

4314/17T

INDEX

1	General	2
2	Mechanics	2
2.1	General.....	2
2.2	Connections	2
3	Operating Data.....	2
3.1	Operating Data - Electrical Interface - Input.....	3
3.2	Electrical Operating Data	4
3.3	Operating Data - Electrical Interface -Output	4
3.4	Electrical Features.....	5
3.5	Aerodynamic	7
3.6	Sound Data	7
4	Environment.....	7
4.1	General.....	7
4.2	Climatic requirements*).....	7
5	Safety.....	7
5.1	Electrical Safety.....	7
5.2	Approval Tests	8
6	Reliability.....	8
6.1	General.....	8

1 General

Fan type	Fan	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position	any	

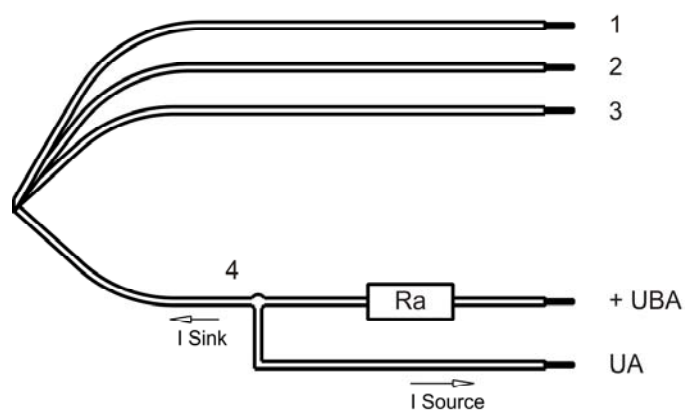
2 Mechanics

2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	32,0 mm	
Weight	0,220 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	wire outlet corner: 20 Ncm remaining corners: 20 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Length of lead wire	310 mm	
Tolerance	+/- 10,0 mm	
Wire gauge (AWG)	24	
Insulation diameter	1,55 mm	



	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	violet	NTC:
Wire 4	white	Alarm

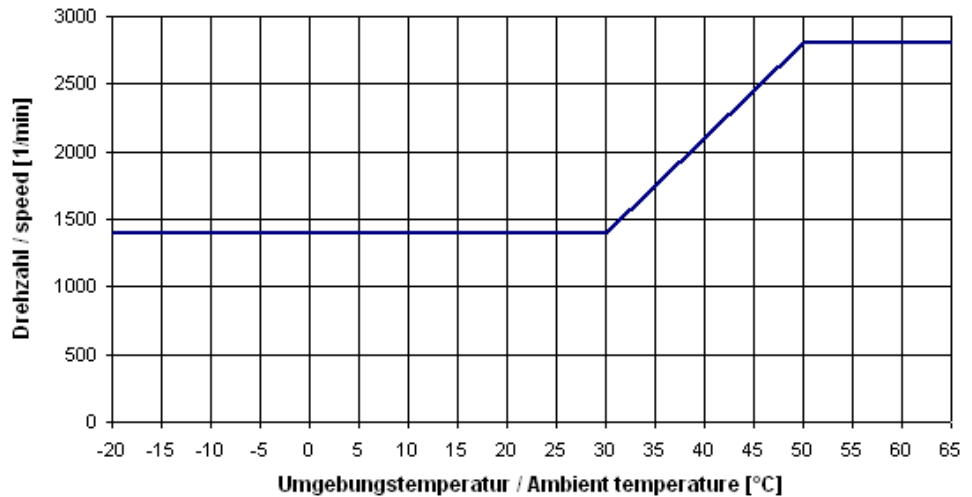
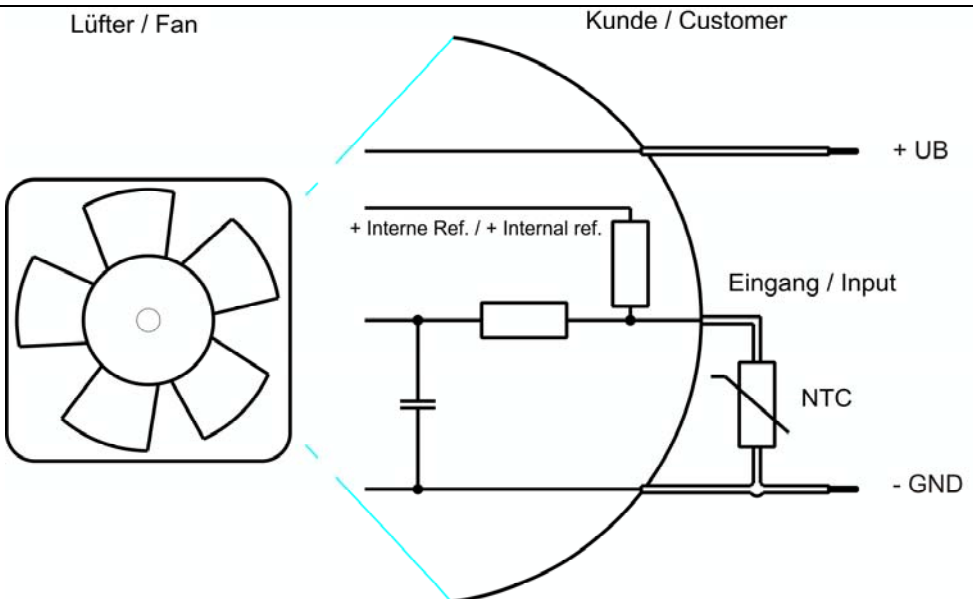
The auxiliaries shown on the schematic diagram (which are required for the intended use) are not part of our delivery.

3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	cExternal Temperature Sensor
---------------	------------------------------

Features

Characteristics	 <table border="1"> <caption>Graph Data: Fan Speed vs. Ambient Temperature</caption> <thead> <tr> <th>Umgebungstemperatur / Ambient temperature [°C]</th> <th>Drehzahl / speed [1/min]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>1400</td></tr> <tr><td>-15</td><td>1400</td></tr> <tr><td>-10</td><td>1400</td></tr> <tr><td>-5</td><td>1400</td></tr> <tr><td>0</td><td>1400</td></tr> <tr><td>5</td><td>1400</td></tr> <tr><td>10</td><td>1400</td></tr> <tr><td>15</td><td>1400</td></tr> <tr><td>20</td><td>1400</td></tr> <tr><td>25</td><td>1400</td></tr> <tr><td>30</td><td>1400</td></tr> <tr><td>35</td><td>1600</td></tr> <tr><td>40</td><td>1800</td></tr> <tr><td>45</td><td>2000</td></tr> <tr><td>50</td><td>2800</td></tr> <tr><td>55</td><td>2800</td></tr> <tr><td>60</td><td>2800</td></tr> <tr><td>65</td><td>2800</td></tr> </tbody> </table>	Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [1/min]	-20	1400	-15	1400	-10	1400	-5	1400	0	1400	5	1400	10	1400	15	1400	20	1400	25	1400	30	1400	35	1600	40	1800	45	2000	50	2800	55	2800	60	2800	65	2800
Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [1/min]																																						
-20	1400																																						
-15	1400																																						
-10	1400																																						
-5	1400																																						
0	1400																																						
5	1400																																						
10	1400																																						
15	1400																																						
20	1400																																						
25	1400																																						
30	1400																																						
35	1600																																						
40	1800																																						
45	2000																																						
50	2800																																						
55	2800																																						
60	2800																																						
65	2800																																						
Schematics	 The schematic diagram illustrates the electrical interface between the fan and the customer. On the left, the fan (Lüfter / Fan) is shown with its internal circuitry. On the right, the customer (Kunde / Customer) circuit is depicted. The fan's power supply is connected to + UB and - GND. The customer circuit includes an internal reference (+ Interne Ref. / + Internal ref.), a resistor, and an NTC thermistor connected to the input (Eingang / Input).																																						

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.

$\Delta p = 0$: corresp. to free air flow (see section 3.5)

I: corresp. to arithm. mean current value

Name	Condition		
TU 0001	TU: ≥ 50 °C		
NTC 0001	NTC: ≤ 34 kOhm		

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	18,0 V		32,0 V
Nominal voltage	$\Delta p = 0$	U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	2,9 W +/- 25,0 %	4,8 W +/- 25,0 %	5,8 W +/- 25,0 %
Tolerance	TU / NTC: 0001				
Current consumption	$\Delta p = 0$	I	160 mA +/- 25,0 %	200 mA +/- 25,0 %	180 mA +/- 25,0 %
Tolerance	TU / NTC: 0001				
Speed	$\Delta p = 0$	n	2.250 1/min +/- 12,5 %	2.800 1/min +/- 9,0 %	2.800 1/min +/- 9,0 %
Tolerance	TU / NTC: 0001				
Starting current consumption				780 mA	

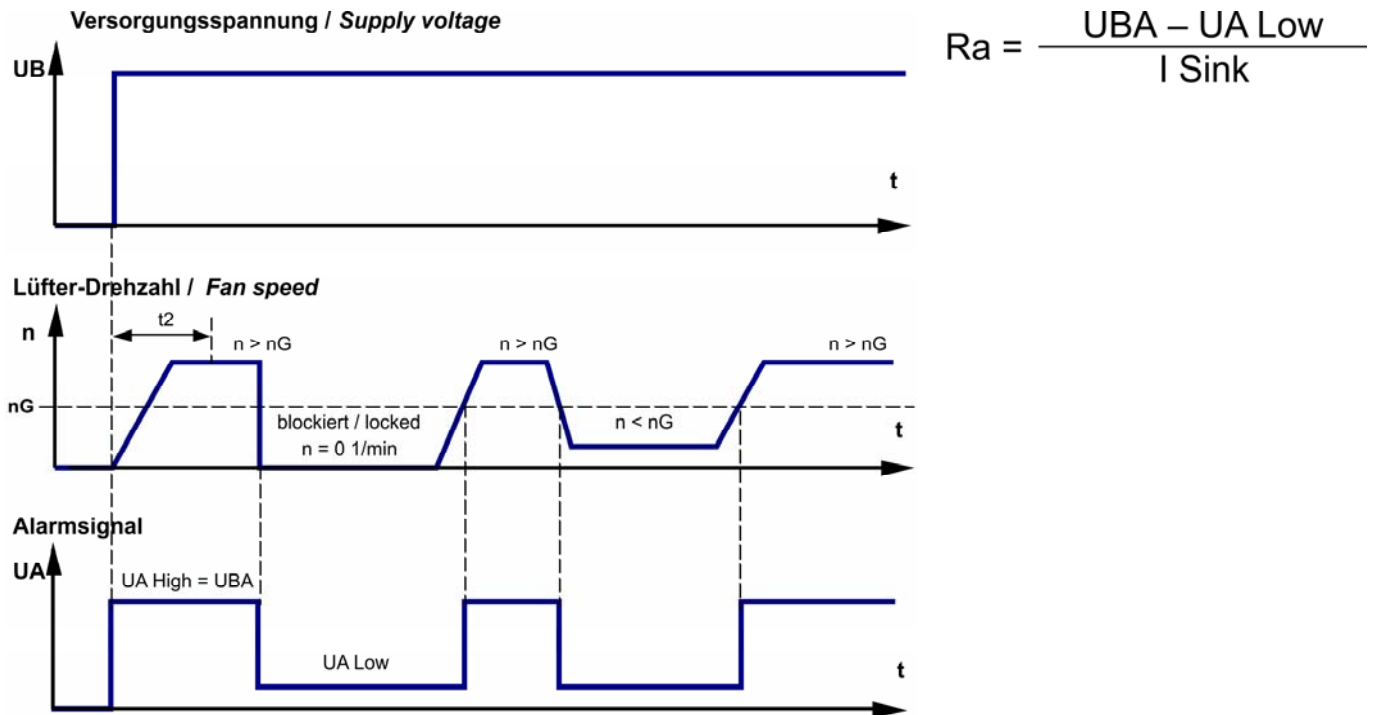
Name	Condition		
TU 0002	TU: ≤ 30 °C		
NTC 0002	NTC: ≥ 78 kOhm		

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	18,0 V		32,0 V
Nominal voltage	$\Delta p = 0$	U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	1,2 W +/- 25,0 %	1,6 W +/- 25,0 %	2,2 W +/- 25,0 %
Tolerance	TU / NTC: 0002				
Current consumption	$\Delta p = 0$	I	66 mA +/- 25,0 %	68 mA +/- 25,0 %	68 mA +/- 25,0 %
Tolerance	TU / NTC: 0002				
Speed	$\Delta p = 0$	n	1.400 1/min **)	1.400 1/min **)	1.400 1/min **)
Tolerance	TU / NTC: 0002				

****) Varío Pro:** Unless otherwise specified in the table a general fan speed tolerance applies, relating to the maximum value of the required characteristic curve. Tolerance: +/- 9,0 %

3.3 Operating Data - Electrical Interface -Output

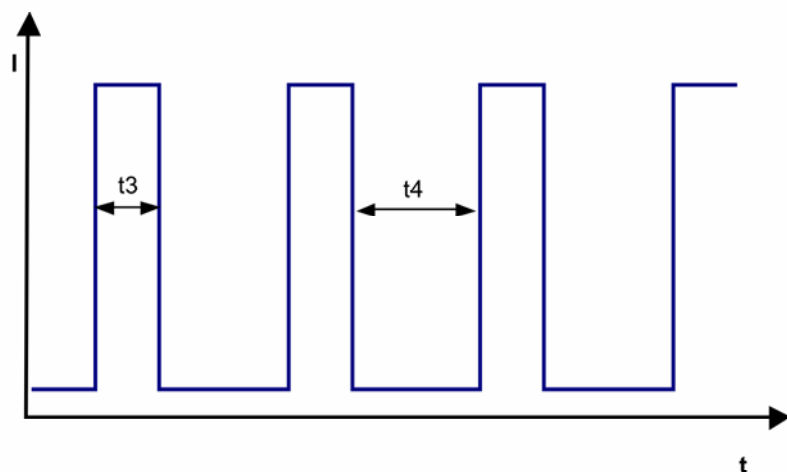
Tacho type	None
Alarm type	/17 (high = ok, Open collector)



Features	Note	Values
Alarm operating voltage (UBA)		<= 60 V
Alarm signal Low *)	I sink: 2 mA	<= 0,4 V
Alarm signal High *)	I source: 0 mA	60 V
Maximum sink current		<= 20 mA
External resistor	External resistor Ra from UBA to UA required. All voltage measured to GND.	
Alarm start-up delay time (t2)		<= 15 s
Alarm trip speed limit (nG)		1.150 1/min +- 100 1/min
Tolerance		
Alarm at sense failure	Yes	
Alarm latch	No	
Alarm isolated from motor	No	

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_n	$I_F \leq 20 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_n	approx. 780 mA	
Clock signal t_3/t_4 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:

2.800 1/min at free air flow	TU >= 50 °C NTC: <= 34 kOhm		
------------------------------	--------------------------------	--	--

Max. free-air flow ($\Delta p = 0$ / $\dot{V} = \text{max.}$)	170,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.}$ / $\dot{V} = 0$)	70 Pa	

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 $L_p(A) < 5 \text{ dB(A)}$
For further measurement conditions see section 3.5

a.) Operation condition:

2.800 1/min at free air flow	TU >= 50 °C NTC: <= 34 kOhm		
------------------------------	--------------------------------	--	--

Optimal operating point	134,0 m ³ /h @ 17 Pa	
Sound power level at the optimal operating point	5,8 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	45,0 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 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	

*) 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. **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.	
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 / 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:

U approval max.: 28 V @ TU approval max.: 65 °C

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	65.000 h	
Life expectancy L10 at TU max.	35.000 h	
Life expectancy L10 Delta (40 °C)	132.500 h	