# DC Axial Fans

Series 4100 N, Type 4112 NHH   119 x 119 x 38 mm

ebmpapst

- DC fans with electronically commutated external rotor motor.
  Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading
  by PTC-resistor; partially impedance protected.
- Metal fan housing. Impeller of fibre-glass reinforced plastic PA.
  Housing with ground lug M4 for M4 x 8 screws.
- Air intake over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables
  a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 flat pins 2,8 x 0,5 mm.
- Mass 390 g.

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Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sintec-Sleeve Bearings / Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L$_{10}$ at 40 °C	at t$_{max}$	Curve
Type	m^3/h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min^{-1}	°C	Hours	Hours	
4182 NGX	160	94.2	**12**	7...15	44	5.3	□	3.5	2 800	-10...+75	85 000 / 37 500		1
4182 NX	180	105.9	**12**	7...15	49	5.7	■	4.5	3 200	-30...+75	85 000 / 37 500		2
4182 NXH	237	139.5	**12**	7...14	59	6.5	■	11	4 400	-30...+55	70 000 / 50 000		2
4184 NGX	160	94.2	**24**	12...30	44	5.3	□	3.5	2 800	-10...+75	85 000 / 37 500		1
4184 NX	180	105.9	**24**	12...29	49	5.7	■	4.5	3 200	-30...+75	85 000 / 37 500		2
4184 NXH	237	139.5	**24**	12...25	59	6.5	■	11	4 400	-30...+55	70 000 / 50 000		3
4184 NXHH	250	147.1	**24**	12...25	60	6.7	■	12.2	4 900	-30...+55	70 000 / 52 500		4
4188 NXM	160	94.2	**48**	36...56	44	5.3	■	3.5	2 800	-30...+75	85 000 / 37 500		1
Programmable fan Vario-Pro (electr. connection via leads)													
4112 NHH	270	158.9	**12**	11...13	64	7.0	■	15.5	5 000	-20...+50	70 000 / 55 000		5
4114 NHH	270	158.9	**24**	18...26.4	64	7.0	■	15.5	5 000	-20...+60	70 000 / 52 500		5
4118 NHH	270	158.9	**48**	44...52	64	7.0	■	15.5	5 000	-10...+55	70 000 / 52 500		5
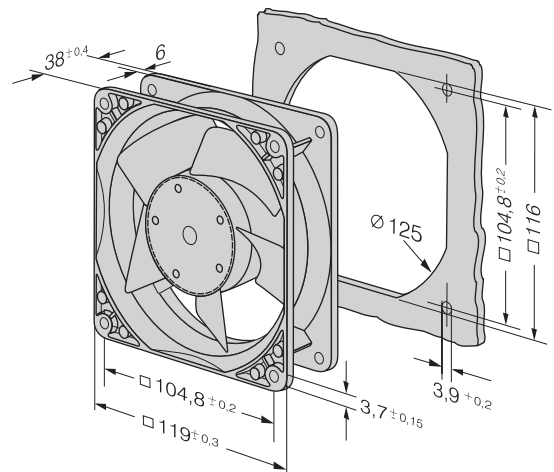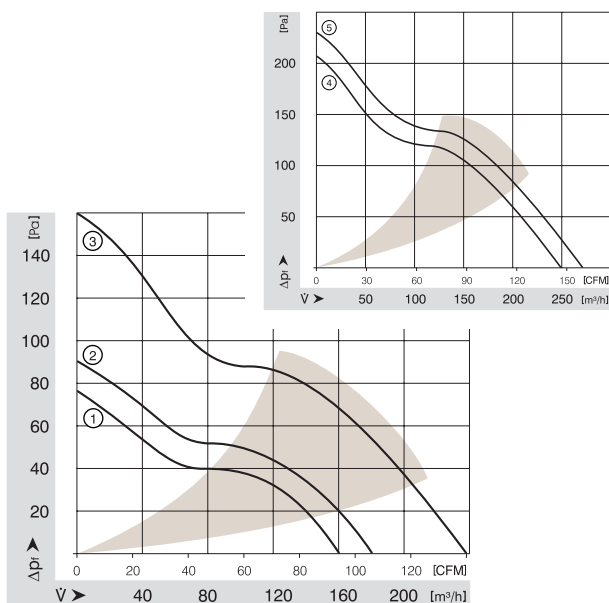
Vario-Pro®

– "Software instead of hardware" – aptly describes the worldwide unique new fans concept are equipped at the plant with tailor-made intelligence for cooling electronics.
– Flexible configuration on a software basis, quicker availability and sampling ex factory and readiness to supply customer-specific solutions in every batch size are the major advantages.

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The way to your Vario-Pro – easier than you thought

– You decide which performance profile your fan should have. First, select the hardware on which the customer-specific configuration will be based from the wide range of fans. The most important selection criteria are: What is the appropriate size for the device? What nominal voltage is available? And what is the maximum air flow performance that is required? Additional functions e.g. alarm signal, temperature/speed, speed limits must also be defined.
– The second stage is devoted to equipping the fan with its specific intelligence. The desired functionalities e.g. output data and operating parameters are quickly and precisely programmed as software modules in the brain of the fan via a data line. The software takes over the work that analogue components have performed so far.

Your Vario-Pro features

Speed profiles
– Description of speed curve with up to 14 freely selectable interpolation points. Linear interpolation between the points.

Temperature as a speed control variable
– Randomly definable speed profile in the temperature range of −20 to +80 °C
– Temperature sensor integrated or externally, randomly positionable
– 0 rpm. possible.
– Recognition of sensor tear-off: In case of loss of sensor, the fan operates at freely programmable (fail-safe) speed.

Interface for external speed setting
– Random curve also possible with external set value by PWM signal or control voltage

Alarm and tacho functions
– Optional alarm/or tacho function
– Freely selectable alarm speed limit (with hysteresis) and alarm delay time

– Storage of alarm signal
– Delay only when starting or permanently active
– Output signal "High" or "Low" in case of alarm
– Optional alarm when temperature sensor torn off.
– Optional alarm in case of excess temperature.

Motor management
– High control accuracy thanks to digital motor management
– Higher operating efficiency thanks to optimum adaptation of motor hardware and software.
– Speed calibration during final test in some cases possible.
– 3-stage current limitation for adaptation for L-, N- and H-winding in some cases possible.
– Reduction of power input and operating temperature thanks to digital drive leads to increased service life of the product.