



MBS[®] Modular Brake Control System



APPLICATIONS

Locomotives | Special Vehicles

MODULAR BRAKE CONTROL SYSTEM MBS®



2

THE BRAKE CONTROL SYSTEM THAT IS CAPABLE OF OPERATION THROUGHOUT EUROPE. Its modular design facilitates repair operations and makes it adaptable to a wide range of requirements.

MODULAR DESIGN

The MBS® architecture combines hundreds of components into 17 functional modules. If defects should occur, time-consuming error diagnosis by highly-trained service personal is not necessary:

A technician uses an internal diagnostics application to identify the defective module, which is then replaced, so the MBS® is immediately ready for operation again. The modular design allows the production of largely standardized components. Customers not only enjoy cost savings but also time savings across the whole process chain from planning to production. At the same time, the modular design permits a system that exactly fits operational conditions.

ADVANTAGES

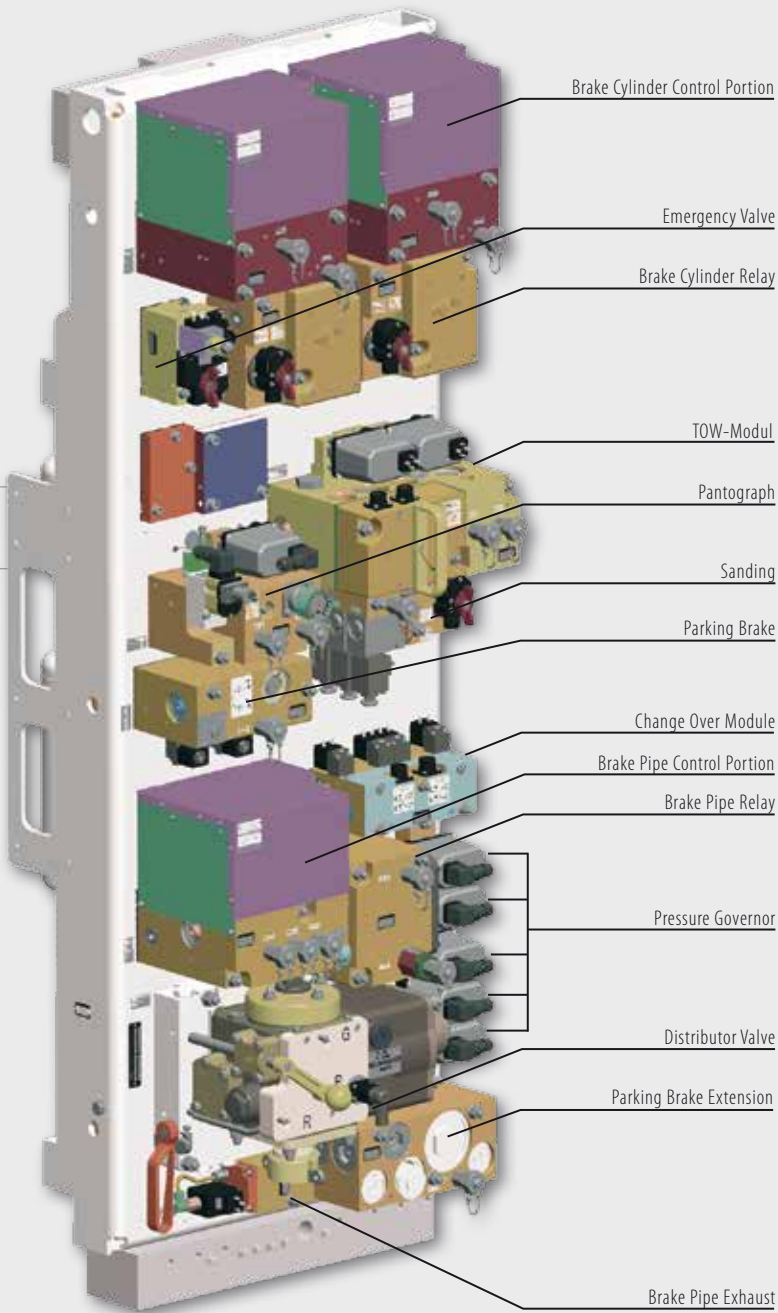
- Lightweight and compact modules
- Easy to maintain and highly available
- Easy plug and play installation
- Simplified interfaces
- 50% less internal cabling due to CAN-bus based communication
- New functions via software update
- Economical, thanks to standardization
- Every failure immediately localized, the defective module is simply exchanged



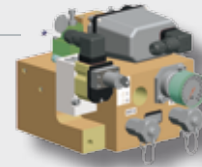
MBS®-TECHNOLOGY FOR GREATER SAFETY, FLEXIBILITY AND AVAILABILITY

This unique solution from Knorr-Bremse is the result of continuous development work built on a base of technologies that have been proven over many years. All components are UIC-compatible and conform to EN standards. Vehicle builders and operators benefit equally from the advantages of this decentralized control system across a broad range of diesel and electric locomotives.

- Pneumatic or electropneumatic backup systems for maintenance of basic functions, even in the case of total loss of the vehicle electronics
- The modules can be mounted decentrally or centrally on a brake panel with easy access to the operational controls and test points
- Electronic brake pipe and brake cylinder pressure control enables simple enhancement of functions via software updates
- Pre-tested, easy exchangeable cartridge valves supporting customer-specific maintenance
- Through parameter adjustment the key functions can be adapted to country-specific requirements
- The on-board diagnostic system enables defective modules to be detected
- Every module weighs less than 25 kg, so only one person is required for module replacement



MODULES



PANTOGRAPH

Monitoring and connection for the air support compressor, pressure supply for two collectors and the main circuit breaker



PRESSURE GOVERNOR / PRESSURE SENSOR

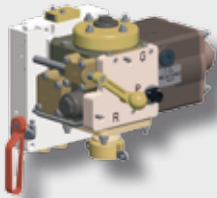
Autonomous adjustable manometric switch or pressure sensor for controlling and monitoring of brake cylinder, parking brake, reservoir pipe and brake pipe pressure amongst others



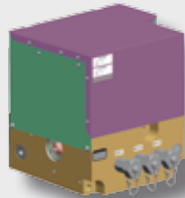
BRAKE CYLINDER CONTROL PORTION BCCP

Electronic brake cylinder pressure control for direct and indirect braking with blending. These are connected over a control valve on a pneumatic back-up. In case of an emergency brake the module sets a stable pressure level

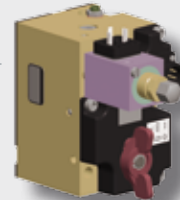
MBS® MODULAR BRAKE CONTROL SYSTEM



DISTRIBUTOR VALVE
Pneumatic back-up for indirect braking



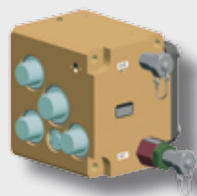
BRAKE PIPE CONTROL PORTION BPCP
Electronic brake pipe control with connecting facilities for a pneumatic or electropneumatic back-up solution



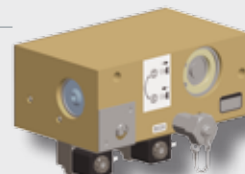
EMERGENCY VALVE
Initiates an emergency braking activated by vehicle control



BRAKE CYLINDER RELAY BCR
Relay function for the brake cylinder pressure

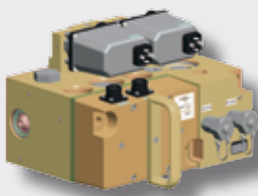


BRAKE PIPE RELAY BPR
BP relay valve type RH. Options: disconnection from brake pipe and/or supply from reservoir pipe by cut-off

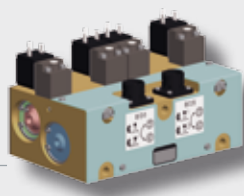


PARKING BRAKE BASIS
Electropneumatic activation of the parking brake with anti-compound function

5



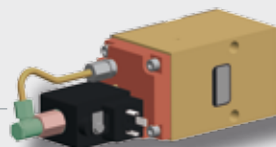
TOW-MODULE / BATTERY SWITCH
For the activation and cut-off of the brake; cut-off air pressure, release of a momentary forced brake, cut-off Sifa, electronic signals to control further functions. Automatic hauling function supplied by brake pipe while hauling without main reservoir pipe



CHANGE OVER MODULE
Choice of the driver's cab and cut-off of the pneumatic back up of the drivers brake valves



PARKING BRAKE EXTENSION
Brake pipe dependent control of the parking brake while towing

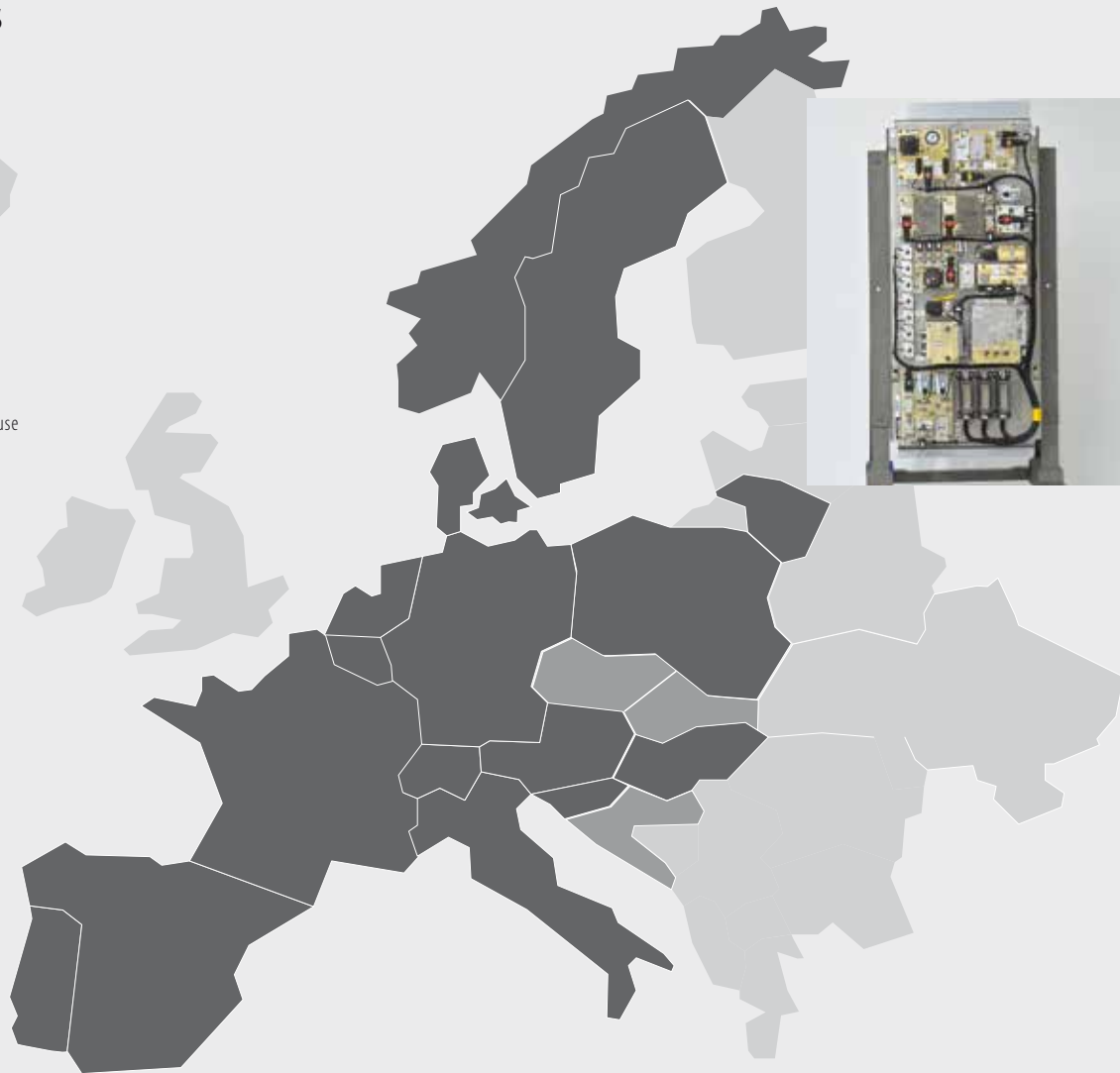


BRAKE PIPE EXHAUST BPEX
Initiates an emergency braking activated by brake control unit



SANDING
Forward and reverse sanding and sand drying

APPLICATIONS



MBS®

In the United States the most popular brake control system is the AAR (Association of American Railroads) version of MBS®. In Europe MBS® has been developed based on the existing modular design and can meet all of the requirements of passenger and freight transportation in this market place. MBS® is also suited to the full range of different speeds, including the high-speed sector. This means it fully meets the requirements of large and small operators alike.

EXISTING PROJECTS USING MBS®

- LE4700/ES46B1-A (Siemens AG)
- ER20CF LG-Lithuania (Siemens AG)
- Euro3000/4000 (Vossloh Valencia)
- TRAXX Locomotive MBS® Europe (Bombardier Transportation)
- E-Locomotive ES64U4 VA-C (Siemens AG)
- BR 185.2 (Bombardier Transportation)
- Locomotive for FESUR (CAF)
- PRIMA II (Alstom)

MBS® MODULAR BRAKE CONTROL SYSTEM

RAIL
VEHICLE
SYSTEMS



RAMS AND LIFE-CYCLE COSTS

- Secure and reliable
- Over 100 years of experience in brake systems
- Continuous development of proven components consistent with latest engineering standards
- Low maintenance costs
- Comprehensive on-board diagnosis system
- "Pit Stop Maintenance"
- Clear operational and service concept
- Easy access to all operational elements and checkpoints
- High availability
- Appropriation of local brake control architecture
- Compatible with UIC brake systems
- Electropneumatic back-up

OPERATING AND ENVIRONMENTAL CONDITIONS

- EN 50155
- -40 °C up to +70 °C
- Vibration and shock-tested according to EN 61373
- Degree of protection up to IP54
- EMC according to EN 50121-3-2

Knorr-Bremse Systeme für Schienenfahrzeuge GmbH

Moosacher Straße 80
80809 Munich
Germany
Tel: +49 89 3547-0
Fax: +49 89 3547-2767

WWW.KNORR-BREMSE.COM

» Europe / Africa

AUSTRIA / Kempten/Ybbs
Knorr-Bremse GmbH Division IFE
Automatic Door Systems
Tel: +43 7448 9000

AUSTRIA / Mödling
Dr. techn. J. ZELISKO GmbH
Tel: +43 2236 4090

Knorr-Bremse GmbH
Tel: +43 2236 4090

CZECH REPUBLIC / Brno
IFE-CR, a.s.
Tel: +42 0532 159111

IGE-CZ s.r.o.
Tel: +42 0548 424050

FRANCE / Reims
Freinrail Systèmes Ferroviaires S.A.
Tel: +33 3 26797200

GERMANY / Berlin
Knorr-Bremse Systeme für
Schienenfahrzeuge GmbH
Zweigniederlassung Berlin
Tel: +49 30 93920

HUNGARY / Budapest
Knorr-Bremse Vasúti Járű
Rendszerek Hungária Kft.
Tel: +36 1 4211100

ITALY / Florence
Knorr-Bremse Rail Systems Italia S.r.l.
Tel: +39 055 30201

ITALY / Buccinasco
Microelettrica Scientifica Spa
Tel: +39 02 575731

NETHERLANDS / Leeuwarden
IFE Tebel Technologies B.V.
Tel: +31 58 2973333

POLAND / Cracow
Knorr-Bremse Systemy dla Kolejowych
Srodków Lokoocij PL Sp. z o.o.
Tel: +48 12 2609610

ROMANIA / Bucharest
Knorr-Bremse SRL
Tel: +40 37 4005155

RUSSIA / Moscow
Knorr-Bremse Systeme für
Schienenfahrzeuge GmbH
Representation Office Russia
Tel: +7 495 7390113

SOUTH AFRICA / Johannesburg
Microelettrica Scientifica (PTY) Ltd.
Tel: +27 11 7943330

SOUTH AFRICA / Spartan
Knorr-Bremse S.A. Pty. Ltd.
Tel: +27 11 9617800

SPAIN / Madrid
Merak Sistemas Integrados
de Climatización, S.A.
Tel: +34 91 1459400

Sociedad Española de Frenos
Calefacción y Señales, S.A.
Tel: +34 91 1459400

SWEDEN / Lund
Knorr-Bremse Nordic Rail Services AB
Tel: +46 46 329350

SWITZERLAND / Niederhasli
Oerlikon-Knorr Eisenbahntechnik AG
Tel: +41 44 8523111

UNITED KINGDOM / Derby
Sydac Ltd.
Tel: +44 1332 299600

UNITED KINGDOM / Melksham
Knorr-Bremse Rail Systems (UK) Ltd.
Tel: +44 1225 898700

» America

BRAZIL / Itupeva
Knorr-Bremse Sistemas para
Veículos Ferroviários Ltda.
Tel: +55 11 4593 4020

CANADA / Kingston
Knorr Brake Ltd.
Tel: +1 613 3894660

USA / Randolph
Microelettrica USA LLC
Tel: +1 973 5980806

USA / Watertown
New York Air Brake Corporation
Tel: +1 315 7865200

USA / West Chicago
Anchor Brake Shoe Company
Tel: +1 630 2931110

USA / Westminster
Knorr Brake Company, LLC
Tel: +1 410 8750900

IFE North America, LLC
Tel: +1 410 8750900

Merak North America, LLC
Tel: +1 410 8750900

Knorr Brake Realty, LLC
Tel: +1 410 8750900

» Asia / Australia

AUSTRALIA / Adelaide
Sydac PTY Ltd.
Tel: +61 8 82393600

AUSTRALIA / Carlisle, WA
Knorr-Bremse Australia Pty Ltd.
Tel: +61 8 93616600

AUSTRALIA / Dandenong, VIC
Knorr-Bremse Australia Pty Ltd.
Tel: +61 3 97978500

AUSTRALIA / Darra, QLD
Knorr-Bremse Australia Pty Ltd.
Tel: +61 7 37137411

AUSTRALIA / Derrimut, VIC
Knorr-Bremse Australia Pty Ltd.
Tel: +61 3 83536400

AUSTRALIA / Granville, NSW
Knorr-Bremse Australia Pty Ltd.
Tel: +61 2 88636500

Sigma Air Conditioning Pty Ltd
Tel: +61 2 88636500

CHINA / Beijing
Knorr-Bremse CARS LD Vehicle Brake Disc
Manufacturing (Beijing) Co., Ltd.
Tel: +86 10 51010999

Knorr-Bremse Nankou Air
Supply Unit (Beijing) Co. Ltd.
Tel: +86 10 52726100

Knorr-Bremse Systems for Rail Vehicles
(Suzhou) Co. Ltd. Beijing Office
Tel: +86 10 68029088

CHINA / Guangzhou
Westinghouse Platform
Screen Doors (Guangzhou) Ltd.
Tel: +86 20 39221333

CHINA / Hong Kong
Knorr-Bremse Asia Pacific
(Holding) Ltd.
Tel: +852 36579800

CHINA / Qingdao
IFE-VICTALL Railway Vehicle Door
Systems (Qingdao) Co., Ltd.
Tel: +86 532 87938512

CHINA / Shanghai
Knorr-Bremse Railway Technologies
(Shanghai) Co., Ltd.
Tel: +86 21 51928000

CHINA / Suzhou
Knorr-Bremse Systems for
Rail Vehicles (Suzhou) Co., Ltd.
Tel: +86 510 66165666

CHINA / Wuxi
Merak-Jinxin Air-Conditioning
Systems (Wuxi) Co., Ltd.
Tel: +86 510 85583133

INDIA / Faridabad
Knorr-Bremse India Private Ltd.
Tel: +91 129 4191402

INDIA / Pune
Knorr-Bremse Technology Center India
Private Limited
Tel: +91 20 39147000

JAPAN / Tokyo
Knorr-Bremse Rail Systems Japan Ltd.
Tel: +81 3 33462620

KOREA / Seoul
Knorr-Bremse
Rail Systems Korea Ltd.
Tel: +82 2 22805555

SINGAPORE / Singapore
Knorr-Bremse Asia Pacific
(Holding) Ltd.,
Singapore Branch
Tel: +65 6848 7291

TAIWAN / Taipei
Knorr-Bremse Asia Pacific
(Holding) Ltd., Taiwan Branch
Tel: +886 2 33223355

 **KNORR-BREMSE**

 **FE** Innovations
for
Entrance Systems

 **merak**

 **SIGMA**

 **Microelettrica Scientifica**

 **WESTINGHOUSE**
platform screen doors

 **NEW YORK AIR BRAKE**

 **ZELISKO**

 **SYDAC**

 **RAILSERVICES**
We go on track

This publication may be subject to alteration without prior notice. A printed copy of this document may not be the latest revision. Please contact your local Knorr-Bremse representative or check our website www.knorr-bremse.com for the latest update. The figurative mark „K“ and the trademarks KNORR and KNORR-BREMSE are registered in the name of Knorr-Bremse AG. Copyright 2013 © Knorr-Bremse AG. All rights reserved. Including industrial property rights applications. Knorr-Bremse AG retains any power of disposal, such as for copying and transferring.



Knorr-Bremse Group