

TECNED S-CORE – Energy-Optimized UPS Architecture (E-UPS)

When no grid monetization or bi-directional energy flow is required, the TECNED E-UPS with S-CORE technology offers BESS functionality while eliminating the need for UPS down-stream.

The **TECNED S-CORE Energy-Optimized UPS** integrates a unidirectional Power Conversion System (PCS) directly into the UPS architecture. Built around **inverter-centric control**, S-CORE combines internal PCS functionality with **sodium-ion battery technology** to enable peak shaving, load shifting, and energy storage—without compromising UPS integrity.

The energy-optimized inverter operates in **hot-standby mode**, delivering ultra-high standby efficiency while maintaining full **no-break protection** with **0 ms transfer time**. This architecture ensures continuous power availability, enhanced energy utilization, and reduced total cost of ownership—bridging the gap between traditional UPS systems and modern energy storage solutions.

- **Sodium-Ion Powered E-UPS**
  Intrinsically low-risk, sustainable battery technology with long cycle life, enabling installation in standard MDB rooms under IEC-compliant conditions without additional fire-mitigation systems
- **Energy-Optimized UPS Architecture**
  Ultra-high efficiency with true **0 ms no-break protection**
- **Island Operation & Black Start Ready**
  Full autonomous operation without grid dependency
- **Smart Generator Compensation**
  Battery-assisted generator support reduces fuel use and genset oversizing
- **Peak Shaving & Load Shifting Built-In**
  Lower energy costs without compromising mission-critical uptime

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Green Energy & E-UPS

1. **E-UPS energy-optimized mode**
   achieving efficiencies up to **99%**, with **0 ms transfer time** and **THDi < 5%**, combining energy savings with true no-break protection.
2. **Low harmonic grid interaction**
   with **THDi ≤ 1.5%** and input power factor up to **0.99**, minimizing grid pollution and reducing upstream infrastructure requirements.
3. **Inverter-centric architecture using advanced IGBT and three-level technology,**
   delivering high conversion efficiency and lower electrical losses across the load range.
4. **Intelligent Energy Storage Mode**
   enabling peak shaving and load shifting, optimizing energy costs by utilizing peak-valley electricity price differences.
5. **Hot-standby energy-optimized inverter operation,**
   maintaining maximum efficiency during normal operation while guaranteeing immediate backup availability.
6. **Wide input voltage (-60% to +25%) and frequency range (40–70 Hz),**
   improving grid compatibility, reducing unnecessary battery cycling, and extending battery lifetime.
7. **Utility-rated output power (kVA = kW)**
   ensures full usable capacity, eliminating oversizing and improving overall system energy efficiency.
8. **High-density modular design,**
   delivering up to **600 kW in 0.8 m²** and **1.2 MW in 1.8 m²**, minimizing material usage and installation footprint.
9. **Intelligent sleep mode for power modules,**
   dynamically optimizing module usage to maintain maximum system efficiency at partial loads.
10. **Self-load testing capability,**
    enabling commissioning and periodic testing without external load banks—saving energy, time, and temporary infrastructure.
11. **Advanced battery charging management,**
    including multi-stage charging and high-current modular chargers, extending battery service life and reducing replacement frequency.
12. **Smart generator interaction mode,**
    allowing battery support to compensate generator limitations and reduce fuel consumption.
13. **No derating operation up to 40 °C**
    and continuous operation up to **55 °C with controlled derating**, reducing cooling energy requirements in warm climates.
14. **Black start & Island mode capability,**
    allowing system startup from battery when grid power is unavailable—supporting resilience in renewable-heavy or weak-grid environments.
15. **Energy-aware system control and monitoring,**
    with advanced diagnostics, event logging, and optimization tools to support long-term efficiency and reduced total cost of ownership.

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MODEL	TECNED S-CORE 100-1200kVA		
Power per 3U module	100kW / max 12 modules		
Input			
Voltage Range (Vac)	3Φ4W+PE, 380/400/415, L-L: 138~485		
Input Wiring	3Ph+N+PE		
Input Frequency (Hz)	40-70		
Bypass Voltage Range (Vac)	-20% (10/15/30/40/50/60%) ~ +15% (10/20/25%)		
Power Factor	≥0.99		
THDi at full load	<3% linear load		
Battery			
Battery type/chemistry	Polyanionic Prismatic Sodium-ion		
Battery Capacity / block	87.5kWh – 1050kWh		
Battery Voltage (Vdc)	± 256.5V (+/- 90 cells / total 180 cells per block)		
Charging Capacity (kW)	51.3kW – 615kW		
Output			
Power (kVA/kW)	100 - 1200		
Power Factor	1		
Voltage (Vac)	3Φ4W+PE, L-L:380,400,415 ±1%		
Frequency (Hz)	50/60± 0.2% (battery mode)		
Three Phase Difference	True sine wave, ≤2 degrees		
THDv	≤1% (linear load, full load); ≤4% (nonlinear load, full load)		
Static Bypass Transfer Time	0 msec		
System Efficiency (MAX)	97% On-line mode / 99% E-UPS mode		
Overload Capacity	101-105% Long run, 106-110% load for 60 minutes 111%-125% load for 10 minutes 126%-150% load for 1 minute, over 150% load transfer to bypass		
Others			
Display	7-inch Touch screen+ LED+ Physical buttons		
Operating Temperature (ºC)	0~40		
Storage Temperature (ºC)	-40~70		
Relative Humidity	0~95%, no condensation		
Communication Function	RS232, RS485, Dry contact, MODBUS, SNMP (optional)		
Noise (dB)	70		
Altitude(m)	0~2000, no derate		
Cabling	Bottom/Top		Top
Color	Light grey RAL 7035		
Cabinet Dimension(W×D×H) (mm)	1200×1000×2000	1400x1000×2000	1800x1000×2000
Weight (kg)	100-600kW 495-625Kg	800kW 825Kg	1000-1200kW 1070-1140Kg
Standards	**Electronics IEC 62040-1-2, IEC 60146, IEC 61000-5-6. Battery UN38.3, IEC 62619**		

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