DASHER

User Guide

Autonomous Food Delivery Robot

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Table Of Contents

Table Of Contents

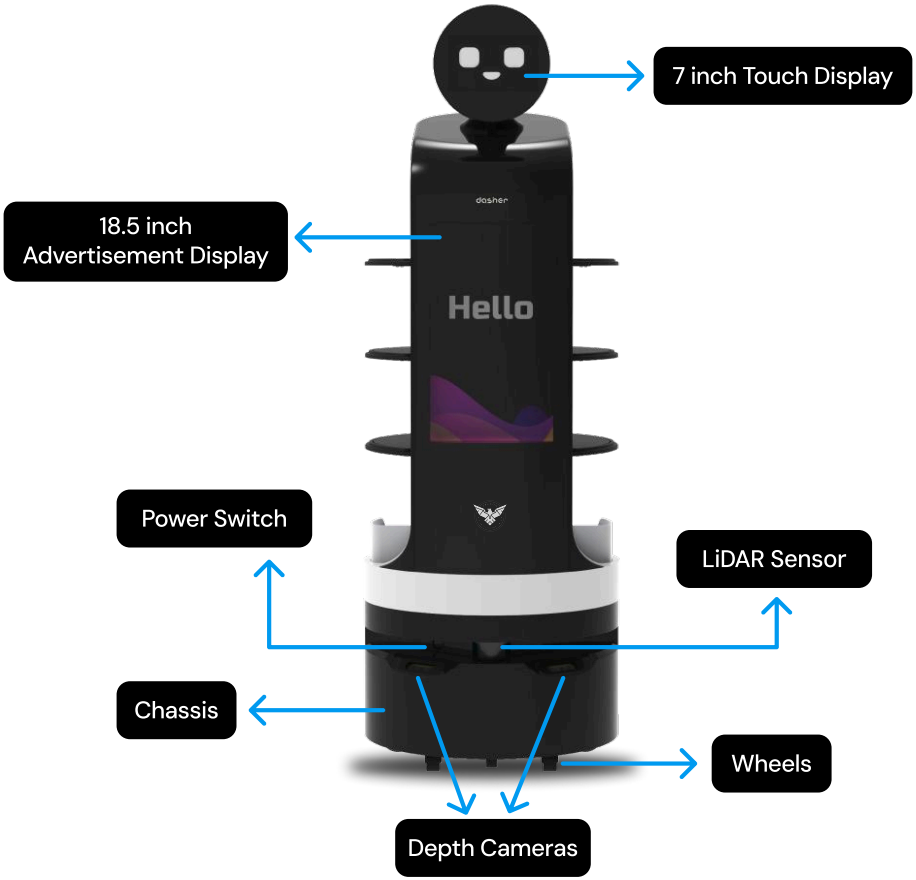
1
PRODUCT INTRODUCTION

Product Introduction

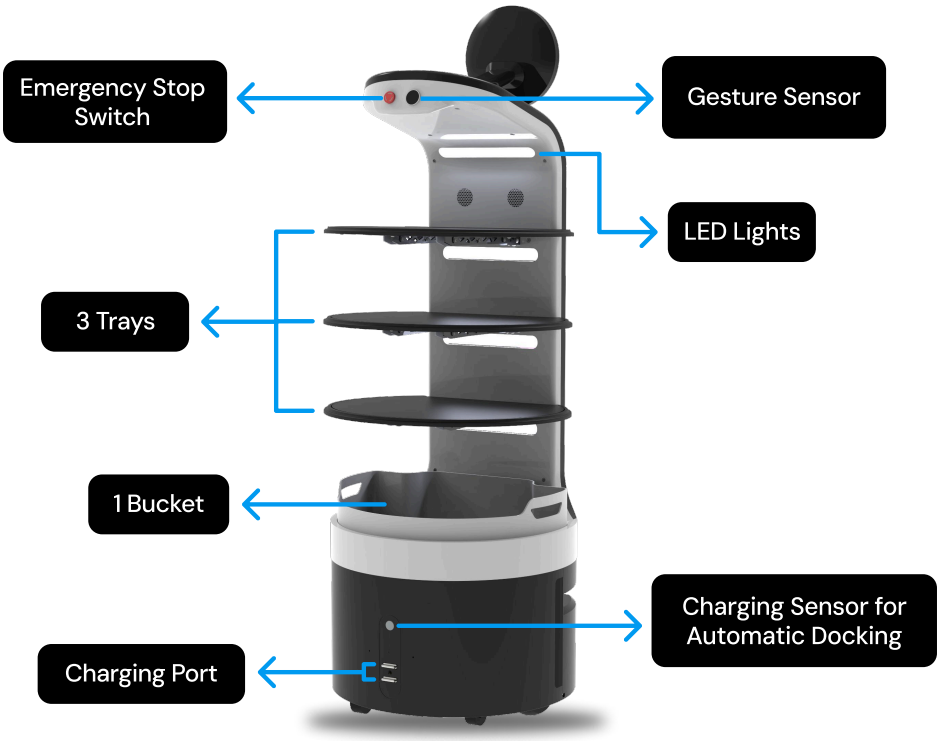
1.1 Overview of Dasher

Dasher is a smart, autonomous food delivery robot designed specifically for indoor hospitality environments such as restaurants, cafés, hotels, and QSRs. It uses a combination of laser navigation, visual SLAM, and sensor fusion to deliver items with precision, avoiding obstacles and navigating efficiently through complex indoor layouts.

Dasher enhances the dining experience by automating food and beverage delivery, reducing staff load, and improving operational efficiency. With customizable delivery modes, tray lighting, background music, and a central dashboard interface, Dasher provides a consistent and reliable service cycle throughout the day.



Product Introduction



1.2 Applications & Use Environments

Dasher is ideal for deployment in high-footfall and structured indoor spaces. Primary use cases include:

- **Restaurants & Hotels:** Meal delivery from kitchen to table with contactless interaction
- **QSR Chains:** Optimized tray dispatch with minimal human intervention
- **Corporate Dining:** Scheduled and automatic food drop-offs

Product Introduction

Events & Parties: Celebration mode with custom greetings and table-to-table interaction

Cafés & Lounges: Beverage circulation and light promotional cruising

Hospitals & Medical Facilities: Safe, hygienic meal and medicine delivery within patient wards and sterile zones

Note: Dasher is not designed for outdoor or uneven terrain usage.

1.3 Robot Design and Highlights

Dasher is engineered with user safety, high-volume delivery, and ease of use in mind. The robot features a compact footprint and stable structure, allowing it to navigate narrow corridors and busy dining floors.

Core Features:

- **Multi-Mode Delivery:** Five intelligent modes: Meal Delivery, Cruise, Recycling, Celebration, and Free Distribution
- **AI Navigation:** Combines laser (270°), visual SLAM, and depth cameras for centimeter-level accuracy
- **Tray-Linked Delivery Points:** Each tray assigned to a specific table or zone
- **Touch Button Interface:** Simple controls for service staff
- **Tray Light Indicators:** Trays illuminate at delivery points for easy pickup
- **Autonomous Charging:** Returns to charging dock automatically based on battery thresholds
- **Ad Panel Ready:** Includes screen for promotional media (non-interactive)
- **Background Music & Broadcasts:** Customizable media for delivery ambiance

2
SAFETY GUIDELINES

Safety Guidelines

2.1 General Precautions

To ensure safe and reliable operation, users must strictly follow the guidelines below:

- Do not operate **Dasher** immediately after moving it from a cold to a warm environment. Let it adjust to room temperature to avoid condensation damage.
- Avoid using Dasher in environments that are **wet, dusty, oily, or have strong magnetic fields**, as these may impair its sensors and internal systems.
- Never operate the robot near **flames, heat sources, or explosive materials.**
- Keep Dasher **out of direct sunlight** for prolonged periods to prevent overheating.
- Ensure the **floor surface is flat and solid.** Dasher is not suitable for carpeted, rough, soft, or sloped terrains.
- Do not use the robot outdoors or in areas with **elevation changes**, steps, or open ledges.
- In environments with **glass doors or transparent partitions**, place safety markers **22–25 cm from the ground** to prevent collisions.
- Use only **original accessories and parts** provided by Falcon Tech to maintain safety and warranty.
- Do not **disassemble, puncture, crush, bend, cut, or paint** any part of Dasher. Internal repairs must only be performed by authorized technicians.
- Avoid excessive pressure on the robot's touchscreen or components. Use fingers only.
- Keep Dasher's path free of **low-lying obstacles under 25 cm**, as these may go undetected by its sensors.

2.2 Environment Requirements

For smooth and uninterrupted operations:

- Ensure the robot's workspace is at **room temperature (5°C to 40°C)** and **humidity levels of 5%–85%.**
- Avoid reflective surfaces, black walls, or glass partitions in unmapped areas.
- Maintain a **clear radius of 1.5–2 meters** around the charging dock.
- The charging area should be dry and free of any electrical hazards.

2.3 Emergency Handling

- **Emergency Stop Switch:** Located at top rear body, press to halt all movement immediately. Use only in emergencies.
- **Post-Emergency Recovery:**
  01) Release the emergency stop by rotating it clockwise.
  02) Manually reposition the robot if needed.
  03) Restart the system or reinitialize the map if the robot fails to resume tasks.

Caution: Moving the robot manually while emergency stop is pressed may result in **positioning loss**. Always recalibrate after manual relocation.

3
SPECIFICATIONS

Specifications

3.1 Technical Specifications

Specifications	Details
Operating System	**Android 5.1**
Dimensions (L × W × H)	527.5 mm × 503 mm × 1431.5 mm
Weight	49.1 kg
Number of Trays	3 Trays & 1 Bucket
Tray Size	439 mm × 391 mm
Tray Load Capacity	Up to 5 kg per tray
Battery Type	Lithium Ion Phosphate (25.6V / 25Ah)
Battery Backup	8 hours
Charging Time	4 hours
Charging Modes	Automatic Docking
Operating Temperature	5°C to 40°C
Storage Temperature	-10°C to 45°C
Ambient Humidity	5% to 85% RH
Movement Speed	0.1 – 1 m/s (customizable)
Navigation	Laser + Visual SLAM + Obstacle Avoidance
Laser Angle & Range	270° scanning angle, up to 25 meters
Screens	7-inch touchscreen (1024 × 600 resolution) 18.5-inch Advertisement Display (1920 x 1080 resolution)

Specifications

Specifications	Details
Flash Storage	8 GB
Connectivity	Dual-band Wi-Fi (2.4GHz / 5GHz), BT4.1
Remote Access	Supports remote monitoring and OTA updates

3.2 Components Overview

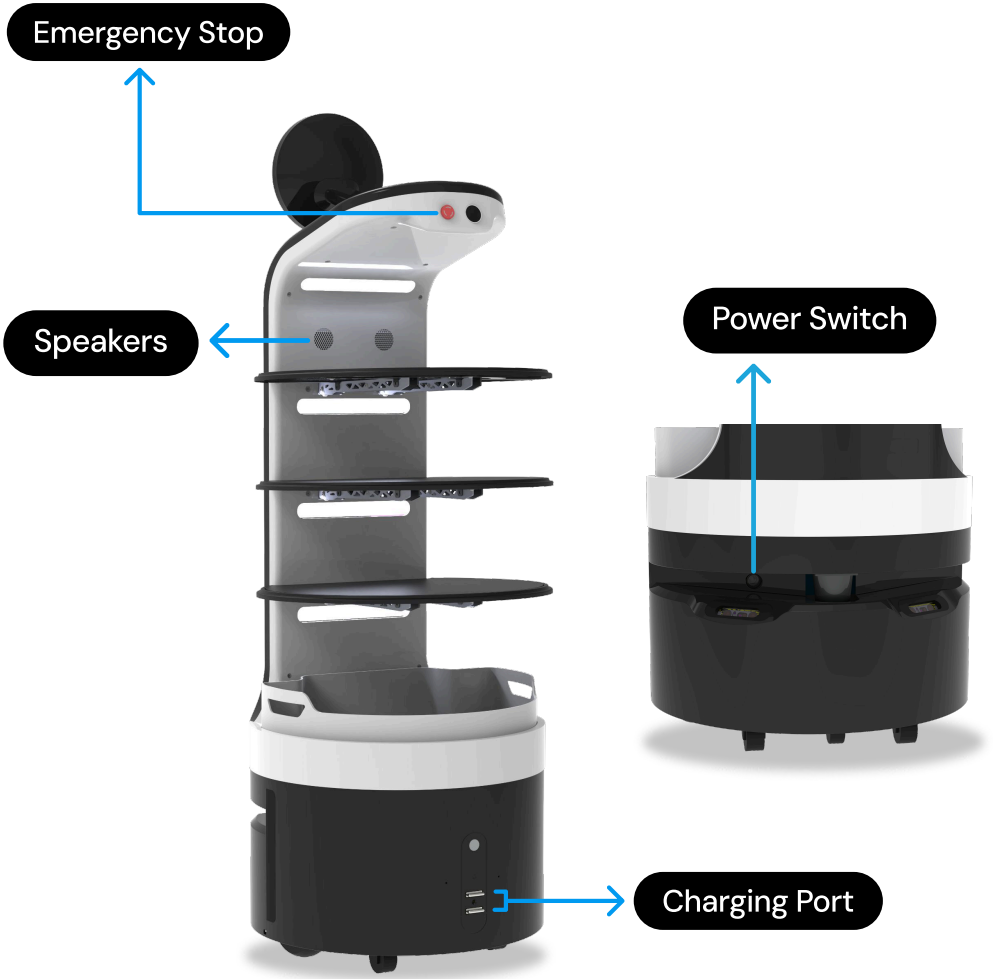
Each unit of Dasher comes with the following key hardware components:

Component	Function
7-Inch Display	Robot face interface, settings, and feedback
18.5-Inch Display	Advertisement/branding panel (non-interactive)
Depth Camera	Front environment sensing
2D LiDAR	Laser navigation and obstacle detection
Touch Button	Manual delivery initiation
Speakers	Audio announcements and music playback
Tray Light Indicators	Indicate which tray is active at each stop
Emergency Stop Switch	Immediate halt of all functions
Charging Connector	For auto docking and power alignment

Specifications

3.3 Interface & Ports

- **Power Switch** – Located on the side base
- **Emergency Stop –** Red push switch located at the top rear body
- **Charging Port –** Rear bottom panel, aligned with docking station
- **Speakers –** Located at the



4
GETTING STARTED

Getting Started

4.1 Unboxing and Initial Checks

Upon delivery, inspect the Dasher packaging for any visible damage. Carefully unbox the robot and verify that all components are present.

Included Items:

- 1 × Dasher Robot (with 3 trays & a bucket pre-installed)
- 1 × Charging Dock
- 1 × Instruction Manual & Warranty Card
- 1 × Emergency Stop Key
- 1 × QR Code Standee (for initial dashboard access)

Note: Store the original packaging in case the robot needs to be returned or transported for servicing.

4.2 Powering On / Off

To Power On:

01) Locate the main power switch on the rear-bottom or side base of the robot.

02) Switch it ON to boot the system. The screen will light up, and the startup chime will play.

03) Wait ~30 seconds for the system to fully load into the **main dashboard interface.**

To Power Off:

01) Press and hold the shutdown icon on the touchscreen.

02) Confirm shutdown when prompted.

03) Once the screen turns off, switch the **main power toggle** to OFF.

Caution: Do not manually power off while the robot is navigating or delivering. Always allow it to return to idle state first.

4.3 Battery Charging (Manual & Automatic)

Dasher supports both **manual plug-in charging** and **automatic docking.**

A. Manual Charging

- Plug the charger into a **standard 220V wall socket.**
- Connect the charging cable to the **charging port** on the rear-bottom panel.
- The screen will show a **charging icon**, and LED indicators will begin to pulsate.
- Disconnect the charger once the screen indicates **100% charge.**

Charging time:

With 7A adapter: 4 hours

B. Automatic Charging (Docking Station)

- Ensure the **charging dock is placed on a flat, open surface** with at least 1.5 meters clearance on all sides.
- Plug in the dock and ensure its **alignment markers** face forward.
- During map building, define the dock's location as the **charging point.**
- Once battery drops below the threshold (configurable, e.g., 20%), Dasher will **autonomously return to dock.**
- While charging, the robot will remain inactive and display a charging progress screen.

Getting Started

Important:

01) Keep the dock area clean and dry

02) Avoid placing obstacles or reflective surfaces nearby

03) Never move the dock after mapping unless the map is rebuilt

5
NETWORK & DASHBOARD SETUP

Network and Dashboard Setup

This section explains how to connect Dasher to the internet, access its dashboard, and configure core system settings such as language, volume, screen, and broadcast content.

5.1 Wi-Fi Configuration

To enable remote monitoring and dashboard control, Dasher must be connected to a stable Wi-Fi network.

Steps to Connect:

01) On Dasher's main touchscreen, tap **Settings** from the bottom panel.

02) Select **Wi-Fi Settings.**

03) A list of available networks will appear. Choose your desired network.

04) Enter the password and tap **Connect.**

05) Once connected, the robot will display its **IP address** on the screen.

Tip: Use a **5GHz network** for faster map syncing and dashboard access.

5.2 QR Code Access Panel

The QR panel is a shortcut for accessing Dasher's internal control page from a mobile or desktop browser.

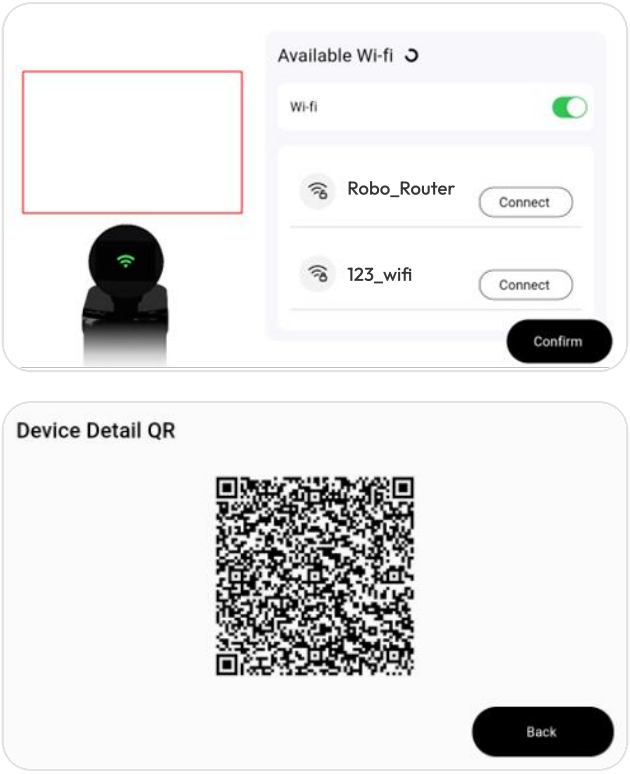
How to Use:

01) Tap the screen **four times rapidly** on the Dasher homepage to bring up the QR code.

02) Scan the code with your phone or tablet to be redirected to Dasher's local IP panel.

03) Alternatively, enter the IP manually into your browser:

The dashboard is only accessible when both device and robot are on the same network.



5.3 Logging into Dashboard

After logging in, you will see a menu bar and real-time status indicators. The main sections include:

Tab	Purpose
Home	Overview of tasks, battery, network, and alerts
Map	Start/stop mapping and save key points
Routes	Define delivery paths and return logic
Settings	Adjust robot behavior (volume, lights, logic)
Log	View historical delivery and error data
Restart/Shutdown	Soft controls for reboot or system off

5.4 Language, Voice, and System Settings

Language Settings

01) Navigate to **Settings → Language.**

02) Choose from available options (EN, AR, FR, etc.).

03) Restart the robot for changes to apply.

Network and Dashboard Setup

Voice & Broadcast

- Go to Settings → Voice.
- Select the default delivery message voice tone.
- Upload a .mp3 or .wav file for custom greetings if needed.
- Adjust **volume slider** for public spaces or quiet mode.

Tray Lighting & Theme

- Set tray light color from **Settings → Tray Light Config.**
- Use themes to match event type (e.g., celebration, promo cruise).
- Screen brightness and tray light glow can be auto-adjusted based on ambient light.

6
MAP BUILDING & DEPLOYMENT

Map Building and Deployment

Map building is the foundational step that enables Dasher to navigate independently and deliver with precision. This section explains how to initiate map mode, define delivery points, and deploy the robot in a real-world environment.

6.1 Accessing Map Mode

From the Dashboard Interface:

01) Ensure the robot is powered on, fully charged, and connected to Wi-Fi.

02) Open the browser panel via:

03) Navigate to the **"Map" tab** on the top menu.

04) Click **"Start Building Map".**

Make sure there are no obstacles or foot traffic while the mapping begins. Mapping should be done during off-hours or in an empty layout.

6.2 Map Building (No Tag & With Tag Options)

Dasher supports two map building modes:

A. Map Without Tag (Standard Mode):

01) Click **Start Mapping.**

02) Use the **"Move"** joystick or **manual push** to guide Dasher along the floor plan.

03) Dasher scans walls, columns, and fixed objects using its LiDAR and camera sensors.

04) Once the route is fully captured, click **"Stop Mapping".**

05) Save the map with a recognizable name (e.g., "Lobby_R1" or "MainHall").

B. Map with Tag (Advanced Anchor Mode):

01) Place **position tags** (visual markers or AprilTags) at key turns or anchors.

02) Start mapping as above. Dasher will **lock coordinates** using visual references.

03) This improves long-term positional accuracy, especially in symmetric spaces.

Note: Use "With Tag" mode in environments where walls and corridors are too similar in shape (e.g., banquet halls, office zones).

6.3 Creating and Labeling Key Points

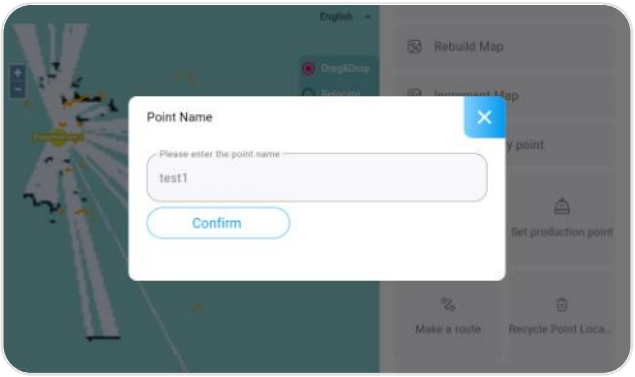
Once the base map is saved:

01) Navigate to **the "Point"** section in the Map tab.

02) Use the onscreen camera view to move Dasher to a specific location (e.g., Table 1).

03) Tap "Create New Point" and assign it a name:
a. Format: T1, T2, Kitchen_Exit, Charging_Zone, etc.

04) Repeat this for all delivery points and destinations.

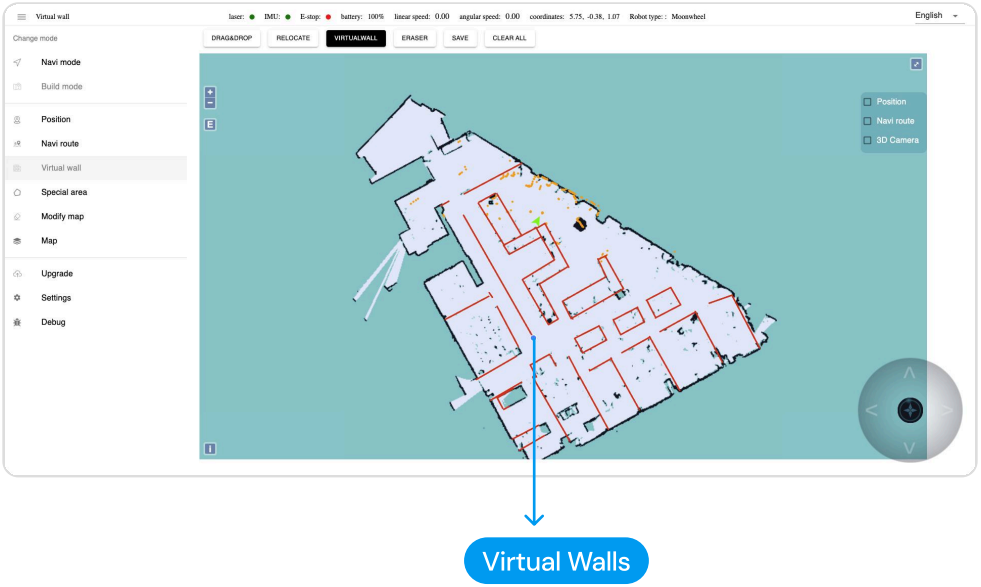


You can also:

- **Set tray numbers** to specific points (Tray 1 = Table A, Tray 2 = Table B)
- Mark return zones and one-way logic

6.4 Virtual Walls & Special Zones

Virtual walls prevent Dasher from entering undesired or restricted areas.



Steps to Add Virtual Walls:

01) From the map screen, click **"Edit Map" → "Add Virtual Wall".**

02) Draw a line across any doorway, kitchen corner, or customer-restricted zone.

03) Save and test navigation to confirm proper rerouting behavior.

Use no-go zones around:

- Restroom doors
- Low-height fixtures
- Emergency exits
- Uneven flooring

6.5 Saving and Applying the Map

Once key points and virtual elements are set:

01) Click **“Save Map”.**

02) Select “Apply as Current Map” when prompted.

03) Dasher will now use this environment data for all future operations unless a new map is created.

Tip: For large venues with multiple zones (e.g., ground floor vs. banquet hall), create separate maps and switch between them from the dashboard.

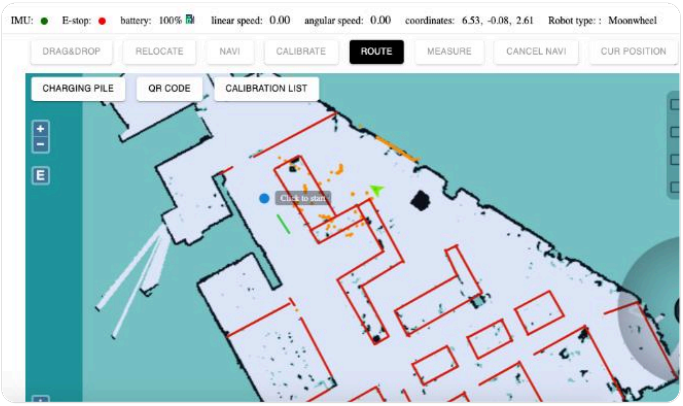
7
ROUTE CREATION & CALIBRATION

Route Creation and Calibration

Once the environment map and delivery points are saved, the next step is to create precise routes that Dasher will follow during its operation. This section covers how to define forward and return routes, calibrate delivery positions, and fine-tune stop distances.

7.1 Accessing Route Settings

01) From the dashboard, navigate to the **“Route” tab.**



02) Select **“Create Route”** to begin adding a delivery flow.

03) Choose an existing **map file** from the dropdown (e.g., “MainFloor_01”).

7.2 Drawing Routes (Start → Destination → Return)

Step-by-Step:

01) Click **“Add Route”** and assign a **Route Name** (e.g., LunchShift_1).

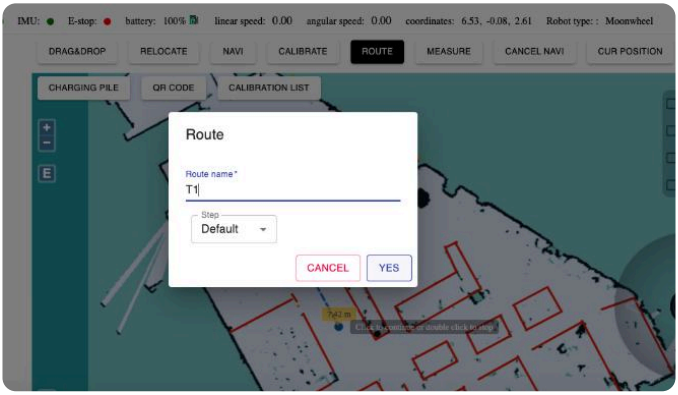
02) Select a **Start Point** (e.g., Kitchen_Exit).

03) Then select one or more **Delivery Points** (e.g., T1, T2, T3).

04) Select the **End Point** or **Return Point** (usually the Charging Dock or Kitchen).

05) Click **“Save”.**

Route Creation and Calibration



Optional Settings per Stop:

- **Tray Allocation:** Assign Tray 1 → T1, Tray 2 → T2, etc.
- **Wait Time:** Configure stop duration at each delivery point (default: 6 sec)
- **Broadcast Message:** Set specific voice messages or greetings for each stop

7.3 Position Calibration (Stop Distance & Tray Light Accuracy)

To ensure accurate positioning at tables and safe stopping distance:

Steps to Calibrate Stop Position:

01) Select a **point** from the dashboard

02) Click **"Adjust Stop Distance"**

03) Use + / – buttons to move the robot **closer or further.**
a. Default = 500 mm from edge
b. Adjust to 400–600 mm depending on table clearance

04) Click **"Test Tray Light"** to verify correct tray indicator and pickup angle

Goal: Each tray should be aligned within ±10 cm of the customer edge, with proper lighting and audio cue.

7.4 Setting Navigation Rules

Configure what the robot should do **after completing delivery:**

Return Logic	Effect
Return to Charging Point	Ideal for breaks or low battery situations
Return to Kitchen Entry	Enables quick reloading during rush hours
Loop Next Route	Automatically begins next saved route (if queued)

Set this under: **Route Settings → Post-Delivery Behavior**

7.5 Testing and Finalizing Route

01) From the **Route Tab**, click on your saved route and press **"Test Run"**

02) Observe the following:

a. Path tracking **b.** Obstacle handling **c.** Stop precision

d. Tray lights and voice announcements

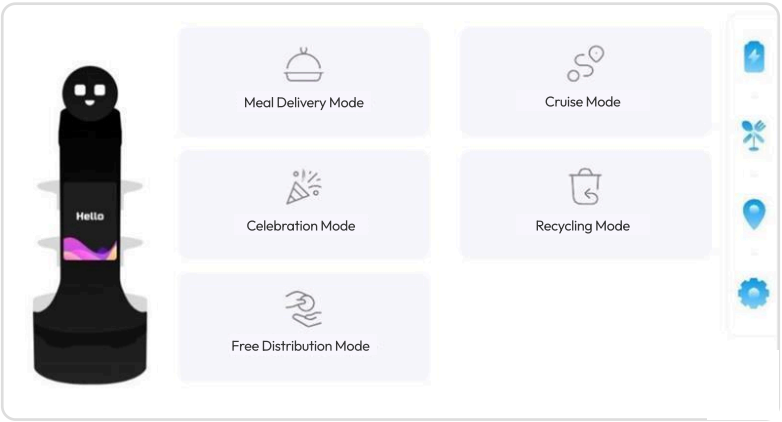
03) If satisfied, click **"Set as Default Route"**

Tip: Run at least **2 full test loops** before live deployment.

8
DELIVERY OPERATIONS

Delivery Operations

Dasher supports a range of intelligent delivery modes tailored to specific real-world scenarios in hospitality, retail, and events. Each mode automates tray logic, route behavior, and broadcast settings based on the selected operation.



8.1 Meal Delivery Mode

This is Dasher's standard mode for restaurant, café, or banquet service. In this mode, each tray is assigned a unique delivery point, and the robot navigates sequentially to each destination.

Use Case:

Table service for dine-in customers, where multiple dishes are preloaded and dispatched in one run.

Setup Process:

01) From the **dashboard panel**, go to the **Routes** tab.

02) Select an existing route or create a new one.

03) Assign:

a. Tray 1 → Point A **b.** Tray 2 → Point B **c.** Tray 3 → Point C

04) Navigate to the **Delivery Operations tab.**

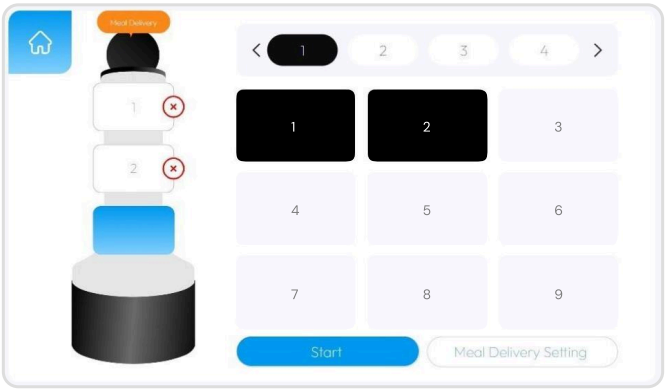
05) Choose **"Meal Delivery Mode"** and press **Start.**

Delivery Operations

The robot will stop at each point, announce the delivery using preset or custom messages, and illuminate the corresponding tray.

Post-Delivery Options:

- Return to kitchen
- Return to charging point
- Start next delivery loop



8.2 Cruise Mode

Cruise Mode is ideal for environments where Dasher is expected to circulate continuously through fixed zones such as exhibitions, retail stores, or hotels.

Use Case:

Display tours, ad loop navigation, or ambient presence.

Setup Process:

01) Navigate to **Delivery Operations → Cruise Mode.**

02) Select desired points in loop (e.g., Lobby → Corridor → Cafe).

03) Set cruise interval and voice broadcast logic (if any).

04) Click **Activate Cruise.**

Dasher will loop indefinitely until manually stopped, or battery runs low.

8.3 Celebration Mode

Celebration Mode is used for birthday parties, ceremonies, or corporate welcome events. The robot delivers cake, flowers, or small gifts with themed audio and tray lighting.

Use Case:

Greeting guests, cake delivery, entry reveals.

Setup Process:

01) Go to **Delivery Operations → Celebration Mode.**

02) Choose delivery point (e.g., "Stage" or "VIP Table").

03) Upload or select:

- **a. Music file (.mp3/.wav)** for the occasion
- **b. Tray light color** (e.g., rainbow, gold)
- **b. Voice greeting** or celebration message

04) Start route.

Dasher will play music, light up trays, and deliver celebration items while announcing the occasion.

8.4 Recycling Mode

This mode is used to collect dishes or return items from customer tables back to the kitchen.

Use Case:

Post-meal dish pickup during non-peak hours or at buffets.

Setup Process:

01) Navigate to **Delivery Operations → Recycling Mode.**

02) Define pickup route (e.g., T1 → T2 → T3 → Kitchen).

03) Select "No Announcement" if quiet mode is preferred.

04) Enable **touch to confirm**

05) Press **Start**

The robot will pause at each station, wait for input, and return once the collection is complete.

8.5 Free Distribution Mode

This is Dasher's unattended giveaway mode for flyers, samples, or beverage promotions.

Use Case:

Mall activations, promotional campaigns, event sampling.

Setup Process:

01) Go to Delivery Operations → Free Distribution Mode.

02) Choose loop points and tray allocation (e.g., Tray 2 = samples).

03) Enable "Loop Broadcast" to announce pickup instructions.

04) Add QR code for lead capture if needed.

05) Press Start Loop.

Dasher will stop at each point, flash tray lights, and play pickup message on repeat.

8.6 Side Panel Shortcuts

The side panel on Dasher's touchscreen includes shortcut buttons for rapid operation:

Shortcut	Function
"Single Delivery"	Direct delivery to one saved point
"Return"	Immediate return to charging or kitchen
"Pause"	Stop robot mid-route without full shutdown
"Resume"	Resume paused delivery or cruise

9
DISPLAY & AD PANEL SETUP

Display and Ad Panel Setup

Dasher includes an integrated ad panel system that allows businesses to display multimedia content such as videos, images, or QR-linked promotional material directly on the robot's screen. Using the AdRemote mobile application, users can remotely pair, upload, schedule, and manage content in real time or offline.

9.1 Ad Panel Overview and Functional Scope

The advertisement panel on Dasher is a high-brightness digital display embedded in the front of the robot, designed to engage nearby customers during operation or idle periods.

Functionality	Description
AdRemote Pairing	Connect your smartphone to Dasher to control and manage advertisements
Multimedia Support	Supports image (.jpg, .png) and video (.mp4) content in portrait orientation
Scheduling System	Schedule content by day, week, or month using the built-in calendar UI
Default Advertisement	Set a fallback video/image to display when no ad is scheduled
Online/Offline Mode	Operates via server (Ad Server) or standalone (local remote control)

Target Use Cases:

- In-mall beverage promotions
- Restaurant campaigns
- Retail lead capture via QR codes
- Sponsored ads during delivery rounds

Note: All control functions require the official **AdRemote** mobile app, available for Android. Compatibility with iOS is limited.

Display and Ad Panel Setup

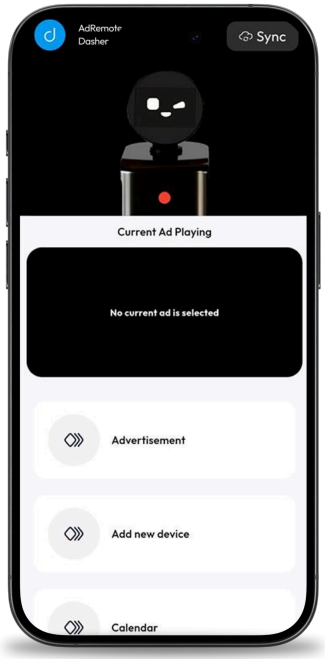


Fig. AdRemote Application

9.2 Initial Setup and Pairing with AdRemote

Before managing advertisements, you must pair your mobile device with Dasher using the AdRemote application. This one-time setup enables control over ad transfer, scheduling, and panel behavior.

9.2.1 QR Code Scanning & First-Time Pairing

01) **Power on Dasher's screen** and ensure it displays the AdRemote QR pairing code.

02) On your **Android device**, install and open the **AdRemote app.**

03) Tap **"Scan QR"** and align the scanner with the robot's QR code.

04) Wait for the screen to show **"Connected,"** this means the robot and remote are now linked.

Successful pairing links your phone to this unit's ad panel until reset.

9.2.2 Permissions, Access Codes & Device Compatibility

- Permissions required:
  - Camera (for QR scanning)
  - Storage (for ad file transfer)
  - Location (for device discovery, optional in some builds)
- Device requirements:
  - Android OS 7.0 or above
  - Minimum 2 GB RAM recommended
- Access code prompt:
  If pairing is blocked by an **admin lock**, you will be prompted to enter a **6-digit access code**. Contact your system administrator if this appears.

9.2.3 Reconnecting or Re-Pairing Devices

If the remote gets disconnected or you switch devices:

01) Reopen AdRemote → Tap "Unbind Device" (if old session exists)

02) On the robot screen, display the **pairing QR again**

03) Scan and confirm reconnection

> **Tip:** If the robot shows "Disconnected" or "Pairing Failed," restart both devices and retry the scan.

9.3 Environment Setup

Dasher's ad panel system supports **standalone** deployment mode. Understanding your environment is essential for stable connectivity, content delivery, and device management.

9.3.1 Standalone Deployment

This mode lets you control and schedule content **directly from your phone** without requiring internet or server registration.

Use Case:

Best for single-robot use in local promotions (e.g., store openings, trade events).

Setup Process:

01) Pair robot via **QR code scan**.

02) On AdRemote, select **"Offline Mode" or "Local Control".**

03) Transfer and schedule ads as needed.

Robot does not require active Wi-Fi or server login.

Limitations:

- Only one mobile device can control a robot at a time
- No cloud backup of ads or logs
- Remote updates not supported

9.4 File Transfer and Content Management

Once the robot is paired and the environment setup is completed, users can begin transferring ad content to the display panel. This includes uploading images, videos, and setting playback behavior.

9.4.1 Sending Image/Video Ads via Remote

To push content from your phone to the robot:

01) Open the **AdRemote app.**

02) Tap **“Send Advertisement”.**

03) Select content from your device:

a. Supported formats:

- **Images:** .jpg, .png (portrait ratio recommended)
- **Videos:** .mp4 (max 1920x1080 resolution; ≤100MB)

04) Tap **“Upload”** to transfer it to Dasher.

05) Once sent, you'll see the media listed under **“Ad Content”** on the robot's screen.

Tip: Videos will autoplay in loop unless scheduled otherwise.

9.4.2 Editing, Replacing, or Deleting Ads

To manage existing content:

- **Edit or Replace:**
  - Navigate to the **Ad Content** tab in AdRemote.
  - Long-press on the ad you want to replace.
  - Select **“Replace File”** and upload the new media.
- **Delete:**
  - Select the ad.
  - Tap the trash bin icon to remove it from the robot.

Deleted ads cannot be recovered unless re-uploaded manually.

The robot will default to its “Default Ad” (see next section) if no ad is actively scheduled.

9.5 Setting the Default Advertisement

The **default advertisement** is the media file that plays continuously when no scheduled ad is active. Setting it correctly ensures there's always promotional content running on Dasher, even in idle times.

9.5.1 Understanding Default vs. Initial Default

Term	Meaning
Initial Default	The ad that plays when the robot is first powered on, and no pairing has been completed yet. This is a factory set and can only be changed via system access.
Default Ad	The fallback ad that plays when no schedule is active or after scheduled playback ends. This can be changed at any time by the operator.

A **default ad** helps maintain brand visibility and prevents a blank screen.

9.5.2 Steps to Change the Default Display

To set a new default ad:

01) Open the **AdRemote app.**

02) Go to the **Ad Content** section.

03) Long-press on the media you want to set as default.

04) Tap **"Set as Default".**

05) Confirm when prompted.

Dasher will now automatically play this content when no scheduled ads are running.

You can change the default settings at any time. Only **one** default ad is allowed at a time.

9.6 Scheduling Advertisements

Dasher allows operators to **schedule ads** for specific dates, times, and durations using the **calendar interface** in the AdRemote app. This is ideal for running limited-time campaigns, alternating offers, or syncing ads with peak hours.

9.6.1 Accessing Calendar Views (Daily/Weekly)

To view or manage schedules:

01) Open the **AdRemote** app.

02) Tap the **"Schedule"** icon in the main menu.

03) Choose your view:

a. Daily View: See hourly time slots for one day.

b. Weekly View: View and adjust ads for each day of the week.

Long-press on a time slot to view or edit existing ad blocks.

9.6.2 Creating and Saving Ad Schedules

To schedule an ad:

01) Tap on an empty time slot in the **calendar.**

02) Select the **ad file** you want to play.

03) Set:

a. Start time

b. End time

c. Days of the week (optional recurrence)

04) Tap **"Save".**

Dasher will automatically switch ads based on the scheduled times.

You can create **multiple scheduled ads** in one day. The robot will seamlessly switch between them as per the schedule defined.

Display and Ad Panel Setup

When no scheduled ad is active, the **Default Advertisement** will play automatically.

9.7 Troubleshooting and Version Updates

If the ad panel fails to respond, content doesn't sync, or the robot screen appears blank, use the following checks to quickly identify and resolve common issues.

9.7.1 Connectivity Issues

Problem: Robot not pairing with AdRemote / "Device Not Found"

Checklist:

- Ensure both robot and mobile devices are powered on.
- Robot's screen must display the **pairing QR code.**
- Confirm Wi-Fi is stable (for server mode).
- Restart both devices and retry scanning the QR.

> **Tip:** Use **Offline Mode** in AdRemote if no Wi-Fi is available.

9.7.2 AdRemote Version Mismatch

Problem: "Incompatible version" message during pairing or file upload.

Checklist:

- Open **Google Play Store.**
- Search for **AdRemote** and install the **latest version.**
- Unpair and re-pair with the robot.
- Reopen the app and retry upload or scheduling.

9.7.3 Restoring Panel Connection

If connection drops mid-operation or after reboot:

01) Open **AdRemote** and tap **“Reconnect to Last Device”** (if visible).

02) If unavailable, **scan the pairing QR** again.

Note: If the panel still doesn’t respond, power cycle the robot and try reconnecting again.

10
MAINTENANCE & TROUBLESHOOTING

Maintenance & Troubleshooting

To ensure Dasher performs reliably and safely in live environments, operators must follow routine maintenance practices and know how to respond to common technical issues. This section outlines actionable checks, error handling, and system-level recovery methods.

10.1 Daily Maintenance Checklist

Perform the following checks at the **start and end of each operational day:**

Functionality	Description
Battery Level Check	Ensure Dasher is charged to at least 60% before peak hours. Auto-dock if battery is <20%.
Screen Inspection	Confirm the ad panel is on, responsive, and showing the correct content.
LiDAR & Sensor Clean-Up	Wipe front and side LIDAR sensors gently with a microfiber cloth. Dust may affect navigation.
Caster Wheel Check	Rotate the wheels to check for any hair, dirt, or debris that may cause misalignment.
Tray Sanitation	Clean the trays using a food-safe surface disinfectant before meal delivery sessions.
Network Reconnection	If using server mode, verify that the robot is connected to Wi-Fi and DMS.
Error Code Display	Ensure no error codes are flashing on the controller panel. Refer to Appendix A if any appear.

Log these checks in a maintenance sheet if used in multi-shift environments.

10.2 Common Errors and Solutions

Dasher includes built-in error prompts on its controller panel and screen. Below are the most frequently encountered errors and how to resolve them.

Maintenance & Troubleshooting

Error: “Navigation Failure”

Cause:

- Route point not reachable
- Obstruction in path
- Floor reflection or poor lighting

Solution:

- Clear obstacles from the route
- Reboot Dasher and retry the route
- If error persists, recalibrate the affected point

Error: “Charging Failed”

Cause:

- Charging station misaligned
- Charging port or base pin not contacting

Solution:

- Manually push Dasher 5–10 cm forward/backward on the dock
- Check for dust or dirt on metal contacts
- Restart charging module from the controller panel

Error: “Motor Overload / Stall Detected”

Cause:

- Tray overloaded or weight imbalance
- Wheel obstruction or uneven surface

Solution:

- Redistribute weight across trays
- Move Dasher to an even surface
- Restart and monitor for repeated alerts

Error: “Panel Not Connected” (Ad Display)

Cause:

- Disconnection from AdRemote
- Wi-Fi failure in server mode

Solution:

- Reconnect using pairing QR code
- For server deployments, verify Wi-Fi and server login
- If still offline, restart panel manually

Error: “Sensor Blocked”

Cause:

- LiDAR or obstacle sensor dirty or obstructed

Solution:

- Clean sensors gently with microfiber cloth
- Avoid direct light/glare on sensors
- Restart if issue persists

Note: For unresolved issues, always check the **Error Code List in Appendix A** for additional context and support escalation.

10.3 Repositioning and Recalibration

If Dasher loses orientation, drifts off-route, or fails to return to a known point, follow this guide to **reposition and recalibrate** the system safely.

When to Recalibrate:

- After a major collision or physical relocation
- When Dasher fails to align with route points or charging dock
- If “Position Lost” or “Unable to Navigate” errors appear frequently

Step-by-Step: Repositioning Dasher

01) **Power OFF Dasher.**
Hold the power button until the screen turns off and the lights dim.

02) **Physically Move Robot to a Known Position.**
Place it in front of a mapped reference point (like a dock or labeled stop).

03) **Power ON and Observe Screen.**
Wait for the system to boot and check if the map re-aligns automatically.

If the system recognizes its position, you're done. If not, proceed to recalibration.

Tips:
- Avoid recalibrating near reflective floors or heavy glass.
- Use **Tag-based recalibration** over manual if available- it’s faster and more precise.
- Always save progress before restarting map mode.

10.4 System Updates and Recovery

To ensure stability, compatibility, and access to new features, Dasher's software and control systems must be kept up to date. This section explains how to perform updates, recover the system in case of failure, and reset core modules.

10.4.1 System Update (OTA)

OTA = Over-the-Air Update (no cable needed)

Steps:

01) Connect Dasher to a **stable Wi-Fi network.**
02) Navigate to the **Dashboard Panel → Settings → System.**
03) Tap **"Check for Updates".**
04) If an update is available, tap **"Download & Install".**
05) Wait for reboot. Do **not power off** during the process.

Updates may include performance enhancements, bug fixes, or new operation modes.

10.4.2 Recovery from System Failure

If the panel is stuck, unresponsive, or looping:

01) **Hard Reset:**
Hold the power button for 10+ seconds until shutdown, then power on again.
02) **Safe Boot Mode** (Advanced):
From the controller panel, hold **"Power + Back"** buttons simultaneously for **15 seconds** to enter Safe Boot.
03) **Restore Last Known Stable Version:**
In Safe Boot Mode, select **"Rollback System"** to restore the previous version (requires last version backup to be enabled).

10.4.3 Factory Reset (Use with Caution)

Only use this when instructed by the Falcon Tech support team.

Warning:

Factory reset will erase:

- All maps, routes, schedules
- Dashboard settings
- Ad panel content and pairings

How to Reset:

- From Dashboard → Admin Settings
- Tap **"Factory Reset"**
- Confirm with password and wait for reboot

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