



The GreyOrange Ranger™ MoveSmart is a modular sortation and smart moving system, designed for flexibility and portability. The system comprises of modular components which can be configured to create solutions usable for a range of applications across retail and logistics industries. The AI-enabled system can be easily scaled up or down making it more investment-friendly, cost-efficient and more adaptive to the future expansions.

The purpose of the system is to sort the shipment into one of many possible destinations (pincode) or transfer them from one station to another for required processing. Which results in increasing the warehouse productivity. The system can handle a variety of entities such as parcels, poly bags, packets (plastic packets), non-boxed items and thin parcels.

It has the following major sub-system or component:

- Ranger™ M / XL
- Auto / Semi-Automatic Induct
- Charging station
- Chute M / XL

## KEY FEATURES

### Versatility:

Ranger™ MoveSmart can handle a variety of entities such as parcels, poly bags, packets (plastic packets), non-boxed items and thin parcels while improving the sorting accuracy and decreasing the cost per shipment.

### Scalability:

Start with what you need today and easily scale up the capacity as the need arises. Leverage the freedom to scale up during peaks or scale down to save on operational costs.

### Portability:

Hassle free relocation across warehouses in minimal downtime.

### Modular:

Plug-and-Play components to build the sortation system.

### Layout adaptability:

Minimal infrastructure dependence allows Ranger™ MoveSmart to adapt to any layout pre or post installation.



The **Ranger™ bot** forms heart of the system, as it works like a bridge between induct station and end sort location (generally chute). It has two conveyors mounted on it, each conveyor generally handles one packet per sortation cycle. Both the conveyors can work independent to each other. This allows them to drop packets in different chutes in single cycle. It can effectively solve a series of problems such as high human costs, high error rate, low efficiency, and low flexibility of traditional sorting methods, it opens a new way for modern logistics sorting and represents the future of sorting.

It has the following advantages:

- Effective reduction of human costs;
- Effective reduction of the error rate and the risk of rework;
- Higher flexibility, easier expansion and contraction;
- Easier operation and lower maintenance cost;
- Visual management, convenient for historical data analysis, mining more valuable operational data.

## KEY FEATURES

### Obstacle Detection System (ODS):

ODS equipped with sensors to detect the objects on its pathways. The Ranger™ bot is capable of auto-recovery in case the obstacle is removed.

### Power source:

Powered by Lithium ion (Li+) batteries, whose health is monitored by BMS, which results in stable power supply and extended battery life.

### Status reporting:

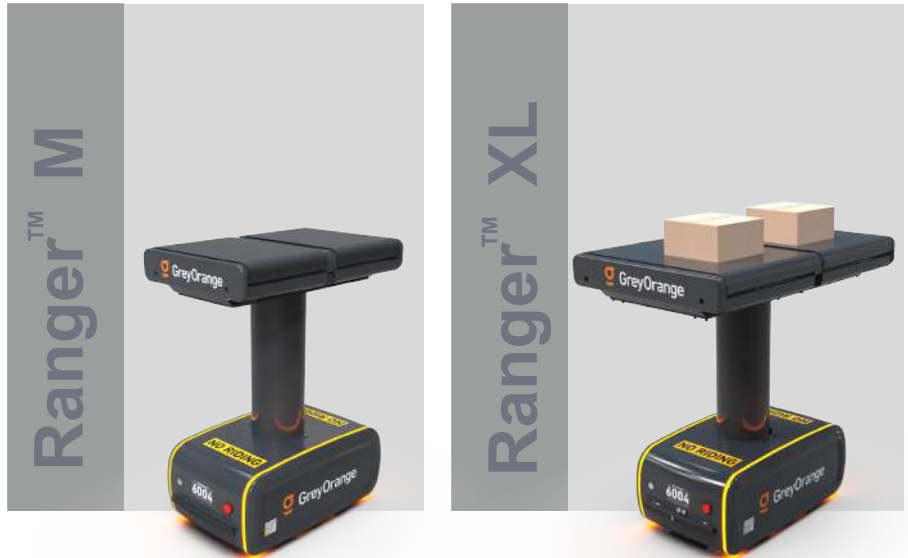
Constantly sends its operational status to GreyMatter™. The status can also be checked on Manager Dashboard or from notification lights on Ranger™ bot.

### Auto-charging capabilities:

Smart charging without manual intervention. 24/7 operation enabled by Opportunistic and Greedy algorithm-based services driven by GreyMatter™, GreyOrange's AI based Platform.



## SPECIFICATION



### DESIGN

<b>Dimensions (including bumper) – LxBxH*</b>	772x480x1000 (mm)	972x630x1000 (mm)
<b>Weight</b>	120 kg	140 kg
<b>Driving mode</b>	Two-wheel drive, unidirectional	
<b>Navigation method</b>	DM code + Inertial navigation	
<b>Max. payload - single belt</b>	15 kg	
<b>Max. payload - dual belt</b>	35 kg	
<b>Max. dimension of package using dual belt (LxWxH)</b>	450x600x400 (mm)	600x800x600 (mm)
<b>Max dimension of package using single belt (LxWxH)</b>	450x300x400 (mm)	600x400x400 (mm)
<b>Loading / sorting height*</b>	1000 mm	
<b>Rotation diameter</b>	1000 mm	1250 mm
<b>Ground clearance</b>	Nominal 18 mm	
<b>Operating modes</b>	<input type="checkbox"/> Auto <input type="checkbox"/> Maintenance	
<b>Operation direction</b>	Forward, Turning on standing position	
<b>Running noise</b>	< 80 dB(A)	

### PERFORMANCE

<b>Max. operating speed</b>	Full load / Empty: < 2 m/s
<b>Max. acceleration</b>	Full load / Empty: < 1.2 m/s <sup>2</sup>
<b>Positional accuracy</b>	<input type="checkbox"/> ±10 mm in direction of travel <input type="checkbox"/> ±30 mm perpendicular to the direction of travel <input type="checkbox"/> ±2° angular
<b>Sorting conveyor speed</b>	< 1 m/s

\* Ranger™ bot's standard height (H) / loading height / sorting height is 1000 mm and can be customized from 600 mm to 1000 mm depending on the requirements.



The Auto Induct functions as the feeder to the Ranger™ MoveSmart, where a running conveyor feeds the packets. Here the process involves creating a unique job id for each packet and processing its unique identification number (generally barcode) to identify its destination. The collected data is then shared with the GreyMatter™ which allots a destination for that packet. Now the packet is transferred to Ranger™ bot for delivery to the designated location.

The Auto Induct has various components to ensure a seamless operation, assist in monitoring and controlling the critical process and system functioning.

- Service Interface Panel** – To monitor the behaviour of system and provide inputs for intended use.
- Tower Light (with buzzer)** – To provide light and audio indication on system status.
- Induct Stop** – It is a push-pull type switch (mushroom head) provided to temporarily stop the respective induct station.

## KEY FEATURES

### Dimensioning:

The dimensioning system is used for measuring the volume of the packets. Induct station is installed with a dimensioning camera to capture the packet dimensions (LxBxH) while the packet is on DWS conveyor.

### Weighing:

A DWS conveyor is installed with load cells to capture the weight of the incoming packets.

### Scanning:

The scanning system is comprised of smart vision lights and camera.

- Smart vision lights are used to improve the contrast ratio for accuracy of barcode scan and ambient independence.
- Camera is used to capture the incoming packets barcode. The scanned barcode is then decoded by the GreyMatter™ and a destination is allocated to the packets.

### Package aligner:

Auto induct is equipped with the automatic packet aligning functionality. This used to align and transfer one packet at a time either on the Left buffer conveyor belt or Right buffer conveyor belt.

### Auto rejection:

Auto rejection segregates the packets with damaged barcode or incomplete information and redirects them into the rejection trolley placed at either side of the aligner module.



# Semi-Automatic Induct

Product Data Sheet | Aug. 2021



The **Semi-Automatic Induct** functions as the feeder to the Ranger™ MoveSmart, where an operator places the packet to be sorted. Here the process involves creating a unique job id for each packet and processing its unique identification number (generally barcode) to identify its destination. The collected data is then shared with the GreyMatter™ which then allots an end sort location for that packet. Now the packet is transferred to Ranger™ bot for delivery at designated end sort location. The Semi-Automatic Induct has various components to assist operators in monitoring and controlling the critical process and system functioning.

- Operator Screen** – To monitor the behaviour of system and provide inputs for intended use.
- Tower Light (with buzzer)** – To provide light and audio indication on system status.
- System Stop** – It is a push-pull type switch (mushroom head) provided for instant stop of the complete system in case a situation arises.
- Induct Stop** – It is a push-pull type switch (mushroom head) provided to temporarily stop the respective induct.

## KEY FEATURES

### Dimensioning:

The dimensioning system is used for measuring the volume of the packets. Each induct is installed with multiple sensors to capture the packet dimensions (LxBxH) while transferring from feeding conveyor to buffer conveyor.

### Weighing:

DWS conveyors are installed with load cells to capture weight of the incoming packets.

### Scanning image archiving:

The scanning system is comprised of smart vision lights and camera.

- Smart vision lights are used to improve the contrast ratio for accuracy of barcode scan and ambient independence.
- Camera is used to capture and archive the image of incoming packets.
- Same camera is used to capture the incoming packets barcode also.

The scanned barcode is then decoded by the GreyMatter™ and end sort location is allocated to the packets.