Eaton 93T UPS
An innovative UPS solution
Lithium-ion battery compatible

E·T·N

Powering Business Worldwide

A cost-effective, reliable and flexible three-phase monolithic transformer-free UPS solution

Product values
- Provide a reliable, easy-to-maintain power protection system for small and medium applications
- Free customers from restrictions of expense, space and lacking professional maintenance personnel/technology experts by providing low TCO (total cost of ownership) and superior performance
- Provides integrated continuous power protection solution with internal battery autonomy in compact footprint

Typical applications
- Network centers of the government facilities and educational institutions
- Information & Technology centers of small and medium enterprises
- Data centers of financial institutions such as banks and securities companies
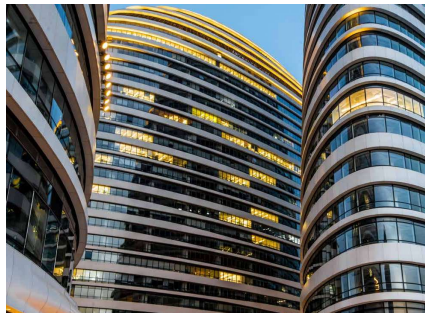
Eaton 93T features

The high-availability and easy-to-maintain transformer-free UPS creates a reliable power protection system for IT installations and mission critical applications

- AReal-time monitoring of the capacitor status eliminates potential safety issues that may happen when capacitors operating under high temperature
- Eaton ABM intelligent battery management technology effectively extends the battery life by more than 50%
- Module-level maintenance enables low MTTR (MTTR<30min)
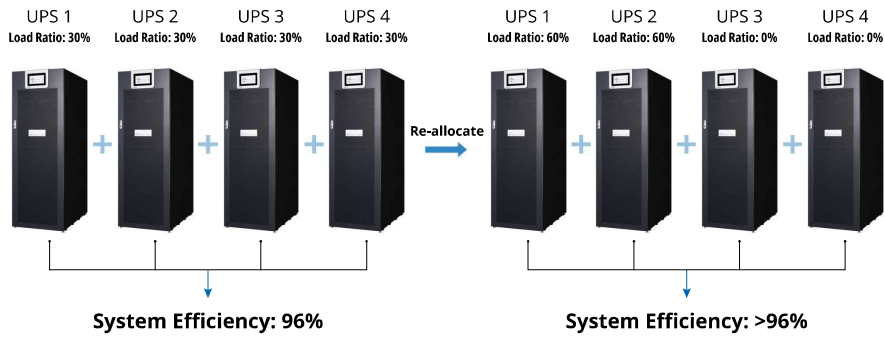

ABM charge profile
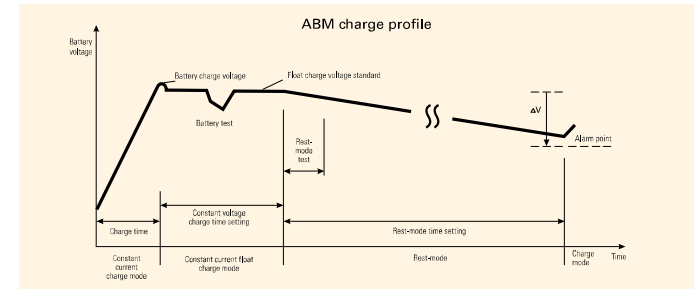
The cost-effective and high-efficient power supply solution optimizes customer initial investment cost and whole-lifecycle operating costs

- Energy utilization efficiency improves. By adopting three-level topology and industry-leading high-efficient technology, the efficiency can be maintained above 96% under typical load rates
- Up to 99% efficiency can be achieved in ESS mode; it can also be achieved under parallel configuration. This ensures that the UPS can achieve higher system availability while providing reliable power in high quality
- Unity output power factor (utmost active power possible), which enables 100% utilization rate of system capacity
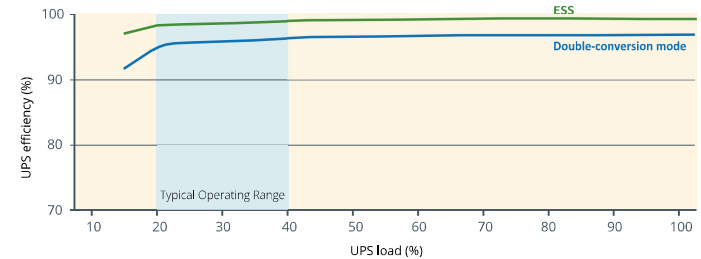
- Enabled by smart load-allocation function, 100-200kVA model is able to keep system operating at high-efficiency load point

UPS 1	UPS 2	UPS 3	UPS 4		UPS 1	UPS 2	UPS 3	UPS 4
Load Ratio: 30%	Load Ratio: 30%	Load Ratio: 30%	Load Ratio: 30%	Re-allocate	Load Ratio: 60%	Load Ratio: 60%	Load Ratio: 0%	Load Ratio: 0%

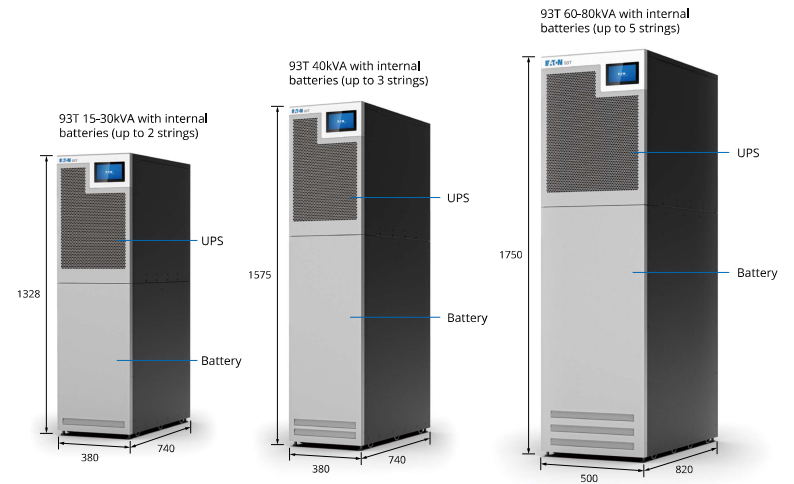**System Efficiency: 96%**   **System Efficiency: >96%**

Back feed protection to prevent feedbacks from the inverter to the mains in case of mains failure and a fault in the bypass circuit, to provide safer operating condition for end users and service engineers:

- Standard feature inside UPS cabinet, no additional installation required
- Compliant with UPS installation safety requirement standard IEC 62040-1
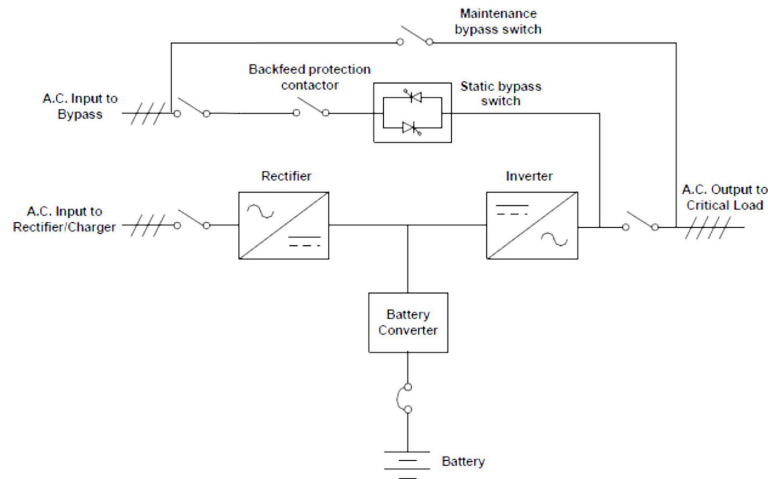

Integrated autonomy

- Able to house up to 5 strings of battery, to provides 5 minutes battery autonomy at full load condition, without additional battery cabinet installation

93T 15-30kVA with internal batteries (up to 2 strings)
93T 40kVA with internal batteries (up to 3 strings)
93T 60-80kVA with internal batteries (up to 5 strings)

- Integral input, bypass input, output and maintenance bypass switches saves additional footprint for I/O section

Flexibly adapt to business development and energy storage system upgrades

- Up to 4 units of 93T can be connected to support 800KW system load at maximum, the built-in Eaton Hot-sync parallel function provides parallel capability for redundancy and capacity with easy software configuration
- Common or distributed battery system supported
- Powerful charger can provide charging power up to 70% of the rated power of the UPS to increase its ability to manage longer back-up time and Lithium-ion battery system

UPS 1	UPS 2	UPS 3	UPS 4

Load up to 800kW
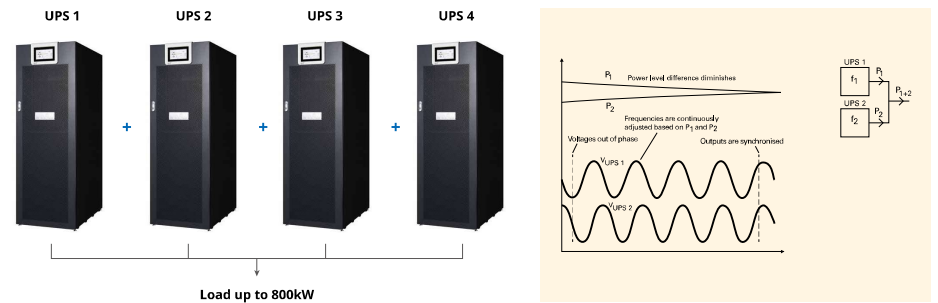
Lithium-ion battery compatible UPS solution

Power on demand

Eaton's lithium-ion battery systems provide a reliable and flexible solution that ensures 24/7 system uptime while delivering significant total cost of ownership (TCO) savings. Capable of providing mega-watts of power in a small footprint, this battery solution comprises of lightweight battery strings designed to seamlessly connect to 93T 15-80kVA UPS.

Why lithium?

Lithium-ion chemistry demonstrates superior characteristics in UPS applications, this results in high energy density, long life, flexible installation, improved cycle life and a lower TCO.

Backup battery runtimes

Contact Eaton for backup times and configurations. A wide range of runtimes from 3 minutes to an hour + are available.

Management and monitoring system

The lithium-ion battery integrates a powerful battery management system (BMS), providing cell protection (temp, current, over/under voltage), cell balancing, state of charge and health and alarms/reports.

Protection: The BMS processes critical parameters such as voltage levels, temperature, and current at the module and solution levels. Abnormal conditions (warnings and alarms) are quickly detected and, if necessary, the BMS will protect the system from damage by disconnecting the affected battery.

Performance optimization: The BMS incorporates cell and module balancing controls. This function optimizes the voltages of each module to maximize performance and increase service life.

Benefits of lithium-ion

Save money		
10 year performance warranty		
15 year design life		

Save space		
up to **8x** cycle		
40% smaller		L-ion
60% lighter		

Reduce risk		
24/7 BMS monitoring		

7-inch colorful touchable screen allows control and monitoring of system status and performance. 93T also provides users with various communication interfaces and options:

- Voltage-free contacts
- Mini-slots for SNMP, Modbus or Relay communication
- RS232 & USB interface
- Users can obtain system information such as system efficiency, battery capacity and historical events via touchable screen
- Designed for the most advanced IT environments, the 93T supports optional communication cards that allow remote access via the HTTP(S), SNMP, MODBUS TCP/IP, Modbus RTU and BACnet IP protocols. In addition, Eaton's Power Xpert® software and Intelligent Power® Software Suite give you all the tools you need to manage power devices in your physical or virtual environment. Learn more at Eaton.com/intelligentpower. Intelligent Power Manager® (IPM) is a world class power management software platform. It seamlessly monitors power and environmental conditions while providing business continuity for workloads using VMware®, Citrix® and Microsoft® platforms. IPM also optimizes power and environmental conditions for data centers using OpenStack® or HPE OneView®

IPM dashboard
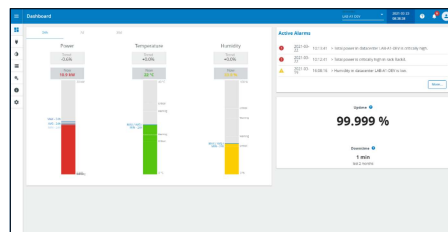
IPM rack view
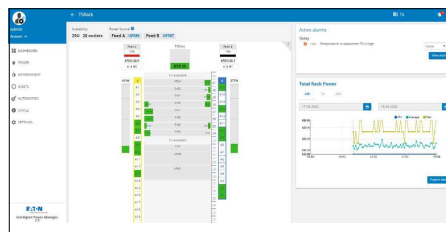
Connectivity options

Gigabit network M2 card

- **Part number:** 744-A3983-00P
- **Product description:** the mini-slot of the UPS is used to provide the integration with the 1000/100Base-T Ethernet network, and the network management software is used to realize UPS monitoring and management functions
- **Communication protocol:** HTTP, SNMP, TFTP, Telnet, BootP, DHCP, WAP, ARP and RARP
- **Support MIB:** UPS Standard MIB RFC-1628
- **Communication configuration:** access the VT-100 emulation terminal through the DB-9 RS-232 port
- **Communication topology structure:** 1000/100Base-T Ethernet integration self-adaptation

Industrial gateway card

- **Part number:** 744-07774-00P
- **Product description:** the mini-slot of the UPS is used to provide the integration with the Modbus network, and the connection between UPS and building management system (BMS) achieves monitoring and management functions. Meanwhile, the product has the integration function with the 1000/100Base-T Ethernet network
- **Modbus command:** read input status / read input data
- **Communication configuration:** access the VT-100 emulation terminal through the DB-9 RS-232 port
- **Communication rate:** settable between 1200 bps and 19.2 k bps
- **Slave address:** settable
- **Network connection:** RS-485 or RS-232 data communication is realized through isolated terminal blocks
- **Communication topology structure:** two-wire or four-wire communication optional

AS/400 relay/RS-232 interface card

- **Part number:** 744-98067-00P
- **Product description:** the mini-slot of the UPS is used to provide the AS/400 computer and other industrial equipment with four groups of dry contact signals related to the working status of UPS equipment, and provide the intelligent monitoring system with an RS-232 serial communication interface
- **Communication protocol:** Eaton SHUT serial communication interface protocol
- **Communication configuration:** no configuration required
- **Communication topology structure:** the state signal line connection provides four groups of on/off signals indicating the working status of the UPS equipment, and a standard RS-232 serial communication interface are provided

EMP DT1H1C2 temperature and humidity sensor

- **Part number:** 744-A4026
- **Product description:** temperature and humidity sensors dedicated for the Gigabit network card and the industrial gateway management card, and each card supports the connection with up to three temperature sensors at the same time through the USB interfaces

Capacity	Rated capacity/active power (kVA/kW)	15/15	20/20	30/30	40/40	60/60	80/80
Input	Rated input voltage (Vac)	380/400/415					
	Input voltage range (Vac)	201-478					
	Rated input frequency (Hz)	50/60					
	Input frequencyrange (Hz)	40-72					
	Bypass voltagerange (Vac)	+/- 15% by default, +/- 20% optional					
	Input power factor	> 0.99					
	Input current THDi (@ rated linearload)	< 3%					
Output	Rated output voltage (M)	380/400/415					
	Rated output frequency (Hz)	50/60					
	Power factor	1					
	Output voltageregulation (steady state)	±1%					
	Output voltage tolerance regulation (dynamic)	±5% (0-100% load variation)					
	Output voltage THDv (@ full linear load)	< 2%					
	Inverteroverload capacity	10 minutes, @125%					
Productivity	Double-conversion mode	> 96%					
	ESS mode	99%					
Parallel	Parallel unit	Up to 4					
Battery configuration	Battery type	VRLA, NiCad,Lithium-ion					
	Battery blocks quantity (with externalVRLA batteries)	32-50**					
	Battery blocks quantity (with internalVRLA batteries)	36	32	36	32	36	36
	Charging method	BMS, ÆBM, or constantfloat charge					
	Connection	Supportcommonbattery					
Dimensions	W*D*H (mm) standard model	330*657*528				330*690*986	
	W*D*H (mm) integrated model (with battery compartment)	380*740*1328			380*740*1575	500*820*1750	
	W*D*H (mm) integrated model (without battery compartment)	380*740*650				500*820*675	
Weight	(Kg) standard model	40	40	44.5	45	96.5	97.5
	(kg) integrated model (without battery compartment)	79		81		128	
	(kg) integrated model (with battery compartment butwithout batteries)	147	149	152	159	260	268
	(kg) integrated model (withinternal batteries)	237	288	332	399	660	768
Communication	Communication interface	2 mini-slots, 3 building alarms inputs, and 1 RS232&1 USB					
	Communication accessories	Gigabit network card; Industrial gateway card; EMP temperature and humidity sensor; AS/400 relay/RS-232 interface card					
Others	Temperature	0-50°C*					
	Humidity	5-95%, non-condensing					
	Altitude	< 1000 m, noderating					
	Noise (1m)	≤ 65dB					
	Safety	IEC62040-1					
	EMC compatibility	IEC62040-2					
	Performance	IEC62040-3					
	Certification	TLC, CQC energy saving, and Seismic testreport					

Capacity	Rated capacity/active power (kVA/kW)	100/100	120/120	160/160	200/200
Input	Rated input voltage (Vac)	380/400/415			
	Input voltage range (Vac)	201-478			
	Rated input frequency (Hz)	50/60			
	Input fre quency range (Hz)	40-72			
	Bypass voltagerange (Vac)	+/- 15% by default, +/- 20% optional			
	Input power factor	> 0.99			
	Input current THDi (@ rated linearload)	< 3%			
Output	Rated output voltage (M)	380/400/415			
	Rated output frequency (Hz)	50/60			
	Power factor	1			
	Output voltage regulation (steady state)	±1%			
	Output voltage tolerance regulation (dynamic)	±5% (0-100% load variation)			
	Output voltage THDv (@ full linear load)	< 2%			
	Inverter overload capacity	10 minutes, @125%			
Productivity	Double-conversion mode	> 96%			
	ESS mode	99%			
Parallel	Parallel unit	Up to 4			
Battery configuration	Battery type	VRLA, NiCad,Lithium-ion			
	Battery blocks quantity (with externalVRLA batteries)	32-50**			
	Chargingmethod	BMS, ÆBM, or constantfloat charge			
	Connection	Support common battery			
Dimension	W*D*H (mm)	500*850*1260		550*850*1600	
Weight	Net weight (kg) without switch	177	177	260	290
	Net weight (kg) withswitch	203	203	281	311
Cable Entry		Bottom/Top		Bottom	
Communication	Communication interface	2 mini-slots, 3building alarms inputs, and 1 RS232&1 USB			
	Communication accessories	Gigabit network card; Industrial gateway card; EMP temperature and humidity sensor; AS/400 relay/RS-232 interface card			
Others	Temperature	0-50°C*			
	Humidity	5-95%, non-condensing			
	Altitude	< 1000 m, no derating			
	Noise (1m)	≤ 65dB			
	Safety	IEC62040-1			
	EMC compatibility	IEC62040-2			
	Performance	IEC62040-3			
	Certification	TLC, CQCenergy saving, and Seismic testreport			

*Conditions apply
**Please contact Eaton technical personnel for application guidance