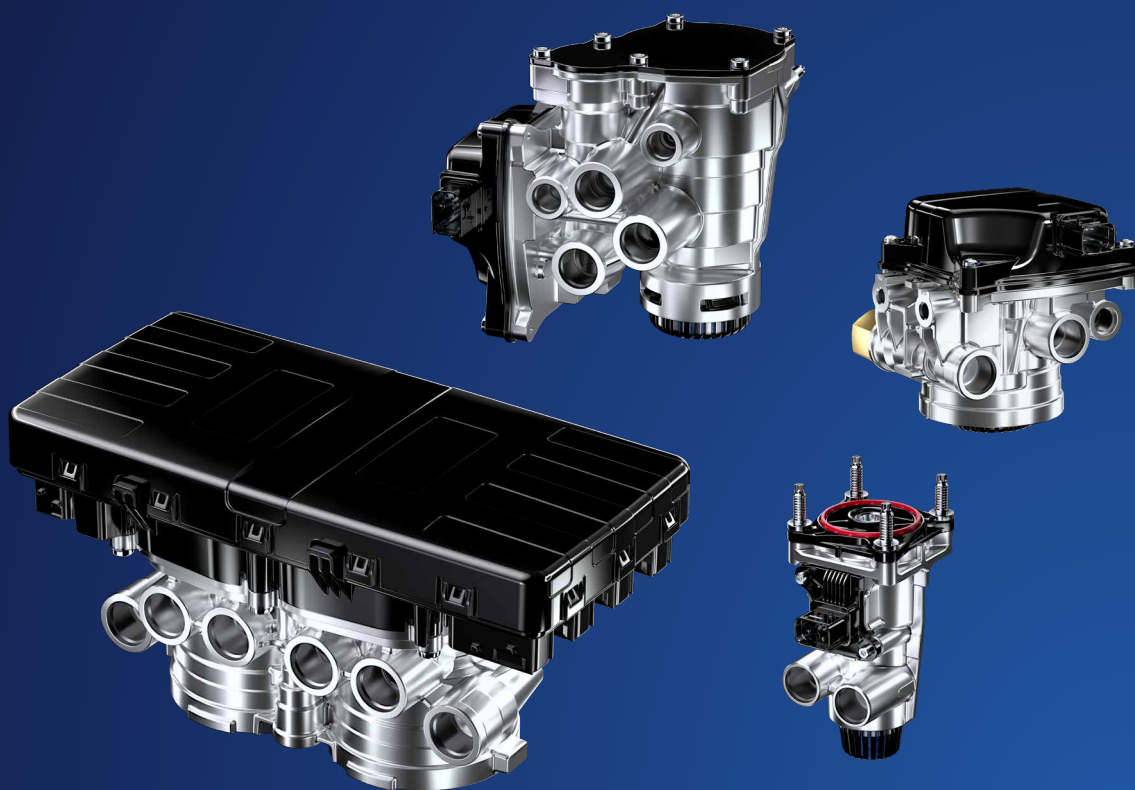


mBSP™

# Modular Braking System Platform mBSP XBS

A modular and scalable braking platform offers  
higher levels of integration and automation



# The Modular Braking System Platform mBSP XBS

This pneumatic braking system platform for trucks and buses is the next evolution of ZF's leading brake control technology for the CV market. It offers functionalities spanning from ABS to EBS and is ready for up to L5 automation on the same platform. With a simplified system layout and the innovative central electronic control unit for the entire system CMAx, mBSP XBS offers higher levels of integration and cybersecurity that serves today's market requirements while preparing for future needs.

## The ZF Difference

- Works seamlessly with a broad range of ZF systems including OnGuard, OnHand, eDRIVE, Steering, PowerLine
- Offers higher levels of integration and centralized intelligence with simplified system layout
- ECU integration on CMAx saves space in the cabin
- Supports automation up to L5 with only one additional component

## Value to Customers

- Provides higher performance and safer system while reducing components
- Higher level of system integration simplifies the system layout, reduces installation space requirements and helps ease assembly process
- Helps reduce Total Cost of Ownership (TCO) and facilitate life-time management through the simplified system layout
- Contributes to sustainability through improved braking energy recovery
- Provides cybersecurity protection from assembly line to operation on public roads and during maintenance
- Supports OEMs' autonomous driving implementation

# Technical Features

## Scalability

- Provides a scalable range of value-added functionalities

## Autonomous Driving

- Supporting autonomous driving with redundant CMAx

## Interactions

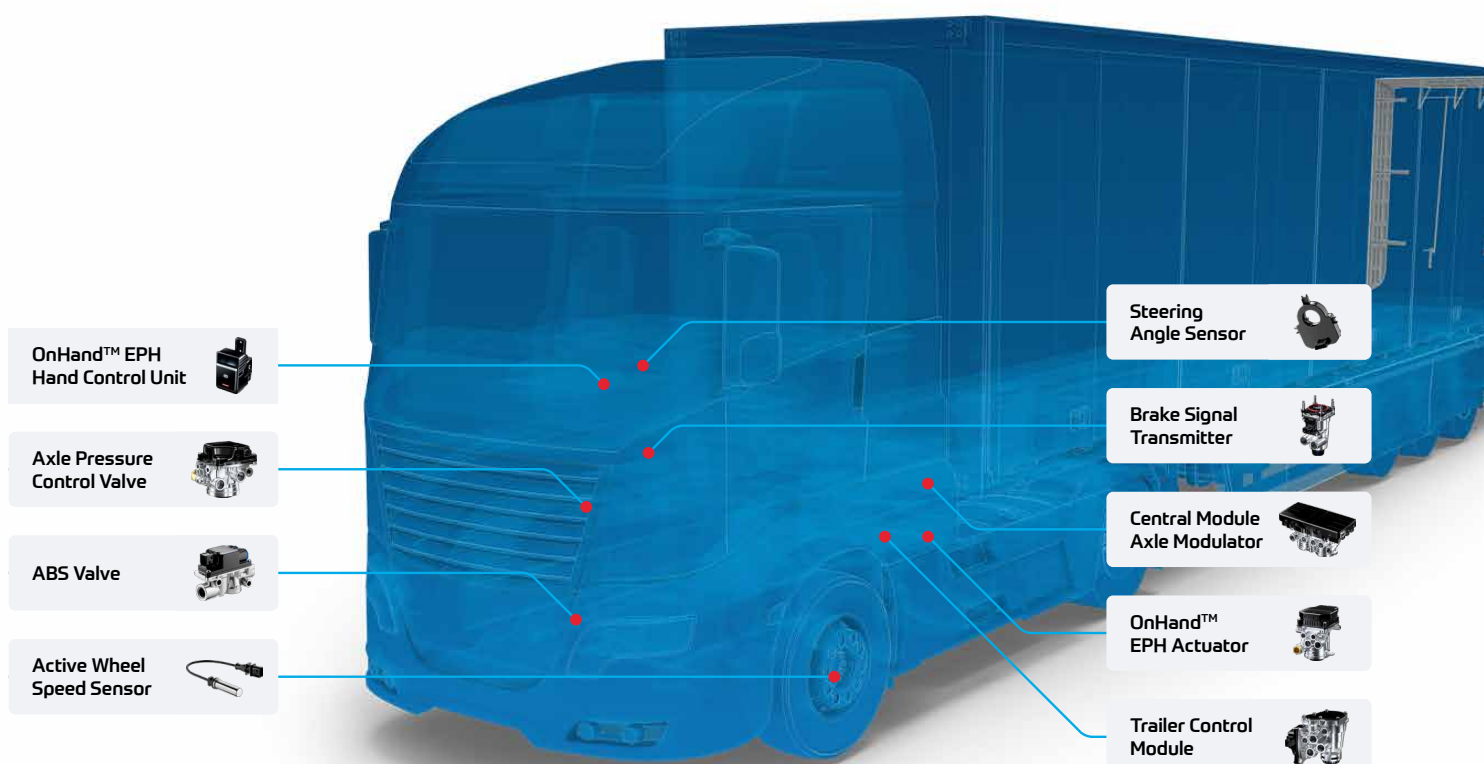
- Offers a higher level of system integration and performance with 30 % fewer parts compared to ZF's previous EBS System (EBS3)
- Interacts seamlessly with a broad range of ZF systems
- Leverages ZF's active wheel speed sensor technology to monitor vehicle speed and direction very accurately
- Works with OnHand Electro-Pneumatic Handbrake (EPH) to enable automatic parking brake control

## System

- Centralizes intelligence in a single ECU in the axle modulator hosting Autosar software platform
- Enables high-speed communication with ISO CAN FD
- Supports advanced braking energy recuperation installed in hybrid and fully electric vehicles
- Provides enhanced pneumatic redundancy concepts

## Compliance

- Meets system-level regulatory cybersecurity requirements (UN ECE/GSR)
- Designed in full compliance with ISO26262 up to ASIL D



# Function Overview



Brake Force  
Distribution



Brake  
Blending



Deceleration  
Control



Coupling Force  
Control



Halt  
Brake



Hill Start Aid  
(HSA)



Brake  
Assist



Soft Start  
Control



Soft Stop  
Control

## Brake Control



Anti-Lock Braking  
Function (ABS)



Automatic Traction  
Control (ATC)



Yaw Control  
(YC)



Roll Stability  
Control (RSC)



Stability  
Optimization



Drag Torque  
Control



Trailer Control  
by Driver (TCD)  
stretch brake



Multitrailer  
Control by Driver  
(TCD)



Combination  
Stability Control

## Stability Control



## Performance Monitoring



Brake Pad  
Wear Control



Temperature  
Monitoring



OnBoard Data  
Recorder

## System Functions



ADAS Function  
Support



Energy Recu-  
peration Support



External Brake  
Request (XBR)

**For further product  
details contact your  
sales representative.**

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**ZF Group**  
Commercial Vehicle Solutions  
Alfred-Colsman-Platz 1  
88045 Friedrichshafen  
Germany

[www.zf.com](https://www.zf.com)