Product Data Sheet 4114 N/17HPR-335

ebmpapst

The engineer's choice



GREEN TECH

4114 N/17HPR-335

INDEX

1 General 3

2 Mechanics 3

2.1 General 3
2.2 Connections 3

3 Operating Data 4

3.1 Electrical Interface - Input 4
3.2 Electrical Operating Data 5
3.3 Electrical Interface - Output - Alarm 6
3.4 Electrical Features 7
3.5 Aerodynamics 8
3.6 Sound Data 9

4 Environment 10

4.1 General 10
4.2 Climatic Requirements 10
4.3 EMC 10

5 Safety 11

5.1 Electrical Safety 11
5.2 Approval Tests 11

6 Reliability 11

6.1 General 11

1 General

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

2 Mechanics

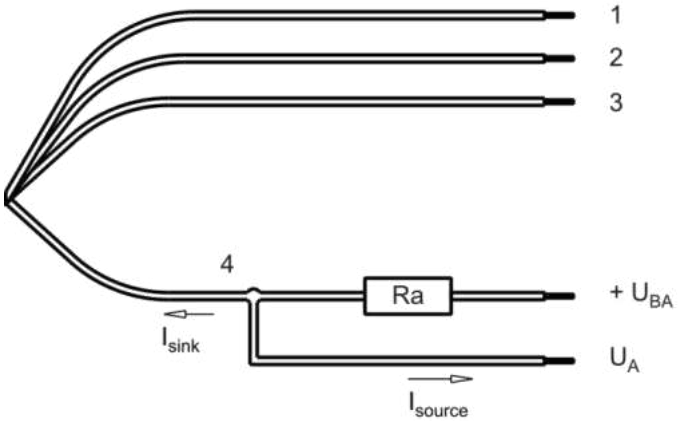
2.1 General

Width	119 mm	
Height	119 mm	
Depth	38 mm	
Mass	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 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 450 mm +- 10 mm	
Wire size (AWG)	24	
Insulation diameter	1,55 mm	





Wire	Color	Operation
1	red	+ UB
2	blue	- GND
3	violet	PWM
4	white	Alarm

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

3 Operating Data

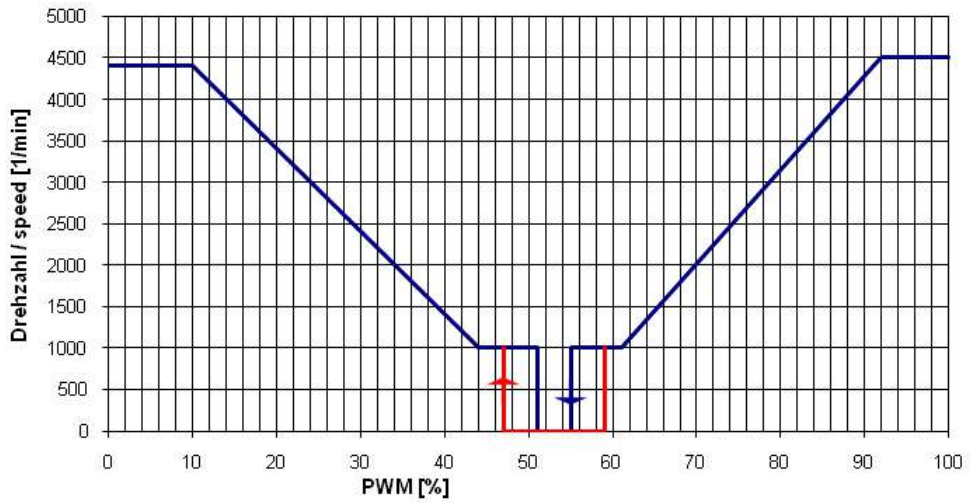
3.1 Electrical Interface - Input

Control input	PWM

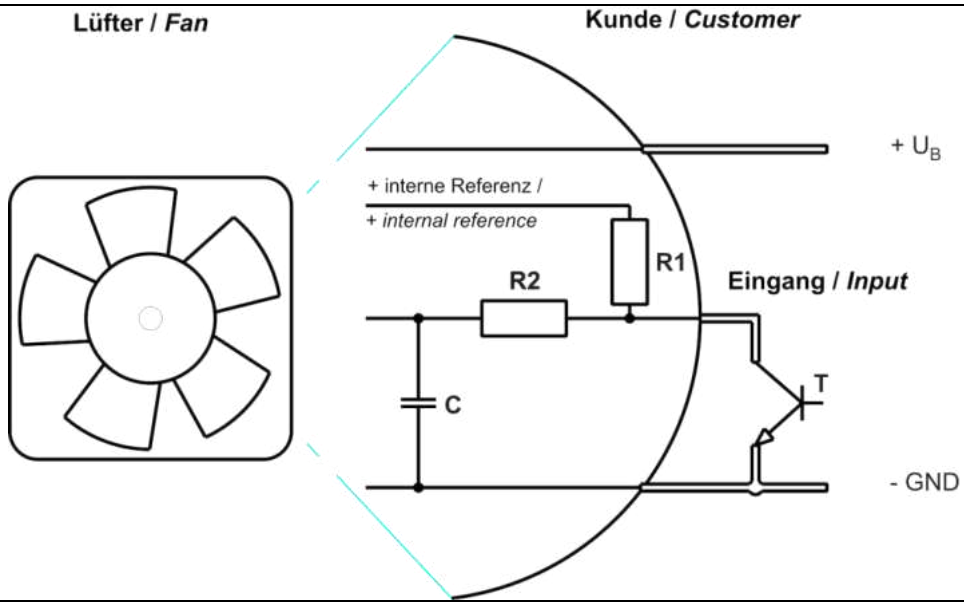
Features

Inpute type	Open collector	
PWM - Frequency		2 kHz - 25 kHz

Characteristics



Schematics



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.

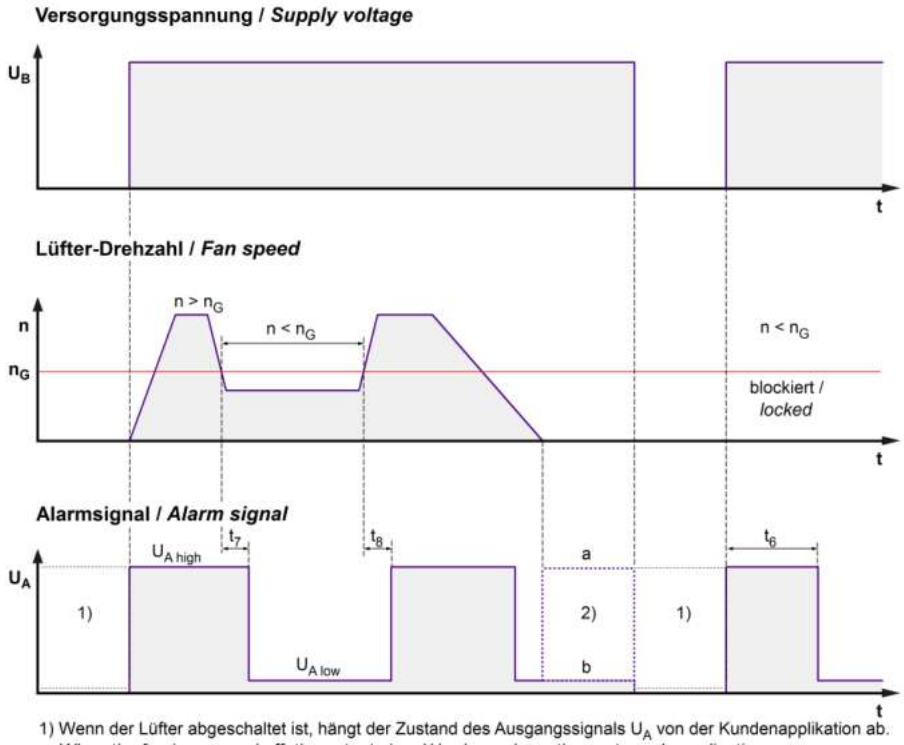
$\Delta p = 0$: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

Name	Condition		
PWM 0001	PWM: 0 %;		

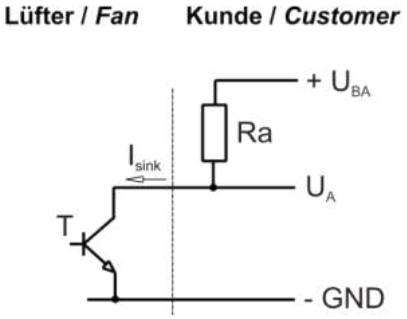
Features	Condition	Symbol	Values		
Voltage range		U	18 V		28 V
Nominal voltage		U_N		24 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	6,2 W +- 20 %	11,2 W +- 25 %	12,5 W +- 25 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0010	I	344 mA +- 17,5 %	467 mA +- 15 %	446 mA +- 25 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	3.800 1/min +- 12,5 %	4.400 1/min +- 4 %	4.400 1/min +- 4 %
Starting current consumption				1.300 mA	

3.3 Electrical Interface - Output - Alarm

Alarm type	/17 (high = ok, open collector)



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

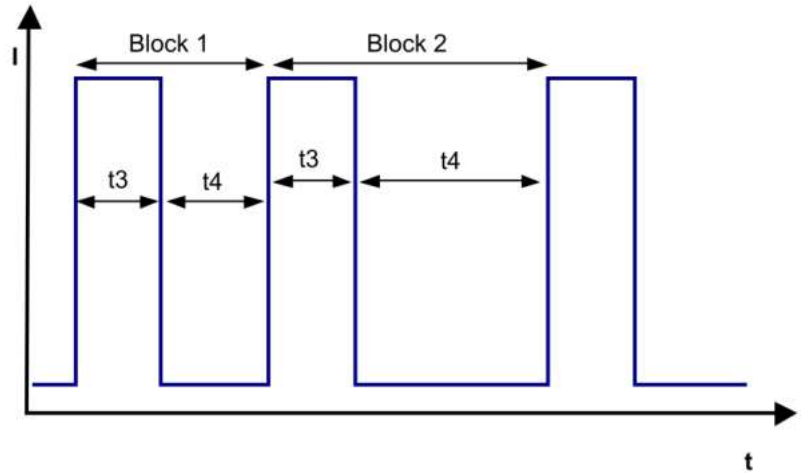


1) Wenn der Lüfter abgeschaltet ist, hängt der Zustand des Ausgangssignals U_A von der Kundenapplikation ab.
When the fan is powered off, the output signal U_A depends on the customer's application.
2) Für den gültigen Zustand (a oder b) siehe Alarmunterdrückung in der Tabelle.
For the valid condition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

Features		**Note**	**Values**
Alarm operating voltage	U_{BA}		<= 60 V
Alarm signal Low	$U_{A\,low}$	I sink: 2 mA	<= 0,4 V
Alarm signal High	$U_{A\,high}$	I source: 0 mA	60 V
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	t_6		<= 15 s
Alarm trip speed limit Tolerance	n_G		650 1/min +- 150 1/min
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 <= 100 uA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.300 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,8 s / 20 s	



Special locked rotor protection: Block1: one time t3 / t4 = 0,8 s / 0,3 s; than Block2: locked rotor protection t3 / t4 = 0,8 s / 20 s

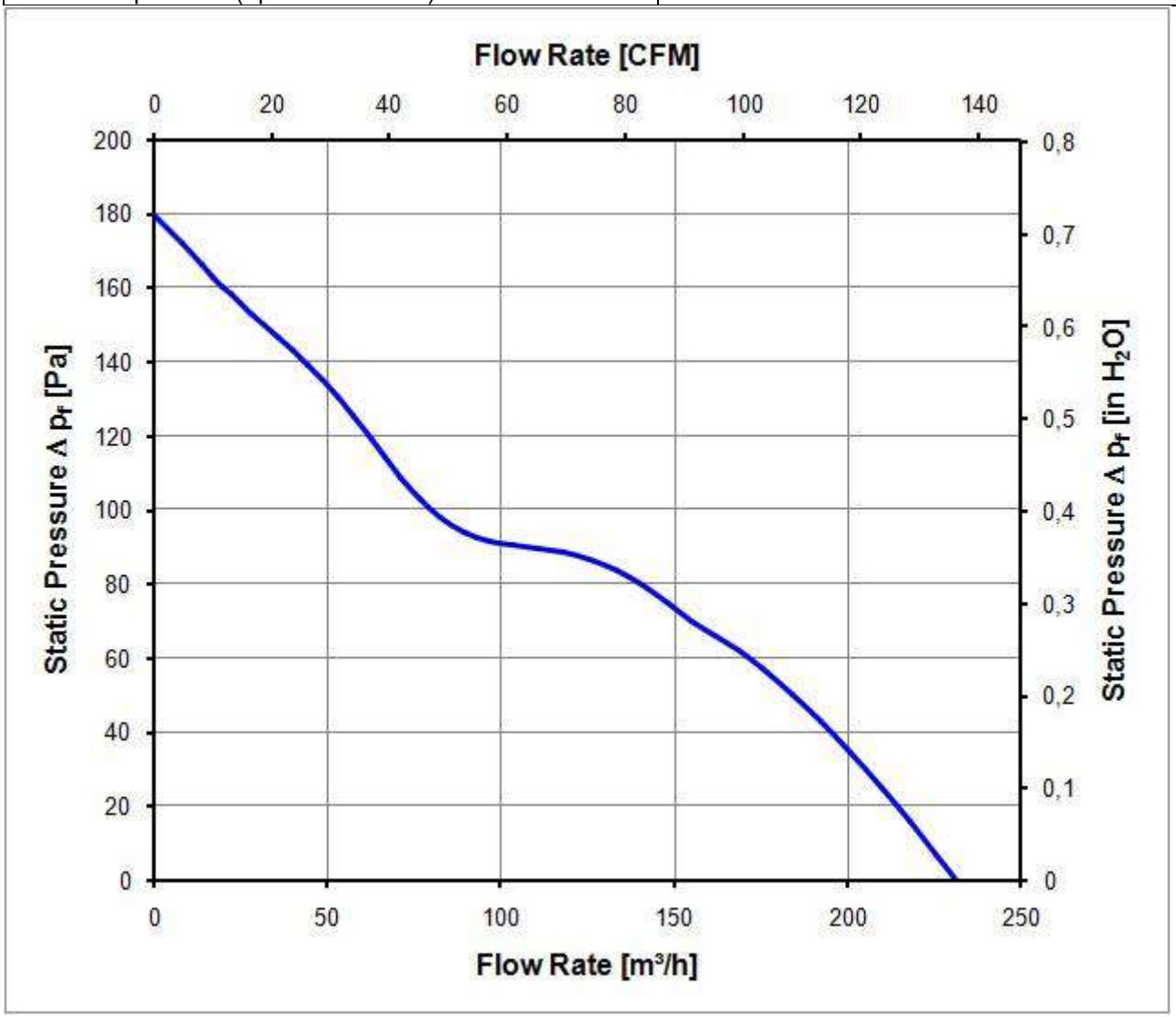
3.5 Aerodynamics

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. 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:

4.400 1/min at free air flow	PWM 0 %;		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	227,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	180 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 Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

4.400 1/min at free air flow	PWM 0 %	PWM min.:	PWM max.:

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.	-20 °C	
Max. permitted ambient temperature TU max.	60 °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, cyclic; according to DIN EN 60068-2-30, 6 cycle	
Water exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m2d, 1 day	
Salt fog requirements	None	

Permitted application area:
The product is for the use in sheltered rooms with limited controlled temperature. Occasionally condensed water is allowed. Direct exposure to water must be avoided. Saline ambient conditions must be avoided.

Pollution degree 2 (according DIN EN 60664-1)
It occurs only non-conductive pollution. Occassionally, temporary conductivity caused by condensation occurs.

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

4.3 EMC

Kind	**Radiated Emission; 30 MHz - 1000 MHz**
According	DIN EN 55022:2007-04
Ceck accuracy / Limit	Class B
Result	Below limit Class B

Kind	**Electrostatic Discharge Immunity Test**
According	DIN EN 61000-4-2:2001-12
Ceck accuracy / Limit	Contact Discharge +/- 4 kV; Air Discharge +/- 8 kV
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

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.	
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 / 1,2 mm	
Protection class	III	

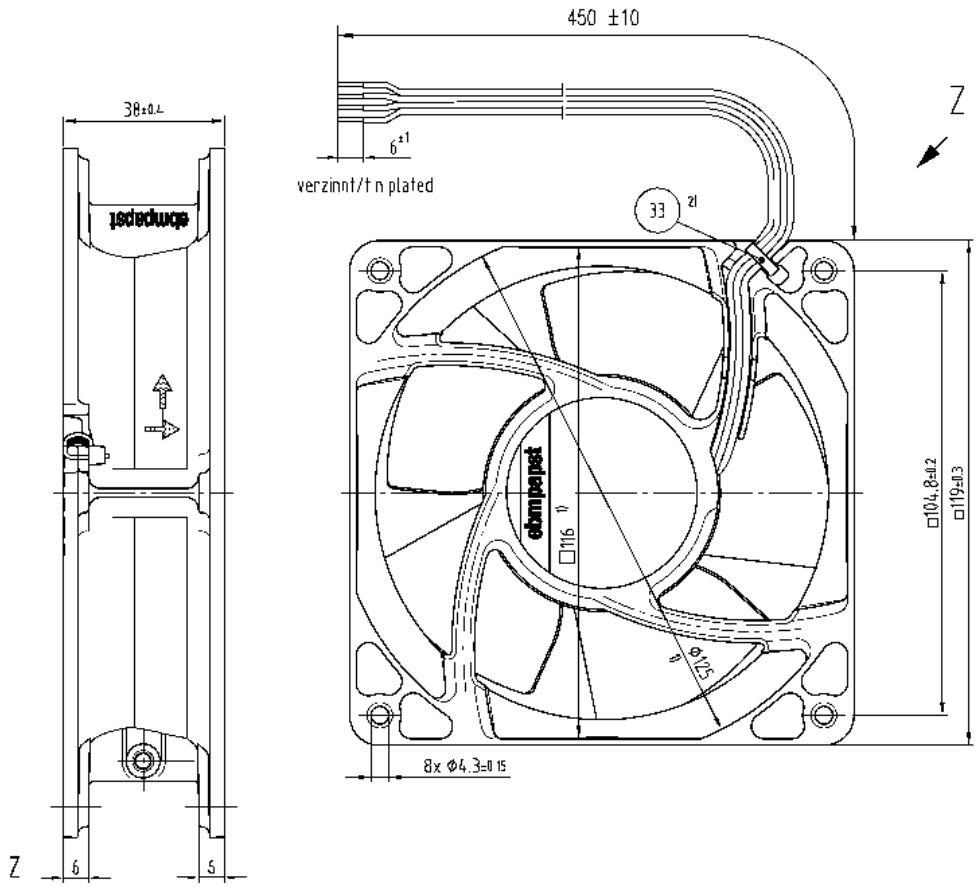
5.2 Approval Tests

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	Not applicable

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	47.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	117.500 h	



-1) = Maße für Montagewand
- Axialspiel bei Kugellagerung (K) : 0 (durch Federausgleich)
- Axialspiel bei Gleitlagerung (G) : 0,1 bis 0,6
-2) = Mit Handhabungswerkzeug montiert,
Kopf darf nach Montage nicht über Außenkontur des Lüftergehäuses stehen

-1) = Measures for prefab wall
- Axial play with ball bearing (K): 0 (by spring compensation)
- Axial play with sleeve bearing (G): 0,1 to 0,6
-2) = With handling tool installed,
Head may not stand over outer contour of the fan housing after assembly

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