

You bring performance to the railways
We bring more power to your train
Let's connect.



Weidmüller 



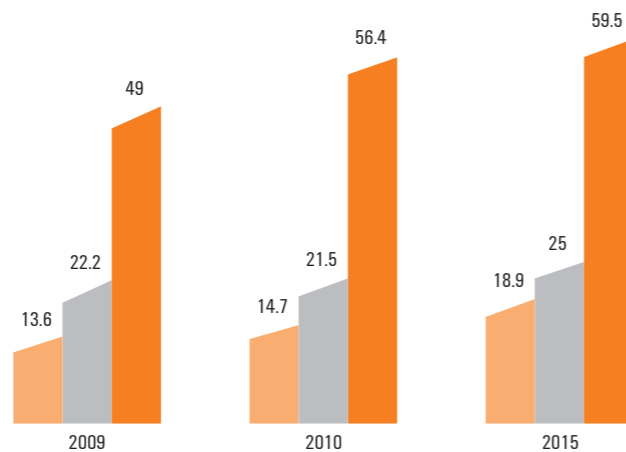
You build the railway vehicles of the future We ensure that they run on time

With urban areas becoming more densely populated, traffic conditions becoming more complex, and the requirement for increased use of sustainable resources – modern mobility concepts are demanding. Indeed, as transportation continues to develop in all regions of the world, so too does the responsibility grow to use modern technology intelligently. Solutions are required that are both smart and safe. Not least because of the many people who use transport systems in densely populated areas.

Worldwide market volumes for railway technology by region
2009–2015 (in billions of euros)

■ Europe/Middle East/Africa
■ Asia/Australia
■ North/South America

Source: statista.com; Siemens; UNIFE



Whether it's locomotives, high-speed trains or metros – a sustainable concept designed to meet all of the current design challenges must also guarantee a consistent power supply and distribution system. From the pantograph to the LED indicator – planning relies on a clean and uninterrupted flow of electricity.

Our flexible solutions for power distribution in rail vehicles

As a manufacturer of rail vehicles, inverters and motors, it is important for you to be able to implement a broad range of applications. We offer two fundamentally different interface concepts for power distribution to cover each of your specific needs. Either utilise quickly detachable plug-in connections from our HDC product group or create permanent connections with traditional stud terminals from our ST 4000 series.

Advantages of our power distribution concept

- The choice is yours: instantly pluggable HDC connections or robust, tried and tested stud terminal connection technology
- Wide range of applications and certified safety
- Decades of expertise and constant development

You want to supply and distribute expediently

We know what to do with your power

The efficient and reliable distribution of electrical power in a challenging environment requires interface solutions that are optimally designed for the special characteristics of a particular application. This includes, in particular, safe operation at high speeds. Our solutions are designed to ensure low losses and to avoid overheating, even under maximum loads.

C Converter **Distribution with a modular structure**

The supplied voltage is converted for the various AC and DC voltage levels and the efficient distribution of electrical power within the locomotive. Our connection technology has a modular structure and is designed for cables with cross-sections up to 240 mm². This allows individualised configurations with a high level of performance.

M Motor connection **Transmit high currents safely**

The motor connection involves high levels of operating power (i.e. up to 550 A) being supplied in a confined space, in order to achieve rapid acceleration to top speeds of up to 300 km/h. Our connection technology is designed for such extreme loads.

W Wagon-to-wagon coupling **Connect quickly and safely**

Our connection technology is robust and designed for use in harsh environments such as wagon-to-wagon couplings. Whether bolt-type screw terminals are used for permanent wagon-to-wagon couplings or plug-in connectors are preferred for faster connections, we always provide a cost-effective solution.

Corrosion protection for converters – our unique solution

The cable entries leading into the converter containers are exposed to extreme mechanical forces. Vibrations and oscillations are transferred via the connector housing to the container walls, which are only 2–3 mm thick. This can eventually cause leakages, allowing humidity and pollution to enter the interior of the container and so damage the equipment.

To solve this problem a bulkhead housing was specially designed for our HDC HP 550 and 250 plug-in connectors. Its layered construction, combined with an aluminium frame, helps to stabilise the container wall, protects the sensitive technology within the converter and ensures a high IP rating. In addition, the thread-free outer structure facilitates rapid maintenance and easy replacement.

Secure power distribution for wagon-to-wagon couplings

Trains coupled with fast, pluggable connectors or permanent cables

For your power distribution at the wagon couplings, you are looking for a solution that allows trains to be connected quickly, for greater flexibility. On the other hand, if cables only need to be replaced for maintenance purposes, it will be more important to you that the installation work can be carried out anywhere in the world by local fitters. In this case, the system needs to be fault-tolerant, robust, durable and reliable.

We provide appropriate solutions for both cases: flexible plug-in connectors for rapid coupling or the tried and tested, world-renowned stud terminals for permanent connections. Irrespective of the technical concept that you choose, our products are well prepared for the extreme climatic conditions, shocks, vibrations and restricted space associated with wagon-to-wagon couplings. They are also approved in accordance with international standards and designed to achieve the necessary flammability ratings.

If you require advice on how to use our system, or would like further details on our solutions, please contact us.



The solution variants



Bulkhead connector with HDC HP 550

The rapid disposition of individual wagons, especially for maintenance tasks, has the highest priority in your concept. You want to recouple your trains in a short space of time and in various configurations within a single shift. In this case, it is important for you to have power lines that can be coupled quickly without having to separate permanently connected cables.

With our HDC HP 550 bulkhead connector, we have developed a plug for the rapid coupling of train busbars and onboard mains cables of up to 240 mm². The high protection class IP68 / 69k of the RockStar aluminium housing also makes the system ideally suited for the outdoor environment in which trains operate. Dust and water splashes will have no impact on the connection.



Bulkhead connector with ST 4000 stud terminals

The train connection is intended to be permanent and your concept requires a simple installation that is both robust and reliable over its working life.

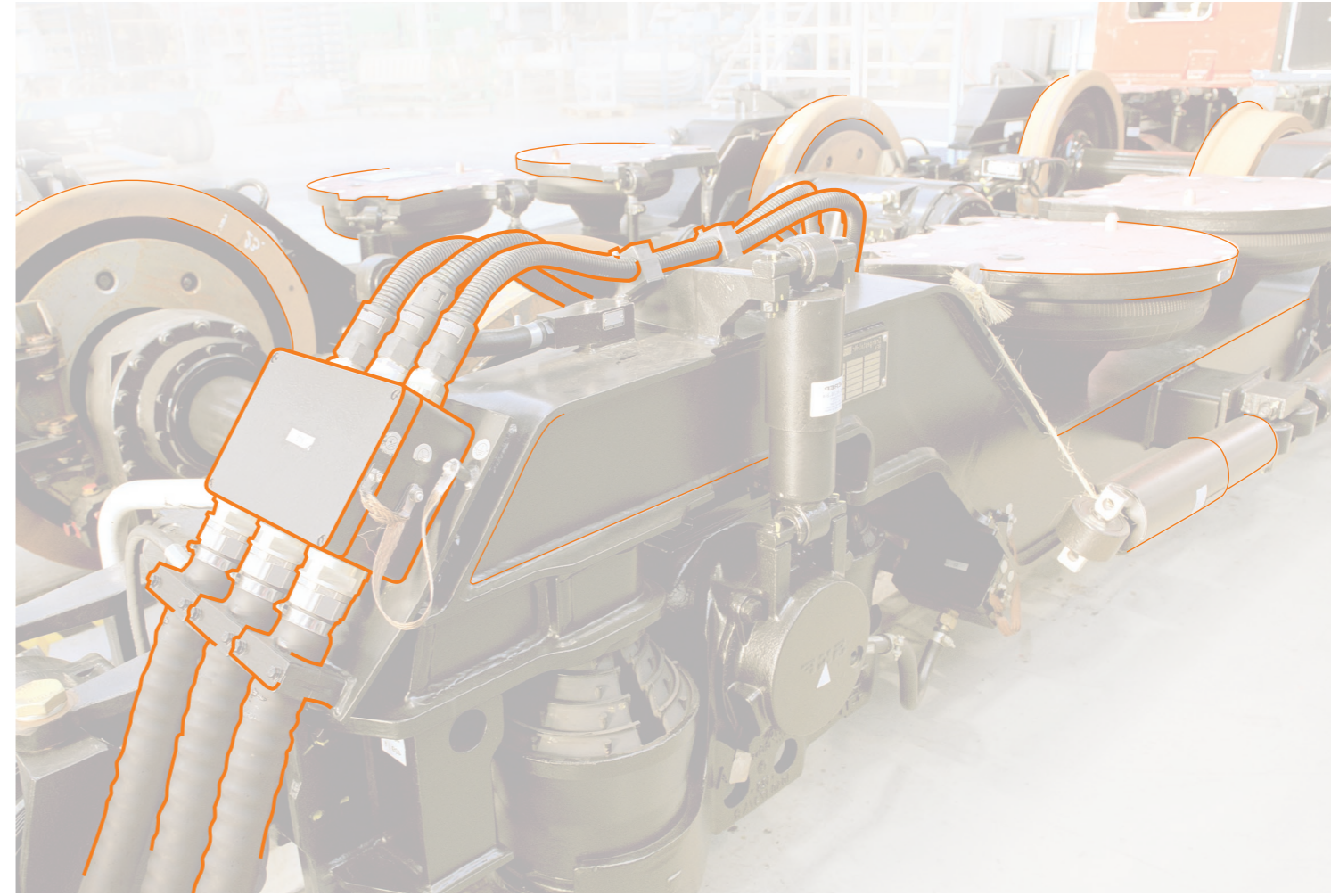
As your rolling stock is intended to provide local added value, it must be possible to assemble it anywhere regardless of language barriers, and thus incorporate both fault tolerance and safety. Thanks to the ring cable lug connection system, which is a proven railway technology, our ST 4000 stud terminals (4 kV) provide you with a modular system that is recognised around the world as well as being extremely easy to use. Suitable for all power lines up to 240 mm² and 4 kV, the weather-resistant terminals are made from epoxy resin and can be used in all applications.

Motor connection in a confined space

From traditional to convenient solutions

3-phase asynchronous traction motors are usually mounted on bogies with their electrical connection in the immediate vicinity. This provides little room for convenient installation or dismantling. Are you looking for a way in which to arrange rigid power lines in this constricted space in a less complicated and time-consuming manner? With the High Power HDC 550 motor connection plug, Weidmüller has come up with a solution that reduces installation times to a minimum. Railway vehicles are more quickly returned to service, ready for operation.

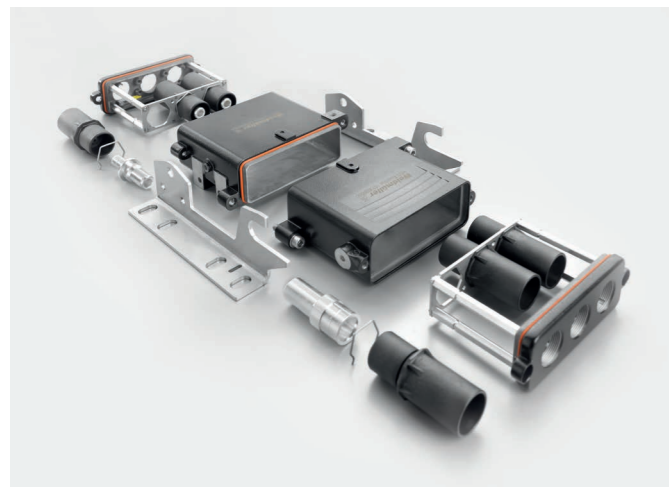
If you can afford longer installation times and your connection cycles are less frequent, the classic and extremely robust solution with stud terminals is highly recommended. Combined and pre-configured as a High Power Motor Junction Box, the appropriate number of terminals are positioned in a robust aluminium housing, which is both vibration-proof and water resistant when installed.



Confined space, rigid power lines.

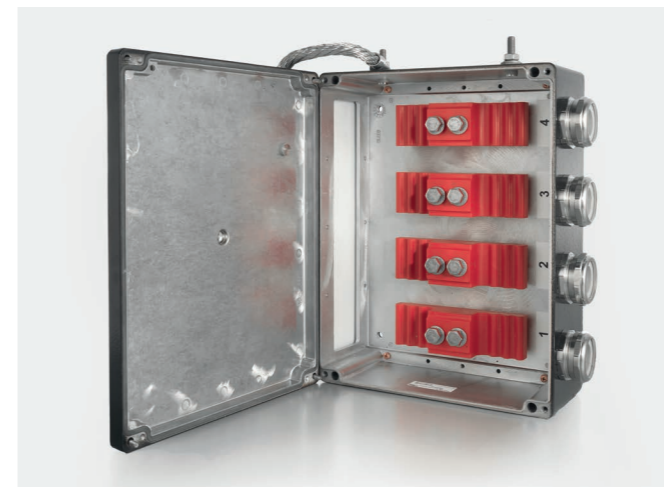
The High Power HDC connecting plug for motors offsets the disadvantages of the positioning of traction motors and their connections. Convenient installation without the need for special tools. Advantageous for rapid maintenance processes and replacements.

The solution variants



High Power HDC 550 motor connection plugs

Heavy-duty connectors simplify the fitting of large cross-section cables in confined spaces, such as where the drive motor is mounted. A mounting frame positions the plug parallel to the socket, right down to the last few centimetres, making the plug-in connection extremely secure. In addition, our HDC connectors reliably withstand the high vibration levels and shield signal lines positioned alongside from unwanted influences. These are the properties that make the plug-in connectors robust in everyday usage and flexible in the workshop.



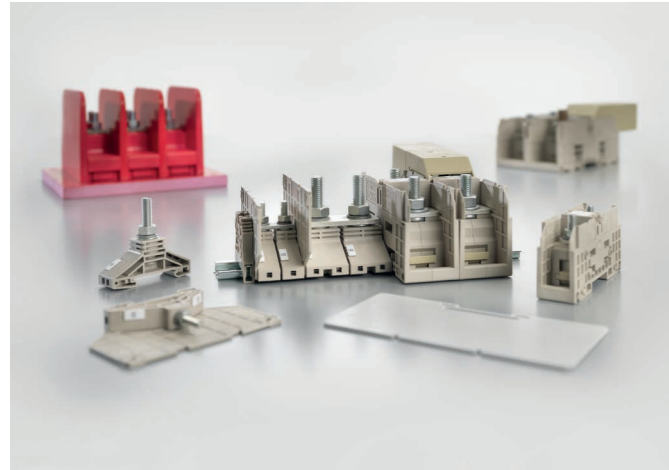
High Power Motor Junction Box with ST 4000 stud terminal

Connections in the vicinity of the motors are subjected to particularly severe conditions: high vibration and shocks, as well as dust, water and extreme climatic stresses. In a classic installation, the junction boxes are mounted on the bogie. In order to shield against external influences, a row of ST 4000 ring cable lug stud terminals are assembled and securely cased in an aluminium housing from our K-Series.

System-independent planning

We provide alternatives and add-ons

Classic connection technology in the form of internationally used stud terminals, or plug-in connectors for producing modern railway vehicles with high flexibility requirements – both methods have their merits. Your benefits: with Weidmüller, you retain your creative freedom without having to commit to a specific system. Depending on your needs, we can also offer a comprehensive range of housings, tools, additional connections and labelling systems to round off your project.



Classic connection technology: our stud terminals

Perfect interplay is what you get with our ST 4000 stud terminals combined with Klippon® enclosures in a weather-proof design. Available as M8, M10 and M12 bolts with a maximum cable cross-section of 240 mm² and 4 kV and 415 A, they are extremely versatile in their use. In addition to the classic stud variant, we offer a flat version with internal thread, which enables the cable lug to be secured via hexagonal screw. Ideal for DIN rail assemblies are our WFF 35 / WFF 300 (cable cross-sections: 35 mm² to 300 mm²) or the space-saving WF 5 / WF 12 stud terminals (including connecting bolts for cable cross-sections up to 120 mm²). We also provide matching partition plates and cross-connections for the full range of terminals.



For projects with high flexibility needs: our Heavy Duty Connectors (HDC) with Rockstar® housings

Our modular, vibration-free plug-in connector system with RockStar® housings for IP 68 with high-quality paint finish, designed for the most extreme conditions: waterproof, shockproof and functionally safe to -50° C.

The RockStar® HighPower HDC – HP 250 or 550 are designed for large cable cross-sections of 95 mm² and 240 mm² and are ideal for train busbars, on-board power supplies and motor connections. Easy installation without the need for special tools makes the entire system very cost-effective.



Global safety

We have the certificates

International standards provide the security you need to be able to use your railway vehicles at any location in the world. Weidmüller offers reliable and secure connections for a wide range of system components in the railway industry. From rolling stock to stationary systems such as signal towers or signalling systems, our technology guarantees excellent reliability – in extreme conditions, in all climate zones, all around the world.

Tested and ready for international use

HDC plug-in connectors and our stud terminals are all tested in our own accredited laboratory. Each of these products meets the following international railway norms and standards:

General: DIN EN 50155, DIN EN 50343, NF F 61-017
 Flammability characteristics: NF F 16-101, BS 6853, ASTM E 162, IEC 45545, EN 5510, CEI 11170
 Shock and vibration resistance: IEC 61373/Ria 20



Further information on heavy duty connectors is available in our online catalogue at www.weidmueller.com

Weidmüller – Your Partner in Industrial Connectivity

As experienced experts, we support our customers and partners around the world with products, solutions and services in the industrial environment of power, signal and data. We are at home in their industries and markets and know the technological challenges of tomorrow. We are therefore continuously developing innovative, sustainable and useful solutions for their individual needs. Together we set standards in Industrial Connectivity.

Weidmüller Interface GmbH & Co. KG
Klingenbergstraße 16
32758 Detmold, Germany
Tel. +49 5231 14-0
Fax +49 5231 14-2083
info@weidmueller.com
www.weidmueller.com

Your local Weidmüller partner can
be found on our website:
www.weidmueller.com/countries



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