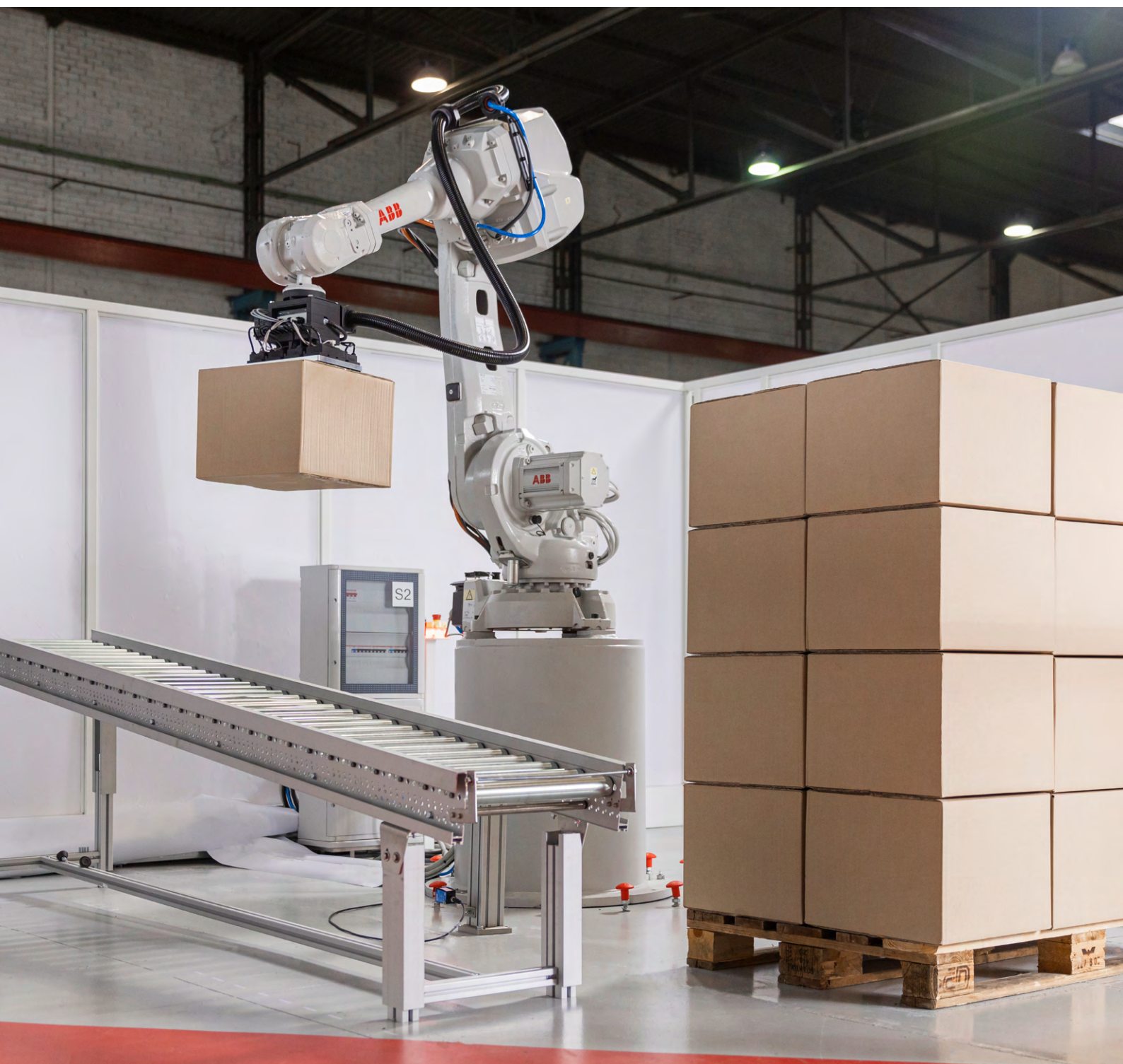


ROBOTICS

# Robotic Depalletizer

ABB's ultimate solution for faster and simpler depalletizing





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**Depalletizing is a critical process in distribution and fulfillment environments. Unreliable unstacking can cause the logistics operations to stall. Moreover, unloading pallets is often a heavy and time-consuming process.**

Depalletizing tasks grow more complex as the composition and configuration of pallets becomes more varied. Traditional solutions cannot be easily adapted to changing pallet patterns or box sizes. Adapting the process requires upgrades and or re-integration of solutions, adding additional costs and leading to downtime of the installed equipment.

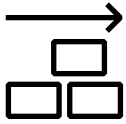
ABB's new Robotic Depalletizer solution solves this problem by using advanced machine vision and machine learning algorithms. The solution consists of a 4- or 6-axis robot with machine vision enabled by proprietary ABB machine learning software.

The solution's software uses the information gathered by the vision sensor to provide the robot with a suitable grasp point for each box. The robot then picks up the detected box and places it on the target location.

The most complete option can depalletize pallets up to 2.8 m high, thanks to the largest field of view in its class, and can handle a 30 kg maximum payload. The speed and accuracy of the system enables it to work at a peak rate of up to 750 cycles per hour.



# Key benefits



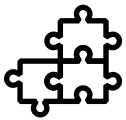
## High Versatility

Can pick any type of box different in size, weight, shape and color. Adapts towards changing pallet patterns and SKUs.



## Superior Performance

Up to 2.8-meter pallet height, 750 cycles peak per hour and 30 kg max payload.



## Modularity

Easy to integrate into existing processes, and scalable to accommodate future growth.



## Digital Twin

Easy to configure with digital twin, enabling virtual commissioning and precise performance simulation.



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# ABB's advanced machine vision software bringing ultimate speed and accuracy

The best depalletizing systems can make the process of unloading pallets full of various boxes safe, fast, effective, reliable, and in the end also cost-efficient. This can only be achieved by combining 3D machine vision with smart robots enabled by advanced machine learning algorithms.

ABB's vision system enables the robot to detect specific carton boxes on pallets, allowing reliable depalletizing of several different types of pallet loads. These include pallets made up of a single type of box in defined layers; 'rainbow' pallets containing a number of different box types, again arranged in defined layers; and mixed pallets,

which have a wide range of boxes with varying dimensions, weights, shapes and materials.

Mixed pallets may have no defined layers of boxes and boxes may also be tilted and have uneven surfaces.

Design of depalletizing applications is facilitated with digital twin software that allows the building of accurate custom application simulations to show what the proposed layout will look like and the performance it can achieve. Customers can configure box dimensions, weights, distribution and pallet patterns to obtain exact performance indications.





# High flexibility for wider applications

The flexibility that ABB Robotic Depalletizer solution offers allows to be used in a wide range of e-commerce and inbound processes, such as depalletizing for put-away into automated storage. An example would be full pallets arriving at a distribution center and which need to be broken up into caches to put into automated storage.

Another application could be depalletizing for re-palletizing into outgoing loads of mixed boxes. This could involve full pallets with single boxes coming from production and needing to be depalletized in order to load mixed boxes on new pallets.

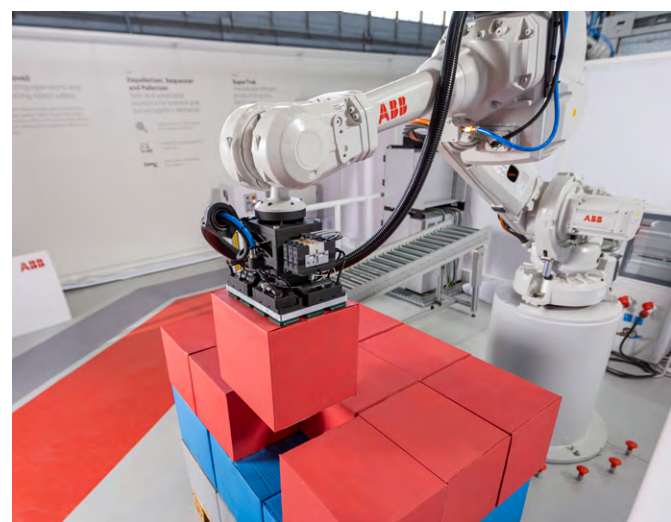
The solution would also find use in depalletizing for sorting of boxes, where mixed pallets with parcels need to be depalletized to enable sorting of parcels on a cross-belt conveyor sorter.

## Key Applications

- Mixed case pallet depalletizing
- Single case pallet depalletizing
- Rainbow pallet depalletizing

## Integrated Applications

- Re-palletizing: Robot depalletizes from incoming pallet – boxes are labeled, mixed or pallet types are changed – robot palletized boxes on new pallet
- Feeding automated sorting systems from pallet: depalletizing robot that fully depalletizes presented boxes one by one on to a conveyor belt feeding a sorting system
- Depalletizing for put away: depalletizing where a robot depalletizes single boxes from pallets to feed automated storage systems



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# Key industries



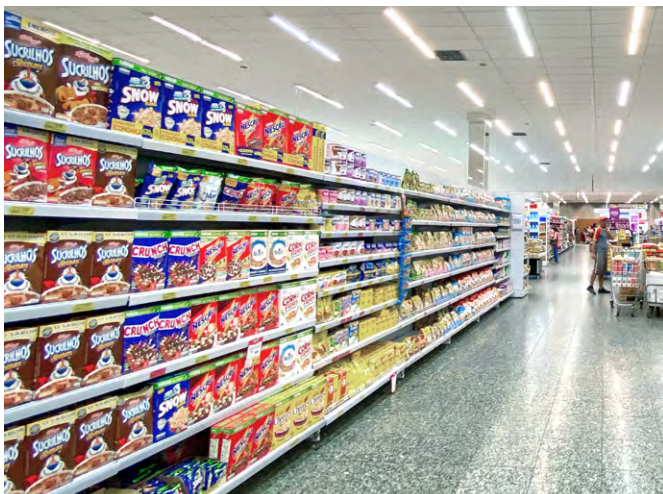
## Logistics

Increasing E-Commerce demand requires more flexible automation concepts.



## Retail

New options for online order delivery – click & collect, curbside pick-up, same day delivery require novel automation concepts.



## Consumer Packaged Goods

CPG players explore omnichannel strategies ramping up automated logistics capacities.



## Healthcare

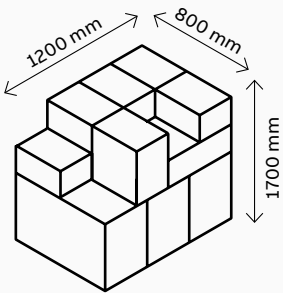
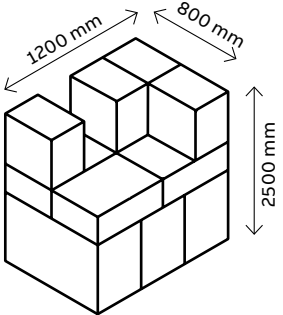
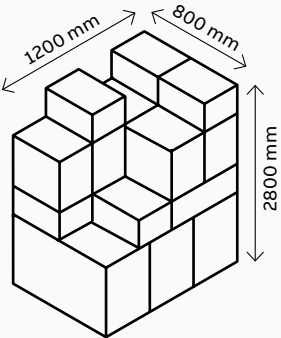



Pharmacies and pharma retail with stable demand for small-scale automation concepts.



# Datasheet

## Robotic Depalletizer

Configuration table

Type	4-axis robots (rainbow & single SKU pallets)				6-axis robots (mixed pallets)	
Configuration	IRB 460		IRB 660		IRB 4600	
						
						
Maximum pallet height						
EU: L x W 1200 x 800 mm						
ISO: L x W 1200 x 1000 mm	EU 1.7 m	ISO 1.7 m	EU 2.5 m	ISO 2.5 m	EU 2.8 m	ISO 2.8 m
Maximum picking angle for tilted boxes (limiting factor)	5° (4-axis robot)		5° (4-axis robot)		45° (sensor angle detection <46°)	
Maximum box weight	+30 kg <sup>1</sup>		+30 kg <sup>1</sup>		+30 kg <sup>2</sup>	
Performance	750 boxes/hour		750 boxes/hour		750 boxes/hour	
Used robots	IRB 460-110/2.40		IRB 660-180/3.15		IRB 4600-40/2.55	

<sup>1</sup>scalable modular gripper with 5 kg payload per suction zone

<sup>2</sup>standard gripper with 6 suction zones with 5 kg payload each





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