

Pole-Mounted Battery Energy Storage System

AmpereArc AA-40.96-PMES10 | 40 kW / 96 kWh | LiFePO₄

General

Brand	AmpereArc Technologies
Model	AA-40.96-PMES10
Manufacturer / principal	Alta Vision (Pvt) Ltd
Country of origin	Sri Lanka
Installation	Single concrete pole, outdoor
Configuration	2 cabinets: battery cabinet + PCS/control cabinet

AC ratings

Rated AC voltage	400 V, 3-phase, 4-wire (with N)
Rated frequency	50 Hz
Rated continuous output	40 kVA at 50 °C ambient
Rated active power	40 kW
Power factor	Full four-quadrant, independent P & Q control; 0.8 lagging to 0.8 leading
Round-trip efficiency (AC–AC)	89.8 %
Power-frequency withstand (1 min)	2 kV
Impulse withstand (1.2/50 µs)	6 kV

Battery system

Chemistry	Lithium iron phosphate (LiFePO ₄)
Cell	Prismatic LiFePO ₄ , EVE MB31
Usable energy (beginning of life)	96 kWh
Nominal DC voltage	51.2 V
DC voltage range	43.2 – 57.6 V
Battery modules per cabinet	3
Operating temperature	0 – 45 °C
Cooling	Integrated cabinet air-conditioning (no external HVAC required)
Cycle life	4,000 cycles at 90 % DoD
Design life	15 years
Self-discharge	0.5 – 2 % per month

Power conversion system (PCS)

Type	Bidirectional inverter
Manufacturer	AmpereArc Technologies
Topology	Non-isolated
Rated continuous power	40 kVA at 50 °C ambient
Overload	44 kVA for 3 s
Maximum efficiency	97.6 %
Current THD at full load	≤ 4 %
Grid-connected operation	Yes

Grid-forming / islanded operation	Optional (not included)
Anti-islanding protection	Integrated
Volt-VAr and Volt-Watt	Yes, to LECO-approved settings and Sri Lankan interconnection requirements

Battery management system (BMS)

Architecture	Multi-level: cell, module and rack monitoring
Measured / estimated	Cell voltage, current, temperature; SOC, SOH, SOP
Cell voltage accuracy	±1 mV
SOC estimation accuracy	98 %
Cell balancing	Passive
Protections	Over/under-voltage, over-current, over-temperature, short-circuit, cell imbalance
Fault handling	Alarms, isolation, controlled shutdown
Event logging / diagnostics	Integrated

Energy management system (EMS)

Integration	Fully integrated with BMS and PCS
Manual P & Q set-point control	0.8 lagging to 0.8 leading
Scheduled charge/discharge (Daily/weekly)	remotely configurable
Remote dispatch	via Modbus
Grid support	Volt-VAr droop, Volt-Watt response, fast reactive power response for voltage support
Peak shaving	Yes
Solar PV absorption / reverse power flow mitigation	Yes, remotely configurable charging
SOC optimisation for cycle-life extension	Yes

Protection and safety

AC circuit breaker	100 A, 4-pole, adjustable MCCB
DC circuit breaker / isolator	500 A DC, 1-pole MCCB
Fuses	125 A
Surge protection	AC Type 1+2 SPD
AC over/under-voltage and frequency	Adjustable to LECO requirements
Fire detection and suppression	Aerosol fire-extinguishing system
Thermal runaway mitigation	BMS cell monitoring with automatic battery isolation; fire detection activates suppression
Earthing	Solidly earthed, suits 400/230 V system

Enclosure and mechanical

Protection class	IP55
Enclosure	Corrosion-resistant, galvanised/painted to BS 5493 / BS 729
Paint system	BS 5493 Table 3 Part 3 (exposed polluted coastal atmosphere), 10–20 year maintenance period
Galvanising	Hot-dip per BS 729, ≥ 98.5 % Zn

Mounting	Single concrete pole; bolts and/or pole straps supplied; compatible with existing LECO poles
Dimensions (H × W × D)	Battery cabinet: 1394 × 1305 × 569 mm PCS cabinet: 902 × 1003 × 702 mm
Weight	Battery cabinet: 950 kg PCS cabinet: 200 kg Total: 1,150 kg

Communication and software

Protocols	DNP3, Modbus
Interfaces	Ethernet; factory-installed cellular modem
Monitoring	Real-time, cloud-based platform
Remote functions	Parameter configuration, fault diagnostics (remote and local), secure firmware update
Third-party API	Monitoring, operation and control, included
Software licence	Included for full service life

Data security

Access control	Password protection on all interfaces; role-based
Communication	Encrypted remote communication
Data	Time-stamped event logs and performance data; complies with national data-hosting regulations

Warranty and support

Comprehensive warranty (hardware and software)	5 years, extendable to 10 years at additional cost
Battery system warranty	5 years or 4,000 cycles at 90 % DoD, whichever occurs first
Battery modules, product warranty	10 years
PCS, product warranty	10 years
Spare parts availability	Minimum 10 years from commissioning
Support	Operator training, OEM remote support, mandatory spares and tools supplied