USER MANUAL
SPIN PRO
Reverse Brushless

#80250

>5.5T Motorlimit
Splashproof
Racing Mode + Boost0
2S - 4S LiPo Operation
Sensored Brushless Technology

LRP — BLUE IS BETTER

Specifications

Pure Brushless	yes		„Boost 0" Mode	yes
Forward/Brake/Reverse	yes		Racing Mode	yes
Forward/Brake (for Racing)	yes		SwitchingBEC	6.0V/2.0A
Case Size	36x38.5x22mm		Easy Single-Touch Operation	yes
Weight (excl. wires)	35g		Multi-Protection-System 3	yes
Voltage Input	3.7 - 14.8V		USB Software Updateability	yes
Typ. Voltage Drop* @20A	0.022V / phase		Connectors	Deans/Bullet
Rated Current*	200A / phase		Splashproof	yes
Compatible winding styles	Star		Adj. Modes (Cut-Off, Drive Selection, Power Mode, Autobrake)	yes
Rec. Motor Limit (@7.4V)	>5.5T			

* Transistors rating at 25°C junction temperature   Specifications subject to change without notice.

Connections & Explanations

On/Off Button: to simplify the usage, the button is also used as the On/Off switch, a quick press of the button will turn your Spin On and Off.

Splashproof: due to latest production technologies and use of HighTech materials, it was possible to make this speed-control splashproof (keep in mind this doesn't imply complete waterproof!). This material also makes the speed-controls more shock resistant then other similar products.
It's no longer needed to seal your speed-control when you are driving in the rain/snow! But please make sure you still seal the sensor connectors (speedo + motor side) and your other electronic components (receiver and servo) since these are normally not splash-/waterproof.

Power Wires: for maximum convience and performance Deans type battery and bullet type motor connectors have been used in combination with high quality silicone wires.

The copper solderposts allow replacement of the power wires. Avoid soldering longer then 5sec per soldering joint to prevent possible damage to the speed-control due to overheating of the components!

Receiver Connecting Wire: the Spin is equipped with an LRP Multicon receiver wire. As supplied, it will easily fit in all ordinary receivers. Make sure you connect it to receiver with correct polarity and use channel 2.

Sensor Connector: the bi-directional sensor wire connects the speed-control and the motor. Always use the sensor wire and do not alter or modify this cable, there are also spare and optional sensor wires available.
Through this connector your speedo can also be updated to the latest firmware using our optional „USB Bridge".

Heatsink: to achieve best perfomance even under extreme conditions, the heatsink has been directly mounted to the speed-control. This ensures the best possible heat transfer away from the speed-control.
Caution: Never attempt to remove the heatsink or your Spin may get damaged as it is an integral part.

Plugged Cooling Fan: your speed-control contains a low-profile cooling fan (25x25x6mm) and mounting screws. The fan mounts on top of the heatsink and should be used for tough applications, as a guideline we recommend using the fan when using motors with 10.5T or lower with 2S LiPo batteries. The fan get's plugged into the 3-pin connector on the back side of the speed-control.

Installation Guide

• Position the speed-control where it is protected in the event of a crash and give you easy access to the connectors and button.

• Mount the speedo using the supplied thick/black doubled-sided tape

• Make sure there is enough clearance between the speed-control, power-wires, antenna and receiver. Avoid any direct contact between power components, the receiver or the antenna as this can cause interference. If interference occurs, position the components at a different place in the model.

• The aerial should be run vertically up and away from the receiver. Avoid contact with any parts made of carbon fibre or metal. If the aerial is too long, don't coil up the excess length. See also the instructions supplied with your radio control system.

Connection to receiver, motor and battery:

• Connect the speed-control to the receiver (position: Channel 2)

• Connect the speed-control to the brushless motor
  • A (blue wire)   ➔ to motor „A"
  • B (yellow wire)   ➔ to motor „B"
  • C (orange wire)   ➔ to motor „C"
  • + hall sensor cable.

• Doublecheck all connections before connecting the speed-control to a battery.
  Caution: If battery is connected with reversed polarity it will destroy your speed-control!

• Connect the speed-control to your battery using the attached Deans type connector.
  • + (red wire)   ➔ to battery „Plus"
  • - (black wire)   ➔ to battery „Minus"

• The speed-control is now ready to be set-up.

Thank you for your trust in this LRP product. By purchasing a **LRP Spin Pro Reverse** brushless speed-control, you have chosen a high-performance speed-control full of new design features, such as:

- Sensored Brushless Technology
- Splash Proof
- AutoCell System 2
- USB Software Updateability
- 2S to 4S LiPo operation
- 6.0V / 2.0A Switching BEC
- Multi-Protection System 3
- Boost0 and Racing Mode

Please read the following instructions carefully before you start using your speed control. This user guide contains important notes for the safety, the use and the maintenance of this product. Thus protecting yourself and avoid damages of the product.

Proceed according to the user guide in order to understand your speed control better. Please take your time as you will have much more joy with your product if you know it exactly.

This user manual shall be kept in a safe place. If another customer is using this product, this manual has to be handed out together with it.

User Interface

The Spin uses a single button which is used as the On/Off button, for calibration to your radio and also the mode adjustments. Therefore it works in a slightly different way than known from previous LRP speed-controls but we have retained the simple and intuitive logic to make it super user-friendly for you.

On/Off works as a simple & short press of the button (power toggle).

Please refer to chapter „Calibrate Speed-Control to Radio" and „Mode Programming" on how to access and use those functions.

A ✳ inside the LED symbolises a flashing LED.

LED's (red/yellow/green)   ON/OFF & SET button

Calibrate Speed-Control to Radio

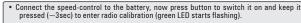In setup mode the Spin stores every step (e.g. learning your radios neutral and endpoints) by pressing the button. All the settings will be stored in the memory even if it will be disconnected from the battery.
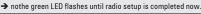
TRANSMITTER SETTINGS: Setup the following basic functions on your transmitter (if available):
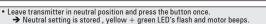
Throttle Travel	High ATV, EPA	100%
Brake Travel	Low ATV, EPA, ATL	100%
Throttle Exponential	EXP, EXPO	start with 0
Neutral Trim	SUB Trim	centre
Servo Reverse	Throttle Reverse	any setting, don't change after set-up procedure!

If your transmitter doesn't offer any of above functions, it's already in „basic setup" mode.

• Ensure that the speed-control is not connected to the drive battery.
• Remove motor pinion or ensure that the wheels of the model are free to rotate.
• Switch the transmitter on and set the transmitter throttle stick to neutral.

• Connect the speed-control to the battery, now press button to switch it on and keep it pressed (~3sec) to enter radio calibration (green LED starts flashing).
  ➔ nothe green LED flashes until radio setup is completed now.

• Leave transmitter in neutral position and press the button once.
  ➔ Neutral setting is stored , yellow + green LED's flash and motor beeps.
• Hold full throttle on transmitter and press the button once.
  ➔ Full-throttle setting is stored, red + green LED flashes.
• Hold full brake/reverse on transmitter and press the button once.
  ➔ Brake/reverse setting is stored, red + green LED's glow permanently.

• This completes the setup procedure and your Spin is ready to use.
• If you make a mistake during the setup procedure, don't worry: Disconnect the battery for about 10sec or and start again from the first step.
• At the start of each run switch on the transmitter first, then switch on the car.
• At the end of each run switch off the car, and then switch off the transmitter.
• For storage of the car, disconnect the drive battery at any time!

Check the LED's when moving the throttle on your radio to doublecheck everything is setup correctly.

Function	Status	red	yellow	green
Neutral		○	○	✳
Neutral (when „Boost Zero" enabled)		○	○	✳
Forward	partial	○	●	○
	full	○	●	○
Brake/Reverse	partial	●	○	○
	full	●	○	○

Motorlimits

Our motorlimits, in the case of Spin Pro Reverse „over 5.5T", are always rated for 2S LiPo battery usage. When increasing the number of cells (e.g. 3S/11.1V or 4S/14.8V) the motorlimit will increase accordingly and this will result in following motorlimits:

- 2S LiPo / 7.4V: over 5.5T
- 3S LiPo / 11.1V: over 9.5T
- 4S LiPo / 14.8V: over 12.5T

Depending on how smooth or hard you drive your car the motorlimits can be rather different (lower or higher).

Multi Protection System 3

New and improved protection system „MPS3" which also informs you the cause of the shutdown with a special LED flashing sequence. You can indicate that a shutdown occured when green LED flashes very fast and the „error code" (= cause for shutdown) is indicated by the MODE LED's as explained in table below.

Error Code LED flashing sequences:

red yellow green	Error Type	Possible Reason
○○✳	Speed-Control Thermal Shutdown	1. too high gear ratio? 2. too low motor wind for application?
●○✳	Motor Thermal Shutdown	1. too high gear ratio? 2. too low motor wind for application? 3. too high mechanical motor timing?
●○●	Battery Low Voltage Cut-Off	1. battery empty or wrong setting in ACS2? 2. battery damaged? 3. motor too strong for battery discharge capability? 4. poor connection (bad connector, bad soldering joint)?
●○●	Motor Failure	1. sensor wire missing or defective? 2. defective motor (rotor does not spin)? 3. drivetrain stuck?

USB Software Updateability

Through the sensor connector the Spin can be updated to the latest firmware available for download at www.LRP.cc.

The optional „USB Bridge - Speedo Firmware Update + PC-Link" (#81800/81801) and a computer are required to do so, please refer to LRP website and the manual which comes with the interface for exact details how to do software updates to your speed-control.

Mode Programming

The *Spin* features three simple modes which enable you to adjust it to your requirements. The WorksDefault settings are shown in grey colour.

This is the first LRP speed-control using a single button which is used as the On/Off button, for calibration to your radio and also the mode adjustments. Therefore it works in a slightly different way than known from LRP speed-controls before but we have retained the simple and intuitive logic to make it super user-friendly.

• How to get into „programming the modes"?	➔ With speedo turned on, press button for 3sec until yellow + green LED start flashing.
• How to know in which mode you are?	➔ check LED flashing sequence of red/yellow LED's.
• How to check the stored values?	➔ Count the number of flashes of the green LED. (* = value 1 | ** = value 2 | etc.).
• How to change the value?	➔ Press button to increase value by one step.
• How to get to the next mode?	➔ this is done automatic, the values will be shown 3 times before it jumps to the next Mode! The „jump" to the next mode is indicated by all 3 LED's flickering very quickly.
• How to leave the programming mode?	➔ let the speedo „hop" through the remaining mode's and it leave the mode programming automatically.

• Table of settings, values and modes: see right side (grey-shaded values show „default settings").

Special Features (further explanations)

Double Action Brake/Reverse Function: in order to give best car control during braking, even when using reverse function, the brake function is integrated as a „double action" brake.
This means that you'll have normal brake in the reverse range for the first time you hit brake, it will switch to reverse operation if you let the trigger return to neutral after braking and then go back to reverse trigger position.

SwitchingBEC: a powerful and efficient 6.0V/2A switching BEC allows the usage of strong servos in combination with a wide range of drive batteries (2S-4S LiPo or 6- to 14-cells NiMH's).

1S LiPo use: the speedo can also operate with lower input voltage then 7.2V but be aware that you need to run a receiver battery when you're using a 1S LiPo or 4cell NiMH battery pack.
Connect a suitable receiver pack directly to the receiver, make sure the receiver packs voltage is within your receivers & servo's limitations (the speed-control itself can accept up to 7.4V from receiver pack).

Boost Zero: if value #0 is choosen for Mode.3 the green LED will flash in neutral trigger position to indicate that speed-control is operating in Boost0 mode for „true stock racing" as required by certain federations!

Changing Mode Settings without the Transmitter: simply disconnect the receiver lead from the receiver and change the MODE settings on the speed-control as described under „Mode Programming".

Sensored Brushless Technology: Advanced Digital allows the perfect knowledge of the brushless motor's magnet position. This results in perfect motor control at high and low RPM's, as well as perfect brake control.

Spare- & Optional Parts

LRP offers a comprehensive line of accessories, as well as particular spare- and optional items. Here you find an overview, for a full picture please visit our website at www.lrp.cc:

#819307	Sensor-Wire „HighFlex" 70mm
#819310	Sensor-Wire „HighFlex" 100mm
#819315	Sensor-Wire „HighFlex" 150mm
#819320	Sensor-Wire „HighFlex" 200mm
#81801	USB Bridge „Spec.2" - Speedo Firmware Update + PC-Link

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 countris only) from the original date of purchase verified by sales receipt. This limited warranty doesn't cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage.

„This applies among other things on:
• Cut off original power plug or not using reverse polarity protected plugs
• Receiver wire and/or switch wire damaged
• Mechanical damage of the case
• Mechanical damage of electronical components/PCB
• Soldered on the PCB
• Connected speed-control with reversed polarity"

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:
• Package your product carefully and include sales receipt and detailed description of malfunction.
• Send parcel to your national LRP distributor.
• Distributor repairs or exchanges the product.
• Shipment back to you usually by COD (cash on delivery), but this is subject to your national LRP distributor's general policy.

●✦ *** Mode.1 *** AutoCell System 2

LED flashes	Remark	#1	#2	#3	#4	#5
Yellow	Cut-Off Voltage	3.2	6.4	9.6	12.8	xxx
	use for	1S LiPo	2S LiPo	3S LiPo	4S LiPo	NiMH

ensures that all batteries can be used safely for all applications, please select the correct value according to our table under „Mode Programming". When the battery voltage reaches the selected cut-off voltage, the motor function will be disabled and the LED's will indicate that the shutdown has occured due to undervoltage of your batteries (see „Multi Protection System 3" for further details).

Caution: WorksDefault setting is 2S LiPo, so if you use other batteries you need to adjust Mode.1 before first use!

✦● *** Mode.2 *** Drive Selection

LED flashes	Remark	#1	#2	#3
Red	Forward	100%	100%	50%
	Reverse	50%	none	50%

the *Spin* includes adjustable drive selection. You can disable reverse, if you plan on using forward/brake only for racing and there's even a „Training Mode" which only gives 50% of the available power in forward direction to give easier control for the less experienced drivers or kids and their first runs with the new vehicle!

✦✦ *** Mode.3 *** Torque Setting
flash alternatively

LED flashes	Remark	#0	#1
Yellow/Red (alternate)	Torque Setting	0%	30°

Value #1: this mode should only be used LRP K4/X12/X20 motors as it will increase the motors torque and efficiency, all other motors should be used with #0 in this mode.

Value #0: Boost0 mode, the green LED will flash in neutral trigger position to indicate that speed-control is operating in Boost0 mode for „true stock racing" as required by certain federations!

✦✦ *** Mode.4 *** Automatic Brake
flash same time

LED flashes	Remark	#0	#1	#2	#3	#4	#5
Yellow/Red (same time)	Autobrake %	0	5	10	15	20	25

allows you to set a slight braking action when your trigger is in neutral range.

Troubleshooting Guide

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide 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.
Always check error by checking LED error code first, this gives you a good indication were to search!

SYMPTOM	CAUSE	REMEDY
Motor overheats	Too high mechanical motor timing	Decrease mechanical motor timing
	Too little motor cooling	Add cooling fan and/or heatsink
Insufficient performance. E.g. poor power, topspeed or brake	Wrong Gear ratio	Adjust gear ratio
	Transmitter settings changed after set-up	Repeat set-up procedure
	Motor or sensor-board in motor defective	Replace sensor-board or motor
	Speed-control defective	Send in product for repair
Servo is working, no motor function	Speedo plugged in incorrectly	Plug speedo to receiver as Ch.2
	Multiprotection System activated	Check settings for your application
	Wiring problem	Check wires and connectors
	Sensor wire missing/defective	Install/replace sensor wire
	Motor defective	Replace motor
	Speedo defective	Send in product for repair
No servo and no motor function	Speedo connected to receiver with wrong polarity	Connect speedo with correct polarity
	Wiring problem	Check wires and connectors
	Battery defective	Replace with different battery pack
	Crystal, receiver or transmitter defective	Replace components one by one
	Speedo defective	Send in product for repair
Motor stutters while accelerating	Sensor wire defective	Replace sensor wire
	Motor or sensor board in motor defective	Replace sensor board or motor
	Radio interference	Change location of components
	Speedo defective	Send in product for repair
Motor runs in reverse when accelerating forward on radio	Model with reversed gearbox!	Can not use a sensored brushless system!
Speed-control switches off frequently	Model used too often without cool-down periods	Let cool down after every run
	Motor stronger than motorlimit or input voltage too high	Use only motors and batteries which are within the specifications of the speed-control
	Stuck drivetrain or ball-bearing	Maintain model
	Motor defective	Replace motor
Motor never stops, runs at constant slow speed	Transmitter settings changed after set-up	Repeat set-up procedure
	Motor or sensor board in motor defective	Replace sensor board or motor
Radio interference	Receiver or antenna too close to power wires, motor, battery or speedo. Receiver aerial too short or coiled up	See „Installation Tips" and „Installation"
	Receiver defective, too sensitive; Transmitter defective, transmitter output power too low, servo problem	Replace components one by one Only use original manufacturers crystals
	Poor battery connection	Check plugs and connecting wires
	Transmitter batteries empty	Replace / recharge transmitter batteries