PHIHONG

Powered Devices

Power and Data
Extender

Active Splitter

THE MIDSPAN SOURCE

Power & Data over
Ethernet

Multiport Midspans

Outdoor
Midspan

Data
Transfer

UPS

Power

Network Switch

PHIHONG POE SOLUTIONS

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![PHIHONG]

About Phihong

Since 1972, Phihong has been at the forefront of technological innovation in power electronics manufacture and design. By employing the latest in technology and research and development, Phihong's customers have continued to expect and receive the best possible products with on-time delivery and exceeding worldwide standards in efficiency and safety.

With a truly international space covering North America, Europe, and Asia, Phihong has design labs and local sales support centers in California, New York, the Netherlands, China, Japan, and Taiwan; Phihong is a top choice for OEMs serving datacom, telecom, personal electronics, networking, lighting, and industrial markets.

Focusing on engineering excellence, product reliability, and a commitment to customer service, sales have continued to grow proving a continued dominance in the power technology industry with a broad line of cost competitive highly efficient products that comply with international standards.

OEMs also choose Phihong to partner on custom projects to meets the needs of very special programs not satisfied by the standard product offerings. With a long history in both standard and custom power designs, Phihong has one of the market's broadest lines of cost competitive and highly reliable power solutions.

Phihong USA Sales (in millions)
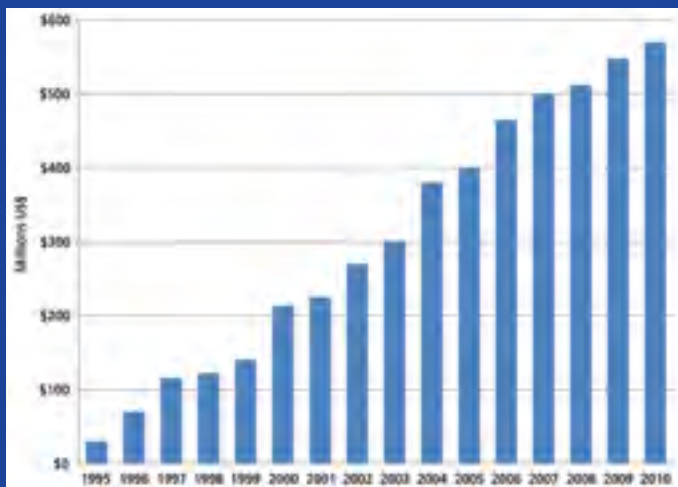
Demonstrating Engineering Excellence
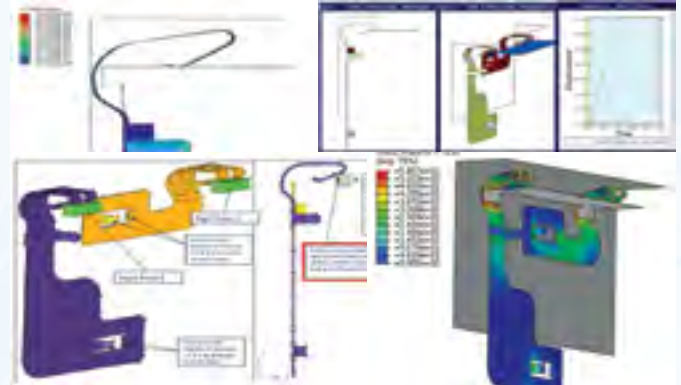
Finite Element Analysis

- Virtually stress test materials in the design
- Reduce the number of prototypes
- Dramatically increase speed from development to production
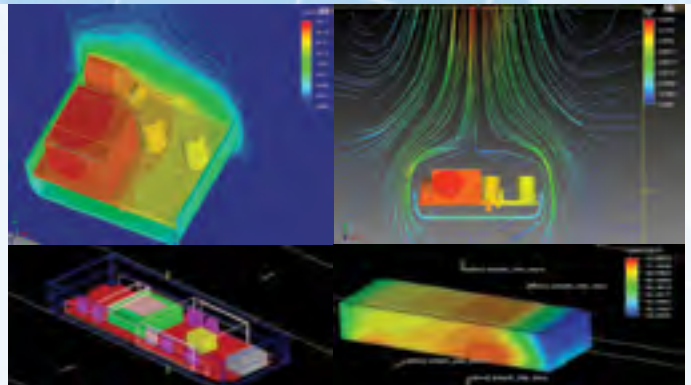
Thermal Simulation

- Virtually simulate thermal stress tests for individual parts to full PCBs
- Analyze the heating and cooling of parts in relation to each other to accurately diagnose conflicts before they occur
- Reduce the number of prototypes needed for real time thermal stress tests
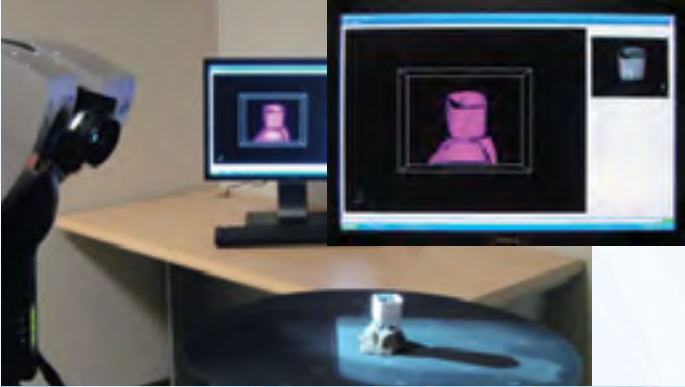
3D Scanning

- Verify that prototype case tooling matches design
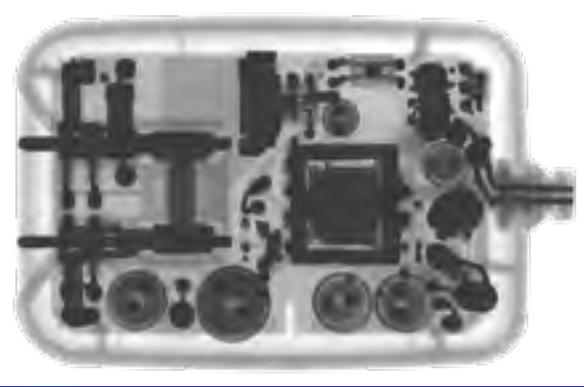- Monitor structural changes accurately following stress tests for more detailed analysis
- Enhances integration with complex parts

Non-Destructive Failure Analysis

- Analyze internal structure for quality without damage to external packaging
- Verify soldering and component connections are accurate and appropriate

Process Automation

- Increases production speeds, capacity, and overall product quality
- Minimizes costs as the cost of labor increases and reducing the need for manual processes


Automated Optical Inspection

- All defects found; nothing overlooked by human error
- Quantitative measure instead of operator judgement using a complex algorithm to detect faults

www.phihong.com

Power over Ethernet

Power-over-Ethernet (PoE) technology combines the advantages of enhanced security with design flexibility by coupling data and power over a single Ethernet cable. As popularity and awareness continue to grow, the availability of solutions from IP Telepathy to computer workstations and advanced security applications have increased as well enabling users to build and maintain complex yet concise networks. Able to install without the need of local AC mains power, and with indoor and now outdoor solutions, plug-and-play technology and no required power management, users can construct and optimize their business networks and security systems without having costly overhead expenditures.

Currently there are two standard power levels as drafted and implemented by the IEEE 802.3 commission, of which Phihong was a founding member. The entry level designated 802.3af is for lower power applications requiring up to a maximum 12.95W. This was later upgraded to the 802.3at standard which increases the power to include applications requiring up to 25.95W. Phihong continues to supply its customers with the markets broadest PoE line up of midspans, single-port power injectors, splitters, extenders, and now outdoor solutions that allow users to truly customize their networks.
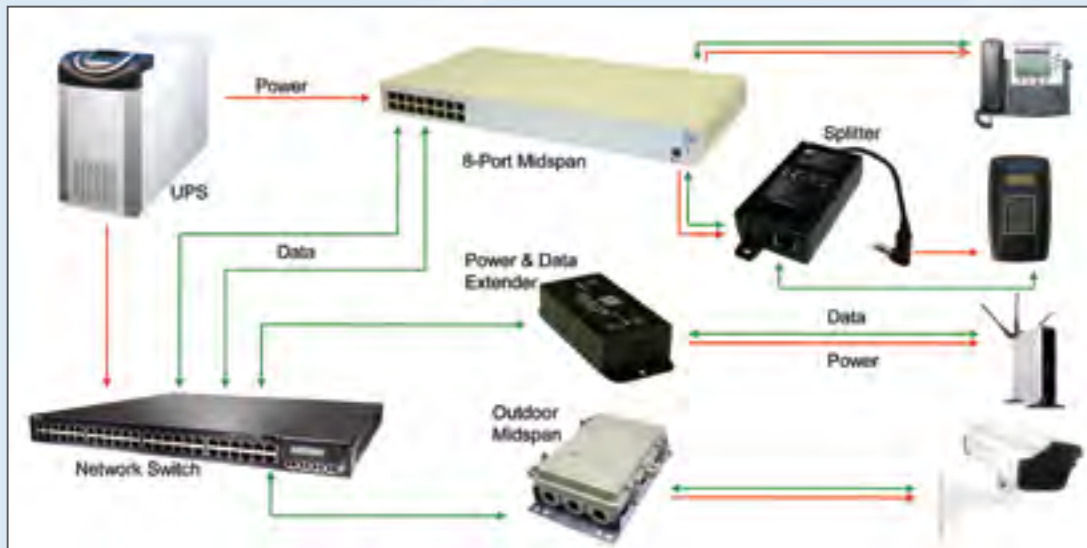
Benefits of Phihong PoE Solutions

Simplicity
• Plug-and-Play makes Phihong midspans ready to use out of the box with little to no set-up required

Freedom
• Low-voltage and safe to handle
• No need to install AC power in hard to reach places for significant cost savings
• Adapt; use a splitter to convert PoE into data and a separate DC Voltage to power non-compatible devices

Selection
• The widest array of output power options available on the market from 15.4W per port up to the most powerful 95W per port
• Multiple port options from single port units to 4, 8, 16 and 24 ports available in most power outputs
• Innovative solutions to expand your network to cover greater distances including indoor and outdoor applications
• Designed to meet all network needs from small business applications to enterprise functionality with full power every port
• Control your power with passive power options to managed network protocol

Investment Protection
• Provides a solid platform for your networking hardware investment, and supports future PoE enabled application requirements
• Operational resiliency
• Leverages a centralized power delivery process though an uninterrupted power supply (UPS) for backups to avoid power outages

Proven Track Record
• Better technology; in-house development and manufacturing provide for leading-edge PoE products at higher quality standards.

PoE Power Level Options

IEEE802.3af (15.4W per Port)

The current IEEE802.3af standard for Power-over-Ethernet was formally approved in 2003, defining PoE applications requiring up to 12.95W of power. Phihong's selection of IEEE802.3af Power-over-Ethernet midspans and splitters allow users to bring power and data to an array of devices without the expense of hiring an electrician to bring power to additional locations. Should the device that needs power such as a camera or VoIP phone not be PoE compatible, there are splitters available to separate the power and data while still eliminating the need for and expense of AC power outlets.

IEEE802.3at PoE Plus (30W per Port)

POE Plus as ratified in September 2009 defines Power-over-Ethernet applications up to 25.5W per port of power. As a founding member of the IEEE task force dedicated to the development of this standard, Phihong is able to deliver a complete range of fully compliant Midspans with the most selection available on today's marketplace. Applications include; wireless multi-radio access points, Pan Tilt Zoom security cameras with heaters, 802.11n wireless applications and IP phones with streaming video displays.

Ultra PoE (60W per Port)

This category though not defined by IEEE, it works within all of the safety parameters as defined for the IEEE802.3at standard. Ultra PoE has an output power of 60W to 80W per port and is designed for a much more diverse array of applications. More common applications can be found in use with computer workstations, LCD display panels, WAP arrays and complex POS systems.

Mega PoE (95W per Port)

The newest addition to the Phihong PoE family is a massive 95W per port series of midspans. Phihong is the first to offer this much power combined with data over a single Ethernet cable. This new series has a large array of specialized applications that it can be used for including Kiosks, Magnetic Locks, Computer Workstations and numerous security functions including access and lighting. Though 95W is a lot of power, it still complies with UL's Safety Extra Low Voltage specifications and all safety measures as outlined in the IEEE802.3at standard.

IEEE802.3af (15.4W PER PORT)
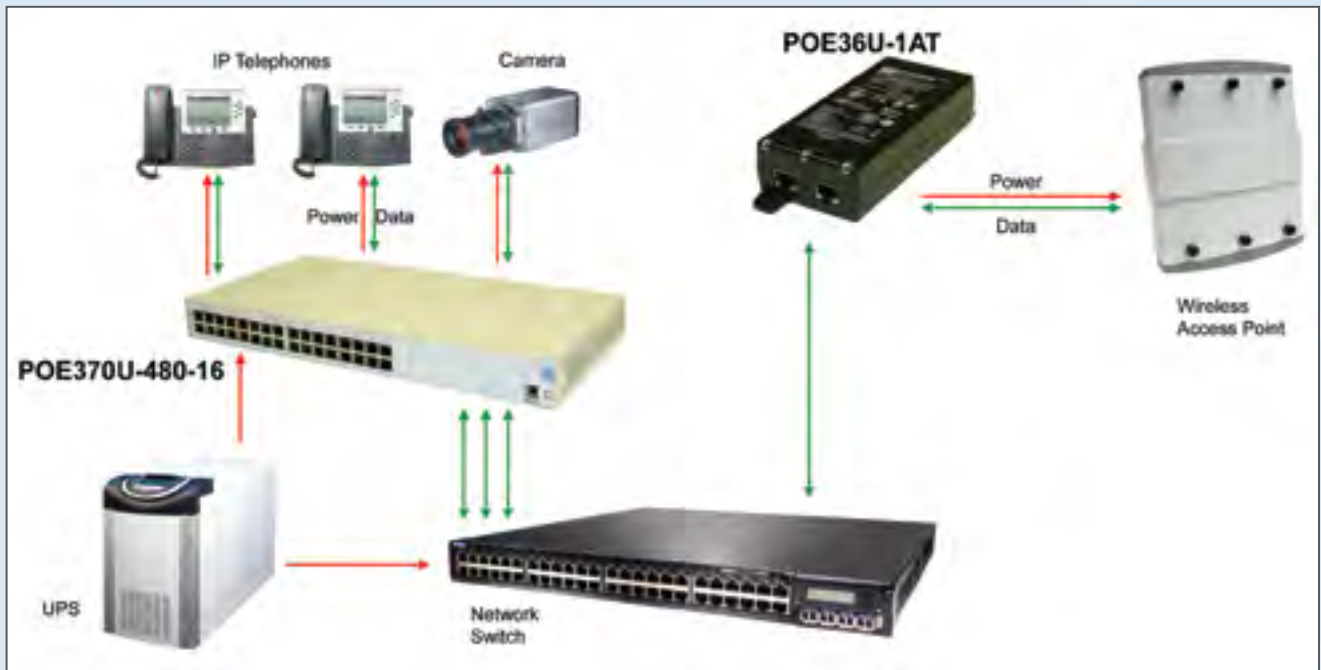
Product Image	Number of Ports	Cisco Legacy	Gigabit	SNMP	Model Name
	1	No	No	No	PSA16U-480(POE)
		No	No	No	POE16R-1AF*
		No	Yes	No	POE16R-1AFG*
		Yes	Yes	No	POE20D-1AF**
		Yes	Yes	No	POE20U-560(G)
		Yes	Yes	No	POE21U-1AF
		Yes	Yes	No	POE21W-1AF
	8	No	Yes	No	POE125U-8
		Yes	Yes	Yes	POE125U-8N
		Yes	Yes	No	POE125U-8C
	8	Yes	Yes	No	POE370U-480-8
		Yes	Yes	Yes	POE370U-480-8N
	16	Yes	Yes	No	POE370U-480-16
		Yes	Yes	Yes	POE370U-480-16N
	24	Yes	Yes	No	POE370U-480-24
		Yes	Yes	Yes	POE370U-480-24N

Notes: * This model features interchangeable AC Clips
       ** This model features DC Input in place of AC input

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IEEE802.3at (33.6W PER PORT)

Applications

- IP telephones
- Security cameras
- Bluetooth access points
- Wireless access points
- IP print servers
- Security systems
- RFID readers

Features

- Limited lifetime warranty on select models
- Compliant for detection, disconnect, and voltage control per IEEE802.3
- SELV and LPS compliant
- Multiport midspans are rack mountable
- Over-voltage/current, short-circuit protections
- Diagnostic LEDs
- UNH-IOL test report
- Optional port management on select models

Product Image	Number of Ports	Cisco Legacy	Gigabit	SNMP	Model Name
		Yes	Yes	No	POE30U-560(G)-HT*
		No	Yes	No	POE31U-1AT
	1	No	Yes	No	POE31W-1AT
		Yes	Yes	No	POE36D-1AT**
		Yes	Yes	No	POE36U-1AT
	1	Yes	Yes	No	POE33U-1AT***
	4	Yes	Yes	No	POE125U-4AT
		Yes	Yes	Yes	POE125U-4ATN
	8	Yes	Yes	No	POE576U-8AT
		Yes	Yes	Yes	POE576U-8ATN
	16	Yes	Yes	No	POE576U-16AT
		Yes	Yes	Yes	POE576U-16ATN
		Yes	Yes	No	POE576U-24AFAT
	24	Yes	Yes	Yes	POE576U-24AFATN
		Yes	Yes	No	POE806U-24AT
		Yes	Yes	Yes	POE806U-24ATN

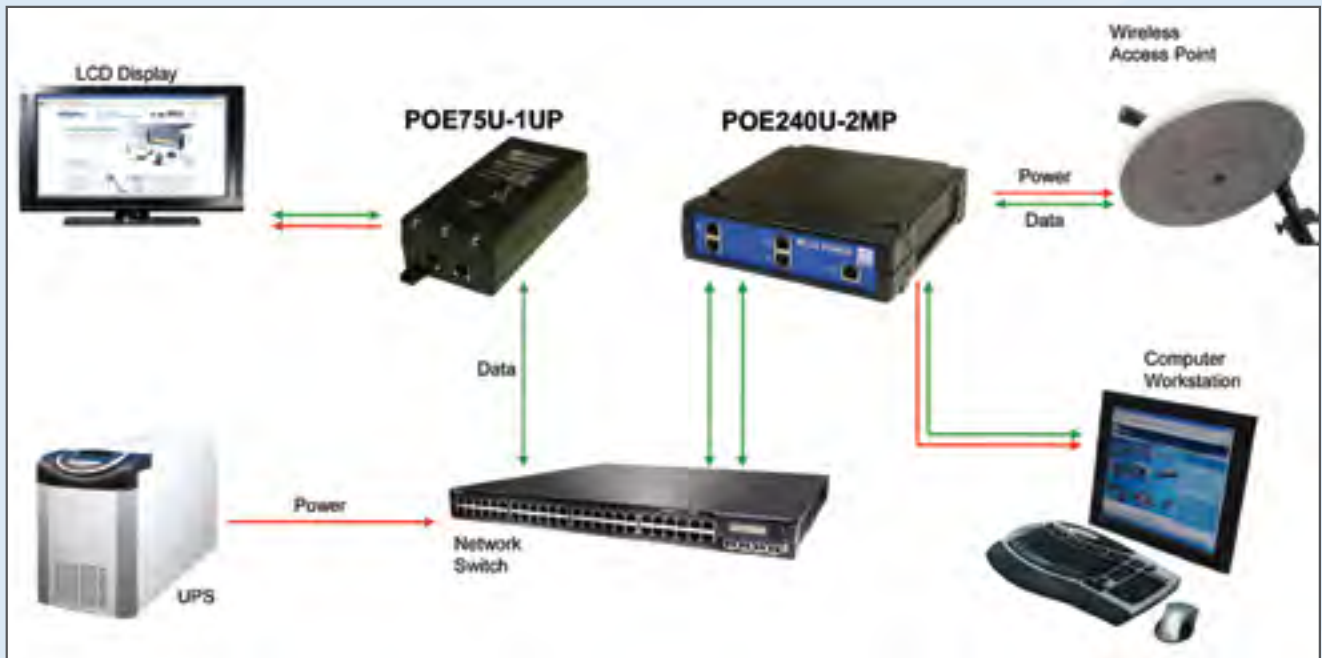*This device operates under a wide temperature range.
**This device is powered by DC input in place of an AC input.
***This device is rated IP67 for waterproof outdoor operation.

For more specific information including product datasheets please visit www.midspans.com

ULTRA POE (60W-80W PER PORT)

Product Image	Output Power	Number of Ports	Cisco Legacy	Gigabit	SNMP	Model
	60W		No	Yes	No	POE60U-560(G)†
	75W	1	Yes	Yes	No	POE75U-1UP
			Yes	Yes	Yes	POE75U-1UPN
			Yes	Yes	No	POE75D-1UP
	80W		Yes	Yes	No	POE80U-560(G)
	60W	4	Yes	Yes	No	POE240U-4UP†
			Yes	Yes	Yes	POE240U-4UPN
	60W	4	Yes	Yes	No	POE480U-4UP
		8	Yes	Yes	No	POE480U-8UP
			Yes	Yes	No	POE576U-8UP†
			Yes	Yes	Yes	POE576U-8UPN

Notes: † - Refers to special order model; minimum order quantity applies

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MEGA POE (95W PER PORT)

Applications

- Computer workstations
- Kiosks
- LCD displays
- Security systems
- High-Definition IP cameras
- Magnetic locks
- Biometric equipment
- Medical devices
- High power wireless radios

Features

- Limited lifetime warranty on select models
- Compliant for detection, disconnect and voltage control per IEEE802.3
- Most units require 12.5K detection for full functionality, select units may operate at limited power with 25K Detection
- Multiport midspans are rack mountable
- Over-voltage/current, short-circuit protection
- Diagnostic LEDs
- Most powerful PoE available
- Standard SNMP port management on select multiport models

Product Image	OutputPower	NumberofPorts	Cisco Legacy	Gigabit	SNMP	Model
		2	Yes	Yes	No	POE240U-2MP†
			Yes	Yes	Yes	POE240U-2MPN
	95W	4	Yes	Yes	No	POE576U-4MP†
			Yes	Yes	Yes	POE576U-4MPN†
		8	Yes	Yes	No	POE806U-8MP†
			Yes	Yes	Yes	POE806U-8MPN

Notes: † - Refers to special order model; minimum order quantity applies

SPLITTERS

FEATURES

- Splits power via DC out and continues data via Ethernet
- Allows for PoE Powering of non-PoE ready equipment
- Gigabit compatible
- User changeable DC tips

- May be powered by 15.6W to 75W PoE
- Proprietary detection and disconnect per IEEE802.3
- Over-current/voltage and short-circuit protections

IEEE802.3af Powered Splitters

Product Image	Output Power	Isolated	Regulated	Voltage	Current	Model Name
	8.25W	Yes	Yes	3.3V	2.5A	POE14-033
	12.5W	Yes	Yes	5V	2.5A	POE14-050
	14W	Yes	Yes	12V	1.17A	POE14-120
	14W	Yes	Yes	13.7V	1.0A	POE14-137*

Note * - Designed for battery charging on 12V Lithium-ion battery. In place of standard DC tip, the DC cable is terminated with exposed wire for connection to battery terminals.

IEEE802.3at Powered Splitters

Product Image	Output Power	Isolated	Regulated	Voltage	Current	Model Name
	21W	Yes	Yes	12V	1.75A	POE21-120
		Yes	Yes	24V	0.875A	POE21-240

Ultra PoE Powered Splitters

Product Image	Output Power	Isolated	Regulated	Voltage	Current	Model
	60W	No	No	50-57V	1.1A	POE60D-560
	45W	Yes	Yes	12V	3.75A	POE45-120

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SPLITTERS FOR MULTIPLE DEVICES

POE21-120H

FEATURES

- Power 2 devices from a single ethernet cable
- 10W PoE output
- 12W for DC powered device not requiring data
- User changeable DC tips
- Designed for applications with accessories such as cameras with lighting
- Requires Phihong IEEE802.3at compliant injector for operation
- Surface mountable
- Gigabit compatible
- PoE Out must be connected to IEEE802.3af compliant device

Output Power	Isolated	Regulated	Voltage	Current	Model Name
10W POE	Yes	Yes	44-57V	180mA	POE21-120H
12W DC Out			12V	1.00A	

POE21-120F

FEATURES

- Power 2 devices from a single ethernet cable
- 25.5W PoE output
- 21W for DC powered device not requiring data
- User changeable DC tips
- Designed for high power applications with accessories such as HD cameras with heaters
- Requires Ultra PoE or Mega PoE compliant injector for operation
- No 2-Finger Classification
- Gigabit compatible
- PoE Out must be connected to IEEE802.3af compliant device

Output Power	Isolated	Regulated	Voltage	Current	Model
25.5W POE	Yes	Yes	42.5-57V	600mA	POE21-120F
21W DC Out			12V	1.75A	

For more specific information including product datasheets please visit www.midspans.com

PASSIVE POE INJECTORS

Passive Injector Features

- IEEE802.3af (15.4W) to Ultra PoE (60W per port) output power options at the lowest cost
- Level V Efficiency compliant
- Very low leakage
- Green LED "ON"
- Over-voltage/current, short-circuit protections

- For use in dedicated situations where there is little to no chance of misconnection
- Continuous power with no detection
- Cannot be used with non-PoE compliant equipment
- Non-vented case

Lowest Cost Passive Injector	Output Power	Input	Gigabit	Output Voltage	Model Name
	16W	AC Clips - Wall Mount	No	56V DC at 0.28A	POE16R-560
			Yes	56V DC at 0.28A	POE16R-560G †
	15W	3 - Wire	Yes	56V DC at 0.27A	POE31U-560DO *
		3 - Wire	Yes	56V DC at 0.30A	POE33U-560DO **
	30W	3 - Wire	No	24V DC at 1.25A	POE31U-240
		2 - Wire	No	24V DC at 1.25A	POE31W-240
		3 - Wire	No	56V DC at 0.54A	POE31U-560
		2 - Wire	No	56V DC at 0.54A	POE31W-560
	60W	3 - Wire	Yes	56V DC at 1.07A	POE61U-560DG
		2 - Wire	Yes	56V DC at 1.07A	POE61W-560DG
		3 - Wire	No	56V DC at 1.07A	POE61U-560D
		2 - Wire	No	56V DC at 1.07A	POE61W-560D

Note: † Indicates model is special order, minimum order quantity applies
Note: * Indicates dual output of 15W on both ports
Note: * Indicates dual output of 16.8W on both ports and is designed for outdoor operations

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PoE and Ethernet Extenders

Multiport Extender Features

- Able to power up to four devices from a single CAT5e Ethernet cable
- 15.4W of output per port with Ultra PoE input
- POE60S-4AF may be used in conjunction with POE16S-1AF to extend data further than 200m
- Diagnostic LEDs
- Protects against data disintegration
- May be powered by an Ultra PoE midspan or optional DC input: PSC75U-560 (Page 26)
- Outdoor version features waterproof case rated IP67

Single Port Extender Features

- May be used in multiple unit tracks to extend data beyond 200 meters
- Diagnostic LEDs
- Protects against data disintegration
- Must be powered by PoE for functionality
- Gigabit compatible
- Operates in a wide temperature range up to 55℃

PoE Extenders	NumberofPorts	Input	Output	OptionalDCPower	Gigabit	Model Name
	1	IEEE802.3at (33W) or greater	IEEE802.3af (19.6W)	No	Yes	POE16S-1AFG
	1	Ultra PoE (60W) or greater	IEEE802.3at (30W)	No	Yes	POE30S-1ATG
	4	Ultra PoE (75W) or greater (12.5K detection)	IEEE802.3af (15.4W per port max/62W total)	Yes	No	POE60S-4AF
	4	Ultra PoE (75W) or greater (12.5K detection)	IEEE802.3af (15.4W per port max/62W total)	Yes	No	POE61S-4AF*

* This model is designed for outdoor use and features a waterproof case

CE

OUTDOOR SOLUTIONS

Waterproof Power-over-Ethernet Features

- Smart injectors, passive midspans and power/data extenders available
- Connects to standard conduit piping or to optional wire glands available for ordering
- IP 67 ratings
- Wide operating temperature range -40 to +65

- IEEE802.3af and IEEE802.3at compatible Outputs
- Mounting bracket for utility poles or outside walls
- Single, dual and 4 port options
- Full protection against over-current/voltage

Single Port Power Injector

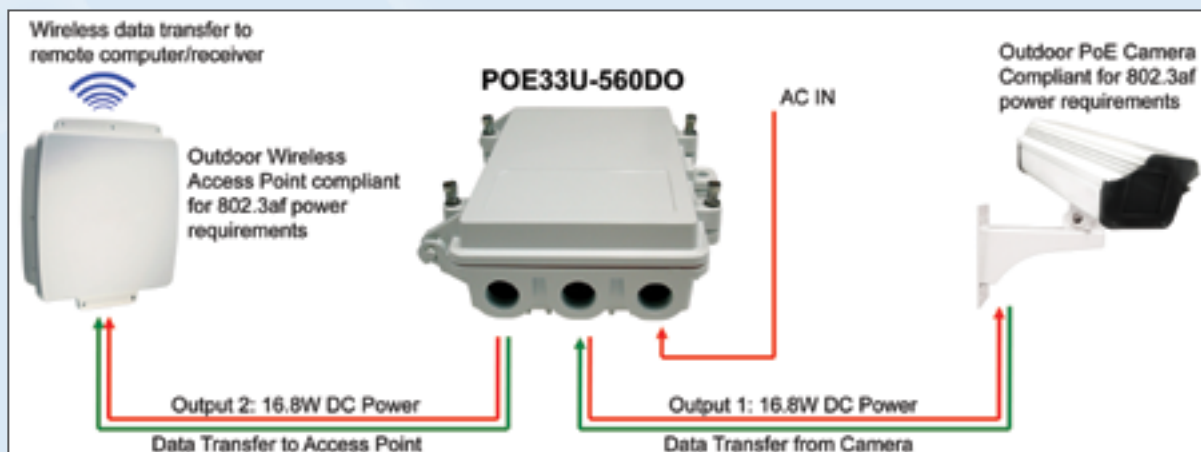|	Output Power	Input	Gigabit	Output Voltage	Model Name
	33.6W	3-Wire	Yes	56V	POE33U-1AT

Outdoor Cable Glands

Phihong offers an accessory cable gland to purchasers of the outdoor Power-over-Ethernet range. As demonstrated to the right, the cable gland will ensure watertight operation to an ingress protection rating of 67 in combination with outdoor compliant AC mains cables and outdoor cat5e ethernet cables.

For ordering please use part numbers:

- PGLAND750 for single cable glands
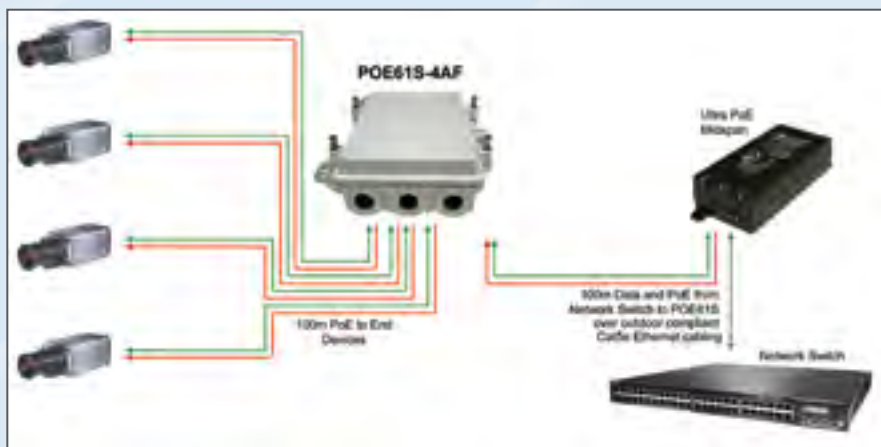
- PGLAND750-2 for double cable glands

Dual Port Passive Power Injector

Wireless data transfer to remote computer/receiver

POE33U-560DO

AC IN

Outdoor PoE Camera Compliant for 802.3af power requirements

Outdoor Wireless Access Point compliant for 802.3af power requirements

Output 2: 16.8W DC Power
Data Transfer to Access Point

Output 1: 16.8W DC Power
Data Transfer from Camera

	Output Power	Input	Gigabit	Output Voltage	Model Name
	16.8W/port	3-Wire	Yes	56V	POE33U-560DO

4 Port PoE/Data Extender

POE61S-4AF

Ultra PoE Midspan

100m PoE to End Devices

100m Data and PoE from Network Switch to POE61S over outdoor compliant Cat5e Ethernet cabling

Network Switch

PoE Extenders	Number of Ports	Input	Output	Optional DC Power	Gigabit	Model Name
	4	Ultra PoE (75W) or greater (12.5K detection)	IEEE802.3af (15.4W per port max/62W total)	Yes	No	POE61S-4AF

For more specific information including product datasheets please visit www.midspans.com

Local Midspan Management
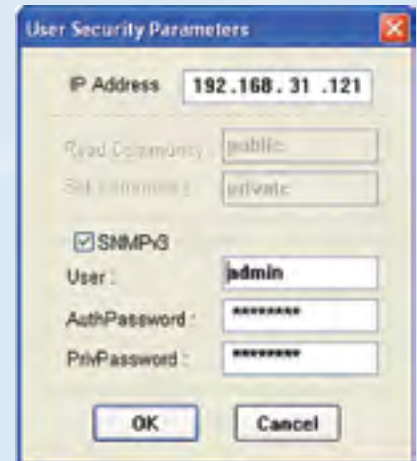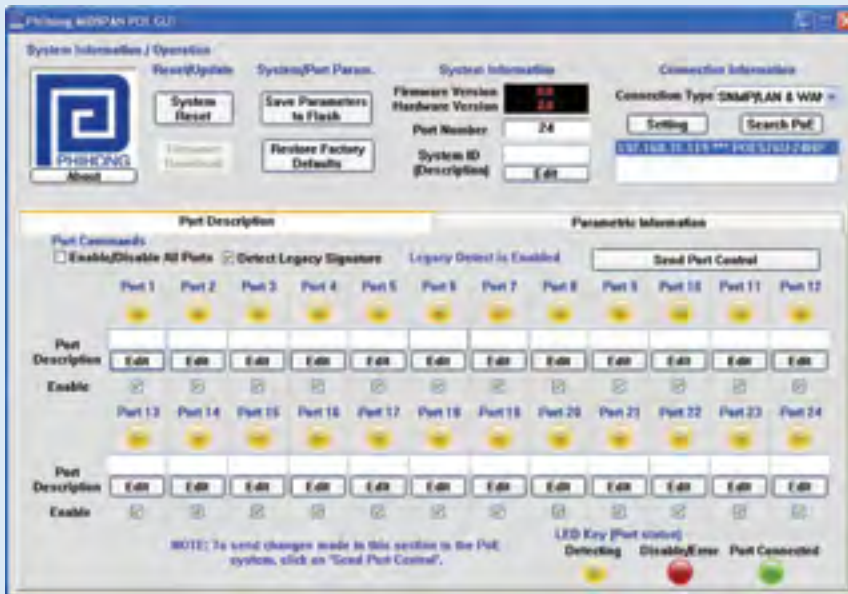
User security parameters and main window from Phihong's local port management GUI

Phihong offers a Management GUI software for enhanced local port control on selected multiport midspans. This local GUI may be used to review the Midspan's port parametrics and to reset ports individually or all at once. This GUI maybe used by individuals via USB/Serial connection, or for local access via SNMP. This new GUI features the updated security parameters as defined in Version 3, but is backwards compatible for all other versions. The advantage of this GUI is that users need not have an SNMP card installed in their midspan for complete local port control with this software.

Features

- Increased security including more secure authentication and privacy encryption
- Complete parametric information including output wattage, voltage, and amperes
- Edit port description to help user identify end devices connected to each port
- Upload new firmware to a unit via the GUI Software
- No need for an SNMP card to manage port control
- Cisco legacy detection enable/disable
- Ability to save settings to Flash
- Support available online at www.midspans.com
- Complete system reset
- Diagnostic LEDs for port control

User Benefits

- No need to manage power across ports
- Full power on every port
- Reset PoE end devices
- Review power consumption and parametric information
- Label ports to Identify PoE end devices quickly
- Works with SNMP for optional future upgrades
- The most secure encryptions available over LAN for user access control

Units that may Use Local Port Management

- POE370U Series
- POE576U-AT Series
- POE576U-24AFAT Series
- POE806U-24AT Series

www.midspans.com

Remote Midspan Management

With SNMP installed in their midspans, users can enjoy both remote and local access to port control and security settings on their midspan. SNMP may be access via a Local Area Network either using Phihong's GUI software available on the website www.midspans.com, or via an internet browser. Phihong's GUI is compatible with all versions of SNMP including the latest Version 3 release. The current SNMPv3 updates security encryption over authentication and privacy settings for the most secure management to date. Remote access is also made convenient by switching the midspan to static mode to customize the device IP address. Support for Phihong's GUI including the local software, user manuals and midspan specific firmware can be found online at www. midspans.com.
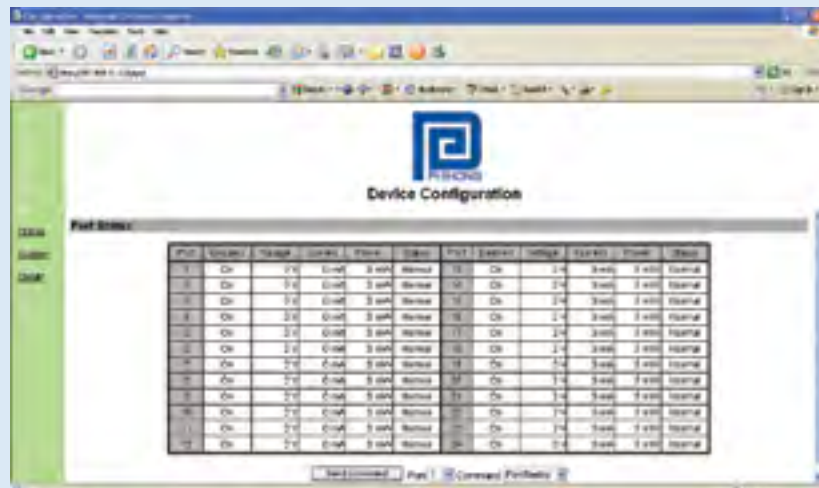
Features

• Remote access from any computer via an internet browser such as Mozilla Firefox, Internet Explorer 8 or Safari

• Upload firmware, review parametric information and reset ports individually or as an entire midspan through an internet browser

• Set IP address to dynamic to be assigned automatically by your LAN, or set to static to customize

• Incorporate into enterprise networks with MIB controls available on www.midspans.com

• Use Phihong's management software with any version of SNMP

User Benefits

• No need to manage power with full power on every port

• Diagnose issues at PoE end devices remotely via http://access

• Easily integrate into large existing networks

• Reset the midspan from any computer

• The most secure encryptions available over LAN for user access control

Units That May Use Remote SNMPv3 Port Management

• POE125U-8N
• POE370U-480-8N
• POE370U-480-16N
• POE370U-480-24N
• POE576U-8ATN
• POE576U-16ATN
• POE576U-24AFATN
• POE806U-24ATN

RPS and PoE Accessories

Redundant Power Source Selection Guide

|	Output Power	DCOutputVoltage	Features	Model
	500W (DC)	50V (10A)	• Input voltage: 85-264V AC • Hot plug N + 1 • Diagnostics • Full protection	PSM500-210
		56V (9A)		PSM500-216
	1000W (DC)	56V (17.85A)		PSM1000-216
	Rack accommodates 500W to 1500W (DC) up to (3) PSM500 power supplies		• Accommodates up to 3 power supplies • Hot plug N + 1 • Powers up to 4 individual midspans • 4 individually current limited outputs to protect wiring	PSA1554-605
	Rack accommodates 1000W to 3000W (DC) up to (3) PSM1000 power supplies			PSA3000-611

Features

- 500W-3000W
- AC or DC Input
- Supports 32-194 ports of 802.3af PoE, depending on the number of RPS power supplies installed.
- Supports 16-97 ports of 802.3at PoE, depending on the number of RPS power supplies installed.

Accessories

ACCY125X-R	Dongle to Operate Cisco Aironet Access Point with 'AT' Enterprise Class Midspans	
POE-CIT-R	PoE Camera Installation Tool	
POE370U-ACCY01-R	Connect 1 Midspan to Redundant Power Source	
POE370U-ACCY02-R	Connect 2 Midspans to Redundant Power Source	
POE125U-ACCY01-R	Mounting Bracket Kit to Connect 1 or 2 Plastic Case Multiport Midspans to 1U 19" Rack	

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Camera Installation Tool
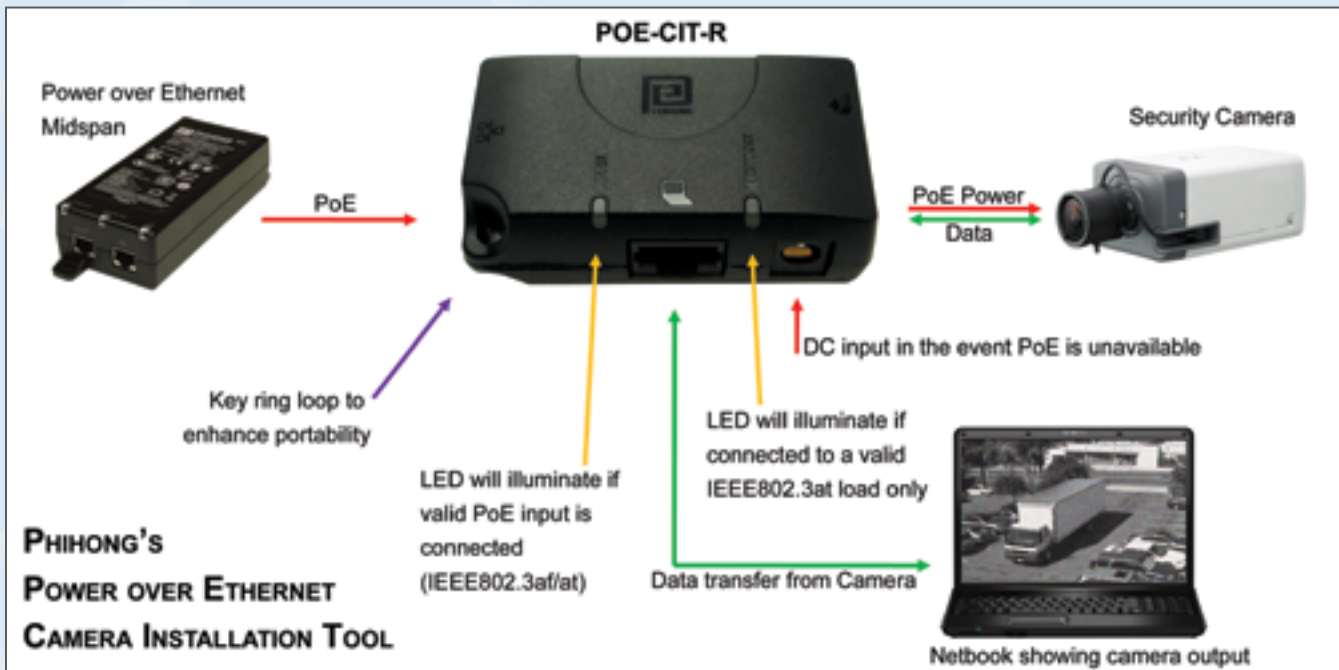
POE-CIT Features

- Redirects data from camera to Ethernet enabled display including netbooks or tablets
- Optional 56V DC IN port if no PoE is available
- Network port detects PoE and PoE type
- Layer 1 classification for IEEE802.3at compliant powered devices
- Shirt pocket sized

- Camera port has no detection and may not be connected to non-PoE ready devices
- Diagnostic LEDs
- Key ring loop
- Use network port to detect if Ethernet cable is connected to a valid load

PoE Type Detection

Connect the POE-CIT to an ethernet cable to determine if the other end is connected to a midspan or PoE enabled switch. Powered devices may be operated up to 100 meters from a network switch, which makes tracing cables time consuming and difficult. Not only will the POE-CIT detect power, but also the power level indicating if the output is 802.3af or 802.3at compliant for connecting appropriate devices.

Power LED illuminates when connected to compliant IEEE802.3af load.

Power LED and IEEE802.3at LED illuminate when connected to compliant IEEE802.3at load.

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