

WEG CFW100 Generation 2 Series AC Drives



WEG CFW100 Series AC Drives				
Motor Rating	hp	0.25	0.50	1
	kW	0.18	0.37	0.75
115VAC Single-Phase Input 230VAC Three-Phase Output		✓	✓	
230VAC Single-Phase Input 230VAC Three-Phase Output		✓	✓	✓



WEG CFW100 Overview

The new generation of WEG CFW100 variable frequency drives – the smallest full featured VFDs on the market – offer impressive functions and features that provide energy cost savings and fast operating response while helping to prevent possible breakdowns or involuntary stoppages.

The CFW100 is a single-phase input, three phase output variable frequency drive (VFD) developed for simple applications ranging from 1/4 to 1hp (0.18 to 0.75 kW). It gives induction motors a selectable scalar (V/F) or voltage vector (VVW) control. Designed with HMI and plug-and-play in mind, the CFW100 opens the door for fast, easy installation and operation.

With its built-in PLC, the CFW100 enables the VFD, motor and application to work interactively. Users can easily implement customized logic for any application.

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 converted back into three-phase output power. The voltage and frequency of this converted output power is controlled by the drive in order to vary the speed of the three-phase AC induction motor.

A number of easily installed accessories for network communication and I/O expansion are available for the CFW100. These make it easy to adapt the CFW100 to a wide range of different applications.

Of special interest to machine manufacturers is the flash memory module which allows you to copy the settings from one CFW100 and download them to others in seconds, even with the inverters turned off.

WEG CFW100 Hardware and Firmware Enhancements

The new generation WEG CFW100 variable speed drives feature hardware and firmware enhancements over the first generation of this line. These include the following:

- A new plug-in module with potentiometer (exclusive for the G2)
- PID control function
- Fire mode function
- Modbus master function
- Energy saving function
- Compatibility with WPS software
- New color for the HMI membrane
- Maintains same dimensions and electrical connections as the first generation
- Compatible with all Generation 1 accessories

Features

- Output current 1.6 A, 2.6 A and 4.2 A (0.25; 0.5 and 1hp)
- Single-phase power supply (110/230 VAC)
- Operates in 50°C [122°F] ambient temperature without derating
- Withstands 150% overload for one minute every 10 minutes at an ambient temperature of 50°C [122°F].
- Vector (VVW) or Scalar (V/F) control
- Plug-and-play functionality
- Built-in operating interface (HMI)
- Digital inputs
- Surface mounting (with PLMP accessory) or DIN rail mounting
- Degree of protection IP20

- Removable external fan (for Frames B and C)
- Fault or alarm diagnosis
- Electronic protection against motor overload
- Free software (WPS)
- Standard coating classified as 3C2 according to IEC 60721-3-3 on all versions for greater protection of the internal circuitry in harsh environments.

Connectivity (WPS)

- Free application software to program, control and monitor the CFW100
- Monitoring of operation status in lists, which can be saved as a computer file
- On-line parameter operation
- Transfer of parameters from a PC to the CFW100
- Off-line edition of parameters stored on the PC

Accessories

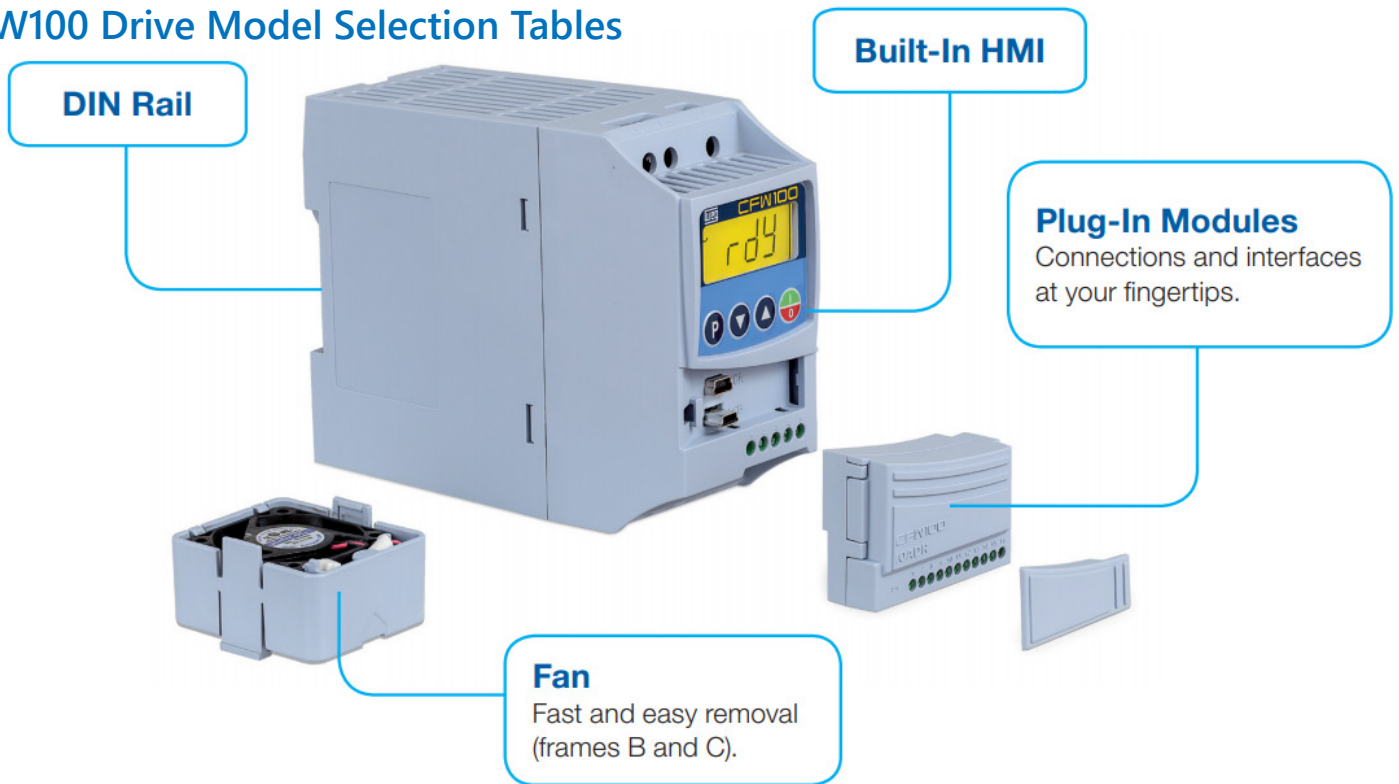
- RS-485 serial communication module (Modbus RTU)
- USB communication module
- I/O expansion modules including 1AI/1AO and 1AI/1RO
- Input expansion module (4 isolated [configurable] NPN or PNP digital inputs)
- Infrared remote control module
- Potentiometer module
- Flash memory module
- HMI (remote)

Typical Applications

- Blenders / Mixers
- Granulators / Palletizers
- Rotary filters
- Roller tables
- Centrifugal pumps
- Process dosing pumps
- Fans / Exhaust systems
- Dryers
- Centrifuges
- Commercial Dryers
- Compressors
- Conveyors

WEG CFW100 AC Drives – Selection Specifications

CFW100 Drive Model Selection Tables



WEG CFW100 AC Drives Selection Specifications													
Drive Model #	Price	Applicable Motor 1, 2			Drive Output		Drive Input		Input Protection		Drive		
		Maximum Power		Nominal Phase / Voltage (VAC)	Rated Current 3 (A)	Nominal Phase / Voltage (VAC)	Nominal Phase / Voltage (VAC)	Rated Current (A)	Circuit Breaker (A)	Fuse 4 (A)	Power Loss (W)	Weight lb [kg]	Frame Size
		(hp)	(kW)										
CFW100A01P6S120G2	\$150.00	0.25	0.18	3 / 230	1.6	3 / 230	1 / 115	7.1	10	20	20	1.05 [0.48]	A
CFW100B02P6S120G2	\$164.00	0.50	0.37	3 / 230	2.6	3 / 230	1 / 115	11.5	16	20	30	1.25 [0.57]	B
CFW100A01P6S220G2	\$134.00	0.25	0.18	3 / 230	1.6	3 / 230	1 / 230	3.5	6.3	20	20	1.05 [0.48]	A
CFW100B02P6S220G2	\$145.00	0.50	0.37	3 / 230	2.6	3 / 230	1 / 230	5.7	10	20	30	1.25 [0.57]	B
CFW100C04P2S220G2	\$154.00	1	0.75	3 / 230	4.2	3 / 230	1 / 230	9.2	16	20	40	1.34 [0.61]	C

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 230VAC. The proper sizing of the CFW100 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. Type J provides 30kA high fault SCCR rating.

WEG CFW100 AC Drives – General

CFW100 General Specifications (Applicable to All Models)		
Control	Method	Scalar (V/F) or voltage vector (VWV) control modes
	Output Frequency Range	0 to 400 Hz, control of 0.1 Hz
Performance	V/Hz Control	Speed regulation: 1% of the rated speed (with slip compensation) Speed variation range: 1:20
	VWV Control	Speed control: 1% of the rated speed Speed variation range: 1:30
Inputs	Analog	Optional CFW100-IOAR (0-10 V or 0-20 mA or 4-20 mA. Maximum 30VDC)
	Digital	4 digital inputs included (NPN or PNP). Optional CFW-IOD module provides additional 4 isolated NPN or PNP digital inputs.
Outputs	Relay	Optional CFW100-IOAR, 1 relay with NO contact
	Power Supply	Maximum 240VAC Maximum current 0.5 A. Minimum current >1 uA
Safety	Protection	Overcurrent/phase-phase short circuit in the output Overcurrent/phase-ground short circuit in the output Under/overvoltage Heatsink overheating Motor overload Power module (IGBTs) overload External fault/alarm Configuration error
Keypad	Integral (HMI)	3 digit LCD display and 4 keys. Indication accuracy, current: 10% of rated current. Indication accuracy, speed resolution: 0.1 Hz.
Rated/Default Carrier Frequency		Standard 5kHz (selectable 2.5 to 15kHz)
Input Voltage Range		Applicable to 2 models (110-127 VAC): -15% to +10%. Applicable to 3 models (200VAC to 240VAC): -15% to +10%.
Input Frequency Range		50/60Hz (48 to 62 Hz)
Allowable Input Phase Imbalance		Phase imbalance: ≤ 3% of the rated phase-to-phase input voltage
Overload Capacity		150% overload for 1 minute every 10 minutes at an ambient temperature of 50°C [122°F]
Braking		N/A
Ambient Operating Temperature		0°C-50°C [32°F-122°F]; up to 60°C [140°F] with current derating (2% per 1°C above 50°C [122°F], limited to 60°C [140°F])
Altitude		0-3300ft (1000m); up to 13,200ft (4000m) with current derating (1% per 100m above 1000m); From 2000-4000m (6560ft-13123ft) above sea level, maximum voltage reduction of 1.1% for each 100m above 2000m
Humidity		5 to 95% non-condensing
Mounting		DIN rail or surface mounting with screws (PLMP adapter required for screw mounting)
Mounting Orientation		Vertical, to provide for proper cooling
Environmental Protection Rating		IP20
Agency Approvals *		UL 508C, UL 840, UL 50, EN61800-5-1, EN 50178, EN 60204-1, EN 60146 (IEC 146), EN 61800-2, EN 60529

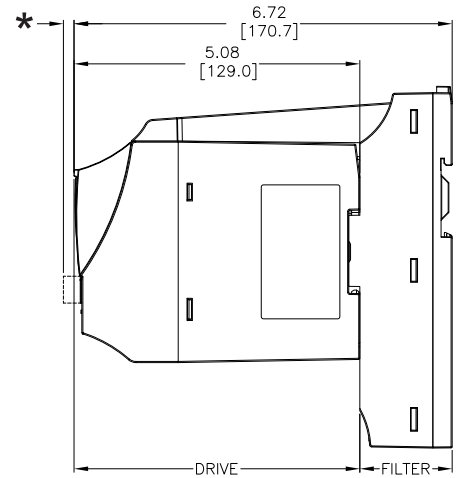
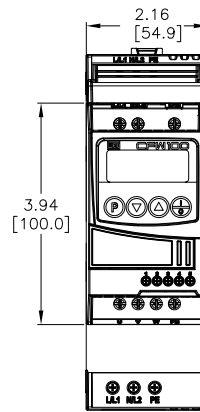
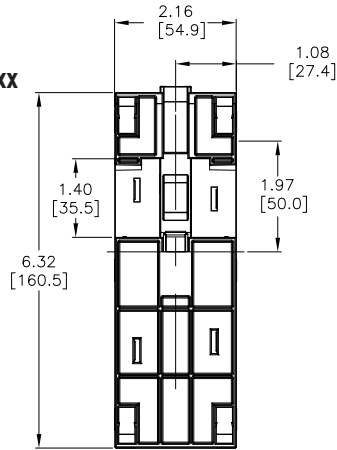
* To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

WEG CFW100 AC Drives – Dimensions

Dimensions With Filter

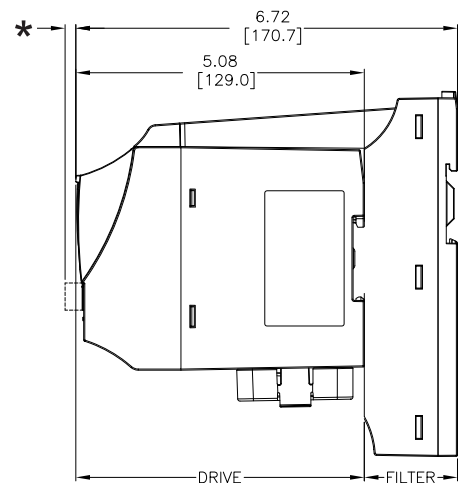
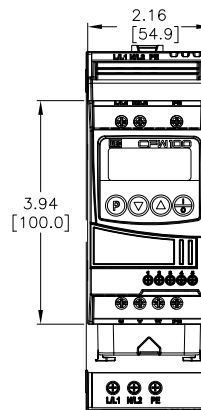
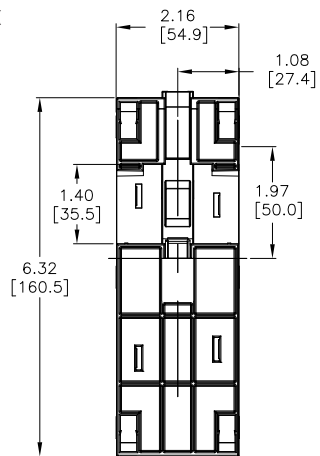
In [mm]

CFW100Axxxxxxxxxx



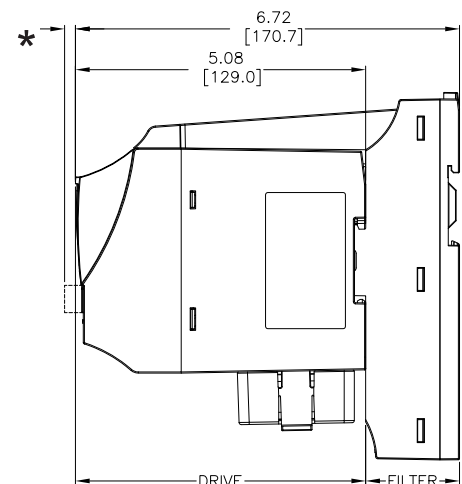
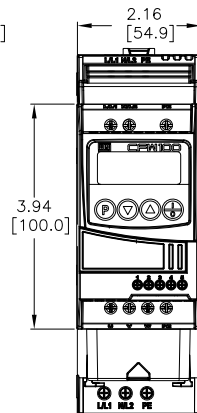
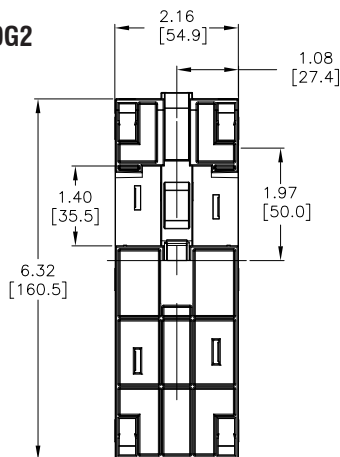
* **Optional modules add depth to dimension as follows:**
 CFW100-IOP adds 17mm [0.67 in]
 CFW100-CRS-485, -IOAR, -IOA, and -IOD add 14mm [0.55 in]
 CFW100-CUSB and -IOADR add 13mm [0.51 in]

CFW100Bxxxxxxxxxx



* **Optional modules add depth to dimension as follows:**
 CFW100-IOP adds 17mm [0.67 in]
 CFW100-CRS-485, -IOAR, -IOA, and -IOD add 14mm [0.55 in]
 CFW100-CUSB and -IOADR add 13mm [0.51 in]

CFW100C04P2S220G2

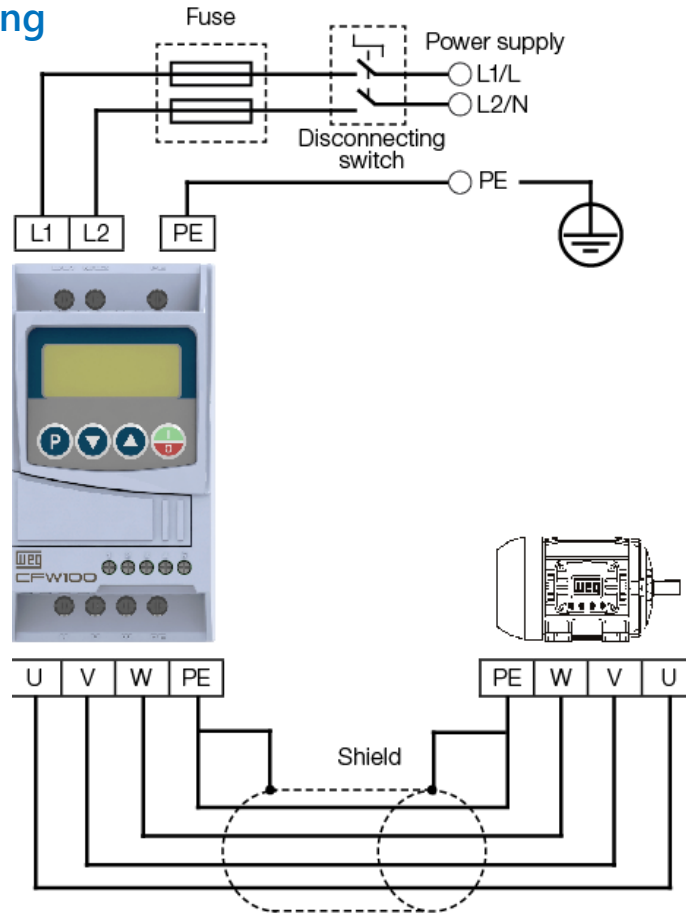


* **Optional modules add depth to dimension as follows:**
 CFW100-IOP adds 17mm [0.67 in]
 CFW100-CRS-485, -IOAR, -IOA, and -IOD add 14mm [0.55 in]
 CFW100-CUSB and -IOADR add 13mm [0.51 in]

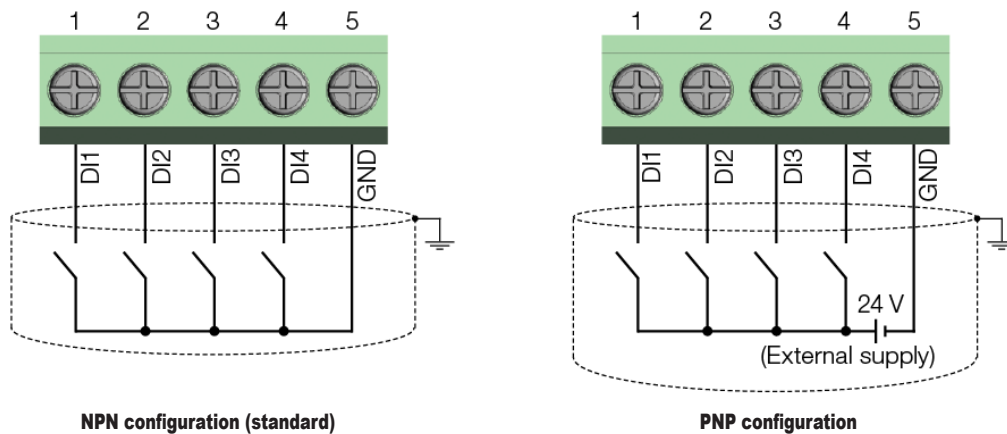
See our website (www.AutomationDirect.com) for complete engineering drawings.

WEG CFW100 AC Drives

Power and Grounding Connections



Installation and Connection



NPN configuration (standard)

PNP configuration

Connector	Description	
1	D11	Digital Input 1
2	D12	Digital Input 2
3	D13	Digital Input 3
4	D14	Digital Input 4
5	GND	Reference 0V

For further information, please reference additional diagrams available in the CFW100 User Manual.

WEG CFW100 AC Drives – Accessories

Hardware resources that can be added to the CFW100

WEG CFW100 AC Drives Accessories			
Model #	Price	Description	Use With Drive #CFW...
<u>CFW100-CRS485</u>	\$40.00	RS485 communication module, with Modbus Master function	CFW-100
<u>CFW100-CUSB</u>	\$42.50	USB communication module with 2m (6.56 ft) cable	CFW-100
<u>CFW100-IOP</u>	\$44.50	Potentiometer plug-in module	CFW-100
<u>CFW100-IOA</u>	\$48.50	I/O expansion module with 1 analog input and 1 analog output	CFW-100
<u>CFW100-IOADR</u>	\$101.00	I/O expansion and infrared remote control module ¹	CFW-100
<u>CFW100-IOAR</u>	\$39.50	I/O expansion module with 1 analog input and 1 relay output	CFW-100
<u>CFW100-IOD</u>	\$40.00	I/O expansion module with 4 isolated (configurable) NPN or PNP digital inputs	CFW-100
<u>CFW100-KHMIR</u>	\$125.00	CFW100 remote interface kit (CFW100-CRS485 with 1m (3.28 ft) cable included)	CFW-100
<u>CFW100-KFABC-S1</u>	\$62.00	Footprint ² radio frequency kit, category C2, for frames A, B or C (120V)	CFW-100 (120G2 models only)
<u>CFW100-KFABC-S2</u>	\$44.50	Footprint ² radio frequency kit, category C2, for frames A, B or C (220V)	CFW-100 (220G2 models only)
<u>PLMP</u>	\$1.00	Adapter kit for surface mounting, fastening with screws, set with two units	CFW-100

NOTES:
 1) I/O expansion and infrared remote control module contains 1 NTC sensor with a 1m (3.28 ft) cable, 1 infrared (IR) remote control, 1 infrared receiver cable with a 1.5 m (4.92 ft) cable, 1 NTC sensor input, 1 analog current input (0-10 mA or 2-20 mA), 1 analog voltage input (0-10 VDC), and 3 NO digital outputs (240 VAC).
 2) The footprint radio frequency filter is an external accessory on whose surface the VFD is mounted. The electrical connection between the filter and the CFW100 is made through the coupling guide that accompanies the filter. After being mounted on the filter surface, the set can be fastened to a DIN rail or mounted to a panel with screws. For mounting with screws, the PLMP Adapter Kit accessory is required. For further information refer to Chapter 7 of the user's manual; access the manual and accessories through www.automationdirect.com.



CFW100-CRS485



CFW100-CUSB



CFW100-IOP



CFW100-IOA



CFW100-IOAR



CFW100-IOD



CFW100-KFABC-S2



CFW100-KFABC-S1



PLMP



CFW100-IOADR



CFW100-KHMIR

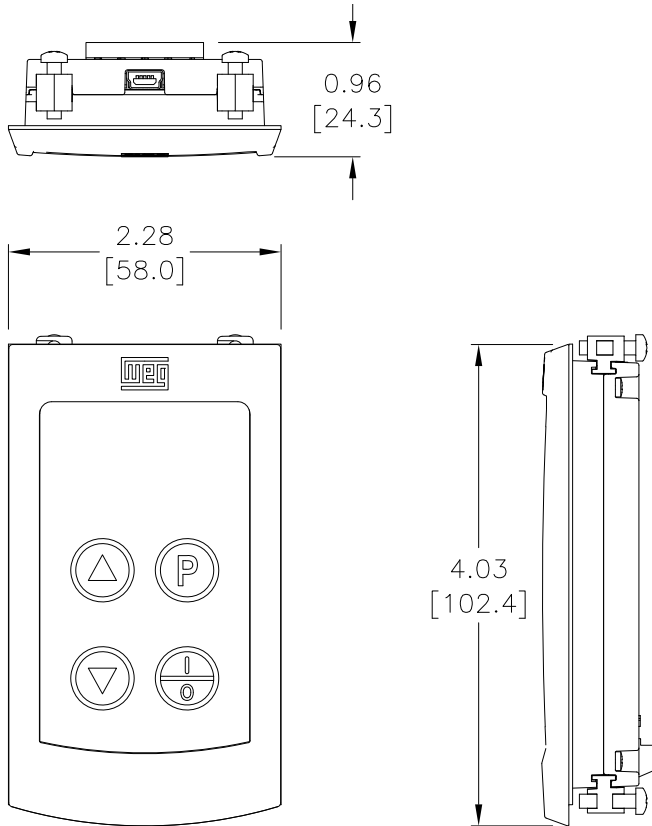


WEG CFW100 AC Drives Accessories – Dimensions

Dimensions

mm [in]

CFW100-KHMIR



General Accessories Recommended for WEG CFW100 AC Drives

General Accessories Recommended for WEG CFW100 AC Drives						
AC Drive Part #	Power		Input Ø/V	Line Reactor*	Load Reactor*	Output Filter**
	hp	kW		1-Phase	3-Phase	3-Phase
CFW100A01P6S120G2	0.25	0.18	1Ø 115VAC	LR2-10P2-1PH	LR2-20P5	VTF-46-DE
CFW100B02P6S120G2	0.50	0.37		LR2-10P5-1PH	LR2-21P0	VTF-246-CFG
CFW100A01P6S220G2	0.25	0.18	1Ø 230VAC	LR2-20P2-1PH	LR2-20P5	VTF-46-DE
CFW100B02P6S220G2	0.50	0.37		LR2-20P2-1PH	LR2-20P7	VTF-246-CFG
CFW100C04P2S220G2	1	0.75		LR2-21P0-1PH	LR2-21P0	VTF-24-FH

* For Line Reactor technical information, please refer to "LR(2) Series Line Reactors" on page tDGA-1.
 ** For Drive Output Filter technical information, please refer to "Drive Output Filters – VTF Series – for Multiple AC Drives" on page tDGA-18.