

USER MANUAL



AUTOMATIC TRANSFER SYSTEM

SPS ATS

SALICRU

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1. INTRODUCTION.

1.1. THANK YOU LETTER.

We thank you in advance for the trust placed in us in the purchasing of this product. Read this instruction manual carefully in order to familiarize yourself with its content, since the more you know and understand the equipment the greater your satisfaction, level of safety and optimization of its functionalities will be.

We remain at your disposal for any additional information or queries that you may wish to make.

Yours sincerely.

SALICRU

- The equipment described herein **is capable of causing significant physical damage in the event of improper handling**. For this reason its installation, maintenance and/or repair must be carried out exclusively by our personnel or by **qualified personnel**.
- Although no effort has been spared to ensure that the information in this user manual is complete and accurate, we are not responsible for any errors or omissions that may exist.
The images included in this document are for illustrative purposes and may not represent exactly the parts of the equipment shown, therefore they are not contractual. However, any divergence that may arise will be remedied or solved with the correct labelling on the unit.
- Following our policy of constant evolution, **we reserve the right to modify the characteristics, operations or actions described in this document without prior notice**.
- **Reproduction, copying, assignment to third parties, modification or total or partial translation** of this manual or document, in any form or by any means, **without previous written authorization by our firm is prohibited**, with the full and exclusive property rights over the same being reserved by our firm.

2. SAFETY INFORMATION.

2.1. USING THIS MANUAL.

The documentation of any standard equipment is available to the customer on our website for download (www.salicru.com).

- For devices "powered by socket", this is the website for obtaining the user manual and "**Safety Instructions**" EK266*08.
- For devices with "permanent connection" via terminals, a Pen drive containing all necessary information for connection and start-up, including "**Safety Instructions**" EK266*08, may be supplied with it.

Before carrying out any action on the device relating to its installation or commissioning, change of location, configuration or handling of any kind, carefully read the safety instructions.

The purpose of the user manual is to provide information regarding safety and explanations of the procedures for installation and operation of the equipment. Read them carefully and follow the steps indicated in the order established.



Compliance with the "Safety Instructions" is mandatory and the user is legally responsible for compliance and enforcement.

The equipment is delivered properly labelled for the correct identification of each of the parts, which together with the instructions described in this user manual allows the operations of installation and commissioning to be performed in a simple and orderly manner without having any doubts whatsoever.

Finally, once the equipment is installed and operating, it is recommended to save the documentation downloaded from the website or Pen Drive in a safe and easy-to-access place, for any future queries or doubts that may arise.

The following terms are used interchangeably in the document to refer to:

- **'SPS ATS, SPS, ATS, device or unit'** - Automatic transfer system.
- **'T.S.S.'** - Technical Service and Support.
- **'Client, installer, operator or user'** - These are used interchangeably and by extension to refer to the installer and/or operator who will carry out the corresponding actions, and the same person may be responsible for carrying out the respective actions when acting on behalf of, or in representation of, same.

2.1.1. Conventions and symbols used.

Some symbols may be used and appear on the device and/or in the context of the user manual.

For more information, see section 1.1.1 of document EK266*08 on "**Safety instructions**".

3. QUALITY ASSURANCE AND STANDARDS.

3.1. STATEMENT BY THE MANAGEMENT.

Our goal is customer satisfaction, therefore this Management has decided to establish a Quality and Environment Policy, through the implementation of a Quality and Environmental Management System that will enable us to comply with the requirements demanded in the **ISO 9001** and **ISO 14001** and also by our Customers and Stakeholders.

Likewise, the management of the company is committed to the development and improvement of the Quality and Environmental Management System, through:

- Communication to the entire company of the importance of satisfying both the client's requirements as well as legal and regulatory requirements.
- The dissemination of the Quality and Environment Policy and the setting of the Quality and Environment objectives.
- Conducting reviews by the Management.
- Providing the necessary resources.

3.2. STANDARDS.

The SPS ATS is designed, manufactured and sold in accordance with Quality Management Systems standard **EN ISO 9001** and is certified by the company SGS. The **CE** marking indicates conformity with EC Directives through the application of the following standards:

- **2014/35/EU**. - Low voltage safety.
- **2014/30/EU**. - Electromagnetic Compatibility - EMC-.
- **2011/65/EU**. - Restriction of the use of hazardous substances in electrical and electronic equipment (RoHS).

According to the specifications of the harmonized standards. Reference standards:

- **EN-IEC 62310-2**. Electromagnetic compatibility (EMC). Static transfer systems (STS). Part 2: General electromagnetic compatibility (EMC) requirements.
- **EN-IEC 60950-1**. Information technology equipment. Safety. Part 1: General requirements.



The manufacturer is not liable in case of modification or intervention on the equipment by the user.



WARNING!

This is a category C2 equipment. In a residential environment, this product may cause radio interference, in which case the user must take additional measures.

It is not appropriate to use this equipment in basic life support applications (BLS), where a failure of the former can render vital equipment out of service or significantly affect its safety or effectiveness. It is also not recommended in medical applications, commercial transport, nuclear installations, or other applications or loads, where a failure of the product can lead to personal or material damages.



The EC declaration of conformity of the product is available to the customer upon express request to our headquarters.

3.2.1. First and second environment.

The environment examples that follow cover most equipment installations.

3.2.1.1. First environment.

Environment including residential, commercial and light industry installations, directly connected, without intermediate transformers, to a low voltage public power grid.

3.2.1.2. Second environment.

An environment that includes all commercial, light industrial and industrial establishments that are not directly connected to a low voltage power grid supplying buildings used for residential purposes.

3.3. UKCA PRODUCT MARK AND UK AUTHORIZED REPRESENTATIVE.

UK CA product marking indicates that this UPS has been evaluated by Salicru and is deemed to comply with safety, health and environmental protection requirements.

The UK CA Declaration of Conformity is available upon request. For copies of the UKCA Declaration of Conformity, please contact Salicru or check our website: www.salicru.com

UK Authorised Representative

Indele Limited

7 Bell Yard,

WC2A 2JR,

London

3.4. ENVIRONMENT.

This product has been designed to respect the environment and manufactured according to **ISO 14001**.

Recycling of the equipment at the end of its useful life:

Our company undertakes to use the services of authorized and regulatory companies to treat the set of products recovered at the end of their useful life (contact your distributor).

Packaging:

For the recycling of the packaging there must be compliance with the legal requirements in force, according to the specific regulations of the country where the equipment is installed.

4. PRESENTATION.

4.1. VIEWS.

4.1.1. Views of the device.

Fig. 1 and Fig. 2 show illustrations of the devices according to model. However, because the product is constantly evolving, discrepancies or slight contradictions may arise. If in any doubt,

the labelling on the SPS ATS itself will always take precedence.



The nameplate of the device shows all of the values relating to its main properties and characteristics. Act accordingly for its installation.

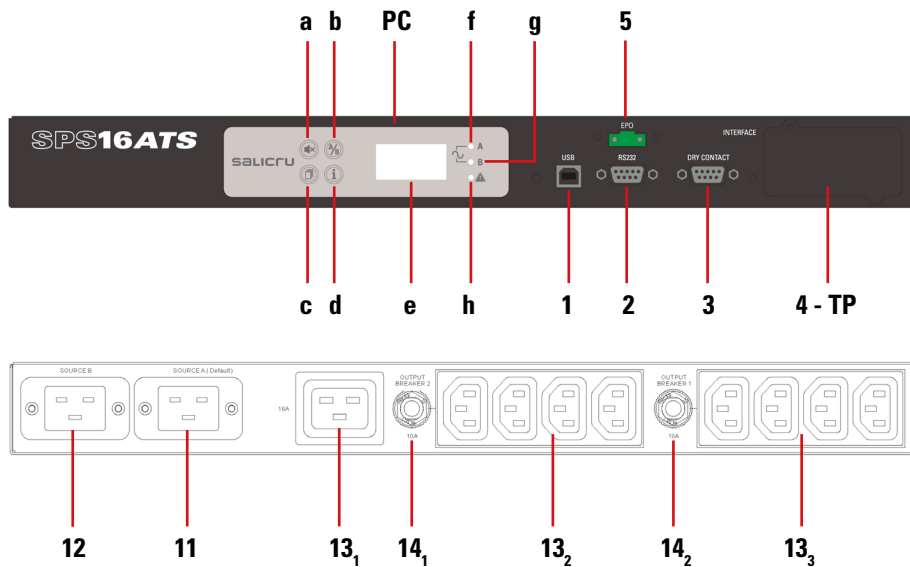


Fig. 1. Front and back views of the SPS 16 ATS.

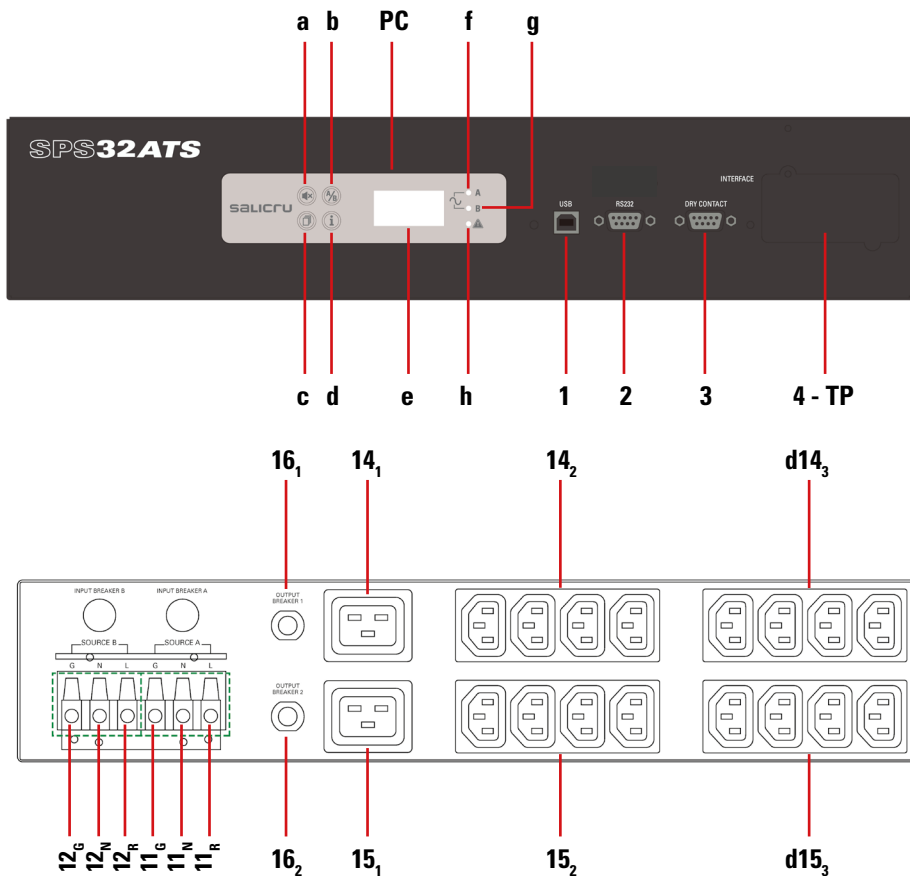


Fig. 2. Front and back views of the SPS 32 ATS.

4.1.2. Key to the views of the SPS.

Control panel (PC), keypad and optical indications.

- a. Key for muting the alarm.
- b. Key for manually transferring the power supply of the load to 'INPUT A' or 'INPUT B.'
- c. Key for selecting the reading source (Input A, Input B or Output to loads).
- d. Key for obtaining the reading of parameters (Voltage, Current, Frequency or % of load connected to the output).
- e. LCD screen.
- f. LED indicator, status Input A.
- g. LED indicator, status Input B.
- h. Device fault or abnormality LED indicator.

Communication ports.

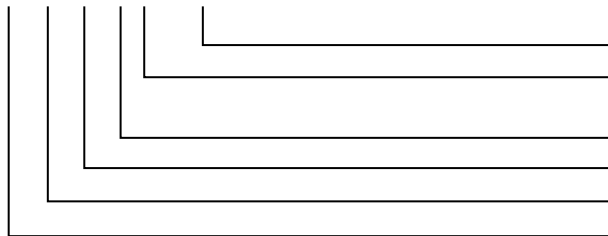
1. USB port.
2. RS232 port (DB9 connector).
3. Interface to relays (DB9 connector).
4. Slot for optional communication cards SNMP, RS485, etc.
5. EPO terminals (Option).

Connection resources in SPS 16 ATS.

11. IEC 60320 C20 power inlet for 'INPUT A' line.
12. IEC 60320 C20 power inlet for 'INPUT B' line.
- 13₁. IEC 60320 C19 output socket.
- 13₂. Group of four IEC 60320 C13 output sockets.
- 13₃. Group of four IEC 60320 C13 output sockets.

4.2. NOMENCLATURE.

SPS 16 ATS WCO EE29503



- EE* Special customer specifications.
- CO 'Made in Spain' marking on device and packaging (for customs purposes).
- W Private-label device.
- ATS Device series (automatic transfer system).
- 16 Maximum current in A.
- SPS Product family.

4.3. OPERATING PRINCIPLE.

An Automatic Transfer Switch (ATS) is essentially an automatic switch with two completely independent input circuits, powered by single-phase sine-wave current mains, which supply output voltage to the load or loads from any of them according to the parameters pre-set at the factory.

The switching between both lines is automatic, although forced manual switching can be carried out through the key provided on the control panel and bidirectionally, that is, from input 'A' to 'B' or from 'B' to 'A.' Automatic returns can however occur in manual forcing if the input to which it is switched is outside voltage and/or frequency ranges.

Automatic transfer of the mains power supply of the loads can occur due to one of the following circumstances:

- Mains failure.
- Input voltage outside range.
- Input frequency outside range.
- Voltage and frequency outside range.

- 14₁. Output thermal protection group bases 13₂.
- 14₂. Output thermal protection group bases 13₃.

Connection resources in SPS 32 ATS.

- 11_R. R phase terminal for 'INPUT A' line.
- 11_N. N neutral terminal for 'INPUT A' line.
- 11_G. Earth connection terminal (⊕) 'INPUT A' line.
- 12_R. R phase terminal for 'INPUT B' line.
- 12_N. N neutral terminal for 'INPUT B' line.
- 12_G. Earth connection terminal (⊕) 'INPUT B' line.
- 14₁. IEC 60320 C19 output socket.
- 14₂. Group of four IEC 60320 C13 output sockets.
- 14₃. Group of four IEC 60320 C13 output sockets.
- 15₁. IEC 60320 C19 output socket.
- 15₂. Group of four IEC 60320 C13 output sockets.
- 15₃. Group of four IEC 60320 C13 output sockets.

Output circuit breakers in SPS 32 ATS.

- 16₁. Output circuit breaker socket group 14₁.
- 16₂. Output circuit breaker socket group 15₁.

Other abbreviations.

- AG. Two angles to adapt the SPS to rack format.
- TP. Slot cover.
- TB₁. Cover assembly consisting of two parts for the SPS 32 ATS's terminal block.
- TO₁. Screws for fixing angles **AG** to the SPS.
- TO₂. Screws for fixing the SPS to a 19" rack cabinet.
- TO₃. Screws for fixing terminal cover assembly **TB₁** to the SPS.

The factory-set transfer ranges and other parameters can be seen in Chapter 8. For any modification, contact our **T.S.S.** Transfer is without overlap (break-before-make), generating a micro-cut at the output < 12 ms.

4.3.1. Block diagram.

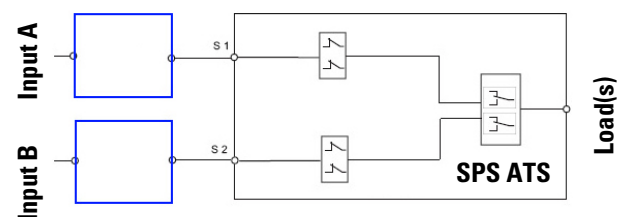



Fig. 3. Structural block diagram.


5. INSTALLATION.

-  Read and respect the Safety Information described in Chapter 2 of this document. Failure to obey some of the instructions described in this manual can result in a serious or very serious accident to persons in direct contact or in the vicinity, as well as faults in the equipment and/or loads connected to it.

5.1. RECEPTION OF THE DEVICE.

- Pay attention to section 1.2.1. of the safety instructions -EK266*08- in all matters relating to the handling, movement and siting of the unit.
- Any handling of the device must be carried out in accordance with the weights shown in the technical specifications according to the model, indicated in chapter "8. Annexes."

5.1.1. Reception, unpacking and contents.

- Reception. Check that:
 - The data on the label affixed to the packaging corresponds to that specified on the order. Once the SPS is unpacked, check the previous information with that on the device's nameplate.
If there are discrepancies, file the disagreement as soon as possible, citing the equipment manufacture number and the delivery note references.
 - There is no damage to the packaging that may have occurred during transportation.
If there is damage, notify the carrier and indicate so on the delivery note, and, as soon as possible, inform the supplier / distributor or, failing that, our firm.
- Unpacking.
 - Remove the packaging to check the contents.
 - Cut the seal and open the cardboard box.
 - Remove:
 - The bag containing cables and the documentation Pen drive.
 - The bag containing mechanical elements (angles, screws, etc.).
 - The two input power cables.
 - Remove the device and plastic bag from the packaging and detach the protective corners.
 - Inspect the device before proceeding and, in the event of finding damage, contact the supplier / distributor or, failing that, our firm.
 -  Do not leave any plastic bags within the reach of children to avoid the danger of suffocation.
 - Disposal of the packaging must be carried out in accordance with current laws.
We recommend keeping it for at least one year.
- Contents.
 - SPS ATS unit.
 - Two cables with IEC 60320 C14/C13 connector.
 - Two cables with IEC 60320 C20/C19 connector for the power supply of the SPS 16 ATS.
 - Quick guide.
 - 1 USB cable.
 - 1 RS232 cable.
 - Two metal angles to fix the ATS to a 19" rack cabinet.

- Screws to fix the angles.
 - Screws to fix the SPS to a 19" rack cabinet.
 - Cover assembly for the terminal block consisting of 2 parts. Only in SPS 32 ATS.
 - Screws to fix the cover assembly to the SPS 32 ATS.
- Once reception is completed, it is advisable to re-pack the ATS until it is put into service in order to protect it from mechanical shock, dust, dirt, etc.

5.1.2. Storage.

- Equipment storage shall be done in a dry, ventilated place and protected from rain, dust, water splashes or chemical agents. It is advisable to keep each equipment in its original packaging as it has been specifically designed to ensure maximum protection during transport and storage.

5.2. SITING IN A 19" RACK CABINET.

- The SPS ATS is designed to be mounted as a rack (horizontal installation in 19" cabinets).

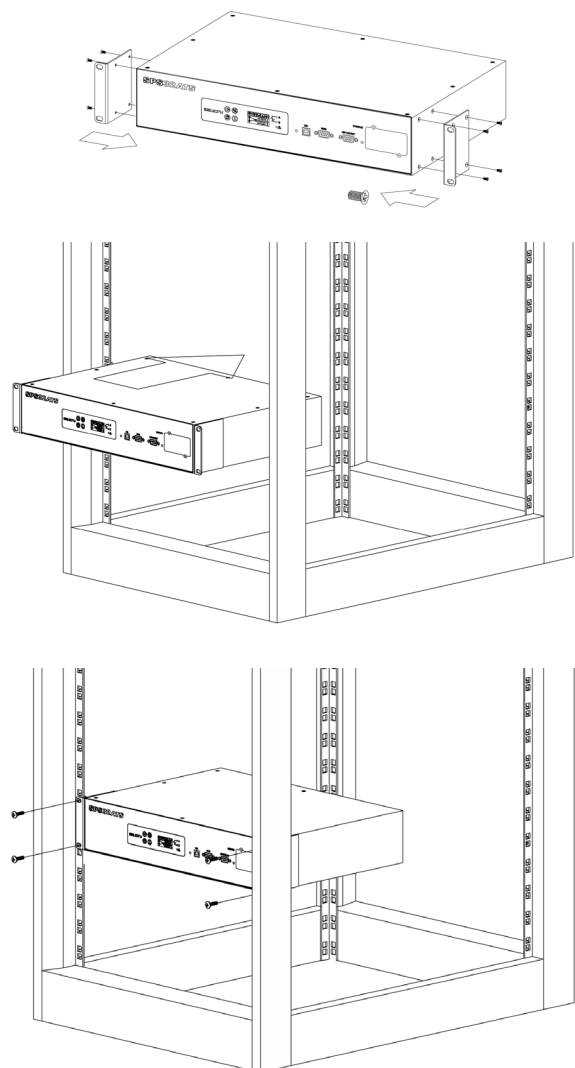


Fig. 4. Example of mounting the device in a 19" rack cabinet.

- Proceed as follows (see Fig. 4):
 - ❑ Using the supplied screws, fix the two angles to the side of each device, respecting its mounting orientation.
 - ❑ Fix the ATS to the frame of the rack cabinet using the screws.
 - ❑ Optionally, guides to facilitate the mounting of the ATS can be installed in the rack cabinet. Upon request, we can supply the user with universal slides to use as guides.


5.2.2.1. Preliminary considerations before connection and siting requirements.

- Check that the information on the device's nameplate is that required for installation.
- Depending on the SPS ATS model, loads can be connected to:
 - ❑ Eight or sixteen IEC 60320 C13 connectors.
 - ❑ One or two IEC 60320 C19 connectors.



Under no circumstances should all of the loads connected to the sockets exceed 16 or 32 A respectively, according to the model.

The overload alarm will detect any excess load connected to the output, since the detector performs a reading before distribution.
- The cross section of the input line cables will be determined by the current indicated on the nameplate of each device, in compliance with local and/or national Low-Voltage Electrotechnical Regulations.
- Regarding the output, although the total limit is the same, the admissible current for each type of connector must be considered:
 - ❑ For the IEC 60320 C13, it is 10 A and thermal protection (only SPS 16 ATS).
 - ❑ And for the IEC 60320 C19, it is 16 A and thermal protection (only SPS 32 ATS).
- This product complies with the safety requirements to be operated in locations with restricted access in accordance with safety standard EN IEC 62310-1, which establishes that the owner must ensure that:
- The device can only be accessed by technical personnel or users who have been properly trained on the restrictions applicable to the location and the precautions that must be followed.
- Access to the device must be under lock and key or other security measures and monitored by responsible personnel.

5.3. CONNECTIONS.

-  When powering one of the unit's inputs with a UPS, both with independent UPSs or even with an electric power generator, the user should take the necessary precautions against direct or indirect contact since these devices are energy generators.



5.3.1. Connection of the input for SPS 16 ATS models.

-  As the device has Class I protection against electric shock, it is obligatory and essential for the AC input socket to have the earth conductor () installed. Check that this is the case before continuing.
- Take one of the power cables supplied, insert the female

IEC connector into its equivalent on the SPS and the Schuko plug on the other end of the cable into an AC power socket. The cross section of the power socket cables must be appropriate for the current of the device, in compliance with local and/or national Low-Voltage Electrotechnical Regulations.

Proceed in the same way for the other input, which will be powered by a source that is different to the previous socket.

5.3.2. Connection of the input for SPS 32 ATS models.


-  As the device has Class I protection against electric shock, it is obligatory and essential to connect the earth conductor () to each group of input terminals. Check that this is the case before continuing.
- The cross section of both input cables must be appropriate for the current of the device, in compliance with local and/or national Low-Voltage Electrotechnical Regulations.
- Connect the input cables to one of the terminals in the group, respecting the order of the phase and neutral indicated on the labelling.
Proceed in the same way for the other input, which will ideally be powered by a source that is different to the previous one.

5.3.3. Connection of the loads to the output connectors.

- Connect the loads to the IEC connectors respecting the limitations of each model and type of connector:
 - ❑ For the IEC 60320 C13, it is 10 A.
 - ❑ And for the IEC 60320 C19, it is 16 A.
- Check that all of the load connected to the output does not exceed the rated current of the SPS according to the model:

5.3.4. Communication port.

5.3.4.1. RS232, USB and interface to relays port.

-  The communications line -COM- constitutes a very low voltage safety circuit. To preserve the quality, it must be installed separately from other lines carrying dangerous voltages (power distribution line).
- The RS232 and USB interfaces are useful for the monitoring software and updating the firmware.
- It is not possible to use both the RS232 and USB ports at the same time.
- The RS232 port consists of the transmission of serial data in such a way that a large amount of information can be sent through a 4-wire communication cable (see Tab. 1).
- The USB port is compatible with the USB 1.1 protocol and the signal arrangement of the connector is indicated in Tab. 2.
- In addition to that corresponding to the RS232, another DB9 connector is supplied for that of the interface to relays which delivers the normally open (NO) contacts of potential-free relays (see Tab. 3). The maximum voltage and current applicable to these is 24 V DC and 1A.

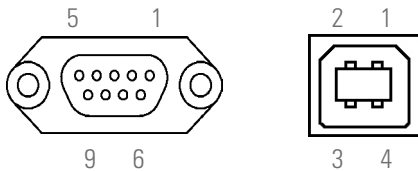


Fig. 5. DB9 connectors for RS232 and interface to relays and USB connector.

Pin #	Description	Input / Output
1	-	-
2	TXD	Output
3	RXD	Input
4	-	-
5	GND	Earth
6	-	-
7	-	-
8	-	-
9	-	-

Tab. 1. Pinout of the DB9 connector, RS232.

Pin #	Signal
1	V BUS-
2	D-
3	D+
4	GND

Tab. 2. Pinout of the USB connector.

Pin #	Description	Input / Output
1	Common, relay 3	-
2	Relay 3	Overload
3	Relay 4	Maximum overload time
4	Common, relay 4 and 5	-
5	Relay 5	Overtemperature
6	Common, relay 1	-
7	Relay 1	Input A abnormal
8	Common, relay 2	-
9	Relay 2	Input B abnormal

Tab. 3. Pinout of the DB9 connector, interface to relays

5.3.5. Smart slot for the integration of an electronic communication unit, SNMP.

- The corresponding documentation is supplied with each option. Read it before starting installation.

Installation.

- Remove the protective cover from the device's slot.
- Take the corresponding electronic unit and insert it into the reserved slot. Make sure that it is properly connected, for which it is necessary to overcome the resistance caused in the connector located in the slot.
- Make the necessary connections in the terminal block or connectors available according to each case.

- For more information, contact our **T.S.S.** or our nearest distributor.

5.3.6. Management and monitoring software.

- Through the RS232 or USB port and the free management and monitoring software, which can be downloaded from our Website, it is possible to display the values of the different parameters of Input A, Input B and Output on a PC screen. The software can be downloaded in two different ways.
 - Ideally by registering the product. This facilitates and streamlines warranty procedures in the event of incidents:
 - Enter the following in the browser's address bar: **<https://support.salicru.com>**.
 - Click the 'Enter' key. The Website's On-Line Support page will be displayed on the screen.
 - Register as a user.
 - Register the product purchased with all of the details requested.
 - Documentation relating to the model and management and monitoring software, with the available operating systems will be displayed. Download the required software and install it.
 - Directly through the Website.
 - Enter the following in the browser's address bar: **<https://www.salicru.com/>**
 - Click the 'Enter' key. The page shows two sections on the screen. Search for the device series within them or via the 'Product' header menu, which is structured in the same way.
 - When accessing the device series, you will see below the illustrations links to the different documentation and below these, some tabs, among them the one marked Software. Select the Software with the required operating system, download it and install it.

5.3.7. EPO "Emergency Power Off" (Only in SPS 16 ATS).

- The SPS have two terminals for the installation of an external Emergency Stop Output **[EPO]** button.
- By default, the equipment is shipped from the factory with the closed EPO circuit type **[NC]**. This means that the UPS will cut off the output power supply, emergency stop, by opening the **[NO]** circuit, see Fig. 6.

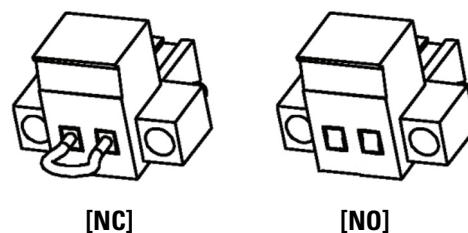


Fig. 6. EPO connector.

Pressing the button installed external to the equipment, and owned by the user, will open the circuit. The connection in the pushbutton must be in the normally closed contact, so that it opens the circuit when it is actuated.

6. OPERATION.

- **i** This document is described and illustrated considering that the power source of Input A is the first that powers the device and that the voltage and frequency parameters are within the acceptable range.

6.1. STARTUP.

- Make sure that all of the connections have been made correctly, following the instructions on the labelling of the device and in Chapter 5.
- Make sure that all loads are 'Off'.
- Check that the power connection is correct.
- Switch on the power sources connected to both inputs. The SPS ATS will start up automatically after a second, supplying voltage to the output sockets from the AC input.
- For a short time, the LCD on the control panel will be displayed as in Fig. 7, with the three LEDs (f), (g) and (h) illuminated and, after this time, it will be displayed as in Fig. 8 with LEDs (f) 'INPUT A' and (g) 'INPUT B' illuminated.

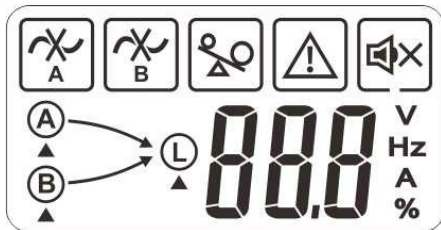


Fig. 7. Initial screen shown in the first moments of device startup.

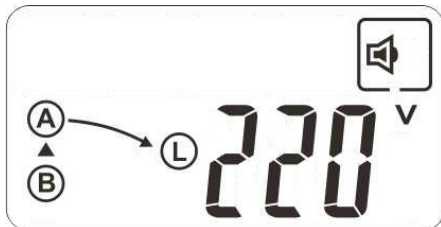


Fig. 8. Screen shown after the beginning of startup.

- Start the loads, making sure that the rated supply of each model is not exceeded.

6.2. FORCED MANUAL TRANSFER OF INPUT.

- Press and hold down key (b) **(b)** on the control panel for at least two seconds until two short beeps are heard. The illustration in Fig. 9 will be displayed on the screen. To confirm the transfer, press key (b) **(b)** on the control panel again for more than two seconds. The system will switch the power supply of the load to 'INPUT B' provided that the voltage and/or frequency are normal (within the predefined range) and it will be shown on the screen as in Fig. 10. If the voltage and/or frequency however is abnormal, it will not allow the transfer and it will be shown on the screen as in Fig. 11.

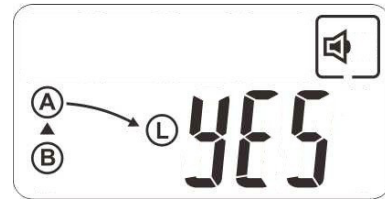


Fig. 9. Transfer confirmation request screen.

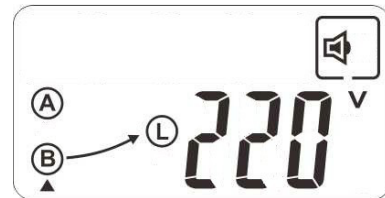


Fig. 10. Transfer to input B screen.

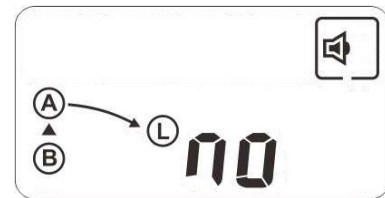


Fig. 11. Input B abnormal mains screen.











- **i** Fig. 8 and Fig. 10 show the voltage values by way of example (220 V in the illustration).

6.3. READING THE PARAMETERS.

- Use key (c) **(c)** to select the source of Input A, Input B or Output whose readings you wish to display. Cyclically with each press, it jumps to the next, showing a pointer below the source in which it is located.
- Use key (d) **(d)** to see the reading of the different parameters on the screen, according to the source selected:
 - For Input A and B: Input voltage and frequency.
 - For output: Voltage, frequency, current and % of output load.

6.4. AUDIBLE ALARM.








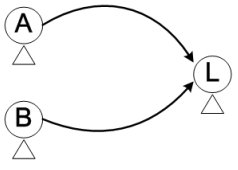

- The device has an audible alarm that is activated in the event of any of the faults or incidents shown in Tab. 4. By pressing key (a) **(a)**, it is possible to mute any alarm that is activated, but only one by one, independently and every time it occurs. It is not possible to mute the alarm permanently.

Active icon on display	Event
 + 	Input A voltage, frequency or both abnormal or failure.
 + 	Input B voltage, frequency or both abnormal or failure.
 + 	Output overload. Alarm message E16 is also displayed on the screen.
 + 	Output overload with time exceeded. Alarm message E30 is also displayed on the screen.  The device will lock and it will be necessary to stop the system completely and restart it.
	Alarm: Abnormal cabinet temperature or device fault.

Tab. 4. List of possible audible alarms

6.5. INFORMATION REPRESENTED BY THE DISPLAY.

- On the LCD screen of the control panel, you can display the icons represented in Fig. 7 and functionally defined in Tab. 5.

Symbol	Description / function
	Input A voltage or frequency abnormal or failure.
	Input B voltage or frequency abnormal or failure.
	Overload.
	Alarm: Input A or B voltage and/or frequency outside the range, abnormal cabinet temperature or device fault.
	 Alarm activated.
	 Alarm deactivated.
	The LCD display shows the parameter reading origin by means of a signal in the form of a pointer located below the icons of input A, input B or the output to loads. A semi-oval arc with a pointer at its end indicates the origin of the output voltage.
 V A Hz %	Digits that show the value and its reading parameter (voltage, current, frequency or % of load connected to the output) from any of the sources (input A, input B or output to loads).

Tab. 5. Description of the icons shown on the display.

6.6. LED INDICATIONS.

Ref.	LED	Error or failure description
f	Input A	- On: Normal input frequency and voltage. - Off: Abnormal input voltage and frequency.
g	Input B	- On: Normal input frequency and voltage. - Off: Abnormal input voltage and frequency.
h	Error	- On: System alarm, fault or abnormality. - Off: System normal.

Tab. 6. LED indications message.

7. MAINTENANCE, WARRANTY AND SERVICE.

7.1. UPS TROUBLESHOOTING GUIDE.

Tab. 7 shows a summary of the faults that can occur and the possible causes and solutions. If it is not possible to solve the problem with this help, consult our **T.S.S.**

If it is necessary to contact our Technical Service and Support **T.S.S.**, provide the following information:

- Device model and serial number.
- Date on which the issue occurred.
- Full description of the issue, including information provided by the LCD display or LEDs and state of the alarm.
- Power supply conditions, type of load and level of load applied, ambient temperature, ventilation conditions.
- Any other information considered relevant.

7.2. WARRANTY CONDITIONS.

7.2.1. Terms of the warranty.

On our website you will find the warranty conditions for the product you have purchased where you can also register it. It is recommended to do so as soon as possible to include it in the database of our Technical Service and Support (**T.S.S.**). Among other advantages, it will streamline any regulatory procedures for the intervention of **T.S.S.** in the event of a fault.

7.2.2. Exclusions.

Our company will not be bound by the warranty if it notices that the defect in the product does not exist or was caused by improper use, negligence, improper installation and/or verification, attempts at unauthorized repair or modification, or any other cause beyond the intended use, or by accident, fire, lightning or other hazards. Nor shall it cover any compensation for damages.

7.3. TECHNICAL SERVICES NETWORK.

Information about our national and international Technical Service and Support (**T.S.S.**) centres can be found on our website.

Symptom	Possible cause	Solution
SPS ATS is off.	Device not connected to power mains.	Check that device's two inputs are connected and preferably to different AC power mains.
	Power mains abnormal.	Check voltage and frequency of both inputs against rated voltage and frequency values and ranges (see device nameplate) and factory parameters indicated in chapter 8.
	Internal electronics damaged.	Contact the distributor, seller or, failing that, our T.S.S.
Power is supplied to load, but control panel remains off.	Internal electronics damaged.	Contact the distributor, seller or, failing that, our T.S.S.
Error code E16 on the screen.	Overload.	Reduce load connected to output sockets. Depending on level of overload, if it persists and after some time, the device may become locked.
Error code E30 on the screen.	Overload exceeded in time.	The device will lock and it will be necessary to stop the system completely and restart it.
Error code E33 on the screen.	Communication connection abnormal	Contact the distributor, seller or, failing that, our T.S.S.

Tab. 7. Troubleshooting guide.

8. ANNEXES.

8.1. GENERAL TECHNICAL SPECIFICATIONS.

ELECTRICAL		
INPUT	SPS 16 ATS	SPS 32 ATS
Rated voltage	200, 208, 220, 230, 240 V (see the rated factory value on the nameplate of the ATS).	
Operating range	150.. 300 V AC.	
Acceptable input voltage range	±5, 10, 15, 20 % (factory set at ± 15%).	
Rated current	16 A.	32 A.
Rated frequency	50 or 60 Hz (see the rated factory value on the nameplate of the ATS).	
Input frequency range	±5, 10, 15, 20 % (factory set at ± 10 %).	
OUTPUT		
Voltage	Same as input.	
Frequency	Same as input.	
Current	16 A.	32 A.
Thermal fuse protection	Yes. IEC 60320 C13 outputs	Yes. IEC 60320 C19 outputs
Transfer time	8..12 ms.	
Performance	99 %.	
Overload capacity > 111.. 125 %	60 s. (Protection through electronics).	
Overload capacity > 125.. 150 %	30 s. (Protection through electronics)	
Overload capacity > 150.. 200 %	5 s. (Protection through electronics)	
Overload capacity > 200 %	1 s. (Protection through electronics)	
Short circuit	Protection through electronics.	
ENVIRONMENTAL		
Operating temperature	0.. 40 °C.	
Storage temperature	-25.. 65 °C permanent.	
Operating humidity	Up to 95% non-condensing.	
Operating altitude	2,400 masl	
Audible noise	That of the sound alarm itself when activated.	
Ventilation	Natural.	
Protection rating	IP 20	
CONNECTIONS		
Input	Connectors: 2 x IEC 60320 C20.	Terminals: 2 groups of 3 (phase, neutral and earth).
Output	Connectors: 1 x IEC 60320 C19 + 8 x IEC 60320 C13	Connectors: 2 x IEC 60320 C19 + 16 x IEC 60320 C13
EPO (Emergency Power Off)	Yes	No
COMMUNICATIONS		
Interface	RS232, USB and interface to relays (5 voltage-free contacts).	
Slot for SNMP	Yes.	
INDICATORS		
LCD + LEDs	Input A, Input B, Overload, Alarm, Alarm mute.	
Values shown on LCD display	Input A and B: voltage and frequency. Output: voltage, frequency, current and % of load. Error code.	
Monitoring software	Free download from our website.	
PHYSICAL		
Dimensions (mm) -Depth x Width x Height-	285 x 440 x 44 (1 u).	295 (with terminal cover 370) x 440 x 88 (2 u).
Weight (kg)	4	6
STANDARDS		
Safety	EN-IEC 60950-1.	
Electromagnetic compatibility (EMC)	EN-IEC 62310-2.	
Marking	CE.	
Quality and environmental management	ISO 9001 and ISO 14001 (certified by SGS).	

Tab. 8. General technical specifications.

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Information about the technical support and service network (TSS), the sales network and the warranty is available on our website:

www.salicru.com

Product range

Uninterruptible Power Supplies (UPS)

Stabilisers - Lighting flow dimmers

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