



## Three-Phase Electronically

### Commutated Motors

Instructions manual for installation, operation and maintenance of electric motors

More languages see website [www.weg.net](http://www.weg.net)



Cod. 501032261 | Rev.05 | Date (m/y): 07/2025  
The values shown are subject to change without prior notice.

## ENGLISH

### 1. Foreword

The installation, operation and maintenance of the motor must be always performed by qualified personnel using proper tools and methods and following the instructions contained in the documents supplied with the motor.

The instructions presented in this document are valid for WEG motors with the following characteristics:

- Three-phase input W30 Smart EC and Emerald eZA

The objective of this manual is to provide important information, which must be considered during the shipment, storage, installation, operation and maintenance of WEG motors. Therefore, we advise to make a careful and detailed study of the instructions contained herein before performing any procedures on the motor. The noncompliance with the instructions informed in this manual and others mentioned on the website [www.weg.net](http://www.weg.net) voids the product warranty and may cause serious personal injuries and material damages. For further information check the W30 Smart EC / Emerald eZA documentation on WEG website.

**Electric motors have energized circuits and exposed rotating parts which may cause injuries to people.**

### 2. Shipment, storage and handling

Check the conditions of the motor immediately upon receipt. Where any damage is noticed, this must be reported in writing to the transportation company, and immediately communicated to the insurance company and to WEG. In this case, no installation job can be started before the detected problem has been solved. Check if the nameplate data matches the invoice data and the environmental conditions in which the motor will be installed. If the motor is not immediately installed, it must be stored in a clean and dry room protected against dust, vibrations, gases and corrosive agents, with temperature between -25 °C and 60 °C and relative humidity not exceeding 60%. If the motors are stored for more than two years, it is recommended to change the bearings, or to remove, wash, inspect and lubricate them before the motor is started. If the drive is stocked (out of operation), every year from the manufacturing date indicated on the identification label of the drive, supply the drive with single-phase or three-phase voltage between 220 and 277 Vac, 50 or 60 Hz, for at least one hour then de-energize and wait for at least 24 hours before using the drive. If the drive has been in operation for at least 10 years, it is recommended to replace it. For instructions, contact WEG technical support.

**Always handle the motor carefully in order to prevent personal injuries and impacts that could damage the bearings.**  
**When available, do not lift and/or carry the product holding by the input cables.**  
**When available, use only the eyebolts to lift the motor. However these eyebolts are designed for the motor weight only. Thus never use these eyebolts to lift the motor with additional loads coupled to it.**

### 4. Operation

**During operation, do not touch the non-insulated energized parts and never touch or stay too close to rotating parts.**

The rated performance values and the operating conditions are specified on the motor nameplate. The voltage and frequency variations of the power supply should never exceed the limits established in the applicable standards. Occasional different behavior during the normal operation (actuation of thermal protections, noise level, vibration level, temperature and current increase) must always be assessed by qualified personnel. In case of doubt, turn off the motor immediately and contact the nearest WEG service center.

#### Selecting the rotation direction

Use the DIP switch identified as CW / CCW to select the rotation direction between counter-clockwise (CCW) or clockwise (CW), looking from the motor drive end (shaft).

#### How to adjust speed

The product speed can be changed by local adjust (buttons) or remote adjust (control inputs). Use the DIP switch identified as R / L to select between remote (R) or local (L).

- Local speed adjust

Use the two tact buttons located in the opening on the back cover to change speed. Press pressing button identified as - to decelerate or button identified as + to accelerate the motor.

- Remote speed adjusts:

- DC voltage: 2 to 10V DC;
- DC current: 4 to 20mA DC;
- Frequency duty-cycle / PWM: 10 to 95%

The product will turn off if imposed signals lower than 2V DC, 4mA DC or 10%.

- After remove and reinstall, make sure that the lid from the back side of the drive cover is securely closed to guarantee the protection degree.
- The product will not go to speeds higher than the value adjusted to be the maximum speed.

For further information check the documentation on WEG website.

#### Product additional features

Signal	Detail	Terminals	
DC Source	10V DC 24V DC	1	2
		10VDC 24VDC	GND
Speed reference	Frequency signal	REF	GND
Serial communication	RS485	485R	GND
		485T	COM
Alarm relay	Normally Open	NO	COM
	Normally Closed	NC	COM

For Fire Mode function, adjust the minimum and maximum speed and others check the documentation on WEG website.

**For multimounting motors (with removable feet/ base), the eyebolts must be positioned according to the motor mounting position so that the lifting angle is vertically aligned (lifting at 0°). Additional information regarding the maximum allowable angle-of-inclination is indicated in the general manual available on the website [www.weg.net](http://www.weg.net).**

### 3. Installation

**Make sure the AC power supply is disconnected and protected against accidental energization before starting the installation; Check the motor direction of rotation, turning it without load until it is coupled to the load;**  
**To prevent accidents, ensure that the grounding connection has been performed according to the applicable standards and that the shaft key has been securely fastened before the motor is started;**  
**When available, do not lift and/or carry the product holding by the input cables.**

Motors must be only installed in places compatible with their mounting features and in applications and environments for which they are intended. Those motors with feet must be installed on bases duly planned in order to prevent vibrations and assure perfect alignment. The motor shaft must be properly aligned with the shaft of the driven machine. Incorrect alignment, as well as improper belt tension, will certainly damage the bearings, resulting in excessive vibrations and even causing the shaft to rupture. The admissible shaft radial and axial loads for standard bearings are mentioned on the website documentation. Use flexible coupling whenever possible.

**The air used for cooling the motor must be at ambient temperature, limited to the temperature indicated on the motor nameplate;**  
**Take the required measures in order to ensure the degree of protection indicated on the motor nameplate:**

- Unused cable inlet holes in the terminal boxes must be properly closed with blanking plugs;
- The cable entries used must be fitted with components, such as, cable glands and conduits;
- Components supplied loose (for example, terminal boxes mounted separately) must be properly closed and sealed;
- Fixing elements mounted in the threaded through holes in the motor enclosure (for example, the flange) must be properly sealed.
- For flying leads motors, do not push the overlength of leads into the motor in order to prevent that they touch the rotor.

Only remove the corrosion protection grease from the shaft end and flange immediately before the motor installation. Unless specified otherwise in the purchase order, WEG motors are dynamically balanced with "half key" and without load (uncoupled). The driving elements, such as pulleys, couplings, etc., must be balanced with "half key" before they are mounted on the shaft of the motors.W30 Smart EC / Emerald product can be supplied with drains and slinger. For further information check the documentation on WEG website.

### 5. Product protections and fault diagnosis

W30 Smart EC / Emerald eZA have LED's to help in the fault diagnosis:

Power supply	Mode	LED #1	LED #2
Off	Stopped	Off	Off
On	Stopped	Off	Blinking (1 Hz)
On	Running	On	Blinking (1 Hz)
On	Fault	Blinking according fault	Blinking (1 Hz)

**The LED in OFF condition doesn't mean that there is no power supply to the drive;**  
**Make sure that the input power supply is disconnected before do any maintenance in the product.**  
**If the Fire Mode function is active, the failures will be detected, but ignored by W30 Smart EC / Emerald eZA, i.e., will not block the IGBTs. If the motor was spinning, will continue spinning. For more information check the documentation on WEG website.**

Blinking periods	Fault	ON time	Off time	Wait / interval time (off)
2	Under voltage	0,1 s	0,1 s	-
3	Overload / over current	0,25 s	0,25 s	2 s
6	Overvoltage			
9	Communication timeout			
10	Watchdog timeout	0,25 s	0,25 s	2 s
11	Locked rotor			

### 6. Maintenance

**Before any service is performed, ensure that motor is it at standstill, disconnected from the power supply and protected against accidental energization. Even when the motor is stopped, dangerous voltages may be present in space heater terminals;**  
**For motors with permanent magnet rotor (W30 Smart EC and Emerald eZA), the motor assembly and disassembly require the use of proper devices due to the attracting or repelling forces that occur between metallic parts. This work must only be performed by a WEG Authorized service center specifically trained for such an operation. People with pacemakers cannot handle these motors. The permanent magnets can also cause disturbances or damages to other electric equipment and components during maintenance.**  
**Motor disassembly during the warranty period must be performed by a WEG authorized service center only;**  
**Regularly inspect the operation of the motor, according to its application, and ensure a free air flow. Inspect the seals, the fastening bolts, the bearings, the vibration and noise levels, the drain operation, etc. The lubrication interval is specified on the motor nameplate.**

#### Environmental information

For information regarding disposal at end of life cycle refer to the manual "Disposal and Environmental information" available in the website [www.weg.net](http://www.weg.net) or contact WEG.

**The motor must always be positioned so the drain hole is at the lowest position;**  
**Motors supplied with rubber drain plugs leave the factory in the closed position and must be opened periodically to allow the exit of condensed water. For environments with high water condensation levels and motor with degree of protection IP55, the drain plugs can be mounted in open position;**  
**For motors with degree of protection IP56, IP65 or IP66, the drain plugs must remain at closed position, being opened only during the motor maintenance procedures.**  
**Motors installed outdoors or in the vertical position require the use of additional shelter to protect them from water.**

#### Power connections

- Make the power connections following nameplate indication.
- Power input: L1, L2 and L3 terminals
- Protective earth: PE - green screw
- Alarm relay: NO, NC and COM terminals

**Connect the motor properly to the power supply by means of safe and permanent contacts, always considering the data informed on the nameplate, such as rated voltage, wiring diagram, etc.**

- Always connect the equipment to the ground protection (PE).
- The power supply that feeds the inverter shall have a solid grounded neutral.

For power cables, switching and protection devices dimensioning, consider the rated motor current, the service factor, and the cable length, among others. For motors without terminal block, insulate the motor terminal cables by using insulating materials that are compatible with the insulation class informed on the nameplate. The minimum insulation distance between the non-insulated live parts themselves and between live parts and the grounding must meet the applicable standards and regulations for each country.

#### Control connections

- Make the control connections following nameplate indication.
- DC voltage: VDC and GND terminals
- DC current: ADC and GND terminals
- Frequency duty-cycle / PWM: PWM and GND terminals
- Speed feedback (reference): REF and GND terminals
- 10VDC source: 10V and GND terminals
- 24VDC source: 10V and GND terminals
- RS485 communication: 485R, 485T and GND terminals

#### EMC requirements for conforming installations

The standard W30 Smart EC / Emerald eZA mounting solution (drive attached to the motor) comply with EN61000-6 / FCC requirements. For optional decentralized mounting, the product class may change and the product may require the use of external filters. Consult WEG for the solution that better comply with your installation requirements.

W30 Smart EC / Emerald eZA product may require the use of an external filter to comply with harmonic current emissions requirements (EN61000-3-2). Consult WEG about optional external filters.

### 7. Additional information

For further information about shipment, storage, handling, installation, operation and maintenance of electric motors, access the website [www.weg.net](http://www.weg.net). For special applications and operating conditions refer to the manual 50033244 available in the website or contact WEG.  
When contacting WEG, please, have the full description of the motor at hand, as well as the Motor model, Batch Number and manufacturing date, indicated on the motor nameplate.

#### Warranty term

WEG Equipamentos Elétricos S/A, Motors Unit ("WEG"), offers warranty against defects in workmanship and materials for its products for a period of 18 months from the invoice date issued by the factory or distributor/dealer, limited to 24 months from the date of manufacture.

The paragraphs above contain the legal warranty periods.  
If a warranty period is defined in a different way in the commercial/technical proposal of a particular sale, that will supersede the time limits set out above. The warranty periods above are independent of the product installation date and the startup.  
If any defect or abnormal occurrence is detected during machine operation, the customer must immediately notify WEG in writing about the occurred defect, and make the product available for WEG or its Authorized Service Center for the period required to identify the cause of the defect, check the warranty coverage, and perform the proper repairs.

In order for the warranty to be valid, the customer must be sure to follow the requirements of WEG's technical documents, especially those set out in the product Installation, Operation and Maintenance Manual, as well as the applicable standards and regulations in force in each country.  
Defects arising from the inappropriate or negligent use, operation, and/or installation of the equipment, non-execution of regular preventive maintenance, as well as defects resulting from external factors or equipment and components not supplied by WEG, will not be covered by the warranty.  
The warranty will not apply if the customer at its own discretion makes repairs and/or modifications to the equipment without prior written consent from WEG. The warranty will not cover equipment, components, parts and materials whose lifetime is usually shorter than the warranty period. It will not cover defects and/or problems resulting from force majeure or other causes not imputable to WEG, such as, but not limited to: incorrect or incomplete specifications or data supplied by the customer; transportation, storage, handling, installation, operation and maintenance not complying with the provided instructions; accidents; defects in the construction works; use in applications and/or environments for which the machine was not designed; equipment and/or components not included in the scope of WEG supply. The warranty does not include disassembly services at the buyer's premises, product transportation costs and travel, lodging and meal expenses for the technical staff of the Service Centers, when requested by the customer.  
The services under warranty will be provided exclusively at WEG authorized Service Centers or at one of its manufacturing plants.  
Under no circumstances will the warranty services extend the equipment warranty period.

WEG's Civil Liability is limited to the supplied product; WEG will not be liable for indirect or consequential damages, such as losses of profit and revenue losses and alike which may arise from the contract signed between the parties.

## EU DECLARATION OF CONFORMITY

Manufacturers:	WEG Equipamentos Elétricos S.A.	WEG Equipamentos Elétricos S.A.
	Av. Padre Wladimir Guedes, 3000 80506-900 - Jaraguá do Sul - SC - Brazil <a href="http://www.weg.net">www.weg.net</a>	Santa Cristina de Goiás, 4780-160 - Santo Tirso - Portugal Single Contact Point in the European Union for completing the technical documentation: Rua Flor Chaves, 85a, Castelo Azeitão Authorized Representative <a href="http://www.weg.net">www.weg.net</a>
	WEG Linhares Equipamentos Elétricos S.A.	VOLT ELEKTRIK MOTOR SANAYI VE TICARET ANONİM ŞİRKETİ
	Rod. BR 102, Km 161,5, s/n, Cidade Industrial Rio Quatari, Bairro Rio Quatari do Itaim 20611-600 - Linhares - ES - Brazil <a href="http://www.weg.net">www.weg.net</a>	Kozi Karadere Cad. No:14 Karapapa 35735 İsmir / Türkiye <a href="http://www.weg.net">www.weg.net</a>
	WEG MEXICO, S.A. DE C.V.	WEG INDUSTRIES (INDIA) PVT.LTD.
	Camela, Jordão - Tula Km 5.5, Marzana 5, Lote 1, Friccionamento Perpetuo Industrial Huatabampo, Municipio de Huatabampo, C.P. 54860, CD. de México y Área Metropolitana - México <a href="http://www.weg.net">www.weg.net</a>	No. 620 (North) SPICOT Industrial Complex - Phase II - Expansion II, Mangalagiri Village Housr 826103 Tane Nadu
	WEG (JIANGSU) ELECTRIC EQUIPMENT CO.LTD	Changpuo Yalong Jewel Electromotor Co., Ltd
	No. 88, Huamen West Road, Changpuo Street, Rugao City, Jiangsu Province - China <a href="http://www.weg.net">www.weg.net</a>	No. 118, Dongpu West Road, Luoyang Town, Wujin, Changzhou, Jiangsu, China.
	WEG (NANTONG) ELECTRIC MOTOR MANUFACTURING CO., LTD	ANTREBSTECHNIK KATT HEISEN GMBH
	No. 1289 - Xinkai South Road, Nantong Economic & Technical Development Zone, Nantong, Jiangsu, China <a href="http://www.weg.net">www.weg.net</a>	(Bavaria)Stassau 66, 34576-Homburg (EBS), Germany <a href="http://www.weg.net">www.weg.net</a>
	ZEST WEG Electric	WEG (Chang Zhou) Automation Equipment Co., Ltd
	6 Lantianhe Street, Longlake Extension 4, Jiannanburg, Gaung, 1619 - South Africa <a href="http://www.weg.net">www.weg.net</a>	No. 227, Xinchang Avenue, Jintan District, Changzhou City, Jiangsu Province, China. <a href="http://www.weg.net">www.weg.net</a>

Declares under sole responsibility that WEG electric motors and components used for following motor lines:  
BLSC, W01, W11, W12, W20, W21, W22, W23, W30, W40, W50, W51, W60, W61, WFL, WK, K1E, K1N, K1S, K1T, K1M, K2E, K2N, K2L, General Purpose, HOF, Roller Table, Steel Motor, PSC, Pump/Filts, Servomotor, Vertical High Thrust, Water Cooled and Wquattro  
When installed, maintained and used in applications for which they were designed, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the provisions of the following relevant European Union harmonization legislation and standards, whenever applicable:

Low Voltage Directive	2014/53/EU
EU Ecolabel Directive	(EU)2019/781 as amended by Commission Regulation (EU)2021/1274 Directive 2009/125/EC
RoHS Directive	2011/65/EU and its amendments (including Directive 2015/863/EU)
Machinery Directive	(EU)2023-1230/1
EMC Directive	2014/53/EU (electric motors are considered inherently benign in terms of electromagnetic compatibility)
EN 60034-1:2010 + A2:2010 / EN 60034-1:2014 / EN IEC 60034-5:2020 / EN 60034-6:1993 / EN 60034-1:1993 + A1:2001 / EN 60034-8:2007 + A1:2014 / EN 60034-9:2005 + A1:2007 / EN 60034-12:2014 / EN 60034-13:2017 / EN 60034-14:2018 / EN 60034-15:2017 / EN 60034-16:2018 / EN 60034-17:2019 / CLC IEC/TS 60034-30:2021 / EN 61800-3-1:2017 / EN 61800-3-2:2017 / EN 61800-3-3:2019 / EN 61800-3-4:2020 / CLC IEC/TS 60034-30:2021 and CLC IEC/TS 60034-30:2024	

"Electric motors are considered partly completed machinery and are supplied with a "Declaration of Incorporation".

Declaration of Incorporation  
The products above cannot be put into service until the machinery into which they have been incorporated has been declared in conformity with the Machinery Directive.  
A technical Documentation for the products above is compiled in accordance with part B of annex VII of Machinery Directive (EU)2023-1230.  
We undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the product identified above partly completed machinery through WEG's authorized representative established in the United Kingdom. The method of transmission shall be electronic or physical method and shall be without prejudice to the intellectual property rights of the manufacturer.  
Signed for and on behalf of the manufacturer:

 Victor Marcon Quality Systems and Certification Manager Jaraguá do Sul July 9, 2025	 Edson Jose Krahovich Engineering Director Jaraguá do Sul July 9, 2025
--	---

## UK Declaration of Conformity

Manufacturers:	WEG Equipamentos Elétricos S.A.	WEG Equipamentos Elétricos S.A.
	Av. Padre Wladimir Guedes, 3000 80506-900 - Jaraguá do Sul - SC - Brazil <a href="http://www.weg.net">www.weg.net</a>	Single Contact Point in the United Kingdom for completing the technical documentation: Rua Flor Chaves, 85a, Castelo Azeitão Authorized Representative <a href="http://www.weg.net">www.weg.net</a>
	WEG Linhares Equipamentos Elétricos S.A.	VOLT ELEKTRIK MOTOR SANAYI VE TICARET ANONİM ŞİRKETİ
	Rod. BR 102, Km 161,5, s/n, Cidade Industrial Rio Quatari, Bairro Rio Quatari do Itaim 20611-600 - Linhares - ES - Brazil <a href="http://www.weg.net">www.weg.net</a>	Kozi Karadere Cad. No:14 Karapapa 35735 İsmir / Türkiye <a href="http://www.weg.net">www.weg.net</a>
	WEG MEXICO, S.A. DE C.V.	WEG INDUSTRIES (INDIA) PVT.LTD.
	Camela, Jordão - Tula Km 5.5, Marzana 5, Lote 1, Friccionamento Perpetuo Industrial Huatabampo, Municipio de Huatabampo, C.P. 54860, CD. de México y Área Metropolitana - México <a href="http://www.weg.net">www.weg.net</a>	No. 620 (North) SPICOT Industrial Complex - Phase II - Expansion II, Mangalagiri Village Housr 826103 Tane Nadu
	WEG (JIANGSU) ELECTRIC EQUIPMENT CO., LTD	Changpuo Yalong Jewel Electromotor Co., LTD
	No. 88, Huamen West Road, Changpuo Street, Rugao City, Jiangsu Province - China <a href="http://www.weg.net">www.weg.net</a>	No. 118, Dongpu West Road, Luoyang Town, Wujin, Changzhou, Jiangsu, China.
	WEG (NANTONG) ELECTRIC MOTOR MANUFACTURING CO., LTD	ANTREBSTECHNIK KATT HEISEN GMBH
	No. 1289 - Xinkai South Road, Nantong Economic & Technical Development Zone, Nantong, Jiangsu Province - China <a href="http://www.weg.net">www.weg.net</a>	(Bavaria)Stassau 66, 34576-Homburg (EBS), Germany <a href="http://www.weg.net">www.weg.net</a>
	ZEST WEG Electric	WEG (Chang Zhou) Automation Equipment Co., Ltd
	6 Lantianhe Street, Longlake Extension 4, Jiannanburg, Gaung, 1619 - South Africa <a href="http://www.weg.net">www.weg.net</a>	No. 227, Xinchang Avenue, Jintan District, Changzhou City, Jiangsu Province, China. <a href="http://www.weg.net">www.weg.net</a>

declares under sole responsibility that WEG electric motors and components used for following motor lines:  
BLSC, W01, W11, W12, W20, W21, W22, W23, W30, W40, W50, W51, W60, W61, WK, K1E, K1N, K1S, K1T, K1M, K2E, K2N, K2L, General Purpose, HOF, Roller Table, Steel Motor, PSC, Pump/Filts, Servomotor, Vertical High Thrust, Water Cooled and Wquattro  
When installed, maintained and used in applications for which they were designed, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the provisions of the following relevant European Union harmonization legislation and standards, whenever applicable:

Electrical Equipment (Safety) Regulations	S.I.2019/1011
The Electricity for Energy-Related Products Regulations and Energy Information	S.I.2021/1461
The Reduction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	S.I.2012/03327
Supply of Machinery (Safety) Regulations	S.I.2008/1597 as amended by S.I.2011/21571
Electromagnetic Compatibility Regulations	S.I.2019/1001 (electric motors are considered inherently benign in terms of electromagnetic compatibility)

EN 60034-1:2010 + A2:2010 / EN 60034-1:2014 / EN IEC 60034-5:2020 / EN 60034-6:1993 / EN 60034-1:1993 + A1:2001 / EN 60034-8:2007 + A1:2014 / EN 60034-9:2005 + A1:2007 / EN 60034-12:2014 / EN 60034-13:2017 / EN 60034-14:2018 / EN 60034-15:2017 / EN 60034-16:2018 / EN 60034-17:2019 / CLC IEC/TS 60034-30:2021 and CLC IEC/TS 60034-30:2024

"Electric motors with a voltage rating higher than 1000V are not under the scope."

"Electric motors are considered partly completed machinery and are supplied with a "Declaration of Incorporation".

Declaration of Incorporation (for motors above 1000V)  
The products above cannot be put into service until the machinery into which they have been incorporated has been declared in conformity with the Machinery Directive.  
A technical Documentation for the products above is compiled in accordance with part B of annex II of the Supply of Machinery (Safety) Regulations 2008.  
We undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the product identified above partly completed machinery through WEG's authorized representative established in the United Kingdom. The method of transmission shall be electronic or physical method and shall be without prejudice to the intellectual property rights of the manufacturer.  
Signed for and on behalf of the manufacturer:

 Victor Marcon Quality Systems and Certification Manager Jaraguá do Sul July 9, 2025	 Edson Jose Krahovich Engineering Director Jaraguá do Sul July 9, 2025
--	---