

WEG CFW300 Series AC Drives – Introduction



Purpose of AC Drives

AC drives are known by many different names: AC Drives, Adjustable Frequency Drives (AFDs), Variable Frequency Drives (VFDs), and Inverters. Drives are used primarily to vary the speed of three phase AC induction motors. They also provide non-emergency start and stop control, acceleration and deceleration, and overload protection. By gradually accelerating the motor, drives can reduce inrush current during motor startup.

AC drives operate by rectifying incoming AC power to DC, which is then inverted back into three-phase output power. The voltage and frequency of this inverted output power is controlled by the drive, in order to vary the speed of the three phase AC induction motor.

WEG CFW300 Overview

WEG CFW300 variable frequency drives are high-performance VFDs for three-phase induction motors. They are ideal for applications on machines or equipment that require precise variable-speed control with easy setup and operation.

The CFW300 series features compact size with contactor-style electrical connections (top in / bottom out). The CFW300's performance can be scaled to match the application by selecting WEG vector control (VFW) or scalar control (V/F).

CFW300s include built-in operator

WEG CFW300 Series AC Drives								
Motor Rating	hp	0.25	0.5	1	1.5	2	3	5
	kW	0.2	0.4	0.75	1.3	1.5	2.2	3.7
115V Single-Phase Input / 230V Three-Phase Output		✓	✓	✓	✓			
230V Single-Phase Input / 230V Three-Phase Output		✓	✓	✓	✓	✓	✓	
230V Three-Phase Input / 230V Three-Phase Output		✓	✓	✓	✓	✓	✓	✓

interface (HMI) and SoftPLC with free WPS programming software for custom-tailored control schemes. A variety of plug-in option modules for additional I/O and communications protocols may be added to provide extended capabilities, making the CFW300 a flexible and cost effective solution for your variable-speed requirements.

Features

- Single-phase and three-phase voltage supply
- DIN rail (35mm) or surface mounting with screws
- Side-by-side mounting; no heat dissipation space required beside/between the drives
- Voltage range:
 - 1-phase models: 110–127 VAC & 200–240 VAC
 - 3-phase models: 200–240 VAC
- Current/Power range: up to 15.2A/3.7kW (5hp)
- Control mode: Scalar (V/Hz) or Voltage Vector (VFW)
- Switching frequency: 2.5, 5, 10, or 15 kHz
- Output frequency range: 0–400 Hz; 0.1 Hz resolution
- Overload capacity: 150% for 60s every 10min; 200% for 3s every 10min
- Degree of protection: IP20
- Operating temperature: 14 to 122 °F (50 °C); up to 140 °F (60 °C) with current derating (2% per 1 °C above 50 °C)
- Altitude: 0 to 3300ft (1000m); up to 13,200ft (4000m) with current derating (1% per 100m above 1000m)

- Humidity: 5 to 95% non-condensing
- Integrated brake chopper for frame size B (not available for size A)
- Local keypad supplied as standard
- cULus, CE

Accessories

- Remote keypad with mounting kit and cable
- RS-232 serial communication module (Modbus RTU)
- RS-485 serial communication module (Modbus RTU)
- USB communication module and cable
- IODR expansion module – Insulated inputs (NPN or PNP)
- IOAR expansion module (1AI, 1AO, and 3RO)
- IOADR expansion module (1 PTC, 3RO, and 1 infrared input)
- Incremental encoder module (A/A - B/B)
- Flash memory module and cable
- RFI Filter

Typical Applications

- Blenders / Mixers
- Centrifugal pumps
- Centrifuges
- Commercial Dryers
- Compressors
- Conveyors
- Fans / Blowers
- Granulators
- Roller Tables
- Rotary Filters

WEG CFW300 AC Drives – Selection Specifications

CFW300 Drive Model Selection Tables

CFW300A (Frame Size A)

CFW300B (Frame Size B)

Modular design with easy-to-install accessories



Zero-Stack Mounting
(no side-to-side heat dissipation space required)



WEG CFW300 AC Drives Selection Specifications												
Drive Model #	Price	Applicable Motor ^{1) 2)}		Drive Output		Drive Input		Input Protection		Drive		
		Maximum Power		Nominal Phase / Voltage	Rated Current ³⁾ (A)	Nominal Phase / Voltage	Rated Current (A)	Circuit Breaker (A)	Fuse ⁴⁾ (A)	Power Loss (W)	Weight	Frame Size
		(hp)	(kW)									
CFW300A01P6S1NB20		0.25	0.18	3Ø / 230 VAC	1.6	1Ø / 115 VAC	7.1	10	20	30	0.90 kg [1.98 lb]	A
CFW300A02P6S1NB20		0.50	0.37		2.6		11.5	16	20	45		
CFW300A04P2S1NB20		1.00	0.75		4.2		17.7	20	35	60		
CFW300A06P0S1NB20		1.50	1.32		6.0		26.5	32	40	75		
CFW300A01P6S2NB20		0.25	0.18		1.6	1Ø / 230 VAC	3.5	6.3	20	30	0.90 kg [1.98 lb]	A
CFW300A02P6S2NB20		0.50	0.37		2.6		5.7	10	20	35		
CFW300A04P2S2NB20		1.00	0.75		4.2		9.2	16	20	50		
CFW300A06P0S2NB20		1.50	1.32		6.0		13.2	16	20	75		
CFW300A07P3S2NB20		2.00	1.50		7.3	3Ø / 230 VAC	16.1	20	25	90	1.34 kg [2.95 lb]	B
CFW300B10P0B2DB20 ⁵⁾		3.00	2.20		10.0		22.0	25	35	100		
CFW300A01P6T2NB20		0.25	0.18		1.6	3Ø / 230 VAC	2.0	2.5	20	30	0.90 kg [1.98 lb]	A
CFW300A02P6T2NB20		0.50	0.37		2.6		3.1	6.3	20	35		
CFW300A04P2T2NB20		1.00	0.75		4.2		5.0	10	20	50		
CFW300A06P0T2NB20		1.50	1.32		6.0		7.2	10	20	75		
CFW300A07P3T2NB20		2.00	1.50		7.3		8.8	16	20	90		
CFW300B10P0B2DB20 ⁵⁾		3.00	2.20		10.0		12.0	25	35	100	1.34 kg [2.95 lb]	B
CFW300B15P2T2DB20		5.00	3.70		15.2		18.2	25	35	160		

1) For Use With Three-Phase Motors Only.

2) The power values for the maximum applicable motor shown are reference values and are valid for WEG three-phase, four-pole induction motors with power supply of 230 VAC. The proper sizing of the CFW300 drive must be determined as a function of the rated current of the motor being used.

3) Motor FLA may vary with speed and manufacturer. ALWAYS compare motor FLA to Nominal AMPS of drive.

4) For UL508C compliance, use UL fuse type J.

5) Model CFW300B10P0B2DB20 is capable of Single-Phase input without derating.

WEG CFW300 AC Drives – General Specifications

CFW300 General Specifications (Applicable to All Models)		
Control	Method	scalar (V/Hz) or voltage vector (VVW)
	Output Frequency Range	0–400 Hz; 0.1 Hz resolution
Performance	V/Hz Control	Speed regulation: 1% of the rated speed (with slip compensation) Speed variation range: 1:20
	VVW Control	Speed regulation: 1% of the rated speed Speed variation range: 1:30
Inputs	Analog	1 insulated input; Levels: 0–10V or 0–20 mA or 4–20 mA Linearity error $\leq 0.25\%$ Impedance: 100 k Ω for voltage input; 500 Ω for current input Programmable functions Maximum voltage permitted in the input: 30 VDC
	Digital	4 isolated inputs Programmable functions • active high (PNP): maximum low level of 10 VDC minimum high level of 20 VDC • active low (NPN): maximum low level of 5 VDC minimum high level of 10 VDC Maximum input voltage of 30 VDC Input current: 11 mA Maximum input current: 20 mA
Outputs	Relay	1 relay with NO/NC contact Maximum voltage: 250 VAC Maximum current: 0.5A Programmable functions
	Power Supply	10 VDC power supply; maximum capacity: 50 mA
Safety	Protection	Overcurrent/Phase-Phase short circuit in the output Under/Overvoltage Motor overload Overtemperature in the power module (IGBTs) Fault / External alarm Programming error
Keypad	Integral (HMI)	4 keys: Start/Stop, Up arrow, Down arrow, and Programming LCD Display View/Edit all parameters Indication accuracy: • current: 5% of the rated current • speed resolution: 0.1 Hz
Rated/Default Carrier Frequency		5kHz (selectable 2.5, 5, 10, or 15 kHz)
Input Voltage Range		1-phase 115V models: 110–127 VAC (-15%, +10%) 1-phase & 3-phase 230V models: 200–240 VAC (-15%, +10%)
Input Frequency Range		50/60 Hz (48–62 Hz)
Allowable Input Phase Imbalance		$\leq 3\%$ of rated phase-to-phase input voltage
Overload Capacity		150% for 60s every 10 min; 200% for 3s every 10 min
Braking		Frame size A models: Not available Frame size B models: Integrated brake chopper
Ambient Operating Temperature		14 to 122 °F (-10 to +50 °C); up to 140 °F (60 °C) with current derating (2% per 1 °C above 50 °C)
Altitude		0 to 3300ft (1000m); up to 13,200ft (4000m) with current derating (1% per 100m above 1000m)
Humidity		5 to 95% non-condensing
Mounting		DIN rail or surface mounting with screws
Mounting Orientation		Vertical and upright; can be mounted side-to-side (zero stack)
Environmental Protection Rating		IP20
Agency Approvals *		UL _{us} [NMMSE184430, NMMSE184430] (except CFW300-IOADR temperature combo module, CFW300-KFx-xx EMI Filters) CE (except CFW300-IOADR)

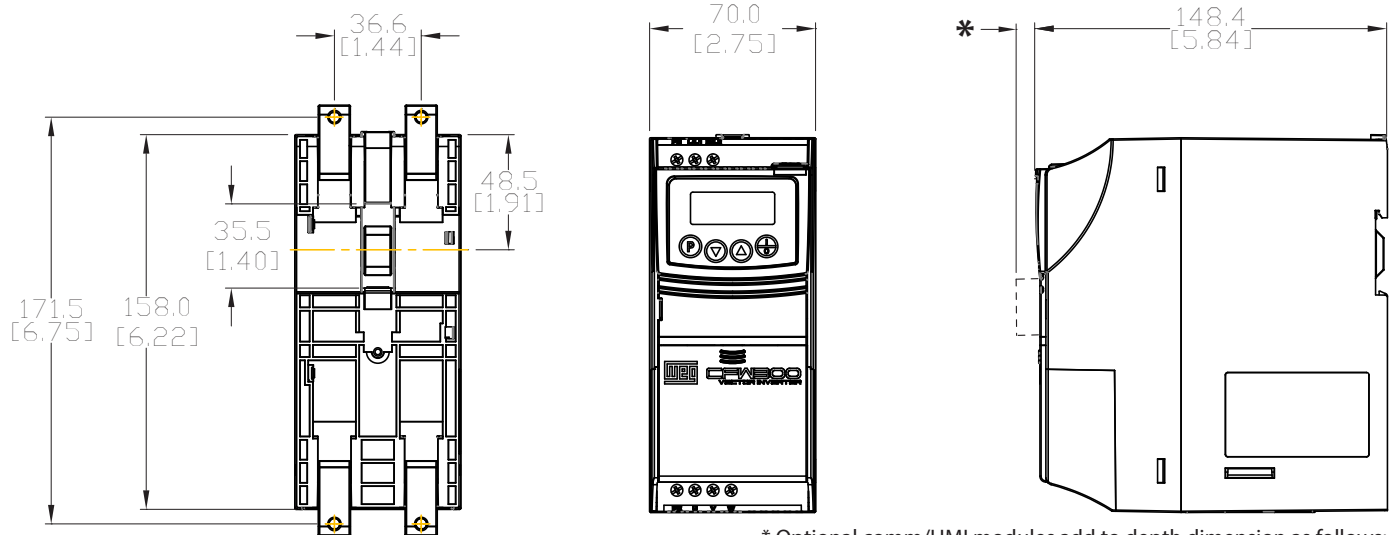
* To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

WEG CFW300 AC Drives – Dimensions

(mm [in])

See our website (www.AutomationDirect.com) for complete engineering drawings.

CFW300 Drive Frame Size A (without RFI Filter)

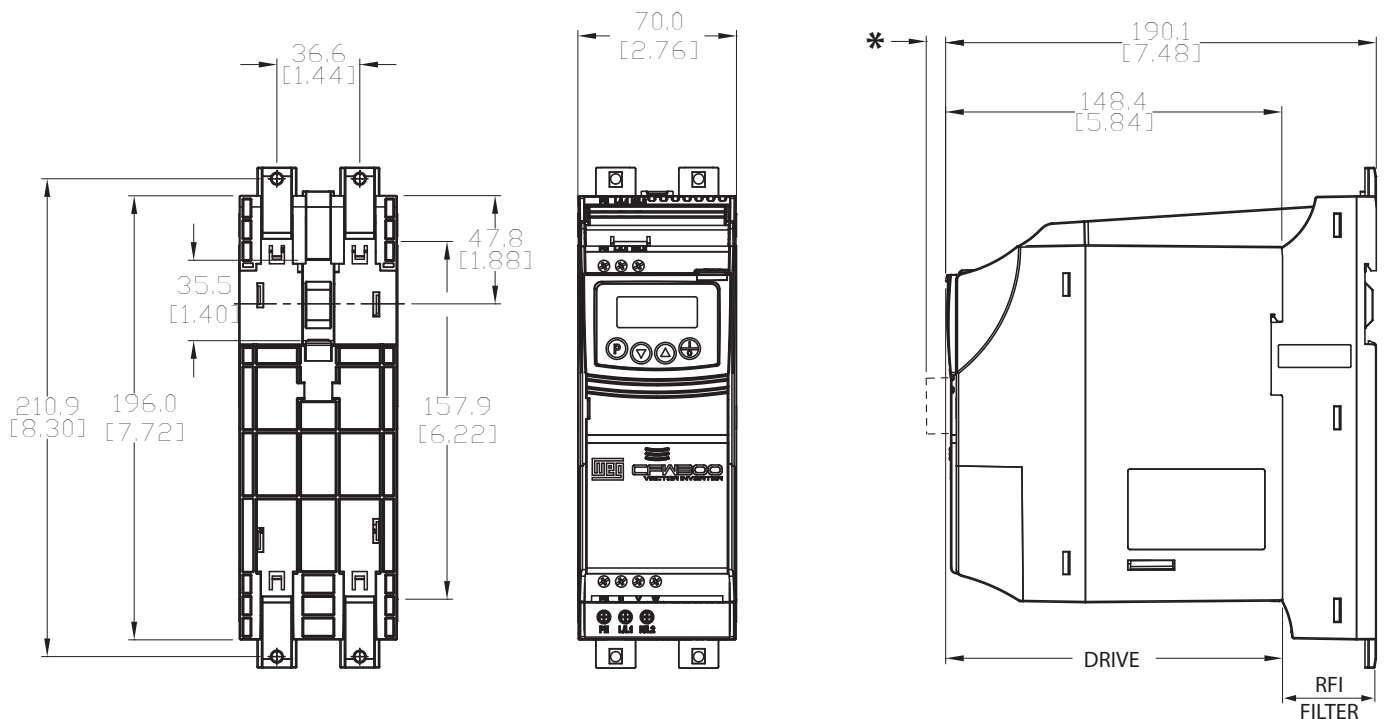


* Optional comm/HMI modules add to depth dimension as follows:

CFW300-KHMIR, -RS232, or -RS485 adds: 21.2 [0.84]

CFW300-CUSB adds: 14.6 [0.58]

CFW300 Drive Frame Size A (with RFI Filter CFW300-KFA-S1-S2)



* Optional comm/HMI modules add to depth dimension as follows:

CFW300-KHMIR, -RS232, or -RS485 adds: 21.2 [0.84]

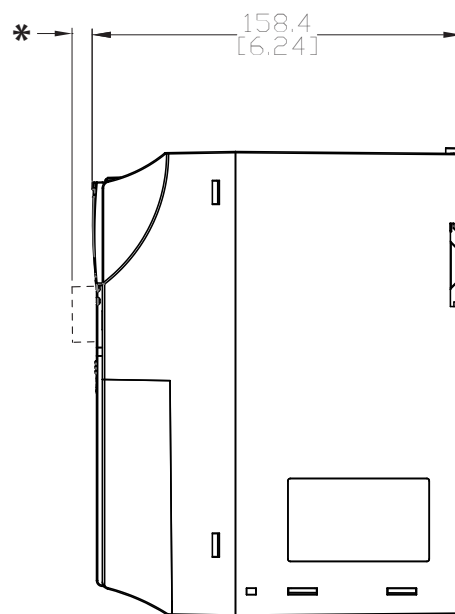
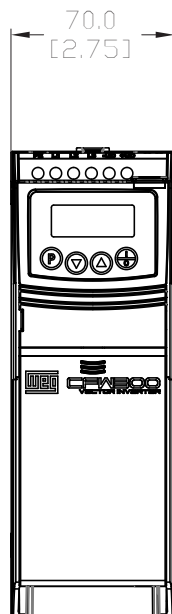
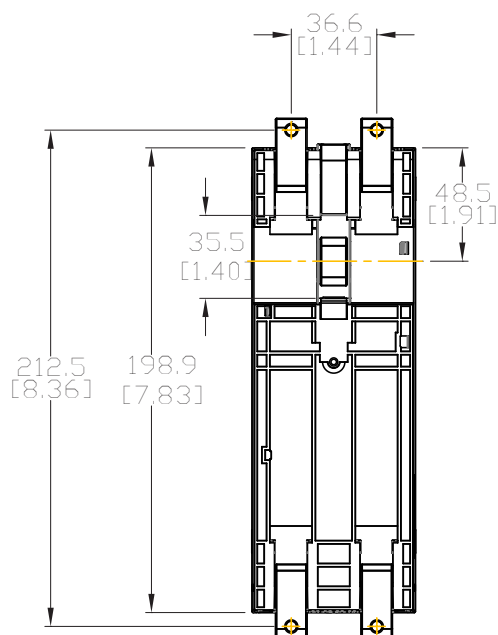
CFW300-CUSB adds: 14.6 [0.58]

WEG CFW300 AC Drives – Dimensions

(mm [in])

See our website (www.AutomationDirect.com) for complete engineering drawings.

CFW300 Drive Frame Size B (without RFI Filter)

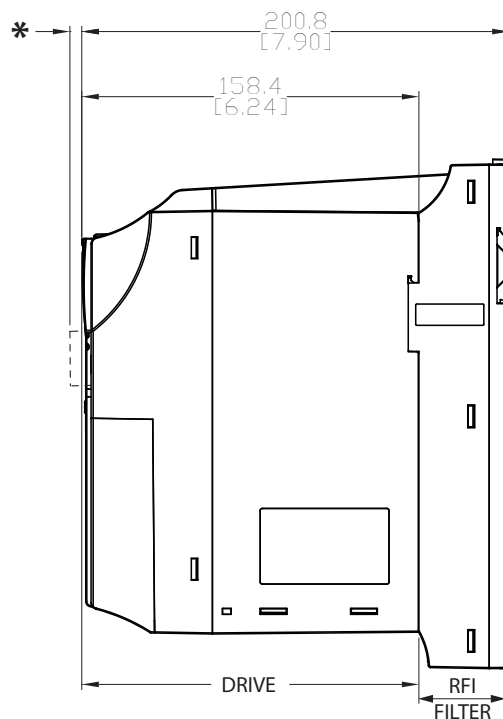
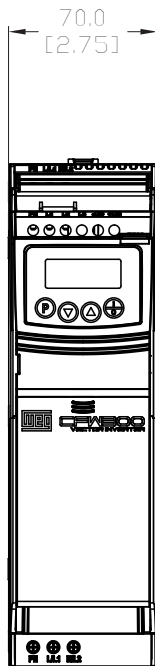
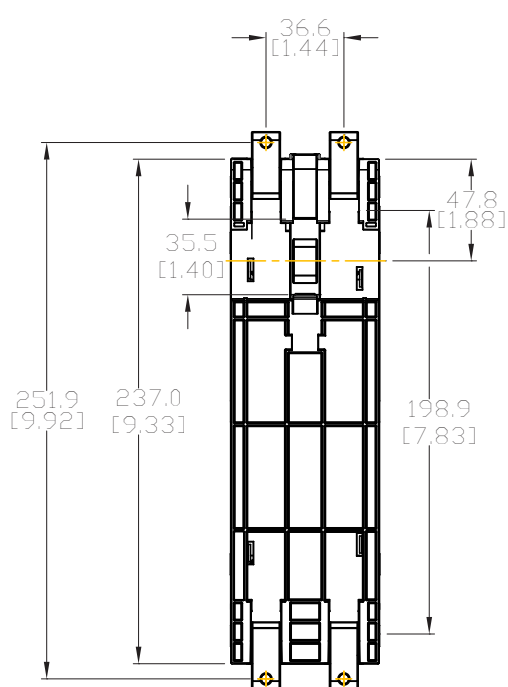


* Optional comm/HMI modules add to depth dimension as follows:

CFW300-KHMIR, -RS232, or -RS485 adds: 21.2 [0.84]

CFW300-CUSB adds: 14.6 [0.58]

CFW300 Drive Frame Size B (with RFI Filter CFW300-KFB-S2)



* Optional comm/HMI modules add to depth dimension as follows:

CFW300-KHMIR, -RS232, or -RS485 adds: 21.2 [0.84]

CFW300-CUSB adds: 14.6 [0.58]

WEG CFW300 AC Drives – Accessories

CFW300-CRS232**CFW300-CRS485****CFW300-CUSB****CFW300-IOADR****CFW300-IOAENC****CFW300-IOAR****CFW300-IODR****CFW300-KFA-S1-S2****CFW300-KFB-S2****CFW300-KHMIR****MMF-UDRIVES****CFW300-FAN-B****CFW300-FAN-A**

WEG CFW300 AC Drives Accessories

Model #	Price	Description	Use With Drive #CFW...
CFW300-CRS232 ¹⁾		RS-232 serial communication module (Modbus-RTU)	...all
CFW300-CRS485 ¹⁾		RS-485 serial communication module (Modbus-RTU)	
CFW300-CUSB ¹⁾		USB communication module + 2m cable	
CFW300-IOADR ²⁾		WEG Electric CFW300 series temperature combo module with infrared remote control, thermistor, 1-channel input, 3-point output, 250 VAC, (3) Form A (SPST) relays. For use with WEG CFW300 series AC drives.	
CFW300-IOAENC ²⁾		WEG Electric CFW300 series encoder analog combo module, 400 kHz maximum switching frequency, 1-channel quadrature encoder input, Analog Input: 1-channel, Analog Output: 2-channel. For use with WEG CFW300 series AC drives.	
CFW300-IOAR ²⁾		WEG Electric CFW300 series relay analog combo module, Analog Input: 1-channel, current/voltage, Analog Output: 1-channel, current/voltage, Discrete Output: 3-point, relay, (3) Form A (SPST) relays. For use with WEG CFW300 series AC drives.	
CFW300-IODR ²⁾		WEG Electric CFW300 series discrete output module, Input: 4-point, 24 VDC, sinking/sourcing, Output: 3-point, 250 VAC, relay, (3) Form A (SPST) relays, 5A/point. For use with WEG CFW300 series AC drives.	
CFW300-KFA-S1-S2		WEG Electric EMI input filter, 1-phase, 7.3A, 35mm DIN rail mount, EMI/RFI filtering. For use with WEG CFW300Axxx 1-phase AC drives.	...300A...
CFW300-KFB-S2		WEG Electric EMI input filter, 1-phase, 10A, 35mm DIN rail mount, EMI/RFI filtering. For use with WEG CFW300Bxxx 1-phase AC drives.	...300B...
CFW300-KHMIR ¹⁾		WEG Electric CFW300 series remote serial HMI, for use with WEG CFW300 series AC drives. (1) CFW300-CRS485 communication module, (1) 9.8ft/3m USB A to miniB-USB cable and installation hardware for optional panel mounting included.	...all
MMF-UDRIVES		WEG Electric CFW320 series flash memory module, for use with WEG CFW100, CFW300 and CFW320 series AC drives. (1) 3.2ft/1m miniB-USB cable included. (Requires three AAA batteries; not included.)	
CFW300-FAN-A		Spare/Replacement main cooling fan for CFW300 frame size A drives	
CFW300-FAN-B		Spare/Replacement main cooling fan for CFW300 frame size B drives	...300B...

1) Only one communication or HMI module per drive; mounted in upper slot

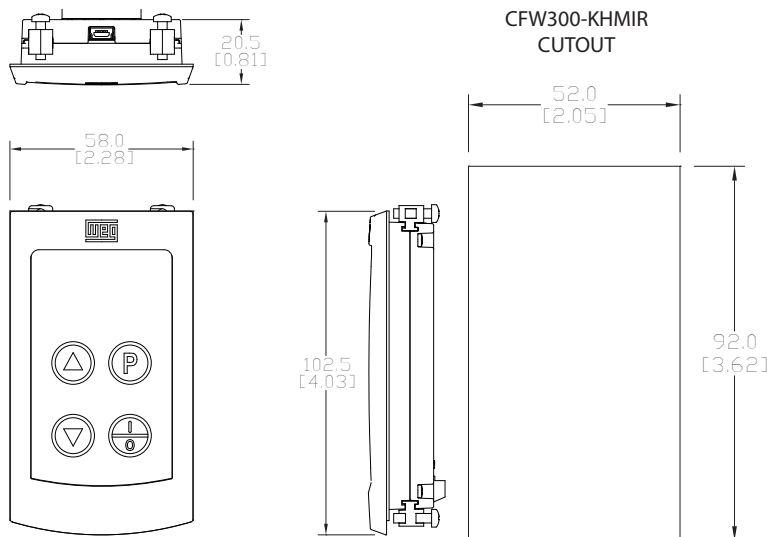
2) Only one I/O expansion module per drive; mounted in lower slot

WEG CFW300 AC Drives Accessories – Dimensions

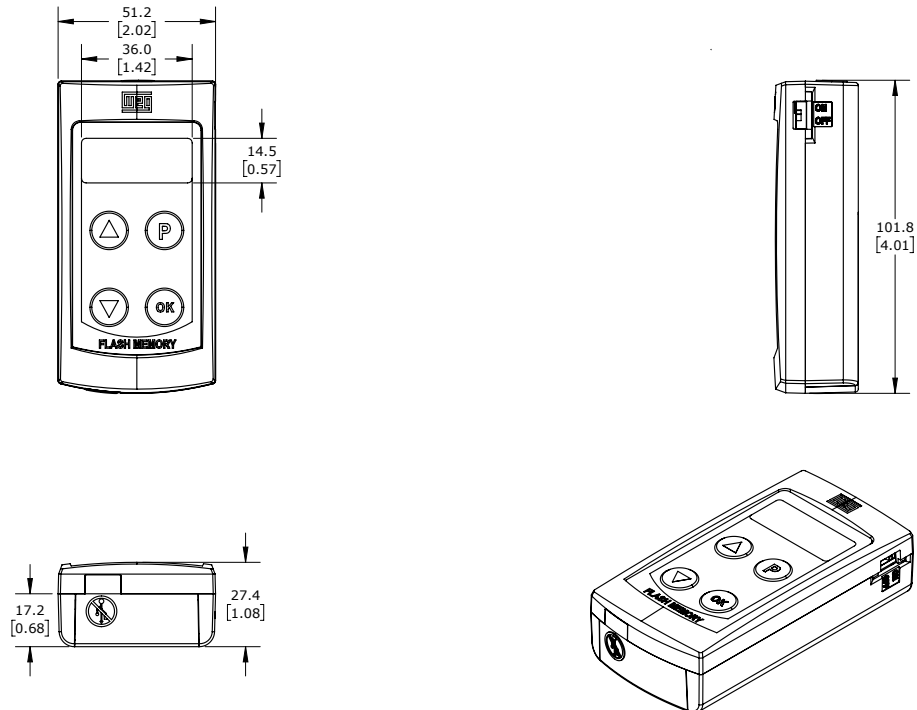
(mm [in])

See our website (www.AutomationDirect.com) for complete engineering drawings.

CFW300-KHMIR Remote Keypad



MMF-UDRIVES Flash Memory Module



WEG CFW300 AC Drives – Accessories

Additional Accessories Recommended for WEG CFW300 AC Drives

Drive Part # CFW300...	Input Ø/V	C/B Amp	Motor Protector ^{1) 4)}		Fuse ^{1) 4)}					Filter								
			WEG ^{1) 5)}	Fuji ⁴⁾	Amp	Class J ¹⁾	Class J Holder	Class T ⁴⁾	Class T Holder	WEG EMI/RFI	Roxburgh EMI							
...A01P6S1NB20	1Ø 115 VAC	10	MPW40-3-U010	BM3RHB-013 BM3VHB-013	20	JHL20 (JHL20-1)	JM60030-1CR	TJN20 (TJN20-1)	T30030-2SR	CFW300-KFA-S1-S2	n/a							
...A02P6S1NB20		16	MPW40-3-U016	BM3RHB-020 BM3VHB-020	20	JHL20 (JHL20-1)	JM60030-1CR	TJN20 (TJN20-1)	T30030-2SR									
...A04P2S1NB20		20	MPW40-3-U020 ²⁾	BM3RHB-025 BM3VHB-025	35	JHL35 (JHL35-1)	JM60060-1CR	TJN35 (TJN35-1)	T30060-2CR									
...A06P0S1NB20		32	MPW40-3-U032 ³⁾	BM3VHB-040	35	JHL35 (JHL35-1)	JM60060-1CR	TJN35 (TJN35-1)	T30060-2CR									
...A01P6S2NB20	1Ø 230 VAC	6.3	MPW40-3-D063	BM3RHB-010 BM3VHB-010	20	JHL20 (JHL20-1)	JM60030-2CR	TJN20 (TJN20-1)	T30030-2SR	CFW300-KFB-S2	n/a							
...A02P6S2NB20		10	MPW40-3-U010	BM3RHB-013 BM3VHB-013	20	JHL20 (JHL20-1)	JM60030-2CR	TJN20 (TJN20-1)	T30030-2SR									
...A04P2S2NB20		16	MPW40-3-U016	BM3RHB-020 BM3VHB-020	20	JHL20 (JHL20-1)	JM60030-2CR	TJN20 (TJN20-1)	T30030-2SR									
...A06P0S2NB20		16	MPW40-3-U016	BM3RHB-020 BM3VHB-020	20	JHL20 (JHL20-1)	JM60030-2CR	TJN20 (TJN20-1)	T30030-2SR									
...A07P3S2NB20		20	MPW40-3-U020 ²⁾	BM3RHB-025 BM3VHB-025	25	JHL25 (JHL25-1)	JM60030-2CR	TJN25 (TJN25-1)	T30030-2SR									
...B10P0B2DB20		25	MPW40-3-U025 ²⁾	BM3RHB-032 BM3VHB-032	35	JHL35 (JHL35-1)	JM60060-2CR	TJN35 (TJN35-1)	T30060-2CR									
...A01P6T2NB20	3Ø 230 VAC	2.5	MPW40-3-D025	BM3RHB-004	20	JHL20 (JHL20-1)	JM60030-3CR	TJN20 (TJN20-1)	T30030-3SR	n/a	KMF306A MIF310							
...A02P6T2NB20		6.3	MPW40-3-D063	BM3RHB-010 BM3VHB-010	20	JHL20 (JHL20-1)	JM60030-3CR	TJN20 (TJN20-1)	T30030-3SR		KMF310A MIF310							
...A04P2T2NB20		10	MPW40-3-U010	BM3RHB-013 BM3VHB-013	20	JHL20 (JHL20-1)	JM60030-3CR	TJN20 (TJN20-1)	T30030-3SR		KMF318A MIF316							
...A06P0T2NB20		10	MPW40-3-U010	BM3RHB-013 BM3VHB-013	20	JHL20 (JHL20-1)	JM60030-3CR	TJN20 (TJN20-1)	T30030-3SR		KMF318A MIF316							
...A07P3T2NB20		16	MPW40-3-U016	BM3RHB-020 BM3VHB-020	20	JHL20 (JHL20-1)	JM60030-3CR	TJN20 (TJN20-1)	T30030-3SR		KMF318A MIF316							
...B10P0B2DB20		25	MPW40-3-U025 ²⁾	BM3RHB-032 BM3VHB-032	35	JHL35 (JHL35-1)	JM60060-3CR	TJN35 (TJN35-1)	T30060-3CR		KMF336A MIF330B							
...B15P2T2DB20		25	MPW40-3-U025 ²⁾	BM3RHB-032 BM3VHB-032	35	JHL35 (JHL35-1)	JM60060-3CR	TJN35 (TJN35-1)	T30060-3CR		KMF336A MIF330B							
Drive Part # (same as above) CFW300...	Input Ø/V	Input Line Reactor	Output Load Reactor	3-Phase Output dV/dT Filter	Braking Resistors ⁶⁾													
					Resistor (ADC)	Drive Rated A	Peak Braking Current <i>I_{pk}</i> (A)	Min Resistor (Ω)	Max Braking Current <i>I_{rms}</i> (A)	Max Braking Torque* (%)								
...A01P6S1NB20	1Ø 115 VAC	LR2-10P2-1PH	LR2-20P5	VTF-46-DE	n/a	n/a	n/a	n/a	n/a	n/a								
...A02P6S1NB20		LR2-10P5-1PH	LR2-20P5	VTF-246-CFG														
...A04P2S1NB20		LR2-22P0-1PH	LR2-20P5	VTF-24-FH														
...A06P0S1NB20		LR2-11P5-1PH	LR2-21P0	VTF-24-FH														
...A01P6S2NB20	1Ø 230 VAC	LR2-20P2-1PH	LR2-20P5	VTF-46-DE								n/a	n/a	n/a	n/a	n/a	n/a	
...A02P6S2NB20		LR2-20P5-1PH	LR2-20P5	VTF-246-CFG														
...A04P2S2NB20		LR2-21P0-1PH	LR2-20P5	VTF-24-FH														
...A06P0S2NB20		LR2-21P5-1PH	LR2-21P0	VTF-24-FH														
...A07P3S2NB20		LR2-22P0-1PH	LR2-22P0	VTF-246-GJJ														
...B10P0B2DB20		LR-27P5 (1PH) / LR-23P0	LR-23P0	VTF-246-HKL	GS-25P0-BR	10	11	39	10	110%								
...A01P6T2NB20	3Ø 230 VAC	LR2-20P2-1PH	LR2-20P5	VTF-46-DE	n/a	n/a	n/a	n/a	n/a	n/a								
...A02P6T2NB20		LR2-20P5	LR2-20P5	VTF-246-CFG														
...A04P2T2NB20		LR2-20P7	LR2-20P7	VTF-24-FH														
...A06P0T2NB20		LR2-20P7	LR2-20P7	VTF-24-FH														
...A07P3T2NB20		LR2-10P2-1PH	LR2-22P0	VTF-246-GJJ														
...B15P2T2DB20		LR-25P0	LR-25P0	VTF-24-JL								GS-25P0-BR	15	11	39	10	73%	

1) WEG published "High Fault" SCCR ratings (65kA) require the use of either the MPW40 motor protector or Class J fuses.

2) For these MPW40 models, the CLT32 accessory is required for 65 kA SCCR (without CLT32 current limiter, the SCCR maximum is 50 kA).

3) For this MPW40 model, the CLT32 accessory is required for 65 kA SCCR (without CLT32 current limiter, the SCCR maximum is 42 kA).

4) The use of Fuji BM3RHB motor protectors or Class T fuses will lower the SCCR to the "Standard Fault" rating of 5 kA.

5) WEG MPW motor protectors and TCI KDR reactors are not currently sold by AutomationDirect.

6) Max braking torque @ 10% duty cycle with maximum ON (braking) time of 10 seconds.



CFW/SSW Series Software

CFW-WPS Software Package

WEG WPS is the versatile configuration software for all WEG products. The software is compatible with all CFW series AC drives and SSW07/SSW900 soft starters. Powerful features include:

- Configuration and Monitoring Wizards
- Custom Variable Monitoring Windows
- IEC 61131 Ladder Programming
- Advanced Trending & Diagnostics
- FW updates
- Automatic online software updates

And MORE!

WEG WPS requires a PC USB port or RJ45 port and appropriate cables or USB-485M kit. Each drive or softstarter series can connect to the software, through the methods noted below:

CFW100:

- USB via the CFW100-CUSB module
- RS485 via the CFW100-CRS485 module

CFW300:

- USB via the CFW300-CUSB module
- RS485 via the CFW300-CRS485 module
- RS232 via the CFW300-CRS232 module

CFW320:

- USB via the CFW320-CUSB module
- Ethernet via the CFW320-CETH module
- RS485 via the CFW320-CRS485 module
- RS232 via the CFW320-CRS232 module

CFW500:

- RS485 via the included CFW500-IOS module or optional CFW500-CRS485-B module.
- USB via the CFW500-CUSB module
- Ethernet via the CFW500-CETH-IP or CFW500-CEMB-TCP module
- RS232 via the CFW500-CRS232 module

SSW07:

- RS485 via the SSW07-08-KRS-485 module
- RS232 via the SSW07-08-KRS-232 module

SSW900:

- USB with integrated USB port.
- Ethernet via the SSW900-CETH-W module
- RS485 via the SSW900-CRS485-W module

See the WPS quick start videos for more information:

- Drive Parameters:
<https://www.automationdirect.com/VID-DR-0071>

- Configuration, Diagnostics, and Wizards:
<https://www.automationdirect.com/VID-DR-0074>



WEG CFW500 Configuration Software					
Model #	Version	Price	Description	Features/Specifications	CFW500 Drive
CFW-WPS	USB Card		WEG Electric Windows Configuration Software: for all WEG CFW series AC drives and SSW07 and SSW900 series soft starters (PN# CFW-WPS)	USB card containing WEG WPS software.	All
	Download	Free		Download software for free through the AutomationDirect.com website: • CFW-WPS Software	



CFW-WPS
USB Installation Card