

English

Quick Installation Guide

CFW100 Micro Drive



13230453

1 SAFETY INSTRUCTIONS

This quick installation guide contains the basic information necessary to commission the CFW100. It has been written to be used by qualified personnel with suitable training or technical qualification for operating this type of equipment. The personnel shall follow all the safety instructions described in this manual defined by the local regulations. Failure to comply with the safety instructions may result in death, serious injury, and/or equipment damage.

2 SAFETY WARNINGS IN THE MANUAL

NOTE!
It is not the intention of this guide to present all the possibilities for the application of the CFW100, as well as WEG cannot take any liability for the use of the CFW100 which is not based on this guide.
For further information about installation, full parameter list and recommendations, visit the website www.weg.net.

DANGER!
The procedures recommended in this warning have the purpose of protecting the user against death, serious injuries and considerable material damage.

ATTENTION!
The procedures recommended in this warning have the purpose of avoiding material damage.

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

High voltages are present.

Components sensitive to electrostatic discharge. Do not touch them.

Mandatory connection to the protective ground (PE).

Connection of the shield to the ground.

3 PRELIMINARY RECOMMENDATIONS

DANGER!
Always disconnect the main power supply before touching any electrical component associated to the inverter. Several components can remain charged with high voltages or remain in movement (fans) even after the AC power is disconnected or switched off. Wait at least ten minutes after turning off the input power for the complete discharge of the power capacitors. Always connect the grounding point of the inverter to the protection earth (PE). Connectors XCA and XCB do not present USB compatibility; therefore, they cannot be connected to USB doors.
These connectors serve only as interface between the CFW100 frequency inverter and its accessories.

NOTE!
Frequency Inverter may interfere with other electronic equipment. Follow the precautions recommended in manual available in www.weg.net.

Do not perform any withstand voltage test!
If necessary, contact the manufacturer.

ATTENTION!
Electronic boards have components sensitive to electrostatic discharges. Do not touch directly on components or connectors. If necessary, first touch the grounding point of the inverter, which must be connected to the protection earth (PE) or use a proper grounding strap.

ATTENTION!
When the inverter is stored for a long period, it becomes necessary to perform the capacitor reforming. Refer to the procedure recommended in www.weg.net.

4 ABOUT THE CFW100

The CFW100 frequency inverter is a high-performance product which allows speed and torque control of three-phase induction motors. This product provides the user with the options of vector (V/W) or scalar (V/f) control, both programmable according to the application.

5 TERMINOLOGY

Table 1: Terminology of the CFW100 inverters

Product and Series	Model Identification				Degree of Protection	Hardware Version	Software Version
	Frame Size	Rated Current	Phase Number	Rated Voltage			
E.g.: CFW100	A	01P6	S	2	20	---	---
Available options	A	01P6 = 1.6 A	S = single-phase supply	2 = 200...240 V			Blank = standard
	B	02P6 = 2.6 A					Sx = special software
	C	04P2 = 4.2 A					
	20 = IP20						Blank = standard Hx = special hardware

6 RECEIVING AND STORAGE

The CFW100 is supplied packed in a cardboard box. There is an identification label affixed to the outside of the package, identical to the one affixed to the side of the inverter.

Verify whether:

- The CFW100 identification label corresponds to the purchased model.
- Any damage occurred during transportation.

Report any damage immediately to the carrier.

If the CFW100 is not 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 prevent dust accumulation inside it.

7 IDENTIFICATION LABEL

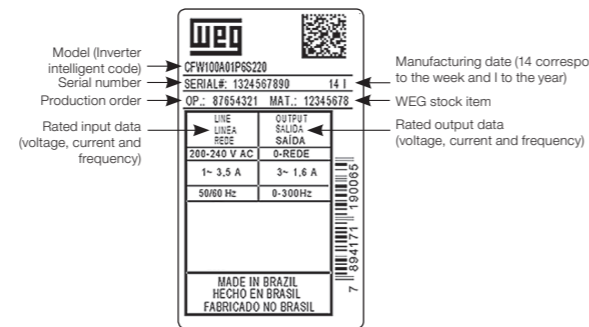
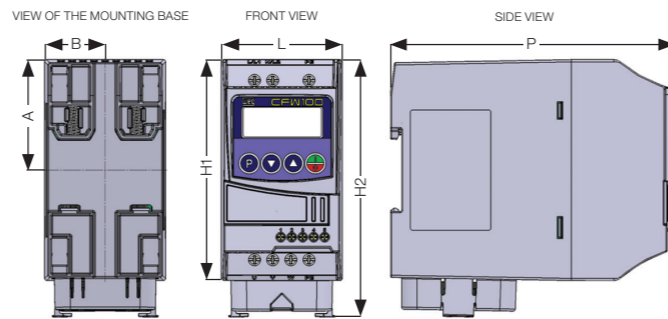


Figure 1: Description of the CFW100 identification label

8 DIMENSIONS



Frame Size	A	B	H1	H2	L	P	Weight
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	kg (lb)
A	50 (1.97)	28 (1.10)	100 (3.94)	-	55 (2.17)	129 (5.08)	0.48 (1.05)
B	50 (1.97)	28 (1.10)	-	117 (4.60)	55 (2.17)	129 (5.08)	0.57 (1.25)
C	50 (1.97)	28 (1.10)	-	125.6 (4.94)	55 (2.17)	129 (5.08)	0.61 (1.34)

Dimension tolerance: ±1,0 mm (±0,039 in)

Figure 2: Inverter dimensions for mechanical installation

9 INSTALLATION AND CONNECTION

Environmental Conditions

Avoid:

- Direct exposure to sunlight, rain, high humidity or sea-air.
- Inflammable or corrosive gases or liquids.
- Excessive vibration.
- Dust, metallic particles or oil mist.

Environment conditions permitted for the operation of the inverter:

- Temperature surrounding the inverter: 0 °C to 50 °C (32 °F to 122 °F) - IP20.
- For temperatures surrounding the inverter higher than the specifications above, it is necessary to apply of 2 % of current derating for each degree Celsius, limited to an increase of 10 °C (50 °F).
- Air relative humidity: 5 % to 95 % non-condensing.
- Maximum altitude: up to 1000 m (3,300 ft) - rated conditions.
- From 1000 m to 4000 m (3,300 ft to 13,200 ft) - 1 % of current derating for each 100 m above 1000 m of altitude.
- Pollution degree: 2 (according to EN50178 and UL508C), with non-conductive pollution. Condensation must not originate conduction through the accumulated residues.

10 ELECTRICAL INSTALLATION

DANGER!
The following information is merely a guide for proper installation. Comply with applicable local regulations for electrical installations.
Make sure the AC power supply is disconnected before starting the installation.
The CFW100 must not be used as an emergency stop device. Provide other devices for that purpose.

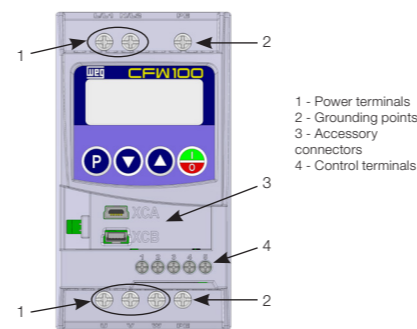


Figure 3: Power terminals, grounding points and recommended tightening torque

10.1 POWER CONNECTIONS

Description of the power terminals:

L/L1 and N/L2: AC power supply must be connected to L/L1 and N/L2.

U, V and W: connection for the motor.

PE: grounding connection.

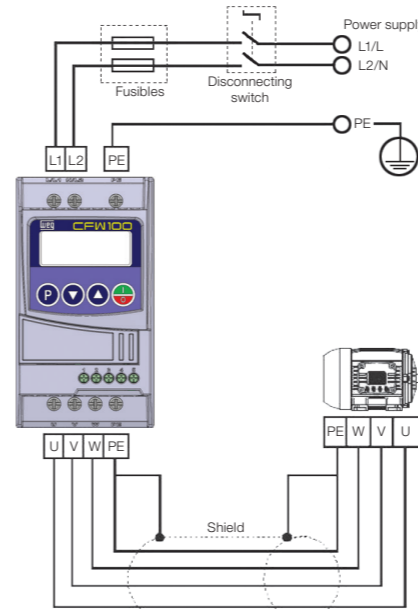


Figure 4: Power and grounding connections

The CFW100 is suitable for application in a circuit able to supply not more than 30.000 symmetric A_{rms} maximum of 240V, when protected by fuses classified as indicated below:

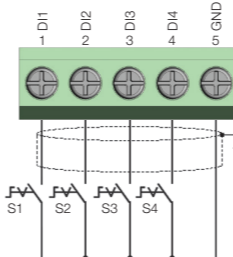
Table 2: List of models of CFW100 series, main electrical specifications

Inverter	Number of Input Phases	Power Supply Rated Voltage [Vrms]	Frame Size	Output Rated Current [Arms]	Maximum Motor [HP/kW]	Circuit Breaker [A]	Recommended J Type Fuse [A]	Power Wire Size [mm² (AWG)]	Grounding Wire Size [mm² (AWG)]
CFW100A01P6S220	1	200 ... 240	A	1.6	0.25/0.18	5.5	MPW25-3-D063	6 1.5 (16)	2.5 (14)
CFW100B02P6S220	1	200 ... 240	B	2.6	0.5/0.37	9.0	MPW25-3-U010	10 1.5 (16)	2.5 (14)
CFW100C04P2S220	1	200 ... 240	C	4.2	1/0.75	13.5	MPW25-3-U016	17.5 1.5 (16)	2.5 (14)

DANGER!
The inverter must be connected to a protective ground (PE). Use a minimum wire gauge for ground connection equal to the indicated in Table 2. Connect the inverter grounding connections to a ground bus bar, to a single ground point or to a common grounding point (Impedance ≤ 10 Ω). The neutral conductor of the line that feeds the inverter must be solidly grounded; however this conductor must not be used to ground the inverter. Do not share the grounding wiring with other equipment that operate with high currents (e.g.: high voltage motors, welding machines, etc.).

NOTE!
The wire gauges listed in Table 2 are guiding values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring sizing.

10.2 CONTROL CONNECTIONS



(*) The digital input 3 (D13) can also be used as input in frequency (F).

Figure 5: Signals of control card connector of the C100A-20

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 connector of the control board with shielded cable and separated from the other wiring (power, command in 110 V / 220 Vac, etc.)

10.3 INSTALLATIONS ACCORDING TO EUROPEAN DIRECTIVE OF ELECTROMAGNETIC COMPATIBILITY

The CFW100 inverter series, when properly installed, meet the requirements of the directive of the electromagnetic compatibility. These inverters were 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.

10.3.1 Conformal Installation

1. Shielded output cables (motor cables) with shield connected at both ends, motor and inverter, by means of a low impedance to high frequency connection. Maximum motor cable length and conducted and radiated emission levels according to Table 5. For more information (RFI filter commercial reference, motor cable length and emission levels) refer to the Table 5.
2. Shielded control cables, keeping the separation distance from other cables according to Table 3.2 the user's manual.
3. Grounding of the inverter according to instruction of the 3.2.4 Grounding Connections the user's manual.
4. Grounded power supply.
5. The inverter and external filter must be mounted on a common metal plate.
6. The wiring between filter and inverter must be as short as possible.
7. The grounding must be done according to recommendation of the CFW100 user's manual.
8. Use short wiring to ground the external filter or inverter.
9. Ground the mounting plate using a flexible braid as short as possible. Flat conductors have lower impedance at high frequencies.
10. Use sleeves for cable conduits whenever possible.

10.3.2 Emission and Immunity Levels

Table 3: Emission and immunity levels

EMC Phenomenon	Basic Standard	Level
Emission:		
Mains terminal disturbance voltage Frequency range: 150 kHz to 30 MHz	IEC/EN 61800-3	It depends on the inverter model on the length of the motor cable. Refer to Table 5
Electromagnetic radiation disturbance Frequency Range: 30 MHz to 1000 MHz		
Immunity:		
Electrostatic discharge (ESD)	IEC 61000-4-2	4 kV for contact discharge and 8 kV for air discharge
Fast transient-Burst	IEC 61000-4-4	2 kV / 5 kHz (coupling capacitor) input cables 1 kV / 5 kHz control cables and remote HMI cables 2 kV / 5 kHz (coupling capacitor) motor cables
Imunidade conduzida ("Conducted radio-frequency common mode")	IEC 61000-4-6	0.15 to 80 MHz: 10 V, 80 % AM (1 kHz) Motor, control and HMI 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: inverters with a voltage rating less than 1000 V and intended for use in the First Environment.
Category C2: inverters with a voltage rating less than 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 inverters, including their EMC aspects.

Category C3: inverters with a voltage rating less than 1000 V and intended for use in the Second Environment only (not designed for use in the First Environment).

10.3.3 Characteristics of the RFI Filter

The CFW100 inverters, when installed with external filter, are used to reduce the conducted from the inverter to the power line in the high frequency band (>150). It is necessary to meet the maximum levels of conducted emission of electromagnetic compatibility standards, such as EN 61800-3 and EN 55011. For further information about the RFI filter model, refer to Table 4. The figure below demonstrate the connection of the filter to the inverter:

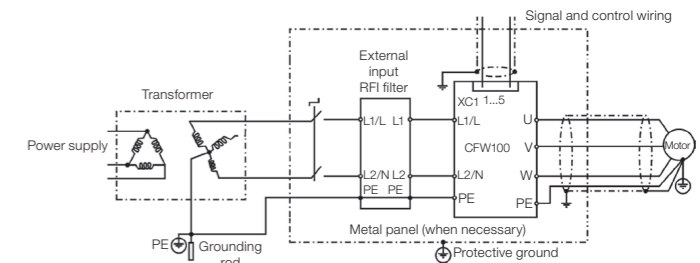


Figure 6: Connection of the RFI filter - general conditions

