Rittal – **CS Outdoor Solutions**



Reliable Outdoor enclosure solutions – for all industries, worldwide

FRIEDHELM LOH GROUP

RITTAL®

These days, communication is a global business which transcends national borders across all industries. Not only is this true in a geographical sense; time has also taken on a whole new dimension. The world has become a global village, and any distance can be covered in a matter of seconds. The network is expanding, but the rapid rate of change relies on one key constant: the junctions where information flows convene, intersect and are distributed. Wherever in the world you happen to be, whatever the altitude, whatever the climatic conditions, Rittal CS Outdoor systems offer rock-solid reliability. We have the right solution, wherever in the world you happen to be.



CS MODULAR ENCLOSURES

Standard enclosures
- 4 size variants, available off-the-shelf
- Twin-walled
- Aluminium (AlMg3)

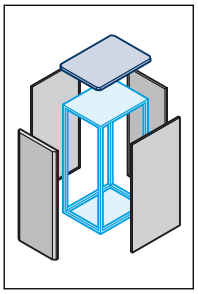


Individual
- Installation service from our modular range with 12 frame sizes
- Customised solutions – Level 4 system integration
- Configuration with climate control components



TOPTEC CR

Standard enclosures
- 4 size variants, available off-the-shelf
- Twin-walled
- Sheet steel, zinc-plated, passivated



Individual
- Size variants
- Baying variants
- Customised solutions – Level 4 system integration
- Configuration with climate control components



CS BASIC ENCLOSURES

Standard enclosures
- 12 size variants, available off-the-shelf
- Single-walled
- Aluminium (AlMg3)



Individual
- Installation service with system accessories
- Size variants
- Colour variants



CS WALL-MOUNTED ENCLOSURES

Standard enclosures
- 4 size variants, available off-the-shelf
- Twin-walled (enclosure-within-an-enclosure)
- Aluminium (AlMg3)



Individual
- Size variants
- 482.6 mm (19˝) rotating frame, fitted
- System integration up to Level 4



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We are at home in any industry, and guarantee the right solution to suit your requirements:

- Telecommunications, transport, industry, the energy sector and environmental engineering
- Anywhere in the world
- Innovative, reliable, sophisticated

MORE SOLUTIONS PER INDUSTRY

Telecommunications, information technology, traffic guidance systems, the energy sector and environmental engineering: Rittal CS Outdoor systems are not limited to certain segments.

Our formula is very simple: Rittal's products are as varied as its customers and the requirements they place on our performance. This is Rittal's greatest strength. Extendibility and modularity, from individual enclosures to climate control solutions through to accessories, are our yardsticks. Conditions can be extreme, ranging from permafrost regions, where temperatures are a constant minus 30°C, to the subtropical heat of the equator, to name but two examples. Challenge us! We have more than one solution, whatever your industry.












Standard solutions to accommodate almost any requirement, thanks to an extensive range of products.

Semi-standard solutions configured with components from our range and system integration up to Level 4.

Individual solutions tailored to the respective task and environment, backed up by the expertise and reliability of a standard range.

MORE IDEAS PER CUBIC CENTIMETRE

Rittal CS Outdoor systems draw on our extensive expertise, and access to a basic system, while our modular approach offers incredible diversity. Versatility can be achieved for individual systems by combining tried-and-trusted standard components. We also go one step further, with systems comprised of individual components which are open to every conceivable modification. Rittal CS Outdoor systems include innovations based on our standard know-how, as well as prototypes for a brand new range of standard products. Whether you opt for off-the-shelf or customised production, the design and details are always adaptable to the local and climatic conditions. In short, this means that every cubic centimetre benefits from our extensive expertise in the development and production of enclosures, climate control and system integration, as well as our passion for incorporating new ideas.

Do you have very specific requirements?
Just ask!

- Modular systems offer enormous diversity based on standard solutions
- Semi-standard modifications
- Prototypes and OEM products, small series tailored to your individual requirements









PROJECT PLANNING and APPLICATION ENGINEERING

An analysis of requirements covers all the relevant factors: Installation location, function and technical status. This provides the basis for sound advice.

All key issues relating to the system, components and market conditions and developments will be clarified, in order to identify the most suitable approach.

PROTOTYPING

Once a concept has been agreed with the customer, a prototype is implemented. This prototype is produced quickly and easily to the customer's exact requirements, in constant dialogue with the client.

SYSTEM INTEGRATION

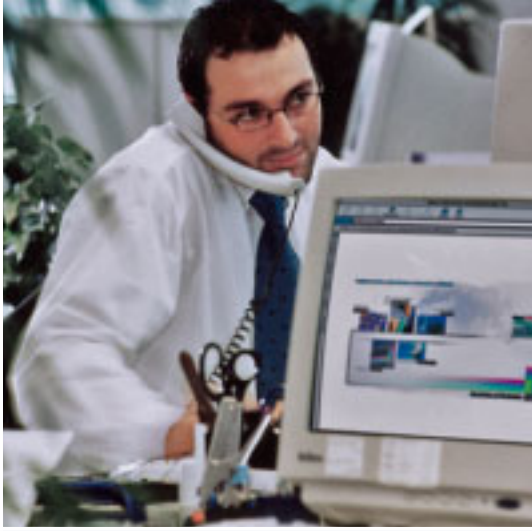
Expert advice and integration regarding the design of power supplies, positioning, attachment and cabling of the active boards are part of the service, together with optimisation of the airflow.

MORE SERVICE PER CUSTOMER

Our clients are discerning and demand high standards of security, reliability and service. They are accustomed to nothing short of perfection. A concept such as the “service chain” must be practised on a daily basis by individuals who embody this philosophy through their knowledge, motivation, friendliness and dedication. Their sole aim is to ensure that our customers experience this level of service on a daily basis. This is a chain comprised of many links, which is much more than just the sum of its parts. Our “service chain” has a beginning, but it has no end. Rittal offers service at an extremely high level.







TESTS/CHECKS

Prototypes undergo extensive testing and analysis at our accredited Rittal test laboratory. Any optimisation requirements are defined, implemented and subjected to in-process monitoring.

MASS PRODUCTION

Once the prototype is ready, mass production can begin. We have 19 production sites worldwide, as well as a wide network of subsidiaries and agents around the globe.

AFTER SALES SERVICE

At Rittal, the service chain does not end with delivery. Our global logistics system for spare parts and our customer service organisation are constantly at your service. For example, you may wish to add extra features such as remote monitoring or an autonomous power supply.

Talk to us!



A WIDER PRESENCE, A FASTER SOLUTION

The CS Outdoor system is designed to transcend national borders with global availability. Rittal commands a worldwide presence. Just-in-time delivery, speed and global customer proximity are our bywords. Our international presence, comprising 19 production sites, 60 subsidiaries and more than 70 agents in five continents, is a key part of our problem-solving expertise. Our accumulated experience of international markets is incorporated into each and every one of our products and advisory services. Face-to-face discussions are a top priority for us, and the best way of achieving this is to ensure a local presence, wherever in the world our clients happen to be.

The best solution for any task always involves direct encounters. For us, globality is not just a formality but an essential part of direct and fast customer proximity – our proximity to you.

Haiger, Germany



Bangalore, India



Shanghai, China





We are at home worldwide, at a location near you:

- With 19 production sites on five continents
- With 60 subsidiaries and more than 70 agents worldwide
- From person to person in almost every country in the world
- With on-site service expertise
- Observing local customs and standards

CS modular enclosures

Features



The basic module of the Outdoor modular enclosure is derived from the modular principle of the Rittal ES 5000 enclosure system. The standard twin-walled enclosure provides optimum protection for the installed components. Cooling units or heat exchangers may be installed in all doors and side panels, as well as in the roof. In this way, the hot spots inside the enclosure receive optimum cooling.



Protection against vandalism – These features will protect your equipment against unauthorised access: **No point of access for lever-type tools,** because the double side panel seamlessly conceals the door hinges.



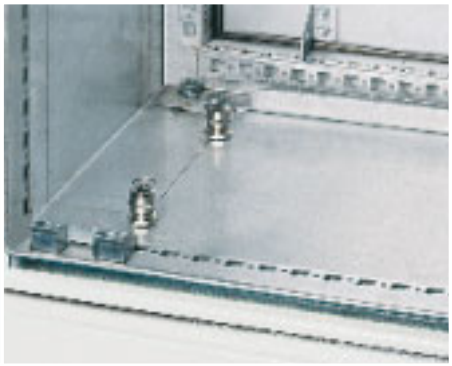
The hinged **roof is screw-fastened to the enclosure frame.**



The **base/plinth trim is secured with safety screws**. A 5-point lock is optionally available.



Batteries for emergency power back-up are securely housed in the **pull-out drawer** of the battery base/plinth.

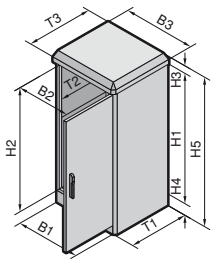


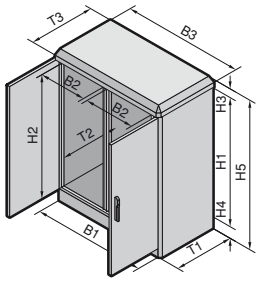
High level of stability thanks to **ten-fold profiling** of the enclosure body.



Rittal accessory components facilitate fast, **universal interior installation.**







Technical specifications:
Basic module:
Solid top and sides, closed base with 4 gland plates (width 600 mm with 2 gland plates).
Double-walled rear panel screw-fastened from the inside.
Double-walled door with Ergo-form padlock handle with 3-point locking, foamed-in PU seal. Gas pressurised spring as door stay.
Double side panel across the enclosure and base/plinth, screw-fastened from the inside, screws not visible from the outside.
Rain canopy, 75 mm high, hinged, 25 mm projection on all sides.
Base/plinth, 100 mm high.

Material:
Enclosure, roof and side panel:
2.0 mm aluminium AlMg3
Base/plinth:
3.0 mm aluminium AlMg3

Colour:
RAL 7035

Protection category:
IP 55 to EN 60 529/10.91, complies with NEMA 3R.

Supply includes:
Twin-walled, fully assembled enclosure, consisting of basic module, roof, side panels and base/plinth.

Note:
Modular enclosures with climate control units, as bayed suites, with side doors or rear doors available on request.

Property rights:
German patents
no. 196 09 699 and 196 09 704
European patents
no. 0 886 899 and 0 886 900
with validity for FR, IT, GB, SE
US patents no. 6,109,053 and 5,971,511
South Korean patents
No. 0 334 548 and 0 325 930
Japan. patent no. 3 401 015

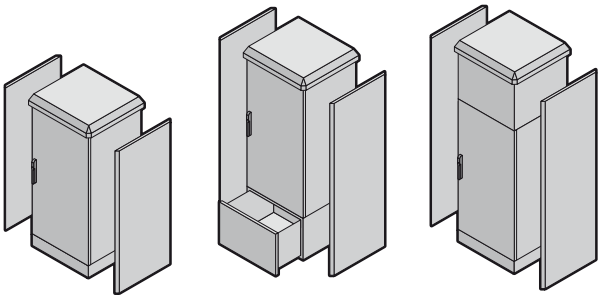
Detailed drawing,
see page 58 – 59.

Width (B1) mm	Packs of	600	800	800	1200	Page
Height (H1) mm		1200	1200	1600	1200	
Depth (T1) mm		600	500	600	600	
Clearance width (B2) mm		512	712	712	512	
Clearance height (H2) mm		1112	1112	1512	1112	
Clearance depth (T2) mm		554	454	554	554	
Rain canopy width (B3) mm		700	900	900	1300	
Rain canopy height (H3) mm		75	75	75	75	
Rain canopy depth (T3) mm		650	550	650	650	
Base/plinth height (H4) mm		100	100	100	100	
Overall height (H5) mm		1375	1375	1775	1375	
Model No. CS	1	**9751.125**	**9751.145**	**9751.165**	**9752.125**	
Accessories						
Concrete base/plinth	1	9765.083	9765.084	9765.085	9765.087	36
Mounting plate	1	9765.092	9765.095	9765.096	9765.191	43
Mounting angles, 482.6 mm (19˝)	2	7688.000	7688.000	7690.000	7688.000	42
Divider kit, 482.6 mm (19˝)	2	7696.000	7698.000	7698.000	7696.000	42
Mounting angles, metric (T-slot)	2	–	7000.240	7000.330	–	42
Divider kit, metric	1	–	7000.100	7000.100	–	42
Plastic gland plates	1	2562.500	2562.500	2562.500	2562.500	37
Metal gland plate, pre-punched	1	2562.100	2562.100	2562.100	2562.100	Cat. 31, p. 968
Support rails	4	4396.000	4395.000	4396.000	4396.000	46
Heater 800 W	1	9769.080	9769.080	9769.080	9769.080	50
Thermostat	1	3110.000	3110.000	3110.000	3110.000	51
Enclosure light 48 V DC	1	9765.150	9765.150	9765.150	9765.150	50

CS modular enclosures

Installation variants, width 600 mm





Material:
Enclosure, roof and side panel:
2.0 mm aluminium AlMg3
Base/plinth, battery plinth:
3.0 mm aluminium AlMg3

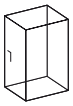
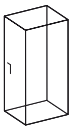
Colour:
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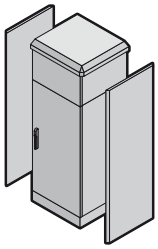
Protection category:
IP 55 to EN 60 529/10.91, complies with NEMA 3R.

Other climate control devices,
from page 30.

Note:
Please note the minimum enclosure dimensions when making your selection.

The enclosures are manufactured to order from individual modules.
Delivery times available on request.

					
Width (W) mm	600	600	600	600	Page
Height (H) mm	800	1000	1200	1600	
Depth (D) mm	600	500	600	600	
Model No. CS	**9751.015**	**9751.075**	**9751.025**	**9751.035**	
Base/plinth					
Standard base/plinth 100 mm	**9755.015**	**9755.065**	**9755.015**	**9755.015**	
Battery plinth 350 mm	**9754.025**	**9754.015**	**9754.025**	**9754.025**	
Roof-mounted climate control					
Cooling unit	9762.012	9762.012	9762.012	9762.012	30
Heat exchangers	9764.012	9764.012	9764.012	9764.012	31
Mounting frame for heat exchanger or cooling unit	**9765.051**	**9765.051**	**9765.051**	**9765.051**	
Climate hood	**9756.015**	**9756.065**	**9756.015**	**9756.015**	
Wall-mounted climate control					
Cooling unit	–	–	9761.012	9761.012	30
Heat exchangers	–	–	9763.012	9763.012	31
Roof					
Standard roof	**9757.015**	**9757.065**	**9757.015**	**9757.015**	
Roof for wall-mounted climate control	**–**	**–**	**9758.015**	**9758.015**	
Side panel					
Side panel for 100 mm base/plinth	**9753.015**	**9753.175**	**9753.035**	**9753.045**	
Side panel for 350 mm base/plinth	**9753.055**	**9753.195**	**9753.075**	**9753.085**	
Side panel for 100 mm base/plinth and roof-mounted climate control	**9753.095**	**9753.185**	**9753.115**	**9753.125**	
Side panel for 350 mm base/plinth and roof-mounted climate control	**9753.135**	**9753.205**	**9753.155**	**9753.165**	

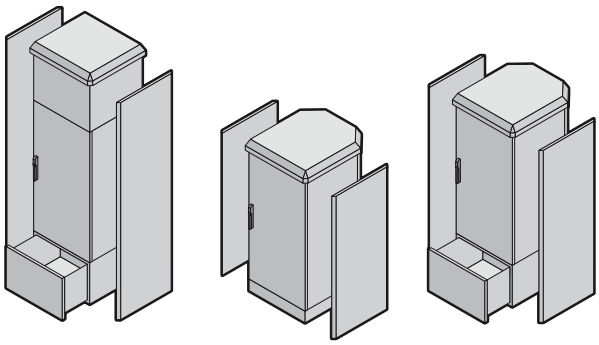


Order example:
Enclosure 600 x 800 x 600 mm of aluminium AlMg3 with standard base/plinth and roof-mounted cooling unit.

You will need:		
Enclosure:	Basic enclosure 600 x 800 x 600 mm	**CS 9751.015**
Base/plinth:	Standard base/plinth 100 mm	**CS 9755.015**
Roof-mounted climate control:	Roof-mounted cooling unit	**CS 9762.012**
	Mounting frame	**CS 9765.051**
	Climate hood	**CS 9756.015**
Roof:	Standard roof	**CS 9757.015**
Side panel:	Side panel for 100 mm base/plinth and roof-mounted climate control	**CS 9753.095**

Installation variants, width 800/1200 mm





Material:
Enclosure, roof and side panel:
2.0 mm aluminium AlMg3
Base/plinth, battery plinth:
3.0 mm aluminium AlMg3

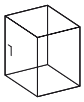
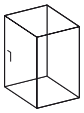
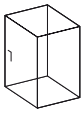
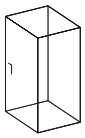
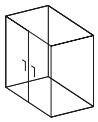
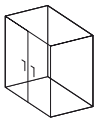
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RAL 7035

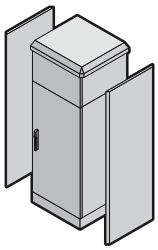
Protection category:
IP 55 to EN 60 529/10.91, complies with NEMA 3R.

Other climate control devices, from page 30.

Note:
Please note the minimum enclosure dimensions when making your selection.

The enclosures are manufactured to order from individual modules.
Delivery times available on request.

							
Width (W) mm	800	800	800	800	1200	1200	Page
Height (H) mm	1000	1200	1200	1600	1200	1200	
Depth (D) mm	500	500	600	600	500	600	
Model No. CS	**9751.085**	**9751.045**	**9751.055**	**9751.065**	**9752.015**	**9752.025**	
Base/plinth							
Standard base/plinth 100 mm	**9755.025**	**9755.025**	**9755.035**	**9755.035**	**9755.045**	**9755.055**	
Battery plinth 350 mm	**9754.035**	**9754.035**	**9754.045**	**9754.045**	2 x **9754.015**	2 x **9754.025**	
Roof-mounted climate control							
Cooling unit	9762.012	9762.012	9762.012	9762.012	9762.012	9762.012	30
Heat exchangers	9764.012	9764.012	9764.012	9764.012	9764.012	9764.012	31
Mounting frame for heat exchanger or cooling unit	**9765.051**	**9765.051**	**9765.051**	**9765.051**	**9765.051**	**9765.051**	
Climate hood	**9756.025**	**9756.025**	**9756.035**	**9756.035**	**9756.045**	**9756.055**	
Wall-mounted climate control							
Cooling unit	–	9761.032	9761.032	9761.032	9761.012	9761.012	30
Heat exchangers	–	9763.012	9763.012	9763.012	9763.012	9763.012	31
Roof							
Standard roof	**9757.025**	**9757.025**	**9757.035**	**9757.035**	**9757.045**	**9757.055**	
Roof for wall-mounted climate control	**–**	**9758.025**	**9758.035**	**9758.035**	**9758.045**	**9758.055**	
Side panel							
Side panel for 100 mm base/plinth	**9753.175**	**9753.025**	**9753.035**	**9753.045**	**9753.025**	**9753.035**	
Side panel for 350 mm base/plinth	**9753.195**	**9753.065**	**9753.075**	**9753.085**	**9753.065**	**9753.075**	
Side panel for 100 mm base/plinth and roof-mounted climate control	**9753.185**	**9753.105**	**9753.115**	**9753.125**	**9753.105**	**9753.115**	
Side panel for 350 mm base/plinth and roof-mounted climate control	**9753.205**	**9753.145**	**9753.155**	**9753.165**	**9753.145**	**9753.155**	

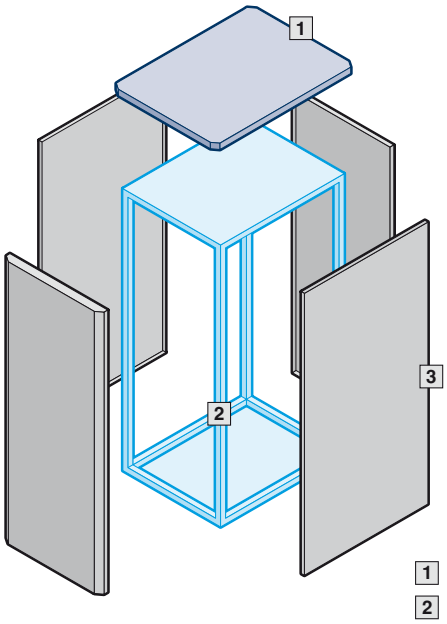


Order example:
Enclosure 800 x 1200 x 500 mm of aluminium AlMg3 with standard base/plinth and roof-mounted cooling unit.

You will need:

Enclosure:	Basic enclosure 800 x 1200 x 500 mm	**CS 9751.045**
Base/plinth:	Standard base/plinth 100 mm	**CS 9755.025**
Roof-mounted climate control:	Roof-mounted cooling unit	**CS 9762.012**
	Mounting frame	**CS 9765.051**
	Climate hood	**CS 9756.025**
Roof:	Standard roof	**CS 9757.025**
Side panel:	Side panel for 100 mm base/plinth and roof-mounted climate control	**CS 9753.105**

Features



1 Aluminium
2 Stainless steel
3 Sheet steel, zinc-plated, passivated

A high level of corrosion resistance and stability at a moderate price?

It's possible, thanks to an intelligent mix of materials! The basic stainless steel frame, based on the system platform TS 8, ensures the required stability and configuration diversity of the Rittal system accessories. Zinc-plated sheet steel with zinc phospating is the basic material of the doors and side panels, combined with an aluminium roof plate to form extremely high load-bearing, visually appealing outdoor enclosures. Standardised climate control solutions are perfectly integrated into the doors.



Functional design
No roof projection at the sides – Enclosures are connected via cut-outs or by baying complete enclosures.



Enclosure platform TS 8
TS 8 vertical sections and system punchings are the key to the comprehensive range of accessories.



Climate control modules
Climate control – identical door cut-outs for cooling units and air/air heat exchangers offer variability when selecting climate control components.



Twin-walled doors
Chimney effect – The twin wall minimises the influence of sunlight and prevents condensation.

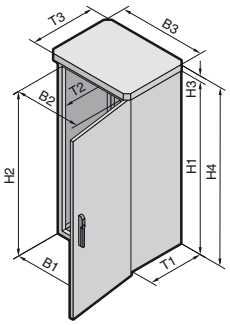


Multifunctional rain canopy
protects the side panel from removal, while ventilation prevents condensation and the sloping roof stops rainwater from accumulating.



Lock system
The doors at the front and rear each have one swing lever handle with security lock.





Material:
Enclosure frame:
1.5 mm stainless steel 1.4301 (AISI 304)
Rain canopy:
2.0 mm aluminium, AlMg3
Doors, side panels, base/plinth trim:
Sheet steel, hot-galvanised

Surface finish:
Zinc-phosphated, powder coated in RAL 7035

Protection category:
IP 55 to EN 60 529/10.91

Supply includes:
Double-walled outdoor enclosure fully preconfigured.
Rigid enclosure body, consisting of vertical sections based on TS 8, roof and integral base/plinth assembly.
Outer roof, door front and rear, side panels left and right secured to the enclosure frame and doubled on the inside, to allow baying possibilities.
Doors doubled by 25 mm on the outside and ventilated, r/h hinge, with swing lever handle and semi-cylinder with security lock.
Door stay lock for a door opening angle of 90°, 115° or 135°.
Roof with front and rear projection, vented.
Outer side panel screw-fastened from the inside, combined to form one unit with the inner side panel. Side panels removable, offering full side accessibility. Integral base/plinth including two screw-fastened gland plates for cable entry.
Front and rear base/plinth trim screw-fastened to the enclosure frame must be dismantled to gain access to the mounting holes for the concrete base/plinth or foundation.
Protection against removal of the roof, side panels and base/plinth trim.

Note:
The outer mounting level of the TS 8 vertical sections may only be used in the enclosure depth to a limited extent, as the side panel protrudes into the level.

Rittal service:

Toptec CR, 800 mm wide, with integral cooling unit or air/air heat exchanger, see page 33 for output data.

Detailed drawing,
see page 60.

Width (B1) mm	Packs of	610	810	610	810	Page
Height (H1) mm		1200	1200	1600	1600	
Depth (T1) mm		653	653	653	653	
Clearance width (B2) mm		512	712	512	712	
Clearance height (H2) mm		1112	1112	1512	1512	
Clearance depth (T2) mm		512	512	512	512	
Rain canopy width (B3) mm		610	810	610	810	
Rain canopy height (H3) mm		40	40	40	40	
Rain canopy depth (T3) mm		700	700	700	700	
Overall height (H4) mm		1299	1299	1699	1699	
Model No. CS	1	**9775.100**	**9775.200**	**9775.300**	**9775.400**	
Accessories						
Concrete base/plinth	1	9765.166	9765.186	9765.166	9765.186	36
Mounting angles, 482.6 mm (19″) full installation	2	7827.120	7827.160	7827.120	7827.160	40
Installation kit for 482.6 mm (19″) mounting angles	4	8612.060	7794.580	8612.060	7794.580	41
Mounting kit CS for roof and base frame	4	9765.155	9765.155	9765.155	9765.155	43
Mounting plate	1	9765.092	9765.095	9765.093	9765.096	43
Plastic cable gland plate	5	2562.000	2562.000	2562.000	2562.000	37
Eyebolts	4	4568.000	4568.000	4568.000	4568.000	Cat. 31, p. 904
Semi-cylinder	1	9785.040	9785.040	9785.040	9785.040	39

CS basic enclosures

Features



Basic outdoor enclosures are part of the single-walled aluminium enclosure series. Ready to use in all applications with passive interior installation or minimal heat loss in telecommunications, traffic guidance and signalling systems, the gas, electricity and water supply sectors, environmental technology, and industry.

Individual configurations can be achieved quickly and cost-effectively with our extensive range of system accessories, for a perfect solution.



Eyebolts, concealed by the rain canopy, for crane transportation of the fully fitted unit.



Ventilation louvres all-round in the hinged rain canopy – with an all-round roof projection of 25 mm.



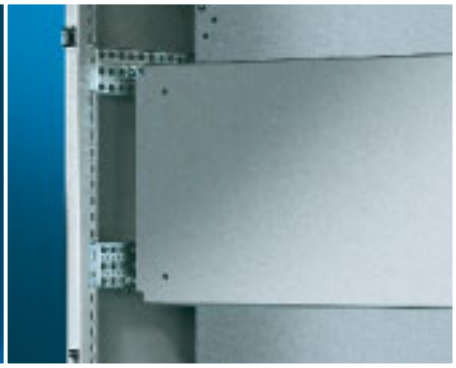
Width 1200 mm: **With removable centre bar** and two lockable doors or without centre bar, with overlapping doors.



The open base frame may be covered with **gland plates**.



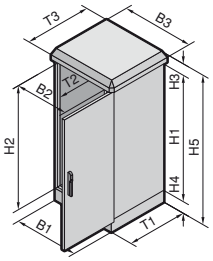
Individual installation with an **extensive choice of system accessories.**



25 mm system punchings for mounting 482.6 mm (19″) mounting angles, mounting plates or partial mounting plates.

single-door, width 600 mm





Material:
Enclosure, roof and doors:
2.0 mm aluminium AlMg3
Base/plinth:
3.0 mm aluminium AlMg3

Colour:
RAL 7035

Protection category:
IP 55 to EN 60 529/10.91
in conjunction with the gland plates available as accessories.

Supply includes:
Single-walled enclosure of all-round solid construction, with open base,
3-point locking via Ergoform padlock and lock cylinder, base/plinth, rain canopy.

Detailed drawing,
see page 61.

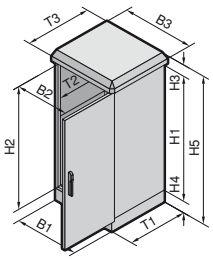
Note:
When installing a mounting plate in the rearmost position, additional vertical mounting rails are required in the enclosure height –
see page 46.

Width (B1) mm	Packs of	600	600	600	600	Page
Height (H1) mm		800	1200	1400	1200	
Depth (T1) mm		400	400	400	500	
Clearance width (B2) mm		512	512	512	512	
Clearance height (H2) mm		712	1112	1312	1112	
Clearance depth (T2) mm		349	349	349	449	
Rain canopy width (B3) mm		650	650	650	650	
Rain canopy height (H3) mm		75	75	75	75	
Rain canopy depth (T3) mm		450	450	450	550	
Base/plinth height (H4) mm		100	100	100	100	
Overall height (H5) mm		975	1375	1575	1375	
Model No. CS	1	**9783.040**	**9783.050**	**9783.060**	**9783.030**	
Accessories						
Concrete base/plinth	1	9765.182	9765.182	9765.182	9765.082	36
One-piece gland plate	1 set	9785.017	9785.017	9785.017	9785.020	36
Gland plate, divided	1 set	9785.011	9785.011	9785.011	9785.014	36
Cable entry plate	2	4320.700	4320.700	4320.700	4320.700	36
Mounting plate	1	9765.090	9765.092	9765.098	9765.092	43
Mounting angles 482.6 mm (19˝), full installation	2	7685.000	7688.000	7689.000	7688.000	42
Installation kit for mounting angles	2	7696.000	7696.000	7696.000	7696.000	42
Heater 800 W	1	9769.080	9769.080	9769.080	9769.080	50
Thermostat	1	3110.000	3110.000	3110.000	3110.000	51

CS basic enclosures

single-door, width 800 mm





Material:
Enclosure, roof and doors:
2.0 mm aluminium AlMg3
Base/plinth:
3.0 mm aluminium AlMg3

Colour:
RAL 7035

Protection category:
IP 55 to EN 60 529/10.91
in conjunction with the gland plates available as accessories.

Supply includes:
Single-walled enclosure of all-round solid construction, with open base,
3-point locking via Ergoform padlock and lock cylinder, base/plinth, rain canopy.

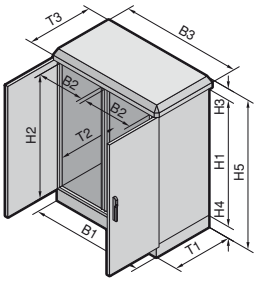
Detailed drawing,
see page 61.

Note:
When installing a mounting plate in the rearmost position, additional vertical mounting rails are required in the enclosure height –
see page 46.

Width (B1) mm	Packs of	800	800	800	800	Page
Height (H1) mm		800	1200	1400	1200	
Depth (T1) mm		400	400	400	500	
Clearance width (B2) mm		712	712	712	712	
Clearance height (H2) mm		712	1112	1312	1112	
Clearance depth (T2) mm		349	349	349	449	
Rain canopy width (B3) mm		850	850	850	850	
Rain canopy height (H3) mm		75	75	75	75	
Rain canopy depth (T3) mm		450	450	450	550	
Base/plinth height (H4) mm		100	100	100	100	
Overall height (H5) mm		975	1375	1575	1375	
Model No. CS	1	**9783.010**	**9783.020**	**9783.120**	**9783.110**	
Accessories						
Concrete base/plinth	1	9765.088	9765.088	9765.088	9765.084	36
One-piece gland plate	1 set	9785.018	9785.018	9785.018	9785.019	36
Gland plate, divided	1 set	9785.012	9785.012	9785.012	9785.013	36
Cable entry plate	2	4321.700	4321.700	4321.700	4321.700	36
Mounting plate	1	9765.097	9765.095	9765.099	9765.095	43
Mounting angles 482.6 mm (19˝), full installation	2	7685.000	7688.000	7689.000	7688.000	42
Installation kit for mounting angles	2	7698.000	7698.000	7698.000	7698.000	42
Heater 800 W	1	9769.080	9769.080	9769.080	9769.080	50
Thermostat	1	3110.000	3110.000	3110.000	3110.000	51

two-door, width 1200 mm





Material:
Enclosure, roof and doors:
2.0 mm aluminium AlMg3
Base/plinth:
3.0 mm aluminium AlMg3

Colour:
RAL 7035

Protection category:
IP 55 to EN 60 529/10.91
in conjunction with the gland plates available as accessories.

Supply includes:
Single-walled enclosure of all-round solid construction,
with open base,
3-point locking via Ergoform padlock and lock cylinder
Version without centre bar:
overlapping doors,
lockable door with r/h hinge.
Version with centre bar:
2 lockable doors,
base/plinth, rain canopy,
centre bar can be dismantled.

Detailed drawing,
see page 61.

Note:
When installing a mounting plate in the rearmost position, additional vertical mounting rails are required in the enclosure height –
see page 46.

Width (B1) mm	Packs of	1200	1200	1200	1200	Page
Height (H1) mm		800	1200	1200	1400	
Depth (T1) mm		400	400	500	400	
Clearance width (B2) mm		512	512	512	512	
Clearance height (H2) mm		712	1112	1112	1312	
Clearance depth (T2) mm		349	349	449	349	
Rain canopy width (B3) mm		1250	1250	1250	1250	
Rain canopy height (H3) mm		75	75	75	75	
Rain canopy depth (T3) mm		450	450	550	450	
Base/plinth height (H4) mm		100	100	100	100	
Overall height (H5) mm		975	1375	1375	1575	
Model No. CS without centre bar	1	**9784.110**	**9784.120**	**9784.140**	**9784.130**	
Model No. CS with centre bar	1	**9784.010**[1)]	**9784.020**	**9784.040**	**9784.030**	
Accessories						
Concrete base/plinth	1	9765.089	9765.089	9765.086	9765.089	36
One-piece gland plate	1 set	2 x 9785.017	2 x 9785.017	2 x 9785.020	2 x 9785.017	36
Gland plate, divided	1 set	2 x 9785.011	2 x 9785.011	2 x 9785.014	2 x 9785.011	36
Cable entry plate	2	4320.700	4320.700	4320.700	4320.700	36
Mounting plate for one half of the enclosure	1	9765.090	9765.092	9765.092	9765.098	43
Mounting plate	1	9765.190	9765.191	9765.191	9765.192	43
482.6 mm (19˝) mounting angles for one half of the enclosure	2	7685.000	7688.000	7688.000	7689.000	42
Installation kit for mounting angles 482.6 mm (19˝)	2	7696.000	7696.000	7696.000	7696.000	42
Heater 800 W	1	9769.080	9769.080	9769.080	9769.080	50
Thermostat	1	3110.000	3110.000	3110.000	3110.000	51

[1)] Delivery times available on request.

CS wall-mounted enclosures

Features

Wall-mounted outdoor enclosures are constructed in accordance with the twin-walled enclosure-within-an-enclosure principle.

The designer cover is very impressive, with a concealed fastener. The entire enclosure is manufactured from aluminium with additional powder coating, thus combining protection against corrosion with environmental friendliness. Rittal offers a broad range of opportunities for individual interior installation.





Security lock on the designer cover and door of the interior enclosure.





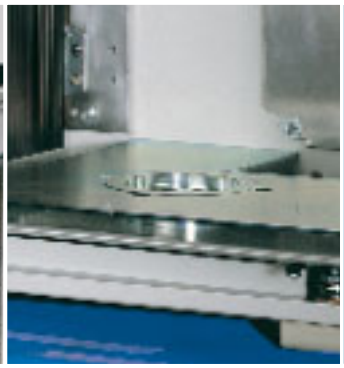
The enclosure-within-an-enclosure concept with the curved **designer cover** is a characteristic feature. Ventilation louvres at the sides and in the rear panel ensure heat dissipation and help to minimise the influence of sunlight.

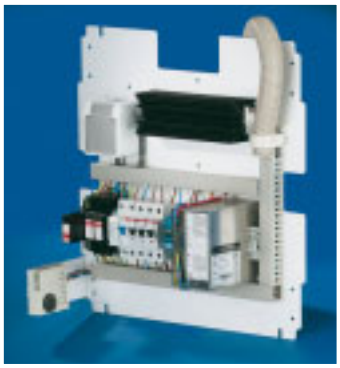


The entire power supply including fuse device may be **installed upon request.**



Optimum use of the interior space with **system integration** up to Level 4.





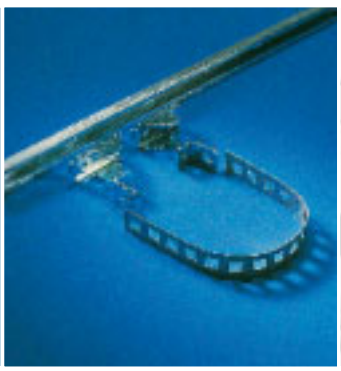
The design of the **mounting plate** supports attachment to the rear panel or in the door.

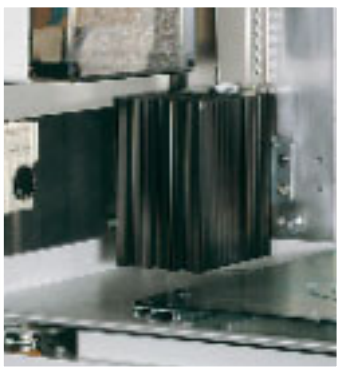


Rotating frame for the vertical accommodation of 482.6 mm (19˝) components.



Fast, secure attachment of enclosures using the wall bracket or **pole clamp.**

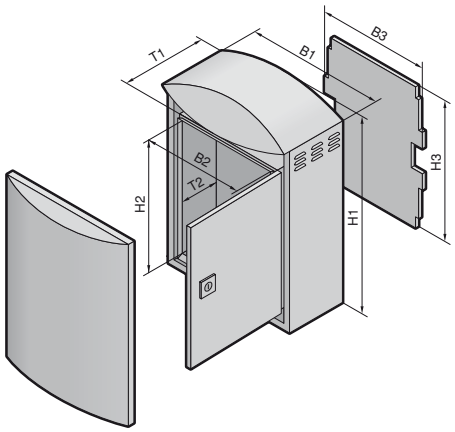




Particularly in outdoor use, condensation poses a high risk. This may be counteracted with controlled **enclosure heating**.


1


2



Material:
Aluminium AlMg3
Enclosure:
Exterior: 2.0 mm
Interior: 1.5 mm/2.0 mm
Doors: 2.0 mm
Mounting plate/rotating frame:
2.0 mm clear chromated

Colour:
RAL 7035

Protection category:
IP 55 to EN 60 529/10.91

Supply includes:
Inner enclosure with door,
aluminium mounting plate
or rotating frame,
security lock (CS 9791.045 and
CS 9791.145 with 2 security
locks),
foamed-in door seals,
gland plate at bottom,
mounting bracket for thermostat,
outer enclosure with integral
vent louvres,
designer cover with security
lock, C rails on the rear panel.

Property rights for wall-mounted enclosure with mounting plate:
German utility model
no. 297 16 467
German registered design
no. 97 08 625
UK registered design
no. 2 072 965
IR reg. design no. DM/044 110
with validity for ES, FR, IT,
Indonesia
US patent no. 6,024,236
European patent no. 0 902 514
with validity for FI, GB, SE
Japan. patent no. 3 189 210

1 Wall-mounted enclosure with mounting plate

2 482.6 mm (19˝) rotating frame

Rittal service:

Complete customised interior installation
of the wall-mounted enclosure up to integration Level 4 to the customer's specifications is available.

Detailed drawing,
see page 62.

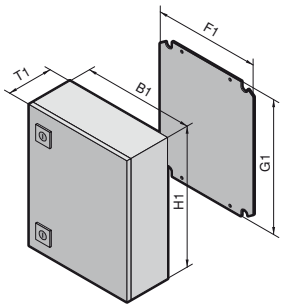
Width (B1) mm	Packs of	370/300	420/350	530/460	630/580	630/580	Page
Height (H1) mm		522.5/400	560.5/440	700/565	780/580	780/580	
Depth (T1) mm		210/170	210/170	265/220	380/333	380/333	
Clearance width (B2) mm		280	330	440	560	560	
Clearance height (H2) mm		380	420	545	560	560	
Clearance depth (T2) mm		145	145	195	308	240[2)]	
Mounting plate width (B3) mm		270	320	430	550	–	
Mounting plate height (H3) mm		380	410	535	550	–	
Model No. CS	1	**9791.015**	**9791.025**	**9791.035**	**9791.045**	**9791.145[1)]**	
Accessories							
Wall mounting	4	9765.120	9765.120	9765.120	9765.120	9765.120	35
Pole clamp	1 set	9765.125	9765.125	9765.125	9765.125	9765.125	35
Heater, 30 W	1	3115.000	3115.000	3115.000	3115.000	3115.000	Cat. 31, p. 655
Thermostat	1	3110.000	3110.000	3110.000	3110.000	3110.000	51

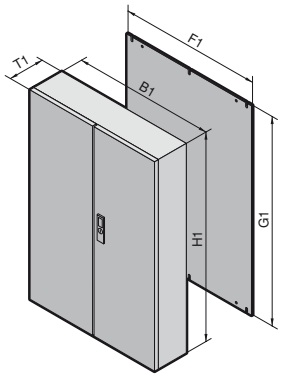
[1)] With 5 U rotating frame instead of mounting plate.
[2)] Max. installation depth in the 482.6 mm (19˝) level.

Compact enclosures AE

Stainless steel







Material:
Stainless steel 1.4301 (AISI 304)
Enclosure and door: Stainless steel
Mounting plate: Sheet steel
Cam lock: Die-cast zinc, nickel-plated

Surface finish:
Enclosure and door:
Brushed, grain 240
Mounting plate: Zinc-plated

Protection category:
IP 66 to EN 60 529/10.91
for AE 1001.600 – AE 1017.600, complies with NEMA 4x.
IP 55 to EN 60 529/10.91
for AE 1018.600/AE 1019.600, complies with NEMA 12.

Supply includes:
Enclosure, door(s) with foamed-in PU seal, mounting plate.

Approvals:
- UL
- CSA
- TÜV
- Germanischer Lloyd
- Norske Veritas
- Russian Maritime Register of Shipping
- Lloyds Register of Shipping
- Bureau Veritas
- VDE

Detailed drawing,
see page 63.

Width (B1) mm	Packs of	200	200	300	380	380	300	380	400	500	Page
Height (H1) mm		300	300	300	300	300	380	380	500	500	
Depth (T1) mm		120	155	210	155	210	210	210	210	210	
Mounting plate width (F1) mm		162	162	254	334	334	334	275	354	449	
Mounting plate height (G1) mm		275	275	275	275	275	275	334	475	470	
Model No. AE	1	**1001.600**	**1002.600**	**1003.600**	**1004.600**	**1011.600**	**1005.600**	**1006.600**	**1015.600**	**1007.600**	
Door(s)		1	1	1	1	1	1	1	1	1	
Weight (kg)		3.8	4.1	7.5	7.4	8.4	8.4	9.8	14.2	15.7	
Accessories											
Rain canopy	1	–	2470.000	2361.000	2471.000	2472.000	2361.000	2472.000	–	2362.000	38
Wall mounting bracket	4	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	35
Wall angle	1	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	Cat. 31, p. 906
Pole clamp	1	2584.000	2584.000	2584.000	2584.000	2584.000	2584.000	2584.000	2584.000	2584.000	35
Cam lock made from 1.4404	1	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	39

Width (B1) mm	Packs of	500	380	600	600	600	760	800	800	1000	1000	Page
Height (H1) mm		500	600	380	600	760	760	1000	1200	1000	1200	
Depth (T1) mm		300	210	210	210	210	300	300	300	300	300	
Mounting plate width (F1) mm		449	334	549	549	549	704	739	740	939	940	
Mounting plate height (G1) mm		470	570	355	570	730	730	955	1150	955	1150	
Model No. AE	1	**1013.600**	**1008.600**	**1009.600**	**1010.600**	**1012.600**	**1014.600**	**1016.600**	**1017.600**	**1018.600**	**1019.600**	
Door(s)		1	1	1	1	1	1	1	1	2	2	
Weight (kg)		18.4	15.1	14.6	23.5	30.2	42.5	52.9	61.5	71.0	76.0	
Accessories												
Rain canopy	1	–	2472.000	2473.000	2473.000	2473.000	2474.000	2475.000	2475.000	2363.000	2363.000	38
Wall mounting bracket	4	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	2433.000	35
Wall angle	1	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	2583.000	Cat. 31, p. 906
Pole clamp	1	2584.000	2584.000	2584.000	2584.000	2584.000	–	–	–	–	–	35
Cam lock made from 1.4404	1	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	2304.000	–	–	–	39

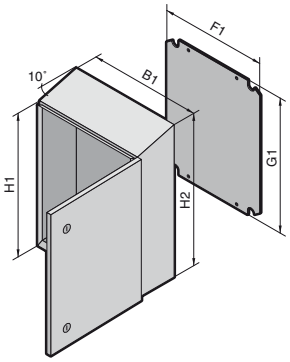
Lock systems

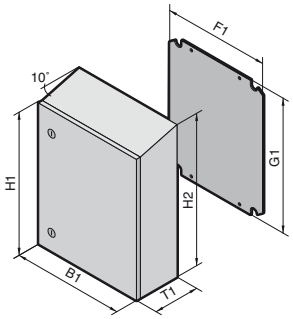
Standard double-bit lock insert may be exchanged in enclosures with cam (except AE 1018.600/AE 1019.600) for 41 mm lock inserts, lock cylinder insert, plastic handles and T handles, type C, see Cat. 31, page 886 – 889.
With AE 1018.600, may only be exchanged for 41 mm lock inserts, see Cat. 31, page 888.
For enclosures with locking rod, may be exchanged for 27 mm lock inserts, type A, see Cat. 31, page 888 and Ergoform-S lock system, see Cat. 31, page 885.

To order compact enclosures in 1.4404 (AISI 316L), please add extension .500 to the Model No. Delivery times available on request.

Stainless steel, protection category IP 69K







Perfect protection in a tough environment
The compact enclosure AE to IP 69K is the ideal solution when a high protection category, corrosion resistance and optimum cleaning are needed.

- Resistant to high-pressure cleaning (protection category IP 69K). The interior seal is protected against direct hosed water.
- Ideal for mounting on vehicles: Lock, hinges and mounting plate are all vibration resistant.
- 10° roof tilt prevents liquids from accumulating on the roof.
- Foamed-in silicone seal. The closed cell structure of the foam means that water absorption is negligible. Temperature-resistant from –60°C to +180°C.

Material:
Enclosure and door:
Stainless steel 1.4301 (AISI 304)
Mounting plate: Sheet steel

Surface finish:
Enclosure and door:
Brushed, grain 240
Mounting plate: Zinc-plated

Protection category:
IP 69K to DIN 40 050-9/5.93 complies with NEMA 4.

Supply includes:
Enclosure of all-round solid construction, single door, interchangeable door hinge, cam lock with double-bit insert.

Rittal service:
Other sizes available on request. Cut-outs and drilled holes to your specifications.

Width (B1) mm	Packs of	230	400	400	650	Page
Height, front (H1) mm		330	400	650	650	
Height, rear (H2) mm		352	439	689	689	
Depth (T1) mm		155	250	250	250	
Mounting plate width (F1) mm		162	334	334	549	
Mounting plate height (G1) mm		275	355	570	570	
Mounting plate thickness mm		2	2	2.5	2.5	
Model No. AE	1	**1101.110**	**1101.120**	**1101.130**	**1101.140**	
Locks		1	1	2	2	
Accessories						
Interior door	1	1101.910	1101.920	1101.930	1101.940	Cat. 31, p. 873
Door stay	1	1101.800	1101.800	1101.800	1101.800	39
Wall mounting bracket	4	2433.000	2433.000	2433.000	2433.000	35



Interior door
with 4 bolts (2 for AE 1101.110) for universal installation.



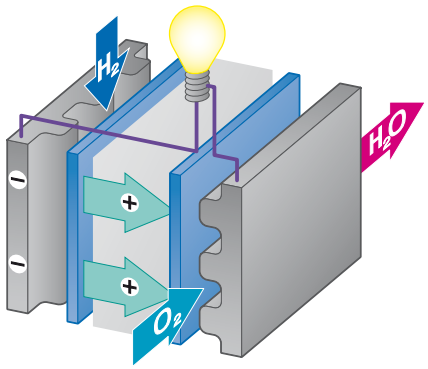
Wall mounting
directly from the rear via M8 nut or with wall mounting bracket, see page 35.

CS fuel cell

Features



Reliable redundancy in the form of emergency power supply systems must be established in critical applications demanding high-availability. From the field of cellular phones via telematics and remote measuring stations through to the primary energy source for information kiosk systems and applications at open-air events – for all these the fuel cell represents the convincing “energy supplier”. Here Rittal with its expertise and know-how in the fields of outdoor enclosure technology, climate control and system integration can supply complete solutions.



How a fuel cell works

Fuel cells convert the chemical energy arising from the reaction between hydrogen (H_2) and oxygen (O_2) directly into electrical energy, water and heat.

- A fuel cell essentially consists of two electrodes separated by an electrolyte.
- At one electrode, the hydrogen is separated into positively charged protons and negatively charged electrons.
- At the other electrode, oxygen molecules (O_2) are dissociated (separated) and are able to absorb electrons at the electrode.
- The H_2 ions pass through the electrolyte to the positive electrode where they react with the O_2 ions to form water.
- The two electrodes are connected to one another via an external load so that an electric current flows. The flow of current is supplied directly by converting a significant portion of the chemical energy from hydrogen and oxygen into electrical energy.



Reliable emergency power supply for outdoor applications

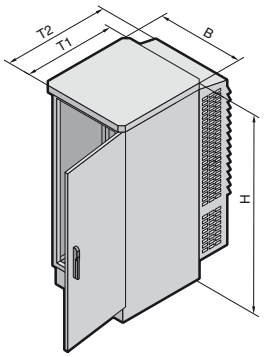
The emergency power supply may be supplied with hydrogen directly at the site of installation.
The oxygen required by the system is obtained from filtered ambient air. The broader temperature range of the fuel cell stacks compared with conventional, battery-buffered back-up systems is a major advantage, since batteries require constant temperatures inside the enclosure.
As a result of this, the fuel cell makes climate control significantly cheaper and more efficient.

Other benefits include:

- Freely scalable autonomy, by adapting the volume of hydrogen stored at the site. In this way, individual back-up times may be achieved very easily for each installation site.
- A substantially longer service life than batteries – the total service life of the plant in this mode of operation is approximately 10 years.
- Minimal servicing and maintenance work for the emergency back-up supply.

3 and 5 kW





Application:
Outdoor emergency power supply unit, e.g. for mobile phone base stations.

Material:
Enclosure frame:
Stainless steel 1.4301 (AISI 304)
Doors, side panels,
climate control cover, roof:
Aluminium AlMg3,
powder coated
in RAL 7035

Supply includes:
Ready-to-connect fuel cell system including climate control. Hydrogen supply not included.

Approvals:
- NEBS Level 3
- ANSI/CSA FC-1

Available on request:
- Cascadable up to 3 systems
- Non-standard input/output voltage
- Use as primary supply unit (not for continuous 24 h operation)
- Reformer system, e.g. infeed of methanol instead of hydrogen
- Housing for gas cylinders
- Further protocols: S-Bus, Profibus, Modbus, MPI, EIB, LON, BacNet, GENIbus

Detailed drawing,
see page 64.

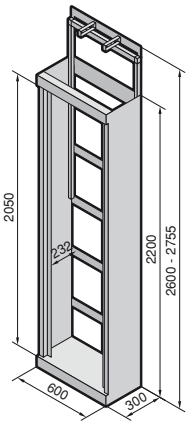
Width (B) mm	694	694
Height (H) mm	1403	1403
Depth (T1) mm	675	675
Overall depth (T2) mm	992	992
Weight (kg)	219	226
Model No. CS	**9782.030**	**9782.050**
Fuel cell		
Output scalable up to	1000 – 3000 W	1000 – 5000 W
Input voltage in standby mode	230 V, 50/60 Hz	230 V, 50/60 Hz
Output voltage	–48 V DC (–42 V DC to –55 V DC)	–48 V DC (–42 V DC to –55 V DC)
Hydrogen supply		
Gas type	Hydrogen, purity at least 3.5 (99.95 %)	Hydrogen, purity at least 3.5 (99.95 %)
Pressurised gas bottles	e.g. 50 litre or 10 litre bottles, 200 bar	e.g. 50 litre or 10 litre bottles, 200 bar
Consumption at full load	45 slpm (standard litres per minute)	75 slpm (standard litres per minute)
Stored energy time	Freely scalable via bottle batteries, 50 l, 200 bar hydrogen produces around 10 kWh electrical output, i.e. at 3 kW full load an autonomy of 3.5 hours	Freely scalable via bottle batteries, 50 l, 200 bar hydrogen produces around 10 kWh electrical output, i.e. at 5 kW full load an autonomy of 2 hours
Ambient conditions		
Temperature range	–40°C to +50°C[1)]	–40°C to +50°C[1)]
Relative humidity	0 % to 95 %, no condensate	0 % to 95 %, no condensate
Height above mean sea level	0 to 1,800 m	0 to 1,800 m
Monitoring		
Interface	Ethernet-IP, RS232	Ethernet-IP, RS232

[1)] From 43°C: 2.5 % reduction in output per degree of temperature increase

CE

CS Indoor Rack





Material:
Side panels, roof and base frame:
Sheet steel, 2.0 mm
Mounting angles:
Extruded aluminium section

Surface finish:
Powder coated in textured RAL 7035
Mounting angles:
Natural aluminium, clear chromated

Supply includes:
Screw-fastened frame, consisting of
2 side panels,
roof and base frame,
front plinth trim,
2 mounting angles,
ceiling attachment,
4 levelling feet,
4 rear panel struts,
enclosure panels, earthed.

Note:
The screw-fastened rack will accommodate metric or 482.6 mm (19˝) installed equipment (to IEC 60 907 or IEC 60 297 and DIN 41 494). In addition to the basic rack, which satisfies the requirements of ETSI standard 300119-3, customised solutions can be designed in next to no time and implemented cost-effectively.

The following variants of the Indoor rack are available, amongst others:
- Solid front door
- Vented front door
- Horizontally divided doors
- Folding doors
- Overlapping doors
- Roof modules
- Cutouts in the enclosure panels
- Interior installation with system accessories

Detailed drawing,
see page 65.

Width mm	Packs of	600
Height mm		2200
Depth mm		300
Clearance width mm		500
Clearance height mm		2050
Clearance depth mm		232
Model No. CS with mounting angles 482.6 mm (19˝)	1	**9790.042**[1)]
Model No. CS with mounting angles, metric	1	**9790.043**[1)]
Accessories		
Rear panel for screw fastening, sheet steel 2.0 mm	1	**9790.003**[1)]

[1)] Delivery times available on request.

Features



Rittal Communication Systems offer everything you need to protect your electronic equipment, from weather-tested enclosure solutions, to a variety of climate control components, through to complete security management systems.

Cooling units, heat exchangers, fans and heaters especially designed for outdoor use ensure constant interior temperatures.

The protection category of IP 55 for the system as a whole is retained when using Outdoor heat exchangers and cooling units.



Climate control modules in various different output levels may be variably positioned on the door, rear panel, side panel or roof of the modular enclosure.



Suitable for use within a temperature range from –33°C to +55°C (with cooling unit) or +65°C (with heat exchanger).



Many units feature an integral heater. **Heaters** may be snap-mounted onto **top hat rails** inside the enclosure using the quick-assembly system.



The **full 25 mm double wall** assists heat management and minimises the influence of sunlight.



Active climate control concept with fixed cut-out sizes and a mounting frame for depth-variable positioning of the climate control unit.



Depending on the local conditions at the installation site, either a heat exchanger or a cooling unit may be used.

Outdoor climate control

Cooling units for CS modular enclosures



Type 1 for roof mounting
With microcontroller and
400 watt heater as standard.

Mounting frame:
required for CS 9762.012.



Type 2 for door mounting
With microcontroller and
400 watt heater as standard.

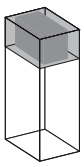
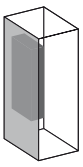
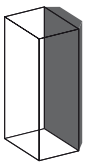
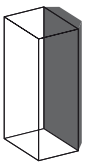
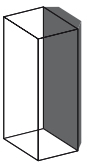
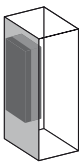


Type 3 for wall mounting
With microcontroller and
400 watt heater as standard.
Alternative mounting on the rear panel or side panels is also possible.
The picture shows the cooling unit with designer cover (not included in the supply).



Type 4 for universal installation
With microcontroller and
800 watt heater as standard.

Installation options:
- in the door or rear panel
- in the side panel

								
Model No. CS		**9762.012**	**9768.100**	**9761.012**	**9761.032**	**9761.042**	**9768.150**	Page
Mounting		Type 1 Roof-mounted	Type 2 Door-mounted	Type 3 Wall-mounted			Type 4 Universal	
Rated operating voltage	AC	230 V, 50/60 Hz						
Unit dimensions (mm)	W H D	535 390 400	430 1070 210	515 1170 151.5	695 1132 151.5	776 1100 250	400 1050 310	
Minimum enclosure dimensions (mm)	W x H/D x H	–	600 x 1200	600 x 1200	800 x 1200	800 x 1200	600 x 1200	
	W x D	600 x 500	–	–	–	–	–	
Useful cooling output EN 814	**L35 L35** **L35 L50**	**900 W** **750 W**	**900 W** **650 W**	**900 W** **750 W**	**1400 W** **1050 W**	**2500 W** **2000 W**	**1500 W** **1250 W**	
Heater		400 W	400 W	400 W	400 W	400 W	800 W	
Rated current max.		4.0 A	4.0 A	3.5 A	5.5 A	10.0 A	5.8 A	
Start-up current max.		10.7 A	11.6 A	10.8 A	15.5 A	32.0 A	19.0 A	
Power consumption	L35 L35 L35 L50	460 W 520 W	470 W 530 W	450 W 520 W	900 W 1000 W	1450 W 1650 W	940 W 1045 W	
Coolant		R134a						
p. max.		26 bar	28 bar	24 bar	24 bar	28 bar	28 bar	
Temperature range		–33°C to +55°C						
Air throughput of fans – unimpeded air flow	Internal circuit fan External circuit fan	570 m^3/h 570 m^3/h	580 m^3/h 430 m^3/h	880 m^3/h 880 m^3/h	850 m^3/h 880 m^3/h	1450 m^3/h 1450 m^3/h	850 m^3/h 680 m^3/h	
Temperature control		Microcontroller[1)]						
Type of connection		Plug panel						
Weight		29 kg	31 kg	45 kg	48 kg	52 kg	40 kg	
Protection category to EN 60 529/10.91		IP 55 (internal circuit to external circuit)						
Material (enclosure)		Aluminium		Sheet steel		Aluminium		
Surface finish		spray finished in RAL 7035						
CE Declaration of Conformity		■	■	■	■	■	■	
UL/CUL		–	–	■	■	–	–	
Accessories								
Cable connection kit		9765.105	9765.105	9765.105	9765.105	9765.105	9765.105	51
Mounting frame		**9765.051**	–	–	–	–	–	–

[1)] With temperature-controlled activation of the components (internal/external circuit, heater).
Setpoints are preset. Modifications can only be made by arrangement.

Delivery times available on request.

Cooling units for modular enclosures are manufactured to order. The units are assembled and supplied connected to the modular enclosure.
Adaptations to other enclosure platforms are available on request.

Heat exchangers for CS modular enclosures



Type 1 for roof mounting
Without microcontroller, without heater.



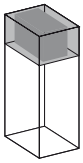
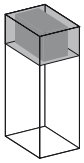
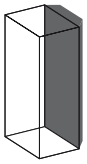
Type 2 for roof mounting
With microcontroller and heater as standard.

Mounting frame:
required for CS 9764.012.



Type 3 for wall mounting
With microcontroller and heater as standard. For external mounting on side panels and rear panels.
The picture shows the heat exchanger with designer cover (not included in the supply).

Property rights for Type 1 and 2:
German patent no. 196 09 796
US patent no. 6,092,384
European patent no. 0 913 015 with validity for FR, GB, IT, SE
Japan. patent no. 32 79 576
South Korean patent no. 0 337 973

					
Model No. CS		**9764.040**	**9764.012**	**9763.012**	Page
Mounting		Type 1 Roof-mounted	Type 2 Roof-mounted	Type 3 Wall-mounted	
Rated operating voltage	DC (fan/ microcontroller)	48 V			
	AC (heater)	–	230 V, 50/60 Hz		
Unit dimensions (mm)	W H D	470 158 380	535 390 400	515 1170 151.5	
Minimum enclosure dimensions (mm)	W x H/D x H	–	–	600 x 1200	
	W x D	600 x 500	600 x 500	–	
Specific thermal output		**30 W/K**	**60 W/K**	**60 W/K**	
Heater		–	400 W	400 W	
Rated current max.	DC (fan/ microcontroller)	1.3 A	3.1 A	3.2 A	
	AC (heater)	–	1.9 A	1.9 A	
Temperature range		–33°C to +65°C			
Air throughput of fans – unimpeded air flow	Internal/external circuit fan	345 m^3/h	830 m^3/h	830 m^3/h	
Temperature control		without[1)]	Microcontroller[2)]		
Type of connection		Plug panel			
Weight		7 kg	17 kg	31 kg	
Protection category to EN 60 529/10.91		IP 55 (internal circuit to external circuit)			
Material (enclosure)		Aluminium		Sheet steel	
Surface finish		spray finished in RAL 7035			
CE Declaration of Conformity		■	■	■	
UL/CUL		–	■	■	
Accessories					
Cable connection kit		9765.110	9765.110	9765.110	51
Thermostat		3110.000	–	–	51
Mounting frame		–	**9765.051**	–	–

[1)] Customers may fit their own temperature control (SK 3110.000).
[2)] With temperature-controlled activation of the components (internal/external circuit, heater). Setpoints are preset. Modifications can only be made by arrangement.

Delivery times available on request.

Heat exchangers for modular enclosures are manufactured to order. The units are assembled and supplied connected to the modular enclosure. Adaptations to other enclosure platforms are available on request.

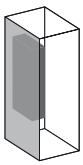
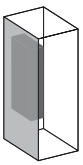
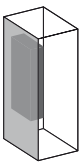
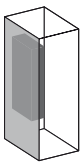
Heat exchanger for CS modular enclosures



Type 4 for door mounting
With microcontroller and 400 W heater as standard.



Type 5 for door mounting
With microcontroller and heater as standard.

						
Model No. CS		**9768.032**	**9768.012**	**9768.042**	**9768.062**	Page
Mounting		Type 4 Door-mounted		Type 5 Door-mounted		
Rated operating voltage	DC (fan/ microcontroller)	48 V				
	AC (heater)	230 V, 50/60 Hz		–		
Unit dimensions (mm)	W H D	480 1005 110	510 1005 150	445 1050 150	575 1050 195	
Minimum enclosure dimensions (mm)	W H	600 1200	650 1200	650 1300	800 1300	
Specific thermal output		**40 W/K**	**60 W/K**	**85 W/K**	**120 W/K**	
Heater		400 W		–		

Rated current max.	DC (fan/ microcontroller)	2.0 A	3.2 A	6.4 A	7.9 A	
	AC (heater)	1.9 A		–		
Temperature range		–33°C to +65°C				
Air throughput of fans – unimpeded air flow	Internal/external circuit fan	515 m^3/h	530 m^3/h	1020 m^3/h		
Temperature control		Microcontroller[1)]				
Type of connection		Plug panel			Sub-D connector 13W3[2)]	
Weight		13 kg	15 kg	28 kg	32 kg	
Protection category to EN 60 529/10.91		IP 55 (internal circuit to external circuit)				
Material (enclosure)		Aluminium				
Surface finish		spray finished in RAL 7035				
CE Declaration of Conformity		■	■	■	■	
UL/CUL		■	■	■	■	
Accessories						
Cable connection kit		9765.110	9765.110	9765.115	–	51

[1)] With temperature-controlled activation of the components (internal/external circuit, heater). Setpoints are preset. Modifications can only be made by arrangement.
[2)] Special connection cable included with the supply.

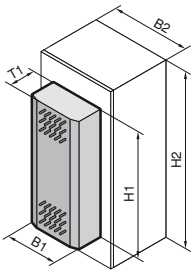
Delivery times available on request.

Heat exchangers for modular enclosures are manufactured to order. The units are assembled and supplied connected to the modular enclosure. Adaptations to other enclosure platforms are available on request.

Cooling units for Toptec CR







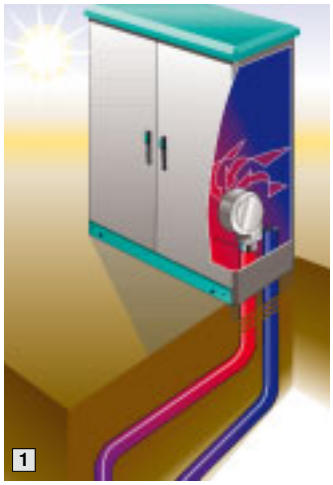
1 Heat exchanger/ cooling unit
With three mounting positions for internal mounting, partial internal mounting or external mounting plus a choice between cooling via front or rear door.

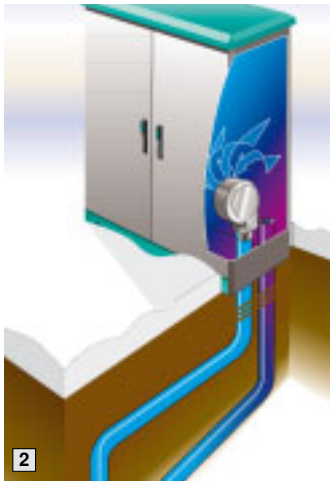
2 Heat exchanger/ cooling unit
built into the Toptec CR.

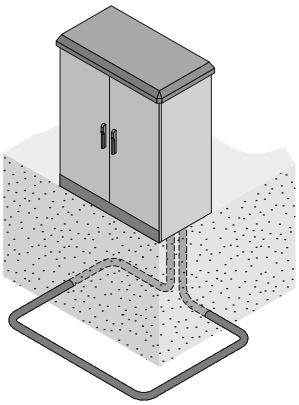
		Heat exchangers		Cooling units		Page
Model No. CS		**9776.100**	**9776.150**	**9776.500**	**9776.550**	
Mounting		Universal		Universal		
Rated operating voltage	DC	48 V		–		
	AC	–		230 V, 50/60 Hz		
Unit dimensions (mm)	B1 H1 T1	500 1000 150	500 1000 200	500 1000 150	500 1000 260	
Minimum enclosure dimensions (mm)	W x H	800 x 1200		800 x 1200		
Specific thermal output		**85 W/K**	**105 W/K**	**–**	**–**	
Useful cooling output EN 814	**L35 L35 L35 L50**	**–**	**–**	**1000 W/1180 W 650 W/700 W**	**1600 W/1750 W 1200 W/1250 W**	
Heater		–	–	400 W		
Rated current max.	DC	4.2 A	4.5 A	–	–	
	AC	–		5.0 A/5.0 A	6.0 A/6.8 A	
Start-up current max.		–		24.0 A/22.0 A	34.0 A/32.0 A	
Power consumption	L35 L35 L35 L50	–		640 W/760 W 780 W/920 W	960 W/1170 W 1125 W/1310 W	
Coolant		–		R134a		
p. max.		–		28 bar	28 bar	
Temperature range		–33°C to +65°C		–33°C to +55°C		
Air throughput of fans – unimpeded air flow	Internal/external circuit fan	530 m^3/h	1130 m^3/h	600/625 m^3/h 600/625 m^3/h	880/950 m^3/h 1000/1090 m^3/h	
Temperature control		Microcontroller[1)]	Microcontroller[2)]			
Type of connection		Plug panel	Female multi-point connector 9-pole			
Weight		22 kg	30 kg	35 kg	45 kg	
Protection category to EN 60 529/10.91		IP 55 (internal circuit to external circuit)				
Material (enclosure)		Aluminium				
Surface finish		spray finished in RAL 7035				
CE Declaration of Conformity		■	■	■	■	
Accessories						
Cable connection kit		9765.115	–	–	–	51

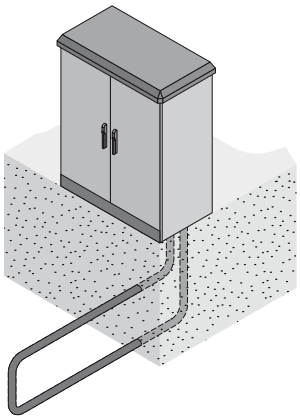
[1)] With temperature-controlled activation of the components (internal/external circuit, heater). Setpoints are preset. Modifications can only be made by arrangement.
[2)] Settings may be amended directly on the unit display.

Geothermal heat exchangers, Terravent


1


2


3


4

Rittal Terravent
This ingeniously simple and effective climate control principle, which uses geothermal effects to cool and heat, underscores Rittal's expertise in all aspects of enclosure systems for outdoor siting. The geothermal heat transmitter is suitable for use whenever earthworks are required to install an outdoor enclosure.
Throughout the world, at a certain depth beneath the earth's crust, the temperature is always roughly the same, whatever the season; and this fact is used to cool and heat outdoor enclosures. The hot air from the enclosure is forced into a pipe with a radial or axial fan.

A pipeline system laid in the earth cools the air, which in turn is used to cool the enclosure. In low external temperatures, the temperature of the air inside the pipeline system rises, and this achieves a heating effect.
The inlet and outlet points of the pipes can be freely positioned to effectively avoid hot spots. Depending on the application, the air discharge and air inlet can be positioned in the base/plinth, in the roof, or at freely selectable positions inside the enclosure.

Benefits of the geothermal heat exchanger
- With the sealed ventilation system, ambient air is unable to penetrate the enclosure, which in turn prevents the ingress of humidity and aggressive pollutants from the air.
- Minimal energy requirements, since only a radial or axial fan is required to generate the air flow. The fan motors are available in various operating voltages.
- Reduction of noise emissions, since there are no active climate control components mounted on the outside of the enclosure.
- Minimal maintenance required for the fan system.
- Control, monitoring and alarm relays can be achieved via the Rittal CMC.

US patent no. 6,523,602

1 With a radial or axial fan, the hot air from the enclosure is forced into a pipe. A pipeline system laid in the earth cools the air, which in turn is used to cool the enclosure.

2 In low external temperatures, the temperature of the air inside the pipeline system rises, and this achieves a heating effect.

3 **With the pipeline system laid horizontally.**
Excellent heat dissipation is effected, because the pipeline system is laid horizontally on one level. Major excavation work is, however, required.

4 **With the pipeline system laid vertically.**
The pipeline system to and from the outdoor enclosure is laid in a pit. The effects of heat dissipation are somewhat less pronounced, but the pipes are simply laid in a pit where the supply lines to the enclosure can also be laid.

Terravent supply includes
- Calculation of the maximum required and maximum possible thermal output.
- Calculation and dimensioning of the fan, the pipe diameter, the pipe length, and the best way of laying the pipe.
- Determination of the optimum positioning of the air inlet and air outlet on the enclosure.
- Supply of all components, pre-assembly of the fan pipe fixtures in the outdoor enclosure, installation of the fan, insulation of the enclosure (where necessary).

Packs of	Model No. CS
1 set	9767.500

Examples of temperature variation, see page 56.



Pole clamp

For reliable, convenient fastening to round or square poles.

For pole diameter/size:
Ø from 40 to 190 mm
□ from 50 to 150 mm

Material:
Mounting angles, clamping section:
Sheet steel, zinc-plated, passivated
Clamping strap: Stainless steel 1.4301 (AISI 304)



For AE stainless steel

Supply includes:
2 mounting angles, 600 mm long
4 clamping sections,
2 clamping straps,
4 clamping brackets,
4 screws and nuts M8
for attachment to the enclosure.

Packs of	Model No. SZ
1 set	**2584.000**



For CS wall-mounted enclosures

Supply includes:
4 clamping sections,
2 clamping straps,
4 clamping brackets.

Packs of	Model No. CS
1 set	**9765.125**



Wall mounting bracket

for CS wall-mounted enclosures
For mounting on a wall or panel.

Material:
Stainless steel 1.4301 (AISI 304)

Packs of	Model No. CS
4	**9765.120**



Wall mounting bracket

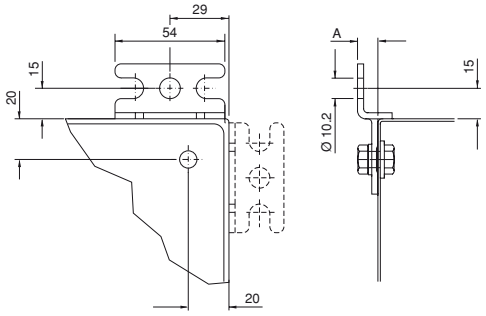
For attaching AE stainless steel enclosures.

Material:
Stainless steel 1.4301 (AISI 304)

Supply includes:
Assembly parts for mounting on the enclosure.

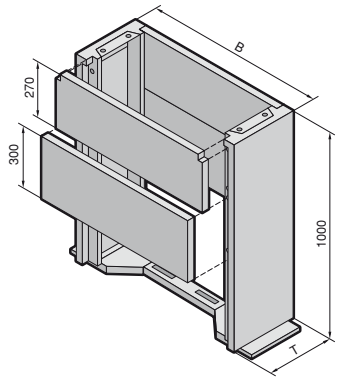
Note:
For hygiene reasons, and in view of the protection category, the stainless steel enclosures do not have any drilled holes for the wall mounting brackets.

Wall distance (A) mm	Packs of	Model No. SZ
10	4	**2433.000**



Base





Concrete base/plinth

for Outdoor enclosures
The base/plinth is made from pre-cast concrete sections which are easily and quickly fitted in situ. Front/rear base/plinth plate screw-fastened from the inside may be removed for servicing equipment.
Total height approx. 1000 mm,
Excavation depth approx. 700 mm.

Material/Surface finish:
Light concrete, untreated

Supply includes:
1 base plate,
2 side parts,
2 divided base/plinth plates,
assembly parts
and fastening screws for mounting the enclosure.

For enclosures/housings		Model No. CS
Width (B) mm	Depth (T) mm	
CS modular and basic enclosures		
600	400	**9765.182**
600	500	**9765.082**
600	600	**9765.083**
800	400	**9765.088**
800	500	**9765.084**
800	600	**9765.085**
1200	400	**9765.089**
1200	500	**9765.086**
1200	600	**9765.087**
Toptec CR		
600	600	**9765.166**
800	600	**9765.186**

Delivery times available on request.
Other sizes available on request.
Base/plinth trim screw-fastened from the outside available on request.



Gland plates

for CS basic enclosures
For sealing the base opening and for cable entry.

Material:
Aluminium, 2 mm

Supply includes:
Assembly parts.

For enclosure dimensions		Packs of	Model No. CS	
Width mm	Depth mm		One-piece	Divided
600	400	1 set	**9785.017**	**9785.011**
600	500	1 set	**9785.020**	**9785.014**
800	400	1 set	**9785.018**	**9785.012**
800	500	1 set	**9785.019**	**9785.013**
1200	400	1 set	**2 x 9785.017**	**2 x 9785.011**
1200	500	1 set	**2 x 9785.020**	**2 x 9785.014**



Cable entry plates

for CS basic enclosures
For simple, fast cable entry and sealing in conjunction with cable entry grommets.
To replace individual modules in the divided gland plates.

German patent no. 42 07 281
European patent no. 0 560 119
with validity for FR, GB, IT, NL
Japan. patent no. 2 533 052
US patent no. 5,422,436

Enclosure width mm	Cut-outs per plate	Packs of	Model No. PS
600	5	2	**4320.700**
800	8	2	**4321.700**
1200	5	2	**2 x 4320.700**

Material:
Sheet steel, zinc-plated, passivated.

Supply includes:
Assembly parts.

Accessories:

Cable entry grommets,
see page 37.



Cable entry grommets

In conjunction with the cable entry plate, simple and fast sealing of cables inserted in the base area of enclosures.

Material:
Body: Polypropylene
Cover: Thermoplastic elastomer

Protection category:
IP 55 if mounted correctly.

Cables per grommet	max. Ø mm	Packs of	Model No. PS
8	13	25	**4316.000**
3	21	25	**4317.000**
1	47	25	**4318.000**

German patent no. 42 07 281
European patent no. 0560119
with validity for FR, GB, IT, NL
Japan. patent no. 2533052
US patent no. 5,422,436



Plastic gland plates

with membranes
Simply pierce the plastic with a sharp object, and pull through the cable.

Material:
Plastic to UL 94-V2

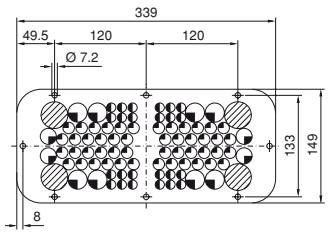
Colour:
Similar to RAL 7035

Protection category:
IP 65 with careful cable entry.

Size	For	Packs of	Model No. SZ
4	AE 1045.500, AE 1050.500, AE 1057.500, AE 1100.500, AE 1110.500, AE 1114.500, AE 1130.500, AE 1213.500, AE 1338.500, AE 1350.500, CS 9751.125, CS 9751.145, CS 9751.165, CS 9752.125, CS 9775.100, CS 9775.200, CS 9775.300, CS 9775.400,	1	**2562.500**

	Diameter mm	Number of cable entries
◐	7 – 12	24
◔	10 – 15	48
◕	15 – 21	4
◑	15 – 25	8
▨	26 – 35	4

Size 4





Plastic gland plates

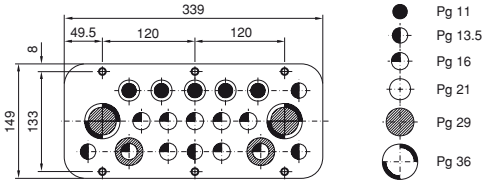
With prepunched PG holes for cable glands.
Used for sealing standard gland plates.
Temperature range:
suitable for use from –40°C to +70°C.

Material:
ABS

Colour:
RAL 7035

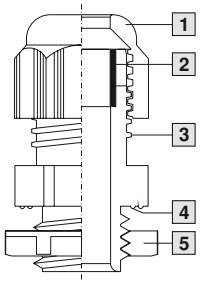
Size	For	Packs of	Model No. SZ
4	AE 1045.500, AE 1050.500, AE 1057.500, AE 1100.500, AE 1110.500, AE 1114.500, AE 1130.500, AE 1213.500, AE 1338.500, AE 1350.500, CS 9751.125, CS 9751.145, CS 9751.165, CS 9752.125, CS 9775.100, CS 9775.200, CS 9775.300, CS 9775.400,	5	**2562.000**

Size 4



Base/roof





Cable gland, polyamide

Benefits:

- Because the gland and lock nut are sold together in a single pack, this saves additional ordering work and storage locations.
- Clamping membranes for even tightening and strain relief which protects the cables.
- Spray-moulded sealing lip ensures an optimum seal against the enclosure.
- Trapezoid thread for secure screw-fastening of the top-hat nut.

1 Top-hat nut
2 Neoprene seal
3 Trapezoid thread
4 Sealing lip
5 Lock nut

Size	Cable diameter mm	Packs of	Model No. SZ
M12 x 1.5	3 – 6.5	50	**2411.600**
M16 x 1.5	4.5 – 10	50	**2411.610**
M20 x 1.5	6 – 12	50	**2411.620**
M25 x 1.5	11 – 17	25	**2411.630**
M32 x 1.5	15 – 21	15	**2411.640**
M40 x 1.5	19 – 28	5	**2411.650**
M50 x 1.5	27 – 38	5	**2411.660**
M63 x 1.5	34 – 44	3	**2411.670**

Material:
Polyamide 6, neoprene seal

Colour:
RAL 7035

Protection category:
IP 68 (5 bar, 30 min.) to EN 60 529/10.91

IP 69K to DIN 40 050-9/5.93
(except SZ 2411.660 and SZ 2411.670)

Approval:
CSA for USA and Canada



Rain canopies

for AE stainless steel

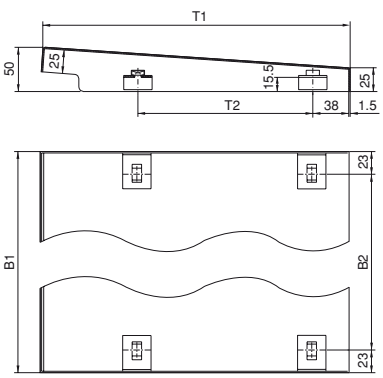
Reliable protection for outside siting – with water run-off to the rear. Easily retro-fitted.

Material:
Stainless steel 1.4301 (AISI 304)

Supply includes:
Assembly parts.

Note:
For outdoor siting, we generally recommend a rain canopy above the enclosure or the gap between the door or screw-fastened rear panel and the enclosure, in order to protect against water and UV radiation.
The tests of IP protection categories for water protection (2nd code number to EN 60 529) cannot be compared with an enclosure sited outdoors or under similar conditions.

Upon request, rain canopies of stainless steel or aluminium can also be produced for other enclosures.



For AE enclosures Stainless steel	B1 mm	B2 mm	T1 mm	T2 mm	Model No. SZ
1002.600	211	160	180	65	**2470.000**
1003.600 1005.600	311	260	235	120	**2361.000**
1004.600 1030.500	391	340	180	65	**2471.000**
1006.600 1008.600 1011.600	391	340	235	120	**2472.000**
1007.600	511	460	235	120	**2362.000**
1009.600 1010.600 1012.600	611	560	235	95	**2473.000**
1014.600 1073.500	771	720	325	185	**2474.000**
1016.600 1017.600	811	760	325	185	**2475.000**
1018.600 1019.600	1011	960	325	185	**2363.000**

Accessories:

Condensate discharge,
see Cat. 31, page 852.

Locks



Ergoform padlock handle system

for CS basic and modular enclosures
With an additional shackle for a padlock.
Hole diameter of shackle: 9 mm.
Prepared for the installation of 40 mm semi-cylinders (length: 10/30 mm).

Packs of	Model No. CS
1	**9785.030**



Semi-cylinder

to DIN 18 252
40 mm, alternative closure, for individual locks in handle systems with cylinder insert.

Supply includes:
3 keys.

Packs of	Model No. CS
1 set	**9785.040**



Cam lock

Made entirely from stainless steel 1.4404 (AISI 316L).
For AE compact enclosures, stainless steel (with cam lock).

	Model No. SZ
With double-bit insert	**2304.000**



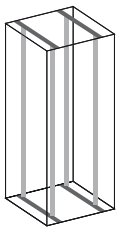
Door stay

To secure the door in the open position.

For	Packs of	Model No. AE
AE stainless steel IP 69K	1	**1101.800**

Mounting angles





Mounting frame, 482.6 mm (19˝)

for CS basic and modular enclosures
The welded 482.6 mm (19˝) mounting frame may be attached with complete depth variability and is used to structure the front and rear 482.6 mm (19˝) level.
The mounting frame has the same system punchings as the TS 8 enclosure section at the sides and rear, and therefore supports the mounting of various TS 8 system accessories such as cable clamp rails, cable shunting rings etc.

Load capacity:
Up to 1,000 kg static load, with even load distribution on two 482.6 mm (19˝) mounting frames, with full installation.

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
Assembly parts.

Explanation of the fastening measurements in interior installations, see page 52.

For enclosures		U	Model No. FR(i)
Width mm	Height mm		
600	1200	24	**7856.713**
800	1200	24	**7856.725**

Accessories:

Captive nuts,
see page 49.
Assembly screws,
see Cat. 31, page 1019.
Cable clamp rails TS,
see Cat. 31, page 983.
C rails,
see page 48.
Slide rails, depth-variable,
see Cat. 31, page 1010.
Component shelves,
see Cat. 31, page 939 and page 944.





Mounting angles, 482.6 mm (19˝)

for Toptec CR

Available in two versions:

Cranked
The integral U markings in the front facilitate systematic assembly within the 482.6 mm (19˝) attachment level.

L-shaped
The L-shaped mounting angles accommodate the installation kits of server systems. The integral U markings in the front facilitate systematic assembly within the 482.6 mm (19") attachment level.

Technical specifications:
2 mm sheet steel, with integral 482.6 mm (19˝) punchings and side round and square holes. Zinc-plated, passivated for conductive connection of the 482.6 mm (19˝) installed equipment.

Supply includes:
Assembly parts.

Explanation of the mounting dimensions in interior installations, see page 52.

Full installation Rack height mm	U	Packs of	Model No. DK	
			Cranked	L-shaped
600	11	2	–	**7827.061**
800	15	2	**7827.080**	**7827.081**
1000	20	2	**7827.100**	**7827.101**
1200	24	2	**7827.120**	**7827.121**
1400	29	2	**7827.140**	**7827.141**
1600	33	2	**7827.160**	**7827.161**
1800	38	2	**7827.180**	**7827.181**
2000	42	2	**7827.200**	**7827.201**

Note:
The mounting angles can also be used to accommodate 21˝, 23˝ and 24˝ attachment dimensions.

Also required:

Punched sections without mounting flanges or depth stays for TS as installation kit for mounting angles,
see page 41.
For L-shaped mounting angle variant:
for mounting slide rails or component shelves:
Adaptor DK 7827.300,
see Cat. 31, page 950.



Support strips

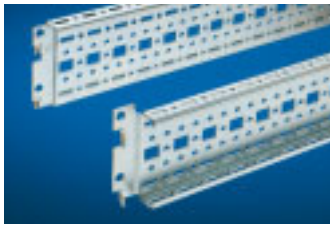
for Toptec CR
as installation kit for mounting angles
One installation kit consists of 4 depth stays to accommodate mounting angles. One pack is sufficient for installing one or two 482.6 mm (19˝) attachment levels. The installation kit is secured to the inner mounting level of the Toptec CR, product platform TS 8.

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
Assembly parts.

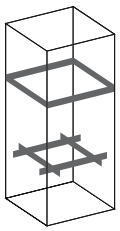
For enclosures		Packs of	Model No. DK
Width mm	Depth mm		
800	600	4	**7794.580**

Note:
For frame size 600 x 600 mm you will need:
TS punched section with mounting flange as installation kit,
Model No. TS 8612.060.

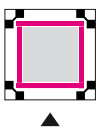












TS punched section with mounting flange, 17 x 73 mm

for Toptec CR
Variable, with 5 rows of holes for universal skeleton structures or partial assembly. Simply locate into the TS punchings and secure.

Installation options:
- On the vertical TS enclosure section
  - On the outer mounting level, all-round, at the same height
  - On the inner mounting level, all-round, height-offset

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
Assembly screws.

German patent no. 196 47 802

Accessories:

Screws,
see Cat. 31, page 937.
Cable tie for quick assembly SZ 2597.000,
see Cat. 31, page 982.

For the outer mounting level

For enclosure width/depth mm	Packs of	Model No. TS
500	4	**8612.150**
600	4	**8612.160**

For the inner mounting level

For enclosure width/depth mm	Packs of	Model No. TS
600	4	**8612.060**

Mounting angles



T-slot mounting angles, 482.6 mm (19˝)/metric

for Toptec CR, CS basic and modular enclosures

With integral T-slot for U nuts. Holes on a U pitch pattern are integrated into the rear section of the T-slot. Round and square holes on a 25 mm DIN 43 660 pitch pattern of holes are provided for side attachment. The mounting angle may optionally be integrated using PS metric or 482.6 mm (19˝) depth stays.

Material:
Extruded aluminium section, pickled

Supply includes:
Assembly parts.

Explanation of the mounting dimensions in interior installations, see page 52.

Full installation Rack height mm	U	SU	Packs of	Model No. DK
800	15	26	2	**7000.150**
1000	20	35	2	**7000.200**
1200	24	42	2	**7000.240**
1400	29	51	2	**7000.290**
1600	33	58	2	**7000.330**

Note:
In 600 mm wide enclosures, mounting angles may be alternatively depth-mounted on TS punched sections with mounting flanges.

Also required:

Punched section with mounting flange 8612.060 as installation kit for mounting angles, see page 41,
or
depth stay for PS, see page 42.



Mounting angles, 482.6 mm (19˝)

for CS modular and basic enclosures

For mounting 482.6 mm (19˝) components in Outdoor enclosures. The mounting angles are depth-adjustable on a 25 mm pitch pattern. An installation bracket is required to attach the mounting angles.

Material:
Sheet steel, zinc plated, passivated

Supply includes:
Assembly parts.

Explanation of the mounting dimensions in interior installations, see page 52.

Enclosure height mm	U	Packs of	Model No. DK
800	15	2	**7685.000**
1200	24	2	**7688.000**
1400	29	2	**7689.000**
1600	33	2	**7690.000**

Also required:

Depth stay for PS, see page 42.



Depth stay for PS

For
- T-slot mounting angles in the Toptec CR
- Mounting angles for CS modular and basic enclosures

Material:
Sheet steel, zinc-plated, passivated

Enclosure width mm		600/1200[1)]	800		
Standards		482.6 mm (19˝)	482.6 mm (19˝)/metric (465 mm)		metric (515 mm)
Installation position		central	central	side	central
Model No. DK	2	**7696.000**	**7698.000**	**7697.000**	**7000.100**

[1)] 1200 mm wide CS modular and basic enclosures are divided in two fields of 600 mm.





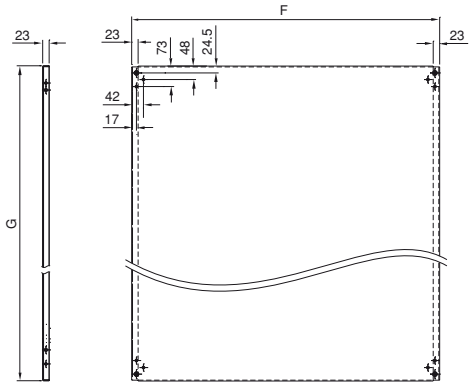
Mounting plates

for Toptec CR, CS basic and modular enclosures
For the configuration of mounting levels.
The mounting plates are depth-adjustable on a 25 mm pitch pattern.

Material:
Aluminium, 3 mm

Supply includes:
Assembly parts.

Note:
For an enclosure width of 1200 mm partial installation with one or two 600 mm wide mounting plates is possible.



For enclosure		F	G	Model No. CS
Width mm	Height mm			
600	800	499	696	**9765.090**
600	1000	499	896	**9765.091**[1)]
600	1200	499	1096	**9765.092**
600	1400	499	1296	**9765.098**
600	1600	499	1496	**9765.093**
800	800	699	696	**9765.097**
800	1000	699	896	**9765.094**[1)]
800	1200	699	1096	**9765.095**
800	1400	699	1296	**9765.099**
800	1600	699	1496	**9765.096**
1200	800	1099	696	**9765.190**[1)]
1200	1200	1099	1096	**9765.191**
1200	1400	1099	1296	**9765.192**

[1)] Delivery times available on request.



Mounting kit

for Toptec CR
For the attachment of mounting plates or swing frames in the enclosure depth.

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
1 set =
2 punched rails and
2 mounting brackets,
assembly parts.

Packs of	Model No. CS
1 set	**9765.155**



Partial mounting plates

for CS basic and modular enclosures
For additional mounting levels.

Material:
Sheet steel 2.5 mm, zinc-plated

Supply includes:
Assembly parts.

For enclosure width mm	Width x height mm	Packs of	Model No. PS
600	492 x 173	2	**4130.700**
600	492 x 373	2	**4131.700**
600	492 x 573	2	**4132.700**
800	692 x 173	2	**4135.700**
800	692 x 373	2	**4136.700**
800	692 x 573	2	**4137.700**
1200	1092 x 373	2	**4141.700**
1200	1092 x 573	2	**4142.700**

Mounting plates





Partial mounting plates

for Toptec CR

For

- Universal interior installation, in conjunction with punched sections with mounting flanges and support strips. Defective assemblies are quickly and easily replaced.
- Additional mounting levels.

Partial mounting plates are fastened directly onto the vertical enclosure sections via the inner mounting level using the assembly parts supplied loose. In this mounting position (in both the width and the depth) they form one level with TS punched sections with mounting flanges 17 x 73 mm and TS support strips for the inner mounting level.

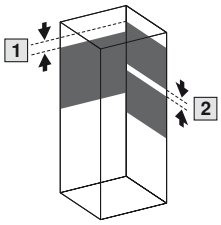
Material:
Sheet steel, 2.5 mm, zinc-plated, passivated

Supply includes:
Assembly parts.

Accessories:

TS punched section with mounting flange 17 x 73 mm for the outer mounting level, see page 41.

For installation in					Size mm	Packs of	Model No. TS
Enclosure width mm		Enclosure depth (side) mm					
600	800	400	500	600			
■		■		■	500 x 300	1	**8614.640**
■			■	■	500 x 400	1	**8614.650**
■				■	500 x 500	1	**8614.660**
■	■			■	500 x 700	1	**8614.680**
■				■	500 x 775	1	**8614.675**
	■	■			700 x 300	1	**8614.840**
	■		■		700 x 400	1	**8614.850**
	■				700 x 700	1	**8614.880**
		■			900 x 300	1	**8614.040**
			■		900 x 400	1	**8614.050**
■				■	900 x 500	1	**8614.060**
		■			1100 x 300	1	**8614.240**
			■		1100 x 400	1	**8614.250**
■				■	1100 x 500	1	**8614.260**

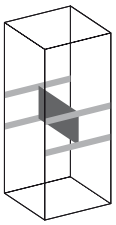


When **installing around corners** due to collision between the assembly components

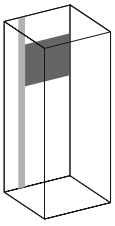
1 At least 75 mm (adjustable on a 25 mm pitch pattern).

Maximum space utilisation

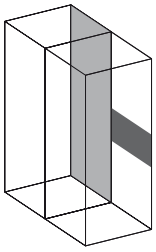
2 1 mm (adjustable on a 25 mm pitch pattern).



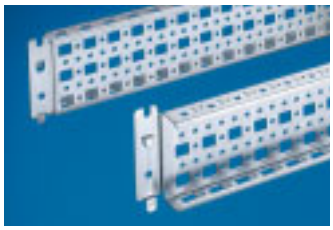
Set forward installation position
Quickly and easily achieved wtih four TS punched sections with mounting flanges 17 x 73 mm for the outer mounting level, see page 41.



Partial installation
Partial utilisation of the enclosure depth or width is also possible. In this example, using a PS punched section without mounting flange 23 x 73 mm, see page 45.



Continuously flush
In bayed enclosures, the partial mounting plate is in the rearmost position flush with the standard mounting plate. This facilitates continuous component mounting.







PS punched section with mounting flange 23 x 73 mm

for Toptec CR, CS basic and modular enclosures

Variable, with 5 rows of holes for universal skeleton structures or partial assembly. Simply locate into the system punchings and secure.

Installation options:

- On the vertical TS enclosure section
  - Via adaptor rail for PS compatibility
- On the horizontal enclosure section

Material:
Sheet steel, zinc-plated, passivated

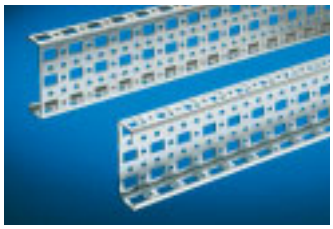
Supply includes:
Assembly screws.

Installation in enclosure width/depth Toptec CR mm	Packs of	Model No. PS
600	4	**4364.000**
800	4	**4365.000**

Installation in enclosure depth CS basic/ modular enclosures mm	Packs of	Model No. PS
400	4	**4369.000**
500	4	**4370.000**
600	4	**4371.000**
800	4	**4372.000**

Also required:

PS punched rail for use in CS basic enclosures, see page 46.









PS punched section without mounting flange 23 x 73 mm

Installation options:

- On the vertical enclosure section
  - Directly via support brackets TS
  - Via adaptor rail for PS compatibility in conjunction with support brackets PS
- On the horizontal enclosure section
  - Directly via support brackets PS

Material:
Sheet steel, zinc-plated, passivated

Length mm	For WHD mm	Packs of	Model No. PS
295	400	4	**4374.000**
395	500	4	**4375.000**
495	600	4	**4376.000**
695	800	4	**4377.000**
895	1000	4	**4382.000**
1095	1200	4	**4378.000**

Also required:

Support brackets PS/TS,
see Cat. 31, page 933.

Accessories:

Screws,
see Cat. 31, page 937.
Cable tie for quick assembly SZ 2597.000,
see Cat. 31, page 982.
U nuts,
see page 48.

Rail systems









PS punched rails 23 x 23 mm

Installation options:

- On the vertical enclosure section
  - Directly via support brackets TS
  - Via adaptor rail for PS compatibility in conjunction with angle brackets, mounting brackets or support brackets PS
- On the horizontal enclosure section
  - Directly via angle brackets, mounting brackets or support brackets PS

Material:
Sheet steel, zinc-plated, passivated

Length mm	For WHD mm	Packs of	Model No. PS
295	400	12	**4169.000**
395	500	12	**4170.000**
495	600	12	**4171.000**
695	800	12	**4172.000**
895	1000	12	**4173.000**
1095	1200	6	**4174.000**
1295	1400	6	**4393.000**
1495	1600	6	**4175.000**

Also required:

U nuts,
see page 48.
Mounting brackets TS/PS,
see Cat. 31, page 932
or
Angle brackets, support brackets TS/PS,
see Cat. 31, page 933.

Accessories:

Cable attachment,
see Cat. 31, page 982.
Screws,
see Cat. 31, page 937.
Cable tie for quick assembly SZ 2597.000,
see Cat. 31, page 982.









Support rails

For heavy installations, with attachment holes. Particularly suitable for the installation of base isolators.

Installation options:

- On the horizontal enclosure section
  - in the width (only with Toptec CR)
  - in the depth
- On the vertical TS enclosure section
  - Via snap-on nut TS 8800.808 (Fig. left)
  - Via adaptor rail for PS compatibility
  - Offset in the height, via TS punched rail 25 x 38 mm (Fig. right)

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
Assembly parts.

For enclosure width/depth mm	Packs of	Model No. PS	Model No. TS
		slotted	unslotted
400	4	**4394.000**	**4394.500**
500	4	**4395.000**	**4395.500**
600	4	**4396.000**	**4396.500**
800	4	**4398.000**	**4398.500**

Accessories:

Snap-on nut M8, TS 8800.808,
see Cat. 31, page 931.
Adaptor rail,
see Cat. 31, page 924.
TS punched rail 25 x 38 mm
see Cat. 31, page 923.





Angle bracket PS

For quick attachment of punched rails 23 x 23 mm.

Installation options:

- On the vertical TS enclosure section via
  - Adaptor rail for PS compatibility see Cat. 31, page 924
- On the horizontal TS enclosure section
- On enclosures and rails with square system punchings 12.5 x 10.5 mm,

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
1 set =
1 angle bracket, left,
1 angle bracket, right,
2 screws 5.5 x 13 mm.

Packs of	Model No. PS
12 sets	4181.000

Also required:

U nuts for punched rails (recommended: M6), see page 48.
Multi-tooth screws M6 x 12 mm, see Cat. 31, page 937.



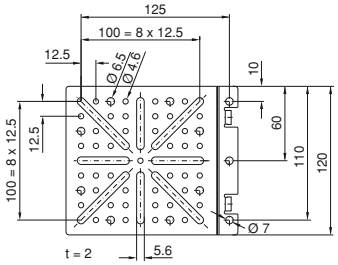

Mounting plates

Locatable
On the vertical TS enclosure section or TS punched section with mounting flange 17 x 73 mm on the inner and outer mounting level.

Material:
Sheet steel, zinc-plated, passivated

Supply includes:
Assembly screws.

Packs of	Model No. TS
4	8612.400






Quick-assembly block

For a variety of installation options.

Installation options:

- On the vertical TS enclosure section via
  - Snap-on nut TS 8800.808, see Cat. 31, page 931, or
  - Adaptor rail for PS compatibility see Cat. 31, page 924
- On the horizontal TS enclosure section
- On enclosures and rails with square system punchings 12.5 x 10.5 mm,

Material:
Die-cast zinc

Supply includes:
12 quick-assembly blocks,
12 threaded blocks M8,
24 screws M8 x 12 mm,
24 square nuts M8.

Packs of	Model No. TS
12	4133.000

German patent no. 42 33 205

Rail systems




U nuts

for
- Punched rail 23 x 23 mm
- Punched sections without mounting flanges, 23 x 73 mm
- Punched sections without mounting flanges, 45 x 88 mm
- Punched sections with mounting flanges, 23 x 73 mm

For mounting punched rails and punched sections without mounting flanges on angle brackets, mounting brackets and support brackets, we recommend U nuts with M6 thread (PS 4179.000).

Thread	Packs of	Model No. PS
M4	20	**4119.000**
M5	20	**4157.000**
M6	20	**4179.000**
M8	20	**4180.000**

Accessories:

Multi-tooth screws M6 x 12 mm,
(for PS 4179.000),
see Cat. 31, page 937.






C rails 30/15

to EN 60 715

Installation options:
- On the vertical TS enclosure section
  - Via snap-on nut TS 8800.808 (Fig. left)
  - Via adaptor rail for PS compatibility
- On the horizontal TS enclosure section (Fig. right)
- On the ES system punchings

Material:
Sheet steel, zinc-plated, passivated

For enclosure width/ depth mm	Length mm	Packs of	Model No. PS
500	455	6	**4943.000**
600	555	6	**4944.000**
800	755	6	**4945.000**
1000	955	6	**4946.000**
1200	1155	6	**4947.000**

Accessories:

Cable clamps,
see Cat. 31, page 981.
Support bracket or spacer,
see Cat. 31, page 934.
Quick-assembly block,
see Cat. 31, page 934.
Snap-on nut M8, TS 8800.808,
see Cat. 31, page 931.
Adaptor rail,
see Cat. 31, page 924.



3 U support unit

for LSA-Plus strips, max. 150 paired wires

To accommodate a maximum of 15 LSA-Plus strips (each with 10 paired wires). 3 x 5 LSA-Plus connection strips 2/10, series 2, may be installed horizontally. Strip length 124 mm, height pitch pattern 22.5 mm. The support unit may be integrated in all 482.6 mm (19″) mounting levels. The mounting level is recessed 100 mm behind the 482.6 mm (19″) flanges. Integral shunting rings enable tidy routing and distribution of the telecommunication cables.

U	Model No. DK
3	**7050.100**

Material:
Stainless steel

Supply includes:
Support unit, 8 shunting rings.





Captive nuts M5/M6

For the attachment of rack-mounted electronic equipment, 482.6 mm (19″) installed equipment and blanking plates to 482.6 mm (19″) mounting angles.
For use with metal thickness from 0.8 – 2.0 mm. In areas of narrow tolerance, captive nuts for metal thicknesses of 1.2 – 1.5 mm should be used.
Optionally with or without contact of the installed equipment to the 482.6 mm (19″) section/enclosure.

Captive nut M5

Design	For metal thicknesses mm	Packs of	Model No. EL
With contact	0.8 – 2.0	50	**2094.500**
Without contact	0.8 – 2.0	50	**2092.500**

Captive nut M6

Design	For metal thicknesses mm	Packs of	Model No. EL
With contact	0.8 – 2.0	50	**2094.200**
Without contact	0.8 – 2.0	50	**2092.200**
With contact	1.2 – 1.5	50	**2094.300**
Without contact	1.2 – 1.5	50	**2092.300**



Multi-tooth screws

M5 x 16 mm/M6 x 16 mm
For optimum transmission of torques, an extended tool life and increased safety and reliability when tightening and loosening screw connections.

Supply includes:
Plastic washers.

	Bit size	Packs of	Model No. DK
M5	Multi-tooth 25	100	**7094.500**
M6	Multi-tooth 30	100	**7094.600**



ESD connection point

During maintenance or conversion work on the enclosure, dangerously high potential differences can occur. To protect sensitive electronic components, this standardised connection point (push-button) provides potential equalisation. The connection point is directly conductively connected to the enclosure frame via two screws.

Material:
Sheet steel

Supply includes:
Assembly parts.

Packs of	Model No. DK
1	**7752.950**



Earth straps

For configuring a reliable earthing connection with perfect contact.

- With ring terminals in M6 and M8 to match the earthing screw
- Length-optimised and ready to install

Connection	Cross-section mm^2	Length mm	Packs of	Model No. SZ
M8 – M8	4	170	5	**2564.000**
M6 – M8	4	170	5	**2564.010**
M6 – M6	4	170	5	**2564.020**
M8 – M8	16	170	5	**2565.000**
M8 – M8	25	170	5	**2566.000**
M6 – M6	10	200	5	**2565.100**
M8 – M8	4	300	5	**2567.000**
M6 – M8	10	300	5	**2565.110**
M8 – M8	10	300	5	**2565.120**
M8 – M8	16	300	5	**2568.000**
M8 – M8	25	300	5	**2569.000**

Lights/heater



Enclosure light, 48 V DC

Robust light. For attachment vertically or horizontally in the frame section via spring brackets, or may be used as a direct light source during maintenance work by inserting the plastic swivel hook. Impact-resistant lamp housing of PMMA (polymethylmethacrylate) protection category II.

Protection category:
IP 64

Supply includes:
2 spring brackets
and assembly parts.

Packs of	Model No. CS
1	**9765.150**

Technical specifications:
Luminosity: 11 W
Luminous efficiency: 900 lm
Fluorescent tube: TC-SEL 11 W, 4-pin
Ambient temperature: –20°C to +40°C
Voltage: 48 V DC ±10 %
Supply lead 3000 mm, H05RN – 2 x 1 mm, without connectors, with crimped ferrules
Length:
450 mm overall
Protective tube 320 mm
Light outlet 195 mm
Diameter:
62 mm overall
Protective tube 38 mm

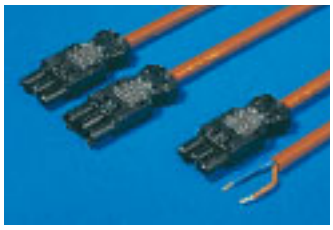


Enclosure light 48 V DC

Specifically designed for use in telecommunication when built-in equipment may require a battery back-up. For mounting on the 25 mm system punchings.

Technical specifications:
14 W, 48 V DC, rated current: 0.38 A

Width mm	Height mm	Depth mm	Model No. CS
452	117	50	**9765.100**



Connection cables

for enclosure light 48 V DC

For	Cable length m	Packs of	Model No. CS
Power supply with socket, without connector	3	1	**9765.137**
Through-wiring with socket and connector	1	1	**9765.138**



Enclosure heater, 800 W

Heater for free positioning inside the enclosure. Simply snap onto top-hat rails and screw fasten to the frame section or punched section with mounting flange. The heater may be operated in 400 W or 800 W output stages:
With protective grille in front of the air inlet and outlet.
Supplied without top-hat rail.

Technical specifications:
Rated operating voltage:
230 V AC, 50/60 Hz
Power consumption: 400 W/800 W
Installation: in the enclosure
Dimensions:
Cross-section 82 x 110 mm
length 150 mm
Rated current of fan: 6 A
Volumetric flow of fan: 35 m^3/h
Connection: Via terminal panel

Packs of	Model No. CS
1	**9769.080**

Accessories:

Top-hat rail,
see Cat. 31, page 1021.



Enclosure internal thermostat

Especially suitable for controlling fan-and-filter units, heaters and heat exchangers, this thermostat can also be used as a signal generator for monitoring the enclosure internal temperature.

Technical specifications:

- Bi-metal sensor as a temperature-sensitive element with thermal feedback.
- Contact population: Single-pole change-over contact as a quick-break contact.
- Permissible contact load:
  Category 5 – 3 (heating)
  AC 10 (4)[1)] A,
  DC = 30 W
  Category 5 – 4 (cooling)
  AC 5 (4)[1)] A,
  DC = 30 W
  ([1)]) = Inductive load at cos j = 0.6
- Setting range +5°C to +60°C
- Weight approx. 105 g
- Dimensions 71 x 71 x 33.5 mm
- Switching difference approx. 1 K ± 0.8 K.

Rated operating voltage	Model No. SK
230/115/60/48/24 V (AC)	3110.000
60/48/24 V (DC)	

- A broad voltage spectrum, i.e. just one model covers 24 to 230 V.
- Time-saving connection technique using a terminal strip with a screw connection from the outside.
- Flexible mounting on a vertical or horizontal 35 mm support rail to EN 50 022, and snap fastening in the TS/ES enclosure section using the supplied adaptor.



Cable connection kit

for CS Outdoor cooling units

For simple connection of CS cooling units in modular enclosures. All cables preassembled with the corresponding connectors.
Length of cables approx. 2500 mm.

Supply includes:
1 set = 3 cables for AC,
door operated switch and
alarm connection.

Packs of	Model No. CS
1 set	9765.105



Cable connection kit

for CS Outdoor heat exchangers

For simple connection of CS heat exchangers. All cables preassembled with the corresponding connectors.
Length of cables approx. 2500 mm.

Design	Model No. CS
3 cables for AC/DC and alarm connection	9765.110
2 cables for DC and alarm connection	9765.115



Test adaptor

for CS Outdoor climate control equipment

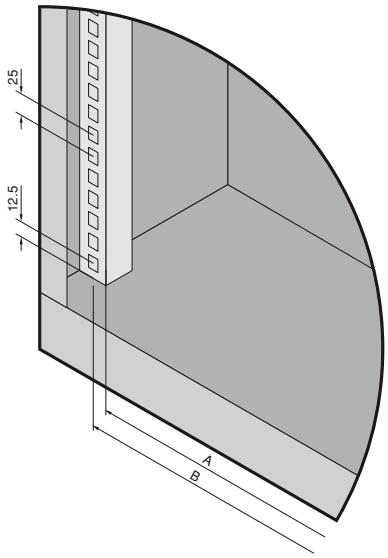
The 9-pole sub-D interface allows testing of all CS climate control equipment. Alternatively supports automatic or manual test procedures.

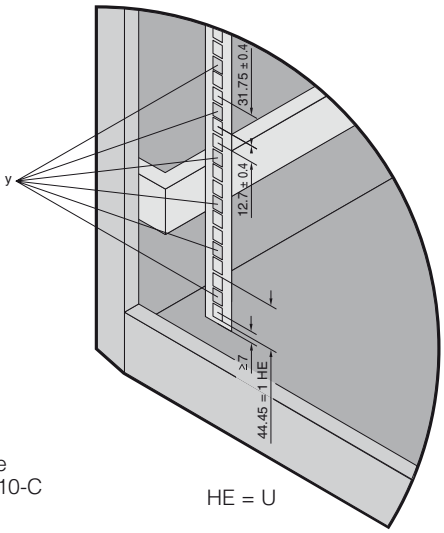
Supply includes:
1 set = test adaptor
including 2 m connection cable.

Packs of	Model No. CS
1 set	9765.050

Note:
Not required for Toptec heat exchangers or Toptec cooling units.

Size systems

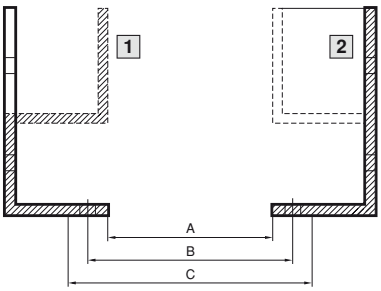




Y Extra hole
EIA RS 310-C

HE = U

Explanation of the mounting dimensions in interior installations



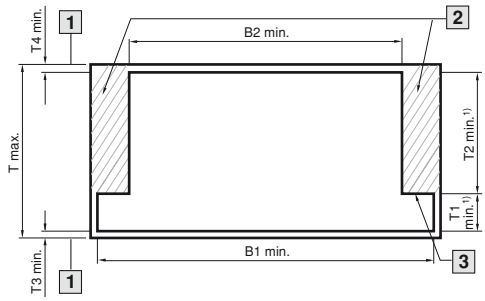
1 Cranked section
2 L-shaped section

A = C.w.
B = Mounting dimension
C = External dimension of slide-in equipment or front panel

Installation width	A mm	B mm	C mm
19″	450	465	482.6
21″	500	515	533.4
23″	552	567	584.2
24″	577	592	609.6
18 SU	450	465	485
20 SU	500	515	535

Size requirements to ETS 300119-3

Section showing standard dimensions



1 Space for door or trim panel
2 Space for outer cable entry
3 Rail level

1) Space for possible accessories

B	Width	600
H	Height	2200
T	Depth	300
SU		82
B1	Installation width for the assembly	535
B2	Distance between mounting angles	500
	Hole-centre distance	515
T1	Mounting depth for the assembly (front)	40
T2	Mounting width for the assembly (rear)	240
T3	Mounting depth for the door or trim panel (front)	10
T4	Mounting depth for the door or trim panel (rear)	5

Protection categories to EN 60 529/IEC 529

The IP protection category is characterised by 2 numbers.

Degrees of protection for protection against contact and foreign bodies: First characteristic numeral			Degrees of protection for protection against water: Second characteristic numeral		
First characteristic numeral	Degree of protection		Second characteristic numeral	Degree of protection	
	Description	Definition		Description	Definition
0	Non-protected	–	0	Non-protected	–
1	Protected against solid foreign objects with a diameter of 50 mm and greater	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 and greater	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 clearance distance must be adhered to.	2	Protected against vertically falling water drops when the enclosure is tilted up to 15°	Vertically falling drops must not have any harmful effects when the enclosure is tilted up to 15° in both directions from the vertical.
3	Protected against solid foreign objects with a diameter of 2.5 mm and greater	The object probe, a sphere 2.5 mm in diameter, must not penetrate at all[1].	3	Protected against spraying 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 and greater	The object probe, a sphere 1.0 mm in diameter, must not penetrate at all[1].	4	Protected against splashing water	Water splashed on the enclosure from every direction must not have any adverse effects.
5	Dust-protected	The ingress of dust is not fully prevented, but dust shall not enter to such an extent as to interfere satisfactory operation of the device or safety.	5	Protected against water jets	Water directed at the enclosure from every direction in a jet must not have any 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 every direction in a powerful jet must not have any harmful effects.

[1] Note: The full diameter of the object probe shall not pass through an opening of the enclosure.

NEMA and IP protection categories are not comparable with one another, because they use completely different test criteria.

NEMA classification

The **N**ational **E**lectrical **M**anufacturers **A**ssociation (NEMA) is a standards organisation in Washington, USA, which publishes a number of technical standards but does not test or certify products itself.

The following NEMA classifications outline the protection of individuals from unintentional contact with equipment and the protection of an enclosure from external factors.

NEMA 1
Indoor siting: Protects against falling dirt.

NEMA 2
Indoor siting: Protects against falling dirt, dripping and lightly splashed liquids.

NEMA 3
Indoor or outdoor siting: Protects against falling dirt, rain, sleet, snow and windblown dust; also protects against damage from external icing on the enclosure.

NEMA 3R
Indoor or outdoor siting: Protects against falling dirt, rain, sleet and snow; also protects against damage from external icing on the enclosure.

NEMA 3S
Indoor or outdoor siting: Protects against falling dirt, rain, sleet, snow and windblown dust; the external mechanisms also remain operational when ice laden.

NEMA 4
Indoor or outdoor siting: Protects against falling dirt, rain, sleet, snow, wind-driven dust, splashing and hose-directed water; also protects against damage from external icing on the enclosure.

NEMA 4x
Indoor or outdoor siting: Protects against falling dirt, rain, sleet, snow, windblown dust, splashing and hose-directed water, and corrosion; also protects against damage from external icing on the enclosure.

NEMA 5
Indoor siting: Protects against falling dirt, settling airborne dust, lint, fibres and airborne cotton dust as well as dripping and light splashing of liquids.

NEMA 6
Indoor or outdoor siting: Protects against falling dirt, hose-directed water and the ingress of water during occasional, temporary submersion at a certain depth; also protects against damage from external icing on the enclosure.

NEMA 6P
Indoor or outdoor siting: Protects against falling dirt, hose-directed water and the ingress of water during protracted submersion at a certain depth; also protects against damage from external icing on the enclosure.

NEMA 12
Indoor siting: Protects against falling dirt, circulating dust, lint, fibres and air-borne cotton dust as well as dripping and light splashing of liquids.

NEMA 13
Indoor siting: Protects against falling dirt, circulating dust, lint, fibres and air-borne cotton dust and against spraying, splashing and seepage of water, oil and non-corrosive coolants.

Maximum enclosure dimensions/baying

In addition to the dimensions listed in the order catalogue, other size variants are also available, including millimetre-accurate built-to-print products. Because the Rittal system platforms are based on a frame section with 25 mm system punchings, for special sizes we recommend using a multiple of the 25 mm pitch pattern.
The closer you stick to the standard sizes, the more likely the components are to be identical, and the greater the choice of system accessories.

Depending on the design principle and production-related options, outdoor enclosures may be bayed. With baying concepts, it is usually important to consider the conditions at the installation site. Can the enclosure combination be installed fully bayed, or is it necessary to transport individual modules to the installation site? A modular enclosure concept is also advisable when functions are divided between individual enclosures, and these functional units will be combined depending on the installation site or situation.

With the earthing base/plinth, we recommend planning the plinth across the entire width in order to prevent individual enclosure modules from slipping. The CS lightweight concrete base/plinth is available in special sizes.

Max. enclosure dimensions

Enclosures	Max. width of one module mm	Max. height of one module mm	Max. depth of one module mm	Assessment of bayability	Individual roofs per module	Max. width of a complete roof mm
Basic enclosures	1200	1400	500	Suitable	Yes	2450
Modular enclosures	1600	2200	1000	Very suitable	Yes	2500
Toptec CR	1800	2000	1200	Ideal	Yes	2500

Example of a modular concept with functional units that may be individually combined at the installation site.



Power supply module

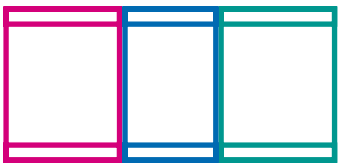


System technology module



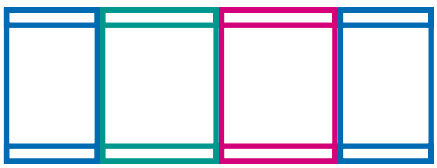
Cabling module (access)

Installation site 1



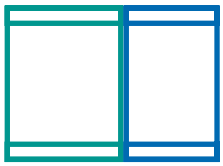
Power supply must be on the left due to site conditions

Installation site 2

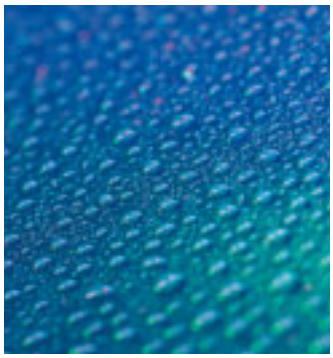


Large supply area, two access modules needed

Installation site 3



Power supply available, only system technology and access needed



Condensation/dew point

The ambient air contains humidity in the form of water vapour. Air humidity indicates the water vapour content of the air and is measured in the form of relative humidity. The concentration depends on a wide range of parameters, of which temperature and air pressure have the greatest influence. As the temperature rises, the air's ability to absorb moisture increases, and as the temperature falls, its ability to bind moisture, i.e. water vapour, is reduced. For example, at a temperature of 0°C, air is capable of absorbing approximately 5 g/m³ of water vapour, while at a temperature of 20°C this increases to 17 g/m³ and at 30°C a water vapour content of approximately 30 g/m³ is possible. Each of these conditions corresponds to 100 % relative air humidity. 100 % relative humidity is equivalent to saturation, and no further water vapour may be absorbed. From this point onwards – which is known as the dew point – any further moisture is emitted to the environment in liquid form, i.e. as water droplets.

For outdoor use, this means that

- The use of a heater is appropriate in order to achieve an interior temperature of approx. 10°C;
- It is not advisable to combine single-walled enclosures with cooling units because the major temperature differences arising between the cool interior wall and the warm outer wall of the enclosure increase the risk of condensation inside the enclosure.

For interior applications with cooling units, it is important to note that condensation is created inside the cooling unit due to the low surface temperature of the evaporator coil. The condensation is collected and evaporates. In the outdoor sector, any condensation arising is simply routed out of the enclosure via a plastic hose. The hose for the condensate discharge may be routed e.g. into the twin wall of the enclosure.

Climate control of outdoor enclosures

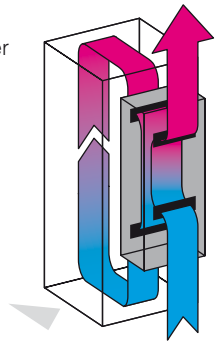
For applications inside buildings, the temperature fluctuations inside the room are generally minimal. Even in extreme locations e.g. in the vicinity of furnaces, the temperature range is limited. For outdoor installations, the range is greater, and at many locations worldwide a range of more than 50 Kelvins (e.g. minimum temperature –15°C and maximum temperature +40°C) has been measured.

The application range of the installed components is crucial when selecting the right climate control unit. If appliances which have been designed for conventional indoor applications, i.e. an ambient temperature of up to approximately +35°C are used outdoors, a compressor cooling unit must be used. Only cooling units allow temperatures which are lower than the ambient temperature to be achieved in the enclosure interior. When using equipment suitable for outdoor use which operates correctly at interior temperatures of up to +55°C, an air/air heat exchanger may be used for climate control purposes. Like the cooling unit, the air/air heat exchanger has hermetically separate air circuits and uses the ambient air to cool the raised interior temperature at the heat exchanger module. With a correctly designed heat exchanger, this climate control concept is capable of achieving temperatures inside the enclosure which are 10 Kelvins higher than the ambient temperature.

All Rittal Outdoor climate control components have a protection category of IP 55 for the basic enclosure and may be used at ambient temperature ranges of –33°C to +55°C (cooling unit) or –33°C to +65°C (heat exchanger).
Many units are already equipped with an internal heater; to upgrade or increase the thermal output, Rittal recommends the powerful 800 W heater CS 9769.080.

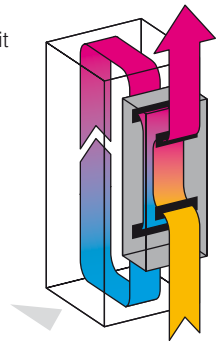
Heat exchanger

$T_i > (T_u + 5)$



Cooling unit

$T_i > T_u$
$T_i = T_u$
$T_i < T_u$

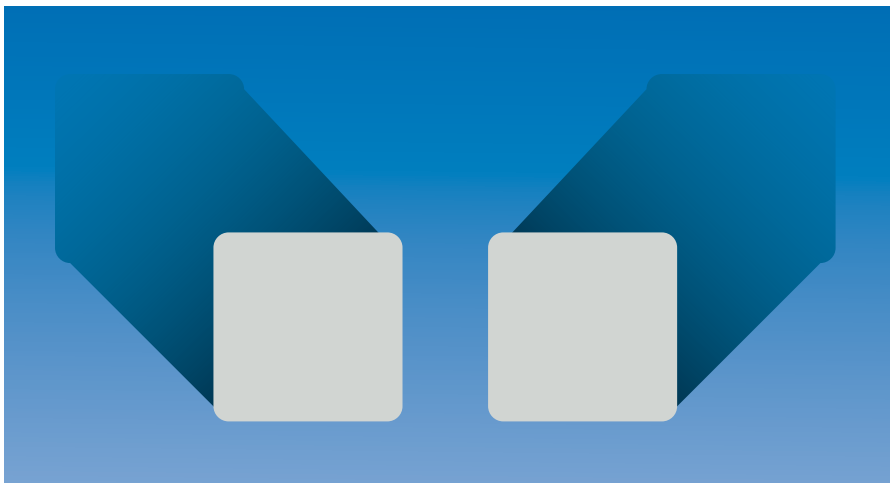


Sunlight

With outdoor siting, the enclosure is additionally heated by direct and diffuse sunlight. The fact is that over the course of the day, the angle of sunlight changes, and even at its zenith, approximately 50 % of the enclosure is in shade. The individual side panels also heat up to varying degrees over the course of the day, depending on whether the sun is shining directly onto the side of the enclosure or part of the enclosure is in shade. The basic design of the enclosures also plays a major role with regard to additional heating from sunlight:
While single-walled enclosures can heat up to an extreme degree, the chimney effect resulting from a twin-walled design reduces the influence of sunlight. Rittal has conducted in-depth studies and accumulated wide-ranging expertise in the calculation and design of climate control units for outdoor siting. Rittal offers a free calculation service for determining the required output of climate control units in outdoor applications. We need the following information in order to be able to provide a meaningful calculation:

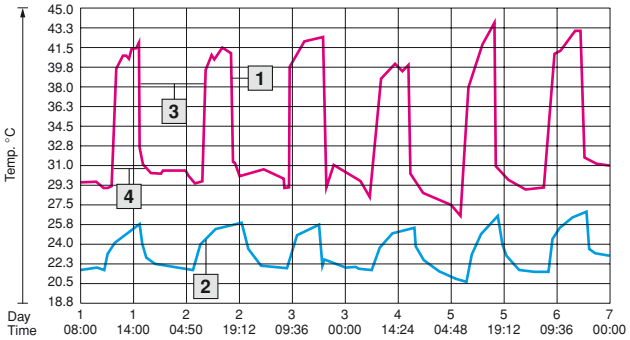
- Enclosure platform
- Enclosure dimensions: Width, height, depth
- Minimum ambient temperature
- Maximum ambient temperature
- Minimum internal temperature
- Maximum internal temperature
- Installed heat loss
- Installation site (geographical location)
- Special features at the installation site (e.g. fully roofed or positioned in front of a black wall)

For climate calculations, please contact your Rittal representative in the sales team or field service.



Terravent

These temperature charts are examples of installations in Central Europe.



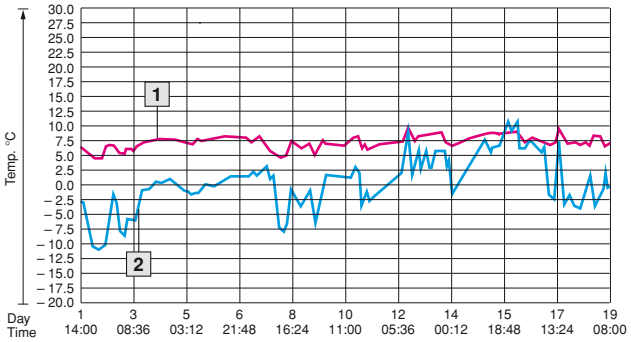
1 Internal temperature = Terravent inlet temperature

2 Terravent outlet temperature

3 Night-time operation

4 Day-time operation

Operating status – cooling:
1300 W heat loss from 8 am – 4 pm
800 W heat loss from 4 pm – 8 am
CS Outdoor modular enclosure, thermally insulated
Enclosure size: W x H x D = 800 x 1200 x 500 mm



1 Internal temperature = Enclosure internal temperature

2 External temperature

Operating status – heating:
No heat loss installed in the enclosure
External temperature below –10°C
CS Outdoor modular enclosure, not thermally insulated
Enclosure size: W x H x D = 800 x 1200 x 500 mm



Choice of materials

Rittal has an extensive range of products for outdoor applications that are available for direct delivery. The broad range of products and materials offers maximum protection for your equipment, tested to international provisions and standards such as IEC, ETSI, Bellcore, NEMA and UL. With this wide variety of materials, Rittal is able to achieve the level of corrosion protection required for a specific location. It is not possible to make general comments on service life, because the locations in the outdoor sector are far from homogenous and we sometimes encounter extreme situations (high humidity, aggressive gases, salt content in the air or from anti-icing agents on road surfaces ...). We are happy to work with you to define the optimum solution for each location:

Stainless steel
Stainless steel 1.4301 (AISI 304) or stainless steel 1.4571 (AISI 316 Ti) – the material which meets maximum requirements in terms of corrosion protection, hygiene and robust mechanical protection.

Aluminium
Aluminium AlMg3 – The material to suit all requirements in outdoor use. With outstanding all-round properties, such as a low weight and a high static load capacity.

Zinc-plated, zinc-phosphated and powder-coated sheet steel
The high standards of the automotive industry have now been implemented for cost-effective solutions. The result: A substantial increase in corrosion protection. Depending on the objectives and application conditions, even aluminium may be substituted. Hot-galvanised sheet steel Z 275 is used as the basis for zinc phosphating. With this combination of materials, we are able to achieve maximum cathodic edge protection. The protective effect of galvanising is substantially increased thanks to additional zinc phosphating. The subsequent high-quality powder coating offers additional protection and allows individual colouring. Optimum rust-proofing at a moderate cost – Analyses by neutral laboratories underscore our high quality standards.

Noise generation of outdoor systems

Rittal outdoor climate control components are designed in such a way that the maximum possible cooling output is achieved in a confined space. This basic requirement is more than sufficient for many field installations. However, street cabinet applications often have significantly higher requirements in terms of the noise generation of the entire system. In our catalogue we have omitted the db value of the individual component, heat exchanger or cooling unit, because this information is not in itself particularly meaningful, and the complete noise generation of the entire system including the built-in system technology must be taken into account. It is fairly complex to make a generalised statement on the noise generation of an outdoor system, because a variety of factors will influence performance. Apart from the position of the fan motors (mounted externally on the enclosure, in a door or side panel), the active components and the size of the entire enclosure also have a considerable influence on noise generation.

If there are certain limits which must not be exceeded for your project, please contact us so that we can work together to define measures to reduce noise generation. Whether we achieve the required result with insulating mats or by reducing the speed of fan motors, or whether structural measures such as noise protection hoods are required, must be determined on a case-by-case basis. With our expertise from numerous successful projects, and with due regard for the required framework conditions, we are able to define the optimum solution and the best value for money.

Comparable noise level	
20 dB	Rustling leaves
40 dB	Inside a house with closed windows
60 dB	Conversation
70 dB	Open-plan office
85 dB	Average road traffic
95 dB	Heavy traffic
100 dB	Pneumatic drill
110 dB	Rock/pop concert (some distance from the stage)
125 dB	A jet taking off at a distance of 100 m
130 dB	Pain threshold
140 dB	A jet engine at a distance of 25 m



No point of access for lever-type tools, because the double side panel seamlessly conceals the door hinges.

Protecting outdoor enclosures from mechanical attacks

Protection of the installed equipment is of central importance in many locations. Particularly outdoor enclosures which are sited in public spaces need to be protected against unauthorised access by means of design features. Depending on the enclosure platform, the specified design principles are incorporated into the standard enclosure.

Some basic design principles:

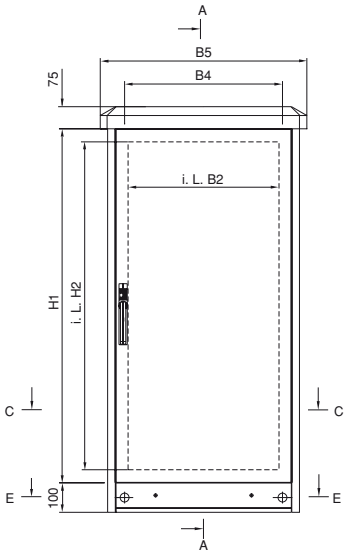
- Minimal gap between doors and side panels, no leverage points.
- No externally visible or accessible screws. If screws are unavoidable, special screw heads are used.
- Modified closure and lock concepts, e.g. 3-point lock or superior.

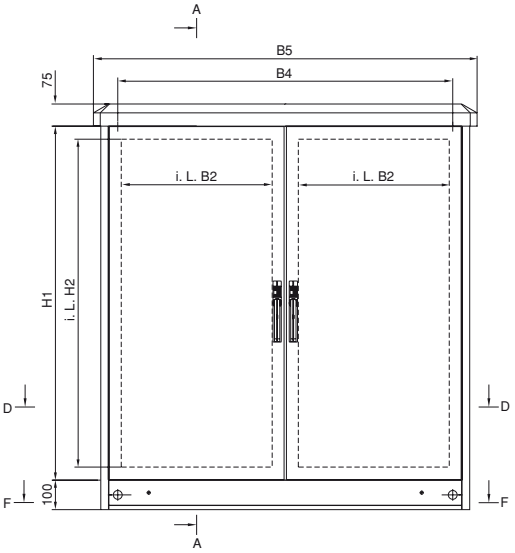
The basic security concept may be upgraded at any time.

Please contact us directly if you have special requirements with regard to mechanical access and the monitoring of entire systems at specific locations.

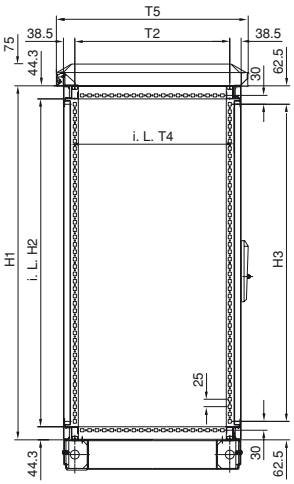
CS modular enclosures

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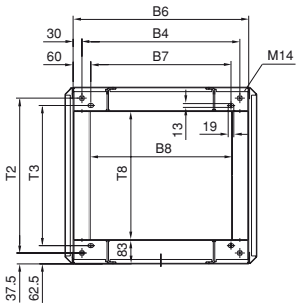




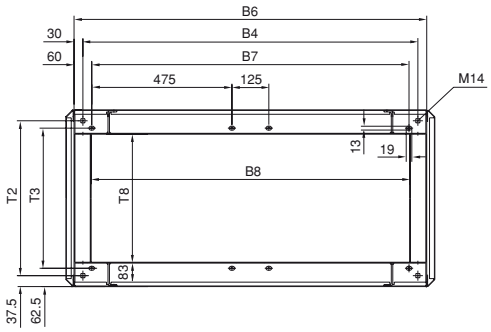
Section A – A



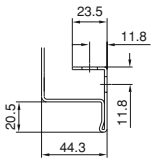
Section E – E



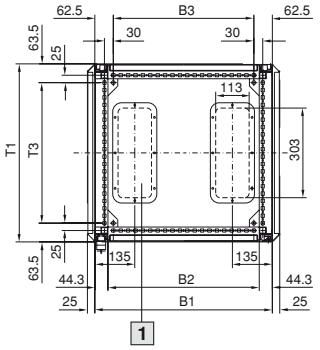
Section F – F



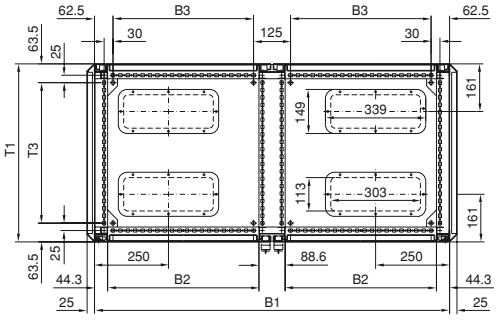
Cross-section



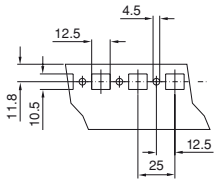
Section C – C



Section D – D



Pitch pattern of holes

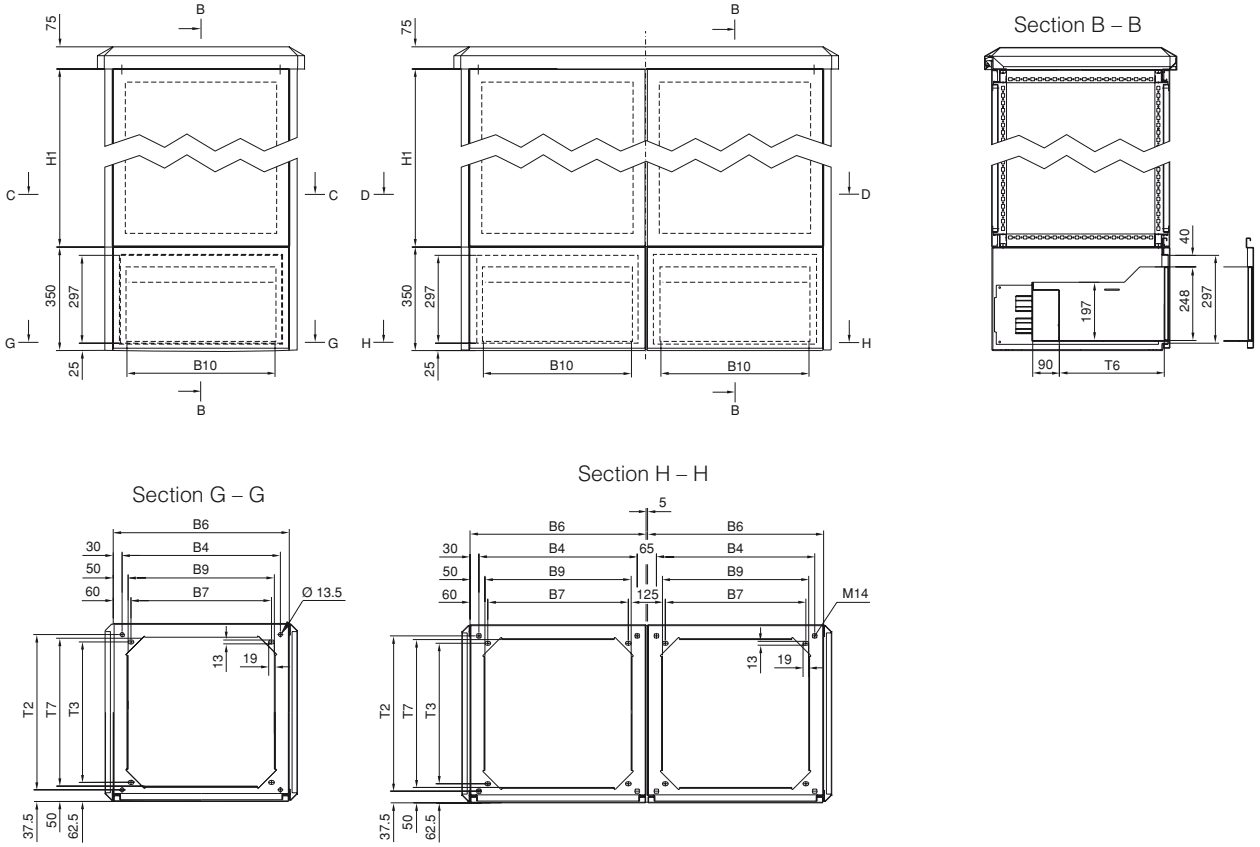


1 From an enclosure width of 800 mm 4 gland plates

Enclosures	Width dimensions mm										Height dimensions mm			Depth dimensions mm							
Model No. CS	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	H1	H2	H3	T1	T2	T3	T4	T5	T6	T7	T8
9751.015	600	512	475	535	700	595	475	479	494	500	800	712	675	600	525	475	554	650	355	500	434
9751.075	600	512	475	535	700	595	475	479	494	500	1000	912	875	500	425	375	454	550	255	400	334
9751.025/.125	600	512	475	535	700	595	475	479	494	500	1200	1112	1075	600	525	475	554	650	355	500	434
9751.035	600	512	475	535	700	595	475	479	494	500	1600	1512	1475	600	525	475	554	650	355	500	434
9751.085	800	712	675	735	900	795	675	679	694	700	1000	912	875	500	425	375	454	550	255	400	334
9751.045/.145	800	712	675	735	900	795	675	679	694	700	1200	1112	1075	500	425	375	454	550	255	400	334
9751.055	800	712	675	735	900	795	675	679	694	700	1200	1112	1075	600	525	475	554	650	355	500	434
9751.065/.165	800	712	675	735	900	795	675	679	694	700	1600	1512	1475	600	525	475	554	650	355	500	434
9752.015	1200	512	475	1135	1300	595	1075	1079	1094	500	1200	1112	1075	500	425	375	454	550	255	400	334
9752.025/.125	1200	512	475	1135	1300	595	1075	1079	1094	500	1200	1112	1075	600	525	475	554	650	355	500	434

CS modular enclosures

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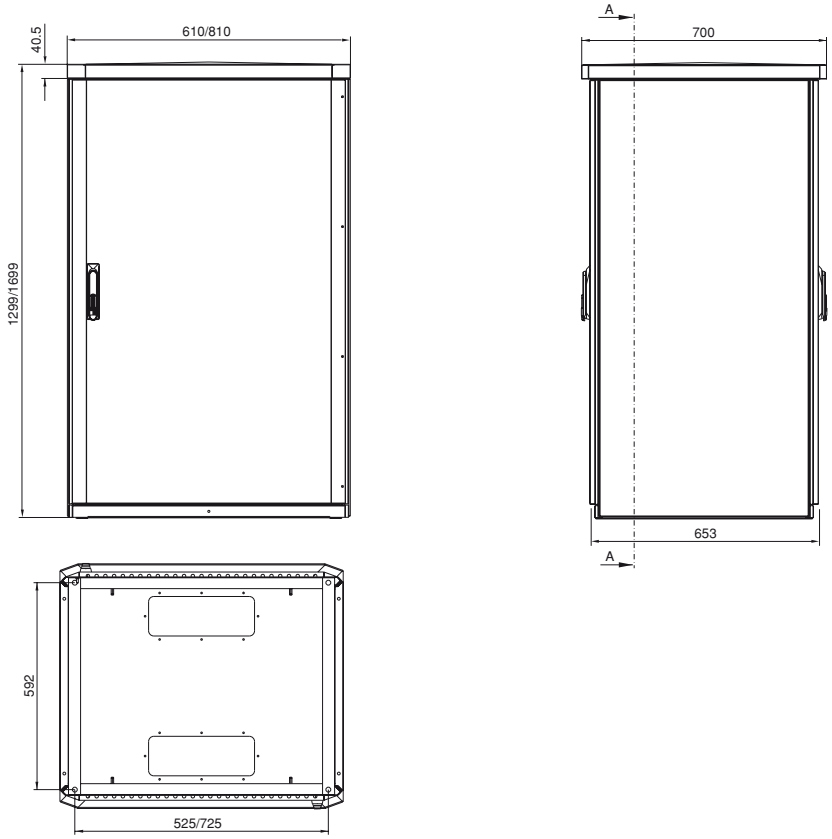
B1 = Width of basic enclosure
B2 = Clearance between enclosure frame sections
B3 = Section length of system punchings
B4 = Centre-to-centre distance between eyebolts
Hole distance between plinth and base attachment
B5 = Width of roof (overall width)
B6 = Width of standard and battery base/ plinth
B7 = Hole distance between plinth and base attachment
B8 = Clearance of standard base/plinth opening
B9 = Clearance of battery base/plinth opening
B10 = Clearance width of battery drawer

H1 = Height of basic enclosure
H2 = Clearance between enclosure frame sections
H3 = Section length of system punchings

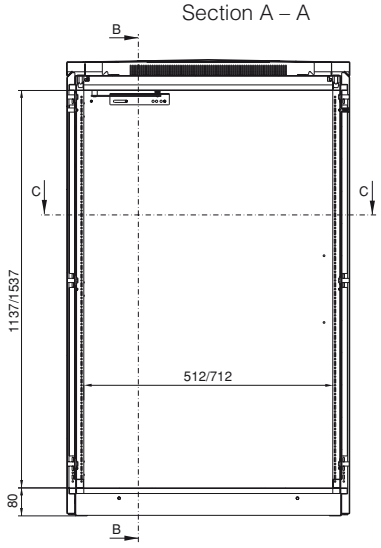
T1 = Depth of basic enclosure
T2 = Centre-to-centre distance between eyebolts
Hole distance between plinth and base attachment
T3 = Section length of system punchings
Hole distance between plinth and base attachment
T4 = Possible mounting depth
T5 = Roof depth (overall depth)
T6 = Clearance depth of battery drawer
T7 = Clearance of battery base/plinth opening
T8 = Clearance of standard base/plinth opening

Toptec CR

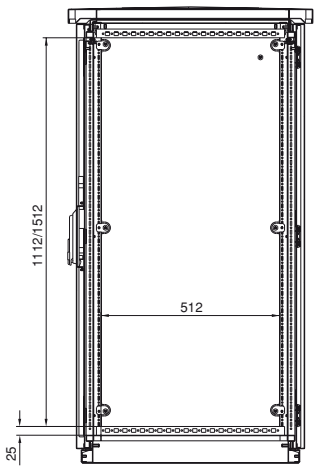
Page 17



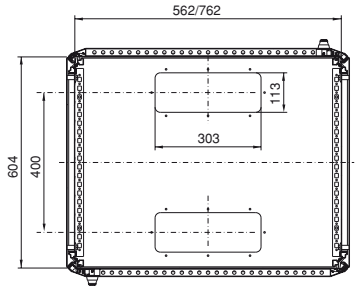
Section A – A



Section B – B

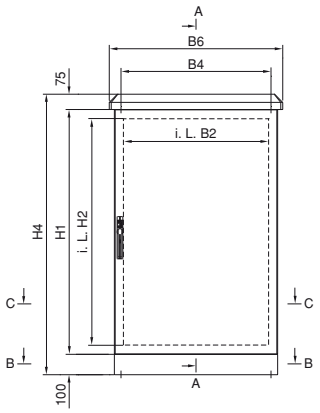


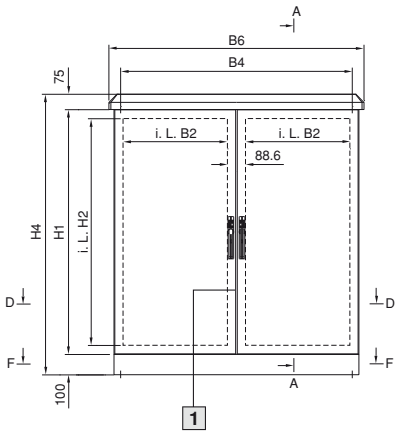
Section C – C



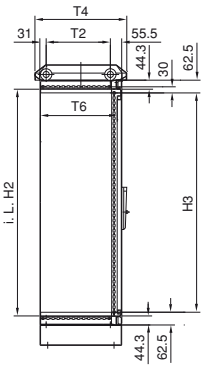
CS basic enclosures

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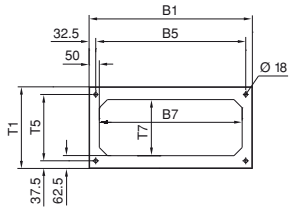


Section A – A

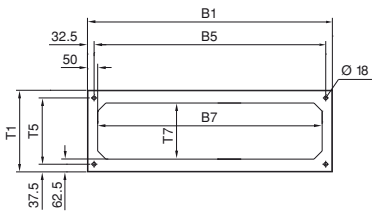


1 Centre bar may be dismantled

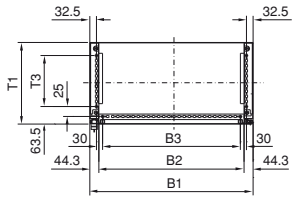
Section B – B



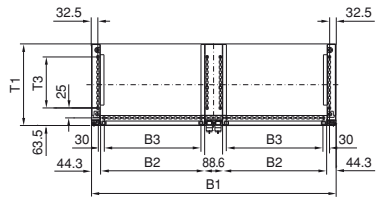
Section F – F



Section C – C



Section D – D



B1 = Width of basic enclosure/standard base/plinth
B2 = Clearance between enclosure frame sections
B3 = Section length of system punchings
B4 = Centre-to-centre distance between eyebolts
B5 = Hole distance between plinth and base attachment
B6 = Width of roof (overall width)
B7 = Clearance of standard base/plinth opening

H1 = Height of basic enclosure
H2 = Clearance between enclosure frame sections
H3 = Section length of system punchings
H4 = Overall height

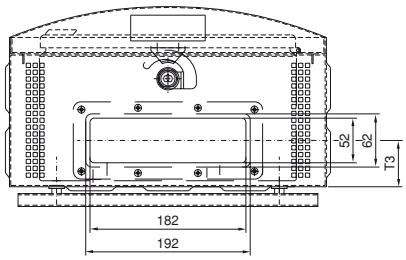
T1 = Depth of basic enclosure/standard base/plinth
T2 = Centre-to-centre distance between eyebolts
T3 = Section length of system punchings
T4 = Roof depth (overall depth)
T5 = Hole distance between plinth and base attachment
T6 = Possible mounting depth
T7 = Clearance of standard base/plinth opening

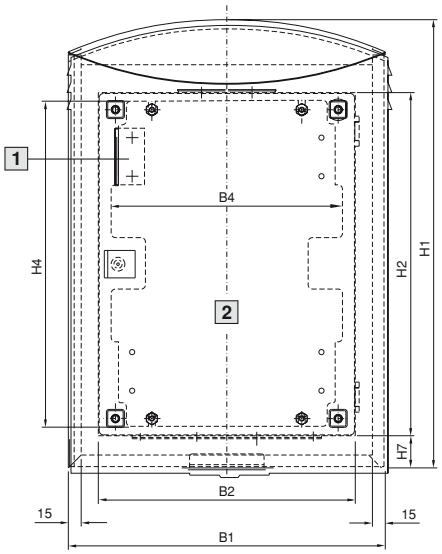
Enclosures		Width dimensions mm							Height dimensions mm				Depth dimensions mm						
Model No. CS																			
without centre bar	**with centre bar**	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	T1	T2	T3	T4	T5	T6	T7
9783.040	–	600	512	475	540	535	650	500	800	712	675	975	400	315	300	450	325	349	275
9783.050	–	600	512	475	540	535	650	500	1200	1112	1075	1375	400	315	300	450	325	349	275
9783.060	–	600	512	475	540	535	650	500	1400	1312	1275	1575	400	315	300	450	325	349	275
9783.030	–	600	512	475	540	535	650	500	1200	1112	1075	1375	500	415	400	550	425	449	375
9783.010	–	800	712	675	740	735	850	700	800	712	675	975	400	315	300	450	325	349	275
9783.020	–	800	712	675	740	735	850	700	1200	1112	1075	1375	400	315	300	450	325	349	275
9783.120	–	800	712	675	740	735	850	700	1400	1312	1275	1575	400	315	300	450	325	349	275
9783.110	–	800	712	675	740	735	850	700	1200	1112	1075	1375	500	415	400	550	425	449	375
9784.110	**9784.010**	1200	512	475	1140	1135	1250	1100	800	712	675	975	400	315	300	450	325	349	275
9784.120	**9784.020**	1200	512	475	1140	1135	1250	1100	1200	1112	1075	1375	400	315	300	450	325	349	275
9784.140	**9784.040**	1200	512	475	1140	1135	1250	1100	1200	1112	1075	1375	500	415	400	550	425	449	375
9784.130	**9784.030**	1200	512	475	1140	1135	1250	1100	1400	1312	1275	1575	400	315	300	450	325	349	275

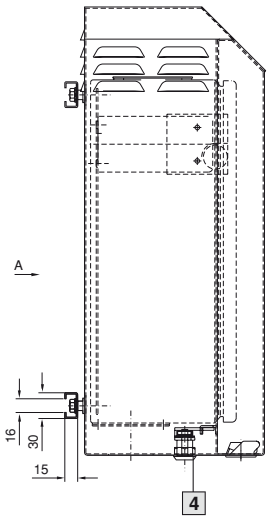
CS wall-mounted enclosures

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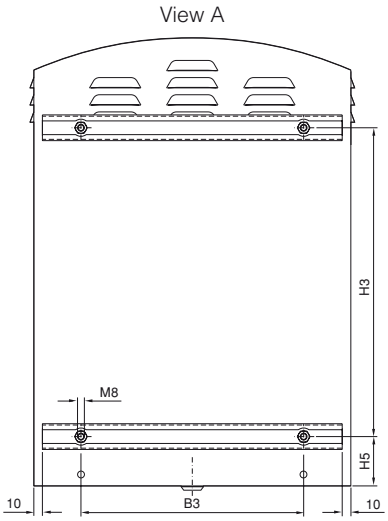
View B

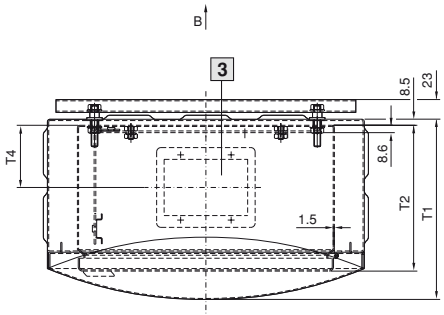






View A





B1 = Width of outer enclosure
B2 = Width of inner enclosure
B3 = Centre-to-centre spacing of attachment C rail/inner enclosure
Centre-to-centre spacing for the wall mounting fixture
B4 = Width of mounting plate

H1 = Height of outer enclosure
H2 = Height of inner enclosure
H3 = Centre-to-centre spacing of attachment C rail/inner enclosure
Centre-to-centre spacing for the wall mounting fixture

H4 = Height of mounting plate
H5 = Distance from outer enclosure to C rail/inner enclosure attachment
H7 = Distance from outer enclosure to inner enclosure

T1 = Depth of outer enclosure
T2 = Depth of inner enclosure
T3 = Distance from outer enclosure to centre of gland plate at the bottom
T4 = Distance from inner enclosure to centre of gland plate at the top

1 Supply includes: Mounting bracket for thermostat SK 3110.000

2 Supports mounting of the mounting plate in the inner enclosure and inner door

3 Roof cutout of internal enclosure with gland plate
CS 9791.015/.025/.035 B 97.5 x T 65.5
CS 9791.045 B 302.0 x T 122.0

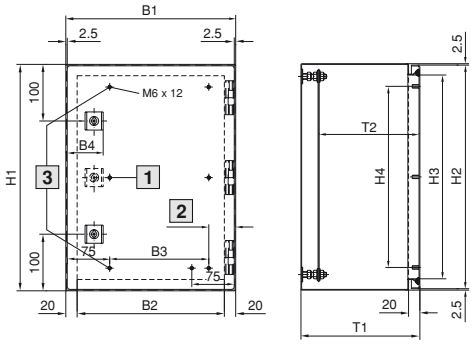
4 Lock SZ 2749.000 with lock insert (from B1 = 630 mm 2 locks)

Enclosures	Width dimensions mm				Height dimensions mm						Depth dimensions mm			
Model No. CS	B1	B2	B3	B4	H1	H2	H3	H4	H5	H7	T1	T2	T3	T4
9791.015	370	300	260	270	522.5	400	360	380	57.5	37.5	210	170	55.5	72.5
9791.025	420	350	310	320	560	440	400	410	58	38	210	170	55.5	72.5
9791.035	530	460	420	430	700	565	525	535	63	43	265	220	82	72.5
9791.045	630	580	540	550	780	580	540	550	55	35	380	333	82	155

Compact enclosures AE, stainless steel

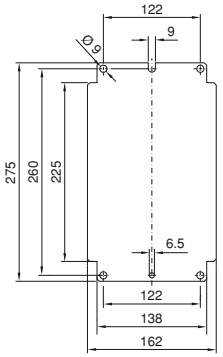
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AE 1002.600 – AE 1016.600

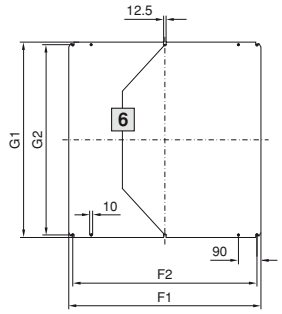


Mounting plates

AE 1002.600

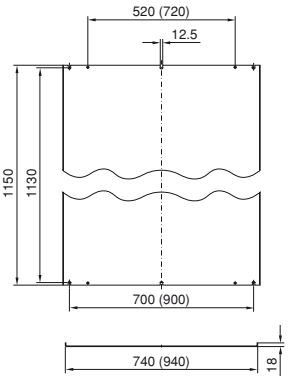


AE 1004.600 – AE 1016.600, AE 1018.600



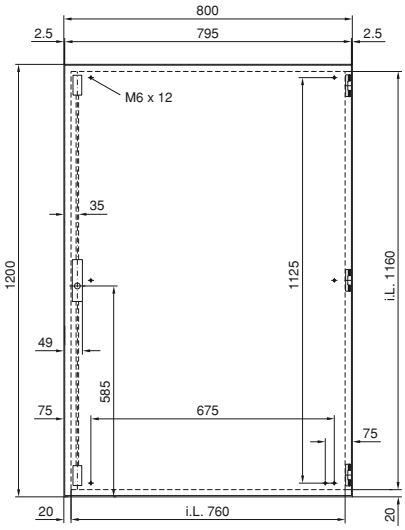
Installation position of the mounting plate with AE 1005.600 rotated through 90°.

AE 1017.600, AE 1019.600

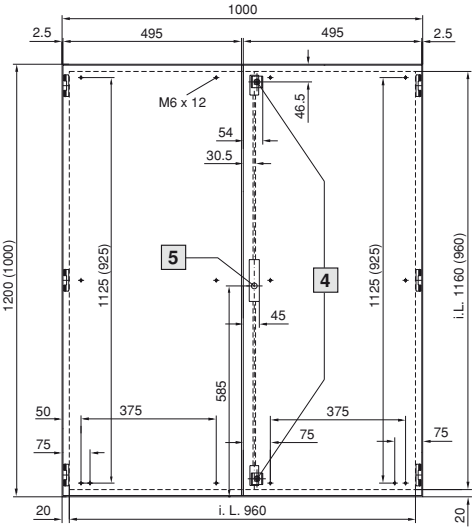


Dimensions in brackets for AE 1019.600.

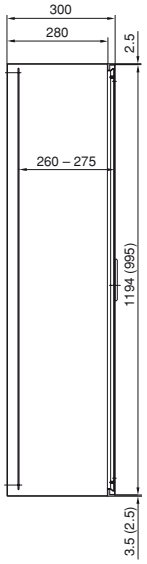
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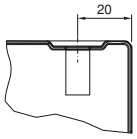


AE 1018.600, AE 1019.600



Dimensions in brackets for AE 1018.600.





With internal thread M8 x 20

1 Where H1 = 300/380 only one cam lock in the centre and without bolts in the centre

2 50 for AE 1002.600

3 Does not apply to AE 1002.600

4 Cam lock for AE 1018.600

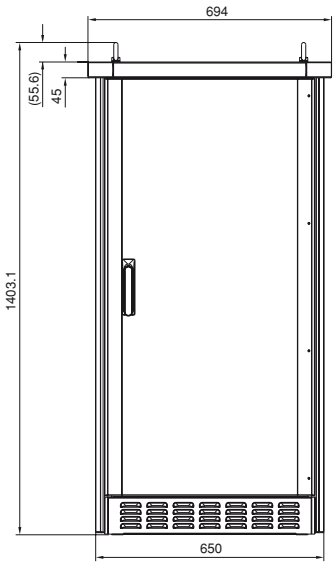
5 Locking rod for AE 1019.600

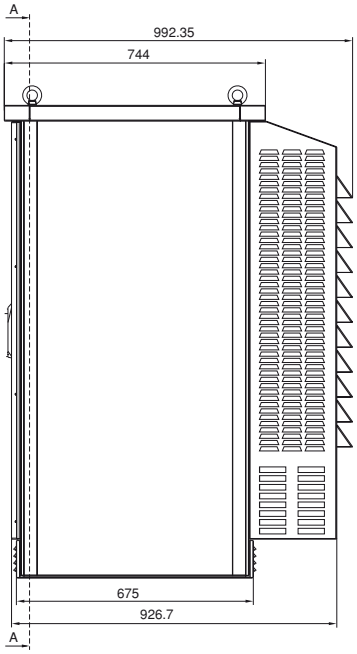
6 Only AE 1018.600

Model No. AE	Dimensions of enclosures										Dimensions of mounting plate				Material thicknesses in mm		
	B1	B2	B3	B4	H1	H2	H3	H4	T1	T2	G1	G2	F1	F2	Enclosure	Door	Mounting plate
1002.600	200	167	–	56	300	295	274	225	155	135	275	260	162	122	1.25	1.5	2.0
1004.600	380	340	250	66	300	295	260	225	155	113 –129	275	250	334	295	1.38	1.5	2.0
1005.600	300	260	175	66	380	375	340	275	210	168 –184	275	250	334	295	1.38	1.5	2.0
1006.600	380	340	250	66	380	375	340	275	210	168 –184	355	330	334	295	1.38	1.5	2.5
1007.600	500	460	375	66	500	495	460	425	210	168 –184	470	445	449	410	1.38	1.5	2.5
1013.600	500	460	375	66	500	495	460	425	300	258 –274	470	445	449	410	1.50	1.5	2.5
1008.600	380	340	250	66	600	595	560	525	210	168 –184	570	545	334	295	1.38	1.5	2.5
1009.600	600	560	475	66	380	375	340	275	210	168 –184	355	330	549	510	1.38	1.5	2.5
1010.600	600	560	475	66	600	595	560	525	210	168 –184	570	545	549	510	1.38	2.0	2.5
1012.600	600	560	475	66	760	755	720	675	210	168 –184	730	705	549	510	1.38	2.0	3.0
1014.600	760	720	625	66	760	755	720	675	300	258 –274	730	705	704	665	1.50	2.0	3.0
1016.600	800	760	675	66	1000	955	960	925	300	258 –274	955	930	739	700	1.50	2.0	3.0
1017.600	800	–	–	–	1200	–	–	–	300	–	1150	1130	740	700	1.50	2.0	3.0
1018.600	1000	–	–	–	1000	–	–	–	300	–	955	930	939	900	1.50	2.0	3.0
1019.600	1000	–	–	–	1200	–	–	–	300	–	1150	1130	940	900	1.50	2.0	3.0

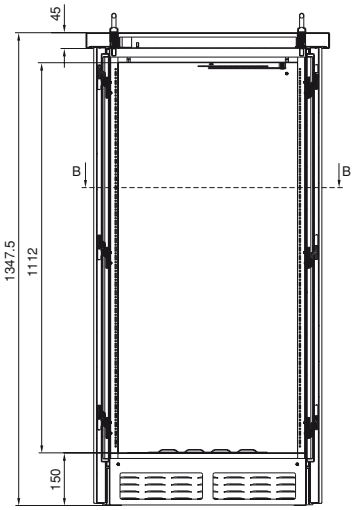
CS fuel cell

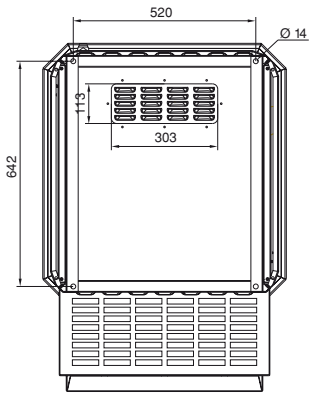
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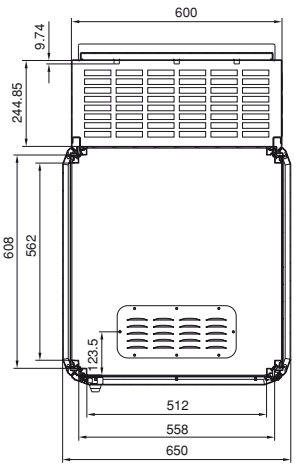


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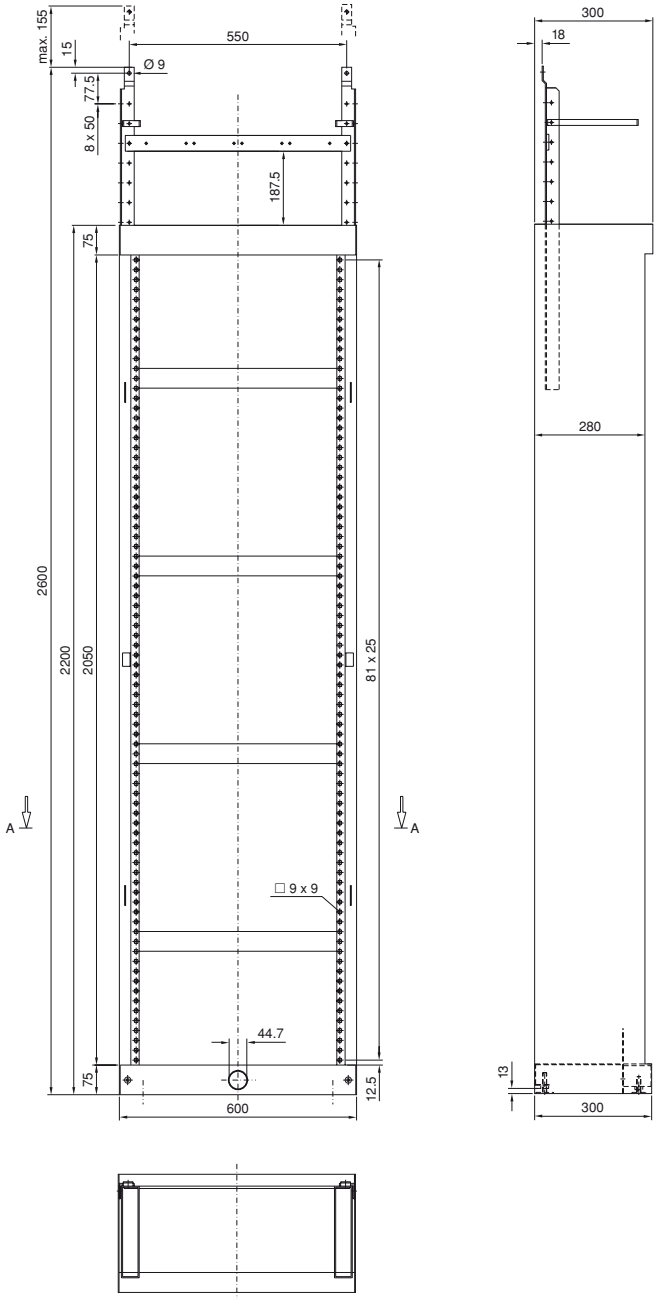


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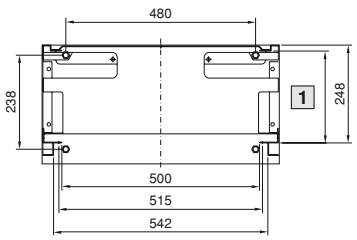


CS Indoor Rack

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1 Max. installation depth 232 mm

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