

EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

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Nominal data

Type	K3G500-PB24-03	
Motor	M3G150-IF	
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	2000
Power consumption	W	4200
Current draw	A	6.4
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	45

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

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	69.6	58
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		73.7	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	4.05
09 Air flow q_v	m ³ /h	8810
09 Pressure increase p_{fs}	Pa	1094
10 Speed (rpm) n	min ⁻¹	2010
11 Specific ratio*		1.01

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

LU-184535



Technical description

Weight	43.3 kg
Size	500 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	Sheet steel, galvanized
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	See product drawing
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), 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	Reverse polarity and locked-rotor protection
Protection class	I (with customer connection of protective earth)

K3G500-PB24-03

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Conformity with standards	EN 61800-5-1; CE
Approval	EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1; UL 1004-7 + 60730-1

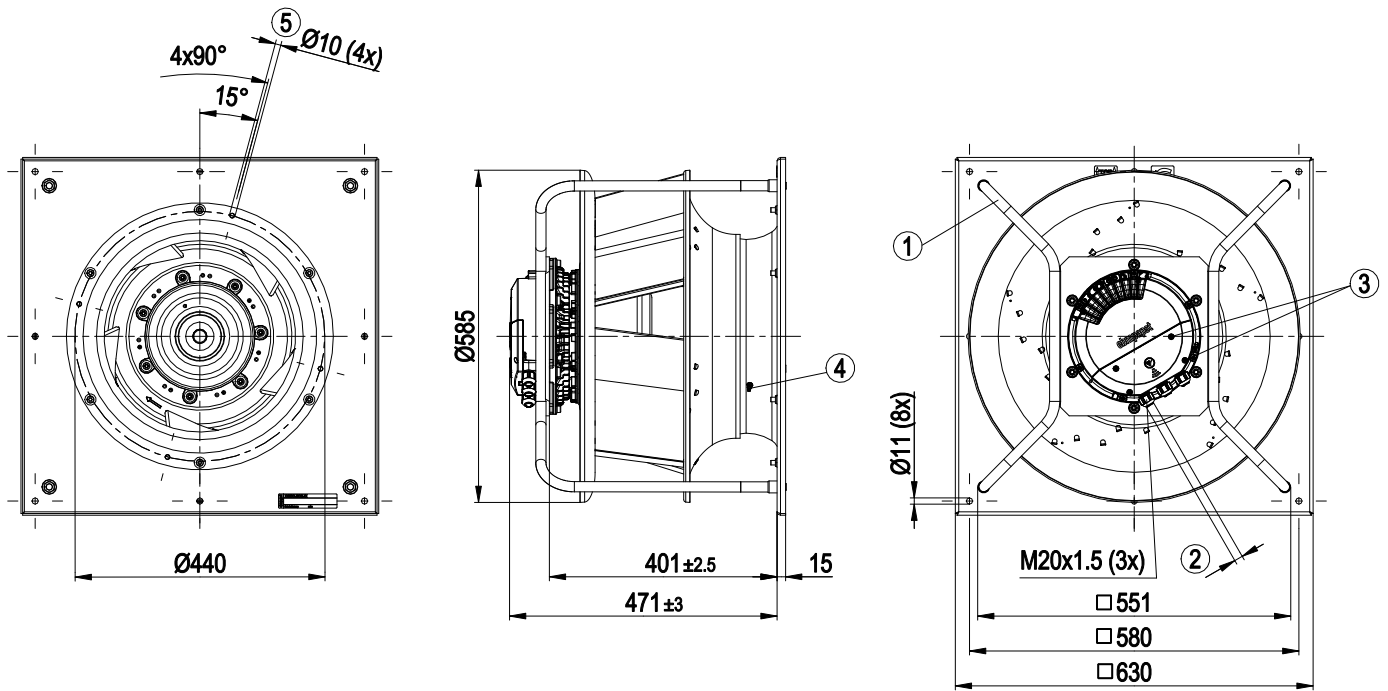


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Product drawing

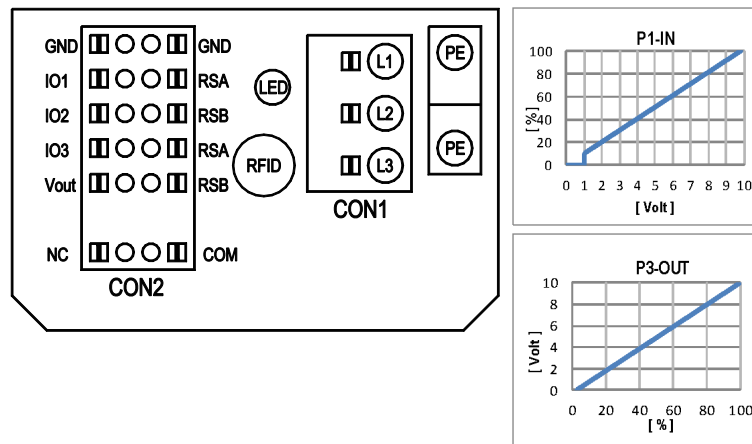


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 2 ± 0.3 Nm
3	Tightening torque 1.5 ± 0.2 Nm
4	Inlet ring with pressure tap (k-factor: 281)
5	Mounting holes for FlowGrid

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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

Terminal/plug assignment

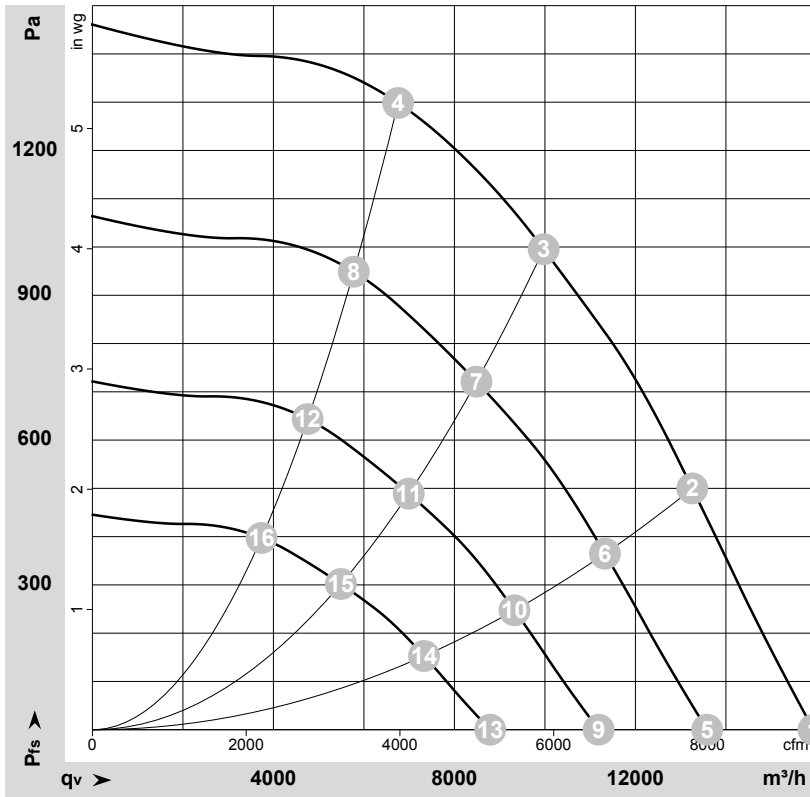
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	INPUT												OUTPUT															
					D158 [0]	D158 [2]	D158 [5]	D158 [6]	D159 [0]	D159 [2]	D159 [3]	D15A [0]	D15A [1]	D15A [7]	D15A [4]	D15A [5]	D15A [6]	source: 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-addressing	pulse output for auto-addressing
101	◦ Din1 (active high): digital input	not active: pin open or applied voltage < 1.5VDC active: applied voltage 3.5-50VDC, SELV																														
	◦ Ain1 0-10V/PWM: analog input	RI=100K, characteristic curve parameterizable, $f_{PWM}=1k..10kHz$, SELV																														
	◦ Tacho out (open collector output)	Umax=50VDC, Imax=20mA, SELV																														
	◦ Diagnostics out (open collector output)	Umax=50VDC, Imax=20mA, SELV																														
102	◦ Din2 (active high): digital input	not active: pin open or applied voltage < 1.5VDC active: applied voltage 3.5-50VDC, SELV																														
	◦ 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																														
103	◦ 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 active: applied voltage < 1.5VDC, SELV																														
	◦ Aout3 0-10V: analog output	40Hz - 10kHz, characteristics parameterizable																														
	◦ Tacho out (pulses), analog output	not active: pin open or applied voltage 3.5-50VDC active: applied voltage < 1.5VDC, SELV																														
RSA RSB	◦ Diagnostics out (pulses)	function parameterizable, max. 5mA, max output frequency 300Hz, SELV																														
	◦ Diagnostics out (pulses)	0-10V max. 5mA, max output frequency 300Hz, SELV																														
Yout	RS485 bus connection,	MODBUS RTU, specification V6.0, SELV																														
	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



Curves: Air performance 50 Hz



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

Measurement: LU-184535-1

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

	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	400	50	2000	2490	3.86	96	103	101	15935	0	9380	0.00
2	400	50	2000	3445	5.27	87	94	95	13255	500	7805	2.01
3	400	50	2000	4200	6.40	79	86	89	9970	1000	5870	4.01
4	400	50	2000	4029	6.14	82	88	90	6755	1300	3975	5.22
5	400	50	1700	1543	2.39	92	99	97	13585	0	7995	0.00
6	400	50	1700	2150	3.29	83	90	91	11325	365	6665	1.47
7	400	50	1700	2580	3.93	75	82	85	8485	721	4995	2.89
8	400	50	1700	2522	3.84	79	84	87	5775	957	3400	3.84
9	400	50	1400	862	1.33	87	94	93	11190	0	6585	0.00
10	400	50	1400	1201	1.84	78	86	86	9330	248	5490	1.00
11	400	50	1400	1441	2.19	70	77	80	6990	489	4115	1.96
12	400	50	1400	1409	2.15	74	80	82	4755	649	2800	2.61
13	400	50	1100	418	0.65	81	88	86	8790	0	5175	0.00
14	400	50	1100	582	0.89	72	79	80	7330	153	4315	0.61
15	400	50	1100	699	1.06	64	71	74	5490	302	3230	1.21
16	400	50	1100	683	1.04	68	73	76	3735	401	2200	1.61

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

