

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

K3G400-PA41-13 ebmpapst Datasheet
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Nominal data

Type	K3G400-PA41-13	
Motor	M3G150-FF	
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	2800
Power consumption	W	3800
Current draw	A	11.5
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}	%	64.6	57.5
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		69.1	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	3.76
09 Air flow q_v	m³/h	5855
09 Pressure increase p_{fs}	Pa	1436
10 Speed (rpm) n	min ⁻¹	2800
11 Specific ratio*		1.01

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

LU-204123

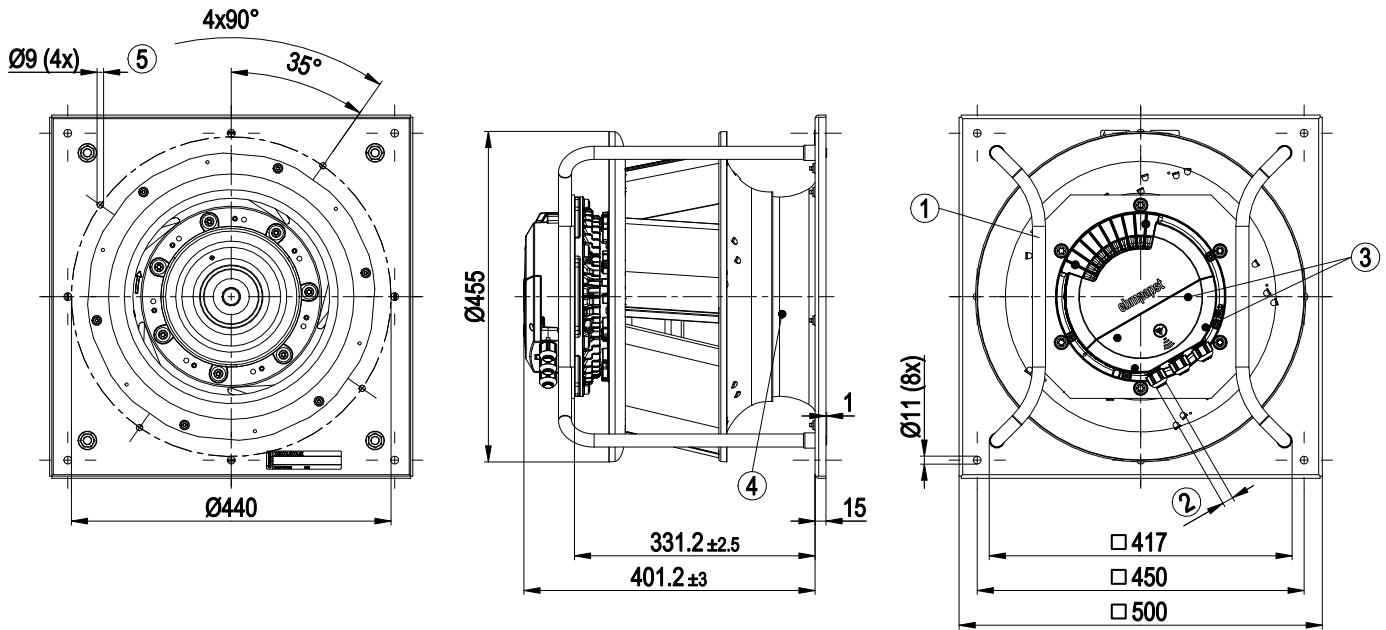


Technical description

Weight	30 kg
Size	400 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 legend on 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
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Terminal box
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

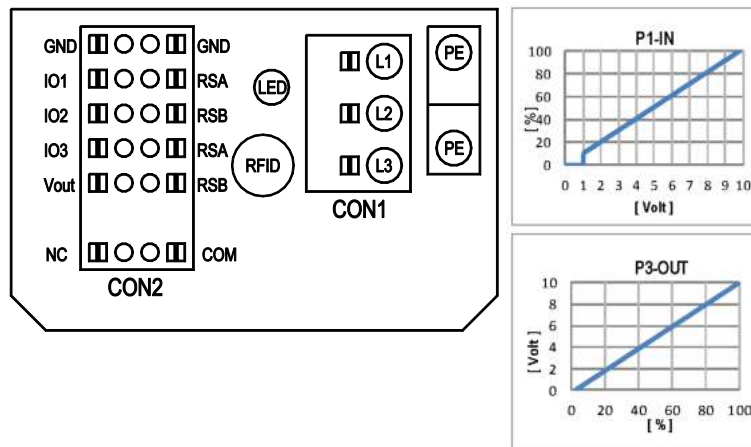


Product drawing



1	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 4 ± 0.6 Nm
3	Tightening torque 1.5 ± 0.2 Nm
4	Inlet ring with pressure tap (k-factor: 188)
5	Attachment holes for FlowGrid (35505-2-2957 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

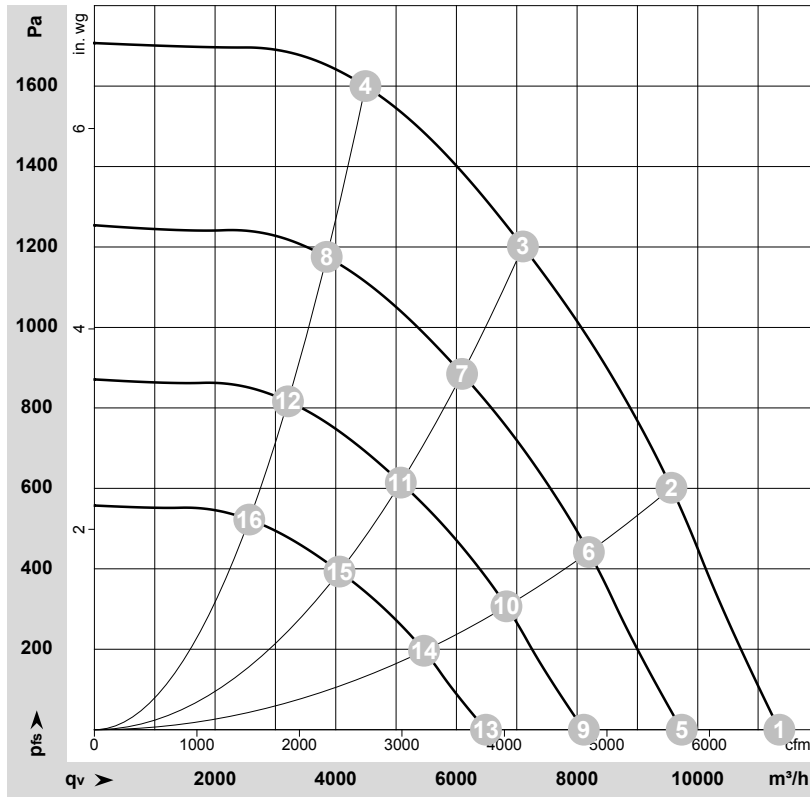
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	INPUT												OUTPUT															
					D158 [0]	D158 [2]	D158 [5]	D158 [6]	D159 [0]	D159 [2]	D159 [3]	D15A [0]	D15A [1]	D15A [7]	D15A [4]	D15A [5]	D15A [6]	source: 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																														
	◦ Tach 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 3.5-50VDC, SELV																														
	◦ Aout3 0-10V: analog output	not active: pin open or applied voltage < 1.5VDC, SELV active: applied voltage < 1.5VDC, SELV																														
	◦ Tacho out (pulses), analog output	40Hz - 10kHz, characteristics parameterizable																														
RSA RSB	◦ Diagnostics out (pulses)	not active: pin open or applied voltage 3.5-50VDC active: applied voltage < 1.5VDC, SELV																														
	◦ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV																														
	◦ 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																														
RSA RSB	RS485 bus connection,	MODBUS RTU, specification V6.0, SELV																														
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



Curves: Air performance 50 Hz



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

Measurement: LU-204123-1

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~	200	50	2800	2348	7.12	90	98	100	11355	0	6680	0.00
2	3~	200	50	2800	3261	9.85	84	91	96	9565	600	5630	2.41
3	3~	200	50	2800	3800	11.50	78	85	93	7100	1200	4180	4.82
4	3~	200	50	2800	3570	10.79	82	89	95	4490	1600	2645	6.42
5	3~	200	50	2400	1480	4.49	87	94	96	9735	0	5730	0.00
6	3~	200	50	2400	2051	6.20	80	87	92	8195	449	4825	1.80
7	3~	200	50	2400	2418	7.30	74	81	89	6095	887	3585	3.56
8	3~	200	50	2400	2248	6.79	78	85	91	3850	1182	2265	4.75
9	3~	200	50	2000	857	2.60	82	89	91	8110	0	4775	0.00
10	3~	200	50	2000	1187	3.59	75	83	87	6830	312	4020	1.25
11	3~	200	50	2000	1399	4.23	69	77	84	5080	616	2990	2.47
12	3~	200	50	2000	1301	3.93	73	80	86	3210	821	1890	3.30
13	3~	200	50	1600	439	1.33	76	84	86	6490	0	3820	0.00
14	3~	200	50	1600	608	1.84	70	77	82	5465	200	3215	0.80
15	3~	200	50	1600	716	2.16	64	71	79	4065	394	2390	1.58
16	3~	200	50	1600	666	2.01	68	75	80	2565	525	1510	2.11

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

