

Efficient, powerful, and usable worldwide –

One series for the whole world



The DR motor – one series for the whole world

The new modular system for AC motors from SEW-EURODRIVE offers millions of drive combinations that can be used all over the world. Independent of the required energy efficiency class, the whole range of DR motor options or variants is available for all efficiency levels. The DR motors comply with all international standards and meet the new parts of the IEC motor standard already today.



The modular DR motor system comprises three energy-efficient motor variants (IE1, IE2, and IE3) and offers an ideally matched brake concept (up to three different brake sizes for each motor size) as well as encoders integrated in the motor.

SEW-EURODRIVE designed and developed the AC motors with all the worldwide requirements for energy efficiency classes in mind. In all relevant countries, the DR motor was approved and certified without any problems. The new DR motor from SEW-EURODRIVE is used all over

the world. By combining all the different design requirements, SEW-EURODRIVE built a “global motor” that saves time and optimizes processes in the areas of motor selection, ordering and logistics.

Voltages and energy efficiency classes vary worldwide, but one motor can be used everywhere:
The DR motor from SEW-EURODRIVE.

	Europe	USA	Canada	Brazil	Australia / New Zealand	Korea	Other, e.g. China
							
Line voltage (3 x ...)	400 V	480 V	480 V 575 V	220 V 380 V 440 V	400 V 415 V	220 V 380 V 440 V	380 V
Line voltage tolerance	± 10 %	± 10 %	± 10 %	± 10 %	± 5 %		
Line frequency	50 Hz	60 Hz	60 Hz	60 Hz	50 Hz	60 Hz	50 Hz
Energy efficiency laws/regulations*							
In effect	Since 1999	Since 1997	Since 1997	Since 2002	Since 2006	Since 2008	Since 2008
Compulsory		– High (IE2)	– High (IE2)	– EFF2 (IE1)	– EFF1 (IE2)	– High (IE2)	– EFF2 (IE1)
Voluntary	– EFF3 – EFF2 – EFF1	– Premium (IE3)	– Premium (IE3)	– EFF1 (IE2)	– Premium (IE3)	– Premium (IE3)	– EFF1 (IE2) – Premium (IE3)
Comment		Various exceptions	Various exceptions			– From 45 kW – Special identification	– From 0.55 kW – Special identification
In the future	16.06.2011	19.12.2010	01.01.2011	08.12.2009	approx. 2013	01.01.2010	01.07.2012
Compulsory	– IE2	– Premium (IE3)	– Premium (IE3) – High (IE2) from 150 kW	– EFF1 (IE2)	– Premium (IE3)	– High (IE2)	– EFF1 (IE2)
Voluntary	– IE3			– Premium (IE3)		– Premium (IE3)	– Premium (IE3)
Comment	01.01.2015 > 7.5 kW compulsory IE3 01.01.2017 > 0.75 kW compulsory IE3 Exceptions	Reduced exceptions	Reduced exceptions			– From 45 kW – Special identification	– From 0.55 kW – Special identification
“Global motor” used	Yes	Yes	Yes	Yes (for 440 V)	Yes (until 2013)	In preparation	In preparation

*Status 01.09.2009

The DR motor – One motor for all efficiency classes worldwide

The DR motor combines many different variants within one drive. For this reason, the nameplate shows 50 Hz/60 Hz information and the elements required by specific countries. This “global motor” from SEW-EURODRIVE complies with IEC 60034, NEMA MG1 and CSA C22.2 requirements.

Abstract of technical description

Voltage	220-242 V / 380-420 V or 380-420 V / 660-725 V	254-277 V / 440-480 V or 440-480 V / --- V
Frequency	50 Hz	60 Hz
Power rating	DRS: <= 0.55 kW (0.75 hp) DRE: 0.75 kW (1 hp) ... 200 kW (300 hp)	
Energy saving information	IE classification with the numerical efficiency for mains operation	
Additional information on the nameplate	<ul style="list-style-type: none"> – According to US design specification NEMA MG1 <ul style="list-style-type: none"> - TEFC, TEBC, TENV depending on the type of ventilation - K.V.A. code, letter designation of the short circuit apparent power - M.L. (Mounting Location), four-digit code for UL-registered mounting location - Design code, code letters for startup, breakdown torque and startup current ratio – Information about the temperature range required by the Canadian design specification CSA C22.2, SEW-EURODRIVE approval up to + 40 °C – Conformity and certification logo for <ul style="list-style-type: none"> - Europe: CE logo - USA: UR logo (by UL) - USA: ee logo (by DoE, Department of Energy) - Canada: CSA logo - Canada: CSAe logo 	



UL approval:
"Recognized Component"
With the UR logo and the
number of the UL file.



For the US-American
energy efficiency approval



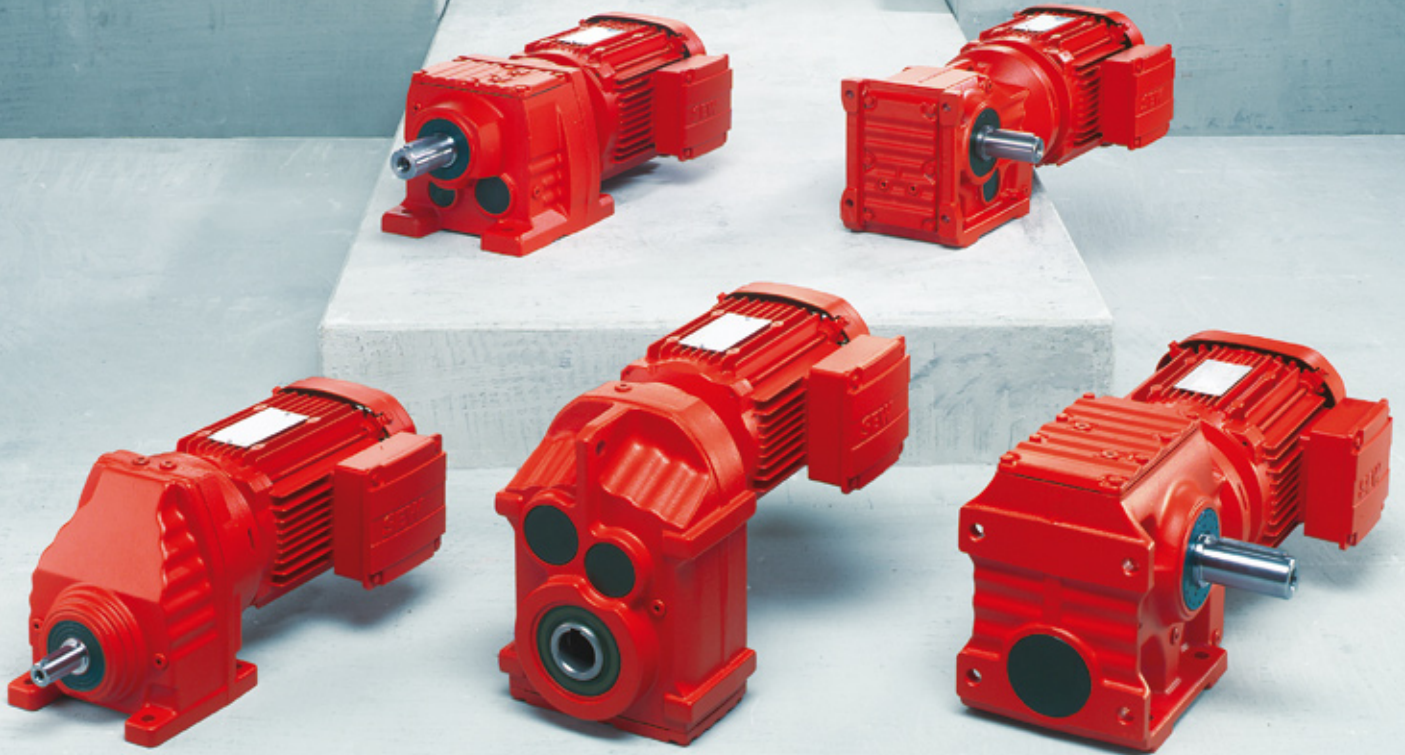
CSA approval:
CSA logo.



For the Canadian
energy efficiency approval



Selection of additional features for
the modular DR motor system



Additional feature	Characteristic	SEW type designation
Brakes		BE with size designation
Manual brake release	Automatic disengaging function (BE05-32)	HR
	Securable (BE05-122)	HF
Brake monitoring	Wear/function	DUB
Built-in encoder (DR71 ... 132)	HTL	EI7C / EI76 / EI72 / EI71
Shaft-centered add-on encoder (DR71 ... 132 / DR160 ... 225)	Sin/Cos	ES7S / EG7S
	HTL	ES7C / EG7C
	TTL	ES7R / EG7R
	SSI	AS7Y / AG7Y
	RS-485 Multi-turn	AS7W / AG7W
Shaft-centered hollow shaft encoder (DR315)	Sin/Cos	EH7S
	SSI Multi-turn	AH7Y
Thermal motor protection	3 PTC resistors	TF
	3 bimetallic switches	TH
Temperature detection	1 or 3 x PT100	PT
	1 x KTY84-130	KY
Backstop	Instead of a brake; CW or CCW direction of rotation blocked	RS
Plug connectors	Integrated in terminal box	IS
	Mounted on (types from Harting)	AC.. / AS.. / AM..
Forced cooling fan		V
Canopy		C
Air filter		LF
Fan	Reduction of the noise level	LN
	Metal	AL
	Heavy (additional inertia)	Z
Condensation drain holes		DH
2nd shaft end		2W
MOVIMOT® (DR71 ... 100)		MM with size designation
MOVI-SWITCH® (DR71 ... 100)		MSW

International regulations concerning motor efficiency classes

Europe



Line: 3 x 400 V ± 10 %, 50 Hz

Date	Since 1999	16.06.2011	01.01.2015	01.01.2017
Type	Voluntary Agreement	EuP directive 2005/32/EC (Lot 11)		
Energy efficiency classes				
Prohibited		– IE1 (EFF2)	– IE1 (EFF2)	– IE1 (EFF2) – IE2 (EFF1)
Compulsory		– IE2 (EFF1)	– IE2 (EFF1) 0.75 ... 7.5 kW – IE3 (Premium) > 7.5 kW	– IE3 (Premium)
Voluntary	– EFF3 – EFF2 – EFF1	– IE3 (Premium)	– IE3 (Premium) 0.75 ... 7.5 kW	
Power rating	1 ... 100 kW	0.75 ... 375 kW		
Pole numbers	– 2-pole – 4-pole	– 2-pole – 4-pole – 6-pole		
DR motor types	DRS DRE DRP	< 0.75 kW DRS ≥ 0.75 kW DRE/DRP	< 0.75 kW DRS 0.75 ... 7.5 kW DRE > 7.5 kW DRP	< 0.75 kW DRS ≥ 0.75 kW DRP
“Global motor” used	Yes	Yes	Yes From 7.5 kW with frequency inverter	Yes From 0.75 kW with frequency inverter

Exceptions to the EuP directive

- All cdf that are not “S1”: S2, S3, etc.
- All brakemotors (including S1 brakemotors)
- All motors according to 94/9/EC (ATEX directive)
- All motors at $T_{amb} < -15\text{ °C}$ or $> +40\text{ °C}$; information on the nameplate

- All motors for altitudes $> 1000\text{ m}$; information on the nameplate
- Motors for fire gases ($> 400\text{ °C}$)
- Motors labeled for inverter operation (torque instead of power, etc.)
- As of 2015/2017 “VSD use only” for IE2

ATEX guideline note:

SEW-EURODRIVE only applied for certification for IE2 motors, because the DRE motors will be approved according to IECEx. The approval regulations for IECEx include the requirements of the ATEX guideline.

USA



Line: 3 x 480 V ± 10 %, 60 Hz

Date	01.10.1997	19.12.2010
Type	EPACT 1992	EISA 2007
Energy efficiency classes		
Prohibited	– Standard (IE1)	– Standard (IE1) – High (IE2)
Compulsory	– High (IE2)	– Premium (IE3)
Voluntary	– Premium (IE3)	– Ultra Premium (IE4)
Power rating	0.75 ... 150 kW / 1 ... 200 hp	0.75 ... 375 kW / 1 ... 500 hp
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole – 8-pole
DR motor types	DRS DRE DRP	< 0.75 kW DRS >= 0.75 kW DRP
“Global motor” used	Yes – As gearmotor – As B5 or B14 flange motor	Yes – As gearmotor

Exceptions to EPACT 1992

- Flange-mounted motors
- Gearmotors
- NEMA design C
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Exceptions to EISA 2007

- Gearmotors
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Compulsory

Energy-efficient motors labeled with the approval logo

Canada



Line: 3 x 575 V ± 10 %, 60 Hz
3 x 480 V ± 10 %, 60 Hz

Date	1997	01.01.2011
Type	CSA	CSA (04-2009)
Energy efficiency classes		
Prohibited	– Standard (IE1)	– Standard (IE1) – High (IE2), ≤ 150 kW
Compulsory	– High (IE2)	– Premium (IE3), 0.75 ... 150 kW – High (IE2), > 150 kW, 8-pole
Voluntary	– Premium (IE3)	– Ultra Premium (IE4)
Power rating	0.75 ... 150 kW / 1 ... 200 hp	0.75 ... 375 kW / 1 ... 500 hp
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole – 8-pole
DR motor types	< 0.75 kW DRS 0.75 ... 150 kW DRE / DRP	< 0.75 kW DRS 0.75 ... 150 kW DRP > 150 kW DRE
“Global motor” used	Yes At 480 V	Yes At 480 V IEC design H

Exceptions to CSA 1997

- NEMA design C
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Exceptions to CSA 2009

- IEC design H, then High (IE2) approval
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Compulsory

Energy-efficient motors labeled with the approval logo

No exceptions for the gearmotor at any time.

Brazil



Line: 3 x 220 V ± 10 %, 60 Hz
 3 x 380 V ± 10 %, 60 Hz
 3 x 440 V ± 10 %, 60 Hz

Date	02.11.2002	08.12.2009
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Type	NBR 7094	NBR 7094
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Energy efficiency classes

Prohibited	– Below EFF2	– EFF2 (IE1)
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Compulsory	– EFF2 (IE1)	– EFF1 (IE2)
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Voluntary	– EFF1 (IE2)	
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Power rating	0.75 ... 150 kW / 1 ... 200 cv	0.75 ... 185 kW / 1 ... 250 cv
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Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole
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DR motor types	DRS DRE	< 0.75 kW DRS ≥ 0.75 kW DRE
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“Global motor” used	Yes At 440 V	Yes At 440 V
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Exceptions to NBR 2002

- Gearmotors (without motor flange)
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Exceptions to NBR 2009

- Gearmotors (without motor flange)
- Special information on the nameplate for motors labeled for inverter operation
- Non-S1 cyclic duration factors
- etc.

Australia



Line: 3 x 400 V ± 5 %, 50 Hz
3 x 415 V ± 5 %, 50 Hz

Date	01.04.2006	Approx. 2013
Type	MEPS 2006	NBR 7094
Energy efficiency classes		
Prohibited	– EFF2 (IE1)	– IE2 (EFF1)
Compulsory	– EFF1 (IE2)	– IE3 (Premium)
Voluntary	– Premium (IE3)	
Power rating	0.75 ... 185 kW	0.75 ... 375 kW
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole
DR motor types	< 0.75 kW DRS ≥ 0.75 kW DRE	< 0.75 kW DRS ≥ 0.75 kW DRP
“Global motor” used	Yes	No Date not confirmed

Exceptions to MEPS 2006

- Gearmotors (without motor flange)
- Motors labeled for inverter operation (e.g. asynchronous servomotors of the DRL series)
- Operating mode S2
- etc.

Exceptions to MEPS 2013

No information available in September 2009

New Zealand



Line: 3 x 400 V ± 5 %, 50 Hz
3 x 415 V ± 5 %, 50 Hz

Date	01.04.2006	Approx. 2013
Type	MEPS 2006	NBR 7094
Energy efficiency classes		
Prohibited	– EFF2 (IE1)	– IE2 (EFF1)
Compulsory	– EFF1 (IE2)	– IE3 (Premium)
Voluntary	– Premium (IE3)	
Power rating	0.75 ... 185 kW	0.75 ... 375 kW
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole
DR motor types	< 0.75 kW DRS >= 0.75 kW DRE	< 0.75 kW DRS >= 0.75 kW DRP
“Global motor” used	Yes	No Date not confirmed

Exceptions to MEPS 2006

- Gearmotors (without motor flange)
- Motors labeled for inverter operation (e.g. asynchronous servomotors of the DRL series)
- Operating mode S2
- etc.

Exceptions to MEPS 2013

No information available in September 2009

South Korea



Line: 3 x 220 V, 60 Hz
3 x 380 V, 60 Hz
3 x 440 V, 60 Hz

Date	01.01.2008	01.01.2010
Type	REELS	REELS
Energy efficiency classes		
Prohibited	– EFF2 (IE1) ≥ 45 kW	– EFF2 (IE1) ≥ 0.75 kW
Compulsory	– EFF1 (IE2) ≥ 45 kW	– EFF1 (IE2) ≥ 0.75 kW
Voluntary	– Premium (IE3)	– Premium (IE3)
Power rating	45 .. 200 kW	0.75 .. 200 kW
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole
DR motor types	≤ 37 kW DRS ≥ 45 kW DRE	< 0.75 kW DRS ≥ 0.75 kW DRE
“Global motor” used	Yes	Yes

Exceptions to REELS

- Operating mode S2
- Explosion-proof motors
- Non-ventilated motors (TENV)
- Single-phase motors
- etc.

Compulsory

Special designation of energy-efficient motors with prescribed label

People's Republic of China



Line: 3 x 380 V, 50 Hz

Date	01.07.2008	01.07.2012
Type	GB 18613	GB 18613
Energy efficiency classes		
Prohibited	– Below EFF2 (IE1)	– IE1 (EFF2)
Compulsory	– EFF2 (IE1)	– IE2 (EFF1)
Voluntary	– EFF1 (IE2) – Premium (IE3)	– Premium (IE3)
Power rating	0.55 ... 315 kW	0.55 ... 315 kW
Pole numbers	– 2-pole – 4-pole – 6-pole	– 2-pole – 4-pole – 6-pole
DR motor types	DRS DRE DRP	< 0.55 kW DRS >= 0.75 kW DRE / DRP
“Global motor” used	Yes But not as IEC foot-mounted and/or flange-mounted motor	Yes But not as IEC foot-mounted and/or flange-mounted motor

Exceptions to GB 18613

- Non-standard motors
 - gearmotors
 - brakemotors
- etc.

Compulsory

- Special designation of energy-efficient motors (in IEC foot-mounted and/or IEC flange-mounted design) with prescribed label
- Additional registration of small power ratings with CCC (2-pole <= 2.2 kW, 4-pole <= 1.5 kW, 6-pole <= 1.1 kW)

How we're driving the world



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