User Manual – SEQURE SQ-SW3

(Capacitor-based spot welder for Li-ion cells and nickel / copper strips)

1) Purpose of the Device

The SEQURE SQ-SW3 is a capacitor energy storage spot welder. It welds nickel or copper strips to cylindrical cells (typically 18650 / 21700) using a short, controlled high-current pulse. The capacitor principle enables a short and strong discharge without prolonged thermal stress on the cell.

2) Power Supply Options

The device allows setting capacitor charging to **Fast charging (15 A)** or **Slow charging (2 A)** depending on the power source.

Supported inputs:
- **USB-C connector** – powered from a source with Power Delivery support.
- **DC barrel connector** – up to 25 V (external power supply or up to 6S LiPo battery).
- **XT60 connector** – max. 5.6 V / 15 A, intended for the supplied power supply.

Warning: Connecting a LiPo battery with voltage higher than 5.6 V to the XT60 input will damage the welder.

3) Safety – Read Before First Use

Working with Li-ion cells and spot welding involves the risk of injury and fire. Please follow these guidelines:

General:
- Work on a non-flammable surface. Keep a Class D fire extinguisher or sand nearby.
- Ensure good ventilation and sufficient lighting.
- Wear protective goggles and thin gloves.
- Never short-circuit the welder outputs.
- Do not leave the device powered on unattended.

Li-ion cells:
- Do not use swollen or damaged cells.
- Never solder strips to cells, always spot weld.
- Take short breaks between welds to reduce heat stress.
- Ensure correct polarity when building packs.

Device:
- Use only recommended power supplies.
- Never handle electrodes during active operation.
- Update firmware only following the official procedure.

4) Package Contents

• Main unit SEQURE SQ-SW3
• Welding handle(s) with electrodes
• Power adapter / cable
• USB-C cable for service and upgrade
• Nickel strip for testing (in some sets)
• Basic maintenance tools

5) Overview of Controls and Interfaces

- LCD display for parameter settings
- Control buttons / encoder
- Output connectors for welding handles
- Power input and USB-C port
- Electrode tips (consumable part)

6) Before First Use

1. Check the tightness of electrodes and cables.
2. Connect the proper power supply.
3. Switch on the device and let capacitors charge.
4. Set language, trigger mode, and energy.
5. Perform a test weld on scrap strip and an old cell.

7) Trigger Modes

- AUTO: the device detects contact and automatically discharges.
- MANUAL: the user triggers the weld by pressing a button. Recommended for beginners.

8) Parameter Settings

You can adjust energy, pulse length, and double pulse if needed.
Start with low energy and increase according to results.
Always perform a mechanical tear test to verify weld strength.

9) Spot Welding Technique

1. Prepare the cell surface.
2. Place the strip.
3. Position electrodes vertically, about 3–5 mm apart.
4. Trigger the pulse.
5. Hold briefly, then lift the electrodes.

10) Maintenance

- Clean electrode tips with fine sandpaper.
- Regularly check cables and connectors.
- Store in a dry place, cover the electrodes.

11) Firmware Update

1. Disconnect power.
2. Hold the service button and connect via USB-C.
3. Copy the correct firmware file.
4. Restart the device after successful update.

12) Troubleshooting

- Weak weld: increase energy or extend pulse.
- Burn-through: reduce energy.
- AUTO not firing: clean the electrode tips.
- Overheating: take breaks, check connections.

13) Material Recommendations

- Use pure nickel (non-magnetic).
- For copper, expect higher energy demand and the need for double pulse.
- Record proven settings for future use.

14) Technical Specifications

• Max current: up to 2500 A
• Max voltage: approx. 5.6 V
• Modes: AUTO / MANUAL
• Recommended thickness: nickel ≤ 0.3 mm, copper ≤ 0.2 mm
• Display: LCD, multilingual menu
• Dimensions: approx. 223 × 133 × 68 mm
• Weight: approx. 1.6 kg