



4656 EZU

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Special features according to QMH 2-5.4.7 and company standard 1-23.00 have the following definitions:

"A" : Product features or process parameters which influence the safety of a product or the compliance of legal requirements. (Must not necessary verified and documented 100%. Standards and legal requirements must be considered.)

"FK" : Product features or process parameters which influence the fit and function of a product or which have to be controlled or documented for some other reasons (e.g. Customer requirements).



1 General

Fan type	Fan without chassis	
Rotational direction looking at rotor	clockwise	FK
Airflow direction	Air outlet over flange	FK
Bearing system	Ball bearing	
Lubrication	see sectional drawing of the bearing	
Mounting position	any	
Tolerance		
Balancing grade	2,5	FK
Impeller weight		

2 Mechanics

2.1 General

Width	0,0 mm	
Height	0,0 mm	
Depth	39,0 mm	
Diameter	108,0 mm	
Weight	0,380 kg	
Surface protection	see single part drawing of the housing, flange and impeller	
Housing material		
Impeller material	Metal	

2.2 Motor

Type of motor	Shaded pole motor-extern rotor	
Diameter of the motor	40,0 mm	
Height of the motor	14,0 mm	
Operating mode	Continuous duty	
Insulation material class	F	

2.3 Connections

Electrical connection	Wires	
Length of lead wire	375,0 mm	
Tolerance	+ - 10,0 mm	
Length of tube	see drawing	
Tolerance		
Wire gauge (AWG)	18	
Insulation diameter	2,06 mm	
Plug	see drawing	
Contact	see drawing	



	Colour	Operation
Wire 1	black	L
Wire 2	black	N



3 Operating Data

3.1 Electrical Operating Data

For checking purposes the electrical data can be specified without an intake nozzle / aperture plate as well. For this the data have to be defined by the appropriate quality assurance.

*) Attention: Marked values are "FK" features

Electrical Operating Data with intake nozzle (For checking purposes)

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 with an aperture plate
Aperture plate diameter:	109 mm
Distance between mounting traverse and aperture plate:	20,5 mm

$\Delta p = 0$: corresp. to free air flow (see section 3.4)

I: corresp. to RMS line current

Features	Condition	Symbol	Values	
			50 Hz	60 Hz
Frequency	$\Delta p = 0$	f	230,0 V	230,0 V
Nominal voltage	$\Delta p = 0$	U_N	+ 6,0 % - 10,0 %	+ 6,0 % - 10,0 %
Tolerance				
Power consumption	$\Delta p = 0$	P	19,0 W	18,0 W
Tolerance			+ - 10,0 %	+ - 10,0 %
Current consumption	$\Delta p = 0$	I	115 mA *)	105 mA *)
Tolerance			+ - 10,0 %	+ - 10,0 %
Speed	$\Delta p = 0$	n	2.600 1/min *)	2.950 1/min *)
Tolerance			+ - 3,0 %	+ - 3,0 %

*) Attention: Marked values are "FK" features

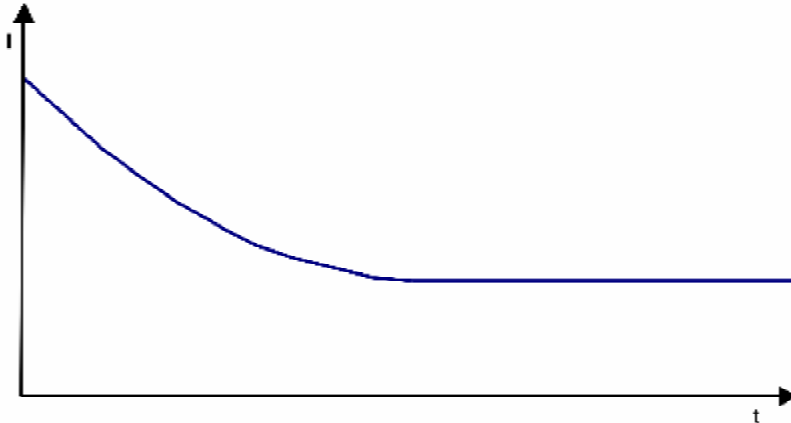
3.2 Operating Data - Electrical Interface -Output

Tacho type	None
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3.3 Electrical Features

Locked rotor protection	Impedance	A
Locked rotor current at U_n		



3.4 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.

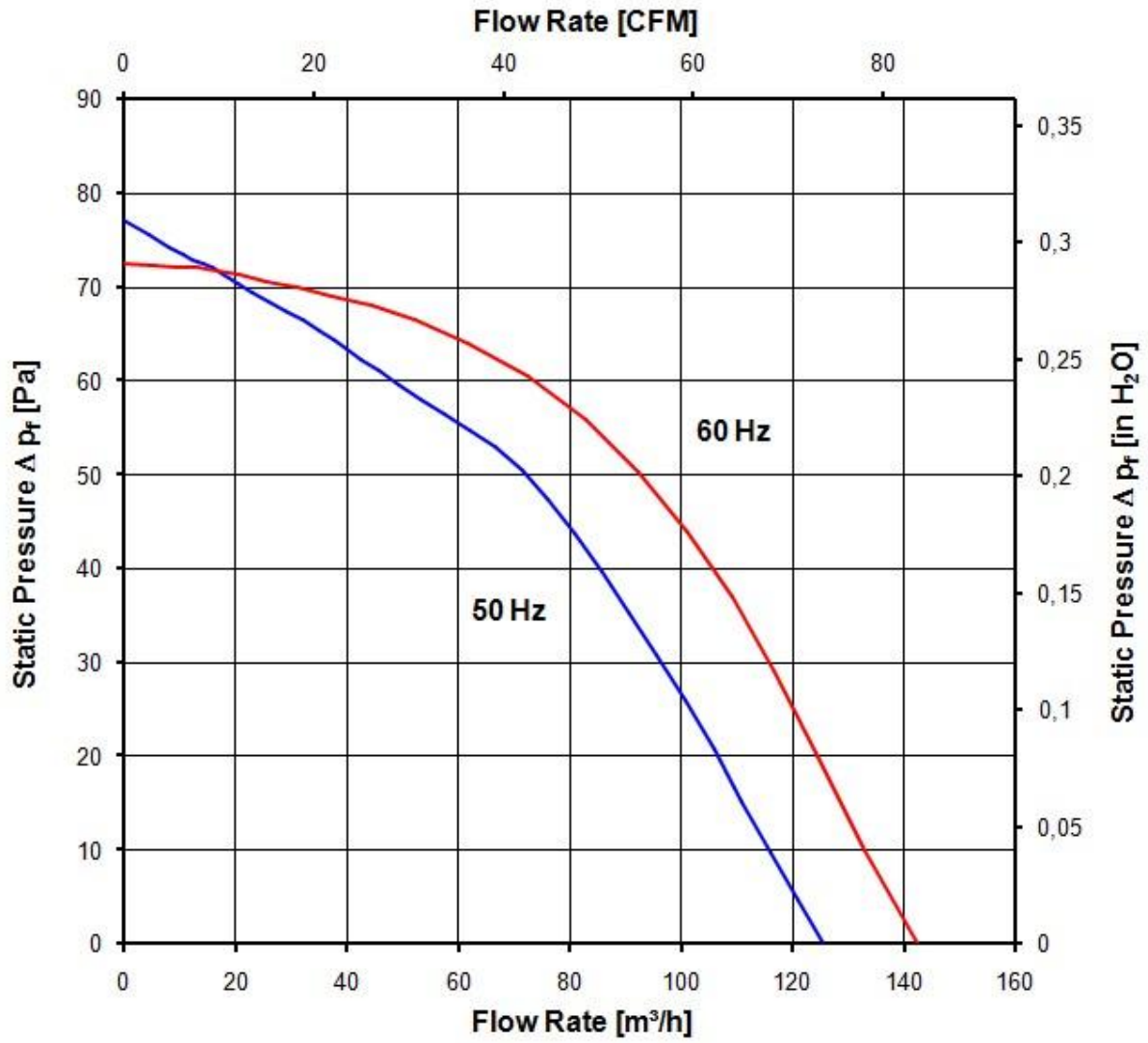
Measurement setup:	Measured with an aperture plate
Aperture plate diameter:	109 mm
Distance between mounting traverse and aperture plate:	20,5 mm

a.) Operation condition:
2.600 1/min at free air flow Frequency: 50 Hz

Max. free-air flow ($\Delta p = 0 / \dot{V} = \max.$)	124,0 m ³ /h	FK
Max. static pressure ($\Delta p = \max. / \dot{V} = 0$)	72 Pa	FK

b.) Operation condition:
2.950 1/min at free air flow Frequency: 60 Hz

Max. free-air flow ($\Delta p = 0 / \dot{V} = \max.$)	142,0 m ³ /h	FK
Max. static pressure ($\Delta p = \max. / \dot{V} = 0$)	77 Pa	FK



Measured with Traverse, 4000 TZ series. Nozzle is set at middle of the rotor.



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 section 3.4

a.) Operation condition:
2.600 1/min at free air flow Frequency: 50 Hz

Optimal operating point		
Sound power level at the optimal operating point		
Sound pressure level at free air flow, measured in rubber bands	39,0 dB(A)	

b.) Operation condition:
2.950 1/min at free air flow Frequency: 60 Hz

Optimal operating point		
Sound power level at the optimal operating point		
Sound pressure level at free air flow, measured in rubber bands	42,0 dB(A)	

Measured with Traverse, 4000 TZ series.

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-40 °C / 50 Hz -40 °C / 60 Hz	
Max. permitted ambient temperature TU max.	65 °C / 50 Hz 70 °C / 60 Hz	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

To meet the same ambient temperatures as for conventional fan casings, a good thermal connection between flange and customer application should be ensured.

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	
Radiation exposure	Solar radiation; according to DIN EN 60068-2-5	
Dust requirements	Dust check IP5X; according to DIN EN 60529 VDE 0470, not certified	



Salt fog requirements	None	
Harmful gas requirements	None	

*) Permitted application area:

The product is for the use in partial sheltered rooms or open, roofed areas. Directly exposure to water is allowed in so far as this doesn't 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 occurs that becomes conductive due to condensation.

4.3 Mechanical requirements

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

not specified

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.	1500 VAC / 1 Min. 1500 VAC / 1 Sec.	A
Isolation resistance Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min.	RI > 50 MOhm	
Air and leakage distances	2,0 mm / 1,8 mm	
Protection class	I	

5.2 Approval Tests

CE	Yes
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	No
CCC	Yes / GB 12350 Safety Requirements for small Power Motors

The approval tests are observed to:

U approval max.: 230 V / f: 60 Hz @ TU approval max.: 65 °C

6 Reliability



6.1 General

Life expectancy L10 at TU = 40 °C	37.500 h / 50 Hz	
Life expectancy L10 at TU max.	15.000 h / 50 Hz	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	/ 50 Hz	

6.2 Additional Data

not specified