

Three Phase Phase-Angle 6 SCR Power Controller

Features

- 6 SCR Phase-Angle Control
- Linear control of RMS Voltage, RMS Current or Load power with respect to a command signal independent of line voltage variations
- Adjustable Current Limit
- Over Current Trip
- Shorted SCR Detection
- Soft Start with Missing Cycle Detection
- In-Line or Inside-Delta Control
- Digital Timing & 50/60 Hz Operation
- Multiple Tap Operating Voltages
- Plug-In & Interchangeable Circuit Card
- 7 Diagnostic/Status LEDs
- Optical Coupled Gatedrives
- Over Temp Protection
(T-Stat on Heat Sink)
- High Surge Current Rating

Description

The model 3629B is a three phase, six SCR, phase-angle power controller. The controller linearly controls, with respect to a command signal, either the RMS value of the load voltage or the average value of the load voltage. When configured to accept an external feedback signal, the 3629B linearly controls other parameters such as load current or load power. The controller can be configured to accept most standard industrial command signals, as well as non-standard commands.

The model 3629B is available with current ratings from 50 to 1000 amperes and voltage ratings from 208 to 575 Vac. The controller will operate without adjustment or modification on 50 or 60 Hertz and can be connected for in-line or inside-delta operation.

The model 3629B is intended for controlling transformer coupled loads, fast responding loads, and non-linear loads in which the resistance changes with time or age. Examples include Scott-T transformers, step-up transformers used in high frequency induction heating, fast responding lamps, and non-linear loads such as tungsten, silicon carbide, and molybdenum disilicide.



Applications

- Variable Resistance Loads
 - Silicon Carbide
 - Molybdenum Disilicide
 - Graphite

- Vacuum Furnaces
- Transformer Coupled Loads

- Fast Responding Loads

- T-3 Lamps

- High Frequency Induction Heating



LISTED 3L32
INDUSTRIAL
CONTROL
EQUIPMENT



CERTIFIED
BY UL TO
CANADIAN
NATIONAL
STANDARDS

Description cont'd

Adjustable Current Limiting.

Current limit provides a means by which the user can prevent the load current from exceeding a preset value. This feature prevents surge currents when controlling loads that have a low resistance when cold.

Over Current Trip.

The over current trip provides an adjustable means to remove power when a load fault occurs. The over current trip feature, in the event of excessive current, prevents the SCRs from being turned ON and energizes a relay with form "C" contacts. The relay contacts can be used to activate an alarm or remove system power. The over current trip is preset at 150% of the current rating of the controller. The relay and operation of the controller are reset by momentary closure of a remote contact or by momentarily removing power from the controller.

Shorted SCR Detection.

A relay with form "C" contacts energized in the event an SCR fails in the ON state allowing full power to be continuously applied to the load. The relay contacts can be used to activate an alarm or to cause system power to be removed.

Soft Start.

Soft start sets the output to zero on start up or after a momentary power interruption and then ramps the output to the desired level at a predetermined rate.

Diagnostic LEDs.

The diagnostic/status indicating LEDs provide a convenient and safe method of analyzing the operation of the controller.

Line OK LED.

Indicates that three phase power is present and the rotation is correct. The controller is ready to accept command.

Command LED.

Varies intensity with the level of the applied command signal.

Line Current LEDs (3).

Vary in intensity with the level of load current in each of the three phases.

Over Current Trip LED.

Indicates that the over current trip relay is activated.

Shorted SCR LED.

Indicates that an SCR has failed in the ON state.

Digital Phase Locked Loop (PLL) Timing.

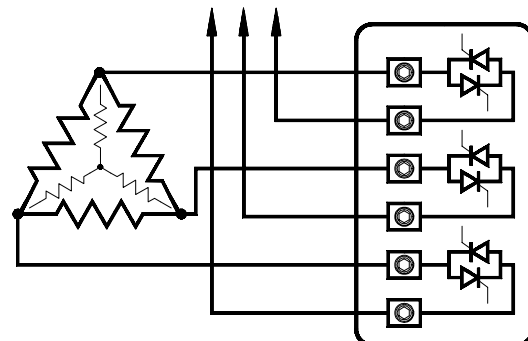
PLL timing ensures a stable, transient immune, accurate timing method that automatically synchronizes to the supply frequency and digitally determines when each SCR is to be turned on. The unique timing circuitry allows the controller to operate at 50 or 60 Hertz without adjustment or modification.

Optically Coupled SCR Gate Drives.

Optically coupled SCR gate drives provide superior transient immunity and electrical isolation than conventional techniques using pulse transformers. This technique virtually eliminates false operation and prevents SCR failure that can result when SCRs are not properly gated into the ON state.

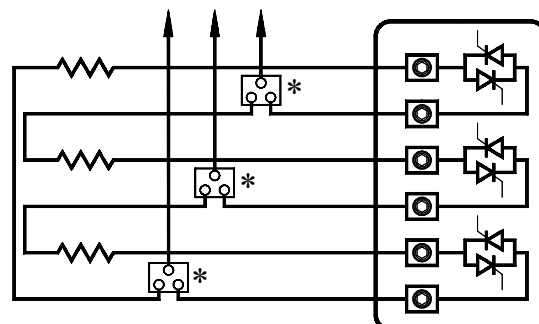
Wiring

THREE PHASE LINE CONNECTIONS



Delta or Wye Connected Load

THREE PHASE LINE CONNECTIONS



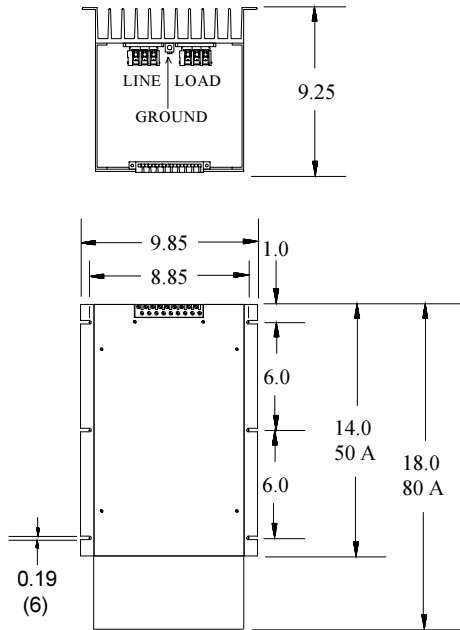
Inside-Delta Connected Load
(* External Power Distribution Blocks
Supplied By Customer)

Dimensions

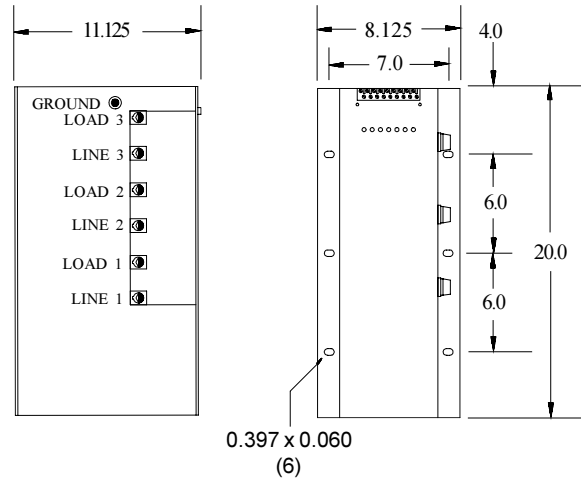
(inches)

LUG / WIRE SIZE

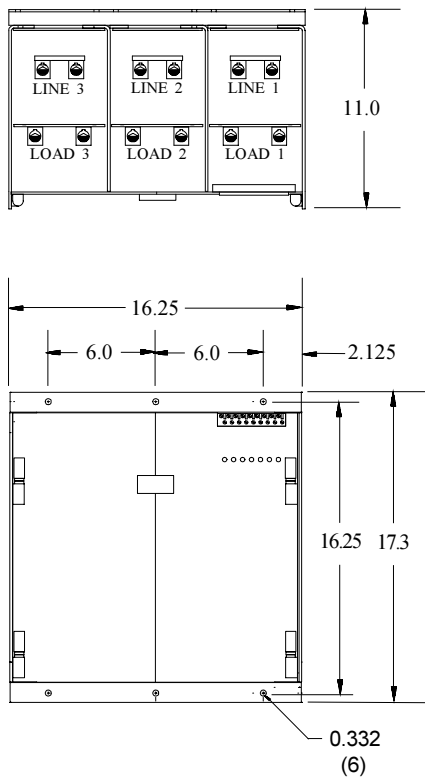
Amps	Lugs	Wire Size
50-80	6	8-2ga
120-160	6	6ga-250MCM
200-425	12	6ga-250MCM
500-750	12	1/0ga-500MCM



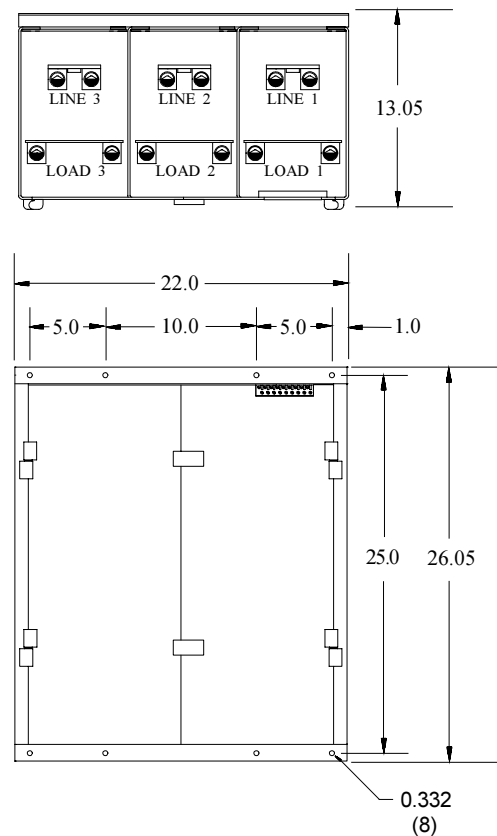
50 Amp and 80 Amp



120 Amp and 160 Amp



200 Amp thru 425 Amp



500 Amp thru 1000 Amp

Specifications

Control Mode(s)	Three-phase in line or inside delta 6 SCR phase angle control of the RMS or average load voltage. External feedback control available.		Line Voltage	208, 240, 380, 415, 440, 480, and 575 Vac, 3 phase, +10%, -15%, 50/60 Hz.
Command Signal	<u>Signal</u> 0-5Vdc 1-20K Pot. 4/20mA	<u>Impedance</u> 200K Ohms 200K Ohms 300 Ohms	Line/Load Connections	Compression lugs, supplied standard on all controllers.
Control Range	0 to 98% of line voltage.		Load Current	Models available with current ratings of 50, 80, 120, 160, 200, 250, 300, 380, 425, 500, 600, 750, 1000A.
Linearity	Output is linear within 2% of span over entire range of control.		dv/dt and Transient Voltage	200 Volts/microsecond minimum. Uses a dv/dt snubber and a metal oxide varistor (MOV).
Zero and Span	Factory preset. Multi-turn potentiometers allow zero and span adjustments of +/- 25% of span.		Cooling	Convection cooling on 50A unit. Forced air fan cooling on all others.
Current Limit	User adjustable over a range from 20% to 105% of rated current.		Shipping Weight	50A, 25 pounds; 80A, 33 pounds; 120A and 160A, 40 pounds; 200A thru 425A, 62 pounds; 500A thru 1000A, 82 pounds.
Over Current Trip	LED indication and Form "C" relay contacts for output. Preset at 150% of rated frame current.		Temperature	Operating: 0 to +55 C (+32 to +131 F) Storage: -40 to +80 C (-40 to +176 F) T-Stat set to 87 C on Heatsink
Isolation	Dielectric strength, input/output and load voltage/heatsink: 2500V(RMS)		Heat Dissipation	4.5 Watts per amp of controlled current (balanced load).
Mounting	Convection cooled: heatsink fins vertical. Forced air cooled: any orientation.		Load & Line Fusing	Class T fuses are recommended to protect controller and load. Special semiconductor fuses are not required. Control transformer is protected by replaceable fuses.

Ordering Information

3629B - V - 480V - 160A - 4/20mA - IL120

3629B Three Phase, 6 SCR, Phase Angle SCR Power Controller with Current Limit and Over-Current Trip.

Feedback Control: V, True RMS Voltage; A, Average Voltage; or E, External feedback control.

Voltage Rating: 208V, 240V, 380V, 415V, 480V, or 575V. Other Voltages available.

Current Rating: 50, 80, 120, 160, 200, 250, 300, 380, 425, 500, 600, 750, or 1000 Amps.

Command Signal: 0/5Vdc, Potentiometer, 4/20mA. Other command signals available.

Current Limit: Specify only if less than frame rating.

CONSULT FACTORY WHEN: Controlling "SCOTT-T" Transformers and DELTA-WYE Transformers Connected to WYE Loads. Not Suitable for WYE-WYE Transformer Connected Loads.

Complementary Products

Control Concepts, Inc., with a full range of standard and custom SCR power controllers and signal conditioners, has the expertise to meet your specific industrial power control needs. All of Control Concepts products are covered by a full two year warranty.

Call us for answers, and delivery schedules, that work.



TEL: (952) 474-6200
(800) 765-2799
FAX: (952) 474-6070
www.ccpower.com

8077 Century Blvd
Chanhassen, MN 55317, USA