CFW700
General Purpose Drive

Variable Speed Drives

CFW700 - General Purpose Drive

The CFW700 was developed for controlling squirrel cage three-phase induction motors, it is a general purpose drive that gives customers the fexibility needed for the control of applications ranging from simple speed control to more demanding ones as torque control. Designed for exclusively industrial or professional use the CFW700 features Sensorless and Closed Loop control as standard utilising the internal micro PLC, the SoftPLC means that the CFW700 can be used for more sophisticated applications like overhead cranes, PCP (Progressive Cavity Pump), pump jack and many more.

Own Technology

Vectrue Technology® - WEG Variable Speed Drive Control Technology

- Four control modes in one drive, linear and adjustable V/F, VVW (Voltage Vector WEG), sensorless vector and closed loop vector (encoder interface factory built)
- Sensorless vector control allows for high torque and quick response in open loop, even at low speeds
- Self-tuning function automatically matches VSD with motor - load when on Sensorless, VVW and closed loop vector mode
- Through adjustable V/F control it is possible to adjust a quadratic V/F curve and that implies energy saving when quadratic torque loads (e.g.: centrifugal pumps and fans) are being driven

Optimal Braking®
WEG Frequency Inverters Braking Technology

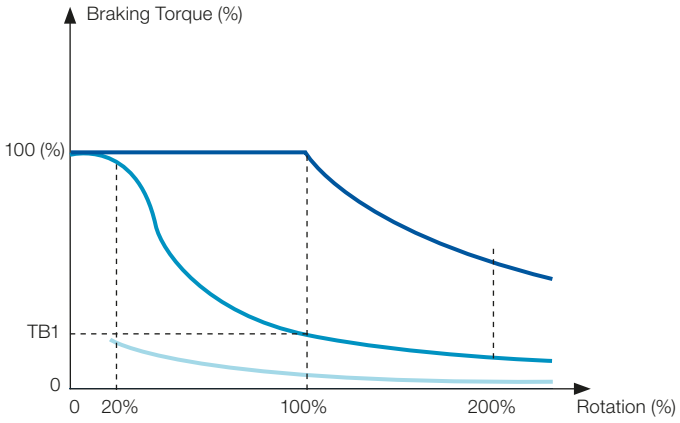
In applications where high inertia and short deceleration times are involved, a large amount of energy is returned from the motor to the VSD.

To handle this energy traditional VSDs have to dissipate it as heat in power resistors, such resistors are usually large and very expensive also the heat dissipation has to be taken into consideration during installation.

As an alternative to the use of braking resistors the CFW700 features a special braking method in vector control mode named Optimal Braking®.

This innovation delivers rated torque with high performance requiring no resistor.

The graph illustrated shows a comparison of the braking torque offered by the different braking methods used.



Typical Braking Torque x Speed Graph for a 10 HP / 7.5 kW motor driven by a CFW700

- Dynamic Braking Torque Curve
- Optimal Braking® Torque Curve
- DC Braking Torque Curve

Optimal Flux® - WEG Technology for the Control of High Efficiency Induction Motors Applied to Constant Torque Load

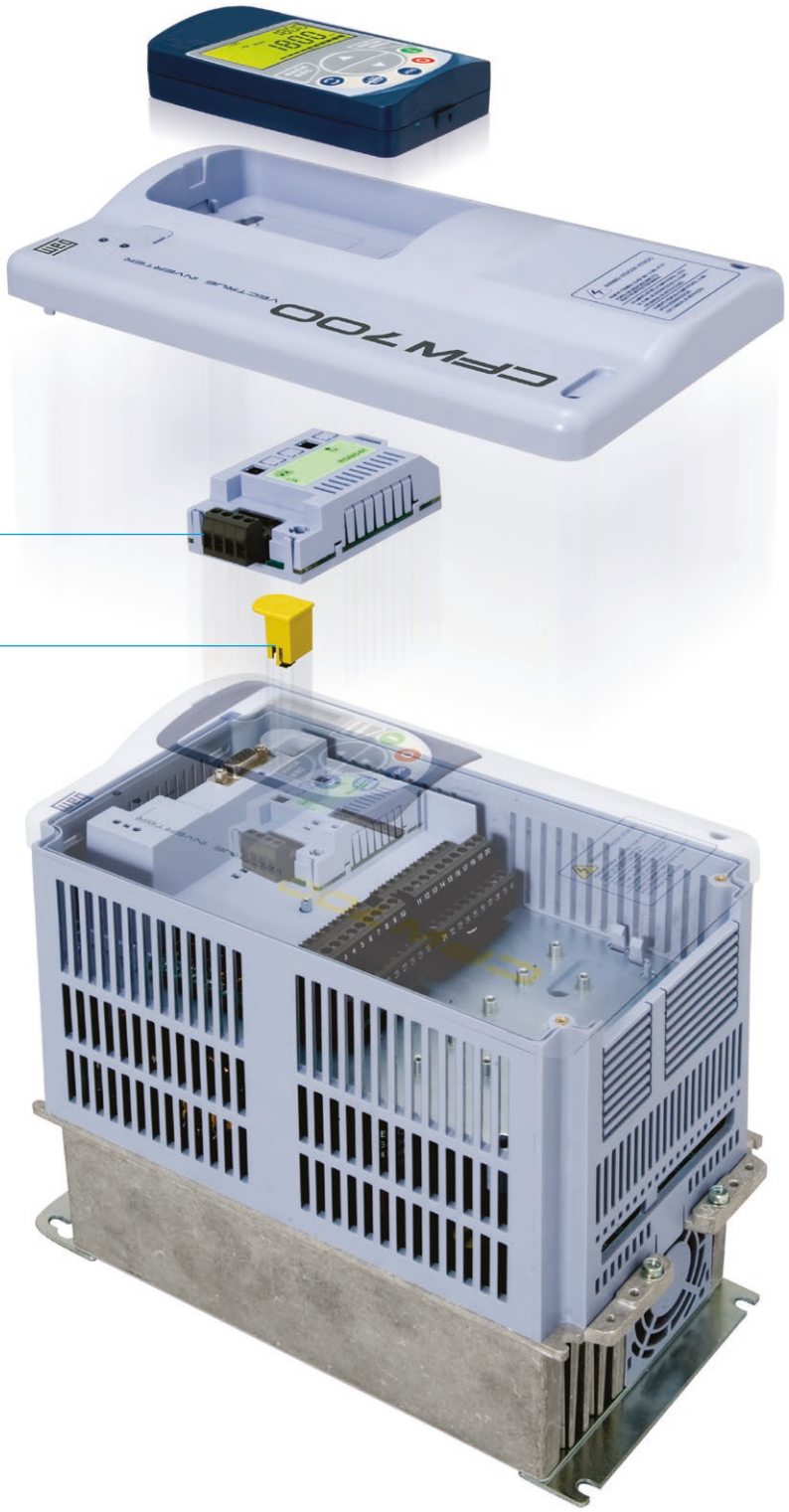
- Rated torque at very low speed discarding the use for forced ventilation or even motor oversizing, thus costs are reduced.
- Better performance results can be achieved with the set motor + VSD, as losses are decreased (tests were conducted based on the set WEG high efficiency MOTOR + WEG VSD).

Simplicity

The new CFW700 was designed based on the Plug & Play technology concept where by plugging in expansion modules hardware and software recognize it automatically. Also this feature allows for easy installation and safe operation with no need for additional configuration.

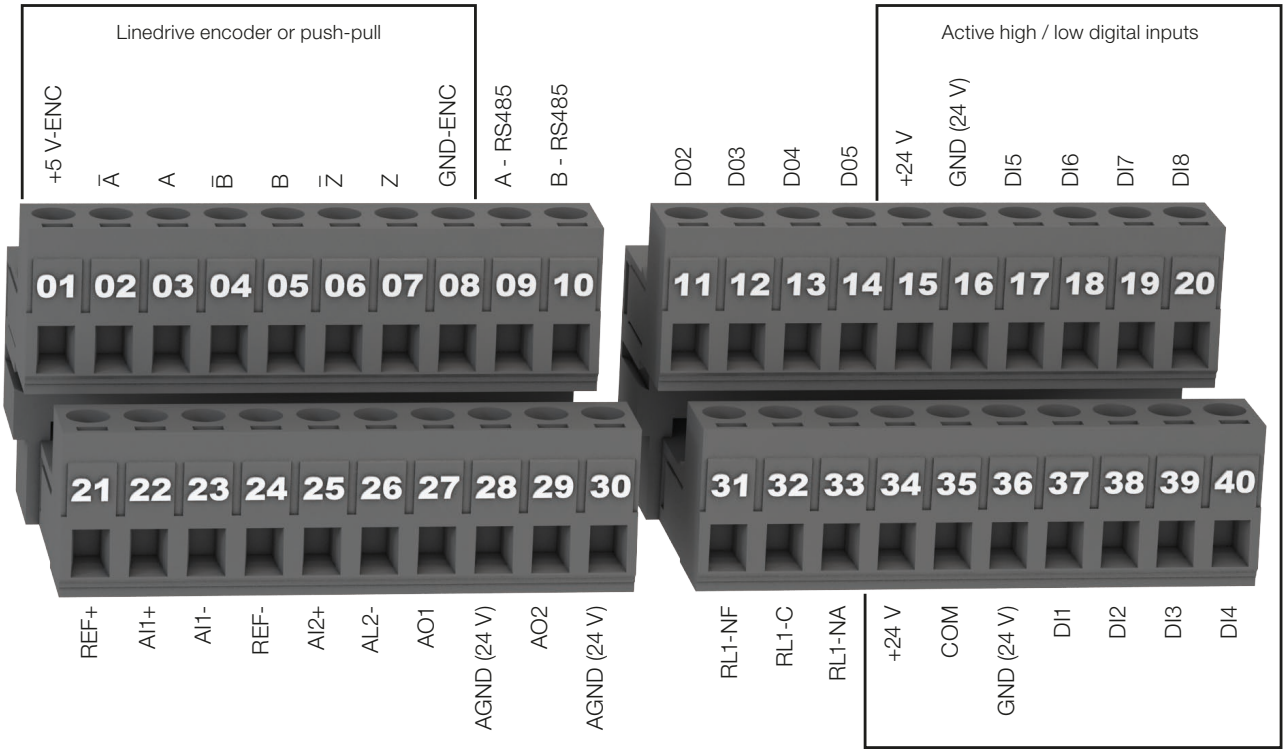
Certifications

- 1.1 to 2.2 kW (1.5 to 3 HP):
  - 200-240 V ac - Single-phase
- 1.1 to 55 kW (1.5 to 75 HP):
  - 220-240 V ac - Three-phase
- 1.5 to 132 kW (2 to 175 HP):
  - 380-480 V ac - Three-phase
- 1.5 to 110 kW (2 to 150 HP):
  - 500-600 V ac - Three-phase



Technical Features

Characteristics Integrated in the Standard Product



Encoder Interface

- For applications requiring closed loop control the encoder module is available at the control terminals
- No need for external power supply for the encoder module (5 V dc)
- 5 V line drive or push pull types can be used

RS485 Port Built-In

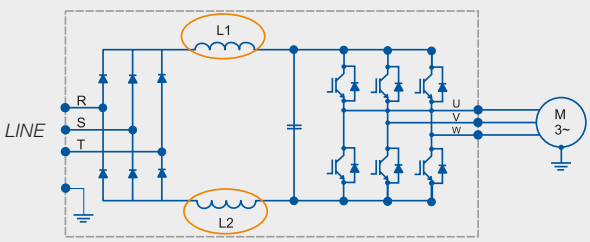
- Modbus-RTU communication protocol ready

I/Os Capability

- 8 digital inputs / 5 digital outputs
- 2 analog inputs / 2 analog outputs

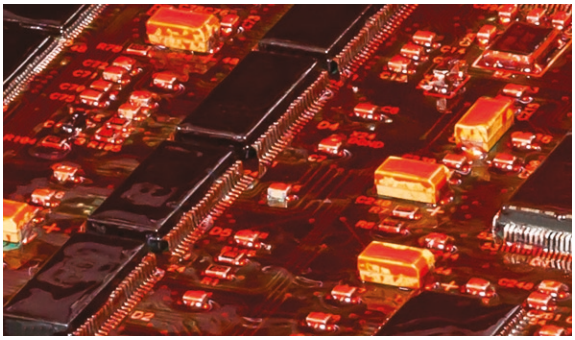
Built-in DC Link Reactor

- Allows the VSD to be installed in any network (no restriction for power supply impedance)
- Typical power factor (PF) for steady condition:
  - 0.94 for three-phase models
  - 0.70 for single-phase and single/three-phase
  - Models fed from single-phase power supply
- Displacement power factor >0.98
- It meets 61000-3-12 standard (limits for harmonic currents)
- No need for an extra line reactor

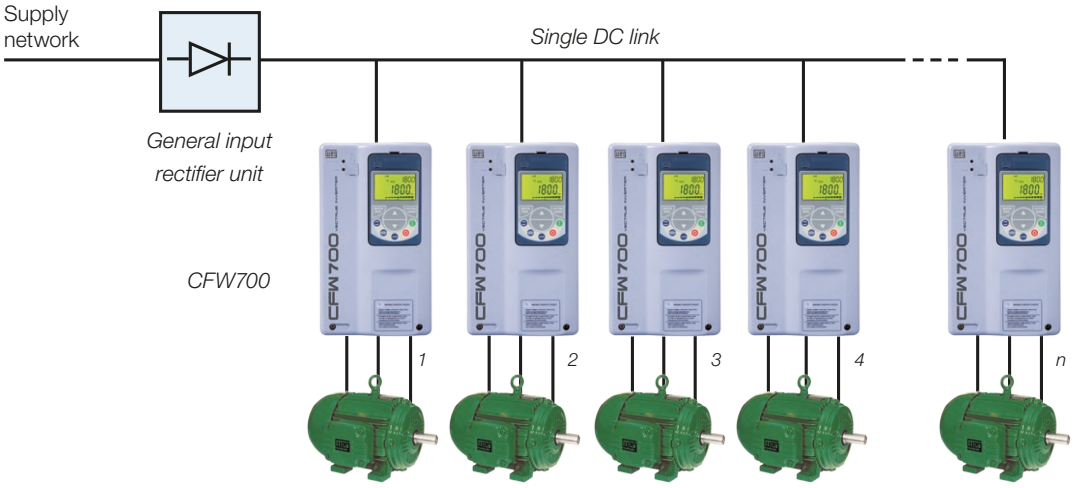


Technical Features

USB Port Built-In
- USB connection in the display ready



Conformal Coating
- Increasing the lifetime, protecting the electronic boards against corrosive atmospheres. Classified as 3C2 according to IEC 60721-3-3



Common DC Bus Connection

In multi motor applications it is possible to supply the CFW700 (AC drive) with DC voltage, this offers extra flexibility and energy savings. By sharing a common DC bus in some applications the energy consumption can be lowered as the power needed to run any of the motors can be drawn from the stored energy at the VSD DC link.

Note: an external pre-charge circuit must be added to each of the VSDs.

Thermal Management
- It is possible to monitor heat sink and inside air temperature thus ensuring protection to critical components e.g. IGBTs and control board
- Fans installed closed to heatsink are turned on and off depending on the temperature of power modules
- Readings of fan operation hours can be analyzed through parameters as well as alarm or fault messages are displayed
- Easy removal of fans makes maintenance and/or replacement a lot faster

Technical Features

Drive Features

- **Multi-Speed:** up to 8 preset speeds can be programmed.
- **PID Regulation:** eliminates the use of an external controller for closed loop control, thus great performance of speed and torque can be achieved.
- **Ride Through:** embedded in the CFW700 control this function prevents the drive from tripping during some power outage. It uses the kinetic energy stored through a forced deceleration imposed to the load by the VSD control algorithm.
- **Speed/Torque Regulation:** open and closed loop (encoder feedback required).
- **Flying Start:** it is able to start smoothly a motor connected to a rotating load regardless of rotation direction.
- **Control Options for DC Bus Regulation:** prevents the drive from tripping when short deceleration time is required, vital for applications with high inertia loads.
- **S ramp:** the smoothness at the starting can be mandatory for process e.g. the beverage industry, by setting up properly this functionality production losses caused by traditional starting methods can be avoided.
- **Three-Wire Start/Stop Control:** no retentive contact can command the drive to start/stop the motor.
- **Electronic Potentiometer:** the drive keeps increasing motor speed as long as the digital input remains closed.
- **Skip Frequency:** for some applications specific frequencies must be avoided in order to protect the machine against resonance effect.
- **Motor Thermal Curve Adjustment:** the possibility for separate adjustment between motor and drive allows for a much more effective protection for overload cycles.
- **Copy Function:** by using the flash memory card MMF-02 parameter settings can be easily stored ensuring integrity and safety in case of replacement of the drive is needed.

Applications

Pumps and Fans

- Precise control of process variables (pressure, flow, temperature, etc.) through a PID regulator superposed to the speed control
- Optimization of power consumption through speed control with an adjustable V/F curve
- Safety and maintenance signaling and alarms of pumps and fans
- Availability of PID regulators to control other process accessories like valves, dumpers, other VSDs, etc.

Compressors

- Optimization of system pressurization control with energy savings and improvement of compressor efficiency
- Reduction of motor startup current minimizing wear and tear of the mechanical system avoiding fees charged by the power supplier company
- Safety and maintenance signaling and alarms available for pressurization system
- Provides startup system control of other compressor units with an increased efficiency of the pressurization system

Pulp & Paper / Wood

- Precise speed and torque control.
- Flexible hardware programming and confguration, making applications where syncronism is required easier
- Can be integrated in a variety of communication protocols commonly used in the industry
- Provided in a compact design the CFW700 series allows for side by side assembly
- Quick and simplified programming
- Highly reliable and robust

Chemical & Petrochemical

- Highly reliable and robust
- Plug & Play system for additional modules, ensuring greater flexibility in adapting to existing system
- Possibility to be integrated in a variety of communication protocols commonly used in the industry

Ironworks and Metallurgy

- Highly precise speed and torque control
- Large overload capacity (models sized in HD)
- Flexible hardware programming and configuration
- Possibility to be integrated in a variety of communication protocols mainly used in the industry

Keypad

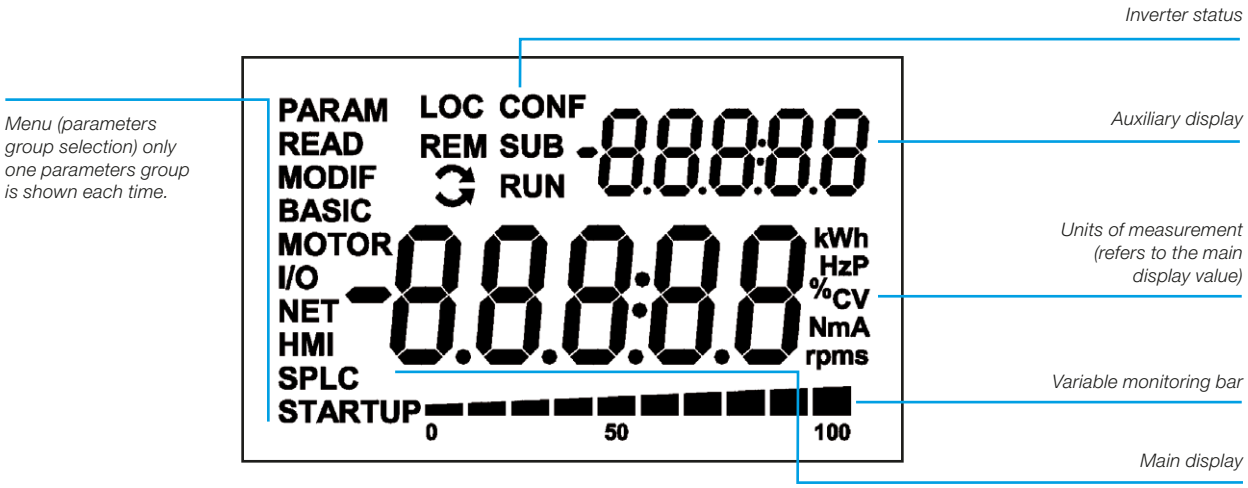
The CFW700 comes equipped with a LCD display capable of providing readings for programming, guided start-up and troubleshooting.
This customized numeric LCD display features the following functionalities:

- LCD display with backlight
- Allows adjust programming through menu separate in folders
- Remote mounting for panel assembly solutions (it can be placed 30 m distant from the drive)

Remote Keypad

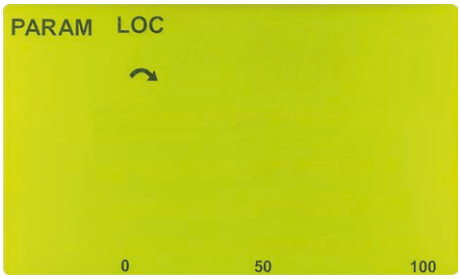
The keypad can be remote assembled by using this configuration, degree of protection IP56 can be achieved.

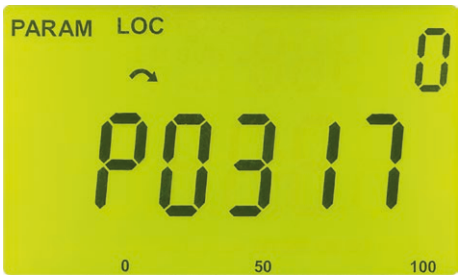
Allows for Showing 3 Variables at Once Through Three Viewing Modes

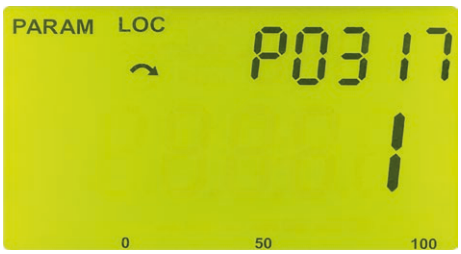


Viewing Modes

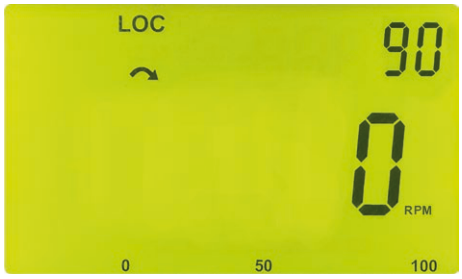
Programming Mode







Monitoring Mode



Accessories

Blank Cover - HMID - 01 [1)]
Used when there is no need for keypad.

Remote Keypad Frame - RHMIF-02
Used when remote keypad is needed, it can be installed at the panel door as well as machine console. IP56 degree of protection.

CAN-01 (CANopen and DeviceNet)
The possibility to connect the CFW700 into a CANopen or DeviceNet network.

Flash Memory Module MMF - 02
This module allows for backup of VSD parameters ensuring the programming to be safely stored.
Also it makes possible the programming to be passed on to other VSDs on the same plant avoiding repetitive programming. The SoftPLC applicative can also be store into this memory.

Profibus-DP-01 (Profibus-DP-V1)
The possibility to connect the CFW700 into a Profibus-DP-01 network.

1) These options must be provided already installed in the CFW700 (please see coding on page 21).

Accessories

Kit for Shielded Cable

PCSA-01	Shielded cable Kit frame size A
PCSB-01	Shielded cable Kit frame size B
PCSC-01	Shielded cable Kit frame size C

Notes: The shielded cable kit for frame Sizes D and E is included in the standard version.
For models with RFI filter fitted in shielded cable kit comes as standard.

Enclosures

Standards	Ratings	Frame sizes				
		A	B	C	D	E
IEC	IP20	x	x	x	x	x
	IP21	KIP21A-01	KIP21B-01	KIP21C-01	KIP21D-01	-
NEMA	Type 1	KN1A-02	KN1B-02	KN1C-02	x	KN1E-01 / KN1E-02

Notes: (x) Standard.
(-) NA.

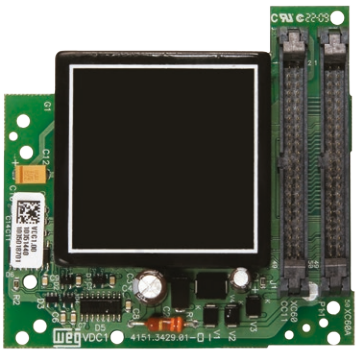
Standard	Accessory	Composition
NEMA Type 1	KN1A-02	Conduit kit frame size A
	KN1B-02	Conduit kit frame size B
	KN1C-02	Conduit kit frame size C
	KN1E-01	Top cover size E models 105, 142 and all 600 V frame size E
	KN1E-02	Top Cover + Conduit kit size E models 180 and 211
IEC	KIP21A-01	Top cover kit frame size A
	KIP21B-01	Top cover kit frame size B
	KIP21C-01	Top cover kit frame size C
	KIP21D-01	Top cover kit frame size D

Note: in the KN1X-01 Conduit kit (frame sizes A,B and C) power cable shielding is also provided.

Optionals (Factory Built)

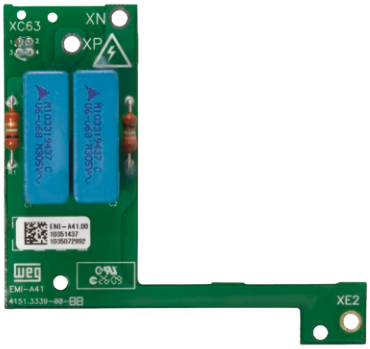
External Control Power Supply 24 V dc

Used mainly for communication networks allowing data exchange even when there is no power at the VSD input (this module must be fed from a power supply different from the one connected to the VSD).



RFI Suppressor Filter (for the VSD to be in Accordance with EN 61800-3 and EN 55011)

When properly installed the CFW700 meet requirements of the electromagnetic compatibility directive - EMC Directive 2004/108/EC.
For models ranging from size A to D, the RFI filter is optional and for size E it is included.



Safety Stop (in Accordance with EN 61800-5-2, EN ISO 13849-1, IEC 62061, IEC 61508 Parts 1-7, EN 50178, IEC 60204-1, Cat. 3/pL d acc. and SIL CL2 acc.)

With this option when the safety circuit is tripped by external causes the IGBT firing circuit is deactivated, thus the power drive system will not provide energy to the motor which can generate torque.

SoftPLC

The new CFW700 incorporates PLC functionalities by means of a factory built micro PLC named SoftPLC. This extra tool gives more flexibility to the product as well as allowing the user to develop his own application through a USB or RS485 ports port available at the control terminal. The SoftPLC features the following characteristics:

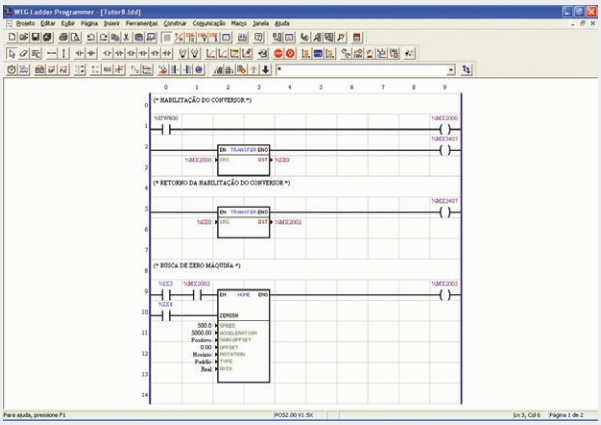
- Access to CFW700 I/Os and parameters
- PLC mathematics and control blocks
- Allows user password
- User can save software in the memory flash card to be downloaded into other VSDs

Free of Charge Software

WLP (WEG Ladder Programmer)

Software designed for development of user application through the micro PLC embedded in the CFW700 hardware.
The WLP tool features the following capabilities:

- Ladder programming
- PLC, math and control blocks are available
- Access to all CFW700 parameters
- On-line monitoring as well as help topics
- RS485 connection with the drive
- 49 user parameters can be individually accessed allowing for creation of a variety of applications



Software SuperDrive G2

It is a windows-based software designed for the programming, commanding and monitoring of WEG VSDs.
The following features the user can benefit from:

- Automatic CFW700 recognition
- CFW700 parameters monitoring
- Off-line/On-line change of parameters
- Reports can be created
- Backup of parameters
- Start/Stop command as well as speed reference can be sent to the drive

Drive Ratings

Normal Duty (ND) Cycle:
- 110% for 60 seconds every 10 minutes
- 150% for 3 seconds every 10 minutes

Heavy Duty (HD) Cycle:
- 150% for 60 seconds every 10 minutes
- 200% for 3 seconds every 10 minutes

Sizing a VFD:

The correct way to size a frequency inverter is by matching its output current with the motor rated current.
However, tables below present the expected motor power for each VSD model.
The purpose of the table below is for guidance as motor rated current may vary with number of poles and manufacturer.

Note: motor power stated on this table is based on IEC standard for IV poles motor.

Motor Voltages 220 V and 230 V

Power supply		Model	Normal Duty (ND)	IEC 50 Hz 220 V 230 V	NEMA 60 Hz 230 V	Heavy Duty (HD)	IEC 50 Hz 220 V 230 V	NEMA 60 Hz 230 V
			A	kW	HP	A	kW	HP
200-240 V	1Ø	CFW700A06P0S2	6	1.1	1.5	5	1.1	1
		CFW700A07P0S2	7	1.5	2	7	1.5	2
		CFW700A10P0S2	10	2.2	3	10	2.2	3
	1/3Ø	CFW700A06P0B2	6	1.1	1.5	5	1.1	1
		CFW700A07P0B2	7	1.5	2	7	1.5	2
	3Ø	CFW700A07P0T2	7	1.5	2	5.5	1.1	1
		CFW700A10P0T2	10	2.2	3	8	1.5	2
		CFW700A13P0T2	13	3	3	11	2.2	3
		CFW700A16P0T2	16	4	5	13	3	3
		CFW700B24P0T2	24	5.5	7.5	20	5.5	5
		CFW700B28P0T2	28	7.5	10	24	5.5	7.5
		CFW700B33P0T2	33.5	9.2	10	28	7.5	10
		CFW700C45P0T2	45	11	15	36	9.2	10
		CFW700C54P0T2	54	15	20	45	11	15
		CFW700C70P0T2	70	18.5	25	56	15	20
		CFW700D86P0T2	86	22	30	70	18.5	25
		CFW700D0105T2	105	30	40	86	22	30
220-230 V	3Ø	CFW700E0142T2	142	37	50	115	30	40
		CFW700E0180T2	180	55	60	142	37	50
		CFW700E0211T2	211	55	75	180	55	60

Motor Voltages 380 V and 460 V

Power supply		Model	Normal Duty (ND)	IEC 50 Hz 380 V 415 V	IEC 60 Hz 440 V 460 V	NEMA 60 Hz 460 V	Heavy Duty (HD)	IEC 50 Hz 380 V 415 V	IEC 60 Hz 440 V 460 V	NEMA 60 Hz 460 V
			A	kW	HP	HP	A	kW	HP	HP
380-480 V	3Ø	CFW700A03P6T4	3.6	1.5	2	2	3.6	1.5	2	2
		CFW700A05P0T4	5	2.2	3	3	5	2.2	3	3
		CFW700A07P0T4	7	3	4	3	5.5	2.2	3	3
		CFW700A10P0T4	10	4	7.5	5	10	4	7.5	5
		CFW700A13P5T4	13.5	5.5	10	7.5	11	4	7.5	7.5
		CFW700B17P0T4	17	7.5	12.5	10	13.5	5.5	10	7.5
		CFW700B24P0T4	24	11	15	15	19	9.2	12.5	10
		CFW700B31P0T4	31	15	20	20	25	11	15	15
		CFW700C38P0T4	38	18.5	30	25	33	15	25	20
		CFW700C45P0T4	45	22	30	30	38	18.5	30	25
		CFW700C58P5T4	58.5	30	40	40	47	22	30	30
		CFW700D70P5T4	70.5	37	50	50	61	30	50	40
		CFW700D88P0T4	88	45	75	60	73	37	60	50
		CFW700E0105T4	105	55	75	75	88	45	75	60
		CFW700E0142T4	142	75	100	100	115	55	75	75
		CFW700E0180T4	180	90	150	150	142	75	100	100
		CFW700E0211T4	211	110	175	150	180	90	150	150

Motor Voltages 500 V and 600 V

Power supply		Model	Normal Duty (ND)	IEC 50 Hz 525 V 575 V	NEMA 60 Hz 575 V	Heavy Duty (HD)	IEC 50 Hz 525 V 575 V	NEMA 60 Hz 575 V
			A	kW	HP	A	kW	HP
500-600 V	3Ø	CFW700B02P9T5	2.9	1.5	2	2.7	1.5	2
		CFW700B04P2T5	4.2	2.2	3	3.8	2.2	2
		CFW700B07P0T5	7	4	5	6.5	4	5
		CFW700B10P0T5	10	5.5	7.5	9	5.5	7.5
		CFW700B12P0T5	12	7.5	10	10	5.5	7.5
		CFW700B17P0T5	17	11	15	17	11	15
		CFW700D22P0T5	22	15	20	19	11	15
		CFW700D27P0T5	27	18.5	25	22	15	20
		CFW700D32P0T5	32	22	30	27	18.5	25
		CFW700D44P0T5	44	30	40	36	22	30
		CFW700E53P0T5	53	37	50	44	30	40
		CFW700E63P0T5	63	45	60	53	37	50
		CFW700E80P0T5	80	55	75	66	45	60
		CFW700E0107T5	107	75	100	90	55	75
		CFW700E0125T5	125	90	125	107	75	100
		CFW700E0150T5	150	110	150	122	90	100

Dimension, Weight and Temperature

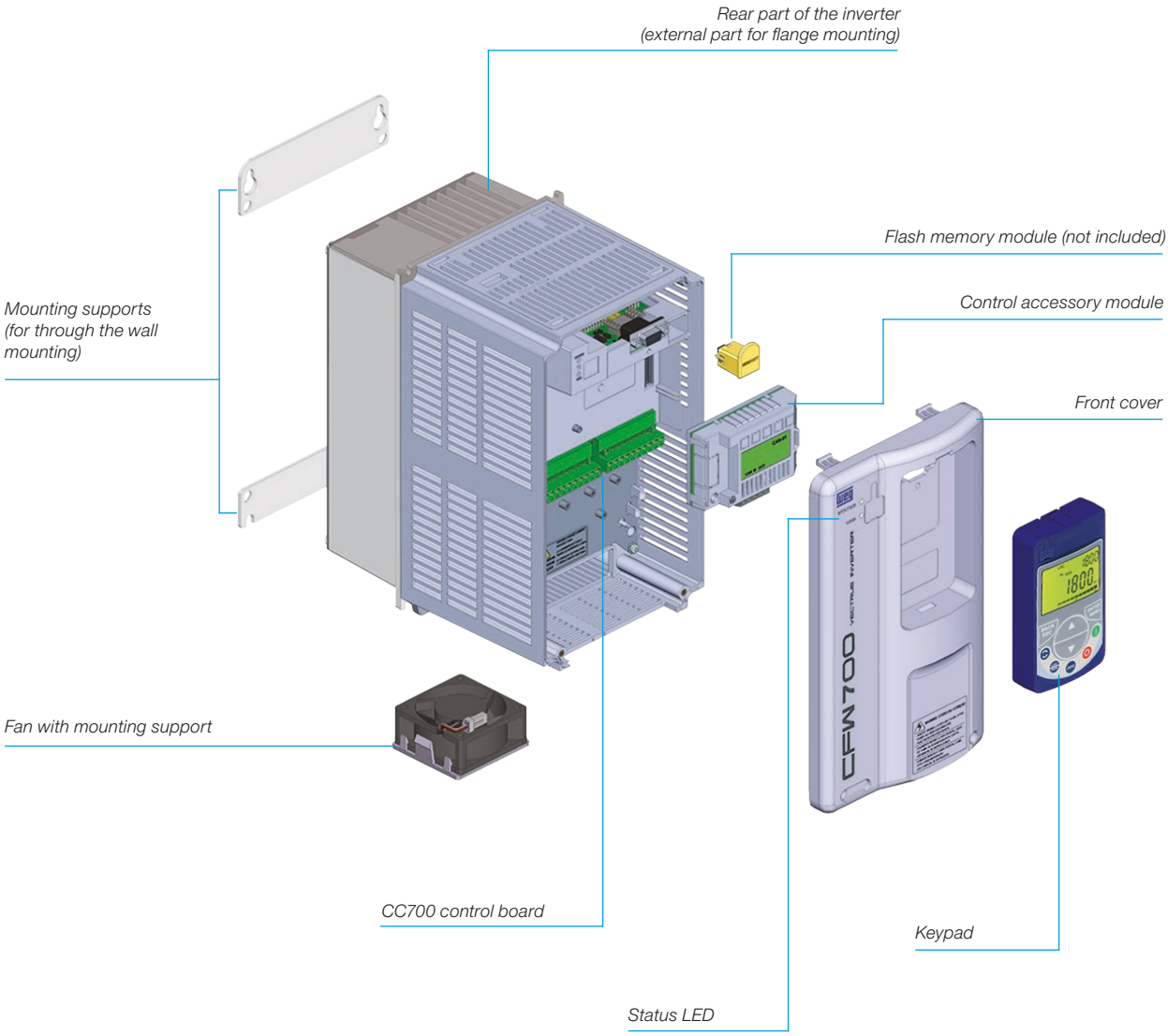
Model	Frame size	NEMA1 Dimension mm (in) H	W	D	IP20 / IP21 Dimension mm (in) H	W	D	IP20 Maximum surrounding air temperature with no derating °C (°F) _ ND/HD	NEMA1 / IP21 Maximum surrounding air temperature with no derating °C (°F) _ ND/HD	Weight kg (lb)	Braking IGBT
CFW700A06P0S2	A	305 (12.02)	145 (5.71)	227 (8.94)	247 (9.73)	145 (5.71)	227 (8.94)	50 (122)_ND/HD	50 (122)_ND/HD	6.3 (13.9)	Standard
CFW700A07P0S2								50 (122)_ND/HD	45 (113)_ND/HD		
CFW700A10P0S2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700A06P0B2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700A07P0B2								50 (122)_ND/HD	45 (113)_ND/HD		
CFW700A07P0T2								50 (122)_ND/HD	45 (113)_ND/HD		
CFW700A10P0T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700A13P0T2								45 (113)_ND 50 (122)_HD	45 (113)_ND 50 (122)_HD		
CFW700A16P0T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B24P0T2	B	351 (13.82)	190 (7.46)	227 (8.94)	293 (11.53)	190 (7.46)	227 (8.94)	45 (113)_ND/HD	40 (104)_ND/HD	10.4 (22.9)	
CFW700B28P0T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B33P0T2								50 (122)_ND/HD	45 (113)_ND 50 (122)_HD		
CFW700C45P0T2	C	448.1 (17.64)	220 (8.67)	293 (11.52)	378 (14.88)	220 (8.67)	293 (11.52)	50 (122)_ND/HD	50 (122)_ND/HD	20.5 (45.2)	
CFW700C54P0T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700C70P0T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700D86P0T2	D	550 (21.63)	300 (11.81)	305 (12.00)	504 (19.84)	300 (11.81)	305 (12.00)	50 (122)_ND/HD	50 (122)_ND/HD	32.6 (71.8)	
CFW700D0105T2								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700E0142T2	E	735 (28.94)	335 (13.2)	358 (14.1)	620 (24.4)	335 (13.2)	358 (14.1)	45 (113)_ND/HD	45 (113)_ND/HD	650 (143.3)	Optional
CFW700E0180T2		828.9 (32.63)						45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0211T2								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700A03P6T4	A	305 (12.02)	145 (5.71)	227 (8.94)	247 (9.73)	145 (5.71)	227 (8.94)	50 (122)_ND/HD	50 (122)_ND/HD	6.3 (13.9)	Standard
CFW700A05P0T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700A07P0T4								45 (113)_ND 50 (122)_HD	40 (104)_ND 50 (122)_HD		
CFW700A10P0T4								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700A13P5T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B17P0T4	B	351 (13.82)	190 (7.46)	227 (8.94)	293 (11.53)	190 (7.46)	227 (8.94)	50 (122)_ND/HD	50 (122)_ND/HD	10.4 (22.9)	
CFW700B24P0T4								50 (122)_ND/HD	40 (104)_ND 45 (122)_HD		
CFW700B31P0T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700C38P0T4	C	448.1 (17.64)	220 (8.67)	293 (11.52)	378 (14.88)	220 (8.67)	293 (11.52)	50 (122)_ND/HD	50 (122)_ND/HD	20.5 (45.2)	
CFW700C45P0T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700C58P5T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700D70P5T4	D	550 (21.63)	300 (11.81)	305 (12.00)	504 (19.84)	300 (11.81)	305 (12.00)	50 (122)_ND/HD	50 (122)_ND/HD	32.6 (71.8)	
CFW700D88P0T4								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700E0105T4	E	735 (28.94)	335 (13.2)	358 (14.1)	620 (24.4)	335 (13.2)	358 (14.1)	45 (113)_ND/HD	45 (113)_ND/HD	65.0 (143.3)	Optional
CFW700E0142T4								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0180T4		828.9 (32.63)						45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0211T4								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700B02P9T5	B	351 (13.82)	190 (7.46)	227 (8.94)	293 (11.53)	190 (7.46)	227 (8.94)	50 (122)_ND/HD	50 (122)_ND/HD	10.4 (22.9)	Standard
CFW700B04P2T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B07P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B10P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B12P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700B17P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700D22P0T5	D	550 (21.63)	300 (11.81)	305 (12.00)	504 (19.84)	300 (11.81)	305 (12.00)	50 (122)_ND/HD	50 (122)_ND/HD	32.6 (71.8)	Optional
CFW700D27P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700D32P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700D44P0T5								50 (122)_ND/HD	50 (122)_ND/HD		
CFW700E53P0T5	E	735 (28.94)	335 (13.2)	358 (14.1)	675 (26.57)	335 (13.2)	358 (14.1)	45 (113)_ND/HD	45 (113)_ND/HD	65.0 (143.3)	
CFW700E63P0T5								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E80P0T5								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0107T5								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0125T5								45 (113)_ND/HD	45 (113)_ND/HD		
CFW700E0150T5								45 (113)_ND/HD	45 (113)_ND/HD		

Note: weight data is for the VSD as IP20 enclosure, if IP21 and NEMA1 kits are being added the total weight will change. Consult the user manual for additional information.

Technical Features

Main Parts

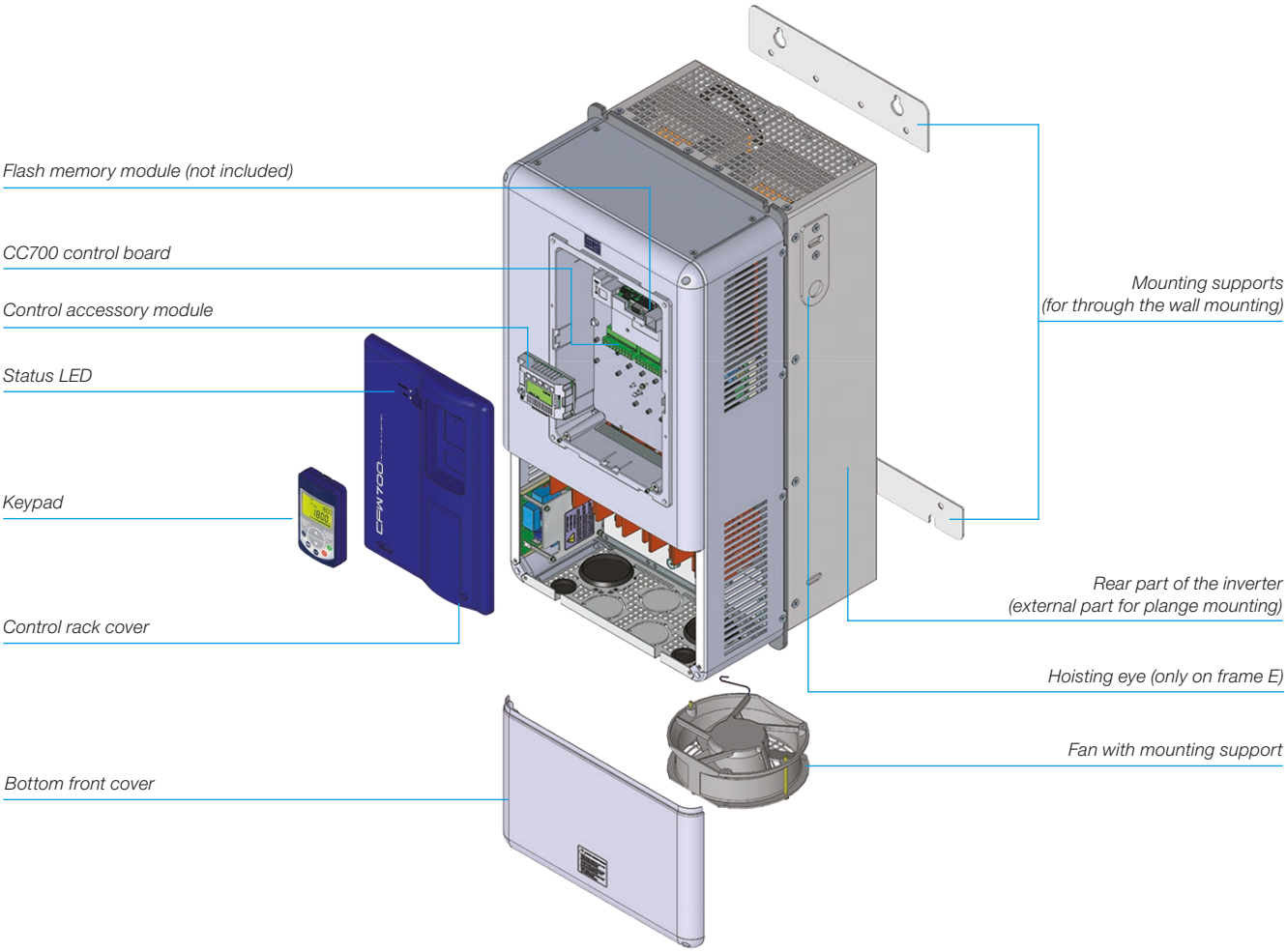
Frames A, B and C



Technical Features

Main Parts

Frames D and E



Mounting Considerations

Standard Installation

Innovative design allows the CFW700 to be assembled in three different ways.

Frame size	Minimum mounting clearance with top cover fitted in			
	A mm (in)	B mm (in)	C mm (in)	D mm (in)
A	25 (0.98)	25 (0.98)	10 (0.39)	30 (1.18)
B	40 (1.57)	45 (1.77)	10 (0.39)	30 (1.18)
C	110 (4.33)	130 (5.12)	10 (0.39)	30 (1.18)
D	110 (4.33)	130 (5.12)	10 (0.39)	30 (1.18)
E	100 (3.94)	250 (9.84)	20 (0.78)	80 (3.15)

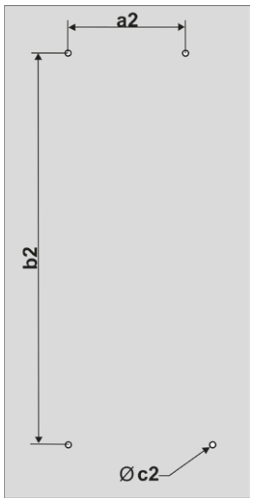
Side by Side Installation

The possibility for installing CFW700 series with no space in between allows for panel space saving.

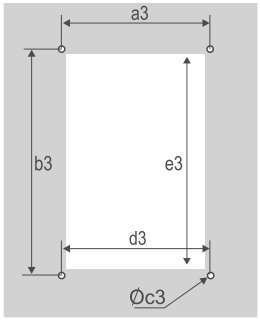
Note: for side by side assembly option check user manual for further operating temperature details.

Mounting Considerations / Panel Assembly

Surface Installation

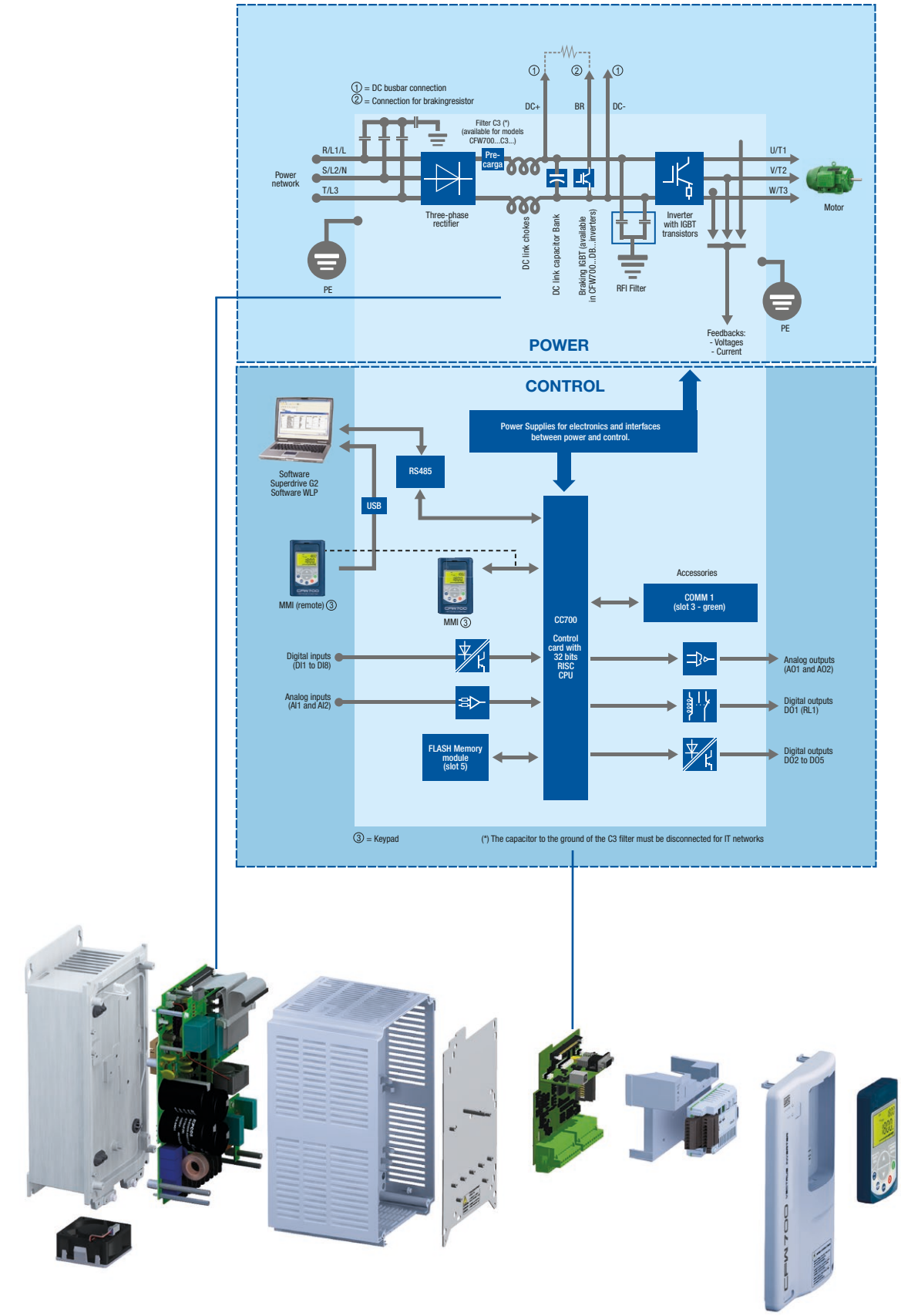


Flange Mounting (IP54 Rated When Mounting the Heatsink Outside the Enclosure)



Frame size	a2 mm (in)	b2 mm (in)	c2 (M)	a3 mm (in)	b3 mm (in)	c3 (M)	d3 mm (in)	e3 mm (in)
A	115 (4.53)	250 (9.85)	M5	130 (5.12)	240 (9.45)	M5	135 (5.32)	225 (8.86)
B	150 (5.91)	300 (11.82)	M5	175 (6.89)	285 (11.23)	M5	179 (7.05)	271 (10.65)
C	150 (5.91)	375 (14.77)	M6	195 (7.68)	365 (14.38)	M6	205 (8.08)	345 (13.59)
D	200 (7.88)	525 (20.67)	M8	275 (10.83)	517 (20.36)	M8	285 (11.23)	485 (19.10)
E	200 (7.8)	650 (25.6)	M8	275 (10.8)	635 (25)	M8	315 (12.40)	615 (24.21)

Technical Features



Notes: 1) Diode type rectifier bridge;
2) Standard for frame sizes A to D;
3) RFI filter factory built for frame size E.

Coding

Product and series	Model identification				Braking	Degree of protection	Conducted emission level [1]	Safety stop [2]	External power supply for control
	Frame size	Rated current	No. of phases	Rated voltage					
CFW700	A	03P6	T	2 / 4 / 5	NB	20	C3	Y1	W1
CFW700	Check table below								
	NB = braking IGBT not available DB = braking IGBT available								
	20 = IP20 21 = IP21 (not available for frame size E) N1 = NEMA1 enclosure *Note: check table enclosures at chapter Accessories.*								
	Blank = with no RFI filter C3 = according to category 3 of IEC 61800-3 standard								
	Blank = with no STO function Y1 = with STO function according to ISO 13849-1, category 3								
	Blank = with no external power supply board W1 = control circuit is supplied through an external 24 V power supply								

Notes: 1) Frame size E comes equipped with RFI filter as standard.
2) This option is not available for models frame size A with the option for NEMA1.

Frame sizes	Output current (ND)	Input	Power supply voltage	Braking	Degree of protection	Conducted emission level
A	06P0 = 6.0 A 07P0 = 7.0 A	B = single/three-phase power supply	2 = 200...240 V	DB	20, 21 or N1	Blank
A	06P0 = 6.0 A 07P0 = 7.0 A	S = single-phase power supply	2 = 200...240 V	DB	20, 21 or N1	C3
	10P0 = 10 A					Blank or C3
A	07P0 = 7.0 A 10P0 = 10 A 13P0 = 13 A 16P0 = 16 A	S = three-phase power supply	2 = 200...240 V	DB	20, 21 or N1	Blank or C3
B	24P0 = 24 A 28P0 = 28 A 33P5 = 33.5 A					
C	45P0 = 45 A 54P0 = 54 A 70P0 = 70 A					
D	86P0 = 86 A				21 or N1	
	0105 = 105 A					
E	0142 = 142 A 0180 = 180 A 0211 = 211 A		2 = 220...230 V	NB or DB	20 or N1	C3
A	06P0 = 6.0 A 07P0 = 7.0 A	B = single/three-phase power supply	2 = 200...240 V	DB	20, 21 or N1	Blank
A	06P0 = 6 A	S = single-phase power supply	2 = 200...240 V	DB	20, 21 or N1	C3
	07P0 = 7.0 A					
	10P0 = 10 A					Blank or C3
A	3P6 = 3.6 A 05P0 = 5.0 A 07P0 = 7.0 A 10P0 = 10 A 13P5 = 13.5 A	T = three-phase power supply	4 = 380...480 V	DB	20, 21 or N1	Blank or C3
B	17P0 = 17 A 24P0 = 24 A 31P0 = 31 A					
C	38P0 = 38 A 45P0 = 45 A 58P5 = 58.5 A					
D	70P5 = 70.5 A				21 or N1	
	88P0 = 88 A					
E	0105 = 105 A 0142 = 142 A 0180 = 180 A 0211 = 211 A			NB or DB	20 or N1	C3

Coding

Frame sizes	Output current (ND)	Input	Power supply voltage	Braking	Degree of protection	Conducted emission level
B	2P9 = 2.9 A	T = three-phase power supply	5 = 500...600 V	DB	20	Blank
	4P2 = 4.2 A					
	7P0 = 7 A					
	10P0 = 10 A					
	12P0 = 12 A					
	17P0 = 17 A					
D	22P0 = 22 A			NB	N1	
	27P0 = 27 A					
	32P0 = 32 A					
	44P0 = 44 A					
E	53P0 = 53 A				20	C3
	63P0 = 63 A					
	80P0 = 80 A					
	0107 = 107 A					
	0125 = 125 A					
	0150 = 150 A					

Technical Data

Voltage and rating features	Voltage	Single-phase	200-220 V ac (+10%-15%)
		Three-phase	200-220 V ac (+10%-15%)
			380-480 V ac (+10%-15%)
			500-600 V ac (+10%-15%)
	Power	Single-phase	1.5 to 3 HP (1.1 to 2.2 kW)
		Three-phase	1.5 to 75 HP (1.1 to 55 kW)
			2 to 150 HP (1.5 to 110 kW)
			2 to 175 HP (1.5 to 110 kW)
	Frequency	50...60 Hz (+/-2%_48 to 63 Hz)	
	Displacement factor	Greater than 0.98	
	Efficiency	Greater than 0.97	
	Power factor	0.94 for three-phase input at nominal conditional 0.70 for single-phase input at nominal conditional	
Control	Frequency range	0 to 3.4 x rated motor frequency (P0403). The rated motor frequency is programmable from 0 Hz to 300 Hz in the V/F and VVW modes and from 30 Hz to 120 Hz in the vector mode. Maximum output frequency limit according to the switching frequency: - 125 Hz (switching frequency = 1.25 kHz) - 250 Hz (switching frequency = 2.5 kHz) - 500 Hz (switching frequency ≥ 5 kHz)	
	Switching frequency	Standard: 5 kHz (A, B, C e D frames)	
		2.5 kHz for all 380 V models frame E	
		2.5 kHz for frame E 220 V models 142/180 Amps (ND)	
		2.5 kHz for frame E 220 V model 211 Amps (ND/HD)	
		5 kHz for frame E 220 V models 142/180 Amps (HD)	
		Available options for 2.5/5/10 kHz (check for derating)	
	Overload	Normal Duty (ND)	110% for 1 min every 10 min 150% for 3 s every 10 min
		Heavy Duty (HD)	150% for 1 min every 10 min 200% for 3 s every 10 min
		Aceleration	0 to 999 s
		Deceleration	0 to 999 s
Environment	Temperature	-10 to 50 °C (14 to 122 °F) for most of models. For operating temperature of each model the table Dimensions, Weight and Temperatureshall be checked.	
		-10...60 ºC for frames A, B, C and D (up to 45 °C without derating for models 13 A and 24 A/200...240 V, 7 and 10 A/380...480 V and up to 50 °C without derating for the other models) and-10...55 °C for frame E (up to 45 °C without derating). If derating has to be considered have 2% current reduction for each °C above the specific operating temperature	
	Humidity	5 to 90% with no condensation	
	Altitude	0 to 1,000 meters with no derating	
		Up to 4,000 meters with current reduction of 1% for each 100 meters above 1,000 meters	
Braking methods	Dynamic braking	Available as standard for frame sizes A, B, C and D for 460 V and D for 600 V. For frame size E "DB"models has to be used. An extra resistor must be fitted in for dynamic braking capability	
	Optimal Braking®	There is no need for braking resistor	
	DC braking	DC current applied to motor	

Technical Data

Performance	V/F	Speed control	Regulation: 1% of rated speed
			Speed variation range 1:20
	Voltage vector VVW		Regulation: 1% of rated speed
			Speed variation range 1:30
	Sensorless vector		Regulation: 0.5% of rated speed
	Vector with encoder (encoder interface built-in)		Speed variation range 1:100 Regulation:+/- 0.1% of rated speed with digital reference (keypad, serial fieldbus, multispeed) Regulation:+/- 0.2% of rated speed with 12 bits analog input
		Torque control	Range: 10 to 180%
			Regulation: +/-5% of rated torque
	Sensorless vector		Range: 20 to 180%
			Regulation: +/-10% of rated torque (above 3 Hz)%
I/Os	Inputs	Digital	8 x isolated bidirectional 24 V
		Analog	2 x +/-10 V, 11 bits + signal (differencial) or 0/4...20 mA, 11 bits (differencial)
			Impedance: 400 kΩ for voltage signal / 500 Ω for current signal
	Output	Relay	1 x relay NO/NC contact (240 V ac / 1 A)
			4 x open drain (24 V/200 mA)
		Analog	2 x 0...10 V or 0/4...20 mA, 11 bits (not isolated from inverter ground)
	24 V power supply capacity	500 mA (available for the user, including I/Os)	
Connectivity	USB	USB in the display / SuperDrive and WLP communication	
	Modbus-RTU	RS485 built-in / SuperDrive and WLP communication	
Communication protocols	Modbus-RTU	RS485 built-in (available at the control terminals)	
	DeviceNet	CAN-01 (slot 3)	
	CANopen	CAN-01 (slot 3)	
	Profibus-DP	Profibus-DP-V1 (slot 3)	
Safety standards	UL 508C Power conversion equipment		
	UL 840 Insulation coordination including clearences 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. In order to have a machine in conformity with this regulation, the machine builder is resposible forthe installation of na emergency shutdown device and na equipment for power disconnection.		
	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 A.C. power drive systems		
Mechanical construction standards eletromagnetic compatibility standards (EMC)	EN 60529 - Degrees of protection provided by enclosures (IP code).		
	UL 50 - Enclosures for electrical equipment		
	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 undustrial, scientific and medical (ISM) radio-frequency equipment.		
	CISPR 11 - Industrial, scientifc and medical (ISM) radio-frequency equipment - Eletromagnetic disturbance characteristics - Limits and methods of measurement.		
	EN 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Eletrostatic 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.		
Protections	Overcurrent / short circuit		
	Under / overvoltage in the power section		
	Phase Loss		
	VSD thermal overload (IGBTs, rectifier and in the eletronics)		
	Motor thermal overload		
	Braking resistor overload		
	IGBTs overload		
	Motor overload		
	Fault / external alarm		
	CPU failure		
	Phase-to-ground short circuit at the output		
	Failure at the heatsink fan		
	Motor overspeed		
	Wrong connection of encoder wiring		

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