SLC CUBE4

Uninterruptible Power Supplies (UPS) with IoT from 7.5 to 80 kVA

salicru

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The most advanced continuity protection on the market

Salicru's **SLC CUBE4** Uninterruptible **Power Supplies** are the most cutting-edge security solution for all critical systems and sensitive loads. They have a Nimbus cloud connection that allows for equipment monitoring as standard, as well as options of remote management incident notification, equipment health monitoring and preventive maintenance.

With three-level on-line technology and quad-core DSP control, they are three-phase input/output systems that offer a range of first-class features, including unity power factor (kVA=kW), very low input distortion (THDi <3%) and performance in excess of 96% in On-line Mode and 99% in Eco Mode. They also boast parallel growth capacity or unlimited redundant security.

Across the entire range, the batteries are included in the same cabinet, meaning the floor area occupied is reduced by up to 40%. They are compatible with all types of battery (including lithium-ion) and incorporate the Batt-Watch battery care system to maximise battery life and availability.

Features

- On-line double conversion technology with three-level topology.
- State-of-the-art quad-core DSP control.
- Output power factor 1 (kVA=kW).
- Input power factor >0.99.
- Input current distortion rate (THDi) <3%.
- Nimbus IoT connection for monitoring, as standard.
- High energy efficiency (over 96% in On-line Mode and up to 99% in Eco Mode).
- Unlimited [1] parallel systemfor redundancy or capacity purposes.
- Batt-Watch battery care and management system.
- Batteries included on standard models throughout the range.
- Compatible with all battery types, including lithium-ion.
- Compatible with power generators.
- 5" touch screen for all models.
- USB, RS-232 and RS-485 interfaces, plus relays.
- Wide range of options available.
- SLC Greenergy solution.

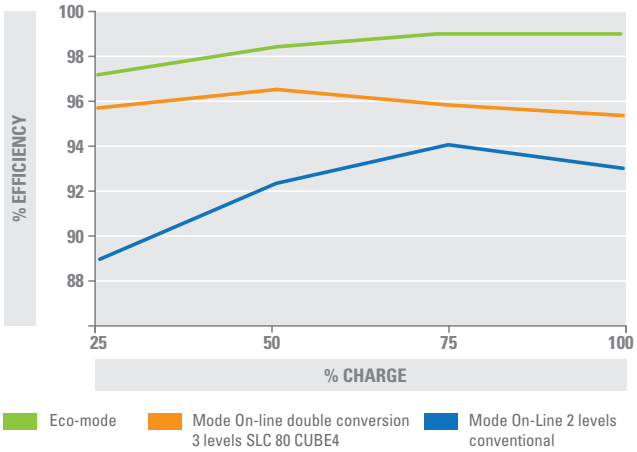
(1) For models up to 20 kVA. maximum of four devices in parallel.

Efficiency

Three-level topology with DSP control

Three-level switching, which is based on switching the IGBTs in half-cycles (positive and negative), controlled by floating point DSP with exclusive cores for the rectifier and inverter, provides maximum performance in double conversion.

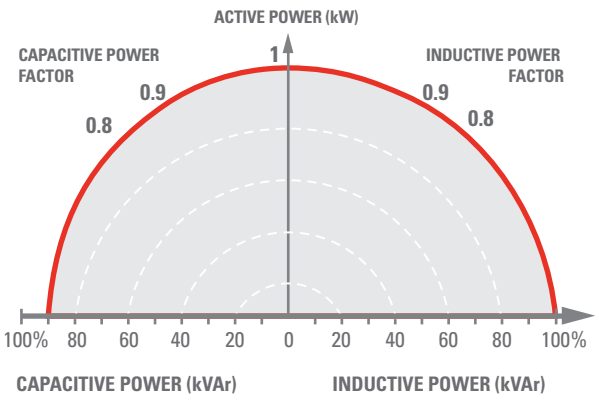
Lowers cooling costs and increases energy efficiency by more than 96% from a 25% charge, thereby improving TCO by reducing OpEx.



Output power factor PF=1 for full rated power (kVA=kW)

The UPS is capable of supplying full rated power in the form of kW.

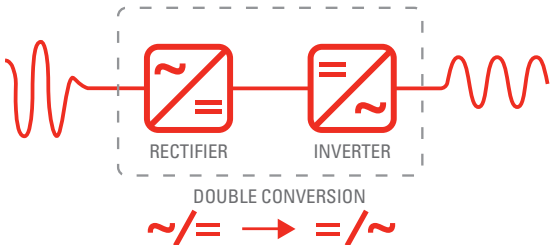
For modern loads with power factor correction, such as servers, it is not necessary to apply a UPS overdimension factor, resulting in lower TCO (total cost of ownership).



VFI double conversion technology

Double conversion of the voltage between input and output (AC/DC – DC/AC) in accordance with VFI-SS-111 (EN-IEC 62040-3) operation, providing clean, stable and reliable voltage at output.

Supplies loads with voltage of the highest quality, protecting them from any and all disturbances in the mains electricity.



Operation in Eco Mode

When maximising the facility's performance is the leading priority, Eco Mode allows loads to be supplied directly from the static bypass, provided the static bypass is within acceptable voltage and frequency ranges.

Increases the overall performance of the system by up to 99%, thereby improving the facility's OpEx.

Improved conditions for the electrical installation

With very low harmonic distortion (THDi <3%) and an input power factor equivalent to unity (FPin>1) (1), it is not necessary to overdimension the transformers, power cables and/or power generators.

Brings down total capital expenditure (CapEx).

(1) Depending on the model.

Silicon carbide devices

Silicon carbide (SiC) devices are the latest development with regard to performance and efficiency.

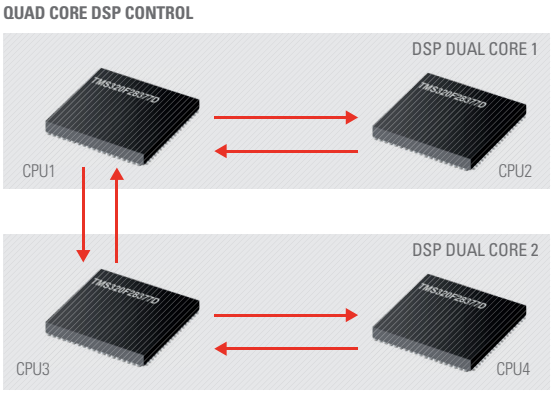
They enable systems to operate in a much wider range of temperatures and at much higher switching speeds, without affecting performance.

Reliability

Cutting-edge technology

Advanced digital control techniques, developed in collaboration with leading European research centres and implemented in quad-core signal processors.

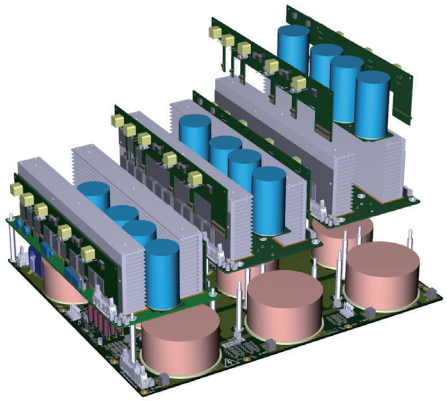
Thereby making it possible to apply the most advanced features.



Modular design

Power modules with a repeating design, divided by phase and internally arranged in parallel in order to increase power.

The design optimises manufacturing processes and reliability while reducing the time required for intervention in the event of an incident (MTTR – mean time to repair).



Redundant power supply

Redundant power supplies for control and the static bypass switch (1).

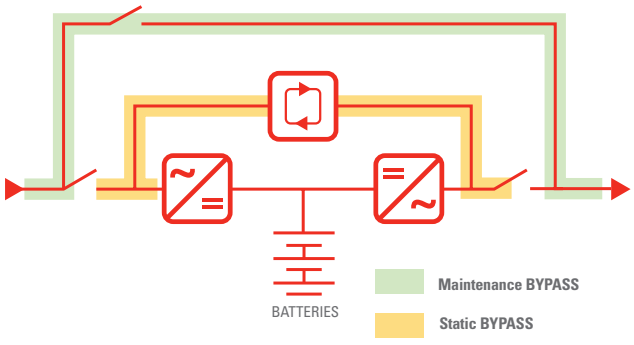
Ensure the continuity of power even in the event of failure of the device itself, providing maximum availability.

(1) Depending on the model.

Security with double bypass

Double bypass circuit as standard for all models. The static bypass deals with unforeseen overloads or anomalous situations affecting the operation of the equipment. There is also a maintenance bypass, which enables the equipment to be worked on without causing the loads to be disconnected.

Continuity of load supply under any circumstances.

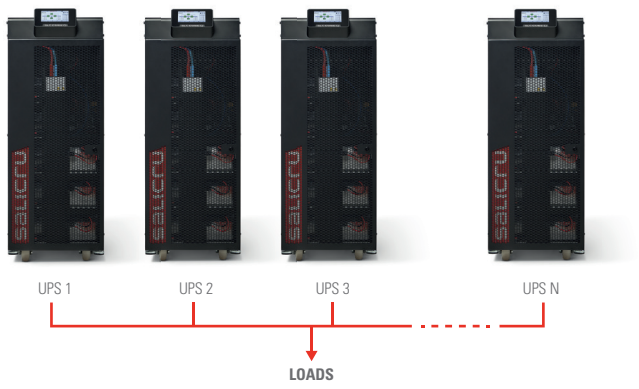


Unlimited (1) parallelingof devices

Offers the capacity to arrange devices in parallel, in order to ensure maximum availability (redundancy N+1, ..., N+M) as well as increasing power (increased load demand). Provides the same output performance in parallel systems as in standalone devices. Continuity of operation even if the communication signal is lost (depending on the model).

The availability of the protection is assured by both the redundancy and the requirements regarding growth in demand.

(1) For models up to 20 kVA. Maximum of four devices in parallel.



Over 55 years of experience

Know-how in electrical continuity and protection solutions, accumulated during **Salicru's** 55-plus years of history.

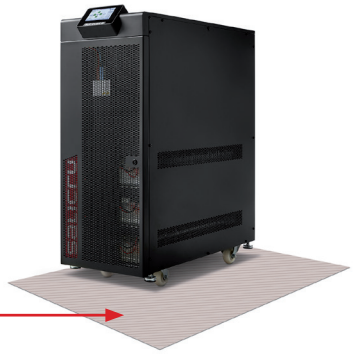
More than 900,000 UPS systems sold in over 130 countries, representing total power equivalent to more than 5 million protected computers.

Operability

Very compact design

One of the most compact solutions on the market, with a footprint of just 0.172 m^2 up to 20 KVA, 0.345 m^2 up to 40 kVA and 0.515 m^2 up to 80 kVA. For standard backup, the batteries are always included in the same cabinet.

This makes it possible to reduce the amount of floor area occupied, which in turn results in lower TCO.



SLC CUBE4 vs conventional UPS with batteries in additional cabinet
SPACE SAVING >40%

Easy to access and install

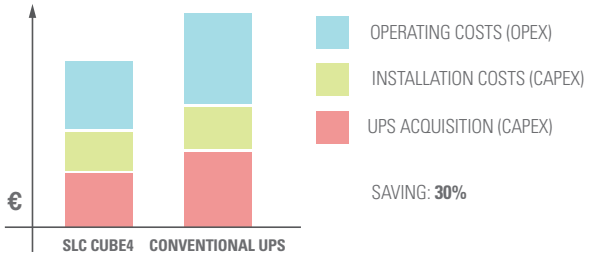
Models of up to 40 kVA have wheels included to facilitate easy placement, and have their connections, switches and communication links located at the back, thus requiring only 100 mm of space behind the device. Models from 50 to 80 kVA can be installed against the wall, and have their connections, switches and communication links located at the front.

Optimisation of space and ease of installation and startup.

Very low TCO

The total cost of ownership (TCO) for a UPS is the sum of investment in the equipment itself + the installation expenses + the operating expenses (performance, maintenance, consumables, etc.). For the **SLC CUBE4** series, all of these aspects have been carefully calculated in order to obtain a very low investment ratio over the operational lifetime of the UPS.

The savings obtained in comparison to earlier series are as much as 30%.



High availability

The design and concept of the **SLC CUBE4** series takes into account two factors that play an important role over the operational lifetime of the device: maximising MTBF (mean time between failures) and minimising MTTR (mean time to repair). By optimising these two variables, the need to call out technical services is reduced to a minimum.

Seeking maximum operational effectiveness.

$$A\,(\%) = \left(1 - \frac{MTBF}{MTTR}\right) \times 100$$

A: Availability
MTTR: Mean time to repair MTBF: Mean time between failure

Touch screen

5" touch screen with a block diagram of the device and all of the information regarding measurements, parameters and notifications. Multilingual.

Facilitates the handling and comprehension of information in an intuitive environment.

Simple to maintain

The various self-diagnostic processes, along with the design of the component assembly, make it much easier for technical service personnel to work on the devices.

Minimises the amount of time required to work on the device, and therefore the amount of time the device is non-operational.

Wide range of options

Although there is a wide range of features included as standard, there are also a number of options available for specific situations, including backup extensions, independent bypass line, frequency converter, isolation transformer, and more.

Achieves full integration into the environment to be protected.

IoT solution

Nimbus Service in the cloud

The **SLC CUBE4** series of UPS systems incorporate a Nimbus communication card as standard. Connecting this card via Ethernet opens up a world of communication possibilities, ranging from remote diagnostics and maintenance to integration with SNMP platforms, MODBUS/TCP protocol, ordered shutdown of servers and/or remote firmware updates for the Nimbus card.

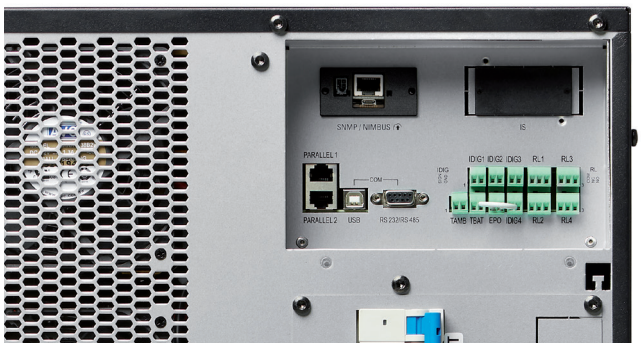
The first UPS to be fully IoT-connected.

Standard interfaces

The communication channels that have been incorporated into the device are many and varied, and include USB, RS-232 and RS-485 (1) interfaces, 1 x slot with Nimbus/SNMP-Ethernet card, 1 x free slot (1), digital inputs, relay outputs and EPO indicator (emergency stop).

Multi-channel communication.

(1) For 30-80 kVA models.



Remote diagnostics

Critical systems (data centres, virtualised systems, control centres, ICUs, operating theatres, etc.) require the highest levels of protection to ensure that they continue functioning. To prevent incidents and/or minimise the amount of time required to resolve them, prevention and immediate notification are fundamental.

With the remote monitoring system and notifications sent directly to our Technical Service, response time is reduced to the absolute minimum.

Remote maintenance

In light of its status as essential equipment, and in order to guarantee maximum performance in the event of disturbances to the electrical supply, a UPS requires continued maintenance. With the remote maintenance system, which offers a variety of options in terms of modalities and schedules, your device will provide the same optimum protection results from the first to the last day of its working life.

The security of your equipment and the continued activity of your business will be guaranteed throughout the years.

Communication capacities

The Nimbus card can be used to enable a number of different communication services, such as:
- Integration with the SNMP/Ethernet platform.
- Communication with the MODBUS/TCP protocol.
- Configuring the ordered shutdown of servers.
- Setting up the email notification service.

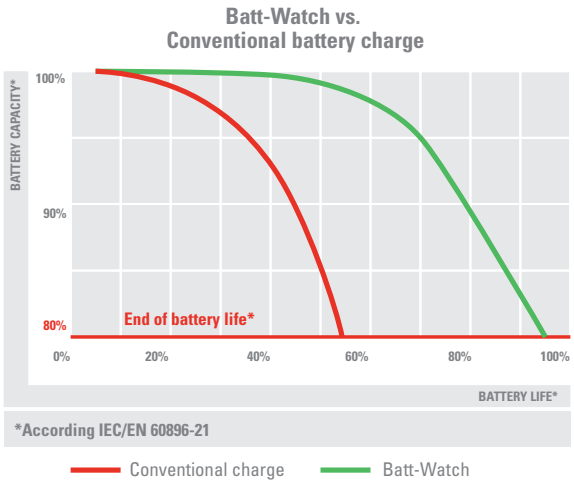
Services to ensure guaranteed integration with any environment.

Battery care

Batt-Watch

The batteries, which provide the backup time in the event of a power outage, are one of the most sensitive components in a UPS solution. Consequently, they require special care in order to maximise their service life and keep them in optimum working condition. The techniques that are used to treat them with as much care as possible include float voltage temperature compensation, manual and automatic battery testing, isolating the batteries from voltage ripples and intermittent charging.

All of these techniques form part of the Batt-Watch system and help to extract maximum performance from the batteries.



Internal batteries

On all models, the batteries for standard backup are located inside the same cabinet as the one housing the UPS.

Extra cabinets are not required, meaning the floor area occupied is reduced (resulting in lower TCO) and the tasks of connecting and starting up the device are much simpler.

Compatible with all types of battery

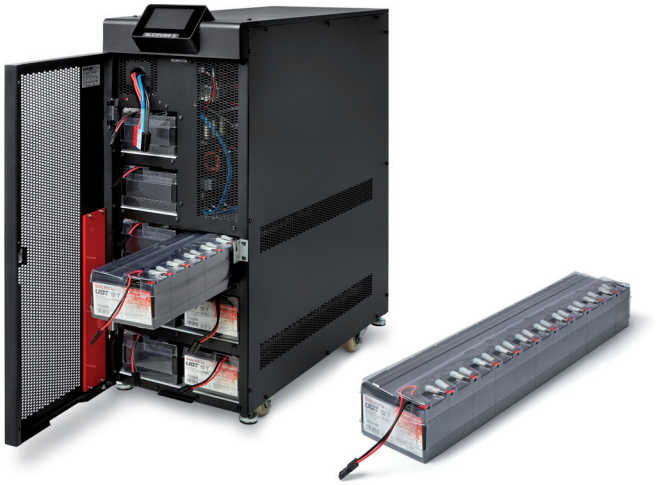
Allows for the charging of different battery types: sealed and open lead, gel, low maintenance and ultra-low maintenance Ni-Cd, lithium-ion, etc.

Compatibility of the device with any type of application related to backup, for example, daily cyclic backups.

Removable battery packs

The 30-80 kVA models have swappable battery packs, making it easy to change the batteries when they reach the end of their service life. The cabinets for extended backup also use battery packs, or the batteries are mounted in removable trays.

Simple system for the swapping of batteries.



Backup extensions available

Additional modules for the placement of batteries are available in order to extend the maximum backup time provided.

Combined with the conveniently sized battery charger, this is the perfect solution for processes that require a longer operational backup time than standard.

Range

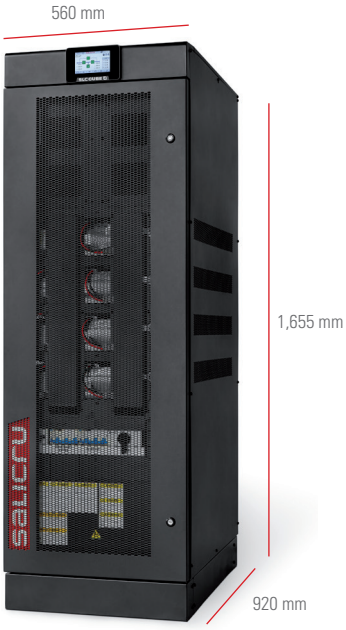
MODEL	CODE	POWER (VA / W)	DIMENSIONS (D x W x H mm)	WEIGHT (kg)
SLC-7.5-CUBE4	6B3AA000001	7,500 / 7,500	689 × 250 × 827	88
SLC-10-CUBE4	6B3AA000002	10,000 / 10,000	689 × 250 × 827	98
SLC-15-CUBE4	6B3AA000003	15,000 / 15,000	689 × 250 × 827	135
SLC-20-CUBE4	6B3AA000004	20,000 / 20,000	689 × 250 × 827	135
SLC-30-CUBE4	6B3AC000001	30,000 / 30,000	910 × 380 × 1,045	220
SLC-40-CUBE4	6B3AC000003	40,000 / 40,000	910 × 380 × 1,045	312
SLC-50-CUBE4	6B3AD000002	50,000 / 50,000	920 × 560 × 1,655	450
SLC-60-CUBE4	6B3AD000003	60,000 / 60,000	920 × 560 × 1,655	450
SLC-80-CUBE4	6B3AD000001	80,000 / 80,000	920 × 560 × 1,655	547

Nomenclature, dimensions and weights for devices with input voltage of 3 x 400 V, output voltage of 3 x 400 V and standard backup.

Dimensions

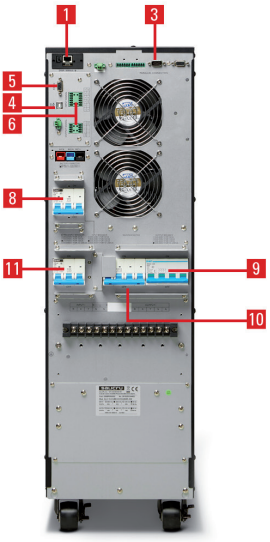
SLC-7.5÷20-CUBE4

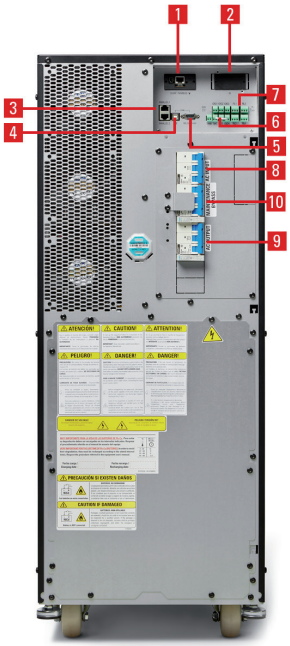
SLC-30÷40-CUBE4

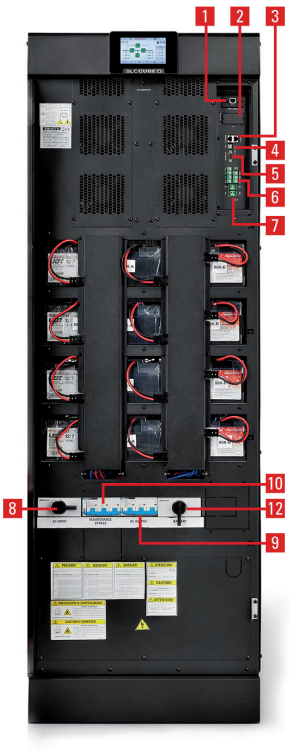


SLC-50÷80-CUBE4

Connections







1. Nimbus cloud card
2. Free communications slot
3. Parallel port
4. USB interface
5. RS-232/(485) interface
6. Digital Input
7. Relay indicators
8. Input circuit breaker/disconnector
9. Output circuit breaker
10. Manual bypass circuit breaker
11. Bypass circuit breaker
12. Battery disconnector

Technical specifications

MODEL		SLC CUBE4
TECHNOLOGY	Type	On-line, double conversion, HF, DSP control
INPUT	Rated voltage	Three-phase 3 × 380 / 3 × 400 / 3 × 415 V (3P + N)
	Voltage range	7.5÷20 kVA: 110÷300 V (P-N) / 30÷80 kVA: 115÷265 V (P-N)
	Rated frequency	50 / 60 Hz
	Frequency range	7.5÷20 kVA: 46÷54 Hz / 56÷64 Hz / 30÷80 kVA: 46÷64 Hz
	Total harmonic distortion (THDi)	<3%
	Power factor	7.5÷20 kVA: ≥0.99 / 30÷80 kVA: 1 from 10% load
	Rectifier topology	Three-phase IGBT full wave, soft start, PFC, transformerless
OUTPUT	Power factor	1
	Rated voltage	Three-phase 3 × 380 / 3 × 400 / 3 × 415 V (3P + N)
	Dynamic accuracy	±2%
	Static accuracy	±1%
	Frequency	50 / 60 Hz
	Overall performance in On-line Mode	>96% (1)
	Performance in Smart Eco Mode	>99%
	Permissible overload	125% for 10 min / 150% for 60 s / >150% for 20 ms
	Crest factor	3:1
MANUAL BYPASS	Type	Uninterrupted
STATIC BYPASS	Activation type and criteria	Solid state
	Transfer time in Smart mode Eco Mode (ms)	<10 ms
	Transfer to bypass	Immediate, for overloads exceeding 150%
	Retransfer	Automatic, after alarm deactivation
BATTERY	Battery type	Pb-Ca, VRLA, lead acid, gel, Ni-Cd or Li-ion
	Charging voltage regulation	Batt-Watch
COMMUNICATION	Ports	1 x RS232/RS485 + 1 x USB
	Relay interface	7.5÷20 kVA: 6 relays / 30÷80 kVA: 4 relays (programmable)
	Smart slot	1, for SNMP/NIMBUS and relays
	LCD display	5" colour touch screen
GENERAL	Operating temperature	0°C ÷ +40°C (2)
	Relative humidity	Up to 95%, non-condensing
	Maximum operating altitude	2,400 masl (3)
	Acoustic noise at 1 metre	7.5÷10 kVA: <55 dB / 15÷20 kVA: <57 dB / 30÷40 kVA: <54 dB / 50÷80 kVA: <62 dB
STANDARDS	Safety	IEC/EN 62040-1
	Electromagnetic Compatibility (EMC)	EN-IEC 62040-2
	Operation	VFI-SS-111 (IEC/EN 62040-3)
	Quality and Environmental Management	ISO 9001 & ISO 14001

(1) Depending on the model.
(2) Up to 55°C with power derating.
(3) Power degradation for higher altitudes up to a maximum of 5,000 masl.

Heat losses

MODEL	HEAT LOSSES 100% load (kW)	COOLING (m^3/h)
SLC-7.5-CUBE4	0.438	266
SLC-10-CUBE4	0.585	266
SLC-15-CUBE4	0.760	266
SLC-20-CUBE4	1.014	266
SLC-30-CUBE4	1.470	427
SLC-40-CUBE4	1.920	427
SLC-50-CUBE4	2.300	854
SLC-60-CUBE4	2.700	854
SLC-80-CUBE4	3.680	854

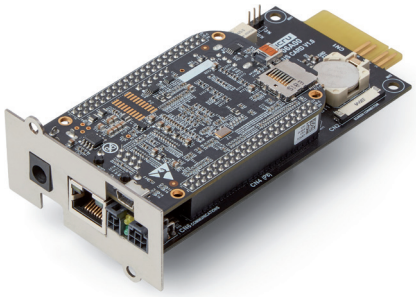
Optional extras

Separate bypass line: For facilities with dual power supply, enabling the separation of inverter and bypass line power supplies.

Backfeed protection (30-80 kVA models): Provides additional protection to the input in the event that the bypass thyristors suffer a short circuit.

Input/output voltage configurations (7.5-20 kVA models): Allows for single-phase/single-phase or three-phase/single-phase input/output configurations.

Nimbus / Ethernet / SNMP adapter: Ethernet adapter for the SNMP network management protocol to integrate the UPS into the IT network completely independently.



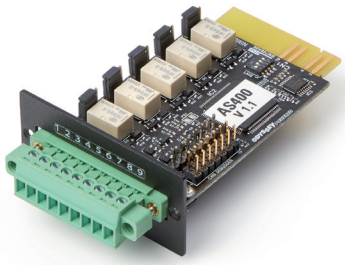
Isolation transformer and autotransformer: Electrical device that allows you to adapt the equipment to the voltage of the facility (autotransformer) or which has galvanic isolation between the input and output (isolation transformer).

External manual bypass board: Enables maintenance operations with the UPS fully disconnected.

Parallel installation cable: Communications cable for simple or redundant parallel installations.

Tropicalised electronic cards: Treated against external agents such as condensation, humidity and marine environments.

Nimbus AS-400 extended relay card: Relay card.



Other levels of protection: Covers with levels of protection tailored to meet particular specifications.

Earthquake-proof feet: Protection against the force of horizontal displacement caused by an earthquake.

Extended backup: Additional battery cabinets for facilities that require long backup times.

Compatible with a wide range of batteries: Pb-Ca, Ni-Cd, lead acid, VRLA with gel electrolyte or lithium-ion.

Batteries in rack: Specific mounting of batteries in racks.

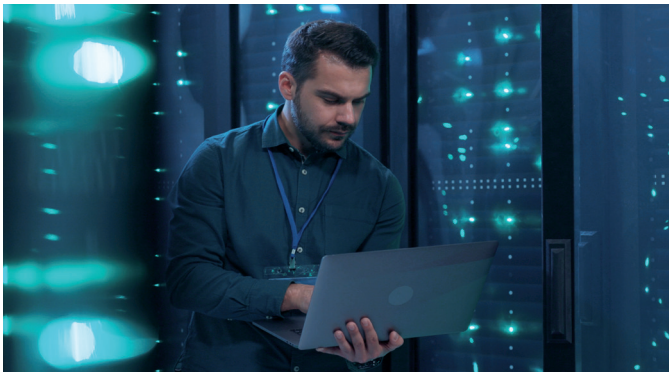
Frequency converter: For 50 to 60 Hz or 60 to 50 Hz conversion.

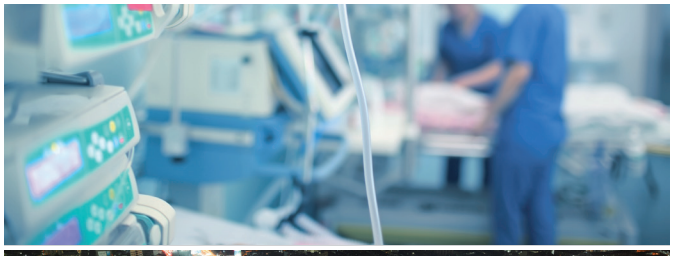
TSS - Technical Support and Service

The day-to-day running of your business must not be allowed to be interrupted by an incident in your uninterruptible power supply (UPS). That is why Salicru places its **Technical Support & Service (TSS)** department at your disposal, offering an extensive network of qualified technicians who can provide assistance with any eventuality or incident that may arise with your device, regardless of location, day or time.

The services offered by our extensive network of qualified technicians include:

- Pre-sales support.
- Startup.
- Maintenance contracts.
- Remote maintenance contracts.
- Preventative actions.
- Corrective actions.
- Telephone support.
- Monitoring of battery service life.





Applications

Data centres: Ensuring the operability of facilities and preventing losses caused by power outages, whether in modular or virtualised data centres for hosting, housing, computer centres, supercomputers, etc.

Financial services: Maintaining the online functionality of financial transactions in centralised payment authorisation systems, continued listing, intercommunication between banking networks, etc.

Health: Electromedical equipment for analysis, laboratories, operating theatres and vital instruments for ICUs, as well as administration systems, security, medical records, etc.

Telecommunications systems: Preventing power outages that can cause the suspension of services between subscribers in fixed telephone, mobile, GSM, DCS and UMTS infrastructure, as well as transmission equipment, microwave, fibre optics, etc.

Transport systems: Protecting productivity in complex electrical systems related to control, communication and operation.

Infrastructure: Safeguarding instruments and ensuring proper management of systems in airports, tunnels, roads, railways, ports, etc.

IT applications: Preventing costs caused by interruptions in availability or loss of information in IT networks, server farms, voice and data networks, CAD/CAM, document management, etc.

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