



 FOCUS ON EC FAN ONLY



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PBM MOTOR AND FAN(SUZHOU) CO.,LTD

 Centrifugal Fans with Support Bracket Series

Version 2022

www.pbmmf.com

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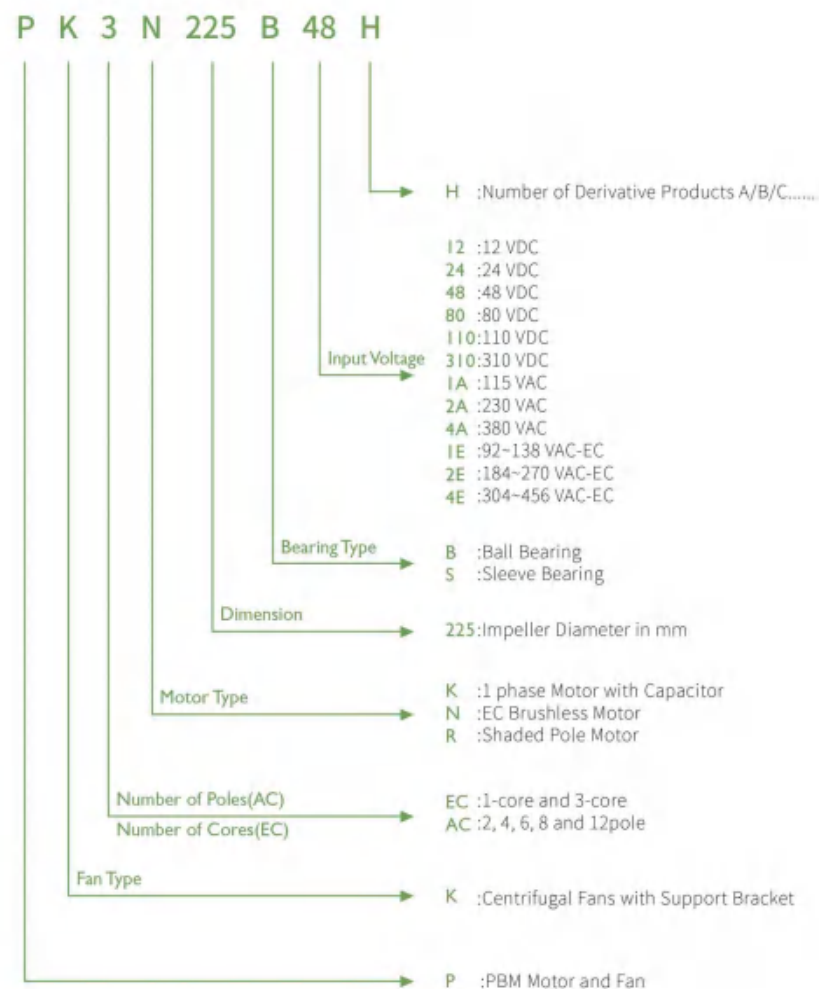
IP55 Type

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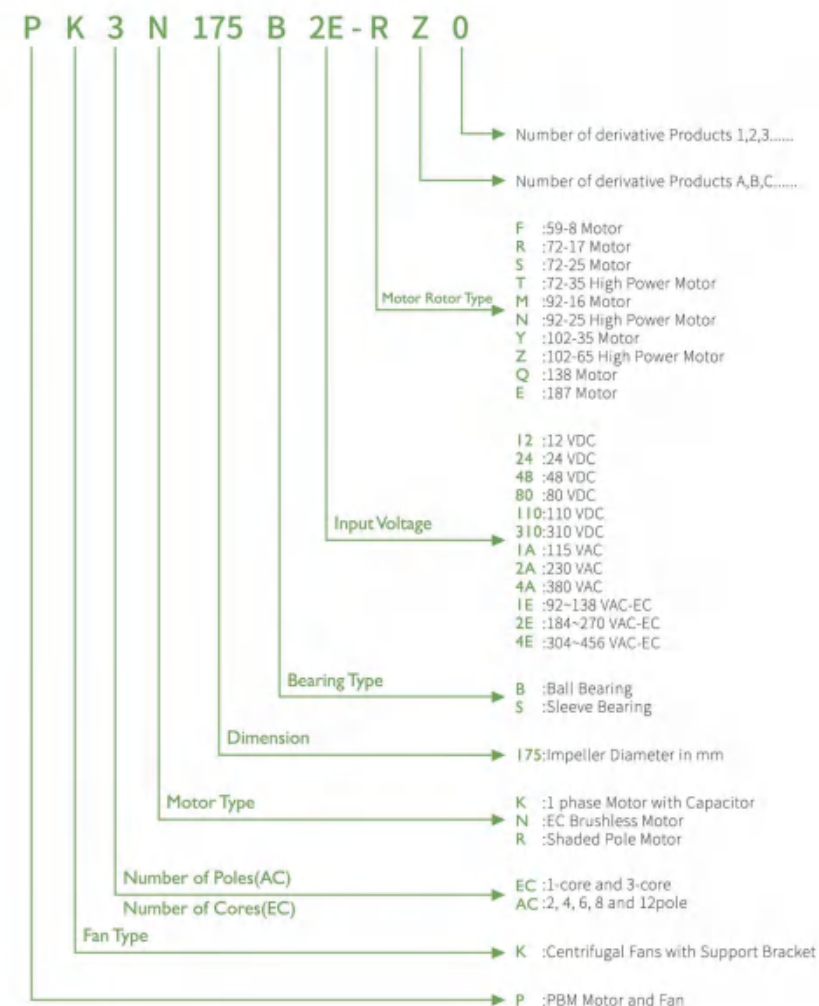
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IP44 Part Number System

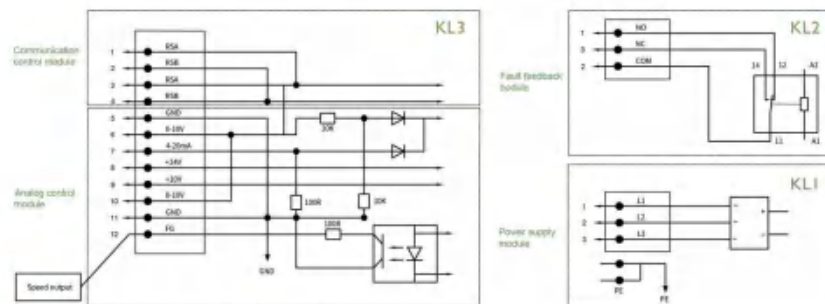


IP55 Part Number System



Wiring Diagram

E7-EC Motor 102/138(380VAC) with Modbus



Electrical Connections with Modbus

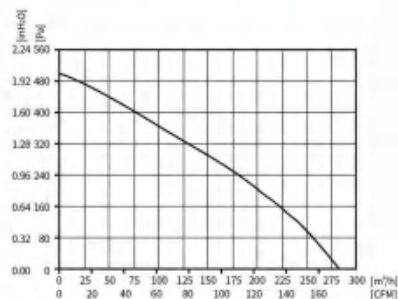
Connector	Pin	Signal	Assignment/Function
KL1	1	L1	Main supply connection.
	2	L2	Supply voltage 3-380-480VAC/50/60Hz.
	3	L3	
PE		PE	Earth connection/PE connection
KL2	1	NO	The relay is normally open/the fan is not powered and normally operation/open with COM/the fan is fail/closed with COM
	2	COM	Status relay, common connection, contact rating 250VAC/2A(AC1)
	3	NC	The relay is normally closed/the fan is not powered and normally operation/closed with COM/the fan is fail/open with COM
KL3	1	RS4	Bus connection RS485/RS485/MODBUS RTU.
	2	RSB	Bus connection RS485/RS485/MODBUS RTU.
	3	RS4	Bus connection RS485/RS485/MODBUS RTU.
	4	RSB	Bus connection RS485/RS485/MODBUS RTU.
	5	GND	Single ground for control interface KL3.
	6	0-10V/PWM	Control input 0-10VDC/PWM; only usable as alternative to input 4-20mA.
	7	4-20mA	Analogue control input 4-20mA; only usable as alternative to input 0-10VDC/PWM.
	8	+24V	Fixed voltage output 24VDC $\pm$ 2V max.20mA/Power supply for ext.devices.
	9	+10V	Fixed voltage output 10VDC $\pm$ 1V max.5mA/Power supply for ext.devices.
	10	0-10V/PWM	Control input 0-10VDC/PWM; only usable as alternative to input 4-20mA.
	11	GND	Single ground for control interface KL3.
	12	FG	Speed signal feedback.



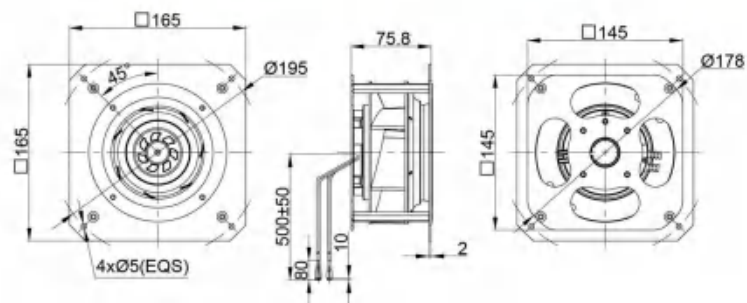
IP55 Type



EC Fan with Support Bracket 165x165x75.8mm

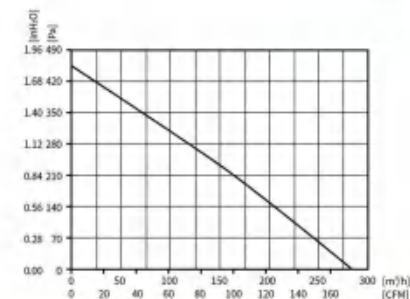
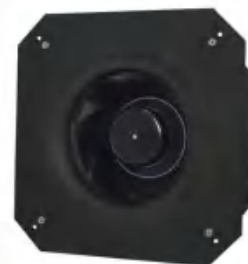


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	2.6KG	E1

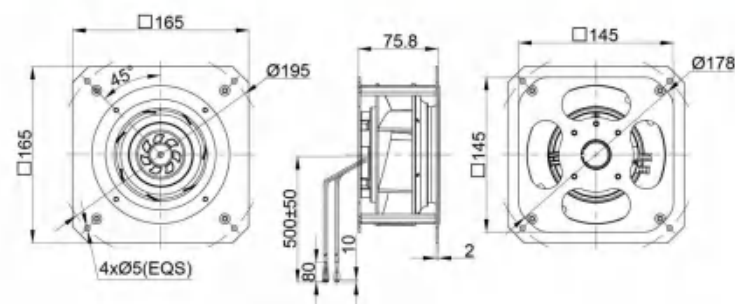


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N133B2E-FZ5	BE59EC	BALL	230	50/60	0.25	34	4450	280	500	65

EC Fan with Support Bracket 165x165x75.8mm

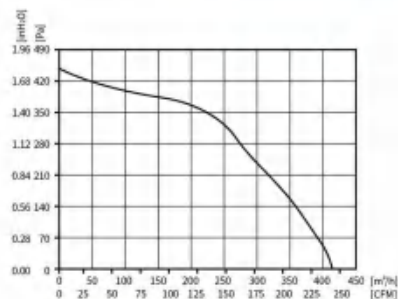


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	2.6KG	E1

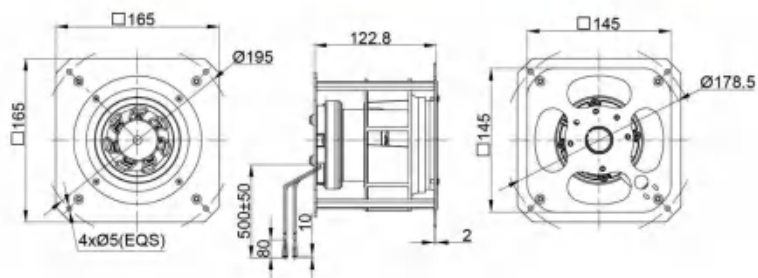


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N133B2E-FZ0	BE59EC	BALL	230	50/60	0.2	30	4250	281	459	64

EC Fan with Support Bracket 165x165x122.8mm

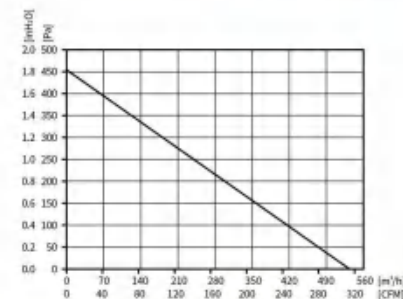
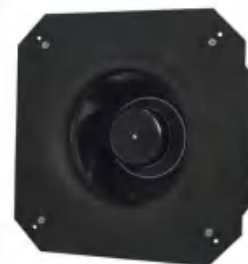


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	2.65KG	E1

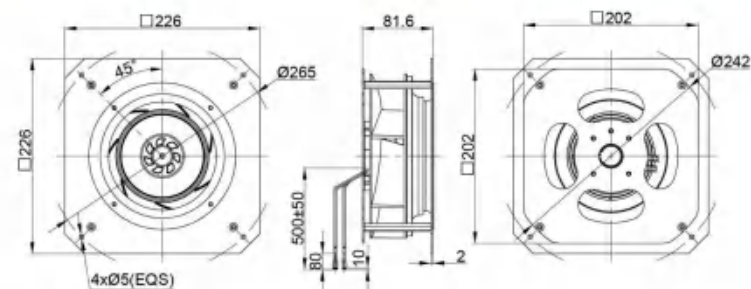


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N133B2E-RB2	BE72EC	BALL	230	50/60	0.3	43	4400	415	450	70

EC Fan with Support Bracket 226x226x81.6mm

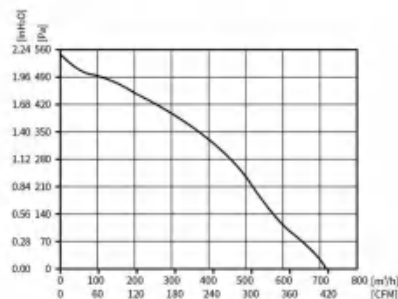


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	2.75KG	E1

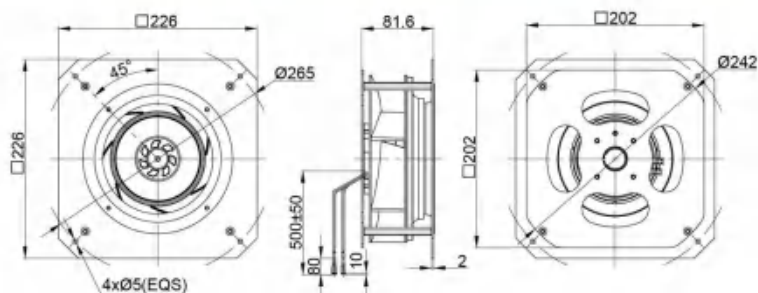


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N175B2E-FZ5	BE59EC	BALL	230	50/60	0.3	40	3200	535	451	65

EC Fan with Support Bracket 226x226x81.6mm

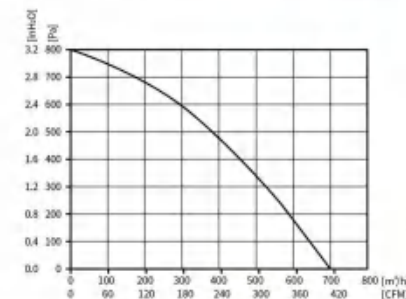


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.3KG	E1

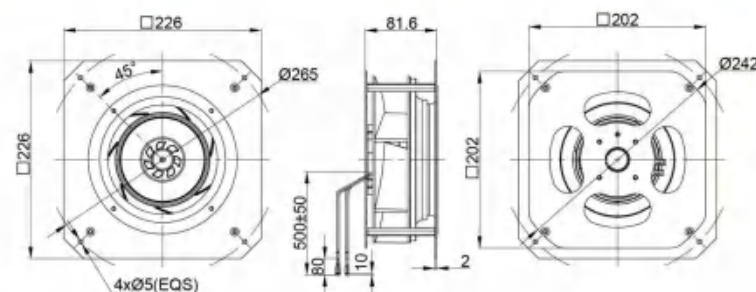


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N175B2E-R20	BE72EC	BALL	230	50/60	0.6	72	4050	710	550	72

EC Fan with Support Bracket 226x226x81.6mm

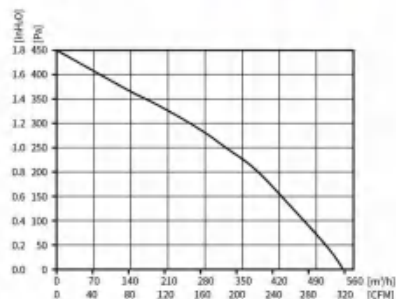


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.5KG	E1

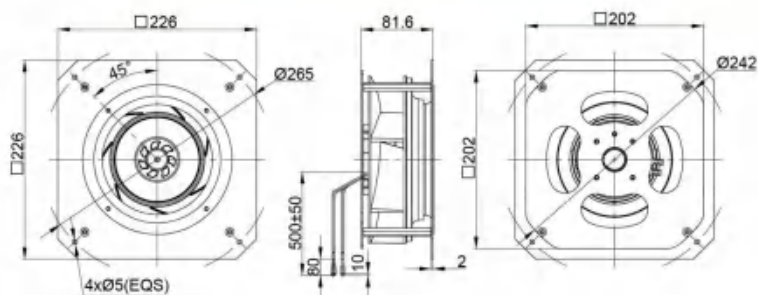


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N175B2E-S20	BE72EC	BALL	230	50/60	0.75	110	4600	700	800	74

EC Fan with Support Bracket 226x226x81.6mm

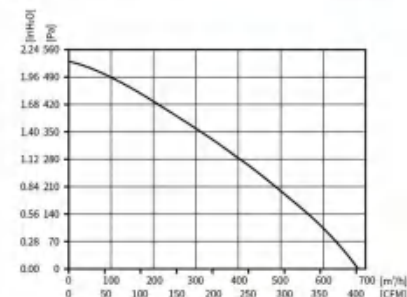
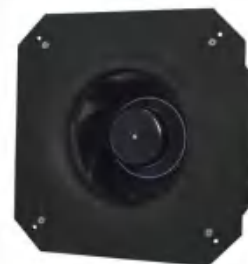


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.35KG	E1

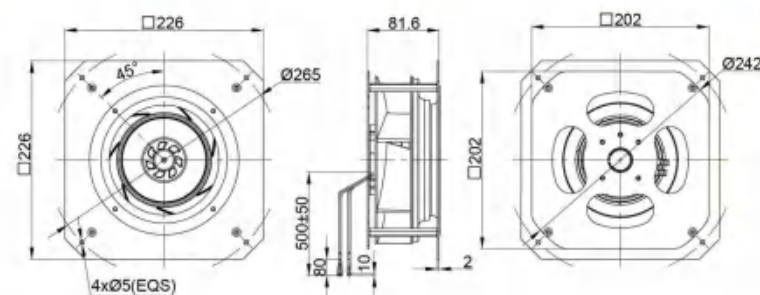


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-RZ0	BE72EC	BALL	230	50/60	0.4	52	2940	540	450	65

EC Fan with Support Bracket 226x226x81.6mm

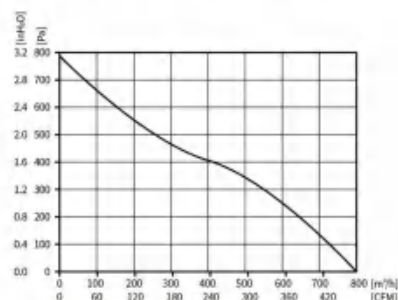


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.35KG	E1

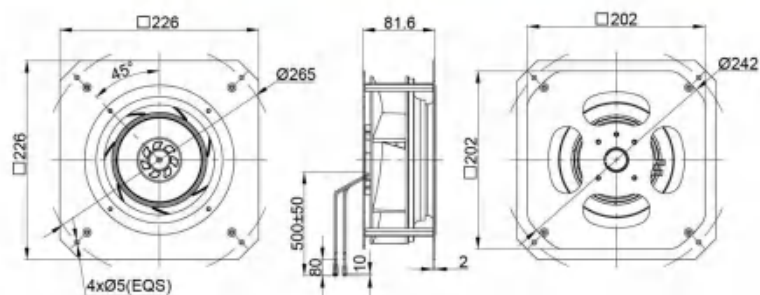


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-RZ1	BE72EC	BALL	230	50/60	0.6	70	3300	685	530	68

EC Fan with Support Bracket 226x226x81.6mm

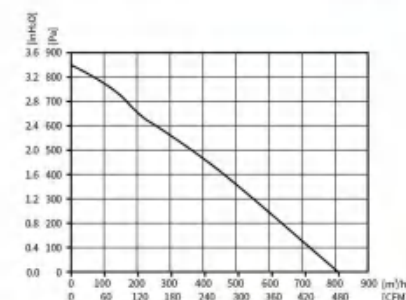


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.35KG	E1

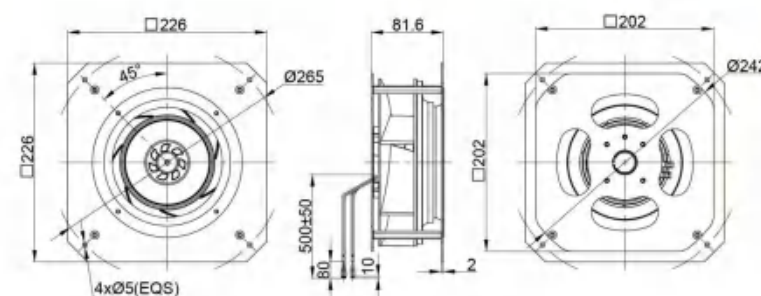


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-RZ2	BE72EC	BALL	230	50/60	0.9	110	3700	800	790	70

EC Fan with Support Bracket 226x226x81.6mm

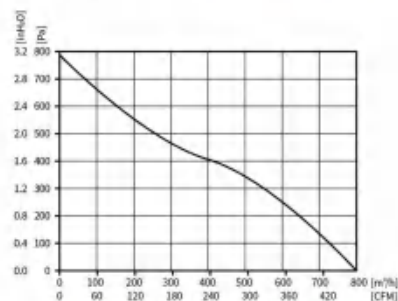


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.45KG	E1

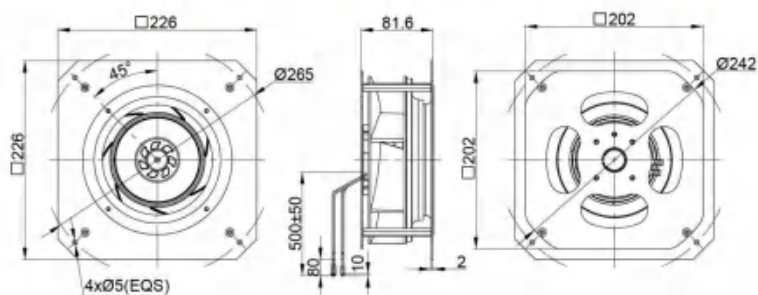


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-SZ0	BE72EC	BALL	230	50/60	0.8	110	3800	810	850	71

EC Fan with Support Bracket 226x226x81.6mm

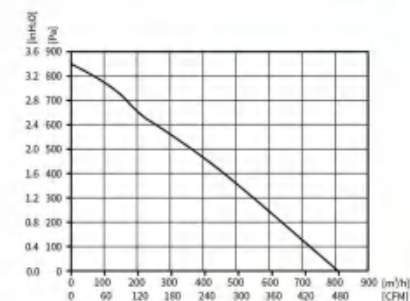


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.35KG	E1

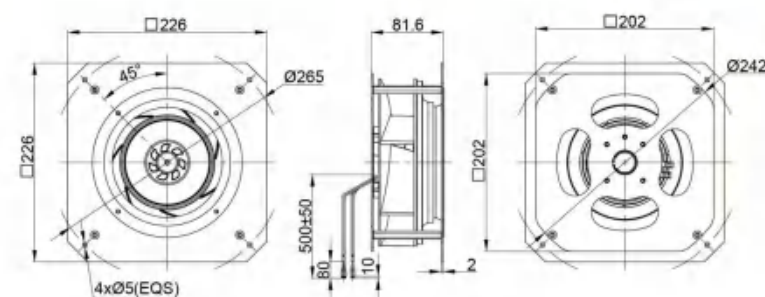


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-RZ2	BE72EC	BALL	230	50/60	0.9	110	3700	800	790	70

EC Fan with Support Bracket 226x226x81.6mm

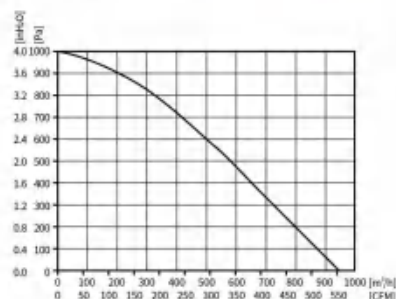


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.45KG	E1

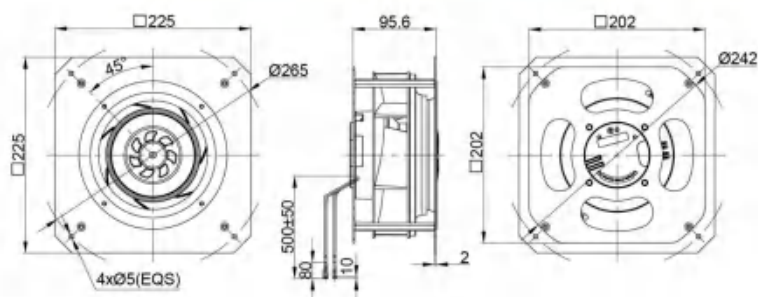


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	V/AC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N190B2E-SZ0	BE72EC	BALL	230	50/60	0.8	110	3800	810	850	71

EC Fan with Support Bracket 225x225x95.6mm

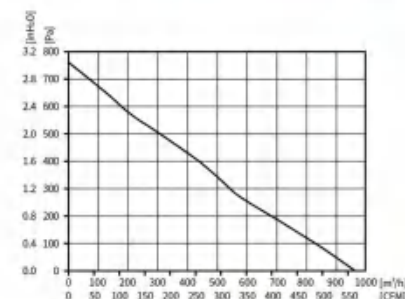


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL ROTOR MOTOR	B: 10VDC/PWM	IP55	B	-25°C~+60°C	3.85KG	E1

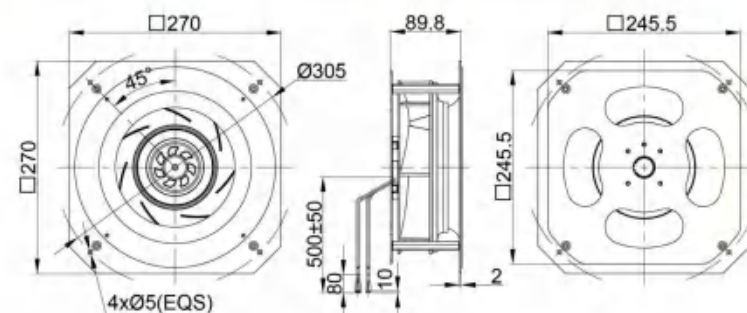


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N190B2E-TZ0	BE72EC	BALL	230	50/60	1.2	170	4550	945	1000	72

EC Fan with Support Bracket 270x270x89.8mm

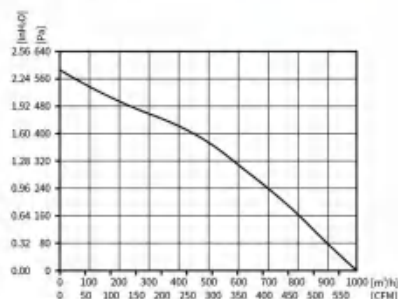


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL ROTOR MOTOR	B: 10VDC/PWM	IP55	B	-25°C~+60°C	3.8KG	E1

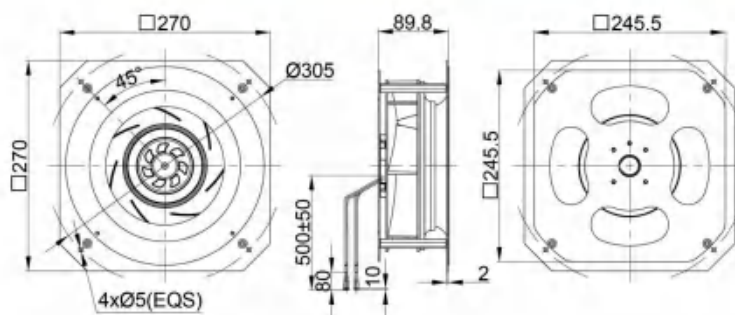


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N220B2E-RZ0	BE72EC	BALL	230	50/60	0.65	85	2670	960	760	68

EC Fan with Support Bracket 270x270x89.8mm

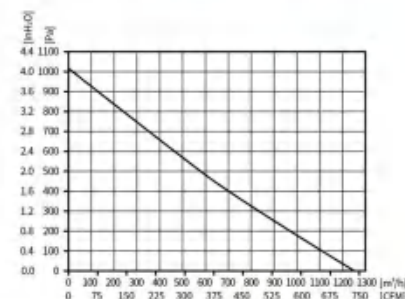
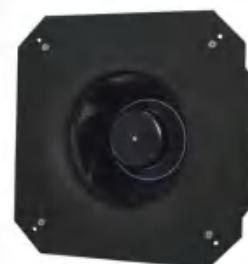


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.7KG	E1

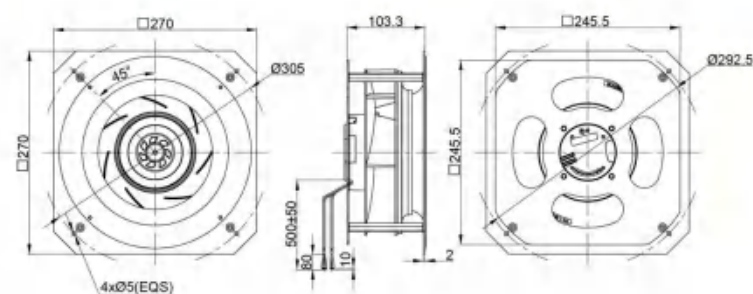


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N220B2E-SZ0	BE72EC	BALL	230	50/60	0.8	110	3100	1000	580	69

EC Fan with Support Bracket 270x270x103.3mm

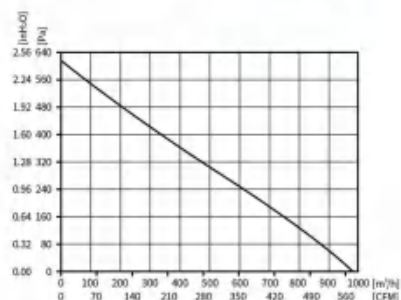


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	4.45KG	E1

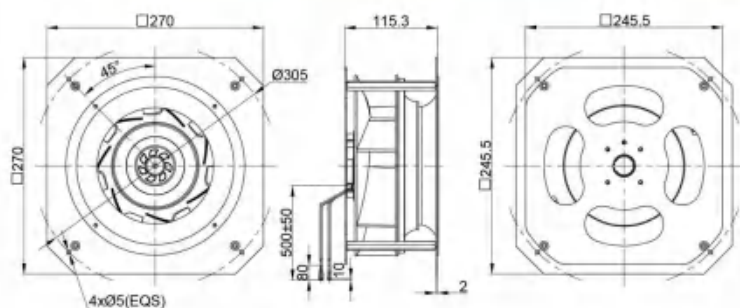


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N220B2E-TZ0	BE72EC	BALL	230	50/60	1.2	170	3500	1255	1010	70

EC Fan with Support Bracket 270x270x115.3mm

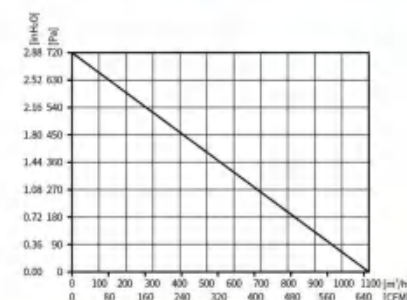


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.52KG	E1

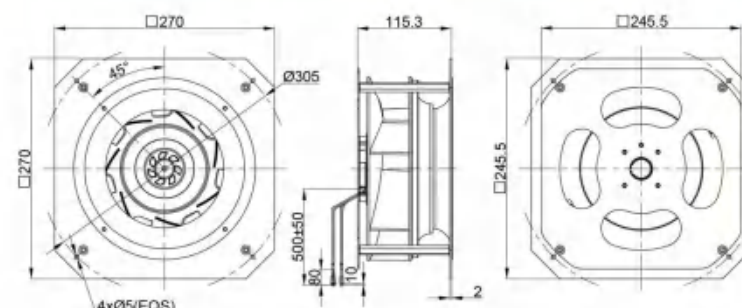


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	V/AC	Hz	A	W	ØPM	M³/H	Pa	dB(A)
PK3N225B2E-RG0	BE72EC	BALL	230	50/60	0.6	85	2300	975	620	65

EC Fan with Support Bracket 270x270x115.3mm



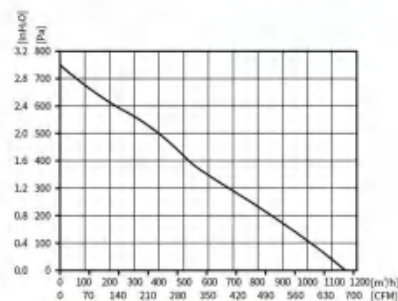
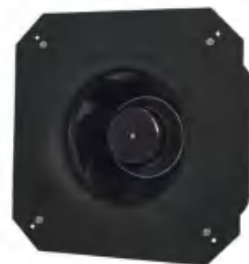
Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.52KG	E2



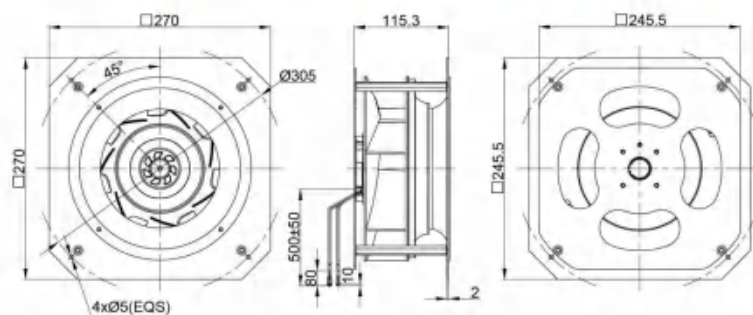
Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	V/AC	Hz	A	W	ØPM	M³/H	Pa	dB(A)
PK3N225B2E-RG1	BE72EC	BALL	230	50/60	0.75	100	2450	1100	720	66

EC Fan with Support Bracket 270x270x115.3mm

EC-A0 Series



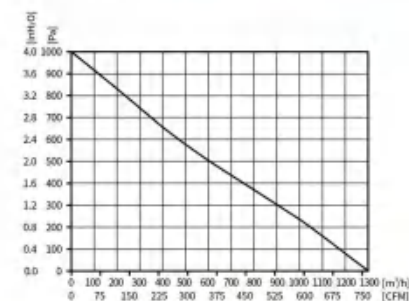
Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.65KG	E1



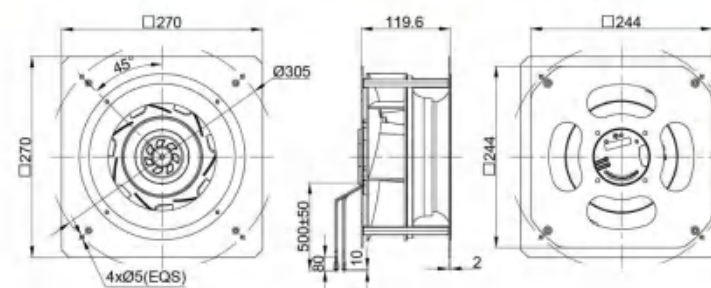
Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N225B2E-SG0	BE72EC	BALL	230	50/60	0.8	110	2600	1150	750	68

EC Fan with Support Bracket 270x270x119.8mm

EC-A0 Series

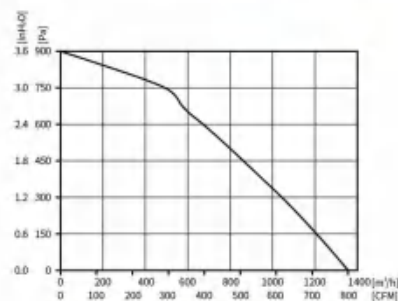


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EE BRUSHLESS EXTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	4.47KG	E1

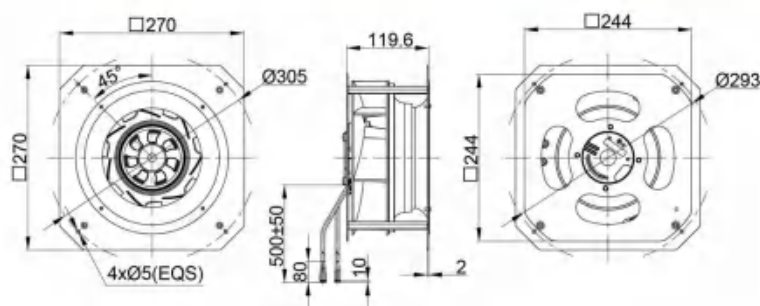


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N225B2E-TG0	BE72EC	BALL	230	50/60	1.2	170	3200	1300	1000	71

EC Fan with Support Bracket 270x270x119.6mm

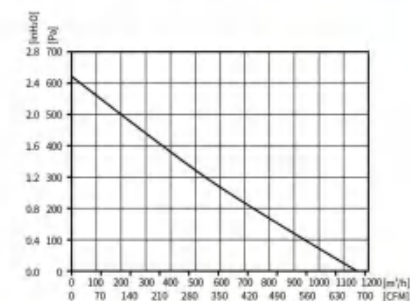
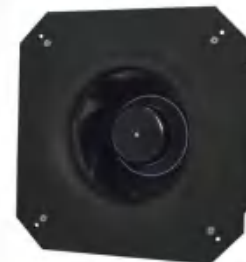


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS INTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	5.1KG	E2

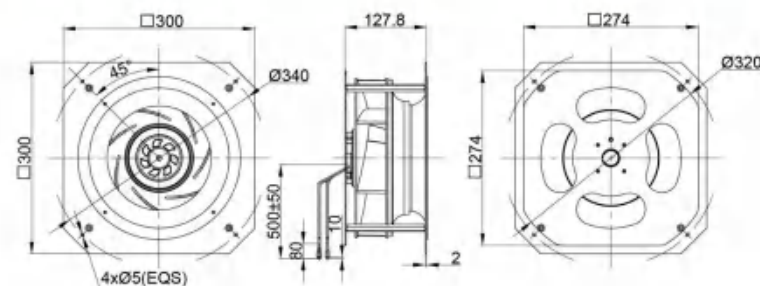


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N225B2E-MG0	BE02EC	BALL	230	50/60	1.6	220	3500	1350	900	72

EC Fan with Support Bracket 300x300x127.8mm



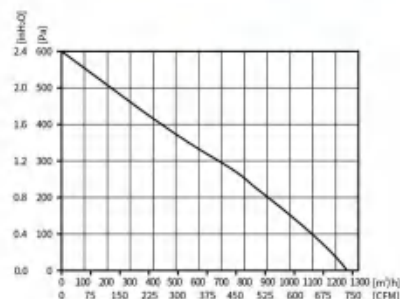
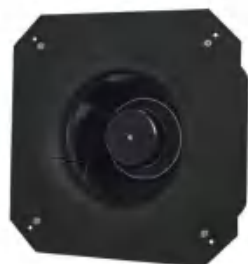
Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS INTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.72KG	E1



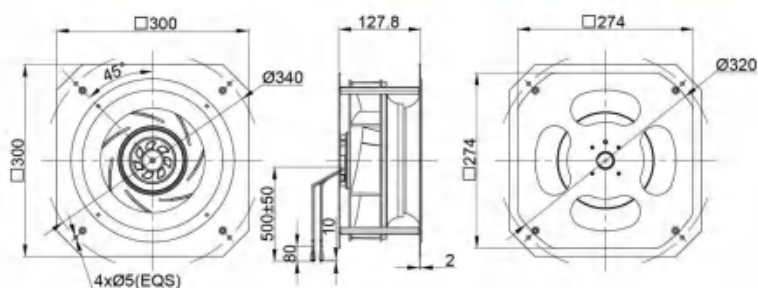
Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N250B2E-RZ0	BE72EC	BALL	230	50/60	0.65	85	2100	1150	610	62

EC Fan with Support Bracket 300x300x127.8mm

EC-A1 Series



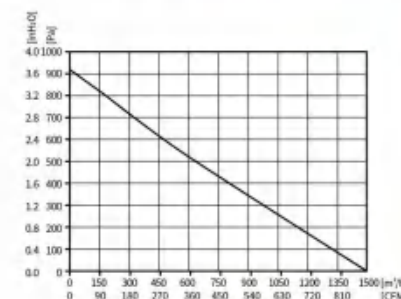
Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	3.82KG	E1



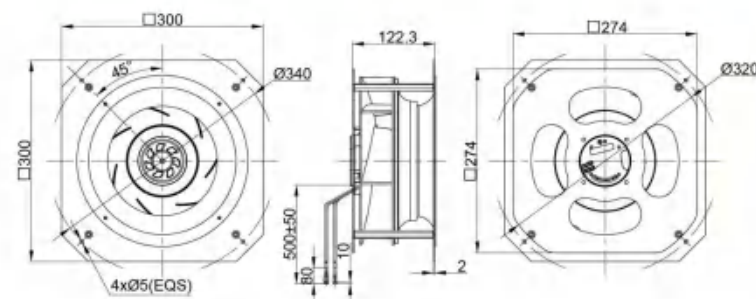
Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N250B2E-SZ0	BE72EC	BALL	230	50/60	0.85	115	2350	1250	600	68

EC Fan with Support Bracket 300x300x122.3mm

EC-A1 Series

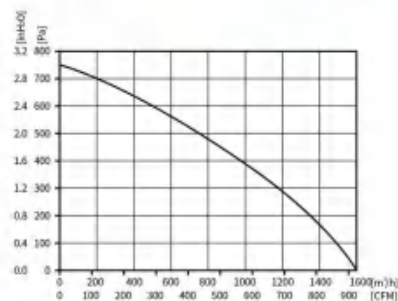


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	4.42KG	E1

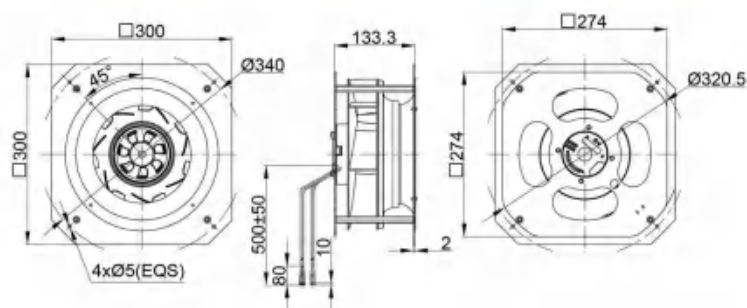


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	b/S	VAC	Hz	A	W	rpm	M³/H	Pa	dB(A)
PK3N250B2E-TZ0	BE72EC	BALL	230	50/60	1.2	170	2750	1500	915	71

EC Fan with Support Bracket 300x300x133.3mm

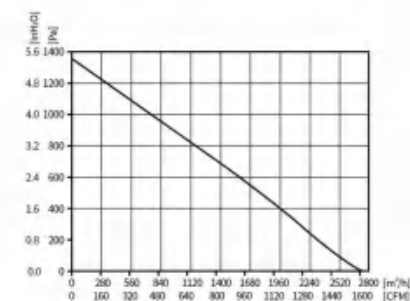


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS INTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	B	-25°C~+60°C	5.42KG	E2

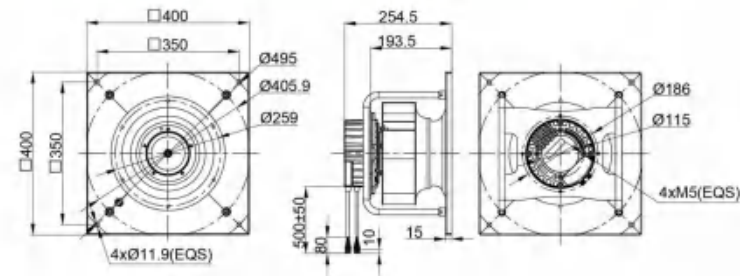


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	IPM	M ³ /H	Pa	dBA
PK3N250B2E-M20	BE92EC	BALL	230	50/60	1.6	220	3100	1600	750	72

EC Fan with Support Bracket 400x400x254.5mm

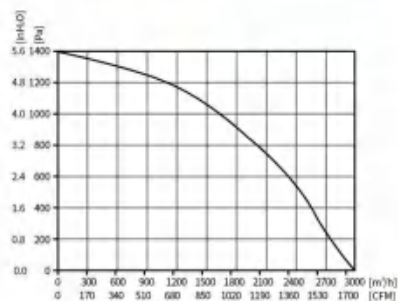


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS INTERNAL MOTOR MOTOR	B (0VDC/PWM)	IP55	F	-25°C~+60°C	7.91KG	E3

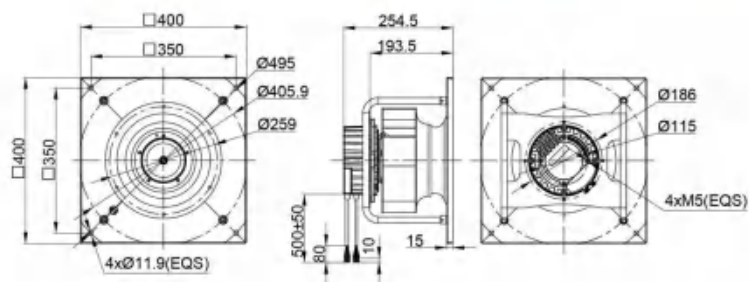


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	IPM	M ³ /H	Pa	dBA
PK3N250B2E-YZ5	BE102EC	BALL	230	50/60	2.5	550	3600	2750	1330	85

FLAME GENIUS

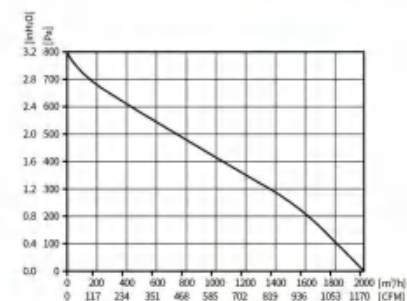


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS PERMANENT MOTOR	B: 10VDC/7PM	IP55	F	-25°C~+60°C	7.91KG	E4

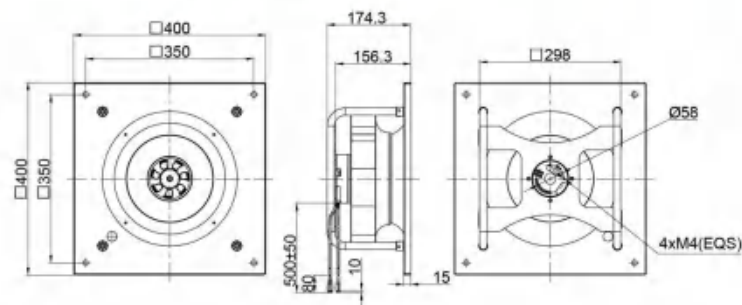


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M ³ /H	Pa	dB(A)
PK3N250B4E-YZ5	BE102EC	BALL	380	50/60	1.17	750	4100	3000	1400	91

20-40 Series

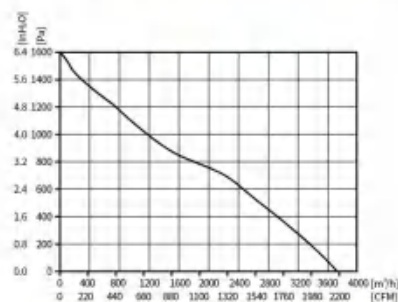


Motor Type E2 BRUSHLESS INTERNAL NOVON MOTOR	Speed Control B (0VDC/0VPM)	Protection Type IP55	Insulation Class B	Operating Temperature -25℃~+60℃	Weight 5.67KG	Wiring Mode E2
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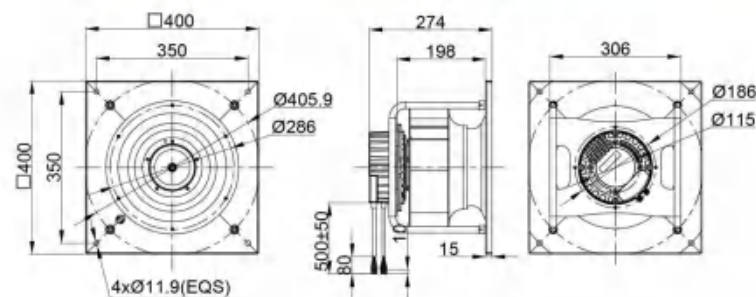


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M ³ /Hr	Psi	dB(A)
PK3N208B2E-MZ0	BE92EC	BALL	230	50/60	1.5	210	2600	2000	800	70

EC Fan with Support Bracket 400x400x274mm

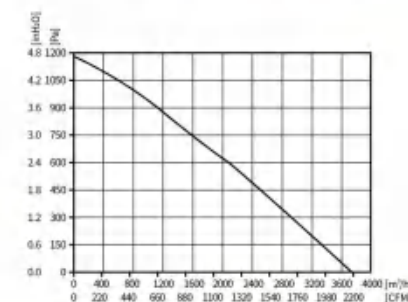


Motor Type EC BRUSHLESS PERMANENT MAGNET MOTOR	Speed Control 0-10VDC/PWM	Protection Type IP55	Insulation Class F	Operating Temperature -25°C ~ +60°C	Weight 8.4KG	Wiring Mark E3
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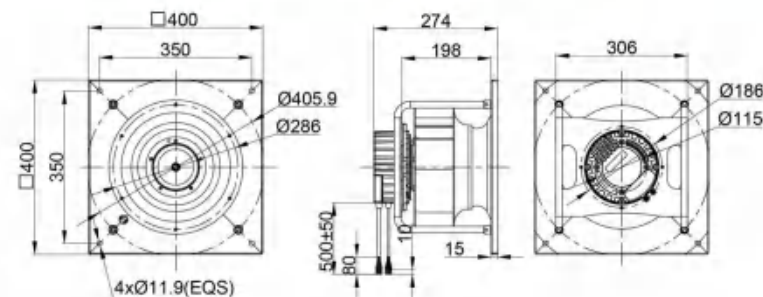


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N280B2E-YZ5	BE102EC	BALL	230	50/60	3.1	700	3300	3720	1600	85

EC Fan with Support Bracket 400x400x274mm

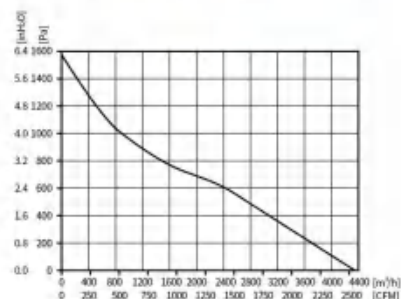


Motor Type EC BRUSHLESS PERMANENT MAGNET MOTOR	Speed Control 0-10VDC/PWM	Protection Type IP55	Insulation Class F	Operating Temperature -25°C ~ +60°C	Weight 8.4KG	Wiring Mark E4
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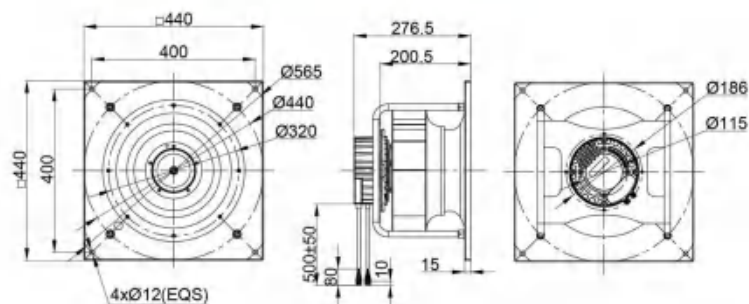


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N280B4E-YZ5	BE102EC	BALL	380	50/60	1.26	800	3400	3700	1180	93

EC Fan with Support Bracket 440x440x276.5mm

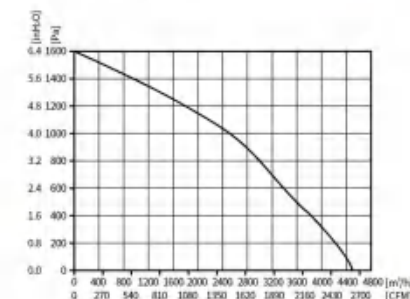


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Method
EC BRUSHLESS PERMANENT MAGNET MOTOR	0-10VDC/PWM	IP55	F	-25°C~+60°C	7.91KG	E3

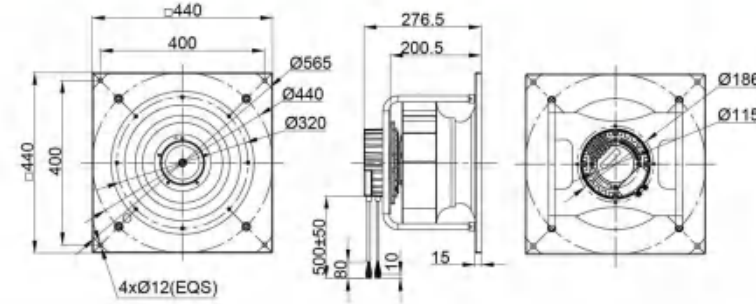


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VOL	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N310B2E-YZ5	BE102EC	BALL	230	50/60	3.1	700	2850	4380	1590	85

EC Fan with Support Bracket 440x440x276.5mm

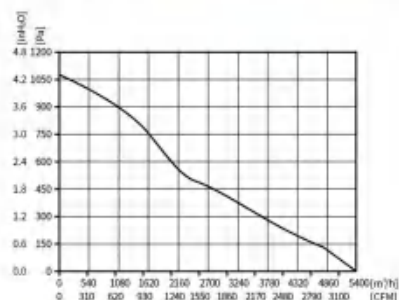


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Method
EC BRUSHLESS PERMANENT MAGNET MOTOR	0-10VDC/PWM	IP55	F	-25°C~+60°C	7.91KG	E4

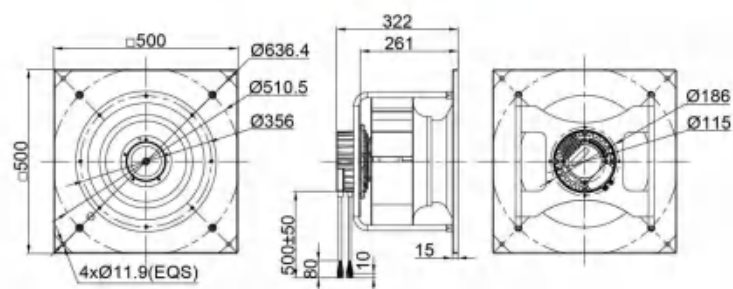


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VOL	Hz	A	W	RPM	M³/H	Pa	dB(A)
PK3N310B4E-YZ5	BE102EC	BALL	380	50/60	1.2	1100	3000	4500	1600	87

EC Fan with Support Bracket 500x500x322mm

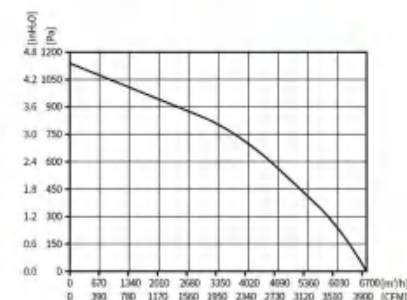


Motor Type EC BRUSHLESS INTERNAL MOTOR MOTOR	Speed Control B: 10VDC/PWM	Protection Type IP55	Insulation Class F	Operating Temperature -25°C~+60°C	Weight 9.44KG	Wiring Mode E3
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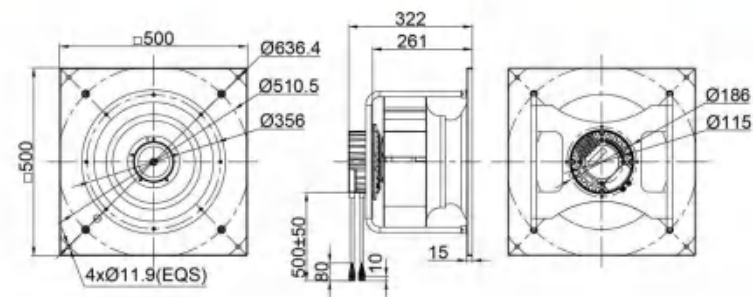


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N355B2E-ZW5	BE102EC	BALL	230	50/60	3.0	700	2150	5400	1080	84

EC Fan with Support Bracket 500x500x322mm

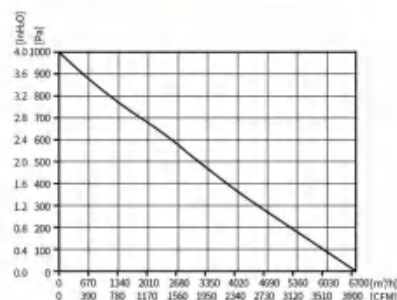


Motor Type EC BRUSHLESS INTERNAL MOTOR MOTOR	Speed Control B: 10VDC/PWM	Protection Type IP55	Insulation Class F	Operating Temperature -25°C~+60°C	Weight 7.91KG	Wiring Mode E4
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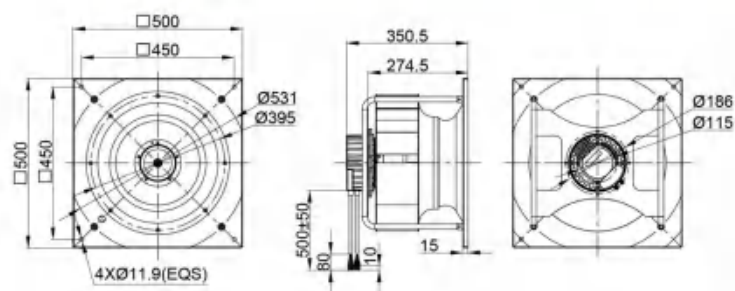


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N355B4E-ZW5	BE102EC	BALL	380	50/60	1.8	1100	2500	6700	1150	86

EC Fan with Support Bracket 500x500x350.5mm

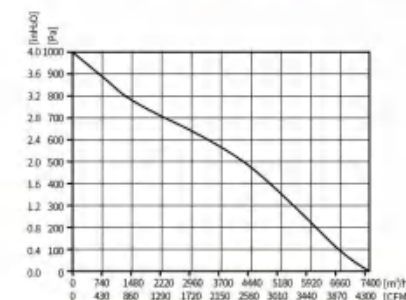


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS PERMANENT MAGNET MOTOR	0-10VDC/PWM	IP55	F	-25°C~+60°C	11.94KG	E3

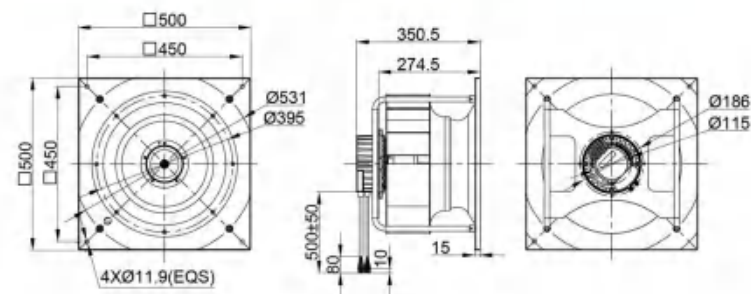


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N400B2E-ZW5	BE102EC	BALL	230	50/60	3.1	700	1750	6700	1000	83

EC Fan with Support Bracket 500x500x350.5mm

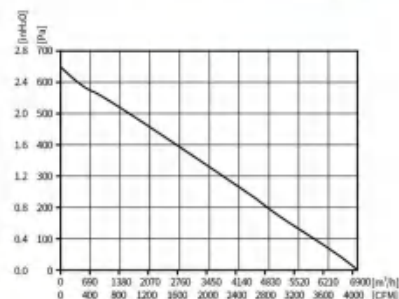


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS PERMANENT MAGNET MOTOR	0-10VDC/PWM	IP55	F	-25°C~+60°C	11.94KG	E4

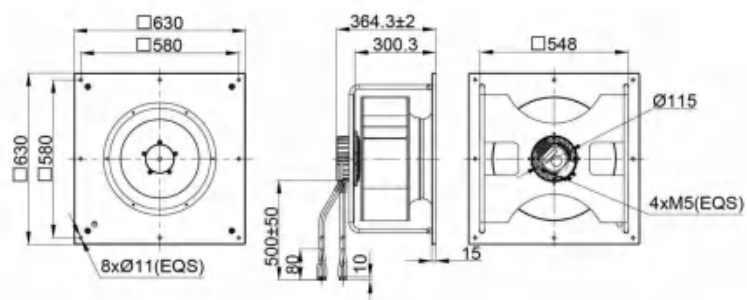


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	Hz	A	W	RPM	M³/H	Pa	dBA
PK3N400B4E-ZW5	BE102EC	BALL	380	50/60	1.2	1300	2000	7400	1000	85

EC Fan with Support Bracket 630x630x364.3mm

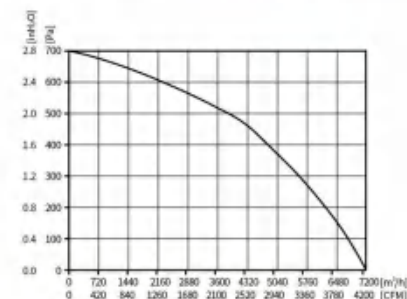


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	F	-25°C~+60°C	11.23KG	E3

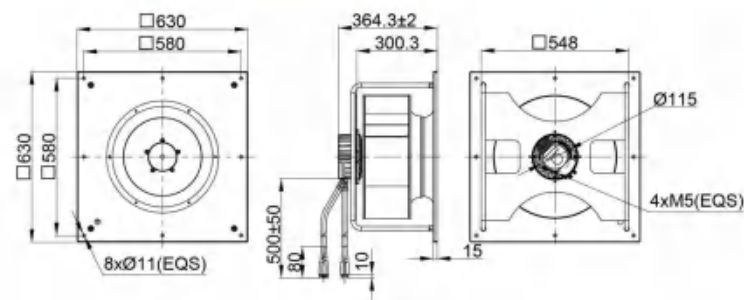


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	1/min	M³/H	Pa	dB(A)
PK3N450B2E-ZW5	BE102EC	BALL	230	50/60	3.2	700	1550	6900	650	80

EC Fan with Support Bracket 630x630x364.3mm

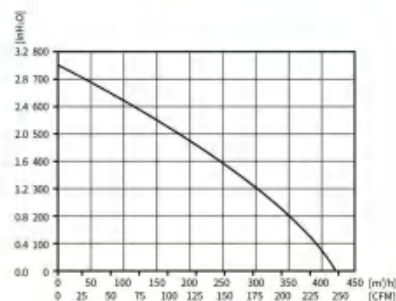


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
EC BRUSHLESS EXTERNAL MOTOR	B (0VDC/PWM)	IP55	F	-25°C~+60°C	11.23KG	E4

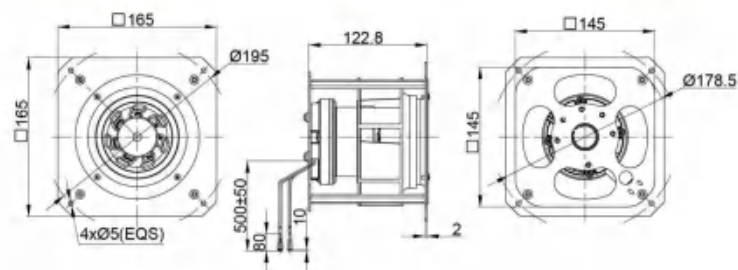


Model	Motor	Bearing System	Rated Voltage	Frequency	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	t/S	VAC	Hz	A	W	1/min	M³/H	Pa	dB(A)
PK3N450B4E-ZW5	BE102EC	BALL	380	50/60	1.5	1000	1800	7200	700	83

DC Fan with Support Bracket 165x165x122.8mm

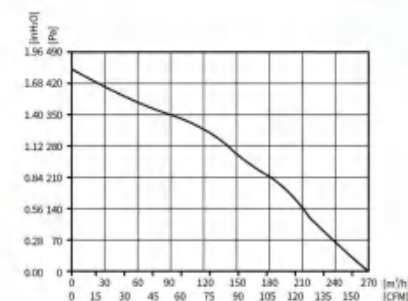


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	P 10VDC/PWM	IP55	B	-25°C~+60°C	2.65KG	D1

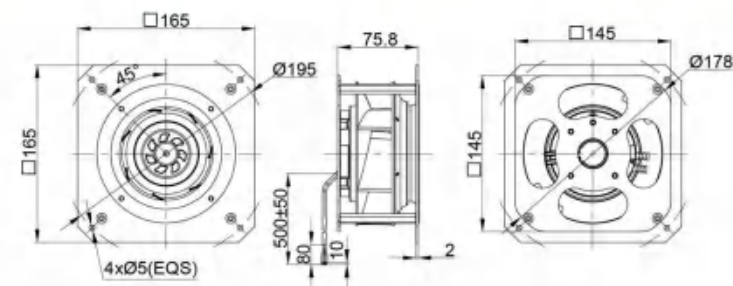


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/h	Pa	dB(A)
PK3N133B24-R80	BE72DC	BALL	24	16~28	2.1	50	5000	420	750	71
PK3N133B48-R80	BE72DC	BALL	48	36~57	1.05	50	5000	420	750	71

DC Fan with Support Bracket 165x165x75.8mm

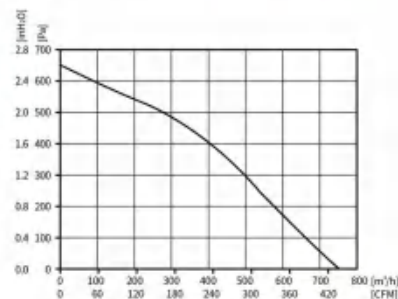


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	P 10VDC/PWM	IP55	B	-25°C~+60°C	2.6KG	D1

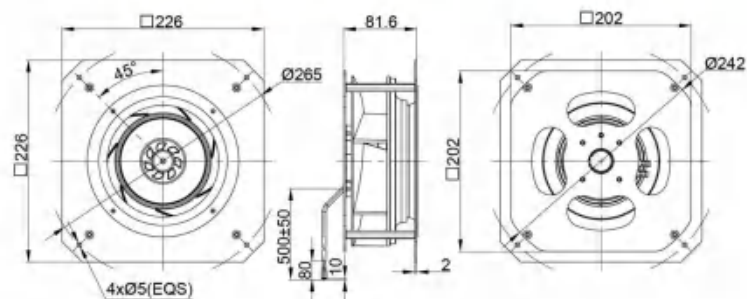


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/h	Pa	dB(A)
PK3N133B24-FZ5	BE59DC	BALL	24	16~28	1.4	33	4500	270	450	68
PK3N133B48-FZ5	BE59DC	BALL	48	36~57	0.7	33	4500	270	450	68

DC Fan with Support Bracket 226x226x81.6mm

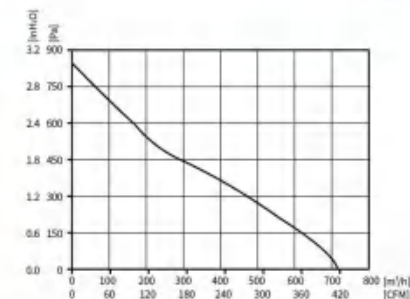


Motor Type DC BRUSHLESS EXTERNAL MOTOR MOTOR	Speed Control P-FREQUENCY/PWM	Protection Type IP55	Insulation Class B	Operating Temperature -25°C~+60°C	Weight 3.2KG	Wiring Mode D1
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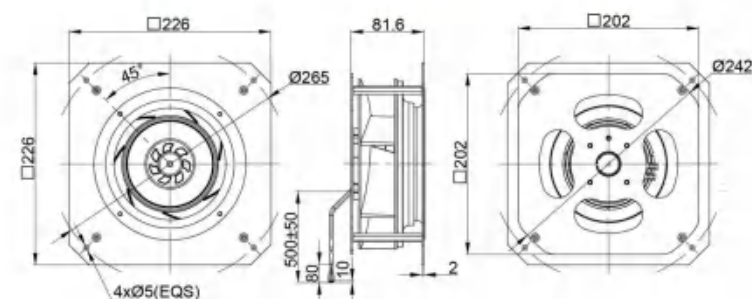


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N175B24-R20	BE72DC	BALL	24	16~28	3.6	85	4300	750	650	72
PK3N175B48-R20	BE72DC	BALL	48	36~57	1.8	85	4300	750	650	72

DC Fan with Support Bracket 226x226x81.6mm

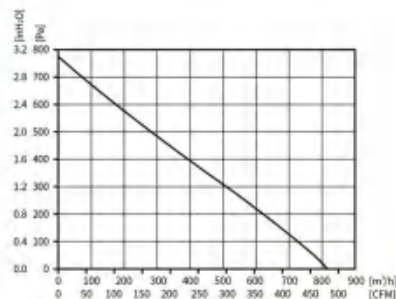


Motor Type DC BRUSHLESS EXTERNAL MOTOR MOTOR	Speed Control P-FREQUENCY/PWM	Protection Type IP55	Insulation Class B	Operating Temperature -25°C~+60°C	Weight 3.2KG	Wiring Mode D1
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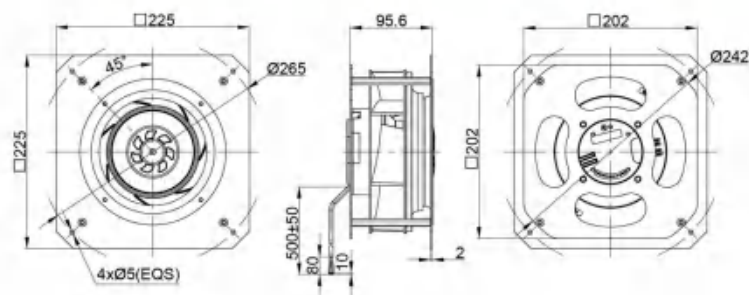


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N190B24-R20	BE72DC	BALL	24	16~28	3.6	85	3500	710	840	68
PK3N190B48-R20	BE72DC	BALL	48	36~57	1.8	85	3500	710	840	68

DC Fan with Support Bracket 225x225x95.6mm

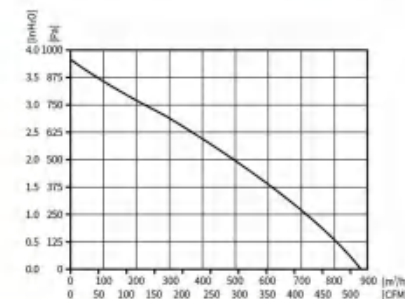


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.8KG	D1

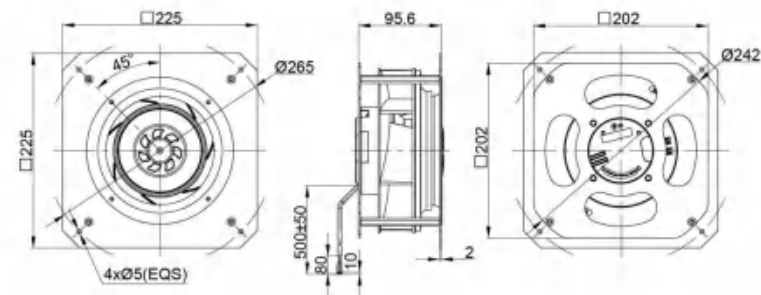


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N190B24-TZ0	BE72DC	BALL	24	16~28	5.0	120	4050	820	780	72
PK3N190B48-TZ0	BE72DC	BALL	48	36~57	2.5	120	4050	820	780	72

DC Fan with Support Bracket 225x225x95.6mm

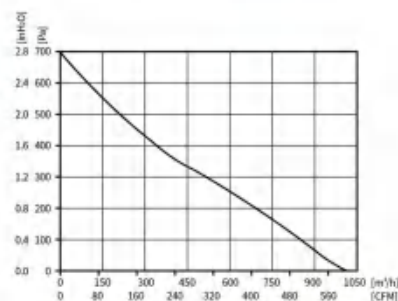


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.2KG	D1

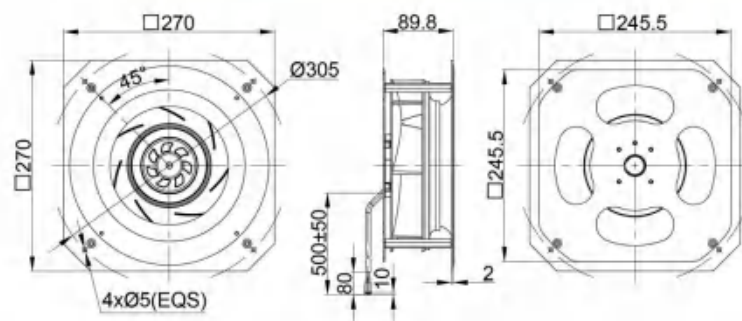


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N190B24-TZ1	BE72DC	BALL	24	16~28	6.4	153.6	4400	880	950	74
PK3N190B48-TZ1	BE72DC	BALL	48	36~57	3.2	153.6	4400	880	950	74

DC Fan with Support Bracket 270x270x89.8mm

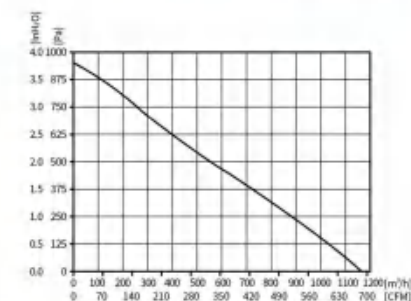


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.6KG	D1

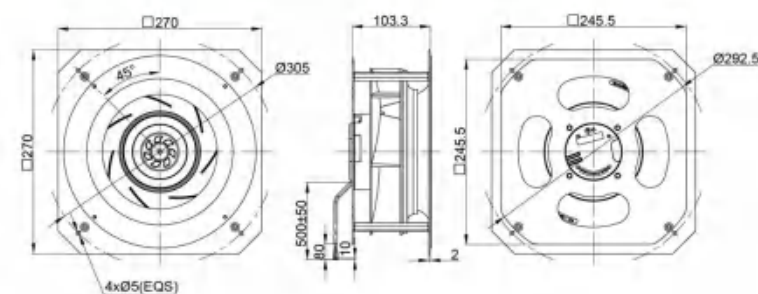


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N220B24-R20	BE72DC	BALL	24	16~28	3.4	85	2600	1010	700	71
PK3N220B48-R20	BE72DC	BALL	48	36~57	1.7	85	2600	1010	700	71

DC Fan with Support Bracket 270x270x103.3mm

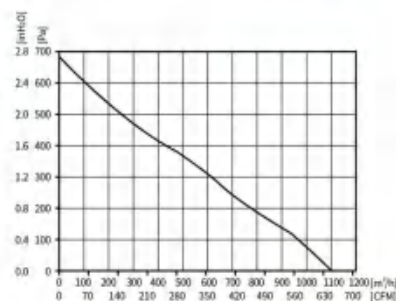


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.2KG	D1

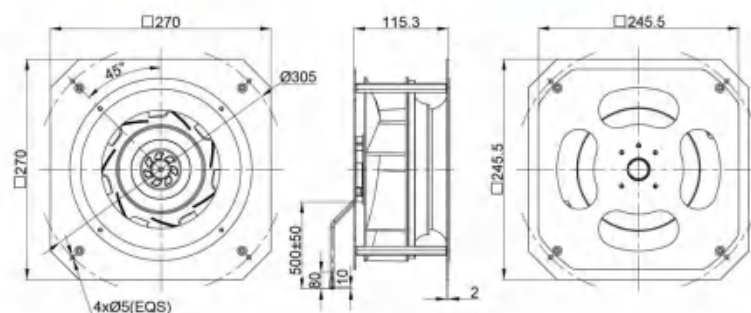


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/H	Pa	dB(A)
PK3N220B24-T20	BE72DC	BALL	24	16~28	7.6	182.4	3500	1165	950	72
PK3N220B48-T20	BE72DC	BALL	48	36~57	3.8	182.4	3500	1165	950	72

DC Fan with Support Bracket 270x270x115.3mm

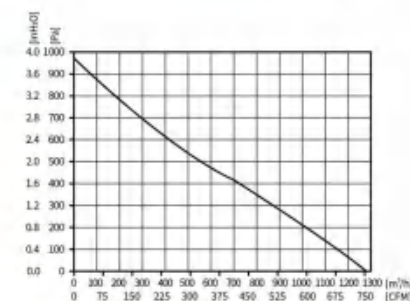


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.5KG	D1

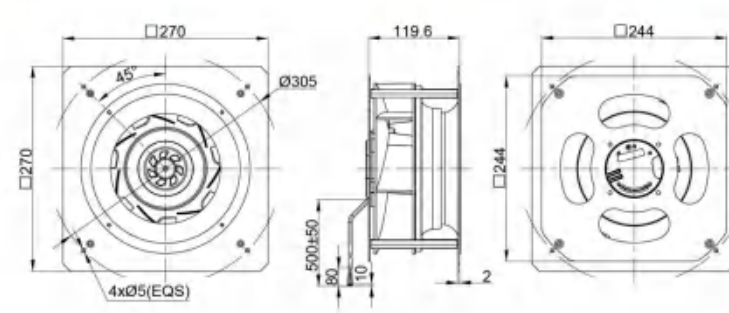


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/h	Pa	dBA
PK3N225B24-RG0	BE72DC	BALL	24	16~28	4.0	96	2400	1100	690	68
PK3N225B48-RG0	BE72DC	BALL	48	36~57	2.0	96	2400	1100	690	68

DC Fan with Support Bracket 270x270x119.6mm

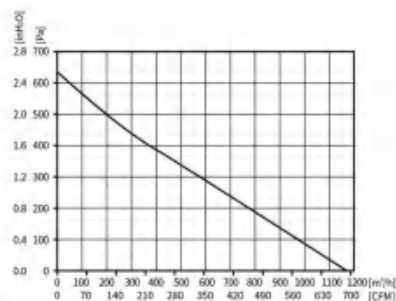


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	4.4KG	D1

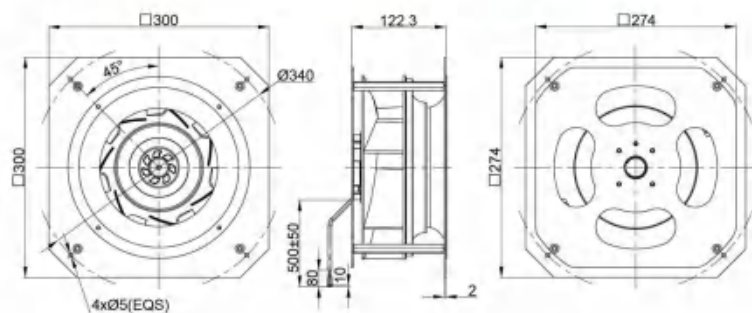


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/h	Pa	dBA
PK3N225B24-TG0	BE72DC	BALL	24	16~28	7.0	168	3000	1280	960	72
PK3N225B48-TG0	BE72DC	BALL	48	36~57	3.5	168	3000	1280	960	72

DC Fan with Support Bracket 300x300x122.3mm

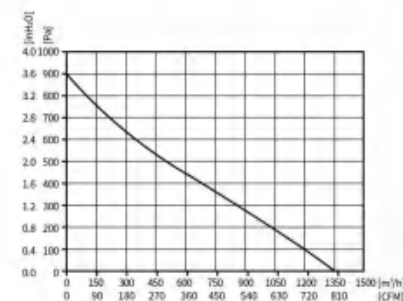


Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	3.7KG	D1

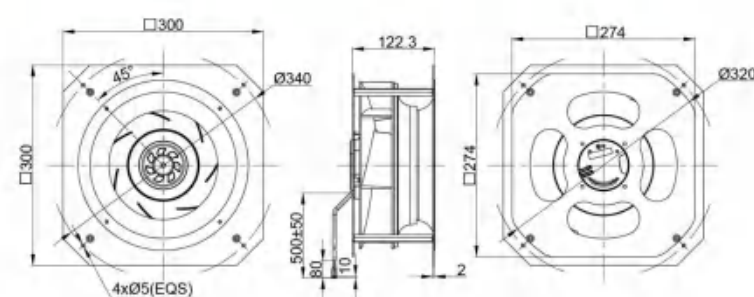


Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VDC	VDC	A	W	RPM	M³/h	Pa	dBA
PK3N250B24-R20	BE72DC	BALL	24	16~28	3.6	86.4	2000	1170	630	68
PK3N250B48-R20	BE72DC	BALL	48	36~57	1.8	86.4	2000	1170	630	68

DC Fan with Support Bracket 300x300x122.3mm



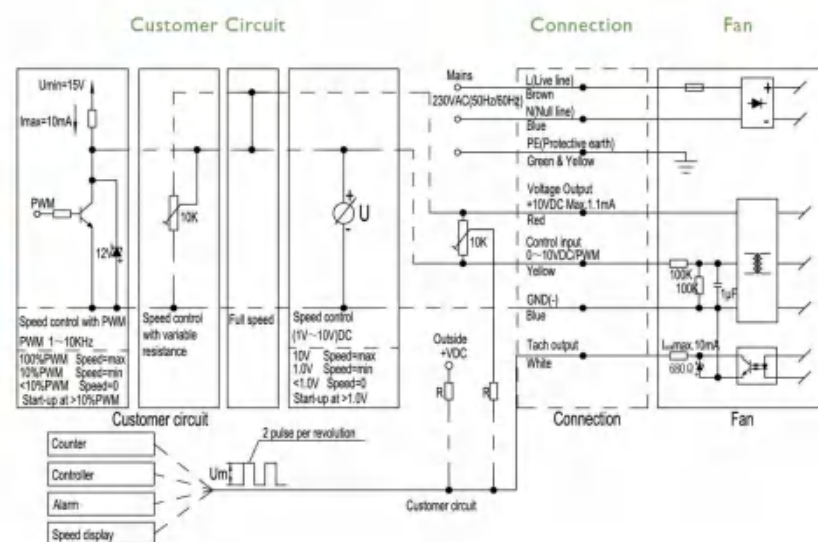
Motor Type	Speed Control	Protection Type	Insulation Class	Operating Temperature	Weight	Wiring Mode
DC BRUSHLESS EXTERNAL MOTOR	0-10VDC/PWM	IP55	B	-25°C~+60°C	4.4KG	D1



Model	Motor	Bearing System	Rated Voltage	Operating Voltage	Rated Current	Rated Power	Rated Speed	Air Flow	Air Pressure	Sound Level
Part No.	Type	B/S	VAC	VDC	A	W	RPM	M³/h	Pa	dBA
PK3N250B24-T20	BE72DC	BALL	24	16~28	6.4	153.6	2700	1350	900	70
PK3N250B48-T20	BE72DC	BALL	48	36~57	3.2	153.6	2700	1350	900	70

Wiring Diagram

IP55 B-FC Motor 59/72 (Nominal voltage 115-230VAC)



Line1 (AC)
Brown= L(Live Line)
Blue= N(Null Line)
Green & Yellow=PE(Protective Earth)

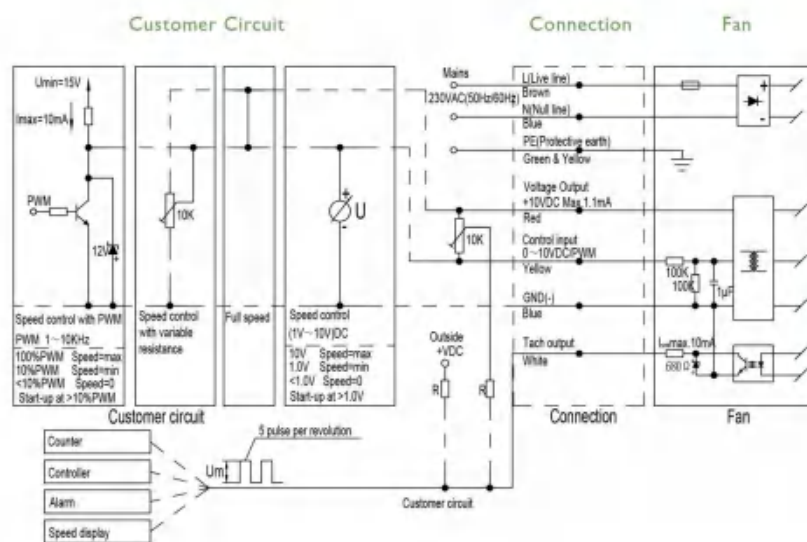
Line2(DC)
Red= Voltage Output +10VDC
Yellow= 0-10VDC/PWM
White= FG
Blue= GND

Signal	Color	Assignment/Function
L	Brown	Mains 50/60 Hz phase
N	Blue	Mains 50/60 Hz neutral
PE	Green & Yellow	Protective Earth

Signal	Color	Assignment/Function
+10VDC	Red	Voltage Output +10VDC max 1.1mA
0-10VDC/PWM	Yellow	Control Input
Tach Output	White	Tach Output 12 puls per revolution
GND	Blue	GND

Wiring Diagram

IP55 E2-FC Motor 92 (Nominal voltage 115-230VAC)



Line1 (AC)
Brown= L(Live Line)
Blue= N(Null Line)
Green & Yellow=PE(Protective Earth)

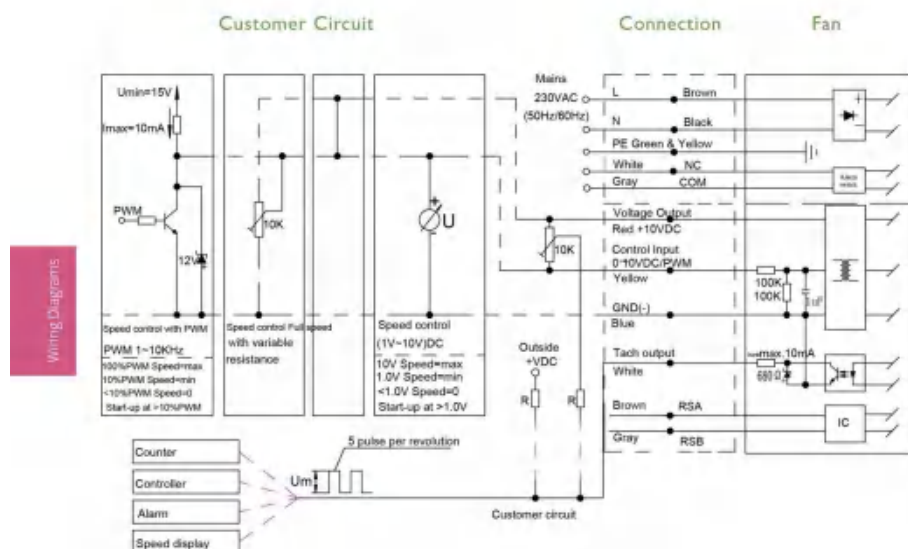
Line2(DC)
Red= Voltage Output +10VDC
Yellow= 0-10VDC/PWM
White= FG
Blue= GND

Signal	Color	Assignment/Function
L	Brown	Mains 50/60 Hz phase
N	Blue	Mains 50/60 Hz neutral
PE	Green & Yellow	Protective Earth

Signal	Color	Assignment/Function
+10VDC	Red	Voltage Output +10VDC max 1.1mA
0-10VDC/PWM	Yellow	Control Input
Tach Output	White	Tach Output 5 puls per revolution
GND	Blue	GND

Wiring Diagram

IP55 E3-EC Motor 102-230VAC-Modbus-Alarm

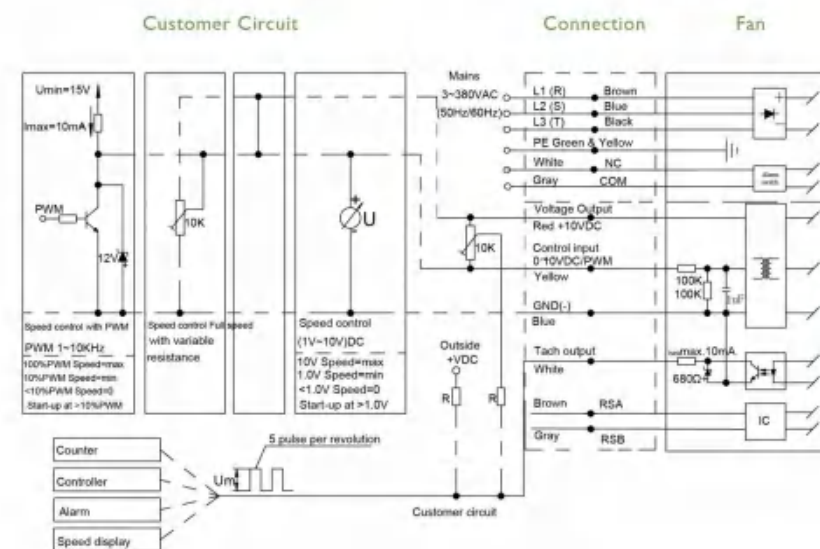


Signal	Color	Assignment/Function
L	Brown	Mains 50/60 Hz phase
N	Blue	Mains 50/60 Hz neutral
PE	Green & Yellow	Protective Earth
NC	White	Alarm switch
COM	Gray	Alarm switch

Signal	Color	Assignment/Function
+10VDC	Red	Voltage Output +10VDC max 1.1mA
0-10VDC/PWM	Yellow	Control Input
Tach Output	White	Tach Output 5 pulse per revolution
GND	Blue	GND
RSA	Brown	Modbus-RS485A
RSB	Gray	Modbus-RS485B

Wiring Diagram

IP55 E4-EC Motor 102-380VAC-Modbus-Alarm

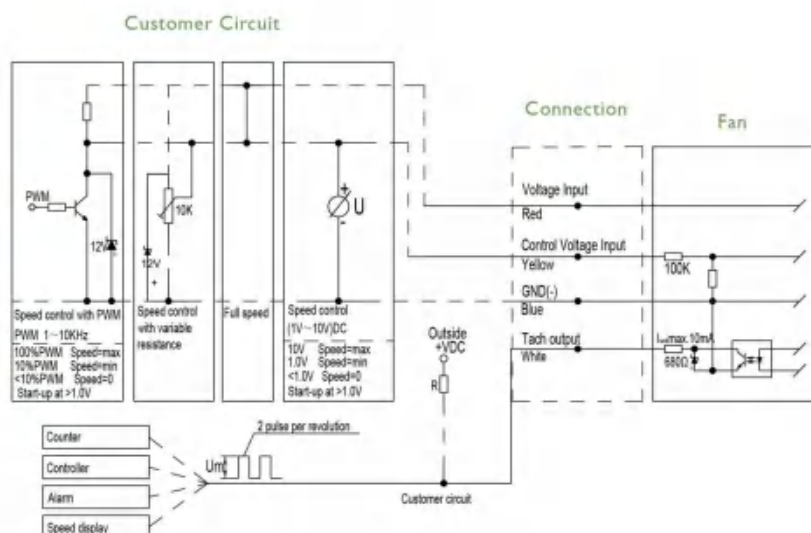


Signal	Color	Assignment/Function
L1	Blue	Mains AC380V 50/60 Hz R
L2	Brown	Mains AC380V 50/60 Hz S
L3	Black	Mains AC380V 50/60 Hz T
PE	Green & Yellow	Protective Earth
NC	White	Alarm switch
COM	Gray	Alarm switch

Signal	Color	Assignment/Function
+10VDC	Red	Voltage Output +10VDC max 1.1mA
0-10VDC/PWM	Yellow	Control Input
Tach Output	White	Tach Output 5 pulse per revolution
GND	Blue	GND
RSA	Brown	Modbus-RS485A
RSB	Gray	Modbus-RS485B

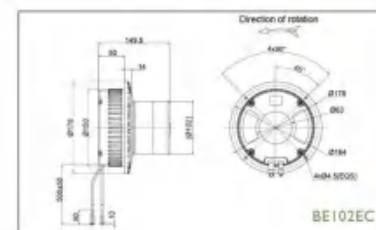
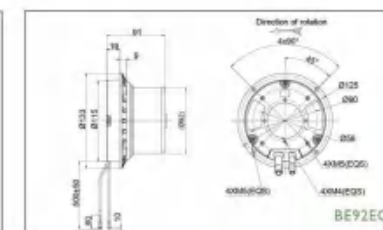
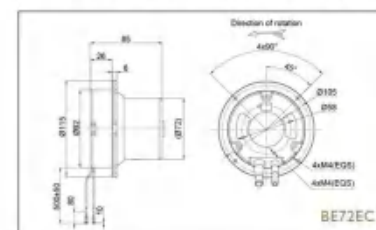
Wiring Diagram

IP55 D1-DC Motor 72 (24,48,85,110,310VDC)



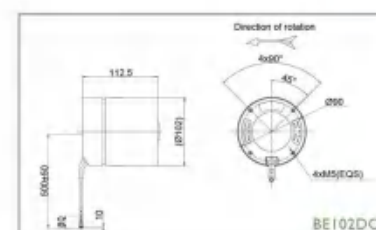
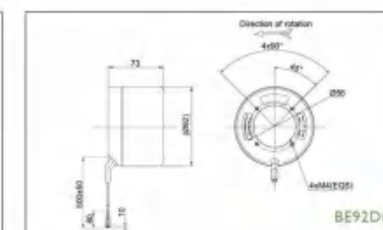
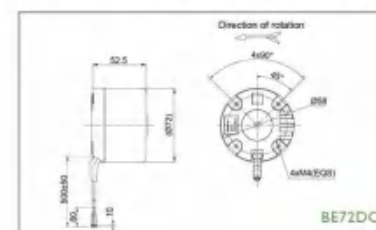
Red= +	Signal	Color	Assignment/Function
Yellow= 0-10VDC/PWM	+	Red	Voltage Input
White= FG	0-10VDC/PWM	Yellow	Control Input
Blue= GND	Tach output	White	Tach output:2 puls per revolution
	GND	Blue	GND

IP44 EC-AC Motor



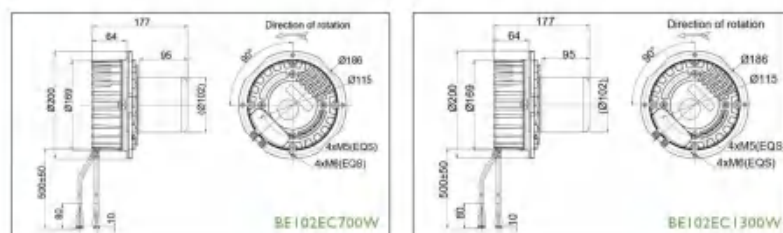
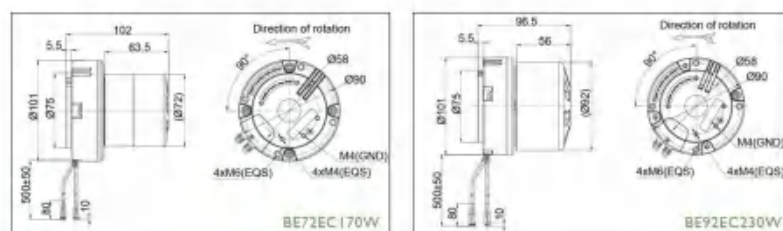
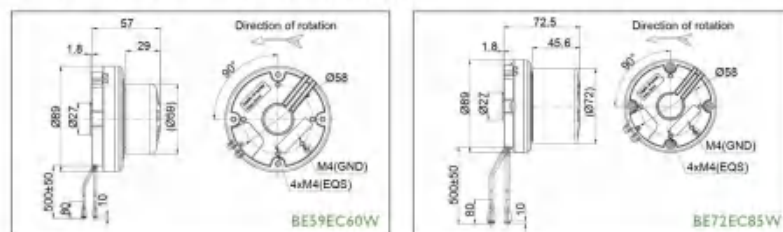
Motor	BE72EC120W	BE92EC230W	BE102EC600W
Voltage	230V	230V	230V
Frequency	50Hz	50Hz	50Hz
Current	1.0A	1.7A	4.3A
Power	120W	230W	600W
Speed	400-445RPM	400-350RPM	400-350RPM
Operating Temperature	-25°C ~ +60°C	-25°C ~ +60°C	-25°C ~ +60°C
Wiring Mode	E1	E2	E3

IP44 EC-DC Motor



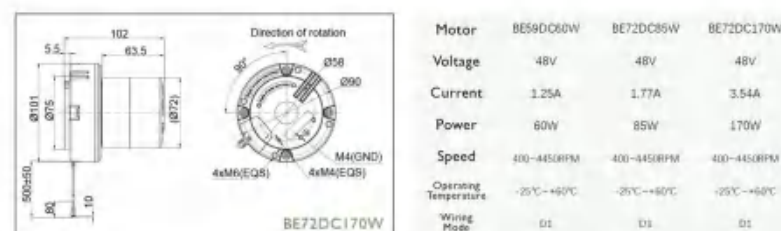
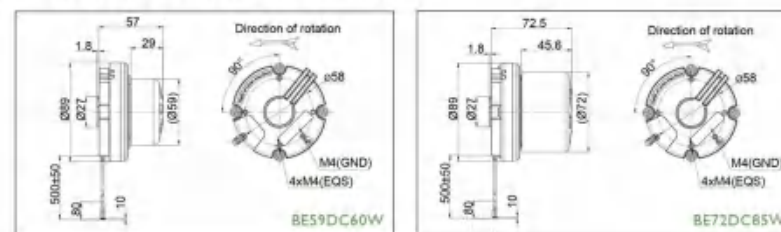
Motor	BE72DC120W	BE92DC230W	BE102DC480W
Voltage	48V	48V	48V
Current	2.5A	4.8A	10A
Power	120W	230W	480W
Speed	400-445RPM	400-330RPM	400-220RPM
Operating Temperature	-25°C ~ +60°C	-25°C ~ +60°C	-25°C ~ +60°C
Wiring Mode	D1	D2	D3

IP55 EC-AC Motor



Motor	BE59EC60W	BE72EC85W	BE72EC170W	BE92EC230W	BE102EC700W	BE102EC1300W
Voltage	230V	230V	230V	230V	230V	380V
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Current	0.47A	0.6A	1.1A	2.0A	3.5A	2.5A
Power	60W	85W	170W	230W	700W	1300W
Speed	400~445RPM	400~445RPM	400~445RPM	400~445RPM	400~445RPM	400~445RPM
Operating Temperature	-25°C~+60°C	-25°C~+60°C	-25°C~+60°C	-25°C~+60°C	-25°C~+60°C	-25°C~+60°C
Wiring Mode	E1	E1	E1	E2	E3	E4

IP55 EC-DC Motor



Motor	BE59DC60W	BE72DC85W	BE72DC170W
Voltage	48V	48V	48V
Current	1.25A	1.77A	3.54A
Power	60W	85W	170W
Speed	400~445RPM	400~445RPM	400~445RPM
Operating Temperature	-25°C~+60°C	-25°C~+60°C	-25°C~+60°C
Wiring Mode	E1	E3	E1



Fan Controller



1. Product Introduction

The fan controller is an external Modbus controller, which can realize single control and multiple centralized control. The controller has a built-in Mod-bus communication protocol to control the operation of the fan through the group control system. It is mostly used in FFU group control occasions.

2. The Main Function

The controller controls the fan speed through speed feedback, and uses the principle of speed closed-loop control to control the fan operation. Its main functions are:

- Control the start and stop and speed regulation of each fan through the host;
- Remote centralized control and fault diagnosis can be realized;
- Each control unit module has a settable ID address;
- The current speed and current ID number can be displayed;
- With alarm function.

3. Product Dimensions and Installation Requirements

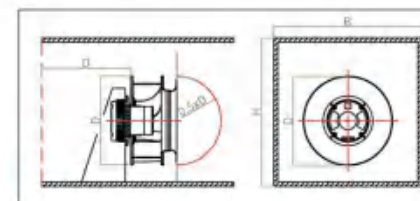
The controller is powered by the fan without external power supply; the controller is equipped with 2P and 4P quick connect terminals for connection, making the connection simpler and more convenient. The product is designed as a panel installation method, which is convenient for installation and construction. See the figure below for the opening size: 112mm x 57mm.

4. Product Application Areas

This product is mainly used in the field of FFU, which can make ordinary IC fans realize group control function, and can effectively solve the problem of group control of ordinary fans.

Effects of installation space

When mounting our product in a rectangular box, air performance might be reduced.



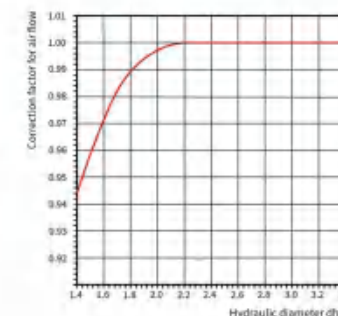
dh = Hydraulic diameter

Formula: $dh = 2 \times B \times H / (B + H)$

B = Width of box

H = Height of box

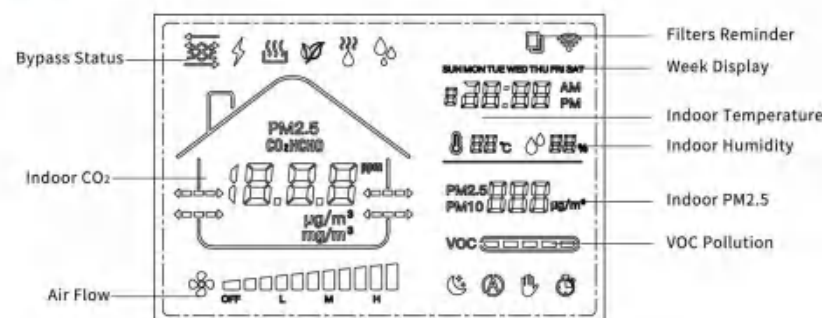
D = Outer diameter of the fan



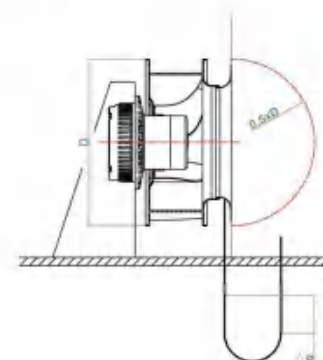
PS2 intelligent multi-functional touch screen controller

1. General description

PS2-PM2.5/CO₂ controller adopts touch technology, which is flexible and convenient. There are sensors which can monitor the indoor temperature, humidity, PM2.5 and CO₂ concentration detection function. The output signal of controller can directly control the starting and RPM of the fresh air. It can be widely used in residential, commercial and industrial conditions, and effectively improve the air quality, create a healthy, comfortable, efficient, environmental protection and energy-saving living environment.



Defining air flow rate for inlet rings with pressure relief



The differential pressure approach compares the static pressure before the inlet nozzle with the static pressure inside the inlet nozzle. Air flow can be calculated on the basis of the differential pressure (difference in pressure of the static pressures) in keeping with the following equation:

$$qv = k \sqrt{\Delta p} \quad qv \text{ in } [m^3/h] \text{ and } \Delta p \text{ in } [Pa]$$

If constant air flow is to be controlled, then the nozzle pressure has to be kept constant:

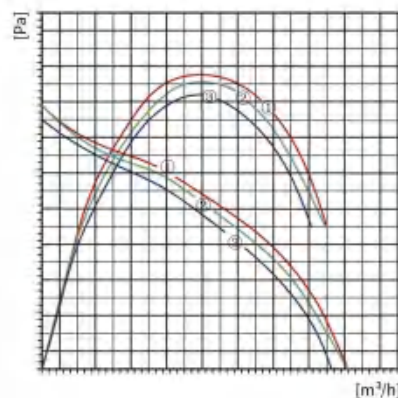
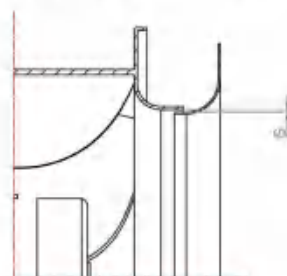
$$\Delta p = qv^2 / k^2$$

k takes into account the specific nozzle characteristics. Differences in static pressure are measured in 1/4 measuring point(s) along the circumference of the inlet nozzle. Connection on the customer side is accomplished via a pre-mounted T tube connector. This tube connector is suited for pneumatic hoses with an internal diameter of 4 mm.

Effects of centrifugal air gap change

The centrifugal air gap between the inlet ring and the impeller cover affects centrifugal fan air flow and operation efficiency. Changes in the size of the inlet ring air gap affects the following curve.

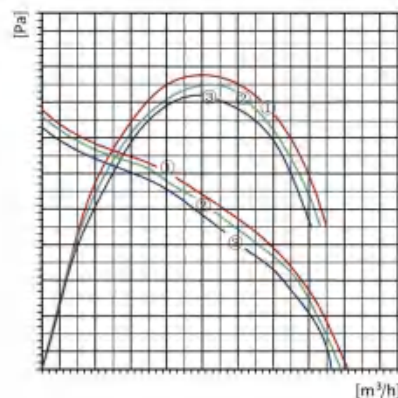
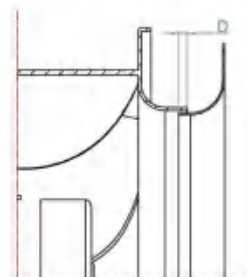
①: $s/D = 0.4\%$ ②: $s/D = 1.0\%$ ③: $s/D = 1.4\%$



Effects of overlapping dimension

The axial overlap between the inlet ring and the impeller cover affects centrifugal fan air flow and operation efficiency. Overlap changes affect the following curve:

①: $x/D = 0.6\%$ ②: $x/D = 0\%$ ③: $x/D = -0.8\%$



Precision Noise Measuring

Measurement conditions for air and noise measurement

PBM products are measured under the following conditions:

- Axial and diagonal fans in direction of rotation "V" in full nozzle and without guard grille
- Backward curved centrifugal fans, free-running and with inlet nozzle
- Forward curved single and dual inlet centrifugal fans with housing

Noise measurements

All noise measurements are carried out in low-reflective test rooms with reverberant floor. Thus the PBM acoustic test chambers meet the requirements of precision class 1 according to DIN EN ISO 3745. For noise measurement, the fans being tested are placed in a reverberant wall and operated at nominal voltage (for AC, also at nominal frequency) without additional attachments such as the guard grille.

Sound pressure level and sound level

All acoustic values are established according to ISO 13347, DIN 45635 and ISO 3744/3745 to accuracy class 2 and given in A-rated form. When the sound pressure level (L_p) is measured, the microphone is on the intake side of the fan being tested, usually at a distance of 1 m on the fan axis.

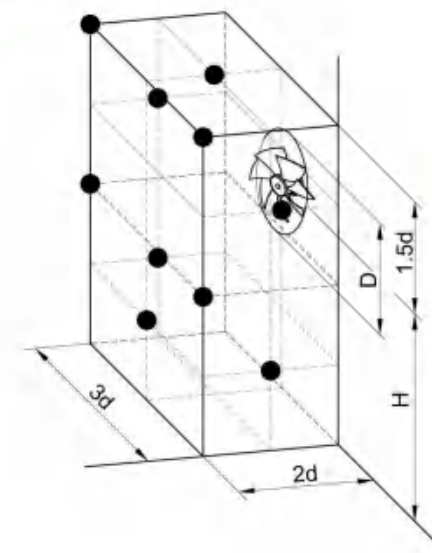
To measure the sound power level (L_w), 10 microphones are distributed over an enveloping surface on the intake side of the fan being tested (see graphic). The sound power level measured can be roughly calculated from the sound pressure level by adding 7 dB.

Measuring configuration as per ISO 13347-3 respectively DIN 45635-38:10 measuring points

$$d \geq D$$

$$H = 1.5d \dots 4.5d$$

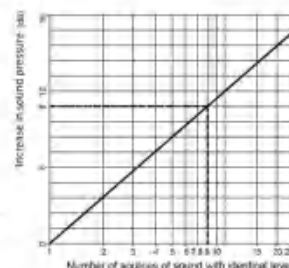
$$\text{Measurement area } S = 6d^2 + 7d(H + 1.5d)$$



Combined level of multiple same-level sound sources

Adding 2 noise sources with the same level results in a level increase of approx. 3 dB. The noise characteristics of multiple identical fans can be determined in advance based on the noise values specified in the data sheet. This is shown in the diagram opposite.

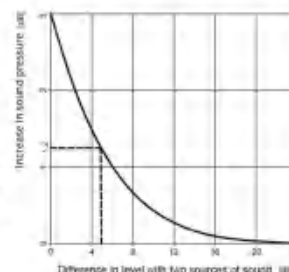
Example: 9 PCS PK3N190B2EM axial fans are on a condenser. According to the data sheet, the sound pressure level of a fan is approximately 72 dB(A). The level increase measured from the diagram is 9 dB. Thus the overall sound level of the installation can be expected to be 79 dB(A).



Combined level of two different-level sound sources

The acoustic performance of two different fans can be predetermined based on the sound levels given in the data sheet. This is shown in the diagram opposite.

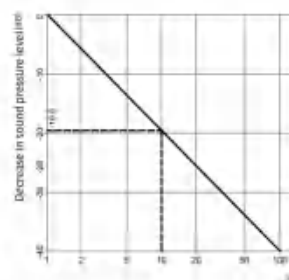
Example: There is an axial fan PK3N225B2EH with a sound pressure level of 71 dB(A) at the operating point and an axial fan PK3N220B2EH with 76 dB(A) in a ventilation unit. The level difference is 5 dB. The level increase can now be read in the diagram as approx. 1.2 dB. This means that the overall sound level of the unit can be expected to be 77.2 dB(A).



Distance laws

Sound power level is independent from distance to the sound source. In contrast to this, sound pressure level decreases the further away the noise source is. The adjacent diagram shows the decrease in level under far sound field conditions. Far sound field conditions apply whenever the distance between microphone and fan is big when compared to fan diameter and wavelength to be considered. For more information on far sound field, please consult the relevant literature on this complex topic. Per doubling of distance, the level in the far sound field decreases by 6 dB. In the near field of the fan, other correlations apply and the decrease in levels can be considerably smaller. The following example only applies to far sound field conditions and can vary strongly depending on the installation effects.

Example: An axial fan PK3N225B2EM, a sound pressure level of 66 dB(A) was measured at a distance of 1 m. According to the adjacent diagram, at a distance of 10 m we would get a reduction by 19.5 dB, i.e. a sound pressure level of 46.5 dB(A).



How to Choose Fans Correctly

All need to use is the electrical machinery and electronic products project engineer which the ventilator radiates, a specific system that radiates the needed amount of air flow is a must, the amount of air flow is decided by the understanding system power consumption and the ability of carrying off the enough quantity of heat. Try to prevent the system superheat situation. The fact demonstrated that the system service life can be reduced as a result of the cooling system insufficiency, therefore project engineer also should understand system sales volume and price, possibly because the system service life symbol user did not anticipate drops. If you'd like to choose the correct well ventilated module, the following goals need to be considered:

- Best air transport efficiency
- Smallest suitable size
- Lowest noise
- Smallest power consumption
- Biggest margin of safety and service life
- Reasonable total cost

So following three steps to correctly choose radiation fan or the drum ventilator, help you achieve the above goals:

Total cooling demand, first must understand three key aspects by obtaining the cooling demand the quantity of heat that must be transformed (temperature DT). Counterbalance transformation quantity of heat wattage(W). The detachment quantity of heat needs amount of wind(CFM).

The total cooling demand regarding of system operating effectively is really important. The effective system operation must provide the ideal operation condition, enables in all systems the module to display the biggest function and the longest service life.

The following available ways are generally used when choosing the ventilator motor:

- Figures out quantity of heat which the equipment interior produces
- Decided the equipment interior can permit temperature rise scope
- Amount of air flow needs which from the equation computation
- If the known system equipment interior heat dissipating capacity and the permission total temperature rise quantity, may obtain the amount of wind which is for the cooling equipment needs.

Following into basic hot transformation equation:

$$H = Cp \times W \times \Delta T$$

in which: H = Hot transformation quantity

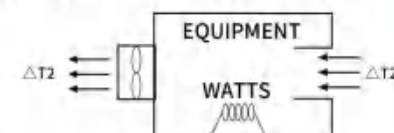
Cp = Air specific heat

ΔT = In the equipment rises temperature

W = Air flow weight

We know (W = CFM x D) in which D = is mad the density after the substitution, We obtain, Conversion factors with the substitution sea level air specific heat and the density, may obtain following radiation equation:

$$CFM = 3160 \times KW / \Delta T$$



Eg(a): The equipment Internal consumption electric power is 500W, the temperature difference is 20 degrees Fahrenheit, please see the computed result below:

$$Q = \frac{3.16 \times 500(W)}{20} = 79CFM \quad \text{or} \quad Q = \frac{0.09 \times 500(W)}{20} = 2.25m^3/Min$$

(b) The equipment internal consumption electric power is 500W, the temperature difference is 10 degrees centigrade:

$$Q = \frac{1.76 \times 500(W)}{20} = 88CFM \quad \text{or} \quad Q = \frac{0.05 \times 500(W)}{20} = 2.5m^3/Min$$

Amount of Wind Conversion Table

CMS	CMM	L/s	L/min	CMH	CFS	CFM
m ³ /s	m ³ /min	L/s	L/min	m ³ /h	ft ³ /s	ft ³ /min
1	60	1x10 ³	6x10 ⁴	3.6x10 ³	35.30	2.118x10 ³
0.0167	1	460	1x10 ³	60	0.5885	35.30
0.001	0.06	1	60	3.60	0.0353	2.12
1.67x10 ⁻⁵	0.001	0.0167	1	0.06	5.88x10 ⁻⁴	0.0353
2.77x10 ⁻⁴	0.0167	0.277	16.7	1	9.81x10 ⁻³	0.5885
0.0283	1.698	460	1.69x10 ³	101.9	1	60
4.7x10 ⁻⁴	0.0283	0.47	28.3	1.698	0.0167	1

Static pressure conversion table

Pa	Bar	Torr	kgf/cm ²	mmH ₂ O	inHg	psi
N/m ²	Bar	mmHg	kgf/cm ²	mmH ₂ O	inHg	lb/in ²
1	1x10 ⁻⁵	7.501x10 ⁻³	1.02x10 ⁻⁵	0.1021	2.953x10 ⁻⁴	1.45x10 ⁻⁴
1x10 ³	1	750.10	1.02	1.02x10 ⁴	29.53	14.50
133.30	1.33x10 ⁻¹	1	1.359x10 ⁻¹	13.61	0.03937	0.01934
9.807x10 ⁴	0.9807	735.5	1	1.001x10 ⁴	28.96	14.22
9.807	9.807x10 ⁻⁶	0.07348	9.96x10 ⁻⁶	1	2.89x10 ⁻³	1.42x10 ⁻³
3.386x10 ³	0.03386	25.4	0.03453	345.6	1	0.4912
6.895x10 ³	1.013	760	1.033	1.034x10 ⁴	29.92	14.7

The following available ways are generally used when choosing the ventilator motor:

- Figures out quantity of heat which the equipment interior produces
- Decided the equipment interior can permit temperature rise scope
- Amount of air flow needs which from the equation computation
- If the known system equipment interior heat dissipating capacity and the permission total temperature rise quantity, may obtain the amount of air flow which is for the cooling equipment needs.

Fan Selection Guide



In order to provide you with more considerate fan selection and technical solution services, please provide your demand information in the following table as much as possible:

Note: The Red * marked is required.		Date	
Project Name		* Client Name	
* Applied to Which Products or Industries		Special Working Conditions to be Reminded	
Fan Mounting Space Size (LxWxH)	mm	Motor Type	
* Blade Type and Materials		* Impeller Size (LxWxH)	mm

Is it possible to provide 《Fan Technical Requirements List》 or replaced fan specification or replaced fan brand & model number?

Fan's Key Technical Requirements	Key Parameters	P/Q	Replaced Fan Brand	Replaced Fan Model Number	Photo of Replaced Fan Name Plate

Key Technical Parameter Information For Fan Selection

* Rated Voltage (V)		Max. Current (A)	Frequency (HZ)
Rated Power(W)		Motor Output Power (W)	Bearing Type
* Max. Airflow (M ³ /H)		* Max. Air Pressure (Pa)	* Speed (RPM)
Operation Point's Air Flow & Air Pressure		Max. Operating Temperature (°C)	Rotation or Air Flow Direction
* Expected Sound Level (dBA)		Water and Dust Protection Class (IPxx)	Isolation Class
Motor Operating Protections		Speed Control Type	Certificates
Operating Voltage Range (V)		Wire Length and Connector Requirements	Wiring Mode
Fan Efficiency (η)		Motor Efficiency (η)	Fan Operation Control

Key Commercial Requirements

Total Quantity Demand		Quantity and Date for the First Order	
Quantity of Sample		Sample Demand Time	
Packing Demand		Type of Shipping	
* Recipient's Name and Mobile Number		* Detail Receiving Address	

Client's Other Requirements:

Such as: non-standard fan size (mm), special installation requirements, special working and operating environment, etc.

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