DESTINATION DISPATCH

FUNCTIONALITY

VERSION 1.0

SMARTRISE

Document History

Date	Version	Summary of Changes
September 22, 2023	1.0	Initial Release

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1 Destination Dispatch Overview

Destination Dispatch (DD) is an advanced system used to optimize elevator travel time by grouping passengers together based on their desired floor destinations and avoiding excessive intermediate stops during travel. Using DD, passengers request their desired floor destinations prior to entering the elevator through smart kiosks located in the hallways. Depending on several factors (traffic, number of car calls, direction of travel, etc.), the kiosks then direct the passengers to an appropriate elevator car. This system results in better traffic flow and less congestion in waiting areas, giving passengers the ideal travel experience.

2 Features/Specs

Smartrise's DD unit offers the following features/specs:

- It supports one of two types of configuration systems, namely the Hybrid Configuration and the Full Configuration. With the Hybrid Configuration, kiosks are located on some floors, usually the busiest floors, and conventional hall fixtures are placed on the other, less busy, floors. Whereas with the Full Configuration, only kiosks can be placed on each floor.

- It supports passcode entry type security. The passcodes are field-adjustable.

- It supports discrete input type security (key switches, card readers, etc.) using additional I/O expansion boards.

- It supports Americans with Disabilities Act (ADA) accessibility features. A few options include extended door-opening times and special annunciations for guidance.

- With flexible software/hardware architecture, the DD unit supports advanced features such as split group operation, third party security integration, seamless entry, and smartphone call commands, etc.

- It supports up to 96 floors.

- It supports up to eight kiosks per floor.

- The installation process is quite straightforward; A single board and a pair of wires are all that's required for basic setup.

- Its software's parameters are field-adjustable; thus, the configs can be fine-tuned on site.

3 Operation/Dispatch Logic

When a request is initiated from the kiosk, it is processed by the Destination Dispatch Manager (DDM) in two stages:

- **Stage I:** The DDM evaluates all cars against a certain criterion to determine their eligibility to respond to a call:

- The car is operational and online.

- The car is on normal mode of operation.

- The anticipated weight, considering the number of calls, does not surpass the allowable weight for the car.

The cars that do not meet these criteria are excluded from the selection pool.

- **Stage II:** The selection of a car depends on the outcome of the dispatching algorithm, which can be one of the following:

  1. **Basic Dispatching** (Default Algorithm)

     This method assigns the nearest car moving in the same direction as the requested call.

     <u>Directional Considerations:</u>

     If a car is idle or moving in an upward direction, and the panel landing is above its current position and is reachable, the distance between the car's current position and the panel landing is calculated for each car. The car with the shortest upward distance will be selected.

     If a car is idle or moving in a downward direction, and the panel landing is beneath its current position and is reachable, the distance between the car's current position and the panel landing is calculated for each car. The car with the shortest downward distance will be selected.

  2. **Time to Pick-Up** (Beta)

     This algorithm calculates the estimated time from call entry to passenger pick-up, factoring in door dwell times and travel time prior to passenger pick-up. The car with the shortest estimated time from call entry to passenger pick-up will be selected.

  3. **Time to Destination** (Beta)

     This algorithm calculates the estimated time from call entry to passenger drop-off, factoring in door dwell times and travel times for both passenger pick-up and drop-off. The car with the shortest estimated time from call entry to passenger drop-off will be selected.

List of Abbreviations

ADA   Americans with Disabilities Act
DD   Destination Dispatch
DDM   Destination Dispatch Manager