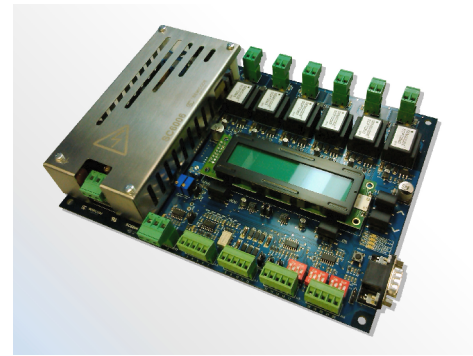


**PRELIMINARY TECHNICAL INFORMATION**

**HIGHLIGHTS**

- Up to 480 V<sub>AC</sub> input supply voltage
- Up to 700 V<sub>AC</sub> sync input
- DSP controlled
- Digital or analog input signaling
- Phase regulation, burst firing, zero crossing
- Automatic phase rotation and outputs autosest
- On-board LCD & remote LCD also available
- Outputs and status LED indications
- RS232 communication port



non-contractual photo

**OVERVIEW**

SC6006 is a digital phase-angle control board for SCR's AC or DC converters. The main feature of this circuit is its versatility, allowing different regulation options and working modes for a wide range of applications. The system is designed to manage rectification regulation topologies; W3C, B6C, M6C and M3.2C. Optionally can also work with W3H, B6H and M3C topologies. Controlled by output current or voltage feedback and setpoint adjustment through potentiometers or by input signals (0-5 V, 0-10 V or 0/4-20 mA) from an external PLC or  $\mu$ C.

All the configuration and monitorization of the system is accessible with an on-board LCD user interface and, optionally, a remote graphical user interface using its serial communication port. Furthermore using its autosest function its capable to detect and autocorrect the phase rotation, and determine the connection order of SCRs and mains frequency.

This circuit also provides protection against overcurrent, independently configurable soft start and stop time, lock input by external relay, a fault output dry relay, inhibition logic input, possibility of a shunt current feedback, current transformer direct feedback, direct alpha control, digital and analog control of setpoints, etc.

For a complete explanation of all the functions and configurations available please refer to the “**SC6006: Manual of operation**” .

SC6006 main applications are those where you need a safe control for large currents through thyristors, for example surfaced treatments, electrolytic process, ovens, lightening, etc.

**TECHNICAL SPECIFICATIONS**

Description	symbol	notes/test conditions	Min	Typ	Max	Units
Input supply voltage	$V_{IN\ RMS}$	50Hz - 60Hz	195	230	480	$V_{RMS}$
Input AC voltage (sync)	$V_{sync}$		10		700	$V_{RMS}$
Direct input voltage sense	$V_{REAL}$		10		700	$V_{DC}$
Thyristor triggering current	$I_{OUT}$	$V_{out} = 5V$			600	mA
Working frequency	$f_w$			50 / 60		Hz
Load		Delta / wye				
Topologies		W3C, B6C, M6C, M3.2C, W3H, B6H, M3C...				
Working modes		Phase angle modulation, Full wave switch and relay mode				
Protection degree				IP-00		
Pollution degree				III		
Humidity		50% Rh @ 35°C / 70% Rh @ 20°C				
Storage temperature range			-20		70	°C
Operating temperature range			0		50	°C
Power-to-control isolation voltage	$V_{ISOp-c}$	50 Hz @ 1min		5300		$V_{AC}$

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**SUPPLY SPECIFICATIONS**

Description	Symbol	notes/test conditions	Min	Typ	Max	Units
Line voltage	$V_{IN\ RMS}$	$\pm 10\%$	195	230	480	$V_{RMS}$
Frequency range	$f_w$		47		63	Hz
Power output	$P_{out}$			25		W
Typical input current		Full load @ 230V <sub>AC IN</sub>		180		mA
		Full load @ 400 V <sub>AC IN</sub>		130		mA
Inrush current limiting		@ 230V <sub>AC IN</sub>		11,5		A
		@ 400 V <sub>AC IN</sub>		20		A
Isolation between mains and output		@ 1min		4000		$V_{RMS}$
Isolation between secondaries		@ 1min		4000		$V_{RMS}$
Power supply starting time					1.5	s
System start up time		without sync signals			5	s

Data at  $T_a = 25\ ^\circ\text{C}$ ,  $V_N = 230\ V_{AC}$  and rated values, unless otherwise indicated

**BOARD CONNECTIONS AND CONFIGURATIONS**

Description	notes/test conditions	Units
Board configuration	Jumpers, DIP switches & software configurations	
Supply, control & trigger signals	Plug connectors, with screw	

**INPUT REFERENCE AND FEEDBACK SIGNALS**

Description	symbol	notes/test conditions	Min	Typ	Max	Units
Voltage setpoint	$V_{IN\ ref}$		0		20	mA
Current setpoint	$I_{IN\ ref}$		4		20	mA
Alpha setpoint	$\alpha_{IN\ ref}$	depending of the on board DIP-switches configuration and software settings.	0		10	V
Voltage feedback signal	$V_{IN\ fb}$		0		5	V
Current feedback signal <sup>[1]</sup>	$I_{IN\ fb}$					
Voltage direct feedback	$V_{IN\ dfb}$		10		700	$V_{peak}$
Current feedback (from curr. Trans.) <sup>[1]</sup>	$I_{IN\ trf}$		0		200	mA
Current feedback (from shunt.)	$I_{IN\ shunt}$		0		60	mV
External lock		NO/NC software configurable		External relay		
Inhibit		NO/NC software configurable		5		V
Output fault dry relay current	$I_{K2}$				1.5	A
Output fault dry relay voltage	$V_{K2}$			250		$V_{RMS}$

[1] Current inputs allows a peak input 3 times the maximum nominal current sensing.

**PROTECTIONS AND TIMMINGS**

Description	symbol	notes/test conditions	Min	Typ	Max	Units
Phase loss, sync or rotation fault						
External block signal		Disables thyristor firing				
Overcurrent fault		Fault auto-reset software configurable				
Max. time detect and stop phase loss	$t_{ph\_dly}$		50	60		ms
Maximum time ext. Block to stop	$t_{blk\_dly}$			0.25		ms
Maximum time to response RS232 op.	$t_{RS232\_dly}$			0.2		ms
Time to get mains sync	$t_{sync}$			50		cycles

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**SOFTWARE ADJUSTMENTS**

Description	notes/test conditions
Maximum/minimum voltage limit	0 – 100%
Maximum/minimum current limit	0 – 100%
Soft start and stop time	1 – 30 s (independently adjustable)
Overcurrent	0 – 300%

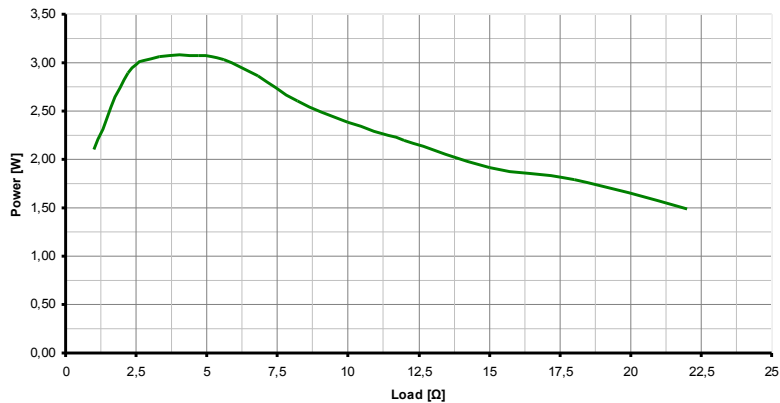
**LCD ON-BOARD SIGNAL & COM MONITORIZATION**

Description	
Voltage setpoint	All signals monitorized at on-board LCD and through serial communications port
Current setpoint	
Alpha setpoint	
Voltage feedback signal	
Current feedback signal	

**OUTPUT FIRING PULSE TRAIN**

Description	symbol	notes/test conditions	Min	Typ	Max	Units
Thyristor triggering current	$I_{OUT}$	$V_{out} = 5V$			600	mA
Maximum output voltage	$V_{OUT\ max}$				7.5	V
Max. transferred power peak to load	$P_{OUT\ max}$				3	W
Output firing train frequency	$f_{OUT}$		1	12	25	kHz
Output firing train duty cycle	$Dc_{OUT}$		5	25	30	%

Output peak power vs. load



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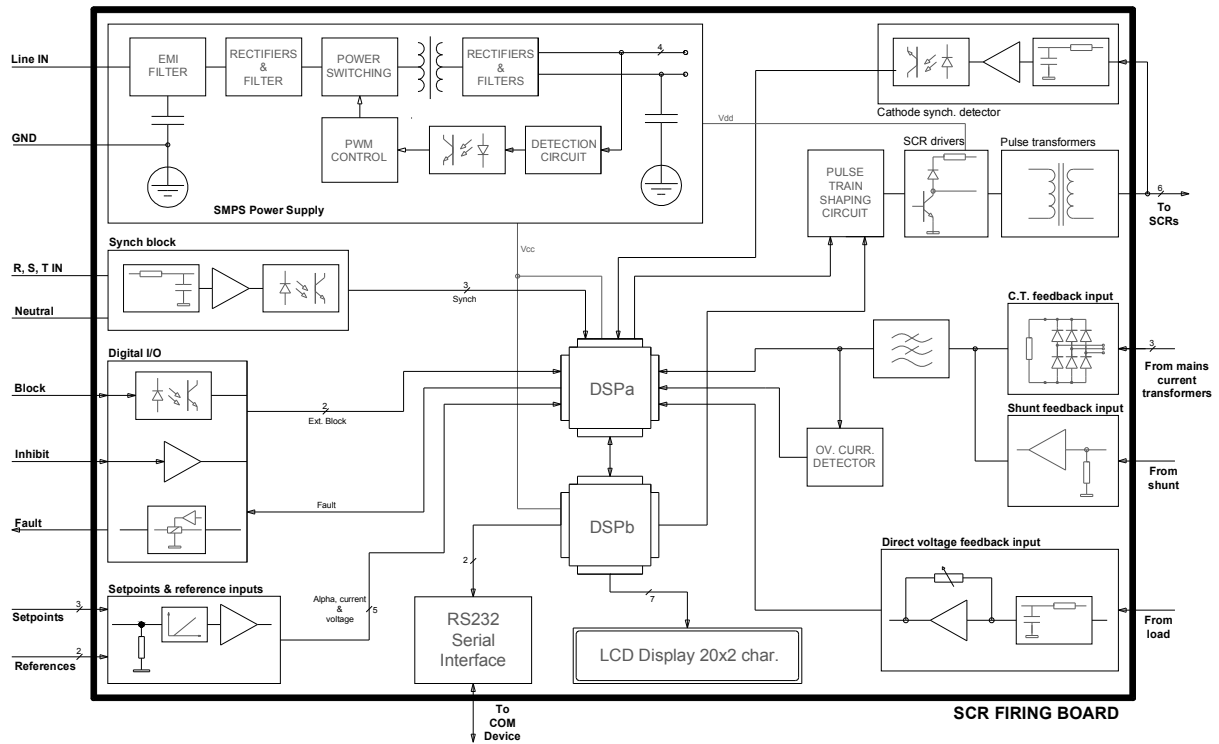
**CONFORMALS**

Conformal coating	MIL-1-46058, Type UR
Security	EN60950-1, UL60950-1

**EMC DIRECTIVE**

This SCR power controller is intended to work as part of an industrial fixed installation and is not for itself a functional unit destined to an end user. According 2004/108/CE directive, CE marking for this device not apply.

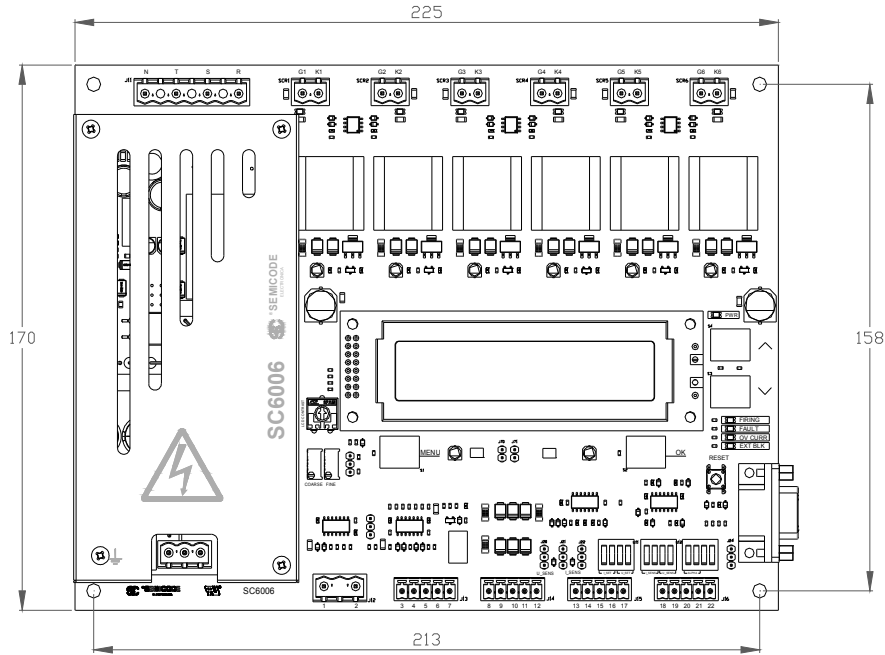
**BLOCK DIAGRAM**



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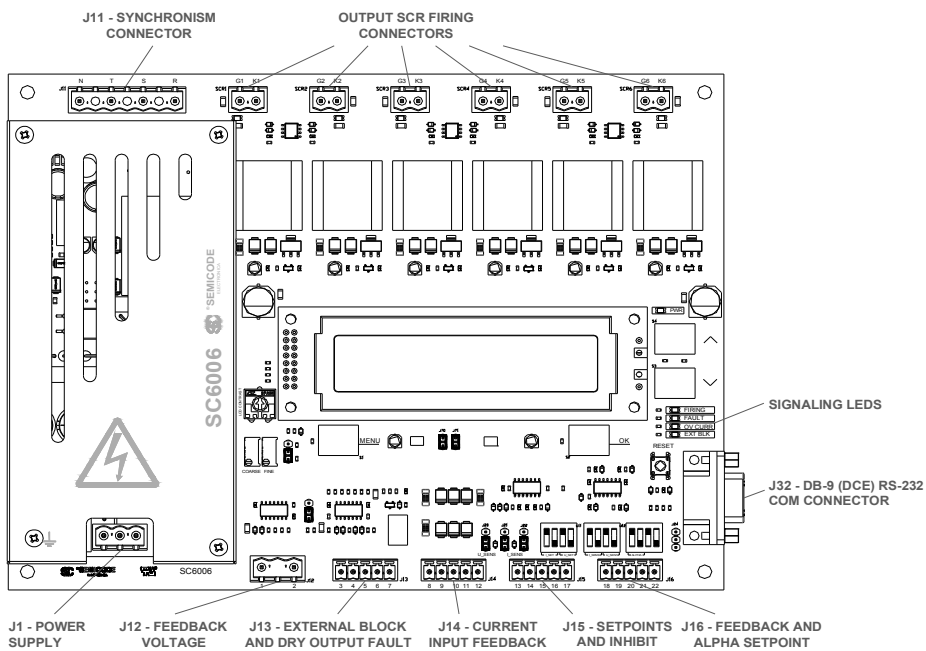
**MECHANICAL DIMENSIONS**

Description	notes/test conditions		Units
Board		225 x 170 x 45	mm
Fixations	fixation holes diameter	4.5	mm
Weight (aprox)		620	gr



(All dimensions in mm)

**CONNECTORS OVERVIEW**



Reserves the right to change limits, test conditions and dimensions given in this data sheet at any time without previous notice.

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# Cost Effective Products

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