

**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](http://www.poweroptimal.com/manuals).

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

## Troubleshooting Steps





No.	Action	Result	Units
1	Open the Elon Smart app. (Download the <b>Elon Smart Water</b> app from the Google Play or Apple app stores if you don't have it installed on your phone. Make sure that you have the <b>latest version</b> of the app – you can check by searching “Elon Smart Water” in your app store and tapping “Update”.)	<input type="checkbox"/>	
2	If you don't have the specific thermostat in your device list, scan its QR code (on the house DB or on the thermostat itself) to add it by tapping the + button in the Elon Smart app. 	<input type="checkbox"/>	
3	Open the thermostat <b>Configuration</b> screen by tapping the Configure (hammer & spanner) button to the right of the thermostat on the app status screen. 	<input type="checkbox"/>	
4	Check for any alarms at the bottom of the screen and rectify accordingly (See <b>list of alarms</b> at the end of this guide)	<input type="checkbox"/>	
5	If you cannot access the thermostat from the app, confirm that a. the DC isolator / circuit breaker is closed (on); b. the AC circuit breaker at DB and AC isolator are closed (on).	<input type="checkbox"/>	DC closed
		<input type="checkbox"/>	AC closed
6	If you still cannot access the thermostat from the app, remove the geyser end cover and: a. Visually inspect the wiring ensuring that AC and DC wiring are still inserted into screw terminals; b. Check using a voltage meter that DC voltage is present on the DC screw terminals and polarity is not reversed (Figure 1); c. Check using a voltage meter that AC voltage is present on the AC screw terminals (Figure 2).	<input type="checkbox"/>	Wiring correct
			V DC & correct polarity
			V AC
7	Write down the conclusion from your testing ( <b>What caused the reported issue?</b> ) & any other observations:	 	

Fig 1 Checking DC voltage

Fig 2 Checking AC voltage

## Things to Remember

- After power up, the unit **runs a self-test that takes about 30 seconds**. Once the self-test passes the unit will engage the correct power source determined by the heating policy. If the water is below the temperature set point for the source (Grid or Solar), it will start heating water. You should hear a click when this happens.
- If the two earth wires are not connected to the earth stud the unit will fail the self-test and never start the heating process.
- **The unit will detect the following installation faults** and display them on the configuration screen. These will stop the unit from connecting power to the element until they are cleared:
  1. DC + and DC – are reversed (reversed polarity);
  2. The earth straps are not connected to the earth stud;
  3. AC is connected to DC input;
  4. There is a fault between the solar wiring and earth (insulation failure);
  5. Element faulty (this may happen if you insert the unit so only a single spade connector makes contact with the element);
  6. Unit component failure.
- **The unit will also warn the installer** if there is:
  1. No power on the AC input. The alarm is not shown if heating policy *Solar Only* is selected.
  2. No power on the DC input and it is daytime. The alarm is not shown if heating policy *Grid Only* is selected.
- For any Heating policy except *Grid Only*, solar power is normally engaged except for the periods listed in the **table below**.
- If the unit has no grid power and engaging the element causes the DC voltage of the solar panels to drop below the voltage required to power the unit, the unit disconnects the element. If AC power is supplied, then the unit can run down to 0 V on DC. If the unit disconnects the element, it will stay disconnected for 2 minutes before connecting to the element again.
- If the unit is connected to the grid, it may draw a small amount of power (<3W) from the grid even if *Solar Only* heating policy is selected.
- **How to switch on solar power to element:** Select *Solar Only* heating policy on the configuration screen.
- **How to switch on mains power to element:** Select *Grid Only* heating policy on the configuration screen.

Heating Profile option	Solar power use	Grid power use	Comments
<b>Grid Only</b>	Never	Always	Select this option if you don't have any solar panels installed.
<b>Solar Only</b>	Always	Never	ONLY use solar power. NEVER use grid power.
<b>Morning Shower</b>	Always except for 3 – 5 am	3 am – 5 am	Solar power will be used whenever available, and grid power will only be used early in the morning to boost water temperature to the Grid set point if the temperature is lower than that.
<b>Evening Shower</b>	Always except for 5 – 7 pm	5 pm – 7 pm	Solar power will be used whenever available, and grid power will only be used in the late afternoon to boost water temperature to the Grid set point if the temperature is lower than that.
<b>Morning and Evening Shower</b>	Always except for 3 – 5 am & 5 – 7 pm	3 am – 5 am & 5 pm – 7 pm	Solar power will be used whenever available, and grid power will only be used in the early morning and late afternoon to boost water temperature to the Grid set point if the temperature is lower than that.

## List of Alarms and How to Resolve Them

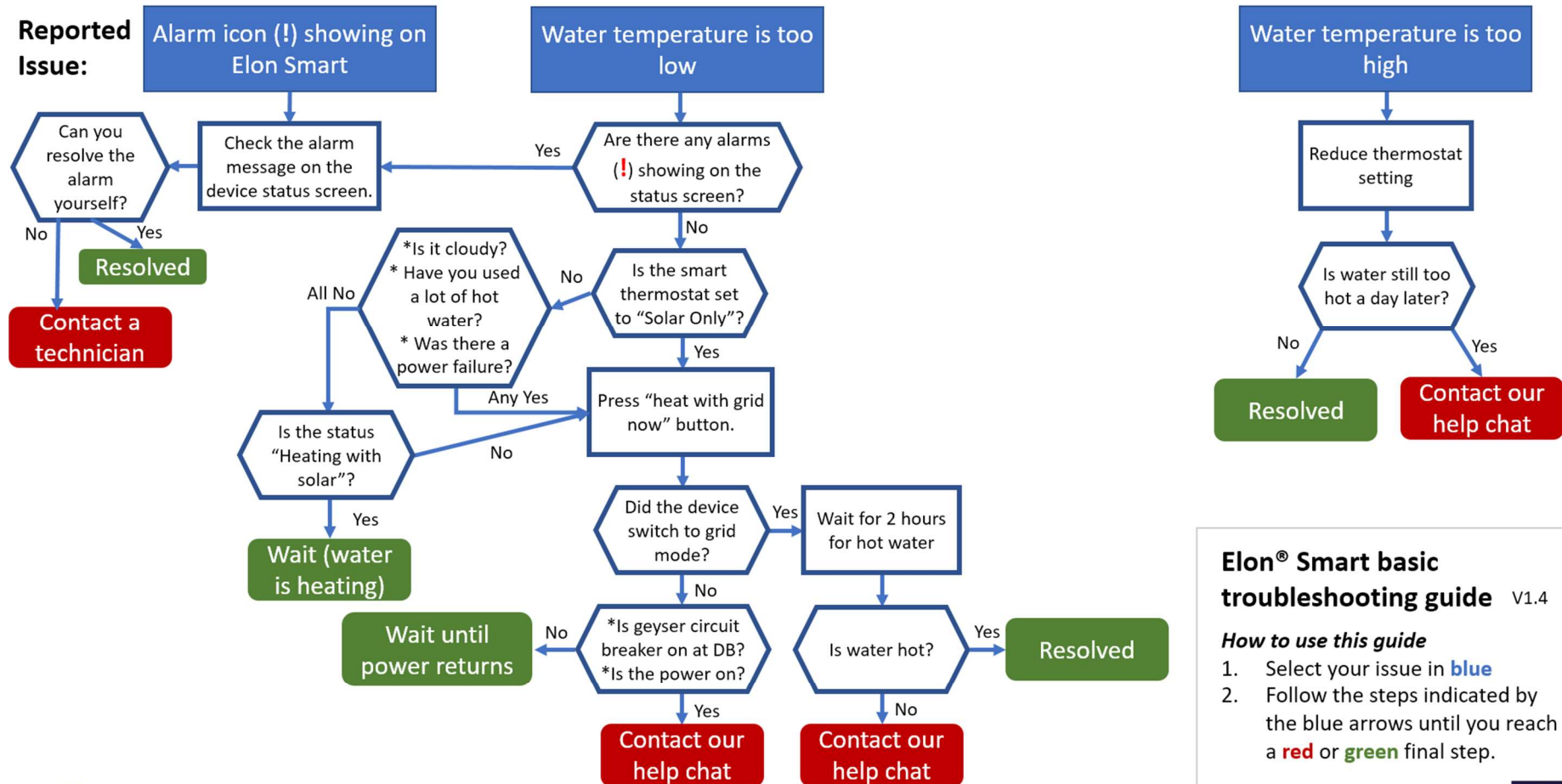
The Elon Smart has a helpful alarm system that detects and reports common issues. See the below list for the various alarms and how to resolve them.

Always check that you have the **latest version of the app** by going to the “Elon Smart Water” app in your app store.

ID	Alarm message	How to resolve the alarm
0	Element Faulty	<ul style="list-style-type: none"> <li>a. Check that the thermostat is inserted correctly.</li> <li>b. If that does not clear the alarm, measure element resistance and replace if necessary.</li> </ul>
1	Switch Failed	Contact technical support
2	DC Disconnect Failed	Contact technical support
3	No Power on AC Input	<p>This can be due to several reasons:</p> <ul style="list-style-type: none"> <li>a. There is no AC power connected to the Elon Smart</li> <li>b. AC power is off at the circuit breaker in the DB board or at the AC isolator close by the Elon Smart unit.</li> <li>c. There is a power failure or loadshedding.</li> </ul> <p>This alarm won't prevent the Elon Smart unit from functioning and heating water with solar (DC) power as long as there is solar power available.</p> <p>You can clear the alarm by switching the AC power on (where applicable), setting the Elon Smart heating policy to <i>Solar Only</i> (see Table 4.1) or you can leave it until AC power returns.</p>
4	Measurement Failure	Contact technical support
5	Disconnected for Safety	When there is a safety-related alarm condition, the Elon Smart will disconnect power from the geyser. To clear this alarm, you need to clear the other safety-related alarm(s).
6	Water Temperature Measurement Failure	Contact technical support
7	Ambient Temperature Exceeded	<ul style="list-style-type: none"> <li>a. Check the installation. If the geyser is installed in direct sunlight, see if you can provide shade to the geyser end space area where the Elon Smart is located.</li> <li>b. Reduce temperature set point by 5 degrees.</li> <li>c. Wait until temperatures cool down. The Elon Smart will start up again.</li> <li>d. Contact technical support if the above doesn't clear the alarm.</li> </ul>
8	DC Wiring Insulation Failure	<ul style="list-style-type: none"> <li>a. Check solar panels and DC wiring for insulation faults.</li> <li>b. To operate the Elon Smart whilst the insulation fault has not been located and resolved, you can set the heating profile to <i>Grid Only</i> or switch off the DC disconnect switch.</li> </ul>
9	Insulation Self-Test Failed	<ul style="list-style-type: none"> <li>a. Check earth wiring. Make sure both earth straps are connected securely to the geyser earth stud.</li> </ul>
10	AC Wired to DC Input	Wire AC to correct input (see Chapter 4).

ID	Alarm message	How to resolve the alarm
11	DC Wired to AC Input	Wire DC to correct input (see Chapter 4).
12	No Power on DC Input	<p>This can be due to several reasons:</p> <ul style="list-style-type: none"> <li>a. There is no DC power connected to the Elon Smart</li> <li>b. DC power is off at the DC disconnect switch close by the Elon Smart unit.</li> <li>c. There is an issue with the DC wiring or solar PV installation.</li> <li>d. It is extremely dark and overcast during daytime. (The alarm is not active when the sun is less than 15 degrees above the horizon.)</li> </ul> <p>This alarm won't prevent the Elon Smart unit from functioning and heating water with grid (AC) power as long as there is grid power available.</p> <p>You can clear the alarm by switching the DC power on (where applicable), fixing the DC wiring / solar PV installation, setting the Elon Smart heating policy to <i>Grid Only</i> (see Table 4.1) or you can leave it until DC power returns.</p>
13	DC Input Reversed	The wiring on the Solar input has been installed incorrectly (in reverse). The DC+ (positive) wire has been connected to the DC- (negative) terminal on the Elon Smart and the DC- (negative) wire has been connected to the DC+ (positive) terminal on the Elon Smart. Swap the DC wires around (see Chapter 4).
14	Hot Connection	Elon Smart not correctly inserted into geyser element. Switch off all power to the Elon Smart and re-seat (reinsert) the Elon Smart.

The below basic troubleshooting guide for users might also be of use to you.

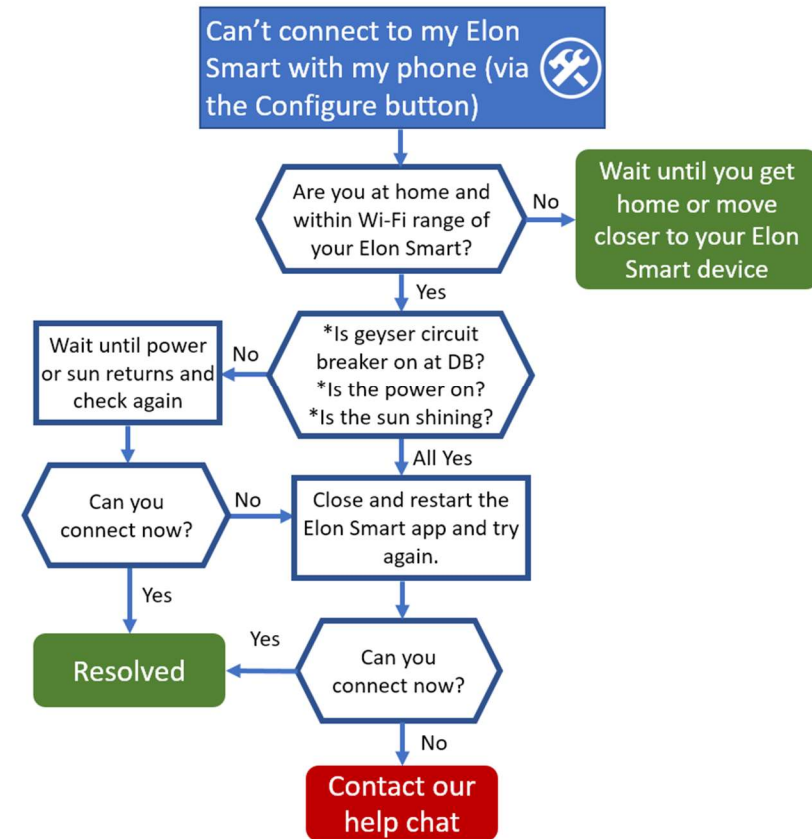
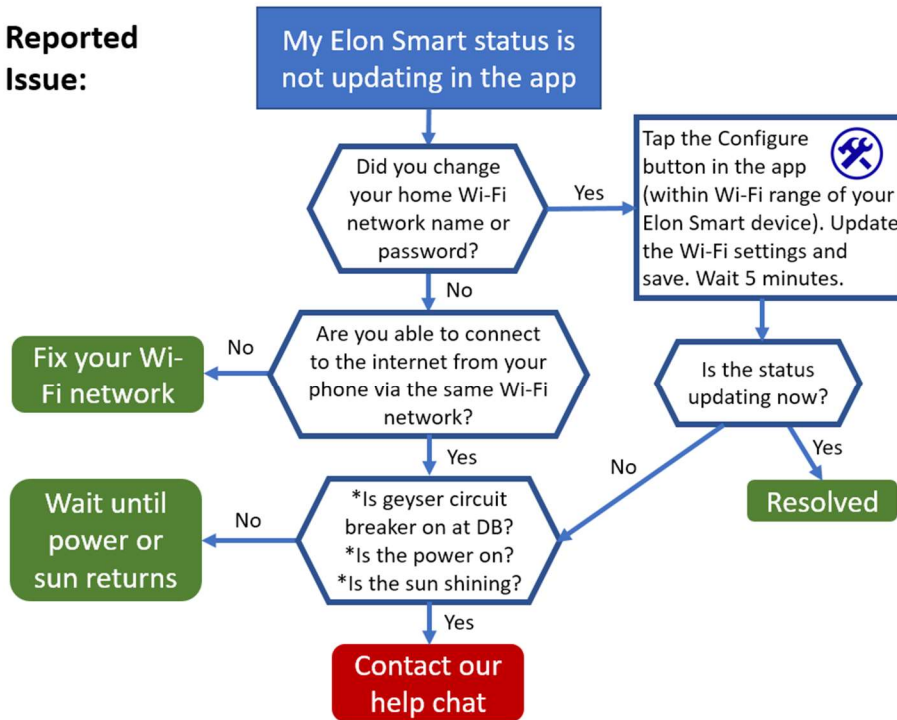


**Elon® Smart basic troubleshooting guide V1.4**

*How to use this guide*

1. Select your issue in **blue**
2. Follow the steps indicated by the blue arrows until you reach a **red** or **green** final step.

**Reported Issue:**



**Reported  
Issue:**

