



English

Quick Installation Guide

CFW100 Micro Drive



14500319

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 WEG.

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.

DANGER! This product was not designed to be used as a safety device. Additional measures must be taken so as to avoid material damages and personal injuries. The product was manufactured under strict quality control; however, if installed in systems in which its failure causes risks of material or personal damages, additional external safety devices must ensure a safety condition in case of such failure, preventing accidents.

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/V) or scalar (V/f) control, both programmable according to the application.

The CFW100 frequency inverter also has PLC (Programmable Logic Controller) functions by means of the SoftPLC (integrated) tool. For further details regarding the programming of those functions, refer to the SoftPLC user's manual of the CFW100.

5 TERMINOLOGY

Table 1: Terminology of the CFW100 inverters

Product and Series	Model Identification				Degree of Protection	Hardware Version	Software Version	Generation
	Frame Size	Rated Current	Phase Number	Rated Voltage				
E.g.: CFW100	A	01P6	S	2	20	---	---	G2
Available options	A	01P6 = 1.6 A	S = single-phase supply	1 = 110...127 V 2 = 200...240 V			Blank = standard Sx = special software	G2
	B	02P6 = 2.6 A						
	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

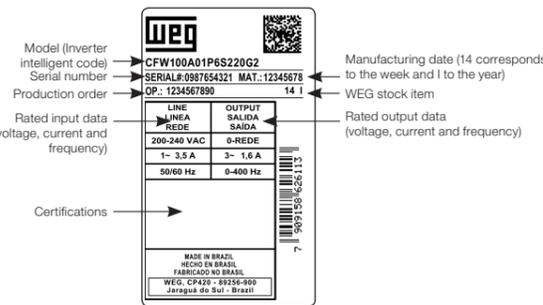


Figure 1: Description of the CFW100 identification label

8 MECHANICAL INSTALLATION

8.1 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.

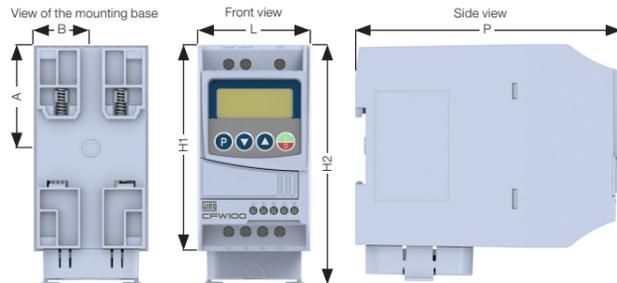
Environment conditions permitted for the operation of the inverter:

- 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.
- From 2000 m to 4000 m above sea level - maximum voltage reduction (127 V / 240 V, according to the model, as specified in Table 2) of 1.1 % for each 100 m above 2000 m.
- Pollution degree: 2 (according to EN50178 and UL508C/UL61800-5-1), with non-conductive pollution. Condensation must not originate conduction through the accumulated residues.

8.2 DIMENSIONS, POSITIONING AND MOUNTING

The external dimensions and fixing holes, and the inverter net weight (mass) are shown in Figure 2.

Mount the inverter in the upright position on a flat and vertical surface. Allow the minimum clearances indicated in Figure 3, in order to allow the circulation of the cooling air. Do not install heat sensitive components right above the inverter.



Frame Size	A		B		H1		H2		L		P		Weight kg (lb)
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)		
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



Frame	A		B		C		D		E		Screw	Torque (N.m)
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)			
A	15 (0.59)	40 (1.57)	30 (1.18)	-	41.3 (1.62)	113.4 (4.46)	M4	2.5				
B	35 (1.38)	50 (1.97)	40 (1.57)	-	-	-	-	-				
C	50 (1.97)	50 (1.97)	50 (1.97)	-	-	-	-	-				

Dimension tolerance: ±1.0 mm (±0.039 in)

Figure 3: (a) to (c) Mechanical installation data (surface mounting and minimum ventilation free spaces)

ATTENTION! When installing two or more inverters vertically, respect the minimum clearance A + B (as shown in Figure 3) and provide an air deflecting plate so that the heat rising up from the lower inverter does not affect the top inverter. Provide independent conduits for the physical separation of signal, control and power cables.

8.3 CABINET MOUNTING

For inverters installed inside cabinets or metallic boxes, provide proper exhaustion, so that the temperature remains within the allowed range. As a reference, Table 2 shows the air flow of rated ventilation for each model.

Cooling Method: internal fan with air flow upwards.

Table 2: Air flow of the internal fan

Model	CFM	l/s	m³/min
B	6.00	2.83	0.17
C	7.73	3.65	0.22

8.4 SURFACE MOUNTING

Figure 3 illustrates the CFW100 installation procedure for surface mounting, using the mounting accessory with screws and the tightening torque used to drive the fixing.

8.5 DIN-RAIL MOUNTING

The CFW100 inverter can also be mounted directly on a 35 mm-rail, in accordance with DIN EN 50.022. For further details, refer to Figure 3.

9 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.

ATTENTION! The inverter short-circuit protection does not protect the feeder circuit. That protection must be provided according to the applicable local standards.

9.1 IDENTIFICATION OF THE POWER TERMINALS AND GROUNDING POINTS

The power terminals can be of different sizes and configurations, depending on the inverter model, as shown in Figure 4. The maximum tightening torque of the power terminals and grounding points should be checked in Figure 4.

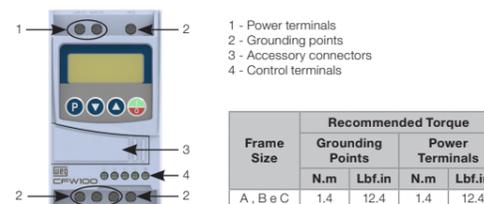


Figure 4: Power terminals, grounding points and recommended tightening torque

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.

9.2 CIRCUIT BREAKERS, FUSES, GROUNDING AND POWERS

ATTENTION! Use proper cable lugs for the power and grounding connection cables. Refer to Table 9 for recommended wiring, circuit breakers and fuses. Keep sensitive equipment and wiring at a minimum distance of 0.25 m (9.85 in) from the inverter and from the cables connecting the inverter to the motor.

NOTE! The wire gauges listed in Table 9 are guiding values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring sizing. For compliance with UL standard, use UL class J fuses or circuit breakers in the inverter power supply with current not above the values indicated in Table 9.

9.3 POWER CONNECTIONS

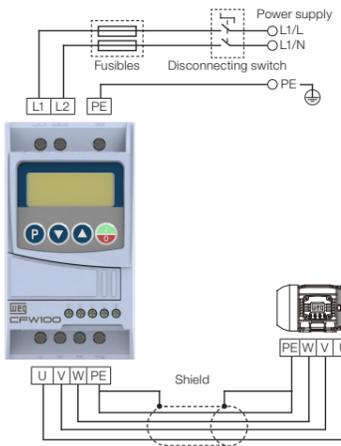


Figure 5: Power and grounding connections

9.3.1 Input Connections

DANGER! Provide a disconnect device for the inverter power supply. This device must cut off the power supply whenever necessary (during maintenance for instance).

ATTENTION! The power supply that feeds the inverter must have a grounded neutral. The CFW100 series inverter must not be used in IT networks (neutral is not grounded or grounding provided by a high ohm value resistor) or in grounded delta networks ("delta corner grounded"), because these type of networks damage the inverter.

NOTE! The input power supply voltage must be compatible with the inverter rated voltage. Power factor correction capacitors are not needed at the input (L/L1, N/L2, L3) and must not be installed at the output (U, V, W).

9.3.1.1 Power supply Capacity (SCCR):

- The CFW100 is suitable for use in circuits capable of delivering not more than (see column "SCCR") 30,000 kArms symmetrical (127 V or 240 V), when protected by fuses or circuit breakers as specified in Table 9.
- In case the CFW100 is installed in power supplies with current capacity over 30,000 Arms, it is necessary to use protection circuits, such as fuses or circuit breakers, proper for those power supplies.

ATTENTION! The opening of the branch-circuit protective device may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current-carrying parts and other components of the inverter or cabinet should be examined and replaced if damaged. If burnout of the current element of an overload relay occurs, the complete overload relay must be replaced.

9.3.2 Power Supply Reactance

In order to prevent damages to the inverter and assure the expected useful life, you must have a minimum line impedance that provides a line voltage drop of 1 %. For more details, refer to the user's manual available at www.weg.net.

9.3.3 Output Connections

The characteristics of the cable used to connect the motor to the inverter, as well as its interconnection and routing, are extremely important to avoid electromagnetic interference in other equipment. Keep motor cables away from other cables (signal cables, sensor cables, control cables, etc.), according to Table 3. For more information, refer to the user's manual available at www.weg.net.

9.4 GROUNDING CONNECTIONS

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 9. 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.).

9.5 CONTROL CONNECTIONS

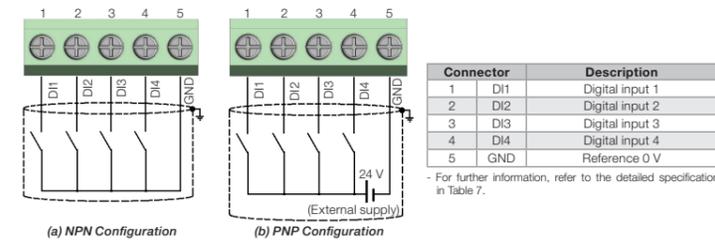


Figure 6: Signals of control card connector of the C110

NOTE! The CFW100 inverters are supplied with the digital inputs configured as active low (NPN). In order to change it, see the use of parameter P271 in the programming manual of the CFW100.

For the correct connection of the control, use:

- Gauge of the cables: 0.5 mm² (20 AWG) to 1.5 mm² (14 AWG).
- Maximum torque: 0.5 N.m (4.50 lbf.in).
- 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.)
- Relays, contactors, solenoids or coils of electromechanical brake installed close to the inverters 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.
- Provide separation between the control and the power cables according to Table 3.

Table 3: Separation distance between cables

Output Rated Current of the Inverter	Cable Length	Minimum Separation Distance
≤ 24 A	≤ 100 m (330 ft)	≥ 10 cm (3.95 in)
	> 100 m (330 ft)	≥ 25 cm (9.85 in)

9.6 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.

9.6.1 Conformal Installation

- 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.
- Shielded control cables, keeping the separation distance from other cables according to Table 3.2 the user's manual.
- Grounding of the inverter according to instruction of the 3.2.4 Grounding Connections the user's manual.
- Grounded power supply.
- The inverter and external filter must be mounted on a common metal plate.
- The wiring between filter and inverter must be as short as possible.
- The grounding must be done according to recommendation of the CFW100 user's manual.
- Use short wiring to ground the external filter or inverter.
- Ground the mounting plate using a flexible braid as short as possible. Flat conductors have lower impedance at high frequencies.
- Use sleeves for cable conduits whenever possible.

9.6.2 Emission and Immunity Levels

Table 4: 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
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	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.

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).

NOTE!

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

9.6.3 Characteristics of the RFI Filter

The CFW100 inverters, when installed with external filter, comply with the Electromagnetic Compatibility Directive (2014/30/EU). The use of RFI filter kit indicated in the Table 5, or equivalent, is required to reduce the conducted disturbances from the inverter to the power line in the high frequency band (> 150 kHz) observing the maximum conducted emission levels of electromagnetic compatibility standard IEC 61800-3.

For further information about the RFI filter kit model, refer to Table 5.

The figure below demonstrate the connection of the filter to the inverter:

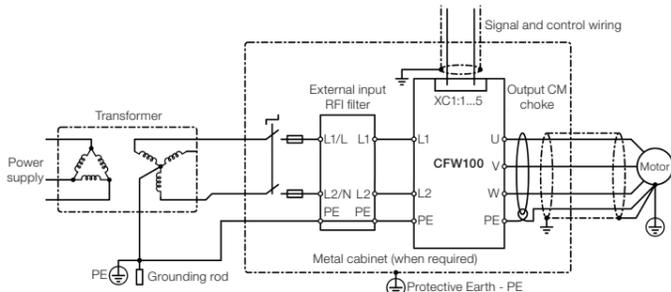


Figure 7: Connection of the RFI filter - general conditions

Table 5: External RFI filter models for CFW100

WEG Item	Name	Description
13128410	CFW100-KFABC-S2	Single-phase RFI Filter Kit - 220 V ⁽¹⁾
14433941	CFW100-KFABC-S1	Single-phase RFI Filter Kit - 110 V ⁽¹⁾

(1) The Filter Kit is provided with the following components: RFI filter, connecting bars and common mode choke.

Table 6: Conducted and radiated emission levels, and additional information

Inverter Model	Conducted Emission - Maximum Motor Cable Length		Radiated Emission
	Category C3	Category C2	Category
CFW100A01P6S120G2	5 m	1 m	C3
CFW100B02P6S120G2			
CFW100A01P6S220G2	20 m		
CFW100B02P6S220G2			
CFW100C04P2S220G2			

(1) The switching frequency is 5 kHz.
(2) Use the ferrite available with the RFI filter accessory on the motor cables (according to Table 5).

9.7 ACCESSORIES

The accessories are hardware resources that can be added in the application with the CFW100.

The accessories are installed in the inverters easily and quickly using the "Plug and Play" concept. The accessory must be installed or modified with the inverter power supply off. They may be ordered separately, and will be shipped in individual packages containing the components and the manuals with detailed instructions for the product installation, operation and programming.

10 TECHNICAL SPECIFICATIONS

10.1 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 (EM 6101/UL 508C).
- Transient voltages according to Category III.
- Maximum of 10 connections per hour (1 every 6 minutes).
- Typical efficiency: ≥ 97 %.
- Classification of chemically active substances: level 3C2.
- Classification of mechanical conditions (vibration): level 3M4.
- Audible noise level: < 60 dB.

10.2 ELECTRONICS/GENERAL DATA

Table 7: Electronics/general data

Control	Method	Types of control: - V/f (Scalar) - VVW: voltage vector control - PWM SVM (Space Vector Modulation)
	Output frequency	0 to 400 Hz, resolution of 0.1 Hz
Performance	Speed Control	V/f Control: <ul style="list-style-type: none"> Speed regulation: 1 % of the rated speed (with slip compensation) Speed variation range: 1:20 Vector Control (VVW): <ul style="list-style-type: none"> Speed regulation: 1 % of the rated speed Speed variation range: 1:30
Inputs	Digital	4 isolated inputs Programmable functions: - active high (PNP): maximum low level of 10 Vdc minimum high level of 20 Vdc - active low (NPN): maximum low level of 5 Vdc minimum high level of 10 Vdc Maximum input voltage of 30 Vdc Input current: 11 mA Maximum input current: 20 mA
Safety	Protection	Output overcurrent/short-circuit Under/overvoltage Motor overload Overtemperature in the power module (IGBTs) Fault / external alarm Programming error
Integral keypad (HMI)	Standard keypad	4 keys: Start/Stop, Up arrow, Down arrow and Programming LCD Display View/edit of parameters Indication accuracy: - current: 10 % of the rated current - speed resolution: 0.1 Hz
Enclosure	IP20	Frame Sizes A, B and C

11 START-UP PREPARATION



DANGER!
Always disconnect the main power supply before making any connection.

- Check if the power, grounding and control connections are correct and firm.
- Remove all the materials left behind from the installation work from inside the inverter or the cabinet.
- Verify the motor connections and if its voltage and current are within the inverter rated value.
- Mechanically uncouple the motor from the load. If the motor cannot be uncoupled, make sure that any speed direction (forward or reverse) will not result in personnel injury and/or equipment damage.
- Close the inverter or cabinet covers.
- Measure the power supply and verify if it is within the allowed range.
- Apply power to the input: close the input disconnecting switch.
- Check the result of the first time power-up:

The HMI display indicates:



11.1 USE OF THE KEYPAD TO OPERATE THE INVERTER



11.2 INDICATIONS OF DISPLAY



11.3 OPERATING MODES OF THE HMI

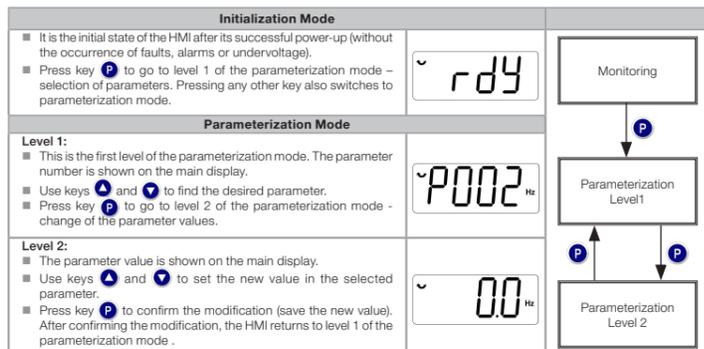


Figure 8: HMI operating modes

11.4 TYPE OF CONTROL V/F (P202 = 0)

Seq	Display Indication/Action	Seq	Display Indication/Action
1	Initialization mode. Press key P to enter the first level of the parameterization mode.	2	Press keys A or V to select parameter P202.
3	Press key P if you need to change the content of "P202 - Type of Control" for P202 = 0 (V/f).		

11.5 MAIN PARAMETERS

The table below contains the mains parameters of the CFW100.

Param.	Description	Adjustable Range	Factory Setting	Prop.	
P000	Access to Parameters	0 to 9999	1		
P001	Speed Reference	0 to 9999		ro	
P002	Output Speed (Motor)	0 to 9999		ro	
P003	Motor Current	0.0 to 10.0 A		ro	
P004	DC Link Voltage (U _{dc})	0 to 524 V		ro	
P005	Output Frequency (Motor)	0.0 to 400.0 Hz		ro	
P006	Inverter Status	0 = Ready 1 = Run 2 = Undervoltage 3 = Fault 4 = Not Used 5 = Configuration 6 = DC-Braking 7 = Reserved 8 = Fire Mode		ro	
P007	Output Voltage	0 to 240 V		ro	
P011	Power Factor	0.00 to 1.00		ro	
P012	DI8 to DI1 Status	0 to FF (hexa) Bit 0 = DI1 Bit 1 = DI2 Bit 2 = DI3 Bit 3 = DI4 Bit 4 = DI5 Bit 5 = DI6 Bit 6 = DI7 Bit 7 = DI8		ro	
P022	Fl Value in Hz	1 to 3000 Hz		ro	
P023	Main SW Version	0.00 to 99.99		ro	
P030	Module Temperature	-200.0 to 200.0 °C (-328 to 392 °F)		ro	
P037	Motor Overload lxt	0.0 to 100.0 %		ro	
P047	CONFIG Status	0 to 33		ro	
P048	Present Alarm	0 to 999		ro	
P049	Present Fault	0 to 999		ro	
P050	Last Fault	0 to 999		ro	
P100	Acceleration Time	0.1 to 999.9 s	5.0		
P101	Deceleration Time	0.1 to 999.9 s	10.0		
P120	Speed Ref. Backup	0 = Inactive 1 = Active 2 = Backup by P121	1		
P121	Reference via HMI	0.0 to 400.0 Hz	3.0 Hz		
P124	Multispeed Ref. 1	-400.0 to 400.0 Hz	3.0 Hz		
P125	Multispeed Ref. 2	-400.0 to 400.0 Hz	10.0 (5.0) Hz		
P126	Multispeed Ref. 3	-400.0 to 400.0 Hz	20.0 (10.0) Hz		
P127	Multispeed Ref. 4	-400.0 to 400.0 Hz	30.0 (20.0) Hz		
P128	Multispeed Ref. 5	-400.0 to 400.0 Hz	40.0 (30.0) Hz		
P129	Multispeed Ref. 6	-400.0 to 400.0 Hz	50.0 (40.0) Hz		
P130	Multispeed Ref. 7	-400.0 to 400.0 Hz	60.0 (50.0) Hz		
P131	Multispeed Ref. 8	-400.0 to 400.0 Hz	66.0 (55.0) Hz		
P133	Minimum Frequency	0.0 to 400.0 Hz	3.0 Hz		
P134	Maximum Frequency	0.0 to 400.0 Hz	66.0 (55.0) Hz		
P135	Maximum Output Current	0.0 to 12.0 A	1.5 x I _{nom}		
P136	Manual Torque Boost	0.0 to 30.0 %	5.0 %	V/f	
P137	Automatic Torque Boost	0.0 to 30.0 %	0.0 %	V/f	
P138	Slip Compensation	-10.0 to 10.0 %	0.0 %	V/f	
P139	Output Current Filter	0.000 to 9.999 s	0.050 s		
P142	Maximum Output Voltage	0.0 to 100.0 %	100.0 %	cfg, V/f	
P143	Intermediate Output Voltage	0.0 to 100.0 %	50.0 %	cfg, V/f	
P145	Field Weakening Start Frequency	0.0 to 400.0 Hz	60.0 (50.0) Hz	cfg, V/f	
P146	Intermediate Frequency	0.0 to 400.0 Hz	30.0 (25.0) Hz	cfg, V/f	
P156	Overload Current	0.1 to 2 x I _{nom}	1.2 x I _{nom}		
P202	Type of Control	0 = V/f 1 = V/f Quadratic 2 to 4 = Not Used 5 = VVW	0	cfg	
P204	Load/Save Parameters	0 to 4 = Not Used 5 = Load 60 Hz 6 = Load 50 Hz 7 = Load User 8 = Not Used 9 = Save User 10 = Not Used 11 = Load Default SoftPLC 12 to 13 = Reserved	0	cfg	
P220	LOC/REM Selection Source	0 = Always Local 1 = Always Remote 2 to 3 = Not Used 4 = DIx 5 = Serial/USB (LOC) 6 = Serial/USB (REM) 7 to 8 = Not Used 9 = CO/DN (LOC) 10 = CO/DN (REM) 11 = SoftPLC	0	cfg	
P221	LOC Reference Sel.	0 = HMI Keys 1 = AI1 2 = Not Used 3 = Potentiometer 4 = FI 5 to 6 = Not Used 7 = E.P. 8 = Multispeed 9 = Serial/USB	0	cfg	
P222	REM Reference Sel.	See options in P221	2	cfg	
P223	LOC Rotation Sel.	0 = Always FWD 1 = Always REV 2 = Not Used 3 = Not Used 4 = DIx 5 = Serial/USB (FWD) 7 to 8 = Not Used 9 = CO/DN (FWD) 10 = CO/DN (REV) 11 = Not Used 12 = SoftPLC	0	cfg	
P263	DI1 Input Function	0 = Not Used 1 = Run/Stop 2 = General Enable 3 = Quick Stop 4 = Forward Run 5 = Reverse Run 6 = Start 7 = Stop 8 = FWD/REV 9 = LOC/REM 38 = De. E.P. / Turn OFF 39 = Stop 40 = Safety Switch 41 = Function 1 Application 42 = Function 2 Application 43 = Function 3 Application 44 = Function 4 Application 45 = Function 5 Application 46 = Function 6 Application 47 = Function 7 Application 48 = Function 8 Application 49 to 54 = Not Used	25 = Not Used 26 = Lock Prog. 27 to 31 = Not Used 32 = 2 nd Ramp Multispeed 33 = 2 nd Ramp E.P. Ac. 34 = 2 nd Ramp E.P. De. 35 = 2 nd Ramp FRW Run 36 = 2 nd Ramp Rev Run 37 = Turn ON / Ac. E.P. 38 = De. E.P. / Turn OFF 39 = Stop 40 = Safety Switch 41 = Function 1 Application 42 = Function 2 Application 43 = Function 3 Application 44 = Function 4 Application 45 = Function 5 Application 46 = Function 6 Application 47 = Function 7 Application 48 = Function 8 Application 49 to 54 = Not Used	1	cfg
P264	DI2 Input Function	See options in P263	8	cfg	
P265	DI3 Input Function	See options in P263	0	cfg	
P266	DI4 Input Function	See options in P263	0	cfg	
P295	Inv. Rated Current	1.6 to 15.2 A		ro	
P296	Line Rated Voltage	0 = Reserved 1 = 110 - 127 Vac 2 = 200 - 240 Vac	2	ro, cfg	
P297	Switching Frequency	2.5 to 15.0 kHz	5.0 kHz		
P401	Motor Rated Current	0.0 to 10.0 A	1.4 A	cfg	
P402	Motor Rated Speed	0 to 30000 rpm	1720 (1310) rpm	cfg	
P403	Motor Rated Frequency	0 to 400 Hz	60 (50) Hz	cfg	

Table 9: List of models of CFW300 series, main electrical specifications

Inverter Model	Number of Input Phases	Frame Size	Output Rated Current	Maximum Motor	Rated Carrier Frequency	Nominal Inverter Surrounding Temperature	Power Wire Size	Grounding Wire Size	Fuses and Circuit Breakers for Inverter Protection ^(a)									
									I _t Maximum ^(b)	Maximum Current	Fuse (semiconductor type, class aR)	Maximum Current	Fuse (UL class J, 600 V)	Circuit Breaker (or "type E") ^(c)				
		[Arms]		[HP/kW]	[kHz]	[°C / °F]	[mm ² (AWG)]	[mm ² (AWG)]	[A*s]	[A]	[kA]	[A]	[kA]	[kA]				
CFW100A01P6S120G2	1	110...127 Vac	A	1.6	0.25/0.18	5	50/122	1.5 (16)	2.5 (14)	375	20	FNH00-20K-A	30	10	30	10.0	MPW40-3-U010	5
CFW100B02P6S120G2			B	2.6	0.5/0.37			1.5 (16)	2.5 (14)	375	20	FNH00-20K-A	30	16	30	16.0	MPW40-3-U016	5
CFW100A01P6S220G2			A	1.6	0.25/0.18			1.5 (16)	2.5 (14)	375	20	FNH00-20K-A	30	6	30	6.3	MPW40-3-D063	5
CFW100B02P6S220G2	3	200...240 Vac	B	2.6	0.5/0.37			1.5 (16)	2.5 (14)	375	20	FNH00-20K-A	30	10	30	10.0	MPW40-3-U010	5
CFW100C04P2S220G2			C	4.2	1/0.75			1.5 (16)	2.5 (14)	375	20	FNH00-20K-A	30	16	30	16.0	MPW40-3-U016	5

- (1) For inverter's semiconductor protection, use the WEG recommended class aR semiconductor fuses (I_t < maximum I_t).
(2) In order to comply with UL508C/UL61800-5-1 standard, use UL class J, 600 V fuses.
(3) In order to comply with UL508C/UL61800-5-1 standard, use the accessories LST25 and TSB-22, required for MPW motor protector be Manual Self-Protected (Type E) Combination Motor Controller.
(4) Largest WEG MPW circuit breaker recommended.
(5) Standard Fault level. To apply the CFW300 with MPW circuit breaker (or Type E) in power supplies with short circuit current levels higher than this (High Fault level up to 30 kA), please refer to Item 3.2.3.1.1 Short Circuit Current Ratings (SCCR) of the user's manual for proper configuration.

11.6 FAULTS AND ALARMS

Most common faults and alarms

Fault / Alarm	Description	Possible Causes
A046 Motor Overload	Motor overload alarm	Settings of P156 is too low for the used motor Overload on the motor shaft
A050 IGBTs Overtemperatures	Overtemperature alarm from the power module temperature sensor (NTC)	High temperature at IGBTs (P030 > 90 °C (194 °F)) High ambient temperature around the inverter (>50 °C (> 122 °F)) and high output current Blocked or defective fan Heatsink is too dirty, preventing the air flow
A090 External Alarm	External alarm via DIx (option "No External Alarm" in P263 to P270)	Wiring on DI1 to DI8 inputs are open or have poor contact
A700 Remote HMI Communication Fault	No communication with remote HMI, but here is frequency command or reference for this source	Check if the communication interface with the HMI is properly configured in parameter P312 HMI cable disconnected
F021 Undervoltage on the DC Link	Undervoltage fault on the intermediate circuit	Wrong voltage supply; check if the data on the inverter label comply with the power supply and parameter P296 Supply voltage too low, producing voltage on the DC link below the minimum value (in P004): U _d < 200 Vdc Phase fault in the input Fault in the pre-charge circuit
F022 Overvoltage on the DC Link	Overvoltage fault on the intermediate circuit	Wrong voltage supply; check if the data on the inverter label comply with the power supply and parameter P296 Supply voltage is too high, producing voltage on the DC link above the maximum value (in P004): U _d > 460 Vdc in 110 / 127 Vac (P296 = 1) or U _d > 410 Vdc in 200 / 240 Vac (P296 = 2) Load inertia is too high or deceleration ramp is too fast P151 setting is too high
F031 Fault of communication with the accessory	Main control cannot establish the communication link with accessory	Accessory damaged Poor connection of the accessory Problem in the identification of the accessory; refer to P027
F051 IGBTs Overtemperatures	Overtemperature fault measured on the temperature sensor of the power pack	High temperature at IGBTs (P030 > 100 °C (212 °F)) High ambient temperature around the inverter (>50 °C (>122 °F)) and high output current Blocked or defective fan Heatsink is too dirty, preventing the air flow
F070 Overcurrent/ Shortcircuit	Overcurrent or short-circuit on the output, DC link or braking resistor	Short-circuit between two motor phases IGBTs module in short-circuit or damaged Start with too short acceleration ramp Start with motor spinning without the Flying Start function
F072 Motor Overload	Motor overload fault (60 s in 1.5 x I _{nom})	P156, P157 e P158 setting is too low in relation to the motor operating current Overload on the motor shaft
F080 CPU Fault (Watchdog)	Fault related to the supervision algorithm of the inverter main CPU	Electric noise Inverter firmware fault
F081 Fault on the Save User function	Fault in the attempt to save the user parameter table	Attempt to save (P204 = 9) more than 32 parameters (with values different from the factory default) on the User parameter table
F082 Fault in the Copy Function (MMF)	Fault in the copy of parameters	Attempt to download data from the flash memory module to the inverter with the inverter energized Attempt to download a SoftPLC application incompatible with the destination inverter Problems saving data downloaded to the inverter
F084 Auto-diagnosis Fault	Fault related to the automatic identification algorithm of the inverter hardware	