R3G450-PW12-01

EC centrifugal fan - RadiPac

backward-curved, single-intake

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Nominal data

Type	**R3G450-PW12-01**
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}	2040
Power consumption	W	2650
Current draw	A	4.1
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}	%	70	55.9
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		76.1	62
05 Variable speed drive		Yes	

09 Power consumption P_{ed}	kW	2.62
09 Air flow q_v	m^3/h	6630
09 Pressure increase p_{fs}	Pa	948
10 Speed (rpm) n	min^{-1}	2045
11 Specific ratio*		1.01

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

* Specific ratio = 1 + p_{fs} / 100 000 Pa

LU-197145

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Technical description

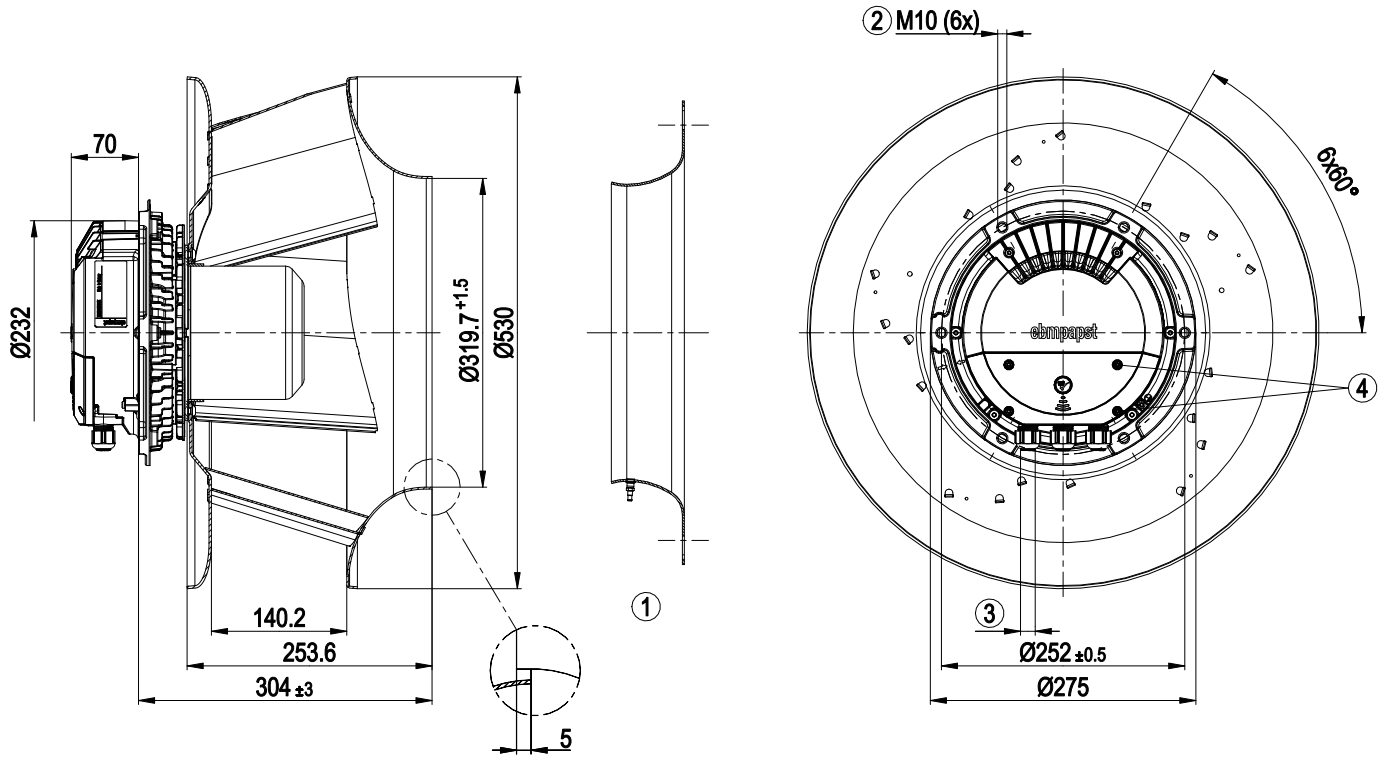
Size	450 mm
Motor size	112
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	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
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

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Product drawing



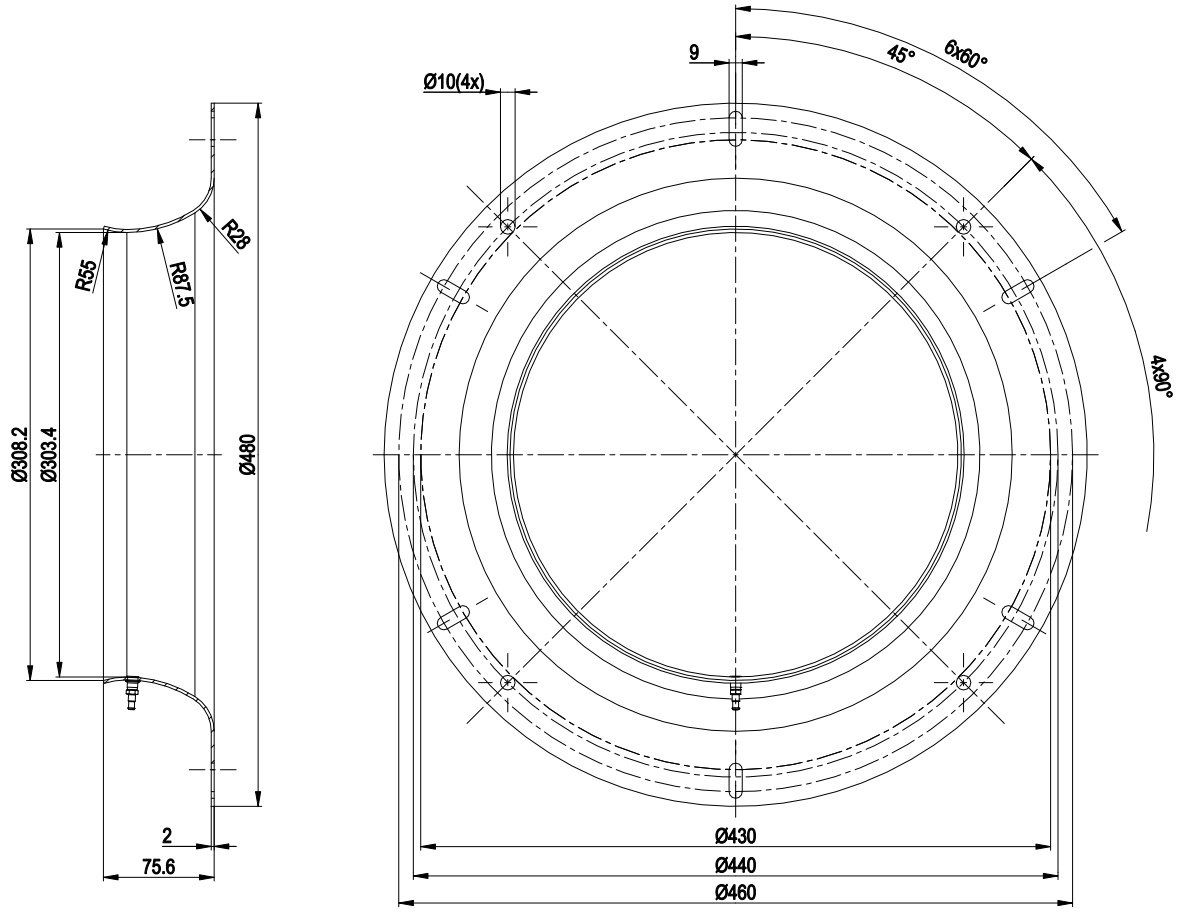
1	Accessory part: Inlet ring 45075-2-4013 with pressure tap (k-factor: 240) not included in scope of delivery
2	Max. clearance for screw 20 mm
3	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm
4	Tightening torque 1.5 ± 0.2 Nm

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Accessory part



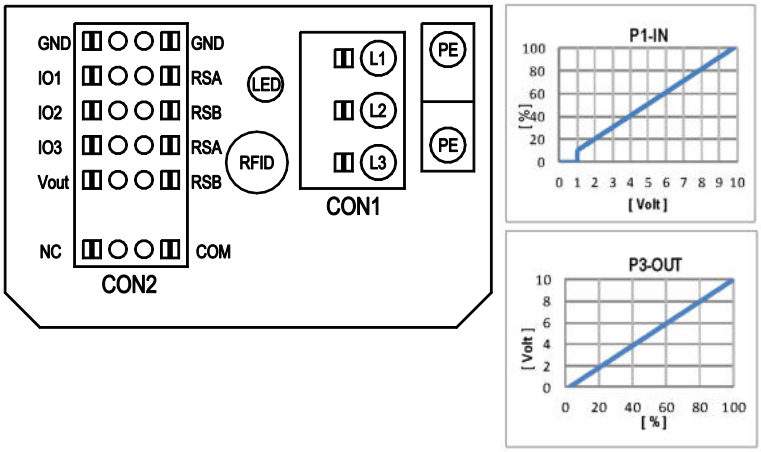
-	inlet ring 45075-2-4013 with pressure tap (k-factor: 240) not included in scope of delivery

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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

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Terminal/plug assignment

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration	configurable IO functions: normal / inverse	INPUT: source: set value	INPUT: source: sensor value	INPUT: switch: parameter set: #1 / #2	INPUT: switch: control function: heating (pos.) / cooling (neg.)	INPUT: switch: direction of rotation: cw / ccw	INPUT: switch: set value source	INPUT: switch: fan enable / disable	OUTPUT: signal: tach out (selected directly via IO mode)	OUTPUT: signal: diagnostics out (selected directly via IO mode)	OUTPUT: signal: fan modulation level %	OUTPUT: signal: actual speed	OUTPUT: signal: system modulation level %	OUTPUT: signal: remote control output 0-10V	pulse input for auto-adressing	pulse output for auto-adressing
			D101 [...]		source: set value	source: sensor value	switch: parameter set: #1 / #2	switch: control function: heating (pos.) / cooling (neg.)	switch: direction of rotation: cw / ccw	switch: set value source	switch: fan enable / disable	signal: tach out (selected directly via IO mode)	signal: diagnostics out (selected directly via IO mode)	signal: fan modulation level %	signal: actual speed	signal: system modulation level %	signal: remote control output 0-10V	pulse input for auto-adressing	pulse output for auto-adressing
			D147 [...]		D104 [...]	D12E [...]	D148 [...]	D16C [...]	D16A [...]	D130 [0]	D130 [1]	D130 [2]	D130 [5]	D00C [1]	D130 [4]					
IO1	○ **Din1 (active high)**: digital input	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3,5-50VDC, SELV	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	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3,5-50VDC, SELV	D159 [0]				○	○	○	○	○									
	○ **Ain2 0-10V/PWM**: analog input	Ri=100K, characteristic curve parameterizable, fPWM=1k..10KHz, SELV	D159 [2]			○														
	○ **Ain2 4-20mA**: analog input	Ri=125R, characteristic curve parameterizable, SELV	D159 [3]			○														
IO3	○ **Din3 (active high)**: digital input	not active: pin open or applied voltage < 1,5VDC active: applied voltage 3,5-50VDC, SELV	D15A [0]				○	○	○	○	○									
	○ **Din3 (active low)**: digital input	active: pin open or applied voltage 3,5-50VDC not active: applied voltage < 1,5VDC, SELV	D15A [1]				○													
	○ **PWMin3**: digital input	40Hz - 10kHz, characteristics parameterizable not active: pin open or applied voltage 3,5-50VDC active: applied voltage < 1,5VDC, SELV	D15A [7]			○														
	○ **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 RSB	RS485 bus connection,	MODBUS RTU, specification V6.0, SELV			○		○	○	○	○	○									
Vout	voltage output	voltage parameterizable 3,3...24VDC +/- 5,5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV	D16E [...]																	
	alternatively: Input auxiliary power supply for parameter-ization via RS485/MODBUS RTU without line voltage	15...50VDC																		

○ configurable option

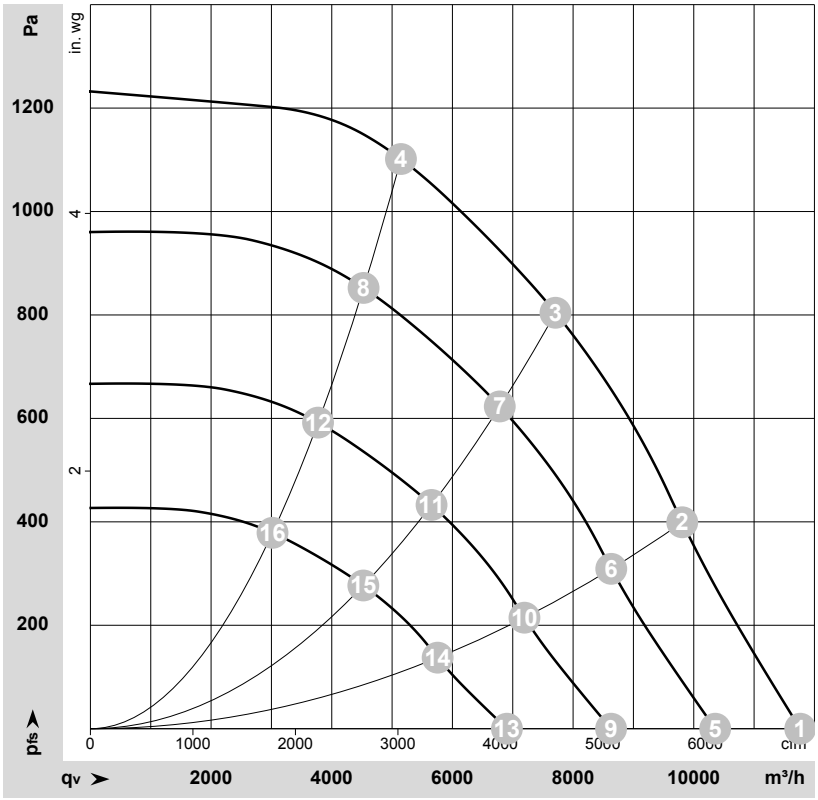
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.0

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Curves: Air performance 50 Hz



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-197145-1

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)	m^3/h	Pa	cfm	in. wg
1	3~	400	50	2040	1627	2.58	87	95	95	11765	0	6925	0.00
2	3~	400	50	2040	2208	3.43	80	87	90	9810	400	5775	1.61
3	3~	400	50	2040	2650	4.10	73	80	85	7710	800	4535	3.21
4	3~	400	50	2040	2586	3.99	78	84	87	5145	1100	3030	4.42
5	3~	400	50	1800	1109	1.76	84	92	92	10355	0	6095	0.00
6	3~	400	50	1800	1505	2.34	77	84	87	8635	308	5080	1.24
7	3~	400	50	1800	1823	2.81	70	77	82	6785	625	3995	2.51
8	3~	400	50	1800	1758	2.71	75	81	84	4525	857	2665	3.44
9	3~	400	50	1500	642	1.02	80	87	87	8630	0	5080	0.00
10	3~	400	50	1500	871	1.35	72	80	82	7195	214	4235	0.86
11	3~	400	50	1500	1055	1.62	65	72	77	5655	434	3330	1.74
12	3~	400	50	1500	1018	1.57	70	76	79	3775	595	2220	2.39
13	3~	400	50	1200	329	0.52	74	81	82	6905	0	4065	0.00
14	3~	400	50	1200	446	0.69	66	74	76	5755	137	3385	0.55
15	3~	400	50	1200	540	0.83	59	67	71	4525	278	2660	1.12
16	3~	400	50	1200	521	0.80	64	70	74	3020	381	1775	1.53

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

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