

EC centrifugal fan - RadiPac

backward-curved, single-intake

R3G500-PW07-11 ebmpapst Datasheet
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Nominal data

Type	R3G500-PW07-11	
Motor	M3G112-IA	
Phase		3~
Nominal voltage	VAC	200
Nominal voltage range	VAC	200 .. 240
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min ⁻¹	1640
Power consumption	W	2300
Current draw	A	7.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

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 (EN 17166)

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	65.7	55.3
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		72.4	62
05 Variable speed drive		Yes	

Data obtained at optimum efficiency level.
The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

09 Power consumption P_{ed}	kW	2.28
09 Air flow q_v	m³/h	7310
09 Pressure increase p_{fs}	Pa	698
10 Speed (rpm) n	min ⁻¹	1645
11 Specific ratio*		1.01

* Specific ratio = $1 + p_{fs} / 100\,000\text{ Pa}$ LU-197315

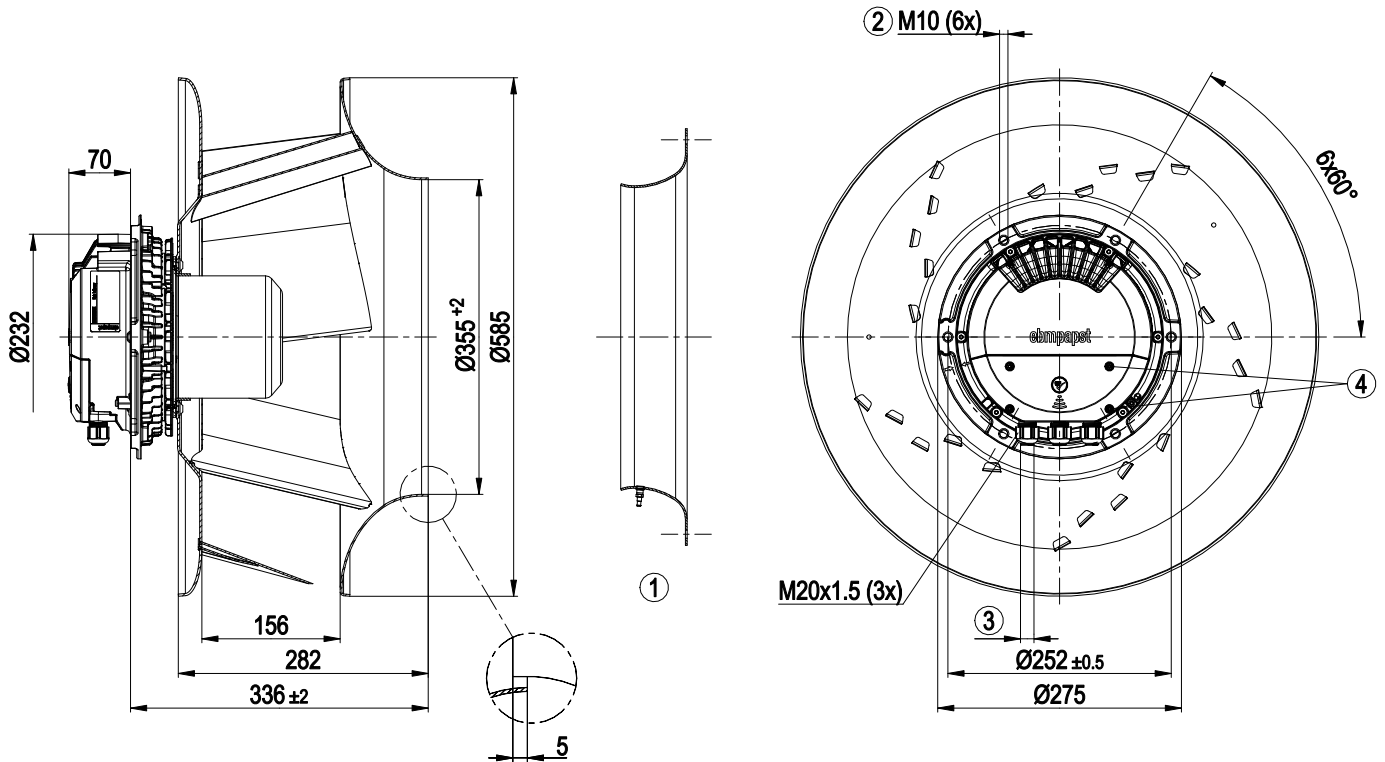


Technical description

Size	500 mm
Motor size	112
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
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	- Operation and alarm display with LED - External 15-50 VDC input (parameterization) - Alarm relay - Integrated PI controller - Configurable inputs/outputs (I/O) - MODBUS V6.0 - 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)
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Terminal box
Motor protection	Electronic motor protection
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 61800-5-1; CE
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

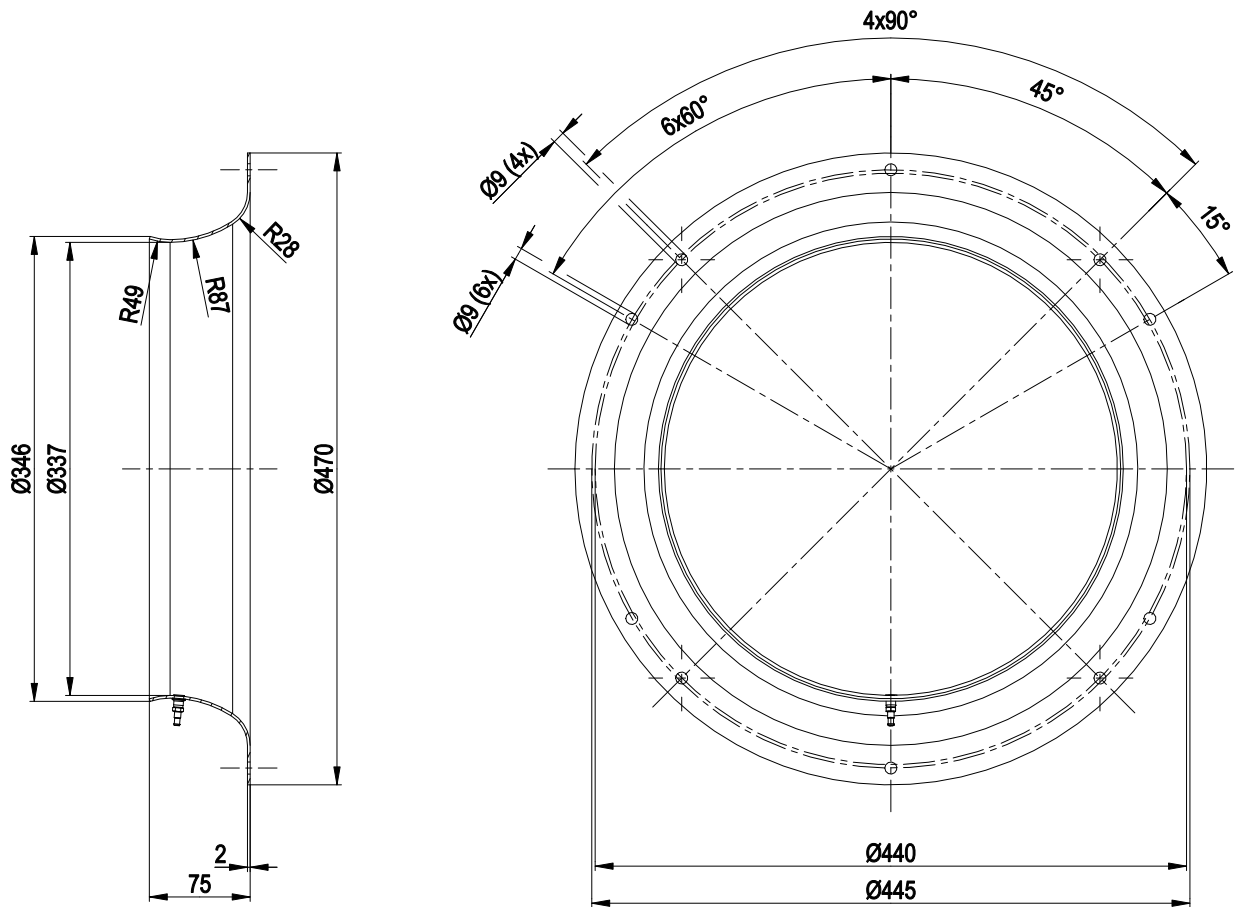


Product drawing



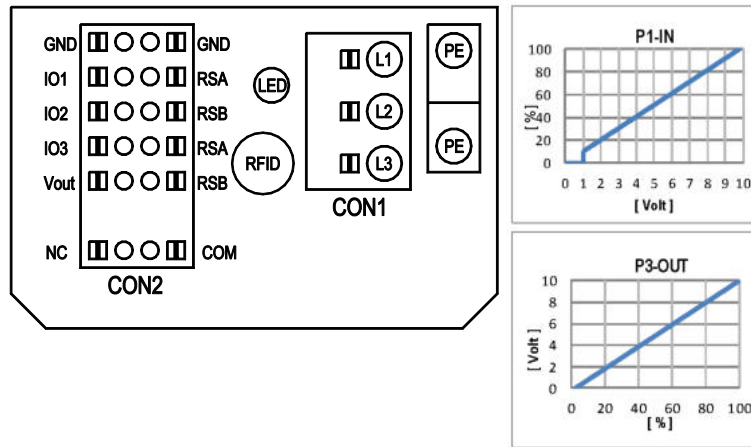
1	Accessory part: Inlet ring 64025-2-4013 with pressure tap (k-factor: 281) not included in scope of delivery
2	Max. clearance for screw 20 mm
3	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm
4	Tightening torque 1.5 ± 0.2 Nm

Accessory part



Inlet ring 64025-2-4013 with pressure tap not included in scope of delivery

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

configurable IO functions: normal / inverse						
CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration	D158 [0]	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3.5-50VDC, SELV	
				D158 [2]	RI=100K, characteristic curve parameterizable, $f_{PWM}=1k..10kHz$, SELV	
				D158 [5]	Umax=50VDC, Imax=20mA, SELV	
				D158 [6]	Umax=50VDC, Imax=20mA, SELV	
				D159 [0]	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3.5-50VDC, SELV	
IO2	Ain2 0-10V/PWM: analog input	RI=100K, characteristic curve parameterizable, $f_{PWM}=1k..10kHz$, SELV				
	Ain2 4-20mA: analog input	RI=125R, characteristic curve parameterizable, SELV				
	Din3 (active high): digital input	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3.5-50VDC, SELV				
IO3	Din3 (active low): digital input	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3.5-50VDC, SELV				
	PWMIn3: digital input	not active: pin open or applied voltage < 1,5VDC, SELV 40Hz - 10kHz, characteristics parameterizable				
	Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV				
RSA	Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV				
	Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV				
	RS485 bus connection,	MODBUS RTU, specification V6.0, SELV				
RSB						
Yout	voltage output	voltage parameterizable 3.3...24VDC +/- 5.5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV				
	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 V6.0

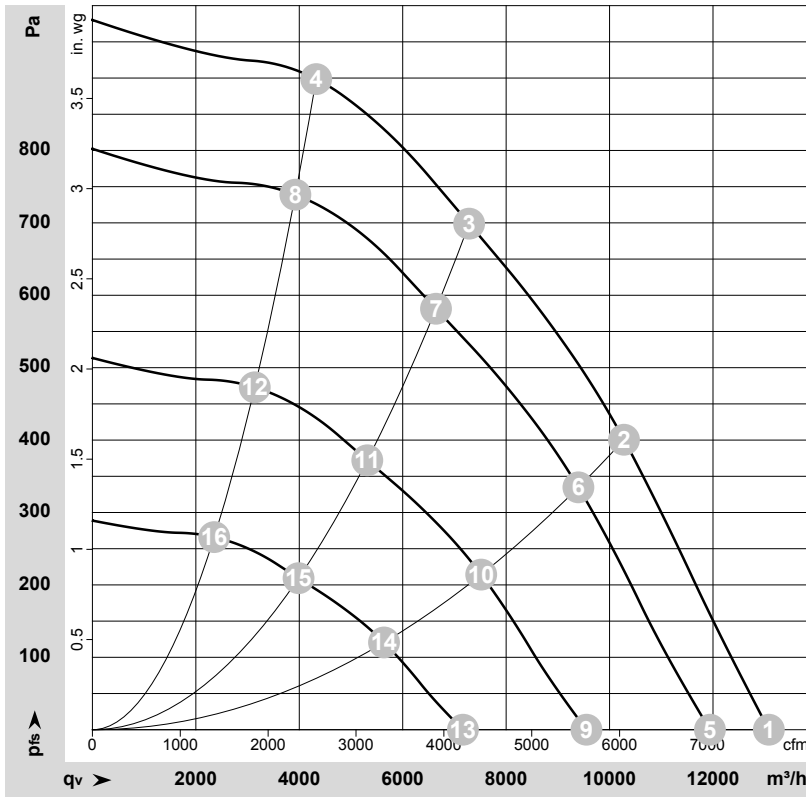
D101 [...] source: set value	D147 [...] source: sensor value	D104 [...] switch: parameter set: #1 / #2	D12E [...] switch: control function: heating (pos.), cooling (neg.)	D148 [...] switch: direction of rotation: cw / ccw	D16C [...] switch: set value source	D16A [...] switch: fan enable / disable	(selected directly via IO mode)	(selected directly via IO mode)	D130 [0] signal: fan modulation level %	D130 [1] signal: actual speed	D130 [2] signal: system modulation level %	D130 [5] signal: remote control output 0-10V	D00C [1] pulse input for auto-addressing	D130 [4] pulse output for auto-addressing
OUTPUT														

◦ configurable option

For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.0



Curves: Air performance 50 Hz



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

Measurement: LU-197315-1

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebm-papst. 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)	m³/h	Pa	cfm	in. wg
1	3~	200	50	1640	1337	4.15	92	98	98	13080	0	7700	0.00
2	3~	200	50	1640	2047	6.24	81	87	89	10280	400	6050	1.61
3	3~	200	50	1640	2300	7.00	71	79	83	7285	700	4290	2.81
4	3~	200	50	1640	2121	6.46	75	83	87	4330	900	2545	3.61
5	3~	200	50	1500	1017	3.16	89	96	95	11940	0	7030	0.00
6	3~	200	50	1500	1564	4.77	78	85	86	9395	335	5530	1.34
7	3~	200	50	1500	1732	5.27	69	76	81	6645	581	3910	2.33
8	3~	200	50	1500	1581	4.82	72	80	84	3925	742	2310	2.98
9	3~	200	50	1200	521	1.62	84	90	90	9555	0	5625	0.00
10	3~	200	50	1200	801	2.44	73	79	81	7520	215	4425	0.86
11	3~	200	50	1200	887	2.70	63	71	75	5315	372	3130	1.49
12	3~	200	50	1200	809	2.47	67	74	79	3140	475	1850	1.91
13	3~	200	50	900	220	0.68	76	83	82	7165	0	4215	0.00
14	3~	200	50	900	338	1.03	65	72	74	5640	121	3320	0.49
15	3~	200	50	900	374	1.14	56	64	68	3985	209	2345	0.84
16	3~	200	50	900	341	1.04	59	67	71	2355	267	1385	1.07

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

