



DEAR CUSTOMER,

thank you for your trust in this LRP product. By purchasing this product you have chosen a high-performance product which has the latest technology incorporated. Please read the following instructions carefully before you start using this product. This user guide contains

important notes for the installation, the safety, the use and the maintenance of this product. Always consult this manual when using this product to protect yourself and to avoid damaging the product.

INTENDED USE

Proceed according to the user guide in order to understand your charger completely.

This charger is intended to charge NiCd/NiMH type rechargeable batteries (1 - 15 cells), LiPo/LiFe/Lilon batteries (1 - 6 cells) and lead acid batteries (2V - 20V). The charge current can be set between 0.1A and 10.0A depending on the connected batteries and their cell number/capacity.

Batteries can also be discharged; the discharge current is between 0.1 to 5.0 A.

The charger can be connected directly to AC power (100 – 240 V/AC, 50/60 Hz) or to a stabilized power supply with a voltage between 11 V/DC and 18 V/DC.

A two-line illuminated LC display and four keys are used to control the charger.

A balancer is integrated into the charger for LiPo/LiFe/Lilon batteries, with balancer connector sockets for the battery located on the right side of the charger.

This charger is intended for indoor use only. Do not use it outdoors. Contact with moisture, e.g. in bathrooms, must be avoided under all circumstances.

For safety and approval purposes (CE), you must not rebuild and/or modify this product. If you use the product for purposes other than those described above, the product may be damaged. In addition, improper use can cause hazards such as short circuiting, fire, electric shock etc.

Read the instructions carefully and keep them. Make this product available to third parties only together with its operating instructions.

DELIVERY CONTENT

- Charger
- Input AC power cable
- Input connection cable with alligator clips

- Output charging cable with alligator clips
- User manual

TECHNICAL DATA

Dimensions	143x160x60mm
Weight (excluding charge wires)	620g
Input voltage range	11-18V [DC]
	100-240V [AC]
Charging capability	1-6 cells [LiPo/LiFe/Lilo]
	1-15 cells [NiMH/NiCd]
	2 -20V [Pb]
Charge power	max. 80W

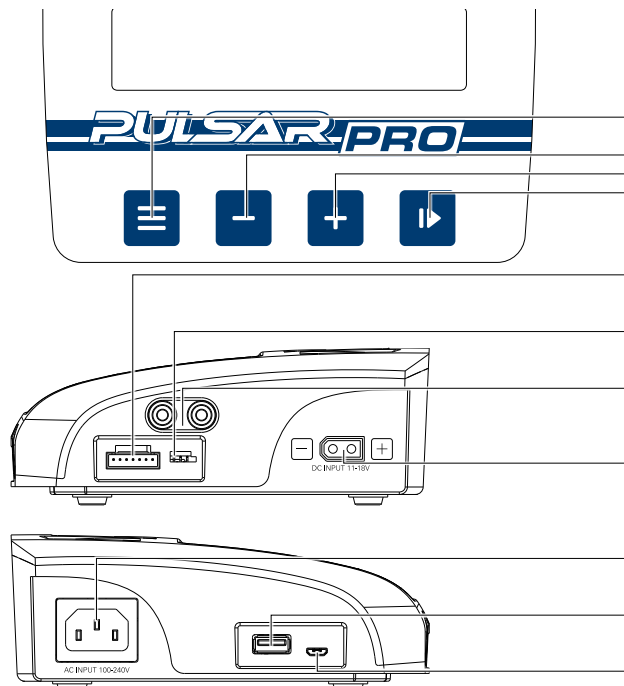
Charge current	0.1-10.0A
Trickle current	0-300mA
Storage charge mode	Yes
Discharge power	max. 25W
Discharge current	0.1-5.0A
Discharge cut-off voltage	0.9-19.8V
Delta peak cut-off sensitivity	5-200mV/pack
Autostart timer	0-99[min]

Cycle mode	NiCd/NiMh
User profile memory	5
Safety timer	1-720min
Acoustic signal type	Buzzer
Display	LCD 16x2, blue backlit
Buttons	4
Multi Protection System	Yes
DC input connection	pluggable DC input wire

AC input connection	Internal SMPS plug
Output connection	alligator clips with 4 mm plug
Internal cooling fan	Yes
USB connection	Yes
USB charge output	5V/2.1A
Integrated balancer	XHR-style, 2S-6S
Temperature Cut-off	20-80°C (optional)
Updateability	Yes

Specifications subject to change without notice

CONNECTIONS & OPERATION



This product was developed with the main objective placed on easy operation of all features. Intuitive navigation by means of 4 buttons makes it very easy to use and the 2-line blue backlit LCD offers perfect, reliable control of all settings and functions.

BUTTONS (FOR DETAILED FUNCTIONS SEE FLOWCHART):

- MENU -> press: Scroll/navigate through the function list.
- > hold: Jump back to initial screen.
- DEC (-) -> Decrease selected (blinking) value.*
- INC (+) -> Increase selected (blinking) value.*
- START/STOP -> Enter or select function / Start a program / Cancel a running program.
- * Button has high-speed function for rapid setting (press and hold to change value faster).

BALANCER CONNECTOR:

high-performance integrated Lixx balancer for 2S to 6S packs using XHR balancing connector.

TEMPERATURE SENSOR (OPTIONAL):

connect the optional temperature probe to measure the battery temperature.

OUTPUT JACKET:

connect battery to the 4.0mm jacket, using supplied charge wires.

DC INPUT:

connect to a suitable DC source with 11-18V, using the supplied connection wire.

Caution: Be careful with correct polarity!
 ⚠ Red = Plus / Black = Minus

AC INPUT:

connect to main power with 100-240V AC.

USB CHARGE OUTPUT:

5V/2.1A USB charge output

USB CONNECTION - PC LINK:

used for upcoming firmware updates.

USER MANUAL - PULSAR PRO

SETTINGS

This product allows you to save 5 customizable user profiles. There are five preset factory default user settings as shown in the table on the right.

The active profile P1 to P5 is displayed in the main menu indicating the selected battery type and charge voltage. Also the last selected profile is loaded during next startup of the product.

In P0 Mode (System Set) you can adjust the following general settings: safety timer value, key beep and buzzer (on/off) and menu language.

Factory reset: In P0 Mode (System Set), you can reset all values to default factory settings simply by pressing and holding START button in "Load factory settings" screen.

User Profile	P1	P2	P3	P4	P5
Battery type	NiMh	LiPo	LiPo	LiPo	LiPo
Battery Lixx Volt	/	7.4V	11.1V	14.8V	18.5V
Charge LiPo TVC	/	4.20V	4.20V	4.20V	4.20V
D-Peak	20mV	/	/	/	/
Trickle	off	/	/	/	/
Charge Current	5.0A	6.0A	3.0A	3.0A	3.0A
Discharge Current	1.0A	1.0A	1.0A	1.0A	1.0A
Discharge Voltage	5.4V	6.6V	9.9V	13.2V	16.5V
Cut-off Temp	50°	50°	50°	50°	50°

User Profile	P0
Safety Timer	off (1-720min)
Button Sound	on (off)
Buzzer	on (off)
Language	English (German)

CHARGE

SET BATTERY TYPE: This product can charge pretty much any type of battery (LiPo, LiFe, Lilo, NiMH, NiCd, Pb) and incorporates the designated charge algorithms for each battery for best performance, reliability and safety.

• **Lixx + Pb:** charging using the CC/CV-charging method. With this charging method, the battery gets charged with a constant current first. As soon as the battery voltage reaches the max. allowed charging voltage per cell (for example, LiPo 4.2V and LiFe 3.7V), the charger automatically reduces the charging current until the battery is fully charged.

Caution: We strongly recommend to use the balancer in Lixx charging modes as this prevents wrong cell number selection and maintains your Lixx battery in best condition.

• **NiMH/NiCd:** charging with constant current + Delta-peak detection. This is the most popular charging method for NiMH/NiCd-batteries.

Caution: Make sure you always choose the correct battery type setting for the battery you want to charge! Wrong setting may result in damage to the battery, fire or explosion!

SET CHARGE CURRENT: the charge current can be set from 0.1-10A. If not specified otherwise by the battery manufacturer, choose 1C (C = battery's nominal capacity; e.g. 7.000mAh => 1C = 7A) charge current and make sure your selected plug-system is capable of the selected current.

SET CHARGE DELTA PEAK: with NiMH/NiCd-batteries, you only obtain the optimum battery performance by slightly „overcharging“ the battery. In real terms, it will not be overcharged, but charged to an optimum level. The battery voltage drops at the end of the charging process (delta). The size of the drop (Delta-Peak) is adjustable in the range between 5-200mV/pack. The higher the value, the hotter the battery will be at the end of the charge. We recommend to start with the Factory-default settings.

Note: The adjustable Delta-Peak value applies to the whole battery pack and not to one single cell!

SET CHARGE TRICKLE: this current, which flows after delta peak cut-off, is adjustable from 0-300mA to achieve the highest possible voltage for NiCd cells. Set this function to „Off“ for NiMH cells.

SET BATTERY LIXX VOLT: the packs rated voltage for LiPo/LiFePo/Lilo must be set according to the packs rating.

SET LIPO TVC: the LiPo battery Terminal Voltage for charging can be set between 3.80V and 4.40V according to your needs.

Caution: We strongly recommend to set LiPo TVC to a maximum of 4.20V unless you are charging special high-voltage LiPo batteries.

SET CHARGE PB: Voltage setting must be set from 2-20V (2V step) depending on the rated battery voltage.

Caution: PB batteries cannot be fast charged. We recommend to charge with 0.1C (10% of the nominal battery capacity) unless specified differently in the battery manufacturer's manual. Otherwise, you might damage your battery!

CHARGING WITH TEMPERATURE SENSOR: you can use the optional temperature sensor to measure the actual temperature of your battery pack: If the preadjusted temperature is reached the charging will stop and a warning message will be displayed. This feature is not a charging method but an additional safety function.

STORAGE CHARGE MODE: You should not store your batteries completely empty or completely charged as this might result in damaged batteries. Therefore, this charger features a „Storage charge“ mode. This function lets you set:

- In case of a Lixx battery: a fixed voltage up to which the battery will be charged.
- In case of a NiMH battery: a capacity which will be charged in additionally. We recommend to discharge the battery first to be able to charge your battery to the exact capacity you desire. This way you can always perfectly prepare your battery for storage. Please note that for Lixx batteries, storage mode is only operational with a balancer connected.

Our recommendations:

- 3.9V/cell for LiPo & 3.4V/cell for LiFe
- NiMH/NiCd cells: 50% of nominal capacity

Note: Charge Wattage limitation: the charge wattage is limited to 80W (Watts = Voltage x Current / e.g. for 7.4V x 10A = 74W). This means, packs with a voltage above 8.0V cannot be charged with 10A but the charger will automatically set the highest possible current by itself during charging.

DISCHARGE

By discharging your battery pack you obtain vital information about remaining capacity for optimizing your motor or gear ratio for the next run. This also maintains your battery packs in good condition.

SET DISCHARGE CURRENT: The discharge current can be set from 0.1 - 5.0A. Please make sure that the set discharge current suits to your battery and the plug-system being used.

SET DISCHARGE VOLTAGE: the cut-off voltage can be adjusted from 0.9 - 19.8V, depending on battery type and number of cells. We recommend following cut-off voltages: LiPo: 3.3V/cell, LiFe: 2.6V/cell, NiMH/NiCd: 0.9V/cell.

Examples: 6.6V for a 2S (= 2-cells) LiPo, 5.2V for a 2S LiFe, 5.4V for a 6-cell NiMH/NiCd.

Note: Discharge Wattage limitation: the discharge wattage is limited to 25W (Current = Watts : Voltage / e.g. 25W : 8.4V ≈ 3A). This means, packs with a voltage above 5.0V cannot be discharge with max. current but the charger will automatically set the highest possible current by itself during discharging.

CYCLE

This fully automatic cycling function for NiMH/NiCd battery packs allows you basic determination of the actual performance of your packs. Battery packs change during their life span. Use this function to control the actual quality of your packs. This may prevent unpleasant surprises.

Tip: We recommend cycling especially if your packs were not in use for a longer time as this can improve performance of the batteries.

The Cycle mode uses the charge and discharge values of the currently selected program, stored under settings. You can adjust:

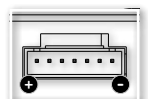
- Cycle direction: CHG > DCHG: charge first - ends with empty battery
DCHG > CHG: discharge first - ends with full battery
- Number of cycles from 1-5: choose the number of cycle repetitions.
- Rest time: To avoid overheating of the battery a rest time can be programmed between the two processes.

BALANCING

This product features an integrated high-performance balancer for 2S to 6S Lithium based (LiPo, LiFePo, Lilo) battery packs using an XHR balancing connector. Please refer to the drawing (also like that on the charger) for correct polarity. Basically minus (black wire) is always on the far right side of the plug as shown on the drawing. The balancer equalises the cells, during charging and balancing, which results in higher performance and a longer life span.

Caution: Avoid incorrect connection as in the worst case this may result in damage to the battery and/or charger!

Tip: We recommend the use of balancer at every charge or discharge operation as this will maintain the performance of your packs in best condition.



SPECIAL FEATURES

ADJUSTABLE BATTERY CUT-OFF VOLTAGE DURING CHARGE: allows you to fine-tune the cut-off voltage per cell (TVC = Terminal Voltage during Charge) in a range from 3.80V to 4.40V in steps of 0.01V.

Changing the LiPo battery cut-off voltage from the standard 4.20V/cell has several advantages:

- 1) Maximize your battery voltage according to the voltage allowed by Technical Inspection.
- 2) Reduce the maximum punch and power by charging to a lower cut-off voltage than the standard 4.20V/cell.
- 3) Increase the lifetime of your battery by charging to a cut-off voltage lower than 4.20V/cell when maximum performance is not vital, for example during practice.
- 4) Charge high-voltage or „Outlaw“-LiPo batteries to their specified voltage.

AUTOSTART TIMER: with this handy feature you can select the time that passes until charging starts automatically. The Autostart timer is adjustable from 0 - 99min. If you stay in the „Autostart Display“ for longer than 30sec without setting a value, or confirming the charge process, charging will not start and the charger will go back to the main menu.

CHANGING THE CURRENT ON THE FLY: The charge current can be changed on the fly by pressing INC+ or DEC- without interrupting the charging process. This change is not stored. The next time you start charging, the charger takes the data settings of each charge profile, stored under “Settings”. Keep the buttons pressed to rapidly adjust the current values.

DATA VIEW FUNCTION: during each process you can view additional data by pressing MENU button. If afterwards no action is made the charger will jump to initial screen automatically after few seconds. You can also exit this screens manually simply pressing DEC- or INC+ button.

SOFTWARE UPDATE: This product’s software can be updated via the integrated USB port. For available updates and information check www.LRP.cc.

USB CHARGE OUTPUT 5V/2.1A: simply plug in your USB device (mobile phone, etc.) with a suitable cable and charge it directly from your charger.

RECOMMENDED SETTINGS

⚠ Important: always follow the battery manufacturer’s recommendations first. The recommendations below should only be seen as a guideline for the most common battery packs!

Battery Type	Charger setting	Voltage / Cells	Charge Current	D-Peak	Trickle	Discharge current	Discharge Voltage
NiMh "Sport" packs (2200-3600mAh)	NiMh	7.2V / 6	4.0A	25mV	Off	5.0A	5.4V
NiMh "Race" packs (>3800mAh)	NiMh	7.2V / 6	5.0A	25mV	Off	5.0A	5.4V
NiMh "Rx" packs	NiMh	6.0V / 5	1.5A	15mV	Off	1.5A	4.5V
NiMh "Tx" packs	NiMh	8.4V / 8	1.0A	30mV	Off	1.0A	7.2V
LiPo 1S "Race" pack >6000mAh	LiPo	3.7V / 1S	8.0A	/	/	5.0A	3.3V
LiPo 2S "Race" pack >6000mAh	LiPo	7.4V / 2S	8.0A	/	/	5.0A	6.6V

For any other pack we suggest to charge with 1C charge rate.

⚠ Caution: Make sure you always select correct settings (charging mode and pack voltage)!

Battery Type	Charger setting	Voltage / Cells	Charge Current	D-Peak	Trickle	Discharge current	Discharge Voltage
LiPo 3S "Sport" ~4000mAh	LiPo	11.1V / 3S	6.0A	/	/	5.0A	9.9V
LiPo 4S "Sport" ~2500mAh	LiPo	14.8V / 4S	3.8A	/	/	5.0A	13.2V
LiPo 2S "Sport" pack ~4000mAh	LiPo	7.4V / 2S	6.0A	/	/	5.0A	6.6V
LiFe 2S *low C* Rx/ Tx pack ~2000mAh	LiFe	6.6V / 2S	2.0A	/	/	2.0A	5.2V
LiPo 2S *low C* Rx/ Tx pack ~2500mAh	LiPo	7.4V / 2S	2.0A	/	/	2.0A	6.6V
LiPo 3S *low C* Tx pack ~3000mAh	LiPo	11.1V / 2S	2.0A	/	/	2.0A	9.9V

TROUBLESHOOTING

This product is protected against faults and operator errors by the Multi-Protection-System. Error messages are displayed on the LCD screen and some may interrupt any process to protect the charger and the battery. The messages are as follows:

LCD MESSAGE	POSSIBLE CAUSES -> SOLUTION
Safety timer	Charging time-limit setting is reached -> re-adjust if needed
No balancer	Balancing not in use -> connect if needed
Pack is balanced	Voltage of each cell is even -> pack does not need balancing
Battery full	Battery completely full -> does not need charging
Check connection	Battery Voltage selection not correct >> check for Lixx Cell quantity
	No battery connection -> check connection and contacts
	Battery defective -> check single cells voltage of battery pack
Check Balancer	Voltage not set correctly -> re-adjust cell (pack) voltage
	Wrong battery type selected. Check battery type setting.

LCD MESSAGE	POSSIBLE CAUSES -> SOLUTION
Reverse polarity	Battery not connected correctly (+/-) -> re-connect with correct polarity
Voltage invalid	No voltage on balancer recognized -> check balancer connection
DC input low	Input voltage too low (<11.0V on DC input) -> check Input
DC input high	Input voltage too high (>18.0V on DC input) -> check Input
Int. temp high	Charger overheats -> check for sufficient cooling
Ext. temp. high	Battery temperature over the adjusted value -> check setting
High current	Internal problem -> re-connect (reset) the charger, load factory settings
Control fail	Internal problem -> re-connect (reset) the charger, load factory settings

REPAIR PROCEDURES / LIMITED WARRANTY

All products from LRP electronic GmbH (hereinafter called "LRP") are manufactured according to the highest quality standards. LRP guarantees this product to be free from defects in materials or workmanship for 90 days (non-european countries only) from the original date of purchase verified by sales receipt. This limited warranty does not cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage.

This applies among other things on:

- Cut off/changed original input- and/or output-wires
- Mechanical damage of the case
- Humidity/Water inside the case
- Mechanical damage of electronical components/PCB
- Soldered on the PCB

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide, if available, before you send in this product for repair. If products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

With sending in this product, the customer has to advise LRP if the product should be repaired in either case. If there is neither a warranty nor guarantee claim, the inspection of the product and the repairs, if necessary, in either case will be charged with a fee at the customers expense according to our price list. A proof of purchase including date of purchase needs to be included. Otherwise, no warranty can be granted. For quick repair- and return service, add your address and detailed description of the malfunction.

If LRP no longer manufactures a returned defective product and we are unable to service it, we shall provide you with a product that has at least the same value from one of the successor series.

The specifications like weight, size and others should be seen as guide values. Due to ongoing technical improvements, which are done in the interest of the product, LRP does not take any responsibility for the accuracy of these specs.

LRP-DISTRIBUTOR-SERVICE: check www.lrp.cc

PROGRAM STRUCTURE

