Securing command of electrical switches and protection breaker in HV substations

A/ Features & norms

The unit chosen must secure electrically the actuation of the switches and breaker located in the HV substation, public or private.

The unit must be compatible with the switches and breakers from the brand … *(Schneider Electric)* or similar, with command coils operated with DC current.

In order to increase the reliability of the installation, power output of the unit can be connected in parallel. Coupling diods used for paralleling the units will be in a separate cabinet, so the swap can be made without opening the circuit.

For a reduced footprint, the cabinet size, whatever the voltage output chosen, must not exceed 420mm x 420mm x 250mm

The base, as well as the hood of the unit must be made of metal sheet with a minimum of 1,2mm thickness, protected by an epoxy coating.

The unit must be compliant to the NFC 13-100 (April 2015) norm.
(« Postes de livraison alimentés par un réseau de distribution publique HTA »)

B/ User interface

The unit must be equipped with a display, LCD technology with integrated backlight, in order to make operations easier, and indicate in clear text alarms and service information's.

The screen must display all information's at least in English and French.

Basic information's available through the display should be at least:

- V Batt : battery voltage
- I Batt : battery current
- V Out : output voltage
- I Out : Total output current

Each of these values must be displayed with minimum two digits after the decimal point.

In order to navigate the menus, the unit must be equipped with two buttons on the front panel.

The relaunch/recovery button must be backlit, for an immediate identification during a blackout situation.

To synthetize and have a fast status update, the unit will be equipped with 2 LEDs on the front panel.
Both LEDs will have three possible colours each and will allow using a table to know the exact status of the unit.

To interface with other elements in the substation, the unit will be equipped with minimum 3 dry contacts outputs.
These contacts will be fail-safe (open in case of failure) and will relay information's to other systems.

C/ Installation, Operation & Service

The unit will have a 3 (three) years warranty, covering the battery.

The temperature range of the unit must be minimum as following:
-5°C … +40°C @ 100% load
-5°C … +50°C @ 75% load

For an easier accessibility to internal elements, opening the box will be made from a hood, accessible on the front panel.

The hood will be maintained closed with captive screw, making the reassembling easier after service.

Thanks to sliding holes (buttonhole shape), the installation of the cabinet on a wall can be made with one single person.
These holes will allow a pre-assembly of the unit, then slide and mechanically lock the unit.
These holes will have enough clearing space to allow final screwing from inside the cabinet.

The unit must have an advanced predictive maintenance feature embedded, allowing with high accuracy the need of replacing the battery 6 months in advance, and to prevent a failure.
The algorithm of the predictive maintenance will use information's based on battery impedance, as well as real conditions of use (temperature, number of cycles, depth of discharge…).
This information will be transmitted with one of the contacts to the operator.

In order to adapt to every configuration onsite, the cables must be able to come from front, sides or rear of the cabinet.