

ActiveShuttle: Setting your intralogistics in motion



**With Plug & Go start quickly
and move safely**



**WE MOVE.
YOU WIN.**

4 THE CHALLENGE OF INTRALOGISTICS

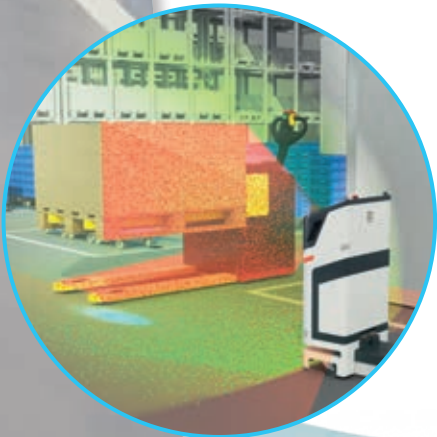
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All technical details and accessories
can be found online at
www.boschrexroth.com/activeshuttle



Test it!
We offer various scenarios for live tests in your
production environment – see page 15.



ActiveShuttle provides answers to the questions of Intralogistics 4.0

Increasingly more individualized products, more component diversity, fluctuating production figures – the competitive pressure in intralogistics is increasing. Autonomous transport systems create the necessary flexibility and transparency.

With ActiveShuttle, Bosch Rexroth sets a new standard: The system ensures a robust and efficient transport of loads up to 260 kg. Fully automatically. Transparently controlled with the ActiveShuttle Management System (AMS). This is Intralogistics 4.0!

Factory of the Future
Now. Next. Beyond.

REQUIREMENT

SOLUTION

!	!	!
Minimum installation work	Transparent material movements	High process robustness in busy environments
Plug & Go without adapting the existing factory infrastructure	Live display of material movements via AMS	Laser navigation plus 3D obstacle detection, automatic map updates with AMS Live Map
✓	✓	✓



YOUR BENEFITS

- ▶ Plug & Go – quick and easy to implement without adapting the existing factory infrastructure
- ▶ Automated materials transport with fully automated loading and unloading
- ▶ Easy, intuitive operation of the entire system
- ▶ Navigate safely around obstacles
- ▶ Easily create and configure logistics scenarios using AMS
- ▶ Return on Investment (ROI) within two years
- ▶ Comprehensive safety concept, designed for continuous 24/7 mixed operation with people and machines
- ▶ Employee relief
- ▶ Standard interface for connecting to third-party systems
- ▶ Increase in transparency
- ▶ Reduction of surfaces and materials



Easy integration



Reduction of manual handling steps



Less safety stocks and storage requirements

Standard interfaces for connecting to third-party systems

Fully automated materials transport

Flexible, requirement-oriented material supply, efficient order management



Automate your flow of materials and goods – it has never been easier

The ActiveShuttle autonomous transport system is already making the transition to the factory of the future possible today: It is quick to implement without any need to adapt your existing factory infrastructure, intuitive and easy to operate, fully connected and safe for use around people! Create transparent and efficient internal processes using ActiveShuttle.

SIMPLE



Plug & Go

The autonomous transport system can be quickly and easily integrated into intralogistics via Plug and Go. Infrastructure adjustments are not required thanks to the reliable laser navigation.

Intuitive operation

Configure your application in the ActiveShuttle Management System (AMS) according to your intralogistics requirements in next to no time. And via the intuitive touchscreen you can operate the ActiveShuttle directly at any time.

FLEXIBLE



Full flexibility

Jobs can be fed in manually or fully automatically thanks to the standard interfaces provided (sensor, PLC, MES/ERP etc.). Transport requirements are assigned to available ActiveShuttles via the AMS.

A wide range of supply principles

With the AMS, a wide range of supply principles can be realized – from cyclic transport to requirement-oriented material deliveries.

Variable job templates

With easy-to-configure job templates, you can achieve a wide range of transport concepts.

SECURE



Safety concept

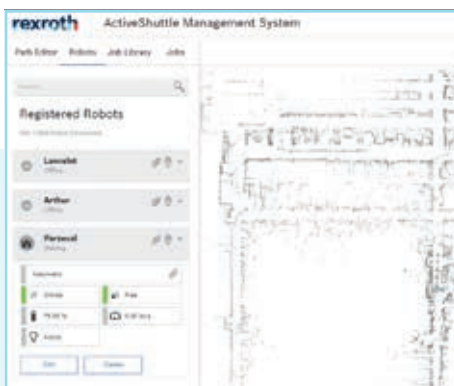
The safety concept designed in cooperation with the German Social Accident Insurance (DGUV) ensures a secure continuous 24/7 mixed operation with people and machines.

Performance Level d

The safety laser scanners used provide the highest reliability in continuous 24/7 operation.



ADAPTIVE



AMS-Live Map

The ActiveShuttle fleet immediately records occurring changes in the production environment and automatically updates the reference map. Therefore, manual re-mapping belongs to the past.

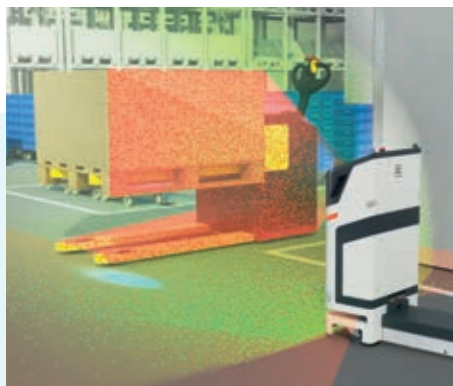
Quick and flexible adaptation

Short-term changes can be made during live operation with a few clicks in the AMS.

Traffic management

If a number of ActiveShuttles are in use, they communicate with each other wirelessly via the AMS and inform each other about changes in the environment in order to be able to react prematurely to bottlenecks.

ROBUST



Obstacle management

The integrated obstacle management enables braking in time and a safe passing of occurring obstacles on the road.

3D obstacle detection

In addition to the safety laser scanner, stereo cameras scan the room in 3D. As a result, even objects protruding into the ActiveShuttle's path are recognized.

Robust transport

The robust construction and the use of tested navigation and sensor technologies ensure high reliability in dynamic production environments.

EFFICIENT



Zero Manual Handling

With the lifting platform, dollies are loaded and unloaded fully automatically – with no need for manual intervention!

Straightforward order management

The prioritization and optimum distribution of pending transport orders to the ActiveShuttle fleet is done via the order management.

Long-term optimization

Reduce surfaces and materials and therefore throughput times significantly by using the ActiveShuttle.

Tightening the value chain

Optimize your intralogistics by automating your flow of materials and goods using the ActiveShuttle.

ActiveShuttle – the autonomous transport system for future intralogistics system

Taxi instead of service bus: The ActiveShuttle driverless transport system moves dollies, which are loaded with small load carriers (SLC), autonomously and quickly from A to B, for example from the goods warehouse directly to the point of use.

The material flow in modern production plants is complex, the points of use are versatile, and ways can be far. With the ActiveShuttle, manual material transport belongs to the past. With its robust and reliable laser navigation and 3D obstacle detection, the ActiveShuttle can move freely in the plant with no need for changes to the factory infrastructure and thus automates the flow of materials and goods.

In practice, compatible dollies with a surface of 600 x 400 mm or 400 x 400 mm are driven under automatically and slightly lifted with the integrated lifting platform. These dollies can be loaded with a number of load carriers: Small load carriers (SLC), blister packs or other containers.

As soon as a transport order was assigned to an available ActiveShuttle via the AMS, the ActiveShuttle approaches its destination and puts down the transported material. In this way, the material flow between various sources/dips in the value stream can be realized, and the dollies are ready for the following process step.

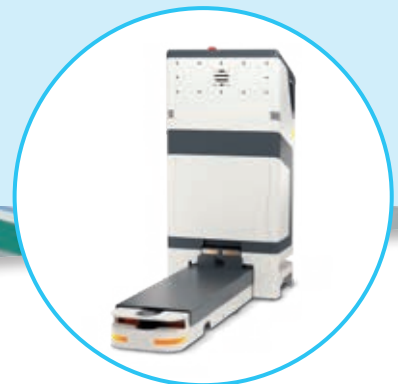
- **Dollies as a flexible basis for a wide range of load carriers**





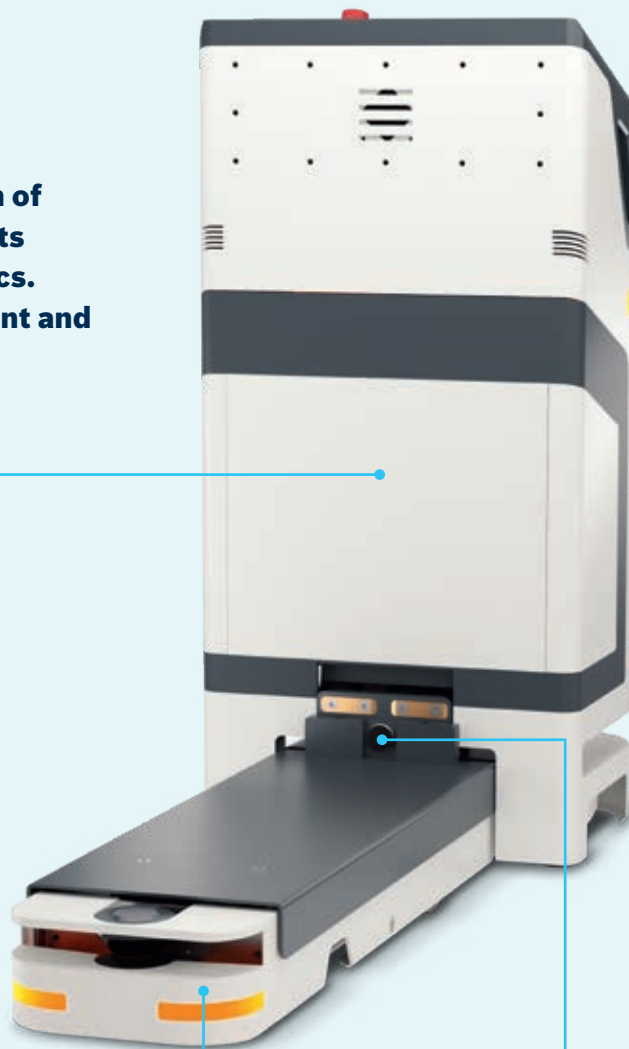
KEY TECHNICAL DATA

- ▶ Load dimensions (L x W x H): 600 x 400 x 1200 mm
- ▶ Navigation technology: Laser navigation
- ▶ ActiveShuttle dimensions: (L x W x H): 1,015 x 405 x 900 mm
- ▶ Transport weight: Max 260 kg
- ▶ Drive speed: Max 1 m/s
- ▶ Mobile gradients: Yes
- ▶ Laser type: Safety laser scanner, type 3, SIL2, performance level d
- ▶ 3D obstacle detection: 2 stereo cameras
- ▶ Touchscreen display: 10.1 inch, 1,280 x 800 pixels
- ▶ Power supply: Lithium-ion battery (48 V, 17 Ah)
- ▶ WLAN: IEEE 802.11.ac/a/b/g/n
- ▶ ESD (electrostatic discharge)
- ▶ Conformity: CE



ActiveShuttle: smarte und clevere Features

Sophisticated technology, practical details, perfect interaction of form and function – ActiveShuttle fits seamlessly into existing intralogistics. And makes them faster, more efficient and future-proof. Find out for yourself.



ESD

Also use the ActiveShuttle in ESD areas.

Direction indicator

Full transparency on the respective vehicle status thanks to clearly visible light signals.

Dolly detection

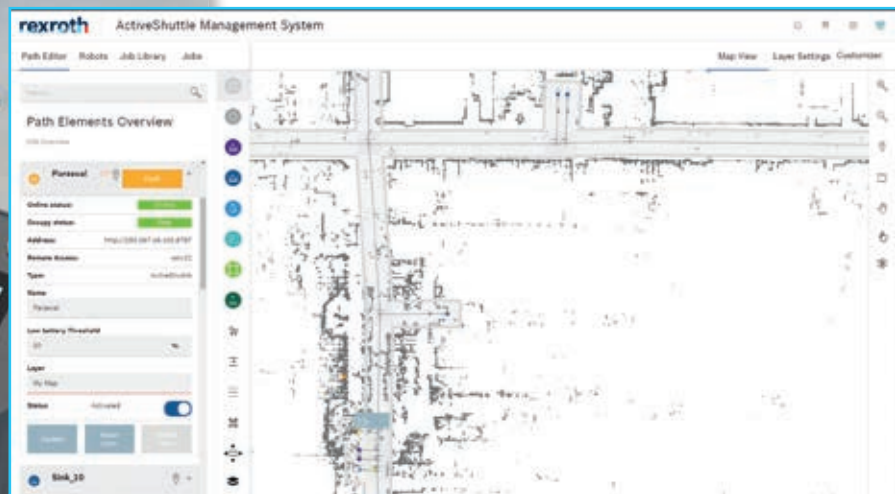
With the inductive safety sensor, dollies are detected safely and loaded.

ActiveShuttle + ADVANCED INTERACTION



ActiveShuttle Management System (AMS): Control intelligently, configure flexibly

The ActiveShuttle Management System (AMS) is the heart of the entire system and centralizes control of the complete ActiveShuttle fleet. As the control software, AMS displays the live status of your fleet, assigns pending transport orders to the available vehicles and lets the user control and configure the logistics scenarios.



- ▲ For a highly flexible order management, you have all processes in view and can intervene at all times

**VDA5050
ready**

THE AMS TAKES ON ALL ASPECTS OF FLEET AND ORDER MANAGEMENT

You remain fully flexible and informed at all times

Users can realize a wide range of supply principles – from cyclic transports to a requirement-oriented material supply. Via the web-based user interface, you can enter transport orders manually, e.g. using a tablet, or fully automatically thanks to the interfaces provided. Higher-level IT systems such as MES or ERP systems send details of transport requirements to the AMS which in turn assigns a transport order to an available ActiveShuttle.

The system steers itself

Once it is set up, the system steers itself to various destinations fully automatically – even in the event of volatile material requirements. The traffic management ensures smooth and coordinated transport operation. Even in case of environmental changes, the overall system remains stable thanks to automatic map updates (AMS Live Map). Changes are automatically detected by the vehicles during live operation and communicated to the entire ActiveShuttle fleet. In this way, the map is always up-to-date and manual re-mapping is no longer required.



AMS-FUNKTIONEN

- ▶ Order management: Prioritizing and distributing transport jobs to available ActiveShuttles
- ▶ Job templates: Easy configuration of your transport concepts
- ▶ Traffic management: Transport control center ensures coordinated and smooth transport operation
- ▶ Obstacle management: Navigate safely around obstacles
- ▶ AMS Live Map: Changes in the factory environment are automatically detected by the operating vehicles and communicated to the entire ActiveShuttle fleet
- ▶ Energy management: Fully automated charging process
- ▶ Web application: Intuitive and user-friendly user interface

Connection to shop floor infrastructure

Machines, robots and sensors (such as dash buttons) can also be integrated into the AMS in order to communicate with the ActiveShuttle. If a shortage of materials is imminent, details of transport requirements are directly transmitted to the ActiveShuttle Management System (AMS). As a result, assembly and logistics can be linked together even more closely. This sets intralogistics in motion. And it is a further step towards the factory of the future.

Intralogistics next level: ActiveShuttle product structure

**Compile your perfect package for your intralogistics 4.0.
Or test ActiveShuttle in your environment first –
we are ready for you in no time.**

ACTIVE SHUTTLE	ActiveShuttle	3842 560 131
	ActiveShuttle charging station	3842 560 422
ACTIVE SHUTTLE ACCESSORIES	Manual control unit	3842 560 106
	Optical track guidance	3842 560 612
	Battery	3842 560 101
ACTIVE SHUTTLE MANAGEMENT SYSTEM (AMS)	ActiveShuttle Management System (AMS) – rental license (1 year) including updates	3842 560 814
	ActiveShuttle Management System (AMS) – purchase license including 2 years' updates	3842 560 815
	ActiveShuttle Management System (AMS) – update service (current release)	3842 560 816
SERVICES	Training, application, commissioning, IT deployment	on request
TEST/DEMO	Test or live demo? Sure! Contact us!	▶▶▶

Test it!



With its plug and go concept, ActiveShuttle can be used straight away without making changes to the factory environment.

Test it live in your production environment: we offer various test and demo scenarios – contact us!



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Find your local contact person here:
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ActiveShuttle at the Bosch Rexroth website
www.boschrexroth.com/activeshuttle

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