



DATASHEET

FLEXLOADER™ FEEDING FUNCTIONAL MODULE

Feeding system for flexible automated material handling tasks

FlexLoader™ is a highly flexible feeding solution designed for applications requiring pick-and-place operations. It combines pallet/bin and conveyor feeding in one single solution, offering unmatched versatility not only for traditional machine tending, but also a wide range of material handling tasks.

Equipped with FlexLoader™ Vision, an advanced vision technology, FlexLoader reliably identifies and picks parts, including stacked layers both on pallets and conveyors, semi-oriented parts from bins or conveyors, and workpieces with complex geometries. This capability enables unmanned production for extended periods, reducing operator intervention and increasing productivity, for example, through longer or additional night shifts. FlexLoader™'s pre-tested robot programming modules and adaptable layout allow seamless integration into even the most complex existing production environments, including those with limited space. Its flexibility enables a single robot to automate multiple machines with varying feeding and placing requirements, ensuring high uptime and reliable performance.

Maximization of manufacturing productivity

Robotic automation, such as FlexLoader™, enables machine tool utilization rates that are significantly higher than those typically achieved with manual operations. While manual processes often result in around 50% utilization, automated solutions can realistically reach utilization levels as high as 98%. This substantial improvement leads to greater productivity, a faster return on investment, and a sustained competitive advantage.

How it works

The integrated FlexLoader™ Vision System is designed for robot guidance and features a simple, intuitive teach-in process. New workpieces can be taught in minutes—no specialized vision expertise required.

To operate the system, the operator places workpieces either:

- On a conveyor belt, which also serves as a buffer, or
- In a pallet/bin positioned under the vision sensor.

Workpieces are processed under a vision sensor for identification. The robot, programmed using ABB Robotics' RAPID language, then picks each item and either places it in a designated position or feeds it into one or more processing machines. This setup enables highly customized and flexible automation solutions.

The dual feeding capability - from and to conveyor and/or pallet/bin - ensures high flexibility and supports long periods of autonomous production, increasing uptime, productivity, and cost efficiency.



Key benefits for the customer

- Higher flexibility and freedom to operate thanks to dual feeding options: pallet/bin and conveyor
- Higher uptime and productivity thanks to extended unmanned operation and system reliability
- Quick and easy integration into complex environments
- Faster ROI and cost optimization
- Reliable solution supported by ABB's expertise and a global network, with over 1,200 systems installed worldwide.

Included in FlexLoader™

- Electrical cabinet with IPC and FlexLoader™ Vision
- Robot
- Conveyors 3,4,5m and 3+4/4+5m stacked OR Pallet locators - for pallet feeding
- Vision tower with 2D camera or 3D sensor
- Calibration tool
- Declaration of incorporation of partly completed machinery
- Customer space within the electrical cabinet for additional components
- Optional: Standard grippers and dresspacks for IRB 1600/2600/4600
- Optional: Robot riser

Features	Benefits	High uptime	Easy to integrate	Flexible operations	Safe processing	Higher efficiency	Higher productivity	Cost optimization
Integration & installation								
Pre-tested robot programming modules			●					
Vision system								
Advanced 3D scanning for reliable picking of stacked parts, enabling multi-layer handling		●●		●●		●●	●●	●●
Smart safety system to avoid collisions during gripping		●●			●●			
Picking of parts from bins using 3D vision, even when not fully aligned				●		●	●	
Handling of workpieces with complex geometries				●●		●●	●●	
Scalable vision system supporting up to 4 cameras/feeding sources						●●	●●	●●
No special fixtures required for picking items on conveyors or pallets		●●	●●	●●		●●		●●
Pallets feeding								
Multi-layer pallet picking (up to 4 collars)		●		●		●	●	●
Handling of heavy items from pallets		●			●	●	●	
Layout								
Fully adaptable layout for optimal equipment positioning			●●	●●			●●	
Multi-machine automation with a single robot				●●				●●

● Pallet/bin ● Conveyor