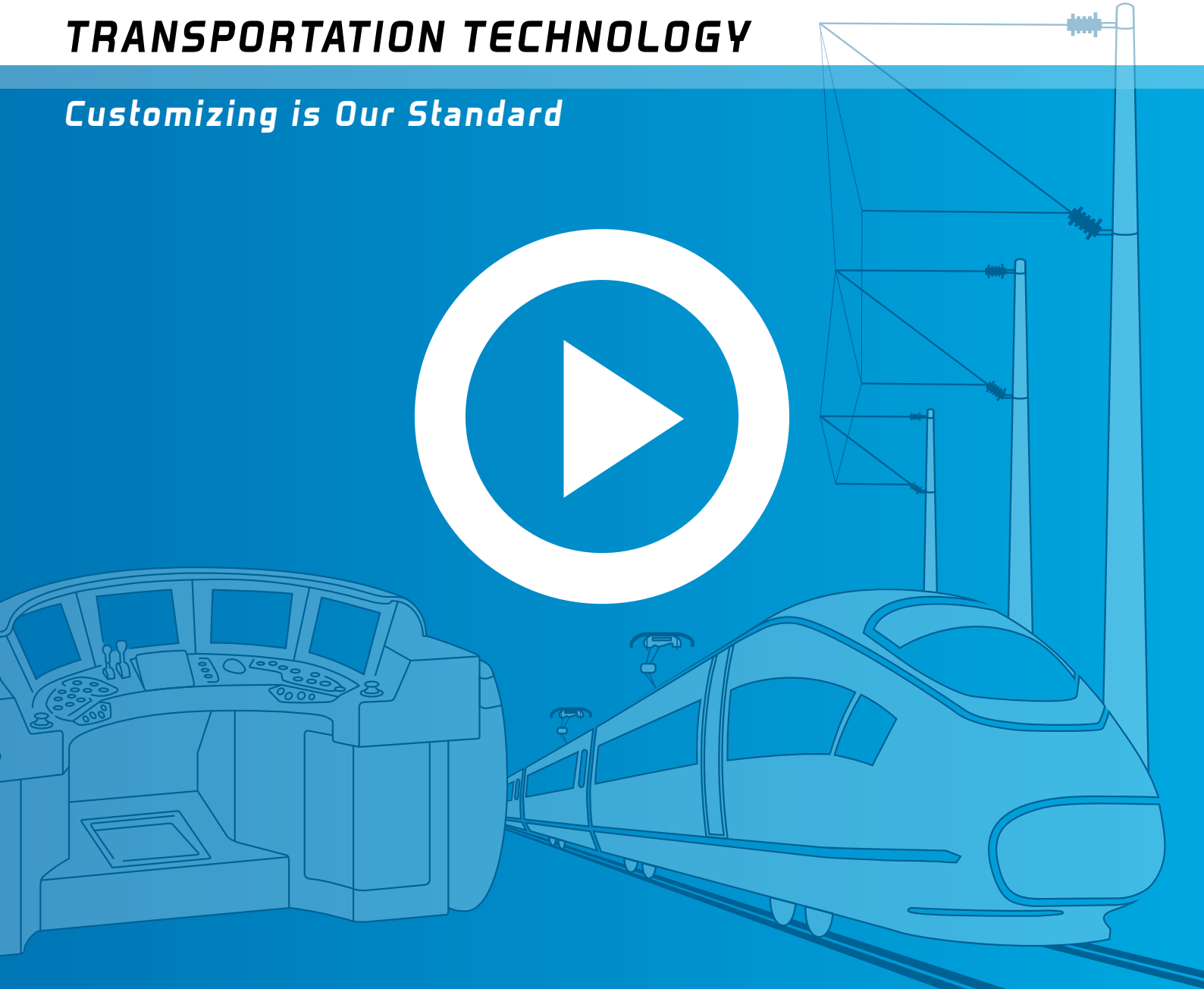
SCHALTBAU
Connect Contact Control

TRANSPORTATION TECHNOLOGY

Customizing is Our Standard



As DC technology expert Schaltbau GmbH has developed and manufactured electrics for rolling stock since 1929, which meet all requirements for quality, reliability and service life. This has made Schaltbau a major railway supplier.

SCHALTBAU ELECTRICS FOR ROLLING STOCK

Safe on Rail

Today more than ever, efficiency, operating reliability and flexibility are the key requirements of every component used in rail traffic. Schaltbau electrics for rolling stock fully meet these requirements of OEMs and railway operators. They are used in rail vehicles all over the world, where they ensure safe and smooth operation in the harsh railway environment.

What is required, however, is often not only a safe but also a customized solution which accounts for a special type of rail vehicle or a special environment where it is used. Here a look into our product line would be worthwhile. You can also learn a lot from our many realized applications for your particular situation. Or benefit from our consulting expertise in order to find out how to implement optimal safety with maximum cost-effectiveness.

Customising is Our standard

When developing and designing electric equipment for rolling stock - the rule is: The sooner you obtain our expertise, the more cost-effective will be the solution. Our know-how acquired over decades of developing and manufacturing electromechanical components makes us an expert in finding the right solution for our customer.

Our sales engineers are experienced professionals who closely cooperate with our R&D and design engineers and are perfectly acquainted with all relevant branches of industry. They are bridging the gap between what the customer wants and the engineer designs. Thus we provide our customers with competent expert advice and help them find the right solution to their particular application.

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RoHS 2011/65/EC

Schaltbau GmbH manufactures in compliance with RoHS.

IRIS Certification

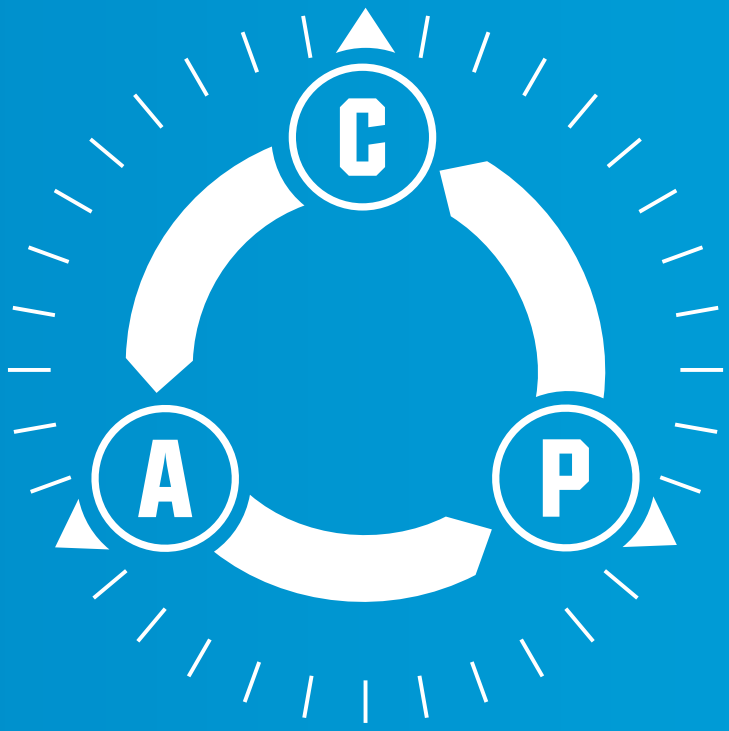
The production facilities of Schaltbau GmbH have been IRIS certified since 2008.

Schaltbau GmbH ISO 14001 certified since 2002

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

Schaltbau GmbH ISO 9001 certified since 1994

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



C Consulting

Experts are the best consultants.
Schaltbau is a specialist in electromechanical components and customer specific solutions with decades of experience in development and manufacture.

A Application

No need to reinvent the wheel.
Schaltbau sales engineers have access to a treasure trove of knowledge and experience including a host of realized applications. Thus you will benefit from analogies and empirical data that may be of some value for your application.

P Product

The right solution may eventually be an item from our product line, a special variant with little need for adaptation, or a completely new design – because customizing is standard with us!

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ELECTRICS FOR ROLLING STOCK

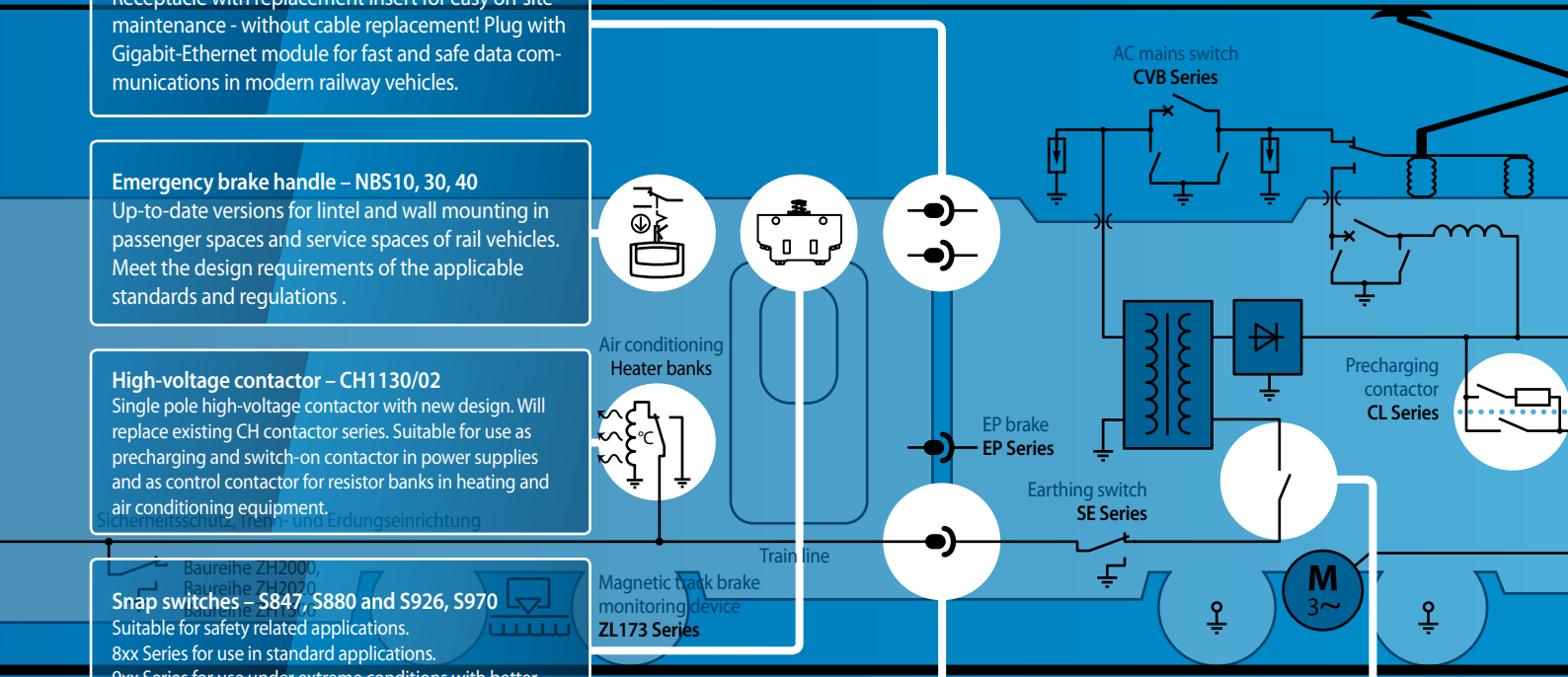
Connectors – UIC 558 and UIC-IT
Receptacle with replacement insert for easy on-site maintenance - without cable replacement! Plug with Gigabit-Ethernet module for fast and safe data communications in modern railway vehicles.

Emergency brake handle – NBS10, 30, 40
Up-to-date versions for lintel and wall mounting in passenger spaces and service spaces of rail vehicles. Meet the design requirements of the applicable standards and regulations .

High-voltage contactor – CH1130/02
Single pole high-voltage contactor with new design. Will replace existing CH contactor series. Suitable for use as precharging and switch-on contactor in power supplies and as control contactor for resistor banks in heating and air conditioning equipment.

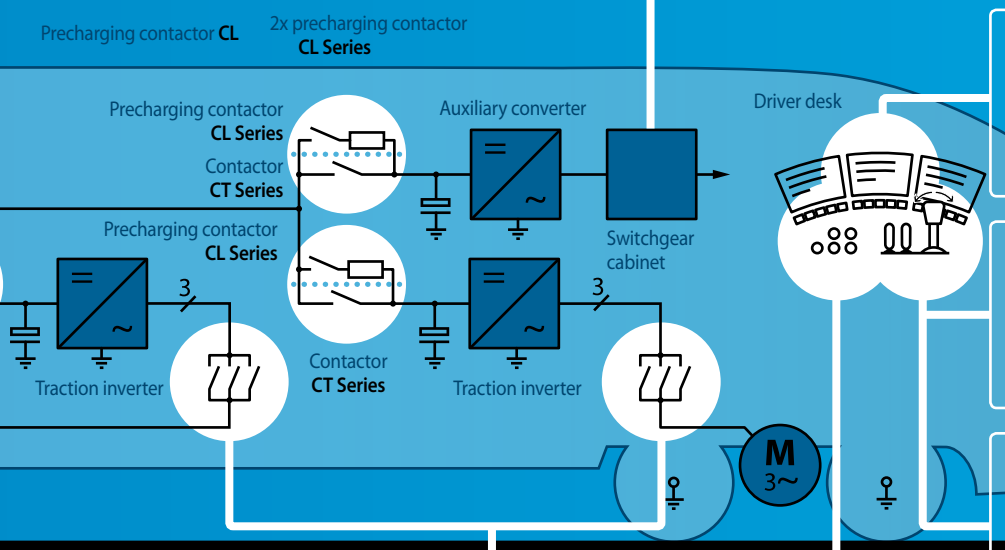
Snap switches – S847, S880 and S926, S970
Suitable for safety related applications.
8xx Series for use in standard applications.
9xx Series for use under extreme conditions with better resistance to temperature and chemicals.

Connectors to UIC 552 – Receptacle ZS552
The new receptacle has a symmetrical design, a common terminal for connecting a cable entering from left, right or the rear. We now offer the plug pre-assembled with cables of your choice in different lengths and sizes as set.



Power contactors for 3 kV and 1,100 A – CT1230/11
Upgraded to 1,100 A the contactor comes with heat sinks mounted to its main terminals and a double winding coil with electronic coil controller. The contactor is capable of generating less heat and carrying the 1,100 A continuously.

Battery contactor – CS115/10
The 4 pole 10 A control contactor for battery voltages up to 110 V is available with the following contact arrangements: 4 NO, 3 NO/1 NC or 2 NO/2 NC. It is especially designed for controlling low and medium loads in battery networks.



Universal contactor – C195 X/
Version X is the bidirectional complement of the proven compact universal contactors of the C195 series for voltages of 1,500 V! It even comes with a higher amperage of 320 A, but generally shares the same compact, rugged design.

ATX-SPII HMI Display –
Interactive Touchscreen-PC being the central HMI for display and diagnosis of operating and vehicle status, control commands, train radio, electronic timetable and video surveillance.

Master controller – Modular design and standardized components, expandable configurable functions, or 100% customized. Design and manufacture strictly to the customer's requirements.

Toggle switches – for driver desks to UIC 612
With a host of options to cover all applications as mentioned in the UIC 612 railway standard. Another option is an illuminated ring in 5 LED colours for use as function indicator or for night design.

Traction contactor – CA1330/08
3 pole AC contactor for the disconnection of traction motors of electric multiple units, e.g. in the event of a short-circuit in the output circuit of the traction inverter.

Other operating elements –
Push buttons, keylock and starter switches, deadman handles and foot switches, electronic and multi-tone buzzers as well as height-adjustable foot rests, to name but a few.

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DRIVER DESKS FOR RAIL VEHICLES

IntelliDesk – The smart driver desk concept

IntelliDesk is an innovative communications and wiring concept for system integration inside a driver desk. Here, every subsystem can be simply connected to a field bus box and at once begin communication via a central master interface with the on-board train control and monitoring system (TCMS). A feature that is unique to this desk is the display of condition based maintenance. IntelliDesk has thus turned out to be a landmark on the way towards standardization and modularization as intended by UIC 612 and, at the same time, it offers a maximum of flexibility and adaptability to a wide variety of rail vehicles.

- Fast and easy to project and realize
- Scalable configuration of driver desks
- Data communications via a central master interface
- Easy configuration of driver desks, also complete and finished, including fully integrated electromechanical operating elements as well as all electronic sub-systems necessary
- Subsystems with integrated field bus and/or gateway for communication with the TCMS
- Display of condition based maintenance (unique)

MASTER CONTROLLERS

Modular concept and standard components

The modular concept allows to design master controllers from standardized modules for almost every desired function. Using standardized components makes also possible low unit production and a system design that can easily be adapted to address specific customer requirements in different countries.

- Time and costs savings due to reduced engineering design time
- Compact, rugged, durable
- Highly flexible, allowing last minute changes
- Setpoint device, wear and maintenance-free
- Components in compliance with UIC 612
- Cost-effective due to use of standardized components

Configurable and expandable functions

With a stock master controller as the basis it is possible to expand its functions by adding other existing standardized modules to it, such as direction control, keylock and pushbutton switches and lots more. Thus the customer is free to configure his own individual master controller that fits the purpose.

- Standard master controller complemented by additional existing standard modules
- Compact, rugged, durable
- Can be configured individually, allowing last minute changes
- Mechanically interacting function modules
- Components in compliance with railway standards (UIC 612 and others)

Customized Design to order

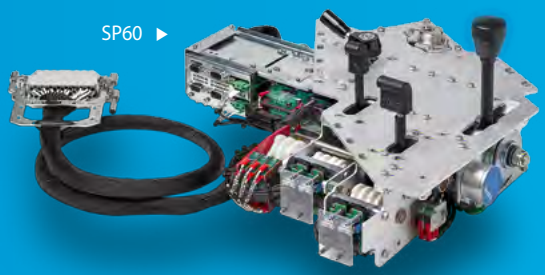
Here, a master controller is newly designed in close cooperation with the customer according to his requirements and exact specifications. It is then manufactured by Schaltbau at their own works. Schaltbau assists the customer with the specifications and supplies adequate documentation.

- In-house design and manufacture
- Field bus: Profinet, CAN, and others
- Sensitive touch functions, RFID card reader, automatic reset of the handle, and others
- Mechanically interacting function modules
- Components in compliance with railway standards (UIC 612 and others)

S337 ▶

S334 ▶

SP60 ▶



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TOGGLE SWITCHES, INTERACTIVE DISPLAYS

K Series toggle switches for driver desks according to UIC 612

Our award winning K Series toggle switches now have four new options. With them our K Series toggle switch assemblies meet all requirements of the UIC 612-0 railway standard as well as the EUDDplus project which aims at an optimum ergonomic configuration of the desk elements by standardizing and harmonizing their design. So a driver's desk presenting itself in modern design will be no problem. The dimmable and consistent illumination of the toggle switches makes separate indicator lights superfluous.

- Bushing mount
- Indicator light function: illuminated ring in 5 LED colours, optional
- Can be lead sealed with lead seal holder
- Yellow ball for ETCS acknowledgement
- Cylinder handle for external warning horn of locomotives
- 8 switching elements max. (S880 Series snap-action switches)

Console with 4x K

product design award 2012

ATX-SPII Display Much more than a simple MMI

The MMI that looks like an ordinary display, is, on second look, a veritable touch screen PC, a real all-rounder: reporting and displaying during operations: operating and train status, control commands, train radio, electronic timetable and video surveillance. With it, all that can be easily monitored and interactively controlled by the engine driver. The HMI meets the requirements of EN 50155 and, due to its rugged design, is suitable for use in the harsh railway environment, and with up to -50 °C it is also resistant to the extremes of temperature.

- LCD size: 10,4", touch screen
- Processor: Freescale™ i.MX6 – Quad ARM Cortex-A9 up to 1.2 GHz with TrustZone
- 2x Ethernet, 2x MVB, 2x CAN, 2x 485
- Suitable for use with: railway signalling (ERTMS/SCMT), technical and diagnostic display, functional safety (in the industrial environment also), video surveillance

ATX-SPII Display ▶

PORTABLE CONSOLES, EMERGENCY BRAKE HANDLES

Portable driver console PDD-100 for driverless metro trains

Today's metros the world over are operated more and more driverless. That is to say, they need no driver desk any longer. But in case of a train dead on the tracks that defies remote control as well as in case of maintenance work a real driver desk would come in handy. And that is what SPII offers you. The portable driver console PDD-100 can be connected via plug and play and is immediately ready for use. Like IntelliDesk, the console is modular and scalable and comes with all operating elements and subsystems fully integrated, so there is no need of wiring.

- Removable and portable, all subsystems already integrated
- Interactive touch screen HMI for data communication with the TCMS
- Separate console fitted with operating elements, display panels and audible feedback
- Master controller/Brake controller with integrated dead-man function
- Train radio display
- Emergency stop switch (mushroom)

Emergency brake handles NBS10, NBS30, NBS40 for lintel and wall mounting

Schaltbau has developed two types of emergency brake handles for use in passenger spaces and service spaces of trains: NBS10 for lintel mounting, as for instance under the lintel of a carriage door, and NBS30 and NBS40 for wall mounting, for example in vestibules, passenger spaces or the train manger's compartment. The emergency brake handles meet the design requirements of DIN EN 15327-1 and comply with the provisions for installation of braking equipment and emergency brake operations in vehicles used for the carriage of persons.

- Elegant design
- Aluminium die-cast housing, rugged, long-lasting
- Finish: semi-gloss varnish, resistant to acids and chemicals
- Handle can be lead sealed
- Optional automatic reset (spring return)
- 2 switching elements max. with gold or silver contacts

PDD160 ▶

NBS40 ▶

◀ NBS30

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CONNECTORS TO UIC

UIC 558 VE Series
Updated connector for remote control or doors and lights or for public address systems in passenger coaches and multiple unit trains.

UIC-IT Series
Robust and state-of-the-art Ethernet solution for data communications in modern railway vehicles.

UIC558

UIC-IT

EP Series
Connector for electro-pneumatic brakes (EP brakes) as well as for emergency brake override control.

ZS552, ZH551 Series
UIC 552 compliant rugged jumpers providing electrical connections between rail vehicles as well as carriages.

EP

ZS552

Jumpers to UIC 552
Now with pre-assembled plug

The ZS552 jumper receptacle for train lines has a new symmetrical design and a common terminal for connecting cables entering from the left, right or the rear. The seal and drainage in the lid have been improved. The insert can now be replaced from the front and for maintenance there is the option of lock and key in the lid.

The plug ZH551 comes with a pre-assembled single or double ended connector cable being a non-halogen sheathed power supply line with improved flammability rating and heat resistance.

- Non-halogen sheathed power supply line for rail vehicles
  - With improved flammability rating and heat resistance following DIN VDE 0250-606 and DIN EN 50624
  - Type designation: NSHXAFCMOE 3,6/6kV
  - Cables of different designs, lengths and sizes
  - Wire gauge: 185 mm²
- High voltage test up to 13 kV inclusive

Plug with Gigabit Ethernet module
UIC-IT Series

Rugged and state-of-the-art Ethernet solutions for data communications is what is required by today's rail vehicles. The new UIC-IT Series from Schaltbau meets those requirements providing a highly flexible, universal and reliable Ethernet connection option for the harsh railway environment with a design life that will last for decades.
The UIC-IT Series connector is fitted with an 8 pole Gigabit Ethernet (GbE) module and 16 optional signal contacts that allows for universal and compatible connections.

- Break-away connector
- Ingress protection rating IP69K: Receptacle with lid closed and connector when mated
- Gigabit Ethernet module for 4 data pairs
- 16 optional signal contacts
- 10,000 mating cycles

Receptacle with new replacement insert
UIC558 Series

Schaltbau has added a new type of receptacle to its UIC558 connector series which is likely to reduce maintenance and downtime considerably. For when doing maintenance work there is no need of rewiring any longer.

All you need do is exchange the replacement insert of the receptacle. You can do that outside the engine shed, and also the electrical testing of the connector's contacts and wires is no longer necessary.

- Break-away connector
- Replacement insert with socket contacts implemented on both sides
- Crimp adapter with pre-assembled cable for on-site replacement
- No need of rewiring the rail vehicle
- No need of testing the connector's contacts and wires

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SNAP-ACTION SWITCHES

Snap-action switches for extreme conditions S926 and S970 Series

Thanks to the high-performance thermoplastic used as housing material, S926 and S970 Series snap-action switches feature both a better resistance to temperature and chemicals as well as a 50% higher impact resistance compared to polycarbonate (PC).
Thus they are ideally suited for applications characterized by harsh environmental conditions. Sharing the same design, dimensional and electrical characteristics as the S826 and S870 Series switches, they can easily replace a standard switch without great effort.

Features of S926 and S970 Series switches:

- Better resistance to temperature and chemicals
- Form Z SPDT-DB, galvanically isolated (S926)
- Double-break contacts (S926)
- IP rating IP40, IEC 60529 (S926)
- IP rating IP40, IP60, IP67 IEC 60529 (S970)
- Terminal styles: e.g. leads, cable (S970)

◄ S926

◄ S970

Snap-action switches for standard applications S847 and S880 Series

S847 Series snap-action switches are available with three different IP ratings: protected against solid particles (IP40), dustproof (IP60), and waterproof (IP67). Due to their wiping double-break contacts S847 series switches are highly reliable even at low contact ratings.
Schaltbau's S880 is the smallest snap-action switch with wiping contacts and positive opening operation in the world. Minimum size in combination with maximum reliability make the V4 package snap-action switch ideally suited for a host of applications .

Common features of Schaltbau snap-action switches:

- Positive opening operation according to IEC 60947-5-1 Annex K
- Contact material: hard silver or gold alloy
- Transparent housing for visual inspection of state of contacts
- Wiping contacts
- High resistance to shock and vibration
- Magnetic blowout, optional

◄ S847

S880 ►

BATTERY AND UNIVERSAL CONTACTORS

4 pole universal contactor CS115/10 for battery voltages up to 110 V

The CS115/10 extends the product range with a series of universal contactors for battery voltages up to 110 V.
The 4 pole 10 A control contactor is available with 4 NO, 3 NO/1 NC, or 2 NO/2 NC contacts. Optionally up to 4 snap-on auxiliary switches can be mounted on it. The contactor is especially designed for controlling low and medium loads in battery networks, such as switching on and off, locking, signalling and controlling power contactors

- Compact, rugged design, DIN rail mounting
- Magnetic blowout
- Contact arrangements: 4 NO, 3 NO/1 NC, or 2 NO/2 NC
- NC or NO auxiliary switches available
- Conventional thermal current 10 A
- Various coil voltages
- Tested to railway standard IEC 60077

CS115/10 ▶

◀ CS115/10

Bidirectional version of C195 Series DC NO contactor

The new C195 X/ is the bidirectional complement of the proven compact C195 series DC NO contactors for voltages up to 1,500 V. And with 320 A, the new bidirectional version features a higher current-carrying capacity, but generally shares the same compact, rugged design, double-break contacts that are enclosed for the most part, and also the same high breaking capacity. This makes the bidirectional variant especially suited for use as line contactor in mainline AC and DC rail networks or, in combination with a precharging contactor, for use with various auxiliaries.

- Bidirectional version for DC applications
- Compact, rugged design
- Conventional thermal current 320 A
- Double-break contacts
- High breaking capacity
- Tested to railway standard IEC 60077

C195 X/ ▶

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HV DISCONNECTORS AND CONTACTORS

SCO2, SCO3 and SCO4 Series Multipole rotating scissor switches

The HV changeover units come in series of 2, 3, and 4 position devices. They are manually operated or driven by a linear or geared motor. Multi-pole and of modular design, they sport up to 10 rotating switching chambers fitted with 8 contacts and one or two knives each. The rotating scissor switches are designed for off-load adjustment of electrical configurations, especially of multi-system locomotives, but also as reliable HV disconnectors for the power converters and traction motors of electric railway vehicles.

- Off-load adjustment of electrical configurations to different networks, e.g. various train line voltages in accordance with UIC 550
- Suitable for all UIC voltages up to 5 kV DC max.
- Inexpensive high-voltage switch for applications requiring high conventional thermal currents
- Various control programmes available in accordance with the requirements of the European railway companies
- Simple adaptation of control programme to new requirements

SCO2 ▶

Single pole CH high-voltage contactor with complete new design

With the new CH1130/02 Schaltbau has updated its line of proven high-voltage railway contactors. The design has been completely modernized, slimmed and likened to the ones of the CT contactor series. It is suitable for use as precharging and switch-on contactor in power supplies and as control contactor for resistor banks in heating and air conditioning equipment.

- Power range: up to 3,000 V / 250 A
- Compact, rugged design
- Double-break contacts
- Magnetic blowout and ceramic materials for cooling the arc
- CH1130/02 will replace existing CH series
- Tested to railway standard IEC 60077

CH1130/02 ▶

TRACTION CONTACTORS

Double pole CT traction contactor for 1,100 A AC and DC

The new CT1230/11 is an upgrade of the CT series with a power rating of 1,100 A! Featuring heat sinks, double winding coil, electronic coil controller, and a stronger spring for higher contact forces the contactor is capable of generating less heat and carrying 1,100 A continuously. Thus a CT1230/11 allows for both vertical and horizontal mounting.

- Power range: up to 3,000 V / 1,100 A
- Heat sinks mounted to main terminals
- Double winding coil and electronic coil controller
- Visual inspection and easy replacement of contact pieces and arc chute
- Tested to railway standard IEC 60077

CT1230/11 ▶

Triple pole CA traction contactor for electric multiple units

The CA1330/08 is a 3 pole AC contactor. It is typically used for switching off permanent magnet traction motors (PMSM) of EMUs in the event of a short-circuit in the output circuit of the traction inverter in order to prevent the drive from being blocked. The CA contactor series is especially designed for use with traction motors with supply voltage frequencies up to 400 Hz!

- Power range: 3,000 V AC / 800 A
- High short-circuit breaking capacity for frequencies up to 400 Hz
- Reinforced insulation between main circuit and control / auxiliary circuit
- Functional insulation for main circuit
- Tested to railway standard IEC 60077

CA1330/08 ▶

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SCHALTBAU – THE SMART AND CREATIVE RAILWAY SPECIALIST

For detailed information on our products and services visit **www.schaltbau-gmbh.com** – or give us a call!

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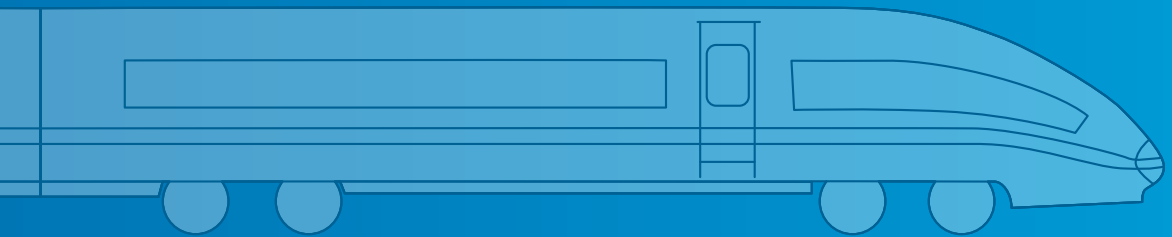

Issued 09-2016
S1985/1609/1.0 Printed in Germany