CFW500 - NEMA4X/IP66 WASHDOWN DRIVE

Motors
Automation
Energy
Transmission and
Distribution
Coatings

Rated for Installation in Direct Sunlight

CFW500-N4X/IP66 WASHDOWN DRIVE

For Indoor / Outdoor Use

The WEG CFW500 Wash series is a redesign of our most successful CFW500 series product line. Engineer improvements have produced one of the most compact and full featured washdown drive in the market.

The new version with IP66/NEMA 4X protection rating increases the product robustness, ensuring protection against the ingress of dust and water jets from any direction, which allows its use and installation both indoors and outdoors. The new IP66 models of the CFW500 line have the following characteristics.

Standard Features

- Same programming as other WEG VFDs including CFW500-IP20.
- Built-in SoftPLC.
- Scalar, Vector Control (Senseless and closed loop with encoder feedback) & VVW PM (suitable for fan, Pump and compressor).
- NEMA 4X(IP66) Enclosure.
- Available with and without disconnect switch.
- Suitable for indoor and Outdoor use.
- 200-240V, 380-480V or 500-600 input voltage.
- 0 to 500 Hz output frequency.
- 2.5 to 15 kHz adjustable switching frequency (5 kHz standard).
- Built-in 24Vdc Power supply (max. 150 mA).
- Built-in RS-485 (Modbus RTU) communication.
- Four isolated programmable digital inputs.
- One programmable relay output (1NO, 1NC, 240vac 0.5A).
- One programmable transistor output.
- One isolated programmable analog input (0-10V, 0/4-20mA).
- One isolated programmable analog output (0-10V, 0/4-20mA).
- Protective features: Over current (Phase-Phase short circuit in the output or phase-ground short circuit in the output), Under/overvoltage, overtemperature in heatsink, motor overload, IGBT overload 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, adjustable V/Hz profile, maximum and minimum adjustable frequency limits, two skip frequencies, adjustable output current limit, JOG, ride-thru, flying start and PID regulator.
- Same keypad with backlight as of CFW500 product line with Main display line, secondary display line and bar graph display.
- Ambient: 14°F (-10ºC) to 104°F (40ºC), 3300ft (1000m) altitude, 5-95% humidity, non-condensing.
- WLP and WPS (only 230VAC and 460VAC Models) compatible.

Applications
NEMA 4X

- **Pumps**
- **Fans**
- **Blowers**
- **Conveyors**
- **Rollout tables**
- **Agitators**
- **Mixers**
- **Any washdown applications**

Pump Genius

The Pump Genius is a customizable feature of WEG drives that enables your standard CFW500 to become dedicated for pumping systems. It ensures accurate pressure / flow control throughout the processing cycle, starting with raw water and its usage, ending on wastewater treatment. With an easy-to-use programming wizard, Pump Genius helps you to minimize downtime and maximize energy savings. Everything you need is selecting one option that best fits your application:
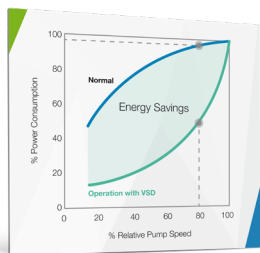
simplex

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

multipump

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

multiplex

Pump Genius Multiplex permits the VFDs to control, monitor and manage the entire system on their own, eliminating the need of external PLC.

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

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

Embedded Safety Functions - with optional Module, CFW500-SFY2
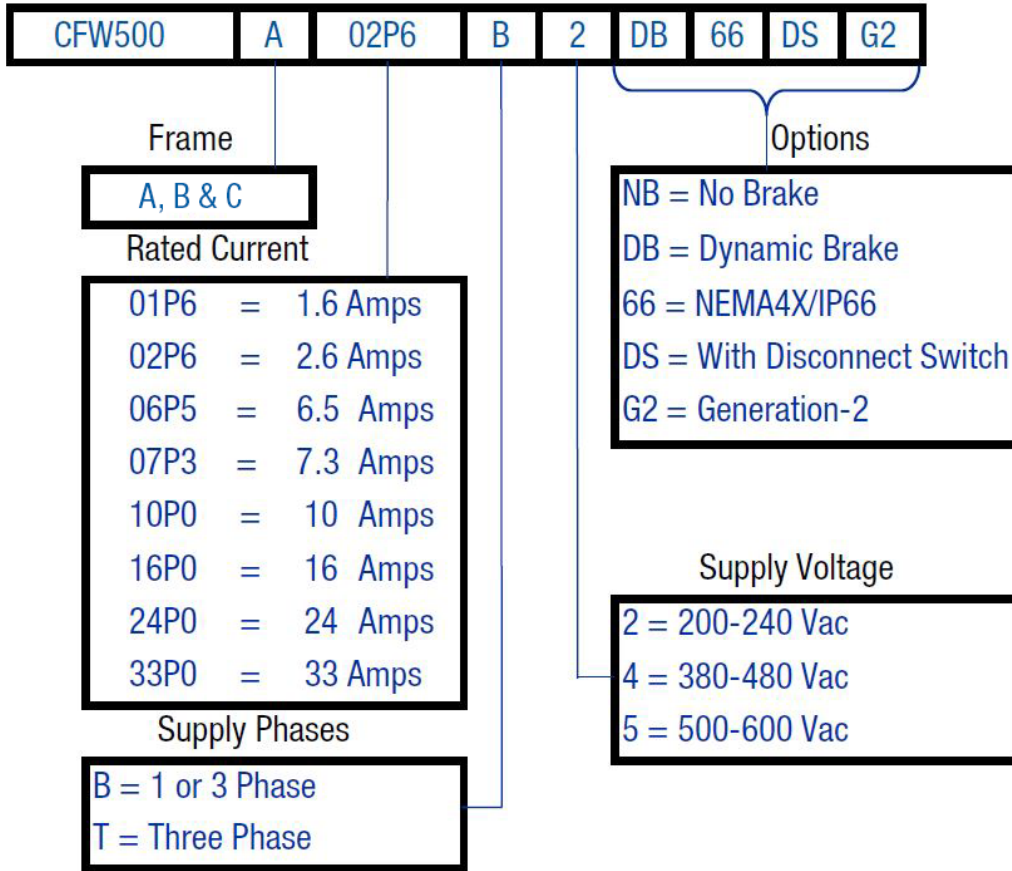
Used to reduce risk and to guarantee the safety of personnel and environment if there is a hazardous event due to a fault in operating machines. The embedded safety functions *STO and SS1* provide machine builders a cost-effective solution to design protective measures and reduce the risk from unexpected and hazardous movement in industrial machines and processes.

Advantages
- Safety functions integrated in the CFW500 drive, making easier to comply with the machine and application safety requirements
- Less components, no need for additional wiring, saving space and installation costs
- Easier installation, commissioning and maintenance
- No electromechanical components, meaning faster responses and higher degree of productivity
- Due to the high safety performance level SIL3, the CFW500 with Safety module may avoid the use of external safety relays for cables and emergency pushbuttons monitoring

CFW500-N4X/IP66 Catalog Number Sequence

| CFW500 | A | 02P6 | B | 2 | DB | 66 | DS | G2 |

Frame

A, B & C

Rated Current

01P6	=	1.6 Amps
02P6	=	2.6 Amps
06P5	=	6.5 Amps
07P3	=	7.3 Amps
10P0	=	10 Amps
16P0	=	16 Amps
24P0	=	24 Amps
33P0	=	33 Amps

Supply Phases

B = 1 or 3 Phase
T = Three Phase

Options

NB = No Brake
DB = Dynamic Brake
66 = NEMA4X/IP66
DS = With Disconnect Switch
G2 = Generation-2

Supply Voltage

2 = 200-240 Vac
4 = 380-480 Vac
5 = 500-600 Vac

CFW500 - N4X/IP66 WASHDOWN VFD W/O DISCONNECT SWITCH

Motor Voltage	ND/VT [1]		HD/CT [1]		Catalog Number	Braking Transistor	Frame Size [4]	Dimensions (in.) HxWxD	Approx. Weight (lbs.)
	Motor HP [2]	Drive Amps [3]	Motor HP [2]	Drive Amps [3]					
230 Vac / 3 Phase	**Input Power Supply: Single or Three-Phase 200-240 Vac**								
	1/3	1.6	1/3	1.6	CFW500A01P6B2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	3/4	2.6	3/4	2.6	CFW500A02P6B2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	1 1/2	4.3	1 1/2	4.3	CFW500A04P3B2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	2	7.3	2	7.3	CFW500A07P3B2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	3	10	3	10	CFW500A10P0B2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	Input Power Supply: Three-Phase 200-240 Vac								
	5	16	5	16	CFW500A16P0T2DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	7 1/2	24	7 1/2	24	CFW500B24P0T2DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	10	28	10	28	CFW500B28P0T2DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	10	33	10	33	CFW500B33P0T2DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	15	47	15	47	CFW500C47P0T2DB66G2	Yes	C	18.7 x 12.6 x 11.4	45.0
	25	70	20	56	CFW500C56P0T2DB66G2	Yes	C	18.7 x 12.6 x 11.4	45.0
460 Vac / 3 Phase	**Input Power Supply: Three-Phase 380-480 Vac**								
	1/2	1	1/2	1	CFW500A01P0T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	1	1.6	1	1.6	CFW500A01P6T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	1 1/2	2.6	1 1/2	2.6	CFW500A02P6T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	3	4.3	3	4.3	CFW500A04P3T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	5	6.5	5	6.5	CFW500A06P5T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	7 1/2	10	7 1/2	10	CFW500A10P0T4DB66G2	Yes	A	10.4 x 6.5 x 8.9	22.0
	10	14	10	14	CFW500B14P0T4DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	10	16	10	16	CFW500B16P0T4DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	15	24	15	24	CFW500B24P0T4DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	25	31	25	31	CFW500B31P0T4DB66G2	Yes	B	13.4 x 8.5 x 8.9	26.5
	30	45	30	39	CFW500C39P0T4DB66G2	Yes	C	18.7 x 12.6 x 11.4	45.0
	50	59.2	40	49	CFW500C49P0T4DB66G2	Yes	C	18.7 x 12.6 x 11.4	45.0
575 Vac / 3 Phase	**Input Power Supply: Three-Phase 500-600 Vac**								
	1 1/2	1.7	1 1/2	1.7	CFW500B01P7T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5
	3	3	3	3	CFW500B03P0T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5
	3	4.3	3	4.3	CFW500B04P3T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5
	7 1/2	7	7 1/2	7	CFW500B07P0T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5
	10	10	10	10	CFW500B10P0T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5
	10	12	10	12	CFW500B12P0T5DB66	Yes	B	13.4 x 8.5 x 8.9	26.5

NOTES:
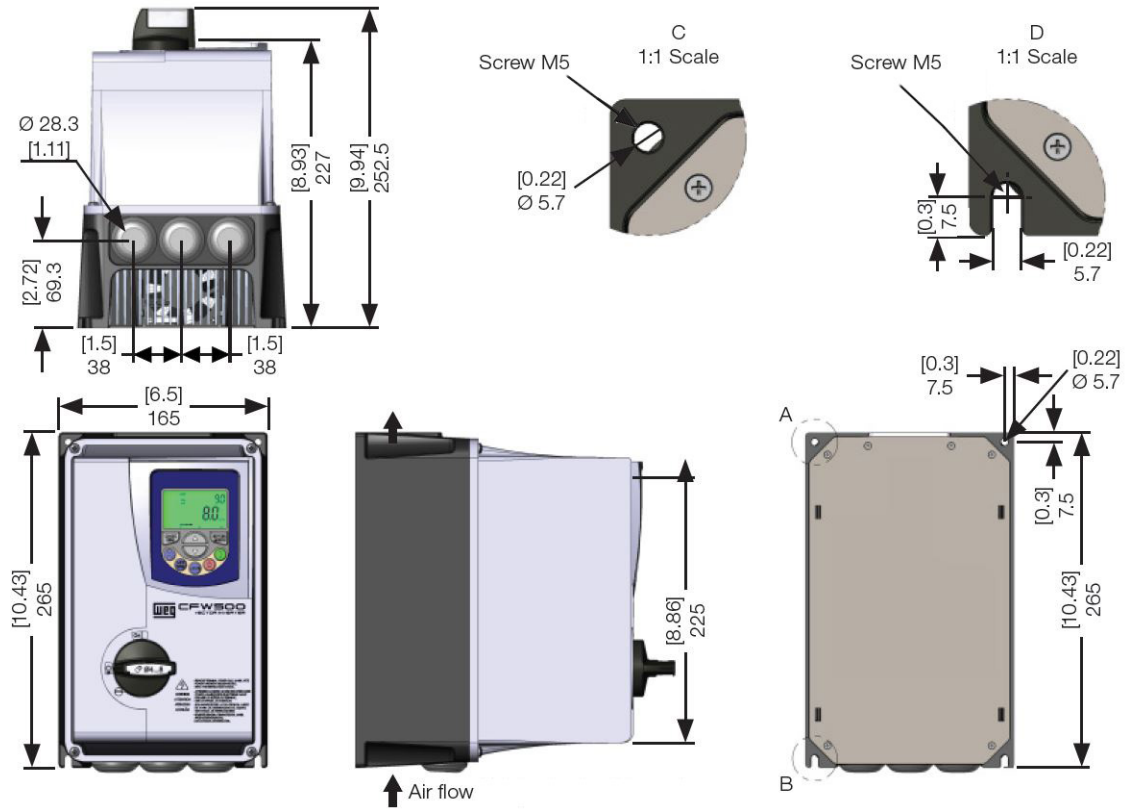1. ND (Normal Duty) / VT (Variable Torque): 110% Overload / 60 Sec;
   HD (Heavy Duty) / CT (Constant Torque): 150% Overload / 60 Sec;
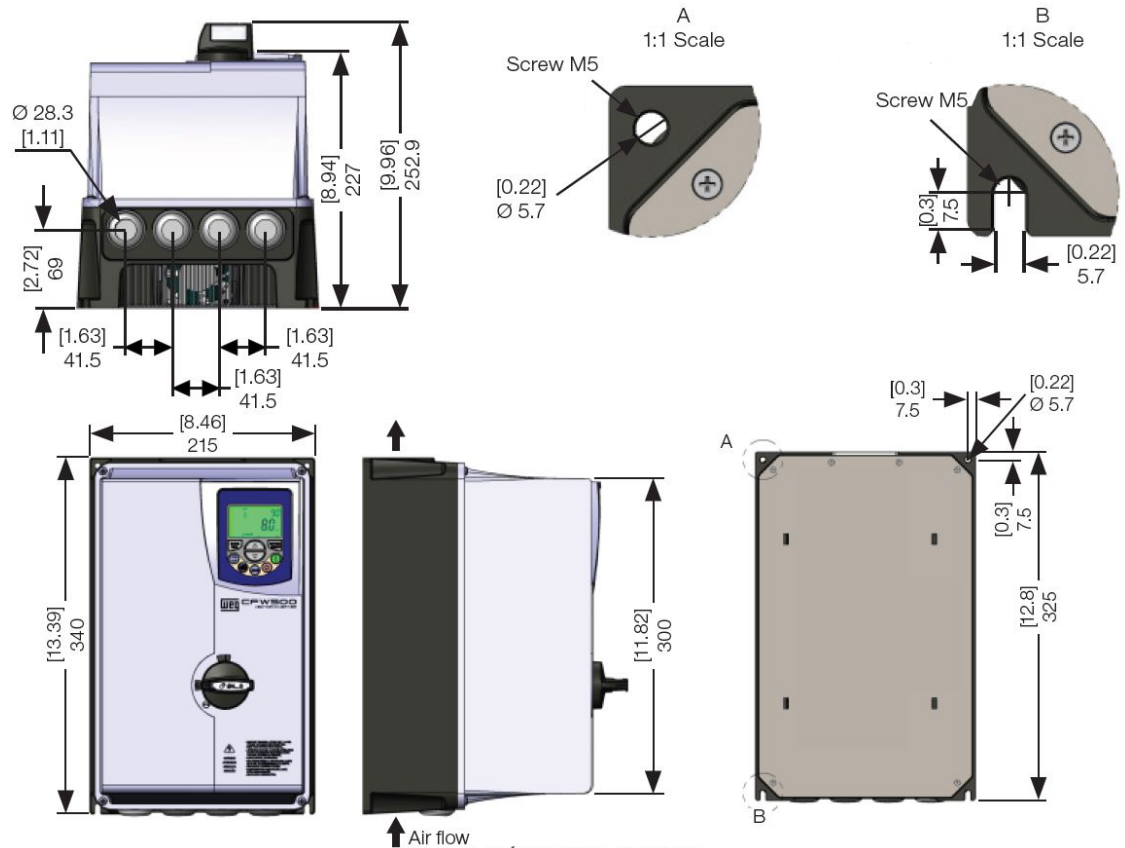2. "HP" rating based on WEG W22 motors "average FLA values". Use as a guide only.
3. Motor FLA may vary with speed and manufacturer. ALWAYS compare motor FLA to Nominal AMPS of drive.
4. Frame Size A, B & C are rated for 40°C ambient temperature.

CFW500 - N4X/IP66 WASHDOWN VFD WITH DISCONNECT SWITCH

Motor Voltage	ND/VT [1]		HD/CT [1]		Catalog Number	Braking Transistor	Frame Size [4]	Dimensions (in.) HxWxD	Approx. Weight (lbs.)
	Motor HP [2]	Drive Amps [3]	Motor HP [2]	Drive Amps [3]					
230 Vac / 3 Phase	Input Power Supply: Single or Three-Phase 200-240 Vac								
	1/3	1.6	1/3	1.6	CFW500A01P6B2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	3/4	2.6	3/4	2.6	CFW500A02P6B2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	1 1/2	4.3	1 1/2	4.3	CFW500A04P3B2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	2	7.3	2	7.3	CFW500A07P3B2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	3	10	3	10	CFW500A10P0B2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	Input Power Supply: Three-Phase 200-240 Vac								
	5	16	5	16	CFW500A16P0T2DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	7 1/2	24	7 1/2	24	CFW500B24P0T2DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	10	28	10	28	CFW500B28P0T2DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	10	33	10	33	CFW500B33P0T2DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	15	47	15	47	CFW500C47P0T2DB66DSG2	Yes	C	18.7 x 12.6 x 12.4	45.0
	25	70	20	56	CFW500C56P0T2DB66DSG2	Yes	C	18.7 x 12.6 x 12.4	45.0
460 Vac / 3 Phase	Input Power Supply: Three-Phase 380-480 Vac								
	1/2	1	1/2	1	CFW500A01P0T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	1	1.6	1	1.6	CFW500A01P6T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	1 1/2	2.6	1 1/2	2.6	CFW500A02P6T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	3	4.3	3	4.3	CFW500A04P3T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	5	6.5	5	6.5	CFW500A06P5T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	7 1/2	10	7 1/2	10	CFW500A10P0T4DB66DSG2	Yes	A	10.4 x 6.5 x 9.9	22.0
	10	14	10	14	CFW500B14P0T4DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	10	16	10	16	CFW500B16P0T4DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	15	24	15	24	CFW500B24P0T4DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	25	31	25	31	CFW500B31P0T4DB66DSG2	Yes	B	13.4 x 8.5 x 9.9	26.5
	30	45	30	39	CFW500C39P0T4DB66DSG2	Yes	C	18.7 x 12.6 x 12.4	45.0
	50	59.2	40	49	CFW500C49P0T4DB66DSG2	Yes	C	18.7 x 12.6 x 12.4	45.0
575 Vac / 3 Phase	Input Power Supply: Three-Phase 500-600 Vac								
	1 1/2	1.7	1 1/2	1.7	CFW500B01P7T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5
	3	3	3	3	CFW500B03P0T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5
	3	4.3	3	4.3	CFW500B04P3T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5
	7 1/2	7	7 1/2	7	CFW500B07P0T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5
	10	10	10	10	CFW500B10P0T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5
	10	12	10	12	CFW500B12P0T5DB66DS	Yes	B	13.4 x 8.5 x 9.9	26.5

NOTES:
1. ND (Normal Duty) / VT (Variable Torque): 110% Overload / 60 Sec;
   HD (Heavy Duty) / CT (Constant Torque): 150% Overload / 60 Sec;
2. "HP" rating based on WEG W22 motors "average FLA values". Use as a guide only.
3. Motor FLA may vary with speed and manufacturer. ALWAYS compare motor FLA to Nominal AMPS of drive.
4. Frame Size A, B & C are rated for 40°C ambient temperature.

Dimensions of CFW500 – N4X/IP66, Frame-A

Dimensions of CFW500 – N4X/IP66, Frame-B

Dimensions of CFW500 – N4X/IP66, Frame-C

Screw M6
Tornilho M6
Parafuso M6
Ø 6.6 [0.26]

Screw M6
Tornilho M6
Parafuso M6
9.5 [0.38]
6.6 [0.26]

M20
M25
M40
40 [1.57]   40 [1.57]
289.6 [11.4]
314.6 [12.39]
140.4 [5.53]
113.6 [4.47]
97.4 [3.83]
57 [2.24]   57 [2.24]
60 [2.36]

320 [12.6]
474 [18.66]
416.8 [16.41]

Air flow / Flujo de aire / Fluxo de ar

10 [0.39]
Ø 6.6 [0.26]
9.5 [0.38]
474.1 [18.66]
A
B

Option Card I/O Table

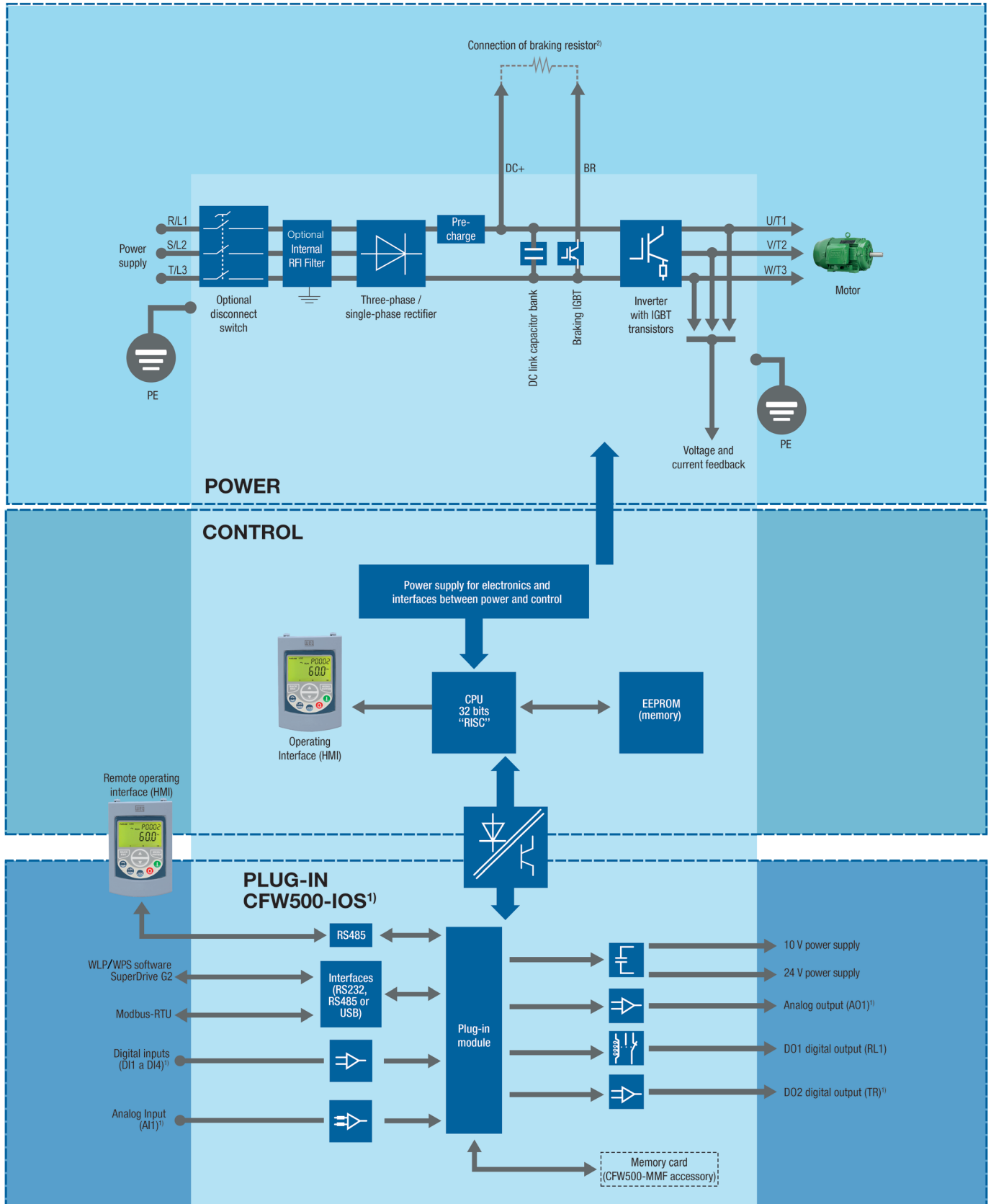| CFW500 Option Module	DI	AI	AO	DOR	DOT	Encoder	USB	RS232	RS485	CANopen / DeviceNet	Profibus-DP / DP V1	Modbus TCP	ProfiNet I/O	EtherNet I/P
CFW500-IOS [1]	4	1	1	1	1				1					
CFW500-IOD	8	1	1	1	4				1					
CFW500-IOAD	6	3	2	1	3				1					
CFW500-IOR / CFW500-IOR-B	5	1	1	4	1				1					
CFW500-ENC	5	1	1	3	1	1			1					
CFW500-CUSB	4	1	1	1	1		1		1					
CFW500-CRS232	4	1	1	1	1			1	1					
CFW500-CRS485 / CFW500-CRS485-B	4	2	1	2	1				2					
CFW500-CCAN	2	1	1	1	1				1	1				
CFW500-CPDP2	2	1	1	1	1				1		1			
CFW500-CEMB-TCP	2	1	1	1	1				1			1		
CFW500-CEPN-IO	2	1	1	1	1				1				1	
CFW500-CETH-IP	2	1	1	1	1				1					1
CFW500-CETH2	2	1			1				1			1		1

Notes:

1) The CFW500 VFD comes standard with "CFW500-IOS" Module. To use any of the above listed optional module, the CFW500-IOS module needs to be removed from the drive. In that case, the number of I/Os will depend on the I/O or communication module being used.

CFW500-N4X/IP66 Technical Data

Power Supply	Voltage	Single phase or Three Phase	200-240 Vac (+10%, -15%)
		Three phase	380-480 Vac, 500-600 Vac (+10%, -15%)
	Frequency	50 / 60Hz +/- 2Hz	
Enclosure	Degree of Protection	NEMA 4X / IP66	
	Mounting	Indoor / Outdoor	
Control	Control Modes	Volts per Hertz (Scalar)	VVW: Voltage vector control
		Sensorless Voltage Vector	Vector control with encoder
	Power Output	Sinusoidal PWM (Space Vector Modulation)	
		IGBT Transistors	
	Switching Frequency	2.5kHz to 15kHz	
	Frequency Range	0-500 Hz, resolution of 0.015 Hz	
	Overload Capacity	150% for 60 seconds, repeatable every 10 min.	
Inputs	4 programmable isolated digital inputs, 24V DC, NPN (Active Low) or PNP (Active High)		
	1 programmable isolated analog input; programmable for current or voltage (0-10V, 4-20mA or 0-20mA)		
Outputs	1 programmable relay output: Form C (One NO & NC contact), 240 V / 0.5 A		
	1 programmable isolated open collector digital output (transistor Output); 24Vdc.		
	1 programmable isolated analog output; programmable for current or voltage (0-10V, 4-20mA or 0-20mA)		
Power Supply	24 Vdc, +/- 20%, Max. 150 mA		
	10 Vdc, Max. 2 mA		
Communication	Isolated RS485 (One Port)		
	Modbus-RTU with max. communication of 38.4 kbps		
Safety	Protections	Motor over current	DC link over voltage
		Motor overload	DC link under voltage
		Output phase-to-phase short circuit	Drive over temperature
		Output phase-to-ground short circuit	External fault
		Programming error	
Ambient	Temperature	14 - 104°F (-10 to 40°C), up to 122°F (50°C) with 2% / 1.8°F (1°C) output current de-rating.	
	Humidity	5-95% Non Condensing	
	Altitude	0-3300 ft (1000m), up to 13,200 ft (4000m) with 1% / 328ft (100 m) output current derating.	
Regulatory Conformance	Safety Standards	UL 508C, UL 840, IEN/EN 61800-5-1, EN 50178, IEC/EN 60204-1, IEC/EN 60146, IEC/EN 61800-2	
	Electromagnetic Compatibility (EMC)	IEC/EN 61800-3, CISPR 11, IEC/EN 61000-4-2/3/4/5/6.	
	Mechanical Construction	IEC/EN 60529, UL 50, IEC/EN 60721-3-3	
Special Functions	Linear and "S" ramp accel and decel, local/remote control, FWD/REV selection, DC braking, manual and auto torque boost, motor slip compensation, electronic pot, two skip frequencies, maximum and minimum adjustable frequency limits, adjustable output current, Dc bus regulaiton, Speed/Torque Control, PID		
Keypad	Three lines of Display (Main display, Secondary display & Bar display) displaying three patematers, LDC; 9 keys		
	Readouts for: output frequency (Hz), output current (A), output voltage (V), motor torque (%) in vector mode, DC bus voltage (V), value proportional to frequency (Ex.: RPM), heatsink temperature, fault and status messages		

Block Diagram of NEMA4X/IP66 Version

Connection of braking resistor[2]

DC+   BR

R/L1

S/L2   Power supply

T/L3

Optional disconnect switch

PE

Optional Internal RFI Filter

Three-phase / single-phase rectifier

Pre-charge

DC link capacitor bank

Braking IGBT

Inverter with IGBT transistors

U/T1

V/T2

W/T3

Motor

Voltage and current feedback

PE

POWER

CONTROL

Power supply for electronics and interfaces between power and control

Operating Interface (HMI)

CPU 32 bits "RISC"

EEPROM (memory)

Remote operating interface (HMI)

PLUG-IN CFW500-IOS[1]

RS485

WLP/WPS software SuperDrive G2

Modbus-RTU

Digital inputs (DI1 a DI4)[1]

Analog Input (AI1)[1]

Interfaces (RS232, RS485 or USB)

Plug-in module

10 V power supply

24 V power supply

Analog output (AO1)[1]

DO1 digital output (RL1)

DO2 digital output (TR)[1]

Memory card (CFW500-MMF accessory)

Notes: 1) The number of inputs and outputs (analog and digital), as well as other resources, may vary according to the plug-in module used. For further information, refer to the CFW500 user manual.

2) Resistor not included. Internal dynamic braking (IGBT) built-in in the whole CFW500 IP66 version.

Notes:

Notes:

Notes:

WEG's scope of solutions is not limited to the products and solutions presented in this brochure. **Contact WEG for information on additional products and solutions.**

For WEG's worldwide operations visit our website

www.weg.net

📞 1-800-ASK-4WEG

✉ info-us@weg.net

📍 Duluth, GA