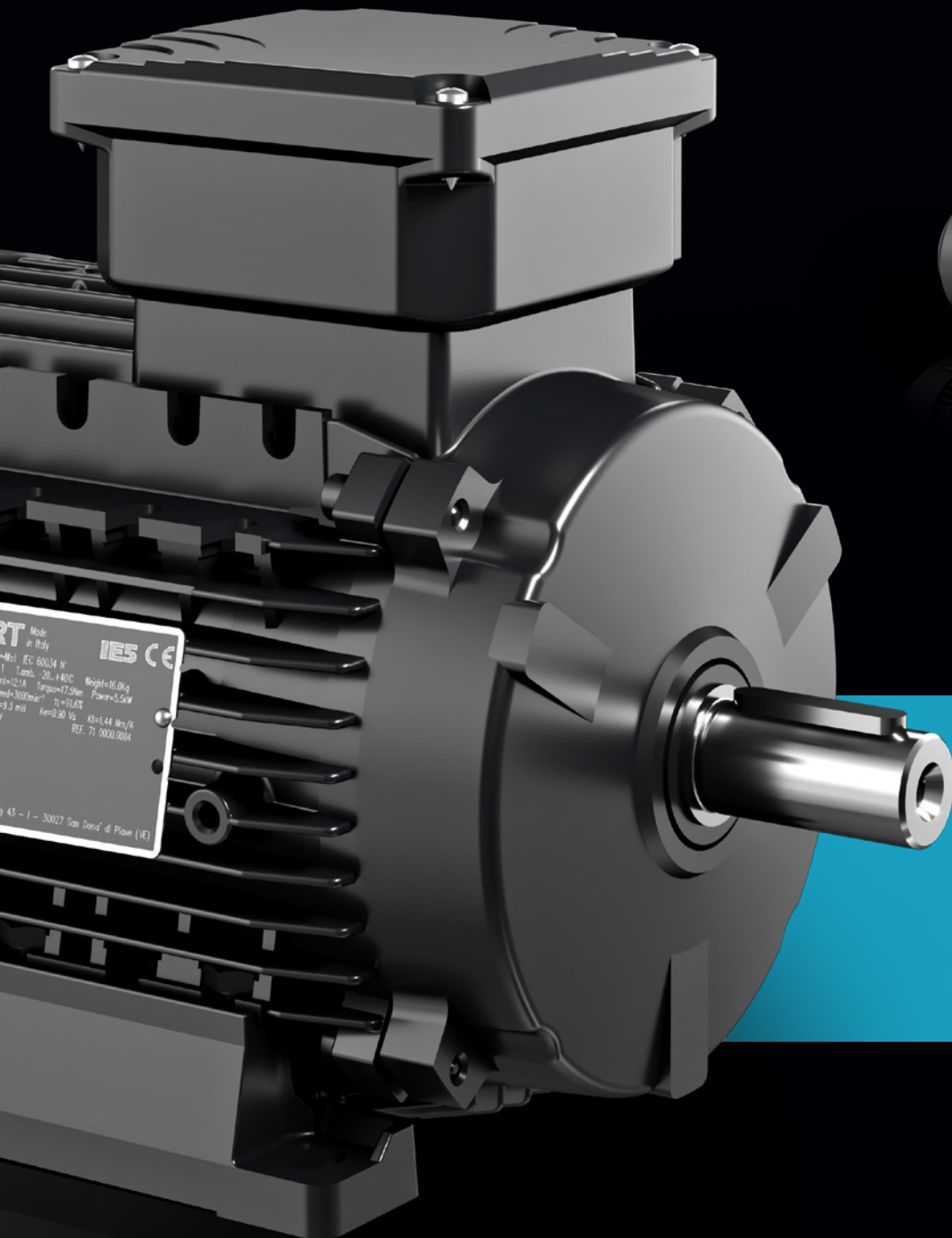


IE5 HPS RANGE ULTRA PREMIUM EFFICIENCY

SYNCHRONOUS PM MOTORS
0.18 TO 37 KW



IE5

HP RANGE: INNOVATIVE GENERATION OF PM SYNCHRONOUS MOTORS

The IE5 HPS Ultra Premium Efficiency range combines the electrical design of brushless servo motors with the mechanical design of AC induction motors.

POWER, COMPACTNESS AND EFFICIENCY TO MEET MARKET NEEDS

The IE5 HPS Ultra Premium Efficiency range enhances the power/weight ratio, thereby allowing for significant size and weight reductions down to 50%.

GREAT FLEXIBILITY TO VARIOUS APPLICATIONS

Targeted to both quadratic torque applications, typically in HVAC, as well as to constant torque applications like material handling, air compressors and vacuum pumps. All applications requiring high performances in continuous operation at a variable speed.

The complete range is supplied as stand-alone motor (HPS range), or as motor-drive combined package (HPC range), or as motor-drive integrated unit (HPI and HPA ranges).

Power rating: 0.18kW to 37kW - 0.24HP to 50HP

Torque: 2 Nm to 190 Nm - Speed: up to 4500 rpm

Frame size: 56 - 71 - 90 - 112 - 132 - 160

IPM (Interior Permanent Magnets) or SMPM (Surface Mounted Permanent Magnets) design

Design flexibility by customizing both active and mechanical parts

IEC mechanical configurations (B14, B5 etc)

NEMA mounting design

Pad mounting design

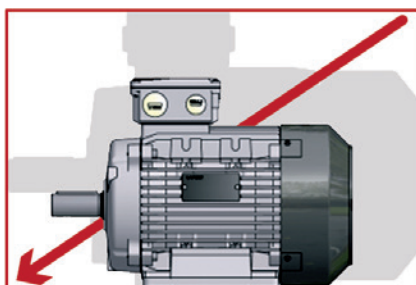


EFFICIENCY @ 3000RPM

Rated Output [kW]	IEC Motor frame	HP Motor frame	IE3 Efficiency [%]	HPS IE4 Efficiency [%]	HPS IE5 Efficiency [%]	HPS IE6 Efficiency [%]
0.75	80	71	80.7	81.5	84.6	87.3
1.1			82.7	83.3	86.2	88.7
1.5			84.2	84.8	87.4	89.7
2.2	90	90	85.9	86.4	88.9	90.9
3			87.1	87.7	89.9	91.8
4	112	112	88.1	88.7	90.7	92.4
5.5			89.2	89.7	91.6	93.2
7.5			90.1	90.6	92.4	93.8
11	160	132	91.2	91.6	93.2	94.5
15			91.9	92.4	93.7	94.9
18.5			92.4	92.8	94.2	95.3
22			92.7	93.2	94.4	95.5
30	200		93.3	93.7	94.9	95.9

REDUCTION OF DIMENSIONS & WEIGHT

AC motor size 112



HPS motor size 90

Weight AC Motor

Size 112 - 5.5 kW - 34 Kg

Size 132 - 7.5 kW - 53 Kg

Weight HPS Motor

Size 90 - 5.5 kW - 16 Kg

Size 112 - 7.5 kW - 26 Kg

VALUES @ 400V

TEMPERATURE RISE TO CLASS B

Type	Size	Rated speed n rpm	Rated power P _n kW	Rated torque M _n Nm	Peak torque M _{pk} Nm	Voltage constant K _e Vs	Torque constant K _t Nm/A	BEMF at rated speed E _n Vrs	Rated current I _n Arms	Efficiency IE5 η %	Weight Kg
1500 rpm											
IE5 HPS 56 1500 4	56	1500	0.18	1.2	3.4	1.73	3	272	0.4	76.3	3.0
IE5 HPS 56 1500 5	56	1500	0.25	1.6	4.8	1.73	3	272	0.5	79.3	3.2
IE5 HPS71 1500 12	71	1500	0.55	3.5	10.5	1.73	3	272	1.2	85.0	5.4
IE5 HPS71 1500 16	71	1500	0.75	4.8	14.4	1.73	3	272	1.6	86.7	6.2
IE5 HPS71 1500 23	71	1500	1.1	7.0	21.0	1.73	3	272	2.3	88.1	7.2
IE5 HPS90 1500 32	S-L	1500	1.5	9.6	28.7	1.73	3	272	3.2	89.1	14
IE5 HPS90 1500 47	S-L	1500	2.2	14.0	42.0	1.73	3	272	4.7	90.2	14
IE5 HPS90 1500 64	XL	1500	3	19.1	57.3	1.73	3	272	6.4	91.0	18
IE5 HPS90 1500 85	XL	1500	4	25.5	76.4	1.73	3	272	8.5	91.8	19
IE5 HPS112 1500 85	M	1500	4	25.5	76.4	1.73	3	272	8.5	91.8	26
IE5 HPS112 1500 117	M	1500	5.5	35.0	105.1	1.73	3	272	11.7	92.5	30
IE5 HPS112 1500 159	XL	1500	7.5	47.8	143.3	1.73	3	272	15.9	93.2	33
IE5 HPS112 1500 195	XL	1500	9.2	58.6	175.8	1.73	3	272	19.5	93.5	33
IE5 HPS132 1500 233	XL	1500	11	70.0	210.1	1.73	3	272	23.3	93.8	56
IE5 HPS132 1500 318	XXL	1500	15	95.5	286.5	1.73	3	272	31.8	94.4	65
IE5 HPS132 1500 393	XXL	1500	18.5	117.8	353.4	1.73	3	272	39.3	94.6	65
IE5 HPS160 1500 233	M	1500	11	70	175	1.73	3	272	23.3	93.8	70
IE5 HPS160 1500 318	M	1500	15	95	239	1.73	3	272	31.8	94.4	75
IE5 HPS160 1500 393	M	1500	18.5	118	294	1.73	3	272	39.3	94.6	85
IE5 HPS160 1500 467	L	1500	22	140	350	1.73	3	272	46.7	94.9	95
IE5 HPS160 1500 637	L	1500	30	191	477	1.73	3	272	63.7	95.3	115
1800 rpm											
IE5 HPS 56 1800 4	56	1800	0.18	1.0	2.9	1.45	2.5	272	0.4	76.3	3.0
IE5 HPS 56 1800 5	56	1800	0.25	1.3	4.0	1.45	2.5	272	0.5	79.3	3.2
IE5 HPS71 1800 12	71	1800	0.55	2.9	8.8	1.45	2.5	272	1.2	85.0	5.0
IE5 HPS71 1800 16	71	1800	0.75	4.0	11.9	1.45	2.5	272	1.6	86.7	5.4
IE5 HPS71 1800 23	71	1800	1.1	5.8	17.5	1.45	2.5	272	2.3	88.1	7.0
IE5 HPS71 1800 32	71	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	89.1	7.0
IE5 HPS90 1800 32	S-L	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	89.1	12
IE5 HPS90 1800 46	S-L	1800	2.2	11.7	35.0	1.45	2.5	272	4.6	90.2	14
IE5 HPS90 1800 64	S-L	1800	3	15.9	47.7	1.45	2.5	272	6.3	91.0	17
IE5 HPS90 1800 84	XL	1800	4	21.2	63.7	1.45	2.5	272	8.4	91.8	18
IE5 HPS112 1800 84	M	1800	4	21.2	63.7	1.45	2.5	272	8.4	91.8	23
IE5 HPS112 1800 116	M	1800	5.5	29.2	87.5	1.45	2.5	272	11.6	92.5	23
IE5 HPS112 1800 158	M	1800	7.5	39.8	119.4	1.45	2.5	272	15.8	93.2	30
IE5 HPS112 1800 232	XL	1800	11	58.4	175.1	1.45	2.5	272	23.2	93.5	33
IE5 HPS132 1800 232	M	1800	11	58.4	175.1	1.45	2.5	272	23.2	93.8	54
IE5 HPS132 1800 317	XXL	1800	15	79.6	238.7	1.45	2.5	272	31.7	94.4	58
IE5 HPS132 1800 391	XXL	1800	18.5	98.1	294.4	1.45	2.5	272	39.1	94.6	65
IE5 HPS160 1800 232	M	1800	11	58	146	1.45	2.5	272	23.2	93.8	70
IE5 HPS160 1800 317	M	1800	15	80	199	1.45	2.5	272	31.7	94.4	75
IE5 HPS160 1800 391	M	1800	18.5	98	245	1.45	2.5	272	39.1	94.6	75
IE5 HPS160 1800 465	L	1800	22	117	292	1.45	2.5	272	46.5	94.9	85
IE5 HPS160 1800 634	L	1800	30	159	398	1.45	2.5	272	63.4	95.3	100

* According to IEC TS 60034-30-2, the IE class limit values are reduced by adding the additional harmonic losses caused by the drive: 15% additional losses for motors up to 90 kW



ULTRA PREMIUM EFFICIENCY MOTORS – IE5



EFFICIENCY LEVEL ACCORDING TO IEC TS 60034-30-2:2016
DEGREE OF PROTECTION IP 55

VALUES @ 400V

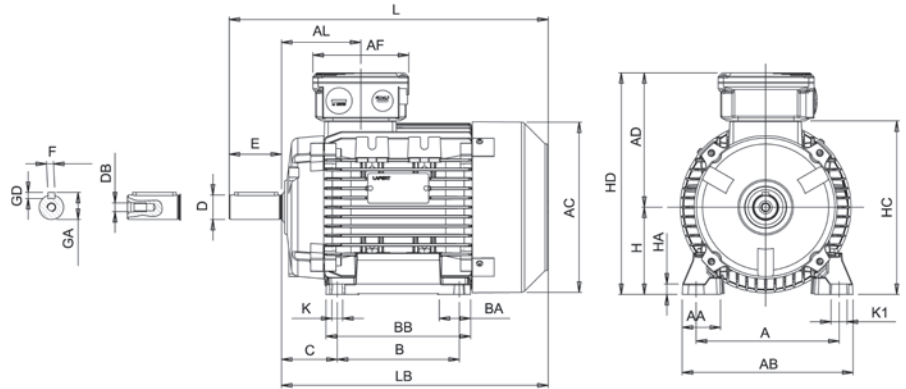
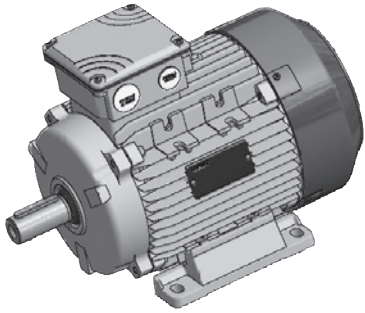
TEMPERATURE RISE TO CLASS B

Type	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency IE5	Weight
		n rpm	P _n kW	M _n Nm	M _{pk} Nm	K _e Vs	K _t Nm/A	E _n Vrs	I _n Arms	η %	Kg
3000 rpm											
IE5 HPS 56 3000 5	56	3000	0.25	0.8	2.4	0.87	1.5	272	0.5	75.8	2.8
IE5 HPS 56 3000 8	56	3000	0.37	1.2	3.5	0.87	1.5	272	0.8	79.5	3.0
IE5 HPS 56 3000 12	56	3000	0.55	1.8	5.3	0.87	1.5	272	1.2	82.7	3.2
IE5 HPS71 3000 16	71	3000	0.75	2.4	7.2	0.87	1.5	272	1.6	84.6	4.8
IE5 HPS71 3000 23	71	3000	1.1	3.5	10.5	0.87	1.5	272	2.3	86.2	6.0
IE5 HPS71 3000 32	71	3000	1.5	4.8	14.3	0.87	1.5	272	3.2	87.4	6.0
IE5 HPS71 3000 47	71	3000	2.2	7.0	21.0	0.87	1.5	272	4.7	88.9	6.6
IE5 HPS90 3000 47	S-L	3000	2.2	7.0	21.0	0.87	1.5	272	4.7	88.9	10
IE5 HPS90 3000 64	S-L	3000	3	9.6	28.7	0.87	1.5	272	6.4	89.9	12
IE5 HPS90 3000 85	S-L	3000	4	12.7	38.2	0.87	1.5	272	8.5	90.7	14
IE5 HPS90 3000 117	S-L	3000	5.5	17.5	52.5	0.87	1.5	272	11.7	91.6	16
IE5 HPS112 3000 117	M	3000	5.5	17.5	52.5	0.87	1.5	272	11.7	91.6	23
IE5 HPS112 3000 159	M	3000	7.5	23.9	71.6	0.87	1.5	272	15.9	92.4	26
IE5 HPS112 3000 233	M	3000	11	35.0	105.1	0.87	1.5	272	23.3	93.2	30
IE5 HPS112 3000 318	M	3000	15	47.8	143.3	0.87	1.5	272	31.8	93.7	33
IE5 HPS132 3000 318	M	3000	15	47.8	143.3	0.87	1.5	272	31.8	93.7	55
IE5 HPS132 3000 393	XL	3000	18.5	58.9	176.7	0.87	1.5	272	39.3	94.2	59
IE5 HPS132 3000 467	XXL	3000	22	70.0	210.1	0.87	1.5	272	46.7	94.4	67
IE5 HPS132 3000 636	XXL	3000	30	95.4	286.0	0.87	1.5	272	63.6	94.9	72
IE5 HPS160 3000 634	L	3000	30	95.4	239	0.87	1.5	272	63.4	94.9	90
IE5 HPS160 3000 782	L	3000	37	118.0	294	0.87	1.5	272	78.2	95.2	95
3600 rpm											
IE5 HPS 56 3600 5	56	3600	0.25	0.7	2.0	0.73	1.26	272	0.5	75.8	2.8
IE5 HPS 56 3600 8	56	3600	0.37	1.0	2.9	0.73	1.26	272	0.8	79.5	3.0
IE5 HPS 56 3600 12	56	3600	0.55	1.5	4.4	0.73	1.26	272	1.2	82.7	3.2
IE5 HPS71 3600 16	71	3600	0.75	2.0	6.0	0.73	1.26	272	1.6	84.6	4.8
IE5 HPS71 3600 23	71	3600	1.1	2.9	8.8	0.73	1.26	272	2.3	86.2	6.0
IE5 HPS71 3600 32	71	3600	1.5	4.0	11.9	0.73	1.26	272	3.2	87.4	6.0
IE5 HPS71 3600 46	71	3600	2.2	5.8	17.5	0.73	1.26	272	4.6	88.9	6.6
IE5 HPS90 3600 46	S-L	3600	2.2	5.8	17.5	0.73	1.26	272	4.6	88.9	10
IE5 HPS90 3600 63	S-L	3600	3	8.0	23.9	0.73	1.26	272	6.3	89.9	12
IE5 HPS90 3600 84	S-L	3600	4	10.6	31.8	0.73	1.26	272	8.4	90.7	14
IE5 HPS90 3600 116	S-L	3600	5.5	14.6	43.8	0.73	1.26	272	11.6	91.6	16
IE5 HPS112 3600 116	M	3600	5.5	14.6	43.8	0.73	1.26	272	11.6	91.6	23
IE5 HPS112 3600 158	M	3600	7.5	19.9	59.7	0.73	1.26	272	15.8	92.4	26
IE5 HPS112 3600 232	M	3600	11	29.2	87.5	0.73	1.26	272	23.2	93.2	30
IE5 HPS112 3600 317	M	3600	15	39.8	119.4	0.73	1.26	272	31.7	93.7	33
IE5 HPS132 3600 317	M	3600	15	39.8	119.4	0.73	1.26	272	31.7	93.7	55
IE5 HPS132 3600 391	XL	3600	18.5	49.1	147.2	0.73	1.26	272	39.1	94.2	59
IE5 HPS132 3600 465	XXL	3600	22	58.4	175.1	0.73	1.26	272	46.5	94.4	67
IE5 HPS132 3600 634	XXL	3600	30	79.6	238.7	0.73	1.26	272	63.4	94.9	72
IE5 HPS160 3600 629	L	3600	30	79.6	199	0.73	1.26	272	62.9	94.9	85
IE5 HPS160 3600 776	L	3600	37	98.0	245	0.73	1.26	272	77.6	95.2	90
4500 rpm											
IE5 HPS 56 4500 8	56	4500	0.37	0.8	2.4	0.58	1	272	0.8	79.5	3.0
IE5 HPS 56 4500 12	56	4500	0.55	1.2	3.5	0.58	1	272	1.2	82.7	3.0
IE5 HPS 56 4500 16	56	4500	0.75	1.6	4.8	0.58	1	272	1.6	84.6	3.2
IE5 HPS71 4500 23	71	4500	1.1	2.3	7.0	0.58	1	272	2.3	86.2	4.8
IE5 HPS71 4500 32	71	4500	1.5	3.2	9.6	0.58	1	272	3.2	87.4	5.4
IE5 HPS71 4500 47	71	4500	2.2	4.7	14.0	0.58	1	272	4.7	88.9	6.2
IE5 HPS71 4500 64	71	4500	3	6.4	19.1	0.58	1	272	6.4	89.9	7.2
IE5 HPS90 4500 64	S-L	4500	3	6.4	19.1	0.58	1	272	6.4	88.9	12
IE5 HPS90 4500 85	S-L	4500	4	8.5	25.5	0.58	1	272	8.5	90.7	14
IE5 HPS90 4500 117	S-L	4500	5.5	11.7	35.0	0.58	1	272	11.7	91.6	17
IE5 HPS90 4500 159	XL	4500	7.5	15.9	47.8	0.58	1	272	15.9	92.4	18

* According to IEC TS 60034-30-2, the IE class limit values are reduced by adding the additional harmonic losses caused by the drive: 15% additional losses for motors up to 90 kW

FRAME SIZE 56 - 71 - 90 - 112 - 132 - 160 IM B3*

* For mounting arrangements IM B5 - IM B14, please refer to the catalogue



IEC	H	A	B	C	K ¹⁾	AB	BB	AD ²⁾	HD ²⁾	AC	HC	HA
56	56	90	71	36	6	107	86	92	148	110	109	8
71	71	112	90	45	8	135	108	114	185	142	142	9
90S	90	140	100	56	10	170	150	148	238	177	181	11
90L	90	140	125	56	10	170	150	148	238	177	181	11
112M	112	190	140	70	12.5	220	176	171	283	225	226	15
112XL	112	190	140	70	12.5	220	176	171	283	225	226	15
132M	132	216	178	89	12	256	218	195	327	248	261	17
132XL	132	216	178	89	12	256	218	195	327	248	261	17
132XXL	132	216	178	89	12	256	218	195	327	248	261	17
160M	160	254	210	108	14	320	270	238	398	317	316	23
160L	160	254	254	108	14	320	310	238	398	317	316	23

IEC	K1	L	LB	AL	AF	BA	AA	D	E	F	GD	GA	DB ³⁾
56	9	188	168	61	93	27	27	14	30	5	5	16	M5
71	17	245	215	75	93	22	30	19	40	6	6	22	M6
90S	15	317	267	85	110	28/53	37	24	50	8	7	27	M8
90L	15	317	267	85	110	28/53	37	24	50	8	7	27	M8
112M	19	388	328	92	110	46	48	28	60	8	7	31	M10
112XL	19	410	350	92	110	46	48	28	60	8	7	31	M10
132M	20	485	405	122	137	45	59	38	80	10	8	41	M12
132XL	20	505	425	122	137	45	59	38	80	10	8	41	M12
132XXL	20	556	476	122	137	45	59	38	80	10	8	41	M12
160M	18	608	498	146	155	65	76	42 ⁴⁾	110	12 ⁴⁾	8 ⁴⁾	45 ⁴⁾	M16
160L	18	652	542	168	155	65	76	48	110	14	9	51.5	M16

1) Clearance hole for screw 2) Maximum dimension 3) Centering holes in shaft extensions to DIN 332 part 2
 4) For type HPS160M 18.5 kW, please refer to HPS160L

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