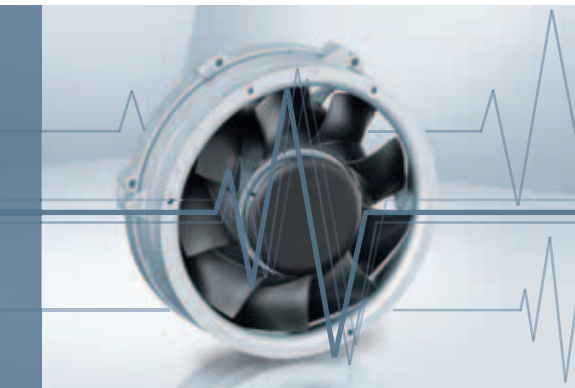
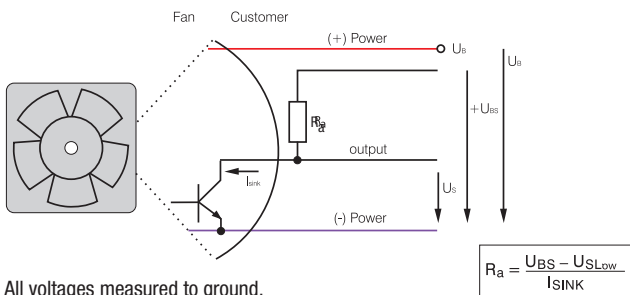


Speed signal /2



- Speed-proportional rectangular pulse for external speed monitoring of fan motor
- 2, 3 or 6 pulses per revolution
- Open collector signal output
- Extremely wide operating voltage range
- Easy adaptation to user interface
- Connection via separate lead
- The sensor signal also serves as a major comparison variable for setting and maintaining the setpoint speed for interactive or controlled cooling with one or several interconnected fans.

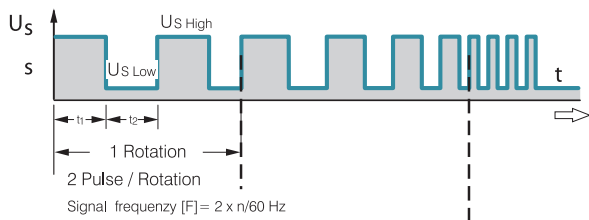
Electrical connection



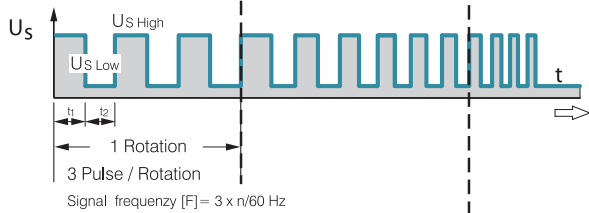
All voltages measured to ground.
External load resistor R_a / U_S / U_{BS} required.

Signal output voltage

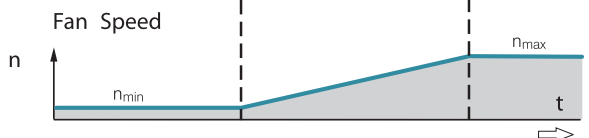
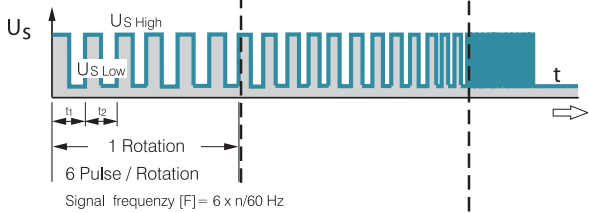
Standard signal for all models (exceptions see below)



only for 4100 NH7 and NH8



Allé TD Lüfter. Bsp.: 6400 TD



Signal data		Speed signal $U_{S \text{ Low}}$	Condition: I_{sink}	Speed signal $U_{S \text{ High}}$	Condition: I_{source}	Sensor operating voltage $U_{BS \text{ max.}}$	Perm. sink current $I_{\text{sink max.}}$	Pulses per revolution	Fan description Basic type
Type	VDC	mA	VDC	mA	VDC	mA	Page		
250	≤ 0,4	2	≤ 30	0	30	2	2	31	
400 F	≤ 0,4	1	≤ 30	0	30	2	2	32	
400	≤ 0,4	1	≤ 30	0	30	2	2	33	
420 J	≤ 0,4	2	≤ 15	0	15	4	2	34	
500 F	≤ 0,4	1	≤ 30	0	30	2	2	35	
600 F	≤ 0,4	1	≤ 30	0	30	2	2	36	
620	≤ 0,4	2	≤ 30	0	30	4	2	37	
630 U	≤ 0,4	2	≤ 30	0	30	4	2	38	
600 N	≤ 0,4	2	≤ 28	0	28	4	2	39	
600 J	≤ 0,4	2	≤ 30	0	30	4	2	41	
700 F	≤ 0,4	2	≤ 30	0	30	4	2	42	
8450	≤ 0,4	2	≤ 28	0	28	4	2	43	
8400 N	≤ 0,4	2	≤ 28	0	28	4	2	44	
8400 N VARIOFAN	≤ 0,4	2	≤ 30	0	30	4	2	45	
8300	≤ 0,4	2	≤ 30	0	30	4	2	46	
8200 J	≤ 0,4	2	≤ 30	0	30	4	2	47	
3400 N	≤ 0,4	2	≤ 28	0	28	4	2	48	
3400 N VARIOFAN	≤ 0,4	2	≤ 30	0	30	4	2	49	
3300	≤ 0,4	2	≤ 30	0	30	4	2	50	
3300 N	≤ 0,4	2	≤ 30	0	30	4	2	51	
3212 J / 3214 J	≤ 0,4	2	≤ 30	0	30	4	2	52	
3218 J	≤ 0,4	2	≤ 60	0	60	4	2	52	
3250 J	≤ 0,4	2	≤ 60	0	60	4	3	53	
4412 F / 4414 F	≤ 0,4	2	≤ 30	0	30	4	2	54	
4418 F	≤ 0,4	2	≤ 60	0	60	4	2	54	
4400 FN	≤ 0,4	2	≤ 30	0	30	4	2	55	
4312 / 4314	≤ 0,4	2	≤ 30	0	30	4	2	56	
4318	≤ 0,4	2	≤ 60	0	60	4	2	56	
4312 / 4314 VARIOFAN	≤ 0,4	2	≤ 30	0	30	4	2	57	
4318 VARIOFAN	≤ 0,4	2	≤ 60	0	60	4	2	57	
4400	≤ 0,4	2	≤ 30	0	30	4	2	58/59	
4100 N	≤ 0,4	2	≤ 30	0	30	4	2	60	
4100 NHH...NH6	≤ 0,4	2	≤ 60	0	60	10	2	61	
4100 NH7...NH8	≤ 0,4	2	≤ 60	0	60	20	3	62	
DV 4100	≤ 0,4	2	≤ 30	0	30	4	2	63	

Subject to alternations

Available on request:

- Electrically isolated sensor and signal circuit
- Varying voltage potentials for power and logic circuit

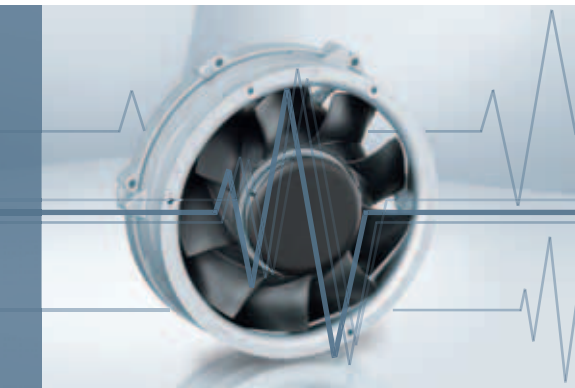
Signal data	Speed signal U _S Low	Condition: I _{sink}	Speed signal U _S High	Condition: I _{source}	Sensor operating voltage U _{BS} max.	Perm. sink current I _{sink} max.	Pulses per revolution	Fan description Basic type
Type	VDC	mA	VDC	mA	VDC	mA	Page	
5200 N	≤ 0,4	2	≤ 30	0	30	4	2	64
DV 5200	≤ 0,4	2	≤ 30	0	30	4	2	65
5112 N	≤ 0,4	2	≤ 15	0	5	20	2	66
5114 N / 5118 N	≤ 0,4	2	≤ 60	0	60	20	2	66
5300	≤ 0,4	2	≤ 72	0	72	4	2	67
5300 TD	≤ 0,4	2	≤ 72	0	72	20	6	68
7112 N / 7118 N	≤ 0,4	2	≤ 60	0	60	20	2	69
7114 N	≤ 0,4	2	≤ 30	0	30	20	2	69
7200 N	≤ 0,4	2	≤ 15	0	15	20	2	70
6300	≤ 0,4	2	≤ 72	0	72	20	2	72
6300 TD	≤ 0,4	2	≤ 72	0	72	20	6	73/74
6300 N	≤ 0,4	2	≤ 72	0	72	20	6	74 a
DV 6300	≤ 0,4	2	≤ 72	0	72	20	6	75
6400	≤ 0,4	2	≤ 60	0	60	20	2	76
2200 FTD	≤ 0,4	2	≤ 72	0	72	20	6	80
RL 48	≤ 0,4	2	≤ 30	0	30	4	2	95
RL 65	≤ 0,4	2	≤ 30	0	30	4	2	96
RL 90 N	≤ 0,4	2	≤ 30	0	30	4	2	97
RLF 100	≤ 0,4	2	≤ 30	0	30	4	2	98
RG 90 N	≤ 0,4	2	≤ 30	0	30	4	2	99
RG 125 N	≤ 0,4	2	≤ 30	0	30	4	2	100
RG 160 N	≤ 0,4	2	≤ 30	0	30	20	2	101
RG 160 NTD	≤ 0,4	2	≤ 60	0	60	20	6	102
RG 190 TD	≤ 0,4	2	≤ 72	0	72	20	6	103
RG 220 TD	≤ 0,4	2	≤ 72	0	72	20	6	104
RG 225 TD	≤ 0,4	2	≤ 72	0	72	20	6	105
RET 97 TD	≤ 0,4	2	≤ 72	0	72	20	6	106
REF 100	≤ 0,4	2	≤ 30	0	30	4	2	107
RER 120 TD	≤ 0,4	2	≤ 72	0	72	20	6	109
RER 133 TD	≤ 0,4	2	≤ 72	0	72	20	6	113
RER 160 NTD	≤ 0,4	2	≤ 60	0	60	20	6	115
REF 175 TD	≤ 0,4	2	≤ 72	0	72	20	6	116
RER 175 TD	≤ 0,4	2	≤ 72	0	72	20	6	117
RER 190 TD	≤ 0,4	2	≤ 72	0	72	20	6	118
RER 220 TD	≤ 0,4	2	≤ 72	0	72	20	6	124
RER 225 TD	≤ 0,4	2	≤ 72	0	72	20	6	125

Subject to alternations

Note:

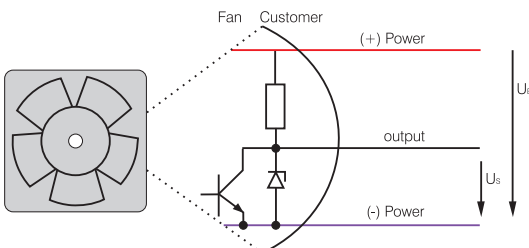
With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

Speed signal /12



- Speed-proportional rectangular pulse for external speed monitoring of fan motor
- 2, 3 or 6 pulses per revolution
- TTL-compatible
- Integrated pull-up resistor
- Connection via separate lead
- The sensor signal also serves as a major comparison variable for setting and maintaining the setpoint speed for interactive or controlled cooling with one or more interconnected fans.

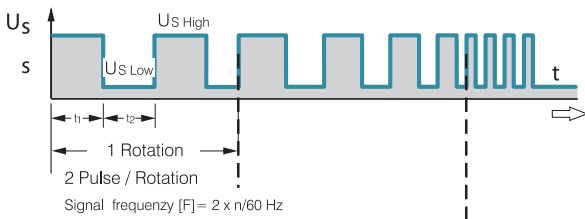
Electrical connection



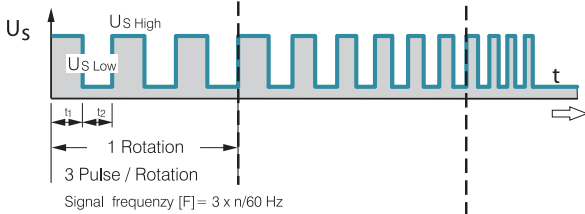
All voltages measured to ground.

Signal output voltage

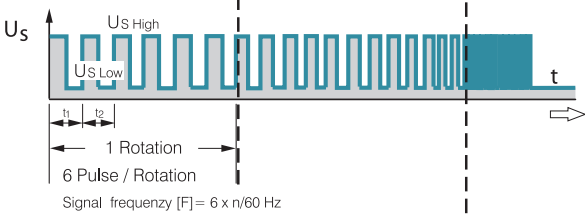
Standard signal for all models (exceptions see below)



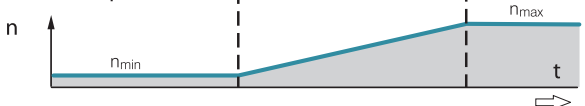
only for 4100 NH7 and NH8



Alle TD Lüfter. Bsp.: 6400 TD



Fan Speed



Signal data

Type	Speed signal $U_{S\ Low}$ VDC	Condition: I_{sink} mA	Speed signal $U_{S\ High}$ VDC	Condition: I_{source} mA	Perm. sink current $I_{sink\ max.}$ mA	Fan description Basic type Page
614 N/12 GM	$\leq 0,4$	1	2,5–5,5	1	1	39
618 N/12 N	$\leq 0,4$	1	2,5–5,5	1	1	39
8412 N/12 H	$\leq 0,4$	1	2,5–5,5	1	1	44
4412 F/12 GM	$\leq 0,4$	1	2,5–5,5	1	1	54
4418 F/12	$\leq 0,4$	1	2,5–5,5	1	1	54
4312 /12 M	$\leq 0,4$	1	2,5–5,5	1	1	56
4314 /12	$\leq 0,4$	1	2,5–5,5	1	1	56
4182 N/12 X	$\leq 0,4$	1	2,5–5,5	1	1	60

Subject to alternations

Note:

With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

Available on request:

- Electrically isolated sensor and signal circuit
- Varying voltage potentials for power and logic circuit

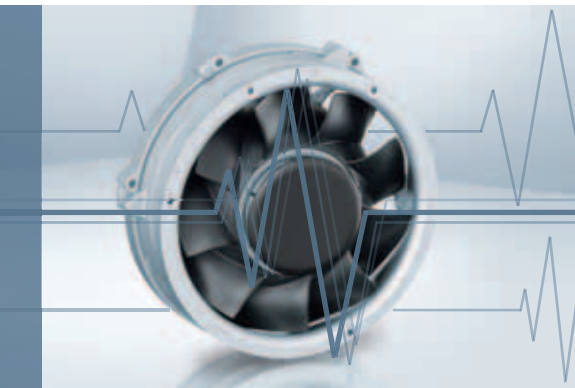
Signal data	Speed signal U _S Low	Condition: I _{sink}	Speed signal U _S High	Condition: I _{source}	Perm. sink current I _{sink} max.	Fan description Basic type
Type	VDC	mA	VDC	mA	mA	Page
7214 N/12	≤0,4	2	2,5–5,5	1	≤20	70
6424/12 H	≤0,4	2	2,5–5,5	1	≤20	76
DV 6424/12	≤0,4	2	4,5–5,25	2	≤12	78
DV 6448/12	≤0,4	2	4,5–5,25	2	≤12	78
RG 125-19/12 N/12	≤0,4	1	2,5–5,5	1	≤1	100
RG 160-28/12 N/12	≤0,4	2	2,5–5,5	1	≤5	101
RG 160-28/18 N/12	≤0,4	2	2,5–5,5	1	≤20	101
RER 125-19/12 N/12	≤0,4	1	2,5–5,5	1	≤1	112
RER 160-28/12 N/12	≤0,4	2	2,5–5,5	1	≤5	114
RER 160-28/18 N/12	≤0,4	2	2,5–5,5	1	≤20	114

Subject to alternations

Note:

With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

Alarm signal /17



- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range.
- Low signal when speed limit is not reached
- After elimination of fault, the fan returns to its setpoint speed; the alarm signal reverts to high.

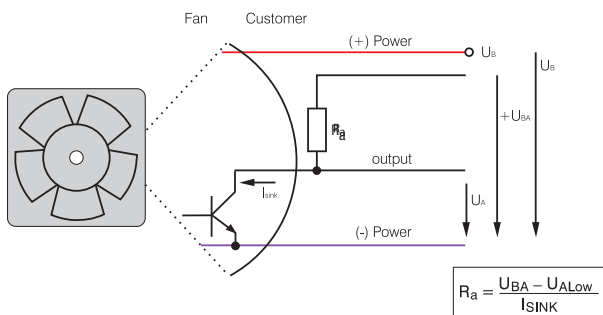
Alarm signal data	Alarm output voltage $U_{A\ Low}$	Condition:	Condition: $I_{sink} =$	Alarm output-voltage $U_{A\ High}$	Condition:	Condition: I_{source}	Alarm operating-voltage $U_{BA\ max.}$	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description Basic type
Type	VDC		mA	VDC		mA	VDC	mA	s		RPM	Page
8318 /17	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	46
8318 /17 H	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	46
3314 /17	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	50
4318 /17	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	850 ± 100	56
4184 N /17 X	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	60

Subject to alternations

Note:

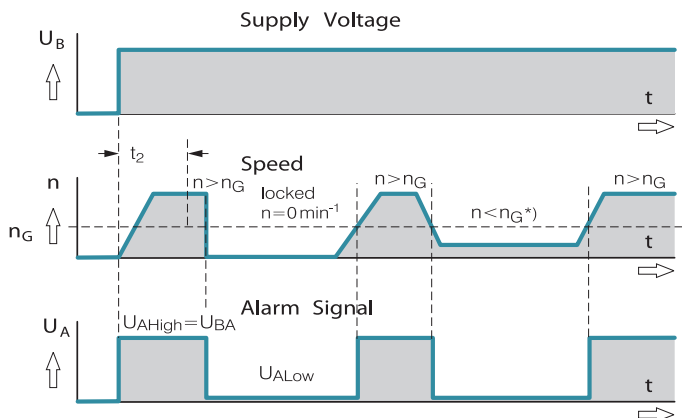
With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

Electrical connection



All voltages measured to ground.

External load resistor R_a from U_A to U_{BA} required.



t_2 = Alarm signal suppression during start-up

* $n <$ speed limit n_G by braking or locking.

Available on request:

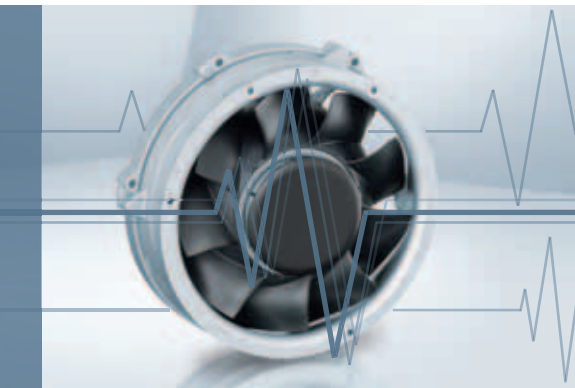
- With integrated signal latching for subsequent recognition of short-time faults
 - Alarm circuit open collector or TTL
 - Electrically isolated for maximum device safety
- Defects in the power circuit do not affect the alarm circuit.

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{\text{sink}} =$	Alarm output-voltage U_A High	Condition:	Condition: I_{source}	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description Basic type
Type	VDC		mA	VDC		mA	VDC	mA	s		RPM	Page
4312/17 MT VARIOFAN	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	57
4312/17 T VARIOFAN	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1500 ± 100	57
4314/17 T VARIOFAN	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	1150 ± 100	57
4318/17 T VARIOFAN	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	20	≤ 15	*	850 ± 100	57
7214 N/17	$\leq 0,4$	$n < n_G$	2	≤ 60	$n > n_G$	0	60	15	≤ 15	*	1330 ± 60	70
Subject to alternations										* After switching on U_B		

Note:

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

Alarm signal /19



- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a low continuous signal during trouble-free operation within the permissible voltage range.
- High signal when speed limit is not reached
- After elimination of fault, the fan returns to its setpoint speed; the alarm signal reverts to low.

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output-voltage U_A High	Condition:	Condition: I_{source}	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description Basic type
Type	VDC		mA	VDC		mA	VDC	mA	s		RPM	Page
8314/19 H	$\leq 0,4$	$n > n_G$	2	≤ 60	$n < n_G$	0	60	20	≤ 15	*	1500 ± 100	46
4312/19	$\leq 0,4$	$n > n_G$	2	≤ 60	$n < n_G$	0	60	20	≤ 15	*	1500 ± 100	56
7214 N/19	$\leq 0,4$	$n > n_G$	2	≤ 60	$n < n_G$	0	60	10	10 ± 4	*	1800 ± 20	70
RLF 100-11/14/19	$\leq 0,4$	$n > n_G$	2	≤ 28	$n < n_G$	0	28	10	10 ± 4	*	1900 ± 100	98
RER 101-36/18N/19 HH	$\leq 0,4$	$n > n_G$	2	≤ 28	$n < n_G$	0	28	10	10 ± 4	*	1900 ± 100	108

Subject to alternations * After switching on U_B

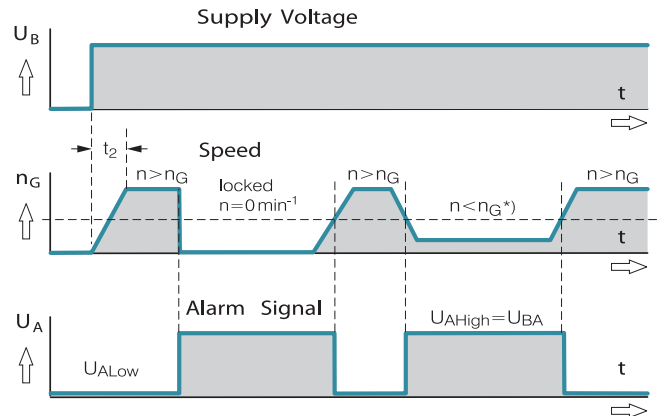
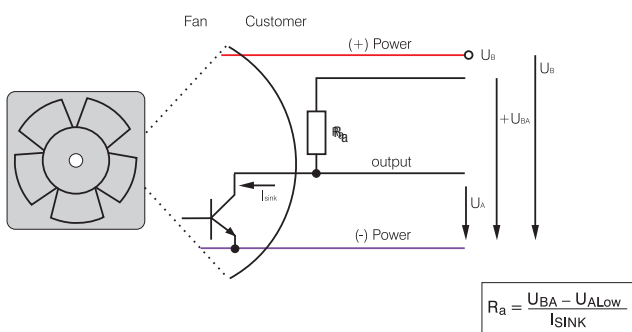
Note:

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

Available on request:

- With integrated signal latching for subsequent recognition of short-term faults.
- Alarm circuit open collector or TTL.
- Electrically isolated for max. device safety; defects in power circuit have no effect on the alarm circuit.

Electrical connection

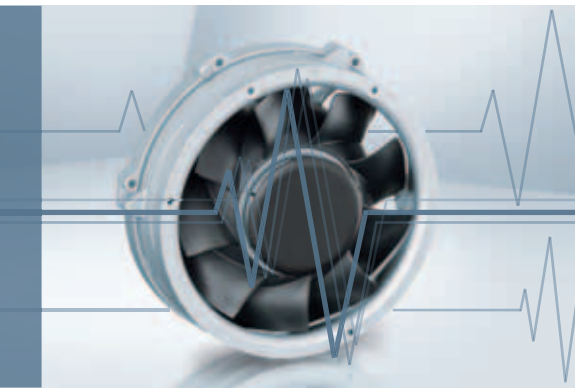


All voltages measured to ground.
External load resistor R_A from U_A to U_{BA} required.

t_2 = Alarm signal suppression during start-up.
* $n < \text{Speed limit } n_G$ by braking or locking.

Alarm signal /37

Go / No-go alarm



- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range.
- Low signal when speed limit is not reached
- After elimination of fault, the fan returns to its setpoint speed; the alarm signal reverts to high.

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output-voltage U_A High	Condition:	Condition: I_{source}	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description Basic type
Type	VDC		mA	VDC		mA	VDC	mA	s		RPM	Page
8412 N/37 GMLV	$\leq 0,4$	$n \leq n_G$	2	≤ 28	$n > n_G$	0	28	10	< 1	*	0	45
3412 N/37 GV	$\leq 0,4$	$n \leq n_G$	2	≤ 28	$n > n_G$	0	28	10	< 1	*	0	49

Subject to alternations * After switching on U_B

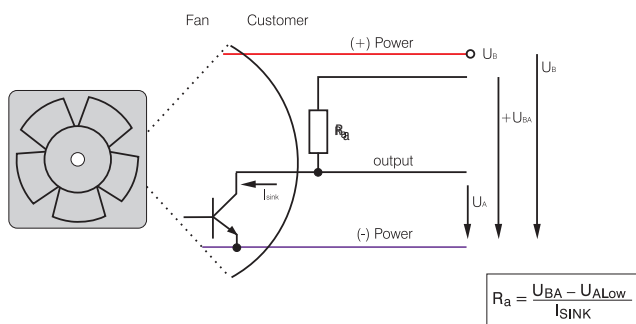
Note:

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

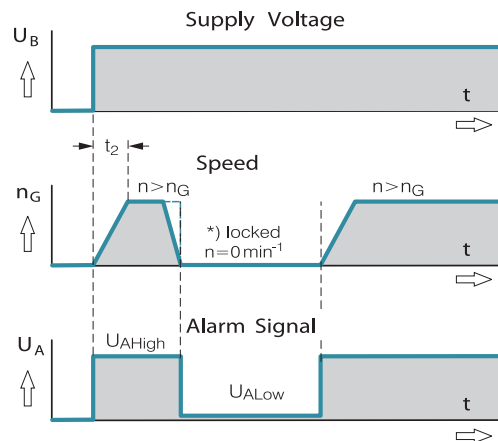
Available on request:

- Alarm circuit TTL compatible.

Electrical connection



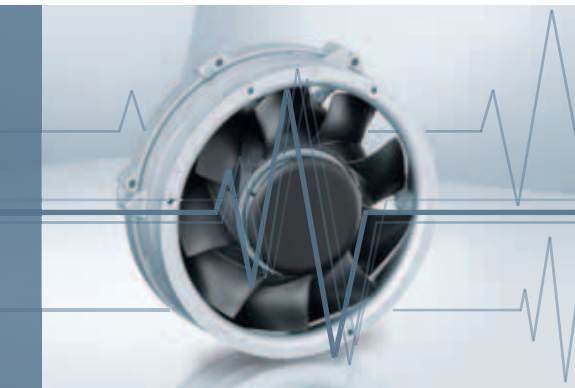
All voltages measured to ground.
External load resistor R_a from U_A to U_{BA} required.



t_2 = Alarm signal suppression during start-up.
* $n < \text{Speed limit } n_G$ by braking or locking.

Alarm signal /39

Go / No-go alarm



- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a low continuous signal during trouble-free operation within the permissible voltage range.
- High signal when speed limit is not reached
- After elimination of fault, the fan returns to its setpoint speed; the alarm signal reverts to low.

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output-voltage U_A High	Condition:	Condition: I_{source}	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description Basic type
Type	VDC		mA	VDC		mA	VDC	mA	s		RPM	Page
412/39	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	33
612 F/39 H	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	36
614 N/39 M	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	39
618 N/39 N	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	39
3412 N/39 H	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	48
3414 N/39 HH	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	48
4412 F/39 GL	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	54
4412 F/39 M	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	54
4414 F/39	≤0,5	$n > n_G$	2	≤28	$n = n_G$	0	28	10	<1	*	0	54
4414 FN/39 H	≤0,4	$n > n_G$	2	≤30	$n = n_G$	0	30	4	<1	*	0	55

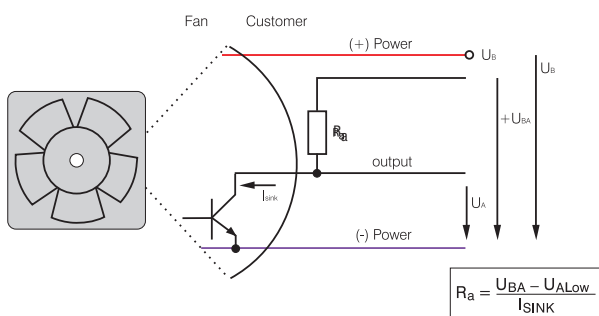
Subject to alternations

* After switching on U_B

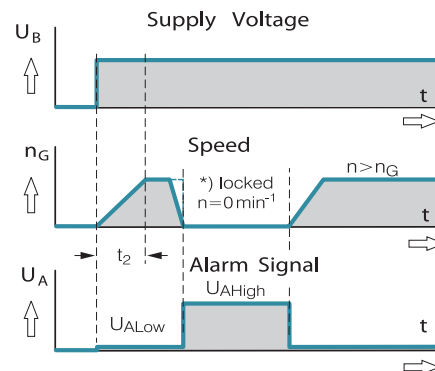
Note:

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

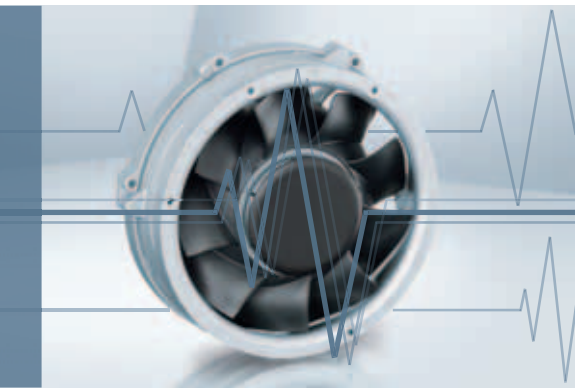
Electrical connection



All voltages measured to ground
External load resistor R_a from U_A to U_{BA} required.



t_2 = Alarm signal suppression during start-up
* $n < n_G$ by braking or locking



- "Software instead of hardware" – aptly describes the unique fan concept, equipped at the plant with tailor-made intelligence for cooling electronics.
- Flexible configuration using software, allows quicker availability, sampling from the factory and the ability to supply customer-specific solutions in any quantity.

Vario-Pro-Features

External Speed setting

- Speed setting via temperature, PWM or analogue control voltage
See page 174 (Speed setting)
- Description of speed curve with up to 14 selectable interpolation points
Linear interpolation between the points
- Zero speed possible
- Recognition of sensor failure: In case of loss of sensor, the fan operates at programmable (fail-safe) speed.

Alarm and tachometer functions

- Optional alarm and/or tachometer function
- Selectable alarm speed limit (with hysteresis) and alarm delay time
- Latching of alarm signal
- Delay only when starting or permanently active
- "High" or "Low" output signal in case of alarm
- Optional alarm if temperature sensor fails
- Optional alarm in case of excess temperature

Motor management

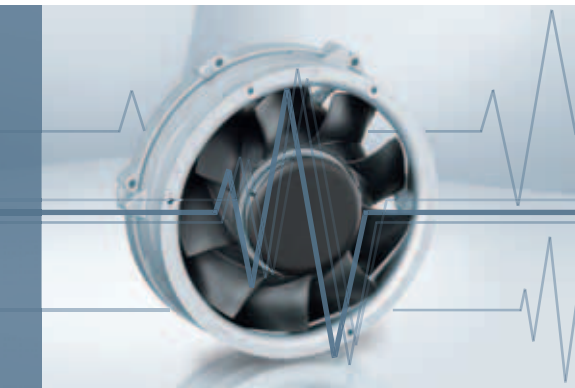
- High control accuracy due to digital motor management
- Higher operating efficiency due to optimum adaptation of motor hardware and software

Fan series	Page
620	37
8400 N	44
8300	46
8200 J	47
3400 N	48
3300	50
3300 N	51
3200 J	52
3250 J	53
4400 FN	55
4300	56
4100 N	60

Fan series	Page
4100 NH...NH6	61
4100 NH 7-8	62
DV 4100	63
5200 N	64
DV 5200	65
5100 N	66
5300	67
7100 N	69
7200 N	70
6100 N	71
6300	72
6300 N	74 a

Fan series	Page
DV 6300	75
6400	76
DV 6400	78
RL 90 N	97
RLF 100	98
RG 90 N	99
RG 125 N	100
RG 160 N	101
REF 100	107
RER 101	108
RER 125 N	112
RER 160 N	114

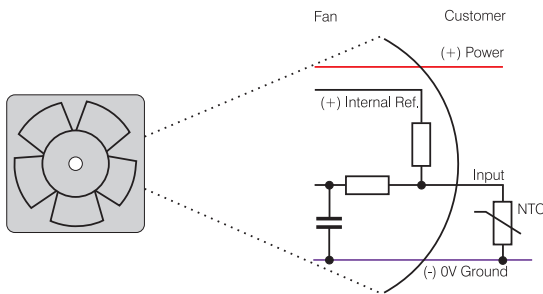
Speed setting via temperature sensor



- The control variable is a temperature sensor which is either integrated into the fan or connected to an additional control wire.

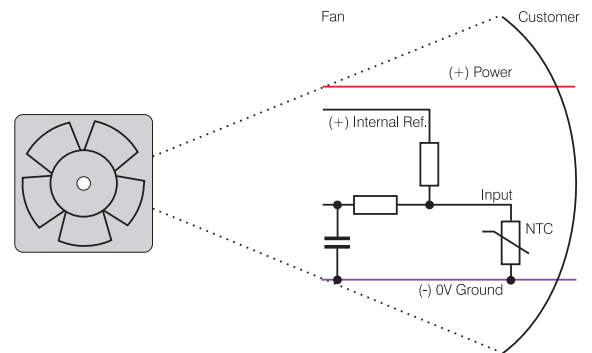
External temperature sensor Type T

- Ext. NTC type LZ370 (p. 253) is required (to be ordered separately)

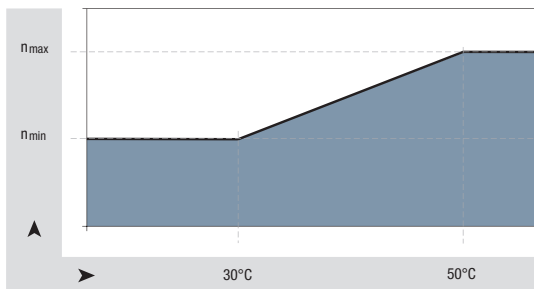


Internal temperature sensor Type I

- NTC integrated into the fan hub



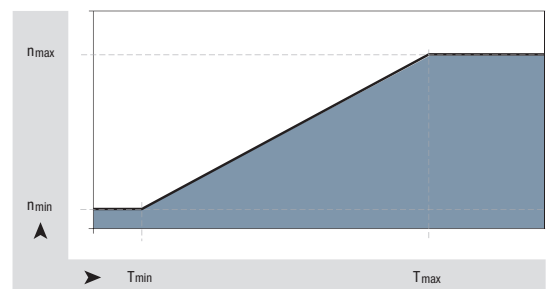
Standard speed-temperature curve for type T and type I



$$n_{\min} \approx \frac{1}{2} n_{\max}$$

$$T_{\min} \approx 30 \text{ }^{\circ}\text{C}; T_{\max} = 50 \text{ }^{\circ}\text{C}$$

Optionally available with customer specific temperature-speed control curve

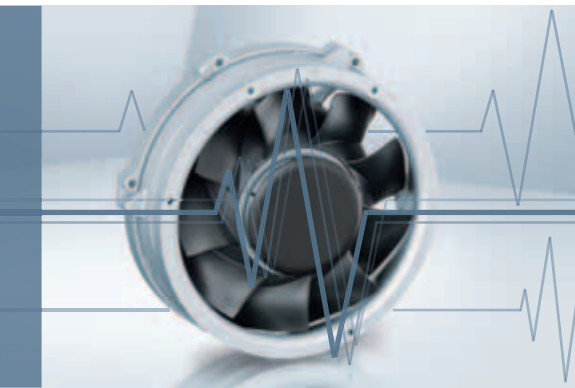


$$n_{\min} \approx 800 \text{ }^1/\text{min} \quad n_{\max} \text{ model-dependent}$$

$$T_{\min} \approx 5 \text{ }^{\circ}\text{C} \quad T_{\max} \leq 85 \text{ }^{\circ}\text{C, model-dependent}$$

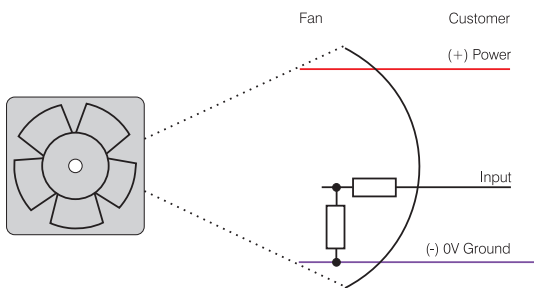
Speed setting with control voltage or PWM

– The control variable is a PWM signal or analogue control voltage.



Speed setting via control voltage Type A

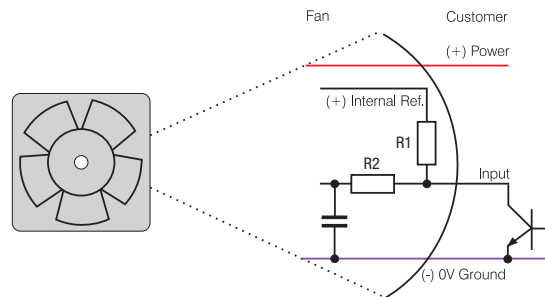
– Standard control range 0 ... 10 V



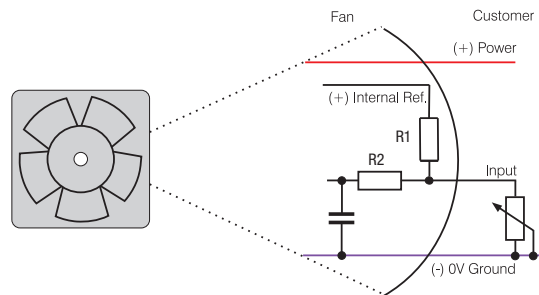
Typical input resistance >10 kΩ

Speed setting via PWM Type P

- Standard PWM signal in two versions
 - a) PWM frequency, mainly 1– 10 kHz (0–100%), Open collector input
 - b) Four-wire interface in accordance with Intel specifications for 12 VDC fans, PWM frequency 25 kHz, incl. speed signal /2

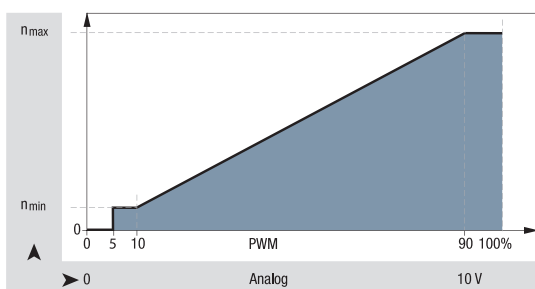


– Optional with potentiometer

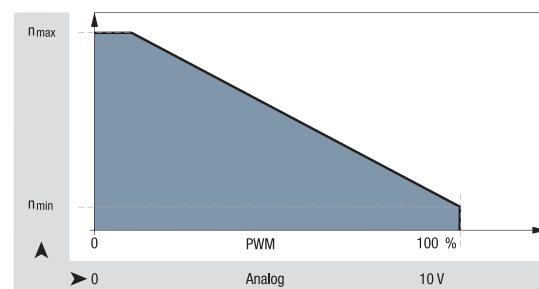


Internal reference = +5V
 R1 typical 4.7...10 kΩ
 R2 typical 100 kΩ

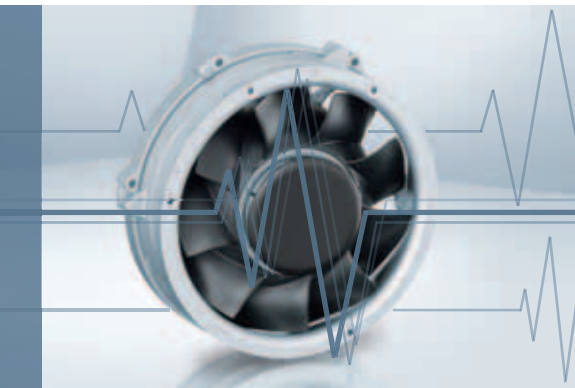
Standard curve P / A



Optionally available with customer specific P / A speed control curve

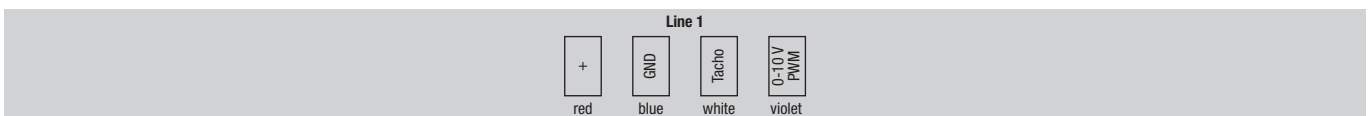
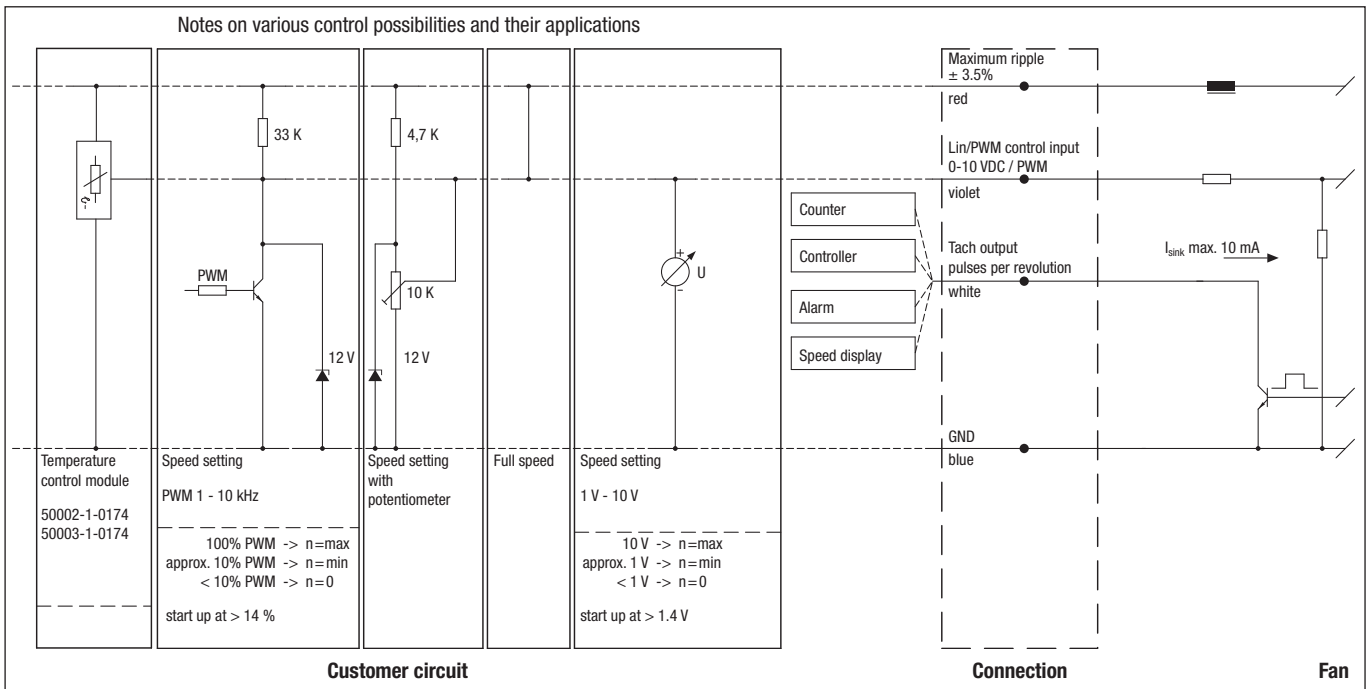


Speed setting via multi-option control input



- Customer can operate input either with PWM signal, analogue voltage, external temperature control module or resistor.
- The control signal-speed characteristics of the fan differ from the standard curve of the A and P inputs (see p. 175).
- To set up maximum speed, the control wire must be connected to UB.
- The control input is usually combined with an open collector tachometer (Type /2, see page 164).

Speed setting via multi-option control input



Line	Connection	Colour	Assignment / function	Line	Connection	Colour	Assignment / function
1	+	red	Maximum ripple $\pm 3.5\%$	1	Tach	white	Tach output: 3 pulses / revolution
	GND	blue	GND				
					0-10 V / PWM	violet	Control input (Impedance 100 k Ω)

Protected fans

against environmental influences

- Capable to fulfil special requirements for a broad range of applications
- Resistant to environmental influences, such as dust, splash water, humidity, spray water and salt fog
- Highly competent solutions for adapting fans to environmental conditions



Moisture protection

Coated motor and printed circuit board protects against humidity and condensation.

Type of protection: IP 54 / IP 68

In the type of protection IP 54, the motor and circuit boards are coated and therefore protected against spray water and moisture.

The type of protection IP 68 is important for ebm-papst products, as it ensures a high degree of protection for the encapsulated motor and electronic against foreign bodies and water, whilst protecting the user against potential hazards upon contact. Types of protection higher than IP 68 are possible upon request.

The available solutions could be different depending on the fan size. We would be glad to develop solutions tailored to the demands of your application.

Salt fog protection

Salt fog is extremely demanding on the resistance of the product. ebm-papst makes use of technologies that protect fans and blowers from salt fog reliably and durably.

Stainless steel bearings

Special bearings made of stainless steel provide additional protection.

Type of protection – IP code

Protection against foreign bodies and accidental contact (first digit)		Water protection (second digit)	
X	No protection	X	No protection
1	Protection against foreign bodies > 50 mm (back of the hand)	1	Protection against dripping water or condensation
2	Protection against foreign bodies > 12 mm (finger)	2	Protection against dripping water, fans tilted 15° from vertical
3	Protection against foreign bodies > 2,5 mm (tool)	3	Protection against water spray up to 60° from vertical
4	Protection against foreign bodies > 1 mm (wire)	4	Protection against water spray from all sides
5	Protection against dust in harmful quantities	5	Protection against low-pressure water jets
6	Dust-proof	6	Protection against high-pressure water jets
		7	Protection against temporary submersion (15 cm - 1 m)
		8	Protection against continuous submersion