



MSG-UPGRADE TRAIN CONTROL & MANAGEMENT SYSTEM

SYSTEM OVERVIEW

The next generation of our control system for rail vehicles makes it more robust and powerful for the application in our railway system equipment. The following features characterize the system:

- Two processor system for the separation of safety and security
- Support of cybersecure authentication using X.509 certificates
- Can be diagnosed via KSD (Kiepe System Diagnostics) and KFM (Kiepe Fleet Management)
- Higher processing power compared to the previous generation
- Ethernet interface for diagnostics and optionally for process data transmission
- The number of inputs and outputs can be flexible adapted to the desired application using different combinations of extension units
- Reduced wiring effort
- Increased adaptability to available installation spaces
- Design includes obsolescence management to ensure long availability

SYSTEM DESCRIPTION AND PROGRAMMING

The MSG upgrade consists of a CSM, which represents the central intelligence, and several CSE that can be connected to the CSM and which provide the inputs and outputs that are optimized for railway applications. The data exchange between the individual units is realized by a high-performance robust CAN bus. On the diagnostics side, Ethernet is used with cyber-secure authentication via X509 certificates.

The extension modules are connected to each other and to the central unit via an integrated cable so that the available installation space can be used in the best possible way.

The integrated cable contains the power supply for the extension modules and a CAN bus connection. The central unit controls and monitors the extension modules.

Both safety-relevant and non-safety-relevant application functions can be executed on the control unit via a function block-oriented programming interface.

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 **KNORR-BREMSE**

 **NEW YORK AIR BRAKE**

 **IFE**

 **MERAK**

 **MICROELETTRICA**

 **KIEPE ELECTRIC**

 **SELECTRON**

 **ZELISKO**

 **RAILSERVICES**

Type	Control system for Kiepe rail vehicles
Standards	50155, 50657 up to SIL2, 50121-3-2, 50129
Central unit types	
CSM1	<p>System-external communication</p> <ul style="list-style-type: none"> • Ethernet • CANopen wagon bus • uCAN2 bus <p>System-internal communication</p> <ul style="list-style-type: none"> • Intermodule bus
CSM2	<p>System-external communication</p> <ul style="list-style-type: none"> • Ethernet • CANopen wagon bus • Train bus • IBIS bus according to VDV300 <p>System-internal communication</p> <ul style="list-style-type: none"> • Intermodule bus <p>This variant is able to operate the internal clock without input supply voltage for a given time.</p>
Extension modules	
CSE100	<p>24 x Digital Input (Common GND) 4x Analog Input (0V-10V/0mA-20mA)</p>
CSE101	<p>24 x Digital Input (Common GND) 2 x Analog Input (0V-10V/0mA-20mA) 4 x Digital Output (4A)</p>
CSE102	<p>24 x Digital Input (Common GND) 6 x Digital Output (0.5A) 12 x Digital Input (Common GND)</p>
CSE103	<p>24 x Digital Input (Common GND) 1 x RSS Input + Supply 8 x Digital Input (Separated GND)</p>
CSE104	<p>24 x Digital Input (Common GND) 12 x Digital Output (0.5A)</p>
CSE200	<p>6 x Digital Output (0.5A) 12 x Digital Input (Common GND)</p>
CSE201	<p>6 x Digital Output (0.5A) 12 x Digital Input (Common GND) 3 x Digital Output (0,5A) 2 x NC/NO Relays Output 4 x Digital Output (4A)</p>
CSE202	<p>6 x Digital Output (0.5A) 12 x Digital Input (Common GND) 4 x Digital Output (4A) 12 x Digital Input (Common GND)</p>

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CSE203	6 x Digital Output (0.5A) 12 x Digital Input (Common GND) 1 x Angle Detector Input 2 x Analog Output (0V-10V/0mA-20mA)
CSE204	6 x Digital Output (0.5A) 12 x Digital Input (Common GND) 4 x NC/NO Relay Output 3 x Digital Output (0.5A) 2 x Digital Output (4A)
CSE205	6 x Digital Output (0.5A) 12 x Digital Input (Common GND) 6 x Digital Input (Common GND) 2 x NC/NO Relay Output 3 x NC/NO Relay Output 3 x NO Relay Output
CSE206	6 x Digital Output (0,5A) 12 x Digital Input (Common GND) 2 x Analog Input (0V-10V/0mA-20mA) 2 x Analog Output (0V-10V/0mA-20mA)
CSE207	6 x Digital Output (0,5A) 12 x Digital Input (Common GND) 2 x Analog Output (0V-10V/0mA-20mA) 6 x Digital Output (0.5A)
CSE300	12 x Digital Input (Common GND) 2 x RSS Input + Supply uCAN2 interface 3 x Digital Output (0,5A) 2 x NC/NO Relays Output
CSE301	12 x Digital Input (Common GND) 2 x RSS Input + Supply uCAN2 interface 12 x Digital Input (Common GND)

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