

Fan housing with guard grille

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Nominal data

Type	W3G500-ZQ12-90	
Motor	M3G112-IA	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min ⁻¹	1870
Power consumption	W	1600
Current draw	A	2.6
Max. back pressure	Pa	440
Max. back pressure	in. wg	1.77
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment
Subject to change

Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency η_{es}	%	54.3	34.9	09 Power consumption P_{ed}	kW	1.57
02 Measurement category		A		09 Air flow q_v	m ³ /h	8070
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	357
04 Efficiency grade N		59.4	40	10 Speed (rpm) n	min ⁻¹	1870
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

* Specific ratio = $1 + p_s / 100\,000\text{ Pa}$

LU-213786

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



Technical description

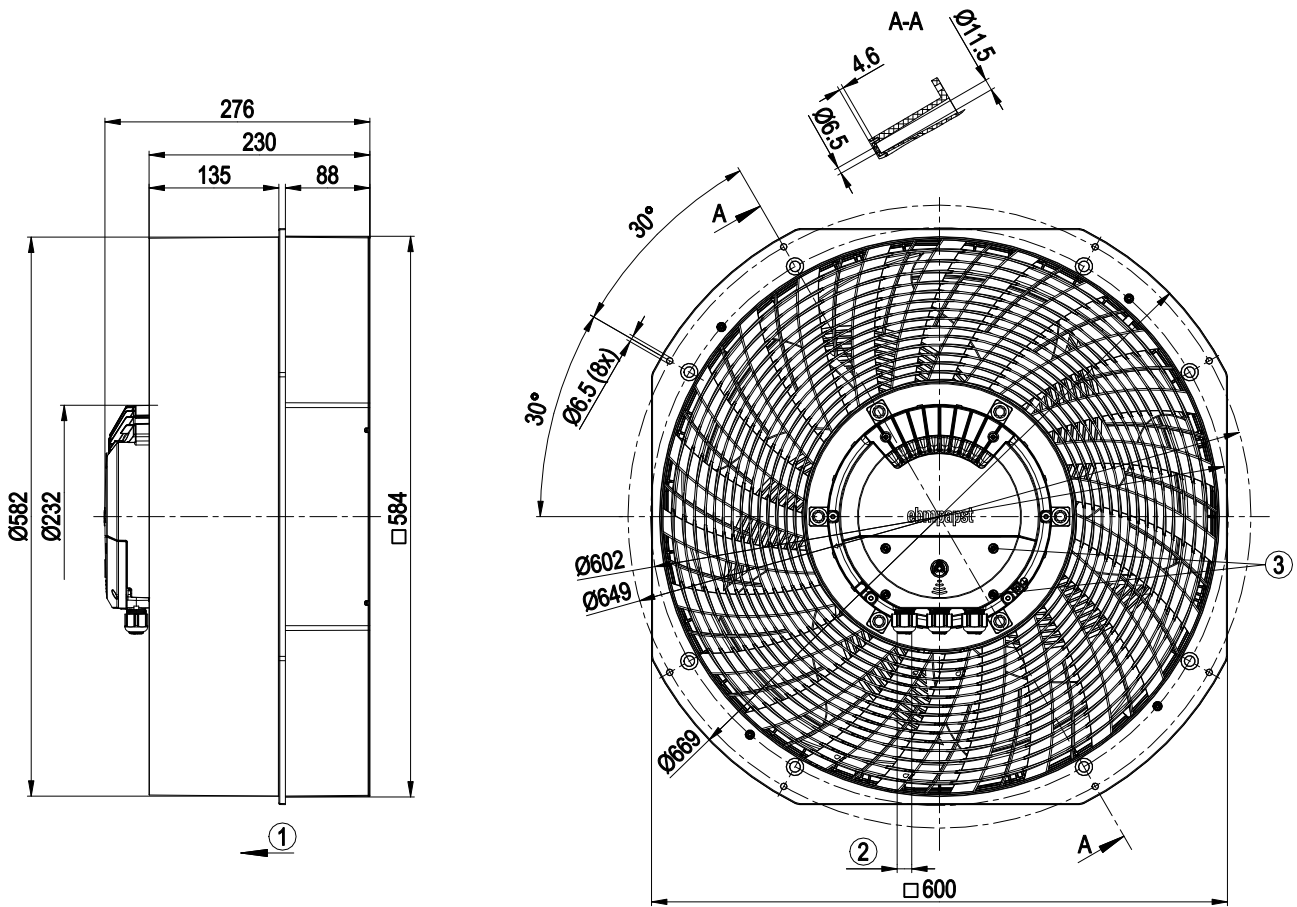
Weight	17.22 kg
Size	500 mm
Motor size	112
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum, painted gray
Impeller material	PP plastic
Fan housing material	PP plastic
Number of blades	5
Airflow direction	V
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H2
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	Shaft horizontal or rotor on bottom; rotor on top on request
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> - Operation and alarm display with LED - External 15-50 VDC input (parameterization) - Alarm relay - Integrated PI controller - Configurable inputs/outputs (I/O) - MODBUS V6.3 - Motor current limitation - RFID - ISO 15693 compatible - RS-485 MODBUS-RTU - Soft start - Voltage output 3.3-24 VDC, Pmax = 800 mW - Control interface with SELV potential safely disconnected from the mains - Thermal overload protection for electronics/motor - Line undervoltage / phase failure detection
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC interference emission	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Terminal box
Motor protection	Electronic motor protection

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Protection class assignment	I; If a protective earth is connected by the customer This component for installation may have several local protection classes. This information relates to this component's basic design. The final protection class is based on the component's intended installation and connection.
Conformity with standards	EN 61800-5-1; CE
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

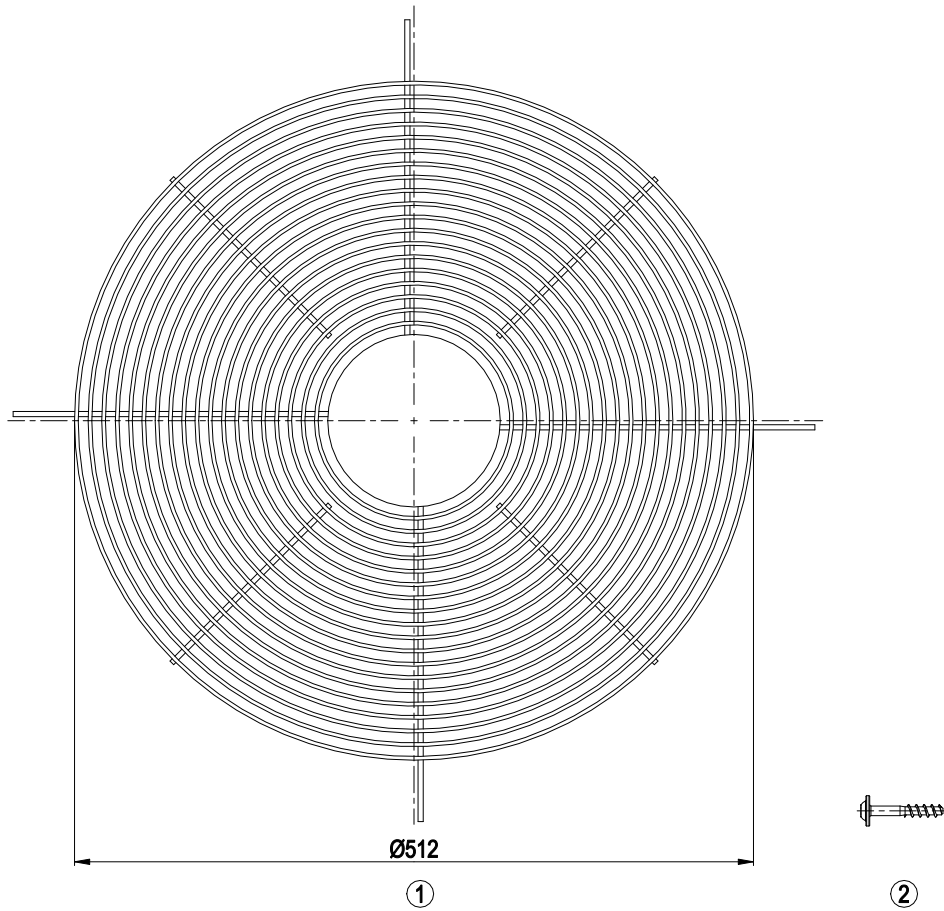


Product drawing



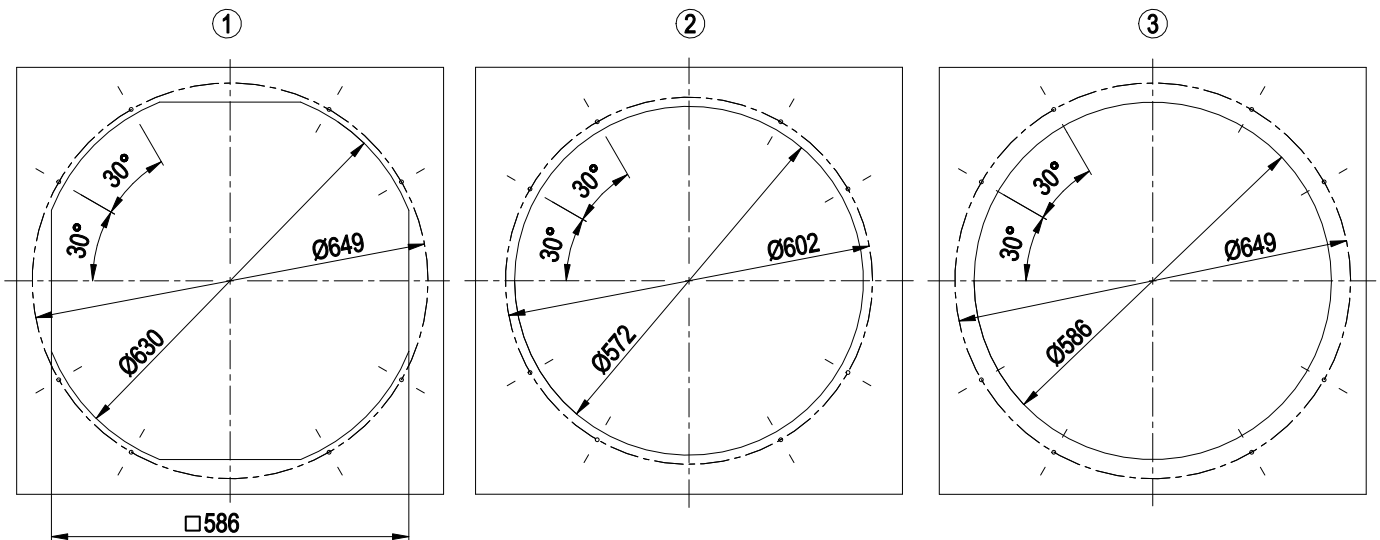
1	Airflow direction "V"
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque 1.5 ± 0.2 Nm
	Accessory part: Guard grill 50070-2-4039 with oval head screw 60080-7-6201 (4x), can be fitted on the intake side. Not included in scope of delivery.
	The installation of accessories may change the air performance and noise values.

Accessory part



1	Guard grill 50070-2-4039
2	Oval head screw 60080-7-6201 (4x)

Mounting dimensions



All 8 holes on the relevant pitch circle must always be used for all types of fastening.

1 intake-side mounting on flange

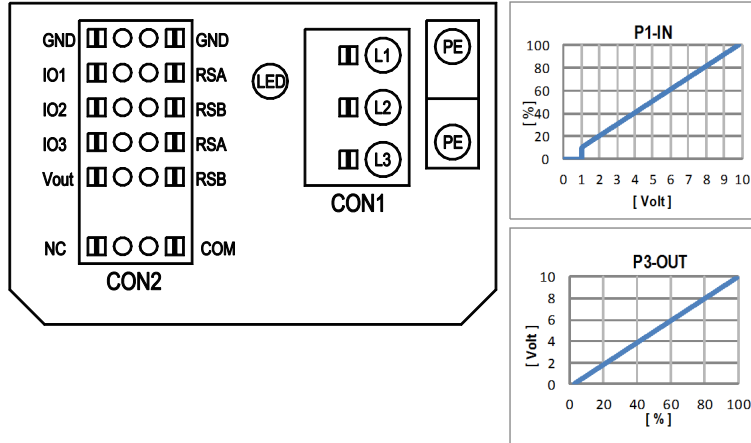
2 intake-side mounting on suction nozzle

The $\text{Ø}6.5$ mm holes must be pierced from the underside with a mandrel or similar tool.

We recommend using M6 cheese-head screws with hexagon socket (DIN 912/DIN EN ISO 4762) for fastening.

3 outlet-side mounting on flange

Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V / PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Fan modulation level Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

Terminal/plug assignment

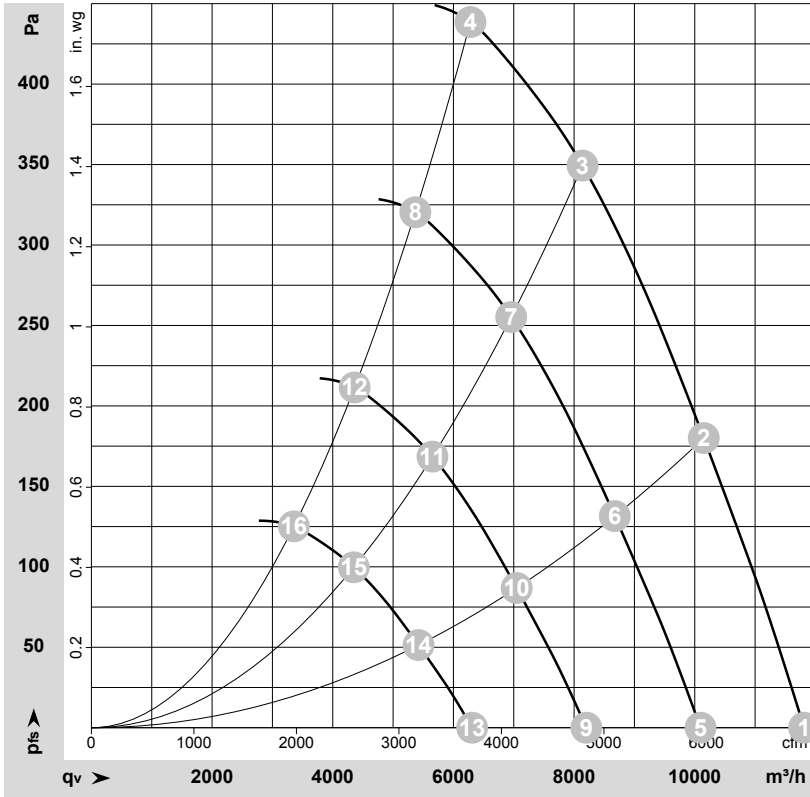
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				MODBUS Register for IO mode configuration	MODBUS Register for IO mode configuration
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [7]	
	○ PWMIn3: digital input, idle level low	40Hz - 10kHz, characteristics parameterizable active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		D15A [4]	
	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
RSA	RS485 bus connection,	MODBUS RTU, specification V6.3, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=600mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

○ configurable option

For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3



Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-213786-1

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebmpapst. Intake sound level: Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

Measured values

	Wired	U	f	n	P _{ed}	I	LpA _{in}	LwA _{in}	LwA _{out}	q _v	p _{fs}	q _v	p _{fs}
		V	Hz	min ⁻¹	W	A	dB(A)	dB(A)	dB(A)	m ³ /h	Pa	cfm	in. wg
1	3~	400	50	1870	1344	2.18	79	85	87	11810	0	6950	0.00
2	3~	400	50	1870	1492	2.40	78	84	86	10150	180	5975	0.72
3	3~	400	50	1870	1577	2.52	77	84	87	8140	350	4790	1.41
4	3~	400	50	1870	1600	2.60	79	86	88	6280	440	3695	1.77
5	3~	400	50	1600	839	1.36	75	82	83	10095	0	5940	0.00
6	3~	400	50	1600	932	1.50	74	80	82	8675	132	5105	0.53
7	3~	400	50	1600	985	1.57	73	80	83	6955	257	4095	1.03
8	3~	400	50	1600	1008	1.61	75	82	84	5370	322	3160	1.29
9	3~	400	50	1300	450	0.73	70	76	78	8205	0	4830	0.00
10	3~	400	50	1300	500	0.80	68	75	77	7050	87	4150	0.35
11	3~	400	50	1300	528	0.84	68	75	77	5655	169	3325	0.68
12	3~	400	50	1300	540	0.86	70	76	79	4365	213	2570	0.86
13	3~	400	50	1000	205	0.33	63	70	72	6310	0	3715	0.00
14	3~	400	50	1000	228	0.37	62	68	70	5420	51	3190	0.20
15	3~	400	50	1000	240	0.38	61	68	71	4350	100	2560	0.40
16	3~	400	50	1000	246	0.39	63	70	72	3355	126	1975	0.51

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P_{ed} = Power consumption · I = Current draw · LpA_{in} = Sound pressure level intake side · LwA_{in} = Sound power level intake side
 LwA_{out} = Sound power level outlet side · q_v = Air flow · p_{fs} = Pressure increase

