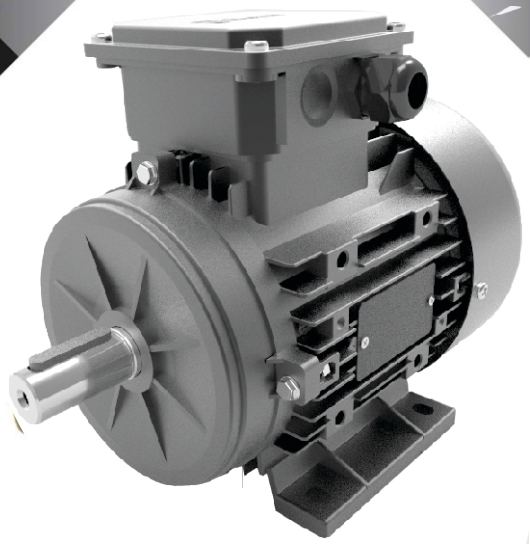
miksan MOTOR



ماهان موتور آریا

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کاوه، پلاک۵٦، ساختمان ماهان موتور آریا

Protection, Isolation, Cooling

IP Protection Class

According to IEC 60034-5 standard, the IP protection class determines the degree to prevent water or foreign substances from reaching the motor parts that will be dangerous by passing through the body of rotary electric machines.This protection class is indicated on the labels of motors. Our standard motor protection class is IP54. Optionally, asynchronous motors are produced in IP55 and IP65 protection class.

First characteristic number : Protection against the introduction of solid foreign substances		Second characteristic number : protection against water	
0	unprotected machine	0	unprotected machine
1	protected against solid objects greater than ! 50 mm	1	protected against dripping water
2	protected against solid objects greater than 12,5 mm	2	protected against dripping water vertically up to 15°
3	protected against solid objects greater than 2,5 mm	3	water spray protection up to 60° vertically
4	protected against solid objects greater than 1 mm	4	protected against splash water
5	protected against dust	5	protection against water jet sprayed from all directions
6	dust-proof	6	protection against severe water jet sprayed from all directions
		7	protected against the effects of temporary water immersion
		8	protected from the effects of staying in the water

İsolation Class

Our standard production motors are designed within the limits of class B temperature increase.It has F type insulation. F type insulation at 40°C ambient temperature with 10°C security rate allow a maksimum temperature rise of 105°C, but for better performance and longer life the temperature rise is limited to 80°C when our motors are designed.

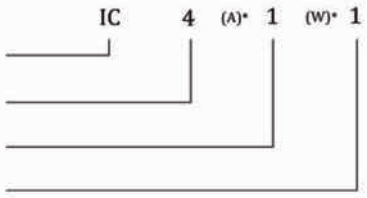
According to ; temperature rise (ΔT*) and maximum temperatures at the hottest points of the coil (Tmax) , IEC 60034-1 standards temperature class

	ΔT*	Tmax
B class	80K	125°C
F class	105K	155°C
H class	125K	180°C

Ambient temperature	45°C	50°C	55°C	60°C
Service factor at ambient temperatures above 40° C (class B temperature rise)	95%	90%	85%	90%

Method of cooling

The code description of the cooling methods defined according to IEC 60034-6 standard and applied in our engines is as follows.



Code letters

Circuit arrangement
(4: Frame surface cooled)
Primary coolant
(1: Self circulation)
Secondary coolant
(1: Self circulation)

4: Cooling from body surface **1: Air circulation inside of engine** **1: Propeller which mounted on spindle**

Mechanical Construction

Frame

The motor frames made of aluminum are fixed to the stator by hot pressing method. This application provides rigid structure and cooling surface.
(Special dimensions are also available upon customer requests.)

End-shields

End-shields are made of aluminium alloy. End-shields attach to frame , also end-shields are the parts of motor housing which support the bearings. (customized design upon customer request are available.)

Terminal Box

For 90 type and over motors, the terminal boxes are made of aluminum and for smaller motors , the terminal boxes are made of plastic material. The terminal boxes greatly increase safety by protecting the motor electrical connection against foreign substances. Single-phase motors have a permanent circuit capacitor in terminal box.

Cooling Fan

Standard Miksan Motors contain plastic fan which is connected to the motor shaft. This application ,provides cooling without being dependent on the direction of rotation of the motor. (Aluminum fan can also be manufactured upon customer request.)

Painting

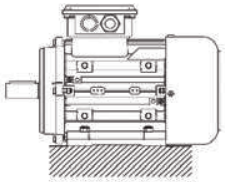
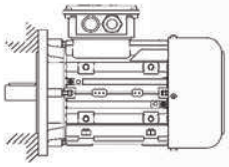
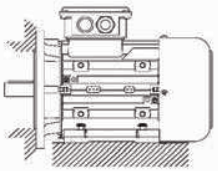
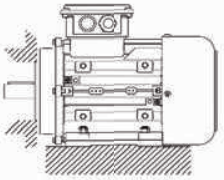
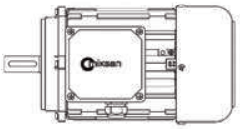
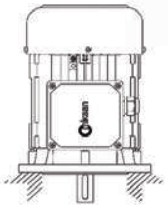
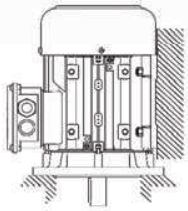
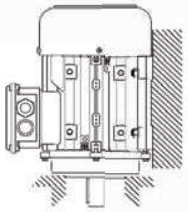
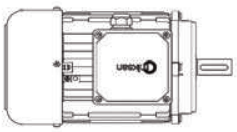
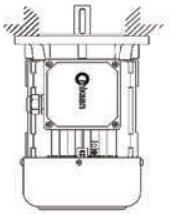
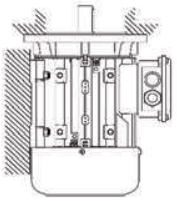
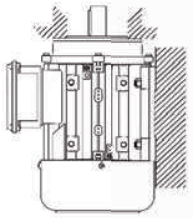
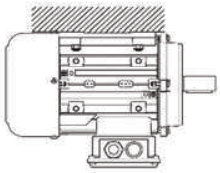
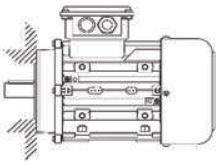
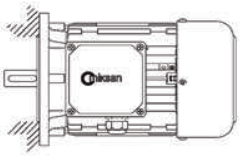
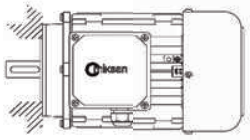
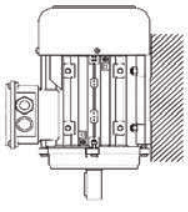
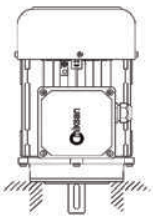
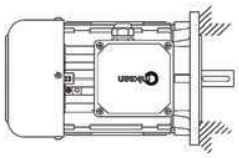
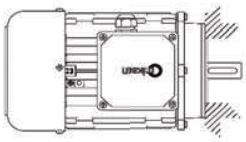
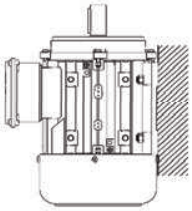
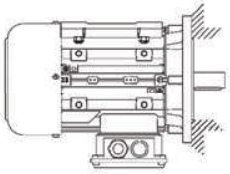
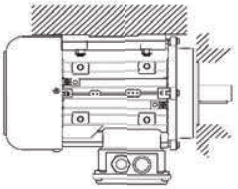
All of our standard motors are painted with RAL 7016. On special request RAL 9005 paint can be used.
(Please contact us for different color requests.)

Bearings

Standard design bearings have continuous lubrication.

Frame Size	Pole	Front Bearing	Rear Bearing	Dimensions
56	2 - 4	6201 - 2Z C3	6201 - 2Z C3	12x32x10
63	2 - 4	6202 - 2Z C3	6202 - 2Z C3	15x35x11
71	2 - 4 - 6	6202 - 2Z C3	6202 - 2Z C3	15x35x11
80	2 - 4 - 6 - 8	6204 - 2Z C3	6204 - 2Z C3	20x47x14
90S	2 - 4 - 6	6205 - 2Z C3	6205 - 2Z C3	25x52x15
90L	2 - 4 - 6	6205 - 2Z C3	6205 - 2Z C3	25x52x15
100	2 - 4 - 6	6206 - 2Z C3	6206 - 2Z C3	30x62x16
112	2 - 4 - 6	6206 - 2Z C3	6206 - 2Z C3	30x62x16
132S	2 - 4	6208 - 2Z C3	6208 - 2Z C3	30x62x16
132M	2 - 4	6208 - 2Z C3	6208 - 2Z C3	40x80x18

Types of mounting according to IEC 60034−7

Foot mounting	Flange mounting	Flange and foot mounting	
B3 - IM 1001	IM B5 - IM 3001	IM B35 - IM 2001	IM B34 - IM 2101
			
IM B6 - IM 1051	IM V1 -IM 3011	IM V15 - IM 2011	IM V17 - IM 2111
			
IM B7 - IM 1061	IM V3 - IM 3031	IM V35 - IM 2031	IM V37 - IM 2131
			
IM B8 - IM 1071	IM B14 - IM 3601	IM 2051	IM 2151
			
IM V5 - IM 1011	IM V18 - IM 3611	IM 2061	IM 2161
			
IM V6 - IM 1031	IM V19 - IM 3631	IM 2071	IM 2171
			

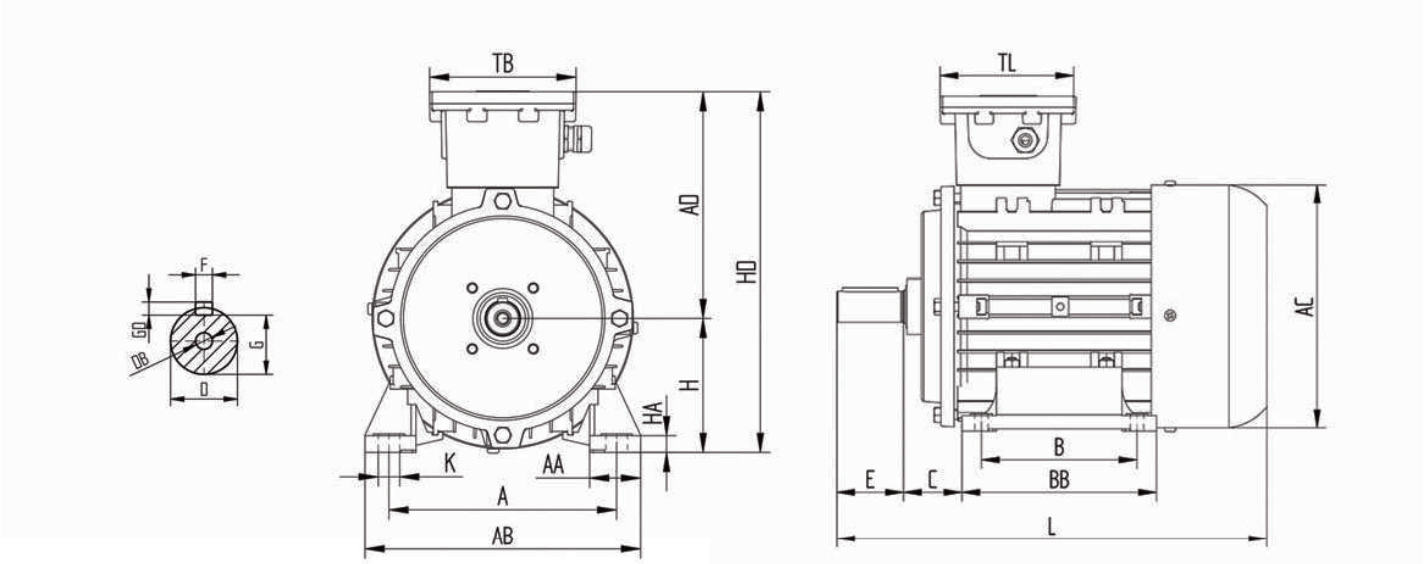
EX SERIES EX-PROOF MOTORS

EX SERIES

Voltage : 400V 50Hz/460V 60Hz
Ins. Class : F
IP : 55/65
Operation Type : S1
Certificate No : IEP 16 ATEX 0433X

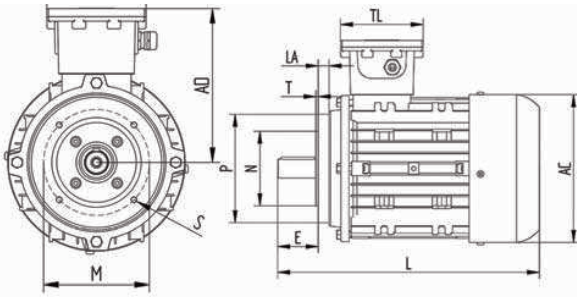
Type	$Pn_{(kW)}$ 50Hz	$Pn_{(kW)}$ 60Hz	HP 50Hz	HP 60Hz	min^{-1} 50Hz	min^{-1} 60Hz	Tn Nm	cos φ	I_n 400V	I_A/I_N	M_A/M_N	M_K/M_N	J kgm^2	kg
3000 min⁻¹														
56 2A EX	**0.09**	**0.11**	0.12	0.15	2815	3370	0.31	0.70	0.30	3.7	3.1	2.9	0.00014	4.0
56 2B EX	**0.12**	**0.14**	0.16	0.21	2835	3395	0.41	0.75	0.35	4.9	3.6	3.0	0.00015	4.2
56 2C EX	**0.18**	**0.22**	0.25	0.33	2800	3355	0.62	0.84	0.50	4.9	3.7	2.9	0.00016	4.4
63 2A EX	**0.18**	**0.22**	0.25	0.30	2785	3345	0.63	0.69	0.65	4.2	2.3	2.7	0.0001	4.8
63 2B EX	**0.25**	**0.30**	0.34	0.41	2755	3310	0.87	0.78	0.70	4.5	2.4	2.8	0.00012	5.3
63 2C EX	**0.37**	**0.44**	0.50	0.60	2760	3315	1.30	0.70	1.20	4.3	2.3	2.6	0.00021	5.7
71 2A EX	**0.37**	**0.44**	0.50	0.60	2790	3350	1.25	0.71	1.10	4.0	2.5	2.6	0.00032	6.5
71 2B EX	**0.55**	**0.66**	0.74	0.98	2760	3310	1.90	0.80	1.45	4.5	2.4	2.5	0.00065	7.4
80 2A EX	**0.75**	**0.90**	1.00	1.20	2890	3470	2.50	0.77	1.75	6.1	2.4	3.2	0.00078	10.2
80 2B EX	**1.10**	**1.32**	1.50	1.80	2790	3350	3.80	0.83	2.60	5.0	2.5	3.2	0.00087	10.2
90S 2A EX	**1.50**	**1.80**	2.00	2.40	2907	3490	4.93	0.81	3.25	6.4	3.0	3.7	0.0013	15.2
90L 2B EX	**2.20**	**2.64**	3.00	3.60	2875	3450	7.30	0.81	4.75	6.6	2.7	2.9	0.0016	15.3
100 2A EX	**3.00**	**3.60**	4.00	4.80	2905	3485	9.85	0.86	5.95	7.6	3.5	4.1	0.0026	23.4
100 2B EX	**4.00**	**4.80**	5.50	6.60	2865	3440	13.2	0.88	7.50	7.6	2.7	3.0	0.0036	23.7
112 2A EX	**4.00**	**4.80**	5.50	6.60	2905	3485	13.2	0.91	7.16	7.1	2.9	3.6	0.0046	28.3
112 2B EX	**5.50**	**6.60**	7.50	9.00	2900	3480	18.1	0.87	9.85	7.4	2.8	3.5	0.0050	33.2
132S 2A EX	**5.50**	**6.60**	7.50	9.00	2910	3490	18.1	0.92	9.73	7.5	2.7	3.4	0.015	45.4
132S 2B EX	**7.50**	**9.50**	10.0	12.0	2935	3520	24.5	0.90	13.4	7.3	2.8	3.4	0.018	51.5
132M 2C EX	**11.0**	**13.2**	15.0	18.0	2910	3490	36.1	0.91	19.7	7.5	3.0	2.2	0.021	53.2
1500 min⁻¹														
56 4A EX	**0.09**	**0.11**	0.12	0.15	2815	3370	0.31	0.70	0.30	2.7	2.4	2.5	0.00014	4.0
56 4B EX	**0.12**	**0.14**	0.16	0.21	2835	3395	0.41	0.75	0.35	2.9	2.2	2.3	0.00015	4.2
56 4C EX	**0.18**	**0.22**	0.25	0.33	2800	3355	0.62	0.84	0.50	3.2	2.1	2.3	0.00016	4.4
63 4A EX	**0.12**	**0.14**	0.16	0.19	1380	1660	0.85	0.60	0.65	3.1	2.2	2.6	0.00019	4.7
63 4B EX	**0.18**	**0.22**	0.25	0.30	1330	1600	1.30	0.68	0.75	3.0	1.9	2.3	0.00022	5.1
63 4C EX	**0.25**	**0.30**	0.34	0.41	1320	1585	1.85	0.66	1.05	2.9	2.0	2.2	0.00035	5.5
71 4A EX	**0.25**	**0.30**	0.34	0.41	1420	1705	1.70	0.70	1.00	3.3	2.3	2.5	0.00048	6.4
71 4B EX	**0.37**	**0.44**	0.50	0.60	1425	1710	2.50	0.62	1.35	3.5	2.4	2.3	0.00056	7.2
80 4A EX	**0.55**	**0.66**	0.74	0.98	1410	1690	3.80	0.73	1.50	3.7	2.0	2.0	0.0010	9.9
80 4B EX	**0.75**	**0.90**	1.00	1.20	1430	1715	5.10	0.70	2.10	4.0	2.1	2.1	0.0018	10.8
90L 4A EX	**1.10**	**1.32**	1.50	1.80	1437	1725	7.40	0.72	2.75	5.2	2.8	3.1	0.0032	16.6
90L 4B EX	**1.50**	**1.80**	2.00	2.40	1415	1700	10.1	0.75	3.55	6.0	2.6	3.0	0.0050	16.7
100 4A EX	**2.20**	**2.64**	3.00	3.60	1440	1730	14.6	0.76	4.90	6.9	3.0	3.6	0.0055	23.5
100 4C EX	**3.00**	**3.60**	4.00	4.80	1425	1710	20.2	0.70	7.70	5.4	2.0	2.5	0.0070	25.1
112 4A EX	**4.00**	**4.80**	5.50	6.60	1445	1735	26.5	0.81	8.50	7.0	2.1	3.0	0.026	29.8
132S 4A EX	**5.5**	**6.6**	7.5	9.00	1460	1750	36.0	0.85	11.7	6.9	2.6	3.3	0.025	54.3
132M 4B EX	**7.5**	**9.0**	10.0	12.0	1460	1750	49.1	0.76	15.9	7.0	2.2	2.7	0.033	54.4
1000 min⁻¹														
71 6A EX	**0.18**	**0.22**	0.25	0.30	925	1110	1.90	0.70	0.65	3.1	1.8	2.0	0.6	6.4
71 6B EX	**0.25**	**0.30**	0.34	0.41	920	1105	2.60	0.71	0.90	3.1	1.9	2.1	0.9	7.3

EX EX-PROOF MOTOR SPECIFICATIONS



IEC	H	HD	L	AC	A	B	AB	BB	K1	K	HA	C	E	D	DB	GA	FxGD
63	63	204	210	124	100	80	120	100	10	7	7	40	23	11	M4	12.5	4x4
71	71	220	243	138	112	90	135	109	12	7	8	45	30	14	M5	16.0	5x5
80	80	236	273	157	125	100	152	129	13	10	10	50	40	19	M6	21.5	6x6
90S	90	248	308	175	140	100	170	127	13	10	10	56	50	24	M8	27.0	8x8
90L	90	248	333	175	140	125	170	152	13	10	10	56	50	24	M8	27.0	8x8
100	100	274	375	194	160	140	192	165	18	12	10	63	60	28	M10	31.0	8x8
112	112	302	387	218	190	140	230	175	18	12	14	70	60	28	M10	31.0	8x8

IEC B14	P	N	M	T	LA	S	AD	TB	TL
63	90	60	75	2.5	10.5	M5	141	121	122
71	105	70	85	2.5	12.8	M6	149	121	122
80	122	80	100	3.0	13.8	M6	156	121	122
90 S/L	180	95	115	3.0	13.8	M8	158	121	122
100	160	110	130	3.5	16.0	M8	174	121	122
112	160	110	130	3.5	16.0	M8	190	121	122



63	140	95	115	3.0	8.0	10	141	121	122
71	160	110	130	3.5	10.0	10	149	121	122
80	200	130	165	3.5	12.0	12	156	121	122
90 S/L	200	130	165	3.5	13.8	12	158	121	122
100	250	180	215	4.0	16.0	13	174	121	122
112	250	180	215	4.0	16.0	13	190	121	122