



EFFICIENCY REGULATIONS IN EUROPE



Efficiency Standard	IEC 60034-30
Efficiency Regulation	(EC) 640/2009 + (EU) 4/2014
Valid since	01/01/2017
Efficiency Requirement	IE3 + IE2 for inverter duty

Applicable for	<ul style="list-style-type: none"> • Single-speed, three-phase, 50 Hz and 50/60 Hz cage induction motors • 2-pole, 4-pole or 6-pole motors • Nominal rated output power between 0.75 kW and 375 kW • Nominal rated voltage U_N up to 1000 V • Continuous operation
Exceptions	<ul style="list-style-type: none"> • Motors which are designed in such a way that they can be operated submerged in a fluid • Motors which are completely built into a product (e.g. a gearbox, a pump, a fan or a compressor), and where the energy efficiency of which cannot be recorded independently of that product • At altitudes exceeding 4000 metres above sea level • At ambient temperatures above 60° C • At ambient temperatures below - 30° C (any motor) and/or at ambient temperatures below 0° C (air-cooled motor) • In potentially explosive atmospheres within the meaning of Directive 94/9/EC of the European Parliament and of the Council • Brake motors

Pending energy efficiency regulations (EU) 2019/1781

Valid from	01/07/2021
Applicable for	<ul style="list-style-type: none"> • VSD frequency inverter 0.12 – 1,000 kW : IE2 • 3-phase motors 0,12 kW to <0,75 kW/ 2-pole, 4-pole, 6-pole or 8-pole: IE2 (except for: Ex eb (DXE)) • 3-phase motors 0.75 – 1,000 kW / 2-pole, 4-pole, 6-pole or 8-pole: IE3 (except for: Ex eb (DXE)) ⚠ Brake motors are no longer excluded
Valid from	01/07/2023
Applicable for	<ul style="list-style-type: none"> • 1-phase motors ≥ 0.12 kW: IE2 • Ex eb (DXE) motors ≥ 0.12 kW: IE2 • 3-phase motors 75 kW – 200 kW / 2-pole, 4-pole or 6-pole: IE4 (except for: Brake motors and all explosion-protected motors) • Induction motors without carbon brushes, commutators, slip rings or electrical rotor connections which are designed to be operated on a sinusoidal voltage of 50 Hz, 60 Hz or 50/60 Hz and which have the following characteristics: <ul style="list-style-type: none"> ◊ 2-pole, 4-pole, 6-pole and 8-pole motors ◊ Nominal rated power P_N between 0.12 kW and 1000 kW ◊ Nominal rated voltage U_N above 50 V up to, and including, 1000 V ◊ Which are designed for continuous mode ($S_1, S_3 \geq 80\%$ ED, $S_6 \geq 80\%$ ED) and ◊ which are intended for direct mains operation
Exceptions	<ul style="list-style-type: none"> • Motors which are designed in such a way that they can be operated submerged in a fluid • Motors which are completely built into a product (e.g. a gearbox, a pump, a fan or a compressor), whereby the energy efficiency of which cannot be recorded independently of these products • Motors with integrated frequency inverters (compact drive units) whose energy efficiency cannot be tested independently of the frequency inverter • Specially designed and specified motors which are exclusively for the following operating conditions: <ul style="list-style-type: none"> • At altitudes exceeding 4000 m above sea level • At ambient temperatures above + 60° C • At ambient temperatures below – 30° C • Motors with an integrated brake which is an integral part of the internal motor design and cannot be removed or powered from a separate power source when testing motor efficiency. • Motors which are specially designed for the safety of nuclear installations in accordance with Article 3 of Council Directive 2009/71/EURATOM • Motors with mechanical commutators • Totally enclosed self-cooled motors (TENV) • Motors placed on the market before 01/07/2029 which are intended to replace identical motors integrated into products placed on the market before 01/07/2022 and marketed specifically for that purpose • Multiple-speed motors i.e. Pole-changing motors • Motors which are specially developed for electric conveyor vehicles • Motors in portable devices whose weight will be carried by hand during operation. • Motors in hand-held mobile devices which will be moved during operation • Motors in wireless or battery-powered devices • Motors for underground mining work (mines) are excluded

