

Rittal – The System.

Faster – better – everywhere.

Solutions for the railway industry

System expertise in tracks, tunnels,
buildings and digital platforms



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



FRIEDHELM LOH GROUP

Solutions for the railway industry

Bespoke system solutions for maximum operational reliability – with Rittal rail technology.
Reliable technology needs reliable protection, particularly in sensitive areas of the rail infrastructure.
Rittal delivers industry-specific enclosure system solutions, precisely tailored to the demanding requirements of rail technology.

Your benefits:



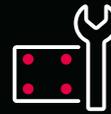
Exceptionally robust for secure use outdoors and under extreme ambient conditions



Modular and flexible, for easy integration into existing systems



Certified quality that meets all the relevant rail technology standards



Durable and service-friendly for continuous, uninterrupted operation

Whether for instrumentation and fuse technology, power distribution, data communications or tunnel safety, Rittal has the right solution for every railway application.



The railway industry has high expectations concerning the fast, efficient implementation of the digital rail. Implementing digital signal boxes and the Future Rail Mobile Communication Systems (FRMCS) are critical for future-proofing rail technology. Digital signal boxes facilitate precise control of rail traffic with enhanced flexibility. FRMCS technology guarantees smooth communications between trains and the infrastructure. The European Train Control System (ETCS) and Automatic Train Operation (ATO) are improving safety and efficiency in the rail sector.

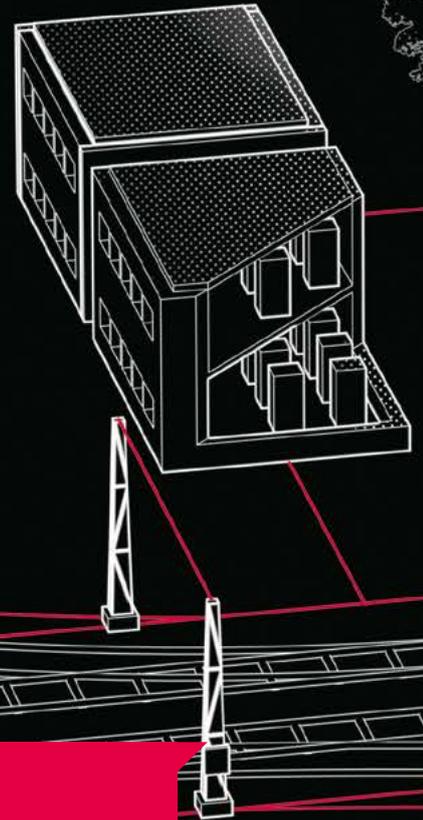
These rail technology systems need sophisticated IT solutions to ensure seamless integration into existing infrastructures, rapid data continuity and minimal latencies.



A modular infrastructure for digital rail technology

Rittal offers scalable system solutions for technical locations (TSO), operating locations (BSO), data centres and track field concentrators (GFK) which are ideally suited to the requirements of modern signal box technology. The modular infrastructure supports key technologies such as GSM-R and the future FRMCS standard for secure communications, FEAS for reliable power supply and powerful network technologies for data transmission.

Supplemented by IT architectures which support the digital radio standard dBOS, these solutions facilitate the efficient, reliable and future-proof implementation of railway applications. Rittal's systems provide a secure environment for instrumentation and fuse technology and meet the requirements of complex communications and energy supply networks, incorporating both current and future technologies.



Tunnel lighting

- AX plastic

CCTV

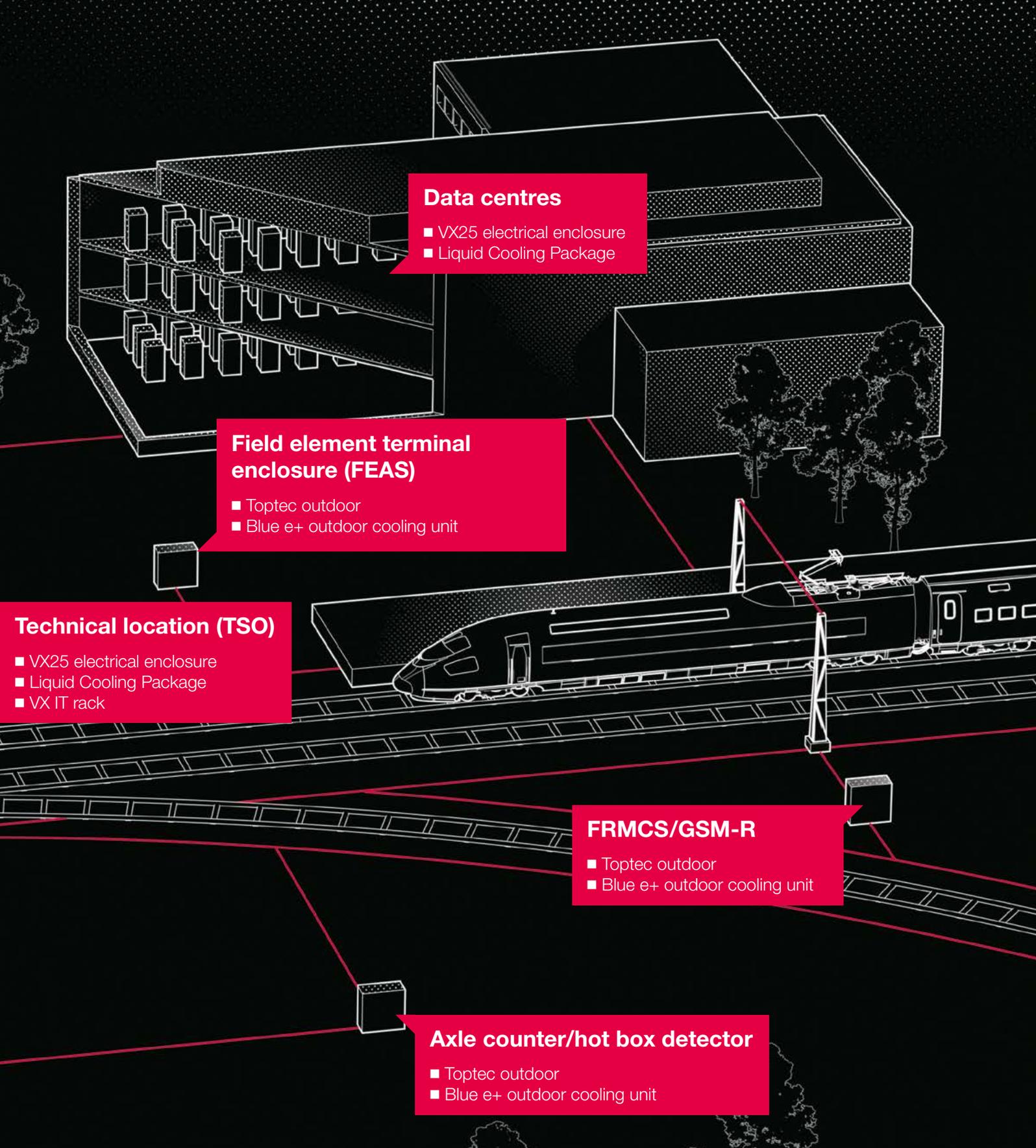
- AX wall mounted enclosure, stainless steel

Track field concentrator (GFK) dBOS/DWDM/FRMCS/GSM-R

- RailwayCube
- Blue e+ outdoor cooling unit

Operating location (BSO)

- VX25 electrical enclosure
- Liquid Cooling Package
- VX IT rack



Data centres

- VX25 electrical enclosure
- Liquid Cooling Package

Field element terminal enclosure (FEAS)

- Toptec outdoor
- Blue e+ outdoor cooling unit

Technical location (TSO)

- VX25 electrical enclosure
- Liquid Cooling Package
- VX IT rack

FRMCS/GSM-R

- Toptec outdoor
- Blue e+ outdoor cooling unit

Axle counter/hot box detector

- Toptec outdoor
- Blue e+ outdoor cooling unit

Key

BSO – Operating location	FRMCS – Future Railway Mobile Communication System
CCTV – Closed Circuit Television	GFK – Track field concentrator
dBOS – BOS digital radio	GSM-R – Global System for Mobile Communications – Rail
DWDM – Dense Wavelength Division Multiplexing	TSO – Technical location
FEAS – Field element terminal enclosure	

AX plastic enclosures



Material:

- Enclosure and door: Fibreglass-reinforced unsaturated polyester
- Fire protection corresponding to UL 94 V-0
- Door: All-round foamed-in PU seal
- Mounting plate: Sheet steel
- Viewing panel: Polycarbonate

Surface finish:

- Enclosure and door: Dyed plastic with no after-treatment
- Mounting plate: Zinc-plated

Colour:

- Enclosure: RAL 7035, light grey
- Rain guard in red; available in RAL 9005 black on request

Protection category:

- IP 66 to IEC 60529

Protection class:

- II at 1000 V AC

Note:

- Special adaptor plates may be used for expert, simple mounting of plastic enclosures AX on a tunnel wall. Multiple enclosures may also be positioned adjacent to or on top of one another on these adaptor plates. Adaptor plates available on request.

AX plastic enclosure

AX plastic enclosures have a protection category of IP 66 to IEC 60529 and are made from fibreglass-reinforced unsaturated polyester. They are available in eight sizes ranging from 250 x 350 x 155 mm to 800 x 1000 x 300 mm.

As an option, most plastic enclosures are also available with a viewing panel in the door.

To verify their tensile strength, the three types 1432.000 (250 x 350 x 150 mm), 1434.000 (600 x 400 x 200 mm) and 1444.000 (400 x 400 x 200 mm) have successfully undergone pressure wave simulation and dynamic pressure testing with respect to aerodynamic

impacts as set out in Ril 853.2001 A01 and are therefore suitable for use in railway tunnels.



Read more about
AX plastic enclosures:

www.rittal.com/ax

Making sure the lights in the tunnel never go out: HERMOS Systems GmbH

Reference

The emergency light in a tunnel is always there in an emergency, but barely noticed in day-to-day operation. It lights the way for the emergency services in the event of an accident, and guides people to safety in the event of a fire.

To ensure that the light stays on in the event of a power failure, the distributor boxes in the railway tunnel must be capable of withstanding pressure waves from trains travelling at high speed in the tunnel, as well as temperature fluctuations, dust and dirt.

HERMOS Systems GmbH has relied on Rittal enclosures for more than 25 years. These certified enclosures are robust and ensure long-term availability for a safe escape route from the tunnel at all times.

Rittal plastic enclosures AX – Robustly built, easily assembled

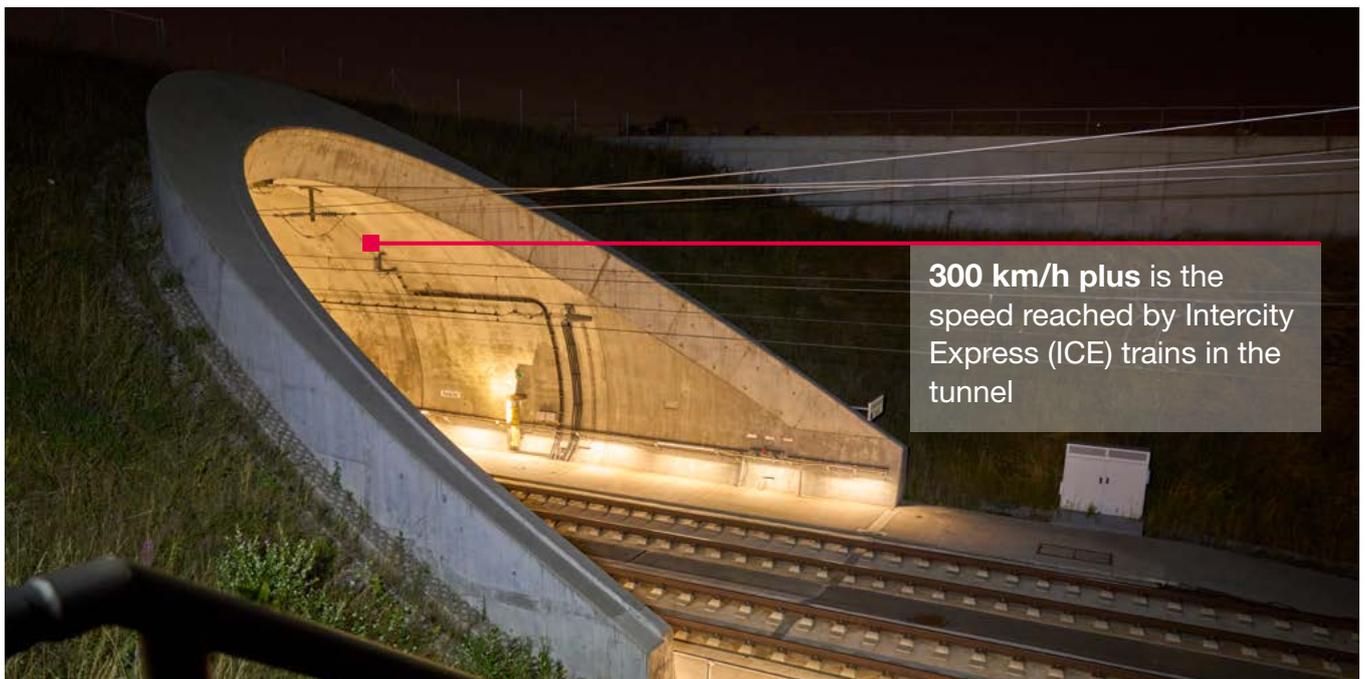
Exceptionally durable, weather-proof and certified – AX enclosures meet the most exacting standards of the railway sector.

“We have been using plastic enclosures from Rittal since 1999 and have had nothing but good experiences with them.”

Veit Demel,
CEO of HERMOS Systems GmbH

Solution

AX plastic enclosures are tested for tensile and compressive strength, are halogen-free and comply with the following standards: UL 94 V-0, UL F1-Outdoor-Rating, UL approval for industrial enclosures, a protection category of up to IP 66/NEMA 4 X for the encapsulated space and total insulation class II.



300 km/h plus is the speed reached by Intercity Express (ICE) trains in the tunnel

AX stainless steel enclosures

**Material:**

- Stainless steel
- Door: All-round foamed-in PU seal
- Mounting plate: Sheet steel
- Lock: Die-cast zinc, nickel-plated

Surface finish:

- Enclosure and door: Brushed, grain size 400
- Mounting plate: Zinc-plated

Protection category:

- Single-door model: IP 66 to IEC 60529
- Two-door model: IP 55 to IEC 60529

Note:

- Outdoor use in protected areas only. Protect enclosure from direct sunlight and precipitation.

AX stainless steel enclosure

Single-door AX stainless steel enclosures have a protection category of IP 66 to IEC 60529, while the two-door variant has a protection category of IP 55. These enclosures are available in sixteen different sizes ranging from 300 x 300 x 210 mm to 1000 x 1200 x 300 mm.

They are made from stainless steel 1.4301 (AISI 304), while four sizes are also available as standard in 1.4404 (AISI 316L).

Outdoors, these enclosures should only be used in protected areas. The enclosures must be protected from direct sunlight and precipitation. Water must not be allowed to accumulate on the seal. The AX protective roof is the ideal solution.



Read more about
AX stainless steel enclosures:

www.rittal.com/ax

Reliably protected – even under extreme conditions

In the railway sector, enclosure solutions are often exposed to relentless adverse weather, humidity and dirt. The AX protective roof from Rittal has a crucial advantage: It protects AX compact and small enclosures from above, reliably discharges rainwater and prevents the accumulation of dirt, for a longer service life and enhanced operational reliability.

Your rail technology benefit:

- Reliable surface protection for external installations on track systems or signal boxes
- Reduced contamination helps to minimise maintenance
- Quickly retrofitted onto existing AX enclosures
- Robust, corrosion-resistant design, ideal for permanent trackside use
- For rail technology that keeps its promises – and protection that starts at the top

An extended service life and enhanced operational reliability



Read more about the protective roof for AX:

www.rittal.com/ax-protective-roof

The sloping protective roof reliably protects the enclosure from standing moisture and other soiling from above.



Reliable protection for outdoor siting – with water run-off to the rear.

GA cast aluminium enclosures

**Material:**

- Enclosure and cover: Cast aluminium
- Cover: All-round cellular rubber (CR) cord seal

Colour:

- RAL 7001 silver grey

Protection category:

- IP 66 to IEC 60529

Protection category NEMA:

- NEMA 4

Note:

- Outdoor use in protected areas only. Protect enclosure from direct sunlight and precipitation.

GA cast aluminium terminal boxes

GA cast aluminium enclosures from Rittal are a robust, compact range of enclosures for industrial applications, particularly in scenarios requiring a high mechanical load capacity plus protection from environmental influences. It is suitable for wall mounting and available in 16 sizes, from small options (e.g. 58 x 64 x 36 mm) through to larger options (e.g. 360 x 160 x 93 mm).

The cover is fitted with an all-round cellular rubber (CR) cord seal, for long-lasting reliability and protection to IP 66.



Read more about
GA cast aluminium terminal boxes:

www.rittal.com/small-enclosures

Robust, secure, uncompromising

The cast aluminium enclosure from Rittal is perfect for protecting sensitive electronics in tough industrial environments. With its compact dimensions and minimal weight, it delivers maximum protection in a minimal space. The structured surface finish in **RAL 7001** ensures a modern look, while the **cellular rubber seal** and **captive cover screws** guarantee reliable sealing. With a protection category of **IP 66**, the enclosure is dust-proof and protected against powerful water jets – ideal for use outdoors or in production areas with high contamination levels. The **IK08 classification** guarantees resistance to mechanical impacts up to 5 joules. Whether for automation, control or connection solutions, the cast aluminium enclosure is a true all-rounder.

Your rail technology benefit:

- Dust-proof and hosed water-proof (IP 66/NEMA 4) – ideal for outdoor areas, tunnels and platforms
- Corrosion-resistant – Withstands humidity, de-icing salt and adverse weather conditions
- Lightweight and assembly-friendly, for easier installation on poles, walls or vehicles
- Robustly withstands vibrations and frost, suitable for mobile and stationary rail applications

100%
dust-tight and
hosed water-proof



GA enclosures in action in the RailwayCube container – compact, resilient, weather-proof.



Photograph: ©Rittal GmbH

Toptec outdoor enclosure for rail applications



Material:

- Frame, roof and base/plinth: Stainless steel 1.4301
- Panels: Stainless steel 1.4016

Surface finish:

- Powder-coated with UV-resistant pure polyester

Colour:

- RAL 7035 light grey

Note:

- Twin-walled, bayable outdoor enclosure with 100 mm high base/plinth and rain canopy with projections on all sides
- Burglar resistance class RC2
- Enclosure frame with 25 mm system punchings in the roof and base frame plus vertical sections with two mounting levels

- Resistance class RC2 for enclosure and base/plinth
- Rear panel and side walls may be replaced by doors

Rittal Toptec – Earthing system

- Current-carrying capacity 40 kW
- 16 mm² earthing cable and M16 earth connection in the base/plinth
- Toptec and concrete plinth, combined with EBA system approval from a ground tension of 250 kN/m²

Toptec outdoor enclosure for rail applications

Toptec meets all relevant railway requirements and can be sited a minimum of 3.65 m from the centre of the track (at train speeds of up to 300 km/h). These enclosures are purpose-designed for each individual application, so it is important to clarify the relevant and non-relevant requirements in advance to avoid wasting money on unnecessary functions.

Toptec outdoor enclosures may be mounted on concrete or steel base/plinths. If the enclosure is sited directly adjacent to the track, the combination of outdoor enclosure and concrete base/plinth meets the required proof of stability for the railway sector.



Read more about
Toptec outdoor enclosures:

www.rittal.com/outdoor_enclosures

S-Transport improves railway safety in Korea

Reference

S-Transport, a leading systems integrator in the railway, road and industry sector, is renowned for its technical expertise and bespoke solutions tailored to the key requirements of the South Korean railway industry. The company collaborates closely with national authorities to introduce progressive technology designed to ensure the safe, efficient operation of both high-speed trains and conventional railways.

S-Transport recently supplied Rittal's CS Toptec outdoor enclosure and Blue e+ outdoor climate control units to a national railway authority to implement the Hot Box Detector (HBD) system, a critical component of railway safety. The project comprises 40 units earmarked for use in Daegu and Gyeongbuk.

Minimum distance of

3.65 m
from the track centre

Solution

The CS Toptec enclosure offers outstanding protection against external influences and climate fluctuations, and solves all previous problems associated with IP protection categories and internal temperature control. Similarly, the Blue e+ outdoor climate control units ensure stable interior temperatures even under extreme conditions, thereby supporting uninterrupted year-round operation of the HBD system.



The Toptec products from Rittal were selected for their outstanding quality and reliability.

Photo: ©Adobe Stock

RailwayCube container

**Material:**

Sheet steel

Surface finish:

Powder-coated, UV-resistant

Colour:

RAL 7035 light grey

Protection category:

- IP 55

Note:

- All-round insulated container in steel construction, tested to ISO 1496 Part 1, weights and classification to ISO 668
- Series 1, with corner castings to ISO 1161
- Manufactured with welding approval Executive Class 2 (EXC2)/DIN EN 1090-2

- Burglar resistance class up to RC4
- Climate control RC4 up to 50 kW
- Meets KRITIS and NIS2 requirements
- Fire protection to DIN 4002-2 F90 is supported
- RailwayCube – 4 variants in accordance with the Deutsche Bahn AG standard

RailwayCube – Normative requirements

- Minimum distance 4 m
- Max. train speed 300 km/h
- Container, earthing system, lightning protection system and foundation constitute EBA system approval

RailwayCube container

RailwayCube containers for rail applications are available in a width of 3000 mm and a height of 3000 mm with an overall length of up to 12,000 mm. These containers have a resistance class of up to RC4 to EN 1627 and a protection category of IP 55 to IEC 60529. They can be sited a minimum of 4 m from the track centre (for train speeds of up to 300 km/h).

They may be fitted with Blue e+ outdoor cooling, which likewise has a resistance class of up to RC4 to EN 1627.

The RailwayCube containers in conjunction with the appropriate concrete foundations form a complete system which is easy to install on site.



Read more about
RailwayCube containers:

www.rittal.com/it-container

RailwayCube – Top-level security for railway infrastructure

The Rittal RailwayCube is a meticulously designed turnkey solution for critical rail infrastructure – robust, secure and ready to use immediately. Whether for accommodating the power supply, signal technology or control systems, the RailwayCube with its IP 55 protection category, integral lightning protection and burglar resistance class of up to RC4 offers top-level security, even under extreme conditions.

The solution meets all relevant rail standards and current safety requirements such as **KRITIS** and **NIS2**. Built-in battery degassing, powerful climate control up to 50 kW and railway standard-compliant lights round out the range. It is ideal for operators, infrastructure companies and OEMs who prioritise reliable system technology and standard-compliant implementation.

32,000 km

high-speed track

is planned by 2050

Solution

The RailwayCube was selected as a robust solution for the rail infrastructure to ensure the secure, standard-compliant accommodation of control and communications technology. With corrosion resistance up to C5VH and a protection category of IP 55, burglar protection up to RC4 and integral lightning protection, it is ideally suited to unprotected outdoor areas. The preassembled structure saves installation time and meets current railway requirements.



Robust. Secure. Interconnected. The Rittal RailwayCube – Your turnkey solution for the railway infrastructure, with RC4 and IP 55 protection plus integral system engineering.

Photo: ©Rittal GmbH

Climate control

Blue e+ outdoor wall-mounted cooling units

**Material:**

- Aluminium AlMg

Surface finish:

- Powder-coated with UV-resistant pure polyester

Colour:

- RAL 7035 light grey

Supply includes:

- Sealing frame for external mounting, partial internal mounting and full internal mounting
- Assembly parts

Note:

- Average energy savings of 75% thanks to speed-controlled components and heat pipe technology
- Component-friendly cooling extends the service life of components inside the enclosure and the cooling unit
- Intuitive operation with touch display and intelligent interfaces
- Integral electric condensate evaporation
- Condenser with hydrophobic RiNano coating
- GWP < 750
- Refrigerant R-513A

Blue e+ outdoor wall-mounted cooling units

Energy-efficient Blue e+ outdoor wall-mounted cooling units in output categories ranging from 1500 W to 5000 W. With their high protection category of IP 56/UL type 12/3R/4 and a temperature range of -30 °C to 60 °C, they provide optimum protection in challenging environments. The cooling unit can be mounted in three different ways (external mounting, partial internal mounting and full internal mounting).



Read more about Blue e+ outdoor wall-mounted cooling units:

[www.rittal.com/
outdoor-cooling-units](http://www.rittal.com/outdoor-cooling-units)

Efficient cooling. Securely housed. Ready for rail operation.

In safety-critical applications like the railway infrastructure, every degree of temperature counts, as does every minute of availability. **Blue e+ outdoor wall-mounted cooling units** from Rittal in the **RailwayCube** and in **Toptec outdoor enclosures** ensure reliable, energy-efficient climate control of all built-in systems, even in extreme external temperatures and tough ambient conditions.

With a cooling output of up to **50 kW**, a protection category of IP 55 and patented hybrid technology, the Blue e+ range unites **smart thermal management with maximum operational reliability**. Space-saving outdoor installation on the RailwayCube and on Toptec solutions does not interfere with the internal structure. The result? **Exceptional energy savings, a long service life for the technology and minimal maintenance input.**

Solution

The RailwayCube was deployed as a weather-proof technical location for control and network technology in unprotected outdoor areas. Blue e+ outdoor cooling units ensure the reliable operation of sensitive electronics, even in heat, direct sunlight and fluctuating temperatures. External mounting means the interior remains fully usable and maintenance-friendly.

Average

75%

less energy consumption with Blue e+ hybrid technology.



Blue e+ outdoor – external mounting, secure interior. Maximum cooling output with minimum space requirements – in the RailwayCube or Toptec. Photo: ©Rittal GmbH



e+ controller on the rear of the cooling unit. Photo: ©Rittal GmbH

RC4 outdoor for railway use



Material:

- Sheet steel, welded construction, vibration- and shock-proof

Colour:

- Powder-coated, UV-resistant, corrosion-resistant

Colour:

- RAL 7035 (light grey) or bespoke to match the railway operator's CI

The RC4 enclosure meets the requirements of the rail industry for outdoor use: High burglar resistance class (RC4), plus protection against vibrations, humidity, UV radiation and temperature fluctuations. Ideal for applications such as signal technology, communications systems or monitoring units along the track. The RC4 enclosure also offers the option of mounting cooling units similar to the tried-and-trusted CS Toptec range and supports both **filter fan solutions** and **wall-mounted cooling units**.

The door is secured by two reinforced lock bars and a swing lever. The rear panel may optionally be replaced with an RC4 door. The enclosures are designed for use in extreme environmental conditions and are protected against dust, rain and snow as well as mechanical pressures from wind and brake dust.

The maximum population is 24 U or 42 U for 482.6 mm (19") systems. Enclosure depths ranging from 500 mm to 1200 mm may be flexibly adapted to suit the individual application.

Developed for extreme conditions: RC4 enclosures for outdoor use

Resistance class to EN 1627 and 1630

The EN 1627-1630 series of test standards applies to doors, windows, curtain walls, railings and shutters, and is also relevant for outdoor enclosures. EN 1627 defines various resistance classes of burglar resistance, while EN 1630 describes the test procedures.

The individual resistance classes (RC) indicate how long a product can withstand a particular type of attempted burglary. The higher the class, the greater the degree of burglar resistance. The burglar resistance of enclosures is often determined using the test procedure to EN 1630.

The following table indicates the resistance time depending on the tool set used and the overall duration of testing. These two factors combined determine the resistance class.

RC 2	RC 3	RC 4	RC 5	RC 6
				
				
				
				
				
				
				
Min. 3 minutes Max. 15 minutes	Min. 5 minutes Max. 20 minutes	Min. 10 minutes Max. 30 minutes	Min. 15 minutes Max. 40 minutes	Min. 20 minutes Max. 50 minutes

Low level of protection

High level of protection

Concrete base/plinth for Toptec outdoor enclosures

**Material:**

- Lightweight concrete, untreated

Note:

- Part of the system approval for use in the rail environment without further static calculations

- The enclosure and concrete base/plinth combined offer system approval for ground tension starting from 250 kN/m²

Concrete plinth for Toptec outdoor enclosures

Made from precast concrete sections which are easily and quickly fitted in situ. The modular concrete base/plinth components are easy to handle and rapidly assembled without the need for specialist tools – ideal for simple, flexible installation in outdoor applications. The front and rear base/plinth panels provide optimum access for servicing. The removable panels, which are screw-fastened from the inside, are designed for easier maintenance and inspections without having to dismantle the enclosure. In this way, your infrastructure remains safely and efficiently accessible at all times.

The concrete base/plinth is available in six variants, ranging from 600 to 1200 mm wide and from 500 to 800 mm deep.



Read more about concrete base/plinths for outdoor enclosures:

www.rittal.com/concrete-plinth

The right foundation for your technology

A secure infrastructure begins with the foundations – with the Rittal concrete base/plinth for rail technology. Uncompromising reliability is key in the railway sector. The concrete base/plinth from Rittal creates a stable basis for outdoor enclosures, be it trackside, in the station or on technical sites – robust, weather-proof and assembly-friendly, even under extreme conditions.

Perfectly tailored to the requirements of the railway environment:

- Fast on-site assembly without the need for heavy equipment
- Protection from vibrations, humidity and de-icing salt
- Durable solution for continuous operational reliability
- Ideal for power supply, signal technology and telecommunications

Whether you are planning a new build, extension or modernisation project, the Rittal concrete base/plinth helps keep your technology safe on the railway.

Description:

Material: Lightweight concrete LC 25/28

Exposure class: XC4; XD1; XA1; XS1 and XF3 WF

Admissible tolerances to: BGB-RiINGB-2021-05

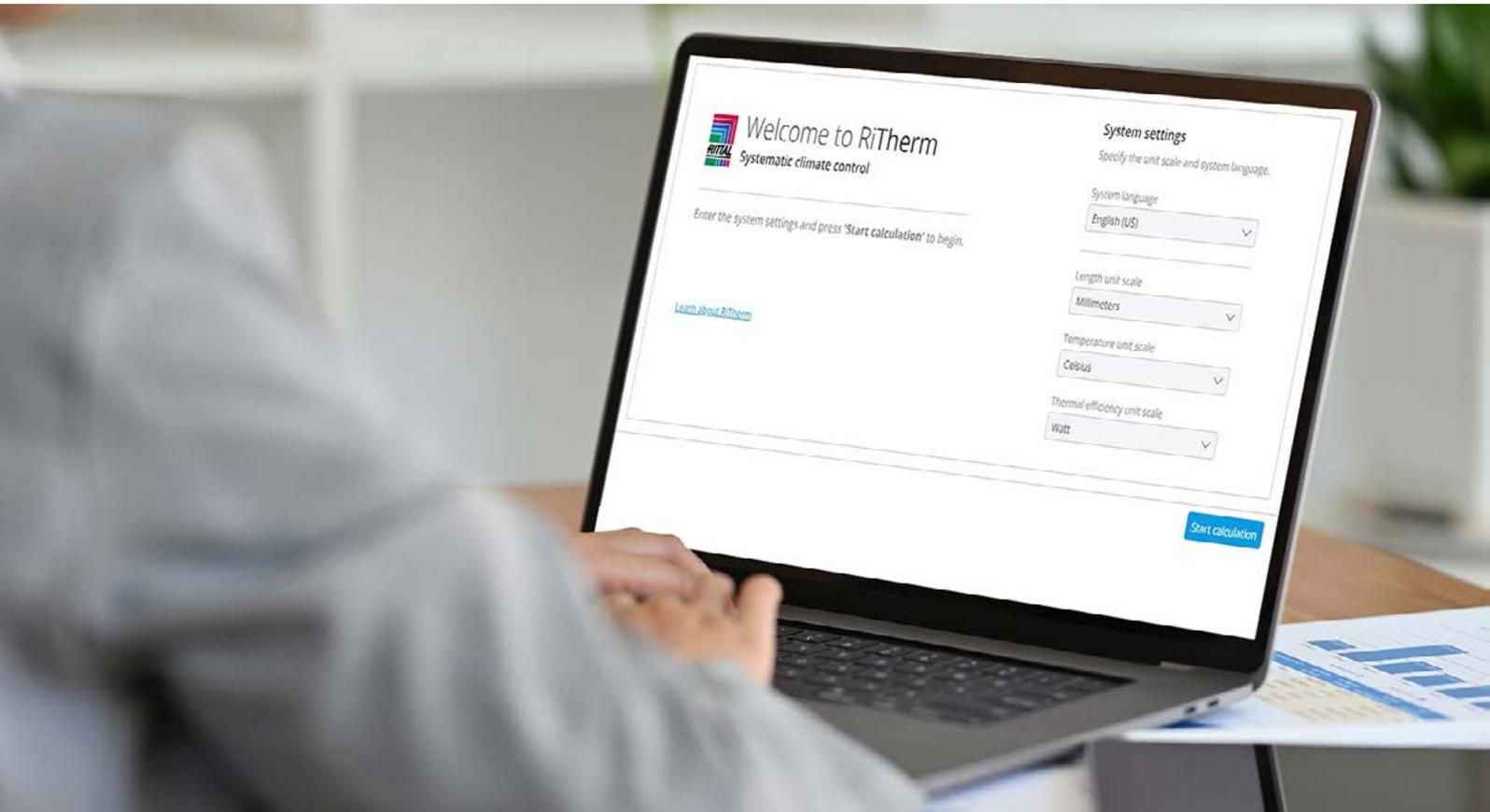
The reinforced structure and dimensioning of the anchoring devices in the concrete meet the valid standards in Eurocode 2. Mechanical strength of the concrete parts to DIN EN 61439-5 10.2.101.9

Temperature resistant
from **-33 °C**
to
+80 °C



Rittal concrete base/plinths – Stable precast concrete sections for rapid assembly and stability in outdoor use.

Climate calculation with RiTherm



What's so special about RiTherm?

- Targeted climate calculation
- Energy efficiency analysis including carbon footprint certificate
- Automatic product recommendations
- Standard-compliant documentation
- Integration into Eplan Cloud

Your benefits with RiTherm

- Calculate bayed enclosure suites according to your requirements
- Optionally define your altitude (which influences cooling output)
- Get recommendations for matching accessories for your enclosure climate control
- Energy efficiency calculator for individual climate zones
- Calculate the carbon footprint of your climate control system, from delivery through to operation
- Standard-compliant cooling certificate
- Display the product lifecycle status with reference to successor products

The ultimate planning tool for enclosure climate control

That moment when you start planning your enclosure climate control and realise that cost-effectiveness and climate protection are in perfect balance.

RiTherm is your free planning software for targeted, reliable, energy-efficient climate control of switchgear with standard-compliant documentation and carbon footprint certificate.

Rittal are pioneers in climate design software. Since our launch 35 years ago, we have delivered exceptional satisfaction to more than 80,000 customers worldwide, and perform over 200,000 climate calculations each year.



Configure directly online at:

www.rittal.com/RiTherm

Documentation with Rittal ePocket

The Rittal ePocket revolutionises enclosure maintenance and allows you to store and manage all documentation, wiring plans, maintenance records and digital twins centrally in the cloud. This helps you organise your documentation, maintenance and service processes more efficiently.

Your design and documentation benefits:

- Save on printing costs when preparing documents
- Reduce your carbon footprint
- Transfer digital documentation to customers efficiently

Your service and maintenance benefits:

- Up-to-the-minute data always available for everybody involved
- Fast change management with the integrated Eplan eVIEW workflow
- Clear tracking of changes

Digital machine and system documentation at every stage of the value chain



Read more about the Rittal ePocket:

www.rittal.com/epocket



Eco-friendly and cost-efficient: As well as saving time and effort, the Rittal ePOCKET also saves on resources.

System accessories



Enclosure internal thermostat

Particularly suitable for controlling fans, heaters and heat exchangers, this thermostat can also be used as a signal generator for monitoring the enclosure internal temperature.



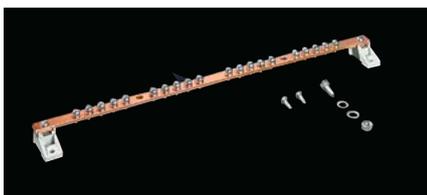
Hygrostat

Activates the heater and/or fan when a preset relative humidity inside the enclosure is exceeded. This raises the relative humidity above the dew point and prevents condensation on assemblies and electronic components.



IoT interface

The IoT interface is a central component for the intelligent networking of Rittal cooling solutions or sensors for monitoring physical ambient conditions. Equipped with a wide range of interfaces and protocols, it collates and transmits data to superordinate IT systems or systems for the local monitoring of machine statuses.



Earth rail, horizontal

Suitable for AX, VX, VX IT, TS, TS IT

The Rittal earth rail provides central earthing and potential equalisation in enclosures and is designed for a current carrying capacity of up to 200 A.



Divider panel for TS

For shielding individual enclosure cells. Thanks to the symmetry of the frame system, the divider panel can also be used at the rear.

System accessories

482.6 mm (19") installation system

Swing frame

The rear of the 482.6 mm (19") installed equipment is conveniently accessible with a swing frame. Depending on the chosen version, available with an opening angle of 130° or 180°.



LED system light

LED system light – the first light designed specifically for enclosures! Highly innovative LED technology casts even more light into the very last corner.



Plastic gland plate with membranes

The plastic gland plate for AX enclosures supports flexible, tool-free cable entry – ideal for applications with a high protection category and variable cable routing.



Enclosure heater

It's not just excessively high temperatures that pose a threat to the reliable functioning of electrical and electronic components in an enclosure. Very low temperatures can also lead to consequential damages and must be prevented. Heaters were developed to prevent corrosion and electrical short-circuits associated with condensation.



Discover more components for interior installation, power distribution and climate control:

www.rittal.com/accessory-finder

VX IT – The solution for all your network and server applications

Future-proof. Flexible. Efficient. The VX IT rack from Rittal is more than just an enclosure – it's the basis for your digital infrastructure. Whether in the data centre, edge environment or part of a hybrid IT landscape, the VX IT is sure to impress with its maximum flexibility, consistent modularity and simple integration into existing systems.

Benefits at a glance

Future-proof and compatible

- The VX IT is a key element of RiMatrix, Rittal's tried-and-trusted IT system.
- A host of innovative new products and features have been added
- The VX IT and RiMatrix are ideal for extending existing data centres and replacing individual components in existing installations.

Key features

- Certified to UL 2416, IEC/EN 60950 and IEC/EN 62368
- Two 482.6 mm (19") variants: "Standard" or "Dynamic"
- Maximum stability, security and load capacity
- Extended portfolio (e.g. 52 U)
- New design and door opener 2.0

Modular concept

- The Rittal RiPanel configuration system provides a wide range of configurable rack options that extend far beyond the standard rack range.
- Range of sizes, 482.6 mm (19") options, front and rear doors, roof and base assemblies plus side panel options and other accessories

Fast delivery

- A wide range of standard racks with optimised delivery times
- Standard racks available off the shelf (in 24/48 hours)
- Variants manufactured to order (in 15-25 days)
- Customisations (minimum 4 weeks)



Read more about
the VX IT:

www.rittal.com/vx-it

Unique data centre for Schweizerische Südostbahn AG

Reference

Schweizerische Südostbahn AG (SOB) is an independent Swiss railway company delivering full transport services to some 13 million passengers each year. Punctuality is a top priority, and this requires a reliable, functioning IT system. To ensure fail-safe operation of the IT, SOB commissioned Rittal to design, plan and execute a backup data centre.

Optimum use of small, awkward spaces

The available room for the proposed installation of the backup data centre was a confined and awkward space. Rittal Switzerland convinced its clients with a bespoke concept consisting of an enclosure system, integral in-row climate control and UPS unit, plus a sensor-based monitoring solution. Because it is scalable to keep pace with demand, Südostbahn can rest assured its investment is protected for the future.

End-to-end project management and committed support

Rittal took on the project management, coordinated the structural measures and configured the enclosures and components in parallel. The preconfigured system was delivered “en bloc”, installed, and handed over to Südostbahn as a turnkey server room.

“We have complete trust in Rittal as a partner. Our confidence is well-founded: We got exactly the infrastructure we wanted, on time and on budget.”

Daniel Kobler,
Head of the ICT Department at
Schweizerische Südostbahn AG

Solution

- Modular, bespoke rack system
- Integral cooling and UPS solution
- Engineering, planning, system configuration and installation by Rittal
- On-site construction and project management by Rittal



Schweizerische Südostbahn AG (SOB) puts its faith in Rittal IT solutions – for maximum fail-safeness and reliable punctuality with its rail operations.

Photo: © Südostbahn AG

LCP – Liquid Cooling Package delivers maximum performance in a confined space

The flexible yet powerful industry solution

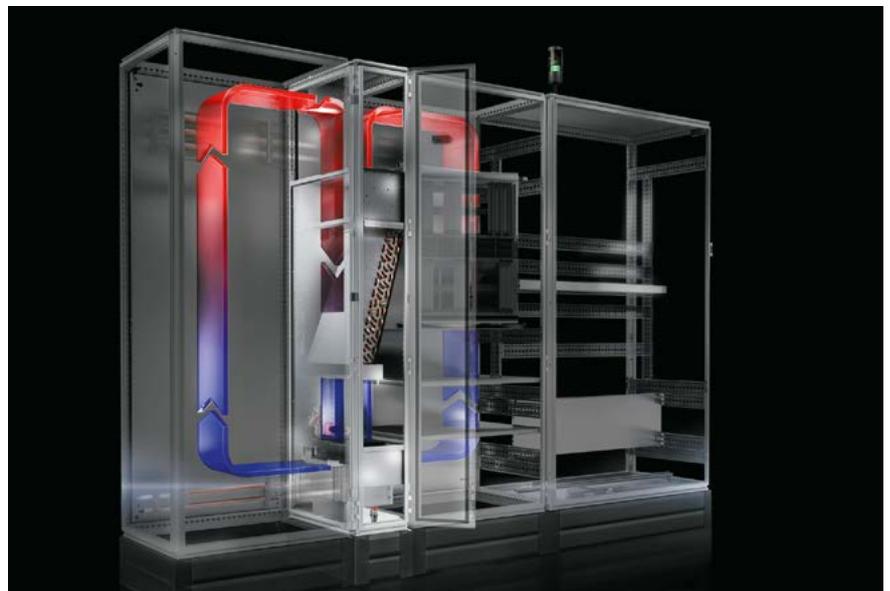
The separation between cooling and enclosure prevents water from penetrating the enclosure, and makes it very easy to assemble and service. The LCP Industry is easy to handle and may be transported in lifts and through doors. The low weight means a minimal floor load. Among industrial applications, there is a growing demand for air/water heat exchangers with a cooling output spectrum of up to 10 kW. Based on very positive experiences with IT cooling, Rittal has developed the high-performance LCP Industry (Liquid Cooling Package) especially for use in industrial environments.

Alongside their high cooling output, another major benefit of these heat exchangers is that they can be easily and fully integrated into the Rittal VX25 baying enclosure system.

The heat exchanger can be fitted into the enclosure system or externally mounted for added flexibility. Depending on the required cooling output, air may be routed to one side on the left or right or (if positioned centrally) on both sides.

Your benefits:

- Virtually maintenance-free operation
- Minimum noise emissions
- Lower operating costs than compressor cooling units
- Compact design
- Water connection options on the top and bottom of the unit



Air/water heat exchanger in the VX25 bayed enclosure system.

LCP – Liquid Cooling Package for industry

A convincing climate control option

■ Fits perfectly into the system

Bayable to all 600 or 800 mm deep and 2000 mm high VX25 enclosures

■ Maximum performance in a minimal space

Air outlet with either 5 kW on each side or 10 kW on one side only

■ Flexible water connection

Flexible water connection options on the top or bottom of the unit

■ Flexible applications

Busbars and cables are readily routed through the unit at the top and bottom. In this way, even bayed enclosure suites may be integrated and supplied with a high cooling output.

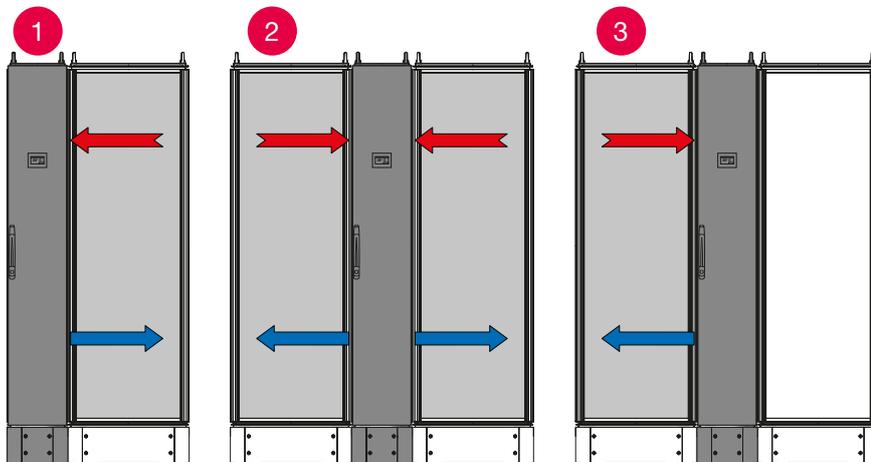
■ Energy efficiency

EC fans and Comfort controllers for even greater efficiency



The heat exchanger is flexibly integrated into the enclosure system or externally mounted.

Variable baying options



- 1 At the beginning or end of an enclosure suite, air routing on one side
- 2 Within an enclosure suite, air routing on both sides
- 3 Within an enclosure suite, air routing on one side, optional sealing of air inlet and outlet openings with metal covers



Busbars and cables are easily routed through the unit

Innovativeness is in our DNA

RiLineX
THE POWER PLATFORM



RiLineX – Busbar system

The requirements placed on state-of-the-art, dependable power distribution are growing all the time due to developments such as the growth of electrification and the energy savings brought about by the switch to direct-current technologies. Demand for internationally recognised and approved components is also growing. This new system platform utilises the DNA of our modular platforms and is the result of over 40 years of experience in power distribution.

This open system platform is not just ideal for today's requirements. It has also been designed with the future in mind.

RiLineX is the optimum basis for efficient, sustainable power distribution and supports the integration of new technologies on its innovative busbar system.



Nine good reasons to use RiLineX

- ✘ Fast, efficient planning with a simple system design
- ✘ Approximately 30% savings with engineering
- ✘ Up to 75% savings with assembly
- ✘ Simple installation thanks to innovative plug-in system for the board and tool-free component fitting
- ✘ Modular system design means reduced complexity
- ✘ Contact hazard protection to IP 2XB, upgradable to IP 4X at the front
- ✘ Tested short-circuit resistance up to 65 kA
- ✘ Suitable for applications up to 1000 V AC and up to 1500 V DC
- ✘ Seamless approvals for UL/IEC



Read more about
RiLineX:

www.rittal.com/RiLineX

Seize the opportunities offered by digitalisation with Eplan

More than **500**
manufacturers and
over
4 million
component
data records

The digital transformation poses challenges across all segments of industry. The world is changing. If a company wants to remain competitive in the Industry 4.0 era, standing still is not an option.

Rittal offers end-to-end solutions and services tailored to your industry which can help future-proof your engineering processes.

Eplan Data Portal

The Eplan Data Portal gives you direct online access to high-quality product catalogues from numerous component manufacturers.

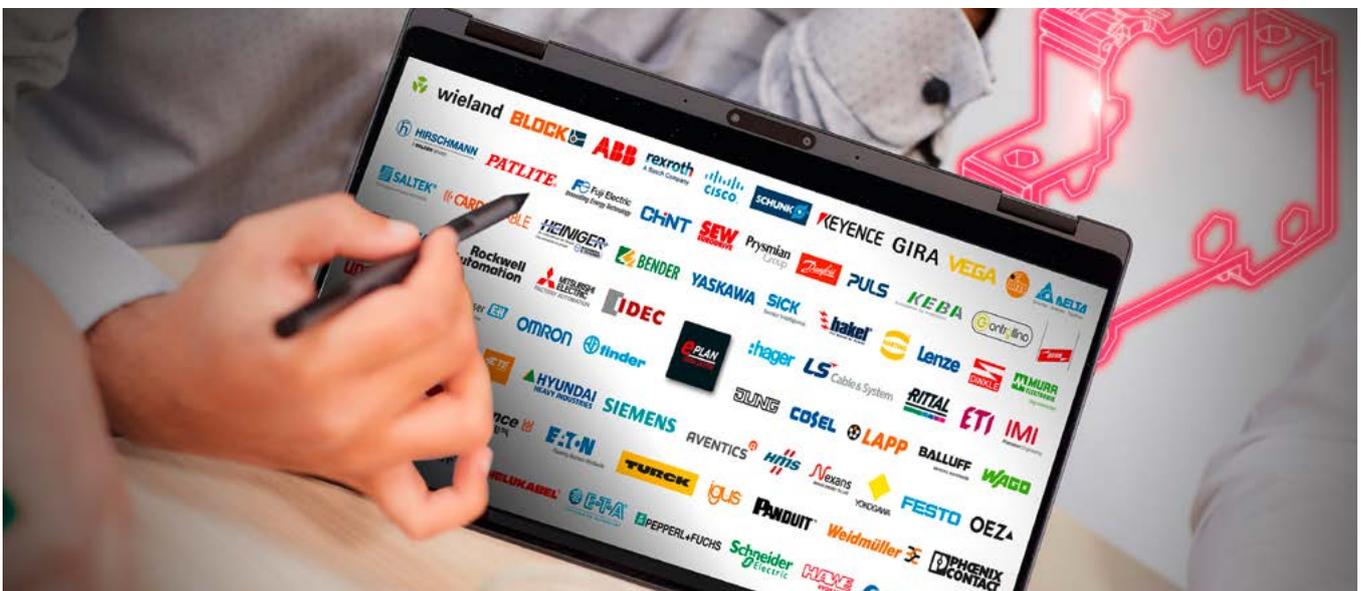
By dragging and dropping the available components into the Eplan documentation, you can reduce project planning work and upgrade the quality of your machine and system documentation.

- Find standardised, intelligent, globally valid device data quickly and easily.
- Minimise the effort required for item data maintenance.
- Choose technical products faster and more easily, with direct access to numerous configurators offered by leading component manufacturers.
- More in-depth automation documentation helps to boost your engineering quality.



Read more about
Eplan Data Portal:

www.eplan-software.com/eplan-data-portal



High-quality product catalogues from a broad range of component manufacturers.

Digitally log your technical preplanning

Eplan Preplanning

Digitally log your technical preplanning

Eplan Preplanning helps you to record engineering data even at the preplanning stage, such as the actuators and sensors in a system, machine or building. You can import data from external spreadsheets as well as making a graphical record of plant and machine overviews, process and instrumentation diagrams.

This means that the initial data sheets and specifications for material procurement can be generated in no time.

You can also access the data collated and augmented in Eplan Preplanning for downstream engineering planning phases.



Read more about
Eplan Preplanning:

[www.eplan-software.com/
preplanning](http://www.eplan-software.com/preplanning)

Eplan Electric P8

The ECAD standard for your engineering – Draw more than just wiring plans

Eplan Electric P8 allows consistent, seamless, fast project planning of your electrical machinery and equipment designs in one engineering system. The software supports a range of engineering techniques, from manual generation through to standardised and template-based approaches. Once recorded in the circuit diagram, the machinery and equipment documentation is auto-completed using the project data. In short, Eplan Electric P8 can do much more than just draw circuit diagrams and wiring plans.



Read more about
Eplan Electric P8:

www.eplan-software.com/electric-p8



Eplan Cable proD

Eplan Cable proD facilitates virtual machine cabling. The software digitises the planning and provides all the information for the use of pre-assembled cables from ordering through to assembly, based on a digital twin.



Read more about
Eplan Cable proD:

[www.eplan-software.com/
cable-prod](http://www.eplan-software.com/cable-prod)



Eplan Pro Panel

End-to-end 3D planning for panel builders and switchgear manufacturers

Design your control cabinets, switchgear and power distribution systems for energy supply in 3D. Eplan Pro Panel provides the basis for automating and streamlining your enclosure manufacturing even at the design phase.



Read more about
Eplan Pro Panel:

www.eplan-software.com/pro-panel

Regulations and standards

Various standards and regulations will apply depending on the application, requirements and environment. Always consider the use of an enclosure within the overall context of its environment.

Track system:

- RIL 853.2001
- RIL 997.0205
- DIN EN 1627 et seq
- DIN EN 1794-1
- DIN EN 1991
- DIN EN 14067
- DIN EN 50124
- DIN EN 60721

Train:

- BN 421 021
- DIN EN 4102
- DIN EN 50121
- DIN EN 50125
- DIN EN 61000

Rittal – Das System.
Schneller – besser – überall.



Specifications, tests and features of enclosures in railway technology

White Paper TSI 01
June 2024
Author: Günther Blöcher

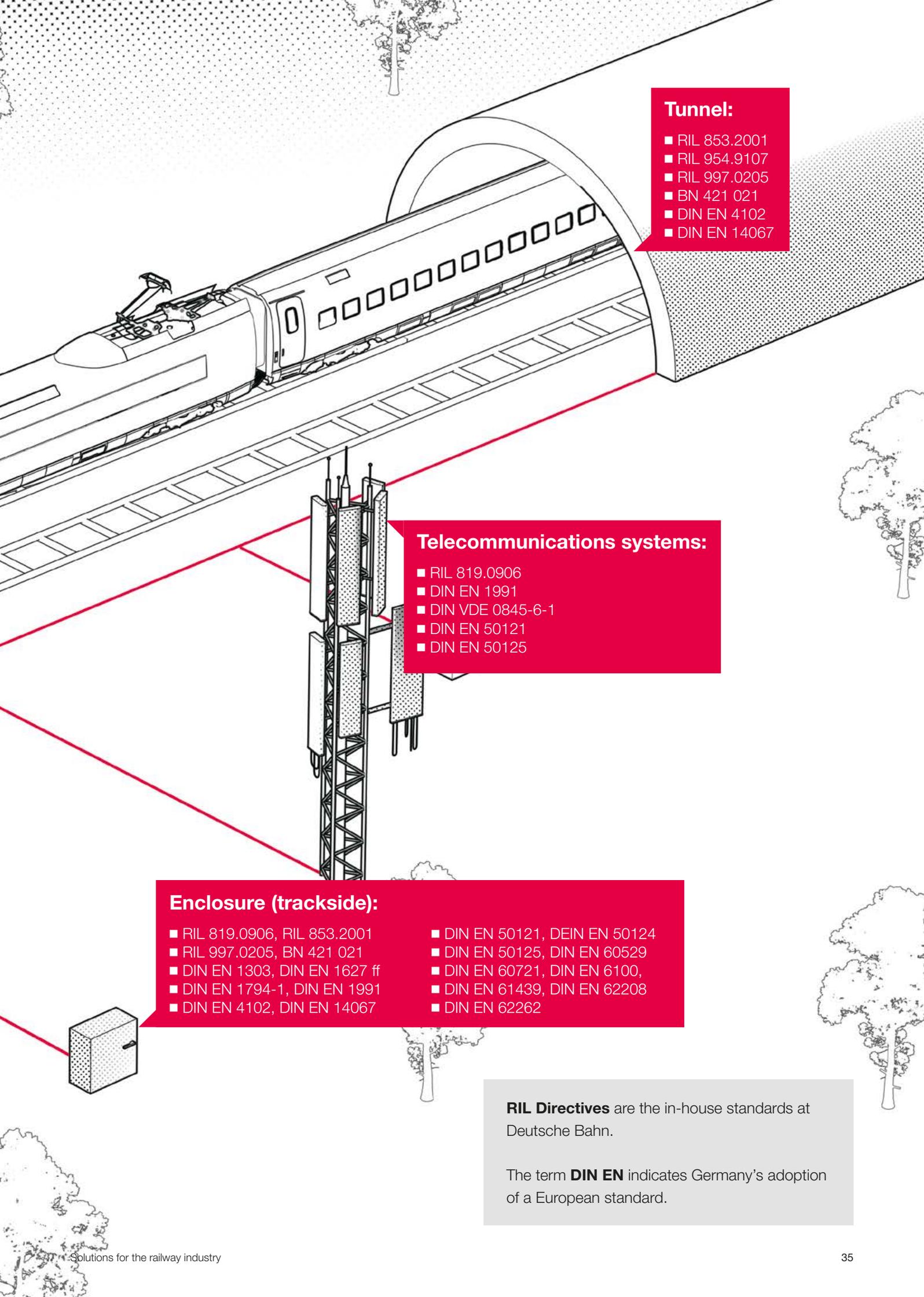


WEISSHAAR & KORN GROUP



In our white paper, read everything you need to know about the regulations and standards for enclosures in rail technology and, based on this, the required tests for verifying compliance with the guidelines.

<https://webinfo.rittal.com/en/rail/form>



Tunnel:

- RIL 853.2001
- RIL 954.9107
- RIL 997.0205
- BN 421 021
- DIN EN 4102
- DIN EN 14067

Telecommunications systems:

- RIL 819.0906
- DIN EN 1991
- DIN VDE 0845-6-1
- DIN EN 50121
- DIN EN 50125

Enclosure (trackside):

■ RIL 819.0906, RIL 853.2001	■ DIN EN 50121, DEIN EN 50124
■ RIL 997.0205, BN 421 021	■ DIN EN 50125, DIN EN 60529
■ DIN EN 1303, DIN EN 1627 ff	■ DIN EN 60721, DIN EN 6100,
■ DIN EN 1794-1, DIN EN 1991	■ DIN EN 61439, DIN EN 62208
■ DIN EN 4102, DIN EN 14067	■ DIN EN 62262

RIL Directives are the in-house standards at Deutsche Bahn.

The term **DIN EN** indicates Germany's adoption of a European standard.

Rittal – The System.

Faster – better – everywhere.

- Enclosures
- Power Distribution
- Climate Control
- IT Infrastructure
- Software & Services

You can find the contact details of all Rittal companies throughout the world here.



www.rittal.com/contact

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