AEC

MODULAR LITHIUM BATTERY CABINET · LIFEPO4 · FOR AEC IST6

# L6 LITHIUM 40 · 50 · 100 Ah modules

## Quick Installation Guide

From delivery to a charged battery on the UPS: place the cabinets, fit the modules, wire power, supply, EPO and communication, test, and make the first-start touchscreen settings. Qualified personnel only; an engineer approved by AEC commissions the system.



L6-CAB-10x50LI · L6-CAB-20x50LI · L6-CAB-EMPTY · L6-MOD-50LI · L6-COMBINER · 40 Ah module · 100 Ah module

AEC-QG-L6-EMEA · REV. A · NOVEMBER 2026

## 1 Safety first

IMPORTANT SAFETY INSTRUCTIONS — SAVE THESE INSTRUCTIONS. The L6 system serves the AEC IST6 modular UPS; do not connect it to any other UPS without the written approval of AEC.

**⚠ DANGER**

- **Lethal DC voltage.** The cabinet output carries up to 480 V DC (600 V DC maximum). Do not touch terminals or conductors connected to the battery positive or negative.
- Never connect or disconnect live wires. Before any wiring, open both battery breakers of every cabinet and set every module knob to OFF. Residual charge can remain: wait at least 10 minutes and measure the voltage at the terminals.

**⚠ WARNING**

- Only qualified personnel install and wire the L6 system, to IEC 60364 and the local regulations. Install it only on concrete or another non-combustible floor.
- **High leakage current:** connect the cabinet to ground (PE) before any other electrical connection.
- Remove watches, rings and other metal objects. Use insulated tools; wear rubber gloves and safety shoes.
- Never short the positive and negative of the output. Do not touch two terminals or two battery conductors at the same time.
- **Do not drill the cabinet:** metal chips short-circuit the circuit boards.
- In case of fire, use an extinguisher suitable for lithium-ion battery systems.

## 2 Check the delivery and the site

The cabinet comes in a honeycomb carton on a wooden pallet; each module comes in its own carton.

1. Check the packaging for transport damage. If it is damaged, tell the carrier at once.
2. Remove the outer packaging, the foam pads and the plastic bag. Take out the accessories.
3. Check the accessories against the packing list (Table 2-1). Report missing or wrong items to AEC.

TABLE 2-1 Contents of the cabinet package

| Item | Qty | Note |
|---|---|---|
| L6 cabinet — master (touchscreen) or slave (indicator panel) | 1 | One master per system, up to 14 slaves |
| Network cable, 4.5 m · RJ45 connectors · door keys | 1 · 2 · 2 | |
| Cabinet communication cable · cabinet power cable | 1 · 1 | Supplied with slave cabinets |
| Nuts, spring washers, flat washers M10 | 6 · 6 · 12 | Floor anchoring |
| Bolts M10 × 30 | 6 | Cabinet-to-cabinet joining |
| Screws M6 × 16 (two types) · bottom plates (side, rear, front) | 60 · 8 · 2/1/1 | Panels and modules · base covers |

**The site.**

- Indoors, out of direct sunlight: 0–40 °C, 5–95 % relative humidity, non-condensing; up to 4,000 m, derated above 2,000 m. Best battery temperature 20–30 °C.
- No flammable or explosive gas, no water, heat sources, dust, corrosive gases, salt air or conductive dust.
- Clearances (Figure 2-1): at least 800 mm in front and behind, 500 mm above; also the working space required by IEC 60364 and the local regulations in front. Air enters at the front and leaves at the rear.
- A floor that carries the cabinets (Table 2-2).

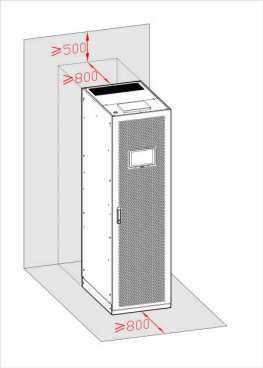



FIGURE 2-1 Minimum clearances, in mm

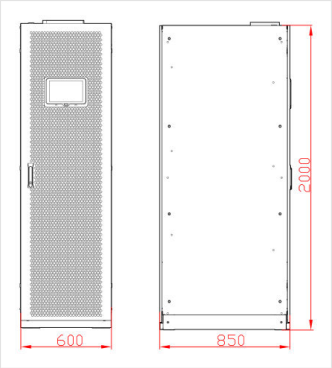



FIGURE 2-2 Cabinet size, mm (600 × 850 × 2,000)

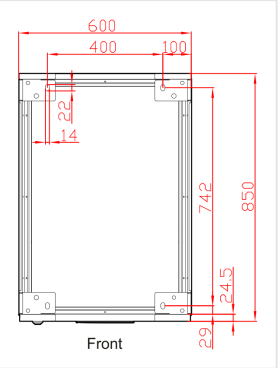



FIGURE 2-3 Floor fixing holes, mm, seen from above

TABLE 2-2 Weights

| Item | Weight |
|---|---|
| L6-CAB-EMPTY · L6-CAB-10×50LI · L6-CAB-20×50LI | 244.9 kg · 615 kg · 985 kg |
| L6-40 cabinet, 20 × 40 Ah · L6-100 cabinet, 12 × 100 Ah | 965 ± 20 kg · 810 ± 24 kg |
| L6-MOD-50LI · 40 Ah module · 100 Ah module | 37 ± 1 kg · 36 ± 1 kg · 52 ± 1 kg |
| L6-COMBINER (400 × 850 × 2,000 mm) | 140 kg |

## 3 Place the cabinets

**⚠ CAUTION**

Move the packed cabinet with an electric forklift or a manual pallet jack, the arms inserted from the side, the center of gravity between the arms and the arms beyond the far side of the pallet. Keep the cabinet upright and balanced.

1. Unscrew the bolts that fix the cabinet to the pallet (Figure 3-1).
2. Drill 4 holes of 14 mm in the floor at the fixing holes of the cabinet (Figure 2-3).

3. Fit the expansion anchors (Figure 3-2): the sleeve fully in the hole, the bolts 30–50 mm above the floor.
4. Move the cabinet onto the anchors. Fit the spring washers and flat washers and tighten the nuts.
5. **One cabinet:** refit the bottom plates of the cabinet.
6. **Several cabinets:** place and anchor each cabinet the same way in the planned layout — master, slaves, combiner (Figure 3-3); align the fronts and rears. Open the doors, remove the rear plates and bolt each pair of adjacent cabinets together with 6 bolts, 3 at the front and 3 at the rear (Figure 3-4). The L6-COMBINER is anchored and joined the same way. Then refit the rear and bottom plates.

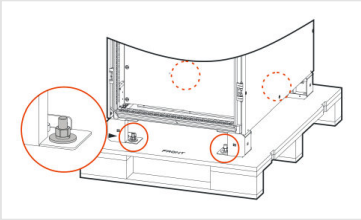


FIGURE 3-1 Pallet bolts (circled)

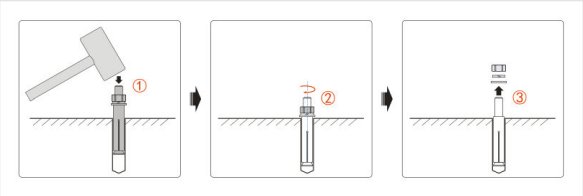



FIGURE 3-2 Fitting an expansion anchor — drill, drive in the sleeve, fit the bolt

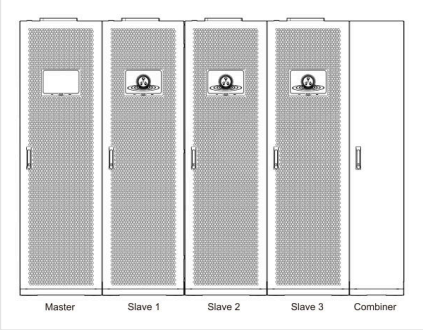



FIGURE 3-3 Layout — master, slaves 1 to 3, combiner

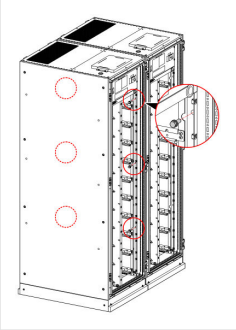
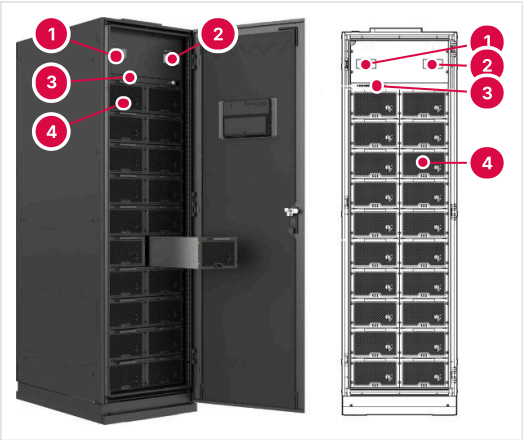


FIGURE 3-4 Joining bolts between two cabinets (circled)

## 4 Fit the battery modules

A module weighs 37 kg (40 Ah: 36 kg; 100 Ah: 52 kg): carry it with two people. Above 1 m from the floor, use a lifting platform.

1. Open the front door. Check that both battery breakers are open (Figure 4-1, items 1 and 2).
2. Take the module out of its carton. Check that the knob is at **OFF** (unlocked symbol, Figure 4-2).
3. Slide the module into the lowest free slot (Figure 4-3). Do not force it.
4. Fix the module with its screws (Figure 4-4).
5. Repeat from the bottom up (in a 100 Ah cabinet, one column of 12). Fit a blank panel in every empty slot.
6. Leave every knob at OFF until the power-on test (Step 7).




1. Battery breaker 1
2. Battery breaker 2
3. Control box: AC IN/OUT, EPO, LAN, RS485
4. Battery modules, 2 columns × 10 rows

FIGURE 4-1 Cabinet with the door open (left, master) and layout of a full cabinet (right)

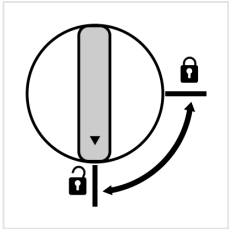


FIGURE 4-2 Knob at OFF (unlocked). ON (locked): the module starts and its output is live

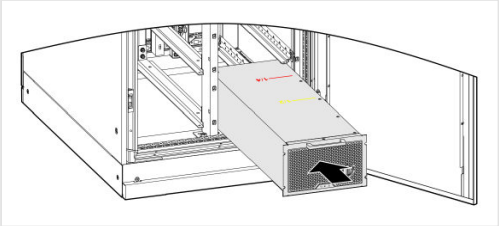


FIGURE 4-3 Sliding a module into its slot

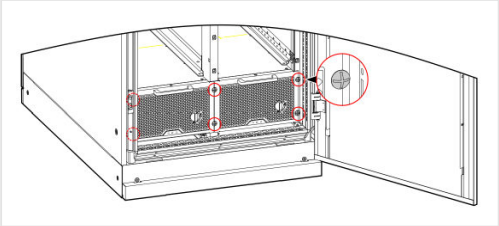


FIGURE 4-4 Fixing the module with its screws (circled)

## 5 Wire the DC power

All cables enter from the top. Connect the N (midline) busbar only if the IST6 battery input has a neutral and the L6 is set to ±240 V with midline; otherwise connect only +, − and ground.

The DC cables are supplied by the customer: copper. AEC recommended sizes for one cabinet, cables of about 5 m: L6-40 and L6-50 — +, − (and N) each 2 × 120 mm² (lug DT120, also the busbar maximum), PE 1 × 50 mm² (DT50); L6-100 — +, − (and N) each 1 × 50 mm² (DT50, busbar maximum 2 × 95 mm²), PE 1 × 25 mm² (DT25). Combiner-to-UPS cables: L6 user manual, section Cables and terminals.

**⚠ *WARNING · Cable sizing***

A qualified electrician sizes and checks every DC conductor for the actual installation to IEC 60364-5-52 and the local regulations. For cables longer than 5 m, ask AEC for the cable size.

**⚠ *CAUTION***

The L6 output system (240 V, ±240 V with midline, or 480 V DC) must match the battery input of the IST6. AEC configures it for each system: check it on the system documents before you wire.

### One cabinet

1. Open the front door and remove the top plate (wiring plate) (Figure 5-1).
2. Lead the +, − and PE cables through the foam of the top entry.
3. Connect **PE first** to the ground bar, then + and − (and N, only as stated above) to their busbars (Figure 5-2, Figure 5-4).

4. Check the polarity with a voltmeter before you connect the UPS end.
5. Connect the other end to the battery input of the IST6: + to battery +, – to battery –, N to the battery neutral only as stated above, PE to the ground bar (Figure 5-5; IST6 user manual).

**Several cabinets — through the L6-COMBINER**

1. Connect the +, –, (N) and PE cables of every cabinet as for one cabinet, steps 1 to 4.
2. Lead the other end of each cabinet's cables through the top of the combiner to the **4 outer holes** of the busbars: + to +, – to –, (N to N), PE to the ground bar (Figure 5-3).
3. Connect the combiner to the battery terminals of the IST6 from the **2 middle holes**, through the top or the bottom of the combiner (Figure 5-6). Each busbar takes at most 4 cables of 240 mm².

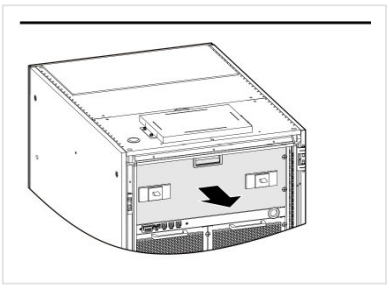
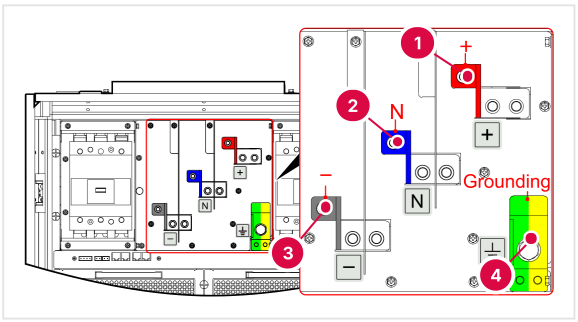


FIGURE 5-1 Removing the top plate, door open




1. Busbar + (positive)
2. Busbar N (midline): only for an IST6 battery input with neutral
3. Busbar – (negative)
4. Ground bar (PE)

FIGURE 5-2 DC output terminals at the top of the cabinet

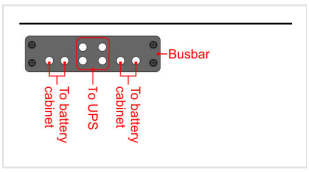
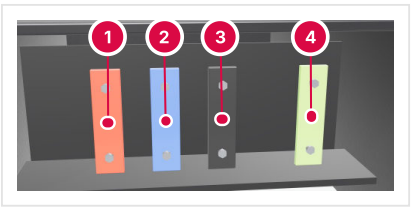



FIGURE 5-3 Combiner busbar: 4 outer holes from the cabinets, 2 middle holes to the UPS




1. Busbar +
2. Busbar N: only with a midline
3. Busbar –
4. Ground bar (PE)

FIGURE 5-4 Illustration: DC output busbars seen from the front, wiring plate removed — bolt size and torque: ask AEC

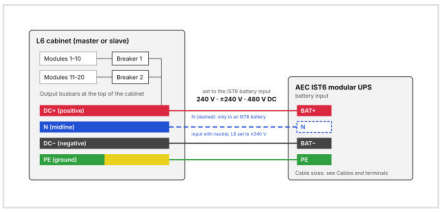



FIGURE 5-5 One L6 cabinet to the AEC IST6

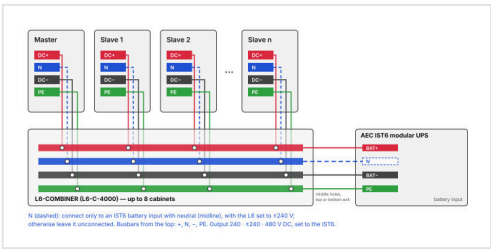



FIGURE 5-6 Several L6 cabinets through the L6-COMBINER to the AEC IST6

## 6 Wire the supply, EPO and communication

Connect the cables to the control box of each cabinet (Figure 6-1).

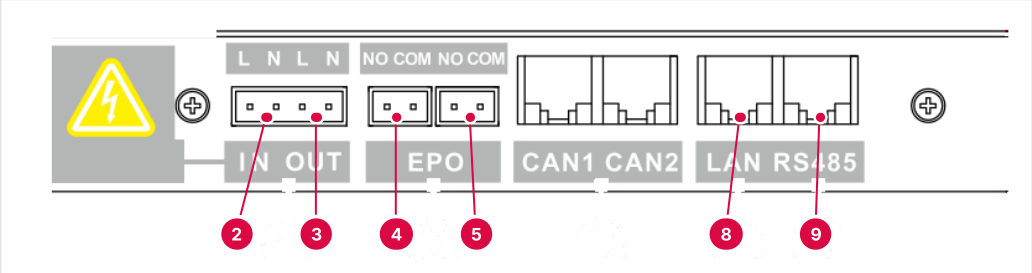
**One cabinet**

1. **Auxiliary supply** to AC IN (L, N): single-phase 160–300 V AC (for example 220–230 V AC) from a circuit with its own overcurrent protection. It powers the touchscreen and the BMS.
2. **EPO** to the left EPO terminal (NO, COM): an external latching switch with a normally open contact, rated 12 V DC and more than 2 A, supplied by the user.

3. **RS485** (pins 1 RS485+ and 2 RS485−) to the BMS port of the BMS expansion card of the IST6, with an RJ45 cable.
4. **LAN** (optional) to the monitoring computer. Refit the top plate and close the door.

**Several cabinets** (Figure 6-2)

1. **Auxiliary supply** to AC IN of the master. Link AC OUT of each cabinet to AC IN of the next with the cabinet power cables.
2. **EPO** switch to the left EPO terminal of the master. Link the right EPO terminal of each cabinet to the left EPO terminal of the next (NO to NO, COM to COM).
3. **Network:** install the networking device on the master (user manual, section Installing the networking device) and connect the LAN port of every slave to it — up to 7 cabinets per device; above 7, a second device on a slave.
4. **RS485** from the master only, to the BMS expansion card of the IST6.




2. AC IN (L, N): auxiliary supply in
3. AC OUT (L, N): to the next cabinet
4. EPO left (NO, COM): EPO switch, or link from the previous cabinet
5. EPO right (NO, COM): link to the next cabinet
8. LAN (RJ45): network
9. RS485 (RJ45): to the UPS

FIGURE 6-1 Ports of the control box

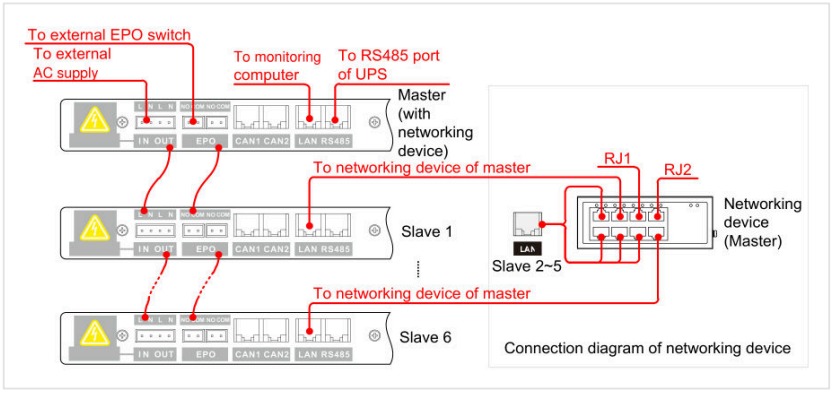



FIGURE 6-2 Supply, EPO, network and RS485 connections for 2 to 7 cabinets

## 7 Test and start with the UPS

Do the power-on test before the first start and after a long time unused. Start for daily use only after the test has passed.

Check first: cable colors, tight connections, polarity + to + and − to −, labels, neat wiring to IEC 60364 and the local regulations, no objects left in the cabinets. The UPS load must not exceed 90 % of the rated output power of the L6 system (200 kW per full 40 Ah or 50 Ah cabinet, 60 kW per full 100 Ah cabinet). With several cabinets, make the touchscreen settings of Step 8 (SBMU addresses and module quantities) before the test.

**Power-on test of the L6 system**

1. Connect the auxiliary supply (AC IN of the master). After about 30 seconds the touchscreen has started; the yellow indicator of each slave lights.
2. Check that all battery breakers are open in every cabinet.

3. Turn the knob of every module to ON (locked symbol). The three indicators flash together (self-test); after about 10 seconds the green indicator flashes once a second (discharge mode).
4. On the touchscreen, check that the system output voltage is **490 ± 5 V DC**, and that the blue indicator of each slave is on.

**Power-on test with the UPS**

1. Wait until the voltage on the touchscreen is below 20 V DC. Close all battery breakers of the L6 cabinets.
2. Start the IST6 from the battery (battery cold start, IST6 user manual). The UPS starts from the battery and gives a normal AC output.
3. When the UPS output is steady, connect the load — no larger than the rated output of the L6 system. Check on the touchscreen that the modules share the load.
4. Close the AC input breaker of the UPS. The UPS moves to mains power and every module goes to charge: its green indicator stays on.

> **i NOTE** **First charge.** The L6 system can be used while it charges, but if the mains fails during this first charge the runtime can be shorter than rated.

**Daily power on.** Close all battery breakers, then turn every module knob to ON. **Power down.** Switch the UPS off first; open all battery breakers; turn every knob to OFF. **EPO.** Pressing the EPO switch switches every module off and the touchscreen shows **EPO protection**: the UPS on battery loses its battery. To recover, release the switch, then open the battery breakers, wait 5 seconds and close them again (L6 user manual, section Recovery after an EPO).

## 8 First-start touchscreen settings

These settings need the administrator login, reserved to AEC service: an AEC engineer makes them at commissioning, or guides you through them (+39 393 080 5211). Power the communication module of every cabinet first.

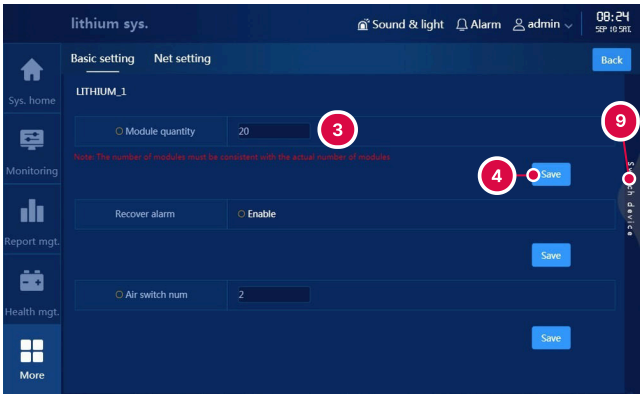
**Charge current.** Work out **Max. cell chg. cur.** = (530 × $I_{UPS}$ × 92 %) ÷ (N × 61) ≈ **8 × $I_{UPS}$ ÷ N**, with $I_{UPS}$ the maximum charge current of the UPS (ask AEC service for the value of your IST6) and N the number of modules of the whole system. Example: 80 A charger, 40 modules → 16 A. The same value in every cabinet. The value is per module: never set it above 40 A (default 20 A).

**One cabinet** (its SBMU is configured at the factory)

1. **More › Sys. setting › Basic setting:** set the date and time, or enable **NTP Synchronize**. Tap **Save**.
2. **More › SBMU setting:** type the **Module quantity** fitted in the cabinet and tap the **Save** beside it (Figure 8-1).
3. **More › PBMU setting:** type **Max. cell chg. cur.** and tap its **Save**; tap **Take midline** or **Without midline**, as the DC output is wired to the IST6, and tap the second **Save** (Figure 8-2).
4. **Link to the UPS — More › Sys. setting › Northbound setting: RTU Func. setting** = **Open**, **Serial port** = **COM4**, **RTU Address** = **48**; tap **Save** (Figure 8-3). On the IST6, AEC service enables the BMS communication.

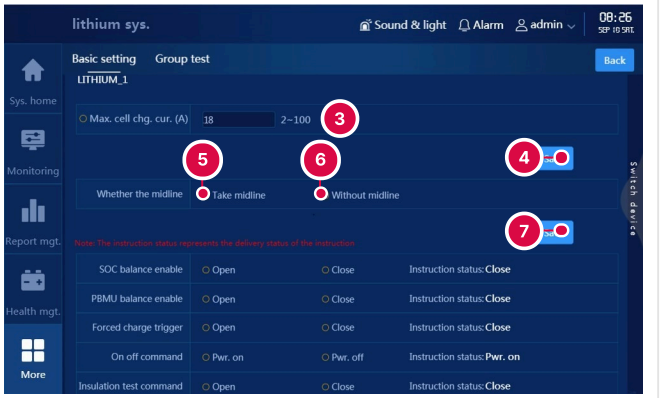
**Several cabinets** — master SBMU 192.168.0.101; every slave leaves the factory at 192.168.0.102.

1. **More › Device mgt. › Add:** add each slave — TCP/Modbus, the module protocol, communication address 1, port 502, its location number, and IP 192.168.0.102 for slave 1, .103 for slave 2, and so on. Tap **Save** each time.
2. **Three cabinets or more:** connect only one slave to the network at a time, from slave 2 on. Select **slave 1** with **SBMU setting › Switch device**, open **Net setting**, type the new address of the connected slave (192.168.0.103 ...) and tap **Save**. Then reconnect all slaves: their areas on the home page turn from gray to yellow or red.
3. Set the date and time, then the **Module quantity** of every cabinet (**Switch device** between cabinets).
4. Set **Max. cell chg. cur.** (N = all modules of all cabinets) and the midline in every cabinet.
5. Set the link to the UPS as for one cabinet, step 4.



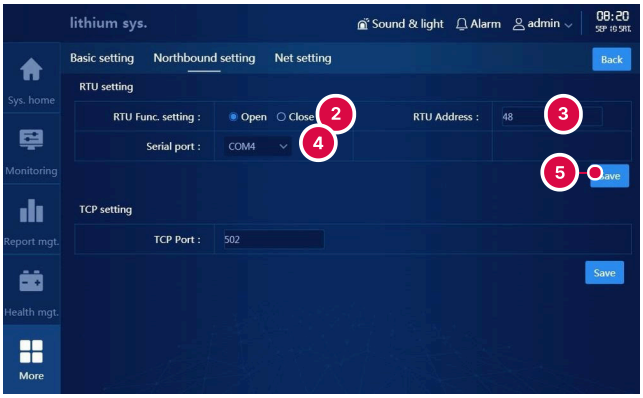

3 Module quantity
4 Save (module quantity)
9 Switch device

FIGURE 8-1 SBMU setting — Basic setting




3 Max. cell chg. cur. (A)
4 Save (charge current)
5 Take midline
6 Without midline
7 Save (midline)

FIGURE 8-2 PBMU setting — Basic setting




2 RTU Func. setting: Open
3 RTU Address: 48
4 Serial port: COM4
5 Save

FIGURE 8-3 Sys. setting — Northbound setting

**⚠ CAUTION**

The module quantity must equal the modules really fitted: set it again each time modules are added or removed. A wrong network setting cuts an SBMU off from the touchscreen.

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Options, maintenance, troubleshooting and every detail: L6 Lithium Battery Cabinet User Manual, AEC-UM-L6-EMEA, and L6 Lithium Touchscreen (MBMU) User Manual, AEC-UM-L6T-EMEA (aecups.com · AEC app › Support › Downloads).