



RLF100-11/18/2HP-182

INDEX

1	General	3
2	Mechanics	3
2.1	General	3
2.2	Connections	3
3	Operating Data.....	4
3.1	Operating Data - Electrical Interface - Input	4
3.2	Electrical Operating Data	5
3.3	Operating Data - Electrical Interface -Output	6
3.4	Electrical Features	6
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

1 General

Fan type	Blower	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position	any	

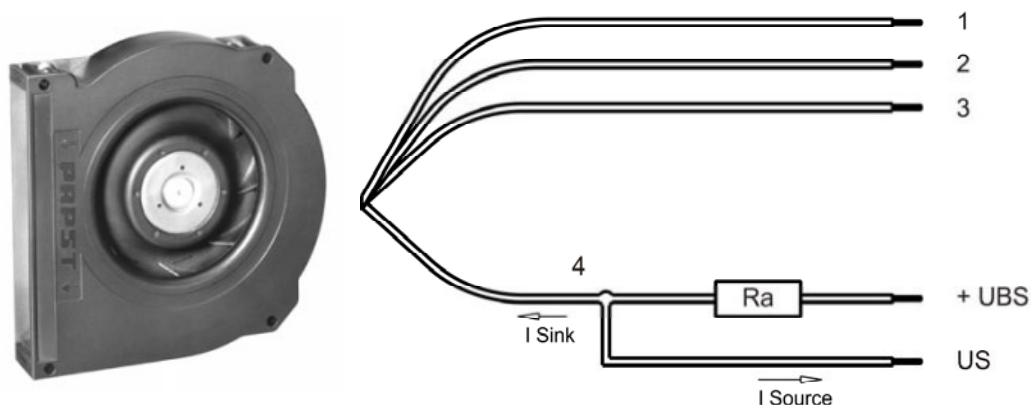
2 Mechanics

2.1 General

Width	127,0 mm	
Height	127,0 mm	
Depth	25,4 mm	
Weight	0,300 kg	
Housing material	Mixed	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	wire outlet corner: 190 Ncm remaining corners: 190 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Length of lead wire	L = 310 mm	
Tolerance	+/- 10,0 mm	
Wire gauge (AWG)	26	
Insulation diameter	1,35 mm	



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

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

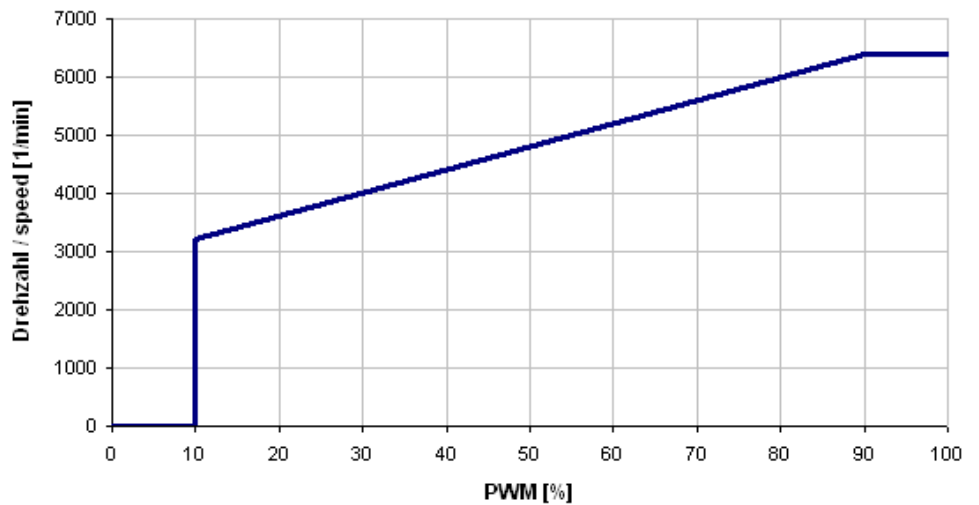
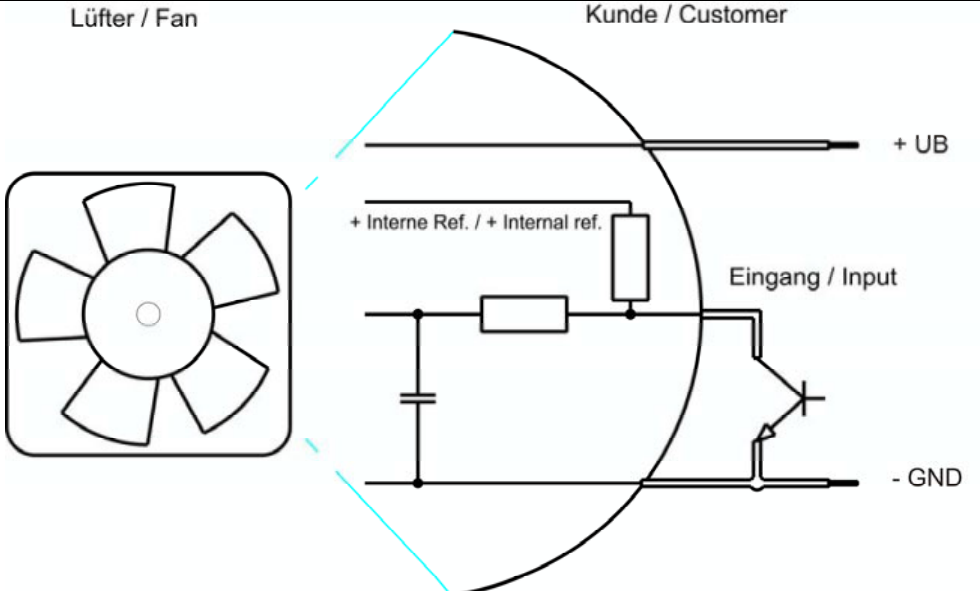
3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	PWM
---------------	-----

Features

PWM - Frequency	2 kHz - 5 kHz
-----------------	---------------

Characteristics	 <table border="1"> <caption>Speed vs PWM Data</caption> <thead> <tr> <th>PWM [%]</th> <th>Speed [1/min]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>3200</td></tr> <tr><td>20</td><td>3600</td></tr> <tr><td>30</td><td>4000</td></tr> <tr><td>40</td><td>4400</td></tr> <tr><td>50</td><td>4800</td></tr> <tr><td>60</td><td>5200</td></tr> <tr><td>70</td><td>5600</td></tr> <tr><td>80</td><td>6000</td></tr> <tr><td>90</td><td>6400</td></tr> <tr><td>100</td><td>6500</td></tr> </tbody> </table>	PWM [%]	Speed [1/min]	0	0	10	3200	20	3600	30	4000	40	4400	50	4800	60	5200	70	5600	80	6000	90	6400	100	6500
PWM [%]	Speed [1/min]																								
0	0																								
10	3200																								
20	3600																								
30	4000																								
40	4400																								
50	4800																								
60	5200																								
70	5600																								
80	6000																								
90	6400																								
100	6500																								
Schematics	 Lüfter / Fan Kunde / Customer + UB + Interne Ref. / + Internal ref. Eingang / Input - GND																								

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 %;

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	43,0 V		53,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption	$\Delta p = 0$	P	14,0 W	17,0 W	17,0 W
Tolerance	PWM 0001		+/- 17,5 %	+/- 17,5 %	+/- 17,5 %
Current consumption	$\Delta p = 0$	I	325 mA	355 mA	320 mA
Tolerance	PWM 0001		+/- 17,5 %	+/- 17,5 %	+/- 17,5 %
Speed	$\Delta p = 0$	n	5.700 1/min	6.400 1/min	6.400 1/min
Tolerance	PWM 0001		+/- 12,5 %	+/- 5,0 %	+/- 5,0 %
Starting current consumption				<= 1.800 mA	

Name	Condition
PWM 0002	PWM: 50 %;

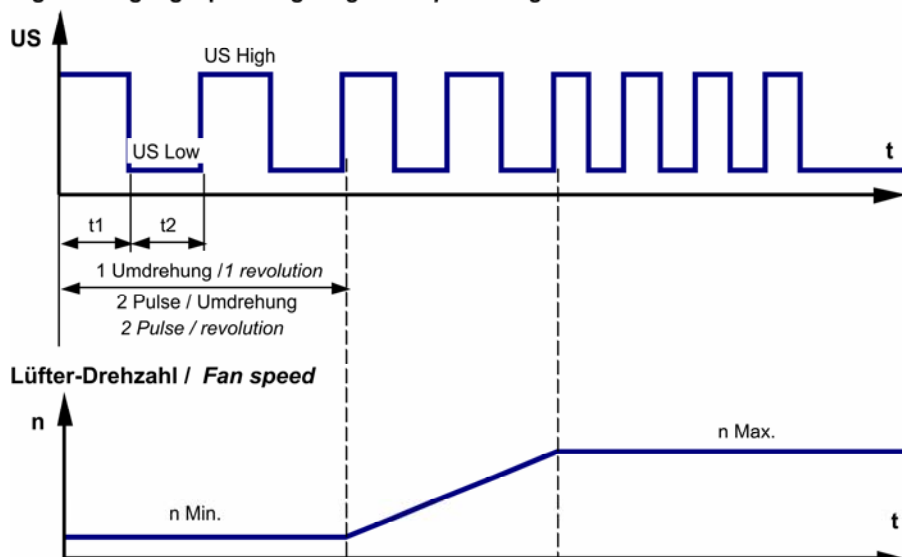
Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	43,0 V		53,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption	$\Delta p = 0$	P	6,7 W	7,4 W	8,2 W
Tolerance	PWM 0002		+/- 17,5 %	+/- 17,5 %	+/- 17,5 %
Current consumption	$\Delta p = 0$	I	155 mA	155 mA	155 mA
Tolerance	PWM 0002		+/- 17,5 %	+/- 17,5 %	+/- 17,5 %
Speed	$\Delta p = 0$	n	4.900 1/min	4.900 1/min	4.900 1/min
Tolerance	PWM 0002		+/- 5,0 %	+/- 5,0 %	+/- 5,0 %

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)
------------	---------------------

Signal-Ausgangsspannung / Signal output voltage

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

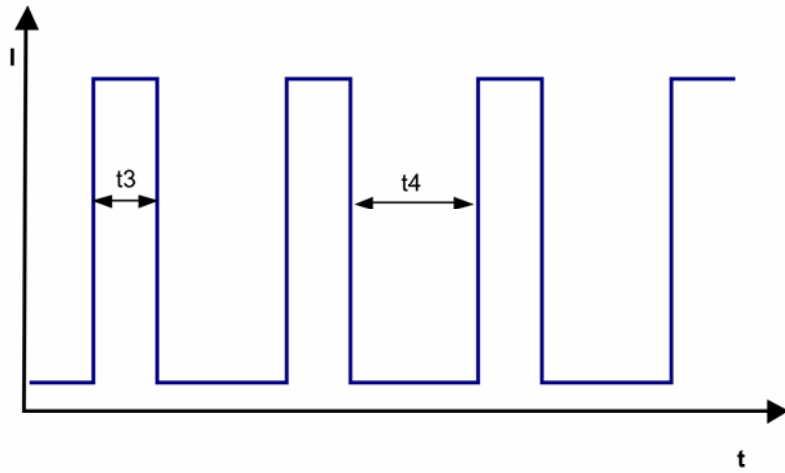


Features	Note	Values
Tacho operating voltage (UBS)		$\leq 60,0 \text{ V}$
Tacho signal Low	I sink: 2 mA	$\leq 0,4 \text{ V}$
Tacho signal High	I source: 0 mA	60,0 V
Maximum sink current		20 mA
External resistor	External resistor R_a from UBS to US required. All voltages measured to GND.	
Tacho frequency	$(2 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5 \text{ V/us}$

Alarm type	None
------------	------

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_n	$I_F \leq 10 \text{ uA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_n	approx. 1.800 mA	
Clock signal $t3/t4$ at locked rotor	Typical: 0,4 s / 20,0 s	

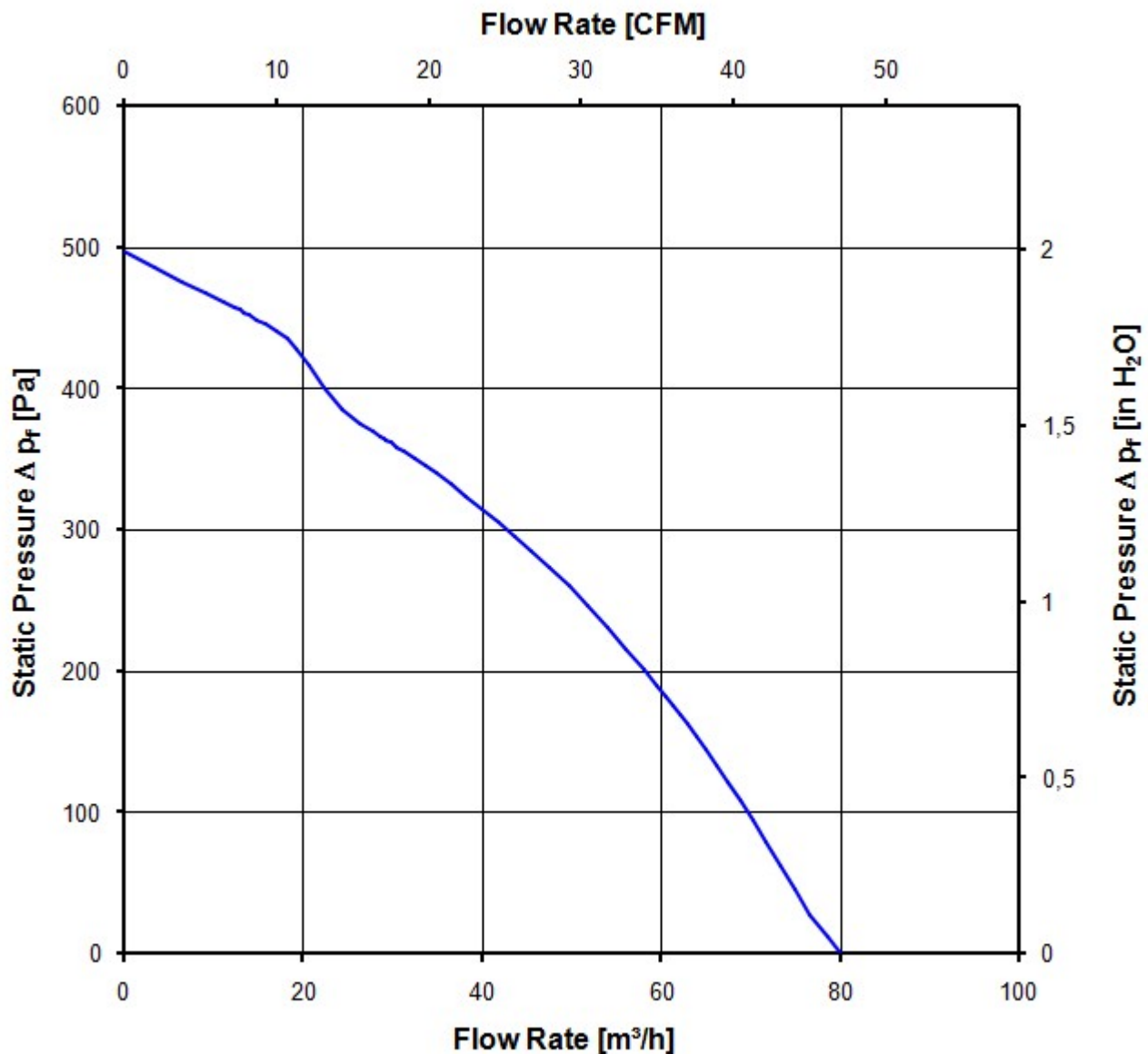


3.5 Aerodynamic

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:

6.400 1/min at free air flow	PWM 100 %;		
Max. free-air flow ($\Delta p = 0$ / $\dot{V} = \text{max.}$)		80,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.}$ / $\dot{V} = 0$)		500 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 section 3.5

a.) Operation condition:

6.400 1/min at free air flow	PWM 100 %	PWM min.:	PWM max.:
------------------------------	-----------	-----------	-----------

Optimal operating point	20,0 m3/h @ 383 Pa	
Sound power level at the optimal operating point	7,0 bel(A)	
Sound pressure level at free air flow, measured in rubber bands		

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.

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	Yes
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:

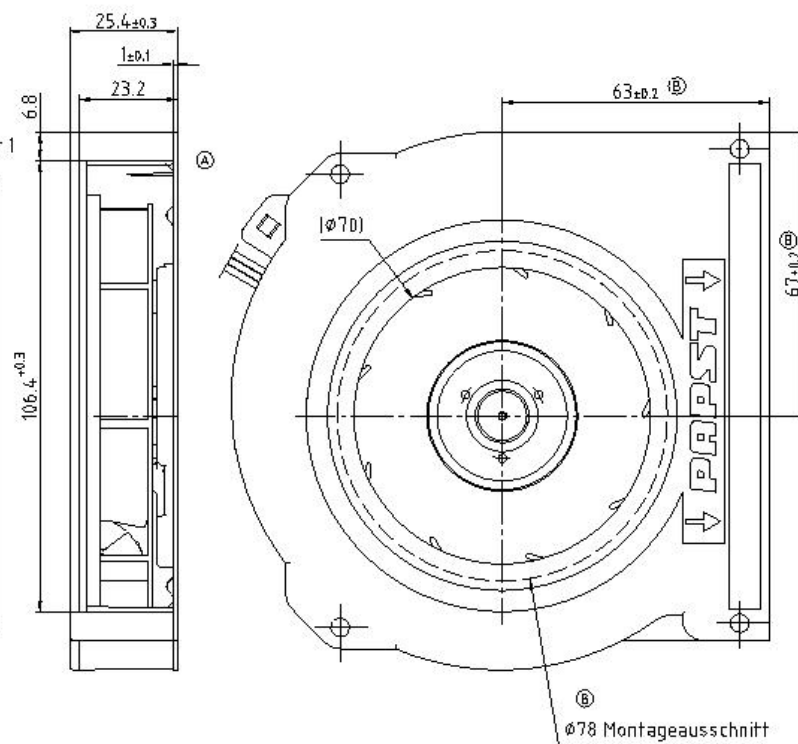
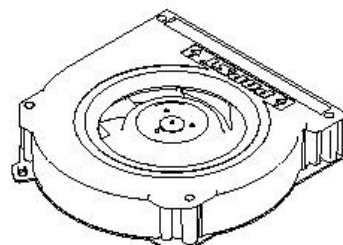
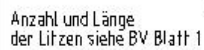
U approval max.: 53,0 V @ TU approval max.: 70,0 °C

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	72.500 h	
Life expectancy L10 at TU max.	35.000 h	
Life expectancy L10 Delta (40 °C)	145.000 h	

50429678



Axialspiel bei
- Kugellagerung (K): 0 (mit Federausgleich)

Tolerierung: DIN 7167 Allgemeintoleranzen: DIN ISO 2768-mK					
				Artikel	Maßstab
Bearbeitet	Datum	Name			
	Index	Änd.-Nr.		Zchg.-Nr.	Blatt
Geprüft u. zur Verwendung freigegeben von: 				obm-papst St. Georgen GmbH & Co. KG	Erst-Zchg: