

Product Data Sheet 3412 N/37GV

**ebmpapst**

The engineer's choice



3412 N/37GV

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## 1 General

Fan type	Fan	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Sleeve bearing	
Mounting position - shaft	Any	

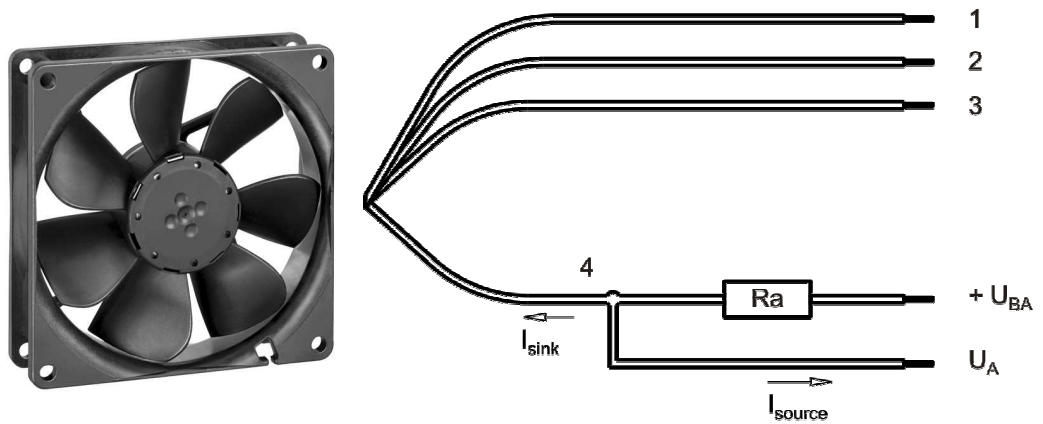
## 2 Mechanics

### 2.1 General

Width	92,0 mm	
Height	92,0 mm	
Depth	25,4 mm	
Mass	0,106 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	Wire outlet corner: 40 Ncm Remaining corners: 60 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

### 2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 310 mm	
Tolerance	+ - 10,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 24	1,55 mm
2	blue	- GND	AWG 24	1,55 mm
3	violet	NTC	AWG 24	1,55 mm
4	white	Alarm	AWG 24	1,55 mm

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

3 Operating Data

3.1 Electrical Interface - Input

Control input	External Temperature Sensor
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Features

<p><b>Characteristics</b></p>	<table border="1"> <caption>Graph Data: Drehzahl / speed [r/min] vs Umgebungstemperatur / Ambient temperature [°C]</caption> <thead> <tr> <th>Umgebungstemperatur / Ambient temperature [°C]</th> <th>Drehzahl / speed [r/min]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>1600</td></tr> <tr><td>-10</td><td>1600</td></tr> <tr><td>0</td><td>1600</td></tr> <tr><td>10</td><td>1600</td></tr> <tr><td>20</td><td>1600</td></tr> <tr><td>30</td><td>1600</td></tr> <tr><td>40</td><td>2100</td></tr> <tr><td>50</td><td>2700</td></tr> <tr><td>60</td><td>2700</td></tr> </tbody> </table>	Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [r/min]	-20	1600	-10	1600	0	1600	10	1600	20	1600	30	1600	40	2100	50	2700	60	2700
Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [r/min]																				
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30	1600																				
40	2100																				
50	2700																				
60	2700																				
<p><b>Schematics</b></p>	<p>The schematic shows the fan's electrical connection to the customer's control system. The fan is connected to the main power supply (+ UB) and ground (- GND). The control input (Eingang / Input) is connected to a network consisting of an internal reference voltage (+ Interne Ref. / + Internal ref.), a resistor, a capacitor, and an NTC (Negative Temperature Coefficient) sensor. The NTC sensor is used to monitor the fan's temperature and adjust its speed accordingly.</p>																				

### 3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m<sup>3</sup>; 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 chapter aerodynamics)

I: corresp. to arithm. mean current value

Name	Condition		
TU 0001	TU: $\geq 50$ °C		
NTC 0001	NTC < 34 kOhm		

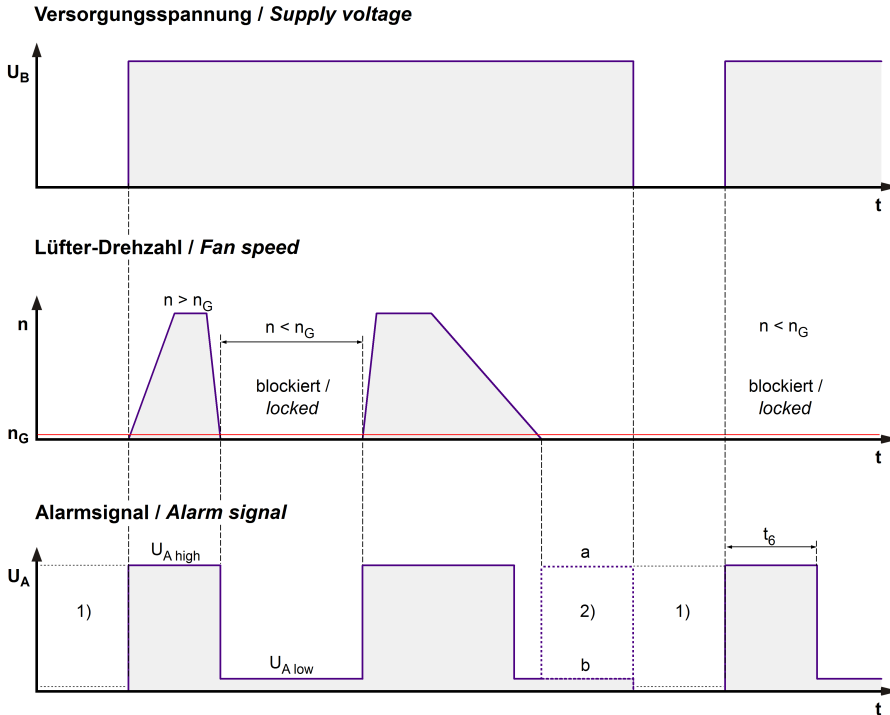
#### Attention!

Fan and NTC must be exposed to the same ambient temperature. It's to exclude that the fan operate at higher ambient temperature and the NTC is placed in a colder environment!

Features	Condition	Symbol	Values		
Voltage range		U	8 V		12,6 V
Nominal voltage		$U_N$		12,0 V	
Power consumption	$\Delta p = 0$		1 W	2,5 W	2,7 W
Tolerance	TU / NTC 0010	P	+/- 20 %	+/- 20,0 %	+/- 20,0 %
Current consumption	$\Delta p = 0$		125 mA	208 mA	215 mA
Tolerance	TU / NTC 0010	I	+/- 20,0 %	+/- 20,0 %	+/- 20,0 %
Speed	$\Delta p = 0$		1.700 1/min	2.700 1/min	2.800 1/min
Tolerance	TU / NTC 0010	n	+/- 10,0 %	+/- 10,0 %	+/- 10,0 %
Starting current consumption				760 mA	

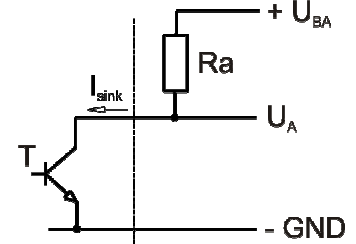
### 3.3 Electrical Interface - Output

Alarm type	/37 (high = ok, open collector inverse)
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$$R_a = \frac{U_{BA} - U_{A\text{low}}}{I_{\text{sink}}}$$

Lüfter / Fan      Kunde / Customer

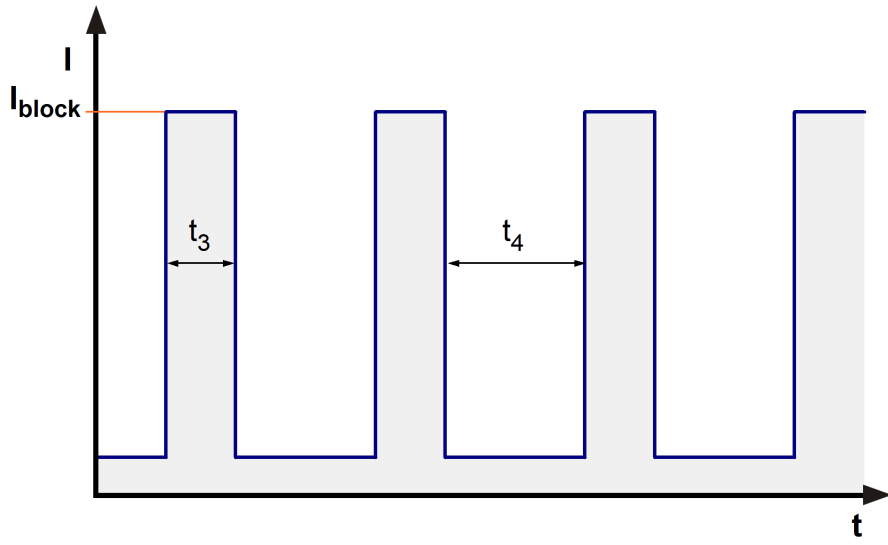


- 1) Wenn der Lüfter abgeschaltet ist, hängt der Zustand des Ausgangssignals  $U_A$  von der Kundenapplikation ab.  
 When the fan is powered off, the output signal  $U_A$  depends on the customer's application.
- 2) Für den gültigen Zustand (a oder b) siehe Alarmunterdrückung in der Tabelle.  
 For the valid condition (a or b) see alarm suppression in the table.

Features	Note	Values
Alarm operating voltage	$U_{BA}$	$\leq 30 \text{ V}$
Alarm signal Low	$U_{A\text{low}}$	$\leq 0,4 \text{ V}$
Alarm signal High	$U_{A\text{high}}$	$30 \text{ V}$
Maximum sink current	$I_{\text{sink}}$	$10 \text{ mA}$
External resistor	External resistor $R_a$ from $U_{BA}$ to $U_A$ required. All voltage measured to GND.	
Alarm trip speed limit	$n_G$	$0 \text{ 1/min}$
Alarm at sense failure	No	
Alarm latch	No	
Alarm isolated from motor	No	

### 3.4 Electrical Features

Electronic function	None	
Reversed polarity protection	Rectifying diode	
Max. residual current at $U_N$	$I_F \leq 50 \mu\text{A}$	
Locked rotor protection	Auto restart	
Locked rotor current at $U_N$	$I_{\text{block}}$ approx. $760 \text{ mA}$	
Clock signal at locked rotor	$t_3 / t_4$ typical: $0,23 \text{ s} / 1,1 \text{ s}$	



### 3.5 Aerodynamics

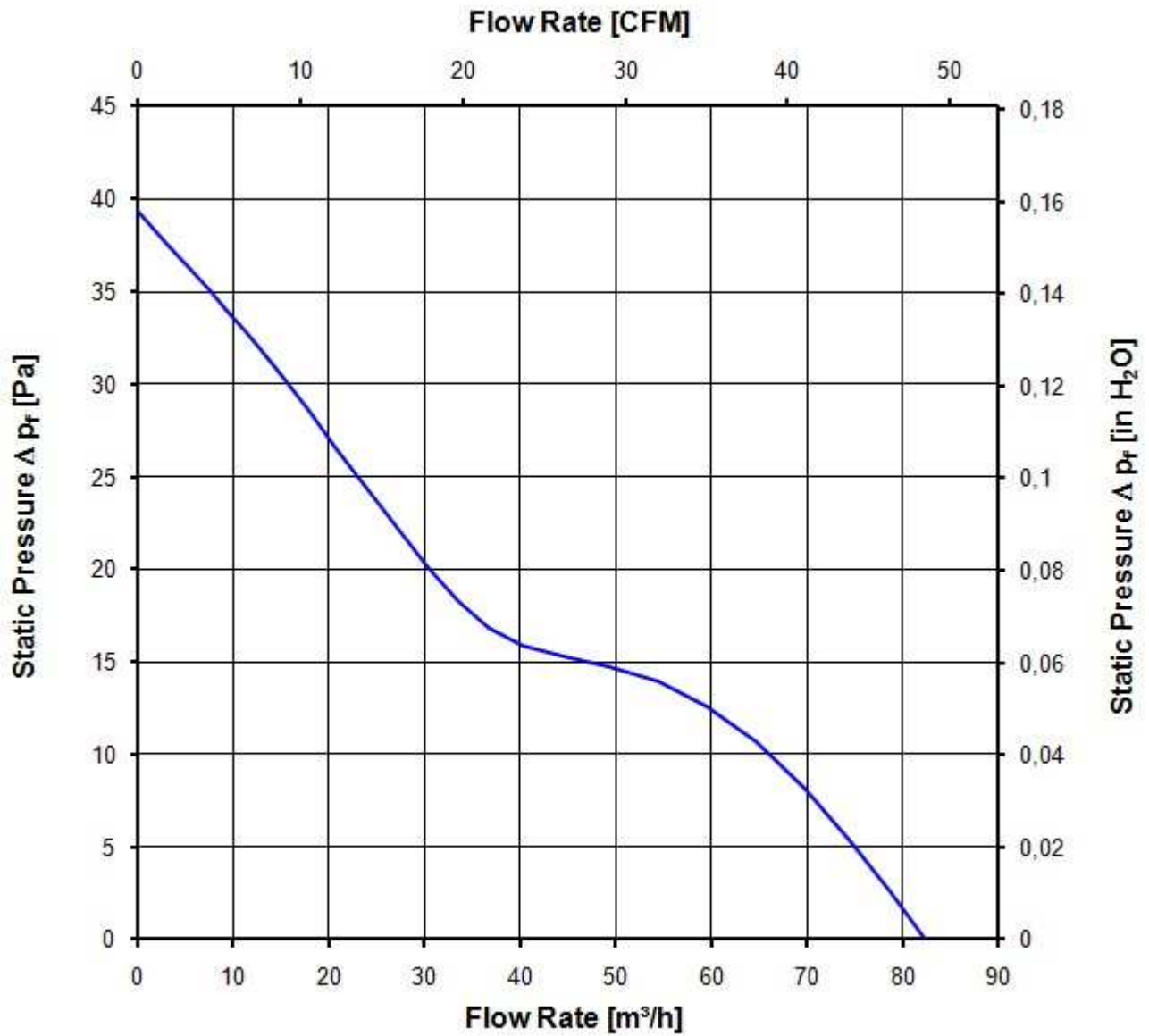
Measurement conditions: Measured with a double chamber intake rig acc. to DIN EN ISO 5801.  
 Normal air density = 1,2 kg/m<sup>3</sup>; Temperature 23°C +/- 3°C;  
 In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.  
 The information is only valid under the specified test conditions and may be changed by the installation conditions. If there are deviations from the standard test conditions, the characteristic values must be checked under the installed conditions.

a.) Operation condition:

2.700 1/min at free air flow	TU >= 50 °C NTC < 34 kOhm		
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Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )	82,0 m <sup>3</sup> /h	
Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ )	39 Pa	





### 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 chapter aerodynamics.

a.) Operation condition:

2.700 1/min at free air flow	TU $\geq 50 \text{ }^\circ\text{C}$ NTC $< 34 \text{ k}\Omega$		
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Optimal operating point	57,0 m <sup>3</sup> /h @ 12 Pa	
Sound power level at the optimal operating point	4,6 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	33,0 dB(A)	

## 4 Environment

### 4.1 General

Min. permitted ambient temperature TU min.	-20 $^\circ\text{C}$	
Max. permitted ambient temperature TU max.	65 $^\circ\text{C}$	
Min. permitted storage temperature TL min.	-40 $^\circ\text{C}$	
Max. permitted storage temperature TL max.	80 $^\circ\text{C}$	

### 4.2 Climatic Requirements

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

Please require severity levels and specification parameters from the responsible development departments.

## 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.	Not applicable	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	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	
Clearance / creepage distance	1,0 mm / 1,2 mm	
Protection class	III	

### 5.2 Approval Tests

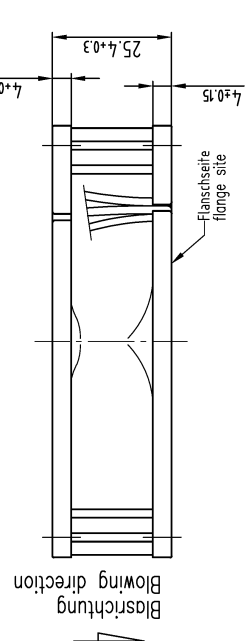
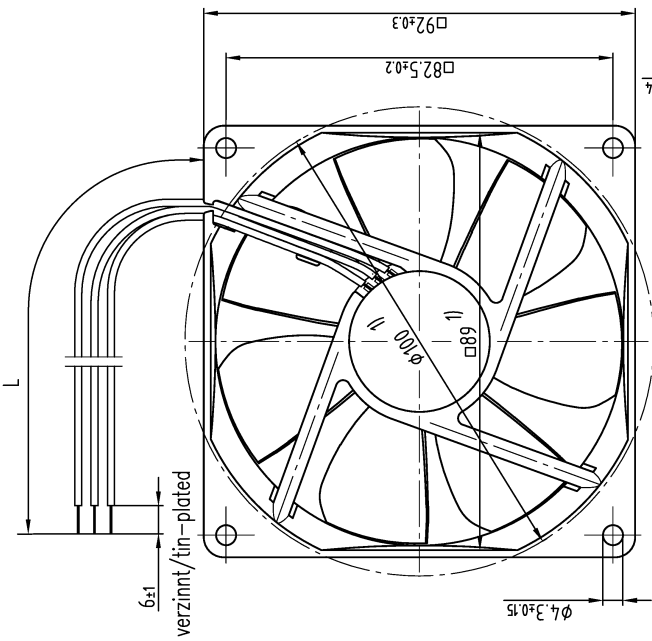
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Not applicable

## 6 Reliability

### 6.1 General

Life expectancy L10 at TU = 40 °C	75.000 h	
Life expectancy L10 at TU max.	42.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	127.500 h	

Anzahl und Länge der Litze s. Spezifikation  
length and number of wires see design specification



1) Maße für Montagewand  
Axialspiel bei  
- Kugellagerung (K): 0 (mit Federausgleich)  
- Gleitlagerung (G): 0.1 - 1.6

1) dimensions for assembly wall  
axial clearance by  
- ball bearing (K): 0 (with spring compensation)  
- sleeve bearing (G): 0.1 - 1.6

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Refer to protection notice DIN ISO 16016!

SWP-Stab/Side	Änd.-Nr./Change-No.	Aut./Üb.-System-Version Aut./Empfänger/Name/Date	ebmpapst		Werkstoff/Material	Volumen/Volume (mm <sup>3</sup> ):
			AP-Übersicht/ CAD-Entwurf			
Tolerierung/Tolerances: Allgemeintoleranzen/Gen. tolerances:	Beim/ Drawn	Gepr./ Checked	Empf./ Revised	Artikel/Title		
				Zug.-Nr./ Drawing-No.:		
 ebm-papst St. Georgen GmbH & Co. KG				Feldname/Field/Signal		Formel/Size
				Feldname/Type of Document		Maßstab/Scale