Motors | Automation | Energy | Transmission & Distribution | Coatings

CFW100 - Mini Drive

Variable Speed Drive

CFW100

Mini Drive

Technology at your fingertips with the incredibly smallest VSD on the market. The CFW100 is a single-phase variable speed drive developed for simple applications from 0.18 kW up to 0.75 kW (0.25 to 1 HP). Suitable for OEMs, it gives, to the induction motors, a selectable scalar (V/F) or voltage vector control (VVW), HMI and plug and play philosophy, with easy and fast installation and operation.

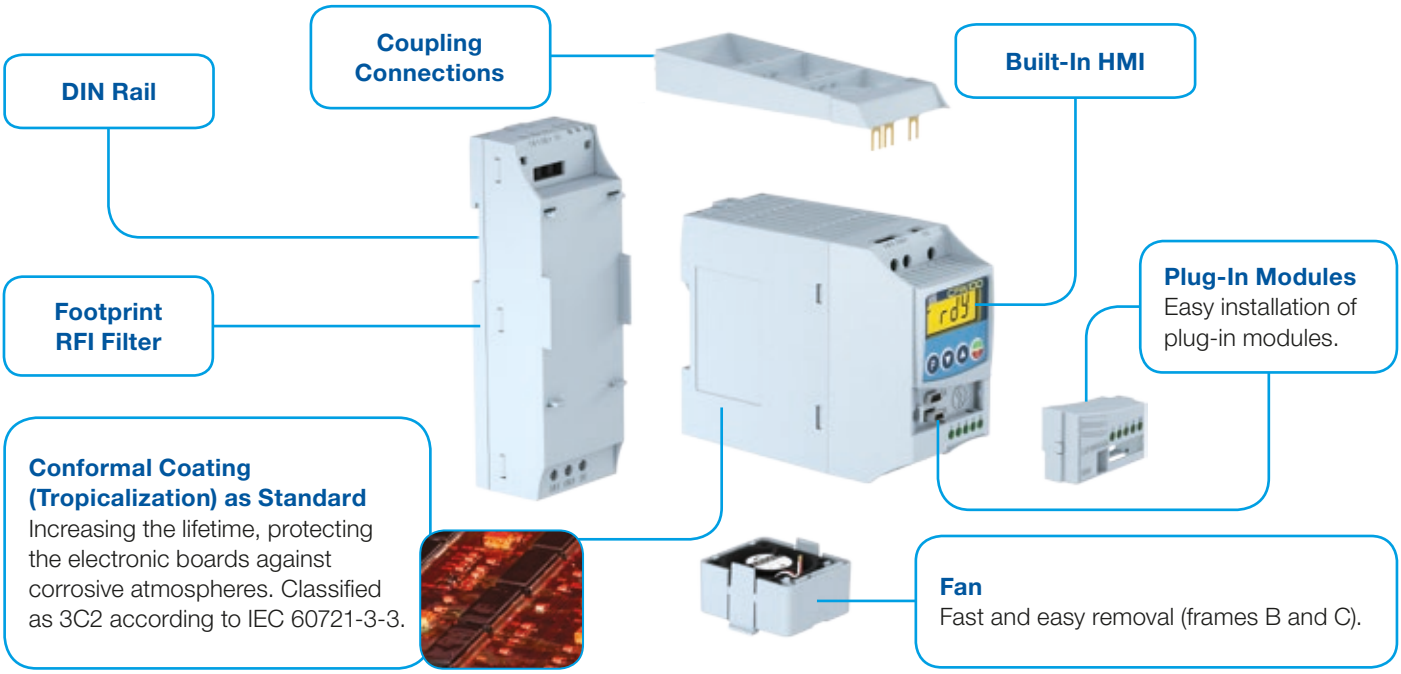
- **Mini** — Compact
- **Focus** — Single-phase supply
- **Compatible** — Plug-in modules; Flash memory
- **Robust** — High overload capacity
- **Efficient** — Functions to streamline operation and performance; SoftPLC
- **Reliable** — WEG quality
- **Integrated** — Communication protocols; Connectivity

Many applications... at your fingertips!

Advantages	Benefits
The smallest VSD on the market, able to operate in a 50 °C ambient temperature without derating.	Smaller electrical panels.
Appropriate for commercial and residential applications, however still suitable for industrial enviroments.	Saves time and installation cost when compared to three-phase applications.
The optional communication network and I/O modules are fast and easily installed, allowing adaptation of the standard VSD to each application.	Time saving, standardization and optimized costs.
Within seconds, it is possible to download the programming from a CFW100 to others without powering them up.	Fast, easy and reliable programming for OEM manufacturers.
It withstands an overload of 150% for 1 minute every 10 minutes, at an ambient temperature of 50 °C.	Does not require VSD oversizing.
PID: process control with SoftPLC. **Sleep:** disables the VSD automatically. **Flying start:** allows control of a motor that is spinning freely, accelerating it from the speed at which it is running. **Ride through:** keeps the VSD in operation during voltage dips.	Energy saving. It enables fast operating response of the machine and prevents occasional mechanical breakdowns. It prevents machine stoppage and downtime.
Built-in PLC, enabling the VSD, motor and application to work in an interactive way. It allows the user to implement customized logic and applications.	It eliminates the necessity for an external PLC, reducing costs, optimizing space and simplifying the system.
100% of the VSDs are tested with load, at the factory, under rated conditions.	High reliability.
Protection against ground fault, short circuit, over temperature and others.	It prevents damage to the inverter, which can be caused by adverse conditions.
Thermal protection of IGBTs based on manufacturer curves.	
Conformal coating (tropicalization) as standard. Classified as 3C2 according to IEC 60721-3-3.	VSD lifetime is extended: protection against dust, humidity, high temperatures and chemicals.
Modbus (RS485), CANopen and DeviceNet.	Full integration with process network.
USB, Bluetooth® and Infrared.	Higher global connections with and without wires.

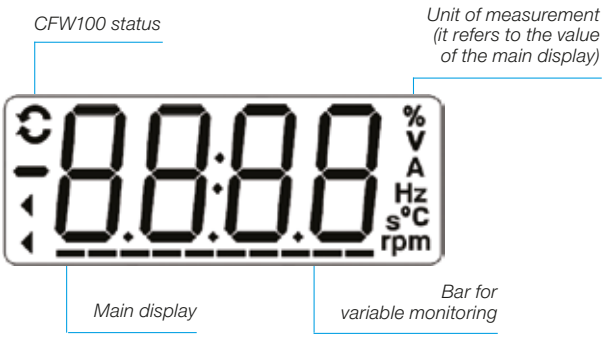
Easy Configuration Fitting Everywhere

- Fast commissioning. Innovative design, extremely compact and uniform
- Optimised cost x benefit



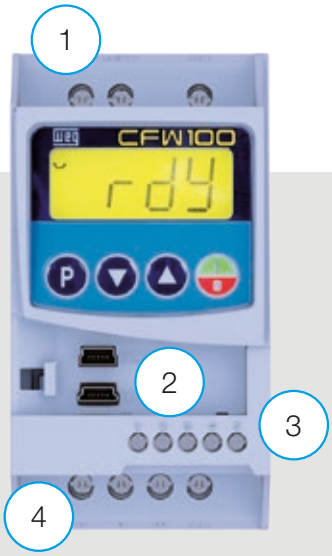
Human-Machine Interface

- View two selected parameters at the same time. Unique in this category of VSD.



Friendly Programming
- Built-in HMI at the standard product
- Oriented start-up: step by step programming

Remote HMI
Solution for panel door or machine console.



Easy replacement of contactors or similar product.

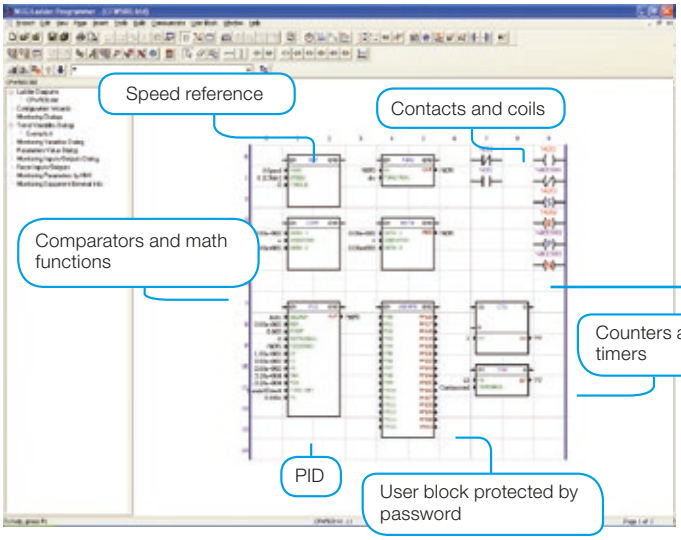
Standard product has 4 DIs and is ready to run.

1 - Power supply terminals
2 - Plug-in modules ONLY
3 - Digital inputs
4 - Motor terminals

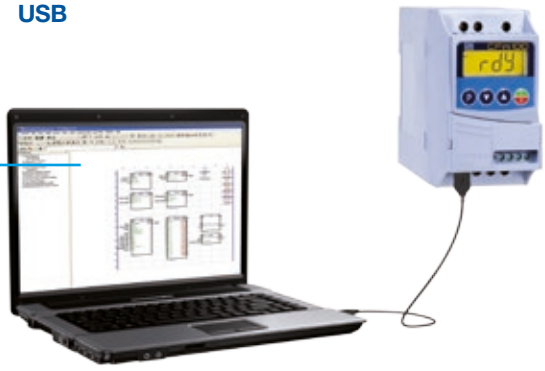
Conectivity

SoftPLC

Functionalities of a PLC available as standard, allowing the creation of applications. The WLP software and the SoftPLC functionality are a smart and simple way to make your CFW100, motor and application work together. To connect CFW100 to a computer, it is necessary to use a plug-in module.



USB



USB cable

Bluetooth®

Plug-in module CFW100-CBLT

Infrared Remote Control

Remote control

IR sensor

Plug-in module CFW100 - IOADR

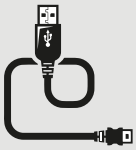
Flexibility

CFW100-CRS485 Plug-in module

CFW100-KHMIR IP54

Flash memory CFW100-MMF

A 3 meters cable comes together with the remote HMI



SuperDrive G2

Software application for programming, control and monitoring of WEG VSD. To connect CFW100 to a computer, it is necessary to use a plug-in module.

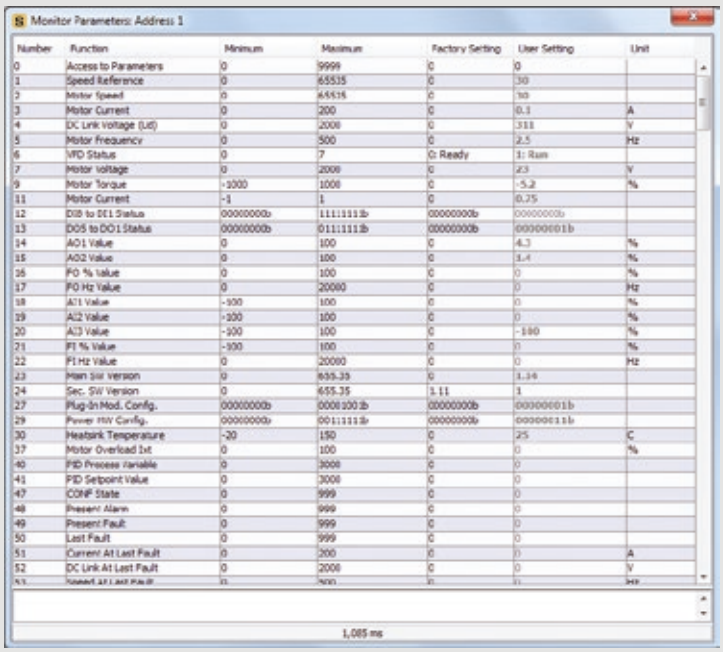
Free download at *www.weg.net*

Trend Function

- Online graphic monitoring of parameters/variables
- Able to export an image with the respective graph according to the selected period

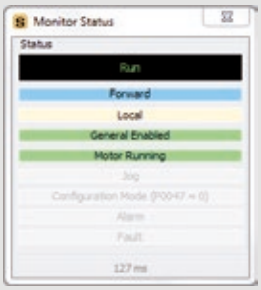
Changing and Monitoring Parameters in a List/Table

Parameter settings can be stored in a computer file format.



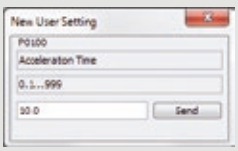
- Transfer parameters from the PC to the CFW100 and vice versa
- Offline editing of the parameters stored on the PC

Status Monitoring



Operation with HMI

Online parameter programming.



OEM Solutions

Mini variable speed drives, with integrated micro-PLC, are particularly suitable for simple technical applications in the commercial sector and OEM users, such as lift doors or fitness equipment, as well as small fans, mixing machines, roller tables and special-purpose machines for small processes. Combining extensive functionality with compact size, the CFW100 is easily integrated into electrical cabinets and many machines.

Certifications

Applications

Dryers

Centrifugal pumps

Fans / Exhausters

Process dosing pumps

Stirrers / Mixers

Granulators / Palletizers

Rotary filters

Roller tables

Small handling applications

Coding

The CFW100 code identifies its construction characteristics, rated current, voltage range and available options. Using the smart code, it is possible to select the CFW100 required for your application.

Product and series	Model identification				Protection degree	Hardware version	Software version
	Frame size	Rated current	Nº of phases	Rated voltage			
CFW100	A	01P6	S	2	20	---	---
CFW100	Check table below						
	20 = IP20						
	Blank = standard Hx = special hardware						
	Blank = standard Sx = special software						

Frame size	Output current	Input	Power supply voltage	Protection degree
A	01P6 = 1.6 A	S = single-phase power supply	2 = 200...240 V	20 = IP20
B	02P6 = 2.6 A			
C	04P2 = 4.2 A			

Drive Ratings

The correct way to select a VSD is matching its output current to the motor rated current. However, the table below presents the expected motor power for each VSD model. Use the motor power ratings below only as a guide. Motor rated currents may vary with speed and manufacturer. IEC motor powers are based on WEG 4-pole motors, NEMA motors powers are based on NEC table 430-150.

Motor Voltages Between 220 V and 230 V

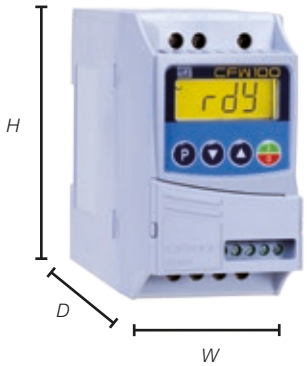
Power supply		Model	Rated current	IEC		NEMA
				50 Hz 220 V	60 Hz 220 V	60 Hz 230 V
			A	kW	HP	HP
200-240 V	1Ø	CFW100 A 01P6 S2	1.6	0.18	0.25	0.33
		CFW100 A 02P6 S2	2.6	0.37	0.5	0.5
		CFW100 A 04P2 S2	4.2	0.75	1	1

Dimensions and Weights

IP20

Frame size	H mm (in)	W mm (in)	D mm (in)	Weight kg (lb)
A	100 (3.94)	55 (2.17)	129 (5.08)	0.48 (1.05)
B	117 (4.60)	56 (2.17)	130 (5.08)	0.57 (1.25)
C	125.6 (4.94)	57 (2.17)	131 (5.08)	0.61 (1.34)
With RFI filter[1)]	160 (6.30)	58 (2.17)	170 (6.69)	+0.40 (0.88)

Note: 1) Same values for all sizes.



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Accessories

The CFW100 VSD was developed to meet the hardware configurations required by a wide range of applications. The table below presents the available options:

Option	Type[1]	Description	Accessory model	Available
RFI filter	Accessory	Used to reduce the disturbance conducted from the CFW100 to the power supply, in the high frequency band (>150 kHz), according to standards 61800-3 and EM 55011	External filter	User installation
I/Os expansion modules (plug-in)[3]		Used to expand the I/O points according to the necessity of the application/machine	CFW100-IOAR CFW100-IOA CFW100-IOD	
Communication module (plug-in)[2]		Used for the communication of the CFW100 with the main networks of the market (Fieldbus)	CFW100-CUSB (USB) CFW100-CRS485 (RS485) CFW100-CCAN (CANopen and DeviceNet)	
		Used for communication of CFW100 with a computer or to control the CFW100 remotely	CFW100-CUSB (USB) CFW100-CBLT (Bluetooth®) CFW100-IOADR (Infrared)	
Flash memory module (plug-in)[2]		Used to download the programming of a CFW100 to others without having to power them up	CFW100-MMF	
Remote HMI		Used to transfer the application control to the panel door or machine console. Maximum distance of 3 m without external supply[3]. Protection degree: IP54	CFW100-KHMIR	

Notes: 1) Accessory = hardware resource requested as a separated item.
2) The CFW100 allows installation of one plug-in module per unit.
3) For more than 3 meters, please use RS485 connection with external power supply.

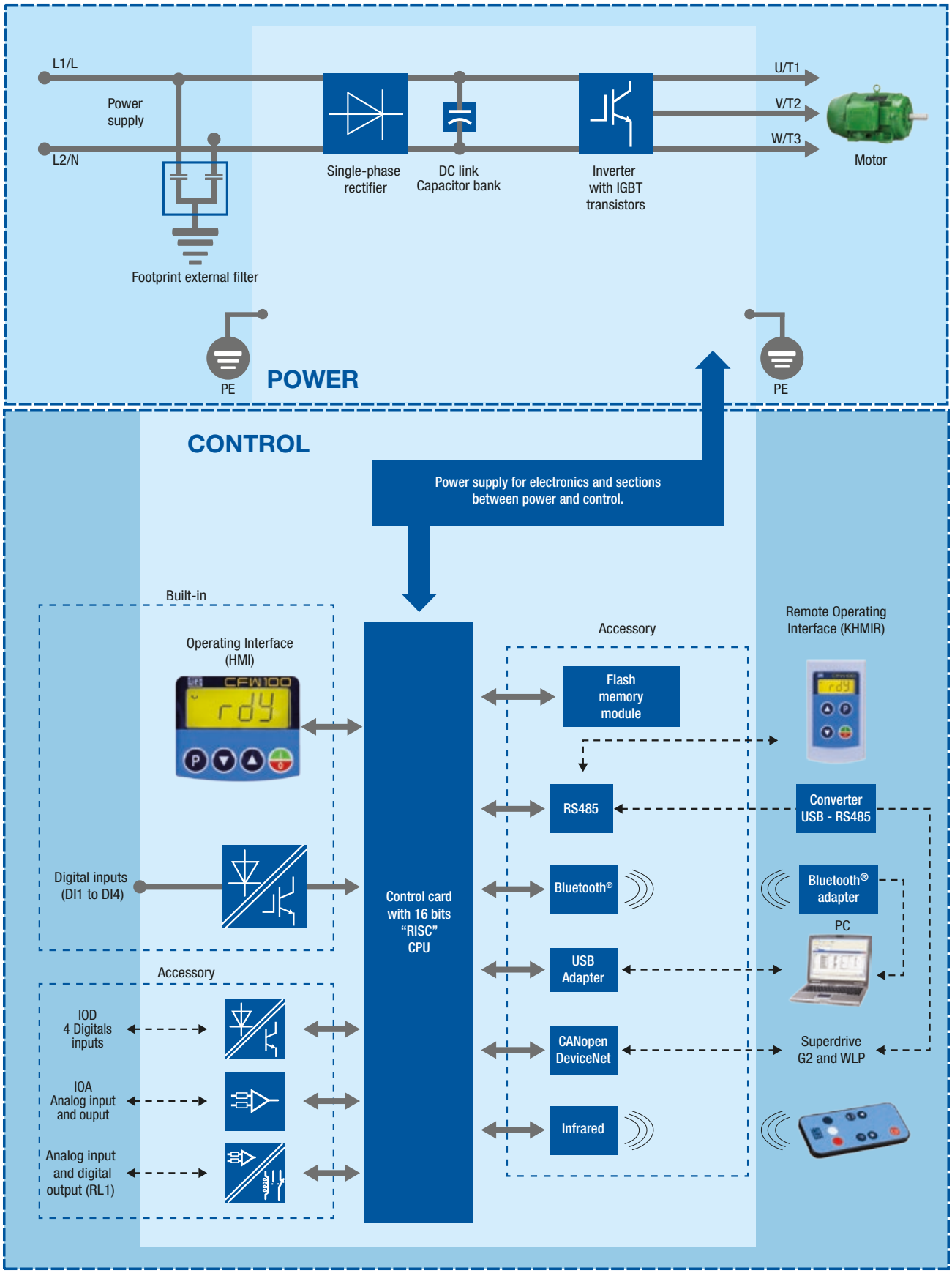
Plug-In Modules I/Os

Plug-in module	Options									
	Inputs		Output		USB	Bluetooth®	Infrared	Fieldbus communication		
	Analog	Digital[1]	Analog	Digital relay				RS485	CANopen	DeviceNet
CFW100-IOAR	1	4	-	1	-	-	-	-	-	-
CFW100-IOA	1	4	1	-	-	-	-	-	-	-
CFW100-IOD	-	8	-	-	-	-	-	-	-	-
CFW100-CUSB	-	4	-	-	1	-	-	-	-	-
CFW100-CBLT	-	4	-	-	-	1	-	-	-	-
CFW100-IOADR	1	4	-	3	-	-	1	-	-	-
CFW100-CRS485	-	4	-	-	-	-	-	1	-	-
CFW100-CCAN	-	4	-	-	-	-	-	-	1	1

Notes: 1) 4 digital inputs are available in the standard product, even without plug-in module.

Step by Step

Block Diagram



Technical Data

Mains supply	Voltage and power range	1-phase, 200-240 V ac (+10% - 15%)
		0.18 to 0.75 kW (0.5 to 1 HP)
	Supply frequency	50/60 Hz (48 Hz a 62 Hz)
Motor connection	Voltage	3-phase, 0-100% of supply voltage
	Output frequency	0 to 300 Hz, regulation of 0.1 Hz
	Displacement power factor	>0.97
	Overload capacity	1.5 x In (drive) for 1 minute every 6 minutes
	Switching frequency	Default 5 kHz (selectable 2.5 to 15 kHz)
	Acceleration time	0.1 to 999s
	Deceleration time	0.1 to 999s
Environment	Temperature	50 °C
		2% current derating for each °C above the specifc operating temperature, limited to 60 °C
	Air relative humidity	5% to 90 % non-condensing
	Altitude	Up to 1,000 m
		1,000 m to 4,000 m - 1% current derating for each 100 m above 1,000 m
	Protection degree	IP20
Performance	V/F control	Speed regulation: 1% of the rated speed (with slip compensation)
		Speed variation range: 1:20
	Vector control (VVW)	Speed regulation: 1% of the rated speed
		Speed variation range: 1:30
Safety	Protection	Overcurrent/phase-phase short circuit in the output
		Overcurrent/phase-ground short circuit in the output
		Under/overvoltage
		Overtemperature in the heatsink
		Overload in the motor
		Overload in the power module (IGBTs)
		External alarm / fault
		Setting error
Communication protocol	Modbus-RTU	Plug-in module for RS485
	CANopen	Plug-in module CFW100-CCAN
	DeviceNet	Plug-in module CFW100-CCAN
Connectivity	USB	Plug-in module CFW100 - CUSB
	Bluetooth®	Plug-in module CFW100 - CBLT
	Infrared	Plug-in module CFW100 - IOADR

Standards

Safety standards	UL 508C	Power conversion equipment.
	UL 840	Insulation coordination including clearances and creepage distances for electrical equipment.
	EN 61800-5-1	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. *Note: For the machine to comply with this standard, the manufacturer of the machine is responsible for installing an emergency stop device and equipment to disconnect the input power supply.*
	EN 60146 (IEC 146)	Semiconductor converters.
	EN 61800-2	Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifcations for low voltage adjustable frequency AC power drive systems.
Electromagnetic compatibility (EMC) standards (with external filter)	EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specifc test methods.
	EN 55011	Limits and methods of measurement of radio disturbance characteristics of industrial, scientifc and medical (ISM) radio-frequency equipment.
	CISPR 11	Industrial, scientifc 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 feld 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 construction standards	EN 60529	Degrees of protection provided by enclosures (IP code).
	UL 50	Enclosures for electrical equipment.

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