

SAFT

URJa

Ni-Cd Pocket Plate battery range

KPL, KPM, KPH types

Installation and operating instructions



Important recommendations

- **WARNING: Risk of fire, explosion, or burns. Do not disassemble, heat above 70°C, or incinerate**
- **Never smoke while performing any operation on the battery.**
- **For protection, wear rubber gloves, long sleeves and appropriate splash goggles or face shield.**
- **The electrolyte is harmful to skin and eyes. In the event of contact with skin or eyes, wash immediately with plenty of water. If eyes are affected, flush with water, and obtain immediate medical attention.**
- **Remove all rings, watches and other items with metal parts before working on the battery.**
- **Use insulated tools.**
- **Avoid static electricity and take measurements for protection against electric shocks.**
- **Discharge any possible static electricity from clothing and/or tools by touching an earth-connected part "ground" before working on the battery.**
- **Ventilation, in accordance with the IEC 62485-2 and EN 50272-2 standard, is mandatory during commissioning and operation.**

1. Receiving the shipment

Do not overturn the package. Upon receipt of the goods, any transportation damage, electrolyte spillage or irregularities must be reported to the carrier and to Saft.

- If the cells are shipped filled and charged, the cells are ready for assembly.

- Storage of cells must not exceed the maximum storage time indicated in section «2. Storage»

2. Storage

Store the battery indoors in a dry, clean, cool location (0°C to +30°C / +32°F to +86°F) and well ventilated space.

Do not store in direct sunlight or expose to excessive heat.

Cells filled and charged

If cells are stored filled, they must be fully charged prior to storage.

Cells may be stored filled and charged for a period not exceeding 12 months from date of dispatch from factory.

Storage of a filled battery at temperatures above +30°C (+86°F) can result in permanent change and loss of product performance, depending on the duration of the storage above the maximum recommended temperature.

Cells empty and discharged

- Saft recommends to store cells empty and discharged.
- Cells can be stored like this for many years.

3. Installation

3.1. Location

Install the battery in a dry and clean room. Avoid direct sunlight and heat.

The battery will give the best performance when the ambient temperature is between +10°C to +30°C (+50°F to +86°F).

3.2 Mounting

Verify that cells are correctly interconnected with the appropriate polarity and with the connectors are correctly torque.

The connecting lugs to the battery terminals should be nickel plated.

Recommended torques values for terminal bolts are:

- M10 = 11-15 Nm (97 - 133 lbf.in)
- M20 = 31-33 Nm (274 - 292 lbf.in)

The connectors and terminals should be corrosion-protected by coating with a thin layer of anti-corrosion oil or DW33 / DW330.

3.3. Ventilation

During charging, the battery is emitting gases (oxygen and hydrogen mixture). Ventilation of the battery room, in accordance with the IEC 62485-2 or EN 50272-2 standard, must be provided.

Note that special regulations for ventilation may be valid in your area depending on the application.

3.4. Electrolyte

► Cells delivered filled and charged:

Check for spilling.

If spilling is noticed, the spilled cells must be refilled with TYPE-2 (density :1.22 ± 0.01) electrolyte to the same level as the other cells in the string.

► Cells delivered empty and discharged:

The electrolyte to be used is TYPE-2. Before filling, make sure the electrolyte temperature is not more than +30°C (+86°F). Mix the electrolyte well to ensure consistent density. Fill the cells about 10 to 15 mm below the Maximum level mark in the cell container with Type-2 electrolyte. Once all the cells in a battery has been filled with correct electrolyte, it is recommended to start the commissioning charge within a span to 12 hours from first filling, according to section 4.

4. Commissioning

Verify that the vents are closed and ventilation in accordance with the IEC62485-2 or EN 50272-2 standard, is provided during this operation.

A good commissioning is important and mandatory. Charge at constant current is preferable.

Prior and during commissioning charge, record all data like, individual cell voltage, battery voltage, cell temperature and charging current is mandatory in the commissioning report.

4.1. Constant current charge

If the current limit is lower than rated 0.2C₅A, charge for a proportionally longer time.

► For cells filled on location:

- a) Charge for 10 h at 0.2 C₅ A recommended
- b) Discharge at 0.2 C₅ A to 1.0 V/cell
- c) Charge for 10 h at 0.2 C₅ A recommended.

Note: At the end of the charge, the cell voltage may reach the level of 1.85 V per cell, thus the charger shall be able to supply such voltage. When the charger maximum voltage setting is too low to supply constant current charging, divide the battery into two parts to be charged individually.

SAFT

URJa

Ni-Cd Pocket Plate battery range



4.2. Constant voltage charge

For cells filled and charged by the factory and stored less than 6 months:

Charge for 27 h at 1.65 V/cell, current limited to 0.2 C₅ A or charge for 52 h at 1.55 V/cell, current limited to 0.2 C₅ A.

For cells filled on location or for filled cells which have been stored more than 6 months:

- Charge for 33 h at 1.65 V/cell with current limited to 0.2 C₅ A
- Discharge at 0.2 C₅ A to 1.0 V/cell
- Charge for 33 h at 1.65 V/cell with current limited to 0.2 C₅ A or charge for 52 h at 1.55 V/cell current limited to 0.2 C₅ A

The battery container temperature is to be monitored during charge. If the temperature exceeds + 45°C (+113°F) during charging, then it must be stopped to reduce the temperature. The charging can be resumed when battery container temperature drops below + 40°C (+ 104°F).

4.3. Electrolyte adjustment after commissioning

► For cells filled on location:

- Check the electrolyte level and adjust it to the maximum level mark (upper) by adding: electrolyte.
The battery is ready for use.

4.4. Capacity Test at Site

► Rated Capacity Testing :

- When full battery performance is required for capacity test purposes, the cells shall be charged in accordance with IEC 60623 section 7 (7.2.2 & 7.3.2).
- It is recommended to follow defined test protocol by the manufacturer to perform such capacity test at site.
- After commissioning, the battery shall be charged permanently according to section 5

5. Charging in service

Maintaining the recommended battery charging voltage is very important to insure long life to the battery. The battery charger must be set to the recommended charging values.

5.1. Continuous parallel operation, with occasional battery discharge.

Recommended charging voltage (+20°C to +25°C / +68°F to +77°F):

► For two level charge:

- Float level
=1.40 to 1.42 for KPL, KPM & KPH cells
 - High level (Boost)
=1.47 - 1.70 V/cell for KPL cells
=1.46 - 1.70 V/cell for KPM cells
=1.45 - 1.70 V/cell for KPH cells.
- A high voltage will increase the speed and efficiency of the recharging.

► For single level charge (Float and Boost charge are not available):

- 1.47 - 1.50 V/cell for KPL cells
- 1.46 - 1.49 V/cell for KPM cells
- 1.45 - 1.48 V/cell for KPH cells.

► For Starting Application:

Recommended charging voltage 1.50-1.55 V/cell.

5.2. Buffer operation

Where the load exceeds the charger rating.
Recommended charging voltage (+20°C to +25°C / +68°F to +77°F):
1.50 - 1.60 V/cell.

6. Preventive maintenance

- Keep the batteries clean using only water. Do not use a wire brush or solvents of any kind. Vent plugs can be rinsed in clean water if necessary.
- Check the charging voltage. It is important that the recommended charging.voltag remains unchanged. The charging voltage should be checked and recorded at least once yearly. If a cell float voltage is found below 1.35 V, high-rate charge is recommended to apply to the cell concerned.

- Check visually the electrolyte level. Never let the level fall below the minimum level mark (lower). Use only distilled or deionized water to top-up. Experience will tell the time interval between topping-up.

Note: Once the battery has been filled with the correct electrolyte either at the battery factory or during the battery commissioning, there is no need to check the electrolyte density periodically. Interpretation of density measurements is difficult and could be misleading.

- The connectors and terminal bolts should be corrosion protected by coating with a thin layer of anti-corrosion oil or DW33 / DW330
- High water consumption is usually caused by high improper voltage setting of the charger.

Note: that all these maintenance recommendations followed the IEEE 1106 standard 'Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications'.

6.1 Changing Electrolyte

In most stationary battery applications, the electrolyte will retain its effectiveness for the life of the battery. However, under special battery operating conditions, if the electrolyte is found to be carbonated, the battery performance can be restored by replacing the electrolyte. The electrolyte type to be used for replacement in these cells is: TYPE-2. Refer to "Electrolyte Instructions".

7. Environment

To protect the environment all used batteries must be recycled. Contact your local Saft representative for further information.

Saft India Pvt Ltd

Plot No 10/1A,1B & 1 C,
Abbanakuppe, Bidadi Industrial Area,
Bangalore- 562109, Karnataka, India
Mobile No. +91 74067 08888
E-mail: marketing@saftbatteries.com
Customer care: 1800 26 60079 (Toll Fee)



Document N°22169-1122-2
Edition: November 2022

Data in this document is subject to change without notice and becomes contractual only after written confirmation.
Photo credits: Saft, Conception: Cap Interactif agency
- 1063 © Saft