

Compact Axial Fans — ebm-papst Frame Sizes 60–127 mm, AC and DC, with Catalogue Cross-Reference

cBallast Technical Sourcing · Compact axial fans · issued 2026-10-03 · cballast.com/documents/ebm-papst-compact-fans-size-reference

Choosing a compact axial fan for cabinet cooling and refrigeration electronics: frame sizes 60 × 60 to 127 × 127 mm, AC versus DC supply, airflow classes, and which stocked ebm-papst models (612 NGME, 8414N, 8850N, 3956, 4312, 4580Z) and generic frames match.

Frame-size families

Compact fans are standardised on square frames with fixed hole patterns, so a replacement is first a frame-size match, then a supply match, then an airflow/noise choice. The catalogue's stocked points:

Frame | Supply | Stocked model | Data |

60 × 60 × 25 | 12 V DC | ebm-papst 612 NGME | Instrument cooling |

80 × 80 × 25 | 24 V DC | ebm-papst 8414N | 2 W, 69 m³/h |

80 × 80 × 38 | 230 V AC | ebm-papst 8850N | 17 W, 37 m³/h |

92 × 92 × 25 | 230 V AC | ebm-papst 3956 | 17 W, 54 m³/h |

119 × 119 × 25 | 230 V AC / 24 V DC | 230 V 14 W / 24 V DC 5 W | Panel builders' standard |

119 × 119 × 32 | 12 V DC | ebm-papst 4312 | 5 W, 170 m³/h |

119 × 119 × 38 | 230 V AC | ebm-papst 4580Z / 19 W generic | 13–19 W, ~115 m³/h class |

127 × 127 × 38 | 230 V AC | 18 W frame fan | Larger drive cabinets |

AC or DC

230 V AC shaded-pole/capacitor compact fans wire straight into panel supply and dominate legacy enclosures; they run at fixed speed and their losses are heat inside your cabinet. DC fans (12/24 V) need a supply rail but bring speed control (voltage or PWM on the electronics-equipped types), tach feedback options and lower consumption — the 8414N moves its air on 2 W. Replacements must match supply exactly; an AC fan on DC or vice versa is an immediate failure. Within a frame, deeper fans (38 vs 25 mm) buy pressure capability — choose depth by what the filter mats and grilles in the airpath demand.

Reading airflow honestly

Catalogue airflow is free-air delivery; against a filter and a packed cabinet the operating point can be half that. Rules of thumb that keep electronics alive: size for the cabinet's heat load at 9EB &B² v—F, f—ÇFW"Ö`ouled margin, prefer two medium fans over one maximum-rpm screamer (noise rises steeply with rpm), and arrange front-bottom intake, rear-top exhaust. In refrigeration service (evaporator compartments, cabinet machine bays), specify the model's ball-bearing versions and check the data sheet's low-temperature limit.

Installation and replacement notes

Direction: arrows on the frame show airflow and rotation; mounting a fan backwards halves cooling silently.

Guards: finger guards on both faces where accessible; a guard also protects the blade during transport.

Connection: AC frames usually terminate on flat tabs — use insulated receptacles; DC leads observe polarity.

Bearings tell you when: a compact fan that rattles cold and quiets warm is on its last season; replace on first noise, not failure, in cooling-critical cabinets.

Larger diameters: for unit-cooler and condenser fans (Ø250–500 mm axial), see the LU-VE spares guide and the fan motors listed there; ring-mounted motor-blade sets (GA150–GA250) cover cabinet evaporators.

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