

ISOVLCL-4



ISOVLCL-4 Isolated Current and Voltage Regulator Board with Overvoltage and Overcurrent Trip

Features:

Isolates Voltage and Current Feedback Signals

Automatic Crossover Between Regulation Modes

Current and Voltage Trip with Automatic Reset

Adjustable Soft-Start

Optional Proportional Plus-Integral (PI) Voltage Regulation

Optional Trip Latches for Voltage and Current Trips

Scaled Current and Voltage Read-Back Signals

Applications:

Battery Chargers

Electro-chemical Process Power Supplies

Motor Controllers

Magnet Power Supplies

UPS Systems

Description

The ISOVLCL-4 is an isolated current and voltage regulator board intended specifically for use with Enerpro SCR firing boards. In a typical configuration, the regulator board accepts current and voltage feedback signals and drives the firing board's delay angle command signal, providing regulation of the controller or converter output according to the voltage or current command signal. The ISOVLCL-4 provides enhanced functionality with potentiometer-adjustable ramp time and transistorized status signals indicating overcurrent, overvoltage, current limit, and current and voltage trip reset.

Feedback signals are typically derived from a 0-50 mV current shunt and a 0-4 Vdc voltage signal as supplied by an external attenuator.

Operational Features

Isolated Voltage and Current Feedback Signals: The current and voltage feedback signals are galvanically isolated from the regulator board by Analog Devices AD202KN isolation amplifiers (1500 Vrms, ± 2000 V peak).

Load Voltage or Current Limit: Limit amplifiers respond to the difference between either feedback signal and the corresponding limit commands. The resulting signal is the SCR delay angle command signal, SIG HI.

Current and Voltage Limit Automatic Crossover: A diode OR circuit provides automatic crossover between voltage and current limiting. The ISOVLCL-4 operates in either current or voltage regulating mode depending on which limit command setting is lowest.

Overcurrent and Overvoltage Trip with Manual or Automatic Reset:

Two board-mounted potentiometers set the current and voltage trip levels. A trip resets the soft-start circuit; its response time to an overcurrent or overvoltage event is approximately 3 milliseconds. If this condition persists, the overcurrent or overvoltage trip will automatically reset and trip, cycling continuously until cleared.



Adjustable Soft-Start: The ISOVLCL-4 includes a potentiometer-adjustable soft-start ramp.

Polarity Reversing Compatibility: The current and voltage feedback signals are processed by precision absolute value circuits, avoiding positive feedback and permitting operation with polarity reversing applications.

Voltage and Current Read-Back Signals: Scaled analog voltage and current signals are available from a dedicated connector.

Status Interface: The ISOVLCL-4 includes an auxiliary connector with four open-collector transistors indicating the status of the overcurrent, overvoltage, manual trip, and current limit signals. Connection to common, +12 and 24 V rails are provided to drive lamps, relay coils, or other common apparatus.

Onboard or Offboard Voltage and Current Commands: Users may command the desired voltage or current level using board-mounted potentiometers or through externally applied voltage and current commands. Several command voltage or current ranges are available, including 0-12 V, 0-10 V, and 4-20 mA.

Board Construction: All circuit boards are assembled at the Enerpro plant in Goleta, California and are manufactured by a UL-approved fabricator from 2.4 mm thick FR4 fire resistant fiberglass epoxy laminate. All boards are conformal coated (MIL-1-46058, Type UR).

Enerpro applications engineers are available by e-mail or fax for applications assistance.

Product Datasheet		
Maximum Ratings		
Maximum Isolation Voltage	2000 V peak	
Operating temperature range	-5 C to 85 C	
Board DC supply voltage	30 V DC	
12 V regulator auxiliary output current	20 mA	
Status Drives	500mA per transistor.	
Characteristics		
Delay angle command signal (SIG HI)	0.85-5.85 V	
Voltage and Current Limit Command	0-12 V, 0-10 V, 4-20 mA (or as specified)	
Soft-start/stop time	0.4 s adjustable & 2.0 s, configurable	
Functions		
Current	Limit	Yes
	Regulation	Yes
	Trip	Yes
Voltage	Limit	Yes
	Regulation	Yes
	Trip	Yes
On-Board Indication	Limit/Regulation	Yes
	Trip	Yes
External Indication	Limit/Regulation	Yes
	Trip	Yes
Trip Latch	Yes	
Compatible with polarity reversing systems	Yes	
Board dimensions	191 x 152 x 18 mm (L x W x D)	
Minimum creepage distance between isolated circuits	18 mm	
Conformal coating	per MIL-1-46058, Type UR	

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