

Product Data Sheet RER160-28/18NTDAU

ebmpapst

The engineer's choice



RER160-28/18NTDAU

INDEX

1	General	3
2	Mechanics	3
2.1	General.....	3
2.2	Connections.....	3
3	Operating Data	4
3.1	Electrical Interface - Input.....	4
3.2	Electrical Operating Data	5
3.3	Electrical Features	7
3.4	Aerodynamics	9
3.5	Sound Data.....	11
4	Environment	11
4.1	General.....	11
4.2	Climatic Requirements	11
5	Safety	13
5.1	Electrical Safety	13
5.2	Approval Tests	13
6	Reliability	13
6.1	General.....	13

1 General

Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

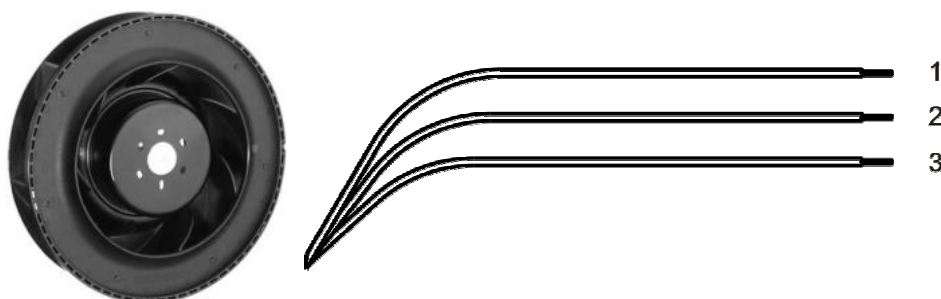
2 Mechanics

2.1 General

Depth	50,3 mm	
Diameter	165,0 mm	
Mass	0,700 kg	
Housing material		
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 425 mm	
Tolerance	+ - 10 mm	
Tube length	S = 119 mm	
Tolerance	+ - 5 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,70 mm
2	blue	- GND	AWG 22	1,70 mm
3	violet	CONTR	AWG 22	1,70 mm

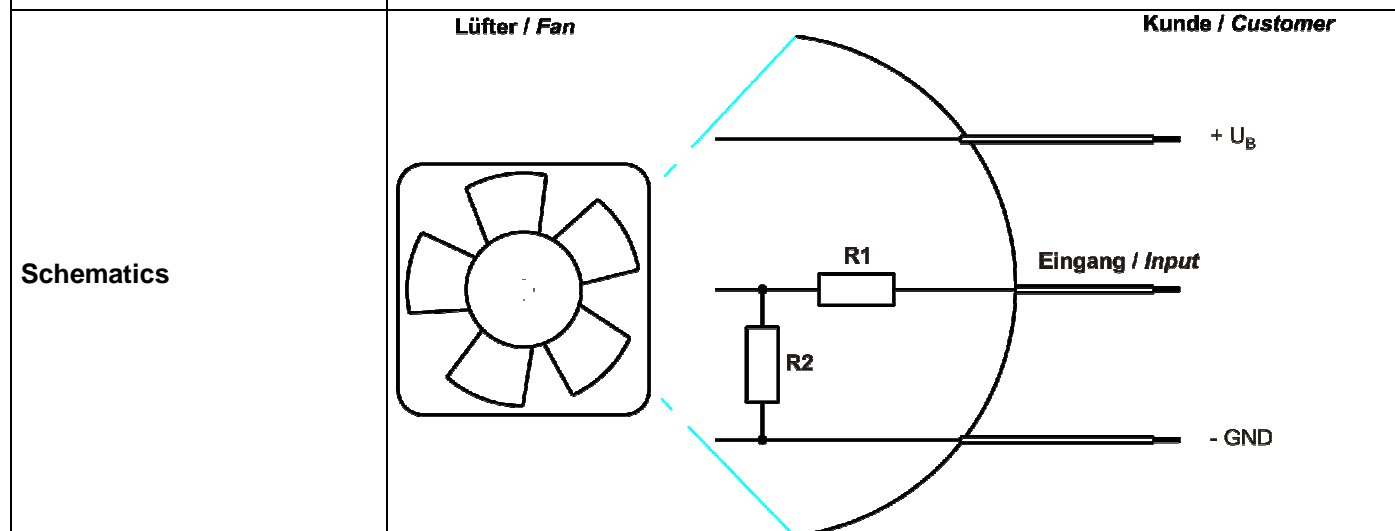
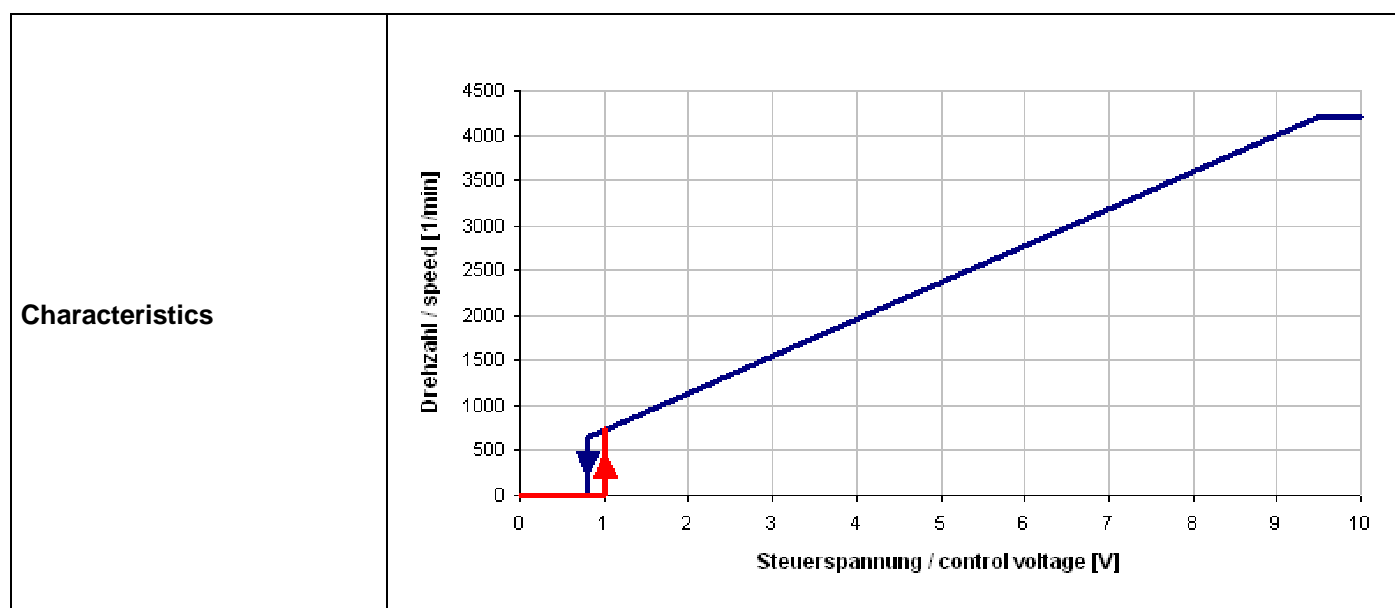
3 Operating Data

3.1 Electrical Interface - Input

Control input	Analog
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Features

Input voltage range	0 V - 10 V
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Speed control:

By control voltage.

U Contr.: 0... 10 V \pm 0,1 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.

Measurement setup:	Measured between two steel plates
Steel plate:	260 mm x 160 mm
Intake nozzle:	D: 100,0 mm; R: 5,0 mm
Distance between bottom and top plate:	53,0 mm
Overlapping impeller / nozzle:	2,0 mm

$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)

I: corresp. to arithm. mean current value

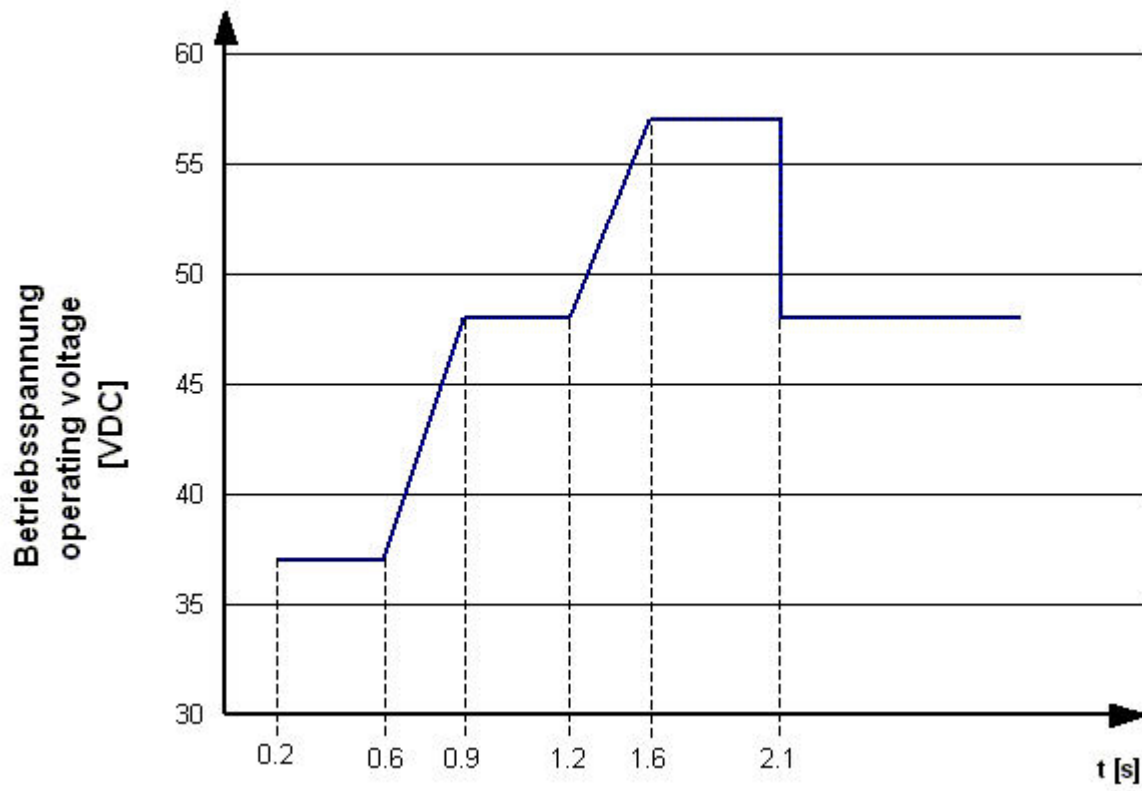
Name	Condition
U Contr. 0001	U Contr.: 10,0 V

Features	Condition	Symbol	Values		
Voltage range		U	38 V		57 V
Nominal voltage		U_N		48 V	
Power consumption	$\Delta p = 0$	P	38 W	48 W	46,7 W
Tolerance	U Contr. 0010		+/- 15,0 %	+/- 15,0 %	+/- 15,0 %
Current consumption	$\Delta p = 0$	I	1.000 mA	1.000 mA	820 mA
Tolerance	U Contr.0010		+/- 15,0 %	+/- 15,0 %	+/- 15,0 %
Speed	$\Delta p = 0$	n	3.900 1/min	4.200 1/min	4.200 1/min
Tolerance	U Contr. 0010		+/- 7,5 %	+/- 7,5 %	+/- 7,5 %

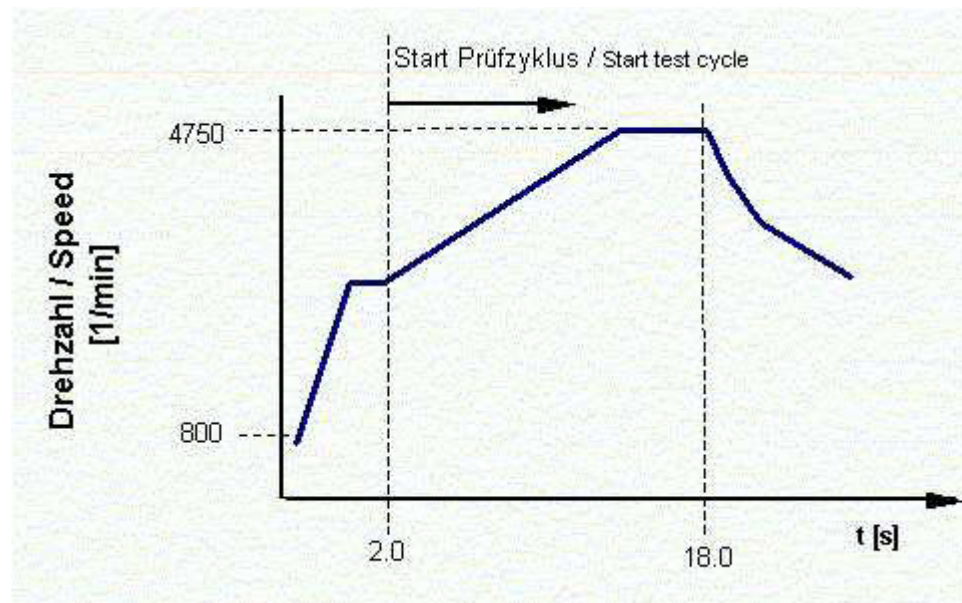
Motor testing

The motor testing relates to a fan, operating with horizontal shaft, at free air flow. It is possible to run this motor in an uncontrolled state. For some testings the motor may set in a test cycle by connecting to a voltage follower as below mentioned.

Voltage graph to start the test cycle



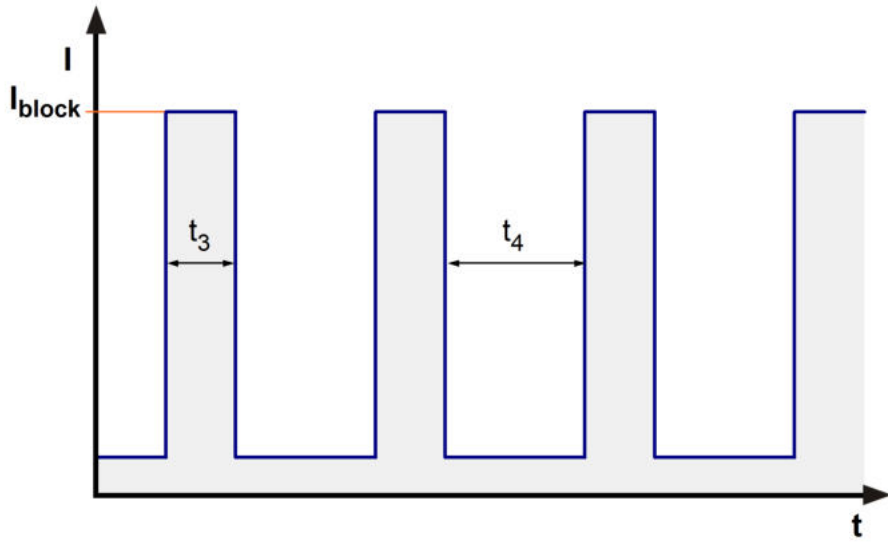
Speed graph after starting the test cycle



Voltage	48,0 V
Power consumption	60,0 W
Tolerance	+ - 15,0 %
Current consumption	1.250 mA
Tolerance	+ - 15,0 %
Speed	4.700 1/min
Tolerance	+ - 10,0 %

3.3 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F \leq 20$ mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block}	
Clock signal at locked rotor	t_3 / t_4 typical: 1,0 s / 3,1 s	



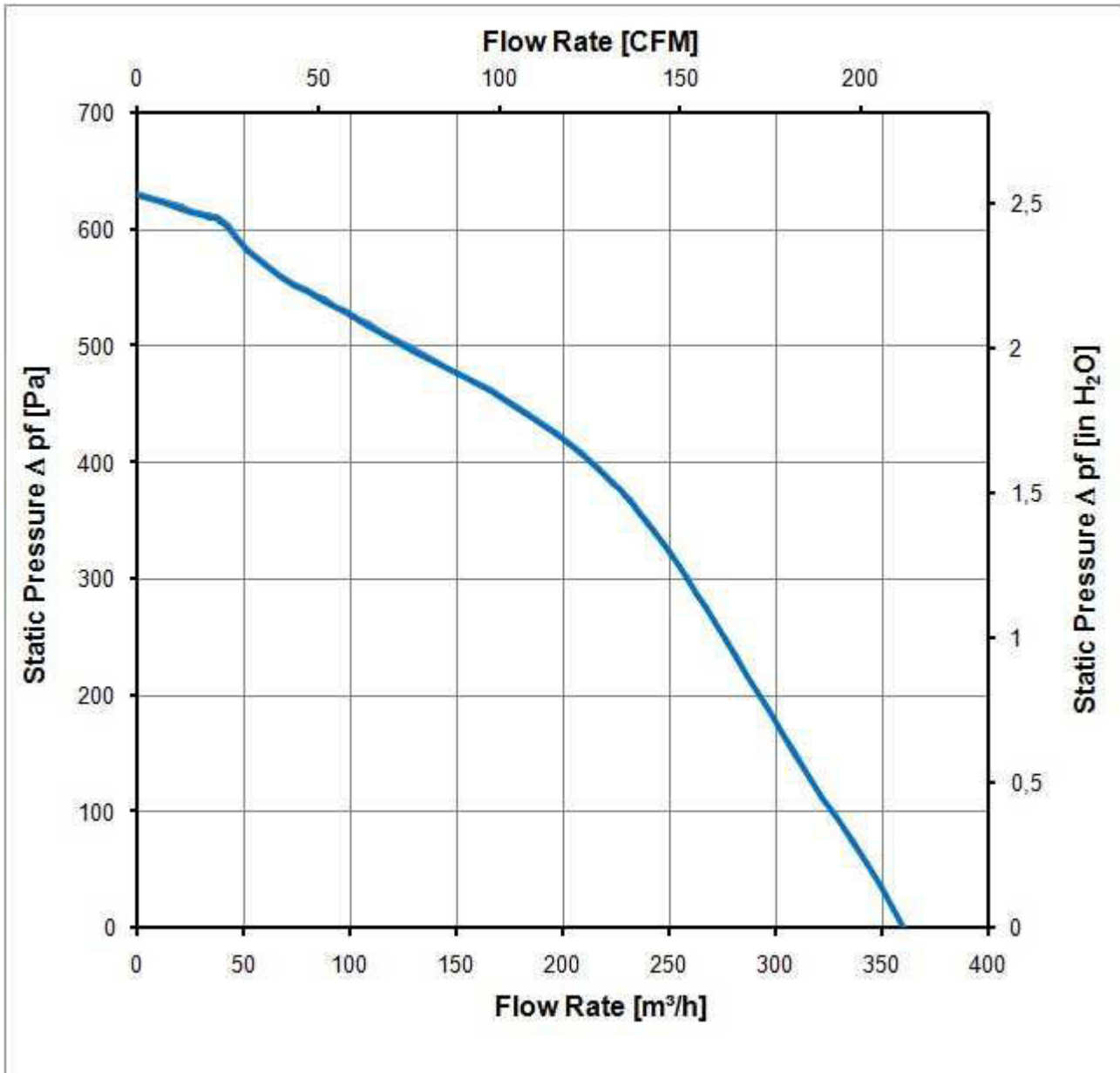
3.4 Aerodynamics

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. 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.

Measurement setup:	Measured between two steel plates
Steel plate:	260 mm x 160 mm
Intake nozzle:	D: 100,0 mm; R: 5,0 mm
Distance between bottom and top plate:	53,0 mm
Overlapping impeller / nozzle:	2,0 mm

a.) Operation condition:

4.200 1/min at free air flow	U Contr. 10,0 V		
Max. free-air flow ($\Delta p = 0 / \dot{V} = \max.$)		360,0 m ³ /h	
Max. static pressure ($\Delta p = \max. / \dot{V} = 0$)		630 Pa	



3.5 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:

4.200 1/min at free air flow	U Contr. 10,0 V		
Optimal operating point	225,0 m ³ /h @ 333 Pa		
Sound power level at the optimal operating point	7,4 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.	60 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

4.2 Climatic Requirements

IP-protection type (certified)	IP 68 (for fan only, not for connector if applicable) **)	
Humidity requirements	humid temperature, cyclic; according to DIN EN 60068-2-38, 10 cycle and condensation water check; according to DIN EN ISO 6270-2, 14 days	
Salt fog requirements	None	

Permitted application area:

The product is for the use in partial sheltered rooms or open, roofed areas. Direct exposure to water is allowed provided that this does not prevent the normal operation. Saline ambient conditions must be avoided.

Pollution degree 3 (according DIN EN 60664-1)

It occurs conductive pollution or dry non-conductive pollution which becomes conductive due to condensation.

***) The specification of the IP protection refers to the conditions mentioned in certification of the fan. The above mentioned short description of the protection scope is not final. For detailed information of the respective protection scope and definitions, see certification as well as DIN EN 60529 (protection by housings) and ISO 20653 (for vehicles) with the letter K.

Short description of the IP-protection type:

Solid particle Protection: Dust tight.

Protection against deliberate contact: Protected against contact to hazardous parts with a wire.

Protection against water: The fan test according to IP68 (Based on IEC 60529), is conducted in non-operating mode. The fan is tested by a complete immersion in water for a period of 2h at a water-level of 1,2m. Electrical connections are not immersed since they are customer specific.

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.	500 VAC / 1 Min.	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	850 VDC / 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	
Clearance / creepage distance	1,0 mm / 1,5 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	Yes / GB 12350 Safety Requirements for small Power Motors

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	55.000 h	
Life expectancy L10 at TU max.	27.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	92.5 00 h	

