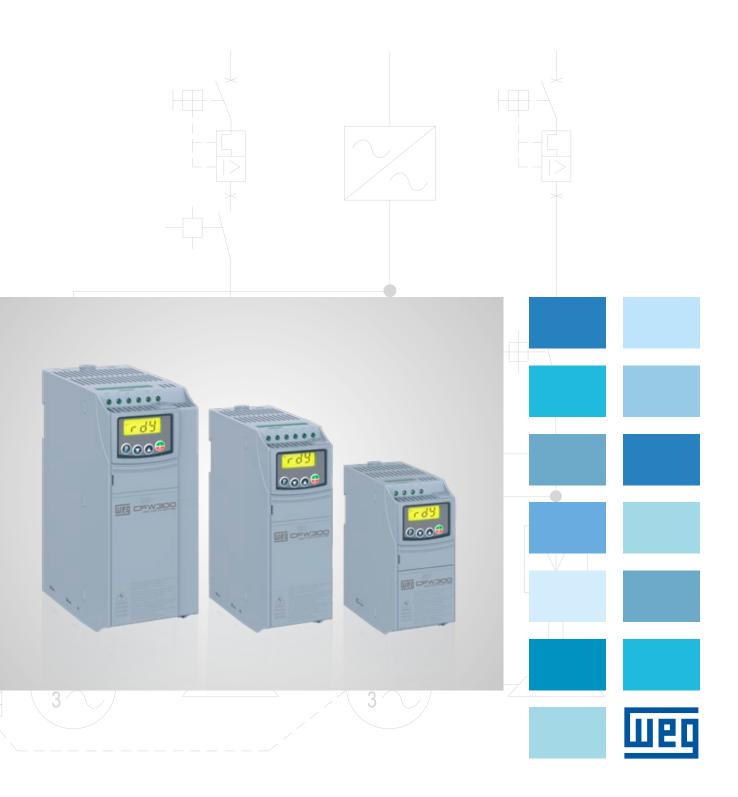
# **CFW300**

# Variable Speed Drive

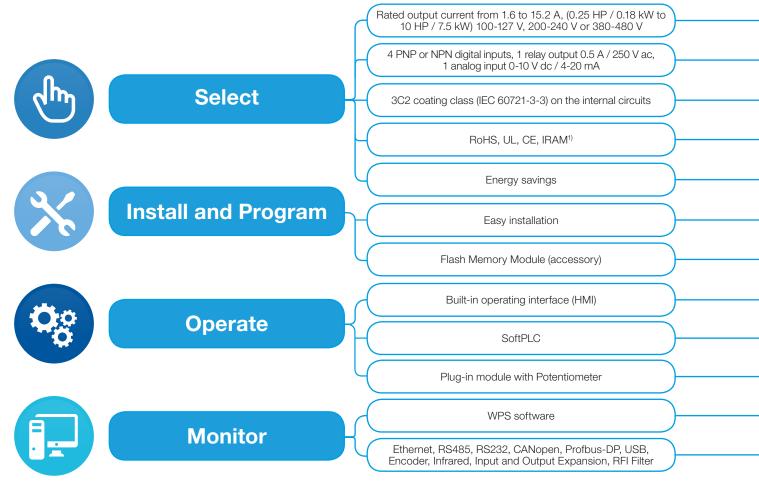




The CFW300 *variable speed drive is a high-performance VSD* for three-phase induction motors, ideal for applications on machines or equipment that require precise control and easy operation.

It features compact size, contactor-style electrical instalation, selectable WEG vector control (V/W) or scalar control (V/F), built-in operating interface (HMI), SoftPLC, free WPS programming software and plug-in accessories that may be added to provide extended functionalities, making it a *flexible solution of excellent cost effectiveness.* 

# **CONVENIENCE** ALL THE TIME



Note: 1) Check for availability.

Single-phase and three-phase power supply or via DC link

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Built-in inputs and outputs in the standard version

Greater protection for aggressive environments

Lead-free, international certificates

High performance and efficiency

Power supply on top and output to the motor in the bottom

Used to copy the original setting of the CFW300 and download it to other devices, with the VSD off

Status information of the CFW300 is easily viewed on the screen

Built-in software resource, equivalent to a small PLC

Used to set speed reference

Online monitoring, programming and configuration of the CFW300

Extra functionality expansion accessories

Ideal for machine or small device applications

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2 slots for function expansion via accessories

Standard, no extra cost

Green product, contributing to the environmental preservation

Ideal for pumps and fans

Easy and intuitive installation with less wiring inside the electrical panel

Less configuration time

Simple operation, configurable displays, Remote operating interface (accessory)

It customizes and integrates the CFW300 to the application

Easiness to machine builders

Easy and intuitive environment, free software

Flexibility according to the application requirements

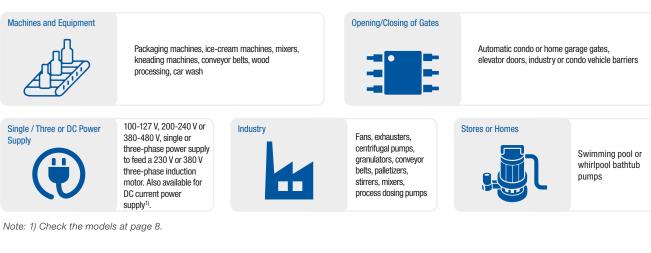


# Flexibility





# Applications







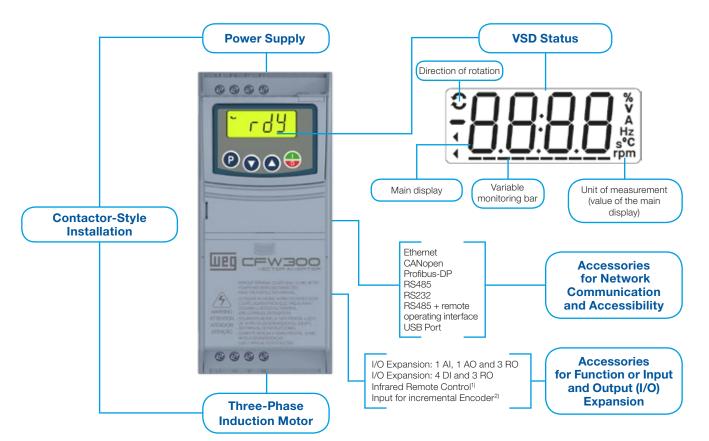






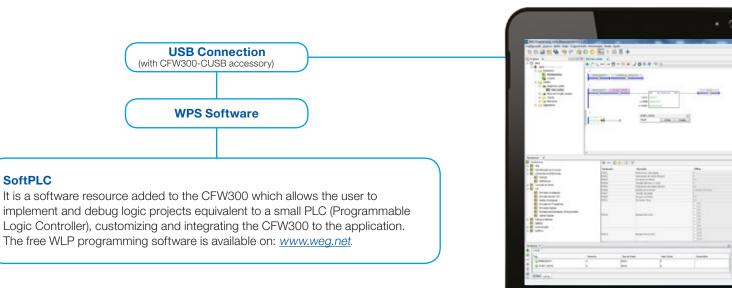
#### www.weg.net

# Easy to Use



Notes: I/O = Inputs and Outputs; AI = Analog Input, AO=Analog Output, RO = Relay Output, DI = Digital Input. 1) Included in the CFW300-IOADR accessory.

2) Included in the CFW300-IOAENC accessory.



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## Main Resources

- V/F, quadratic V/F or VVW vector control
- Password to protect the settings
- Engineering units (V, A, Hz, rpm, s, °C, %, etc.)
- Backup of all parameters (via software WPS, memory card or internal memory of the CFW300)
- Switching frequency selecting according to the application requirements
- Speed reference via electronic potentiometer (EP)
- Speed reference by frequency input signal

Much ()

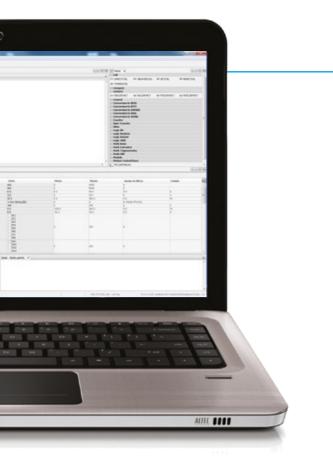
- Multispeed with up to eight programmable speeds
- Slip compensation
- Manual or automatic torque boost (V/F scalar mode) or self-tuning (VVW vector mode)
- 2 acceleration/deceleration ramps and emergency deceleration
- "S" type ramp
- DC braking

- Internal dynamic braking (frame sizes B and C)
- Infrared control (via CFW300-IOADR accessory)
- PID controller to control processes in closed loop (via software WPS)
- Flying start / ride through
- Skip frequency or frequency ranges
- Overload and overtemperature protection on the motor and on the IGBTs
- Overcurrent protection
- DC link voltage supervision
- Self-diagnosis alarm
- Fault log
- SoftPLC programming via free WLP software
- Fan control
- Energy saving function
- Fire mode
- Modbus master function

# Much more advantages

The CFW300 replaces direct online starters or star-delta starters:

- Electric energy savings
- Precise speed control
- Protection and improved lifetime for the electric motor
- Diagnosis and fault log
- Easy to use and install
- Flexible, allowing the installation of accessories for the application (Plug & Play)



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# Coding

Inverter /		Model ide	entification		Internal dynamic	Protection	Hardware	Software	
smart code	Size	Rated output current	Number of phases	Rated voltage	braking (IGBT)	degree	version	version	
	A	01P6	S	2	NB	20			
	See availabili	ity in the following ta	ble						
	NB = without	t dynamic braking (IG	BT)						
CFW300	DB = with dy	namic braking (IGBT)							
	20 = IP20								
	Hx = special	Hx = special hardware							
	Sx = special	Sx = special software							

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

#### **Available Options**

Frame size	Rated output current	Number of phases	Power supply voltage	IGBT braking	
	01P6 = 1.6 A				
	02P6 = 2.6 A		1 110 107 //		
	04P2 = 4.2 A		1 = 110-127 V ac		
	06P0 = 6.0 A				
	01P6 = 1.6 A	S = single-phase power supply			
	02P6 = 2.6 A				
	04P2 = 4.2 A				
	06P0 = 6.0 A	]			
	07P3 = 7.3 A		2 = 200-240 V ac		
А	01P6 = 1.6 A		2 = 200-240 V ac	NB	
	02P6 = 2.6 A				
	04P2 = 4.2 A	T = three-phase power supply			
	06P0 = 6.0 A	]			
	07P3 = 7.3 A				
	01P6 = 1.6 A				
	02P6 = 2.6 A	]			
	04P2 = 4.2 A	D = DC power supply	3 = 280-340  V dc		
	06P0 = 6.0 A				
	07P3 = 7.3 A				
В	10P0 = 10.0 A	B = single-phase, three-phase or DC power supply	2 = 200-240 V ac	DB	
5	15P2 = 15.2 A	T = three-phase or DC power supply	or 280-340 V dc		
	01P1 = 1.1 A				
А	02P6 = 2.6 A	T = three-phase power supply	4 = 380-480 V ac		
n	03P5 = 3.5 A		4 = 000 400 V au		
	04P8 = 4.8 A				
В	06P5 = 6.5 A			NB	
	08P2 = 8.2 A				
	10P0 = 10.0 A				
С	12P0 = 12.0 A				
	15P0 = 15.0 A				
	01P1 = 1.1 A				
	01P8 = 1.8 A		4 = 380-480 V ac		
	02P6 = 2.6 A	T = three-phase or DC power supply	4 = 380-480 V ac or 513-650 V dc		
В	03P5 = 3.5 A				
	04P8 = 4.8 A			DB	
	06P5 = 6.5 A			55	
	08P2 = 8.2 A				
	10P0 = 10.0 A				
C	12P0 = 12.0 A				
	15P0 = 15.0 A				

# Specification

#### **AC Current Power Supply**

Reference	Dource			drive CFW300 <sup>2)</sup>	Poted output current (A)	· · · · · · · · · · · · · · · · · · ·	plicable motor <sup>1)</sup>	(1.10)					
	Power s	supply (V)	Frame size	IGBT braking	Rated output current (A)	Power supply (V)	(HP)	(kW)					
CFW300A01P6S1NB20	-				1.6		0.25	0.18					
CFW300A02P6S1NB20	110-127	Single-phase	А		2.6		0.5	0.37					
CFW300A04P2S1NB20	-				4.2		1	0.75					
CFW300A06P0S1NB20					6		1.5	1.1					
CFW300A01P6S2NB20	_			Not available	1.6		0.25	0.18					
CFW300A02P6S2NB20	_				2.6		0.5	0.37					
CFW300A04P2S2NB20		Single-phase	A		4.2		1	0.75					
CFW300A06P0S2NB20					6		1.5	1.1					
CFW300A07P3S2NB20					7.3	220	2	1.5					
CFW300B10P0B2DB20	000.040	Single-phase ou Three-phase	В	Built-in	10		3	2.2					
CFW300A01P6T2NB20	200-240				1.6		0.25	0.18					
CFW300A02P6T2NB20	]				2.6		0.5	0.37					
CFW300A04P2T2NB20	]		А	Not available	4.2		1	0.75					
CFW300A06P0T2NB20	1	Three-phase			6		1.5	1.1					
CFW300A07P3T2NB20					7.3		2	1.5					
CFW300B10P0B2DB20	1		_	D. 111.1	10		3	2.2					
CFW300B15P2T2DB20	1		В	Built-in	15.2		5	3.7					
CFW300A01P1T4NB20					1.1		0.5	0.37					
CFW300A01P8T4NB20	-				1.8		1	0.75					
CFW300A02P6T4NB20	-		А		2.6		1.5	1.1					
CFW300A03P5T4NB20	1				3.5		2	1.5					
CFW300A04P8T4NB20	-				4.8		3	2.2					
CFW300B06P5T4NB20	-			Not available	6.5		4	3					
	-		В		8.2	380	5.5						
CFW300B08P2T4NB20	-			C				4					
CFW300C10P0T4NB20	-				10		6	4.5					
CFW300C12P0T4NB20	-		C		12		7.5	5.5					
CFW300C15P0T4NB20	380-415	Three-phase			15		10	7.5					
CFW300B01P1T4DB20	_				1.1		0.5	0.37					
CFW300B01P8T4DB20	_				1.8		1	0.75					
CFW300B02P6T4DB20	_						В		В	2.6	_	1.5	1.1
CFW300B03P5T4DB20								В		3.5		2	1.5
CFW300B04P8T4DB20				Built-in	4.8		3	2.2					
CFW300B06P5T4DB20							Built-IN	6.5	]	4	3		
CFW300B08P2T4DB20	]				8.2	]	5.5	4					
CFW300C10P0T4DB20	]			] [	10		6	4.5					
CFW300C12P0T4DB20	1		С		12		7.5	5.5					
CFW300C15P0T4DB20					15		10	7.5					
CFW300A01P1T4NB20					1.1		0.5	0.37					
CFW300A01P8T4NB20	1				1.8		1	0.75					
CFW300A02P6T4NB20	1		А		2.6		1.5	1.1					
CFW300A03P5T4NB20	1				3.5		2	1.5					
CFW300A04P8T4NB20	1				4.8		3	2.2					
CFW300B06P5T4NB20	1			Not available	5.6		4	3					
CFW300B08P2T4NB20	1		В		7.6		5.5	4					
CFW300C10P0T4NB20	1				8.3		6	4.5					
CFW300C10P014NB20	1		С		11		7.5	4.5					
	-		U			440							
CFW300C15P0T4NB20	440-480	Three-phase			14		10	7.5					
CFW300B01P1T4DB20	-		B		1.1		0.5	0.37					
CFW300B01P8T4DB20	-				1.8		1	0.75					
CFW300B02P6T4DB20	-				2.6		1.5	1.1					
CFW300B03P5T4DB20		В			3.5		2	1.5					
CFW300B04P8T4DB20					Built in	4.8		3	2.2				
CFW300B06P5T4DB20				Built-in	5.6		4	3					
CFW300B08P2T4DB20					7.6		5.5	4					
CFW300C10P0T4DB20					8.3		6	4.5					
CFW300C12P0T4DB20	1		С		11		7.5	5.5					
CFW300C15P0T4DB20	1				14		10	7.5					

Notes: 1) The power values for the maximum applicable motor shown in the table above are reference values and valid for WEG three-phase, four-pole induction motors with power supply of 220 V, 380 V or 440 V. The proper sizing of the CFW300 must be determined as a function of the rated current of the used motor.

*current of the used motor.* 2) Designed for exclusive industrial or professional use.



# Specification

#### **DC Current Power Supply**

Poforonco	Variable speed drive CFW300 <sup>2)</sup>				Maximum applicable motor <sup>1)</sup>			
Reference	Power supply (V)	Frame size	IGBT braking	Rated output current (A)	Power supply (V)	(HP)	(kW)	
CFW300A01P6D3NB20				1.6		0.25	0.18	
CFW300A02P6D3NB20				2.6		0.5	0.37	
CFW300A04P2D3NB20		A	Not available	4.2		1	0.75	
CFW300A06P0D3NB20	DC link (280-340 V dc)			6	220	1.5	1.1	
CFW300A07P3D3NB20				7.3		2	1.5	
CFW300B10P0B2DB20		В	Duilt in	10		3	2.2	
CFW300B15P2T2DB20		В	Built-in	15.2		5	3.7	
CFW300B06P5T4NB20		D		6.5		4	3	
CFW300B08P2T4NB20		В		8.2		5.5	4	
CFW300C10P0T4NB20			Not available	10		6	4.5	
CFW300C12P0T4NB20		С		12		7.5	5.5	
CFW300C15P0T4NB20				15		10	7.5	
CFW300B01P1T4DB20				1.1		0.5	0.37	
CFW300B01P8T4DB20				1.8		1	0.75	
CFW300B02P6T4DB20	DC link (513-560 V dc)			2.6	380	1.5	1.1	
CFW300B03P5T4DB20		В		3.5		2	1.5	
CFW300B04P8T4DB20			Built-in	4.8		3	2.2	
CFW300B06P5T4DB20			Dunt-in	6.5		4	3	
CFW300B08P2T4DB20				8.2		5.5	4	
CFW300C10P0T4DB20				10		6	4.5	
CFW300C12P0T4DB20		С		12	]	7.5	5.5	
CFW300C15P0T4DB20				15		10	7.5	
CFW300B06P5T4NB20		В		5.6		4	3	
CFW300B08P2T4NB20		D		7.6		5.5	4	
CFW300C10P0T4NB20			Not available	8.3		6	4.5	
CFW300C12P0T4NB20		С		11		7.5	5.5	
CFW300C15P0T4NB20				14		10	7.5	
CFW300B01P1T4DB20				1.1		0.5	0.37	
CFW300B01P8T4DB20				1.8		1	0.75	
CFW300B02P6T4DB20	DC link (594-650 V dc)			2.6	440	1.5	1.1	
CFW300B03P5T4DB20		В		3.5		2	1.5	
CFW300B04P8T4DB20			Built-in	4.8	-	3	2.2	
CFW300B06P5T4DB20			Duilt-III	5.6		4	3	
CFW300B08P2T4DB20				7.6		5.5	4	
CFW300C10P0T4DB20				8.3		6	4.5	
CFW300C12P0T4DB20		С		22		7.5	5.5	
CFW300C15P0T4DB20				14		10	7.5	

Notes: 1) The power values for the maximum applicable motor shown in the table above are reference values and valid for WEG three-phase, four-pole induction motors with power supply of 220 V, 380 V or 440 V. The proper sizing of the CFW300 must be determined as a function of the rated 2) Designed for exclusive industrial or professional use.

#### Accessories

The CFW300 has inputs and outputs in the standard version and allows installing Plug & Play accessories, which makes flexible and increases its capacity to adapt to the requirements of different applications.

In the front part there are two slots: the upper slot, can be used to connect with network communication or accessibility, and the lower slot, which can be used for input and output (I/O) expansion, incremental encoder input or infrared remote control kit.

Reference	Description	Illustrative images
	Upper slot - network communication and accessibility	
CFW300-CRS485	RS485 communication module	
CFW300-CUSB	USB communication module (2 m cable included)	
CFW300-CRS232	RS232 communication module	
CFW300-CCAN	CANopen or DeviceNet communication module	
CFW300-CPDP	Profibus-DP communication module	
CFW300-IOP	Potentiometer reference module	
CFW300-CETH	Ethernet communication module	( and
	Lower slot - input and output (I/O) expansion	
CFW300-IOAR	1 analog input, 1 analog output and 3 relay outputs	
CFW300-IODR	4 digital inputs and 3 relay outputs	
CFW300-IOAENC	1 analog input, 2 analog outputs and input for incremental encoder	
CFW300-IOADR	1 NTC input, 3 relay outputs and 1 input for infrared sensor (infrared sensor, NTC and remote control with battery included)	
CFW300-I0DF	3 frequency digital inputs, 3 frequency digital outputs, for multipump application	
	Remote operating interface (HMI)	
CFW300-KHMIR	Kit with remote HMI (CFW300-CRS485 + 3 m cable included)	
	Flash memory	
CFW300-MMF	Flash memory module (1 m cable included)	10
	Filtro RFI	
CFW300-KFA-S1-S2	RFI filter kit CFW300 frame A single-phase (200 V Line) <sup>1)</sup>	
CFW300-KFB-S2	RFI filter kit CFW300 frame B single-phase (200 V Line) <sup>1)</sup>	
CFW300-KFA-T2	RFI filter kit CFW300 frame size A three-phase (200 V Line) <sup>1)</sup>	
CFW300-KFB-T2	RFI filter kit CFW300 frame size B three-phase (200 V Line) <sup>1)</sup>	
CFW300-KFA-T4 CFW300-KFB-T4	RFI filter kit CFW300 frame A three-phase (400 V Line) <sup>2)</sup> RFI filter kit CFW300 frame B three-phase (400 V Line) <sup>2)</sup>	
CFW300-KFC-14 CFW300-KFC-T4	RFI filter kit CFW300 frame C three-phase (400 V Line) <sup>2</sup>	

Notes: 1) The filter kit is provided with the following parts: RFI Filter and connecting bars.

2) The filter kit is provided with the following parts: RFI Filter, connecting bars and common mode choke.

# Specification

#### Configuration of the Plug-In Modules<sup>6)</sup>

			Inputs			Outputs				Infrared		Netw	ork commı	inication
Reference	Slots <sup>5)</sup>	Analog	Digital	Frequency	Analog	Digital / relay	Frequency	Potentiometer	USB <sup>4)</sup>	sensors and NTC <sup>3)</sup>	Encoder <sup>2)</sup>	RS485	RS232	Other
CFW300-CRS485		-	-	-	-	-	-	-	-	-	-	1	-	-
CFW300-CRS232		-	-	-	-	-	-	-	-	-	-	-	1	-
CFW300-CCAN	Uppor	-	-	-	-	-	-	-	-	-	-	-	-	CANopen or DeviceNet
CFW300-CPDP	Upper slot	-	-	-	-	-	-	-	-	-	-	-	-	Profibus-DP
CFW300-CUSB		-	-	-	-	-	-	-	1	-	-	-	-	-
CFW300-IOP		-	-	-	-	-	-	1	-	-	-	-	-	-
CFW300-CETH		-	-	-	-	-	-	-	-	-	-	-	-	Modbus-TCP
CFW300-IOAR		1	-	-	1	3	-	-	-	-	-		-	-
CFW300-I0DR <sup>1)</sup>		-	4	-	-	3	-	-	-	-	-	-	-	-
CFW300-IOAENC	Lower	1	-	-	2	-	-	-	-	-	1	-	-	-
CFW300-IOADR	slot	1	-	-	-	3	-	-	-	1	-	-	-	-
CFW300-I0ADR-D		-	-	-	-	3	-	-	-	1	-	-	-	-
CFW300-I0DF			-	3	-	-	3	-	-	-	-	-	-	-

Notes: 1) Configurable isolated digital inputs (NPN or PNP).

2) Incremental encoder (A/A - B/B), power supply of +5 V @ 100 mA for the encoder, maximum frequency of 400 kHz.

3) Remote control and battery included.

4) USB cable included.

5) Allows 1 plug-in module on the upper slot (network communication or accessibility) and 1 plug-in module on the lower slot (input/output expansion).
6) The standard version of the CFW300 already features 4 PNP or NPN digital inputs (configurable), 1 analog input 0-10 V dc / 4-20 mA and 1 relay output 0.5 A / 250 V ac.

#### **Dimmensions**



#### **Dimmensions without RFI Filter**

Frame size	H mm (in)	L mm (in)	P mm (in)	Weight kg (lb)
А	157.9 (6.22)	70.0 (2.76)	148.4 (5.84)	0.90 (1.98)
В	198.9 (8.08)	70.0 (2.76)	158.4 (6.24)	1.34 (2.95)
С	214.0 (8.43)	89.0 (3.50)	164.0 (6.45)	1.50 (3.30)

Note: tolerance: +/-1.0 mm (+/-0.039 in).

#### **Dimmensions with RFI Filter**

Frame size	H mm (in)	L mm (in)	P mm (in)	Weight kg (lb)
A	196.0 (7.72)	70.0 (2.76)	190.1 (7.48)	1.30 (2.86)
В	237.0 (9.33)	70.0 (2.76)	200.1 (7.88)	1.80 (3.96)
С	252.3 (9.93)	89.0 (3.50)	207.5 (8.17)	1.96 (4.31)

Note: tolerance: +/-1.0 mm (+/-0.039 in).

20

# Technical Specifications

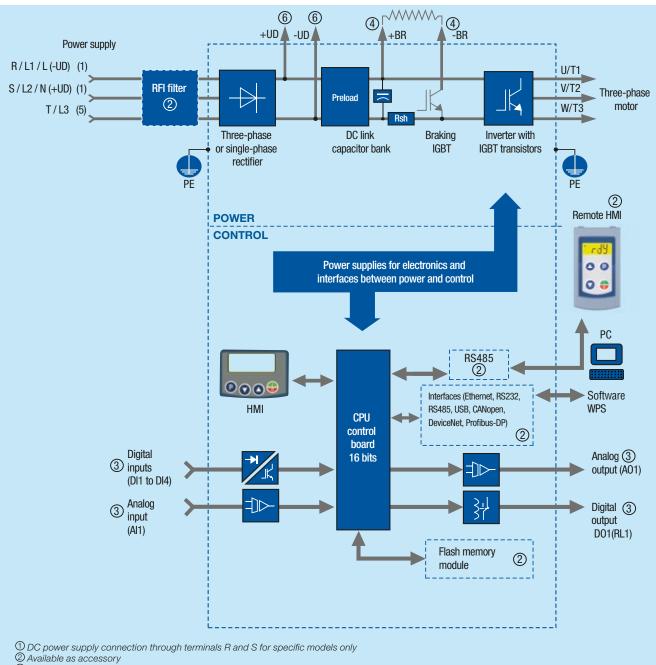
Power data         Power supply         Transient voltages according to category III           Maximum of 10 considers priver (1994)         Maximum of 10 considers priver (1994)         Maximum of 10 considers priver (1994)           Installation         Fer higher temportures that the synchronic soft (1994)         Set (1994)         Maximum of 10 considers (1994)           Installation         Environment conditions         Surrounding temportures that the synchronic soft (1994)         Set (1994)           Installation         Environment conditions         Surrounding temportures that the synchronic soft (1994)         Set (1994)           Installation         Environment conditions         Surrounding temportures that soft (1994)         Set (1994)           Control         Method         -VF (soft)         Set (1994)         Set (1994)           Vector control         Output frequency         Other 4000 in above set (1994)         Set (1994)           Vector control         VF (control         Speed regulation (10 in 1994)         Set (1994)           Vector control         Vector soft (1994)         Set (1994)         Set (1994)           Vector control         Vector control         -VF (soft)         -VF (soft)           Speed regulation (1994)         Set (1994)         Set (1994)         Set (1994)           Vector control (VWI)         Speed regulation			, , ,
Power data         Power supply         Transent values according to carginary ill manum of 10 connections per hand (every 6 minutes) Typical efficiency : SP7.           Installation and connection         Environment conditions         Surrounding temperature: 0°E to 50°C (200 Vile) and 0°E to 40°C (400 Vile) (essistication of mechanical conditions (withoutor): SM4 level Austinuitations (every 6 minutes)           Installation and connection         Environment conditions         Surrounding temperature: 0°E to 50°C (200 Vile) and 0°E to 40°C (400 Vile) (essistication of mechanical conditions (with level Austinuitations above, it is necessary to apply 2% of current derating each Celcus degree, limited to an increase of 10°C Austrum affaber to 1000 in 500°C, to 50°C (200 Vile) and 0°E a	(HMI)		Accuracy: - Current: 10% of the rated current
Power data         Power supply         Transient voltages according to category ill Maximum of 10 connections per hour (1 were 6 minutes) Typical efficiency: 297% (Cassification of hemically active substances: 30:2 level Cassification active substances: 30:2 level Poly and Poly level Cassification active substances: 30:2 level Cassification active substances: 30:2 level Poly active substances: 30:2 le	Safety	Protection	Overtemperature on the power module (IGBTs) External fault/alarm Programming error
Power data         Power supply         Transient 'valuages according to category III Maximum of 10 connections per hour (1 every 6 minutes) Typical efficiency: ±97%.           Installation and connection         Environment conditions         Surrounding temperature: 0°: 0: 50 °C (200 V line) and 0°C to 40 °C (400 V line) (2 dashfication of mechanical conditions (vibration): 3M4 level Audible noise level: <60 dB           Installation and connection         Environment conditions         Surrounding temperature: 0°: 0: 50 °C (200 V line) and 0°C to 40 °C (400 V line) (2 dashfication of mechanical conditions (vibration): 3M4 level Audible noise level: <60 dB           Installation and connection         Environment conditions         Surrounding temperature: 0°: 0: 50 °C (200 V line) and 0°C to 40 °C (400 V line) (2 dash degree, limited to an increase of 10 °C Air relative humidity; 5% to 95% non-condensing Maximum altitude: up to 1,000 m - rade conditions           From 1000 m to 4000 m - 1% of current derating for each 100 m (330 th above 100 m (330 th dBV accord the model) of 1.1% for each 100 m above 2000 m Polition degree: 2 (according to 15 % to 10 m above 2000 m Polition degree: 2 (according to 15 % and UL: 508C), with non-conductive pollution Condensation must not cause conduction of the accumulated residues           Performance         V/F Control         Speed regulation: 1% of the rated speed Speed variation range: 1:30           Inputs <sup>1</sup> )         Analog         Speed variation range: 1:30         Analog           Inputs <sup>1</sup> Analog         Insection range: 1:30         Analog         Analog           Output transi		Power supply	Overcurrent/phase-phase short circuit Under/overvoltage at the power supply
Power data         Power supply         Transient voltages according to category III           Maximum of 10 connections per hour (1 every 6 minutes)         Typical efficiency: 297%         Classification of chemically active substances: 3C2 level           Lassification of mechanical conditions (vibration): 3M4 level         Aucibie noise level: -60 d8         Surrounding temperature: 0°C to 50 °C (200 Vilne) and 0°C to 40 °C (400 Vilne)           For higher temperatures than the specifications above, it is necessary to apply 2% of current derating each feature timulation on to 4000 m -10% or related conditions         Auritie temperatures than the specifications above, it is necessary to apply 2% of current derating each feature tumulity: 5% to 95% non-condensing           Maximum altitude: up to 1,000 m -10% or related conditions         Form 2000 m to 4000 m -10% or related conditions           From 2000 m to 4000 m above seal level — maximum voltage derating (127 V / 240 V 480 V, accord the mode) of 1.1% or carent derating for each 100 m (33 0f) above 1000 m (3.300 ff) dove 100 m (3.300 ff) dove 10	Outputs <sup>1)</sup>	Relay	Maximum voltage: 250 V ac Maximum current of 0.5 A
Power data         Power supply         Transient voltages according to category III Maximum of 10 connections per hour (1 every 6 minutes) Typical efficiency: ≥97% Classification of mechanical conditions (vibration): 3M4 level Audible noise level: <60 dB           Installation and connection         Environment conditions         Surrounding temperatures than the specifications above, it is necessary to apply 2% of current derating each Celcius degree, limited to an increase of 10°C Air relative humidity: 5% to 95% non-condensing Maximum afitude: up to 1,000 m - rated conditions           Control         Method	Inputs <sup>1)</sup>	Digital	4 isolated inputs. Programmable functions: - Active high (PNP): maximum low level of 10 V dc minimum high level of 20 V dc - Active low (NPN): maximum low level of 5 V dc minimum high level of 10 V dc Maximum input voltage of 30 V dc Input current: 11 mA
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: = 57%         Classification of mechanical conditions (vibration): 3M4 level         Audible noise level: < 60 dB         Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For higher temperatures than the specifications above, it is necessary to apply 2% of current derating each Celcius degree, limited to an increase of 10 °C         Installation and connection       Environment conditions         Environment conditions       From 1000 m to 4000 m - 1% of current derating for each 100 m (330 ft) above 1000 m (330 ft) of alt From 2000 m to 4000 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, accord the model) of 1.1% for each 100 m above 2000 m         Pollution degree: 2 (according to EN 50178 and UL 508C), with non-conductive pollution Condensation must not cause conduction of the accumulated residues         Vir (quadratic)       - VVF (gcalar)         Output frequency       0 to 400 Hz, resolution of 0.1 Hz         Performance       V/F Control		Analog	Linearity error $\leq$ 0.25% Impedance: 100 k $\Omega$ for voltage input, 500 $\Omega$ for current input Programmable functions
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: ≥97%         Installation and connection       Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For higher temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)       For higher temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         Installation and connection       Environment conditions       Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For higher temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)       For higher temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         Environment conditions       For higher temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For 1000 m to 4000 m to 95% non-condensing       Maximum altitude: up to 1,000 m - rated conditions         From 1000 m to 4000 m - 1% of current derating for each 100 m (330 ft) above 1000 m (3.300 ft) of alt       From 2000 m to 4000 m above 2000 m         Pollution degree: 2 (according to EN 50178 and UL 508C), with non-conductive pollution       Condensation must not cause conduction of the accumulated residues         Control       Method       - V/F (scalar)       - V/F (quadratic)         Output frequency       0 to 400 Hz, resolution of 0.1 Hz       Speed regulation: 1% of the rated speed (with sleep compensation)	Performance	Vector control (VVW)	Speed regulation: 1% of the rated speed
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: ≥97%         Classification of chemically active substances: 3C2 level       Classification of mechanical conditions (vibration): 3M4 level         Audible noise level: <60 dB       Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For higher temperatures than the specifications above, it is necessary to apply 2% of current derating each Celcius degree, limited to an increase of 10 °C         Air relative humidity: 5% to 95% non-condensing       Maximum altitude: up to 1,000 m - rated conditions         From 1000 m to 4000 m dowe sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m d30 ft) above 1000 m (3.300 ft) of alt From 2000 m to 4000 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above 2000 m         Control       Method       -V/F (scalar)       -V/F (quadratic)       -V/F (quadratic)       -V/F (scalar)       -V/F (scalar)       -V/F (scalar)       -V/F (scalar)       -V/F (scalar)       -V/F (s		V/F Control	
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: :297%         Classification of chemically active substances: 3C2 level       Classification of chemically active substances: 3C2 level         Lossification of mechanical conditions (vibration): 3M4 level       Audible noise level: <60 dB	Control		- PWM SVM (Space Vector Modulation)
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: ±97%         Classification of chemically active substances: 3C2 level       Classification of mechanical conditions (vibration): 3M4 level         Audible noise level: <60 dB       Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line)         For higher temperatures than the specifications above, it is necessary to apply 2% of current derating each Celcius degree, limited to an increase of 10 °C         Air relative humidity: 5% to 95% non-condensing       Maximum altitude: up to 1,000 m - rated conditions         Maximum altitude: up to 1,000 m to 4000 m to 4000 m (3300 ft) above 1000 m (3.300 ft) of alt From 2000 m to 4000 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according the model) of 1.1% for each 100 m above 2000 m         Pollution degree: 2 (according to EN 50178 and UL 508C), with non-conductive pollution		Method	- V/F (scalar) - V/F (quadratic)
Power data       Power supply       Transient voltages according to category III         Maximum of 10 connections per hour (1 every 6 minutes)       Typical efficiency: ≥97%         Classification of chemically active substances: 3C2 level       Classification of mechanical conditions (vibration): 3M4 level		Environment conditions	Surrounding temperature: 0 °C to 50 °C (200 V line) and 0 °C to 40 °C (400 V line) For higher temperatures than the specifications above, it is necessary to apply 2% of current derating for each Celcius degree, limited to an increase of 10 °C Air relative humidity: 5% to 95% non-condensing Maximum altitude: up to 1,000 m - rated conditions From 1000 m to 4000 m - 1% of current derating for each 100 m (330 ft) above 1000 m (3.300 ft) of altitude From 2000 m to 4000 m above sea level – maximum voltage derating (127 V / 240 V / 480 V, according to the model) of 1.1% for each 100 m above 2000 m Pollution degree: 2 (according to EN 50178 and UL 508C), with non-conductive pollution
Voltage tolerance: -15% to +10% of nominal voltage Frequency: 50/60 Hz (48 Hz to 62 Hz) Phase unbalance: ≤3% of the rated phase-phase input voltage	Power data	Power supply	Frequency: 50/60 Hz (48 Hz to 62 Hz) Phase unbalance: ≤3% of the rated phase-phase input voltage Overvoltages according to category III (EN 61010/UL 508C) Transient voltages according to category III Maximum of 10 connections per hour (1 every 6 minutes) Typical efficiency: ≥97% Classification of mechanical conditions (vibration): 3M4 level

Notes: 1) Available in the standard version.



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## Block Diagram



- ③ Number of Inputs/Outputs depends on the I/O expansion accessory
- (4) Braking resistor connection available for specific models only
- 5 Three-phase power supply connection available for specific models only
- DC link power supply connection for sizes B and C

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