K3G400-AY87-05

EC centrifugal module

backward-curved, single-intake

with support bracket

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ErP2015 EXCEEDS THE NORM

Nominal data

Type	**K3G400-AY87-05**
Motor	**M3G112-IA**

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}	2180
Power consumption	W	1850
Current draw	A	2.9
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	50

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

Data according to ErP Directive

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	65.2	54.1
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		73.1	62
05 Variable speed drive		Yes	

09 Power consumption P_{ed}	kW	1.78
09 Air flow q_v	m^3/h	5490
09 Pressure increase p_{fs}	Pa	712
10 Speed (rpm) n	min^{-1}	2160
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-122009

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Technical description

Weight	26 kg
Fan size	400 mm
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum, painted black
Impeller material	Sheet aluminum
Support plate material	Sheet steel, galvanized and painted black
Support bracket material	Steel, galvanized and painted black
Inlet nozzle material	Sheet steel, galvanized and painted black
Number of blades	7
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP54
Insulation class	"B"
Moisture (F) / Environmental (H) protection class	F4-1
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	- Output 10 VDC, max. 10 mA - Output 20 VDC, max. 50 mA - Output for slave 0-10 V - Input for sensor 0-10 V or 4-20 mA - External 24 V input (parameter setting) - Alarm relay - Integrated PID controller - Motor current limitation - PFC, passive - RS-485 MODBUS-RTU - Soft start - Control input 0-10 VDC / PWM - Thermal overload protection for electronics/motor - Line undervoltage / phase failure detection - Thermal overload protection for electronics
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC interference emission	According to EN 61000-6-3 (household environment)
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Via terminal box
Motor protection	Thermal overload protector (TOP) internally connected
With cable	Variable
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 61800-5-1; CE

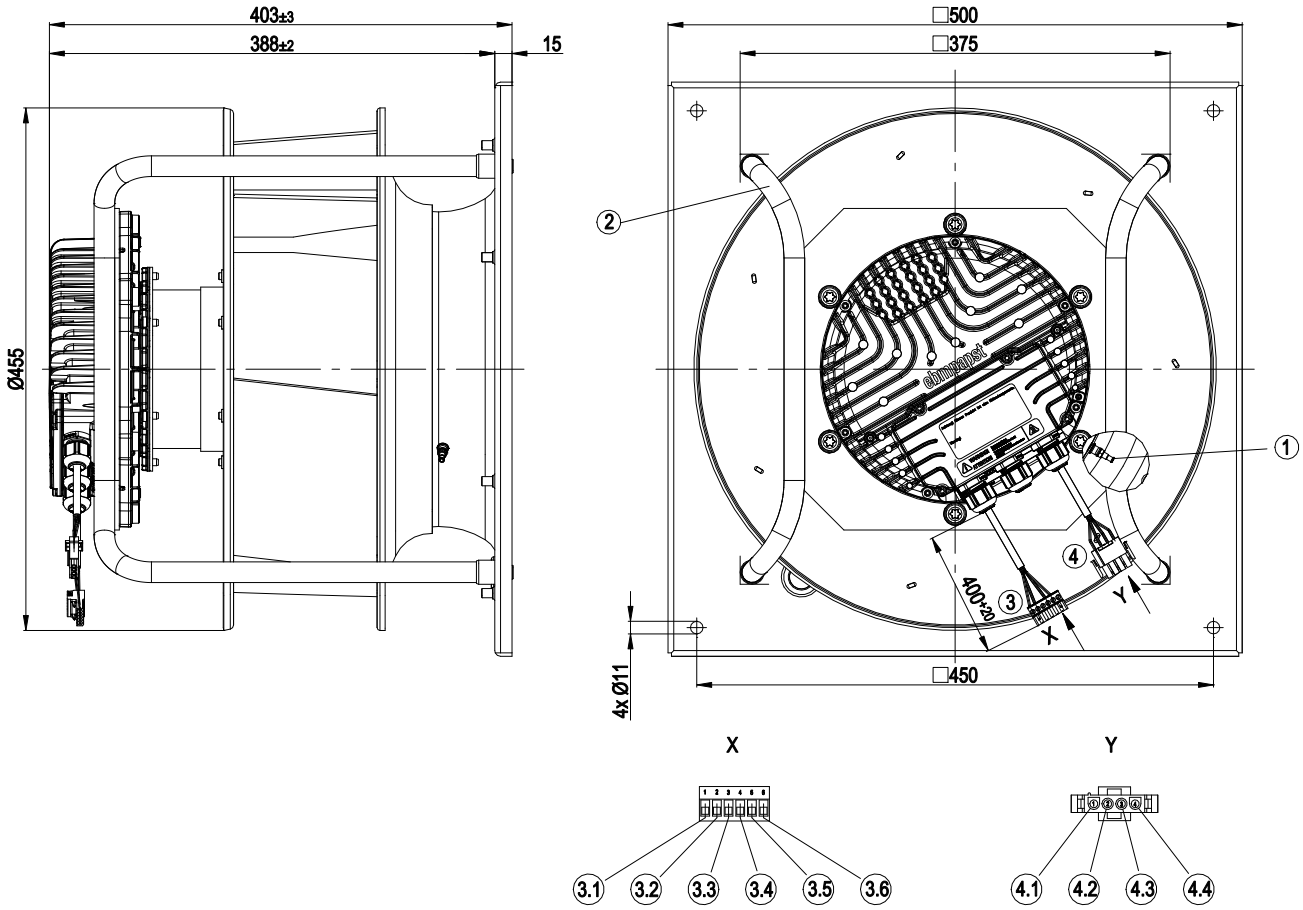
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Product drawing



1	Inlet ring with pressure tap (k-factor 240)
2	Installation position: Shaft horizontal (only install support struts vertically as illustrated) or rotor on bottom; rotor on top on request
X	View X
Y	View Y
3	Connector housing Phönix 17 57 05 1
3.1	not used
3.2	GND (blue)
3.3	not used
3.4	Ain 1 U (yellow)
3.5	NC (red)
3.6	COM (orange)
4	Connector housing AMP 1-480 702-0
4.1	PE (yellow/green)
4.2	L3 (black)
4.3	L2 (black)
4.4	L1 (black)

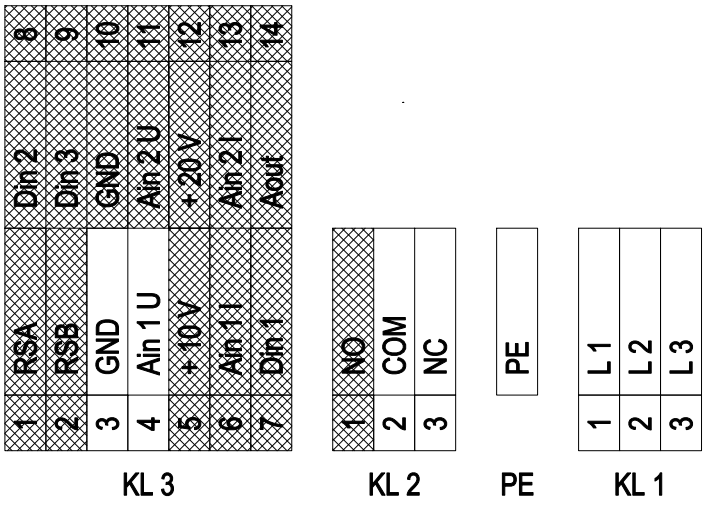
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Connection diagram



shaded gray => not brought out via leads

No.	Conn.	Designation	Function/assignment
KL 1	1	L1	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
KL 1	2	L2	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
KL 1	3	L3	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
PE		PE	Ground connection, PE connection
KL 2	1	NO	Status relay, floating status contact, make for failure
KL 2	2	COM	Status relay, floating status contact; changeover contact; common connection; contact rating 250 VAC / max. 2 A (AC1) / min. 10 mA
KL 2	3	NC	Status relay, floating status contact, break for failure
KL 3	1	RSA	Bus connection RS485, RSA, MODBUS RTU
KL 3	2	RSB	Bus connection RS485, RSB, MODBUS RTU
KL 3	3 / 10	GND	Reference ground for control interface
KL 3	4	Ain1 U	Analog input 1 (set value), 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain1I
KL 3	5	+ 10 V	Fixed voltage output 10 VDC, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot)
KL 3	6	Ain1 I	Analog input 1 (set value), 4-20 mA, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain1U
KL 3	7	Din1	Digital input 1: enable electronics, enable: pin open or applied voltage 5...50 VDC: disable: bridge to GND or applied voltage < 1 VDC; reset function: triggers software reset after a level change to < 1 V (SELV)
KL 3	8	Din2	Digital input 2: Switching parameter sets 1/2; according to EEPROM setting, the valid or used parameter set can be selected via bus or via digital input DIN2. Parameter set 1: pin open or applied voltage 5-50 VDC; parameter set 2: bridge to GND or applied voltage < 1 VDC
KL 3	9	Din3	Digital input 3: according to EEPROM setting, the integrated controller's direction of action can be selected as normal/inverse via bus or digital input; normal: pin open or applied voltage 5-50 VDC inverse: bridge to GND or applied voltage < 1 VDC
KL 3	11	Ain2 U	Analog input 2 (measured value), 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain2I
KL 3	12	+ 20 V	Fixed voltage output 20 VDC, +20 V +25/-10%, max. 50 mA, short-circuit-proof, power supply for external devices (e.g. sensors)
KL 3	13	Ain2 I	Analog input 2 (measured value), 4-20 mA, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain2U
KL 3	14	Aout	Analog output 0-10 V, max. 5 mA, output of current motor modulation level / of the current motor speed. Adjustable curve.

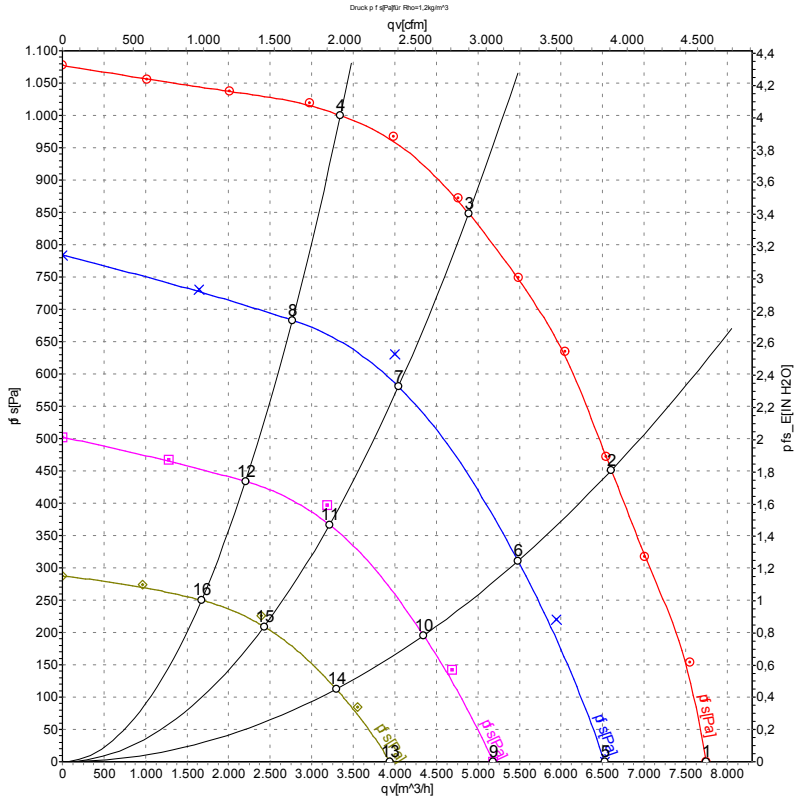
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Curves: Air performance 50 Hz



Measurement: LU-122009-1
Measurement: LU-122096-1
Measurement: LU-122097-1
Measurement: LU-122098-1

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}	qv	p_{fs}	qv	p_{fs}
	V	Hz	min^{-1}	W	A	dB(A)	dB(A)	dB(A)	m^3/h	Pa	CFM	inH2O
1	400	50	2180	1162	1.76	82	89	95	7745	0	4560	0.00
2	400	50	2180	1562	2.37	76	84	89	6605	450	3890	1.81
3	400	50	2180	1850	2.90	74	81	87	4890	850	2880	3.41
4	400	50	2180	1694	2.56	76	84	90	3345	1000	1970	4.01
5	400	50	1810	672	1.04	77	85	90	6525	0	3840	0.00
6	400	50	1810	877	1.34	72	80	85	5480	318	3225	1.28
7	400	50	1810	1040	1.59	71	78	84	4045	622	2380	2.50
8	400	50	1810	905	1.38	72	79	85	2765	683	1630	2.74
9	400	50	1440	346	0.59	71	79	84	5185	0	3050	0.00
10	400	50	1440	447	0.75	68	74	80	4345	200	2560	0.80
11	400	50	1440	475	0.85	66	73	78	3215	393	1890	1.58
12	400	50	1440	430	0.74	67	74	79	2205	434	1295	1.74
13	400	50	1090	172	0.38	64	73	80	3940	0	2320	0.00
14	400	50	1090	204	0.42	61	69	74	3295	116	1940	0.47
15	400	50	1090	228	0.47	61	67	72	2425	222	1430	0.89
16	400	50	1090	204	0.43	61	67	73	1675	250	985	1.00

U = Power supply · 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 · qv = Air flow · p_{fs} = Pressure increase

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