

HIGH FREQUENCY CONVERTER TESEO

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About Us

FOUNDED IN 1975, SECOM IS A LEADING COMPANY FOR THE DISTRIBUTION AND PRODUCTION OF COMPONENTS AND DEVICES FOR POWER ELECTRONICS

SECOM continuously carries out new research and technical proposal in conjunction with important clients, providing technical support to meet their specific needs.

Production excellence and efficient organization allow SECOM to commit itself to providing to the market with timely and professional service in numerous sectors of static energy conversion. Flexibility and short delivery time have become pillars to SECOM's company policy.

WHO WE ARE



Over the years the company has become an important designer and manufacturer of power electronic devices for industrial automation manufacturing technologies

WHAT WE DO



SECOM studies and manufactures customized solutions on behalf of its customers.

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TESEO

OVERVIEW

SECOM introduced in 2013 a new series of frequency converters designed to supply power to equipment that incorporates technology currently used in induction heating, hardening, smelting and/or other applications where a resonant circuit is required.

H bridge configuration is used in SECOM induction heating converters.

The “**Teseo**” is an IGBT power electronic for induction heating applications. The electrical power flowing through the “H-Bridge” inverter is converted in thermal power by means of an inductor (outside the power module).

The output frequency is defined by the working point of the application.

The control unit is outside the inverter and commands the IGBT and reads the current and other feedbacks in order to control the injected power in the inductor.

Strength points of this solution are:

- IGBT High Frequency technology
- A drastically gas and smoke emission reduction typical of the old heating process
- A reduced energy consumption
- Immediate availability of the heating -> no need long start or stop sequences, as with traditional reheating furnaces.

TESEO

OVERVIEW

The **TESEO** is an DC/AC converter with H-Bridge topology.
The short description of the machine is described below:

The SDXXXXV06.LFT, where the XXXX is the active power (kW) calculated at 50 z output current.

There are 4 inverter sizes, are in the table below:

Model name	Nominal current @ 50 Hz [Arms]	Ac voltage input [Vrms]	Capacitor value [μ F]	Overcurrent value [Apk]	Overvoltage value [Vpk]
SD600KV06.LFT	750	690+5%-10%	16800	Nd	1050
SD840KV06.LFT	1050	690+5%-10%	23800	4400	1050
SD1M20V06.LFT	1500	690+5%-10%	33200	4400	1050
SD1M52V06.LFT	1900	690+5%-10%	47600	4400	1050

The control system is interfaced with the power module through the fiber optic and connectors located in the interface board (INTER_TES).

MECHANICAL DATA

The machine has three different size, listed in the table below (without bars):

Model name	W (mm)	D (mm)	H (mm)
SD0600KV06.LFT	350	690	1354
SD0840KV06.LFT	350	690	1354
SD1200KV06.LFT	390	690	1354
SD1540KV06.LFT	470	690	1354

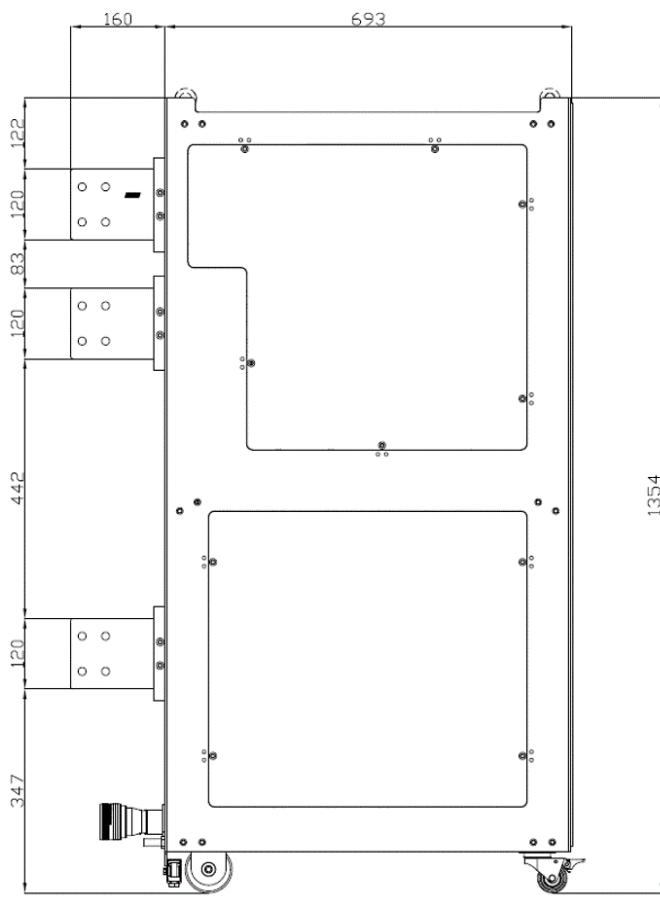


Fig. - SD600V06.LFT and SD840V06.LFT left side view

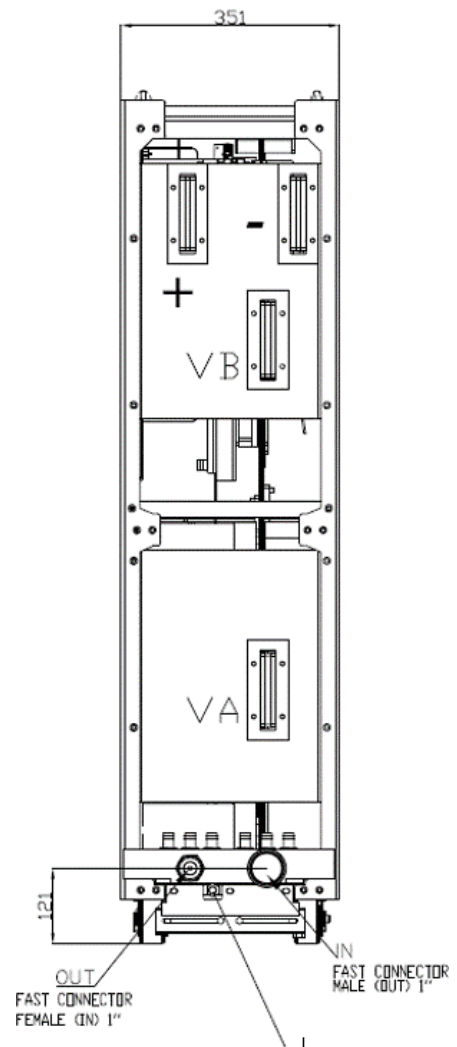


Fig. - SD600V06.LFT and SD840V06.LFT rear side view

MECHANICAL DATA

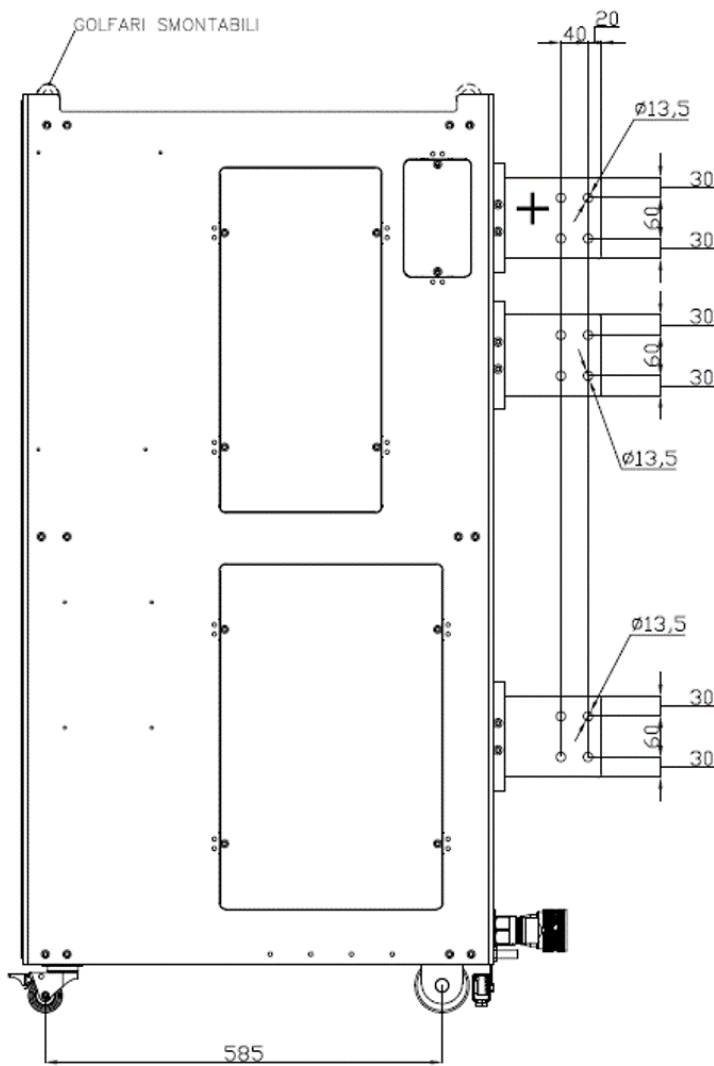


Fig. - SD600V06.LFT and SD840V06.LFT right side view

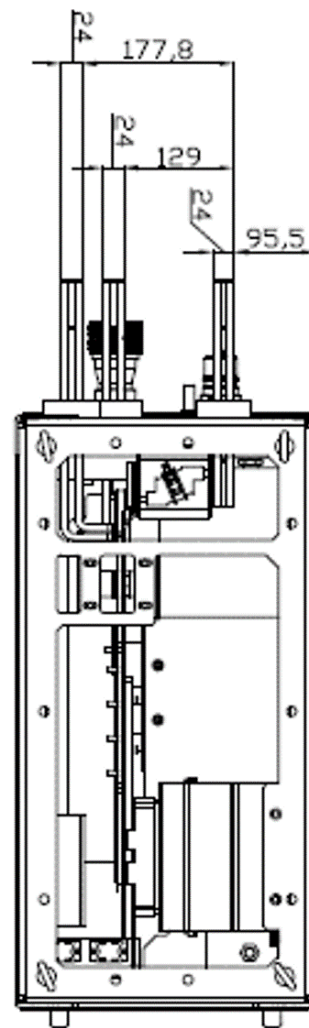


Fig. - SD600V06.LFT and SD840V06.LFT top side view

COOLING SYSTEM

The power modules are equipped with a cooling system circuit to refresh and cool down the IGBT. The inlet and outlet of the cooling system are located on the bottom rear side of the module.

A system with quick connector guarantee a fast operating maintenance. The main cooling data is described in . It is mandatory to respect the water flow value described.

Data	Value
Internal pipes water volume [L]	4
Water flow [L/min]	> 40
Rated pressure drop [bar] @ 40 L/min	1.7
Operating temperature range [°C]	10÷40
Maximum absolute pressure [bar]	3
Semiconductor losses [kW]	18
Heatsink material	Aluminium
Water type	Distilled
Water maximum conductivity [μ S/cm]	< 50
Water pH	7÷8
Water hardness	3÷10 °dH
Undissolved particles	< 5 mg/l
Quick connection type	76KB (1")

It is mandatory to use only stainless steel or aluminum in the entire hydraulic circuit connected to power module.

The water flow/pressure drop characteristic is showed in the table below.

Water flow [l/min]	ΔP [Bar]
20	0.7
30	1.15
40	1.7
50	2.8

TECHNICAL DATA

Ambient conditions	
Altitude	1000 m. a.s.l.
Air temperature	0 ÷ 40°C
Storage temperature	0 ÷ 50°C
Relative humidity	10 ÷ 90 %
Maximum pollution degree	2

Dimensions and weight	
Height	1500 mm.
Width	350 ÷ 540
Depth with short connection	690 mm
Depth with long connection	820 mm

Electrical data	
Converter type	
Cooling system	Water
Supply voltage	530 ÷ 930 V _{DC}
Output frequency	50 ÷ 1000 Hz

Freq. Out [Hz]	I _{rms} [A]	I _{cMax} [A _{peak}]	V _{dc} max[V]	Power out [kW]	V _{ac} in [V]	V _{dc} range [V]
50	750	958	1000	608	380÷690	530÷1000
100	1250	1133	1000	1013	380÷690	530÷1000
200	1850	2466	1000	1499	380÷690	530÷1000
300	2350	3133	1000	1904	380÷690	530÷1000
400	2650	3533	1000	2147	380÷690	530÷1000
500	2850	3800	1000	2309	380÷690	530÷1000
1000	2800	3733	1000	2269	380÷690	530÷1000
1500	2500	1850	1000	2026	380÷690	530÷1000
2000	2300	1600	1000	1864	380÷690	530÷1000
2500	2150	1300	1000	1742	380÷690	530÷1000
3000	1900	1000	1000	1540	380÷690	530÷1000

Fig. - Derating table for SD0600KV06.LFT

TECHNICAL DATA

Freq. Out [Hz]	I _{rms} [A]	I _{cMax} [A _{peak}]	V _{dc} max[V]	Power out [kW]	V _{ac} in [V]	V _{dc} range [V]
50	750	958	1000	608	380÷690	530÷1000
100	1250	1133	1000	1013	380÷690	530÷1000
200	1850	2466	1000	1499	380÷690	530÷1000
300	2350	3133	1000	1904	380÷690	530÷1000
400	2650	3533	1000	2147	380÷690	530÷1000
500	2850	3800	1000	2309	380÷690	530÷1000
1000	2800	3733	1000	2269	380÷690	530÷1000
1500	2500	1850	1000	2026	380÷690	530÷1000
2000	2300	1600	1000	1864	380÷690	530÷1000
2500	2150	1300	1000	1742	380÷690	530÷1000
3000	1900	1000	1000	1540	380÷690	530÷1000

Fig. - Derating table for SD0600KV06.LFT

Freq. Out [Hz]	I _{rms} [A]	I _{cMax} [A _{peak}]	V _{dc} max[V]	Power out [kW]	V _{ac} in [V]	V _{dc} range [V]
50	1050	1134	1000	851	380÷690	530÷1000
100	1700	2252	1000	1377	380÷690	530÷1000
200	2350	2538	1000	1904	380÷690	530÷1000
300	2650	2862	1000	2147	380÷690	530÷1000
400	3000	3240	1000	2431	380÷690	530÷1000
500	2900	3866	1000	2350	380÷690	530÷1000
1000	2800	2792	1000	2269	380÷690	530÷1000
1500	2500	1816	1000	2026	380÷690	530÷1000
2000	2300	1572	1000	1864	380÷690	530÷1000
2500	2150	1281	1000	1742	380÷690	530÷1000
3000	1900	960	1000	1540	380÷690	530÷1000

Fig. - Derating table for SD0840KV06.LFT

TECHNICAL DATA

Freq. Out [Hz]	I _{rms} [A]	I _{cMax} [A _{peak}]	V _{dc} max[V]	Power out [kW]	V _{ac} in [V]	V _{dc} range [V]
50	1500	1620	1000	1215	380÷690	530÷1000
100	2200	2376	1000	1783	380÷690	530÷1000
200	2900	3132	1000	2350	380÷690	530÷1000
300	3000	4000	1000	2431	380÷690	530÷1000
400	3000	3240	1000	2431	380÷690	530÷1000
500	2900	3866	1000	2350	380÷690	530÷1000
1000	2800	2792	1000	2269	380÷690	530÷1000
1500	2500	1816	1000	2026	380÷690	530÷1000
2000	2300	1572	1000	1864	380÷690	530÷1000
2500	2150	1281	1000	1742	380÷690	530÷1000
3000	1900	960	1000	1540	380÷690	530÷1000

Fig. - Derating table for SD1200KV06.LFT

Freq. Out [Hz]	I _{rms} [A]	I _{cMax} [A _{peak}]	V _{dc} max[V]	Power out [kW]	V _{ac} in [V]	V _{dc} range [V]
50	1900	2052	1000	1540	380÷690	530÷1000
100	2400	2592	1000	1945	380÷690	530÷1000
200	3000	3240	1000	2431	380÷690	530÷1000
300	3100	3348	1000	2512	380÷690	530÷1000
400	3100	3348	1000	2512	380÷690	530÷1000
500	2900	3132	1000	2350	380÷690	530÷1000
1000	2800	2792	1000	2269	380÷690	530÷1000
1500	2500	1850	1000	2026	380÷690	530÷1000
2000	2300	1600	1000	1864	380÷690	530÷1000
2500	2150	1300	1000	1742	380÷690	530÷1000
3000	1900	1000	1000	1540	380÷690	530÷1000

Fig. - Derating table for SD1540KV06.LFT

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