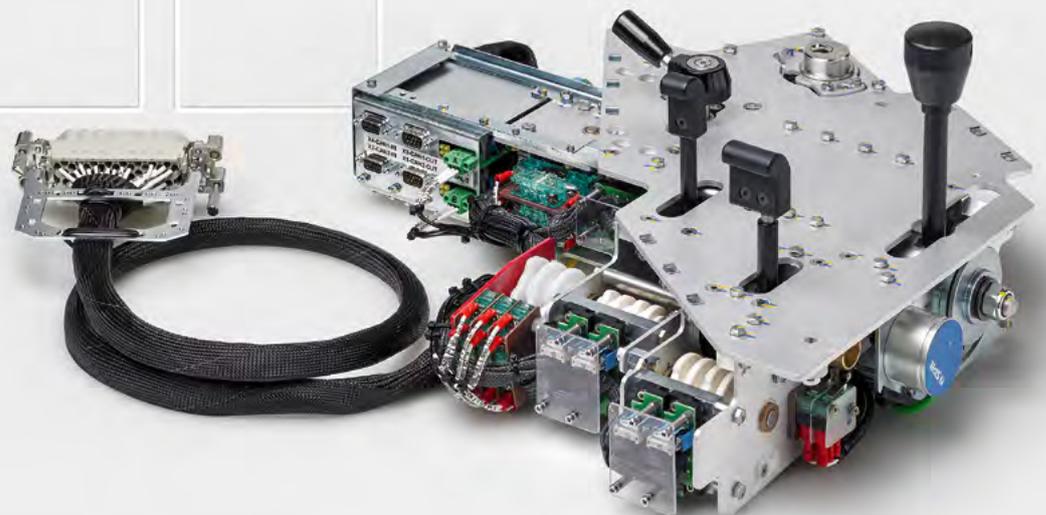
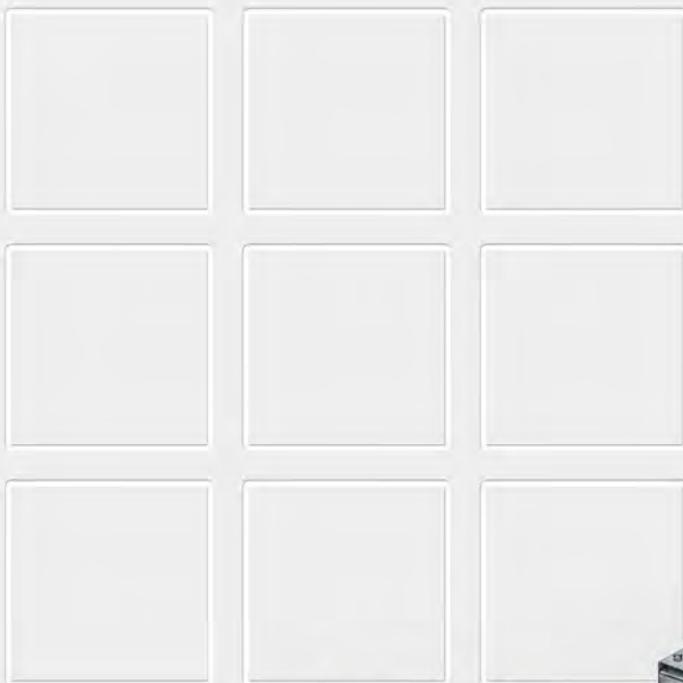


# 4

## Electrics for Rolling Stock

Master controller  
for rail vehicles

Catalogue F165.en



More information at:  
[schaltbau-gmbh.com](http://schaltbau-gmbh.com)

## Master controllers / brake controllers

### Rail vehicles in good hands – with Schaltbau master controllers and brake switches

Schaltbau master controller can be found in use in railway vehicles all around the world. Our master controllers allow the driver to control the vehicle safely and reliably from an ergonomic position.

The quality system for development, manufacturing and assembly in our factory is DIN EN ISO 9001 and IRIS (International Railway Industry Standard) compliant. Continuous testing ensures consistently improving quality. The long term pay-off is low follow-up costs for service and maintenance and, of course, a high degree of safety over the vehicle's

many years of operation. The modular construction of our robust, shockproof and vibration-proof master controllers enables a wide range of possible design variants and varying arrangements of the individual operating, locking and switching elements. The setpoint controllers can be designed with either digital or analogue output signals, or also equipped with modern bus systems to meet customer requirements. Further applications are crane construction and shipbuilding.

## Customized solutions

In cooperation with you, our experienced design engineers select appropriate solutions from the existing basic models and customize them to meet your needs.

Together, we find the optimum, state-of-the-art solution for every requirement. Our inhouse electronics development division enables us to respond quickly and flexibly to changing needs. Comprehensive type testing is performed in our laboratory according to customer specifications.

Generally, master controllers are customized product developments because of the need for adaptations.

Modern project management ensures adherence to the required deadlines and quality – even when requirements change.

Talk to us and set us a challenge.

## Globally leading

**BOMBARDIER**

**VOITH**

**vossloh**

HYUNDAI  
**Rotem**

**SIEMENS**

**HITACHI**

**EDi**  
RAIL

**NIGATA**

**ALSTOM**

**MotivePower**

**GE**  
Transportation

**pesa**

**STADLER**

**EIM**

**Unitedgroup**

**Kawasaki**

**MITSUBISHI**  
ELECTRIC

**CAF**

### Design to order

Based on many years' experience, we develop new master controllers in close cooperation with the customer dependent on requirements and exact specifications.

This new controller is then manufactured by Schaltbau in their own works. Schaltbau assists the customer with the specifications and supplies complete documentation.

### Our Portfolio

- Complete in-house customized design and manufacture
- Ethernet, Field bus Profinet, CAN, and others
- Sensitive touch functions, RFID card reader, automatic reset of the master controller etc.
- Mechanically interacting function modules
- Railway standard-compliant components (UIC 612 and others)

## Versions and features

We manufacture master controllers and brake controllers to your specifications:

### Human factor design

- Ergonomic lever or handle form, e.g. T-handle, ball, mushroom, joystick, etc.
- DSD function mechanical, electronic or contactless
- Lever forms in special designs (optimized for installation)
- Ergonomic positions of controls
- Illumination of inscriptions and position indicators

### Electric interface

- Switching arrangements, number and types of snap-action switches for various currents and voltages, e.g. S800, S826, S870

### Electronic interface

- Analogue encoders, e.g. current output
- Digital encoders, e.g. Gray code, PWM signal
- Bus protocol, e.g. CAN, Ethernet
- Supply voltages, e.g. 24 / 37.5 / 72 / 110 V DC

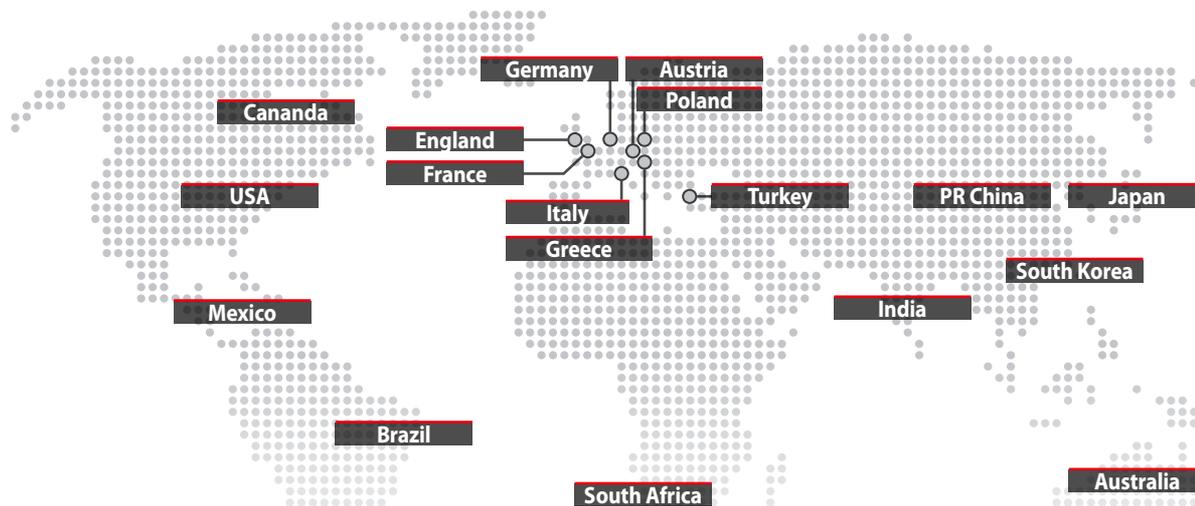
### Pneumatic interface

- Emergency brake valves
- Integration of brake system in the master controller

### Mechanical interface

- Levers and selectors
  - Traction/speed/brakes
  - Direction selector/reverser
  - Controls, e.g. key and toggle switches, push buttons
- Interlocking
  - Complete mechanical interlocking possible
- Drivers safety device (DSD) functions
  - Capacitive sensors
  - Actuation by rotation of the main lever
  - Actuation by pressing the main lever
- Various housing designs
  - Cover plates with a range of surfaces, films and inscriptions
  - Notched, button-push or continuous adjustment, variable switching angle
  - Main handle covers, e.g. brush, crank or hood
  - Built-into or installed below the driver's desk
- Dimensions
  - Horizontal designs: depth 70 mm min.
  - Vertical designs: depth, e.g. 500 mm
- IP rating
  - Protection against solid foreign objects
  - Protection against liquids

## Worldwide acceptance in urban transport and main line rail service (selection)



Country	Project	Customer	Country	Project	Customer
Australia	United Group	UGR	Italy	Rock-Caravaggio	Hitachi
	Queensland	EDI		ETR675 NTV	Alstom
	Railcorp	Knorr Bremse		E656, D145	Firema
Brazil	Metro Sao Paolo	Bombardier	Mexico	Mexico	Mitsubishi
PR China	Chongqing Monorail	Hitachi	Poland	Tram Poland	Pesa
Germany, Austria	ET422, ET423, ET424, ET425, ET430	Bombardier	South Africa	Prasa	Bombardier
United Kingdom	Tram Flexity 2	Bombardier	South Korea	Metro Seoul	Rotem
	Westcoast Mainline UK	Knorr Bremse	Spain	GTW Beh 2/6	Stadler
	Freightliner UK	General Electric		TAV S104 Lanzaderas	Alstom
France	Y9000	Socofer	Switzerland	Flirt, Dosto	Stadler
Greece	Metro Athens	Rotem	Turkey	DMU	Rotem
Holland	Civity	CAF	USA	Motive Power	Motive Power
India	Mumbai	Siemens		New York City	Knorr Bremse, WABCO
				Phoenix	Elin
				Seattle	Elin

## Master controllers / brake controllers



### Dosto – Double deck regional train platform, various countries/operators

Dosto (or Kiss) is a train platform developed and manufactured by Stadler in Switzerland. The double-decker regional trains are used in more than 10 different countries around the world, including Switzerland, the USA, Azerbaijan, Russia and Sweden.

The master controllers meet the different country-specific standards and can be universally integrated into driver's desks due to their low height and extensive variety of interfaces and functions.

#### General:

Low-shape Master Controller with Network Communication Interface (CAN, Ethernet)

#### Features:

- Traction/braking lever
- Optional DSD
- Incremental speed lever, mode switch, reverser lever, enabling key
- Canbus (CANOPEN) or Ethernet (CIP, TRDP protocol) output with dual integrated CPUs
- Complete mechanical interlocking



### S334 C51 – Tram Flexity 2 Blackpool, England

Flexity 2 is a low-floor tram that was custom built by Bombardier for Blackpool Transport.

The 5-part tram is designed as a bi-directional vehicle and has two driver's cabs without a conventional driver's desk.

To save space, the main control components are built into the armrests of the driver's seat. The master controller S334 C5 on the left side was specially developed by Schaltbau and fulfills the highest requirements in respect of safety, reliability and service life.

#### General:

Modular master controller, space-saving integration in the left armrest of the driver's seat

#### Features:

- Master controller
- Narrow and compact design
- Electronic encoder: Gray code
- DSD function with two switching elements
- Available with different rotary handle designs
- Top plate with inlay technology
- Plug & play: wired ready for connection



### EMU 250 – High Speed Train, Korea

Designed for high-speed trains and manufactured for Korea's next generation trains with multiple units by Hyundai – Rotem for Korail.

The EMU 250 is designed for high-speed trains with top speeds of up to 260 km/h and meets all the ergonomic and functional requirements of Korail for safe and comfortable driving. The device is mounted on the driver's desk and has a document storage area on top of it.

#### General:

Double traction master controller with capacitive touch sensors for DSD function

#### Features:

- Double traction-controller
- 2 capacitive touch sensors for DSD
- Mode selector (4 positions)
- Reverser (3 positions)
- Complete mechanical interlocking
- 2 solenoid interlocks
- 4 analog encoders with 4 ... 20 mA outputs



### R46 – Metro New York City Transport, USA

Master controller for refurbishment of R46 metro trains for New York City Transport (NYCT).

The R46 represents a state-of-the-art, intermountable master controller as a plug-and-play solution with an identical electrical interface.

The new master controller now have electronic load monitoring with feedback from all braking units of the trainset. In addition, the units are equipped with a pneumatic brake force control system.

#### General:

Master controller with rotary handle and inductive loads interface, for high current and L/R load driving

#### Features:

- Vertical traction/brake lever
- Pneumatic DSD
- Optional key switch
- Overtravel push button
- Complete interlocking
- Fully integrated pneumatic functions
- Relay output
- PCB for diagnostics and history tracking function

## Master controllers / brake controllers



### S335 D22 Railcorp, Australia

The master controller was designed for Railcorp for deployment in the Sydney area and based on a design required by Railcorp.

The combined unit with brake valves was designed in cooperation with the brake system supplier.

The S335 D22 is one of the largest and most complex master controller. The unit has a robust mechanical interlock system.

#### General:

Large and complex master controller with special features

#### Features:

- Traction/brake lever with integrated DSD function obtained by handle rotation
- Mode selector with rotating handle
- Key switch by customer request
- Complete mechanical interlock
- Electronic output with PWM
- 4 integrated special valves for braking
- Lighting system for the position on the traction/brake lever
- Plug & play: connection-ready



### S334 H34 – RandstadRail Noord, Netherlands

The master controller is a custom development based on requirements from Randstad Rail Noord.

Especially striking are the large lever and the arrangement of the various elements such as mode selector and key switch.

The device has a robust mechanical interlock system.

#### General:

Master controller with a large ergonomic traction/brake lever, design based on customers request

#### Features:

- Big ergonomic traction/brake lever
- Mode selector with special interlock
- Industry-standard key switch
- Complete mechanical interlocking
- Top plate engraved in two colors
- CAN bus interface
- Push button integrated in the mechanical interlock system
- Plug & play: connection-ready



### CTA7000 – Chicago Metro, USA

The master controller is a custom development for the new generation of metro cars of the Chicago Transit Authority (CTA). The cars were ordered from CRRC Sifang America and manufactured in Chicago.

The compact and robust units are designed as traction and brake switches. Communication is via a double Ethernet interface.

The state-of-the-art master controller meets CTA's modernization concept and replaces existing units.

#### General:

High-end and compact master controller with DSD functions in the handle and network communication interface

#### Features:

- Traction/brake lever with integrated DSD function through rotation of the handle in a clockwise or counterclockwise direction
- Off position release button
- Key switch for enabling and direction selection
- Complete mechanical interlocking
- Dual Ethernet output (TRDP protocol) with a single CPU
- Electronic acquisition of the switching status of all snap-action switches

## Standards

Compliance with the applicable standards (selection):

- DIN EN 45545 / 50155 / 50121 / 50124 / 50126 / 60068
- DIN EN 61000 / 61373 / 61508
- DIN 5510

## Specifications

- Ambient temperature range:  $-40^{\circ}$  ...  $+85^{\circ}$ C
- Mechanical endurance:  $> 1,000,000$  switching cycles
- RoHS compliant, non-halogen materials
- Long life and availability of spare parts

# Schaltbau GmbH

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

Schaltbau GmbH  
Hollerithstrasse 5  
81829 Munich  
Germany



Phone +49 89 9 30 05-0  
Fax +49 89 9 30 05-350  
Internet [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com)  
e-Mail [contact@schaltbau.de](mailto:contact@schaltbau.de)

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

Subject to change!

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