

3218 J/2H4P

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6.1 General 10

1 General

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

2 Mechanics

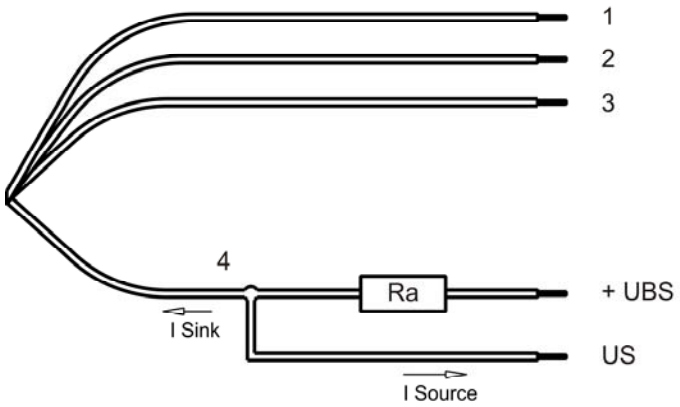
2.1 General

Width	92,0 mm	
Height	92,0 mm	
Depth	38,0 mm	
Weight	0,290 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	wire outlet corner: 30 Ncm remaining corners: 30 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Length of lead wire Tolerance	310 mm +- 10,0 mm	
Wire gauge (AWG)	22	
Insulation diameter	1,30 mm	





	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	violet	PWM
Wire 4	white	Tacho

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

3 Operating Data

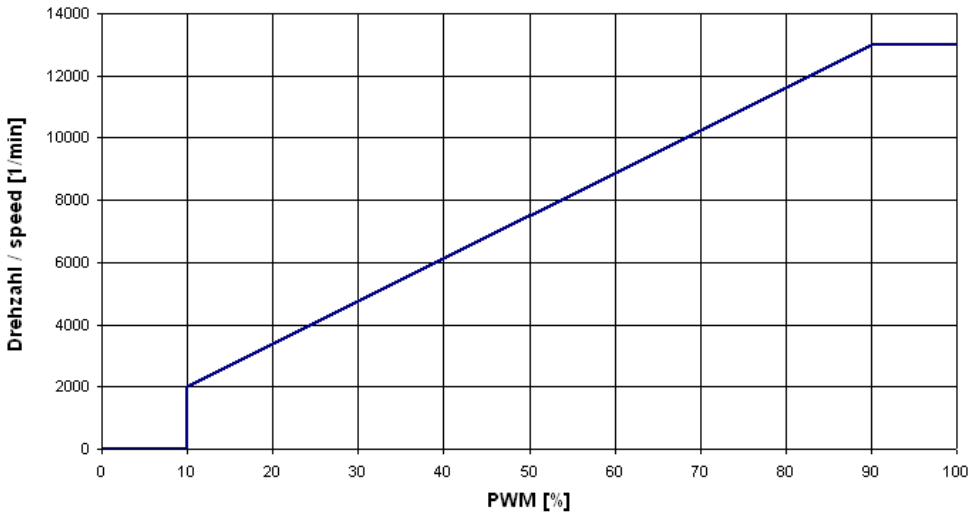
3.1 Operating Data - Electrical Interface - Input

Control input	PWM

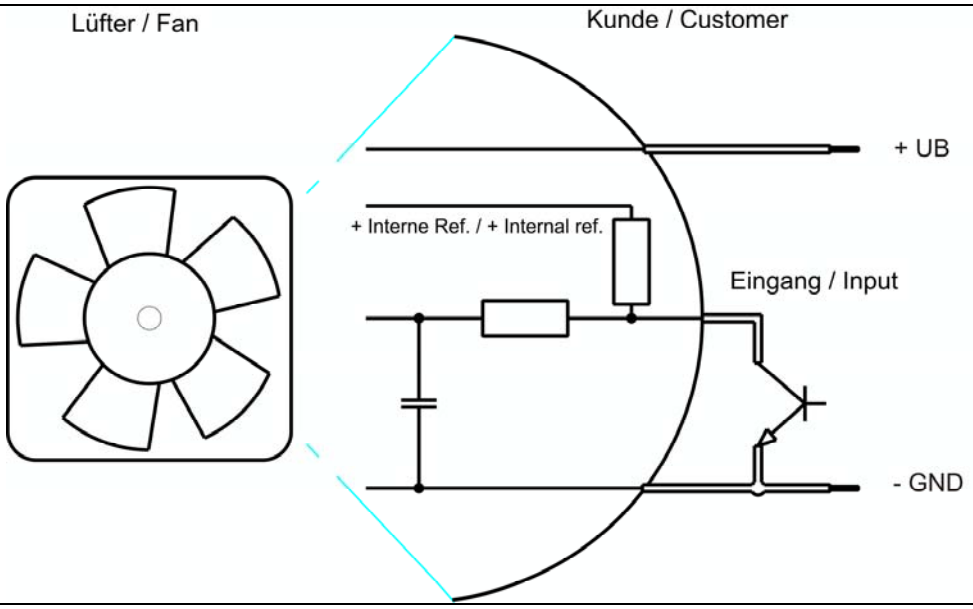
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 5 kHz

Characteristics



Schematics



Speed control: 0...100 % PWM; f: 1...5 kHz; open collector PWM-Low <0,2 V

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

Name	**Condition**		
PWM 0001	PWM: 100 %;	f: 1 kHz	f: 5 kHz

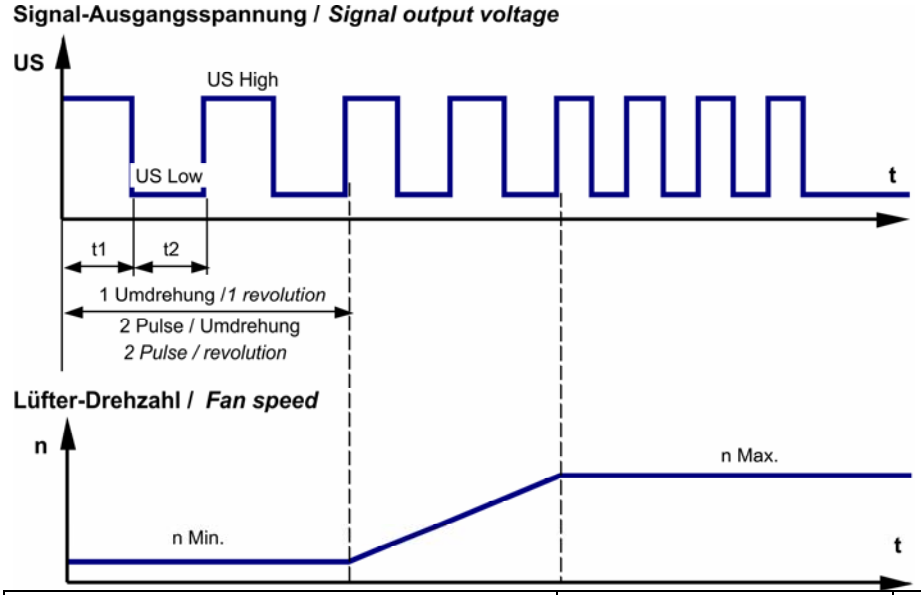
Features	**Condition**	**Symbol**	**Values**		
Voltage range	$\Delta p = 0$	U	20,0 V		58,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0001	P	8,0 W +- 17,5 %	49,0 W +- 17,5 %	50,0 W +- 25,0 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0001	I	400 mA +- 17,5 %	1.000 mA +- 17,5 %	900 mA +- 25,0 %
Speed Tolerance	$\Delta p = 0$ PWM 0001	n	6.800 1/min +- 12,5 %	13.000 1/min +- 7,5 %	13.000 1/min +- 3,0 %
Starting current consumption				3.800 mA	
Inrush current				51.000 mA	

Name	**Condition**		
PWM 0100	PWM: 50 %;	f: 1 kHz	f: 5 kHz

Features	**Condition**	**Symbol**	**Values**		
Voltage range	$\Delta p = 0$	U	20,0 V		58,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0100	P	8,5 W +- 17,5 %	12,0 W +- 25,0 %	12,5 W +- 25,0 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0002	I	425 mA +- 17,5 %	250 mA +- 25,0 %	215 mA +- 25,0 %
Speed Tolerance	$\Delta p = 0$ PWM 0002	n	7.000 1/min +- 12,5 %	7.500 1/min +- 5,0 %	7.500 1/min +- 5,0 %

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)



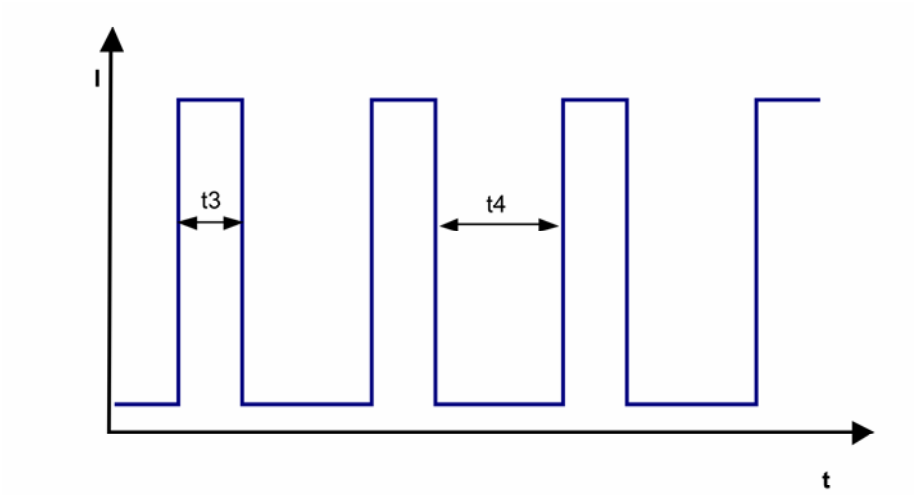
$$Ra = \frac{UBS - US\ Low}{I\ Sink}$$

Features	Note	Values
Tacho operating voltage (UBS)		<= 60 V
Tacho signal Low	I sink: 2 mA	<= 0,4 V
Tacho signal High	I source: 0 mA	<= 60 V
Maximum sink current		<= 4 mA
External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	(2 x n) / 60	
Tacho isolated from motor	No	
Slew rate		=> 0,5 V/us

Alarm type	None

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at Un	Rectifying diode IF <= 200 uA	
Locked rotor protection	Auto restart	
Locked rotor current at Un	approx. 3.800 mA	
Clock signal t3/t4 at locked rotor	Typical: 0,5 s / 10 s	



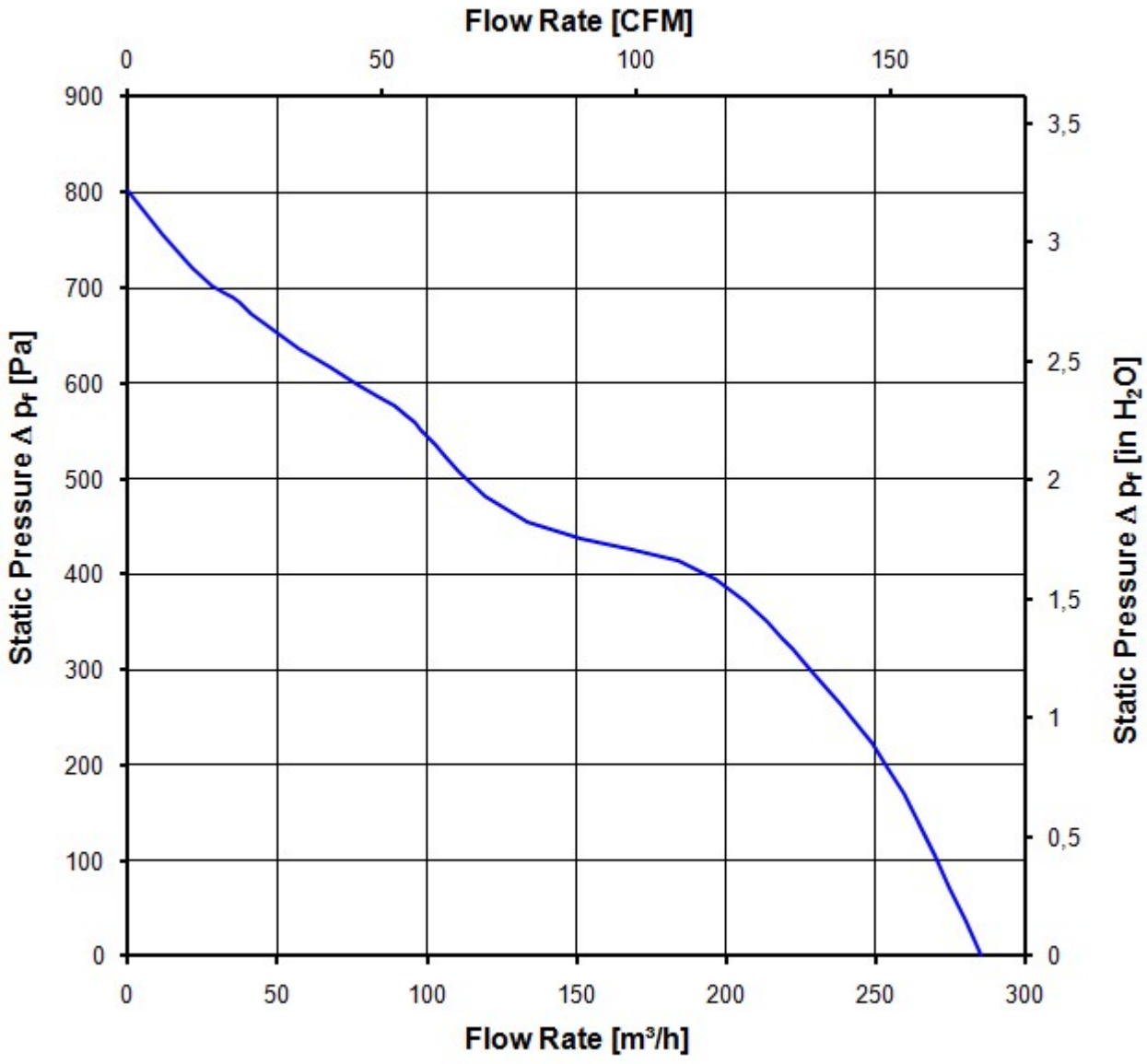
3.5 Aerodynamic

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:

13.000 1/min at free air flow	PWM 100 %;	f: 1 kHz	f: 5 kHz

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	285,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	800 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 Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

13.000 1/min at free air flow	PWM 100 %	PWM min.: ; f: 1 kHz	PWM max.:; f: 5 kHz

Optimal operating point	190,0 m3/h @ 374 Pa	
Sound power level at the optimal operating point	8,0 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	76,0 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	

*) Permittet 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.

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.	500 VAC / 1 Min. 500 VAC / 1 Sec.	
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 / 1,5 mm	
Protection class	III	

5.2 Approval Tests

CE	No
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Yes / C22.2 No. 113 Fans and Ventilators
CCC	Yes

The approval tests are observed to:
U approval max.:48,0 V @ TU approval max.: 70 °C

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	60.000 h	
Life expectancy L10 at TU max.	30.000 h	
Life expectancy L10 Delta (40 °C)	120.000 h	