

EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

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Nominal data

Type	K3G355-PV70-05	
Motor	M3G112-GA	
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	3230
Power consumption	W	2900
Current draw	A	4.4
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 (EN 17166)

		Actual	Req. 2015			
01 Overall efficiency η_{es}	%	65	56.3	09 Power consumption P_{ed}	kW	2.84
02 Measurement category		A		09 Air flow q_v	m ³ /h	5145
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	1232
04 Efficiency grade N		70.7	62	10 Speed (rpm) n	min ⁻¹	3225
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

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

LU-205782

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	22.7 kg
Size	355 mm
Motor size	112
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 V6.3 - Motor current limitation - 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 61000-6-4 (industrial 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

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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

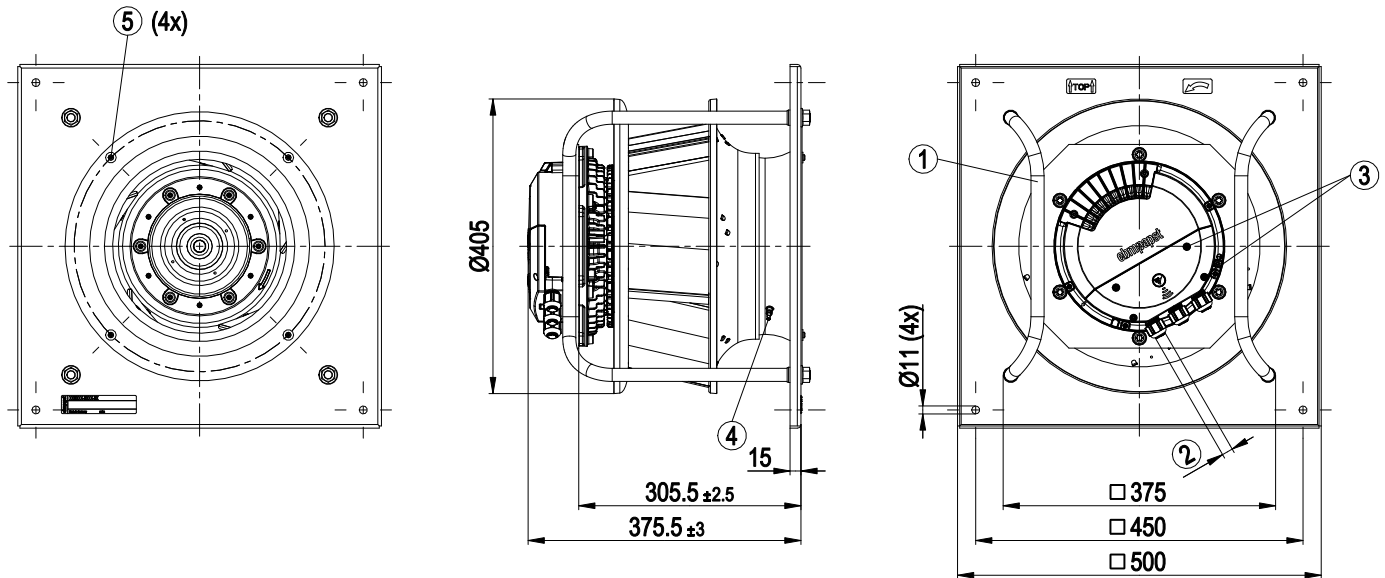


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Product drawing



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 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
4	Inlet ring with pressure tap (k-factor: 148)
5	Attachment for inlet ring and FlowGrid (00400-2-2957 not included in scope of delivery)

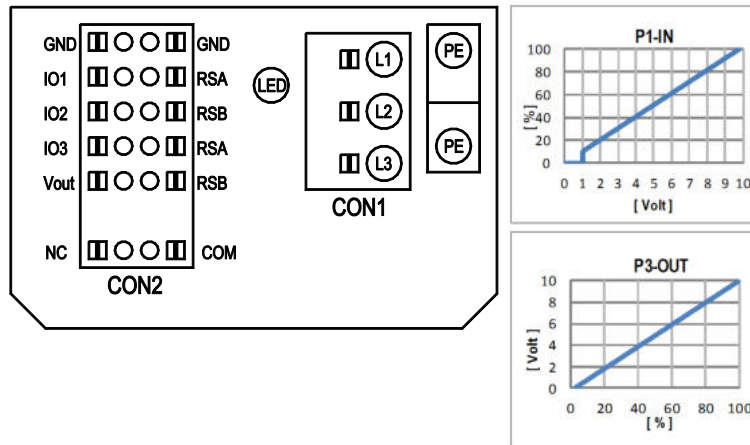


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Connection diagram



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



Terminal/plug assignment

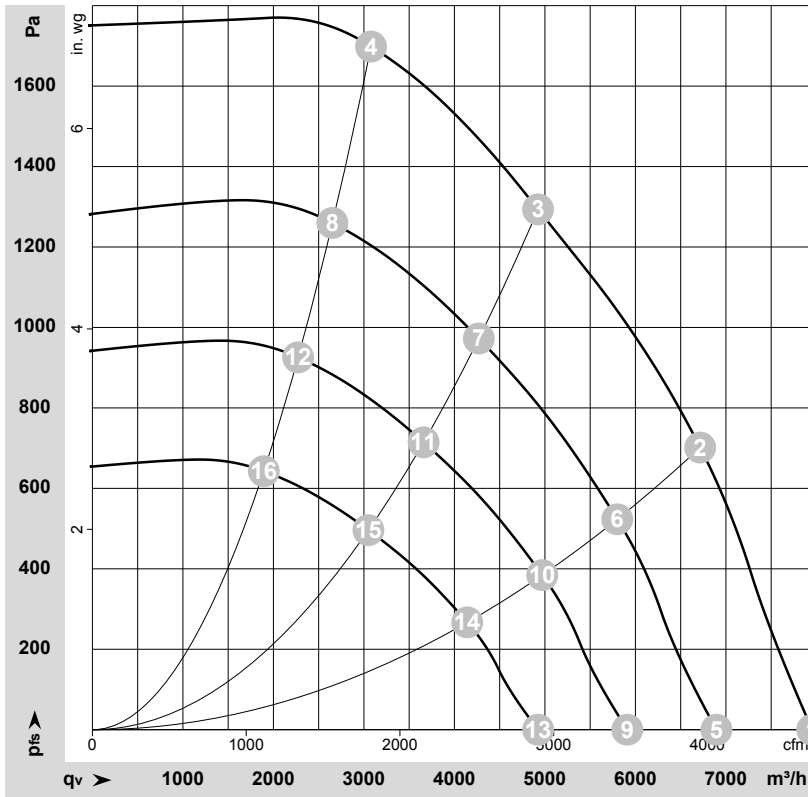
o configurable option																					
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3																					
CON2	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification	configurable IO mode	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		
				D158 [0]	D158 [2]	D158 [5]	D158 [6]	D159 [0]	D159 [2]	D159 [3]	D15A [0]	D15A [1]	D15A [7]	D15A [8]	D15A [4]	D15A [5]	D15A [6]				
				active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC	RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV U _{max} = 50VDC, I _{max} = 20mA, SELV U _{max} = 50VDC, I _{max} = 20mA, SELV	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC	RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV RI = 125R, characteristic curve parameterizable, SELV	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC	active: applied voltage < 1,5VDC, SELV not active: pin open or applied voltage 3.5-50VDC	PWM = 40Hz - 10KHz, characteristics parameterizable active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV	40Hz - 10KHz, characteristics parameterizable active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1,5VDC, SELV	function parameterizable, max. 5mA, max output frequency 300Hz, SELV 0-10V/max. 5mA, max output frequency 300Hz, SELV 0-10V/max. 5mA, max output frequency 300Hz, SELV									
				Din1 (active high): digital input																	
	IO1	Ain1 0-10V/PWM: analog input																			
		Tach out (open collector output)																			
		Diagnostics out (open collector output)																			
	IO2	Din2 (active high): digital input																			
		Ain2 0-10V/PWM: analog input																			
		Ain2 4-20mA: analog input																			
IO3	Din3 (active high): digital input																				
	Din3 (active low): digital input																				
	PWMIn3: digital input, idle level high																				
	PWMIn3: digital input, idle level low																				
RSA RSB	RS485 bus connection,																				
	voltage output																				
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage																				

◦ 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-205782-1

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	3230	1761	2.77	94	100	101	7955	0	4680	0.00
2	3~	400	50	3230	2498	3.85	83	90	94	6715	700	3950	2.81
3	3~	400	50	3230	2900	4.40	76	85	91	4925	1300	2900	5.22
4	3~	400	50	3230	2688	4.13	79	88	93	3080	1700	1810	6.82
5	3~	400	50	2800	1148	1.80	90	97	97	6895	0	4060	0.00
6	3~	400	50	2800	1608	2.48	79	86	90	5800	523	3415	2.10
7	3~	400	50	2800	1863	2.86	73	81	87	4270	973	2515	3.91
8	3~	400	50	2800	1717	2.64	76	84	89	2650	1260	1560	5.06
9	3~	400	50	2400	723	1.14	86	93	93	5910	0	3480	0.00
10	3~	400	50	2400	1013	1.56	75	82	86	4970	384	2925	1.54
11	3~	400	50	2400	1173	1.80	69	77	83	3660	715	2155	2.87
12	3~	400	50	2400	1082	1.66	72	80	85	2275	926	1340	3.72
13	3~	400	50	2000	418	0.66	82	88	89	4925	0	2900	0.00
14	3~	400	50	2000	586	0.90	70	78	82	4140	267	2440	1.07
15	3~	400	50	2000	679	1.04	64	72	79	3050	496	1795	1.99
16	3~	400	50	2000	626	0.96	67	76	81	1895	643	1115	2.58

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

