



English

Quick Installation Guide

CFW300 Micro Drive



13259186

1 SAFETY INSTRUCTIONS

This quick installation guide contains the basic information necessary to commission the CFW300. 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 CFW300, as well as WEG cannot take any liability for the use of the CFW300 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). The XC10 connector does is not USB compatible, therefore, it cannot be connected to USB ports.
This connectors serve only as interface between the CFW300 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 CFW300

The CFW300 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/VV) or scalar (V/f) control, both programmable according to the application.

5 TERMINOLOGY

Table 1: Terminology of the CFW300 inverters								
Product and Series		Model Identification			Brake	Degree of Protection	Hardware Version	Software Version
Frame Size	Rated Current	Phase Number	Rated Voltage					
Ex.: CFW300	A	01P6	S	2	NB	20	---	---
Available options	CFW300	Refer to Table 2						Blank = standard
		NB = without braking reostática						Sx = special software
		DB = with braking reostática						Blank = standard
		20 = IP20						Hx = special hardware

Table 2: Available options for each field of the nomenclature according to the rated current and voltage of the inverter					
Frame Size	Output Rated Current	N° of Phases	Rated Voltage	Brake	
A	01P6 = 1.6 A	S = single-phase power supply	1 = 110...127 Vac	NB	
	02P6 = 2.6 A				
	04P2 = 4.2 A				
	06P0 = 6.0 A				
	01P6 = 1.6 A				
	02P6 = 2.6 A				
	04P2 = 4.2 A				
	06P0 = 6.0 A				
	07P3 = 7.3 A	T = three-phase power supply	2 = 200...240 Vac		
	01P6 = 1.6 A				
	02P6 = 2.6 A				
	04P2 = 4.2 A				
	06P0 = 6.0 A				
	07P3 = 7.3 A				
	01P6 = 1.6 A				
	02P6 = 2.6 A				D = DC power supply
04P2 = 4.2 A					
06P0 = 6.0 A					
07P3 = 7.3 A					
B	10P0 = 10.0 A	B = single-phase or three-phase power supply or DC			2 = 200...240 Vac or 280...340 Vdc
	15P2 = 15.2A	T = three-phase power supply or DC			

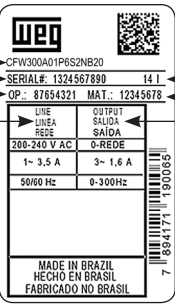
6 RECEIVING AND STORAGE

The CFW300 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 CFW300 identification label corresponds to the purchased model.
 - Any damage occurred during transportation.

Report any damage immediately to the carrier.
If the CFW300 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



Model (Inverter intelligent code) → CFW300A01P6S2NB20

Serial number → SERIAL# 1324567890

Production order → OP: 87654321 MAT: 12345678

Rated input data (voltage, current and frequency) → LINE LINEA 200-240 V AC 1~ 3.5 A 50/60 Hz

Rated output data (voltage, current and frequency) → OUTPUT SAÍDA 0-REDE 3~ 1.6 A 0-300Hz

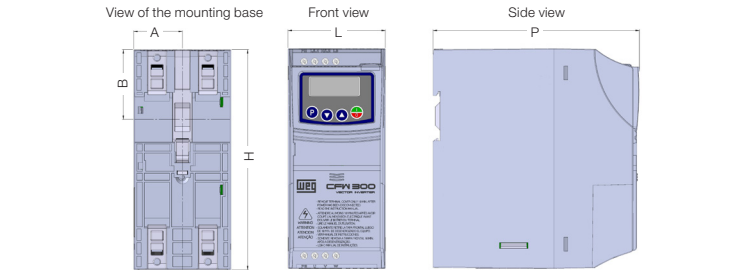
Manufacturing date (14 corresponds to the week and I to the year) → I 4 I

WEG stock item →

MADE IN BRAZIL HECHO EN BRASIL FABRICADO NO BRASIL

Figure 1: Description of the CFW300 identification label

8 DIMENSIONS



Frame Size	A	B	H	L	P	Weight	Mounting Bolt	Recommended Torque
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	kg (lb)		N.m (lbf.in)
A	35.0 (1.37)	50.1 (1.97)	157.9 (6.22)	70.0 (2.76)	148.4 (5.84)	0.900 (1.98)	M4	2 (17.7)
B	35.0 (1.37)	50.1 (1.97)	198.9 (6.08)	70.0 (2.76)	158.4 (6.24)	1.340 (2.98)	M4	2 (17.7)

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.

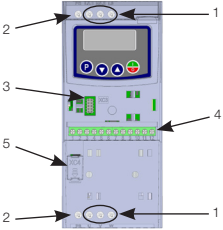
- Pollution degree: 2 (according to EN50178 and UL508C), with non-conductive pollution. Condensation must not originate conduction through the accumulated residues.

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 CFW300 must not be used as an emergency stop device. Provide other devices for that purpose.



Frame Size	Recommended Torque	
	Grounding Points	Power Terminal
A and B	N.m 0.8 Lbf.in 7.2	N.m 0.8 Lbf.in 7.2

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

10.1 POWER CONNECTIONS

Description of the power terminals:
L/L1, N/L2, L3 (R,S,T): power supply connection.
U, V and W: connection for the motor.
-UD: negative pole of the DC power supply.
+UD: positive pole of the DC power supply.
+BR, BR: connection of the braking resistor (available for frame size B models).
PE: grounding connection.

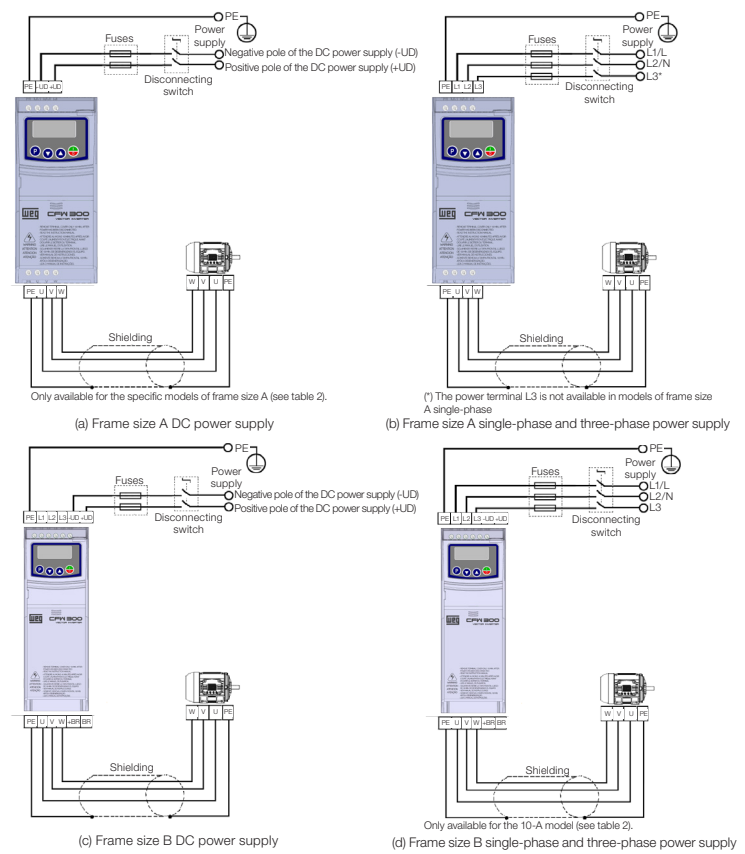


Figure 4: (a) to (d) Power and grounding connections

10.2 INSTALLATIONS ACCORDING TO EUROPEAN DIRECTIVE OF ELECTROMAGNETIC COMPATIBILITY

The CFW300 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.

10.2.1 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 6.
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. Use short wiring to ground the external filter or inverter.
6. Ground the mounting plate using a flexible braid as short as possible. Flat conductors have lower impedance at high frequencies.
7. Use sleeves for cable conduits whenever possible.

The CFW300 is suitable for application in a circuit able to supply not more than 30.000 symetric Arms maximum of 127 / 240 V, when protected by fuses classified as indicated below:

Table 3: List of models of CFW300 series, main electrical specifications													
Dynamic Braking	Power Wire Size for DC+ and BR Terminals		mm² (AWG)		Braking rms Current		[A]		Recommended Resistor		[Ω]		Dynamic braking not available
	Maximum Current		(Imax)		[A]		[A]		[A]		[A]		
Grounding Wire Size			mm² (AWG)		Power Wire Size		mm² (AWG)		Recommended Fuse WEG				
Recommended Fuse	Current		[A]		I²t [A²s]		Circuit Breaker		WEG		[A]		
Maximum Motor			[HP/kW]		Overload Currents		1 min [Arms]		Output Rated Current		[Arms]		
Frame Size													
Power Supply Rated Voltage													
Number of Input Phases													
Inverter													
CFW300A01P6S1N820	1	110...127 Vac	A	1.6	2.4	0.25/0.18	10.0	MPW40-3-U016	166	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P1S1N820	1	110...127 Vac	A	2.6	3.9	0.50/37	16.0	MPW40-3-U016	166	20	FNH00-20K-A	2.5 (14)	2.5 (14)
CFW300A04P2S1N820	1	110...127 Vac	A	4.2	6.3	1.0/75	20.0	MPW40-3-U020	660	35	FNH00-35K-A	2.5 (14)	4.0 (12)
CFW300A06P1S1N820	1	110...127 Vac	A	6.0	9.0	1.51/32	32.0	MPW40-3-U032	660	40	FNH00-40K-A	4.0 (12)	4.0 (12)
CFW300A04P1S2N820	1	200...240 Vac	A	1.6	2.4	0.25/0.18	6.3	MPW40-3-D063	166	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P2S2N820	1	200...240 Vac	A	2.6	3.9	0.50/37	10.0	MPW40-3-U016	166	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A06P2S2N820	1	200...240 Vac	A	4.2	6.3	1.0/75	16.0	MPW40-3-U016	166	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A06P1S3N820	1	200...240 Vac	A	6.0	9.0	1.51/32	16.0	MPW40-3-U016	660	20	FNH00-20K-A	2.5 (14)	4.0 (12)
CFW300A07P1S3N820	3	200...240 Vac	A	7.3	11.0	2/15	20.0	MPW40-3-U020	860	25	FNH00-25K-A	1.5 (16)	2.5 (14)
CFW300A04P1R1T2N820	3	200...240 Vac	A	1.6	2.4	0.25/0.18	2.5	MPW40-3-D025	500	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P2R1T2N820	3	200...240 Vac	A	2.6	3.9	0.50/37	6.3	MPW40-3-D063	500	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A06P1R2T2N820	3	200...240 Vac	A	4.2	6.3	1.0/75	10.0	MPW40-3-U010	500	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P2P1T2N820	3	200...240 Vac	A	6.0	9.0	1.51/32	16.0	MPW40-3-U010	500	20	FNH00-20K-A	2.5 (14)	4.0 (12)
CFW300A04P2P2T2N820	3	200...240 Vac	A	7.3	11.0	2/15	16.0	MPW40-3-U016	500	20	FNH00-20K-A	2.5 (14)	4.0 (12)
CFW300A06P1P3N820	1	280...340 Vdc	A	1.6	2.4	0.25/0.18	2.5	MPW40-3-D025	5	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P2P3N820	1	280...340 Vdc	A	2.6	3.9	0.50/37	6.3	MPW40-3-D063	-	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A06P1P3N820	1	280...340 Vdc	A	4.2	6.3	1.0/75	10.0	MPW40-3-U010	-	20	FNH00-20K-A	1.5 (16)	2.5 (14)
CFW300A04P2P3N820	1	280...340 Vdc	A	6.0	9.0	1.51/32	10.0	MPW40-3-U010	-	20	FNH00-20K-A	2.5 (14)	4.0 (12)
CFW300A06P1P3N820	1	280...340 Vdc	A	7.3	11.0	2/15	16.0	MPW40-3-U016	-	20	FNH00-20K-A	2.5 (14)	4.0 (12)
CFW300B10P1B2D820	1/3	200...240 Vac or 280...340 Vdc	B	10.0	15.0	3/22	25.0	MPW40-3-U025	300	35	FNH00-35K-A	2.5 (14)	4.0 (12)
CFW300B16P1P2D820	3	200...240 Vac or 280...340 Vdc	B	15.2	22.8	5/37	25.0	MPW40-3-U025	865	35	FNH00-35K-A	4.0 (12)	4.0 (12)
CFW300B16P2P2D820	3	200...240 Vac or 280...340 Vdc	B	15.2	22.8	5/37	25.0	MPW40-3-U025	865	35	FNH00-35K-A	4.0 (12)	4.0 (12)

In order to comply with UL508C standard, use fuses UL type J.

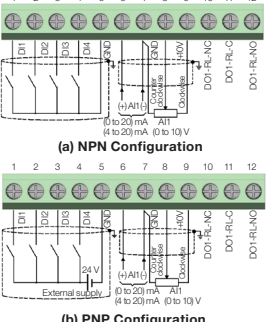


DANGER!
The inverter must be connected to a protective ground (PE).
Use a minimum wire gauge for ground connection equal to the indicated in Table 3.
Connect the inverter grounding connections to a ground bus bar, to a single ground point or to a common grounding point (impedance ≤ 10 Ω).
The neuter 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 3 are guiding values. Installation conditions and the maximum permitted voltage drop must be considered for the proper wiring design.

10.3 CONTROL CONNECTIONS



Connector	Description
1	DI1 Digital input 1
2	DI2 Digital input 2
3	DI3 Digital input 3
4	DI4 Digital input 4
5	GND Reference 0 V
6	AI1 Analog input 1 (Current)
7	GND Reference 0 V
8	AI1 Analog input 1 (Tension)
9	+10 V Reference +10 Vdc for potentiometer
10	DO1-RL-NC Digital output 1 (NC contact of relay 1)
11	DO1-RL-C Digital output 1 (Common point of relay 1)
12	DO1-RL-NO Digital output 1 (NO contact of relay 1)

Figure 5: (a) and (b) Signals of C300 control card connector

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.).

10.3.1 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 cabo motor cable. Refer to Table 6
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
Conducted Radio-Frequency Common Mode	IEC 61000-4-6	2 kV / 5 kHz (coupling capacitor) motor cables
Surges	IEC 61000-4-5	0.15 to 80 MHz; 10 V; 80 % AM (1 kHz) Motor, control and remote HMI cables
Radio-Frequency Electromagnetic Field	IEC 61000-4-3	1.2/50 µs, 8/20 µs 1 kV line-to-line coupling 2 kV line-to-ground coupling

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.

10.3.2 Characteristics of the RFI Filter

CFW300 inverters are installed with external filter when it is intended to reduce the disturbance conducted from the inverter to the power line in the high frequency band (> 150). It is observe 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 5.

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

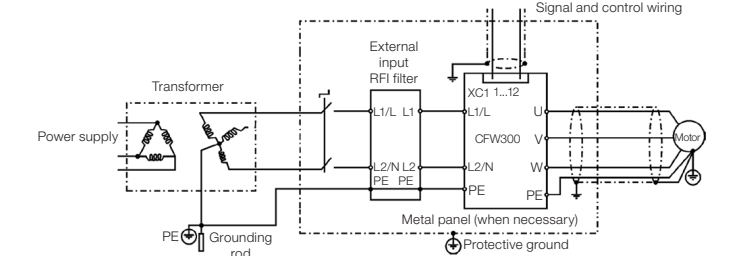


Figure 6: Connection of the RFI filter - general conditions

Table 5: External RFI filter models for CFW300

WEG Item	Name	Description
13015615	CFW300-KFA	RFI filter kit CFW300 frame size A
13015616	CFW300-KFB	RFI filter kit CFW300 frame size B

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

	Inverter Model	Conducted Emission – Maximum Motor Cable Length		Radiated Emission Category
		Category C3	Category C2	
1	CFW300AXXPXS1XX20 ^(*)	27 m (1063 in)	3 m (118 in)	C3
2	CFW300AXXPXS2XX20 ^(*)	27 m (1063 in)	20 m (787 in)	C3
3	CFW300B10P0B2DB20	27 m (1063 in)	27 m (1063 in)	C3

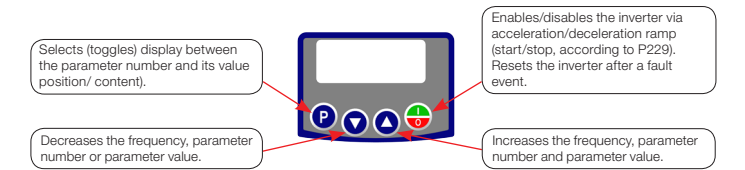
- The switching frequency is 5 kHz.

(*) Where there is an "X", it is assumed as any corresponding value of Table 2.

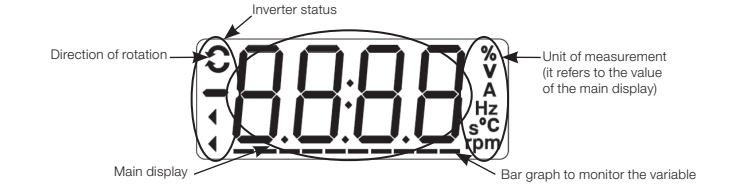
10.4 ACCESSORIES

The accessories are hardware resources that can be added in the application with the CFW300. The accessories are incorporated to the inverters in an easy and quick way by using the concept "Plug and Play". The accessory must be installed or modified with the inverter de-energized. 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.

11 USE OF THE KEYPAD TO OPERATE THE INVERTER



11.1 INDICATIONS OF DISPLAY



11.2 OPERATING MODES OF THE HMI

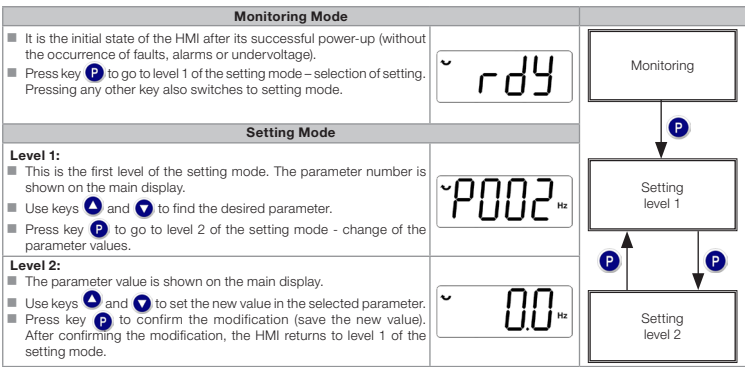


Figure 7: HMI operating modes

12 START-UP PREPARATION

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

1. Check if the power, grounding and control connections are correct and firm.
2. Remove all the materials left behind from the installation work from inside the inverter or the cabinet.
3. Verify the motor connections and if its voltage and current are within the inverter rated value.
4. 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.
5. Close the inverter or cabinet covers.
6. Measure the power supply and verify if it is within the allowed range.
7. Apply power to the input: close the input disconnecting switch.
8. Check the result of the first time power-up:
The HMI display indicates:



12.1 BASIC APPLICATION

Seq	Display Indication/Action	Seq	Display Indication/Action
1	■ Initialization mode. ■ Press key P to enter the first level of the parameterization mode. ■ Press keys A or V to select the parameter P100.	2	■ Press key P if you need to change the content of P100 – "Acceleration Time" or press key A for the next parameter.
3	■ If necessary, change the content of "P101 - Deceleration Time". ■ Use key A to select the parameter P133.	4	■ If necessary, change the content of "P133 - Minimum Speed". ■ Press key A for the next parameter.
5	■ If necessary, change the content of "P134 - Maximum Speed". ■ Press key A for the next parameter.	6	■ If necessary, change the content of "P135 - Output Maximum Current". ■ Press key V to select parameter P002.
7	■ Press key P to view the parameter content.	8	■ Press key that the motor will accelerate up to 3.0 Hz (factory default setting of P133 - Minimum Frequency). ■ Press A and hold it until it reaches 60.0 Hz.
9	■ Press key The motor will decelerate to a stop.	10	■ When the motor stops, the display will indicate "ready".

12.2 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). ■ Press key A to select parameter P401.	4	■ If necessary, change the content of parameter "P401 – Motor Rated Current" according to the nameplate. ■ Press key A for the next parameter.
5	■ Se necessário altere o conteúdo de "P402 - Rotação Nominal Motor". ■ Press key A for the next parameter.	6	■ If necessary, change the content of "P403 - Motor Rated Frequency".

13 TECHNICAL SPECIFICATIONS

POWER DATA

Power Supply:

- Tolerance: -15 % to +10 %.
- Frequência: 50/60 Hz (48 Hz a 62 Hz).
- Phase imbalance: ≤ 3 % of the rated phase-to-phase input voltage.
- Overvoltage according to Category III (EM 61010/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.
- Mechanical condition rating (vibration): level 3M4.
- Audible noise level: < 60dB.

14 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) ■ Speed variation range: 1:20
	Output frequency	■ Speed regulation: 1 % of the rated speed (with slip compensation) ■ Speed variation range: 1:20
Performance	V/F control	■ Regulação de velocidade: 1 % da velocidade nominal ■ Faixa de variação de velocidade: 1:30
	Vector control (VVW)	■ 1 insulated input. Levels: (0 to 10) V or (0 a 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
Inputs	Analog	■ 1 insulated input. Levels: (0 to 10) V or (0 a 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

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
Outputs	Relay	■ 1 relay with NO/NC contact ■ Maximum voltage: 250 Vac ■ Maximum current: 0.5 A ■ Programmable functions
	Power supply	■ 10 Vdc power supply. Maximum capacity: 50 mA
Safety	Protection	■ Overcurrent/phase-phase short circuit in the output ■ 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/editing of all parameters ■ Indication accuracy: - current: 5 % of the rated current - speed resolution: 0.1 Hz
Enclosure	IP20	■ Frames sizes A and B

15 CONSIDERED STANDARDS

Table 8: Considered standards

Safety standards	■ UL 508C - power conversion equipment ■ UL 840 - insulation coordination including clearances and creepage distances for electrical equipment ■ EN 61800-5-1 - safety requirements electrical, thermal and energy ■ EN 50178 - electronic equipment for use in power installations ■ EN 60204-1 - safety of machinery. Electrical equipment of machines. Part 1: general requirements ■ Note: the final assembler of the machine is responsible for installing a safety stop device and a supply disconnecting device ■ 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
Mechanical standards	■ EN 60529 - degrees of protection provided by enclosures (IP code) ■ UL 50 - enclosures for electrical equipment ■ IEC 60721-3-3 - classification of environmental conditions
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 61800-4-6 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 6: immunity to conducted disturbances, induced by radio-frequency fields.

(*) Compliance with standards upon installation of RFI filter. For further details refer to consulte www.weg.net.

16 MAIN PAREMETERS

The table below contains the mains parameters of the CFW300.

NOTE!
ro = read only parameter.
V/f = parameter available in V/f mode.
cfg = configuration parameter, value can only be changed with the motor stopped.

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 40.0 A		ro	
P004	DC Link Voltage (Ud)	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 = Self-Tuning 5 = Configuration	ro	
P007	Output Voltage	0 to 240 V		ro	
P011	Active Current	-40.0 to 40.0 A		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	FI Value in Hz	1 to 3000 Hz		ro	
P023	Main SW Version	0.00 to 99.99		ro	
P030	Module Temperature	0.0 to 200.0 °C		ro	
P037	Motor Overload lxt	0.0 to 100.0 %		ro	
P047	CONFIG Status	0 to 999		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 s		
P101	Deceleration Time	0.1 to 999.9 s	10.0 s		
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 40.0 A	1.5 x I _{nom}		
P136	Manual Torque Boost	0.0 to 30.0 %	0.0 %	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	0.005 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 2.0 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 1 8 = Not Used	9 = Save User 1 10 = Not Used 11 = Load Default SoftPLC 12 to 13 = Reserved	0	cfg

Param.	Description	Adjustable Range		Factory Setting	Prop.
P220	LOC/REM Selection Source	0 = Always Local 1 = Always Remote 2 to 3 = Not Used 4 = Dlx 5 = Serial/USB (LOC)	6 = Serial/USB (REM) 7 to 8 = Not Used 9 = CO/DN/DP (LOC) 10 = CO/DN/DP (REM) 11 = SoftPLC	0	cfg
P221	LOC Reference Sel	0 = HMI Keys 1 = A11 2 = A12 3 = Not Used 4 = FI 5 = A11 + A12 > 0 6 = A11 + A12 7 = E.P. 8 = Multispeed	9 = Serial/USB 10 = Not Used 11 = CO/DN/DP 12 = SoftPLC 13 = Not Used 14 = A11 > 0 15 = A12 > 0 16 = Not Used 17 = FI > 0	0	cfg
P222	REM Reference Sel.	See Options in P221		3	cfg
P223	LOC Rotation Sel.	0 = Forward 1 = Reverse 2 to 3 = Not Used 4 = Dlx 5 = Serial/USB (FWD) 6 = Serial/USB (REV)	7 to 8 = Not Used 9 = CO/DN/DP (FWD) 10 = CO/DN/DP (REV) 11 = Not Used 12 = SoftPLC	0	cfg
P263	DI1 Input Function	0 = Not Used 1 = Run/Stop 2 = General Enable 3 = Not Used 4 = Forward 5 = Reverse 6 = Start 7 = Stop 8 = Direction of Rotation 9 = LOC/REM 10 = JOG 11 = Increase E.P. 12 = Decelerate E.P. 13 = Multispeed 14 = 2 nd Ramp 15 to 17 = Not Used 18 = No Ext. Alarm 19 = No Ext. Fault 20 = Reset 21 to 23 = Not Used 24 = Disab. Flying Start	25 = Regul. DC Link 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 FWD 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	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
P267	DI5 Input Function	See Options in P263		0	cfg
P268	DI6 Input Function	See Options in P263		0	cfg
P269	DI7 Input Function	See Options in P263		0	cfg
P270	DI8 Input Function	See Options in P263		0	cfg
P295	Inv. Rated Current	1.6 to 15.2 A		According inverter model	ro
P296	Line Rated Voltage	0 = Reserved 1 = 110 / 127 Vac	2 = 200 / 240 Vac or 310 Vdc	According inverter model	ro
P297	Switching Frequency	2.5 to 15.0 kHz		5.0 kHz	cfg
P401	Motor Rated Current	0.0 to 40.0 A		1.0 x I _{nom}	cfg
P402	Motor Rated Speed	0 to 9999 rpm		1720 (1310) rpm	cfg
P403	Motor Rated Frequency	0 to 400 Hz		60 (50) Hz	cfg

17 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 Power Module Overtemperature	Overtemperature alarm from the power module temperature sensor (NTC)	■ High temperature at IGBTs: P030 > 90 °C (> 194 °F) (Frame size A) and P030 > 116 °C (> 240.8 °F) (Frame size B) ■ 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 Dlx (option "no external alarm" in P263 to P270)	■ Wiring on DI1 to DI8 inputs are open or have poor contact
A700 Remote HMI Communication	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): Ud < 250 Vdc in 110 / 127 Vac (P296 = 1) or Ud < 200 Vdc in 200 / 240 Vac (P296 = 2) ■ 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): Ud > 460 Vdc in 110 / 127 Vac (P296 = 1) or Ud > 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 in Communication with IOs Expansion Accessory	Main control cannot establish the communication link with the IOs expansion accessory	■ Accessory damaged ■ Poor connection of the accessory ■ Problem in the identification of the accessory; refer to P027
F032 Fault in Communication with IOs Communication Accessory	Main control cannot establish the communication link with the communication accessory	■ Accessory damaged ■ Poor connection of the accessory ■ Problem in the identification of the accessory; refer to P028
F051 IGBTs Overtemperatures	Overtemperature fault measured on the temperature sensor of the power pack	■ High temperature at IGBTs: P030 > 100 °C (> 212 °F) (Frame size A) e P030 > 126 °C (> 258.8 °F) (Frame size B) ■ 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 Inom)	■ P156 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 End of User's Memory	Fault of end of memory to save user's 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 copy the parameters from the flash memory module to the inverter with different software versions
F084 Auto-diagnosis Fault	Fault related to the automatic identification algorithm of the inverter hardware	■ Poor contact in the connection between the main control and the power pack ■ Hardware not compatible with the firmware version ■ Defect on the internal circuits of the inverter
F091 External Fault	External fault via Dlx ("no external fault" in P263 to P270)	■ Wiring on DI1 to DI8 inputs are open or have poor contact
F701 Remote HMI Communication Fault	No communication with the remote HMI; however, there is command or frequency reference for this source	■ Check that the HMI communication interface is properly configured in parameter P312 ■ HMI cable disconnected