ORDER NO.: 83710 — IPC GENERATION+ V3.1 — FORWARD/BRAKE OVER 14 TURNS

ORDER NO.: 83720 — IPC GENERATION+ V4.1 — FORWARD/BRAKE OVER 12 TURNS

ORDER NO.: 83730 — IPC GENERATION+ V5.1 — FORWARD/BRAKE OVER 8 TURNS

USER GUIDE

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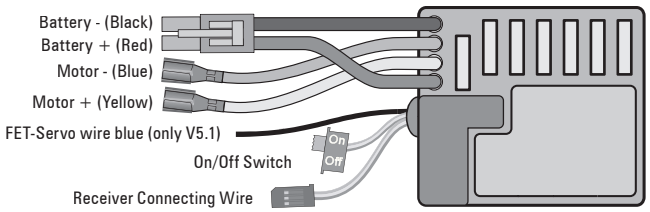
1. CONNECTIONS



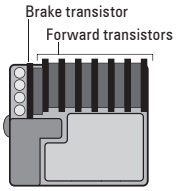
RECEIVER CONNECTING WIRE:
This LRP speed-control is equipped with a LRP Multicon receiver wire. As supplied, it will easily fit in all ordinary receivers.

POWER WIRES:
The LRP IPC GENERATION+ series speed-controls come pre-wired using common „Tamiya-/JST style" battery and motor connectors. Together with a motor and a pre-assembled battery-pack from LRPs selection of motors and battery packs, the speed-control can be used instantly without the need of a solder iron (please see section 5 „Installation" for further reference).
You can also solder the power wires of the speed-control directly to the motor, if you do not want to use the supplied plugs. Nevertheless some soldering skills are still required. However please note, that your warranty may void if you cut-off the plugs. Therefore we recommend using the original power-wires and plugs.

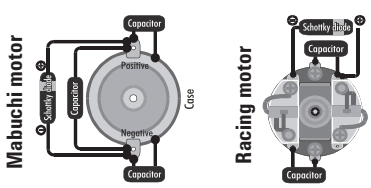
2. INSTALLATION TIPS

- Mount the speed-control using the supplied thick/black doubled-sided tape.
- Position the speed-control where it is protected in the event of a crash.
- Install the speed-control so that you have easy access to the connector and buttons.
- Make sure there is enough clearance (about 3cm) between the speed-control, power-wires, antenna and receiver. Avoid any direct contact between power components, the receiver or the antenna. 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. It is better to cut it down to a length of about 35 cm. See also the instructions supplied with your radio control system.
- Make sure there are enough cooling slits in the body. This will increase the performance and life of all the electronic components.

HEATSINK:
The supplied heatsink improves and safeguards the performance capacity of your LRP IPC GENERATION+ series speed-control when used close to it's specified limits.
Use only the genuine LRP IPC GENERATION+ series heatsink. Never allow the Forward transistors or their heatsink to touch the brake transistor or its heatsink. This will result in a short circuit!



3. SUPPRESSION



Motors with no capacitors or not enough capacitors may interfere with the speed-control. To avoid this, solder the supplied capacitors to your motor (see picture).

The Schottky diode improves the efficiency of the speed-control/motor combination and provides extra protection to the brake FETs. Solder the diode in place as shown in the illustration. The white ring must always face the positive motor terminal.

Dear customer,

thank you for your trust in this LRP product. By purchasing a LRP IPC GENERATION+ series speed-control, you have chosen a high-performance speed-control. These new speed-controls are based on the World Champion technology of the legendary V7.1 control combined with the spirit of the new IPC V8.1 Generation+. All speed controls have the original IPC technology adapted for street and fun racers. The main features of this LRP IPC GENERATION+ series speed-control are:

- V5.1 / V4.1 / V3.1 Software
- Power optimised
- High Frequency
- Optimised operation on 4 cells, w/o receiver battery
- Multi-Protection-System
- Advanced Digital
- Improved brake feel
- APC Adjustable Power Control
- Plug in and drive
- Limited Lifetime Warranty

Please read the following instructions to ensure, that your LRP IPC GENERATION+ series speed-control always works up to your full satisfaction.

Please read and understand these instructions completely before you use this product! With operating this product, you accept the LRP warranty terms.

4. SPECIFICATION

	IPC V3.1 Generation+ (#83710)	IPC V4.1 Generation+ (#83720)	IPC V5.1 Generation+ (#83730)
Forward/Brake	yes	yes	yes
Case Size	41x36x19mm	41x36x19mm	41x36x19mm
Weight (excl. wires)	23g	28g	28g
Voltage input	4-8 cells (4.8-9.6V)	4-8 cells (4.8-9.6V)	4-8 cells (4.8-9.6V)
Typical Voltage Drop*	@20A - 0.053V	@20A - 0.027V	@20A - 0.012V
Rec. Motor Limit**	over 14 Turns	over 12 Turns	over 8 Turns
Rated Current*	180A	360A	480A
4, 5 and 6 cell optimised	yes	yes	yes
B.E.C.	5.0V	5.0V	5.0V
High Frequency	yes	yes	yes
Improved brake feel	yes	yes	yes
APC Adjustable Power Control	yes	yes	yes
Multi-Protection-System	yes	yes	yes
Standard Tamiya Style Connectors	yes	yes	yes

* Transistors rating at 25°C junction temperature
** measured at 7.2V

Specifications subject to change without notice.

5. INSTALLATION

Your LRP IPC GENERATION+ series speed-control comes pre-wired using common „Tamiya-/JST style" battery and motor connectors. Be very careful with the correct wire sequence/colours since an incorrect connection may damage the speed-control!

- Mount the speedo using the supplied thick/black doubled-sided tape.
- Connect the receiver connecting wire of the speed-control with the receiver (position: Channel 2).
- Connect the speed-control to the motor:
  Yellow power-wire ➔ Connect to motor „Plus"
  Blue power-wire ➔ Connect to motor „Minus"
  CAUTION: Be careful with the correct polarity!
- Doublecheck all connections before connecting the speed-control to a battery.
  CAUTION: If a battery is connected with reversed polarity it will destroy your speed-control!
- Red power-wire ➔ Connect to battery „Plus"
- Black power-wire ➔ Connect to battery „Minus"
- You can now switch on the speed-control with the On/Off switch.
- The speed-control is now ready to be set-up (please see section 6 „Radio/speed-control set-up" for further reference).

Note (only V5.1): If your servo has an external FET connection, you have to connect it to the blue FET servo wire of the speed-control.

LRP IPC V3.1 Generation+ speed-control

LRP IPC V4.1 Generation+ speed-control

LRP IPC V5.1 Generation+ speed-control

6. RADIO / SPEED-CONTROL SET-UP

In setup mode the LRP IPC GENERATION+ series speed-control stores every step when you press the SET button. All the settings will be stored in the speed-controls memory even if the speed-control will be disconnected from the battery.

TRANSMITTER SETTINGS
Setup the following basic functions on your transmitter (if available):

Throttle travel	High ATV, EPA	maximum
Brake travel	Low ATV, EPA, ATL	maximum
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 and is switched off.
- 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 and switch the unit on.
- Hold the SET button pressed for at least 3sec using the supplied plastic screwdriver.
  ➔ You entered setup mode and the LED flashes green (it will flash until the setup is completed).

- Leave transmitter in neutral position and press the SET button once.
  ➔ Neutral setting is stored , LED flashes green and the motor beeps.
- Hold full throttle on transmitter and press the SET button once.
  ➔ Full-throttle setting is stored, LED flashes green.
- Hold full brake on transmitter and press the SET button once.
  ➔ Brake setting is stored, LED glows green.

- This completes the setup procedure and your LRP IPC GENERATION+ series speed-control is ready to use.
- If you have made a mistake so far, don't worry: Switch off the speed-control for about 10 seconds and start over again.
- After the run, first switch off the speed-control, unplug the battery and then switch off the transmitter. When you start again, first switch on the transmitter, then plug in the battery and switch on the speed-control.
- Always disconnect the drive battery from the speed-control, if you are not using your model.

CHECKING THE FUNCTIONS:
Check the LED when moving your throttle stick and you will see if everything is setup correctly.

FUNCTION	STATUS	LED SHOWS
Neutral	--	dark green
Forward	partial throttle	bright green
Forward	full throttle	off
Brake	partial brake	bright green
Brake	full brake	off
Temperature protection	activated	flashes green

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 normal wear, misuse or improper maintenance. 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
- Humidity/Water inside the speed control
- Mechanical damage of electronical components/PCB
- Soldered on the PCB (except on external solder-tabs)
- Connected speed-control with reversed polarity

To eliminate all other possibilities or improper handling, first check all other components and the trouble shooting guide, if available, before you send in this product for repair or warranty. Products sent in for repair, that operate perfect have to be charged with a service fee.

By sending in this product, you assign LRP to repair the product, if it is no warranty or Limited Lifetime Warranty case. The original sales receipt 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.

Because we don't have control over the installation or use of this product, we can't accept any liability for any damages resulting from using this product. Therefore using this product is at owner's risk. Our limited warranty liability shall be limited to repairing the unit to our original specifications. In no case shall our liability exceed the original cost of the unit. By installing or operating this product, the user accepts all resulting liability.

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.

With Limited Lifetime Warranty products, the warranty terms on the Limited Lifetime Warranty card do also apply.

7. SPECIAL FEATURES

APC Adjustable Power Control
It is very easy to loose control of a model car on a slippery track surface if you are running a powerful motor. The adjustable power control provides the solution. The unique LRP APC (Adjustable Power Control) effectively prevents unwanted spins and slides, improves vehicle control and thus improves your lap times and extends running times.

Adjusting the APC system:

- For maximum power - rotate the power potentiometer carefully to the right-hand stop using the plastic screwdriver supplied.
- If your car tends to spin - you need slightly less power when accelerating. Rotate the power potentiometer to the left until you can control your car during acceleration.
- If your car has a powerful motor and your speed control switches into temperature protection (overload protection) - rotate the power potentiometer about 1/3 of a turn to the left.

Note: The APC function has no effect on the car's maximum speed.

Multi-Protection System, 3-way protection
The perfect protection against short-circuits (motor), overload and overheating. If your speed-control faces one of these problems, the motor function will be shut-off for protection and the LED will flash. The steering function will be maintained. Let everything cool down for a few minutes.
If the speed-control switches off frequently, either the used motor is too strong, the motor pinion is too big or you are using full brake too often. You can improve this if you make additional cooling slots in the body.

Improved Brake Feel
All the LRP IPC GENERATION+ series speed controls feature a fully proportional EMF brake which can be applied very smoothly to maintain good grip on slippery surfaces. Thanks to the Advanced Digital technology, it was possible to improve the brake feel of the LRP IPC GENERATION+ series speed controls even more.

Advantages:
- Smooth, proportional braking
- Superior braking power
- Battery recharge during braking

If the braking power is too strong for your driving style and conditions, you can reduce it by adjusting servo travel at the transmitter.

8. TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	REMEDY
Servo is working, no motor function.	Speed-control plugged in incorrectly	Plug speed-control in Ch 2
	Overload protection activated	Allow speed-control to cool down
	Wiring problem	Check wires and plugs
	Motor defective	Replace motor
	Motor brushes stuck	Check that brushes are moving freely
	Speed-control defective	Send in product for repair
No servo and no motor function.	Speed-control plugged in incorrectly	Plug speed-control in with correct polarity
	Crystal defective	Replace components one by one.
	Receiver defective	
	Transmitter defective	
	Speed-control defective	Send in product for repair
Motor runs in reverse when accelerating forward on the transmitter.	Motor connected incorrectly	Connect motor correctly
Insufficient performance. E.g. poor brake power, topspeed or acceleration..	Motor pinion too big or gear ratio too long.	Use smaller motor pinion/shorter gear ratio
	Transmitter settings changed after set-up	Repeat set-up procedure
	Motor worn out	Maintain motor
	Motor defective	Replace motor
	Speed-control defective.	Send in product for repair
Speed-control overheats or switches off frequently.	Motor stronger than motorlimit or input voltage too high	Use only motors and batteries which are within the specifications of the speed-control
	Motor pinion too big or gear ratio too long.	Use smaller motor pinion/shorter gear ratio
	Drive train or bearing problems.	Check or replace components.
	Model used too often without cool-down periods	Let speed-control cool down after every run
Motor never stops, runs at constant slow speed	Transmitter settings changed after set-up	Repeat set-up procedure
	Humidity/water in speed-control	Immediately unplug and dry speed-control
	Speed-control defective	Send in product for repair
Radio interference	Motor suppressors not sufficient	Solder capacitors to motor
	Receiver or antenna too close to power wires, motor, battery or speed-control. 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
	Transmitter antenna too short	Pull out antenna to full length
Speed-control looses settings	Receiver problem (especially with some 2.4GHz systems)	Use a power capacitor on the receiver

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.