Product Data Sheet RER190-39/18/19TDMP-213

ebmpapst

The engineer's choice



GREEN TECH

RER190-39/18/19TDMP-213

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1 General

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

2 Mechanics

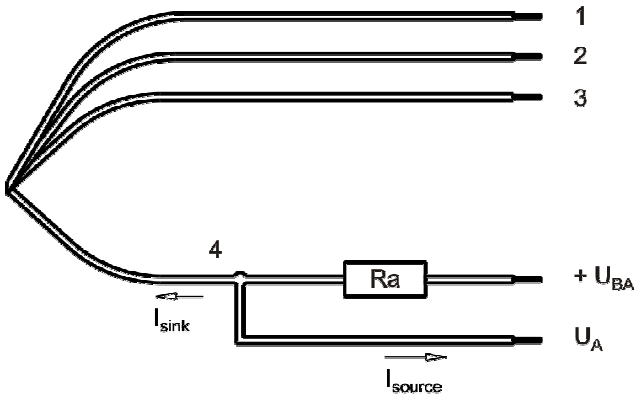
2.1 General

Height	68,5 mm	
Depth	0 mm	
Diameter	190 mm	
Mass	0,89 kg	
Housing material		
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires - Plug	
Lead wire length Tolerance	L = 760 mm +- 10 mm	
Plug	See drawing	
Contact	See drawing	





Wire	Color	Operation	Plug connection	Wire size	Insulation diameter
1	red	+ UB	Pin 1	AWG 22	1,7 mm
2	blue	- GND	Pin 3	AWG 22	1,7 mm
3	violet	PWM	Pin 4	AWG 22	1,7 mm
4	yellow	Alarm	Pin 2	AWG 22	1,7 mm

3 Operating Data

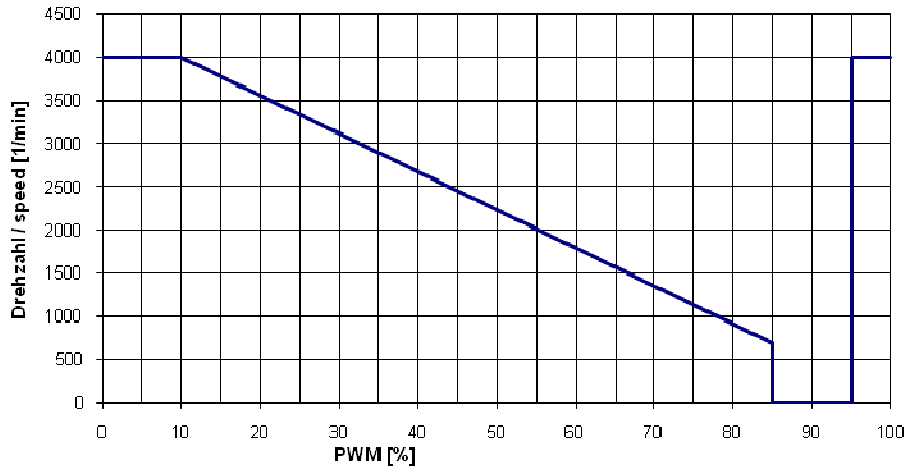
3.1 Electrical Interface - Input

Control input	PWM

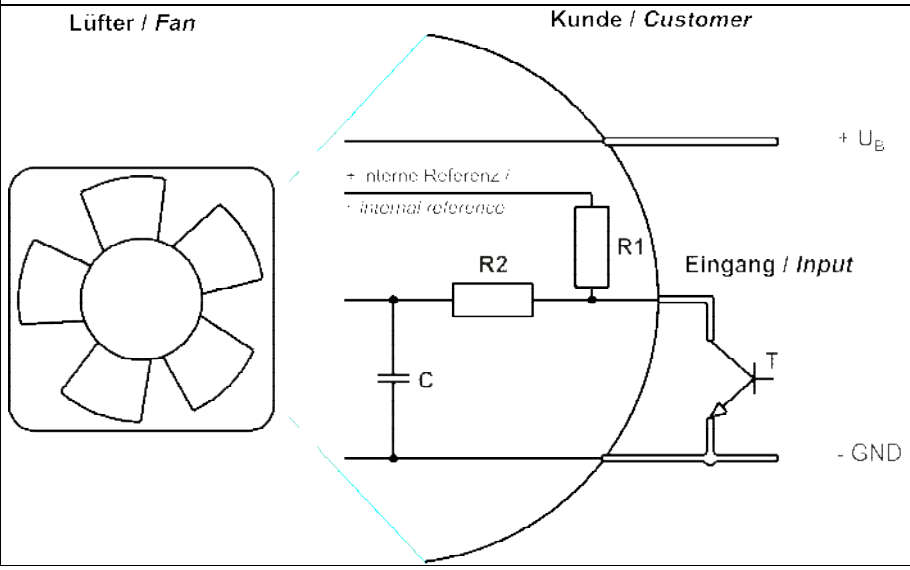
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 10 kHz typical: 2 kHz

Characteristics



Schematics



PWM input transistor requirements:
U_{CE}max. => 12 V; I Sink max. > 5 mA; U_{CE}sat. < 0,15 V

Speed control:
By Puls width modulation (PWM) 0 ... 100%
Open collector in relation to signal-ground

Information to the curve:

0 % - 10 % PWM:	4.000 1/min (corresponding to max. speed)
10 % - 85 % PWM:	linear decreasing curve
86 % PWM:	750 1/min bzw. 0 1/min (Fan off, comming from 0% PWM)
> 86 % - <95 % PWM:	0 1/min
95 % PWM:	4.000 1/min (Fan on, comming from 0% PWM)
95 % - 100 % PWM:	4.000 1/min (corresponding to max. speed)
84 % PWM:	700 1/min (Fan on, comming from 100% PWM)

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:	195 mm x 195 mm
Intake nozzle:	D: 125,5 mm; R: 10 mm
Distance between bottom and top plate:	80 mm
Overlapping impeller / nozzle:	2 mm

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

Name	Condition		
PWM 0001	PWM: 0 %; f: 2 kHz		

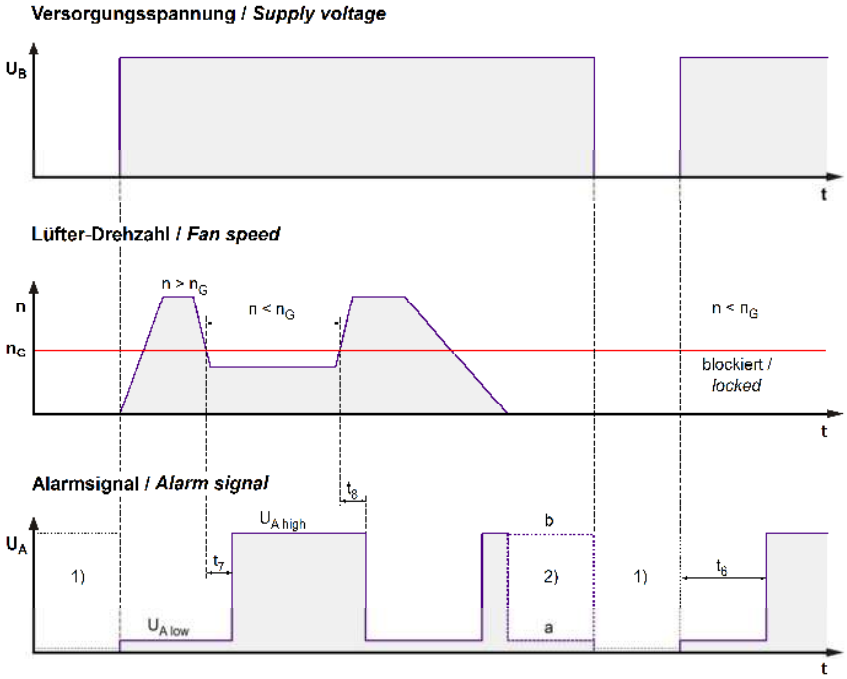
100% PWM; f = 2 kHz or broken lead wire (open control input)

Features	Condition	Symbol	Values		
Voltage range		U	38 V		60 V
Nominal voltage		U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	104 W +- 12,5 %	150 W +- 12,5 %	121 W +- 12,5 %
Current consumption Tolerance	$\Delta p = 0$ PWM0010	I	2.730 mA +- 12,5 %	3.100 mA +- 12,5 %	2.090 mA +- 12,5 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	3.800 1/min +- 10,0 %	4.000 1/min +- 5,0 %	4.000 1/min +- 5,0 %

Note:
No inrush current at Unom means:
The internal electrolytic capacitor 220µF/75V has no resistor or inrush current limitation, essentially the power supply and the type and length of the connecting cable is limiting the Inrush current.

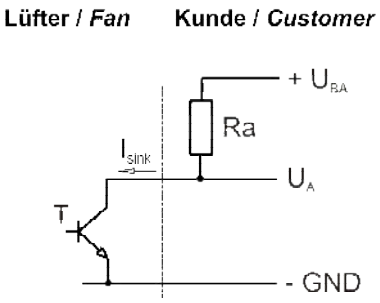
3.3 Electrical Interface - Output

Alarm type	/19 (low = ok, open collector inverse)



1) Wenn der Lüfter abgeschaltet ist, hängt der Zustand des Ausgangssignals U_A von der Kundenapplikation ab.
When the fan is powered off, the ouput signal U_A depends on the customer's application.
2) Für den gültigen Zustand (a oder b) siehe Alarmunterdrückung in der Tabelle.
For the valid condition (a or b) see alarm suppression in the table.

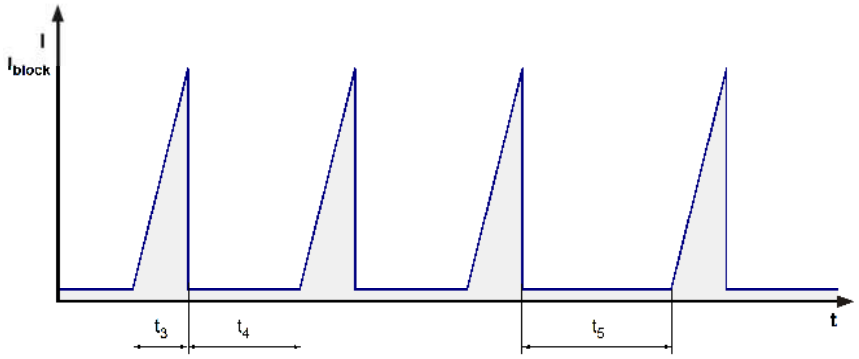
$$Ra = \frac{U_{BA} - U_{A\,low}}{I_{sink}}$$



Features		Note	Values
Alarm operating voltage	U_{BA}		Min.: 4,0 V Max.: 60,0 V
Alarm signal Low	$U_{A\,low}$	I sink: 2 mA	<= 0,4 V
Alarm signal High	$U_{A\,high}$	I source: 0 mA	
Maximum sink current	I_{sink}		<= 20 mA
External resistor		External resistor Ra from UBA to UA required. All voltage measured to GND.	
Alarm start-up delay time Tolerance	t_6		<= 10,0 s +- 1,0 s
Alarm delay time	t_7		10 s
Alarm delay time	t_9		10 s
Alarm trip speed limit of the nominal Speed	n_G		62 %
Alarm at sense failure		No	
Alarm latch		No	
Alarm isolated from motor		No	

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F < 10 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 2.500 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 3,3 s / 10,0 s	



Locked rotor signal t5:
After 4 failed start-ups there is an extended timeout of 50 s.

Internal Fuse:
Littlefuse NANO2(R) FUSE; Very fast acting 451 Series; 6,3 A (Art.-Nr.: 451063)

Current during braking of the rotor
Max. current when decelerate at Unom. = < 6.500mA peak

3.5 Data According ErP Directive

Installation / Efficency category	A / static
Speed control	integrated
Specific ratio	1,00488
Target overall efficiency 2015	42,6 %
Overall efficiency	53,9 %
Efficiency grade	62
Power input	143,5 W
Speed	3.970 1/min

All values measured in optimum energy efficiency point.

3.6 Aerodynamics

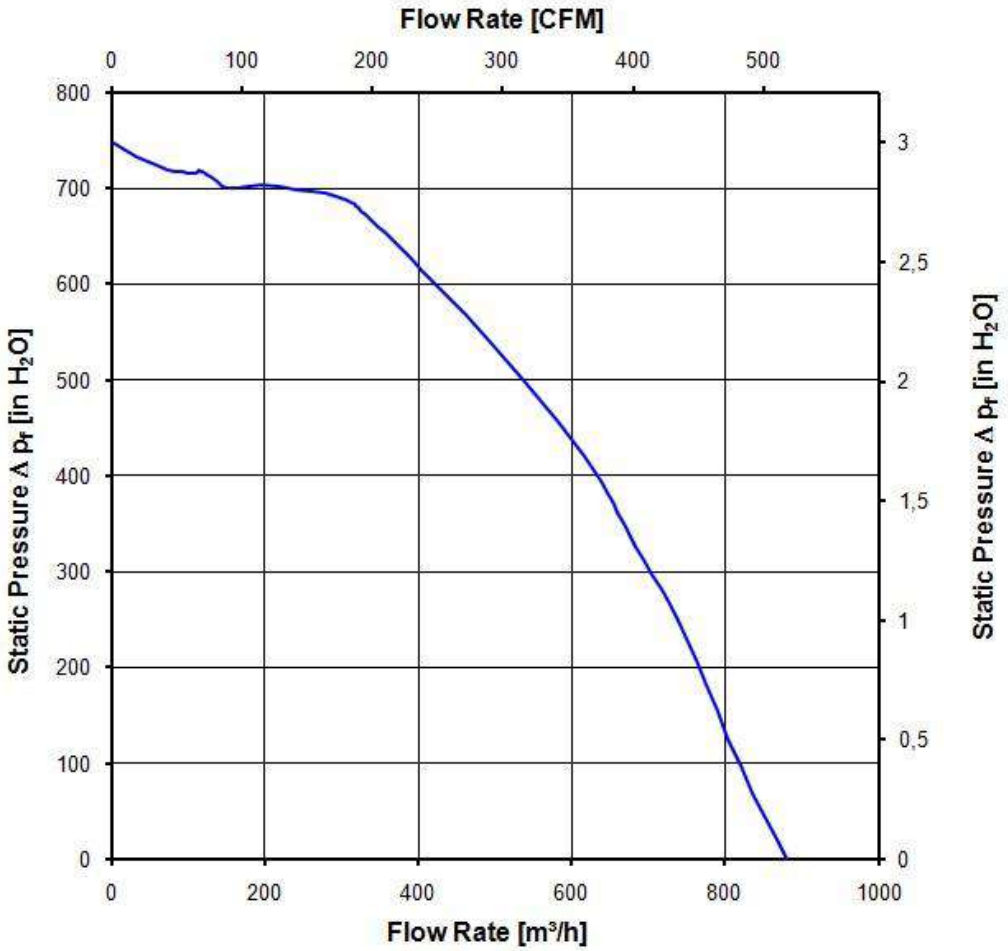
Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal. The information is only valid under the specified 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:	195 mm x 195 mm
Intake nozzle:	D: 125,5 mm; R: 10 mm
Distance between bottom and top plate:	80 mm
Overlapping impeller / nozzle:	2 mm

a.) Operation condition:

4.000 1/min at free air flow	PWM 0 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	750,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	880 Pa	



3.7 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 chapter aerodynamics.

a.) Operation condition:

4.000 1/min at free air flow	PWM 0 %; f: 2 kHz		

Optimal operating point	470,0 m3/h @ 507 Pa	
Sound power level at the optimal operating point	7,7 bel(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-40 °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 heat, constant; according to DIN EN 60068-2-78, 14 days	
Water exposure	None	
Dust requirements	None	
Salt fog 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.		
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	

Dielectrical strength / type test and routine test: **750 VDC / 1 s**
Because Y-Cs no AC test possible.

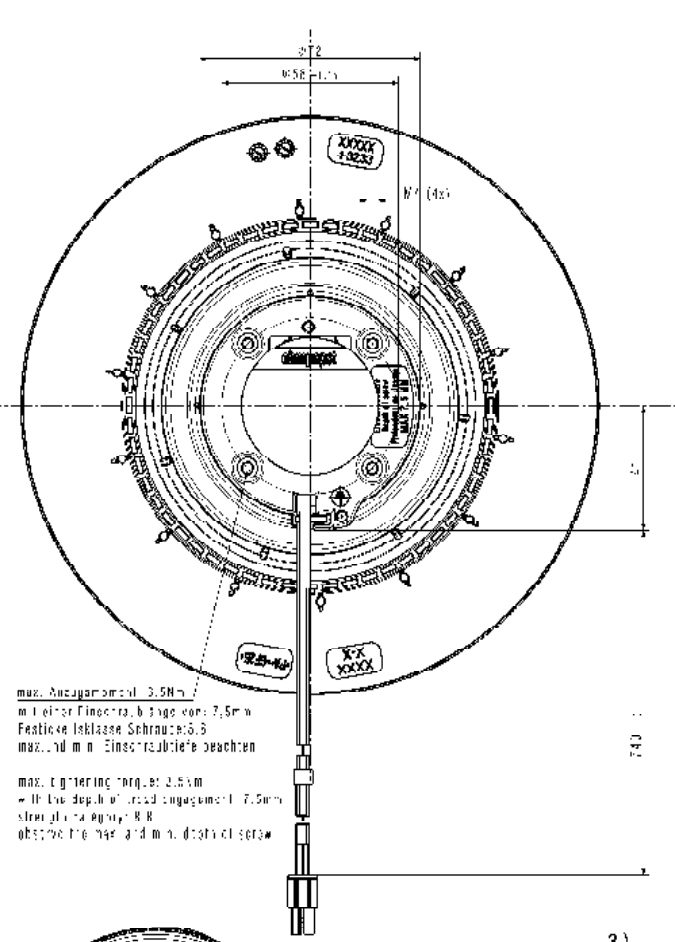
5.2 Approval Tests

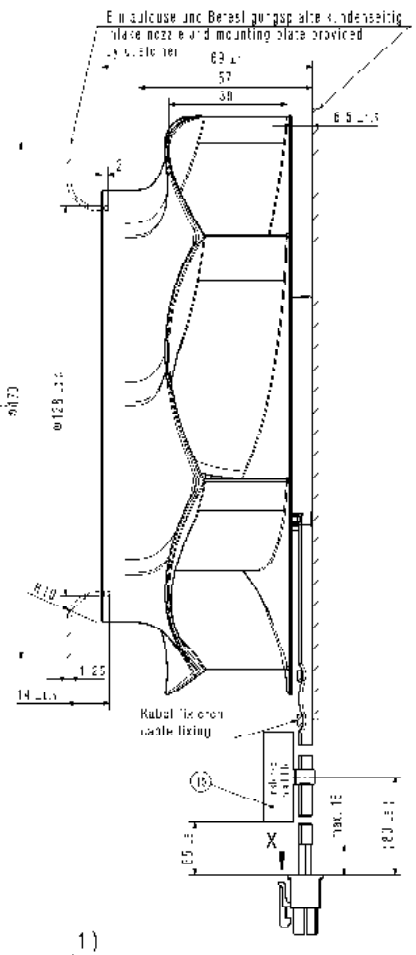
CE	EC Declaration of Conformity	No
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Yes / GB 12350 Safety Requirements for small Power Motors

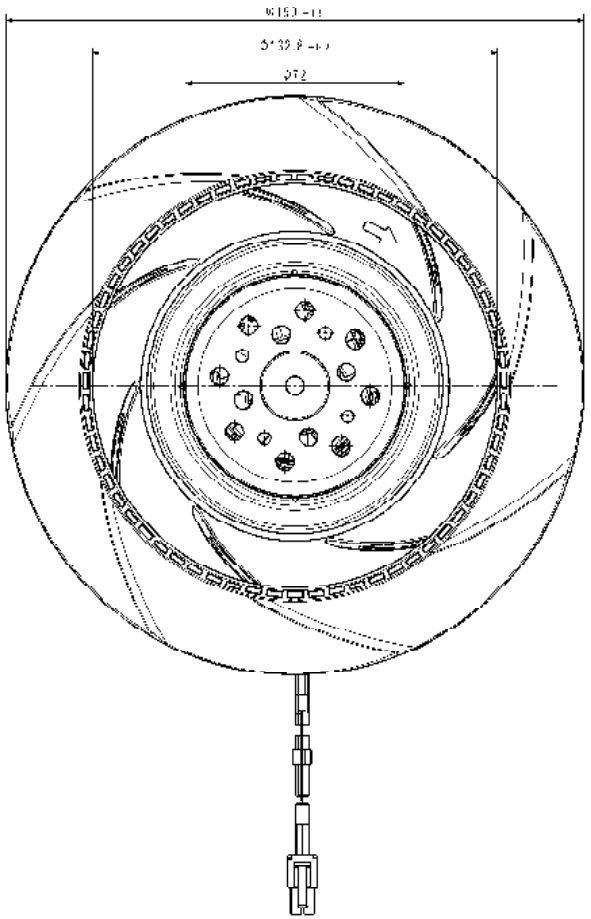
6 Reliability

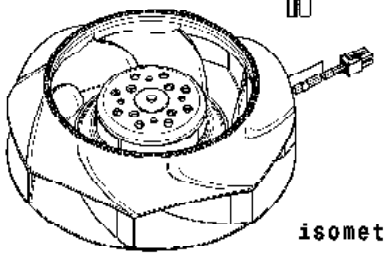
6.1 General

tbd

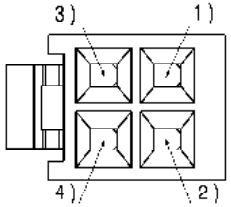








isometric view
1:2



Ansicht/view X
5:1

Ansicht X view X		
Steckerbelegung Pin configuration	Function Function	Litzenfarbe wire colour
1	+UB	rot / red
2	Alarm	gelb / yellow
3	GND	blau / blue
4	PWM	grün/grau oder/or violett / violet

- Axialspiel mit Federscheibe frei versandt
- Without axial clearance by a pre-loaded spring.