4184 NH-185

Customer specification: No
Version: 1.0
Created: 03.11.2011

INDEX

1 General 2

2 Mechanics 2

2.1 General 2
2.2 Motor 2
2.3 Connections 3

3 Operating Data 4

3.1 Operating Data - Electrical Interface - Input 4
3.2 Electrical Operating Data 4
3.3 Operating Data - Electrical Interface -Output 4
3.4 Electrical Features 5
3.5 Aerodynamic 5
3.6 Sound Data 5

4 Environment 6

4.1 General 6
4.2 Climatic requirements 6
4.3 Mechanical requirements 7
4.4 EMC 7

5 Safety 7

5.1 Electrical Safety 7
5.2 Approval Tests 7

6 Reliability 7

6.1 General 7
6.2 Additional Data 7

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	
Rotational direction looking at rotor	clockwise	**FK**
Airflow direction	Air intake over struts	**FK**
Bearing system	Ball bearing	
Lubrication	see sectional drawing of the bearing	
Mounting position Tolerance	any	
Balancing grade	16,0	**FK**
Impeller weight	119,0 g	

2 Mechanics

2.1 General

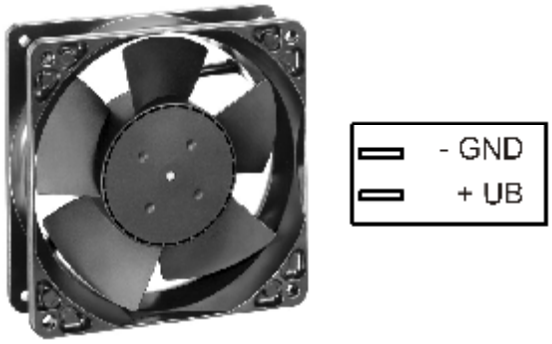
Width	119,0 mm	
Height	119,0 mm	
Depth	38,0 mm	
Diameter	0,0 mm	
Weight	0,380 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	wire outlet corner: 420 Ncm remaining corners: 600 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Motor

Type of motor	Electronically commutated external rotor	
Diameter of the motor	43,0 mm	
Height of the motor	10,0 mm	
Number of phases	1	
Number of windings	2	
Operating mode	Continuous duty	
Insulation material class	E	

2.3 Connections

Electrical connection	Plug	
Length of lead wire Tolerance	see drawing	
Length of tube Tolerance	see drawing	
Wire gauge (AWG)		
Insulation diameter		
Plug	see drawing	
Contact	see drawing	



3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	None

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.

Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	12,0 V		28,0 V
Nominal voltage	Δp = 0	U_N		24,0 V	
Power consumption Tolerance	Δp = 0 0001	P	2,5 W +- 17,5 %	11,0 W +- 12,5 %	15,3 W +- 15,0 %
Current consumption Tolerance	Δp = 0 0001	I	210 mA +- 17,5 %	460 mA*) +- 12,5 %	545 mA +- 15,0 %
Speed Tolerance	Δp = 0 0001	n	2.500 1/min +- 12,5 %	4.400 1/min*) +- 7,5 %	4.750 1/min +- 10,0 %
Starting current consumption				1.900 mA	

*) Attention: Marked values are "FK" features

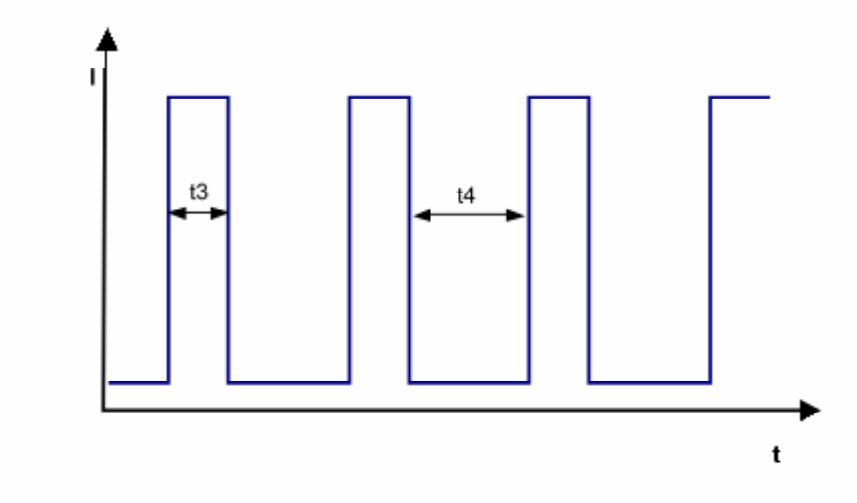
3.3 Operating Data - Electrical Interface -Output

Tacho type	None

Alarm type	None

3.4 Electrical Features

Electronic function	None	
Reversed polarity protection Max. residual current at Un	Rectifying diode IF <= 10 mA	**A**
Locked rotor protection	Auto restart	**A**
Locked rotor current at Un	approx. 1.900 mA	
Clock signal t3/t4 at locked rotor	Typical: 0,6 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:

4.400 1/min at free air flow

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	227,0 m3/h	**FK**
Max. static pressure (Δp = max. / $\dot{V}$ =0)	170 Pa	**FK**

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:

4.400 1/min at free air flow

Optimal operating point	130,0 m3/h @ 79 Pa	
Sound power level at the optimal operating point	6,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	56,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-30 °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.

4.3 Mechanical requirements

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

4.4 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.	500 VAC / 1 Min. 500 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 > 10 MOhm	
Air and leakage distances	1,0 mm / 1,2 mm	
Protection class	III	

5.2 Approval Tests

CE	Yes
UL	Yes / UL audited by CSA according to UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment - Part 1 Safety - Connection to a SELV circuit.
CSA	Yes / C22.2 No. 113-M1984 Fans and Ventilators
CCC	No

The approval tests are observed to:
Maximal permitted operating voltage (see section 3.1) and max. permitted ambient temperature TU max.

6 Reliability

6.1 General

6.2 Additional Data

not specified