

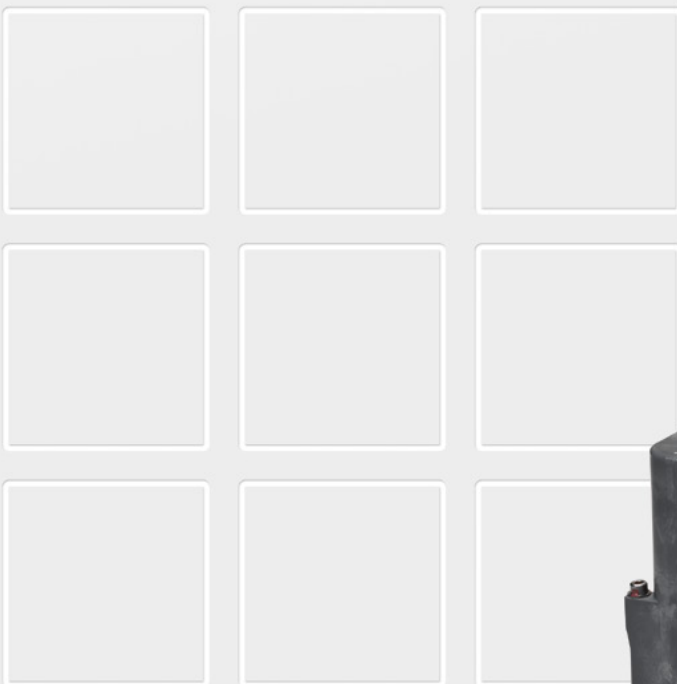
# 3

## Contactors

CA1315/04, CA1330/08

3 pole  
AC traction contactors  
for permanent magnet  
traction motors

Catalogue [C28.en](#)



Mehr Informationen hier:  
[schaltbau-gmbh.de](http://schaltbau-gmbh.de)

**CA1315/04, CA1330/08** 3 pole AC traction contactors for permanent magnet traction motors

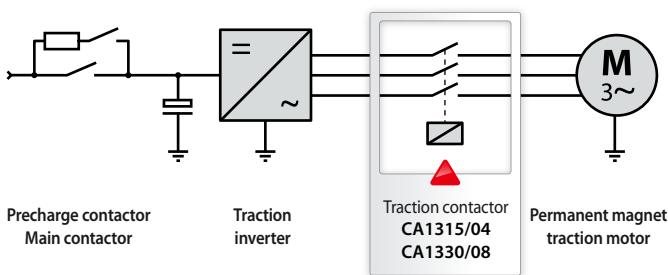
**CA Series – AC traction contactors for permanent magnet motors**

With the CA contactor series Schaltbau is introducing an innovative contactor concept to the market. It ensures the reliable disconnection of the motors from the traction inverter of electric multiple units. Disconnecting the motors becomes necessary in the event of a short-circuit in the output circuit of the inverter in order to prevent the drive from being blocked. The outstanding feature of this new contactor series is the controlling of modern traction motors with frequencies up to 400 Hz!

Due to its technical features, its compact design, its high switching functionality and reliability, the CA Series contactor offers flexibility and versatility found in no other contactor. The product family comprises a number of various design versions catering to a wide range of uses.

**Features**

- Innovative design: compact, rugged, reliable
- High short-circuit breaking capacity for frequencies up to 400 Hz
- Double-break contacts
- 3 pole version
- Easy maintenance:
  - Easy inspection and replacement of contacts
  - Easy replacement of arc chute
- Drive with coil tolerance according to railway standard
- Insulation coordination:
  - Functional insulation of main circuit
  - Basic insulation between main circuit and protective earth
  - Reinforced insulation between main circuit and control circuit /auxiliary circuit

**Applications**


CA Series contactors are designed for load-free switching of traction motors of electric multiple units. In the event of a system fault, e.g. a short-circuit in the traction inverter, the traction motors are instantly and reliably switched off, irrespective of the operating situation of the motor.

Do you need support for a special application?

Please, do not hesitate to contact us!

We would be glad to assist you in the selection of the contactor that suits your application best.

**Standards**

- **IEC 60077-1:** Railway applications – Electric equipment for rolling stock - Part 1: General service conditions and general rules
- **IEC 60077-2:** Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components – General rules
- **IEC 61373:** Railway applications – Rolling stock equipment – Shock and vibration tests

**Ordering code**

Series CA

 Example: **CA1315/04 110ET-09**
**Series**

CA13 3 pole NO contactor

**Nominal voltage**

 15  $U_n = 1,500 \text{ V} / 400 \text{ Hz}$   
 30  $U_n = 3,000 \text{ V} / 400 \text{ Hz}$ 
**Conv. thermal current**

 04  $I_{th} = 350 \text{ A}^{*1} / I_{th} = 540 \text{ A}^{*2}$   
 08  $I_{th} = 800 \text{ A}^{*2}$ 
**Coil voltage**

 24 / 36 / 48 / 72 / 110 V DC<sup>\*3</sup>
**Coil tolerance**

E -30 % ... +25 %

**Coil circuit**

 T Suppressor diode, standard  
 CM Integrated double coil controller (for automatic coil changeover)

**Auxiliary contacts**

 00 1x S870 <sup>\*4</sup> (a<sub>1</sub>)  
 1x S870 <sup>\*4</sup> (b<sub>0</sub>)  
 2x S826 <sup>\*5</sup>/<sub>\*6</sub>  
 02 4x S826 <sup>\*5</sup>/<sub>\*6</sub>  
 09 2x S970 <sup>\*4</sup> (a<sub>1</sub>)  
 2x S970 <sup>\*4</sup> (b<sub>0</sub>)  
 11 1x S970 <sup>\*4</sup> (a<sub>1</sub>)  
 1x S970 <sup>\*4</sup> (b<sub>0</sub>)

- <sup>\*1</sup> With suppressor diode «T», standard
- <sup>\*2</sup> With double coil controller «CM», increasing performance considerably
- <sup>\*3</sup> Others upon request
- <sup>\*4</sup> Aux. contact, refer to catalogue D70
- <sup>\*5</sup> Aux. contact, refer to catalogue D26
- <sup>\*6</sup> Aux. contact, version with magnetic blowout


**Note:**

Presented in this catalogue are only stock items which can be supplied in short delivery time. For some variants minimum quantities apply. Please do not hesitate to ask for the conditions.

**Special variant:**

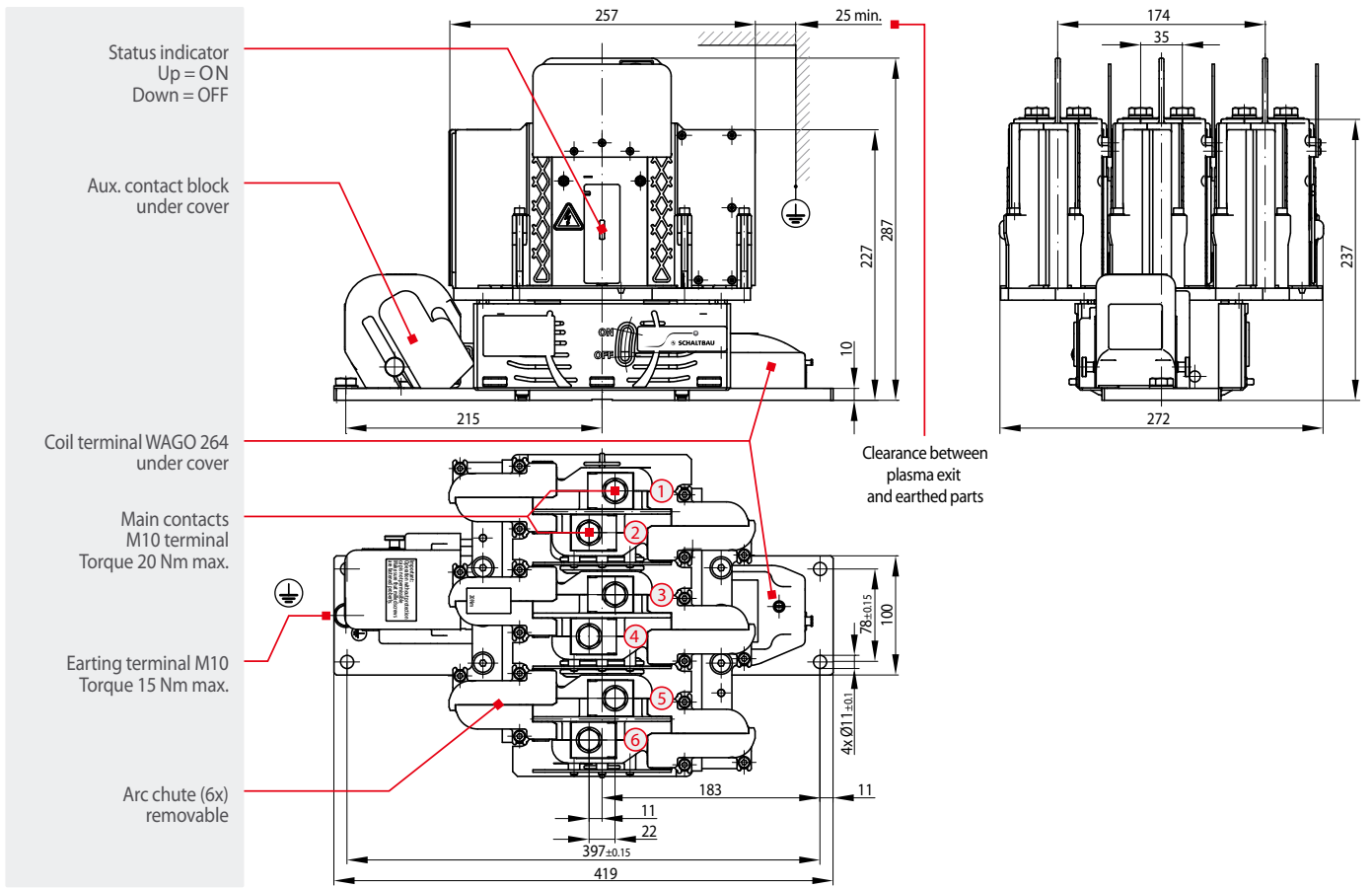
If you need a special variant of the contactor, please do not hesitate to contact us. Maybe the type of contactor you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minimum order quantities apply.

Series CA

- **EN 50124-1:** Railway applications – Insulation coordination Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
- **EN 50125-1:** Railway applications – Environmental conditions for equipment – Part 1: Equipment on board rolling stock

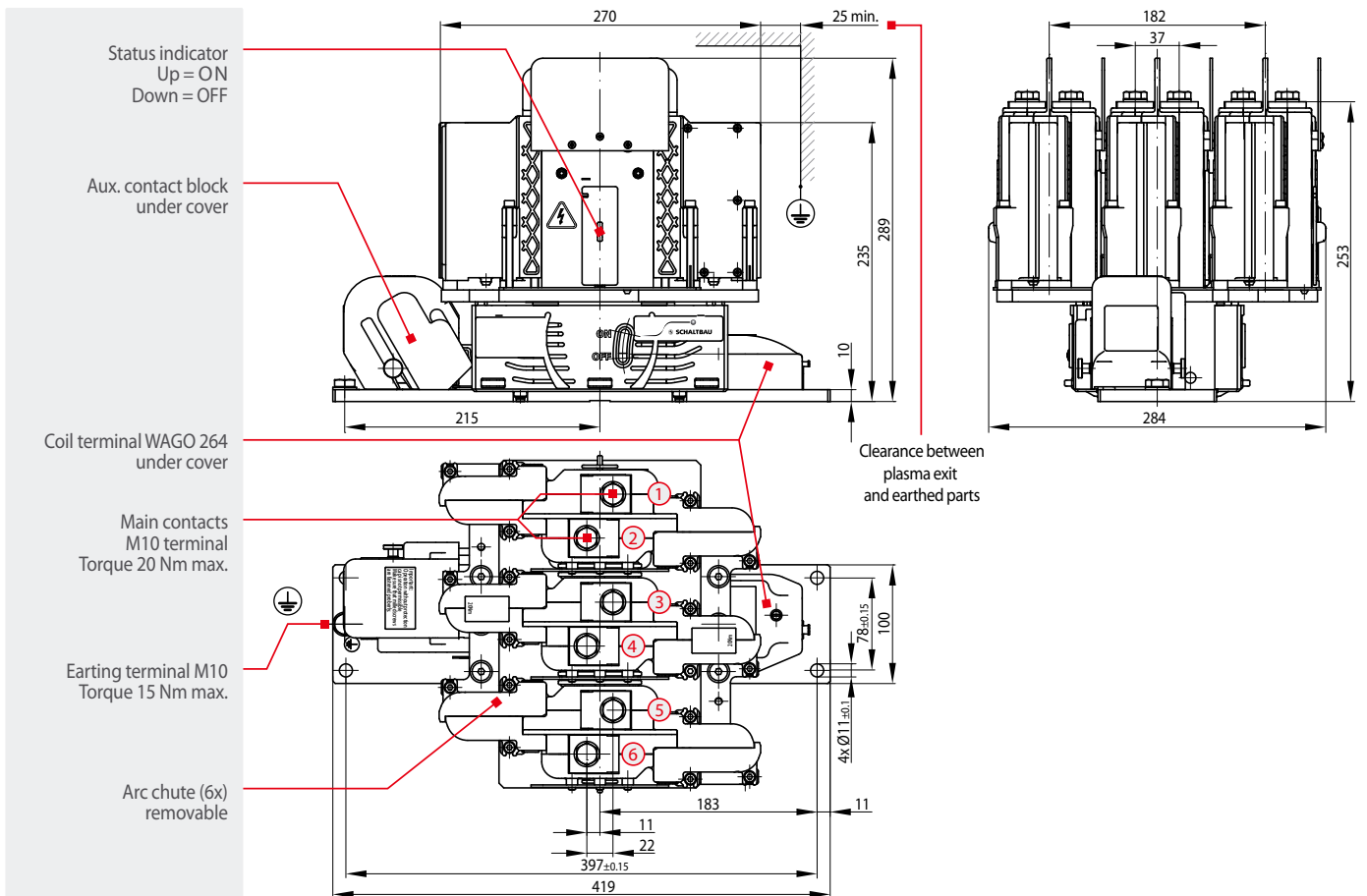
**CA1315/04** Dimension diagram 3 pole AC traction contactor for 1,500 V and 350 A / 540 A

Series CA



**CA1330/08** Dimension diagram 3 pole AC traction contactor for 3,000 V and 800 A

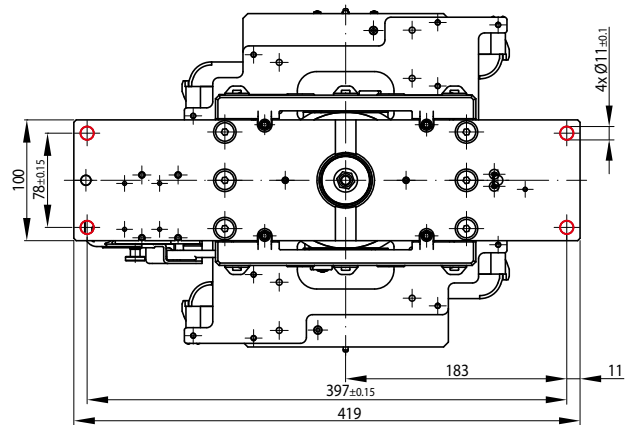
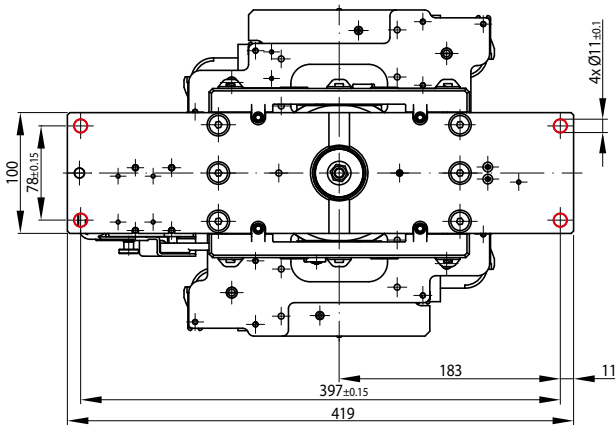
Series CA



## CA1315/04 Mounting holes

## CA1330/08 Mounting holes

Series CA



## Circuit diagram

Series CA

## Drive, terminal and coil circuit

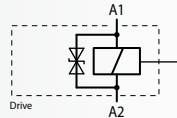
## Main contacts

## Aux. contacts, terminal

## Coil circuit:

«T» Suppressor diode, standard

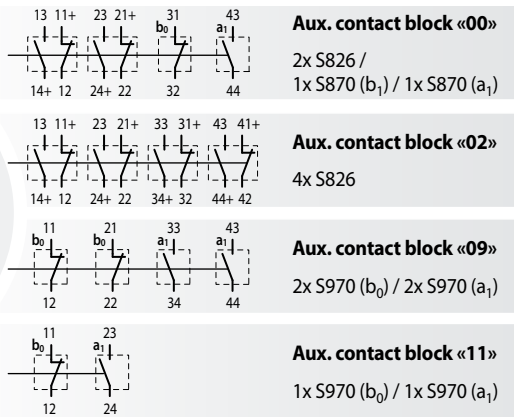
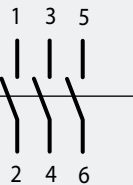
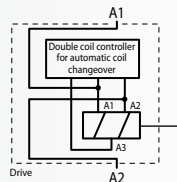
- CA1315/04  $I_{th} = 350$  A



## Coil circuit:

«CM» Integrated double coil controller

- CA1315/04  $I_{th} = 540$  A
- CA1330/08  $I_{th} = 800$  A



## Note:

Optionally, we offer separate plug connections for coil and auxiliary contacts. We also supply customized designs. In this case, however, minimum order quantities apply. So do not hesitate to contact us!

## Maintenance instructions

## Safety instructions

Series CA



For detailed maintenance, safety and mounting instructions please refer to our operating manual C28/04-M.en!

- CA1300 Series contactors are maintenance-free with normal use.
- Make regular inspections once or twice a year. So when installing the contactor, make sure that there is enough space to remove and replace the arc chute with ease and that the main contacts become accessible for inspection.
- Frequent switching or switching under high load may lead to increased wear of the main contacts. In this case replacement of the main contacts may become necessary. The design of the CA1300 contactor series allows for easy replacement of the main contacts. For detailed information please refer to our manual C28/04-M.en.

- The switching device meets the requirements of basic insulation. Make sure the plate onto which the drive of the contactor is mounted is earthed in a vibration resistant way.
- Do not use contactor without properly mounted arc chute.
- The contactor has unprotected live parts and carries a label that warns of the hazard. This caution must be observed and the label must not be removed in any way.
- The required clearance of live parts to ground and other parts of the contactor is to be observed as well as the safety regulations of the applicable standards.
- Switching at maximum breaking capacity might require larger clearance! Do not hesitate to ask our advice for dimensioning.
- Do not use contactor without protective covers (for coil terminals and auxiliary switches).
- Coil suppression for reducing surges when the coil is switched off is optimally attuned to the contactor's switching behaviour. The existing opening characteristic must not be negatively influenced by parallel connection with an external diode.
- Improper handling of the contactor, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.



Defective parts must be replaced immediately!

## Specifications

Series CA

Series	CA1315/04	CA1330/08
<b>Main contacts</b>		
Type of voltage	AC ( $f \leq 400$ Hz)	AC ( $f \leq 400$ Hz)
Configuration	3x SPST-NO	3x SPST-NO
Nominal voltage $U_n$	1,500 V	3,000 V
Rated operating voltage $U_e$	1,800 V	3,600 V
Rated insulation voltage $U_{Nm}$	2,000 V	4,800 V
Rated impulse withstand voltage $U_{Ni}$	15 kV	25 kV
Pollution degree / Overvoltage category	PD3 / OV3	PD2 / OV3
Conventional thermal current $I_{th}$	350 A *1 / 540 A *2	800 A
Component category (IEC 60077-2)		A2
Switching frequency class		C1
Short-circuit making capacity		Please contact us
Short-circuit breaking capacity		Please contact us
Rated short-time withstand current $I_{cw}$ ( $T < 100$ ms)		Please contact us
<b>Design</b>		
Contact material		AgSnO <sub>2</sub>
Terminals		M10
Torque		20 Nm max.
<b>Auxiliary contacts</b>		
Number and type	1x S970 (a <sub>1</sub> ), 1x S970 (b <sub>0</sub> ) or 2x S970 (a <sub>1</sub> ), 3x S970 (b <sub>0</sub> ) or 1x S870 (a <sub>1</sub> ), 1x S870 (b <sub>0</sub> ), 2x S826 or 4x S826 *3	
Contact material	Silver	
S826 switching capacity ( $T = 5$ ms)	16 A at 24 V DC; 13.5 A at 80 V DC; 7 A at 110 V DC	
Terminals	Plug connection / Screws M3 / Flat tabs 6.3 x 0.8 mm	
<b>Magnetic drive (coil suppression »T«, suppressor diode)</b>		
Pollution degree / Overvoltage category	PD3 / OV2	
Coil voltage $U_s$	24 / 36 / 48 / 72 / 110 V DC	
Coil tolerance	-30 % ... +25 % $U_s$	
Coil suppression	Suppressor diode *1 or Coil changeover *2	Coil changeover *2
Power dissipation at $U_s$ and $T_a = 20$ °C		---
Coil suppression: Suppressor diode	Cold coil: 100 W / warm coil: 75 W	
Coil suppression: Coil changeover	Cold coil: 280 W / warm coil: 27 W	Cold coil: 280 W / warm coil: 27 W
Pull-in voltage, typical at $T_a = 20$ °C	0.6 x $U_s$	
Pull-in time, typical at $T_a = 20$ °C	150 ms	
Drop-off voltage, typical at $T_a = 20$ °C	0.1 x $U_s$	
Drop-off time, typical at $T_a = 20$ °C	50 ms	
Coil terminal	WAGO 264: Cage clamp for solid and stranded copper conductors, AWG14 (2.5 mm <sup>2</sup> max.)	
Ingress protection rating	IP00	
Mechanical endurance	> 500,000 operating cycles	
Vibration / Shock (IEC 61373)	Category 1, class B	
Mounting position	Any	
<b>Ambient conditions</b>		
Operating / storage temperature	-40 °C ... +70 °C / -40 °C ... +85 °C	
Altitude	< 2,000 m above sea level	
Humidity (EN 50125-1)	< 75 % yearly average	
Weight	20 kg	25 kg

\*1  $I_{th} = 250$  A /  $I_{th} = 350$  A: Coil suppression »T« suppressor diode, standard\*2  $I_{th} = 540$  A: Economy circuit »CM« integrated double coil controller for automatic coil changeover

\*3 a1 and b0 according to IEC 60077

# Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

## Electrical Components and Systems for Railway Engineering and Industrial Applications

### Connectors

- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

### Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Enabling switches
- Special switches to suit customer requirements

### Contactors

- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

### Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

We reserve the right to make technical alterations without prior notice.

For updated product information visit [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com).  
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