

# DATASHEET

## Variable Speed Drives



### Main Features

Product coding : CFW100A01P6S220G2  
 Product code : 14248096  
 Reference : CFW100

### Basic data

Power supply : 200-240 V  
 Input minimum-maximum voltage : 170-264 V  
 Input phases : Single-phase  
 - In : 1  
 - Out : 3

	Heavy (HD)
Rated current (HD)	1.6
Overload current for 60 s (HD)	2,4 A
Single-phase input current (HD) [1]	

Maximum applicable motor:

Voltage/Frequency	Normal Overload (ND)	Heavy Overload (HD)
220V / 50Hz	Not applicable	0,33 / 0,25
220V / 60Hz	Not applicable	0,33 / 0,25
230V / 50Hz	Not applicable	0,33 / 0,25
230V / 60Hz	Not applicable	0,33 / 0,25
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable

External RFI filter : CFW100-KFABC-S2  
 Link Inductor :  
 Memory card : Not included in the product  
 USB port : Yes, by CFW100-CUSB  
 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  
 Typical input power factor : 0,70  
 Displacement factor : 0,98  
 Rated efficiency :  $\geq 97\%$   
 Maximum connections (power up cycles - on/off) per hour : 10 (1 each 6 minutes)  
 DC power supply :  
 Switching frequency [3]: : 5 kHz  
 Selectable switching frequency : 2,5 and 15 kHz  
 Real-time clock : Not available  
 COPY Function : Yes, by CFW100-CFW300-MMF  
 : 20 W

### Source available to the user

Output voltage : Not applicable  
 Maximum capacity : Not applicable

### Control/performance data

Power supply : Switched-mode power supply  
 Control method - induction motor : V/f (escalar) and VVW  
 Encoder interface : Not applicable  
 Control output frequency : 0-400 Hz  
 Frequency resolution : 0.1 Hz

### V/F Control

- V/F speed regulation - induction motor : 1% of rated speed  
 - V/F speed variation - induction motor : 1:20  
 VVW Control  
 - VVW speed regulation - induction motor : 1% of rated speed  
 - VVW speed variation - induction motor : 1:30  
 Sensorless vector control  
 - SLV speed regulation - induction motor : Not applicable  
 - SLV speed variation - induction motor : Not applicable  
 Vector control with Encoder  
 - ENC speed regulation - induction motor : Not applicable

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### V/F Control

- ENC speed variation - induction motor : Not applicable

### Analog Inputs

Quantity (standard) AI : Not available  
 AI levels : Not applicable  
 Impedance for AI voltage input : Not applicable  
 Impedance for AI current input : Not applicable  
 AI function : Not applicable  
 Maximum allowed voltage AI : Not applicable

### Digital inputs

Quantity (standard) AI : Not available  
 Activation : Active low and high  
 DI maximum low level : 5 V (low) and 10 V (high)  
 DI minimum high level : 10 V (low) and 20 V (high)  
 Input current : 11 mA  
 Maximum input current DI : 20 mA  
 Function : Programmable  
 Maximum allowed voltage : 30 Vcc

### Analog outputs

Analogic outputs - Quantity (standard) : Only with plug-in  
 Levels : Not applicable  
 RL for voltage output : Not applicable  
 RL for AO current output : Not applicable  
 Function : Not applicable

### Digital outputs

Digital outputs - Quantity (standard) : 3 NO relay and 1 transistor  
 Maximum voltage : Not applicable  
 Maximum current DO - transistor : Not applicable  
 Function : Not applicable

### Communication

- Modbus-RTU (with accessory: CFW100-CRS485, CFW100-CUSB or CFW100-CBLT)  
 - Modbus/TCP (Not available)  
 - Profibus DP (Not available)  
 - Profibus DPV1 (Not available)  
 - Profinet (Not available)  
 - CANopen (with accessory: CFW100-CCAN)  
 - DeviceNet (with accessory: CFW100-CCAN)  
 - EtherNet/IP (Not available)  
 - EtherCAT (Not available)  
 - Bluetooth (with accessory: CFW100-CBLT)  
 - BACnet (Not available)

### Available protection

- Output phase-phase overcurrente/Short  
 - Not applicable  
 - Under/Overvoltage in power  
 - Heat sink overtemperature  
 - Motor overload  
 - Not applicable  
 - Fault/External alarm  
 - Programming error  
 - CPU or memory failure

### Operation interface (HMI)

Availability : Included in the product  
 HMI installation : Fixed HMI  
 Number of HMI buttons : 4  
 Display : Numeric LCD  
 Indication accuracy : 10% of rated current  
 Speed resolution : 0,1 Hz  
 Standard HMI degree of protection : IP20  
 HMI battery type : Not applicable  
 HMI battery life expectancy : Not applicable  
 Remote HMI type : Accessory CFW100-KHMIR  
 Remote HMI frame : Not applicable  
 Remote HMI degree of protection : IP54

### Ambient conditions

Enclosure : IP20  
 Degree of pollution (EN50178 and UL508C or UL61800-5-1) : 2

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### Ambient conditions

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 (0,3% for each 100 ft above) of 1000 m (3281 ft). Reduce the maximum voltage (127 V for models 110...127 V and 240 V for models 200...240 V) in 1,1% for each 100 m above (0,33% for each 100 ft above) of 2000 m.

### Sustainability policies

RoHS : Yes  
Conformal Coating : 3C2 (IEC 60721-3-3:2002)

### Dimensions and weight

- Size : A  
- Height : 100 mm / 3.9 in  
- Width : 55 mm / 2.17 in  
- Depth : 129 mm / 5.08 in  
- Weight : 0.48 kg / 1.05 lb

### Mechanical Installation

Mounting position : DIN rail  
Fixing screw : M4 with PLMP kit  
Tightening torque : 2.5 N.m / 1.84 lb.ft  
Allows side-by-side assembly : Yes, without derating  
Minimum spacing around the inverter:  
- Top : 15 mm / 0.59 in  
- Bottom : 40 mm / 1.57 in  
- Front : 30 mm / 1.18 in  
- Minimum spacing around inverter : Not applicable

### Electrical connections

Cable gauges and tightening torques:

	Recommended cable gauge	Recommended tightening torque
Power	1,5 mm <sup>2</sup> (16 AWG)	1,4 N.m / 1,03 lb.ft
Braking	Not applicable	1,4 N.m / 1,03 lb.ft
Grounding	2,5 mm <sup>2</sup> (14 AWG)	1.4 N.m / 1.03 lb.ft
Control	0,5 to 1,5 mm <sup>2</sup> (20 to 14 AWG)	0,5 N.m / 0.37 lb.ft

### Additional especifications

SoftPLC : Yes, incorporated  
Maximum breaking current : Not available  
Minimum resistance for the brake resistor : Not available  
Recommended fuse : FNH00-20K-A  
: MPW40-3-D063

### 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> <li>- UL 508C - Power conversion equipment.</li> </ul>
Electromagnetic Compatibility [6]	<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> <li>- CISPR 11 - Industrial, scientific and medical (ISM) radio-frequency equipment</li> <li>- Electromagnetic disturbance characteristics - Limits and methods of measurement.</li> <li>- EN 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test.</li> <li>- EN 61000-4-3 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test.</li> </ul>

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### Standards

	<ul style="list-style-type: none"><li>- EN 61000-4-4 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 4: Electrical fast transient/burst immunity test.</li><li>- EN 61000-4-5 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 5: Surge immunity test.</li><li>- EN 61000-4-6 - Electromagnetic compatibility (EMC)- Part 4: Testing and measurement techniques - Section 6: Immunity to conducted disturbances, induced by radio-frequency fields.</li><li>- With external filter only</li></ul>
Mechanical Construction	<ul style="list-style-type: none"><li>- EN 60529 - degrees of protection provided by enclosures (IP code).</li><li>- UL 50 - enclosures for electrical equipment.</li><li>- IEC 60721-3-3 - classification of environmental conditions - part 3: classification of groups of environmental parameters and their severities - section 3: stationary use at weather protected locations level 3m4.</li><li>- EN 60529 e UL 50</li></ul>

### Certifications

#### Notes

- 1) Considering minimum impedance of 1%;
- 2) 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;
- 3) For operation with a switching frequency above nominal, apply derating to the output current (refer to the user manual).
- 4) Surface mounting, HD overload.
- 5) Only for electrical circuit protection. For protection of inverters, use aR fuses indicated.
- 6) Only with external filter.
- 7) For more information, refer to the user manual of CFW100;
- 8) All images are merely illustrative.