

VARIABLE SPEED DRIVE

SD700 Series



SD700 SERIES is the core of the family, available from 1.5kW to 2200kW^[1], a voltage range from 230V_{AC} to 690V_{AC} and available 6, 12, 18 and 24 pulses. IP20 and IP54 mechanical designs cover all general industry applications, making it the most flexible and extensive series.

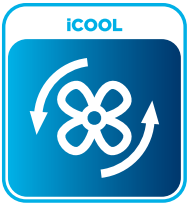
The whole series integrates unique features such as low dV/dt, smart mechanical design and accurate control. It is divided in 11 frame sizes to cover the whole power range. SD700 has been certified by Germanischer Lloyd.

[1] Higher power drives, consult Power Electronics.

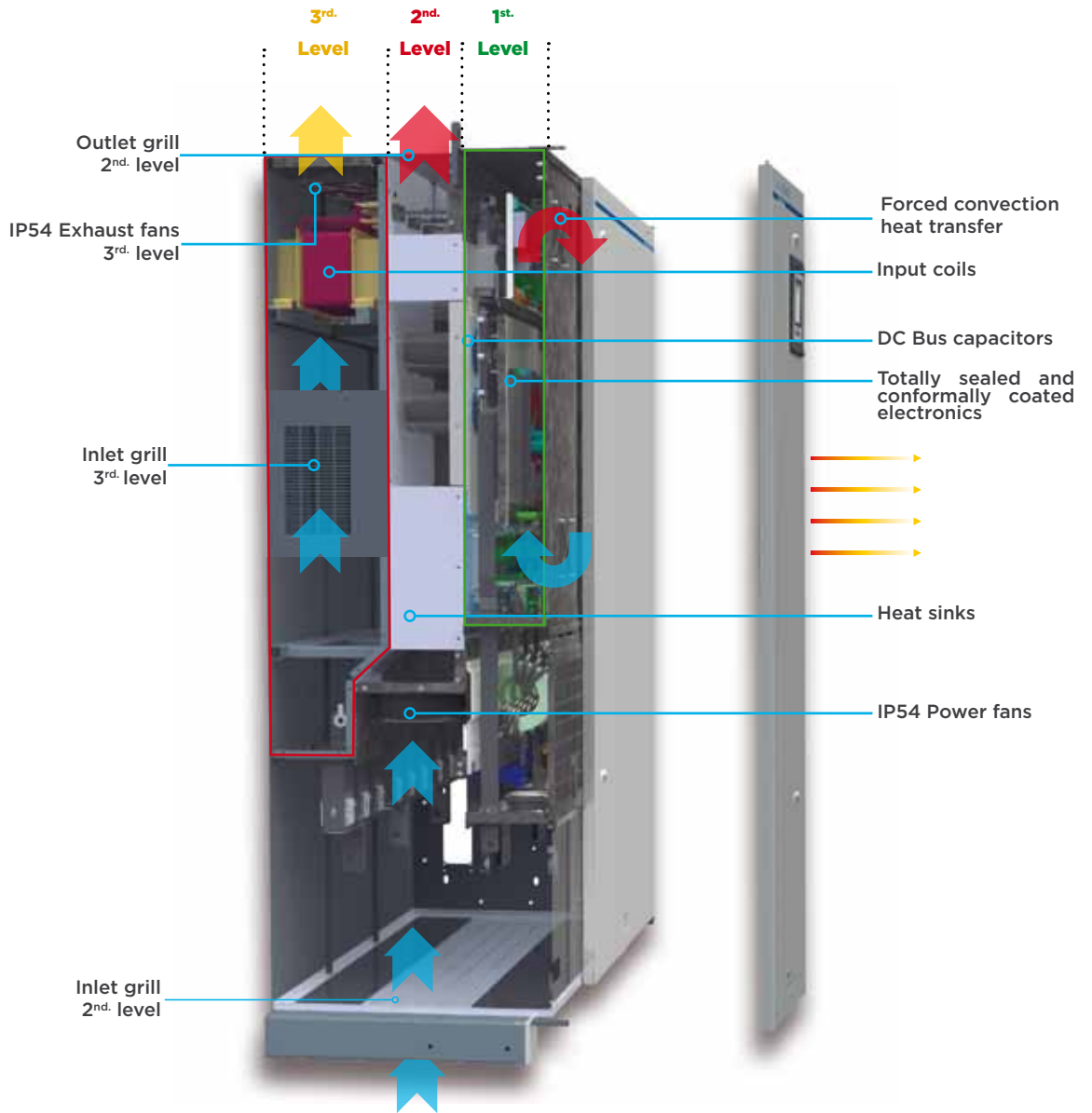
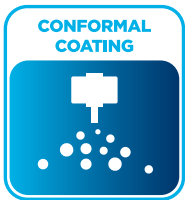


- IP54 without dust filters
- 50°C operation without power derating
- (FFA) Full frontal access
- Built-in harmonics and RFI filters
- Built-in dV/dt filter 500V/μs-800V/μs (unshielded cable up to 300m)
- Modularity
- Conformally coated electronics with military and aerospace technology

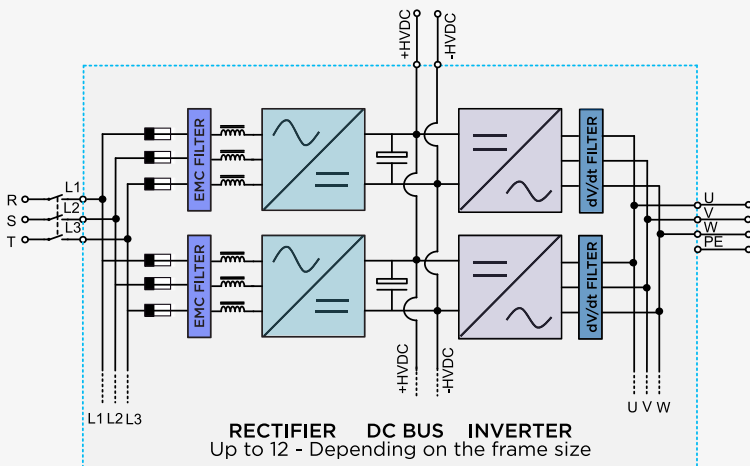




Three independent levels offer maximum protection and efficient cooling features



The PCB coating protects the micro lead components that are vulnerable to dust, moisture, pollution (PD3) and corrosive gasses 3C3 build up, which can produce conductive paths that can result in pins short circuiting.



UNIFIED ELECTRONIC BOARDS PERMIT NOT ONLY AN EASY AND QUICK MAINTENANCE BUT ALSO A REDUCED AMOUNT OF SPARE PARTS WORLDWIDE

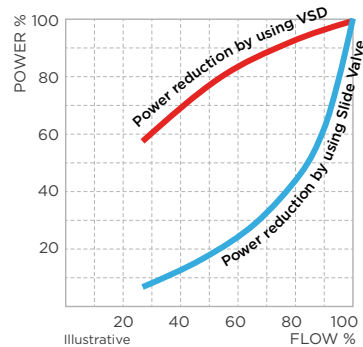
dV/dt FILTERS WITH CLAMP INTEGRATED AS STANDARD



The SD700 offers improved efficiency due to innovative control system and generates the maximum savings for pumps, fans, compressors, conveyors, mills, extruders... by means of its accurate speed control.

Energy savings depend on multiple parameters such as the torque and power response of the load, the process and motor sizing, running hours per year, etc. Nevertheless Power Electronics can tell you the expected savings on your new and retrofit projects.

TYPICAL PUMP ENERGY SAVINGS

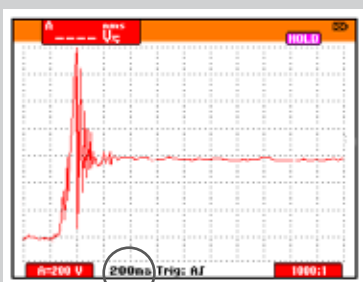


SD700 includes built-in as standard dV/dt filter that reduces the dV/dt value to 500V/μs-800V/μs depending on the drive size and rated voltage, minimizing the voltage peaks at the motor winding. Additionally SD700 has a unique CLAMP electronic system that smartly absorbs high frequency currents caused by the reflection phenomena in long motor cables.

These features reduce the transferred Electromagnetic Energy and the voltage peaks seen by the first turn of the winding. Consequently SD700 low voltage drive portfolio can be installed following Power Electronics recommendations with:

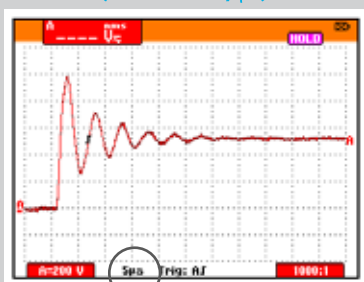
- greater cable distances (unshielded cable up to 300m)
- standard unshielded cable
- non isolated bearings
- no special motor insulation

NO dV/dt FILTER



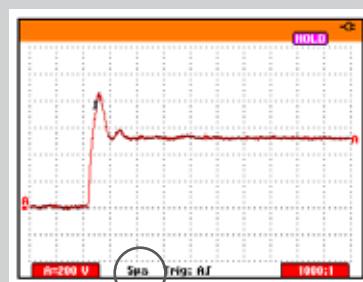
200ns
Peak voltage: $3.6 \times V_{LINE}$
Frequency_{CMC}: 12.5MHz

dV/dt FILTER (500-800V/μs)



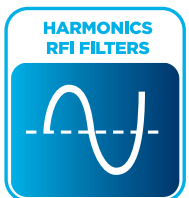
5μs
Peak voltage: $2.6 \times V_{LINE}$
Frequency_{CMC}: 200kHz

dV/dt FILTER + CLAMP

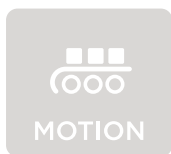


5μs
Peak voltage: $2.1 \times V_{LINE}$
Frequency_{CMC}: negligible

NOTE: 200m Motor cable, 400 VAC



High input impedance given by the input chokes 3% protects the drive against any grid anomaly and enhances its THDi performance in weak grids.

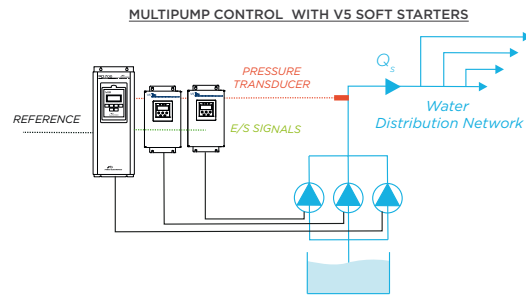
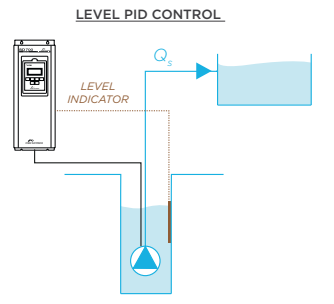
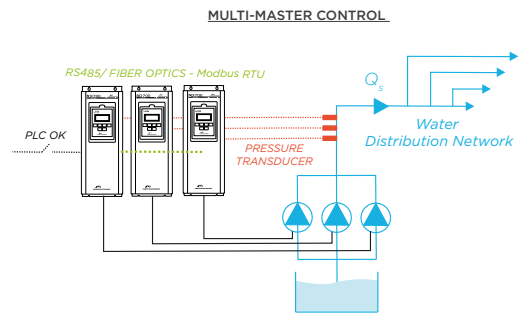
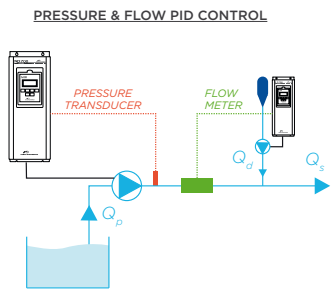


PowerCOMMS. The PowerCOMMS tool offers real performance information about motor and drive status.

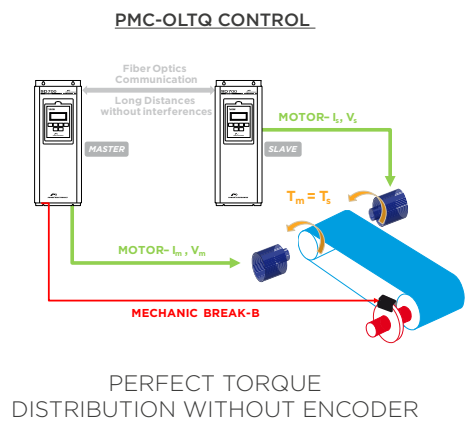
Powerful and Accurate control Power Electronics' success is measured by our customer's satisfaction so the motor control systems developed by Power Electronics have been designed to meet the most demanding features in any sector.

PowerPLC. The PowerPLC tool will enhance SD700 performance implementing multiple functions without additional hardware.

- Accurate direct and reverse action of the PID control regulation of pressure, flow, level.
- Sleep and wake up functionality for extra energy saving depending on pressure and flow.
- Water Hammer control to prevent catastrophic breakdowns.
- Direct programming in engineering units (l/s, m³/s, %, °C, ...).
- Operation in manual or automatic mode is up to you.
- Several Pump alternation modes for homogeneous ageing.
- Visualization of working time per pump and number of starts.
- Under-pressure and Over-pressure compensation.
- Head or pressure compensation depending on flow rate.
- Pipe fill function.
- Out of service Motor monitoring.
- Pulse measurement of the flow.
- Pump safety protections: cavitation with reset activation time, minimum pressure detection, over-pressure control, zero-flow detection...



- Precise and high starting torque features dedicated to loaded lifting systems.
- PMC-OLTQ (Power Motor Control-Open Loop Torque Control) over fibre optics communications provides unique master-slave performance in the most demanding applications, and guarantees a perfect torque distribution.
- Fast commissioning and invariable control response due to motor or belt parameters variation.
- Thanks to the MBC (Mechanical Brake Control), the Pre-Magnetization and Delay off IGBT, the loaded process will have a smooth start and stop.
- PMC factory settings and motor nameplate parameters ensure perfect performance without enabling the auto tuning function during commissioning.





Customised solutions

Power Electronics' engineering department offers a wide variety of tailor made solutions to comply with your specific requirements. Factory tested solutions that provide flexibility and reliability.

Customised input and output wiring:

- Top and bottom connections
- Size and number of conductors
- EMC requirements

Disconnection and Protection:

- Fuses
- On-load disconnectors
- Circuit breakers
- Isolation monitoring
- Earthing switch
- Mechanical interlocks

Documentation:

- Dimensions and electrical drawings
- ITP reports
- FAT - Factory Acceptance Test
- ...

Customised control and push buttons:

- Selectors and pushbuttons
- Customized user terminal strip
- PTC and PT100 relays
- Redundant Power Supply (UPS)
- ...

Cabinet features:

- Transport and elevation plinths
- Painting requirements
- Special cooling system (altitude, humidity, dust...)
- Structural design and test
- ...

ACCESSORIES

CODE	ACCESSORIES DESCRIPTION
SD7PD	Profibus Communication Board
SD7ET	Ethernet Communication Board
SD7DN	DeviceNet Communication Board
SD7CO	CAN Open Communication Board
(*)	N2 Metasys Communication Gateway
SD7EC	Encoder Board
SD7IO	Inputs / Outputs Expansion Board Additional 4DI, 5DO, 1AI and 1 AO
SD7FO	Fiber Optics board
SD7STO	Safe Torque Off (STO) board. Allows to implement in the drive the safe torque off function according to IEC/EN 61800-5-2
SD7ES01E	External 24Vdc Power Supply - Frame 1 of SD700. Exterior assembly SD7EB1 extension box required
SD7ES02I	External 24Vdc Power Supply - Frame 2 of SD700. Interior Assembly.
SD7ES03I	External 24Vdc Power Supply - Frame 3 of SD700. Interior Assembly.
SD7ES04I	External 24VDC Power Supply - Frame 4 of SD700. Interior Assembly
SD7ES05I	External 24VDC Power Supply - Frame 5 of SD700. Interior Assembly

CODE	ACCESSORIES DESCRIPTION
SD7ES06I	External 24VDC Power Supply - Frames 6, 7, 9 and 10 of SD700. Interior Assembly
SD7ES08I	External 24VDC Power Supply - Frames 8 and 11 of SD700. Interior Assembly
V11	Display Extender Kit (3 meters)
V12	Display Extender Kit (5 meters)
B150.2	Dynamic brake 230V _{AC}
B150	Dynamic brake 380V _{AC} , 500V _{AC}
B150.6	Dynamic brake 690V _{AC}
SD7DB	Optional Board for Slave Mode Brake
SD7EB1	SD700 Connection box frame 1
SD7EB2	SD700 Connection box frame 2
SD7EB3	SD700 Connection box frame 3

* Consult availability

TECHNICAL CHARACTERISTICS

INPUT	Power range	1,5kW - 2200 kW ^[1]
	Voltage power	230Vac, 380-500Vac, 525Vac, 690Vac , 3 phases (±10%)
	Multipulse	6, 12, 18, 24
	Input frequency	50Hz/60Hz ± 6%
	Input rectifier technology	Thyristor-Diode
	DPF=cos ϕ / Power factor	≥ 0.98 / ≥ 0.91
	EMC input filter	Frames 1 & 2: First environment (C2 standard) Frames 3 to 11: Second environment (Industrial) (C3 Standard) First environment (C2 Optional). C1 consult Power Electronics. Optional IT filter
	Current THDi (%) / Filter harmonics	≤ 40% / Choke coils 3% impedance
Regenerative	NO	
OUTPUT	Output frequency ^[2]	0...200Hz
	Overload capacity	Constant torque/heavy duty: 150% during 60 sec at 50°C Variable torque/normal duty: 120% during 60 sec at 40°C
	Efficiency (at rated current and rated voltage)	≥ 98%
	Switching frequency	4 to 8kHz - PEWave
	Output dV/dt filter	500 to 800V/μs ^[3]
Output cable length ^[4]	USC 300m, SC 150m	
ENVIRONMENTAL CONDITIONS	Operation temp. / Storage temp.	-20°C to +50°C / -40°C to +70°C
	Altitude/Power altitude derating ^[1]	1000m / >1000m, 1% PN(kW) per 100m; 4000m maximum
	Ambient humidity	<95%, non-condensing
	Degree of protection	IP20, IP54
INPUTS / OUTPUTS	Digital inputs	6 programmable active high (24Vdc), Isolated power supply, 1 PTC input
	Digital outputs	3 Programmable changeover relays (250Vac, 8A or 30Vdc, 8A)
	Analogue input	2 Programmable differential inputs: 0 - 20mA, 4 - 20mA, 0 - 10Vdc and ±10Vdc. (Optically isolated)
	Analogue outputs	2 Isolated programmable outputs: 0 - 20mA, 4 - 20mA, 0 - 10Vdc and ±10Vdc
	Encoder inputs (optional)	Two differential encoders input. Voltages inputs from 5 to 24Vdc
	User power supply	+24Vdc user power supply (Max 180mA) regulated and short-circuit protected +10Vdc user power supply (Max 2 potentiometers R= 1 kΩ) regulated and short-circuit protected
	I/O Extension board (optional)	4 Digital Inputs: Programmable inputs and active high (24Vdc). Optically isolated. 1 Analogue Input: Programmable and differential input. 5 Digital Outputs: Programmable multi-function relays. 1 Analogue Output: Programmable outputs in voltage / current.
External power supply (optional)	24V External Power Supply, Fault Relay integrated	
COMMUNICATION	Standard protocol	Modbus-RTU
	Optional protocol	Profibus-DP, DeviceNet, Ethernet (Modbus TCP), Ethernet IP, CAN Open, N2 Metasys Gateway
REGULATIONS	Certifications	CE, cTick, UL ^[5] , cUL ^[5] , GL ^[6]
	Electromagnetic compatibility	EMC Directive (2004/108/CE), IEC/EN 61800-3
	Design and construction	LVD Directive (2006/95/CE), IEC/EN 61800-2, IEC/EN 61800-5-1, IEC/EN 60146-1-1, IEC60068-2-6, IEC/EN 61800-5-2(STO) Tüv Rheinland Certified

NOTES	[1] Other configuration, consult Power Electronics.	the rated power, the input voltage and under Power Electronics' installation recommendations. For frames 1 and 2 it is available optional filters.	[4] SC: Shielded cable, USC: Unshielded Cable. Follow Power Electronics installation recommendations. For greater cable lengths and first environment (C2) consult Power Electronics.
	[2] For operation frequencies higher than 100Hz consult Power Electronics.		
	[3] Valid for frames 3 to 11, depending on		

CONFIGURATION TABLE

SD700 Series	Model		Output Current ^[1]		Input Voltage		Degree of protection		Pulses number		Cabinet plinths ^[2]		EMC Filter		Floating Earth		Input Frequency	
			0006	6A	2	230Vac	2	IP20	-	6 pulses	-	Standar	-	Second environment	-	Without Floating Earth	-	50Hz
SD7	-	SD700	0100	100A	5	380-500Vac	5	IP54	12	12 pulses	20	Total height 2000mm	E	First environment ^[3]	T	With Floating Earth	6	60Hz ^[4]
			7	525Vac			18	18 pulses	22	Total height 2200mm	M	Optional IT filter				
			2500	2500A	6	690Vac			24	24 pulses								

NOTES	[1] Verify the rated current of the motor nameplate to guarantee the compatibility with the selected drive.	[3] Floating earth drive not available with first environment filter. [4] Consult availability. For more ordering info contact our sales representatives.
	[2] SD700 frame 4 available with standard height and with 1712mm total height.	

STANDARD RATINGS

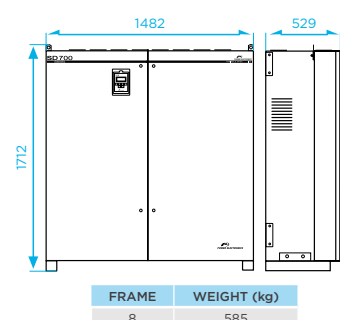
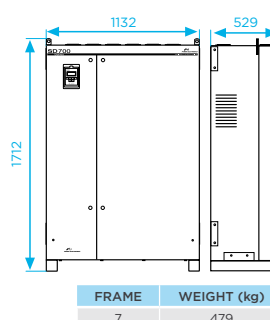
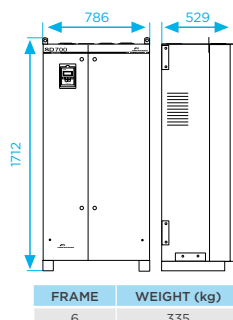
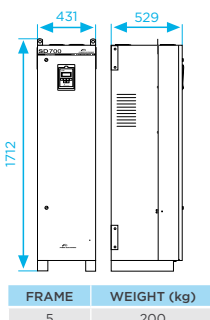
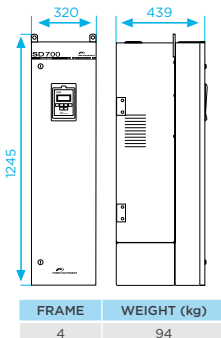
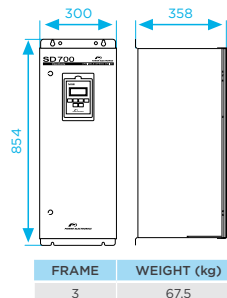
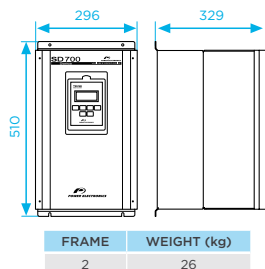
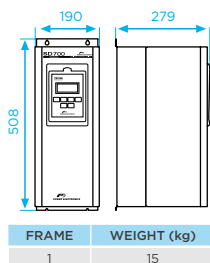
230Vac - 6 PULSES							
FRAME	CODE	Operation Temperature 50°C HEAVY DUTY			Operation Temperature 40°C NORMAL DUTY		
		I(A) Rated	Motor Power (kW) at 230VAC	150% Overload (A)	I(A) Rated	Motor Power (kW) at 230VAC	120% Overload (A)
1	SD70006 2	6	1,5	9	7,5	2,2	9
	SD70009 2	9	2,2	14	11	3	14
	SD70012 2	12	3	18	15	5,5	18
	SD70020 2	20	5,5	30	25	7,5	30
	SD70026 2	26	7,5	39	33	9	39
2	SD70032 2	32	9	48	40	11	48
	SD70039 2	39	11	59	49	15	59
	SD70050 2	50	15	75	63	18,5	75
3	SD70064 2	64	18,5	96	80	22	96
	SD70075 2	75	22	113	94	25	113
	SD70090 2	90	25	135	113	33	135
	SD70115 2	115	33	173	144	45	173
4	SD70150 2	150	45	225	188	51	225
	SD70170 2	170	51	255	213	63	255
5	SD70210 2	210	63	315	263	75	315
	SD70250 2	250	75	375	313	86	375
	SD70275 2	275	86	413	344	100	413
6	SD70330 2	330	100	495	413	110	495
	SD70370 2	370	110	555	463	140	555
	SD70460 2	460	140	690	575	185	690
7	SD70580 2	580	185	870	725	200	870
	SD70650 2	650	200	975	813	220	975
	SD70720 2	720	220	1080	900	250	1080

Higher power drives available. Consult Power Electronics.

525Vac - 6 PULSES							
FRAME	CODE	Operation Temperature 50°C HEAVY DUTY			Operation Temperature 40°C NORMAL DUTY		
		I(A) Rated	Motor Power (kW) at 525VAC	150% Overload (A)	I(A) Rated	Motor Power (kW) at 525VAC	120% Overload (A)
4	SD70100 7	100	75	150	122	90	150
	SD70120 7	120	90	180	147	110	180
	SD70145 7	145	110	218	176	132	218
5	SD70180 7	180	132	270	222	150	270
	SD70205 7	205	150	308	254	185	308
6	SD70270 7	270	200	405	334	250	405
	SD70295 7	295	220	443	360	280	443
	SD70340 7	340	250	510	417	315	510
7	SD70425 7	425	315	638	526	400	638
	SD70470 7	470	355	705	586	450	705
	SD70535 7	535	400	803	666	500	803
8	SD70660 7	660	500	990	824	600	990
	SD70750 7	750	560	1125	936	700	1125

Higher power drives available. Consult Power Electronics.

NOTE [1] Multipulse drives (12, 18, 24) and higher power drives available. Consult your sales representative.



400Vac - 6 PULSES							
FRAME	CODE	Operation Temperature 50°C HEAVY DUTY			Operation Temperature 40°C NORMAL DUTY		
		I(A) Rated	Motor Power (kW) at 400VAC	150% Overload (A)	I(A) Rated	Motor Power (kW) at 400VAC	120% Overload (A)
1	SD70006 5	6	2,2	9	7,5	3	9
	SD70009 5	9	4	14	11	5,5	14
	SD70012 5	12	5,5	18	15	7,5	18
	SD70018 5	18	7,5	27	23	11	27
	SD70024 5	24	11	36	30	15	36
2	SD70032 5	32	15	48	40	18,5	48
	SD70038 5	38	18,5	57	48	22	57
	SD70048 5	48	22	72	60	30	72
3	SD70060 5	60	30	90	75	37	90
	SD70075 5	75	37	113	94	45	113
	SD70090 5	90	45	135	113	55	135
	SD70115 5	115	55	173	144	75	173
4	SD70150 5	150	75	225	188	90	225
	SD70170 5	170	90	255	213	110	255
	SD70210 5	210	110	315	263	132	315
5	SD70250 5	250	132	375	313	160	375
	SD70275 5	275	150	413	344	200	413
	SD70330 5	330	160	495	413	220	495
6	SD70370 5	370	200	555	463	250	555
	SD70460 5	460	250	690	575	315	690
	SD70580 5	580	315	870	725	400	870
7	SD70650 5	650	355	975	813	450	975
	SD70720 5	720	400	1080	900	500	1080
	SD70840 5	840	450	1260	1050	560	1260
8	SD70925 5	925	500	1388	1156	630	1388
	SD70990 5	990	560	1485	1238	710	1485

Higher power drives available. Consult Power Electronics.

690Vac - 6 PULSES							
FRAME	CODE	Operation Temperature 50°C HEAVY DUTY			Operation Temperature 40°C NORMAL DUTY		
		I(A) Rated	Motor Power (kW) at 690VAC	150% Overload (A)	I(A) Rated	Motor Power (kW) at 690VAC	120% Overload (A)
4	SD70052 6	52	45	78	65	55	78
	SD70062 6	62	55	93	78	75	93
	SD70080 6	80	75	120	100	90	120
5	SD70105 6	105	90	157	131	110	157
	SD70130 6	130	110	195	163	132	195
	SD70150 6	150	132	225	188	160	225
6	SD70170 6	170	160	255	213	200	255
	SD70210 6	210	200	315	263	250	315
	SD70260 6	260	250	390	325	315	390
7	SD70320 6	320	315	480	400	400	480
	SD70385 6	385	355	578	481	450	578
	SD70460 6	460	450	690	575	560	690
8	SD70550 6	550	500	825	688	630	825
	SD70660 6	660	630	990	825	800	990

Higher power drives available. Consult Power Electronics.



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