

Preliminary Information

DESCRIPTION

SC1010 is a solid state relay controller card. It is intended to be used in applications where high reliability is needed.

This card is configurable to trigger SCR's with 20kHz pulse trains synchronised with mains voltage or in permanent mode. It can be configured to start at zero crossing or random phase.

Control signal can be logic level refereed to card reference (high input impedance) or floating optocoupled input (low input impedance).

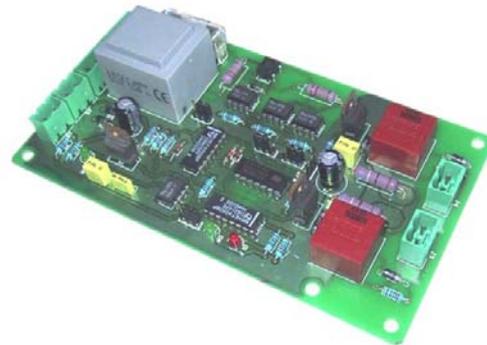
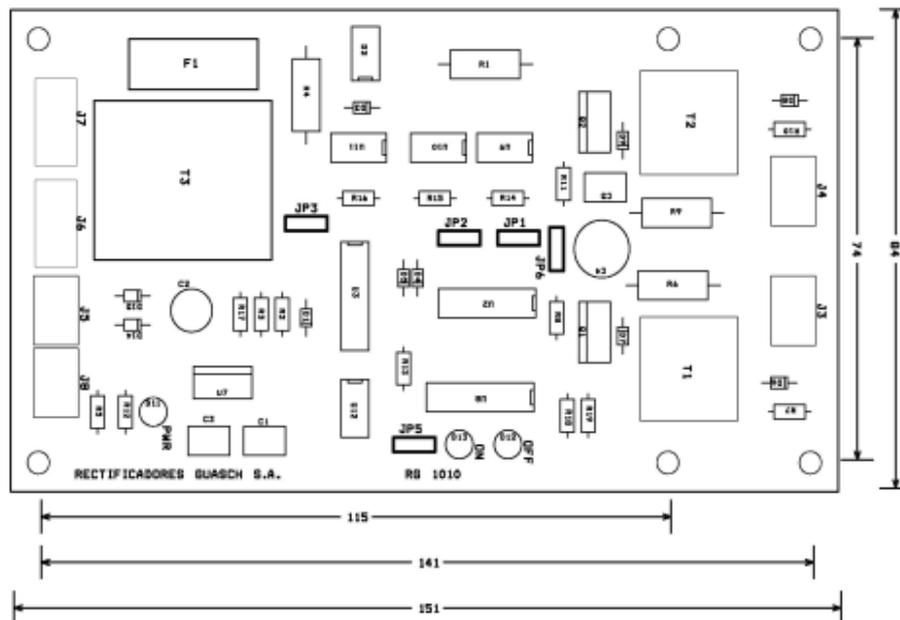


Photo non-contractual

Built in power supply is feed directly from the mains either 230 V or 400 V, 50 Hz.

DIMENSIONS



Dimensions and component situation

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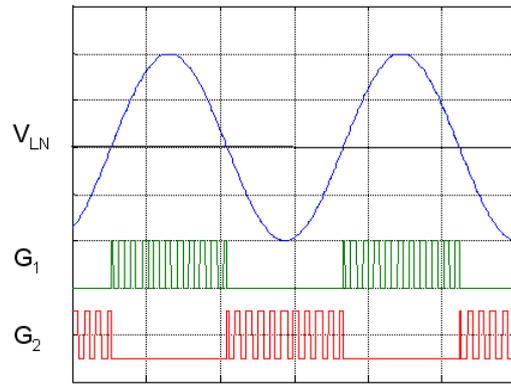
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OPERATION GATE SIGNAL MODES

Regarding gate signals, the board can operate in two different modes; «Synchronous Pulse Train» or «Permanent Pulse Train». Operation mode is jumper selectable by means of JP1 and JP2.

- Synchronous pulse train mode.

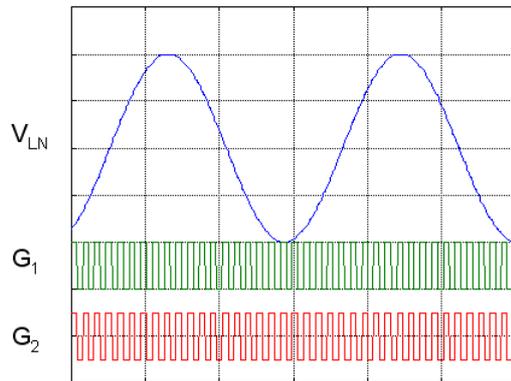
When in synchronous pulse train mode the board produces 20 kHz pulse trains synchronised and in phase with the mains voltage for each SCR. This operation mode is recommended since commutation and gate losses are reduced.



Gate pulses in synchronous pulse train mode

- Permanent pulse train mode.

When in permanent pulse train mode the board produces a 20 kHz pulse signal for each SCR. Gate losses are higher than for «synchronous pulse train» mode.



Gate pulses in permanent pulse train mode

 JP1  JP2	<p>Synchronous pulse train mode</p>
 JP1  JP2	<p>Permanent pulse train mode</p>

Pulse train mode selection jumper

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STARTING MODES

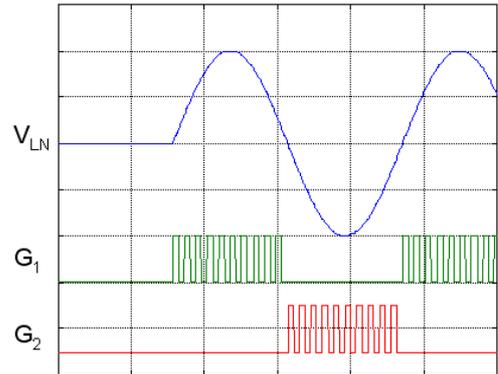
Regarding starting, the board can operate in two different modes; «Zero crossing start» or «Random phase start». Start mode is jumper selectable by means of JP3.

Starting mode only affects at the first cycle after a start control signal is applied.

- Zero crossing start mode.

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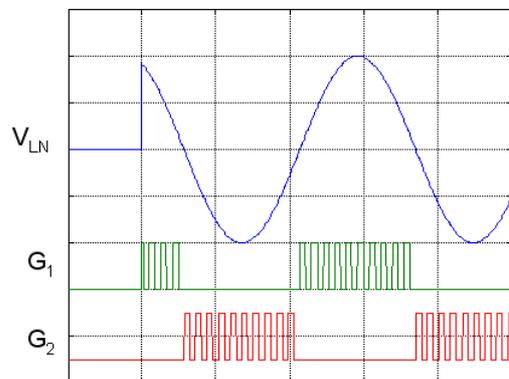
When in «zero crossing» start mode, first cycle of load voltage always start at zero cross of the mains voltage.



Gate pulses and load voltage in «zero crossing start» mode

- Random phase start mode

When in «random phase» start mode, voltage is applied to the load at the moment that control signal is applied.



Gate pulses and load voltage in «random phase start» mode

	Zero crossing start
	Random phase start

Start mode selection jumper

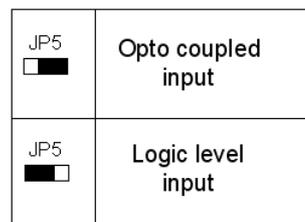
CONTROL SIGNAL

Input type of control signal is jumper selectable between «logic level» or opto-isolated.

Logic level input is intended to be controlled directly from a logic signal source (PLC, microcontroller, etc.). It is advised logic level circuits are high impedance, so attention must be paid to avoid undesirable interference. Shielded lines must be used for control signals.

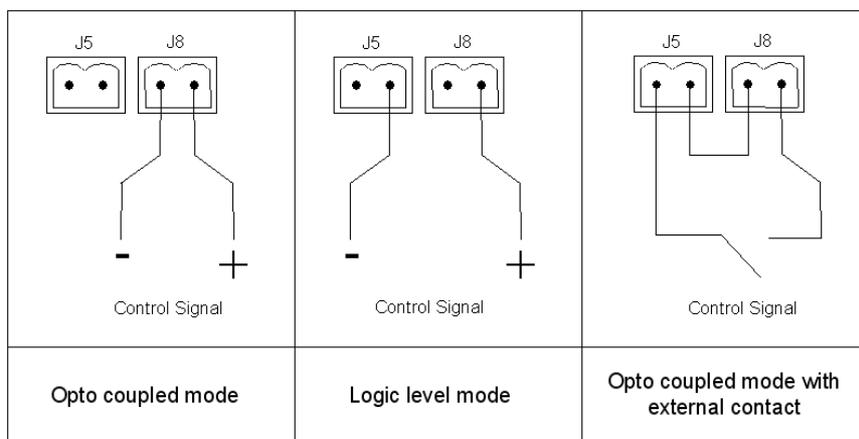
Opto-isolated mode requires a control signal source capable of deliver at least 5mA at 15V. In this mode 5.22kΩ input impedance helps to prevent interference influence, nevertheless shielding is suggested.

A mechanical external switch can be used but optocoupled input mode must be selected since a high impedance open circuit can produce undesirable operation. Since the switch is feeded from internal power supply, isolation is not achievable in this mode.



Jumper selection

CONTROL SIGNAL WIRING



CONTROL SIGNAL LEVEL

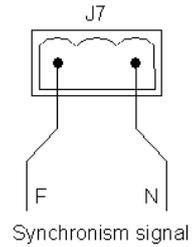
	Opto coupled mode	Logic level mode
ON state	8 - 30 V	9 - 12 V
OFF state	0 - 3 V	0 - 3 V

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SYNCHRONISM SIGNAL

Synchronous pulse train mode requires to detect line-neutral mains voltage, this must be connected to J7 connector. See complete connection diagram at the end of application manual.

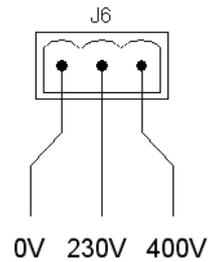
MAXIMUM VOLTAGE FOR SYNCHRONISM SIGNAL IS 400 Vrms !!!



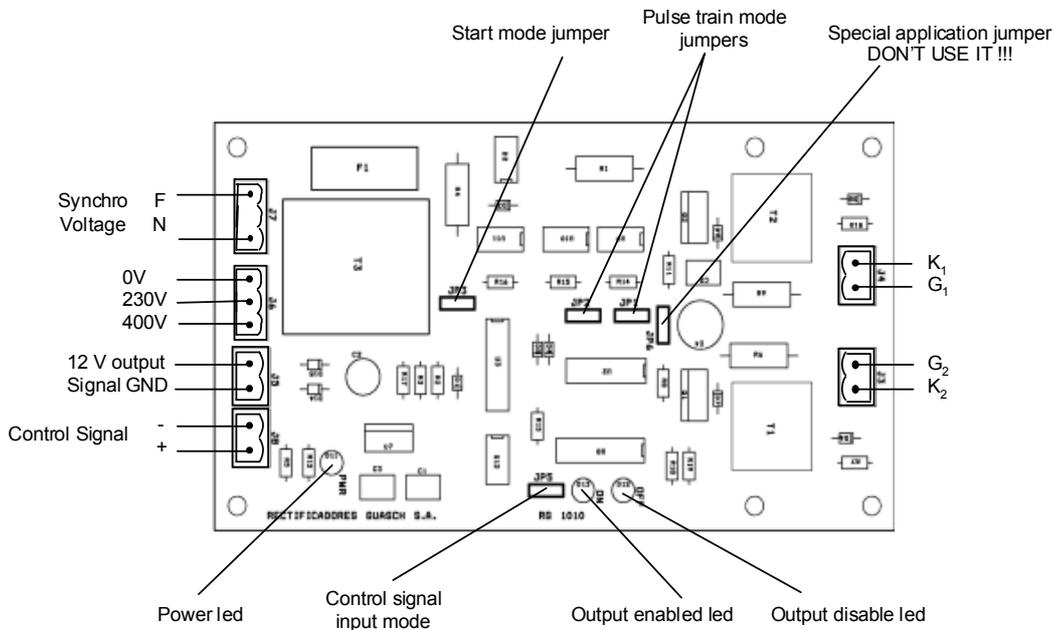
INTERNAL SUPPLY POWER

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Internal supply is feed at 230 V or 400 V 50 Hz. Power must be connected to J6 connector.



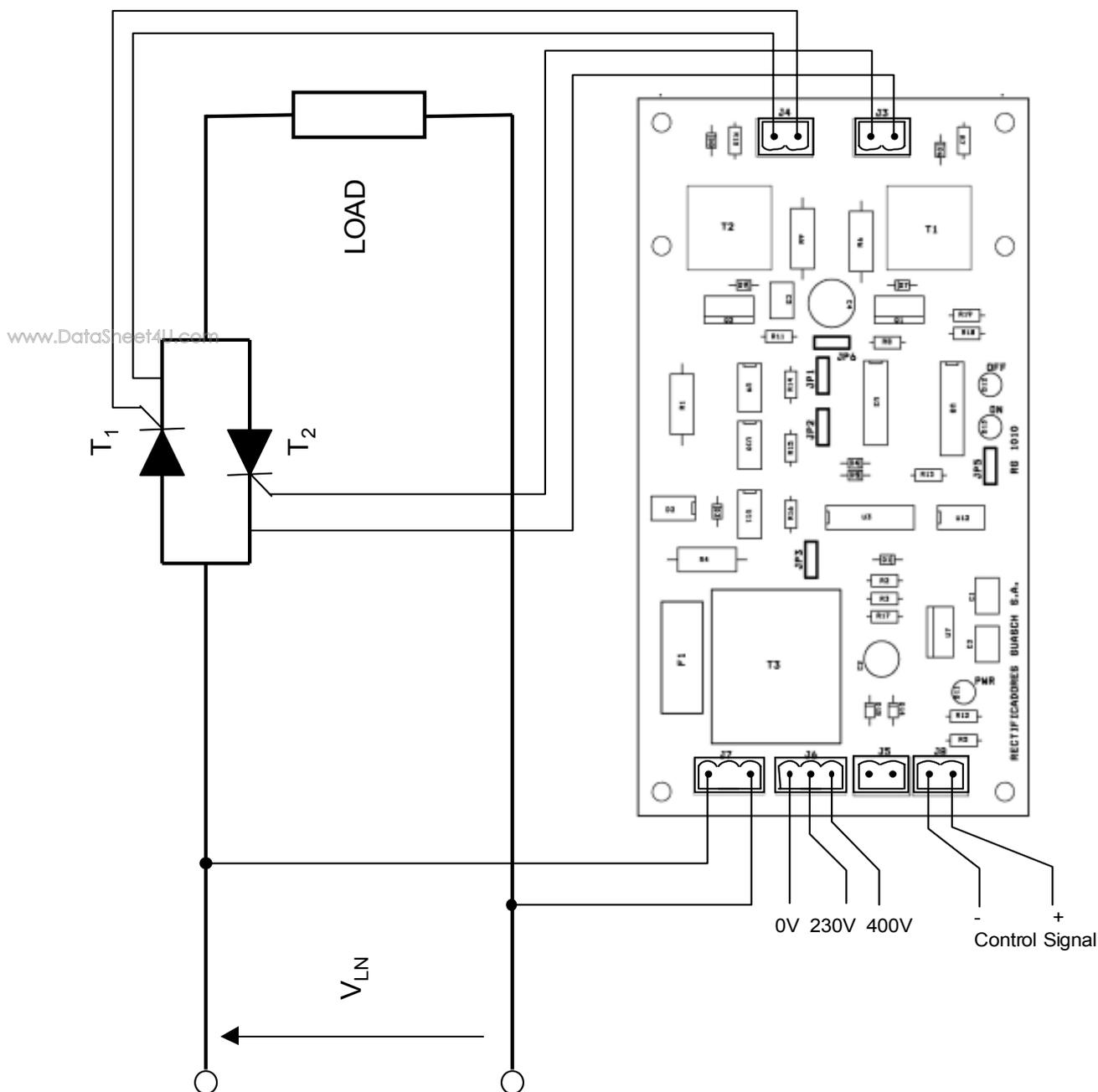
BOARD COMPONENTS



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APPLICATION EXAMPLE



ORDERING INFORMATION

Order the standard version as SC1010

A high voltage version, capable to operate at 700 Vrms, is available on request (SC1010H).

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