FAN CONTROL

# 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

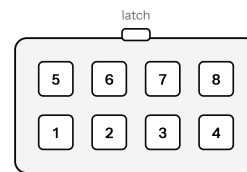
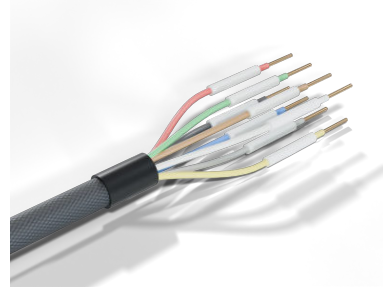


Bottom row, left to right: 1 BATT+ · 2 AUX1 · 3 IGN · 4 GND · 5 CAN2 H · 6 CAN2 L  
Top row, left to right: 7 GND · 8 AUX2 · 9 OUT4 · 10 OUT3 · 11 OUT2 · 12 OUT1

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

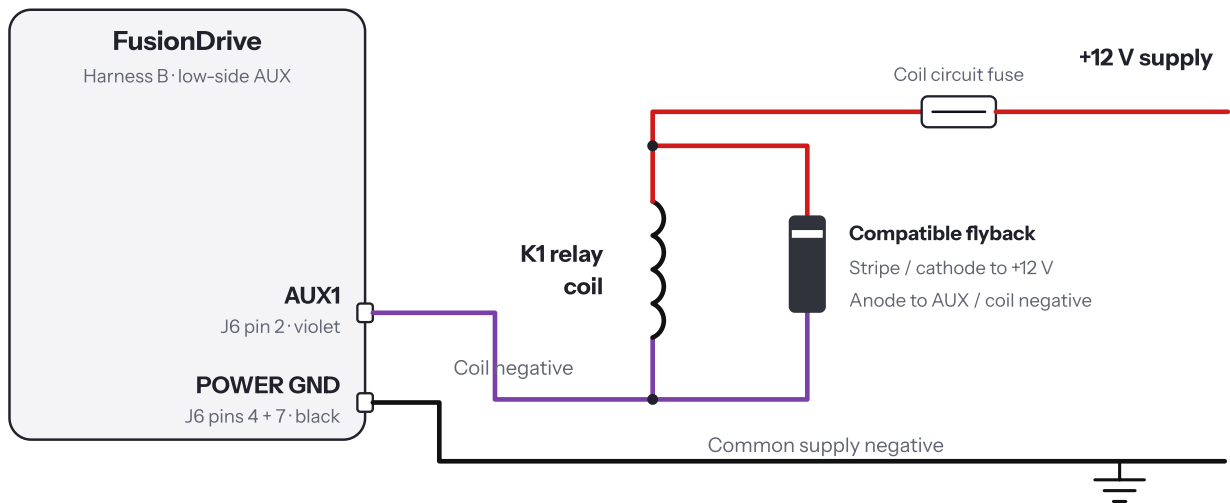
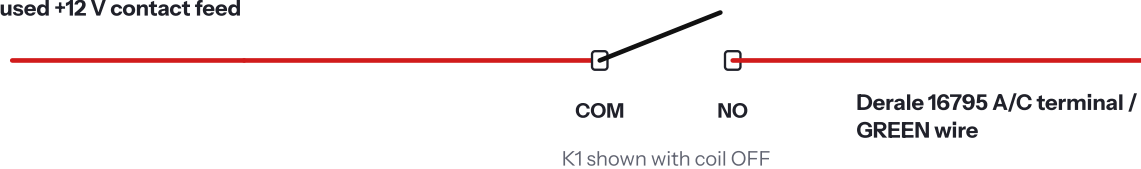
Looking into the plug's mating face with the latch at the top

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 • Derale 16795 native fan wiring plus isolated FD positive override**
2. **W2 • Derale 16795 Fan control • direct FD fan wiring**

## 2.1

**W1 • Derale 16795 native fan wiring plus isolated FD positive override****K1 CONTACTS • electrically isolated from the coil****Fused +12 V contact feed**

Coil and contact circuits remain separate. A mechanical relay is binary only: 0% or 100%.

NO closes only when energized; OFF interrupts the permitted path.

Match coil current, suppression polarity and contact ratings to the selected relay before installation.

Derale 16795 native fan wiring plus isolated FD positive override

## Terminal-to-terminal wiring schedule

| From                               | To                                         | Signal / electrical condition               |
|------------------------------------|--------------------------------------------|---------------------------------------------|
| Protected 12 V control supply      | K1 coil +                                  | Relay coil supply positive                  |
| K1 coil -                          | FD AUX1 / J6 pin 2                         | Low-side coil command sink, not source      |
| Protected 12 V contact feed        | K1 COM                                     | Isolated override supply positive           |
| K1 NO                              | 16795 A/C terminal via GREEN override wire | Positive override request +12 V when closed |
| FD power grounds / J6 pins 4 and 7 | Defined system return                      | FD command reference ground                 |

**OFF / released:** K1 open:FD request removed; native thermal fan control still operates

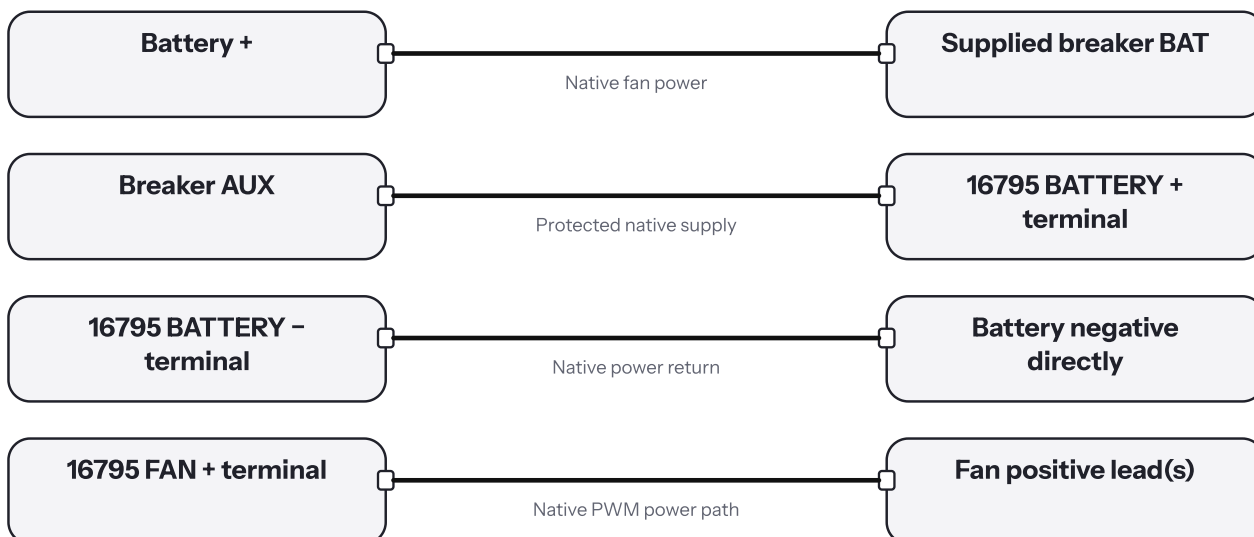
**ON / active:** K1 closed:+12 V override requests at least 60% running speed; thermal demand can increase it

**Qualification:** Relay coil, suppression and contacts must suit actual current/transients; mechanical relay uses binary duty only. Existing A/C source requires designed isolation, not a blind parallel feed.

## Accessory-side connections - 1

## Derales 16795 Fan control · accessory-side connections

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



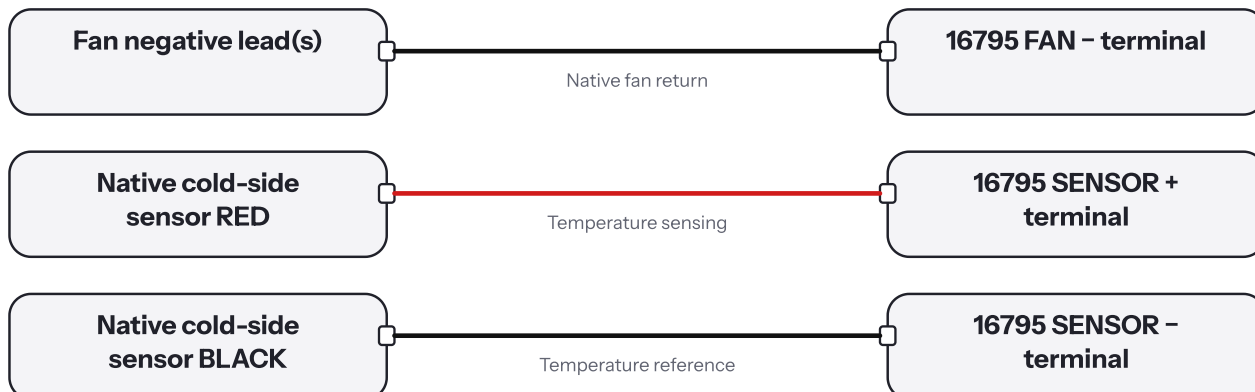
Match the exact harness/revision in the source manual. Unspecified wire colours are drawn black.

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

### Derafe 16795 Fan control · accessory-side connections

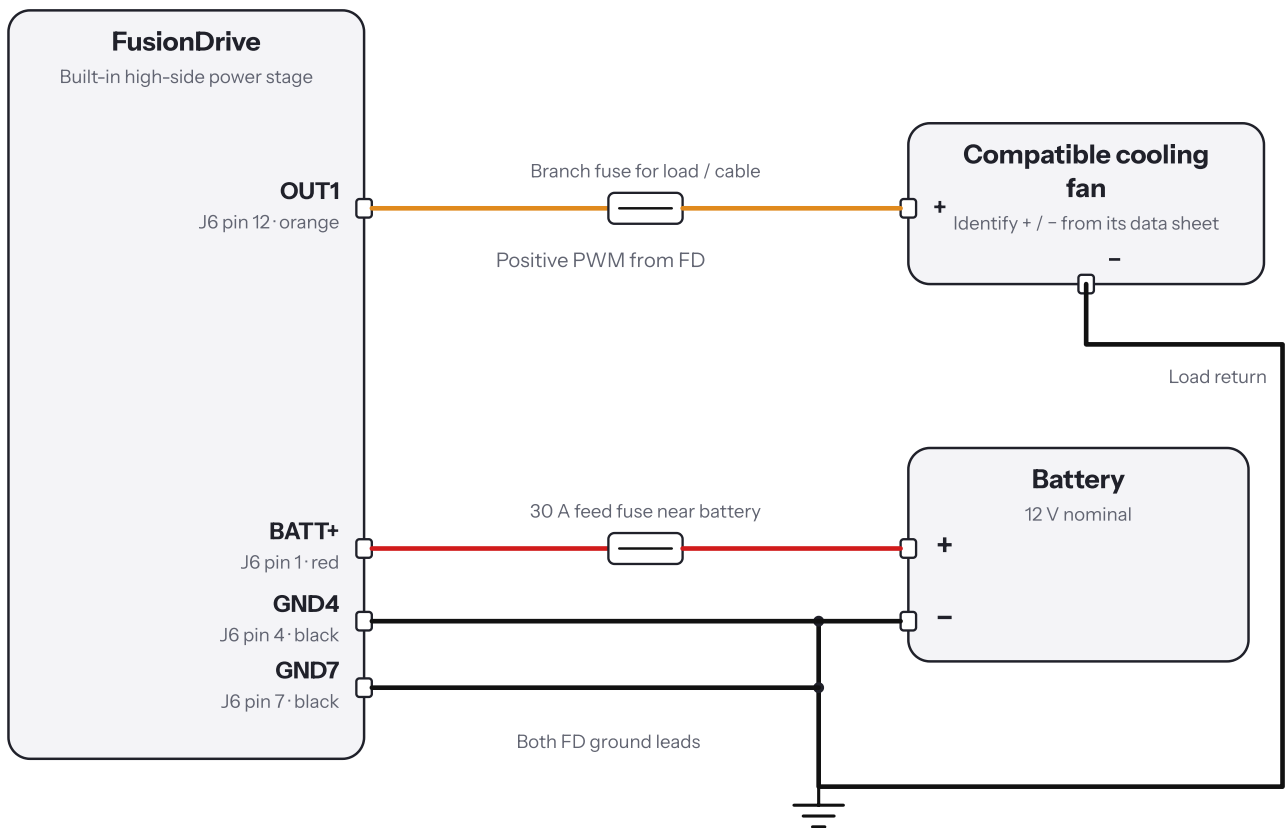
Accessory connections for the selected route. Grey bands are complete looms; blue dashes are pressure hoses.



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 • Derale 16795 Fan control • direct FD fan 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<br>Positive 12 V |
| FD GND · J6 pin 4 · black                                         | Rated common power ground       | First FD ground<br>Ground              |
| FD GND · J6 pin 7 · black                                         | Rated common power ground       | Second FD ground<br>Ground             |
| FD OUT1 · J6 pin 12 · orange via suitable branch fuse             | Compatible cooling fan positive | PWM load supply<br>High-side positive  |
| Compatible cooling fan negative                                   | Rated power ground              | Load return<br>Ground                  |

**OFF / released:** FD output off removes this fan command. An independent thermal fallback must still provide adequate cooling; loss of FD must not remove the only cooling 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

## — DERALE 16795 FAN CONTROL

# Route A - retain Derale's full thermal and power system

## 3.1 Native harness schedule

| Connection                         | Native path to keep                                           |
|------------------------------------|---------------------------------------------------------------|
| Battery positive                   | Through supplied breaker BAT/AUX to controller BATTERY+       |
| Controller BATTERY-                | Directly to battery negative, not a substituted chassis point |
| Controller FAN+                    | Fan positive lead(s)                                          |
| Fan negative lead(s)               | Controller FAN-                                               |
| Temperature sensor RED             | SENSOR+ terminal                                              |
| Temperature sensor BLACK           | SENSOR- terminal                                              |
| GREEN override wire                | A/C terminal; accepts positive 12 V request                   |
| Calibration terminal/potentiometer | Service/calibration function, not an FD control input         |

The manual specifies a 65 A combined fan capacity for the **Derale controller**, supplied 50 A breaker and its shown 10 AWG power wiring. Those are not ratings for FD. The actual fan load, inrush, wire length, protection and termination still need installation-specific assessment. Keep the controller's positive and negative feeds directly on the battery as specified; do not replace them with FD's output bank.

## 3.2 Add the isolated FD request

- 1 Save the native setpoint and test thermal operation before any FD connection. Verify the sensor's exact revision/location and inspect its bond to the clean cold-side radiator surface.
- 2 Disconnect power. Keep both native fan leads and sensor terminals intact. Reserve **AUX1 / J6 pin 2** for a small qualified relay coil; never connect the fan motor to AUX.
- 3 Feed the relay coil positive from a protected 12 V control supply and connect coil negative to AUX1. Provide the relay's specified coil suppression; a diode, if used, has cathode at coil positive. Verify coil current and transients fit the LS output.
- 4 Connect isolated contact **COM** to a protected 12 V contact feed and **NO** to the 16795 A/C terminal/GREEN wire. Coil released means no FD override. There is no electrical connection between the coil circuit and isolated contacts inside the diagram.

- 5 If the original A/C compressor/manual switch already feeds GREEN, do not blindly parallel a new supply into that circuit. Use a qualified diode-OR or additional isolated relay arrangement to preserve A/C requests without back-feeding the compressor or vehicle electronics. The base drawing shows the FD request by itself; the added isolation must be documented for the actual existing source.
- 6 Restore power with the fan area clear and use a safe test fixture where possible. Prove K1 open restores **native thermal control**, not necessarily fan OFF. Then prove K1 closed activates the documented override.

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

The relay uses binary command only. Do not send variable-duty PWM through mechanical contacts. FD is not setting the fan's internal speed through the GREEN wire. The native controller ramps to 60% on override and can increase toward 100% as temperature rises. Removing an FD request cannot override a separate active A/C request or a native thermal demand.

## 4

## — DERALE 16795 FAN CONTROL

# Configure FD's request and temperature sources

**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.

In **More > Outputs > select the physical OUT/AUX**, choose **AUX1**, name it **Derale fan override**, enable it and choose a suitable output preset. Set Duty Limits 0-100%, both ramp rates 0 and output calibration OFF; initialize the quick-control duty to 0. Save and reload the settings. Only 0/100% commands are permitted for this mechanical relay. Confirm no boost, WMI, nitrous or other automation owns that pin. Its role is a binary relay request; 100% means coil energized, not a claim that the fan runs 100%.

Use an independently configured coolant/oil temperature or a selected supported vehicle OBD PID for the automation. The Derale two-wire probe is a native resistance circuit; do not connect its SENSOR terminal to an FD analogue IN and call it coolant temperature. If a dedicated FD temperature sensor is installed, its interface must be properly conditioned and calibrated in Sensors. A coolant PID from the engine and the Derale cold-side radiator probe measure different locations.

Create a disabled **Fan override - review** rule using **ALL conditions (AND)**, a suitable configured temperature threshold, source validity and age within a tested limit. The vehicle OBD source must actually respond; absence is not 0°C. Set the action to **Derale fan override · Duty 100%**, with **Restore Previous Value When False** only after verifying the captured prior duty is 0. Give the output one owner and choose threshold/hysteresis to avoid relay chatter. Save, wait for ESP acknowledgement, read back and test.

Use a temporary safe threshold/stimulus for commissioning, not a hot-engine experiment. Reboot FD and remove the phone to prove stored rules run locally. Source loss should remove the additional FD request while the independent Derale thermal controller continues; verify that outcome physically. This guide does not prescribe a universal engine cooling threshold.

## 5

## — DERALE 16795 FAN CONTROL

# Route B - replace the Derale controller

Replacing this device is a separate power/control design. FD's low-side AUX outputs are not 65 A fan drivers. The FD high-side bank is also not automatically a substitute merely because its aggregate current rating looks large. A fan may have high starting or stalled current, and a two-speed or brushless fan needs its correct electrical interface.

Use wiring diagram W2 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.

For a compatible fan, connect OUT1/J6-12 to fan positive and its negative to rated power ground; supply J6-1 through the selected fuse and connect both FD grounds. Match the fan type, current/inrush, frequency, wire size and suppression. Disconnect both Derale FAN+ and FAN- before takeover. Fans beyond FD capacity or with separate control electronics require their matching interface.

FD can directly supply the compatible fan and run saved temperature-based automations. Add a separately qualified independent thermal fallback; simply turning the fan off when FD loses power is not a safe cooling strategy for a hot engine. The Derale probe's few ambient resistance checks are not a complete temperature calibration for another controller. Use a documented sensor/conditioner or an explicitly supported probe interface.

Removing Derale loses its native PWM temperature algorithm, soft ramp, local adjustment, positive override handling and existing power protection arrangement. These functions need named replacements. Unless that output/fallback design is complete and tested, retain Derale and use Route A; the picture does not certify an unspecified replacement module.



## — DERALE 16795 FAN CONTROL

# Request truth table and useful logging

| FD relay      | Other/native demand         | Required interpretation                                                    |
|---------------|-----------------------------|----------------------------------------------------------------------------|
| Open          | Cold/no other override      | Native controller determines whether fans run                              |
| Closed        | Any native temperature      | Additional positive override; at least 60% running request, not fixed 100% |
| Open          | Native temperature high     | Fans may continue; FD did not command them off                             |
| Open          | Existing A/C request active | Fans may continue through independently preserved A/C path                 |
| FD power lost | Any thermal state           | FD request disappears; retained Derale still controls cooling              |

Record **Derale fan override duty** as a request, not measured fan speed. Add coolant temperature, RPM, vehicle voltage and any separately measured current/speed channel. The controller does not publish fan RPM or actual current on GREEN, and this guide invents no CAN telemetry. Compare request time with an independent tachometer/current fixture during commissioning. Save actual recording timestamps and note source/transport delays; cloud trends cannot verify a rotating fan from a request bit alone.



## — DERALE 16795 FAN CONTROL

# 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.



— DERALE 16795 FAN CONTROL

# Sources and review scope

[M1] Derale 16795 PWM fan controller, instruction revision 08292018, PDF pp 1–5; quick-reference drawing PDF p5. <https://derale.com/product-footer/product-instructions-footer?download=3532:16795-pwm-electric-fan-controller&start=260>

Identification image: the actual 16795 controller and supplied kit components reconstructed from the original split photographic objects in the official 08292018 instruction sheet, PDF p1. Only the product-photo region is shown, not a manual-page image. No 16797 product is substituted.

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](https://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.