

EC axial panel fan - AxiBlade

sickle-shaped blades (S series)
with square full nozzle

ebm-papst Mulfingen GmbH & Co. KGaA & Co. KG
Bachmühle 2 · D-74673 Mulfingen
Phone +49 7938 81-0
info1@de.fansco.com
www.fansco.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	W3G910-KS35-03	
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	850
Power consumption	W	1770
Current draw	A	2.8
Max. back pressure	Pa	185
Max. back pressure	in. wg	0.74
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

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), a fan design with special low-temperature bearings must be used.

Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency η_{es}	%	52.3	34.9	09 Power consumption P_{ed}	kW	1.55
02 Measurement category		A		09 Air flow q_v	m³/h	21000
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	130
04 Efficiency grade N		57.4	40	10 Speed (rpm) n	min ⁻¹	850
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

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

LU-184390

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).

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Technical description

Weight	45 kg
Size	910 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum, painted gray
Impeller material	PP plastic
Fan housing material	Sheet steel, galvanized and coated with black plastic (RAL 9005)
Guard grille material	Steel, coated with black plastic (RAL 9005)
Number of blades	5
Blade pitch	0°
Airflow direction	V
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H2
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	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 V6.3 - 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
Power Factor Correction (PFC)	Passive (through low-capacitance DC link)
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	Terminal box
Motor protection	Reverse polarity and locked-rotor protection

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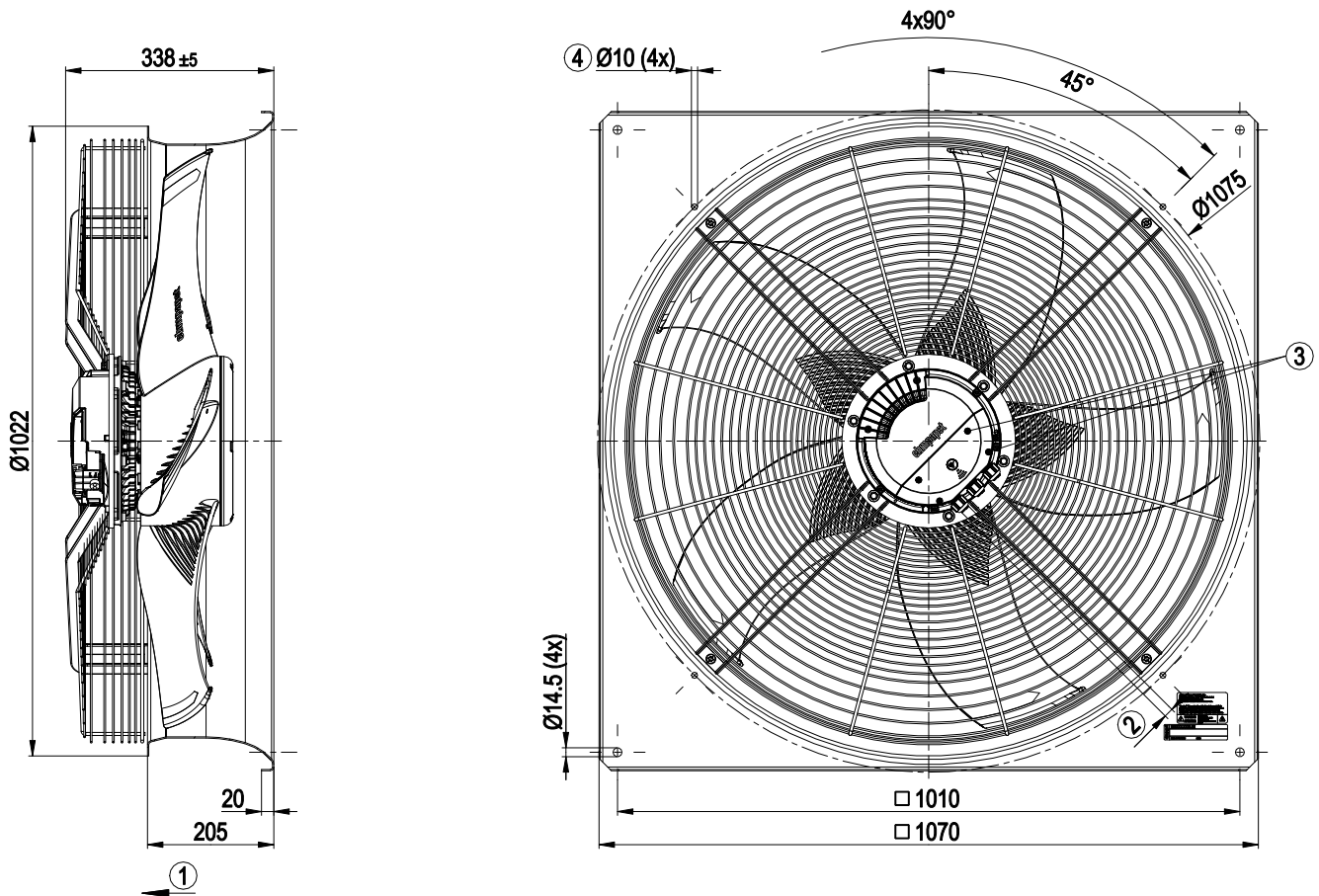
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 61800-5-1; CE
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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Product drawing



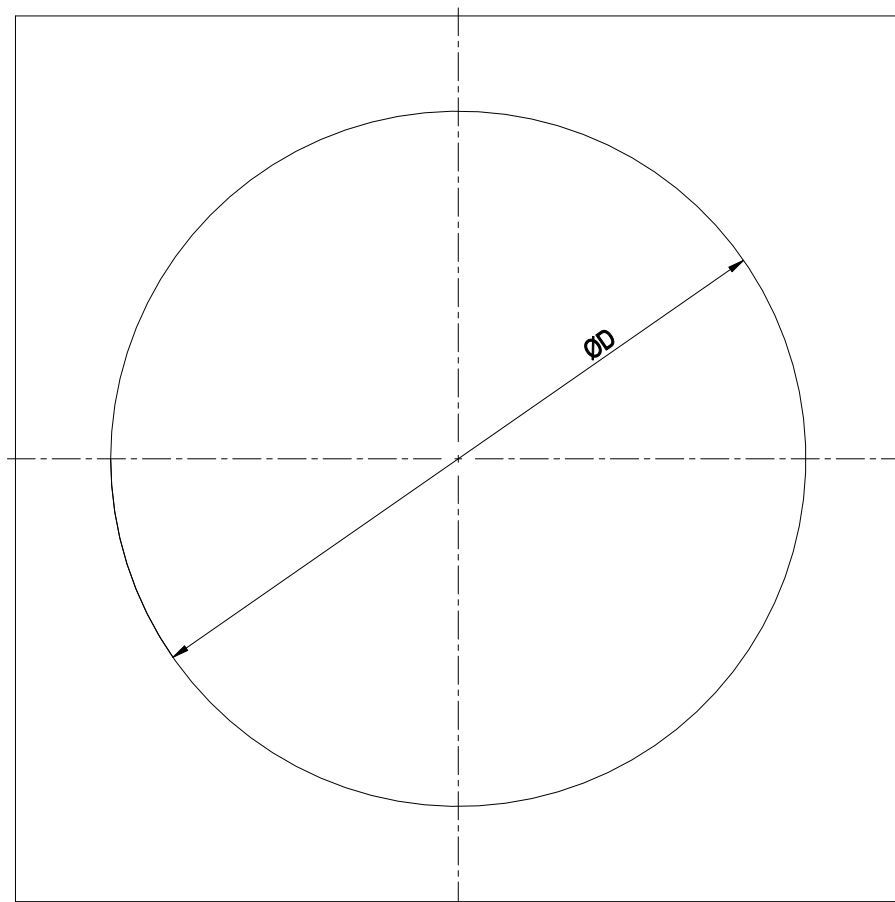
1	Airflow direction "V"
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque 1.5 ± 0.2 Nm
4	Attachment holes for FlowGrid (91000-2-2957 not included in scope of delivery)

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Mounting dimensions



Diameter of the necessary recess for mounting the fan housing in the end device

BG630: D = Ø785 mm

BG710: D = Ø830 mm

BG800: D = Ø950 mm

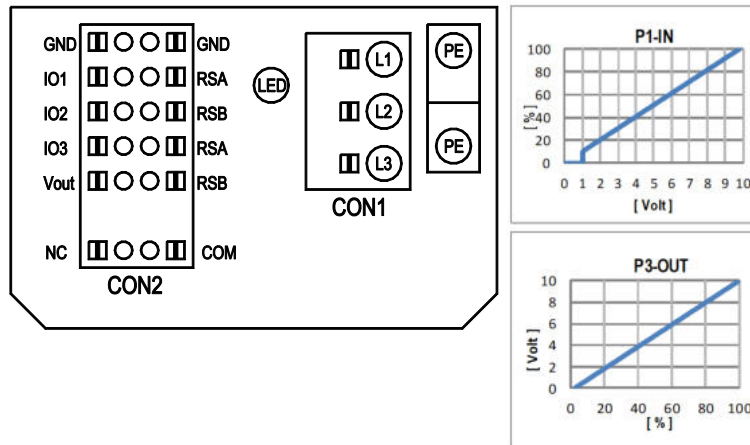
BG910: D = Ø1050 mm

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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

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Terminal/plug assignment

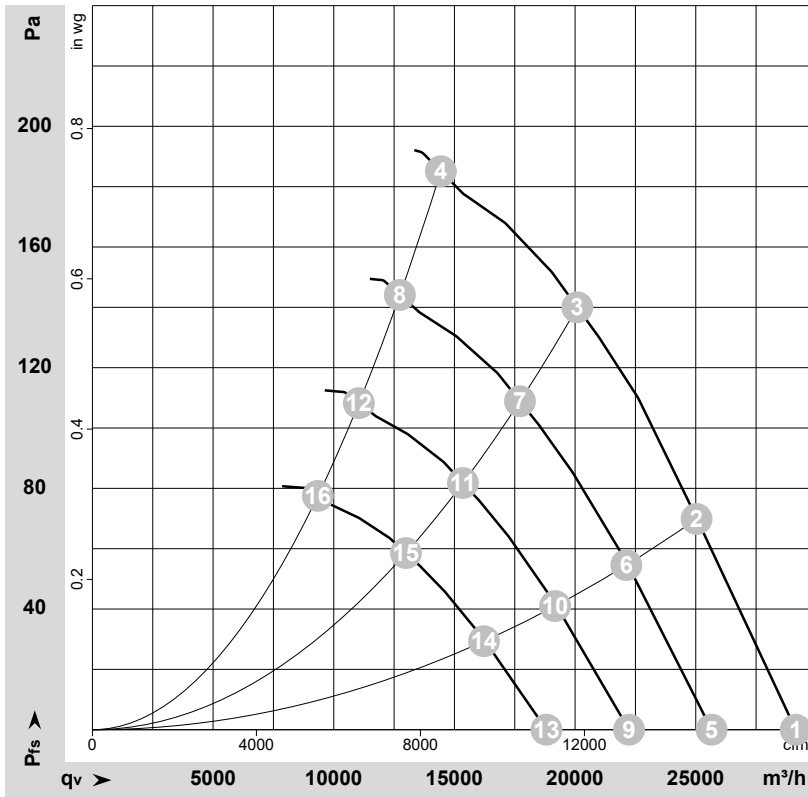
configurable option		For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3		configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification	configurable IO mode		CON2										
							Din1 (active high): digital input	Din1 (active high): digital input											
IO1	○ Ain1 0-10V/PWM: analog input	active: applied voltage 3.5-50VDC, SELV	D158 [0]	○	switch: fan enable / disable	D16A [...]	(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
	○ Tach out (open collector output)	RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV	D158 [2]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Diagnostics out (open collector output)	U _{max} = 50VDC, I _{max} = 20mA, SELV	D158 [5]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D158 [6]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Din2 (active high): digital input	U _{max} = 50VDC, I _{max} = 20mA, SELV	D158 [6]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D159 [0]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
IO2	○ Ain2 0-10V/PWM: analog input	active: applied voltage 3.5-50VDC, SELV	D159 [0]	○	switch: fan enable / disable	D16A [...]	(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
	○ Ain2 4-20mA: analog input	not active: pin open or applied voltage < 1.5VDC	D159 [2]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Din3 (active high): digital input	RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV	D159 [3]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D159 [6]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Din3 (active low): digital input	RI = 125R, characteristic curve parameterizable, SELV	D15A [0]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [1]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
IO3	○ PWMIn3: digital input, idle level high	active: applied voltage < 1.5VDC, SELV	D15A [1]	○	switch: fan enable / disable	D16A [...]	(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
	○ PWMMin3: digital input, idle level low	not active: pin open or applied voltage 3.5-50VDC	D15A [7]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Aout3 0-10V: analog output	PWM = 40Hz - 10KHz, characteristics parameterizable	D15A [8]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [4]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ Tacho out (pulses), analog output	active: pin open or applied voltage < 1.5VDC, SELV	D15A [5]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
RSA RSB	○ Diagnostics out (pulses)	not active: applied voltage < 1.5VDC, SELV	D15A [6]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [4]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ RS485 bus connection,	40Hz - 10KHz, characteristics parameterizable		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [8]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
Vout	○ RS485 bus connection,	active: applied voltage 3.5-50VDC		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [4]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ voltage output	not active: pin open or applied voltage < 1.5VDC, SELV		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [8]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
Vout	○ alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	function parameterizable, max. 5mA max output frequency 300Hz, SELV		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [4]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ voltage output	0-10V max. 5mA max output frequency 300Hz, SELV		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [5]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
Vout	○ alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	0-10V max. 5mA max output frequency 300Hz, SELV		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [6]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ voltage output	MODBUS RTU, specification V6.3, SELV		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [6]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
Vout	○ alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	voltage parameterizable 3.3..24VDC +/- 5%, P _{max} =800mW, short-circuit-proof, supply for external devices, SELV	D16E [...]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [4]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			
	○ voltage output	15...50VDC		○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		D15A [5]	switch: parameter set: #1 / #2	D104 [...]	switch: tach out	D148 [...]	switch: direction of rotation: cw / ccw	D147 [...]	source: sensor value	D101 [...]			

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Curves: Air performance 50 Hz



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

Measurement: LU-184390-1
Date: 2017-02-03
Housing: 15953-2-4037

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	850	1019	1.72	68	75	75	29145	0	17155	0.00
2	400	50	850	1307	2.13	65	72	73	25035	70	14735	0.28
3	400	50	850	1600	2.55	69	75	75	20090	140	11825	0.56
4	400	50	850	1770	2.80	79	86	87	14440	185	8500	0.74
5	400	50	750	695	1.18	65	72	72	25655	0	15100	0.00
6	400	50	750	909	1.48	62	69	70	22125	56	13020	0.22
7	400	50	750	1097	1.75	65	72	72	17715	109	10425	0.44
8	400	50	750	1223	1.93	76	83	84	12740	144	7500	0.58
9	400	50	650	453	0.77	61	68	68	22235	0	13090	0.00
10	400	50	650	592	0.96	58	65	66	19175	42	11285	0.17
11	400	50	650	714	1.14	62	68	68	15355	82	9035	0.33
12	400	50	650	796	1.26	72	79	80	11040	108	6500	0.43
13	400	50	550	274	0.46	57	64	64	18815	0	11075	0.00
14	400	50	550	359	0.58	54	61	62	16225	30	9550	0.12
15	400	50	550	433	0.69	58	64	64	12990	59	7645	0.24
16	400	50	550	482	0.76	68	75	76	9345	78	5500	0.31

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