

Rittal – The System.

Faster – better – everywhere.

Rittal Outdoor Solutions

Protection for problem-free operation
under the harshest conditions



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



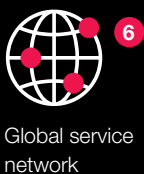
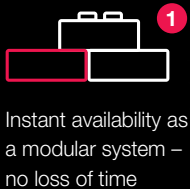
FRIEDHELM LOH GROUP

The right solution for every environment

The intelligent modular system comprising enclosure and climate control components offers a multitude of choices for configuring your individual outdoor solution. Now, the bayable Toptec creates even more flexibility. Its double-walled enclosures are effortlessly connected and therefore scalable according to your requirements. Benefit from uniform design of Rittal solutions with built-in compatibility, look forward to delivery within 24/48 h and the convenience of a single supplier for all your product needs – for every outdoor application, and for every climate type.

The name Rittal is synonymous with ultimate quality, durability and reliability in enclosure manufacturing. Its reputation extends to the outdoor segment. Maximum protection for your electrical and electronic components, however hostile the environment, is our prime objective. Whether that means extreme temperatures, exposure to UV radiation, aggressive atmospheres, high wind loads, dust or humidity: Rittal enclosures stand up to even the harshest conditions.

Rittal standard outdoor solutions – 6 essential reasons to keep your equipment safe and secure in all environments





The choice is yours: Scale your required enclosure to your specific requirements and extend it with special enclosure walls, climate control equipment, vent louvres or heating / lock systems, all available as standard. Everything you need to safeguard your particular application – in any industry. You can rely on Rittal to help you plan and operate your application:

■ **Flexible outdoor solutions from a single source**

Ready to use in any environment, thanks to the smart combination of enclosure and climate control, individually scalable and bayable with a range of enclosures

■ **Resistant to all weathers**

Rittal outdoor solutions are made from weather-proof aluminium spray-finished with pure, UV-resistant polyester, or from robust fibreglass-reinforced plastic. This ensures a long service life and reduced maintenance cycles.

■ **Protection from vandalism and security threats**

Whether in public spaces, at the roadside or in fenced solar farms, even the standard Rittal range includes a wide range of protection options, including double locks and enhanced status monitoring.

■ **Perfect climate control**

Rittal carries out ongoing and extensive testing in our quality laboratory and can propose solutions that significantly increase the service life of your equipment and appreciably minimise energy costs. The energy-efficient Blue e+ cooling unit is particularly recommended for situations with high heat losses.

In view of constant changes in external and climatic conditions, we recommend carrying out regular checks. Rittal's service team is on hand to assist you.

Reliable protection in even the toughest conditions.

Further information can be found on our website:

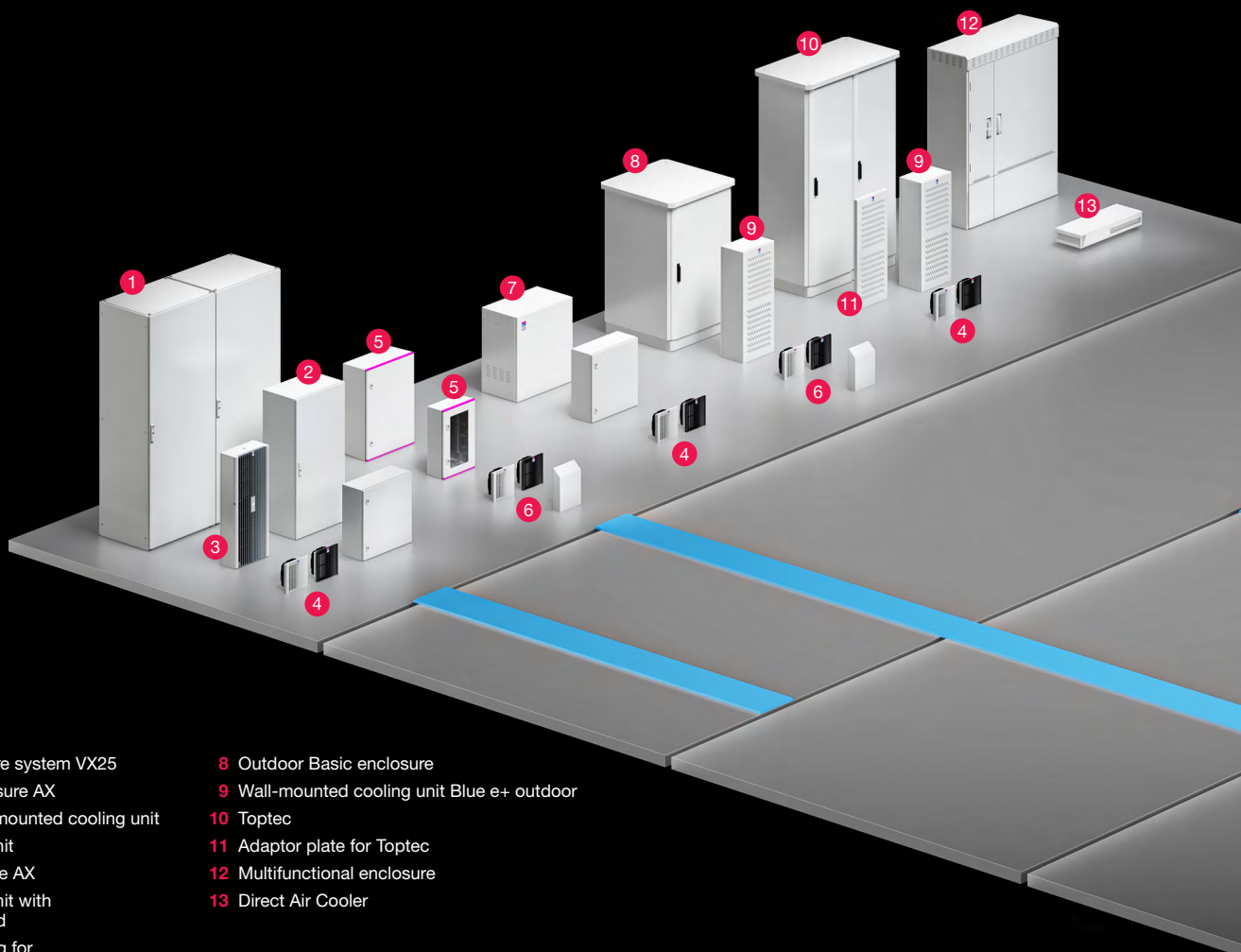
www.rittal.com/outdoor



Not all outdoor applications are the same – what are your key requirements?

Where is your enclosure located? Your choice of robust enclosure, climate control solution, coating, heaters, networking capabilities and much more will depend on the environment and protection available. Outdoor applications are subject to a wide range of requirements:

- Wide temperature fluctuations call for different active and passive climate control solutions
- Humidity, UV radiation and salt necessitate a high degree of corrosion and surface protection
- Noise emissions must be minimised effectively for installations located in urban environments



- | | |
|--|---|
| 1 Baying enclosure system VX25 | 8 Outdoor Basic enclosure |
| 2 Compact enclosure AX | 9 Wall-mounted cooling unit Blue e+ outdoor |
| 3 Blue e+ S wall-mounted cooling unit | 10 Toptec |
| 4 Fan-and-filter unit | 11 Adaptor plate for Toptec |
| 5 Plastic enclosure AX | 12 Multifunctional enclosure |
| 6 Fan-and-filter unit with hose-proof hood | 13 Direct Air Cooler |
| 7 Outdoor housing for AX compact enclosure | |



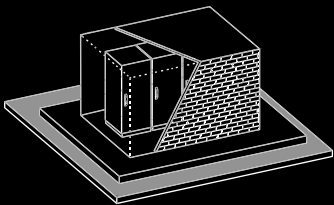
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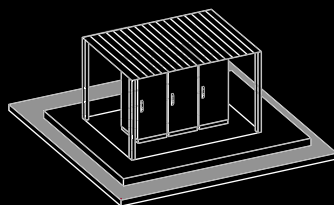
We have outlined a range of environments to help you select the ideal Rittal solution. From protected environments in sealed rooms, to roofed areas, to public spaces exposed to ever-changing weather conditions. It is important to remember that every application requires an individual design and check of the on-site ambient conditions prior to installation.

Environment 1



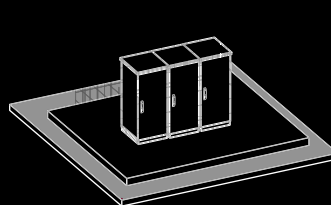
Indoor Advanced Protection
Environments protected from the weather (parking garages, wind turbines etc.).

Environment 2



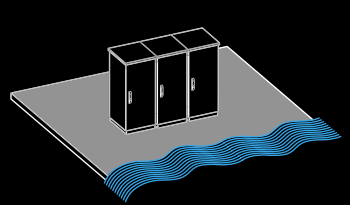
Outdoor Light
An environment largely protected from the weather.

Environment 3

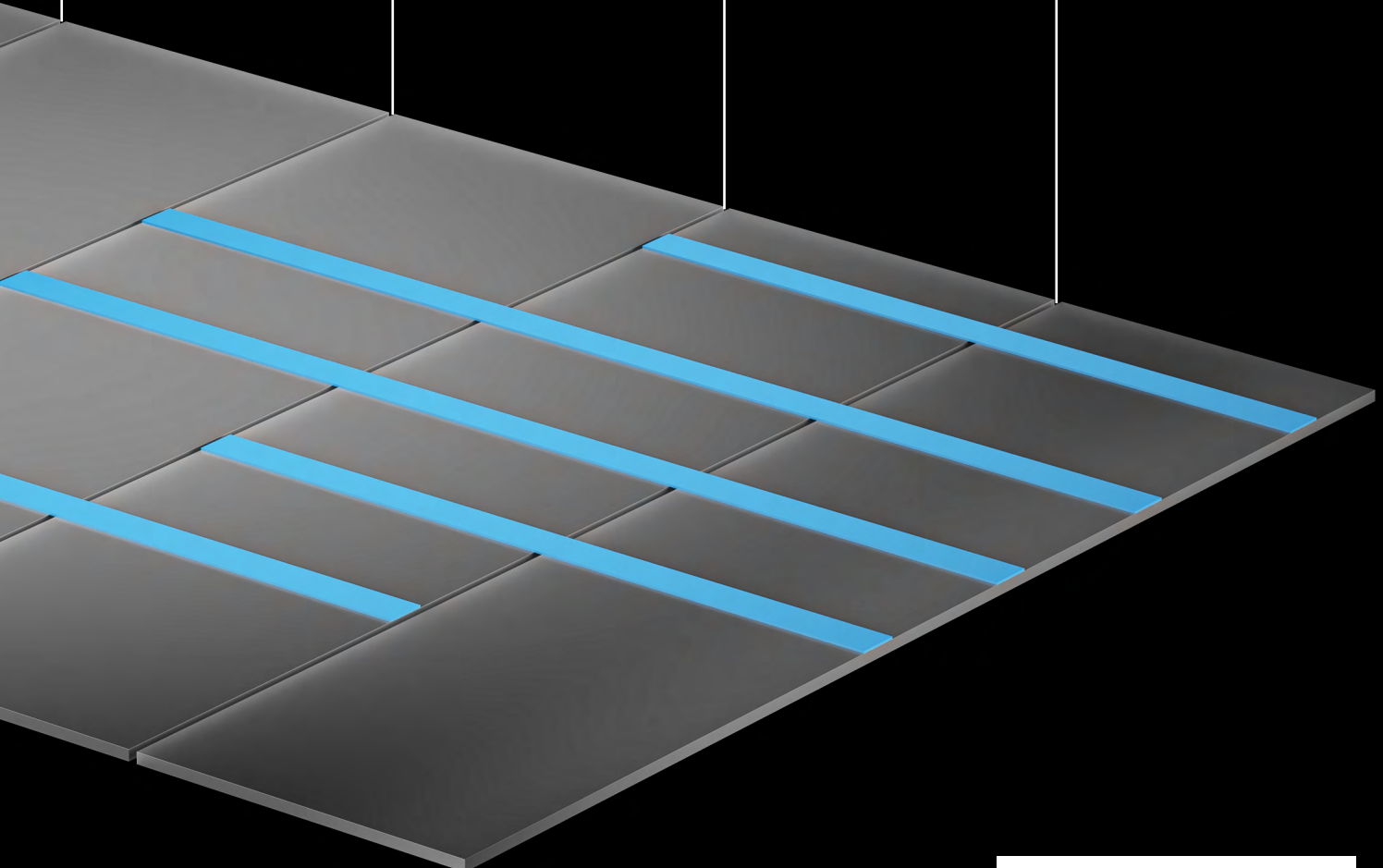


Outdoor Advanced
Installations that are exposed to the weather with potentially aggressive/abrasive/corrosive substances in the atmosphere.

Environment 4



Outdoor Extreme
Installations that are fully exposed to the weather in public areas and extreme environments with potentially aggressive/abrasive/corrosive substances in the atmosphere.



 Optimum application area

Rittal ePOCKET

Optimise your enclosure maintenance and switch to digital documentation – Rittal ePOCKET now available as standard for all Rittal enclosures.

Enclosures used under extreme conditions, whether outdoors or in challenging environments, are at the heart of the digital transformation. This is where the Rittal ePOCKET, with its ground-breaking innovations, comes into play.

Digitally transform your enclosure maintenance

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.

It frees you from laboriously searching for faded or damaged physical documents and delivers digital enclosure documentation in real time.

Maintenance without physical access – The future has arrived

Maintaining enclosures in challenging environments or outdoors often demands time-consuming physical access. The Rittal ePOCKET allows you to access all relevant information and wiring plans without being physically present. This means less effort, reduced downtime and streamlined efficiency with all your maintenance work.

Secure and reliable – Proven quality from Rittal

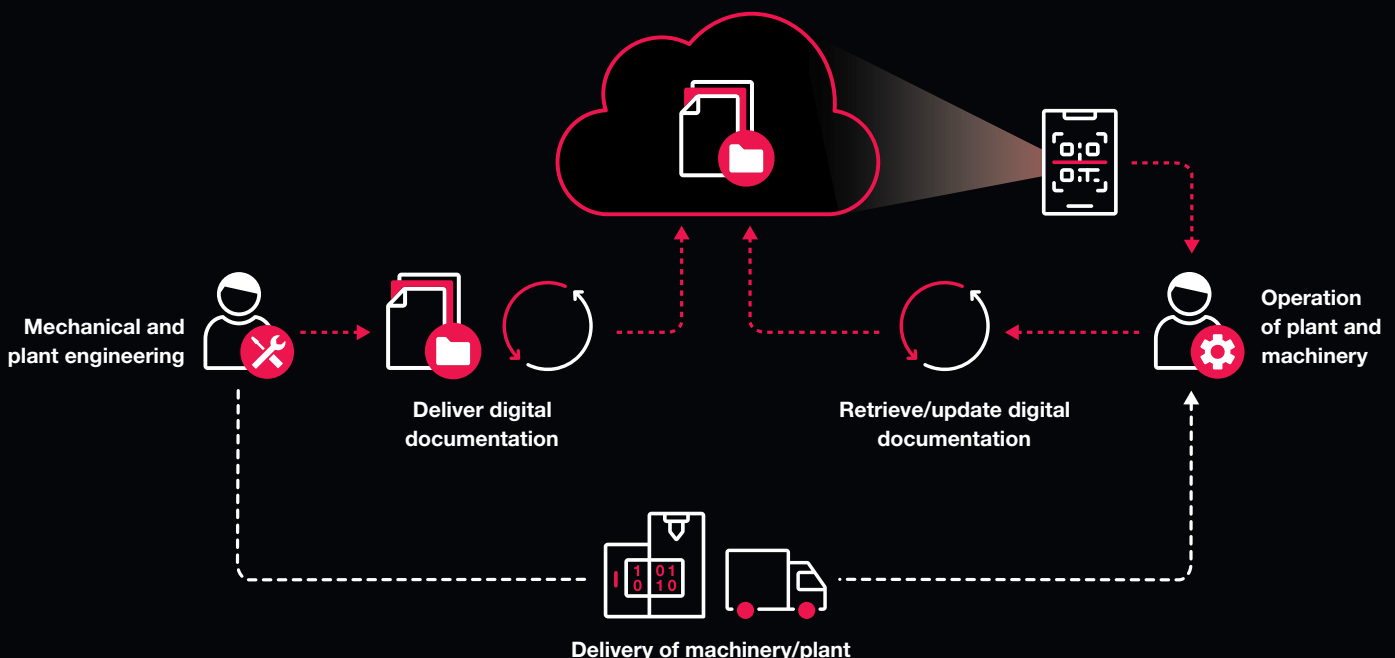
The Rittal ePOCKET is a safe, reliable method of managing your enclosure documentation. It is accessed via the Eplan cloud, which guarantees data privacy and integrity.

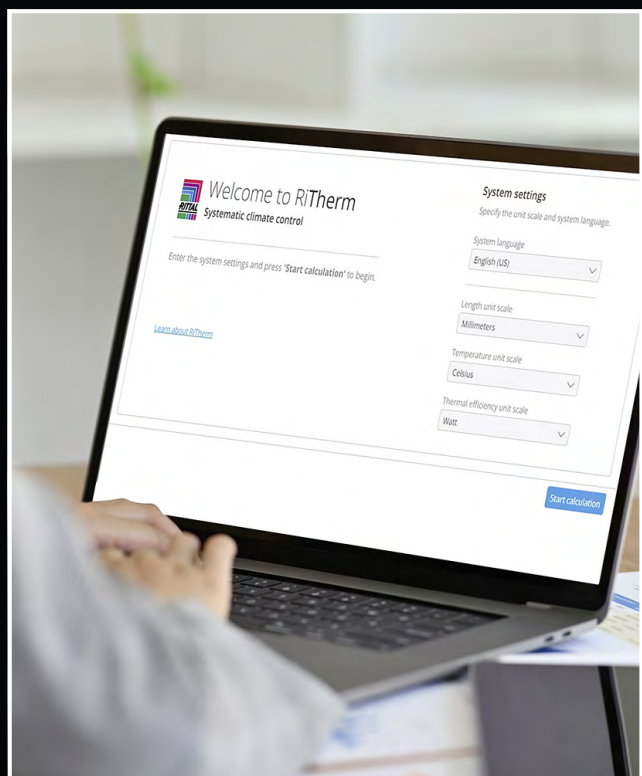
Eco-friendly and cost-efficient – For a sustainable future

As well as saving time and effort, the Rittal ePOCKET also saves on resources. By dispensing with printed documents, you reduce paper waste and protect the environment. What's more, more efficient maintenance and reduced downtime can help lower your operating costs.

Rittal ePOCKET

Digital machinery and plant documentation





Your climate control planning tool for enclosures

Quickly and easily design the correct climate control for your switchgear:

- Calculation and selection depending on the ambient conditions (indoor and outdoor applications)
- Energy efficiency calculator for individual climate zones
- Calculate bayed enclosure suites according to your requirements
- Standard-compliant heat dissipation record



More about
RiTherm:

www.rittal.com/RiTherm

Single-walled or double-walled?

While operational, single-walled and double-walled enclosure solutions with the same dimensions, external temperature and siting environment can exhibit significant internal temperature differences. It is important to keep the internal temperature as constant as possible and avoid temperature spikes to ensure the reliable operation of components inside the enclosure. Remember that a single-walled enclosure requires a significantly larger-dimensioned active climate control than a double-walled enclosure solution. This effect is amplified at higher heat losses.

Use RiTherm – your Rittal planning tool – to select the correct enclosure climate control combination.

Enclosure wall	Internal temperature without active climate control	Required climate control at a maximum internal temperature of 45°C
Single-walled	85 °C	150 W
Double-walled	70 °C	100 W



Sample enclosure

Dimensions:

– W 800 x H 1600 x D 800 mm

Installed heat loss:

– 500 W

Ambient conditions:

– Max. external temperature: 40 °C

– Max. total radiation: 1120 W/m²
(assumed figures for central Europe)

Enclosure protection

Protection categories to IEC 60 529

Outdoor enclosures, like all other enclosures, have an IP protection category, whereby consideration must be given to the ambient conditions. For example, an environment with fine sand and extremely strong winds will place different requirements on the seal of the outdoor enclosure than if it were sited in the middle of a residential area.

Essentially, the IP protection category is tested in the laboratory according to the requirements of the applicable standard IEC 60 529. When selecting an enclosure, it is important to observe the local conditions and select an appropriate protection category for the site. In conjunction with the IP protection category, it is also important to assess the IK protection class against external mechanical influences. The IK protection class to IEC 62 262 indicates the degree of impact resistance and must be considered in conjunction with the corresponding IP protection category.

The IP protection category is characterised by 2 numerals.					
Example of a protection category, e.g. IP 43					
Code letters					
First numeral [4]			Second numeral [3]		
Degrees of protection against contact and foreign bodies: First numeral			Degrees of protection against water: Second numeral		
First numeral	Degree of protection	Explanation	Second numeral	Degree of protection	Explanation
[1]	Protected against solid foreign objects with a diameter of 50 mm or more	The object probe, a sphere 50 mm in diameter, must not penetrate fully. ¹⁾	[1]	Protected against vertically falling water drops	Vertically falling drops shall have no harmful effects.
[2]	Protected against solid foreign objects with a diameter of 12.5 mm or more	The object probe, a sphere 12.5 mm in diameter, must not penetrate fully. ¹⁾ The articulated test finger may penetrate up to its length of 80 mm, but adequate distance from hazardous parts must be adhered to.	[2]	Protected against vertically falling water drops when the enclosure is tilted up to 15°	Vertically falling drops shall not have any harmful effects when the enclosure is tilted up to 15° on either side of the vertical.
[3]	Protected against solid foreign objects with a diameter of 2.5 mm or more	The object probe, a sphere 2.5 mm in diameter, must not penetrate at all ¹⁾ .	[3]	Protected against sprayed water	Water sprayed at an angle of up to 60° on either side of the vertical shall have no harmful effects.
[4]	Protected against solid foreign objects with a diameter of 1.0 mm or more	The object probe, a sphere 1.0 mm in diameter, must not penetrate at all ¹⁾ .	[4]	Protected against splashed water	Water splashed on the enclosure from any direction must have no harmful effects.
[5]	Dust-protected	The ingress of dust is not fully prevented, but dust shall not enter to such an extent as to impair satisfactory operation of the device or safety.	[5]	Protected against water jets	Water directed at the enclosure from any direction in a jet must have no harmful effects.
[6]	Dust-tight	No ingress of dust at a partial vacuum of 20 mbar inside the enclosure.	[6]	Protected against powerful water jets	Water directed at the enclosure from any direction in a powerful jet must have no harmful effects.
			[7]	Protected against temporary immersion in water	Water must not ingress to such an extent as to cause harmful effects when the enclosure is temporarily immersed in water under standardised pressure and time conditions.
			[8]	Protected against continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions to be agreed between the manufacturer and the user. However, the conditions must be more difficult than for numeral 7.
			[9]	Protected against high-pressure and high-temperature water jets	Water projected at high pressure and high temperature against the enclosure from any direction shall not have harmful effects.

¹⁾ The full diameter of the object probe must not pass through an opening of the enclosure.

IP protection category and IK impact protection

Damage to enclosures can impair the functioning of built-in operating equipment or even render it inoperable. For this reason, as well as IP protection, enclosures must also be adequately protected from the effects of external mechanical force. The IK code is a protection category indicating an enclosure’s impact strength. If the seal is

damaged by external mechanical force, this will also directly influence the previously calculated IP protection category. As shown in the table below, each numeral in the IK code indicates the amount of energy acting on the enclosure without impairing its function or protection from dust and water.

IK code	IK00	IK01	IK02	IK03	IK04	IK05	IK06	IK07	IK08	IK09	IK10
Impact energy [J]	a)	0.14	0.2	0.35	0.5	0.7	1	2	5	10	20

a) Unprotected under this standard

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 relating to burglary resistance, while EN 1630 describes the test procedure. 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 burglary resistance. In the case of enclosures, burglary resistance is often determined using the test procedure to EN 1630. The following table indicates the resistance time depending on the tools 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

Implementation of a solar farm

Customer reference: Momberg Group

Our collaboration with Eplan and Rittal was invaluable. Apart from the fact that the AX plastic enclosures were ideal for our purposes, we also benefited from the expertise of both companies at every stage of the process.

André Pinheiro,
Momberg Group

The demand for state-of-the-art photovoltaic systems is unprecedented. In order to keep the industry supplied with large quantities at a rapid rate while also ensuring excellent robustness, the Brazilian Momberg Group uses the AX plastic enclosure series. It also uses the Eplan Pro Panel and Perforex BC milling centre for its prototyping and machining. Ultimately, sustainability needs to happen fast.

Project: Momberg Group

Location: Sorocaba, Brazil

Industry: Energy

The challenge: The rapid implementation of enclosures for safety-relevant components in a solar farm which are resistant to dust, humidity and UV radiation.

The solution: Installation of the plastic AX enclosure series, planned using Eplan Pro Panel, machined with Perforex BC

Photovoltaic energy on every scale is making rapid headway, not just in Europe but also, to a particular degree, in South America. The string box is a vital component for ensuring the effective long-term use of solar power. The string box is a safety-relevant component in photovoltaic technology which transmits strings to the modules and prevents electrical accidents such as short-circuits. It achieves this using so-called string collectors which “collect” electricity from the photovoltaic modules. Under the brand name TECBOX®, the Momberg Group specialises in manufacturing high-performance string boxes. The company relies heavily on the expertise of Rittal and Eplan to help it deliver this future technology in large quantities.

The Momberg Group manufactures the TECBOX® for a wide range of photovoltaic applications, not just in the private sector. Some of the plant supplied by Momberg is on a vast scale, including a large solar farm for a project with one of the country’s largest energy companies. This solar farm required 600 string boxes, and posed a series of challenges. The boxes must be resistant to UV radiation and humidity, and the client also imposed a strict time frame. In collaboration with Rittal and Eplan, Momberg came up with a time-saving and efficient solution. The AX plastic enclosure series from Rittal with its high IP 66 protection category is ideal for large solar farms because it reliably and securely protects the electrical components inside from sunlight, humidity and dust.



Milling with Perforex BC

In the project with Momberg, Rittal was able to draw on its wealth of expertise and provide the prototyping. The entire project was planned using the Eplan Pro Panel software, and the seamless data management also benefited the high-speed machining of countless enclosures on a Perforex BC. Rittal and Momberg succeeded in achieving a rate of 14 enclosures a day, each with 25 holes.

Automation with the Perforex BC helped us achieve huge time savings with the machining process. The combined expertise of Rittal, Eplan and Momberg enabled us to meet the tight deadline and deliver a safe photovoltaic installation which will reliably deliver clean electricity to Brazil in the future.

André Pinheiro, Momberg Group



E-mobility for all

Customer reference: Tritium

Tritium, Australian producers of charging pillars for e-vehicles, will be manufacturing rapid charging stations for e-vehicles across Europe as part of the IONITY joint venture with car manufacturers BMW, Daimler, Ford, VW, Audi and Porsche. Tritium won the contract to build 100 charging stations in several countries including Germany, France, the UK and Sweden. The global availability and quality of Rittal products were among the deciding factors. Rittal's products are used to protect the sensitive electrical components in the charging pillars from environmental influences.

From a start-up, Tritium evolved into one of Australia's fastest-growing companies. Given the low number of electric vehicles in Australia at that time, the company decided to expand to Europe, where e-mobility was developing more rapidly. With its guiding concept of "energy freedom", Tritium's aim is to get power easily and cost-effectively into cars, at home if required, without asking consumers to modify their behaviour. This is the key to making electromobility accessible and generally more attractive to the broader mass market. Confidence in electromobility grows as the number and capacity of charging stations rises, since this is the only way of ensuring the required reach.

The planned rapid charging stations are an important milestone en route to "unrestricted charging freedom" in public spaces. The Rittal enclosures were developed specifically for this application to withstand the challenging conditions of outdoor use while ensuring maximum flexibility with a wide range of accessories. This has been pivotal to the project's success. Rittal's integration into the Tritium IONITY project is a testimony to its expertise in the e-mobility sector, and the Group is now actively involved in promoting the sale of electric vehicles by expanding the charging infrastructure, in keeping with the "energy freedom" motto.

When we began manufacturing for IONITY, we needed an enclosure supplier. Fast availability was a pivotal consideration, because we were keen to deliver this large order on time. The other deciding factors were Rittal's service and accessibility. They won us over.

David Finn,
Founder and CEO of Tritium



Protection from rain and sunshine

Customer reference: SBRS GmbH

Freiburg in Breisgau has gained a new attraction, with its fleet of climate-friendly electric buses. These buses are served by an ingenious charging infrastructure from SBRS GmbH incorporating Rittal components that provide ideal protection from the elements as well as from unauthorised access.

The electric buses can recharge in just 5-8 minutes, while the next passengers are already waiting at the bus stop. This top-up charging at bus stops is achieved with a pantograph and automated contact. In most cases, power is supplied from an infrastructure enclosure designed for outdoor siting. The enclosures must therefore withstand all weathers and not pose any risk to humans, for example from electric shock. A charging infrastructure of this kind is subject to stringent safety requirements, because the charging pillars have a maximum charging output of 450 kW and a rated voltage of up to 800 V. SBRS from Dinslaken won the contract to build the charging infrastructure in Freiburg, having already completed similar projects in Brussels, Münster, Kiel and Venice. The systems integrator develops, project plans and delivers complete charging infrastructures, from the charging device to lightning protection. It also takes care of the civil engineering works and cabling. SBRS GmbH opted for a bayed Toptec enclosure suite from Rittal.

The charging pillars for Freiburg's e-buses are located at the bus depot and at the "Europaplatz" bus stop. They have a protection category of IP 55 which ensures protection from contact, dust and water ingress. For systems integrator SBRS, enclosure technology from Rittal was the obvious choice from day one.

The "Europaplatz" bus stop in Freiburg uses a Toptec outdoor enclosure with an EMC design to shield against electromagnetic waves. The enclosure suite is accessible from three different points. Fan-and-filter units from Rittal were installed to achieve targeted ventilation, with climate control using the ambient temperature. A twin-walled enclosure concept creates a "chimney effect" and prevents the interior from heating up when the sun shines. In other words, hot air is routed upwards and expelled via the vented roof canopy. The use of high-quality materials such as stainless steel and aluminium achieves a high level of corrosion resistance.

We are impressed by the modular system used in Rittal enclosures. The charging infrastructure is quickly and easily developed using Rittal products. What's more, the products are available worldwide, which benefits our international projects.

Dr. Stephan Nahmer,
Member of the Board and Head of Project
Management at SBRS GmbH

Digital on the roof with Rittal ePOCKET

Customer reference: Suatec GmbH

The digital wiring plan pocket gives us up-to-date documentation for every plant.

Christopher Kühl,
Head of Electrical Design at Suatec

When installing large-scale PV systems on building roofs, it's important to keep up a brisk pace. But that's not all. Maintenance is another key consideration at the planning stage. This creates an opportunity for electrical engineering companies, who can now support their customers – the operators – with servicing and add value with Rittal ePOCKET, the digital wiring plan pocket. Electrical engineering company Suatec is a prime example. As well as ordering AX enclosures, it also opted for digital plant documentation for its project with energy experts EHA.

It's a familiar scene to every maintenance engineer: When you open an outdoor enclosure, it's not uncommon to find a bundle of sodden, dusty notes or binders hanging from the door. Hardly surprising, since this type of work is often carried out in poor weather. With the ePOCKET electronic wiring plan pocket, Rittal has devised an ingenious solution that is not just weather-proof but digital, and easily updated. Not least, ePOCKET provides online access to data, so service engineers can prepare from the comfort of their warm, dry office and plan their deployments to optimum effect without having to climb onto the roof.



Into the cloud with a QR code

The digital wiring plan pocket comprises a QR code located on the enclosure rating plate and a corresponding storage location in the Eplan cloud.

The service engineer simply scans the QR code with their smartphone or tablet and is then directed to the system documentation in ePOCKET, with digital copies of wiring plans, data sheets and other information. The service engineer can open ePOCKET before setting out and download the files onto their own device, to avoid reliance on local Internet connections.

Rittal ePOCKET included with the quote

The digital solution with ePOCKET was part of the quote that Suattec GmbH submitted to EHA in Schwarzenbeck, the central energy service-provider to the REWE Group. EHA was looking for a supplier capable of delivering large quantities of standardised switch boxes for PV systems on the roofs of REWE Group supermarkets. Christopher Kühn, Head of Electrical Design at Suattec, recalls: "We supplied the design and prototype for an enclosure that can be mounted directly on the roof. The prototype itself made a great impression, partly thanks to the Rittal AX plastic enclosure." EHA was won over and ordered an initial batch of 50 enclosures in 2023. A further 180 have been ordered for 2024.

More than just an enclosure

After activating the digital wiring plan pocket, the enclosure data sheet is automatically filed in ePOCKET. Suattec then adds the documents for all other components. Rittal supplies the enclosures themselves as well as some of the interior components, including the power distributors and disconnectors fitted on the RiLine60 busbar systems. Additionally, a Rittal heater and fan ensure consistent climate control inside the enclosure in both winter and summer. The enclosures are designed for use with PV systems of different sizes.

Customers appreciate the added value

The additional digital solution was very positively received by those responsible at EHA. "As energy experts, we benefit from the digital documentation in the Rittal ePOCKET that is easily updated while being stored safe from the elements in the cloud", says Bennet Robeck, Manager of Technical Photovoltaic Operations at EHA. Christopher Kühn concludes: "The ePOCKET takes us one step closer to digitalisation, helping us to establish fully digital, seamless processes. EHA can utilise this digitalisation itself, while the Rittal ePOCKET delivers a future-proof, digital documentation system."



Pollen hunting on the mountain peak

Customer reference: Helmut Hund GmbH

Securely protected by the Rittal Toptec, our POMO is ready to record pollen data at 2,650 m on the Zugspitze mountain peak.

Dr. Stefan Schäfer,
Helmut Hund GmbH

Pollen allergies can be grim. The company HUND has developed an automatic pollen monitoring system that claims to predict the spread of allergens more rapidly and accurately. Part of the plan entails conducting measurements from Germany's highest mounting peak, the Zugspitze. However, the region surrounding the research station is exposed to high winds and low temperatures, so the sensitive technology needs an enclosure capable of ensuring an optimum operating climate at all times.

Project: Helmut Hund GmbH – Pollen monitor enclosure

Location: Zugspitze, Germany

Industry: Panel-builders & switchgear manufacturers

The challenge: To install a pollen measurement system which automatically analyses airborne allergens on the Zugspitze mountain peak.

Because the peak is exposed to extreme weather conditions, the developers needed to find an enclosure that would reliably protect the technology from high winds, snow, rain, UV radiation, temperature fluctuations ranging from -30 to +60°C, and even rockfall. To make matters more difficult, cold external air must be drawn into the enclosure for analysis purposes, yet the sensitive technology cannot tolerate temperatures below zero.

The solution: The Rittal Toptec outdoor enclosure: It can withstand the extreme conditions on the mountain peak.

The Toptec also offers sufficient opportunities for expansion. A heated intake pipe, an internal heater and a microscope heater were also incorporated.

Helmut Hund GmbH has developed an AI algorithm capable of automatically distinguishing and counting pollen and spores. Until now, this required the human eye and a microscope, but prompt, detailed forecasts were not available for allergy-sufferers. The new system delivers information in real time about current pollen and spores. Combined with meteorological data about wind strength and direction, these forecasts offer an invaluable tool. However, the exposed location on the mountain peak placed particular demands on the enclosure. As well as needing the usual outdoor approvals to withstand external influences, the client also stipulated a perfect climate for the enclosure interior. Hund opted for the Toptec outdoor enclosure from Rittal, the “outdoor enthusiast” of the enclosure world.



The Toptec boasts a host of valuable features. The enclosure itself and its doors are doubled-walled, preventing heat from penetrating, even in strong sunlight. The double-walled enclosure concept also prevents the formation of condensation. A projecting rain canopy keeps water away from the seal. The Toptec has a high protection category of IP 55 against dust and water jets. This “outdoor enthusiast” is easy-care and robust. It can withstand high winds without damage.

At the same time, the Toptec offers extensive opportunities for expansion. The POMO team at Helmut Hund GmbH were easily able to install heaters at critical points. For example, a heated air intake pipe now protrudes from the roof of the compact enclosure. To protect against cold outdoor air, the engineers also installed an interior device heater. The sensitive lens and electronics of the camera-based microscope at the heart of the POMO are protected by a further heater.

After an adventurous train journey, the compact stand-alone enclosure was transported from Grainau to the research station on the mountain peak, where, it was assembled in the sunshine and commissioned.

If the system proves itself under the extreme conditions at 2,650 metres altitude, the go-ahead will be given for a nationwide pollen monitoring system. Unlike ozone, fine dust and nitrogen oxide, there are only a handful of private organisations measuring biological air quality parameters like pollen and spore concentrations, despite the fact that more than 80 million people in Europe suffer from airborne allergens and would benefit from more accurate forecasts.

The pollen monitor can now provide automated information on how much pollen is actually in the air. Mankind has discovered a new weapon in the battle against airborne allergens.



Plastic enclosures AX



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

Surface finish:

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

Colour:

- Similar to RAL 7035

Protection class:

- II at 1000 V AC

Protection category IP to IEC 60 529:

- IP 66

Type rating to UL 50E:

- Type 1, 3R, 3RX, 4, 4X, 12

Supply includes:

- Enclosure with hinged door, of all-round solid construction, 3 mm double-bit lock
- Door hinged on the right, may be swapped to the left
- Mounting plate
- Twin seal on the top and bottom edges of the door as integral rain protection strip

Please note the product-specific scope of supply.

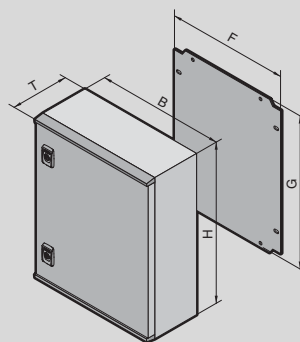
Note:

- Interior installation screws are required to secure components inside the enclosure
- If exposed to long-term UV radiation (sunlight) and rain, we recommend spray-finishing the surface with a PUR paint to avoid any visual impairments to the surface. Prices and delivery times on request.

Approvals:

- UL
- cUL

Further approvals can be found on the Internet.



without viewing window

Width (B) mm	Packs of	250	300	400	400	500	600	600	800
Height (H) mm		350	400	400	600	500	600	800	1000
Depth (T) mm		150	200	200	200	300	200	300	300
Mounting plate width (F) mm		155	205	305	305	405	505	505	705
Mounting plate height (G) mm		275	325	325	525	425	525	725	925
Mounting plate thickness mm		2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0
Model No.	1 pc(s).	1432.000	1434.000	1444.000	1446.000	1453.000	1466.000	1468.000	1480.000
Weight kg		7	6.96	8.5	12.3	14.5	17.5	25.4	38.7
Product-specific scope of supply									
Cam lock		1	2	2	2	2	2	2	3
Accessories									
Wall mounting bracket	4 pc(s).	1485.400	1485.400	1485.400	1485.400	1485.400	1485.400	1485.400	1485.400
Pole clamp	2 pc(s).	2584.100	2584.100	2584.100	2584.100	2584.100	2584.100	2584.100	–
Universal bracket	4 pc(s).	1485.200	1485.200	1485.200	1485.200	1485.200	1485.200	1485.200	1485.200
Door stay	2 pc(s).	–	1485.100	1485.100	1485.100	1485.100	1485.100	1485.100	1485.100
LED system light		–	–	2500.100	2500.100	2500.100	2500.100	2500.110	2500.110
Mini-comfort handle AX	1 pc(s).	1485.600	1485.600	1485.600	1485.600	1485.600	1485.600	1485.600	1485.600
Cable gland		see Internet	see Internet	see Internet	see Internet	see Internet	see Internet	see Internet	see Internet
Screw for interior installation	50 pc(s).	1485.300	1485.300	1485.300	1485.300	1485.300	1485.300	1485.300	1485.300
Wiring plan pocket	1 pc(s).	–	–	–	–	–	4116.500	4116.500	4118.500
Punched section with mounting flange 23 x 64 mm, installation in the height	4 pc(s).	–	8617.110	8617.110	8617.130	8617.120	8617.130	8617.140	8617.150
Punched section with mounting flange 23 x 64 mm, installation in the width		–	–	8617.110	8617.110	8617.120	8617.130	8617.130	8617.140
Support strips, installation in the door	20 pc(s).	–	–	4594.000	4594.000	4309.000	4596.000	4596.000	4598.000
Punched section with mounting flange 14 x 39 mm, installation in the door	4 pc(s).	–	–	8619.700	8619.700	8619.710	8619.720	8619.720	8619.730



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 window: Polycarbonate

Surface finish:

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

Colour:

- Similar to RAL 7035

Protection class:

- II at 1000 V AC

Protection category IP to IEC 60 529:

- IP 56

Type rating to UL 50E:

- Type 1, 3R, 3RX, 4, 4X, 12

Supply includes:

- Enclosure with hinged door with viewing window, of all-round solid construction, 3 mm double-bit lock
- Door hinged on the right, may be swapped to the left
- Mounting plate
- Twin seal on the top and bottom edges of the door as integral rain protection strip

Please note the product-specific scope of supply.

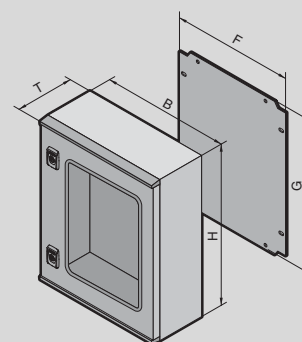
Note:

- Interior installation screws are required to secure components inside the enclosure
- If exposed to long-term UV radiation (sunlight) and rain, we recommend spray-finishing the surface with a PUR paint to avoid any visual impairments to the surface. Prices and delivery times on request.

Approvals:

- UL
- cUL

Further approvals can be found on the Internet.



with viewing window

Width (B) mm	Packs of	400	400	500	600	600	800
Height (H) mm		400	600	500	600	800	1000
Depth (T) mm		200	200	300	200	300	300
Mounting plate width (F) mm		305	305	405	505	505	705
Mounting plate height (G) mm		325	525	425	525	725	925
Mounting plate thickness mm		2.5	3.0	3.0	3.0	3.0	3.0
Model No.	1 pc(s).	1448.000	1449.000	1454.000	1467.000	1469.000	1479.000
Weight kg		8.97	12.1	15.1	17.1	24.4	39.5
Product-specific scope of supply							
Cam lock		2	2	2	2	2	3
Accessories							
Wall mounting bracket	4 pc(s).	1485.400	1485.400	1485.400	1485.400	1485.400	1485.400
Pole clamp	2 pc(s).	2584.100	2584.100	2584.100	2584.100	2584.100	–
Universal bracket	4 pc(s).	1485.200	1485.200	1485.200	1485.200	1485.200	1485.200
Door stay	2 pc(s).	1485.100	1485.100	1485.100	1485.100	1485.100	1485.100
LED system light		2500.100	2500.100	2500.100	2500.100	2500.110	2500.110
Mini-comfort handle AX	1 pc(s).	1485.600	1485.600	1485.600	1485.600	1485.600	1485.600
Cable gland		see Internet	see Internet	see Internet	see Internet	see Internet	see Internet
Screw for interior installation	50 pc(s).	1485.300	1485.300	1485.300	1485.300	1485.300	1485.300
Wiring plan pocket	1 pc(s).	–	–	–	4116.500	4116.500	4118.500
Punched section with mounting flange 23 x 64 mm, installation in the height	4 pc(s).	8617.110	8617.130	8617.120	8617.130	8617.140	8617.150
Punched section with mounting flange 23 x 64 mm, installation in the width		8617.110	8617.110	8617.120	8617.130	8617.130	8617.140
Support strips, installation in the door	20 pc(s).	4594.000	4594.000	4309.000	4596.000	4596.000	4598.000
Punched section with mounting flange 14 x 39 mm, installation in the door	4 pc(s).	8619.700	8619.700	8619.710	8619.720	8619.720	8619.730

Toptec, bayable



Bayable, double-walled outdoor enclosure. The entire enclosure frame is available for efficient, flexible interior installation on a 25 mm pitch pattern.

Material:

- Enclosure frame: Stainless steel 1.4301 (AISI 304)
- Door, protection canopy, rear panel and base/plinth trim panels: Aluminium, AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

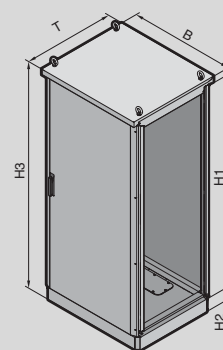
- IP 55

Type rating to UL 50E:

- 3R
- 12

Supply includes:

- Enclosure frame
- Front door with door stay, swing lever handle and profile half-cylinder, lock BJ 20027
- Door hinged on the right, may be swapped to the left
- Rear panel, removable
- Protection canopy
- Base/plinth with screw-fastened trim panels, front and rear
- Gland plates, screw-fastened in the base

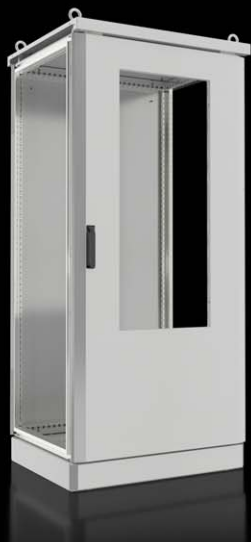


Door, sealed

Width (B) mm	Packs of	600	600	800	800	800	800	800
Height (H1) mm		1600	1800	1200	2000	1600	1600	1800
Depth (T) mm		600	600	800	800	600	800	800
Base/plinth height (H2) mm		100	100	100	100	100	100	100
Overall height (H3) mm		1745	1945	1345	2145	1745	1745	1945
Model No.	1 pc(s).	9781.666	9781.686	9781.818	9781.828	9781.866	9781.868	9781.888
Weight kg		65.0	70.0	76.0	96.0	81.5	86.0	91.5

Accessories

Accessories		5051.035	5051.036	5051.039	5051.043	5051.041	5051.041	5051.042
Mounting plate	1 pc(s).	5051.035	5051.036	5051.039	5051.043	5051.041	5051.041	5051.042
Mounting plate attachment	1 pc(s).	5050.063	5050.063	5050.063	5050.063	5050.063	5050.063	5050.063
Mounting angles, 482.6 mm (19")	2 pc(s).	7827.160	7827.180	7827.120	7827.200	7827.160	7827.160	7827.180
Installation brackets for 482.6 mm (19") mounting angles	2 pc(s).	7696.000	7696.000	7698.000	7698.000	7698.000	7698.000	7698.000
Swing frame, large	1 pc(s).	see page 30	see page 30	see page 30	see page 30	see page 30	see page 30	see page 30
Side panels	2 pc(s).	9781.660	9781.860	9781.180	9781.280	9781.660	9781.680	9781.880
Baying kit	1 pc(s).	9781.000	9781.000	9781.000	9781.000	9781.000	9781.000	9781.000
LED system light	1 pc(s).	2500.100	2500.100	2500.100	2500.100	2500.100	2500.100	2500.100
Door-operated switch	1 pc(s).	2500.460	2500.460	2500.460	2500.460	2500.460	2500.460	2500.460
Socket box	1 pc(s).	see Internet	see Internet	see Internet	see Internet	see Internet	see Internet	see Internet
Concrete base/plinth	1 pc(s).	9765.071	9765.071	9765.183	9765.183	9765.072	9765.183	9765.183



Bayable, double-walled outdoor enclosure. The entire enclosure frame is available for efficient, flexible interior installation on a 25 mm pitch pattern.

Material:

- Enclosure frame: Stainless steel 1.4301 (AISI 304)
- Door, protection canopy, rear panel and base/plinth trim panels: Aluminium, AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

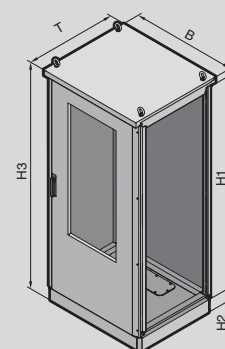
- IP 55

Type rating to UL 50E:

- 3R
- 12

Supply includes:

- Enclosure frame
- Front door with door stay, swing lever handle and profile half-cylinder, lock BJ 20027
- Door hinged on the right, may be swapped to the left
- Rear panel, removable
- Protection canopy
- Base/plinth with screw-fastened trim panels, front and rear
- Gland plates, screw-fastened in the base



With door cut-out for climate control

Width (B) mm	Packs of	800	800	800	800	800	800
Height (H1) mm		1200	2000	1600	1600	1800	1800
Depth (T) mm		800	800	600	800	800	800
Base/plinth height (H2) mm		100	100	100	100	100	100
Overall height (H3) mm		1345	2145	1745	1745	1945	1945
Model No.	1 pc(s).	9782.818	9782.828	9782.866	9782.868	9782.888	9783.888
Weight kg		73.5	92.0	70.5	75.5	80.5	76.5
Accessories							
Mounting plate	1 pc(s).	5051.039	5051.043	5051.041	5051.041	5051.042	5051.042
Mounting plate attachment	1 pc(s).	5050.063	5050.063	5050.063	5050.063	5050.063	5050.063
Mounting angles, 482.6 mm (19")	2 pc(s).	7827.120	7827.200	7827.160	7827.160	7827.180	7827.180
Installation brackets for 482.6 mm (19") mounting angles	2 pc(s).	7698.000	7698.000	7698.000	7698.000	7698.000	7698.000
Side panels	1 pc(s).	9781.180	9781.280	9781.660	9781.680	9781.880	9781.880
Adaptor plate	1 pc(s).	9828.110	–	9828.110	9828.110	9828.110	–
Baying kit	1 pc(s).	9781.000	9781.000	9781.000	9781.000	9781.000	9781.000
LED system light	1 pc(s).	2500.100	2500.100	2500.100	2500.100	2500.100	2500.100
Door-operated switch	1 pc(s).	2500.460	2500.460	2500.460	2500.460	2500.460	2500.460
Socket box	1 pc(s).	see Internet	see Internet	see Internet	see Internet	see Internet	see Internet
Wall-mounted cooling unit Blue e+ outdoor	1 pc(s).	3185.330	see page 26	3185.330	3185.330	3185.330	see page 26
Concrete base/plinth	1 pc(s).	9765.183	9765.183	9765.072	9765.183	9765.183	9765.183

Outdoor Basic enclosures



Outdoor enclosure with transport plinth and protection canopy with projections on all sides.

Material:

- Aluminium, AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

- IP 55

Type rating to UL 50E:

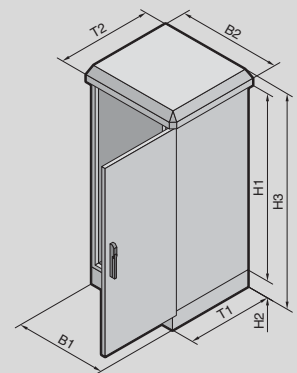
- 3R

Supply includes:

- Single-walled outdoor enclosure, fully preconfigured
- Gland plates, three-part
- Front door(s) with door stay, swing lever handle and profile half-cylinder, lock BJ20027
- Transport plinth with screw-fastened trim panels front and rear
- Protection canopy

Note:

- Enclosure width 1200 mm has two 600 mm wide mounting plates
- Removable centre bar for 1200 mm wide enclosure



Single-walled

Width (B1) mm	Packs of	600	800	1200
Height (H1) mm		1200	1200	1200
Depth (T1) mm		500	500	500
Protection canopy width (B2) mm		650	850	1250
Protection canopy depth (T2) mm		550	550	550
Base/plinth height (H2) mm		100	100	100
Overall height (H3) mm		1355	1355	1355
Model No.	1 pc(s).	9783.530	9783.610	9784.540
Door(s)		1	1	2
Weight kg		38.0	49.5	66.0
Accessories				
Mounting plate	1 pc(s).	9765.092	9765.095	9765.191
Profile half-cylinders	1 pc(s).	9785.040	9785.040	9785.040
Mounting angles, 482.6 mm (19')	2 pc(s).	7688.000	7688.000	7688.000
Installation bracket for mounting angles, 482.6 mm (19')	2 pc(s).	7696.000	7698.000	7696.000
LED system light	1 pc(s).	see Internet	see Internet	see Internet
Door-operated switch	1 pc(s).	2500.460	2500.460	2500.460
Socket box	1 pc(s).	see Internet	see Internet	see Internet
Enclosure heater	1 pc(s).	3105.400	3105.400	3105.400
Thermostat	1 pc(s).	3110.000	3110.000	3110.000
Concrete base/plinth	1 pc(s).	9765.084	9765.082	9765.086

Multifunctional enclosures



Double-walled outdoor enclosures made from aluminium with a resistance class of RC 2 including cable management plinth. Prepared for the fitting of 19"/ETSI combination rails and a Direct Air Cooling system (DAC).

Material:

- Enclosure, roof, doors(s), gland plate: Aluminium, AlMg3
- Mounting plate(s): Aluminium, AlMg3
- Support rail: Stainless steel 1.4016 (AISI 430)

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

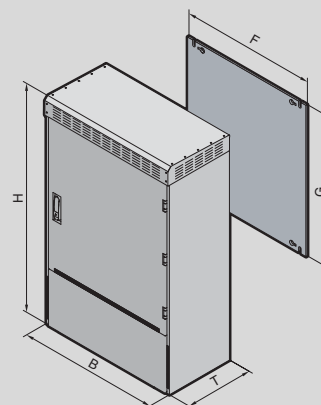
- IP 55

Type rating to UL 50E:

- NEMA 3R
- NEMA 12

Supply includes:

- Protection canopy with ventilation, prepared for mounting a Direct Air Cooling (DAC) system
- Mechanical door stay (door opening angle approx. 155°)
- Swing lever handle and profile half-cylinder, lock BJ20027
- Cable management base/plinth with all-round panelling
- Gland plates
- Base plate
- Mounting plate



Width (B) mm	Packs of	1000	1300	2000
Height (H) mm		1050	1050	1050
Depth (T) mm		400	500	500
Mounting plate width (F) mm		841	610 548	548 375 280
Mounting plate height (G) mm		948	941	941
Model No.	1 pc(s).	9751.908	9751.912	9751.918
Accessories				
Ground plinth	1 pc(s).	9765.248	9765.249	9765.250
Combination rail 19"/ETSI	2 pc(s).	9751.600	9751.600	9751.600
Divider panel	1 pc(s).	–	9751.200	9751.200
LED system light	1 pc(s).	see Internet	see Internet	see Internet
Door-operated switch	1 pc(s).	2500.460	2500.460	2500.460
Socket box	1 pc(s).	see Internet	see Internet	see Internet
Connection cable	Infeed, 2-pole, 100 – 240 V AC	5 pc(s).	2500.420	2500.420
	Through-wiring, 2-pole, 100 – 240 V AC	5 pc(s).	2500.450	2500.450
Plastic gland plate, modular	1 pc(s).	2562.200	2562.200	2562.200
Plastic gland plate with membranes	1 pc(s).	2562.300	2562.300	2562.300
Direct Air Cooling (DAC) system	1 pc(s).	9760.342	9760.342	9760.342

Wall-mounted cooling unit Blue e+ outdoor



The energy-efficient wall-mounted cooling unit Blue e+ Outdoor can be used worldwide, thanks to its multi-voltage capability, and is suitable for use with Toptec project solutions, for example.

Benefits:

- Average 75% energy savings thanks to speed-regulated components and heat pipe technology
- Longer service life of the components inside the enclosure and the cooling unit due to component-friendly cooling
- Intuitive operation with touch display and intelligent interfaces

Temperature control:

- e+ controller (factory setting +35 °C)

Material:

- Aluminium AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

- Internal circuit IP 56

Protection category NEMA:

- UL Type 4/3R/12

Supply includes:

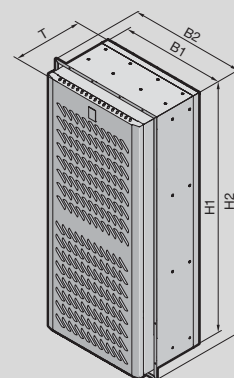
- Condenser with hydrophobic RiNano coating
- Integral electric condensate evaporation
- Fully wired ready for connection (plug-in terminal strip)
- Sealing frame for universal attachment to outdoor enclosures for external, partial internal and full internal mounting.
- Assembly parts

Approvals:

Available on the Internet

Performance diagrams:

Available on the Internet



Output class 1500 – 5000 W

Model No.	Packs of	3185.330	3186.330	3187.330	3188.340	3189.340
Total cooling output 50 Hz L35 L35 to DIN EN 14511 kW		1.5	2.0	2.5	3.7	4.9
Total cooling output 50/60 Hz L35 L35 kW		1.5/1.5	2.0/2.0	2.5/2.5	3.7/3.7	4.9/4.9
Rated operating voltage V, ~, Hz		110 – 240, 1~, 50/60 380 – 480, 3~, 50/60	110 – 240, 1~, 50/60 380 – 480, 3~, 50/60	110 – 240, 1~, 50/60 380 – 480, 3~, 50/60	380 – 480, 3~, 50/60	380 – 480, 3~, 50/60
Width (B1) mm		415	465	465	465	465
Height (H1) mm		990	1640	1640	1640	1640
Depth (T) mm		280	260	260	360	360
Enclosure dimensions including sealing frame and designer cover (B2 x H2 x T) mm		467 x 1042 x 280	517 x 1692 x 260	517 x 1692 x 260	517 x 1692 x 360	517 x 1692 x 360
Dimensions to fit enclosure type		Toptec	Toptec	Toptec	Toptec	Toptec
With height mm		≥ 1200	≥ 1800	≥ 1800	≥ 1800	≥ 1800
With width mm		≥ 600	≥ 800	≥ 800	≥ 800	≥ 800
Rated power input kW		0.62	0.85	1.05	1.57	2.35
Power consumption P _{el} 50/60 Hz L35 L35 kW		0.57/0.57	0.70/0.70	1.08/1.08	1.55/1.55	2.35/2.35
Operating temperature range		-30 °C...+60 °C	-30 °C...+60 °C	-30 °C...+60 °C	-30 °C...+60 °C	-30 °C...+60 °C
Setting range		+20 °C...+50 °C	+20 °C...+50 °C	+20 °C...+50 °C	+20 °C...+50 °C	+20 °C...+50 °C
Energy efficiency ratio (EER) 50/60 Hz L35 L35		2.61/2.61	3.08/3.08	2.31/2.31	2.39/2.39	2.09/2.09
Refrigerant g		R-513A, 760	R-513A, 1070	R-513A, 1070	R-513A, 1800	R-513A, 1800
Weight kg		36.0	56.8	56.8	72.8	72.8
Also required						
Enclosure heater		see page 28	see page 28	see page 28	see page 28	see page 28
Thermostat	1 pc(s).	3110.000	3110.000	3110.000	3110.000	3110.000
Hygrostat	1 pc(s).	3118.000	3118.000	3118.000	3118.000	3118.000

Blue e+ fan-and-filter units

Revolutionary, IoT-compatible fan-and-filter units – Superior performance, sustainability & reliability

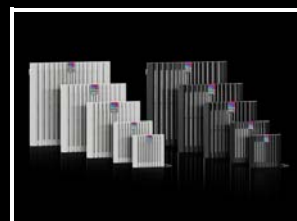
Enter the future of fan-and-filter technology with Blue e+ fan-and-filter units. Alongside their pioneering IoT-compatibility, the outstanding filter performance with innovative pleated filter included with the supply sets these units apart.

These fan-and-filter units will unlock a host of benefits – from energy efficiency, to superior monitoring and sustainability, through to higher air throughputs.

- Maximum air throughput with a standard pleated filter
- Easy filter changes, thanks to a new opening mechanism on the louvred grille
- Faster installation on the enclosure with optimised detent hooks
- IoT link including new filters (automatic filter cleaning, filter maintenance display, emergency cooling function)
- Multi-voltage capability 100 – 240 V
- The fan-and-filter portfolio includes the options AC/DC, EC and EMC

More about
Blue e+ fan-and-filter units:

www.rittal.com/fan-solutions



Hose-proof hood

to increase the protection category

For fan-and-filter units/outlet filters. Easy cleaning thanks to exterior silicone coating approved for use with foodstuffs.

Material:

- Stainless steel
- Silicone

Protection category IP to IEC 60 529:

- IP 56 when fitted over fan-and-filter unit/outlet filter with filter mat



To fit Model No.	W x H x D mm	Protection category	Packs of	Model No.
3237....	150 x 230 x 40	NEMA 1 NEMA 12 NEMA 3 NEMA 3R	1 pc(s).	3237.080
3238....	176 x 245 x 55	NEMA 1 NEMA 12 NEMA 3 NEMA 3R NEMA 4 NEMA 4X	1 pc(s).	3238.080
3239....	233 x 330 x 55	NEMA 1 NEMA 12 NEMA 3 NEMA 3R NEMA 4 NEMA 4X	1 pc(s).	3239.080
3240..../3241....	282 x 390 x 85	NEMA 1 NEMA 12 NEMA 3 NEMA 3R NEMA 4 NEMA 4X	1 pc(s).	3240.080
3243..../3244....	350 x 480 x 110	NEMA 1 NEMA 12 NEMA 3 NEMA 3R NEMA 4 NEMA 4X	1 pc(s).	3243.080
3245....	350 x 480 x 160	NEMA 1 NEMA 12 NEMA 3 NEMA 3R	1 pc(s).	3245.080



Direct Air Cooling (DAC) system

Roof-mounted for installing in a multifunctional enclosure

The product compensates very efficiently for high heat losses with a low delta T in the multifunctional enclosure. It uses a highly effective pleated filter to filter ambient air and route it into the multifunctional enclosure, while the heated interior air escapes via a non-return valve. The Direct Air Cooler (DAC) is fully integrated into the roof of the multifunctional enclosure and thus protected against vandalism.

Material:

- Enclosure: Aluminium AlMg3

Colour:

- RAL 7035

Supply includes:

- 12-pole WAGO connector

Protection category IP to IEC 60 529:

- IP 54
- IP 55 (in conjunction with multifunctional enclosure)

Note:

- Characteristic curve and alarms configurable via PC software CS200. The software is available in the download area on the Rittal website. The connection cable must be provided by the customer.

W x H x D mm	To fit Model No.	Specific thermal output W/K	Rated operating voltage V	Operating temperature range	Packs of	Model No.
875 x 125 x 313	9751.908 9751.912 9751.918	110	48 (DC)	-33 °C...+65 °C	1 pc(s).	9760.342



Enclosure heater

Enclosure heaters to regulate relative humidity, prevent temperatures from dropping below the dew point and stop condensation forming inside the enclosure. This prevents consequential damage associated with corrosion or electrical short-circuits.

Material:

- Without fan: Aluminium, anodised
- With fan: Plastic

Protection category IP to IEC 60 529:

- IP 20

Protection class:

- II (all-insulated)

Supply includes:

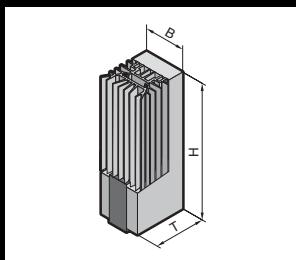
- Without fan: PTC heater, quick-connect terminal, assembly parts
- With fan: PTC heater with fan, assembly parts

Note:

- A thermostat 3110.000 is recommended for precise temperature control inside the enclosure.
- To prevent condensation on assemblies, we recommend hygrostat 3118.000 to regulate the heating.
- In larger enclosures, even heat distribution is best achieved by installing several low-output heaters.

Approvals:

Available on the Internet



1 Continuous thermal output 10 – 150 W, without fan

Width (B) mm	Height (H) mm	Depth (T) mm	Continuous thermal output at Tu = 10 °C W	Rated operating voltage V, ~, Hz	Packs of	Model No.
45	120	46	8 – 10	110 – 240, 1~, 50/60	1 pc(s).	3105.310
45	120	46	18 – 20	110 – 240, 1~, 50/60	1 pc(s).	3105.320
64	155	56	23 – 30	110 – 240, 1~, 50/60	1 pc(s).	3105.330
64	155	56	49 – 50	110 – 240, 1~, 50/60	1 pc(s).	3105.340
64	230	56	63 – 75	110 – 240, 1~, 50/60	1 pc(s).	3105.350
90	165	75	86 – 100	110 – 240, 1~, 50/60	1 pc(s).	3105.360
90	180	75	130 – 150	110 – 240, 1~, 50/60	1 pc(s).	3105.370

2 Continuous thermal output 235 – 800 W, with fan

Width mm	Height mm	Depth mm	Continuous thermal output at Tu = 10 °C W	Rated operating voltage V, ~, Hz	Packs of	Model No.
103	200	103	235/250	115, 1~, 50/60	1 pc(s).	3105.410
103	200	103	250/265	230, 1~, 50/60	1 pc(s).	3105.380
103	200	103	355/400	115, 1~, 50/60	1 pc(s).	3105.420
103	200	103	400/415	230, 1~, 50/60	1 pc(s).	3105.390
103	200	103	710/800	115, 1~, 50/60	1 pc(s).	3105.430
103	200	103	800/870	230, 1~, 50/60	1 pc(s).	3105.400

Side panel, screw-fastened

For Toptec, bayable

Twin-walled, screw-fastened side panel, including roof side parts.

Material:

- Aluminium, AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Protection category IP to IEC 60 529:

- IP 55

Protection category to UL 50E:

- 3R, 12

Supply includes:

- Side panels
- Roof side parts
- Including earthing and assembly parts

To fit		Packs of	Model No.
Height mm	Depth mm		
1600	600	2 pc(s).	9781.660
1800	600	2 pc(s).	9781.860
1200	800	2 pc(s).	9781.180
1600	800	2 pc(s).	9781.680
1800	800	2 pc(s).	9781.880
2000	800	2 pc(s).	9781.280



Door module

For Toptec, bayable

Door for retro-fitting in exchange for the rear panel.

Material:

- Aluminium, AlMg3

Surface finish:

- Powder-coated
- UV-resistant pure polyester

Colour:

- RAL 7035

Supply includes:

- Door with door stay, swing lever handle and profile half-cylinder, lock BJ 20027
- Door hinged on the right, may be swapped to the left

To fit Model No.	Dimensions mm		Packs of	Model No.
	Width	Height		
9781.818 9782.818	800	1200	1 pc(s).	5051.443
9781.666 9781.866 9782.866	600	1600	1 pc(s).	5051.444
9781.866 9782.866 9781.868 9782.868	800	1600	1 pc(s).	5051.445
9781.686	600	1800	1 pc(s).	5051.446
9781.888 9782.888 9783.888	800	1800	1 pc(s).	5051.447
9781.828 9782.828	800	2000	1 pc(s).	5051.448



Outdoor housing

for AX compact enclosures

- For use outdoors
- For creating an enclosure-within-an-enclosure concept
- Cut-out at the bottom and integrated louvres in the side and base for optimum enclosure ventilation

Material:

- Aluminium AlMg3

Surface finish:

- Powder-coated

Note:

- Depending on the application/environment, a sheet steel or stainless steel enclosure may be built into the housing

Encapsulation W x H x D mm	For AX enclosures W x H x D mm	Packs of	Model No.
421 x 550 x 308	300 x 400 x 210	1 pc(s).	9792.055



Also required:

- Wall mounting bracket for AX sheet steel, see Internet
- Or wall mounting bracket for AX stainless steel, see Internet

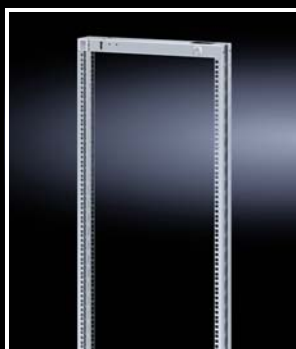


Accessories:

- Pole clamp, see Internet



Accessories



Swing frame, large

for 600 and 800 mm wide enclosures

For mounting 482.6 mm (19") equipment.

Material:

- Sheet steel

Surface finish:

- Frame: Zinc-plated
- Trim panels: Spray finished

Colour:

- Trim panels: RAL 7035

Supply includes:

- Lock system, 130° hinge and parts for attaching to the installation kit

Note:

- The swing frame stay is required to lock the open swing frame, see page 31



Accessories:

- 482.6 mm (19") fastener, 1 U, see Internet

Installation options

Full installation, front/set back	Partial installation, top, front/set back	Partial installation, centre, front/set back

Trim panel			Without	One side	Both sides	Page
For enclosure width mm			600	800	800	
U	For min. enclosure height mm	Packs of	Model No.			
22	1200	1 pc(s).	8619.010	8619.020	8619.030	
31	1600	1 pc(s).	8619.011	8619.021	–	
35	1800	1 pc(s).	8619.012	8619.022	8619.032	
40	2000	1 pc(s).	8619.013	8619.023	8619.033	
44	2200	1 pc(s).	8619.014	8619.024	8619.034	
Lock system		Cam lock	■	–	–	
		Locking rod	–	■	■	

Also required:

1) Installation kit	For enclosure width mm	Packs of				
	600	1 pc(s).	8619.040	–	–	31
	800	1 pc(s).	8619.041	8619.041	8619.041	31
2) Punched section with mounting flange 23 x 64 mm, 2 or 4 pc(s) required	Installation in enclosure depth mm	Packs of				
	600	4 pc(s).	8617.130	8617.130	8617.130	
	800	4 pc(s).	8617.140	8617.140	8617.140	

Accessories

Comfort handle AX			–	see Internet	see Internet	
Lock inserts	Version A		–	see Internet	see Internet	
		1 pc(s).	8619.051	8619.051	8619.051	31

1) Only in conjunction with 800 mm wide installation kit



Installation kit

for swing frame, large

For mounting:

- Directly on the enclosure section when installed across the entire enclosure height
- In conjunction with punched section with mounting flange 23 x 64 mm, for partial installation in the enclosure height

Material:

- Sheet steel, 3 mm

Surface finish:

- Spray-finished

Colour:

- RAL 7035

Supply includes:

- Assembly parts

For enclosure width mm	Load capacity N	Packs of	Model No.
600	3500	1 pc(s).	8619.040
800	3500	1 pc(s).	8619.041



Swing frame stay

Secures the swing frame in the open position.

For mounting on swing frame, large:

- 8619.270 at the top of the enclosure
- 1980.200 at the bottom of the enclosure (with safety stop at 160°)

	Packs of	Model No.
For 130° hinge	1 pc(s).	8619.270
For 180° hinge	1 pc(s).	1980.200



180° hinge

for swing frame, large

- To extend the opening angle from 130° to 180° in the foremost installation position
- Provides optimum access to the components and 482.6 mm (19") components located behind the swing frame

Load capacity:

- Up to 1500 N

Material:

- Die-cast

Packs of	Model No.
1 pc(s).	8619.051



Slide rail

for swing frames

To support heavy slide-in 482.6 mm (19") electronic equipment in the swing frame.

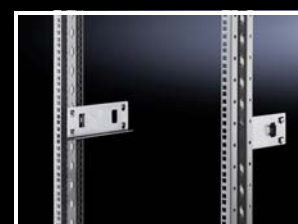
Material:

- Sheet steel

Surface finish:

- Zinc-plated

For slide-in equipment with max. installation depth	Packs of	Model No.
< 190 mm	10 pc(s).	1962.200
> 190 mm	10 pc(s).	1963.200



Blanking plate, 482.6 mm (19")

For installation in electronic enclosures or housings.

Benefits:

- To neatly finish off free locations within the mounting level

Material:

- Aluminium, 3 mm

Surface finish:

- Natural anodised

Height units U	Packs of	Model No.
1	3 pc(s).	1931.200
2	3 pc(s).	1932.200
3	3 pc(s).	1933.200
4	3 pc(s).	1934.200
6	3 pc(s).	1936.200
7	3 pc(s).	1935.200
9	3 pc(s).	1939.200
12	3 pc(s).	1937.200



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