ENERGY EFFICIENCY

ENERGY EFFICIENT LEGISLATION

As an industry leader in developing environmentally friendly products and manufacturing solutions, Phihong is committed to meeting voluntary and mandatory worldwide regulatory initiatives. Phihong is an active member of several advisory committees and councils to establish compliance standards in the power supply industry. We are the first external power supply manufacturer to attain the U.S. Energy Star certification. We also have been recognized by the U.S. Environmental Protection Agency as an Innovation Design Eco Award Winner for environmentally friendly products.

Phihong's products meet the following energy efficiency standards, specifications and regulations. For more details, visit www.phihong.com/green/

CEC *www.phihong.com/green/*

Mandatory requirement Jan 1, 2007

On December 15, 2005, the California Energy Commission (CEC) adopted energy efficiency standards for external power supplies in consumer audio, video equipment, and appliances offered for sale in California. Since then, Arizona and Washington have followed suit and similar legislation is pending in New York and other states. The standards mandate minimum efficiency levels in active and no-load modes, as well as maximum standby requirements, and apply to single-voltage external AC-to-DC or AC-to-AC power supplies. The efficiency level is calculated based on power levels. Maximum energy consumption in no-load mode must be 0.5W if the output is less than 10W, and 0.75W if the output is between 10W and 250W. Phihong is also certified by the California Energy Commission to test for compliance in its labs.

CEC Standards for Power Supplies Effective - January 1, 2007

MARK*	DESCRIPTION	PERFORMANCE REQUIREMENTS			
		Nameplate Power Output (Pno)	No-Load Power	Nameplate Power Output (Pno)	Average Active Efficiency
I	Used if none of the other criteria are met				
III	California: CEC Tier 1 standard January 1, 2007 - (mandatory) - Laptop computers, mobile phones, printers, print servers, scanners, PDA, digital cameras July 1st, 2007 - Wireline telephones and all other applications	0 to < 10 watts 10 to 250 watts	< =0.5W < =0.75W	0 to 1 watt >1 to 49 watts >49 to 250 watts	>=0.49 x Pno >=0.09 xLn(Pno)+0.49 >=0.84
IV	California: CEC Tier 2 standard July 1, 2008 (mandatory)	0 to < 10 watts 10 to 250 watts	< =0.5W < =0.5W	0 to 1 watt >1 to 51 watts >51 to 250 watts	>=0.5 x Pno >=0.09 x Ln(Pno)+0.5 >=0.85

Where Pno is the nameplate Output Power of the unit under test. Ln refers to the natural logarithm.

* The international efficiency marking protocol provides a system for power supply manufacturers to designate the minimum efficiency performance of an external power supply, so that finished product manufacturers and government representatives can easily determine a unit's efficiency. This mark does not serve as a consumer information label, but rather demonstrates the performance of the external power supply when tested to the internationally supported test method.

EU Code of Conduct

The European Code of Conduct consists of a number of voluntary agreements with manufacturer associations and the European Association of Consumer Electronics Manufacturers (EACEM). It focuses on External Power Supplies, Digital TV Services, and Broadband Equipment.

Energy-Efficiency Criteria for Active Mode for Phase 2 (valid after January 1, 2007)

Rated Output Power (Pno)	Minimum Four Point Average (see Annex) or 100% Load Efficiency in Active Mode (expressed as a decimal)[2]
0 < W ≤ 1	≥ 0.49 * Pno
1 < W ≤ 49	≥ [0.09 * Ln(Pao)] + 0.49
49 < W ≤ 150	≥ 0.84[3]

Energy Star *www.energystar.gov*

Energy Star is an international standard for energy efficient electronic equipment, sponsored jointly by the U.S. Department of Energy and the Environmental Protection Agency. It was created in 1992 and now has been adopted by several countries around the world. In January 2005, Phihong became the first manufacturer of external power supplies to be named an Energy Star Program Partner. On average, Energy Star models are 35 percent more efficient than conventional designs, and often are lighter and smaller in size.

Energy Star Standards for Power Supplies Effective - January 1, 2007

MARK*	DESCRIPTION	PERFORMANCE REQUIREMENTS			
		Nameplate Power Output (Pno)	No-Load Power	Nameplate Power Output (Pno)	Average Active Efficiency
I	Used if none of the other criteria are met				
III	Energy Star Tier 1 standard January 1, 2005 (voluntary)	0 to < 10W 10 to 250W	< =0.5W < =0.75W	0 to 1W >1 to 49W >49 to 250W	>=0.49 x Pno >=0.09 xLn(Pno)+0.49 >=0.84
IV	Energy Star Proposed Tier 2 standard January 1, 2008 (voluntary)	0 to < 10W 10 to 250W	< =0.3W < =0.5W	0 to 1W >1 to 51W >51 to 250W	>=to be determined

Where Pno is the nameplate Output Power of the unit under test. Ln refers to the natural logarithm.

Australian/New Zealand Greenhouse (AGO)

Mandatory requirement Jan 1, 2007

The AGO is formulating product-specific plans to address excessive standby power over ten years, from 2002 - 2012, within the umbrella of the IEA "One Watt" initiative. Phihong is committed to meet these evolving requirements.

Canadian Standards Association

Pending mandatory requirement

The CSA is working to establish a Canadian national requirement for power supply manufacturers by 2008.

KEMCO

Pending mandatory requirement

KEMCO is a Korean partnership aiming for mandatory efficiency standards by 2010. The program encourages manufacturers to voluntarily create energy-saving home electronics and office equipment.

U.S. Department of Energy

Pending mandatory requirement

D.O.E. is working on a mandatory national requirement for power supply manufacturers to meet minimum energy-efficiency performance level and also no-load performance for a single-output external adaptor power supply.

China Energy Council

Pending mandatory requirement

The CECP works closely with Energy Star to encourage manufacturers to make more efficient products.

Blue Angel

Phihong meets Germany's Blue Angel regulations, which require standby power consumption to be listed in all product manuals.

Group for Energy Efficient Appliances

European national energy agencies and government departments working on voluntary information activities in the field of energy-efficient home electronics, office equipment and IT equipment.

Washington, Arizona, New York

Mandatory legislation for these states

International Marking Protocol

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MEETING SAFETY COMPLIANCE WORLDWI DE

In support of OEM requirements, Phihong works with these safety agencies and others, to obtain and maintain safety approvals on specified products. For safety approvals on a specific product, please refer to the data sheet.

AGENCIES	QAS	PSB	PSE	E-MARK	SEMKO	FIMKO	KEMA	UL/CUL
APPLICATIONS	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Vehicular Charger	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Power Supply
COUNTRY	Australia	Singapore	Japan	Europe	Sweden	Finland	Netherlands	USA

AGENCIES	TUV GS Mark	CSA	CE	KTL	IRAM	OVE	NF	SEV
APPLICATIONS	Adapter	Adapter Power Supply	Adapter	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply
COUNTRY	Germany	Canada	Europe	Korea	Argentina	Austria	France	Switzerland

AGENCIES	C-Tick	TUV S Mark	VDE	NOM	CEBEC	BSI	ASTA	PCBC	SASO
APPLICATIONS	Adapter Power Supply	Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply
COUNTRY	Australia EMI	Japan	Germany	Mexico	Belgium	UK	UK	Poland	Saudi Arabia

AGENCIES	FCC	BSMI	CCC	SABS	UL/CUL (Listed)	NEMKO	DEMKO	GOST
APPLICATIONS	Adapter	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter Power Supply	Adapter
COUNTRY	USA	Taiwan	China	South Africa	USA	Norway	Denmark	Russia

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EMC AND RoHS

Effective July 1, 2006, all electrical/electronic equipment needed to be RoHS compliant.

CE and EMC Compliance

The EU requires that electrical products sold in that region be constructed so that they do not cause nor are they susceptible to specified levels of electromagnetic interference. To comply with these EMC (electromagnetic compatibility) regulations, products undergo a comprehensive series of tests to avoid or reduce the influence of electromagnetic phenomena on the product itself, and/or on living or inert matter.

Virtually all of Phihong's products meet EMC Directive 89/336/EEC and are marked for CE compliance. The CE marking indicates that the product meets the Low Voltage Directive 73/23/EEC and the EMC Directive, requirements. While Phihong's open frame power supplies are regarded as components that perform "no direct function and are not intended to be placed on the market for distribution and final use" — and as such are exempt from the EMC Directive — many of the open frame power supplies nevertheless meet the majority or all of the Directive's requirements for stand-alone products.

RoHS

The European Reduction of Hazardous Substances (RoHS) Directive restricts the levels of lead, cadmium, mercury, hexavalent chromium, PBB or PBDE that can be contained in new electrical and electronic equipment.

Phihong has been manufacturing many products lead-free for five years even before the RoHS directive took effect. While other manufacturers are still working to comply with these regulations, every single standard product manufactured by Phihong after June 2006 is RoHS compliant. This is a tangible demonstration of Phihong's dedication to stay ahead of the curve with products that both exceed customer expectations and comply with demanding environmental regulations.

CE EMC Requirements

To comply with the EMC requirements, there are a comprehensive series of tests that apply to our products, including:

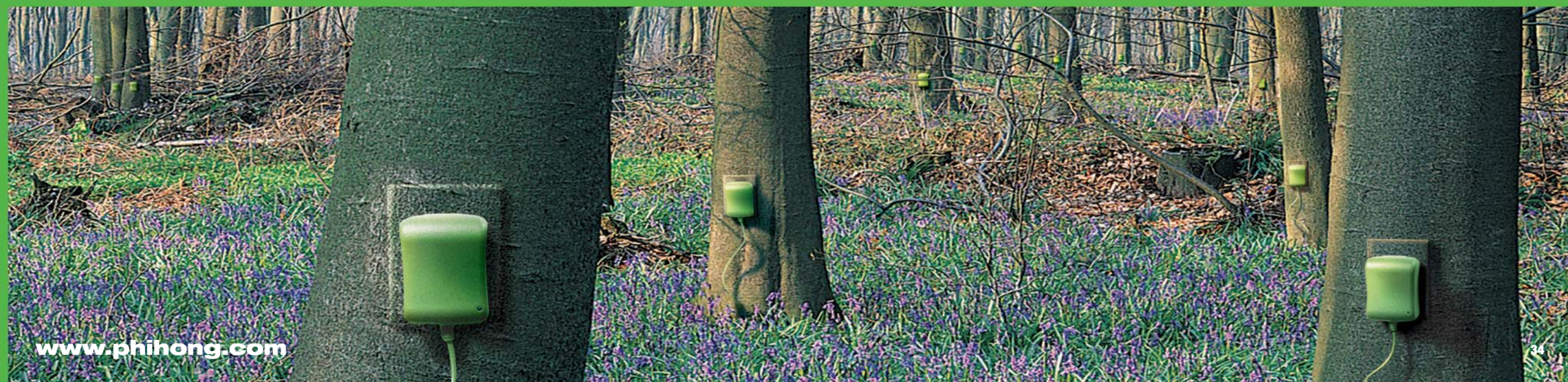
Susceptibility*

EN61000-4-2	Electrostatic Discharge
EN61000-4-3	Radiated Susceptibility
EN61000-4-4	Burst/Fast Transients
EN61000-4-5	Surge/Lightning Strike
EN61000-4-6	Conducted Susceptibility
EN61000-4-8	Power Frequency Magnetic Field
EN61000-4-11	Dips and Brown-outs

Emissions

EN61000-3-2	Harmonic Input Current
EN61000-3-3	Flicker
EN55022/CISPR 22	Radiated and Conducted Emissions

*Please note that for each of these tests there are various test levels that are specific to the application. For specific levels, please consult the product datasheets or your local Phihong Sales Engineer. Note also that the standards allow for various acceptance criteria, including whether the product fails in a safe manner. All Phihong products are designed to operate through an event with the exception of some battery charging products, which will automatically recover after the event.

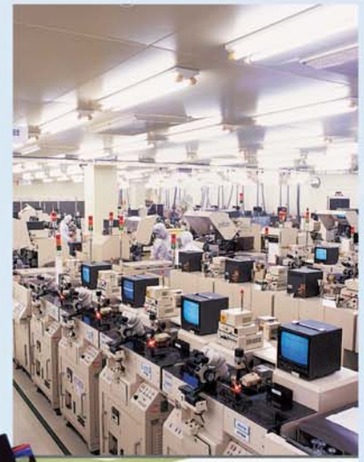


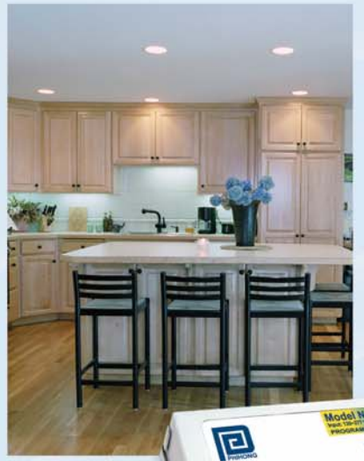
LIGHTING SOLUTIONS

Phihong manufactures a comprehensive range of electronic ballasts for commercial and residential lighting applications. Our high frequency, energy-efficient fluorescent ballasts provide reliable high-quality lighting performance. Backed by a five-year warranty, rigorous quality standards, 100% burn-in testing and advanced life testing, our solid-state products meet ENERGY STAR and other industry standards. Our commitment to quality, cost control and customer service is supported by a network of worldwide manufacturing, warehousing and service support centers.

Fluorescent Ballasts

Phihong produces a wide range of highly efficient electronic ballasts (T5, T5HO, T8 and T12), all of which meet UL, cUL and other key industry standards. Each ballast is subject to Phihong's rigid quality control procedures. We guarantee our ballasts with a five-year warranty and provide warehouse and service support centers in North America for faster response.





Compact Fluorescent

Phihong adapters are designed for OEMs of residential lighting fixtures, including 3-way dimmable and high intensity lamps. These products fit into a tight mechanical package and meet all UL and safety requirements while supporting a low price tag to end-users.

LED Lighting

Phihong designs and builds power supplies for displays and channel lighting solutions. These products have extremely high efficiency and have the ability to operate in extreme environments.

PHIHONG

QUALITY

Phihong employs quality measurements in every aspect of the organization, including the design and manufacturing processes, supplier management and employee selection and training.

Design Quality

Design Philosophy

We evaluate every design for long-term performance with component derating, statistical tolerance checks, reliability prediction and application abuse survival prediction. This has a significant impact on the dependability of each product.

Design qualification

ALT (Accelerated Life Test) is performed by an independent design audit department to validate conformance to specification and design quality prior to release to production.

Failure Mode Effects Analysis

FEMA is a systematic process used for identifying potential design and process failures before they occur, with the intent to eliminate or minimize the risk associated with them.

Production Control

Outgoing Quality Control

During OQC, boxes are opened at random and products are inspected before shipment.

Statistical process controls

These controls, such as Cpk analysis, measure in real time the performance of all manufacturing design processes.

Training & Certification

We achieve consistent manufacturing quality through proper employee selection and training. Employees are thoroughly trained and certified in the manufacturing process and procedures, and each employee is re-certified on an ongoing basis.

Elimination of repair & rework

Our company culture requires us to “do it right the first time.” We shut the line down if two failures in a process occur consecutively. We then identify and address the root cause before resuming production.

Supplier Management

Material controls

Controls include IQC, FIFO, shelf life control and a material review board (MRB), which quarantines incoming materials and drives corrective action from suppliers.

Preferred supplier program

Requires vendors to adhere to strict standards in order to qualify for our “preferred” list and to take corrective action to maintain preferred status.

Customer Relationships

Product specification and definition

Detailed product specifications and terms are defined through mutual agreement with the customer, ensuring products meet customer needs exactly.

Root cause analysis

This is performed using failure tree and an 8D problem solving process to identify, correct and eliminate the recurrence of quality problems.

Customer Audits

We encourage our customers to audit and make recommendations on how to improve. We continue to learn and adopt the best practices.

Certifications and approvals:
ISO/TL9000

MANUFACTURING

We build more power supplies in a month than most companies make in a lifetime. Phihong capitalizes on low manufacturing cost and low cost, high quality suppliers to remain competitive in today's global business environment. With four major manufacturing facilities in China and one in Brazil, Phihong's 4,500+ employees produce more than 15 million units per month, most at 100ppm quality levels or better.

Manufacturing Capacity

China 1 (Dong Guan)	China 2 (Dong Guan)	China 3 (Tianjin)	China 4 (Suzhou)	China 5 (Suzhou)	Brazil (Santa Rita)
Power supplies, cell phone accessories; 156,000 sq. ft.	Power supplies, cell phone accessories, lighting; 440,000 sq. ft.	Cell phone accessories; 156,000 sq. ft.	Lighting products; 94,120 sq. ft.	Power Supplies, lighting products; 1,000,000 sq. ft.	Power supplies, cell phone accessories, UPS, PC motherboards; 235,000 sq. ft.




Process Automation

Phihong automates the manufacturing process as much as possible to ensure the highest possible product quality and to expedite production. Our SMD and auto insertion process lines enable Phihong to place more than 100 million components per month. Because we understand how difficult it is for our customers to forecast demand, we have developed the ability to ramp up or shift down quickly without sacrificing quality.

Product Verification

We perform a battery of automatic tests on each product to verify conformity to performance specifications and validate that the manufacturing process is in control. All products undergo 100% burn-in at elevated temperature and cycled input line conditions. An AQL procedure is applied to reduce burn-in with demonstrated zero defects.

Material Control

All incoming material is inspected for conformance to specification, then date-coded and entered into a FIFO inventory system with environmentally- and ESD-controlled storage. We also carefully manage and select our suppliers, keeping them close to our facilities and insisting on lower cost, faster delivery and higher quality.

5S Management

Phihong uses 5S management to maintain our facilities so that they are kept immaculately clean and well organized. "5S" refers to five Japanese words that translate as: classified (SEIRI), organized (SEITON), clean (SEISO), clear (SETKTSU) and cultivated (SHITSUKE). Our facilities are continuously monitored and checked according to these principles. Employees are rewarded and recognized for helping to maintain these standards.