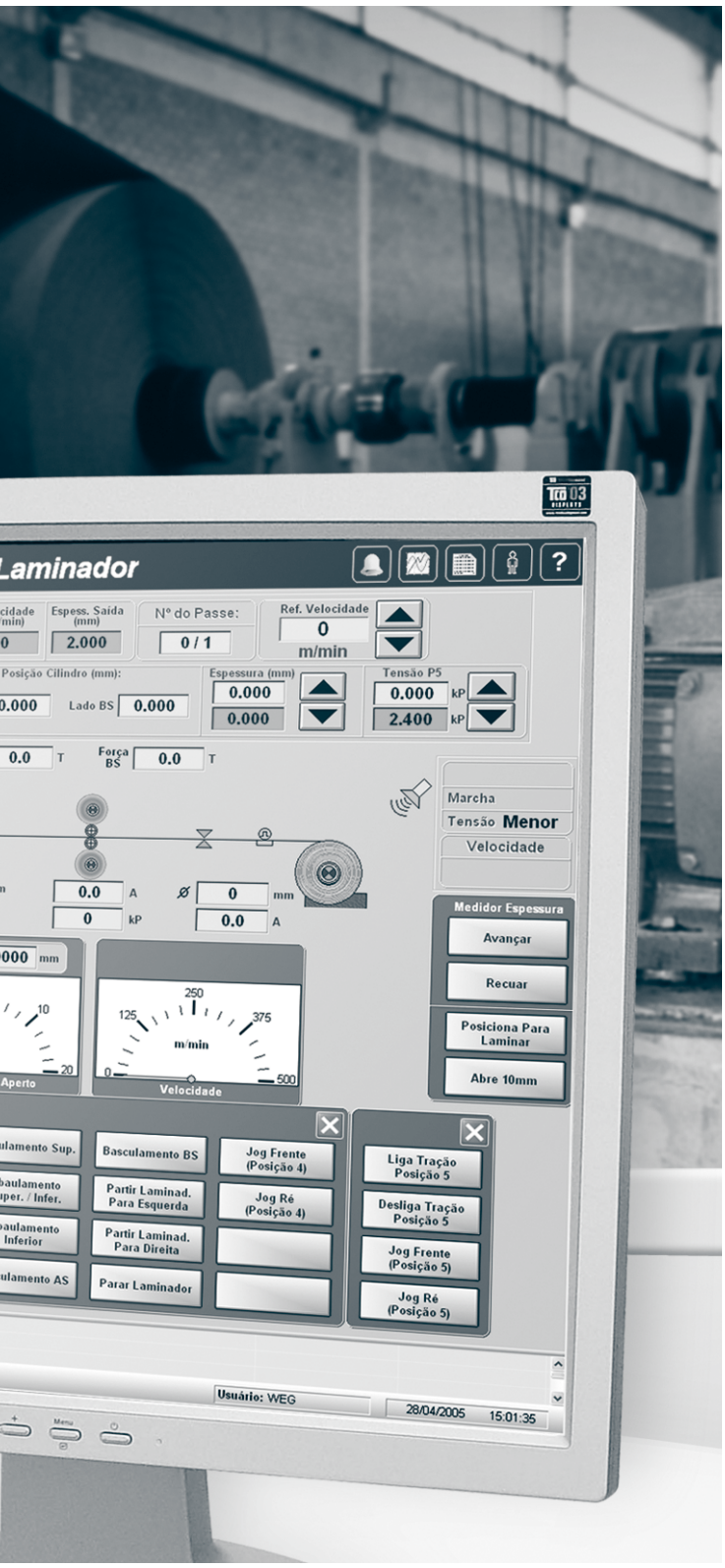
Automation

Variable Speed Drives

VSD



VSDs are intended for speed control of three-phase induction motors in a wide variety of industrial applications. The WEG VSD series offer state-of-the-art technology in motor control with a modern design, great number of features, and easily installed and operated.

These products are designed with high-software optimization and are easily set through a simple Human-Machine Interface. Additionally, they comprise functions and resources that allow protection and control of electric motors extremely easily and efficiently. They are suitable to operate with scalor or vector control.

CFW-08

The WEG CFW-08 VSDs are intended for speed control of three-phase induction motors. These VSDs incorporate the most advanced technology features in a compact product, besides a set of special functions that are available. WEG CFW-08 VSDs are easy to install and operate. They are equipped with an optimized software that can be easily set through a keypad, which enables them to process and control most of industrial machines. In addition, the CFW-08 Plus is equipped with dead time compensation technique, thus avoiding motor instability and providing increase of torque at low speeds.

Standard Features

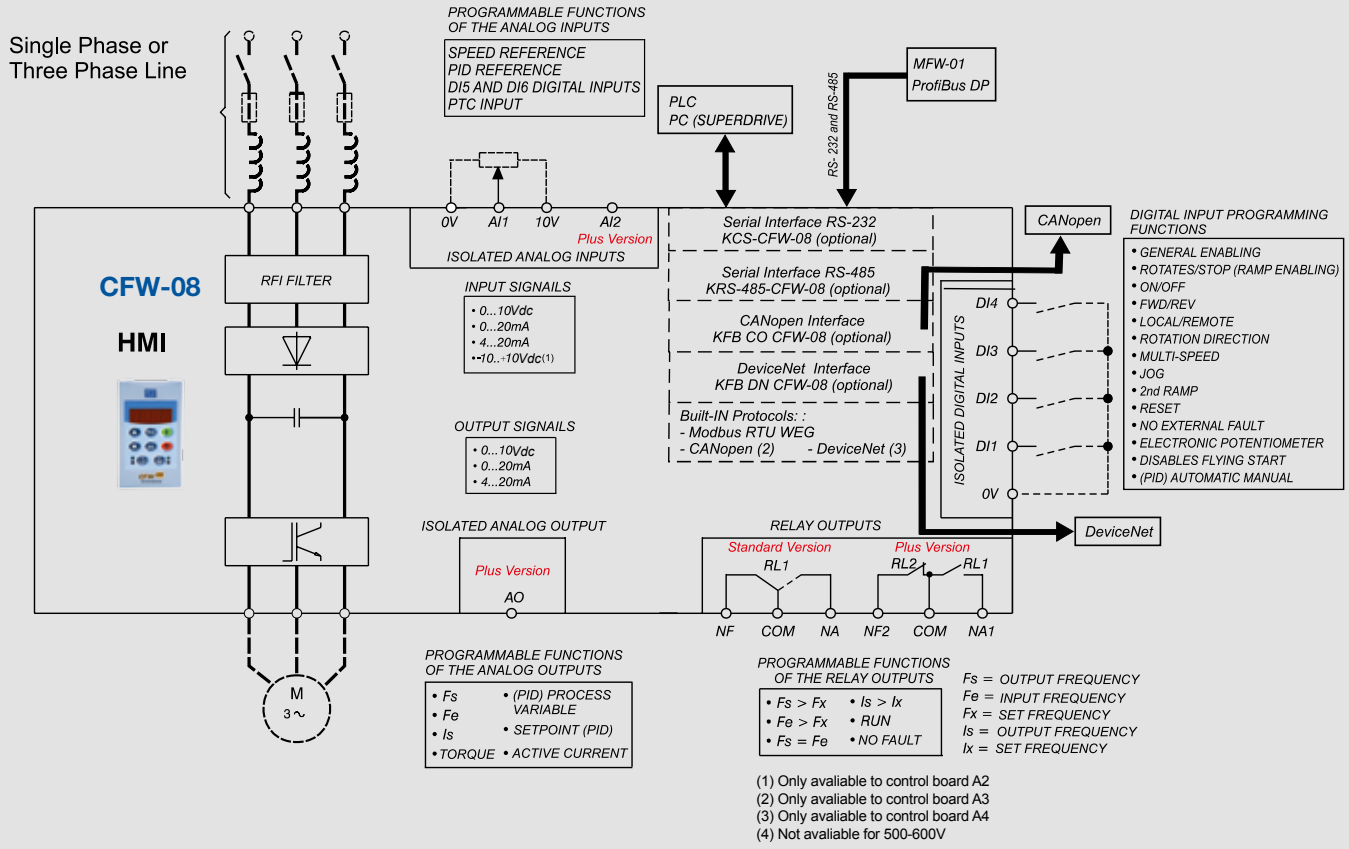
- DSP (Digital Signal Processor) control provides a reasonable improvement of inverter performance
- State-of-the-Art Technology with the newest generation of IGBTs
- Electronics with SMD components
- Scalor (V/F) or sensorless vector control
- Sinusoidal PWM modulation- Space Vector Modulation
- Latest generation IGBT modules
- Considerable motor noise reduction
- Interface with membrane keypad (standard and remote HMI)
- Flexible programming
- Compact dimensions
- Easy installation and operation
- High starting torque
- Conduit installation kit
- Optional internal (class A) and external (class B) EMC filters

Main Applications

- Centrifugal pumps
- Process pumps
- Fans / Exhausters
- Stirrers / Mixers
- Extruding machines
- Conveyors
- Roller tables
- Granulators / Peletizers
- Driers / Rotating ovens
- Rotating filters
- Winding / Unwinding machines
- Cutting and welding machines

Certifications

Block Diagram



CFW-08 - Specification Table

Power Supply Voltage	Power Supply	CFW-08 DRIVES				Maximum Applicable Motor			Dimensions (mm)			Weight (Kg)
		Part Number CFW-08	Dynamic Braking	Current (A)	Size	Voltage (V)	Power rating					
							HP	kW	H	W	D	
200/220/230/240V	Single-Phase	CFW080016S2024ESZ	No	1.6	1	230	0.25	0.25	151	75	131	1
		CFW080026S2024ESZ	No	2.6	1		0.5	0.37				
		CFW080040S2024ESZ	No	4	1		1	0.75				
	Single-Phase or Three-Phase	CFW080016B2024ESZ	No	1.6	1		0.33	0.25	151	75	131	1
		CFW080026B2024ESZ	No	2.6	1		0.5	0.37				
		CFW080040B2024ESZ	No	4	1		1	0.75				
		CFW080073B2024ESZ	Yes	7.3	2		2	1.5	200	115	150	2
		CFW080100B2024ESZ	Yes	10	2		3	2.2				
	Three-Phase	CFW080070T2024ESZ	No	7	1		2	1.5	151	75	131	1
		CFW080160T2024ESZ	Yes	16	2		5	4	200	115	150	2
		CFW080220T2024ESZ	Yes	22	3		7.5	5.5	203	143	165	2.5
		CFW080280T2024ESZ	Yes	28	4		10	7.5	290	182	196	6
		CFW080330T2024ESZ	Yes	33	4		12.5	9.5				
380/400/415/440/480V	Three-Phase	CFW080010T2024ESZ	No	1	1	400/415	0.25	0.25	151	75	131	1
		CFW080016T2024ESZ	No	1.6	1		0.5	0.55				
		CFW080026T2024ESZ	No	2.6	1		1	0.75				
		CFW080040T2024ESZ	No	4	1		2	1.5				
		CFW080027T2024ESZ	Yes	2.7	2		1.5	1.1	200	115	150	2
		CFW080043T2024ESZ	Yes	4.3	2		2	1.5				
		CFW080065T2024ESZ	Yes	6.5	2		3	3				
		CFW080100T2024ESZ	Yes	10	2		6	4				
		CFW080130T2024ESZ	Yes	13	3		7.5	5.5	203	143	165	2.5
		CFW080160T2024ESZ	Yes	16	3		10	7.5				
		CFW080240T2024ESZ	Yes	24	4		15	11	290	182	196	6
		CFW080300T2024ESZ	Yes	30	4		20	15				
	Three-Phase	CFW080010T2024ESZ	No	1	1	440	0.33	0.25	151	75	131	1
		CFW080016T2024ESZ	No	1.6	1		0.75	0.55				
		CFW080026T2024ESZ	No	2.6	1		1.5	1.1				
		CFW080040T2024ESZ	No	4	1		2	1.5				
		CFW080027T2024ESZ	Yes	2.7	2		1.5	1.1	200	115	150	2
		CFW080043T2024ESZ	Yes	4.3	2		2	1.5				
		CFW080065T2024ESZ	Yes	6.5	2		4	3				
		CFW080100T2024ESZ	Yes	10	2		6	4.5				
		CFW080130T2024ESZ	Yes	13	3		7.5	5.5	203	143	165	2.5
		CFW080160T2024ESZ	Yes	16	3		10	7.5				
		CFW080240T2024ESZ	Yes	24	4		15	11.3	290	182	196	6
		CFW080300T2024ESZ	Yes	30	4		20	15				
500-600V	Three-Phase	CFW080017T5060ESZ	Yes	1.7	3	525	1	0.75	203	143	165	2.5
		CFW080030T5060ESZ	Yes	3.0			2	1.5				
		CFW080043T5060ESZ	Yes	4.3			3	2.2				
		CFW080070T5060ESZ	Yes	7.0			5	4				
		CFW080100T5060ESZ	Yes	10			7.5	5.5				
		CFW080120T5060ESZ	Yes	12			10	7.5				
500-600V	Three-Phase	CFW080017T5060ESZ	Yes	1.7	3	575	1	0.75	203	143	165	2.5
		CFW080030T5060ESZ	Yes	3.0			2	1.5				
		CFW080043T5060ESZ	Yes	4.3			3	2.2				
		CFW080070T5060ESZ	Yes	7.0			5	3.7				
		CFW080100T5060ESZ	Yes	10			7.5	5.5				
		CFW080120T5060ESZ	Yes	12			10	7.5				

NOTE: The maximum motor power ratings listed above were based on WEG II and IV-pole motors. For motors with different number of poles (ex.: VI and VIII poles), other voltages (ex.: 220V, 380V and 460V) and/or motors from other manufacturers, specify the VSD according to the rated motor current.

CFW-08 - Models and optional accessories

Standard

Standard Model with HMI-CFW08-P (Human Machine Interface)

Blank Keypad

Optional Model without HMI (with dummy cover/blank keypad)

Serial Interface Module RS-485

Optional Kit: Serial communication RS-485 (KRS-485-CFW08)

Serial Interface Module RS-232
HMI Remote Interface Module

Optional Kit: Serial communication RS-232 (KCS-CFW08)

Optional Kit: Serial, remote HMI interface (MIS-CFW08-RS)

Parallel HMI Remote Interface Module

Optional Kit: Parallel, remote HMI interface (MIP-CFW08-RP)

DIN Rail Mounting Base

Optional Kit: Din rail mounting base(KMD-CFW08-M1) (only for Size 1)

Connection in Metallic Conduit

Optional Kit: Connection in Metallic Conduit (NEMA 1/IP21) KN1-CFW08-MX available for sizes 1 and 2

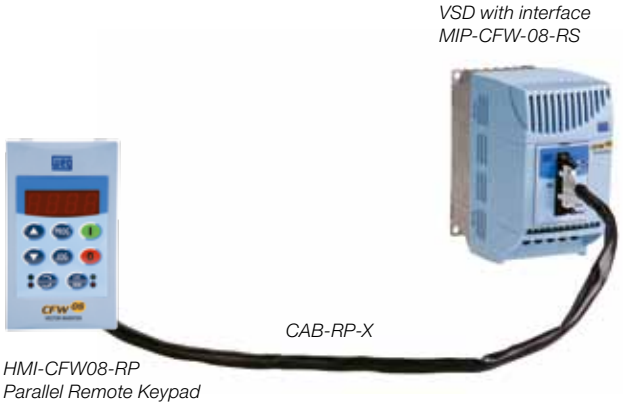
Interface module KAC – 120

Optional Kit: Driving at 120 Vac of the digital inputs (KAC – 120 – CFW08)

CFW-08 - Remote Keypad

HMI remote on parallel

- It allows starting on panel door with maximum distance of 10m.



HMI remote serial

- It allows starting on panel door with maximum distance of 150m (Distance above 10m requires external source 12V / 250 mA).
- Copy function available

Superdrive

WEG Superdrive is a windows based software program that follows serial (RS 232 or RS 485) communication between a PC and all WEG Soft Starters and Variable Speed Drives (VSD). Superdrive is an excellent programming, documentation, and troubleshooting tool for WEG Starters and VSDs.

Superdrive is available for free download at www.weg.net. Hardware accessories may be required depending on the Soft Starter or VSD line.

Model with SUPERDRIVE Kit KSD-CFW08

CFW-08 - Fast network interconnection

CFW-08 Speed drives can be interconnected in “FieldBus” fast communication networks through the most wide spread, standard protocols. They can be:

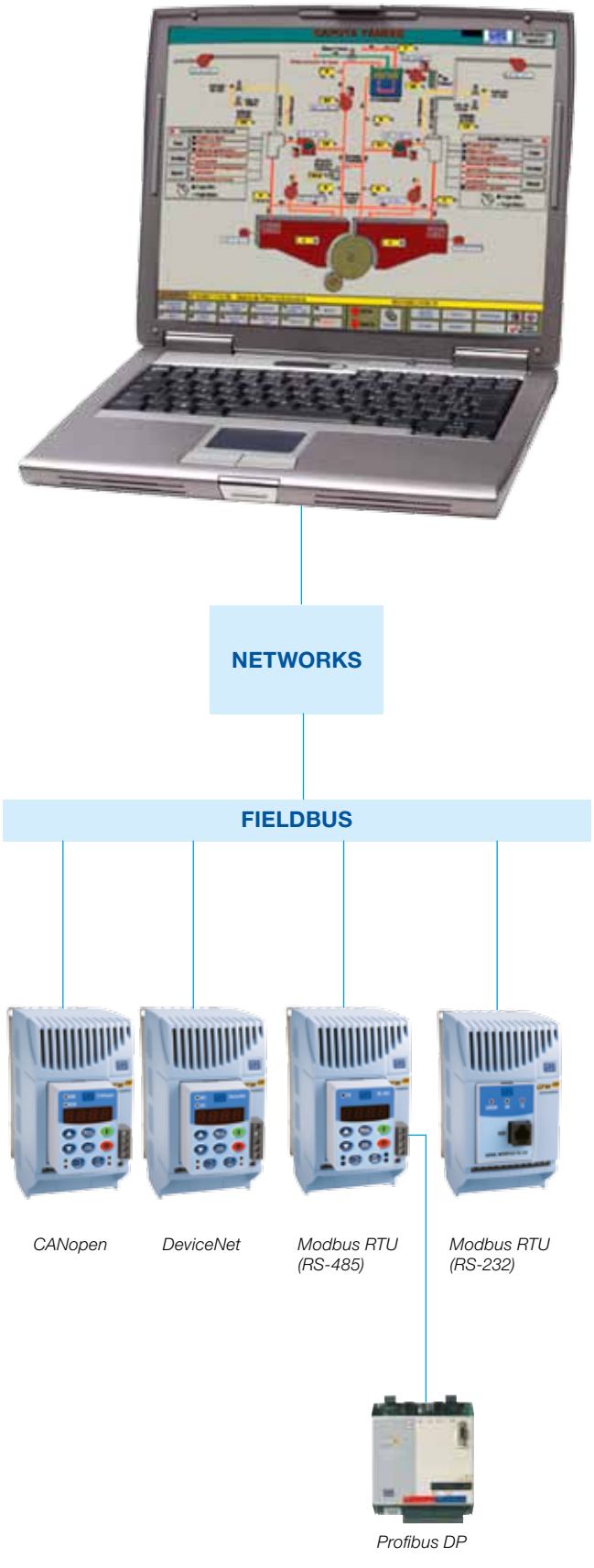
FIELDBUS →
- Profibus DP (optional)
- DeviceNet (built-in protocol) (1)
- ModbusRTU (built-in protocol)
- CANopen (built-in protocol) (1)

Intended mainly for the integration of large, industrial automation plants, the fast communication networks provide advantages in the supervision, monitoring and control of the drives. This provides high working performance and great operational flexibility, which are required characteristics in complex systems and / or integrated applications.

For the interconnection of the CFW-08 variable speed drives, the following options and characteristics can be used:

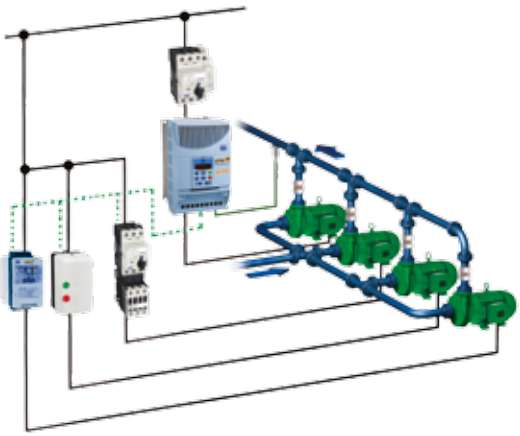
- Profibus DP: Communication uses a serial interface RS-232 (KRS-232-CFW08) or RS-485 (KRS-485-CFW08) switched to an MFW01 gateway for the Profibus DP.
- DeviceNet: Software available through the A4 control card and Device-Net interface (KFB-DN-CFW08) (1)
- CANopen: Software available through the A3 control card and CANopen interface (KFB-CO-CFW08) (1)
- Modbus - RTU: Software available through the A1 and A2 standard control cards and serial interface RS-232 (KCS-CFW08) or RS-485 (KRS-485-CFW08)

(1) Not avaliable for 500-600V



CFW-08 - Multipump Drive

VSDs allow a system to maintain the line pressure in pipes completely constant, independently from fluctuations in outflow demand. The Multipump Drive controls up to 4 pumps simultaneously. Another interesting function of the multipump drive is the intelligent start of the auxiliary pumps for their operation time is considered.
Besides controlling the pumps output pressure, the drive also monitors the suction pressure and the level of the capture reservoir.



Advantages of the multipump control

- Energy Savings;
- Longer lifetimes for the pumps;
- Maintains the line pressure constant;
- Provides the necessary outflow according to the demand of the system;
- Soft starts, protecting the mechanical and electrical installation;
- Alternation in running auxiliary pumps based on operating hours.

CFW-08 - Wash

Coming from the robust performance of the original CFW-08, the NEMA 4X AC Drive features a IP56-rated enclosure that protects against high-pressure water, corrosion and circulating dust.
The drive is designed to be mounted directly in severe environments and can be used in wash-down applications without the need for a custom enclosure.

Power Supply Voltage	Power Supply	CFW-08 DRIVES NEMA 4X				Maximum Applicable Motor			Dimensions (mm)			Weight(kg)
		Model	Dynamic Braking	Current (A)	Size	Voltage (V)	Power Rating HP	Power Rating kW	Height	Width	Depth	
200 220/230 240V	Single-Phase or Three Phase	CFW080073B2024PON4A1Z	YES	7.3	A	230	2	1.5	265	165	216	5
		CFW080100B2024PON4A1Z	YES	10	A		3	2.2	265	165	216	5
380/400/415/480V	Three-Phase	CFW080027T3848PON4A1Z	YES	2.7	A	400/415	1.5	1.1	265	165	216	5
		CFW080043T3848PON4A1Z	YES	4.3	A		2	1.5	265	165	216	5
		CFW080065T3848PON4A1Z	YES	6.5	A		3	3	265	165	216	5
		CFW080100T3848PON4A1Z	YES	10	A		6	4	265	165	216	5
		CFW080130T3848PON4A1Z	YES	13	B		7.5	5.5	340	215	216	8
		CFW080160T3848PON4A1Z	YES	16	B		10	7.5	340	215	216	8
		CFW080240T3848PON4A1Z	YES	24	B		15	11	340	215	216	8
		CFW080300T3848PON4A1Z	YES	30	B		20	15	340	215	216	8
380/400/415/480V	Three-Phase	CFW080027T3848PON4A1Z	YES	2.7	A	440	1.5	1.1	265	165	216	5
		CFW080043T3848PON4A1Z	YES	4.3	A		3	2.2	265	165	216	5
		CFW080065T3848PON4A1Z	YES	6.5	A		4	3	265	165	216	5
		CFW080100T3848PON4A1Z	YES	10	A		7.5	5.5	265	165	216	5
		CFW080130T3848PON4A1Z	YES	13	B		10	7.5	340	215	216	8
		CFW080160T3848PON4A1Z	YES	16	B		10	7.5	340	215	216	8
		CFW080240T3848PON4A1Z	YES	24	B		15	11	340	215	216	8
		CFW080300T3848PON4A1Z	YES	30	B		20	15	340	215	216	8
500/600V	Three-Phase	CFW080017T5060PON4A1Z	YES	1.7	B	525	1	0.75	340	215	216	8
		CFW080030T5060PON4A1Z	YES	3.0	B		2	1.5	340	215	216	8
		CFW080043T5060PON4A1Z	YES	4.3	B		3	2.2	340	215	216	8
		CFW080070T5060PON4A1Z	YES	7.0	B		5	4	340	215	216	8
		CFW080100T5060PON4A1Z	YES	10	B		7.5	5.5	340	215	216	8
		CFW080120T5060PON4A1Z	YES	12	B		10	7.5	340	215	216	8
500/600V	Three-Phase	CFW080017T5060PON4A1Z	YES	1.7	B	575	1	0.75	340	215	216	8
		CFW080030T5060PON4A1Z	YES	3.0	B		2	1.5	340	215	216	8
		CFW080043T5060PON4A1Z	YES	4.3	B		3	2.2	340	215	216	8
		CFW080070T5060PON4A1Z	YES	7.0	B		5	4	340	215	216	8
		CFW080100T5060PON4A1Z	YES	10	B		7.5	5.5	340	215	216	8
		CFW080120T5060PON4A1Z	YES	12	B		10	7.5	340	215	216	8

CFW-08 - Technical Data

Model			CFW-08 Standard	CFW-08 Plus
POWER SUPPLY	Voltage	Single-Phase	200-240V: 200/220/230/240 V (+10% - 15%)	
		Three-Phase	200-240V: 200/220/230/240 V (+10% - 15%)	
			380-480V: 380 / 400 / 415 / 440 / 460 / 480 / 525 / 575 V (10% - 15%)	
	Frequency		50 / 60 Hz +/- 2 Hz (48...62 Hz)	
	Cos * (Displacement Power Factor)		> 0.98	
ENCLOSURE	Drive	Standard	NEMA 1 in sizes 3 and 4and IP 20 in sizes 1 and 2	
		Optional	NEMA 1 with optional kit for connection in metalic conduit (KN1-CFW08-MX)	
	HMI	Optional	NEMA 12 Parallel, remote HMI (IP54) (HMI-CFW08-RS)	
			NEMA 12 Serial, remote HMI (IP54) (HMI-CFW08-RS)	
CONTROL	Power Supply Type		Switching power supply	
	Control Method		DSP (Digital Signal Processor), 16 bits, sinusoidal PWM (Space Vector Modulation)	
	Control Type		Imposed voltage - linear V/Hz or quadratic	
			Sensorless vector control (WC: Voltage Vector Control)	
	Switching Frequency		IGBT Transistors - Frequencies: 2.5 / 5.0 / 10 / 15 kHz	
	Frequency Range		0...300Hz	
	Fequency Resolution		Analog Ref.: 0.1% of Fmax. And digital ref.: 0.01 Hz (f<100Hz); 0.1 Hz (f>100 Hz)	
	Accuracy (25º C = 10ºC)		Analog Ref.: 0.5% and digital Ref.: 0.01%	
PERFOMANCE	Overload capacity		150% during 60 sec. Every 10 min (1.5 x Rated Current.)	
	Efficiency		>95%	
	Speed control		Regulation: 1% of the rated speed with slip compensation	
INPUTS	Analog		1 isolated input 0..10 V. 0/4...20 mA or - 10...+10V (AI1)1	2 isolated inputs 0..10, 0/4...20mA or - 10...+10V (AI1 e AI2)1
	Digital		4 Programmable isolated inputs - with NPN or PNP logic (DI1...DI4)	
			1 Isolated PTC input via AI1	2 Isolated PTC inputs via AL1 and AL2
OUTPUTS	Relay (2)		1 programmabie output, I reversal contact (NU/NC)	2 Programmable outpluts, I no and TNC
			Programming options: Is > Ix; Fs > Fx; Fe> Fx; Fs = Fe; Run	
	Analog (2)			1 Isolated analog output 0...10V, 0/4...20mA (8 bits)
COMMUNICATION	Serial Interface		RS-232 or RS-485 (optional)	
	“Field Bus” Networks		Unit for ProfiBus DP Communication, DeviceNet (optional) and ModBus RTU (built-in)	
SAFETY	Protections		DC link overvoltage / undervoltage	
			Overtemperature	
			Output overcurrent	
			Motor overload (i x t)	
			Hardware fault, external fault and serial communication error	
			Output phase to phase and phase to ground short circuit	
			Programming fault and self-tuning error	
HUMAN-MACHINE INTERFACE (HMI)	Commands		On/Off , Parameter Setting (Programming of special functions)	
			Frequency Increment / Decrement (Speed)	
			JOG, Reversal of Direction of Rotation and Local /Remote Selection	
	Monitoring (Reading)		Motor Output Frequency (Hz)	
			DC Link Voltage (V)	
			Value proportional to the frequency (Ex.:RPM)	
			Heat Sink Temperature	
			Motor Output Current (A)	
			Motor Output Voltage (V)	
			Error / Fault Messages	
			Load Torque	
ENVIRONMENT	Temperature		0 ... 40 °C (up to 50 °C with output current derating 2% / °C)	
	Humidity		5 ... 90% non condensing	
	Altitude		0 ... 1000 m (up tp 4000 m with output current derating 10% / 1000 m)	
FINISHING	Color		Polytherm 20 mt gray and Polytherm 20 mt blue	
STANDARDS	Electromagnetic Compatibility		EMC Directive 89/336/EEC - Industrial Environment; EN 61800-3 (EMC - Emission and Immunity)	
	Low Voltage		LVD 73/23/EEC - Low Voltage Directive / UL 508C	
	IEC 146		Semiconductors convertors	
	UL 508 C		Power conversion equipment	
	EN 50178		Electronic equipment for use in power installations	
	EN 61010		Safety requirements for electrical equipment for measurement, control and laboratory use	
CERTIFICATIONS	UL (USA) and cUL (CANADA)		Underwriters Laboratories Inc. / USA	
	CE (EUROPE)		SGS / England	
	IRAM (ARGENTINA)		Instituto Argentino de Normalización	
	C-Tick (AUSTRALIA)		Australian Communications Authority	

(1) Only avaliable to control board .
(2) To control board A5 (multipump) there are 3 output by relays (contact N/A) there is not output analog.

CFW-08 - Coding

CFW08	0040	B	2024	P	0	--	--	--	--	--	--	Z
1	2	3	4	5	6	7	8	9	10	11	12	13

1 - CFW-08 Variable Speed Drives

2 - Output Rated Current:

200-240 V	
0016	1,6 A
0026	2,6 A
0040	4,0 A
0070	7,0 A
0073	7,3 A
0100	10 A
0160	16 A
0170	17 A
0220	22 A
0280	28 A
0330	33 A

380-480 V	
0010	1,0 A
0016	1,6 A
0026	2,6 A
0027	2,7 A
0040	4,0 A
0043	4,3 A
0065	6,5 A
0100	10 A
0130	13 A
0160	16 A
0240	24 A
0300	30 A

500-600 V	
0017	1,7 A
0030	3,0 A
0043	4,3 A
0070	7,0 A
0100	10 A
0120	12 A

3 - Power Supply

S = single-phase
T = three-phase
B = single-phase or three-phase

4 - Power Supply Voltage

2024 = 200-240 V
3848 = 380-480 V
5060 = 500 - 600 V

5 - Manual Language

P = Portuguese
E = English
S = Spanish
G = German

6 - Options

S = Standard
O = Options

7 - Enclosure

Blank = standard
SI = without keypad

8 - Keypad/HMI

Blank = standard
SI = without interface

9 - Control Board

Blank = standard (CFW-08 Standard)
A1 = control 1 (CFW-08 PLUS)
A2 = control 2 (CFW-08 Plus with bipolar analog inputs)
A3 = CANopen (1)
A4 = DeviceNet (1)
A5 = Pumps

10 - EMI Filter

Blank = without filter
FA = Internal Class A filter

11 - Special Hardware

Blank = not provided
Hx = X version special hardware

12 - Special Software

Blank = not provided
Sx = X version special software

13 - End of Code

Ex.: CFW080040B2024EOA1Z
VSD of CFW-08 series, 4.0 A, single-phase or three-phase at 200-240 Vac, manual in English and control board 1 (CFW-08 Plus).

(1) Not avaliable for 500-600V

CFW-08 - Resources / Special Fuctions

Standard / Plus Features

- Incorporated Human-Machine Interface - 7 segment LED
- Programming enabling password
- Fault self-diagnosis and Auto-Reset
- Specific value indication (programmable) - (Ex.: m/min; rpm, etc)
- Slip compensation (U/F control)
- Manual and automatic torque boost
- Adjustable U/F curve
- Self-tuning (sensorless vector control)
- Dynamic braking
- JOG Function (transitory speed pulses)
- COPY Function via remote keypad (HMI-CFW08-RS)
- Linear, 'S' type and double ramps
- Acceleration and deceleration ramps (independent)
- DC braking (DC Current)
- Multi-Speed Function (up to 8 pre-programmable speeds)
- FWD/REV Selection
- Local/Remote Operation selection
- PID Regulator (automatic level, pressure control, etc)
- Running motor start (Flying Start)
- Rejection of critical or resonant frequencies (Skip Frequency)
- Operation during transitory line loss (Ride-through)
- Units for Fieldbus Communication:
  - Modbus RTU (built-in)
  - DeviceNet
  - CANopen
- Multipump control

Optional Features

- Parallel Remote Keypad (HMI) (7 segment LED) - HMI-CFW08-RP
- Serial Remote Keypad (HMI) (7 segment LED) - HMI-CFW08-RS
- Interface Module for Serial Remote Keypad (HMI) - MIS-CFW08-RS
- Interface Module for Parallel Remote Keypad (HMI) - MIP-CFW08-RP
- Interface Module for starting with digital input in 120 Vac - KAC - 120 - CFW08
- Interconnection Cable of the Serial Remote HMI (1; 2; 3; 5; 7.5 and 10 m) - CAB-RS-X
- Interconnection Cable of the Parallel Remote HMI (1; 2; 3; 5; 7.5 and 10 m) - CAB-RP-X
- Serial Communication module RS-232 - KCS-CFW08
- Serial Communication module RS-485 - KCS-485-CFW08
- CANopen Communication module KFB-CO-CFW08
- DeviceNet Communication module KFB-DN-CFW08
- ProfiBus DP Communication module KCS-CFW08 or KRS-485-CFW08 + MFM-01/PD
- RS-232 to RS-485 Converter (MCS-CFW08 Module required) - MIW-02
- Windows based programming software - SUPERDRIVE
- NEMA 1 Kit for metallic conduit connection - KN1-CFW08-MX
- Din rail mounting kit - KMD-CFW08-M1
- EMC Filter with high Attenuation Capacity (Class A - internal)
- EMC Filter with high Attenuation Capacity (Class B - external)

CFW-09

The WEG CFW-09 Series of Variable Speed Drives incorporate the world's most advanced technology in drives for three-phase AC induction motors.
The Vectrue Technology™ represents a siginificant advancement, allowing this generation of WEG VSD to combine V/F, Sensorless Vector and Closed Loop Vector (with encoder) control techniques, all in one product.
An innovation was also introduced to simplify applications that require braking torque. A new feature named Optimal Braking™ eliminates the need for the dynamic braking resistor in some applications allowing a simple, more compact and economical solution.

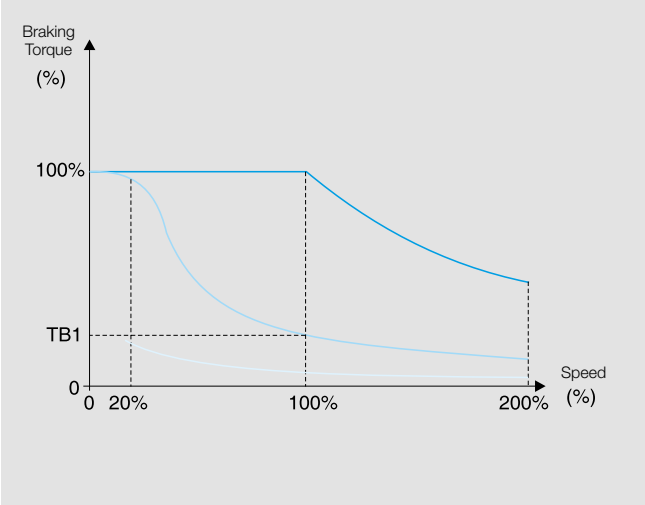
Vectrue Technology ®

This technology was developped by WEG for variable speed applications with three-phase AC induction motors providing the following advantages:

- V/ F or Vector Control modes via parameter selection;
- True Flux Vector Control in either open or closed loop vector modes;
- True Open Loop Vector Control with high torque and fast dynamic response, even at very low speeds;
- Self-tuning for automatic drive set-up to match the drive to motor and load in vector modes.

CFW-09 - *Optimal Braking* ™

For applications requiring short stopping times and/or stops under high inertial loading, the traditional braking devices call for Dynamic Braking, in which the load kinetic energy is regenerated to the inverter DC link and the excess of which is dissipated in the form of heat in a braking resistor which is interlinked to the power circuit. The CFW-09 VSD has a built-in “Optimal Braking ®” function, for the vector mode, enabling an optimal braking which can cater for many applications that could previously only be solved by dynamic braking. This technological innovation enables high dynamic performance activation/starts to be obtained with braking torques about 5 times the DC braking torque besides the great advantage of eliminating the need for a braking resistor. The graph shows the advantage of this new braking system “ Optimal Braking ®“, thereby ensuring an ideal solution for braking applications at low cost.



Typical Braking Torque x Speed curve for motors driven by the CFW-09

Dynamic Braking Torque Curve
“Optimal Braking” ™ Torque Curve
DC Braking Torque Curve

CFW-09 - Other Advantages

- High performance RISC 32 bit microprocessor;
- Vector and Scale Control with selection by parameter;
- Detachable SMART keypad with dual display (LCD and LED);
- Wide power range: 1.1.. 1,100 kW;
- Variable and Constant Torque ratings;
- Degree of Protection NEMA 1 / IP 20 standard up to 132kW, IP 20 up to 330kW and NEMA 4X / IP 56 in stainless steel enclosure up to 7.5kW;
- Compact design;
- Simplified installation and programming;
- Oriented start-up;
- Through surface mounting option;
- On/Off-line PC programming with SuperDrive software (Optional);
- DC bus connections available;
- Fieldbus network communication: Profibus DP or DeviceNet (optional). Modbus RTU (built-in) also available;
- International certifications including UL and cUL, CE, C-Tick and IRAM.

CFW-09 - Applications

Chemical and Petrochemical
- Fans / Exhausters
- Centrifugal Pumps
- Metering / Processing Pumps
- Mixers
- Compressors
- Extruders

Mining and Cement
- Fans / Exhausters
- Pumps
- Screeners
- Vibratory Feeders
- Crushers
- Dynamic Separators
- Conveyors
- Cement Ovens

Steel
- Fans / Exhausters
- Roller Tables
- Winders / Unwinders
- Overhead Cranes / Cranes
- Presses / Lathes / Milling Cutters
- Drillers / Grinders
- Laminators
- Cutting Lines
- Ingot Molding Lines
- Pipe Forming Machines
- Wire Drawing Machines
- Pumps

Lumber
- Veneer Lathes
- Chippers
- Plains
- Saws

HVAC
- Processing Pumps
- Fans / Exhausters
- Air Conditioners Units

Pulp and Paper
- Metering Pumps
- Processing Pumps
- Fans / Exhausters
- Agitators / Mixers
- Rotating Filters
- Rotating Ovens
- Scrap Conveyors
- Paper Machines
- Paper Rewinders
- Calenders

Sugar
- Sugar Centrifugal Pumps
- Process Pumps
- Conveyors
- Waste Dosers

Ceramic
- Fans / Exhausters
- Driers / Ovens
- Ball Mills
- Rollout Tables
- Enameling machine
- Conveyors

Beverage
- Metering / Processing Pumps
- Bottlers
- Mixers
- Roller Tables
- Conveyors

Plastic and Rubber
- Extruders
- Injection Machines
- Mixers
- Calenders / Pullers
- Winders / Unwinders
- Cutting and Welding Machines
- Granulators

Waste Water
- Centrifugal Pumps
- Booster Systems

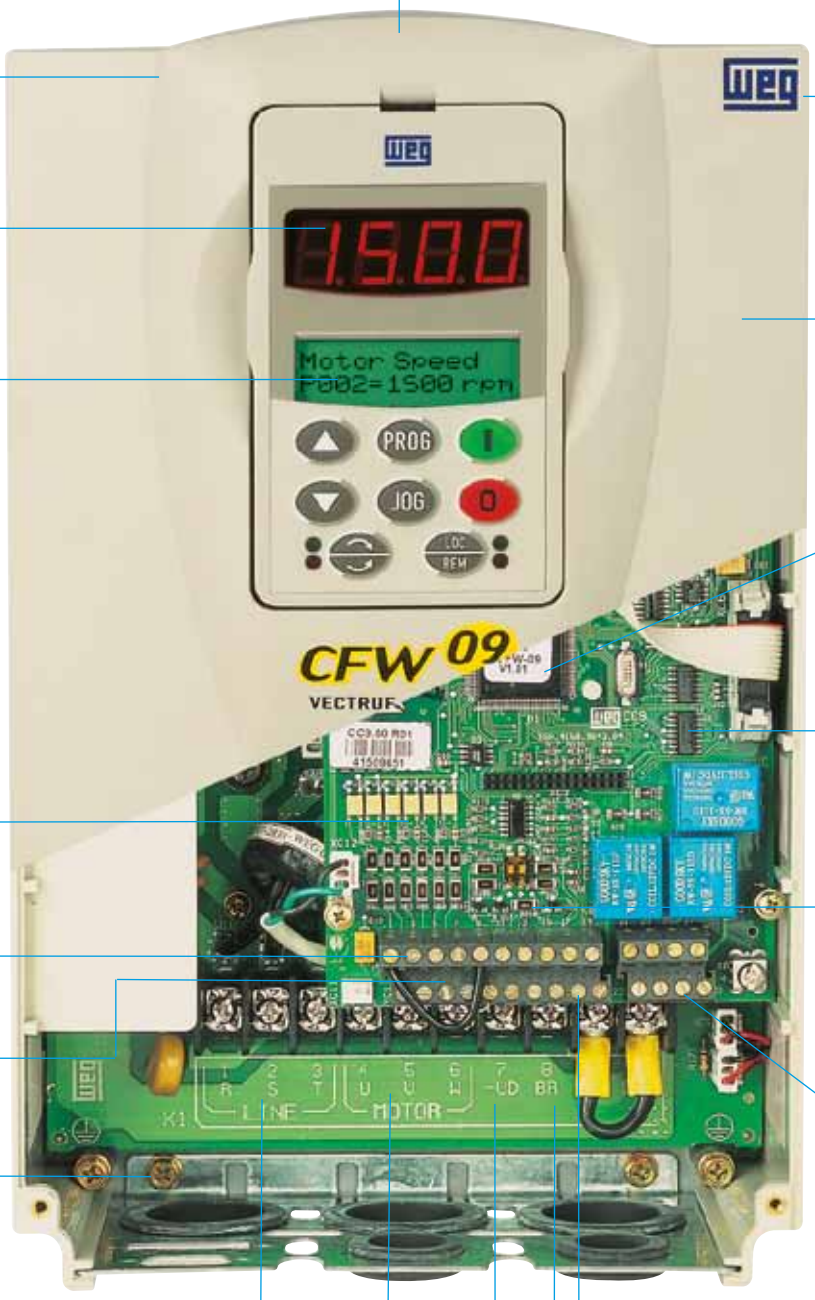
Textile
- Mixers / Agitators
- Washers / Driers
- Looms
- Spinning Machines
- Carding Machines
- Warpers
- Winders

Food
- Metering / Process Pumps
- Fans / Exhausters
- Mixers
- Driers / Ovens
- Palletizers
- Monorails
- Conveyors

Glass
- Fans / Exhausters
- Bottlers
- Roller Tables
- Conveyors

Elevators
- Load Elevators
- Commercial Elevators
- Overhead Cranes
- Hoists

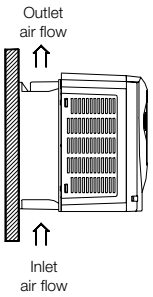
CFW-09 - A Complete, Flexible and Compact Product



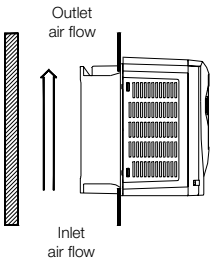
CFW-09 - Mounting Configurations

The CFW-09 allows flexible mounting configurations. Besides the traditional Base mounting, they allow flange mounting, where the heat sink is mounted at the back of the mounting plate.
As a result, the warm air generated by the power components inside the panel is so blown out that minimizes drive overheating, which is caused by heating sources inside the panel.

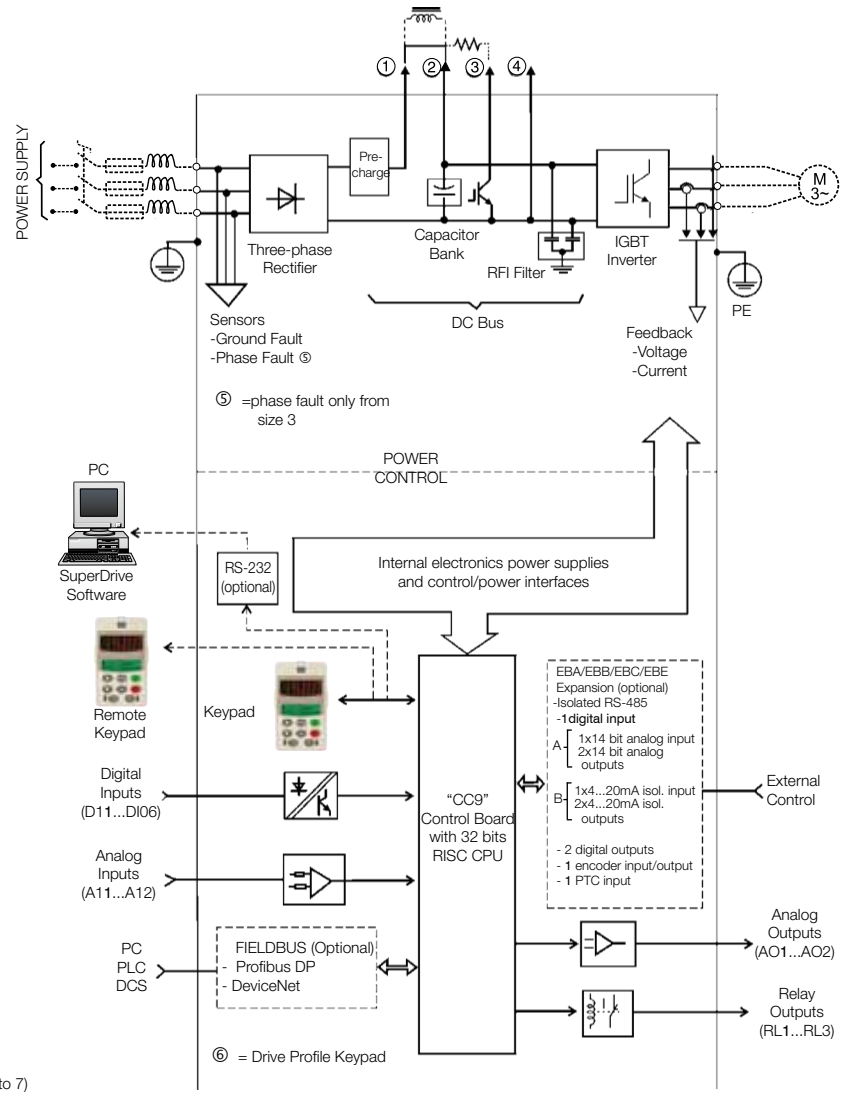
Base mounting



Flange mounting



Block Diagram



①e② = DC Bus Choke connection (Optional)
(only from Size 2 and up)
②e④ = DC Bus Connection
②e③ = DB Resistor Connection
(Up to Size 7 only. Option for Sizes 4 to 7)

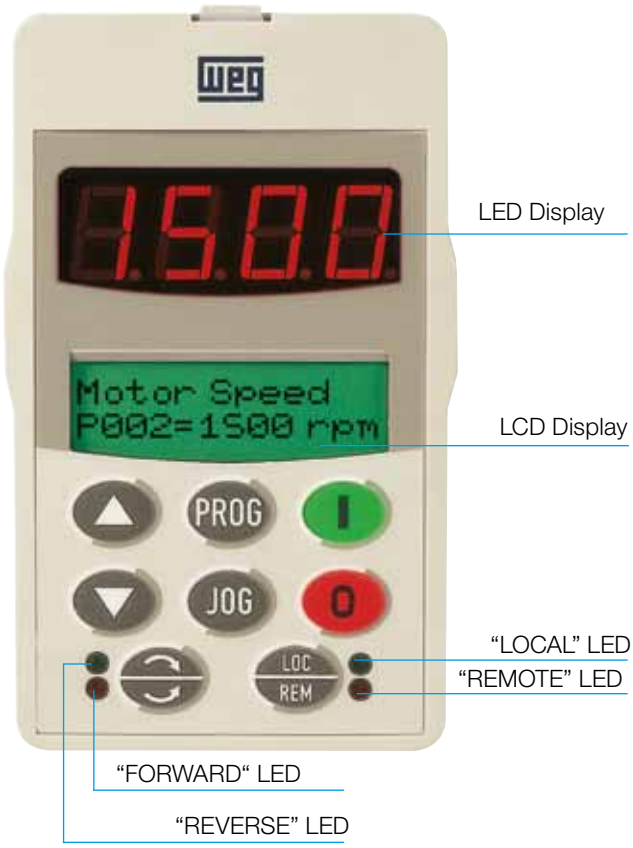
CFW-09 - Keypad

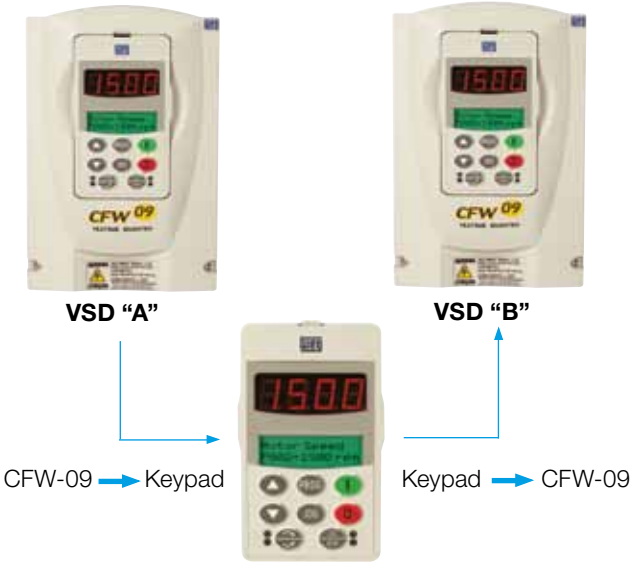
Intelligent Keypad
Intelligent operating interface with double display, LED (7 segment) and LCD (2 lines with 16 characters), providing optimum distant viewing along with a detailed description of all parameters and messages.

Selectable Language
The intelligent operating interface also allows the product user to choose the language to be used in programming, reading and presenting the parameters and alphanumerical messages through the LCD display.
The product's high hardware and software capacity enables the user to use various languages such as Portuguese, English and Spanish so as to make it adaptable for users throughout the world.

Oriented Start-up
The CFW-09 "Oriented Start-Up" feature was specially created to facilited and expedite the start-up procedure. At the first power-up or after a reset to factory default parameters, and automatic programming routine guides the operator through a sequence of steps for the introduction of the minimum parameters necessary for a perfect adaptation between drive and motor.

COPY Function
This intelligent keypad also incorporates a "Copy Function", which allows copying parameters from one drive to others, providing easy and reliable programming repeatability for duplicate applications.





CFW-09 - Keypad Functions

Starts the drive via a controlled acceleration ramp.
When running switches the display indication:
rpm - Volts - Status - Torque - Hz - Amps

Stops the drive via a controlled deceleration ramp.
Resets the inverter after a fault trip has occurred.

Increases the speed or parameter number/content.

Decreases the speed or parameter number/content.

Switches the display between the parameter number and its content (position/content) for programming.

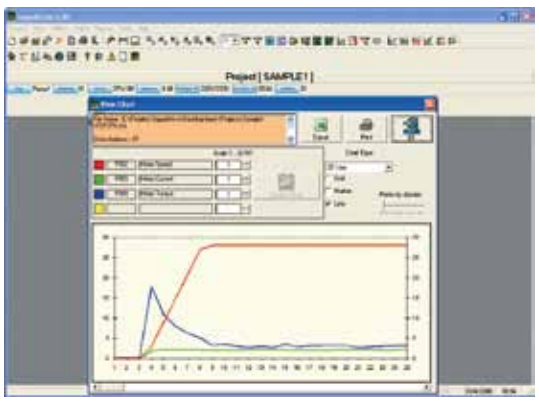
While pressed the motor is run at JOG speed.

FWD/REV key. When pressed reverses the direction of rotation.

Selects the drive operating mode as Local or Remote.

Superdrive Programming Software

Windows Programming software via PC microcomputer, for parameterization, control and monitoring of CFW-09 drives.
It allows editing of "on-line" parameters, directly on the drive or editing "off-line" parameter files, saved in the microcomputer.
It also allows storage of parameter files of all CFW-09 drives available on the installation.
The software also incorporates functions to transfer the set of parameters from the microcomputer to the drive, as well as from the drive to the microcomputer.
The communication between drive and microcomputer is made via serial interface RS-232 (point to point) or RS-485 for network interconnection.
Free software on the site **www.weg.net**



CFW-09 - Technical Data

POWER SUPPLY	Voltage	Three-phase:	220-230 V: 220 230 V (+10% -15%)
			380 - 480 V: 380 / 400 / 415 / 440 / 460 / 480 V (+10%, - 15%)
			500 - 600 V; 500 - 690 V; 660 - 690 V; 660/690 (+ 10%. -15%)
	Frequency	50 / 60 Hz +/- 2 Hz (48 ... 62 Hz)	
	Phase Unbalance	Up to 3%	
	Cos (Displacement Power Factor)	Greater Ihan 0.98	
ENCLOSURE	Degree of Protection	NEMA 1/IP 20 (sizes 1...8 and 8E), IP20 (sizes 9,10 and 10E)	
		NEMA 4X I IP 56 (modules up to 10HP)	
	Finishing Color	Plastic Cover - Light Gray PANTONE 413 C (sizes 1 and 2)	
		Metallic Cover and Sides - Light Gray RAL 7032 (sizes 3 to 10)	
		Base - Dark Gray RAL 7022 (sizes 3 to 10)	
CONTROL	Power Supply	Switched Mode Power Supply Fed from the DC Link	
	Microprocessor	32 bit RISC Technology	
	PWM Technique	SVM Sine wave PWM (Space Vector Modulation)	
		Software Implemented Current flux and Speed Regulators (Full Digital)	
	Control Modes	V / F	
		Sensorless Vector (without encoder)	
		Vector with Encoder	
	Switching Frequency	1.25 / 2.5 / 5.0 / 10 kHz	
	Frequency Range	0...1020 Hz for V / Hz Control	
		0...408 Hz for Vector Control	
	Overload Capacity	150% for 60 seconds every 10 minutes	
		180% for 1 second every 10 minutes	
	Efficiency	Greater than 97%	
PERFORMANCE	Speed Control	V / F Mode	Regulation (wilh Slip Compensation) : 1% 01 Motor Rated Speed
			Resolution: 1 rpm (Keypad Reference)
			Speed Regulation Range: 1: 20
		Sensorless Vector Mode	Regulation: 0.5% of Motor Rated Speed
			Resolution: 1 rpm (Keypad Reference)
			Speed Regulation Range: 1:100
		Encoder Vector Mode	Regulation with:
			10 bit Analogy Reference: +1- 0.1% 01 Motor Rated Speed
			14 bit Analogy Reference: +- 0.01% 01 Motor Rated Speed
			Digital Reference (Ex: Keypad): + / - 0.01 % of Motor Rated Speed
			Speed Regulation Range: Down to 0 rpm
	Torque Control	Vector Modes	Regulation: + - 10% of Motor Rated Torque
			Range: 0 ... 150% 01 Motor Rated Torque
CONTROL INPUTS	Analog	2 Programmable Differential Input (10 bit) : 0...10 V 0...20 mA or 4...20 mA	
		1 Programmable Bipolar Input (14 bit): -10 ... + 10 V 0...20 mA or 4...20 mA <D	
		1 Programmable Isolated Input (10 bit) : 0 ... 10 V 0...20 mA or 4...20 mA <D	
	Digital	6 Programmable Isolated Input: 24 Vdc	
		1 Programmable Isolated Input: 24 Vdc	
		1 Programmable Isolated Input: 24 Vdc (for Motor PTC Thermistor)	
	Encorder	1 Isolated Differencial Encoder Signals Output: 5 ...15 Vdc External Power Supply	
COMMUNICATION	Serial	RS-232 wilh KCS-GFW09 Kn <D - RS-485 Isolated with EBA or EBB Board <D	
		Protocolo Johnson Contols-N2 (optional)	
	Fieldbus	Modbus RTU Standard, Profibus DP, DeviceNet, EtherNet / IP, DeviceNet Drive Profile with KFB kits.	
SAFETY	Protections	D C Link Under Voltage	Output Short Circuit
		D C Link Over Voltage	Output Ground Fault
		Drive Over Temperature	External Fault
		Motor Over Temperature	Self -diagnosis Fault
		Output Over Current	Programming Error
		Motor Overload (i x t)	Serial Communication Fault
		Dynamic Braking Resistor Overload	Motor or Encoder Connection Fault
		CPU / EPROM Error (watchdog)	Power Supply Ohase Fault (30 A and above models)
		Encoder Fault	Keypad Connection Fault
AMBIENT	Temperature	0ºC (32ºF)...40ºC (104ºF), up to 50ºC (122ºF) with 2% / ºC (1,1% / ºF) output current derating	
	Humidity	5...90% Non Condensing	
	Altitude	0...1000m (3300ft), up to 4000m (13100ft) with 10% / 1000m (3% / 1000ft) output current derating	
CONFORMITIES	EMC Directive 89 / 336 / EEC - EM 61800-3	Elec tromagnetie Compatibil -Industrial Environment - EMC - Emission and Immunitv	
	LVD 73 / 23 / EEC	low Voltage Directive	
	IEC 146	Semiconductor drive	
	UL 508C	Power Conversion Enuinment	
	EN 50178	Electronic Equipment for Use in Power Installations	
	EN 61010	Safety Requirements for Electrical Equipament for Measurement Control and laboratory Use	
CERTIFICATIONS	UL (USA) and cUL (CANADA)	Underwriters laboratories Ine. USA	
	CE (EUROPE)	Phoenix Test-Lab GmbH – Germany (Competent Body)	
	IRAM (ARGENTINA)	Instituto Argentino de Normalización	
	C-Tiek (AUSTRALIA) 2250/1132383	Australian Communications Aulhority	

CFW-09 - Technical Data

KEYPAD	Programming	General Drive Functions Programming		
	Controls	Start/Stop , Increase/Decrease Speed, JOG, FWD/REV and Local/Remote		
	Monitoring	Speed Reference (rpm)	Oulput Current (A)	
		Motor Speed (rpm)	Oulput Voltage (Vac)	
		Speed Proportional Value (Ex: ft/min)	Drive Status	
		Output Frequency (Hz)	Digital Inputs Status	
		DC Link Voftage (Vdc)	Transistor Outputs Status	
		Motor Torque (%)	Relay Outputs Status	
		Outout Power (kW)	Analog Inputs Value	
		Hours Powered Up (h)	Four Last Faults	
		Hours Enabled (h)	Fault Messages	
CONTROL FEATURES AND OTPIONS	Standard	Keypad wilh LCD + LED displays (HMI-CFW09-LCD)		
		Password to protect drive programming		
		LCD display language selection: English, Spanish and Portuguese		
		Control mode selection (via parameter}: V / F. Sensorless Vector or Vector with Encoder		
		Fault auto-diagnosis and auto-reset		
		Parameters reset to factory or user default		
		Drive Self-tuning to motor and load (Vector Modes)		
		Specific unit indication (Ex: l/s, t/h, %, etc.)		
		Motor slip compensation (V / F Mode)		
		Manual and automatic Torque Boost (V / F Mode)		
		Adjustable V / F Curve (V / F Mode)		
		Minimum and maximum speed limits		
		Output current limit		
		Adjustable motor overload protection		
		Digital gain and offset adjustments for the analog inputs		
		Digital gain adjustment for the analog outputs		
		JOG function		
		JOG + I JOG - Function (momentary speed increase/decrease)		
		COPY Function (Drive ® Keypad or Keypad ® Drive)		
		Comparison functions for Ihe digital outputs: N* > Nx; N > Nx; N < Nx; N = O; N = N*; Is > Ix ; Is < Ix; T > Tx and T < Tx Where: N = Motor speed; N* = Speed reference; Is = Output Current and T = Motor torque		
		Linear and S independent acceleration and deceleration ramps, two sets of ramps		
		DC Braking		
		Optimal Braking (Vector Modes)		
		Built-in dynamic braking transistor – Models up to 45A/220-230V and up to 30A/380-480V and up to 14A/500-600V		
		Multi-speed function (up to 8 preset speeds)		
		Speed Profiling function		
		Hour meter and Wattrneter		
		Overlapping PID Regulator (for automatic control of level, pressure, flow, etc.)		
		FWD I REV selection		
		Local I Remate operation selection		
		Flying Start function (restart with the motor spinning)		
		Skip Speed (critical speed rejection)		
		Ride-Through (operation during momentary power loss)		
		Built-in dynamic braking transistor: Models: 6 ... 45 A / 220 - 230 V and 36 ... 30 A / 380 - 480 V		
		FieldBus communication: Modbus RTU built-in		
	Options	Simplified keypad (with LED display only)		HMI-CFW09-LED
		IP 55 Remote keypad (LED display only)		HMI-CFW09-LED-N4
		IP 55 Remote keypad (LCD + LED displays)		HMI-CFW09-LCD-N4
		Remote Keypad cable (3.3, 6.6,10.16.25 and 35 ft)		CAB - HMI 09-X
		Blank Keypad for local Installation		TCL - CFW09
		Blank Keypad for remote installation		TCR - CFW09
		Remote Keypad frame kit		KMR - CFW09
		I/O Expansion Boards		EBA . OX - CFW09
				EBB .OX.- CFW09
				EBC1 .OX- CFW10
				EBE1. OX - CFW09
		FieldBus Communications kits (Mounted inside drive)	Profibus DP	KFB - PD
			DeviceNet	KFB - DN
			DeviceNet Drive Profile	KFB - DD
			ElherNet I IP	KFB - EN
		VSD I PC Communication kit	Software SUPERDRIVE	KSD - CFW09
			Conectores e Cabos	
			KCS - CFW09	
		Intertace Serial Module RS-232		KCS - CFW09
		Built-in dynamic braking transistor Models: 54...130 A / 220-230 V and 38...142 A / 380-480 V		"DB" Models
		External dynamic braking module	Models 180...600A/220-230V e 380-480V	DBW - 01
			Models 107...472A/500-690V	DBW - 02
			Models 100...428A/660-690V	
		Easy mounting kit wilh flange (for sizes 3...8)		KMF - CFW09
		Removable mounting kit (for slzes 9...10)		KME - CFW09
		Inductor kit for DC link (for sizes 2...8)		KIL - CFW09
		EMC filter with high attenuation capacity		RF

CFW-09 - Sizing Table

Power Supply Voltage	CFW-09 DRIVE				MAXIMUM APPLICABLE MOTOR					Size
	Part Number CFW-09	Built-In Dynamic Braking	Rated Current (A)		Voltage (V)	Constant Torque		Variable Torque		
			CT*	VT*		KW	HP	KW	HP	
220 / 230V	0006 T 2223 E S	Yes	6		230	1.1	1.5	1.1	1.5	1
	0007 T 2223 E S		7			1.5	2	1.5	2	
	0010 T 2223 E S		10			2.2	3	2.2	3	
	0013 T 2223 E S		13			2.2	3	2.2	3	
	0016 T 2223 E S		16			3.7	5	3.7	5	2
	0024 T 2223 E S		24			5.5	7.5	5.5	5.5	
	0028 T 2223 E S		28			7.5	10	7.5	10	
	0045 T 2223 E S		45			11	15	11	15	3
	0054 T 2223 E S	Optional Built-in	54	68		15	20	18.5	25	4
	0070 T 2223 E S		70	86		18.5	25	22	30	5
	0086 T 2223 E S		86	105		22	30	30	40	
	0105 T 2223 E S		105	130		30	40	37	50	6
	0130 T 2223 E S		130	150		37	50	45	60	
380 / 400 / 415 / 440 / 460 / 480 V	0003 T 3848 E S	Yes	3.6		400 / 415	1.1	1.5	1.1	1.5	1
	0004T 3848 E S		4			1.5	2	1.5	2	
	0005 T 3848 E S		5.5			2.2	3	2.2	3	
	0009 T 3848 E S		9			4	5.5	4	5.5	
	0013 T 3848 E S		13			5.5	7.5	5.5	7.5	2
	0016 T 3848 E S		16			7.5	10	7.5	10	
	0024 T 3848 E S		24			11	15	11	15	
	0030 T 3848 E S		30	36		15	20	18.5	25	3
	0038 T 3848 E S	Optional Built-in	38	45		18.5	25	22	30	4
	0045 T 3848 E S		45	54		22	30	22	30	
	0060 T 3848 E S		60	70		30	40	37	50	5
	0070T 3848 E S		70	86		37	50	45	60	
	0086 T 3848 E S		86	105		45	60	55	75	6
	0105 T 3848 E S		105	130		55	75	55	100	
	0142 T 3848 E S		142	174		75	100	90	125	7
	0180T 3848 E S	External DB Module	180			90	125	90	125	8
	0211 T 3848 E S		211			110	150	110	150	
	0240 T 3848 E S		240			132	175	132	175	
	0312 T 3848 E S		312			160	220	160	220	9
	0361T 3848 E S		361			200	270	200	270	
	0450 T 3848 E S		450			260	340	260	340	10
	0515 T 3848 E S		515			300	400	300	400	
	0600 T 3848 E S		600			350	430	370	430	
	0686 T 3848 E S	External DB Module	0686			355	600	355	600	-
	0855 T 3848 E S		0855			500	700	500	700	
	0979 T 3848 E S		0979			560	800	560	800	
	1140 T 3848 E S		1140			630	900	630	900	
	1283 T 3848 E S		1283			710	1000	710	1000	
	1468 T 3848 E S		1468			800	1250	800	1250	
	1710 T 3848 E S		1710			1000	1500	1000	1500	
500/600V	0002 T 5060 E S	Yes	2.9	4.2	525	1,5	2.0	2,2	2.0	2
	0004 T 5060 E S		4,2	7		2,2	3	4.0	2.95	
	0007 T 5060 E S		7	10		4.0	5.5	5.5	3.0	
	0010 T 5060 E S		10	12		5.5	7.5	7.5	7.40	
	0012 T 5060 E S		12	14		7.5	10	9.2	10	
	0014 T 5060 E S		14	14		9.2	12.3	9.2	12.3	
	0022 T 5060 E S	Optional Built-in	22	27		15	20	18.5	20	4
	0027 T 5060 E S		27	32		18.5	25	22	25	
	0032 T 5060 E S		32	32		22	30	22	30	
	0044 T 5060 E S	Optional Built-in	44	53		30	40.2	37	40.2	7
	0053 T 5060 E S		53	63		37	50	45	50	
	0063 T 5060 E S		63	79		45	60.3	55	60.3	
	0079 T 5060 E S		79	99		55	73.7	75	73.7	

CFW-09 - Sizing Table

Power Supply Voltage	CFW-09 INVERTER				MAXIMUM APPLICABLE MOTOR					Size
	Part Number CFW-09	Built-In Dynamic Braking	Rated Current (A)		Voltage (V)	Constant Torque		Variable Torque		
			CT*	VT*		KW	HP	KW	HP	
500/600V	0107 T 5060 E S	External	107(100)	147(127)	525	75	100	90	100	8E
	0147 T 5060 E S		147(127)	196(179)		90	147.5	132	147.5	
	0211 T 5060 E S		211(179)	211(179)		150	201	150	201	
	0247 T 5060 E S		247(225)	315(259)		185	248	220	248	10E
	0315 T 5060 E S		315(259)	343(305)		220	295	260	295	
	0343 T 5060 E S		343 (305)	418(340)		260	350	315	350	
	0418 T 5060 E S		418(840)	472(428)		315	422	355	422	
	0472 T 5060 E S		472(428)	555(428)		355	475.7	400	475.7	
	0600 T 5060 E S		0600			450	600	450	600	-
	0652 T 5060 E S		0652			500	650	500	650	
	0794 T 5060 E S		0794			600	850	600	850	
	0897 T 5060 E S		0897			630	950	630	950	
	0978 T 5060 E S		0978			710	1000	710	1000	
	1191 T 5060 E S		1191			900	1300	900	1300	
	1345 T 5060 E S		1345			1120	1500	1120	1500	
500/600V	0002 T 5060 E S	Yes	2.9	4.2	575	1,5	2	2,2	3	2
	0004 T 5060 E S		4,2	7		2,2	3	3,7	5	
	0007 T 5060 E S		7	10		3,7	5	5,5	7,5	
	0010 T 5060 E S		10	12		5,5	7,5	7,5	10	
	0012 T 5060 E S		12	14		7,5	10	9,2	12,5	
	0014 T 5060 E S		14	14		11	15	11	15	
	0022 T 5060 E S	Optional Built-in	22	27		15	20	18,5	25	4
	0027 T 5060 E S		27	32		18,5	25	22	30	
	0032 T 5060 E S		32	32		22	30	22	30	
	0044 T 5060 E S		44	53		30	40	37	50	7
	0053 T 5060 E S		53	63		37	50	45	60	
	0063 T 5060 E S		63	79		45	60	55	75	
	0079 T 5060 E S		79	99		55	75	75	100	
	0107 T 5060 E S	External DB Module	107(100)	147(127)		75	100	110	150	8E
	0147 T 5060 E S		147(127)	196(179)		110	150	150	200	
	0211 T 5060 E S		211(179)	211(179)		150	200	150	200	
	0247 T 5060 E S		247(225)	315(259)		185	250	220	300	10E
	0315 T 5060 E S		315(259)	343(305)		220	300	250	350	
	0343 T 5060 E S		343 (305)	318(340)		250	350	300	400	
	0418 T 5060 E S		418(840)	472(428)		300	400	370	500	
	0472 T 5060 E S		472(428)	555(428)		370	500	450(370)	600	
	0600 T 5060 E S		600			450	600	450	600	-
	0652 T 5060 E S		0652			490	650	490	650	
	0794 T 5060 E S		0794			635	850	635	850	
	0897 T 5060 E S		0897			710	950	710	950	
	0978 T 5060 E S		0978			750	1000	750	1000	
	1191 T 5060 E S		1191			970	1300	970	1300	
	1345 T 5060 E S		1345			1120	1500	1120	1500	
660 / 690 V	0492 T 6669 E S	Optimal with external unit	0492		690	448	600	448	600	-
	0580 T 6669 E S		0580			560	750	560	750	
	0646 T 6669 E S		0646			635	850	635	850	
	0813 T 6669 E S		0813			750	1000	750	1000	
	0869 T 6669 E S		0869			900	1200	900	1200	
	0969 T 6669 E S		0969			970	1300	970	1300	
	1220 T 6669 E S		1220			1120	1500	1120	1500	
	0100 T 6669 E S	690	100	127		90	125	110	150	8E
	0127 T 6669 E S		127	179		110	150	160	220	
	0179 T 6669 E S		179			160	220	160	220	
	0225 T 6669 E S		225	259		200	275	250	350	10E
	0259 T 6669 E S		259	305		250	350	280	370	
	0305T 6669 E S		305	340		280	370	315	430	
	0340T 6669 E S		340	428		315	430	400	500	
	0428T 6669 E S		428			400	500	400	500	

CFW-09 - Part Number Specification

CFW09	0016	T	3848	P	O	00	SI	DB	A1	DN	H1	S3	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14

1 - CFW-09 VSD

2 - Output Rated Current for Constant Torque (CT) Sizing

220 - 230 V	380 - 480 V	500 - 600 V	500 - 690 V	660 - 690 V
0006 = 6,0 A	0003 = 3,6 A	0002 = 2,9 A	0107 = 107 A	0100 = 100 A
0007 = 7,0 A	0004 = 4,0 A	0004 =4,2 A	0147 = 147 A	0127 = 127 A
0010 = 10 A	0005 = 5,5 A	0007 =7,0 A	0211 = 211 A	0179 = 179 A
0013 = 13 A	0009 = 9,0 A	0010 =10 A	0247 = 247 A	0225 = 225 A
0016 = 16 A	0013 = 13 A	0012 =12 A	0315 = 315 A	0259 = 259 A
0024 = 24 A	0016 = 16 A	0014 =14 A	0343 = 343 A	0305 = 305 A
0028 = 28 A	0024 = 24 A	0022 =22 A	0418 = 418 A	0340 = 340 A
0033 = 33 A	0030 = 30 A	0027 =27 A	0472 = 472 A	0428 = 428 A
0038 = 38 A	0038 = 38 A	0032 =32 A		
0045 = 45 A	0045 = 45 A	0044 = 44 A		
0054 = 54 A	0060 = 60 A	0053 = 53 A		
0070 = 70 A	0070 = 70 A	0063 = 63 A		
0086 = 86 A	0086 = 86 A	0079 = 79A		
0105 = 105 A	0105 = 105 A	0107 = 0107A		
0130 = 130 A	0142 = 142 A	0147 = 0147A		
0142 = 142 A	0180 = 180 A	0211 = 0211A		
0180 = 180 A	0211 = 211 A	0247 = 0247A		
0240 = 240 A	0240 = 240 A	0315 = 0315A		
0361 = 361 A	0312 = 312 A	0418 = 418A		
	0361 = 361 A	0472 = 472A		
	0450 = 450 A	0600 = 600A		
	0515 = 515 A	0794 = 794A		
	0600 = 600 A	0897 = 897A		
	0686 = 686 A	0978 = 978A		
	0855 = 855 A	1191 = 1191A		
	1140 = 1140 A	1345 = 1345A		
	1283 = 1286 A			
	1710 = 1710 A			

3 - Power Supply: T = Three-phase

4 - Power Supply Voltage: 2223 = 220 ... 230 VAC
3848 = 380 ... 480 VAC
5060 = 500 ... 600 VAC
6669 = 660 ... 690 VAC

5 - Languages: P = Portuguese
E = English
G = German
S = Spanish
F = French
R = Russian
Sw = Swedish

6 - Product Version: S = Standard
O = Optional

7 - Enclosure: 00 = Standard (see technical specifications table)
N4 = NEMA 4 x IP 56 (models up to 10HP)

8 - HMI - Human Machine Interface:
00 = standard (with HMI of LED´S + LCD)
SI = Without HMI
IL = Optional only with LED HMI

9 - Dynamic Braking: 00 = Standard
DB = With Built-in Dynamic Braking Transistor
RB = Regenative rectifying unit (models from 105A at 220V, and from 86A at 380-480V)

10 - Expansion Boards:
00 = Standard
A1 = EBA.01-CFW09 optional
A2 = EBA.02-CFW09 optional
A3 = EBA.03-CFW09 optional
B1 = EBB.01-CFW09 optional
B2 = EBB.02-CFW09 optional
B3 = EBB.03-CFW09 optional
B4 = EBB.04-CFW09 optional
B5 = EBB.05-CFW09 optional
C1 = EBC1.01-CFW09 optional
C2 = EBC1.02-CFW09 optional
C3 = EBC1.03-CFW09 optional
E1 = Optional with EBE1.00 - CFW09
P1 = PLC1.01-CFW09 optional
P2 = PLC2.00-CFW09 optional

11 - FieldBus Communications cards: 00 = Standard (not provided)
PD = KFB-PD optional (Profibus DP)
DN = KFB-DN optional (Device Net)
DD = Optional with KFB – DD
(Device Net Drive Profile / Special software)
EN = EtherNet / IP standard

12 - Special Hardware:
00 = not provided
H1...Hn = Special Hardware version-Optional
HD = Models from 105A at 220V, and from 86A at 380-480V are power supplied via DC link
HC/HV = The CFW09 VSDs mechanics from 2 to 8 have and inductor line for the DC link built into the product. To request the VSD with the inductor in place just add the code “HC” (for drives operating on Variable Torque).

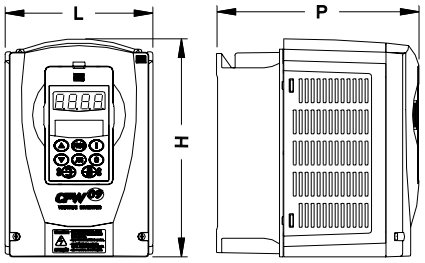
13 - Special Software:
00 = Standard software version
S1...Sn = Optional with version a special software
SF = Protocol Metasys N2
SC = Hoist functions
SN = Winder I with power calculation
SQ = Special version for Kit Device Net Drive Profile

14 - Z = End of Code

Example:

CFW09 0013 T 2223 E S Z
CFW09 0105 T 3848 E O IL A1 PD Z
CFW09 0086 T 3848 E O SI DB B2 MR S3 Z

CFW-09 - Dimensions and Weight



NEMA 1 / IP 20

SIZE	Width - W mm	(in)	Height - H mm	(in)	Depth - D mm	(in)	Weight lb	(kg)
1	143	(5.6)	210	(8.3)	196	(7.7)	7.7	(3.5)
2	182	(7.2)	290	(11.4)			13.2	(6.0)
3	223	(8.9)	390	(15.3)	274	(10.8)	41.9	(19.0)
4	250	(9.8)	475	(18.7)			49.6	(22.5)
5	335	(13.2)	550	(21.6)			90.4	(41.0)
6			675	(26.6)	300	(11.8)	121.3	(55.0)
7			835	(32.9)			154.3	(70.0)
8	410	(16.1)	975	(38.4)	370	(14.6)	220.5	(100.0)
8E			1145	(45.1)			253.0	(115.0)
9	688	(27.1)	1020	(40.2)	492	(19.3)	476.2	(216)
10	700	(27.5)	1185	(46.6)			571.0	(259)
10E					582	(22.9)	682.0	(310.0)

CFW-09 Shark

CFW-09 Drives with Degree of Protection NEMA 4X (IP 56), designed for highly aggressive environments including:

- Chemical industry
- Petrochemical
- Food industry
- Other applications requiring full protection to the electronic equipment.

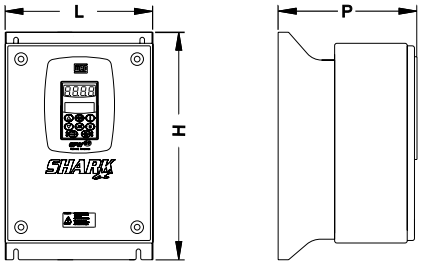
POWER SUPPLY VOLTAGE	CFW-09 DRIVE			MAXIMUM APLICABLE MOTOR①			Size
	MODEL CFW09...	Rheostatic Braking	Outlet rated current (A)	Voltage (V)	Constant (CT*) / Variable (VT*) Torque		
			CT* VT*		HP	kW	
220-230	0006 T 2223 P O N4 Z	Standard built-in to the product	6	220	1,5	1,1	1
	0007 T 2223 P O N4 Z		7		2	1,5	
	0010 T 2223 P O N4 Z		10		3	2,2	
	0016 T 2223 P O N4 Z		16		5	3,7	2
380-480	0003 T 3848 P O N4 Z	Standard built-in to the product	3,6	380	1,5	1,1	1
	0004 T 3848 P O N4 Z		4		2	1,5	
	0005 T 3848 P O N4 Z		5,5		3	2,2	
	0009 T 3848 P O N4 Z		9		5	3,7	2
	0013 T 3848 P O N4 Z		13		7,5	5,5	
	0016 T 3848 P O N4 Z		16		10	7,5	

**CT = Constant Torque (T load = CTE); VT = Variable Torque (e.g.: Quadratic Torque = > T load ~ n ²*

Notes: 1 – Recommended motors 230/400VAC are based on WEG motors II and IV pode W21 line. For other polarity motors (e.g.: 6 and 8 poles), other (e.g.: 460V) and/or motors from other suppliers, specify the inverter based on nominal motor current.

2 – Models 6,7 and 10A/230V can be single-phase powered without output current derating.

Dimensions and Weight



NEMA 4X / IP 56

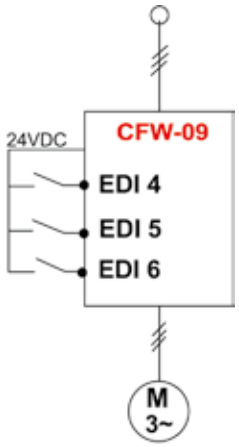
SIZE	Width - W mm	(in)	Height - H mm	(in)	Depth - D mm	(in)	Weight lb	(kg)
1	234	(9.2)	360	(14.2)	221	(8.5)	10	(22)
2	280	(10.2)	410	(16.2)			15	(33)

CFW-09 - Special Functions

Multi-speed

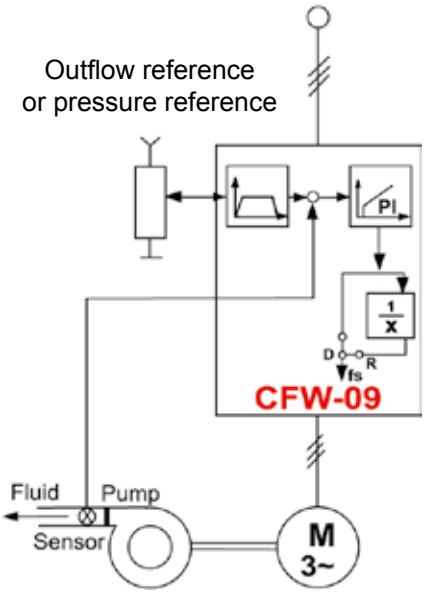
Up to eight different speeds can be programmed by the user and selected via the combination of three digital Inputs. These Inputs can be switched by any external device such as Limit Switches, Photocells, Proximity Sensors, PLC, etc.

DI	4	5	6
n_1	0	0	0
n_2	0	0	1
n_3	0	1	0
n_4	0	1	1
n_5	1	0	0
n_6	1	0	1
n_7	1	1	0
n_8	1	1	1



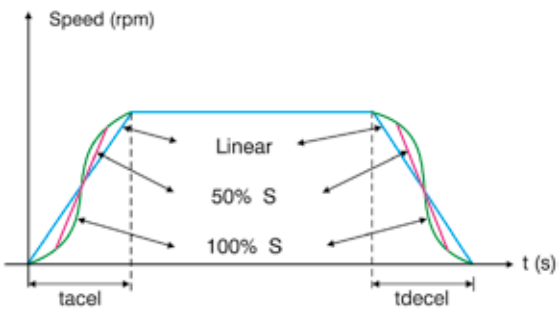
Overlapping PID Regulator

This built-in digital PID regulator was designed for applications where a process variable (flow, pressure, level, etc.) has to be controlled by the motor speed. To implement this regulator the CFW-09 needs a set point and a feedback signal from the process variable sensor so that a closed loop is formed. This function eliminates the need for an external regulator to control the process reducing the solution cost.



"S" Ramp

This function replaces the traditional linear acceleration and deceleration ramps by Type "S" Ramps providing smoother starting, braking and approximation to the set speed curves. The practical result is the elimination of mechanical shocks, which are undesirable and some times unpractical for certain applications.



CFW-10

Designed for the control and speed variation of three-phase induction electric motors, the CFW-10 VSD combines modern design with worldwide technology, where extreme compactness and easy programming stand out. With simple installation and operation, this product comes with optimized software resources, through a local Human-Machine interface, which enables it to be used in process controls and industrial machines.

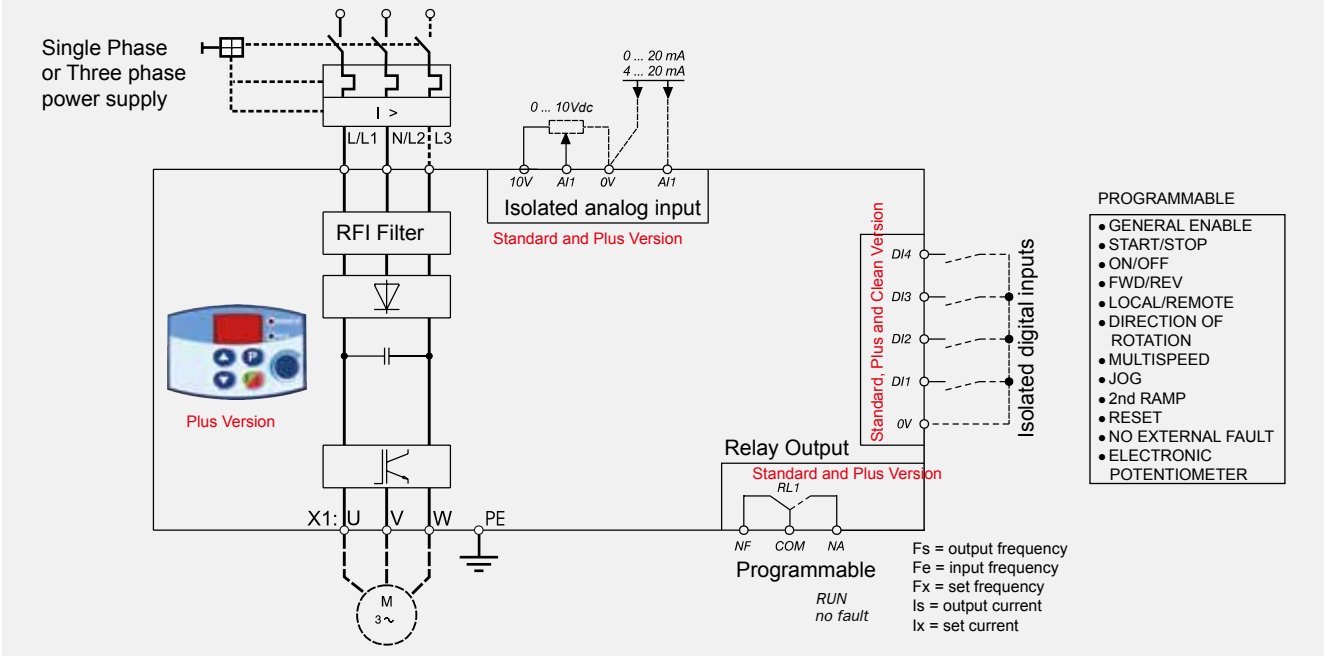
Benefits

- (V/F) Control
- IP20 Finger-safe Enclosure
- Single-phase 110-127 input voltage up to 0.75 KW
- Single-phase 200-240 input voltage up to 2.2 KW
- Three-phase
- 150% current overload capacity
- DSP controlled PWM output
- 2.5 - 15 kHz ajustable switching frequency
- Four isolated programmable digital inputs
- Programmable relay output
- One isolated programmable analog input
- Diagnostic features: Overcurrent, motor overload, drive over temperature, output short circuit, DC bus over and undervoltage and external fault
- Control features: Linear and “S” ramp acceleration and deceleration, local/ remote control, DC braking, torque boost, motor slip compensation, electronic pot, preset speeds, maximum and minimum adjustable frequency limits, adjustable output current limit, JOG
- Display readings: Motor speed, frequency, voltage, current, last fault, heatsink temperature and drive status
- Ambient: 122ºF (50ºC), 3300ft (1000m) altitude, 90% humidity, non-condensing for model 15,2A, 104°F (40°C).

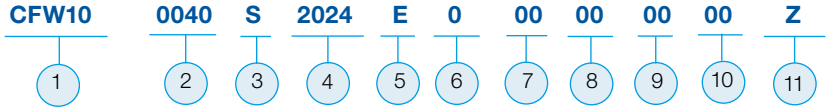
Applications

- Centrifugal pumps
- Processing pumps
- Fans / Exhausters
- Stirrers / Mixers
- Extruding Machines
- Roller tables
- Driers
- Rotating filters
- Cutting machines
- Conveyors

Block diagram



CFW-10 - Coding



1 - CFW-10 Variable Speed Drives

2 - Output rated current:

110-127 V		200-240 V		
0016	1,6 A	0016	1,6A	
0026	2,6 A	0026	2,6A	
0040	4,0 A	0040	4,0A	
		0073	7,3A	
		0100	10,0A	
		0152	15,2A	Only for three-phase model

3 - Number of phases

S = single-phase
T = Three - phase

4- Power Voltage Supply

1112 = 110-127 V (Single-phase only)
2024 = 200-240 V

5 -Manual Language

P = Portuguese
E = English
S = Spanish

6 -Options

S = standard
O = optional

7 - Control card

00 = standard
CL = clean
PL = plus (with potentiometer)

8- EMC Buit-in filter

00 = (not avaliable)
FA = with EMC filter (class A) –
Only for single-phase models (200-240V) models

9 - Special hardware

00 = not provided
Hx = special hardware in version X
CP = Cold Plate heatsink version

10 - Special software

00 = not provided
Sx = special software in version X

11 - End of code

Ex.: CFW100040S2024ESZ
VSD of CFW-10 series, 4.0 A, single -phase
at 200-240 VAC and manual in English.

CFW-10 - Specification Table

Power Supply Voltage	Variable Speed Drives CFW-10				Maximum Applicable Motor			Dimensions (mm)			Weight (Kg)
	Power Supply	Model	In Output (A)	Size	Voltage (V)	Power rating					
						HP	kW	H	W	D	
110-127	Single phase	CFW100016S1112ESZ	1,6	1	230	0.25	0.25	132	95	121	0.9
		CFW100026S1112ESZ	2,6	1		0.5	0.55				
		CFW100040S1112ESZ	4.0	2		1.0	0.75	161	115	122	1.5
200-240		CFW100016S2024ESZ	1.6	1		0.25	0.25	132	95	121	0.9
		CFW100026S2024ESZ	2.6	1		0.5	0.55				
		CFW100040S2024ESZ	4.0	1		1.0	0.75				
		CFW100073S2024ESZ	7.3	2		2.0	1.5	161	115	122	1.5
		CFW100100S2024ESZ	10	3		3.0	2.2	191			1.8
	Three phase	CFW100016T2024ESZ*	1.6	1		0.25	0.25	132	95	121	0.9
		CFW100026T2024ESZ*	2.6	1		0.5	0.55				
		CFW100040T2024ESZ*	4	1		1.0	0.75				
		CFW100073T2024ESZ*	7.3	1		2.0	1.5				
		CFW1000100T2024ESZ*	10	2		3.0	2.2	161	115	122	1.5
		CFW1000152T2024ESZ*	15.2	3		5.0	4	191		122	1.8

NOTES: The maximum motor power ratings listed above were based on WEG II and IV-pole motors.
For motors with different numbers of poles (ex.: VI and VIII-poles), other voltages (ex.: 230V) and/or motors from other manufacturers, specify the VSD through the motor rated current.
** CE Certification pending.*

CFW-10 - Specification Table “Cold Plate”

Power Supply Voltage	Variable Speed Drives CFW-10				Maximum Applicable Motor			Dimensions (mm)			Weight (Kg)
	Power Supply	Model	In Output (A)	Size	Voltage (V)	Power rating					
						HP	kW	H	W	D	
110-127	Single phase	CFW100016S1112EOCPZ	1,6	1	230	0.25	0.18	132	100	82	0.7
		CFW100026S1112EOCPZ	2,6	1		0.5	0.37				
		CFW100040S1112EOCPZ	4.0	2		1.0	0.75	161	120		1.0
200-240		CFW100016S2024EOCPZ	1.6	1		0.25	0.18	132	100		0.7
		CFW100026S2024EOCPZ	2.6	1		0.5	0.37				
		CFW100040S2024EOCPZ	4.0	1		1.0	0.75				
		CFW100073S2024EOCPZ	7.3	2		2.0	1.50	161	120		1.0
		CFW100100S2024EOCPZ	10	3		3.0	2.20	191			1.2
	Three phase	CFW100016T2024EOCPZ*	1.6	1		0.25	0.18	132	100		0.7
		CFW100026T2024EOCPZ*	2.6	1		0.5	0.37				
		CFW100040T2024EOCPZ*	4.0	1		1.0	0.75				
		CFW100073T2024EOCPZ*	7.3	1		2.0	1.5				
		CFW1000100T2024EOCPZ*	10	2		3.0	2.2	161	120		1.0
		CFW1000152T2024EOCPZ*	15.2	3		5.0	3.70	191			1.2

** CE Certification pending.*

CFW-10 - Technical Data

MODEL			CFW-10 Standard	CFW-10 Clean	CFW-10 with potentiometer
POWER SUPPLY	Voltage	Single-phase	110 - 127VAC: 110 / 127VAC (+10%, -15%)		
		Single-phase or Three-phase	200 - 240VAC: 200 / 220 / 230 / 240VAC (+10%, -15%)		
	Frequency		50 / 60 Hz +/- 2 Hz (48 - 62 Hz)		
	Cos φ (Displacement Power Factor)		> 0.98		
ENCLOSURE	Degree of Protection		IP 20		
CONTROL	Electronic Power Supply		Switching power supply		
	Control Method		Sinusoidal PWM modulation (Space Vector Modulation), Linear V/F or quadratic V/F		
	Switching Frequency		Frequencies: from 2.5 KHZ up to 15 KHZ		
	Frequency Range		0 - 300 Hz		
	Frequency Setting Resolution		Analog Ref.: 0.1% of max. frequency and Digital ref.: 0.01 Hz (f<100Hz); 0.1Hz (f>100Hz)		
	Output Frequency Accuracy		Analogue Ref.: 0.5% and Digital Ref.: 0.01%		
	Overload capacity		150% during 60 sec. every 10 min. (1.5 x In - Rated Current)		
CONTROL INPUTS	Analog		1 programmable isolated Input 0 -10VDC, 0 - 20mA or 4 - 0mA	-	1 programmable isolated Input 0 -10VDC, 0 - 20mA or 4 - 0mA
	Digital		4 programmable isolated inputs 12 Vdc		
CONTROL OUTPUTS	Relay		1 programmable output, form C Contacts (NO/NC)	-	1 programmable output, form C Contacts (NO/NC)
			Programming Options: Is > Ix ; Fs > Fx ; Fe > Fx ; Fs = Fe ; Run; No Fault		
SAFETY	Protections		DC Link Overvoltage / Undervoltage		
			VSD Over temperature		
			Keypad Connection Fault		
			Motor Overload (i x t)/ Output Short Circuit		
			CPU Error (Watchdog), External Fault		
			Output short-circuit		
			Programming Error./ Self-diagnosis Error		
KEYPAD (HMI)	Programming		Start/Stop, (General functions programming)		
	Commands		Start/Stop / Frequency Increases / Decreases Speed		
			-	-	Variable speed potentiometer
	Monitoring (reading)		Output Frequency (Hz)		
			DC Link Voltage (VDC)		
			Speed proportional value (Ex: tt/min)		
			Heat sink temperature		
			Output Current (Amps)		
			Output Voltage (Volts) Last Fault Messages		
AMBIENT	Temperature		0...122ºF (0 ... 50 °C) - 0...104°F (0...40°C) for 15,2A mode		
	Humidity		5 ... 90% non condensing		
	Altitude		0...3300ft (1000 m) up to (4000 m) with 10%/1000m output current de-rating		
ENCLOSURE	Color		Opaque gray - WEG development 205E1404		
CONFORMITIES	Electromagnetic Compatibility		EMC directive 89 / 336 / EEC		
			EN 61800-3		
	Low Voltage		LVD 73/23/EEC - Low Voltge Directive / UL 508C		
CONTROL FEATURES	Standard		Keypad with 7 segment displays (LED's)		
			Password to protect VSD Programming		
			Fault Auto-diagnosis and automatic reset		
			Motor Slip compensation (V/F mode)		
			Manual and automatic torque boost (I x R)		
			Linear and "S" independent acceleration ramp, two sets of ramps		
			JOG function		
			DC braking		
			Multi-Speed function (up to 8 pre programmable speeds)		
			Forward/Reverse Speed Selection via DI		
			Local/Remote Reference Selection via DI		

Drive Comparison

		MODELS		
		CFW-08	CFW-09	CFW-10
Power Supply	Single-phase Voltage	200 - 240V:200/220/230/240 V (+10%, -15%)	-	110-127V: 110/127 V (+10 %, -15%)
				200-240V: 200/220/230/240 V (+10%, -15%)
	3-phase voltage	200 - 240V:200/220/230/240 V (+10%, -15%)	220 - 230V:220/230V (+10%, - 15%)	200-240V: 200/220/230/240 V (+10%, -15%)
		380 - 480V : 380/400/415/440/460/ 480V (+10%, -15%)	380 - 480V : 380/400/415/ 440/460/480V (+10%, -15%)	
		500 - 600V:500/525/575/600V (+10%, -15%)	500 - 600V:500/525/575/600V (+10%, -15%)	
			500 - 690V:500/525/575/600/690V (+10%, - 15%)	
	Frequency	50 / 60 Hz +/- 2 Hz (48 ... 62Hz)		
	Cos ϕ (displacement power factor)	Greater than 0,98		
	Power factor	-		
Degree of Protection	Drive	Nema 1 on mechanical size 3 and 4 and IP 20 on mechanical size 1 and 2	NEMA 1 / IP20 (Size 1...8) IP20 (Size 9...10)	IP 20
		Nema 1 with additonal metallic conduit connection kit		
	Remote MMI	NEMA12 Parallel, remote MMI (IP54) (MMI-CFW08-RP)	NEMA 4x / IP 56	-
		NEMA12 Serial, remote MMI (IP54) (MMI-CFW08-RS)		
Flange mounted		Size 2, 3 and 4	Yes	-
Braking IGBT		Size 2, 3 and 4	mechanical models 1 and 2 standard, optional for mechanical size 8 and 10	Size 2 and 3
Control	Supply type	Switched Mode Power Supply		
	Control type	V/F (scalar) linear or quadratic	V/F (scalar)	V/F (scalor) linear or quadratic
		Sensorless vector control (Voltage Vector-Control WEG)	VVW (Voltage Vector-Control WEG)	
			Sensorless vector (without encoder)	
			Vector with encoder	
Control	Switching	Available frequencies 2,5 / 5,0 / 10 / 15 kHz	Available frequencies 1.25/ 2.5 / 5.0 / 10 kHz	Available frequencies 2.5 up to 15 kHz
	Speed variation	Band Range : 0 ... 300 Hz	0...204Hz (Supply frequency 60Hz)	Band Range : 0 ... 300 Hz
			0...170Hz (Supply frequency 50Hz)	
			Above 204 Hz (please contact WEG)	
Performance	Permitted overload	150% for 60 seconds every 10 minutes	CT: 150% for 60 seconds every 10 minutes VT: 110 to 120% for 60 seconds every 10 minutes	150% for 60 seconds every 10 minutes (1,5 x Inom.)
	Efficiency	Greater than 0,95 %	98%	Greater than 0,95 %
	Speed control	V/F Setting: 1% Rated Speed with Slip Compensation	V/F Setting: 1% Rated Speed with Slip Compensation	V/F Setting: 1% Rated Speed with Slip Compensation
		Resolution: 0.01 Hz (f<100Hz); 0.1 Hz(f<100Hz) (keypad reference)	Resolution; 1 rpm (keypad reference) regulation rate = 1:20	Resolution: 0.01 Hz (f<100Hz); 0.1 Hz(f<100Hz) (keypad reference)
	Control VVW	Regulation; 0.5% of the rated speed.	Regulation; 0.5% of the rated speed.	-
		Resolution; 1 rpm (keypad reference)	Resolution; 1 rpm (keypad reference) regulation rate = 1:30	
	Speed control	-	Regulation; 0.5% of the rated speed.	-
			Resolution; 1 rpm (keypad reference) regulation rate = 1:100	
	Speed control	-	10 bit analog reference setting: +/- 0.01% Rated Speed: with 14-bit analog reference +/-0.01% Rated Speed: with digital reference	-
			Rate: Up to 0	
	Torque Control	-	Setting: +/- 10% (sensorles) +/- 5% (encoder) motor Rated torque	-
			Setting: 0...150% (encoder) motor Rated torque	

Drive Comparison

		MODELS		
		CFW-08	CFW-09	CFW-10
Inputs and Outputs	Digital	4 programmable isolated digital inputs with NPN or PNP logic (DI1...DI4)	6 programmable inputs, optoisolated, bidirectional, 24Vdc	4 programable isolated inputs
		PTC isolated inputs via AI and AI2	2 outputs with reverser contacts (NO/NC) and 1 output with NO contact, programmable	
		Programmable isolated inputs via AI1 and AI2 with NPN or PNP logic (DI5 and DI6)		
	Relay	Programmable 2-output relay, reversible contacts (NO/NC)	2 programmable outputs, NO/NC contacts	1 programable output, reversal NO/NC contacts
			2 programmable outputs, NO/NC contacts	
	Analog	2 isolated analog inputs 0...10V/ 4...20mA / -10 ...10V, 8 bits	2 programmable differential inputs, 10 bits	1 isolated input 0...10 V, 0...20 mA or 4...20 mA
		1 isolated input 0 ...10V, (0)4 ... 20mA, 8 bits	2 programmable outputs, 0 a 10V, 11 bits	
			2 programmable outputs bipolares (-10...10V), 14 bits (optional)	
			2 programmable outputs isoladas, 11 bits (optional)	
Communication	Serial Interface	RS-232 or RS-485	RS - 232 via serial kit KCS - CFW09	
			RS - 485, isolated, via EBA or EBB RS-485 cards (accesory)	
	FieldBus networks	Profibus DP unit for communication (optional) and DeviceNet or CANopen or RTU ModBus (built-in)	RTU ModBus via Profibus DP, DeviceNet or DeviceNet Profile serial interface via additonal KFB kit	
Safety	Protections	Overvoltage and undervoltage in intermediary circuit		
		Overheating in the inverter and motor		Inverter overheating
		Output overcurrent		
		Motor overload (i x t)		
		Hardware error, external defect or serial communication error	Braking resistor overload	Hardware Error, external fault.
		Output short-circuit and output ground short-circuit	CPU error (Watchdog)	EPROM output short-circuit
		Programming error and self-adjusting error	Incremental encoder failure	Programming Error
		-	Output short-circuit	-
			Output ground short-circuit	
			External Error	
			Autodiagnosing and programming error	
			Serial communication failure	
			Inverted motor / Encoder connection	
			Power Supply Phase Fault	
			MMI-CFW09 interface failure	
Ambient conditions	Temperature	0...40 °C (up to 50 C with reduction of 2%/ ° C in the output current)	0...40 °C (up to 50 C with reduction of 2%/ ° C in the output current)	0...50 °C (without reduction in the output current)
	Humidity	5...90% without condensation	5...90% without condensation	5...90% without condensation
	Altitude	0.....1000 m (up to 4000 m with 1% / 100 m in the output current)	0.....1000 m (up to 4000 m with 1% / 100 m in the output current)	0.....1000 m (up to 4000 m with 1% / 100 m in the output current)
Human-Machine Interface (HMI)	Control	On/off, Setting Parameters (general programming)		
		Increase / decrease frequency		
		JOG, invertion of rotation direction and local / remote potentiometer selection for speed control		Variable speed potentiometer
	Monitoring (reading)	Motor output frequency		
		Intermediate circuit voltage	Inverter status	Intermediate circuit voltage
		Frequency proportional value	Digital input and output status	Speed proportional value
		Heat sink temperature	Motor speed	Heat sink temperature
		Motor output current (A)		
		Motor output voltager (V)		
		Error messages / output power defects		
		Load torque		-
		Inverter status	Relay output status	
			-	
Functions	Rheostatic braking	Built-in in frame size 2,3,4	Built-in in frame size 1,2 optional in frame size 3,4,5,6,7	Built-in frame size 2,3
	CC braking	Built-in	Built-in	Built-in
	Optimal Braking	-	Built-in	
	+24 Vdc source available	-	-	-
	PID	Built-in	Built-in	Built-in

WEG Worldwide Operations

ARGENTINA
WEG EQUIPAMIENTOS ELECTRICOS S.A.
(Headquarters San Francisco-Cordoba)
Sgo. Pampiglione 4849
Parque Industrial San Francisco
2400 - San Francisco
Phone(s): +54 (3564) 421484
Fax: +54 (3564) 421459
info-ar@weg.net
www.weg.net/ar

AUSTRALIA
WEG AUSTRALIA PTY. LTD.
3 Dalmore Drive
Carribean Park Industrial Estate
Scoresby VIC 3179 - Melbourne
Phone(s): 61 (3) 9765 4600
Fax: 61 (3) 9753 2088
info-au@weg.net
www.weg.net/au

BELGIUM
WEG BENELUX S.A.
Rue de l'Industrie 30 D,
1400 Nivelles
Phone(s): + 32 (67) 88-8420
Fax: + 32 (67) 84-1748
info-be@weg.net
www.weg.net/be

CHILE
WEG CHILE S.A.
Los Canteros 8600
La Reina - Santiago
Phone(s): (56-2) 784 8900
Fax: (56-2) 784 8950
info-cl@weg.net
www.weg.net/cl

CHINA
WEG (NANTONG) ELECTRIC MOTOR MANUFACTURING CO., LTD.
No. 128# - Xinkai South Road,
Nantong Economic &
Technical Development Zone,
Nantong, Jiangsu Province.
Phone(s): (86) 0513-85989333
Fax: (86) 0513-85922161
info-cn@weg.net
www.weg.net/cn

COLOMBIA
WEG COLOMBIA LTDA
Calle 46A N82 - 54
Portería II - Bodega 7 - San Cayetano II - Bogotá
Phone(s): (57 1) 416 0166
Fax: (57 1) 416 2077
info-co@weg.net
www.weg.net/co

FRANCE
WEG FRANCE SAS
ZI de Chenes – Le Loup
13 Rue du Morellon – BP 738
38297 Saint Quentin Fallavier
Phone(s): +33 (0) 4 74 99 11 35
Fax: +33 (0) 4 74 99 11 44
info-fr@weg.net
www.weg.net/fr

GERMANY
WEG GERMANY GmbH
Alfred-Nobel-Str. 7-9
D-50226 Frechen
Phone(s): +49 (2234) 9 5353-0
Fax: +49 (2234) 9 5353-10
info-de@weg.net
www.weg.net/de

INDIA
WEG Electric (India) Pvt. Ltd.
#38, Ground Floor, 1st Main Road, Lower Palace Orchards,
Bangalore – 560 003
Phone(s): +91-80-4128 2007
+91-80-4128 2006
Fax: +91-80-2336 7624
info-in@weg.net
www.weg.net/in

ITALY
WEG ITALIA S.R.L.
V.le Brianza 20 - 20092 - Cinisello Balsamo - Milano
Phone(s): (39) 02 6129-3535
Fax: (39) 02 6601-3738
info-it@weg.net
www.weg.net/it

JAPAN
WEG ELECTRIC MOTORS JAPAN CO., LTD.
Matsumoto Bldg. 2F, 3-23-7
Kamata, Ohta-ku,
Tokyo, Japan 144-0052
Phone(s): (81) 3 3736-2998
Fax: (81) 3 3736-2995
info-jp@weg.net
www.weg.net/jp

MEXICO
WEG MEXICO, S.A. DE C.V.
Carretera Jorobas-Tula Km. 3.5,
Manzana 5, Lote 1
Fraccionamiento Parque Industrial - Huehuetoca,
Estado de México - C.P. 54680
Phone(s): + 52 (55) 5321 4275
Fax: + 52 (55) 5321 4262
info-mx@weg.net
www.weg.net/mx

NETHERLANDS
WEG NETHERLANDS
Sales Office of
WEG Benelux S.A.
Hanzepoort 23C
7575 DB Oldenzaal
Phone(s): +31 (0) 541-571080
Fax: +31 (0) 541-571090
info-nl@weg.net
www.weg.net/nl

PORTUGAL
WEG EURO - INDÚSTRIA ELÉCTRICA, S.A.
Rua Eng. Frederico Ulrich
Apartado 6074
4476-908 - Maia
Phone(s): +351 229 477 705
Fax: +351 229 477 792
info-pt@weg.net
www.weg.net/pt

RUSSIA
WEG RUSSIA
Pochainskaya Str. 17
Nizhny Novgorod
603001 - Russia
Phone(s): +7-831-2780425
Fax: +7-831-2780424
info-ru@weg.net
www.weg.net/ru

SPAIN
WEG IBERIA S.L.
Avenida de la Industria,25
28823 Coslada - Madrid
Phone(s) : (34) 916 553 008
Fax : (34) 916 553 058
info-es@weg.net
www.weg.net/es

SINGAPORE
WEG SINGAPORE PTE LTD
159, Kampong Ampat,
#06-02A KA PLACE.
Singapore 368328.
Phone(s): +65 6858 9081
Fax: +65 6858 1081
info-sg@weg.net
www.weg.net/sg

SWEDEN
WEG SCANDINAVIA AB
Box 10196
Verkstadgatan 9
434 22 Kungsbacka
Phone(s): (46) 300 73400
Fax: (46) 300 70264
info-se@weg.net
www.weg.net/se

UK
WEG ELECTRIC MOTORS (U.K.) LTD.
28/29 Walkers Road
Manorside Industrial Estate
North Moons Moat - Redditch
Worcestershire B98 9HE
Phone(s): 44 (01527) 596-748
Fax: 44 (01527) 591-133
info-uk@weg.net
www.weg.net/uk

UNITED ARAB EMIRATES
WEG MIDDLE EAST FZE
JAFZA – JEBEL ALI FREE ZONE
Tower 18, 19th Floor,
Office LB181905
Dubai – United Arab Emirates
info-ae@weg.net
www.weg.net/ae

USA
WEG ELECTRIC CORP.
1327 Northbrook Parkway,
Suite 490
Suwanee 30024
Phone(s): 1-770-338-5656
Fax: 1-770-338-1632
info-us@weg.net
www.weg.net/us

VENEZUELA
WEG INDUSTRIAS VENEZUELA C.A.
Avenida 138-A
Edificio Torre Banco Occidental de Descuento, Piso 6 Oficina 6-12
Urbanizacion San Jose de Tarbes
Zona Postal 2001
Valencia, Edo. Carabobo
Phone(s): (58) 241 8210582
(58) 241 8210799
(58) 241 8211457
Fax: (58) 241 8210966
info-ve@weg.net
www.weg.net/ve

WEG Equipamentos Elétricos S.A.
International Division
Av. Prefeito Waldemar Grubba, 3000
89256-900 - Jaraguá do Sul - SC - Brazil
Phone: 55 (47) 3276-4002
Fax: 55 (47) 3276-4060
www.weg.net

ZEST ELECTRIC MOTORS (PTY) LTD.
47 Galaxy Avenue, Linbro Business Park - Gauteng Private Bag X10011
Sandton, 2146 Johannesburg - JOHANNESBURG - SOUTH AFRICA
Phone(s): (27-11) 723-6000
Fax: (27-11) 723-6001
E-mail: info@zest.co.za
www.zest.co.za