Why Sensor-enabled eco PDU?

Sensor-enabled eco PDU provides you with a real time Rack Cooling Index (RCI)® and dynamic power analysis to protect IT equipment from excess heat or insufficient power capacity.

According to a report from McKinsey & Company, there are over 44 million servers worldwide, and on average, each server consumes 400 watts of power, which equals 3500 kWh every year. So, the total worldwide server consumption is 154 billion kWh of energy every year, which is very considerable. However, the power used by air conditioners to keep these servers operational, if we use a power efficiency average of 0.3 per server room, reaches as high as 600 billion kWh of power, and this number continues to grow. Therefore, it is very meaningful to find out how to use the power efficiently, increase the server room's power usage efficiency and reduce the number of unused servers in order to suppress global warming brought on by the greenhouse effect.

ATEN has focused on data center server management and increasing the performance of enterprise servers. The excellent results are very obvious. Facing the problem of global warming, ATEN has taken on a further responsibility – ATEN has used its accumulated research and development strength as a basis, learned about the harmonious mechanisms of the ecological balance of nature, and developed a new generation of intelligent PDUs to effectively increase the efficiency of data center power usage.

Sensor-enabled eco PDU isn't just another smart PDU or intelligent PDU

Generally speaking, an intelligent PDU refers to a PDU that transmits the power usage status of IT equipment through the internet to use for analytical purposes for power management. For example, it is able to grasp the power consumption information of a data center within a specific period or a certain department's power usage status, and by connecting a hygrograph to it, it can also provide the environment's temperature and humidity data.

eco PDU offers remote power control combined with real-time power measurement – allowing you to control and monitor the power status of IT equipment attached to the PDUs, either at the PDU or outlet level, from practically any location via a TCP/IP connection. It helps you to minimize power costs and ensure high levels of system availability for your data center.

Sensor-enabled eco PDU provides various useful features :

▶ **Remote Power Control**
By simply clicking a button on the UI, administrators can power control the connected IT equipment with ease. There is no longer any need to move around the data center turning equipment on and off.

▶ **Power Management**
eco PDU products are designed with up to 8/20 outlets for easy data center management. Each outlet can be individually controlled so that users can set the power on/off sequence and delay time for each outlet separately. In addition, On/Off scheduling allows administrators to configure start and shutdown.

▶ **Overcurrent Protection**
Built-in overcurrent protection and recovery saves your money by eliminating costly onsite service calls. With eco PDU products, you have the ability to access your data center any time and deal with any situation that may occur – entirely immediately and effectively.

▶ **Power Analysis Report**
The Sensor-enabled eco PDU offers comprehensive power analysis reports which can separate by departments and locations.
• Precise power consumption value: Precise measuring of current, voltage, power and energy, real-time display.
• Real-time data collection: Collects data in real-time.
• Power consumption analysis decision: Displays trend charts in real-time or according to day, month, season or year, grasping the power consumption needs for each of the four seasons. By knowing the actual power consumption trend, it helps allocate the power resources without waste and prevents wasted power capacity.
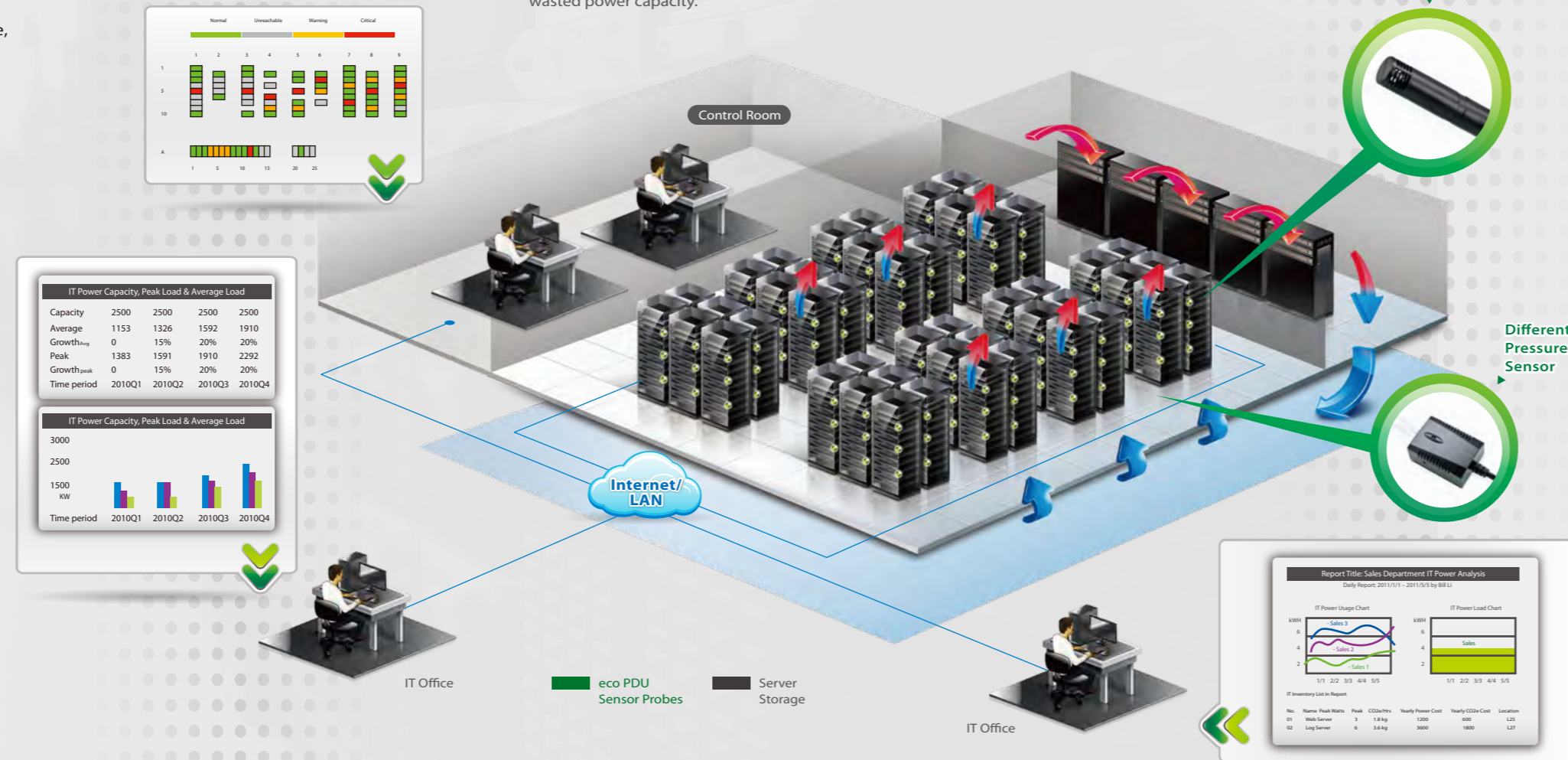
▶ **Real-time Monitoring**
With PDU/Outlet level metering, IT administrators can easily monitor the real-time current, voltage, kWH, and circuit breaker status of all connected IT equipment from a remote console.

▶ **Rack Environment Monitoring**
The eco PDU supports external, environment sensors that allow administrators to monitor temperature and humidity of the rack environment from just about anywhere in the world.

▶ **Early Warning Notification**
The eco PDU permits data center administrators to set custom thresholds for current and kWH. When levels exceed the user defined thresholds, designated recipients can receive alarm notifications via SMTP email, SNMP traps, or Syslog. An audio alarm can also sound and lights with blink at the local site.

▶ **Easy Operation – eco Sensors**
With eco Sensors management software support, the Sensor-enabled eco PDU offers an intuitive and user-friendly Graphical User Interface – allowing you to configure a PDU device and monitor power status of the equipment connected to it via an ease-to-use interface.

▶ **Multi Sites Centralized Management**
Combining with ALTUSEN's products gives IT administrators the advantages of centralized control over the entire eco PDU installation in different sites.

▶ **External Authentication Support**
The eco PDU supports login authorization management from external sources – RADIUS.

▶ **Advanced Security**
• Secure 128-bit SSL encryption
• Two-level password security
• Login Failures – The number of consecutive failed login attempts and the time a remote computer must wait before trying again can be set
• Configurable user permissions for outlet level access and control

▶ **Event Log Support**
The eco PDU supports event log function that records all the events that take place on – including user login/logout, timeout, outlet ON/OFF/Reboot by user, user add/delete/changed, eco PDU add/remove and FW upgrade.

Temperature Sensor

Differential Pressure Sensor

Control Room

Internet/ LAN

IT Office

eco PDU Sensor Probes

Server Storage

IT Office

Product

Lock Your Plug

eco PDU Models

▶ 1U 8-Outlet Models

Model	Input Power	# of Outlet Socket x Type	Switching Capability	Metering Capability	Regulatory Approval
PE6108A	15A, 100 – 120V UL de-rated 12A NEMA 5-15 Plug	8 x NEMA5-15R	Per Outlet	PDU Level	UL, PSE
PE6108B	15A, 200 – 240V UL de-rated 12A NEMA 6-15 Plug	8 x IEC 320 C13	Per Outlet	PDU Level	UL, PSE
PE6108G	10A, 200 – 240V IEC320 C14 Plug	8 x IEC 320 C13	Per Outlet	PDU Level	TUV
PE6208A	20A, 100 – 120V UL de-rated 16A NEMA 5-20 Plug	8 x NEMA 5-20R	Per Outlet	PDU Level	UL, PSE
PE6208B	20A, 200 – 240V UL de-rated 16A NEMA 6-20 Plug	7 x IEC 320 C13 + 1 x IEC 320 C19	Per Outlet	PDU Level	UL, PSE
PE6208G	16A, 200 – 240V IEC320 C20 Plug	7 x IEC 320 C13 + 1 x IEC 320 C19	Per Outlet	PDU Level	TUV
PE8108A	15A, 100 – 120V UL de-rated 12A NEMA 5-15 Plug	8 x NEMA5-20R	Per Outlet	Per Outlet	UL, PSE
PE8108B	15A, 200 – 240V UL de-rated 12A NEMA 6-15 Plug	8 x IEC 320 C13	Per Outlet	Per Outlet	UL, PSE
PE8108G	10A, 200 – 240V IEC320 C14 Plug	8 x IEC 320 C13	Per Outlet	Per Outlet	TUV
PE8208A	20A, 100 – 120V UL de-rated 16A NEMA 5-20 Plug	8 x NEMA5-20R	Per Outlet	Per Outlet	UL, PSE
PE8208B	20A, 200 – 240V UL de-rated 16A NEMA 6-20 Plug	7 x IEC 320 C13 + 1 x IEC 320 C19	Per Outlet	Per Outlet	UL, PSE
PE8208G	16A, 200 – 240V IEC320 C20 Plug	7 x IEC 320 C13 + 1 x IEC 320 C19	Per Outlet	Per Outlet	TUV

▶ 0U 12 / 20-Outlet Models

Model	Input Power	# of Outlet Socket x Type	Switching Capability	Metering Capability	Regulatory Approval
PN5212	20A, 100 – 120V UL de-rated 16A NEMA L5-20P	12 x NEMA 5-15R	Per Outlet	PDU Level	UL, PSE
PN5212	16A, 200 – 240V IEC 60309	12 x IEC320 C13	Per Outlet	PDU Level	TUV
PN5320	30A, 100 – 120V UL de-rated 24A NEMA L5-30P	3 x NEMA 5-20R+ 17 x NEMA 5-15R	Per Outlet	Per Outlet	UL, PSE
PN5320	32A, 200 – 240V IEC 60309	3 x IEC320 C19+ 17 x IEC320 C13	Per Outlet	Per Outlet	TUV
PN7212	20A, 100 – 120V UL de-rated 16A NEMA L5-20P	12 x NEMA 5-15R	Per Outlet	Per Outlet	UL, PSE
PN7212	16A, 200 – 240V IEC 60309	12 x IEC320 C13	Per Outlet	Per Outlet	TUV
PN7320	30A, 100 – 120V UL de-rated 24A NEMA L5-30P	17 x NEMA 5-15R + 3 x NEMA 5-20R	Per Outlet	Per Outlet	UL, PSE
PN7320	32A, 200 – 240V IEC 60309	3 x IEC320 C19+ 17 x IEC320 C13	Per Outlet	Per Outlet	TUV

Optional Accessories

▶ Sensors

Part No.	Sensor
EA1140	Temperature
EA1240	Temperature / Humidity
EA1340	Differential Pressure / Temperature

▶ Cable Holders
For added safety, use ATEN Lock-Your-Plug cable holders to secure the cables from your attached devices in place on the eco PDU unit. Use only the ATEN Lock-Your-Plug cable holders that have been specifically designed to work with the eco PDU. Using any other kind of cable securing device could be highly dangerous.

Part No.	Cable Holder
0X12-0017-300G	Lock-Your-Plug *Patent Pending!*

Note: Sensor probes and Cable Holders are optional accessories. A 4-sensor installation is required to generate a complete energy-efficient data and chart. Higher sensor installation density is helpful to generate more accurate data. 8-port models have 2 sensor ports and 24-port models have 6 sensor ports built-in. All models come with a 10 foot input power cord.

+ The specification and pictures are subject to change without notice.
+ PN5212/PN5320 doesn't support external sensors.
+ Lock-Your-Plug supported by PE series only.

Sensor-enabled eco PDU beyond power management

Sensor-enabled eco PDU leverages cabinet power to thermal, air and energy management
• How does the air conditioner perform in terms of cooling of the equipment? Should we increase the air flow temperature? Is the equipment safe?
• How does the air-conditioner perform in regulating the humidity? Is the equipment safe?
• How does the air-conditioner perform in terms of air-flow? Should we increase the air conditioner fan's air flow?
• What is the air conditioner's overall performance? Where is the problem?

The Green Energy Sensor-enabled eco PDU enhances traditional power to thermal management, and improves thermal to air flow management, and then augments air flow to energy management – providing a cooling performance index for the air conditioner of the equipment, humidity performance index for the humidity of the equipment, air flow performance index for the air conditioner fan of the equipment, and the air conditioner's overall performance index, and by doing so provides accurate directions for effective energy usage.

Overall Indices Dashboard
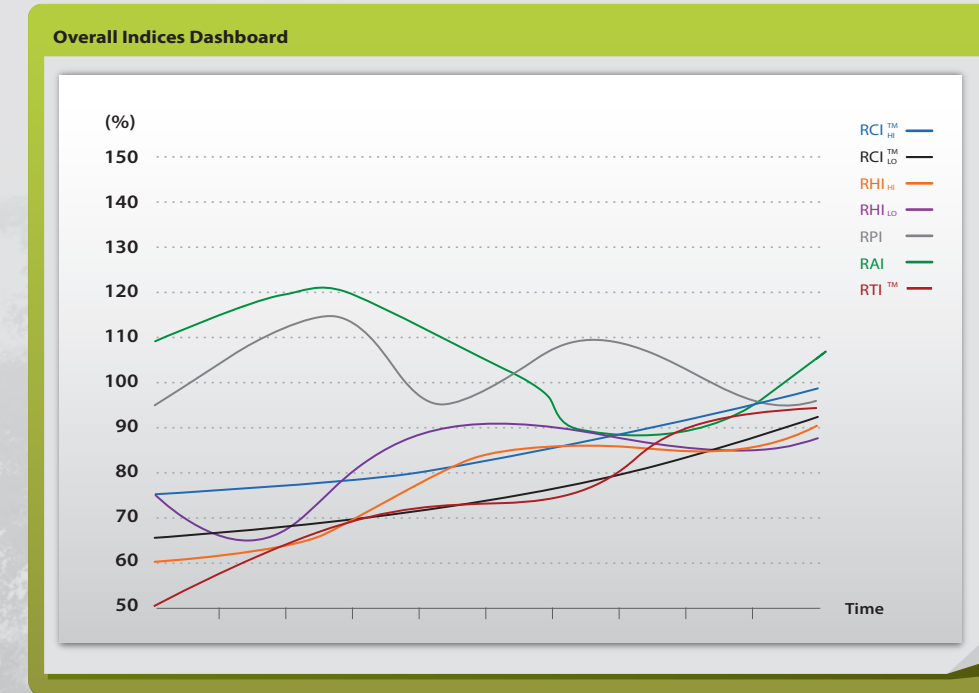
RCI™ = Overall Rack Cooling Index™ = Overall Rack Cooling Effectiveness
RHI = Overall Rack Humidity Index = Overall Rack Humidity Effectiveness
RPI = Overall Rack Differential Pressure Index = Overall Rack Differential Pressure Effectiveness
RAI = Overall Rack Airflow Index = Overall Rack Airflow Effectiveness
RTI™ = Overall Return Temperature Index™ = Overall Air Management Performance

• Sensor-enabled eco PDU turns data center energy-efficient plan into action!
Tune your energy usage more efficiently to increase server room health!

▸▸▸ Health and safety of energy-saving
• How do we blend safety and energy-saving?
• Will saving energy undermine the safety of the server?
• Should we focus more on safety or more on energy-saving?

The Green Energy Sensor-enabled eco PDU provides accurate energy-saving guidelines; only by using healthy energy-saving measures can all the indices be improved simultaneously. If the energy-saving measures used are not healthy, some indices will be affected; therefore only by finding the accurate path to achieving healthy energy-saving and continuing to improve the indices will the measures be comprehensive and not undermine the server's safety. For example, if we only increase the air conditioner's airflow speed, or lower the air conditioner's air flow temperature to acquire a higher RCI, RPI and RAI index, the price we have to pay would be more energy, and the RTI index will be lowered; it will display the price paid by this energy. Suitable energy-saving will improve these four indices simultaneously; we must avoid the interflow of cold and hot air and increase the pressure difference in order to improve all the indices simultaneously; when all the indices moves towards 100, this is considered to be healthy energy-saving.

▸▸▸ Effectively saving energy
• Energy saving estimation, how much room is there for improvement?
• How much energy will be saved?
In addition to providing a healthy energy-saving index, the Green Energy Sensor-enabled eco PDU also improves energy conservation and by doing so also evaluates how long it would take to recover the invested resources, confirming the investment returns.

Fan Energy Saving %

Chiller Energy Saving %
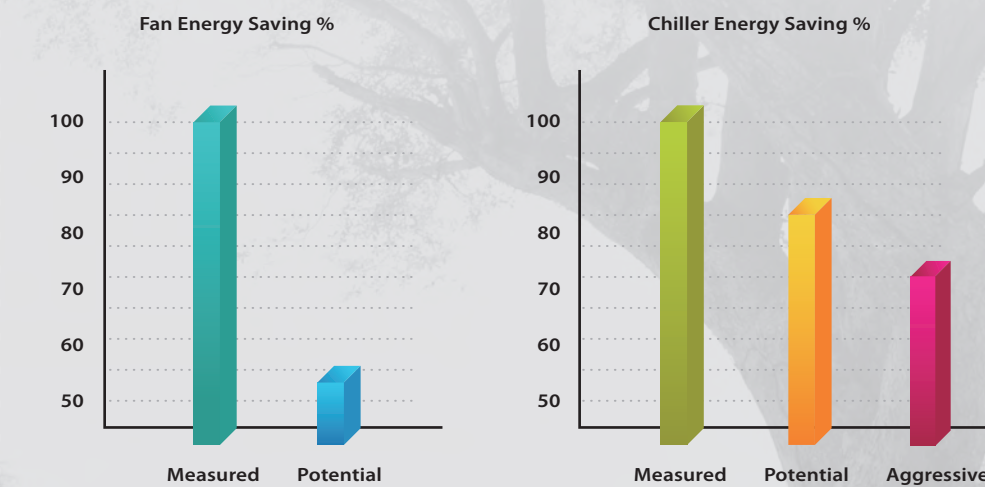
Potential Yearly Energy Saving Amount:
US$ 360,000.00
Actions:
1. Calibrate Temp/Hum/DP sensors
2. Provide adequate pressure
3. Ensure an adequate ratio of IT airflow to AHU airflow
4. Data Center is over-ventilated
5. Supply air is under-temperature
6. Improve air management

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