

## Features:

Automatic Crossover  
Between Regulation  
Modes

Scaled Current and  
Voltage Feed-Back  
Signals

## Applications:

Battery Chargers

Motor Controllers

Magnet Power  
Supplies

UPS Systems

Transformer Primary  
Controllers

## VRCL1P-1 1-Phase Regulator Circuit Boards

### Description

The VRCL1P-1 voltage regulator and current limiter board operates with the FCRO4100 General Purpose Single Phase SCR firing board to form an SCR control electronics package for regulating voltage and limiting current for ac/ac controllers or ac/dc converters. The VRCL1P-1 board mounts on a 14-pin header (J6) on to the FCRO4100 board.

Additional features of the VRCL1P-1 is mechanically interchangeable. And current board voltage set.

### Operational Features

- AC or DC current feedback from either a current transformer (AC) or Hall Effect Sensor.
- AC or DC voltage feedback from an isolated feedback from an isolation transformer.
- Current command SPAN potentiometer for maximum output adjustment.

### Mechanical

Dimensions: 2.0( w) x 3.0(l) x 1.40(h) inches.

Mounting Holes: 1.50 x 2.65 inches. (matching the mounting pattern of the FCRO4100 )

Material: FR4 fire resistant fiberglass epoxy laminate.

Construction:

Connector: 14-socket header J1.

### Electrical

Feedback loops: Inner current regulator loop with proportional gain (built into the FCRO4100 board) and current limit amplifier and outer regulator loop with proportional plus integral gain (built into the VRCL1P-1 board). The regulator is in the voltage regulation mode when the load current is less than the commanded current. The regulator is in the current limit mode when the load current is greater than the command current.

### Electrical ( con't)

Current Command: 0- 5VDC (typical) signal voltage from external source sets the maximum current command voltage  
The on-board SPAN potentiometer can be used as a current command limiter.

### Interface

Interface signals with the FCRO4100 firing board: 14-position socket/pin connector:

Connector J1

Position:

- J1.1 Current Limit Command (output to FCRO4100 )
- J1.2 +5V (input from FCRO4100 )
- J1.3 Voltage error (output to FCRO4100 )
- J1.4 Voltage command (output to FCRO4100 )
- J1.5 +12V (input from FCRO4100 )
- J1.6 COM (input from FCRO4100 )
- J1.7 +30V (input from FCRO4100 )
- J1.8 Rectified Current feedback (input from FCRO4100 )
- J1.9 Rectified Voltage feedback (input from FCRO4100 )
- J1.10 Current Limit Command (input from FCRO4100 )
- J1.11 through J1.14: Not used for this board.

*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.*

<b>Product Datasheet</b>	
<b>Maximum Ratings</b>	
<b>AC mains voltage</b>	600 Vac
<b>Operating temperature range</b>	-5 C to 85 C
<b>Board DC supply voltage</b>	30 VDC, 12VDC, 5VDC
<b>12 V regulator output current</b>	20 mA
<b>Characteristics</b>	
<b>Current limit command</b>	0-12 V, 0-10 V, 4-20 mA, or as specified
<b>Features</b>	
<b>Board dimensions</b>	76.2 x 51 x 36 mm (L x W x D)
<b>Conformal coating</b>	per MIL-1-46058, Type UR

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