

8317082035
VBH0500STTLS

EC centrifugal fan - RadiCal

backward-curved, single-intake
with support bracket

8317082035 ebmpapst Datasheet FansCo

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Nominal data

Part number	8317082035	
Type	VBH0500STTLS	
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	1900
Power consumption	W	2850
Current draw	A	4.4
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}	%	71.1	56.3	09 Power consumption P_{ed}	kW	2.84
02 Measurement category		A		09 Air flow q_v	m ³ /h	8715
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	794
04 Efficiency grade N		76.8	62	10 Speed (rpm) n	min ⁻¹	1905
05 Variable speed drive		Yes		11 Specific ratio [*]		1.01

Data obtained at optimum efficiency level.

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

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).

LU-206666



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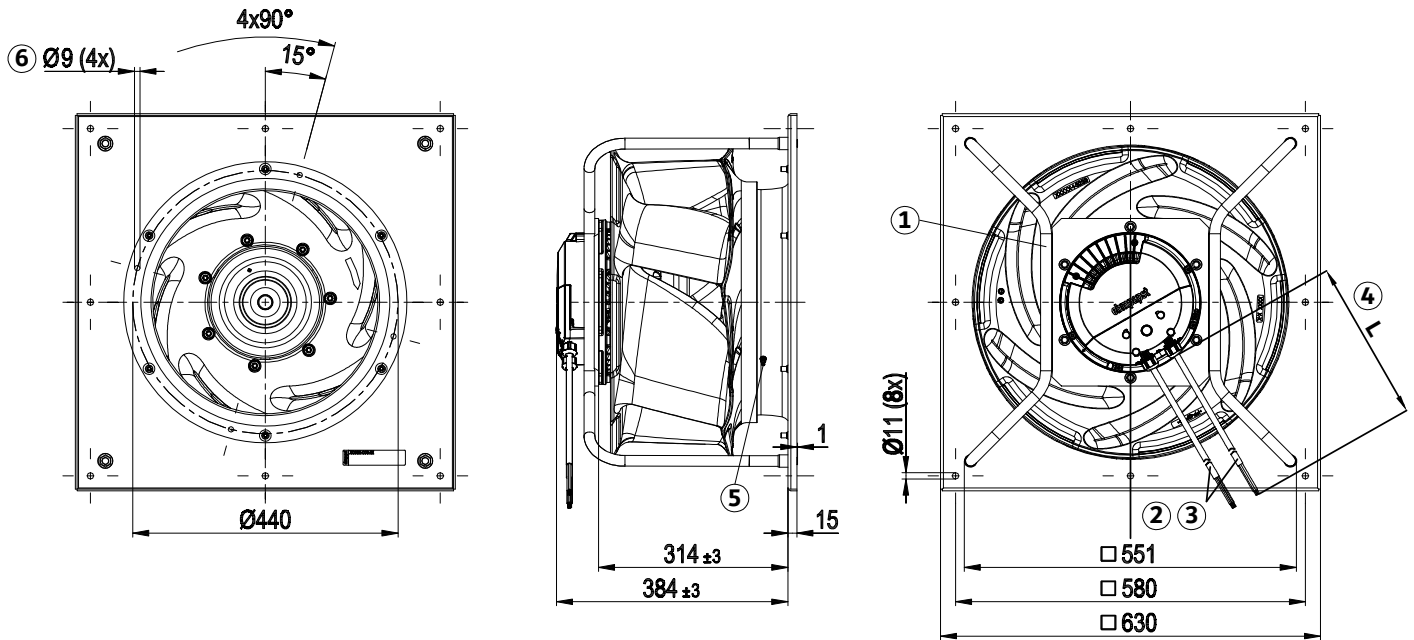
backward-curved, single-intake

Technical description

Weight	36.5 kg
Size	500 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	6
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	<ul style="list-style-type: none">- 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 10VDC+/-3%, I_{max}=10mA- 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	Cable w/o connector
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 61800-5-1; CE

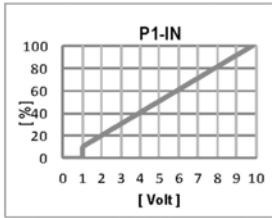


Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable length and customer connector (both power and signal) can be adjusted according to customer request
3	Cable wire diameter: power: AWG 15(4x); signal: AWG 22(8x)
4	L=1200mm \pm 50mm
5	Inlet ring with pressure tap(k-factor:350)
6	Attachment holes for FlowGrid(35505-2-2957 not included in scope of delivery)

Connection diagram



Wire color	Designation	Function/assignment
black	L1	Power supply, phase, see nameplate for voltage range
black	L2	Power supply, phase, see nameplate for voltage range
black	L3	Power supply, phase, see nameplate for voltage range
green/yellow	PE	Protective earth
grey	RSA	RS485 interface for MODBUS, RSA; SELV
brown	RSB	RS485 interface for MODBUS, RSB; SELV
blue	GND	Reference ground for control interface, SELV
white	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"
yellow	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
red	Vout	Voltage output 10VDC+/-3%, I _{max} =10mA supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
orange (1)	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10mA, reinforced insulation on supply side and on control interface side
orange (2)	NC	Status relay, floating status contact, break for failure
	P1-IN	Input characteristic curve

Terminal/plug assignment

Control software, Fan-Set-App, or MODBUS parameter specification V6.3
for details and additional functions, see EC

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
IO1	Dim1 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D168 [0]
	Ain1 0-10V/PWM: analog input	RI=100K, characteristic curve parameterizable, f _{PWM} =1k...10KHz, SELV	D168 [2]
	Tach out (open collector output)	U _{max} =50VDC, I _{max} =20mA, SELV	D158 [5]
	Diagnosics out (open collector output)	U _{max} =50VDC, I _{max} =20mA, SELV	D158 [6]
IO2	Dim2 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D169 [0]
	Ain2 0-10V/PWM: analog input	RI=100K, characteristic curve parameterizable, f _{PWM} =1k...10KHz, SELV	D169 [2]
RSA RSB	RS485 bus connection,	MODBUS RTU, specification V6.3, SELV	
Vout	voltage output alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	Fixed voltage output 10VDC ±r.3%, I _{max} =10mA, short-circuit-proof, supply for external devices, SELV 15...50VDC	D16E [...]

o configurable option
(o) function, activation via IO mode

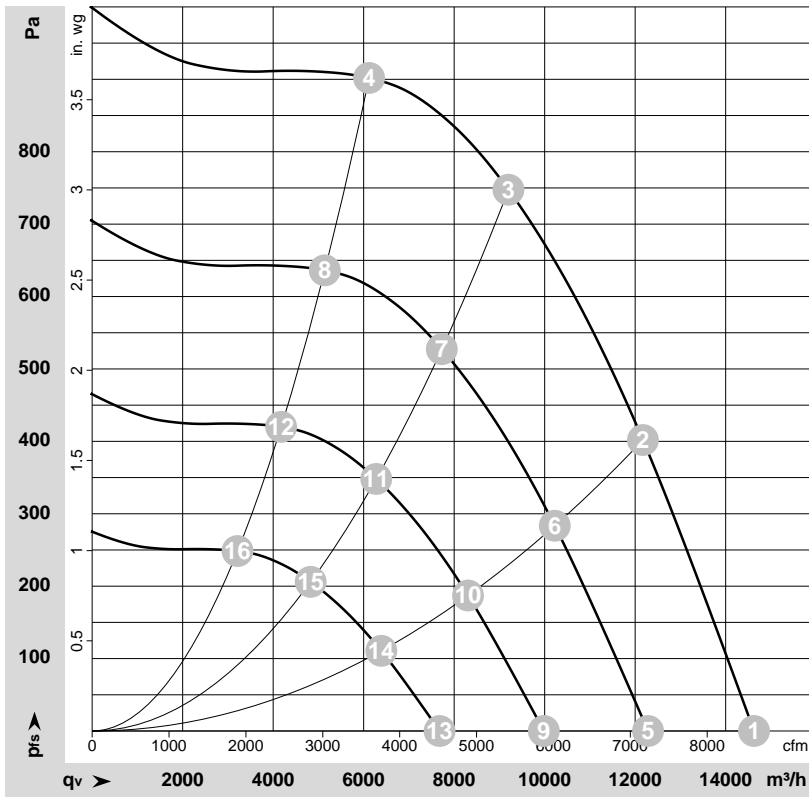
configurable IO functions: normal / Inverse

terminal	function	input/output	switch	source
D101 [...]	source: set value			o
D147 [...]	source: sensor value			o
D104 [...]	switch: parameter set: #1 / #2			o
D12E [...]	switch: control function: heating (pos.) / cooling (neg.)			o
D148 [...]	switch: direction of rotation: cw / ccw			o
D16C [...]	switch: set value source			o
D16A [...]	switch: fan enable / disable			o
(selected directly via IO)	signal: tach out		(o)	
(selected directly via IO)	signal: diagnostics out		(o)	
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		o	
D130 [4]	pulse output for auto-addressing			

customer connection side



Curves: Air performance 50 Hz



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

Measurement: LU-206666-1

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebmpapst. 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.

Fan performance

	Wired	U	f	n	P _{ed}	I	q _v	P _{fs}	q _v	P _{fs}
		V	Hz	min ⁻¹	W	A	m ³ /h	Pa	cfm	in. wg
1	3~	400	50	1900	1648	2.61	14625	0	8610	0.00
2	3~	400	50	1900	2479	3.83	12170	400	7165	1.61
3	3~	400	50	1900	2850	4.40	9200	750	5415	3.01
4	3~	400	50	1900	2627	4.05	6120	900	3600	3.61
5	3~	400	50	1600	976	1.55	12285	0	7230	0.00
6	3~	400	50	1600	1469	2.27	10225	285	6015	1.14
7	3~	400	50	1600	1685	2.59	7725	528	4550	2.12
8	3~	400	50	1600	1557	2.40	5140	638	3025	2.56
9	3~	400	50	1300	524	0.83	9980	0	5875	0.00
10	3~	400	50	1300	788	1.22	8305	188	4890	0.75
11	3~	400	50	1300	904	1.39	6280	349	3695	1.40
12	3~	400	50	1300	835	1.29	4175	421	2460	1.69
13	3~	400	50	1000	238	0.38	7680	0	4520	0.00
14	3~	400	50	1000	359	0.55	6390	111	3760	0.45
15	3~	400	50	1000	411	0.63	4830	206	2840	0.83
16	3~	400	50	1000	380	0.59	3215	249	1890	1.00

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P_{ed} = Power consumption · I = Current draw · q_v = Air flow · P_{fs} = Pressure increase