



## 1U SWITCHING POWER SUPPLIES

Acopian 1U switching regulated power supplies include models with outputs up to 750 watts. They have universal input and power factor correction, and primary outputs can be operated in either constant voltage or constant current mode. Standard features include short circuit, overload, and thermal protection, as well as remote sensing.

### INSTALLATION

These power supplies are constructed in the form of assemblies that are front mountable in standard 19" wide RETMA cabinet racks or 17" wide benchtop units with rubber feet. If possible, mount spaced away from other heat dissipating or air blocking assemblies. This will result in cooler running operation, which in turn will maximize stability and reliability. Surrounding air temperature of 40°C is optimal. Make all connections before applying AC input power. For installation in a Pollution Degree 2 environment.

### OPERATION

THE SENSING TERMINALS MUST BE CONNECTED to the output terminals, either at the output return terminals of the power supply or at the load. Failure to have the sense terminals connected will affect the output voltage (usually causing it to be higher than the rating of the supply, and unadjustable), or may result in the overvoltage protection circuit latching the output 'off'. If voltage drops in the output voltage leads (which degrade regulation) are not objectionable, local sensing can be used; leave in place the jumpers provided with the power supply (connecting the +Sense to the +Rtn and the -Sense to the -Rtn). However, if the best possible regulation at the load is required, then remove the jumpers and use two lighter gauge leads to connect the sense terminals to the output leads at the load, as shown in the schematic. This configuration permits the power supply to sense and compensate the voltage actually across the load. Note that remote sensing is capable of compensating only limited wiring drops. The voltage across the load, plus the voltage drops through the wiring, must be within the output voltage range of the supply for the voltage at the load to remain within the load regulation specification. Therefore, the wire gauge used for the output lines MUST BE LARGE ENOUGH to assure that their combined voltage drops will not exceed the difference between the maximum output voltage of the supply and the voltage to be maintained across the load. (Wide adjust output models compensate up to 0.5 Vdc drop per output line.)

In electrically noisy environments it may be necessary to use shielded wire for remote voltage control and remote sensing. Connect the shields to the ground terminal on the terminal strip. Usually, the lowest level of output noise results when the load ends of the shield are *not* connected. Noise can be reduced in some applications with the use of a capacitor connected across the sense lines at the power supply; and in other applications, when one is connected across the load. A 0.1 mfd (100 WVdc) capacitor with good high frequency characteristics (such as Mylar types) is appropriate. Do not use a capacitor unless necessary.

**Over Voltage Protection:** A higher than normal output voltage (even if momentary, as when caused by a transient induced into the output wiring) will result in the overvoltage protection circuit latching the output OFF. To reset the output, interrupt the AC input power for 5 seconds. (Models with "N" option reset automatically.)

**Overload/Short circuit Protection:** These power supplies function as a constant voltage or constant current source. A short circuit or overload will force the power supply

into the constant current mode. The supply will recover automatically when the overload or short circuit is removed.

**Series operation:** Outputs may be connected in series to obtain a higher voltage provided that a reverse-biased diode, having PIV and current ratings exceeding the combined output, is used across each output; however, keep in mind that the output current to be drawn cannot exceed the output current rating of the lowest rated supply used.

**Parallel or Redundant operation:** See note 2 on other side of this sheet.

**Output Programming (Wide Adjust models):** Rear panel programming switch (if present) must be set to 'Remote'. The output voltage and current may be programmed from 0 to full rating by means of control voltage inputs of 0 to +10Vdc (0 to +5Vdc for models with option "C5"). Voltage mode accuracy: 0.5%. Current mode accuracy: 3% for models with greater than 10 amps output current and 4% for models with less than 10 amps output current. Accuracy percentages do not apply below 5% of output rating. If "C1" and "DIO" options both present, rear panel output programming is disabled.

**Voltage Monitor Terminal:** Permits remote monitoring of output voltage, stepped down by a ratio of 10:1 (for 3.3v to 90v models) or 100:1 (for 100v to 135v models). Accuracy is 0.5% of maximum rated output voltage.

**For models with 0-5v programming option "C5":** Permits remote monitoring of output voltage, stepped down by a ratio of 10:1 (for 3.3v to 45v models) or 100:1 (for 48v to 135v models). Accuracy is 0.5% of maximum rated output voltage.

**Current Monitor Terminal:** For models with greater than 10 amps output current: permits remote monitoring of output current, stepped down by a ratio of 100 mV/Amp (accuracy is 3% of maximum rated output current). For models with less than 10 amps output current: permits remote monitoring of output current, stepped down by a ratio of 1000 mV/Amp (accuracy is 3% of maximum rated output current).

**For models with 0-5v programming option "C5":** For models with greater than 45 amps output current: permits remote monitoring of output current, stepped down by a ratio of 10 mV/Amp (accuracy is 5% of maximum rated output current). For models with less than 45 amps output current: permits remote monitoring of output current, stepped down by a ratio of 100 mV/Amp (accuracy is 3% of maximum rated output current).

**\*For models with Digital Interface option "DIO1" or "DIO2":** See 'Digital Interface' instruction sheet (included with option).

#### Applies to CE-certified models:

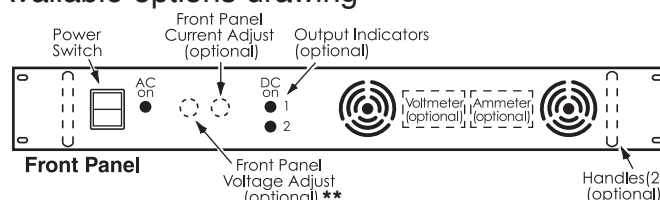
CE Marked To: Directive 2011/65/EU (ROHS Recast)  
Directive 2006/95/EC (Low Voltage Directive)  
Regulation (EC) No 1907/2006 (REACH)

#### SPECIAL MEASURES AND LIMITATIONS

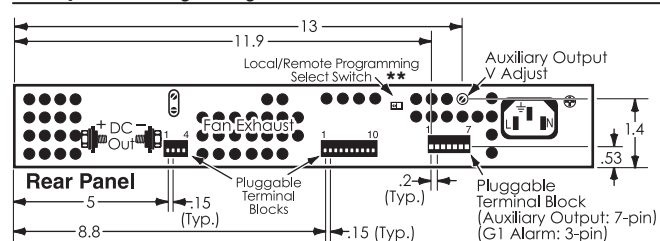
To maintain compliance with the Low Voltage Directive, the following special measures and limitations must be observed when the product is placed into service:

- Evaluated for use in Pollution Degree 2 environment.
- Intended for connection to Class 1, TN-S power system.
- Models with outputs of 36 volts or less are considered to have SELV outputs.
- Models with outputs greater than 36 volts are considered to have hazardous voltage outputs and should not be located in an Operator Access area in the end product.
- Models with output ratings less than 240VA are considered to have non-hazardous energy levels. Models with output ratings of 240VA or greater are considered to have hazardous energy levels.
- Models without a built-in fuse require an external fuse to be used in the ungrounded (hot) side of the AC line.
- See catalog for electrical and mechanical specifications.
- Ground terminal must be bonded to protective earth.
- Intended to be installed within end-use equipment.

#### Available options drawing



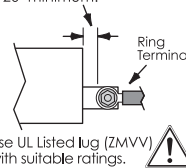
**\*\*C1 Option:** See 'Programming' Switch note on the other side of this instruction sheet.



**\*DIO Options:** See Digital Interface Instruction Sheet

#### Output detail

For UL applications, distance between load terminal and case must measure .120" minimum.

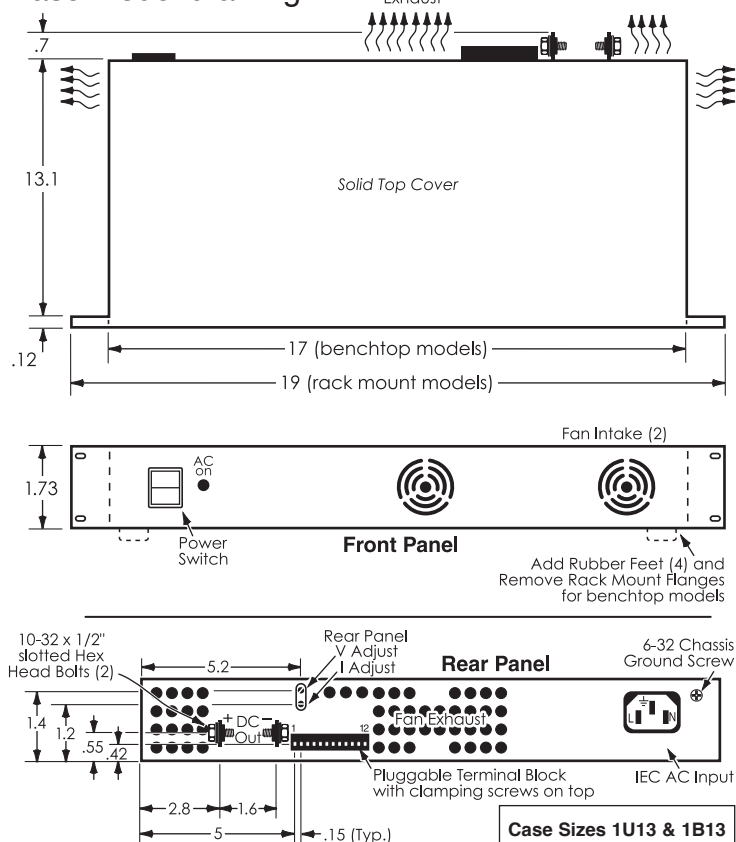


#### Pluggable Terminal Blocks

Base Model Primary Control	Auxiliary Output Option	Form C Alarm Contacts Option	Programming Options
[12] V ok [11] S bus [10] I mon [9] V mon [8] Inhibit [7] I pgrm [6] Ref [5] V pgrm [4] + Rtn [3] + Sense [2] - Sense [1] - Rtn	[7] Inhibit [6] - Sense [5] - Out [4] - Out [3] + Out [2] + Out [1] + Sense	NO C NC	[10] - Rtn [9] I pgrm [8] Ref [7] V pgrm [6] Inhibit [5] I mon [4] V mon [3] - Rtn [2] S bus [1] V ok

See reverse for pin function descriptions.

#### Base model drawing



All dimensions in inches.

Case Sizes 1U13 & 1B13  
Approx. Weight: 6 lb. 7 oz.



The complete Acopian catalog is available on the Internet at [www.acopian.com](http://www.acopian.com)

131 Loomis Street, Easton, PA 18045 • Phone: (610) 258-5441 • FAX: (610) 258-2842

ALL ACOPIAN  
POWER SUPPLIES  
MADE IN U.S.A.

E6000-830 Rev0



# 1U SWITCHING POWER SUPPLIES

## CONNECTIONS:

WARNING:  
HIGH LEAKAGE CURRENT.  
EARTH CONNECTION ESSENTIAL  
BEFORE CONNECTING SUPPLY

IEC AC INPUT



AC INPUT:  
95-265 VAC  
49-420Hz  
single phase

Note: All units are shipped with 125v IEC line cord (standard).

## DESCRIPTION / WIRING:

**CAUTION:** These power supplies are fused for protection in the event of power supply failure. For continued protection against risk of fire, replace only with same type and rating of UL Listed fuse: 15 amps, 250VAC 5x20mm. When using a line to line input (two high lines as with typical 208 VAC and 230 VAC sources), for safety reasons, it is recommended that an external UL Listed fuse be used in series with the 'N' side of the AC input (15 amps). **These power supplies are NOT RECOMMENDED FOR USE ON GROUND FAULT PROTECTED CIRCUITS.**

## 'Form C Alarm Contacts' Option Connector

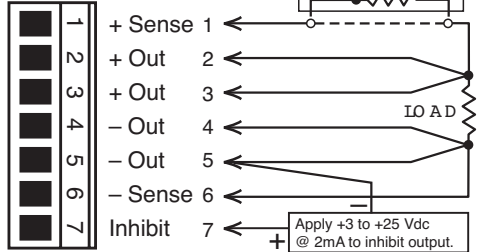


NC  
C  
NO

G1: Contacts rated at 250v, 8A.  
Connector accepts 22 to 16 awg wire size.  
Tightening torque = 0.2NM or 1.7 in-lbs.

## 'Auxiliary Output' Option Connector

Connector accepts maximum 12 awg wire size. Tightening torque = 0.5NM or 4.5 in-lbs.



\* THE DOTTED LINE CONNECTION IS REQUIRED, unless remote voltage adjustment is used. If using remote adjustment, prior to removing the remote jumper, the built-in adjustment must be adjusted to the minimum rated output voltage and the remote pot should have a value of 1K (0.5w).  
\*\* USE BOTH OUTPUT TERMINALS for load currents above 12 amps.

## For Models with 'Digital Interface' Option

See 'Digital Interface' instruction sheet (included with option).  
Note: This option incorporates the "E" (Enable) option.

## 'Programming' Switch (Rear Panel; w/o DIO option)

Set to 'Local' - enables "C1" front panel adjust pots; disables standard rear panel V&I programming capabilities.  
Set to 'Remote' - disables "C1" front panel adjust pots; enables standard rear panel V&I programming capabilities.  
\* Set switch BEFORE AC POWER IS APPLIED to power supply.

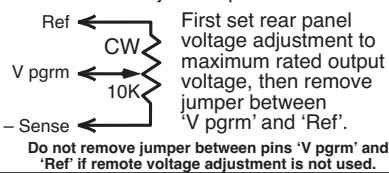
## WIRING NOTES:

- 'V ok' is a TTL compatible signal voltage. When the power supply's output voltage is between -14%  $\pm$  2% of the minimum rated output voltage and +15%  $\pm$  2% of the maximum rated output voltage, 'V ok' will be between +3 and +5 Vdc (high). When the output voltage is outside the -14%, +15% window, the 'V ok' voltage will go low (approx 0.5 Vdc). 'V ok' can source 1 mA or sink up to 5 mA. (Not available on Wide Adjust Output models.)
- Option "N" allows up to 4 like models to be wired in N+1 redundancy. An internal isolation OR-ing diode is included in each power supply.  
Option "P" allows up to 4 like models to be directly wired in parallel for increased current capability.  
Options "N" and "P" force equal current sharing among like model supplies. The DC output load lines of each individual supply may be directly connected in parallel. Remote sense lines may also be directly connected in parallel and all 'S bus' terminals must be connected together. The output voltage of each supply is individually set so that the difference between the highest and the lowest is less than 100 mv. The current limiting set point of each supply should be set at equal value. Power supply output current must be derated by 10% for Option "N"; 5% for Option "P".
- When monitoring the output voltage and/or current by means of the monitor terminals, the use of an instrument having an input impedance of at least 10 megohms is recommended. See 'Voltage Monitor Terminal' and 'Current Monitor Terminal' on the other side of this page.

## PROGRAMMING NOTES: (If "C1" and "DIO" options are both present, rear panel output programming is disabled.)

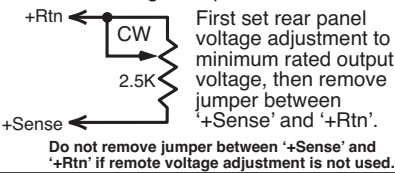
### REMOTE VOLTAGE ADJUSTMENT:

Wide Adjust Output models:



Do not remove jumper between pins 'V pgrm' and 'Ref' if remote voltage adjustment is not used.

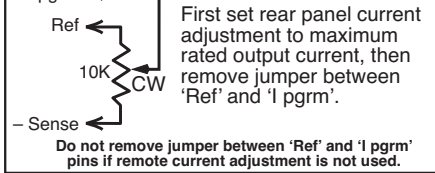
Single Output models:



Do not remove jumper between '+Sense' and '+Rtn' if remote voltage adjustment is not used.

### REMOTE CURRENT ADJUSTMENT:

I pgrm

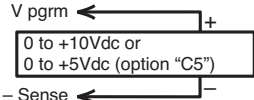


Do not remove jumper between 'Ref' and 'I pgrm' pins if remote current adjustment is not used.

## OUTPUT PROGRAMMING for STANDARD or "C5" OPTION (Wide Adjust Output models):

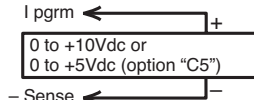
### Voltage Programming:

First set rear panel voltage adjustment to maximum rated output voltage, then remove jumper between 'V pgrm' and 'Ref'.



### Current Programming:

First set rear panel current adjustment to maximum rated output current, then remove jumper between 'I pgrm' and 'Ref'.



**CAUTION: DO NOT** apply negative polarity control voltage to the voltage or current program terminals.

UL508 FILE: E306586

UL60950 FILE: E208800