



AUSTRALIA · NEW ZEALAND



SUR-RON LIGHT BEE TROUBLESHOOTING GUIDE

Applicable to Light Bee Original(Square wave) Version,
Light Bee X Version and Light Bee L1e Version

2020-YQ2A-01

Electronic control system inspection and maintenance guide



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A. Bike has no power

Switch on the ignition key, speedometer, tail light& head light not turned on and twist throttle bike has no respond.

B. Bike has power but not move

Switch on the ignition key, speedometer, tail light& head light turned on and twist throttle bike has no respond.

C. Diagnostic Identification Chart

For Light Bee that connect diagnostic cable or Light Bee L1e version that have error code

D. Controller test

Test controller individually

Bike has no power situation

1. Check battery percentage

If battery LCD screen has no display, please charge the battery first, then do the troubleshooting.(if the battery over discharged, you need start the battery activation process first to active the battery.)

If battery LCD screen has correct display, please use another battery to test, if the bike working properly, we can confirm that the bike electric system is fine but the battery has issue.(check battery troubleshooting guide)

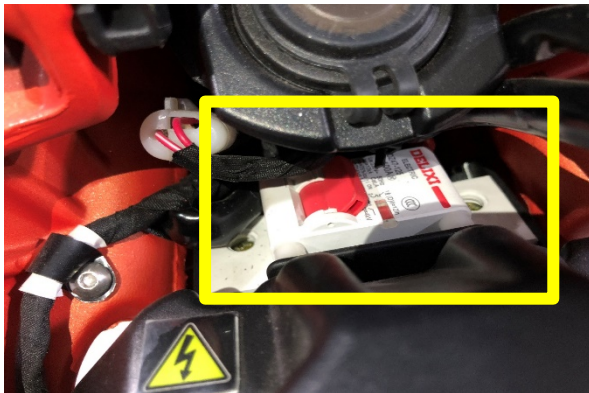


Bike has no power situation

2. Check air circuit switch

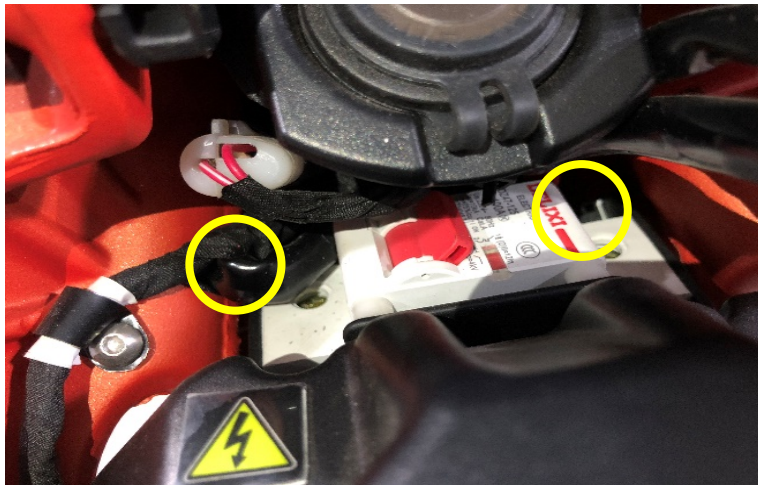
Make sure the air circuit switch is switched on. Figure below shown switched on condition.

If the air circuit switch is turned on, but the bike still has no power, please check whether the air circuit switch is malfunctioned or not.



Bike has no power situation

Air circuit switch troubleshooting guide: use multimeter, set to continuity mode. See figure below, keep the air circuit switch on, use two probes to touch two bolts on the each side of the air circuit switch, then you can determine whether the air circuit switch is malfunctioned or not.



Bike has no power situation

3. Check main fuse

Under the ignition key cap and around air circuit switch, you can find main fuse box.

Step 1: find main fuse box



Step 2: open main fuse box, one is connected to main wiring loom, another is backup fuse



Step 3. check fuse, replace new fuse if blown.
Fuse type: 5A 250V
Picture below is a good fuse

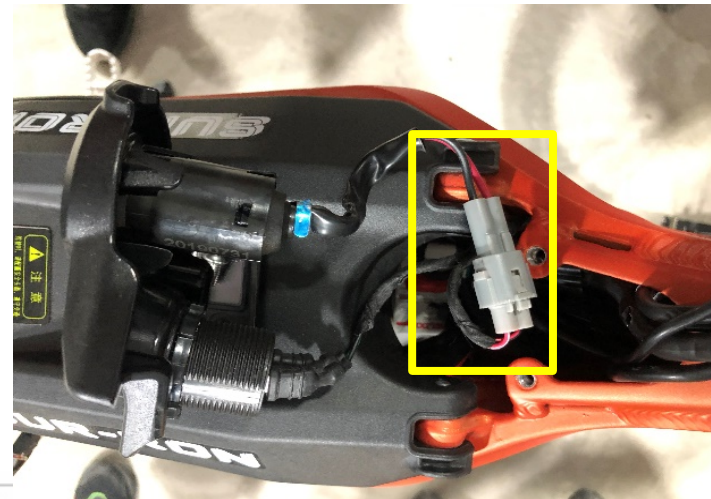


Bike has no power situation

4. Check ignition key switch

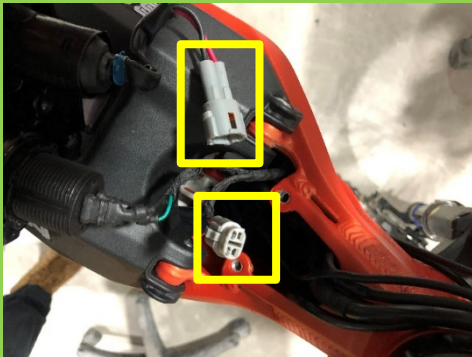
Disconnect the ignition key switch, short circuit main loom side plug, if the bike power back on, the ignition key switch need to be replaced.

Step 1: Disassemble the ignition key switch cap by remove two bolts (see figure below), find ignition



Bike has no power situation

Step 2. disconnect plug



Step 3. use a short wire, make sure its conductive, and make sure you are safe



Step 4: connect the short wire to main loom side plug, see figure below



Bike has power but no move

1. Check throttle cable first, whether the throttle “sticky/loose” or not, make sure the throttle cable was not too tighten, loose or stuck (After crash or any accident, the throttle cable might be damaged, make sure you check the throttle cable before your next ride). This might trigger controller protection, recover when throttle cable repaired.



Bike has power but no move

Throttle cable stuck, turn on switch will trigger protection



Throttle cable too tight, turn on switch will trigger protection



Bike has power but no move

2. Eliminate power protection function (disconnect 12v converter)

Attention: disconnect converter will disable headlight, tail light and speedometer.

Step 1: Remove four bike bash guard bolts



Step 2: Remove controller protection guard

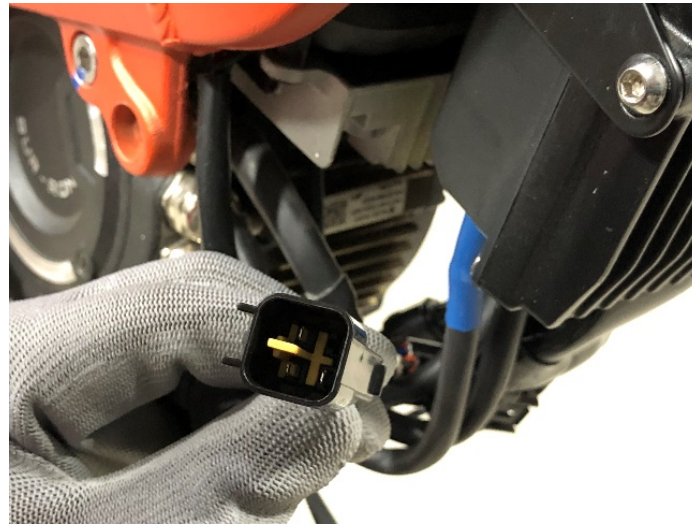
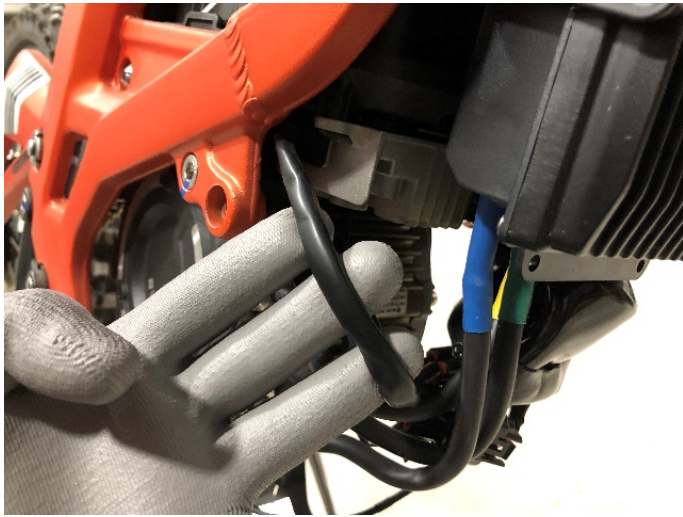


Step 3: Remove cable tie on the rubber plug protection cover from main loom



Bike has power but no move

Step 4: Find and disconnect 12V converter



Test the bike after disconnect 12V converter, If the electric motor back to functional, then we can confirm that the 12V converter was malfunction.

Since we confirm the 12V converter was malfunction, check all the power protection functions respectively.

Bike has power but no move

3. Check throttle controller

Keep the bike power on, find the throttle controller cable(see figure below).



A. Black probe insert to the black/white wire port

B. Red probe insert to the red/white wire port, the correct voltage should around to 4.3V

C. Keep black probe insert to the black/white wire port, then insert the red probe to the green/white

wire port, twist the throttle, the correct voltage should around between 0.8 to 3.6V

Bike has power but no move

4. Disconnect the front and rear brake power protection function

Step 1: find brake power protection function sensor cable



Step 2: remove the ignition key switch cap, find the sensor plug and disconnect the plug. Put the bike on the stand, lift the side stand, test the bike, if the motor back to work, then we can confirm the brake power protection malfunction, replace new part to repair.



Bike has power but no move

5. Check side stand protection

Find the side stand protection sensor cable from side and disconnect the plug.
Put the bike on the stand, lift the side stand, test the bike, if the motor back to work, then we can confirm the side stand protection malfunction, replace new part to repair.



Bike has power but no move

6. Check tilt switch sensor

Step 1: Turn off air circuit switch, disconnect communication plug and power plug, remove battery off the battery rack.

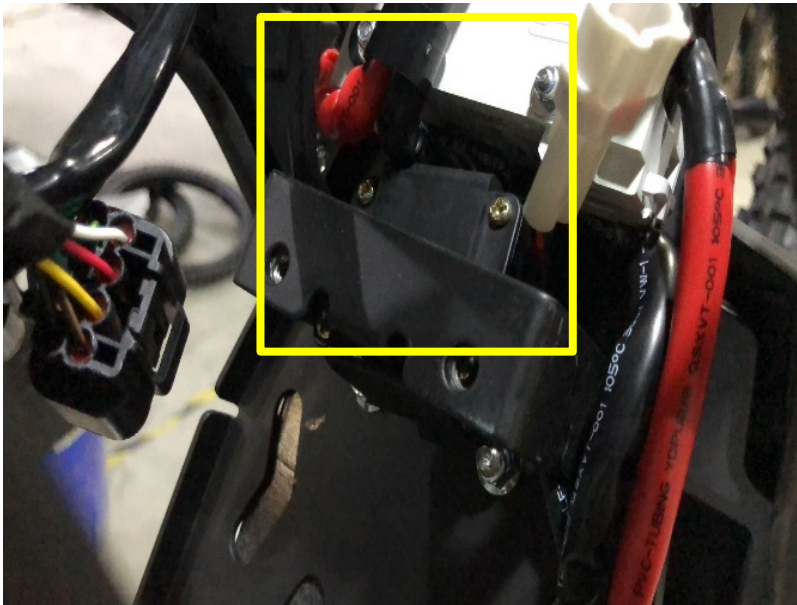


Step 2: Open the front battery plate



Bike has power but no move

Step 3: Find the tilt switch sensor, see figure below, disconnect the plug.
Put the bike on the stand, lift the side stand, test the bike, if the motor back to work, then we can confirm the tilt switch sensor malfunction, replace new part to repair.

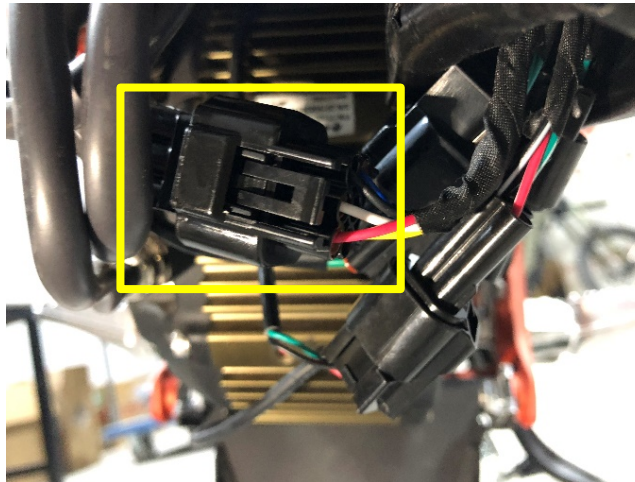


Bike has power but no move

7.Check motor

Keep the bike power on testing the motor hall voltage, you need multimeter, set the multimeter to 0-20V Voltage

Step 1, find hall sensor connector (six pin multiblock)



Bike has power but no move

Step 2, black probe insert to the black wire port, red probe insert to the red wire port, measure the voltage, the voltage should between 4.0 to 4.3V;

Put your bike on the bike stand, leave the rear wheel off the ground, keep the black probe in the black wire port, red probe insert yellow port, turn the rear wheel gently and slowly, the voltage should shown jumping between 0V to about 4.3V. Measure the green and blue port use the same method respectively, the result should be the same.

Voltage lower than 4V means hall sensor is malfunctioned.

Carefully measure the Voltage, the needle probe could damage the seal ring of the multiblock, or even the wire itself. Highly recommend you to insert from outside of the seal ring, close to the plastic part.



Bike has power but no move

8. CHECK CONTROLLER

Keep the bike power on

Unplug the motor hall sensor connector, check main harness six pin multiblock

Step 1, set the multimeter to 0-20V Voltage

(easier to measure by remove the yellow block from connector)



Step 2, black probe insert to the black wire port,
red probe insert to the yellow, green and blue wire port,
measure the voltage, normal voltage should be between 4.5-4.7V

Diagnostic Identification Chart

No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
1	1	normal operation condition	----	----
2	2	controller power tube malfunction	Er-208	turn off power switch and turn on again
3	3	controller hardware over current protection	Er-207	leave throttle to idle position and twist throttle again
4	4	controller software over current protection	Er-206	auto recovery
5	5	motor main cable phase malfunction	Er-205	turn off power switch and turn on again
6	6	motor Hoare coil malfunction	Er-204	turn off power switch and turn on again
7	7	motor stall protection	----	leave throttle to idle position and twist throttle again
8	8	controller level. 1 over temperature protection	Er-202	turn off power switch and turn on again
9	9	controller level. 2 over temperature protection	Er-201	turn off power switch and turn on again
10	10	motor level. 1 over temperature protection	Er-216	turn off power switch and turn on again
11	11	motor level. 2 over temperature protection	Er-215	turn off power switch and turn on again

No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
12	12	battery level.2 over voltage protection	----	leave throttle to idle position and twist throttle again
13	13	battery level.2 low voltage protection	Er-213	leave throttle to idle position and twist throttle again
14	14	throttle rush-out protection	Er-212	turn off power switch and turn on again
15	15	Throttle to controller signal wire short-circuit	Er-211	turn off power switch and turn on again
16	16	brake protection	----	auto recovery
17	21	controller current sampling failure	Er-209	turn off power switch and turn on again
18	22	side stand protection	Er-224	auto recovery
19	23	tilt swith protection	Er-223	leave throttle to idle position and twist throttle again



Diagnostic Identification Chart

No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
20	24	key switch port power failure protection	Er-222	turn off power switch and turn on again
21	25	battery low voltage protection (level. 1)	Er-221	turn off power switch and turn on again
22	27	CAN communication malfunction	ER 217	auto recovery
23	----	communication malfunction(ER 002	auto recovery
24	28	battery premier discharge(voltage) protection(level. 2)	Er-105	charging battery to recovery
25	29	battery discharge low temperature protection(level. 2)	Er-114	turn off power switch and turn on again
26	30	battery over temperature protection(level. 1)	Er-219	turn off power switch and turn on again

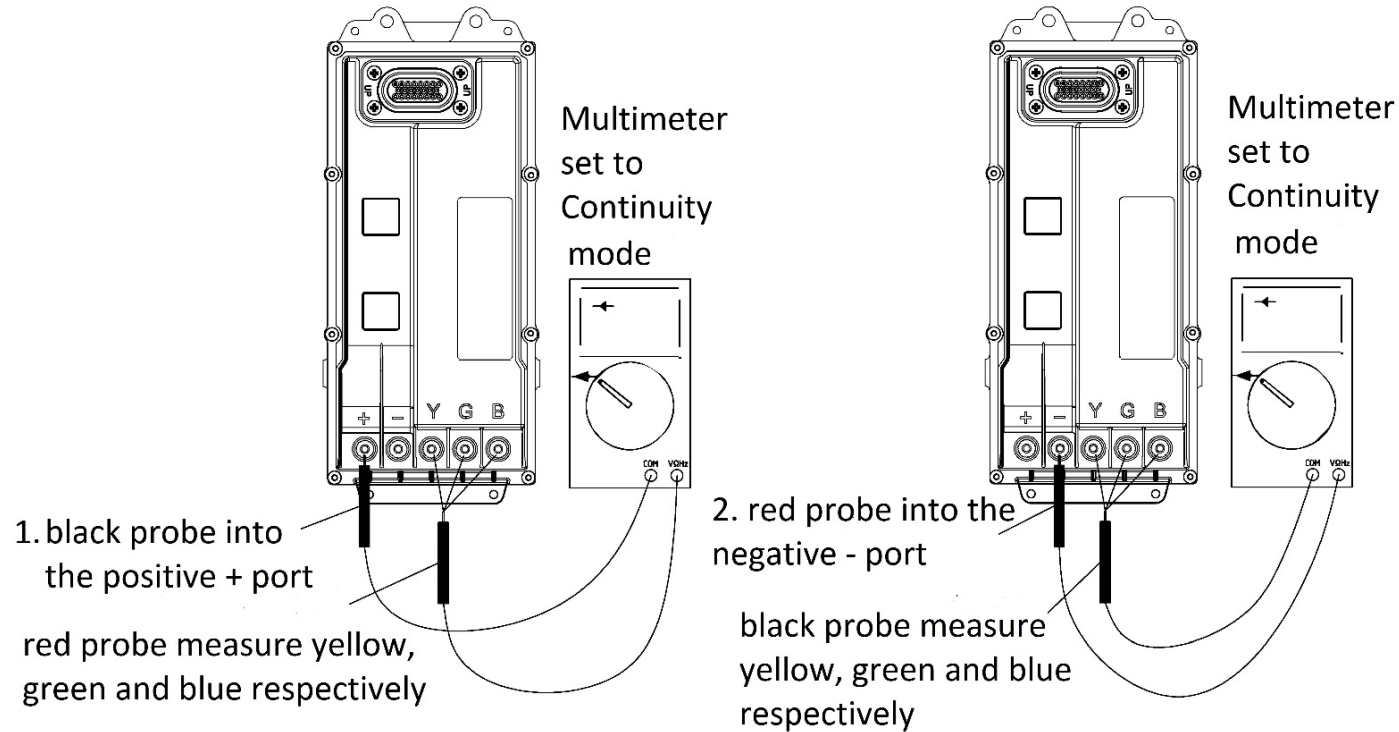
No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
27	31	controller and battery 485 communication no response	Er-216	auto recovery
28	32	controller and battery 485 communication unmatched		auto recovery
29	33	battery SOC low capacity protection	Er-218	turn off power switch and turn on again
30	17	motor temperature sensor malfunction	Er-200	auto recovery
31	18	battery BMS discharging MOS malfunction	Er-107	recovery after fault removal
32	18	battery BMS charging MOS malfunction	Er-106	recovery after fault removal
33	19	battery BMS MOS temperature sensor malfunction	Er-102	auto recovery
34	19	battery cell temperature sensor malfunction	----	auto recovery
35	20	battery discharge over temperature protection(level. 2)	Er-116	temperature drop to working temperature to recovery
36	26	battery cell charging over temperature protection(level. 2)	----	temperature drop to working temperature to recovery

Diagnostic Identification Chart

No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
37	34	battery cell charging low temperature protection(level. 2)	----	temperature rise to working temperature to recovery
38	20	battery discharging MOS over temperature protection(level. 2)	----	temperature drop to working temperature to recovery
39	26	battery charging MOS over temperature protection(level. 2)	----	temperature drop to working temperature to recovery
40	20	battery BMS soft start circuit over temperature protection(level. 2)	----	temperature drop to working temperature to recovery
41	35	battery over current protection (level.3)	----	auto recovery

No.	LED	Diagnostic explanation	Diagnostic code	Solution
	Number of flash times		Shown on instrument	
42	----	battery BMS discharge MOS over temperature protection(level. 1)	Er-120	temperature drop to working temperature to recovery
43	----	battery premier over discharge(voltage) protection(level. 1)	Er-119	auto recovery
44	----	battery discharge low temperature protection(level. 1)	Er-118	temperature rise to working temperature to recovery
45	----	battery discharge over temperature protection(level. 1)	Er-117	temperature drop to working temperature to recovery

Controller test



3. measure result should be between: around 0.2 and 0.6, can not be 0



THANKS !



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