

EU Ecodesign Regulation

Commission Regulation EU 2019/1781 setting new requirements for electric motors and variable speed drives

Information on upcoming changes

EU member countries have agreed about the new and more demanding requirements in the new regulation EU 2019/1781 repealing and replacing Regulation 640/2009. The implementation will be done in two steps on 1st of July 2021 and 1st of July 2023. The new regulation has the following main features:

Current regulation (valid until 30.06.2021)

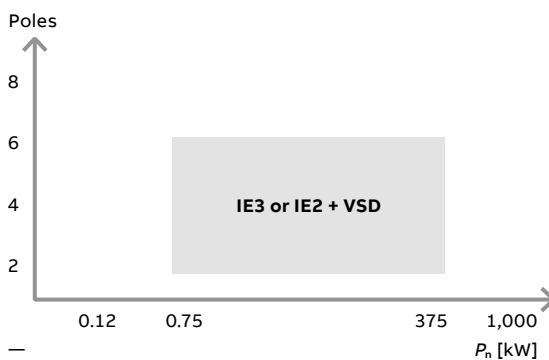
Electric motors

Applies to “normal motors” (= single speed, 3-phase 50 Hz or 50/60 Hz, squirrel cage induction motor for continuous duty*)

* Continuous duty definition: duty class S1, S3>80% , S6>80%.

Major exemptions:

Ex-motors, brake motors, submersible motors, 8-pole and TEAO motors



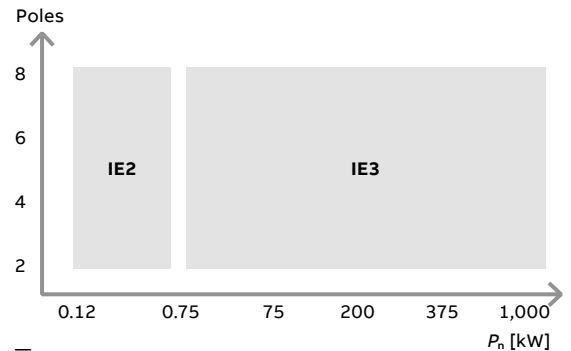
Variable speed drives (VSDs)

No efficiency requirements imposed on variable speed drives.

New regulation for electric motors

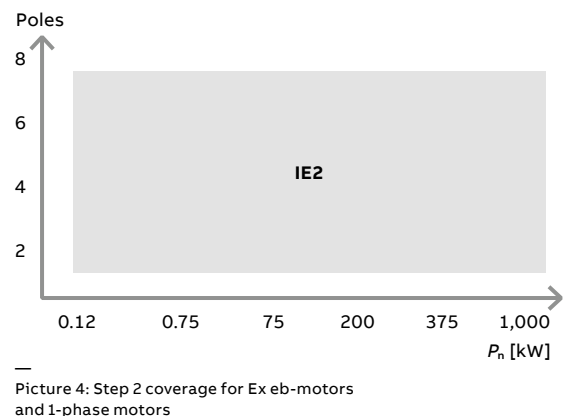
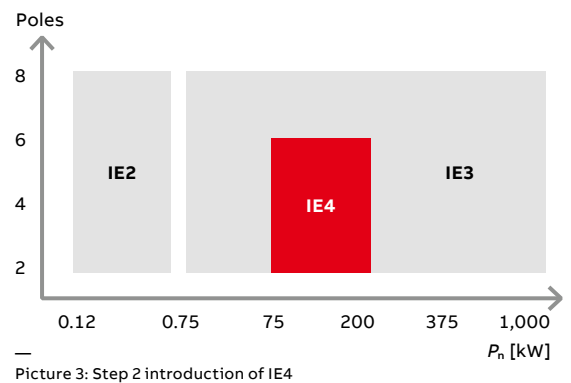
Step 1: Starting 01.07.2021

The regulation will cover 3-phase single speed motors 50 Hz, 60 Hz, 50/60 Hz, brake motors with external brake, all motors for Ex t, Ex ec, Ex d and Ex de rated for duty class: S1, S3 > 80%, S6 > 80% and also Totally Enclosed, Air Over (TEAO) motors. It is important to note that the option of IE2 + VSD ceases.



Step 2: Starting 01.07.2023 (additions to Step 1)

IE4 for 3-phase will become mandatory for 2-6 poles single speed motors between 75-200 kW. The coverage is also extended to Ex eb motors and 1-phase motors.



New regulation for variable speed drives

Step 1: Starting 01.07.2021

The regulation will cover 3-phase standard drives (diode rectifier) from $0.12 \text{ kW} \leq P_n \leq 1,000 \text{ kW}$.



Picture 5: Step 1 coverage for VSD

For LV AC drives, the following exclusions from the directive apply: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and 1-phase drives. Several drive types are also excluded from the directive: MV drives, DC drives and traction drives.

Compliant two years ahead

Today ABB already offers a comprehensive motor portfolio that complies with the new requirements set by the new regulation, including motor types that are exempt in the current regulation like Ex motors, TEAO motors and motors for the 60 Hz network.

ABB's major drive products ACS880, ACS580, ACH580, ACQ580, ACS380 are already confirmed as compliant, and product documentation and manuals will be updated accordingly.

How regulation is evolving

Ecodesign		Year and minimum efficiency requirements (2016 onward)		
Induction motor <= 1000 V		2016-30.06.2021	01.07.2021	01.07.2023 onward
0.12 ... < 0.75 kW	3-phase, 2/4/6 pole ²⁾	Excluded	IE2	
	3-phase, 8 pole ²⁾	Excluded	IE2	
0.75 ... 7.5 kW	3-phase, 2/4/6 pole ²⁾	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole ²⁾	Excluded	IE3	
7.5 ... 75 kW	3-phase, 2/4/6 pole ²⁾	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole ²⁾	Excluded	IE3	
75 ... 200 kW	3-phase, 2/4/6 pole ²⁾	IE2 + VSD / IE3	IE3	IE4 ¹⁾
	3-phase, 8 pole ²⁾	Excluded	IE3	
200 ... 375 kW	3-phase, 2/4/6 pole ²⁾	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole ²⁾	Excluded	IE3	
375 ... 1,000 kW	3-phase, 2/4/6 pole ²⁾	Excluded	IE3	
	3-phase, 8 pole ²⁾	Excluded	IE3	
> 0.12 kW	Ex eb	Excluded		IE2
	1-phase	Excluded		IE2
Explosion-protected motors specifically designed and certified for mining		Excluded		
Motors specifically qualified for the safety of nuclear installations		Excluded		
High voltage motors DC motors		Excluded Excluded		
Variable speed drives <= 1000 V		2016-30.06.2021	01.07.2021	01.07.2023 onward
0.12 – 1.000 kW (Diode bridge)			IE2	
Regenerative drives		Excluded		
Low-harmonic drives (THD < 10%)		Excluded		
1-phase drives		Excluded		
AC drives with multiple AC outputs		Excluded		
MV drives DC drives		Excluded		

¹⁾ Exception: Brake motors with internal integrated brake, explosion protected motors

²⁾ Exception: Ex eb, but including Ex t, Ex ec, Ex d and Ex de

For more information please contact your local ABB representative or visit:

abb.com/motors&generators
abb.com/drives

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 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. Copyright© 2019 ABB. All rights reserved.