

# EU Ecodesign Regulation

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

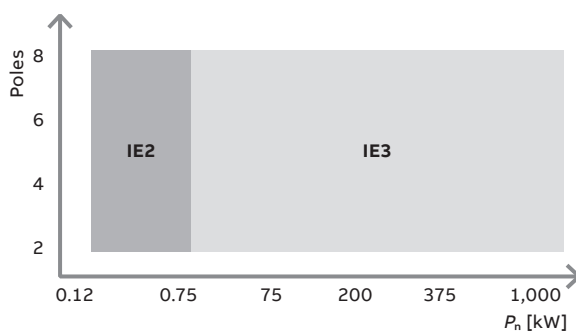


EU member countries have agreed about the new and more demanding requirements in the new regulation EU 2019/1781 repealing and replacing Regulation 640/2009. The implementation will be done in two steps on 1st of July 2021 and 1st of July 2023.

## 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 rated for direct-on-line operation with continuous type defined as S1, S3  $\geq 80\%$  and S6  $\geq 80\%$ , motors for potentially explosive atmospheres with protection types of Ex t, Ex ec, Ex d and Ex de, brake motors with external brake and also Totally Enclosed, Air Over (TEAO) motors. It is important to note that the option of IE2 + VSD ceases.



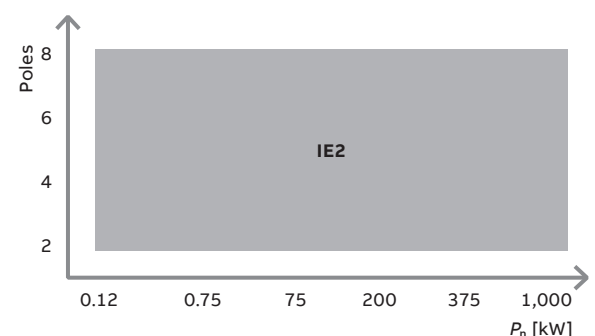
Picture 2: Step 1 starting from 01.07.2021

### 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 that must be of IE2.



Picture 3: Step 2 introduction of IE4



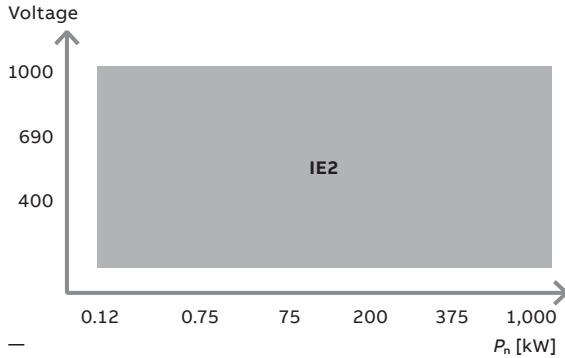
Picture 4: Step 2 Ex eb-motors and 1-phase motors

## New regulation for variable speed drives

### Step 1: Starting 01.07.2021

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

For LV AC drives, the following exclusions from the



Picture 5: Step 1 coverage for VSD

directive apply: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and 1-phase drives. A drive cabinet with already conformity assessed drives module does not need to be assessed again. 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, ACS480, ACH480, 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 $\leq 1000 \text{ V}$		2016-30.06.2021	01.07.2021	01.07.2023 onward
$\geq 0.12 \dots < 0.75 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	Excluded	IE2	
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE2	
$\geq 0.75 \dots < 7.5 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE3	
$\geq 7.5 \dots < 75 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE3	
$\geq 75 \dots \leq 200 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	IE2 + VSD / IE3	IE3	IE4 <sup>1)</sup>
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE3	
$> 200 \dots \leq 375 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	IE2 + VSD / IE3	IE3	
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE3	
$> 375 \dots \leq 1,000 \text{ kW}$	3-phase, 2/4/6 pole <sup>2)</sup>	Excluded	IE3	
	3-phase, 8 pole <sup>2)</sup>	Excluded	IE3	
	Ex eb	Excluded		IE2
$\geq 0.12 \text{ kW} \dots \leq 1,000 \text{ kW}$	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 and DC motors		Excluded   Excluded		
Variable speed drives $\leq 1000 \text{ V}$		2016-30.06.2021	01.07.2021	01.07.2023 onward
0.12 ... 1,000 kW (Diode bridge)			IE2	
Cabinet with already conformity assessed module		Excluded		
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		

<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

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

[abb.com/motors&generators](http://abb.com/motors&generators)  
[abb.com/drives](http://abb.com/drives)

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