



User Manual



Table of Contents

I. Safety Instructions

- General Safety
- Electrical and Solar Safety
- User Interaction
- Emergency Procedures

II. Product Overview

- Key Features

III. User Interface and Operation

- Components
- How to use

IV. Troubleshooting Guide

V. Maintenance and Care

VI. Warranty Information

- Limited warranty coverage
- What's not covered?
- How to make a warranty claim
- Options for extended warranty

VII. Conclusion

Printable User Manual

Prepared by: **Maya Balawi**

Contact: **balawiimaya@gmail.com**

EcoBin

[YOUR COMPANY WEBSITE]

Date Published: May, 8, 2025

Introduction

With solar power, real-time monitoring, and user-friendly feedback to encourage sustainability, the EcoBin is an AI-powered smart garbage bin that uses computer vision and Internet of Things technology to automatically sort waste into categories (paper, plastic, and cans) and automate recycling.

I. Safety Instructions

General Safety

- Place the bin on a stable, flat surface
- Maintain a clean solar panel
- Report any damage to the maintenance team immediately
- Do not insert any liquids or hazardous materials
- Do not force items inside the chute
- Do not disassemble the bin's internal components

Electrical and Solar Safety

- Avoid contact with exposed wiring or the solar panel
- In case of malfunction, disconnect power and contact support
- Avoid directly spraying water on the electrical components

User Interaction

- Supervise children from preventing small objects from being inserted
- Follow LED display instructions

Emergency Procedures

- Power failure: check battery connection
- Jammed mechanism: turn off power before clearing the blockage
- Fire/smoke: stay away and call for emergency

Complies with **ISO 14001** and **JSMO** electrical standards

II. Product Overview

Key Features:

- **AI Sorting:** Classifies waste with using a camera and CNN model.
 - **Solar-Powered:** Energy-efficient with lithium-ion batteries and solar panels.
 - **IoT Alerts:** Notifies waste management team when bins are full.
 - **User Engagement:** LED lights confirm proper disposal.
 - **Durable Design:** UV-resistant materials for outdoor use.
-

III. User Interface and Operation

Components

Component Name	Description	Material	Maintenance Frequency	Replacement Cost
Intake chute	Entry for waste items	UV-resistant ABS plastic	Weekly	7.10 JOD
Camera	Scans and classifies waste via AI	Glass/polycarbonate	Monthly	9 JOD
Servo motors	Rotates internal compartments	Metal/gear plastic	Quarterly	8.45 JOD (per motor)
Solar panel	Powers bin and charges batteries	Tempered glass/silicone	Biannual	35.47 JOD
Lithium-ion battery	Stores solar energy for operation	Lithium polymer	Annual	2.75 JOD (per camera)
LED indicator panel	Gives feedback (green/red lights)	Polycarbonate/LEDs	3 months	50 JOD
IoT sensor (ESP32)	Sends alerts to management	Plastic/electronics	Annual	7.90 JOD
Internal bins	Holds waste	Recycled HDPE plastic	Monthly	8.50 JOD (per bin)
Rejection chute	Removes non-recyclables	Stainless steel hinges	Quarterly	12.77 JOD

How To Use

- Step 1:** Approach the bin and wave your hand near the sensor.
- Step 2:** Place the item in the intake chute.
- Step 3:** Wait for the LED light (green = success; red = try again).
- Step 4:** The bin rotates internally to sort the item.

IV. Troubleshooting Guide

Problem	Possible Cause	Solution
Bin not powering on	Dead battery/ solar panel failure	Check battery charge, move to sunlight
Incorrect sorting	Misplaced items/ dirty camera	Insure items are placed correctly in chute/ wipe camera lens
LED panel not lighting up	Loose wiring/ software glitch	Restart the bin/ check power connections to raspberry Pi
Rejection chute stuck open	Debris blockage/ servo motor error	Clear debris/ reset motor
IoT alerts not functioning	Weka wifi/ module crash	Reconnect wifi/ reboot the module
Solar pnale not charging	Shading/ faulty charging circuit	Reposition to sunlight/ inspect wiring
Unusual noises	Foreign object in bin/ motor issue	Power off and remove object/ lubricate motors
False alerts	Sensor misalignment/ overfilled compartment	adjust sensors/ empty the overfilled compartment

V. Maintenance and Care

- Wipe the exterior daily/weekly to remove dust and dirt
- Clean the intake chute daily/weekly to prevent debris buildup
- Wipe camera lens daily/weekly to insure proper image detection
- Check LED indicators daily/weekly
- Empty and clean waste compartments monthly
- Inspect servo motors for proper operation monthly
- Clear dust and debris from solar panel monthly
- Lubricate servo motors quarterly
- Check wiring connections for loose wires quarterly
- Test lithium-ion battery health quarterly
- Replace worn parts yearly
- Update software and firmware for AI and IoT yearly

VI. Warranty Information

Limited Warranty Coverage

Your **EcoBin** comes with a 1-year limited warranty from the date of purchase, covering:

- Manufacturing defects in materials
- Malfunctioning components (e.g., servo motors, camera, IoT sensors).
- Solar panel and battery performance issues under normal use.

What's Not Covered?

- Improper use, neglect, or failure to follow the **User Manual**.
- Unauthorized repairs, modifications, or tampering.
- Natural disasters (floods, fires, extreme weather).
- Accidental drops, vandalism, or physical abuse.
- Normal wear and tear (e.g., scratches, minor cosmetic damage).

How to make a Warranty Claim?

- Within 30 days of the problem, get in touch with support:
 - is the email.
 - Contact number: +962 7 9514 3047
- Present proof of purchase in the form of an invoice or receipt.
- Explain the problem (pictures and videos are welcome).

For repairs or replacements, follow the instructions (shipping charges may apply in non-warranty circumstances).

Options for Extended Warranty

- obtainable within 30 days of the initial purchase.
- Coverage is extended for two or three years (terms apply).

VII. Conclusion

We appreciate you selecting EcoBin, your astute partner in environmentally friendly waste disposal! You can help create a cleaner environment and more effective resource recovery by using this AI-powered recycling container.

Need Help?

Contact: | +962795143047

Thank you for supporting sustainable waste management! 

Manual Version 1.0 | © 2025 EcoBin Team