

*Acopian*

Since 1957

# Power Supply Catalog 2010

We make Power Supplies in  
Every voltage from 0 volts to 30kV

AC-DC and DC-DC

3 Day Shipping Guarantees

Linear, Switching, Unregulated

5 Year Warranties

Order Factory Direct



Made in the U.S.A.



# Celebrating 50 Years of Excellence



*Sarkis Acopian*

Having come to the United States as an immigrant in the mid 1940s, Sarkis Acopian, founder of Acopian Technical Company, attended Lafayette College in Easton, PA. During his time at Lafayette, he was called to serve in the U.S. Army. After being honorably discharged and returning to Lafayette, he graduated in 1951, earning a bachelor's degree in mechanical engineering. After graduation, Mr. Acopian was employed by Weller Electric Corp., where he designed a power sander and a soldering gun that became two of its main products. With just a small loan to start his own company and achieve his share of the American dream, he began by designing and manufacturing the first ever solar radio, a milestone of 1957 technology. The Acopian Solar Radio was promoted as 'Revolutionary – No Batteries or Outside Electrical Plug-ins – Uses light for its source of energy.'

When Mr. Acopian needed some power supplies and couldn't obtain them quickly, he made them himself, and – realizing that other engineers were experiencing the same problem – began to advertise them for sale. Soon, Acopian was building and shipping power supplies very quickly. This evolved into our 3 Day shipping policy – “up to 5 pieces of any power supply is guaranteed to ship within 3 Days after receipt of order.” As the power supply line grew, larger and more complicated power supplies were introduced, but the same philosophy was followed for these larger supplies – “up to 2 pieces of these would ship within 9 days after receipt of order.” We still pride ourselves on this remarkable ability. To this day, none of our competitors can consistently match our shipping promise dates.

Mr. Acopian, an industrialist, environmentalist and humanitarian, has displayed extraordinary generosity to international, national and local non-profit agencies throughout his lifetime. His interest in ornithology resulted in establishing the Birds of Armenia Project, whose primary goal was to stimulate environmental awareness and establish a conservation ethic among the citizenry of Armenia.

Mr. Acopian's passion for higher education and the sciences is seen in his many philanthropic endeavors, which have included the Acopian Engineering Center at Lafayette College, the Acopian Center for Conservation Learning at Hawk Mountain Sanctuary and the Acopian Center for Ornithology at Muhlenberg College, as well as his endowing of the environmental education programs at the American University of Armenia and the Florida Institute of Technology. His great sense of gratitude to his adopted country played a major part in his being the largest individual donor to the World War II Memorial in Washington, DC.

In celebrating its 50<sup>th</sup> anniversary, **Acopian** continues to develop new lines of power supplies for the constantly changing needs of industry. But what will never change is our commitment to serving our valued customers with quality products, our 3-Day shipping guarantee and unsurpassed customer service.





# Acopian Promises to Ship Within Three Days

## Lawrence Berkeley National Laboratory

“Whenever I need a power supply for any project, I always check Acopian first. Your customer service is first rate, and I really like the fast, dependable shipping. The reliability of your products is an additional bonus – they seem to last forever.”

Gudrun Kleist, Engineering Associate



... and we keep that promise. For more than 40 years, Acopian has been shipping AC to DC power modules within three days after receipt of an order. During this period, the Acopian line has expanded from the original Plug-in modules to a broad range of different types of power supplies. Our unique 3-day shipping guarantee has prompted many questions. Below are some of those most often asked:

### I've seen other power supply manufacturers advertise "same-day shipment." Isn't that better than 3-day shipment?

A typical vendor's "same-day shipment" advertisement can only be fulfilled if the power supplies you need are in stock. Otherwise, a four to six week delay is not unusual before inventory is replenished and your order is shipped.

Acopian's 3-day shipment promise applies to ALL 3 Day models (larger units ship within 9 Days) and is not dependent on the quantity in stock. We build each unit after the order for that unit is received. If an order is needed faster, often times we can ship in less than 3 days.

### What does Acopian's 3-day shipping promise mean?

It means that power modules listed in this catalog are shipped within 3 days after we receive your order. High Voltage, Redundant, Rack Mounting, Systems and certain Switching power supplies are shipped within 9 days.

### Do options affect shipping time?

The 230 volt input option and moisture/fungus-proofing option require two additional days. All other options do not affect shipping time.

### Has Acopian ever failed to meet this promise?

Never.

### Is the 3-day promise affected by quantity? Suppose we need 50 or 100 pieces?

The 3-day promise applies to orders for five or less modules. (Two or less for 9-day items). If requested, Acopian will ship five pieces of a larger order in 3 days and, with consideration of your requirement, schedule the balance. (Since each shipment is processed and priced as a separate order, for lowest prices request shipment in one lot.)

### What if I need four or five different models? Does the 3-day promise still apply?

Yes. Guaranteed 3-day shipment applies to one model or to a combination of models.

### Do I have to ask for 3-day shipment of my order?

3-day shipment is automatic. In fact, you must tell us if you want the shipment delayed.

### How long after you ship will I have the power supplies?

Transportation time varies with the carrier used. Unless otherwise requested, Acopian ships small orders by UPS Ground.

### You say Acopian has never failed to meet the 3-day promise. How do you do it?

Our facilities have been designed and equipped to meet our 3-day shipment promise. When your order is received, your power supplies are built specifically for you and shipped within three days. We do not ship from stock. (For this reason, we are unable to accept returns for credit.)



# Table of Contents

## Customized Solutions to meet your needs

Acopian has been customizing power supplies and building Power Systems for over 48 years. . . . . **PAGE 4-5**

**Shipped within 9 DAYS**



### POWER SYSTEMS

Try the convenient  
**Online System Builder**  
at [www.acopian.com](http://www.acopian.com)

Any combination of power supplies can be mounted in an assembly that includes the operating features you require . . . . . **6-13**

**Shipped within 9 DAYS**



### REDUNDANT POWER PACKAGES, AC-DC

(includes models with Power Factor Correction and Universal Input)

<b>RACK MOUNTING, WALL MOUNTING</b>	
Using two linear supplies . . . . .	<b>18-19, 14-17</b>
Using two switching supplies . . . . .	<b>20-21, 14-17</b>
<b>PLUGGABLE REDUNDANT SYSTEMS</b>	
Using two switching supplies . . . . .	<b>22-23, 14-17</b>
<b>MODULAR REDUNDANT SYSTEMS</b>	
Using two linear supplies . . . . .	<b>24-25, 14-17</b>
Using two switching supplies . . . . .	<b>26-27, 14-17</b>

### SWITCHING REGULATED, AC-DC

**Shipped within 6 DAYS**



<b>MINI ENCAPSULATED - PC Board Mounting</b>	
- with Screw Terminals	
Single output . . . . .	<b>38-39</b>
Socket . . . . .	<b>38</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>77</b>

**Shipped within 3 DAYS**



<b>NARROW PROFILE</b>	
Single output (to 120 watts) . . . . .	<b>42-43</b>
Single output (to 288 watts) <b>'UL508 Listed' option</b>	
<b>NEW!!</b> with Power Factor Correction and Universal Input . . . . .	<b>44-45</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>91</b>

**Shipped within 9 DAYS**



**NEW!!**

<b>LOW PROFILE</b> (with Power Factor Correction and Universal Input)	
Single output . . . . .	<b>50-53</b>
Wide Adjust output . . . . .	<b>50-53</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>91</b>

**Shipped within 9 DAYS**



<b>GOLD BOX</b>	
Single output . . . . .	<b>54-55</b>
Wide Adjust output . . . . .	<b>54-55</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>91</b>

### DC-DC CONVERTERS, REGULATED

**Shipped within 3 DAYS**



{ 5-48 Vdc in  
5-28 volts out  
0.2-2.5 amps  
6-15 watts }

<b>MINI ENCAPSULATED - PC Board Mounting</b>	
Single and Dual output . . . . .	<b>74-75</b>
Sockets . . . . .	<b>34</b>

<b>MINI ENCAPSULATED - With Screw Terminals</b>	
Single and Dual output . . . . .	<b>76-77</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>77</b>



{ 18-350 Vdc in  
3.3-125 Vdc out  
1.3-25 amps  
to 288 watts }

<b>NARROW PROFILE</b>	
Single output . . . . .	<b>78-80</b>
Mounting Kits (for wall mounting or DIN rail mounting) . . . . .	<b>91</b>

### HIGH VOLTAGE REGULATED, AC-DC & DC-DC

**Shipped within...**

**...6 DAYS**

**...9 DAYS**



{ 0-30 kV  
1-60 mA  
30-60 watts }

<b>MODULAR</b>	
Single output . . . . .	<b>70-73</b>
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<b>RACK MOUNTING</b>	
Single output . . . . .	<b>68-69</b>

To 30 kV

## LINEAR REGULATED, AC-DC

**Shipped  
within  
3 DAYS**



{ 1-75 volts  
0.02-2.5 amps  
0.25-15 watts }

### MINI ENCAPSULATED - PC Board Mounting

PAGE

Single output	32-33
Dual output	34
Sockets	34

### MINI ENCAPSULATED - With Screw Terminals

Single and Dual output	36-37
Mounting Kits (for wall mounting or DIN rail mounting)	77

**Shipped  
within  
3 DAYS**



{ 0-150 volts  
0.05-3.5 amps  
2-38 watts }

### NARROW PROFILE

Single output	40-41
Dual output	62
Wide Adjust output	58-59
Mounting Kits (for wall mounting or DIN rail mounting)	91

**Shipped  
within  
3 DAYS**



{ 0-200 volts  
0.1-32 amps  
0.6-450 watts }

### GOLD BOX

Single output	46-49
Dual output	62-66
Triple output	67
Wide Adjust output	58-61
Adjustable Current Limiting	58-59
Programmable (with a control voltage or potentiometer)	60-61
Mounting Kits (for wall mounting or DIN rail mounting)	91

**Shipped  
within  
3 DAYS**



{ 1-200 volts  
0.02-5 amps  
0.1-60 watts }

### PLUG-IN

Single output	84-85
Dual output	86-88
Wide Adjust output	84-85
MIL tested	81
Sockets	81
Solder terminals (optional)	84-88

**Shipped within 9 DAYS**



{ 0-150 volts  
2.3-60 amps  
30-784 watts }

### RACK MOUNTING

Single output	28-29
Dual output	28-29
Wide Adjust output	60-61, 30-31
Adjustable Current Limiting	30-31
Programmable (with a control voltage or potentiometer)	60-61

## UNREGULATED, AC-DC

**Shipped  
within  
3 DAYS**

{ 0-1000 volts  
0.02-23 amps  
0.8-560 watts }



### GOLD BOX

Single output	56-57
Wide Adjust output	56-57
Mounting Kits (for wall mounting or DIN rail mounting)	91

{ 0-950 volts  
0.02-5 amps  
7-140 watts }



### PLUG-IN

Single output	82-83
Wide Adjust output	82-83
Sockets	81

## NEMA 4X Enclosed

We can mount many of our power supplies in NEMA enclosures. . . . . 35

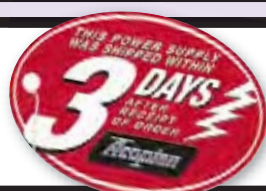
**FIND POWER SUPPLY BY MODEL NUMBER** . . . . . 92

## Under/Overtoltage Monitors

These modules can be used with any manufacturer's power supply to control an external horn or light, or to signal your PLC if the 'target' output voltage deviates. . . 90

## Circuit Enclosure Boxes

You can now package your own circuits in the same rugged casework used for Acopian power supplies . . . . . 89



**ORDER DIRECT FROM ACOPIAN** . . . . . Inside Back Cover  
**WARRANTY** . . . . . Inside Back Cover  
**TAGGING, TEST DATA, FUNGUS PROOFING** . . . Inside Back Cover  
**3-DAY AND 9-DAY SHIPPING GUARANTEE** . . . . . 1

# Need a non-standard power supply?

**We'll customize a power supply to meet your requirements.**

Acopian has been customizing power supplies to meet our customers' unique requirements for over 48 years. The cost is reasonable, even in small quantities. We ship them quickly – often within the same 3 working days as our standard models. And they carry the same five year warranty. Tell us your requirements, and we'll quote what we can do for you.



*Power supply with IEC input connector and circular output connector*

64V output

42V output



*Baseplate-mounting power supply*

44 Vac input



*High voltage power supply mounted in NEMA enclosure.*

17.2V output

# Acopian can help you by making modifications such as these:

## These Output modifications are easily done:

- Non-standard output voltages/ranges
- Capability to compensate large load line drops
- Programmable with 0-5 or 0-10V control voltage
- Programmable current control
- Capability to provide a surge current at turn-on
- Wide adjust zero-up outputs
- Modified current limiting characteristics:
  - Adjustable current limiting
  - Latching current limiting
  - Constant current limiting
  - Pulsing limiting
- Adjustable overvoltage protection
- Redundancy: N+1 or diode OR-ing
- Inhibit and enable control
- Multiple sets of fused output terminals
- Electrostatically shielded transformers
- Low noise/low ripple outputs
- Paralleling: passive or active
- Switchable polarity outputs
- Relay controlled outputs

## These Input modifications are easily done:

- Special input ranges
- Selectable input voltage ranges
- DC inputs to 350V
- Logic-controlled on/off
- 400 Hz input
- 90-265 Vac input (Japan)
- Inhibit/enable (TTL or other level)
- AC inrush limiting
- Soft start
- Optically Isolated Control inputs

## These Operating Features are easily done:

- Alarm contacts
- Monitor outputs (may be scaled)
- Input switch
- Output voltage selector switch
- LED indicators
- 10-turn output controls
- Test jacks (pin or banana)
- Temperature protection (thermostat)
- Analog or digital meters
- Voltage and current monitors
- Outputs on binding posts
- Remote system AC control using SS relays
- EMI and RFI filtering/shielding
- Safety/interlock switches

## These Mechanical modifications are easily done:

- Input/output connector(s) instead of screw terminals
- Customer specified connectors
- Flying lead connections
- Output cables
- Line cord (hard-wired or IEC with detachable cord)
- Mounting flanges added
- Clips for DIN rail mounting added
- Changed case dimension
- Special case to fit available space
- Mounting in NEMA enclosure
- Fan cooling
- Handles/rubber feet added
- Custom painted
- Rack heights from 1¾" to 12¼"
- Pluggable modules

**Or we can build a Power System  
that will meet your requirements.  
See next page.**

# Power Supply Systems

Any way YOU want!



**The next 7 pages detail for you:**

- The unlimited variety Acopian can make!
- How easy it is to order Power Systems Online!
- Acopian's 9 Day Shipping Promise for Systems!
- Why Acopian warranties its Systems for 5 years!

Since 1964, Acopian has been building Power Supply Systems for customers including Lockheed Martin, Raytheon, Northrop Grumman, BAE, Westinghouse, Walt Disney, U.S. Army, U.S. Navy, Emerson, Tyco, Siemens, Chevron, University of Chicago, MIT, Honeywell, Goodrich, Harris Corp, GM and GE. Shouldn't you be choosing Acopian too?





PHOTO COURTESY OF THE ICECUBE PROJECT

*"At Project IceCube, it's absolutely critical to have a good power supply. The ice must be as pure and clear as possible. If the power to the ice top sensor system were to fail, we would risk the tank water freezing without being controlled, resulting in bubbles and impurities, and very much reducing the quality of ice and quality of information that we can see with our detectors. We chose Acopian power supplies to power our pumping and degassing systems because of their reputation for reliability. The people at Acopian met all of our highly demanding specifications and, despite very little time until our window to ship to the Pole, they met our schedule. We were 100% satisfied."*

**Jim Baccus**  
**Cable System Manager**  
**Project IceCube**

*(the international high-energy neutrino observatory being built and installed in the ice below South Pole Station)*

## The world's most demanding environments demand Acopian power systems.

Design your own Acopian power system online with the System Builder at [www.acopian.com](http://www.acopian.com). Simply enter your requirements, and you'll receive a quotation for fully wired multiple-output power systems, without the need for you to prepare mechanical layouts or search through a power supply catalog.

Each system will be completely wired, tested and shipped within 9 days after receipt of the order. Choose Acopian – the power supplies of choice for the world's leading engineers.



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



Acopian Technical Company

1-800-523-9478 • [www.acopian.com](http://www.acopian.com)

# Building your own Power Supply System is so simple anyone can do it...with Acopian's Online System Builder!

www.acopian.com

Once Online, click here. Then...

Simply 'check' or fill in whichever items you require.

Acopian Power Supplies  
Shipped Within 3 Days

My Account Cart Checkout

Contact an Engineer Tech Talk News Testimonials About Us Contact Us Why Acopian?

Find a Power Supply **Build a Custom Power System** Enter DC Voltage GO Enter Model # GO

## Acopian Power System Builder

[MORE INFO] [PHOTOS]  
Simply 'check' or fill in whichever items you require. Since the possibilities are endless, use the 'Notes/special instructions' sections for anything not covered in the System Builder.

How Many Outputs Do You Need For Your System? 2 **Choose up to 30 outputs**

Switching Linear Unregulated Overvoltage Protection Remote Sensing

Output 1: [ ] volts dc, [ ] amps [ ] [ ] [ ] [ ] [ ]

Output 2: [ ] volts dc, [ ] amps [ ] [ ] [ ] [ ] [ ]

Physical Form: 19" Wide rack

19" Wide Rack: [ ] Maximum height [ ] Maximum depth


handles on front panel  
 chassis slides:  
 adjustable from 16" to 22" long  
 adjustable from 20" to 26" long (standard size)  
 specify length: [ ] (uncommon sizes may require more than 9 days)  
 Acopian can select appropriate length

Leave top and bottom open for ventilation and accessibility  
 Install top and bottom perforated covers

Systems of unusual size or shape (other than 19" wide, or more than 7" high) may require more than 9 days.

**These are your choices:**

- 19" Wide rack
- 24" Wide rack
- Custom width rack
- Wall mounting
- Benchtop
- Not sure
- Make me a 'special' Power Supply (I don't want a Power System)


**Power Supplies**  
 † Shipped Within 3 Days

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[Find a Power Supply](#) [Build a Custom Power System](#)

Enter DC Voltage  
 Enter Model #

**Input connections:**

- [screw terminals](#) (this is standard)
- [terminal strip cover](#)
- [IEC connector with 6' line cord](#)
- [hardwired line cord](#)

**Output connections:**

- [screw terminals](#)
- [terminal strip cover](#)
- connector
  - [D-subminiature](#)
  - [circular](#)
- Acopian can select (and provide mate)
- use this type:

**Notes/special instructions:**

**Input power switch with 'on' indicator:**

- on front panel (this is standard)
- on rear panel.
- I don't need a power switch.



When Northrop Grumman engineers needed a system with output setting precision better than 1%, they turned to Acopian. A digital voltmeter and ammeter permit setting and monitoring the four outputs of this system to three digit accuracy. **Acopian shipped it within 9 Days of receiving the order.** And as is true of all Acopian systems, it shipped with a 5 year warranty.

# Next!

## Let us know if you want Redundancy in your Acopian Power System.

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**Acopian** Power Supplies  
Shipped Within 3 Days

Contact an Engineer Tech Talk News Testimonials About Us Contact Us Why Acopian?

Find a Power Supply Build a Custom Power System

Enter DC Voltage GO Enter Model # GO

Would you like Redundant\* outputs?

Acopian Redundant Power Package style (primary/backup)

N+1 (current sharing)

Redundancy not required

\* Two power supplies for each output. If one fails, the other will continue to provide an uninterrupted output.

Notes/special instructions:

Input voltage:

100 VAC nominal

115 VAC nominal

208 VAC nominal

230 VAC nominal

240 VAC nominal

With the near endless kinds of features, types and parts we can accommodate in Acopian Power Systems, we only included the most standard ones in the System Builder, so every section comes with a "Notes/special instructions" block. What can we do for you?

See page 13 for a partial list of features not included in our System Builder.

Two identical linearly regulated power supplies with their outputs connected in parallel provide a 48 Vdc 15A redundant output with line and load regulation better than  $\pm 0.05\%$ , and output ripple of less than 1 mV rms, 3 mV p-p. For AC redundancy, each supply can be fed from a different power source, and each has failure alarm contacts for remote monitoring of operating status. Because each supply is physically separate, one supply can be quickly and easily removed from the rack while the other continues to provide uninterrupted power to the load. **This system was shipped within 9 days and carries Acopian's 5 year warranty.**





Find a Power Supply

Build a Custom Power System

Enter DC Voltage

GO

Enter Model #

GO

**Metering:**

analog (this is standard)

digital

meters not required

Voltmeter

If there is more than one output:

Dedicated voltmeters (each output has its own voltmeter)

Switchable voltmeter (multiple outputs share one meter. A switch is used to change which output will display on the meter.)

Ammeter

If there is more than one output:

Dedicated ammeters (each output has its own ammeter)

Switchable ammeter (multiple outputs share one meter. A switch is used to change which output will display on the meter.)

(If you only require meters for certain outputs, indicate this here.)

**Output indicators:**

'Output Present' LED

green

red

'Output Not Present' red neon lamp

**Output adjustment:**

Front Panel

screwdriver slot with shaft lock

knob

Rear Panel

screwdriver slot(s)

shaft lock required.

[holes in panel to access adjustments on power supplies would be adequate](#)

**Contacts:**

(SPDT, to control external alarm or circuitry)

isolated set for each output

one set of connections which switches if any output is not present.

contacts not required



Responding to a customer's critical need, Acopian was able to ship this system in less than the 9 days we had guaranteed to meet or beat. It has front panel voltage and current controls for each of its three outputs, and a voltmeter and ammeter that may be switched to check all output settings. It also has the unusual capability of being operable with either a 208 VAC 3-phase input or 230 VAC single phase, and came with Acopian's 5 year warranty.

## Lastly!

Indicate other special features or instructions you would like in your Acopian Multi-Output Power System.

Acopian Power Supplies  
Shipped Within 3 Days

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Contact an Engineer Tech Talk News Testimonials About Us Contact Us Why Acopian?

Find a Power Supply Build a Custom Power System

Enter DC Voltage GO Enter Model # GO

Test points:

- on the front panel
- on the rear panel
- banana jacks
- tip jacks
- binding posts

Notes/special instructions:

Individual fusing or switches:

(If you require non-stocked components, such as special connectors or circuit breakers, more than 9 days may be required.)

Any other special instructions:

Then... [Click Here to Submit Your 'System'](#)

Your System Builder information is immediately transferred to Acopian via e-mail (you will receive a copy).

## Quote!

An engineer will review your information and assign a unique Acopian model number. A quote that includes price, lead-time and a full description of the proposed System will then be e-mailed to you.

# Acopian Power Systems can also include such features as:

## **Output Features:**

- Capability to compensate large load line drops
- Programmable with 0-5 or 0-10V control voltage
- Programmable current control
- Capability to provide a surge current at turn-on
- Wide adjust zero-up outputs
- Modified current limiting characteristics:
  - Adjustable current limiting
  - Latching current limiting
  - Constant current limiting
  - Pulsing limiting
- Adjustable overvoltage protection
- Inhibit and enable control
- Multiple sets of fused output terminals
- Electrostatically shielded transformers
- Low noise/low ripple outputs
- Paralleling: passive or active
- Switchable polarity outputs
- Relay controlled outputs

## **Input Features:**

- Selectable input voltage ranges
- Logic-controlled turn-on
- 400 Hz input
- 90-265 Vac input (Japan)
- Optically isolated control inputs
- Two AC inputs (for redundancy)

## **Operating Features:**

- Monitor outputs (may be scaled)
- 10-turn output controls
- Temperature protection (thermostat)
- Voltage and current monitors
- Outputs on binding posts
- Remote system AC control using SS relays
- EMI and RFI filtering/shielding
- Safety/interlock switches

## **Mechanical Features:**

- Customer specified connectors
- Flying lead connections
- Output cables
- Mounting flanges added
- Special case to fit available space
- Mounting in NEMA enclosure
- Fan cooling
- Custom painted
- Pluggable modules



Power Systems by



**The possibilities are infinite!**



**Use the Online System Builder or Call Acopian at 1-800-523-9478 and discuss your requirements with an applications engineer. We'll do the rest.**



# Need Ultra-Reliability?

*Redundant Power Packages and Systems have two power supplies for each output. If one fails, you're still operating.*



*Wall Mounting  
Redundant Power Package*



*Modular Redundant System  
(May be mounted on a DIN rail,  
wall, chassis or cabinet frame)*



*Rack Mounting  
Redundant Power Package*



*Pluggable  
Redundant  
Power Package*



*Customized Redundant Systems  
(Built to your requirements)*



# Use Redundant Power

*If none of our standard models  
meets your requirements,  
we'll build you one that does.  
(See pages 6 - 14)*

## **284 standard models (see pages 16-27), each shipped within 9 Days**

Our standard models have outputs from 5 to 125 volts, and up to 1200 watts. Each is fully wired, tested and shipped within 9 days after receiving your order. All that's left for you to do is to connect it to input power and your load.

## **We can customize Redundants for you**

If no standard model meets your needs, we can customize a model for you, or design a 'special' for your unique requirements. We frequently design 'specials' with outputs as high as 3600 watts.

## **Various configurations to fit the available space**

Acopian manufactures redundants in three form factors: rack mounting (some with power supplies that plug in from the front), wall mounting and modular. If you need something different, speak with one of our engineers. We can design a form that meets your requirements.

## **Proven designs since 1973**

There are numerous considerations that go into the design of a good redundant system. (Can the power supplies compensate the voltage drops of the isolation diodes? Is the regulation maintained after the diodes? Is the output stable?) Acopian has been manufacturing a standard line of redundants since 1973. We have the expertise to build redundants that are extremely reliable, provide high performance and are easy to use.

## **Five Year Warranty**

Obviously, the reliability of a redundant system is dependent upon the reliability of the power supplies it uses. We build our supplies so you can operate them reliably for many years, which is why all Acopian Redundants come with an unsurpassed, full 5 year warranty. Our customers have told us about Acopian supplies that have remained in use for 30 years and more.

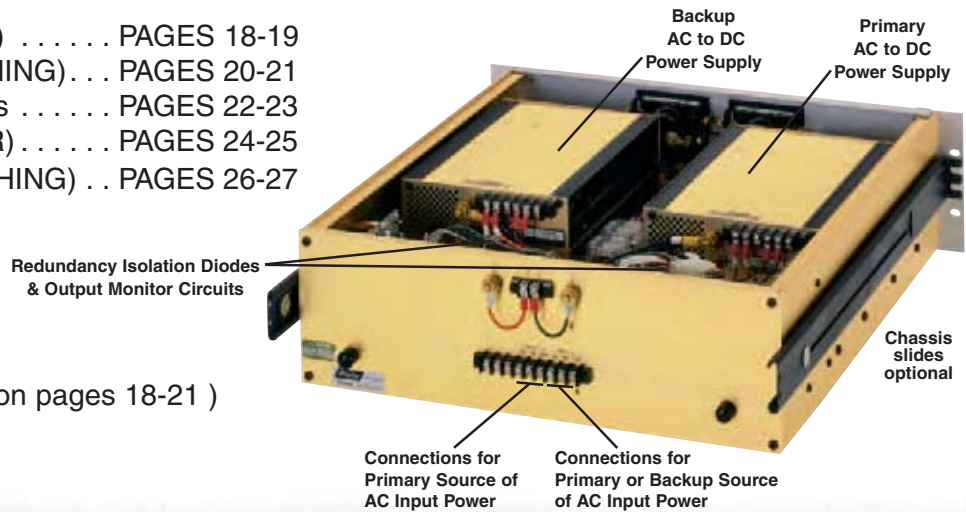


## **REDUNDANT POWER PACKAGES and MODULAR REDUNDANT SYSTEMS** *(Rack Mounting, Wall Mounting & Pluggable)* *(Three separate modules)*

Redundant Power Packages (LINEAR) . . . . . PAGES 18-19  
 Redundant Power Packages (SWITCHING) . . . PAGES 20-21  
 Pluggable Redundant Power Packages . . . . . PAGES 22-23  
 Modular Redundant Systems (LINEAR) . . . . . PAGES 24-25  
 Modular Redundant Systems (SWITCHING) . . PAGES 26-27

### AC-DC *single output*

- Shipped Within 9 Days
- U.L. Recognized (Power Packages on pages 18-21 )
- Five Year Warranty



**Applications:** Redundant Power should be considered for any equipment where the highest attainable reliability is essential, and an unexpected loss of power would be disastrous. Such applications include communications systems (both voice and data types), computer systems (volatile memory systems in particular), process controls, utility and municipal systems, and security/safety alarm systems.

**Output Redundancy:** Each Redundant Power Package or Modular Redundant System contains two identical power supplies with their outputs interconnected through a diode switching arrangement that will detect any fault condition, isolate it from the system output, and pass only the output of the other supply with no interruption of output power during the transition.

**Input Redundancy:** All Acopian Redundant Power Packages or Modular Redundant Systems may be operated with only one AC power source. However, two isolated sets of AC input connections are provided, so that two independent sources of AC input power may be used, to obtain the additional benefit of input power redundancy. By feeding one input through a battery-backup power source (UPS), DC output power will be maintained even if both AC power sources should fail.

**Serviceability:** A defective power supply can be rapidly and safely changed while the other supply continues to furnish uninterrupted power to the load. All input, output and alarm-contact connections are at the rear of the assembly for Rack Mounting models or on the front for Wall Mounting models or Modular Systems. For Rack Mounting models, the chassis slides and handles options are recommended for applications where it is desired to service the Redundant Power Package without removing it from the rack.

**Operation:** The output voltage of the primary supply is set approximately 0.2 volt higher than that of the backup supply. Under this condition, the backup supply's diode is not forward biased; only the primary supply delivers current to the load. If the output voltage of the primary supply decreases by more than 0.2 volt, the situation is reversed and only the backup supply delivers load current. There is no interruption of output power during the transition.

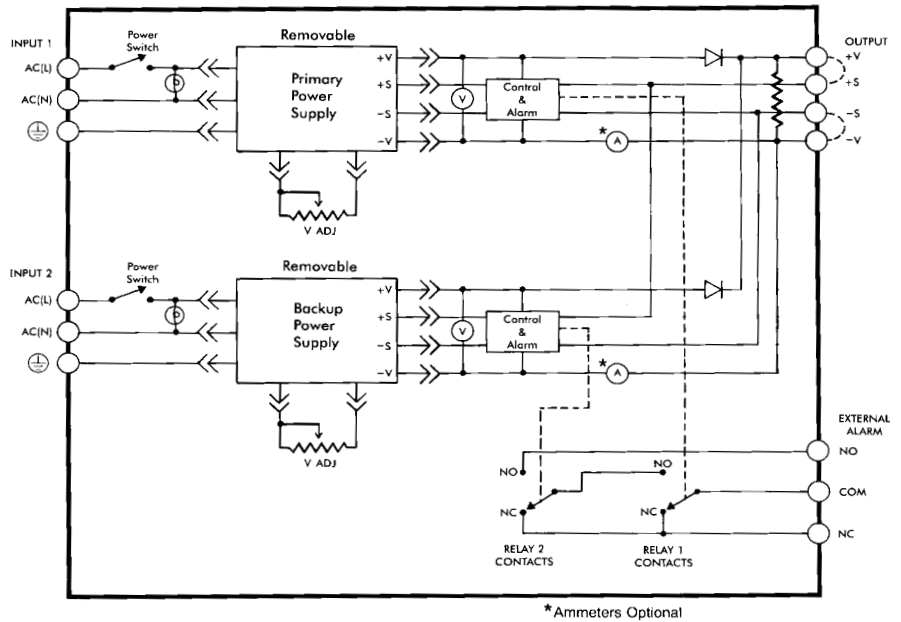
**Monitoring Circuitry:** Acopian Redundants contain two voltage monitoring circuits with relays, the contacts of which are available to control external failure alarms or other circuitry. The contact wiring of the two relays is connected in cascade, to simulate a single set of Form C contacts which switches if the output voltage of either power supply decreases by more than 2.0 volts from the nominal rating (3.0 volts for Linear models with outputs over 49 volts; 4.0 volts for Switching models with outputs over 49 volts).

**Overvoltage Protection:** Automatic recovery. Each power supply contains an overvoltage protection circuit, to assure that neither power supply output will significantly exceed the nominal output voltage rating under any condition, including incorrect application and misadjustment.



## Simplified Diagram for Redundant Power Packages

(see page 23 for Simplified Diagram of the Pluggable Redundant Power Packages or page 25 for Simplified Diagram of the Modular Redundant Systems)



### SPECIFICATIONS (for all Redundant Power Packages & Modular Redundant Systems)

**Input Voltage:** (A separate set of AC input terminals is provided for each power supply, so that if two sources of AC input power are available, one may be used for each supply and so reduce the possibility of output dropout due to loss of input power.)

**Linear (all models):** 105-125 VAC, 50-400 Hz, single phase.

**Switching (Redundant Power Packages):** 90-132 VAC, 49-61 Hz, single phase.

For models R24W7, RWL24W7, R28W7, RWL28W7, R48W7 and RWL48W7, the use of 30A lines is recommended.

When operating on 50 Hz input, derate output by 5%.

**Switching (Pluggable Redundant Power Packages):** 90-265 VAC, 49-420 Hz, single phase.

**Switching (Modular Redundant Systems):** 90-265 VAC, 49-420 Hz, single phase.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, so that drops in the load lines are compensated, is a standard feature.

#### Output Voltage:

Normal mode: Nominal voltage shown in tables.

Backup mode: 0.2 volt less than nominal voltage shown in tables.

#### Output Regulation:

Line:  $\pm 0.05\%$

Load:  $\pm 0.05\%$  (Dynamic regulation - does not include 0.2 volt shift which occurs during switchover to lower-set backup supply.)

**Load Protection:** Overvoltage protection.

**Overload/Short Circuit Protection:** Foldback current limiting with automatic recovery (Switching Modular Redundant Systems and Pluggable Redundant Power Packages have current limiting with automatic recovery).

**Polarity:** Output is floating; either positive or negative output terminal may be grounded or floated up to 300 volts above ground.

#### Output Monitoring:

**Redundant Power Packages:** A separate voltmeter for each output (standard). Ammeters available; see Options.

**Modular Redundant Systems:** 'Output Present' LED for each power supply is located on the Integration Module. ('Output Present' green LEDs are also located on each power supply (DC on) on the Switching Regulated Modular Redundant Systems.)

**Alarm Relay Contact Ratings:** 120 VAC, 8A / 60 Vdc, 1A. (To comply with SELV requirements, limit switched voltage to 60Vdc/42 VAC.)

**Temperature Coefficient:** 0.02%/°C (Typical).

#### Ambient Operating Temperature:

**Linear:** -20 to +71°C.

**Switching:** 0 to +71°C.

#### Storage Temperature:

**Linear:** -55 to +85°C.

**Switching:** -40 to +85°C.

**Terminal Strip Cover:** Clips on.



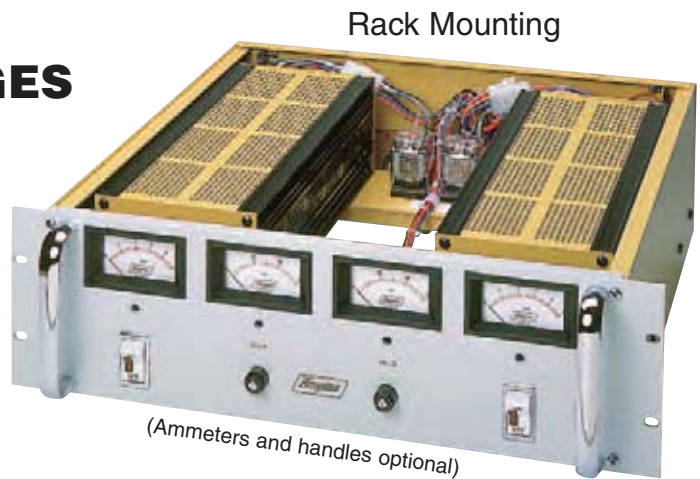
# LINEAR REGULATED REDUNDANT POWER PACKAGES

Rack Mounting & Wall Mounting

AC-DC  
single output

- Shipped Within 9 Days
- All Models U.L. Recognized
- Five Year Warranty

An Acopian Redundant Power Package is installed by simply connecting the AC input and DC output terminals. All wiring (including isolation diodes, output monitor circuits, switches, meters, adjustments and connectors) has been done for you.



For Specifications and other information, see pages 16 & 17.

## OPTIONS

Add option suffixes in alphabetical order. Example: R5H16AH-230.

**Ammeters:** One for each output. For models in case sizes 3R14 and 317R18 two volt/ammmeters, each with switch, are substituted for the standard voltmeters. Add suffix "A" to model number and \$120.00 to price.

**Audible Alarms:** Piercing whistle alerts personnel to a voltage lower than normal. Front panel mounted, one for each power supply. When this option is included and the alarm contacts are also used, meeting SELV levels requires that the input voltages be no greater than 125 VAC. To order, add suffix "K" to model number and \$90.00 to price.

**Separate Alarm Contacts for each Power Supply:** If a power supply's output is incorrect, using two alarms permits remotely identifying that power supply. Each contact set is Form C (SPDT). To order, add suffix "R" to model number and \$35.00 to price. (Cannot combine "K" and "R" options on Wall Mounting units.)

**Handles** (for Rack Mounting models): Add suffix "H" to model number and \$30.00 to price.

**Chassis Slides** (for Rack Mounting models): For racks having rear mounting rails spaced 20" to 26" behind the front panel. To order, add suffix "S" to model number and \$90.00 to price.

**230 Volt Input:** For operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$75.00 to price. Requires two additional days.

## Linear Regulated REDUNDANT POWER PACKAGES

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at			Ripple mV RMS	Rack Mounting Models			Wall Mounting Models		
		40°C	55°C	71°C		(\$) Price	Model	Case Size	(\$) Price	Model	Case Size
5	.5	2.6	2.5	2.4	1	1095	R5N8X	3R14	1395	RWL5N8X	317R18
5	.5	5.3	4.4	3.5	1	1195	R5M6	5R14	1495	RWL5M6	517R18
5	.5	11	9.3	7.5	1	1295	R5M13	5R18	1595	RWL5M13X	517R20
5	.5	21	17	14	1	1495	R5H11	7R18	1795	RWL5H11	719R20
5	.5	28	23	19	1	1695	R5H16	7R20	1995	RWL5H16	719R25
12	.5	1.5	1.5	1.5	1	1095	R12N8X	3R14	1395	RWL12N8X	317R18
12	.5	3.5	3	2.5	1	1195	R12M6	5R14	1495	RWL12M6	517R18
12	.5	8	7.5	7	1	1295	R12M13	5R18	1595	RWL12M13X	517R20
12	.5	16	13.8	11.2	1	1495	R12H11	7R18	1795	RWL12H11	719R20
12	.5	20	17	14.2	1	1695	R12H16	7R20	1995	RWL12H16	719R25
15	.5	1.5	1.5	1.5	1	1095	R15N8X	3R14	1395	RWL15N8X	317R18
15	.5	4	3.8	3.6	1	1195	R15M9	5R14	1495	RWL15M9	517R18
15	.5	6.5	6	5.5	1	1295	R15M13	5R18	1595	RWL15M13X	517R20
15	.5	14.7	12.5	10.3	1	1495	R15H11	7R18	1795	RWL15H11	719R20
15	.5	18.7	16	13.3	1	1695	R15H16	7R20	1995	RWL15H16	719R25
24	.5	.9	.9	.9	1	1095	R24N8X	3R14	1395	RWL24N8X	317R18
24	.5	3	2.7	2.4	1	1195	R24M9	5R14	1495	RWL24M9	517R18
24	.5	5	5	5	1	1295	R24M13	5R18	1595	RWL24M13X	517R20
24	.5	11.7	10.2	8.7	1	1495	R24H11	7R18	1795	RWL24H11	719R20
24	.5	14.7	12.7	10.7	1	1695	R24H16	7R20	1995	RWL24H16	719R25
28	.5	1	1	1	1	1095	R28N8X	3R14	1395	RWL28N8X	317R18
28	.5	2.7	2.6	2.5	1	1195	R28M9	5R14	1495	RWL28M9	517R18
28	.5	5	5	5	1	1295	R28M13	5R18	1595	RWL28M13X	517R20
28	.5	10.5	9.2	8	1	1495	R28H11	7R18	1795	RWL28H11	719R20
28	.5	14	12	10	1	1695	R28H16	7R20	1995	RWL28H16	719R25
48	.5	.4	.4	.4	1	1130	R48N8T	3R14	1430	RWL48N8T	317R18
48	.5	1.6	1.4	1.2	1	1240	R48M9	5R14	1540	RWL48M9	517R18
48	.5	3	3	3	1	1340	R48M13	5R18	1640	RWL48M13X	517R20
48	.5	6	5	4	1	1545	R48H11	7R18	1845	RWL48H11	719R20
48	.5	8.5	7.2	5.5	1	1835	R48H16	7R20	2135	RWL48H16	719R25
60	1	.25	.25	.25	1	1160	R60N8T	3R14	1460	RWL60N8T	317R18
60	1	1	.9	.8	1	1270	R60M9	5R14	1570	RWL60M9	517R18
60	1	2.5	2.1	1.7	1	1370	R60M13	5R18	1670	RWL60M13X	517R20
60	1	5	4.1	3.3	1	1575	R60H11	7R18	1875	RWL60H11	719R20
60	1	7	5.8	4.6	1	1845	R60H16	7R20	2145	RWL60H16	719R25
120	1	.12	.12	.12	1	1180	R120N8T	3R14	1480	RWL120N8T	317R18
120	1	.5	.5	.4	1	1295	R120M6	5R14	1595	RWL120M6	517R18
120	1	1.2	1.1	1	1	1400	R120M13	5R18	1700	RWL120M13X	517R20
120	1	2.5	2	1.6	1	1615	R120H11	7R18	1915	RWL120H11	719R20
120	1	3.5	2.9	2.3	1	1890	R120H16	7R20	2190	RWL120H16	719R25
125	1	.12	.12	.12	1	1200	R125N8T	3R14	1500	RWL125N8T	317R18
125	1	.4	.4	.4	1	1315	R125M6	5R14	1615	RWL125M6	517R18
125	1	1.2	1.1	1	1	1420	R125M13	5R18	1720	RWL125M13X	517R20
125	1	2.4	1.9	1.5	1	1635	R125H11	7R18	1935	RWL125H11	719R20
125	1	3.4	2.8	2.3	1	1910	R125H16	7R20	2210	RWL125H16	719R25



## Wall Mounting



(Ammeters optional)

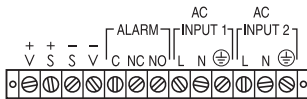
### CASE SIZES:

#### Rack Mounting:

- 3R14** 3½" x 19" panel, 14<sup>13</sup>/<sub>16</sub>" deep. (15 lb.)
- 5R14** 5¼" x 19" panel, 14<sup>13</sup>/<sub>16</sub>" deep. (23 lb.)
- 5R18** 5¼" x 19" panel, 17<sup>7</sup>/<sub>8</sub>" deep. (29 lb.)
- 7R18** 7" x 19" panel, 18½" deep. (50 lb.)
- 7R20** 7" x 19" panel, 20½" deep. (64 lb.)

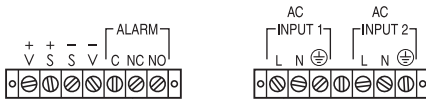
**Wall Mounting:** See page 21.

#### CONNECTIONS FOR CASE SIZES 3R14, 317R18, 5R14, 5R18, 517R18 and 517R20:



Barrier Strip with 6-32 terminal screws

#### CONNECTIONS FOR CASE SIZES 7R18, 7R20, 719R20, and 719R25:



Barrier Strips with 8-32 terminal screws

#### Additional CONNECTIONS for "R" Option: Separate Alarm Contacts for each Power Supply

(Note: Connections for 'ALARM' in above drawings become connections for 'PS2 ALARM')



## PARALLELEABLE "SEMISYSTEM" POWER SUPPLIES

### LINEAR REGULATED

Two units connected in parallel function the same as a Redundant Power Package.



(Handles optional)

SHIPPED WITHIN 9 DAYS  
FIVE YEAR WARRANTY  
ALL MODELS U.L. RECOGNIZED

Each supply contains a voltmeter, isolation diodes, a voltage monitor circuit providing contacts for control of an external alarm (or built-in audible alarm) and overvoltage protection circuit, so that two paralleled units are functionally equivalent to a Redundant Power Package. All connections are by means of a Jones connector (mate provided), so that one supply may be quickly, easily and safely installed in or removed from the rack while another provides uninterrupted power to the load. For a redundant system, order two units.

**Specifications:** Same as shown under SPECIFICATIONS on page 17 for Linear Redundant Power Packages.

**Case Size:** 5¼" x 19" panel, 16<sup>13</sup>/<sub>16</sub>" deep. (53 lbs.)

To allow for mating connector and radius of wiring, mounting space should be at least 20" deep.

## PARALLELEABLE "SEMISYSTEM" POWER SUPPLIES Linear Regulated

For a redundant system, order two units.

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at		Ripple mV RMS	(\$) Price	Model	Case Size
		40°C	55°C				
5	.5	55	43	1	1095	R5PH17	5R17
12	.5	41	32	1	1095	R12PH17	5R17
15	.5	37	29	1	1095	R15PH17	5R17
24	.5	28	22	1	1095	R24PH17	5R17
28	.5	27	21	1	1095	R28PH17	5R17
48	.5	15	12	1	1095	R48P17	5R17

### OPTIONS

Add option suffixes in alphabetical order.

**Ammeter:** Add suffix letter "A" to model number and \$60.00 to unit price.

**Handles:** Add suffix "H" to model number and \$30.00 to unit price.

**Audible Alarm:** Whistle alerts personnel to voltage lower than normal. Front panel mounted. Units with this option do not have provision for control of an external alarm. Add suffix "K" to model number and \$45.00 to unit price.

**230 Volt Input:** For operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$40.00 to unit price. Requires two additional days.



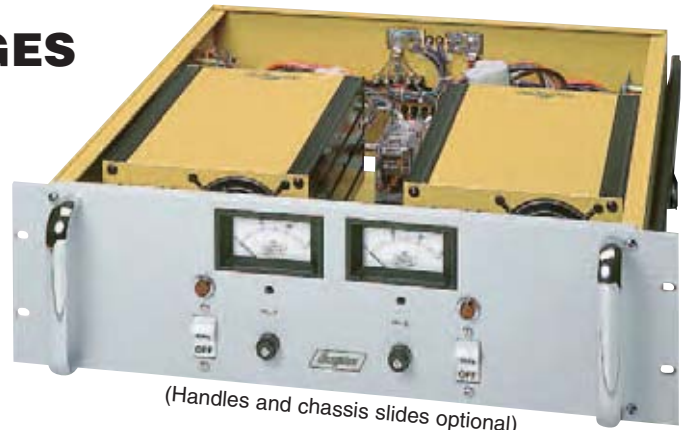


Rack Mounting

SWITCHING REGULATED  
**REDUNDANT POWER PACKAGES**  
 Rack Mounting & Wall Mounting

AC-DC  
*single output*

- Shipped Within 9 Days
- All Models U.L. Recognized
- Five Year Warranty



(Handles and chassis slides optional)

An Acopian Redundant Power Package is installed by simply connecting the AC input and DC output terminals. All wiring (including isolation diodes, output monitor circuits, switches, meters, adjustments and connectors) has been done for you.

For Specifications and other information, see pages 16 & 17.

**OPTIONS**

Add option suffixes in alphabetical order. Example: R12W6AH-230.

**Ammeters:** One for each output. Add suffix letter "A" to model number and \$120 to price.

**Audible Alarms:** Piercing whistle alerts personnel if the power supply's output deviates by more than 2 volts from the nominal rating. Front panel mounted, one for each power supply. When this option is included and the alarm contacts are also used, meeting SELV levels requires that the input voltages be no greater than 125 VAC. To order, add suffix "K" to model number and \$90.00 to price.

**Separate Alarm Contacts for each Power Supply:** If a power supply's output is incorrect, using two alarms permits remotely identifying that power supply. Each contact set is Form C (SPDT). To order, add suffix "R" to model number and \$35.00 to price. (Cannot combine "K" and "R" options on Wall Mounting units.)

**Handles** (for Rack Mounting models): Add suffix "H" to model number and \$30.00 to price.

**Chassis Slides** (for Rack Mounting models): For racks having rear mounting rails spaced 20" to 26" behind the front panel. To order, add suffix "S" to model number and \$90.00 to price.

**230 Volt Input:** For operation on inputs of 180-264 VAC, 49-61 Hz. To order, add suffix "-230" to model number and \$100.00 to price. Requires two additional days.

**Rack Mounting Case Sizes:**

- 5RW16** 5 1/4" x 19" panel, 16 13/16" deep. (21 lb.)
- 5RW18** 5 1/4" x 19" panel, 18 13/16" deep. (27 lb.)
- 5RW22** 5 1/4" x 19" panel, 22 13/16" deep. (32 lb.)

**Wall Mounting Case Sizes:** See page 21.

**Switching Regulated REDUNDANT POWER PACKAGES**

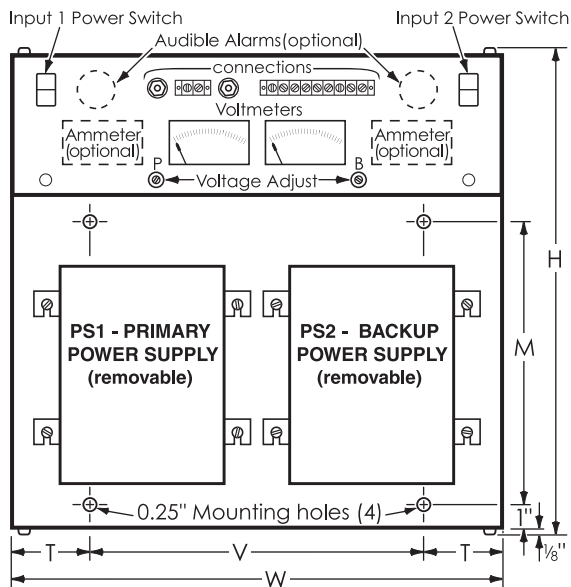
Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at			Ripple mV (@ 25 MHz BW)		Rack Mounting Models			Wall Mounting Models		
		40°C	55°C	71°C	RMS	P-P	Price	Model	Case Size	Price	Model	Case Size
12	.5	26	22	18	15	100	1995	R12W6	5RW16	2295	RWL12W6	519RW15
12	.5	41	35	28	15	100	2395	R12W9	5RW18	2695	RWL12W9	519RW18
12	.5	61	52	42	15	100	2795	R12G7	5RW22	3095	RWL12G7	522RW17
15	.5	21	18	15	15	100	1995	R15W6	5RW16	2295	RWL15W6	519RW15
15	.5	33	28	23	15	100	2395	R15W9	5RW18	2695	RWL15W9	519RW18
15	.5	49	42	34	15	100	2795	R15G7	5RW22	3095	RWL15G7	522RW17
24	.5	15	13	11	15	100	1995	R24W6	5RW16	2295	RWL24W6	519RW15
24	.5	24	21	17	15	100	2395	R24W9	5RW18	2695	RWL24W9	519RW18
24	.5	36	31	25	15	100	2795	R24G7	5RW22	3095	RWL24G7	522RW17
24	.5	50	42	35	15	100	2995	R24W7	5RW22	3295	RWL24W7	522RW17
28	.5	13	11	9	15	100	1995	R28W6	5RW16	2295	RWL28W6	519RW15
28	.5	20	17	14	15	100	2395	R28W9	5RW18	2695	RWL28W9	519RW18
28	.5	30	26	21	15	100	2795	R28G7	5RW22	3095	RWL28G7	522RW17
28	.5	42	35	29	15	100	2995	R28W7	5RW22	3295	RWL28W7	522RW17
48	.5	8	7	5	25	150	1995	R48W6	5RW16	2295	RWL48W6	519RW15
48	.5	12	10	8	25	150	2395	R48W9	5RW18	2695	RWL48W9	519RW18
48	.5	19	16	13	25	150	2795	R48G7	5RW22	3095	RWL48G7	522RW17
48	.5	25	21	17	25	150	2995	R48W7	5RW22	3295	RWL48W7	522RW17



## Wall Mounting



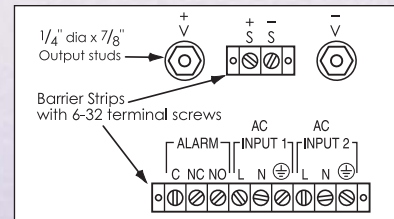
### Wall Mounting Case Sizes:



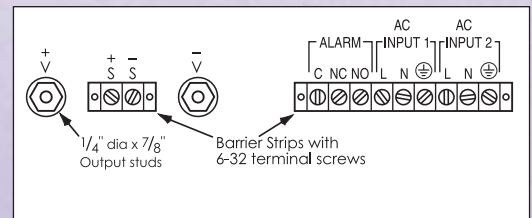
Case Size	H	W	M	V	T	Depth	Approx. Weight
317R18	18 1/2"	17	11	14	1 1/2	4 1/4	18 lb.
517R18	18 1/2"	17	11	14	1 1/2	6	22-26 lb.
517R20	20 1/2"	17	13	13	2	6	34 lb.
519RW15	15 1/2"	19	8	13	3	6 1/16	24 lb.
519RW18	18 1/2"	19	11	13	3	6 1/16	27 lb.
522RW17	17 1/4"	22 1/2	10	16 1/2	3	6 1/16	33 lb.
719R20	20 1/2"	19	13	13	3	7 3/4	58 lb.
719R25	25 1/2"	19	18	13	3	7 3/4	70 lb.

### CONNECTIONS:

#### RACK MOUNTING

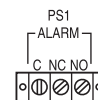


#### WALL MOUNTING



**Additional CONNECTIONS for "R" Option:  
Separate Alarm Contacts for each Power Supply**

**(Note: Connections for 'ALARM' in above drawings become connections for 'PS2 ALARM')**





# SWITCHING REGULATED PLUGGABLE REDUNDANT POWER PACKAGES (Power Factor Correction and Universal Input)

AC-DC

*single output*

- Shipped Within 9 Days
- Five Year Warranty

**Extremely high overall reliability** results from connecting two power sources so that one will continue to provide power to their load even if the other becomes inoperative. Acopian Redundant Power Packages have all the wiring done for you - not only isolation diodes, but also switches, meters, adjustments and output monitor circuits. All you need to do is connect the input and output terminals.

**System Description:** These models are functionally identical to the other Redundant Power Packages, but have the added advantage that a power supply can literally be changed in seconds.

## OPTIONS

Add option suffixes in alphabetical order.  
Example: R24WP8XAHKS.

**Ammeters:** One for each output. Add suffix letter "A" to model number and \$120.00 to price.

**Audible Alarms:** Front panel mounted, one for each power supply. Piercing whistle alerts personnel if the power supply's output deviates by more than 2 volts from the nominal rating (4 volts for 50 to 125 volt models). When this option is included and the alarm contacts are also used, meeting SELV levels requires that the input voltages be no greater than 125 VAC. To order, add suffix "K" to model number and \$90.00 to price.

**Separate Alarm Contacts for each Power Supply:** If a power supply's output is incorrect, using two alarms permits remotely identifying that power supply. Each contact set is Form C (SPDT). To order, add suffix "R" to model number and \$35.00 to price.

**Handles:** Add suffix "H" to model number and \$30.00 to price.

**Chassis Slides:** For racks having rear mounting rails spaced 20" to 26" behind the front panel. To order, add suffix "S" to model number and \$90.00 to price.



Two Voltmeters (standard)  
Two Ammeters (optional)  
Audible Alarms (optional)  
Handles (optional)

**For more Specifications and information, see pages 16 & 17.**

## SPECIFICATIONS

**Input Voltage:** 90-265 VAC, 49-420 Hz, single phase.  
(A separate set of AC input terminals is provided for each power supply, so that if two sources of AC input power are available, one may be used for each supply and so reduce the possibility of output dropout due to loss of input power.)

**Power Factor:** 0.99 typical at 115 VAC, 60Hz and full load.  
Complies with EN61000-3-2.

**Drift:** ±0.1% typical over 8 hours, after 30 minute warmup.

**Inrush Current:** Cold start, (thermistor limiter) 20A peak @ 115 VAC; 40A peak @ 230 VAC.

**Startup Time:** 800 mS typical.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line (1 volt for 50 to 125 volt models), within the limits of the output voltage adjustment range.

**Holdup Time:** 16 mS minimum.

**Transient Response:** 300 µS to return to ±1% of output setting. Maximum of ±3% output excursion following a load step change from 50% to 100%.

**Switching Frequency:** 100 kHz (Typical).

**Isolation:** Input to output, input to case; 500 VAC.  
Output to case; 300 VAC

**Thermal Protection:** Thermostat, self-resetting.

**Cooling:** Forced-air cooled; air enters front of system and exits from top.

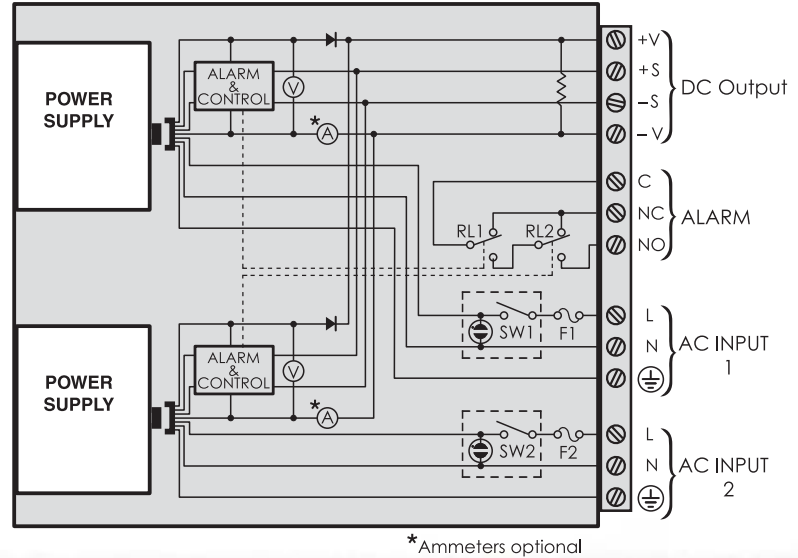
**CASE SIZE:** 5RP13 5¼" x 19" panel, 12¾" deep. (14 lb. 4 oz.)



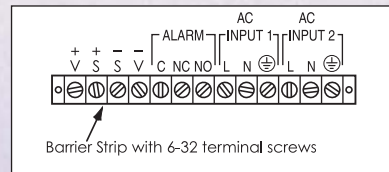


## Simplified Diagram for Pluggable Redundant Power Packages

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at			Ripple mV (@ 25 MHz BW)		Price	Model	Case Size
		40°C	55°C	71°C	RMS	P-P			
3.3	.5	15.4	13	10.7	10	50	1390	R3.3WP8X	5RP13
3.3	.5	24	20.5	16.8	10	50	1550	R3.3WP8	5RP13
5	.5	15.4	13	10.7	10	50	1390	R5WP8X	5RP13
5	.5	24	20.5	16.8	10	50	1550	R5WP8	5RP13
6	.5	15	12.6	10.5	10	50	1390	R6WP8X	5RP13
6	.5	23	19.5	16.8	10	50	1550	R6WP8	5RP13
7	.5	14.7	12.4	10.3	10	50	1390	R7WP8X	5RP13
7	.5	23	19.5	16.1	10	50	1550	R7WP8	5RP13
8	.5	14.4	12	10	15	100	1390	R8WP8X	5RP13
8	.5	23	19.5	16.1	15	100	1550	R8WP8	5RP13
9	.5	14.1	12	9.8	15	100	1390	R9WP8X	5RP13
9	.5	22	18.7	15.4	15	100	1550	R9WP8	5RP13
10	.5	13.5	11.5	9.5	15	100	1390	R10WP8X	5RP13
10	.5	21	18.5	15	15	100	1550	R10WP8	5RP13
12	.5	12.3	10.5	8.6	15	100	1390	R12WP8X	5RP13
12	.5	20	17	14	15	100	1550	R12WP8	5RP13
13	.5	11.3	9.7	7.9	15	100	1390	R13WP8X	5RP13
13	.5	18.4	15.7	12.9	15	100	1550	R13WP8	5RP13
14	.5	10.9	9.3	7.6	15	100	1390	R14WP8X	5RP13
14	.5	17.6	15	12.3	15	100	1550	R14WP8	5RP13
15	.5	10.2	8.7	7.1	15	100	1390	R15WP8X	5RP13
15	.5	16.5	14	11.5	15	100	1550	R15WP8	5RP13
18	.5	8.5	7.2	5.9	15	100	1390	R18WP8X	5RP13
18	.5	13.7	11.6	9.5	15	100	1550	R18WP8	5RP13
20	.5	7.6	6.5	5.3	15	100	1390	R20WP8X	5RP13
20	.5	12.7	10.7	8.8	15	100	1550	R20WP8	5RP13
24	.5	7.2	6.1	5	15	100	1390	R24WP8X	5RP13
24	.5	11.5	9.8	8	15	100	1550	R24WP8	5RP13
25	.5	6.6	5.6	4.6	15	100	1390	R25WP8X	5RP13
25	.5	10.6	9	7.4	15	100	1550	R25WP8	5RP13
28	.5	5.9	5	4.1	15	100	1390	R28WP8X	5RP13
28	.5	9.5	8.1	6.7	15	100	1550	R28WP8	5RP13
30	.5	5.6	4.8	4	25	150	1390	R30WP8X	5RP13
30	.5	8.7	7.4	6.1	25	150	1550	R30WP8	5RP13
32	.5	5.2	4.5	3.7	25	150	1390	R32WP8X	5RP13
32	.5	8.3	7	5.8	25	150	1550	R32WP8	5RP13
36	.5	4.7	4	3.3	25	150	1390	R36WP8X	5RP13
36	.5	7.7	6.5	5.4	25	150	1550	R36WP8	5RP13
40	.5	4.2	3.6	3	25	150	1390	R40WP8X	5RP13
40	.5	6.8	5.8	4.8	25	150	1550	R40WP8	5RP13
48	.5	3.5	3	2.5	25	150	1390	R48WP8X	5RP13
48	.5	5.7	4.9	4	25	150	1550	R48WP8	5RP13
50	1	3.3	2.8	2.3	50	150	1390	R50WP8X	5RP13
50	1	5	4.3	3.5	50	150	1550	R50WP8	5RP13
55	1	3	2.5	2.1	50	150	1390	R55WP8X	5RP13
55	1	4.5	3.8	3.1	50	150	1550	R55WP8	5RP13
60	1	2.8	2.3	1.9	50	150	1390	R60WP8X	5RP13
60	1	4.2	3.5	2.9	50	150	1550	R60WP8	5RP13
70	1	2.4	2	1.7	67	200	1390	R70WP8X	5RP13
70	1	3.6	3.1	2.5	67	200	1550	R70WP8	5RP13
75	1	2.2	1.8	1.5	67	200	1390	R75WP8X	5RP13
75	1	3.3	2.8	2.3	67	200	1550	R75WP8	5RP13
80	1	2.1	1.7	1.4	67	200	1390	R80WP8X	5RP13
80	1	3.1	2.6	2.2	67	200	1550	R80WP8	5RP13
90	1	1.8	1.5	1.3	100	300	1390	R90WP8X	5RP13
90	1	2.8	2.4	2	100	300	1550	R90WP8	5RP13
100	1	1.7	1.4	1.2	150	450	1390	R100WP8X	5RP13
100	1	2.5	2.1	1.8	150	450	1550	R100WP8	5RP13
110	1	1.5	1.3	1.1	150	450	1390	R110WP8X	5RP13
110	1	2.3	1.9	1.6	150	450	1550	R110WP8	5RP13
120	1	1.4	1.2	1	150	450	1390	R120WP8X	5RP13
120	1	2.1	1.8	1.5	150	450	1550	R120WP8	5RP13
125	1	1.3	1.1	0.9	150	450	1390	R125WP8X	5RP13
125	1	2	1.7	1.4	150	450	1550	R125WP8	5RP13

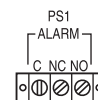


### CONNECTIONS:



### Additional CONNECTIONS for "R" Option: Separate Alarm Contacts for each Power Supply

(Note: Connections for 'ALARM' in the above drawing become connections for 'PS2 ALARM')

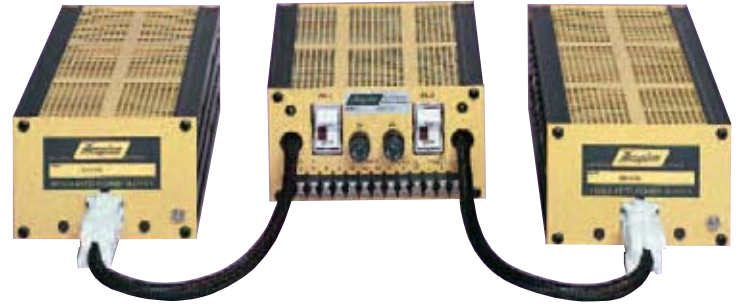




# LINEAR REGULATED MODULAR REDUNDANT SYSTEMS

AC-DC  
single output

- Shipped Within 9 Days
- Five Year Warranty



These systems have the versatility to be mounted in a wide variety of ways - within a system cabinet, on a DIN rail or to a wall. Another benefit is that the three modules need not be mounted together, so that if a control panel is crowded, just the Integration Module may be mounted there and the power supplies mounted elsewhere.

For Specifications and other information, see pages 16 & 17.

**System Description:** Each Modular Redundant DC Power System consists of three units: two identical power supplies connected to an Integration Module by 24" long cables. The Integration Module includes the diodes for isolating the power supply outputs, AC input switches, input fuses, LED 'output present' indicators, failure alarm circuits, and the umbilical cables which plug into the power supplies. Connections for the AC inputs, redundant DC output and failure alarm relays are on a screw terminal strip.

**Mounting:** Each module has threaded mounting holes which permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, use an Accessory Mounting Kit (see page 25).

**Interconnection:** The Integration Module has two 24 inch long cables.

## OPTIONS

**Cable lengths:** Although 24" is standard, any other length from 12" to 60" may be ordered as an option. To order, add suffix "C???" to model number and \$60.00 to price. Replace the "???" with the cable length desired. For example, if you are ordering Model RM24M9 with 4 foot (48") cables, the model number would be RM24M9C48, and the price would be \$995.00+\$60.00=\$1055.00.

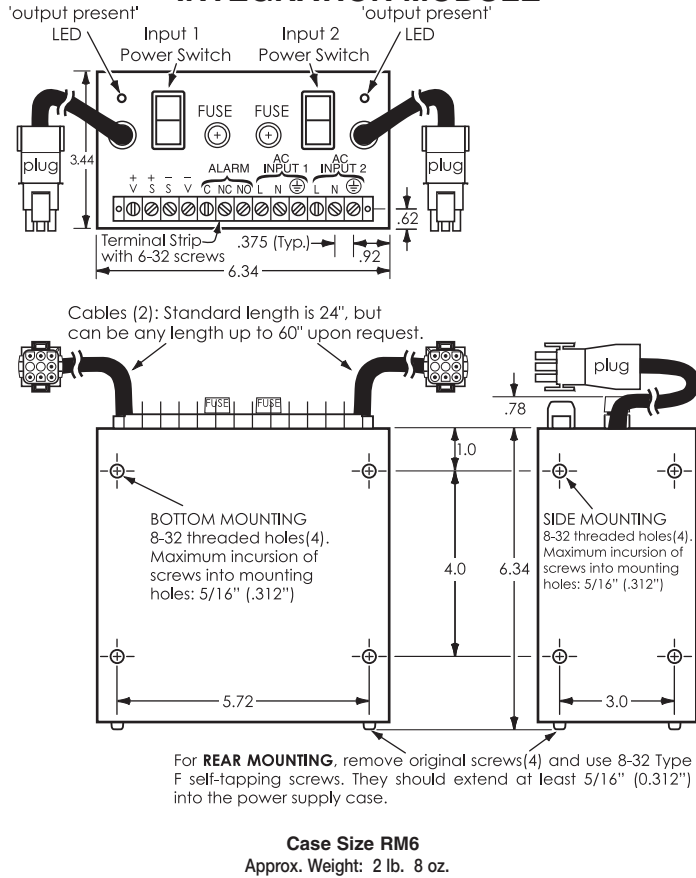
**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$80.00 to price. The "-230" option requires two additional days.

## Linear Regulated MODULAR REDUNDANT SYSTEMS

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at			Ripple mV RMS	(\$) Price	Model	Case sizes	
		40°C	55°C	71°C				Integration Module	Power Supplies (2)
5	.5	2.6	2.5	2.4	1	895	RM5N8X	RM6	CN8H
5	.5	5.3	4.4	3.5	1	995	RM5M6	RM6	CM6
5	.5	11	9.3	7.5	1	1095	RM5M13	RM6	CM13
5	.5	21	17	14	1	1295	RM5H11	RM6	CH11
12	.5	1.5	1.5	1.5	1	895	RM12N8X	RM6	CN8H
12	.5	3.5	3	2.5	1	995	RM12M6	RM6	CM6
12	.5	8	7.5	7	1	1095	RM12M13	RM6	CM13
12	.5	16	13.8	11.2	1	1295	RM12H11	RM6	CH11
12	.5	20	17	14.2	1	1495	RM12H16	RM6	CH16
15	.5	1.5	1.5	1.5	1	895	RM15N8X	RM6	CN8H
15	.5	4	3.8	3.6	1	995	RM15M9	RM6	CM9
15	.5	6.5	6	5.5	1	1095	RM15M13	RM6	CM13
15	.5	14.7	12.5	10.3	1	1295	RM15H11	RM6	CH11
15	.5	18.7	16	13.3	1	1495	RM15H16	RM6	CH16
24	.5	.9	.9	.9	1	895	RM24N8X	RM6	CN8H
24	.5	3	2.7	2.4	1	995	RM24M9	RM6	CM9
24	.5	5	5	5	1	1095	RM24M13	RM6	CM13
24	.5	11.7	10.2	8.7	1	1295	RM24H11	RM6	CH11
24	.5	14.7	12.7	10.7	1	1495	RM24H16	RM6	CH16
28	.5	1	1	1	1	895	RM28N8X	RM6	CN8H
28	.5	2.7	2.6	2.5	1	995	RM28M9	RM6	CM9
28	.5	5	5	5	1	1095	RM28M13	RM6	CM13
28	.5	10.5	9.2	8	1	1295	RM28H11	RM6	CH11
28	.5	14	12	10	1	1495	RM28H16	RM6	CH16
48	.5	.4	.4	.4	1	930	RM48N8T	RM6	CN8T
48	.5	1.6	1.4	1.2	1	1040	RM48M9	RM6	CM9
48	.5	3	3	3	1	1140	RM48M13	RM6	CM13
48	.5	6	5	4	1	1345	RM48H11	RM6	CH11
48	.5	8.5	7.2	5.5	1	1635	RM48H16	RM6	CH16
60	1	.25	.25	.25	1	960	RM60N8T	RM6	CN8T
60	1	1	.9	.8	1	1070	RM60M9	RM6	CM9
60	1	2.5	2.1	1.7	1	1170	RM60M13	RM6	CM13
60	1	5	4.1	3.3	1	1375	RM60H11	RM6	CH11
60	1	7	5.8	4.6	1	1645	RM60H16	RM6	CH16
120	1	.12	.12	.12	1	980	RM120N8T	RM6	CN8T
120	1	.5	.5	.4	1	1095	RM120M6	RM6	CM6
120	1	1.2	1.1	1	1	1200	RM120M13	RM6	CM13
120	1	2.5	2	1.6	1	1415	RM120H11	RM6	CH11
120	1	3.5	2.9	2.3	1	1690	RM120H16	RM6	CH16
125	1	.12	.12	.12	1	1000	RM125N8T	RM6	CN8T
125	1	.4	.4	.4	1	1115	RM125M6	RM6	CM6
125	1	1.2	1.1	1	1	1220	RM125M13	RM6	CM13
125	1	2.4	1.9	1.5	1	1435	RM125H11	RM6	CH11
125	1	3.4	2.8	2.3	1	1710	RM125H16	RM6	CH16

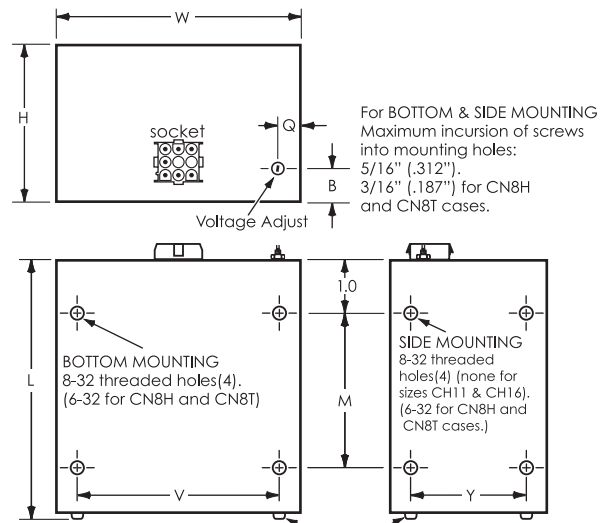


## INTEGRATION MODULE



## POWER SUPPLIES

(Two in each Modular Redundant System)



For **REAR MOUNTING**, remove original screws(4) and use 8-32 Type F self-tapping screws. They should extend at least 5/16" (.312") into the power supply case.

For **REAR MOUNTING of CN8H and CN8T cases**, remove original 6-32 screws(4). These screws may then be used for mounting, provided they extend at least 1/4" (.250") into the power supply case.

Case Size	L	W	H	M	V	Y	Q	B	Approx. Weight
CM6	6.59	5.12	3.44	4.0	4.5	3.0	.5	.75	4 lb. 4 oz.
CM9	9.25	5.12	3.44	6.0	4.5	3.0	.5	.75	7 lb. 4 oz.
CM13	13.25	5.12	3.44	10.0	4.5	3.0	.5	.75	11 lb.
CH11	11.25	7.37	5.12	8.0	6.75	4.56	1.12	1.25	18 lb. 4 oz.
CH16	16.00	7.37	5.12	11.0	6.75	4.56	1.12	1.25	26 lb.
CN8H	8.47	4.68	1.68	5.0	3.12	1.31	2.87	1.31	3 lb. 14 oz.
CN8T	8.47	3.84	1.68	5.0	3.12	1.31	2.87	1.31	3 lb. 2 oz.

## ACCESSORY MOUNTING KITS

### - FOR WALL MOUNTING (See page 91 for illustration.)

These kits provide a way of mounting power supplies on a wall or panel when the other side of the mounting surface is inaccessible. Each kit consists of four aluminum brackets and four machine screws for fastening them to the power supply, effectively adding mounting flanges to the power supply.

For case sizes RM6, CM6, CM9, CM13, CH11, CH16  
GB8 Mounting Kit (#8-32 mounting holes) . . . . \$8

For case size CN8T

NP6 Mounting Kit (#6-32 mounting holes) . . . . \$8

For case size CN8H

NP6L Mounting Kit (#6-32 mounting holes) . . . . \$8

Model NP6L consists of two brackets 1.5" long and two 2.5" long brackets (to extend beyond heat sink).

### - FOR DIN RAIL MOUNTING (See page 91 for illustration.)

#### For Rear Mounting

GR35DIN Mounting Kit . . . . \$15.00

Fits on case sizes RM6, CM6, CM9.

(Can be used, but not recommended, on case size CM13.)

NPR35DIN Mounting Kit . . . . \$15.00

Fits on case sizes CN8H, CN8T.

#### For Horizontal Mounting

CH35DIN Mounting Kit . . . . \$15.00

Fits on case size RM6.

GH35DIN Mounting Kit . . . . \$15.00

Fits on case sizes CM6, CM9, CM13.

NPH35DIN Mounting Kit . . . . \$15.00

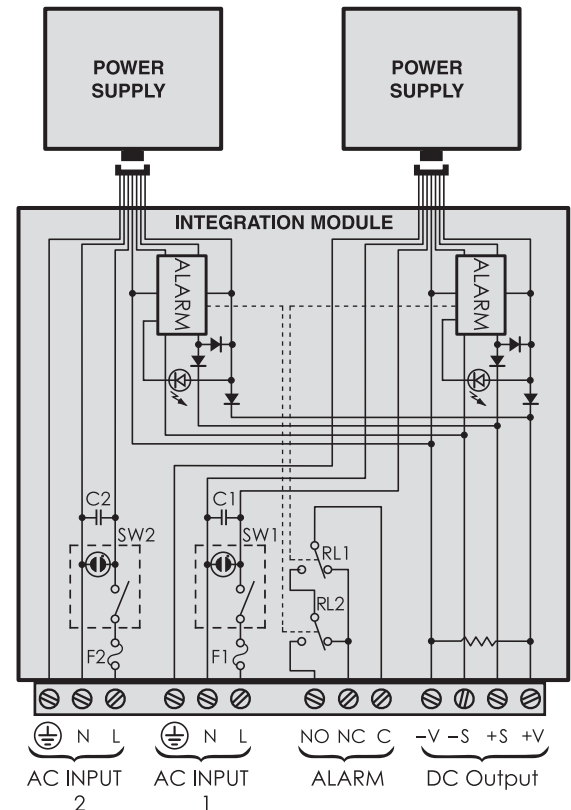
Fits on case sizes CN8H, CN8T.

#### For Vertical Mounting

NPV35DIN Mounting Kit . . . . \$15.00

Fits on case sizes CN8H, CN8T.

## Simplified Diagram for Modular Redundant Systems





# SWITCHING REGULATED MODULAR REDUNDANT SYSTEMS (Power Factor Correction and Universal Input)

AC-DC  
single output

- Shipped Within 9 Days
- Five Year Warranty

These systems have the versatility to be mounted in a wide variety of ways - within a system cabinet, on a DIN rail or to a wall. Another benefit is that the three modules need not be mounted together, so that if a control panel is crowded, just the Integration Module may be mounted there and the power supplies mounted elsewhere.



For more Specifications and information, see pages 16 & 17.

**System Description:** Each Modular Redundant DC Power System consists of three units: two identical power supplies connected to an Integration Module by 24" long cables. The Integration Module includes the diodes for isolating the power supply outputs, AC input switches, input fuses, LED 'output present' indicators, failure alarm circuits, and the umbilical cables which plug into the power supplies. Connections for the AC inputs, redundant DC output and failure alarm relays are on a screw terminal strip.

**Mounting:** Each module has threaded mounting holes which permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, use an Accessory Mounting Kit (see page 27).

**Interconnection:** The Integration Module has two 24 inch long cables.

## OPTIONS

**Cable lengths:** Although 24" is standard, any other length from 12" to 60" may be ordered as an option. To order, add suffix "C???" to model number and \$60.00 to price. Replace the "???" with the cable length desired. For example, if you are ordering Model RM24WN8 with 4 foot (48") cables, the model number would be RM24WN8C48, and the price would be \$1250.00+\$60.00=\$1310.00.

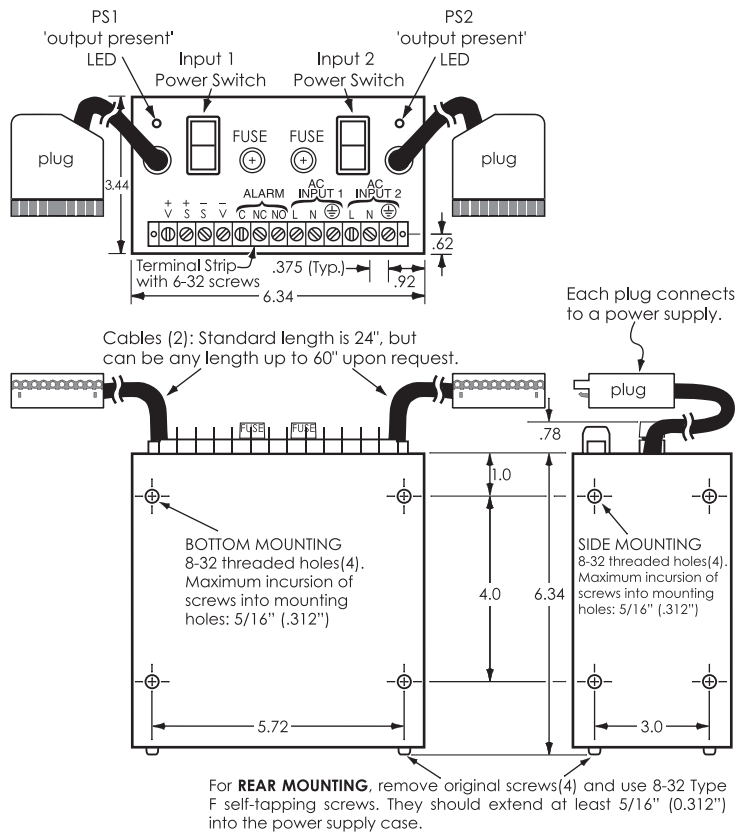
Simplified Diagram for  
Modular Redundant Systems:  
See page 25

## Switching Regulated MODULAR REDUNDANT SYSTEMS

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at			Ripple mV (@ 25 MHz BW)		Price	Model	Case sizes	
		40°C	55°C	71°C	RMS	P-P			Integration Module	Power Supplies (2)
3.3	.5	15.4	13	10.7	10	50	1100	RM3.3WN8A	RW6	WN8A
3.3	.5	24	20.5	16.8	10	50	1250	RM3.3WN8	RW6	WN8
5	.5	15.4	13	10.7	10	50	1100	RM5WN8A	RW6	WN8A
5	.5	24	20.5	16.8	10	50	1250	RM5WN8	RW6	WN8
8	.5	14.4	12	10	15	100	1100	RM8WN8A	RW6	WN8A
8	.5	23	19.5	16.1	15	100	1250	RM8WN8	RW6	WN8
10	.5	13.5	11.5	9.5	15	100	1100	RM10WN8A	RW6	WN8A
10	.5	21	18.5	15	15	100	1250	RM10WN8	RW6	WN8
12	.5	12.3	10.5	8.6	15	100	1100	RM12WN8A	RW6	WN8A
12	.5	20	17	14	15	100	1250	RM12WN8	RW6	WN8
13	.5	11.3	9.7	7.9	15	100	1100	RM13WN8A	RW6	WN8A
13	.5	18.4	15.7	12.9	15	100	1250	RM13WN8	RW6	WN8
15	.5	10.2	8.7	7.1	15	100	1100	RM15WN8A	RW6	WN8A
15	.5	16.5	14	11.5	15	100	1250	RM15WN8	RW6	WN8
20	.5	7.6	6.5	5.3	15	100	1100	RM20WN8A	RW6	WN8A
20	.5	12.7	10.7	8.8	15	100	1250	RM20WN8	RW6	WN8
24	.5	7.2	6.1	5	15	100	1100	RM24WN8A	RW6	WN8A
24	.5	11.5	9.8	8	15	100	1250	RM24WN8	RW6	WN8
28	.5	5.9	5	4.1	15	100	1100	RM28WN8A	RW6	WN8A
28	.5	9.5	8.1	6.7	15	100	1250	RM28WN8	RW6	WN8
32	.5	5.2	4.5	3.7	25	150	1100	RM32WN8A	RW6	WN8A
32	.5	8.3	7	5.8	25	150	1250	RM32WN8	RW6	WN8
40	.5	4.2	3.6	3	25	150	1100	RM40WN8A	RW6	WN8A
40	.5	6.8	5.8	4.8	25	150	1250	RM40WN8	RW6	WN8
48	.5	3.5	3	2.5	25	150	1100	RM48WN8A	RW6	WN8A
48	.5	5.7	4.9	4	25	150	1250	RM48WN8	RW6	WN8
55	1	3	2.5	2.1	50	150	1100	RM55WN8A	RW6	WN8A
55	1	4.5	3.8	3.1	50	150	1250	RM55WN8	RW6	WN8
60	1	2.8	2.3	1.9	50	150	1100	RM60WN8A	RW6	WN8A
60	1	4.2	3.5	2.9	50	150	1250	RM60WN8	RW6	WN8
70	1	2.4	2	1.7	67	200	1100	RM70WN8A	RW6	WN8A
70	1	3.6	3.1	2.5	67	200	1250	RM70WN8	RW6	WN8
80	1	2.1	1.7	1.4	67	200	1100	RM80WN8A	RW6	WN8A
80	1	3.1	2.6	2.2	67	200	1250	RM80WN8	RW6	WN8
90	1	1.8	1.5	1.3	100	300	1100	RM90WN8A	RW6	WN8A
90	1	2.8	2.4	2	100	300	1250	RM90WN8	RW6	WN8
100	1	1.7	1.4	1.2	150	450	1100	RM100WN8A	RW6	WN8A
100	1	2.5	2.1	1.8	150	450	1250	RM100WN8	RW6	WN8
110	1	1.5	1.3	1.1	150	450	1100	RM110WN8A	RW6	WN8A
110	1	2.3	1.9	1.6	150	450	1250	RM110WN8	RW6	WN8
120	1	1.4	1.2	1	150	450	1100	RM120WN8A	RW6	WN8A
120	1	2.1	1.8	1.5	150	450	1250	RM120WN8	RW6	WN8
125	1	1.3	1.1	0.9	150	450	1100	RM125WN8A	RW6	WN8A
125	1	2	1.7	1.4	150	450	1250	RM125WN8	RW6	WN8



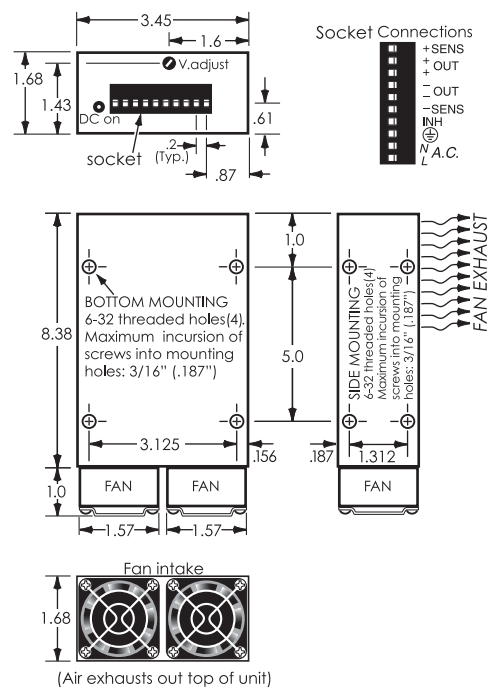
## INTEGRATION MODULE



**Case Size RW6**  
Approx. Weight: 3 lb. 4 oz.

## POWER SUPPLIES

(Two in each Modular Redundant System)



Case Size	Number of fans on rear panel	Approx. Weight
WN8	2	2 lb. 2 oz.
WN8A	1 (centered on rear)	1 lb. 14 oz.

## SPECIFICATIONS

**Input Voltage:** 90-265 VAC, 49-420 Hz, single phase.  
(A separate set of AC input terminals is provided for each power supply, so that if two sources of AC input power are available, one may be used for each supply and so reduce the possibility of output dropout due to loss of input power.)

**Power Factor:** 0.99 typical at 115 VAC, 60Hz and full load. Complies with EN61000-3-2.

**Drift:**  $\pm 0.1\%$  typical over 8 hours, after 30 minute warmup.

**Output Monitoring:** 'Output Present' green LEDs are located on each power supply (DC on) and on the Integration Module.

**Inrush current:** Cold start, (thermistor limiter) 20A peak @ 115 VAC; 40A peak @ 230 VAC.

**Startup Time:** 800 mS typical.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line (1 volt for 55 to 125 volt models), within the limits of the output voltage adjustment range.

**Holdup Time:** 16 mS minimum.

**Transient Response:** 300  $\mu$ S to return to  $\pm 1\%$  of output setting. Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100%.

**Switching Frequency:** 100 kHz (Typical).

**Isolation:** Input to output, input to case; 500 VAC. Output to case; 300 VAC.

**Thermal Protection:** Thermostat, self-resetting.

**Cooling:** Forced-air cooled; air enters rear of power supply and exits from top.

## ACCESSORY MOUNTING KITS

**- FOR WALL MOUNTING** (See page 91 for illustration.)  
These kits provide a way of mounting power supplies on a wall or panel when the other side of the mounting surface is inaccessible. Each kit consists of four aluminum brackets and four machine screws for fastening them to the power supply, effectively adding mounting flanges to the power supply.

For case size RW6

GB8 Mounting Kit (#8-32 mounting holes) . . . . \$8

For case sizes WN8, WN8A

NP6 Mounting Kit (#6-32 mounting holes) . . . . \$8

**- FOR DIN RAIL MOUNTING** (See page 91 for illustration.)

**For Rear Mounting**

GR35DIN Mounting Kit . . . . \$15.00

Fits on case size RW6.

**For Horizontal Mounting**

CH35DIN Mounting Kit . . . . \$15.00

Fits on case size RW6.

NPH35DIN Mounting Kit . . . . \$15.00

Fits on case sizes WN8, WN8A.

**For Vertical Mounting**

NPV35DIN Mounting Kit . . . . \$15.00

Fits on case sizes WN8, WN8A.

single & dual tracking outputs

## Rack Mounting

LINEAR REGULATED  
AC-DC

- Shipped Within 9 Days
- All Models U.L. Recognized
- Five Year Warranty



(Meters and handles optional)

**Acopian rack-mounting power supplies** feature excellent regulation and ripple specifications in 101 models with outputs up to 150 volts and 60 amps. Metering and overvoltage protection are available as

options. These power supplies are constructed in sturdy extruded aluminum assemblies designed expressly for mounting in standard 19" wide RETMA cabinet racks. The front panels are finished in light gray enamel.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load is a standard feature.

#### Polarity:

**Single Output Models:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Dual Output Models:** Positive output, common, negative output.

#### Temperature Coefficient:

**Single Output Models:** 0.015%/°C (Typical).

**Dual Output Models:** 0.02%/°C (Typical).

#### Ambient Operating Temperature:

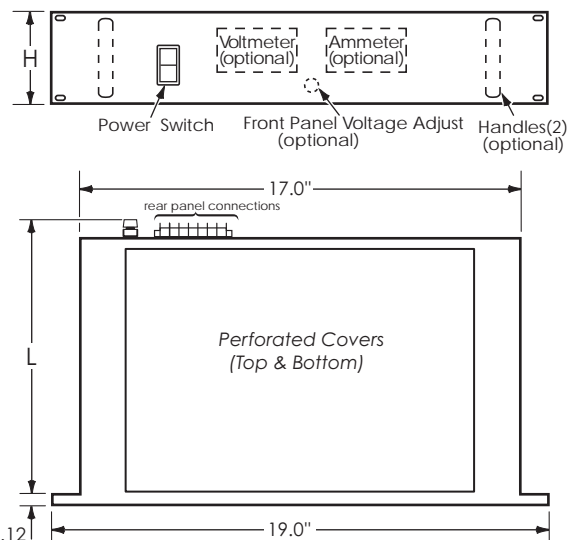
**Single Output Models:** -20 to +55°C.

**Dual Output Models:** -10 to +55°C.

#### Storage Temperature:

**Single Output Models:** -55 to +85°C.

**Overload/Short Circuit Protection:** Foldback current limiting with automatic recovery.

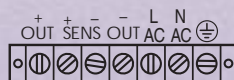


Case Size	H	L	Approx. Weight
3P11	3 1/2"	10 7/8"	22 lb.
3P17	3 1/2"	16 13/16"	38 lb.
5P12	5 1/4"	11 15/16"	28 lb.
5P17	5 1/4"	16 13/16"	53 lb.

### CONNECTIONS (Single Output models):

#### Case sizes

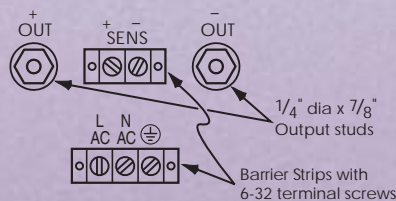
3P11 and 5P12:



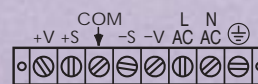
3P11 Barrier Strip with 6-32 terminal screws  
5P12 Barrier Strip with 8-32 terminal screws

#### Case sizes

3P17 and 5P17:



### CONNECTIONS (Dual Output models):



Barrier Strip with 6-32 terminal screws



wide adjust output

## Rack Mounting

LINEAR REGULATED

AC-DC

(fixed & adjustable current limiting)

- Shipped Within 9 Days
- U.L. Recognized
- Five Year Warranty

Similar to the rack mounting power supplies listed on pages 28 and 29, but with broadened output voltage ranges. All models may be programmed through their voltage ranges by means of external resistance. Models with adjustable current limiting have a constant-voltage/constant-current crossover characteristic, and so may be used as constant current sources.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC,  
50-400 Hz, single phase.

**Regulation, Ripple (in constant voltage mode):**  
Line Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Load Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Ripple: 0.25 mV rms.

**Regulation, Ripple (in constant current mode):**  
Line Regulation:  $\pm 0.1\%$  or 2 mA.  
Load Regulation:  $\pm 0.2\%$  or 5 mA.  
Ripple: 0.1% rms.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, to compensate voltage drops in output wiring, is a standard feature.

**Remote Voltage Programming:** The output voltage may be controlled by means of external resistance connected in series with the - S lead.

**Voltage Programming Coefficient:** See table.  
Calibration tolerance,  $\pm 2\%$ .

**Current Limiting/Programming:** Models with fixed current limiting have a rolloff characteristic with automatic recovery. All others have current limiting with a constant-voltage/constant-current crossover characteristic.

**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Controls:** Coarse and fine voltage adjustments, and the current limit adjustment, are located at the rear of the assembly.

**Temperature Coefficient (in constant voltage mode):**  
0.02%/°C (Typical).

**Ambient Operating Temperature:** -20 to +71°C.

**Storage Temperature:** -55 to +85°C.



(Meters and handles optional)

### OPTIONS

**Overvoltage Protection:** An internally mounted overvoltage protection circuit, set approximately 20% above the maximum output voltage rating of the supply, is available on all models. To order, add prefix "V" to the model number, and increase standard price as follows:

Maximum output of	6-50V	100V
All case sizes except 5P17 . . . . .	\$35.00	\$45.00
Case size 5P17 . . . . .	\$85.00	

**Remote Current Limiting Adjustment:** All models having numbers beginning with the letter P have a built in current limit control. Provision for control of the current limit setting by adjustment of an external resistance is available as an option. To order, add the prefix letter "E" to the model number, and add \$25.00 to the standard price.

The current limit setting is inversely related to resistance. Use a 200 ohm, 1/2 W potentiometer.

**Ammeter:** Add suffix "A" to model number and \$60.00 to price.

**Voltmeter:** Add suffix "F" to model number and \$60.00 to price.

**Handles:** Add suffix "H" to model number and \$30.00 to price.

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**Front Panel Voltage Controls:** For voltage controls (coarse and fine) mounted on the front panel, instead of the standard screwdriver-slot adjustments at the rear, add suffix "P" to the model number and \$25.00 to price.

**Front Panel Current Limiting Control:** For adjustable current limiting models, a current limit control can be mounted on the front panel. Add suffix "Y" to the model number and \$15.00 to price.

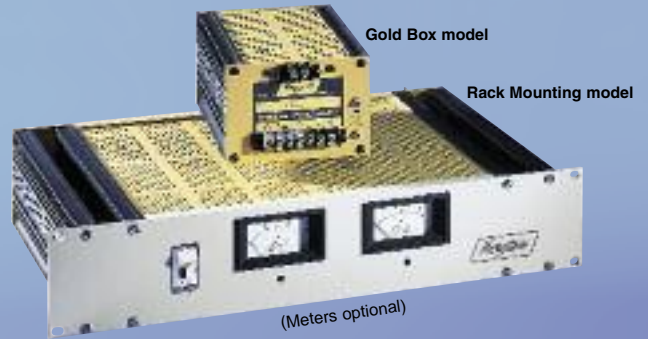
**230 Volt Input:** For operation on inputs of 210 to 250 VAC, 50-400 Hz. Add suffix "-230" to model number and \$40.00 to price. The "-230" option requires two additional days.



# Power Supplies Programmable with a 0-10 Vdc Control Voltage

These power supplies have the broad adjustment capability required for analog instrumentation and circuitry, process controls, basic research, and similar applications.

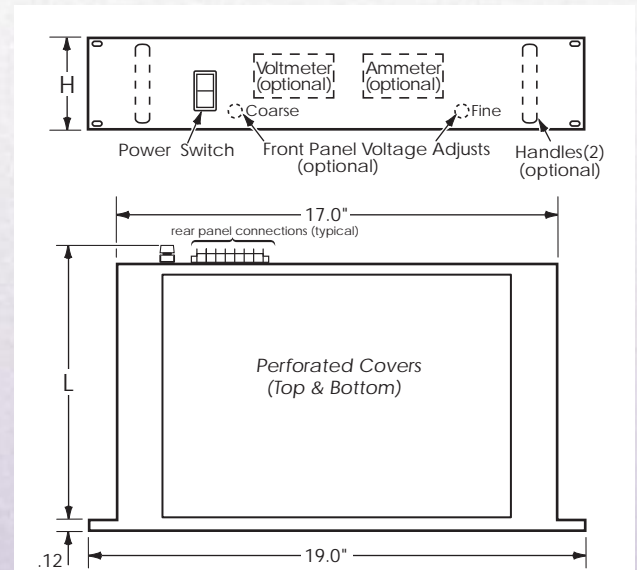
The output voltage may be manually controlled either at the power supply or remotely, or it may be programmed with the analog output from a PLC or digital-to-analog converter.



**See pages 60 and 61**

Output Voltage Range	Output Current Amps. at			Voltage Prmg. Coeff. ( $\Omega/V$ )	Case Size	Voltage Programmable Fixed Current Limiting		Voltage Programmable Adjust. Current Limiting	
	40°C	55°C	71°C			Model	Price(\$)	Model	Price(\$)
0-6	10.0	8.0	6.0	820	3P11	A06PX10	\$575	P06PX10	\$620
0-6	16.0	12.8	9.6	820	5P12	A06PX16	\$705	P06PX16	\$750
0-6*	23.0	18.4	13.8	820	3P17	A06PX23	\$875	P06PX23	\$920
0-6*	30.0	24.0	18.0	820	5P17	A06PX30	\$1015	P06PX30	\$1060
0-15	7.0	5.6	4.2	330	3P11	A015PX7	\$575	P015PX7	\$620
0-15	10.0	8.0	6.0	330	5P12	A015PX10	\$705	P015PX10	\$750
0-15*	13.0	10.4	7.8	330	3P17	A015PX13	\$875	P015PX13	\$920
0-30	4.0	3.2	2.4	160	3P11	A030PX4	\$575	P030PX4	\$620
0-30	5.0	4.0	3.0	160	5P12	A030PX5	\$705	P030PX5	\$750
0-30*	7.0	5.6	4.2	160	3P17	A030PX7	\$875	P030PX7	\$920
0-30*	9.0	7.2	5.4	160	5P17	A030PX9	\$1015	P030PX9	\$1060
0-50	2.4	1.9	1.5	1000	3P11	A050PX2	\$575	P050PX2	\$620
0-50	3.0	2.4	1.8	1000	5P12	A050PX3	\$705	P050PX3	\$750
0-50*	5.0	4.0	3.0	1000	5P17	A050PX5	\$1015	P050PX5	\$1060
0-100*	1.2	.9	.7	500	3P11	A0100PX1.2	\$635	P0100PX1.2	\$680
0-100*	1.5	1.2	.9	500	5P12	A0100PX1.5	\$820	P0100PX1.5	\$865

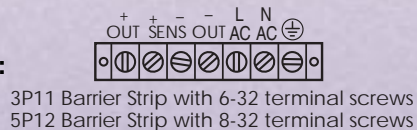
\*Not U.L. recognized when this catalog was published.



## CONNECTIONS:

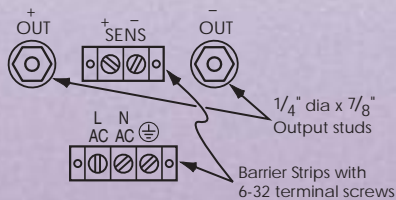
### Case sizes

#### 3P11 and 5P12:



### Case sizes

#### 3P17 and 5P17:



Case Size	H	L	Approx. Weight
3P11	3 1/2"	10 7/8"	16 lb.
3P17	3 1/2"	16 13/16"	26 lb.
5P12	5 1/4"	11 15/16"	20 lb.
5P17	5 1/4"	16 13/16"	30 lb.

single output

## Mini Encapsulated - PC Board mounting

LINEAR REGULATED

AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- One Year Warranty



**Conserve space with mini-modules** as small as 2.3" x 1.8" x 1.0". Models with outputs ranging from 1 to 75 volts, and from 30 mA to 2.5 amps are available. All feature excellent regulation and ripple parameters, and are short circuit protected.

Rugged encapsulated construction and generously derated components assure years of reliable operation. PC Board mounting mini-modules are also available with dual outputs - see page 34.

### STANDARD FEATURES

- May be used in series
- No derating or heat sinking required
- Short circuit protected
- Small, lightweight

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 47 to 420 Hz, single phase.

**Output Voltage Setting:** Output is factory preset to within  $\pm 2\%$  (1 to 9 volt models) or  $\pm 1\%$  (10 to 75 volt models) of the nominal output voltage.

**T/C terminal (Output Voltage Trim Adjustment):** The T/C terminal can be used to trim the output more precisely to the nominal voltage rating by connecting an external resistor from the T/C terminal to either the + or - terminal.

**Polarity:** Output is floating. Either positive or negative terminal may be grounded.

**Ambient Operating Temperature:**  $-20$  to  $+71^{\circ}\text{C}$ . No derating required.

**Storage Temperature:**  $-55$  to  $+85^{\circ}\text{C}$ .

**Temperature Coefficient:** From 9 to 75 volts, typically  $0.015\%/^{\circ}\text{C}$ ; 1 to 8 volts,  $0.03\%/^{\circ}\text{C}$ .

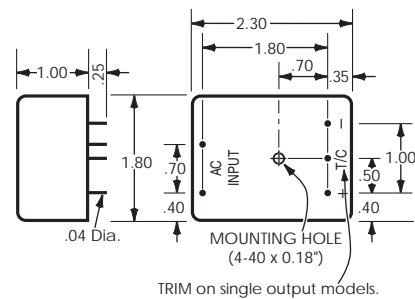
**Impedance:** 0.07 ohms at 1 kHz and 0.2 ohms at 10 kHz (approx.).

**Weight:** 7 oz. (Case size ES-10)  
13 oz. (Case size EL-10)  
1 lb. 3 oz. (Case size EL-13)  
1 lb. 15 oz. (Case size EL-20)

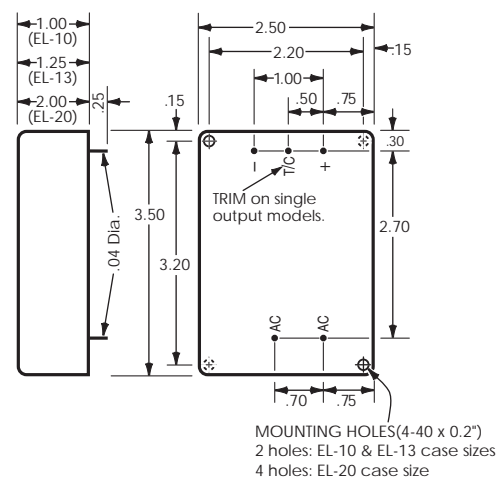
**Mounting:** May be mounted on printed circuit board or in socket (see page 34).

### OPTIONS

**230 Volt Input:** All models can be alternately furnished for operation on an input of 210 to 250 VAC, 47-420 Hz. To order, add suffix "-230" to model number and \$10.00 to price. Requires two additional days.



Case Size ES-10



Case Sizes EL-10, EL-13, and EL-20





dual tracking outputs

# Mini Encapsulated - PC Board mounting

LINEAR REGULATED

AC-DC



- Shipped Within 3 Days
- All Models U.L. Recognized
- One Year Warranty

These dual output mini-modules are compact and convenient sources of the voltages required to power operational amplifiers and related circuits. They may be mounted directly on printed circuit board assemblies, simplifying system layout and minimizing the connectors and wiring required.

### STANDARD FEATURES

- May be used in series
- No derating or heat sinking required
- Short circuit protected

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 47 to 420 Hz, single phase.

**Output Voltage Setting:** Each output is factory preset to within  $\pm 2\%$  (5 volt models) or  $\pm 1\%$  (10, 12 and 15 volt models) of the nominal output voltage.

**T/C terminal:** The T/C terminal is the output Common.

**Polarity:** Positive output, common, and negative output.

**Ambient Operating Temperature:**  $-20$  to  $+71^\circ\text{C}$ .

No derating required.

**Storage Temperature:**  $-55$  to  $+85^\circ\text{C}$ .

**Temperature Coefficient:** 10, 12 and 15 volt models, typically  $0.015\%/^\circ\text{C}$ ; 5 volt models,  $0.03\%/^\circ\text{C}$ .

**Impedance:**  $0.07$  ohms at  $1$  kHz and  $0.2$  ohms at  $10$  kHz (approx.).

**Weight:** 7 oz. (Case size ES-10)

13 oz. (Case size EL-10)

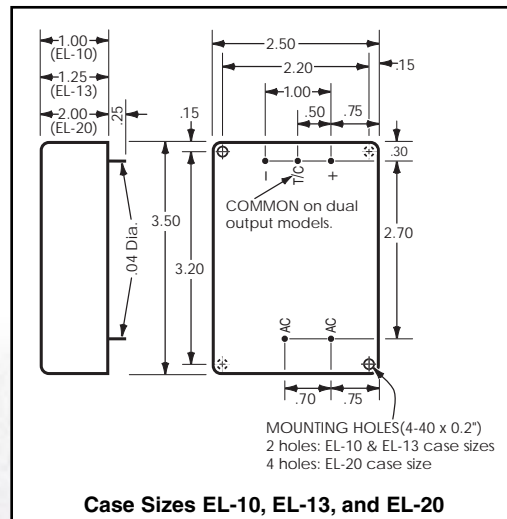
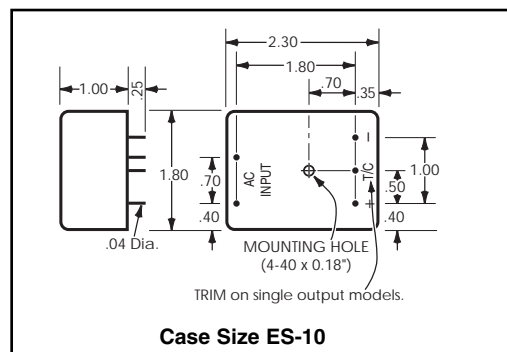
1 lb. 3 oz. (Case size EL-13)

1 lb. 15 oz. (Case size EL-20)

**Mounting:** May be mounted on printed circuit board or in socket (see below).

### OPTIONS

**230 Volt Input:** All models can be alternately furnished for operation on an input of 210 to 250 VAC, 47-420 Hz. To order, add suffix "-230" to model number and \$10.00 to price. Requires two additional days.



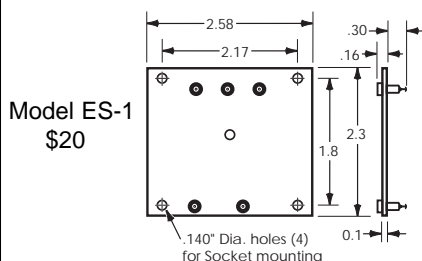
## DUAL TRACKING OUTPUTS

Nominal Output Voltages	Amps. per Output	Regulation		Ripple mV RMS	(\$)	Model	Case Size
		Load $\pm\%$	Line $\pm\%$				
$\pm 5$	.150	.1	.05	1.5	90	D5-15	EL-10
$\pm 5$	.250	.1	.05	1.5	112	D5-25	EL-10
$\pm 5$	.500	.1	.05	1.5	155	D5-50	EL-20
$\pm 10$	.200	.05	.05	1	102	D10-20	EL-10
$\pm 10$	.300	.05	.05	1	132	D10-30	EL-13
$\pm 10$	.400	.1	.05	1	155	D10-40	EL-20
$\pm 12$	.025	.1	.05	1	56	D12-03	ES-10
$\pm 12$	.050	.1	.05	1	67	D12-05	ES-10
$\pm 12$	.100	.05	.05	1	79	D12-10A	EL-10
$\pm 12$	.150	.05	.05	1	90	D12-15A	EL-10
$\pm 12$	.200	.05	.05	1	102	D12-20	EL-10
$\pm 12$	.300	.05	.05	1	120	D12-30	EL-13
$\pm 12$	.350	.05	.05	1	132	D12-35	EL-13
$\pm 12$	.500	.1	.05	1	155	D12-50	EL-20
$\pm 15$	.025	.1	.05	1	56	D15-03	ES-10
$\pm 15$	.050	.1	.05	1	67	D15-05	ES-10
$\pm 15$	.100	.05	.05	1	79	D15-10A	EL-10
$\pm 15$	.150	.05	.05	1	90	D15-15A	EL-10
$\pm 15$	.200	.05	.05	1	102	D15-20	EL-10
$\pm 15$	.300	.05	.05	1	120	D15-30	EL-13
$\pm 15$	.350	.05	.05	1	132	D15-35	EL-13
$\pm 15$	.500	.1	.05	1	155	D15-50	EL-20

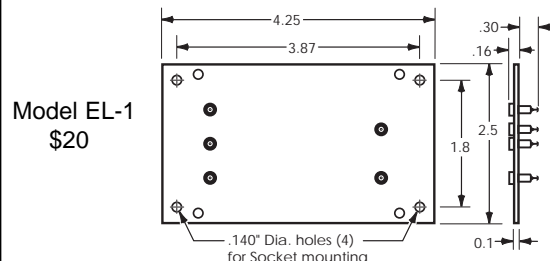
### ACCESSORY SOCKETS:

For use with PC board mounting Mini Linears and PC board mounting DC-DC Converters.

Each of these sockets has a sturdy phenolic base with gold plated teflon-insulated contacts.



For case sizes ES-10 and ESC-10



For case sizes EL-10, EL-13, EL-20 and ELC-10



# NEMA 4X Enclosed Power Supplies



We can put many of our power supplies in NEMA enclosures. Shown here is one of our Mini power supplies in a NEMA enclosure.

NEMA 4X enclosures provide protection against accidental contact with dangerous voltages, and protect the power supply inside from the ingress of dirt, dust, lint, and other substances. Although they do not have an airtight seal, they provide substantial protection from dripping and splashing water and other liquids.

Please contact Acopian for more information. Call 800-523-9478.



Acopian Technical Company  
Easton, PA



single & dual tracking outputs

# Mini Encapsulated - with screw terminals

LINEAR REGULATED

AC-DC



- Shipped Within 3 Days
- All Models U.L. Recognized
- One Year Warranty

Although small in size, these mini-modules offer high performance at modest prices. All models, with series regulated outputs ranging from 1 to 75 volts and as high as 2.5 amps, may be mounted in an area only 3.5" x 2.5". Dual output models are available with the ratings

commonly required for driving op amps and other balanced loads. Terminal strip input/output connections eliminate all need for sockets or soldering. Short circuit protection, encapsulated construction, and conservative design assure long term reliability.

### STANDARD FEATURES

- May be used in series
- No derating or heat sinking required
- Short circuit protected
- Small, lightweight

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 47 to 420 Hz, single phase.

**Output Voltage Setting:** Outputs are factory preset to within  $\pm 2\%$  (1 to 9 volt models) or  $\pm 1\%$  (10 to 75 volt models) of the nominal output voltage.

**T/C terminal:** For single output models, the T/C terminal can be used to trim the output more precisely to the nominal voltage rating by connecting an external resistor from the T/C terminal to either the + or - terminal. For dual output models, the T/C terminal is the output common.

**Polarity:** Either positive or negative terminal of a single output module may be grounded. Dual output modules have a positive/common/negative output terminal configuration.

**Ambient Operating Temperature:**  $-20$  to  $+71^{\circ}\text{C}$ . No derating required.

**Storage Temperature:**  $-55$  to  $+85^{\circ}\text{C}$ .

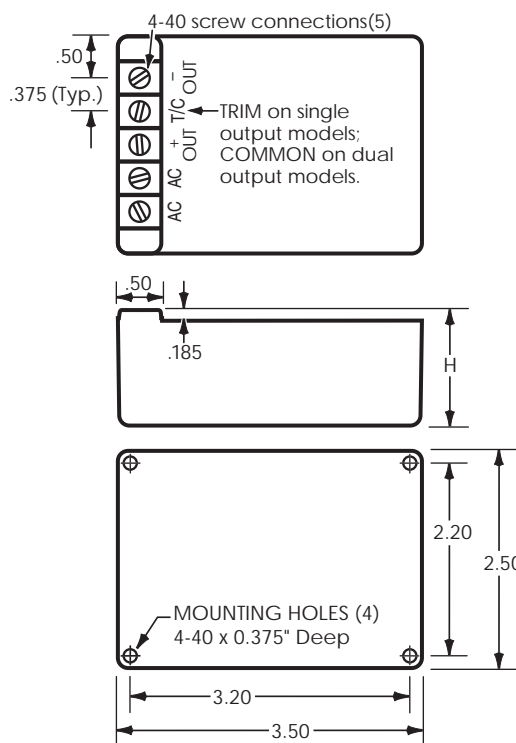
**Temperature Coefficient:** From 9 to 75 volts, typically  $0.015\%/^{\circ}\text{C}$ ; 1 to 8 volts,  $0.03\%/^{\circ}\text{C}$ .

**Impedance:** 0.07 ohms at 1 kHz and 0.2 ohms at 10 kHz (approx.).

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. When wall-mounting or DIN rail mounting is desired, use accessory Mounting Kits on page 77.

### OPTIONS

**230 Volt Input:** All models can be alternately furnished for operation on an input of 210 to 250 VAC, 47-420 Hz. To order, add suffix "-230" to model number and \$10.00 to price. The "-230" option requires two additional days.



Case Size	H	Approx. Weight
EB-10	1.375	15 oz.
EB-13	1.625	1 lb. 4 oz.
EB-20	2.375	2 lb. 1 oz.





single output

## Mini Encapsulated - PC Board mounting or - with screw terminals

SWITCHING REGULATED

DC output (accepts either AC or DC input)

- Shipped Within 6 Days
- One Year Warranty



**These versatile power supplies** mount in a surface area of only 3.5" x 2.5", and are available in a choice of mounting styles. They have a high efficiency and may be operated through a wide temperature range.

### STANDARD FEATURES

- Compact, lightweight, fully encapsulated
- Short circuit and overload protected
- No heat sinking or forced air required
- Input/output isolation
- Extensive EMI filtering and shielding

### SPECIFICATIONS

**Input Voltage:** 85-130 VAC, 47-420 Hz, single phase, or 120-180 Vdc. DC input may be connected without regard to polarity.

**Output Voltage Setting:** Output is factory preset to within  $\pm 2\%$  (5 to 9 volt models) or  $\pm 1\%$  (10 to 48 volt models) of the nominal output voltage.

**T/C terminal (Output Voltage Trim Adjustment):** The T/C terminal can be used to trim the output more precisely to the nominal voltage rating by connecting an external resistor from the T/C terminal to either the + or - terminal.

**Polarity:** Output is floating. Either positive or negative terminal may be grounded.

#### Regulation:

**Load:**  $\pm 0.05\%$  (5 and 6 volt "WL" models,  $\pm 0.1\%$ )

**Line:**  $\pm 0.05\%$

**Ambient Operating Temperature:**  $-10$  to  $+71^\circ\text{C}$ .

No derating required through  $+50^\circ\text{C}$ .

**Storage Temperature:**  $-40$  to  $+85^\circ\text{C}$ .

**Temperature Coefficient:**  $\pm 0.02\%/^\circ\text{C}$  (Typical).

**Humidity:** Maximum of 90% relative, non-condensing.

**Overload/Short Circuit Protection:** Power foldback with automatic recovery.

#### Isolation:

**Input to output:** 1400 Vdc

**Input to ground:** 1400 Vdc

**Output to ground:** 400 Vdc

A common-mode input filter reduces conducted noise, and the shielded case minimizes radiated energy. Their outputs may be used in either polarity, and may be precisely trimmed.

**Efficiency:** 76% (Typical).

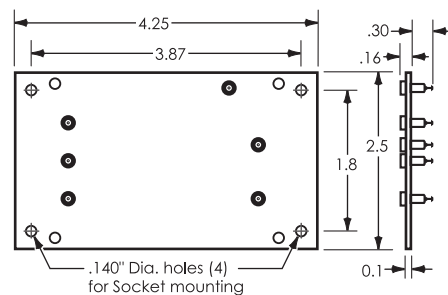
**Switching Frequency:** 225 kHz (Typical).

**Transient Response:** Returns to within  $\pm 1\%$  of output setting within 300  $\mu\text{s}$ . Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100% of rating.

**Holdup Time:** 33 mS (Typical, at nominal input voltage with full load).

**Mounting:** Models for PC Board mounting may also be mounted in the socket shown below. For models with screw terminals, when wall-mounting or DIN rail mounting is desired, use accessory Mounting Kits on page 77.

### ACCESSORY SOCKET



Accepts power supplies in case sizes ELW-13 and ELW-20. Sturdy phenolic base with gold plated teflon-insulated contacts.

Model ELW-1 .....\$20





**Narrow Profile**  
**SINGLE OUTPUT**  
 LINEAR REGULATED  
 AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- Five Year Warranty



Where only a narrow mounting space is available, Acopian Narrow Profile power supplies fit where many others cannot. Choose from Series A (High Performance) and Series B (General Purpose) models with output ratings up to 150 volts, up to 3.5 amps.

**SPECIFICATIONS**

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Specifications:** See table.

**Series A:** Model numbers begin with the letter A.

**Series B:** Model numbers begin with the letter B.

**Remote Voltage Adjustment/Sensing:** Standard in Series A, not available in Series B.

**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Temperature Coefficient:**

**Series A:** 0.015%/°C (Typical).

**Series B:** 0.02%/°C (Typical).

**Ambient Operating Temperature:**

**Series A:** -20 to +71°C.

**Series B:** 0 to +71°C.

**Storage Temperature:** -55 to +85°C.

**Overload/Short Circuit Protection:**

**Series A:** Foldback current limiting with automatic recovery.

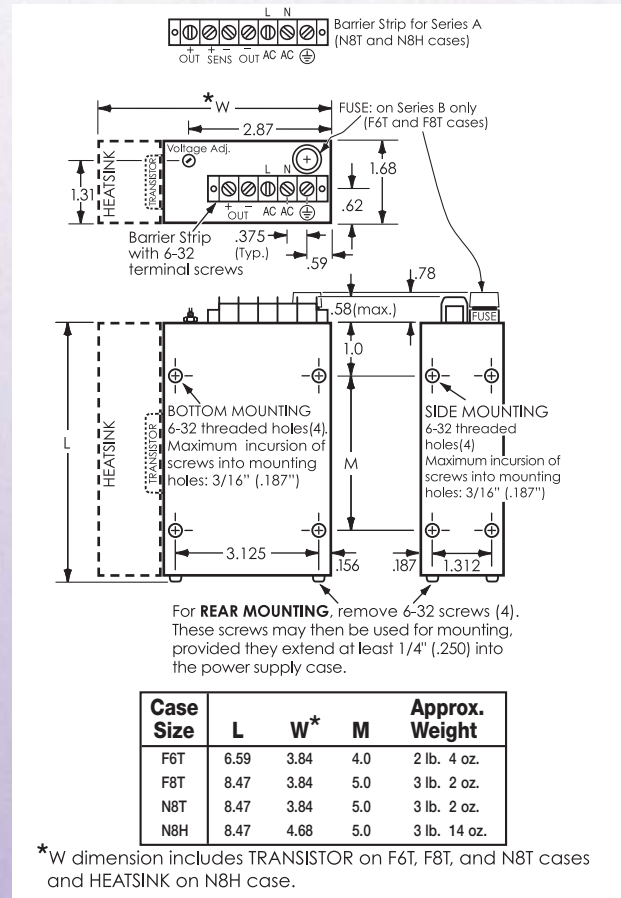
**Series B:** Input fuse and output current limiting.

**OPTIONS**

**Overvoltage Protection:** An internal preset overvoltage protector is available. To order, add prefix "V" to the model number and add \$25.00 to the standard price of models with outputs of 1 to 70 volts; \$35.00, for 75 to 150 volt outputs.

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.



**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.



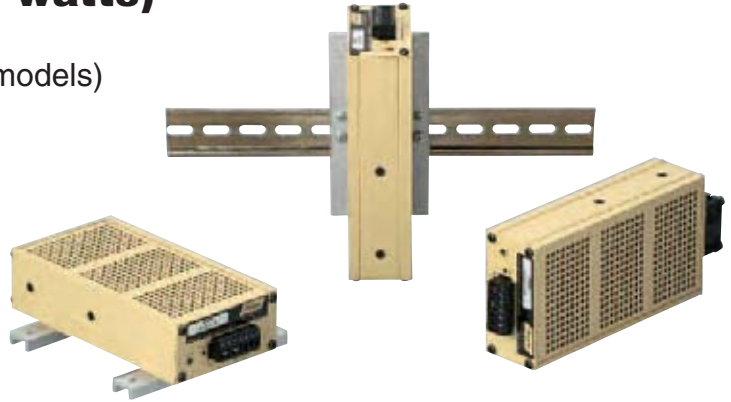
## Narrow Profile

# SWITCHING REGULATED (to 120 watts)

AC-DC single output

DC-DC (DC input can be used on 230 VAC input models)

- Shipped Within 3 Days
- Five Year Warranty



This newest group of Narrow Profile switchers includes convection cooled models less than 7" long that

provide outputs up to 75 watts and fan cooled models less than 8" long that provide outputs to 120 watts.

### STANDARD FEATURES

- Internal EMI Filter and Shielding
- Pluggable Input/output Terminal Block
- Excellent Load/line Regulation
- Overcurrent, Overvoltage Protection
- No Minimum Load Required

### SPECIFICATIONS

**Input Voltage:** 90-132 VAC, 47-420 Hz, single phase. 180-265 VAC input is also available (see Options).

**DC Input:** Not applicable on 115 VAC models. On 230 VAC models, 200-375 Vdc input can be used. DC input may be connected without regard to polarity.

**Inrush current:** Cold start, (thermistor limiter) 15A peak @ 115 VAC; 30A peak @ 230 VAC.

**Startup Time:** 1 second typical.

**Input Undervoltage:** An input of less than 90 VAC (180 VAC with "-230" option) will not damage power supply.

#### Regulation:

- Line:**  $\pm 0.05\%$
- Load:**  $\pm 0.05\%$

**Output Voltage Remote Adjustment:** The output voltage may be controlled by means of an external 1K potentiometer.

**Polarity:** Output is floating and may be used in either polarity.

**Drift:**  $\pm 0.1\%$  typical over 8 hours, after 30 minute warmup.

**Temperature Coefficient:**  $\pm 0.02\%/^{\circ}\text{C}$  (Typical).

**Holdup Time:** 20 mS minimum.

**Transient Response:** 300  $\mu\text{S}$  to return to  $\pm 1\%$  of output setting. Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100%.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line, within the limits of the output voltage adjustment range.

**Overload/Short Circuit Protection:** Current limiting with automatic recovery.

**Overvoltage Protection:** Latches power supply OFF, reset by momentarily removing AC input power.

**EMI:** Designed to meet FCC Part 15 and EN55022, Class A.

**Output Indicator (DC on):** Green LED.

**Efficiency:** See table. (Typical, at nominal input voltage, with full load.)

**Ambient Operating Temperature:** 0 to  $+71^{\circ}\text{C}$ .

**Storage Temperature:**  $-40$  to  $+85^{\circ}\text{C}$ .

**Cooling:** Case size WN6A: forced-air cooled; air enters rear of power supply and exits from top. Case size WN6B: convection cooled.

**Switching Frequency:** 100 kHz (Typical).

#### Dielectric Withstand Voltage    Isolation

<b>Input to output:</b>	4242 Vdc	500 VAC
<b>Input to case:</b>	2121 Vdc	500 VAC
<b>Output to case:</b>	750 Vdc	300 VAC

**Internal Failure Protection:** Provided by internal fuse.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

### OPTIONS

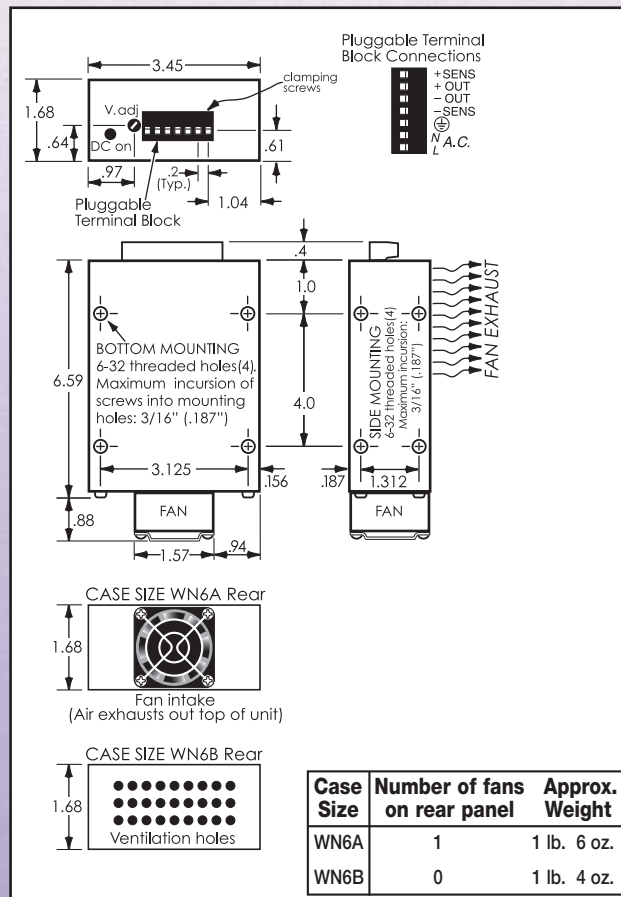
**230 Volt Input:** For applications where operation on an input of 180-265 VAC, 47-420 Hz, is desired. To order, add suffix "-230" to the model number. No increase in price.

On 230 VAC models, 200-375 Vdc input can also be used.

## Narrow Profile SWITCHING REGULATED (to 120 watts)

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Effic. (Typ.) %	(\$ Price	Model	Case Size
		40°C	71°C	RMS	P-P				
3.3	.5	12	8.4	10	50	66	185	W3.3FT1200	WN6B
3.3	.5	15	10.5	10	50	66	225	W3.3FT1500	WN6A
5	.5	12	8.4	10	50	70	185	W5FT1200	WN6B
5	.5	15	10.5	10	50	70	225	W5FT1500	WN6A
6	.5	10	7	10	50	71	185	W6FT1000	WN6B
6	.5	12.5	8.6	10	50	71	225	W6FT1250	WN6A
7	.5	8.5	5.9	10	50	71	185	W7FT850	WN6B
7	.5	10.6	7.4	10	50	71	225	W7FT1060	WN6A
8	.5	7.5	5.2	15	100	72	185	W8FT750	WN6B
8	.5	9.4	6.6	15	100	72	225	W8FT940	WN6A
9	.5	6.6	4.6	15	100	73	185	W9FT660	WN6B
9	.5	9.3	6.5	15	100	73	225	W9FT930	WN6A
10	.5	6	4.2	15	100	73	185	W10FT600	WN6B
10	.5	9.2	6.4	15	100	73	225	W10FT920	WN6A
12	.5	5.8	4.0	15	100	76	185	W12FT580	WN6B
12	.5	9.1	6.3	15	100	76	225	W12FT910	WN6A
13	.5	5.3	3.7	15	100	76	185	W13FT530	WN6B
13	.5	8.1	5.6	15	100	76	225	W13FT810	WN6A
14	.5	4.9	3.4	15	100	76	185	W14FT490	WN6B
14	.5	7.7	5.4	15	100	76	225	W14FT770	WN6A
15	.5	4.7	3.3	15	100	76	185	W15FT470	WN6B
15	.5	7.4	5.2	15	100	76	225	W15FT740	WN6A
16	.5	4.4	3	15	100	76	185	W16FT440	WN6B
16	.5	6.8	4.7	15	100	76	225	W16FT680	WN6A
18	.5	4	2.8	15	100	78	185	W18FT400	WN6B
18	.5	6	4.2	15	100	78	225	W18FT600	WN6A
20	.5	3.7	2.6	15	100	78	185	W20FT370	WN6B
20	.5	5.6	3.9	15	100	78	225	W20FT560	WN6A

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Effic. (Typ.) %	(\$ Price	Model	Case Size
		40°C	71°C	RMS	P-P				
22	.5	3.4	2.4	15	100	79	185	W22FT340	WN6B
22	.5	5.3	3.7	15	100	79	225	W22FT530	WN6A
24	.5	3.2	2.2	15	100	81	185	W24FT320	WN6B
24	.5	5	3.5	15	100	80	225	W24FT500	WN6A
25	.5	3	2.1	15	100	81	185	W25FT300	WN6B
25	.5	4.8	3.3	15	100	80	225	W25FT480	WN6A
26	.5	2.8	2	15	100	81	185	W26FT280	WN6B
26	.5	4.6	3.2	15	100	80	225	W26FT460	WN6A
28	.5	2.7	1.9	15	100	81	185	W28FT270	WN6B
28	.5	4.2	2.9	15	100	80	225	W28FT420	WN6A
30	.5	2.5	1.7	25	150	81	185	W30FT250	WN6B
30	.5	4	2.8	25	150	80	225	W30FT400	WN6A
32	1	2.3	1.6	25	150	81	185	W32FT230	WN6B
32	1	3.7	2.5	25	150	80	225	W32FT370	WN6A
34	1	2.2	1.5	25	150	81	185	W34FT220	WN6B
34	1	3.5	2.4	25	150	80	225	W34FT350	WN6A
36	1	2.1	1.4	25	150	81	185	W36FT210	WN6B
36	1	3.3	2.3	25	150	80	225	W36FT330	WN6A
38	1	2	1.4	25	150	81	185	W38FT200	WN6B
38	1	3.1	2.2	25	150	80	225	W38FT310	WN6A
40	1	1.9	1.3	25	150	82	185	W40FT190	WN6B
40	1	3	2.1	25	150	81	225	W40FT300	WN6A
42	1	1.8	1.2	25	150	82	185	W42FT180	WN6B
42	1	2.8	1.9	25	150	81	225	W42FT280	WN6A
45	1	1.7	1.2	25	150	82	185	W45FT170	WN6B
45	1	2.6	1.8	25	150	81	225	W45FT260	WN6A
48	1	1.6	1.1	25	150	82	185	W48FT160	WN6B
48	1	2.5	1.7	25	150	81	225	W48FT250	WN6A



## Narrow Profile

# SWITCHING REGULATED (to 288 watts) (Power Factor Correction and Universal Input)

DC output (accepts either AC or DC input)

**NEW!!**  
UL508 Listed models  
now available

**NEW!!**

- Shipped Within 3 Days
- U.L. Recognized (3.3v to 48v models)
- UL508 Listed units available
- CE (3.3v to 48v models)
- Five Year Warranty



Small yet providing up to 288 watts of well regulated DC, these supplies can be mounted in spaces where many others won't fit. A metal case fully encloses all

circuitry and provides EMI shielding and an AC input filter attenuates both common and differential mode noise conducted to the line.

### STANDARD FEATURES

- Universal input
- Power Factor Correction
- High surge current capability
- 'Soft start' operation

### SPECIFICATIONS

**Input Voltage:** 90-265 VAC, 49-420 Hz, single phase, or 110-350 Vdc. DC input may be connected without regard to polarity.

**Inrush current:** Cold start, (thermistor limiter) 20A peak @ 115 VAC; 40A peak @ 230 VAC.

**Startup Time:** 800 mS typical.

**Input Undervoltage:** An input of less than 90 VAC will not damage power supply.

**Power Factor:** 0.99 typical at 115 VAC, 60Hz and full load. Complies with EN61000-3-2.

#### Regulation:

- Line:  $\pm 0.05\%$
- Load:  $\pm 0.05\%$

**Output Voltage Remote Adjustment:** The output voltage may be controlled by means of an external 1K potentiometer.

**Polarity:** Output is floating and may be used in either polarity.

**Drift:**  $\pm 0.1\%$  typical over 8 hours, after 30 minute warmup.

**Temperature Coefficient:**  $\pm 0.02\%/^{\circ}\text{C}$  (Typical).

**Holdup Time:** 16 mS minimum.

**Transient Response:** 300  $\mu\text{S}$  to return to  $\pm 1\%$  of output setting. Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100%.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line, within the limits of the output voltage adjustment range.

**Overload/Short Circuit Protection:** Current limiting with automatic recovery.

**Overvoltage Protection:** Latches power supply OFF, reset by momentarily removing AC input power.

**Output Inhibit:** Applying between +3 and +25 Vdc to the inhibit terminal will disable the supply.

**EMI:** Complies with FCC Part 15 and EN55022, Class A.

**Output Indicator (DC on):** Green LED.

**Thermal Protection:** Thermostat, self-resetting.

**Efficiency:** See table. (Typical, at nominal input voltage, with full load.)

**Ambient Operating Temperature:** 0 to  $+71^{\circ}\text{C}$ .

**Storage Temperature:**  $-40$  to  $+85^{\circ}\text{C}$ .

**Cooling:** Forced-air cooled; air enters rear of power supply and exits from top.

**Switching Frequency:** 100 kHz (Typical).

#### Dielectric Withstand Voltage Isolation

Input to output:	4242 Vdc	500 VAC
Input to case:	2121 Vdc	500 VAC
Output to case:	750 Vdc	300 VAC

**Internal Failure Protection:** provided by internal fuse.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

**NEW!!**

### OPTIONS

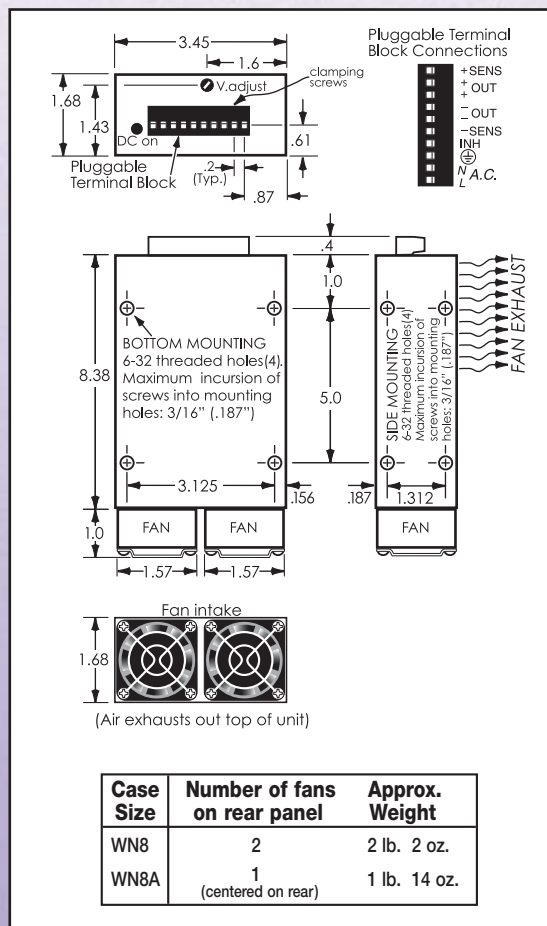
**UL508 Listed (3.3v to 48v models):** These power supplies have been tested for compliance with the electrical requirements of UL508, and can be marked in compliance to UL508 at no additional cost. To order, add suffix "U" to model number.

## Narrow Profile SWITCHING REGULATED (to 288 watts)

Nominal Output Voltage	Adjust Range ± V	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Effic. (Typ.) %	(\$) Price	Model	Case Size
		40°C	71°C	RMS	P-P				
3.3	.5	18.5	12.9	10	50	66	275	W3.3NT1850	WN8A
3.3	.5	25	17.5	10	50	66	350	W3.3NT2500	WN8
5	.5	18.5	12.9	10	50	69	275	W5NT1850	WN8A
5	.5	25	17.5	10	50	69	350	W5NT2500	WN8
6	.5	15.4	10.7	10	50	70	275	W6NT1540	WN8A
6	.5	24	16.8	10	50	70	350	W6NT2400	WN8
7	.5	15	10.5	10	50	70	275	W7NT1500	WN8A
7	.5	23	16.1	10	50	70	350	W7NT2300	WN8
8	.5	14.7	10.3	15	100	72	275	W8NT1470	WN8A
8	.5	23	16.1	15	100	72	350	W8NT2300	WN8
9	.5	14.4	10	15	100	72	275	W9NT1440	WN8A
9	.5	23	16.1	15	100	72	350	W9NT2300	WN8
10	.5	14.1	9.8	15	100	73	275	W10NT1410	WN8A
10	.5	22	15.4	15	100	73	350	W10NT2200	WN8
12	.5	13.7	9.6	15	100	75	275	W12NT1370	WN8A
12	.5	22	15.4	15	100	75	350	W12NT2200	WN8
13	.5	12.3	8.6	15	100	75	275	W13NT1230	WN8A
13	.5	20	14	15	100	75	350	W13NT2000	WN8
14	.5	11.7	8.2	15	100	75	275	W14NT1170	WN8A
14	.5	19	13.3	15	100	75	350	W14NT1900	WN8
15	.5	11.1	7.8	15	100	75	275	W15NT1110	WN8A
15	.5	18	12.6	15	100	75	350	W15NT1800	WN8
16	.5	10.2	7.1	15	100	75	275	W16NT1020	WN8A
16	.5	16.5	11.5	15	100	75	350	W16NT1650	WN8
18	.5	9.2	6.4	15	100	77	275	W18NT920	WN8A
18	.5	15	10.5	15	100	77	350	W18NT1500	WN8
20	.5	8.6	6	15	100	78	275	W20NT860	WN8A
20	.5	14	9.8	15	100	78	350	W20NT1400	WN8
22	.5	8	5.6	15	100	78	275	W22NT800	WN8A
22	.5	13	9.1	15	100	78	350	W22NT1300	WN8
24	.5	7.5	5.3	15	100	80	275	W24NT750	WN8A
24	.5	12	8.4	15	100	80	350	W24NT1200	WN8
25	.5	7.2	5	15	100	80	275	W25NT720	WN8A
25	.5	11.2	7.8	15	100	80	350	W25NT1120	WN8
26	.5	6.9	4.8	15	100	80	275	W26NT690	WN8A
26	.5	10.6	7.4	15	100	80	350	W26NT1060	WN8
28	.5	6.2	4.3	15	100	80	275	W28NT620	WN8A
28	.5	10	7	15	100	80	350	W28NT1000	WN8
30	.5	5.6	3.9	25	150	80	275	W30NT560	WN8A
30	.5	9	6.3	25	150	80	350	W30NT900	WN8
32	1	5.4	3.7	25	150	80	275	W32NT540	WN8A
32	1	8.6	6	25	150	80	350	W32NT860	WN8
34	1	5.2	3.6	25	150	80	275	W34NT520	WN8A
34	1	8.3	5.8	25	150	80	350	W34NT830	WN8
36	1	5	3.5	25	150	80	275	W36NT500	WN8A
36	1	8	5.6	25	150	80	350	W36NT800	WN8
38	1	4.7	3.3	25	150	80	275	W38NT470	WN8A
38	1	7.5	5.2	25	150	80	350	W38NT750	WN8
40	1	4.3	3	25	150	81	275	W40NT430	WN8A
40	1	7	4.9	25	150	81	350	W40NT700	WN8
42	1	4.1	2.8	25	150	81	275	W42NT410	WN8A
42	1	6.8	4.7	25	150	81	350	W42NT680	WN8
45	1	3.9	2.7	25	150	81	275	W45NT390	WN8A
45	1	6.4	4.4	25	150	81	350	W45NT640	WN8
48	1	3.7	2.6	25	150	81	275	W48NT370	WN8A
48	1	6	4.2	25	150	81	350	W48NT600	WN8

Nominal Output Voltage	Adjust Range ± V	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Effic. (Typ.) %	(\$) Price	Model	Case Size
		40°C	71°C	RMS	P-P				
50*	1	3.3	2.3	50	150	80	275	W50NT330	WN8A
50*	1	5	3.5	50	150	80	350	W50NT500	WN8
55*	1	3	2.1	50	150	80	275	W55NT300	WN8A
55*	1	4.5	3.2	50	150	80	350	W55NT450	WN8
60*	1	2.8	1.9	50	150	80	275	W60NT280	WN8A
60*	1	4.2	2.9	50	150	80	350	W60NT420	WN8
70*	1	2.4	1.7	67	200	80	275	W70NT240	WN8A
70*	1	3.6	2.5	67	200	80	350	W70NT360	WN8
75*	1	2.2	1.5	67	200	80	275	W75NT220	WN8A
75*	1	3.3	2.3	67	200	80	350	W75NT330	WN8
80*	1	2.1	1.4	67	200	80	275	W80NT210	WN8A
80*	1	3.1	2.2	67	200	80	350	W80NT310	WN8
90*	1	1.8	1.3	100	300	80	275	W90NT180	WN8A
90*	1	2.8	1.9	100	300	80	350	W90NT280	WN8
100*	1	1.7	1.2	150	450	80	275	W100NT170	WN8A
100*	1	2.5	1.8	150	450	80	350	W100NT250	WN8
110*	1	1.5	1.1	150	450	80	275	W110NT150	WN8A
110*	1	2.3	1.6	150	450	80	350	W110NT230	WN8
120*	1	1.4	1	150	450	80	275	W120NT140	WN8A
120*	1	2.1	1.5	150	450	80	350	W120NT210	WN8
125*	1	1.3	0.9	150	450	80	275	W125NT130	WN8A
125*	1	2	1.4	150	450	80	350	W125NT200	WN8

\*Not CE or U.L. recognized when this catalog was published.





# Gold Box SINGLE OUTPUT

LINEAR REGULATED  
AC-DC

## SERIES A (High Performance)

- Shipped Within 3 Days
- All Models U.L. Recognized
- **CE**
- Five Year Warranty



**Series A power supplies** offer unusually high performance—many models have regulation of  $\pm 0.005\%$ . Electronic current limiting and provision for remote voltage sensing are standard features; overvoltage

protection is available as a built-in option. Rugged extruded aluminum cases include threaded mounting holes on bottom, back, and side, permitting mounting in any position.

### SERIES A: HIGH PERFORMANCE POWER SUPPLIES

#### STANDARD FEATURES

- Provision for remote sensing and/or external output adjustment
- Short circuit proof with automatic recovery (electronic current limiting)
- Can be mounted on any of three surfaces (case sizes H8, H11 and H16; two surfaces)

#### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Specifications:** See pages 48 and 49. Series A supplies have model numbers beginning with the letter A.

**Remote Voltage Adjustment/Sensing:** Provision for sensing the output voltage across the load, so that drops in the load line are compensated, is a standard feature. This feature also permits the use of an externally located potentiometer to adjust output voltage.

**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Temperature Coefficient:** 0.015%/°C (Typical).

**Ambient Operating Temperature:** -20 to +71°C.

**Storage Temperature:** -55 to +85°C.

**Response Time:** Less than 20 microseconds.

#### OPTIONS

**Under/Overvoltage Alarm Contacts:** To control a horn or light, or to signal your PLC. Available on models with nominal outputs of 5 Vdc to 125 Vdc. SPDT contacts switch if the power supply's output deviates by

- 1.0 volt or more: 5 volt models.
- 2.0 volts or more: 6 to 48 volt models.
- 3.0 volts or more: 50 to 125 volt models.

Contact ratings: 120 VAC, 8A / 60 Vdc, 1A. (To comply with SELV requirements, limit switched voltage to 60Vdc/42 VAC.) To order, add suffix "L" to model number and \$35.00 to price. Models with this option are not yet UL Recognized/CE certified.

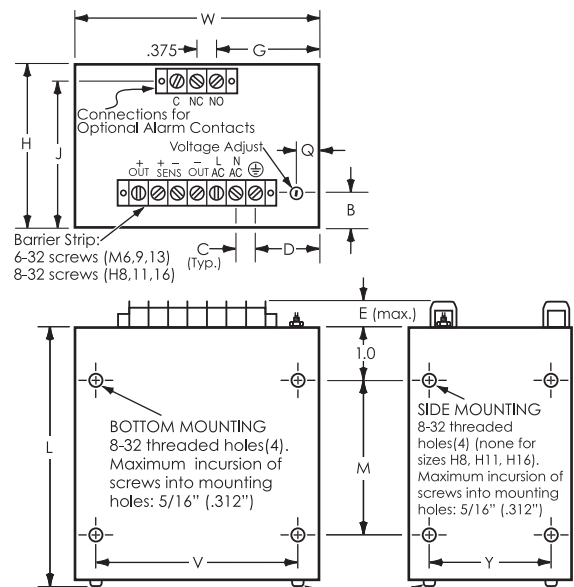
**Overvoltage Protection:** An internal preset overvoltage protector is available. To order, add prefix "V" to the model number, and increase standard price as follows:

<b>Outputs of</b>	<b>1.5-70V</b>	<b>75-150V</b>
All case sizes except H16 . . .	\$25.00	\$35.00
Case size H16 . . . . .	75.00	85.00

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to price. (For models in case sizes H8, H11 and H16, add \$40.00.) The "-230" option requires two additional days.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.



For REAR MOUNTING, remove original screws(4) and use 8-32 Type F self-tapping screws. They should extend at least 5/16" (0.312") into the power supply case.

Case Size	L	W	H	M	V	Y	Q	B	E	C	D	G	J	Approx. Weight
M6	6.59	5.12	3.44	4.0	4.5	3.0	.5	.75	.58	.375	1.44	2.19	3.09	4 lb. 4 oz.
M9	9.25	5.12	3.44	6.0	4.5	3.0	.5	.75	.58	.375	1.44	2.19	3.09	7 lb. 4 oz.
M13	13.25	5.12	3.44	10.0	4.5	3.0	.5	.75	.58	.375	1.44	2.19	3.09	11 lb.
H8	8.75	7.37	5.12	6.0	6.75	4.56	1.12	1.25	.78	.562	2.25	3.57	4.72	15 lb. 8 oz.
H11	11.25	7.37	5.12	8.0	6.75	4.56	1.12	1.25	.78	.562	2.25	3.57	4.72	18 lb. 4 oz.
H16	16.00	7.37	5.12	11.0	6.75	4.56	1.12	1.25	.78	.562	2.25	3.57	4.72	26 lb.



**Gold Box**  
**SINGLE OUTPUT**  
 LINEAR REGULATED  
 AC-DC



**SERIES B (General Purpose)**

- Shipped Within 3 Days
- All Models U.L. Recognized
- **CE**
- Five Year Warranty

**Series B power supplies** are ideal for powering digital circuitry, test sets, instrument bridges, and process control transmitters. Many models have regulation of  $\pm 0.1\%$  or better. All components are generously derated

to insure a long and trouble-free life, and they use the same rugged construction as the Series A line. Overvoltage protection and other options are available.

**SERIES B: GENERAL PURPOSE POWER SUPPLIES**

**STANDARD FEATURES**

- Short circuit proof (electronic current limiting)
- May be mounted on any of three surfaces
- Completely serviceable

**SPECIFICATIONS**

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.  
**Output Specifications:** See pages 48 and 49. Series B supplies have model numbers beginning with the letter B.  
**Remote Voltage Adjustment/Sensing:** Available as an option. See below.  
**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.  
**Temperature Coefficient:** 0.02%/°C (Typical).  
**Ambient Operating Temperature:** 0 to +71°C.  
**Storage Temperature:** -55 to +85°C.

**OPTIONS**

**Under/Overvoltage Alarm Contacts:** To control a horn or light, or to signal your PLC. Available on models with nominal outputs of 5 Vdc to 125 Vdc. SPDT contacts switch if the power supply's output deviates by  
 1.0 volt or more: 5 volt models.  
 2.0 volts or more: 6 to 48 volt models.  
 3.0 volts or more: 50 to 125 volt models.  
 Contact ratings: 120 VAC, 8A / 60 Vdc, 1A. (To comply with SELV requirements, limit switched voltage to 60Vdc/42 VAC.) To order, add suffix "L" to model number and \$35.00 to price. Models with this option are not yet UL Recognized/CE certified.

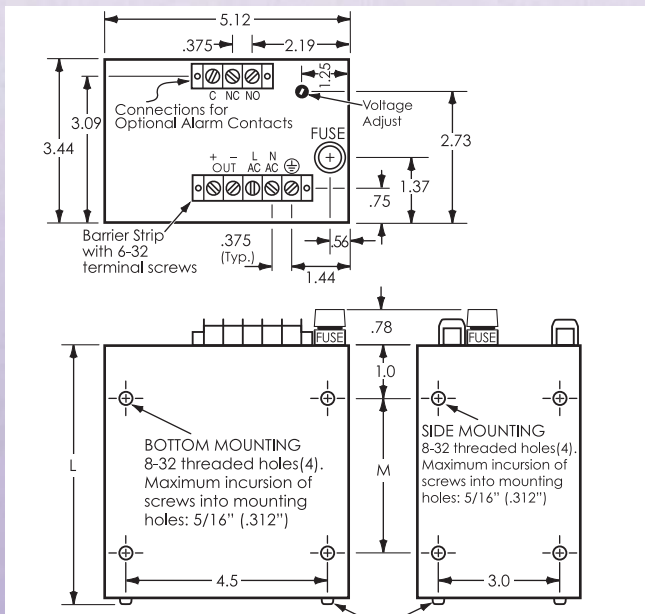
**Overvoltage Protection:** An internal preset overvoltage protector is available. To order, add prefix "V" to the model number, and add \$25.00 to the standard price of models with outputs of 1.5 to 70 volts; \$35.00, for 75 to 200 volt outputs.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, so that drops in the load lines are compensated, is available on all models. (This option also permits the use of an externally located potentiometer to adjust output voltage.) To order, add prefix "R" to the model number. No increase in price.

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.



For **REAR MOUNTING**, remove original screws(4) and use 8-32 Type F self-lapping screws. They should extend at least 5/16" (0.312") into the power supply case.

Case Size	L	M	Approx. Weight
G3	3.71	1.62	3 lb. 2 oz.
G5	5.09	3.0	4 lb. 14 oz.
G6	6.59	4.0	5 lb. 8 oz.
G9	9.25	6.0	7 lb. 4 oz.
G13	13.25	10.0	11 lb.







**NEW!**

## Acopian's most versatile 720 watt power supply...



**Less than 1U High**

### Featuring

- Constant Current Control
- Constant Voltage Control
- Can be paralleled for Current Share
- Output can be inhibited with TTL level
- Can be paralleled for N+1 Redundancy
- Wide Adjust models with ranges down to 0 Volts
- Programmable models with 0-10V control voltages
- Outputs to 50 VOLTS, 720 WATTS
- 5 Year Warranty

For complete specifications, see pages 51-53.

Order factory direct and save.

We accept American Express,  
VISA and MasterCard.

Now with ONLINE ORDERING!

**NEW!!**

**Low Profile  
SWITCHING REGULATED (to 720 watts)  
(Power Factor Correction and Universal Input)**

AC-DC or DC-DC  
*single output & wide adjust output*

- Shipped Within 6 Days
- Five Year Warranty



**STANDARD FEATURES**

- Universal input
- Power Factor Correction
- Constant voltage and constant current modes
- Voltage and current monitor terminals
- Voltage and current programming capabilities
- Short circuit and overload protection
- Thermal protection
- Low Profile
- No minimum load required
- Adjustable down to 0 volts ('Wide Adjust' models)
- Can be paralleled for increased current (option P)
- N+1 Redundancy (option N)
- Internal EMI Filter and RFI Shielding
- Pluggable connectors for input and control wiring
- Remote Sensing
- 'Vout OK' signal monitor
- 'Soft start' operation

**SPECIFICATIONS**

**Input Voltage:** 90-265 VAC, 49-420 Hz, single phase, or 110-350 Vdc.

208 VAC 3-phase is also available (see Options).

AC input (maximum): 8A (WL7 case), 12A (WL9 case)

DC input (maximum): 5.75A (WL7 case), 8.8A (WL9 case)

DC input may be connected without regard to polarity.

**Inrush current:** Cold start, (thermistor limiter) 33A peak @ 115 VAC (typical); 65A peak @ 230 VAC (typical).

**Startup Time:** 800 mS (typical).

**Input Undervoltage:** An input of less than 90 VAC will not damage power supply.

**Power Factor:** 0.99 typical at 115 VAC, 60Hz and full load. Complies with EN61000-3-2.

**Regulation (in constant voltage mode):**

Line Regulation:  $\pm 0.05\%$

Load Regulation:  $\pm 0.05\%$

**Regulation, Ripple (in constant current mode):**

Line Regulation:  $\pm 0.2\%$  or 30 mA.

Load Regulation:  $\pm 0.5\%$  or 100 mA.

Current Ripple: 0.5% rms.

**Ambient Operating Temperature:** 0 to +71°C.

**Temperature Coefficient (after 30 minute warm-up):**

Voltage mode;  $\pm 0.02\%/^{\circ}\text{C}$  (typical).

Current mode;  $\pm 0.1\%/^{\circ}\text{C}$  (typical).

**Drift (voltage mode or current mode):**  $\pm 0.1\%$  (typical) over 8 hours, after 30 minute warmup.

**Storage Temperature:** -40 to +85°C.

**Holdup Time:** 20 mS minimum with full load.

**Transient Response:** 300  $\mu\text{S}$  to return to  $\pm 1\%$  of output setting. Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100%.

**Efficiency:** See table, (typical, at 115 VAC, with full load.)

**Polarity:** Output is floating and may be used in either polarity.

**Remote Sensing:** Compensates up to 0.5 Vdc drop per output line (or within the limits of the output voltage adjustment range). (Wide Adjust models compensate up to 0.5 Vdc drop per output line.

**Output Adjustment:** Voltage and current output adjustments are located on the front. Output adjustment may also be controlled by using remotely located potentiometers.

**Output Programming (Wide Adjust models):** 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.

**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 100 mV/Amp (accuracy is 3% of maximum rated output current).

**Overload/Short Circuit Protection:** A short or overload forces the power supply into constant current mode, with automatic recovery.

**Overvoltage Protection:** Latches power supply OFF, reset by momentarily removing AC input power. (Models with 'N' option reset automatically.)

**Thermal Protection:** Thermostat(s), self-resetting.

**Internal Failure Protection:** Provided by internal fuse.

**Output Inhibit:** Applying between +3 and +15 Vdc to the Inhibit terminal will disable the supply. 'Output Enable' is also available (see Options).

**Vout OK:** When the power supply's output voltage is between -10% and +15% of the nominal output voltage, 'Vout OK' will be between +3 and +5Vdc(high). When the output voltage is outside the -10%, +15% window, the 'Vout OK' voltage will go low (approx 0.5 Vdc). 'Vout OK' can source 1 mA or sink up to 5 mA. (Not available on Wide Adjust Output models.)

**Output Indicator (DC on):** Green LED.

**Switching Frequency:** 110 kHz (typical).

**EMI:** Designed to meet FCC Part 15 and EN55022, Class A.

**Dielectric Withstand Voltage Isolation**

<b>Input to output:</b>	4242 Vdc	500 VAC
<b>Input to case:</b>	2121 Vdc	500 VAC
<b>Output to case:</b>	750 Vdc	300 VAC

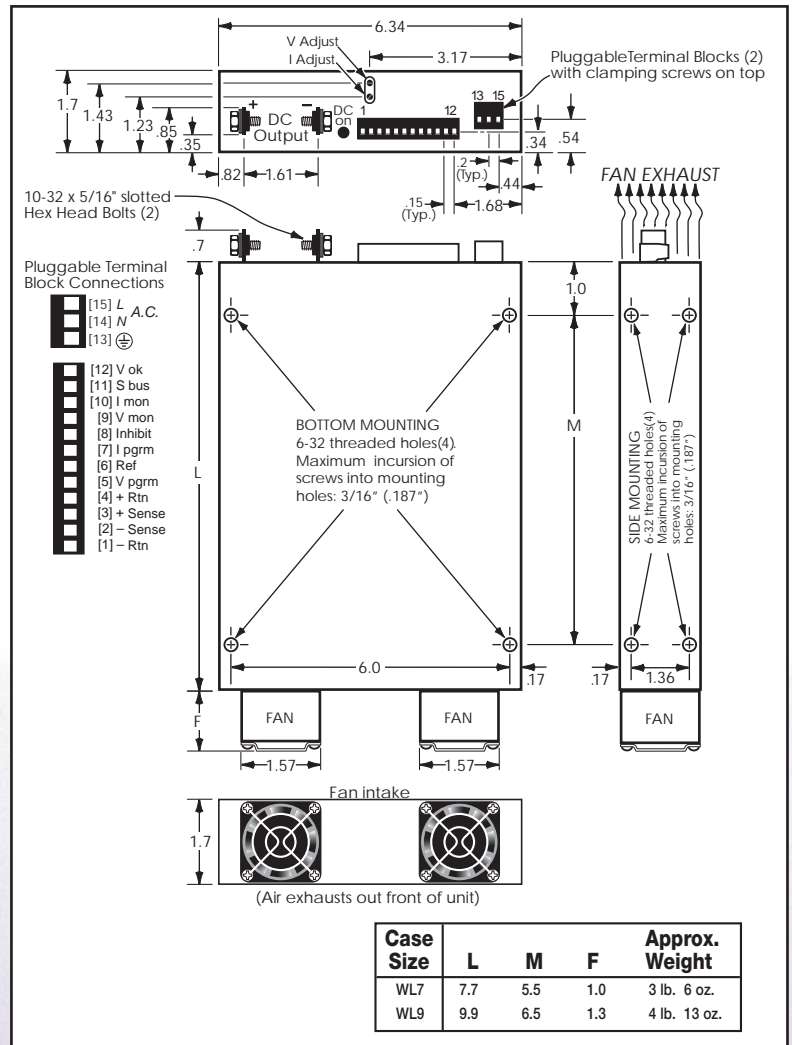
**Cooling:** Forced-air cooled; air enters rear of power supply and exits from front cover.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface use Mounting Kit NP6, or for DIN rail mounting use Mounting Kit WL35DIN or WLH35DIN. See accessory Mounting Kits on page 91.

**OPTIONS**

**Output Enable:** To enable the DC output, the Inhibit terminal must be tied to the -DC output. An open collector or contact closure can be used. To order, add suffix "E" to the model number. No increase in price.

**N+1 Redundancy:** 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. Current share accuracy is ±5% (typical). Power supply output current must be derated by 10%. (Available on Single Output models only.) This option includes the "P" (Parallelable) option



listed below, so if you specify the "N" option do not also specify the "P" option. To order, add suffix "N" to the model number, and increase standard price by \$50.00.

**Parallelable:** Allows up to 4 like models to be directly wired in parallel for increased current capability. Current share accuracy is ±5% (typical). Power supply output current must be derated by 5%. (Available on Single Output models only.) This option is included in the "N" (N+1 Redundancy) option listed above, so if you specify the "N" option, do not also specify the "P" option. To order, add suffix "P" to the model number, and increase standard price by \$25.00.

**0-5v Programming (instead of the standard 0-10v Programming):** Output voltage and current of standard models may be programmed from 0 to full rating by means of control voltage inputs of 0 to +10Vdc. For programming with 0 to +5Vdc control voltages, add suffix "C5" to the model number, and increase standard price by \$40.00. Voltage mode accuracy: 1%. Current mode accuracy: 5%. Accuracy percentages do not apply below 5% of output rating. (Available on Wide Adjust Output models only.)

**Thermostatically Controlled Fan:** Fan runs at reduced speed until maximum speed is required. To order, add suffix "D2" to the model number, and increase standard price by \$30.00.

**Output Blocking Protection Diode:** Used for battery charging or redundant applications. Derate output by 10%. To order, add suffix "E1" to the model number, and increase standard price by \$25.00.

**208 VAC 3-phase Input Voltage:** 170-240 VAC, 60-400 Hz. To order, add suffix "L4" to the model number, and increase standard price by \$115.00.





# Gold Box SWITCHING REGULATED

AC-DC

single output & wide adjust output

- Shipped Within 9 Days
- U.L. Recognized (3.3v to 48v models)
- Five Year Warranty

These ruggedly-built power supplies have tightly regulated outputs and low output ripple. Features include status indicator lights, overvoltage protection, EMI filtering, 'soft start' operation and provision for external output inhibiting (TTL-compatible).

### SPECIFICATIONS

**Input Voltage:** 90-132 VAC, 49-61 Hz, single phase. For models W12GT95, W15GT78, W24GT50, W28GT42 and W48GT25, the use of a 30A line is recommended and when operating on 50 Hz input, derate output by 5%.

**Startup Time:** 400 mS maximum (250 mS typical).

**Input Undervoltage:** An input of less than 90 VAC (180 VAC with "-230" option) will not damage power supply.

<b>Load Regulation:</b>	<b>Line Regulation:</b>
3.3v to 48v Models: ±0.05%	3.3v to 48v Models: ±0.05%
50v to 125v Models: ±0.1%	50v to 125v Models: ±0.1%

**Remote Voltage Programming:** The output voltage may be controlled by means of an external potentiometer (2500 ohms for single output models; 50,000 ohms for wide adjust output models).

**Polarity:** Output is floating and may be used in either polarity.

**Drift:** ±0.1% typical over 8 hours, after 30 minute warmup.

**Temperature Coefficient:** ±0.02%/°C (Typical).

**Holdup Time:** 33 mS minimum (At nominal input voltage, with full load).

**Transient Response:** 300 µS to return to ±1% of output setting. Maximum of ±3% output excursion following a load step change from 50% to 100%.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line, within the limits of the output voltage adjustment range.

**Overload/Short Circuit Protection:** Foldback current limiting with automatic recovery.

**Overvoltage Protection:** Latches power supply OFF, reset by momentarily removing AC input power. Red indicator lights to indicate latchup.

**Output Inhibit:** Applying between +2 and +30 Vdc to the inhibit terminal will disable the supply (TTL compatible).

**Thermal Protection:** Thermostat, self-resetting.



**Efficiency:** See table. (Typical, at nominal input voltage, with full load.)

**Ambient Operating Temperature:** 0 to +71°C.

**Storage Temperature:** -40 to +85°C.

**Terminal Strip Cover:** Clips on.

**Cooling:** Forced-air cooled (ball bearing fan); air enters back of power supply and exits from front.

**Switching Frequency:** 55 kHz (Typical).

**Isolation: Input to output:** 1400 Vdc

**Input to case:** 1400 Vdc

**Output to case:** 400 Vdc

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

### OPTIONS

**230 Volt Input:** For applications where operation on an input of 180-264 VAC, 49-61 Hz, is desired. To order, add suffix "-230" to the model number and \$40.00 to the standard price. The "-230" option requires two additional days.

### WIDE ADJUST OUTPUT MODELS

Output Voltage Range	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Effic. (Typ.) %**	(\$ Price	Model	Case Size
	40°C	71°C	RMS	P-P				
5-15	23	16	15	100	76	650	W515MT23	WM6
	36	25	15	100	76	850	W515MT36	WM9
	54	38	15	100	76	1050	W515GT54	WG7
5-30	13	9	25	150	81	650	W530MT13	WM6
	19	13	25	150	81	850	W530MT19	WM9
	30	20	25	150	81	1050	W530GT30	WG7
15-50	8	5	25	150	82	650	W1550MT8	WM6
	12	8.5	25	150	82	850	W1550MT12	WM9
	18	12	25	150	82	1050	W1550GT18	WG7

\*\* At maximum output voltage







## Gold Box UNREGULATED

AC-DC  
single output & wide adjust output

- Shipped Within 3 Days
- U.L. Recognized
- Five Year Warranty



Models in case size YA have output voltage adjustment on rear panel.

**Low-cost DC power** suitable for driving loads such as lamps, relays, and small motors is provided by these unregulated power supplies. All components are generously derated, insuring a long and trouble-free life; built-in fusing prevents damage due to prolonged

### STANDARD FEATURES

- Capacitive filtering
- Fused input
- May be used in series or parallel
- No derating or heat sinking required
- Completely serviceable

### SPECIFICATIONS

**Input Voltage:** 0-125 VAC, 50-400 Hz, single phase.

**Output Voltage Adjustment:** Adjustable voltage models are provided with a built-in continuously adjustable autotransformer.

**Load Regulation:** The nominal output voltages of single output models, and the maximum rated output voltages for models with wide adjust outputs, are based on 115 VAC input with approximately one-half load. At no load, they will increase by approximately 10%. At full load, they will be reduced by approximately 10%.

**Line Regulation:** Output voltage change due to line change directly proportional to input change.

**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Ambient Operating Temperature:** -10 to +65°C.  
No derating required.

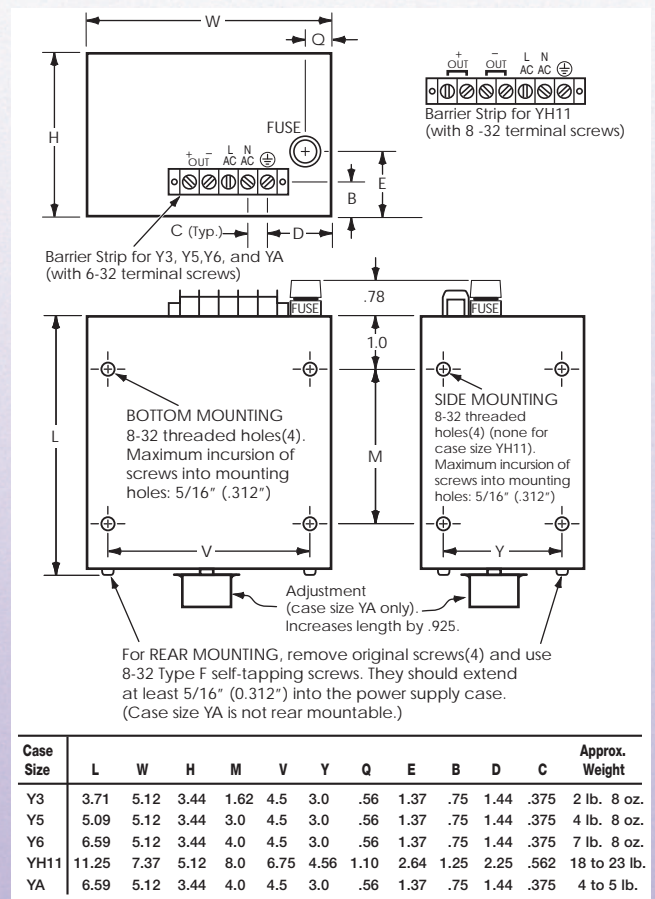
**Storage Temperature:** -55 to +85°C.

### OPTIONS

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** Provision for inputs of 0-250 VAC, 50-400 Hz, replacing the standard 0-125 VAC input voltage range, is available on single output models. To order, add suffix "-230" to model number and \$25.00 to price (for models in case size YH11 add \$40.00). The "-230" option requires two additional days.

overloading or short circuits. Mechanically similar to the regulated supplies shown on pages 46 and 47, they are housed in extruded aluminum cases which can be mounted in any position. Many models are U.L. Recognized.



**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

## SINGLE OUTPUT

Nominal Output Voltage	Output Current Amps.	Output Voltage N/L-F/L	Ripple Volts RMS	(\$) Price	Model	Case Size
4	.200	4.4 to 3.6	.2	\$90	U4Y20	Y3
5	10.0 (@ 5.0)	6.7 to 3.6 (5.0)	1.8 (1.3)	\$135	U5Y1000	Y6
6	2.0	7.7 to 4.8	2.0	\$90	U6Y200	Y3
6	5.0	7.5 to 5.0	1.8	\$135	U6Y500	Y5
7	8.0	8.0 to 5.4	1.5	\$135	U7Y800	Y6
9	10.0 (@ 5.0)	11.5 to 7.5 (9.0)	2.3 (1.3)	\$135	U9Y1000	Y6
10	10.0 (@ 5.0)	12.4 to 8.0 (9.8)	2.3 (1.3)	\$135	U10Y1000	Y6
12	1.5	14.9 to 10.9	2.5	\$90	U12Y150	Y3
12	5.0	14.8 to 10.5	1.8	\$125	U12Y500	Y5
12	10.0 (@ 5.0)	14.1 to 9.8 (11.5)	2.3 (1.3)	\$140	U12Y1000	Y6
14	1.0	15.4 to 12.6	.7	\$90	U14Y100	Y3
14	10.0 (@ 5.0)	16.4 to 12.1 (14.0)	2.3 (1.3)	\$140	U14Y1000	Y6
15	10.0 (@ 5.0)	17.2 to 12.8 (14.5)	2.3 (1.3)	\$140	U15Y1000	Y6
16	1.0	17.6 to 14.4	.7	\$90	U16Y100	Y3
16	10.0 (@ 5.0)	18.8 to 14.2 (16.0)	2.3 (1.3)	\$140	U16Y1000	Y6
18	1.0	19.8 to 16.2	.7	\$90	U18Y100	Y3
18	10.0 (@ 5.0)	21.0 to 15.8 (18.0)	2.4 (1.4)	\$140	U18Y1000	Y6
20	4.0	22.0 to 17.5	2.0	\$125	U20Y400	Y5
20	10.0 (@ 5.0)	23.7 to 18.3 (20.4)	2.4 (1.4)	\$140	U20Y1000	Y6
24	1.0	26.4 to 21.6	1.7	\$90	U24Y100	Y3
24	3.5	26.0 to 21.0	2.0	\$125	U24Y350	Y5
24	5.0	26.5 to 21.0	2.5	\$140	U24Y500	Y6
24	10.0	26.8 to 21.4	2.4	\$170	U24Y1000	Y6
24	17.0	26.4 to 21.6	1.5	\$295	U24Y1700	YH11
24	23.0	27.0 to 21.0	1.5	\$325	U24Y2300	YH11
25	5.0	28.1 to 22.3	2.5	\$140	U25Y500	Y6
27	5.0	30.0 to 24.0	2.6	\$140	U27Y500	Y6
28	1.0	30.8 to 25.2	1.7	\$90	U28Y100	Y3
28	3.0	30.8 to 26.0	2.0	\$125	U28Y300	Y5
28	5.0	31.2 to 24.8	2.6	\$140	U28Y500	Y6
28	8.0	30.2 to 25.0	2.4	\$170	U28Y800	Y6
28	15.0	30.8 to 25.2	1.5	\$295	U28Y1500	YH11
28	20.0	30.4 to 24.5	1.5	\$325	U28Y2000	YH11
30	2.0	33.0 to 27.0	1.5	\$120	U30Y200	Y5
32	.400	35.2 to 28.8	.6	\$90	U32Y40	Y3
32	5.0	35.5 to 28.0	3.3	\$145	U32Y500	Y6
35	5.0	38.0 to 30.0	3.3	\$145	U35Y500	Y6
37	5.0	40.5 to 32.2	3.3	\$145	U37Y500	Y6
38	5.0	43.0 to 34.0	3.3	\$145	U38Y500	Y6
40	1.0	44.0 to 36.0	1.6	\$100	40UY100	Y3
40	2.0	44.0 to 36.0	1.5	\$125	U40Y200	Y5
40	5.0	45.0 to 37.0	3.3	\$145	U40Y500	Y6

Nominal Output Voltage	Output Current Amps.	Output Voltage N/L-F/L	Ripple Volts RMS	(\$) Price	Model	Case Size
41	.400	45.1 to 36.9	.6	\$90	U41Y40	Y3
42	5.0	48.0 to 36.0	6.5	\$145	U42Y500	Y6
44	2.0	48.4 to 39.6	1.5	\$125	U44Y200	Y5
45	1.0	49.5 to 40.5	1.6	\$110	45UY100	Y3
45	5.0	51.0 to 38.5	6.5	\$145	U45Y500	Y6
48	.400	52.8 to 43.2	.6	\$95	U48Y40	Y3
50	1.0	55 to 45	1.6	\$110	50UY100	Y3
52	.400	57.2 to 46.8	.6	\$100	U52Y40	Y3
55	.250	60.5 to 49.5	.4	\$95	U55Y25	Y3
60	1.0	65.3 to 53.0	2.8	\$120	U60Y100	Y5
62	.400	69.0 to 58.0	1.5	\$100	U62Y40	Y3
80	.300	88.0 to 72.0	1.0	\$100	U80Y30	Y3
90	.400	99.0 to 81.0	2.2	\$100	U90Y40	Y3
95	.150	105 to 85	1.1	\$100	U95Y15	Y3
100	.200	110 to 93	1.0	\$100	U100Y20	Y3
110	.200	121 to 100	1.0	\$100	U110Y20	Y3
120	.200	132 to 110	1.0	\$100	U120Y20	Y3
140	.200	154 to 126	1.7	\$110	U140Y20	Y3
150	.200	165 to 135	1.7	\$110	U150Y20	Y3
165	.200	176 to 144	1.7	\$110	U165Y20	Y3
170	.200	187 to 153	2.0	\$110	U170Y20	Y3
180	.200	190 to 162	2.0	\$110	U180Y20	Y3
200	.200	220 to 180	2.0	\$115	U200Y20	Y3
250	.200	275 to 225	4.0	\$115	250UY20	Y3
275	.100	303 to 247	3.0	\$110	U275Y10	Y3
275	.200	303 to 247	4.0	\$120	U275Y20	Y5
300	.200	330 to 270	5.0	\$120	U300Y20	Y5
325	.200	360 to 295	6.0	\$120	U325Y20	Y5
340	.100	374 to 306	3.0	\$110	U340Y10	Y3
360	.100	396 to 324	3.0	\$110	U360Y10	Y3
370	.100	407 to 333	3.0	\$110	U370Y10	Y3
400	.200	440 to 360	6.0	\$125	U400Y20	Y5
420	.100	462 to 378	6.7	\$110	U420Y10	Y3
475	.020	523 to 426	3.1	\$110	U475Y02	Y3
500	.200	550 to 450	9.1	\$135	U500Y20	Y5
550*	.100	605 to 495	4.8	\$135	U550Y10	Y5
580*	.020	638 to 522	3.1	\$110	U580Y02	Y3
600*	.100	660 to 540	10.0	\$140	U600Y10	Y5
750*	.020	825 to 675	3.1	\$110	U750Y02	Y3
800*	.100	880 to 720	13.0	\$140	U800Y10	Y5
900*	.020	990 to 810	5.0	\$115	U900Y02	Y3
900*	.100	990 to 810	13.0	\$140	U900Y10	Y5
1000*	.100	1100 to 900	13.0	\$140	U1000Y10	Y5

\*Not U.L. recognized when this catalog was published.

## WIDE ADJUST OUTPUT

Output Voltage Range	Output Current Amps.	Ripple Volts RMS	(\$) Price	Model	Case Size
0-8*	2.0	2	\$240	U8YA200	YA
0-15*	1.5	2.5	\$240	U15YA150	YA
0-54*	1.0	1.6	\$240	U54YA100	YA
0-95*	.300	2.2	\$240	U95YA30	YA
0-125*	.200	1.5	\$240	U125YA20	YA
0-220*	.200	2	\$240	U220YA20	YA
0-260*	.200	4	\$240	U260YA20	YA
0-370*	.100	3	\$240	U370YA10	YA
0-450*	.100	6.7	\$240	U450YA10	YA
0-800*	.020	3.1	\$240	U800YA02	YA
0-950*	.020	5	\$240	U950YA02	YA

\*Not U.L. recognized when this catalog was published.



## Gold Box & Narrow Profile WIDE ADJUST OUTPUT

LINEAR REGULATED  
AC-DC

(fixed & adjustable current limiting)



Narrow Profile

Gold Box

- Shipped Within 3 Days
- All models U.L. Recognized
- **CE** (Gold Box models)
- Five Year Warranty

These power supplies have the broad adjustment capability required for analog instrumentation and circuitry, electronic system development, basic research, and similar applications.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Regulation, Ripple (in constant voltage mode):**

Line Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Load Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Ripple: 0.25 mV rms.

**Regulation, Ripple (in constant current mode):**

Line Regulation:  $\pm 0.1\%$  or 2 mA.  
Load Regulation:  $\pm 0.2\%$  or 5 mA.  
Ripple: 0.1% rms.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, to compensate voltage drops in output wiring, is a standard feature.

**Remote Voltage Programming:** The output voltage of all models may be controlled by means of external resistance connected in series with the -S lead.

**Voltage Programming Coefficient:** See table.  
Calibration tolerance,  $\pm 2\%$ .

**Current Limiting:** Models with fixed current limiting have a rolloff characteristic with automatic recovery. All others have current limiting with a constant-voltage/constant-current crossover characteristic.

**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Temperature Coefficient (in constant voltage mode):** 0.015%/°C (Typical).

**Ambient Operating Temperature:** -20 to +71°C.

**Storage Temperature:** -55 to +85°C.

For applications requiring a constant current or adjustable current limiting, a power supply with a true constant-current characteristic, such as those with model numbers beginning with the letter P, should be used.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

### OPTIONS

**Remote Current Limiting Adjustment:** All models having numbers beginning with the letter P have a built-in (front panel) current limit control. Provision for control of the current limit setting by adjustment of an external resistance is available as an option. To order, add the prefix letter "E" to the model number, and add \$10.00 to the standard price.

The current limit setting is inversely related to resistance. Use a 200 ohm, 1/2 W potentiometer.

**Overvoltage Protection:** An internally mounted overvoltage protection circuit, set approximately 20% above the maximum output voltage rating of the supply, is available on all models. To order, add prefix "V" to the model number, and increase standard price as follows:

<b>Maximum output of</b>	<b>.....6-60V</b>	<b>100-150V</b>
All case sizes except H16	...\$25.00	\$35.00
Case size H16	.....75.00	85.00

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to price. (For models in case sizes H11 and H16, add \$40.00.) The "-230" option requires two additional days.



## GOLD BOX MODELS

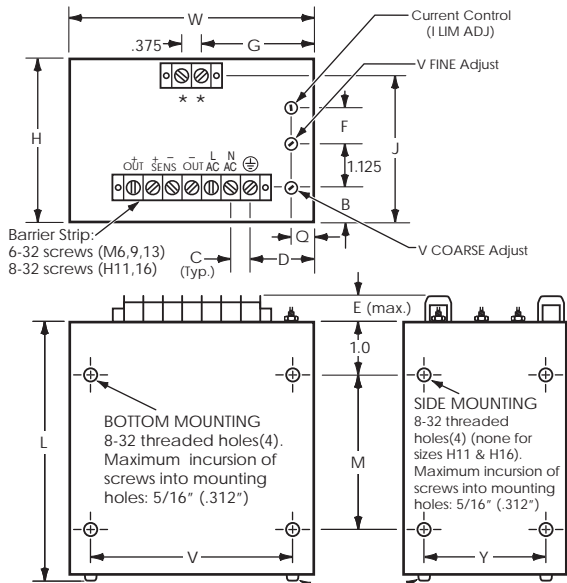
Output Voltage Range	Output Current Amps. at			Voltage Prgm. Coeff. (Ω/V)	Case Size	Voltage Programmable Fixed Current Limiting		Voltage Programmable Adjust. Current Limiting	
	40°C	55°C	71°C			Model	Price(\$)	Model	Price(\$)
0-6	1.2	1.2	1.2	820	M6	A06MX120	\$195	P06MX120	\$225
0-6	2.0	2.0	2.0	820	M6	A06MX200	\$225	P06MX200	\$245
0-6	3.0	2.5	2.0	820	M6	A06MX300	\$255	P06MX300	\$280
0-6	5.0	4.0	3.0	820	M9	A06MX500	\$305	P06MX500	\$335
0-6	8.0	7.0	6.0	820	M13	A06MX800	\$355	P06MX800	\$375
0-6	12.0	10.0	7.0	820	H11	A06HX1200	\$440	P06HX1200	\$460
0-6	16.0	13.0	10.0	820	H16	A06HX1600	\$515	P06HX1600	\$535
0-15	1.0	1.0	1.0	330	M6	A015MX100	\$185	P015MX100	\$205
0-15	2.0	1.6	1.2	330	M6	A015MX200	\$245	P015MX200	\$270
0-15	3.0	2.4	1.8	330	M9	A015MX300	\$305	P015MX300	\$335
0-15	5.0	4.0	2.5	330	M13	A015MX500	\$355	P015MX500	\$375
0-15	8.0	6.0	4.0	330	H11	A015HX800	\$455	P015HX800	\$475
0-15	10.0	8.0	6.0	330	H16	A015HX1000	\$515	P015HX1000	\$535
0-30	.50	.50	.50	160	M6	A030MX50	\$205	P030MX50	\$235
0-30	1.0	1.0	1.0	160	M6	A030MX100	\$245	P030MX100	\$270
0-30	1.6	1.4	1.2	160	M9	A030MX160	\$290	P030MX160	\$310
0-30	2.5	2.0	1.5	160	M13	A030MX250	\$350	P030MX250	\$370
0-30	4.0	3.0	2.0	160	H11	A030HX400	\$465	P030HX400	\$485
0-30	5.0	4.0	3.0	160	H16	A030HX500	\$530	P030HX500	\$550
0-50	.35	.34	.33	1000	M6	A050MX35	\$235	P050MX35	\$255
0-50	.60	.50	.40	1000	M6	A050MX60	\$290	P050MX60	\$310
0-50	.85	.75	.65	1000	M9	A050MX85	\$340	P050MX85	\$360
0-50	1.2	.96	.72	1000	M13	A050MX120	\$395	P050MX120	\$420
0-50	2.4	1.9	1.4	1000	H11	A050HX240	\$510	P050HX240	\$535
0-50	3.0	2.4	1.8	1000	H16	A050HX300	\$590	P050HX300	\$620
0-100	.10	.09	.08	500	M6	A0100MX10	\$290	P0100MX10	\$310
0-100	.25	.20	.15	500	M6	A0100MX25	\$340	P0100MX25	\$360
0-100	.45	.36	.27	500	M9	A0100MX45	\$385	P0100MX45	\$410
0-100	.60	.48	.36	500	M13	A0100MX60	\$440	P0100MX60	\$465
0-100	1.2	.96	.72	500	H11	A0100HX120	\$555	P0100HX120	\$580
0-100	1.5	1.2	.90	500	H16	A0100HX150	\$635	P0100HX150	\$660

## NARROW PROFILE MODELS (for limited space applications)

Output Voltage Range	Output Current Amps. (to +71°C)	Voltage Prgm. Coeff. (Ω/V)	Case Size	Model	Price
0-7*	1.0	700	N8T	A07XN100	\$185
0-7*	2.1	700	N8H	A07NX210	\$230
0-18*	.400	270	N8T	A018XN40	\$180
0-18*	1.0	270	N8H	A018NX100	\$215
0-32*	.250	150	N8T	A032XN25	\$160
0-32*	.600	150	N8H	A032NX60	\$215
0-60*	.125	820	N8T	A060NX12	\$190
0-60*	.250	820	N8H	A060NX25	\$240
0-150*	.050	330	N8T	A0150NX05	\$230
0-150*	.100	330	N8H	A0150NX10	\$275

\* Not CE certified.

### Gold Box

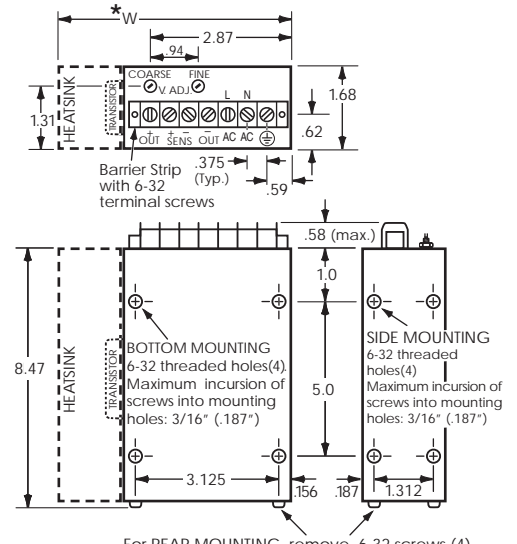


\* \* Connections for Remote Current Control

For REAR MOUNTING, remove original screws(4) and use 8-32 Type F self-tapping screws. They should extend at least 5/16" (.312") into the power supply case.

Case Size	L	W	H	M	V	Y	E	Q	B	C	D	F	G	J	Approx. Weight
M6	6.59	5.12	3.44	4.0	4.5	3.0	.58	.5	.75	.375	1.44	.75	2.37	3.09	5 lb. 5 oz.
M9	9.25	5.12	3.44	6.0	4.5	3.0	.58	.5	.75	.375	1.44	.75	2.37	3.09	6 lb. 3 oz.
M13	13.25	5.12	3.44	10.0	4.5	3.0	.58	.5	.75	.375	1.44	.75	2.37	3.09	8 lb. 3 oz.
H11	11.25	7.37	5.12	8.0	6.75	4.56	.78	1.12	1.25	.562	2.25	1.12	3.75	4.72	12 lb. 14 oz.
H16	16.00	7.37	5.12	11.0	6.75	4.56	.78	1.12	1.25	.562	2.25	1.12	3.75	4.72	17 lb. 12 oz.

### Narrow Profile



For REAR MOUNTING, remove 6-32 screws (4). These screws may then be used for mounting, provided they extend at least 1/4" (.250) into the power supply case.

Case Size	W*	Approx. Weight
N8T	3.84	3 lb. 2 oz.
N8H	4.68	3 lb. 14 oz.

\*W dimension includes TRANSISTOR on N8T case and HEATSINK on N8H case.



## Gold Box & Rack Mounting

### WIDE ADJUST OUTPUT

### PROGRAMMABLE (with a control voltage or a potentiometer)

LINEAR REGULATED  
AC-DC

- Shipped Within 3 Days (Gold Box models)
- Shipped Within 9 Days (Rack models)
- Five Year Warranty

These power supplies have the broad adjustment capability required for analog instrumentation and circuitry, process controls, basic research, and similar applications.

#### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Regulation, Ripple:**

Line Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Load Regulation:  $\pm 0.005\%$  or 2 mV, whichever is greater.  
Ripple: 0.25 mV rms.

**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, to compensate voltage drops in output wiring, is a standard feature.

**Controls:** Coarse and fine voltage adjustments are located on the front panel of Gold Box models and on the rear panel of Rack Mounting models.

**Output Voltage Programming:**

**With a Control Voltage:** The output voltage may be programmed from 0 to full rating by means of control voltage inputs of 0 to +10Vdc. Linearity, 1%. Contact factory for information on other input ranges.

**With a Potentiometer:** The output voltage may be programmed by means of a remotely located 5K potentiometer.

**Current Limiting:** Rolloff characteristic with automatic recovery.

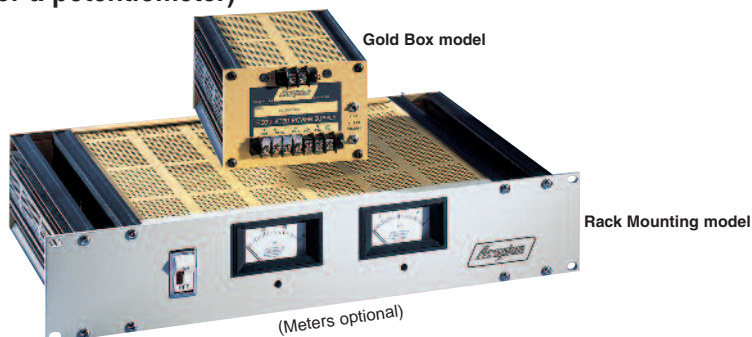
**Polarity:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground. When using a control voltage input, its negative side must be connected to the -S (sense) terminal.

**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:** -20 to +71°C.

**Storage Temperature:** -55 to +85°C.

**Mounting (Gold Box models):** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.



The output voltage may be manually controlled either at the power supply or remotely, or it may be programmed with the analog output from a PLC or digital-to-analog converter.

#### OPTIONS

**Overvoltage Protection:** An internally mounted overvoltage protection circuit, set approximately 20% above the maximum output voltage rating of the supply, is available on all models. To order, add prefix "V" to the model number, and increase standard price as follows:

Maximum output of	.6-50V	100V
Case size M6	\$25.00	\$35.00
Case size M9	25.00	35.00
Case size M13	25.00	35.00
Case size H11	25.00	35.00
Case size H16	75.00	85.00
Case size 3P11	35.00	45.00
Case size 5P12	35.00	45.00
Case size 3P17	35.00	
Case size 5P17	85.00	

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$40.00 to price. (For models in case sizes M6, M9 and M13, add \$25.00.) The "-230" option requires two additional days.

**Ammeter (Rack Mounting models):** Add suffix "A" to model number and \$60.00 to price.

**Voltmeter (Rack Mounting models):** Add suffix "F" to model number and \$60.00 to price.

**Handles (Rack Mounting models):** Add suffix "H" to model number and \$30.00 to price.

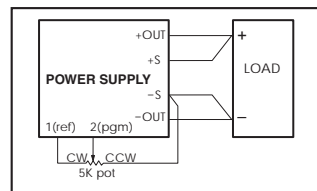
**Front Panel Controls (Rack Mounting models):** For voltage controls (coarse and fine) mounted on the front panel, instead of the standard screwdriver-slot adjustments at the rear, add suffix "P" to the model number and \$25.00 to price.



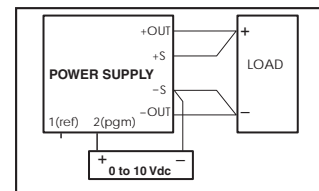


### GOLD BOX MODELS

Output Voltage Range	Output Current Amps. at			Case Size	Model	Price(\$)
	40°C	55°C	71°C			
0-6	1.2	1.2	1.2	M6	Y06MX120	245
0-6	2.0	2.0	2.0	M6	Y06MX200	265
0-6	3.0	2.5	2.0	M6	Y06MX300	300
0-6	5.0	4.0	3.0	M9	Y06MX500	355
0-6	8.0	7.0	6.0	M13	Y06MX800	395
0-6	12.0	10.0	7.0	H11	Y06HX1200	480
0-6	16.0	13.0	10.0	H16	Y06HX1600	555
0-15	1.0	1.0	1.0	M6	Y015MX100	225
0-15	2.0	1.6	1.2	M6	Y015MX200	290
0-15	3.0	2.4	1.8	M9	Y015MX300	355
0-15	5.0	4.0	2.5	M13	Y015MX500	395
0-15	8.0	6.0	4.0	H11	Y015HX800	495
0-15	10.0	8.0	6.0	H16	Y015HX1000	555
0-30	.50	.50	.50	M6	Y030MX50	255
0-30	1.0	1.0	1.0	M6	Y030MX100	290
0-30	1.6	1.4	1.2	M9	Y030MX160	330
0-30	2.5	2.0	1.5	M13	Y030MX250	390
0-30	4.0	3.0	2.0	H11	Y030HX400	505
0-30	5.0	4.0	3.0	H16	Y030HX500	570
0-50	.35	.34	.33	M6	Y050MX35	275
0-50	.60	.50	.40	M6	Y050MX60	330
0-50	.85	.75	.65	M9	Y050MX85	380
0-50	1.2	.96	.72	M13	Y050MX120	445
0-50	2.4	1.9	1.4	H11	Y050HX240	560
0-50	3.0	2.4	1.8	H16	Y050HX300	645
0-100	.10	.09	.08	M6	Y0100MX10	330
0-100	.25	.20	.15	M6	Y0100MX25	380
0-100	.45	.36	.27	M9	Y0100MX45	435
0-100	.60	.48	.36	M13	Y0100MX60	490
0-100	1.2	.96	.72	H11	Y0100HX120	605
0-100	1.5	1.2	.90	H16	Y0100HX150	685



Programming with a Potentiometer

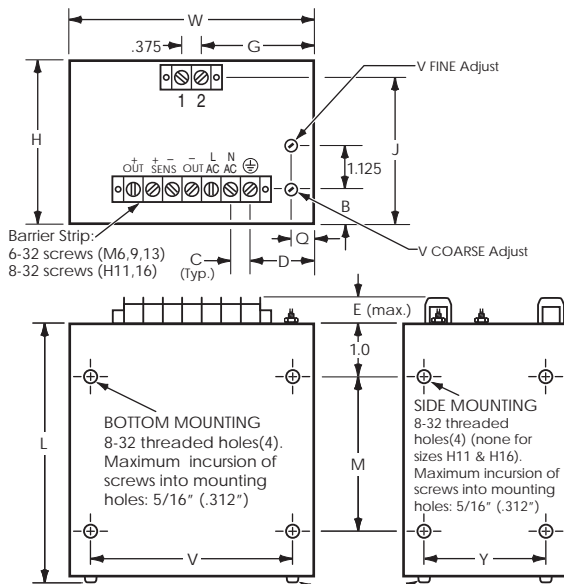


Programming with a Control Voltage

### RACK MOUNTING MODELS

Output Voltage Range	Output Current Amps. at			Case Size	Model	Price(\$)
	40°C	55°C	71°C			
0-6	10.0	8.0	6.0	3P11	Y06PX10	600
0-6	16.0	12.8	9.6	5P12	Y06PX16	720
0-6	23.0	18.4	13.8	3P17	Y06PX23	875
0-6	30.0	24.0	18.0	5P17	Y06PX30	1010
0-15	7.0	5.6	4.2	3P11	Y015PX7	600
0-15	10.0	8.0	6.0	5P12	Y015PX10	720
0-15	13.0	10.4	7.8	3P17	Y015PX13	875
0-30	4.0	3.2	2.4	3P11	Y030PX4	600
0-30	5.0	4.0	3.0	5P12	Y030PX5	720
0-30	7.0	5.6	4.2	3P17	Y030PX7	875
0-30	9.0	7.2	5.4	5P17	Y030PX9	1010
0-50	2.4	1.9	1.5	3P11	Y050PX2	600
0-50	3.0	2.4	1.8	5P12	Y050PX3	720
0-50	5.0	4.0	3.0	5P17	Y050PX5	1010
0-100	1.2	.9	.7	3P11	Y0100PX1.2	655
0-100	1.5	1.2	.9	5P12	Y0100PX1.5	825

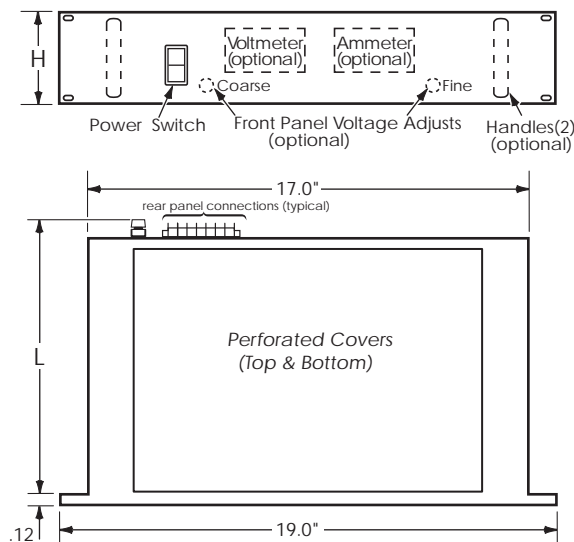
### Gold Box



For REAR MOUNTING, remove original screws(4) and use 8-32 Type F self-tapping screws. They should extend at least 5/16" (0.312") into the power supply case.

Case Size	L	W	H	M	V	Y	E	Q	B	C	D	G	J	Approx. Weight
M6	6.59	5.12	3.44	4.0	4.5	3.0	.58	.5	.75	.375	1.44	2.37	3.09	5 lb. 10 oz.
M9	9.25	5.12	3.44	6.0	4.5	3.0	.58	.5	.75	.375	1.44	2.37	3.09	6 lb. 7 oz.
M13	13.25	5.12	3.44	10.0	4.5	3.0	.58	.5	.75	.375	1.44	2.37	3.09	8 lb. 8 oz.
H11	11.25	7.37	5.12	8.0	6.75	4.56	.78	1.12	1.25	.562	2.25	3.75	4.72	13 lb. 3 oz.
H16	16.00	7.37	5.12	11.0	6.75	4.56	.78	1.12	1.25	.562	2.25	3.75	4.72	18 lb.

### Rack Mounting



Case Size	H	L	Approx. Weight
3P11	3 1/2"	10 7/8"	16 lb.
3P17	3 1/2"	16 13/16"	26 lb.
5P12	5 1/4"	11 15/16"	20 lb.
5P17	5 1/4"	16 13/16"	30 lb.



## Gold Box & Narrow Profile DUAL TRACKING OUTPUTS

LINEAR REGULATED  
AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- (Gold Box models)
- Five Year Warranty



Narrow Profile

Gold Box

These dual output power supplies are a convenient source of the tracking voltages required for powering operational amplifiers and related circuits. Their positive/common/negative output terminal configuration

minimizes system wiring. Provision for remote sensing permits compensation of load line effects. Although moderately priced, they are sturdily constructed and conservatively rated.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Voltages:** Tracking within 1%.

**Load Regulation:**  $\pm 0.1\%$ .

**Line Regulation:**  $\pm 0.1\%$ .

**Ripple:** 1.5 mV rms.

**Polarity:** Positive output, common, and negative output.

**Remote Voltage Sensing:** Standard.

**Overload/Short Circuit Protection:** Electronic current limiting.

**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:** -10 to +71°C.

**Storage Temperature:** -55 to +85°C.

**Dimensions:** See page 63 for case dimensions.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

### OPTIONS

**Overvoltage Protection:** A built-in preset overvoltage protection circuit is available on all models. If either output fails, both outputs are 'crowbarred'. To order, add prefix "V" to the model number, and increase standard price by \$30.00.

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

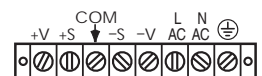
**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.

### GOLD BOX MODELS

Nominal Output Voltages	Adjust Range $\pm V$	Amps. per Output at			(\$) Price	Model	Case Size
		40°C	55°C	71°C			
$\pm 5$	.5	.750	.650	.550	\$230	TD5-75	TG5
$\pm 5$	.5	1.5	1.25	1.0	\$270	TD5-150	TG6
$\pm 5$	.5	2.5	2.0	1.5	\$325	TD5-250	TG9
$\pm 12$	1	1.0	.900	.800	\$235	TD12-100	TG5
$\pm 12$	1	1.6	1.4	1.0	\$275	TD12-160	TG6
$\pm 12$	1	2.5	2.0	1.5	\$325	TD12-250	TG9
$\pm 12$	.5	4.5	3.7	3.0	\$390	TD12-450	TG13
$\pm 12$	.5	8.5	7.0	5.5	\$495	TD12-850	TH11
$\pm 15$	1	.400	.400	.400	\$180	TD15-40	TG5
$\pm 15$	1	1.0	.900	.800	\$235	TD15-100	TG5
$\pm 15$	1	1.6	1.4	1.0	\$275	TD15-160	TG6
$\pm 15$	1	2.5	2.0	1.5	\$325	TD15-250	TG9
$\pm 15$	.5	4.5	3.7	3.0	\$390	TD15-450	TG13
$\pm 15$	.5	8.5	7.0	5.5	\$495	TD15-850	TH11

### FRONT COVER CONNECTIONS:

(See page 63 for complete drawing.)



### NARROW PROFILE MODELS (for limited space applications)

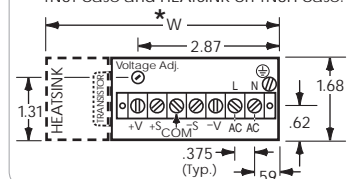
Nominal Output Voltages	Adjust Range $\pm V$	Amps. per Output at			(\$) Price	Model	Case Size
		40°C	55°C	71°C			
$\pm 12^*$	1	.500	.500	.400	\$195	FD12-50A	TN6T
$\pm 12^*$	.5	1.0	.900	.800	\$260	LD12-100	TN8H
$\pm 15^*$	1	.500	.500	.400	\$195	FD15-50A	TN6T
$\pm 15^*$	.5	1.0	.900	.800	\$260	LD15-100	TN8H

\* Not CE certified.

See page 63 for complete drawing.

### FRONT COVER for TN6T & TN8H cases.

\* W dimension includes TRANSISTOR on TN6T case and HEATSINK on TN8H case.





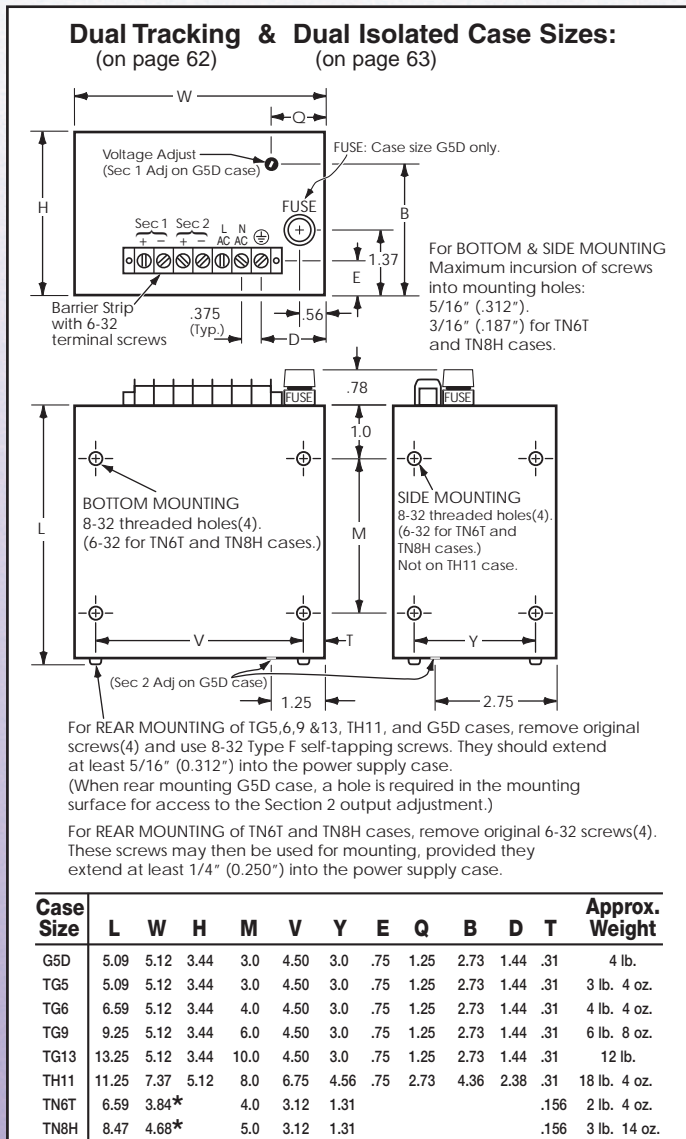


**Gold Box**  
**DUAL ISOLATED OUTPUTS**  
**(User-selectable)**  
 LINEAR REGULATED  
 AC-DC



- Shipped Within 3 Days
- All Models U.L. Recognized
- Five Year Warranty

Acopian general purpose duals furnish two completely independent outputs, either identical or different, in less space and at less cost than two equivalent single output supplies. Thousands of output voltage/current rating combinations are available. Mounting and system wiring are simplified. Quality components, generously derated, insure long-term reliability.





# DUAL OUTPUT (User-selectable)

## (OUTPUTS TO 2 AMPS.)

Nominal Output Voltage	Adjust Range $\pm V$	Output Current Amps.	Regulation		Ripple mV RMS	(see 'How to Order')	
			Load $\pm \%$	Line $\pm \%$		Price per Section (\$)	Section
1.5	.5	.400	.5	.1	1	\$110	1.5GT40D
2.5	.5	.400	.5	.1	1	\$110	2.5GT40D
3	.5	.400	.5	.1	1	\$110	3GT40D
3	.5	.700	.5	.1	1	\$115	3GT70D
3	.5	1.0	.5	.1	1	\$120	3GT100D
3.3	.5	.400	.3	.1	1	\$110	3.3GT40D
3.3	.5	.700	.4	.1	1	\$115	3.3GT70D
3.3	.5	1.0	.5	.1	1	\$120	3.3GT100D
5	.5	.500	.3	.05	1	\$110	5GT50D
5	.5	.700	.4	.05	1	\$115	5GT70D
5	.5	1.0	.5	.05	1	\$120	5GT100D
5	.25	2.0	.5	.05	1	\$140	5GT200D
6	1	.500	.15	.05	1	\$110	6GT50D
6	.5	.700	.2	.05	1	\$115	6GT70D
6	.5	1.0	.3	.05	1	\$120	6GT100D
7	1	.500	.15	.05	1	\$110	7GT50D
7	.5	.700	.2	.05	1	\$115	7GT70D
7	.5	1.0	.3	.05	1	\$120	7GT100D
8	1	.500	.1	.05	1	\$110	8GT50D
8	.5	.700	.15	.05	1	\$115	8GT70D
8	.5	1.0	.2	.05	1	\$120	8GT100D
9	1	.500	.1	.05	1	\$110	9GT50D
9	.5	.700	.15	.05	1	\$115	9GT70D
9	.5	1.0	.2	.05	1	\$120	9GT100D
10	1	.500	.1	.05	1	\$110	10GT50D
10	.5	.700	.15	.05	1	\$115	10GT70D
10	.5	1.0	.2	.05	1	\$120	10GT100D
12	1	.500	.1	.05	1	\$110	12GT50D
12	.5	.700	.1	.05	1	\$115	12GT70D
12	.5	1.0	.1	.05	1	\$120	12GT100D
14	1	.500	.1	.05	1	\$110	14GT50D
14	.5	.700	.1	.05	1	\$115	14GT70D
14	.5	1.0	.1	.05	1	\$120	14GT100D
15	1	.500	.1	.05	1	\$110	15GT50D
15	.5	.700	.1	.05	1	\$115	15GT70D
15	.5	1.0	.1	.05	1	\$120	15GT100D
16	1	.500	.1	.05	1	\$110	16GT50D
16	.5	.700	.1	.05	1	\$115	16GT70D
16	.5	1.0	.1	.05	1	\$130	16GT100D
18	1	.500	.1	.05	1	\$110	18GT50D
18	.5	.700	.1	.05	1	\$115	18GT70D
18	.5	1.0	.1	.05	1	\$130	18GT100D
19	1	.500	.1	.05	1	\$110	19GT50D
19	.5	.750	.1	.05	1	\$120	19GT75D
20	1	.500	.1	.05	1	\$110	20GT50D
20	.5	.750	.1	.05	1	\$120	20GT75D

## (90 TO 150 VOLTS)

Nominal Output Voltage	Adjust Range $\pm V$	Output Current Amps.	Regulation		Ripple mV RMS	(see 'How to Order')	
			Load $\pm \%$	Line $\pm \%$		Price per Section (\$)	Section
90	1	.050	.05	.05	1	\$130	90GT05D
90	1	.100	.05	.05	1	\$145	90GT10D
95	1	.050	.05	.05	1	\$135	95GT05D
95	1	.100	.05	.05	1	\$150	95GT10D
100	1	.050	.05	.05	1	\$140	100GT05D
100	1	.100	.05	.05	1	\$155	100GT10D
105	1	.050	.05	.05	1	\$140	105GT05D
105	1	.100	.05	.05	1	\$155	105GT10D
110	1	.050	.05	.05	1	\$145	110GT05D
110	1	.100	.05	.05	1	\$160	110GT10D
115	1	.050	.05	.05	1	\$145	115GT05D
115	1	.100	.05	.05	1	\$160	115GT10D
120	1	.050	.05	.05	1	\$150	120GT05D
120	1	.100	.05	.05	1	\$165	120GT10D
125	1	.050	.05	.05	1	\$155	125GT05D
125	1	.100	.05	.05	1	\$170	125GT10D
130	1	.050	.05	.05	1	\$155	130GT05D
130	1	.100	.05	.05	1	\$170	130GT10D
135	1	.050	.05	.05	1	\$155	135GT05D
135	1	.100	.05	.05	1	\$170	135GT10D
140	1	.050	.05	.05	1	\$155	140GT05D
140	1	.100	.05	.05	1	\$170	140GT10D
145	1	.050	.05	.05	1	\$155	145GT05D
145	1	.100	.05	.05	1	\$170	145GT10D
150	1	.050	.05	.05	1	\$155	150GT05D
150	1	.100	.05	.05	1	\$170	150GT10D

**Gold Box**  
**DUAL ISOLATED OUTPUTS**  
**(5v/12v combinations)**  
 LINEAR REGULATED  
 AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- 
- Five Year Warranty



**Dual isolated output power supplies** may be connected to provide any desired arrangement of positive and negative output voltages. Each voltage is independently

adjustable. No derating is required up to +60°C. A separate overvoltage protector on each output is available as a built-in option.

**SPECIFICATIONS**

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Polarity:** Outputs are floating. Each may be independently connected to provide any combination of positive and negative voltages. Outputs may be floated up to 300 volts above ground.

**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:** -10 to +60°C.  
 No derating required.

**Storage Temperature:** -55 to +85°C.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

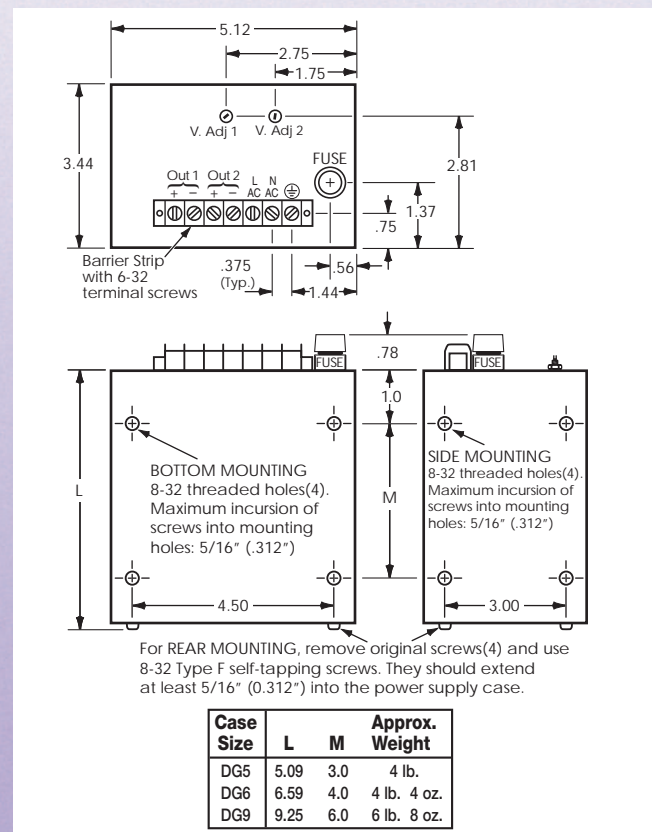
**OPTIONS**

**Overvoltage Protection:** Two separate, preset overvoltage protection circuits, one for each output. To order, add prefix "V" to model number and add \$45.00 to the standard price.

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. To order, add suffix "-230" to model number and \$25.00 to the standard price. The "-230" option requires two additional days.

Nominal Output Voltages	Adjust Range ± V	Output Current Amps.	Regulation		Ripple mV RMS	(\$)	Model	Case Size
			Load ± %	Line ± %				
5 12	.25 1	2.0 .600	.15 .15	.15 .15	1 1	\$235	512D5A	DG5
5 12	.25 1	3.0 1.2	.15 .15	.15 .15	1 1	\$270	512D6A	DG6
5 12	.25 1	6.0 2.4	.15 .15	.15 .15	1 1	\$330	512D9A	DG9





# Gold Box TRIPLE ISOLATED OUTPUTS

LINEAR REGULATED  
AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- **CE**
- Five Year Warranty



**Triple isolated output power supplies** provide the features and characteristics of three supplies in one compact, easy-to-use package. They are available in the voltage combinations most frequently required for driving microprocessors and associated circuitry.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.  
**Polarity:** Outputs are floating. Each output may be independently connected to provide any combination of positive and negative voltages. Outputs may be floated up to 300 volts above ground.

**Temperature Coefficient:** 0.02%/°C (Typical).  
**Ambient Operating Temperature:** -10 to +60°C.  
 No derating required.

**Storage Temperature:** -55 to +85°C.

**Accessory Mounting Kits:** See page 91.

### OPTIONS

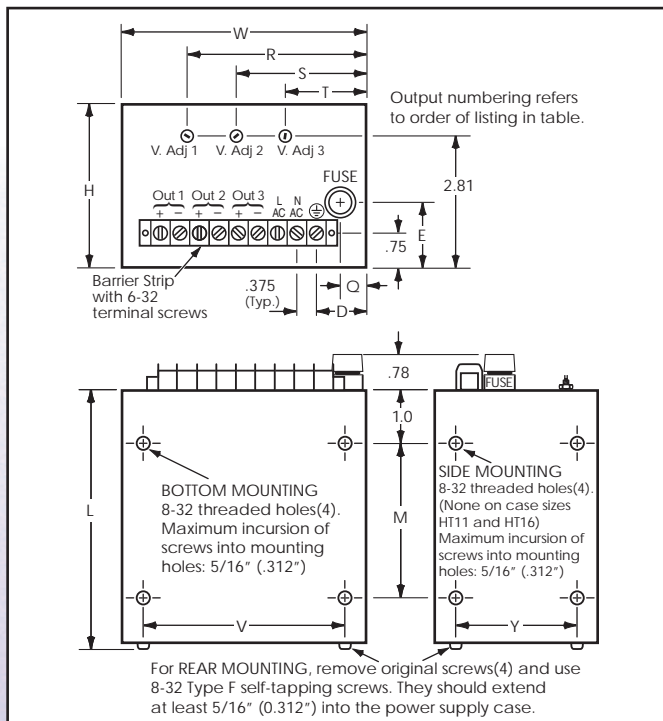
**Overvoltage Protection:** Separate overvoltage protection circuit on each output. Add prefix "3V" to model number and increase standard price as follows:

- Case sizes GT5 - GT13 . . . \$45.00
- Case size HT11 . . . . .65.00
- Case size HT16 . . . . .95.00

**Terminal Strip Cover:** Clips on. To order, add suffix "M" to model number and \$5.00 to price.

**230 Volt Input:** Add suffix "-230" to the model number and \$25.00 to the price. Requires two additional days.

Nominal Output Voltages	Adjust Range ± V	Output Current Amps.	Regulation		Ripple mV RMS	(\$) Price	Model	Case Size
			Load ± %	Line ± %				
5	.25	3.0	.15	.15	1	\$285	512126A	GT6
5	.25	1.0	.15	.15	1			
12	1	.600	.15	.15	1			
5	.25	6.0	.15	.15	1	\$350	512129A	GT9
5	.25	2.0	.15	.15	1			
12	1	1.2	.15	.15	1			
5	.25	6.0	.15	.15	1	\$350	59129A	GT9
9	1	1.4	.15	.15	1			
12	1	1.2	.15	.15	1			
5	.25	2.0	.15	.15	1	\$255	512125A	GT5
12	1	.300	.15	.15	1			
12	1	.300	.15	.15	1			
5	.25	3.0	.15	.15	1	\$285	512126A	GT6
12	1	.600	.15	.15	1			
12	1	.600	.15	.15	1			
5	.25	6.0	.15	.15	1	\$350	512129A	GT9
12	1	1.2	.15	.15	1			
12	1	1.2	.15	.15	1			
5	.25	8.0	.15	.15	1	\$390	5121213A	GT13
12	1	1.3	.15	.15	1			
12	1	1.3	.15	.15	1			
5	.5	15.0	.15	.15	1	\$465	5121211A	HT11
12	1	2.0	.15	.15	1			
12	1	2.0	.15	.15	1			



Case Size	L	W	H	M	V	Y	D	E	Q	R	S	T	Approx. Weight
GT5	5.09	5.12	3.44	3.0	4.50	3.0	1.06	1.37	.56	3.75	2.75	1.75	4 lb. 14 oz.
GT6	6.59	5.12	3.44	4.0	4.50	3.0	1.06	1.37	.56	3.75	2.75	1.75	5 lb. 8 oz.
GT9	9.25	5.12	3.44	6.0	4.50	3.0	1.06	1.37	.56	3.75	2.75	1.75	7 lb. 4 oz.
GT13	13.25	5.12	3.44	10.0	4.50	3.0	1.06	1.37	.56	3.75	2.75	1.75	12 lb.
HT11	11.25	7.37	5.12	8.0	6.75	4.56	2.18	3.25	1.13	4.88	3.88	2.88	18 lb. 4 oz.
HT16	16.00	7.37	5.12	11.0	6.75	4.56	2.18	3.25	1.13	4.88	3.88	2.88	26 lb.

Nominal Output Voltages	Adjust Range ± V	Output Current Amps.	Regulation		Ripple mV RMS	(\$) Price	Model	Case Size
			Load ± %	Line ± %				
5	.5	20.0	.15	.15	1	\$525	51212T16A	HT16
12	1	3.0	.15	.15	1			
12	1	3.0	.15	.15	1			
5	.25	2.0	.15	.15	1	\$255	51515T5A	GT5
15	1	.250	.15	.15	1			
15	1	.250	.15	.15	1			
5	.25	3.0	.15	.15	1	\$285	51515T6A	GT6
15	1	.500	.15	.15	1			
15	1	.500	.15	.15	1			
5	.25	6.0	.15	.15	1	\$350	51515T9A	GT9
15	1	1.0	.15	.15	1			
15	1	1.0	.15	.15	1			
5	.25	8.0	.15	.15	1	\$390	51515T13A	GT13
15	1	1.1	.15	.15	1			
15	1	1.1	.15	.15	1			
5	.5	15.0	.15	.15	1	\$465	51515T11A	HT11
15	1	1.5	.15	.15	1			
15	1	1.5	.15	.15	1			
5	.5	20.0	.15	.15	1	\$525	51515T16A	HT16
15	1	2.5	.15	.15	1			
15	1	2.5	.15	.15	1			

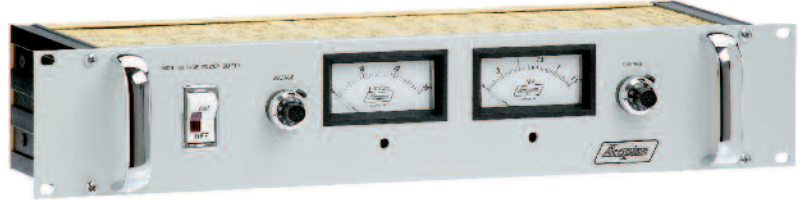


## High Voltage AC-DC

RACK MOUNTING  
REGULATED

Output ranges: 0 - 1,000 volts to 0 - 30,000 volts

- Shipped Within 9 Days
- Five Year Warranty  
(internal encapsulated module - One Year)



**Ideal for laboratory and instrumentation** applications, these rack mounting supplies have the same output ratings and specifications as the modular supplies shown on pages 70 and 71, but additionally feature calibrated

ten-turn controls (with locking vernier dials) for precisely setting voltage and current. Voltmeter, ammeter and handles are standard. An 8' long shielded output cable is included.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Input Current:**

30 watt output ratings: 0.6A

60 watt output ratings: 1.2A

**Output Polarity:** Positive output is standard. For negative output, change first letter of model number from P to N.

**Regulation (constant voltage operation):**

**Line:**  $\pm 0.05\%$

**Load:**  $\pm 0.05\%$

**Regulation (constant current operation):**

**Line:**  $\pm 0.1\%$

**Load:**  $\pm 0.1\%$  plus 50  $\mu\text{A}$ .

**Ripple:** 0.05%, peak-to-peak.

**Output Controls:** Voltage and current may be controlled by means of two 10-turn front panel adjustments with locking vernier dials. Control linearity is 1% of full rated output. Calibration accuracy is 1% of rated output plus 1% of setting. (Remotely located 1000 ohm potentiometers may alternately be used for output control.)

**Metering:** Voltmeter and ammeter are standard. Accuracy is 2% of full scale.

**Voltage Monitor Terminal:** Permits remote monitoring of output voltage, stepped down by ratio shown. Accuracy is 2% of maximum rated output voltage.

**Current Monitor Terminal:** Permits remote monitoring of output current, at mV/mA ratio shown. Accuracy is 2% of maximum rated output current.

**Inhibit Terminal:** Grounding inhibits output.

**Input Protection:** "Soft start" circuit minimizes start-up power stresses.

**Output Programming:** Output voltage and current may be programmed from 0 to full rating by means of control voltage inputs of 0 to +5.1 Vdc,  $\pm 2\%$ .

**Output Protection:** Current regulation circuit protects power supply from short circuits, overload, and arcing.

**Response Time:** Less than 5 mS for 100  $\mu\text{A}$  load step change.

**Stability:** 0.05% over eight hours, after 30 minute warmup.

**Temperature Coefficient:** 200 PPM/ $^{\circ}\text{C}$  = 0.02%/ $^{\circ}\text{C}$  (Typical).

**Ambient Operating Temperature:**  $-10$  to  $+60^{\circ}\text{C}$ . No derating required.

**Storage Temperature:**  $-20$  to  $+85^{\circ}\text{C}$ .

**Humidity:** Maximum of 90% relative, non-condensing.

**Connections:**

**Input, Control and Monitoring:** Screw terminals.

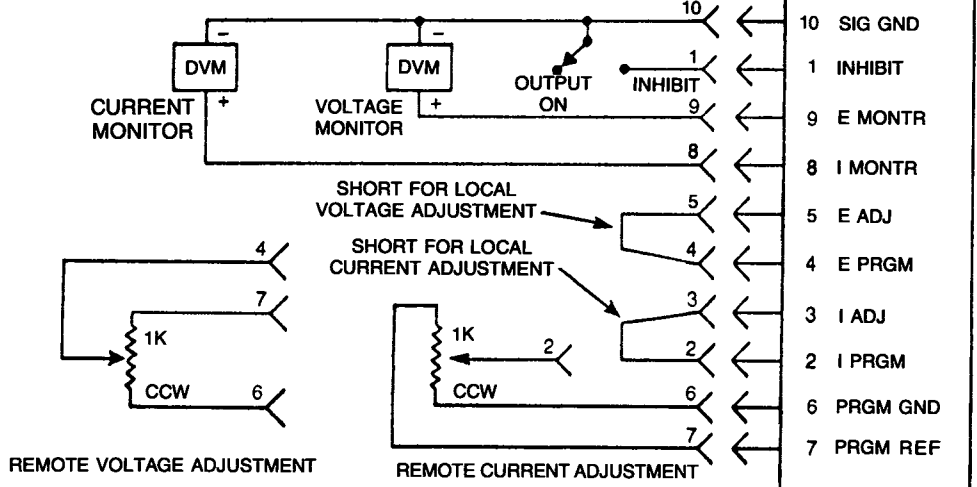
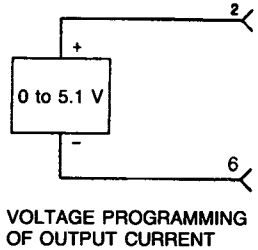
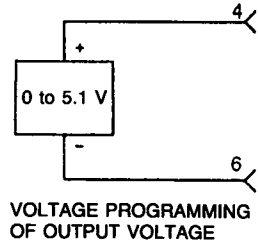
**Output:** High voltage connector (Type varies with model number). An 8' shielded output cable, with mating connector installed, is provided.

### OPTIONS

**Terminal Strip Cover:** Clips on AC input terminal strip. To order, add suffix "M" to model number and \$5.00 to price.

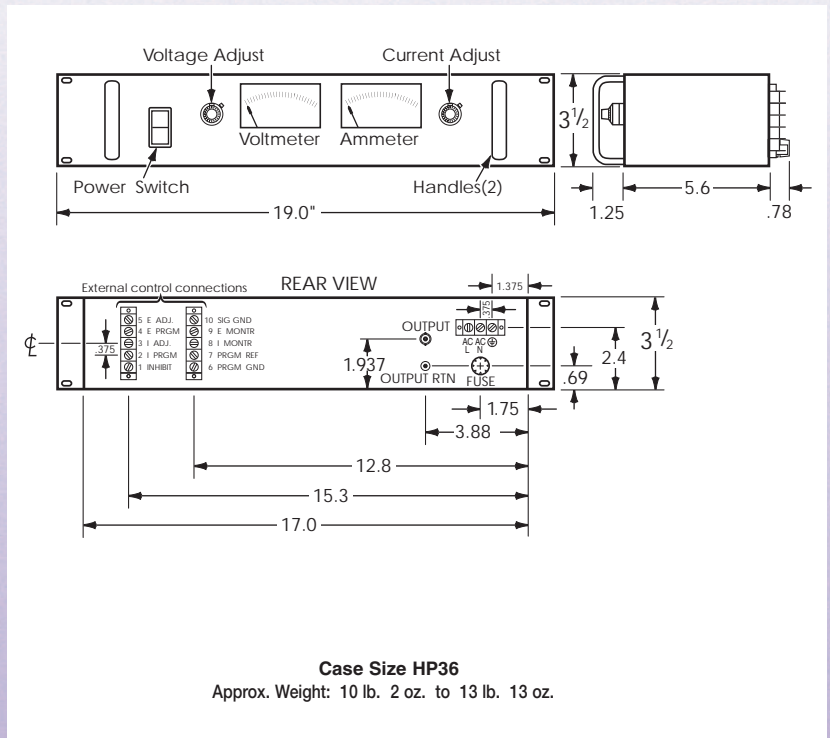
**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz, single phase. To order, add suffix "-230" to model number and add \$40.00 to price. The "-230" option requires two additional days.

## REMOTE PROGRAMMING AND MONITORING



Output Range kVdc	Output Current mA	Output Monitor Ratio		(\$) Price	Model (Positive Output) *
		Voltage	Current mV/mA		
0-1	30	1,000:1	100:1	1090	P01HP30
0-1	60	1,000:1	10:1	1195	P01HP60
0-1.5	20	1,000:1	100:1	1195	P01.5HP20
0-1.5	40	1,000:1	100:1	1305	P01.5HP40
0-2	15	1,000:1	100:1	1090	P02HP15
0-2	30	1,000:1	100:1	1195	P02HP30
0-2.5	12	1,000:1	100:1	1090	P02.5HP12
0-2.5	24	1,000:1	100:1	1195	P02.5HP24
0-3.5	8.5	1,000:1	100:1	1090	P03.5HP8.5
0-3.5	17	1,000:1	100:1	1195	P03.5HP17
0-5	6	10,000:1	100:1	1145	P05HP6
0-5	12	10,000:1	100:1	1255	P05HP12
0-7.5	4	10,000:1	100:1	1145	P07.5HP4
0-7.5	8	10,000:1	100:1	1255	P07.5HP8
0-10	3	10,000:1	1,000:1	1145	P010HP3
0-10	6	10,000:1	100:1	1255	P010HP6
0-12	2.5	10,000:1	1,000:1	1145	P012HP2.5
0-12	5	10,000:1	100:1	1255	P012HP5
0-15	2	10,000:1	1,000:1	1195	P015HP2
0-15	4	10,000:1	100:1	1305	P015HP4
0-18	1.6	10,000:1	1,000:1	1195	P018HP1.6
0-18	3.2	10,000:1	1,000:1	1305	P018HP3.2
0-20	1.5	10,000:1	1,000:1	1195	P020HP1.5
0-20	3	10,000:1	1,000:1	1305	P020HP3
0-22	1.3	10,000:1	1,000:1	1255	P022HP1.3
0-22	2.6	10,000:1	1,000:1	1360	P022HP2.6
0-25	1.2	10,000:1	1,000:1	1305	P025HP1.2
0-25	2.4	10,000:1	1,000:1	1415	P025HP2.4
0-30	1	10,000:1	1,000:1	1305	P030HP1
0-30	2	10,000:1	1,000:1	1415	P030HP2

\* Positive output is standard. For negative output, change first letter of model number from P to N.



# High Voltage AC-DC

MODULAR  
REGULATED

Output ranges:

0 - 1,000 volts to 0 - 30,000 volts

- Shipped Within 6 Days
- Five Year Warranty  
(internal encapsulated module - One Year)



These modular High Voltage supplies may be used as constant voltage or constant current sources. They may be remotely programmed by means of either voltage or resistance, and have provisions for remote monitoring and output inhibiting. All control and monitoring connections

## SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Polarity:** Positive output is standard. For negative output, change first letter of model number from P to N.

**Regulation (constant voltage operation):**

**Line:**  $\pm 0.05\%$

**Load:**  $\pm 0.05\%$

**Regulation (constant current operation):**

**Line:**  $\pm 0.1\%$

**Load:**  $\pm 0.1\%$  plus 50  $\mu\text{A}$ .

**Ripple:** 0.05%, peak-to-peak.

**Output Controls:** Voltage and current may be controlled by means of two 20-turn front panel adjustments, or by using remotely located 1000 ohm potentiometers.

**Output Programming:** Output voltage and current may be programmed from 0 to full rating by means of control voltage inputs of 0 to +5.1 Vdc.

**Voltage Monitor Terminal:** Permits monitoring output voltage, stepped down by ratio shown. Accuracy is 2% of maximum rated output voltage.

**Current Monitor Terminal:** Permits monitoring output current at mV/mA ratio shown. Accuracy is 2% of maximum rated output current.

**Inhibit Terminal:** Grounding inhibits output.

**Input Protection:** "Soft start" circuit minimizes start-up power stresses.

**Output Protection:** Current regulation circuit protects power supply from short circuits, overload, and arcing.

**Efficiency:** Greater than 70% at full load.

**Response Time:** Less than 5 mS for 100  $\mu\text{A}$  load step change.

are on a pluggable terminal block that functions as a connector, providing wiring convenience and permitting easy and rapid connect/disconnect. Outputs are arc/short circuit protected.

**Stability:** 0.05% over eight hours, after 30 minute warmup.

**Temperature Coefficient:** 200 PPM/ $^{\circ}\text{C}$  = 0.02%/ $^{\circ}\text{C}$  (Typical).

**Ambient Operating Temperature:**  $-10$  to  $+60^{\circ}\text{C}$ . No derating required.

**Storage Temperature:**  $-20$  to  $+85^{\circ}\text{C}$ .

**Humidity:** Maximum of 90% relative, non-condensing.

**Connections:** 24" flying lead for high side of output and 5-way binding post for return (ground) are at the rear. AC input connections on separate terminal strip. All other connections on pluggable terminal block.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface, see accessory Mounting Kit GB8 on page 91.

## OPTIONS

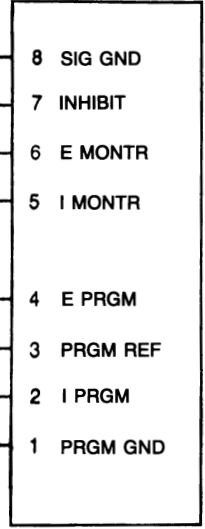
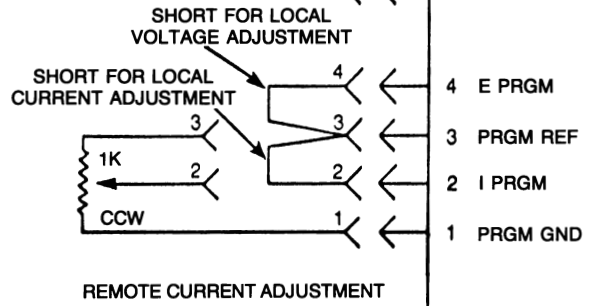
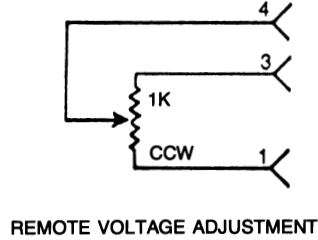
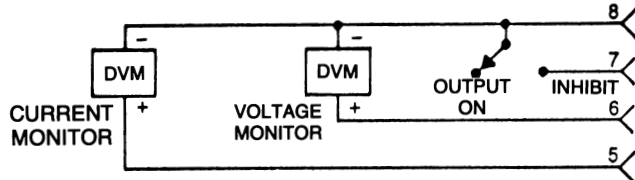
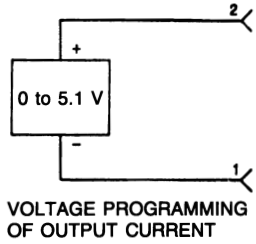
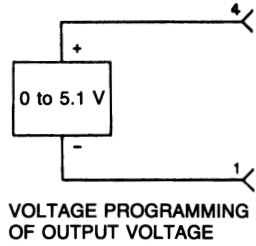
**Terminal Strip Cover:** Clips on AC input terminal strip. To order, add suffix "M" to model number and \$5.00 to price.

**Output Connector:** Models with an output of 5000 volts or less can be provided with an MHV connector (and 8' long detachable shielded output cable with mating MHV connector installed on one end) instead of the flying lead. To order, add suffix letter "T" to the model number and \$50.00 to price.

**230 Volt Input:** For operation on inputs of 210-250 VAC, 50-400 Hz, single phase. To order, add suffix "-230" to model number and \$40.00 to price. The "-230" option requires two additional days.



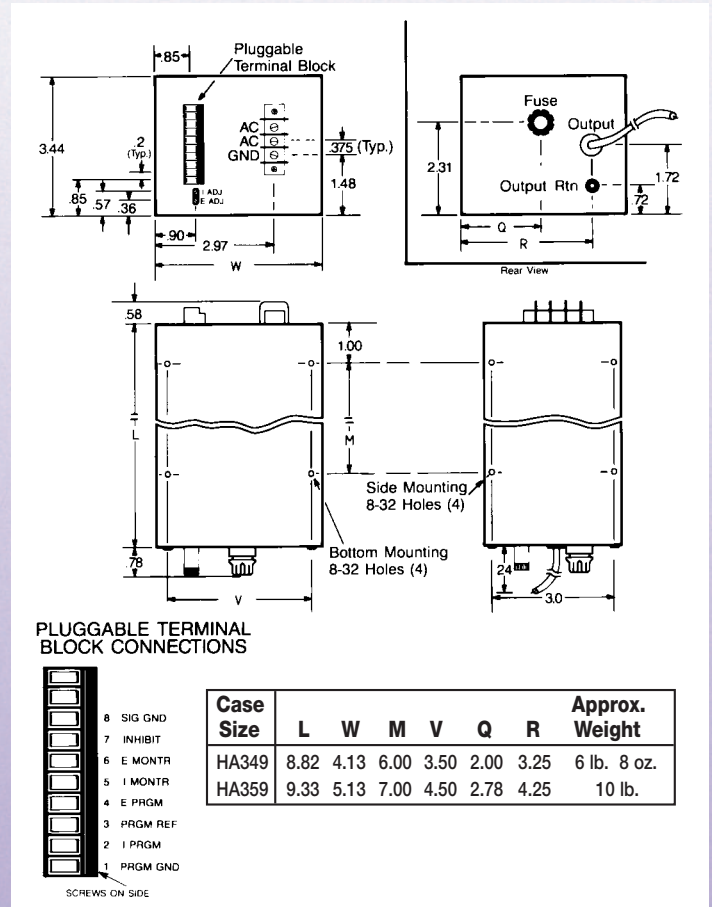
## REMOTE PROGRAMMING AND MONITORING



## AC-DC MODELS

Output Range kVdc	Output Current mA	Output Monitor Ratio		(\$) Price	Model (Positive Output)*	Case Size
		Voltage	Current mV/mA			
0-1	30	1,000:1	100:1	650	P01HA30	HA349
0-1	60	1,000:1	10:1	760	P01HA60	HA359
0-1.5	20	1,000:1	100:1	650	P01.5HA20	HA349
0-1.5	40	1,000:1	100:1	760	P01.5HA40	HA359
0-2	15	1,000:1	100:1	650	P02HA15	HA349
0-2	30	1,000:1	100:1	760	P02HA30	HA359
0-2.5	12	1,000:1	100:1	650	P02.5HA12	HA349
0-2.5	24	1,000:1	100:1	760	P02.5HA24	HA359
0-3.5	8.5	1,000:1	100:1	650	P03.5HA8.5	HA349
0-3.5	17	1,000:1	100:1	760	P03.5HA17	HA359
0-5	6	10,000:1	100:1	720	P05HA6	HA349
0-5	12	10,000:1	100:1	830	P05HA12	HA359
0-7.5	4	10,000:1	100:1	720	P07.5HA4	HA349
0-7.5	8	10,000:1	100:1	830	P07.5HA8	HA359
0-10	3	10,000:1	1,000:1	720	P010HA3	HA349
0-10	6	10,000:1	100:1	830	P010HA6	HA359
0-12	2.5	10,000:1	1,000:1	720	P012HA2.5	HA349
0-12	5	10,000:1	100:1	830	P012HA5	HA359
0-15	2	10,000:1	1,000:1	760	P015HA2	HA349
0-15	4	10,000:1	100:1	870	P015HA4	HA359
0-18	1.6	10,000:1	1,000:1	760	P018HA1.6	HA349
0-18	3.2	10,000:1	1,000:1	870	P018HA3.2	HA359
0-20	1.5	10,000:1	1,000:1	870	P020HA1.5	HA349
0-20	3	10,000:1	1,000:1	975	P020HA3	HA359
0-22	1.3	10,000:1	1,000:1	870	P022HA1.3	HA349
0-22	2.6	10,000:1	1,000:1	975	P022HA2.6	HA359
0-25	1.2	10,000:1	1,000:1	975	P025HA1.2	HA349
0-25	2.4	10,000:1	1,000:1	1085	P025HA2.4	HA359
0-30	1	10,000:1	1,000:1	975	P030HA1	HA349
0-30	2	10,000:1	1,000:1	1085	P030HA2	HA359

\* Positive output is standard. For negative output, change first letter of model number from P to N.



# High Voltage DC-DC

MODULAR  
REGULATED

Output ranges: 0 - 1,000 volts to 0 - 30,000 volts

- Shipped Within 6 Days
- Five Year Warranty  
(internal encapsulated module - One Year)



**DC inputs from 21.6 to 32.0 volts** may be used for these versatile power supplies. Although their outputs are continuously adjustable from 0 to their maximum ratings, 20-turn controls permit precise setability.

## SPECIFICATIONS

**Input Voltage:** +21.6 to 32.0 Vdc.

**Output Polarity:** Positive output is standard. For negative output, change first letter of model number from P to N.

**Regulation (constant voltage operation):**

**Line:**  $\pm 0.05\%$

**Load:**  $\pm 0.05\%$

**Regulation (constant current operation):**

**Line:**  $\pm 0.1\%$

**Load:**  $\pm 0.1\%$  plus 50  $\mu\text{A}$ .

**Ripple:** 0.05%, peak-to-peak.

**Output Controls:** Voltage and current may be controlled by means of two 20-turn front panel adjustments, or by using remotely located 1000 ohm potentiometers.

**Output Programming:** Output voltage and current may be programmed from 0 to full rating by means of control voltage inputs of 0 to +5.1 Vdc.

**Voltage Monitor Terminal:** Permits monitoring output voltage, stepped down by ratio shown. Accuracy is 2% of maximum rated output voltage.

**Current Monitor Terminal:** Permits monitoring output current at mV/mA ratio shown. Accuracy is 2% of maximum rated output current.

**Inhibit Terminal:** Grounding inhibits output.

**Input Protection:** "Soft start" circuit minimizes start-up power stresses.

**Output Protection:** Current regulation circuit protects power supply from short circuits, overload, and arcing.

These supplies have been designed to withstand severe arcing and short circuits without damage. They are ruggedly constructed with quality components to provide many years of reliable service.

**Efficiency:** Greater than 70% at full load.

**Response Time:** Less than 5 mS for 100  $\mu\text{A}$  load step change.

**Stability:** 0.05% over eight hours, after 30 minute warmup.

**Temperature Coefficient:** 200 PPM/ $^{\circ}\text{C}$  = 0.02%/ $^{\circ}\text{C}$  (Typical).

**Ambient Operating Temperature:**  $-10$  to  $+60^{\circ}\text{C}$ .  
No derating required.

**Storage Temperature:**  $-20$  to  $+85^{\circ}\text{C}$ .

**Humidity:** Maximum of 90% relative, non-condensing.

**Connections:** 24" flying lead for high side of output and 5-way binding post for return (ground). All other connections on pluggable terminal block.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.

## OPTIONS

**Output Connector:** Models with an output of 5000 volts or less can be provided with an MHV connector (and 8' long detachable shielded output cable with mating MHV connector installed on one end) instead of the flying lead. To order, add suffix letter "T" to the model number and \$50.00 to price.

### OPTIONAL OUTPUT CONNECTOR

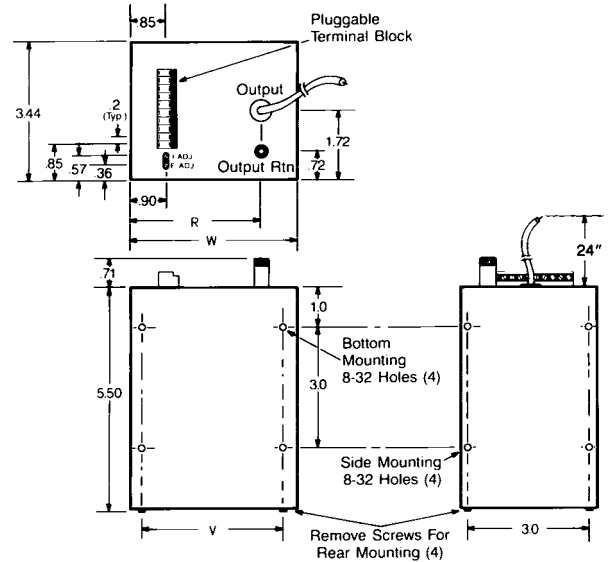
Models with an output of 5000 volts or less can be provided with an MHV connector (and 8' long detachable output cable with mating MHV connector installed on one end) instead of the flying lead. To order, add suffix letter "T" to the model number and \$50.00 to price.



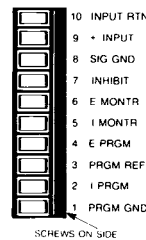
### DC-DC MODELS

Output Range kVdc	Output Current mA	Output Monitor Ratio		(\$) Price	Model (Positive Output)*	Case Size
		Voltage	Current mV/mA			
0-1	30	1,000:1	100:1	545	P01HD30	HD345
0-1	60	1,000:1	10:1	650	P01HD60	HD355
0-1.5	20	1,000:1	100:1	545	P01.5HD20	HD345
0-1.5	40	1,000:1	100:1	650	P01.5HD40	HD355
0-2	15	1,000:1	100:1	545	P02HD15	HD345
0-2	30	1,000:1	100:1	650	P02HD30	HD355
0-2.5	12	1,000:1	100:1	545	P02.5HD12	HD345
0-2.5	24	1,000:1	100:1	650	P02.5HD24	HD355
0-3.5	8.5	1,000:1	100:1	545	P03.5HD8.5	HD345
0-3.5	17	1,000:1	100:1	650	P03.5HD17	HD355
0-5	6	10,000:1	100:1	610	P05HD6	HD345
0-5	12	10,000:1	100:1	720	P05HD12	HD355
0-7.5	4	10,000:1	100:1	610	P07.5HD4	HD345
0-7.5	8	10,000:1	100:1	720	P07.5HD8	HD355
0-10	3	10,000:1	1,000:1	610	P010HD3	HD345
0-10	6	10,000:1	100:1	720	P010HD6	HD355
0-12	2.5	10,000:1	1,000:1	610	P012HD2.5	HD345
0-12	5	10,000:1	100:1	720	P012HD5	HD355
0-15	2	10,000:1	1,000:1	650	P015HD2	HD345
0-15	4	10,000:1	100:1	760	P015HD4	HD355
0-18	1.6	10,000:1	1,000:1	650	P018HD1.6	HD345
0-18	3.2	10,000:1	1,000:1	760	P018HD3.2	HD355
0-20	1.5	10,000:1	1,000:1	760	P020HD1.5	HD345
0-20	3	10,000:1	1,000:1	870	P020HD3	HD355
0-22	1.3	10,000:1	1,000:1	760	P022HD1.3	HD345
0-22	2.6	10,000:1	1,000:1	870	P022HD2.6	HD355
0-25	1.2	10,000:1	1,000:1	870	P025HD1.2	HD345
0-25	2.4	10,000:1	1,000:1	975	P025HD2.4	HD355
0-30	1	10,000:1	1,000:1	870	P030HD1	HD345
0-30	2	10,000:1	1,000:1	975	P030HD2	HD355

\* Positive output is standard. For negative output, change first letter of model number from P to N.



PLUGGABLE TERMINAL BLOCK CONNECTIONS



Case Size	W	V	R	Approx. Weight
HD345	4.13	3.50	3.25	2 lb.
HD355	5.13	4.50	4.25	2 lb. 12 oz.



## DC-DC Converters

Mini Encapsulated - **PC Board mounting**  
REGULATED  
*single & dual tracking outputs*

- Shipped Within 3 Days
- One Year Warranty



**These versatile DC-DC Converters** are ideally suited for powering a wide variety of analog and digital circuitry, such as op amps, logic and microprocessors. They may be mounted directly on a printed circuit board for OEM applications, or installed in a socket for developmental and small quantity requirements. For DC-DC Converters with screw terminals, see pages 76 and 77.

Efficiency is in the order of 65%, and is maintained down to low levels of output current. Input reflected ripple is reduced to less than 1% by means of a standard built-in pi filter, and electrostatic shielding on all six sides minimizes radiated energy. High input/output isolation permits separation of the output from the dc input bus to minimize circuit interaction due to ground loops, and the use of inputs in either polarity.

### SPECIFICATIONS

**Input Voltage:** Nominal voltage  $\pm 10\%$ .

**Input Reflected Ripple:** 1%  $E_{in}$  (max.)

**Output Regulation:**

**Line:**  $\pm 0.02\%$

**Load:**  $\pm 0.05\%$

**Output Ripple (@ 25 MHz bandwidth):**

1 mV rms, 50 mV p-p (5-15V outputs).

1.5 mV rms, 75 mV p-p (18-28V outputs).

**Output Voltage Setting:** Outputs are factory preset to within  $\pm 1\%$  of the nominal output voltage.

**T/C terminal:** For single output models, the T/C terminal can be used to trim the output more precisely to the nominal voltage rating by connecting an external resistor from the T/C terminal to either the + or - terminal. For dual output models, the T/C terminal is the output common.

**Polarity:** The output of single output models may be connected in either polarity. Dual output models have a positive/common/negative output terminal configuration.

**Transient Response (NL-FL):** 50 microseconds.

**Overload/Short Circuit Protection:** Electronic current limiting with automatic recovery. Models in case size ELC-10 also have thermal protection with automatic reset.

**Input/Output Isolation:**

**Voltage:** 500 Vdc

**Resistance:** 100 megohms

**Capacitance:** 100 pF

**Switching Frequency:** 20 kHz minimum.

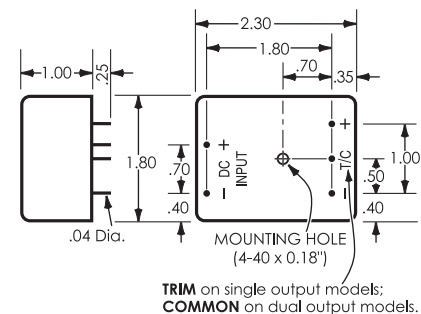
**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:**  $-20$  to  $+71^\circ\text{C}$ .

**Storage Temperature:**  $-40$  to  $+85^\circ\text{C}$ .

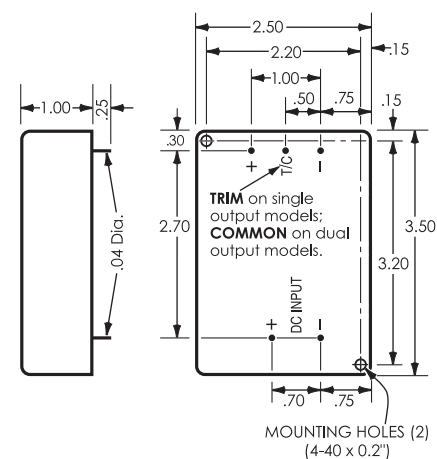
**Humidity:** 20% to 80% R.H. (non-condensing).

**Mounting:** May be mounted on printed circuit board or in socket (see page 34).



**Case Size ESC-10**

Approx. Weight: 5 oz.



**Case Size ELC-10**

Approx. Weight: 12 oz.





## DC-DC Converters

Mini Encapsulated - **with screw terminals**  
REGULATED  
*single & dual tracking outputs*



- Shipped Within 3 Days
- One Year Warranty

**These DC-DC Converters** have the versatility to be used in a broad range of applications. Threaded mounting holes permit them to be mounted to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. Screw terminals provide easy connection without sockets or soldering.

Input/output isolation prevents ground loops, and permits the use of inputs of either polarity; outputs of single output models may be used in either polarity and floated up to 500 volts above the input. Short circuit and thermal protection, and rugged encapsulated construction, assure years of reliable service.

### SPECIFICATIONS

**Input Voltage:** Nominal voltage  $\pm 10\%$ .

**Input Reflected Ripple:**  $1\% E_{in}$  (max.)

**Output Ripple** (@25 MHz bandwidth):  
1 mV rms, 50 mV p-p (5-15V outputs).  
1.5 mV rms, 75 mV p-p (18-28V outputs).

**Output Voltage Setting:** Outputs are factory preset to within  $\pm 1\%$  of the nominal output voltage.

**T/C terminal:** For single output models, the T/C terminal can be used to trim the output more precisely to the nominal voltage rating by connecting an external resistor from the T/C terminal to either the + or - terminal. For dual output models, the T/C terminal is the output common.

**Polarity:** The output of single output models may be connected in either polarity. Dual output models have a positive/common/negative output terminal configuration.

**Transient Response (NL-FL):** 50 microseconds.

**Overload/Short Circuit Protection:** Electronic current limiting with automatic recovery. All models have thermal protection with automatic reset.

**Input/Output Isolation:**

- Voltage: 500 Vdc
- Resistance: 100 megohms
- Capacitance: 100 pF

**Switching Frequency:** 20 kHz minimum.

**Temperature Coefficient:**  $0.02\%/^{\circ}\text{C}$  (Typical).

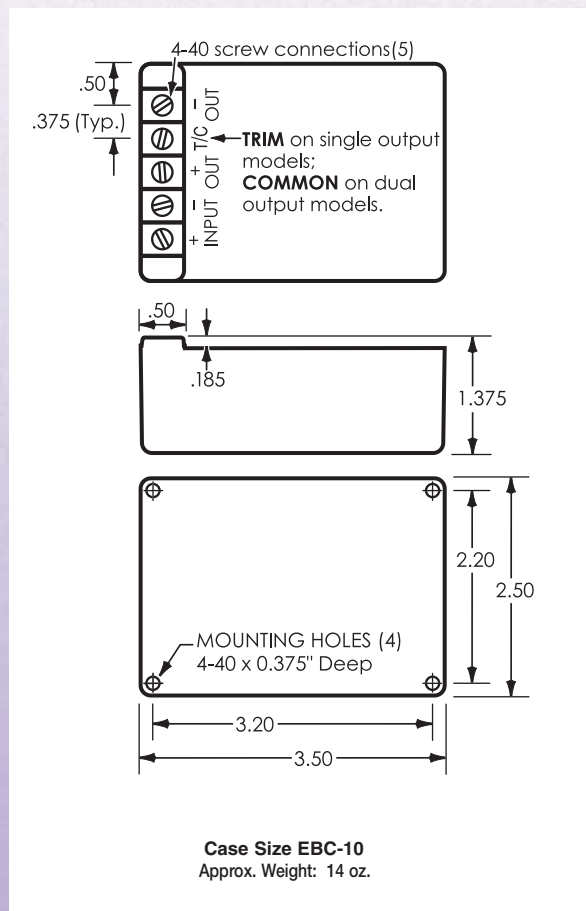
**Ambient Operating Temperature:**  $-20$  to  $+71^{\circ}\text{C}$ .

**Storage Temperature:**  $-40$  to  $+85^{\circ}\text{C}$ .

**Humidity:** 20% to 80% R.H. (non-condensing).

**Case Size:** EBC-10.

**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket, or they may be used on a test bench or tabletop. When wall-mounting or DIN rail mounting is desired, use accessory Mounting Kits on page 77.





## Narrow Profile DC-DC Converters (to 288 watts)

REGULATED

wide input ranges

single output

- Shipped Within 3 Days
- Five Year Warranty



These state-of-the-art DC-DC converters combine excellent regulation and ripple specifications with broad input ranges. They are available in a large selection of

output voltages and current ratings. Accessory mounting kits permit easy installation on a vertical panel, wall or on a DIN rail.

### STANDARD FEATURES

- Tight regulation, low ripple
- Extensive filtering and shielding
- Output status indicator
- Input/output isolation exceeds 2828Vdc
- Extruded aluminum case

### SPECIFICATIONS

Nominal Input	Operating Input Voltage Range
24 Vdc	18-36 Vdc (or 18-75 Vdc; see table)
48 Vdc	36-75 Vdc (or 18-75 Vdc; see table)
125 Vdc	110-350 Vdc (see table)
250 Vdc	110-350 Vdc (see table)

**Input Reverse Polarity Protection:** Internal shunt diode (external fuse required).

**Startup Time:** 800 mS typical.

**Regulation:**

Line:  $\pm 0.05\%$

Load:  $\pm 0.05\%$

**Output Voltage Remote Adjustment:** The output voltage may be controlled by means of an external 1K potentiometer.

**Output Indicator (DC out):** Green LED.

**Polarity:** Output is floating and may be used in either polarity.

**Drift:**  $\pm 0.1\%$  typical over 8 hours, after 30 minute warmup.

**Temperature Coefficient:**  $\pm 0.02\%/^{\circ}\text{C}$  (Typical).

**Transient Response:** 300  $\mu\text{S}$  to return to  $\pm 1\%$  of output setting. Maximum of  $\pm 3\%$  output excursion following a load step change from 50% to 100%.

**Remote Sensing:** Compensates up to 0.5 volt drop per output line, within the limits of the output voltage adjustment range.

**Overload/Short Circuit Protection:** Current limiting with automatic recovery.

**Overvoltage Protection:**

Case sizes DN6A, DN6B: automatic reset.

Case sizes DN8, DN8A: latches power supply OFF, reset by momentarily removing DC input power.

**Output Inhibit (DN8 and DN8A case sizes only):**

Applying between +3 and +25 Vdc (relative to the -Out terminal) to the inhibit terminal will disable the supply.

**EMI:** Designed to meet FCC Part 15 and EN55022, Class A.

**Thermal Protection:**

Case sizes DN8, DN8A, DN6A: thermostat, self-resetting.

Case size DN6B: inherently protected.

**Efficiency:** (Typical, at nominal input voltage, with full load.) 65 to 80%

**Ambient Operating Temperature:** 0 to +71°C.

**Storage Temperature:** -40 to +85°C.

**Cooling:** Case sizes DN8, DN8A, DN6A: forced-air cooled; air enters rear of power supply and exits from top. Case size DN6B: convection cooled.

**Switching Frequency:** 100 kHz (Typical).

**Dielectric Withstand Voltage:**

	inputs to 75 Vdc	110-350 Vdc input	Isolation
<b>Input to output:</b>	2828 Vdc	4242 Vdc	707 Vdc
<b>Input to case:</b>	2828 Vdc	2121 Vdc	707 Vdc
<b>Output to case:</b>	750 Vdc	750 Vdc	424 Vdc

**Drawings:** See page 80.

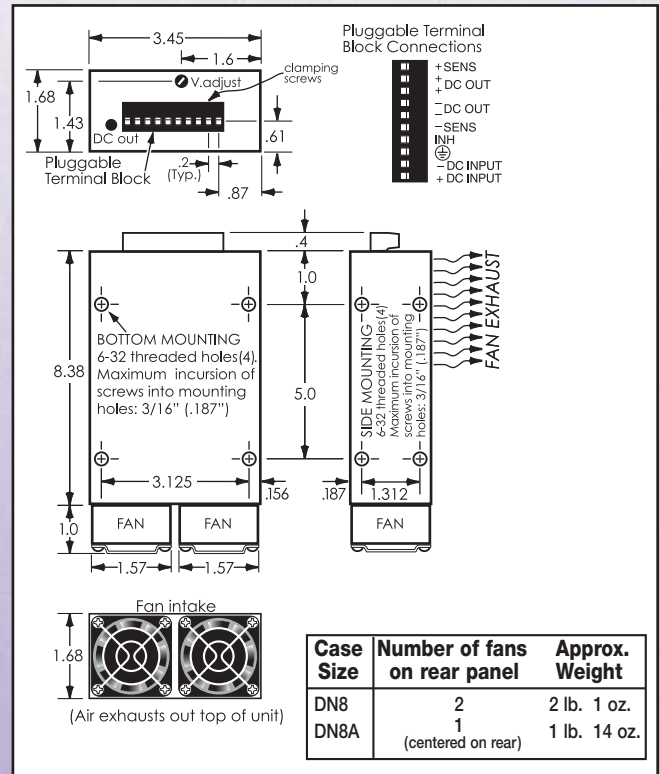
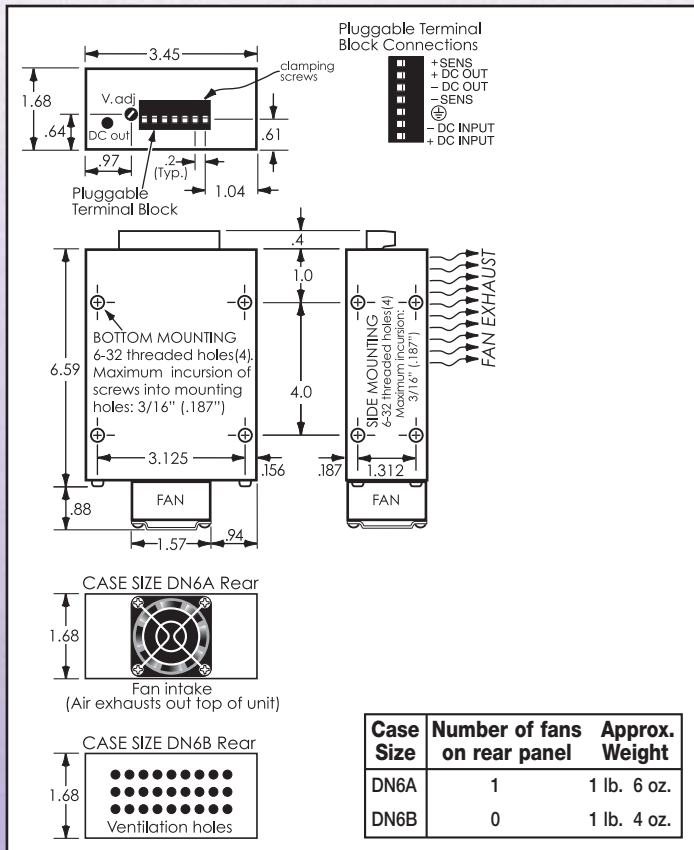
**Mounting:** Threaded mounting holes permit mounting to a chassis, cabinet wall or bracket. To mount from the power supply side of the mounting surface or for DIN rail mounting, see accessory Mounting Kits on page 91.





## Narrow Profile DC-DC CONVERTERS (continued)

Nominal Output Voltage	Adjust Range ±V	Output Current Amps. at		Ripple mV (@ 25 MHz BW)		Case Size	18 to 36 Vdc Input		36 to 75 Vdc Input		18 to 75 Vdc Input		110 to 350 Vdc Input	
		40°C	71°C	RMS	P-P		Price (\$)	Model	Price (\$)	Model	Price (\$)	Model	Price (\$)	Model
50	1	3.3	2.3	50	150	DN8A	----	-----	----	-----	----	-----	275	230C50NT330
50	1	5	3.5	50	150	DN8	----	-----	----	-----	----	-----	350	230C50NT500
55	1	3	2.1	50	150	DN8A	----	-----	----	-----	----	-----	275	230C55NT300
55	1	4.5	3.2	50	150	DN8	----	-----	----	-----	----	-----	350	230C55NT450
60	1	2.8	1.9	50	150	DN8A	----	-----	----	-----	----	-----	275	230C60NT280
60	1	4.2	2.9	50	150	DN8	----	-----	----	-----	----	-----	350	230C60NT420
70	1	2.4	1.7	67	200	DN8A	----	-----	----	-----	----	-----	275	230C70NT240
70	1	3.6	2.5	67	200	DN8	----	-----	----	-----	----	-----	350	230C70NT360
75	1	2.2	1.5	67	200	DN8A	----	-----	----	-----	----	-----	275	230C75NT220
75	1	3.3	2.3	67	200	DN8	----	-----	----	-----	----	-----	350	230C75NT330
80	1	2.1	1.4	67	200	DN8A	----	-----	----	-----	----	-----	275	230C80NT210
80	1	3.1	2.2	67	200	DN8	----	-----	----	-----	----	-----	350	230C80NT310
90	1	1.8	1.3	100	300	DN8A	----	-----	----	-----	----	-----	275	230C90NT180
90	1	2.8	1.9	100	300	DN8	----	-----	----	-----	----	-----	350	230C90NT280
100	1	1.7	1.2	150	450	DN8A	----	-----	----	-----	----	-----	275	230C100NT170
100	1	2.5	1.8	150	450	DN8	----	-----	----	-----	----	-----	350	230C100NT250
110	1	1.5	1.1	150	450	DN8A	----	-----	----	-----	----	-----	275	230C110NT150
110	1	2.3	1.6	150	450	DN8	----	-----	----	-----	----	-----	350	230C110NT230
120	1	1.4	1	150	450	DN8A	----	-----	----	-----	----	-----	275	230C120NT140
120	1	2.1	1.5	150	450	DN8	----	-----	----	-----	----	-----	350	230C120NT210
125	1	1.3	0.9	150	450	DN8A	----	-----	----	-----	----	-----	275	230C125NT130
125	1	2	1.4	150	450	DN8	----	-----	----	-----	----	-----	350	230C125NT200



## MIL TESTED and EXTENDED TEMP RANGE (for Plug-in models on pages 84-87)

SHIPPED WITHIN 3 DAYS  
ALL MODELS U.L. RECOGNIZED

Ruggedized construction and capability for operation through an extended ambient temperature range of -20 to +71°C (without derating) are provided by Acopian MIL-option supplies. In all other respects they are identical to our standard Plug-in power supplies.

### HOW TO ORDER:

Add prefix "MIL-" to standard model number and \$15.00 to price of single output models; \$30.00 to price of dual output models. Example: Model 6J200 becomes MIL-6J200. Price becomes \$175.00 plus \$15.00; or \$190.00 total.

MIL-option equivalents to all the models included on pages 84 through 87, except those housed in case size HS, have been tested to these specifications:

**ALTITUDE:** MIL-STD-810B, Method 500, Procedure II.

**VIBRATION:** MIL-STD-810B, Method 514, Procedure I, Curve D.

**SHOCK:** MIL-STD-810B, Method 516, Procedure I.

**FUNGUS:** (additional \$25.00/output charge applies.) MIL-STD-810B, Method 508, Procedure I.

**CONDUCTED EMI:** MIL-I-6181D, Paragraph 4.3.1., Figure II.

**RADIATED EMI:** MIL-I-6181D, Paragraph 4.3.2.

**SUSCEPTIBILITY TO CONDUCTED AND RADIATED EMI:** MIL-I-6181D, Paragraph 4.3.4.

**HIGH TEMPERATURE:** MIL-STD-810B, Method 501, Procedure I.

**LOW TEMPERATURE:** MIL-E-5272C, Paragraph 4.2.2, Procedure II.

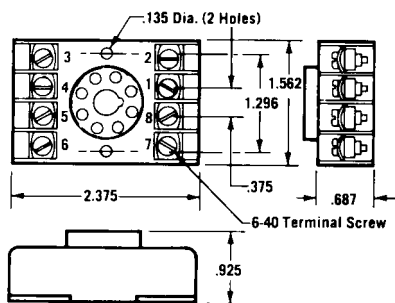
**HUMIDITY:** MIL-STD-810B, Method 507, Procedure I.

**SALT FOG:** MIL-STD-810B, Method 509, Procedure I.

## ACCESSORY SOCKETS (for Plug-in models on pages 82-88)

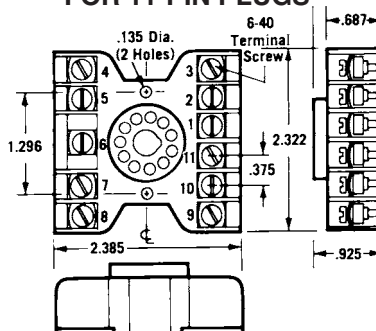
RETMA-numbered screw-type terminals simplify wiring and permit the use of wire terminals or bare wire, 12 to 20 gauge. Rated at 300 volts RMS, 10 Amp.

### FOR 8-PIN PLUGS



Model SL608..... \$10

### FOR 11-PIN PLUGS



Model SL611..... \$15



## Plug-in UNREGULATED

AC-DC  
single output & wide adjust output

- Shipped Within 3 Days
- U.L. Recognized
- Five Year Warranty



To meet the need for unregulated DC power at low cost, Acopian offers a broad line of both fixed and fully adjustable Plug-in power modules with output voltages to 950 volts.

### STANDARD FEATURES

- Capacitive filtering
- Fused input
- May be used in series or parallel
- No derating or heat sinking required
- Completely serviceable

### SPECIFICATIONS

**Input Voltage:** 0-125 VAC, 50-400 Hz, single phase.

**Output Voltage Adjustment:** Adjustable voltage models are provided with a built-in continuously adjustable autotransformer.

**Load Regulation:** The nominal output voltages of fixed output models, and the maximum rated output voltages for models with adjustable outputs, are based on 115 VAC input with approximately one-half load. At no load, they will increase by approximately 10%. At full load, they will be reduced by approximately 10%.

**Line Regulation:** Output voltage change due to line change directly proportional to input change.

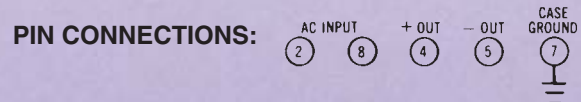
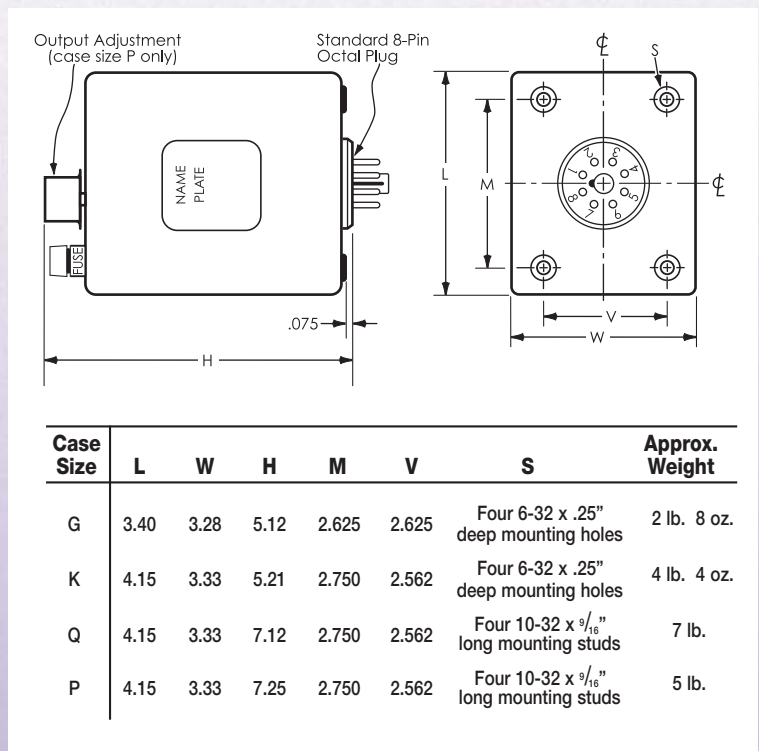
**Polarity:** Output is floating; either positive or negative terminal may be grounded.

**Ambient Operating Temperature:** -10 to +65°C. No derating required.

**Storage Temperature:** -55 to +85°C.

**Installation:** Plugs into standard 8-pin octal socket (see page 81). Four 6-32 mounting holes (on case sizes G and K) or four 10-32 mounting studs (on case sizes Q and P) are provided in the base for fastening the module when used in other than the upright position, or if extreme vibration will be encountered.

There is no need to use tiedown hardware unless it is mounted in other than an upright position, or where shock and vibration will be encountered.



### OPTIONS

**230 Volt Input:** Provision for inputs of 0-250 VAC, 50-400 Hz, replacing the standard of 0-125 VAC input voltage range, is available on single output models. To order, add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.





## SINGLE OUTPUT

Nominal Output Voltage	Output Current Amps.	Ripple Volts RMS	(\$) Price	Model	Case Size
7	1.0	.8	\$115	7U100	G
13	.600	.5	\$115	13U60	G
13	3.0	1.5	\$150	13U300	K
14	1.0	.7	\$115	14U100	G
16	1.0	.7	\$115	16U100	G
18	1.0	.7	\$115	18U100	G
20	3.0	2.3	\$150	20UP300	K
24	1.0	1.7	\$115	24U100	G
24	3.0	2.2	\$150	24UP300	K
28	1.0	1.7	\$115	28U100	G
28	3.0	2.7	\$150	28UP300	K
32	.400	.6	\$115	32U40	G
41	.400	.6	\$115	41U40	G
45	1.0	1.6	\$125	45UP100	G
48	.400	.6	\$120	48U40	G
50	1.0	1.6	\$125	50UP100	G
52	.400	.6	\$120	52U40	G
55	.250	.4	\$120	55U25	G
80	.300	1	\$125	80UP30	G
90	.300	2.2	\$135	90UP30	G
100	.200	1	\$135	100UP20	G
110	.200	1	\$135	110UP20	G
120	.200	1	\$135	120UP20	G
140	.200	2	\$135	140UP20	G
150	.200	2	\$135	150UP20	G
165	.200	2	\$135	165UP20	G
170	.200	2	\$140	170UP20	G
180	.200	2	\$140	180UP20	G
200	.200	2	\$140	200UP20	G
250	.200	4	\$140	250UP20	G
275	.100	3	\$135	275UP10	G
340	.100	3	\$135	340UP10	G
360	.100	3	\$135	360UP10	G
370	.100	3	\$135	370UP10	G
420	.100	6.7	\$135	420UP10	G
475	.020	3.1	\$125	475U02	G
580*	.020	3.1	\$125	580U02	G
750*	.020	3.1	\$135	750U02	G
900*	.020	5	\$140	900U02	G

\*Not U.L. recognized when this catalog was published.

## SINGLE OUTPUT - for relays

Nominal Output Voltage	Output Current Amps.	Output Voltage N/L-F/L	Ripple Volts RMS	(\$) Price	Model	Case Size
6	2.0	7.7 to 4.8	2.0	\$115	US6	G
6	5.0	7.6 to 5.0	2.5	\$150	UP6	K
12	1.5	14.9 to 10.9	2.5	\$115	US12	G
12	5.0	14.8 to 10.0	2.5	\$150	UP12	K
24	1.5	26.2 to 20.2	2.5	\$115	US24	G
24	3.5	26.0 to 21.0	2.0	\$150	UP24	K
24	5.0	26.6 to 20.0	3.2	\$160	U24	Q
28	1.0	30.6 to 25.5	2.0	\$120	US28	G
28	3.0	30.8 to 26.0	2.0	\$150	UP28	K
28	5.0	31.9 to 23.6	3.4	\$160	U28	Q
48	0.5	54.0 to 42.0	1.3	\$120	US48	G

## WIDE ADJUST OUTPUT

Output Voltage Range	Output Current Amps.	Ripple Volts RMS	(\$) Price	Model	Case Size
0-14	1.0	1	\$270	14UA100	P
0-54	1.0	1.6	\$270	54UA100	P
0-95	.300	2.2	\$270	95UA30	P
0-125	.200	1.5	\$270	125UA20	P
0-220	.200	2	\$270	220UA20	P
0-260	.200	4	\$270	260UA20	P
0-370	.100	3	\$270	370UA10	P
0-450	.100	6.7	\$270	450UA10	P
0-500	.020	3.1	\$270	500UA02	P
0-800*	.020	3.1	\$270	800UA02	P
0-950*	.020	5	\$270	950UA02	P

\*Not U.L. recognized when this catalog was published.

(See page 57 for other unregulated wide adjust output power supplies.)



# Plug-in SINGLE OUTPUT & WIDE ADJUST OUTPUT

LINEAR REGULATED  
AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- Five Year Warranty

An Acopian Plug-in power module can be installed in a matter of seconds. Simply plug it into a standard octal socket. (Threaded mounting holes are provided in the base for fastening the module when used in other than the upright position, or if subject to extreme vibration.) To replace a module - for example, where added circuitry calls for a higher current rating - just unplug the old, plug in the new. And as a result of years of product refinement, your Acopian Plug-in provides the highest reliability of any available series-regulated power supply.

## STANDARD FEATURES

- May be used in series
- Delivers current surges without damage - to protect against prolonged overload and shorts, use of an input fuse is recommended
- No derating or additional heat sinking required
- Completely serviceable
- Lightweight

## SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Specifications:** See table.

**Polarity:** Output floating; either positive or negative terminal may be grounded or floated up to 300 volts above ground.

**Temperature Coefficient:** 0.02%/°C (Typical).

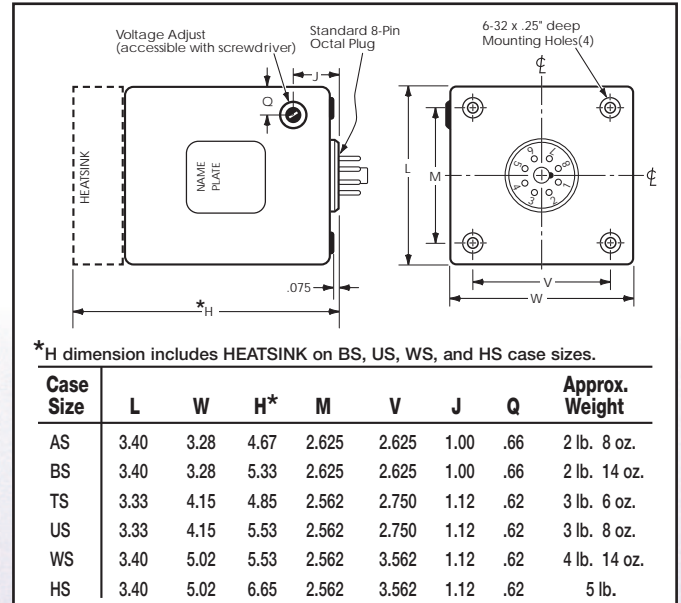
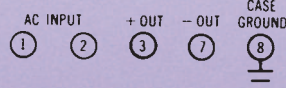
**Ambient Operating Temperature:** -10 to +65°C.  
No derating required.

**MIL Tested and Extended Temperature Range:**  
See page 81.

**Storage Temperature:** -55 to +85°C.

**Installation:** Plugs into standard 8-pin octal socket (see page 81). Four mounting holes (6-32) are provided in the base for fastening the module when used in other than the upright position, or if extreme vibration will be encountered.

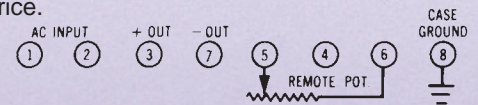
**PIN CONNECTIONS:**  
Standard model.



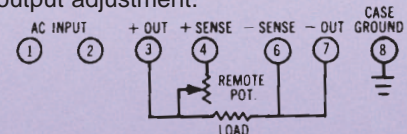
## OPTIONS

**Solder Terminals:** All models can be furnished with solder terminals instead of the octal type plug. Contact factory or see web site for detailed information.

**Remote Output Adjustment:** All models have a local voltage adjustment. When provision for remote (external) adjustment is also desired, add prefix "E" to model number. Example: Model 12J100 becomes Model E12J100. No increase in price.



**Remote Sensing:** Provision for remote sensing of the output voltage to compensate for drops in the load lines can be furnished at an additional charge of \$10.00 per unit. Add prefix "R" to model number when ordering. "R" power supplies have a local voltage adjustment and provision for remote (external) output adjustment.



**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210 to 250 VAC, 50-400 Hz. Add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.

**Overvoltage Protection:** An internal preset overvoltage protector is available. To order, add prefix "V" to the model number, and add \$25.00 to the standard price of models with outputs of 1 to 70 volts; \$35.00, for 75 to 200 volt outputs.



## Plug-in DUAL ISOLATED OUTPUTS (User-selectable)

LINEAR REGULATED  
AC-DC

- Shipped Within 3 Days
- All Models U.L. Recognized
- Five Year Warranty

**Space-saving Acopian duals** combine two electrically independent DC outputs in a single case. Either identical or different outputs may be selected. And every combination is supplied with Acopian's usual 3 day shipment guarantee and 5 year warranty.

### SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Specifications:** See page 87.

**Polarity:** Outputs are floating. Each section may be independently connected to provide any combination of positive and negative outputs.

**Short Circuit Protection:** Delivers current surges without damage—to protect against prolonged overloads and shorts, use of an input fuse is recommended.

**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:** -10 to +65°C.

No derating required.

**MIL Tested and Extended Temperature Range:**

See page 81.

**Storage Temperature:** -55 to +85°C.

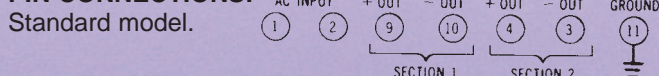
**Installation:** Plugs into standard 11-pin octal-type socket (see page 81). Four mounting holes (6-32) are provided in the base for fastening the module when used in other than the upright position, or if extreme vibration will be encountered.

### HOW TO ORDER

Select two **sections** from the table on page 87. The complete model number is the combination of the two **sections** selected. Example: The combination of section 6J40D and section 12J100D is Model 6J40D-12J100D. Always assign the lower voltage section first. (Two of the same section can also be selected.) Where the indicated case sizes for the two sections differ, the larger case size applies.

For pricing purposes, add the costs of the individual sections selected. Example: The price of Model 6J40D-12J100D is \$215.00 total (\$95.00 plus \$120.00).

### PIN CONNECTIONS:

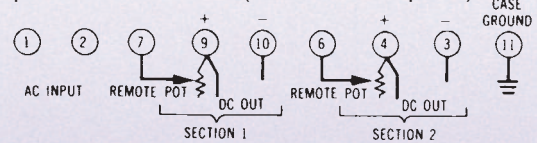


Like all Acopian Plug-ins, a dual-output module can be installed in seconds. Simply plug it into a standard 11-pin socket. Acopian duals are exceptionally dependable, too - offering the highest reliability of any available series-regulated power supply.

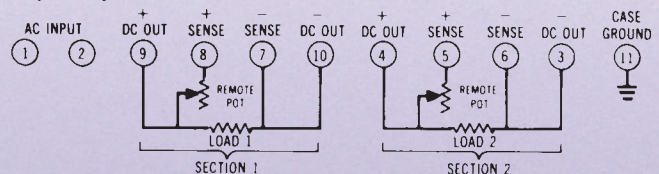
### OPTIONS

**Solder Terminals:** All models can be furnished with solder terminals instead of the octal type plug. Contact factory or see web site for detailed information.

**Remote Output Adjustment:** All models have local voltage adjustments. When provision for remote (external) adjustments is also desired, add prefix "E" to model number. Example: E6J40D-12J100D. (No increase in price.)



**Remote Sensing:** Provision for remote sensing of the output voltages, to compensate for drops in the load lines, can be furnished at an additional charge of \$20.00 per unit. Add prefix "R" to model number when ordering. "R" power supplies have local voltage adjustments and provision for remote (external) output adjustments.



**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210 to 250 VAC, 50 to 400 Hz. Add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.

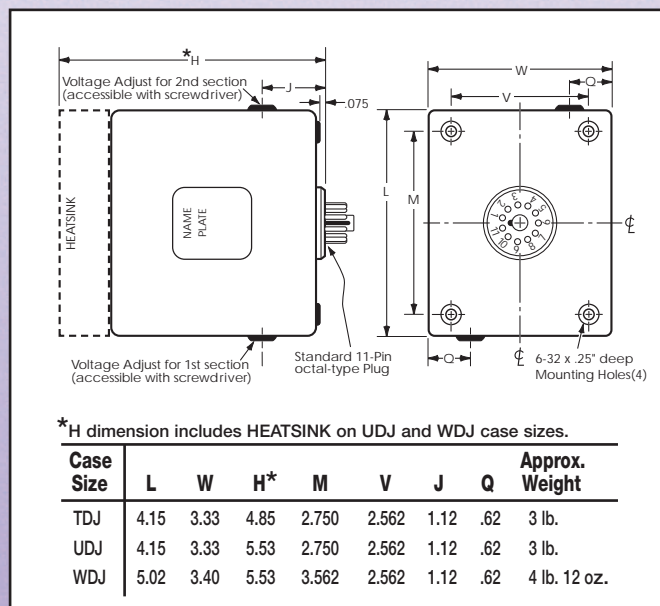
**Overvoltage Protection:** Two separate, preset overvoltage protection circuits, one for each output. To order, add prefix "V" to model number and add \$30.00 to the standard price for outputs up to 70 volts; add \$50.00 if either or both outputs are greater than 70 volts.



## DUAL OUTPUT PLUG-IN (User-selectable)

Nominal Output Voltage	Adjust Range $\pm$ V	Output Current Amps.	Regulation		Ripple mV RMS	(see 'How to Order')		Case Size
			Load $\pm$ %	Line $\pm$ %		Price per Section (\$)	Section	
3.3	.5	.500	.5	.05	1	\$125	3.3J50D	TDJ
3.3	.5	.700	.5	.05	1	\$135	3.3J70D	UDJ
3.3	.5	1.0	.5	.05	1	\$145	3.3J100D	WDJ
4	1	.500	.3	.05	1	\$125	4J50D	TDJ
4	.5	.700	.4	.05	1	\$135	4J70D	UDJ
4	.5	1.0	.5	.05	1	\$145	4J100D	WDJ
5	1	.400	.3	.05	1	\$120	5J40D	TDJ
5	1	.500	.3	.05	1	\$125	5J50D	TDJ
5	.5	.700	.4	.05	1	\$135	5J70D	UDJ
5	.5	1.0	.5	.05	1	\$145	5J100D	WDJ
5	.25	2.0	.5	.05	1	\$175	5J200D	WDJ
6	1	.400	.15	.05	1	\$120	6J40D	TDJ
6	1	.500	.15	.05	1	\$125	6J50D	TDJ
6	.5	.700	.2	.05	1	\$135	6J70D	UDJ
6	.5	1.0	.3	.05	1	\$145	6J100D	WDJ
7	1	.400	.15	.05	1	\$120	7J40D	TDJ
7	1	.500	.15	.05	1	\$125	7J50D	TDJ
7	.5	.700	.2	.05	1	\$135	7J70D	UDJ
7	.5	1.0	.3	.05	1	\$145	7J100D	WDJ
8	1	.400	.1	.05	1	\$120	8J40D	TDJ
8	1	.500	.1	.05	1	\$125	8J50D	TDJ
8	.5	.700	.15	.05	1	\$135	8J70D	UDJ
8	.5	1.0	.2	.05	1	\$145	8J100D	WDJ
9	1	.500	.1	.05	1	\$125	9J50D	TDJ
9	.5	.700	.15	.05	1	\$135	9J70D	UDJ
9	.5	1.0	.2	.05	1	\$145	9J100D	WDJ
10	1	.400	.1	.05	1	\$120	10J40D	TDJ
10	1	.500	.1	.05	1	\$125	10J50D	TDJ
10	.5	.700	.15	.05	1	\$135	10J70D	UDJ
10	.5	1.0	.2	.05	1	\$145	10J100D	WDJ
12	1	.400	.1	.05	1	\$120	12J40D	TDJ
12	1	.500	.1	.05	1	\$125	12J50D	TDJ
12	.5	.700	.1	.05	1	\$135	12J70D	UDJ
12	.5	1.0	.1	.05	1	\$150	12J100D	WDJ
13	1	.500	.1	.05	1	\$125	13J50D	TDJ
13	.5	.700	.1	.05	1	\$135	13J70D	UDJ
13	.5	1.0	.15	.05	1	\$150	13J100D	WDJ
15	1	.400	.1	.05	1	\$120	15J40D	TDJ
15	1	.500	.1	.05	1	\$125	15J50D	TDJ
15	.5	.700	.1	.05	1	\$135	15J70D	UDJ
15	.5	1.0	.15	.05	1	\$150	15J100D	WDJ
18	1	.400	.1	.05	1	\$120	18J40D	TDJ
18	1	.500	.1	.05	1	\$125	18J50D	TDJ
18	1	.750	.15	.05	1	\$140	18J75D	WDJ
18	.5	1.0	.15	.05	1	\$150	18J100D	WDJ

Nominal Output Voltage	Adjust Range $\pm$ V	Output Current Amps.	Regulation		Ripple mV RMS	(see 'How to Order')		Case Size
			Load $\pm$ %	Line $\pm$ %		Price per Section (\$)	Section	
20	1	.400	.1	.05	1	\$120	20J40D	TDJ
20	1	.500	.1	.05	1	\$125	20J50D	TDJ
20	1	.750	.15	.05	1	\$140	20J75D	WDJ
22	1	.400	.1	.05	1	\$120	22J40D	TDJ
24	1	.400	.1	.05	1	\$120	24J40D	TDJ
26	1	.400	.05	.05	1	\$120	26J40D	TDJ
28	1	.400	.05	.05	1	\$120	28J40D	TDJ
30	1	.400	.05	.05	1	\$125	30J40D	TDJ
32	1	.300	.05	.05	1	\$125	32J30D	TDJ
34	1	.300	.05	.05	1	\$125	34J30D	TDJ
35	1	.200	.05	.05	1	\$120	35J20D	TDJ
36	1	.200	.05	.05	1	\$120	36J20D	TDJ
40	1	.200	.05	.05	1	\$125	40J20D	TDJ
45	1	.200	.05	.05	1	\$125	45J20D	TDJ
48	1	.200	.05	.05	1	\$135	48J20D	TDJ
50	1	.200	.05	.05	1	\$140	50J20D	TDJ
55	1	.200	.05	.05	1	\$145	55J20D	TDJ
60	1	.100	.05	.05	1	\$135	60J10D	TDJ
65	1	.100	.05	.05	1	\$140	65J10D	TDJ
70	1	.050	.05	.05	1	\$125	70J05D	TDJ
70	1	.100	.05	.05	1	\$140	70J10D	TDJ
75	1	.100	.05	.05	1	\$145	75J10D	TDJ
80	1	.100	.05	.05	1	\$150	80J10D	TDJ
85	1	.100	.05	.05	1	\$160	85J10D	TDJ
90	1	.100	.05	.05	1	\$165	90J10D	TDJ
95	1	.100	.05	.05	1	\$170	95J10D	TDJ
100	1	.100	.05	.05	1	\$175	100J10D	TDJ
105	1	.100	.05	.05	1	\$175	105J10D	TDJ
110	1	.100	.05	.05	1	\$185	110J10D	TDJ
115	1	.100	.05	.05	1	\$190	115J10D	TDJ
120	1	.100	.05	.05	1	\$195	120J10D	TDJ
125	1	.100	.05	.05	1	\$195	125J10D	TDJ
130	1	.100	.05	.05	1	\$200	130J10D	TDJ
135	1	.100	.05	.05	1	\$200	135J10D	TDJ
140	1	.100	.05	.05	1	\$210	140J10D	TDJ
145	1	.100	.05	.05	1	\$210	145J10D	TDJ
150	1	.100	.05	.05	1	\$210	150J10D	TDJ





# Plug-in DUAL TRACKING OUTPUTS

LINEAR REGULATED  
AC-DC



- Shipped Within 3 Days
- All Models U.L. Recognized
- Five Year Warranty

Dual tracking output Plug-in power supplies provide the balanced voltages commonly required for driving operational amplifiers and related linear circuitry. The convenient plug-in configuration simplifies mounting and wiring, and connections for the remote sensing of the

output voltages, to permit compensation of load line voltage drops, are a standard feature.

## SPECIFICATIONS

**Input Voltage:** 105-125 VAC, 50-400 Hz, single phase.

**Output Tracking:** Within 1%.

**Polarity:** Positive output, common, and negative output.

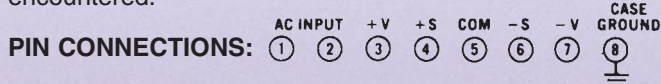
**Remote Voltage Sensing:** Provision for sensing the output voltage across the load, so that drops in the load lines are compensated, is a standard feature.

**Temperature Coefficient:** 0.02%/°C (Typical).

**Ambient Operating Temperature:** -10 to +65°C.  
No derating required.

**Storage Temperature:** -55 to +85°C.

**Installation:** Plugs into standard 8-pin octal socket (see page 81). Four mounting holes (6-32) are provided in the base for fastening the module when used in other than the upright position, or if extreme vibration will be encountered.



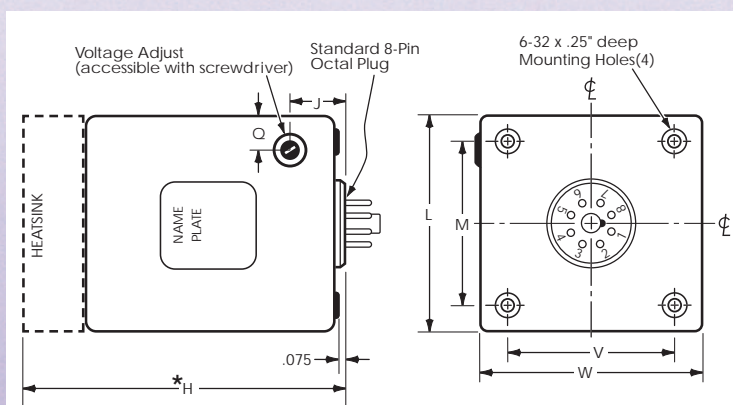
## OPTIONS

**Solder Terminals:** All models can be furnished with solder terminals instead of the octal-type plug. To order, add suffix "L" to model number and \$30.00 to price.

**230 Volt Input:** All models can be alternately furnished for operation on inputs of 210-250 VAC, 50-400 Hz. Add suffix "-230" to model number and \$25.00 to price. The "-230" option requires two additional days.

**Overvoltage Protection:** A built-in, preset overvoltage protection circuit is available on all models. If either output fails, both outputs are 'crowbarred'. To order, add prefix "V" to the model number, and increase standard price by \$30.00.

Nominal Output Voltages	Adjust Range ± V	Amps. per Output	Regulation		Ripple mV RMS	(\$) Price	Model	Case Size
			Load ± %	Line ± %				
±5	.25	.750	.1	.1	1.5	\$250	JD5-75	BD
	.25	1.5	.1	.1	1.5	\$285	JD5-150	DU
±12	1	.400	.1	.1	1.5	\$220	JD12-40	DA
	1	.700	.1	.1	1.5	\$250	JD12-70	BD
	1	1.0	.1	.1	1.5	\$285	JD12-100	DU
±15	1	.400	.1	.1	1.5	\$220	JD15-40	DA
	1	.700	.1	.1	1.5	\$250	JD15-70	BD
	1	1.0	.1	.1	1.5	\$285	JD15-100	DU



\*H dimension includes HEATSINK on BD and DU case sizes.

Case Size	L	W	H*	M	V	J	Q	Approx. Weight
DA	3.40	3.28	4.67	2.625	2.625	1.00	.66	2 lb. 8 oz.
BD	3.40	3.28	5.33	2.625	2.625	1.00	.66	2 lb. 14 oz.
DU	3.33	4.15	5.53	2.562	2.750	1.12	.62	3 lb. 8 oz.





# CIRCUIT ENCLOSURE BOXES

Versatile enclosures for housing prototypes, adapters, testers, etc.



You can now package your own circuits in the same rugged casework used for Acopian power supplies.

*Any case size shown in the Acopian catalog can be purchased as a Circuit Enclosure Box.*

## DESCRIPTION

Moderate-dissipation components may be directly mounted to the case for heat sinking. Connectors, switches, controls and indicators are easily installed on the front and rear covers.

**Sides and Bottom (Narrow Profile Enclosures):** Attractive extruded aluminum channel (.08" thick) withstands even severe abuse.

**Top cover (Narrow Profile Enclosures):** Perforated for ventilation, the sturdy aluminum top (0.032" thick) slides into slots without the need for mounting hardware.

**Sides (Gold Box Enclosures):** Grooved; attractive and rugged extruded aluminum sides (.08" thick) can withstand severe abuse.

**Top and Bottom Covers (Gold Box Enclosures):** Perforated aluminum (0.032" thick); ideal for ventilation.

**Front and Rear covers:** Aluminum (0.062" thick).

**Internal Circuit Board Mounting (Narrow Profile Enclosures):** Grooves 1/4" above the inside bottom of the case are for holding a circuit board (0.062" thick).

**Color:** Flat gold (sides are flat black on Gold Box Enclosures).

**Mounting:** Threaded mounting holes are provided to permit mounting the boxes to an equipment frame or bracket. Accessory Mounting Kits are available for wall mounting or DIN Rail mounting (see page 91).

## ACCESSORIES

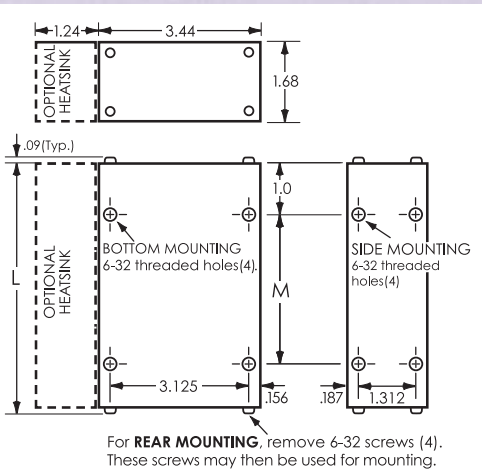
**Circuit Board (for Narrow Profile Enclosures):** Perforated board for mounting hand-wired components. Contact factory for sizes.

**Mounting Kits:** For wall mounting or DIN Rail mounting (see page 91).

**Heat sink (for Narrow Profile Enclosures):** High-dissipation semiconductors may be mounted on an accessory heat sink. (Provided with mounting hardware, including standoffs for thermal isolation. The heat sink is black anodized.) Contact factory.

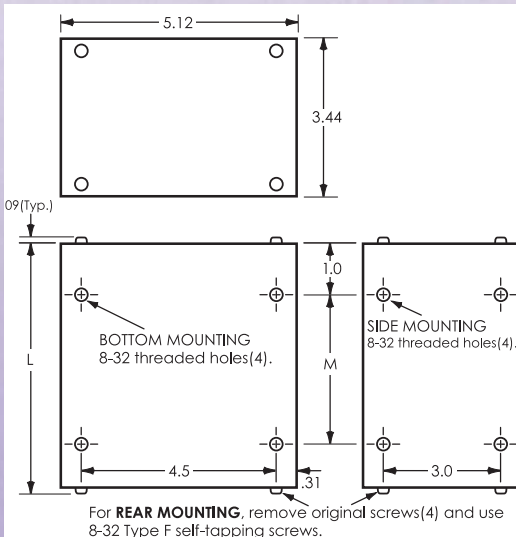
**Heat sink (for Gold Box Enclosures):** An optional heat sink can be ordered for the left side to replace the grooved aluminum side. High-dissipation semiconductors may be mounted on the accessory heat sink. To order, add suffix "H" to model number and \$2.00 to price (for models EG9H and EG13H, add \$4.00).

## Narrow Profile Circuit Enclosure Boxes



Case Size	L	M	Approx. Weight	Price (\$)
EN6	6.59	4.0	9 oz.	\$27
EN8	8.47	5.0	12 oz.	\$30

## Gold Box Circuit Enclosure Boxes



Case Size	L	M	Approx. Weight	Price (\$)
EG3	3.71	1.62	11 oz.	\$25
EG5	5.09	3.0	14 oz.	\$28
EG6	6.59	4.0	1 lb. 2 oz.	\$29
EG9	9.25	6.0	1 lb. 7 oz.	\$33
EG13	13.25	10.0	2 lb. 1 oz.	\$38

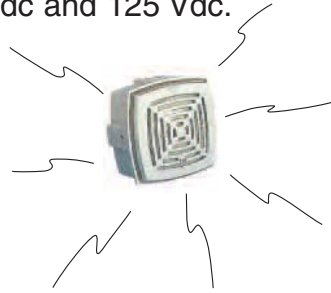
## Other size Circuit Enclosure Boxes

- Rack Mounting; see page 28 & 69 drawings
- Wall Mounting; see page 21 drawing
- SW Gold Box; see page 55 drawing
- HV Gold Box; see page 71 & 73 drawings
- Plug-in; see page 84 drawing

## Under/Overvoltage Monitors

These modules can be used with any manufacturer's power supply between 5 Vdc and 125 Vdc.

- Shipped Within 3 Days
- Five Year Warranty



Enclosed UOV Monitor



'Board with Leads' UOV Monitor



These Under/Overvoltage Monitors may be used as independent accessories for any power supply to control an external horn or light, or to signal your PLC. These modules can be used on power supplies with DC voltages from 5 to 125 Vdc. SPDT relay contacts switch if the power supply's output deviates by:

- 1.0 volt or more (for 5 volt outputs)
- 2.0 volts or more (for 6 to 48 volt outputs)
- 3.0 volts or more (for 49 to 125 volt outputs)

### SPECIFICATIONS

**Relay contact ratings:** 120 VAC, 8A / 60 Vdc, 1A.  
(To comply with SELV requirements, limit switched voltage to 60Vdc/42 VAC.)

**Ambient Operating Temperature:** -20 to +71°C.

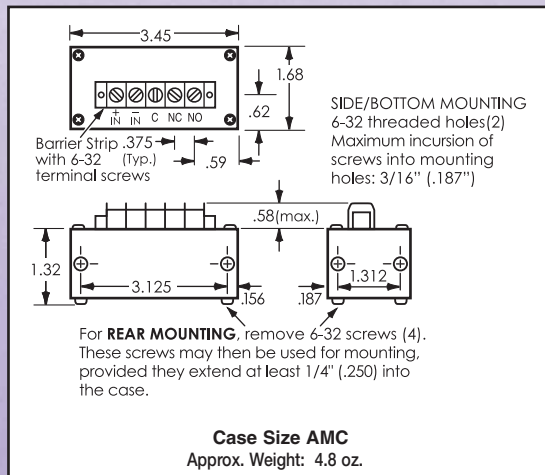
**Storage Temperature:** -40 to +85°C.

Power Supply Output	UOV Monitor Operating Current
5 Vdc to 11 Vdc	(typ) 80ma
12 Vdc to 23 Vdc	(typ) 40ma
24 Vdc to 47 Vdc	(typ) 25ma
48 Vdc to 125 Vdc	(typ) 15ma

### Enclosed UOV Monitor

The front panel LED lights when voltage is within range. Order model number AMC?? replacing the ?? with the DC voltage to be monitored. The price is \$65.00.

**Mounting:** Threaded holes on the bottom and right side surface may be used for mounting. Accessory Mounting Kit NP6 (see page 91) is available to enable mounting the Enclosed UOV Monitor when the opposite side of the mounting surface is inaccessible. To order a DIN rail mounting unit, add suffix "-DIN" to the model number and \$5.00 to the price.

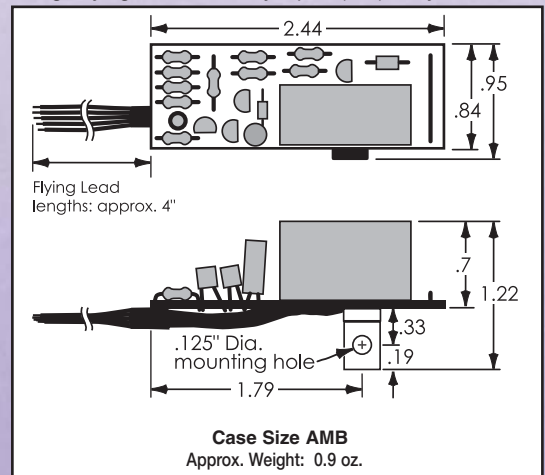


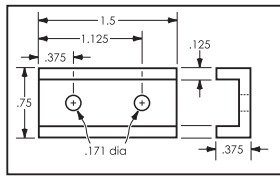
### 'Board with leads' UOV Monitor

Order model number AMB?? replacing the ?? with the DC voltage to be monitored. The price is \$35.00.

**Mounting:** An electrically isolated bracket with a .125" diameter mounting hole has been incorporated into the 'Board with leads' UOV Monitor to enable mounting in any orientation.

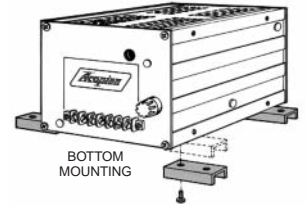
Red flying lead: Connects to '+ DC' being monitored.  
Black flying lead: Connects to '- DC' being monitored.  
White flying lead: Common (C) relay connection.  
Green flying lead: Normally Closed (NC) relay connection.  
Orange flying lead: Normally Open (NO) relay connection.



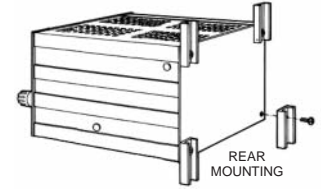


## WALL MOUNTING KITS ...\$8

These kits provide a way of mounting power supplies on a wall or panel when the other side of the mounting surface is inaccessible. Each kit consists of four aluminum brackets and four machine screws for fastening them to the power supply, effectively adding mounting flanges to the power supply.



BOTTOM MOUNTING



REAR MOUNTING

### For Gold Box and modular High Voltage power supplies:

#### GB8 Mounting Kit (#8-32 mounting holes)

Can be used on these case sizes:

CM6, CM9, CM13, CH11, CH16, DG5, DG6, DG9, G3, G5, G5D, G6, G9, G13, GT5, GT6, GT9, GT13, H8, H11, H16, HD345, HD355, HA349, HA359, HT11, HT16, M6, M9, M13, RM6, RW6, TG5, TG6, TG9, TG13, TH11, WG7, WM6, WM9, Y3, Y5, Y6, YH11, YA

### For Narrow Profile power supplies:

#### NP6 Mounting Kit (#6-32 mounting holes)

Can be used on these case sizes:

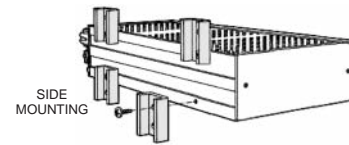
AMC, CN8T, DN6B, DN6A, DN8A, DN8, F6T, F8T, N8T, WL9, WN6A, WN6B, WN8, WN8A, TN6T

#### NP6L Mounting Kit (#6-32 mounting holes)

Model NP6L consists of two brackets 1.5" long as shown above, and two 2.5" long brackets (to extend beyond heat sink).

Can be used on these case sizes:

CN8H, N8H, TN8H



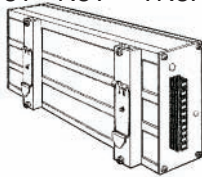
SIDE MOUNTING

## DIN RAIL MOUNTING KITS ...\$15

### NPH35DIN Mounting Kit (Horizontal mounting)

Can be used on these case sizes:

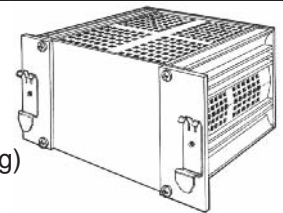
CN8H	DN6A	F6T	N8H	TN6T	WN6A
CN8T	DN6B	F8T	N8T	TN8H	WN6B
	DN8				WN8
	DN8A				WN8A



### GR35DIN Mounting Kit (Rear mounting)

Can be used on these case sizes:

CM6	DG5	G3	GT5	HD345	M6	RM6	TG5	Y3
CM9	DG6	G5	GT6	HD355	M9	RW6	TG6	Y5
	DG9	G5D	GT9				TG9	Y6
		G6						
		G9						



(Can be used, but not recommended on case sizes: G13, GT13, M13, TG13)

### NPV35DIN Mounting Kit (Vertical mounting)

Can be used on these case sizes:

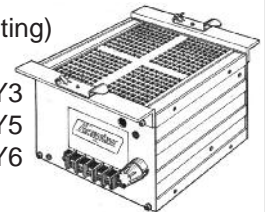
CN8H	DN6A	F6T	N8H	TN6T	WN6A
CN8T	DN6B	F8T	N8T	TN8H	WN6B
	DN8				WN8
	DN8A				WN8A



### GH35DIN Mounting Kit (Horizontal mounting)

Can be used on these case sizes:

CM6	DG5	G3	GT5	M6	TG5	Y3
CM9	DG6	G5	GT6	M9	TG6	Y5
CM13	DG9	G5D	GT9	M13	TG9	Y6
		G6	GT13		TG13	
		G9				
		G13				



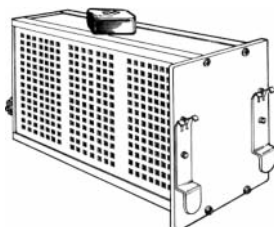
### WL35DIN Mounting Kit (Vertical mounting)

Can be used on this case size: WL9

### NPR35DIN Mounting Kit (Rear mounting)

Can be used on these case sizes:

CN8H	F6T	N8H	TN6T
CN8T	F8T	N8T	TN8H

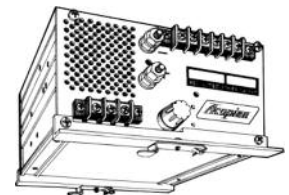


### CH35DIN Mounting Kit (Horizontal mounting)

Can be used on these case sizes: RM6, RW6

### WH35DIN Mounting Kit (Horizontal mounting)

Can be used on these case sizes: WM6, WM9





# FIND POWER SUPPLY BY MODEL NUMBER

Over 500,000 different Acopian model numbers are possible considering all the different combinations of outputs, inputs and options available. However, **by matching the model number format of the power supply you are looking for with the model number format from the list below, you will be able to find the page it is on.**

- For the model that you are looking for, replace the 'numbers' in that model number with the # symbol.  
Examples: To find model number A24H8500, use A#H#. To find model number 24EB60, use #EB#  
(The numbers(#), which indicate voltage and current, will vary depending on your particular model number. The letters do not vary.)
- Ignore V or 3V (Overvoltage Protection option) if it is in the front of the model number you are looking for.
- Option letter prefixes E and R are included with parenthesis around them, (E) and (R), in the list below.
- Ignore any of these option letters/numbers which may appear at the end of the model number you are looking for: A,F,G,H,K,L,M,P,R,S,T,Y or -230.

Model Number Format	Page	Model Number Format	Page	Model Number Format	Page
A#H#	48-49	J#	85	RM#N#XC#	24
A#HT#	49	#J#	85	RM#WN#	26
A#HX#	59	#J#D-#J#D	87	RM#WN#A	26
A#MT#	48-49	JD#-#	88	RM#WN#AC#	26
A#MX#	59	LD#-#	62	RM#WN#C#	26
A#NT#	41	N#HA#	71	RWL#G#	20
A#NX#	59	N#HD#	73	RWL#H#	18
A#PX#	31	N#HP#	69	RWL#M#	18
A#TN#	41	NX-#	33	RWL#M#X	18
A#XN#	59	NX-#A	33	RWL#N#T	18
B#FT#	41	NX-#B	37	RWL#N#X	18
B#G#	48-49	P#HA#	71	RWL#W#	20
B#GT#	49	P#HD#	73	(R)#J#	85
B#TN#	41	P#HP#	69	(R)#J#D-#J#D	87
#C#FT#	79	P#HX#	59	(R)#B#G#	48-49
#C#NT#	79-80	P#MX#	59	(R)#B#GT#	49
D#-#	34	P#PX#	31	(R)#J#	85
D#-#A	34	PD#-#	29	TD#-#	62
#D#A	66	#PT#	29	#T#A	67
DB#-#	37	#PH#	29	U#	83
#E#	33	R#G#	20	U#Y#	57
#E#A	33	R#H#	18	U#YA#	57
#E#D#	75	R#M#	18	#U#	83
#E#E#	75	R#N#T	18	#UA#	83
#EB#	37	R#N#X	18	#UP#	83
#EB#E#	77	R#P#	19	#UY#	57
#EB#D#	77	R#PH#	19	UP#	83
(E)#J#	85	R#W#	20	US#	83
(E)#J#D-#J#D	87	R#WP#	23	W#FT#	43
(E)J#	85	R#WP#X	23	W#GT#	55
(E)P#HX#	59	RM#H#	24	W#MT#	55
(E)P#MX#	59	RM#H#C#	24	W#LT#	53
(E)P#PX#	31	RM#M#	24	W#NT#	45
FD#-#A	62	RM#M#C#	24	#WB#	39
#GT#D-#GT#D	64-65	RM#N#T	24	#WL#	39
		RM#N#TC#	24	Y#HX#	61
		RM#N#X	24	Y#LX#	53
				Y#MX#	61
				Y#PX#	61



# ORDERING INFORMATION & Terms and Conditions

**ACOPIAN SELLS FACTORY DIRECT WORLDWIDE:** We do not use representatives or distributors. Contact Acopian for technical information or a quote.

**WARRANTY:** Acopian power supplies are warranted to be free from defects in material and workmanship for a period of five years (encapsulated devices, for one year) from date of original shipment. Acopian's obligation under this warranty is limited to repairing any power supply returned to the factory Service Department in Easton, PA and replacing any defective parts. Mini Encapsulated power supplies are not repairable. Authorization must be obtained from Acopian before a power supply may be returned for repair. Units must be well packed when shipping to Acopian; the repair of any damage incurred during shipment will be charged. Transportation charges are to be paid by the purchaser. A reinspection and handling charge will be applied to returned units found to have no defects. If a failure has been caused by misuse, operation in excess of specifications, or modification by the customer, repairs will be billed at cost; in such cases, a cost estimate will be submitted before work is started.

Acopian reserves the right to make changes or improvements in its products without incurring any obligation to install the same on products previously manufactured.

This warranty is in lieu of all other warranties, obligations, and liabilities, expressed or implied, and is the purchaser's exclusive remedy. Acopian makes no warranty, either express or implied, of merchantability, fitness for a particular purpose or otherwise. In no event shall Acopian be liable whether in contract, tort, or negligence, for special, indirect, incidental or consequential damages of any kind, including loss of business or profits, or any other losses incurred by the purchaser or any third party, the Customer's remedies being limited, at Acopian's option, to replacement, repair or credit at the price on the date of claim.

The validity, performance and construction of all terms and conditions and any sale made by Acopian shall be determined by the law of Pennsylvania, without regard to its conflict of law principles, and all parties to the transaction expressly consent to the jurisdiction of such courts and consent to the venue of the Court of Common Pleas for Northampton County, Pennsylvania.

**PRICES:** The prices shown are F.O.B. our factory; Easton, PA. or Melbourne, FL.. All prices and specifications are subject to change without notice. Minimum order is \$50.00.

**TERMS:** Net 30 days, subject to credit approval. Visa, MasterCard and American Express also accepted.

**SHIPPING:** Location permitting, small shipments are made by United Parcel Service, or by Parcel Post; larger shipments, by insured motor freight collect. Shipments can be made by air upon request. Risk of loss shall be F.O.B. Our Factory, even in cases where freight may be prepaid or allowed to destination by Acopian. If equipment is received in damaged condition, it is the customer's responsibility to contact the carrier and file a claim for damages.

**TIME FOR DELIVERY:** The time for delivery quoted by Acopian is the time required to ship from our plants. We will not be liable for delays in delivery caused by any reason beyond our control, including but not limited to acts of God, casualty, civil disturbance, labor disputes, transportation or supply difficulties, or any interruption of our facilities, and the quoted time for delivery shall be extended during the continuance of such conditions and for a reasonable time thereafter. In no event will Acopian be liable for any premium transportation, procurement, or similar costs incurred by the Customer as a result of conditions beyond Acopian's control resulting in Acopian's inability to deliver product in accordance with customer's requested delivery schedules.

**QUANTITY DISCOUNTS:** Discounts are available to quantity buyers and are dependent upon the order quantity and the manufacturing scheduling anticipated by the order, and apply only to the quantity and delivery ordered. Partial shipments are considered as separate orders for discounting purposes.

**EXPORT ORDERS:** A minimum export documentation charge of \$60.00 applies. (A minimum charge of \$25.00 applies on orders requiring customs forms for Canadian orders and for orders to certain U.S. territories.)

**MOISTURE/FUNGUS PROOFING:** Power supplies can be furnished with a moisture and fungus resistant varnish applied to interior surfaces. To order, add the suffix letter F to the model number. The additional cost is \$25.00 per output and requires two additional days. Not available on High Voltage, Mini Encapsulated, Rack Mounting, and Gold Box Switching models.

**TAGGING:** Maximum of 15 characters/spaces. Add \$10.00 to price.

**TEST DATA:** Cost, \$35.00 or 2% of order, whichever is greater.

**SPECIAL MODELS/MODIFICATIONS:** Cataloged models can be altered at the factory to meet special requirements. Contact the Applications Engineering Department to discuss your needs.

**PARTS:** The designs used in Acopian power supplies utilize standard components to the greatest practical extent. When replacements are required, the types originally used, or their equivalents, can usually be obtained most quickly from a local electronic components distributor.

Special components, such as transformers, are stocked at the factory warehouses. Contact the Applications Engineering Department for information on the parts required, referencing the model number of the power supply, the circuit designation of the component, and a description.

**PURCHASE ORDER ACCEPTANCE:** Orders are accepted subject to Acopian's Terms and Conditions. Any Terms and Conditions of any Purchaser's order, agreement, or understanding which are in addition to or inconsistent with Acopian's shall not be binding upon Acopian unless made in writing and accepted over the signature of an authorized officer of Acopian. Orders shall not be considered accepted until entered into production at our plant. Acopian reserves the right to refuse any order. All typographical and clerical errors are subject to correction by Acopian.

**RETURNED GOODS:** Acopian products are built on a per-order basis, and ordinarily no credit can be extended for their return. No goods will be accepted for return unless authorized in writing by Acopian.

**CHANGES:** The customer may, by a written notice, request changes within the general scope of the order, in the drawings, designs or specifications; method of shipment; and place of delivery. If any such change causes an increase or decrease in the cost, or the time required for the processing of any part of the order, an equitable adjustment shall be made in the price or delivery schedule, or both, and the order shall be modified in writing accordingly.

**CANCELLATION:** Suspension or cancellation of orders may be made only upon our written approval and on terms that will indemnify us against all loss.

**OVERTIME:** It is anticipated that any order will be processed during regular working hours on regular working days. If for any reason the Purchaser requests Acopian to process the order, or any portion of it, outside of such regular working hours, any overtime or other additional expense occasioned thereby shall be billed to and paid by the Purchaser as an extra cost. Acopian reserves the right to decline to process the order outside regular working hours.

**CUSTOMER DELAY OF WORK:** If the performance of all or any part of the work is delayed or interrupted by Customer's failure to act within the time specified (or within a reasonable time if no time is specified) and such act is not expressed or implied by the order, an adjustment shall be made in the cost of performance of the order caused by such delay or interruption and the order modified in writing accordingly. Adjustment will also be made in the delivery or performance dates and any other contractual provisions affected by such delay or interruption.

**GOVERNMENT SPECIFICATIONS:** Pricing is based upon industrial-grade construction, marking, packing, and packaging. Exception is taken to any MIL specifications, and to any requirements for the use of special forms, documentation other than quoted, and Government Source Inspection. Acopian must decline to quote on any other basis.

**APPLICATIONS ASSISTANCE:** Questions regarding the specifications, features, and use of any Acopian product should be directed to the Applications Engineering Department. A staff of power supply specialists will be pleased to assist you.

[www.acopian.com](http://www.acopian.com) - Now with Online Ordering and Instant Quotes Online!



Since 1957

Acopian Technical Company  
P.O. Box 638, Easton, PA 18044 • Phone: (610) 258-5441 • FAX: (610) 258-2842  
Call toll free: (800) 523-9478 (International: Country Code 01)

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

# Acopian = Reliability!



At Acopian, our customers have spoken time and again, telling us of their **great experience** with Acopian and with our Power Supplies. We've built our reputation on **reliability** and **unsurpassed customer service**.

## 5 year warranty

All Acopian metal-cased power products have a 5-year warranty, but you can expect them to last a lot longer. You may find power supplies that cost less or that are smaller, but you won't find any that last longer than an Acopian.

## Live salesperson

At Acopian, a knowledgeable sales associate answers your call, not an automated system. Our staff will courteously and promptly answer your questions, quote price and delivery, expedite your urgent requirements, and offer you immediate access to our engineers. Call 610-258-5441 or toll free 800-523-9478.

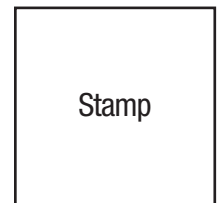
## Expedited shipments

If you require a power supply shipment earlier than our standard 3 or 9 Day Promise, we can usually ship sooner. We welcome the opportunity to work with you.

## Customized power supplies

We can often modify the specifications, ratings and configuration of a supply. We can also combine several power supplies into a Multiple Output Power System with the operating features you specify (such as meters and switches) and ship it within 9 Days.

Acopian Technical Company  
P.O. Box 638  
Easton, PA 18044



Phone: 610-258-5441  
FAX: 610-258-2842  
Call Toll-free: 800-523-9478  
[www.acopian.com](http://www.acopian.com)

