

Variable Frequency Drives



CFW 09

VECTRUE INVERTER



- V/Hz + Sensorless or Flux Vector
- *Optimal Braking™*



CFW⁰⁹ Variable Frequency Drives

The WEG CFW-09 Series of Variable Frequency Drives incorporate the world's most advanced technology in drives for three-phase AC induction motors.

The **Vectrue Technology™** represents a significant advancement, allowing this new generation of WEG VFD's 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 simpler, more compact and economic solution.

Vectrue Technology™

Technology developed by WEG for variable speed applications with three-phase AC induction motors providing the following advantages:

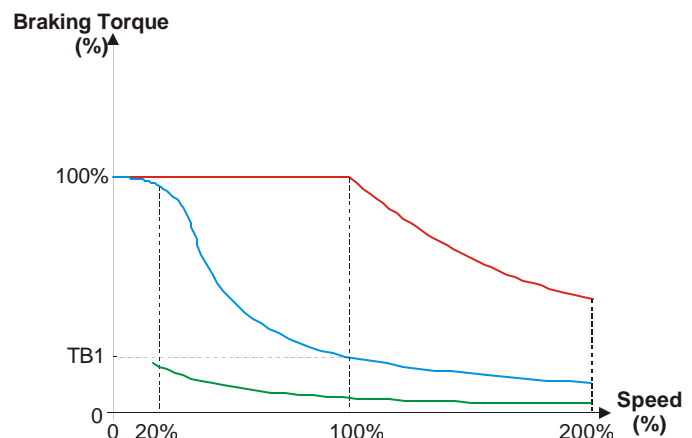
- ⇒ V/F or Vector Control modes via parameter selection;
- ⇒ True Flux Vector Control in either open or closed loop vector modes;
- ⇒ True Open Loop Vector Control with high torque and fast dynamic response, even at very low speeds;
- ⇒ Self-tuning for automatic drive set-up to match the drive to motor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

Optimal Braking™

For applications that require reduced braking times or to stop high inertia loads, traditional VFD's use a Dynamic Braking scheme, where the excessive kinetic energy regenerated to the DC Link is dissipated as heat in a dynamic braking resistor connected to the drive.

The CFW-09 Vector Modes incorporate the Optimal Braking™ feature, which allows a sufficient braking performance to handle most applications that so far needed dynamic braking.

This innovation allows high dynamic performance drive systems with braking torques of about 5 times of typical DC braking.



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

- Dynamic Braking Torque Curve
- Optimal Braking™ Torque Curve
- DC Braking Torque Curve

Other Advantages

- ⇒ High performance RISC 32 bit microprocessor
- ⇒ Detachable SMART keypad with dual display (LCD and LED)
- ⇒ Wide power range: 1 ... 500HP (up to 1500HP with parallel configuration)
- ⇒ Variable and Constant Torque ratings
- ⇒ NEMA 1 enclosure up to 200HP and IP20 Protected Chassis up to 500HP
- ⇒ 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 communication: Profibus DP, DeviceNet or Modbus RTU (Optional)
- ⇒ UL, cUL, CE Certifications

One Drive ... All Applications

CHEMICAL AND PETROCHEMICAL

Fans / Exhausts
Centrifugal Pumps
Metering / Process Pumps
Centrifuges
Mixers
Compressors
Extruders

PULP AND PAPER

Metering Pumps
Process Pumps
Fans / Exhausts
Agitators / Mixers
Rotating Filters
Rotating Kilns
Scrap Conveyors
Paper Machines
Paper Rewinders
Calenders

PLASTIC AND RUBBER

Extruders
Injection Machines
Mixers
Calenders / Pullers
Winders / Unwinders
Cut and Welding Machines
Granulators

MINING AND CEMENT

Fans / Exhausts
Pumps
Screeners
Vibratory Feeders
Crushers
Dynamic Separators
Conveyors
Cement Kilns

SUGAR

Sugar Centrifuges
Process Pumps
Conveyors
Bagasse Dosers

TEXTILE

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

STEEL

Fans / Exhausts
Rollout Tables
Winders / Unwinders
Cranes
Presses / Lathes / Milling Cutters
Drillers / Grinders
Laminators
Cutting Lines
Ingot Molding Lines
Pipe Forming Machines
Wire Drawing Machines
Pumps

CERAMIC

Fans / Exhausts
Driers / Ovens
Ball Mills
Rollout Tables
Enamellers
Conveyors

FOOD

Metering / Process Pumps
Fans / Exhausts
Mixers
Driers / Ovens
Palletizers
Monorails
Conveyors

LUMBER

Veneer Lathes
Chippers
Planers
Saws

BEVERAGE

Metering / Process Pumps
Bottlers
Mixers
Rollout Tables
Conveyors

GLASS

Fans / Exhausts
Bottlers
Rollout Tables
Conveyors

HVAC

Process Pumps
Fans / Exhausts
Air Conditioning Units

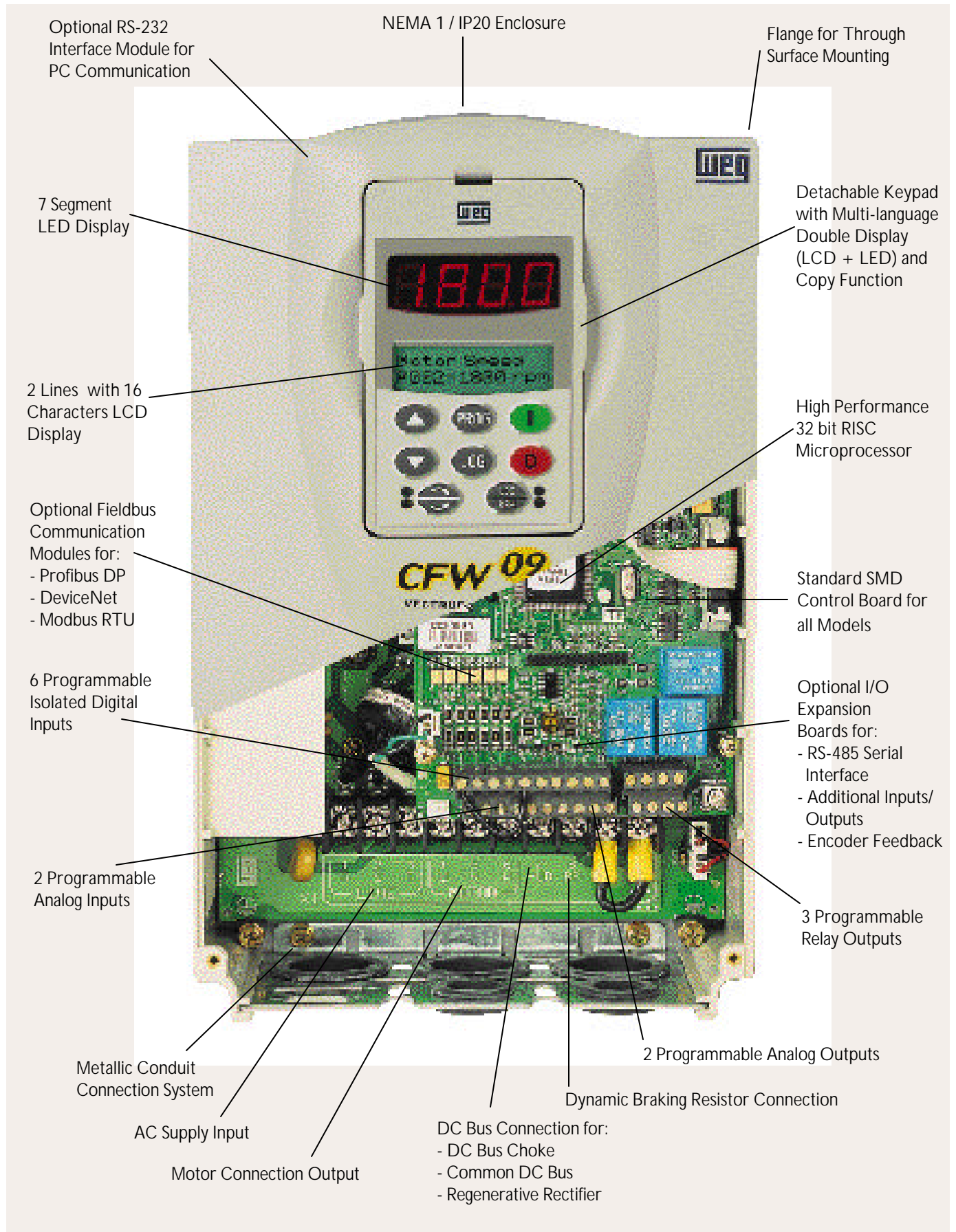
WASTE WATER

Centrifugal Pumps
Booster Systems

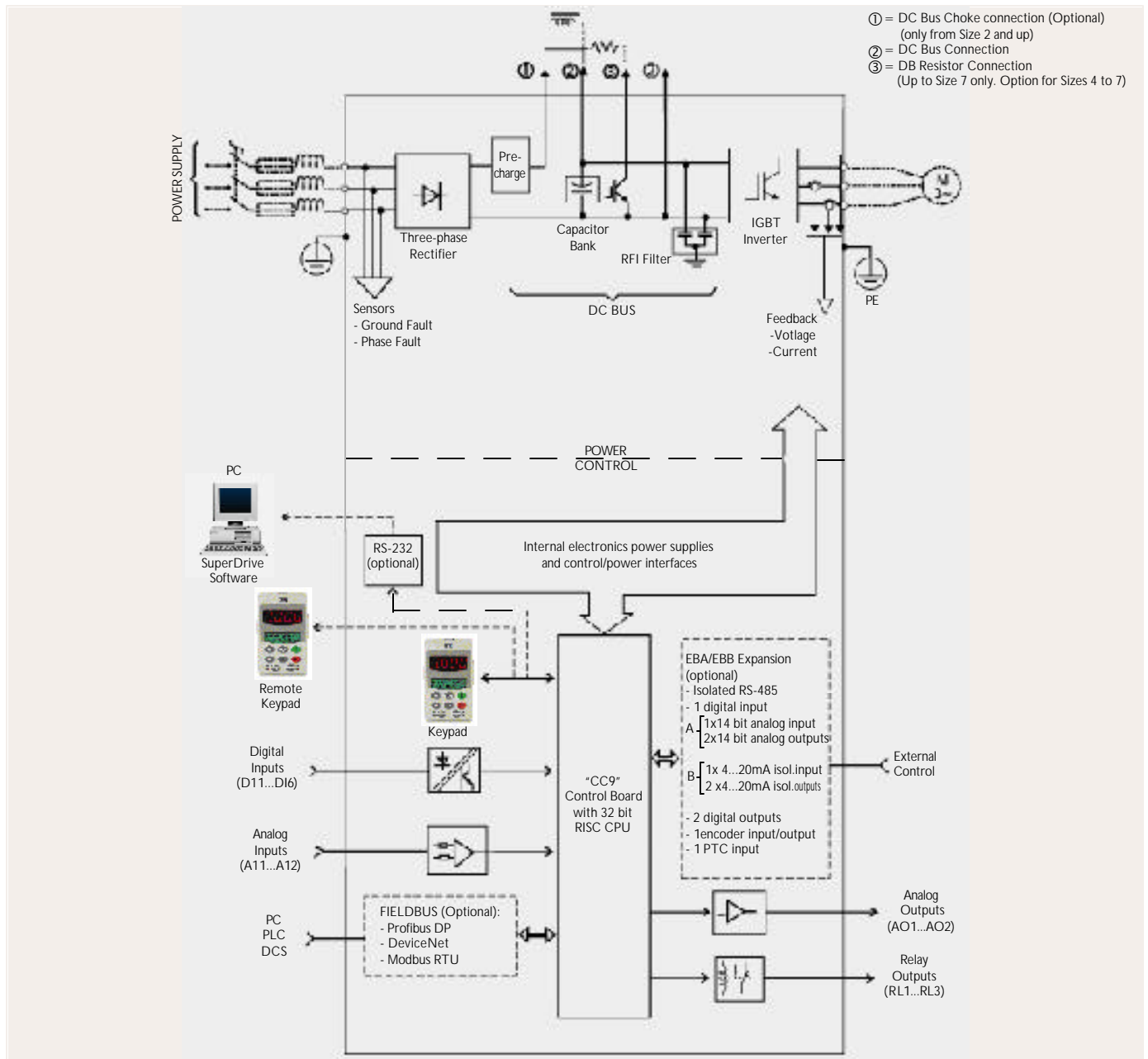
ELEVATORS

Load Elevators
Commercial Elevators
Overhead Cranes
Hoists

A Complete, Flexible and Compact Product



Block Diagram



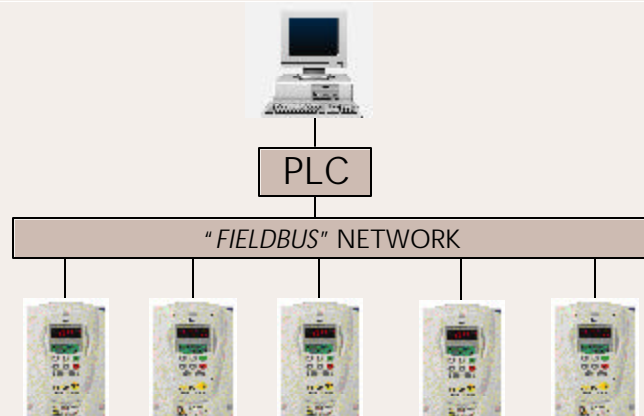
“FieldBus” Communication

High Speed Communication Networks

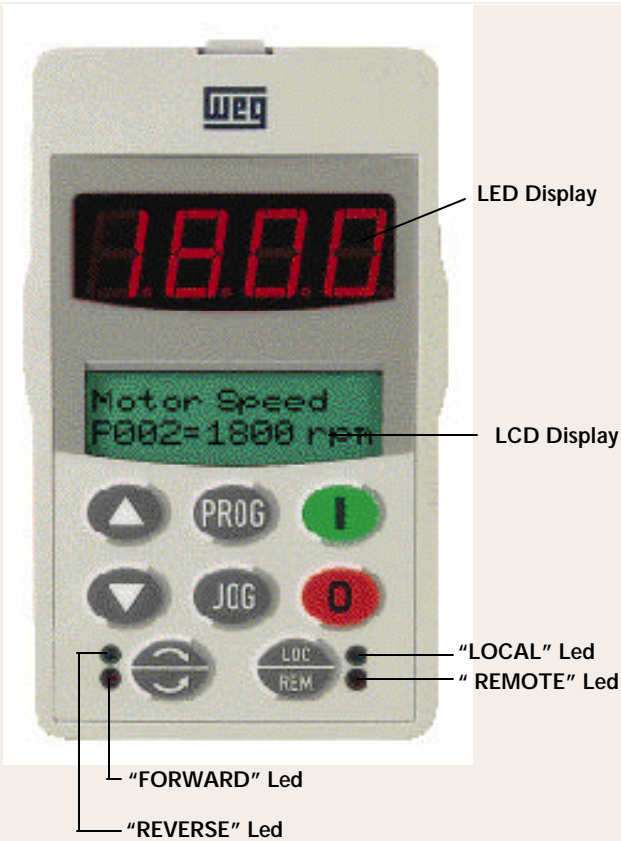
Designed to integrate large industrial plant automation systems, high speed communication networks provide on-line supervision and control over the drives with the required operational flexibility. The CFW-09 VFD's can be connected to “fieldbus” communication networks with the following protocols:

- FIELDBUS →
 - Profibus DP
 - DeviceNet
 - Modbus RTU

For the connection to Fieldbus networks, the CFW-09 allows the installation of an add-on communication board according to the desired protocol. No other peripherals are necessary.



Keypad



Intelligent Keypad

Intelligent operator 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 language of the LCD display messages can be selected by the operator. English, Spanish and Portuguese available.

Oriented Start-up

The CFW-09 "Oriented Start-up" feature was specially created to facilitate and expedite the start-up procedure. At the first power-up or after a reset to factory default parameters, an 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.

Keypad Functions



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



Stops the VFD via a controlled deceleration ramp. Resets the VFD 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 VFD operating mode as Local or Remote.



VFD "A"



VFD "B"



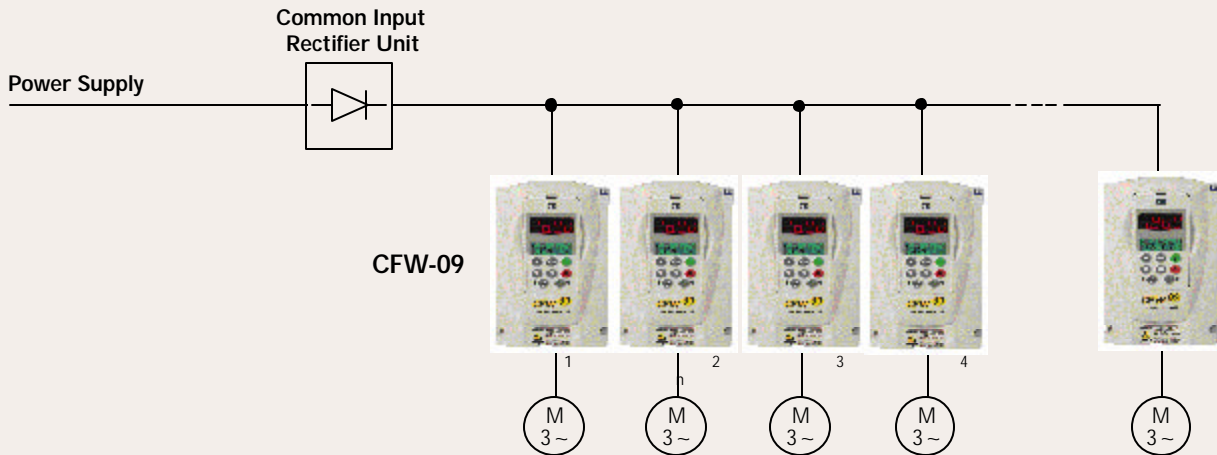
Common DC Bus Configuration

The CFW-09 VFD's have DC Bus access to allow the implementation of applications that require a Common DC Bus Configuration as well as Regenerative Systems.

Common DC Bus

Used in multi-motor drive systems where the individual rectifier bridges are replaced by a common input rectifier unit and the multiple drives are fed directly to their DC Buses in a parallel configuration.

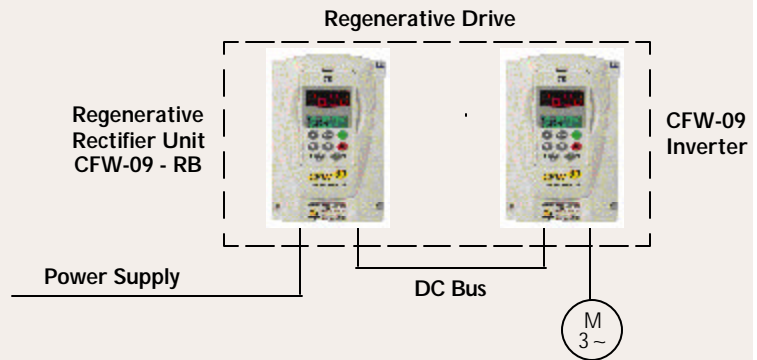
This solution allows energy transfer between the VFD units optimizing the power consumption of the system.



Regenerative Drive

A Regenerative Drive can be implemented connecting the DC Bus of a standard CFW-09 to the output of a Regenerative Rectifier Unit CFW-09-RB.

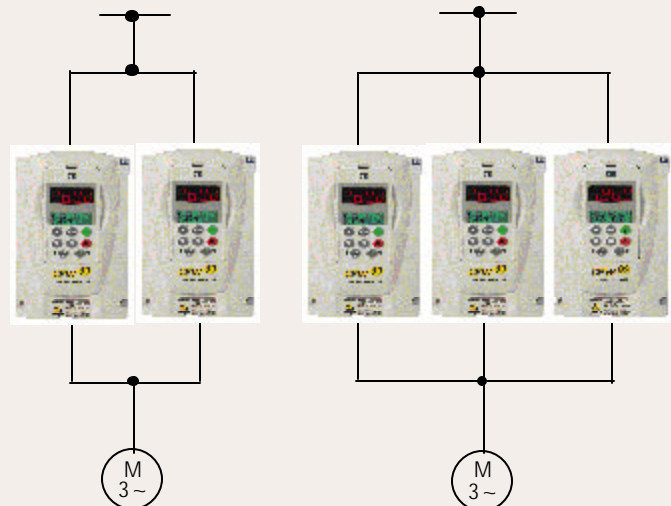
This solution provides line regenerative braking capability and near unity input power factor. Such a drive configuration is recommended for applications with cyclic braking duty, extremely short braking times and high dynamic performance requirements, as: Paper Rewinders, Centrifuges, Cranes, etc.



Parallel Configuration

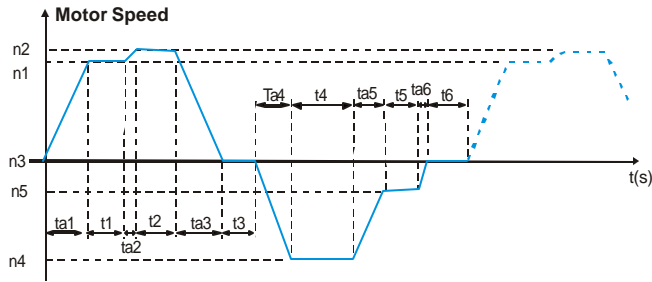
CFW-09 Units in Parallel

To extend its power range, the CFW-09 design allows the parallel connection of units. Up to three standard IP20 cabinet units can be connected in parallel to reach power ratings of up to 1500HP.



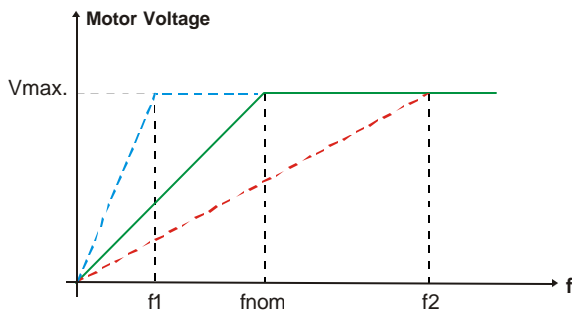
Special Functions

Automatic Process Cycle



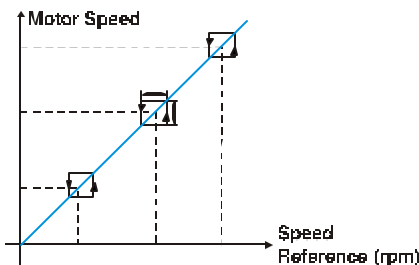
Any machine or process that presents a cyclic duty can be automated using this function incorporated in the CFW-09 software. A speed profile (speeds, acceleration/deceleration rates and times) is programmed in the CFW-09 and followed when it is enabled, providing better process repeatability and reliability.

Ajustable V/F Curve



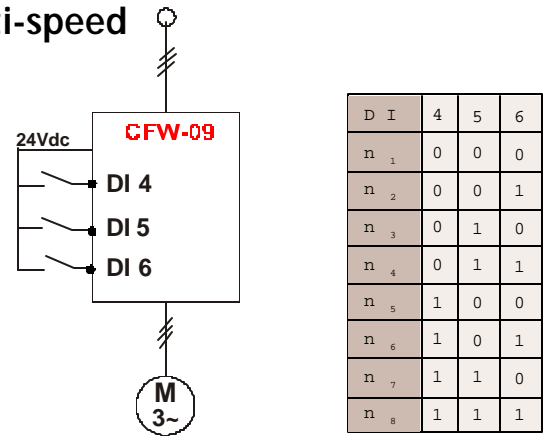
The alteration of the standard V/F curve intends to allow driving motors with rated voltage and/or frequency different from the power supply. The base frequency can be programmed to a new value, below or above the power supply frequency, the voltage can be set to any value below line voltage.

Critical Speeds Rejection



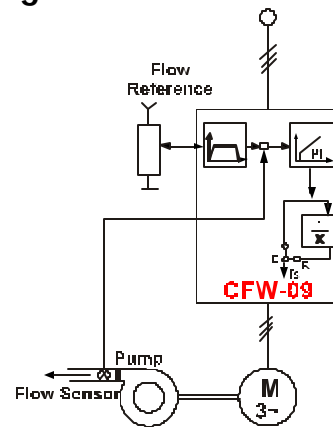
This function avoids the possibility of running the motor at critical speeds that may provoke mechanical resonance on the motor/load system causing excessive noise or vibration. Up to three speeds and a rejection band can be programmed.

Multi-speed



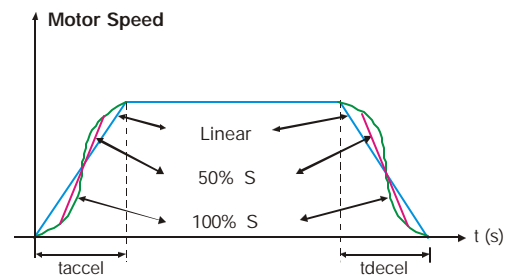
Up to eight different speeds can be programmed by the user and selected via the combination of three Digital Inputs. These Inputs can be switched by any external devices such as Limit Switches, Photocells, Proximity Sensors, PLC, etc.

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, undesirable and some times unpractical for certain applications.

Accessories and Peripherals



COMPLETE KEYPAD (Standard)

HMI - CFW09 - LCD

Intelligent Operator Interface with double display (LED and LCD), plain English messages and COPY Function. Local or remote installation.



SIMPLIFIED KEYPAD (Optional)

HMI - CFW09 - LED

Simplified Operator Interface with LED display only. An option for reduced cost solutions. Local or remote installation.



LOCAL



REMOTE

BLANK KEYPADS

TCL - CFW09

TCR - CFW09

Blank Keypad Modules to fill space when the keypad is not mounted. TCL for Local (on the VFD cover/door) installation and TCR for Remote (on remote keypad frame) installation.



RS-232 SERIAL INTERFACE KIT

KCS - CFW09

Composed of a Serial Interface Module and accessories (cable, connectors and SuperDrive Software) to connect the CFW-09 to a PC or other equipment via an RS-232 Serial Link.



REMOTE KEYPAD FRAME KIT

KMR - CFW09

Frame for remote keypad mounting on panel door or operator station.

Optional up to 16 ft (5m) cable.

Maximum cable length: 33 ft (10 m)



NEMA 4 REMOTE KEYPAD

HMI - CFW09 - LCD - N4

For installation on panel door or remote operator station in harsh environments, such as splashing or hose-directed water and windblown dust.

Maximum cable length: 33 ft (10 m)



REMOTE KEYPAD CABLES

CAB - HMI 09 - X

Cables with lengths (X) of 3.3, 6.6, 10, 16, 25 and 33 ft (1, 2, 3, 5, 7.5 and 10 m).

Special cables available on request



I/O EXPANSION BOARDS

EBA.0X - CFW09

EBB.0X - CFW09

Configurations Functions	EBA ...			EBB...		
	01	02	03	01	02	03
Encoder Input	•			•	•	
Encoder Output	•			•		
RS-485 Serial Interface	•	•		•		
14 bit A/D	•		•			
14 bit D/A's	•		•			
Isolated Analog Input				•		•
Isolated Analog Outputs				•		•
Digital Inputs and Outputs + Thermistor (PTC) Input	•	•	•	•	•	•



"FIELDBUS" COMMUNICATION KITS

Profibus DP → **KFB - PD**

DeviceNet → **KFB - DN**

ModBus RTU → **KFB - MR**

Sizing Table

AC LINE VOLTAGE	CFW-09 VFD				RECOMMENDED MOTOR				SIZE	
	Part Number CFW-09...	Built-in DB Transistor	Rated Current (A)		Voltage (V)	CT*		VT*		
			CT*	VT*		HP	KW	HP		KW
220 / 230V	0006 T D Z	Yes	6.0		230	1.5	1.1	1.5	1.1	1
	0007 T D Z		7.0			2.0	1.5	2.0	1.5	
	0010 T D Z		10			3.0	2.2	3.0	2.2	
	0013 T D Z		13			3.0	2.2	3.0	2.2	
	0016 T D Z		16			5.0	3.7	5.0	3.7	
	0024 T D Z		24			7.5	5.5	7.5	5.5	
	0028 T D Z		28			10	7.5	10	7.5	
	0045 T D Z		45			15	11	15	11	
	0054 T D Z	Optional Order as CFW09XXXXTDBZ	54	68		20	15	25	18	3
	0070 T D Z		70	86		25	18	30	22	4
	0086 T D Z		86	105		30	22	40	30	5
	0105 T D Z		105	130		40	30	50	37	6
	0130 T D Z		130	150		50	37	50	37	
380 / 400 / 415 / 440 / 460 / 480V	0003 T G Z		Yes	3.6		460	2.0	1.5	2	1.5
	0004 T G Z	4.0		2.0	1.5		2.0	1.5		
	0005 T G Z	5.5		3.0	2.2		3.0	2.2		
	0009 T G Z	9.0		5.0	3.7		5.0	3.7		
	0013 T G Z	13		7.5	5.5		7.5	5.5		
	0016 T G Z	16		10	7.5		10	7.5		
	0024 T G Z	24		15	11		15	11		
	0030 T G Z	30		36	20		15	25	18	3
	0038 T G Z	Optional Order as CFW09XXXXTGDBZ	38	45	25		18	30	22	4
	0045 T G Z		45	54	30		22	40	30	
	0060 T G Z		60	70	40		30	50	37	5
	0070 T G Z		70	86	50		37	60	45	
	0086 T G Z		86	105	60		45	75	55	6
	0105 T G Z		105	130	75		55	100	55	
	0142 T G Z	142	174	100	75		125	90	7	
	0180 T G Z	External DB Module	180		150		110	150	110	8
	0240 T G Z		240		200		150	200	150	
	0361 T G Z		361		300		220	300	220	9
	0450 T G Z		450		350		260	350	260	10
	0600 T G Z		600		500		370	500	370	

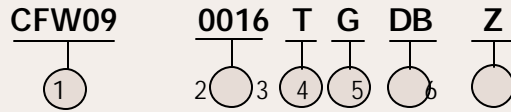
*CT = Constant Torque; VT = Variable Torque

Notes: 1 -Recommended Motor ratings are based on Table 430-150 (Full-Load Current Three-Phase Alternating-Current Motors) of the US National Electrical Code (NEC).

2 -The 6, 7 and 10A/230V models can be single-phase powered without output current de-rating

3 -Enclosure: NEMA1 for Sizes 1 through 8, IP20 Protected Chassis for Sizes 9 and 10.

CFW-09 Part Number Specification



1 - WEG Variable Frequency Drive CFW-09 Series

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

3 - Power Supply: T = Three-phase

4 - Power Supply Voltage: D = 220 ... 230 VAC
G = 380 ... 480 VAC

5 - Dynamic Braking: Blank = Standard
DB = With Built-in Dynamic Braking Transistor

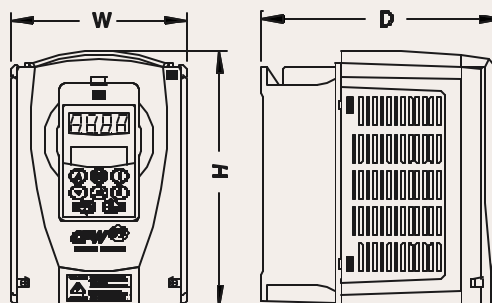
6 - Z = End of Code



220 ... 230 V	380 ... 480 V
0006 = 6.0 A	0003 = 3.6 A
0007 = 7.0 A	0004 = 4.0 A
0010 = 10 A	0005 = 5.5 A
0013 = 13 A	0009 = 9.0 A
0016 = 16 A	0013 = 13 A
0024 = 24 A	0016 = 16 A
0028 = 28 A	0024 = 24 A
0045 = 45 A	0030 = 30 A
0054 = 54 A	0038 = 38 A
0070 = 70 A	0045 = 45 A
0086 = 86 A	0060 = 60 A
0105 = 105 A	0070 = 70 A
0130 = 130 A	0086 = 86 A
	0105 = 105 A
	0142 = 142 A
	0180 = 180 A
	0240 = 240 A
	0361 = 361 A
	0450 = 450 A
	0600 = 600 A

Dimensions and Weight

SIZE	Height - H in (mm)	Width - W in (mm)	Depth - D in (mm)	Weight lb (kg)
1	8.3 (210)	5.6 (143)	7.7 (196)	6.6 (3.0)
2	11.4 (290)	7.2 (182)		11.7 (5.3)
3	15.3 (390)	8.9 (223)	10.8 (274)	37.5 (17)
4	18.7 (475)	9.8 (250)		48.5 (22)
5	21.6 (550)	13.2 (335)		66.1 (30)
6	26.6 (675)		11.8 (299)	94.8 (43)
7	32.9 (835)		12.2 (310)	121 (55)
8	38.4 (975)	16.1 (410)	14.6 (370)	176 (80)
9	40.2 (1020)	27.1 (688)	19.3 (491)	441 (200)
10	46.6 (1185)	27.5 (700)		507 (230)



Technical Specifications

POWER SUPPLY	Voltage	Three-phase:	220 – 230 V: 220 / 230 V (+10%, -15%) - 1 Ø up to 3HP without de-rating 380 - 480 V: 380 / 400 / 415 / 440 / 460 / 480 V (+10%, -15%)
	Frequency		50 / 60 Hz +/- 2 Hz (48 ... 62 Hz)
	Phase Unbalance		Up to 3 %
	Cos φ (Displacement Power Factor)		Greater than 0.98
ENCLOSURE	Degree of Protection		NEMA 1 / IP 20 (Sizes 1 to 8) IP 20 (Sizes 9 and 10)
	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		Scalar (Voltage Source – V / F)
			Sensorless Vector (without encoder)
			Vector with Encoder
	Switching Frequency		1.25 / 2.5 / 5.0 / 10 kHz
	Frequency Range		0 ... 204 Hz for V / F and Vector with Encoder Control (60 Hz Motor)
			0 ... 170 Hz for V / F and Vector with Encoder Control (50 Hz Motor)
			0 ... 100 Hz for Sensorless Vector Control (50 or 60 Hz Motor)
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 (with Slip Compensation): 1% of 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)
		Encoder Vector Mode	Range: 1:100
	Regulation with:		
10 bit Analog Reference: +/- 0.1% of Motor Rated Speed			
Torque Control	Vector Modes	14 bit Analog Reference: +/- 0.01% of Motor Rated Speed ①	
		Digital Reference (Ex: Keypad or Serial): +/- 0.01% of Motor Rated Speed	
		Range: Down to 0 rpm	
		Regulation: +/- 10% of Motor Rated Torque	
		Range: 0 ... 150% of Motor Rated Torque	
CONTROL INPUTS	Analog		2 Programmable Differential Inputs (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 ①
			1 Programmable Isolated Input (10 bit): 0 ... 10 V, 0...20 mA or 4...20 mA ①
	Digital		6 Programmable Isolated Input: 24 Vdc
			1 Programmable Isolated Input: 24 Vdc ① 1 Programmable Isolated Input: 24 Vdc (for Motor PTC Thermistor) ①
Encoder		1 Differential Input, with 12 Vdc Internal Isolated Power Supply (14 bit resolution) ①	
CONTROL OUTPUTS	Analog		2 Programmable Outputs (11 bit): 0 ... 10 V
			2 Programmable Bipolar Outputs (14 bit): -10 ... +10 V ①
			2 Programmable Isolated Outputs (11 bit): 0 ... 20 mA or 4 ... 20 mA ①
	Relay		2 Programmable Outputs, Form C Contacts (NO/NC): 240 Vac, 1 A 1 Programmable Output , Form A Contact (NO): 240 Vac, 1 A
	Transistor		2 Programmable Isolated Outputs (Open Collector): 24 Vdc, 50 mA ①
Encoder		1 Isolated Differential Encoder Signals Output: 5 ... 15 Vdc External Power Supply ①	
COMMUNICATION	Serial		RS-232 with KCS-CFW09 Kit ① RS-485, Isolated, with EBA or EBB Board ①
	Field Bus		Profibus DP, DeviceNet or Modbus RTU, with KFB kits ①
SAFETY	Protections		DC Link Over Voltage
			Output Short Circuit
			DC Link Under Voltage
			Output Ground Fault
			VFD Over Temperature
			External Fault
			Motor Over Temperature ①
			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 Phase Fault (30 A and above models)		
	Encoder Fault		
	Keypad Connection Fault		
AMBIENT	Temperature		0 ... 104 °F (40 °C), up to 122 °F (50 °C) with 2% / °C Output Current De-rating
	Humidity		5 ... 90% Non Condensing
	Altitude		0 ... 3300 ft (1000 m) (up to 13100 ft (4000 m) with 10% / 1000 m Output Current De-rating
CONFORMITIES	EMC Directive 89 / 336 / EEC EN 61800-3		Electromagnetic Compatibility – Industrial Environment EMC - Emission and Immunity
	LVD 73/23/EEC		Low Voltage Directive
	IEC 146		Semiconductor Inverters
	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
			Underwriters Laboratories Inc. USA
CERTIFICATIONS	UL (USA) and cUL (CANADA)		Underwriters Laboratories Inc. USA
	CE (EUROPE)		Pending

Data subject to change without previous notice.

① Optional

Technical Specifications

KEYPAD	Programming	General VFD Functions Programming			
	Commands	Start / Stop , Increase / Decrease Speed, JOG, FWD/REV and Local/Remote			
	Monitoring	Speed Reference (rpm)	Output Current (A)		
		Motor Speed (rpm)	Output Voltage (Vac)		
		Speed Proportional Value (Ex: ft/min)	VFD Status		
		Output Frequency (Hz)	Digital Inputs Status		
		DC Link Voltage (Vdc)	Transistor Outputs Status		
		Motor Torque (%)	Relay Outputs Status		
		Output Power (kW)	Analog Inputs Value		
		Hours Powered Up (h)	Four Last Faults		
		Hours Enabled (h)	Fault Messages		
CONTROL FEATURES AND OPTIONS	Standard	Keypad with LCD + LED displays (HMI-CFW09-LCD)			
		Password to protect VFD 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			
		VFD 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 + / JOG - Function (momentary speed increase/decrease, phase shift)			
		COPY Function (VFD ⇒ Keypad or Keypad ⇒ VFD)			
		Comparison functions for the digital outputs: N* > Nx; N > Nx; N < Nx ; N = 0; 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 45 A / 220-230 V and 30 A / 380-480 V			
		Multi-speed function (up to 8 preset speeds)			
		Speed Profiling function ②			
		Hour meter and Wattmeter			
		PID Regulator (for automatic control of level, pressure, flow, etc.) ②			
		FWD / REV selection			
		Local / Remote operation selection			
		Flying Start function (restart with the motor spinning) ②			
		Skip Speed (critical speed rejection)			
		Ride-Through (operation during momentary power loss) ②			
	Built-in dynamic braking transistor: Models: 6 ... 45 A / 220 - 230 V and 3.6 ... 30 A / 380 - 480 V				
	Options	Simplified keypad (with LED display only)		OPTIONAL	HMI-CFW09-LED
		NEMA 4 remote keypad (LED display only)			HMI-CFW09-LED-N4
		NEMA 4 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 . 0X – CFW09
					EBB . 0X – CFW09
FieldBus Communications kits (Mounted inside VFD)		KFB – PD			
		KFB – DN			
		KFB – MR			
VFD / PC communication kit		SUPERDRIVE Software	SUPERDRIVE		
		Connectors and cables			
		KCS CFW-09			
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 ... 600 A / 380-480 V			“FR”		
Through surface mounting kit (for sizes 3 ... 8)			-		
EMC filter			-		

Data subject to change without previous notice.

② Available in Jan/2001.

WEG has a complete range of drive products to fulfill your motor starting, protection and variable speed application needs. Get to know our other Variable Frequency Drive and Soft Starter lines.



CFW-08 VARIABLE FREQUENCY DRIVE

Compact, full featured Micro VFD Line:

- 1/4 to 2 HP
- Single and three-phase input power supply
- 200-240V or 380-480V, input voltage
- 4 programmable digital inputs
- 1 programmable relay output
- 1 programmable analog input
- Protective features: overcurrent, motor overload, drive overtemperature, output phase to phase and phase to ground short circuit, DC link over and undervoltage and external fault
- Control features: linear and "S" acceleration and deceleration ramps, local/remote control, DC braking, torque boost, motor slip compensation, electronic pot, multi-speed, adjustable V/Hz profile, maximum and minimum adjustable frequency limits, two skip frequencies, adjustable output current limit, JOG, ride-through and flying start
- Display readings: motor speed, frequency, current, voltage, last fault and drive status



CFW-07 VARIABLE FREQUENCY DRIVE

A cost effective general purpose VFD Line:

- 1/3 to 10 HP
- Single and three-phase input power supply
- 230 and 380-480 V, 50/60 Hz input voltage
- Standard built-in transistor for dynamic braking
- 4 programmable digital inputs
- 2 programmable relay outputs
- 2 differential analog inputs
- 1 analog output
- RS-232 serial Interface
- Protective features: overcurrent, motor overload, output phase to phase and phase to ground short circuit, DC link over and undervoltage and external fault
- Control features: linear and "S" acceleration and deceleration independently adjustable ramps, local/remote control, DC braking, torque boost, motor slip compensation, electronic pot, multispeed, maximum and minimum adjustable frequency limits, three skip frequencies, adjustable output current limit, JOG function and ride-through
- Display readings: motor speed, frequency, current, voltage and drive status



SSW-03 and SSW-04 SOFT STARTERS

Full digital Soft Starters with electronic "Thermal Image Motor Protection" and keypad programming:

- 5 to 1000 HP
- 230, 460 and 575 V, 50/60 Hz input voltage
- 4 programmable isolated digital inputs (24 VDC)
- 2 programmable relay outputs (1 Amp - 250 V)
- 1 differential analog input
- Protective features: motor overload, under and overcurrent, power supply phase loss, motor phase loss, thyristor fault, phase sequence, soft starter overtemperature and external fault
- Control features: pump control, acceleration and deceleration independently adjustable ramps, kick start, pedestal voltage, starting current limitation and by-pass relay
- Display readings: motor current, voltage, kW, kVA and Cos ϕ



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