

# SmartUP SmartUP Plus

## 1 Assembly

Necessary material:

- 1 cross screwdriver (PH1)
- 1, 3mm hex key
- 1, 4mm hex key

Pass the cable of the positive pole (red cable) inside the hole of the **SmartUP**  
Place the **SmartUP** as in the picture

- A) DINxxx connector
- B) **SmartUP** Module
- C) Plastic straps
- D) Screws Cable clamp

Secure the cable of the positive pole (red cable) with the straps supplied



### Assembly for nominal current values below or equal to 100 A

Pass the cable of the positive pole (red cable) twice or several times inside the hole of the **SmartUP** Module.  
Secure the cable of the positive pole with the cable sleeve on the side of the **SmartUP** Module.



Image before the parameters are sent

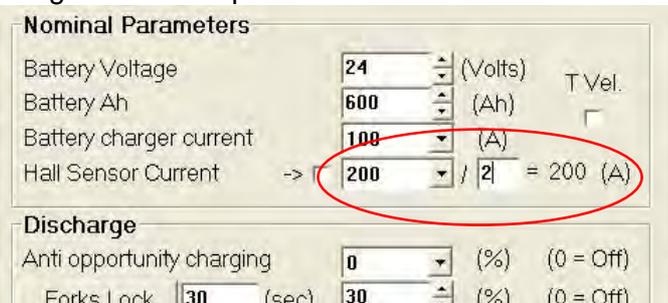
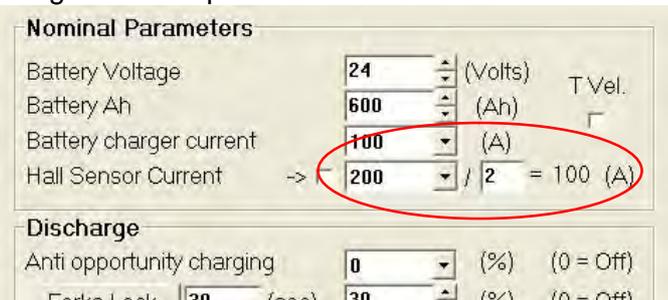


Image after the parameters have been sent



Use SmartViewII to set the number of times the cable of the positive pole passes through the Hall effect sensor.

## 2 Programming

Once it has been installed, SmartUP needs to receive some information to be able to operate correctly. This is why it is necessary to connect a PC with the SmartViewII program for Windows via a USB cable.

### 2.1 Preparation

- Connect the USB cables
- Launch the SmartViewII program
- Enter the password for level 2
- Press the connection button

### 2.2 Setting the date / time

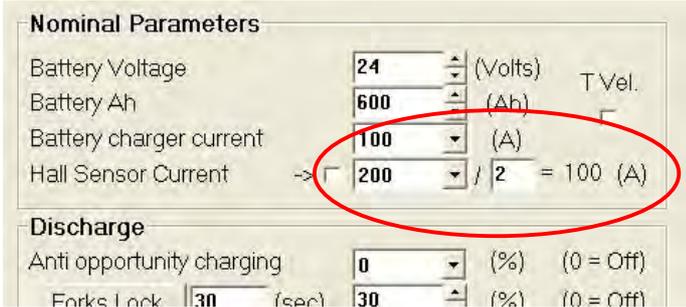
- Select the "Programming" TAB
- Press the "Set Clock" button<sup>2</sup>
- Select the "Monitor" TAB and make sure the information in the box that reports the date and time is correct

### 2.3 Programming the operating parameters

The operating parameters allow SmartUP to gather data correctly during normal operation and must therefore be entered with great care.

For more details, please refer to the user manual of the program SmartViewII (v 3:00:00) and the user's guide and installation of SMARTUP.

Select the "Programming" TAB and fill in the following fields:

Battery Voltage	Battery voltage nominal value
Battery Ah	Battery nominal capacity
Battery charger current	Battery charger nominal current
Hall Sensor Current	<p>Current sensor nominal value</p> <p>If the cable of the positive pole is passed several times inside the Hall effect sensor, indicate how many times it is passed.</p> <p>Example:</p> 
Chart Sampling Time	<p>Sampling time for the saved voltage and current charts (1, ..., 127 min / 1, ..., 127 sec); (default: 6 min)</p> <p>NOTE: if indicated in seconds, the cycles will last for maximum one hour</p>
Ext. Temp. Sensor Present	External temperature sensor selection
Electrolyte Sensor	Electrolyte level sensor operation and input selection
Operating Current Threshold	See the SmartViewII manual (default: 10A)
Anti-Opportunity Charging	Fork lock setting for anti-opportunity charging.
Fork Lock	Fork lock setting for flat battery.
Forklift Lock	Button to the set Forklift Lock time schedule.
Undercharge	If the voltage is below the specified value (V/el) for the specified time (min), the capacity is forced to (100–AhBS)% of the battery's Ah nominal capacity if greater than this value (default: 1.70 V/el, 30 min)

<sup>2</sup> The transaction transfers Smart II on the date and time of the PC. Verify that the date window on your PC is correct.



Flat battery threshold (AhBS)	By discharging below (100-AhBS)% of the nominal capacity, the battery is considered flat (default: 80%)
Self-discharging	Self-discharged capacity every 24 hours (default: 1%)
Ah method	Charging mode selection: capacity (Yes) or time (No) (default: YES)
Smart CB control	Charging selection via the SmartCB / SmartEnergy battery charger
Opportunity charging	Selection of the working cycles' timed count (opportunity charging mode) (default: No)
Ah Self-alignment	Button to access the setting of the Self-alignment parameters
% Great. Charging	Energy percentage loss during charging (default: 7%)
2nd Stage Threshold Voltage	Gassing threshold voltage. Determines the transition from the first to the second charging stage and the relative counts (default: 2.40 V/eI)
2nd Stage Charging Time	Time from when the 2nd Stage Threshold Voltage has been exceeded to end charging for timed charges and during the alignment cycle (default: 2:00 hours)
1st Stage Safety Time	An alarm is generated if the voltage has not reached the 2nd Stage Threshold Voltage within this time (default: 10:00:00 hours)
2nd Stage Safety Time	An alarm is generated if the capacity has not reached the nominal value within this time from when the 2nd Stage Threshold Voltage has been reached (default: 6:00 hours)
Autostart	Autostart time selection (active only with SmartCB selected)
Setup	Button to select the daily autostart time schedules if the energy-saving function is active (active only with SmartCB selected)

NOTE: the operating parameters can also be programmed beforehand before installing the device on the battery.

### 2.4 Programming the associations

The associations are the mnemonic parameters the operating cycles refer to and the charts gathered by SmartUP during normal operation. Whenever the cycles and charts are downloaded on a PC, they can be identified and downloaded thanks to these parameters.

NOTE: the association parameters are optional and there is no restriction associated with their entry. However, it is best to fill them in by carefully choosing the names and codes used and avoid several devices with identical parameters.

For further details please see the user manual for the SmartViewII program.

Select the "Associations" TAB and fill in the following fields:

Press the "Send Data" button and make sure a new row with the parameters entered appears in the table below

NOTE: the associations can also be programmed beforehand in the lab if all the parameters are known.

### 3 Alignment

To ensure SmartUP is fully operational and enable it to gather and then provide the data, it needs to be informed on the actual status of the battery. This operation is called ALIGNMENT and must be conducted only once after connecting the device to the battery. During normal operation, SmartUP is aligned and measures and counts the battery's incoming and outgoing charge.

The alignment procedure consists of a full normal charging cycle, i.e.:

- the battery voltage reaches the value indicated in the programming parameters by the "2nd stage threshold voltage" (default: 2.4V/eI)
- the charging continues after this value has been reached for a time not shorter than the one indicated in the programming parameters by the "2nd Stage charging time" parameter (default: 2 hours).

At the end of the alignment procedure, all the battery LEDs of the panel are on, which means that battery is fully charged. We recommend carrying out the alignment when the battery is not fully charged.

**IMPORTANT:** it is usually very easy to conduct the alignment: just charge with a traditional battery charger. However, sometimes the battery is not charged under the conditions above. This may be due to various reasons, including:

- the battery is already charged and the battery charger's charging time is too short
- the battery voltage does not reach the set 2nd Stage Threshold Voltage (for instance, this happens in the case of battery chargers for gel batteries)
- the battery charger has a special charging curve.

In this case, it is possible to change the value of the "2nd Stage threshold voltage" and/or "2nd Stage charging time" parameters by reducing them in order to make it easier to achieve the alignment. However, we recommend staying close to the default values to avoid providing SmartUP with incorrect information regarding the battery's real charging status.

NOTE: until SmartUP is aligned

- the red LED indicating that the battery is flat flashes on the panel
- with SmartView:
  - § "Ah alignment not carried out" appears instead of the battery's charging status on the Monitor TAB
  - § "Ah alignment not carried out" appears instead of cycle chart on the OLD Data TAB
  - § there is no information on the battery's charging status elsewhere.

Even with SmartUP not aligned, all the values measured during the cycle are saved in any case (voltage, current, temperature, time), as well as the charts.

NOTE: the alignment procedure must be repeated whenever SmartUP is powered off.

### 4 Download data to USB flash memory

It is possible to download data to USB flash memory. The data once stored on a USB stick, can be imported to your PC via SmartViewII. What to do:

	<p>Remove the cap from the USB port</p> <p>Insert the USB Flash memory</p> <p>Press the button for about 5 seconds, until the LED LD7 (USB) begins to flash</p> <p>Wait until the download data is completed (about 1 minutes and 40 seconds). The Led USB switches off.</p> <p>Remove the USB flash memory</p> <p>Close the cap of the USB port</p>
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For more details, please refer to the user manual of the program SmartViewII (v 3:00:00) and the user's guide and installation of SMARTUP.

## 5 Accessories SmartUP Plus

### Locking functions

The SmartUP Plus device has two functions that are based on the measurement of the capacity level in the battery in order to disable forklift operation and/or lock the forks, through the NO (Normally Open) contact of a relay.

These functions require the relay contact to be wired to a circuit of the forklift that can limit its functions (for example, the circuit that blocks operation when the operator is not seated).

**Anti-opportunity charging:** At the end of the charging phase, if the percentage of Ah in the battery is greater than the percentage set in Anti-opportunity charging, the forklift is enabled for normal use (the NO contact closes). Vice versa, if the capacity in the battery is lower than the set percentage, operation is disabled (the NO contact stays open). By setting the parameter at 0% (as default), function is switched off.

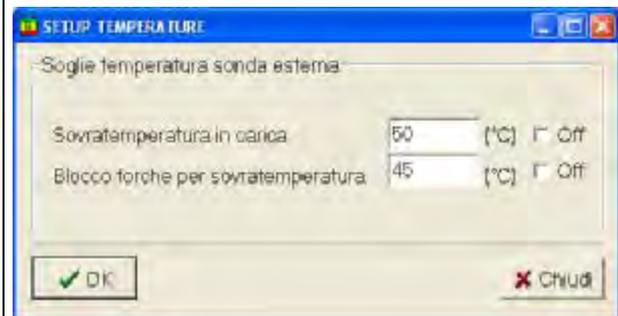
**Fork Lock (capacity):** During discharging, as long as the level in the battery does not drop below (100-Fork Lock)%, normal operation is allowed (the NO contact closes). When the capacity drops below this threshold, normal operation is disabled (the NO contact stays open).

NOTE: To avoid interrupting manoeuvres during a phase of intense use, the lock is applied 30 seconds after the last manoeuvre. The default value of the programmable "Fork Lock" parameter is 80%.

### Temperature probe



Set the temperature probe between the battery elements.



### Block Forks not charging (temperature):

Only at the end of charging phase if the temperature measured by the probe is higher than the set threshold (overtemperature in charge), the forks are blocked. They are rehabilitated only when the temperature drops below the threshold minus 1 ° C. This control intervenes only once at the end of charge, during the discharge phase is not executed.

The device also has the following lock function, to avoid the forklift from being used outside of the work schedule.

**Fork Lock:** for each day of the week it is possible to set the time (start and end) that the fork lock needs to be applied. If the two times are identical, the lock is not applied. The Timeout parameter is the amount of forklift downtime that must lapse before the lock is applied.

**Electrolyte level probe**

	<p>Set the Level sensor up inside one of the battery elements (in the figure shows this being done with the automatic top-up cap; alternatively, it is possible to drill a hole on the cover of the element).</p> <p>Wire the probe between the elements of battery with correct polarity (refer to the probe's manufacturer).</p> <p>Since the input is galvanically isolated, the sensor can be installed on any of the battery's elements.</p>
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Based on the type of probe being used and the input that it is connected to, it will be necessary to use SmartView to programme the "Electrolyte sensor" parameter in the Programming TAB

The table illustrates the options that can be selected from the drop-down menu.

Off	Probe not installed.
Water	Decide whether the probe generates a signal when the electrolyte level exceeds the threshold (electrolyte level OK). Probe wired to clamps 8 (signal) and 10 (common).
No water	Decide whether the probe generates a signal when the electrolyte level drops below the threshold (low electrolyte level). Probe wired to clamps 8 (signal) and 10 (common).