



# **FLEX** INSTALLATION AND SERVICE MANUAL



**ZOLA**  
Power Anywhere

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# 1. INTRODUCTION TO **FLEX** & CONFIGURATIONS

# INTRODUCTION TO FLEX & CONFIGURATIONS

ZOLA FLEX is a wall mounted, **“plug and play”** power device that is used in the home. All inputs and outputs are plugged directly into the box with cables - like a PlayStation.

It contains a lithium-ion battery which charges with a solar panel and a wall charger in parallel - it uses solar when available.

ZOLA FLEX is sold in a number of different configurations which offer different DC appliances.

The Core System which is common to all configurations is the Power Box, Solar Panel, Lights and USB phone charger.

The additional appliances available are the AC inverter, Boombox, Fan and TV (24” and 32”)

## HARDWARE IN PICTURES



Power Box



ZOLA TV



Solar Panel



Fan



Boombox



Bulb



Inverter



Tube light



Wall Charger

## 2. OVERVIEW OF THE **FLEX** POWERBOX

# FLEX OVERVIEW

## Appliance Shelf

For use while charging phones, radio, or other small appliances

## QR Code

Contains box DID

## Box Reset

Hard reset button for critical failures

## USB Ports (2)

- Top port (single bolt) includes a data connection
- Both ports charge at equal speed

## Appliance Ports (3)

## Light Ports (3)

Ability to chain up to 4 lights per port = 12 total



## LEDs (12)

- 3 red LEDs for discharge
- 3 green LEDs for charging

## LCD Screen (1)

Information about the system, unlock code entry, alerts and

## Navigation Buttons (3)

Useful for paying and interacting

## Charging Port 1

## Security Light Port (1)

# FLEX SYSTEM OVERVIEW

## THE POWER BOX HAS 2 TOOLS FOR COMMUNICATING:

12 LEDs and an LCD screen controlled by 3 buttons underneath it.



LEDs



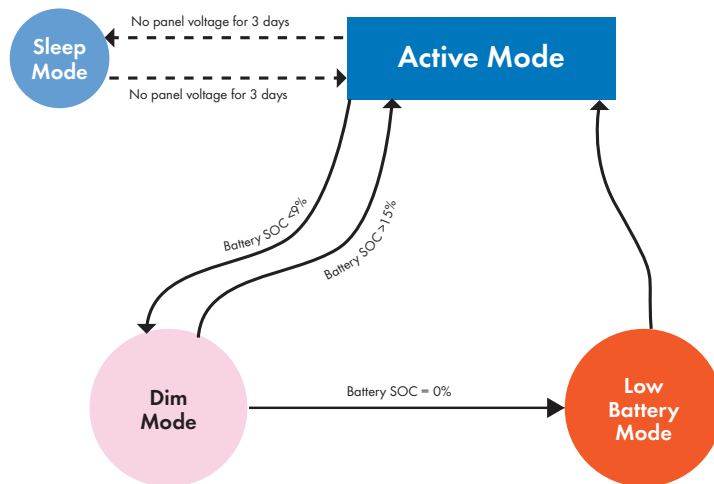
LCD Screen



Buttons



## SUMMARY OF FLEX OPERATIONAL MODES



1. No appliances
2. Dim lights
3. No USB

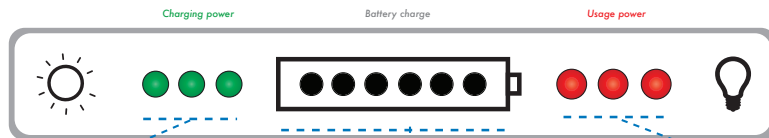
1. No appliances
2. No lights
3. No USB
4. No LCD
5. No LEDs

**\*all battery percentages are in SOC-D**

# LEDs OVERVIEW

LEDs are ON when the battery level is above 0%. They relay specific information.

**12 LEDs in total:** 6 charging LEDs, 6 Battery level LEDs, 3 Discharge LEDs



## CHARGING LEDs (3)

Indicate charging strength and how fast the system is charging

- 1 LED indicates weak solar power
- 2 LEDs indicate moderate solar power
- 3 LEDs indicate strong solar power

## BATTERY LEVEL LEDs (6)

Each LED indicate a certain percentage level

- 1 LED = 0 - 25%
- 2 LEDs = 26 - 40%
- 3 LEDs = 41 - 55%
- 4 LEDs = 56 - 70%
- 5 LEDs = 71 - 85%
- 6 LEDs = 86 - 100%

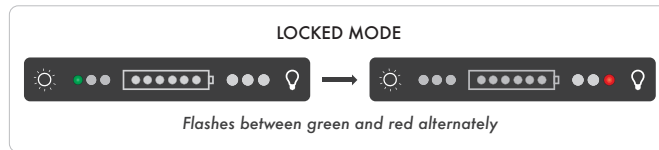
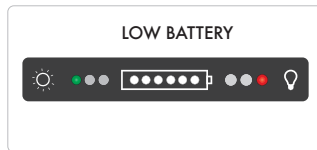
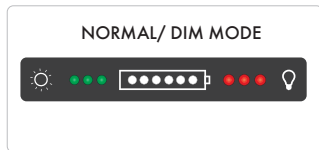
## DISCHARGE LEDs (3)

How much current or energy is being used by lights and appliances connected

- 1 LED indicates low use
- 2 LEDs indicate moderate use
- 3 LEDs indicate high power

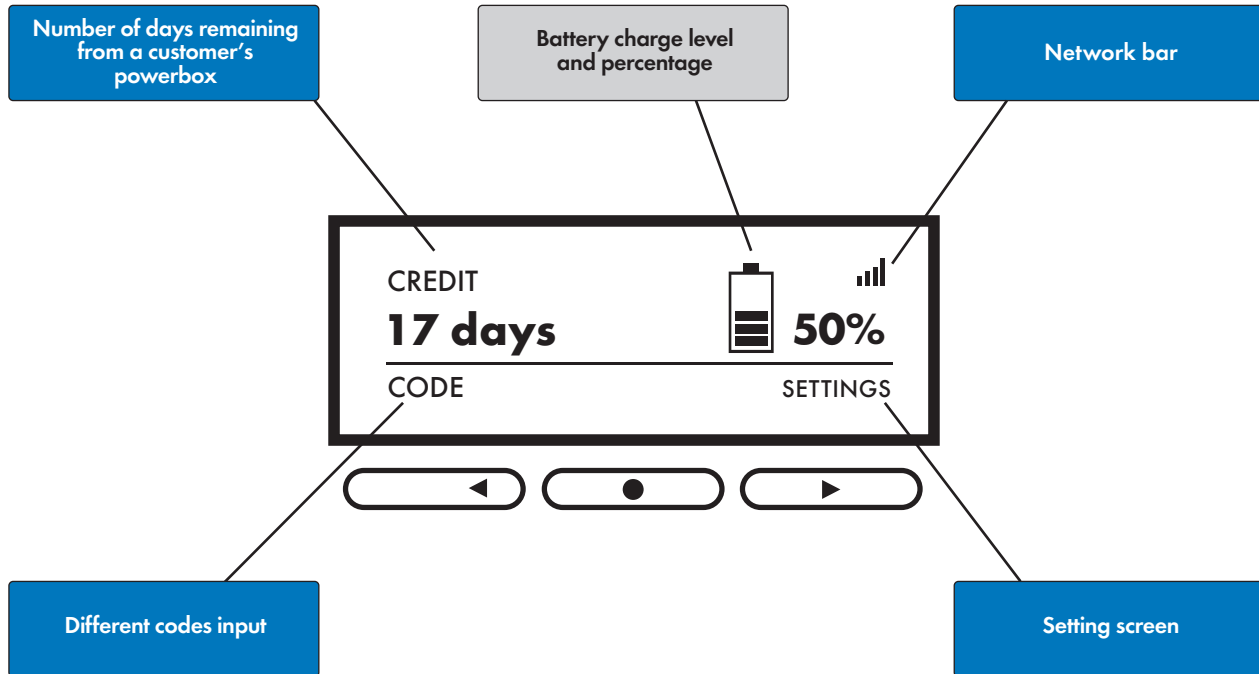
## FLEX POWERBOX MODES - LEDs

When the Powerbox enters Low Battery mode or Locked mode, the LEDs change to show this.

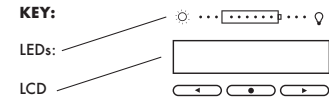




# LCD SCREEN



# FLEX SCREENS & LEDs



	MODE	IMAGE	LEDs	LCD	LIGHT PORTS	APPLIANCE PORT	USB PORT
FLEX MODES	ACTIVE MODE		<ul style="list-style-type: none"> <li>GREEN LEDs depend on when power box is connected to power</li> <li>If the power box is above 95%, No Green LED</li> <li>White LEDs depend on battery level</li> <li>RED LEDs depend on the discharging level</li> </ul>	ON	ON	ON	ON
	LOW SOC		<ul style="list-style-type: none"> <li>1 GREEN LED</li> <li>2 White LEDs</li> <li>1 RED LED</li> </ul>	OFF	OFF	OFF	OFF
	DEAD BATTERY		OFF	OFF	OFF	OFF	OFF
	NO CREDIT		<ul style="list-style-type: none"> <li>1 GREEN LED and 1 RED LED blink</li> </ul>	OFF	OFF	OFF	OFF

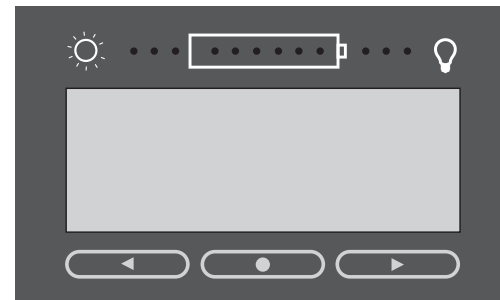
- On the active mode if the power Box is charged to 100% and starts discharging, the green LED will not be seen until the power box goes below 95%
- The screens and LED behavior might change due to firmware change

# DIFFERENCE BETWEEN SLEEP MODE AND DEAD BATTERY

## They both look alike at first sight

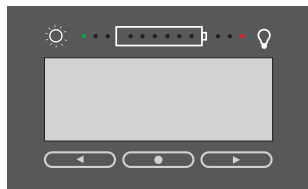
- **Sleep Mode** means the Flex system is drawing minimum power
  - System can be awakened by pressing the left button, middle & right button
  - A Flex box can enter sleep mode when:
    - Entering codes manually
    - Automatically when the Flex box is not charged for 3 consecutive days
- **Dead Battery** means battery level is too low to power anything therefore
  - System can not be awakened by any button press
  - Needs to be replaced

Sleep mode & a dead battery LCD & LEDs



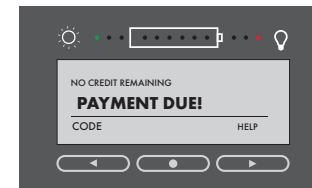
## Powerbox low state of charge - (Low SOC)

- Low SOC LEDs turns ON, on button push and will turn off after 3 seconds
- Resetting the FLEX power box will not activate the lights and appliance ports
- To exit Low Soc, the power box needs to be charged
- Credits purchased while a box is in low SOC will not be sent to the box automatically via GSM. This will need to be entered manually



## Out of Credits

- When FLEX power box is out of credits
  - One red & one green LED lights will keep blinking
  - LCD will display **"PAYMENT DUE"**
- Resetting the FLEX power box will not activate the lights and appliance ports
- Advise the customer to purchase credits to activate the power box



# GSM AND ITS IMPORTANCE TO THE COMPANY

**GSM** - Global System for Mobile communications, As of 2014, it has become the global standard for mobile communications

## GSM importance to ZOLA:

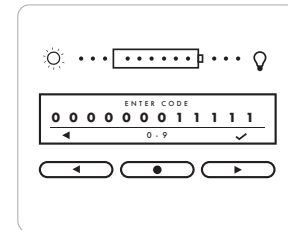
- Communication between our engineering team and the FLEX power box can be done through GSM connectivity
- Different codes can be pushed to customers powerbox remotely
- Firmware updated can be pushed to power boxes remotely
- Help the company to be proactive as our engineering team can see issues in the power box even before a customer has complained

## How to reset GSM:

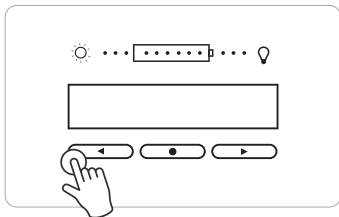
It is important to reset GSM when installing a power box into a customers home as it help it to be connected to the nearest powerful connection

### NOTE:

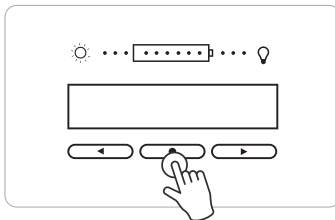
The appropriate way to reset GSM is by entering this codes **"000000011111"** and not otherwise



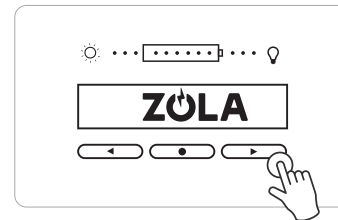
## WAKING UP FLEX POWER BOX FROM SLEEP MODE



1. Press and hold the left button for 2 seconds until you see 2nd and 5th battery indicator lights turn on



2. After you see the indicator lights, release the left button and wait for 1 second, then quickly press the middle button and then the right button



3. After pressing the right button the display screen should turn on and display the ZOLA logo

# **3. PRODUCT: USER EXPERIENCE**

# FLEX TERMINOLOGY

<b>User Interface (UI)</b>	The visual layout and design of indicators that allow the customer to gather information from the product. For Flex this is only the LCD screen and the 12 LEDs
<b>User Experience (UX)</b>	The whole multi-sensory experience the customer has while interacting with the product. This includes elements of the UI but can be expanded to other objects, sounds, or interactions related to the core system.
<b>Active Mode</b>	When the box is in active mode it is behaving as expected and all outputs are functioning
<b>Sleep Mode</b>	After the box has not received voltage for 3 days, the box enters <b>"sleep mode"</b> . This was previously <b>"ship/store"</b> mode. There is no code to enter or exit sleep mode. Any button pressed or panel voltage will return the box to <b>"active"</b> mode.
<b>Dim Mode</b>	Previously called <b>"auto-dim"</b> this mode is entered when the LCD displays 9%. In dim mode the appliance ports do not work and the light ports only operate on the dim setting. Box will return to Active mode after the LCD reads 15% battery.
<b>Low battery Mode</b>	Previously called <b>"low SOC"</b> , in this state all output ports are disabled. Upon pressing a button, the LEDs flash but the LCD screen remains blank. Box will return to active at 9%.
<b>Firmware update Mode</b>	When the box firmware is being updated over the GSM network, the box will temporarily be disabled for 5-10 minutes as the update is completed.
<b>SOC</b>	State of Charge. This refers to the battery charge level, commonly referred to as a percentage.

# FLEX TERMINOLOGY

<b>Unlocked</b>	Box is paid for and all outputs should work according to defined operational states
<b>Locked</b>	Box outputs are disabled until the next payment is made
<b>Permanent Unlocked</b>	Box total cost has been paid for and ownership transferred to the customer. Box is unlocked permanently and all outputs continue to function according to defined operational states.
<b>Chain</b>	A method of linking light cables, one after another so that all lights do not have to connect into power box. This extends the distance that lights can reach from the power box
<b>Junction Box (J-Box)</b>	The point at which two light cables and 1 switch cable are joined.
<b>QR Code</b>	A visual label placed on the power box that communicates information about the box including the device identification number when scanned by a special device or smartphone and app
<b>AC wall charger</b>	It is AC charger that uses the grid to charge the powerbox [instead of using solar panel].
<b>Inverter</b>	This is a device that converts the DC voltage to an AC voltage

# BOX BEHAVIORS - BY OPERATIONAL MODE

	ACTIVE MODE	DIM MODE	LOW BATTERY	SLEEP MODE	LOCKED MODE (No Credit)
<b>LCD</b>	Normal behavior. Turns on with notification or button press, auto off after ~30 seconds	Normal behavior. Turns on with notification or button press, auto off after ~30 seconds	OFF	OFF	OFF
<b>LEDs</b>	Normal behavior. Always display state of battery, charging, and discharging strength	Normal behavior. Always display state of battery, charging, and discharging strength	Far left green LED, far right red LED, and two middle white LEDs turn on when any of 3 buttons are pressed. Otherwise off	OFF	Far left green LED and far right red LED alternate flashing (on and off) until credit is added
<b>Outputs</b>	All ON	Appliance ports and USB ports to not work. Lights are only on "dim" setting	All OFF	All OFF	All OFF
<b>Trigger</b>	Default mode when battery is fully charged	Battery SOC display falls	Battery SOC reaches 0%	No panel voltage for 3 days	Credit runs out
<b>Return to active mode</b>	N/A	Battery SOC displays 15%	Battery SOC displays 9%	Button press or panel voltage	Credit added

Low Battery LEDs



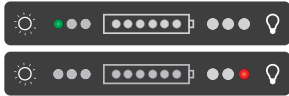
Locked mode LEDs



Flashes between green and red alternately



# PAYMENT MODES



NO CREDIT REMAINING

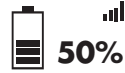
**Payment due!**

CODE

HELP

CREDIT

**17 days**



SETTINGS

**ZOLA**



CODE

SETTINGS

## No Credit - Locked

- When credit runs out, this replaces the home screen.
- Press the left button to enter a code band to unlock box.
- Press help to view CC number and DID

## Unlocked - Home Screen

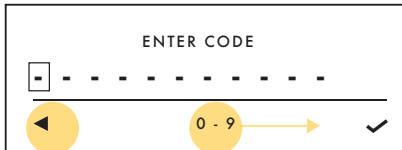
- After credit has been added, the LCD will return to that seen above:  
  
Credit remaining, battery remaining, network connection

## No Credit - Locked

- When the customer enters two permanent unlock codes, the home screen will display the screen above

# LCD SCREENS - MAIN

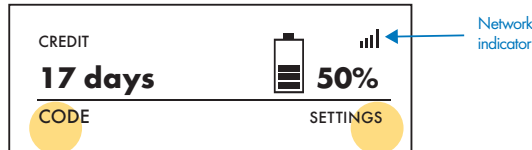
## CODE ENTRY



### No Credit - Locked

- Enter code by incrementing up with middle button
- Move right to continue and enter 12 digit code

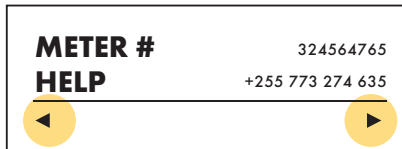
## HOME



### Unlocked - Home Screen

- Credit remaining, battery remaining, network connection
- Left button for code entry
- Right button for settings/ information

## SETTINGS/INFO



### Settings screen

- Device ID number
- Call center number



### Security light

- Toggle between on and off with middle button



### Language

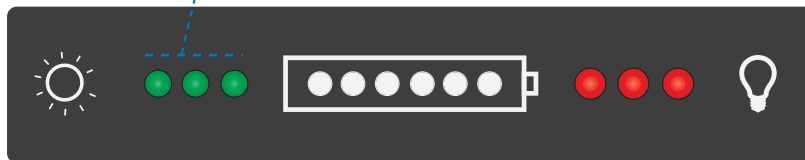
- Toggle between languages with middle button middle button

# PAYMENT MODES

## CHARGING LEDs (3)

Indicate how fast the system is charging. Grid charging is always Strong

- 1 LED indicates charging weak
- 2 LEDs Indicate charging moderate
- 3 LEDs indicate charging strong



The LEDs are **"always on"** when the system has power and are designed to relay specific information at a glance from across the room

- 12 LEDs in total
- 3 charging LEDs
- 6 Battery percentage LEDs
- 3 discharging LEDs

## BATTERY LEDs (6)

Indicate percentage of the battery

- 1 LED = 0 - 25%
- 2 LEDs = 26 - 40%
- 3 LEDs = 41 - 55%
- 4 LEDs = 56 - 70%
- 5 LEDs = 71 - 85%
- 6 LEDs = 86 - 100%

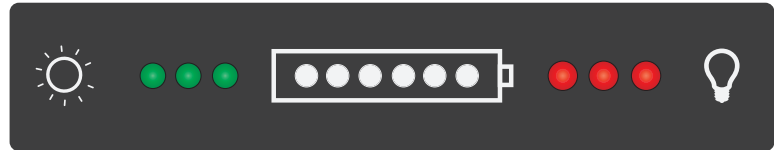
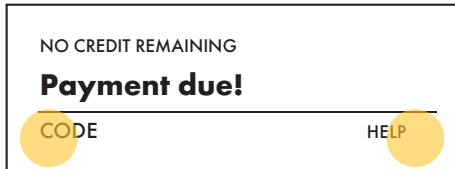
## DISCHARGE LEDs (3)

How much current or energy is being used by lights and appliances connected




- 1 LED indicates low use
- 2 LEDs indicate moderate use
- 3 LEDs indicate high power

# USER EXPERIENCE

**"ON BOX" CREDIT AND DEVICE INFORMATION. PAYMENTS MADE THROUGH INTERSWITCH.**



**An LED strip provides usage information:**

-  Charging Status
-  Battery Charge Status
-  Discharge Status

The LCD and physical buttons provide device management.

# LCD SCREENS - CODE ENTRY

## 1. START - CODE ENTRY

The screen displays 'ENTER CODE' at the top. Below it is a horizontal line with a cursor (a small square) on the left and a series of dashes. At the bottom, there are three circular buttons: a left arrow, a middle button labeled '0 - 9', and a right arrow. A checkmark is visible on the right side of the screen.

Increment with middle button to scroll through 0-9

## 2a. NUMBER ENTRY

The screen displays 'ENTER CODE' at the top. Below it is a horizontal line with the number '0' entered and a series of dashes. At the bottom, there are three circular buttons: a left arrow, a middle button labeled '0 - 9', and a right arrow. A checkmark is visible on the right side of the screen.

Use middle button to increment number from 0-9. Use right arrow to select next number

## 2b. NUMBER ENTRY

The screen displays 'ENTER CODE' at the top. Below it is a horizontal line with the number '3' entered and a series of dashes. At the bottom, there are three circular buttons: a left arrow, a middle button labeled '0 - 9', and a right arrow. A checkmark is visible on the right side of the screen.

## 3. ENTER CODE

The screen displays 'ENTER CODE' at the top. Below it is a horizontal line with the code '342746829397' entered. At the bottom, there are three circular buttons: a left arrow, a middle button labeled '0 - 9', and a right arrow. A checkmark is visible on the right side of the screen.

Once finished hit the right button again to enter

## 4. VERIFICATION

The screen displays 'PAYMENT ACCEPTED' at the top. Below it is a horizontal line with the text 'Thank you!' in the center. At the bottom, there is a circular button labeled 'DONE'.

The screen displays 'CODE NOT VALID' at the top. Below it is a horizontal line with the text 'Try again' in the center. At the bottom, there are two circular buttons: 'TRY AGAIN' on the left and 'CANCEL' on the right.

If code is accepted press center button to return to home screen. If code is invalid press left button to try again or right to cancel

### CODE ENTRY\*

- Most customers (~70%) will not use this feature
- We have removed the keypad because of GSM but added a backup for code entry for customers without network
- Code entry is 4 basic steps as outlined above

# SYSTEM ALERTS

The most important factors for a customer to be aware of when using his or her flex system is the amount of credit remaining and the battery capacity remaining.

## General Alerts

Use combination of LCD screen and LEDs on the power box

## Battery Alerts

- Use combination of LCD screen, LEDs, and ZOLA lights

## Credit Alerts

- Use combination of LCD screen, LEDs, and Audio

## Battery Use

- Box has limited battery remaining (25%)
- LEDs flash, **ZOLA lights flash**



## Dim Mode

- Box enters dim mode at 9%
- LEDs flash, LCD message

## Credit Added

- Upon adding credit
- LEDs flash, LCD message, **ascending audio tone**

## Low Credit Alert

- 3 days until payment due
- LEDs flash, LCD message, **descending audio tone**



## No Credit Alert

- Box locked
- LEDs flash, LCD message, **descending audio tone**
- LED continues flashing

# GENERAL SYSTEM ALERT

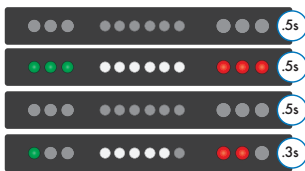
## GENERAL SYSTEM ALERT

- The default alert behavior for flex is described here
- Default alerts could apply to system malfunctions or system notifications related to battery usage or credit/ payments

*Example: Hardware Malfunction*

### 1. FLASHING LEDs

- LEDs flash "OFF" "ON" "OFF" then return to normal for 3 seconds (ex. Shown here)
- Repeat until dismissed



### 2. LCD SCREEN

Specific message displayed related to alert.  
Dismissed with button press

Please call the call center:  
+250 XXX XXXX. There is a  
problem with your system

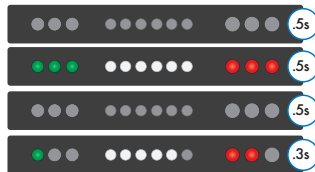
DONE

## BATTERY USAGE ALERT

- When a customer's battery percentage falls below 25%, he or she will experience this behavior
- The intention is to alert the customer so that he/she might have enough time to change behavior and reduce consumption before the system enters dim mode and appliances are disabled

### 1. FLASHING LEDs

- All 12 LEDs flash on and off 3 times and then stop



### 2. FLASHING LIGHTS

All lights (bulbs & tubes) that are currently on will flash between ON and DIM 3 times and then stop

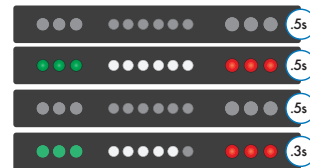


## DIM MODE ALERT

- When a customer's battery percentage drops below 9% he or she will not be able to use the appliances or USB ports
- Lights will only function in dim setting
- Outputs will re-enable at 15%

### 1. FLASHING LEDs

- All 12 LEDs flash on and off 3 times and then stop



### 2. LCD SCREEN

Display dim mode alert screen until dismissed

# SYSTEM ALERTS

## CREDIT ADDED ALERT

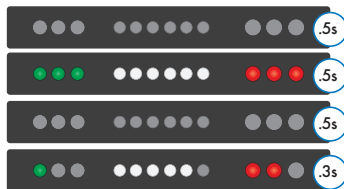
- When a customer adds credit either by GSM (remotely) or by entering codes physically, he or she will experience this behavior.

*\* Note difference in LCD screens in step 2*

- After alert progression, system will return to active state

### 1. FLASHING LEDs

All 12 LEDs flash **ON** and **OFF** until the LCD screen is dismissed.



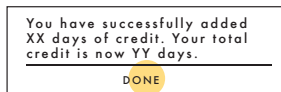
### 2a. LCD SCREEN - MANUAL

- Upon manual entry user sees "thank you" screen
- Dismiss by pressing center button



### 2b. LCD SCREEN - GSM

- Upon GSM (remote) code entry user sees "credit added" screen
- Dismiss by pressing center button



### 3. AUDIO ALERTS

3 ascending tones indicate a successful top up

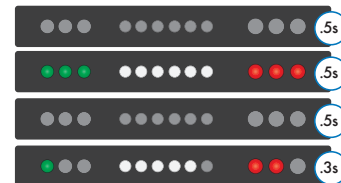
## LOW CREDIT ALERT

- When remaining credit drops below 3 days (72 hours) and voltage from the panel is applied to the power box (at sunrise), alert sequence starts and repeats every hour for 3 hours.

- The customer is reminded by a combination of LCD screen message, flashing LEDs, and an audio tone

### 1. FLASHING LEDs

All 12 LEDs flash **ON** and **OFF** until acknowledged (button press)



### 2. LCD SCREEN

Specific message displayed with days remaining

Your next payment is required soon. You have xx days of credit remaining

DONE

### 3. AUDIO ALERT

3 low tones repeated 3x



# 4 FLEX INSTALLATION

# FLEX INSTALLATION

## SAFETY IN INSTALLING THE FLEX SYSTEM

### Installing the Panel

- Put on comfortable shoes with a sole that won't easily slide on the roof.
- Avoid climbing the roof barefooted. If you can, wear hand gloves. This will be much safer during sunny days.
- Climb to the top of the roof first and have someone from the ground to lever the panel towards your direction.
- Properly position the panel and install it

### Installing Lights, switches and Flex box

- Be careful when using hammer to put nails through the wall
- For the houses that are connected to the National grid , it is important to wear gloves to avoid getting electrocuted by the live wires.
- If part of the installation requires you to stand on a chair or ladder make sure you have someone to hold the ladder or chair for you if necessary.
- Wear ZOLA Customized T-shirt and full set of PPE as advised.

## INSTALLATION ORDER OF OPERATIONS

1. Payment, activation with ZOLA App & Inspection
- 2a. Rough Layout
  - Lights
  - Power Box
  - Switches
- 2b. Connect Chained lights and route cables
  - Mount switches to wall
  - Install solar panel
  - Mount Power Box to wall
  - Clean up cables for a neat installation
  - Educate the customer

# ACTIVATION AND INSPECTION

## 1. SYSTEM INSTALLATION/REGISTRATION (VIA PHONE APP)

- a. Reset box by entering 0000-00001-1111  
(do not press the hard reset button)
- b. Scan box QR code– sometimes signal may be weak and require to walk around site for better reception
  - i. Look for a sticker on the side of the box.  
The sticker will have the mobile money number, call center number, QR code, barcode, and the reference number.
- c. Check if you see the network indicator on the home screen. If you do, the customer will receive codes automatically when you complete the top up step. If you do not, the customer will receive codes through SMS and you will assist him or her entering the codes using the keypad and LCD screen.

QR CODE



## 2. TEST LIGHTS/SWITCHES/EXTENSION CABLES

*Must do this before starting installation*

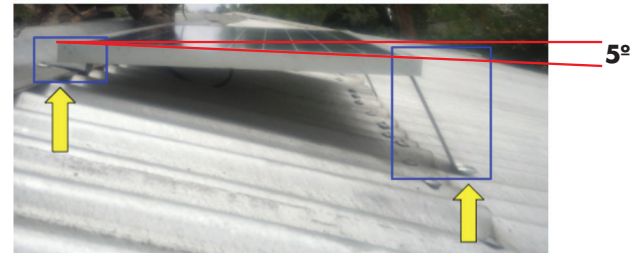
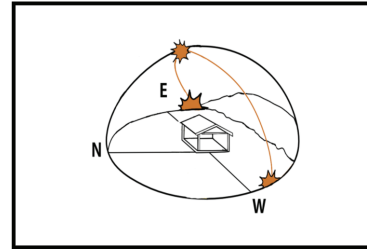
### **Very Important:**

test for breaks in the cables by slightly bending them close to the plugs during testing



# INSTALLING THE PANEL

1. Planning the panel placement:
  - a. The panel should be facing South, southwest or West, for **West Africa** countries.
  - b. The panel should be facing North or Northwest for **East Africa** countries
  - c. The panel should not be covered by shade.
2. The panels should be installed with 4 total roofing nails: 2 at the front and 2 at the back panel tabs. Use binding wire to hold firm the panel on the roof.
3. To absorb maximum sunlight place the panel to face the midday sunlight directly - about 5 degrees tilted.
4. Pass the panel wire through the iron sheet openings through the roof down to the box position. **Step by step of this summary is shown in the next page(s)**

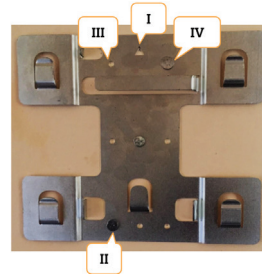


## Equipments you will need for this step

Panel, Nails, Binding wire, Hammer, Panel tabs, Ladder, Helmet & Hand Gloves

## Install the meter box inside customer's house

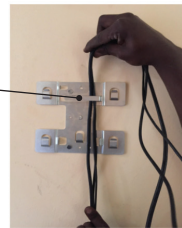
1. Determine height of box placement with LCD screen at eye level of customer
2. Mount the bracket by putting the nails in order of the numbers:
  - a. Nail number 1 can be nailed loosely at first to balance the bracket and help level it.
  - b. Use at least 4 nails, the rest is optional



3. Hang the cables through the bracket

4. Mount the box

*This tab can be bent inwards to help keep cables in place*



*Installer should hear and feel box click into place to confirm proper engagement with Mounting Bracket*

5. Plug in the cables
6. Take up excess slack in the cables through the top.



# LIGHTS PLACEMENT

## BULB



- Install lights in the planned locations
- Route the light's wire to the box/chain connector.
  - a. **NOTE:** In case a light cable won't reach the box there are 3m extension cables.  
Only use one extension per light.
  - b. Use clips to neatly keep the wires pinned to the wall

### Equipments you will need for this step

Bulb light, Chain connector, Extension cables, Clips, Hammer & Nails

## ROUGH LAYOUT OF LIGHTS & SWITCHES

1. **This step is critical to visualize cable layout, clips should be used minimally at strategic locations only (and may need to be removed or re-fastened)**
  - a. Mount lights in desired locations first (tube and bulb) – bracket for tube and cable clip for bulb
  - b. **PRO TIP:** Follow rafters as much as possible in open ceiling homes to keep cable routing simple, moving along and over at intersection points
2. **1st priority are lights that plug directly into meter box**
  - a. Determine location of box with respect to placement of lights if cable lengths are limiting.
  - b. **PRO TIP:**  
If chaining is required and cable length is limiting, position meter box end of plug approximately where it will plug into box, then begin routing cable outwards into room towards chained light to position J-box in the most ideal location.
3. **2nd priority is the chained lights**
  - b. Ensure any chained lights can reach the J-box of the connecting light, connect plugs to help visualize
4. **3rd priority is switch placement**
  - b. Best location is in same room as light at entrance doorway, sometimes the most ideal location for switch is not available, if excess cable is available try to move J-box towards wall where switch will be mounted
  - c. **PRO TIP:** For open ceilings place switch under rafter for easier cable routing.  
Switches are waterproof so outdoor mounting is OK  
(if possible should keep under covered area out of direct sun exposure)
5. **Finishing light and switch installation**
  - b. Strategic Cable Clip locations- (corner between wall and ceiling),  
directly above meter box at junction between wall and ceiling,  
after intersection points

# LIGHTS PLACEMENT

## TUBE LIGHT



- Mount the tube light bracket with screws or with nails to the roof
- Snap the tube light to the metal holder
- Route the light's wire to the box/chain connector.

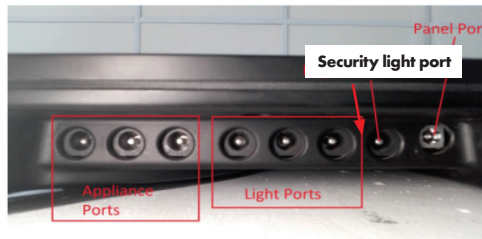
### NOTE:

- a. In case a light cable won't reach the box there are 3m extension cables.  
**Only use one extension per light.**
- b. Use clips to neatly keep the wires pinned to the wall

### Equipments you will need for this step

Tube light, Chain connector, Extension cables  
Clips, Hammer & Nails

## SECURITY LIGHT



1. The security light should always be the **ZOLA Tube**.
2. The security light should not be chained with any other light so as to avoid auto operation.
3. The security light can be configured to operate automatically or manually through the menu on the display.

### TO ENABLE THE SECURITY LIGHT:

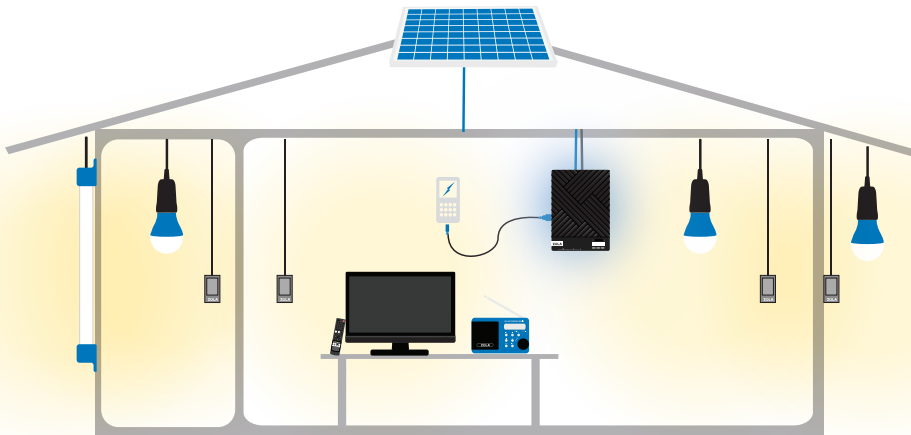
- a. Plug in the light and turn it on with the switch to **bright**
- b. Go to the **"settings"** on the Power Box LCD screen and turn the security light to **"ON"**



- c. **If it is during the day** (and the panel has voltage), the light should turn off automatically after 10 minutes
- d. **If it is night**, the light will stay on until morning

# SWITCH PLACEMENT & MOUNTING

1. Plan the location of the lights
2. Two mounting methods – Clip-on and Mounting Plate methods
  - a. Clip-on – only requires nail with Mounting Collar to be nailed directly into wall, switch is placed over then pushed down and clipped into place with a strong click feel and sound
  - b. Mounting Plate – rear plate of switch housing can be removed with nail or knife by prying off, collar can be placed into key way then nailed in
  - c. **PRO TIP:** For softer walls (like mud or plaster walls) use mounting plate method
3. Insert a nail using one of two mounting methods into wall
4. Place switch on to nail
5. Move on to installing chain connector. Step by step of this summary is shown in the next page(s)



To easily install the switches in the customer's house first place the switches on the required position, and then you can go on the roof ceiling to finish up the connection.

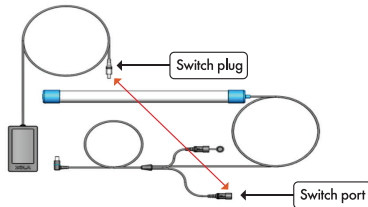


# CHAIN CONNECTOR PLACEMENT

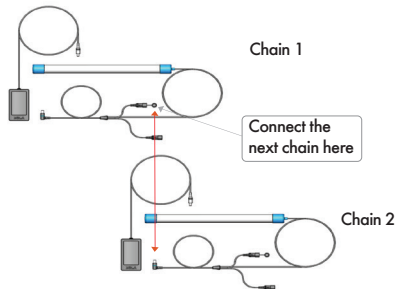
## CHAIN CONNECTOR:

1. Connect lights to box and/or connectors, use extension cables where necessary. Remember not to chain more than 4 lights on a chain.

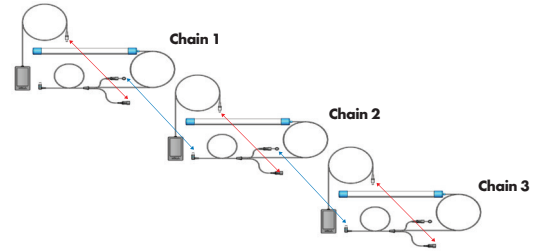
**A. Connect the installed switch plug to the switch port on Chain 1**



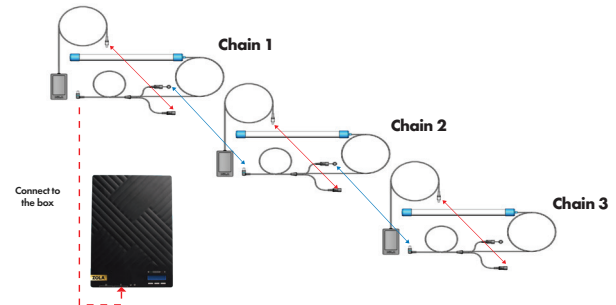
**B. Then plug the next chain (Chain 2) to the Chain 1 chain port**



**C. Connect the switch onto Chain 2 and repeat the steps again until the process is completed**



**2. Connect chain 1 plug to the box's light port.**



## Equipments you will need for this step

Switches, Lights, Chain connector, Extension cables, Clips, Hammer, Nails  
Helmet, Ladder & Hand Gloves

# INSTALLING APPLIANCES

1. Appliances are inserted into the appliance ports on the power box.
2. The ZOLA Fan, ZOLA TV and ZOLA BOOMBOX are inserted into an appliance port and positioned for the customer.
  - a. The ZOLA TV includes a wall mount, to be installed using the same process as for the Power Box mount is a TV is chosen
4. The ZOLA Inverter has 2 cables to allow for a **ZOLA POWER 2** configuration. For normal ZOLA POWER 1 installations both of the ports can be plugged into appliance ports. The inverter has a 2M cable and is placed by the customer - on the floor or a solid surface is recommended.

For FLEX POWER 1 both of these cables can be inserted into appliance ports on the Power Box.



## THINGS TO DO AFTER INSTALLATION IS COMPLETE

- An installation should be neat. The wires from the panel and all lights should be clipped tight to the wall and large bundles of wire should be kept out of sight. Use clips and electrical tape where necessary for a neat installation.
- After the meter box has been installed, the customer will now be able to enter their first top-up code. Help the customer to top-up before leaving the installation.
  - "Never leave a customer in the dark"
  - For top-up instructions and how to use the system, see the owner's manual

# **5** PRODUCT: TROUBLESHOOTING

# WHY DO WE TROUBLESHOOT A FLEX POWERBOX

**We only troubleshoot FLEX power box when it does not give output.**

There is a lot of reasons for why a FLEX power box will not give out output below are all of them

1. ERROR 01
2. ERROR 02
3. BAD FUSE
4. ZOLA INVERTER OVERLOAD
5. BAD BATTERY
6. LOW STATE OF CHARGE
7. DEAD BATTERY
8. OUT OF CREDIT

# ERROR 01

This happens when:

- **Excessive current** is drawn from a Flex power box (possibly due to plugging in unapproved or damaged appliances)
- **Short detected** (possibly due to damaged cable(s) where by +ve & -ve terminals are shorted)

Previous firmware versions (1.22.0 - 1.25.1)	Latest firmware version (1.26.1)
"Please call the Call Center: 0800 024 7365. There is a problem with your system" <b>"01"</b>	"Call ZOLA: 0800 024 7365" <b>ERROR: 01"</b>



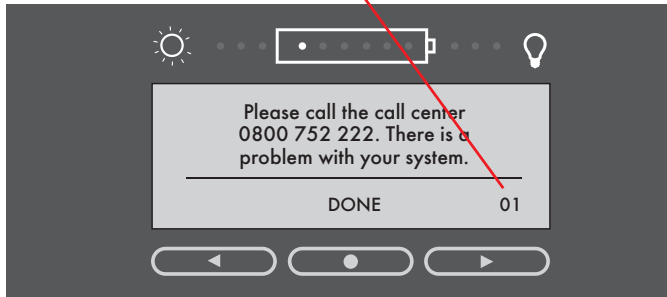
## HOW TO FIX

1. Unplug all connected Lights and Appliances from the Flex box
2. Manually enter the reset code "000000000000" (see image on next page)
3. Verify that the error is cleared from the LCD
4. Plug in the Solar panel cable and one light cable
5. Power one the light to make sure it is working and leave it on
6. Plug in the other lights and test to make sure they are powering ON
7. Plug in the appliances, one by one, and turn them on to make sure they are powering ON.
8. The appliance that causes Overcurrent or short circuit will make the lights flicker or turn OFF
9. Ask the customer not to plug in the faulty appliance and check the cable for short circuit
10. If the faulty appliance is from ZOLA and the customer cannot see any issues with the cable, create a service troubleshooting ticket.
11. If the faulty appliance is non-ZOLA, and the customer cannot see any issues with the cable, inform the customer the appliance is not compatible with the Flex Box.

# SHORT CIRCUIT & HOW TO FIX

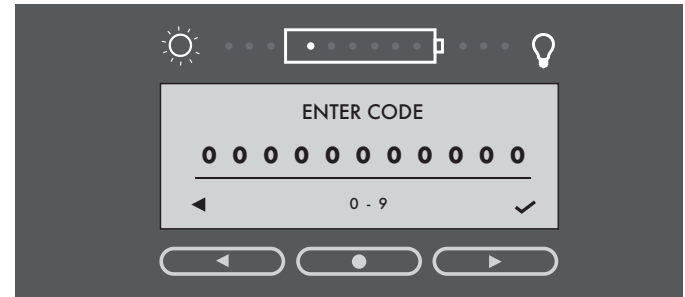
## HOW DOES IT HAPPEN

- When there is overcurrent draw from a Power box due to plugging in a non ZOLA device that draws excessive current.
- When a short circuit is detected
- LEDs will look ok but powerbox will not give out output
- Power box will display **error 01**



## HOW TO RESOLVE

- Unplug all lights & appliances
- Enter the reset code **"000000000000"**
- Plug in lights & appliances checking to see if the error message will reappear
- If it does, disconnect the faulty appliance



# ERROR 02

This happens when the Flex Power box detects that it has been opened without authorization. **Opening a Flex Power box should only be done at the Workshop by an authorized technician.**

Previous firmware versions (1.22.0 - 1.25.1)	Latest firmware version (1.26.1)
"Please call the Call Center: 0800 024 7365. There is a problem with your system" <b>"02"</b>	"Call ZOLA: 0800 024 7365" <b>ERROR: 02"</b>



## HOW TO FIX

When this error occurs, it's likely that the Flex Power Box has been opened without authorization.

### Proceed as follows:

Inquire from the customer if the Flex box has been opened or had any physical damage.

### If YES:

- Report Immediately to the ZOLA Service Manager for next line of action.

### If NO:

- Send the Flex device ID To the ZOLA Service Manager for next line of investigation.

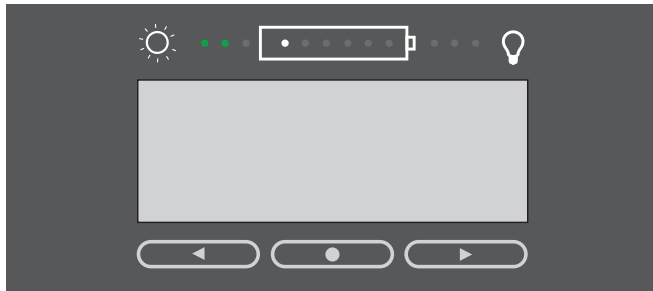
# BAD FUSE & HOW TO FIX

## OBSERVATION

- The Flex Power Box does not provide outputs power
- The LCD stays OFF (doesn't turn on after button push)
- The LEDs light up in the pattern shown below (this happens when the solar power is connected otherwise LEDs will not light up)

### IMPORTANT:

The only LEDs that light up are 2 Green LEDs and the 3rd white LED



### DIAGNOSIS:

(NOTE: All the 3 issues above have to be TRUE)

- A Flex Box that exhibits this issue likely has a blown Fuse

## HOW TO RESOLVE

- This issue **cannot** be fixed in the field.
- Create a ticket to replace the faulty Flex Power Box
- Tag the faulty Flex Power Box as: **"Suspected Faulty Fuse"**
- Once the Flex Power Box is received by the Workshop, the Fuse will be replaced and the box can be used for future replacement tasks.

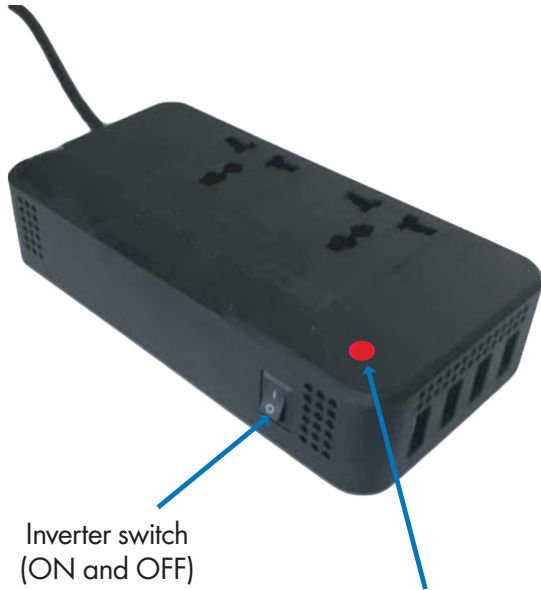
### NOTE:

This is a rare case that is being observed during the install process after connecting the TV or other appliance. The Engineering team is currently working to determine and fix the root cause of this issue.



# BAD FUSE & HOW TO FIX

This is a device that is made to convert DC storage to AC power. It is a 65W inverter that is specifically made to be used with FLEX power box.



Inverter switch  
(ON and OFF)



## INSTRUCTION ON HOW TO INSTALL

1. Connect both cables of the Inverter into the FLEX appliance ports and turn on the Inverter.
2. Connect appliances up to 65W cumulative - you can look up Wattage on devices.

## HOW TO POWER ON DEVICES

1. Power on FLEX and the ZOLA Inverter using switch on the back - wait for green LED
2. Plug in appliances, that are switched **OFF**
3. Turn **ON** appliances

# ZOLA INVERTER USAGE

## USAGE

### What happens when the Inverter is working properly?

—

On startup the LED will be RED for 3 seconds and turn GREEN.

Whilst powering devices the LED should be GREEN.

### What happens when you connect appliances that exceed 65W?

—

65W is advised limit, but inverter will stop working immediately after more than 65W has been tried to be used. For loads at the limit of power, the device will cycle between GREEN and RED a number of times before power box displays **Error 01**. See fix on the side.

The devices will stop working and the LED will be RED.

### What can the customer do before contacting ZOLA?

—

Remove the loads and wait for the LED to turn GREEN. Insert loads one at a time and check for function. When it turns RED this is too much and customer should return to the previous loads.

## TROUBLESHOOTING

### What happens?

- Customer overloads the inverter, however the inverter is still **RED** after the load has been removed.
- Power Box will display Error message **"Error 1"**



### How to resolve?

1. Switch off the Inverter
2. Unplug everything from the Inverter
3. Clear the Error message if the FLEX power box LCD screen display error 1, Enter **"0000000000"** to clear the error code
4. Switch on the Inverter
5. Start to plug back appliances one by one to notice what appliance cause problems

### Note:

Stop using the appliance that exceed 65W as it will cause the problem to repeat

# 6. CUSTOMER EDUCATION

# CUSTOMER EDUCATION

After installation, it is very important to do the following with your customer:

## CONTRACT & PAYMENT

1. Review contract & warranty terms
2. Top up for the first time & enter codes (if applicable)
3. Customer Education Guide.

## SYSTEM USE

1. Configure system settings according to customer preferences
  - a. Security light
  - b. Language
2. Review user manual
  - a. Spend extra time on the LCD screen and LEDs
  - b. Explain where to find call center number and device ID
  - c. Set expectations around system performance & run-times

Help get familiar with appliances & turn on the TV

## INVERTER DEEP DIVE

It is particularly important with FLEX POWER 1 customers to spend time explaining how to use the ZOLA Inverter. This consists of 3 things:

### What can I use with the inverter?

1. Review with the customer the power rating of their devices - remember that only 65W max, 55W recommended, can be used.

### How should I use the inverter?

1. Turn the inverter **OFF** using the switch on the device
2. Insert loads which are switched OFF into the inverter
3. Turn the inverter **ON** using the switch on the device
4. Turn loads **ON**

### What should I do if my appliances do not work?

1. Turn **OFF** the inverter and remove all loads
2. Follow Step 2, one appliance at a time.

This will show what is supported and what is not at the given state of the battery - NOTE that at lower states of charge devices above 50W may stop working.

# **7. STORAGE AND NORMAL OPERATING CONDITIONS**

# NORMAL APPLICATION, OPERATION & STORAGE CONDITIONS

## NORMAL APPLICATIONS

- Designed for indoor application
- Use with specified solar panel  
(80Wp-100Wp for FP1; 40Wp for FLEX fan/Boombox)
- Use with specified grid charger adaptor:  
Input - 100-240VAC, 50/60Hz 3.0A;  
Output - 18VDC 5.0A; IP20 (indoor application)
- Inverter application not exceeding 65A

## OPERATING & STORAGE CONDITIONS:

- Temp: -20 to 70C
- Relative Humidity: 0 to 100%



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