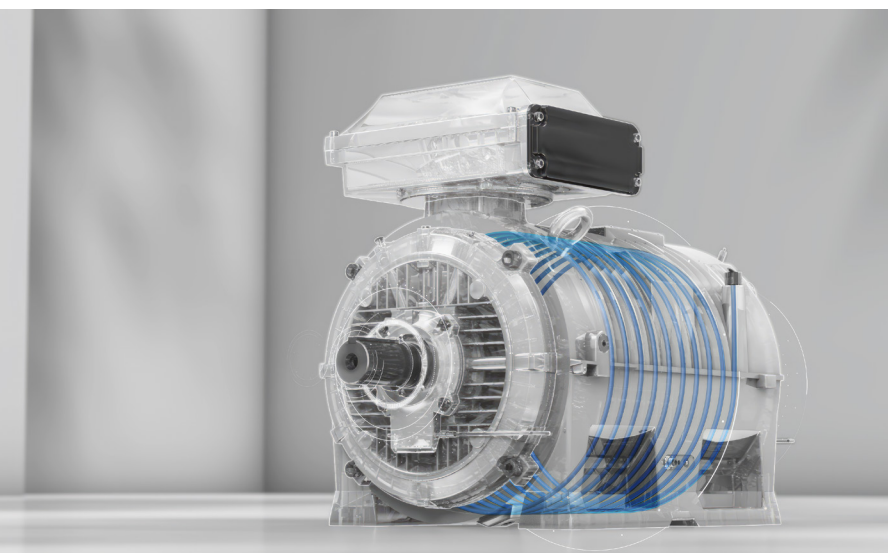


PRODUCT NOTE

Liquid-cooled SynRM motors up to IE5 efficiency

Compact, efficient and highly reliable



These versatile motors meet a range of OEM and end-user needs. IE5 versions are a drop-in replacement for old, inefficient motors. They make it easy to upgrade to ultra-premium efficiency with the same size motor.

Compact versions offer a cost-effective way to reduce machine footprint and weight while still providing up to IE4 efficiency.

—
For technical data, please refer to pages 3-4

The benefits of SynRM technology in liquid-cooled motors

ABB's award-winning synchronous reluctance (SynRM) technology is also available in liquid-cooled motors. Compact, cost-effective versions provide up to IE4 efficiency while ultra premium versions deliver IE5 efficiency. The motors offer high power density across the entire range.

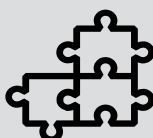
Reliable and sustainable

SynRM combines the performance advantages of permanent magnet motors with the straightforward reliability and service-friendliness of an induction platform. The motors are also a sustainable choice, as they do not contain magnets or rare earth metals.



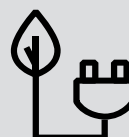
Range:

- Powers from 37 to 710 kW
- Frame sizes 200/250/280/315
- Nominal speeds 1500/2100/3000 rpm



Applications:

- All variable speed applications
- Low inertia and excellent controllability



Sustainability:

- Up to IE5 ultra-premium efficiency
- Magnet-free rotor
- Lightweight, compact design



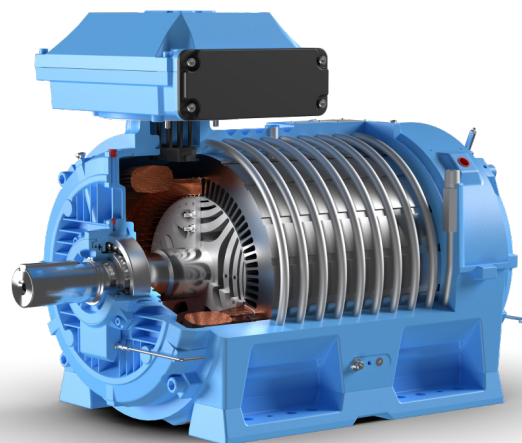
Options:

- Many premium features included as standard
- Highly customizable
- Options as for standard ABB motors

—
01 Grease outlet for easy removal of old grease.

—
02 SPM nipple makes vibration monitoring straightforward.

Liquid-cooled SynRM: Harnessing the benefits of liquid cooling with SynRM technology.



Efficient and easy to use

SynRM motors deliver high efficiency, even at partial loads, reducing electricity consumption and CO2 emissions. Lower energy costs significantly reduce the total cost of ownership. The payback time for selecting a high efficiency motor can be less than one year.

Cooling ribs on the bearing assembly extend the lifetime of the bearings. This enhances the motors' reliability and reduces unexpected downtime. Regreasable bearings are fitted as standard, and a grease outlet ensures easy removal of old grease.

The terminal box is rotatable through 360° which provides flexible installation options. Maintenance and repair are straightforward thanks to the magnet-free rotor. Both SPM nipples and PTC Thermistors are supplied as standard for monitoring purposes.

Liquid-cooled motors are ideal for applications where airflow could interfere with the process. Further, liquid-cooled SynRM motors improve the working environment in industrial plants and are the ideal choice where noise sensitivity is paramount.

Motor features

- IC71W water jacket cooling system
- IP55 protection
- Insulation system up to Class H
- Aluminum frame (Steel frame available on request)
- Low noise level
- Lighter in weight and higher power density than equivalent induction motors

High performance in variable speed applications

- Wide speed range for constant torque applications, starting at zero speed.
- Accurate control and low inertia for dynamic applications.
- Operate with variable speed drives (VSDs) using SynRM motor control.
- Verified performance with ABB's SynRM capable VSDs.



01



02

Technical data

High output Liquid-cooled Synchronous reluctance motors. network voltage 400V

Output kW	Type designation	Product code	Speed (r/min)	IE class acc. to IEC TS60034- 30-2	Motor efficiency with VSD supply TN = 100%. nN = 100%	Max speed. n _{max} r/m	Torque			Rotor inertia (J = 1/4GD2) (M) (kgm2)	Weight kg	Tempera- ture rise class (M)
							Cur- rent. IN A	T _N Nm	T _{OL} /T _N Nm			
3000 r/min (100 Hz)					Motor voltage 370V							
160	M3LL 200MLE 4	3GLL202457---B	3000	IE3	94.6	4500	358	509	1.3	0.378	356	H
200	M3LL 200MLF 4	3GLL202467---B	3000	IE2	94.7	4500	447	637	1.2	0.407	388	H
2100 r/min (70 Hz)					Motor voltage 370V							
132	M3LL 200MLE 4	3GLL202455---B	2100	IE3	94.3	4500	305	600	1.3	0.378	356	H
160	M3LL 200MLF 4	3GLL202465---B	2100	IE2	94.5	4500	371	727	1.4	0.407	388	H
185	M3LL 250SMD 4	3GLL252245---B	2100	IE3	94.8	4000	409	841	1.4	0.702	488	H
240	M3LL 250SME 4	3GLL252255---B	2100	IE3	95.1	4000	549	1092	1.5	0.792	523	H
1500 r/min (50 Hz)					Motor voltage 370V							
90	M3LL 200MLE 4	3GLL202453---B	1500	IE1	93.1	4500	203	573	1.3	0.378	356	H
110	M3LL 200MLF 4	3GLL202463---B	1500	IE2	93.4	4500	248	700	1.3	0.407	388	H
132	M3LL 250SMC 4	3GLL252233---B	1500	IE2	94.3	4000	296	840	1.3	0.633	459	H
160	M3LL 250SMD 4	3GLL252243---B	1500	IE2	94.5	4000	360	1019	1.3	0.702	488	H
185	M3LL 250SME 4	3GLL252253---B	1500	IE2	94.7	4000	421	1178	1.4	0.792	523	H
225	M3LL 250KHD 4	3GLL252943---B	1500	IE3	95.5	4000	508	1432	1.5	0.942	665	H

Technical data

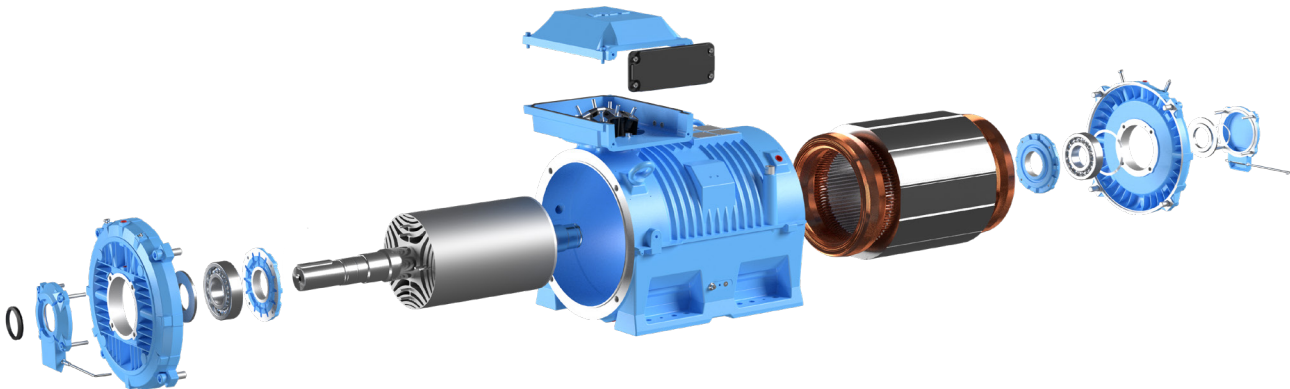
IE4 Liquid-cooled Synchronous reluctance motors. network voltage 400V

Output kW	Type designation	Product code	Speed (r/min)	IE class acc. to IEC TS60034- 30-2	Motor efficiency with VSD supply TN = 100%. nN = 100%	Max speed. n _{max} r/m	Cur- rent. IN A	Torque			Rotor inertia (J = 1/4GD2) (M) (kgm2)	Weight kg	Temperature rise class (M)
								T _N Nm	T _{OL} /T _N Nm				
3000 r/min (100 Hz)					Motor voltage 370V								
132	M3LL 200MLE 4	3GLL202457---M	3000	IE4	95.3	4500	303	420	1.7	0.378	356	F	
160	M3LL 200MLF 4	3GLL202467---M	3000	IE4	95.4	4500	363	509	1.7	0.407	388	F	
200	M3LL 250SMC 4	3GLL252237---M	3000	IE4	95.7	4000	437	636	1.6	0.633	459	F	
250	M3LL 250SMD 4	3GLL252247---M	3000	IE4	95.7	4000	545	796	1.5	0.702	488	F	
300	M3LL 250SME 4	3GLL252257---M	3000	IE4	95.7	4000	655	955	1.5	0.792	523	F	
355	M3LL 250KHD 4	3GLL252947---M	3000	IE4	95.7	4000	810	1128	1.5	0.942	665	H	
2100 r/min (70 Hz)					Motor voltage 370V								
90	M3LL 200MLE 4	3GLL202455---M	2100	IE4	95.2	4500	204	409	1.6	0.378	356	F	
110	M3LL 200MLF 4	3GLL202465---M	2100	IE4	95.0	4500	248	500	1.6	0.407	388	F	
132	M3LL 250SMC 4	3GLL252235---M	2100	IE4	95.3	4000	298	601	1.9	0.633	459	F	
160	M3LL 250SMD 4	3GLL252245---M	2100	IE4	95.4	4000	349	727	1.6	0.702	488	F	
200	M3LL 250SME 4	3GLL252255---M	2100	IE4	95.7	4000	460	910	1.9	0.792	523	F	
250	M3LL 250KHC 4	3GLL252935---M	2100	IE4	95.7	4000	585	1135	1.7	0.905	651	H	
280	M3LL 250KHD 4	3GLL252945---M	2100	IE4	95.7	4000	625	1272	1.4	0.942	665	H	
1500 r/min (50 Hz)					Motor voltage 370V								
55	M3LL 200MLE 4	3GLL202453---M	1500	IE4	95.1	4500	119	350	1.5	0.378	356	F	
75	M3LL 200MLF 4	3GLL202463---M	1500	IE4	95.4	4500	163	477	1.5	0.407	388	F	
90	M3LL 250SMC 4	3GLL252233---M	1500	IE4	95.5	4000	195	573	1.7	0.633	459	F	
110	M3LL 250SMD 4	3GLL252243---M	1500	IE4	95.4	4000	238	700	1.6	0.702	488	F	
132	M3LL 250SME 4	3GLL252253---M	1500	IE4	95.5	4000	286	840	1.7	0.792	523	F	
200	M3LL 250KHD 4	3GLL252943---M	1500	IE4	95.9	4000	442	1273	1.3	0.942	665	H	
250	M3LL 280SME 4	3GLL282253---M	1500	IE4	95.9	2600	568	1591	1.8	1.67	822	H	

Technical data

IE5 Liquid-cooled Synchronous reluctance motors. network voltage 400V

Output kW	Type designation	Product code	Speed (r/min)	IE class acc. to IEC TS60034- 30-2	Motor efficiency with VSD supply TN = 100%. nN = 100%	Max speed. n _{max} r/m	Current. IN A	Torque		Rotor inertia (J = 1/4GD2) (M) (kgm2)	Weight kg	Tempera- ture rise class (M)
								T _N Nm	T _{OL} /T _N Nm			
3000 r/min (100 Hz)				Motor voltage 370V								
75	M3LL 200MLE 4	3GLL202457-••C	3000	IE5	96.0	5000	163	239	1.9	0.387	356	F
110	M3LL 200MLF 4	3GLL202467-••C	3000	IE5	96.0	5000	236	350	1.6	0.407	388	F
132	M3LL 250SMC 4	3GLL252237-••C	3000	IE5	96.2	4000	298	420	2.0	0.632	459	F
160	M3LL 250SMD 4	3GLL252247-••C	3000	IE5	96.3	4000	367	509	1.9	0.702	488	F
200	M3LL 250SME 4	3GLL252257-••C	3000	IE5	96.5	4000	438	636	1.6	0.792	523	F
315	M3LL 250KHD 4	3GLL252947-••C	3000	IE5	96.5	4000	750	1003	1.8	0.942	665	F
2100 r/min (70 Hz)				Motor voltage 370V								
75	M3LL 200MLE 4	3GLL202455-••C	2100	IE5	96.0	5000	179	341	1.8	0.378	356	F
90	M3LL 200MLF 4	3GLL202465-••C	2100	IE5	96.1	5000	220	409	2.0	0.407	388	F
110	M3LL 250SMC 4	3GLL252235-••C	2100	IE5	96.0	4000	257	500	1.9	0.633	488	F
132	M3LL 250SMD 4	3GLL252245-••C	2100	IE5	96.2	4000	300	599	1.7	0.702	523	F
160	M3LL 250SME 4	3GLL252255-••C	2100	IE5	96.3	4000	367	729	1.8	0.792	523	F
250	M3LL 250KHD 4	3GLL252945-••C	2100	IE5	96.5	4000	579	1135	1.6	0.942	665	H
315	M3LL 280KHA 4	3GLL282915-••C	2100	IE5	96.5	2600	675	1433	1.4	1.61	883	H
355	M3LL 280KHB 4	3GLL282925-••C	2100	IE5	96.5	2600	775	1614	1.6	1.75	922	H
400	M3LL 315MLB 4	3GLL312425-••C	2100	IE5	96.5	2200	852	1818	1.4	2.68	1083	H
450	M3LL 315KHA 4	3GLL312915-••C	2100	IE5	96.5	2200	972	2048	1.7	3.04	1490	H
550	M3LL 315KHB 4	3GLL312925-••C	2100	IE5	96.5	2200	1256	2501	2.0	3.46	1520	H
710	M3LL 315KHC 4	3GLL312935-••C	2100	IE5	96.5	2200	1517	3227	1.3	3.77	1560	H
1500 r/min (50 Hz)				Motor voltage 370V								
37	M3LL 200MLE 4	3GLL202453-••C	1500	IE5	95.5	5000	87	235	1.9	0.387	356	F
55	M3LL 200MLF 4	3GLL202463-••C	1500	IE5	96.0	5000	117	350	1.9	0.407	388	F
75	M3LL 250SMD 4	3GLL252243-••C	1500	IE5	96.2	4000	168	477	1.9	0.702	488	F
110	M3LL 250SME 4	3GLL252253-••C	1500	IE5	96.3	4000	247	701	1.6	0.792	523	F
160	M3LL 250KHD 4	3GLL252943-••C	1500	IE5	96.5	4000	360	1018	1.6	0.942	665	F
200	M3LL 280SME 4	3GLL282253-••C	1500	IE5	96.8	2600	422	1271	1.7	1.67	822	F
250	M3LL 315MC 4	3GLL312333-••C	1500	IE5	96.8	2200	547	1592	1.7	2.04	870	H
315	M3LL 315MLB 4	3GLL312423-••C	1500	IE5	96.8	2200	657	2003	1.3	2.68	1083	H
355	M3LL 315KHA 4	3GLL312913-••C	1500	IE5	96.8	2200	752	2260	1.5	3.04	1490	H
450	M3LL 315KHB 4	3GLL312923-••C	1500	IE5	96.8	2200	962	2863	1.4	3.46	1520	H
550	M3LL 315KHC 4	3GLL312933-••C	1500	IE5	96.8	2200	1211	3502	1.5	3.77	1560	H



[new.abb.com/motors-generators /
iec-low-voltage-motors](https://new.abb.com/motors-generators/iec-low-voltage-motors)

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG. Copyright© 2024 ABB All rights reserved