Laundry Manager and Optimizer

Operations Manual

Introduction

The Laundry Manager and Optimizer (LMaO) is a smart laundry hamper system that detects and scans laundry symbols on clothing tags, organizes items accordingly, and instructs users on the optimal laundry washing settings when the hamper fills up. It can be used by a single user or linked to a system of multiple LMaOs for maximum energy savings. This manual describes how to operate and use all the features of your LMaO.

Product Overview

What's in the Box

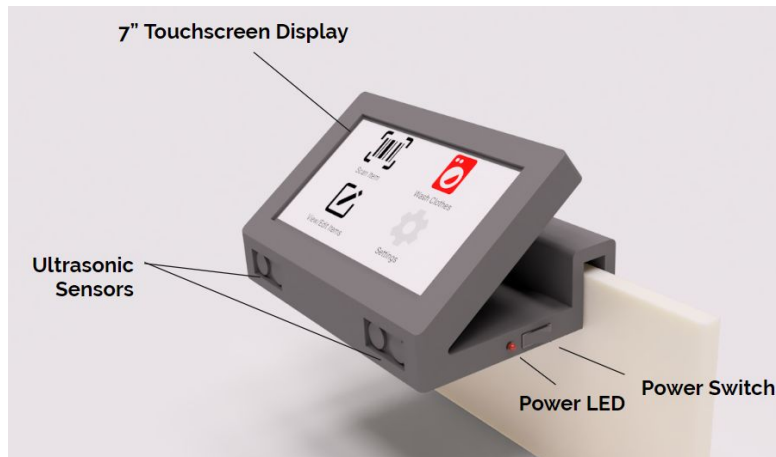Your product comes with the following parts:

- **One (1) Laundry Manager and Optimizer device (left)**
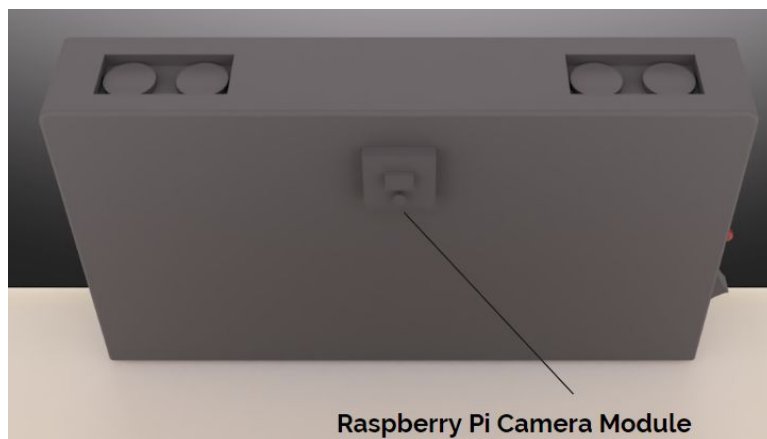- **One (1) USB-AC adapter (right)**: Provides power to the LMaO device.

The following components are part of the main LMaO device:

- **One (1) 7" touchscreen display**: Use this to interact with the main LMaO software.
- **Two (2) ultrasonic sensors**: These detect when the hamper attached to the LMaO is full.
- **One (1) power switch**: Slide the power switch to turn the LMaO on and off.
- **One (1) LED indicator**: Possible states include:
  - **No color**: Power is currently not provided to the LMaO
  - **Red**: Power is provided to the LMaO, but the LMaO is not turned on
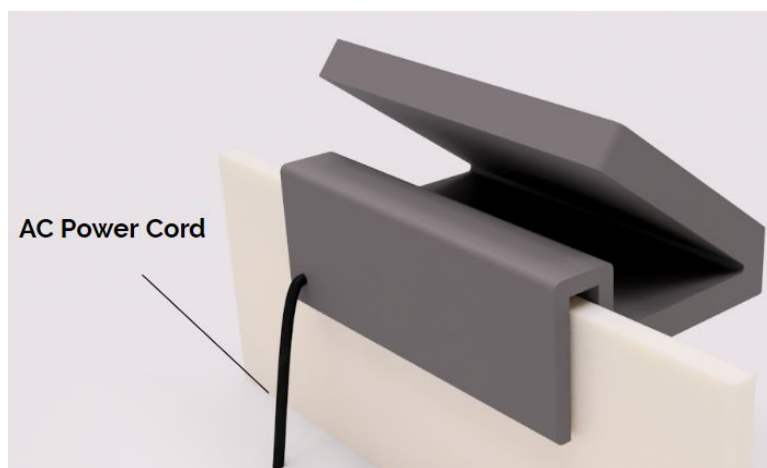 - **Green**: The LMaO is turned on

- **One (1) 8 MP camera**: Hold laundry symbol tags underneath the camera to scan them.
- **One (1) AC power cord (USB cable)**: Connect this to the included AC adapter to turn on the LMaO

7" Touchscreen Display

Ultrasonic Sensors

Power LED

Power Switch

(a) Front view

Raspberry Pi Camera Module

(b) Bottom view

AC Power Cord

(c) Back view

Main Menu

The main menu of the LMaO contains four submenus:

- **Scan Item**: Displays the Scan Menu, where you can scan laundry tags and add new items to the LMaO.
- **Wash Clothes**: Displays instructions to wash all the clothes currently in the LMaO.
- **View/Edit Items**: View and delete items currently in the LMaO.
- **Settings**: Adjust device brightness, manage data, and change laundry symbol detection method.

Getting Started

1. Identify which laundry hamper you'll be using with the LMaO.
2. Ensure that the back of the hamper is sturdy enough to support the weight of the LMaO by carefully sliding the LMaO downwards onto the back face of the hamper.
3. Once the LMaO is securely attached, attach the USB cable from the main LMaO device to the USB-AC adapter.
4. Plug the USB-AC adapter into a nearby outlet and connect the LMaO's power cord to the adapter.
5. After sliding the power switch, LMaO will turn on and is immediately ready for use.

Wi-Fi Setup

In addition to the AC power you connected above, the LMaO also supports an optional Wi-Fi connection to sync clothing articles across multiple LMaO devices.

To connect, tap the Wi-Fi icon in the taskbar at the top of the screen and follow the on-screen instructions to connect to a network.
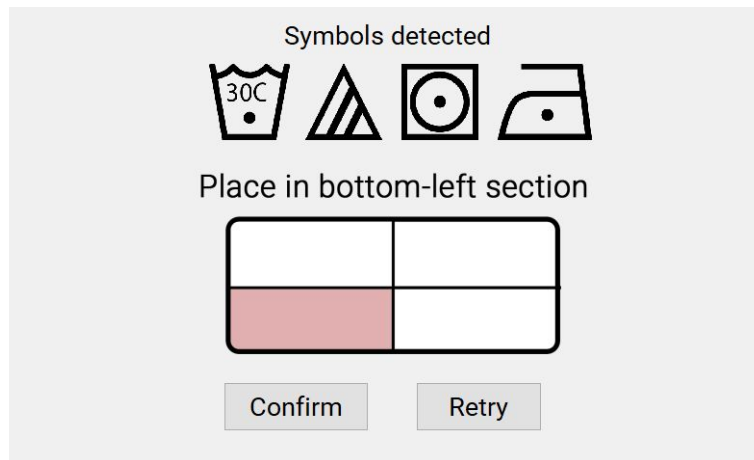

Adding Clothing Articles

Begin adding new clothing articles to the LMaO by opening the Scan Menu from the Main Menu.

If the clothing article has a laundry tag:

1. Hold the laundry tag (pictured above) below the camera at the bottom of the LMaO.
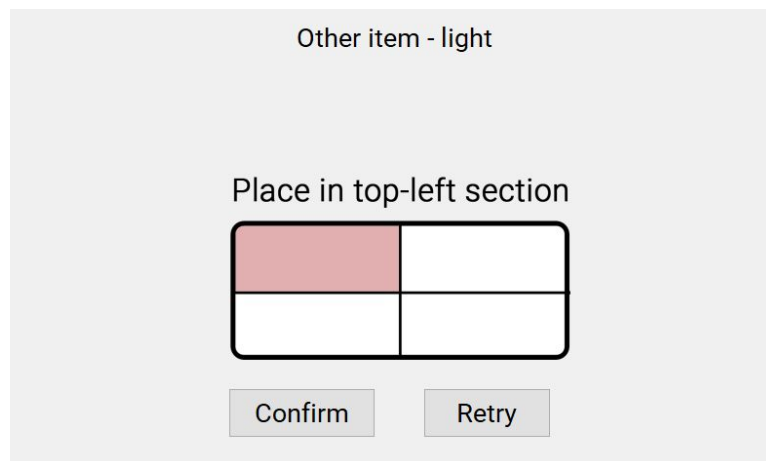2. Once the tag's symbols are in focus, press the "Scan Tag" button.

3. After several seconds, the laundry symbols recognized by the LMaO will display on screen.

Symbols detected

Place in bottom-left section

Confirm   Retry

4. If the displayed symbols match the ones on the laundry tag, place the clothing article in the hamper section specified by the LMaO, then press the "Confirm" button.
5. If the displayed symbols do not match, press the "Retry" button to scan the laundry tag again.

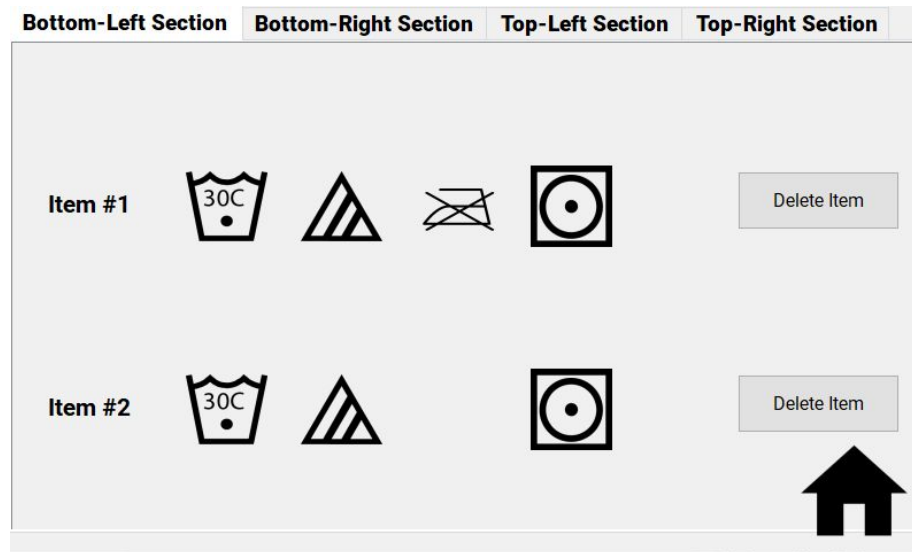**If the clothing article (e.g. socks, underwear) does not have a laundry tag:**

1. If the clothing article is light in color (i.e. white or light gray), press the "Other Item: Light" button. Otherwise, press the "Other Item: Dark" button.

Other item - light

Place in top-left section

Confirm   Retry

2. Place the clothing article in the hamper section specified by the LMaO, then press the "Confirm" button.

Modifying Hamper Contents

| Bottom-Left Section | Bottom-Right Section | Top-Left Section | Top-Right Section |

Item #1   30C   △   ⊠   ◉   Delete Item

Item #2   30C   △   ◉   Delete Item
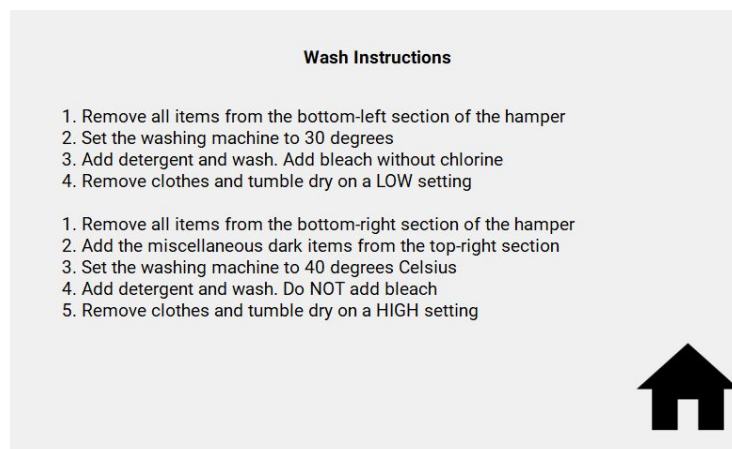
1. Open the "View/Edit Items" menu.
2. Select the appropriate tab to view clothing articles and their symbols in a section.
3. Click "Delete Item" to remove items that are physically removed from a section.

Note: The LMaO will automatically remove articles from this menu once they are washed.

Washing Clothes

Wash Instructions

1. Remove all items from the bottom-left section of the hamper
2. Set the washing machine to 30 degrees
3. Add detergent and wash. Add bleach without chlorine
4. Remove clothes and tumble dry on a LOW setting

1. Remove all items from the bottom-right section of the hamper
2. Add the miscellaneous dark items from the top-right section
3. Set the washing machine to 40 degrees Celsius
4. Add detergent and wash. Do NOT add bleach
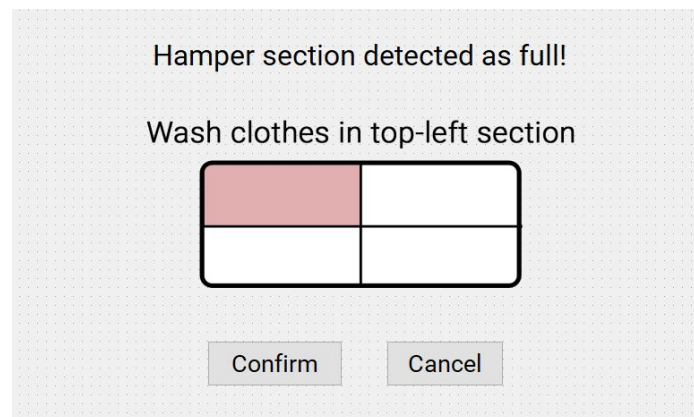5. Remove clothes and tumble dry on a HIGH setting

1. Open the "Wash Clothes" menu.

2. Remove items from the hamper and place them into the washing machine according to the on-screen directions.
3. Once all items for a load have been removed, the LMaO will tell you which settings you should use to wash those clothes.

Special Features

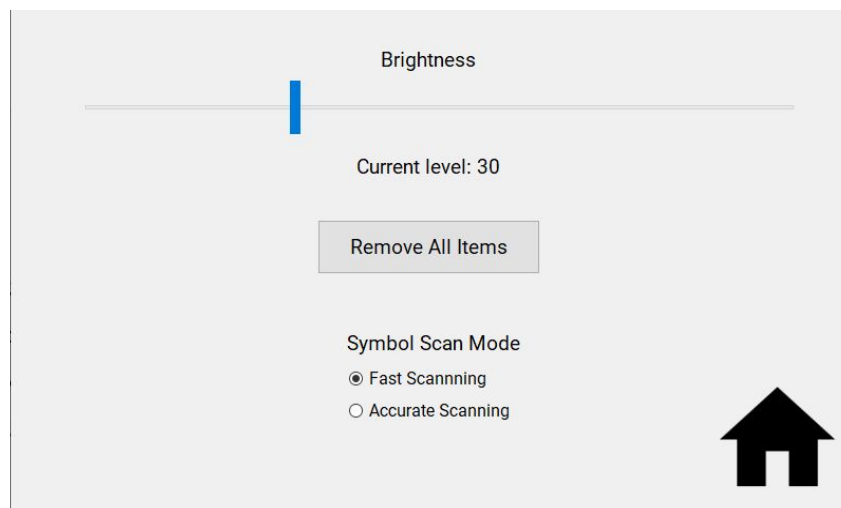### *Overflow Detection*

Hamper section detected as full!

Wash clothes in top-left section

Confirm   Cancel

The LMaO automatically detects if any of the four hamper sections have been filled. Once it detects a full section, it will prompt you to wash the clothes in that section and will not allow any new clothes to be categorized into that section.

Settings

Begin by opening the settings menu:

Brightness

Current level: 30

Remove All Items

Symbol Scan Mode
◉ Fast Scannning
○ Accurate Scanning

Brightness

If needed, you can adjust the brightness of the LMaO's screen using the slider at the top of the screen.

Scan Modes

The LMaO can be configured to use one of two scanning modes: Fast Scanning or Accurate Scanning. Fast Scanning uses the LMaO's on-board image recognition models, and is fairly accurate. However, if symbols on certain articles of clothing are not being recognized properly, the Accurate Scanning mode may be used. Accurate scanning uses the Internet to use more complex image recognition models.

Data Reset

If you'd like to quickly reset all data, press the "Remove All Items" button to clear the LMaO's memory.

Troubleshooting

Issue	Possible Solution(s)
Screen does not turn on	Unplug the LMaO's power cable, wait 5 seconds, then plug in the LMaO's power cable
	Ensure that the screen's brightness is set sufficiently high in the Settings menu
Camera does not focus	Clean the camera module, located on the bottom of the LMaO
Overflow is not detected	Ensure that there are no objects blocking the ultrasonic modules at the front of the LMaO

Technical Specifications

- 1.4GHz 64-bit quad-core CPU
- 1GB Ram
- 8MP Camera Module
- 2 x Ultrasonic Sensor Module
- 800 x 480 pixel 7" touchscreen