

SD700FL

VARIABLE SPEED DRIVES

Low harmonics Notch Filter Drive



SD700FL

The unique features of the SD700 drive are improved adding an input notch filter that reduces the THDi below 5%^[1]. It is constructed through the parallel connection of individual filtering modules, all controlled and monitored by the drive. Each module integrates temperature sensors and a contactor that isolates the long life integrated capacitors. This contactor is controlled by the drive depending on the motor load to get best filtering features.

What makes SD700FL different? The filtering features do not depend on the grid impedance, that means that the filter will never cause resonance as the passive filter could cause, and its performance will not vary significantly after electrical grid modifications. This feature makes it suitable for any low harmonic application.

[1]Harmonics are below the limits defined in IEEE519 for all ISC/IL

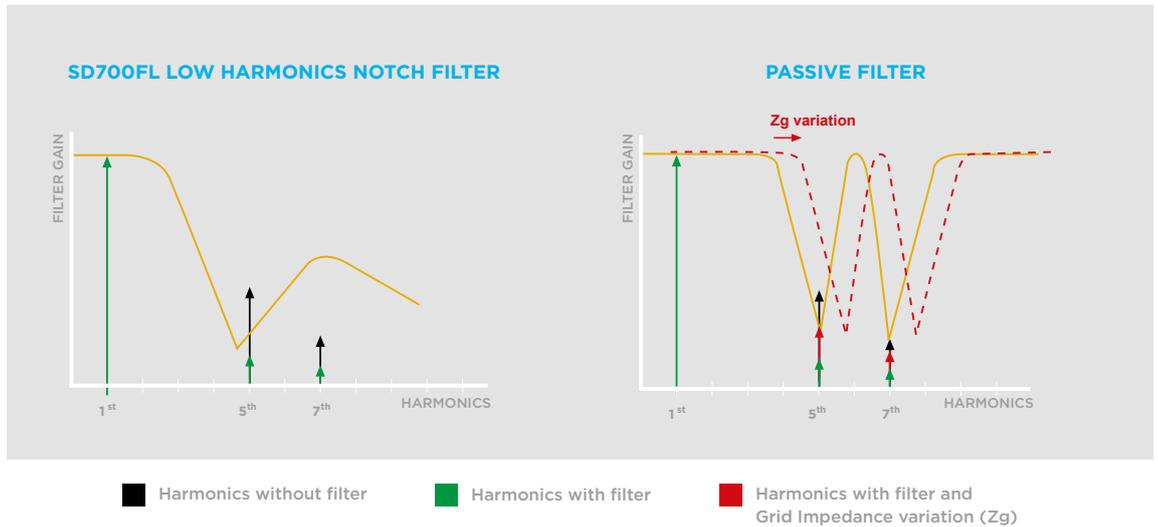
RUGGED AND
RELIABLE SOLUTION
FOR LOW HARMONICS
APPLICATIONS

- IP54 WITHOUT DUST FILTERS
- 50°C OPERATION WITHOUT POWER DERATING
- (FFA) FULL FRONTAL ACCESS
- MODULAR POWER STAGE AND NOTCH FILTER
- BUILT-IN RFI FILTER
- BUILT-IN DV/Dt FILTER 500V/μS-800V/μS (SCREENED CABLE UP TO 300M)
- CONFORMALLY COATED ELECTRONICS WITH MILITAR AND AEROSPACE TECHNOLOGY



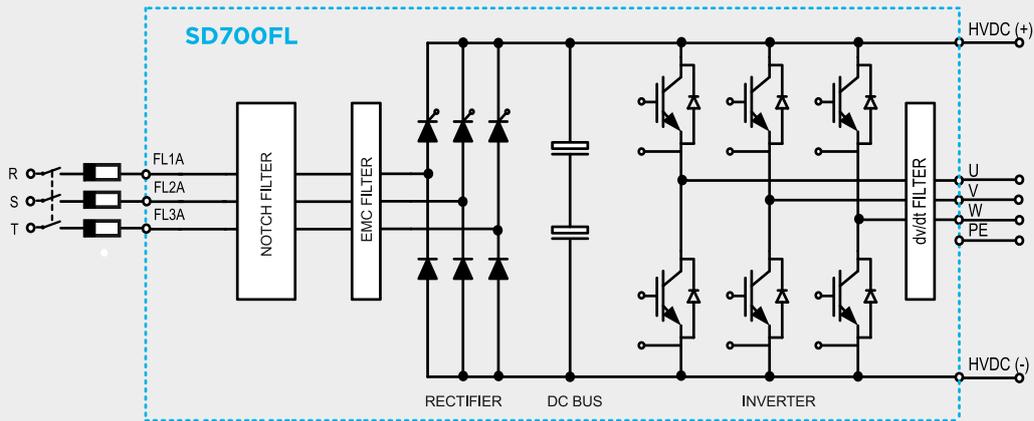
LOW HARMONIC DRIVE

The additional input filter customised for your application ensures a THDi level that meets all the projects requirements. SD700FL is not a common passive filter, its performance does not depend on the grid impedance so the filter will never cause resonance under normal working conditions.



The passive filters are usually LC filters designed specifically to filter the 5th and 7th harmonic for a specific grid configuration and impedance Z_g . If the grid impedance is modified due to the introduction of new loads or motors, the filtering features are modified and may cause a resonance effect in the worst case.

The Notch filter integrates a line impedance that makes negates the grid, consequently the variation of the grid impedance does not affect the filtering features. We create long lasting solutions to meet today and future needs.



SD7FLDTP0001AI

WIDE VOLTAGE AND POWER RANGE

400Vac and 690Vac from 22kW to 1800kW.

COMPLETE AND FULLY TESTED SOLUTION

Forget about buying independent filters and separate solutions. SD700FL is a truly tested solution designed for your application. The drive monitors the temperature and activates the integrated contactor of the filter to provide the best performance under any load condition.



SD700 FL SERIES

Technical Characteristics

SD700 FL SERIES

INPUT	Power range	2.2kW - 1800kW ^[1]	
	Voltage power	380-500Vac, 690Vac, 3 phase (±10%)	
	Multipulse	6	
	Input frequency	50Hz/60Hz ± 6%	
	Input rectifier technology	Thyristor-Diode	
	Displacement power factor (DPF = cos Φ)	≥ 0.99	
	Power factor (PF= I ₁ /I _{rms} · cos Φ)	≥ 0.98	
	Momentary power loss	> 2sec (depending on the load inertia)	
	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.	
	Harmonics filter	Notch Filter	
	Current THDi (%)	≤ 5% ^[2]	
	Regenerative	NO	
	OUTPUT	Output frequency ^[3]	0... 200Hz
Overload capacity		150% during 60s at 50°C	
Efficiency (at rated current and rated voltage)		≥97%	
Control method		V/Hz VECTOR CONTROL Open Loop: PMC: speed (OLSP)/torque control (OLTQ), AVC: speed(OLSP) / torque control (OLTQ) Close Loop (Encoder): PMC:speed (CLSP)/torque control (CLTQ), AVC: speed(CLSP)/torque control (CLTQ)	
Switching frequency		4 to 8kHz - PEWave	
Output dv/dt filter		500 to 800V/μs	
Output cable length ^[4]		USC 300m SC 150m	
Dynamic brake		External BI50 Dynamic Brake	
ENVIRONMENTAL CONDITIONS		Operation ambient temperature	Minimum: -20°C Maximum: +50°C
		Storage temperature	Minimum: -40°C Maximum: +70°C
	Altitude	1000m	
	Power altitude derating ^[1]	>1000m, 1% P _N (kW) per 100m; 4000m maximum	
	Ambient humidity	<95%, non-condensing	
	Degree of protection	IP42 Filter Cabinet / (IP20/IP54) Drive Cabinet	
	Vibration	Deflection: 0.075mm (10Hz-57Hz), Acceleration: 9.8m/s ² (57Hz-150Hz)	
	Heating resistors	Optional	
PROTECTIONS	Motor protections	Rotor locked, Motor overload (thermal model), Output current limit, Phase current imbalance, Phase voltage imbalance, Motor over-temperature (PTC signal), Speed limit, Torque limit.	
	Drive protections	IGBT's overload, Input phase loss, Low input voltage, High input voltage, DC Bus voltage limit, Low DC Bus voltage, High input frequency, Low input frequency, IGBT temperature, Heat-sink over-temperature, Power supply fault, Drive thermal model, Ground fault, Software and Hardware fault, Analogue input signal loss (speed reference loss), Safe stop / Emergency stop.	
INPUTS/OUTPUTS	Digital inputs	5 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)	Differential encoder 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.	
	External power supply (optional)	1 Analogue Output: Programmable outputs in voltage / current. 24 V External Power Supply, Fault Relay integrated	

NOTES

[1] Other configuration, consult Power Electronics.
[2] Harmonics are below the limits defined in IEEE519 for all I_{sc}/I_L

[3]: For operation frequencies higher than 100Hz consult Power Electronics.

[4] SC: Shielded cable, USC: Unshielded Cable. Follow Power Electronics installation recommendations. For greater cable lengths and first environment (C2) consult Power Electronics.

SD700 FL SERIES | Technical Characteristics

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COMMUNICATION	Standard hardware	USB port RS232 port RS485 port
	Standard protocol	Modbus-RTU
	Optional protocol	Profibus-DP DeviceNet Ethernet (Modbus TCP) Ethernet IP CAN Open N2 Metasys Gateway
CONTROL PANEL	Type	Removable
	Length	3 meters and 5 meters (optional)
	Connection	RJ45
	Visualization leds	LED ON: Control board is energized LED RUN: Motor receiving power supply LED FAULT: Flashing displays that a fault has occurred
	Alphanumeric display	4 lines x 16 characters Keypad with 6 keys to control and configure the drive, start and stop/reset Independent memory
	Display information	Average current and 3-phase motor current Average voltage and 3-phase motor voltage Average input voltage and 3-phase input voltage 3-phase input and output frequency DC Bus Voltage Drive Status Speed, Torque, Power, Power factor of motor Register of total and partial drive running time with reset function. (hours) Register of total and partial drive energy consumption with reset function (kWh) Relay status Digital inputs / PTC status Output comparator status Analogue inputs and sensor values Analogue output value Motor overload and equipment status Drive and rectifier temperature Fault history (last 6 faults)
	Others	Real time clock Perpetual calendar
REGULATIONS	Certifications	CE, cTick, UL ^[5] , cUL ^[5]
	Electromagnetic compatibility	EMC Directive (2004/108/CE) IEC/EN 61800-3 IEEE 519
	Design and construction	LVD Directive (2006/95/CE) IEC/EN 61800-2 General requirements IEC/EN 61800-5-1 Safety IEC/EN 60146-1-1 Semiconductor converters IEC60068-2-6 - Vibration
	Functional Safety	IEC/EN 61800-5-2(STO) TÜV Rheinland Certified

NOTES [5] On certification process.



Standard Ratings

POWER RANGE AT 400VAC

400Vca													
FRAME	CODE	Operation temperature 50°C			DIMENSIONS						Weight (kg)		
		I(A) Rated	Motor power (kW) at 400Vac	150% Overload (A)	Width		Depth		Height ^[1]		Drive	Filter	
					Drive (W _D)	Filter (W _F)	Drive (D _D)	Filter (D _F)	Drive (H _D)	Filter (H _F)			
1	SD7FL0006 5X	6	2.2	9	190	207	278.6	279	507.6	507.6	15	50	
	SD7FL0009 5X	9	4	14									
	SD7FL0012 5X	12	5.5	18									
	SD7FL0018 5X	18	7.5	27									
	SD7FL0024 5X	24	11	36									
2	SD7FL0032 5X	32	15	48	296	500	328.8	394	510.3	851	26	75	
	SD7FL0038 5X	38	18.5	57									
	SD7FL0048 5X	48	22	72									
3	SD7FL0060 5X	60	30	90	300.5	500	358	390	853.5	990	67.5	100	
	SD7FL0075 5X	75	37	113								105	
	SD7FL0090 5X	90	45	135								110	
	SD7FL0115 5X	115	55	173								110	
4	SD7FL0150 5X	150	75	225	320	608	438.5	440	1245	1206	94	175	
	SD7FL0170 5X	170	90	255								180	
5	SD7FL0210 5X	210	110	315	431	407	529	1712	1712	1712	94	425	
	SD7FL0250 5X	250	132	375								450	
	SD7FL0275 5X	275	150	413								460	
6	SD7FL0330 5X	330	160	495	786	407	529	1712	1712	1712	94	614	
	SD7FL0370 5X	370	200	555								649	
	SD7FL0460 5X 20	460	250	690								814	2000
7	SD7FL0580 5X 20	580	315	870	1132	814	529	2000	2000	2000	94	1037	
	SD7FL0650 5X 20	650	355	975								1221	1236
	SD7FL0720 5X 20	720	400	1080								814	1107
8	SD7FL0840 5X 20	840	450	1260	1482	1221	529	2000	2000	2000	94	1412	
	SD7FL0925 5X 20	925	500	1388								1457	
	SD7FL0990 5X 20	990	560	1485								1492	
9	SD7FL1150 5X 20	1150	630	1725	2352	1628	529	2000	2000	2000	94	2121	
	SD7FL1260 5X 20	1260	710	1890								2171	
	SD7FL1440 5X 20	1440	800	2160								2261	
10	SD7FL1580 5X 20	1580	900	2370	3402	2035	529	2000	2000	2000	94	2937	
	SD7FL1800 5X 20	1800	1000	2700								3007	
11	SD7FL2200 5X 20	2200	1200	3300	4452	2442	529	2000	2000	2000	94	3429	
	SD7FL2500 5X 20	2500	1400	3750								2849	3953

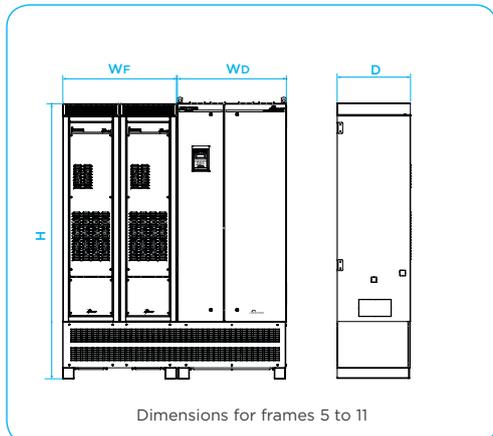
NOTE [1] Available optional plinths for frames 5 to 11, 2000mm and 2200mm total height.

POWER RANGE AT 690VAC

690Vca												
FRAME	CODE	Operation temperature 50°C			DIMENSIONS						Weight (kg)	
		I(A) Rated	Motor power (kW) at 690Vac	150% Overload (A)	Width		Depth		Height ^[1]		Drive	Filter
					Drive (W _D)	Filter (W _F)	Drive (D _D)	Filter (D _F)	Drive (H _D)	Filter (H _F)		
4 ^[1]	SD7FL0052 6X	52	45	78	300.5	-	358	-	853.5	-	67.5	-
	SD7FL0062 6X	62	55	93		500		390		990		128
	SD7FL0080 6X	80	75	120	320	608	438.5	440	1245	1206	94	128
	SD7FL0105 6X	105	90	157								185
5	SD7FL0130 6X	130	110	195	431	407	529	1712	1712	2000	413	413
	SD7FL0150 6X	150	132	225								550
	SD7FL0170 6X	170	160	255								560
6	SD7FL0210 6X	210	200	315	786	407	529	1712	2000	2000	724	724
	SD7FL0260 6X 20	260	250	390		814						1073
	SD7FL0320 6X 20	320	315	480		1093						
7	SD7FL0385 6X 20	385	355	578	1132	814	529	2000	2000	2000	1247	1247
	SD7FL0460 6X 20	460	450	690		1221						1606
8	SD7FL0550 6X 20	550	500	825	1482	1221	529	2000	2000	2000	1732	1732
	SD7FL0660 6X 20	660	630	990		1628						2101
9	SD7FL0750 6X 20	750	710	1125	2352	1628	529	2000	2000	2000	2541	2541
	SD7FL0840 6X 20	840	800	1260		2035						2561
	SD7FL0950 6X 20	950	900	1425		2930						
10	SD7FL1140 6X 20	1140	1000	1710	3402	2035	529	2000	2000	2000	3382	3382
	SD7FL1270 6X 20	1270	1200	1905		2442						3771
	SD7FL1420 6X 20	1420	1400	2130		2849						4160
11	SD7FL1500 6X 20	1500	1500	2250	4452	3256	529	2000	2000	2000	4847	4847
	SD7FL1800 6X 20	1800	1800	2700		3663						5256

NOTES [1] Dimensions and weights not indicated upon request.
[2] Available optional plinths for frames 5 to 11, 2000 and 2200 total height.

DRIVES



FILTERS

