

Overloader 2

INSTRUCTION MANUAL



ROBITRONIC
POWER FOR WINNERS

Introduction

Thank you for purchasing this high-end competition charger. This charger is a high performance computerized battery maintenance system. Capable of charging, discharging, cycling and conditioning multiple rechargeable battery types, with very high output power, a customized display with expertly designed software and programming controls, the Overloader2 is easily one of the smartest and most powerful R/C battery maintenance systems available!

NOTE: You will find a transparent protective plastic film on the front plate. Please remove this film before the first usage.

Special features

- Perfect for electric cars, trucks, boats and planes
- Handling NiCd / NiMH / Li-Ion / Li-Po / Pb battery types
- Restart of charge and discharge after a loss of power
- Symbol aided graphical screens
- Graphical display show charge, discharge and cycle curves
- Storing up to 10 different battery configurations
- Performs 1 - 10 cycles for NiCd / NiMH only, and stores capacity and voltage data for all 10 cycles
- Break-in electric motors (1.0 - 8.0 V, 10A constant) or operate commutator lathes
- Heat glow plugs for nitro engines
- Operate tire warmers
- Intuitive program menus and simple pushbutton control
- Intelligent cooling fan control system for better charge efficiency and extended charger life
- Language, LCD contrast, fan operation, temp scale and sound cues are fully adjustable
- Popups for information and warnings
- packaged in a red-colored rugged, extruded aluminium case

Precautions !

- Do not charge or discharge battery types other than nickel-cadmium (NiCd), nickel-metal hydride (NiMH), Lithium-Ion (Li-Ion) or Lithium-Polymer (Li-Po) rechargeable batteries. Damage may occur from other types of batteries.
- Do not attempt to charge batteries at excessive fast charge currents.
- Do not use automotive type battery chargers to power the charger.
- Do not leave the charger unattended while charging. Disconnect the battery and remove input power from charger immediately if the charger becomes hot.
- Allow the charger or battery to cool down before reconnecting.
- Do not allow water, moisture or foreign objects into the charger.
- Do not place the battery or the charger on or near a flammable object while in use.
- Keep away from carpets, cluttered workbenches, etc.
- Do not cover the air intake holes on the charger as this could cause the charger to overheat.
- Always disconnect charger from power source when not in use.

Safety note for Li-Ion and Li-Po batteries !

- Do not allow Li-Ion or Li-Po batteries to overheat!
- It is very important to know the battery's nominal rated voltage before charge or discharge.
- Li-Po batteries: 2-cell pack wired in series -> total voltage will be 7.4 V (2x 3.7V)
- Li-Ion batteries: 2-cell pack wired in series -> total voltage will be 7.2 V (2x 3.6V)
- ALWAYS make sure to set the correct Li-Ion or Li-Po battery voltage (3.6V per cell for Li-Ion and 3.7V per cell for Li-Po)
- Do not attempt to use the NiCd or NiMH mode for Li-Ion or Li-Po batteries.
- Do not attempt to charge Li-Ion or Li-Po batteries at greater than "1C" rating of the battery.
- Do not attempt to repeatedly charge Li-Ion or Li-Po batteries.
- If Li-Ion or Li-Po batteries overheat, please immediately disconnect batteries from the charger!

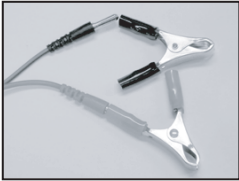
Specification

Description	Settings	Step
General		
Case type	Aluminium, anodized	
Cooling system	Aluminium heat sink, 3 x Fan 40mm	
Display type	Graphic LCD, 128x64 Pixel	
Input type	Input cable with banana plugs black/red	
Output type	Banana jacks black/red	
Input voltage	11-15V	
Battery types	NiCd, NiMH, LiPo, Lilon, Pb	
Battery memories	10	
Powerlimit charge	120W	
Powerlimit discharge	180W	
Graph storage time	up to 22h 45min 20sec	
Settings		
Name	15 characters, A-Z a-z, 0-9, special chars	
Language	English, Geman, French	
Fan control	Auto, On	
Temperature mode	°C, °F	
Button sound	Off, On	
Finish sound	1-11	1
Finish sound repetitions	1-10	1
Info sounds	Off, On	
Graph resolution	1, 2, 5, 10s/p	
LCD contrast	0-20	1
LCD backlight	Off, On	
Motor break-in menu	Off, On	
Glow-plug menu	Off, On	
Tire warmers menu	Off, On	
Motor break-in		
Run Time	1min - 23h 59min	1min
Voltage	0,1-8,0V	0,1V
Current	max 10,0A	
Glow-plug		
Voltage	0,1-2,5V	0,1V
Current	max 10,0A	
Tire warmers		
Temperature	45-75°C / 113-167°F	1°C / 1°F
Voltage	13,5V	
Current	max 10,0A	
Profiles		
Profilnumber	0-9	1
Profilname	8 characters, A-Z a-z, 0-9, special chars	
Capacity	100-15000mAh	100mAh
Charge current	0,1-10,0A	0,1A
Discharge current	0,1-20,0A	0,1A
Cutoff temperature	20-70°C / 68-158°F	1°C / 1°F
maximum charge capacity	100-140%	1%

Specification

Description	Settings	Step
specific for NiMH/NiCd		
Charge mode	Linear, Impulse, Reflex, Auto, 4-Step	
Cells	1-12	1
deltaPeak/cell	1-30mV	1mV
Peak-Lock time	1-50min	1min
Trickle current	Off, 10-400mA	10mA
Limits of discharge current	1-6 cells - max 20.0A	
	7 cells - max 17.0A	
	8 cells - max 15.0A	
	9 cells - max 13.5A	
	10 cells - max 12.0A	
	11 cells - max 11.0A	
Cutoff voltage/cell	0,5-1,2V	0,1V
Cycle mode	Off, C->D, D->C, (D)C->D	
Numbers of cycles	1-10	1
Cycle wait mode	Time, Temperature	
C->D Delay	1-240min	1min
D->C Delay	1-240min	1min
C->D temperature	20-70°C / 68-158°F	1°C / 1°F
D->C temperature	20-70°C / 68-158°F	1°C / 1°F
specific for LiPo		
Charge mode	CC-CV	
Cells	1-4	1
Charge end voltage/cell	4,2V	
Limits of discharge current	1-2 cells - max 20.0A	
	3 cells - max 13.5A	
	4 cells - max 10.0A	
Cutoff voltage/cell	2,7-3,7V	0,1V
specific for Lixx		
Charge mode	CC-CV	
Cells	1-4	1
Charge end voltage/cell	3,3-4,3V	0,1V
Limits of discharge current	1-2 cells - max 20.0A	
	3 cells - max 13.5A	
	4 cells - max 10.0A	
Cutoff voltage/cell	2,0-3,7V	0,1V
specific for Pb		
Charge mode	CC-CV	
Cells	1-6	1
Charge end voltage/cell	2,35V	
Limits of discharge current	1-3 cells - max 20.0A	
	4 cells - max 15.0A	
	5 cells - max 12.0A	
	6 cells - max 10.0A	
Cutoff voltage/cell	1,8-2,3V	0,1V

Charger – general description



The power input cord is equipped with 4mm connectors for using a power supply. Crocodile style connectors are also included. They are directly compatible with the 4mm power input cord connectors. This way you can easily use your Overloader2 with various input power sources (power supply, 12V car battery,...). PLEASE NOTE: it is very important that you connect the black input cord with the minus pole (-) and the red input cord with the plus pole (+) of your power source.

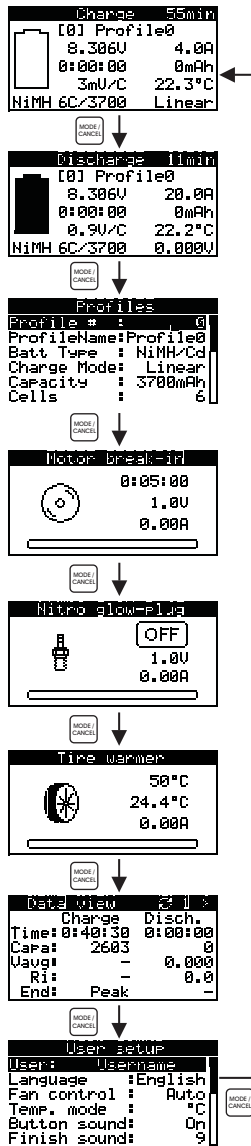


For best connect ability and safe operations the temperature sensor is equipped with a strong magnet and therefore can be easily attached to most kind of common hobby batteries.

● Operating buttons

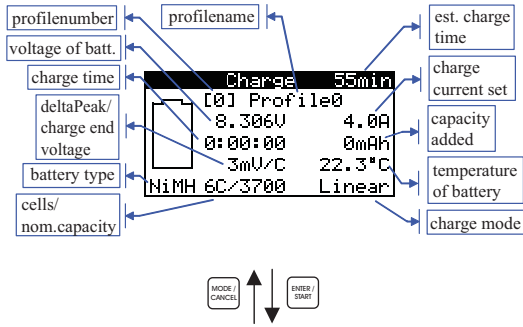


Menu - abstract



- **Charge**
 - starts charging the battery
 - Only one screen for all charge modes
- **Discharge**
 - starts discharging the battery
 - all information without scrolling
- **Profiles**
 - settings of the batteries
 - 10 x 4 battery types (NiCd/NiMh, LiPo, Lixx, Pb)
 - Cycle- and 4-step settings
- **Motor break-in**
 - Break-in electric motors
 - operate commutator lathes
 - can be disabled
- **Nitro glow-plug**
 - operation of glow plugs for nitro engines
 - can be disabled
- **Tire warmers**
 - temperature controlled operation of tire warmers
 - can be disabled
- **Data view**
 - information of the last charge, discharge, or cycle procedure
 - view the graph
- **User setup**
 - all settings of the device
 - name, language, sounds, LCD display, menus...

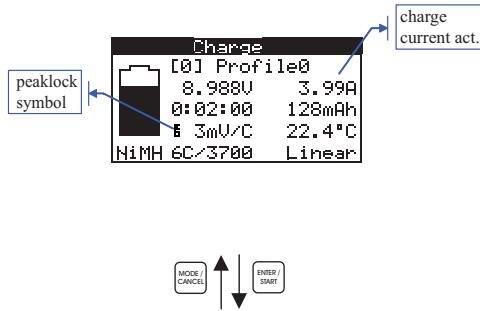
Charge



● Charge in idle mode

you are here, if you have just switched to charge menu.

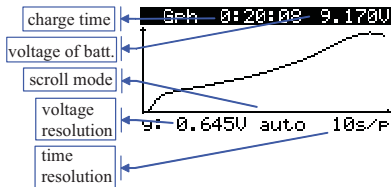
- Use **UP** and **DOWN** to select a suitable profile (0-9) for your battery.
- The keys **←** and **→** changes the charge current with steps of 0.1A.
- The **ENTER/START** button starts charging.
- Use the **MODE/CANCEL** button to switch to discharge menu.



● Charge in action

The battery symbol is animated and the actual charge current is shown.

- While charging **UP** and **DOWN** do not have any function.
- **←** and **→** keep on changing the charge current.
- The **ENTER/START** key switches to the charge graph view.
- Press and hold the **MODE/CANCEL** button to cancel charging.

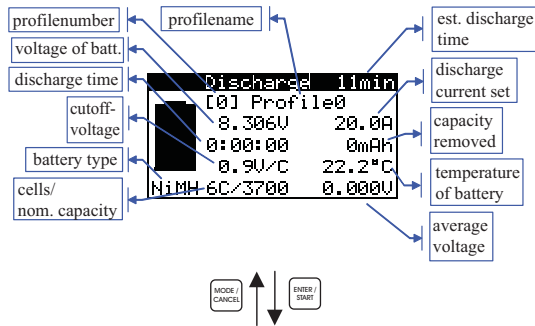


● Charge graph

shows the battery voltage against the charge time

- Use **UP** and **DOWN** to zoom. The number of seconds, one point represents (s/p) is changed. While changing the value is inverted. Note that voltage resolution is automatically set. The range of the voltage-axis is shown in Volt.
- **←**, **→** and **ENTER/START** do not have any function at the charge graph.
- Use **MODE/CANCEL** to leave the charge graph.

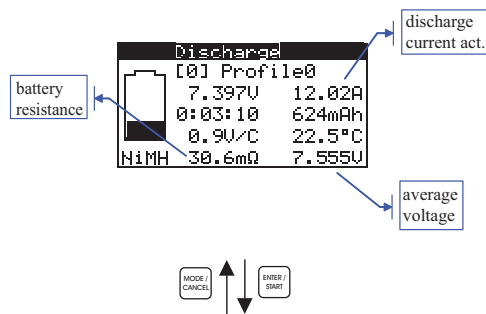
Discharge



● Discharge in idle mode

you are here, if you have just switched to discharge menu.

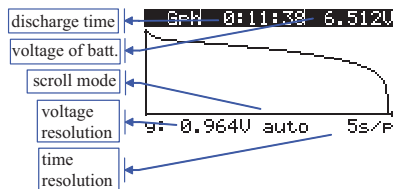
- Use **UP** and **DOWN** to select a suitable profile (0-9) for your battery.
- The keys **←** and **→** changes the discharge current with steps of 0.1A.
- The **ENTER/START** button starts discharging.
- Use the **MODE/CANCEL** button to switch to the profile settings.



● Discharge in action

The battery symbol is animated and the actual discharge current is shown.

- While discharging **UP** and **DOWN** do not have any function.
- **←** and **→** keep on changing the discharge current.
- The **ENTER/START** key switches to the discharge graph view.
- Press and hold the **MODE/CANCEL** button to cancel discharging.

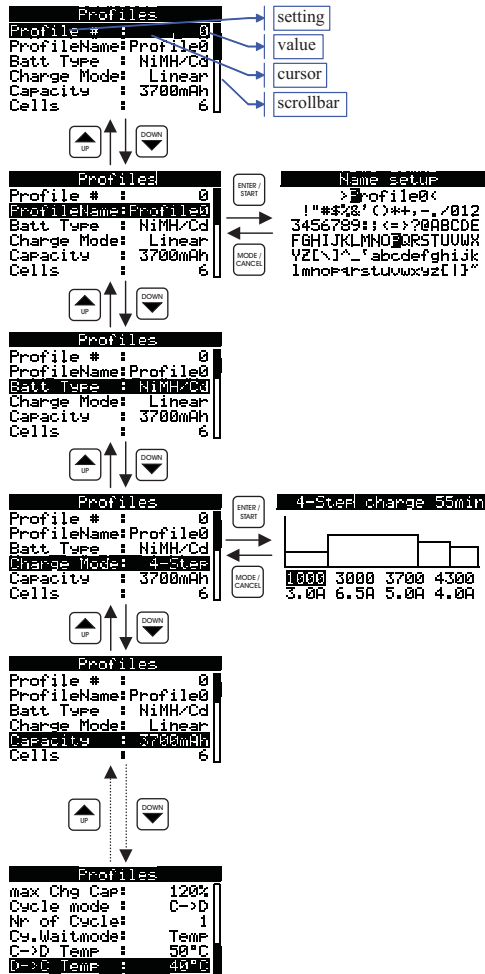


● Discharge graph

shows the battery voltage against the charge time

- Use **UP** and **DOWN** to zoom. The number of seconds, one point represents (s/p) is changed. While changing the value is inverted. Note that voltage resolution is automatically set. The range of the voltage-axis is shown in Volt.
- **←**, **→** and **ENTER/START** do not have any function at the charge graph.
- Use **MODE/CANCEL** to leave the charge graph.

Profiles



Profiles - general

stores all your battery settings.

There are 4 x 10 profiles available, which means for each profilenumber you can choose from 4 batterytypes. Each batterytype stores its own settings.

Note, for each profilenumber only one batterytype can be activated simultaneously.

- Use **UP** and **DOWN** to select the setting you would like to change. Note, there are dependencies between settings, so it is possible that some settings are not shown.
- With **LEFT**, **RIGHT** the value of the highlighted setting can be changed between its upper and its lower limit. Use press and hold to change the value more quickly.
- Usually the **ENTER/START** key has no function. Except profilename and chargemode 4-step.
- Depending on your settings **MODE/CANCEL** switches to motor break-in, nitro glow-plug, tire warmers or data view menu.

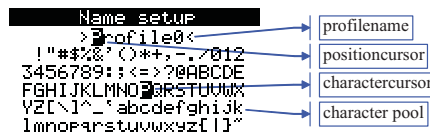
Profiles







- **Number of profile**

- values between 0 and 9 are available.
- This number is linked with the profiles and is used to choose profiles in the charge and discharge menu.

- **Profile name**

- Profilenames are used, to identify profiles more quickly.
- To change the profilename press . The name setup menu appears.



- Use  and  to set the positioncursor on the character you want to change. The charactercursor highlights the selected character in the pool immediately.
-  and  changes the selected character in the pool and in the string simultaneously.
- To leave name setup menu press  or .

- **Battery type**

- 4 respectively 6 battery types are supported:
 - nickel-cadmium (NiMH/Cd)
 - nickel-metal-hydride (NiMH/Cd)
 - lithium-polymer (LiPO)
 - lithium-ion (Lixx)
 - lead-acid (PB)
 - gel-cell (PB)
- So the values NiMH/Cd, LiPO, Lixx, PB are available.
- Other profile settings depend on the selection of the battery type.
- Note, that battery type Lixx needs an additional setting of the charge end voltage in the user setup menu.
- Use only battery types suitable to your batteries.

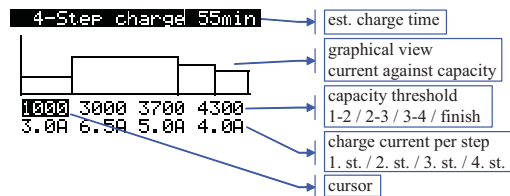
Profiles





● Charge mode

- 6 different charge modes are supported.
 - linear charge (Linear)
 - impulse charge (Impulse)
 - reflex charge (Re-Flex)
 - auto charge (Auto)
 - 4-step charge (4-Step)
 - constant current-constant voltage charge (CC-CV)
- Available values are Linear, Impulse, Re-Flex, Auto, 4-Step und CC-CV.
- You will find a brief description of the different charge modes at the end of this manual.
- Note, that availability of charge modes depends on the selected battery type.
- Note, that the charge mode setting will affect other profile settings.

Set up 4-Step charge

- When charge mode 4-step is selected, the  button opens the 4-Step Setup menu.



- Select the value you want to change with  and .
- Use  and  to change the highlighted value.
- First row values are the capacity thresholds. When the added capacity passes the capacity threshold, the next step begins.
- The charge currents in the second row belong to the steps 1 to 4.

The setting in our example would be the following:

The charger starts charging with a charge current of 3.0A.



When the added capacity reaches 1000mAh, step 2 begins and charge current is increased to 6.5A.

At 3000mAh step 3 with 5.0A is in action.

The last step is introduced with the capacity threshold of 3700mAh.

The battery is charged with 4.0A.

The last value of 4300mAh is the nominal capacity. In combination with the maximum capacity it is a charge end mechanism.

- Note, that each following threshold must be higher than the previous one.
 - threshold 1-2 < threshold 2-3 < threshold 3-4 < nominal capacity
- Note, that nominal capacity of 4-step setup will overwrite the setting of the profile.
- To leave the 4-step setup menu press  or .

Profile

- **Nominal Capacity**
 - is adjustable between 100mAh and 9900mAh with a stepwidth of 100mAh and between 10000mAh and 25000mAh with a stepwidth of 1000mAh.
 - Nominal capacity means the nominal capacity of the battery which is in use.
 - The value is used to calculate the estimated charge/discharge time.
 - In combination with the maximum capacity it is a charge end mechanism.

- **Cells**
 - depending on the selected battery type values between 1-12, 1-4 or 1-6 are available.
 - Set the number of cells in series your battery consists of.
 - Note, that this setting depends on previous settings and is maybe not shown.

- **Charge current**
 - depending on the selected charge mode the value is adjustable between 0.1A and 10A or 8A with a stepwidth of 0.1A.
 - Note, there is no capacity-controlled limit of the charge current for LiPO batteries.
 - General LiPO batteries should be charged with a maximum charge current of 1C, which means a battery with a nominal capacity of 5000mAh should be charged with a maximum charge current of 5A.
 - Note, that this setting depends on previous settings and is maybe not shown.

- **deltaPeak / cell**
 - is adjustable between 1mV and 30mV with a stepwidth of 1mV.
 - DeltaPeak is the main charge end mechanism with NiMH/Cd batteries.
 - Note, that this setting depends on previous settings and is maybe not shown.

- **Peak-locktime**
 - is adjustable from 1min to 50min with a stepwidth of 1min.
 - Peak-locktime is a countdown started with the charge.
 - During the countdown there is no check on deltaPeak and the peaklock symbol is shown.
 - This is very useful with old batteries which often generates a first peak at the beginning of the charge.
 - Note, that this setting depends on previous settings and is maybe not shown.


Profile

- **Cut off temperature**
 - adjustable between 20°C and 70°C with a stepwidth of 1°C or between 68°F and 158°F with a stepwidth of 1°F.
 - If the temperature of the external sensor reaches this limit, the charge will be finished.
- **Trickle charge**
 - the values Off and between 10mA and 400mA with a stepwidth of 10mA are available.
 - Trickle charge will only become active if charge ends with deltaPeak or temperature.
 - When charge ends with temperature, the charger will wait till the battery becomes 2°C colder and then starts trickle charge.
 - Note, that this setting depends on previous settings and is maybe not shown.
- **Discharge current**
 - general it is adjustable from 0.1A to 20A with a stepwidth of 0.1A,
 - but dependent on the number of cells set, a limit of 17A, 15A, 13.5A, 12A, 11A or 10A become active, to prevent exceeding discharge power limit.
 - Note, there is no capacity-controlled limit of the discharge current for LiPO batteries. General LiPO batteries should be discharged with a maximum discharge current of 2C, which means a battery with a nominal capacity of 5000mAh should be discharged with a maximum discharge current of 10A.
- **Cut off voltage / cell**
 - depending on the selected battery type values between 0.5V - 1.2V, 2.7V - 3.7V, 2.0V - 3.7V or 1.8V - 2.3V with a stepwidth of 0.1V are available.
 - Note, that the cut off voltage is the only end mechanism with discharge. A too low cut off voltage will destroy your battery.
- **Maximum capacity**
 - adjustable from 100% to 140% with a stepwidth of 1%.
 - In combination with the nominal capacity it is a charge end mechanism.
 - e.g.: The battery has a nominal capacity of 3700mAh.
 - Maximum capacity is set to 120%.
 - If added capacity reaches 4440mAh (3700mAh x 120% = 4440mAh) charge is finished.

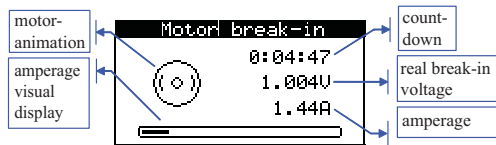
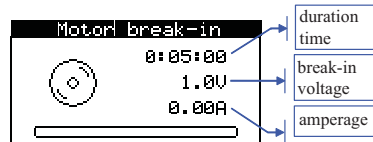
Profiles

- **Number of cycles**
 - The number of cycles can be adjusted from 1 to 10.
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.
- **Character of cycle delay time**
 - It is possible to choose between time (Time) and temperature (Temp) delay.
 - This adjustment determines if the delay time is defined by an adjusted time period or until an adjusted “cooling-off” temperature level is reached
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.
- **Delay time C > D**
 - Here you can adjust the delay time before the discharge process from 1 min to 240 min in 1-minute increments.
 - The time should be chosen long enough for the battery to appropriately recover.
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.
- **Delay time D > C**
 - Here you can adjust the delay time before the charge process from 1 min to 240 min in 1-minute increments.
 - The time should be chosen long enough for the battery to appropriately recover.
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.
- **“Cooling-off” temperature C > D**
 - Here you can adjust the temperature the battery has to reach first before the next discharge process starts - from 20°C to 70°C resp. 68°F to 158°F in 1° increments.
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.
- **“Cooling-off” temperature D > C**
 - Here you can adjust the temperature the battery has to reach first before the next charge process starts - from 20°C to 70°C resp. 68°F to 158°F in 1° increments.
 - PLEASE NOTE that this adjustment topic might not appear because of other already made adjustments.

Guideline for the profile mode

- You have the possibility to directly switch from the profile mode into the regarding charge/discharge mode without having to change completely into the regarding user interface.
- Just continuously press the button  for approx. 2 seconds and you will directly switch into the regarding mode.
- If you have adjusted the charge-timer, it's popup window will open and the charge-countdown will start.
- PLEASE NOTE that this function might not be always available because of other already made adjustments. This function is not activated when the marker is set on the topics “Charge mode” and “Number of cycles”

Motor break-in



● Set-up motor break-in

This is where you are when you first enter the motor break-in mode.

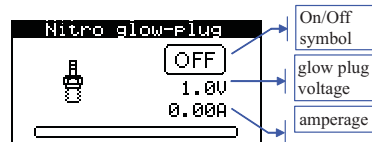
- With and you adjust the duration time for motor break-in from 0:01:00 to 9:59:00 in 1-minute increments.
- The buttons and change the motor break-in voltage from 0.1V to 8.0V in 0.1 increments.
- The button starts the motor break-in process.
- With the button you will switch corresponding to the adjustment into the glow plug, tire heating or display mode.

● During motor break-in

The motor animation symbolizes the running break-in process. The adjusted duration time runs down in a count down format. Instead of the adjusted motor break-in voltage now the REAL running voltage is displayed. The actual amperage is shown in graphic form (in relation to the maximum of 10A) and in digital figures, also.

- The buttons and can still be used to readjust the duration time for the motor break-in.
- With and you can still change the motor break-in voltage during the running process.
- The button has no function during the running break-in process.
- With you can always stop the break-in process.

Glow plug heating



● Set-up glow plug heating

This is where you are when you first enter the nitro glow plug heating mode.

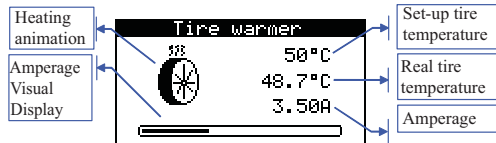
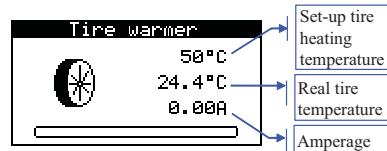
- The buttons and have no function in this set-up of the glow plug heating.
- With and you adjust the glow plug heating voltage from 0.1V to 2.5V in 0.1 increments.
- The button starts the plug heating process.
- With the button you will switch corresponding to the adjustment into the tire heating or display mode.

● During glow plug heating

The glow plug animation symbolizes the running heating process. When a glow plug is connected to the system and it is correctly functioning (no defect plug) it is displayed with a glowing plug animation. Instead of the adjusted glow plug heating voltage now the REAL running voltage is displayed. The actual amperage is shown in graphic form and in digital figures, also.

- The and buttons still can be used to readjust the glow plug heating voltage.
- With you can always stop glow plug heating process.
- The buttons , , and have no function during glow plug heating process.

Tire heating control



● Set-up tire heating control

This is where you are when you first enter the tire heating control mode.

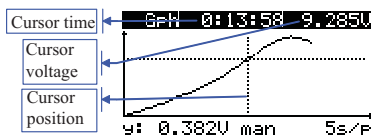
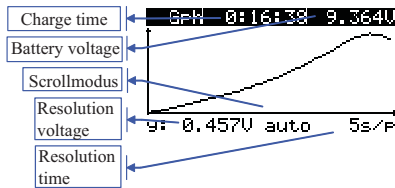
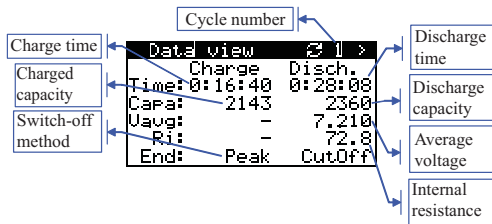
- The buttons and have no function in this set-up of the tire heating control.
- With and you are still able to adjust the tire heating temperature from 45°C to 70°C resp. 113°F to 158°F in 1° increments.
- The button starts the tire heating process.
- PLEASE NOTE: the tire heating control only functions when the temperature sensor of the Overloader2 is activated and attached within the tire heating electric blankets.
- With the button you will switch from here into the display mode.

● During tire heating process

The "smoking" tire animation symbolizes the running heating process. During the running heating process both, the set-up tire temperature and the actual real temperature are displayed. The actual amperage is shown in graphic form and in digital figures, also.

- With and buttons still can be used to readjust the tire heating temperature.
- With the you can always stop the heating process.
- The buttons , , and have no function during the tire heating process.

Data view display



● Data view display

This is where you are when you first enter the display data view mode or after the ending of a cycle program. The display menu appears in table format. The left data slot (Charge) includes the charge data, the right one (Disch.) the discharge data.

- and buttons have no function in the data view mode.
- With and you are able to “turn the pages” from 1 to 10. Each page corresponds to the regarding charge/discharge cycle.
- switches to the display of the visual graphical illustration.
- switches to the adjustments mode.

● Visual graphical illustration (graph)

Here you can see the battery voltage over the time axis.

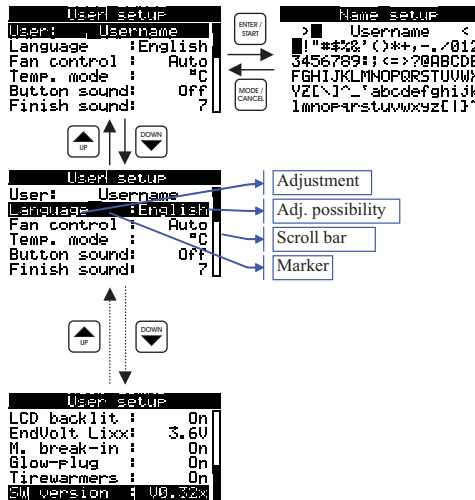
- With and you can use as a zoom. It will be adjusted, how many seconds are symbolized by one displayed point (s/P). PLEASE NOTE: the voltage is automatically scaled. The given voltage refers to the regarding visible part of the graphic illustration (graph).
- , have no function here.
- activates the scroll function.
- is changing back to the data view display.

● Graph with activated scroll function

Every figure of the graph can be individually displayed.

- The buttons and keep on having their zoom function.
- With and the graph can be moved to the left or right. During moving the graph the displayed voltage and time corresponds to the cursor position.
- ends the scroll function.
- is changing back to the data view display.

Adjustments



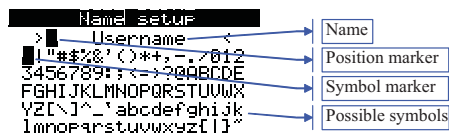
● Adjustments – General

Here you can make all adjustments for the general basis system management of the Overloader2.

- With and the marker is positioned onto the adjustment you want to edit.
- The buttons and change the adjustment within the possible limits. Continuously pressing one of these buttons will move you faster through the range of possible adjustments.
- As long as not different mentioned (e.g. name and melody) the button has no function in this section.
- The button brings you into the charge mode.


● Name

- For clear identification you can personalize the Overloader2 with your name in the starting display. Right after the start the display shows the current name. This is the time to change the name.
- Press and the mode for changing the user name will now open.



- With and you can place the position marker on the place you want to edit. At the same time the symbol marker jumps on the current symbol.
- With and now you can choose the symbol of your choice by moving the symbol marker. At the same time your newly chosen symbol will already be shown at the marked position within the name.
- To exit the name changing mode please press or .

Adjustments


- **Language**
 - The following languages are available: English, Deutsch and French.
The language selection is effective within the complete system.
- **Cooling fan**
 - Can be switched on AUTO (Automatic) or ON.
 - In the ON position all 3 cooling fans are permanently running.
 - In the position AUTO the fans are automatically switch on depending on the load on the system.
- **Temperature**
 - Temperatures can be displayed in °C or °F.
 - PLEASE NOTE: by changing from one to the other ALL temperature readings will be mathematically transferred and “rounding errors” might be possible.
- **Acoustical buttons**
 - Can be switched ON or OFF.
 - Depending on the adjustment all button-use will be confirmed by an acoustical sound.
- **Melody**
 - You can choose between 9 different melody settings.
 - The melody will be played after each ending of a charge, discharge, cycle or break-in process.
 - With the  button you can play the currently active melody.
- **Melody repeat duration**
 - Adjustments for repeat duration are possible from 1 to 10 times.
- **Information acoustical sounds**
 - Can be switched ON or OFF.
 - In the position OFF all sounds of the unit for the ending of processes are turned off. This also includes all sounds due to errors and wrong user inputs.
- **Graph resolution**
 - The following resolution steps are available: 1sec./point, 2s/P, 5s/P, 10s/P.
This means for the practical use, that the voltage is stored for graphical use every second, every 2 seconds, every 5 seconds or every 10 seconds.
 - Depending on the setting the all over record time can vary from 2h 16m 32s (1s/P setting) to a total of 22h 45m 20s (10s/P setting).
 - PLEASE NOTE: that this adjustment has to be done BEFORE any charge, discharge or cycle process.
 - PLEASE NOTE: that by changing the graph resolution the graphic storage of the system will be deleted.


Adjustments


- **LCD contrast**
 - The brilliance/contrast can be adjusted from 1 to 15 (low to high).

- **LCD light**
 - The blue display light can be switched ON or OFF.

- **Charge switch-Off voltage Lixx**
 - Can be adjusted from 3,3V to 4,3V in 0,1 V increments.
 - Lilon batteries are existing in quite many different variations and with different voltage switch-off requirements. The developments in this battery section are continuously going on. Therefore the Overloader2 is adjustable for this kind of battery technology within the necessary range.
 - This way the Overloader2 comes already prepared for further future developments in battery technology.
 - PLEASE NOTE: it is absolutely important, that the user adjusts the switch-off voltage for these types of battery exactly according to the instructions from the battery manufacturer. Read and follow the battery instructions!

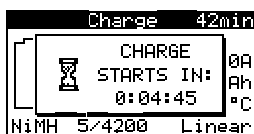
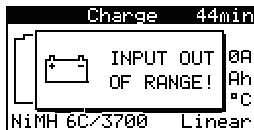
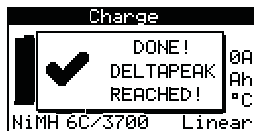
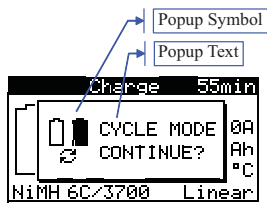
- **Motor break-in mode**
 - Can be switched ON or OFF.
 - In position ON the motor break-in mode can be reached over the  button.
 - In position OFF the motor break-in mode is not reachable over the navigation until it is activated again here in the "adjustments" section.
 - This speeds up the navigation by switching OFF functions, which are not in use.

- **Glow plug heating mode**
 - Can be switched ON or OFF.
 - In position ON the Glow plug heating mode can be reached over the  button.
 - In position OFF the Glow plug heating mode is not reachable over the navigation until it is activated here in the adjustments.
 - This speeds up the navigation by switching OFF functions, which are not in use.

- **Tire heating mode**
 - Can be switched ON or OFF.
 - In position ON the Tire heating mode can be reached over the  button.
 - In position OFF the Tire heating mode is not reachable over the navigation until it is activated here in the adjustments.
 - This speeds up the navigation by switching OFF functions, which are not in use.

- **Software Version**
 - There are no adjustments possible here.
 - This is just for information reasons only. It shows which software version is currently running on your Overloader2.

Popups



● Popups – General

Errors and other extra information are displays via popups. With the help of the popup symbol a popup can be easily associated with it's "message".

- , , and buttons are having no function when it comes to popups.

- Some popups require a decision from your side (e.g. cycle mode continue?).

- In such cases the button stands for YES (confirmation).

- And the button for NO (exit).

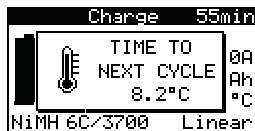
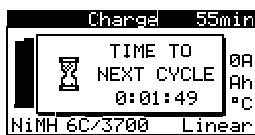
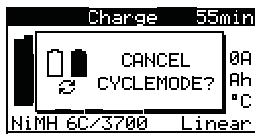
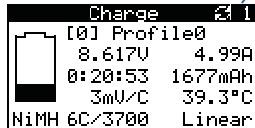
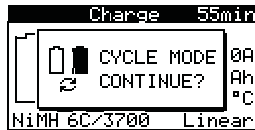
- Any popup with just an informative message (e.g. Done!...) can be deleted by any of the two buttons or .

- Popups referring to a significant error or system requirement (e.g. input out of range!) will only disappear after they were confirmed AND the regarding problem has been solved.

- Charge time related popups display in form of a countdown for the charge start and will disappear from alone.




- The countdown can be overruled by pressing the button.

Cycle charge & discharge




● How to start a cycle process

To start a cycle process you have to choose a profile with an activated cycle function. This selection can be done in the charge or discharge mode.




- The button  within the charge or discharge mode will start the cycle charge & discharge dialog..
-  Confirms and starts the cycle according to the adjustment with charging resp. discharging the battery.
-  exits the cycle start.

● During a cycle

You can see the number of the currently running cycle in the right hand upper corner of the screen.


- Every button with the exception of  can be used as usual, just like known from the regular charge or discharge mode.

● How to stop a running cycle

- The button  has to be pressed to stop a running cycle. To avoid an accidental stop of a running cycle, an additional dialog follows.
- Pressing  is a confirmation and stops the running cycle process.
- Pressing  ends the dialog and keeps the cycle process running.

● Between active cycle steps

the system is waiting according to the adjustments until the battery has reached the adjusted cooling-off temperature or until the adjusted time delay has run out. Status information about the delay period is provided via popups.

- The  button overrules the adjusted cooling-off time or temperature and starts immediately the next cycle step.
- PLEASE NOTE: that it might be possible, that after too short of an cooling-off time the following charging could be stopped way too early due to the high temperature of the battery.

Charging/discharging after an input electricity cut

● General

- The Overloader2 is equipped with a protection function, which keeps the unit going with the same process that was running before the input electricity cut. This is especially important for racing. There is always the possibility of a short time electricity cut-off in the drivers pit area. The Overloader2 insures, that you are not missing a race due to a half empty battery after such an electricity cut in the pits.
- This function is always active and cannot be switched off.
- This function is working for charging, discharging and cycling.
- The charge or discharge process after an input electricity cut is always running with the original (before the original start of the process) parameter adjustments. Later made changes (e.g. amperage) will not be taken into account.
- All the process information (charge or discharge graphs, capacities, average voltage, internal resistance readings) will be still available, but minor allover errors in these figures are possible (but not more than the records from the last 60 seconds before the input electricity cut).
- The records from the currently running cycle will be available, but the information from earlier cycles will be lost.

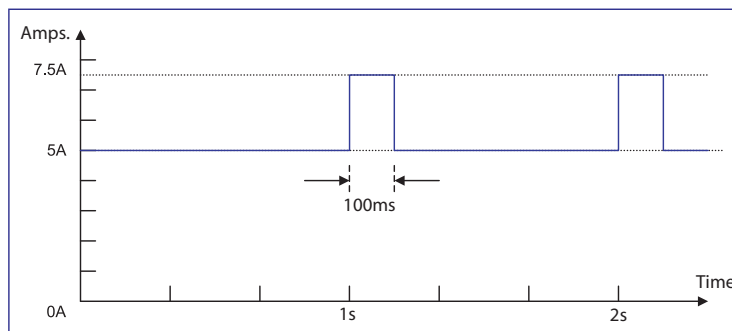
Charging techniques

A) Linear charging

- The charging takes place with constant and linear amperage.

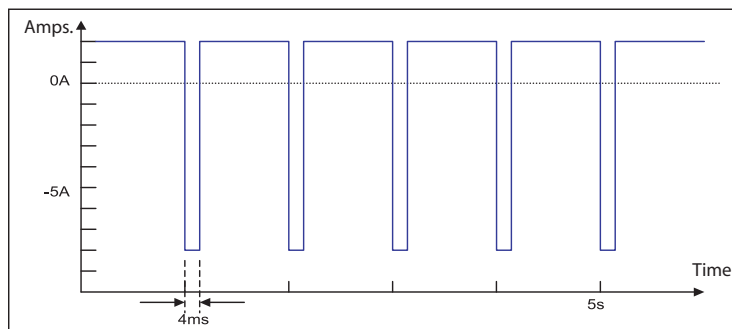
B) Impulse charging

- With this method there is a short amperage “spike” (approx. 100ms) every full second during the entire charging time. The continuously appearing “spikes” are providing an amperage approx. 1.5 higher than the main charge adjustment.
- This system was developed to reduce the oxidation within the batteries, which results in a better cell structure over longer time of using the batteries.



C) Reflex charging

- This method is actually a “reversed” impulse charging. The “spike” comes every second also, but it is much shorter in time (approx. 4ms), much stronger (about 4 times higher) and it “goes” into the opposite direction. So actually it is a very short, quite strong discharge “spike”.
- This system is especially good for older NiCd batteries to give them some sort of refreshment.



Charging techniques

D) Automatic charging

- The automatic charge mode is only available for NiCd and NiMH batteries
- In this mode the Overloader2 continuously meters the internal resistance of the battery, re-calculates and re-adjusts all parameters accordingly for best charging results.
- The charge starts with a low amperage of 0,3A.
- The Overloader2 recognizes automatically the number of cells and uses a deltaPeak of 4mV/cell.
- Switch-off criteria: deltaPeak, the adjusted temperature or maximum capacity.

E) CC/CV charging method

- CC stands for “Constant Current” and CV for “Constant Voltage”. This combined method is used for LiPo, Lixx and Pb batteries.
- The unit charges with the adjusted, constant amperage until the batteries have reached their designated voltage: 4,2V/cell (LiPo), 3,3-4,3V/cell (Lixx) and 2,35V/cell (Pb). From this point on the Overloader2 charges the batteries with a constant voltage. This means, the amperage is permanently re-adjusted (reduced), so that the voltage of the batteries stays constant. This continues until the amperage drops lower than 1/10C (capacity of the battery divided by 10). After this the process goes over to trickle charge, the battery is ready for use.
- PLEASE NOTE: it is absolutely important, that you adjust the switch-off voltage for these types of battery exactly according to the instructions from the battery manufacturer.
- PLEASE NOTE: Read and follow all instructions from the manufacturer of your battery!

F) Metering the internal resistance while Discharging

- During discharge the Overloader2 can meter the internal resistance of the battery in process.
- This procedure always takes place exactly 1 minutes after starting the discharge. This method ensures constant and comparable results.
- The metered result is then displayed instead of the nominal battery capacity.

Serial PC connection / LogView

The Overloader2 is equipped with a serial PC connection slot on the right side of its aluminum housing. With the article-number RS153 is an optional USB interface available. With a connection to your PC or laptop you can view, edit and file all of your charging and battery information data on your computer. You can also update your Overloader2 with newer software versions in the future. For handling the data transfer the Overloader2 is preset for LogView software (www.logview.info).

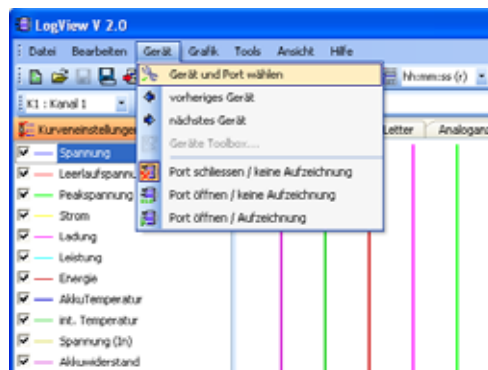


LogView

LogView is a free software and can be downloaded in the newest version under www.logview.info. This software allows to monitor all relevant charge-, discharge- and cycle-parameters graphically in many different ways. You can compare different readings; edit them, store them for future references and print them.

First steps in LogView

In the moment the LogView software is only available in German user language, but it is possible that an English version will follow in the future. After you have installed and started the software, in the next step you have to choose the right “Gerät” (unit) and the right “Port”. For that you click in the menu bar on “Geräte” and in the opening window on “Gerät und Port wählen”. The Robitronic USB interface (RS153) has to be connected and the necessary driver has to be installed. The right driver is delivered together with the USB interface.

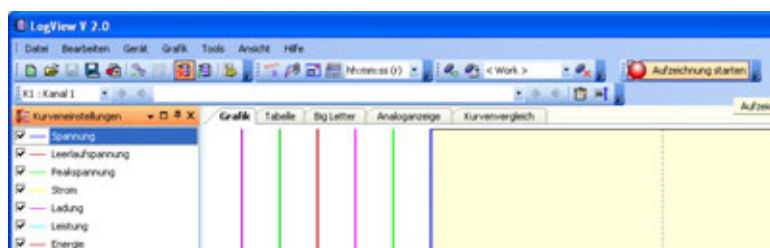


Serial PC connection / LogView

Now the “Gerätedialog” opens, in which you have to choose the “Ladegerät” (charger type) and port. Of course you have to choose the Overloader2, the port number however varies with every PC. But the Robitronic USB interface will always be recognized as “CP2101 USB to UART Bridge Controller”, so it is easily to find. After making these two adjustments you can close this window.

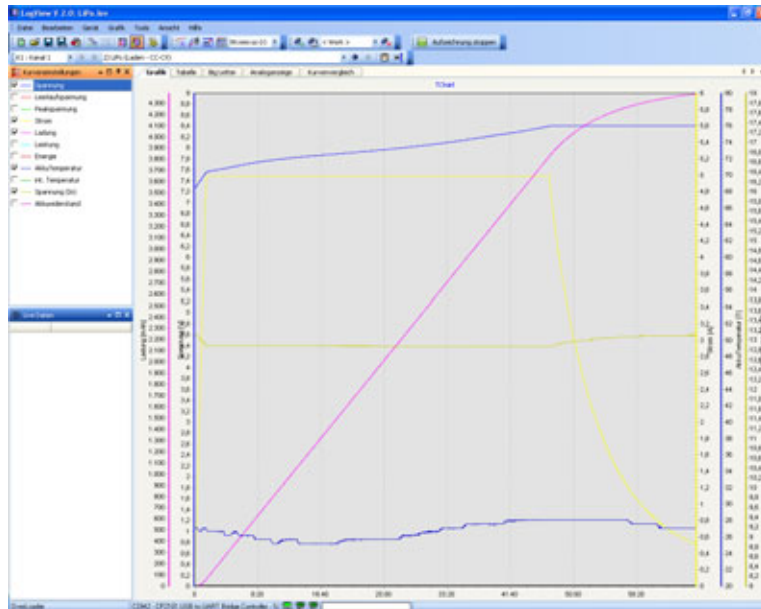


The last thing to do is now to click on “Aufzeichnung starten” on the menu bar (right, upper side on the screen) and to start a charge- or discharge-process with the Overloader2. Very fast you should receive the first data from the Overloader2 on your PC.



Serial PC connection / LogView

After one charge or discharge has been finished, you should have a complete process graph on your LogView screen. Now you can handle your battery information just like you are used to handle files from other PC applications. Organize them, store them, compare them or print them out. In the following you can see a screenshot from a LiPo battery charging graph. On the left side of the program window you have various options regarding the process parameters and their way of being displayed in LogView. PLEASE NOTE: depending on the battery type and/or process type there might be some of the listed options without any data results.



The LogView program includes many more options, but to get into them would go beyond the scope of these instructions. There is much more information to find on the LogView homepage including their active support forum. Both of those links can be directly used right out of the LogView program under the “Hilfe” (help) menu topic.



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