Elon® 100 Troubleshooting Guide for Electricians V2.10

POWEROPTIMAL — THE FUTURE OF ENERGY

Electrolux SA (Pty) Ltd — KWIKOT

NOTE: This Troubleshooting Guide is intended for electricians and not general users. Users should please refer to the User Manual, which can be found at www.poweroptimal.com/manuals. Please see page 3 for a summary of the Elon®'s controller and LED lights.

Unit no.		Development name			Elon® serial no.	
Date			Name: 1st level support person			
Unit construction status (Works OR Final Completion)			Resident name			
Reported issue (customer)						
Reported issue (Level 1 Support)						

Troubleshooting Steps

- If you have a test controller (little black box with the control dial & lights), plug it into the Elon®.
- If you identify the problem at a specific step, you can stop there and write your conclusion.
- If you replace an Elon®, thermostat, element or wiring, you should commission the system again as per the Installation Manual.
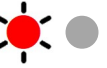
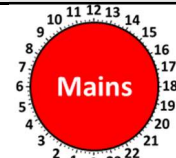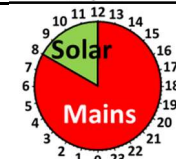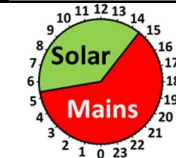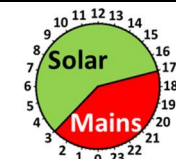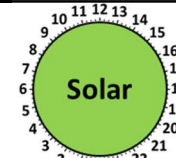| No.	Action	Result	Units
1	Confirm correct wiring and polarity to Elon®. Also confirm test meter wires are connected correctly, black to common!	☐	
2	Confirm correct voltages and currents of all connections through the following steps:		
2a	Confirm open / closed **thermostat** voltages (11 – 14 V DC open, 0 V DC closed).		V DC (open)
			V DC (closed)
2b	Confirm controller wire is connected properly. The connections should "click" into place and appropriate LEDs should indicate (be active).	☐	
2c	With **solar power to element switched on** (green LED flashing), confirm same **DC voltage to element** as measured at solar terminals.		V DC solar
			V DC element
2d	With DC clamp meter confirm that there is an **active current through element.**		A DC
2e	With **mains power to element switched on** (red LED flashing), confirm same **AC voltage to element** as measured at mains terminals (should be approx. 230V AC).		V AC mains
			V AC element
2f	With **AC clamp meter** confirm **active current through element** of between 9 and 18 Amps depending on element rating.		A AC
3	If you used a test controller for troubleshooting, remember to plug the wire from the installed controller back into the Elon® and check functioning.	☐	
4	Set thermostat back to original setting.	☐	
5	Write down the conclusion from your testing (**What caused the reported issue?**) & any other observations:		

Things to Remember

- The **red mains LED** will only start functioning once stable mains voltage between 190 and 260 V AC is present for more than **5 minutes**. (In other words, the Elon® will only allow mains power to the element 5 minutes after mains connection or switch-on.)

- **Solar power** is only recognised **40 seconds** after active solar panels are connected to Elon®.

- An **open thermostat** (water at correct temperature) measures between **11 and 14 V DC** across the "thermostat" terminals on the Elon®. Polarity across these terminals is not important.

- A **closed thermostat** (cold water) **measures 0 V** across the "thermostat" terminals on the Elon®.

- **How to switch on solar power to element**: With enough solar energy (check at solar terminals), solar power will be routed to the element within 15 seconds after the thermostat closes and the controller dial is set to "**SOLAR ONLY**". A green flashing LED indicates this condition.

- **How to switch on mains power to element:** Turn control dial to "**MAINS ONLY**" and, if the thermostat is closed, mains power will be directed to the element indicated by a red flashing LED.

- **Note:** Once the dial has been turned to "**MAINS ONLY**", it will complete a full mains heating cycle (until the thermostat opens). Turning the control back to "**SOLAR ONLY**" at this point will not immediately switch the unit back to solar power. It will only switch back again after the mains heating cycle is completed (i.e. the thermostat opens) and the thermostat then closes again. You can finish the mains heating cycle faster by reducing the thermostat temperature setting until the thermostat opens. **Test solar power first**.

- **Fast flashing red / green LEDs** indicate either:
  a. a short between a PV (photovoltaic) lead and earth – this condition prevents solar power to the element;
  b. a partial short of the element to earth, e.g., a puncture exposing element to water. This condition can be ruled out by disconnecting both wires to the element. If the LEDs stop flashing, the element is faulty. If the LEDs continue flashing, then the cause is likely as per item a. above.

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The **Mains & Solar indicator lights (LEDs)** indicate the following conditions:

	Lights (LEDs)	Meaning
⚪ 🟢	**Green** light **ON**	**Geyser on temperature**
⚪ 🟢	**Green** light **flashing**	Heating with solar
🔴 ⚪	**Red** light **ON**	Mains power available (power to Elon® unit on)
🔴 ⚪	**Red** light **flashing**	Heating with mains
🔴 🟢	**Both** lights **ON**	Geyser is on temperature. Mains power available (mains power to Elon® unit on)
🔴 🟢	**Red** light **ON** & **Green** light **flashing**	Heating with solar. Mains power available (mains power to Elon® unit on)
🔴 🟢	**Red** & **Green** light **flashing fast**	Isolation fault (contact electrician)
⚪ ⚪	Both lights **OFF**	No power to unit (e.g. no sun + power failure, or no sun + geyser breaker at DB board is switched off) OR supply voltage outside specifications

The **control dial** sets the mains & solar times as follows:

Dial Setting	Time on Mains*	Time on Solar*	24-Hour Clock
MAINS ONLY	24 hr	Never	
1	12:00 to 08:00	08:00 to 12:00	
2	14:30 to 05:30	05:30 to 14:30	
3	17:00 to 03:00	03:00 to 17:00	
SOLAR ONLY	Never	24 hr	

* Times are approximate – will vary slightly with season and location