

# DATASHEET

## Variable Speed Drives



### Main Features



Product coding : CFW501C24P0T2DB20C3  
 Product code : 12209558  
 Product reference : CFW501 HVAC  
 Accessory module (control) : CFW500-485

### Basic data

Power supply : 200-240 V  
 Input minimum-maximum voltage : 170-264 V  
 - In : 3  
 - Out : 3

Supply voltage range	200-240 V	
Overload cycle	Normal Overload (ND)	Heavy Overload (HD)
WDC_CORRENTE_NOMINAL		
Overload current for 60 sec (HD)	26	26
Overload current for 3 sec (HD)	40	40

Maximum applicable motor:

Voltage/Frequency	Power (HP/kW) [1]	
	Normal Overload (ND)	Heavy Overload (HD)
220V / 50Hz	Not applicable	7,5 / 5,5
220V / 60Hz	Not applicable	7,5 / 5,5
230V / 50Hz	Not applicable	7,5 / 5,5
230V / 60Hz	Not applicable	7,5 / 5,5
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable

Accessory module (control) : CFW500-485  
 Dynamic braking [2] : Standard with braking  
 External electronic supply 24Vcc : Not available  
 Safety Stop : Not available  
 Internal RFI filter : With filter (C3 category)  
 External RFI filter : Not available  
 Link Inductor : No  
 Memory card : Not included in the product  
 USB port : Only with plug-in  
 Line frequency : 50/60Hz  
 Line frequency range (minimum - maximum) : 48-62 Hz  
 Phase unbalance : Less or equal to 3% of input rated line voltage  
 Transient voltage and overvoltage : Category III  
 Single-phase input current [3] : Not applicable  
 Three-phase input current [3] : 22,3 A  
 Power factor : 0,95  
 Displacement factor : 0,98  
 Rated efficiency : ≥ 97%  
 Maximum connections (power up cycles - on/off) per hour : 10 (1 each 6 minutes)  
 DC power supply : Allow  
 Standard switching frequency : 5 kHz  
 Selectable switching frequency : 2,5 and 15 kHz  
 Real-time clock : Not available  
 COPY Function : Yes, by MMF  
 Dissipated power:

Mounting type	Overload	
	ND	HD
Surface	183 W	183 W
Flange	Not applicable	Not applicable

### Source available to the user

Output voltage : 24 Vcc  
 Maximum capacity : 150 mA

### Control/performance data

Power supply : Switched-mode power supply  
 Control method : V/f (escalar) and VVW  
 Encoder interface : Only with plug-in  
 Control output frequency : 0-500 Hz  
 Frequency resolution : 0,015 Hz

### Control/performance data

V/F Control	
- Speed resolution	: 1% of rated speed
- Speed range	: 1:20
VVW Control	
- Speed resolution	: 1% of rated speed
- Speed range	: 1:30
Sensorless vector control	
- Speed resolution	: Not applicable
- Speed range	: Not applicable
Vector control with Encoder	
- Speed resolution	: Not applicable
- Speed range	: Not applicable

### Analog Inputs

Quantity (standard)	: 2
Levels	: 0-10V, 0-20mA and 4-20mA
Impedance for voltage input	: 100 k $\Omega$
Impedance for current input	: 500 $\Omega$
Function	: Programmable
Maximum allowed voltage	: 30 Vcc

### Digital inputs

Quantity (standard)	: 4
Activation	: Active low and high
Maximum low level	: 5 V (low) e 15 V (high)
Minimum high level	: 9 V (low) e 20 V (high)
Input current	: 4,5 mA
Maximum input current	: 5,5 mA
Function	: Programmable
Maximum allowed voltage	: 30 Vcc

### Analog outputs

Analogic outputs - Quantity (standard)	: 1
Levels	: 0 to 10V, 0 to 20mA and 4 to 20mA
RL for voltage output	: 10 k $\Omega$
RL for current output	: 500 $\Omega$
Function	: Programmable

### Digital outputs

Digital outputs - Quantity (standard)	: 2 NO/NC relay and 1 transistor
Maximum voltage	: 240 Vca and 24 Vcc
Maximum current	: 0,5 A and 150 mA
Function	: Programmable

### Communication

- Modbus-RTU (with accessory: Any plug-in module)
- Modbus/TCP (with accessory CFW500-CEMB-TCP)
- Profibus DP (with accessory: CFW500-CPDP)
- Profibus DPV1 (with accessory: CFW500-CPDP)
- Profinet (with accessory CFW500-CEPN-IO)
- CANopen (with accessory: CFW500-CCAN)
- DeviceNet (with accessory: CFW500-CCAN)
- EtherNet/IP (with accessory CFW500-CETH-IP)
- EtherCAT (Not available)
- BACnet (Not aplicable)

### Available protection

- Output phase-phase overcurrente/Short
- Overcurrent/Short circuit phase-ground
- Under/Overvoltage in power
- Heat sink overtemperature
- Motor overload
- IGBT's modules overload
- Fault/External alarm
- Programming error

### Operation interface (HMI)

Availiability	: Included in the product
Installation	: Fixed HMI
Number of HMI buttons	: 9
Display	: Numeric LCD
Indication accuracy	: 5% of rated current
Speed resolution	: 1 rpm
Standard HMI degree of protection	: IP20

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### Operation interface (HMI)

HMI battery type	: Not applicable
HMI battery life expectancy	: Not applicable
Remote HMI type	: Accessory
Remote HMI frame	: Not applicable
Remote HMI degree of protection	: IP54

### Ambient conditions

Enclosure	: IP20
Degree of pollution	: 2

Temperature around the inverter: of 0 °C / 32 °F to 50 °C / 122 °F. For temperatures above the specified is necessary to apply current reduction of 2 % per °C of 50 (122) o 60 °C (140 °F).

Relative humidity: 5% to 95% without condensation.

Altitude: up to 1000 m (3281 ft) under normal conditions. Of 1000 m (3281 ft) to 4000 m (13123 ft) reduce the current in 1% for each 100 m above of 1000 m (3281 ft). Reduce the maximum voltage (240 V for models 200...240 V, 480 V for models 380...480 V and 600 V for models 500...600 V) in 1,1% for each 100 m above of 2000 m.

### Sustainability policies

RoHS	: Yes
Conformal Coating	: 3C2

### Dimensions and weight

- Size	: C
- Height	: 210 mm / 8.3 in
- Width	: 135 mm / 5.31 in
- Depth	: 165 mm / 6.5 in
- Weight	: 2,0 kg / 4.4 lb

### Mechanical Installation

Mounting position	: Surface or DIN rail
Fixing screw	: M5
Tightening torque	: 3 N.m / 2.21 lb.ft
Allows side-by-side assembly	: No
Minimum spacing around the inverter:	
- Top	: 40 mm / 1.57 in
- Bottom	: 50 mm / 1.97 in
- Front	: 50 mm / 1.97 in
- Side	: 30 mm / 1.18 in

### Electrical connections

Cable gauges and tightening torques:

	Recommended cable gauge	Recommended tightening torque
Power	4,0 mm <sup>2</sup> (12 AWG)	1,7 N.m / 1,25 lb.ft
Braking	6,0 mm <sup>2</sup> (10 AWG)	1,7 N.m / 1,25 lb.ft
Grounding	4,0 mm <sup>2</sup> (12 AWG)	0,5 N.m / 0.37 lb.ft
Control	0,5 to 1,5 mm <sup>2</sup> (20 to 14 AWG)	0,5 N.m / 0.37 lb.ft

SoftPLC	: Yes, incorporated
Maximum breaking current	: 26,0 A
Minimum resistance for the brake resistor	: 15 Ω
Recommended aR fuse	: FNH00-63K-A
Recommended circuit breaker	: MPW40-3-U040
Disconnect switch	: Not applicable
Motor coupling box	: Not applicable

### Standards

Safety	<ul style="list-style-type: none"> <li>- UL 508C - Power conversion equipment.</li> <li>- UL 840 - Insulation coordination including clearances and creepage distances for electrical equipment.</li> <li>- EN 61800-5-1 - Safety requirements electrical, thermal and energy.</li> <li>- EN 50178 - Electronic equipment for use in power installations.</li> <li>- EN 60204-1-Safety of machinery. Electrical equipment of machines. Part 1: General requirements. Note: To have a machine in accordance with that standard, the manufacturer of the machine is responsible for the installation of an emergency-stop device and a network switching equipment.</li> <li>- EN 60146 (IEC 146) - Semiconductor converters.</li> <li>- EN 61800-2 - Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for low voltage adjustable frequency AC power drive systems.</li> </ul>
Electromagnetic Compatibility	<ul style="list-style-type: none"> <li>- EN 61800-3 - Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test methods.</li> <li>- EN 55011 - Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.</li> </ul>



### Standards

- CISPR 11 - Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement.
- EN 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test.
- EN 61000-4-3 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test.
- EN 61000-4-4 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 4: Electrical fast transient/burst immunity test.
- EN 61000-4-5 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 5: Surge immunity test.
- EN 61000-4-6 - Electromagnetic compatibility (EMC)- Part 4: Testing and measurement techniques - Section 6: Immunity to conducted disturbances, induced by radio-frequency fields.

Mechanical Construction

- EN 60529 e UL 50

### Certifications

UL, CE, RCM and EAC

### Notes

- 1) Motor power is orientative, valid for standard WEG Motors of IV poles. The correct sizing must be done according to the nominal current of the motor used, which must be less than or equal to the rated output current of the inverter;
- 2) Braking resistor is not included;
- 3) Considering minimum line impedance of 1%;
- 4) For more information, refer to the user manual of CFW500;
- 5) All images are merely illustrative.
- 6) For operation with switching frequency above nominal, apply derating to the output current (refer to the user manual).