

USER MANUAL

RA00299 Version: 15.9.11
© LRP electronic GmbH 2011



LRP electronic GmbH
Wilhelm-Enssle-Str. 132-134
73630 Remshalden, Germany
info@LRP.cc - www.LRP.cc

80880

1/8th Brushless Competition
2S to 6S LiPo capability
6.0V / 6.0A Switching BEC
USB Software Updateability

iX8

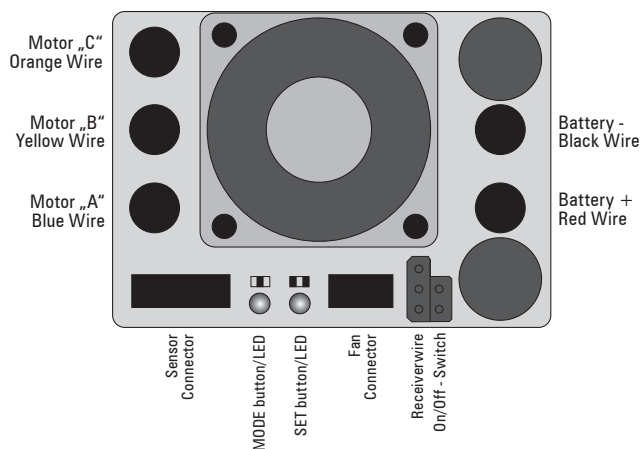
Specifications

Pure Brushless Competition	yes	Reverse Motor Rotation Mode	yes
Forward/Brake	yes	X-Brake	yes
Forward/Brake/Reverse	yes	Multi-Protection-System 3	yes
Size	55x40mm	Internal-Temp-Check System 3	yes
Height	25mm	Blue LED	yes
Weight (excl. wires)	62.0g	Power Wires	3.3mm ² + G4
Voltage Input	7.2-22.2V (2S-6S)	USB Software Updateability	yes
Typ. Voltage Drop* @20A	0.007V / phase	Plugged Fan	yes
Rated Current*	600A / phase	4 adjustable Modes (ACS2, Drive Select, Powerprofiles, Autobrake)	yes
Switching BEC	6.0V / 6.0A		

* Transistors rating at 25°C junction temperature

Specifications subject to change without notice.

Connections & Explanations



Receiver & Switch Connecting Wires: The iX8 is equipped with pluggable LRP Multicon receiver wire + plugable switch wire. As supplied, it will easily fit in all ordinary receivers. Make sure you connect the receiver wire with correct polarity and use channel 2.

Sensor Connector: The bi-directional multipole sensor wire connects the speed-control and the motor. Always use the sensor wire and do not alter or modify this cable! There are replaceable/optional hall sensor wires available. Through this sensor connector, the iX8 can also be updated with the latest software updates using the optional „USB Bridge #81800“. Please refer to chapter „USB Software Updateability“ for details

Power Wires: For maximum convenience and performance, the flexible silicone power wires are a plug-in design using high-power 4.0mm power sockets & connectors. There are replacement power wires available, please refer to complete line-up at www.LRP.cc.

Heatsink: To achieve best performance even under extreme conditions, the heatsink is an integral part of the design and directly connected to the fets. This ensures the best possible heat transfer away from the speed-control.

Plugged Cooling Fan: the iX8 comes with a high-performance low-profile (30x30x6mm) fan, protection cover and mounting screws. The fan can be mounted on top of the heatsink and should be used for tough applications in hot conditions. It get's plugged into the 3-pin connector on the front.

Installation Guide

- Position the speed-control where is protected in the event of a crash and gives you easy access to the connectors and buttons.
- 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.

The iX8 comes supplied with flexible 3.3mm² silicone power-wires and attached 4.0mm bullet connectors. 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.

- Connect the speed-control to the receiver (position: Channel 2)
 - Blue power-wire → Speedo MOT.A to motor „A“
 - Yellow power-wire → Speedo MOT.B to motor „B“
 - Orange power-wire → Speedo MOT.C to motor „C“
- Connect the hall sensor cable to the speed-control and the motor.
- 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!
- Red power-wire → Speedo BAT+ to battery „Plus“
- Black power-wire → Speedo BAT- to battery „Minus“

→ Your speed-control is now ready to be set-up.



The crossed-out wheeled bin means that within the European Union the product must be taken to separate collection at the product end-of-life. Do not dispose of these products as unsorted municipal waste.

Thank you for your trust in this LRP product. By purchasing a **LRP iX8** brushless speed-control, you have chosen one of the most advanced and successful speed-controls of today. This speed-control with all of its high-tech features and specially selected electronic components is one of the best speed-controls currently available on the market.

- Pure Brushless Competition
- 2S to 6S operation
- 6.0V / 6.0A Switching BEC
- Internal-Temp-Check System 3
- USB Software Updateability
- Fully adjustable
- AutoCell System 2
- Multi-Protection System 3

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.

Calibrate Speed-Control to Radio

In setup mode the speed-control stores every step (e.g. learning your radios neutral and endpoints) by pressing the SET 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, EXP0	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.
→ 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 iX8 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 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	Mode LED	Set LED
Neutral	--	off	blue
Forward	partial full	yellow	off blue
Brake/Reverse	partial full	red	off blue

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 occurred when blue SET 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:

Error Code	Set LED	Mode LED's	Reason	Possible Cause
#1		Yellow	Speed-Control Thermal Shutdown	1. too strong motor or too high battery voltage for application 2. insufficient cooling of speed-control or motor.
#2		Red	Motor Thermal Shutdown	3. too high gear ratio?
#3	Blue (fast flashing)	Yellow/Red (alternate)	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)?
#4		Yellow/Red (same time)	Motor Failure	1. sensor wire missing or defective? 2. drivetrain stuck? 3. motor defective (locked rotor, damaged sensor)?

Active Fan Operation: the fan will only become active above a certain temperature level of the speed-control, at initialisation (turn on of the speed-control with radio switched on) the fan will run for 3sec to indicate it's correct operation.

Internal-Temp-Check System 3: allows you to read-out the maximum internal temperature that the speedo and motor have reached during the run. You can conveniently read-out the temperature back in the pits since it remains stored until you turn it on the next time regularly (which will reset the memory). This feature allows you to accurately check if all is running well or if you're close to shutdown already.

How to read-out the temperature:

- switch at „OFF“ position.
- keep MODE button pressed while you turn switch to „ON“ (then release button).
- at first speed-control temperature will be indicated.
- SET LED will start to flash blue (MODE LED's are off)
- count the number of flashes. The higher the number, the hotter the speedo ran (shutdown occurs at 10 flashes).
- to change to motor temperature read-out, press MODE button one more time.
- SET LED will start to flash blue (MODE LED's are off) again, for motor the LED's on time will be shorter.
- count the number of flashes. The higher the number, the hotter the motor ran (shutdown occurs at 10 flashes).
- every flash below 10 equals to 5°C temperature decrease.

Temperature chart (speed-control and motor temperature):

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
> -45°C > -81°F	-40°C -72°F	-35°C -63°F	-30°C -54°F	-25°C -45°F	-20°C -36°F	-15°C -27°F	-10°C -18°F	-5°C -9°F	Shut- down

Caution: motor temperature read-out only works if your motor has a built-in NTC temperature sensor!

USB Software Updateability

Through the sensor connector the iX8 can be updated to the latest firmware available for download at www.LRP.cc. The optional „USB Bridge - Speedo Firmware Update + PC-Link“ (#81800) and a Windows-PC or MAC 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.

The same USB-Bridge can be used to update all the latest LRP speed-controls (80230, 80250, 80905, 80915, 80955, etc). Please check guide at www.LRP.cc for further details.

Mode Programming

The iX8 features 4 modes which enable you to adjust it 100% to YOUR requirements.

- How to get into „programming the modes“
- How to check the stored values

→ Press MODE button for 3 or more seconds.

→ Count the number of flashes of the blue SET-LED (* = value 1 | ** = value 2 | etc.).

- How to change the value
- How to get to the next Mode
- How to leave the programming mode

→ Press SET button to increase value by one step.

→ Press MODE button once.

→ If you are in MODE.4, press the MODE button one more time, which will also store the settings!

Important: Don't turn the switch off before leaving Mode 4 (by one more press of MODE button) as otherwise your recent changes won't be stored in the memory of the iX8!

Table of settings, values and modes: see below (grey-shaded values show „works default settings“)

Mode.1 (ACSS2): allows you to adjust the cut-off voltage precisely depending on the battery type you use:

LED flashes	Remark	#0	#2	#3	#4	#5	#6
Yellow	Cut-Off Voltage use for LiPo	disabled	6.4V	9.6V	12.8V	16.0V	19.2V
			2S	3S	4S	5S	6S

Caution: WorksDefault setting has cut-off disabled, make sure you adjust this setting before first use!
Important: Using value #0 in this mode will also disable the motor temperature cut-off function!

Mode.2 (Drive Selection): the iX8 can be adjusted for all applications, no matter which motor rotation direction you need, if you want reverse, electronic brakes or neither you can set it up accordingly!

LED flashes	Remark	#1	#2	#3	#4	#5	#6
Red	Reverse	no	yes	no	no	yes	no
	Brake	yes	yes	no	yes	yes	no
	Motor Direction	CCW (normal)			CW (reversed)		

Mode.3 (Powerprofiles): allows you to adjust the iX8 to your likes. Either you run on slippery or high-traction surfaces, we have incorporated a profile for you!
Higher value means more overall power and more aggressive throttle response.

LED flashes	#1	#2	#3	#4	#5
Yellow/Red (alternate)	lowest to highest power setting (value 1 = minimum / value 5 = maximum)				

Mode.4 (Automatic Brake): allows you to set a slight braking action when your trigger is in neutral range.

LED flashes	#0	#1	#2	#3	#4	#5
Yellow/Red (same time)	disabled	lowest to highest automatic brake setting (value 1 = minimum / value 5 = maximum)				

Special Features

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“.

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 easily. With your radio switched on, hold the SET button pressed while you switch on the speed-control. This returns the unit to our works default settings.

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.

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 where to search!

SYMPTOM	URSACHE	MASSNAHME
Motor overheats	Wrong number of cells for your motor	Decrease number of cells
	Wrong Gear ratio	Adjust gear ratio
	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
	Wrong number of cells for your motor	Adjust number of cells
	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 Speed-control switches off frequently	Model with reversed gearbox!	Change settings in Mode.2 (CCW + CCW motor rotation direction)
	Wrong setting in ACS2 (Mode.1)	Change value of ACS2 (Mode.1) accordingly
	Speed-Control overheats	Add cooling fan to speed-control
	Model used too often without cool-down periods	Let cool down after every run
	Motor too strong for input voltage	Use lower kV motor or lower number of cells
	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
	Humidity/water in speedo	Immediately unplug and dry speedo
	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	Replace components one by one
	Transmitter defective, transmitter output power too low, servo problem	Only use original manufacturers crystals
	Poor battery connection	Check plugs and connecting wires
	Transmitter batteries empty	Replace / recharge transmitter batteries

Mode.1 - AutoCell System 2 & SwitchingBEC

AutoCell System 2: 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 occurred due to undervoltage of your batteries (see chapter „Multi Protection System 3“ for further details).

Switching BEC: strongest in it's class, 6.0V/6A highly efficient output which powers even the strongest digital servo's in the heaviest vehicles!

Mode.2 - Drive Selection

Drive Selection (Brake-, Reverse-Function and Motor Rotation Direction): the iX8 includes fully adjustable drive selection. The requirements and preferences for 1:8 buggy and truggy-brushless setups can be rather different and therefore we allow maximum flexibility!

You can disable reverse, if you plan on using forward/brake only as you're used to from your nitro vehicle. But additionally you can also disable the speed-controls brake function in case you prefer using your standard nitro cars brake system with a brake servo, for that operation you need a separate „Y-wire“ which allows you to connect both the speed-control and the brake servo to the receivers channel 2.

Also there is reversed/CW motor rotation mode available for models with reversed gearbox which normally can not use a sensored brushless system.

Mode.3 - Feel / Powerprofiles

Allows you to adjust the iX8's feeling & characteristics to different motor types, classes, number of cells, race-tracks and of course personal preferences!

Our worlds-winning profiles have been altered for the special requirements of 1:8 cars, buggy's and truggy's now! Depending on the status of the car (start, acceleration, full speed) the software calculates the perfect motor management by adjusting current limiter, throttle curve and more! Higher value means more overall power and aggressive response.

We integrated an active current limiter to achieve best car control without sacrificing topspeed, so you have very good control during acceleration but always reach the maximum speed your motor is capable of. The higher profile you select the more bottom end power & torque you will achieve.

Recommendations

Caution: correct gearing is crucial for good performance and a healthy temperature of motor, speed-control and batteries. When making changes to gearing, battery voltage, motor or mode3 settings you need to monitor motor temperatures during the first minutes of running carefully.

A brushless motor should never exceed a temperature of 100°C (210°F).

X-Brake: A good starting point for the brake setting on your radio is 80% for all classes. Make sure you do the radio-setup with all settings on the radio on 100% and decrease them to 80% after you have completed the setup.!

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:

Optional parts:	
#819307	Sensor-Wire „HighFlex“ 70mm
#819310	Sensor-Wire „HighFlex“ 100mm
#819315	Sensor-Wire „HighFlex“ 150mm
#819320	Sensor-Wire „HighFlex“ 200mm
#81907	3.3mm² Powerwire black (1.0m)
#81908	3.3mm² Powerwire blue (1.0m)
#82506	Power-Wire Set Brushless 3.3mm² (red, black, blue, orange, yellow)

1/8th Brushless Motors:	
#53230	Dynamic8 Brushless Motor 1800kV
#53235	Dynamic8 Brushless Motor 2000kV
#53240	Dynamic8 Brushless Motor 2200kV

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 electronical components/PCB
- Soldered on the PCB (except on solderpads)
- 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.