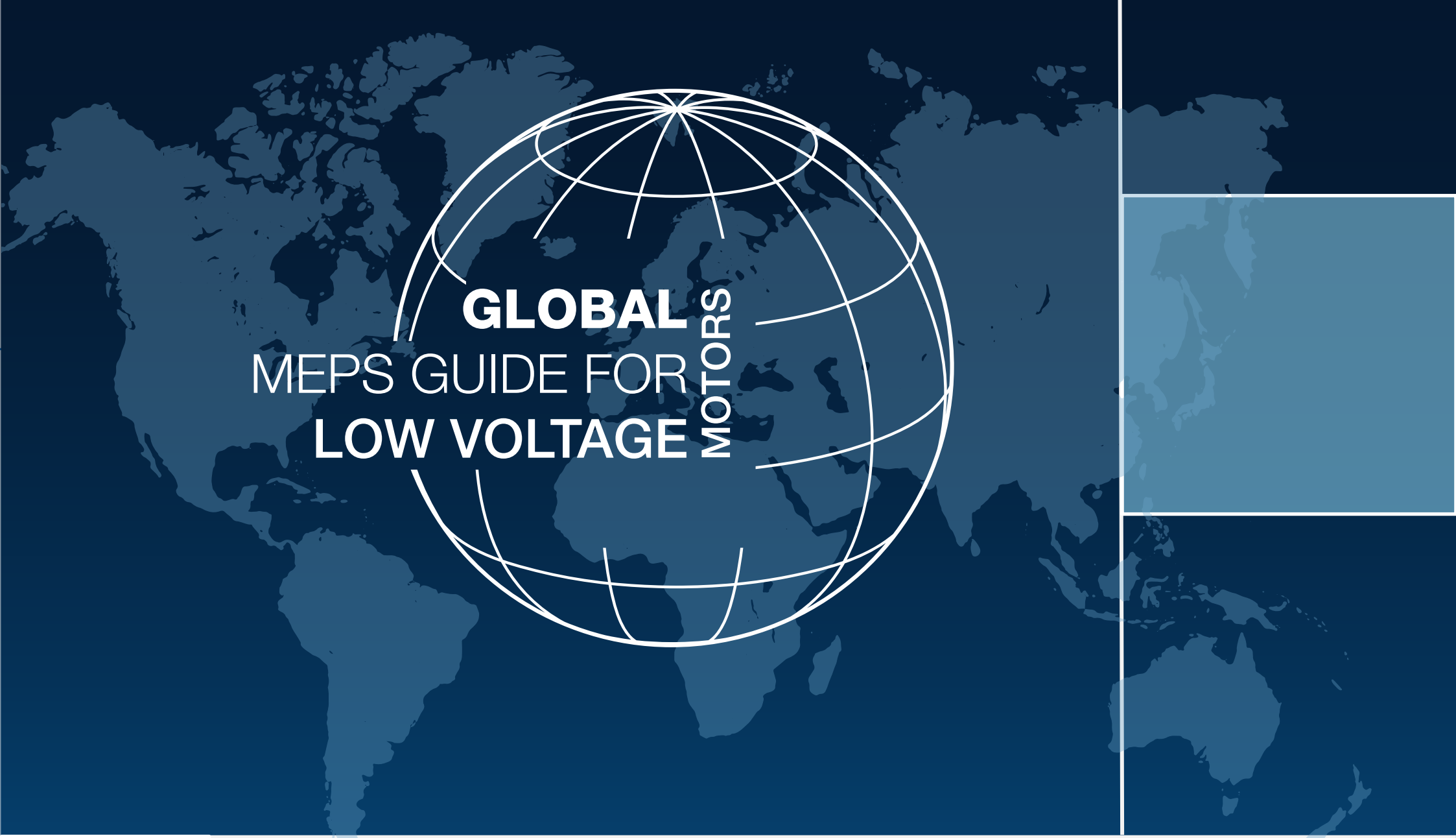


GLOBAL MEPS GUIDE FOR LOW VOLTAGE MOTORS

Driving efficiency and sustainability

Understanding MEPS

The increasing demand for electrical energy to sustain global development requires consistent heavy investment in power supply generation. However, in addition to complex medium and long term planning, these investments rely on natural resources, which are becoming depleted due to constant pressures upon the environment. The best strategy, therefore, to maintain energy supply in the short term is to avoid wastage and increase energy efficiency. Electric motors play a major role in this strategy; since around **40% of global energy demand is estimated to be related to electric motor applications**.

As a consequence of this need to reduce energy consumption and carbon dioxide emissions, many Governments worldwide have imposed local Regulations, also known as **MEPS (Minimum Energy Performance Standards)** to numerous types of equipment, including electric motors.

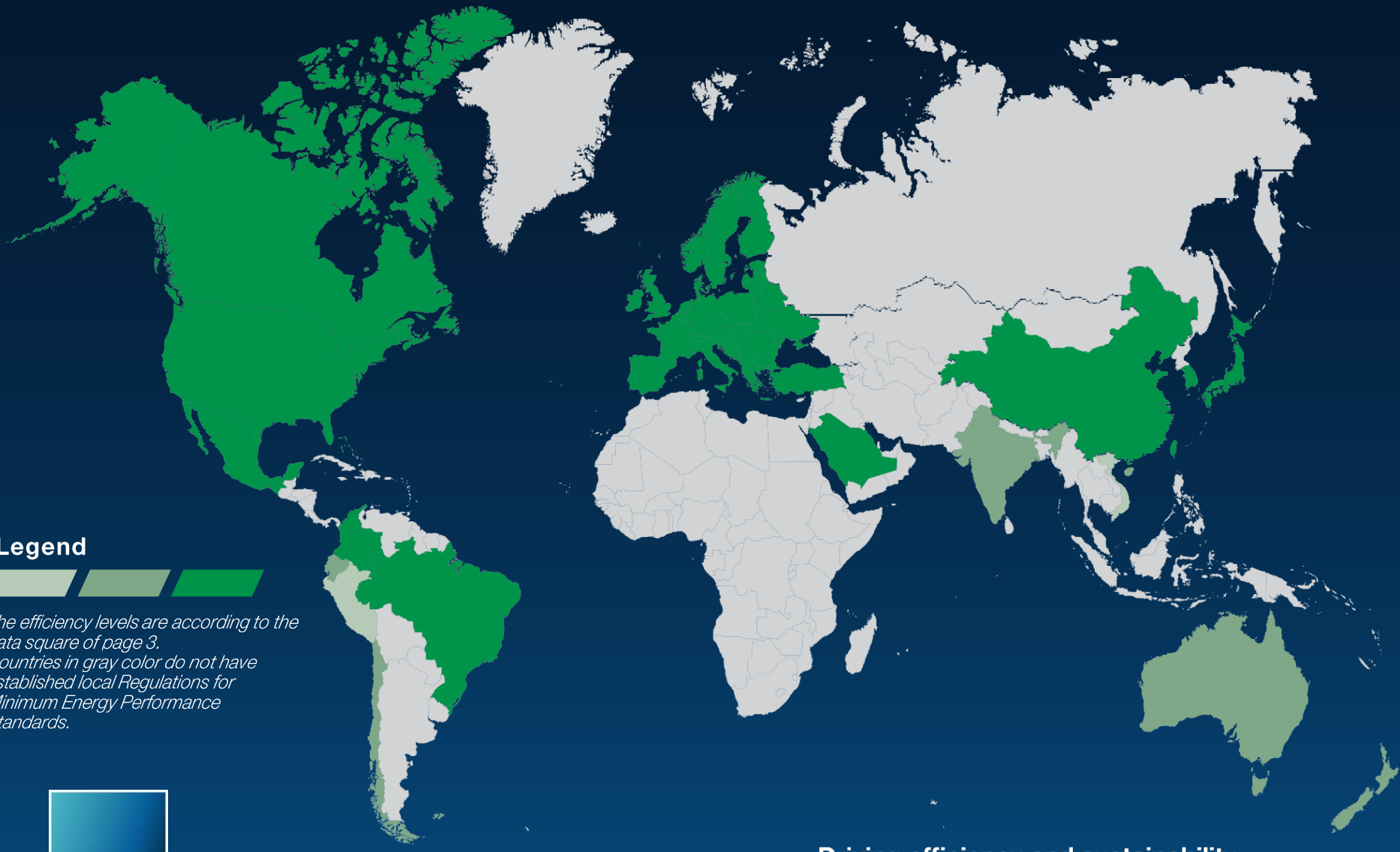
Whilst the specific requirements of these MEPS differ slightly between countries, the implementation of regional standards such as ABNT, IEC, MG-1, which define the efficiency levels and test methods to determine these efficiencies, allow a standardization of the definition, measurement and publication format for efficiency data amongst motor manufacturers, simplifying the correct motors' selection.

WEG fully understands the requirements of these Global regulations, and today offers one of the most comprehensive ranges of electric motors complying with these minimum efficiency levels. Furthermore, as a forward thinking Company whose philosophy is to provide its Customers with products which offer optimum performance, energy savings, fast return on investment and sustainability, **WEG continues to focus its efforts in the research and development of electric motors with efficiency levels exceeding those defined in currently published International standards.**

Efficiency Grades

Driving efficiency and sustainability

Guide to Mandatory Efficiency Regulations Worldwide Overwiew



Legend

The efficiency levels are according to the data square of page 3.
Countries in gray color do not have established local Regulations for Minimum Energy Performance Standards.

Driving efficiency and sustainability

SOUTH AMERICA

- Argentina
- Brazil
- Chile
- Colombia
- Ecuador
- Peru

ARGENTINA

Regulation	Disposición 230/2015	
Standard	IRAM 62409:2014	IRAM 62405:2012
Power supply system	Single-phase	Three-phase
Minimum energy performance	IE00	IE0
Minimum energy performance when is able to operate with inverter frequency	Not applicable	IE0
Output (kW)	0,12 up to 7,5 kW	0,75 up to 30 kW
Number of poles	2, 4 and 6	
Voltage (V)	up to 200 V	up to 380 V
Frequency (Hz)	50 Hz or 50/60 Hz	
Service Duty	S1	
Cooling method	TEFC, ODP	
Degree of protection	IP 2X up to IP 66	
Area classification	Safety area	
Altitude	All	
Ambient temperature	All	
Required documentation	Certificate	

** Multi-voltage motors that have 220 V (single-phase) or 380 V (three-phase) as one of the operating voltages are covered by scope.*

Requirements

- Energy efficiency level label.

Minimum efficiency level: regulation does not set a minimum efficiency level for motors.

BRAZIL

Regulation	Portaria nº 01/2017
Standard	ABNT NBR 17094-1
Power supply system	Three-phase
Minimum energy performance	IR3
Minimum energy performance when is able to operate with inverter frequency	IR3
Output (kW)	0.12 up to 370 kW (0,16 up to 500 cv)
Number of poles	2, 4, 6 and 8
Voltage (V)	up to 1000 V
Frequency (Hz)	60 Hz or 60/50 Hz
Service Duty	S1 or S3 ≥ 80%
Cooling method	TEFC, ODP, TEAO, TEBC
Degree of protection	IP 00 up to IP 66
Area classification	Safe and hazardous area (only Ex ec)
Altitude	All
Ambient temperature	All
Required documentation	Register by model

Requirements

- Mandatory label (can be on the motor nameplate).

IR3

CHILE

Regulation	NCh 3086 of 2008
Standard	IEC 60034-30-1
Power supply system	Three-phase
Minimum energy performance	IE2
Minimum energy performance when is able to operate with inverter frequency	IE2
Output (kW)	0,75 up to 7,5 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 690 V
Frequency (Hz)	50 Hz or 50/60 Hz
Service Duty	S1
Cooling method	All
Degree of protection	All
Area classification	Safety area
Altitude	All
Ambient temperature	All
Required documentation	Certificate

Requirements

- Motors held in stock by distributors must be certified for the Energy label according PE nº 7/01/2 and eficinecy and safety labels.

IE2

COLOMBIA

Regulation	RETIQ 2015			
Standard	Resolution nº 4 1012:2015			
Power supply system	Single-phase	Single-phase	Three-phase	Three-phase
Minimum energy performance	IE2*	IE3*	IE2	IE3
Minimum energy performance when is able to operate with inverter frequency	Not applicable	Not applicable	IE2	IE3
Output (kW)	0,18 up to 0,74 kW	0,75 up to 11,2 kW	0,18 up to 0,74 kW	≥ 0,75 up to 375 kW
Number of poles	2, 4 and 6	2, 4 and 6	2, 4, 6 and 8	2, 4, 6 and 8
Voltage (V)	up to 240 V	up to 240 V	up to 600 V	up to 600 V
Frequency (Hz)	60 Hz or 50/60 Hz			
Service Duty	S1			
Cooling method	TEFC, ODP			
Degree of protection	IP 00 up to IP 66			
Area classification	Safety area			
Altitude	All			
Ambient temperature	All			
Required documentation	Self declaration			

Note:
**For single-phase motors, efficiency level is different from values defined by IEC 60034-30-1 standard.*

Requirements

- Energy efficiency level label.

IE2 / IE3

ECUADOR

Regulation	RTE INEN 145	
Standard	IEC60034-30-1	
Power supply system	Single-phase	Three-phase
Minimum energy performance	IE2	IE2
Minimum energy performance when is able to operate with inverter frequency	Not applicable	IE2
Output (kW)	0,18 up to 1,5 kW	0,746 up to 373 kW
Number of poles	2, 4 and 6	2, 4, 6 and 8
Voltage (V)	up to 1000 V	
Frequency (Hz)	60 Hz	
Service Duty	S1	
Cooling method	TEFC, ODP, TEAO	
Degree of protection	IP 00 up to IP 66	All
Area classification	Safe and hazardous area	
Altitude	Up to 4000 m	
Ambient temperature	-20 up to 60 °C	
Required documentation	Self declaration	

IE2

PERU

Regulation	Decreto Supremo N° 009-2017-EM
Standard	Law 27345-2000
Power supply system	Three-phase
Minimum energy performance	IE1
Minimum energy performance when is able to operate with inverter frequency	IE1
Output (kW)	0.75 up to 375 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 600 V
Frequency (Hz)	60 Hz
Service Duty	S1 or S3 ≥ 80%
Cooling method	TEFC, ODP, TEAO
Degree of protection	≥ IP21
Area classification	Safe and hazardous area
Altitude	All
Ambient temperature	All
Required documentation	Certificate

Requirements

- Energy efficiency level label.

IE1

NORTH AMERICA

Canada

United States of America

Mexico

CANADA

Regulation	Amendment 14 to Energy Efficiency Regulations – Small Electric Motors	Amendment 13 to Energy Efficiency Regulations – Electric Motors
Standard	IEEE Std 114-2010, IEEE Std 112-2004, CSA C390-10, CSA C747-09, NEMA MG-1	IEEE Std 112-2004, CSA C390-10, NEMA MG-1
Power supply system	Single-phase or Three-phase	Three-phase
Minimum energy performance	Premium	NEMA Premium
Minimum energy performance when is able to operate with inverter frequency	Not applicable	NEMA Premium
Output (kW)	0.25 up to 3 HP (0,18 up to 2,2 kW)	1 up to 500 HP (0,75 up to 375 kW)
Number of poles	2, 4 and 6	2, 4, 6 and 8
Voltage (V)	All	up to 600 V
Frequency (Hz)	60 Hz or 50/60 Hz	
Service Duty	S1 (Continuous)	
Cooling method	ODP	TEFC, ODP, TENV, TEBC
Degree of protection	All	
Area classification	Safety area	Safe and hazardous area
Altitude	All	
Ambient temperature	All	
Required documentation	-	Certificate

Notes:
** Applicable to frame sizes NEMA 42, 48 and 56 (IEC 63 and 71).*
*** Applicable to frame sizes from NEMA 143 (IEC 90 and above), including 56 enclosed frame.*
**** Motors that meet NEMA premium efficiency can bear the NEMA Premium mark.*

NEMA Premium®

Premium
NEMA Premium

UNITED STATES OF AMERICA

	Current Standard		Jun/27
Regulation	DOE 10 CFR Part 431 - Subpart X - Small Electric Motors *	DOE 10 CFR Part 431 - Subpart B - Electric Motors **	DOE 10 CFR Part 431 - Subpart B - Electric Motors **
Standard	IEEE Std 114-2010, IEEE Std 112-2004, CSA C390-10, CSA C747-09, NEMA MG-1	IEEE Std 112-2004, CSA C390-10, NEMA MG-1	IEEE Std 114-2010, IEEE Std 112-2004, CSA C390-10, CSA C747-09, NEMA MG-1, IEC 60034-2-1
Power supply system	Single-phase or Three-phase	Three-phase	Three-phase
Minimum energy performance	Premium	NEMA Premium	- NEMA Premium - Super Premium (IE4) only for 100 up to 250HP
Minimum energy performance when is able to operate with inverter frequency	Not applicable	NEMA Premium	- NEMA Premium - Super Premium (IE4) only for 100 up to 250HP
Output (kW)	0.25 up to 3 HP (0,18 up to 2,2 kW)	1 up to 500 HP (0,75 up to 375 kW)	1 up to 750 HP (0,75 up to 559 kW)
Number of poles	2, 4 and 6	2, 4, 6 and 8	2, 4, 6 and 8
Voltage (V)	All	up to 600 V	up to 600 V
Frequency (Hz)	60 Hz or 50/60 Hz	60 Hz or 50/60 Hz	60 Hz or 50/60 Hz
Service Duty	S1 (Continuous)	S1 (Continuous)	S1 (Continuous)
Cooling method	ODP	TEFC, ODP, TENV, TEBC	TEFC, ODP, TENV, TEBC, ODPAO, TEAO
Degree of protection	All	All	All
Area classification	Safe area	Safe and hazardous area	Safe and hazardous area
Altitude	All	All	All
Ambient temperature	All	All	All
Required documentation	-	Certificate***	Certificate***

Notes:

**Applicable to frame sizes NEMA 42, 48 and 56 (IEC 63 and 71).*

*** Applicable to frame sizes from NEMA 143 (IEC 90 and above), including 56 enclosed frame.*

**** DOE Compliance Certification code for WEG: CC029A on nameplate.*

***** Motors that meet NEMA premium efficiency can bear the NEMA Premium mark.*

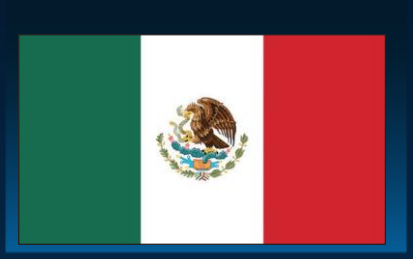
****** Efficiencies on Motor Nameplates must be met for all voltages listed. This eliminates a key feature in the US market where 230/460V motors often included "Usable @208V". Only motors out of DOE scope or motors that meet the minimum energy efficiency value in 208V can bear the mark "Usable @208V".*

NEMA Premium®

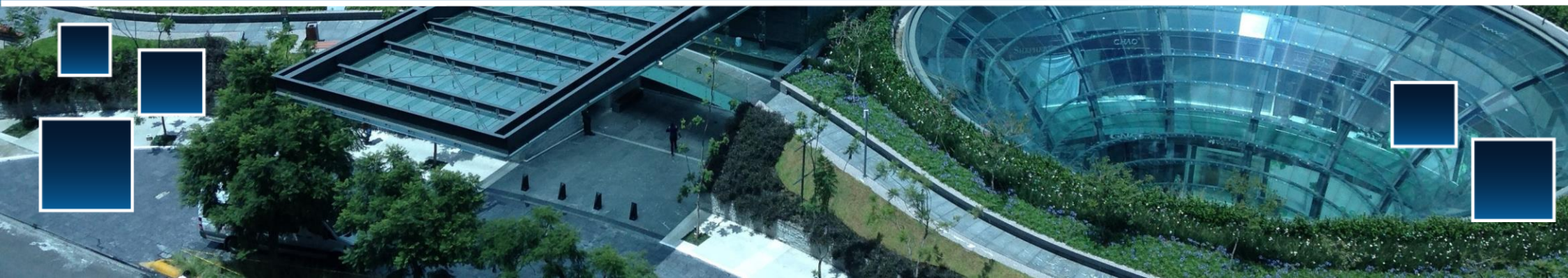
Premium
NEMA Premium

MEXICO

Regulation	NOM-014-ENER-2004	NOM-016-ENER-2016
Standard	NOM-014-ENER-2004	NOM-016-ENER-2016
Power supply system	Single-phase	Three-phase
Minimum energy performance	Mexico Standard (Table)	NEMA Premium
Minimum energy performance when is able to operate with inverter frequency	Mexico Standard (Table)	NEMA Premium
Output (kW)	0.18 up to 1.5 kW	1 up to 500 HP (0,75 up to 375 kW)
Number of poles	2, 4 and 6	2, 4, 6 and 8
Voltage (V)	All	up to 600 V
Frequency (Hz)	60 Hz or 50/60 Hz	
Service Duty	All	S1
Cooling method	All	
Degree of protection	All	
Area classification	Safety area	Safe and hazardous area
Altitude	All	
Ambient temperature	All	
Required documentation	Certificate	



NEMA Premium



Europe

European Union

Ukraine

Great Britain

EUROPEAN UNION

NEW 07/2023

Regulation	Regulation EU 1781/2019				
Standard	IEC 60034-30-1				
Power supply system	Three-phase				Single-phase
Minimum energy performance	IE3	IE2	IE4	IE2	IE2
Minimum energy performance when is able to operate with inverter frequency	IE3	IE2	IE4	IE2	Not applicable
Output (kW)	0,75 up to 1000 kW	0,12 up to <0,75 kW	75 up to 200 kW	0,12 up to 1000 kW	
Number of poles	2, 4, 6 and 8		2, 4 and 6	2, 4, 6 and 8	
Voltage (V)	up to 1000 V				
Frequency (Hz)	50 Hz or 60 Hz				
Service Duty	S1, S3 ≥ 80% or S6 ≥ 80%				
Cooling method	TEFC, TEBC, ODP, TEAO				
Degree of protection	IP 00 up to IP 66				
Area classification	Safe and hazardous area (Ex ec, Ex tc, Ex tb, Ex db, Ex dc, Ex db eb)		Safety area	Hazardous area (Ex eb)	Safety area
Altitude	Up to 4000 m				
Ambient temperature	-30 up to 60 °C				
Required documentation	Self declaration				

IE3

UKRAINE

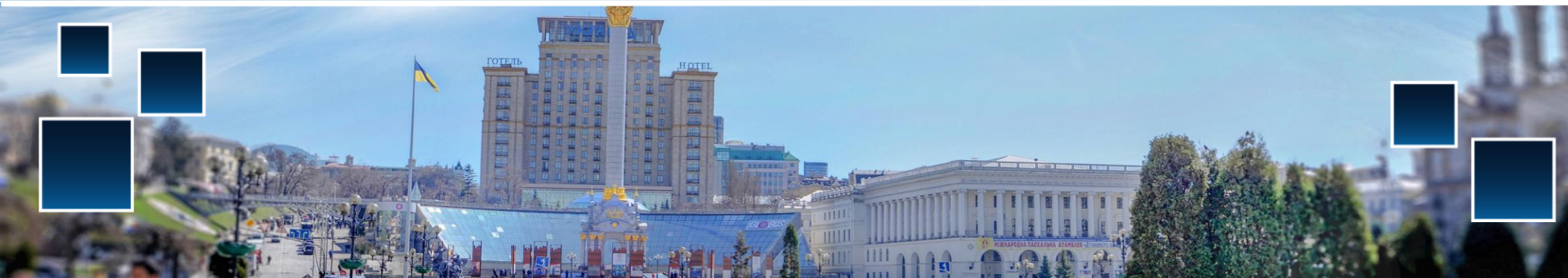
Regulation	Decree N° 157, Resolution N° 804 and Resolution N° 1184
Standard	IEC 60034-2-1
Power supply system	Three-phase
Minimum energy performance	IE3
Minimum energy performance when is able to operate with inverter frequency	IE2
Output (kW)	0.75 up to 375 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 1000 V
Frequency (Hz)	50 Hz
Service Duty	S1 or S3 ≥ 80%
Cooling method	All
Degree of protection	All
Area classification	Safety area
Altitude	Up to 4000 m
Ambient temperature	Up to 60 °C
Required documentation	Self declaration

Requirements

- The motor must be identified with the logo.

UA.TR.000

IE3



GREAT BRITAIN

NEW 07/2023

Regulation	Statutory Instrument 2021 No. 745				
Standard	IEC 60034-30-1				
Power supply system	Three-phase				Single-phase
Minimum energy performance	IE3	IE2	IE4	IE2	IE2
Minimum energy performance when is able to operate with inverter frequency	IE3	IE2	IE4	IE2	Not applicable
Output (kW)	0,75 up to 1000 kW	0,12 up to <0,75 kW	75 up to 200 kW	≥0,12 kW	0,12 up to 1000 kW
Number of poles	2, 4, 6 and 8		2, 4 and 6	2, 4, 6 and 8	
Voltage (V)	up to 1000 V				
Frequency (Hz)	50 Hz or 60 Hz				
Service Duty	S1, S3 ≥ 80% or S6 ≥ 80%				
Cooling method	TEFC, TEBC, ODP, TEAO				
Degree of protection	IP 00 up to IP 66				
Area classification	Safe and hazardous area (Ex ec, Ex tc, Ex tb, Ex db, Ex dc, Ex db eb)		Safety area	Hazardous area (Ex eb)	Safety area
Altitude	Up to 4000 m				
Ambient temperature	-30 up to 60 °C				
Required documentation	Self declaration				

IE3

OCEANIA

Australia

New Zealand

AUSTRALIA

Regulation	GEMS Act of 2019
Standard	IEC 60034-30-1
Power supply system	Three-phase
Minimum energy performance	IE2
Minimum energy performance when is able to operate with inverter frequency	IE2
Output (kW)	0.73 up to <185 kW
Number of poles	2, 4, 6 and 8
Voltage (V)	up to 1100 V
Frequency (Hz)	50 Hz or 60 Hz
Service Duty	All except S2
Cooling method	TEFC, ODP, TEAO
Degree of protection	IP 00 up to IP 66
Area classification	Safe and hazardous area
Altitude	All
Ambient temperature	All
Required documentation	Register by model

IE2

NEW ZEALAND

Regulation	GEMS Act of 2019
Standard	IEC 60034-30-1
Power supply system	Three-phase
Minimum energy performance	IE2
Minimum energy performance when is able to operate with inverter frequency	IE2
Output (kW)	0.73 up to <185 kW
Number of poles	2, 4, 6 and 8
Voltage (V)	up to 1100 V
Frequency (Hz)	50 Hz or 60 Hz
Service Duty	All except S2
Cooling method	TEFC, ODP, TEAO
Degree of protection	IP 00 up to IP 66
Area classification	Safe and hazardous area
Altitude	All
Ambient temperature	All
Required documentation	Register by model

IE2

ASIA

Saudi Arabia
India
Japan
South Korea
Singapore
China
Taiwan

SAUDI ARABIA

Regulation	BOD (Board of Directors) MEETING N° 163	
Standard	SASO 2893:2018	
Power supply system	Three-phase	
Minimum energy performance	IE3	IE1
Minimum energy performance when is able to operate with inverter frequency	IE3	IE1
Output (kW)	0.75 up to 375 kW	
Number of poles	2, 4, 6 and 8	
Voltage (V)	50 up to 1000 V	
Frequency (Hz)	60 Hz or 60/50 Hz	
Service Duty	S1	
Cooling method	TEBC, TEFC, ODP, TENV	TEAO, ODPAO
Degree of protection	All	
Area classification	Safety area	Hazardous area
Altitude	Up to 4000 m	
Ambient temperature	-20 up to 60 °C	
Required documentation	Energy Efficiency Certificate by model	Exclusive application certificate by model

Requirements

- Smart Code on the nameplate, used on the motor register.

IE3

INDIA

Regulation	The Gazette of India S.O.178
Standard	IS 12615:2018
Power supply system	Three-phase
Minimum energy performance	IE2
Minimum energy performance when is able to operate with inverter frequency	IE2
Output (kW)	0.12 up to 1000 kW
Number of poles	2, 4, 6 and 8
Voltage (V)	up to 1000 V
Frequency (Hz)	50 Hz or 50/60 Hz
Service Duty	S1
Cooling method	IC411 (TEFC), IC416, IC417, IC418 (TEAO)
Degree of protection	IP 23 up to IP 66
Area classification	Safety area
Altitude	Up to 4000 m
Ambient temperature	-20 up to 60 °C
Required documentation	Certificate

Requirements

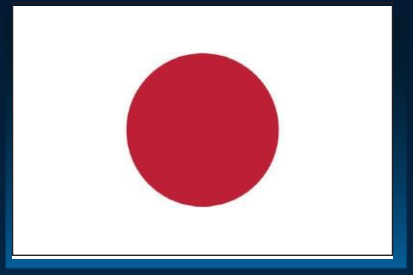
- The motor must be identified with the logo.

IS 12615

IE2

JAPAN

Regulation	Energy Saving Act / Top Runner Program
Standard	JIS C 4034-30
Power supply system	Three-phase
Minimum energy performance	IE3
Minimum energy performance when is able to operate with inverter frequency	-
Output (kW)	0.75 up to 375 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 1000 V
Frequency (Hz)	50 Hz, 60 Hz or 50/60 Hz
Service Duty	S1, S3 ≥ 80%
Cooling method	All
Degree of protection	All
Area classification	Safety area
Altitude	All
Ambient temperature	From -20 °C and above
Required documentation	Self declaration



Requirements

- Importer must provide a self declaration for Efficiency level.

IE3

SOUTH KOREA

Regulation	MKE-2017-206
Standard	KS C IEC 60034
Power supply system	Three-phase
Minimum energy performance	IE3
Minimum energy performance when is able to operate with inverter frequency	-
Output (kW)	0.75 up to 375 kW
Number of poles	2, 4, 6 and 8
Voltage (V)	up to 600 V
Frequency (Hz)	60 Hz
Service Duty	S1, S3 > 80%
Cooling method	TEFC, ODP
Degree of protection	All
Area classification	Safe and hazardous area
Altitude	All
Ambient temperature	-15 up to 40 °C
Required documentation	Register by model

Requirements

- Energy efficiency level label.

IE3

SINGAPORE

Regulation	Energy Conservation Act (Cap. 92C)
Standard	IEC 60034-2-1
Power supply system	Three-phase
Minimum energy performance	IE3
Minimum energy performance when is able to operate with inverter frequency	IE3
Output (kW)	0.75 up to 375 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 1000 V
Frequency (Hz)	50 Hz or 50/60 Hz
Service Duty	S1, S3 ≥ 80%, S6 or S9
Cooling method	TEFC, ODP, TEAO
Degree of protection	All
Area classification	Safety area
Altitude	up to 1000 m
Ambient temperature	-30 up to 60 °C
Required documentation	Certificate

Requirements

- Importer's register.

IE3

CHINA

NEW 06/2021

Regulation	Decree nº 35 (CEL 007:2006)	Draft CEL 007:202	CEL 038:2020 Three-phase Permanent Magnet
Standard	GB 18613-2012	GB 18613-2020	GB 30253-2013
Power supply system	Three-phase	Single-phase and Three-phase	Three-phase
Minimum energy performance	GB3 (IE2)	GB3 (IE3)	GB3
Minimum energy performance when is able to operate with inverter frequency	GB3 (IE2)	GB3 (IE3)	GB3
Output (kW)	0,75 up to 375 kW	0,12 up to 1000 kW	0,55 up to 90 kW
Number of poles	2, 4 and 6	2, 4, 6 and 8	6 and 8
Voltage (V)	up to 1000 V		
Frequency (Hz)	50 Hz or 50/60 Hz		
Service Duty	S1 or S3 ≥ 80%		
Cooling method	TEFC (IC 411)		TEFC (IC 411) or TEBC (IC 416)
Degree of protection	IP 44 up to IP 66		
Area classification	Safe and hazardous area		
Altitude	up to 1000 m		
Ambient temperature	-20 up to 40 °C		All
Required documentation	Register by model		

Only for three-phase motors from 0,75 up to 375 kW.

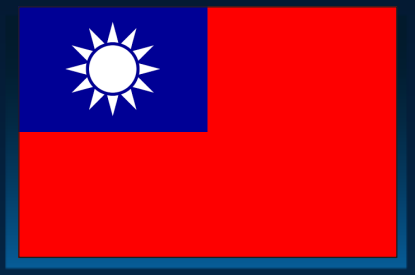
Requirements*

- Energy efficiency level label. Nameplate shall record:
- Name of manufacturer in Chinese
- Marking GB 18613-2020 and its efficiency value
- Term “Three-phase induction motor“

GB3 (IE3)

TAIWAN

Regulation	Efficiency Standard and Benchmarks and BSMI Regulatory Inspection
Standard	CNS 14400
Power supply system	Three-phase
Minimum energy performance	IE3
Minimum energy performance when is able to operate with inverter frequency	IE3
Output (kW)	0,75 up to 200 kW
Number of poles	2, 4 and 6
Voltage (V)	up to 600 V
Frequency (Hz)	60 Hz or 50/60 Hz
Service Duty	S1
Cooling method	All
Degree of protection	All
Area classification	Safety area
Altitude	All
Ambient temperature	up to 40 °C
Required documentation	-



IE3

The scope of WEG Group solutions
is not limited to products and
solutions presented in this catalogue.
To see our portfolio, contact us.

For WEG's worldwide
operations visit our website

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