Eaton 93T 15kW-200kW

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





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







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)



- · 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

Product values

- 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



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
- 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



• 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

• Enabled by smart load-allocation function, 100-200kVA model is able to keep system operating at high-efficiency load point



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

batteries (up to 3 strings) 93T 15-30kVA with internal batteries (up to 2 strings) UPS 1575 1328 Battery 380 380

• 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



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

Benefits of lithium-ion



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
- 1000/100Base-T Ethernet network
- Modbus command: read input status read input data
- · Slave address: settable
- blocks

AS/400 relay/RS-232 interface card

- Part number: 744-98067-00P

- Communication configuration: no configuration required
- communication interface are provided

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, MODBUSTCP/ 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



E:T.N 931



EMP DT1H1C2 temperature and humidity sensor

- Part number: 744-A4026
- temperature sensors at the same time through the USB interfaces



• 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

• 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

• Network connection: RS-485 or RS-232 data communication is realized through isolated terminal

• Communication topology structure: two-wire or four-wire communication optional

 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 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

• 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

Eaton 93T 15-200kVA UPS technical specifications

Capacity	Rated capacity/active power (kVA/kW)	15/15	20/20	30/30	40/40	60/60	80/80	
	Rated input voltage (Vac)	380/400/415						
	Input voltage range (Vac)	201-478						
	Rated input frequency (Hz)	50/60						
Input	Input frequency range (Hz)	40-72						
	Bypass voltage range (Vac)	+/- 15% by defau	ılt, +/- 20% optiona	al				
	Input power factor	> 0.99						
	Input current THDi (@ rated linear load)	< 3%						
	Rated output voltage (M)	380/400/415						
	Rated output frequency (Hz)	50/60						
	Power factor	1						
Output	Output voltage regulation (steady state)	±1%						
output	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%						
FIDUUCLIVILY	ESS mode	99%						
Parallel	Parallel unit	Up to 4						
	Battery type	VRLA, NiCad,Lithium-ion						
D. II	Battery blocks quantity (with external VRLA batteries)	32-44 blocks						
configuration	Battery blocks quantity (with internal VRLA batteries)	36	32	36	32	36	36	
	Charging method	BMS, ABM, or constant float charge						
	Connection	Support common battery						
	·							
Dimensi	W*D*H (mm) compact model	330*657*528 330*690*986						
Dimensions	imensions W*D*H (mm) integrated model		380*740*1328 380*740*1575 500*820*1750					
	Net weight (Kg) compact model	40	40	44.5	45	96.5	97.5	
	Net weight (kg) integrated model without	79		81		128		

Weight	Net weight (kg) integrated model without batteries	t 79		81		128	
	Net weight (kg) integrated model with batteries	230	288	313	424	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℃*
		Humidity	5-95%, non-condensing
		Altitude	< 1000 m, no derating
	Others	Noise (1m)	≤ 65dB
	Uthers	Safety	IEC62040-1
		EMC compatibility	IEC62040-2
		Performance	IEC62040-3
		Certification	TLC, CQC energy saving, and Seismic test report

*Conditions apply

Eaton 93T 15-200kVA UPS technical specifications

Capacity	Rated capacity/active power (kVA/kW)	100/100	120/1		
	Rated input voltage (Vac)	380/400/415			
	Input voltage range (Vac)	201-478			
Input	Rated input frequency (Hz)	50/60			
	Input frequency range (Hz)	40-72			
	Bypass voltage range (Vac)	+/- 15% by defa	ult, +/-		
	Input power factor	> 0.99			
	Input current THDi (@ rated linear load)	< 3%			
	Rated output voltage (M)	380/400/415			
	Rated output frequency (Hz)	50/60			
	Power factor	1			
Output	Output voltage regulation (steady state)	±1%			
ouput	Output voltage tolerance regulation	+ 5% (0-100%	nad va		
	(dynamic)	1070 (0 100701			
	Output voltage THDv (@ full linear load)	< 2%			
	Inverter overload capacity	10 minutes, @12	5%		
	Double-conversion mode	> 96%			
Productivity	ESS mode	99%			
Parallel	Parallel unit	Up to 4			
	1				
	Battery type	VRLA, NiCad,Lith	ium-io		
Battery	Battery blocks quantity (with external VRLA batteries)	32-44			
configuration	Charging method	BMS, ABM, or consta			
	Connection	Support common bat			
Dimension	W*D*H (mm)	500*850*1260			
Weight	Net weight (kg) without switch	177	177		
weight	Net weight (kg) with switch	203	203		
Cable Entry		Bottom/Top			
	Communication interface	2 mini clata 0 h	ulding		
Communication		2 mini-slots, 3 building			
oommunication	Communication accessories	EMP temperature and h			
		porature	2		
	Temperature	0-50℃*			
	Humidity 5-95%, non-condens				
	Altitude < 1000 m, no derating				
	Noise (1m) < 65dB				
Others	Safety IEC62040-1				
	EMC compatibility IEC62040-2				
	Performance IEC62040-3				
	Certification TLC. CQC energy si				
		, = 10 shory			

*Conditions apply

0	160/160	200/200			
20% optiona					
ation)					
float charge					
	550*850*1600				
	260	290			
	281	311			
	_				
	Bottom				
larms inputs, and 1 RS232&1 USB					
tustrial gateway card; imidity sensor; AS/400 relay/RS-232 interface card					
and Seismic test report					

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