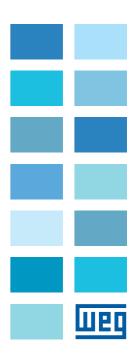
Frequency Inverter

MW500

User's Manual







User's Manual

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Summary of Reviews



The information below describes the reviews made in this manual.

Review		Description	Chapter
	00	First edition	-
	01	General review and inclusion of frame A	-



NOTE!

The inverters MW500 have the default parameters set as described below:

■ 50 Hz for models with internal filter (check the smart code E.g.: MW500B06P5T4).



ATTENTION!

Check the frequency of the power supply.

In case the power supply frequency is different from the default frequency (check P0403), it is necessary to set:

- \blacksquare P0204 = 5 for 60 Hz.
- \blacksquare P0204 = 6 for 50 Hz.

It is only necessary to set these parameters once.

Refer to the programming manual of the MW500 for further details about the setting of parameter P0204.



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1 SAFETY INSTRUCTIONS

This manual contains the information necessary for the correct use of the MW500 drive.

It was developed to be operated by people with proper technical training or qualification to handle this kind of equipment. Those people must follow the safety instructions defined by the local standards. The noncompliance with the safety instructions may cause risk of death and/or damages to the equipment.

1.1 SAFETY WARNINGS IN THIS MANUAL



DANGER!

The procedures recommended in this warning aim at protecting the user against death, serious injuries and considerable material damages.



ATTENTION!

The procedures recommended in this warning aim at preventing material damages.



NOTE!

The information mentioned in this warning is important for the proper understanding and good operation of the product.

1.2 SAFETY WARNINGS IN THE PRODUCT



High voltages present.



Components sensitive to electrostatic discharges. Do not touch them.



The connection to the protection grounding is required (PE).



Connection of the shield to the grounding.



High temperature warning.



1.3 PRELIMINARY RECOMMENDATIONS



DANGER!

Always disconnect the general power supply before changing any electric component associated to the drive. Many components may remain loaded with high voltages and/or moving (fans), even after the AC power supply is disconnected or turned off. Wait for at least ten minutes in order to guarantee the full discharge of the capacitors. Always connect the grounding point of the drive to the protection grounding.



NOTES!

- The MW500 drive may interfere in other electronic equipment. Observe the recommendations of chapter 3 Installation and Connection in order to minimize these effects.
- Read the entire manual before installing or operating this drive.

Do not execute any applied withstand voltage test on the drive! If necessary, contact WEG.



ATTENTION!

The electronic boards have components sensitive to electrostatic discharges.

Do not touch the components or connectors directly. If necessary, first touch the grounding point of the drive, which must be connected to the protection ground or use a proper grounding strap.



ATTENTION!

Do not touch the enclouser of the drive directly. The drive may be very hot during and after the operation.



2 GENERAL INFORMATION

2.1 ABOUT THE MANUAL

This manual contains information for the proper installation and operation of the drive, as well as start-up procedures, main technical features and how to identify the most usual problems of the different models of the MW500 series of drives.



ATTENTION!

The operation of this equipment requires detailed installation and operation instructions provided in the user's manual, programming manual and communication manuals. The user's manual and the quick reference of the parameters are supplied at the purchase of the drive, while the guides are supplied with their respective accessories. Other manuals are only supplied in CD-ROM, which comes with the drive, or can be downloaded in WEG's website - www.weg.net. This CD must be always kept with this equipment. A printed copy of the files available in the CD can be requested at your local WEG dealer.



NOTE!

It is not the intention of this manual to present all the possibilities for the application of the MW500, as well as WEG cannot take any liability for the use of the MW500 which is not based on this manual.

2.2 ABOUT THE MW500

The MW500 is a high-performance, decentralized motordrive with IP66 degree of protection which allows speed and torque control of three-phase induction motors. This product features vector (VVW) and scalar (V/f) control - both programmable according to your application.

In the vector control mode (VVW), the operation is optimized for the motor in use, providing a better performance in terms of speed regulation.

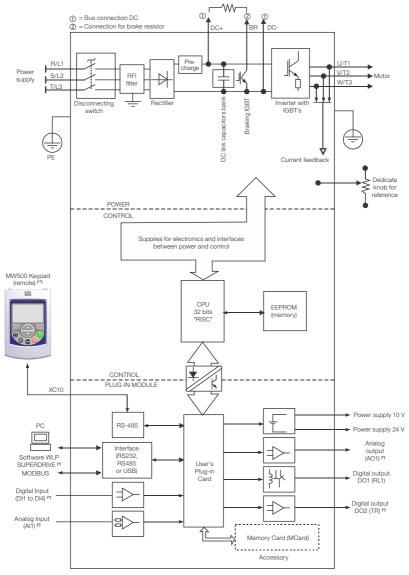
The scalar mode (V/f) is recommended for simpler applications, such as the activation of most pumps and fans. The V/f mode is used when more than one motor is activated by a drive simultaneously (multimotor applications).

The MW500 can be mounted on the motor or on the wall, depending on the application requirements.

The MW500 drive also provides PLC functions (Programmable Logic Controller) by means of the SoftPLC (integrated) feature. For further details regarding the programming of those functions on the MW500, refer to the SoftPLC user's manual of the MW500.



The main components of the MW500 are shown in the block diagram of figure 2.1.



^(*) 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 CD-ROM.

Figure 2.1: Block diagram of the MW500

Part of the figures and tables are available in the appendixes, which are divided into Appendix A for parts, Appendix B for technical specifications and Appendix C for mounting instructions.

^(**) Not provided with the product.



2.3 NOMENCLATURE

Table 2.1: Nomenclature of the MW500 drives

	Product		ntificatio	n of the N				Canduated				Special
	and	Frame	Rated Current	N° of Phases			Degree of Protection	Emission Level	Disconnecting Switch	Connection Box	Hardware Version	Software Version
Ex.:	MW500	В	06P5	Т	4	DB	66	C2	DS	A56		
		See table 2.2.								A56 = motor connection box		Blank = standard
									size 56x56mm A70 = motor		Sx = special software	
Sc		DB = with dynamic braking							connection box size 70x70mm	Blank = standard plug-in module		
ptiol										H00 = with	out plug-in	
ple	MW500					MW500			DS = with discor	nnecting switch		
Available options		66 = IP66/Nema4X (degree of protection)							Blank = without	disconnecting switc	h	
								Blank = It do	d emission.			
								C2 = with internal RFI filter				

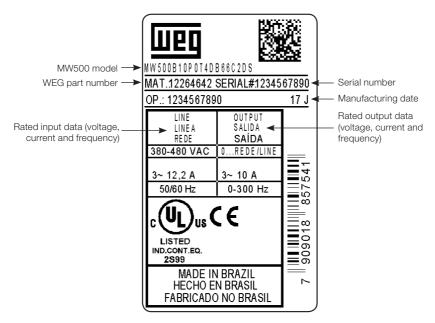
Table 2.2: Available options for each field of the nomenclature according to the rated current and voltage of the drive

_	Rated Output	No CDI		Available Options for the Remaining Identification Codes of the Drives						
Frame	Current	N° of Phases	Rated Voltage	Brake	Degree of Protection	Conducted Emission Level	Disconnecting Switch	Connection Box		
	04P3 = 4.3 A	S = single-phase	0 000 0401/							
	06P0 = 6.0 A	power supply	2 = 200240 V							
A	02P6 = 2.6 A	T = three-phase	4 = 380480 V DB	4 = 380480 V	4 = 380480 V		DB 66	District On	D DO	450 470
	04P3 = 4.3 A	power supply				4 = 300400 V	4 = 300400 V	DB	66	Blank or C2
В	06P5 = 6.5 A	S = single-phase	0 000 040 1/	1						
В	10P0 =10.0 A	power supply	2 = 200240 V							

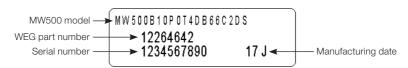


2.4 IDENTIFICATION LABELS

There are two identification labels: one complete nameplate, located on the side of the drive and a simplified label inside the drive shown in figure 2.2. The simplified label over the plug-in module allows the identification of the most important characteristics of the drive, even in drives mounted side-by-side. For further details about the position of the labels, see figure A.2 and A.3 of Appendix A.



(a) Side label of the MW500 (Inside the drive)



(b) Simplified internal label (over the plug-in module)

Figure 2.2 (a) and (b): Description of the identification labels on the MW500



2.5 RECEIVING AND STORAGE

The MW500 is supplied packed in a cardboard box. On this package, there is an identification label which is the same as the one attached to the side of the drive.

Check if:

- The identification of the MW500 matches the model purchased.
- Any damages occurred during transportation.

Report any damage immediately to the carrier.

If the MW500 will not be installed soon, store it in a clean and dry location (temperature between -25 °C and 60 °C (-13 °F and 140 °F)), with a cover to protect it against dust accumulation and in consequence maintain the dissipation capacity of the drive.



ATTENTION!

When the drive is stored for a long period, it is necessary to perform the capacitor reforming. Refer to the procedure recommended in section 6.4 - Preventive Maintenance of this manual.



3 INSTALLATION AND CONNECTION

3.1 MECHANICAL INSTALLATION

3.1.1 Environmental Conditions

Avoid:

- Direct exposure to sunlight.
- Inflammable or corrosive liquids or gases.
- Dust, metallic particles or oil mist.

Environmental conditions permitted for the operation of the drive:

- Temperature surrounding the inverter: from 0 °C (32 °F) to the rated temperature specified as follows:
 - 40 °C (104 °F) Nema4x/IP66 (mounted on the wall).
 - 50 °C (122 °F) Nema4x/IP66 (mounted integrated on the motor).
- For temperatures surrounding the inverter higher than the specifications above, it is necessary to apply a derating on the current of 2 % for each Celsius degree (or 1.11 % each °F), limited to an increase of 10 °C (50 °F).
- Air relative humidity: 5 % to 90 % non-condensing.
- Maximum altitude: up to 1000 m (3,300 ft) standard conditions (no derating required).
- From 1000 m to 4000 m (3,300 ft to 13,200 ft) current derating of 1 % each 100 m (or 0.3 % each 100 ft) above 1000 m (3,300 ft) altitude.
- From 2000 m to 4000 m (6,600 ft to 13,200 ft) maximum voltage reduction (480 V for 380...480 V models) of 1.1 % for each 100 m (330 ft) above 2000 m (6,600 ft) altitude.
- Pollution degree: 2 (according to EN50178 and UL508C), with non-conductive pollution. Condensation must not originate conduction through the accumulated residues.

3.1.2 Positioning and Mounting

The external dimensions, the net weight (mass) of the drive and the suggested torque values are presented in figure B.1 of Appendix B.

Integrate the motor

For assembling of the drive onto the motor follow the step by step guide in figure C.1 of Appendix C.

Wall mounted

For assembling of the drive in the wall follow the step by step guide in figure C.2 of Appendix C.



ATTENTION!

Provide independent conduits for the physical separation of signal, control, and power cables (refer to section 3.2 - Electrical Installation).



3.2 ELECTRICAL INSTALLATION



DANGER!

- The following information is merely a guide for proper installation. Comply with the applicable local regulations for electrical installations.
- Make sure the power supply is disconnected before starting the installation.
- The MW500 must not be used as an emergency stop device. Provide other devices for that purpose.

3.2.1 Identification of the Power Terminals and Grounding Points

The location of the power, grounding and control connections are shown in figure A.2.

Description of the power terminals:

- Terminal X1 (L1/L, L2/N and L3 (R, S, T, $\frac{1}{2}$)): AC power supply.
- **Terminal X2 (U/T1, V/T2, W/T3, ():** connection for the motor.
- **Terminal X3 (DC-, BR, DC+,** \(\pm\): DC bus and brake connection. DC- is the negative pole of the voltage of the DC bus, BR is the connection of the brake resistor and DC+ is the positive pole of the voltage of the DC bus.

3.2.2 Power and Grounding Wiring, Circuit Breakers and Fuses



ATTENTION!

- Use proper cable lugs for the power and grounding connection cables. Refer to table B.1 for recommended wiring, circuit breakers and fuses.
- Keep sensitive equipment and wiring at a minimum distance of 0.25 m from the drive and from the cables connecting the drive to the motor.
- It is not recommended the use of mini circuit breakers (MDU), because of the actuation level of the magnet.



NOTE!

The wire gauges listed in table B.1 are approximate values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring sizing.



3.2.3 Power Connections

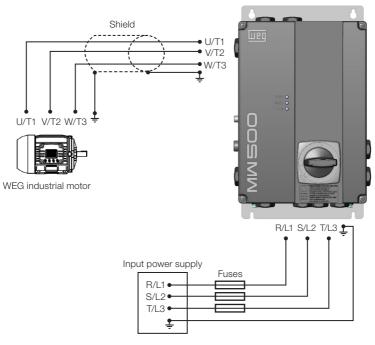


Figure 3.1: Power and grounding connection

3.2.3.1 Input Connections



ATTENTION!

The power supply that feeds the drive must have a grounded neutral. In case of IT networks, follow the instructions described in item 3.2.3.2 - IT Networks.



NOTE!

- The input power supply voltage must be compatible with the drive rated voltage.
- Capacitors for power factor correction are not needed at the drive input (L1/L, L2/N, L3 or R, S, T) and must not be installed at the output (U/T1, V/T2, W/T3).



Power supply capacity

- The MW500 is suitable for use in a circuit capable of delivering not more than 30.000 Arms symmetrically (200 V 480 V).
- In case the MW500 is installed in power supplies with current capacity over 30.000 Arms, it is necessary to use proper protection circuits for those power supplies, such as fuses or circuit breakers.

3.2.3.2 IT Networks



ATTENTION!

When drives with internal RFI filter is used in IT networks (neutral conductor not grounded or grounded through a high ohmic value resistor), remove grounding screw XE1, since those kinds of network cause damage to the filter capacitors of the drive.

3.2.3.3 Dynamic Braking

Refer to table B.1 for the following specifications of the dynamic braking: maximum current, recommended resistance, effective current (*) and cable gauge.

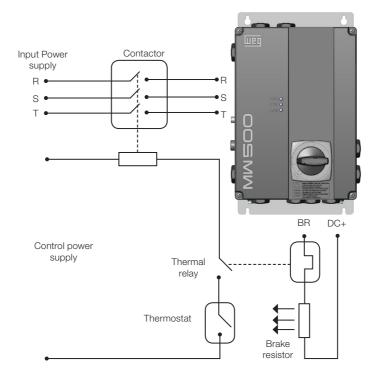


Figure 3.2: Installation of brake resistor

(*) The effective braking current can be calculated as follows:



$$I_{\text{effective}} = I_{\text{max}} \cdot \sqrt{\frac{t_{\text{br}}^{\text{(min)}}}{5}}$$

Where: $t_{\rm br}$ corresponds to the sum of the braking actuation times during the most severe cycle of five minutes.

The power of the brake resistor must be calculated considering the deceleration time, the inertia of the load and of the resistive torque.

Procedure to use the dynamic braking:

- Connect the brake resistor between the power terminals DC+ and BR (X3).
- Use a twisted cable for the connection. Separate these cables from the signal and control wiring.
- Dimension the cables according to the application, observing the maximum and effective currents.
- If the brake resistor is mounted within the cabinet of the drive, consider its energy when dimensioning the ventilation of the cabinet.



DANGER!

The internal braking circuit and the resistor may be damaged if the latter is not properly dimensioned and/or if the voltage of the input power supply exceeds the maximum permitted value. In order to avoid the destruction of the resistor or risk of fire, the only guaranteed method is the inclusion of a thermal relay in series with the resistor and/or a thermostat in contact with its housing, connected so as to disconnect the input power supply of the drive in case of overload, as shown in figure 3.2.

- Set P0151 to the maximum value when using dynamic braking.
- The voltage level on the DC bus for activation of the dynamic braking is defined by parameter P0153 (level of the dynamic braking).
- Refer to the MW500 programming manual.



3.2.3.4 Output Connections



ATTENTION!

- The drive has an electronic motor overload protection that must be adjusted according to the driven motor. When several motors are connected to the same drive, install individual overload relays for each motor.
- The motor overload protection available in the MW500 is in accordance with the UL508C standard. Note the following information:
 - 1. Trip current equal to 1.2 times the motor rated current (P0401).
 - 2. When parameters P0156, P0157 and P0158 (Overload current at 100 %, 50 % and 5 % of the rated speed, respectively) are manually set, the maximum value to meet condition 1 is 1.1 x P0401.



ATTENTION!

If a disconnect switch or a contactor is installed at the power supply between the drive and the motor, never operate it with the motor spinning or with voltage at the drive output.

The characteristics of the cable used to connect the motor to the drive, as well as its interconnection and routing, are extremely important to avoid electromagnetic interference in other equipment and not to affect the life cycle of windings and bearings of the controlled motors.

Keep motor cables away from other cables (signal cables, sensor cables, control cables, etc.), according to item 3.2.7 - Cable Separation Distance.

Connect a fourth cable between the motor ground and the drive ground.

When using shielded cables to install the motor:

- Follow the safety recommendations of IEC60034-25.
- Use the low impedance connection for high frequencies to connect the cable shield to the grounding. Use parts supplied with the drive.





Figure 3.3: Details of the connection of the motor cable

3.2.4 Grounding Connections



DANGER!

- The drive must be connected to a protection grounding (PE).
- Use grounding wiring with a gauge at least equal to that indicated in table B.1.
- The maximum tightening torque of the grounding connections is of 1.7 N.m (15 lbf.in).
- Connect the grounding points of the drive to a specific grounding rod, or specific grounding point or to the general grounding point (resistance \leq 10 Ω).
- Do not share the grounding wiring with other equipment that operate with high currents (e.g. high power motors, soldering machines, etc.).

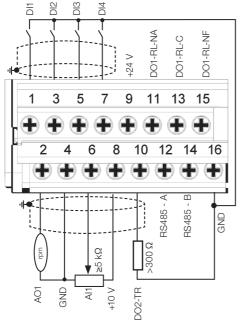
3.2.5 Control Board

Plug-in modules are connected to control board. S10 DIP-switch are available in control board, for more information refer to section 4.3 - Operating Modes of the HMIR.

3.2.6 Control Connections

The control connections (analog input/output, digital input/output and interface RS485) must be performed according to the specification of the connector of the plug-in module connected to the MW500. Refer to the guide of the plug-in module in print or in the CD of the product. The typical functions and connections for the CFW500-IOS standard plug-in module are shown in figure 3.4. For further details about the specifications of the connector signals, refer to chapter 8 - Technical Specifications.





	Connector		Description (**)
	1	DI1	Digital Input 1
	3 DI2		Digital Input 2 (*)
_	5	DI3	Digital Input 3
lina	7	DI4	Digital Input 4
[ern	9	+24 V	Power Supply +24 Vdc
Upper Terminal	11 DO1-RL-NA 13 DO1-RL-C		Digital Output 1 (Relay NO Contact 1)
_			Digital Output 1 (Relay Common Point 1)
	15	DO1-RL-NF	Digital Output 1 (Relay NC Contact 1)
	2	AO1	Analog Output 1
	4	GND	Reference 0 V
<u> </u>	6	Al1	Analog Input 1
_ower Terminal	8	+10 V	Reference +10 Vdc for Potentiometer
Wer	10	DO2-TR	Digital Output 2 (Transistor)
2	12	RS485 - A	RS485 (Terminal A)
	14	RS485 - B	RS485 (Terminal B)
	16	GND	Reference 0 V

(*) Digital input 2 (DI2) can also be used as input in frequency (FI). For further details refer to the programming manual of the MW500.

(**) For further information, refer to the detailed specification in section 8.2 - Electronics/General Data.

Figure 3.4: Signals of the connector of the CFW500-IOS plug-in module

The location of the plug-in module and DIP-switches to select the type of analog input and output signal and the termination of the RS485 network is shown in figure A.1.

The MW500 drives are supplied with the digital inputs configured as active low (NPN), analog input and output configured for signal in voltage 0...10 V and with the termination resistor of the RS485 OFF.



NOTE!

- To use the analog inputs and/or outputs with signal in current, you must set switch S1 and related parameters as per table 3.1. For further information, refer to the MW500 programming manual.
- To modify the digital inputs from active low to active high, check the use of parameter P0271 in the MW500 programming manual.



Table 3.1: Configuration of the switches to select the type of analog input and output signal on the CFW500-IOS

Input/ Output	Signal	Setting of Switch S1	Signal Range	Parameter Setting
	Voltage S1.1 = OFF		010 V	P0233 = 0 (direct reference) or 2 (inverse reference)
Al1	Current	S1.1 = ON	020 mA	P0233 = 0 (direct reference) or 2 (inverse reference)
			420 mA	P0233 = 1 (direct reference) or 3 (inverse reference)
	Voltage S1.2 = ON		010 V	P0253 = 0 (direct reference) or 3 (inverse reference)
AO1		Current S1.2 = OFF	020 mA	P0253 = 1 (direct reference) or 4 (inverse reference)
	Current		420 mA	P0253 = 2 (direct reference) or 5 (inverse reference)



NOTE!

Configuration to connect the RS485:

■ S1.3 = ON and S1.4 = ON: terminal RS485 ON.

■ S1.3 = OFF and S1.4 = OFF: terminal RS485 OFF.

Any other combination of the switches is not allowed.

For the correct connection of the control, use:

- 1) Gauge of the cables: 0.5 mm² (20 AWG) to 1.5 mm² (14 AWG).
- 2) Maximum torque: 0.5 N.m (4.50 lbf.in).
- 3) Wiring of the plug-in module connector with shielded cables separated from the other wiring (power, command in 110 V / 220 Vac, etc.), according to item 3.2.7 Cable Separation Distance. If those cables must cross other cables, it must be done perpendicularly, keeping the minimum separation distance of 5 cm (1.97 in) at the crossing point.

Connect the shield according to the figure below:

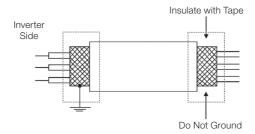


Figure 3.5: Connection of the shield

- 4) Relays, contactors, solenoids or coils of electromechanical brakes installed close to the drives may occasionally generate interference in the control circuitry. To eliminate this effect, RC suppressors (with AC power supply) or freewheel diodes (with DC power supply) must be connected in parallel to the coils of these devices.
- 5) When using the external HMIR (refer to section 7.2 Accessories), the cable that connects to the drive must be separated from the other cables in the installation, keeping a minimum distance of 10 cm (3.94 in).
- 6) When using analog reference (Al1) and the frequency oscillates (problem of electromagnetic interference), interconnect the GND of the connector of the plug-in module to the drive grounding connection.



3.2.7 Cable Separation Distance

Provide separation between the control and power cables and between the control cables (relay output cables and other control cables) as per table 3.2.

Table 3.2: Cable separation distance

Drive Rated Output Current	Cable Length (s)	Minimum Separation Distance	
≤ 24 A	≤ 100 m (330 ft) > 100 m (330 ft)	≥ 10 cm (3.94 in) ≥ 25 cm (9.84 in)	

3.3 INSTALLATIONS ACCORDING TO EUROPEAN DIRECTIVE OF ELECTROMAGNETIC COMPATIBILITY

Drives with option C2 or C3 (MW500...C2...) feature internal RFI filter in order to reduce the electromagnetic interference. Those drives, when properly installed, meet the requirements of the directive of electromagnetic compatibility.

The MW500 drive series was developed for professional applications only. Therefore, the emission limits of harmonic currents by the standards EN 61000-3-2 and EN 61000-3-2/A 14 are not applicable.

3.3.1 Conformal Installation

- 1) Drive with optional internal RFI filter MW500...C2... (with grounding switch of the capacitors of the internal RFI filter in the position ON). Check the installation of the grounding screw in figure A.2.
- 2) Shielded output cables (motor cables) with the shield connected at both ends, motor and drives, by means of low impedance for high frequency connection. Maximum motor cable length and conducted and radiated emission levels according to table B.3. If a lower conducted emission level and/or a longer motor cable is desired, then an external RFI filter must be used at the drive input. For more information (RFI filter commercial reference, motor cable length and emission levels) refer to the table B.3.
- 3) Shielded control cables, keeping the separations distance from other cables according to table 3.2.
- 4) Grounding of the drive according to instructions of item 3.2.4 Grounding Connections.
- 5) Grounded power supply.



3.3.2 Emission and Immunity Levels

Table 3.3: Emission and immunity levels

EMC Phenomenon	Basic Standard	Level
Emission:		
Mains Terminal Disturbance Voltage Frequency Range: 150 kHz to 30 MHz)	IEC/EN61800-3	It depends on the drive model and on the length of the motor cable. Refer to table B.3.
Electromagnetic Radiation Disturbance Frequency Range: 30 MHz to 1000 MHz)		longer of the moter cable. Heldric table B.e.
Immunity:		
Fast Transient-Burst	IEC 61000-4-4	2 kV / 5 kHz (coupling capacitor) input cables. 1 kV / 5 kHz control cables and remote HMIR cables. 2 kV / 5 kHz (coupling capacitor) motor cables.
Conducted Radio-Frequency Common Mode	IEC 61000-4-6	0.15 to 80 MHz; 10 V; 80 % AM (1 kHz). Motor, control and HMIR cables.
Surges	IEC 61000-4-5	1.2/50 µs, 8/20 µs. 1 kV line-to-line coupling. 2 kV line-to-ground coupling.
Radio-Frequency Electromagnetic Field	IEC 61000-4-3	80 to 1000 MHz 10 V/m 80 % AM (1 kHz)

Definition of Standard IEC/EM 61800-3: "Adjustable Speed Electrical Power Drives Systems"

Environments:

First Environment: Environments that include domestic installations, as well as establishments directly connected without intermediate transformer to a low-voltage power supply network which supplies buildings used for domestic purposes.

Second Environment: includes all establishments other than those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes.

■ Categories:

Category C1: drives with a rated voltage below 1000 V and intended for use in the First Environment.

Category C2: drives with a rated voltage below 1000 V intended for use in the First Environment, not provided with a plug connector or movable installations. They must be installed and commissioned by a professional.



NOTE!

A professional is a person or organization familiar with the installation and/or commissioning of drives, including their EMC aspects.

Category C3: drives with a rated voltage below 1000 V and intended for use in the Second Environment only (not designed for use in the First Environment).



4 KEYPAD (HMIR) AND BASIC PROGRAMMING

4.1 USE OF THE HMIR TO OPERATE THE DRIVE

Through the HMIR, it is possible to command the drive, view and set all of its parameters. The HMIR presents two operating modes: monitoring and setting. The functions of the keys and fields of the display active on the HMIR vary according to the operating mode. The setting mode is composed of three levels.

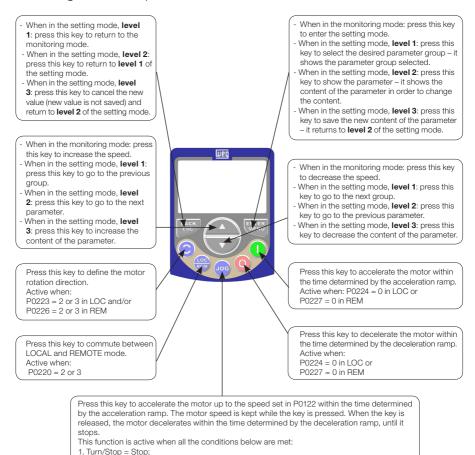


Figure 4.1: HMIR keys

2. Enable general = Active .:

3. P0225 = 1 in LOC and/or P0228 = 1 in REM.



4.2 INDICATIONS ON THE HMIR DISPLAY

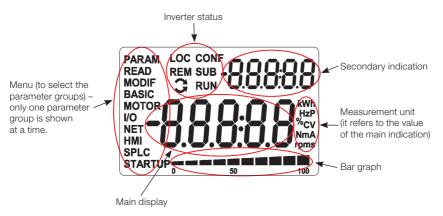


Figure 4.2: Display fields

Parameter groups available in the field Menu:

- PARAM: all parameters.
- **READ:** reading parameters only.
- **MODIF:** parameters modified in relation to the default only.
- **BASIC:** parameters for basic application.
- **MOTOR:** parameters related to the control of the motor.
- I/O: parameters related to digital and analog inputs and outputs.
- **NET:** parameters related to the communication networks.
- **HMIR:** parameters to configure the HMIR.
- **SPLC:** parameters related to the SoftPLC.
- **STARTUP:** parameters for oriented Start-up.

Status of the drive:

- **LOC:** command source or local references.
- **REM:** command source or remote references.
- : direction of motor rotation by means of arrows.
- **CONF:** configuration error.
- SUB: undervoltage.
- RUN: execution.



4.3 OPERATING MODES OF THE HMIR

The HMIR must be configured via hardware on S10 DIP-switch before the operation. The S10 is shown in figure A.2 of Appendix A. For recognizing the HMIR the drive can be adjusted as shown in table 4.1.

Table 4.1: S10 DIP-switches configuration

Switches	Status
S1	ON
S2	OFF
S3	OFF
S4	OFF

The monitoring mode allows the user to view up to three variables on the main display, secondary display and bar graph. Such fields of the display are defined in figure 4.2.

The setting mode is composed of three levels: Level 1 allows the user to select the Menu items in order to browse the parameters. Level 2 allows browsing the parameters of the group selected by level 1. Level 3 allows the modification of the parameter selected in Level 2. At the end of this level, the modified value is saved or not if the key ENTER or ESC is pressed, respectively.



Figure 4.3 illustrates the basic browsing of the operating modes of the HMIR.

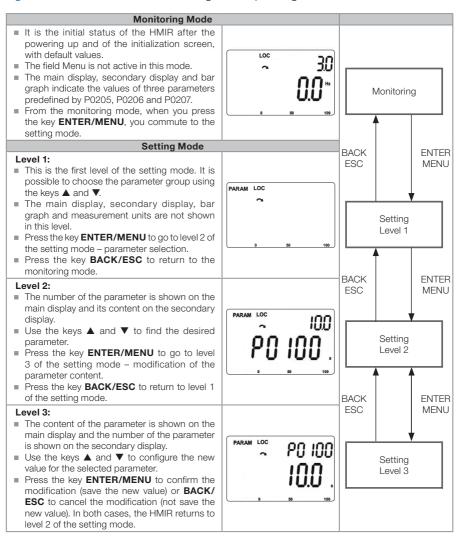


Figure 4.3: Operating modes of the HMIR





NOTE!

When the drive is in the fault state, the main display indicates the number of the fault in the format **Fxxxx**. The browsing is allowed after the activation of the key ESC, and the indication **Fxxxx** goes to the secondary display until the fault is reset.



NOTE!

When the drive is in the alarm state, the main display indicates the number of the Alarm in the format **Axxxx**. The browsing is allowed after the activation of any key, and the indication **Axxxx** goes to the secondary display until the situation causing the alarm is solved.



NOTE!

A list of parameters is presented in the quick reference of the parameters. For further information about each parameter, refer to the programming manual of the MW500.





5 POWERING UP AND START-UP

5.1 PREPARATION AND POWERING UP

The drive must be installed according the chapter 3 - Installation and Connection.



DANGER!

Always disconnect the general power supply before making any connections.

- 1) Check if the power, grounding and control connections are correct and firm.
- 2) Remove all materials left from the inside of the drive.
- 3) Check if the motor connections and motor current and voltage match the drive.
- 4) Mechanically uncouple the motor from the load. If the motor cannot be uncoupled, be sure that its turning in any direction (clockwise or counterclockwise) will not cause damages to the machine or risk of accidents.
- 5) Close the covers of the drive.
- 6) Measure the voltage of the input power supply and check if it is within the permitted range, as presented in chapter 8 Technical Specifications.
- 7) Power up the input: close the disconnecting switch.
- 8) Check the success of the powering up: The display of the HMIR indicates:

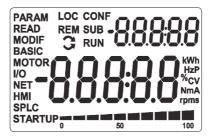


Figure 5.1: Display of the HMIR at power-up

The drive executes some routines related to data upload or download (parameter configurations and/or SoftPLC). The indication of those routines is presented in the bar graph. After those routines, if there are no problems, the display will show the monitoring mode.



5.2 CONSIDERATIONS FOR INTEGRATED MOUNTING IN VENTILATED MOTORS

In order to keep the temperature rise of WEG motors within acceptable levels, the following loadability limits must be attended (observe the motor line with constant flux condition in figure 5.2). This condition can be adjusted in P0406 where the overload motor protection was pre adjusted for attend the derating.

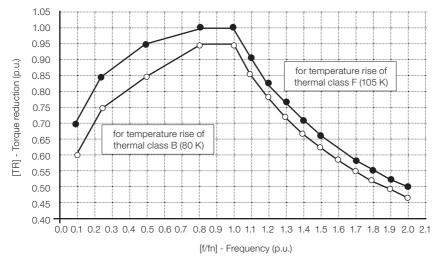


Figure 5.2: Torque derating



5.3 START-UP

5.3.1 Start-up (using Superdrive and default circuit configuration)

When there is no possible to use the HMIR to start-up the drive, it is possible to use the Superdrive configuration software for parameters setting and default circuit configuration for start-up, as shown in figure 5.3.

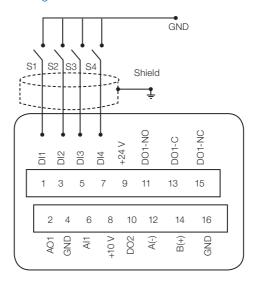


Figure 5.3: Default circuit configuration

For default configuration the commands of the drive are the following:

 Table 5.1: Default functions configurations

Function	Dlx
Run/Stop	DI1 (S1)
FWD/REW	DI2 (S2)
Reset	DI3 (S3)
LOC/REM	DI4 (S4)

Speed reference is set via knob reference.



5.3.2 STARTUP Menu (Using Remote Keypad (HMIR))

The start-up is explained in a very simple way, using the programming features with the existing parameter groups in the menus STARTUP and BASIC.

After the hardware pre-configuration, the drive will operate with a different control type.

5.3.2.1 V/f Control Type (P0202 = 0)

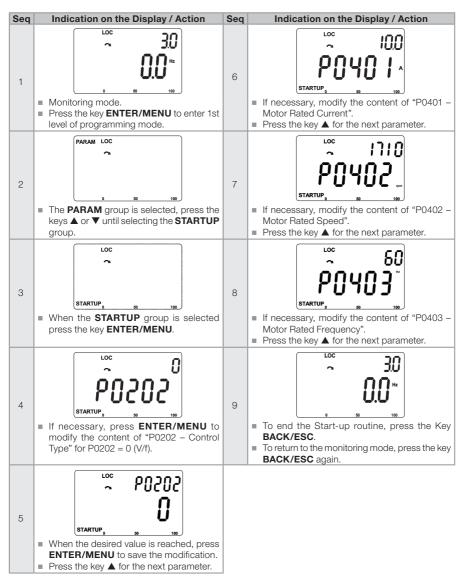


Figure 5.4: Sequence of the Start-up group for V/f control



5.3.2.2 VVW Control Type (P0202 = 5)

Seq	Indication on the Display / Action	Seq	Indication on the Display / Action
1	PARAM LOC O Hz Monitoring mode. Press the key ENTER/MENU to enter the 1st level of the programming mode.	6	Press the key ▲ to proceed with the Start-up of the VVW.
2	PARAM LOC The PARAM group is selected, press the Keys A or ▼ until selecting the STARTUP group.	7	Loc 75.0 P0399 startup, so 100 If necessary, modify the content of "P0399 - Motor Rated Performance", or press the key ▲ for the next parameter.
3	STARTUP, 50 190 When the STARTUP group is selected press the key ENTER/MENU.	8	LOC 220 POUR 199 STARTUP, 59 199 ■ If necessary, modify the content of "P0400 — Motor Rated Voltage", or press the key ▲ for the next parameter.
4	Press ENTER/MENU and with the keys ▲ and ▼ set the value 5, which activates the control mode VVW.	9	LOC STARTUP. STARTUP.
5	Press ENTER/MENU to save the modification of P0202.	10	If necessary, modify the content of "P0402 Motor Rated Rotation", or press the key for the next parameter.

Figure 5.5: Sequence of the Start-up group for VVW control



Seq	Indication on the Display / Action	Seq	Indication on the Display / Action
11	LOC	16	LOC STARTUP, 50 1000 ■ At the end of the Self-Adjustment, the value of P0408 automatically returns to "0", as well as the Status of "RUN" and "CONF" are cleared. ■ Press the key ▲ for the next parameter.
12	If necessary, modify the content of "P0404 – Motor Rated Power", or press the key ▲ for the next parameter.	17	■ The result of Self-Adjustment is the value in ohms of the motor stator resistance shown in P0409. ■ This is the last parameter of the Self-Adjustment of the VVW control mode. Press the key ▲ to return to initial parameter P0202.
13	If necessary, modify the content of "P0407 – Motor Rated Power Factor", or press the key	18	STARTUP ₀ ₅₀ ₁₀₀ ■ To exit the STARTUP menu, just press BACK/ESC.
14	At this point, the HMIR shows the option to do the self-adjustment. Whenever possible, perform the self-adjustment. Thus, to activate the self-adjustment, change the value of P0408 to "1".	19	■ Through the keys ▲ and ▼, select the desired menu or press the key BACK/ESC again to return directly to the monitoring mode of the HMIR.
15	During the Self-Adjustment the HMIR will simultaneously indicate the status of "RUN" and "CONF". And the bar graph indicates the progress of the operation. And the bar graph indicates the progress of the operation. The Self-Adjustment can be interrupted at any time by means of the key 0.		

Figure 5.5 (cont.): Sequence of the Start-up group for VVW control



5.3.3 Menu BASIC - Basic Application

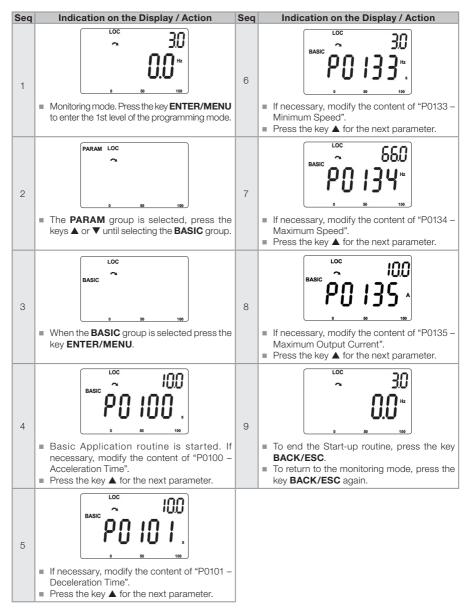


Figure 5.6: Sequence of the Basic Application group



6 TROUBLESHOOTING AND MAINTENANCE

6.1 FAULT AND ALARMS



NOTE!

Refer to the quick reference and to the programming manual of the MW500 for further information about each fault or alarm.

6.2 SOLUTIONS FOR THE MOST FREQUENT PROBLEMS

Table 6.1: Solutions for the most frequent problems

Problem	Point to be verified	Corrective Action
Motor will not	Incorrect wiring	Check all the power and command connections.
start	Analog reference (if used)	Check if the external signal is properly connected. Check the status of the control potentiometer (if used).
	Wrong settings	1. Check if the parameter values are correct for the application.
	Fault	Check if the drive is disabled due to a fault condition.
	Motor stall	1. Decrease the motor overload. 2. Increase P0136, P0137 (V/f).
Motor speed oscillates	Loose connections	Stop the drive, turn off the power supply and tighten all the connections. Check all the internal connections of the drive.
	Defective speed reference potentiometer	Replace the potentiometer.
	Oscillation of the external analog reference	Identify the cause of the oscillation. If the cause is electrical noise, use shielded cables or separate them from the power or command wiring. Interconnect the GND of the analog reference to the grounding connection of the drive.
Too high or too low motor speed	Incorrect settings (reference limits)	Check whether the content of P0133 (minimum speed) and P0134 (maximum speed) are properly set for the used motor and application.
	Control signal of the analog reference (if used)	Check the level of the reference control signal. Check the setting (gain and offset) of parameters P0232 to P0240.
	Motor nameplate	1. Check whether the motor used matches the application.
Display off	HMIR connections	Check the connections of the drive external HMIR.
	Power supply voltage	1. Rated values must be within the limits specified below: 380-480 V power supply: - Min: 323 V - Max: 528 V.
	Main supply fuse open	1. Replace the fuses.



6.3 DATA TO CONTACT THE TECHNICAL ASSISTANCE

For information or service request, it is important to have at hand the following data:

- Drive model.
- Serial number and manufacturing date of the product found in the identification label (refer to section 2.4 - Identification Labels).
- Software version installed (see P0023 and P0024).
- Information about the application and programming executed.

6.4 PREVENTIVE MAINTENANCE



DANGER!

Always disconnect the general power supply before changing any electric component associated to the drive.

High voltages can be present even after the disconnection of the power supply. Wait for at least ten minutes for the full discharge of the power capacitors. Always connect the frame of the equipment to the protection grounding (PE) at the proper point for that.



ATTENTION!

The electronic boards have components sensitive to electrostatic discharges.

Do not touch components or connectors directly. If necessary, first touch the grounded metallic frame or use a proper grounding strap.

Do not execute any applied potential test on the drive. If necessary, contact WEG.

When installed in proper environment and operating conditions, the drives require little service. Table 6.2 lists the main procedures and intervals for routine maintenance. Table 6.3 suggests inspections on the product every 6 months after start-up.

Table 6.2: Preventive maintenance

Mair	itenance	Interval	Instructions			
Internal fan replacement		After 40,000 hours of operation.	Replacement.			
Electrolytic capacitors	If the drive is stocked (not in use): "Reforming"	Every year from the manufacturing date printed on the drive identification label (refer to section 2.5 - Receiving and Storage).	Apply power to the drive with voltage between 380 and 480 Vac, single-phase or three-phase, 50 or 60 Hz, for at least one hour. Then, disconnect the power supply and wait for at least 24 hours before using the drive (reapply power).			
	Drive being used: replace	Every 10 years.	Contact WEG technical support to obtain replacement procedure.			

Troubleshooting and Maintenance



Table 6.3: Periodic inspection every 6 months

Component	Abnormality	Corrective Action	
Terminals, connectors	Loose screws	Tighten	
reminals, connectors	Loose connectors	rigitien	
Printed circuit boards	Accumulation of dust, oil, humidity, etc.	Cleaning	
Fillited Circuit boards	Odor	Replacement	
Power module/ Power	Accumulation of dust, oil, humidity, etc.	Cleaning	
connections	Loose connection screws	Tightening	
DC hus sansaitara	Discoloration / odor / electrolyte leakage		
DC bus capacitors	Safety valve expanded or broken	Replacement	
(DC link)	Frame expansion		
Power resistors	Discoloration	Danlagament	
rower resistors	Odor	Replacement	
Heatsink	Accumulation of dust	Classing	
neatsink	Dirt	Cleaning	

6.5 CLEANING INSTRUCTIONS

When it is necessary to clean the drive, follow the instructions below:

External cleaning:

The drive is fully washable according the IEC-60529 normative.



7 OPTIONAL KITS AND ACCESSORIES

7.1 OPTIONAL KITS

The optional kits are hardware resources added to the drive in the manufacturing process.

7.1.1 RFI Filter

Built-in RFI filter option is available to reduce the conducted disturbance from the drive to the main power supply in the high frequency band (>150 kHz). It is necessary to meet the maximum levels of conducted and radiated emissions of electromagnetic compatibility standards, such as EN 61800-3 and EN 55011. For further details, refer to section 3.3 - Installations According to European Directive of Electromagnetic Compatibility.



ATTENTION!

When drives with internal RFI filter is used in IT networks (neutral conductor not grounded or grounded through a high ohmic value resistor), remove grounding screw XE1, since those kinds of network cause damage to the filter capacitors of the drive.

7.1.2 Disconnecting Switch

An integrated disconnecting switch is available as an option.

7.2 ACCESSORIES

The accessories are hardware resources that can be added to the application.

The accessories are incorporated to the drives in an easy and quick way by using the "Plug and Play" concept. When an accessory is connected to the drive, the control circuitry identifies the model and informs the code of the accessory connected in parameter P0027. The accessory must be installed or modified with the drive deenergized. They may be ordered separately and are sent in their own package containing the components and manuals with detailed instructions for their installation, operation and setting.



Table 7.1: Accessory models

		,
WEG Item	Name	Description
	Control Accessories (refer to table 7.2 for additional information)
11518579	CFW500-IOS	Standard Plug-in module.
11769748	CFW500-IOD	Digital Input and Output Plug-in Module (I/O).
11769749	CFW500-IOAD	Digital and Analog Input and Output Plug-in Module (I/O).
11635754	CFW500-IOR	Digital Relay Output Communication Plug-in Module.
11631564	CFW500-CUSB	USB Communication Plug-in Module.
11593087	CFW500-CCAN	CAN Communication Plug-in Module.
11950925	CFW500-CRS485	RS485 Communication Plug-in Module.
12443605	CFW500-CPDP2	PROFIBUS Communication Plug-in Module.
	F	Flash Memory Module
11636485	CFW500-MMF	Flash Memory Module.
	Α	daptation Accessories
13100469	MW500-KCFA-CL56	Wall adapter plate for frame A and connection box 56x56mm.
13100470	MW500-KCFA-CL70	Wall adapter plate for frame A and connection box 70x70mm.
12362338	MW500-KCFB-CL56	Wall adapter plate for frame B and connection box 56x56mm.
13100468	MW500-KCFB-CL70	Wall adapter plate for frame B and connection box 70x70mm.
12778122	MW500-KAIM-A56	Connection box 56x56mm for frame A.
12778123	MW500-KAIM-B56	Connection box 56x56mm for frame B.
12778124	MW500-KAIM-B70	Connection box 70x70mm for frame B.
12597760	MW500-KIP66OD	Outdoor plugs kit.
		HMIR Accessories
11833992	CFW500-HMIR	Remote Keypad (HMIR) - IP20 degree of protection.
12378837	MW500-CCHMIR0,5M	Coiled communication wire for connection of IP20 keypad via XC10 connector.
12330016	CFW500-CCHIR01M	(*) 1 m cable kit.
12330459	CFW500-CCHIR02M	(°)2 m cable kit.
12330460	CFW500-CCHIR03M	(°)3 m cable kit.
12330461	CFW500-CCHIR05M	^(*) 5 m cable kit.
12330462	CFW500-CCHIR75M	^(*) 7.5 m cable kit.
12330463	CFW500-CCHIR10M	(1) 10 m cable kit.

(*) For internal connection of IP20 keypad.

Table 7.2: I/O configurations of plug-in modules

		Functions											
Module	DI	AI	АО	DOR	DOT	USB	CAN	RS232	RS485	PROFIBUS	10 V Source	24 V Source	
CFW500-IOS	4	1	1	1	1	-	-	-	1	-	1	1	
CFW500-IOD	8	1	1	1	4	-	-	-	1	-	1	1	
CFW500-IOAD	6	3	2	1	3	-	-	-	1	-	1	1	
CFW500-IOR	4	1	1	4	1	-	-	-	1	-	1	1	
CFW500-CUSB	4	1	1	1	1	1	-	-	1	-	1	1	
CFW500-CCAN	2	1	1	1	1	-	1	-	1	-	1	1	
CFW500-CRS485	4	1	1	1	1	-	-	-	2	-	1	1	
CFW500-CPDP2	2	1	1	1	1	-	-	-	1	1	-	1	



8 TECHNICAL SPECIFICATIONS

8.1 POWER DATA

Power Supply:

- Tolerance: -15 % to +10 %.
- Frequency: 50/60 Hz (48 Hz to 62 Hz).
- Phase imbalance: ≤ 3 % of the rated phase-to-phase input voltage.
- Overvoltage according to Category III (EN 61010/UL 508C).
- Transient voltage according to Category III.
- Maximum of 10 connections per hour (1 every 6 minutes).
- Typical efficiency: ≥ 97 %.

For further information about the technical specifications, refer to Appendix B.

8.2 ELECTRONICS/GENERAL DATA

Table 8.1: Electronics/general data

CONTROL	METHOD	Type of control: - V/f (Scalar) VVW: Voltage vector control. PWM SVM (Space Vector Modulation).
DEDECRIANIOS	OUTPUT FREQUENCY	■ 0 to 500 Hz, resolution of 0.015 Hz
PERFORMANCE	V/f CONTROL	Speed regulation: 1 % of the rated speed (with slip compensation).Speed variation range: 1:20.
	VECTOR CONTROL (VVW)	Speed regulation: 1 % of the rated speed.Speed variation range: 1:30
INPUTS ^(*)	ANALOG	 Knob additional input for speed reference variation. 1 insulated input. Levels: (0 to 10) V or (0 to 20) mA or (4 to 20) mA. Linearity error ≤ 0.25 %. Impedance: 100 kΩ for voltage input, 500 Ω for current input. Programmable functions. Maximum voltage permitted in the input: 30 Vdc.
	DIGITAL	 4 insulated inputs. Programmable functions: active high (PNP): maximum low level of 15 Vdc. minimum high level of 20 Vdc. active low (NPN): maximum low level of 5 Vdc. minimum high level of 9 Vdc. Maximum input voltage of 30 Vdc. Input current: 4.5 mA. Maximum input current: 5.5 mA.



Table 8.1 (cont.): Electronics/general data

	Table 6.1 (cont	.j. Liecti onics/general data			
OUTPUTS ^(*)	RELAY	 1 relay with NC/NO contact. Maximum voltage: 240 Vac. Maximum current: 0.5 A. Programmable functions. 			
	TRANSISTOR	 1 insulated digital output open sink (uses as reference the 24 Vdc power supply). Maximum current 150 mA^(*) (maximum capacity of the 24 Vdc) power supply. Programmable functions. 			
	POWER SUPPLY	24 Vdc power supply. Maximum capacity: 150 mA.10 Vdc power supply. Maximum capacity: 2 mA.			
COMMUNICATION	INTERFACE RS485	Insulated RS485.Modbus-RTU protocol with maximum communication of 38.4 kbps.			
SAFETY	PROTECTION	 Overcurrent/phase-phase short circuit in the output. Overcurrent/phase-ground short circuit in the output. Under/overvoltage. Overtemperature in the heatsink. Overload in the motor. Overload in the power module (IGBTs). External alarm / fault. Setting error. 			
HUMAN-MACHINE INTERFACE (KEYPAD)	REMOTE KEYPAD (HMIR)	 9 keys: Start/Stop, Up arrow, Down arrow, Direction of Rotation, Jog, Local/Remote, BACK/ESC and ENTER/MENU. LCD display. View/edition of all parameters. Indication accuracy: current: 5 % of the rated current. speed resolution: 0.1 Hz. 			
ENCLOSURE	DEGREE OF	■ IP66.			
	PROTECTION	■ UL type 4X.			

^(*) The number and/or type of analog/digital inputs/outputs may vary, depending on the Plug-in module (accessory) used. For the table above, it was considered the standard plug-in module. For further information, refer to the programming manual and the guide supplied with the optional item or in the CD-ROM.

8.2.1 Codes and Standards

Table 8.2: Codes and standards

SAFETY STANDARDS ■ EN61800-5-1 - Safety electrical, thermal and energy requirements. ■ 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.

^(**) The maximum capacity of 150 mA must be considered by adding the load of the 24 V power supply and transistor output, that is, the sum of the consumption of both must not exceed 150 mA.



Table 8.2 (cont.): Codes and standards

ELECTROMAGNETIC COMPATIBILITY (EMC) STANDARDS	 EN 61800-3 - Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific 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, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement. EN 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test. EN 61000-4-3 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field 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 STANDARDS	 EN 60529 - Degrees of protection provided by enclosures (IP code). UL 50 - Enclosures for electrical equipment.

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APPENDIX A - PARTS

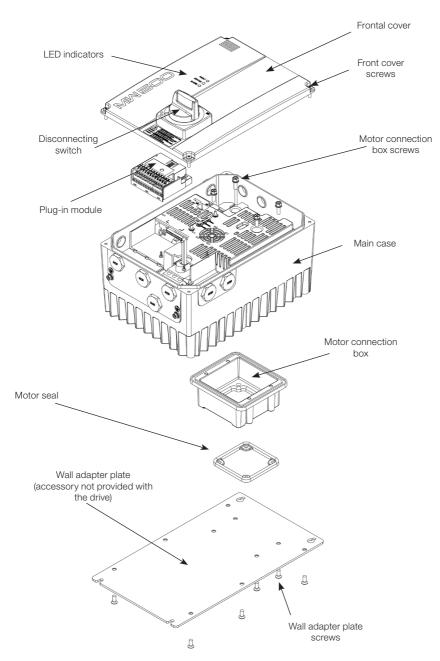
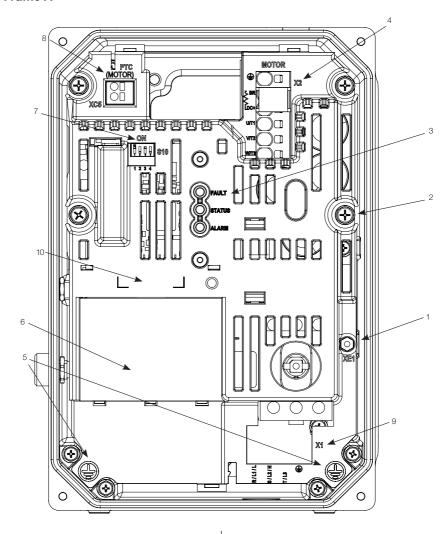


Figure A.1: Main components of the MW500



Frame A

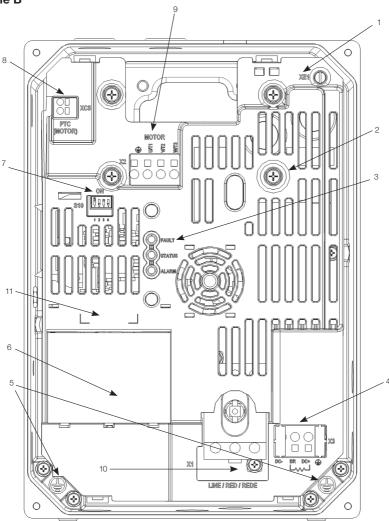


- 1 XE1 grounding connection screw
- 2 Intermediate connection box screw
- 3 LED indicators
- 4 Motor and brake connection (X2 terminal)
- 5 Grounding points
- 6 Plug-in slot

- 7 S10 dip-switches
- 8 Motor PTC input
- 9 Power supply connection (X1 terminal)
- 10 Simplified label with drive data (see section 2.4 Identification Labels)



Frame B

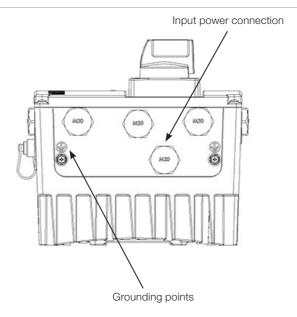


- 1 XE1 grounding connection screw
- 2 Intermediate connection box screw
- 3 LED indicators
- 4 Brake connection (X3 terminal)
- 5 Grounding points
- 6 Plug-in slot

- 7 S10 dip-switches
- 8 Motor PTC input
- 9 Motor connection (X2 terminal)
- 10 Power supply connection (X1 terminal)
- 11 Simplified label with drive data (see section 2.4 Identification Labels)

Figure A.2: Main components of the MW500





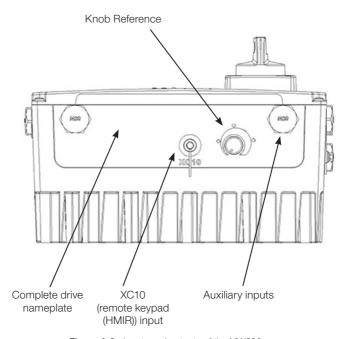


Figure A.3: Inputs and outputs of the MW500



APPENDIX B - TECHNICAL SPECIFICATIONS

Table B.1: List of models of MW500 series, main electrical specifications

							-1	rication
aking	Power Wire Size for DC and BR Terminals	mm² (AWG)	2.5 (14)	2.5 (14)	2.5 (14)	2.5 (14)	2.5 (14)	11.5 2.5 (14)
ic Br	Braking rms Current	₹	4.5	5.7	4.5	4.5	5.7	11.5
/nam	Current Recommend Resistor		127	100	127	127	100	47
Resistor Maximum Current		₹	9	ω	9	9	∞	16
Grounding Wire Size		mm² (AWG)	2.5 (14)	2.5 (14)	2.5 (14)	2.5 (14)	2.5 (14)	2.5 (14)
	Power Wire Size	mm² (AWG)	1.5 (16)	2.5 (14)	1.5 (16)	1.5 (16)	1.5 (16)	2.5 (14)
	Circuit Breaker	WEG	MPW18- 3-U016	MPW40- 3-U025	MPW18- 3-U004	MPW18- 3-D063	MPW25- 10	MPW25- 16
Dreaker		₹	13.5	25	4.0	6.3	10	16
Recommended Fuse	Recommended WEG aR Fuse		FNH00-25K-A	FNH00-20K-A	FNH00-20K-A	FNH00-20K-A	1	1
Recor		ב ב	25	20	20	20	1	1
		l²t [A²s]	373	420	450	450	450	1000
	Maximum Motor	[Arms] [HP/kW]	1/0.75	1.5/1.1	1.5/1.1	2/1.5	3/2.2	5/3.7
	Output Rated Current	[Arms]	4.3	6.0	2.6	4.3	6.5	10
	Frame Size			<	τ		a	
	Power Supply Rated Voltage	[Vrms]	200	240	380	480	380	480
	Number of Input Phases		,	_	c	o	c	,
Inverter			MW500A04P3S2DB66	MW500A06P0S2DB66	MW500A02P6T4DB66	MW500A04P3T4DB66	MW500B06P5T4DB66	MW500B10P0T4DB66



Table B.2: Input and output currents, overload currents, carrier frequency, surrounding air temperature and power losses specifications

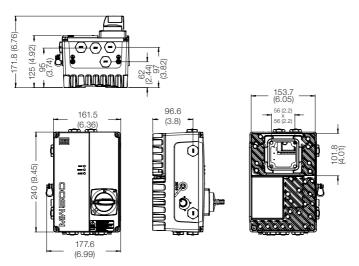
	Output Rated Current	ated Overload		Rated Carrier Frequency	Nominal Inverter Surrounding Temperature		Input	Inverter Power Losses
Inverter	(Inom)	1 min 3 s		(fsw)	IP66 for Integrate Mounting	IP66 for Wall Mounting	Rated Current	Surface Mounting
	[Arms]	[Arms]	[Arms]	[kHz]	[°C / °F]	[°C / °F]	[Arms]	[W]
MW500A04P3S2	4.3	6.5	8.6	4	50 / 122	40 / 104	10.5	49
MW500A06P0S2	6.0	9.0	12.0	4	50 / 122	40 / 104	14.6	65
MW500A02P6T4	2.6	3.9	5.2	4	50 / 122	40 / 104	3.2	45
MW500A04P3T4	4.3	6.5	8.6	4	50 / 122	40 / 104	5.2	65
MW500B06P5T4	6.5	9.8	13	4	50 / 122	40 / 104	6.45	109
MW500B10P0T4	10	15	20	4	50 / 122	40 / 104	9.30	168

Table B.3: Conducted and radiated emission levels, and additional information Values to be defined.

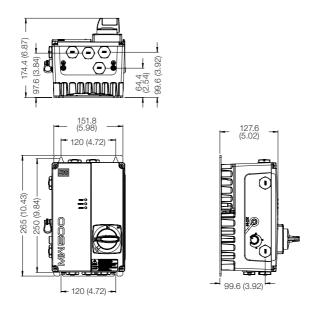
		xternal RF ralized Inst		With External RFI Filter				
Inverter Model	- Maximu	d Emission um Motor Length	Radiated Emission	External RFI Filter Part	Conducted - Maximum Cable	Radiated Emission - Category		
	Category C3	Category C2	Category	Number (manufacturer: XXX)	Category C2	Category C1	Without Metallic Cabinet	
MW500A04P3S2C2	30 m	10 m	C3	-	-	-	-	
MW500A06P0S2C2	30 m	10 m	C3	-	-	-	-	
MW500A02P6T4C2	30 m	-	C3	-	-	-	-	
MW500A04P3T4C2	30 m	-	C3	-	-	-	-	
MW500B06P5T4C2	6 m	-	C3	-	-	-	-	
MW500B10P0T4C2	6 m	-	C3	-	-	-	-	



Frame A



(a) Inverter without mounting support



(b) Inverter with mounting support

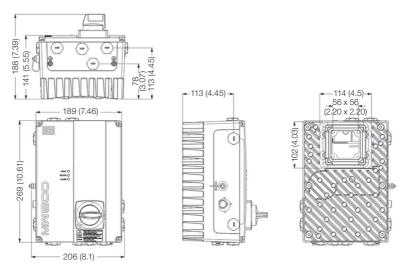
* Dimensions in mm (in)

Frame	Weight Kg (lb)	Recommended Torque External Screws N.m (lbf.in)	Mounting Bolt Recommended Torque N.m (lbf.in)
А	3.7 (8.16)	0.5 (4.34)	2 (17.7)

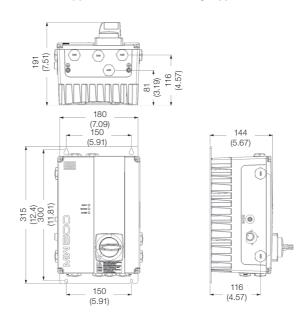
Figure B.1 (a) and (b): External dimension and drilling - frame A



Frame B



(a) Inverter without mounting support



(b) Inverter with mounting support

^{*} Dimensions in mm (in)

Frame	Weight Kg (lb)	Recommended Torque External Screws N.m (lbf.in)	Mounting Bolt Recommended Torque N.m (lbf.in)
В	5.3 (11.68)	0.5 (4.34)	2 (17.7)

Figure B.2 (a) and (b): External dimension and drilling - frame B



APPENDIX C - MOUNTING INSTRUCTIONS

Integrate Mounting Instructions

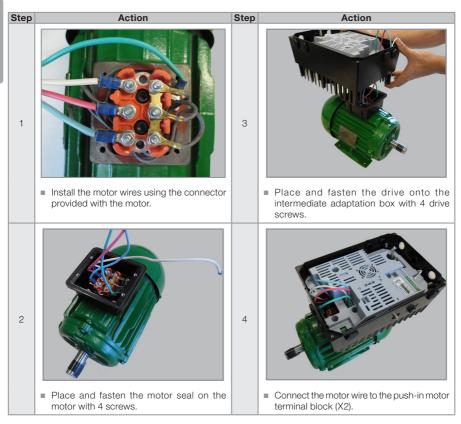


Figure C.1: Integrate mounting instructions



Wall Mounting Instructions

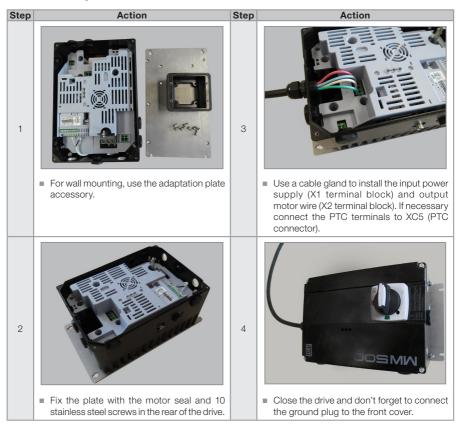


Figure C.2: Wall mounting instructions