

ORDER#: **80830**
QC-3 DIGITAL
 OVER 5T
 FORWARD BRAKE

USER GUIDE


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1. INSTALLATION

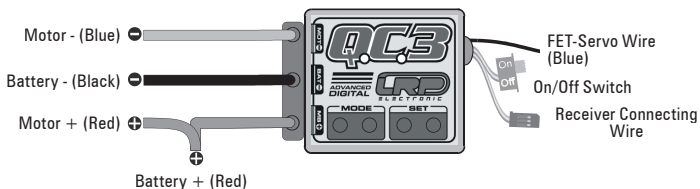
The LRP QC-3 DIGITAL is supplied with 2.6mm² power-wires without connectors for maximum performance. Be very careful with the correct wire sequence/colors since an incorrect connection may damage the speed-control! Avoid creating solder bridges on the solder-tabs and isolate all connections carefully. The motor power wires can be soldered directly to the motor. For the battery power wires we recommend to use reverse polarity protected plugs.

Caution: Avoid soldering longer than 5sec per soldering joint when replacing the power wires on the speed-control and motor to prevent possible damage due to overheating of the components!

- 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:
 - Red wire → Connect to motor „Plus“
 - Blue wire → Connect to motor „Minus“**CAUTION:** Be careful with the correct polarity!
- Solder some suitable plugs to the battery power wires (please also see section 2 „Connections“ for further reference). The plugs are not included with the speed-control. We recommend to use some reverse polarity protected plugs.
 - Red wire → Connect to battery „Plus“
 - Black wire → Connect to battery „Minus“
- 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!
- 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 5 „Radio/speed-control set-up“ for further reference).

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

2. 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:

For maximum performance, 2.6mm² power wires without any connectors are used. The unique splitted solder-tabs allow easy and convenient replacement of the power wires. Nevertheless some soldering skills are required. Avoid soldering longer than 5sec per soldering joint to prevent possible damage to the speed-control due to overheating of the components! There is a full 2.6mm² replacement power wire set available: #82825

3. INSTALLATION TIPS

- Mount the speedo 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 is not mandatory. But it improves and safeguards the performance capacity of your LRP QC-3 DIGITAL speed-control when used close to it's specified limits. Use only the genuine LRP QC-3 DIGITAL heatsink.

Dear Customer,

thank you for your trust in this LRP product. By purchasing a LRP QC-3 DIGITAL Brushed speed-control, you have chosen one of the most advanced speed-controls of today. This speed-control with all of its high-tech features and specially selected electronic components is one of the best brushed speed-controls currently available on the market. Superior power and an extremely smooth driving feeling.

- IFMAR World Champion 2005/2006/2007
- Maximum Power and minimal losses
- IceDrive Design
- 4, 5 and 6 cell optimised
- Digital-Active Launch Control
- External solder-tabs
- 70% new software - ADVANCED Digital with 4 adjustable modes
- Offroad European Champion 2007
- Improved 6.0V/3.5A BEC
- AutoCell System - Automatic NiMH-LiPo adaptation
- Blue LEDs
- Multi Protection System
- Special power profile for Stock motors

Please read the following instructions carefully before you start running your LRP QC-3 DIGITAL speed-control. This user guide contains important notes for the installation, 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 set-up your LRP QC-3 DIGITAL to your personal preferences and to understand it 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.

4. SPECIFICATION

Forward/Brake	yes	PWM Frequency	Reactive
Case Size	28.7x25.7x14.4mm	B.E.C.	6.0V/3.5A improved
Weight (excl. wires)	17.5g	Shock resistant	yes
Voltage Input	4-7 cells (4.8-8.4V)	Multi-Protection-System	yes
Typical Voltage Drop @20A*	0.005V	Launch Control	yes
Rated Current*	360A	D.E.M.S.-3	yes
Rec. Motor Limit**	over 5 turns		
4 adjustable Modes (NiMH-LiPo, Power Profiles, Initial-Brake, Auto Brake)			yes

* Transistors rating at 25°C junction temperature

Specifications subject to change without notice.

** @ 6 cells (7.2V)

5. RADIO / SPEED-CONTROL SET-UP

In setup mode the LRP QC-3 DIGITAL 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 SET LED flashes blue (it will flash until the setup is completed).

- Leave transmitter in neutral position and press the SET button once. → Neutral setting is stored, MODE LED flashes yellow and the motor beeps.
- Hold full throttle on transmitter and press the SET button once. → Full-throttle setting is stored, MODE LED flashes red.
- Hold full brake on transmitter and press the SET button once. → Brake setting is stored, LED's glow red (MODE) and blue (SET).

- This completes the setup procedure and your LRP QC-3 DIGITAL is ready to use.
- If you make a mistake during the setup procedure, don't worry: Disconnect the battery for about 10sec and start again from the first step.
- At the end of each run switch of the car, and then switch off the transmitter.
- At the start of each run switch on the transmitter first, then switch on the car.
- For storage of the car, disconnect the drive battery at any time!

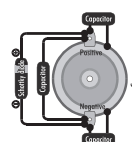
CHECKING THE FUNCTIONS:

Check the LED's when moving your throttle stick and you will see if everything is setup correctly.

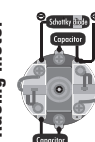
FUNCTION	STATUS	MODE LED	SET LED
Neutral (automatic brake inactive)	--	off	blue
Neutral (automatic brake active)	--	red	off
Forward	partial throttle	yellow	off
Forward	full throttle	yellow	blue
Brake	partial brake	red	off
Brake	full brake	red	blue

6. SUPPRESSION

Mabuchi motor



Racing motor



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.

7. MODE PROGRAMMING

The LRP QC-3 DIGITAL features 4 modes which enable you to adjust it to YOUR special requirements. The factory settings are shown in grey colour.

- How to get into „programming the modes“ → Press MODE button for 3 or more seconds.
- How to check the stored values → Count the number of flashes of the blue SET-LED (1x = Value 1, 2x = Value 2, etc.).
- How to change the value → Press SET button to increase value by one step.
- How to get to the next Mode → Press MODE button once.
- How to leave the programming mode → If you are in MODE.4, press the MODE button one more time
- Table of settings, values and modes: see below (grey-shaded values show „works default settings“).

MODE.1 (AutoCell System):

MODE LED	Value 1	Value 2
Yellow	LiPo/NiMH Automatic	4-7cell NiMH Racing Mode

In LiPo/NiMH Automatic mode, LiPo batteries can be used without worrying about deep discharging the battery. The speed-control automatically detects when a LiPo battery is used and shuts off the motor function before a critical low voltage for the LiPo battery is reached. You will recognize this shutdown by a blinking SET LED (blue). Hence your LiPo battery will be effectively protected against a harmful deep discharge state.

Tip: We recommend the 4-7cell NiMH Racing Mode for competition use. In this mode, the automatic LiPo detection is deactivated.

MODE.2 (D.E.M.S.-3 Brushed Power Profile):

MODE LED	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6
Red	smooth, low traction	very linear	linear, punch increasing	aggressive profile	very aggressive profile	Stock profile

Higher value means more overall power and more aggressive throttle response.

Team Tips: The following D.E.M.S.-3 (Brushed) settings are the preferences from our teamdrivers:

- Touring Car: Brushed: 3-5
- 1/12: Brushed: 2-3
- 19/27T motors: Brushed: 5-6
- Off-Road 2WD + Truck: Brushed: 1-2
- Off-Road 4WD: Brushed: 1-4

MODE.3 (Initial Brake):

Allows you to set a certain level of „hand-brake-effect“.

MODE LED	Value 0	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6
Yellow/Red (alternate)	No Initial Brake	Going from lowest to highest initial brake setting (value 1 = minimum / value 6 = maximum)					

MODE.4 (Automatic Brake):

Allows you to set a slight braking action in neutral range.

MODE LED	Value 0	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6
Yellow/Red (same time)	No Automatic Brake	Going from lowest to highest automatic brake setting (value 1 = minimum / value 6 = maximum)					

8. SPECIAL FEATURES

Digital-Active Launch Control: Well known and famous from our LRP Quantum Competition 2 speed! By using the new Digital-Active Launch Control you will have the deciding advantage at the start. It shortens the response time of the speed-control which results in more power for one time at the start. As soon as you lift the throttle for the first time, this function will be switched off automatically (this feature is only recommended to be used with touring cars on high traction surfaces!).

How to activate launch control:

- Hold trigger of transmitter at full brake for 5sec before start. Ready and active!!!

AutoCell System: Ready for the next battery technology – LiPo batteries! LRP's exclusive and smart AutoCell System ensures that LiPo batteries can be used safely without accidentally deep-discharging the cells. The motor function will be shut-off and the SET LED will flash if the system recognises very low battery voltage.

Tip: We recommend using value 2 for 4-6 cells NiMH racing purposes, which disengages the LiPo protection.

D.E.M.S.-3 Brushed Power Profiles: The known and world's winning D.E.M.S. Brushed Quantum style power programs have been further refined and implemented into the LRP QC-3 DIGITAL. Higher value means more overall power and aggressive response.

Changing Mode settings without the transmitter: At race events you usually do not have access to your transmitter, but never mind since you can simply disconnect the receiver lead from the receiver and change the MODE settings as described in section 7 „Mode Programming“.

Works-Default-Settings: All LRP speed-controls come factory-adjusted (defaults are grey-shaded). If you loose track of the modes, you can restore the works default settings. With the transmitter switched on, hold the SET button pressed while you switch on the speed-control. This simple action returns the unit to the LRP works default settings.

IceDrive Design: LRP's secret IceDrive Design results in lower speedo temperature under all racing conditions. Sorry, no further details to be disclosed. Simply a step ahead of the competition!

Forward/Brake: Uncompromising and outstanding performance for top level competition was the target! Therefore the LRP engineering team developed a pure forward/brake competition speed-control without reverse function.

Multi-Protection System, 3-way protection: The perfect protection against short-circuits (motor), overload and overheating. If your speed-control faces overload, the motor function will be shut-off for protection and the SET LED will flash, although the steering function is maintained. Let the speed-control cool down for a few minutes. If you experience frequent shutdowns, check for the following:

- Correct gear ratio (refer to motor manual for gearing recommendations)
- D.E.M.S.-3 setting too high (higher value will heat up motor and speed-control excessively)
- Motor is too strong or motor is damaged.

QC-3 Worlds Option Kit (optional): This set supports the battery and provides even more punch during acceleration. Order#83830.

Note: This set is not mandatory. The LRP QC-3 DIGITAL also works perfectly without the Worlds Option Kit.

9. 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
No servo and no motor function.	Speed-control defective	Send in product for repair
	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, topsped 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 motor/limit 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
	Transmitter settings changed after set-up	Repeat set-up procedure
Motor never stops, runs at constant slow speed	Humidity/water in speed-control	Immediately unplug and dry speed-control
	Speed-control defective	Send in product for repair
	Radio interference	Solder capacitors to motor
Receiver or antenna too close to power wires, motor, battery or speed-control. Receiver aerial too short or coiled up	Motor suppressors not sufficient	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

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
- Humidity/Water inside the speed control
- Mechanical damage of electronic 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 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.

With LRP 25-Years Warranty products, the warranty terms on the LRP 25-Years Warranty card do also apply. The legal warranty claims, which arose originally when the product was purchased, shall remain unaffected.

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.