



**POWER ELECTRONICS<sup>®</sup>**



**SD300**

**LOW VOLTAGE  
VARIABLE  
SPEED DRIVE**



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# ABOUT US

Since our inauguration in 1987 Power Electronics' strategy of continuous innovation in product development has realized an extensive range of AC variable speed drives and soft starters in low and medium voltage and utility scale solar inverters.

The expertise and know-how gained over more than 25 years in the business is demonstrated in the unique features and patented designs of our products, coupled with the shortest lead-times and unbeatable 24/7 Power On Support has consolidated Power Electronics' position as a global market leader in the AC drive and soft starter business.



**INDUSTRIAL DIVISION**  
VARIABLE SPEED DRIVES  
ELECTRONIC SOFT STARTERS

**SOLAR DIVISION**  
SOLAR INVERTERS  
SOLAR POWER STATIONS



**+45**  
countries

**T**he most complete range of AC drives and soft starters

**0.4kW - 6000kW**

**0.23kV - 11kV**

Financial stability and strength

**SUSTAINABLE GROWTH**

**+25** years

of product excellence and diversification





**+1200**  
Employees  
worldwide



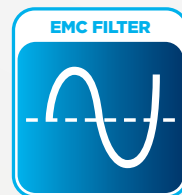
Product and Factory independent  
Reports and Certifications

— Engineered for reliability

— **3** year warranty:  
Industrial products

# SD300

VARIABLE SPEED DRIVE



## SD300

The SD300 is a high performance general purpose AC drive that excels in demanding heavy-duty applications that require high starting torque and precise control. The dual duty rating of the IP20 models ensures compatibility with all normal duty loads with less demanding overload requirements. The IP66/NEMA4X models guarantee operation even in the most severe environments.

The versatile SD300 is ideal for applications in water treatment and irrigation, food and beverage, ventilation systems, materials handling, packaging systems, textiles, plastic, wood processing, in fact any general purpose application where apparatus and machinery needs to be automated.

EXCEPTIONAL PERFORMANCE  
IN ANY APPLICATION

- SENSORLESS VECTOR CONTROL WITH 200% STARTING TORQUE
- SIDE-BY-SIDE MOUNTING
- COMPACT FOOTPRINT
- MULTIPLE FIELDBUS OPTIONS
- BUILT-IN EMC FILTER AND COMPLIANT WITH INTERNATIONAL STANDARDS
- BUILT-IN SAFE TORQUE OFF (STO) AND REDUNDANT INPUT CIRCUIT
- IP66 MODELS

## SD300 MAIN FEATURES

- The SD300 AC drive is an easy-to-use, compact and robust product offering users savings in time and space.
- The overall motor control features and the motor/drive protection functions limit unexpected machine downtime.
- An integrated keypad offers programming and operation capabilities.
- Integrated communication port and Modbus protocol allows the SD300 to exchange data for machine/process monitoring, control and preventive maintenance.

- 0.4kW to 2.2kW 230V SPh
- 0.4kW to 22kW 230V 3Ph.
- 0.4kW to 30kW 400V 3Ph.

### I/O expansion card option:

- 2 Relay Outputs
- 3 Digital inputs
- 2 Analog Inputs
- 1 Analog Output

Powerful sensorless control.  
High torque at very low speed  
(200% at 0,5 Hz)

50°C operating temperature.  
Suitable for IT Power Networks.

IP20 and IP66 degree of  
environmental protection.

Built in display with keypad.  
Remote LCD display option.

Output frequency up to 400Hz,  
Sensorless and V/Hz motor  
control, 150% current overload  
capability.

Safe Torque Off (STO) as standard.  
Meets EN ISO 13849-1 PLd and EN  
61508 SIL2 (EN60204-1, stop category  
0).

Intuitive control and  
comprehensive menu setup  
including PID, PLC functionality.

Integrated EMC filter compliant with  
EN61800-3 and EN 61800-5-1.

CE marked, UL/cUL listed & RCM  
(Australia & New Zealand) certified.

Multiple fieldbus options: Profibus,  
Profinet, Ethercat, Ethernet I/P,  
Modbus TCP.

RS485 communication port with  
integrated Modbus protocol as  
standard



# BIG ON PERFORMANCE SMALL ON SPACE

- SPACE SAVING DESIGN WITH SIDE BY SIDE MOUNTING
- BUILT-IN RFI FILTER ON SINGLE PHASE AND THREE PHASES
- JUMPER TO DISCONNECT RFI FILTER (IT POWER NETWORKS)
- INTEGRATED BRAKE CHOPPER
- POWER, DC BUS AND GROUND TERMINALS
- SAFE TORQUE OFF (STO) AS STANDARD
- MULTIPLE FIELDBUS OPTIONS
- FAST A/D CONVERSION, TORQUE COMPENSATION AND SMOOTH CONTROL AT LOW SPEED
- IP66 WITH DISCONNECT SWITCH



## CONTROL I/O TERMINAL BLOCK

- 7 Digital inputs (5 on IP66 option).
- Analog input configurable V/mA.
- Analog input 0-10V.
- Output Relay.
- Digital Output Open Collector.
- I/O Expansion Card Option.

## BUILT IN KEYPAD WITH DISPLAY

- 4 Digits display for Parameter, Frequency, Voltage, Current, Temperature, Fault messages.
- Multi function LEDs.
- Parameter navigation keys: Up, Down, Left and Right.
- Run, Stop/Reset keys.



# THE DRIVE FOR HARSH ENVIRONMENTS

Protected against fine dust and high pressure water jets.

- Meets IEC 60529 standard IP66
- Meets NEMA 4X for indoor use
- 200/400V 0.4-22kW
- Integrated Disconnect Switch

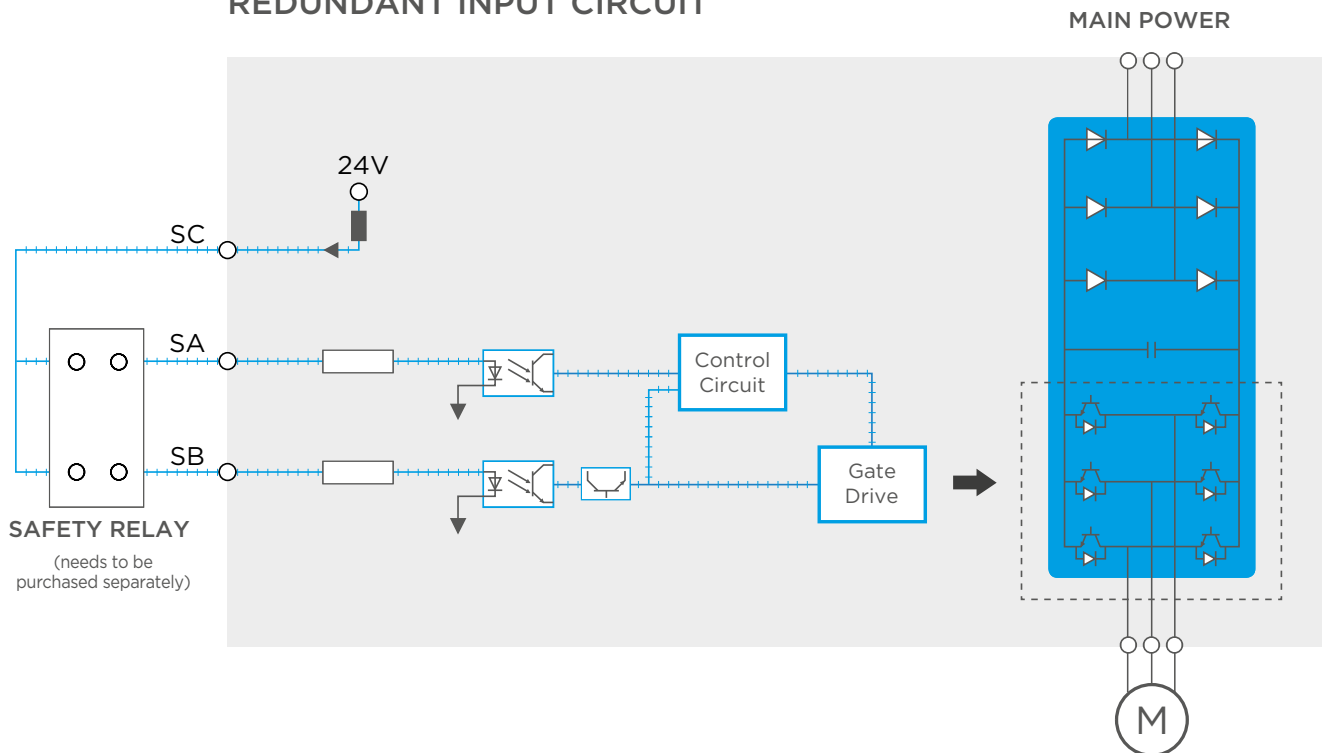
## SAFETY FUNCTIONS

### SAFE TORQUE OFF

The Safe Torque Off function meets EN ISO 13849-1 PLd and EN 61508 SIL2 (EN60204-1, stop category 0).

This feature is standard and enables compliance with current safety standards.

### REDUNDANT INPUT CIRCUIT



## GLOBAL STANDARDS

The SD300 AC drive complies with all the major international standards.


- CE, UL, cUL, RoHS.
- 3C2 Conformal coating on PCBs.



## FIELDBUS COMMUNICATIONS

The SD300 integrates the most powerful and widely used fieldbus communication protocols used in automation and industry today. The multiple fieldbus options add another dimension to the versatility of the drive and allow the full potential of the SD300 to be realised as a key component in the automation and control network.

 Integrated as standard via the RS485 communication terminals.	 The “de-facto” standard of supervisory control and automation systems integrated onto the Ethernet platform.
 This option is the future standard for factory automation and encompasses the latest technology available for fieldbus communications.	 Efficient, high performing lower cost I/O level protocol.
 This option enables compatibility with the popular flexible and low cost CanOPEN networks.	 An industry standard and one of the most widely used fieldbus protocol today.
 All the features of ProfiBus transposed over to the power of Ethernet.	



## REMOTE DISPLAY

The remote LCD display-keypad option facilitates installation of the drive inside a cabinet while enabling control of the drive by mounting the LCD display-keypad remotely on the cabinet door.

The LCD display-keypad comprises four lines of parameter visualization and programming, parameter upload/download, and local-remote control functionality.

The LCD display-keypad is also compatible with other Power Electronics drives.





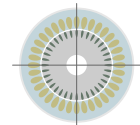
## SOFTWARE

The SD300 is packed with new functions to cover all user requirements. Ranging from improved motor control including the integration of PMSM motors to PLC and process and pump control and configurations.

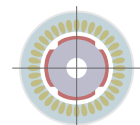
### MOTOR CONTROL SENSORLESS AND PMSM

Exceptional performance for asynchronous and synchronous motors.

- Control of asynchronous and synchronous (PMSM) motors.
- Smooth and dynamic control of the motor.
- 200% torque at 0,5Hz.
- Static auto-tuning.
- Fast response to transient load torque changes.
- Improved motor regeneration control.
- Dynamic motor flux control.



INDUCTION MOTOR (IM)

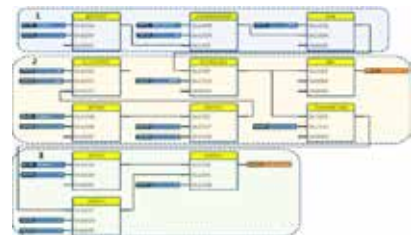


SURFACE PERMANENT  
MAGNET MOTOR (SPM)

### INTERNAL PLC

PLC functions to simplify your external control requirements.

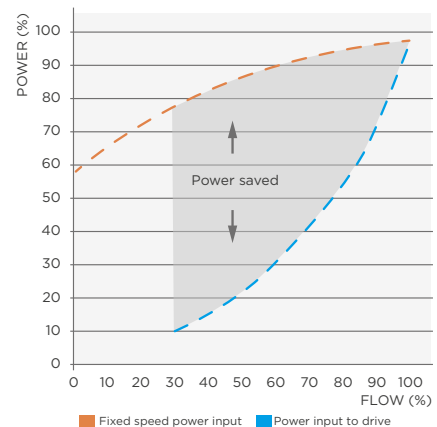
- Simple and powerful functionality.
- Logic operations.
- Arithmetic operations.
- Comparitors.
- Scan rate selection.
- Sequential execution.



### ENERGY SAVING FUNCTIONS

Reduces motor power consumption under light load conditions.

- Ideal for variable torque applications.
- Power consumption reduction depending on motor load.
- Reduction of motor losses.
- Automatic and Manual adjustment.



### PUMP CONTROL

Smooth and easy control for pumps in simple applications.

- Process PID controller.
- Pre-PID functionality.
- Sleep mode.
- Second PID adjustment.
- Engineering units.









# ***SD300***

## **FOR ALL STANDARD MACHINE AND PROCESS CONTROL NEEDS**

*PUMPS, FANS, CONVEYORS, COMPRESSORS,  
FOOD & BEVERAGE, MATERIALS HANDLING,  
PACKAGING, WOOD PROCESSING, PLASTICS,  
AUTOMATIC DOORS...AND ANY GENERAL  
PURPOSE MACHINERY*



# SD300

## TECHNICAL CHARACTERISTICS

<b>INPUT</b>	Power ranges	0.4kW - 2.2kW 230V - Single Phase 0.4kW - 22kW 230V - 3-Phase 0.4kW - 30kW 400V - 3-Phase		
	Voltage range	230V: 200-240V Single Phase/3-Phase (-15%/+10%) 400V: 380-480V 3-Phase (-15%/+10%)		
	EMC Filter	Single Phase 230V: 0-4 2.2kW C2 (First environment) 3-Phase 400V: 0.4-30kW C3 (Second environment)		
<b>OUTPUT</b>	Overload capacity	150% for 60sec. (Heavy duty) 120% for 60sec. (Normal duty) <sup>[2]</sup> 200% for 3sec. (Heavy duty)		
	Control Method	V/f, Slip compensation, Sensorless vector, PMSM VC <sup>[1]</sup>		
	Frequency Setting Resolution	Digital command: 0.01Hz / Analog command: 0.06Hz (maximum frequency: 60Hz)		
	Frequency Accuracy	1% of the maximum output frequency		
	V/F Pattern	Linear, Quadratic, User V/F		
	Overload Capacity	HD: 150% 1 minute, ND: 120% 1 minute <sup>[2]</sup>		
	Torque Boost	Manual/Automatic torque boost		
<b>OPERATION</b>	Operation Mode	Keypad / Terminal / Communication option selectable		
	Frequency Setting	Analog : -10-10V, 0-10V, 4-20mA / Digital : Keypad, Pulse train input		
	Operation Function	PID control, 3-wire operation, Frequency limit, Second function, Anti-forward and reverse direction rotation, Speed search, Power braking, Leakage reduction, Up-down operation, DC braking, Frequency jump, Slip compensation, Automatic restart, Automatic tuning, Energy buffering, Flux braking, Fire Mode		
	Input	Multi-function Terminal Standard I/O (5 points) Multiple I/O (7 points)	NPN (Sink) / PNP (Source) Selectable  Function: Forward run, Reverse run, Reset, External trip, Emergency stop, Jog operation, Multi-step frequency-high, middle, low, Multi-step acceleration/ deceleration-high, middle, low, DC braking at stop, 2nd motor select, Frequency up/down, 3-wire operation, Change into normal operation during PID operation, Change into main body operation during option operation, Analog command frequency fixing, Acceleration/deceleration stop etc. Selectable	
		Analog Input	V1: -10-10V, selectable V2: 0-10V/12 4-20mA	
		Pulse Train	0-32kHz, Low level: 0-2.5V, High level: 3.5-12V	
	Output	Open Collector Terminal	Fault output and drive	less than DC 24V 50mA
		Multi-function Relay	operation status output	(N.O., N.C.) less than AC 250V 1A, less than DC 30V 1A
		Analog Output	Selectable 0-12Vdc/0-24mA Frequency, Output current, Output voltage, DC bus voltage etc. selectable	
		Pulse Train	Maximum 32kHz, 10-12V	
<b>PROTECTIVE FUNCTION</b>	Trip	Over current trip, External signal trip, ARM short circuit current trip, Over heat trip, Ground trip, Motor over heat trip, I/O board link trip, No motor trip, Parameter writing trip, Emergency stop trip, Command loss trip, External memory error, CPU watchdog trip, Motor normal load trip, Over voltage trip, Temperature sensor trip, Drive over heat, Option trip, Output imaging trip, Drive overload trip, Fan trip, Pre-PID operation failure, External break trip, Low voltage trip during operation, Low voltage trip, Safety A(B) trip, Analog input error, Motor overload trip,		
	Alarm	Command loss trip alarm, overload alarm, normal load alarm, drive overload alarm, fan operation alarm, resistance braking rate alarm, number of corrections on rotor tuning error		
	Momentary Power Loss	HD below 15ms (ND below 8ms): Continuous operation (To be within rated input voltage, rated output) HD above 15ms (ND above 8ms): Automatic restart operation enable		
<b>ENVIRONMENT</b>	Cooling Type	Forced fan cooling structure		
	Protection Degree	IP20/UL Open (Default), UL Enclosed Type 1 (Option), IP66/NEMA 4X (Option)		
	Ambient Temperature	IP20: HD: -10-50°C(14-122°F) ND: -10-40°C(14-104°F) [However, recommended to use load below 80% when using at 50°C under light load]		
		IP66: HD: -10-40°C(14-104°F)		
	Storage Temperature	-20-65°C (-4-149°F)		
	Humidity	Relative humidity below 90% RH (non condensing)		
	Altitude, Vibration	Below 1,000m, below 9.8m/sec <sup>2</sup> (1G)		
Location	No corrosive gas, flammable gas, oil mist and dust etc. indoors (Pollution Degree 3 Env.)			
<b>REGULATIONS</b>	Pressure	70-106 kPa		
	Global certification	CE, UL, cUL, RoHS		
	PCB	3C2 Conformal coating		

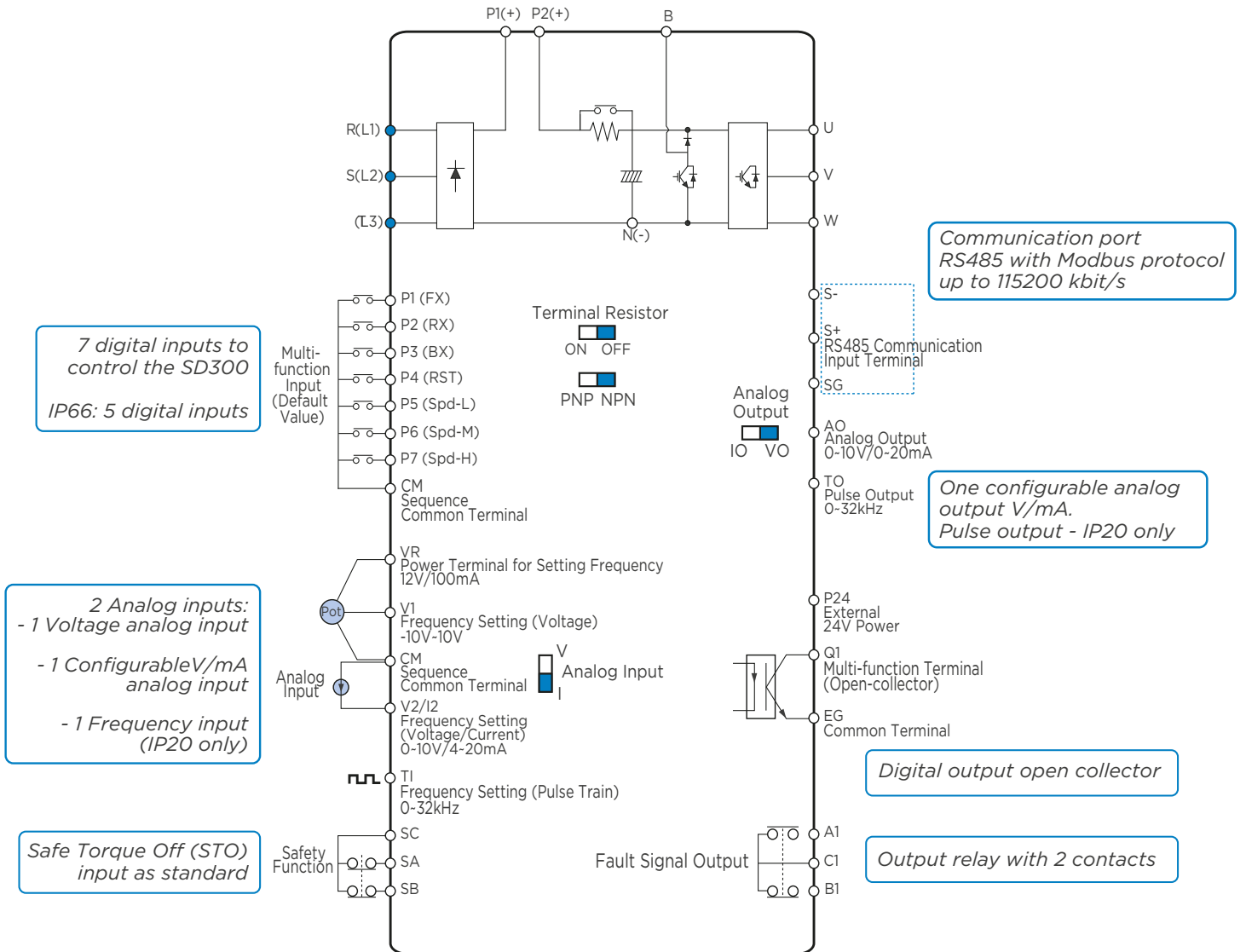
NOTES [1] Please consult Power Electronics before the installation with these kind of motors.

[2] Only available with IP20 protection degree.

# INPUT/OUTPUT TERMINATIONS

Connection external DC reactor  
Harmonic mitigation

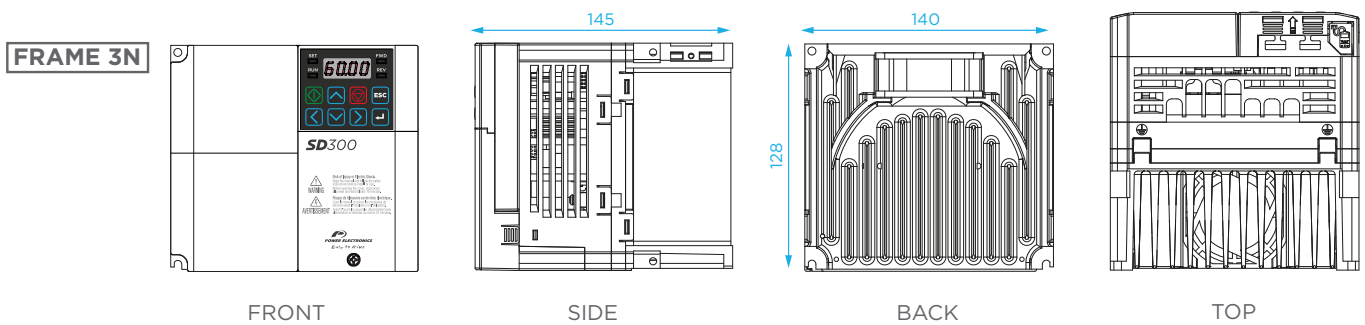
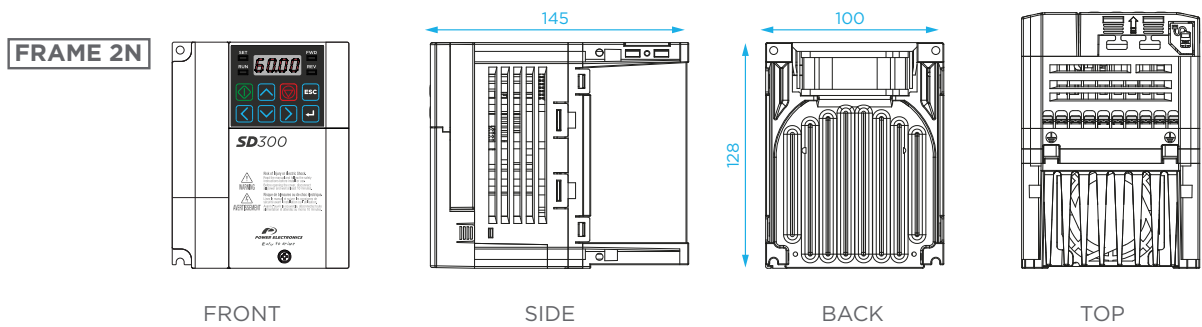
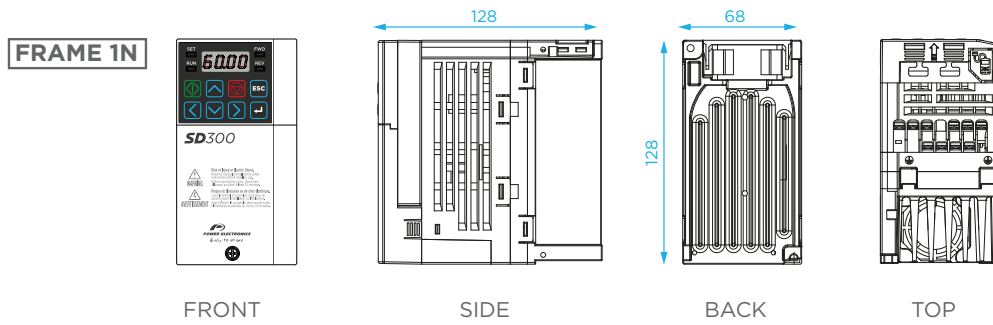
Integrated dynamic brake switch



# SD300

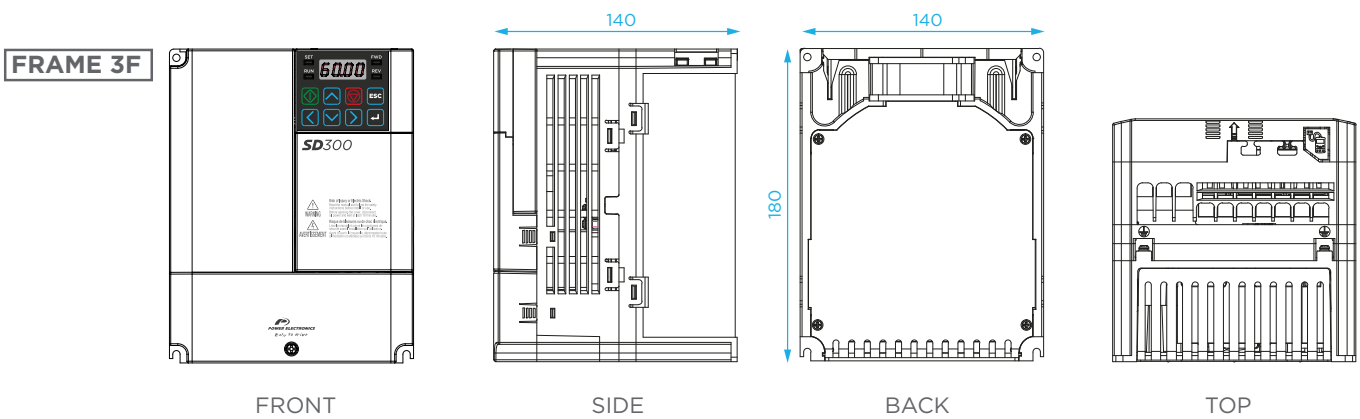
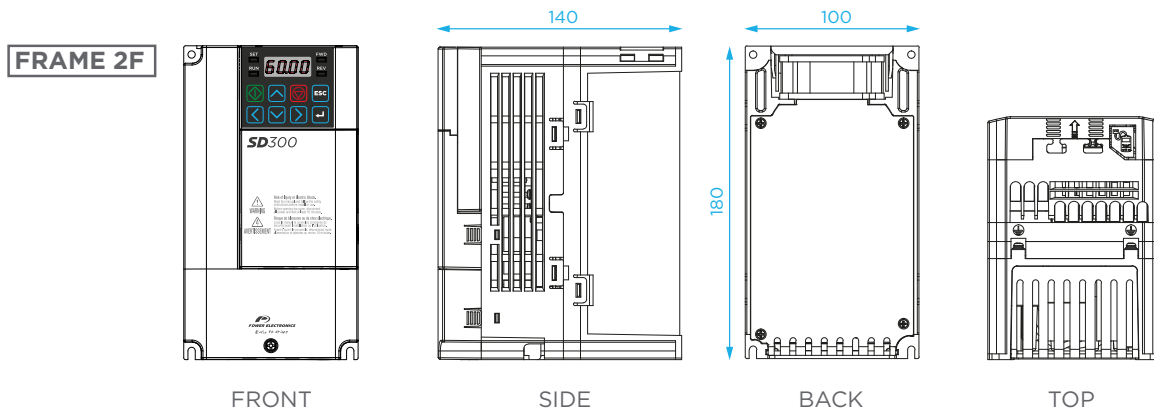
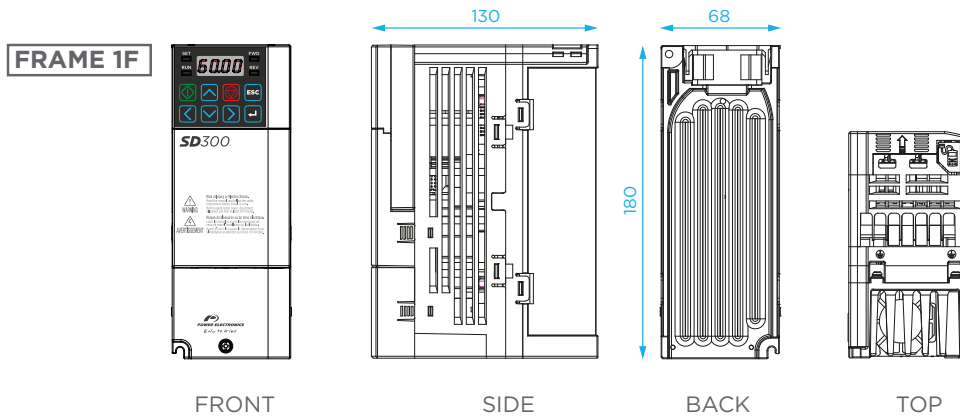
FRAMES

IP20 - NEMA1





IP20 - NEMA1

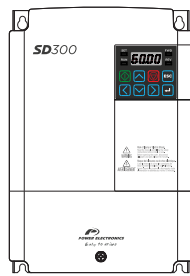


# SD300

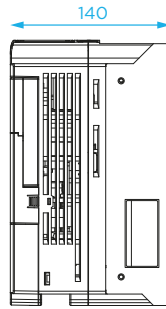
## FRAMES

IP20 - NEMA1

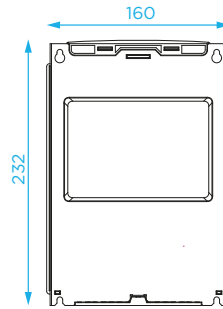
FRAME 4



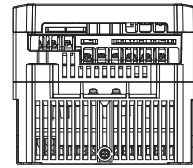
FRONT



SIDE

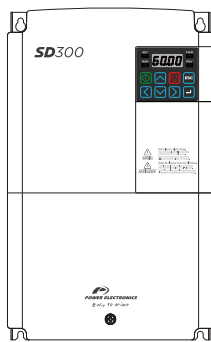


BACK

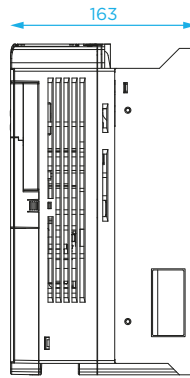


TOP

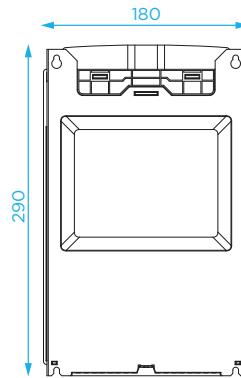
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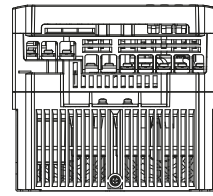
FRONT



SIDE

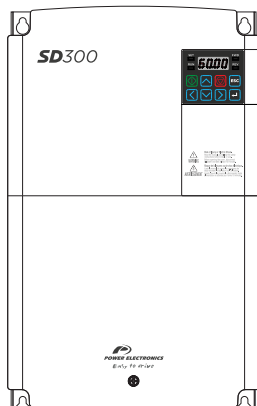


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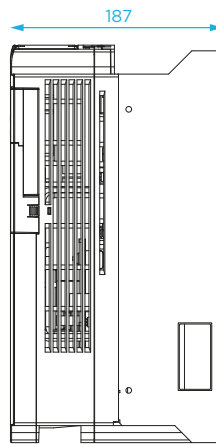


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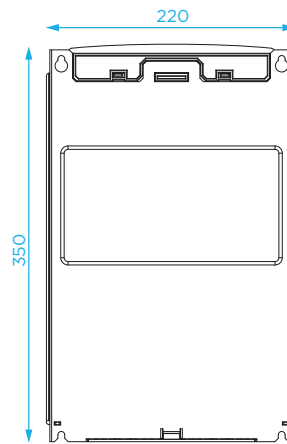
FRAME 6



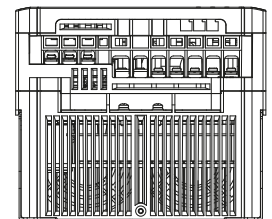
FRONT



SIDE



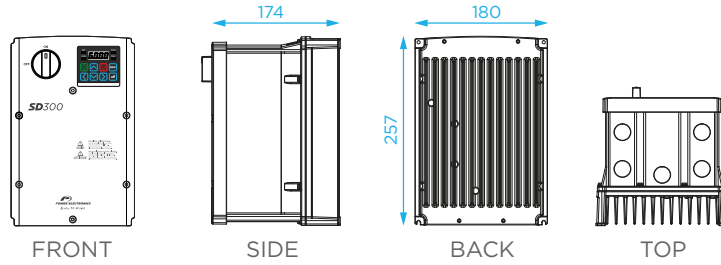
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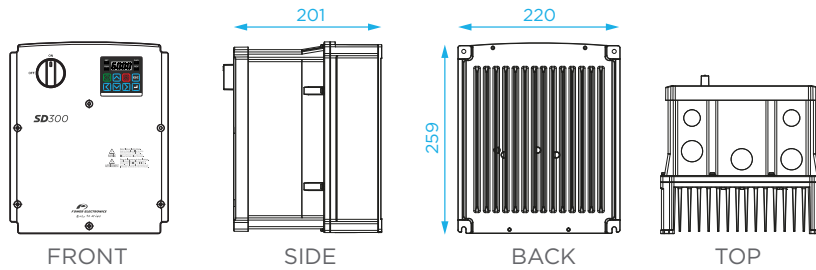
TOP

IP66 - NEMA 4X

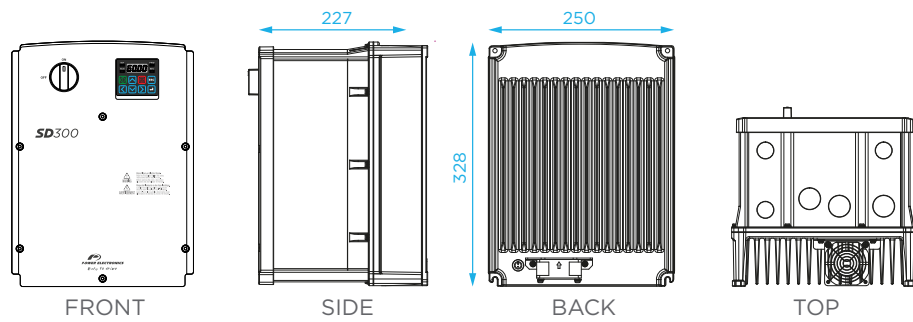
FRAME 1I



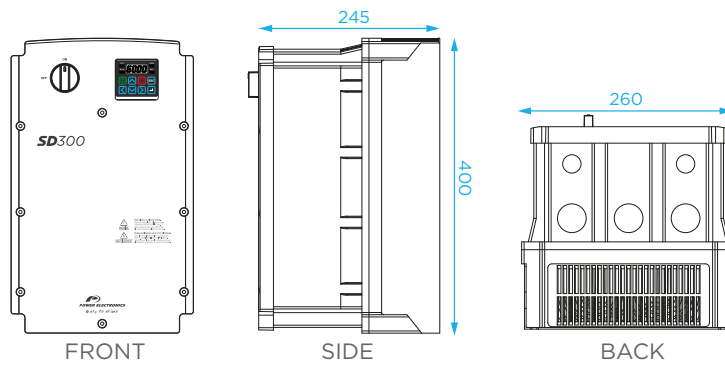
FRAME 2I



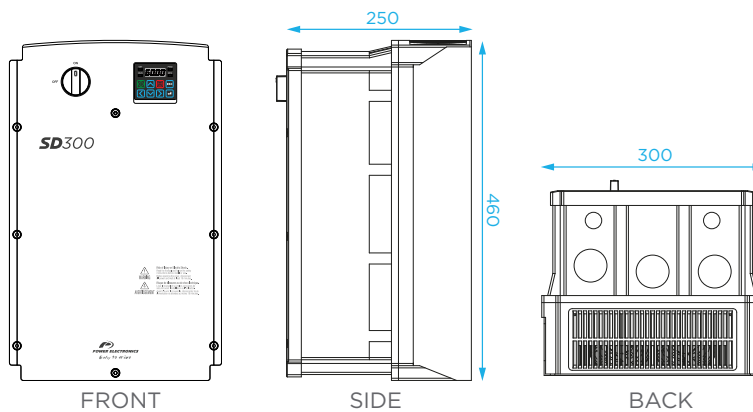
FRAME 3I



FRAME 4I



FRAME 5I



# SD300

## CONFIGURATION TABLE & STANDARD RATINGS

SD3	058		04		20			
SD300 SERIES	Current normal duty*		Voltage		Degree of protection		EMC Filter	
SD3	002	2A	1	230Vac Single Phase	2	IP20	F	Built-in
	...		2	230Vac Three Phase	6	IP66	-	Not included
	069	69A	4	400Vac Three Phase				

\*Heavy duty for IP66 models.

### 230VAC SINGLE PHASE

230VAC SINGLE PHASE - IP20													
Power ND (kW)	Power HD (kW)	Current ND (A)	Current HD (A)	NO FILTER					WITH FILTER				
				MODEL	DIMENSIONS (mm)			FRAME	MODEL	DIMENSIONS (mm)			FRAME
					W	H	D			W	H	D	
0,75	0,4	3.1	2.5	SD300312	68	128	128	1N	SD300312F	68	180	130	1F
1,5	0,75	6.0	5.0	SD300612	100	128	145	2N	SD300612F	100	180	140	2F
2,2	1,5	9.6	8.0	SD300912					SD300812F				
3,7	2,2	12.0	11.0	SD301212	140	128	145	3N	SD301112F	140	180	140	3F

### 230VAC THREE PHASE

230VAC THREE PHASE - IP20									
Power ND (kW)	Power HD (kW)	Current ND (A)	Current HD (A)	MODEL	DIMENSIONS (mm)			FRAME	
					W	H	D		
0,75	0,4	3.1	2.5	SD300322	68	128	128	1N	
1,5	0,75	6.0	5.0	SD300622					
2,2	1,5	9.6	8.0	SD300922	100	128	145	2N	
4	2,2	12	11	SD301222					
5,5	4	18	17	SD301822	140	128	145	3N	
7,5	5,5	30	24	SD303022	160	232	140	4	
11	7,5	40	32	SD304022					
15	11	56	46	SD305622	180	290	163	5	
22	15	69	60	SD306922	220	350	187	6	

230VAC THREE PHASE - IP66 (only Heavy Duty)							
Power HD (kW)	Current HD (A)	MODEL	DIMENSIONS (mm)			FRAME	
			W	H	D		
0,4	2.5	SD300326	180	257	174	1I	
0,75	5.0	SD300526					
1,5	8.0	SD300826	220	259	201	2I	
2,2	11	SD301126					
4	17	SD301726	250	328	227	3I	
5,5	24	SD302426					
7,5	32	SD303226	260	400	245	4I	
11	46	SD304626					
15	60	SD306026	300	460	250	5I	

**400VAC THREE PHASE**

400VAC THREE PHASE - IP20								
Power ND (kW)	Power HD (kW)	Current ND (A)	Current HD (A)	MODEL	DIMENSIONS (mm)			FRAME
					W	H	D	
0,75	0,4	2.0	1.3	SD300242	68	128	128	1N
1,5	0,75	3.1	2.4	SD300342				
2,2	1,5	5.1	4.0	SD300542	100	128	145	2N
4	2,2	6.9	5.5	SD300742				
5,5	4	10	9.0	SD301042	140	128	145	3N

400VAC THREE PHASE - IP20 - WITH FILTER								
Power ND (kW)	Power HD (kW)	Current ND (A)	Current HD (A)	MODEL	DIMENSIONS (mm)			FRAME
					W	H	D	
0,75	0,4	2.0	1.3	SD300242F	68	180	130	1F
1,5	0,75	3.1	2.4	SD300342F				
2,2	1,5	5.1	4.0	SD300542F	100	180	140	2F
4	2,2	6.9	5.5	SD300742F				
5,5	4	10	9.0	SD301042F	140	180	140	3F
7,5	5,5	16	12	SD301642F	68	232	140	4
11	7,5	23	16	SD302342F				
15	11	30	24	SD303042F	180	290	163	5
18,5	15	38	30	SD303842F				
22	18,5	44	39	SD304442F	220	350	187	6
30	22	58	45	SD305842F				

400VAC THREE PHASE - IP66 (only Heavy Duty)							
Power HD (kW)	Current HD (A)	NO FILTER	WITH FILTER	DIMENSIONS (mm)			FRAME
		MODEL	MODEL	W	H	D	
0,4	1.3	SD300146	SD300146F	180	257	174	1I
0,75	2.4	SD300246	SD300246F				
1,5	4.0	SD300446	SD300446F	220	259	201	2I
2,2	5.5	SD300646	SD300646F				
4	9.0	SD300946	SD300946F	250	328	227	3I
5,5	12	SD301246	SD301246F				
7,5	16	SD301646	SD301646F	260	400	245	4I
11	24	SD302446	SD302446F				
15	30	SD303046	SD303046F	300	460	250	5I
18,5	39	SD303946	SD303946F				
22	45	SD304546	SD304546F				



# SD300

## ACCESSORIES



### • MULTIPLE FIELDBUS OPTIONS EASY TO INSTALL AND USE

- PROFINET
- Modbus TCP
- CANopen
- Profibus-DP
- EtherCAT
- Ethernet IP



### • CONDUIT KIT

UL open type and enclosed type 1 certification:

- UL open type is offered as default.
- UL enclosed type1 needs conduit kit (option) installation.

### • FLANGE TYPE

The heat sink can be mounted outside the panel in case of space limitations.



### • I/O EXPANSION CARD OPTION

- 2 Relay outputs
- 3 Digital inputs
- 2 Analog Inputs
- 1 Analog Output

REFERENCE	DESCRIPTION
SD3CO	CANOpen communication module
SD3PB	Profibus communication module
SD3ETH	Ethernet I/P - Modbus TCP communication module
SD3ETC	EtherCAT communications module
SD3PN	Profinet communications module
SD3IO	Expansion module I/O
SD3EBF1	Conduit module frame 1N for NEMA1 compliant
SD3EBF2	Conduit module frame 2N for NEMA1 compliant
SD3EBF3	Conduit module frame 3N for NEMA1 compliant
SD3EBF4	Conduit module frame 1F for NEMA1 compliant
SD3EBF5	Conduit module frame 2F for NEMA1 compliant
SD3EBF6	Conduit module frame 3F for NEMA1 compliant
SD3EBF7	Conduit module frame 4F for NEMA1 compliant
SD3EBF8	Conduit module frame 5F for NEMA1 compliant
SD3EBF9	Conduit module frame 6F for NEMA1 compliant
SD3FLGF1	Flange module frame 1N
SD3FLGF2	Flange module frame 2N
SD3FLGF3	Flange module frame 3N
SD3FLGF4	Flange module frame 1F
SD3FLGF5	Flange module frame 2F
SD3FLGF6	Flange module frame 3F
SD3FLGF7	Flange module frame 4F
SD3FLGF8	Flange module frame 5F
SD3FLGF9	Flange module frame 6F
SD3CF1	Remote display-keypad option

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