

# CFW100 - VARIABLE SPEED DRIVE

The ideal solution for small machine manufacturers

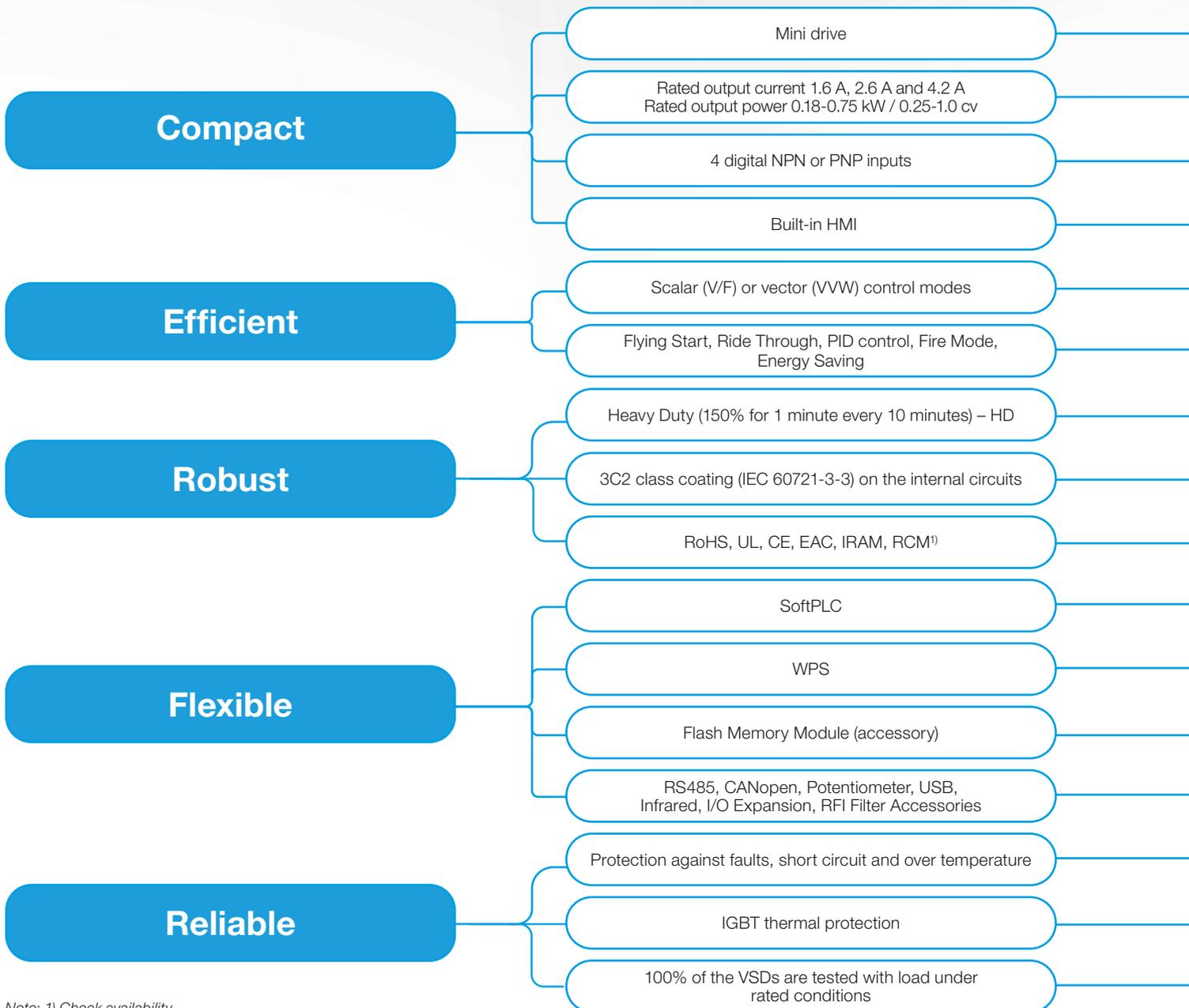


Motors | Automation | Energy | Transmission & Distribution | Coatings

# CFW100

## Mini Drive

The CFW100 is an extremely small, high performance variable speed drive for three-phase induction motors suitable for manufacturers of small machines. It features selectable scalar (V/F) or voltage vector (VVW) control, HMI, and Plug & Play philosophy for fast and simple accessory installation. It also offers SoftPLC, which adds the functionalities of PLC to the drive, and free programming and monitoring software applications.



Note: 1) Check availability.

Many applications...



at your fingertips!

- The smallest VSD on the market
- Single-phase power supply 100-127 V or 200-240 V
- Built-in inputs and outputs in the standard version
- CFW100 status information is easily viewed on the screen
- Selectable modes
- Functions for improved performance
- High overload capacity
- Greater protection for aggressive environments
- Lead free, international certifications
- Built-in software resource, equivalent to a small PLC
- Online monitoring, programming and configuration
- Used to copy the CFW100 original programming and download it to others, with the VSDs off
- Plug & Play accessories can be easily installed
- It prevents unexpected stoppages and damages to the equipment
- It prevents damages to the CFW100
- High reliability
- Able to operate in up to 50 °C ambient temperature without derating
- Ideal for small industrial, commercial or home applications
- 1 slot for functions or I/O expansion accessory
- Simple operation, reliable displays, remote operating interface (accessory)
- Suitable for simple or complex applications
- Easy configuration and high performance
- No oversized VSDs
- No extra costs
- Green product, it contributes to the environment conservation and complies with national and international standards
- It customizes and integrates the CFW100 to the application
- Easy and intuitive environment, free software
- Faster setting and configuration and quick start up
- Flexibility, according to the application requirements
- Less downtime
- It increases the VSD useful life
- It prevents exchanges due to defects or assembly errors

## Simple Configuration

**Compact and innovative** design. Flexible selection.

**Footprint RFI Filter<sup>1)</sup>**  
Category C2 or C3 to reduce the electromagnetic interference level

**Operating Interface (HMI)**

**Plug-In Module (Accessories)**  
Plug & Play Philosophy

**DIN Rail Mounting**

**Easily Removable Fan (Frames B and C)**

**Greater Protection in Aggressive Environments**  
Standard coating classified as 3C2 according to IEC 60721-3-3 on all versions, ensuring greater protection of the internal circuits on harsh environments

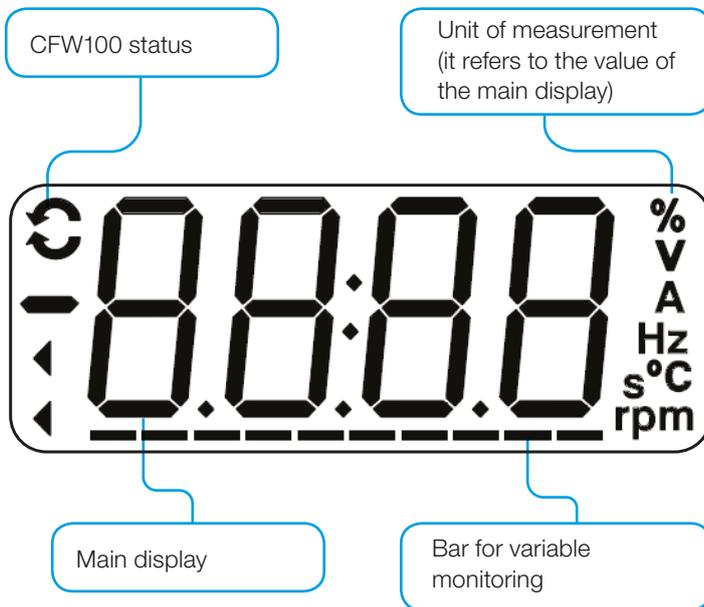
**Flash Memory Module**  
Download/Upload of the programming from/to other CFW100 units without having to power them up  
*CFW100/CFW300-MMF Accessory*

**Remote HMI<sup>2)</sup>**  
*CFW100-KHMIR Accessory*

Notes: 1) The CFW100 is mounted on the surface of the external footprint RFI filter. See more details in accessories or in the installation guide available at [www.weg.net](http://www.weg.net).  
2) The accessory CFW100-CRS485 is supplied with the remote HMI, for communication with the interface.

## HMI

- Simultaneous indication of up to two selected parameters. The only one in this VSD category.
- Included in the standard version of the CFW100 (non-detachable).



### Friendly Programming

- Oriented start-up: step by step programming.

### Remote HMI - Accessory

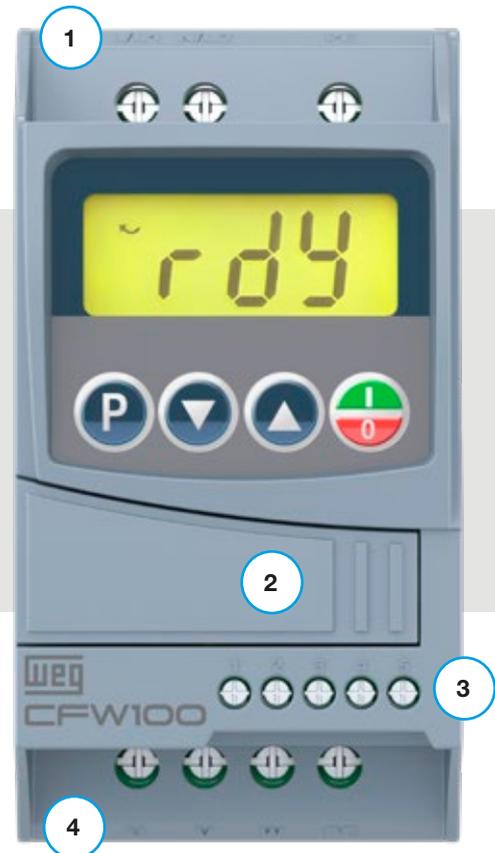
Solution for panel door or machine console.

### Easy Installation

- Ideal to replace contactors or similar products.
- The standard CFW100 (without accessory) has 4 DIs ready to run.

- 1 - Power supply terminals
- 2 - Slot for plug-in modules<sup>1)</sup>
- 3 - Digital inputs
- 4 - Motor terminals

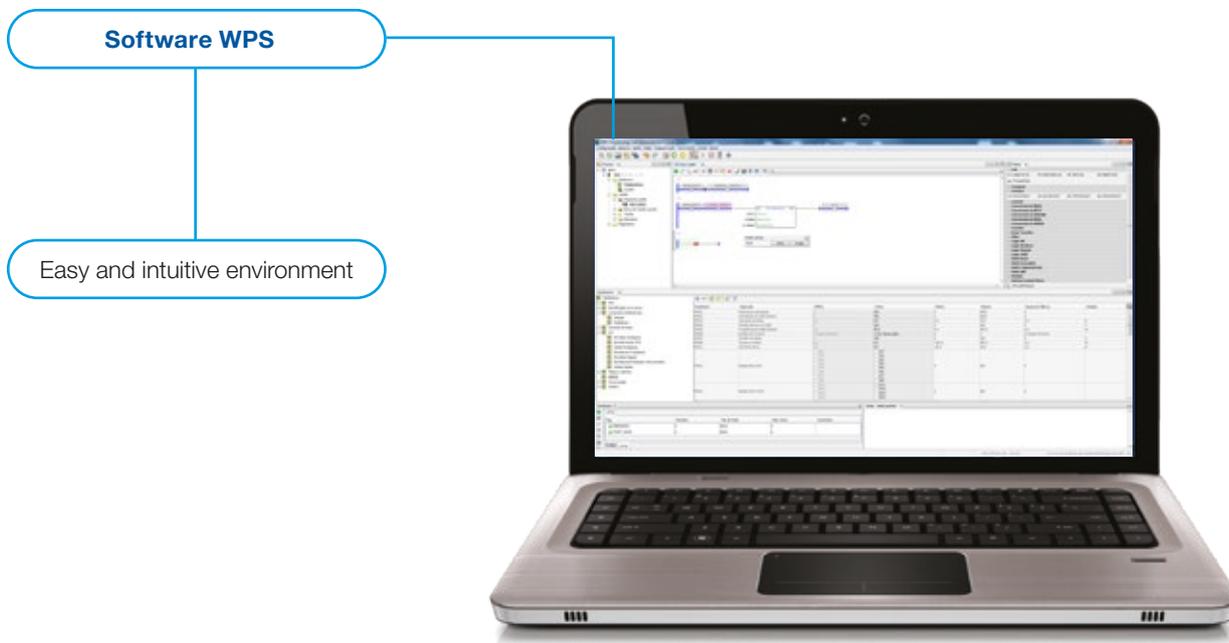
Note: 1) Internal USB connector for plug-in modules only. Do not connect the cables directly.



## Connectivity

### WEG Programming Suite (WPS)

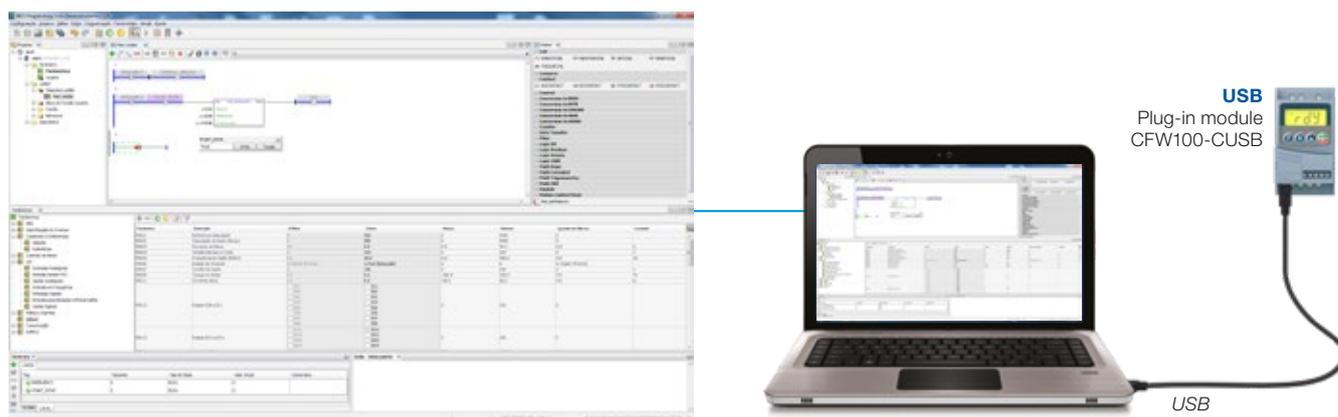
WPS is an integrated PC software that assists in the creation of automation applications allowing graphical monitoring, parameterization and programming in Ladder language (IEC 61131-3) of several WEG product families.



### SoftPLC

Built-in tool in all the CFW100 versions which is equivalent in resources to a small PLC. It has free programming software which enables the user to develop logic projects, customizing the applications.

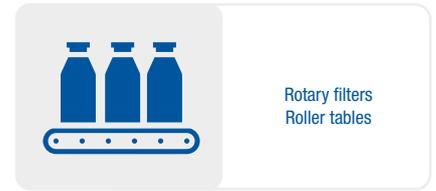
The SoftPLC is the simplest and smartest way to make your CFW100, motor and application work together. For the operation of the SoftPLC, it is necessary to use a CFW100-CUSB plug-in module. To design your logic programs, use the free software WPS, available at [www.weg.net](http://www.weg.net).



### Infrared Remote Control



## Applications



### OEM and Small Industrial and Commercial Processes

The CFW100 with integrated SoftPLC is particularly suitable for small machines or small industrial processes due to its flexibility to meet the requirements of different applications, easy operation and compact size, perfectly fitting even small electrical panels. It can also be used in commercial applications such as lifting garage doors and opening automatic gates.



### Certifications



## Coding<sup>1)</sup>

1	2	3	4	5	6	7	8	9
CFW100	A	01P6	S	2	20	-	-	G2

### 1 - CFW100 variable speed drive

### 2 - CFW100 size according to table 1 below

### 3 - Rated output current as shown in table 1

Rated output current	Number of phases	Rated voltage	Size	Degree of protection
01P6 = 1.60 A	Single-phase	100-127 V or 200-240 V	A	IP20
02P6 = 2.60 A			B	
04P2 = 4.20 A			C	

### 4 - Number of phases

S	Single-phase power supply
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### 5 - Rated voltage

1	100-127 V
2	200-240 V

### 6 - Degree of protection

20	Degree of protection IP20
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### 7 - Special hardware version<sup>2)</sup>

Blank	Standard hardware
Hx	Special hardware

### 8 - Special software version<sup>2)</sup>

Blank	Standard software
Sx	Special software

### 9 - Generation

Blank	Generation 1
G2	Generation 2

## Specification

Variable speed drive CFW100					Maximum applicable motor <sup>3)</sup>							
Reference	Power supply (V)		Frame size	Rated output current (A)	IEC			UL				
					Power supply (V) 60 Hz	cv	kW	Power supply (V) 60 Hz	HP			
										CFW100A01P6S120G2	100-127 V ac	Single-phase
CFW100B02P6S120G2	B	0.5	0.37									
CFW100A01P6S220G2	200-240 V ac	Single-phase	A	220	0.25	0.18	230	0.33				
CFW100B02P6S220G2			B						0.5	0.37		
CFW100C04P2S220G2			C						4.2	1.0	0.75	1.0

Notes: 1) Other configurations available upon request.

2) For versions with special hardware (Hx) and software (Sx), contact WEG Automation sales department or your sales representative.

3) The motor powers are reference values, valid for WEG IEC or NEMA three-phase induction motors. The motor powers for IEC standard are based on WEG W22 IE2 High-Efficiency 4-pole motors, while the motor powers for UL standard are based on WEG W22 NEMA Premium 4-pole motors with 220 V or 230 V. The proper size must be always determined according to the rated current of the motor used, which must be lower than or equal to the inverter rated output current.

4) Designed for exclusive industrial or professional use.



## Accessories

They are hardware resources that can be added to the CFW100:

Reference	Description	Illustrative figures
<b>Control accessories</b>		
CFW100-CRS485	RS485 communication module, with Modbus Master function	
CFW100-CUSB	USB communication module with 2 m cable	
CFW100-IOA	I/O expansion module with 1 analog input and 1 analog output	
CFW100-IOADR	I/O expansion and infrared remote control module <sup>1)</sup>	
CFW100-IOAR	I/O expansion module with 1 analog input and 1 relay output	
CFW100-IOD	I/O expansion module with 4 isolated (configurable) NPN or PNP digital inputs	
CFW100-CCAN	CANopen communication module	
CFW100-IOP	Potentiometer plug-in module	
<b>Flash memory</b>		
CFW100-MMF	Flash memory module (3 m cable included)	
<b>External HMI</b>		
CFW100-KHMIR	CFW100 remote interface kit (CFW100-CRS485 + 3 m cable included)	
<b>RFI filter</b>		
CFW100-KFABC-S1	Footprint radiofrequency filter kit <sup>2)</sup> , category C2, for frames A, B or C single-phase at 110 V	
CFW100-KFABC-S2	Footprint radiofrequency filter kit <sup>2)</sup> , category C2, for frames A, B or C single-phase at 220 V	
<b>Others</b>		
PLMP	Adapter kit for surface mounting, fastening with screws, set with two units	

Notes: 1) I/O expansion and infrared remote control module contains: 1 NTC sensor with 1 m cable, 1 infrared (IR) remote control, 1 infrared receiver cable with 1.5 m, 1 NTC sensor input, 1 analog current input (0-10 or 2-20 mA), 1 analog voltage input (0-10 V dc), 3 NO digital outputs (240 V ac);

2) The footprint radiofrequency filter is an external accessory on whose surface the VSD is mounted, and the electrical connection between the filter and the CFW100 is done through the coupling guide that accompanies the filter. After mounted on the filter surface, the set can be fastened to a DIN rail. I/O = Inputs and outputs.

### Configuration of the Plug-In Modules

Reference	Function								
	Inputs		Output		USB	Potentiometer	Infrared	Network communication	
	Analog	Digital <sup>1)</sup>	Analog	Relay digital				RS485	CANopen
CFW100-CRS485	-	-	-	-	-	-	-	1	-
CFW100-CCAN	-	-	-	-	-	-	-	-	1
CFW100-IOP	-	-	-	-	-	1	-	-	-
CFW100-CUSB	-	-	-	-	1	-	-	-	-
CFW100-IOA	1	-	1	-	-	-	-	-	-
CFW100-IOADR	1	-	-	3	-	-	1	-	-
CFW100-IOAR	1	-	-	1	-	-	-	-	-
CFW100-IOD <sup>2)</sup>	-	4	-	-	-	-	-	-	-

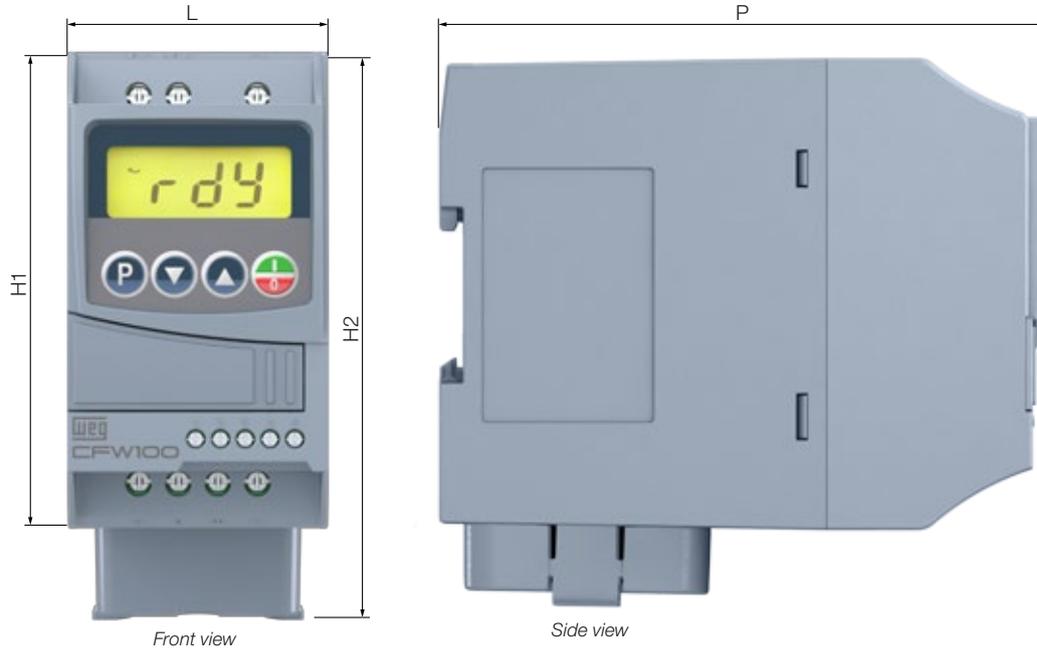
Notes: 1) The standard version of the CFW100 comes with 4 isolated NPN or PNP (configurable) digital inputs.

2) The digital inputs of the CFW100-IOD module are configurable (NPN or PNP) isolated digital inputs.



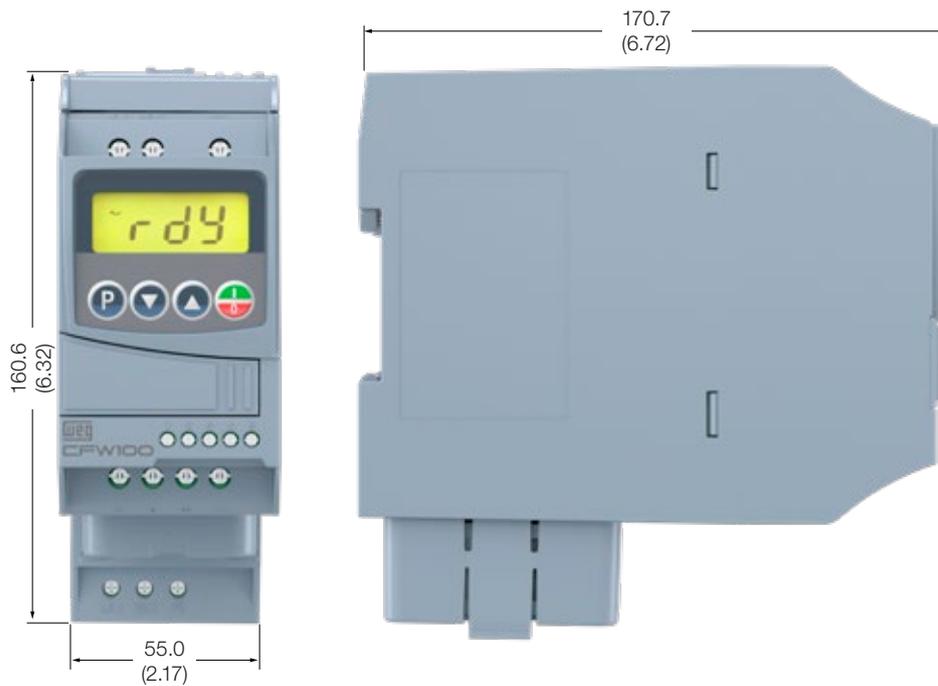
## Dimensions

### Standard Version



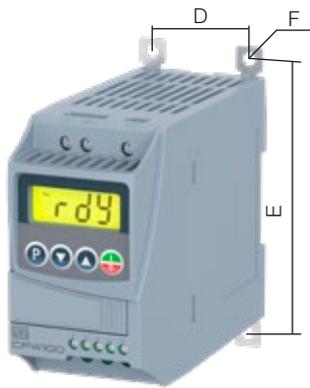
Size	H1	H2	L	P	Weight
	mm (in)	mm (in)	mm (in)	mm (in)	kg (lb)
A	100.0 (3.94)	-	55.0 (2.17)	129.0 (5.08)	0.48 (1.05)
B	-	117.0 (4.60)	55.0 (2.17)	129.0 (5.08)	0.57 (1.25)
C	-	125.6 (4.94)	55.0 (2.17)	129.0 (5.08)	0.61 (1.34)

### With RFI Filter



Note: Dimensions in millimeters (mm).  
 In the version with RFI filter, the dimensions are valid for the footprint RFI filter + the CFW100 frame A, B or C.

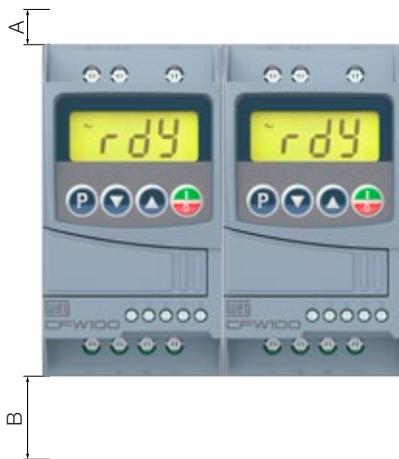
## Mounting



a) Surface mounting



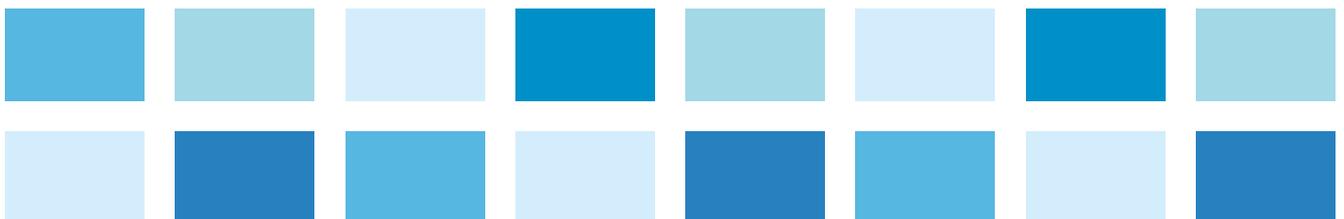
b) DIN rail mounting



Minimum clearances for ventilation

Size	A	B	C	D	E	F	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Screw	Torque (N.m)
A	15 (0.59)	40 (1.57)	30 (1.18)	41.3 (1.62)	113.4 (4.46)	M4	2.5
B	35 (1.38)	50 (1.97)	40 (1.57)				
C	50 (1.97)	50 (1.97)	50 (1.97)				

Note: tolerance of the dimensions  $\pm 1.0$  mm ( $\pm 0.039$  in).

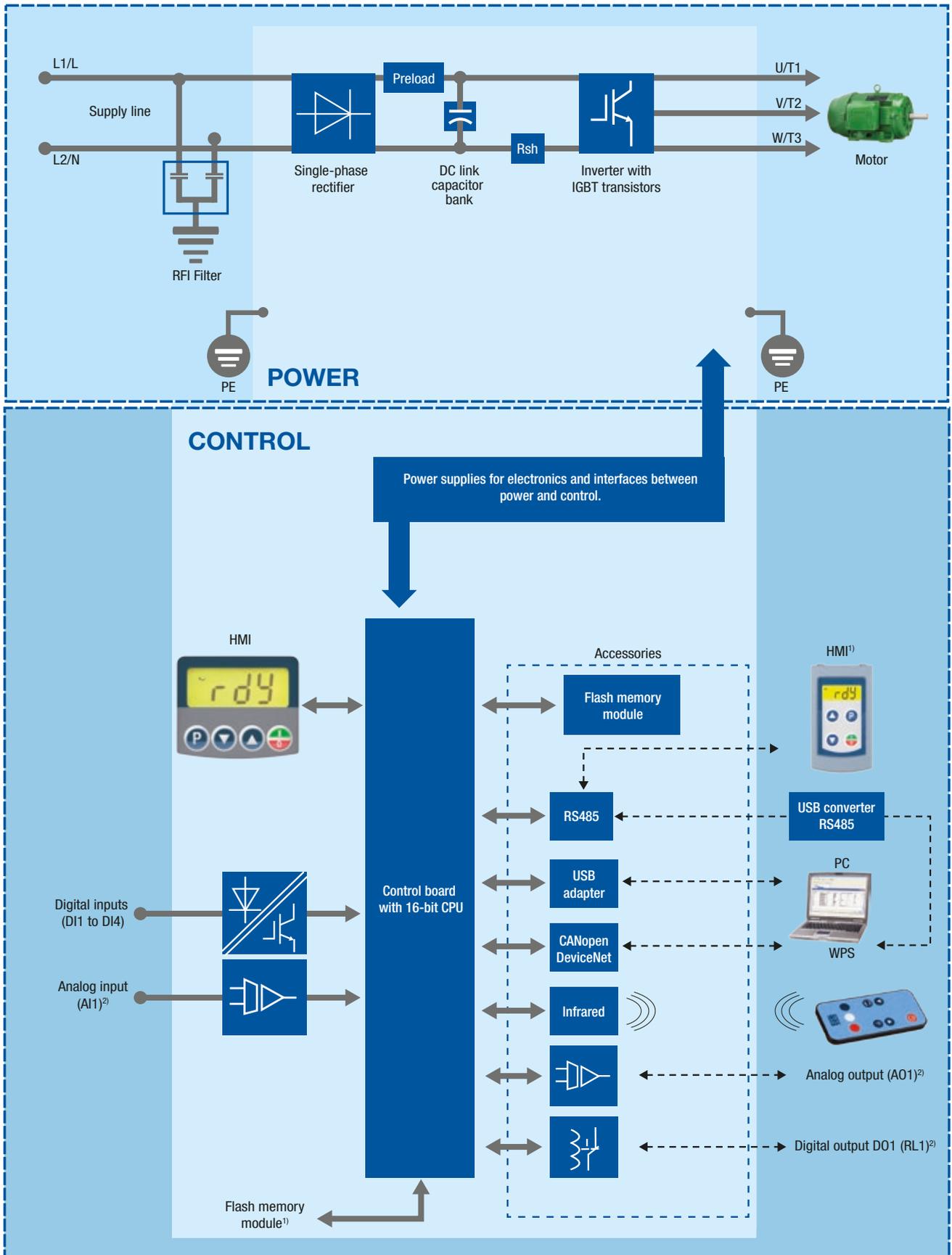


## Technical Specifications

Supply voltage	Power and voltage range	Tolerance: -15%, +10%
		Frequency: 50/60 Hz $\pm$ 2Hz
		Transient voltages and overvoltages according to category III (EN 61010/UL 508 C)
		Maximum of 10 (line) connections per hour (1 every 6 minutes)
Typical efficiency	$\geq$ 97%	
Control	Method	Control types: V/F (scalar) VWV: voltage vector control
	Output frequency	0 to 400 Hz, resolution of 0.1 Hz
Performance	V/f Control	Speed regulation: 1% of the rated speed (with sleep compensation) Speed variation range: 1:20
	VWV vector control	Speed regulation: 1% of the rated speed Speed variation range: 1:30
Environment conditions	Temperature around the CFW100	50 °C - IP20 without RFI filter Current derating of 2% for each °C above the rated operating temperature, limited to 60 °C
	Aggressive environments	Class 3C2 - Standard coating on the internal circuits, according to IEC 60721-3-3 (standard model)
		Class 3C3 - Extra coating - optional, according to IEC 60721-3-3 (optional)
	Air relative humidity	5% to 90% non-condensing
	Altitude	Maximum altitude: up to 1,000 m - rated conditions. 1,000 m to 4,000 m - current derating of 1% for each 100 m above 1,000 m. From 2,000 m to 4,000 m above sea level - 1.1% derating of the maximum voltage for each 100 m above 2,000 m.
Pollution degree	2 (according to EN 50178 and UL 508C/UL 61800-5-1), with non-conductive pollution. Condensation must not cause conduction of the accumulated residues.	
Inputs <sup>1)</sup>	Analog	Available through accessory plug-in modules: CFW100-IOA, CFW100-IOADR or CFW100-IOAR. For further information, refer to the plug-in manual.
	Digital	4 isolated inputs. Programmable functions: - Active high (PNP): maximum low level 10 V dc, maximum high level 20 V dc - Active low (NPN): maximum low level 5 V dc, minimum high level 10 V dc Maximum input voltage 30 V dc Input current: 11 mA Maximum input current: 20 mA
Outputs	Analog	Available through the accessory plug-in module: CFW100-IOA. For further information, refer to the plug-in manual.
	Relay	Available through accessory plug-in modules: CFW100-IOAR or CFW100-IOADR. For further information, refer to the plug-in manual.
Communication	Plug-in modules	Fieldbus: CANopen, DeviceNet, Profibus-DP
Safety	Protection	Overcurrent/phase-phase short circuit in the output Under/overvoltage at the power Motor overload Power module (IGBTs) overload External fault / alarm Configuration error
Human machine interface (HMI)	Standard	4 keys: Run/Stop, Increment, Decrement and LCD Display Settings It allows accessing/changing all the parameters Accuracy of the indications: - Current: 10% of the rated current - Speed resolution: 0.1 Hz
Safety standards		UL 508C - power conversion equipment UL 61800-5-1 - adjustable speed electrical power drive systems - part 5-1: EMC safety requirements - electrical, thermal and energy UL 840 - insulation coordination including clearances and creepage distances for electrical equipment EN61800-5-1 - safety requirements electrical, thermal and energy EN 50178 - electronic equipment for use in power installations EN 60204-1 - safety of machinery. Electrical equipment of machines. Part 1: general requirements Nota: para tener una máquina en conformidad con esta norma, el fabricante de la misma es responsable por la instalación de un dispositivo de parada de emergencia y de un equipo para seccionamiento de la red. EN 60146 (IEC 146) - semiconductor converters EN 61800-2 - adjustable speed electrical power drive systems - part 2: general requirements - rating specifications for low voltage adjustable frequency AC power drive systems
Electromagnetic compatibility standards <sup>1)</sup>		EN 61800-3 - adjustable speed electrical power drive systems - part 3: EMC product standard including specific test methods CISPR 11 - industrial, scientific and medical (ISM) radio-frequency equipment - electromagnetic disturbance characteristics - limits and methods of measurement EN 61000-4-2 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 2: electrostatic discharge immunity test EN 61000-4-3 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 3: radiated, radio-frequency, electromagnetic field immunity test EN 61000-4-4 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 4: electrical fast transient/burst immunity test EN 61000-4-5 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 5: surge immunity test EN 61000-4-6 - electromagnetic compatibility (EMC) - part 4: testing and measurement techniques - section 6: immunity to conducted disturbances, induced by radio-frequency fields
Mechanical standards		EN 60529 - degrees of protection provided by enclosures (IP code) UL 50 - enclosures for electrical equipment IEC 60721-3-3 - classification of environmental conditions - part 3: classification of groups of environmental parameters and their severities - section 3: stationary use at weather protected locations level

Note: 1) Compliance with standards upon installation of external RFI filter.

# Block Diagram



Notes: 1) Available as accessory.  
 2) The number of inputs/outputs depends on the I/O expansion accessory used.



# Global presence is essential, as much as understanding your needs.

## Global Presence

With more than 30.000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **CFW100 variable speed drives** is the right choice for your application and business, assuring safety, efficiency and reliability.



**Availability** is to have a global support network



**Partnership** is to create solutions that suit your needs



**Competitive edge** is to unite technology and innovation



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The values shown are subject to change without prior notice.

The information contained is reference values.