

IE5 Reluctance-Hybrid Standard-Motors

SERIES XTM

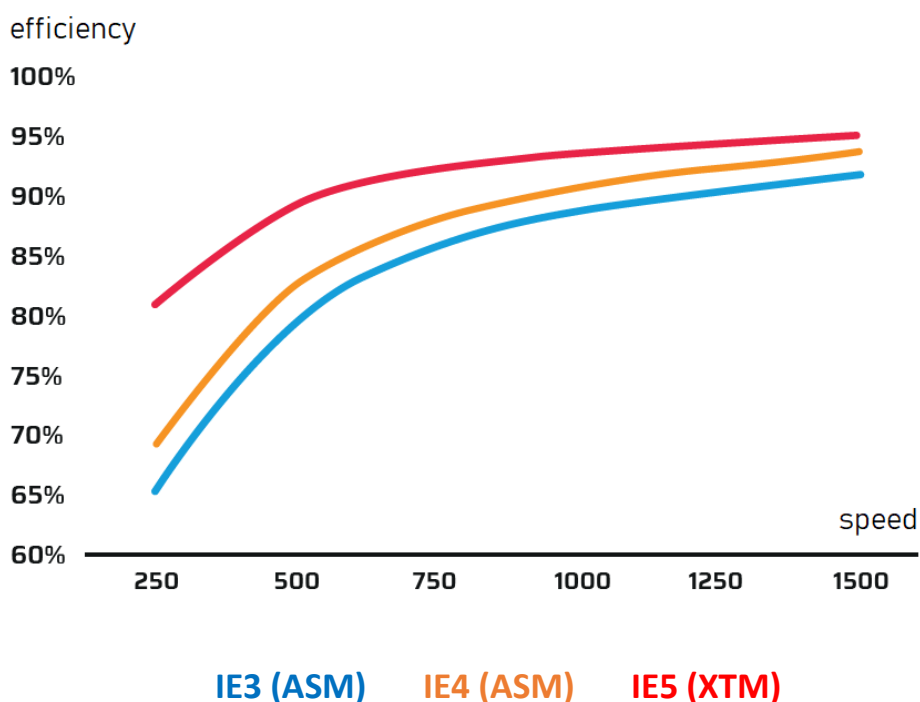
3..200 KW

Innovation in the electric machine market

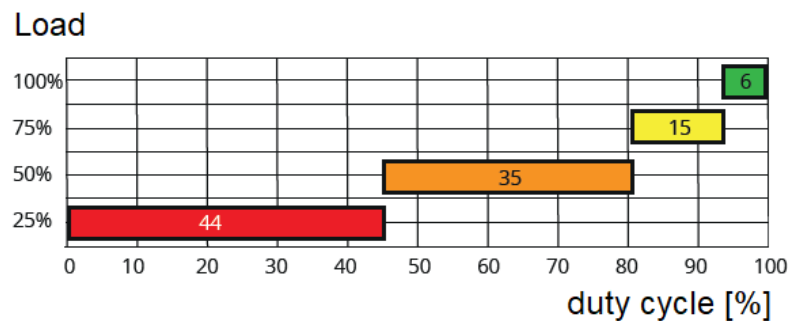
XTM motors are ideal for meeting the requirements of the EU Ecodesign Directive. Their design corresponds to that of the asynchronous standard motor, so replacement is easy. In addition to efficiency, there are other advantages over asynchronous machines. These include constant torque, higher overload capacity, synchronous speed without speed feedback (no slip), and particular efficiency advantages in the partial load range. XTM motors are recommended for all applications with continuous operation times, especially those that operate frequently in the partial load range. The gray cast iron housing gives the XTM additional robustness.

Features:

- o Extremely high efficiency (IE5 efficiency and better)
- o Suitable for eco-design
- o Reduced operating costs
- o No rare earths, with ferrites
- o Consistently high torque
- o Higher dynamics than ASM
- o Particular advantages in the partial load range compared to ASM
- o 1:1 replacement of ASM is possible
- o Synchronous speed without encoder
- o Grey cast iron housing
- o Insulation class: F
- o Protection class: IP55
- o Ventilation: IC411



Typical example of a pump application:



XTM IE5 Motors have the following common characteristics:

- 4 Poles
- Nominal Voltage = 370V
- Maximum Torque $M_{\max} = 1,5 * M_{\text{nenn}}$
- Nominal Voltage of the Frequency Inverter Input: 3x 400V AC

XTM Motors with $n = 1.000 \text{ rpm}$ and $f = 33,3 \text{ Hz}$

XTM	P_N [kW]	T_N [Nm]	I_N [A]	$\cos\varphi$	η			J [kgm ²]	m [kg]
					[100%]	[75%]	[50%]		
132Sa	3	28,7	7,3	0,71	90,6	90,5	89,8	0,0364	65
132Ma	4	38,2	9,5	0,72	91,4	91,3	91,0	0,0567	74
132Mb	5,5	52,5	12,9	0,72	92,2	92,2	92,2	0,0645	85
160Ma	7,5	71,6	16,6	0,76	92,9	92,7	92,2	0,0994	125
160La	11	105	23,8	0,77	93,7	93,6	93,1	0,1422	149
180La	15	143	31	0,80	94,3	94,3	94,2	0,2082	193
200La	18,5	177	38,1	0,80	94,6	94,4	93,8	0,2706	241
200Lb	22	210	44,7	0,81	94,9	94,7	94,1	0,3106	258
225Ma	30	287	59,9	0,82	95,3	94,2	94,7	0,5993	320
250Ma	37	353	72,8	0,83	95,6	95,5	95,2	0,7029	402
280Sa	45	430	88,3	0,83	95,8	95,8	95,7	1,2770	520
280Ma	55	525	106	0,84	96,0	95,9	95,7	1,6209	586
315Sa	75	716	145	0,84	96,3	96,2	95,7	3,0205	841
315Ma	90	860	171	0,85	96,5	96,4	96,2	0,3344	948
315La	110	1.051	209	0,85	96,6	95,5	96,3	4,0869	1.035
315Lb	132	1.261	247	0,86	96,8	96,8	96,6	4,4056	1.096

XTM Motors with n = 1.500 rpm and f = 50 Hz

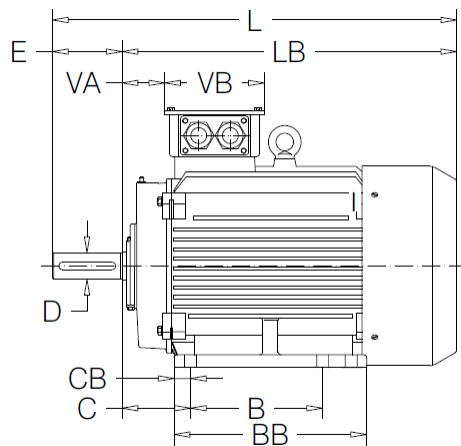
XTM	P _N	T _N	I _N	cosφ	η			J	m
	[kW]	[Nm]	[A]		[100%]	[75%]	[50%]	[kgm ²]	[kg]
132Sa	5,5	35	11,5	0,80	94,6	94,3	93,9	0,0456	75
132Ma	7,5	47,8	15,4	0,81	94,0	93,9	93,5	0,0567	83
160Ma	11	70	21,9	0,83	94,6	95,9	95,9	0,1024	133
160La	15	95,5	29,3	0,84	95,1	95,1	95,0	0,1300	146
180Ma	18,5	118	35,6	0,85	95,3	95,2	94,9	0,1898	184
180La	22	140	42,3	0,85	95,5	95,4	95,1	0,2175	199
200L	30	191	57,4	0,85	95,9	95,4	94,5	0,2973	260
225Sa	37	236	70,7	0,85	96,1	95,5	94,6	0,5006	304
225Ma	45	287	85,8	0,85	96,3	96,0	94,2	0,5993	336
250Ma	55	350	103	0,86	96,5	96,4	96,4	0,7656	423
280Sa	75	478	139	0,87	96,7	96,7	96,6	1,4484	567
280Ma	90	573	165	0,88	96,9	96,9	96,8	1,7352	630
315Sa	110	700	199	0,89	97,0	96,8	96,4	3,0148	877
315Ma	132	840	238	0,89	97,1	96,8	96,3	3,4500	1.003
315La	160	1.019	289	0,89	97,2	97,0	96,6	3,8749	1.071
315Lb	200	1.273	356	0,90	97,4	97,3	97,1	4,6185	1.183

XTM Motors with n = 3.000 rpm and f = 100 Hz

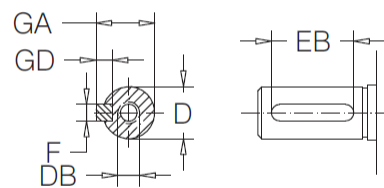
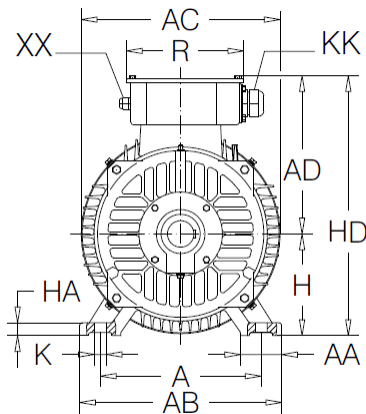
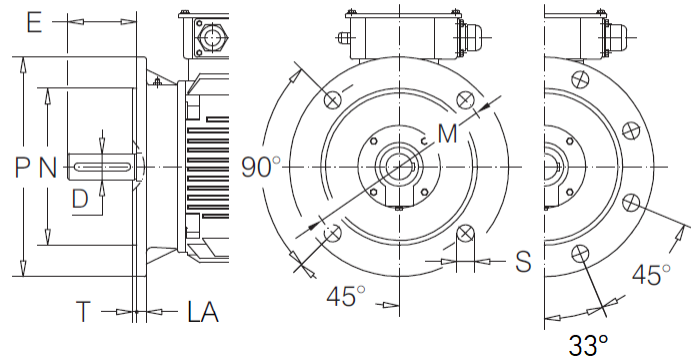
XTM	P _N	T _N	I _N	cosφ	η			J	m
	[kW]	[Nm]	[A]		[100%]	[75%]	[50%]	[kgm ²]	[kg]
132Sa	5,5	17,5	10,5	0,88	92,6	92,1	91,3	0,0361	63
132Sb	7,5	23,9	14,3	0,88	93,3	92,9	92,3	0,0404	79
160Ma	11	35	20,5	0,89	94,0	93,6	92,1	0,0690	109
160Mb	15	47,8	27,8	0,89	94,5	94,0	93,0	0,0933	121
160La	18,5	58,9	34,2	0,89	94,9	94,4	93,5	0,1204	144
180Ma	22	70	40,7	0,89	95,1	94,6	93,6	0,1615	168
200La	30	95,5	55,1	0,89	95,5	95,0	94,5	0,2884	235
200Lb	37	118	67,7	0,89	95,8	95,2	94,7	0,2442	247
225Ma	45	143	82,2	0,89	96,0	95,7	95,3	0,4270	299
250Ma	55	175	100	0,89	96,2	95,9	95,6	0,5461	387
280Sa	75	239	136	0,89	96,5	96,3	96,1	0,5461	486
280Ma	90	287	163	0,89	96,6	96,4	96,2	1,0443	548
315Sa	110	350	199	0,89	96,8	96,3	95,4	1,4043	664
315Ma	132	420	239	0,89	96,9	93,6	95,9	1,5129	757
315La	160	509	289	0,89	97,0	96,8	96,4	1,9351	836
315Lb	200	637	361	0,89	97,2	96,8	96,1	2,2716	890

XTM Dimensions

Build B3



Build B5



XTM		Frame						Feet								
		AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K
132	S	290	243	132	375	424	504	216	140	89	262	226	52	23	18	12
	M					454	534		178			256				
160	M	325	240	160	400	551	661	254	210	108	314	307	65	29	19	14,5
	L					597	707		254			341				
180	M	365	277	180	457	610	720	279	241	121	345	320	68	21	22	14,5
	L					656	766		279			367				
200	L	398	307	200	507	671	781	318	305	133	388	353	78	24	25	18,5
225	S	447	328	225	553	691	831	356	286	149	431	348	75	31	28	18,5
	M					716	856		311			373				
250	M	486	367	250	617	797	937	406	349	168	484	445	100	49	33	24
280	S	548	396	280	676	847	987	457	368	190	546	485	105	69	35	24
	M					898	1038		419			536				
315	S	623	481	315	796	1036	1206	508	406	216	624	511	125	59	45	28
	M					1146	1316		457			621				
	L					1146	1316		457			621				

XTM		B5/B14-Flange							Terminal Box					
									Con.	Cable Gland				
		IM	M	Nj6	P	LA	T	S	N°-ø	N°-KK	N°-XX	VA	VB	R
132	S	B5	265	230	300	14	4	N°4 15	6x M5	2x M32x1,5	M16x1,5	36	126	126
	M	-	-	-	-	-	-	-						
160	M	B5	300	250	350	15	5	N°4 18,5	6x M6	2x M40x1,5	M16x1,5	71	158	166
	L	B14	215	180	250		5	N°4 12						
180	M	B5	300	250	350	15	5	N°4 18,5	6x M6	2x M40x1,5	M16x1,5	83	200	216
	L													
200	L	B5	350	300	400	17	5	N°4 18,5	6x M8	2x M50x1,5	M16x1,5	88	200	216
225	S	B5	400	350	450	19	5	N°8 18,5	6x M8	2x M50x1,5	M16x1,5	98	200	216
	M													
250	M	B5	500	450	550	22	5	N°8 18,5	6x M10	2x M50x1,5	M16x1,5	105	224	245
280	S	B5	500	450	550	22	5	N°8 18,5	6x M10	2x M63x1,5	M16x1,5	104	224	245
	M													
315	S	B5	600	550	660	24	6	N°8 18,5	6x M12 /16	2x M63x1,5	M16x1,5	97	311	343
	M													
	L													

XTM		Shaft End							Shaft Sealing Ring					
									B5-Flange			B3 A/B-Side		
		D	DB	E	GA	F	GD	EB	øi	øe	H	øi	øe	H
132	S	38	M12	80	41	10	8	65	40	62	7	40	62	7
	M													
160	M	42	M16	110	45	12	8	90	45	70	8	45	70	8
	L													
180	M	48	M16	110	51,5	14	9	100	55	80	8	55	80	8
	L													
200	L	55	M20	110	59	16	10	100	60	85	8	60	85	8
225	S	60	M20	110/ 140	59/ 64	16/ 18	10/ 11	100/ 125	65	90	10	65	90	10
	M	55/60												
250	M	60/65	M20	140	64/69	18	11	125	70	95	10	70	95	10
280	S	65/75	M20	140	69/ 79,5	18/ 20	11/ 12	125	70/ 85	95/ 110	10/ 12	70/ 85	95/ 110	10/ 12
	M	65/75												
315	S	65/80	M20	140/ 170	69/85	18/ 22	11/ 14	125/ 140	80/ 95	105/ 120	10/ 12	80/ 95	105/ 120	10/ 12
	M													
	L													

Bearing

Bearings specifically designed for use with electric motors are used. From an axle height of 280, these are open and the machine is therefore equipped with a grease nipple for the necessary periodic lubrication of the bearings.

Overview of bearings used:

XTM	Horizontal Installation IM: B3, B35, B34, B6, B7, B8, B14		Vertical Installation IM: B5, V1, V15, V5, V18, V6		Dimensions
	A-Side	B-Side	A-Side	B-Side	[ϕ i x ϕ e x H]mm
132	6308 ZZ C3		6308 ZZ C3		40 x 90 x 23
160	6309 ZZ C3		6309 ZZ C3		45 x 100 x 25
180	6311 ZZ C3		6311 ZZ C3		55 x 120 x 29
200	6312 ZZ C3		6312 ZZ C3		60 x 130 x 31
225	6313 ZZ C3		6313 ZZ C3		65 x 140 x 33
250	6314 ZZ C3		6314 ZZ C3		70 x 150 x 35
280 *	6324 C3		6324 C3		70 x 150 x 35
280 **	6317 C3		6317 C3		85 x 180 x 41
315 *	6317 C3		6317 C3		85 x 180 x 41
315 **	NU 319 E	6319 C3	6319 C3 ***	6319 C3 ***	95 x 200 x 45

* n = 3000 rpm

** n = 1000, 1500 rpm

*** The cylindrical roller bearing can only be used if the bearing itself is subjected to a constant radial load.

Insulated Bearings

When using frequency inverters, bearing currents can be expected, which can cause damage to the bearings. One measure to prevent this is the use of insulated bearings. These can be installed on request.



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