

8317083559  
VBS0500RTTLZ

# EC centrifugal fan - RadiCal

backward-curved, single-intake

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8317083559 ebmpapst Datasheet  
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## Nominal data

Type	8317083559	
Motor	M3G150-FF	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1700
Power consumption	W	2080
Current draw	A	3.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change



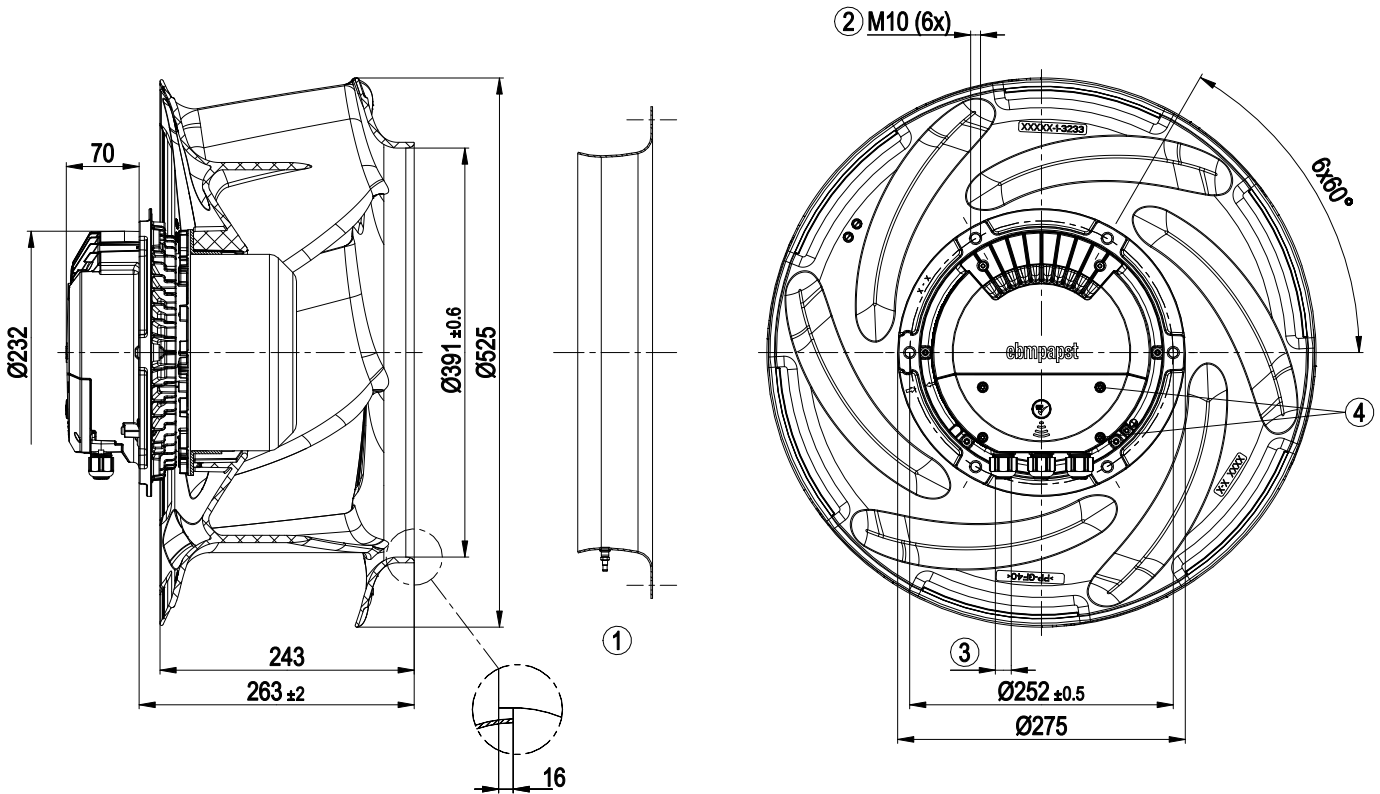
## Technical description

<b>Size</b>	500 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Number of blades</b>	6
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H2+S
<b>Ambient temperature note</b>	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.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	Shaft horizontal or rotor on bottom; rotor on top on request
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	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
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Reverse polarity and locked-rotor protection
<b>Protection class</b>	I (with customer connection of protective earth)
<b>Conformity with standards</b>	EN 61800-5-1; CE
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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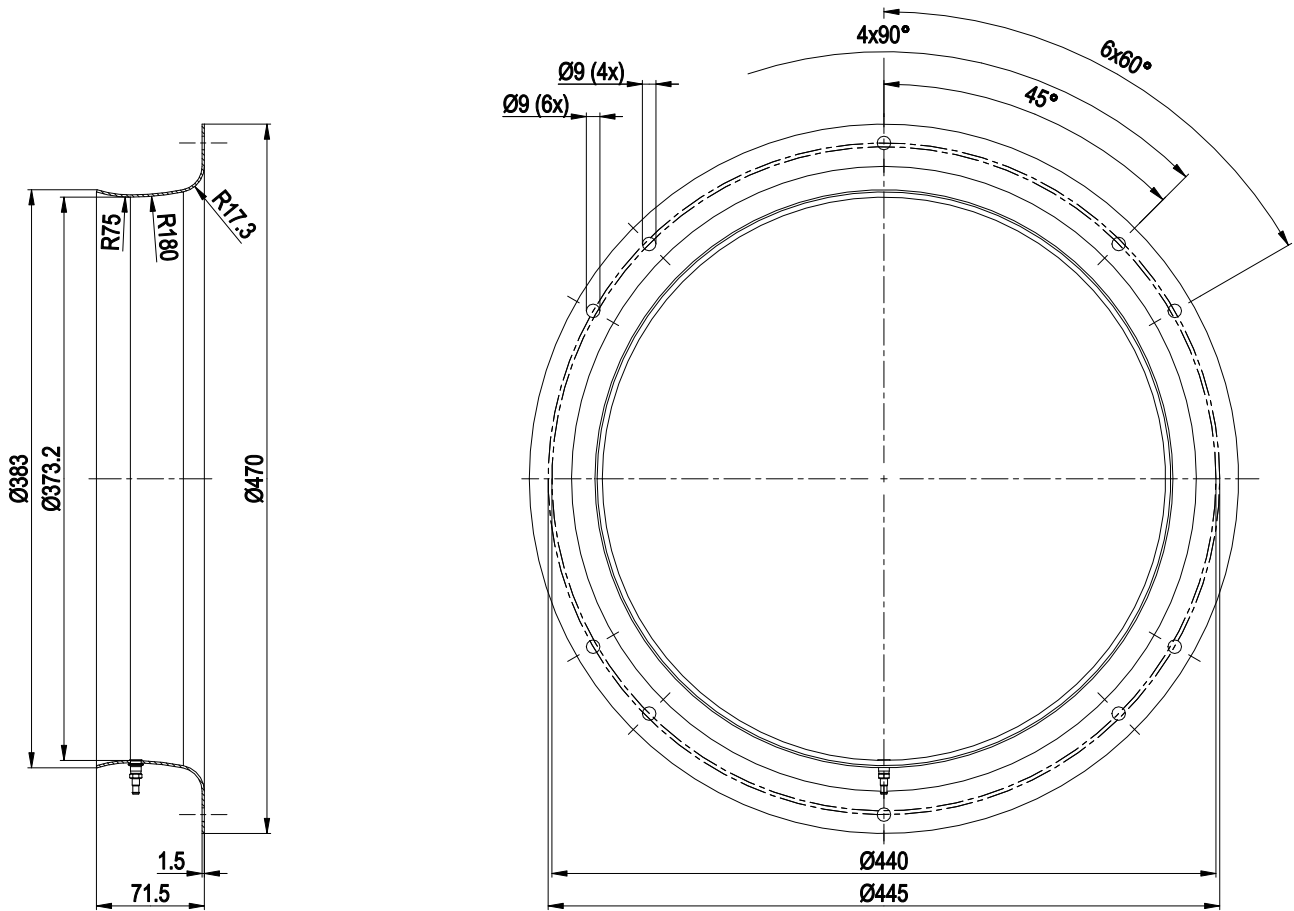
## Product drawing



1	Accessory part: Inlet ring 50355-2-4013 with pressure tap (k-factor: 375) not included in scope of delivery
2	Max. clearance for screw 20 mm
3	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $1.5 \pm 0.2$ Nm



## Accessory part

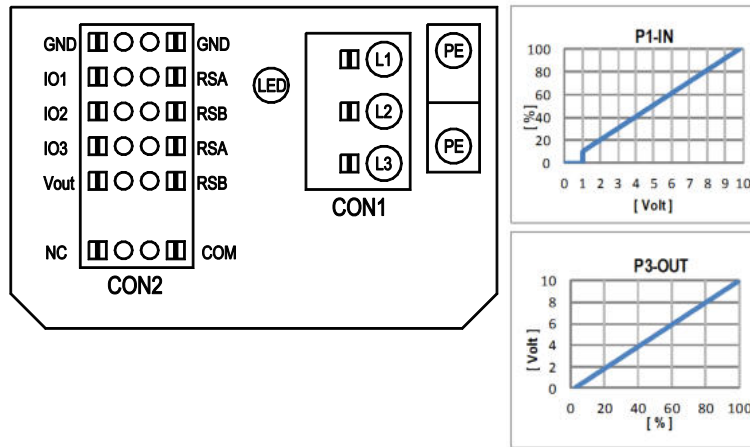


Inlet ring 50355-2-4013 with pressure tap (k-factor: 375)

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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

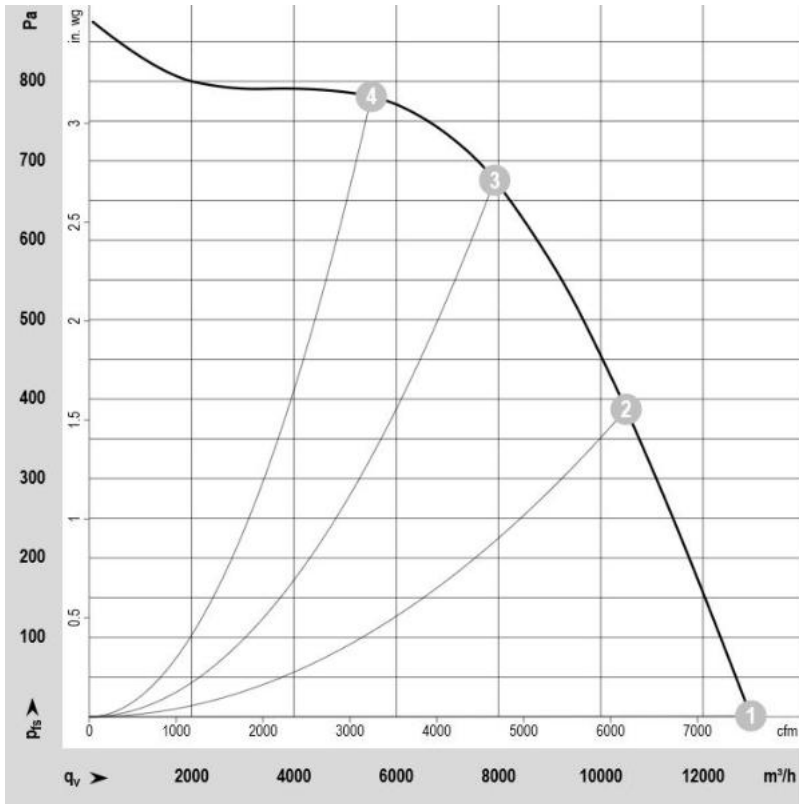
CON2	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification	configurable IO mode	
				active	inverse
IO1	○ Din1 (active high), digital input	D158 [0]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		
	○ Ain1 0-10V/PWM: analog input	D158 [2]	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		
	○ Tach out (open collector output)	D158 [5]	Umax = 50VDC, Imax = 20mA, SELV		
	○ Diagnostics out (open collector output)	D158 [6]	Umax = 50VDC, Imax = 20mA, SELV		
IO2	○ Din2 (active high), digital input	D159 [0]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		
	○ Ain2 0-10V/PWM: analog input	D159 [2]	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		
	○ Ain2.4-20mA: analog input	D159 [3]	RI = 125R, characteristic curve parameterizable, SELV		
	○ Din3 (active high), digital input	D15A [0]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		
IO3	○ Din3 (active low), digital input	D15A [1]	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		
	○ PWMIn3: digital input, idle level high	D15A [7]	PWM = 40Hz - 10kHz, characteristics parameterizable active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		
	○ PWMIn3: digital input, idle level low	D15A [8]	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV		
	○ Aout3 0-10V: analog output	D15A [4]	function parameterizable, max. 5mA max output frequency 300Hz SELV		
RSA	○ Tacho out (pulses), analog output	D15A [5]	0-10V/max. 5mA max output frequency 300Hz SELV		
	○ Diagnostics out (pulses)	D15A [6]	0-10V/max. 5mA max output frequency 300Hz, SELV		
	○ RS485 bus connection,		MODBUS RTU, specification V6.3, SELV		
RSB					
Vout	voltage output	D16E [..]	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=600mW, 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 V6.3



## Curves: Air performance 50 Hz



$\rho = 1.2 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-15252

## Measured values

	Wired	U	f	n	P <sub>ed</sub>	I	q <sub>v</sub>	p <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	m <sup>3</sup> /h	Pa
1	3~	400	50	1700	1200	1.97	13000	0
2	3~	400	50	1700	1863	2.93	10600	370
3	3~	400	50	1700	2080	3.30	8600	600
4	3~	400	50	1700	1938	3.0	5600	760

Wired Wiring U Voltage f Frequency n Speed (rpm) P<sub>ed</sub> Power consumption I Current draw q<sub>v</sub> Air flow p<sub>fs</sub> Pressure increase