

KARTA KATALOGOWA

414/2

Wentylator osiowy kompaktowy DC

Producent: ebm-papst



Dane znamionowe		Budowa	
Napięcie znamionowe	24 V DC (20...28 V DC)	Wymiary	40 × 40 × 20 mm
Prędkość obrotowa	6000 obr/min	Materiał wirnika	tworzywo sztuczne
Pobór mocy	1,0 W	Obudowa	tworzywo sztuczne
Pobór prądu	40 mA	Kierunek obrotów	w lewo, patrząc na wirnik
Wydajność	10 m³/h	Kierunek przepływu	wydmuch przez żebra
Maks. ciśnienie statyczne	41 Pa	Łożyskowanie	ślizgowe
Poziom ciśnienia akustycznego	20 dB(A)	Podłączenie	przewody AWG 28
Poziom mocy akustycznej	4,1 B	Trwałość L10 (40 °C)	35000 h
Temperatura otoczenia	-20...+70 °C	Masa	0,027 kg

Dane na okładce odczytane z karty produktu ebm-papst (oryginał na kolejnych stronach).
 Producent zastrzega możliwość zmian.

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Product Data Sheet 414/2

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Product Data Sheet 414/2

414/2

INDEX

1	General	3
2	Mechanics	3
2.1	General	3
2.2	Connections	3
3	Operating Data	5
3.1	Operating Data - Electrical Interface - Input	5
3.2	Electrical Operating Data	6
3.3	Operating Data - Electrical Interface -Output	6
3.4	Electrical Features	7
3.5	Aerodynamic	8
3.6	Sound Data	9
4	Environment	9
4.1	General	9
4.2	Climatic requirements*)	9
5	Safety	10
5.1	Electrical Safety	10
5.2	Approval Tests	10
6	Reliability	10
6.1	General	10

Product Data Sheet 414/2
1 General

Fan type	Fan	
Rotational direction looking at rotor	counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Sleeve bearing	
Mounting position	any	

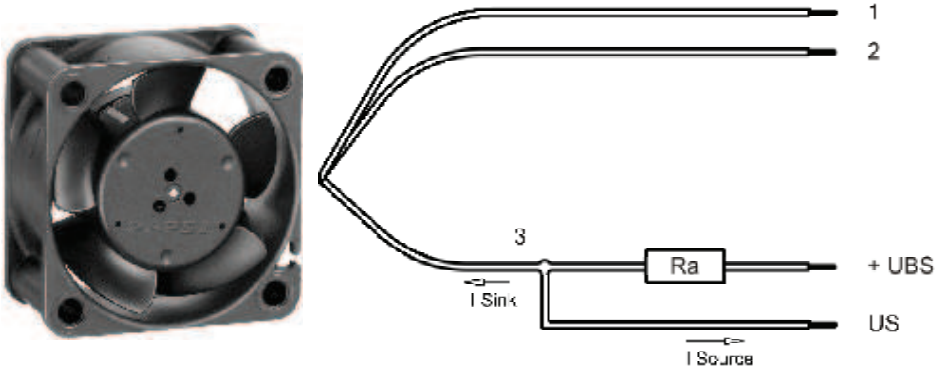
2 Mechanics
2.1 General

Width	40,0 mm	
Height	40,0 mm	
Depth	20,0 mm	
Weight	0,027 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	wire outlet corner: 80 Ncm remaining corners: 90 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Length of lead wire	310 mm	
Tolerance	+ - 10,0 mm	
Wire gauge (AWG)	28	
Insulation diameter	1,40 mm	
Contact	see drawing	

Product Data Sheet 414/2



	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	white	Tacho

The auxilliaries shown on the schematic diagram (which are required for the intended use) are not part of our delivery.

Product Data Sheet 414/2

3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	None
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Product Data Sheet 414/2
3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m³; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

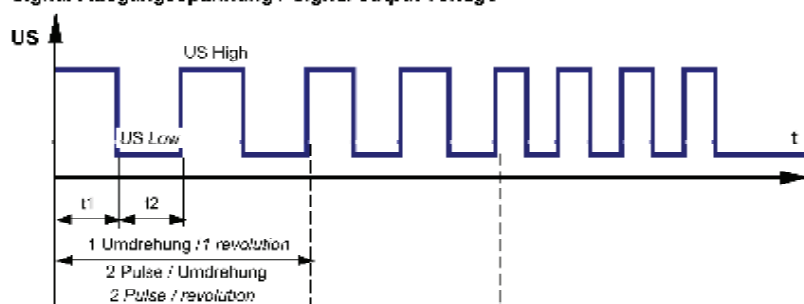
$\Delta p = 0$: corresp. to free air flow (see section 3.5)
 I: corresp. to arithm. mean current value

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	20,0 V		28,0 V
Nominal voltage	$\Delta p = 0$	U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	0,7 W +/- 17,5 %	1,0 W +/- 12,5 %	1,2 W +/- 17,5 %
Tolerance	0001				
Current consumption	$\Delta p = 0$	I	33 mA +/- 17,5 %	40 mA +/- 12,5 %	43 mA +/- 17,5 %
Tolerance	0001				
Speed	$\Delta p = 0$	n	5.200 1/min +/- 15,0 %	6.000 1/min +/- 10,0 %	6.700 1/min +/- 15,0 %
Tolerance	0001				
Starting current consumption				68 mA	

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)
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Signal-Ausgangsspannung / Signal output voltage



$$R_a = \frac{U_{BS} - U_{S \text{ Low}}}{I_{\text{Sink}}}$$

Lüfter-Drehzahl / Fan speed

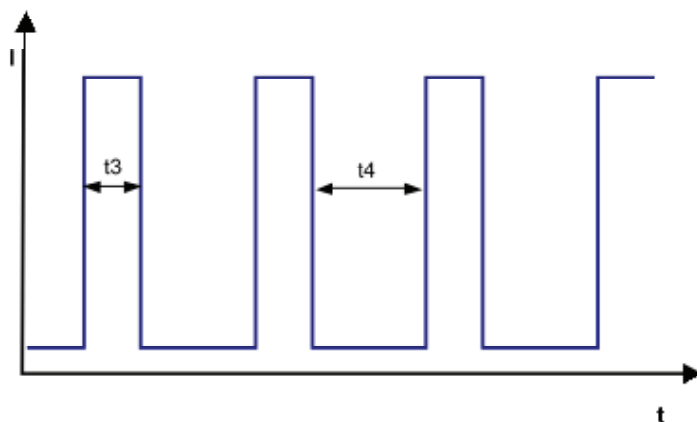


Product Data Sheet 414/2

Features	Note	Values
Tacho operating voltage (UBS)		$\leq 30\text{ V}$
Tacho signal Low	I sink: 1 mA	$\leq 0,4\text{ V}$
Tacho signal High	I source: 0 mA	$\leq 30\text{ V}$
Maximum sink current		$\leq 2\text{ mA}$
Maximum source current		0 mA
External resistor	External resistor R_a from UBS to US required. All voltages measured to GND.	
Tacho frequency	$(2 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5\text{ V/us}$

3.4 Electrical Features

Electronic function	None	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_n	$I_F \leq 30\text{ nA}$	
Locked rotor protection	Impedance protected	



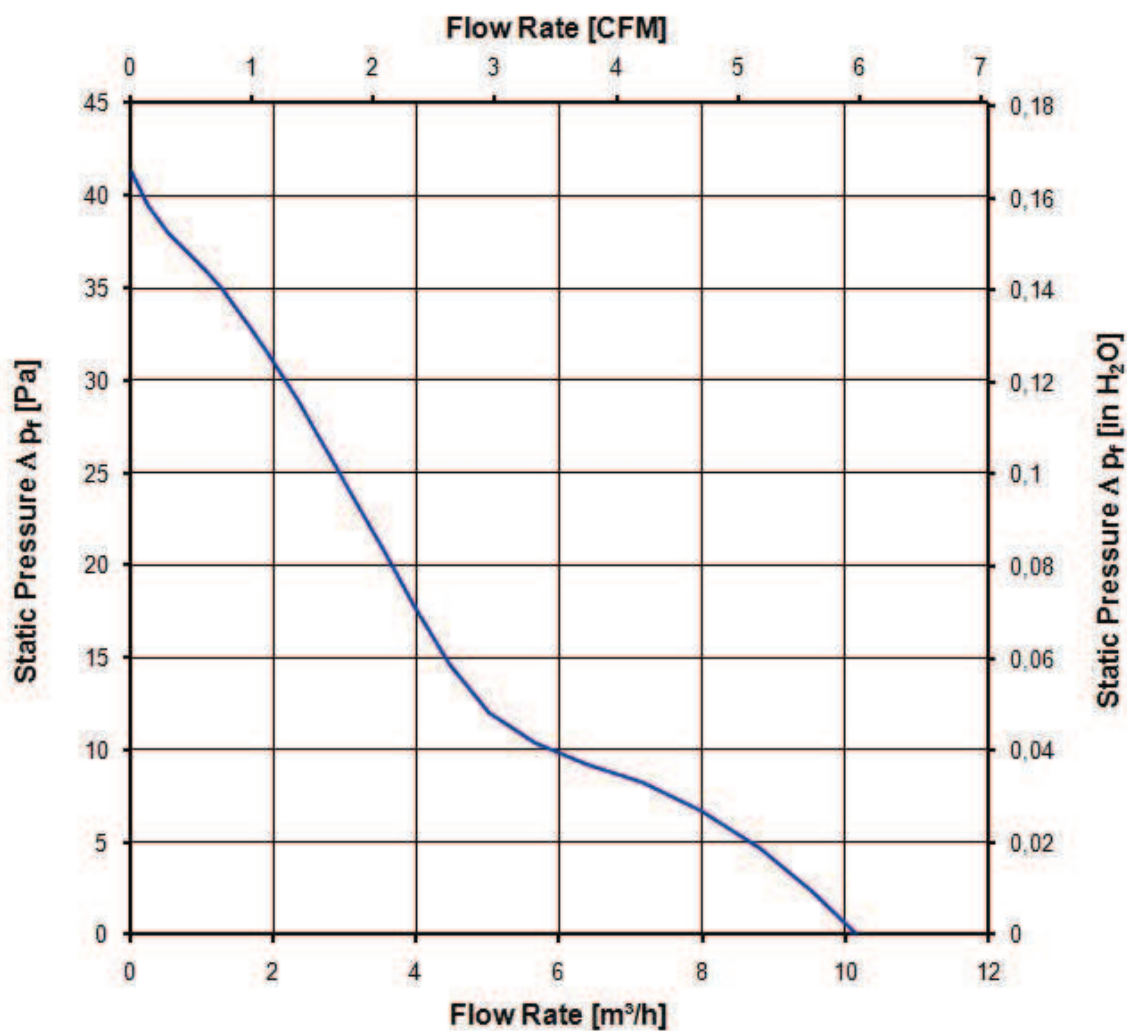
Product Data Sheet 414/2
3.5 Aerodynamic

Measurement conditions: Measured with a double chamber intake rig acc. to DIN EN ISO 5801.
 Normal air density = 1,2 kg/m³; Temperature 23°C +/- 3°C;
 In the intake and outlet area should not be any solid obstruction within 0,5 m.

a.) Operation condition:

6.000 1/min at free air flow

Max. free-air flow ($\Delta p = 0$ / $\dot{V} = \text{max.}$)	10,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.}$ / $\dot{V} = 0$)	41 Pa	



Product Data Sheet 414/2
3.6 Sound Data

Measurement conditions: Sound pressure level: 1 Meter distance between microphone and the air intake.
 Sound power level: Acc. to DIN 45635 part 38 (ISO 10302)
 Measured in a semianchoic chamber with a background noise level of $L_p(A) < 5 \text{ dB(A)}$
 For further measurement conditions see section 3.5

a.) Operation condition:

6.000 1/min at free air flow		
Optimal operating point	9,0 m ³ /h @ 5 Pa	
Sound power level at the optimal operating point	4,1 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	20,0 dB(A)	

4 Environment
4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	70 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

4.2 Climatic requirements*)

Humidity requirements	humid heat, constant; according to DIN EN 60068-2-78, 14 days	
Water exposure	None	
Radiation exposure	None	
Dust requirements	None	
Salt fog requirements	None	
Harmful gas requirements	None	

*) Permitted application area:

The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

Pollution degree 1 (according DIN EN 60664-1)

There is either no pollution or it occurs only dry, non-conductive pollution. The pollution has no negative impact.

Product Data Sheet 414/2
5 Safety
5.1 Electrical Safety

Dielectric strength DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700) A.) Type test Measuring conditions: After 48h of storage at 95% R.H. and 25°C. No arcing or breakdown is allowed! All connections together to ground. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	Not applicable Not applicable	
Isolation resistance Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min.	RI > 10 MOhm	
Air and leakage distances	1,0 mm / 1,2 mm	
Protection class	III	

5.2 Approval Tests

CE	Yes
UL	Yes
VDE	Yes
CSA	Yes
CCC	No

The approval tests are observed to:

U approval max.: 28,0 V @ TU approval max.: 70,0 °C

6 Reliability
6.1 General

Life expectancy L10 at TU = 20 °C	50.000 h	
Life expectancy L10 at TU = 40 °C	35.000 h	
Life expectancy L10 at TU = 60 °C	20.000 h	
Life expectancy L10 at TU max.	15.000 h	