



USER GUIDE

Order No.:
8305



FORWARD + REVERSE
18 - 36 Turns
80 Amps

LRP electronic

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Dear customer,

Congratulations on choosing one of the world's best speed controls.

We have incorporated the latest digital technology in your Runner-Plus-Reverse speed control in order to provide maximum performance and reliability. The following features (described in detail later) give your Runner-Plus-Reverse the crucial advantage:

- EMF brake, Drive-Control-System
- Fully proportional reverse function with zero delay
- Multi-Protection protective functions

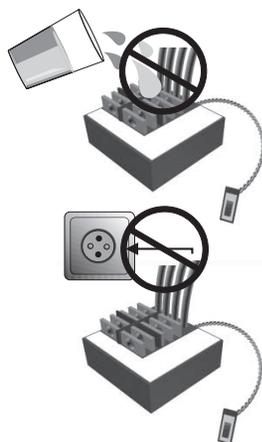
SPECIFICATION

Voltage range / No. of cells	4.8-8.4 V / 4-7	Pulse frequency	1250 Hz
Internal resistance	0.017 Ω	Brake, Drive-Control-System	EMF
Momentary load (1 sec)*	80 A	Reverse function	yes
Brief load (30 sec)*	40 A	Protective functions	yes
Continuous load (5 min)*	20 A	Set-up procedure /	Digital/push-button
Recommended motor	18-36 winds	Battery recharge during braking	yes
Receiver voltage	5.0 V	Power-on pulse suppression	yes
Max. receiver current (30 sec)	1.6 A	Weight	55 g
Continuous receiver current (5 min)	0.6 A	Size	40 x 40 x 15 mm

* The reading „Momentary load (1sec)“ is equal to US-manufacturers reading „continuous load at 25°C“

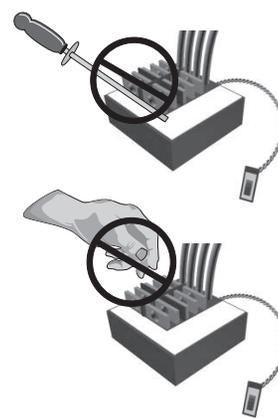
WARNING NOTES

- **Important:** never leave your RC model unattended when the battery is connected. If a fault should occur the result could be a fire in the model which could destroy anything else in the vicinity.
- The speed control and other electronic components must **never be allowed to contact water**. Avoid operating the unit in rain. If you are obliged to run in wet conditions, domestic paper towels provide the best protection.
- If the motor is connected to the speed control you must not run the motor by connecting a separate battery. This will wreck the unit and invalidate the guarantee.
- Do not cut off the original plug, as this invalidates the guarantee.
- Take care to avoid incorrect connections and reverse polarity as this will also cause damage to the unit. If you prefer different



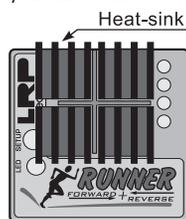
connectors, fit a polarised connector system (plugs / sockets) such as the LRP Hi-Amp (No. 6280); this does not invalidate your guarantee.

- Never allow the output stages (FETs) to touch a metal surface - short-circuit hazard.
- Never wrap your speed control in foil or film; air must always be able to flow round and over the unit.
- All cables and connections should be well insulated. Short-circuits will ruin the unit.
- Never change the polarity of the receiver plug.
- **Never solder a Schottky diode to the motor when you are using an LRP Runner speed control. Schottky diodes ruin any forward/reverse speed control.**

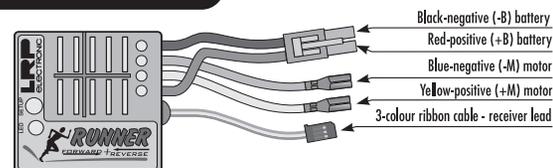


INSTALLATION TIPS

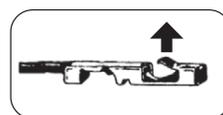
- Mount the speed control in the model using the double-sided foam tape supplied.
- Provide plenty of cooling openings in the bodywork; this increases the performance and extends the life of all electronic components.
- Install the speed control in a location where it is protected from crash damage.
- The speed control should be installed in such a way that you have easy access to all connectors and the set-up button.
- Ensure that there is an adequate distance (approx. 3 cm) between the speed control and power cables and the receiver or receiver aerial. Avoid direct contact between all power system components and the receiver or aerial, as this can cause interference. If you encounter interference problems, re-position the components 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.
- **IMPORTANT:** the heat-sink supplied in the set improves the performance of your Runner-Plus-Reverse speed control and must always be used. Use only genuine LRP heat-sinks. Never allow the heatsink or FETs of one "block" (field in the cross) to touch parts of another "block" - short circuit. For this reason we recommend that you attach the heat-sink to the case using a small drop of cyano glue.



CONNECTIONS



- **Graupner, Ko-Propo, Futaba, Hitec and LRP Phaser receivers:**
The LRP speed control is fitted with an LRP Multi-Con receiver lead which fits any of the above receivers directly.
- **Sanwa receivers:**
Remove the black plastic moulding from the receiver cable and replace it with the plastic moulding supplied (inscribed "AIR") as follows:
- **Replacing the plastic plug moulding:**
Press in the metal lugs of the connector pins using a ball-point pen to disengage them; the wires can then be withdrawn from the plastic housing. Check the polarity using the table below, and slip the pins into the new plastic moulding until they snap into place.



Bend the metal lugs up again.
Push the plug into the new plastic moulding.



Check correct polarity carefully if changing connectors:

Receiver	Futaba	Graupner	Acoms	Sanwa
Signal wire	white	orange	yellow	yellow
Positive wire	red	red	red	red
Negative wire	black	brown	black	black

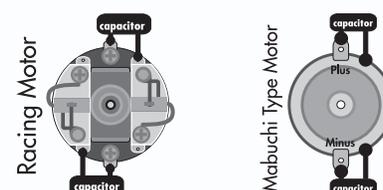
INSTALLATION

- First attach the heat-sink (supplied) to the speed control, as described under "Installation tips".

- Solder the suppressor capacitors to the motor.
- Remove the motor pinion, or ensure in some other way that the wheels of the model can rotate freely.

- Install the speed control in the model.
- Connect the speed control to the receiver (channel 2).
- Connect the speed control to the motor. Note the colour code: yellow wire positive, blue wire negative.
- Check all the wiring and connections before you connect the speed control to a drive battery. Caution: incorrect polarity will wreck your speed control.
- The speed control is now ready to be set-up (see next page).

MOTOR SUPPRESSION:



Your speed control can be ruined if you connect it to a motor with no suppressors or inadequate suppression. It is therefore essential to solder the capacitors supplied in the set to your motor (see drawing).



CAUTION: never use Schottky diodes in conjunction with a forward/reverse controller such as the Runner-Plus-Reverse.

Schottky diode:



SET-UP PROCEDURE

In set-up mode the Runner-Plus-Reverse speed control automatically stores the neutral, full-throttle and reverse values it receives from the transmitter without you having to press the set-up button. All the settings are stored in the unit even when the speed control is subsequently disconnected from the battery. Start with the transmitter set-up procedure:

TRANSMITTER SETTINGS:

Set up the following basic functions on your transmitter (if present):

High ATV, EPA	(throttle travel)	- maximum
Low ATV, EPA, ATL	(brake travel)	- maximum
EXP, EXPO	(exponential)	- start with 0
SUB trim	(neutral trim)	- centre
TH trim, coast brake		- centre
Throttle reverse	(servo reverse)	- any setting; must not be changed after completion of set-up procedure.

Asymmetrical stick travel is possible (2/3 throttle - 1/3 brake)

If your transmitter does not feature these set-up functions, it is already in "basic set-up" mode.

- Check that the speed control is not connected to the drive battery.
- Remove the motor pinion, or ensure in some other way that the wheels of the model are free to rotate.
- Switch the transmitter on.
- Set the transmitter throttle stick to neutral.

- Connect the speed control to the battery.
- Hold the set-up button pressed in for at least 2 seconds using the plastic screwdriver supplied.

- The set-up LED flashes green and the unit automatically stores the neutral position.

- Move the transmitter stick first to full-throttle forward and then to full-throttle reverse.
- Release the throttle stick and leave it at neutral.
- Press the set-up button again to store these settings.

- The set-up LED now glows green constantly.
- Your Runner-Plus-Reverse is now completely set-up and ready to run.

- If you make a mistake during the set-up procedure, don't worry: disconnect the battery for about 10 seconds and start again from the first step.
- At the end of each run disconnect the drive battery, and only then switch off the transmitter. At the start of each run switch on the transmitter first, then connect the drive battery.

CHECKING THE FUNCTIONS:

You can check the following functions by watching the reaction of the LED:

FUNCTION	STATE	LED GLOWS
Neutral		dull green
Forward	part-load	bright green
Forward	full-throttle	off
Brake	part-load	bright green
Brake	full brake	off
Reverse	part-load	dull to bright green
Reverse	full-throttle	off
Temperature protection	active	flashes bright green

REPAIR PROCEDURES/WARRANTY

In case of problems first check the trouble shooting guide or contact your hobby shop or **LRP-importer**. In case of damage, repair fees are normally far below the recommended retail price of a new unit. **Hobby shops are not authorized to replace speed controls thought to be defective.**

Warranty can only be accepted if it is claimed by the customer on the warranty sheet and the control sheet and the original sales receipt are included.

For quick repair and return we definitely need your address, detailed description of the malfunction and the original sales receipt. Repair may be refused without sales receipt.

To guarantee a proper repair, cut off or worn receiver plugs, wires and switches will be replaced and charged in any case. Any speed control treated severely with silicone or anything similar inside, might not be repairable.

Speed controls sent in for repair that operate perfect normally will be charged with a service fee. Therefore first check with the trouble shooting guide.

LRP guarantees this speed control to be free from defects in materials or workmanship for 90 days from the original date of purchase verified by sales receipt.

This warranty doesn't cover: suitability for specific operation, incorrect installation, components worn by use, application of reverse or improper voltage, shipping, tampering, misuse like any soldering inside the unit, poor installation, replacing of wires on the board, connection to electrical components not mentioned in the instructions, mechanical damage, immersion of water and cutting off the original wires, plugs, connectors and switches.

Our warranty liability shall be limited to repairing the unit to our original specifications. Because we have no control over the installation or use of this product, in no case shall our liability exceed the original cost of this unit. We can't accept any liability for any damage resulting from using this product. By the act of installing or operation this speed control, the user accepts all resulting liability.

DESCRIPTION OF FEATURES

EMF BRAKE, DRIVE-CONTROL-SYSTEM

The LRP Runner-Plus-Reverse speed control features a new type of Drive-Control-System, in which the first 50% of the reverse stick travel is reserved for the EMF brake. The remaining 50% of stick travel gives you full proportional control of the reverse range. This new form of combination control allows you to switch directly to reverse from a stop without any annoying delay, but still exploit the advantages of an efficient EMF brake.

Advantage of the EMF brake:

- Lower temperature loading for greater power
- Outstandingly controllable brake
- Superior braking power
- Battery recharge during braking

Whenever the vehicle is moving forward you should use the EMF brake only, i.e. only use the first half of the full stick travel for braking.

If you do apply full stick travel, i.e. switch to reverse when braking, this will not harm the speed control. However, it is best to avoid this, as the speed control heats up more quickly, and the overload protection circuit could trip earlier than you would wish.

REVERSING FROM A STOP

The reverse function offers fully proportional control over the range 0 - 100%.

With the vehicle at rest, move the throttle stick back slowly to the reverse range. You will see that the vehicle slowly starts to accelerate after the stick reaches the half-way point.

MULTI-PROTECTION SYSTEM, PROTECTIVE FUNCTIONS

This unique system of monitoring software provides highly effective protection for your Runner-Plus-Reverse against short-circuit (motor), overloading and overheating. If your speed control is subjected to one of these forms of overloading, the unit switches off the motor function for maximum protection, but the steering function is retained in full. The set-up LED flashes green if this should happen.

Wait a few minutes for the speed control to cool off.

If the unit switches off regularly, your motor is too powerful, the motor pinion is too large or you brake too often using full brake stick travel. You can also improve the situation by cutting additional cooling openings in the bodywork.

TROUBLE-SHOOTING GUIDE

Symptom	Cause	Remedy
Servo works; no throttle function	Set-up / basic settings problem	Repeat basic speed control set-up procedure from start. Note also that all transmitter functions must be set as described in the instructions.
	Speed control connected to wrong receiver channel	Speed control must be connected to Ch. 2; check polarity of receiver lead
	Motor defective	Fit new motor
	Motor brushes stuck	Check that brushes are free to move
	Overload protection tripped	Allow speed control to cool down
	Wiring problem	Check cables and connectors
	Speed control defective	Send unit in for repair
No servo or motor function	Receiver plug incorrectly wired	Check polarity of receiver plug
	Crystal faulty	Replace components one by one to locate fault
	Receiver faulty	
	Transmitter faulty	
	Speed control damp, protective circuit tripped	Switch off immediately, allow speed control to dry out
Vehicle stops when running forward, accelerates strangely	Receiver power supply circuit faulty	Check BEC output voltage, or send unit in for repair
	Motor connected incorrectly, speed control set-up incorrectly. You are using reverse function for forward running.	Connect motor correctly. Repeat complete speed control set-up procedure from start
	Motor runs in reverse when you open the throttle	Motor connected incorrectly. Transmitter throttle stick direction changed.
No brake function, or no reverse function	Motor connected incorrectly	Check motor connections (- is yellow)
	Transmitter throttle stick direction changed	Simply repeat basic speed control set-up procedure leave stick direction unchanged.
Insufficient brake power	Set-up / basic settings problem	Repeat basic speed control set-up procedure from start; see also „No motor function“ point.
	Speed control faulty	Send unit in for repair
Insufficient top speed	Set-up / basic settings problem	Repeat basic speed control set-up procedure (see above), or reset Low ATV, EPA, ATL on transmitter to maximum
	Motor too powerful, or input voltage too high	Use less powerful motor, or battery with lower voltage / fewer cells
	Gear ratio for too long	Fit smaller motor pinion
Speed control overheats or switches off	Motor too powerful, or input voltage too high	Use less powerful motor, or battery with lower voltage / fewer cells
	Gear ratio for too long	Fit smaller motor pinion
	Car drive / bearing system problem	Check or replace components
	Model run too often without cooling period	Allow speed control to cool off after each full run
Motor does not stop; continues running slowly	Dump in speed control	Disconnect battery immediately. Dry speed control with heat-gun, try again after 2 days
	Set-up / basic settings problem	Repeat basic speed control set-up procedure
	Speed control faulty	Send unit in for repair
Radio interference	Motor inadequately suppressed	Solder capacitors to motor
	Receiver or aerial too close to power cables, motor, drive battery or speed control.	See „Installation“
	Receiver aerial too long or too short	
	Receiver faulty, too sensitive	Replace components one by one to locate fault
	Transmitter faulty	Use original crystals only
	Transmitter output power too low	
	Servo problem	
	KO-FET servo without choke	Solder choke (supplied with servo) in place
Poor battery connection	Check connectors	
Imprecise, non-linear, control characteristics	Transmitter battery / cells flat	Replace dry cells, recharge Ni pack
	Transmitter aerial too short	Extend transmitter aerial fully
	Transmitter battery / cells flat	Check transmitter battery regularly
	Transmitter or transmitter „car program“ has been changed	Repeat basic speed control set-up procedure

WHAT SHALL I DO?

- Package your Speed-Control carefully.

- Send parcel to your national distributor.

- Distributor repairs/replaces the Speed Control.

- Shipment back to you usually by COD /cash on delivery), but is subject to your distributors general policy.