



Power Supply & Charger Technology

SCR

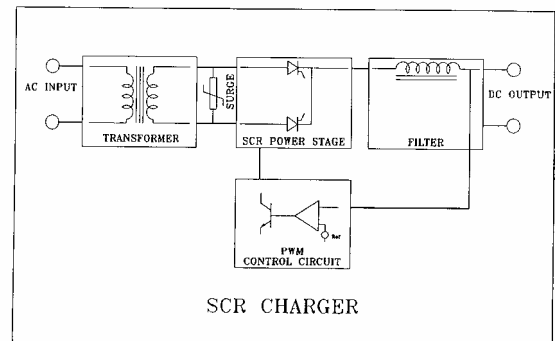
The SCR regulator technology uses the silicon controlled rectifier (SCR). The SCR is a semiconductor functionally equivalent to a gated diode, to control the unit output. The SCR regulator switches the AC output of the power transformer on output demand.

A phase modulator circuit is used to control the SCR conduction angle. This in effect changes the amount of time that the SCR conducts in a cycle. A longer conduction time equals higher output and shorter conduction times reduce output.

A measurement of the DC output current can be taken and compared to a reference to produce output current limiting while voltage feedback controls regulation.

The use of a microprocessor in the control loop of the SCR power supply gives the flexibility to produce output volt/amp characteristics consistently from program stored internally in the microprocessor's ROM. Additional timer and status lamps are also a by-product of this circuit. With this type of control, the current limit, cell range, AC operating limits, and status/alarm functions are widely adjustable, and usually re-programmable with altered software.

The microprocessor controlled SCR units have very predictable output curves under all AC input line conditions. The output efficiency for single phase AC input is approximately 75% and the power factor is about .7. An output filter choke improves the input power factor, but at the cost of lower efficiency. Input current harmonic distortion is typically greater than 20% depending of the rectifier configuration (12 pulse rectifiers are lower in



harmonics than 6 pulse for example.) It is also possible to see some EMI activity in these designs due to the SCR switching each power line cycle.

La Marche models that utilize SCR technology are A70B, A75M, A75E and A75UF. The sizes are available from a few amps to hundreds of amps in 12V to 240V outputs.