

# Lee

## Technical Service Manual



*Sprint*  
*Persuade*  
*Cadence*  
*Carro*  
*Quando*  
*Torq*



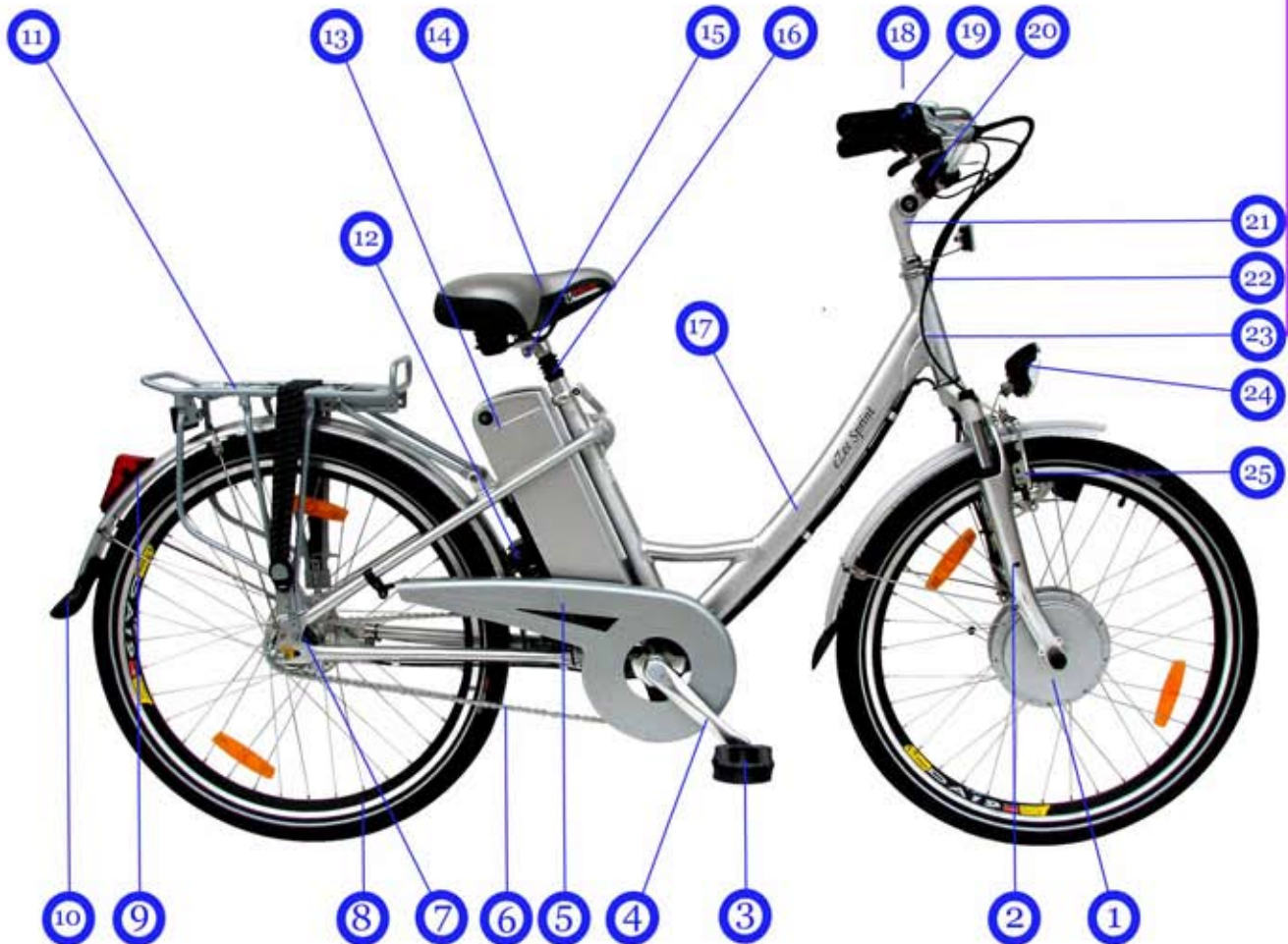
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# Bike Overview

## *Sprint*

Familiarize yourself with the different components on the bicycle. The following picture is a reference for many of the parts discussed later on, especially the electronics.



- |                           |                            |
|---------------------------|----------------------------|
| 1. 36v Brushless DC motor | 14. Saddle                 |
| 2. Suspension fork        | 15. Seat folding mechanism |
| 3. Pedals                 | 16. Sprung seat post       |
| 4. Crank/Chainwheel       | 17. Aluminum alloy frame   |
| 5. Chainguard             | 18. Gear shifter           |
| 6. Chain                  | 19. Throttle               |
| 7. Gears                  | 20. Battery indicator      |
| 8. Rim                    | 21. Headstem               |
| 9. Rear light/Reflector   | 22. Headtube               |
| 10. Mudguard              | 23. Brake wire             |
| 11. Rear carrier          | 24. Front lighting         |
| 12. Controller            | 25. V-Brakes               |
| 13. Battery               |                            |

# Controller

## Controller Overview



1. Self diagnostic LED
2. Motor phase wires
3. Motor hall wires
4. Battery gauge/Throttle /Brake lever
5. Motion sensor
6. Power cables

Controller

## Part Identification

PWM microprocessor for 36V Brushless hub motor with planetary gears, Ebike/EPAC controller unit. Overload protection 20amps, undervoltage protection 31.5V. Die cast aluminum casing.

- C1-9922-C (15km/h maximum speed)
- C1-9923-F (shorter motor wires length)
- C1-9923-L (with motor wires running to front fork)
- C1-9924-T (with EU speed limiter)

36V Brush hub motor with planetary gears, Ebike/EPAC controller unit. Overload protection 18amps, undervoltage protection 31.5V. Die cast aluminum casing

c2-9900-R

# Controller

## 2.1 Controller installation and removal



The controller is mounted onto the bicycle in the space between the battery slot and the rear wheel.

Ensure that the bicycle is turned off and the battery taken out before proceeding with the removal of the controller.

Overturn the bicycle on a clean soft surface or mount it on a bicycle repair stand during the operation to prevent surface scratches and damage.

Disconnect all wires attached to the controller. You will find these wires on the underside center of the bicycle (below the battery slot base plate).



Familiarize yourself with [8. Connector pins/plugs](#) before attempting to install or remove electrical connections on the bicycle.

1

1. Note! On some bicycles, the motor wires from the controller leads all the way to the front fork as shown, in some cases the wires are threaded through the frame cable guides. It is then necessary to cut away the connectors to continue with the dismantling of the controller.



2



3

2. Release the controller unit holding screws from the battery slot.
3. Release the screws and nuts of the Chainguard (if any) and dislodge the chain to push the controller out towards the right of the bicycle. Note - on some bicycles the chainguard is secured using both screws and bolts (use hex key size 4.)

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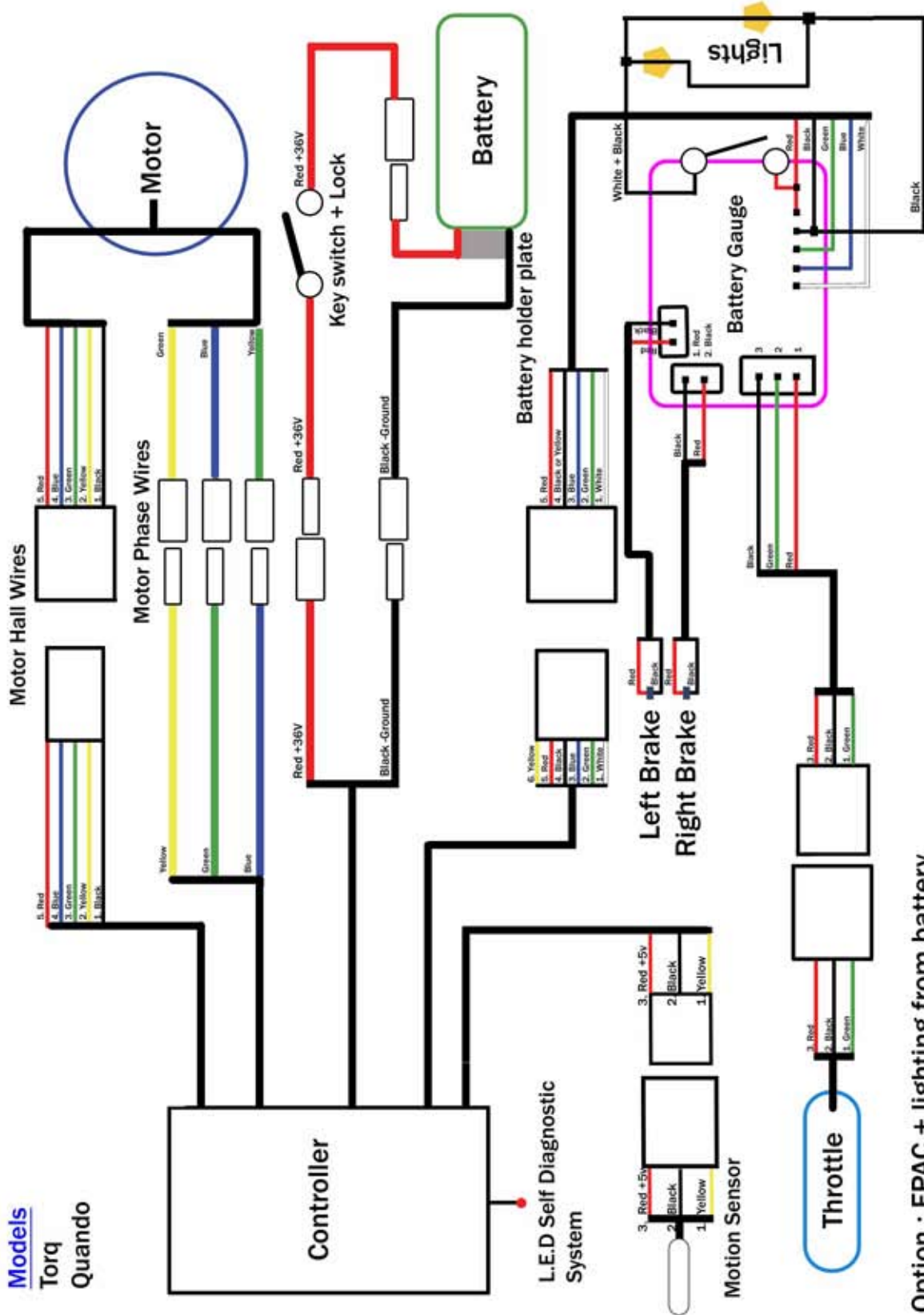
3

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# Controller

## 2.2 Wiring diagram

Be sure to check the corresponding diagram for the bicycle you are about to service!  
Improper connections and poor experience with electronics may cause irreparable damage to the controller and will not be covered under warranty. If you are unsure of how to proceed please consult eZee kinetics Technology Co., Ltd beforehand.



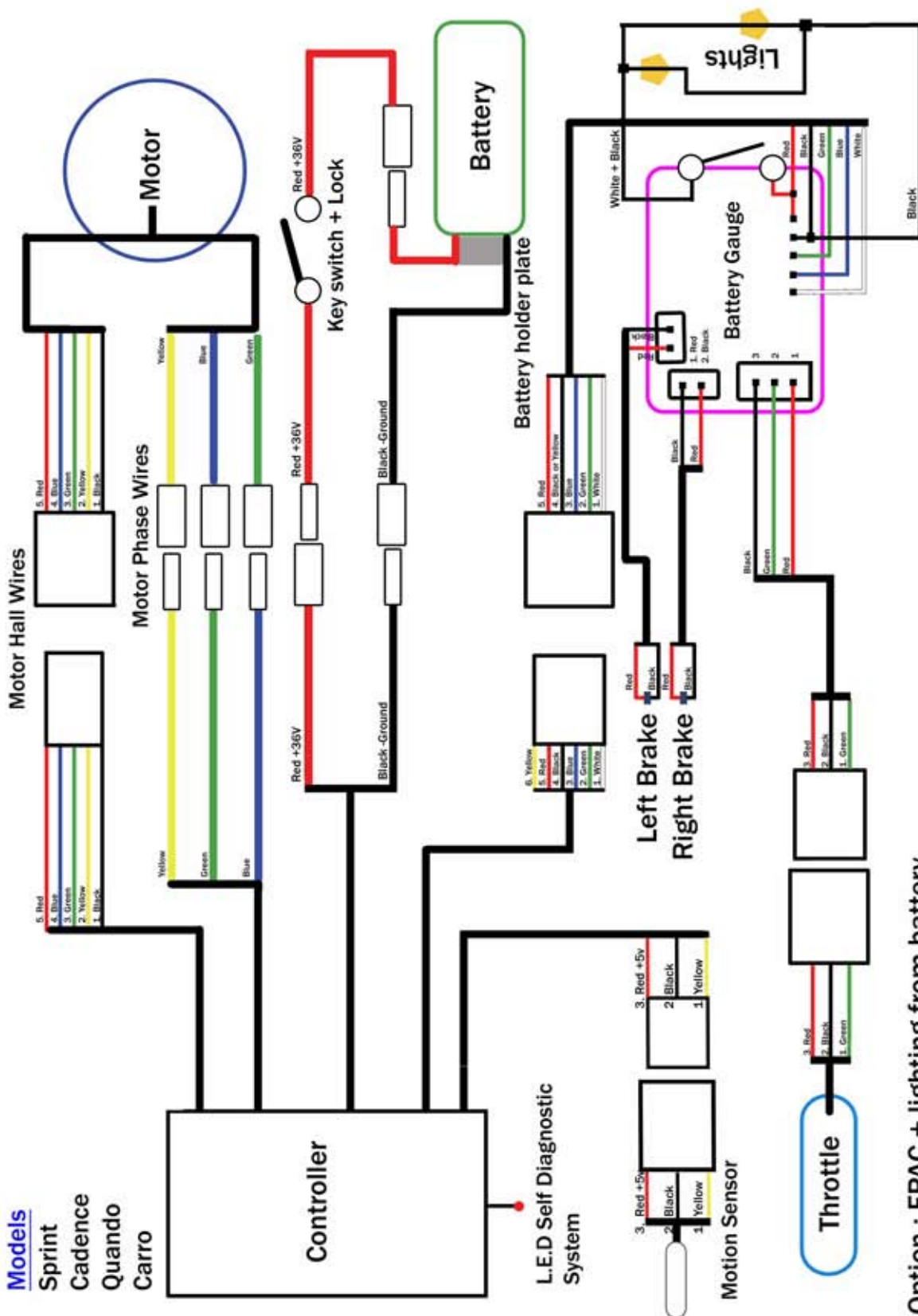
Option : EPAC + lighting from battery

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Option : EPAC + lighting from battery

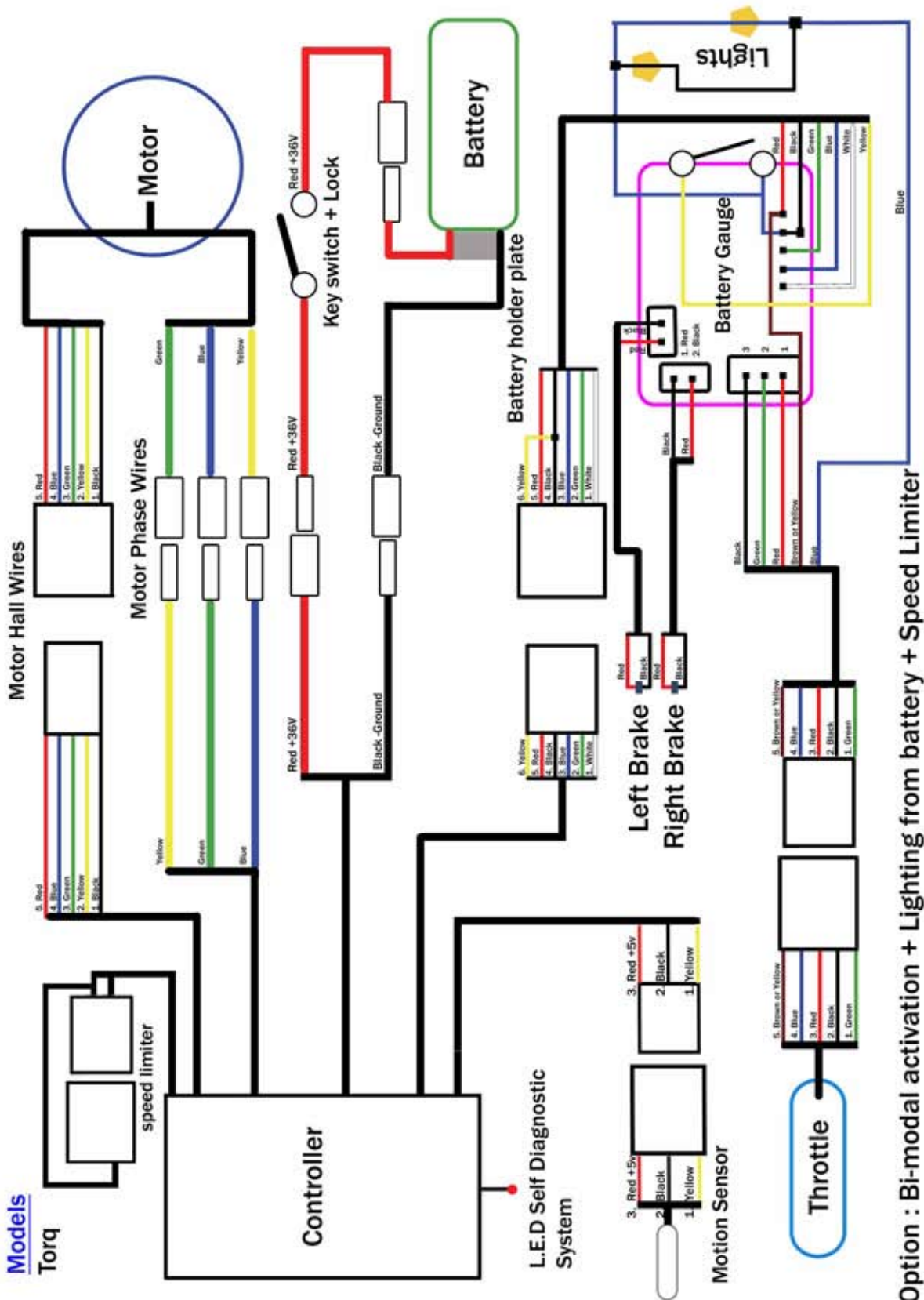


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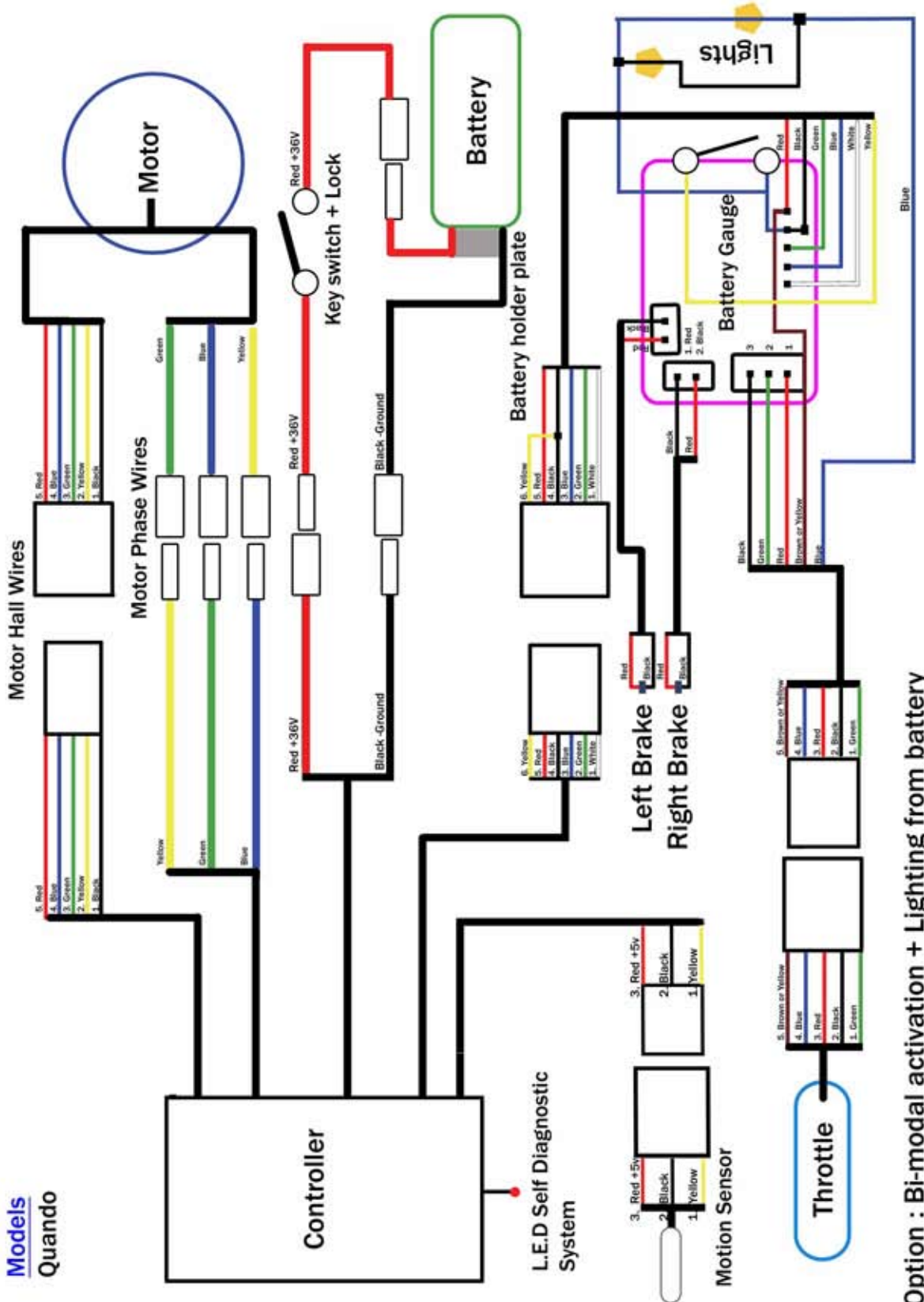


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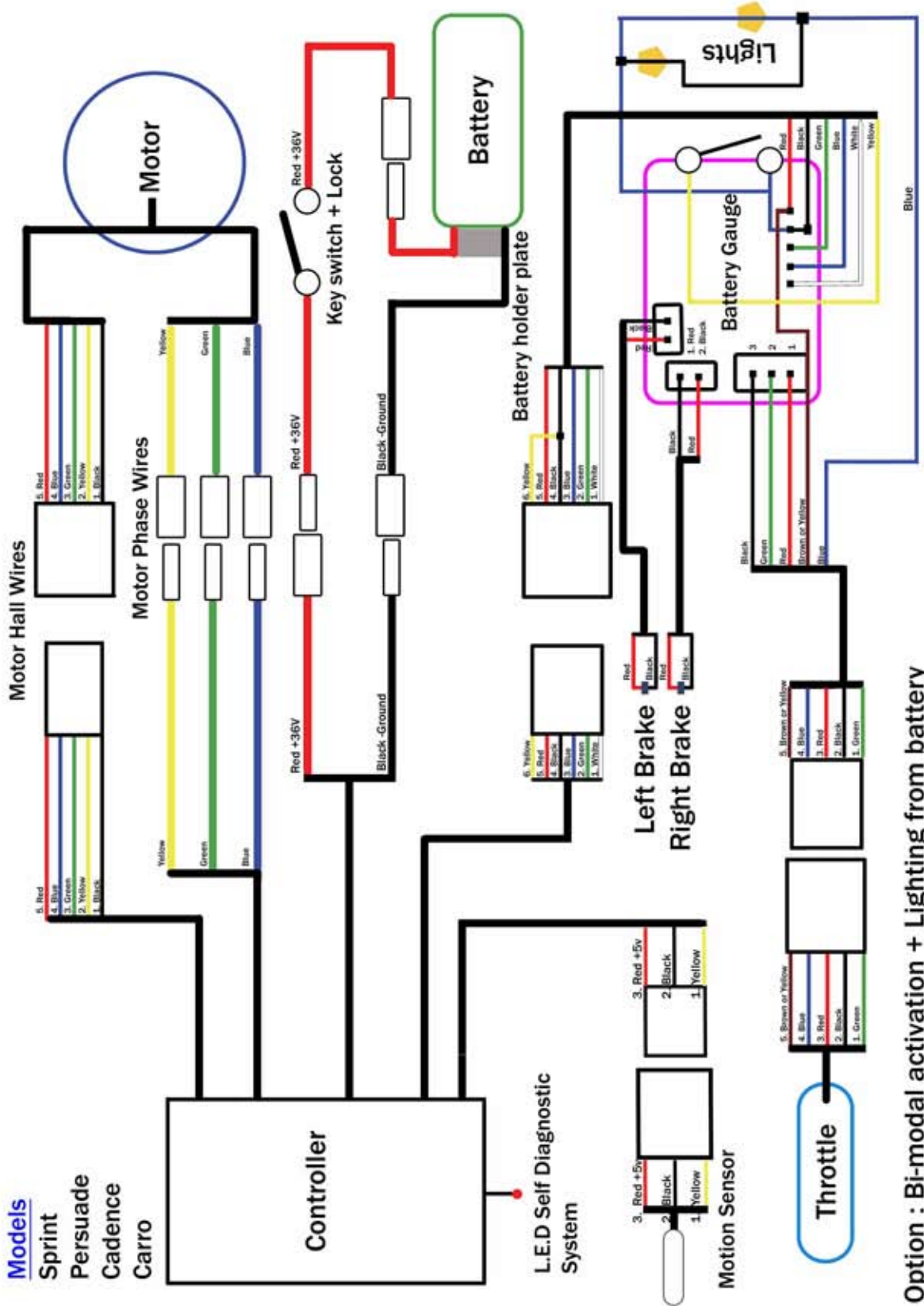
Option : Bi-modal activation + Lighting from battery

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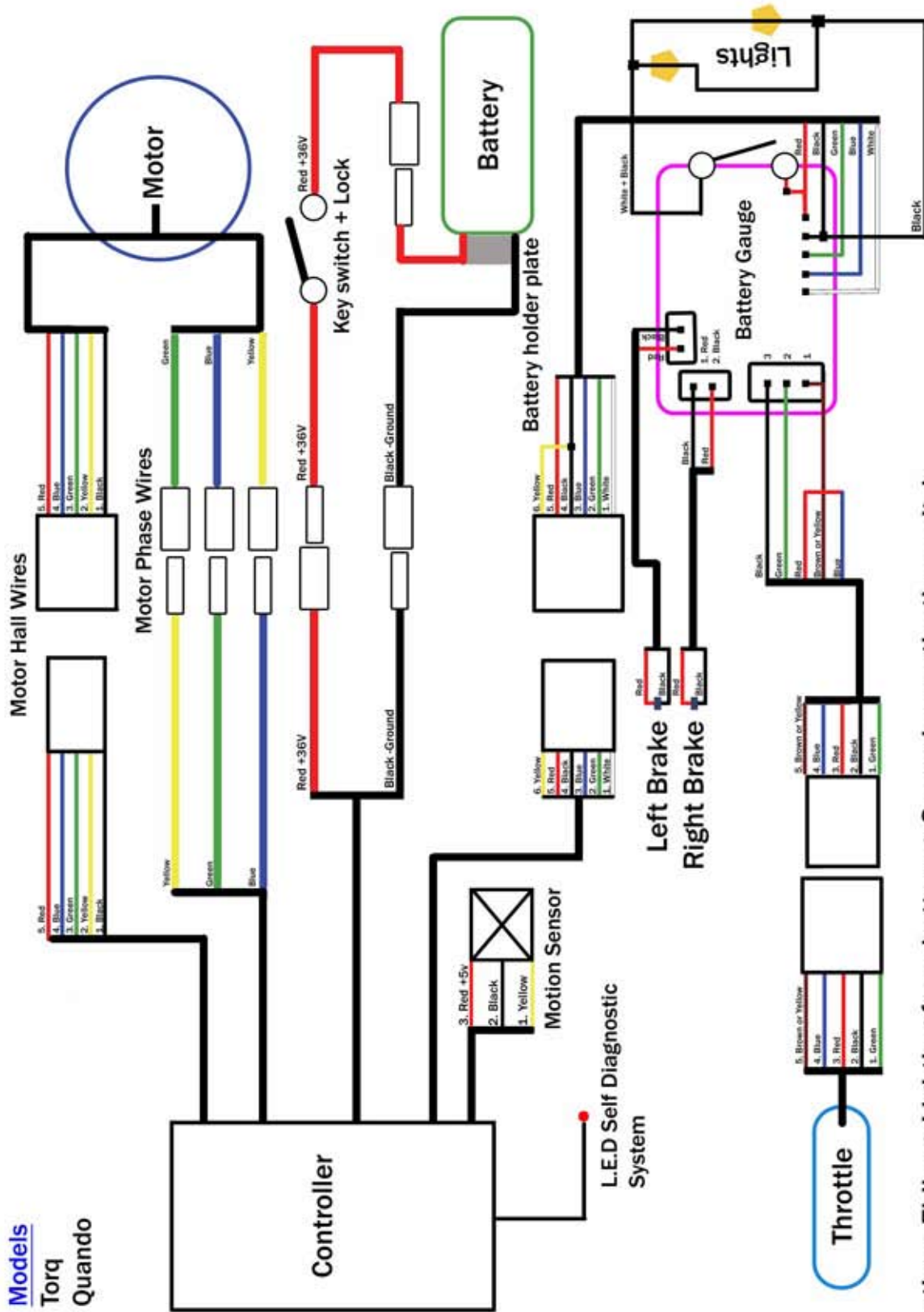
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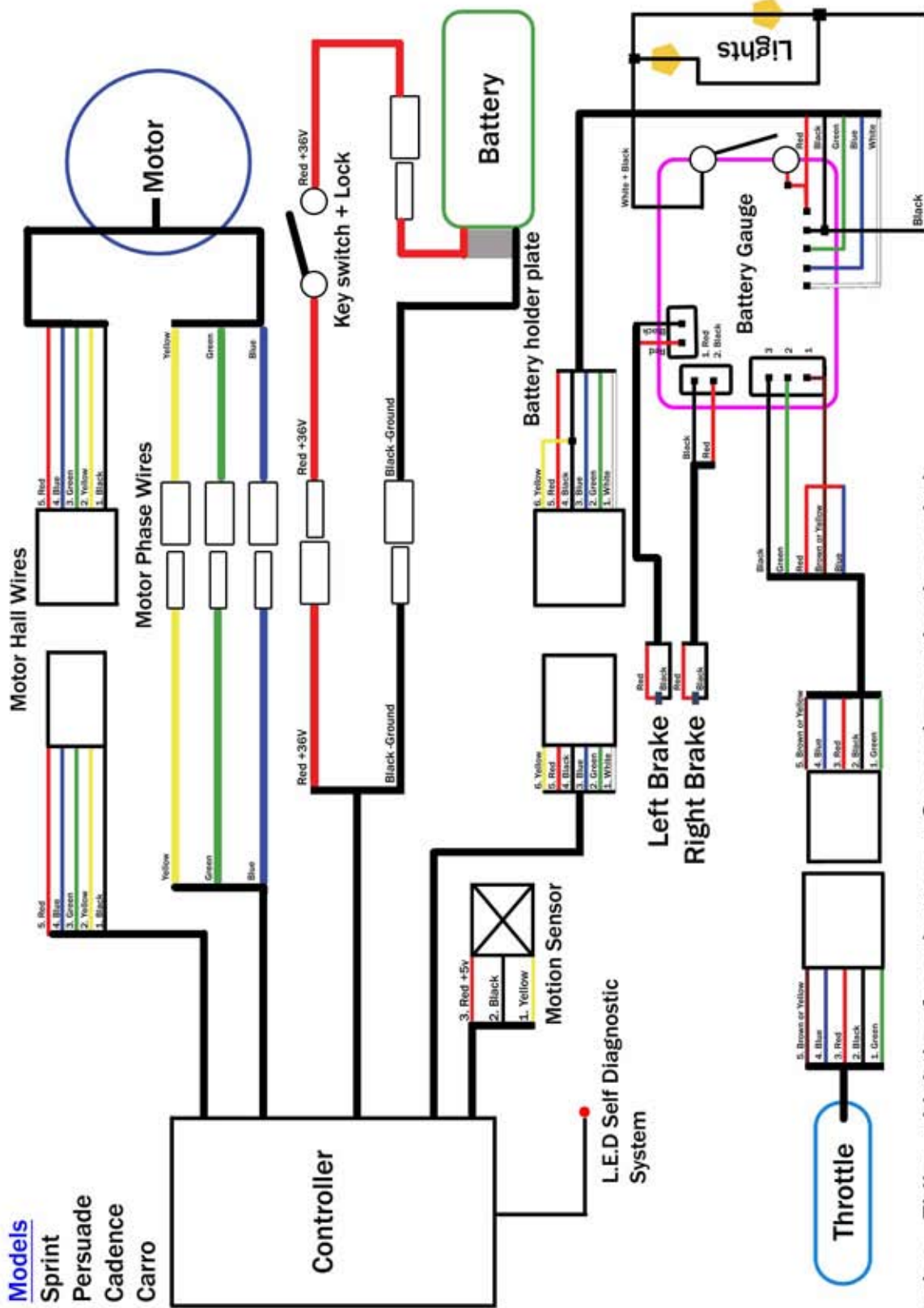
Option : Ebike + Lighting from battery + Secondary activation switch

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Option : Ebike + Lighting from battery + Secondary activation switch

# Controller

## 2.3 Controller self-diagnostic indicator

The controller is programmed with a self-diagnostic system that monitors the type of failure occurring . Count the number of continuous blinks on the red LED at the left of the controller box; then refer to the corresponding signal code below.

This however does not necessarily encompass every possible failure. If you are unsure, refer back to us.

LED No. of blinks	Description	Corrective measures
ON	Bicycle functioning	none
2	Brake lever cut-off in contact	check brake lever,
3	Brake lever cut-off in contact	check brake lever, water in electric cut-off
4	Throttle not returned to original position	check throttle if spring/faulty
5	Throttle faulty	check throttle connections or replace
6	Low voltage	charge battery
7	excessively high voltage	Measure voltage with multi-tester
8	Hall sensor in motor faulty	Replace motorcore, check hall wires
9	Incompatible motor	Replace motor
10	Temp. too high, thermostat activated	Wait for controller to cool dow
11	Thermostat faulty	Replace controller
12	Amperes control faulty, controller faulty	Replace controller
OFF	Power dead	Replace controller, check wires

# Motor



CMAEZ-250  
CMAEZ-250-L (long cable length)

36V, nominal 250w planetary reduction gear brushless hub motor.

CMAEZ-350  
CMAEZ-350-L (Long cable length)

36V, nominal 350w planetary reduction gear brushless hub motor



TXEZ-250  
TXEZ-250-L (long cable length)

36V, nominal 250w planetary reduction gear brushless hub motor.



BREZ-250

36V, nominal 250W planetary reduction gear brush hub motor

# Motor

## 3.1 Installation and removal of motor



Front V-brakes.



Rear V Brakes

Release brake cable and deflate tyres before continuing with removal of hub motor.  
(Hex Key 5)



Right side of bicycle.

Tools required : 18mm wrench  
Hex key 4

Remove nut, spring washer, spacer located on the right side of the bicycle.

Release nut, torque plate (screwed onto fork) and spacer on the left side of the bicycle. The motor wires are threaded through these parts. These parts may not be removed without first cutting off the connection plugs from the motor wires. The protection bracket may be removed.



Left side of bicycle.



If it is necessary to remove front hub wheel completely away from the bicycle. Remove connections located by the front fork as shown. For more information see chapter 8 Connector pins/plugs.

The front wheel may now be removed from the bicycle.

**Note:** When reinstalling the bicycle remember to fit front hub motor wheel in the correct direction. i.e. motor wires are coming out from the left side of the bicycle.



# Motor

## 3.1 Installation and removal of motor



Tool :  
Philips head screwdriver

Release all 6 screws on hub motor cover.

**Note:** Releasing screws will detune spoke tension. Remember to recalibrate spokes on wheel after installation.



Tool:  
Rubber mallet

Knock axle as shown in diagram to release hub motor from casing.

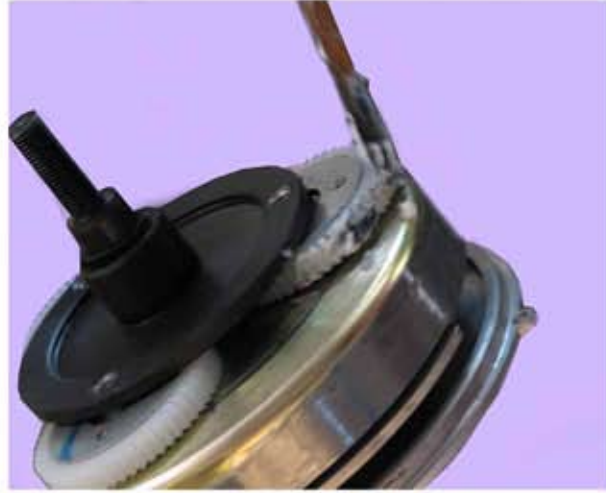
Remove hub motor.

**Note:** Hub motor should be worked on in a clean environment to avoid particles from entering sensitive electronic equipment.

Ensure while working or when placing away the hub motor not to put weight or pressure on the axle to prevent damage of the axle.

# Motor

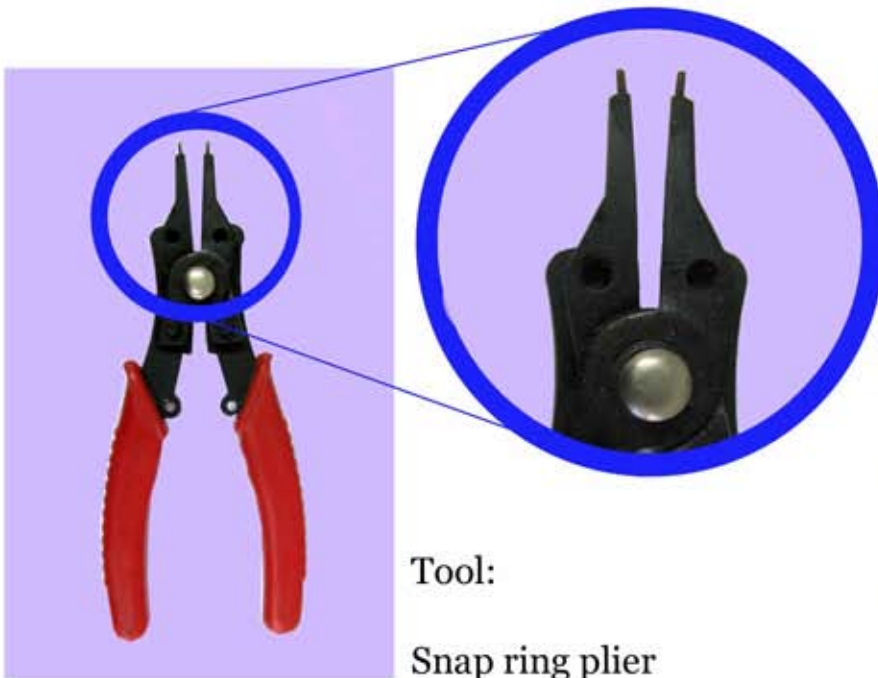
## 3.2 Motor Maintenance



All motor parts are not servicable by dealers with the exception of gears. Gears servicing is limited to re-greasing the gears or replacement of gears. Any modification or reparation work done without explicit consent of eZee will immediately void warranty.

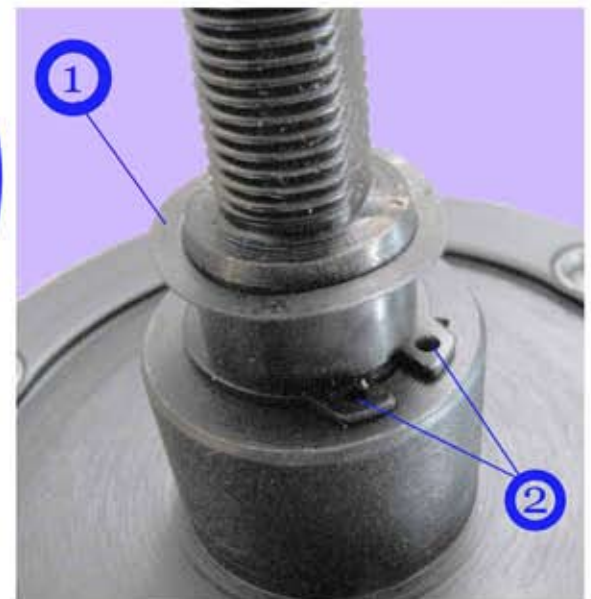
Apply silicone grease on gears and gear ring with a soft brush as shown on the pictures above.

Motor



Tool:

Snap ring plier



### Removal of planetary gears

**1.** Remove washer. **2.** Use Snap ring plier to remove snap ring - Apply the 2 pointed ends of the snap ring plier into the holes located in the snap ring. Gently and firmly press the plier handles to enlarge the ring out of its groove. Remove the snap ring out and over the axle.

# Motor

## 3.2 Motor Maintenance



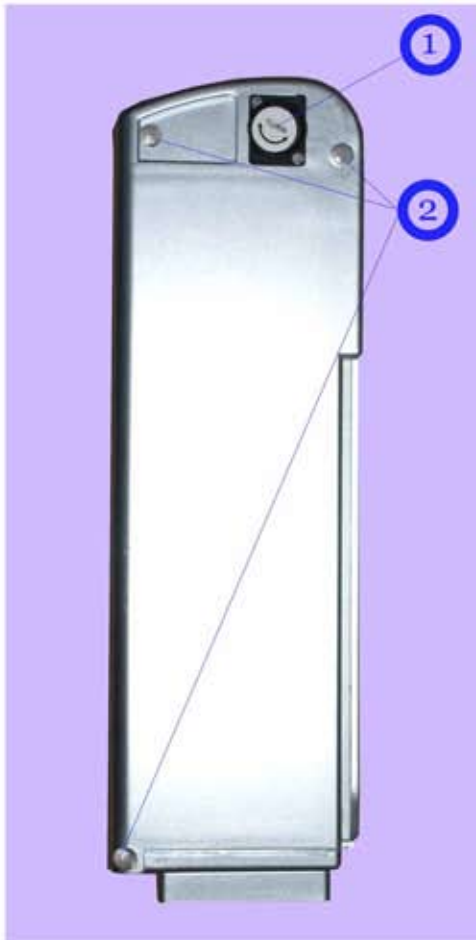
To prevent water from leaking into the motor core, apply silicone adhesive as shown. Silicone adhesive should completely cover up the cable entry point in the axle. Only refit motorwheel when the adhesive is dry.

## 3.3 Motor troubleshooting

1. **Motor is not working.**  
Check LED self diagnostic indicator. Ensure that all cables are properly attached (see wiring diagram.)
2. **Motor making grinding noise but refuses to spin.**  
Are phase wires connected in correct order?
3. **Motor runs but cuts immediately or during riding.**  
Check wiring to ensure that all is in order. Open up motor to inspect for short-circuitry.
4. **Motor making grinding noises throughout ride.**  
Open up motor to examine planetary gears for any damages or misalignment.
5. **LED self diagnostic indicator flashes 8 times.**  
Check wiring to ensure that all is in order. Open up motor to inspect for short-circuitry.
6. **LED good, motor good but still refuses to work.**  
Check if motion sensor is in order. Check if throttle is working.

# Battery

## 4.1 Battery Installation / Removal



- 1. Charging port
- 2. Housing screws



- 3. Fuse
- 4. Battery sliding groove
- 5. Locking pin socket
- 6. Bottom plate screws



30A Fuse and fuse cover

Nickel Metal Hydride (NiMH) Battery 36V 9Ah  
E2/001

Li+ / Lithium Manganese Oxide (LiMnO) Battery 36V 10Ah  
E2/002

There are no distributor servicable parts in the Li+ battery. Removal of the warranty sticker will void warranty.

# Battery

## 4.1 Battery Installation / Removal



Release cache under saddle to flip it forwards, allowing for the battery to be slotted in.

1. With the aluminum seat post option or when the customer uses his/her own seat post, it then becomes necessary to remove the entire post in order to slot in the battery

Align the battery grooves with the battery plate before pushing down the battery firmly.



Once the battery is inserted correctly, it will be possible to turn the key from the open position to the “off” or “on” position. To remove the battery, it is necessary to push the key inwards and rotate from the “off” position to the “open” position.

Battery

Seat post outer diameter for all models except Quando I - 25.4 / 1”  
Quando I seat post outer diameter - 28.6



30A Fuse

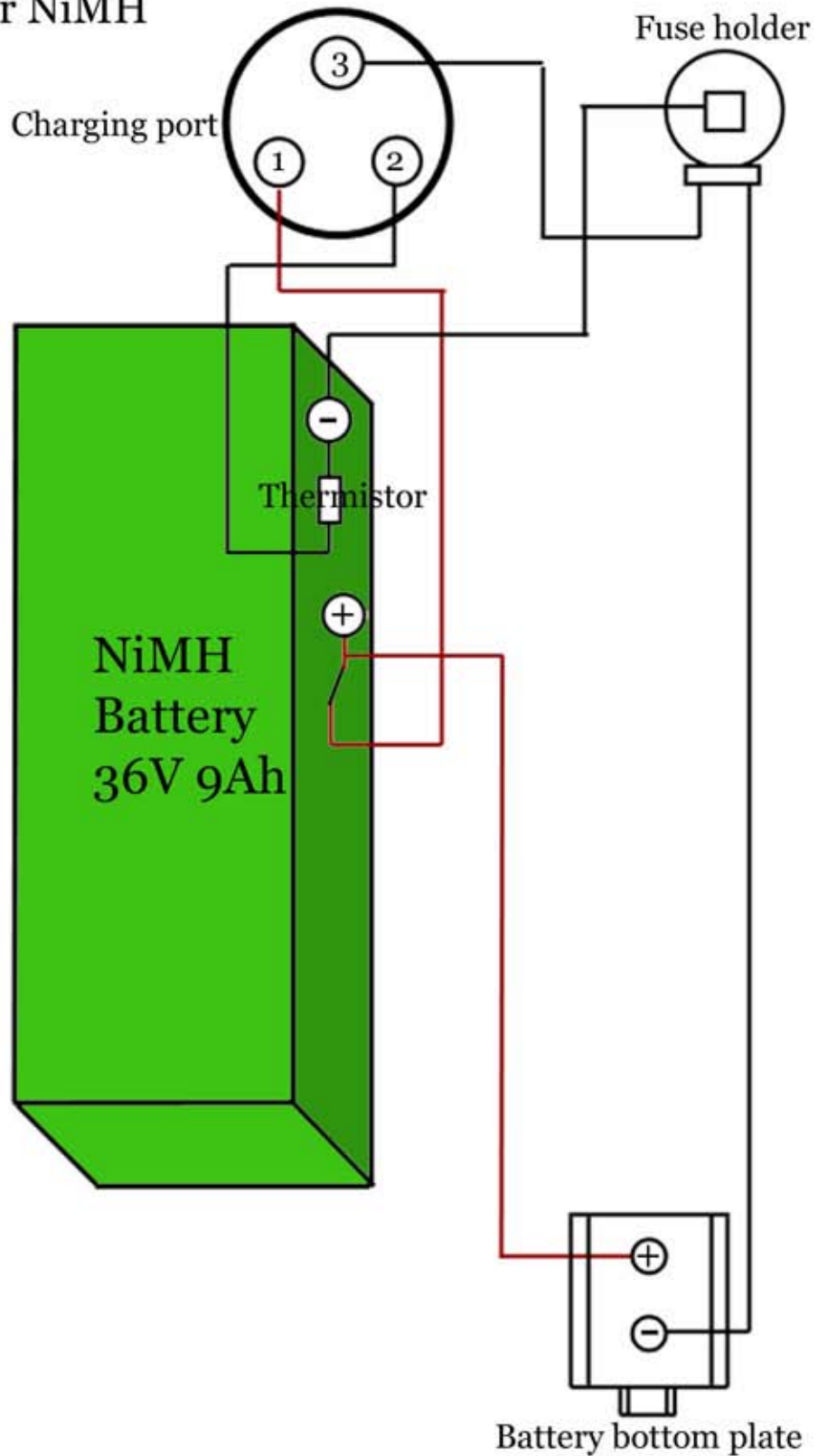
Ensure that the fuse is properly inserted and tightened before operation of the bicycle.

Replace fuse when blown.

# Battery

## 4.2 Wiring Diagram

Wiring diagram for NiMH battery 36V 9Ah



Battery

## 4.3 Battery Troubleshooting

- 1. Battery does not fit properly into holder.**  
Remove battery and realign it along the battery grooves.  
If fitting is too tight, consider sanding battery plate sides or apply grease/lubricant.
- 2. Battery is in holder but the key does not turn.**  
Push battery firmly down and ensure that it is securely in place. Check alignment of battery locking socket and the pin. Ensure correct key is used for the bicycle.
- 3. Battery is in holder, key is at “on” position but there is no power.**  
Ensure that the battery is charged, battery pins are not damaged, fuse is not blown.  
Check intergrity of power cables. Refer to controller wiring diagram.
- 4. Battery pins are damaged.**  
Refer to battery wiring diagram. Remove fuse before attempting any repair of the pins. Refer to battery bottom plate for positive and negative wires.
- 5. NiMH battery is not charging.**  
Ensure that the fuse is intact, attempt to swap charger in order to verify whether battery or charger is faulty.  
Remove fuse before opening up battery casing and check thermistor or damage. Replace thermistor if necessary.
- 6. Li+ battery is not charging.**  
Ensure that the fuse is intact, attempt to swap charger in order to verify whether battery or charger is faulty. Do not attempt to open Li+ to troubleshoot. Record battery details and keep aside for future inspection by us.
- 6. Battery not giving enough mileage / has lower capacity than specification**  
Warranty for battery is 80% of DOD for 6 months from the date of purchase. i.e. e.g. A Li+ battery under 36V 8Ah before 6 months will be a bonafide claim. Distributor must test the battery using the battery testing unit for verification of bonafide claim.

# Battery

## 4.4 Battery Testing Unit



The battery testing unit will be used to verify the capacity of a battery.  
The equipment has been made to 220 V 60Hz or 110V 60Hz  
Plug power cord into wall socket and turn power on with the main switch.  
Push the reset button. You will get a numerical value reading of UL (Voltage )  
A (amps current ) and H (hrs )

Whereby UL is the voltage you will select for the measurement to stop.  
Push the arrow buttons until you see a value of 31.5 on the display.  
31.5V is where we stop the flow set on the controller of the bike,  
At this value, the battery charge is nearly empty. Deep discharge  
(draining the battery completely empty) will damage the battery.

Push the reset button again you get a display of A .  
Push the arrows buttons until you see a value of 5.0.  
This is the value of current discharging. The average draw is approximately 5 amps.

Push the reset button again you get a display of H.  
Push the arrow buttons to set a value of 2.00 hrs.  
The test will normally stop at 100 mins (1 hr 40 mins) or automatically when the 31.5 V is reached.

After the above 3 values are set, push the set button –  
all displays will revert to 0 and the battery is ready to be tested.

Insert the connector to the battery ( MAKE SURE THE + AND – CORRESPOND )  
In the case of a wrong connection, the equipment will cut-off with short circuit protection.  
Reboot the battery testing unit with the right battery connection.

Push the on button to start the discharge test. The unit will rotate the readings of A, Hrs and Ah.

When the min. set voltage or time is reached (which ever is earlier), the discharge will stop automatically. Read the Ah of the battery discharge.

Attention: Once the discharge stops, the voltage will recover and if left unattended will return back to 35 or 36 Volts although for practical reasons it is empty. You will be able to see the Ah reading until you turn the unit off.



# Charger

## 5.1 Charger



Lithium Ion battery charger

2 Amps, smart charge, maximum charge time : 4-5 hours

Do not attempt to use Li+ charger with other battery types.

Always ensure voltage is set correctly to your country's specification.

There will be no warranty coverage for mishandling of charger.



Nickel metal hydride battery charger

2 amps, smart charge, maximum charge time : 4-5 hours

Do not attempt to use NiMH charger with other battery types.

Always ensure voltage is set correctly to your country's specification.

There will be no warranty coverage for mishandling of charger.

## 5.2 Charger Troubleshooting

### Charging Protocol

For optimum and safe charging. Charge battery in a clean, cool and dry place.  
Ensure voltage on charger is set correctly and fuse is working and secure.  
Plug power cord into wall socket, do not switch power from wall socket.  
Rest both charger and battery on a firm and flat surface  
Plug charger port into battery before switching on both the wall socket and the charger in this sequence.  
Red light indicates charger is “on”  
Yellow light indicates battery is charging  
Green light indicates charging has stopped.

#### 1. Charger does not light up

Ensure that voltage has been set correctly.  
Ensure that the 10A fuse has not blown, replace if necessary.  
Ensure that power cord is fitted in properly and in good condition.

#### 2. Charger orange light is blinking

The charger is sensitive to movement, temperature and voltage drops.  
Switch off charger and retry charging protocol.

**After retrying charging protocol, problem persists.**

Inspect battery fuse, voltage and amp reading.

there are no distributor servicable parts on the Lithium Ion battery.  
replace battery if necessary.

for NiMH battery, open up casing and inspect thermistor for damage.  
Replace thermistor if necessary and repeat charging protocol.

# Battery

## 7.1 Battery Indicator



Battery indicator unit

Two step switch available in following arrangements according to wiring settings:

L.E.D on/off

Bi-modal arrangement

Secondary on/off (ebike safety precaution)

## 7.2 Battery Indicator installation / removal

Unscrew battery indicator unit clamps. The wire is threaded by the fram guides to the underside of the frame by the BB axle. Cut away shrink tubes and plug connectors if necessary.

Cut away shrink tube that connects the EPAC interface wire to the battery indicator and unplug the connection.

## 7.3 Battery indicator troubleshooting

### 1. Battery indicator not responding

Ensure that problem is not power failure.

Replace battery indicator in case of malfunction.

Battery indicator has no servicable parts, ensure that all wiring is intact and in working condition. If problem persists, replace entire battery indicator.

# Pins, Connectors

## 8.1 Pins, Connectors



bullet head connectors  
for power cables



connector pins for plug



plug in  
2 pin  
3 pin  
5 pin  
6 pin



Bullet crimp tool



Connector pin crimp tool



wire stripping tool



heat shrink tubing