MW500

Decentralized VSD MotorDrive





MN500

The VSD wherever you need

The MW500 is a high performance product dedicated for induction motor control, with embedded features and a high protection degree of IP66 / NEMA 4X which allow decentralized installation directly on the motor or on a wall. Designed exclusively for industrial or professional use, the decentralized WEG VSD adds a great deal of flexibility, allowing the user to install the product near to the controlled motor, thus eliminating the necessity of long cables and panels.

Decentralized

Indoor or outdoor applications

Flexible

Wide range of accessories and functions

Robust

IP66/NEMA 4X outdoor enclosure

Efficient

High performance for machines and processes

Reliable

Same trustworthiness of WEG products

Integrated

Fieldbus networks

Characteristics

Motor or wall assembly

Plug-in module

Flash memory module

SoftPLC

Increasing the ruggedness and durability

Functions to streamline operation and performance

WEG quality

Communication networks



Advantages

It is possible for the MW500 to be assembled on a wall or, using the terminal box coupling directly over the W22 or W21 motors.

The optional communication network and I/O modules are fast and easily to be installed, allowing adaptation of the standard VSD to each application.

Within seconds, it is possible to download the SoftPLC program and parameters setup from a MW500 to others without powering them up.

Built-in PLC (SoftPLC), allowing the VSD, motor and application to work in an interactive way. It allows the user to implement customized logic and applications.

Complete protection against contact with internal live parts, avoiding the entrance of dust or water coming from jets.

PID: process control. Sleep: disables the VSD automatically.

Flying start: allows to start a motor that was running freely, accelerating it from the speed at which it was running.

Ride through: keeps the VSD in operation during voltage dips.

100% of the VSDs are tested with load at the factory under rated conditions.

Protection against ground fault, short circuit, over temperature and others.

Thermal protection of IGBTs based on manufacturer curve.

Conformal Coating (Tropicalization) as Standard. Classified as 3C2 according to IEC 60721-3-3.

CANopen, DeviceNet, Profibus-DP and Modbus-RTU.

Benefits

Makes the commissioning easy, saving space and cabling, in other words, reducing cost for all installation.

Time saving, standardization and optimized costs according to the necessity.

Fast, easy and reliable programming for manufacturers that produce machines in large scale.

It eliminates the necessity of an external PLC, reducing costs, optimizing space and simplifying the system.

Panel not required, reducing the installation costs.

Energy saving.

It allows fast operating response of the machine and prevents occasional mechanical breakdowns.

It prevents machine stoppage and downtime.

High reliability.

It prevents damage to the inverter which can be caused by adverse situations, normally external factors.

VSD lifetime is extended: protection against chemically active substances, related to contamination from the atmosphere.

Full integration with process network.



Easy Configuration



5 - Plug-in slot

6 - Power supply connection

11 - Grounding connection screw

(6)



Applications

Centrifugal pumps

Compressors

Process pumps

Fans/exhaust fans

Mixers/bottlers

Washers/driers

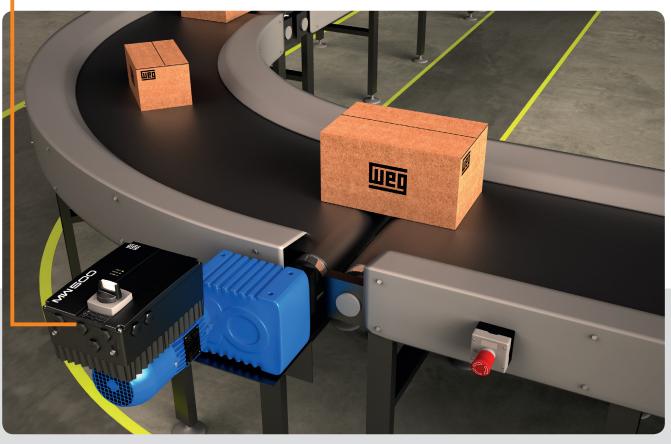
Conveyor belts











Special Features



Conector IP66/NEMA 4X Special conector for Remote HMI (M8)



Analog Potentiometer Built-In No need HMI to operate



Fins Instead of Fan Reduce maintenance cost



LED Indicators Status indication









Built-In (Optional)

Easy and safe machine maintenance

Characteristics

Conformal Coating

Increasing the lifetime, protecting the electronic boards against corrosive atmospheres. Classified as 3C2 according to IEC 60721-3-3.



IP66/NEMA 4X Protection Degree

Key to the decentralized solution, the IP66 provides protection against contact with internal live parts and the ingress of dust or water.



SoftPLC

Functions to streamline operation and increase performance, in many cases eliminating the necessity of an external PLC, optimizing and simplifying the system.



RFI Filter

With C2/C3 options, the VSD faces a redution in the EMC level, some cases even more, taking advantage of the motor and VSD distance, thus increasing the EMC class.



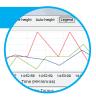
Black Color

The black color increases the enclosure dissipation capability, helping the drive support up to 50 °C on motor mounting without derating.



SuperDrive G2

Special software, allowing the parameter setting, command and monitoring of VSD, in this last option, simulating an oscilloscope with Trend function.







Space saving and flexible solution



Reduced installation costs



Increased ruggedness



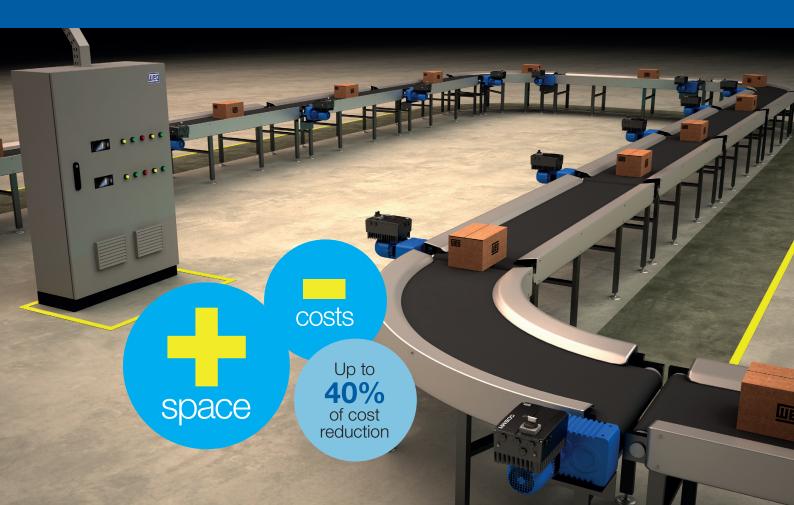
Easy commissioning



Cost savings on cables



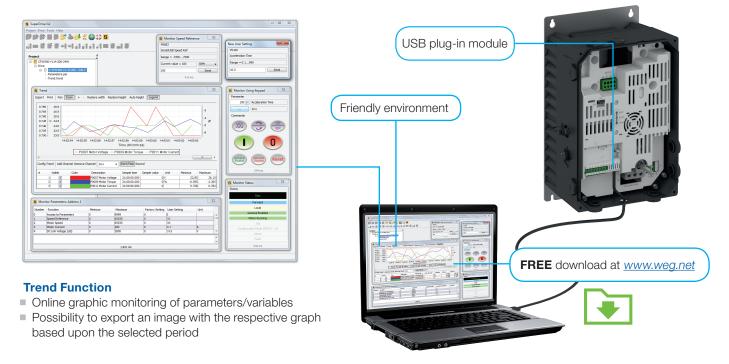
Panel not required





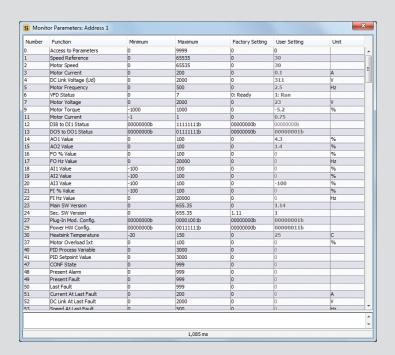
SuperDrive G2

Software application to program, control and monitor WEG VSDs. To connect MW500 to a computer it is necessary to use a plug-in module.



Changing and Monitoring Parameters in a List/Table

Parameter settings can be stored in a computer file format.



- Upload/download parameters from the PC to the MW500 and vice versa
- Offline editing of the parameters stored on the PC

Status Monitoring



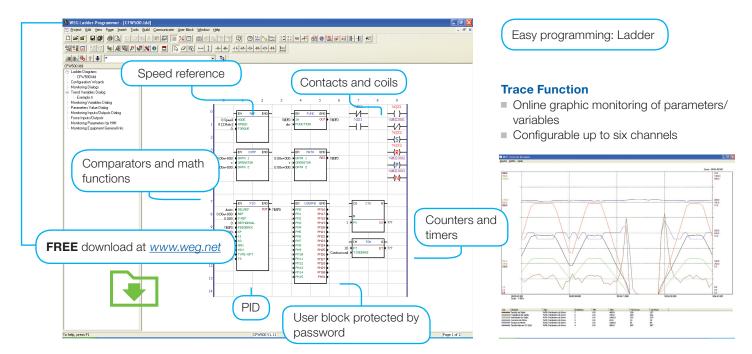
Operation with HMI

Online parameter editing.

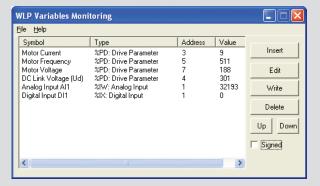


SoftPLC - Built-In in the Standard Product

Functionalities of a PLC available as standard, allowing the creation of applications. The WLP software and the SoftPLC functionality are a smart and simple way to make your MW500, motor and application work together. Plug-in module required to connect with a computer.



Online Monitoring Parameters/Variables List



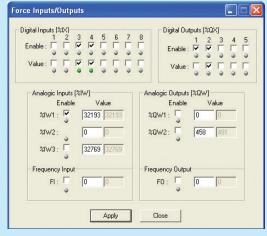
Parameter Edition

For changing the parameters values.



Enable/Disable I/Os

It simplifies and speeds up the validation of the application.



I/Os Monitoring





Coding

The MW500 code identifies its construction characteristics, nominal current, voltage range and optionals. Using the smart code, it is possible to select the MW500 required for your application simple and quickly.

Product and		Model identification				Degree of	Conducted	Disconnect	Torminal	Hardware	Software
series	Frame size	Rated current	N° of phases	Rated voltage	Braking ¹⁾	protection ¹⁾	emission level ¹⁾	switch	Terminal box adaptor	version	version
MW500	Α	02P6	T	4	DB	66	C2	DS	A56	H00	
	Check table bel	-									
		IB = without dynamic braking DB = with dynamic braking									
	66 = IP66/NEM	= IP66/NEMA 4X									
	Blank = with no RFI filter C2 = according to category 2 of IEC 61800-3 standard, with internal RFI filter C3 = according to category 3 of IEC 61800-3 standard, with internal RFI filter										
MW500	Blank = without disconnect switch DS = with disconnect switch										
	A56 = 56 mm motor terminal box adaptor A70 = 70 mm motor terminal box adaptor										
	Blank = standard H00 = without plug-in module										
	Blank = standard Sx = special software										

Frame sizes	Output current	Input	Power supply voltage	Braking	Degree of protection	Conducted emission level ²⁾	
Δ.	04P3 = 4.3 A	S = single phase	2 = 200 240 V				
A	06P0 = 6.0 A	power supply	Z = 200 240 V		00	Plank or C2	
Δ.	02P6 = 2.6 A			DD.			
A	04P3 = 4.3 A	T = three-phase	4 = 380 480 V		DB	66	Blank or C2
D.	06P5 = 6.5 A	power supply					
В	10P0 = 10 A						

Notes: 1) To know which models have these options in the standard product the above table should be checked.

2) RFI filter.

Categories:

- Category C1: inverters with voltages below 1,000 V, for use in the First Environment.
 Category C2: inverters with voltages below 1,000 V, with plugs or mobile installation, when used in the "First Environment", must be installed and started-up by a qualified professional.
- Category C3: inverters with voltages below 1,000 V, developed for use in the Second Environment and not designed for use in the "First Environment". Environments:
- First Environment: environments that include household installations, such as buildings directly connected, without intermediate transformer, to a lowvoltage power supply grid, which supplies buildings used for domestic purposes.
- Second Environment: includes all the buildings other than those directly connected to a low-voltage power supply grid, which supplies buildings used for domestic purposes.

For the RFI filters of external installations, refer to the MW500 user manual.



Drive Ratings

The correct way to select a VSD is matching its output current with the motor rated current. The tables below present the expected motor power for each VSD model. Use the motor power ratings below only as a guidance. Motor rated currents may vary with speed and manufacturer. IEC motor powers are based on WEG 4-pole motors; NEMA motor powers are based on NEC table 430-150.

Ratings and Models

Power supply In (V)		Model Frame size		Output current (A)	Maximum motor power ¹⁾				
		Model	Fiaille Size	Output current (A)	IEC	(kW)	NEMA (HP)		
Single-phase	200-240	MW500 A 04P3 S2 DB 66	A ²⁾	4.3	50 Hz - 230 V	0.75	60 Hz - 230 V	1	
Sillyle-pilase	200-240	MW500 A 06P0 S2 DB 66	A ²⁾	6.0	30 HZ - 230 V	1.1	00 112 - 230 V	1.5	
Three-phase	380-480	MW500 A 02P6 T4 DB 66	A ²⁾	2.6		1.1	60 Hz - 460 V	1.5	
milee-phase	300-400	MW500 A 04P3 T4 DB 66	A ²⁾	4.3	50 Hz - 415 V	1.5		2	
Three phase	200 400	MW500 B 06P0 T4 DB 66	В	6.5	30 HZ - 413 V	2.2		3	
Three-phase 380-480		MW500 B 10P0 T4 DB 66	В	10		4		5	

Notes: 1) Use motor power ratings below only as a guidance. Motors are rated for 400 V, 50 Hz, 4-pole. The right way to size a VSD is matching its output current with the rated motor current.

Dimensions and Weights

IP66/NEMA 4X

Frame size	H mm (in)	W mm (in)	D (without disconnect switch) mm (in)	D (with disconnect switch) mm (in)	Weight Kg (lb)
A ¹⁾	240 (9.45)	165 (6.50)	125 (4.92)	172 (6.77)	3,7 (9.14)
В	269 (10.61)	269 (10.61)	141 (5.55)	188 (7.39)	5,3 (11.68)

Note: 1) Coming soon.

Mechanical Sizing Table for Motor Mounting

IEC

		56	mm		70	mm	110	mm
Frame	71	80	90	100	112	132	160	180
A ¹⁾	✓	✓	✓	✓	✓			
В			✓	✓	✓	✓		

Note: 1) Coming soon.

NEMA

	56 mm	70	mm	110	mm
Frame	143T/145T	182T/184T	213T/215T	254T/256T	284T/286T
A ¹⁾	✓	✓	✓		
В	✓	✓	✓		

Notes: 1) Coming soon.

Motor frame size for W22 and W21 series: Standard Efficiency (IE1), High Efficiency (IE2), Premium Efficiency (IE3), Multimounting (standards and compact versions).



²⁾ Coming soon.



Accessories and Optionals

The MW500 VSD was developed to meet the hardware configurations required by a wide range of applications. The table below presents the available options:

Option	Type ¹⁾	Description	Optional item code ²⁾	Accessory model	Available
RFI filter	Optional	Used to reduce the disturbance conducted from the CFW500 to the power supply, in the high frequency band (>150 kHz), according to standards 61800-3 and EN 55011	C2 or C3	-	Factory installation only
Braking IGBT	Optional	Used in high-inertia applications for the fast stop of the motor by means of an external braking resistance. Resistance not included. For the calculation of the braking resistance, refer to the MW500 user manual	DB	-	Factory installation only
Disconnect switch	Optional	A disconnect switch built-in the product for easy and safe maintenance. This optional makes the VSD IP65	DS	-	Factory installation only
Wall mounting kit	Accessory	An adaptation plate for assemble the drive on the wall For more information please check the user manual	-	MW500 - KCFB	User installation
Motor mounting kit	Accessory	An adaptation box for assemble the drive on the motor. For more information please check the user manual	-	MW500 - KAIM - A55 MW500 - KAIM - B56 MW500 - KAIM - B70	User installation
I/O expansion modules (plug-in) ³⁾	Accessory	Used to configure the I/O points according to the needs of the application/machine	-	CFW500-IOS CFW500-IOD CFW500-IOAD CFW500-IOR	-
Communication module (plug-in) ³⁾	Accessory	Used for the communication of the MW500 with the main networks of the market (fieldbus)	-	CFW500-CUSB (USB) CFW500-CCAN (CANopen /DeviceNet) CFW500-CRS232 CFW500-CRS485 CFW500-CPDP (Profibus-DP)	-
Flash memory module (plug-in) ³⁾	Accessory	Used to download the programming of a MW500 to others without having to power them up	-	CFW500-MMF	-
Remote HMI	Accessory	Used to transfer the operation to the panel door or machine console. Maximum distance of 10 m. Degree of protection IP54	-	CFW500-HMIR	-
Cables for remote HMI	Accessory	Special cable desing using M8-DB9 connector with 0.5 m, or using the same cables of CFW the MW500 to the remote HMI (CFW500-HMIR)	-	MW500-CCHMIR0.5M CFW500-CCHMIRXM, where cables with lengths (X) of 1, 2, 3, 5, 7.5 and 10 meters	-

Plug-In Modules Specification³⁾

	Functions											
Plug-in module	Inp	Inputs		Outputs			Fieldbus networks				Power supply	
riug-iii iiiouule	Digital	Analog	Analog	Digital relay	Digital transistor		CANopen/ DeviceNet	RS232	RS485	Profibus-DP	10 V	24 V
IOS	4	1	1	1	1	-	-	-	1	-	1	1
IOD	8	1	1	1	4	-	-	-	1	-	1	1
IOAD	6	3	2	1	3	-	-	-	1	-	1	1
IOR	5	1	1	4	1	-	-	-	1	-	1	1
CUSB	4	1	1	1	1	1	-	-	1	-	1	1
CCAN	2	1	1	1	1	-	1	-	1	-	1	1
CRS232	2	1	1	1	1	-	-	1	1	-	-	1
CRS485	4	2	1	2	1	-	-	-	2	-	1	1
CPDP	2	1	1	1	1	-	-	-	1	1	-	1

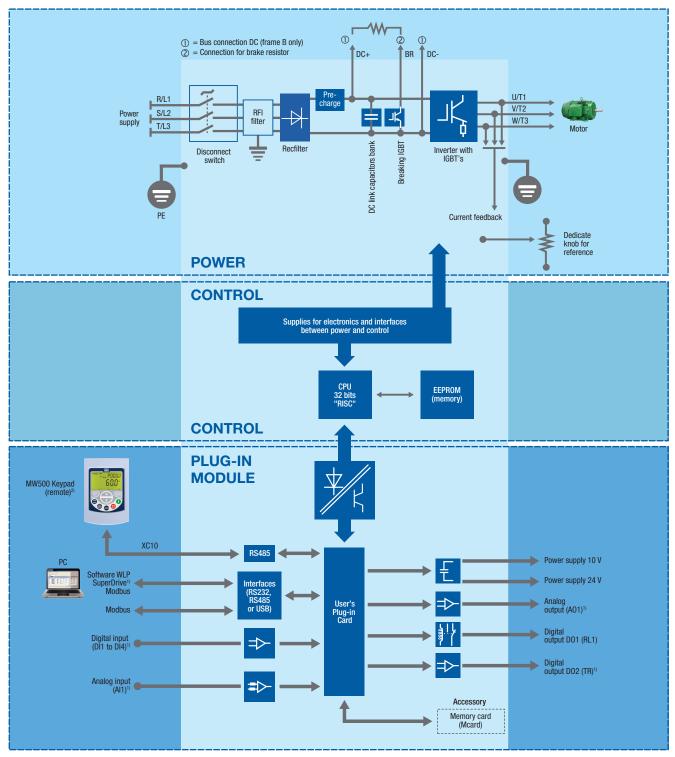
Notes: 1) Optional: hardware resources added to the MW500 in the manufacturing process accessory = hardware resource requested as a separated item.

2) Request the product according to the code available on page 10.

³⁾ All models of plug-in modules have at least one RS485 port. The CRS485 plug-in module has two RS485 ports. The MW500 allows installing one plug-in module per unit.



Block Diagram



Notes: 1) The number of analog/digital inputs/outputs, as well as other resources, may vary according to the plug-in module used. Table 7.1 provides a list of the available plug-ins. For further information, refer to the guide supplied with the accessory or the

2) Not provided with the product.

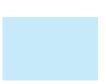


Technical Data

		200 01011 (100 170)				
		1-phase, 200-240 V ac (+10%-15%) 0.75 and 1.1 kW (1 and 1.5 HP)				
	W.H.	1-phase/3-phase, 200-240 V ac (+10%-15%) 0.25 to 3 HP (0.25 to 2.2 kW)				
Power supply	Voltage and power range	3-phase, 200-240 V ac (+10%-15%) 2 to 7.5 HP (1.5 to 5.5 kW)				
		3-phase, 380-480 V ac (+10%-15%) 1.1 to 4 kW (1.5 to 5 HP)				
	Supply frequency	50/60 Hz (48 Hz to 62 Hz)				
	Voltage	3-phase, 0-100% of supplied voltage				
	Output frequency	0 a 500 Hz				
	Displacement power factor	>0.97				
Motor connection	Overload capacity	1.5 x ln (drive) for 1 minute every 6 minutes				
	Switching frequency	Default 5 kHz (selectable 2.5 to 15 kHz)				
	Aceleration time	0.1 to 999s				
	Deceleration time	0.1 to 999s				
		40 °C - for wall mounting installation				
	Temperature	50 °C - for motor mounting installation using self-ventilation				
		2% of current derating for each °C above the specific operating temperature, limited to an increase of 10 °C				
Environment	Humidity	5% to 95% non-condensing				
	Altitude	Up to 1,000 m - rated conditions				
	Attitude	1,000 m to 4,000 m - 1% of current derating for each 100 m above 1,000 m of altitude				
	Protection degree	IP66/NEMA 4X (the disconnect switch is IP65)				
	V/f control	Speed regulation: 1% of the rated speed (with slip compensation)				
Performance	V/1 Control	Speed variation range: 1:20				
1 chormance	Vector control (VVW)	Speed regulation: 1% of the rated speed				
	vocioi conta oi (vvv)	Speed variation range: 1:30				
Braking methods	DC current applied to motor dynamic braking	Available as standard for frame size B. For frame size A "DB" models has to be used. An extra resistor must be fitted in for dynamic braking capability				
		Overcurrent/phase-phase short circuit in the output				
		Overcurrent/phase-ground short circuit in the output				
		Under/overvoltage				
Safety	Protection	Overtemperature in the heatsink				
Guioty	1 TOLEGUION	Overload in the motor				
		Overload in the power module (IGBTs)				
		External alarm / fault				
		Setting error				

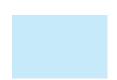














Technical Data - Standards

	Modbus-RTU	All plug-in modules for RS485 and CFW500-CRS232 for RS232
Communication	Profibus-DP	Plug-in module CFW500-CPDP
Communication	DeviceNet	Plug-in module CFW500-CCAN
	CANopen	Plug-in module CFW500-CCAN
Chokes	AC input chokes	For reducing THD
(external as accessory)	AC output chokes	For longer motor cables
	UL 508C	Power conversion equipment.
	UL 840	Insulation coordination including clearances and creepage distances for electrical equipment.
	EN 61800-5-1	Safety requirements electrical, thermal and energy.
Safety standards	EN 50178	Electronic equipment for use in power installations.
,	EN 60204-1	Safety of machinery. Electrical equipment of machines. Part 1: General requirements. Note: For the machine to comply with this standard, the manufacturer of the machine is responsible for installing an emergency stop device and equipment to disconnect the input power supply.
	EN 60146 (IEC 146)	Semiconductor converters.
	EN 61800-2	Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for low voltage adjustable frequency AC power drive systems.
	EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specifc test methods.
	EN 55011	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.
	CISPR 11	Industrial, scientifc and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement.
Electromagnetic	EN 61000-4-2	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test.
Compatibility (EMC) Standards	EN 61000-4-3	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic feld immunity test.
	EN 61000-4-4	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 4: Electrical fast transient/ burst immunity test.
	EN 61000-4-5	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 5: Surge immunity test.
	EN 61000-4-6	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 6: Immunity to conducted disturbances, induced by radio-frequency fields.
Mechanical construction	EN 60529	Degrees of protection provided by enclosures (IP code).
standards	UL 50	Enclosures for electrical equipment.

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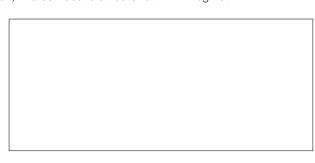
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For those countries where there is not a WEG own operation, find our local distributor at www.weg.net.



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