



USER MANUAL

AUTOMATIC RESCUE DEVICE SOJI SP SERIES

Model: SJ-S 48VDC/ 60VDC/ 72VDC/ 96VDC/ 120VDC



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I. GENERAL:

This device is mainly an UPS supplied by a 60VDC 7AH batteries (or other DC voltage model such as 48VDC/ 72VDC/ 96VDC/ 120VDC), with some additional functions.

Soji SP Series can be used for both synchronous and asynchronous motor drives.

The main part of the Soji SP Series device is a '220VAC, 50Hz/60Hz inverter build-in battery charger' which supplies power to the main lift control panel, including the control circuits, the brake and the door unit, during a power failure. In Soji SP elevator rescue device, the main power to the motor drive inverter is supplied directly from the Batteries with voltage 48VDC/ 60VDC/ 72VDC/ 96VDC/ 120VDC depends on the model.

This device can be used for emergency evacuation operation for all elevator panels with inverters of all power ratings, because the inverters DC buses are directly derived from the batteries.

They usually require 220Volts to activate their own built-in power supply, and a powerful DC voltage (the batteries) to be connected to their DC bus for power conversion. This DC bus voltage changes from 48V to 120V depending on the different model.

Soji SP Series devices are to be placed within the main elevator control panel. The dimensions are 155 mm width, 180mm height, and 175mm depth, weight 7.0 kg.

The operating ambient temperature is 0⁰C – 45⁰C.

Main features:

- Pure sine wave output
- Microprocessor-based digital control
- Auto restart while AC is recovering
- Intelligent battery management with build-in 3 stage battery charger to maximize battery life



- High efficiency, optimum performance, low maintenance, easy to operate
- User friendly through LED indicators
- Small size, light weight to build in lift control panel
- 310VDC output to supply lift inverter control circuit (such as Yaskawa L1000A)
- Short circuit and overload protection
- Suitable for all kinds of elevator VVVF supported DC rescue operation
- Expandable DC voltage to 60VDC – 72VDC- 96VDC -120VDC for many different types of inverters on the market



II. TECHNICAL SPECIFICATIONS

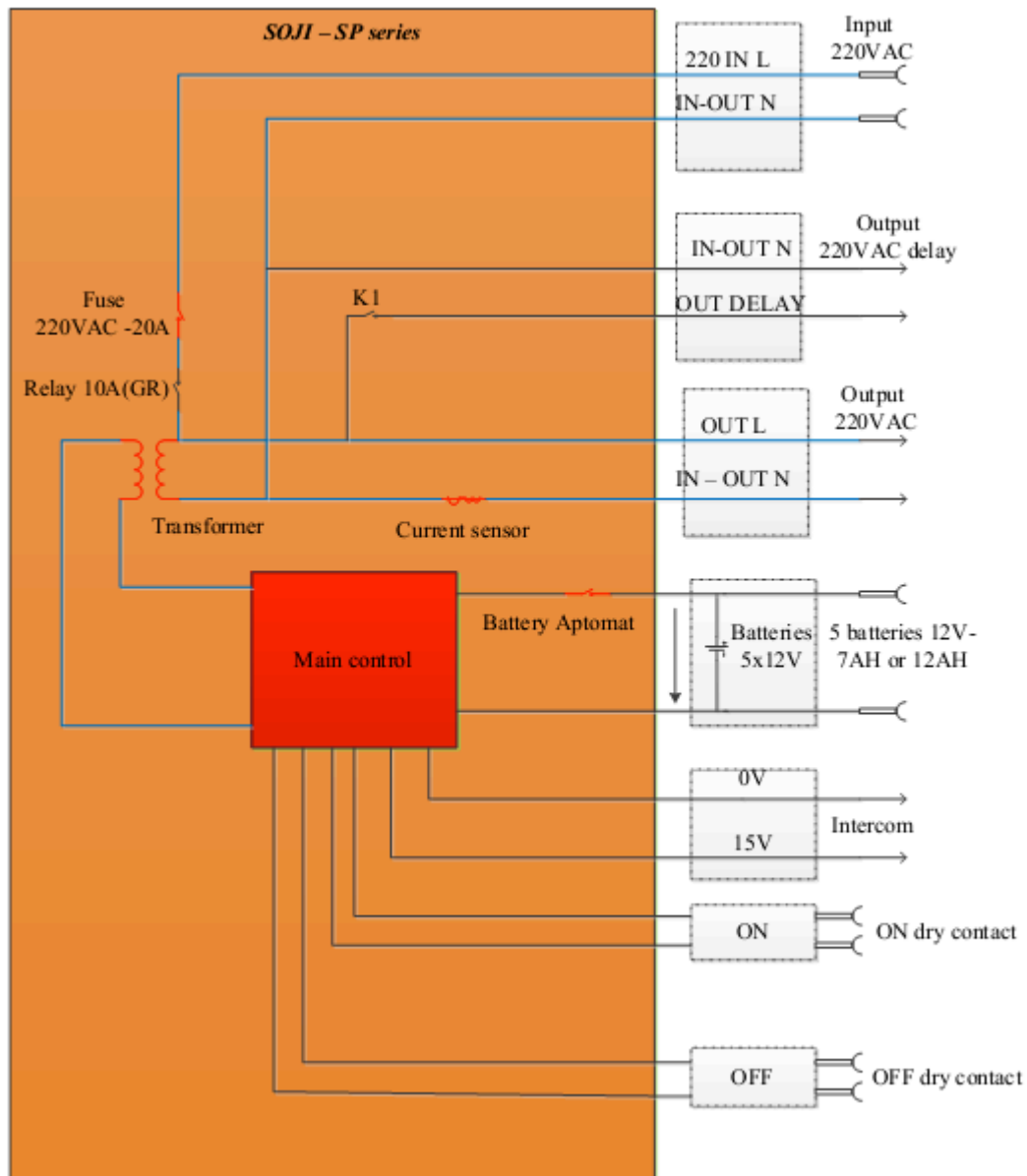
DETAILS					
Model	SJ-S 48VDC	SJ-S 60VDC	SJ-S 72VDC	SJ-S 96VDC	SJ-S 120VDC
Power rating	1000VA (1500VA optional)				
Input					
AC Voltage	220V Single phase + N 50/60Hz				
DC Voltage	48VDC	60VDC	72VDC	96VDC	120VDC
DC, AC start	yes				
Output					
AC Voltage output	220V				
Wave form	Pure Sine (Mains); Pure sine (Battery)				
Frequency	50Hz/ 60Hz				
Delayed output	5s – 10s – 20s				
Transfer	<10ms				
DC Voltage output	48VDC	60VDC	72VDC	96VDC	120VDC
Battery					
Battery type	Lead acid maintenance free battery				
Charging	48VDC	60VDC	72VDC	96VDC	120VDC
DC Configuration	4 x 12V	5 x 12V	6 x 12V	7 x 12V	8 x 12V
Recharge	90% Capacity after 8 hours				
Back up time	Depend on battery capacity, automatic off after 300s in evacuation mode				
Other features					
Transformer	Yes				
Noise	<45db (1m)				
Temperature	0 – 45°C				
Humidity	20% - 90% (Non- Condensing)				
Weight	7.0 kg				
Dimension	155 x 170 x 178 (mm)				

III. OVERVIEW CIRCUIT



Main PCB of Elevator rescue device SOJI SP Series

IV. BLOCK DIAGRAM



In this connection, the SJ-S 60VDC/ 1000VA is supplied by the 60VDC battery as in our standard case.

The additional/optional 36VDC battery is connected in series with the 60V battery.

The optional 36VDC charger fixed within the device will charge this 36V additional battery.

The total 96VDC battery will be used to supply the inverter DC bus.

Note: Without connecting the additional 36V battery, this device may be used as our standard device.

ATTENTION! BE CAREFUL NOT CONNECT THE BATTERIES IN REVERSE POLARITY!



V. OPERATIONAL INSTRUCTIONS

The device has the following additional features in addition to a standard UPS:

- In the evacuation state, **the device automatically stops after a pre-selected time (standard 300s)** and becomes completely stops and does not consume any current from the batteries. This saves the batteries from discharging during the waiting time for the AC to come back. When AC power comes back, it starts and goes into stand-by state.
- In addition to the main uninterrupted output **OUTL**, there is a time-delayed **output K1**. The delay time may be selected by time-delayed jumpers, 5, 10 or 20s.
- There is a **battery circuit breaker** on battery circuit for protection of the batteries and for easy service.
- There is a 310VDC output, 600mA for inverter control circuit such as Yaskawa L1000A CN19
- There is a 12VDC output for telecom
- There is a ON signal to start device remotely and OFF signal to stop device remotely from lift control panel if necessary.
- The device is fully protected against reverse polarity battery connection.
- There is a **AC fuse F3** on 220V AC line, for protection and easy service.

The device functions without battery connection that means the voltage on L1 input is connected to the OUTL output, even if the batteries are not connected, or discharged completely to zero.

So the batteries do not cause any additional fault to the operation of the elevator panel. This improves the reliability of the elevator panel equipped with an emergency evacuation device. Of course, in this case, the emergency evacuation operation cannot be done.



For most of the possible faults of the device, the L1 and OUTL terminals stays connected, and the elevator panel operates. So generally the device does not cause any potential fault to the operation of the elevator panel.

ATTENTION! A standard UPS does not satisfy item 6 and 7 above. A standard UPS with the batteries disconnected does not start when it is connected to 220V AC for the first start. That means the 220V AC input voltage stays disconnected from the output terminal, and the elevator panel does not function.

VI. OPERATION:

1. At the beginning, when L1 phase is OFF, the device is dead, and the contacts are as shown in the figure.
2. When L1 phase becomes ON, the device starts operation, the relays **GR** becomes ON, OUTL output is connected to L1 input voltage.
3. When L1 phase fails, GR relay becomes OFF, and if the battery is connected, OUTL continuous to supply the load without any interruption, and the operation duration timing starts. Operation duration is 300 second.

If the battery is not connected, when AC fails, the OUTL fails also, and the devices dies. When L1 phase comes back, the device starts from the beginning again.

4. After 5 or 10 or 20 seconds (can be selected by time-delayed jumper) K1 relay becomes ON, for the delayed output.
5. After 300 seconds, the device stops and becomes complete dead. From now on no current is drawn from the batteries, batteries are saved from discharging.
6. When L1 phase comes back, the device starts operation from the beginning.



VII. BUZZER and LEDS:

A. When AC power is ON:

Led	Status	Remark
5V	ON	-
12V	ON	-
MAIN	ON	-
GR	OFF	-
CH	ON/OFF	When battery is charging CH led is ON, when completely charged it becomes OFF.
K1	OFF	-
INVRT	OFF	-
Buzzer		In case of overload, the buzzer beeps continuously

B. When AC is OFF, operation from the batteries:

Led	Status	Remark
5V	ON	-
12V	ON	-
MAIN	OFF	-
GR	ON	-
CH	OFF	-
K1	ON	After delayed time 5s, 10s or 20s Led K1 output will be ON
INVRT	ON	-
Buzzer		Beeps every 500ms in 10 sec then stops

If overload occurs, buzzer beeps continuously.

If overload lasts for less than 3 seconds, buzzer starts intermittent beeping again. If overload lasts for more than 3 seconds, the device stops and becomes dead.

When the voltage drops below 45.0V (for SJ-S 60VDC model), the device stops and dies.



VIII. WARNINGS, DIAGNOSES and CORRECTIONS:

The batteries must be in good condition for a problem free operation. For this:

1. Measure the terminal voltages of each battery; they should be around 12-13 Volts. During this measurement the batteries must be loaded by a few amperes.
2. Measure the terminal voltages of each battery during charging, do not use the batteries lower than 11.0 Volt terminal voltages after 12 hours.
3. When the total terminal voltage is around 68-69 Volts after the charging, and if it drops below 45V or lower at the beginning of the first evacuation operation, keeps them for charging at least 20 hours. If they drop again below 45 Volt at the beginning of the operation, replace them by new batteries.
4. When main power supply is presented at L1, if the device is not automatically ON, please check fuse F3 220VAC-10A, if the fuse is burnt, replace the fuse
5. If the main power supply is connected to L1 but the device does not run at inverter mode, please check and make sure the Battery circuit breaker ON, otherwise please check batteries or replace batteries.
6. Do not connect the batteries in reverse polarity.

IX. PERIODICAL MAINTENANCE:

1. For a long service life of the batteries the ambient temperature should be limited to maximum 50C degree. Since the maximum temperature in the machine room is limited to 45C degree, this condition may be satisfied.
2. Read item 6 for the maintenance of the batteries. Additionally, a periodical discharge and charge of the batteries helps to activate the batteries for their maximum use. To do this, let the device make an evacuation operation at least once during the periodical maintenance work of the elevator once in a month.
3. Keep the device in a clean environment.



X. WARRANTY:

SOJI SP series battery powered emergency evacuation devices are guaranteed for a duration of two years from the date of purchase against breakdowns or faults in parts, components, material and workmanship.

This guarantee by SOJITECH does not cover the failures or breakdowns due to use of the equipment under abnormal conditions and the damages and breakdowns of components and/or parts that are connected to SOJI SP series.

AUTOMATIC RESCUE DEVICE SOJI SP SERIES

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Easy to setup, High performance

The purpose of this manual is to provide accurate information in the handling, setting up and operating of the SOJI SP Series of power emergency. Please feel free to send your comments regarding any errors or commissions you may have found, or any suggestions you may have for generally improving the manual. Data specification can change without notice.



Visit us at www.sojitech.com for more information
or contact us at contact@sojitech.com

