

QUANTUM 2 COMPETITION

USER GUIDE

Order No.:
80820



FORWARD **|| BRAKE**
Over 5 turns
REACTIVE SOFTWARE

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Dear customer,

Many thanks for placing your trust in LRP products. In purchasing the Quantum Competition 2 you have selected one of the world's smallest and lightest competition speed controls, which incorporates many unique features:

- Fully waterproof and shock-resistant
- Revolutionary Reactive Software
- Lowest resistance for minimised losses and maximum power
- LRP's improved Digital Engine Mapping System 2 (DEMS-2)
- 100% digital technology with 3 adj. modes "Punch Control", "Initial Brake" and "Automatic Brake"
- External solder tabs with 13AWG silicone flex wire
- Pre-Set factory set-up
- Automatic start
- Blue super-shielded case
- 4-cell operation possible without receiver battery

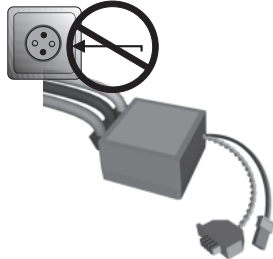
SPECIFICATION

Case Size (mm)	W28.7 x D25.7 x H14.4	Waterproof / shock resistant	yes
Weight (excl. wires)	21.5 g	Multi-Protection-System	yes
Voltage Input	4-7 cells (4.8-8.4 V)	Start automatic	yes
Typical voltage drop @20 A*	0.013 V	3 adj. Modes (Punch, Initial-brake, Auto-brake)	yes
Rated Current*	150 A	DEMS-2 (Digital Engine Mapping System 2)	yes
Rec. Motor Limit	Over 5 turns		
B.E.C.	5.8 V		
PWM Frequency	Reactive		

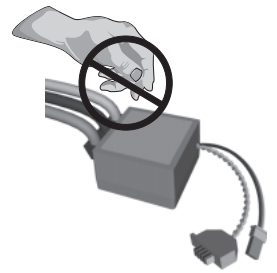
* Transistors rating at 25°C junction temperature. Specifications subject to change without notice.

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.
- Never allow the solder tabs to touch metall or other conducting material - short-circuit hazard.
- 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.
- 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); this does not invalidate your guarantee.



- 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.



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 the buttons.
- 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.

World's Option Kit (No.82820)

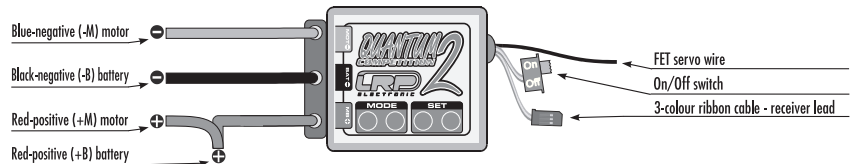
Optional Hi-Performance Set including heat-sink and various power capacitors for extreme applications.
Note: not strictly essential. Naturally, the Quantum Competition 2 also works perfectly without the World's Option Kit.

INSTALLATION

- Solder the suppressor capacitors and the Schottky diode 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.
- Solder the connectors (not included) to the thick power cables .
- The switch must be set to OFF when you do this.
- Connect the speed control to the receiver (channel 2).
- If you are using a servo with an external FET cable, solder this connection now.
- Connect the speed control to the motor: red wire to positive (+), blue wire to 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).

CONNECTIONS

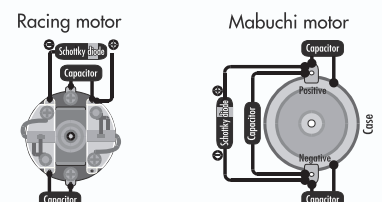


- **Receiver lead:**
Your LRP speed control is fitted with the LRP-Multicon receiver lead, and therefore fits all conventional receivers without modification.
- **Power wires:**
Due to the unique splitted solder-tabs, the replacement of the power-wires can be done easily. Nevertheless some soldering skills are required. Talk to your local hobbyshop if you are afraid to replace the wires yourself.
Use only LRP 13AWG silicone flex wire (No.82825) which suits the speed-control perfectly

WATERPROOF

- Due to latest production technologies and use of HighTech materials, it was possible to make the Quantum Competition 2 fully waterproof! This material also makes the speed control more shock resistant than 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 your other electronic components (receiver & servo) since these are normally not waterproof.

SUPPRESSING THE MOTOR:



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

Caution: Schottky diodes may only be used with pure forward/brake speed controls!

Schottky diode:

SET-UP PROCEDURE

In set-up mode the Quantum Competition 2 stores every step when you 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.

- Ensure that the speed control is not connected to the drive battery, and is switched off.
- 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, and switch the unit on.
- Hold the Set button pressed in for at least 3 seconds using the plastic screwdriver supplied.

- The right SET LED flashes red, to indicate that the unit is in set-up mode. It continues flashing until the set-up procedure is completed.

- Leave the throttle stick at neutral, and press the Set button once.
- The neutral setting is now stored, the left Mode LED flashes green, and the motor beeps.
- Hold the transmitter stick at full throttle, and press the Set button once.
- The full-throttle setting is now stored, and the left Mode LED flashes red.
- Hold the transmitter stick at full brake, and press the Set button once.
- The brake setting is now stored, the left Mode LED and the right Set LED glow red.
- This completes the set-up procedure, and your Quantum Competition 2 is ready to use.

- 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

If you run through the following functions with the throttle stick, you can check on the LEDs that everything is set up correctly.

FUNCTION	STATUS	LEFT MODE LED	RIGHT SET LED
Neutral and normal brake		off	red
Neutral and automatic brake		red	off
Forward	part-load	green	off
Forward	full-throttle	green	red
Brake	part-load	red	off
Brake	full-brake	red	red

TROUBLE-SHOOTING GUIDE

Symptom	Cause	Remedy
Steering servo works, but no motor function	Set-up / basic settings problem	Repeat basic speed control set-up procedure from start; to store the function correctly you must hold stick in full-throttle position while you press the set-up button. 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 carbon brushes are free to move
	Wiring problem	Check cables and connectors
No steering servo function no motor function	Speed control defective	Send unit in for repair
	Receiver plug incorrectly wired	Check polarity of receiver plug
	Crystal faulty	Replace components one by one to locate fault
	Receiver faulty	
Transmitter faulty		
Motor does not run when throttle is advanced; motor runs when braking	Receiver power supply circuit faulty	Check BEC output voltage, or send unit in for repair
	Transmitter throttle polarity (direction) has been changed	Simply repeat speed control set-up procedure. Leave transmitter stick direction unchanged
No brake function	Set-up / basic settings problem	Repeat basic speed control set-up procedure from start; see also "Motor does not run" point.
Poor braking effect	Speed control faulty	Send unit in for repair
	Set-up / basic settings problem	Repeat basic speed control set-up (see above), or reset Low ATV, EPA, ATL on transmitter to maximum
	Motor pinion / reduction ratio too large	Fit smaller motor pinion
Insufficient top speed	Problem with set-up / basic settings	Repeat basic speed control set-up procedure from start; see also "Motor does not run" point.
	Transmitter has been changed after speed control set-up, or has changed its own settings.	
Poor acceleration	Motor faulty, brushes sticking	Try different motor, free up brushes
	Inadequate cooling	Cut cooling openings in bodywork
	Motor too powerful, or input voltage too high	Use less powerful motor, or battery with lower voltage / fewer cells
	Motor pinion / reduction ratio too large	Fit smaller motor pinion
	Car drive / bearing system problem	Check or replace components
Speed control overheats	Mandel run too often without cooling period	Allow speed control to cool off after each full run
	Set-up / basic settings problem	Repeat basic speed control set-up procedure
Motor does not stop; continues running slowly	Speed control faulty	Send unit in for repair
	Motor inadequately suppressed	Solder capacitors to motor
Radio interference	Receiver or aerial too close to power cables, motor, battery or speed control; Receiver aerial too short, or coiled up	See "Installation"
	Receiver fault	Replace components one by one to locate fault
	Transmitter or transmitter module fault	
	Servo fault	Use original crystals only
	Crystal fault, or crystal not correct type	
	Power cables too long, red power cable connected incorrectly	See "Wiring" and "General installation notes"
Imprecise, non-linear control characteristics	KO-FEI servo without choke	Solder choke (supplied with servo) in place
	Connector contact problem	Check connectors
	Transmitter battery / cells flat	Replace dry cells, recharge Ni pack
	Transmitter aerial too short	Extend transmitter aerial fully
	Transmitter battery / cells almost flat	Check transmitter battery regularly
Transmitter or transmitter "car program" has been changed	Repeat basic speed control set-up procedure	

SPEED SECRETS

AVAILABLE MODES:

The Quantum Competition 2 features three different modes which enable you to adjust motor power and the driving "feel" to match YOUR special requirements precisely.

1. Punch Control:

Punch Control is LRP's improved Digital Engine Mapping System 2 (DEMS-2), which enables you to set the rate of acceleration to meet your specific preference. This system replaces simple technologies such as current limiters. As a revolutionary world-exclusive, DEMS-2 works Reactive and adjusts to your needs automatically! No matter if it's your driving style or your motor, DEMS-2 will detect it and delivers maximum performance.

2. Initial Brake:

Initial brake allows you to set a certain level of "hand-brake effect", i.e. you can vary the minimum brake effect when you apply the brake.

3. Automatic Brake:

Automatic brake allows you to set a slight braking action which is applied in the neutral range. This enables you to hold the throttle on longer when entering a turn. Your car also has greater front axle grip with this setting.

PROGRAMMING THE MODES:

- Hold the Mode button pressed in for at least 3 seconds. The Mode LED flashes green to indicate that you have selected 'Punch Control' mode.
- You can check the set value (1-5) by counting the flashes of the red Set LED (one flash equals value 1, two flashes value 2 etc.)
- You can adjust the value by pressing the Set button.
- Press the Mode button again to move to the next mode. The Mode LED flashes red to indicate that you have selected 'Initial Brake' mode.
- The right Set LED now shows the stored value again. Press the Set button to change the value.
- Press the Mode button again to move to the next mode. The Mode LED flashes red/green to indicate that you have selected 'Automatic Brake' mode.
- The right Set LED shows the stored value again. Press the Set button to change the value.
- Press the Mode button again to complete the programming procedure and return to the normal mode of operation.

MODE:	MODE LED:	SET LED (Values):	EFFECTS:
Punch Control	green	1 - 5	1 = smooth 5 = mega punch
Initial Brake	red	0 - 5	0 = linear 5 = progressive
Automatic Brake	red/green	0 - 5	0 = off 5 = strong

Punch Control with DEMS-2 enables you to set any of the following 5 Engine Maps:

Map 1.	LRP team program for low grip
Map 2.	LRP team off-road program
Map 3.	LRP team touring car program
Map 4.	LRP team "Super-Reactive" program
Map 5.	LRP team "Stock-Racing" program

WORKS SETTINGS:

LRP speed controls are supplied factory-adjusted.

The default setting is this: **Punch Control = 2, Initial Brake = 2, Automatic Brake = 0**

If you lose track of the modes during the set-up procedure, you can reset the speed control to the LRP works default settings. With the radio control system switched on, hold the Set button pressed in while you switch on the speed control. This action returns the unit to the LRP factory settings.

CHANGING MODE SETTINGS WITHOUT THE TRANSMITTER:

At race events you usually do not have access to your transmitter.

In this situation it is possible to adjust the speed control's settings without the transmitter signal.

All you have to do is disconnect the receiver lead (attached to the speed control) from the receiver, and connect the drive battery. You can now change the Mode settings as described above.

AUTOMATIC START:

The start of a race is often crucial to the result. You can exploit the Automatic Start system to give you THE crucial advantage at start time, as the system shortens the speed control's response time at this critical moment, with the result that you have more acceleration available.

- Activate Automatic Start by holding transmitter at full brake for 5 sec before start.

REPAIR PROCEDURES/WARRANTY

In case of problems first check the trouble shooting guide or contact the hobby shop where you bought the product or contact your national LRP-distributor. **Hobby shops are not authorized to replace products thought to be defective.**

Warranty can only be accepted if it is claimed by the customer on the warranty sheet. 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.

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

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

LRP guarantees this product 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, 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 product, the user accepts all resulting liability.

WHAT SHALL I DO?

- Package your product carefully.
- Send parcel to your national LRP distributor.
- Distributor repairs the product.
- Shipment back to you usually by COD (cash on delivery), but is subject to your national LRP distributor's general policy.