

Medical & Commercial Power Supplies
Custom Power Supplies
Custom Docking Stations
Custom Battery Chargers



Track Record of Success

U.S. Design Expertise, Chinese Production Efficiency

Elpac designs and manufactures high-performance AC DC power supplies, custom docking stations and battery chargers. We focus on providing standard products in the 5 to 200 watt range, with custom designs up to 500 watts.

45 Years Experience

Founded in 1960, Elpac now has operations centered in Irvine, California and Shenzhen, China. In Southern California we focus on product design, quality control and customer service. Production is centered at our own manufacturing and design center in China. This gives our customers a combination of American design expertise and Chinese production efficiencies.

Focus on Innovative and Custom Designs

We focus on innovative designs which meet our customers' most challenging requirements. A significant portion of our business comes from custom power supplies, docking stations, and battery chargers. Our customers include major international OEMs, often leaders in their fields, who use our products in applications including computing, medical devices, telecommunications and office automation.

Listening to Customer Needs and Rapidly Meeting Them

Our company emphasizes speed, quality, and customer satisfaction. We do this while maintaining a friendly atmosphere, where it's clear to visitors that we have a sincere connection with our customers and teammates.

Not surprisingly, the key to our success is our people. We have as many people here with 15+ years at Elpac as those with less than 5 years of service. That means our customers deal with experienced professionals. The result is a company that's growing and taking great care of its customers. So please let us know how we might be able to assist you. And thank you for considering Elpac.



Marshall Wright
Chief Operating Officer

Why Should You Choose Elpac?

We know you have many choices when selecting a partner to meet your power requirements. Here are the three reasons our customers repeatedly tell us they're glad they chose Elpac:

You get things Faster

OEM quantities of Fast Track™ models ship in 3 weeks or less ARO FOB Asia

You get superior Quality

5 year warranty

You get Knock-your-socks-off Customer Service

Rave reviews from customers

Product information may change without notice. For current information, please visit www.elpac.com.

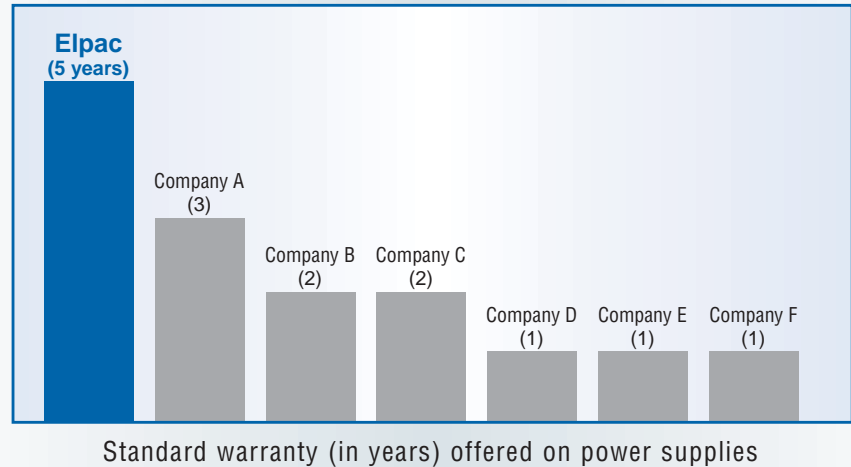
www.elpac.com • TEL +1 949 476-6070 • 1-888-ELPAC80 • info@elpac.com

Delivering Superior Quality

Field Failure Rates Below 50ppm

We understand that field failures increase your costs and decrease the value of your brand. That's why Elpac employs extensive quality systems to assure you that our power supplies will not need costly field repairs or returns. These quality methods allow us to offer you a 5 year warranty, the longest in the industry. It's your assurance of the superior quality that goes into our products.

Industry Leading 5 Year Warranty



Conservative Design Rules

We employ conservative electrical and mechanical design rules to achieve optimum reliability. Our designs provide specified performance at the extremes of line voltage, minimum and maximum current draw, temperature extremes, and applicable Regulatory Agency requirements. This is accomplished by employing conservative safety margins for power dissipation, voltage ratings, current limits and physical spacing. The end result is a design that assures specified operational performance and high reliability for the life of the product.

Stringent Vendor Qualification

All Elpac vendors are selected based upon quality. For example, we use only high-quality Japanese-supplied electrolytic capacitors for the prime power supply functions. We find that other available capacitors don't meet the rigid standards we demand for all of our component selections. When you want the very best, you have to start with superior quality components.

Demonstrated MTBF

All Elpac power supplies undergo burn-in for two to eight hours, plus at least one full ATE acceptance test. As a separate requirement, Elpac subjects all power supplies to a demonstrated MTBF program where we run units under higher-than-normal-temperature ranges and stress them with severe on/off cycling and extended full load/high temperature runs. This reliability testing is maintained until each product series has achieved a minimum demonstrated MTBF of at least 100,000 hours (typical MTBF is in excess of 500,000 hours).

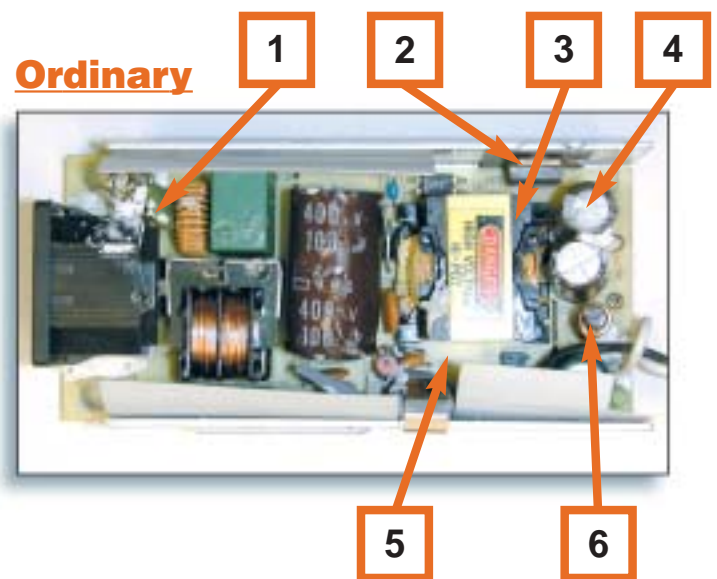
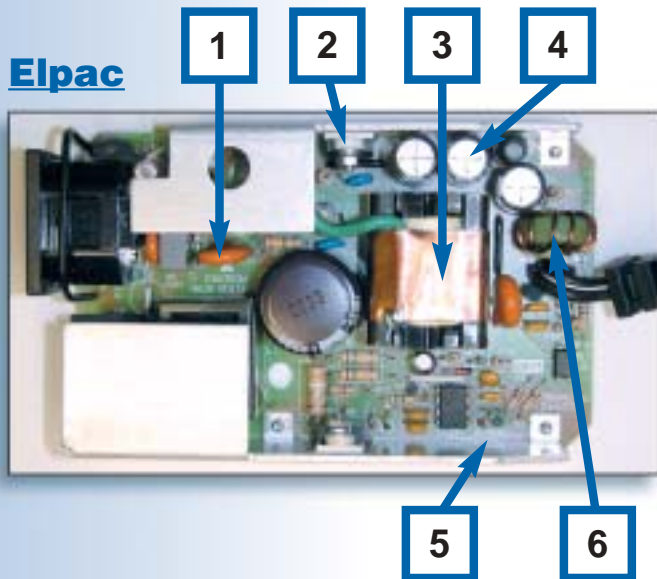
ISO 9001:2000 Certified

Both our Irvine and Shenzhen facilities are ISO9001:2000 certified.

The Elpac Difference Inside

Superior Design Separates Elpac from the Crowd

If you want a supply that lives up to a 5 year warranty and doesn't fail in the field, you have to design in superior quality. This page spotlights key differences between superior and ordinary supplies.



1 Y CAPS

Elpac uses high quality Y caps which provide superior EMI suppression, compared to the often sub-standard Y caps used by others. As a result, your product will speed through EMI lab testing.

2 MOSFETS

Elpac uses higher breakdown MOSFETs, to give you a buffer in handling spikes. The kickback voltage on a power supply can reach 565 volts, exceeding the MOSFET rating (typically 500 volts) in ordinary supplies. Elpac uses 600 volt MOSFETs to increase reliability.

3 CORES

Elpac uses high performance LP shaped cores in superior PC40 material from TDK, instead of local PQ type cores with standard materials. Therefore, your Elpac units run much more efficiently, cooler, and last longer.

4 OUTPUT CAPACITORS

Elpac typically uses 3 output capacitors (from a high quality Japanese manufacturer). Others typically use only 2 output capacitors. Since the output capacitor is often the first part to fail in a power supply, the Elpac design extends the life of your product.

5 BOARD

Elpac uses high quality FR4 board, where some others use paper boards. FR4 delivers superior moisture resistance so that your product benefits from reduced potential for dielectric failures.

6 OUTPUT INDUCTOR

Elpac uses a high quality toroid inductor on the output to suppress radiated EMI, where ordinary power supplies use a very small output inductor. As a result of this superior EMI suppression, the Elpac product speeds through EMI lab testing.

Custom Designs to Your Specs

Meeting Your Toughest Design Challenges

Custom products are a major portion of our business because customers know we deliver excellent results.

Collaborative Engineering Approach

We work closely with customers to address all aspects of the design – form factor, power, charging parameters, data transmission, mechanical and electrical requirements, cosmetic match, safety, agency approvals and more. We utilize the most popular design tools (e.g. PRO-E and Solid Works) to facilitate the exchange of information between your engineering team and ours. Working together, we can take your product concept, develop fully functional working models (complete with charging, transmission ports and other I/O capabilities) and produce finished product – faster than you might think possible.

Custom Power Supplies – We design and deliver custom power supplies for Medical and Commercial applications, typically with power levels ranging from 5-500 watts, with single or multiple outputs.

Custom Battery Chargers – We work with all chemistries including Lead Acid, NiMH, NiCad, and Lithium Ion. Our designs include rapid charge, trickle charge, and smart charge technologies, for single bay and multi-bay applications.

Custom Docking Stations – We have developed considerable expertise in the design and manufacture of docking stations. These products serve as operational platforms for handheld and mobile devices while providing power, charging, and data transfer capabilities. We do custom mechanical and electrical designs for Medical and Data applications, and can provide data transfer options including Ethernet, USB, and Wireless (802.11).

Deal with Engineering in Southern California

You'll work directly with engineers in Irvine, California. Communication will be in English, and meetings will be scheduled at times that are convenient for you (based on your time zone). Technical collaboration will happen frequently, and information exchange between your team and ours will be accurate and timely. Should problems arise, we're nearby and have senior technical staff on-hand ready to help you resolve the problem fast. We also have complete lab facilities in-house (including a UL testing lab and a screen room for EMI testing) to facilitate fast turn-around.



Custom Power Supplies



Custom Battery Chargers



Custom Docking Stations

Custom Power Supplies

Tailoring to Your Needs

Custom power supplies are a major portion of our business because customers know we deliver excellent results. We design and deliver custom power supplies for Medical (UL2601) and Commercial (UL1950) applications, typically with power levels ranging from 5-500 watts, with single or multiple outputs.

Collaborative Engineering

We work closely with customers to address all aspects of the design - form factor, power, charging parameters, data transmission, mechanical and electrical requirements, cosmetic match, safety, agency approvals and more.

We can give you a detailed schedule at the project start and conduct weekly conference calls between our engineering team and yours, so you know what's happening every step of the way. Working together, we can take your concept, develop working prototypes, and produce finished product much faster than you might think possible.

Very Satisfied Customers

Below are brief case studies of projects where customers gave Elpac custom requirements and were very pleased with the custom power supplies that we delivered.

CUSTOM POWER SUPPLY (MEDICAL)



Application:	Infusion Pump
Requirements:	20 watt open frame medical grade power supply with efficiency greater than 85%, wide range input, custom mechanical specs to fit into small space available in customer's system.
Elpac Role:	Listen to customer needs and meet them. Handle all aspects of mechanical and electrical design from concept through agency approvals and production.
Delivered:	Sample of a modified existing unit to begin testing the next day! This enabled the customer to power up their boards to start debugging their system. Delivered final prototypes to their specification with agency approvals in 12 weeks.
Result:	A very satisfied customer who engaged Elpac in additional projects.

CUSTOM POWER SUPPLY (ULTRA COMPACT)



Application:	Office Equipment
Requirements:	A custom power supply with ultra-compact form factor. Interchangeable plugs for delivery to international locations.
Elpac Role:	Do mechanical and electrical design in collaboration with customer. Serve as a turn-key manufacturer, deliver completed units.
Delivered:	Tooling, design and agency approved production units in 4 months.
Result:	No field returns in 4 years!

Custom Docking Stations

Simple to Multi-Purpose

Elpac docking stations range in complexity from simple cradles with single connectors for battery charging and data exchange... to multi-purpose, multi-bay intelligent docking stations with sophisticated charging capabilities, multiple data ports and I/Os for numerous peripheral devices.

A Turn-Key Partner

We can take your product concept, develop fully functional working models (complete with charging, transmission ports and other I/O capabilities) and produce finished product – all in a matter of weeks. Our approach includes addressing all aspects of the design – form factor, power, charging parameters, data transmission, mechanical and electrical requirements, cosmetic match, safety, agency approvals and more.

Very Satisfied Customers

The examples below show how our specialized experience in docking stations enables us to consistently meet customer requirements on time and on budget.

CUSTOM DOCKING STATION (WITH CHARGER)



Application:	Handheld computing
Requirements:	Handle data transmission via serial and Ethernet protocols. Integrate a charge solution on board to fully charge a Lilon battery in less than 2 hours in addition to charging the hand held computer. Ensure electrical design fits in a very small footprint to avoid exceeding acceptance criteria of end users.
Elpac Role:	Electrical & Mechanical design in close collaboration with customer. Project management from design through qualification & production.
Delivered:	Full custom Electrical and Mechanical design in 4 weeks. Fully functional units after 8 weeks with a custom tool.
Result:	Delivered working samples several weeks ahead of schedule. Program then went into volume production on time and on budget.

CUSTOM DOCKING STATION (MEDICAL)



Application:	Ambulatory Infusion Pumps
Requirements:	A custom docking station with a built in battery charger and power on a single compact board.
Elpac Role:	Electrical design in collaboration with customer. Serve as a turn-key manufacturer, deliver completed units.
Delivered:	Working electrical prototypes in 8 weeks. Product through agency in less than 8 weeks.
Result:	Customer launched their pump and docking station on schedule.

Custom Battery Chargers

All Chemistries

Elpac has considerable experience designing and manufacturing custom battery chargers for a variety of OEM applications. We work with all chemistries including Lead acid, NiMH, NiCad and Lilon and technologies including rapid charge, trickle charge and smart charge. We can also deliver intelligent battery packs with programmable microcontrollers. We frequently create chargers that also have power capabilities (typically in the 10Watt to 500Watt range). These can be packaged for use inside or external to your system, and tailored for Medical (UL2601-1) or Commercial/IT (UL1950) use.

"Design to Manufacture" Approach

We work closely with customers to address all aspects of the design -- form factor, power, charging parameters, data transmission, mechanical and electrical requirements, cosmetic match, safety, agency approvals and more. Working together, we can take your concept for a battery charger, develop working prototypes, and produce finished product much faster than you might think possible.

Very Satisfied Customers

The case studies below illustrate how Elpac can take custom requirements and deliver superior, custom battery chargers.

CUSTOM BATTERY CHARGER (INDUSTRIAL)



Application:	DC to DC power supply for a Fork Lift
Requirements:	Custom DC to DC power supply to take wide range input of 6-60VDC and deliver dual outputs of 12V, 4A each. Power supply to be rugged enough to sustain Vehicle Vibration Standards and occasional current and voltage spikes. Mechanical outline must remain the same as the customer's previous design which had only one output. Needed to eliminate using two power supplies from a previous source.
Elpac Role:	Do mechanical and electrical design in collaboration with customer. Deliver completed units.
Delivered:	Tooling, design, agency approved production units.
Result:	Customer completely satisfied and in volume production.

CUSTOM BATTERY CHARGER (MEDICAL)



Application:	Portable Ultrasound
Requirements:	Custom Charger with an auxiliary power output to run the equipment and simultaneously charge the battery. Frequency matched custom design, 90-264 VAC input, dual output, 15VDC @ 2Amp & 12.6VDC @ 1.8Amp with size constraints. Operating Temp: 0°-40°C @ 100% full load, 0°-50°C at 90% load. Special gold plated contacts on connector.
Elpac Role:	Do mechanical and electrical design in collaboration with customer. Deliver completed units.
Delivered:	Manufactured & delivered prototypes for approval (< 8 weeks). Obtained agency approvals & delivered final production (8 weeks). Responding to a customer-requested spec change, reworked 200 pieces of finished product and delivered for an important sales meeting (2 days).
Result:	Customer launched their product on schedule.

Superior Quality in China

Company Owned & Operated Facility



Outside View

Elpac operates its own factory in Shenzhen, China, which manufactures all Elpac power supplies, custom docking stations and battery chargers.

Elpac Electronics (Shenzhen), Inc. is led by American management, and all employees are full-time on the Elpac payroll. The facility operates under U.S. quality control principles and in close collaboration with Elpac headquarters staff in Irvine, California. All components are specified in the U.S. (for quality control) by Elpac personnel, and sourced in China (to lower purchasing costs) by Elpac personnel. So Elpac controls the entire supply chain.

The facility is registered to the most recent (2000) version of ISO9001. This provides Elpac customers with least cost production efficiency in combination with U.S. design expertise.

Elpac opened this new, expanded facility in Shenzhen, China (just a few miles from Hong Kong) on April 1, 2003. (We have been operating our own company in China for five years). The factory operates in 56,000 square feet, with space available to double production in the same facility.

Excellent Quality Ratings

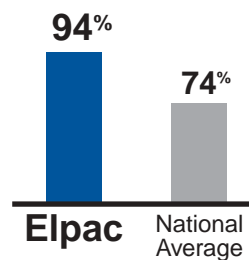
The company employs approximately 125 Chinese nationals and maintains high standards of social accountability, far surpassing the norm for quality of working conditions. This results in very low staff turnover, which is a major factor in maintaining high levels of quality. The facility has been audited in-depth by major multinational companies and passed with high marks. As a result, Elpac is now in volume production with these customers.



PCB Assembly

Knock-your-Socks off Customer Service

Recent surveys show Elpac far surpassing industry averages for customer satisfaction.



Final Assembly

Demonstrating MTBF

Elpac Demonstrates MTBF on Power Supplies (where others rely on “calculations”)

“Demonstrating MTBF” is a key element of how Elpac delivers superior quality and assures our customers lower field failures.

Ordinary power supply manufacturers only “calculate” MTBF (Mean Time Between Failure, or the average time a device will function before failing) as a way of suggesting that their power supplies last a long time. Elpac doesn’t believe this tells the whole story. We know that “calculated” results are subject to the assumptions they are based upon. To remove any doubt, Elpac “demonstrates” MTBF on all series by conducting extensive life testing.

Our life tests consist of running real units under higher than normal temperature ranges (e.g. 40°C, not 25°C), and stressing the units with severe on/off cycling at full load. This cycle is repeated until either a failure occurs or the tests are terminated. Below are recent results on several series of switching power supplies and a view of a typical test setup.

Demonstrating MTBF on Every Power Supply Series – Recent Test Data



(Typical Test Setup)

COMMERCIAL POWER SUPPLIES

Model Number	Hours Tested	Test Status	Results
FW18 series (2 models)	108,960	Completed	No failures
FW30 series (4 models)	160,800	Completed	No failures
FW50 series (4 models)	303,512	Completed	No failures
FW72 series (2 models)	100,800	Completed	No failures
FW100 series (2 models)	143,232	Completed	No failures
FWP72 series (6 models)	103,200	Completed	No failures
FWP80 series (2 models)	102,600	Completed	No failures
FWP100 series (2 models)	102,000	Completed	No failures
WM0705 series (2 models)	100,812	Completed	No failures
WM07 series (5 models)	100,800	Completed	No failures
WM10 series (3 models)	100,800	Completed	No failures

MEDICAL POWER SUPPLIES

Model Number	Hours Tested	Test Status	Results
MW12 series (2 models)	217,920	Completed	No failures
MW24 series (3 models)	265,440	Completed	1 fuse failure
MW40 series (3 models)	146,784	Completed	1 fuse failure
MSM20 series (3 models)	124,320	Ongoing	No failures
MSM28 series (4 models)	115,680	Ongoing	No failures
MSM60 series (2 models)	110,880	Ongoing	No failures

Elpac also conducts 100% ATE, 100% burn-in, 100% vibration testing and 100% Hipot (dielectric) testing on every power supply we ship. As a result, you can be even more comfortable with the quality of Elpac power supplies and recognize the added value of the Elpac industry-leading five year warranty.

Fast Track™ Power Supplies

Off-the-shelf Products Available with Short Lead-time



- OEM quantities shipped in 3 weeks or less ARO FOB Asia
- Worldwide agency approvals already completed (including UL, CE, CSA)
- 5 year warranty
- Medical and Commercial grade power supplies

Fast Track™ is an Elpac program that allows you to get OEM quantities at OEM pricing – much faster than is possible from other sources.

Our Most Popular Models

Fast Track™ models are available for Commercial (UL1950) and Medical (UL2601-1) applications in a variety of power levels and voltages, with and without Power Factor Correction. They accept wide ranging universal AC input, and provide fully regulated outputs at high efficiency, in compact form factors.

All models carry the industry leading Elpac 5 year warranty, which is your assurance of the quality in our designs that comes from over 40 years in the business and Field Failure Rates below 50ppm.

Agency Approvals Completed

Commercial (IT) power supplies are agency “listed” (not just “recognized”) so that you never have to re-submit, regardless of what you attach them to. These commercial models all comply with FCC class B, and CISPR 11 class B.

Medical models also carry the requisite agency approvals, including UL2601-1 (registered), CSA22.2 No. 601.1-M90, IEC601-1, and EN60601-1-2:2001. These models all comply with FCC class B, and CISPR 11 class B, and meet EMC requirements per EN60601-1-2. Choose from open frame models (internal to your system) or external, desktop models (so your system is smaller and runs cooler).

Currently we have seventy models on the Elpac Fast Track™ program. Please see our website or contact our sales team for additional information.

Rapid Response to Custom Requests

Our standard products give us a base to respond fast to requests for modified standard and custom products. That's because we design with standard platforms, and use common components across all platforms. We can also provide a wide range of custom DC output cables and connectors, and apply your custom label. Please contact us with questions or to discuss a custom product to meet your specific needs.

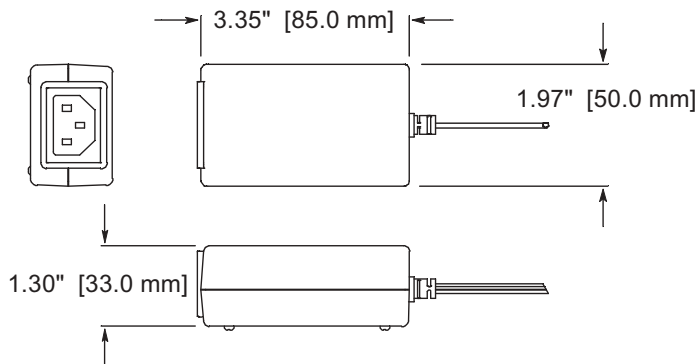
RoHS and WEEE

Elpac fully supports the European directives on the Restriction of Hazardous Substances (RoHS) and on Waste Electrical and Electronic Equipment (WEEE). We will have products in full compliance by the mandated deadlines. Please see our website for the most current details.



FW18 series

18 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.7 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

- UL UL1950
- cUL CSA 22.2 NO. 950
- Nemko EN 60950
- CE Marked

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.5 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

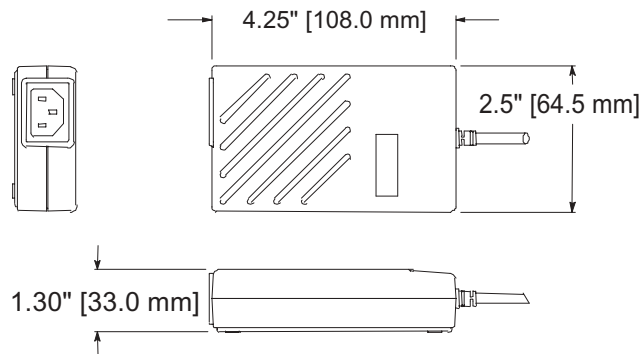
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% nominal at full load and 115 VAC (12 VDC and higher)
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... Barrel type (5.5 x 2.5 x 9.5 mm)

Model No.	Voltage	Power	Current
FW1805-760-NC	5V	15W	3.00A
FW1812-760-NC	12V	18W	1.50A
FW1818-760-NC	18V	18W	1.00A
FW1824-760-NC	24V	18W	0.75A

FW30 series

30 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.7 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

- UL UL1950
- cUL CSA 22.2 NO. 950
- Nemko EN 60950
- CE Marked

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

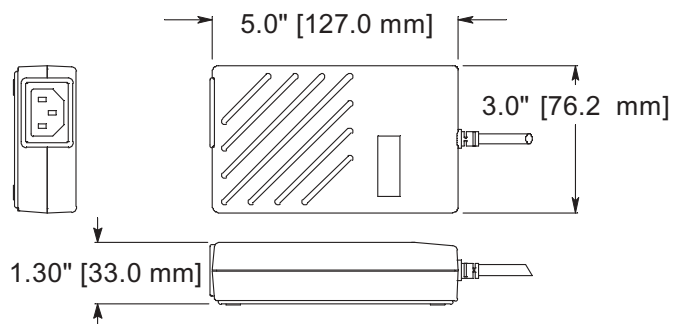
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... Barrel type (5.5 x 2.5 x 9.5 mm)

Model No.	Voltage	Power	Current
FW3012-760-NC	12V	30W	2.5A
FW3015-760-NC	15V	30W	2.0A
FW3018-760-NC	18V	30W	1.67A
FW3024-760-NC	24V	30W	1.25A

FW50 series

50 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.8 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

- UL UL1950
- cUL CSA 22.2 NO. 950
- Nemko EN 60950
- CE Marked

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

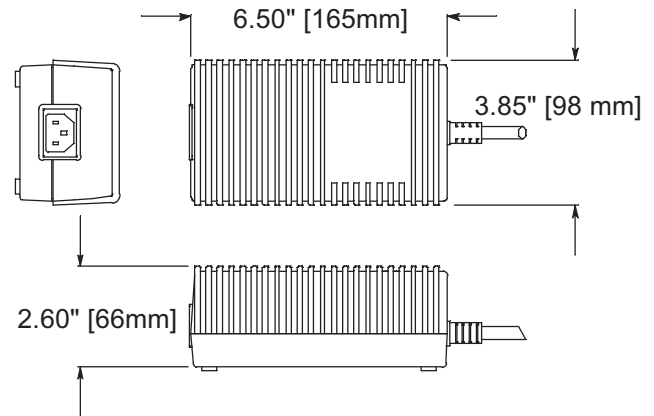
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... Barrel type (5.5 x 2.5 x 9.5 mm)

Model No.	Voltage	Power	Current
FW5012-760-NC	12V	50W	4.15A
FW5018-760-NC	18V	50W	2.75A
FW5024-760-NC	24V	50W	2.10A

FW60 series

60 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 2.5 lbs

EMI/EMC

Meets FCC class B, CISPR 22 class B

Safety

- CSA Certified to CSA 950
- NRTL/C : UL 1950, CSA 950
- CE Marked

Electrical Specifications

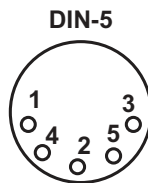
Input

- Voltage..... 100 - 240 VAC
- Current..... 2.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... 5 pin DIN

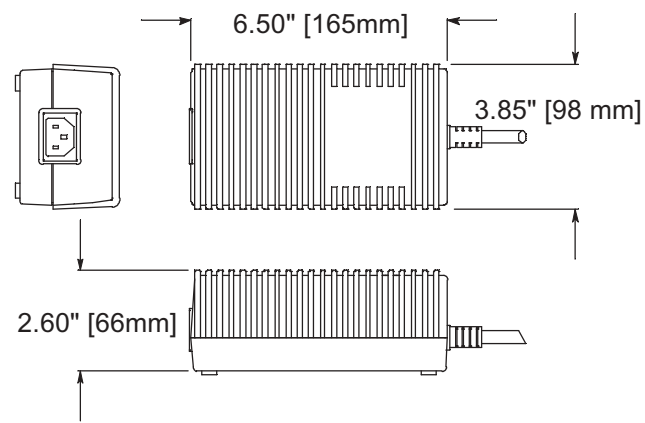
Polarity	1	2	3	4	5
DIN-5	Com	Com	+V	Com	+V



Model No.	Voltage	Power	Current
FW6012-D5-NC	12V	60W	5.0A
FW6024-D5-NC	24V	60W	2.5A

FW72 series

72 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 2.5 lbs

EMI/EMC

Meets FCC class B, CISPR 22 class B

Safety

- CSA Certified to CSA 950
- NRTL/C : UL 1950, CSA 950
- CE Marked

Electrical Specifications

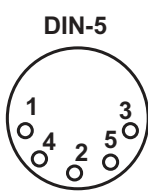
Input

- Voltage..... 100 - 240 VAC
- Current..... 2.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... 5 pin DIN

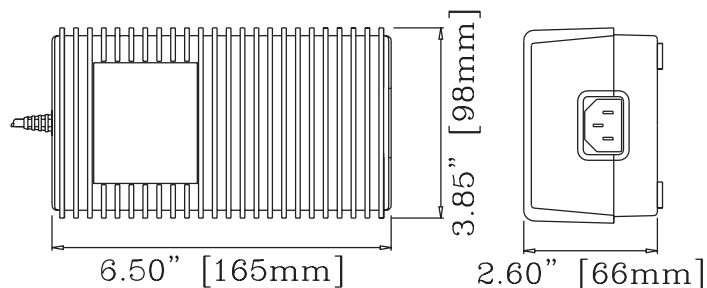
Polarity	1	2	3	4	5
DIN-5	Com	Com	+V	Com	+V



Model No.	Voltage	Power	Current
FW7212-D5-NC	12V	72W	6.0A
FW7224-D5-NC	24V	72W	3.0A

FWP72 series

72 Watt AC Adapter with PFC



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Power Factor Correction (PFC) circuit
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 2.05 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

- CSA Certified to CSA 950
- NRTL/C : UL 1950, CSA 950
- CE-Marked

Electrical Specifications

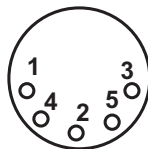
Input

- Voltage..... 100 - 240 VAC
- Current..... 2.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... 5 pin DIN

DIN-5

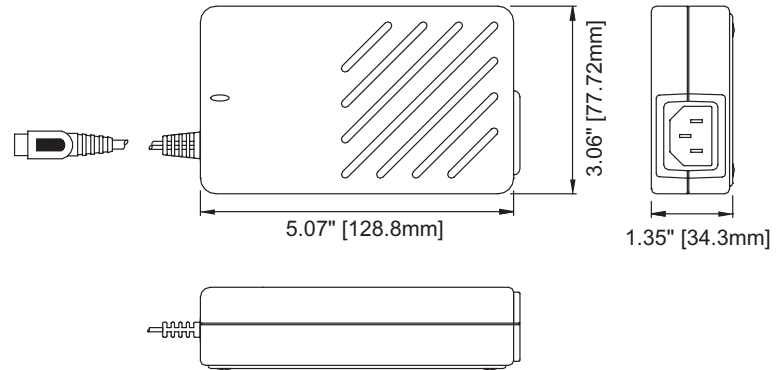


Polarity	1	2	3	4	5
DIN-5	Com	Com	+V	Com	+V

Model No.	Voltage	Power	Current
FWP7212-D5-NC	12V	72W	6.0A
FWP7215-D5-NC	15V	72W	4.8A
FWP7218-D5-NC	18V	72W	4.0A
FWP7224-D5-NC	24V	72W	3.0A
FWP7248-D5-NC	48V	72W	1.5A
FWP72-48-D5-NC	-48V	72W	1.5A

FWP80 series

80 Watt AC Adapter with PFC



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Level B EMI filter
- LED power indicator
- Power Factor Correction (PFC) circuit
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 1.10 lbs

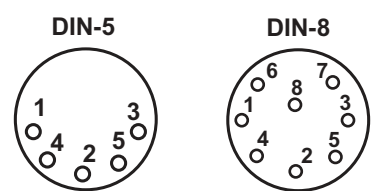
EMI/EMC

Meets FCC class B, CISPR 22 class B

Safety

- UL/cUL UL-60950
- CE Marked

Polarity	1	2	3	4	5	6	7	8
DIN-5	Com	Com	V	Com	V	-	-	-
DIN-8	V	V	Com	V	Com	V	Com	Com



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.84 Amp @ 115 VAC
- Frequency..... 47 - 63 Hz
- Input connector..... IEC 320 input receptacle

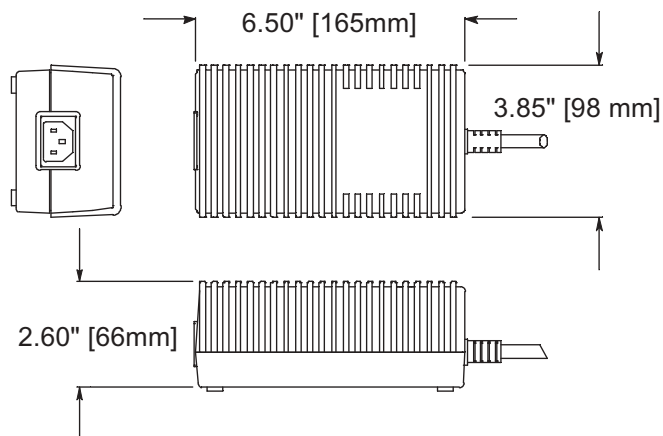
Output

- Line regulation..... TYP +/- 1% over 95 - 250 VAC range
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 85% nominal at full load and 115 VAC
- Transient response..... Recovery within 1% of nominal output within 2 ms for 50% to 100% load change. Max excursion of 6% from set point
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... DIN connector (5 pin or 8 pin)

Model No.	Voltage	Power	Current
FWP8012-D8-NC	12V	80W	6.67A
FWP8024-D5-NC	24V	80W	3.34A

FW100 series

96 Watt AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 2.5 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

CSA Certified to CSA 950
NRTL/C : UL 1950, CSA 950

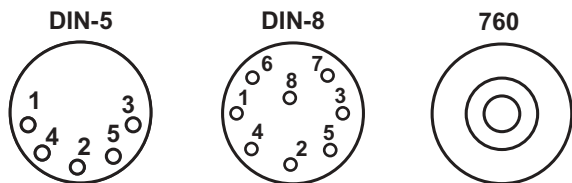
Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 3.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... DIN (5 pin or 8 pin), 760



Polarity	1	2	3	4	5	6	7	8
DIN-5	Com	Com	+V	Com	+V	-	-	-
DIN-8	V1	V1	Com	V1	Com	V1	Com	Com

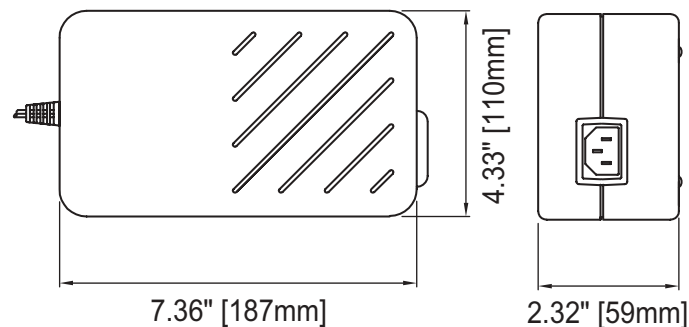
Polarity, 760:



Model No.	Voltage	Power	Current
FW10012-D8-NC	12V	96W	8.0A
FW10024-D5-NC	24V	96W	4.0A
FW10024-760-NC	24V	96W	4.0A

FWP100 series

100 Watt AC Adapter with PFC



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Power Factor Correction (PFC) circuit
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 2.35 lbs

EMI

Meets FCC class B, CISPR 22 class B

Safety

- CSA Certified to CSA 950
- NRTL/C : UL 1950, CSA 950
- CE-Marked

Electrical Specifications

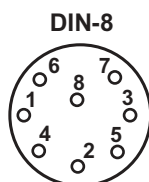
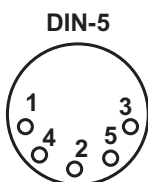
Input

- Voltage..... 100 - 240 VAC
- Current..... 3.0 Amp @ 100 VAC
- Frequency..... 47 - 63 Hz
- AC cord..... Optional
- Input connector..... 3 Pin IEC 320 input receptacle

Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... DIN (5 pin or 8 pin)

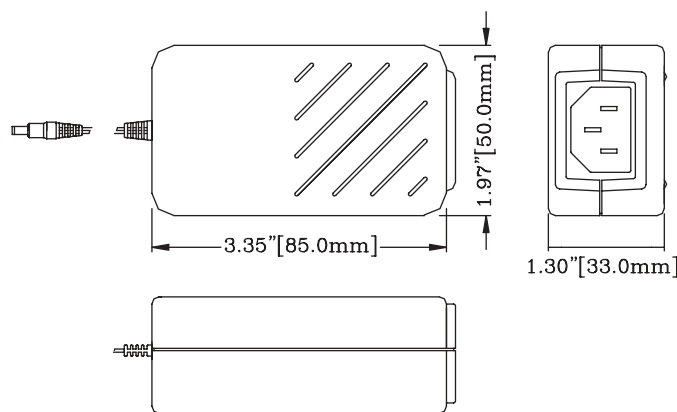
Polarity	1	2	3	4	5	6	7	8
DIN-5	Com	Com	V	Com	V	-	-	-
DIN-8	V1	V1	Com	V1	Com	V1	Com	Com



Model No.	Voltage	Power	Current
FWP10012-D8-NC	12V	100W	8.3A
FWP10024-D5-NC	24V	100W	4.15A

MW12 series

12 Watt Medical Grade AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- Also available in white
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.45 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Input and Output Connections

- Input connector (P1) = IEC 60320 inlet plug
- Output connector (P2) = 760 Barrel type

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 2.0 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	100 uA	200 uA
264 VAC 60 Hz	200 uA	400 uA

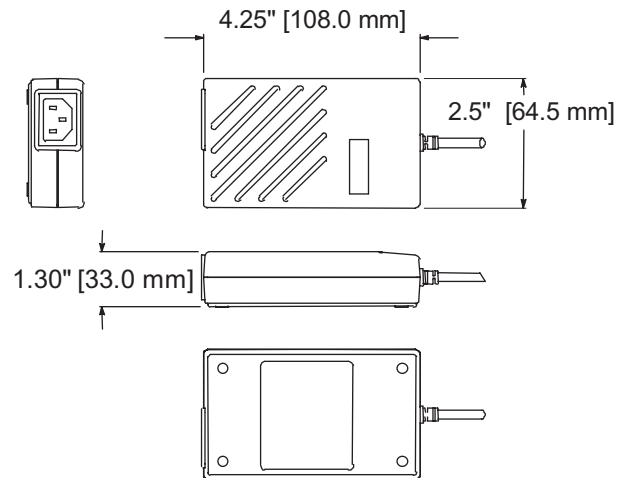
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MW1212-760-NC-BK	12V	12W	1.0A
MW1224-760-NC-BK	24V	12W	0.5A

MW24 series

24 Watt Medical Grade AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- Also available in white
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.45 lbs

EMI/EMC

Meets FCC class B, CISPR 11 class B

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.43 Amp @ 115 VAC
- Frequency..... 47 - 63 Hz
- Input connector..... 3 Pin IEC 320 input receptacle
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	55 uA	90 uA
264 VAC 60 Hz	110 uA	180 uA

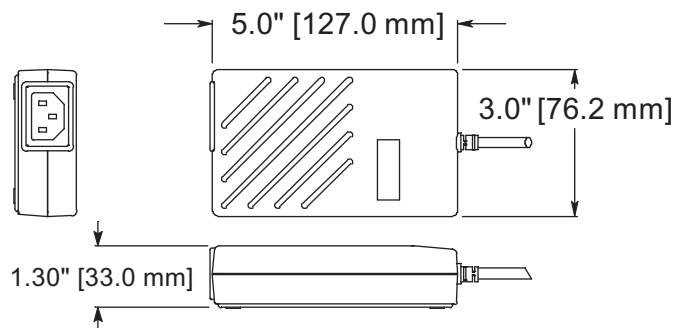
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)
- Output connector..... Barrel type (5.5 x 2.5 x 9.5 mm)

Model No.	Voltage	Power	Current
MW2412-760-NC-BK	12V	24W	2.0A
MW2415-760-NC-BK	15V	24W	1.6A
MW2418-760-NC-BK	18V	24W	1.33A
MW2424-760-NC-BK	24V	24W	1.0A

MW40 series

40 Watt Medical Grade AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- Also available in white
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.7 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UL 2601
- CSA 601
- IEC 601-1
- CE Marked EN60601-1-2:2001

Input and Output Connections

- Input connector = IEC 60320 inlet plug
- Output connector = 760 Barrel type

Polarity



Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.72 Amp @ 115 VAC
- Frequency..... 47 - 63 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	30 uA	45 uA
264 VAC 60 Hz	60 uA	90 uA

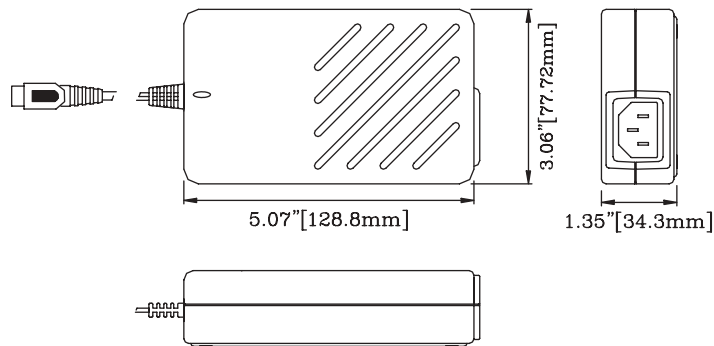
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... 5% Max
- Set point..... +/- 5% of rated output
- Hold up time..... 20 ms min at full load, 115 VAC
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Transient response..... 2 ms for 50% load change typical
- Ripple/noise (V_{p-p})..... 1%

Model No.	Voltage	Power	Current
MW4012-760-NC-BK	12V	40W	3.3A
MW4015-760-NC-BK	15V	40W	2.6A
MW4018-760-NC-BK	18V	40W	2.2A
MW4024-760-NC-BK	24V	40W	1.67A

MW65 series

65 Watt Medical Grade AC Adapter



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- LED Indicator
- Also available in white
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.8 lbs

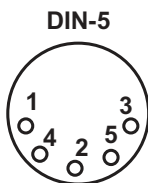
EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3	4	5
DIN-5	Com	Com	+V1	Com	+V1



Input and Output Connections

- Input connector (P1) = IEC 60320 inlet plug
- Output connector (P2) = DIN-5 pin circular connector
- Output cable length = 4ft (+4"/-0")

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.75 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	55 uA	75 uA
264 VAC 60 Hz	110 uA	150 uA

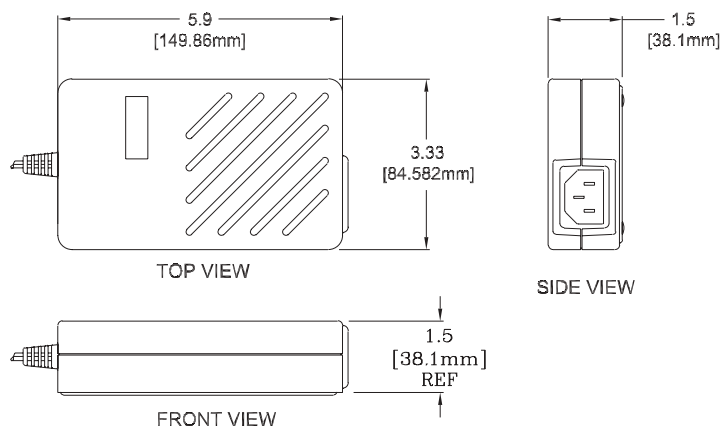
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... +/- 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MW6512-D5-NC-BK	12V	65W	5.4A
MW6515-D5-NC-BK	15V	65W	4.3A
MW6524-D5-NC-BK	24V	65W	2.7A

MWP90 series

90 Watt Medical Grade AC Adapter



Features

- Power factor correction
- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- Also available in white
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 40° C
- Storage temperature..... -55° C to 85° C
- Weight = 1.40 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2
- EN61000-3-2 and EN61000-3-3

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Electrical Specifications

Input

- Voltage..... 90 - 264 VAC
- Current..... 2.0 Amp @ 90 VAC
- Frequency..... 47 - 63 Hz
- Earth leakage current.....

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	100 uA	190 uA
264 VAC 50 Hz	190 uA	330 uA

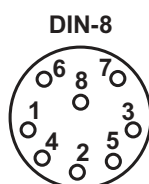
Output

- Line regulation..... TYP +/- 1%
- Load regulation..... TYP +/- 5%
- Set point..... +/- 3% at 60% load
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 500 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 90% typical
- Ripple/noise (V_{p-p})..... +/- 1% pk-pk (20 MHz bandwidth)

Polarity	1	2	3	4	5	6	7	8
DIN-8	V1	V1	Com	V1	Com	V1	Com	Com

Input and Output Connections

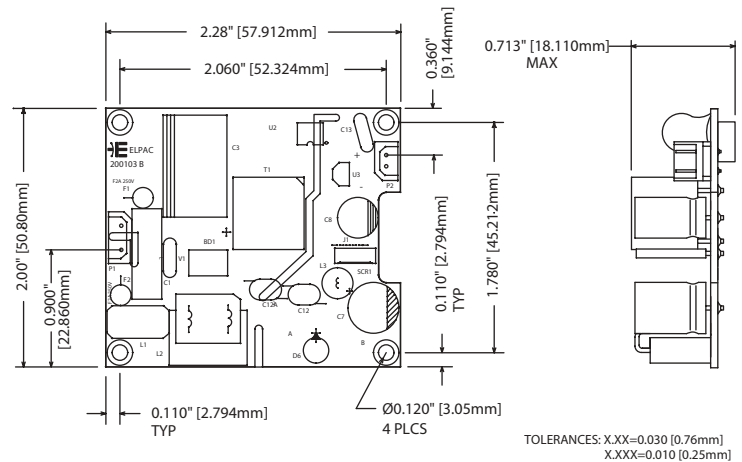
- Input connector (P1) = IEC 60320 inlet plug
- Output connector (P2) = DIN-8 pin circular connector
- Output cable length = 6 ft



Model No.	Voltage	Power	Current
MWP9012-D8-NC-BK	12V	90W	7.5A
MWP9015-D8-NC-BK	15V	90W	6.0A
MWP9018-D8-NC-BK	18V	90W	5.0A
MWP9024-D8-NC-BK	24V	90W	3.75A

MSM07 series

7 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.1 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3
Input P1	Neutral	-	Line
Output P2	+V	Com	-

Input and Output Connections

- Input connector = Molex p/n 22-43-8030
- Input mating connector = Molex p/n 50-37-5033 or equivalent
- Input mating connector contacts = Molex p/n 08-70-1040 or equivalent
- Output connector = Molex p/n 22-43-8020
- Output mating connector = Molex p/n 50-37-5023 or equivalent
- Output mating connector contacts = Molex p/n 08-70-1040 or equivalent

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.1 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Earth leakage current.....

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	32 μ A	50 μ A
264 VAC 50 Hz	55 μ A	85 μ A

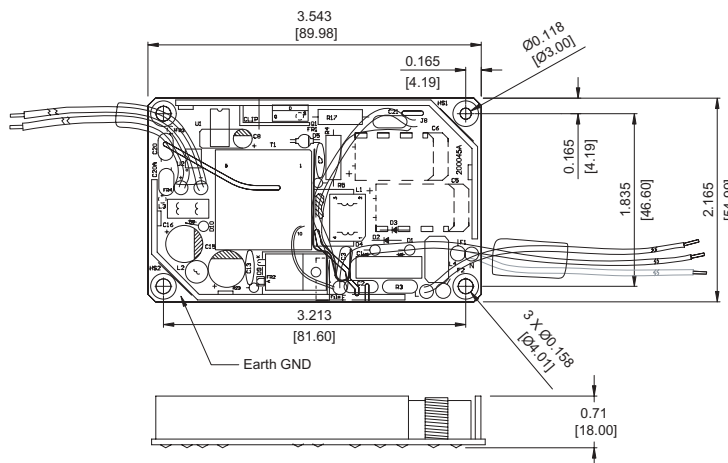
Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time..... 15 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM0705	5.1V	7W	1.4A
MSM0712	12V	7W	0.6A
MSM0715	15V	7W	0.5A
MSM0724	24V	7W	0.3A
MSM0728	28V	7W	0.3A

MSM20 series

20 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.30 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Input and Output Connections/Polarity

- Input ground connection = 8.0" min green/yellow UL 1015 wire
- Input line connection = 8.0" min white UL 1015 wire
- Input neutral connection = 8.0" min black UL 1015 wire
- Output +V connection = 8.0" min red UL 1015 wire
- Output common connection = 8.0" min black UL 1015 wire

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.38 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	90 uA	120 uA
264 VAC 50 Hz	150 uA	200 uA

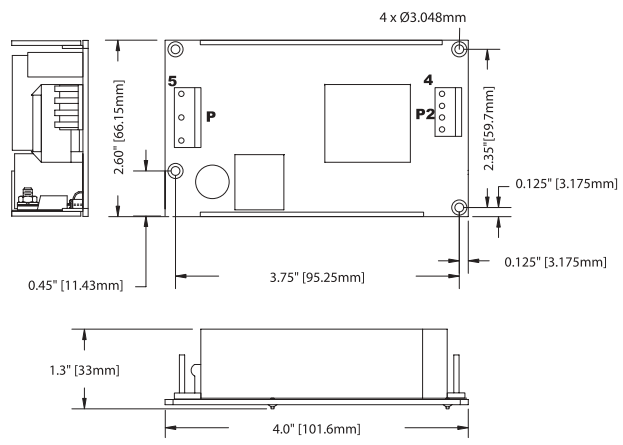
Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time..... 15 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% typ at full load and 115 VAC
- Ripple/noise (V_{p-p})..... 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM2012	12V	20W	1.67A
MSM2015	15V	20W	1.34A
MSM2024	24V	20W	0.84A

MSM28 series

28 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.30 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3	4	5
Input CN1	Earth Gnd	-	AC Neutral	-	AC Line
Output CN2	Com	Com	+V1	+V1	-

Input and Output Connections

- Input connector (P1) = AMP p/n 640445-5 or equivalent
- Input mating connector = AMP p/n 640250-5 or equivalent
- Output connector (P2) = AMP p/n 640445-4 or equivalent
- Output mating connector = AMP p/n 640250-4 or equivalent
- Mating connector contacts = AMP p/n 770476-1 or equivalent

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 0.55 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	25 uA	45 uA
264 VAC 50 Hz	50 uA	90 uA

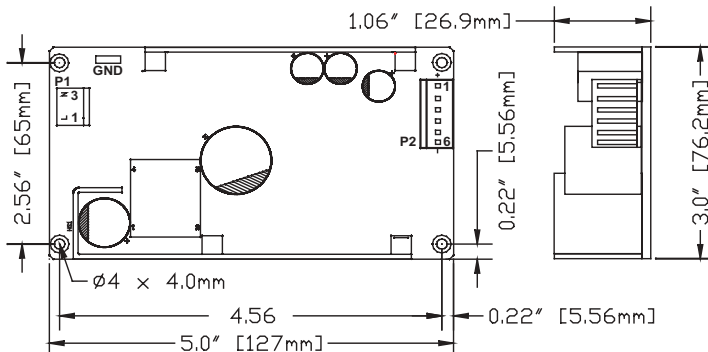
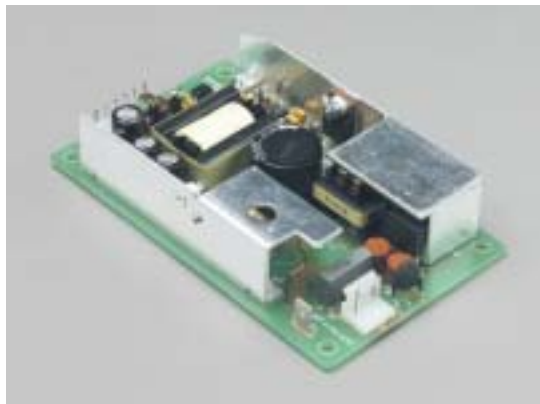
Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time..... 15 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM2812	12V	28W	2.3A
MSM2815	15V	28W	1.9A
MSM2824	24V	28W	1.2A

MSM40 series

40 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.40 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Input and Output Connections

- Input connector (P1) = AMP p/n 640445-3 or equivalent
- Input mating connector = AMP p/n 640250-3 or equivalent
- Output connector (P2) = AMP p/n 640445-6 or equivalent
- Output mating connector = AMP p/n 640250-6 or equivalent
- Mating connector contacts = AMP p/n 770476-1 or equivalent

Polarity	1	2	3	4	5	6
Input P1	AC Line	-	AC Neutral	-	-	-
Output P2	+V1	+V1	+V1	Com	Com	Com

Input P1 GND 0.25" FASTON TAB

Electrical Specifications

Input

- Voltage.....90 - 264 VAC
- Current.....0.72 Amp @ 100 VAC
- Frequency.....47 - 63 Hz
- Max. Earth leakage current:

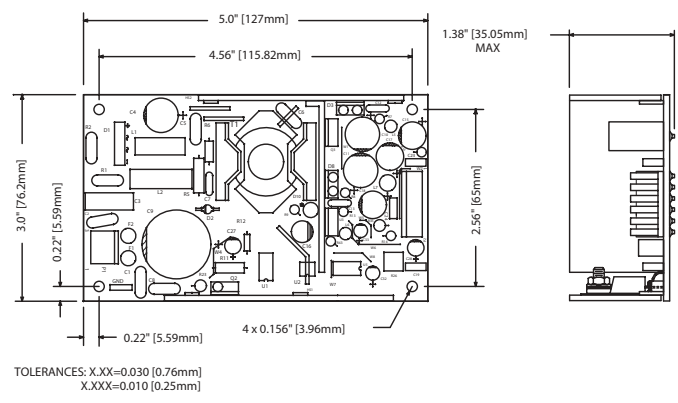
Test Voltage	Normal	Single-fault
132 VAC 60 Hz	25 uA	45 uA
264 VAC 50 Hz	45 uA	90 uA

Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time.....20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% load change typical
- Over voltage protection.....Built-in
- Over current protection..... 150% of max load
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... +/- 0.5% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM4012	12V	40W	3.3A
MSM4015	15V	40W	2.6A
MSM4018	18V	40W	2.2A
MSM4024	24V	40W	1.67A

MSM40-A/B/D series 40 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Multiple regulated outputs
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.55 lbs

EMI/EMC

- Meets:
- EN55022 Class B; FCC Class B
- EN55011 Class B; FCC Class B
- Static Discharge EN61000-4-2, 6 kV contact, 8 kV air
- RF Field Susceptibility EN61000-4-3, 3 V/meter
- Fast Transients/Bursts EN61000-4-4, 2 kV, 5 kHz
- Surge Susceptibility EN61000-4-5, 1 kV diff., 2 kV com

Safety

- UL2601-1
- CSA22.2 No. 601 Level 3 and IEC601-1. UL file E116994
- CSA #LR46516

Polarity	1	2	3	4	5	6
Input P1	Line	-	Neutral	-	-	-
Output P2	V2	V1	V1	Com	Com	V3

Input Ground 0.25" FASTON TAB

Input and Output Connections

- Input connector (P1) = AMP p/n 640445-3 or equivalent
- Input mating connector = AMP p/n 640250-3 or equivalent
- Output connector (P2) = AMP p/n 640445-6 or equivalent
- Output mating connector = AMP p/n 640250-6 or equivalent
- Mating connector contacts = AMP p/n 770476- * or equivalent

Electrical Specifications

Input

- Voltage..... 85 - 264 VAC
- Current..... 1.3 Amp @ 120 VAC
- Frequency..... 47 - 63 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
120 VAC 60 Hz	25 uA	35 uA
264 VAC 50 Hz	40 uA	60 uA

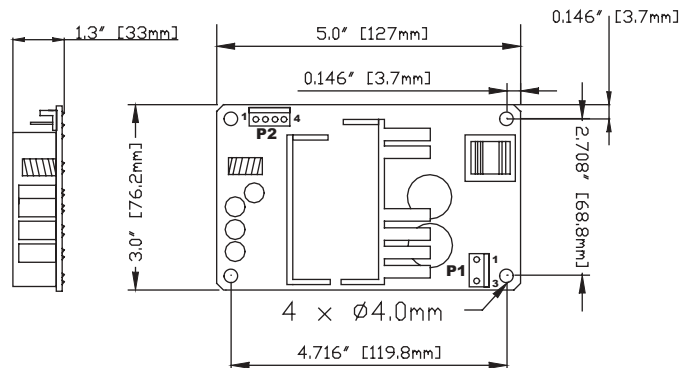
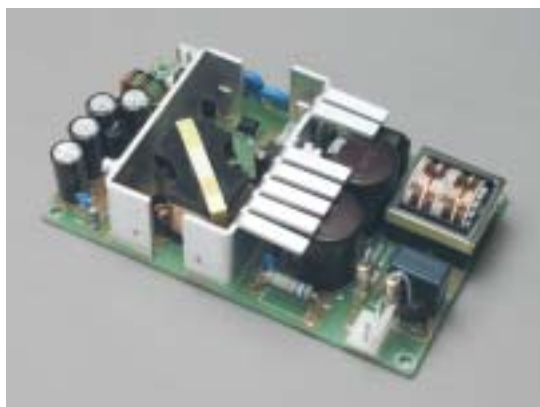
Output

- Total regulation..... V1 = 2%, V2 = 5%, V3 = 3%
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Main outputs: 124% +/- 12%
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 70% min at full load and 115 VAC
- Ripple/noise (Vp-p)..... 0.5% rms, +/-1% pk-pk (20 MHz bandwidth)

Model No.	Power	V1	I1	V2	I2	V3	I3
MSM40A	40 W	5.1	4	12	2	-12	0.4
MSM40B	40 W	5.1	4	15	2	-15	0.4
MSM40D	40 W	5.1	4	24	1	-12	0.4

MSM60 series

60 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.50 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3	4
Input P1	Line	-	Neutral	-
Output P2	Com	Com	+V	+V

Input and Output Connections

- Input mating connector = Molex p/n 09-50-3031 or equivalent
- Input mating connector contacts = Molex p/n 08-50-0105 or equivalent
- Output mating connector = Molex p/n 09-91-0400 or equivalent
- Output mating connector contacts = Molex p/n 08-50-0164 or equivalent

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.1 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Earth leakage current.....

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	50 uA	100 uA
264 VAC 60 Hz	100 uA	200 uA

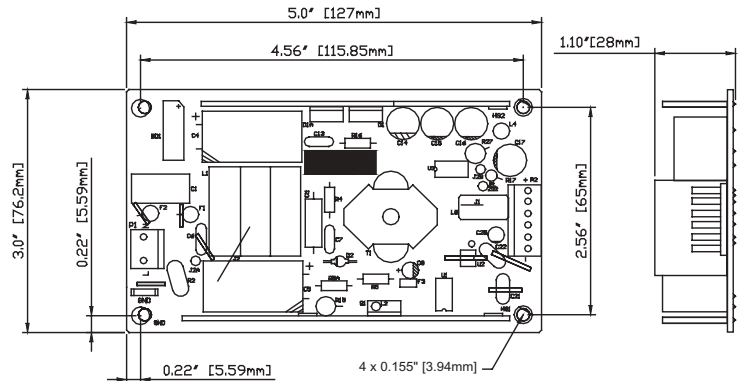
Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time..... 15 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... 1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM6012	12V	60W	5.0A
MSM6024	24V	60W	2.5A

MSM65 series

65 Watt Medical Grade Power Supply



Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- 5 year warranty

Environmental

- Operating temperature..... 0° C to 50° C
- Storage temperature..... -55° C to 85° C
- Weight = 0.85 lbs

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3	4	5	6
Input P1	Line	-	Neutral	-	-	-
Output P2	+V1	+V1	+V1	Com	Com	Com

Input P1 GND 0.25" FASTON TAB

Input and Output Connections

- Input connector (P1) = AMP p/n 640445-3
- Input mating connector = AMP p/n 640250-3
- Output connector (P2) = AMP p/n 640445-6
- Output mating connector = AMP p/n 640250-6
- Mating connector contacts = AMP p/n 770476-*

Electrical Specifications

Input

- Voltage..... 100 - 240 VAC
- Current..... 1.75 Amp @ 100 VAC
- Frequency..... 50 - 60 Hz
- Max. Earth leakage current:

Test Voltage	Normal	Single-fault
132 VAC 60 Hz	40 uA	60 uA
264 VAC 50 Hz	62 uA	120 uA

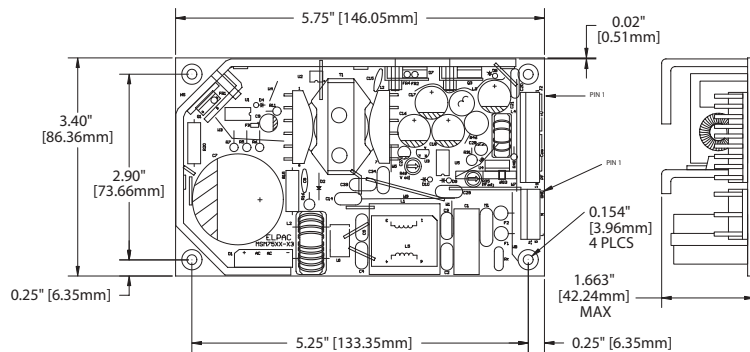
Output

- Line regulation..... TYP +/- 0.5%
- Load regulation..... TYP +/- 2%
- Hold up time..... 20 ms min at full load, 115 VAC
- Transient response..... 2 ms for 50% to 100% load change
- Over voltage protection..... Built-in
- Over current protection..... Built-in
- Short circuit protection..... Pulsing mode, auto recovery
- Efficiency..... 80% min at full load and 115 VAC
- Ripple/noise (V_{p-p})..... +/-1% (20 MHz bandwidth)

Model No.	Voltage	Power	Current
MSM6512	12V	65W	5.4A
MSM6515	15V	65W	4.3A
MSM6524	24V	65W	2.7A

MSM75 series

75 Watt Medical Grade Power Supply



TOLERANCES: X.XX=0.030 [0.76mm]
X.XXX=0.010 [0.25mm]

Features

- Wide range AC input
- Fully regulated output
- High efficiency
- Medical grade approval
- Dimensions meet 1U applications
- 5 year warranty

EMI/EMC

- Meets FCC class B, CISPR 11 class B
- EMC per EN60601-1-2
- Complies with EN61000-3-2 class A

Safety

- UR/cUR UL2601-1
- CE Marked EN60601-1-2:2001

Polarity	1	2	3	4	5	6	7	8	9
Input P1	Gnd	-	Neut.	-	Line	-	-	-	-
Output P2	+V	+V	+V	+V	Com	Com	Com	Com	Pwr Fail

Input and Output Connections

- Input connector = AMP p/n 643495-2
- Input mating connector = AMP p/n 640250-5 or equivalent
- Input mating connector contacts = AMP p/n 770476-1 or equivalent
- Output connector = AMP p/n 640445-9
- Output mating connector = AMP p/n 640250-9 or equivalent
- Output mating connector contacts = AMP p/n 770476-1 or equivalent

Electrical Specifications

Input

- Voltage.....90-264 VAC
- Current.....1.5 Amp @ 100 VAC
- Frequency.....47 - 63 Hz
- Earth leakage current.....70 uA, 264 V @ 50 Hz (normal condition)

Output

- Line regulation.....TYP +/- 1%
- Load regulation.....TYP +/- 3%
- Hold up time.....15 ms min at full load, 115 VAC
- Transient response.....2 ms for 50% to 100% load change
- Over voltage protection.....Built-in
- Over current protection.....Built-in
- Short circuit protection.....Pulsing mode, auto recovery
- Efficiency.....80% min at full load and 115 VAC
- Ripple/noise (V_{p-p}).....1% (20 MHz bandwidth)

Environmental

- Operating temperature.....0° C to 50° C
- Storage temperature.....-55° C to 85° C
- Weight = 0.50 lbs

Model No.	Voltage	Power	Current
MSM7512	12V	75W	6.3A
MSM7515	15V	75W	5A
MSM7524	24V	75W	3.1A
MSM7528	28V	75W	2.7A

Output Connectors

External Power Supplies

This page shows the DC output connectors that are most often used on Elpac external power supplies. The 760 and D5 are our standard output connectors. If you are interested in a different connector, we can assist you with a wide range of options. Please note that there is usually a minimum quantity required. All dimensions below are typical. Please contact us for complete details.

MODEL NO.	DESCRIPTION (For general reference only)	PROFILE AND DIMENSIONS (All dimensions in millimeters)
760	760 PLUG	
760RA	MOLDED RIGHT ANGLE 760 PLUG	
S760	S760 PLUG	
S760RA	MOLDED RIGHT ANGLE S760 PLUG	
S760K	LOCKING S760K PLUG	
D5	5 PIN DIN MALE CONNECTOR	
D8	8 PIN DIN MALE CONNECTOR	
KPP-4P	KPP-4P CONNECTOR	

Fast Track™ Product Matrix

These tables list the Fast Track™ power supplies available as of this printing. Please contact us for details on new models and program updates.

Commercial Grade (UL1950) – External (Desktop)

Watts DC Output	Series	Page	5V	12V	15V	18V	24V	48V	-48V	Notes
18	FW18	12	X	X		X	X			
30	FW30	13		X	X	X	X			
50	FW50	14		X		X	X			
60	FW60	15		X			X			
72	FW72	16		X			X			
72	FWP72	17		X	X	X	X	X	X	PFC
80	FWP80	18		X			X			PFC
96	FW100	19		X			X			
100	FWP100	20		X			X			PFC

Medical Grade (UL2601-1) – External (Desktop)

Watts DC Output	Series	Page	5V	12V	15V	18V	24V	28V	Notes
12	MW12	21		X			X		
24	MW24	22		X	X	X	X		
40	MW40	23		X	X	X	X		
65	MW65	24		X	X		X		
90	MWP90	25		X	X	X	X		PFC

Medical Grade (UL2601-1) – Open Frame (Internal)

Watts DC Output	Series	Page	5V	12V	15V	18V	24V	28V
7	MSM07	26	X	X	X		X	X
20	MSM20	27		X	X		X	
28	MSM28	28		X	X		X	
40	MSM40	29		X	X	X	X	
60	MSM60	31		X			X	
65	MSM65	32		X	X		X	
75	MSM75	33		X	X		X	X

Watts DC Output	Series	Page	5, 12, -12V	5, 15, -15V	5, 24, -12V	Notes
40	MSM40-A/B/D	30	X	X	X	Triple Output

Rapid Response to Custom Requests

We respond fast to requests for modified standard and custom products. We can provide a wide range of custom DC output cables and connectors, and apply your custom label. Please contact us to discuss a custom product to meet your specific needs.

New Products in Development

We have new products in development on an on-going basis. For the latest details, please contact us or visit www.elpac.com.

Product information may change without notice. For current information, please visit www.elpac.com.

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Why choose Elpac?

Exceptional Customer Service

- Experienced people who respond fast
- Customers can deal directly with Engineering

Leading Edge Quality

- 5 year warranty available (vs. industry standard 0-1 years); 40 year history to back it up
- MTBF demonstrated, not just calculated

Priced to Compete

- China manufacturing
- Company owned & operated facility

Accelerated Delivery

- OEM quantities of Fast Track models available in 3 weeks or less (vs. industry standard 9 weeks)
- Commitment to have your model, when you want it

Custom Design Capability

- Meet your toughest design challenges (when others say it can't be done)
- Work from napkin drawings or 3D CAD files

Get More Information

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