Swansons
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SM40

INSTALLATION AND OPERATING INSTRUCTIONS

Medium · Large · XL — 12-24-48 V DC



Read all the instructions before installation and keep them for future reference. These instructions apply to SM40 Medium, Large and XL. SM40 Mini has separate instructions.

⚠ SAFETY – READ THIS FIRST

- ⚠ **Lethal voltage.** Hazardous voltages and currents are present in the unit whether the internal fuses are on or off. The area marked “Livsfarlig spänning” (lethal voltage) on the circuit board is live when mains voltage is connected.
- ⚠ **Qualified personnel only.** Only authorised personnel experienced in AC and DC may operate, install, work on, service or maintain the unit.
- ⚠ **Insulated tools.** Use only insulated tools inside the unit.
- ⚠ **Batteries are always active.** Batteries are always electrochemically active, even when the unit is disconnected. Never short-circuit the battery terminals.
- ⚠ **Read and understand the instructions.** The instructions must be read thoroughly and understood by all personnel handling the unit. If in any doubt about the system’s design, function, components or safety – contact the supplier.
- ⚠ **Check before installation.** Check that the circuit boards are securely fixed and have not been damaged in transport.

✓ DO

- ✓ Read all the instructions before starting work.
- ✓ Use insulated tools.
- ✓ Check that the circuit boards are securely fixed and undamaged.
- ✓ Mount the unit with free space around it so that ventilation is not blocked.
- ✓ Follow the connection order: 230 V AC → batteries → load.
- ✓ Check the output voltage before connecting batteries and load.
- ✓ Contact Swansons if in any doubt.

✗ DO NOT

- ✗ Work inside the unit without AC and DC qualification.
- ✗ Assume the unit is de-energised because the fuses are switched off.
- ✗ Short-circuit the battery terminals.
- ✗ Cover the enclosure ventilation.
- ✗ Load above the rated current – it applies to the total load for OUT1 and OUT2 together.

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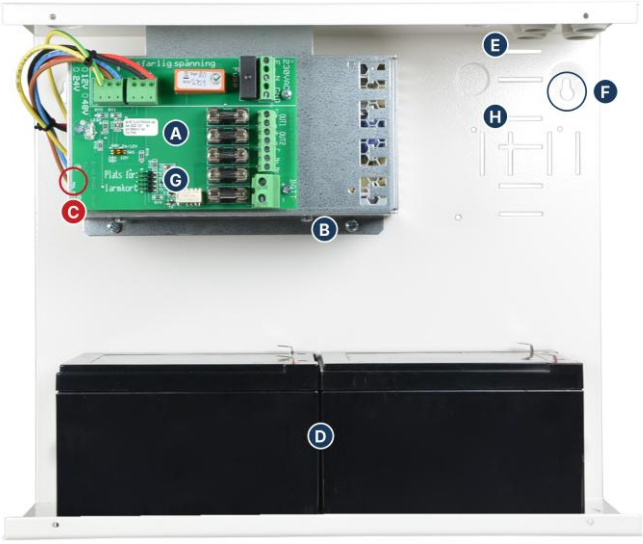
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1 UNIT LAYOUT



The picture shows SM40 with 2 × 12 V batteries. Any make.

A **Circuit board**
Connections, fuses and alarm relay – see section 3.

B **Power supply**
Mounted under the circuit board. Mains voltage is connected to the circuit board.

C **Potentiometer V ADJ**
Output voltage adjustment. Located on the power supply, between the mounting holes for alarm board SM102 (G), partly hidden under the circuit board.

D **Battery space**
12 V: 1–2 pcs, 24 V: 2 pcs, 48 V: 4 pcs. Batteries not included.

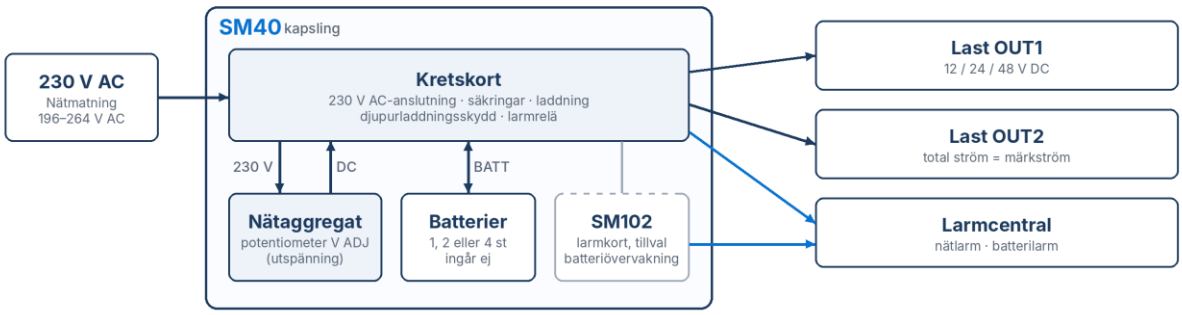
E **Cable entry**
Knockouts Ø 20.5 mm and holes Ø 21 mm.

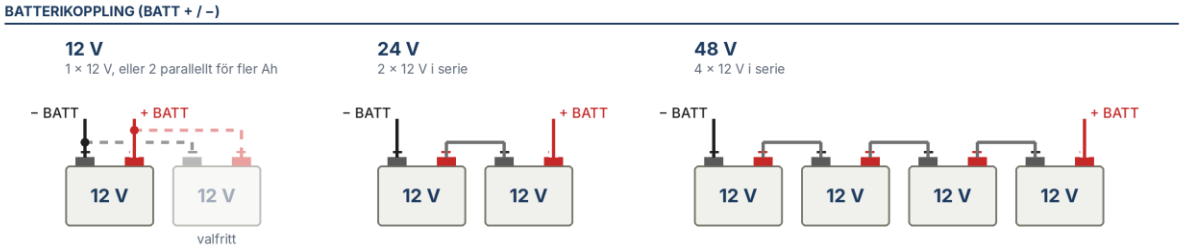
F **Keyholes**
For wall mounting.

G **Space for alarm board SM102**
Option. Mounted on pin header W1 – see section 3.

H **Accessory mountings**
L-profile for fuse boards SPM900-L, SPM908-L and DC/DC converters SPM902-L, SPM904-L, SPM906-L.

Block diagram and battery connection





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2 INSTALLATION

> ⚠ **WARNING**
>
> **Work may only be carried out by qualified personnel.** Hazardous voltage is present in the unit even when the internal fuses are switched off. Use insulated tools.

2.1 Before installation

- Check that the delivery is complete, that the enclosure and circuit board have not been damaged in transport and that the circuit boards are securely fixed.
- Check that the correct variant has been delivered, e.g. SM40 24V 5A Large = 24 V, 5 A, size Large.
- Check that the batteries have the correct voltage and capacity and fit in the enclosure.

2.2 Mounting

- Mount the unit on the wall with free space around it, using the enclosure hole patterns.
- Do not cover the enclosure ventilation.
- Cables enter through pre-drilled holes (Ø 21 mm) and knockouts (Ø 20.5 mm) in the enclosure.

SIZE	DIMENSIONS H×W×D (MM)	HOLE SPACING W×H (MM)
Medium	210 × 310 × 85	270 × 146
Large	300 × 360 × 115	320 × 236
XL	320 × 420 × 180	370 × 246

Hole spacing = centre-to-centre distance. Two keyholes at the top edge for hanging, two round holes at the bottom edge for fixing.

2.3 Connection

Numbers in brackets refer to the circuit board picture in section 3. Follow the order: **mains → batteries → load.**

1. First connect 230 V AC **(1)**. The mains voltage LED lights up.
2. Check that the output voltage is correct (see table below).
3. If necessary, adjust the output voltage with the V ADJ potentiometer on the power supply **(C, see section 1)**.
4. If the LED does not light up: check the input voltage and the input fuse **(6)**.
5. Connect the batteries **(4)** – 12 V: one battery, or two in parallel for more Ah. 24 V and 48 V: in series. Check the polarity. **Never short-circuit the battery terminals – batteries are always electrochemically active.**
6. Connect the load to OUT1 and/or OUT2 **(2)**.
7. If required, connect the alarm relay **(3)** to a higher-level alarm or monitoring system.
8. If the output fuses trip **(7)**: check the wiring and the connected equipment.

2.4 Checking the output voltage

VARIANT	NOMINAL OUTPUT VOLTAGE	FACTORY-SET OUTPUT VOLTAGE	ADJUSTMENT RANGE (POT.)
SM40 12V (all variants)	12 V DC	13.7 V DC	10.2–13.8 V DC
SM40 24V (all variants)	24 V DC	27.4 V DC	24–29 V DC
SM40 48V (all variants)	48 V DC	54.6 V DC	40.8–55.2 V DC

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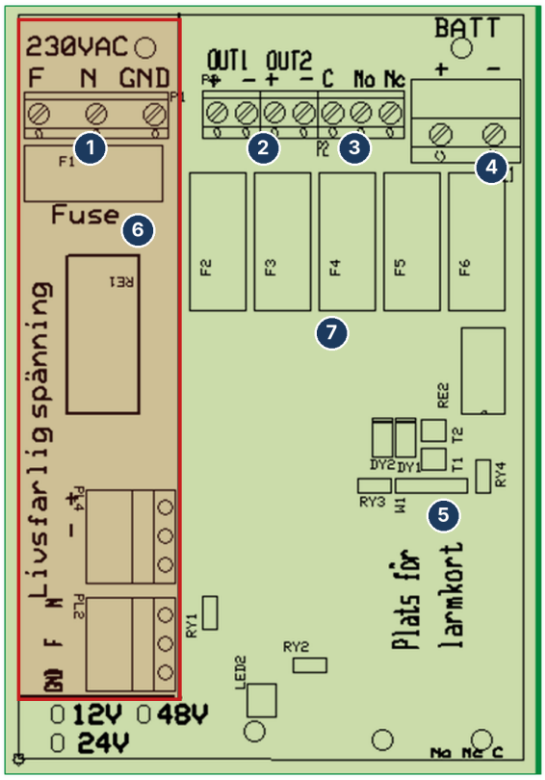
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3 CONNECTIONS



■ Red area = lethal voltage

1 **Mains voltage 230 V AC**
L · N · PE. Input voltage 230 V AC (180–264 V), 47–62 Hz.

2 **Load outputs OUT1 and OUT2**
The stated current applies to the total load, not per output.

3 **Mains failure alarm relay (C · No · Nc)**
Changeover, max **8 A**. Mains operation: C–Nc closed. Battery operation: C–No closed.

4 **Battery input BATT + / –**
12 V: 1 battery or 2 in parallel. 24 V and 48 V: series connection.

5 **Space for alarm board SM102 (option)**
Mounted on pin header W1. Changeover relay: normal operation C–Nc, alarm state C–No.

6 **Input fuse (Fuse F1)**
Protects the mains side.

7 **Fuses F2–F6**
Protect the load and battery circuits.

Model	Mains fuse	Load fuse	Battery fuse
12V 3A	1 A glass	3.15 A glass	4 A glass
12V 5A	1 A glass	5 A glass	6.3 A glass
12V 10A	2 A glass	10 A glass	12.5 A glass
24V 1A	1 A glass	1 A glass	2 A glass
24V 3A	1 A glass	3.15 A glass	4 A glass
24V 5A	2 A glass	5 A glass	6.3 A glass
24 10A	2 A glass	10 A glass	12.5 A glass
48V 5A	2 A glass	5 A glass	6.3 A glass

4 FUNCTION, INDICATION AND ALARMS

A green LED on the front indicates that mains voltage is present. All SM40 units have a changeover alarm relay for mains failure. With alarm board SM102, a relay for battery monitoring is added.

RELAY	NORMAL STATE	ALARM STATE
Mains failure alarm relay (3) – standard, max 8 A	Mains operation: C–Nc closed	Battery operation: C–No closed
Battery alarm – SM102 (option)	Normal operation: C–Nc closed	Alarm state: C–No closed

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5 TROUBLESHOOTING

PROBLEM	ACTION
The mains voltage LED does not light up	Check the input voltage – 230 V AC (180–264 V), 47–62 Hz – and the input fuse (6).
Incorrect output voltage	Adjust the output voltage with the potentiometer on the power supply. See table in section 2.4.
The output fuses trip	Check the wiring and the connected equipment. Check that the total load does not exceed the rated current.
The unit does not switch over to battery operation	Check that the battery connections are correct. Measure the voltage of each battery individually; the voltages should be the same. Check that the charging voltage is correct, 27.4 V.
Battery fault LED flashes	Check that the battery connections are correct. If the connections are OK, the batteries are faulty and need to be replaced. After replacement, the alarm must be reset with a button on alarm board SM102. (Does not apply to SM102HV, which resets automatically.)
Battery fault alarm relay does not switch	SM102 measures the batteries in 15-minute cycles; the relay switches after a measurement. If the relay has not switched after 15 minutes, contact our support for help.

6 MAINTENANCE

- Maintenance and service may only be carried out by qualified personnel experienced in AC and DC.
- Check the batteries and connections once a year.
- Function test: disconnect the mains voltage and check that the load is supplied from the batteries and that the mains failure alarm relay is activated. Restore the mains voltage and check that the LED lights up and the alarm resets.
- Replace the batteries according to the battery manufacturer's recommendation, normally after 3–5 years. Always replace all batteries at the same time.
- Keep the ventilation openings free from dust and objects.

7 WARRANTY AND RECYCLING

- **Warranty:** ... years in accordance with Swansons Telemekanik's general terms of delivery.
- **Recycling:** The product is electronic waste and must be taken to electronics recycling. Batteries must be taken to a battery collection point. Do not dispose of with household waste.

Support and service

If in any doubt about the system's design, function, components or safety – contact Swansons Telemekanik on **0303-746 320** or **info@swtm.se**.

Service and maintenance may only be carried out by authorised personnel experienced in AC and DC.

8 TECHNICAL DATA

Input voltage	**230 V AC (180–264 V), 47–62 Hz**
Output voltage, nominal	**12-24-48 V DC**
Output voltage, factory setting	**13.7 / 27.4 / 54.6 V DC** Adjustable with potentiometer on the power supply
Rated current	**1-3-5-10 A** Refers to the total load for OUT1 and OUT2 together
Efficiency	**30–300 W**
Efficiency	**86–95 % (depending on model)**
Battery voltage	**12-24-48 V**
Battery space (internal)	**Max 9 / 20 / 45 Ah per battery depending on size** 12 V: 1–2 pcs · 24 V: 2 pcs · 48 V: 4 pcs. Batteries are not included in the delivery
Battery connection	**12 V: 1 pc (or 2 in parallel) · 24 V: 2 pcs in series · 48 V: 4 pcs in series**
Protection	**Overload, short circuit and deep discharge** Mains, load and battery are fused separately
Indication	**Green LED on the front: mains voltage**
Alarm	**Changeover relay for mains failure** Max relay contact load: **8 A** · Option SM102: changeover relay for battery monitoring
Accessories	**Alarm board SM102 (5256993) · Tamper switch SAB40 (5256991)** Fuse boards SPM900-L, SPM908-L and DC/DC converters SPM902-L, SPM904-L, SPM906-L – see SM40 product sheet
Mounting	**Wall mounting**
Enclosure rating	**IP20**
Approvals	**CE marked – EN 61000-6-3:2001, EN 61000-6-2:2005** RoHS, REACH

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