

RAILWAY

POWER ELECTRONICS SOLUTIONS



SALICRU

ALWAYS ENERGY

Power electronics for systems that cannot fail

Six decades of research and investment and global solutions for railways

At Salicru, we specialise in manufacturing power electronics solutions for highly specialised environments that require customised and exceptionally robust electrical management. With over 60 years of experience, our solutions ensure uninterrupted operation, enhanced safety, and optimal performance in environments where precision and continuity are crucial.

In rail transport, we cover off-board structures, from critical signalling equipment to power conversion and protection systems. We develop and supply systems designed to ensure the quality, stability, and availability of the power supply in highly critical operating environments, such as electric traction substations, signalling, control, communications, and auxiliary services, thereby minimising operational risk, protecting critical loads from network disturbances and safeguarding service continuity at all times.

In this environment, the power supply must be reliable, robust and permanently available because any interruption, even one that lasts for a millisecond, can compromise the operation of an interlocking, a signal box or a control centre. Our product range meets the primary electrical needs of railway infrastructure in both alternating and direct current and has been designed to withstand harsh environmental

conditions with extended temperature ranges and resistance to high humidity, electrical noise, harmonics, transients, and electromagnetic forces. Furthermore, all our solutions comply with current international railway regulations, making them suitable for implementation in both public and private railway projects in urban environments, as well as on high-speed and conventional lines.



+160.000
EQUIPMENTS
production
per year

+2.000.000
EQUIPMENTS
in operation
worldwide

+200
MVA/YEAR
safe power
supply

60 YEARS
1965
of industrial
activity

14
National
offices

8
International
subsidiaries



CUSTOM SOLUTIONS

Every installation is different. Every solution should be too.

It's not the length of the track, but the strength of the journey

Customisation makes it possible to offer protection adapted to suit the specific needs of each customer, ensuring the seamless continuity and safety of all their operations. In a world that depends fully on electricity, having systems that ensure an uninterrupted power supply is essential to prevent losses, breakdowns and associated risks. At **Salicru**, our team understands what you need and offers customised solutions to meet the most challenging market demands.

Our **customised solutions** are designed to seamlessly adapt to each project's unique requirements. That's how we provide our customers with an unmatched peace of mind. Flexibility is one of our core principles, which is why we offer customised solutions that always incorporate our own developments. Options available on the market do not usually cover the specific requirements of each customer across the board. With this in mind, we develop equipment from scratch or adapt existing device, always in accordance with the most rigorous quality assurance inspections.

The automatic detection of single-phase or three-phase input is one of the most important features in our projects. They're especially useful when it comes to railway solutions, where power supply conditions can vary based on the connection point and technical constraints. The same solutions **can also act as single-phase input to three-phase output converters**, which is a highly sought-after feature that very few manufacturers offer. The result is that energy

sources can be used even if they are not ideal for the load, by converting them safely and reliably to power three-phase device. These are especially useful in settings where stable three-phase power is not available or where the existing infrastructure limits installation options. At Salicru, our solutions are integrated into technical enclosures, platforms, or space-saving electrical control panels.

Furthermore, we collaborate with a consolidated network of partners, including engineering firms and certified installers in the railway sector, which enables us to approach each project with a holistic vision, from the initial identification of the most suitable solution to start-up, training, maintenance, and long-term after-sales support. These partnerships help us respond quickly and accurately to end-customer needs and guarantee the reliability of the installation throughout its entire life cycle.

Our product range extends beyond the railway sector to include data centres, industrial automation, and telecommunications networks, offering solutions designed to provide unbeatable reliability.



OUR SOLUTIONS

UNINTERRUPTIBLE POWER SUPPLY SYSTEMS (UPS)

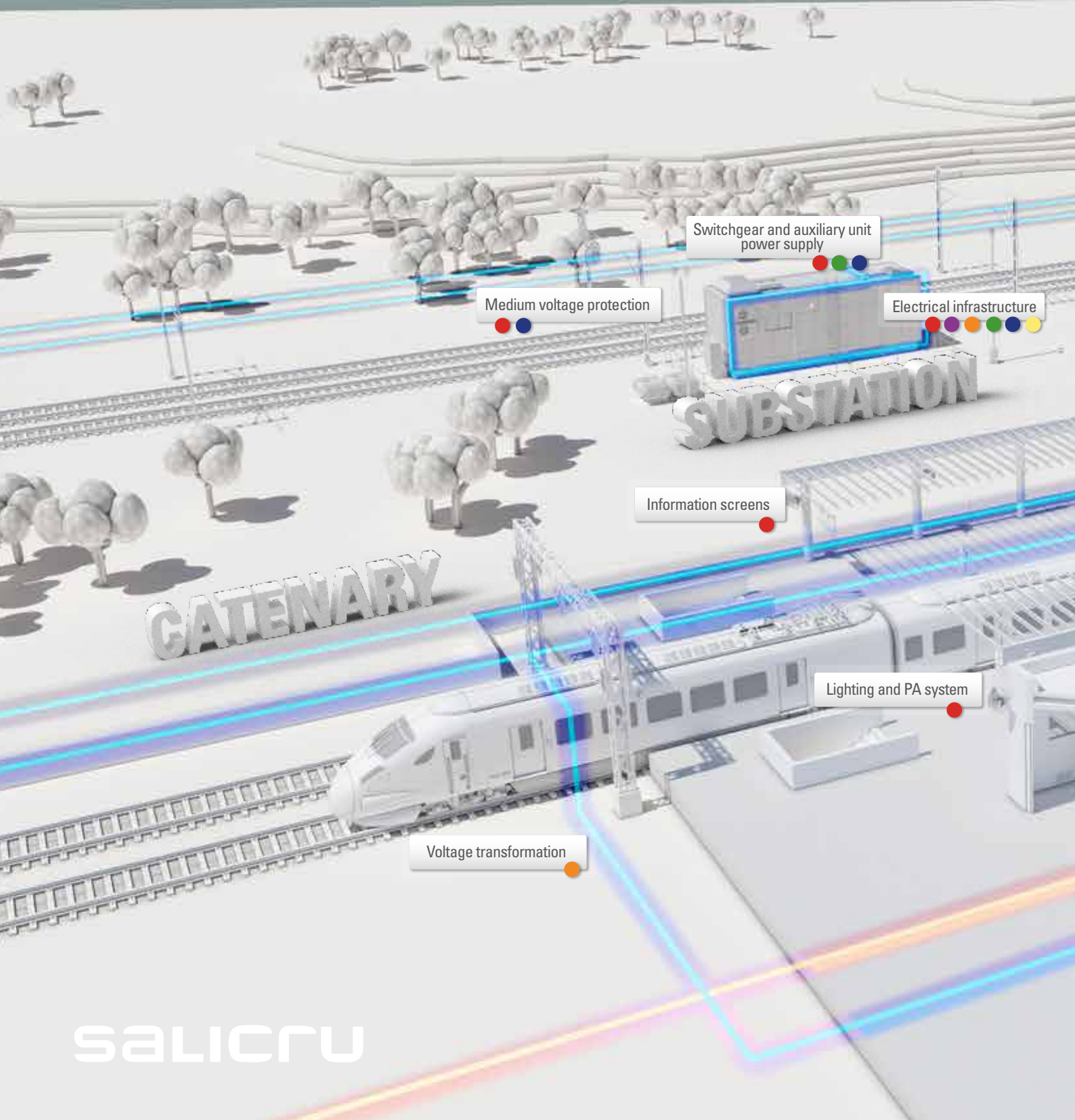
SLC ADAPT 2	6
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CATENARY FILTERS

F-RW	18
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CATENARY VOLTAGE CONVERTERS

CS-MV	20
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VOLTAGE STABILISERS

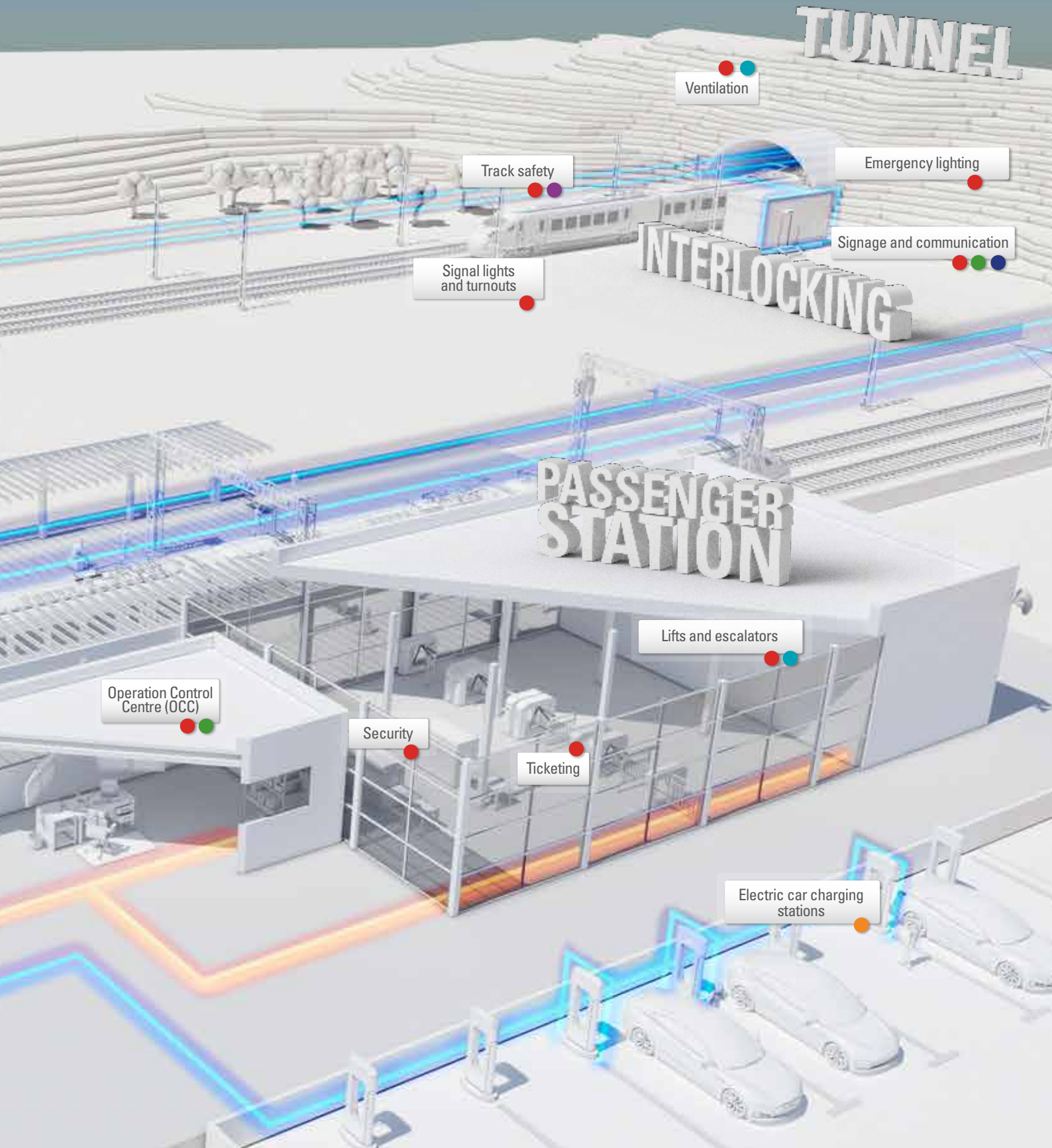
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TRANSFORMERS

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SLC ADAPT2

On-line double-conversion modular rack UPS with modules 10 and 15 kVA

SLC ADAPT2: Modularity, optimisation and efficiency in electrical safety for data centres

Salicru's **SLC ADAPT2** series UPSs are on-line double-conversion modular solutions for superior electrical protection, featuring DSP control and three-level IGBT technology.

Modularity: The range of modules available -10 and 15 kW- together with the different configurable systems -2, 3, 4 and 6 modules per system- enables adaptation to any environment, with the option of paralleling systems to achieve greater protection or increased power. Preventative diagnosis and frontal extraction of the modules drastically reduces intervention times (MTTR) and increases the availability of the system.

Optimisation: High power density, modules occupying only 2U of height require less space in data centres and reduce installation and working costs (TCO). Moreover, expenditure can be optimised by simply adding new modules in line with the pace of growth of the data centre.

Efficiency: The modules with a unity output power factor (kVA = kW) operate with an efficiency up to 96% (depending on model) and a very flat performance curve for all working modes, resulting in less exertion when cooling and significant energy savings. They also feature various operating modes (Eco-mode, Hibernation, Smart-Efficiency, etc.), which further increase the performance and efficiency of the system.



Applications: Scalable protection for better adaptation to growing needs

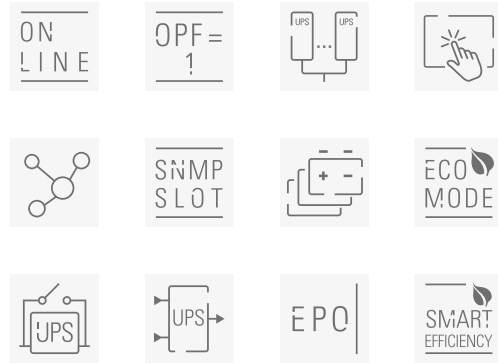
Salicru's **SLC ADAPT2** series modular solutions ensure reliability, quality and continuity and provide improved protection for small and medium-power data centres, both modular and virtualised, as well as IT infrastructures and applications for associated critical processes, avoiding the enormous costs resulting from interruptions in the operation of data centres.



Performances

- Modular on-line double-conversion UPS solutions.
- Output power factor PF=1 (kVA=kW).
- High power density with 10 and 15 kVA modules occupying only 2U of height.
- Maximum flexibility with 2, 3, 4 and 6 module systems.
- Parallel growth, up to 450 kVA.
- Hot-pluggable and swappable plug & play modules.
- Input power factor >0.99.
- Flexible configurations 1/1, 1/3, 3/1 and 3/3.⁽¹⁾
- Standard Nimbus IoT connection for monitoring, optional.
- 7" LCD colour touchscreen, LEDs and keypad.
- Up to 96% efficiency of modules in Online mode (depending on model).
- Eco-mode operation for improved efficiency.
- Cold start function for start-up without mains, optional.
- Smart hibernation mode to extend the life of the modules.
- Smart charger of up to 20% of the power of the system.
- USB, RS-232, RS-485 and potential-free contact communication channels.
- SNMP/ Ethernet and relays, as options.
- Multi-platform management and monitoring software.

(1) For systems with 10 kW modules.



Display

- 7" colour touchscreen.
- Large touchpanel display that provides status information and useful records.



Built-in cabinet

Possibility of assembling the module systems in 1100/1600/2000 mm high cabinets with or without batteries included. Batteries can also be installed in additional cabinets.



Continuous surveillance

By integrating the equipment as feature of Salicru's Nimbus-cloud (optional), it is permanently monitored and provides a continuous analysis of the level of protection provided.



Remote maintenance

There are multiple remote maintenance options through the Nimbus Services connections, both in modalities and response, allowing immediate actions in case of incidents or advances on anomalous situations.



Range

MODULES	CODE	POWER (VA / W)	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
SLC ADAPT2 10	694AB000008	10000 / 10000	590 × 436 × 85	15.3
SLC ADAPT2 15	694AB000009	15000 / 15000	590 × 436 × 85	15.5

SYSTEMS	CODE	NO. MODULES (#)	MAX. POWER PER SYSTEM (kVA)	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
SLC-#/2 ADAPT2 30	694RA000221	1 to 2 × 10 kVA/1 to 2 × 15 kVA	20/30	612 × 485 × 309	57
SLC-#/4 ADAPT2 45	694RA000222	1 to 4 × 10 kVA/1 to 3 × 15 kVA	40/45	612 × 485 × 485	66
SLC-#/6 ADAPT2 90	694RA000223	1 to 6 × 10 kVA/1 to 6 × 15 kVA	60/90	751 × 485 × 1033	100

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

Replace # with the number of system modules.

19" rack format for 2, 3 and 4 slot systems.

Batteries located in additional cabinets.

The weight shown corresponds only to the system, without modules.

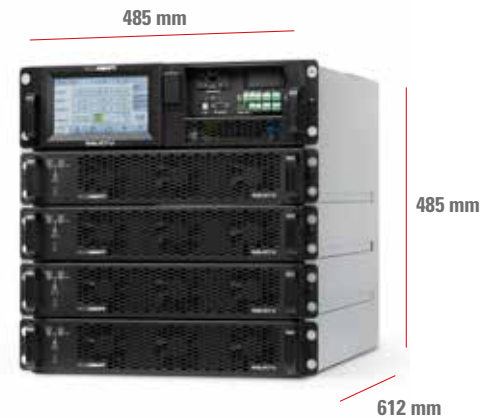
Dimensions



SLC ADAPT2 10
SLC ADAPT2 15



SLC-#/2 ADAPT2 30



SLC-#/4 ADAPT2 45



SLC-#/6 ADAPT2 90

Technical specifications

MODEL		SLC ADAPT2	
Module power (VA/W)		10000 / 10000	15000 / 15000
TECHNOLOGY		On-line double-conversion, HF, DSP control	
INPUT	Rated single phase voltage	220 / 230 / 240 V	Not available
	Rated three-phase voltage (3P + N + E)	3 × 380 / 400 / 415 V	
	Voltage range	-40% +25% (Depending on charge) ⁽¹⁾	
	Frequency range	40 - 70 Hz	
	Total harmonic distortion (THDi)	≤3%	
	Power factor	>0.99	
OUTPUT	Power factor	1	
	Single phase rated voltage	220 / 230 / 240 V	Not available
	Rated three-phase voltage (3P + N + E)	3 × 380 / 400 / 415 V	
	Static accuracy	±1%	
	Total harmonic distortion (THDv)	≤1% linear load; ≤5% non-linear load	
	Frequency	50 / 60 Hz	
	Module performance (On-line)	96% ⁽²⁾	
	Performance in Smart Eco-mode	99%	
	Admissible overloads	≤110% for 1 hour / ≤125% for 10 min / ≤150% for 1 min	
	Crest factor	3:1	
MANUAL BYPASS	Type	Uninterrupted (optional) ⁽³⁾	
STATIC BYPASS	Type	Static thyristor	
	Transfer time	0 ms	
	Admissible overloads	≤110% constant / ≤130% for 1 hour / ≤150% for 1 minute / ≥150% for 5 seconds	
BATTERY	Battery type	Pb-Ca, VRLA, lead acid, gel, Ni-Cd, Li-Ion	
	Charger bus voltage	Configurable between +/-192 and +/-264 Vdc	
	Charger maximum power (W)	20% of total system power	
COMMUNICATION	Display	7" touchscreen and LEDs	
	Ports	USB, RS-232, RS-485 and relays	
	Intelligent slot	1 × Nimbus SNMP / 1 × Nimbus extended relays	
GENERAL	Operating temperature	0° C ÷ +55° C ⁽⁴⁾	
	Relative humidity	Up to 95%, non-condensing	
	Maximum operating altitude	2,400 masl ⁽⁵⁾	
	Acoustic noise at 1 metre	<54 dB(A) (According to number of modules)	
SYSTEMS	Maximum no. modules per system	2, 4, or 6	2, 3, or 6
	Maximum power per system	20, 40, 60 kVA	30, 45, 90 kVA
	Maximum no. modules systems	30	
	Maximum power per parallel system	300 kVA	450 kVA
STANDARDS	Safety	EN IEC 62040-1	
	Railway	EN 50121-4 / EN50121-5	
	Electromagnetic compatibility (EMC)	EN IEC 62040-2	
	Operation	VFI-SS-11 (EN 62040-3)	
	Seismic	IEC 60068-3-3:2019/COR1:2021 / UBC1997 Zone3 & Zone 4 Ip 1.5	
	Corporate certification	ISO 9001, ISO 14001, ISO 45001	

(1) Linear % load derating from -20% to -40%.

(2) Depending on model.

(3) Not included in subracks. Excellent for cabinet systems.

(4) Power derating for higher altitudes up to +40°C.

(5) Power degradation for higher altitudes, up to a maximum of 5,000 masl.

SLC ADAPT2

Modular On-line double conversion UPS with modules 25 and 50 kVA

SLC ADAPT2: Flexibility, availability and reliability in superior electrical protection

Salicru's **SLC ADAPT2** series consists of modular On-line double conversion uninterruptible power supply (UPS) solutions with DSP control and three-level IGBT inverter technology.

Flexibility: It enables solutions to be configured from 25 kVA to 1500 kVA, thanks to the range of modules available (25 and 50 kVA), different configurable systems (8, 10 or 12 modules) and the parallel/redundant option of up to three 500 kVA systems. It also provides increased protection as needs grow - pay as you grow - thereby improving total cost of ownership (TCO).

Availability: Its hot-swap modules can be added or replaced during operation, thereby improving mean time to repair (MTTR) and reducing maintenance costs. In addition, the system's remote management, which can be integrated into any platform, also facilitates operation. And the extensive back-up options available, along with intelligent battery charging, ensure continuous operation of the protected critical loads.

Reliability: Its DSP control, based on three-level PWM technology, improves response effectiveness and, along with shared load redundancy, significantly extends the mean time between failures (MTBF).



Applications: Redundant protection for critical applications

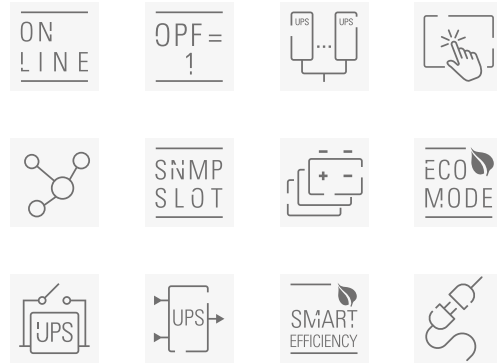
Data centres with all capacities, IT infrastructures, modular and virtualised data centres and applications for critical processes are some of the services that require high-level electrical protection to ensure reliable, continuous and high-quality operation, such as that provided by Salicru's **SLC ADAPT2** series systems.



Performances

- On-line double conversion technology with modular architecture.
- 25 and 50 kVA modules with DSP control and three-level PWM technology.
- 8, 10 or 12-module systems (up to 600 kVA per system).
- Possibility of parallel/redundant operation up to 1500 kVA.
- Hot-pluggable and swappable plug & play modules.
- Input power factor >0.99.
- Input current distortion (THDi) <3%.
- Three-phase input / output voltages.⁽¹⁾
- Output power factor = 1 (kVA = kW).
- Control and management by means of LCD display, LEDs and keypad.
- Up to 96% efficiency of modules in Online mode (depending on model).
- 99% performance in Eco-mode operation.
- USB, RS-232, RS-485 and potential-free contact communication channels.
- Smart slots for extended relays and SNMP/Nimbus.
- Smart-efficiency mode to optimize system performance.
- Improved return on investment (ROI).
- Compact design to save space in server rooms.
- SLC Greenergy solution.

(1) 1/1, 1/3 and 3/1 options with power derating (under request).



Display

Display consisting of operation keys, status LEDs and touch screen detailing all functions, measurements and alarms.



Options

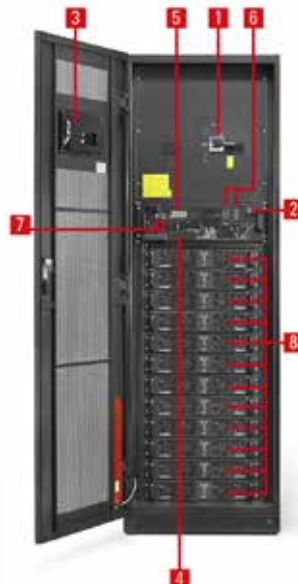
- Extended relays and SNMP/Nimbus adapter.
- Extended back-up times.
- Kit for parallel systems (Included in systems with 25 kW modules).
- Frequency converter operation.

Technical support and service

- Pre-sales and after-sales advice.
- Start-up.⁽¹⁾
- Technical support by telephone.
- Preventive/corrective services.
- Maintenance contracts.⁽¹⁾
- Training courses.

(1) Ask for local conditions

Connections



1. Manual bypass.
2. Start-up from batteries (Cold Start).
3. LCD display.
4. Bypass module.
5. Dry contacts.
6. Extended relays and SNMP / Nimbus slot.
7. USB, RS-232 and RS-485 interfaces.
8. Power modules.



Range

MODULES	CODE	POWER (VA / W)	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
SLC ADAPT2 25	694AB000010	25000 / 25000	677 × 436 × 85	18
SLC ADAPT2 50	694AB000016	50000 / 50000	700 × 510 × 178	45

SYSTEMS	CODE	NO. MODULES (#)	MODULE POWER (VA / W)	MAX. POWER (VA / W)	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
SLC-#/8 ADAPT2 200	694RA000249	1 to 8	25000 / 25000	200000 / 200000	916 × 482 × 1550	178
SLC-#/12 ADAPT2 300	694RA000250	1 to 12	25000 / 25000	300000 / 300000	1100 × 650 × 2000	230
SLC-#/10 ADAPT2 500	694RA000251	1 to 10	50000 / 50000	500000 / 500000	1100 × 1300 × 2000	945
SLC-#/12 ADAPT 600	694OQ000125	1 to 12	50000 / 50000	600000 / 600000	1100 × 1300 × 2000	945

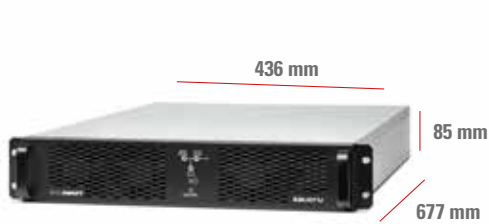
Nomenclature, dimensions and weights for devices with input voltage 3 x 400 V, output voltage 3 x 400 V.

Replace # with the number of system modules.

Batteries located in additional cabinets.

The weight shown corresponds only to the system, without modules.

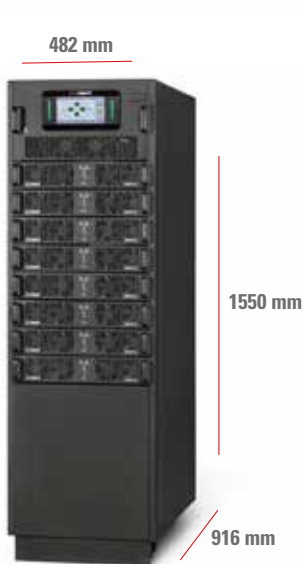
Dimensions



SLC ADAPT2 25



SLC ADAPT2 50



SLC-#/8 ADAPT2 200



SLC-#/12 ADAPT2 300



SLC-#/10 ADAPT2 500
SLC-#/12 ADAPT 600

Technical specifications

MODEL		SLC ADAPT2	
Module power (VA/W)		25000 / 25000	50000 / 50000
TECHNOLOGY		On-line double conversion, three-level PWM, DSP control	
INPUT	Rated three-phase voltage (3P + N + E)	3 × 380 / 400 / 415 V ⁽¹⁾	
	Voltage range	-27% +25% (Depending on charge) ⁽³⁾	-40% +25% (Depending on charge) ⁽³⁾
	Rated frequency	50 / 60 Hz	
	Frequency range	40 - 70 Hz	
	Total harmonic distortion (THDi)	≤3%	
	Power factor	>0.99	
	OUTPUT	Power factor	1
Rated three-phase voltage (3P + N + E)		3 × 380 / 400 / 415 V ⁽¹⁾	
Accuracy		±1%	
Total harmonic distortion (THDv)		≤1%	
Frequency		50 / 60 Hz	
Module performance (On-line)		96% ⁽²⁾	
Performance in Smart Eco-mode		99%	
Admissible overloads		≤110% for 1 hour / ≤125% for 10 min / ≤150% for 1 min / ≥150% for 200 ms	
Crest factor		3:1	
MANUAL BYPASS	Type	Uninterrupted	
STATIC BYPASS	Type	Static thyristor	
	Three-phase voltage (V)	3 × 380 / 400 / 415 (3P + N)	
	Admissible overloads	≤110% constant / ≤130% for 1 hour / ≤150% for 1 minute / ≥150% for 5 seconds	
BATTERY	Battery type	Pb-Ca, VRLA, lead acid, gel, Ni-Cd, Li-Ion	
	Charging voltage regulation	Batt-watch	
	Charger maximum power (W)	20% of total system power	
COMMUNICATION	Display	7"/10" touchscreen and LEDs	
	Ports	RS-232, RS-485, relays and USB	
	Intelligent slot	1 × Nimbus SNMP/1 × Nimbus extended relays	
GENERAL	Operating temperature	0° C ÷ +55° C ⁽⁴⁾	
	Relative humidity	Up to 95%, non-condensing	
	Maximum operating altitude	2,400 masl ⁽⁵⁾	
	Acoustic noise at 1 metre	<65 dB(A)	<72 dB(A)
SYSTEMS	Maximum no. modules per system	8 / 12	10 / 12
	Maximum power per system	200 / 300 kVA	500 / 600 kVA
	Maximum no. modules systems	30	
	Maximum power per parallel system	750 kVA	1500 kVA
STANDARDS	Safety	EN IEC 62040-1	
	Railway	EN 50121-4 / EN 50121-5	
	Electromagnetic compatibility (EMC)	EN IEC 62040-2	
	Operation	VFI SS-11 (EN 62040-3)	
	Seismic	IEC 60068-3-3:2019/COR1:2021 / UBC1997 Zone3 & Zone 4 Ip 1.5	
	Corporate certification	ISO 9001, ISO 14001, ISO 45001	

(1) 1/1, 1/3 and 3/1 options with power derating (under request).

(2) Depending on model.

(3) Linear % load derating: For 25 kVA from -20% to -27% and for 50 kVA from -20% to -40%.

(4) Power derating for higher altitudes up to +40°C.

(5) Power degradation for temperature altitudes, up to a maximum of 5,000 masl.

SLC CUBE3+

Uninterruptible power supply system from 7.5 to 200 kVA

SLC CUBE3+: Energy efficiency with superior electrical protection

Salicru's **SLC CUBE3+** series is a UPS range featuring high-performance, On-line double conversion (VFI) technology that provides a reliable, high-quality power supply and, at the same time, achieves significant energy and financial savings in terms of installation and operating costs.

Particularly noteworthy is the unit's input power factor (PF=1) and its extremely low distortion rate (THDi even lower than 1.5%), which help to reduce installation and operating costs, and contribute to improving the quality of the electrical grid.

The output power factor (PF=0.9) also stands out, providing optimum electrical protection for computer systems and low harmonic output distortion (THDv even lower than 0.5%), enabling it to protect any type of load (inductive, resistive, capacitive or mixed). In addition, the performance achieved (up to 95% in On-line mode and 98.4% in Smart Eco-mode) produces significant energy consumption savings and reduces air conditioning needs.

For a full optimum solution, the **SLC CUBE3+** provides maximum adaptability (even with the standard model), the possibility of parallel redundant expansion and extensive communication options. Finally, also worth noting is the unit's lightweight design and reduced dimensions, enabling it to be easily installed and ensuring that footprint is minimal.



Applications: Designed to protect any type of environment

High-end design features plus great flexibility capacity (options, power upgrading, communications...) make **SLC CUBE3+** series the best option to protect and secure a wide range of environments: data-centres, hosting, housing, IT-networks, server farms, voice and data networks...



Performances

- On-line double conversion (VFI) technology with DSP control.
- Input power factor 1, for better performance.
- Very low input current harmonic distortion (THDi as low as <math><1.5\%</math>).
- Total flexibility in input/output voltage. ⁽¹⁾
- Designed to withstand any type of load.
- Batt-Watch function for monitoring and battery care.
- High output power factor (PF=0.9)⁽²⁾.
- Very low output voltage distortion rate (THDv even lower than 0.5%).
- On-line mode efficiency of up to 95%.
- Smart Eco-mode efficiency of up to 98.4%.
- Touch screen 7" color. ⁽³⁾
- Very compact design with minimal footprint.
- Can be integrated into the most advanced IT environments.
- Parallel redundant configuration (N+1) for critical installations. ⁽⁴⁾
- Built with 80% recyclable materials.
- SLC Greenery solution.

ON
LINE

OPF =
0.9

TOWER

UPS
UPS

SNMP
SLOT

SNMP
SLOT

+

Hz

ECO
MODE

UPS

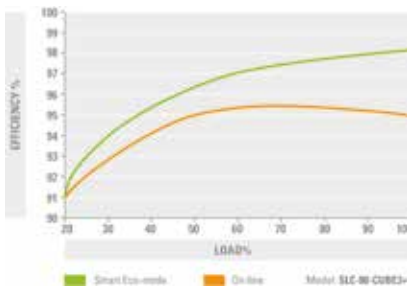
SLC
GREENERY
SOLUTIONS

SOFT

- (1) Single/single, single/three and three/single configurations up to 100 kVA
 (2) Only for three-phase input / output models. PF = 0.8 for other configurations
 (3) According to model
 (4) Up to 4 units.

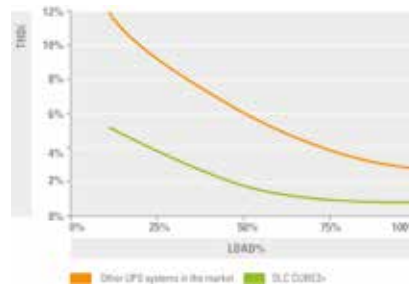
High efficiency

High performance in On-line and Smart Eco-mode operation.



Low harmonic distortion | Options

The lowest harmonic distortion in the market.



- Nimbus/Ethernet/SNMP adapter.
- Monitoring, management and shutdown software.
- 1 x additional RS-232/485 serial port.
- Extended backup times.
- Common battery set for parallel systems.
- BACS II, battery monitoring, regulation and alarms.
- Dual-level charger for NiCd batteries.
- Separate bypass line.
- Touch screen 7" color. ⁽²⁾
- Single/single, single/three and three/single configurations. ⁽¹⁾
- External manual bypass.
- Temperature and humidity sensors.
- Frequency converter function.
- Backfeed protection.
- Isolation transformer and autotransformer.
- Parallel installation cable.
- Nimbus AS-400 extended relay card.
- Earthquake-proof feet.
- Other levels of protection.
- Batteries in rack.

- (1) Up to 100 kVA
 (2) Up to 60 kVA

Technical support and service

- Pre and post-sales advice.
- Start-up.
- Telephone technical support.
- Preventative/corrective intervention.
- Maintenance contracts.
- Remote maintenance contracts.
- Training courses.



Range

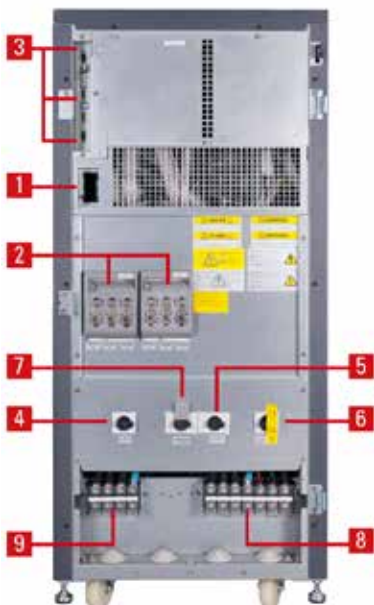
MODEL	CODE	POWER (VA / W)	N° CABINETS (UPS + BAT)	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)	BAT DIMENSIONS (D × W × H mm)	BAT WEIGHT (Kg)
SLC-7,5-CUBE3+	681LA000339	7500 / 6750	1 + 0	770 × 450 × 1100	203	-	-
SLC-10-CUBE3+	681LA000340	10000 / 9000	1 + 0	770 × 450 × 1100	203	-	-
SLC-15-CUBE3+	681LA000341	15000 / 13500	1 + 0	770 × 450 × 1100	205	-	-
SLC-20-CUBE3+	681LA000342	20000 / 18000	1 + 0	770 × 450 × 1100	254	-	-
SLC-30-CUBE3+	681LB000006	30000 / 27000	1 + 0	770 × 450 × 1100	305	-	-
SLC-40-CUBE3+	681LB000137	40000 / 36000	1 + 0	770 × 450 × 1100	403	-	-
SLC-50-CUBE3+	681LC000001	50000 / 45000	1 + 1	770 × 450 × 1100	185	775 × 450 × 1100	295
SLC-60-CUBE3+	681LC000002	60000 / 54000	1 + 1	770 × 450 × 1100	185	775 × 450 × 1100	523
SLC-80-CUBE3+	681TD000001	80000 / 72000	1 + 1	880 × 590 × 1320	265	1050 × 650 × 1325	624
SLC-100-CUBE3+	681TD000002	100000 / 90000	1 + 1	880 × 590 × 1320	290	1050 × 650 × 1325	624
SLC-120-CUBE3+	681TD000003	120000 / 108000	1 + 1	880 × 590 × 1320	290	1050 × 650 × 1325	750
SLC-160-CUBE3+	681TE000001	160000 / 140000	1 + 1	850 × 900 × 1900	540	850 × 1305 × 1905	1595
SLC-200-CUBE3+	681TE000002	200000 / 180000	1 + 1	850 × 900 × 1900	550	850 × 1305 × 1905	1918

Nomenclature, dimensions and weights for units with input voltage 3 x 400 V, output voltage 3 x 400 V and standard backup time.
This code corresponds only to the UPS module. Consult code for battery module.

Dimensions



Connections



SLC-7,5÷200-CUBE3+

1. Slot for card (option).
2. Internal protection fuses. 80 kVA equipments only.
3. Communication interfaces.
4. Circuit breaker switch / Input switch.
5. Output switch.
6. Fuse holder / switch power.
7. Manual bypass.
8. Output terminals.
9. Input and output terminals.

Technical specifications

MODEL		SLC CUBE3+
TECHNOLOGY		On-line, double conversion, HF, DSP control
INPUT	Rated voltage	Single-phase 220 / 230 / 240 V ⁽¹⁾ / Three-phase 3 × 380 / 3 × 400 / 3 × 415 V (3P + N)
	Voltage range	+15% / -20% (configurable)
	Rated frequency	50 / 60 Hz
	Total harmonic distortion (THDi)	100% load: <1.5% / 50% load: <2.5% / 10% load: <6.0%
	Power factor	1 from 10% load
	Rectifier topology	Three-phase IGBT full wave, soft start, PFC, transformerless
OUTPUT	Power factor	0.9 ⁽²⁾
	Rated voltage	Single-phase 220 / 230 / 240 V ⁽¹⁾ / Three-phase 3 × 380 / 3 × 400 / 3 × 415 V (3P + N)
	Dynamic accuracy	± 2% dynamic
	Static accuracy	± 1% steady
	Response time accuracy	20 ms for load steps 0% ÷ 100% and voltage drop up to -5%
	Total harmonic distortion (THDv)	<0.5% linear load / <1.5% (EN-62040-3) non-linear load
	Synchronised frequency	50/60 Hz ±5 Hz (selectable)
	Free running frequency	50/60 Hz ±0,05%
	Synchronous speed	From 1 Hz/s to 10 Hz/s (programmable)
	Total performance in On-line mode	7.5÷60 kVA: 92.0%÷93.0% / 80÷200 kVA: 94.0%÷95.0%
	Performance in Smart Eco-mode	Up to 98.4%
	Admissible overloads	125% for 10 min / 150% for 60 s / >150% for 20ms
	Crest factor	>3:1
MANUAL BYPASS	Type	No breaks
STATIC BYPASS	Type and activation criteria	Solid state, controlled by microprocessor
	Transfer times in Smart Eco-mode (ms)	4 ms (typical)
	Transfer times in On-line	Nil
	Transfer to bypass	Immediate, for overloads exceeding 150%
	Retransfer	Automatic, after alarm deactivation
BATTERY	Battery type	Lead acid, sealed, maintenance free
	Charging voltage regulation	Batt-Watch
COMMUNICATION	Ports	1 × RS232/RS485 + 1xUSB, with Modbus protocol
	Relay interface	4 × AC failure, bypass, low battery and general
	Intelligent slot	1, for SNMP
	Display from 80 kVA	Touch screen 7" color
	Display up to 60 kVA	LCD display, LEDs and keyboard
GENERAL	Operating temperature	0° C ÷ +40° C
	Relative humidity	Up to 95%, non-condensing
	Maximum operating altitude	2,400 masl ⁽³⁾
	Acoustic noise at 1 metre	<52 dB(A) ⁽⁴⁾
STANDARDS	Safety	EN-IEC 62040-1
	Electromagnetic compatibility (EMC)	EN-62040-2
	Operation	VFI-SS-11 (EN-62040-3)
	Seismic (Optional)	IEC 60068-3-3:2019/COR1:2021 / UBC1997 Zone3 & Zone 4 Ip 1.5
	Corporate certification	ISO 9001, ISO 14001, ISO 45001

(1) Up to 60 kVA.

(2) Only for three-phase input / output models. FP = 0.8 for other configurations.

(3) Power derating for higher altitudes up to 5000 masl.

(4) <65 dB(A) for 80 to 120 kVA models / <70 dB(A) for 160 to 200 kVA models.

F-RW Series

Catenary filter

Enhanced energy efficiency with a specialised filter for high-speed lines

In recent years, the development of railway infrastructure, particularly high-speed lines, has seen exponential growth. This progress has resulted in multiple devices being incorporated into the substations and technical buildings distributed along the track to perform vital functions such as signalling, communication, and control of the railway system. These devices rely on receiving a stable, low-voltage power supply to operate effectively.

Ideally, that power would come from a stable commercial grid, but because of infrastructure limitations or the remote location of many of these buildings, it comes directly from the traction catenary. This type of power supply is prone to multiple issues, including disturbances generated by the converters on board the locomotives and voltage drops, which directly affect the quality of the supply and can compromise the reliability of critical systems.

The F-RW filter attenuates harmonic disturbances and noise in the catenary power lines to improve the quality of the supply to sensitive equipment. It is designed to be highly efficient and reliable, minimising losses and maximising energy efficiency to offer robust and effective protection from electrical disturbances. Easy to incorporate into existing systems, it allows monitoring via remote control systems or auxiliary relays and has been designed to withstand adverse temperature, humidity and altitude conditions.



Applications: efficiency and safety as priorities

The F-RW catenary filter is a specialised solution for single-phase 50 Hz power lines with high levels of harmonic interference. It is a low-pass filter specifically designed to attenuate the unwanted frequencies generated by the railway environment, thus protecting connected equipment in high-speed railway settings, where harmonic disturbances induced by passing trains can reach levels that interfere with the proper functioning of control systems. Salicru offers a range of standard F-RW models with power ratings from 50 to 250 kVA, making them suitable for various load requirements and installation architectures.



Range

MODEL	POWER (kVA)
F-50-RW 50	50
F-75-RW 75	75
F-100-RW 100	100
F-150-RW 150	150
F-200-RW 200	200
F-250-RW 250	250

Technical specifications

MODEL		F-RW
INPUT	Rated voltage	230V single-phase + ground
	Entry range	+15% -35%
	Rated frequency	45 / 65 Hz
	No-load current	<8A
	Input-Output phase shift	<9°
OUTPUT	Gain @ 50 Hz	> -0,63 dB
	Gain @ 100 Hz	< 1,5 dB
	Gain @ 150 Hz	< 4,1 dB
	Gain @ 200 Hz	< 6,2 dB
	Gain @ 250 Hz	< 1,4 dB
	Gain @ 300 Hz	< -0,37 dB
	Gain @ 350 Hz	< -7 dB
	Gain @ 400 Hz	< -9,5 dB
	Gain @ 450 Hz	< -12,2 dB
	Gain @ 500 Hz	< -14,3 dB
	Gain @ 550 Hz	< -16,2 dB
	Gain @ 600 Hz	< -17,8 dB
	Gain @ 650 Hz	< -19,4 dB
	Gain @ 700 Hz	< -20,7 dB
	Gain @ 750 Hz	< -22 dB
	Gain @ 800 Hz	< -23,2 dB
	Gain @ 850 Hz	< -24,3 dB
Gain @ 900 Hz	< -25,3 dB	
Gain @ 1000 Hz	< -27,2 dB	
GENERAL	Ambient temperature	-5°C ÷ +45°C
	Relative humidity	5% ÷ 85%
	Maximum working height	2.500 m.a.s.l

Subject to change without prior notice.

CS-MV

Bi-directional DC/AC overhead line converter



CS-MV: Power your grid into the future

The two-way DC/AC converter (three-phase inverter) is a state-of-the-art power conversion solution. This 5-level converter (9 levels between phases) featuring 97 % efficiency, and designed to optimise the electrical infrastructure, converts direct current (DC) to alternating current (AC) and vice versa, with flexible two-way operation. Handling input voltages between 1500 and 3000 volts DC, and a stable output of 400 volts AC, it offers a scalable power output of up to 1 MW. This makes it ideal for stationary grid stabilisation applications, as well as large-scale industrial and commercial applications, where both DC to AC power conversion and AC to DC power backfeed are required. Our converter guarantees exceptional performance and proven reliability, boosting efficiency and meeting the power demands of the future, from energy storage systems to electric vehicles and renewable energy systems.

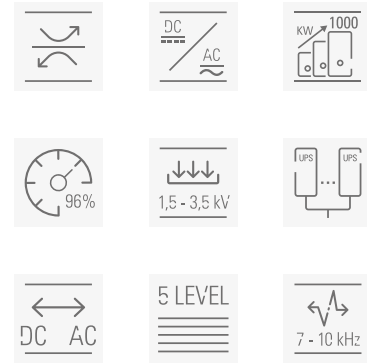
Applications: Efficiency and versatility in a sustainable energy system

The two-way DC/AC converter (three-phase inverter) is an advanced technical solution designed specifically for the transport industry. It can take input voltages typical in commuter, metro and railway DC overhead systems and transform them into a three-phase 400 VAC output, providing a versatile and reliable solution for a variety of industrial, commercial and electrical infrastructure applications. Its modular and scalable design can accommodate a wide range of needs, from electric vehicle charging stations to energy storage systems (ESS), stationary grid stabilisation applications and high-power industrial applications. It maximises energy conversion efficiency, reducing losses and optimising energy consumption.



Performances

- Overhead Contact Line Application (OCL) for 1500 VDC and 3300 VDC
- Output voltage 3 x 400 V / 50 Hz
- Input voltage between 1500 VDC and 3000 VDC
- Flexible use (up to 1000 kW)
- Safety and reliability with high quality galvanic isolation
- High insulation level of 18.5 kV - 1 min at 50 Hz
- High efficiency and power quality due to 5 levels of energy efficiency
- Maximum efficiency 97 %.
- Efficient and controlled AC/DC/AC power management capability
- Increased reliability by reducing energy losses and heat generation
- Bidirectional
- Reactive power management
- Harmonic compensation
- Redundancy and Scalability (up to 4 elements)
- Electromagnetic interference reduction



Range

MODEL	POWER (VA / W)	INPUT VOLTAGE (VDC)	DIMENSIONS (D x W x H mm)
CS-MV 125/10	125000 / 125000	1500 / 3300	1000 x 2600 x 2260
CS-MV 250/10	250000 / 250000	1500 / 3300	1000 x 2600 x 2260
CS-MV 375/10	375000 / 375000	1500 / 3300	1000 x 2600 x 2260
CS-MV 500/10	500000 / 500000	1500 / 3300	1000 x 2600 x 2260
CS-MV 250/7	250000 / 250000	1500 / 3300	1000 x 2600 x 2260
CS-MV 500/7	500000 / 500000	1500 / 3300	1000 x 2600 x 2260
CS-MV 750/7	750000 / 750000	1500 / 3300	1000 x 2600 x 2260
CS-MV 1000/7	1000000 / 1000000	1500 / 3300	1000 x 2600 x 2260

Manufactured according to customer requirements.
Indicative technical specifications.

Technical specifications

MODEL		CS-MV
INPUT	Rated voltage	1500 / 3300 V
	Voltage range	1350 ~ 1800 V / 3000 ~ 3900 V
OUTPUT	Power factor	1
	Rated voltage	3x400 V
	Accuracy	±1 %
	Frequency	50 Hz
	Performance	97 %
	Admissible overloads	125% @ 30 s.
GENERAL	Operating temperature	-20°C ~ + 40°C
	Cooling	Forced
STANDARDS	Safety	UNE-EN IEC 62477-2
	Railway	UNE-EN 50121-3-2 / UNE-EN 50124-1 / UNE-EN 50124-2 / UNE-CLC/TS 50238-2 / UNE-EN 61287-1 / UNE-EN IEC 62477-2
	Corporate certification	ISO 9001, ISO 14001, ISO 45001

Non-contractual specifications. Final specifications according to project.

Information subject to change without notice.

DC POWER-S

DC power systems



DC POWER-S: Compact, flexible and modular DC power supply systems

Salicru's **DC power-S** energy systems feature the following components: DC-S rectifier modules, subracks, a control and monitoring system, a communications module and a DC distribution unit, all situated in a closed cabinet with the possibility of including batteries.

DC power-S system rectifier modules are available in power ratings of 1000, 2000 and 2700 W and output voltages of 24, 48, 60, 110, 125 and 220 Vdc. Its modular design enables up to 4 modules to be installed in a 19" 2U subrack, achieving very high power density.

The control and monitoring system manages the entire system: input and output measurements, battery charging currents (Batteries are not supported for 60V output voltage option), control of priority and non-priority loads and communication channels with the outside. The maximum number of rectifiers controlled by a control system is 30, enabling systems to achieve power ratings of up to 81 kW with N+n redundant configuration options.

The basic version of the communications module has: three programmable relays, a battery temperature sensor and an RS-232/485 channel. Extended version features a slot for an Ethernet/SNMP Nimbus adapter, an NiCd electrolyte level detection input and six additional relays.

Applications: Redundant protection for critical applications

Salicru's **DC power-S** energy systems provide a high-level power supply to always critical telecommunications systems, ensuring excellent operation without unexpected outages. Because of its modular nature, it can also be expanded according to needs, thereby optimizing the investment. Typical applications include: fixed and mobile communications networks, broadband access networks, data and telecommunications networks and railway infrastructures,...



Performances

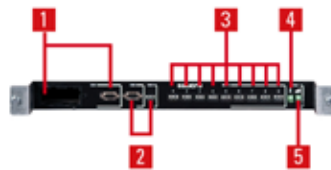
- Maximum power per system up to 81 kW.
- Flexible, scalable and N+n redundant systems, configurable for current demand and future expansion.
- High power density in the modules, up to 27 W/in³.
- High efficiency, up to 95% even with low load.
- Option of single or three-phase power supply.
- DC systems with output voltages of 24, 48, 60, 110, 125 or 220 Vdc.
- Wide operating temperature range from -20° C to +55° C.
- Wide input voltage range from 90 Vac to 290 Vac with power derating.
- Input power factor 1 for better performance.
- Modular design of the rectifiers and control system.
- Output current sharing between rectifiers.
- Front access for easy installation and maintenance.
- Hot-swap and hot-plug functions with automatic adjustment for module connection/disconnection.
- LLVD and BLVD - disconnection of non-priority loads and for low battery voltage.
- Full local control and monitoring system with LCD backlit (4x40 characters).
- Communication unit for remote monitoring.
- Monitoring software via Ethernet/Nimbus SNMP.
- Smart-mode to maximise MTBF (Mean Time Between Failures).



Communications

1. Slot for the telemagement or RS-232 interface.
2. RS-485 serial ports. MODBUS communication protocol.
3. Programmable relay (x6) interface.
4. Battery temperature measurement input.
5. NiCd electrolyte level detection input. ⁽¹⁾

(1) Only extended version.



SMART mode

Load sharing in normal operation.



Load sharing and cycling of rectifiers in Smart-mode operation.



Options

- Surge protector.
- Output voltage dropping diodes.
- Positive, negative or isolated output voltages.
- Sealed or open PbCa batteries, NiCd, etc.
- Extended communications module.
- Other degrees of IP protection.
- Wireless-link communication.
- Non priority loads disconnecter.

Range

MODEL	POWER (W)	CURRENT (A)	OUTPUT VOLTAGE (VDC)	CURRENT PER SYSTEM (A)	POWER PER SYSTEM MODEL (kW)
DC-36-S	1000	36	24	36 ÷ 1080	1 ÷ 30
DC-18-S	1000	18	48	18 ÷ 540	1 ÷ 30
DC-16-S	1000	16	60	16 ÷ 480	1 ÷ 30
DC-8-S	1000	8	110	8 ÷ 240	1 ÷ 30
DC-7-S	1000	7	125	7 ÷ 210	1 ÷ 30
DC-4-S	1000	4	220	4 ÷ 120	1 ÷ 30
DC-70-S	2000	70	24	70 ÷ 2100	2 ÷ 60
DC-33-S	2000	33	60	33 ÷ 990	2 ÷ 60
DC-36-S	2000	36	48	36 ÷ 1080	2 ÷ 60
DC-16-S	2000	16	110	16 ÷ 480	2 ÷ 60
DC-15-S	2000	15	125	15 ÷ 450	2 ÷ 60
DC-8-S	2000	8	220	8 ÷ 240	2 ÷ 60
DC-50-S	2700	50	48	50 ÷ 1500	2,7 ÷ 81
DC-45-S	2700	45	60	45 ÷ 1350	2,7 ÷ 81
DC-22-S	2700	22	110	22 ÷ 660	2,7 ÷ 81
DC-20-S	2700	20	125	20 ÷ 600	2,7 ÷ 81
DC-10-S	2400	10	220	10 ÷ 300	2,4 ÷ 74

Dimensions



POWER MODULE

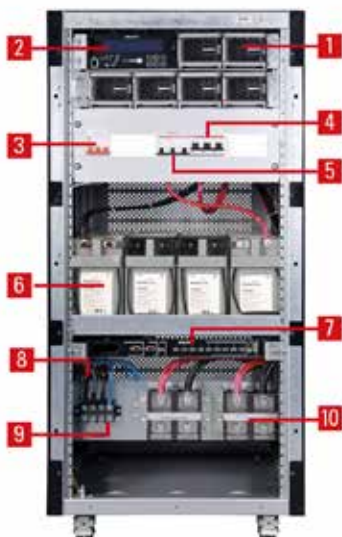


CONTROL MODULE



2 SUBRACK MODULES

Connections



1. Rectifier module
2. Centralised control
3. Input protection
4. Output distribution
5. Batteries protection (Batteries are not supported for 60 V output voltage option)
6. Batteries
7. Extended communication
8. Surge protector
9. Input terminals
10. Output terminals

Technical specifications

MODEL		DC POWER-S
INPUT	Rated voltage	120 / 127 / 220 / 230 / 240 V; 3x208 / 220 / 380 / 400 / 415 V (3F+PE)
	Voltage range	90 ÷ 290 Vac
	Rated frequency	50/60 Hz
	Total harmonic distortion (THDi)	<5%
	Power factor	>0.99 (PFC)
	Performance	Up to 95.5%
	OUTPUT	DC nominal voltage
Accuracy		±1%
Output voltage setting		-15% +25% ⁽¹⁾
Maximum power (W)		30 / 60 / 81 kW
Rectifier module power		1000 / 2000 / 2700 W
Psophometric noise		<2 mV
Load sharing between modules		Active parallel
Maximum number of parallel modules		30
BATTERY	Protection	Against overvoltage, undervoltage and overload ⁽²⁾
	Battery type	PbCa or NiCd
	Charge type	Constant I/U in accordance with DIN 41773
	Recharge time	Up to 80% in 4 hours (0.2C)
	Voltage/temperature compensation	Yes, customisable (mV/°C)
	Electrolyte level detection (NiCd battery)	Optional
COMMUNICATION	Ports	RS-232/485 - 7 relays
	Intelligent slot	Yes, one / Optional
PROTECTION	Input and output	Circuit breakers
	Battery	Fuses + switch ⁽²⁾
GENERAL	Operating temperature	-20°C ÷ +55°C ⁽²⁾
	Storage temperature	-40°C ÷ +70°C ⁽³⁾
	Relative humidity	Up to 95%, non-condensing
	Maximum operating altitude	3,000 masl ⁽⁴⁾
	Dielectric strength (Input - Output)	2000V @1 minuto para 24, 48 Vdc / 4000 V @ 1 minuto para 110, 125, 220 Vdc
	Degree of protection	IP20
	Cooling	Forced
	Acoustic noise at 1 metre	<55 dB(A)
	Mean time between failures (MTBF)	250,000 hours
	Mean time to repair (MTTR)	15 minutes
STANDARDS	Safety	EN IEC 61204-7
	Electromagnetic compatibility (EMC)	EN IEC 61204-3
	Seismic (Optional)	IEC 60068-3-3:2019/COR1:2021 / UBC1997 Zone3 & Zone 4 Ip 1.5
	Corporate certification	ISO 9001, ISO 14001, ISO 45001

(1) -9% + 25% for voltages 110 Vdc

(2) Batteries are not supported for 60 Vdc output

(3) Power degradation for temperatures higher than 45°C.

(4) Without batteries

(5) Power degradation from 2000 m.a.s.l.

Information subject to change without notice.

DC POWER-L

Thyristor rectifiers 10 A - 800 A

DC POWER-L: Charging systems for stationary batteries

Salicru's **DC power-L** range of rectifiers/battery chargers, based on microprocessor-controlled thyristor technology, provides high-quality and reliable protection for critical DC loads.

The **DC power-L** series covers the range between 10 A and 800 A with outputs from 24 to 220 Vdc. The output accuracy is better than +/- 1% and the system is designed to charge open or sealed lead acid and nickel cadmium batteries.

All alarms, monitoring and status indicators (via display and LEDs) are managed through a digital control system. Each type of battery requires special charging characteristics, which are managed by the controller. The systems are completely customisable to the specific characteristics and needs of each client and application.

The robust design ensures that the installation requires low maintenance and can work for long periods without special attention.



Applications: Efficient, reliable and robust solutions

DC power-L systems are designed to protect DC loads of maximum criticality and to operate with nickel cadmium or lead acid batteries in harsh and demanding operating environments, such as power plants, electrical substations, oil and gas pipelines, petrochemical plants, mines, railways, telecommunications facilities, hospitals, industrial plants, etc.



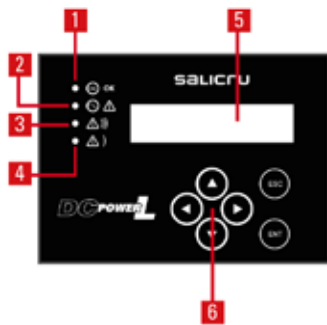
Performances

- Microprocessor-controlled thyristor technology.
- Galvanic isolation between input and output via transformer.
- Complete six-pulse bridge.
- Ventilation by natural convection.
- Standard DC output earth fault detection.
- Electrolyte level detection for NiCd batteries (optional).
- Charging states: floating, fast and exceptional.
- Robust and compact design.
- High power density.
- Monitoring of all equipment parameters through LCD display.
- Possibility of redundant parallel operation.
- Operation with lead acid or nickel cadmium batteries.
- Temperature-compensated float voltage.
- Automatic disconnection in the event of minimum battery voltage or temperature.
- Extensive configuration options.
- High MTBF and low MTTR.
- Easy installation, start-up and maintenance.



Display

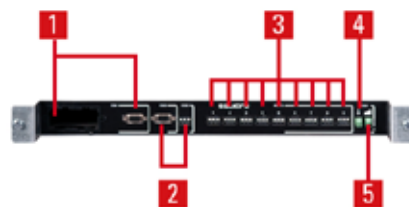
1. Output voltage indicator.
2. Input voltage fault indicator.
3. Urgent alarm indicator (customisable).
4. Non-urgent alarm indicator (customisable).
5. LCD display with multiple languages.
6. Navigation keys.



Communications

1. Slot for the telemagement or RS-232 interface.
2. RS-485 serial ports. MODBUS communication protocol.
3. Programmable relay (x6) interface.
4. Battery temperature measurement input.
5. NiCd electrolyte level detection input. ⁽¹⁾

(1) Only extended version.

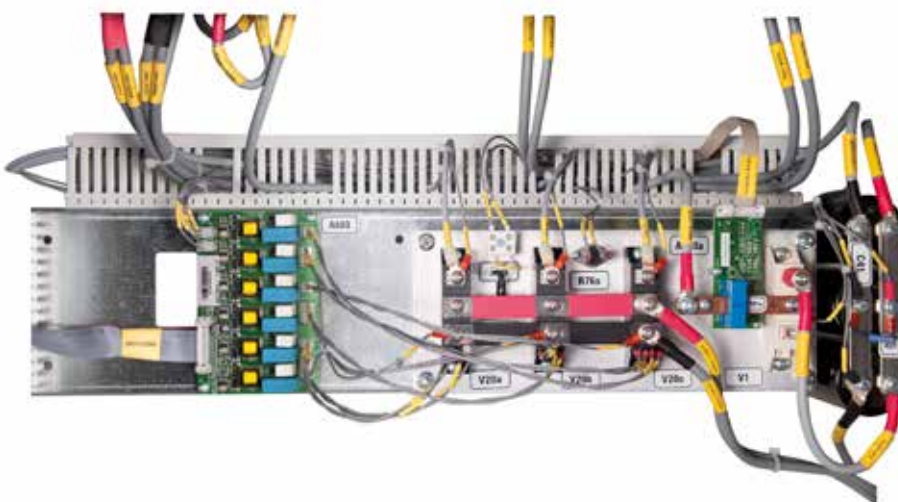


Options

- 12-pulse rectifier with isolation transformer.
- Voltage drop diodes.
- TCP/IP interface.
- Heater.
- Output diodes for parallel operation.
- Different types of batteries (SLA, lead acid, nickel cadmium, etc.).
- Other degrees of protection.
- Other input voltages on request.
- Top cable entry.
- Schuko outlet socket.
- Colour cabinet RAL9005.

Technical support and service

- Pre and post-sales advice.
- Multiple maintenance and telemaintenance options.



Range

MODEL	OUTPUT CURRENT (A)	INPUT VOLTAGE (VAC)	OUTPUT VOLTAGE (VDC)
DC-10-L	10	120 / 230	24 / 48 / 110 / 120 / 125 / 220
DC-20-L	20	120 / 230	24 / 48 / 110 / 120 / 125 / 220
DC-30-L	30	120 / 230	24 / 48 / 110 / 120 / 125 / 220
DC-50-L	50	120 / 230	24 / 48 / 110 / 120 / 125 / 220
DC-25-L	25	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-50-L	50	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-75-L	75	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-100-L	100	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-150-L	150	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-200-L	200	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-250-L	250	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-300-L	300	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-350-L	350	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-400-L	400	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-450-L	450	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-500-L	500	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-600-L	600	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-700-L	700	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220
DC-800-L	800	3 × 208 / 3 × 220 / 3 × 400	24 / 48 / 110 / 120 / 125 / 220

Check for other output currents.

Dimensions



Technical specifications

MODEL		DC POWER-L
TECHNOLOGY		Thyristor
INPUT	Rated voltage	120 / 230 V (F + N); 3 × 208 / 3 × 220 / 3 × 400 V / 3 × 480 V (3F + PE)
	Voltage range	±15%
	Rated frequency	50/60 Hz
	Frequency range	±5%
	Power factor	0.85
	Performance	>85%
OUTPUT	DC nominal voltage	24 V, 48 V, 110 V, 120 V, 125 V, 220 V
	Float voltage	2.27 V/cell (Pb) / 1.4 ÷ 1.45 V/el (NiCd)
	Fast charging voltage	2.5 V/cell (Pb) / 1.5 V/el (NiCd)
	Exceptional charging voltage/formation	2.7 V/cell (Pb) / 1.65 V/el (NiCd)
	Accuracy	±1%
	Ripple	<1% ⁽¹⁾
	Single phase current	10 / 20 / 30 / 50 A ⁽²⁾
	Three phase current	25 / 50 / 75 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 600 / 700 / 800 A ⁽²⁾
BATTERY	Protection	Against overvoltage and undervoltage
	Battery type	PbCa (sealed or open) or NiCd
	Charge type	IU constant as per DIN 41773
	Recharge time	Up to 80% in 4 hours (0.2 C)
	Voltage/temperature compensation	Yes, customisable as per battery specifications (mV / °C)
	No. of cells Pb	12 (24 V) / 24 (48 V) / 55 (110 V) / 60 (120 V) / 62 (125 V) / 110 (220 V)
	No. of elements NiCd	19 (24 V) / 38 ÷ 39 (48 V) / 81 ÷ 86 (110 V) / 88 ÷ 94 (120 V) / 92 ÷ 96 (125 V) / 161 ÷ 173 (220 V)
COMMUNICATION	Ports	RS-232/485 - 6 Dry contacts
	Intelligent slot	Yes, one / Optional
	Protocol	MODBUS Yes
PROTECTION	Input and output	Circuit breaker
	Battery	Fuses
	Soft start	Yes
GENERAL	Operating temperature	-10° C ÷ +55° C ⁽³⁾
	Storage temperature	-20° C ÷ +70° C ⁽⁴⁾
	Relative humidity	Up to 95% non-condensing
	Maxium operating altitude	Up to 3000 m.a.s.l. ⁽⁵⁾
	Colour	RAL7035
	Dielectric strength (Input - Output)	2500 V @1 min
	Degree of protection	IP20
	Cooling	Natural
STANDARDS	Safety	IEC/EN 61204-7, IEC 60146-1-1
	Electromagnetic compatibility (EMC)	IEC/EN 61204-3 class A
	Seismic (Optional)	IEC 60068-3-3:2019/COR1:2021 / UBC1997 Zone3 & Zone 4 Ip 1.5
	Corporate cerification	ISO 9001, ISO 14001, ISO 45001

(1) Premium version

(2) Includes battery charging current (Ibat). In Premium, Ibat version. can power loads

(3) Power degradation from +40°C

(4) Without batteries

(5) Power degradation from 1000 m.a.s.l.

CS-IS

DC power converters



CS-IS: High performance DC/AC industrial converters

Salicru's **CS IS** series DC/AC converters are based on technically advanced solutions such as PWM technology and digitally controlled servo systems so as to obtain: high performance, low distortion (THDv < 2%) and elevated stability. Moreover, they offer excellent tolerance to short-circuits, polarity inversion protection and the possibility of operating in Eco-mode.

The line is available in power ranges between 1000 and 20000 VA, with admissible continuous incoming voltage from 48 Vdc to 220 Vdc nominal input.

Applications: Energy conversion for industrial plants

Salicru's **CS IS** series provides quality AC power from a DC power source (normally batteries) for the most varied of industrial applications such as cogeneration and biomass plants, gas generators, water distributors, power stations and substations, telecommunications, etc..



Performances

- Polarity inversion protection DC.
- Availability in a wide range of voltages and outgoing power.
- Broad range of input voltage variation.
- LCD display comes standard.
- Communication through relay interface and RS-232 / RS-485.
- Excellent dynamic behavior.
- Automatic restart to re-establish incoming power.
- Ramp start.
- 19" rack or box casing.

Options

- Static bypass.
- EMI filters.
- Isolation transformer on the bypass line.
- Psofometric filter.
- Anti-harmonic filter.

Technical support and service

- Pre-sales and post-sales consultation service.
- Several maintenance and remote maintenance methods.

Range

MODEL	POWER (VA / W)	INPUT VOLTAGE (VDC)	DIMENSIONS (D × W × H mm)		WEIGHT (Kg)
			BOX	RACK	
CS 1000-IS	1000 / 1000	48,110,120,125,220	385 × 440 × 180	385 × 483 × 4U	28
CS 2000-IS	2000 / 2000	48,110,120,125,220	385 × 440 × 180	385 × 483 × 4U	30
CS 3000-IS	3000 / 3000	48,110,120,125,220	385 × 440 × 180	385 × 483 × 4U	32
CS 4000-IS	4000 / 4000	110,120,125,220	600 × 440 × 270	600 × 483 × 6U	63
CS 5000-IS	5000 / 5000	110,120,125,220	600 × 440 × 270	600 × 483 × 6U	68
CS 6000-IS	6000 / 6000	110,120,125,220	640 × 630 × 1310	-	84
CS 8000-IS	8000 / 8000	110,120,125,220	640 × 630 × 1310	-	120
CS 10000-IS	10000 / 10000	110,120,125,220	640 × 630 × 1310	-	135
CS 15000-IS	15000 / 15000	220	640 × 630 × 1310	-	150
CS 20000-IS	20000 / 20000	220	640 × 630 × 1310	-	170

Dimensions and weights for models without bypass nor filters and 230 Vac output voltage. Ask for another power needs and/or configurations.
Dimensions for power models 1000, 2000 and 3000 with voltages ≥ 110 Vdc.

Technical specifications

MODEL	CS IS	
INPUT	Rated voltage	48 V, 110 V, 120 V, 125 V, 220 V
	Voltage range	- 17%, + 20%
OUTPUT	Power factor	1
	AC nominal voltage	120 V, 220 V, 230 V, 240 V
	Accuracy	$\pm 2\%$
	Synchronised frequency	0.1 Hz ÷ 9.9 Hz in increments of 0.1 Hz
	Free running frequency	$\pm 0.05\%$
	Frequency	50 / 60 Hz
	Synchronous speed	1 Hz/s
	Performance	Up to 92%
GENERAL	Admissible overloads	150% for 30 seconds / 125% for 45 seconds
	Operating temperature	- 10° C ÷ + 40° C
	Relative humidity	Up to 95%, non-condensing
	Maxium operating altitude	2400 m.a.s.l
STANDARDS	Cooling	Forced
	Safety	EN IEC 61204-7
	Electromagnetic compatibility (EMC)	EN IEC 61204-3
	Corporate certification	ISO 9001, ISO 14001, ISO 45001

Information subject to change without notice.

EMi3

Servomotor voltage stabiliser 450 kVA - 5 MVA



EMi3: Constant stabilisation and savings in overvoltages

Issues such as the constant variation of loads connected to the mains, interference generated by the loads themselves, possible failures in distribution lines, voltage drops due to the length of the lines and problems caused by lightning make it impossible to have an electricity supply with a stable voltage. Salicru's **EMi3** servomotor voltage stabilisers are the ideal solution to protect sensitive equipment from constant voltage fluctuations in the power supply.

Moreover, in the event of drops in the total consumption of a power line, voltage tends to rise, causing overconsumption in the equipment that remains connected. By using a stabiliser, overconsumption can be eliminated, thereby producing significant cost savings and ensuring that connected loads function within the voltage range for which they were designed.

The operating principle is based on regulation, by means of a control circuit, of the variable autotransformer that supplies the voltage for the booster transformer in series, either in phase or in phase opposition, to achieve the rated value of the output voltage.

Applications: Effective protection for all types of critical load

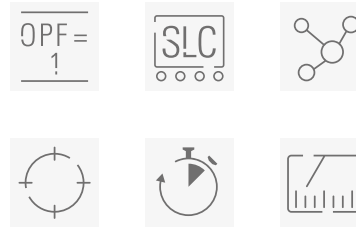
Actions and operations in electrical substations, electric ovens, numerical controls, lifts, graphic printing equipment, production lines, medical equipment, TV repeater stations, machine tools (milling machines, trimming machines, presses, lathes, polishing machines, electrical discharge machines, etc.) are some of the applications, because of their power, extremely reactive nature and high sensitivity to voltage variations.



Performances

- Power range, single and three-phase, up to 5000 kVA.
- Fast and efficient toroidal or column-type autotransformers for the entire power range.
- Output accuracy better than 1% (adjustable).
- In three-phase units, independent regulation per phase, unaffected by imbalances.
- Input regulation ranges of $\pm 15\%$ standard, $\pm 20\%$, $\pm 25\%$ and $\pm 30\%$ optional. ⁽¹⁾
- High efficiency, up to 97.5%.
- High speed regulation, up to 70 V/s.
- Full LCD display for stabiliser control and monitoring.
- Guaranteed output stability through a MosFET servo control.
- Unaffected by line voltage harmonics; stabilisation based on true RMS.
- Stable operation in the event of load and/or voltage variations.
- Wide operating temperature range (-10°C to +55°C).
- Dry contact interface (2 standard and up to 11 optional).
- No harmonics injection.
- Mechanically-optimised design, easier maintenance.
- Transient overloads of up to 1000% of the rated admissible.
- Highly robust and reliable (high MTBF).
- Quiet operation.
- Overvoltage surge suppression protection.
- Suitable for regenerative loads.

(1) Depending on the model.



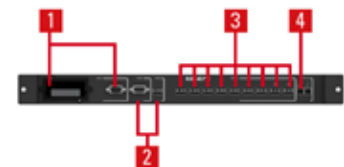
Display

1. LCD 2x16 characters.
2. Navigation keys.
3. LEDs (alarm, bypass, normal operation and communications).



Communications

1. Slot for remote management or RS-232 interface.
2. RS-485 serial ports. MODBUS communications protocol.
3. Programmable dry contact interface (x9).
4. Digital input.



Options

- Output current, power and overload measurement.
- Maximum and minimum output voltage protection.
- Manual and automatic bypass.
- Overload contactor.
- Communications and relay module.
- Other regulation ranges.
- Galvanic isolation transformer.
- Output circuit breaker.
- Extended ambient operating temperature from -20°C.

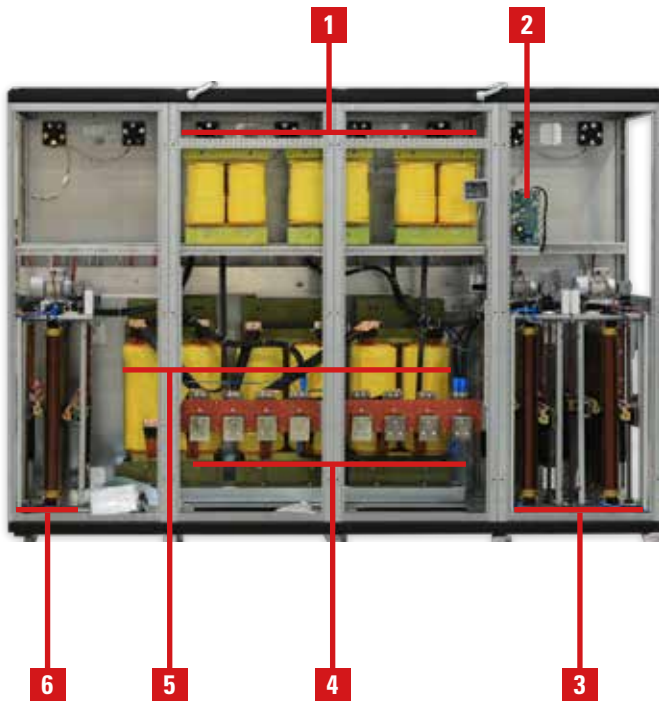


Range

MODEL	CODE	POTENCIA (kVA / W)	NUMBER OF CABINETS	DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
EMi3 T 450-4F	6A5FA000022	450	1	840 × 1604 × 2240	1223
EMi3 T 500-4F	6A5FA000023	500	1	840 × 1604 × 2240	1275
EMi3 T 600-4F	6A5FA000024	600	1	840 × 1604 × 2240	1503
EMi3 T 800-4F	6A5FA000025	800	1	840 × 1604 × 2240	1946
EMi3 T 1000-4F	6A5FA000026	1000	1	840 × 3204 × 2240	2400
EMi3 T 1300-4F	6A5FA000027	1300	1	840 × 3204 × 2240	3120
EMi3 T 1600-4F	6A5FA000090	1600	1	1225 × 5613 × 2240	3772
EMi3 T 2000-4F	6A5FA000091	2000	1	1225 × 5613 × 2240	4675
EMi3 T 2500-4F	6A5FA000092	2500	1	1225 × 5613 × 2240	5805
EMi3 T 3200-4F	6A5FA000093	3200	3	840 × 3204 × 2240	3 x 2400
EMi3 T 4000-4F	6A5FA000094	4000	3	840 × 3204 × 2240	3 x 3120
EMi3 T 5000-4F	6A5FA000095	5000	3	1225 × 5613 × 2240	3 x 3772

Nomenclature, dimensions and weights for models: Input 3x400 V 50 Hz / Output 3x400 V 50 Hz, input range +/-15% and independent regulation per phase. Others powers and/or other input ranges on request.

Conexiones



1. Autotransformers - phase 1 / 2 / 3
2. Control board
3. Continuous regulation autotransformer - phase 2 / 3
4. Input and output terminals
5. Booster transformers
6. Continuous regulation autotransformer - phase 1

Technical specifications

MODEL		EMi3
INPUT	Three-phase voltage	3x208 / 3x220 / 3x400 / 3x480 V (3Ph+N+PE) ⁽¹⁾
	Regulation range	±15% ⁽²⁾
	Frequency range	47.5 ÷ 63 Hz
OUTPUT	Single phase rated voltage	120 / 220 / 230 / 240 V
	Three-phase rated voltage	3x208 / 3x220 / 3x400 / 3x480 V (3Ph+N+PE) ⁽¹⁾
	Accuracy	± 3% (adjustable between 1% ÷ 5%)
	Output voltage setting	± 10%
	Total harmonic distortion (THDv)	<0.2%
	Frequency	48 ÷ 63 Hz
	Regulation speed	Up to 70 V/s
	Performance	Between 96.5% and 97.5%
	Voltage disconnection value	Adjustable ⁽³⁾
	Admissible overloads	Up to 200% for 20 s
	Possible load variation	0 ÷ 100%
	Power factor influence	Independent
	COMMUNICATION	Ports
Intelligent slot		One ⁽⁴⁾
INDICATIONS	Type	LCD display (2x16 characters) + 4 status LEDs
GENERAL	Ambient temperature	-10° C ÷ +55° C ⁽²⁾
	Storage temperature	-20° C ÷ +85° C
	Relative humidity	Up to 95%, non-condensing
	Maxium operating altitude	2,400 m.a.s.l.
	Cooling	Natural or forced depending on power rate ⁽⁵⁾
	Acoustic noise at 1 metre	<45 dB(A) ⁽⁶⁾
	Mean time between failures (MTBF)	60,000 hours
	Mean time to repair (MTTR)	30 minutes
STANDARDS	Safety	IEC/EN 61558-2-14
	Electromagnetic compatibility (EMC)	IEC/EN 62041
	Corporate cerification	ISO 9001, ISO 14001, ISO 45001

(1) Ask for other settings

(2) Other ranges available on request

(3) With optional voltage maximum-minimum

(4) Mutually exclusive ports

(5) Forced from 20 kVA for single phase and 55 kVA for three-phase

(6) <65 dB(A) for models with forced ventilation

IT

Electrical transformers and autotransformers



IT: Simple concepts, effective solutions

Salicru has been designing and manufacturing low voltage electrical transformers and autotransformers for more than 50 years, for use as **IT series** standalone solutions, or integrated within its wide range of power electronics solutions (uninterruptible power supplies, voltage stabilisers, rectifiers, etc.). At the same time, we have continuously improved our own production methods and processes in order to meet the needs of our customers and also for special requirements.

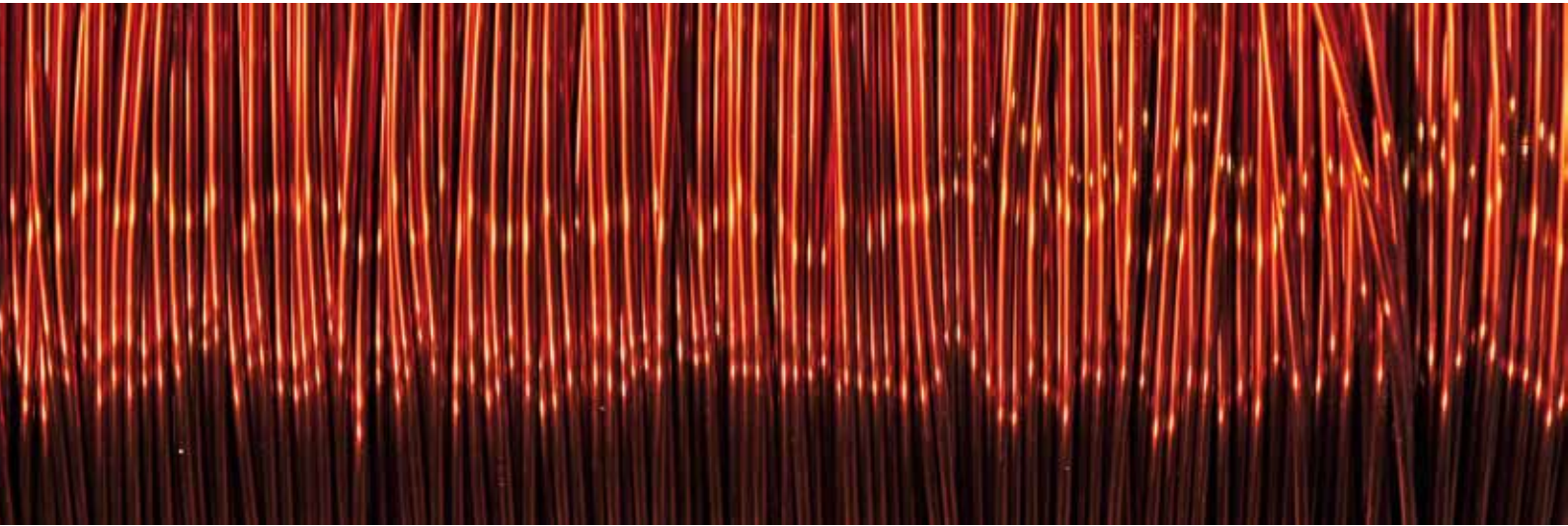
Single-phase and three-phase transformers are used as electrical isolation for reducing mains disturbances or adjusting the level of voltage coming from the grid. Autotransformers, on the other hand, with their serially-connected coils that do not provide galvanic isolation, have the function of converting one voltage to another, and, as such, are a more economical solution than transformers.

The transformers and autotransformers from **Salicru's IT series** are of the dry variety, made from low-loss magnetic plate and windings impregnated with class-H resin, and connected by means of clamp terminals or screws for pressure terminals. They can be manufactured with other voltages, regulation sockets, additional electrostatic screens, heat shields, etc., on request.

Applications: Adaptation and/or filtering of the supply voltage

Transformers are used in different types of industry, construction, energy technology and marine applications, such as electric motors, compressors, converters, cooling systems, UPSs and IT/TN networks. On the request of the customer, transformers can be manufactured for different voltages and frequencies, and feature, for example, an electrostatic screen between the primary and secondary windings, different finishes, wheels or other attachments.

And autotransformers are used for adapting the voltage of the mains supply to the voltage required to power all kinds of load and machinery.



Range

MODEL	TYPE	POWER (kVA / kW)	VOLTAGE	PRESENTATION
IT-T	Transformer	3,15 ÷ 20	Single-phase / Single-phase	Panel mounting
IT-T	Transformer	3,15 ÷ 20	Single-phase / Single-phase	Box
IT-T	Transformer	5 ÷ 200	Three-phase / Three-phase	Panel mounting
IT-T	Transformer	5 ÷ 200	Three-phase / Three-phase	Box
IT-ATR	Autotransformer	5 ÷ 40	Three-phase / Three-phase	Panel mounting
IT-ATR	Autotransformer	5 ÷ 40	Three-phase / Three-phase	Box

For other powers and versions, please enquire.

Technical specifications

MODEL		IT	
ELECTRICAL	Input/Output	Single-phase	Three-phase
	Power range	3,15 ÷ 20 kVA	5 ÷ 200 kVA
	Power factor	1	
	Connection group	li0	Dyn11 ⁽¹⁾
INPUT	Rated voltage	230 V ⁽¹⁾	3 × 400 V ⁽¹⁾
	Rated frequency	50 / 60 Hz	
	Magnetising current	< 6 I _n	
OUTPUT	Rated voltage	230 V ⁽¹⁾	3 × 400 V ⁽¹⁾
	Voltage drop (100% load)	< 4%	< 5%
	Frequency	50 / 60 Hz	
	Performance	> 95%	
	Short-circuit voltage	< 2.6%	< 3.1%
MANUFACTURE	Insulators	Class 155 (F)	
	Windings	Class 180 (H)	
	Windings material	Aluminium	
	Impregnation	Unsaturated polyester imide resin, low emission	
	Ventilation	ANAN	
GENERAL	Operating temperature	-25°C ÷ +40°C (climate class C2)	
	Storage temperature	-25°C ÷ +75°C	
	Relative humidity	Up to 95% non-condensing	
	Maximum operating altitude	2,400 masl	
	Version	Panel mounting or metal box	
	Colour (box version)	RAL 7035	
	Eye bolts for elevation	Yes, on units weighing more than 15 kg	
	Degree of protection	IP00 panel mounted version - IP23 boxed version	
	Heat loss (100% load)	< 4.5%	< 5%
	Vacuum heat loss	< 1.5%	
	Isolation voltage	3000 V input/output for 1 minute	
	Terminal type	Screw terminals	
	OPTIONAL	K factor	K-4 / K-13 / K-20
Windings material		Copper	
Wheels		For devices in box version	
Isolation		Class 2 (Double isolation)	
STANDARDS	Safety	EN 61558-2-4 / EN 60076-11	
	Corporate certification	ISO 9001, ISO 14001, ISO 45001	

(1) Others available on request

Information subject to change without notice.

CV50

Variable frequency drives from 0.75 kW to 500 kW



CV50: High-performance multifunction vector frequency drives

Salicru's **Controlvit CV50** variable frequency drive series covers power ratings that range from 0.75 kW to 500 kW. They are suitable for both constant and variable torque applications (power duality), and therefore allow the costs of the system to be optimised by adapting to the type of load to be regulated.

They stand out for their design, reliability, ease of use and versatility, being suitable both for low-power applications, where it is necessary to have good control precision, and high-power applications, where it is important to maintain the appropriate torque and ensure continuity of operation.

Thanks to their automatic energy-saving function, they achieve significant consumption reductions, mainly in ventilation, water treatment and irrigation applications.

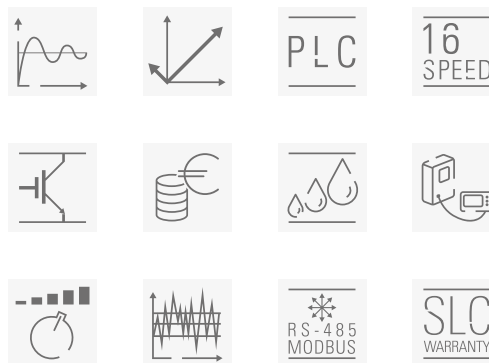
Applications:

The **CV50** is a dual inverter, meaning that it can work in constant and variable torque applications. For this reason, they are suitable for use in the following applications: pumps, fans, HVAC applications, compressors, extruders, mills, presses, mining industry and machinery in general.



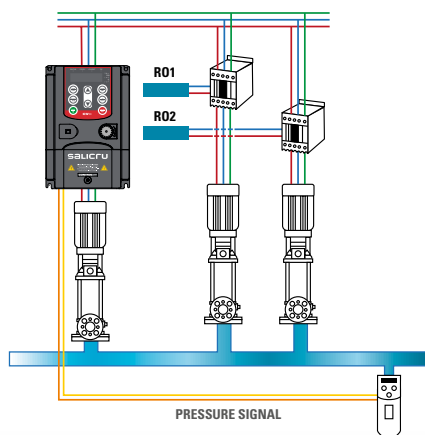
Performances

- Selectable control: V/f, sensorless vector or torque control.
- Built-in EMC filter.
- Power duality: constant torque / variable torque.
- Advanced sleep/wake function for control of up to 3 pumps.
- Motor auto-tuning motor tuning (static and dynamic).
- 150% torque at 0.5 Hz.
- Advanced PID process control.
- Simple PLC (automatic cycle) and 16-speed multi-step control.
- RS485 Modbus RTU communication.
- Built-in potentiometer.
- Remote control with removable or optional keypad.
- Intuitive parameter setting.
- Compact size.
- Built-in dynamic braking unit (≤ 30 kW).
- DC braking.
- Automatic energy saving and kWh meter.
- Pulse train input (max. 50 kHz).
- Fly start function.
- Numerous inputs/outputs (8 digital inputs, 1 pulse input, 2 analogue inputs and 2 analogue outputs, 2 relay outputs, 1 transistor output, 1 pulse output).
- Cooling fans with On/Off control and easy replacement.
- Monitoring and parameter setting using VITdrive software.
- SLC Greenergy solution.



Pumping systems

- The CV50 inverter enables the creation of a pressure unit with up to three pumps (main pump + two fixed auxiliary pumps).
- By means of a signal provided by the transducer, automatic PID pressure control is performed.
- The setpoint can be set via keypad, an analogue signal or RS485 Modbus communication.
- Features two level parameter setting modes for sleep or wake: % of sensor pressure or by frequency.



Advanced vector control

In the event of a sudden change in load with the motor running at 0.5 Hz, the speed remains constant and the assembly is capable of providing the torque demanded at full load.

Technical support and service

- Pre- and after-sales service.
- Telephone technical support.
- Maintenance contracts.
- Training courses.
- Online registration at www.salicru.com.



Range

MODEL	CODE	CONSTANT TORQUE			VARIABLE TORQUE			DIMENSIONS (D × W × H mm)	WEIGHT (Kg)
		POWER (kW)	CURRENT INPUT (A)	CURRENT OUTPUT (A)	POWER (kW)	CURRENT INPUT (A)	CURRENT OUTPUT (A)		
CV50-008-4F	6B1CA000001	0.75	3.4	2.5	-	-	-	175 × 126 × 186	2.5
CV50-015-4F	6B1CA000002	1.5	5	3.7	-	-	-	175 × 126 × 186	2.5
CV50-022-4F	6B1CA000003	2.2	5.8	5	-	-	-	175 × 126 × 186	2.5
CV50-040-4F	6B1CA000004	4	13	9	5.5	19.5	14	181 × 146 × 256	4.1
CV50-055-4F	6B1CA000005	5.5	19.5	14	7.5	25	18.5	181 × 146 × 256	4.1
CV50-075-4F	6B1CA000006	7.5	25	18.5	11	32	25	216 × 170 × 320	7.4
CV50-110-4F	6B1CA000007	11	32	25	15	40	32	216 × 170 × 320	7.4
CV50-150-4F	6B1CA000008	15	40	32	18.5	47	38	216 × 170 × 320	7.4
CV50-185-4F	6B1CA000009	18.5	47	38	22	56	45	216 × 230 × 342	9
CV50-220-4F	6B1CA000010	22	56	45	30	70	60	245 × 255 × 407	11
CV50-300-4F	6B1CA000011	30	70	60	37	80	75	245 × 255 × 407	11
CV50-370-4F	6B1CA000012	37	80	75	45	94	92	325 × 270 × 555	32
CV50-450-4F	6B1CA000013	45	94	92	58	128	115	325 × 270 × 555	32
CV50-550-4F	6B1CA000014	55	128	115	75	160	150	325 × 270 × 555	32
CV50-750-4F	6B1CA000015	75	160	150	90	190	180	365 × 325 × 680	67
CV50-900-4F	6B1CA000016	90	190	180	110	225	215	365 × 325 × 680	67
CV50-1100-4F	6B1CA000017	110	225	215	132	265	260	365 × 325 × 680	67
CV50-1320-4F	6B1CA000018	132	265	260	160	310	305	360 × 500 × 870	110
CV50-1600-4F	6B1CA000019	160	310	305	185	345	340	360 × 500 × 870	110
CV50-1850-4F	6B1CA000020	185	345	340	200	385	380	360 × 500 × 870	110
CV50-2000-4F	6B1CA000021	200	385	380	220	430	425	360 × 500 × 870	110
CV50-2200-4F	6B1CA000022	220	430	425	250	485	480	380 × 750 × 1410	165
CV50-2500-4F	6B1CA000023	250	485	480	280	545	530	380 × 750 × 1410	165
CV50-2800-4F	6B1CA000024	280	545	530	315	610	600	380 × 750 × 1410	165
CV50-3150-4F	6B1CA000025	315	610	600	350	625	650	380 × 750 × 1410	165
CV50-3500-4F	6B1CA000026	350	625	650	400	715	720	560 × 620 × 1700	450
CV50-4000-4F	6B1CA000027	400	715	720	-	-	-	560 × 620 × 1700	450
CV50-5000-4F	6B1CA000028	500	890	860	-	-	-	560 × 620 × 1700	450

Power supply voltage: Three-phase 400 V

Dimensions



Technical specifications

MODEL		CV50
INPUT	Rated voltage	Three-phase 380 V (-15%) ÷ 440 V (+10%)
	Rated frequency	50/60 Hz / Allowed range: 47 ÷ 63 Hz
OUTPUT	Rated voltage	Three-phase, 0 ÷ 100% of input voltage
	Frequency	0 ÷ 400 Hz
	Admissible overloads	Constant torque: 150% for 1 min; 180% for 10 s; 200% for 1 s Variable torque: 120% for 1 min
	Maximum distance	<50 m without filter / between 50 and 100 m install chokes / >100 m LC filter
CONTROL SPECIFICATIONS	Type of motor	Asynchronous
	Method of control	V/f, sensorless vector control, torque control
	V/f characteristics	Linear, quadratic (3 types), user defined
	Degree of control	1% of maximum output frequency
	Speed fluctuation	±0.3% (in vector control mode)
	Braking unit	Built-in for ≤30 kW, external (optional) for ≥37 kW
	INPUT SIGNALS	Digital
Analogue		2 inputs, AI2: 0 ÷ 10 V / 0 ÷ 20 mA and AI3: -10 ÷ 10V Built-in potentiometer
OUTPUT SIGNALS	Relay	2 multifunction NO/NC switching outputs Maximum 3 A / 250 VAC, 1 A / 30 VDC Selectable polarity and on/off delay
	Power Supply	24 V (±10%) 200 mA
	Analogue	2 selectable outputs 0 ÷ 10 V / 0 ÷ 20 mA, proportional to frequency, current, speed, voltage, torque, etc
	Digital	1 multifunction open collector output (200 mA / 30 V) 1 selectable output between pulses (max. 50 kHz) and open collector Selectable polarity and on/off delay
	Communication port	RS-485 Modbus-RTU
OPERATION	Method	Keypad, control terminal and communication Removable keypad up to 200 m for models ≥ 18.5 kW For other models, remote keypad (up to 200 m) as optional extra
	Frequency setting	Digital, analogue, pulse train, multi-step, simple PLC, PID, Modbus communication
	Protection	Overcurrent, overvoltage, low voltage, inverter overheating, phase loss, overload, underload, etc
FILTERING	EMC filter	Built-in. Category C3
	DC reactor	Installable in inverters ≥37 kW
GENERAL	Ambient temperature	-10° ÷ 50°C (3% derating per degree exceeding 40°C)
	Degree of protection	IP20
	Cooling	By easy-to-maintain fans
	Installation	Wall, flange and floor mounting for ≥ 220 kW
STANDARDS	Safety	EN 61800-5-1
	Electromagnetic compatibility (EMC)	EN 61800-3 C3
	Corporate certification	ISO 9001, ISO 14001, ISO 45001

Information subject to change without notice.

PROJECTS AROUND THE WORLD

Energy protection on the move

Proven experience

Our references include railway installations in metropolitan, conventional and high-speed transport networks. Each project is proof of our ability to adapt to technical requirements and comply with regulations while maintaining a commitment to operational reliability and energy efficiency.

We have established ourselves as a leader in advanced electrical protection systems across a diverse range of critical infrastructures. In Spain, highlights include supplying and upgrading modular UPS systems from the **SLC ADAPT2** series, together with EMI3 stabilisers, isolation transformers and **DC POWER-S** rectifiers for various high-speed lines, notably the Madrid–Seville high-speed line. This project follows others on the high-speed network, such as the Madrid–Galicia line (which also has **DC POWER-L** chargers), the Madrid–Lleida section, the Vandellós–Camp de Tarragona line and the Extremadura network, with **SLC ADAPT** models, **EMI3** stabilisers and a large number of **F-RW** catenary filters.

Salicru has been actively involved in various high-speed rail projects in Egypt. The Cairo–Alexandria corridor has **SLC CUBE3+** units installed, while 24 V rectifiers and UPS units have been supplied for the Cairo–Behna and Asyut–Naga Hammadi routes. As with the Blue, Red and Green lines, these are modular **SLC ADAPT2** systems.

The Tren Maya line in Mexico, one of Latin America’s most ambitious railway projects, features our modular **DC POWER-L** 125 V rectifier UPS

units, guaranteeing uninterrupted power supply to signal boxes, signalling and control systems along more than 1,500 km of track. The Bandirma high-speed line in Turkey and the Rail Baltica project (Estonia, Latvia and Lithuania) in the Baltic countries both feature modular UPS and **DC POWER-L** rectifiers.

Multiple UPS solutions, isolation transformers, rectifiers and batteries have been deployed on conventional Spanish lines section, including substations. ADIF’s safety and communications systems in Barcelona are equipped with our **SLC ADAPT2** series, as are all FGC (Catalan Government Railways) signal boxes, where each one has a module that can be adapted to three-phase, single-phase or three-phase 220 V systems.

The most important projects in the urban and conventional sector include our collaboration with TMB for the Barcelona and Madrid underground lines (**SLC ADAPT2**), and the CAF for the Uruguay rail network (**SLC ADAPT2** and **SLC CUBE3+**). We have also supplied 30 kVA single-phase UPS units and frequency converters for the Quito underground and for the Sofia (**SLC CUBE3+** and **IT** transformers) and Constantina (**SLC CUBE3+**) metro systems.

Through these flagship projects, we continue to set new standards at Salicru in power protection and reliability for railway and transportation sectors all over the world.



Administrador de Infraestructuras Ferroviarias
Spanish Railways Organization



Deutsche Bahn



State Railways of the Turkish Republic



Egyptian Railways Organization



Morocco’s National Railways operator



Agencia Reguladora de Transporte Ferroviario de Mexico



Rail Baltica Global Project



Saudi Railways Organization



ČESKÉ DRÁHY, a.s.

Czech Railways Organization



Greek Railways Organization



Bulgarian Railways Organization



Ferrocarril Central Uruguay



Catalonia Railways Organization



Barcelona Subway Organization



Lisboa Subway Organization



Santo Domingo Subway Organization



Málaga Subway Organization



Madrid Subway Organization



Ciudad de México Subway Organization



Quito Subway Organization



Santiago de Chile Subway Organization



Lima Subway Organization



Chile Railways Organization

REFERENCES AND CLIENTS

Energy protection on the move

The following entities have already jumped on board:

- Constantine Subway Algiers (Algeria) – ALSTOM
- Conventional & High Speed Line / Maintenance (Spain) – THALES
- Conventional line / Communication and Security systems (Barcelona - Spain) - ADIF
- Conventional line / ERTMS (Barcelona - Spain) – ALSTOM
- Conventional line / Substations and Transformation Centers (Spain) – ELECENOR
- Conventional line Monfragüe-Humanes Madrid-Extremadura (Spain) – SIEMENS
- Conventional Line R3- Barcelona-Manresa (Spain) – FCC
- Conventional Line R3 Parets-Garriga (Spain) – ALSTOM
- Conventional lines (Germany) - THALES
- High Speed Blue & Red & Green Lines (Egypt) – SIEMENS
- High Speed Line Bandirma (Turkey) – SIEMENS
- High Speed Train Barcelona-Figueres / Tunnel (Spain) – FCC
- High Speed Train Cairo–Alejandria (Egypt) – THALES
- High Speed Train Cairo–Behna & Asyut–Nah Hammadi (Egypt) – THALES
- High Speed Train Extremadura – Phase 1 -2 & 3 (Spain) – ALSTOM
- High Speed Train Lin3 Vandellós-Camp de Tarragona (Spain)– FCC
- High Speed Train Madrid-Galicia (Spain) UTE TELICE – EIFFAGE
- High Speed Train Madrid-Galicia / Da Vinci System and TSAD (Spain) – SISTEMSA
- High Speed Train Madrid–Lleida Guallar Station (Spain) – ANSALDO-HITACHI
- High Speed Train Madrid-Sevilla (Spain) – THALES
- High Speed Train Medina–La Meca (Saudi Arabia) – COBRA-RAILWAYS
- High Speed Train Tren Maya (Mexico) – ALSTOM
- Metro Line Barcelona (Spain) – TMB
- Metro Line Madrid (Spain) – ELECENOR
- Rail Baltica (Estonia-Latvia-Lithuania) – ELECENOR
- Subway Montevideo (Uruguay) – CAF
- Subway Quito (Ecuador) – BOMBARDIER
- Subway Sofia (Bulgaria) – SIEMENS

SIEMENS

ALSTOM

HITACHI

cobra

syneo

ELECTREN

CAF

FCC

indra

中國中鐵
CHINA RAILWAY

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CYPRUS	IRELAND	PANAMA	VENEZUELA
CZECH REPUBLIC	ITALY	PHILIPPINES	VIETNAM

Product Range

Uninterruptible Power Supplies (UPS)
Solar Inverters
Variable Frequency Drives
DC Systems
Transformers and Autotransformers
Voltage Stabilisers
Protective Power Strips
Batteries



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