R3G500-PA28-03

EC centrifugal fan - RadiPac

backward-curved, single-intake

ebm-papst Mulfingen GmbH & Co. KG
Bachmühle 2 · D-74673 Mulfingen
Phone +49 7938 81-0
Fax +49 7938 81-110
info1@de.ebmpapst.com
www.ebmpapst.com

Limited partnership · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Type	**R3G500-PA28-03**
Motor	**M3G150-FF**

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}	1890
Power consumption	W	3800
Current draw	A	5.9
Min. ambient temperature	°C	-25
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

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	66.7	57.6
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		71.1	62
05 Variable speed drive		Yes	

09 Power consumption P_{ed}	kW	3.83
09 Air flow q_v	m^3/h	9005
09 Pressure increase p_{fs}	Pa	981
10 Speed (rpm) n	min^{-1}	1895
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-183469

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Technical description

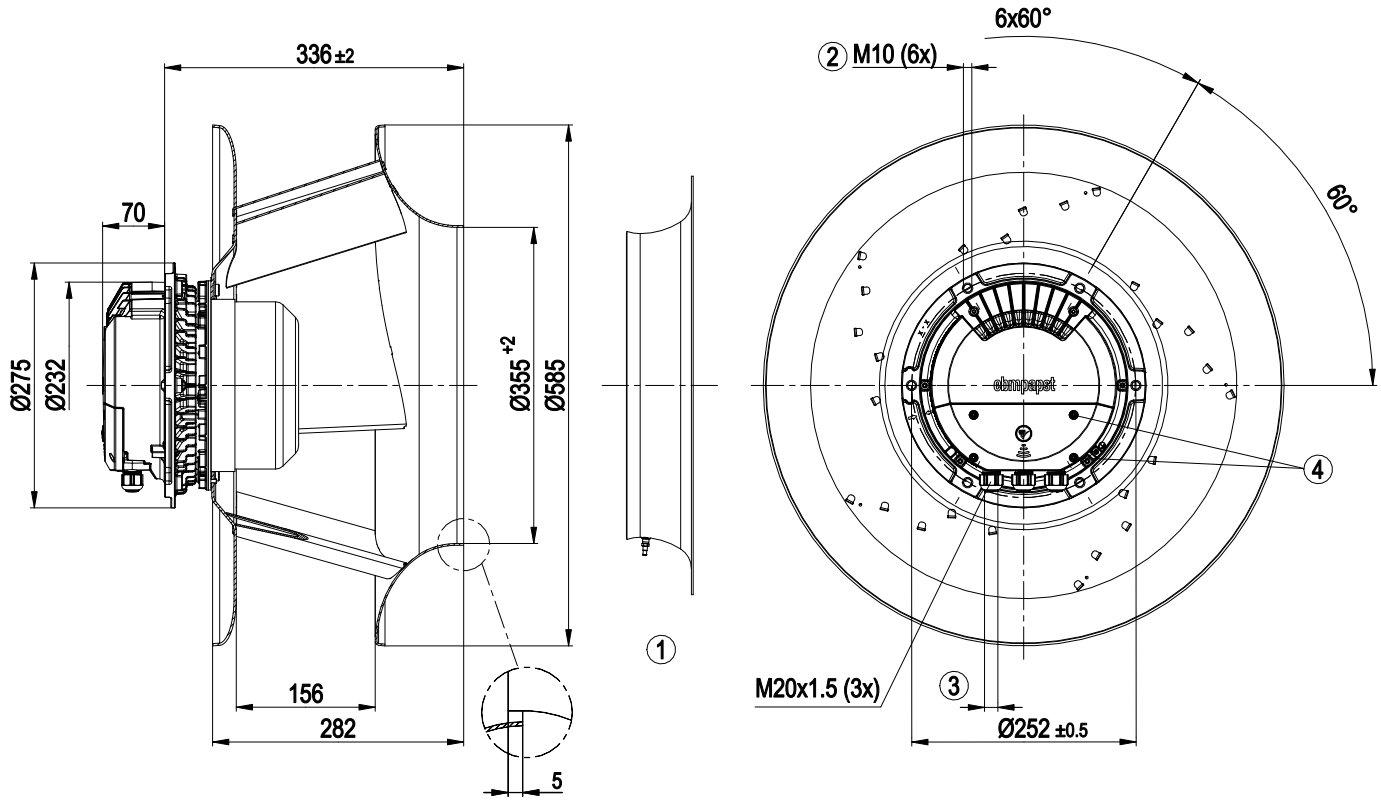
Weight	22.2 kg
Size	500 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up between -40°C and -25°C is permissible. For continuous operation at temperatures below -25°C (e.g. refrigeration applications) we recommend our 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	Reverse polarity and locked-rotor 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

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Product drawing



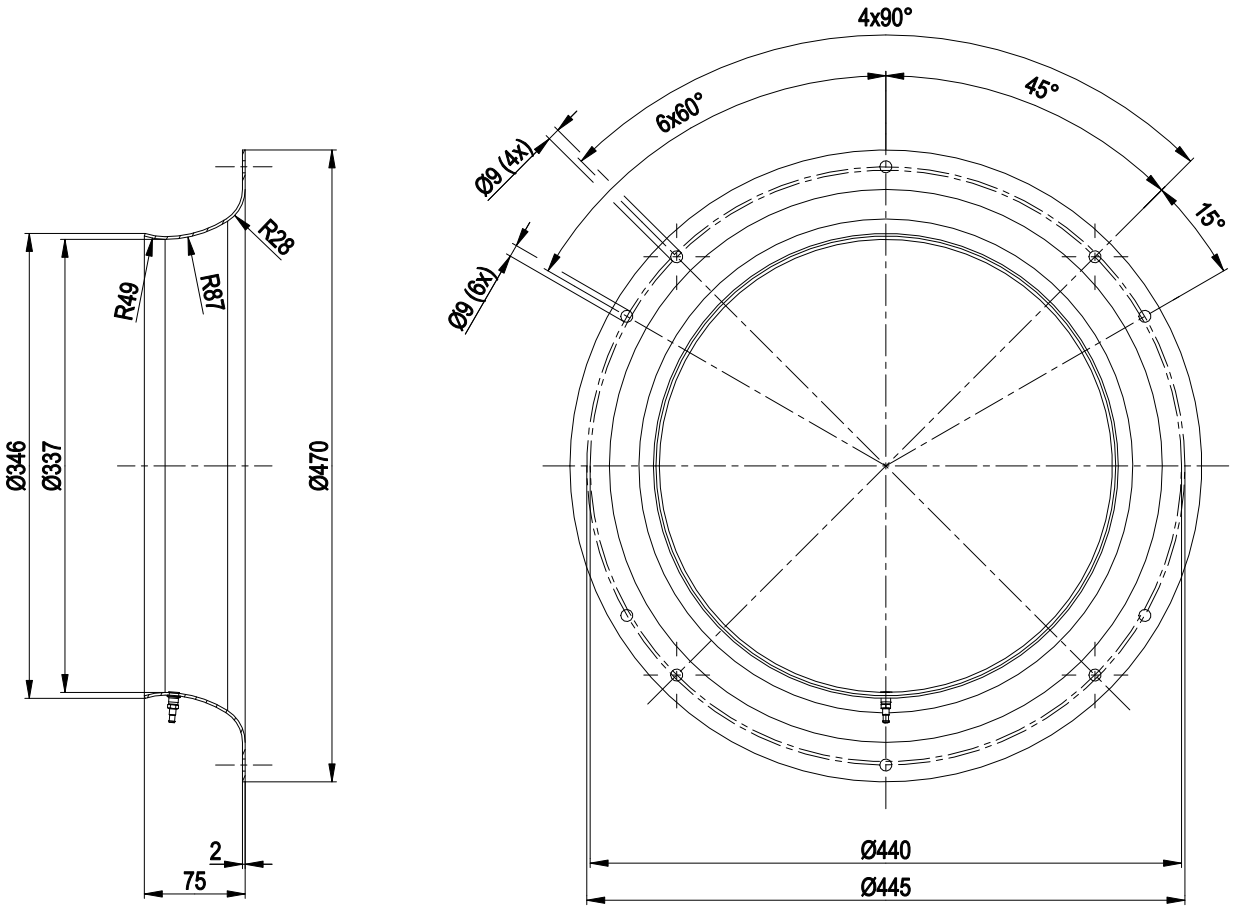
1	Accessory part: inlet ring 64025-2-4013 with pressure tap (k-factor: 281) not included in scope of delivery
2	Max. clearance for screw 20 mm
3	Cable diameter min. 4 mm, max. 10 mm, tightening torque 2 ± 0.3 Nm
4	Tightening torque 1.5 ± 0.2 Nm

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Accessory part



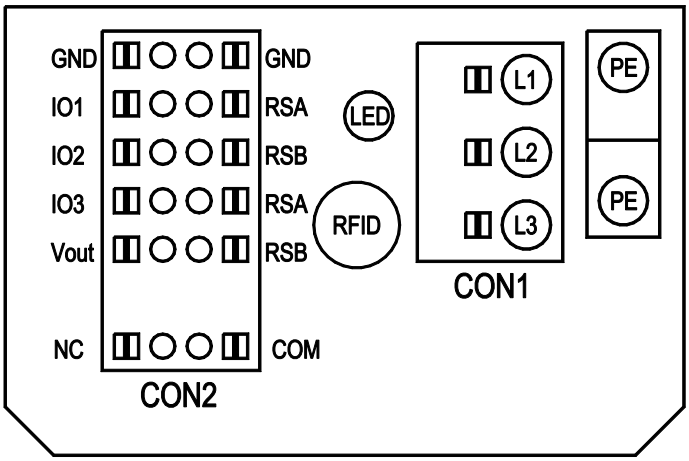
Inlet ring 64025-2-4013 with pressure tap not included in scope of delivery

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Connection diagram



No.	Conn.	Designation	Function/assignment
CON1	-	L1, L2, L3	Supply connection, power supply, protection class 1
PE	-	PE	Ground connection, PE connection
CON2	-	RSA	Bus connection RS485, RSA, MODBUS-RTU; SELV
CON2	-	RSB	Bus connection RS485, RSB, MODBUS-RTU; SELV
CON2	-	GND	GND reference ground for control interface, SELV
CON2	-	IO1	IN2: Digital input - positive logic (factory setting: Enable) function parameterizable, SELV - normal: Pin open or applied voltage < 1.5 VDC - inverse: applied voltage 3.5-50 VDC
CON2	-	IO2	IN1: Analog input 0-10 V 0-10 V, Ri=100 K, parameterizable as set value or measured value (factory setting: set value) characteristic curve parameterizable, SELV
CON2	-	IO3	OUT1: Analog output 0-10 V 0-10 V, max 5 mA, function parameterizable (factory setting: modulation level) max output frequency 300 Hz, SELV
CON2	-	V out	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, nominal voltage 250 VAC; max 2 A (AC1): min 10 mA; Reinforced insulation in accordance with EN60335-1, EN61800-5-1, UL60730-1
CON2	-	NC	Status relay, floating status contact, break for failure

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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 [...]	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

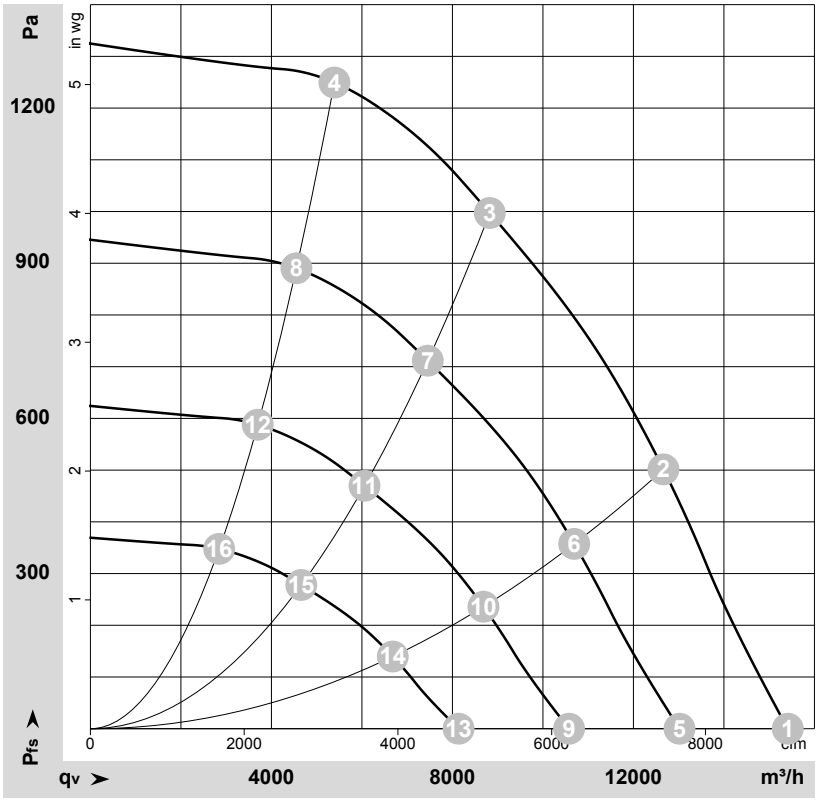
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.0

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Curves: Air performance 50 Hz



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-183469-1

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)	m^3/h	Pa	cfm	in. wg
1	400	50	1890	2220	3.45	92	100	100	15410	0	9070	0.00
2	400	50	1890	3217	4.93	86	93	94	12665	500	7455	2.01
3	400	50	1890	3800	5.90	76	83	88	8825	1000	5195	4.01
4	400	50	1890	3399	5.20	79	87	91	5390	1250	3175	5.02
5	400	50	1600	1339	2.08	88	96	96	13020	0	7665	0.00
6	400	50	1600	1935	2.96	81	89	90	10690	358	6290	1.44
7	400	50	1600	2303	3.51	72	79	83	7455	712	4390	2.86
8	400	50	1600	2043	3.12	75	83	87	4550	896	2680	3.60
9	400	50	1300	718	1.12	83	90	90	10580	0	6225	0.00
10	400	50	1300	1038	1.59	76	83	84	8685	236	5110	0.95
11	400	50	1300	1235	1.88	67	74	78	6055	470	3565	1.89
12	400	50	1300	1096	1.68	70	77	82	3700	591	2175	2.37
13	400	50	1000	327	0.51	76	84	84	8135	0	4790	0.00
14	400	50	1000	473	0.72	69	77	78	6680	140	3935	0.56
15	400	50	1000	562	0.86	60	67	72	4660	278	2745	1.12
16	400	50	1000	499	0.76	63	71	75	2845	350	1675	1.41

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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