

1 General

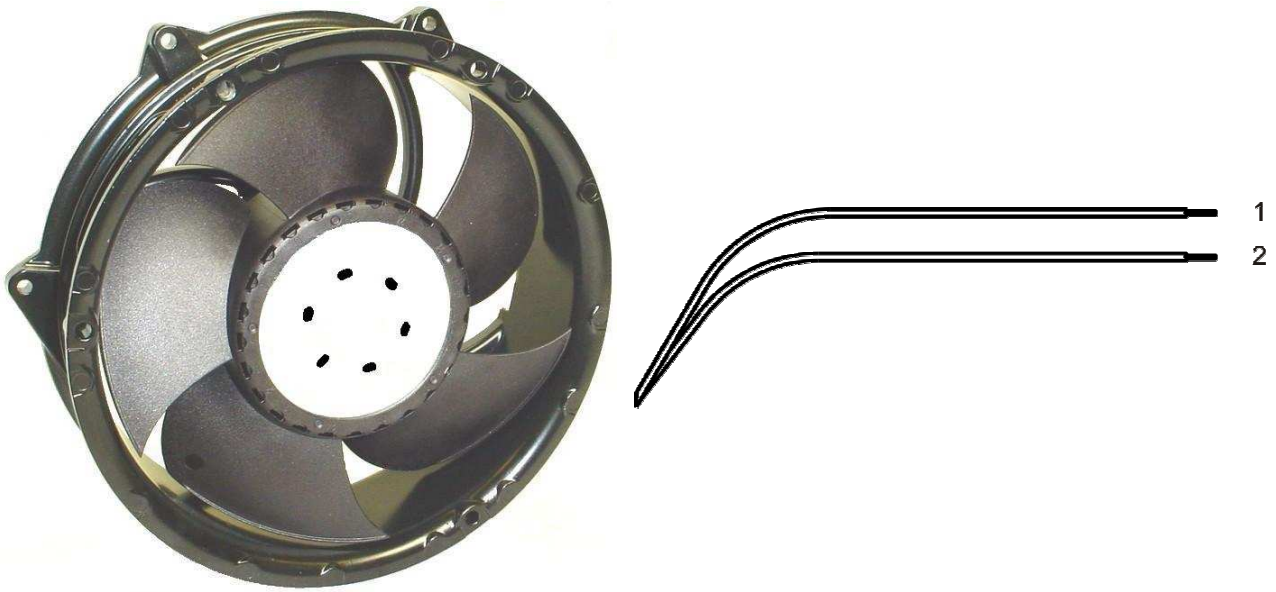
Fan type	Fan	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics**2.1 General**

Depth	51,0 mm	
Diameter	172 mm	
Mass	0,910 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 600 Ncm Remaining corners: 600 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 365 mm	
Tolerance	+ - 10,0 mm	
Tube length	S = 10,0 mm	
Tolerance	+ - 5,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,7 mm
2	blue	- GND	AWG 22	1,7 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 Operating Data

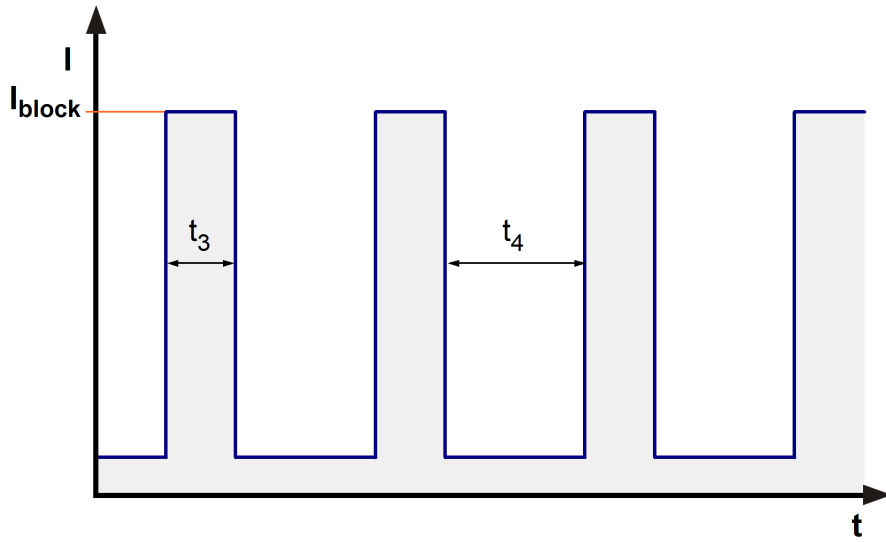
Measurement conditions: Normal air density = 1,2 kg/m³; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

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

Features	Condition	Symbol	Values		
Voltage range		U	36 V		65 V
Nominal voltage		U_N		48 V	
Power consumption	$\Delta p = 0$	P		32 W	36,0 W
Tolerance	0010			+/- 10,0 %	+/- 10,0 %
Current consumption	$\Delta p = 0$	I		670 mA	550 mA
Tolerance	0010			+/- 10,0 %	+/- 10,0 %
Speed	$\Delta p = 0$	n	4.200 1/min	5.000 1/min	5.000 1/min
Tolerance	0010			+/- 10,0 %	+/- 5,0 %
Starting current consumption				<= 1.350 mA	

3.2 Electrical Features

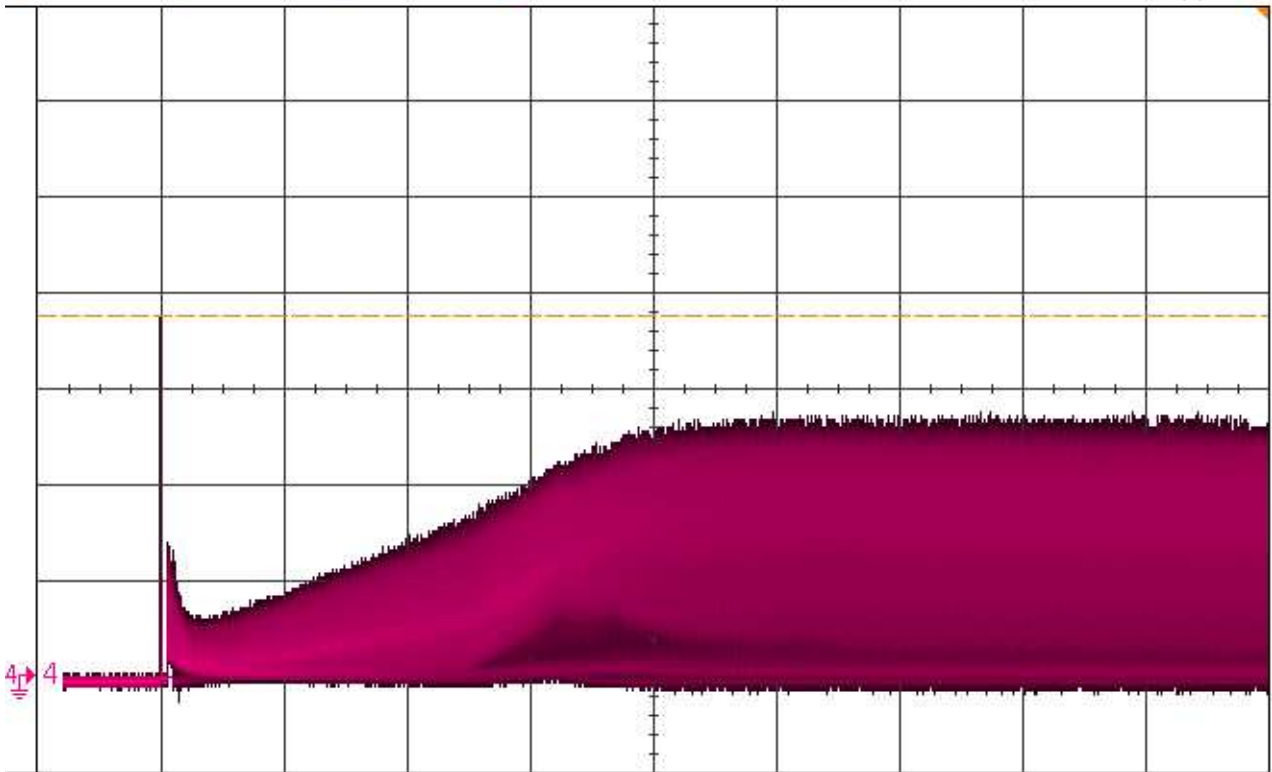
Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F \leq 5 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block}	
Clock signal at locked rotor	t_3 / t_4 typical: 0,5 s / 10,0 s	



Start-up current @ 48 V ($I = 500\text{mA/div}$; $t = 2\text{s/div}$)

DSO-X 3034A, MY52012719: Fri Dec 06 08:44:02 2013

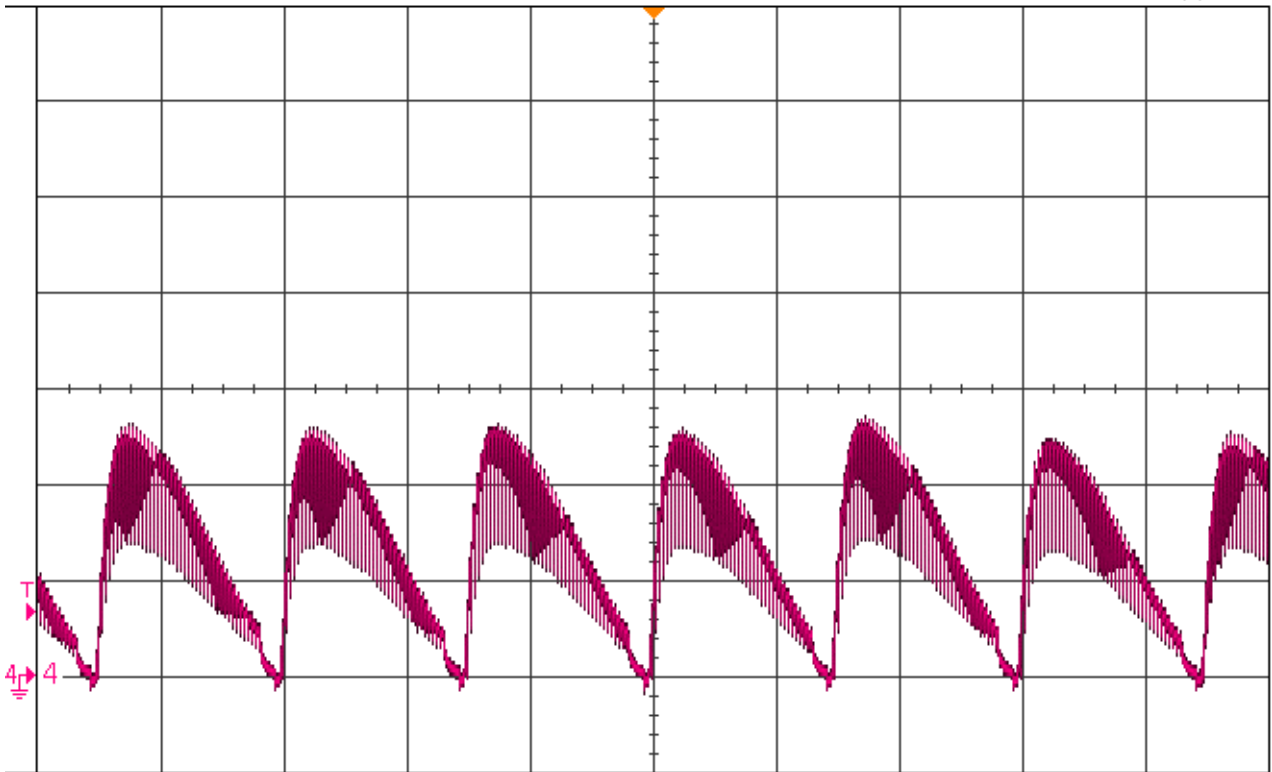
1 2 3 4 500%/-140.0% 2.000s/ Stopp



Running current @ 48 V (I = 500mA/div ; t = 2ms/div)

DSO-X 3034A, MY52012719: Fri Dec 06 10:49:11 2013

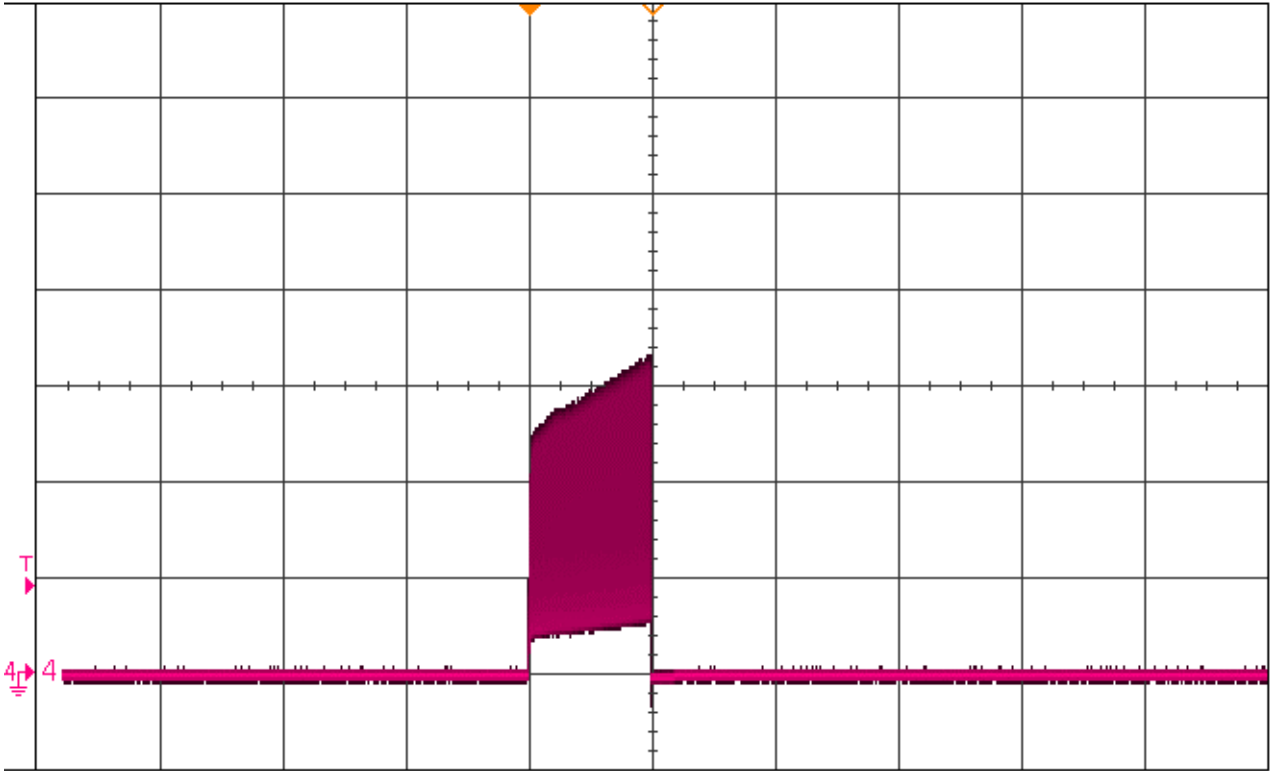
1 2 3 4 500%/ 0.0s 2.000µs/ Stopp



Locked rotor current @ 48 V (I = 500mA/div ; t = 500ms/div)

DSO-X 3034A, MY52012719: Fri Dec 06 11:04:19 2013

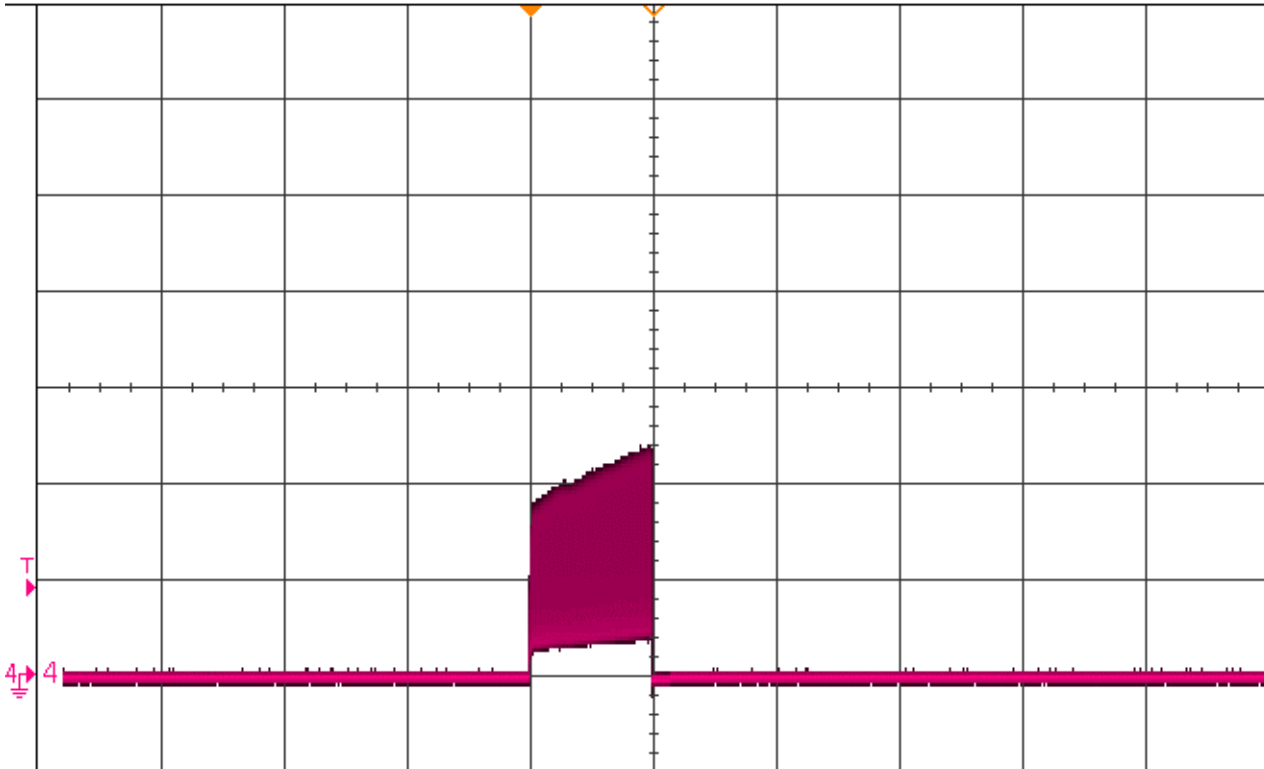
1 2 3 4 500% / 500.0ns 500.0ns / Stopp



Locked rotor current @ 36 V (I = 500mA/div ; t = 500ms/div)

DSO-X 3034A, MY52012719: Fri Dec 06 11:05:05 2013

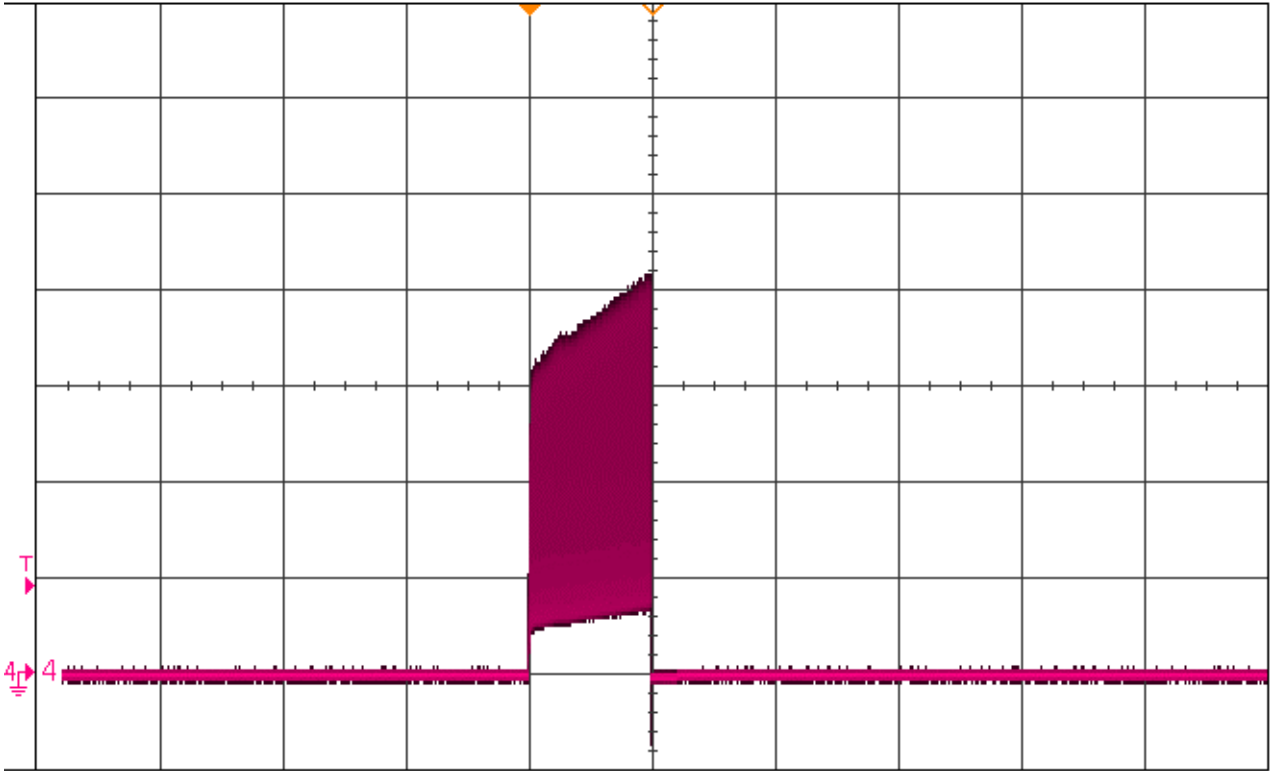
1 2 3 4 500% / 500.0ms 500.0ms / Stopp



Locked rotor current @ 60 V (I = 500mA/div ; t = 500ms/div)

DSO-X 3034A, MY52012719: Fri Dec 06 11:03:28 2013

1 2 3 4 500% / 500.0ns 500.0ns / Stopp



3.3 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;

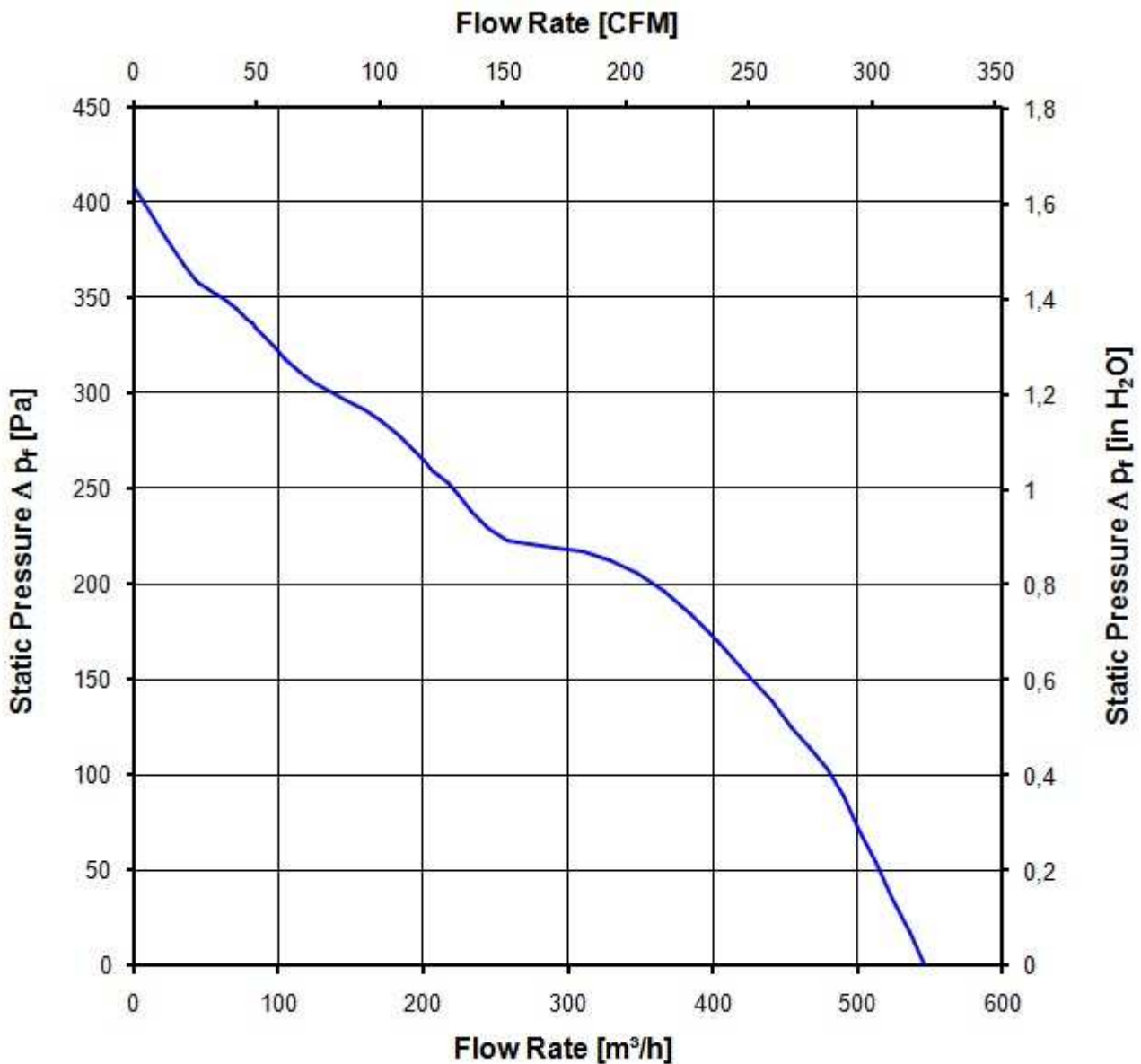
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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.

a.) Operation condition:

5.000 1/min at free air flow

Max. free-air flow ($\Delta p = 0 / \dot{V} = \max.$)	545,0 m ³ /h	
Max. static pressure ($\Delta p = \max. / \dot{V} = 0$)	410 Pa	



3.4 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:

5.000 1/min at free air flow		
Optimal operating point	450,0 m ³ /h @ 117 Pa	
Sound power level at the optimal operating point	6,9 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	58,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	65 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

4.2 Climatic Requirements

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	
Water exposure	Splash water check IPX4; according to DIN EN 60529 VDE 0470, not certified	
Dust requirements	Dust check IP5X; according to DIN EN 60529 VDE 0470, not certified	
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.

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.	1000 VAC / 1 Min.	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	1700 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	I	

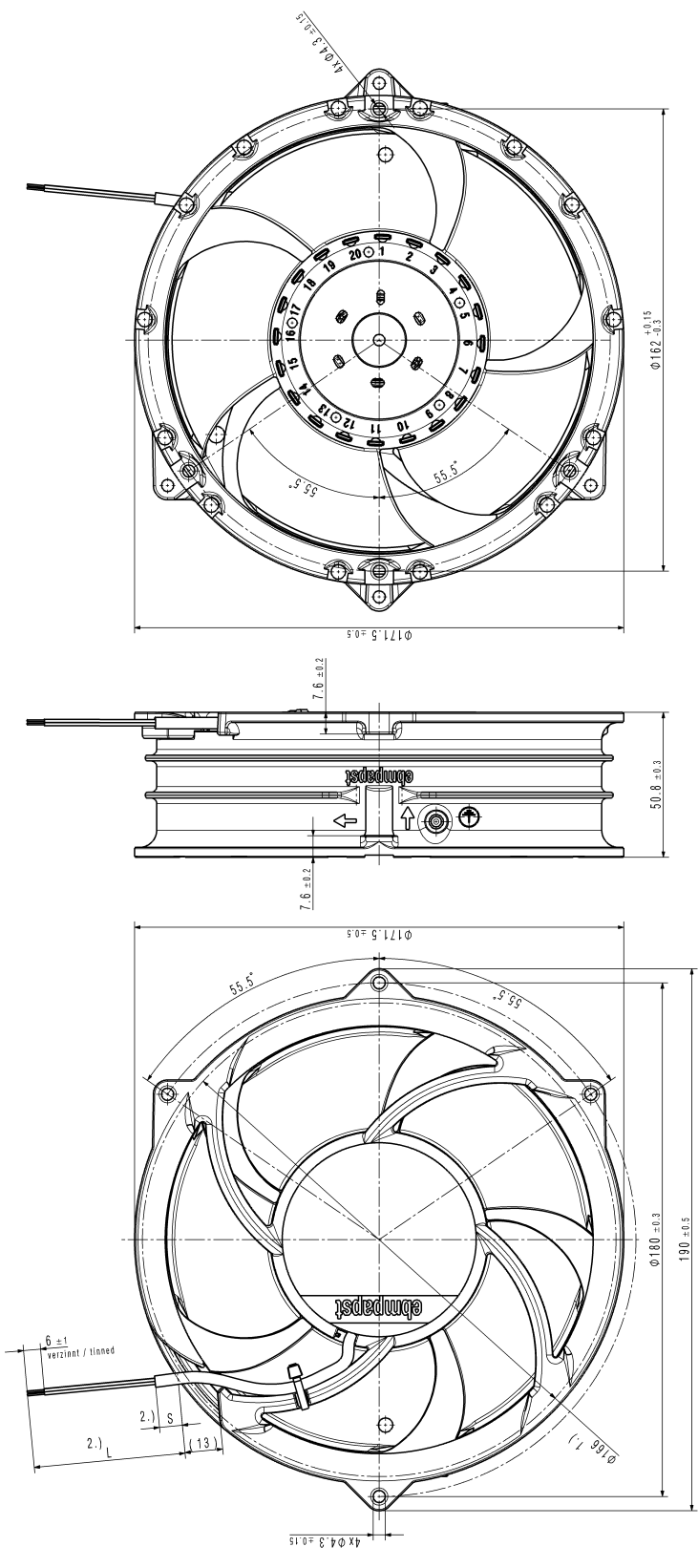
5.2 Approval Tests

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	77.500 h	
Life expectancy L10 at TU max.	42.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	130.000 h	



- 1.) Maße aus Montageausschnitt
 2.) Anzahl und Länge der Litzen/Schlauch siehe Produktspezifikation
 3.) Nur wenn in Stückliste enthalten
- Axialspiel der Kugellager mit Feder spielfrei gelagert
- 1.) measures of mounting cut out
 2.) length an number of wires/tube see product specification
 3.) only it is included in bill of material
- ball bearing without clearance by a pre-load spring

Rechte der Patente, die Erfindung ist durch den Staat geschützt und darf nicht ohne schriftliche Genehmigung des Erfinders oder seines Rechtsnachfolgers nachgedruckt oder in irgendeiner Weise verbreitet werden. Die Rechte an der Erfindung sind durch den Staat geschützt und dürfen nicht ohne schriftliche Genehmigung des Erfinders oder seines Rechtsnachfolgers nachgedruckt oder in irgendeiner Weise verbreitet werden.

3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell
ebmpapst ebm-papst GmbH, 7430 Metzingen, Germany			3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell	3D-Modell / 3D-Modell 3D-Modell / 3D-Modell 3D-Modell / 3D-Modell