

# EU Ecodesign Regulation

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



Efficiency requirements for electric motors and variable speed drives established by EU Commission Regulation EU 2019/1781, repealing and replacing the previous Regulation 640/2009.

The regulation aims to boost energy efficiency and cut carbon dioxide emissions. Implementation is in two steps: Step 1 on July 1, 2021 and Step 2 on July 1, 2023.

## Requirements for electric motors

### Step 2: Effective from 01.07.2023

Step 2 builds on Step 1, which made IE3 or IE2 efficiency levels mandatory for many common types of 3-phase low voltage motor rated for direct-on-line operation.

Full details of the Step 1 requirements are available here: [Ecodesign regulation](#).

Step 2 makes IE4 mandatory for 3-phase 2-6 pole, single speed motors rated between 75-200 kW. Coverage is also extended to Ex eb motors and 1-phase motors, which must meet IE2 efficiency levels.



Figure 1: Requirement for IE4 introduced in Step 2

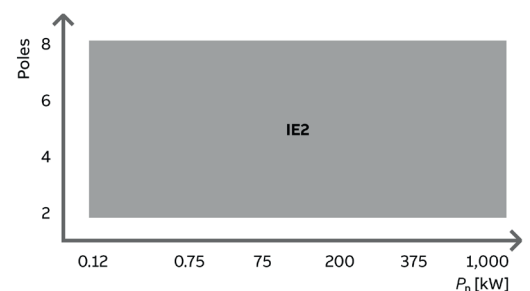


Figure 2: Coverage extended to Ex eb and 1-phase motors in Step 2

## New regulation for variable speed drives

### Step 2: No changes for VSDs

Step 2 does not make any changes to the requirements for drives. The Step 1 requirements, effective from 01.07.2021, cover 3-phase standard drives (diode rectifier) rated  $0.12 \text{ kW} \leq P_n \leq 1,000 \text{ kW}$ .

The following types of low voltage AC drives are excluded: regenerative drives, low-harmonic drives (THD < 10%), multiple AC output drives and 1-phase drives. A drive cabinet containing a drive module that has already been assessed does not need to be reassessed.

Other types of drive that are excluded from the regulation: MV drives, DC drives and traction drives.

## Efficient motors and drives from a reliable supplier

ABB is a leader in highly efficient electrical products. Our motors and drives deliver the highest levels of energy efficiency, helping customers to save electricity, cut their power bills and reduce carbon dioxide emissions. We closely watch the evolving regulatory environment, ensuring that the products we supply comply fully with all relevant requirements.

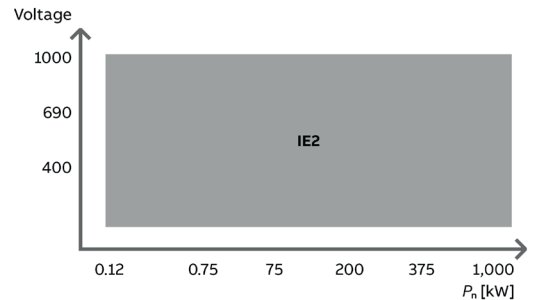


Figure 3: No change to requirements for VSDs in Step 2

## How regulation is evolving

Ecodesign		Year and minimum	
Induction motor ≤ 1000 V		01.07.2021	01.07.2023 onward
≥ 0.12 ... < 0.75 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE2	
	3-phase, 8 pole <sup>2)</sup>	IE2	
≥ 0.75 ... < 7.5 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE3	
	3-phase, 8 pole <sup>2)</sup>	IE3	
≥ 7.5 ... < 75 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE3	
	3-phase, 8 pole <sup>2)</sup>	IE3	
≥ 75 ... ≤ 200 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE3	IE4 <sup>1)</sup>
	3-phase, 8 pole <sup>2)</sup>	IE3	
> 200 ... ≤ 375 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE3	
	3-phase, 8 pole <sup>2)</sup>	IE3	
> 375 ... ≤ 1,000 kW	3-phase, 2/4/6 pole <sup>2)</sup>	IE3	
	3-phase, 8 pole <sup>2)</sup>	IE3	
≥ 0.12 kW... ≤ 1,000 kW	Ex eb	Excluded	IE2
	1-phase	Excluded	IE2
Motors specifically qualified for the safety of nuclear installations		Excluded	Excluded
High voltage motors and DC motors		Excluded	Excluded
Variable speed drives ≤ 1000 V		01.07.2021	01.07.2023 onward
0.12 ...1,000 kW (Diode bridge)		IE2	
Cabinet with already conformity assessed module			
Regenerative drives			
Low-harmonic drives (THD < 10%)			
1-phase drives			
AC drives with multiple AC outputs			
MV drives   DC drives			

<sup>1)</sup> Exception: Brake motors with internal integrated brake, explosion protected motors

<sup>2)</sup> Exception: Ex eb, but including Ex t, Ex ec, Ex d and Ex de

\*Exception; Explosion protected motors specifically designed and certified for mining

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

[new.abb.com/motors-generators/ecodesign](http://new.abb.com/motors-generators/ecodesign)

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