CFW500

Variable Speed Drive

CFW500

Machinery Drive

Endless possibilities

With modern design, the variable speed drive CFW500 is a ***high performance*** VSD for applications that require speed and torque control of three-phase induction motors. The equipment has ***sensorless vector control, closed loop vector control or scalar V/f***. It also has SoftPLC, which adds PLC (programmable logic controller) functions, Pump Genius, which adds dedicated functions for pumping systems and selectable plug-in modules, that ***provide a flexible and optmized solution*** for any application.

Performance

- Sensorless or closed loop vector control, VVW or Scalar V/f
- Advanced resources for total control of the application

Flexibility

- Expansible number of inputs and outputs as well as functions using plug-in modules with plug-and-play philosophy
- Surface or DIN rail mounting, including side-by-side installation

Innovation

- SoftPLC - built-in PLC functionalities
- USB communication port available with plug-in module

WEG Quality

- All VSDs are factory tested at full load conditions and maximum operational temperature
- Diagnostics and protections

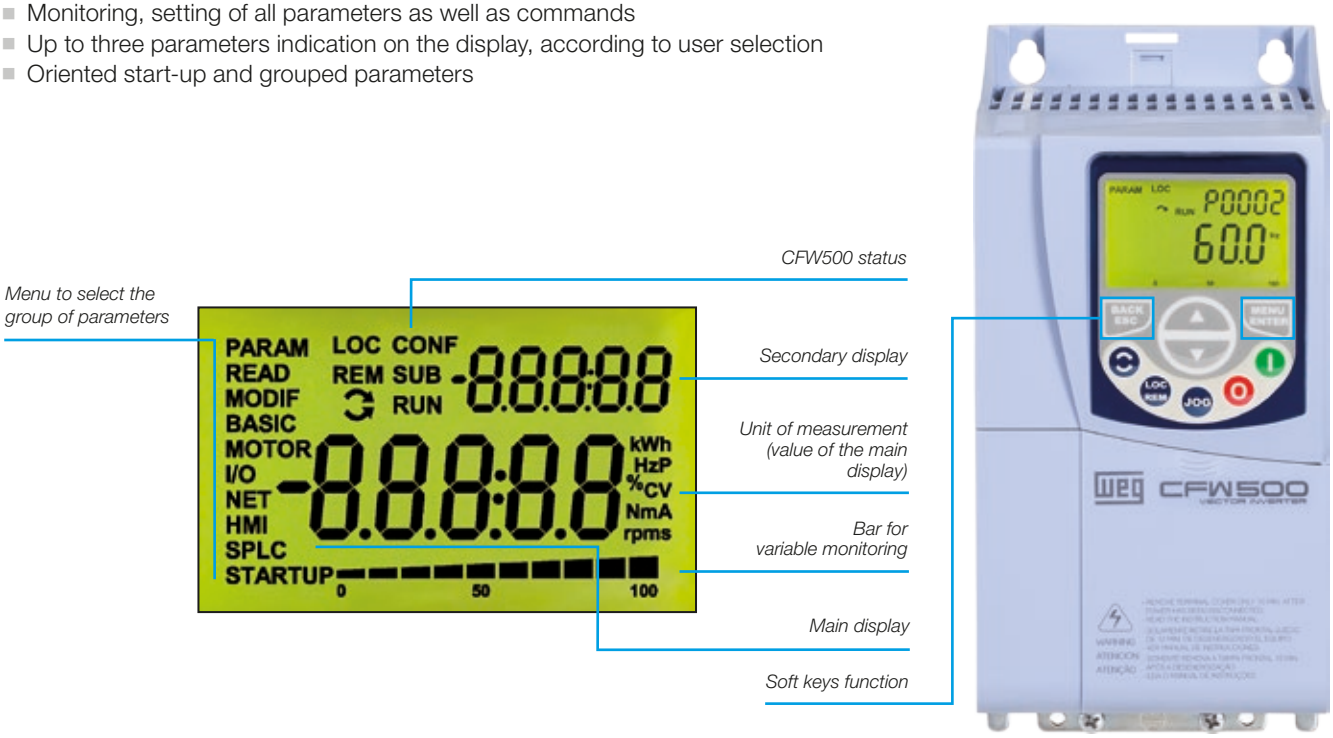
- Current range from 1,0 to 56 A (0,25 kW / 0,33 HP to 30 kW / 40 HP) with supply voltages 200-240, 380-480 or 500-600 V
- Built-in braking IGBT (optional)
- Fieldbus communication modules for the most used industrial networks, like CANopen, DeviceNet, Profibus-DP, EtherNet-IP, Profinet-IO or Modbus-RTU
- Operating ambient temperature up to 50 °C without derating
- Ideal for machinery manufacturer
- Free WLP and SuperDrive G2 programming softwares available at *www.weg.net*
- *Conformal Coating class 3C2 for greater protection of electronic boards against corrosive atmospheres*
- Internal RFI filter to reduce high-frequency electromagnetic interference signals
- Dedicated functions for pumping systems using Pump Genius
- Single or three-phase power supply in 200-240 V, 380-480 V or 500-600 V
- Memory card for data transfers without the necessity to power the CFW500 up

Certifications

Simplified Programming and Operation

Operating Interface (HMI)

- Monitoring, setting of all parameters as well as commands
- Up to three parameters indication on the display, according to user selection
- Oriented start-up and grouped parameters



Note: the operating interface (HMI) of the CFW500 is not removable. For remote operation of the HMI, use the CFW500-HMIR accessory, according to the accessory table on page 15.

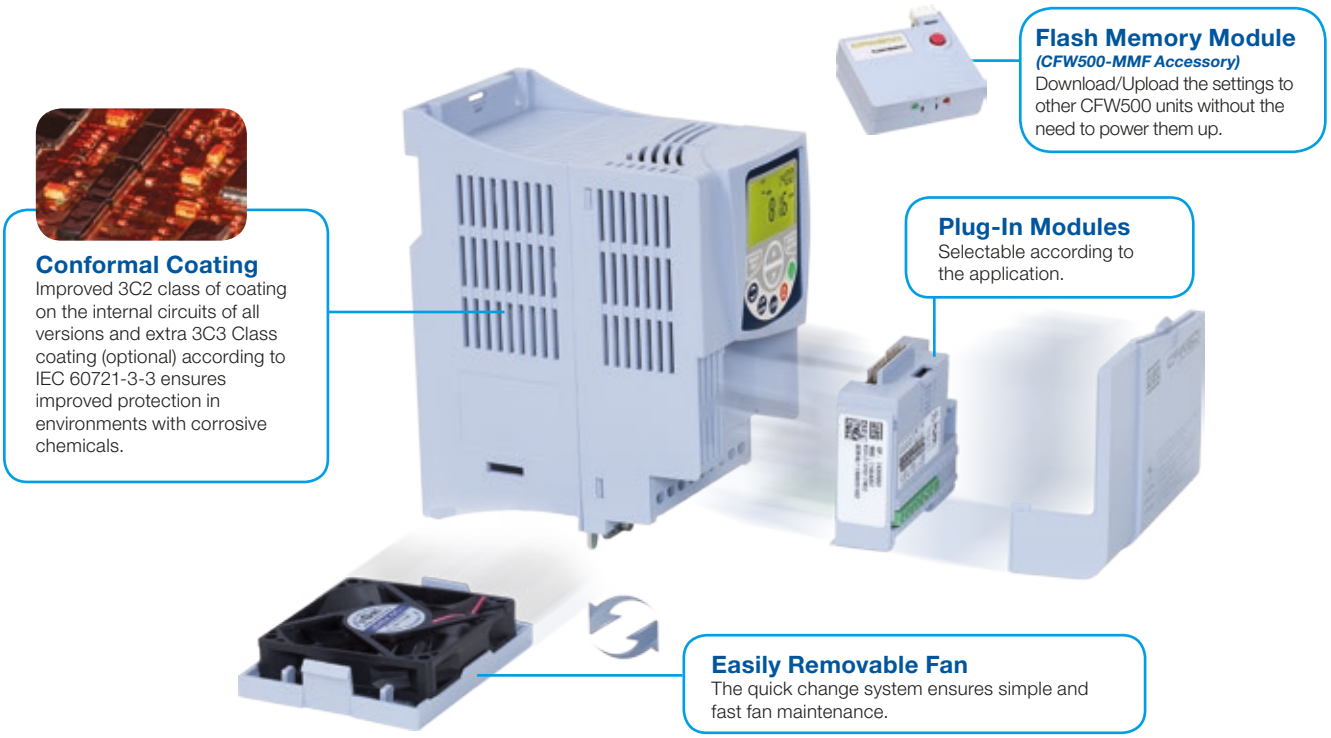
Remote Operating Interface (HMI)

Solutions for machine consoles and panels.

CFW500-HMIR
Accessory

Flexibility and Performance

The CFW500 has a modern design and it can be selected according to the application requirements, providing flexibility with excellent performance. The VSD gives the user the possibility to choose the plug-in module that best fits his application, or to use the standard version, that comes with the CFW500-IOS plug-in module. All plug-in modules comes with one RS485 port as standard.
The installation of the CFW500 is simple and its configuration and operation is intuitive with the navigation menus of the operating interface (HMI) with built-in LCD display. By using the flash memory module, it is possible to download the existing setting from one CFW500 to other units without powering them up.

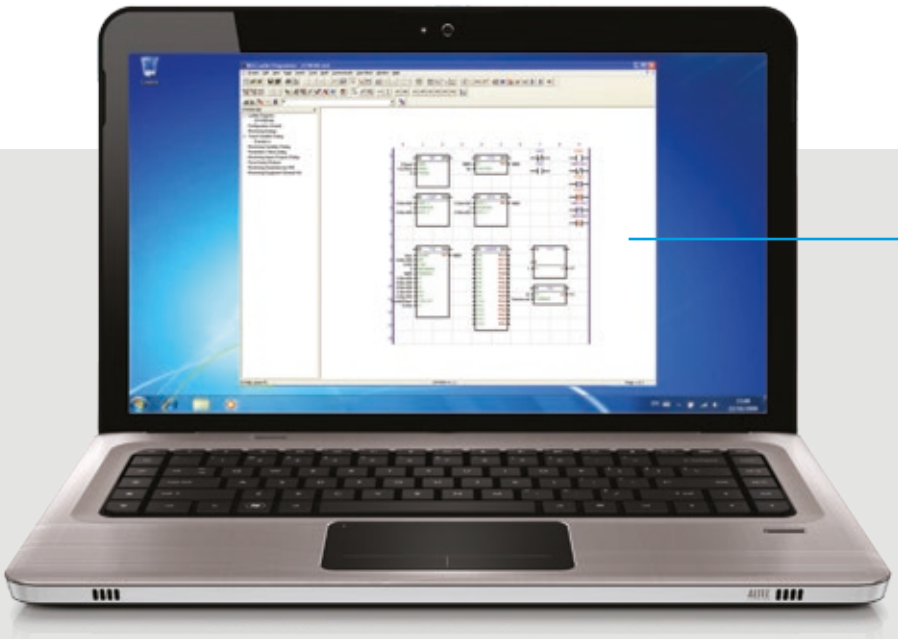


Flash Memory Module
(CFW500-MMF Accessory)
Download/Upload the settings to other CFW500 units without the need to power them up.

Plug-In Modules
Selectable according to the application.

Conformal Coating
Improved 3C2 class of coating on the internal circuits of all versions and extra 3C3 Class coating (optional) according to IEC 60721-3-3 ensures improved protection in environments with corrosive chemicals.

Easily Removable Fan
The quick change system ensures simple and fast fan maintenance.



SoftPLC
It is a software resource added to the CFW500 which allows the user to implement and debug logic projects equivalent to a small PLC (Programmable Logic Controller), customizing and integrating the CFW500 to the application. The free WLP programming software is available at: www.weg.net.

Connectivity

The CFW500 can be connected to the main fast industrial Fieldbus communication networks, with protocols used worldwide such as CANopen, Profibus-DP, DeviceNet, Profinet and EtherNet, according to the plug-in module selected.

In addition, all plug-in modules come with serial interface RS485 Modbus-RTU built-in.

Remote operating interface (HMI) (CFW500-HMIR accessory)

Easy operation and view

I/O expansion:
IOS (standard, included in the version with plug-in), IOD, IOAD, IOR

Functionality expansion:
Incremental encoder
USB

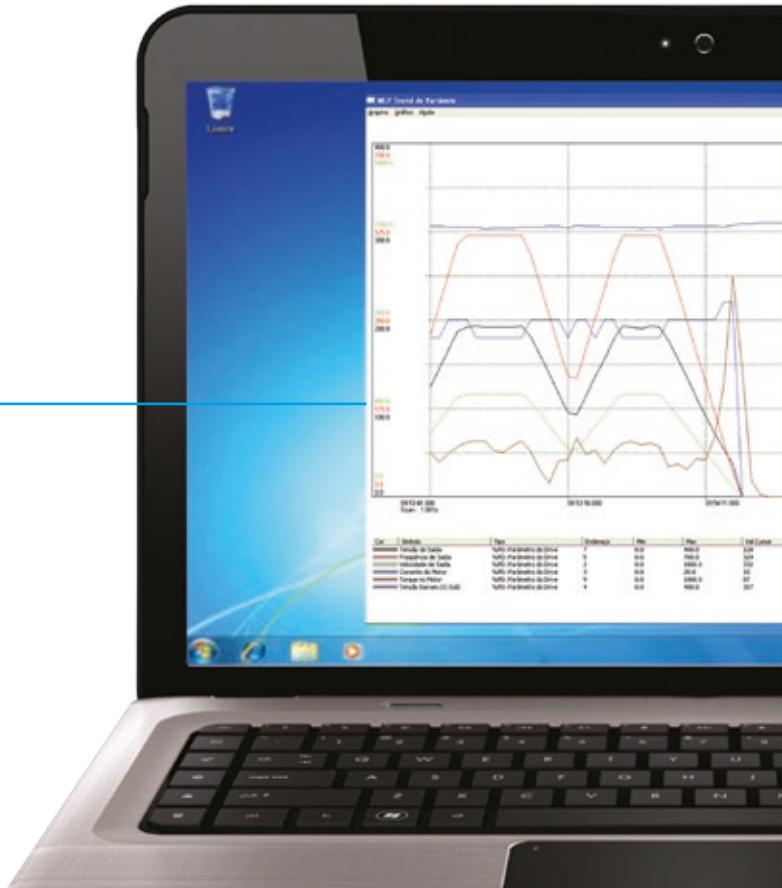
Fieldbus communication protocols:
CANopen
DeviceNet
RS232
RS485
Profibus-DP
EtherNet-IP
Modbus-TCP
Profinet-IO

Selectable plug-in modules

Free at www.weg.net

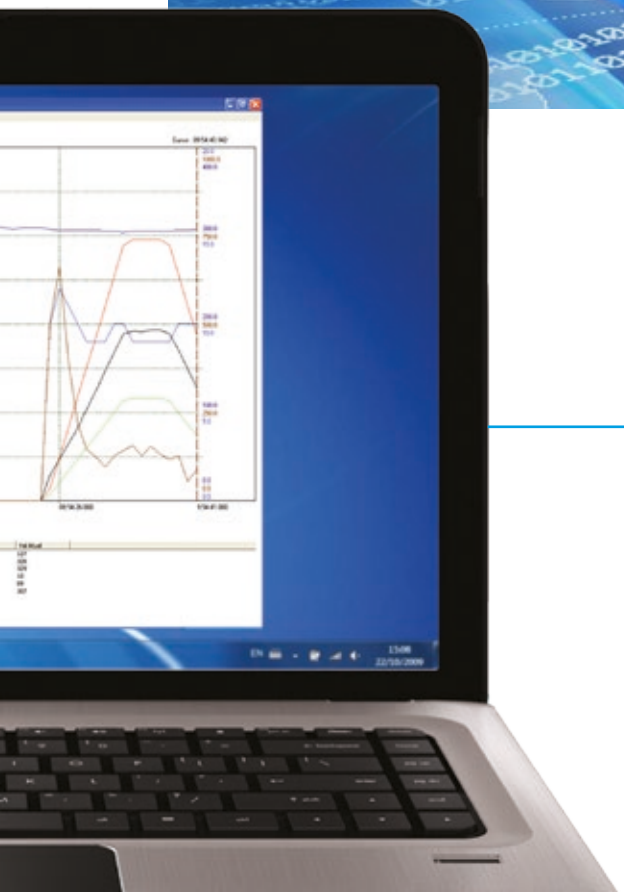
USB Connection (CFW500-CUSB accessory)

SuperDrive G2



Features

- Special engineering units (RPM, ºC, Nm, mA, %, kW, kWh, among others)
- Password to protect the parameters
- Backup of all parameters (via SuperDrive G2 software, or plugin memory MMF)
- Possibility to save up to two different settings on the memory of the CFW500
- Setting of the switching frequency according to the application requirements
- Speed reference via electronic potentiometer
- Multispeed with up to eight programmable speeds
- Slip compensation
- Manual or automatic torque boost (V/F scalar mode) or self-adjustment (VVW and vector modes)
- Acceleration/deceleration ramps
- “S” type ramp
- DC braking
- Internal dynamic braking (except frame size A)
- PID controller to control processes in closed loop
- Flying start / Ride-through
- Sleep mode
- Skip frequencies or frequency ranges function adjustable
- Overload and overtemperature protection
- Overcurrent protection
- DC link voltage supervision
- Fault log



Using the SuperDrive G2 software, it is possible to change, monitor and view graphically the variables of the CFW500 on a personal computer.

Trend Function
Trend charts for online monitoring of parameters and other variables within the SuperDrive G2 software.

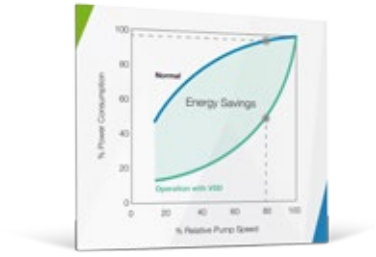
Pump Genius

simplex

The Pump Genius Simplex software adds ideal features to the VSD for single pump control.

multipump

Pump Genius Multipump allows driving two or more pumps with only one inverter.

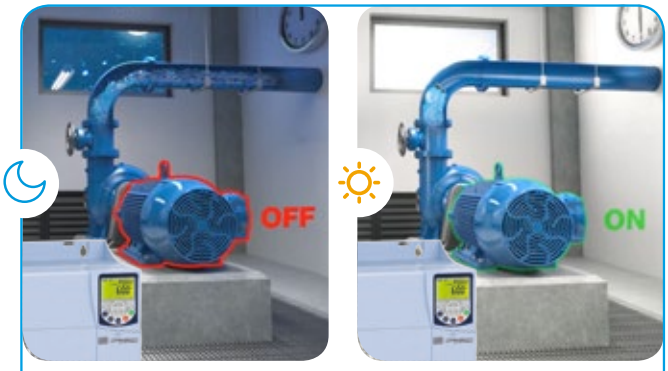


Energy Savings

The use of the CFW500 with the Pump Genius Multipump improves the performance and provides electric energy savings.
Using this solution together with WEG W22 Premium motors, and reducing the pump speed even if slightly, it is possible to reduce the electric energy consumption by approximately 15%, thus contributing to the sustainable development of the planet.

Broken Pipe Alarm

Pump Genius detects when the pump is consuming more electric energy than it should, by means of information on the pump load and speed, automatically generating an alarm warning of leaky pipes. In addition, with the monitoring of the system pressure, a clogging condition may be detected by configuring the maximum pressure to trigger the alarm of clogged pipe.



Sleep and Wake up Function

The sleep function keeps the pump in the standby mode when the demand or flow is below the minimum, avoiding that it runs at low speed for long periods, providing electric energy savings and increasing the lifetime of the pump.
The wake up function restarts the drive automatically when the pressure falls below the set point.

Pipe Charging Function

It allows lubrication and smooth initial charging of the pipes, making the pump operate at a lower preset speed for a certain time, avoiding “Water Hammers”, which may damage the piping system.

Applications

Extruders

Conveyor belts

Roller tables

Fans / exhausters

Centrifugal pumps

Granulators / palletizers

Cutting and welding machines

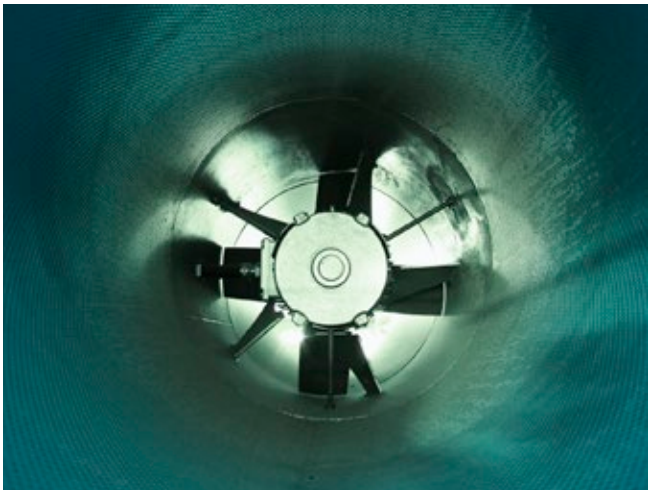
Dryers and rotary ovens

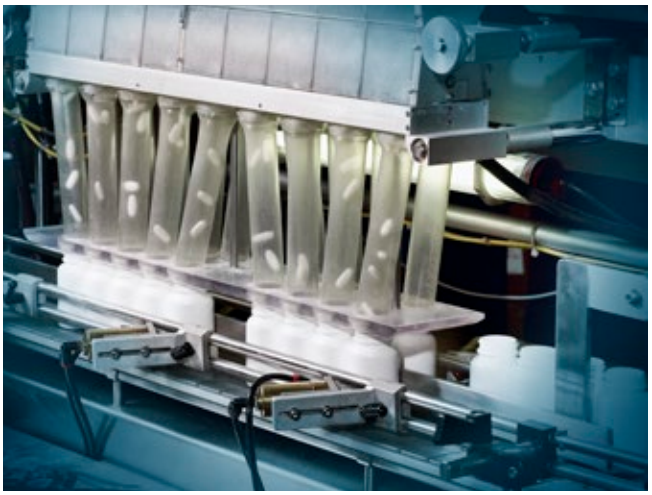
Process dosing pumps

Stirrers / mixers

Rotary filters

Winding machines / uncoiling machines





Coding

1	2	3	4	5	6	7	8	9	10
CFW500	A	02P6	T	4	NB	20	C2	---	---

1 - CFW500 variable speed drive
2 - Size of the CFW500, according to table 1 below
3 - Rated output current, according to table 1 below

Rated output current of the	Number of phases	Rated voltage	Frame size	Internal dynamic braking[1]	Degree of protection	Internal RFI filter[2]
01P6 = 1.6 A	Single-phase	200-240 V	A	NB	IP20 or N1	Blank or C2
02P6 = 2.6 A						
04P3 = 4.3 A						
07P0 = 7.0 A						Blank or C3
07P3 = 7.3 A			B	DB		C2
10P0 = 10.0 A						
01P6 = 1.6 A	Single-phase or three-phase		A	NB		Blank (not available)
02P6 = 2.6 A						
04P3 = 4.3 A						
07P3 = 7.3 A			B	DB		
10P0 = 10.0 A						
07P0 = 7.0 A	Three-phase		A	NB		Blank (not available)
09P6 = 9.6 A						
16P0 = 16 A			B	DB		
24P0 = 24 A			C	DB		
28P0 = 28 A			D	DB		Blank or C3
33P0 = 33 A						
47P0 = 47 A						
56P0 = 56.0 A			E	DB		
01P0 = 1.0 A	Three-phase	380-480 V	A	NB		Blank or C2
01P6 = 1.6 A						
02P6 = 2.6 A						
04P3 = 4.3 A						
06P1 = 6.1 A						Blank or C3
02P6 = 2.6 A			B	DB		Blank or C2
04P3 = 4.3 A						
06P5 = 6.5 A						
10P0 = 10.0 A						Blank or C3
14P0 = 14.0 A			C	DB		Blank or C2
16P0 = 16.0 A						
24P0 = 24.0 A			D	DB		Blank or C3
31P0 = 31.0 A						
39P0 = 39.0 A			E	DB		Blank or C3
49P0 = 49.0 A						

4 - Number of phases

S	Single-phase power supply
B	Single or three-phase power supply
T	Three-phase power supply

5 - Rated voltage

2	200-240 V
4	380-480 V
5	500-600 V

6 - Internal dynamic braking

NB	Without internal dynamic braking IGBT
DB	With internal dynamic braking IGBT

7- Protection degree

20	IP20 protection degree
N1	NEMA1 protection degree

8 - RFI filter

Blank	Without internal RFI filter
C2	With internal RFI filter - category 2
C3	With internal RFI filter - category 3

9 - Special hardware versions - H xx

9.1 - Plug-in module

Blank	With standard plug-in module
H00	Without plug-in module

9.2 - Coating for harsh environments

Blank	Class 3C2 - Standard conformal coating
EC	Class 3C3 - Extra coating

10 - Special software version - S xx

Blank	Standard software
xx	Special software

Notes: 1) Braking resistor not included.

2) Conducted emission level (IEC 61800-3).

In order to minimize such problem, WEG variable speed drives contain common-mode capacitive filters, which are enough to avoid this type of interference in most cases. If necessary, our inverters also have radio frequency (RFI) filters to reduce even more those high-frequency electromagnetic interference signals. Item 8 of the table above shows how to select the models of internal RFI filters for the CFW500.

Definitions of IEC/EN 61800-3 standard. Categories:

Category C1: variable speed drives with voltage rating below 1,000 V and intended for application in the "First Environment".

Category C2: inverters with voltage rating below 1,000 V not provided with plugs or movable installations, and, when applied in the "First Environment", they must be installed and commissioned by a professional.

Category C3: inverters with voltage ratings below 1,000 V developed for application in the "Second Environment" and not designed for application in the "First Environment".

Environments: First Environment: environments that include domestic installations, such as establishments directly connected without intermediate transformers to the low voltage power line, which supplies buildings used for domestic purposes.

Second environment: environments that include all the buildings other than those directly connected to the low voltage power line, which supplies buildings used for domestic purposes.

For RFI filters installed externally, refer to the CFW500 user manual.

Specification

CFW500 with IOS Plug-In Module Built-In

CFW500 variable speed drive						Maximum applicable motor[1]					
						IEC				UL	
Reference[2]	Power supply (V)		Frame size	Internal dynamic braking (IGBT)	Rated current (A)	Power supply (V) 50 Hz	kW	Power supply (V) 60 Hz	HP	Power supply (V) 60 Hz	HP
CFW500A01P6S2NB20	Single-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6S2NB20					2.60		0.55		0.5		0.75
CFW500A04P3S2NB20					4.30		1.1		1.0		1.5
CFW500A07P0S2NB20					7.00		1.5		2.0		2.0
CFW500A01P6B2NB20	Single-phase or three-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6B2NB20					2.60		0.55		0.5		0.75
CFW500A04P3B2NB20					4.30		1.1		1.0		1.5
CFW500B07P3B2DB20			B	Built-in	7.30		1.5		2.0		2.0
CFW500B10P0B2DB20					10.00		2.2		3.0		3.0
CFW500A07P0T2NB20	Three-phase	200-240	A	N/A	7.00	230	1.5	220	2.0	230	2.0
CFW500A09P6T2NB20					9.60		2.2		3.0		3.0
CFW500B16P0T2DB20			B	Built-in	16.00		4.0		5.0		5.0
CFW500C24P0T2DB20			C		24.00		5.5		7.5		7.5
CFW500D28P0T2DB20			D		28.00		7.5		10.0		10.0
CFW500D33P0T2DB20					33.00		9.2		12.5		10.0
CFW500D47P0T2DB20					47.00		11.0		15.0		15.0
CFW500E56P0T2DB20			E		56.00		15.0		20.0		20.0
CFW500A01P0T4NB20	Three-phase	380-480	A	N/A	1.00	415	0.37	460	0.5	460	0.5
CFW500A01P6T4NB20					1.60		0.75		1.0		0.75
CFW500A02P6T4NB20					2.60		1.1		1.5		2.0
CFW500A04P3T4NB20					4.30		1.5		3.0		3.0
CFW500A06P1T4NB20					6.10		3.0		4.0		5.0
CFW500B02P6T4DB20			B	Built-in	2.60		1.1		1.5		2.0
CFW500B04P3T4DB20					4.30		1.5		3.0		3.0
CFW500B06P5T4DB20					6.50		3.0		4.0		5.0
CFW500B10P0T4DB20					10.00		4.0		7.5		7.5
CFW500C14P0T4DB20			C		14.00		7.5		10.0		10.0
CFW500C16P0T4DB20					16.00		7.5		12.5		10.0
CFW500D24P0T4DB20			D		24.00		11.0		15.0		15.0
CFW500D31P0T4DB20					31.00		15.0		25.0		25.0
CFW500E39P0T4DB20			E		39.00		18.5		30.0		30.0
CFW500E49P0T4DB20					49.00		22.0		40.0		40.0
CFW500C01P7T5DB20	Three-phase	500-600	C	Built-in	1.70	525	0.75	575	1.5	575	1.0
CFW500C03P0T5DB20					3.00		1.5		2.0		2.0
CFW500C04P3T5DB20					4.30		2.2		4.0		3.0
CFW500C07P0T5DB20					7.00		4.0		6.0		5.0
CFW500C10P0T5DB20					10.00		5.5		10.0		7.5
CFW500C12P0T5DB20					12.00		7.5		12.5		10.0

Notes: 1) The power values for maximum applicable motor shown in the table above are reference values and valid for WEG motors. IEC motor powers are based on motor WEG four-pole W22 High Efficiency IE2 three-phase induction motors with power supply of 220 V, 230 V, 415 V, 460, 525 or 575 V. NEMA motor power are based on WEG four pole W22 Premium. Motor rated currents may vary with speed and manufacturer, use the motor power ratings below only as a guidance. The proper sizing of the CFW500 to be used must be determined as a function of the rated current of the motor used.

2) Included in this reference the CFW500-IOS standard plug-in module. Smart code without "H00".

N/A = Not applicable.

Specification

CFW500 without Plug-In Module

You must select the smart code of the CFW500 without plug-in module (CFW500 xxx H00) + smart code of the desired plug-in module.

CFW500 variable speed drive						Maximum applicable motor[1]					
						IEC				UL	
Reference[2]	Power supply (V)		Frame size	Internal dynamic braking (IGBT)	Rated current (A)	Power supply (V) 50 Hz	kW	Power supply (V) 60 Hz	HP	Power supply (V) 60 Hz	HP
CFW500A01P6S2NB20H00	Single-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6S2NB20H00					2.60		0.55		0.5		0.75
CFW500A04P3S2NB20H00					4.30		1.1		1.0		1.5
CFW500A07P0S2NB20H00					7.00		1.5		2.0		2.0
CFW500A01P6B2NB20H00	Single-phase or three-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6B2NB20H00					2.60		0.55		0.5		0.75
CFW500A04P3B2NB20H00					4.30		1.1		1.0		1.5
CFW500B07P3B2DB20H00			B	Built-in	7.30		1.5		2.0		2.0
CFW500B10P0B2DB20H00					10.00		2.2		3.0		3.0
CFW500A07P0T2NB20H00	Three-phase	200-240	A	N/A	7.00	230	1.5	220	2.0	230	2.0
CFW500A09P6T2NB20H00					9.60		2.2		3.0		3.0
CFW500B16P0T2DB20H00			B	Built-in	16.00		4.0		5.0		5.0
CFW500C24P0T2DB20H00			C		24.00		5.5		7.5		7.5
CFW500D28P0T2DB20H00			D		28.00		7.5		10.0		10.0
CFW500D33P0T2DB20H00					33.00		9.2		12.5		10.0
CFW500D47P0T2DB20H00					47.00		11.0		15.0		15.0
CFW500E56P0T2DB20H00			E		56.00		15.0		20.0		20.0
CFW500A01P0T4NB20H00	Three-phase	380-480	A	N/A	1.00	415	0.37	460	0.5	460	0.5
CFW500A01P6T4NB20H00					1.60		0.75		1.0		0.75
CFW500A02P6T4NB20H00					2.60		1.1		1.5		2.0
CFW500A04P3T4NB20H00					4.30		1.5		3.0		3.0
CFW500A06P1T4NB20H00					6.10		3.0		4.0		5.0
CFW500B02P6T4DB20H00			B	Built-in	2.60		1.1		1.5		2.0
CFW500B04P3T4DB20H00					4.30		1.5		3.0		3.0
CFW500B06P5T4DB20H00					6.50		3.0		4.0		5.0
CFW500B10P0T4DB20H00					10.00		4.0		7.5		7.5
CFW500C14P0T4DB20H00			C		14.00		7.5		10.0		10.0
CFW500C16P0T4DB20H00					16.00		7.5		12.5		10.0
CFW500D24P0T4DB20H00			D		24.00		11.0		15.0		15.0
CFW500D31P0T4DB20H00					31.00		15.0		25.0		25.0
CFW500E39P0T4DB20H00			E		39.00		18.5		30.0		30.0
CFW500E49P0T4DB20H00					49.00		22.0		40.0		40.0
CFW500C01P7T5DB20H00	Three-phase	500-600	C	Built-in	1.70	525	0.75	575	1.5	575	1.0
CFW500C03P0T5DB20H00					3.00		1.5		2.0		2.0
CFW500C04P3T5DB20H00					4.30		2.2		4.0		3.0
CFW500C07P0T5DB20H00					7.00		4.0		6.0		5.0
CFW500C10P0T5DB20H00					10.00		5.5		10.0		7.5
CFW500C12P0T5DB20H00					12.00		7.5		12.5		10.0

Notes: 1) The power values for maximum applicable motor shown in the table above are reference values and valid for WEG motors. IEC motor powers are based on motor WEG four-pole W22 High Efficiency IE2 three-phase induction motors with power supply of 220 V, 230 V, 415 V, 460, 525 or 575 V. NEMA motor power are based on WEG four pole W22 Premium. Motor rated currents may vary with speed and manufacturer, use the motor power ratings below only as a guidance. The proper sizing of the CFW500 to be used must be determined as a function of the rated current of the motor used.

2) No plug-in module included in this reference. A plug-in module must be added according to the table on page 15.

N/A = Not applicable.

Specification

CFW500 with IOS Plug-In Module and RFI Filter Built-In

CFW500 variable speed drive						Maximum applicable motor[1]					
						IEC				UL	
Reference[2]	Power supply (V)		Frame size	Internal dynamic braking (IGBT)	Rated current (A)	Power supply (V) 50 Hz	kW	Power supply (V) 60 Hz	HP	Power supply (V) 60 Hz	HP
CFW500A01P6S2NB20C2	Single-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6S2NB20C2					2.60		0.55		0.5		0.75
CFW500A04P3S2NB20C2					4.30		1.1		1.0		1.5
CFW500A07P0S2NB20C3					7.00		1.5		2.0		2.0
CFW500B07P3S2DB20C2			B	Built-in	7.30		1.5		2.0		2.0
CFW500B10P0S2DB20C2					10.00		2.2		3.0		3.0
N/A	Single-phase or three-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
N/A					2.60		0.55		0.5		0.75
N/A					4.30		1.1		1.0		1.5
N/A			B	Built-in	7.30		1.5		2.0		2.0
N/A					10.00		2.2		3.0		3.0
N/A	Three-phase	200-240	A	N/A	7.00	230	1.5	220	2.0	230	2.0
N/A					9.60		2.2		3.0		3.0
N/A			B	Built-in	16.00		4.0		5.0		5.0
N/A			C		24.00		5.5		7.5		7.5
CFW500D28P0T2DB20C3			D		28.00		7.5		10.0		10.0
CFW500D33P0T2DB20C3					33.00		9.2		12.5		10.0
CFW500D47P0T2DB20C3					47.00		11.0		15.0		15.0
CFW500E56P0T2DB20C3			E		56.00		15.0		20.0		20.0
CFW500A01P0T4NB20C2	Three-phase	380-480	A	N/A	1.00	415	0.37	460	0.5	460	0.5
CFW500A01P6T4NB20C2					1.60		0.75		1.0		0.75
CFW500A02P6T4NB20C2					2.60		1.1		1.5		2.0
CFW500A04P3T4NB20C2					4.30		1.5		3.0		3.0
CFW500A06P1T4NB20C3					6.10		3.0		4.0		5.0
CFW500B02P6T4DB20C2			B	Built-in	2.60		1.1		1.5		2.0
CFW500B04P3T4DB20C2					4.30		1.5		3.0		3.0
CFW500B06P5T4DB20C2					6.50		3.0		4.0		5.0
CFW500B10P0T4DB20C3					10.00		4.0		7.5		7.5
CFW500C14P0T4DB20C2			C		14.00		7.5		10.0		10.0
CFW500C16P0T4DB20C2					16.00		7.5		12.5		10.0
CFW500D24P0T4DB20C3			D		24.00		11.0		15.0		15.0
CFW500D31P0T4DB20C3					31.00		15.0		25.0		25.0
CFW500E39P0T4DB20C3			E		39.00		18.5		30.0		30.0
CFW500E49P0T4DB20C3					49.00		22.0		40.0		40.0

Notes: 1) The power values for maximum applicable motor shown in the table above are reference values and valid for WEG motors. IEC motor powers are based on motor WEG four-pole W22 High Efficiency IE2 three-phase induction motors with power supply of 220 V, 230 V, 415 V, 460, 525 or 575 V. NEMA motor power are based on WEG four pole W22 Premium. Motor rated currents may vary with speed and manufacturer, use the motor power ratings below only as a guidance. The proper sizing of the CFW500 to be used must be determined as a function of the rated current of the motor used.

2) Included in this reference the CFW500-IOS standard plug-in module. Smart code without "H00".

N/A = Not applicable.

Specification

CFW500 without Plug-In Module And RFI Filter Built-In

You must select the smart code of the CFW500 without plug-in module + smart code of the desired plug-in module (according to the selection table on page 15).

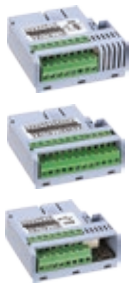
CFW500 variable speed drive						Maximum applicable motor[1]					
						IEC				UL	
Reference[2]	Power supply (V)		Frame size	Internal dynamic braking (IGBT)	Rated current (A)	Power supply (V) 50 Hz	kW	Power supply (V) 60 Hz	HP	Power supply (V) 60 Hz	HP
CFW500A01P6S2NB20C2H00	Single-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
CFW500A02P6S2NB20C2H00					2.60		0.55		0.5		0.75
CFW500A04P3S2NB20C2H00					4.30		1.1		1.0		1.5
CFW500A07P0S2NB20C3H00					7.00		1.5		2.0		2.0
CFW500B07P3S2DB20C2H00			B	Built-in	7.30		1.5		2.0		2.0
CFW500B10P0S2DB20C2H00					10.00		2.2		3.0		3.0
N/A	Single-phase or three-phase	200-240	A	N/A	1.60	230	0.25	220	0.33	230	0.33
N/A					2.60		0.55		0.5		0.75
N/A					4.30		1.1		1.0		1.5
N/A			B	Built-in	7.30		1.5		2.0		2.0
N/A					10.00		2.2		3.0		3.0
N/A	Three-phase	200-240	A	N/A	7.00	230	1.5	220	2.0	230	2.0
N/A					9.60		2.2		3.0		3.0
N/A			B	Built-in	16.00		4.0		5.0		5.0
N/A			C		24.00		5.5		7.5		7.5
CFW500D28P0T2DB20C3H00			D		28.00		7.5		10.0		10.0
CFW500D33P0T2DB20C3H00					33.00		9.2		12.5		10.0
CFW500D47P0T2DB20C3H00					47.00		11.0		15.0		15.0
CFW500E56P0T2DB20C3H00			E		56.00		15.0		20.0		20.0
CFW500A01P0T4NB20C2H00	Three-phase	380-480	A	N/A	1.00	415	0.37	460	0.5	460	0.5
CFW500A01P6T4NB20C2H00					1.60		0.75		1.0		0.75
CFW500A02P6T4NB20C2H00					2.60		1.1		1.5		2.0
CFW500A04P3T4NB20C2H00					4.30		1.5		3.0		3.0
CFW500A06P1T4NB20C3H00					6.10		3.0		4.0		5.0
CFW500B02P6T4DB20C2H00			B	Built-in	2.60		1.1		1.5		2.0
CFW500B04P3T4DB20C2H00					4.30		1.5		3.0		3.0
CFW500B06P5T4DB20C2H00					6.50		3.0		4.0		5.0
CFW500B10P0T4DB20C3H00					10.00		4.0		7.5		7.5
CFW500C14P0T4DB20C2H00			C		14.00		7.5		10.0		10.0
CFW500C16P0T4DB20C2H00					16.00		7.5		12.5		10.0
CFW500D24P0T4DB20C3H00			D		24.00		11.0		15.0		15.0
CFW500D31P0T4DB20C3H00					31.00		15.0		25.0		25.0
CFW500E39P0T4DB20C3H00			E		39.00		18.5		30.0		30.0
CFW500E49P0T4DB20C3H00					49.00		22.0		40.0		40.0

Notes: 1) The power values for maximum applicable motor shown in the table above are reference values and valid for WEG motors. IEC motor powers are based on motor WEG four-pole W22 High Efficiency IE2 three-phase induction motors with power supply of 220 V, 230 V, 415 V, 460, 525 or 575 V. NEMA motor power are based on WEG four pole W22 Premium. Motor rated currents may vary with speed and manufacturer, use the motor power ratings below only as a guidance. The proper sizing of the CFW500 to be used must be determined as a function of the rated current of the motor used.
2) No plug-in module included in this reference, only RFI filter. A plug-in module must be added according to the table on page 15.
N/A = Not applicable.

Specification

Plug-In Module Selection

On the CFW500, it is possible leave to choose later the model of the internal plug-in module by entering H00 in item 9 of the smart code. In this case, it is necessary to select the plug-in module as an accessory, according to the table bellow.
In case H00 is not selected in item 9 of the smart code, the CFW500 will be supplied with the CFW500-IOS plug-in. You must always use one plug-in module per CFW500.

Reference	Description	Illustrative figures
	Input and output (I/O) expansion	
CFW500-IOS[1)]	Standard plug-in module (included in the version with plug-in module)	
CFW500-IOD	Digital input and output (I/O) expansion plug-in module	
CFW500-IOAD	Digital and analog input and output (I/O) expansion plug-in module	
CFW500-IOR	Relay output expansion plug-in module	
	Functionality expansion	
CFW500-ENC	Plug-in module with encoder input	
CFW500-CUSB	Plug-in module with USB port	
	Communication on Fieldbus network	
CFW500-CCAN	CAN communication plug-in module (CANopen/DeviceNet)	
CFW500-CRS232	RS232 communication plug-in module	
CFW500-CRS485	RS485 communication plug-in module	
CFW500-CPDP	Profibus-DP communication plug-in module	
CFW500-CETH-IP	EtherNet-IP communication plug-in module	
CFW500-CEMB-TCP	Modbus-TCP communication plug-in module	
CFW500-CEPN-IO	Profinet IO communication plug-in module	

Note: 1) Accessory already included if the CFW500 version with the standard plug-in module is selected.
The plug-in modules can also be sold separately as an accessory item or spare part.

Configuration of the Plug-In Modules[1)]

Plug-in module	Functions															
	Inputs		Outputs			USB port	Input for Encoder[3)]	Fieldbus networks							Supply	
	Digital	Analog	Analog	Digital relay	Digital transistor			CANopen DeviceNet	RS232	RS485	Profibus-DP	EtherNet-IP	Modbus-TCP	Profinet-IO	10 V	24 V
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	5[2)]	1	1	4	1	-	-	-	-	1	-	-	-	-	1	1
CFW500-ENC	5[2)]	1	1	4	1	-	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	-
CFW500-CRS232	2	1	1	1	1	-	-	-	1	1	-	-	-	-	-	1
CFW500-CRS485	4	2	1	2	1	-	-	-	-	2	-	-	-	-	1	1
CFW500-CPDP	2	1	1	1	1	-	-	-	-	1	1	-	-	-	-	1
CFW500-CETH-IP	2	1	1	1	1	-	-	-	-	1	-	1	-	-	-	1
CFW500-CEMB-TCP	2	1	1	1	1	-	-	-	-	1	-	-	1	-	-	1
CFW500-CEPN-IO	2	1	1	1	1	-	-	-	-	1	-	-	-	1	-	1

Note: 1) All plug-in models have at least one RS485 port. The CFW500-CRS485 plug-in module has two RS485 ports.
The CFW500 allows the installation of one plug-in module per unit.
2) The digital inputs are always NPN, and it cannot be configured for PNP like the others.
3) Incremental Encoder (A/A - B/B).
See the installation guides of the plug-in modules on the website www.weg.net

Specification

Optional Items

They are hardware resources added to the CFW500 in the manufacturing process, and they should be requested via smart code.

Internal Dynamic Braking (IGBT)[1)]

Used for quick stop of the motor with external[2)] braking resistor.
The braking IGBT is available as standard in frames B, C, D and E ("DB" must be inserted in the item 8 of the smart code).

Notes: 1) Not available for frame size A.
2) External braking resistor not included. To specify the correct braking resistor, please reder to the CFW500 User's Manual.

NEMA1 Protection Kit (N1)

Insert "O...N1" in item 7 of the smart code, in frame sizes A, B, C, D and E.
According to the National Electrical Manufacturers Association (NEMA)[3)] standard, Type 1.

- Protecting against penetration of foreign solid objects (falling dust)
- Prevents access to hazardous parts
- Can also be added separately (see accessories)

Notes: 3) Not recommended for external use, only indoor applications or inside enclosures.
4) Image of frame size A with NEMA1 kit.

4)

Internal RFI Filter

The RFI filters installed on the CFW500 inverters are used to reduce the disturbance conducted from the inverter to the power line in the high frequency band (>150 kHz). If it is necessary to comply with the maximum emission levels of the electromagnetic compatibility standards, such as EN 61800-3 and EN55011, it is necessary to add an internal RFI filter to the CFW500, by means of filling C2 or C3 in item 8 of the smart code.

Specification

Optional Items

Conformal Coating

The standard version of the CFW500 offers protection class 3C2, according to IEC 60721-3-3, ensuring greater protection for applications in environments with corrosive chemicals.
It is possible to request an extra coating on the internal circuit boards, Protection Class 3C3, according to IEC 60721-3-3, by adding EC to item 9 of the smart code, ensuring even greater protection for applications in harsh corrosive environment.

Note: in order to select the CFW500 without plug-in module (H00) and with extra coating on the internal circuit boards (HEC), H00EC must be filled in item 9 of the smart code.

Pump Genius

To use CFW500 with the Pump Genius Simplex or Multipump, contact the WEG Automation sales department.

Accessories

The accessories are hardware resources that may be added to the CFW500 in the application, according to the table below:

Reference	Description	Illustrative figures
	Memory	
CFW500-MMF	Flash memory module	
Interfaces		
CFW500-HMIR	Remote operating interface (HMI)	
CFW500-CCHMIR1M	1-meter cable set for remote operating interface (HMI)	
CFW500-CCHMIR2M	2-meter cable set for remote operating interface (HMI)	
CFW500-CCHMIR3M	3-meter cable set for remote operating interface (HMI)	
CFW500-CCHMIR5M	5-meter cable set for remote operating interface (HMI)	
CFW500-CCHMIR75M	7.5-meter cable set for remote operating interface (HMI)	
CFW500-CCHMIR10M	10-meter cable set for remote operating interface (HMI)	
Description		
CFW500-KN1A	NEMA 1 Kit - size A (standard for option N1)	
CFW500-KN1B	NEMA 1 Kit - size B (standard for option N1)	
CFW500-KN1C	NEMA 1 Kit - size C (standard for option N1)	
CFW500-KN1D	NEMA 1 Kit - size D (standard for option N1)	
CFW500-KN1E	NEMA 1 Kit - size E (standard for option N1)	
CFW500-KPCSA	Shielding kit for the power cables - size A (standard for option C2 and C3)	
CFW500-KPCSB	Shielding kit for the power cables - size B (standard for option C2 and C3)	
CFW500-KPCSC	Shielding kit for the power cables - size C (standard for option C2 and C3)	
CFW500-KPCSD	Shielding kit for the power cables - size D (standard for option C2 and C3)	
CFW500-KPCSE	Shielding kit for the power cables - size E (standard for option C2 and C3)	

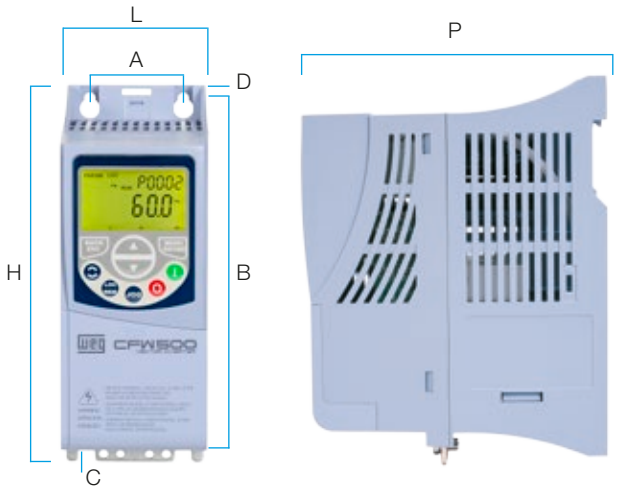
Specification

CFW500 Recommended WEG Protections

CFW500 reference	Power supply (V)		Rated output current (A)	Frame size	IEC protections[1]					
					Recommended WEG semicondutor fuse and switch-disconnector				Recommended WEG motor-protective circuit breaker[2]	
					I^2t (A^2s)	Current (A)	Reference		Current (A)	WEG reference
CFW500A01P6S2	Single-phase	200-240	1.60	A	373	20	FNH00-20K-A	FSW160-3	6.30	MPW18-3-D063
CFW500A02P6S2			2.60		373	20	FNH00-20K-A	FSW160-3	10.00	MPW18-3-U010
CFW500A04P3S2			4.30		373	25	FNH00-25K-A	FSW160-3	16.00	MPW18-3-U016
CFW500A07P0S2			7.00		800	40	FNH00-40K-A	FSW160-3	25.00	MPW40-3-U025
CFW500B07P3C2S2			7.30	B	450	40	FNH00-40K-A	FSW160-3	25.00	MPW40-3-U025
CFW500B10P0C2S2			10.00		450	63	FNH1-63K-A	FSW250-3	32.00	MPW40-3-U032
CFW500A01P6B2	Single phase or three-phase	200-240	1.60	A	680	20	FNH00-20K-A	FSW160-3	6.30 / 2.5[3]	MPW18-3-D063 / MPW18-3-D025[3]
CFW500A02P6B2			2.60		680	20	FNH00-20K-A	FSW160-3	4.00[3]	MPW18-3-U010 / MPW18-3-U004[3]
CFW500A04P3B2			4.30		680	25/20[3]	FNH00-25K-A / FNH00-20K-A[3]	FSW160-3	16.00 / 6.30[3]	MPW18-3-U016 / MPW18-3-D063[3]
CFW500B07P3B2			7.30	B	450	40/20[3]	FNH00-40K-A / FNH00-20K-A[3]	FSW160-3	25.00 / 16.00[3]	MPW40-3-U025 / MPW18-3-U016[3]
CFW500B10P0B2			10.00		450	63/25[3]	FNH1-63K-A / FNH00-25K-A[3]	FSW250-3 / FSW160-3[3]	32.00 / 16.00[3]	MPW40-3-U032 / MPW18-3-U016[3]
CFW500A07P0T2	Three-phase	200-240	7.00	A	680	20	FNH00-20K-A	FSW160-3	10.00	MPW18-3-U010
CFW500A09P6T2			9.60		1,250	25	FNH00-25K-A	FSW160-3	16.00	MPW18-3-U016
CFW500B16P0T2			16.00	B	1,000	40	FNH00-40K-A	FSW160-3	25.00	MPW40-3-U025
CFW500C24P0T2			24.00	C	1,000	63	FNH00-63K-A	FSW160-3	40.00	MPW40-3-U040
CFW500D28P0T2			28.00	D	2,750	63	FNH00-63K-A	FSW160-3	40.00	MPW65-3-U040
CFW500D33P0T2			33.00		2,750	80	FNH00-80K-A	FSW160-3	50.00	MPW65-3-U050
CFW500E47P0T2			47.00	E	2,750	100	FNH00-100K-A	FSW160-3	65.00	MPW80-3-U080
CFW500E56P0T2			56.00		6,600	125	FNH00-125K-A	FSW160-3	80.00	MPW65-3-U065
CFW500A01P0T4	Three-phase	380-480	1.00	A	450	20	FNH00-20K-A	FSW160-3	1.60	MPW18-3-D016
CFW500A01P6T4			1.60		450	20	FNH00-20K-A	FSW160-3	2.50	MPW18-3-D025
CFW500A02P6T4			2.60		450	20	FNH00-20K-A	FSW160-3	4.00	MPW18-3-U004
CFW500A04P3T4			4.30		450	20	FNH00-20K-A	FSW160-3	6.30	MPW18-3-D063
CFW500A06P1T4			6.10		450	20	FNH00-20K-A	FSW160-3	10.00	MPW18-3-U010
CFW500B02P6T4			2.60	B	450	20	FNH00-20K-A	FSW160-3	4.00	MPW18-3-U004
CFW500B04P3T4			4.30		450	20	FNH00-20K-A	FSW160-3	6.30	MPW18-3-D063
CFW500B06P5T4			6.50		450	20	FNH00-20K-A	FSW160-3	10.00	MPW18-3-U010
CFW500B10P0T4			10.00		1,000	25	FNH00-25K-A	FSW160-3	16.00	MPW18-3-U016
CFW500C14P0T4			14.00	C	1,000	35	FNH00-35K-A	FSW160-3	20.00	MPW40-3-U020
CFW500C16P0T4			16.00		1,000	35	FNH00-35K-A	FSW160-3	25.00	MPW40-3-U025
CFW500D24P0T4			24.00	D	1,800	63	FNH00-63K-A	FSW160-3	40.00	MPW65-3-U040
CFW500D31P0T4			31.00		1,800	63	FNH00-63K-A	FSW160-3	50.00	MPW65-3-U050
CFW500E39P0T4			39.00	E	2,100	80	FNH00-80K-A	FSW160-3	50.00	MPW65-3-U050
CFW500E49P0T4			49.00		13,000	100	FNH00-100K-A	FSW160-3	55.00	MPW65-3-U065
CFW500C01P7T5	Three-phase	500-600	1.70	C	495	20	FNH00-20K-A	FSW160-3	2.50	MPW18-3-U025
CFW500C03P0T5			3.00		495	20	FNH00-20K-A	FSW160-3	4.00	MPW18-3-U004
CFW500C04P3T5			4.30		495	20	FNH00-20K-A	FSW160-3	6.30	MPW18-3-U063
CFW500C07P0T5			7.00		495	20	FNH00-20K-A	FSW160-3	10.00	MPW18-3-U010
CFW500C10P0T5			10.00		495	25	FNH00-25K-A	FSW160-3	16.00	MPW18-3-U016
CFW500C12P0T5			12.00		495	25	FNH00-25K-A	FSW160-3	16.00	MPW18-3-U016

Notes: 1) For UL protections, consult WEG Automation sales department.
2) Protection of the electrical circuit only. In order to protect the VSDs, use the recommended semiconductor fuses.
3) The first value refers to the single-phase power supply and the second value to the three-phase power supply.
4) Designed for exclusive industrial or professional use.

Sizes



Front view *Side view*

Size	A	B	C	D	H	L	P	Weight
	mm	mm	mm	mm	mm	mm	mm	kg
A	50.0	175.0	11.9	7.2	189.0	75.0	150.0	0.8
B	75.0	185.0	11.8	7.3	199.0	100.0	160.0	1.2
C	100.0	195.0	16.7	5.8	210.0	135.0	165.0	2.0
D	125.0	290.0	27.5	10.2	306.6	180.0	166.5	4.3
E	150.0	330.0	34.0	10.6	350.0	220.0	191.5	10.0

Note: for the dimensions in the NEMA version, refer to the user manual.

Standards

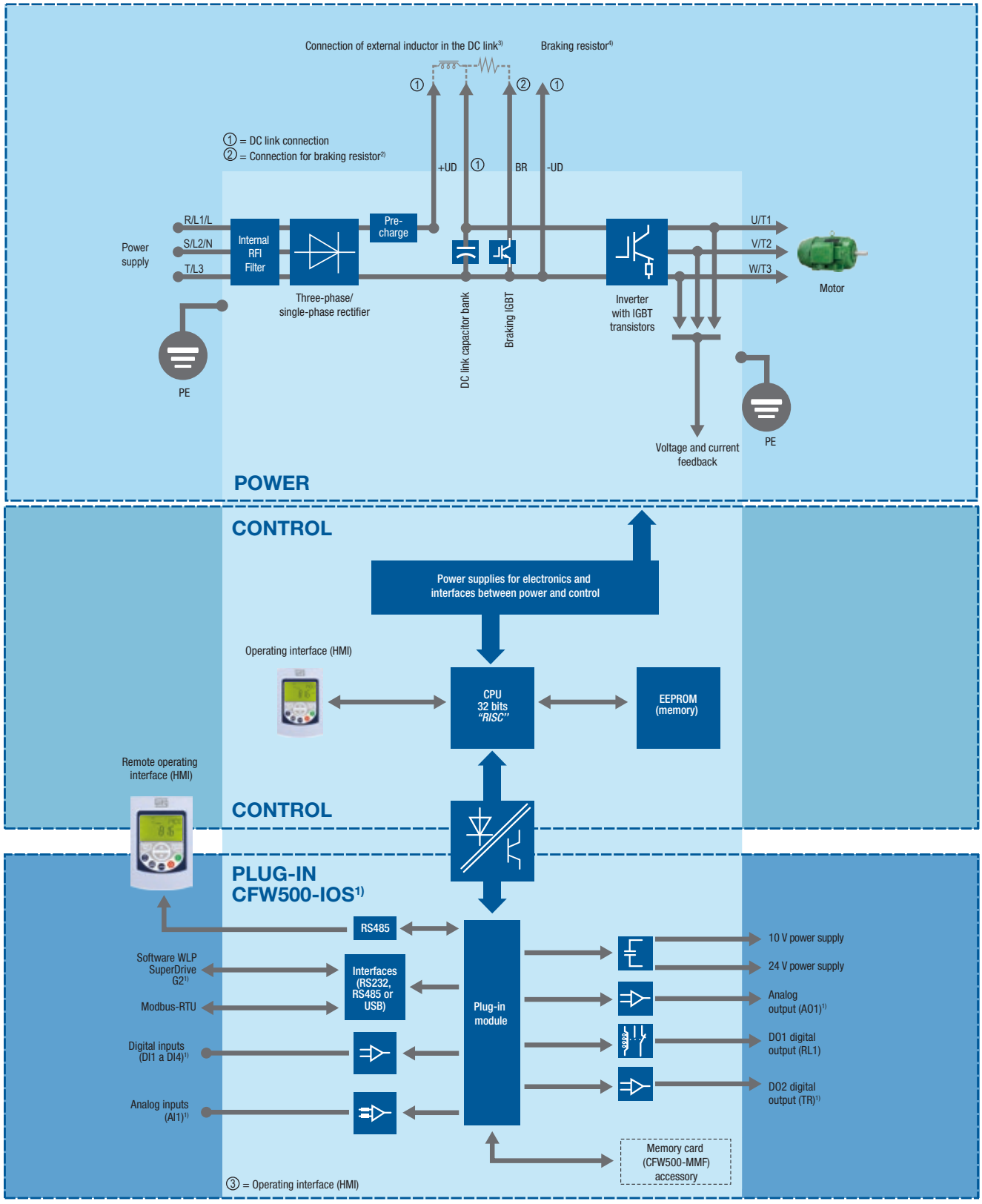
Standards	Safety standards	UL 508C - Power conversion equipment
		UL 840 - Insulation coordination including clearances and creepage distances for electrical equipment
		EN 61800-5-1 - Safety requirements electrical, thermal and energy
		EN 50178 - Electronic equipment for use in power installations
		EN 60204-1 - Safety of machinery. Electrical equipment of machines. Part 1: general requirements Note: In order to have a machine in accordance with this standard, the manufacturer of the machine is responsible for installing an emergency stop device and a device for disconnection from the power line
		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
	Electromagnetic compatibility 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 characteristcs 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 - Part 4: testing and measurement techniques - Section 3: ratiated, radio-frequency, electromagnetic field immunity test
		EN 61000-4-4 - Electromagnetic compatibility - Part 4: testing and measurement techniques - Section 4: electrical fast transient/burst immunity test
		EN 61000-4-5 - Electromagnetic compatibility - Part 4: testing and measurement techniques - Section 5: surge immunity test
		EN 61000-4-6 - Electromagnetic compatibility - 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

Technical Specifications

Power rating	Power supply	Tolerance: -15 to +10%
		Frequency: 50/60 Hz (48 Hz to 62 Hz)
		Phase imbalance: ≤3% of the rated phase-phase input voltage
		Transient voltages and overvoltages according to Category III (EN 61010/UL 508C)
		Maximum of 10 (line) connections per hour (1 every 6 minutes)
		Typical efficiency: ≥97%
Control	Method	V/F (scalar) VVW: voltage vector control Vector without encoder (sensorless) and closed loop vector with encoder PWM SVM (space vector modulation)
	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
	Sensorless	Speed regulation: 0.5% of the rated speed Speed variation range: 1:100
	Vector control with Encoder	Speed regulation: ±0.01% of the rated speed Speed variation range: 1:100
Environment conditions	Temperature around the CFW500	0 °C to 40 °C - NEMA1 0 °C to 40 °C - IP20 side by side and / or with RFI filter 0 °C to 50 °C - IP20 without RFI filter For temperatures above the specification, it is necessary to apply a 2% of current derating for each degree Celsius (ºC), limited to an increase of 10 ºC
	Aggressive environments	Protection Class 3C2 - Standard coating on the internal circuits, according to IEC 60721-3-3 (standard model)
		Protection Class 3C3 - Extra coating - optional, according to IEC 60721-3-3 (optional)
	Air relative humidity	5% to 95% non-condensing
	Altitude	Up to 1,000 m (maximum altitude under normal conditions) 1,000 to 4,000 m: current derating of 1% for each 100 m above 1,000 m of altitude
	Pollution degree	2 (EN 50178 and UL 508C), with non-conductive pollution Condensation must not cause conduction of the accumulated residues
Inputs[1)]	Analog	1 isolated 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 accepted in the inputs: 30 V dc
	Digital	4 isolated inputs Programmable functions: Active high (PNP): maximum low level of 15 V dc; minimum high level of 20 V dc Active low (NPN): maximum low level of 5 V dc; minimum high level of 9 V dc Maximum input voltage of 30 V dc Input current: 4.5 mA Maximum input current: 5.5 mA
Outputs[1)]	Analog	1 isolated output. Levels (0 to 10) V or (0 to 20) mA or (4 to 20) mA Linearity error ≤0.25% Programmable functions RL ≥10 kΩ (0 to 10 V) or RL ≤500 Ω (0 to 20 mA / 4 to 20 mA)
	Relay	1 relay with NO/NC contact Maximum voltage: 240 V ac Maximum current of 0.5 A Programmable functions
	Transistor	1 isolated open sink digital output (using as reference the 24 V dc power supply) Maximum current of 150 mA (maximum capacity of the 24 V dc power supply)[2)] Programmable functions
	Power supply	24 V dc power supply. Maximum capacity: 150 mA[2)] Power supply of 10 V dc. Maximum capacity: 2 mA
Communication	Selectable plug-in	Fieldbus: CANopen, DeviceNet, Profibus-DP, EtherNet-IP, Modbus-TCP, Profinet-IO USB, RS485 and RS232 ports
Safety	Protection	Phase-phase overcurrent/short circuit in the output Phase-ground overcurrent/short circuit in the output Undervoltage/overvoltage in the power Overtemperature of the heatsink Motor overload Overload on the power module (IGBTs) External fault / alarm Programming error
Operating interface (HMI)	Standard (built in the CFW500)	9 keys: Run/Stop, Increment, Decrement, Direction of rotation, Jog, Local/Remote, Back/Esc and Enter/Menu LCD Display It allows accessing/changing all the parameters Accuracy of the indications: Current: 5% of the rated current Speed resolution: 0.1 Hz
Protection degree	IP20	Sizes A, B, C, D and E
	NEMA1/IP20	Sizes A, B, C, D and E with NEMA1 kit

Notes: 1) The number and/or types of analog/digital inputs/outputs may vary according to the plug-in module (accessory) used. In the table above, the standard plug-in module (CFW500-IOS) was taken into account. For further information, refer to the CFW500 user manual.
2) The maximum capacity of 150 mA considers the load of the 24 V power supply plus the transistor output, that is, the sum of the consumption of both must not exceed 150 mA.
3) Designed for exclusive industrial or professional use.

Block Diagram



Notes: 1) The number of inputs and outputs (analog and digital), as well as other resources, may vary according to the plug-in module used. For further information, refer to the CFW500 user manual.
2) Not available for size A.
3) Available for sizes D and E only. Inductor on the DC link not included.
4) Resistor not included. Internal dynamic braking (IGBT) built-in on sizes B, C, D and E.

Global presence is essential, as much as understanding your needs.

Global Presence

With more than 30,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our ***CFW500*** are the right choice for your application and business, assuring safety, efficiency and reliability.

- ***Availability*** is to have a global support network
- ***Partnership*** is to create solutions that suits your needs
- ***Competitive edge*** is to unite technology and inovation