Fan Controller

DOM-D-FC-1 | 19-32 V Motor + PWM + Tach | Domatic Bus | OEM Reference

The Fan Controller is an embedded controller-board reference design that lets OEMs put their ventilation fans on the Domatic Bus. It replaces the typical AC-DC power adapter and basic speed-control circuitry inside a fan with a single board: a potentiometer-adjustable 19-32 VDC output to the motor, PWM output for speed command, and a counter (tach) input for closed-loop speed feedback — all powered and controlled from the Domatic Bus instead of building AC mains.

The reference design is offered to OEMs for easy adaptation to a particular product form factor, and is intended as a drop-in replacement for the AC-DC adapter and speed-control board found in a typical ventilation fan. Per-fan behavior — RPM setpoints, schedules, modes, telemetry — is configured in software via the Domatic PowerHub.

Key Features

- ✓ Drop-in replacement for the AC-DC adapter + speed control inside a typical low-voltage ventilation fan
- ✓ Powers the fan motor from the Domatic Bus — no separate AC mains wiring required at the fan
- ✓ PWM output for fine-grained motor-speed command
- ✓ Tach (counter) input for closed-loop RPM feedback and precise speed control
- ✓ Telemetry — actual RPM, runtime, fault state — reported to the Domatic PowerHub
- ✓ Reference design adaptable to OEM form factors — Altium project / schematics / BOM available to integrators
- ✓ Native Domatic Bus interface — power, control, and reporting on a single 2-wire CL2 input

OEM Integration

The Fan Controller is supplied as a reference design rather than a finished consumer SKU. Typical integration:

Replaces	The fan's AC-DC adapter and any analog or proprietary speed-control board
Adds	Domatic Bus connectivity, software-configurable RPM control, telemetry to the PowerHub
Footprint	Adaptable — OEM may re-spin the board to fit a specific enclosure or use the reference layout as-is
Deliverables to OEM	Schematic, layout (Altium), BOM, firmware, integration notes
OEM Branding	OEM ships the integrated fan under its own SKU; the Fan Controller becomes an internal subassembly

Electrical Specifications

Input — Domatic Bus

Input Voltage	Nominal 48 VDC (Domatic Bus)
Communication	Domatic Bus (IEEE 1901 HD-PLC over the same 2-wire pair as power)
Power Source	Domatic PowerHub output port

Output — Fan Motor

Motor Voltage	19-32 VDC, potentiometer-adjustable
Max Motor Current	2 A
Speed Command	5 V push-pull PWM output, 12 mA max drive
PWM Frequency	Up to 7.63 kHz
PWM Resolution	16-bit
Speed Feedback	Counter (tach) input
Tach Input Level	5 V logic

I/O Configuration

I/O	*Connector*	*Description*
Domatic Bus Input	Molex Mini-Fit, 2-pin	48 VDC and Domatic Bus protocol on the same pair. Mates with PowerHub output ports.
Motor Power Output	TBD	19-32 VDC adjustable output to the fan motor
PWM Speed Command	TBD	5 V push-pull PWM output to motor speed-control input, 12 mA max drive
Tach Input	TBD	5 V logic counter input for motor RPM feedback

PowerHub Integration

Controller	Domatic PowerHub (required)
Configuration	RPM setpoints, schedules, modes (boost / quiet / auto), min/max limits — software-configurable via the PowerHub
Telemetry	Actual RPM, runtime, motor current, fault state reported to the PowerHub in real time
Closed-Loop Control	Tach feedback enables precise RPM control independent of motor / load variation

Mechanical Specifications

Form Factor	OEM-adaptable reference design
Reference Dimensions	100 mm x 43 mm
Mounting	Per OEM enclosure design

Environmental Specifications

Operating Temperature	TBD
Humidity	TBD
Installation	Inside the OEM fan enclosure — final environment rating depends on OEM enclosure

Standards & Compliance

Safety	TBD — final certification typically held by the OEM at the integrated-product level
Power Source	NEC Class 2 from the PowerHub output
Output	19-32 VDC motor output, low-voltage PWM

Ordering Information

Model Number	*Description*
DOM-D-FC-1	Fan Controller — OEM reference design, 19-32 V motor + PWM + tach, Domatic Bus