

Xtrem Technology Motor

XTM



IE5 Reluctance Motor

Electric innovation

Industrial expertise

Merkes provides an opportunity to comply with Eco-design regulations with application improvements that increase the competitiveness. Synchronous speed without feedback allows a simplified control.

The high efficiency reduces dimensions without assisted ventilation. Constant torque and power operation makes sizing more accurate and effective with the same robustness recognized as asynchronous motors

IE5 EFFICIENCY

5,5 - 200kW

Constant power operation up to 1:3

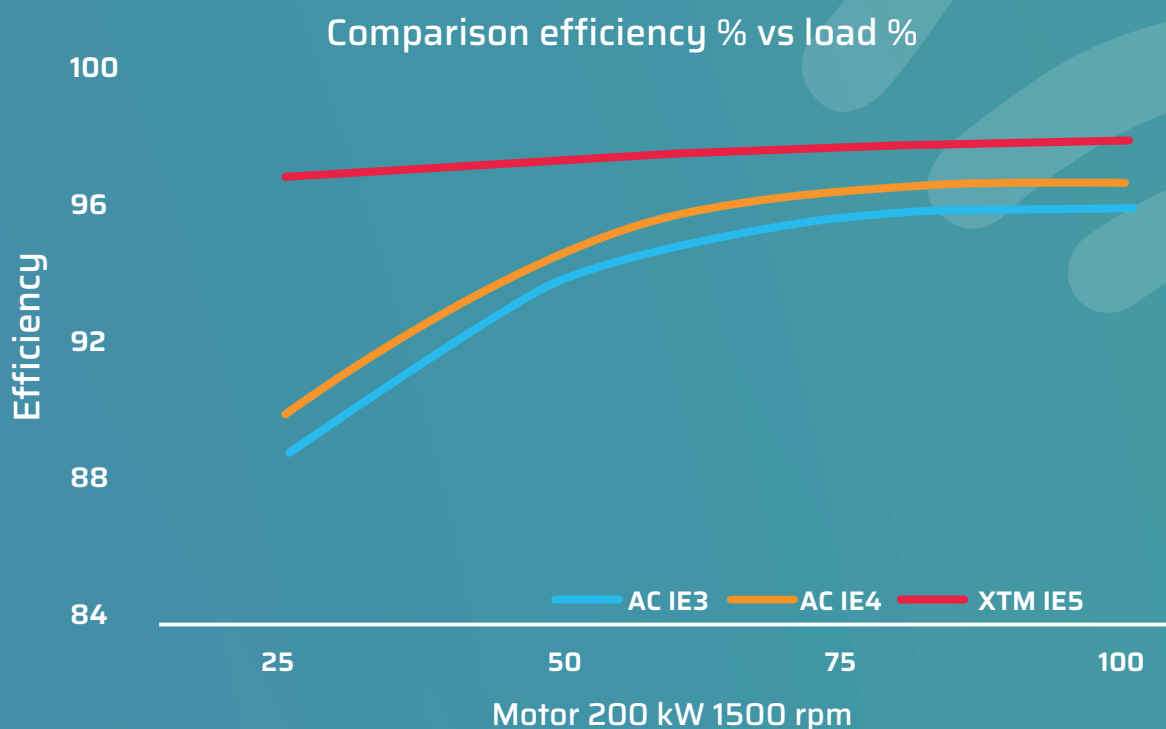
Speed Accuracy: 0.01%

IEC - UNEL/MEC from 132 to 315

RSpeed range: 0 - 6000 rpm

WITHOUT RARE EARTHS

- ◆ Synchronous speed without encoder
- ◆ More compact design
- ◆ Lower moment of inertia
- ◆ Reduced costs



XTM Reluctance Motor

XTM synchronous reluctance motors **guarantee high efficiency at nominal load, even more so at partial load compared to asynchronous ones.**

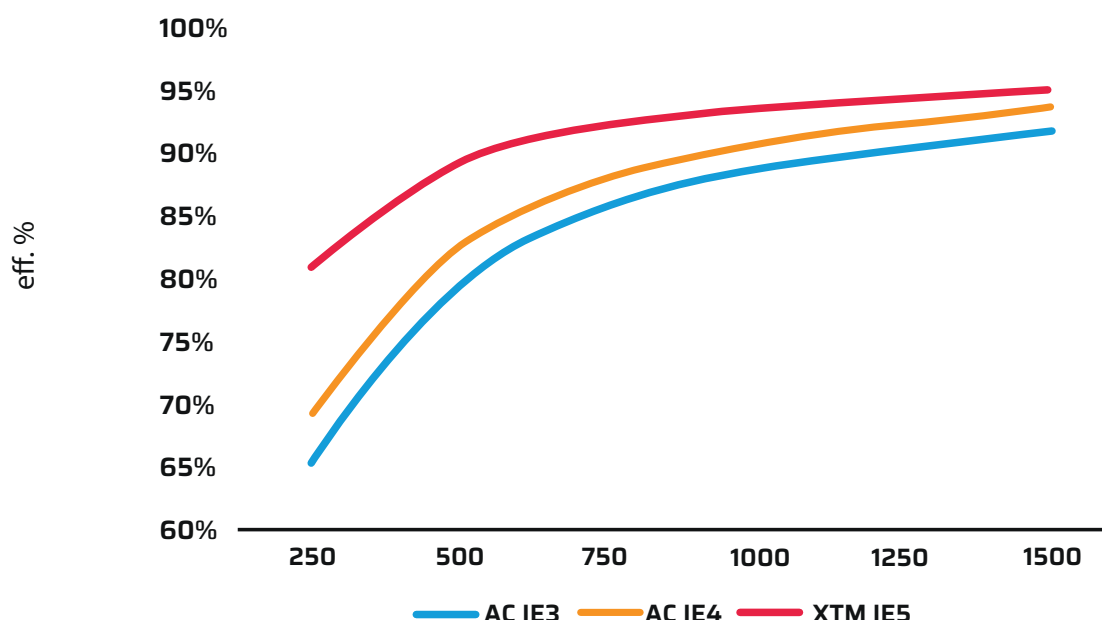
Widely used in electric mobility, **they are ready to replace the asynchronous motor** in variable speed applications, where the cost of the final product is closely linked to the energy cost.

In these cases it is now inevitable to evaluate the economy of the current engine's life cycle the high number of hours of employment. In the HVAC field in particular.

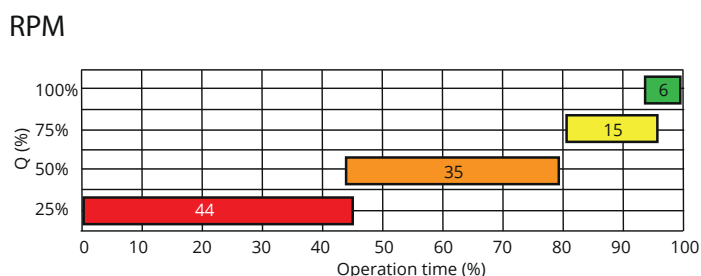
The approach to design today is dictated by **ecodesign** directives and guided by the needs of final producers who must lower the cost of electricity.

The smaller dimensions and the high overload open up the possibility of revisiting many applications of previous design.

Efficiency map as a function of motor speed.



Typical demand for a pump over time



**THE WAY OF
EFFICIENCY
AND ENERGY SAVING**



XTM motors feature a **cast iron casing** with integral feet and lifting eyebolt
The steel terminal box **can be rotated 90° by 90°**. As standard, the IMB3 motor is supplied with a terminal box at the top with power cable entry on the right side.
The side terminal box option is available on request. Shields and flanges are entirely made of cast iron.
Class F/B insulation, IP55 protection, IC411 ventilation.

XTM Series - IE5 1000rpm 400V 33,33Hz

IE5	XTM Motor	P _N	n _N	T _N	U _n	I _N (400 V)	cosφ		η		Po-les	T _{Max}	J	Wei- ght
		kW	min ⁻¹	Nm		A	100%	100%	75%	50%		T _N	kg m ²	Kg
1000rpm 400V 33,33Hz	132Sa	3	1000	28,7	370	7,3	0,71	90,60%	90,47	89,8	4	1,5	0,036442	65
	132Ma	4	1000	38,2	370	9,5	0,72	91,40%	91,34%	91,00%	4	1,5	0,056694	74
	132Mb	5,5	1000	52,5	370	12,9	0,72	92,20%	92,20%	92,21%	4	1,5	0,064533	85
	160Ma	7,5	1000	71,6	370	16,6	0,76	92,90%	92,72%	92,15%	4	1,5	0,099395	125
	160La	11	1000	105	370	23,8	0,77	93,70%	93,56%	93,08%	4	1,5	0,14216	149
	180La	15	1000	143	370	31	0,80	94,30%	94,28%	94,17%	4	1,5	0,20823	193
	200La	18,5	1000	177	370	38,1	0,80	94,60%	94,37%	93,77%	4	1,5	0,27059	241
	200Lb	22	1000	210	370	44,7	0,81	94,90%	94,68%	94,11%	4	1,5	0,31056	258
	225Ma	30	1000	287	370	59,9	0,82	95,30%	94,19%	94,72%	4	1,5	0,59933	320
	250Ma	37	1000	353	370	72,8	0,83	95,60%	95,53%	95,15%	4	1,5	0,70287	402
	280Sa	45	1000	430	370	88,3	0,83	95,80%	95,80%	95,69%	4	1,5	1,2770	520
	280Ma	55	1000	525	370	106	0,84	96,00%	95,93%	95,69%	4	1,5	1,6209	586
	315Sa	75	1000	716	370	145	0,84	96,30%	96,16%	95,70%	4	1,5	3,0205	841
	315Ma	90	1000	860	370	171	0,85	96,50%	96,44%	96,20%	4	1,5	3,3437	948
	315La	110	1000	1051	370	209	0,85	96,60%	95,54%	96,30%	4	1,5	4,0869	1035
	315Lb	132	1000	1261	370	247	0,86	96,80%	96,79%	96,60%	4	1,5	4,4056	1096

XTM Series - IE5 1500rpm 400V 50Hz

IE5	XTM Motor	P _N	n _N	T _N	U _n	I _N (400 V)	cosφ		η		Po-les	T _{Max}	J	Wei- ght
		kW	min ⁻¹	Nm		A	100%	100%	75%	50%		T _N	kg m ²	Kg
1500rpm 400V 50Hz	132Sa	5,5	1500	35	370	11,5	0,80	94,59%	94,33%	93,92%	4	1,5	0,04562	75
	132Ma	7,5	1500	47,8	370	15,4	0,81	94,00%	93,89%	93,51%	4	1,5	0,056694	83
	160Ma	11	1500	70	370	21,9	0,83	94,60%	95,91%	95,93%	4	1,5	0,10235	133
	160La	15	1500	95,5	370	29,3	0,84	95,10%	95,06%	94,95%	4	1,5	0,1300	146
	180Ma	18,5	1500	118	370	35,6	0,85	95,30%	95,16%	94,88%	4	1,5	0,18978	184
	180La	22	1500	140	370	42,3	0,85	95,50%	95,36%	95,08%	4	1,5	0,21753	199
	200L	30	1500	191	370	57,4	0,85	95,90%	95,44%	94,53%	4	1,5	0,29728	260
	225Sa	37	1500	236	370	70,7	0,85	96,10%	95,46%	94,64%	4	1,5	0,50059	304
	225Ma	45	1500	287	370	85,8	0,85	96,30%	95,95%	94,18%	4	1,5	0,59933	336
	250Ma	55	1500	350	370	103	0,86	96,50%	96,44%	96,38%	4	1,5	0,76557	423
	280Sa	75	1500	478	370	139	0,87	96,70%	96,67%	96,63%	4	1,5	1,4484	567
	280Ma	90	1500	573	370	165	0,88	96,90%	96,86%	96,84%	4	1,5	1,7352	630
	315Sa	110	1500	700	370	199	0,89	97,00%	96,78%	96,40%	4	1,5	3,0148	877
	315Ma	132	1500	840	370	238	0,89	97,10%	96,83%	96,30%	4	1,5	3,4500	1003
	315La	160	1500	1019	370	289	0,89	97,20%	96,98%	96,60%	4	1,5	3,8749	1071
	315Lb	200	1500	1273	370	356	0,90	97,40%	97,28%	97,10%	4	1,5	4,6185	1183

XTM Series - IE5 3000rpm 400V 100Hz

IE5	XTM Motor	P _N	n _N	T _N	U _n	I _N (400 V)	cosφ		η		Po- les	T _{Max}	J	Wei- ght
		kW	min ⁻¹	Nm		A	100%	100%	75%	50%		T _N	kg m ²	Kg
3000rpm 400V 100Hz	132 Sa	5,5	3000	17,5	370	10,5	0,88	92,6%	92,13%	91,28%	4	1,5	0,0361	63
	132Sb	7,5	3000	23,9	370	14,3	0,88	93,3%	92,93%	92,32%	4	1,5	0,0404	79
	160Ma	11	3000	35	370	20,5	0,89	94,0%	93,62%	92,08%	4	1,5	0,0690	109
	160Mb	15	3000	47,8	370	27,8	0,89	94,5%	93,95%	92,95%	4	1,5	0,0933	121
	160La	18,5	3000	58,9	370	34,2	0,89	94,9%	94,40%	93,49%	4	1,5	0,1204	144
	180Ma	22	3000	70	370	40,7	0,89	95,1%	94,57%	93,55%	4	1,5	0,1615	168
	200La	30	3000	95,5	370	55,1	0,89	95,5%	94,99%	94,52%	4	1,5	0,2884	235
	200Lb	37	3000	118	370	67,7	0,89	95,8%	95,23%	94,66%	4	1,5	0,2442	247
	225Ma	45	3000	143	370	82,2	0,89	96,0%	95,66%	95,32%	4	1,5	0,4270	299
	250Ma	55	3000	175	370	100	0,89	96,2%	95,93%	95,61%	4	1,5	0,5461	387
	280Sa	75	3000	239	370	136	0,89	96,5%	96,28%	96,08%	4	1,5	0,5461	486
	280Ma	90	3000	287	370	163	0,89	96,6%	96,41%	96,24%	4	1,5	1,0443	548
	315Sa	110	3000	350	370	199	0,89	96,8%	96,27%	95,40%	4	1,5	1,4043	664
	315Ma	132	3000	420	370	239	0,89	96,9%	93,57%	95,90%	4	1,5	1,5129	757
	315La	160	3000	509	370	289	0,89	97,0%	96,76%	96,40%	4	1,5	1,9351	836
	315Lb	200	3000	637	370	361	0,89	97,2%	96,81%	96,10%	4	1,5	2,2716	890

BEARINGS

Merkes used bearings selected for specific use on electric motors.

From **axis height 280 upwards** they are equipped with open bearings, always **at C3 clearance**, and are therefore **equipped with a grease nipple** for the necessary periodic lubrication of the bearings and relative exhaust grease discharge.

The characteristics of standard motor bearings are shown in the following table:

Motor		Horizontal		Vertical		Dimensions Bearings
		IM B3, B35, B34, B6, B7, B8, B14		IM B5, V1, V15, V5, V18, V6		[Øi x Øe x H]
		Coupling side	Side opp. coup.	Coupling side	Side opp. coup.	
XTM 132		6308 ZZ C3		6308 ZZ C3		40x90x23
XTM 160		6309 ZZ C3		6309 ZZ C3		45x100x25
XTM 180		6311 ZZ C3		6311 ZZ C3		55x120x29
XTM 200		6312 ZZ C3		6312 ZZ C3		60x130x31
XTM 225		6313 ZZ C3		6313 ZZ C3		65x140x33
XTM 250		6314 ZZ C3		6314 ZZ C3		70x150x35
XTM280	3000rpm	6314 C3		6314 C3		70x150x35
	1000/1500rpm	6317 C3		6317 C3		85x180x41
XTM 315	3000rpm	6317 C3		6317 C3		85x180x41
	1000/1500rpm	NU 319 E	6319 C3	6319 C3 1)	6319 C3 2)	95x200x45

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

2) In the presence of high axial loads, request the motor with the 7 series angular contact ball bearing.

3) From size 160 the bearing is axially locked as standard. On size 132 it is possible to lock the front bearing on request.

Electrically insulated bearing

The rolling bearings of electric motors are potentially subject to current passages, which rapidly damage the surfaces of the raceways and rolling elements and degrade them. the fat.

The risk of damage increases on electric motors equipped with frequency converters, especially in applications with sudden frequency variations.

In the bearings of such motors, there is an additional risk due to the presence of high frequency currents caused by parasitic capacitances existing within the motor.

The electrically insulated bearing has the outer surface of the outer ring coated with a 100 µm thick layer of aluminum oxide, capable of withstanding voltages of 1,000 V DC; it practically eliminates the inconveniences due to current passages.

It is usually installed on the NDE bearing.

To be used in motors equipped with frequency converters: recommended starting from size 250.

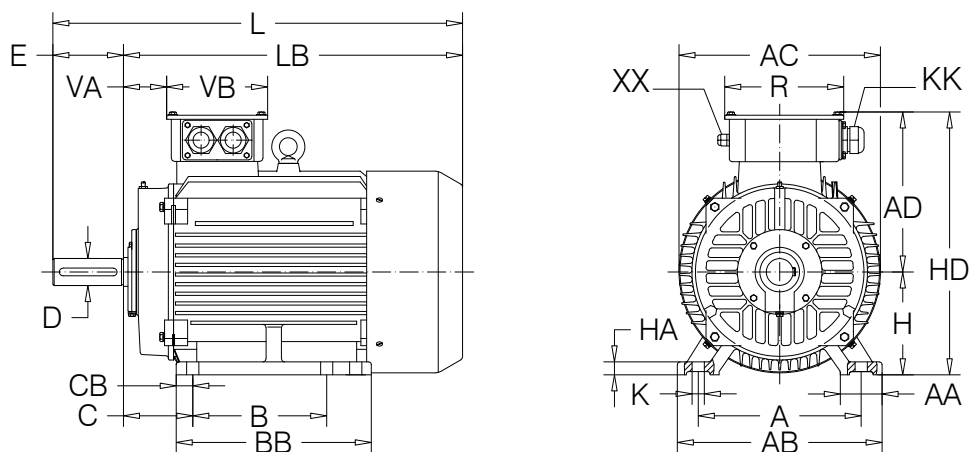
XTM		Main Overall Dimension						Feet								
		AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K
132	S	290	243	132	375	424	504	216	140	89	262	226	52	23	18	12
	M					454	534		178			256				
160	M	325	240	160	400	551	661	254	210	108	314	307	65	29	19	14,5
	L					597	707		254			341				
180	M	365	277	180	457	610	720	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
225	M	447	328	225	553	716	856	356	311	149	431	373	75	31	28	18,5
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
280	M	548	396	280	676	898	1038	457	419	190	546	536	105	69	35	24
315	S	623	481	315	796	1036	1206	508	406	216	624	511	125	59	45	28
315	M	623	481	315	796	1146	1316	508	457	216	624	621	125	59	45	28
315	L	623	481	315	796	1146	1316	508	457	216	624	621	125	59	45	28

XTM		Flange						
		IM	M	N j6	P	LA	T	S
132	S	B5	265	230	300	14	4	N°4 15
	M							
160	M	B5	300	250	350	15	5	N°4 18,5
	L	B14	215	180	250		4	N°4 M12
180	M	B5	300	250	350	15	5	N°4 18,5
	L							
200	L	B5	350	300	400	17	5	N°4 18,5
225	S	B5	400	350	450	19	5	N° 8 18,5
225	M	B5	400	350	450	19	5	N° 8 18,5
250	M	B5	500	450	550	22	5	N° 8 18,5
280	S	B5	500	450	550	22	5	N° 8 18,5
280	M	B5	500	450	550	22	5	N° 8 18,5
315	S	B5	600	550	660	24	6	N° 8 24
315	M	B5	600	550	660	24	6	N° 8 24
315	L	B5	600	550	660	24	6	N° 8 24

Dimensions

XTM		Shaft - End							Shaft - Seals						Terminal - Box					
						Key			Flange-End			B3 control side and opposite side			Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
132	S	38	M12	80	41	10	8	65	40	62	7	40	62	7	6-M5	2-M32X1,5	1-M16x1,5	36	126	126
	M																			
160	M	42	M16	110	45	12	8	90	45	70	8	45	70	8	6-M6	2-M40x1,5	1-M16x1,5	71	158	166
	L																			
180	M	48	M16	110	51,5	14	9	100	55	80	8	55	80	8	6-M6	2-M40x1,5	1-M16x1,5	83	158	166
	L																			
200	L	55	M20	110	59	16	10	100	60	85	8	60	85	8	6-M8	2-M50x1,5	1-M16x1,5	88	200	216
225	S	60	M20	140	64	18	11	125	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
225	M	55	M20	110	59	16	10	100	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
		60		140	64	18	11	125												
250	M	60	M20	140	64	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	105	224	245
		65		170	69															
280	S	65	M20	140	69	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	104	224	245
		75		170	79,5	20	12	140	85	110	12	85	110	12						
315	M	65	M20	140	69	18	11	125	80	105	10	80	105	10	6-M12/16	2-M63x1,5	1-M16x1,5	97	311	343
		80		170	85	22	14	140	95	120	12	95	120	12						

Dimensional data B3 XTM



Dimensional data B5 XTM

Shaft end

