

# 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:

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

## Electrical Specifications

### Input — Domatic Bus

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

### Output — Fan Motor

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

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

## Mechanical Specifications

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

## Environmental Specifications

<b>Operating Temperature</b>	TBD
<b>Humidity</b>	TBD
<b>Installation</b>	Inside the OEM fan enclosure – final environment rating depends on OEM enclosure

## Standards & Compliance

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

## Ordering Information

<i>Model Number</i>	<i>Description</i>
DOM-D-FC-1	Fan Controller – OEM reference design, 19-32 V motor + PWM + tach, Domatic Bus

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