

GENERAL PURPOSE 3-PHASE INDUCTION MOTORS



SUPER PREMIUM EFFICIENCY IE4 MOTORS



FRANK & DVORAK
ELEKTROMOTOREN



Product Folder

Efficiency of motors

Standard IEC 60034-30-1 defines and harmonizes worldwide the efficiency classes IE1, IE2, IE3 and IE4 for low-voltage three-phase motors in the power range from 0,12 kW to 1000 kW (2p=2, 4, 6, 8).

IE1 = Standard Efficiency

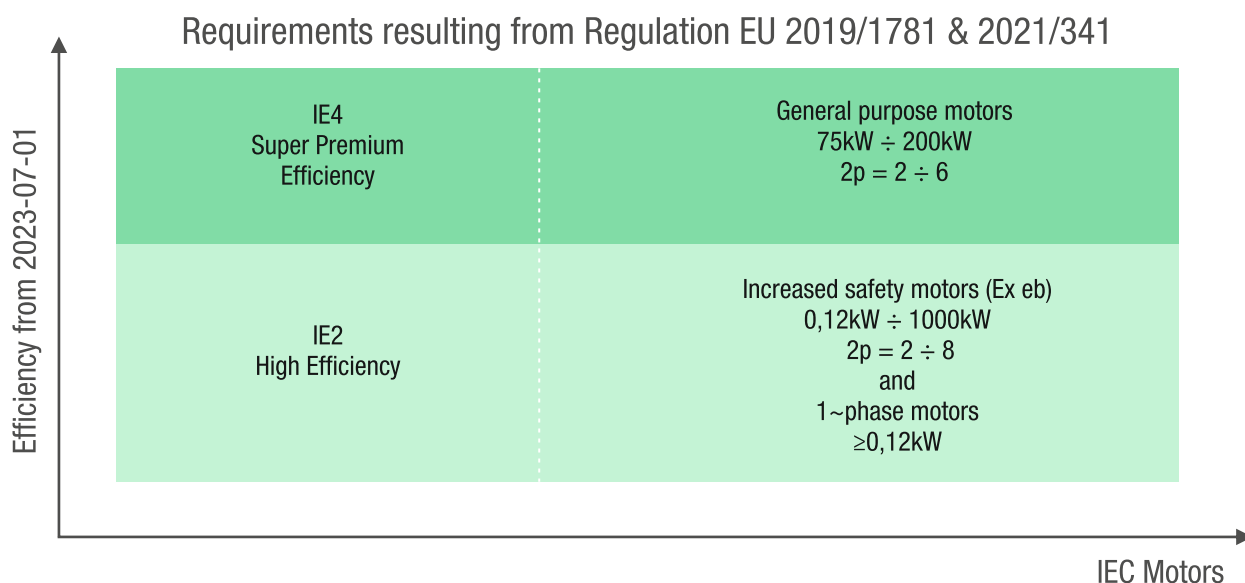
IE2 = High Efficiency

IE3 = Premium Efficiency

IE4 = Super Premium Efficiency

From 1st July 2023, general purpose three-phase induction motors in the range from 75 kW up to 200 kW (2p=2, 4, 6) shall have minimum efficiency class of IE4 resulting from Regulation EU 2019/1781 & 2021/341.

Cantoni Group complies with the new requirements - IE4 Super Premium Efficiency motors are available in the offer. However, the range of IE4 motors offered by Cantoni Group is wider than required by Regulation, and available upon request.



When switching from IE3 to IE4 efficiency level in some of the biggest motor types it was not possible to maintain the same external dimensions as previously available in 3SIE (IE3) motors.

This technical issue is summarized in the below table:

Rated output power	No of poles	Motor type in 3SIE (IE3)	Motor type in 4SIE (IE4)
132kW	2	3SIE315M2A	4SIE315M2A with longer housing as used in 3SIE315M2C
160kW	2	3SIE315M2B	4SIE315M2B with longer housing as used in 3SIE315M2C
200kW	2	3SIE315M2C	4SIE315L2C based on 3SIE315L2C
160kW	4	3SIE315M4B	4SIE315M4B with longer housing as used in 3SIE315M4C
200kW	4	3SIE315M4C	4SIE315L4C based on 3SIE315L4C
160kW	6	3SIE315M6D	4SIE315L6C based on 3SIE315L6C

Totally Enclosed Motors IP 55 f=50Hz

Item	Type	Rated output		Rated speed	Rated torque	Efficiency			Power factor	Full load current			Locked rotor torque ratio	Locked rotor current ratio	Breakdown torque ratio	Moment of Inertia	Weight (IMB3)
		P _N		n _N	T _N	η _N [%]			cosφ _N	I _N at rated voltage [A]			T _L /T _N	I _L /I _N	T _B /T _N	J	
		[kW]	[HP]	[min ⁻¹]	[Nm]	50%	75%	100%	[-]	230V	380V	400V	[-]	[-]	[-]	[kgm ²]	[kg]
2p=2 n _s =3000 rpm																	
1	4SIE200L2A	30	40	2968	97	94,3	94,7	94,5	0,89	90	54	52	2,3	7,2	2,7	0,21	305
2	4SIE200L2B	37	50	2968	119	94,4	94,9	94,8	0,90	109	66	63	2,3	7,1	2,6	0,24	315
3	4SIE225M2	45	60	2973	145	94,2	95,1	95,0	0,89	133	81	77	2,1	7,2	3,2	0,33	407
4	4SIE250M2	55	75	2974	177	95,1	92,5	95,3	0,91	159	96	92	2,2	7,9	3,1	0,51	510
5	4SIE280S2	75	100	2979	240	94,9	95,6	95,6	0,90	219	132	126	2,1	7,7	3,0	0,95	690
6	4SIE280M2	90	125	2980	288	95,2	95,8	95,8	0,90	262	159	151	2,3	8,1	3,8	1,08	745
7	4SIE315S2	110	150	2978	353	95,4	96,0	96,0	0,91	316	191	182	1,9	7,0	2,5	1,30	970
8	4SIE315M2A	132	175	2979	423	95,7	96,2	96,2	0,91	379	229	218	2,4	7,8	2,7	1,70	1050
9	4SIE315M2B	160	220	2976	513	96,5	96,5	96,3	0,92	453	274	261	2,2	7,4	3,0	1,98	1160
10	4SIE315L2C	200	270	2979	641	95,3	96,2	96,5	0,94	-	335	318	2,0	8,7	3,8	3,50	1510
2p=4 n _s =1500 rpm																	
1	4SIE200L4	30	40	1480	194	94,9	95,1	94,9	0,89	89	54	51	2,6	7,9	3,0	0,48	338
2	4SIE225S4	37	50	1485	238	94,9	95,4	95,2	0,86	113	69	65	2,0	7,5	2,9	0,58	385
3	4SIE225M4	45	60	1486	289	95,2	95,6	95,4	0,86	138	83	79	2,4	8,1	3,1	0,65	416
4	4SIE250M4	55	75	1488	353	94,9	95,6	95,7	0,89	162	98	93	2,5	8,5	3,3	1,21	550
5	4SIE280S4	75	100	1488	481	95,8	96,1	96,0	0,91	216	130	124	3,0	8,3	2,8	1,74	740
6	4SIE280M4	90	125	1488	578	96,2	96,3	96,1	0,91	258	156	149	2,7	8,0	2,7	2,00	800
7	4SIE315S4	110	150	1488	706	96,3	96,5	96,3	0,90	319	193	183	3,2	8,0	2,7	2,60	1010
8	4SIE315M4A	132	175	1487	848	96,3	96,6	96,4	0,90	382	231	220	3,1	7,6	2,6	2,82	1130
9	4SIE315M4B	160	220	1489	1026	96,8	96,8	96,6	0,89	467	283	269	3,6	8,5	3,0	3,46	1205
10	4SIE315L4C	200	270	1484	1287	96,1	96,6	96,7	0,90	-	349	332	2,1	8,2	3,2	3,66	1480
2p=6 n _s =1000 rpm																	
1	4SIE200L6A	18,5	25	990	178	92,5	93,5	93,4	0,80	62	37,5	35,5	2,5	7,6	3,0	0,59	300
2	4SIE200L6B	22	30	990	212	92,7	93,7	93,7	0,80	74	45	42	2,7	8,2	2,9	0,75	335
3	4SIE225M6	30	40	991	289	94,0	94,6	94,2	0,83	96	58	55	2,7	8,0	3,0	1,06	415
4	4SIE250M6	37	50	992	356	93,4	94,4	94,5	0,82	120	73	69	2,0	6,5	2,4	1,76	520
5	4SIE280S6	45	60	991	434	94,4	94,9	94,8	0,85	140	85	81	2,2	7,2	2,5	1,70	635
6	4SIE280M6	55	75	991	530	94,7	95,2	95,1	0,84	173	105	99	2,4	7,7	2,7	1,90	695
7	4SIE315S6	75	100	992	722	95,0	95,5	95,4	0,85	232	141	134	2,5	7,6	2,7	2,32	890
8	4SIE315M6A	90	125	992	866	95,2	95,7	95,6	0,84	281	170	162	2,8	8,2	2,8	2,93	965
9	4SIE315M6B	110	150	992	1059	95,2	95,8	95,8	0,85	339	205	195	3,2	9,0	3,0	3,89	1200
10	4SIE315M6C	132	175	993	1270	95,2	95,9	96,0	0,82	421	255	242	2,6	8,1	2,9	4,26	1235
11	4SIE315L6C	160	220	992	1540	95,4	96,1	96,2	0,80	-	316	300	2,0	6,7	2,6	5,50	1500

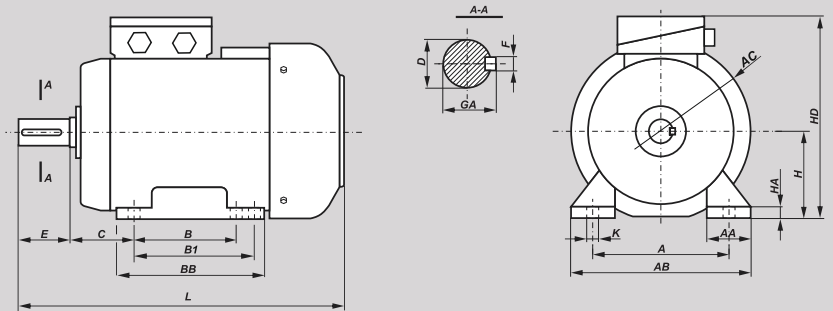
Efficiency is determined acc. to IEC 60034-2-1:2014 Clause 6.1.3 Method 2-1-1B - summation of losses, additional losses acc. to the method of residual loss.

As part of our development program, we reserve the right to alter or amend any of the specifications without giving prior notice.

Housing, shields, feet

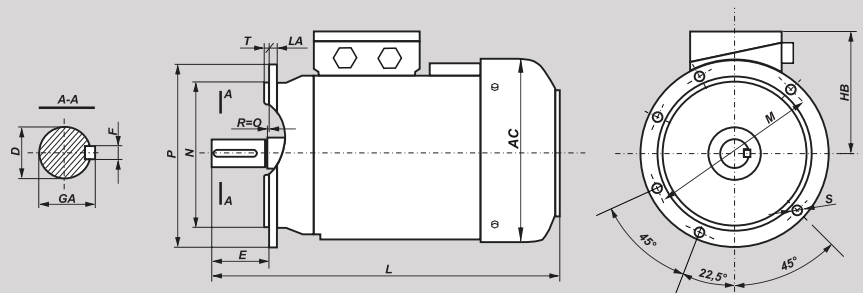
Frame size	Housing	End shields	Flange B5	Feet
4SIE200	Cast iron	Cast iron	Cast iron	Cast iron - screwed or integrated
4SIE225	Cast iron	Cast iron	Cast iron	
4SIE250	Cast iron	Cast iron	Cast iron	
4SIE280	Cast iron	Cast iron	Cast iron	
4SIE315	Cast iron	Cast iron	Cast iron	
4SIE315M2(A,B),M4B,M6(B,C)	Cast iron	Cast iron	Cast iron	Cast iron - screwed
4SIE315L2C,L4C,L6C	Cast iron	Cast iron	Cast iron	

Dimensions of Foot Mounted Motors - IM B3



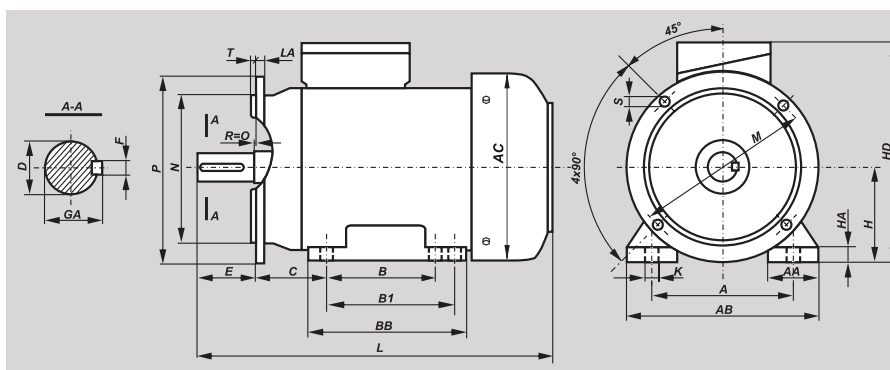
Motor type	A	B	B1	C	D	E	F	GA	H	HA	K	AA	AB	AC	BB	HD	L
4SIE200L(2,4,6)A,B	318	305	-	133	55	110	16	59	200	32	19	80	400	455	380	520	850
4SIE225S4	356	286	311	149	60	140	18	64	225	34	19	85	440	500	380	570	930
4SIE225M2	356	286	311	149	55	110	16	59	225	34	19	85	440	500	380	570	900
4SIE225M4;M6	356	286	311	149	60	140	18	64	225	34	19	85	440	500	380	570	930
4SIE250M2	406	349	-	168	60	140	18	64	250	37	24	90	480	545	445	635	1010
4SIE250M4;M6	406	349	-	168	65	140	18	69	250	37	24	90	480	545	445	635	1030
4SIE280S2	457	368	419	190	65	140	18	69	280	40	24	105	550	600	520	720	1135
4SIE280S4;S6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	600	520	720	1135
4SIE280M2	457	368	419	190	65	140	18	69	280	40	24	105	550	600	520	720	1135
4SIE280M4;M6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	600	520	720	1135
4SIE315S2	508	406	457	216	65	140	18	69	315	46	28	120	610	630	565	815	1235
4SIE315S4;S6	508	406	457	216	80	170	22	85	315	46	28	120	610	630	565	815	1265
4SIE315M2(A,B)	508	406	457	216	65	140	18	69	315	46	28	135	610	630	600	815	1290
4SIE315M4A;6A	508	406	457	216	80	170	22	85	315	46	28	120	610	630	565	815	1265
4SIE315M4B;6B;6C	508	406	457	216	80	170	22	85	315	46	28	135	610	630	600	815	1320
4SIE315L2C	508	508	-	216	80	170	22	85	315	46	28	135	635	635	715	815	1580
4SIE315L4C;L6C	508	508	-	216	90	170	25	95	315	46	28	135	635	635	715	815	1580

Dimensions of Flange Mounted Motors - IM B5



Motor type	D	E	F	GA	M	N	P	LA	T	HB	L	AC	S	
													Ø	holes
4SIEK200L(2,4,6)A,B	55	110	16	59	350	300	400	16,5	5	320	850	455	19	4
4SIEK225S4	60	140	18	64	400	350	450	18	5	345	930	500	19	8
4SIEK225M2	55	110	16	59	400	350	450	18	5	345	900	500	19	8
4SIEK225M4;M6	60	140	18	64	400	350	450	18	5	345	930	500	19	8
4SIEK250M2	60	140	18	64	500	450	550	23	5	385	1010	545	19	8
4SIEK250M4;M6	65	140	18	69	500	450	550	23	5	385	1030	545	19	8
4SIEK280S2	65	140	18	69	500	450	550	23	5	440	1135	600	19	8
4SIEK280S4;S6	75	140	20	79,5	500	450	550	23	5	440	1135	600	19	8
4SIEK280M2	65	140	18	69	500	450	550	23	5	440	1135	600	19	8
4SIEK280M4;M6	75	140	20	79,5	500	450	550	23	5	440	1135	600	19	8
4SIEK315S2	65	140	18	69	600	550	660	23	6	500	1235	630	24	8
4SIEK315S4;S6	80	170	22	85	600	550	660	23	6	500	1265	630	24	8
4SIEK315M2(A,B)	65	140	18	69	600	550	660	23	6	500	1290	630	24	8
4SIEK315M4;6A	80	170	22	85	600	550	660	23	6	500	1265	630	24	8
4SIEK315M4B;6B;6C	80	170	22	85	600	550	660	23	6	500	1320	630	24	8
4SIEK315L2C	80	170	22	85	600	550	660	41	6	500	1580	635	24	8
4SIEK315L4C;6C	90	170	25	95	600	550	660	41	6	500	1580	635	24	8

Dimensions of Foot/Flange Mounted Motors - IM B35



Motor type	A	B	B1	C	D	E	F	GA	H	HA	K	AA	AB	AC	BB	HD	LA	P	M	N	T	L	S	
																							Ø	holes
4SIEL200L(2,4,6)A,B	318	305	-	133	55	110	16	59	200	32	19	80	400	455	380	520	16,5	400	350	300	5	850	19	4
4SIEL225S4	356	286	311	149	60	140	18	64	225	34	19	85	440	500	380	570	18	450	400	350	5	930	19	8
4SIEL225M2	356	286	311	149	55	110	16	59	225	34	19	85	440	500	380	570	18	450	400	350	5	900	19	8
4SIEL225M4;M6	356	286	311	149	60	140	18	64	225	34	19	85	440	500	380	570	18	450	400	350	5	930	19	8
4SIEL250M2	406	349	-	168	60	140	18	64	250	37	24	90	480	545	445	635	23	550	500	450	5	1010	19	8
4SIEL250M4;M6	406	349	-	168	65	140	18	69	250	37	24	90	480	545	445	635	23	550	500	450	5	1030	19	8
4SIEL280S2	457	368	419	190	65	140	18	69	280	40	24	105	550	600	520	720	23	550	500	450	5	1135	19	8
4SIEL280S4;S6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	600	520	720	23	550	500	450	5	1135	19	8
4SIEL280M2	457	368	419	190	65	140	18	69	280	40	24	105	550	600	520	720	23	550	500	450	5	1135	19	8
4SIEL280M4;M6	457	368	457	190	75	140	20	79,5	280	40	24	105	550	600	520	720	23	550	500	450	5	1135	19	8
4SIEL315S2	508	406	457	216	65	140	18	69	315	46	28	120	610	630	565	815	23	660	600	550	6	1235	24	8
4SIEL315S4;S6	508	406	457	216	80	170	22	85	315	46	28	120	610	630	565	815	23	660	600	550	6	1265	24	8
4SIEL315M2(A,B)	508	406	457	216	65	140	18	69	315	46	28	135	610	630	600	815	23	660	600	550	6	1290	24	8
4SIEL315M4;6A	508	406	457	216	80	170	22	85	315	46	28	120	610	630	565	815	23	660	600	550	6	1265	24	8
4SIEL315M4B;6B;6C	508	406	457	216	80	170	22	85	315	46	28	135	610	630	600	815	23	660	600	550	6	1320	24	8
4SIEL315L2C	508	508	-	216	80	170	22	85	315	46	28	135	635	635	715	815	41	660	600	550	6	1580	24	8
4SIEL315L4C;6C	508	508	-	216	90	170	25	95	315	46	28	135	635	635	715	815	41	660	600	550	6	1580	24	8

We reserve the right to modify the overall dimensions of the products shown in this product folder.

PRODUCT RANGE

LOW VOLTAGE GENERAL PURPOSE 3-PHASE INDUCTION MOTORS	Three-phase motors with squirrel-cage rotor series (2)Sg(m), Sh, SIE-K HIGH (IE2), PREMIUM (IE3) and SUPER PREMIUM (IE4) efficiency motors	from 0,04kW up to 2200kW	for general purpose applications like pumps, fans, compressors; complying with the newest efficiency requirements	
GENERAL PURPOSE 1-PHASE INDUCTION MOTORS	Single-phase motors with squirrel-cage rotor series SEh, SEMh Single-phase motors PREMIUM (IE3) efficiency class, series 3SSIE	from 0,04kW up to 2,2kW	for general purpose applications like pumps, fans, compressors, woodworking machines, devices for food processing, concrete mixers etc.	
HIGH VOLTAGE INDUCTION MOTORS up to 11 kV	Three-phase squirrel-cage high voltage and high efficiency motors series Sh with cast-iron housing High voltage motors with module construction (steel/welded housing) series Sf (-E), Sfw, Sfr	from 160kW up to 7000kW	for general industrial use, drives used for own needs of power plants (pumps, fans, coal mills, conveyors)	
BRAKE MOTORS	Three-phase and single-phase brake motors with AC and DC brakes	from 0,04kW up to 200kW	for applications with high safety requirements or where immediate stopping of the drive is required e.g.: theatres, concert, halls, lifts, platforms, etc.	
MOTORS WITH FORCED VENTILATION	Three-phase induction motors with forced ventilation	from 0,06kW up to 2500kW	for variable frequency drives with very wide speed regulation	
EXPLOSION-PROOF MOTORS	Standard and PREMIUM (IE3) efficiency increased safety motors Standard, HIGH (IE2) and PREMIUM (IE3) efficiency flame-proof motors	from 0,06kW up to 22kW from 0,37kW up to 3200kW	adapted for operation in areas endangered by explosion (without methane) for applications in chemical and mining industry where explosive atmosphere of gases, vapours or dust can occur	
NEMA MOTORS	Low voltage NEMA motors SIE series (in compliance with the NEMA PREMIUM requirements)	from 1HP up to 250HP	for general industrial applications like pumps (including JM and JP), fans, compressors also for Hazardous Locations (Class I Div 2, Class II Div 2) with CSA certificate	
TRACTION MOTORS	Traction motors and traction generators	from 50kW up to 1500kW	various traction vehicles: trams (including low-deck trams), trolleybusses, subway and locomotives	

FRANK & DVORAK

Elektromaschinenbau- und Vertriebsgesellschaft m.b.H. & Co. KG.

A-7033 Pötsching, Industriestraße 1, +43 2631/8005, ffd@frank-dvorak.at

www.frank-dvorak.at

