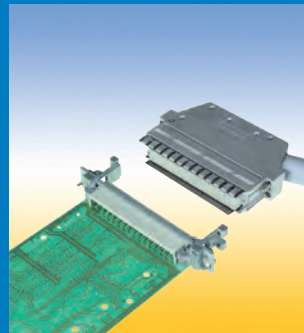


Modular Assembly Systems



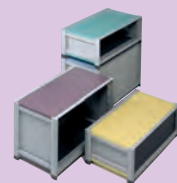
Cabinets

1



Housings

2



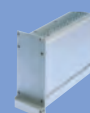
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and Subrack Accessories

3



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The "19-inch-Assembly System"

The so-called 19-inch assembly system consists of a wide range of mechanical and electromechanical components matched to each other in terms of their dimensions and can be regarded as a „mechanical construction kit“ for assembling electronic devices and systems.

The "19-inch assembly system" was first presented in 1970 at the Hanover Trade Fair by AEG Telefunken (Intermas Modular Assembly Systems). The first application areas of this revolutionary development were industrial electronics followed by power station control engineering and traffic engineering. Today the system is in use worldwide in almost all areas of industrial electronics such as telecommunications, military technology, medical technology, measurement and control technology etc.

The 19 inches originated in the width of equipment front panels in accordance with the USA standard C83-9. In view of the frequent need to combine European and American equipment in a single system the width and

the height increments of the 19-inch front panel became the starting point for the DIN 41494 and IEC 60 297-1 standards. Although the 19-inch (482.6 mm) dimension is only used once as the width specification for the front panels of plug-in units and sub-racks, it has given its name to the modular assembly system. All system dimensions are defined in mm. The correct designation should therefore more correctly be 482.6 mm technology, a term which is also used in DIN 14 494, the German standard for the 19" assembly system.

All necessary dimensions were defined in the German DIN 41 494 standard, in IEC Publication 60 297 and in the USA standard ANSI/IEEE 1101.

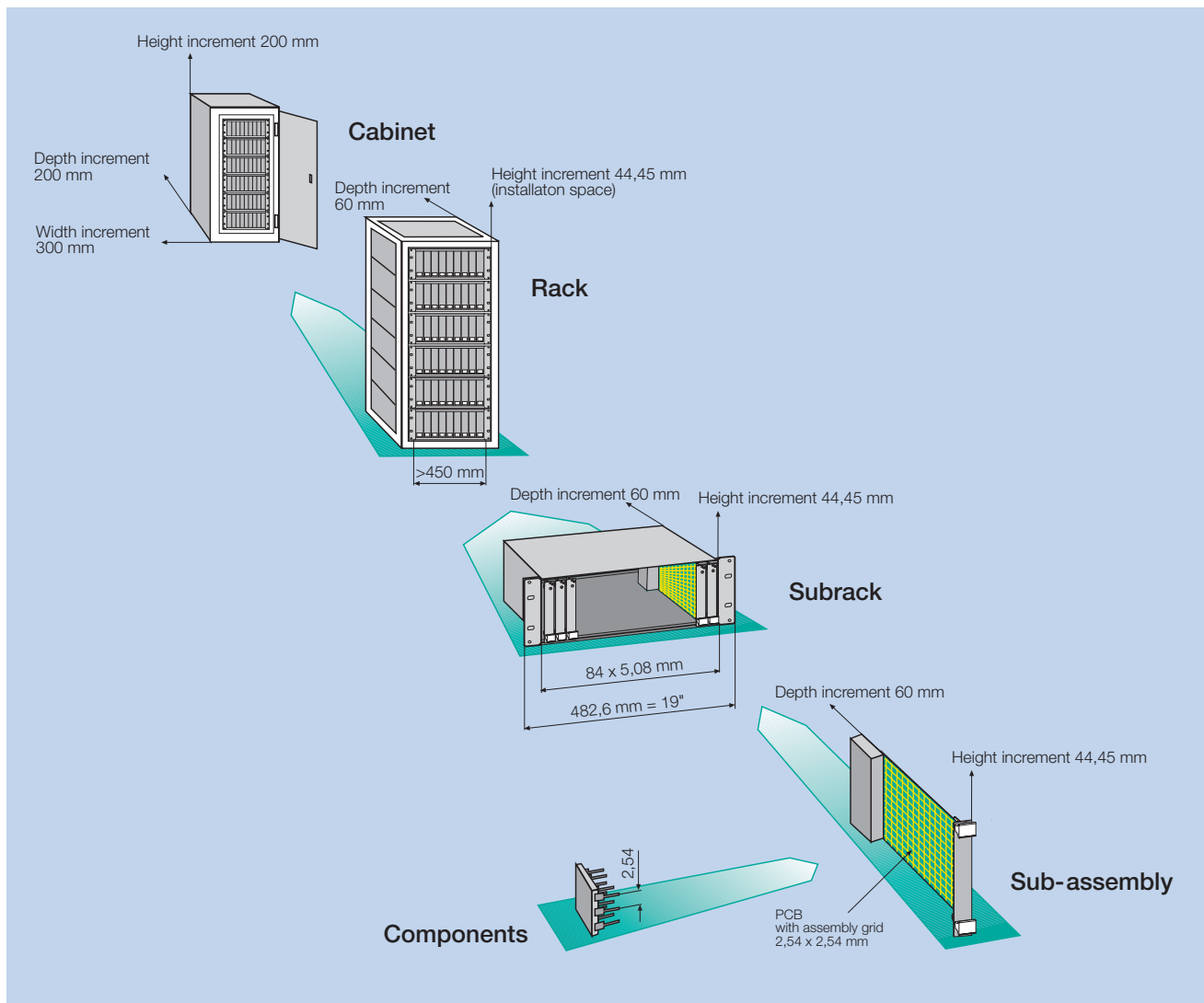
The aim of the standardization was to make it possible to combine different system components without problems and to ensure compatibility between different devices and modules as the basis for the specialization of individual manufacturers which resulted from global division of labor.

DIN standards and IEC publications

System level	DIN-standards	IEC-publications	DIN-standards	IEC-publications	DIN-standards	IEC-publications
Level 4 Racks	Table Top Housings DIN 41494	IEC 60297-1/2	Racks DIN 41494	IEC 60297-1/2	Cabinets DIN 41494	IEC 60297-1/2
Level 3 19"-Front- and rear pane and subracks	19"-front panel DIN 41494	IEC 60297-3	19"-subracks DIN 41494	IEC 60297-3	19"-rear panel DIN 41494	IEC 60297-3
Level 2 Sub-assembly	PCB DIN 41494	IEC 60297-3	Plug in block DIN 41494	IEC 60297-3	Plug- in unit DIN 41494	IEC 60297-3
Level 1 Components	Sub-assemblys at front panel DIN 41494	IEC 60297-3	Cards DIN 41494	IEC 60297-3	Connectors DIN 41494	IEC 60303-3

(cp.: "The Modular 19"-System", Hesse, 1991, side 43)

The "19-inch-Assembly System"



(Cp.: "The Modular 19"-System", Hesse, 1991, side 17)

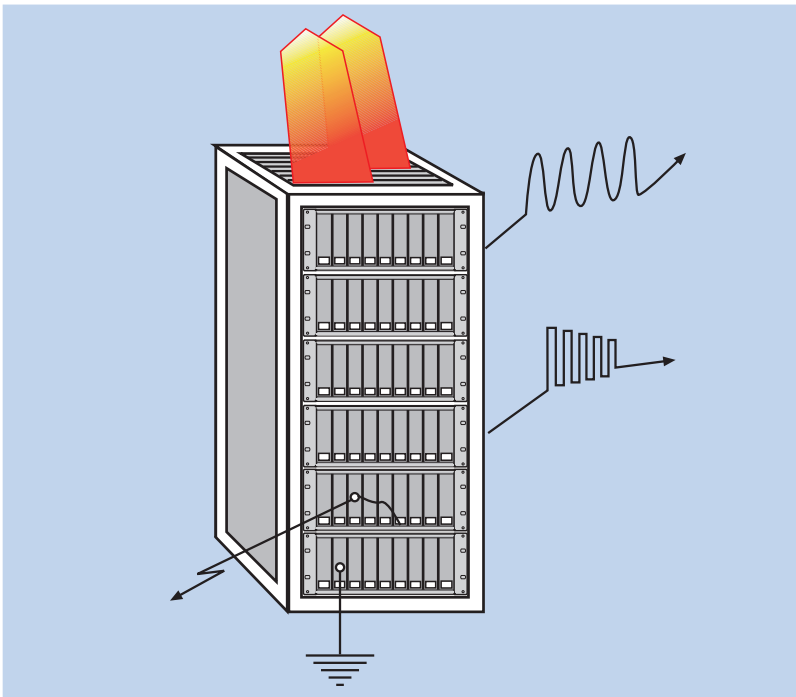
The modular structure

The modular structure of the so-called 19" assembly system allows components of one level to be freely combined with one another without problems and used in assemblies of the next higher level.

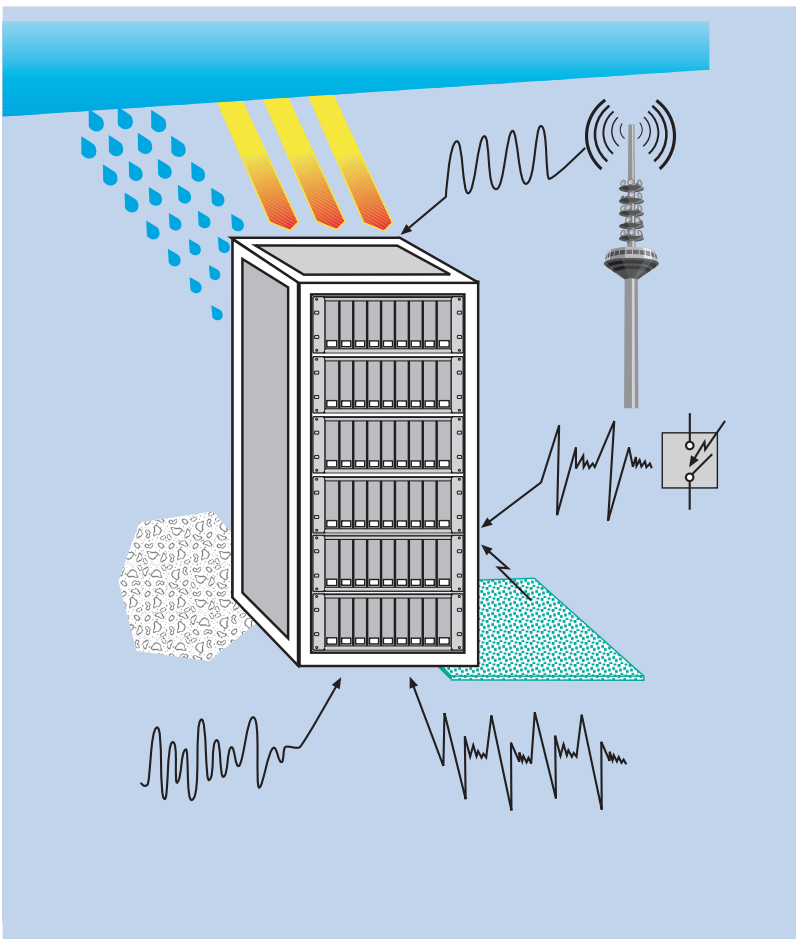
In addition to the 19" front panel, the dimensions of the Euroboard (100x160 mm), the component-fitting and wiring grid on the PCB (2.54 mm) and the external dimensions for cabinets formed the initial dimensions for the modular 19" assembly system.

Protection Requirements

The protection requirements depend on sensitivity of the installed electronics and on the interference levels at the installation location.



(Cp.: "The Modular 19"-System", Hesse, 1991, side 127)



(Cp.: "The Modular 19"-System", Hesse, 1991, side 127)

The protection requirements can be divided into:

1. Protection of the surrounding environment against interference, for example RF radiation, emitted by the device or protection against contact with live components.

2. Protection of the modules against external influences such as mechanical stresses as a result of vibration or shock, or infiltration of foreign bodies and humidity and also highfrequency interference signals.

EMI protection

Electromagnetic interference basically results from three different types of signals:

- ✓ sinusoidal permanent signals of fixed frequency
- ✓ broadband permanent signals (fundamental frequency with harmonics)
- ✓ transient signals (short period impulse)

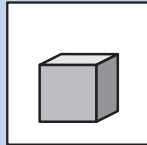
In order to adequately counteract such interference factors the paneling elements are conductively connected to one another or bonded to one another using appropriate RFI gaskets.

IP-Protection Classes (IP-Code) IEC 60 529 / EN 60 529

Protection for contact and foreign bodies

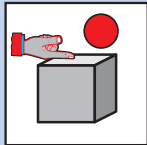
IP 1. Index

0 no special protection



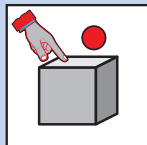
1 against large area
bodies

large foreign bodies
 $\varnothing > 50 \text{ mm (2")}$



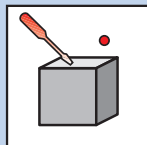
2 against fingers

medium sized
foreign bodies
 $\varnothing > 12 \text{ mm (0.48")}$



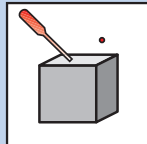
3 against tools, wires
 $> 2,5 \text{ mm (0.10")}$

small foreign bodies
 $\varnothing > 2,5 \text{ mm (0.10")}$



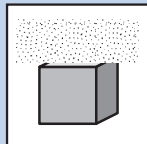
4 against tools, wires
 $> 1 \text{ mm (0.04")}$

granular foreign bodies
 $\varnothing > 1 \text{ mm (0.04")}$



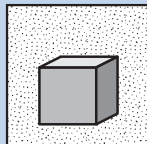
5 complete protection

dust-protected against
dust desposits



6 complete protection

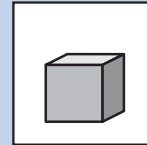
dust-proof



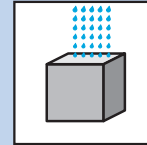
Water protection

IP 2. Index

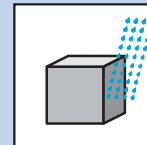
0 no special protection



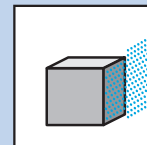
1 against water
dripping vertically



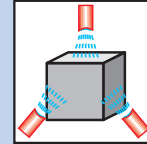
2 against water
dripping at an angle
up to 15° from the
vertical



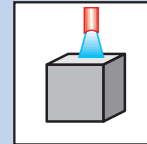
3 against spray water
any direction
up to 60° from the
vertical



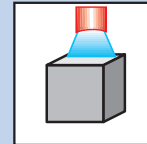
4 against spray water



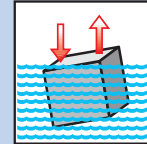
5 against water jets



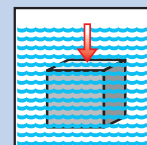
6 against strong
water jets



7 against immersion



8 against submersion





Our ultimate goal is achieving a competitive advantage through competent advisory services combined with high quality and environmental awareness of our employees.

Quality policy

Quality and competitiveness of Interimas products and services are driven by customer requirements and expectations as well as international market standards. Therefore, every Interimas employee is dedicated to fulfill these requirements constantly and entirely.

Customer orientation and customer satisfaction

In order to improve the customer satisfaction consultation services are offered at any stage of the product life cycle. Our management informs customers about technical innovations.

Interimas offers expertise in developing technical solutions through a dialogue with customers. A certified quality management system according to DIN EN ISO 9001 is in place.

System Cabinet *InterRack*®

System Cabinet *InterRack*

A sophisticated, systematically constructed cabinet system for electrical engineering applications, e.g. as:

- ✓ a universal 19" cabinet
- ✓ a low-voltage cabinet
- ✓ a data and network cabinet

Also excellently suitable for your own designs or special solutions, e.g. as:

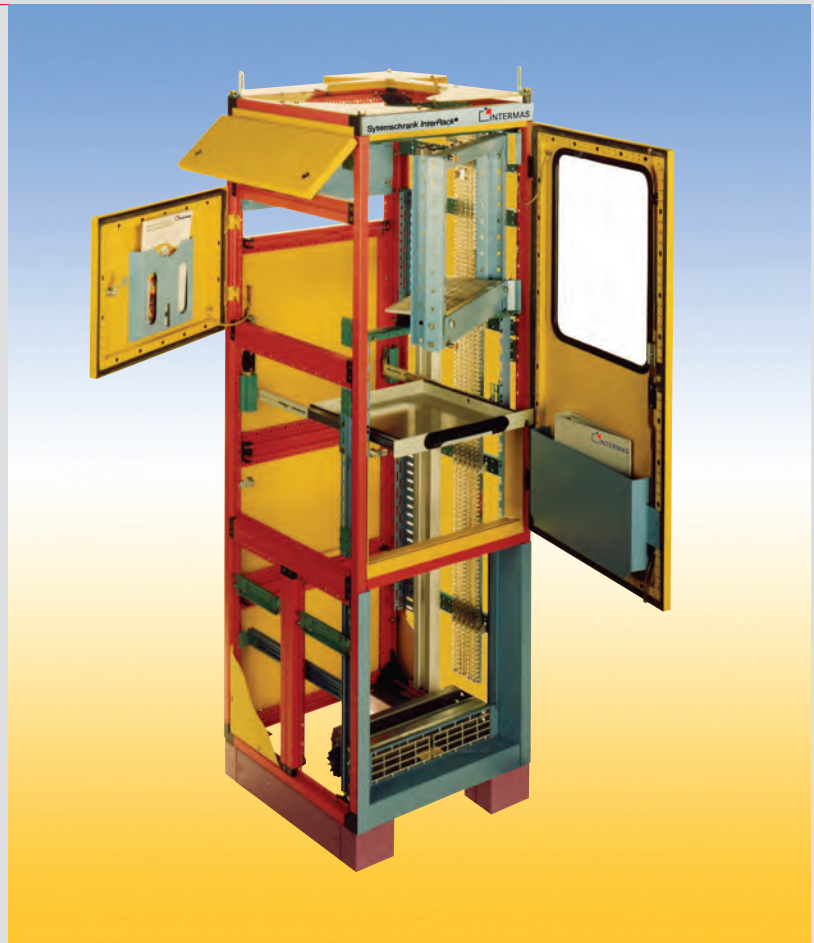
- ✓ a training cabinet
- ✓ for patch panels

or in

- ✓ maintenance and control engineering
- ✓ military technology
- ✓ traffic engineering

In short:

This cabinet meets all your requirements and desires.



System Cabinet *InterRack*®



Description

The InterRack system cabinet is made of steel and is easy to assemble using screws. Profiles and paneling elements are galvanized. The customer can choose between two colors of paint finish. The rack variants and assembly elements provide the capacity for individual configuration. Protection classes IP 40 and IP 54 are achieved thanks to the use of silicon-free seals.

The cabinet stands out due to its enormous flexibility of the configuration and extension options.

- ✓ Consistent implementation of the system pattern allows interior fittings in 25 mm steps.
- ✓ Easily incorporated into CAE and CAD-supported development projects.
- ✓ Each level can be used for assembly using only a few system elements.
- ✓ Self-tapping screws allow simple and fast assembly and dismantling and ensure tight and electrically conductive connections.
- ✓ Conducting surfaces and the replaceable system elements ensure excellent EMC characteristics.

Delivery

As a completely assembled and painted cabinet. Unassembled components on request.

Technical Data

Standards	compliant with DIN 41 488, IEC 60 297-1 and 2, IEC 60917
External dimensions	DIN 41 488, p.2
Width grid	interior fittings in a 25 mm grid, external dimensions in a 50 mm grid
Depth grid	interior fittings in a 25 mm grid, external dimensions in a 50 mm grid
Material	loading profiles and corner connectors: aluminum other parts: galvanized steel
Finish	standard: RAL 7032 or as required by the customer
Protection class	compliant with DIN 40050 IP 40 and IP 54 contact protection in accordance with VDE 0160
Utilization category	-25 °C, +70 °C, 75% relative humidity
Protective grounding	all metal parts are electrically bonded to one another following assembly in accordance with VDE 100/12.65, § 6 Nb



Cabinet example

- ✓ Rack A
- ✓ Mounting plate
- ✓ Frontdoor, right opening
- ✓ Rear panel
- ✓ Base panel
- ✓ Top panel closed
- ✓ Swing handle
- ✓ 130° hinges
- ✓ With side panel protection class IP 40



Sealing of the door



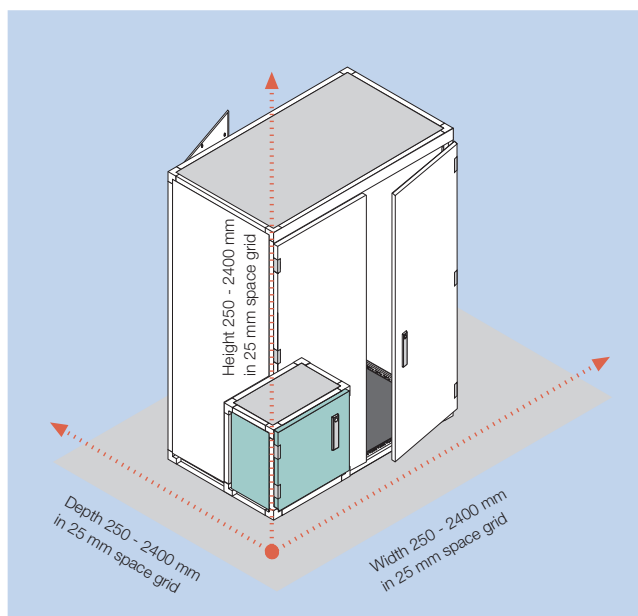
Sealing of the paneling parts

Sealing of the system cabinet *InterRack* to protection class IP 54



RFI-shielding of the door of the system cabinet *InterRack*

Configuration



Configuration System Cabinet *InterRack*

Cabinet	pieces _____						
Rack	<input type="checkbox"/> version A <input type="checkbox"/> version B <input type="checkbox"/> version C <input type="checkbox"/> version D height: _____ mm width: _____ mm depth: _____ mm						
Color rack	RAL _____						
Color paneling parts	RAL _____						
Side panel	<input type="checkbox"/> adding: <table border="0"> <tr> <td><input type="checkbox"/> left</td> <td><input type="checkbox"/> right</td> </tr> <tr> <td><input type="checkbox"/> left</td> <td><input type="checkbox"/> right</td> </tr> </table>	<input type="checkbox"/> left	<input type="checkbox"/> right	<input type="checkbox"/> left	<input type="checkbox"/> right		
<input type="checkbox"/> left	<input type="checkbox"/> right						
<input type="checkbox"/> left	<input type="checkbox"/> right						
Rear panel	<input type="checkbox"/>						
Door opening	<table border="0"> <tr> <td><input type="checkbox"/> front</td> <td><input type="checkbox"/> left</td> <td><input type="checkbox"/> right</td> </tr> <tr> <td><input type="checkbox"/> rear</td> <td><input type="checkbox"/> left</td> <td><input type="checkbox"/> right</td> </tr> </table>	<input type="checkbox"/> front	<input type="checkbox"/> left	<input type="checkbox"/> right	<input type="checkbox"/> rear	<input type="checkbox"/> left	<input type="checkbox"/> right
<input type="checkbox"/> front	<input type="checkbox"/> left	<input type="checkbox"/> right					
<input type="checkbox"/> rear	<input type="checkbox"/> left	<input type="checkbox"/> right					
Double door	<input type="checkbox"/> front <input type="checkbox"/> rear						
Hinges	<input type="checkbox"/> 130 degree <input type="checkbox"/> 180 degree						

Door lock	<input type="checkbox"/> swing handle <input type="checkbox"/> key plate	<input type="checkbox"/> dummy element <input type="checkbox"/> square <input type="checkbox"/> double bit 3 mm <input type="checkbox"/> double bit 5 mm <input type="checkbox"/> short cylinder keyed alike
Top panel	<input type="checkbox"/> closed	<input type="checkbox"/> labyrinth <input type="checkbox"/> perforated <input type="checkbox"/> raised
Base panel	<input type="checkbox"/> closed	<input type="checkbox"/> divided -
Mounting plate	<input type="checkbox"/> galvanized	<input type="checkbox"/> color RAL _____
Hinged frame	opening: <input type="checkbox"/> left <input type="checkbox"/> right <input type="checkbox"/> 130 degree <input type="checkbox"/> 180 degree	
19" unit support	<input type="checkbox"/> front <input type="checkbox"/> rear	
Protection class	<input type="checkbox"/> IP _____	
RFI-shielded	<input type="checkbox"/>	
Accessories	<input type="checkbox"/> Adaptor <input type="checkbox"/> Document box <input type="checkbox"/> U-strut piece _____	<input type="checkbox"/> Logo strip <input type="checkbox"/> Universal angle piece _____ <input type="checkbox"/> Lifting eye (kit with 4 pieces)
Base	<input type="checkbox"/>	
Notes	_____ _____ _____ _____	

Please ask your local representative for your
individual configuration.

You find your contact person on our homepage:
www.intermas-el.com

Rack construction

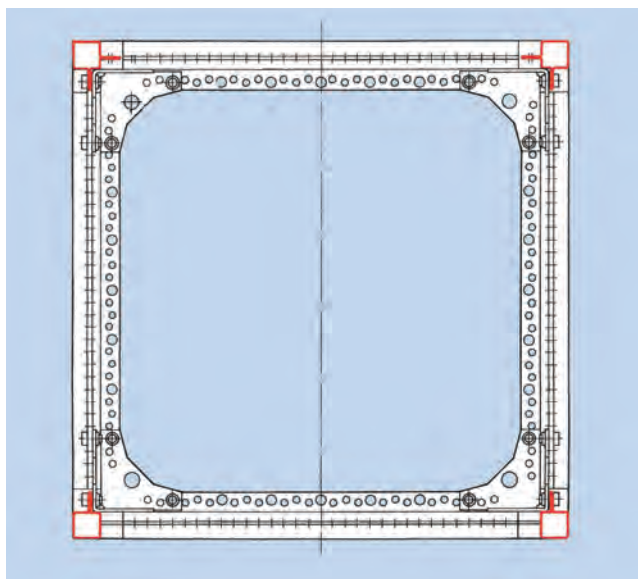
The rail profiles are rolled from galvanized sheet steel. This ensures optimal corrosion protection, including the cut edges.

Two versions of rail profiles are available, rail profile W and rail profile V.

Plug-in corner connectors made of die-cast aluminum ensure stable connection in all three axes.

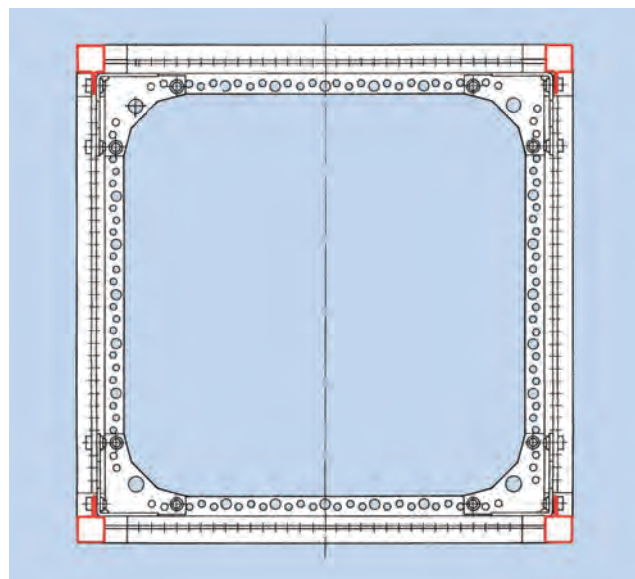
The rail profiles are then screwed to the gusset plate.

This method of construction allows assembly of any cabinet rack with an edge length of 250 to 2400 mm. Individual switch racks or patch panels can also be constructed just as easily.



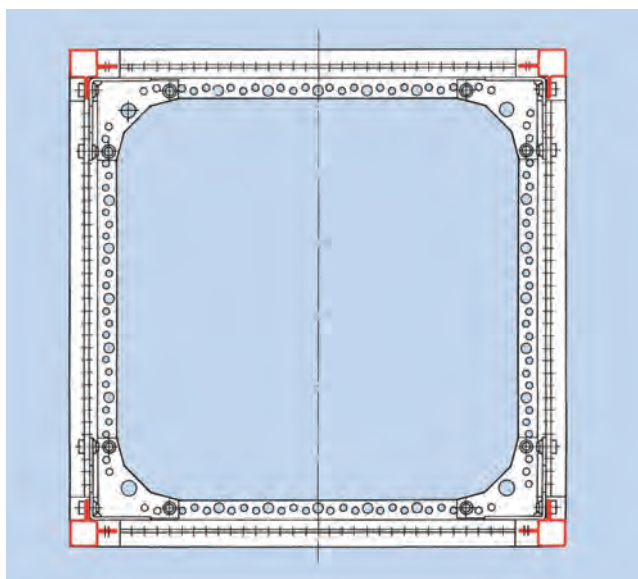
Rack version A

for stand alone cabinets with front door.



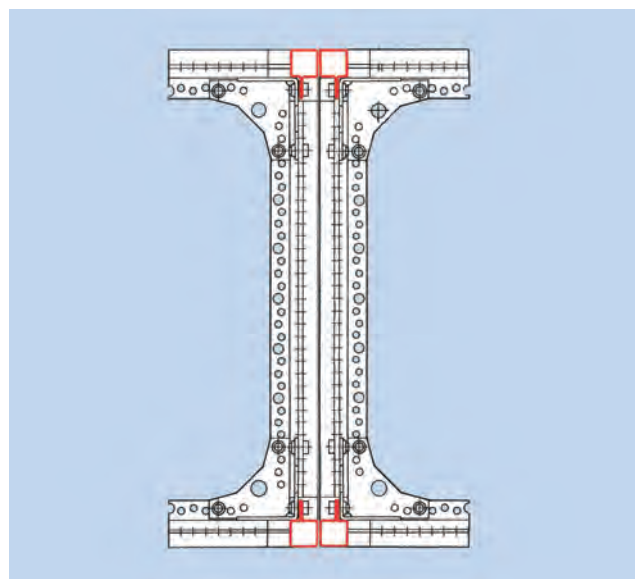
Rack version B

for stand alone cabinets with front and rear door.



Rack version C

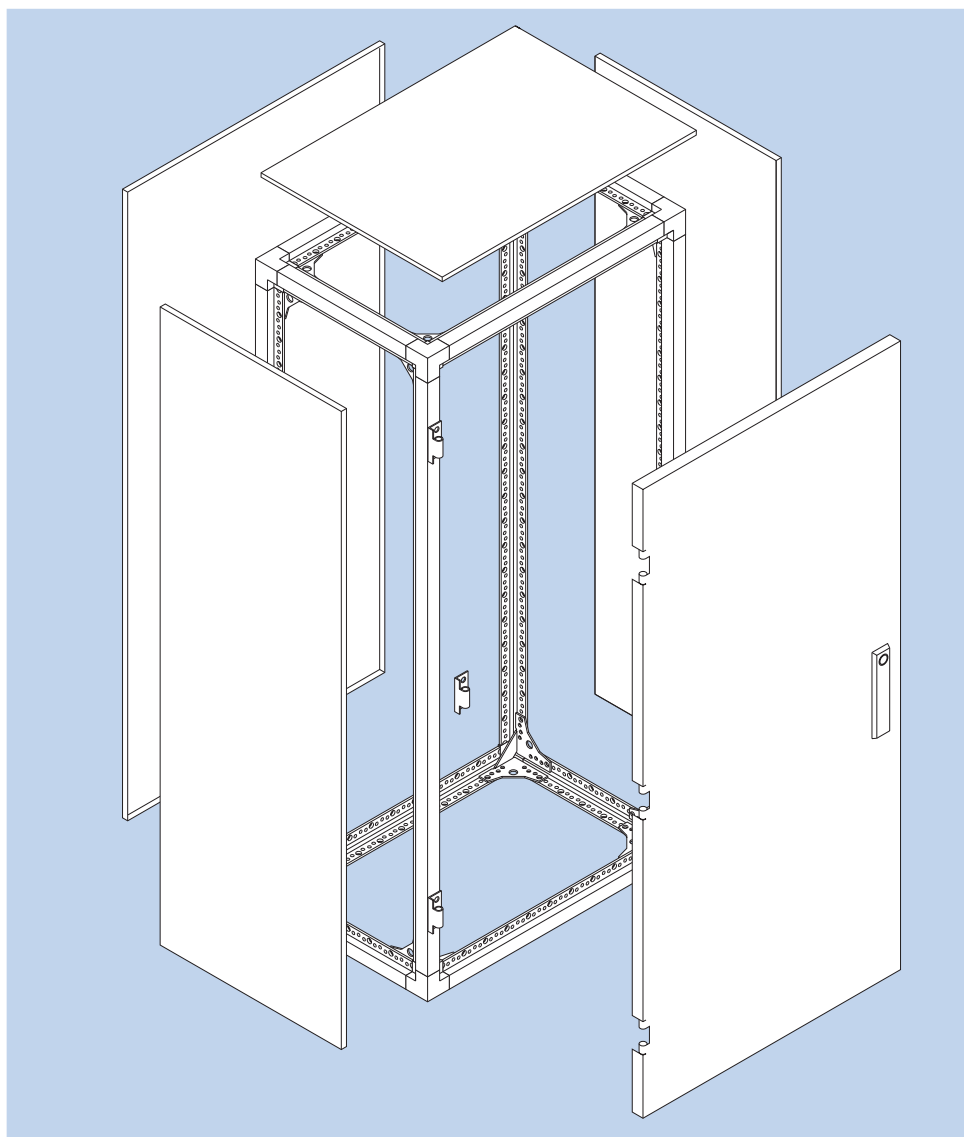
for protected and separated regions, all sides prepared for covering panels.



Rack version D

for frame type switchboards and distribution jumper rings.

System Cabinet *InterRack*®



Ordering details system cabinet

	height [mm]	width [mm]	depth [mm]	1 front door order no. 409	1 front door 1 rear door order no. 409	double door order no. 409
<i>InterRack</i> 1200 x 1000 x 400	1200	1000	400	-	-	166261
<i>InterRack</i> 2000 x 600 x 500	2000	600	500	166262	166263	166264
<i>InterRack</i> 2200 x 900 x 600	2200	900	600	166265	-	166266

Delivery

	quantity per kit 1 door	quantity per kit 2 doors	quantity per kit double door
Rack	1	1	1
Door front/rear (130°) <small>Hinges 130°, left opening</small>	1	2	1
Side panels	2	2	2
Rear panel	1	-	1
Top panel closed	1	1	1
Swing handle	1	2	2

Rail Profiles

Rail Profiles

The rail profiles are rolled from galvanized sheet steel. This ensures optimal protection against corrosion including the cut edges. Two Versions of rail profile are available.

Rail profile V

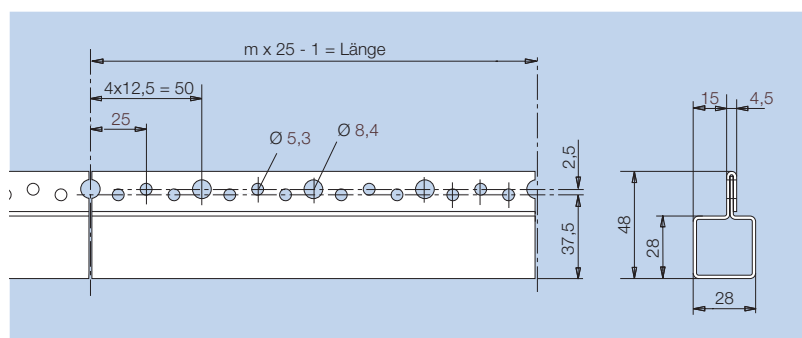
Rail profile W

Material: steel

Finish: galvanized

Finished length for rail profiles

rack-nom. width [mm]	length [mm]	m = number space grid
400	299	12
500	399	16
600	499	20
900	799	32
1000	899	36
1200	1099	44
2000	1899	76
2200	2099	84

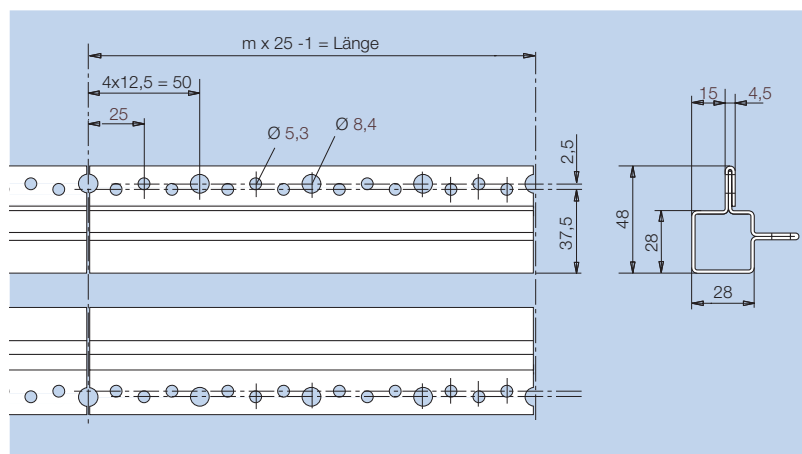


Rail Profile V

For use as height profile and diving profile.

Length: 6360 mm

order no.: **409074056**



Rail Profile W

For use as height, depth, width profile and dividing profile

Length: 6360 mm

order no.: **409074057**

Corner Connector, Gusset Plate A and B, 19"-Unit Support



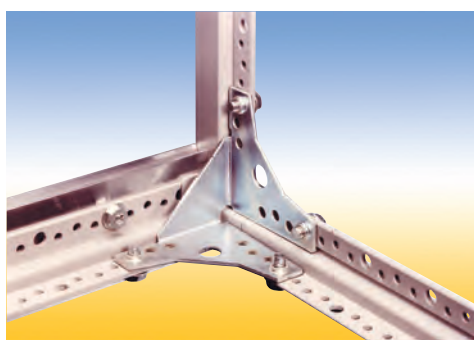
Corner Connector

For connecting the rear profiles.

Material: aluminum die casting

Finish: untreated

order no.: **409050688**



Gusset Plate A

For fastening the rack corner.

Material: steel

Finish: galvanized, passivated

order no.: **409131354**

Accessories

Cylinder head screw M 8 x 14

(Torx T40) DIN 7500

Minimum order quantity: 10 pieces

order no.: **409132778**



Gusset Plate B

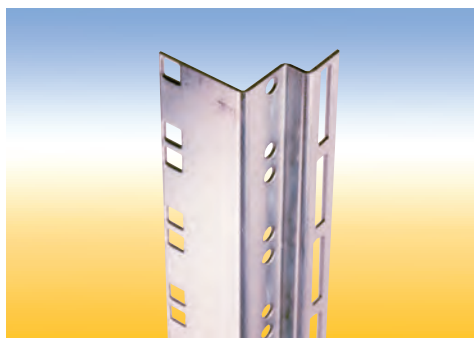
For fastening the rack corner.

To get maximum free space for assemblies and for fastening with screws M 8.

Material: steel

Finish: galvanized, passivated

order no.: **409167416**



19"-Unit Support

Are mounted vertically, depth variable in 25-mm-space grid.

For mounting of 19"-equipment.

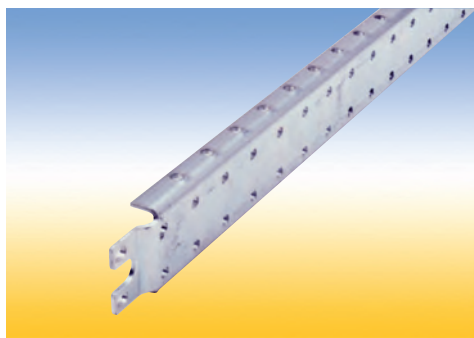
Material: steel

Finish: galvanized, passivated

Ordering details

	for cabinet-height [mm]	length [mm]	order no. 409
19"-unit support 2000	2000	1866.45	078641
19"-unit support 2200	2200	2044.70	078646

U-Strut, Universal Angle, Door Hinge 180°



U-Strut

As support for unit support and fixtures in 25-mm-space grid.

2 versions are available:

1. For mounting from outside the cabinet.
2. For mounting from inside the cabinet.

This version is especially suitable for later installations.

Material: steel, 3 mm thick

Finish: galvanized, passivated

Ordering details

	for cabinet- depth/width [mm]	outside order no. 409	inside order no. 409
U-Strut 400	400	049677	132601
U-Strut 500	500	049679	132603
U-Strut 600	600	049680	132604
U-Strut 800	800	049681	132605
U-Strut 900	900	049682	132606

Accessories

Hexagon Head Screw M 6 x 12

Minimum order quantity: 10 pieces

order no.: **409131550**



Universal Angle

To fastening of 19"-unit support and accessories.

Material: steel, 3 mm thick

Finish: galvanized, passivated

order no.: **409132240**

Accessory

Hexagon Head Screw M 6 x 12

Minimum order quantity: 10 Pieces

order no.: **409131550**



Door Hinge 180°

with a 180° opening angle.

Material: aluminum

Finish: black anodized

Delivery:

3 hinges, 3 hinge pins

Mounting parts

order no.: **409069369**

Standard Adaptor, Lifting Eye, Document Box, Custom Logo Strip for Cabinets



Standard Adaptor Kit

To bolt together additional cabinets.

Material: steel
Finish: galvanized, passivated
Delivery: 8 threaded spacers
 Mounting parts

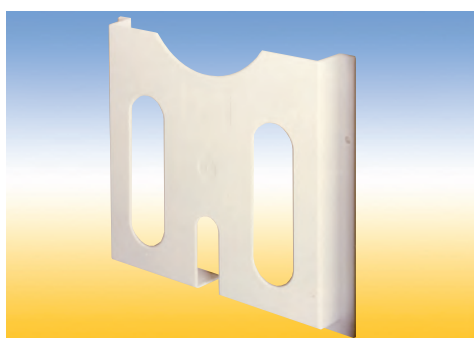
order no.: **409132464**



Lifting Eye Kit

Material: steel
Finish: galvanized, passivated
Delivery: 4 lifting eyes
 Mounting parts

order no.: **409132735**

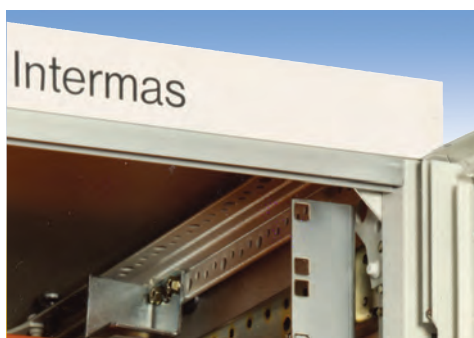


Document Box

DIN A4, upright, self adhesive

Material: Polystyrene, shock resistant
Finish: RAL 9002

order no.: **409068760**



Custom Logo Strip

For the rack above the door.

Self adhesive

Material: aluminum 2 mm thick
Finish: anodized (paintable and printable)

Ordering details

	length [mm]	order no. 409
Custom logo strip 600	594	049668
Custom logo strip 900	894	049670
Custom logo strip 1000	994	069302

Housings

Desktop Housings

***InterMeZo* Housing**

- ✓ Design front
- ✓ Functional front
- ✓ Variable in three dimensions
- ✓ Can be RFI-shielded
- ✓ Mechanical protection up to IP 54



***InterCase* Desktop Housing**

- ✓ Easy construction
- ✓ Service friendly
- ✓ Variable dimensions
- ✓ Can be RFI-shielded

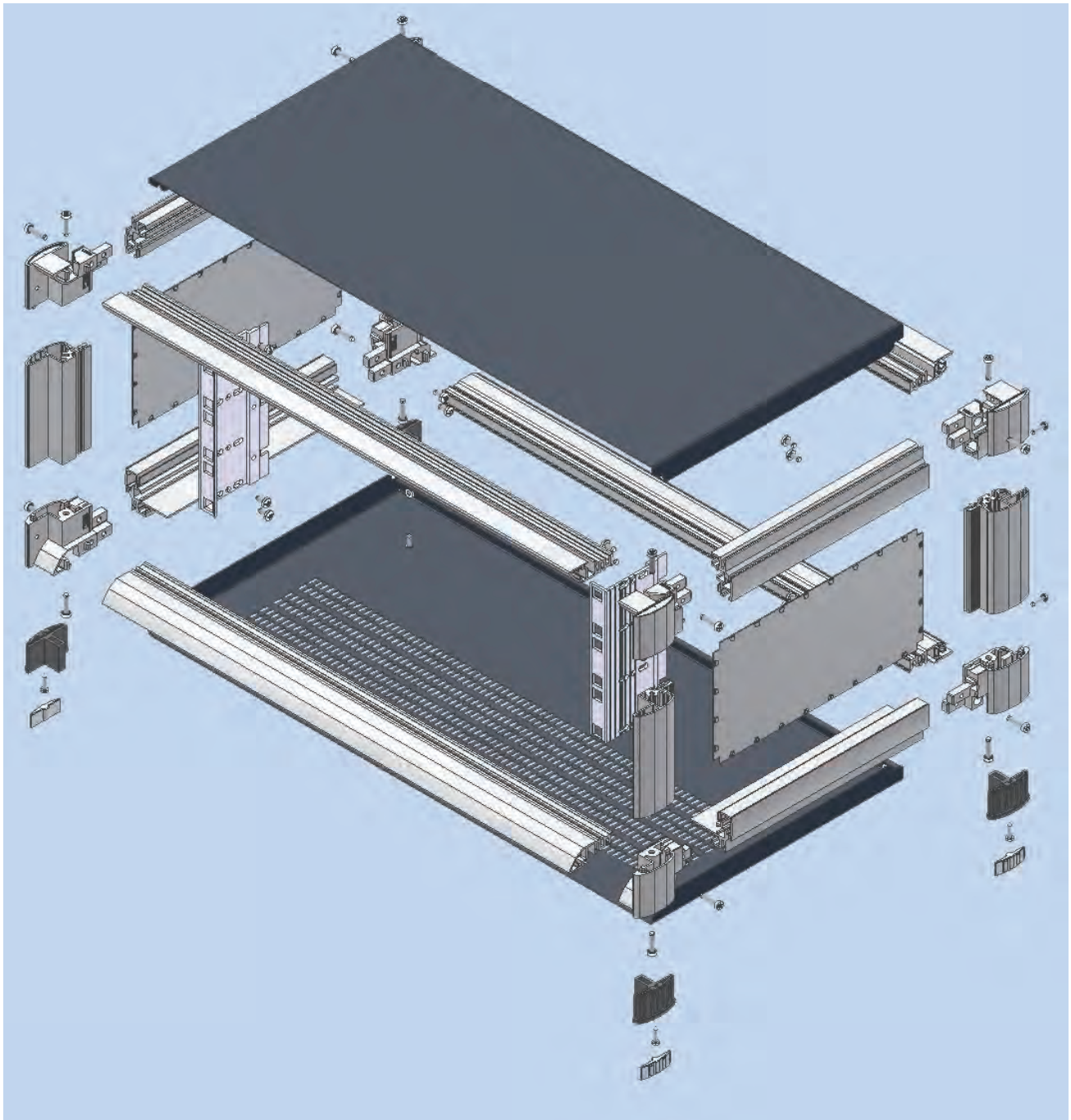


***InterLock* Housing**

- ✓ Covering of subracks
- ✓ Easy mounting without screws



InterMeZo Housing



Requirements

A modern housing flexible in its applications, with a modular design, can be RFI-shielded and ventilated, in an attractive design and at a reasonable price: InterMeZo

Construction

1. Housing frame

The InterMeZo housing is based on a framework construction consisting of profiles and corner connectors. This flexible design also enables fast and cost-effective assembly of individual housing sizes.

2. Easy to access

For quick access to the installed electronics the cover plates are pressed into profiled grooves and secured with two screws.

3. RFI shielding

The side walls are pressed into profile grooves; contact elements ensure RFI-shielded bonding.

To achieve effective protection of the housing against dust and water the cover panels, the rear wall and the door can all be fitted with seals.

Please state RFI requirement when ordering.

4. Mechanical sealing

To achieve effective protection of the housing against dust and water the cover panels, the rear wall and the door can all be fitted with seals.

5. Recessed grips

Grips for easy transportation are formed by the recessed mounting of the side walls.

6. Equipment supports

Subracks can be installed variably as the housing depth permits.

7. Chassis panels

The depth profiles are provided with grooves in which chassis panels or similar can be fitted at any depth with the aid of spring nuts.

Summary

The InterMeZo housing from InterMas is a modular and cost-effective housing solution for high-quality industrial electronics in a visually attractive design, developed for the highest possible flexibility and simplest possible assembly, with expansion capabilities for more demanding needs, compliant with stringent EMI/ESD protection specifications, and with extensive configuration options to fulfil application-specific requirements.

Technical data

Materials	casing: aluminum profiles corner connectors: die-cast zinc feet: ABS other parts: 0.8 mm galvanized sheet steel
Finish	standard for rear wall and cover panels: painted dark gray (RAL DS 5500) standard for casing and side walls: painted light gray (RAL DS 7000) feet: dark gray

Versions

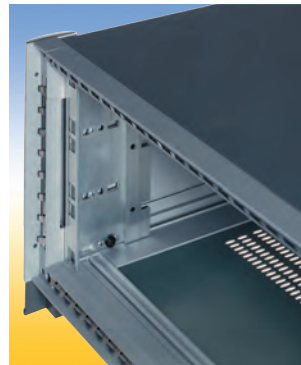
The *InterMeZo housings* are available to assembly 19"- or metric subracks. Alternatively, any dimensions for variable applications are possible.

For all versions the possibility exists to choose between the following types.



1. Design front

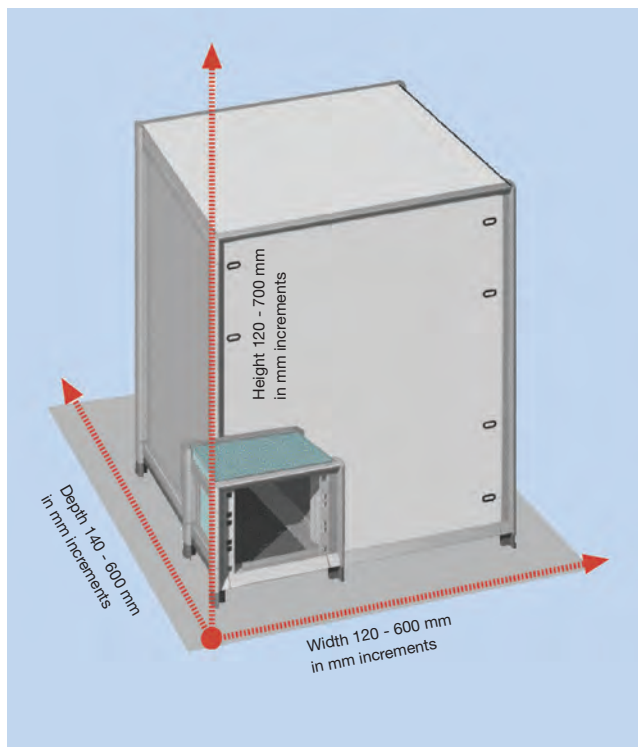
This version has been constructed in terms of a harmonic front design for use with a wide range of applications.



2. Functional front

For higher protection against dust and water as well as EMC shielding.

InterMeZo Housing

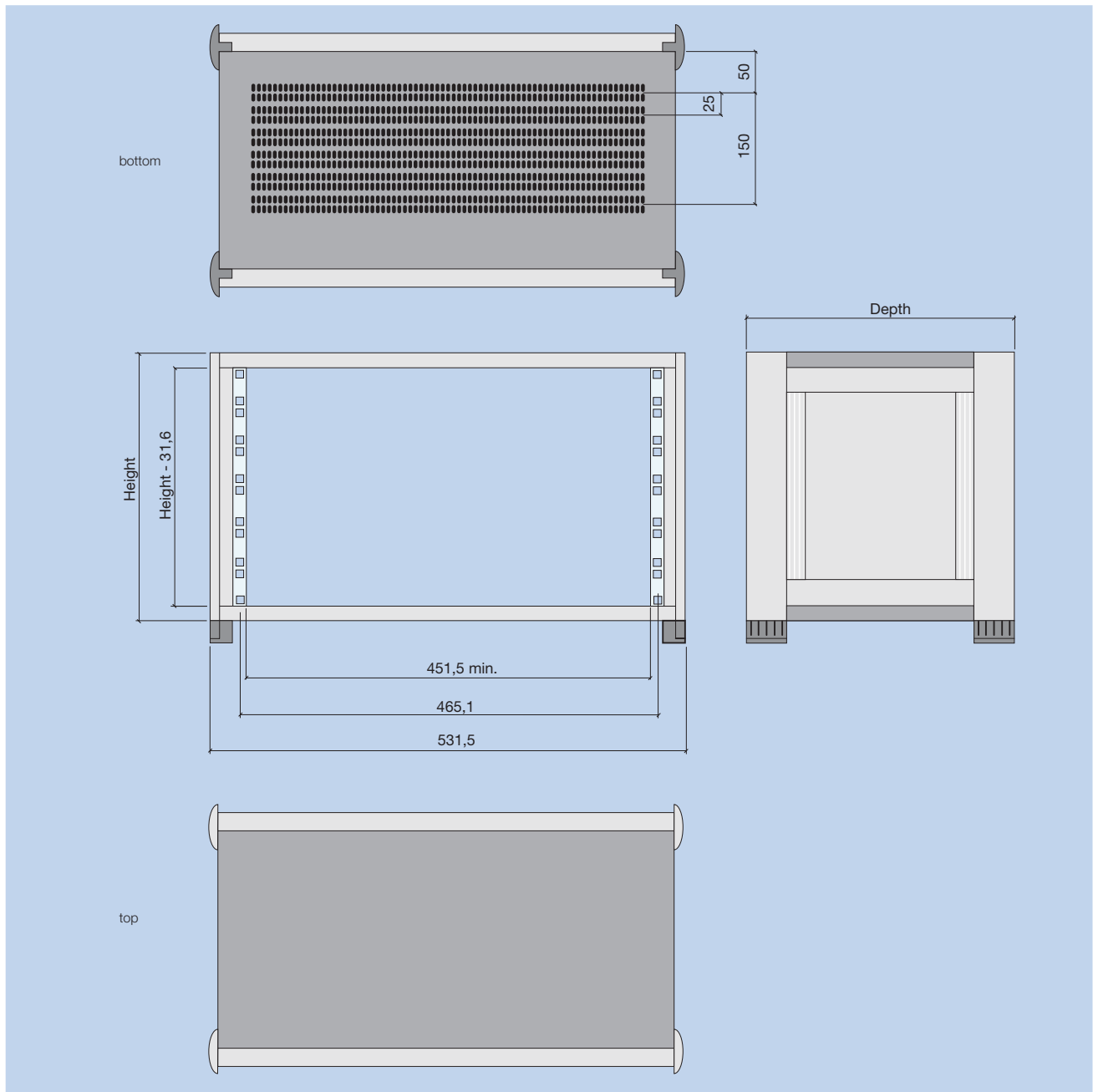


InterMeZo Housing

Housing	pieces _____
Dimension	height: <input type="checkbox"/> 3 U <input type="checkbox"/> 6 U width: <input type="checkbox"/> 84 HP <input type="checkbox"/> 42 HP depth: <input type="checkbox"/> 300 mm <input type="checkbox"/> 400 mm <input type="checkbox"/> 500 mm <input type="checkbox"/> other: height: _____ U or _____ mm width: _____ HP or _____ mm depth: _____ mm
Design	<input type="checkbox"/> design front <input type="checkbox"/> front <input type="checkbox"/> rear <input type="checkbox"/> functional front <input type="checkbox"/> front <input type="checkbox"/> rear
Color casing, side wall	<input type="checkbox"/> RAL DS 7000 <input type="checkbox"/> RAL _____
Color rear wall, panels	<input type="checkbox"/> RAL DS 5500 <input type="checkbox"/> RAL _____
Louvers in	<input type="checkbox"/> bottom panel <input type="checkbox"/> top panel <input type="checkbox"/> rear panel

Front	<input type="checkbox"/> Casing door <input type="checkbox"/> Plexiglass door <input type="checkbox"/> Front panel	<input type="checkbox"/> anodized <input type="checkbox"/> RAL _____
19" unit support	<input type="checkbox"/> front <input type="checkbox"/> rear	
Protection class	<input type="checkbox"/> IP _____	
RFI-shielding	<input type="checkbox"/>	
Accessories	<input type="checkbox"/> Rear panel <input type="checkbox"/> Wheels <input type="checkbox"/> Side bars <input type="checkbox"/> Subplate <input type="checkbox"/> Mounting material for subrack and front panels kit _____ pieces	
Notes	_____ _____ _____	

Please ask your local representative for your
individual system configuration
 You find your contact person on our homepage:
www.intermas-el.com



Ordering details for assembled *InterMeZo* housings

nom. height [U]	height [mm]	width [mm]	depth [mm]	design- front order no. 409	functional- front order no. 409
3	165.60	531.50	300	166208	-
3	165.60	531.50	400	166209	166217
4	210.05	531.50	400	166210	-
6	298.95	531.50	400	166211	166218
6	298.95	531.50	500	166212	-
7	343.40	531.50	400	166213	-
9	432.30	531.50	400	166214	166219
9	432.30	531.50	500	166215	-
12	565.65	531.50	500	166216	166220

Delivery:

Housing frame with side panels, top closed, bottom panel with louvers 4 feet, 2 unit supports

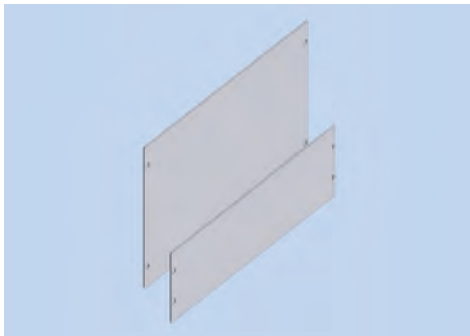
Delivery:

The housing is delivered assembled and painted.

Please state RFI requirement when ordering.

This catalog contains stock and standard parts. Other products and sizes on request.

InterMeZo Housing Accessories

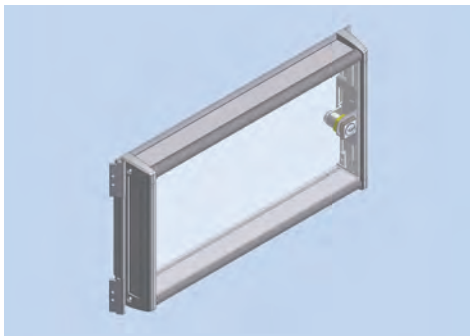


19" Front Panels

Material: aluminum 3 mm thick
Finish: anodized

Ordering details for 19" front panels

nom. height [U]	order no. 409
3	086513
4	086514
6	086516
7	086517
9	086519
12	086522



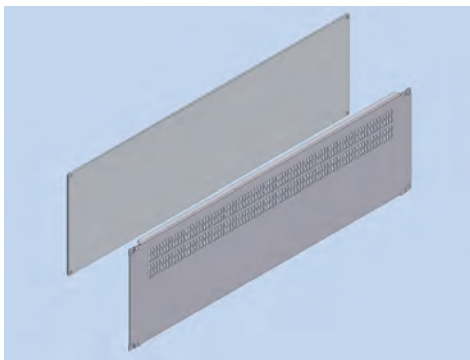
19" Casing Door

Kit consists of:
1 casing door with plexiglass pane
1 lock
2 hinges
Installation hardware

Delivery:
As complete assembled casing door.

Ordering details for 19" casing door

nom. height [U]	order no. 409
3	110452
4	110453
6	110454
7	110455
9	110456
12	110457



Rear Panel, closed

Material: aluminum 2.5 mm thick
Finish: front side anodized, rear side conductive

Rear Panel with Louvers

Material: steel 0.8 mm thick
Finish: front side RAL DS 5500, rear side conductive

Ordering details rear panel

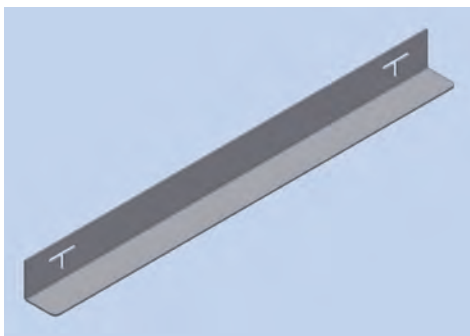
nom. height [U]	closed order no. 409	with louvers order no. 409
3	109984	111556
4	109985	111557
6	109986	111559
7	109987	111560
9	109988	111561
12	110392	111562

Accessories

Taptite screw M4x10

Minimum order quantity 100 pieces

order-no.: 409110395



Slide Bars

Kit consists of:
2 slide bars
Installation hardware

Material: 1.5 mm galvanized sheet steel

Finish: passivated

Ordering details kit

	for housing-depth [mm]	order no. 409
slide bar	300	111285
slide bar	400	111286
slide bar	500	111287



RFI-Shielding

Material: stainless steel

Standard housings are not retrofittable.
Please state when ordering.

Ordering details RFI-shielding-kit for rear/front panel

nom. height [U]	order no. 409
3	110360
6	110361
9	110366
12	110367

Ordering details RFI-shielding-kit for cover plates

depth [mm]	order no. 409
300	110368
400	110370
500	110372



Unit Support

Kit consists of:
2 unit supports and
Installation hardware

Ordering details for unit support kit

nom. height [U]	order no. 409
3	110375
4	110376
6	110378
7	110379
9	110381
12	110382



Mounting material for subracks and front panels in housing

Screw Locking M6

Color: black

Material: POM

Minimum order quantity 10 pieces

order no.: 409074387

Oval Head Screw

M6 x 16 DIN 7985

steel, nickel plated

Minimum order quantity 10 pieces

order no.: 409013919

Cage Nut

steel, galvanized

Minimum order quantity 10 pieces

order no.: 409131652



Castors

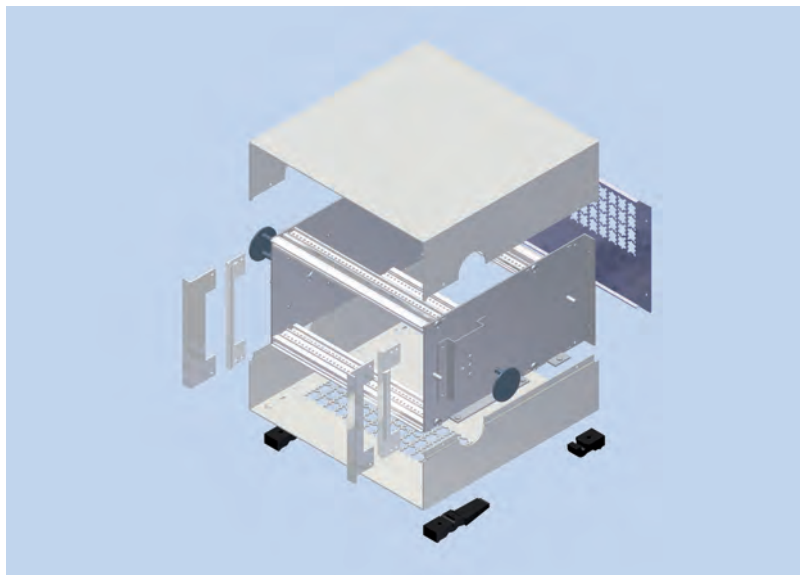
Kit consists of:
2 mounting angles
4 castors
Installation hardware

Ordering details for castor kit

	housing-depth [mm]	order no. 409
castors 300	300	112092
castors 400	400	112093
castors 500	500	112094

Castors are not retrofittable.
Please order with housing.

InterCase Desktop Housing



Description

The special design features of the *InterCase* desktop housing:

- ✓ A desktop housing with a simple design for standardized plug-in units and individual assemblies.
- ✓ The easy to access design allows all covering parts to be removed at any time.
- ✓ The bottom cover and the rear panel are provided with louvers.
- ✓ The side plates include perforations for attaching profile rails at different board depths.
- ✓ The comprehensive range of Intermas subrack accessories allows individual
- ✓ Can be RFI-shielded.

Technical Data

Material	Aluminum feet: plastic
Finish	side plates: blank side panels and rear panel: painted feet: black

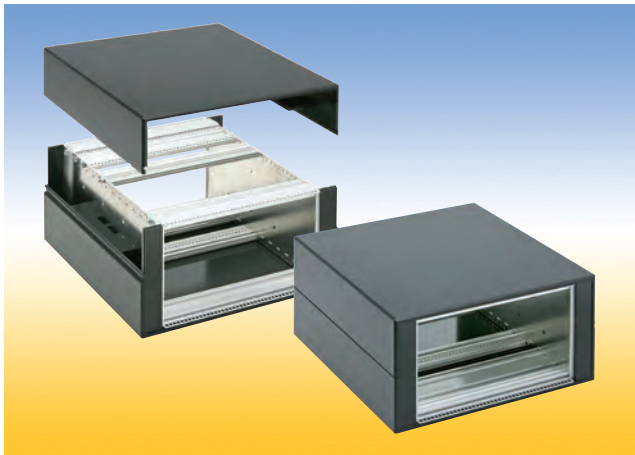
Delivery:

2 top/bottom panels
2 side plates
2 side panels
4 pr. front/rear
1 pr. rear middle
(only for 6 U)
1 rear panel
2 covers
2 mounting angles
4 threaded strips
(6 for 6 U)
1 foot kit
(1 carrying handle)
Installation hardware

Ordering details *InterCase* desktop housing

nom. height [U]	width [HP]	nom. depth [mm]	total depth [mm]	order no. 409	with carry- ing handle- order no. 409
3	42	160	260	172610	172548
3	42	220	320	172620	172621
3	84	160	260	172630	172631
3	84	220	320	172640	172641
6	84	160	260	172650	172651
6	84	220	320	172660	172661

InterLock Desktop Housing



Material: Polystyrene 6 mm thick
Color: black

Delivery:

The *InterLock* desktop housing is delivered in single parts.

Set consists of:

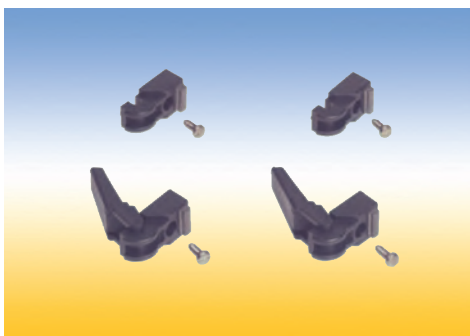
- 1 top-shell
- 1 bottom-shell

Ordering details kit - *InterLock* desktop housing

nom. height [U]	width [HP]	nom. depth [mm]	order no. 409
3	42	220	168935
3	84	220	168936
6	84	220	168937

Ordering details for compatible subrack kits

	nom. height [HE]	width [HP]	PCB depth/ nom. depth [mm]	order no. 409
Subrack <i>FLEXIBLE Fi-alpha</i> prepared for RFI	3	42	160/220	133306
Subrack <i>FLEXIBLE Fi-alpha</i> prepared for RFI	3	84	160/220	133307
Subrack <i>FLEXIBLE Fi-alpha</i> prepared for RFI	6	84	160/220	133308



Accessories *InterLock*

Foot kit:

- 2 feet without tip-up
- 2 feet with tip-up
- 4 lens head screws with nut

Material: PPE+HIPS

Color: black

Foot kit

order-no.: **409133305**

Accessories other housings

Foot kit:

- 2 feet without tip-up
- 2 feet with tip-up
- 4 self-tapping screws

Material: PPE+HIPS

Color: black

Foot kit

order-no.: **409059640**

Description

The *InterLock* desktop housing has been designed to cover subracks. Also System-Module can be dressed up.

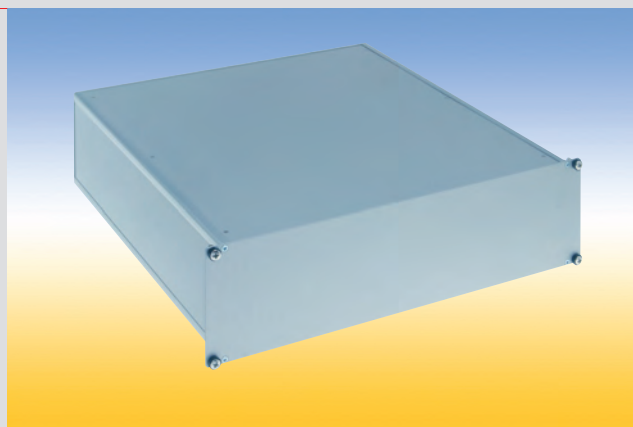
The special design features of the *InterLock* desktop housing:

- ✓ The covering elements are formed from recyclable polystyrene plate-material warmly and the joints are welded together by means of a chlorine carbon solution coldly.
- ✓ Material strength of 4 to 10 mm can be processed according to demand of the device.
- ✓ Easy assembly or disassembly of the case shells. Both case shells are locked by a clamp groove without screws.
- ✓ The case is upgradeable by feet and handles.
- ✓ However, on account of an economic manufacturing technology special dimensions or special colors can be also already realised for small quantities at a reasonable price.
- ✓ Extensive range of accessories is available.

Housings for small form factors

***DiVar* Housing**

- ✓ 19" rack mounted for customized housing
- ✓ Unrestricted configuration and installation
- ✓ Cover plates removable



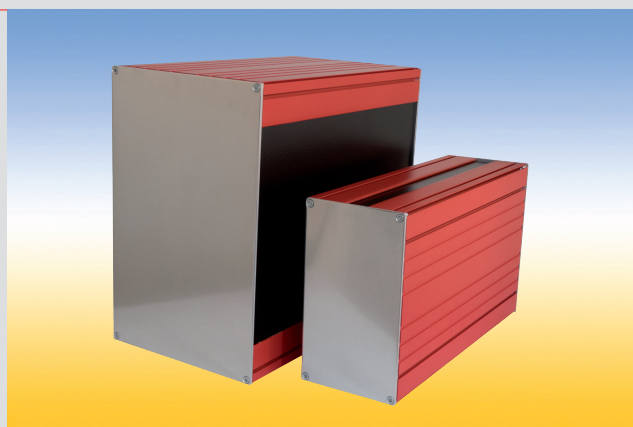
***InterShell* Housing**

- ✓ Customized adjustments
- ✓ Quick and uncomplicated installation
- ✓ Individual color design

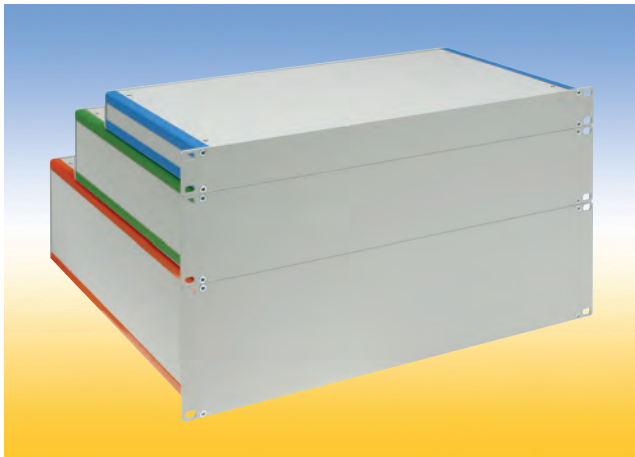


***InterShell IP* Housing**

- ✓ Custom specific adjustments
- ✓ Quick and uncomplicated installation
- ✓ Protection class up to IP 65



DiVar Housing



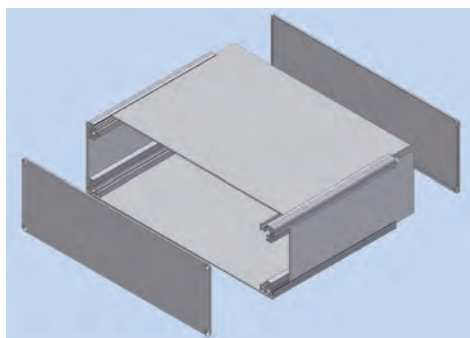
Painting examples of the DiVar housing

Technical Data

Material	aluminum
Finish	profiles: blank cover plates, front panel and side plates: front: anodized, rear: conductive

Delivery

The *DiVar* housing is delivered unassembled as individual parts or as a kit



DiVar housing as individual housing

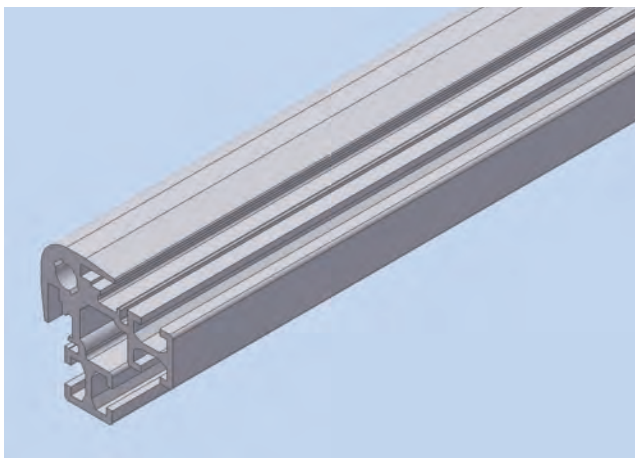
Description

The special design features of the *DiVar* housing:

- ✓ It consists of profiles into which aluminum, sheet steel, stainless steel or plastic panels with a thickness of 1.5 to 2.5 mm are inserted and, if desired, secured with screws. A wall panel at the rear and a panel at the front are screwed to the profiles.
- ✓ The flexible design allows variable configuration of the housing geometry in all three axes, this allowing adaptation of the housing to customer-specific requirements.
- ✓ Different surfaces can be selected for an individual appearance.
- ✓ The proven RFI contact spring concept ensures optimum RFI shielding.
- ✓ Rails with threaded holes can be pressed into the profile grooves, for example to screw in PCBs or mounting plates.
- ✓ The extensive range of Intermas accessories allows unrestricted configuration and installation of both standardized and non-standard components.

The housing can be supplied in 4 versions:

1. Customized housing
2. 19" rack mounted
3. Desktop housing with a keyboard area
4. Desktop housing with a continuous slanting surface



Multifunctional Profile *DiVar*

Material: aluminum
Finish: blank

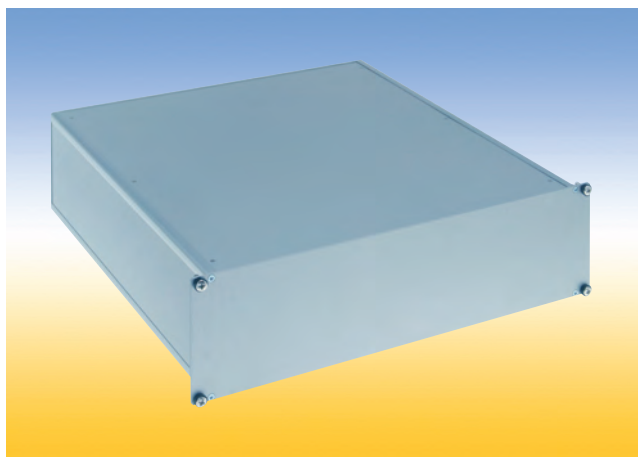
Length: 1000 mm

order no.: **409121808**

Accessories

RFI-spring F3
Length: 399.64 mm

order no.: **409111774**



DiVar Housing as rack mounted version

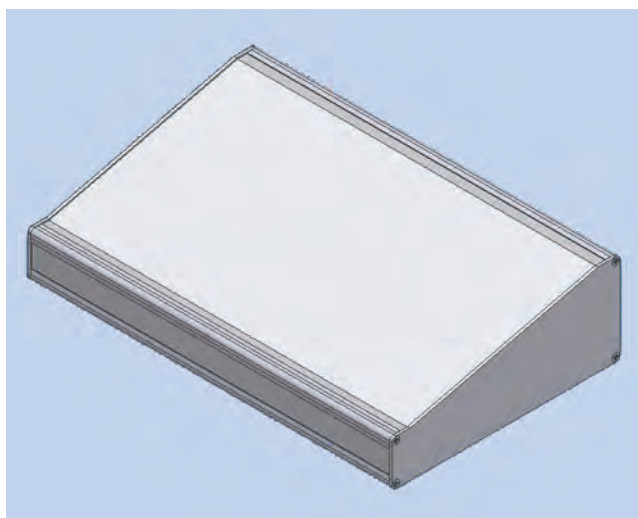
Delivery

4 profiles
4 cover plates
1 19" front panel
1 rear panel
Assembly hardware

Ordering details

DiVar housing as rack mounted version

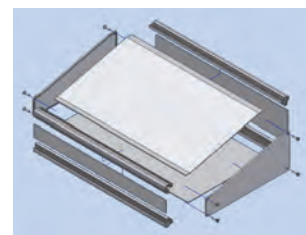
nom. height [U]	width [HP]	depth [mm]	order no. 409
1	84	250	122356
2	84	350	122357
3	84	450	122358



DiVar Desktop Housing

Delivery

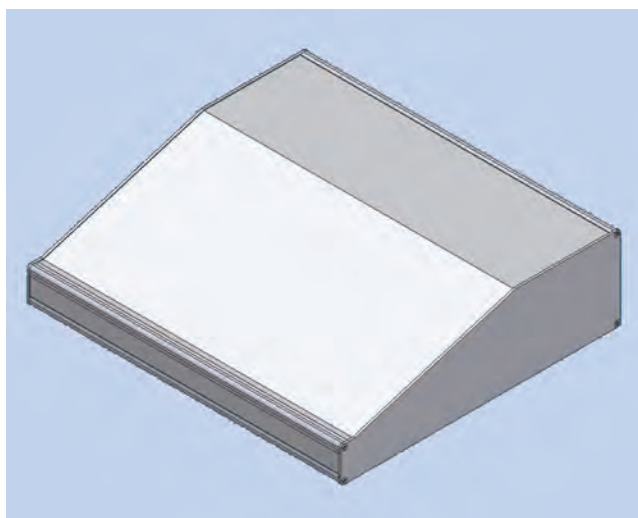
4 profiles
4 cover plates
2 side plates
Assembly hardware



Ordering details

DiVar desktop housing

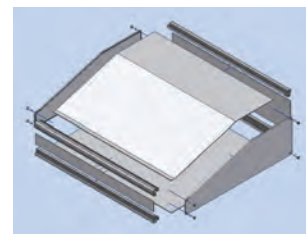
height [mm]	width [mm]	depth [mm]	order no. 409
50/100	400	250	122359



DiVar Desktop Housing with keyboard area

Delivery

4 profiles
4 cover plates
2 side plates
Assembly hardware



Ordering details

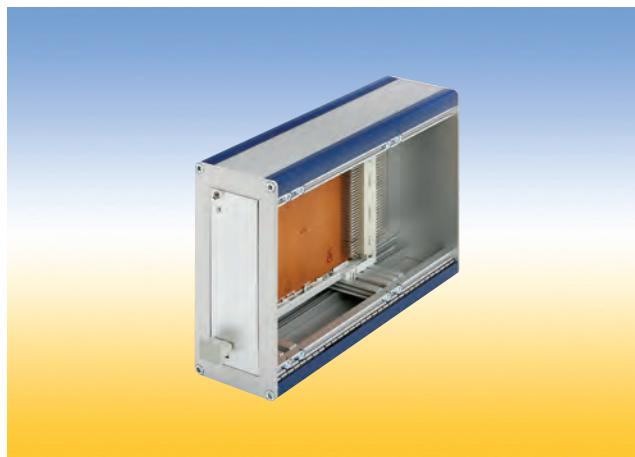
DiVar desktop housing with keyboard area

height [mm]	width [mm]	depth [mm]	order no. 409
50/120	450	250/150	122360

DiVar Housing Examples



DiVar housing as covered subrack 3 U - 84 HP - 160 mm depth



DiVar housing as covered cassette 3 U - 8 HP - 160 mm depth



DiVar housing for instrumentation

Please ask your local representative for your
individual configuration.
You find your contact person on our homepage:
www.intermas-el.com



Painting examples of the *InterShell*

Material: Aluminium

Surface : top-shell and bottom-shell
RAL 9006 white aluminum
front panel RAL 9005 - black

Set consists of:

- 1 top-shell
- 1 bottom-shell
- 2 front panels
- 4 countersunk screw

Delivery:

The *InterShell* housing will be delivered fully assembled and painted.

Description

The aluminium housing *InterShell* allows individual customer requirements in the context of Small Form Factors and has the following characteristics:

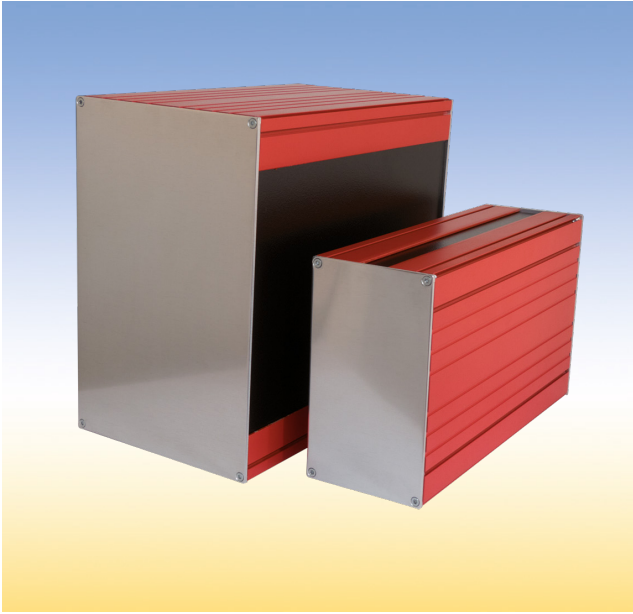
- ✓ Flexible design in all three axes.
- ✓ Quick and simple assembly due to its simple setting.
- ✓ Adapted for packing small electronic units like
 - euroboards in 100 x 160 (mm)
 - customer-specific requirements
 - mITX boards.
- ✓ Protection classes up to IP 40.
- ✓ EMC-compatible.
- ✓ A wide range of surfaces allows individual colour design.
- ✓ Additional imprints according to customers requirements are available.
- ✓ Expandable with adhesive mounting feet.

Order details *InterShell* housing

Usage	height [mm]	width [mm]	depth [mm]	order no. 409
Euroboard 100 x 160 [mm]	40	106,6	168,2	138020
Universal	60	150	170	138021
mITX board, fastening points included	50	190	190	138022

Accessories	order no. 409
housing foot 12,7 x 12,7 x 3,1[mm] PU, black	137981
housing foot 12,7 x 12,7 x 5,8[mm] PU, black	137982

Housing *InterShell IP*



Painting examples of the InterShell IP

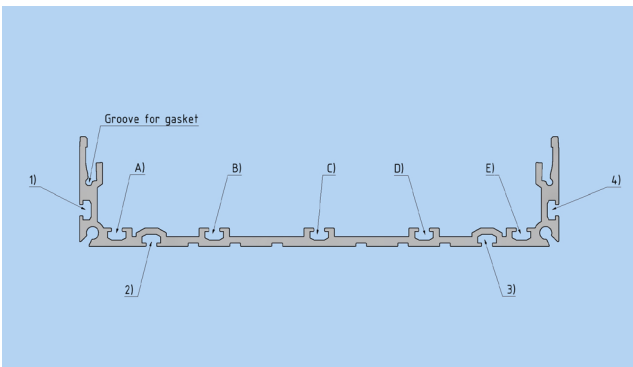
Description

The *InterShell IP* - perfect heavy duty housing. For euroboard cards and customised electronic applications.

Due to its robustness and tightness up to IP65 it is particularly suitable for mobile applications in the outdoor area as well as desk housing for measuring and test equipment. It is also possible to use the interior for subrack 3HE 42TE.

The small housing *InterShell IP* stands out due to its particular constructive features:

- ✓ The notches outside of the profile can be used for threaded strips (pos. 1-4) or for fittings like clip-angle or stock mounting.
 - ✓ The notches internal the profile (5x, pos. A-E) are used for threaded strips and for additional parts like card guides.
 - ✓ Alternative surface treatments, e.g. colorless passivation or varnishing of all visible surfaces are possible.
 - ✓ Front panel and rear panel are made of 3mm metal sheet. On request, cut-outs for connectors as well as individual printing are possible.
 - ✓ Sidewall, front and back panel are made of bright sea water resistant aluminum. Surface treatments are also possible.
 - ✓ Front and rear panel are each fitted with 4 counter-sunk screws.
 - ✓ A sealing ($\varnothing 2\text{mm}$) can be inserted between the profile and the plugged-in side panel to protect against extraneous particles and splashed water.
 - ✓ The use of high-quality silicone sealings provides an optimal protection against foreign particles and moisture.
 - ✓ Optionally, two conductive variants of sealings are available in order to obtain an optimal EMC-shielding
- Silicone filled with particles of nickel-plated graphite
 - Fluorosilicone filled with conductive particles of silver-plated aluminum
- ✓ Feet-kit is available as an option and can be ordered separately.



Position of the notches and sealings

Delivery :

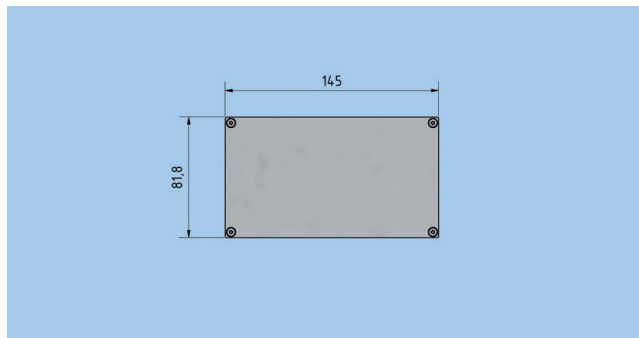
The housings are delivered unassembled as kits. They are packed - depending on quantity - either as kits or same parts packed together.

Upon request, the housings can also be delivered completely assembled and wired according to your requirements.

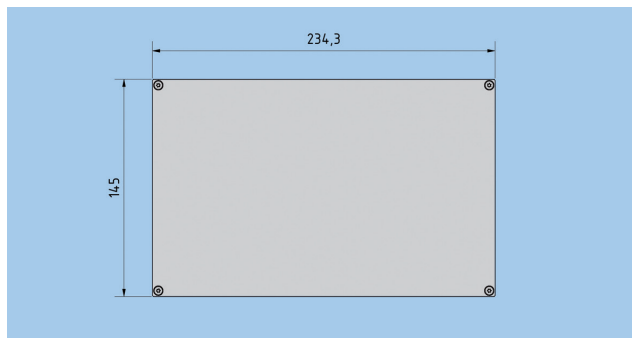
Technical Data

Dimensions	Small housing W 145 mm, H 81,8 mm basic Small housing for subrack 3 U-42 HP, W 234,3 mm, H 145 mm
Usable depth	150, 200, 250 mm (inner dimensions)
Materials	Screws: stainless steel, Assembled and threaded strips: steel or stainless steel profile and side panel: aluminium
Surface	Aluminium parts: blank or colorless passivated Steel parts: galvanized and colourless passivated
Protection class	IP 65 with sealing, otherwise IP43
Temperature range	-35 °C to +80 °C with sealing, otherwise -55 °C to +160 °C
Protective earthing	After assembly all metal parts have an electrically conductive interconnection acc. to VDE 100/12.65, § 6 Nb.

Dimension



Housing InterShell IP basic



Housing InterShell IP for subrack 3 U-42 HP

Version 1

Housing *InterShell IP* basic

Dimension front panel/rear panel

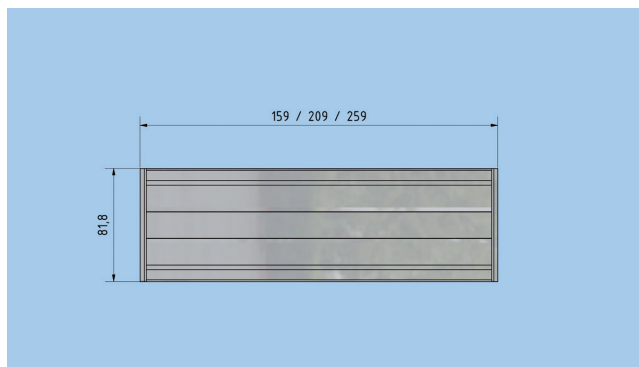
Width 145 mm
Height 81,8 mm

Version 2

Housing *InterShell IP* for subrack 3 U-42 HP

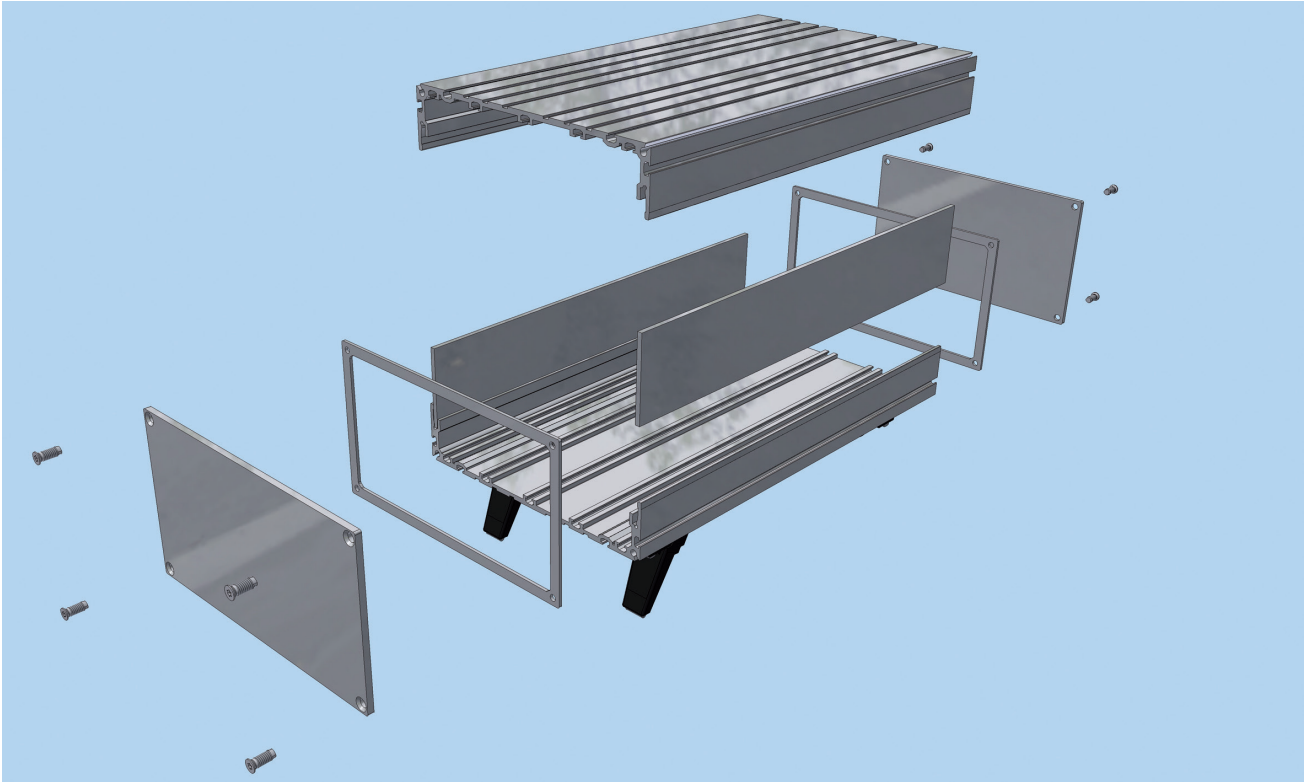
Dimension front panel/rear panel

Width 234,3 mm
Height 145 mm



Housing InterShell IP basic

Housing *InterShell IP*



Version 1

Small housing *InterShell IP* basic

Ordering details

	Order-no. 409
Depth dimensions 250 mm	180910
Depth dimensions 200 mm	180965
Depth dimensions 150 mm	180967

Scope of delivery

	pieces per kit 250 mm	pieces per kit 200 mm	pieces per kit 150 mm
Half-shell l = 250 mm	2	-	-
Half-shell l = 200 mm	-	2	-
Half-shell l = 150 mm	-	-	2
Countersunk screw M 4 x 10	8	8	8
Cellular rubber Ø 2 mm	1 m	0,8 m	0,6 m
Side panel l = 250 mm	2	-	-
Side panel l = 200 mm	-	2	-
Side panel l = 150 mm	-	-	2
Front panel / back panel	2	2	2
Sealing for housing	2	2	2

Version 2

Housing *InterShell IP* subrack 3 HE-42 TE

Ordering details for kits

	Order-no. 409
Depth dimensions 250 mm	180911
Depth dimensions 200 mm	180966
Depth dimensions 150 mm	180968

Scope of delivery

	quantity in kit 250 mm	quantity in kit 200 mm	quantity in kit 150 mm
Half-shell I = 250 mm	2	-	-
Half-shell I = 200 mm	-	2	-
Half-shell I = 150 mm	-	-	2
Countersunk screw M 4 x 10	8	8	8
Cellular rubber Ø 2 mm	1 m	0,8 m	0,6 m
Roof panel/floor panel I = 250 mm	2	-	-
Roof panel/floor panel I = 200 mm	-	2	-
Roof panel/floor panel I = 150 mm	-	-	2
Front panel/back panel 3 U 19"	2	2	2
Sealing for housing 3 U 42 HP	2	2	2

The silicon sealings are included in the basic kit.

Sealings made of conductive material must be ordered separately.

Sealings

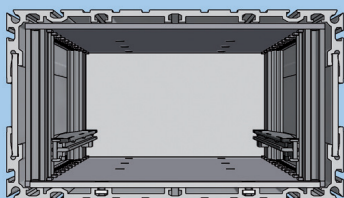
Ordering details conductive sealing

	Fluorosilicone filled with conductive particles of silver-plated aluminum. order-no. 409	Silicone filled with par- ticles of nickel-plated graphite. order-no. 409
Version 1 Housing <i>InterShell IP</i> basic	180913*	180914*
Version 2 Housing <i>InterShell IP</i> subrack 3 HE-42 TE	180918*	180919*

*Remark! Two seals are required per enclosure!

Housing *InterShell IP*

Kit to install 19 inch standard parts

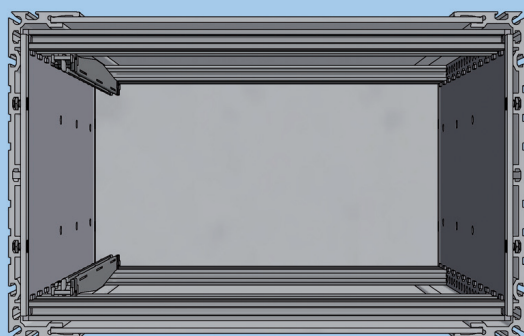


Housing *InterShell IP* basic

Assembly kit 19 inch standard parts Housing *InterShell IP*

Scope of delivery

	quantity in kit
side panel 3 U - 220	2
profile rail U 2 13 HP	4
countersunk screw M 4 x 10	8
stop bar	2
threaded strip M 2,5 x 12 HP	4
countersunk screw M 2,5 x 6	4
square nuts M 2,5	4



Housing *InterShell IP* for subrack 3 U 42 HP

Assembly kit 19 inch standard parts Housing *InterShell IP* for subrack 3 U-42 HP

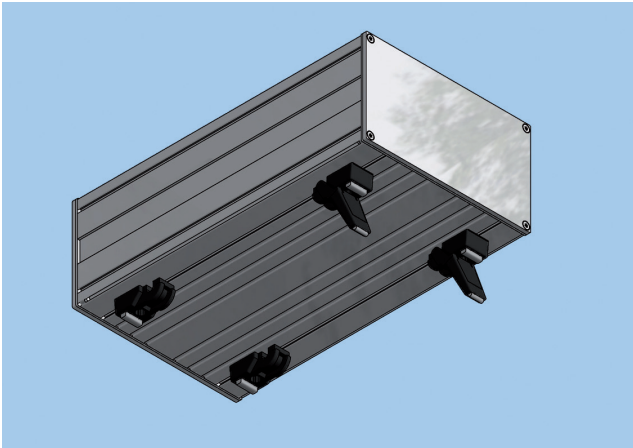
Scope of delivery

	quantity in kit
side panel 3 U - 220	2
profile rail U 2 13 HP	4
countersunk screw M 4 x 10	8
stop bar	2
threaded strip M 2,5 x 42 HP	4
countersunk screw M 2,5 x 6	4
square nuts M 2,5	4

Ordering details kits

	order-no.
Assembly kit 19 inch standard parts basic <i>InterShell IP</i>	180978
Assembly kit 19 inch standard parts <i>InterShell IP</i> for subrack 3 U-42 HP	180979

Both kits are only suitable for housing depths of 250 mm.



Housing feet

Foot kit

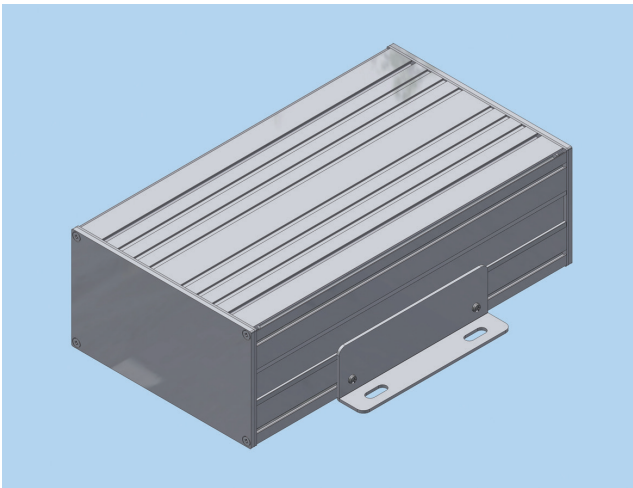
- 4 Feet without put-up hinge
- 2 put-up hinge with rubber
- 4 head screw M 3 x 8
- 4 washer A 3,2
- 4 square nut M 3

Material: ultramid

Color: black

Ordering details for kit

	order no. 409	Alternative: a kit with 4 adhesive feet is available.
Foot kit	180982	



Ground mounting

Version 1: Kit for basic housing

- 2 mounting angle
- 4 head screw M 3 x 5
- 4 square nuts M 3

Version 2: Kit for 3U-42HP

- 1 mounting angle right 3 U
- 1 mounting angle left 3 U
- 4 head screw M 3 x 5
- 4 square nut M 3

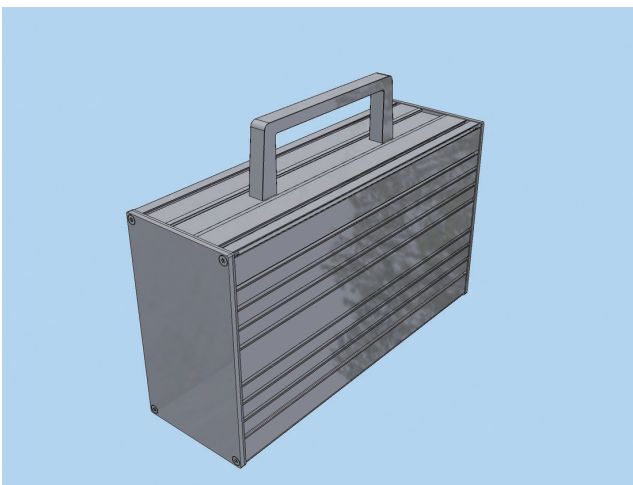
Material: aluminium

Surface: blank

Ordering details for kit

	order no. 409
ground mounting	180969
ground mounting 3 U 42 HP	180970

Both kits are suitable for housing depths of
250/200/150 mm



Handle

Scope of delivery

- 2 countersunk screw M 4 x 12
- 1 handle 3 U

Material: aluminium

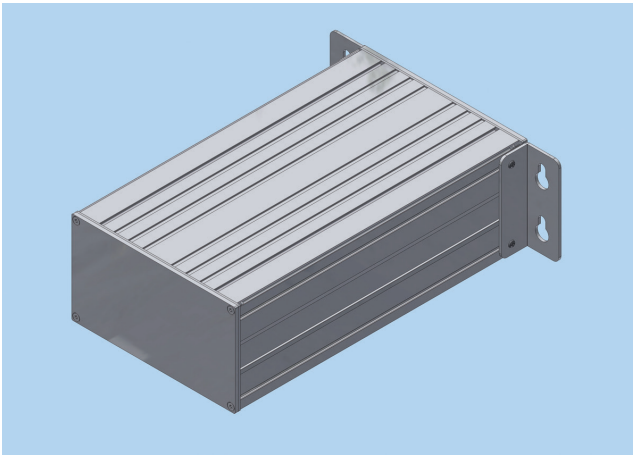
Surface: anodized

Ordering details for kit

	order-no. 409
handle kit	180974

Kit only for *InterShell IP* basic version available.
Other handles on request.

Housing InterShell IP Accessories



Wall mounting

Version 1: Kit for basic housing

- 1 mounting angle right
- 1 mounting angle left
- 4 head screw M 3 x 5
- 4 square nut M 3

Version 2: Kit for 3 U-42 HP

- 1 mounting angle right 3 U
- 1 mounting angle left 3 U
- 4 head screw M 3 x 4
- 4 square nut M 3

Material: aluminium
Surface: blank

Ordering details for kit

	order no. 409
wall mounting kit	180972
wall mounting kit for 3 U 42 HP	180973



Angle for stacking

Stock mounting and stock mounting heavy version

scope of delivery for kit

- 2 mounting plate
- 8 head screw M 3 x 5
- 8 square nut M 3

scope of delivery for kit heavy version

- 2 mounting plate heavy version
- 8 head screw M 3 x 5
- 8 square nut M 3

Material: aluminium
Surface: blank

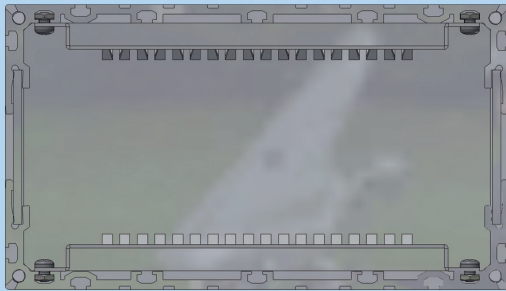
Ordering details for kit

	order no. 409
mounting angle	180975
mounting angle heavy	180976



Angle for stacking - heavy version

Both kits are suitable for housing depths of 250/200/150 mm
Both kits are only available for InterShell IP basic structure.



Card guide 2 U vertikal

Scope of delivery - depth 250/200 mm

- 2 card guide vertikal 2 U für depth 250/200 mm
- 12 head screw M 3 x 4
- 12 square nut M 3

Scope of delivery - depth 150 mm

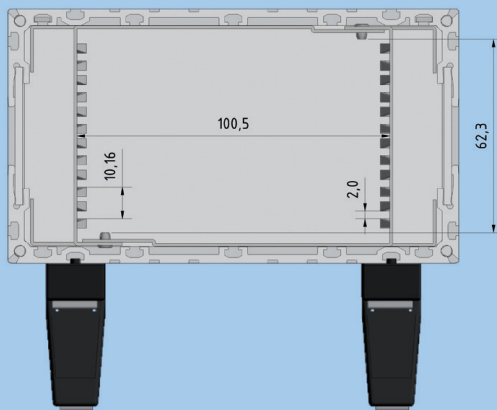
- 2 card guide vertikal 2 U für depth 150 mm
- 12 head screw M 3 x 4
- 12 square nut M 3

Material: steel

Surface : galvanised

Ordering details for kit

	order no. 409
Kit card guide 2 U 250/200 mm	180971
Kit card guide 2 U 150 mm	180981



card cage (horizontal framing for circuit boards as Euro-card format)

Scope of delivery horizontal

- 1 card cage komplett
- 6 head screw M 2,5 x 4
- 2 threaded strip M 2,5 x 39 TE anreihbar

Material: steel

Surface : galvanized

Ordering details for kit

	order no. 409
Kit card cage	180977

Kit only suitable for housing depths of 250 mm.
Kit only available for *InterShell IP* basic construction.

Technical changes and errors reserved.

Subrack *FLEXIBLE*

- ✓ Simple and fast assembly
- ✓ All-purpose
- ✓ RFI shielding can be added later



Subrack *RFI-SHIELDED*

- ✓ High shielding effectiveness
- ✓ Individual internal layout
- ✓ Complies with the latest IEEE standards
- ✓ For VME / VME64x



Subrack *InterRail®*

- ✓ For tough physical demands
- ✓ Vibration-proof
- ✓ For use e.g. in railway engineering, traffic engineering, power station engineering



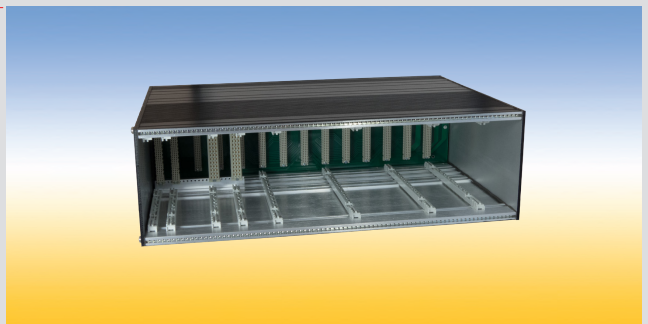
System-Modules CompactPCI

- ✓ Integrated bus board
- ✓ Integrated power supply unit
- ✓ Wired and tested
- ✓ Optionally with active cooling

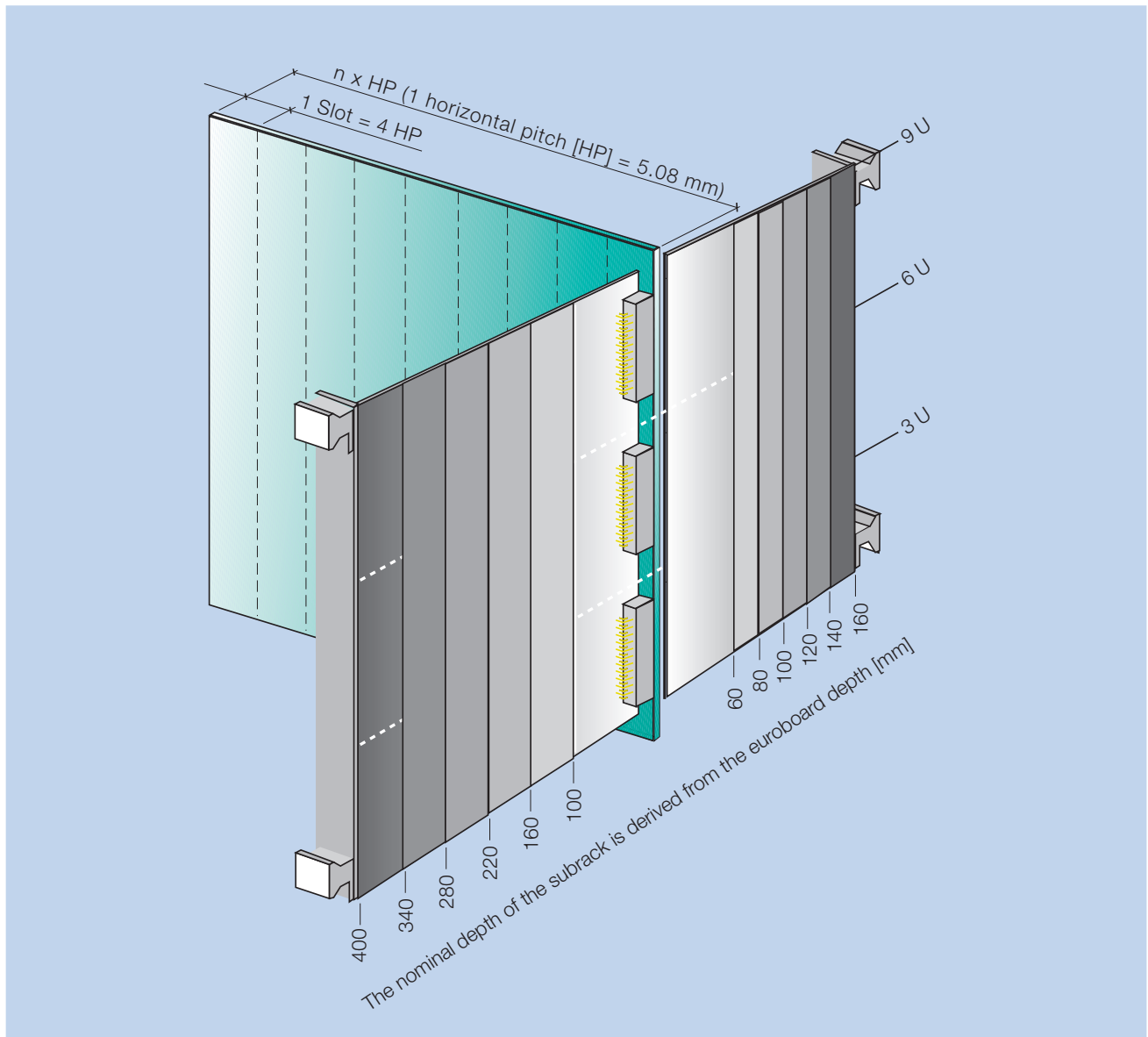


Subrack *InterProtect®*

- ✓ Shock and vibration resistant
- ✓ Water and dustproof
- ✓ Optimal HF-tightness



Systematics of the Intermas Subracks



Systematics

The illustration shows the systematics of the height, depth and width pitches of the Intermas-subracks.

The height of the subracks are in Units [U].
1 U is equivalent to 44.45 mm.

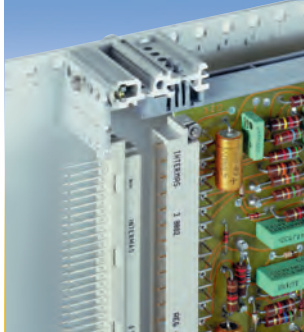
The nominal depth of the subracks is derived from the euroboard depth. Front inserted PCB's are generally specified in 60 mm-steps and for rear stuck PCB's in 20 mm-steps.
 For Intermas subracks depths in 10 mm-steps can be realized.

The width pitch is stated in horizontal pitches [HP].
1 HP is equivalent to 5.08 mm.

Busboards are specified in slots.
1 Slot is equivalent to 4 HP = 20.32 mm.

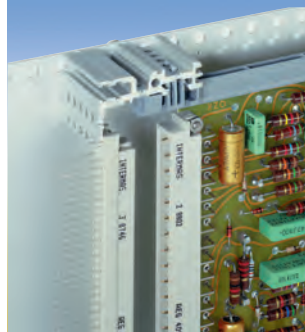
Structural Shapes of Subracks

There are three structural shapes, different in the wiring field.



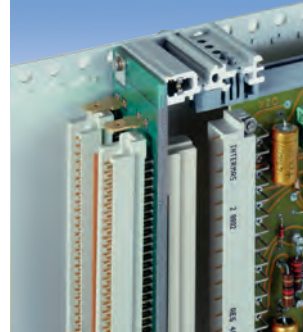
1. Type *alpha*

The rear profiles are suitable for mounting any appropriate wiring carrier, e. g. bus and connector securing devices, used with insulation strips or Z-rails for mounting connectors according to DIN 41 612.



2. Type *beta*

The rear profiles with integral Z-rail are suitable for the direct mounting of connectors to DIN 41 612.

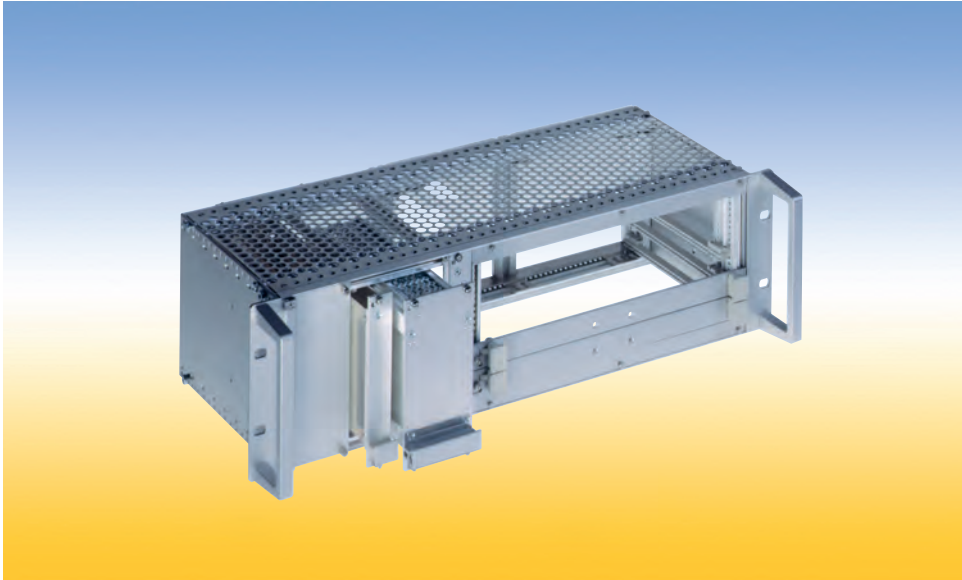


3. Type *delta*

The rear profiles are 2.6 mm deeper than in the type alpha, permitting direct mounting of multilayer backplanes and/or connector securing devices for mounting of DIN-connectors.

Please ask your local representative for your
individual system configuration.
You find your contact person on our homepage:
www.intermas-el.com

Subrack *FLEXIBLE*



Description

The special design features of the subrack *FLEXIBLE*:

- ✓ For mounting of the profile rails the side wall is perforated with a grid of 10 mm to allow installation of modules in depth steps of 10 mm. This results in a flexible amount of free space behind the wiring level or in front of the operating level.
- ✓ The profile rails are connected to the side wall at the front using a special screw which ensures electrical bonding of the parts via a ring cutter under the head.
- ✓ The front and rear profile rails can be interchanged such that the wiring level which is normally at the rear can be implemented at the front of the subrack.
- ✓ The extensive range of accessories allows individual configuration.
- ✓ Fast and simple assembly:
Easy positioning of the profile rails thanks to raised embossing on the side wall.
- ✓ There are 2 versions of this subrack:

1. The *FLEXIBLE Fi* subrack (with an integrated flange)

The combination of the side wall and mounting flange form a single unit. This is the simple and cost-effective version. This standard version can not be shielded.

2. The *FLEXIBLE Fs* subrack (with a separate flange)

The side wall and flange are separate components, so the flange can be screwed to the side panel at the front or the rear.

Advantages:

- Even if the flange is detached and repositioned from the front to the rear the subrack remains a physical unit and is thus also suitable for direct wall mounting.
- This version can be converted to an RFI-shielded subrack with little effort.

Mixed forms

For vertical mounting PCB's of varying heights, divider kits are available.

Delivery

Supplied as unassembled kits.

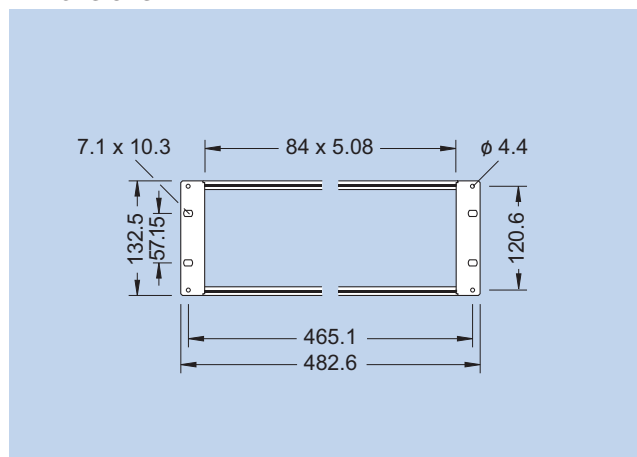
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

On request, delivered as assembled and wired subrack according your requirements.

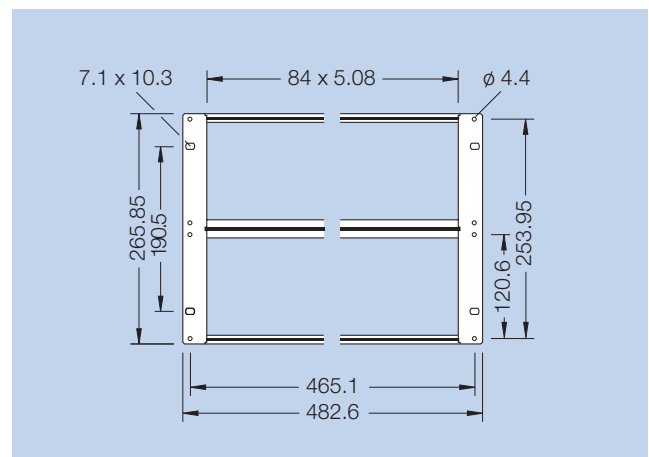
Technical data

Standards	compliant with DIN 41 494 / IEC 60297
width / horizontal pitch	84 usable HP / 5.08 mm
Depth of the inserted board	160, 220, 280 mm (nom. depth)
Depth increment-side panel	10 mm
Connector mounting	M 2.5 in increments of 5.08 mm for DIN 41 612, VG 95 324 and EC 60603-2 connectors
Materials	screws: steel other parts: aluminum
Finish	screws: galvanized and passivated colorless subrack Fi: anodized; cut areas: blank subrack Fs: passivated
Protection class	DIN 40050 IP 00, IP 20 with cover panels contact protection in accordance with VDE 0160
Utilization category	-25 °C, +70 °C, 75% relative humidity
Protective grounding	all metal parts are electrically bonded to one another following assembly in accordance with VDE 100 D 12.65, § 6 Nb.

Dimensions



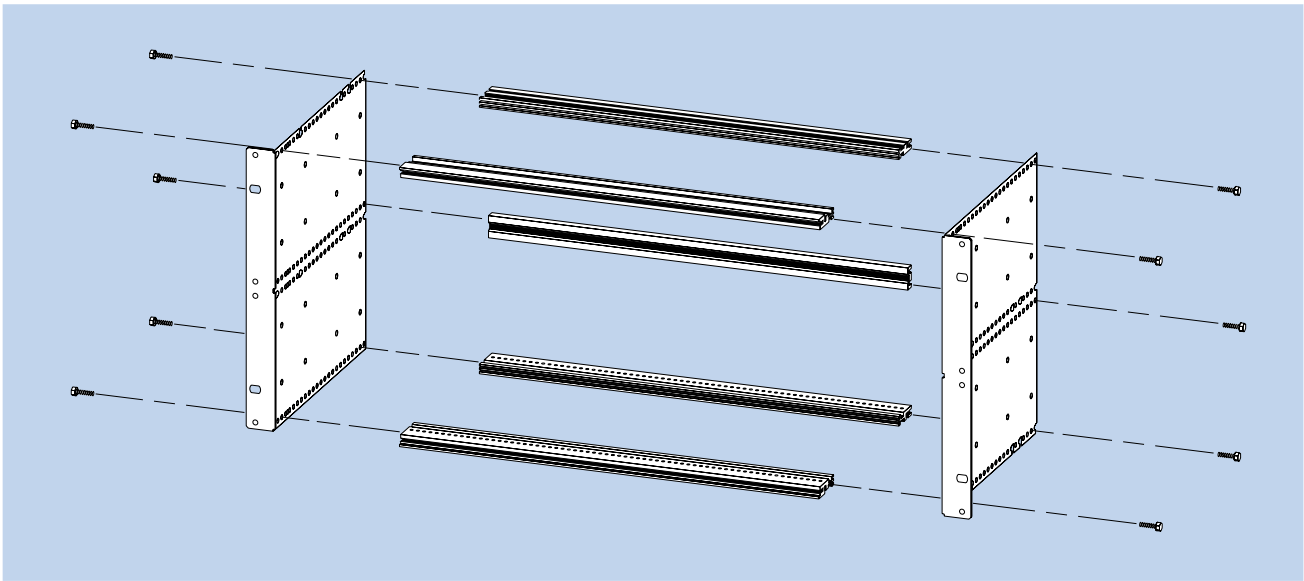
Front of subrack 3 U



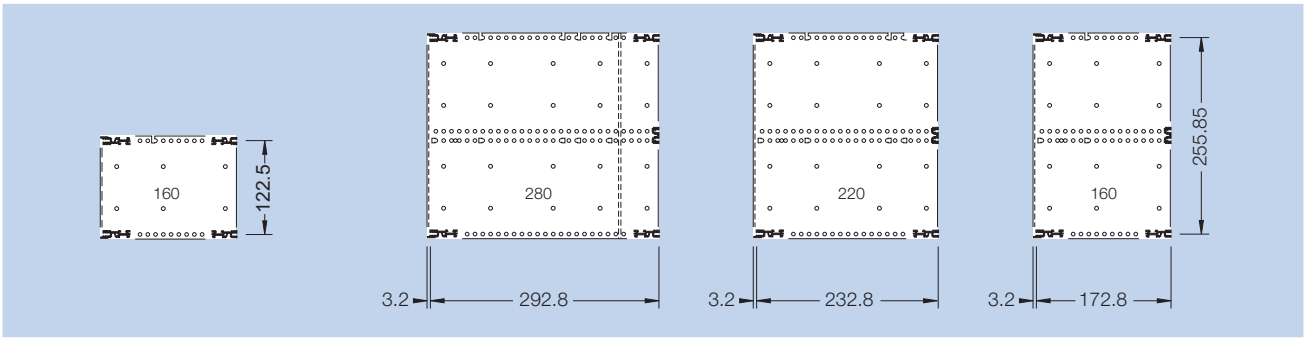
Front of subrack 6 U

Subrack FLEXIBLE Fi

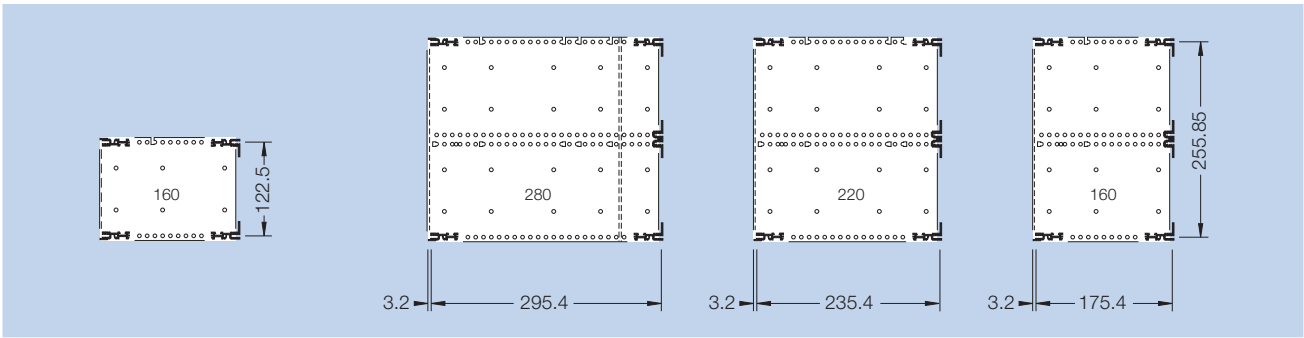
Subracks



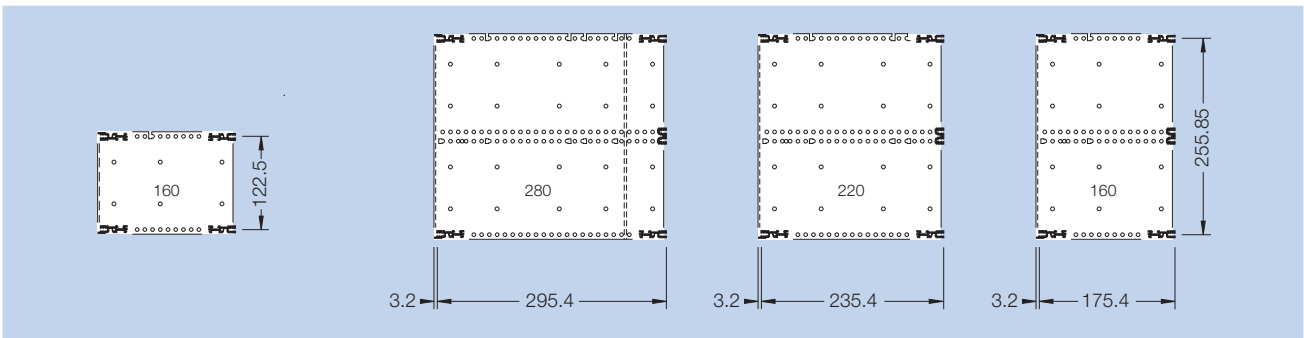
Subrack FLEXIBLE Fi



Depth dimensions type alpha 3 U and 6 U



Depth dimensions type beta 3 U and 6 U



Depth dimensions type delta 3 U and 6 U

Ordering details for kits

	nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>beta</i> order no. 409	type <i>delta</i> order no. 409
3 U - subrack				
<i>FLEXIBLE Fi</i> - 84-3-160	160	087340	087440	087388
<i>FLEXIBLE Fi</i> - 84-3-220	220	087341	087441	087389
<i>FLEXIBLE Fi</i> - 84-3-280	280	087342	087442	087390
6 U - subrack				
<i>FLEXIBLE Fi</i> - 84-6-160	160	087364	087446	087462
<i>FLEXIBLE Fi</i> - 84-6-220	220	087365	087447	087463
<i>FLEXIBLE Fi</i> - 84-6-280	280	087366	087448	087464

Delivery

	pieces per kit <i>alpha</i> 3 HE	pieces per kit <i>alpha</i> 6 HE	pieces per kit <i>beta</i> 3 HE	pieces per kit <i>beta</i> 6 HE	pieces per kit <i>delta</i> 3 HE	pieces per kit <i>delta</i> 6 HE
Side panel Fi, anodized	2	2	2	2	2	2
Front pr	2	2	2	2	2	2
Rear pr	2	2	-	-	-	-
Rear pr	-	-	2	2	-	-
Rear pr	-	-	-	-	2	2
Center pr	-	1	-	-	-	-
Center pr	-	-	-	1	-	-
Center pr	-	-	-	-	-	1
Mounting parts kit	1	1	1	1	1	1
Threaded strip	2	2	2	2	2	2

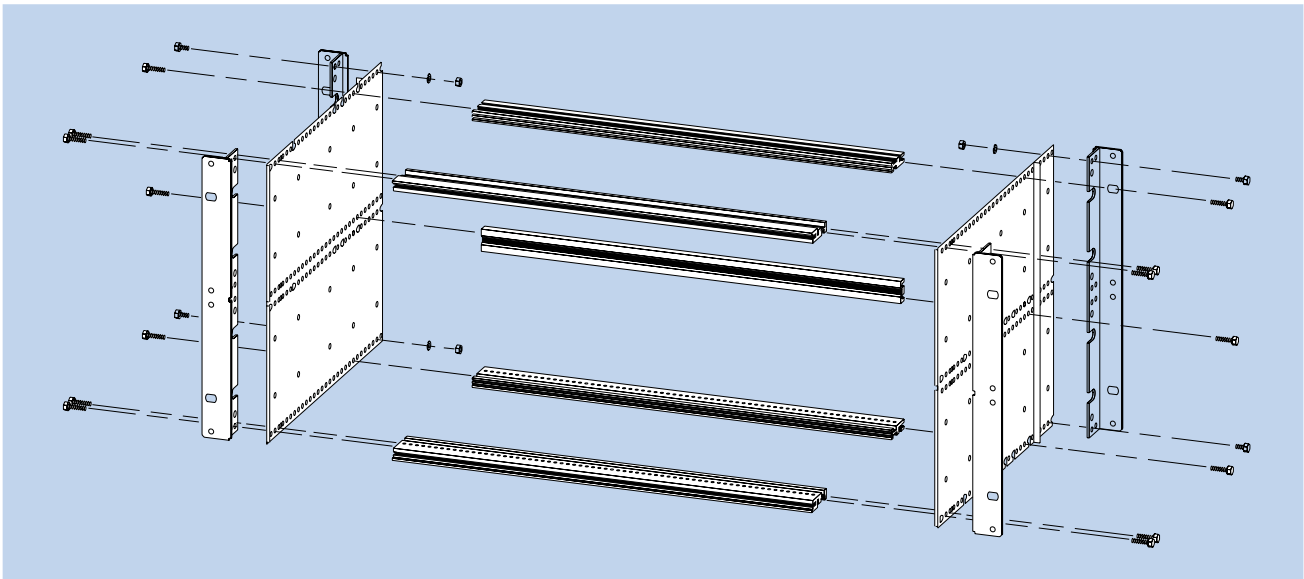
Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
Kits with 2 cover plate ø 8.5 mm and mounting parts	
Cover plates kit slide-in 160	162700
Cover plates kit slide-in 220	162701
Cover plates kit screw-on 160	162703
Cover plates kit screw-on 220	162704
Cover plates kit screw-on 280	162705

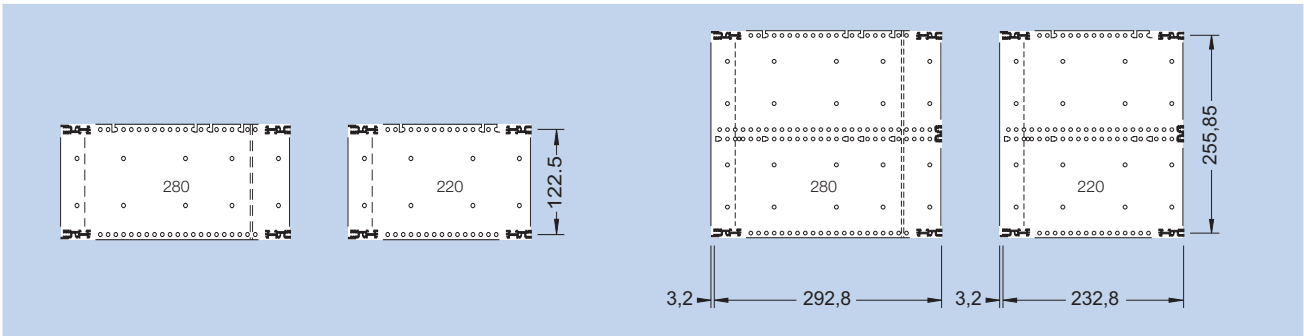
Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *FLEXIBLE* Fs

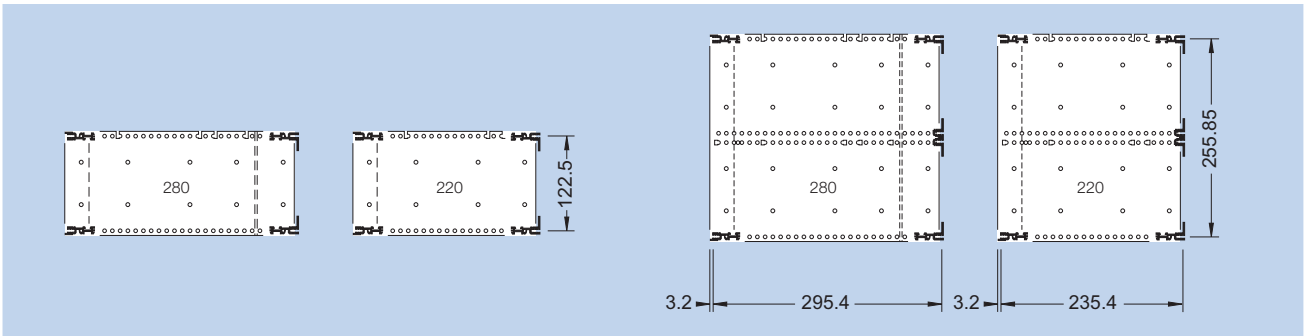
Subracks



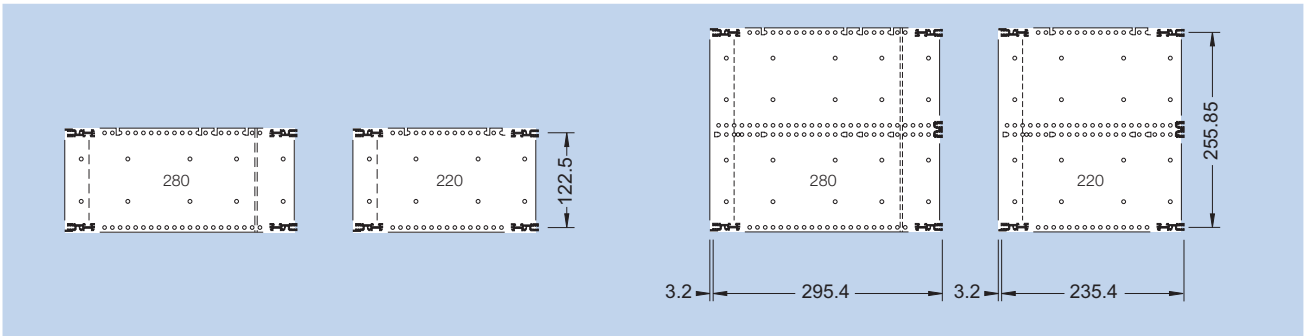
Subrack *FLEXIBLE* Fs



Depth dimensions *Fs* type alpha 3 U and 6 U



Depth dimensions *Fs* type beta 3 U and 6 U



Depth dimensions *Fs* type delta 3 U and 6 U

Ordering details for kits

	nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>beta</i> order no. 409	type <i>delta</i> order no. 409
3 U - subrack				
<i>FLEXIBLE Fs</i> - 84-3-220	220	094700	094704	094708
<i>FLEXIBLE Fs</i> - 84-3-280	280	094701	094705	094709
6 U - subrack				
<i>FLEXIBLE Fs</i> - 84-6-220	220	094702	094706	094710
<i>FLEXIBLE Fs</i> - 84-6-280	280	094703	094707	094711

Delivery

	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U	pieces per kit <i>beta</i> 3 U	pieces per kit <i>beta</i> 6 U	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel Fs, passivated	2	2	2	2	2	2
Flange separated, anodized	2	2	2	2	2	2
Front pr	2	2	2	2	2	2
Rear pr	2	2	-	-	-	-
Rear pr	-	-	2	2	-	-
Rear pr	-	-	-	-	2	2
Center pr	-	1	-	-	-	-
Center pr	-	-	-	1	-	-
Center pr	-	-	-	-	-	1
Mounting parts kit	1	1	1	1	1	1
Threaded strip	2	2	2	2	2	2

Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
Kits with 2 cover plates ø 8.5 mm and mounting parts	
Cover plates kit screw-on 220	162704
Cover plates kit screw-on 280	162705

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *RFI-SHIELDED*



Description

The system dimensions of the *RFI-SHIELDED* subrack are based on those of the *FLEXIBLE* subrack as a logical further development to produce the perfectly shielded subrack. This allows unrestricted use of the extensive and complete range of accessories.

The special design features of the *RFI-SHIELDED* subrack:

- ✓ The refined RFI shielding concept enables high shielding effectiveness.
- ✓ The stable stainless steel contact springs ensure permanent and reliable bonding, even after a large number of plug-in cycles.
- ✓ The perforated RFI cover plates guarantee optimal air flow for improved heat dissipation.
- ✓ The use of high-quality, seawater-resistant aluminum alloys and stainless steel materials removes, for the most part, the need for unnecessary, environmentally harmful surface treatment.
- ✓ There are three versions of this subrack:

1. Subrack *RFI-SHIELDED*
The standard RFI-shielded version.

2. Subrack *RFI-SHIELDED IEEE*
The front is in accordance with IEEE 1101.10.
The special profile rail is designed for the use of insertion and removal handles (optionally with a hot-swap function) for overcoming high insertion and removal resistance.

The card guides are fitted with mechanical coding systems and special bonding for electrostatic discharge.

3. Subrack *RFI-SHIELDED IEEE / Rear I/O*

The front and the rear are in accordance with IEEE 1101.10/11. This enables insertion and removal of modules with a front panel from both the front and the rear of the subrack.

Mixed forms

For vertical mounting PCB's of varying heights, divider kits are available.

Delivery

Supplied as unassembled kits.

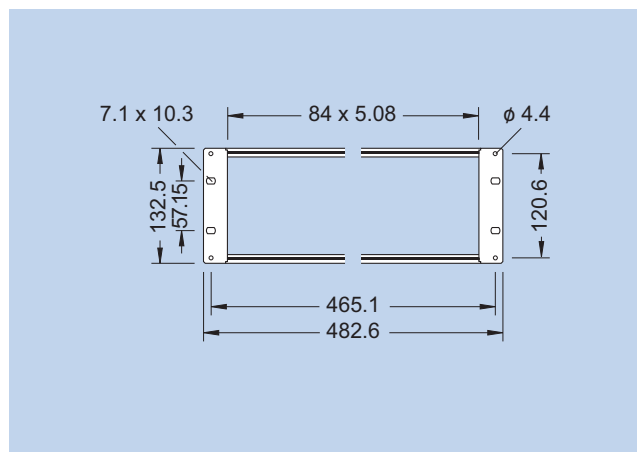
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

On request, delivered as assembled and wired subrack according your requirements.

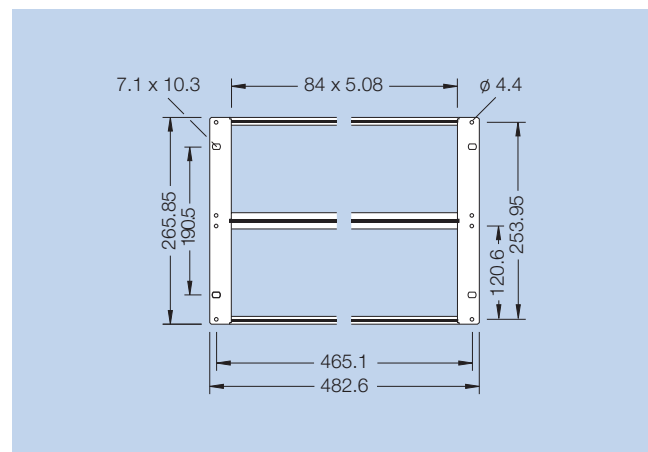
Technical data

Standards	compliant with DIN 41 494 D IEC 60297-3, IEEE 1101.10
Width / horizontal pitch	84 usable HP / 5.08 mm
Depth of the inserted board	160, 220, 280 mm (nom. depth), 80 mm at the rear
Depth increment-side panel	10 mm
Connector mounting	M 2.5 in increments of 5.08 mm for DIN 41 612, VG 95 324 and EC 60603-2 connectors
Materials	screws: steel contact springs: stainless steel other parts: aluminum
Finish	screws: galvanized und passivated side panels and cover plates: blank (seawater-resistant) other parts: passivated
Protection class	DIN 40050 IP 00, IP 20 with cover panels contact protection in accordance with VDE 0160
Utilization category	-25 °C, +70 °C, 75% relative humidity
Protective grounding	all metal parts are electrically bonded to one another following assembly in accordance with VDE 100 D 12.65, § 6 Nb.

Dimensions

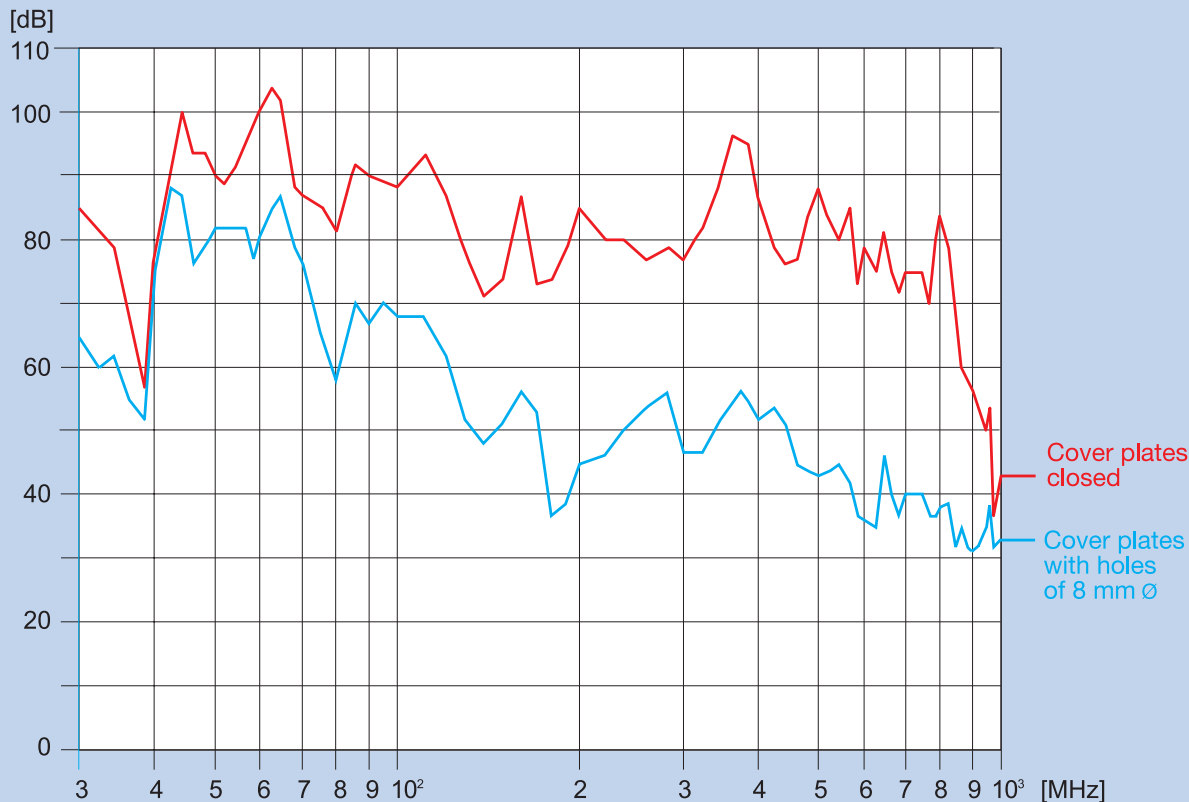


Front of subrack 3 U



Front of subrack 6 U

Measurement Configuration, Tests, Measurement Results



Shielding efficiency as function of grade of perforation of the covers

1. Measurement configuration

The measurement configuration fundamentally complies with the requirements of VG 95 373, Part 15, measurement method KS 04 G. The subrack stood in the middle of a shielded anechoic chamber. The receiver antenna was in the center of the subrack and the transmitter antenna was mounted at a distance of 1 m from it. The subrack was positioned such that the perforated cover panel faced the transmitter antenna. The measurement receiver was located inside the measurement chamber, approximately 2 m from the test object; the measurement transmitter and amplifier were outside the chamber.

2. Tests

All measurements were performed at a constant transmitter output of -5dBm at 50V. The series of measurement was performed with a free-standing receiver antenna. The next measurements were then performed with the receiver antenna inside the subrack. The shielding effectiveness SE [dB] is the difference between the measurement levels obtained. Two subrack types were tested, one with a perforated cover panel and one with a solid cover panel. Perforation diameters of 3-8 mm essentially lead to the same result:

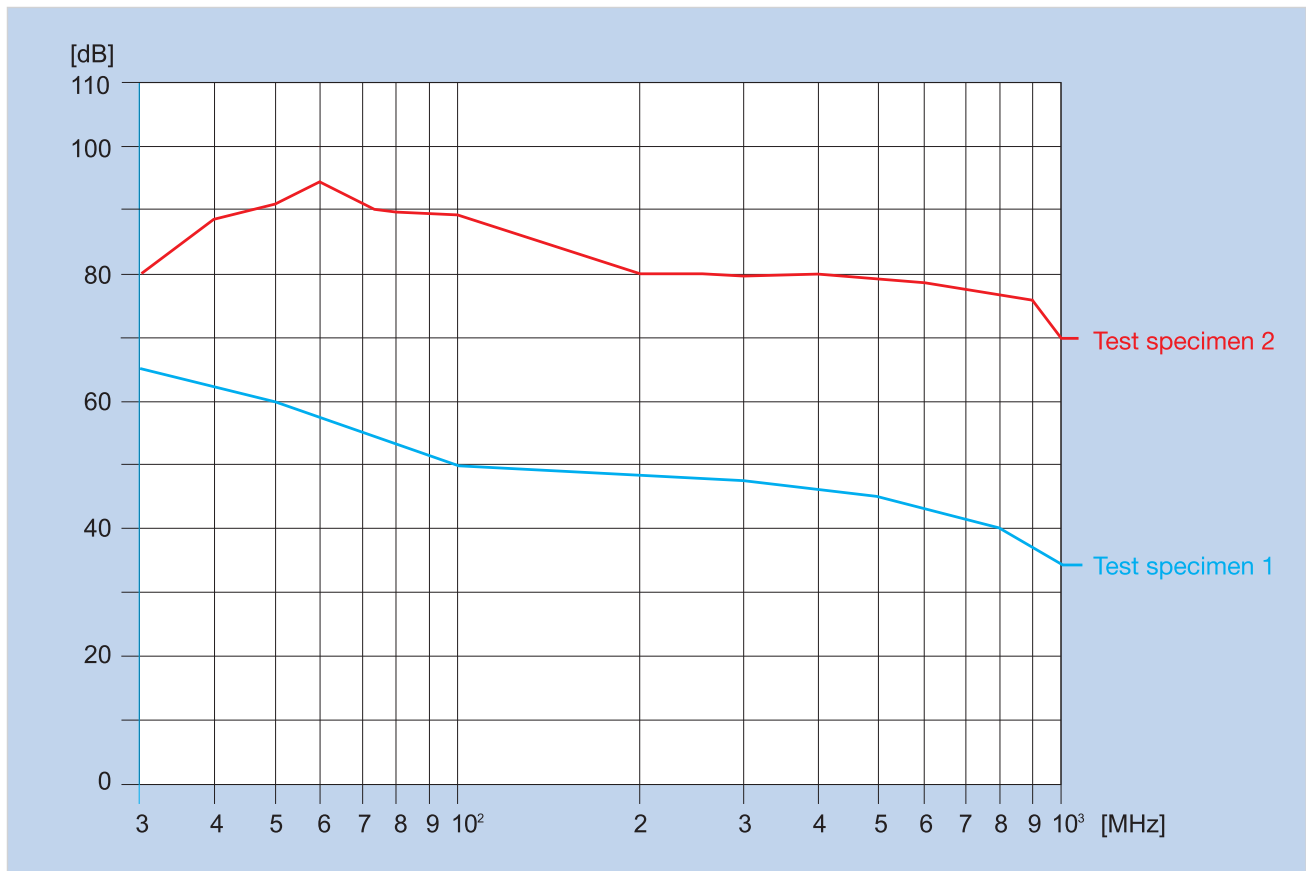
The two related measurement curves can be seen in the diagram above.

Frequency steps

Frequency range [MHz]	Measurement step [MHz]
30 - 70	2
70 - 100	5
100 - 200	10
200 - 1000	20

3. Measurement results, summary

Compared to the subrack with a perforated cover panel the subrack with a solid cover panel exhibits a significantly higher level of shielding effectiveness, on average 20 dB higher in the lower frequency range (30 - 180 MHz) and on average 40 dB higher in the upper range (180 MHz - 1 GHz). Above approximately 800 MHz the shielding effectiveness is determined by the distances between the contact points between the subrack and the front panels. For subracks in accordance with IEEE P 1101.10 this boundary frequency lies at 1.2 to 1.5 GHz depending on the subrack design.



Shielding effectiveness

Shielding effectiveness

The shielding effectiveness of the empty subrack was determined in accordance with VG 95 373, Part 15.

Testing organisation

The measurements were performed in the Siemens Institute for Quality Engineering, Testing and Certification in Munich, Germany.

Test object

Two subracks with a height of 6 U, a width of 84 HP and a depth of 320 mm were tested:

Test specimen 1

Subrack 1 was closed at the top and bottom with perforated cover panels (Ø 4/5 x 4 mm), at the rear with an 85 HP front panel and at the front with twenty-one 4 HP profile front panels.

The elements were bonded to each other via stainless steel RFI gaskets.

Test specimen 2

Subrack 2 was closed at the top and bottom with solid cover panels and at the front and the rear with an 85 HP front panel. The elements were bonded to each other via stainless steel RFI gaskets.

Advice on use

To achieve optimal shielding the subrack must be closed at all sides using RFI gaskets, i.e. it must be fitted at the front and the rear with front panels or sub-assemblies.

Implementation of the Shielding

The RFI-SHIELDED subrack is fitted with stainless steel springs on all sides for defined bonding of all individual elements to each other. The only exceptions are the transitions of the cover plates to the side panel. In this case the bonding is performed using multiple screw connections at short distances from one another. The use of RFI front panels with bonding points at the side and bonding areas in the case of the extruded profile front panel results in a shielded subrack with shielding effectiveness levels as shown in the diagram below.

The details of the technical implementation using stainless steel springs:

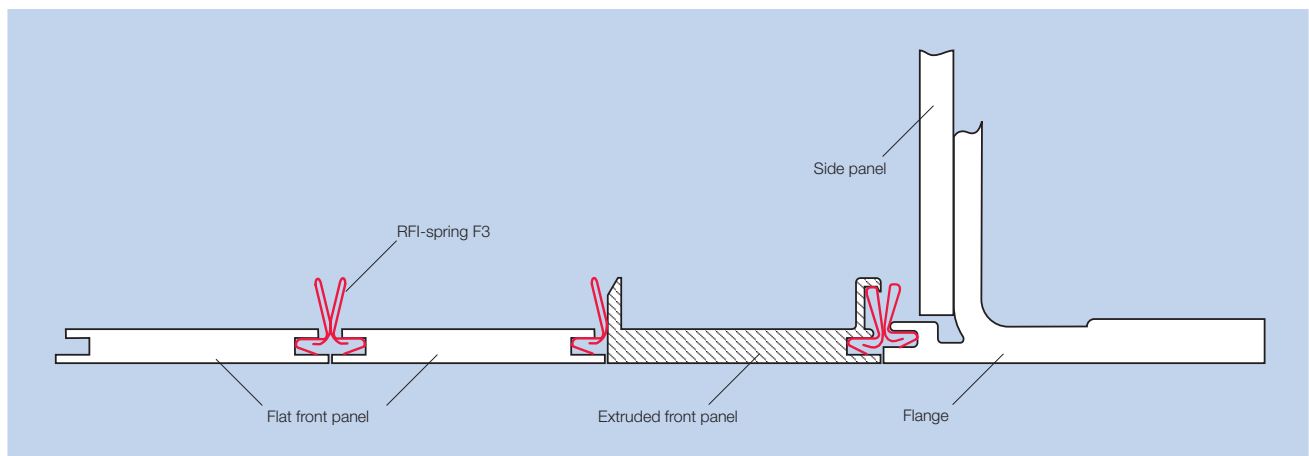
1. Bonding of the cover panel to the profile channel via the RFI spring A2 which is inserted into the groove of the profile.
2. The RFI spring P2 is snapped onto the profile channel at both the front and the rear and at its front face creates the bonding to the front panels and the rear wall.

3. The RFI spring F3 is used in the subrack flange. This spring is also used at the sides of the RFI front panels and creates the bonding between the front panels and between the front panel and the flange or side panel.

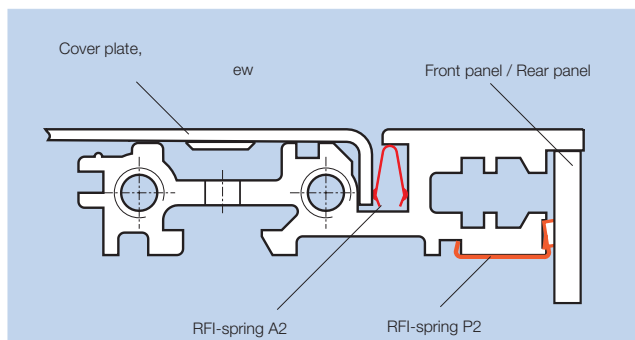
4. The cover panel is screwed directly to the side panel; springs are thus not necessary here.

The subrack, its paneling elements and the cover panels are made of high-quality seawater-resistant aluminum alloys.

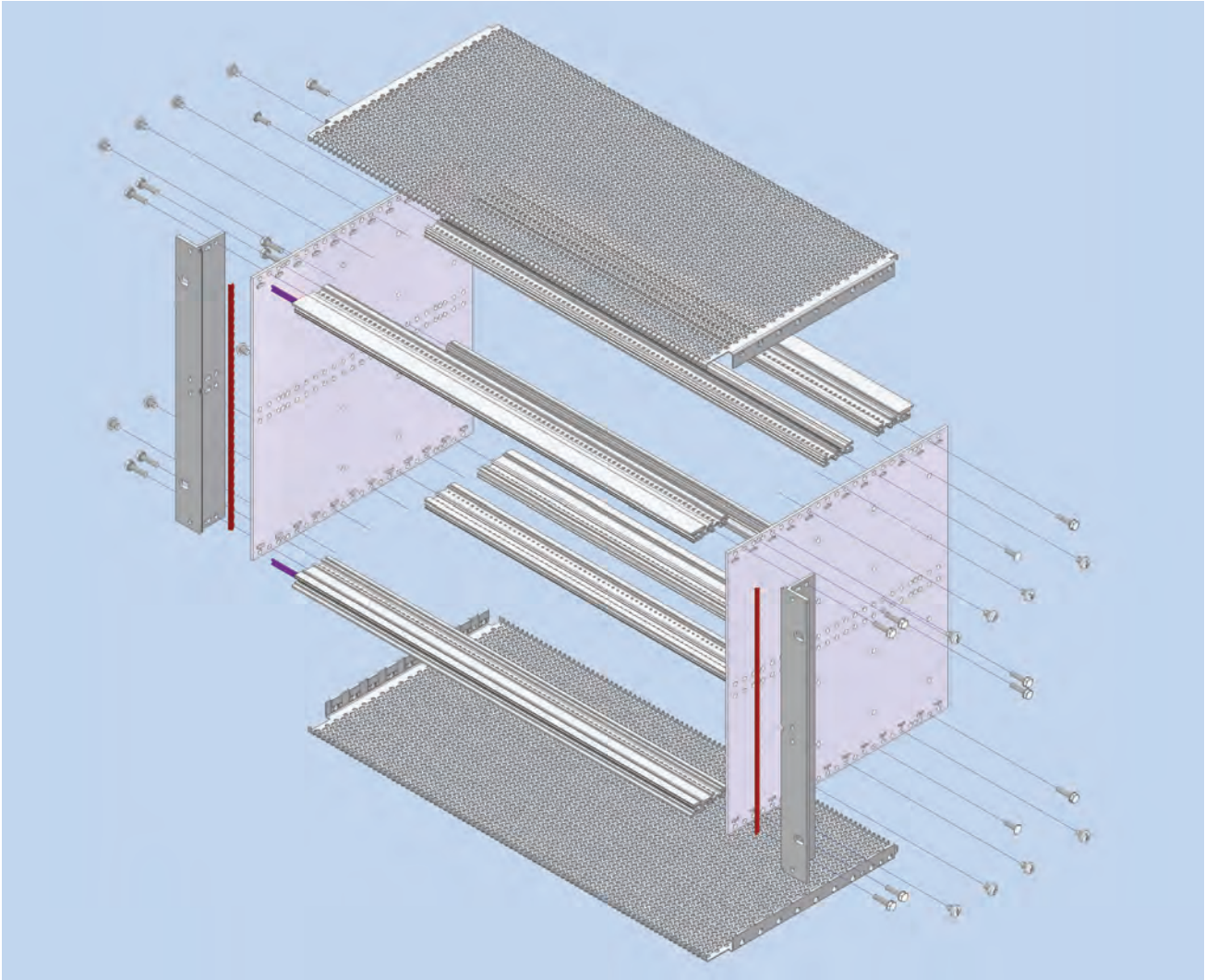
The spring strips are made of stainless steel. This well-balanced combination of materials and surface treatment ensures high corrosion and ageing resistance and achievement of the necessary low contact resistance between the individual elements.



Sealing of the vertical splices between the front panels and between front panel and flange



Bonding with RFI-springs

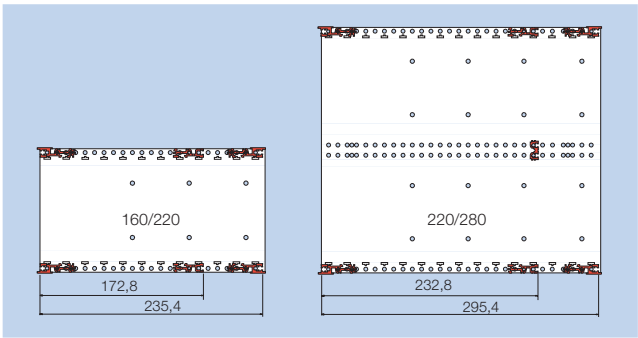


Assembling example

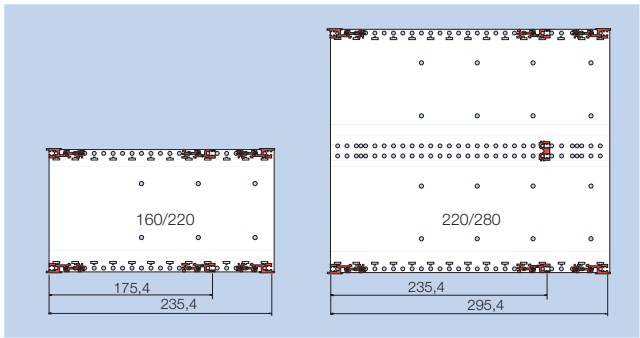
Delivery example

	pieces
	6 U
Side panel	2
Flange	2
RFI-spring F3 (flange/front panel)	2
Threaded strip (front only)	2
Cover plates punched holes Ø 4 / 5.2x4 mm	2
RFI-spring A2 (cover plate/profile)	4
Mounting parts	1
Front profile	2
Rear profile	2
Inside profile	2
Center profile	1

Subrack *RFI-SHIELDED*



Depth dimensions type alpha 3 U and 6 U



Depth dimensions type delta 3 U and 6 U

Ordering details for kits

	PCB depth/ nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>delta</i> order no. 409
3 U - subrack			
<i>RFI-SHIELDED</i> - 84-3-220	160/220	162708	162710
<i>RFI-SHIELDED</i> - 84-3-280	220/280	162709	162711
6 U - subrack			
<i>RFI-SHIELDED</i> - 84-6-220	160/220	162712	162714
<i>RFI-SHIELDED</i> - 84-6-280	220/280	162713	162715

Delivery

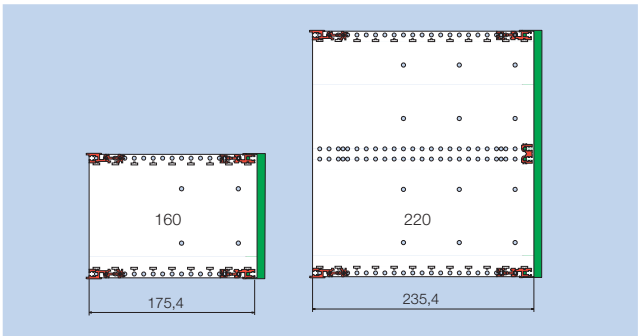
	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only)	2	2	2	2
<small>For your custom subrack: please order threaded strips separately.</small>				
Cover plate punched holes Ø 4 / 5.2 x 4 mm	2	2	2	2
RFI-spring A2 (cover plate/profile)	4	4	4	4
Mounting parts kit	1	1	1	1
Front profile/rear V12-RFI-85	4	4	4	4
Inside profile-HE1-85	2	2	-	-
Center profile-ME1-85	-	1	-	-
Inside profile-HE2-85	-	-	2	2
Center profile-ME2-85	-	-	-	1

Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *RFI-SHIELDED* with Rear Cover



Depth dimensions type delta 3 U and 6 U

Ordering details for kits

	PCB depth [mm]	type <i>delta</i> order no. 409
3 U - subrack		
<i>RFI-SHIELDED</i> - 84-3-160	160	162716
<i>RFI-SHIELDED</i> - 84-3-220	220	162717
6 U - subrack		
<i>RFI-SHIELDED</i> - 84-6-160	160	162718
<i>RFI-SHIELDED</i> - 84-6-220	220	162719

Delivery

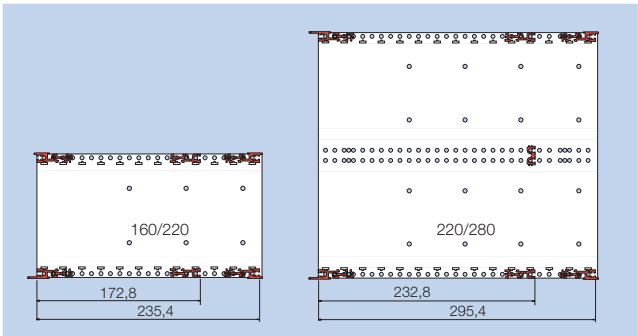
	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel	2	2
Flange	2	2
Cover	1	1
RFI-spring F3 (flange/front panel)	2	2
Threaded strip (front only)	2	2
<small>For your custom subrack please order threaded strips separately.</small>		
Cover plates punched holes Ø 4 / 5.2 x 4 mm	2	2
RFI-spring A2 (cover plate/profile)	4	4
Mounting parts kit	1	1
Front profile V12-RFI-85	2	2
Rear profile H22-RFI-85 for scrow on cover	2	2
Center profile ME2-85	-	1

Accessories

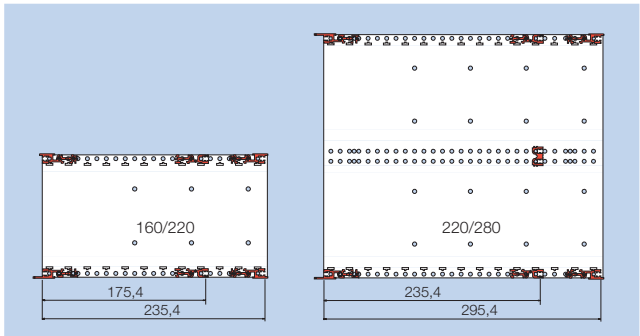
	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *RFI-SHIELDED IEEE*



Depth dimensions IEEE type alpha 3 U and 6 U



Depth dimensions IEEE type delta 3 U and 6 U

Ordering details for kits

	PCB depth/ nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>delta</i> order no. 409
3 U - subrack			
<i>RFI-SHIELDED - IEEE - 84-3-220</i>	160/220	162720	162722
<i>RFI-SHIELDED - IEEE - 84-3-280</i>	220/280	162721	162723
6 U - subrack			
<i>RFI-SHIELDED - IEEE - 84-6-220</i>	160/220	162724	162726
<i>RFI-SHIELDED - IEEE - 84-6-280</i>	220/280	162725	162727

Delivery

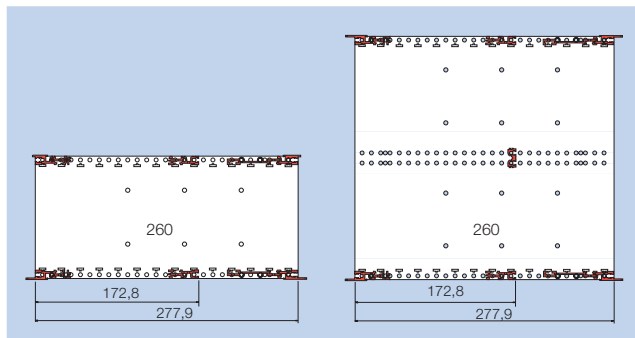
	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only)	2	2	2	2
<small>For your custom subrack please order threaded strips separately.</small>				
Cover plates punched holes $\varnothing 4 / 5.2 \times 4\text{mm}$	2	2	2	2
RFI-spring A2 (cover plate/profile)	4	4	4	4
Mounting parts kit	1	1	1	1
Front profile/rear V12-IEEE-85	1	2	1	2
Front profile/rear V12-RFI-85	3	2	3	2
Inside profile-HE1-85	2	2	-	-
Center profile inside ME1-85	-	1	-	-
Inside profile-HE2-85	-	-	2	2
Center profile inside ME2-85	-	-	-	1

Accessories

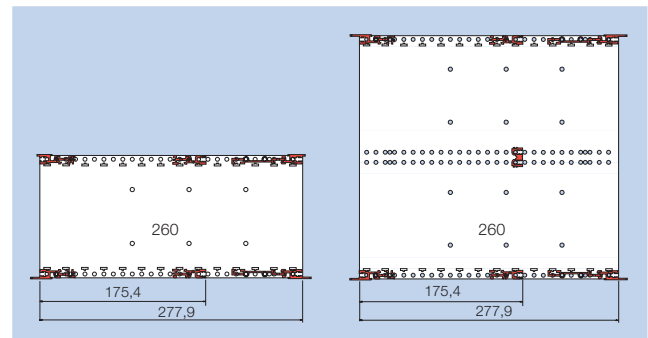
	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *RFI-SHIELDED* Rear I/O



Depth dimensions Rear I/O type alpha 3 U and 6 U



Depth dimensions Rear I/O type delta 3 U and 6 U

Ordering details for kits

	nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>delta</i> order no. 409
3 U - subrack			
<i>RFI-SHIELDED</i> Rear I/O-84-3-160+80	260	162728	162729
6 U - subrack			
<i>RFI-SHIELDED</i> Rear I/O-84-6-160+80	260	116484	161034

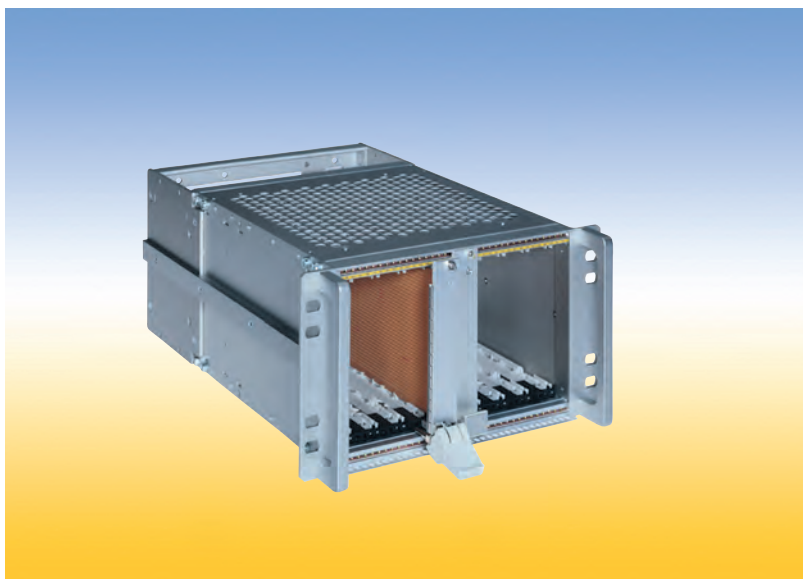
Delivery

	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only)	2	2	2	2
<small>For your custom subrack please order threaded strips separately.</small>				
Cover plates punched holes $\varnothing 4 / 5.2 \times 4\text{mm}$	2	2	2	2
RFI-spring A2 (cover plate/profile)	4	4	4	4
Mounting parts kit	1	1	1	1
Front profile V12-IEEE-85	1	2	1	2
Front profile V12-RFI-85	1	-	1	-
Rear profile-V1HUCK-IEEE-85	1	2	1	2
Rear profile-V1HUCK-85	1	-	1	-
Inside profile-HE1-85	2	2	-	-
Inside profile-HE2-85	-	-	2	2
Support profile for card guide	2	2	2	2

Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547

Further details and possibilities of other applications are in the chapter Subrack-Accessories.



Description

The system dimensions of the InterRail subrack are based on those of the *FLEXIBLE Fi* as a logical further development to produce a subrack for heavy-duty use. This allows unrestricted use of the extensive range of accessories.

The special design features of the InterRail subrack:

- ✓ Profile rails with a high section modulus guarantee resistance to vibrations.
- ✓ The refined RFI-shielding concept enables high shielding effectiveness (see the RFI-SHIELDED chapter).
- ✓ There are four versions of this subrack:

1. Subrack *InterRail*

Shielding is not possible for the unsealed version.

2. Subrack *InterRail RFI*

The RFI-shielded version.

3. Subrack *InterRail RFI - IEEE*

The front is in accordance with IEEE 1101.10. The special profile rail is designed for the use of insertion and removal handles (optionally with a hot-swap function) for overcoming high insertion and removal resistance. The card guides are fitted with mechanical coding systems and special bonding for electrostatic discharge.

4. Subrack *InterRail SNCF*

The special subrack with the certification from the French Railways.

Mixed forms

For vertical mounting PCB's of varying heights, divider kits are available.

Delivery

Supplied as unassembled kits.

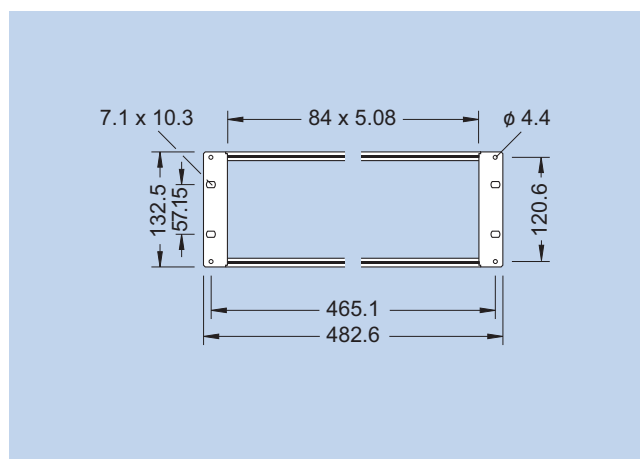
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

On request, delivered as assembled and wired subrack according your requirements.

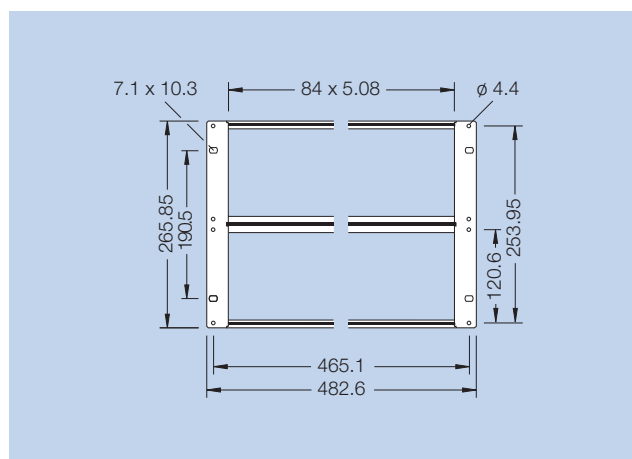
Technical data

Standards	IEC 60297, DIN 41 494, IEEE 1101.10, DIN EN 50 155 NF F 60-002, NF F 61-012, NF F 67-012
Width / horizontal pitch	84 usable HP / 5.08 mm (36 HP at SNCF)
Depth of the inserted board	160, 220, 280 mm (nom. depth)
Connector mounting	M 2.5 in increments of 5.08 mm for connectors, DIN 41 612, VG 95 324 and EC 60603-2
Materials	screws: steel contact springs: stainless steel or tin-plated other parts: aluminum
Finish	screws: galvanized und passivated other parts: passivated
Protection class	DIN 40 050 IP 20 (with cover plates) contact protection in accordance to VDE 0160
Utilization category	-25 °C, +70 °C, 75% relative humidity
Protective grounding	all metal parts are electrically bonded to one another following assembly in accordance with VDE 100 D 12.65, § 6 Nb.

Dimensions



Front of subrack 3 U



Front of subrack 6 U

■ Testing in accordance with DIN EN 50 155

The tests are passed if no damage or malfunctions are determined.

The tests are performed from 5 to 150 Hz with the assigned accelerations and amplitudes.

■ Tests in accordance with SNCF NF standards

The tests are passed if the maximum resonance sharpness of ca. 10 g is not exceeded in any axis.

Certification

Based on development and manufacture certified in accordance with DIN ISO 9001 this SNCF-tested subrack complies with the SNCF standards NF F 60-002 (testing standard), NF F 61-005 (dimensions standard), NF F 67-012 (test boards) and DIN EN 50 155.

In addition to being certified for railway applications the InterRail subrack is also approved for use with the French National Railways.

Test specimen

Subrack with dimensions H = 6 U, W = 84 HP, D = 220 mm

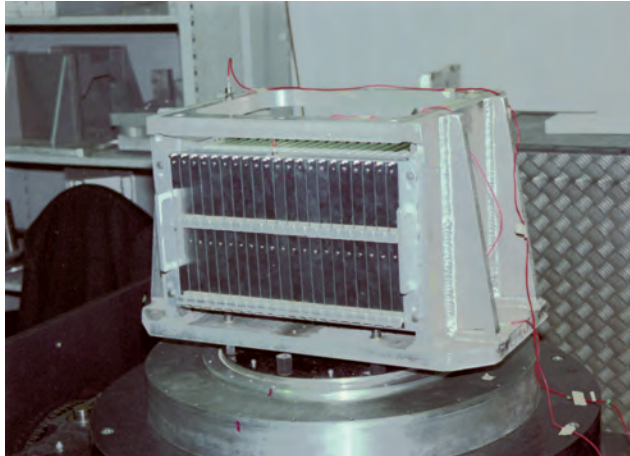
Test sequence

The following tests were performed in the 3 axes X, Y and Z on the subrack with the PCB configuration listed below:

- Determination of the critical resonance frequency
- An endurance test at the resonance frequency The vibration excitation was performed between 7 and 70 Hz at a constant acceleration of 1 g in 12 cycles each lasting 10 minutes.

In total the subrack was vibrated for eight hours, 2 hours each with the following alternating board configuration:

- In the X-axis
21 x 420 g boards
- In the Z-axis
21 x 420 g boards
- In the Y-axis
21 x 240 g boards
- In the Z-axis
4 x 420 g boards plus a 6.22 kg cassette installed in the center.



Measurement results with non-stiffened boards

Excerpt from the results of the measurements in the Y-axis, measurement on the front profile rail: Maximum resonance sharpness 10.8 g at 52.5 Hz. Measurement at the rear on the side panel extension: Maximum resonance sharpness 9.6 g at 52.5 Hz (see the measurement curve).

Measurement results with stiffened boards

These measurements are not demanded by the testing standard but were nonetheless also performed.

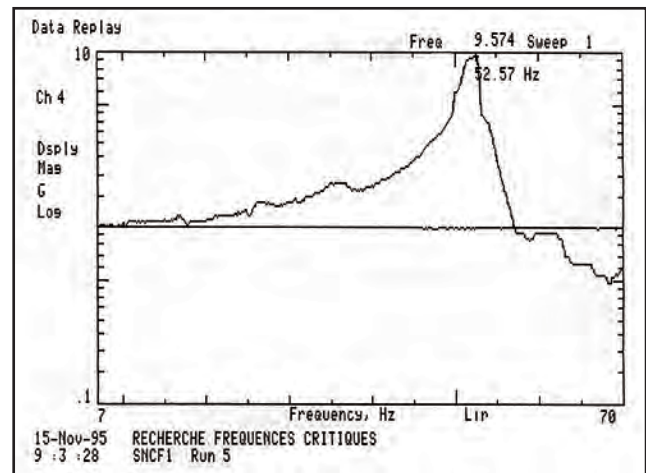
Excerpt from the results of the measurement in the Y-axis, measured on the front profile rail: Maximum resonance sharpness 7.6 g at 47.1 Hz.

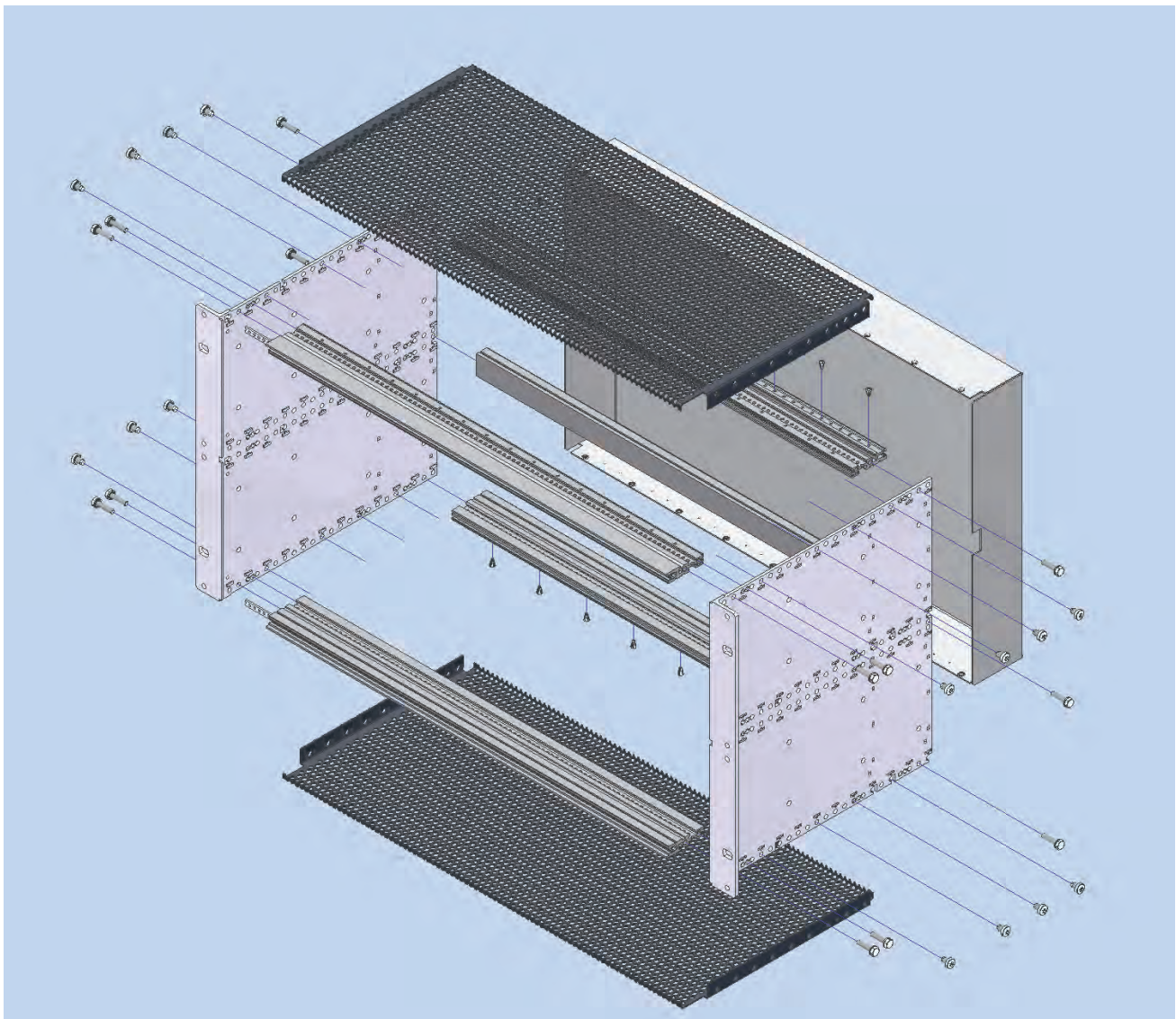
Measurement at the rear on the side panel extension:

Maximum resonance sharpness 6.5 g at 47.1 Hz.

Test result

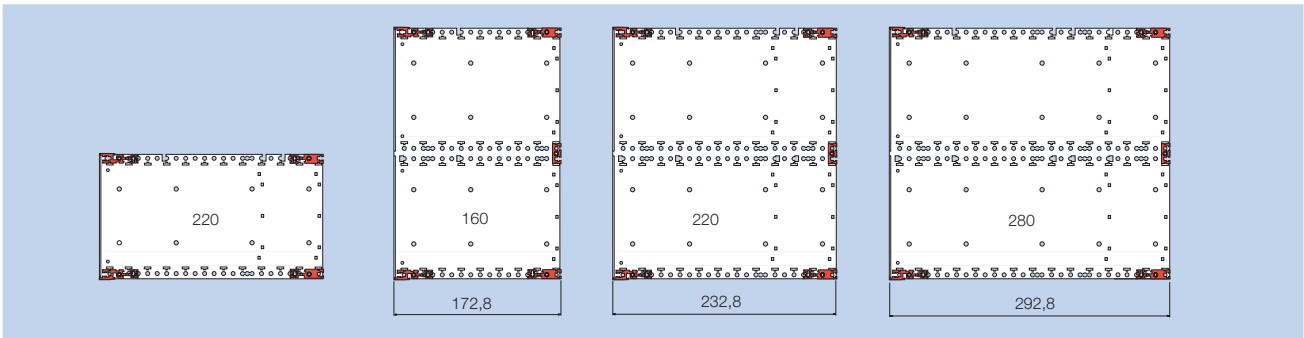
Following vibration for a total of 8 hours the test specimen showed no signs of damage.





Delivery example

	pieces
	6 U
Side panel	2
Cover	1
Threaded strip (front only)	2
Cover plates punched holes Ø 4 / 5.2x4 mm	2
RFI-spring A2 (cover plate/profile)	4
Mounting parts	1
Front profile	2
Rear profile	2
Inside profile	2
Center profile	1



Depth dimensions type alpha 3 U and 6 U

Subracks

Ordering details for kits

	nom. depth [mm]	type <i>alpha</i> order no. 409
3 U - subrack		
<i>InterRail</i> - 84-3-160	160	162610
<i>InterRail</i> - 84-3-220	220	162611
<i>InterRail</i> - 84-3-280	280	162612
6 U - subrack		
<i>InterRail</i> - 84-6-160	160	162613
<i>InterRail</i> - 84-6-220	220	162614

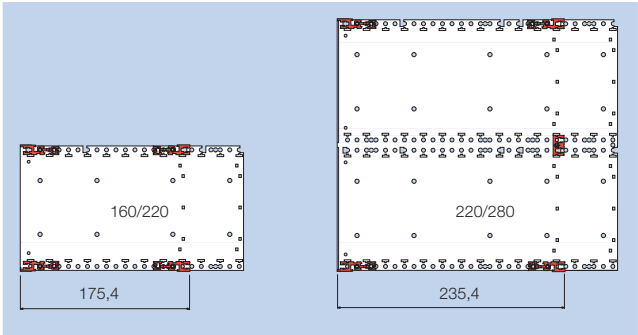
Delivery

	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U
Side panel	2	2
Threaded strip (front only) <small>For your custom subrack please order threaded strips separately.</small>	2	2
Mounting parts kit	1	1
Front profile V12S-RFI-85	2	2
Rear profile H12S-85	2	2
Center profile M1S-85	-	1

Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981

Further details and possibilities of other applications are in the chapter Subrack-Accessories.



Depth dimensions type delta 3 U and 6 U

Ordering details for kits

	PCB depth/ nom. depth [mm]	type <i>delta</i> order no. 409
3 U - subrack		
<i>InterRail RFI-84-3-220</i>	160/220	162730
<i>InterRail RFI-84-3-280</i>	220/280	162731
6 U - subrack		
<i>InterRail RFI - 84-6-220</i>	160/220	162732
<i>InterRail RFI - 84-6-280</i>	220/280	162733

Delivery

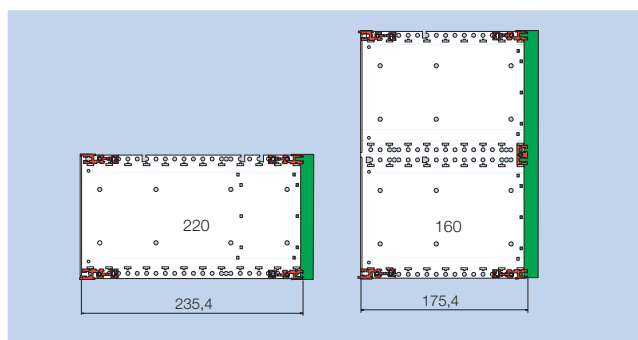
	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Threaded strip (front only)	2	2
<small>For your custom subrack please order threaded strips separately.</small>	2	2
Cover plates punched holes \varnothing 4 / 5.2 x 4mm	2	2
RFI-spring A2 (cover plate/profile)	4	4
Mounting parts kit	1	1
Front profile V12S-RFI-85	2	2
Rear profile H22S-RFI-85	2	2
Center profile M2S-85	-	1

Accessories

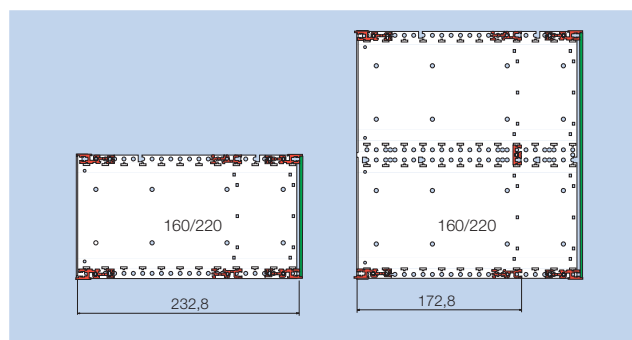
	order no. 409
Threaded strip 84 x M 2.5	091255
RFI-spring P2 - 84 (profile/front panel)	106547
Shielding kit F1 3 U (side panel/front panel)	093605
Shielding kit F1 6 U (side panel/front panel)	093606
Shielding kit 3 U (side panel/backplane)	108274
Shielding kit 6 U (side panel/backplane)	108275

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *InterRail® RFI* with Rear Cover or for Front Panel in the Rear



Depth dimensions type delta 3 U and 6 U with cover



Depth dimensions type alpha 3 U and 6 U for front panel

Ordering details for kits

	nom. depth [mm]	type <i>delta</i> with cover order no. 409	PCB depth/ nom. depth [mm]	type <i>alpha</i> f. front panel order no. 409
3 U - subrack				
<i>InterRail RFI</i> 84-3-160	160	162734	-	-
<i>InterRail RFI</i> 84-3-220	220	162735	160/220	162738
6 U - subrack				
<i>InterRail RFI</i> 84-6-160	160	162736	-	-
<i>InterRail RFI</i> 84-6-220	220	162737	160/220	162739

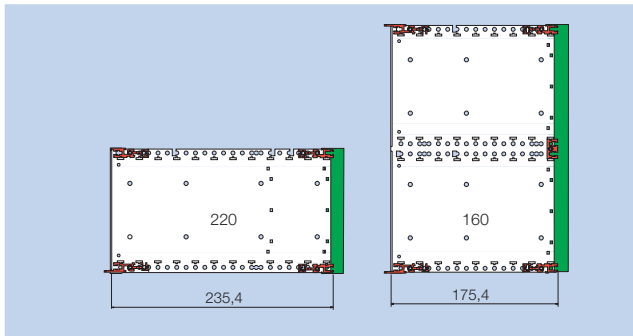
Delivery

	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Threaded strip (front only)	2	2	2	2
<small>For your custom subrack please order threaded strips separately.</small>	2	2	2	2
Cover plates punched holes $\varnothing 4 / 5.2 \times 4\text{mm}$	2	2	2	2
RFI-spring A2 (cover plate/pr	4	4	4	4
Mounting parts kit	1	1	1	1
Cover	1	1	-	-
Front profile/rear V12S-85	2	2	4	4
Rear profile H22RFI-85 screw on cover	2	2	-	-
Center profile M2S-85	-	1	-	-
Rear profile H12S-85	-	-	2	2
Center profile M1S-85	-	-	-	1

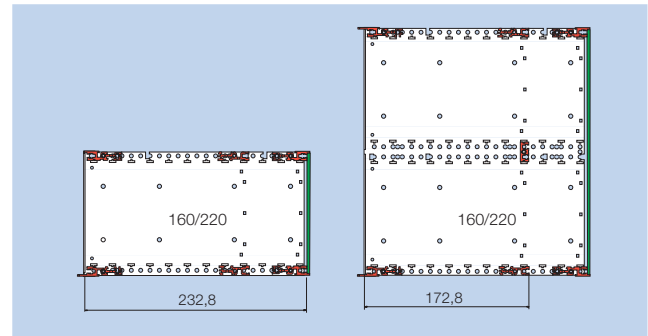
Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547
Shielding kit F1 3 U (side panel/front panel)	093605
Shielding kit F1 6 U (side panel/front panel)	093606

Further details and possibilities of other applications are in the chapter Subrack-Accessories.



Depth dimensions IEEE type delta 3 U and 6 U with cover



Depth dimensions IEEE type alpha 3 U and 6 U for front panel

Ordering details for kits

	nom. depth [mm]	type <i>delta</i> with cover order no. 409	PCB depth/ nom. depth [mm]	type <i>alpha</i> f. front panel order no. 409
3 U - subrack				
<i>InterRail RFI 84-3-160</i>	160	162740	-	-
<i>InterRail RFI 84-3-220</i>	220	162741	160/220	162744
6 U - subrack				
<i>InterRail RFI 84-6-160</i>	160	162742	-	-
<i>InterRail RFI 84-6-220</i>	220	162743	160/220	162745

Delivery

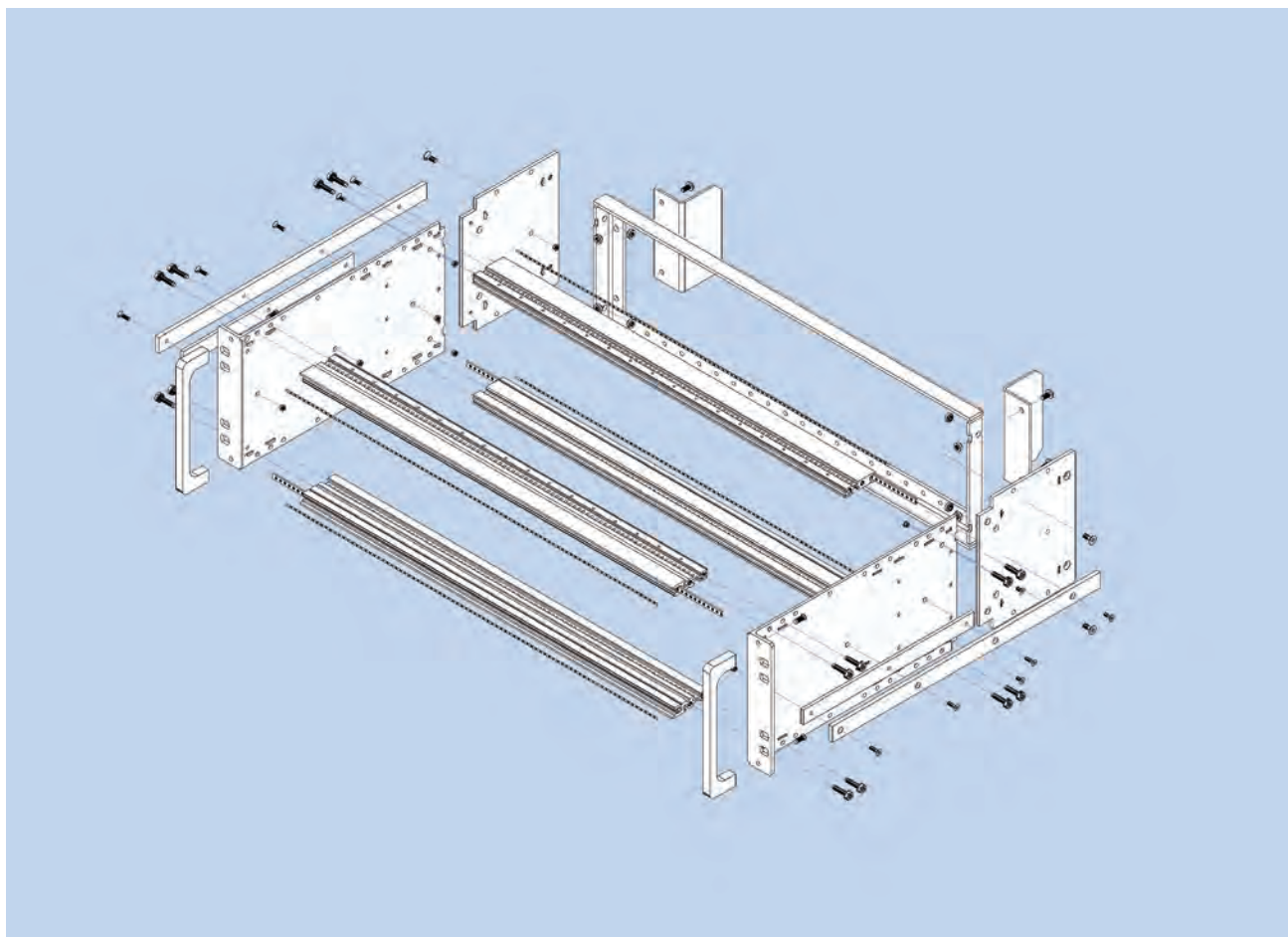
	pieces per kit <i>with cover</i> 3 U	pieces per kit <i>with cover</i> 6 U	pieces per kit <i>f. front panel</i> 3 U	pieces per kit <i>f. front panel</i> 6 U
Threaded strip (front only)	2	2	2	2
<small>For your custom subrack please order threaded strips separately.</small>	2	2	2	2
Cover plates punched holes $\varnothing 4 / 5.2 \times 4\text{mm}$	2	2	2	2
RFI-spring A2 (cover plate/profile)	4	4	4	4
Mounting parts kit	1	1	1	1
Cover	1	1	-	-
Front profile V12-IEEE-85	1	2	1	2
Front profile/rear V12S-85	1	-	3	2
Rear profile H22-RFI f. Cover 85	2	2	-	-
Center profile M2S-85	-	1	-	-
Inside profile H12S-85	-	-	2	2
Center profile inside M1S-85	-	-	-	1

Accessories

	order no. 409
Threaded strip 84 x M 2.5	091255
Insulating strip 84 HP	051981
RFI-spring P2 - 84 (profile/front panel)	106547
Shielding kit F1 3 U (side panel/front panel)	093605
Shielding kit F1 6 U (side panel/front panel)	093606

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

Subrack *InterRail*® - SNCF



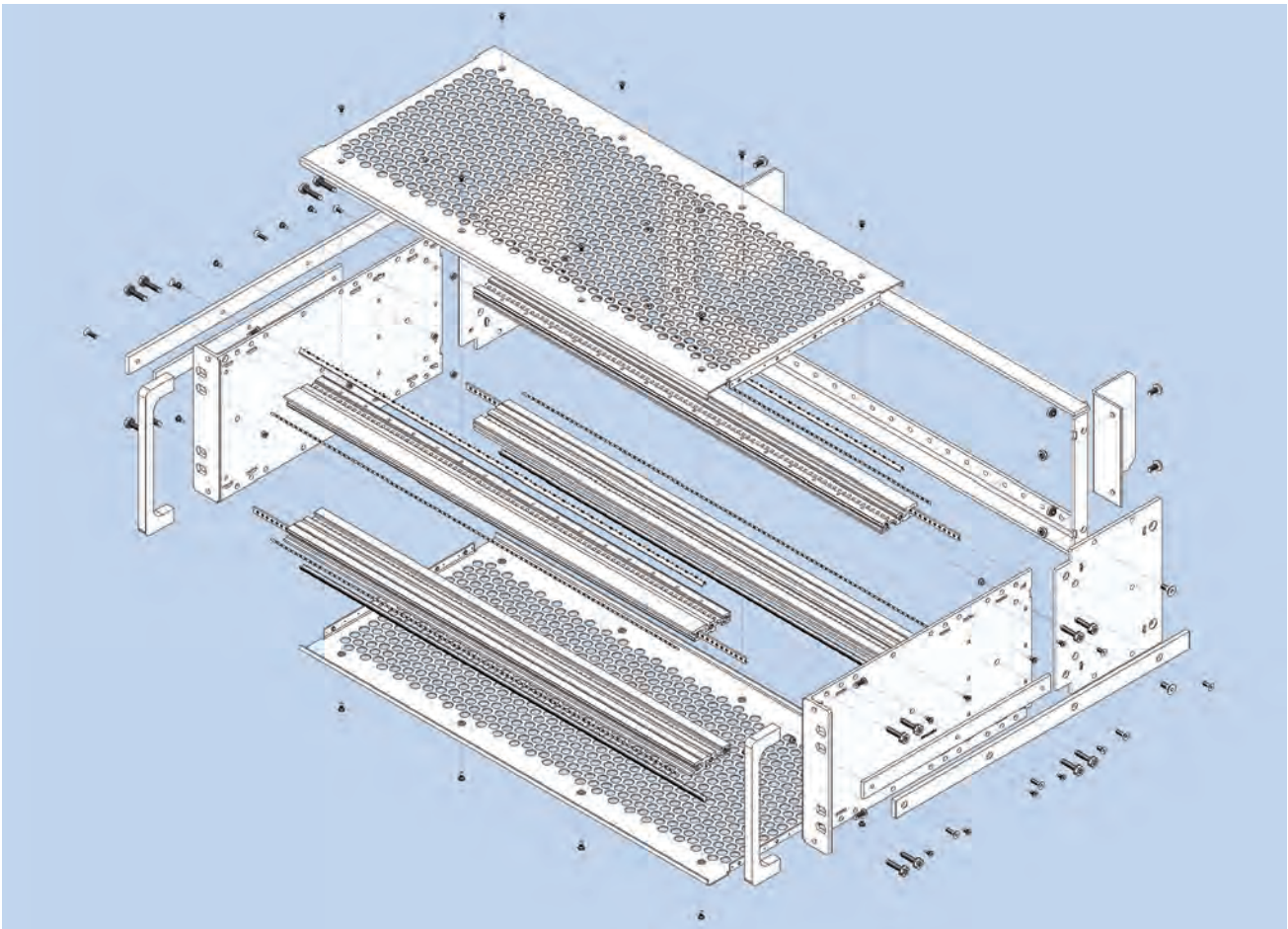
Delivery

	pieces per kit <i>alpha</i> 3 U	pieces per kit <i>alpha</i> 6 U
Side panel extender	2	2
Wiring frame	1	2
Wiring protection angle	2	4
Guide bar short	2	2
Guide bar long	2	2
Front profile V12S	2	2
Rear profile H12S	2	2
Center profile M1S	-	1
Handle	2	2
Label strip	4	4
Mounting parts kit	1	1
Threaded strip	4	6

Ordering details for kits

	nom. width/ nom. depth [mm]	type <i>alpha</i> order no. 409
3 U - subrack		
<i>InterRail SNCF-36-3-220</i>	36 - 220	108251
<i>InterRail SNCF-84-3-220</i>	84 - 220	108250
6 U - subrack		
<i>InterRail SNCF-36-6-220</i>	36 - 220	107716
<i>InterRail SNCF-84-6-220</i>	84 - 220	102822

Further details and possibilities of other applications are in the chapter Subrack-Accessories.



Delivery

	pieces per kit <i>delta</i> 3 U	pieces per kit <i>delta</i> 6 U
Side panel extender	2	2
Wiring frame	1	2
Wiring protection angle	2	4
Guide bar short	2	2
Guide bar long	2	2
Front profile V12S	2	2
Rear profile H22S	2	2
Center profile M2S	-	1
Cover plates with punched holes ø 8 mm	2	2
RFI-springn A2 (cover plates/profile)	4	4
Handle	2	2
Label strip	4	4
Mounting parts kit	1	1
Threaded strip	4	6

Ordering details for kits

	nom. width/ nom. depth [mm]	type <i>delta</i> order no. 409
3 U - subrack		
<i>InterRail SNCF RFI-36-3-220</i>	36 - 220	108255
<i>InterRail SNCF RFI-84-3-220</i>	84 - 220	108254
6 U - subrack		
<i>InterRail SNCF RFI-36-6-220</i>	36 - 220	108253
<i>InterRail SNCF RFI-84-6-220</i>	84 - 220	108252

Accessories

	order no. 409
Card guide VIB 1.6-220 without nut	058944
Screw M 3.2 x 12 for card guide SNCF	102432
RFI-spring P2 - 84 (pr ont panel)	106547
Shielding kit F1 3 U (side panel/front panel)	093605
Shielding kit F1 6 U (side panel/front panel)	093606

Further details and possibilities of other applications are in the chapter Subrack-Accessories.

System-Module CompactPCI



Description

The special design features of the CompactPCI system ✓ Convection or active ventilation modules:

✓ The refined RFI-shielding concept enables high shielding effectiveness (see the RFI-SHIELDED chapter).

✓ The construction offers additional space for drives and hard disks.

✓ They are fitted with an ATX 300 W power supply unit with a wide-range input and PFC.

✓ CPCI backplane in accordance with specification 2.0 Rev. 3.0, with or without rear I/O

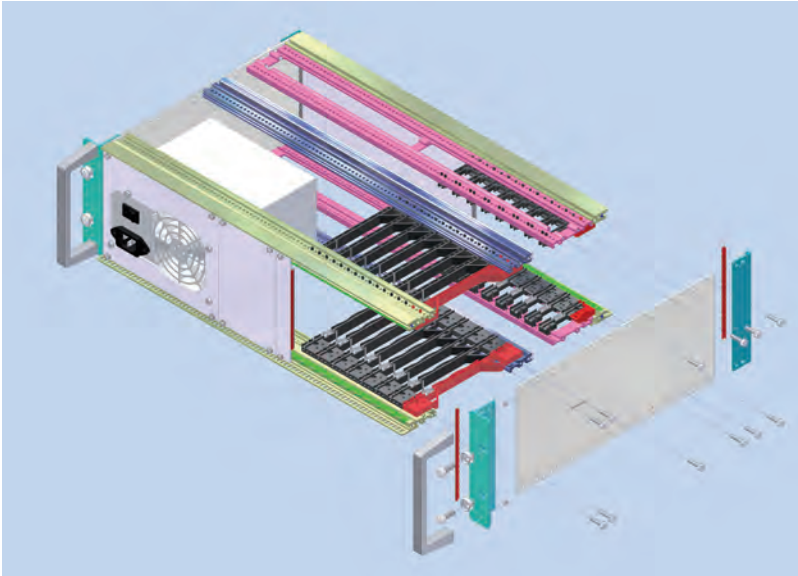
Delivery

The subrack is delivered assembled.

Other systems on request.

Technical data

Standards	compliant with DIN 41 494, IEC 60 297-3, IEEE 1101.10 IEC 61 076-4-101, CPCI Specification 2.0, Revision 3.0
Width / horizontal pitch	84 usable HP/ 5.08 mm
Depth of the inserted board	160 mm at the front, 80 mm at the rear
Depth increment side panel	10 mm
Materials	screws: steel contact springs: stainless steel card guide: plastic other parts: aluminum
Finish	screws: galvanized und passivated side panels and cover plates: blank (seawater resistance) other parts: passivated
Protection class	DIN 40 050 IP 20 (with cover plates) contact protection in accordance with VDE 0160
Utilization category	-25 °C, +70 °C, 75% relative humidity
Protective grounding	all metal parts are electrically bonded to one another following assembly in accordance with VDE 100 D 12.65, § 6 Nb.



Consists of:

- 1 Subrack *RFI-SHIELDED CPCI / REAR I/O* 84 HP,
260 mm nom. depth
(160 mm at the front, 80 mm at the rear)
- 1 Backplane 8 Slot, 3 U, 32 Bit, system slot right
- 1 ATX 300W power supply unit with a wide-range input
and PFC, with assembled front panel.
- 1 Blind front panel 16 HP at the front.
- 1 Blind front panel 4 HP at the front.
- 1 Blind front panel 48 HP at the rear.
- 1 Blind front panel 8 HP at the rear.
- 1 Pair of card guides red 160 mm (CPU)
including IEEE-coding and ESD-spring in the bottom card guide.
- 1 Pair of card guides red 80 mm (CPU)
including IEEE-coding and
- 7 Pair of card guides black 160 mm (CPU)
including IEEE-coding and ESD-spring in the bottom card guide.
- 7 Pair of card guides black 80 mm (CPU)
including IEEE-coding and ESD-spring in the bottom card guide.

System-Module CompactPCI-3 U-Rear I/O and 6 U-Rear I/O



System-Module CompactPCI-3 U-Rear I/O

order no.: **409122295**

Consists of:

- 1 Subrack *RFI-SHIELDED CPCI / REAR I/O*
84 HP, 260 mm nom. depth
(160 mm at the front, 80 mm at the rear)
- 1 Backplane 8 Slot, 3 U, 32 Bit, system slot right
- 1 ATX 300W power supply unit with a wide-range input and PFC, with assembled front panel.
- 1 Blind front panel 16 HP at the front.
- 1 Blind front panel 4 HP at the front.
- 1 Blind front panel 48 HP at the rear.
- 1 Blind front panel 8 HP at the rear.
- 1 Pair of card guides red 160 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 1 Pair of card guides red 160 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 7 Pair of card guides black 160 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 7 Pair of card guides black 80 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.



System-Module CompactPCI-6 U-Rear I/O

order no.: **409122297**

Consists of:

- 1 Subrack *RFI-SHIELDED CPCI / REAR I/O*
84 HP, 260 mm nom. depth
(160 mm at the front, 80 mm at the rear)
- 1 Backplane 8 Slot, 6 U, 64 Bit, system slot right
- 1 ATX 300W power supply unit with a wide-range input and PFC, with assembled front panel.
(optional front panel for a drive over the power supply).
- 1 Blind front panel 16 HP at the front.
- 1 Blind front panel 4 HP at the front.
- 1 Blind front panel 48 HP at the rear.
- 1 Blind front panel 8 HP at the rear.
- 1 Pair of card guides red 160 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 1 Pair of card guides red 80 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 7 Pair of card guides black 160 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.
- 7 Pair of card guides black 80 mm (CPU) including IEEE-coding and ESD-spring in the bottom card guide.

System-Module CompactPCI - 6+3 U-Rear I/O and 4 U-Rear I/O



System-Module CompactPCI-6+1U-Rear I/O

order no.: **409122301**

Consists of:

- 1 subrack *RFI-SHIELDED CPCI / REAR I/O*
84 HP, 260 mm nom. depth
(160 mm at the front, 80 mm at the rear)
- 1 Backplane 8 Slot, 6U, 64 Bit, system slot right
- 1 ATX 300W power supply unit with a wide-range
input and PFC, with assembled front panel.
(optional front panel for a drive over the power supply).
- 1 Blind front panel 16 HP at the front.
- 1 Blind front panel 4 HP at the front.
- 1 Blind front panel 48 HP at the rear.
- 1 Blind front panel 8 HP at the rear.
- 1 Fan drawer with integrated fan.
- 1 Pair of card guides red 160 mm (CPU)
including IEEE-coding and ESD-spring
in the bottom card guide.
- 1 Pair of card guides red 80 mm (CPU)
including IEEE-coding and
ESD-spring in the bottom card guide.
- 7 Pair of card guides black 160 mm (CPU)
including IEEE-coding and ESD-spring
in the bottom card guide.
- 7 Pair of card guides black 80 mm (CPU)
including IEEE-coding and ESD-spring
in the bottom card guide.



System-Module CompactPCI-4U-Rear I/O

order no.: **409122300**

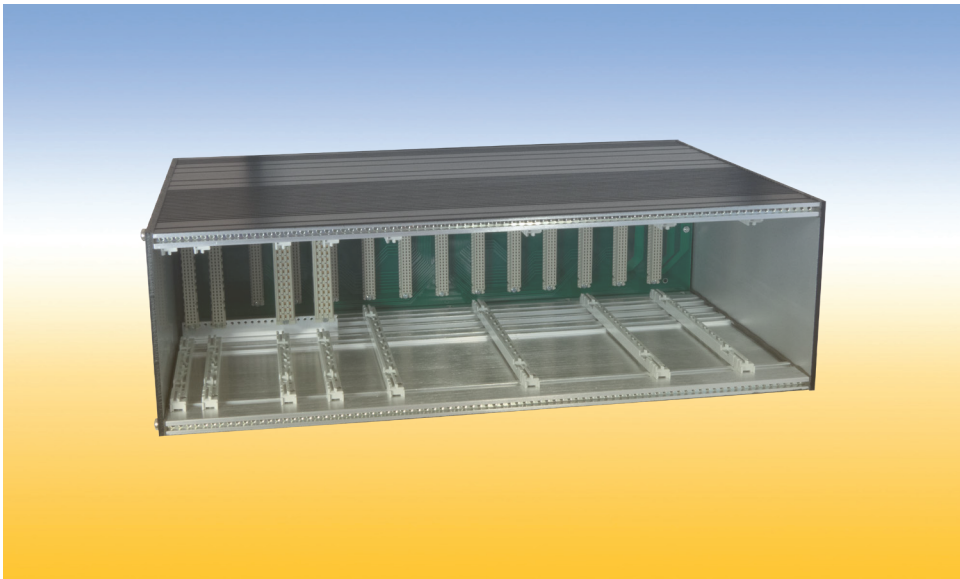
Consists of:

- 1 subrack *RFI-SHIELDED CPCI / REAR I/O*
84 HP, 260 mm nom. depth
(160 mm at the front, 80 mm at the rear)
for horizontal embedded 6 U PCB's
- 1 Backplane 4 Slot, 6U, 64 Bit, system slot right
(1 Slot free e. g. for hard disk or driver)
- 2 Front panels 6U - 4 HP (1 at the front, 1 at the rear)
- 1 ATX 300W power supply unit with a wide-range
input and PFC, with integrated 32 HP Front panel
at the front.
- 1 Fan
- 1 Pair of card guides red 160 mm (CPU)
including IEEE-coding
and ESD-spring in the bottom card guide.
- 1 Pair of card guides red 80 mm (CPU)
including IEEE-coding and
ESD-spring in the bottom card guide.
- 4 Pair of card guides black 160 mm (CPU)
including IEEE-coding and
ESD-spring in the bottom card guide.
- 4 Pair of card guides black 80 mm (CPU)
including IEEE-coding and
ESD-spring in the bottom card guide.

System-Module

<input type="checkbox"/> Housing <input type="checkbox"/> Subrack	pieces _____ pieces _____
Dimensions	height: <input type="checkbox"/> 3 U <input type="checkbox"/> 6 U <input type="checkbox"/> other _____ U width: <input type="checkbox"/> 84 HP <input type="checkbox"/> 42 HP <input type="checkbox"/> other _____ HP depth: <input type="checkbox"/> 260 mm <input type="checkbox"/> other _____ mm
Backplane	<input type="checkbox"/> CPU number of slots _____ <input type="checkbox"/> J1 VME number of slots _____ <input type="checkbox"/> J1/J2 Monolithic VME number of slots _____ <input type="checkbox"/> VME64x number of slots _____ Rear I/O: <input type="checkbox"/> 80 mm <input type="checkbox"/> other _____ mm <input type="checkbox"/> CPCI number of slots _____ System slot: <input type="checkbox"/> right <input type="checkbox"/> left Width system slot: <input type="checkbox"/> 4 HP <input type="checkbox"/> 8 HP Rear I/O : <input type="checkbox"/> 80 mm <input type="checkbox"/> other _____ mm
Mounting position PCB	<input type="checkbox"/> horizontal <input type="checkbox"/> vertical
Depth of the PCB	<input type="checkbox"/> 160 mm <input type="checkbox"/> other _____ mm
Power supply / PSU	<input type="checkbox"/> AC / DC <input type="checkbox"/> DC / DC <input type="checkbox"/> ATX <input type="checkbox"/> 300 Watt <input type="checkbox"/> 400 Watt <input type="checkbox"/> 19" <input type="checkbox"/> 300 Watt <input type="checkbox"/> 400 Watt <input type="checkbox"/> other Watt _____ <input type="checkbox"/> active ventilation of the system
Accessories	<input type="checkbox"/> Harddisc <input type="checkbox"/> CD-ROM <input type="checkbox"/> Keypad
Notes	_____ _____ _____ _____

Please ask your local representative for your
individual system-module-configuration.
 You find your contact person on our homepage:
www.intermas-el.com



Description

Special design features of the subrack InterProtect®:

- ✓ Upper and lower cover are made of a solid extruded aluminium profile. The surface is passivated
- ✓ Profiles have 11 screwing points on each side in order to fix the side panels.
- ✓ Profiles are equipped with channels to insert mounting or threaded strips. These strips are designated to fix frontpanel, rear wall, card guides and connectors resp. backplanes.
- ✓ Connector and backplane sections can be realized with nominal depth of 160, 180, 220 und 240 mm.
- ✓ Card guides with a nominal depth of 160 and 220 mm, optionally snap-in or screwable can be used.
- ✓ The side walls, front panel and rear wall are made of seawater resistant aluminium. They have a material thickness of 4 mm and are passivated.
- ✓ Front panel and rear wall are each fixed with 28 (42HP) resp. 52 (84HP) screws on the 3U subrack, and with 36 (42HP) resp. 60 (84HP) screws on the 6U subrack.
- ✓ The usage of high-quality sealing materials guarantees an optimal protection against dirt, dust and the intrusion of water.
- ✓ An optimal shielding is achieved by the usage of conductive sealings.
- ✓ Sealings are made of silicone resp. the conductible variant of silicone, filled with particles of nickel-plated graphite. Upon request it is also possible to use sealings made of fluorine silicone or of conductible particles of silver-plated aluminum.

Delivery form:

Supplied as unassembled kits.

These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

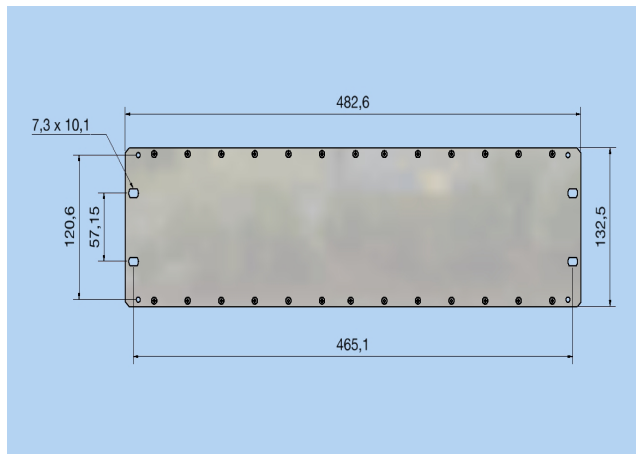
On request, delivered as assembled and wired subrack according your requirements.

Subrack *InterProtect*[®]

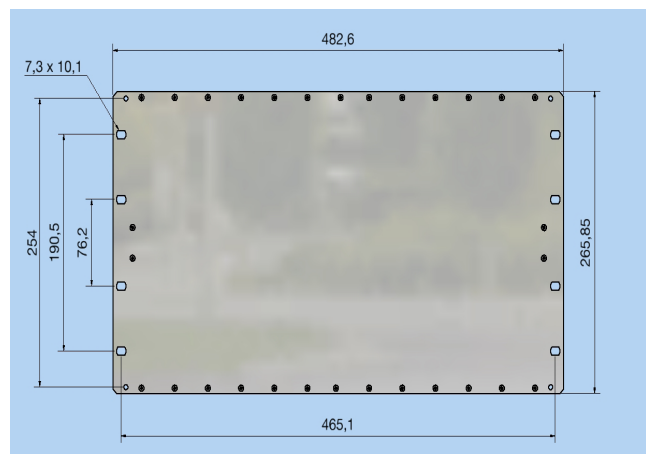
Technical Data

Dimension	Acc. to DIN 41 494/ IEC 60 297
Width / horizontal pitch	84 / 42 usable HP / 5,08
Depth of backplane	160, 180, 220, 240 mm (Nominal depth)
Attachment of plug-in connector	M 2,5 as grid of 5,08 mm for plug-in connectors acc. to DIN 41 612, VG 95 324, IEC 60 603-2
Materials	screws: stainless steel, assembly and threaded strips: steel or stainless steel, other parts: aluminium
Surfaces	aluminium parts: passivated, steel parts zink-cromated and passivated
Protection class	acc. to DIN EN 60529, IP66
Temperature range	-55 to +160 °C
Protective earthing	After assembly all metal parts have an electrically conductive interconnection acc. to VDE 100/12.65, § 6 Nb

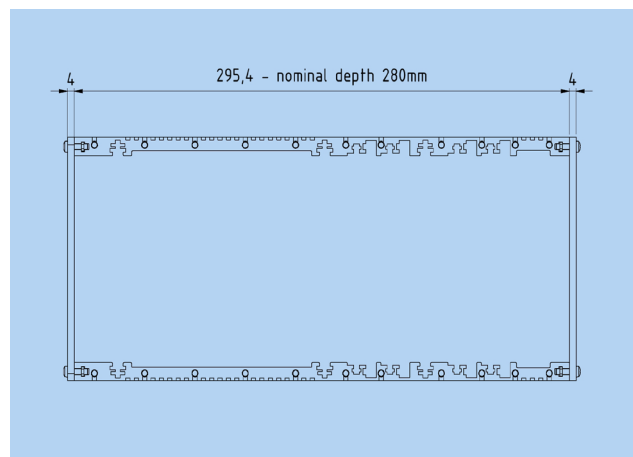
Dimension



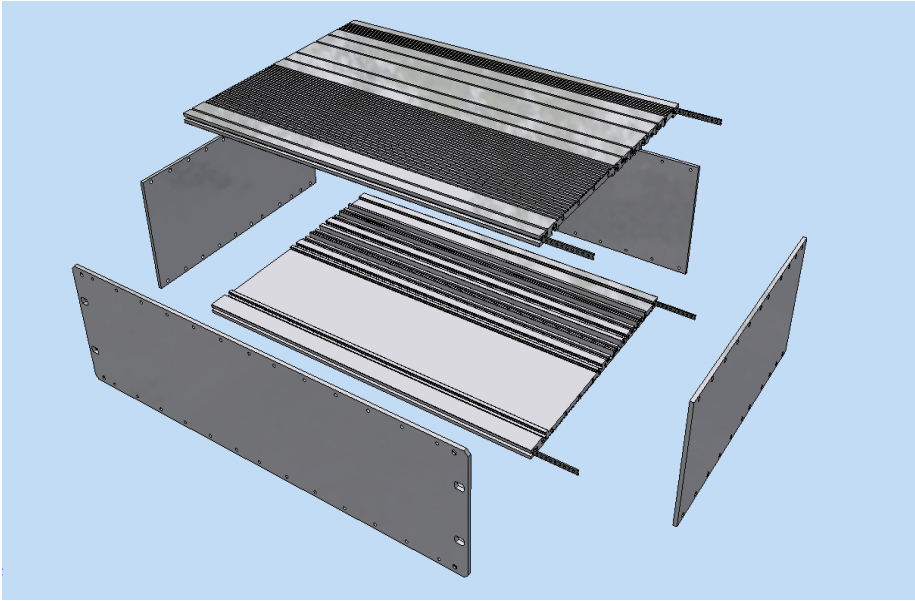
Subrack 3 TE



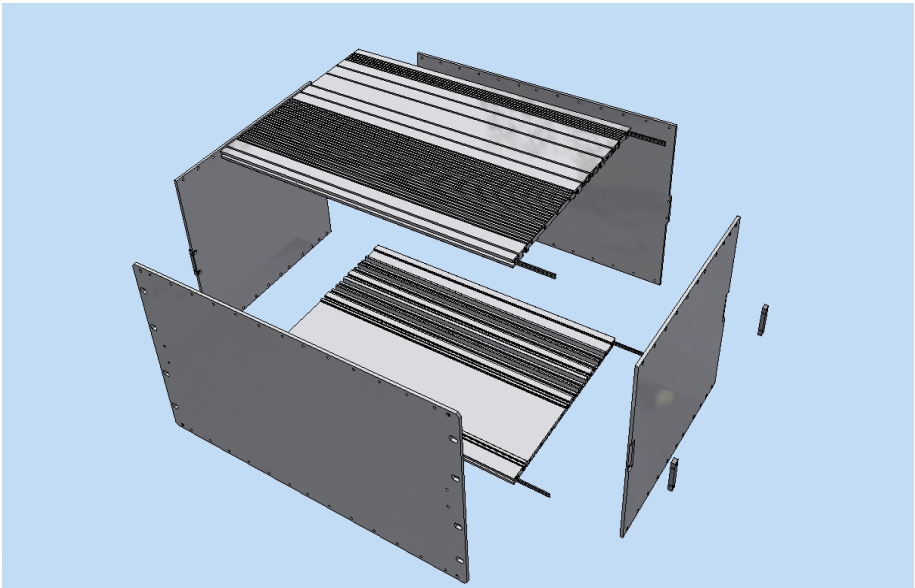
Subrack 6 TE



Depth dimensions of subrack



Subrack 3U



Subrack 6 U

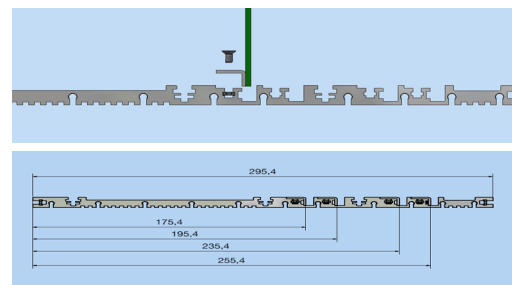
Ordering details for kits

	nom. depth [mm]	order no. 409
3 U - subrack		
42-3-280	280	138802
84-3-280	280	138803
6 U - subrack		
42-6-280	280	138821
84-6-280	280	138822

Delivery

	pieces per kit 3U-42HP	pieces per kit 3U-84HP	pieces per kit 6U-42HP	pieces per kit 6U-84HP
Subrack profile 280	2	2	2	2
Side panel 280	2	2	2	2
Front panel	1	1	1	1
Rear panel	1	1	1	1
Threaded strip	4	4	4	4
Pan-head screw M3x12	28	52	36	60
Pan-head screw M4x16	44	44	44	44
Connector 6U	-	-	4	4
Countersunk scw M3x6	-	-	8	8

Sealings are not included. They must be ordered in accordance to your application and requirements.
Further details and possibilities of other applications can be found in the chapter Subrack-Accessories



Kit for backplane fixing bar

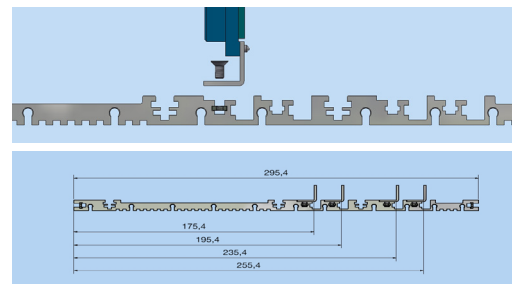
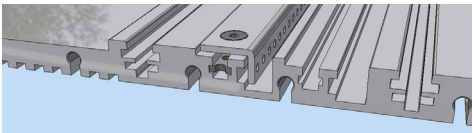
Material: aluminium
Finish: passivated (TCP)

Scope of delivery:

2 backplane fixing bars
2 treaded strips
Fixing screws

Ordering details for kits

	order no. 409
Backplane-fixing bars 42HP	138976
Backplane-fixing bars 84HP	138977



Kit for pin assignment

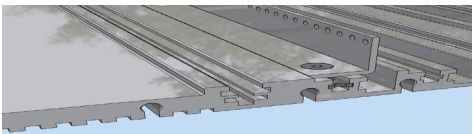
Material: aluminium
Finish: passivated (TCP)

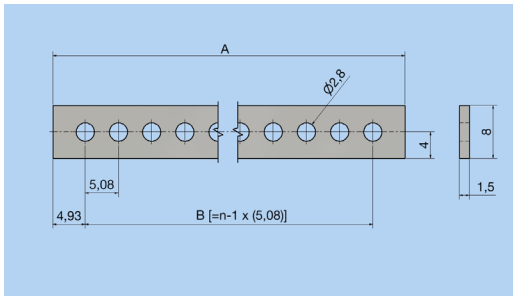
Scope of delivery:

2 connector fixing
2 treaded strips
Fixing screws

Ordering details for kits

	order no. 409
connector fixing 42HP	138978
connector fixing 84HP	138979





Mounting strip for snap-in card guide

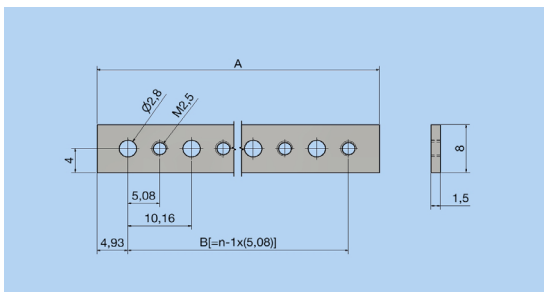
Material: steel or stainless steel
Finish: electrogalvanized, passivated resp. stainless steel blank

Every card guide section requires 4 assembly strips.

Ordering details for kits snap-in

n = number of holes	A [mm].	B [mm]	steel order no. 409	stainless steel order no. 409
42	218,14	202,28	138811	138872
84	431,50	421,64	138812	138873

Other lengths on request.



Mounting strip for screwable card guide

Material: steel or stainless steel
Finish: electrogalvanized, passivated resp. stainless steel blank

Every card guide section requires 4 assembly strips.

Ordering details for kits screwable

n = number of holes	A [mm].	B [mm]	steel order no. 409	stainless steel order no. 409
42	218,14	202,28	138870	138874
84	431,50	421,64	138871	138875

Other lengths on request.

Subrack *InterProtect*[®] Sealing

Ordering details for kits

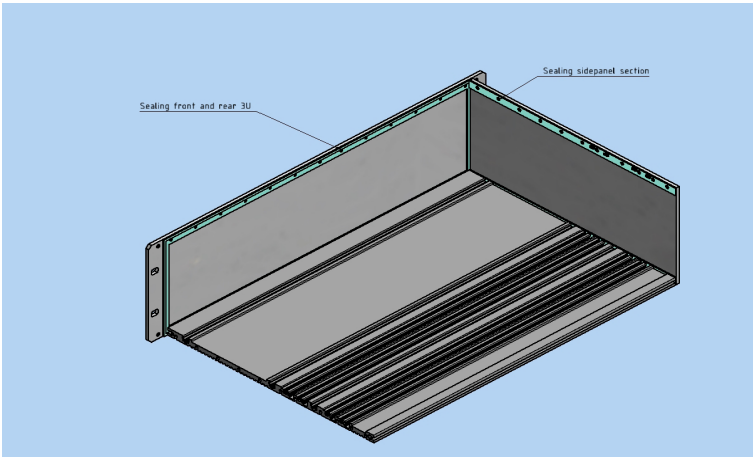
Sealing kit	Sealing kit IP *	Sealing kit IP/EMV **
	order no.	order no.
	409	409
3U-42HP	138905	138906
3U-84HP	138908	138909
6U-42HP	138911	138912
6U-84HP	138914	138915

* Sealings are made of silicone / ** Sealings are made of silicone filled with particles of nickel-plated graphite.

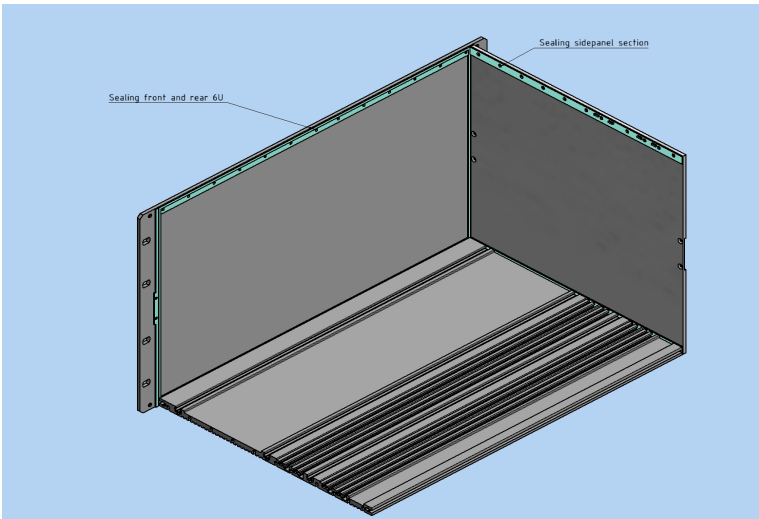
Scope of dedelivery:

- 2 Sealing right and left
- 2 Sealing left and right
- 2 Sealing F/R

Realisation of the shielding

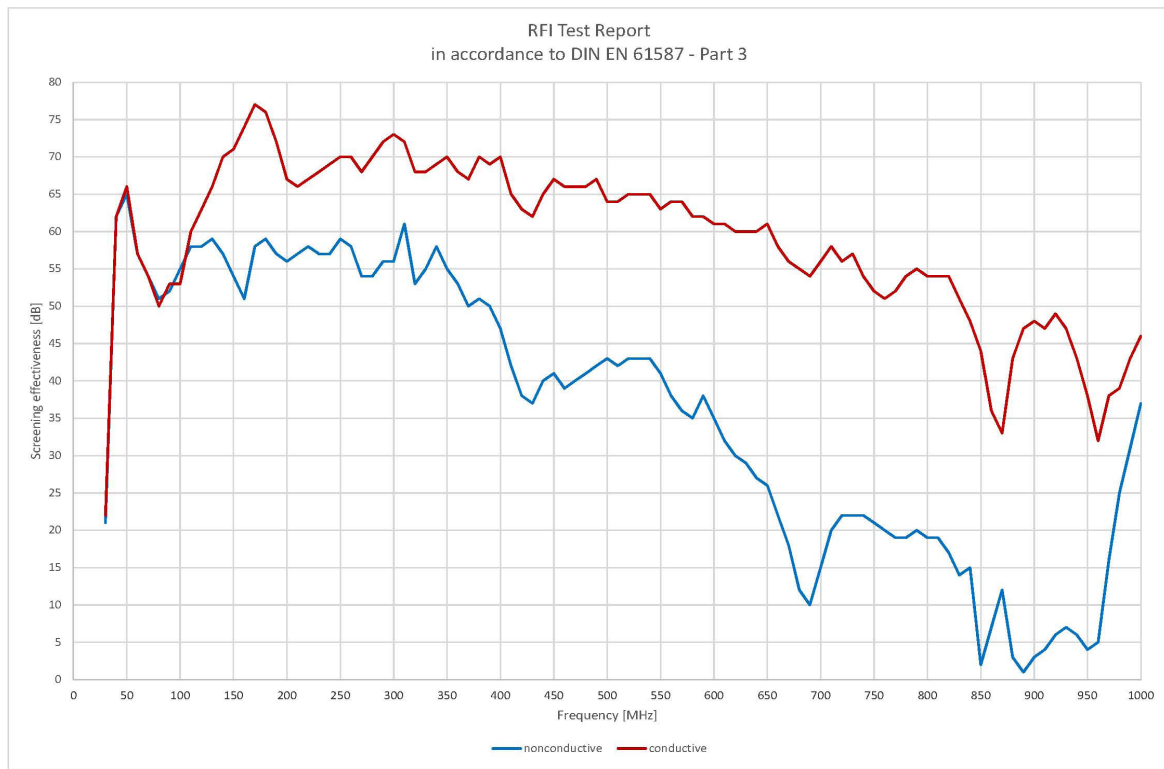


Subrack 3U



Subrack 6U

Measurement configurations *InterProtect*®



Shielding efficienc depends on the material of the used sealing material.

Shielding effectiveness:

The shielding effectiveness of the empty subrack was determined in accordance with DIN EN 61 587-Part 3.

Testing institute:

The measurements were performed at *hummel electronic* in Fellbach, Germany.

Test specimen 1

This subrack was equipped with sealings made of silicone, filled with particles of nickel-plated graphite.

Test specimen 2

This subrack was equipped with sealings made of silicone.

Subrack configuration *InterProtect*[®]

Subrack

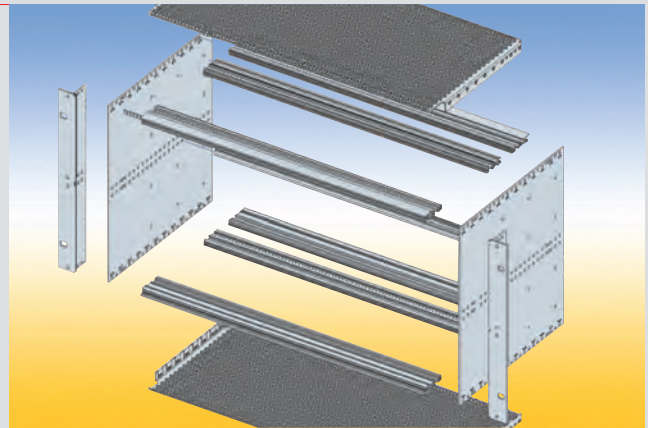
Configuration module

<input type="checkbox"/> Subrack	piece _____
Dimensions	height: <input type="checkbox"/> 3 U <input type="checkbox"/> 6 U <input type="checkbox"/> other _____ U width: <input type="checkbox"/> 84 HP <input type="checkbox"/> 42 HP <input type="checkbox"/> other _____ HP depth: <input type="checkbox"/> 280 mm
Backplane	<input type="checkbox"/> CPU number of slots _____ <input type="checkbox"/> J1 VME number of slots _____ <input type="checkbox"/> J1/J2 Monolithic VME number of slots _____ <input type="checkbox"/> VME64x number of slots _____ <input type="checkbox"/> CPCI number of slots _____ Systemslot: <input type="checkbox"/> right <input type="checkbox"/> left width Systemslot: <input type="checkbox"/> 4 HP <input type="checkbox"/> 8 HP
Depth of PCB:	<input type="checkbox"/> 160 mm <input type="checkbox"/> 180 mm <input type="checkbox"/> 220 mm <input type="checkbox"/> 240 mm
Accessories:	<input type="checkbox"/> Backplane-mounting bracket <input type="checkbox"/> Connector fixing <input type="checkbox"/> Installation strip: card strip snap-in <input type="checkbox"/> Installation strip: card strip screwable <input type="checkbox"/> Sealing: <input type="checkbox"/> Silicone <input type="checkbox"/> Silicone with particles of nickel-plated graphite
Notes	<div></div> <div></div> <div></div> <div></div>

Subrack Accessories

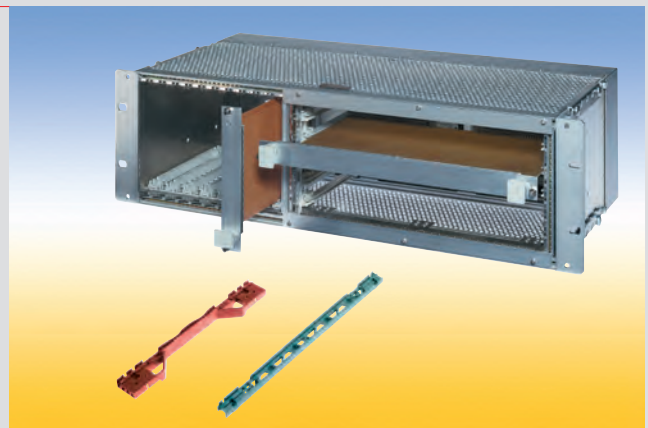
Single Parts

- ✓ Side Panels
- ✓ Flanges
- ✓ Closing Profiles
- ✓ Handle
- ✓ Side Panel Extender
- ✓ Side Panel Connector
- ✓ Horizontal Rails
- ✓ Cover Plates
- ✓ Rear Covers



Configurations

- ✓ Subrack Divider
- ✓ Partition Wall
- ✓ Labelling Rail, Locking Rail, Label Strip
- ✓ Threaded Strips
- ✓ Z-Rail A, Mounting Rail B
- ✓ Card Guide and Accessories

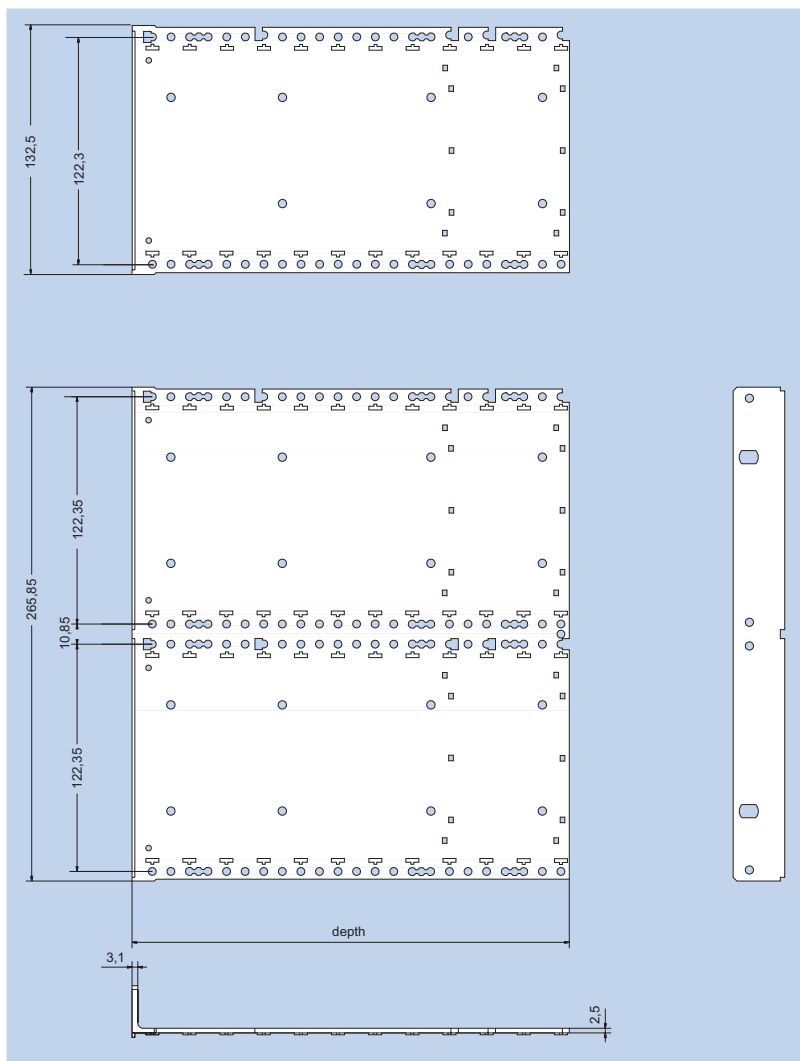


Front Panels and Handles

- ✓ Blind Front Panels
- ✓ Front Panels with Handle
- ✓ Front Panels with Ejector Handle
- ✓ Front Panels with IEEE-Handle
- ✓ Plastic Front Panels



Side Panel Fi



for subrack **FLEXIBLE Fi** and **InterRail** (not for **InterRail SNCF**)

Side Panel Fi (flange integrated)

The side panel and the flange are extruded in one piece.

Material: aluminum, extruded
Finish: colorless anodized or passivated

Side Panel Fi TOX (flange clinched)

Side panel made of aluminum sheet is connected to the extruded flange RFI by clinching (toxen®). There is one TOX® point per height unit (U).

Finish: flange passivated / side panel blank, seawater resistant

Ordering details

	nom. height [U]	nom. depth [mm]	depth [mm]	anodized order no. 409	passivated order no. 409	passivated/blank order no. 409
Side panel Fi - 3 - 160	3	160	175.4	085001	110248	-
Side panel Fi - 3 - 220	3	220	235.4	085002	110234	-
Side panel Fi TOX - 3 - 280	3	280	295.4	-	-	182910
Side panel Fi - 6 - 160	6	160	175.4	085095	110201	-
Side panel Fi - 6 - 220	6	220	235.4	085096	110238	-
Side panel Fi TOX - 6 - 280	6	280	295.4	-	-	182911

Accessories

Hexagonal cupped point head screw M 4 x 16, Torx T 20

For assembly of the side panel to the horizontal rails.

Minimumm order quantity 100 pieces

order no.: 409052156

Accessories

Self tapping hexagonal cupped point head screw M 4 x 16, Torx T 20

For assembly of the side panel to the horizontal rails.

Minimumm order quantity 100 pieces

order no.: 409087639

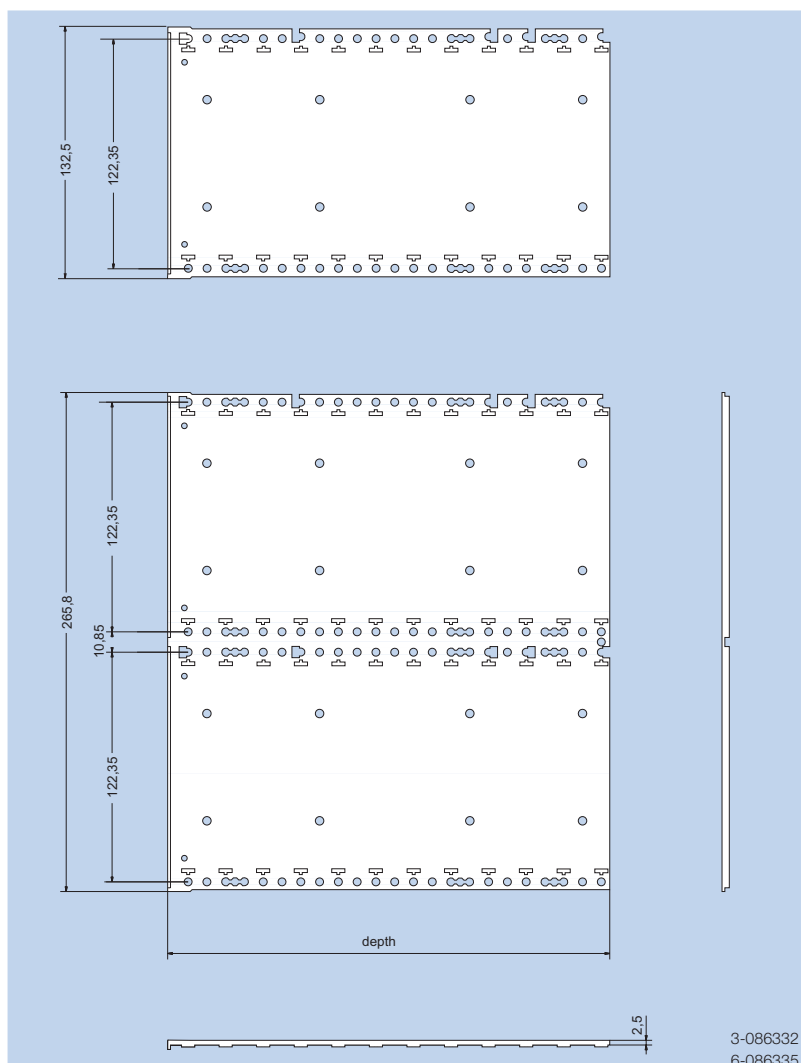
Side Panel Fs

for subrack *FLEXIBLE Fs*

Side Panel Fs (flange seperate)

Material: aluminum, extruded

Finish: passivated



Ordering details

	nom. height [U]	nom. depth [mm]	depth [mm]	order no. 409
Side panel Fs - 3 - 160	3	160	174.2	106750
Side panel Fs - 3 - 220	3	220	234.2	086333
Side panel Fs - 3 - 280	3	280	294.2	086334
Side panel Fs - 6 - 160	6	160	174.2	097286
Side panel Fs - 6 - 220	6	220	234.2	086336
Side panel Fs - 6 - 280	6	280	294.2	086337

Accessories

Hexagonal cupped point head screw M 4 x 16, Torx T 20

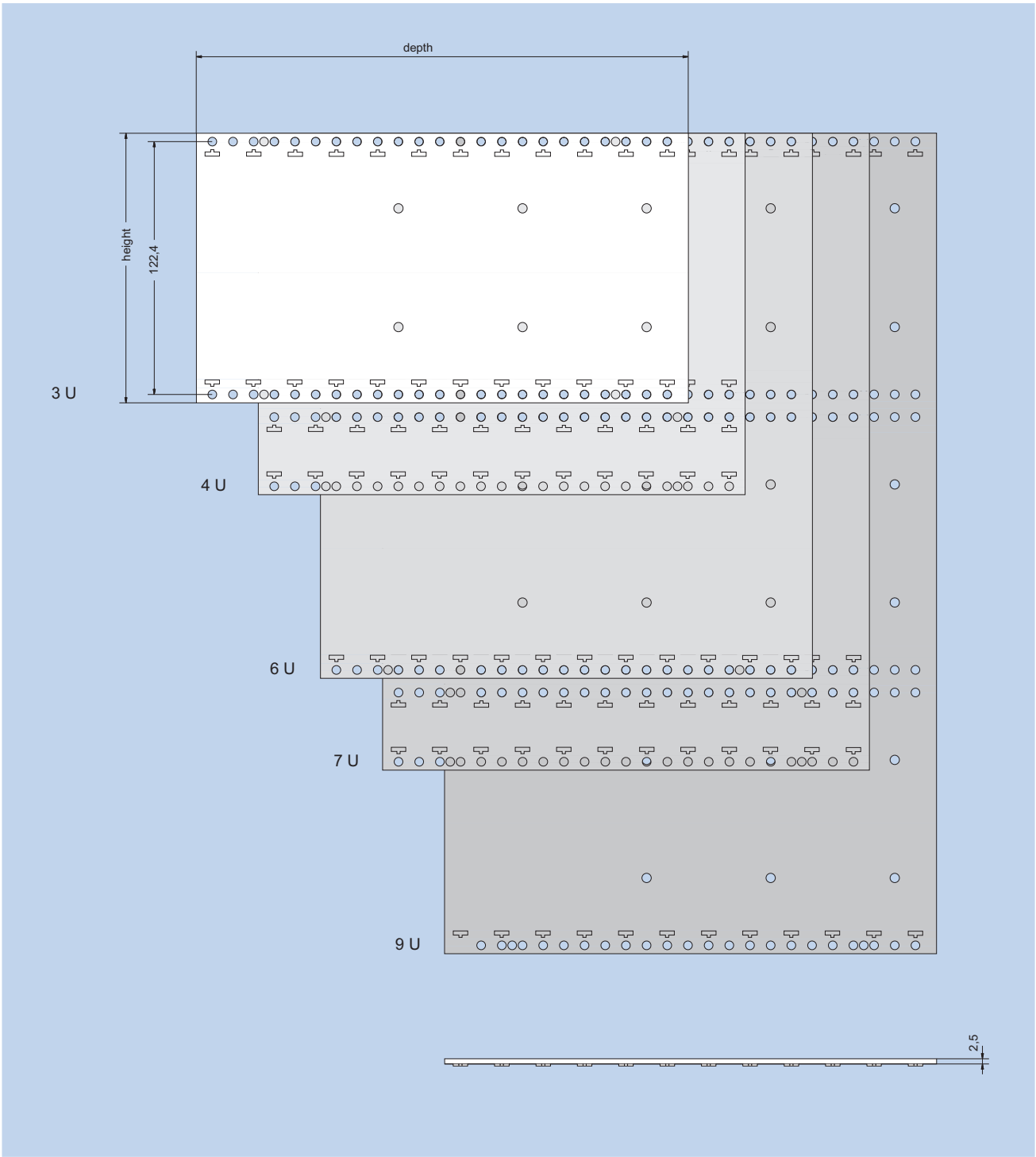
For assembly of the side panel to the horizontal rails.

Minimum order quantity 100 pieces

order no.: **409052156**

Side Panel RFI without Flange

Subrack Accessories



Side Panel RFI without Flange

for subrack **RFI-SHIELDED**

Side Panel RFI without flange

Material: aluminum, 2.5 mm thick

Finish: blank, seawater resistant

Ordering details

	nom. height [U]	height [mm]	nom. depth [mm]	depth [mm]	order no. 409
Side panel RFI - 3 - 160	3	130.50	160	177.9	114240
Side panel RFI - 3 - 220	3	130.50	220	237.9	114241
Side panel RFI - 3 - 240	3	130.50	240	257.9	161173
Side panel RFI - 3 - 260	3	130.50	260	277.9	161174
Side panel RFI - 3 - 280	3	130.50	280	297.9	114242
Side panel RFI - 3 - 340	3	130.50	340	357.9	114243
Side panel RFI - 4 - 280	4	174.95	280	297.9	112872
Side panel RFI - 4 - 460	4	174.95	460	477.9	112876
Side panel RFI - 6 - 160	6	263.85	160	177.9	114758
Side panel RFI - 6 - 220	6	263.85	220	237.9	114759
Side panel RFI - 6 - 240	6	263.85	240	257.9	161188
Side panel RFI - 6 - 260	6	263.85	260	277.9	161189
Side panel RFI - 6 - 280	6	263.85	280	297.9	114760
Side panel RFI - 6 - 340	6	263.85	340	357.9	114762
Side panel RFI - 6 - 460	6	263.85	460	477.9	114766
Side panel RFI - 7 - 240	7	308.30	240	257.9	161193
Side panel RFI - 9 - 220	9	397.20	220	237.9	161155
Side panel RFI - 9 - 280	9	397.20	280	297.9	161156
Side panel RFI - 9 - 340	9	397.20	340	357.9	161157
Side panel RFI - 9 - 460	9	397.20	460	477.9	161160

Accessories

	order no. 409
For assembly of the side panel to the pr Minimum order quantity 100 pieces	
Hexagon cupped point head screw M 4 x 16 Torx T 20	052156
For assembly of the middle pro led rail by using an outside xed cover plate. Minimum order quantity 10 pieces	
Hexagon head screw	116769

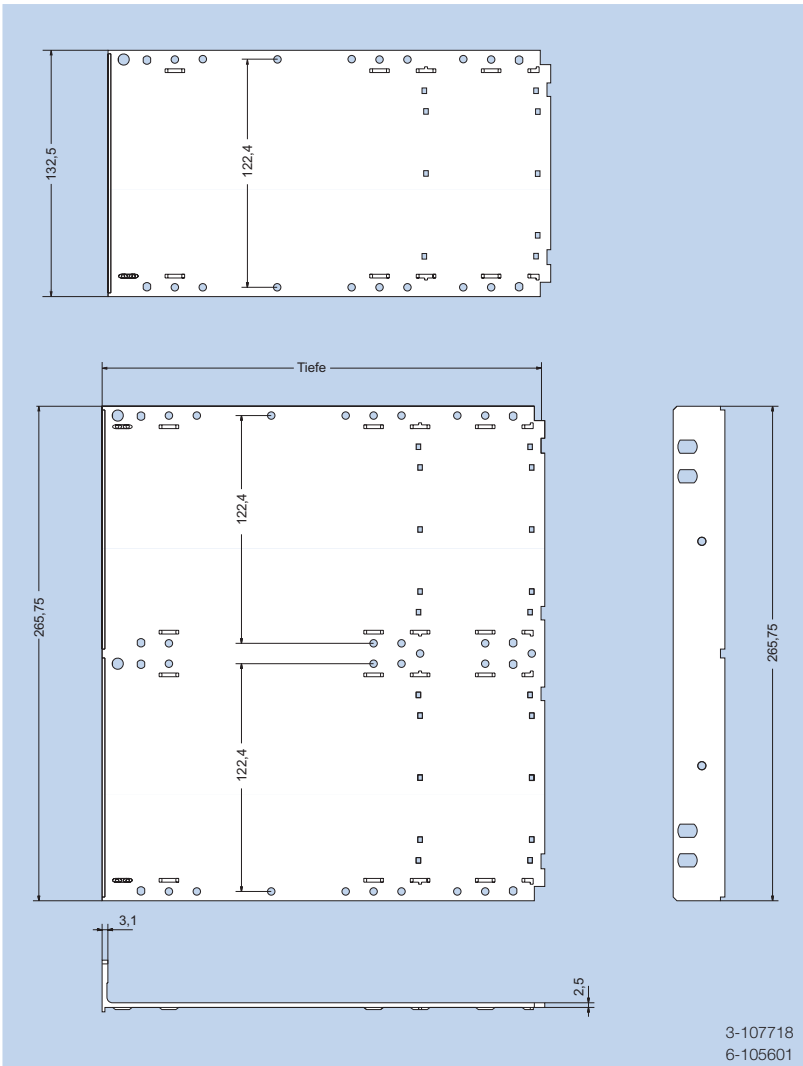
Side Panel *InterRail*® SNCF

for subrack *InterRail* SNCF

Side Panel *InterRail* SNCF

Material: aluminum, extruded
Finish: passivated

Subrack Accessories



Ordering details

	nom. height [U]	nom. depth [mm]	depth [mm]	order no.
Side panel <i>InterRail</i> - SNCF - 3 - 220	3	220	237.9	107719
Side panel <i>InterRail</i> - SNCF - 6 - 220	6	220	237.9	105602

Accessories

Self tapping hexagonal cupped point head screw M 4 x 16, Torx T 20

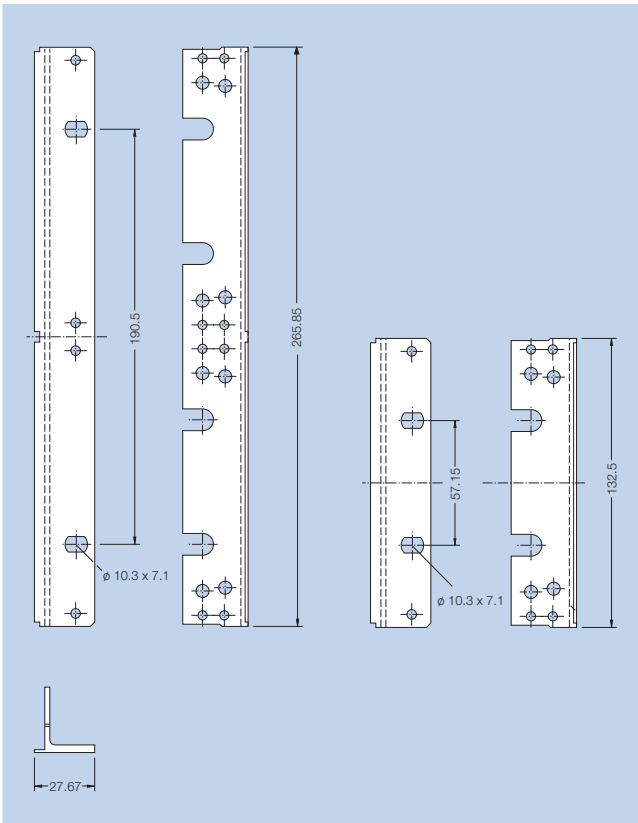
For assembly of the side panel to the horizontal rails.

Minimum order quantity 100 pieces

order no.: **409087639**

Flange F

Flange without Nose



for subrack *FLEXIBLE Fs*

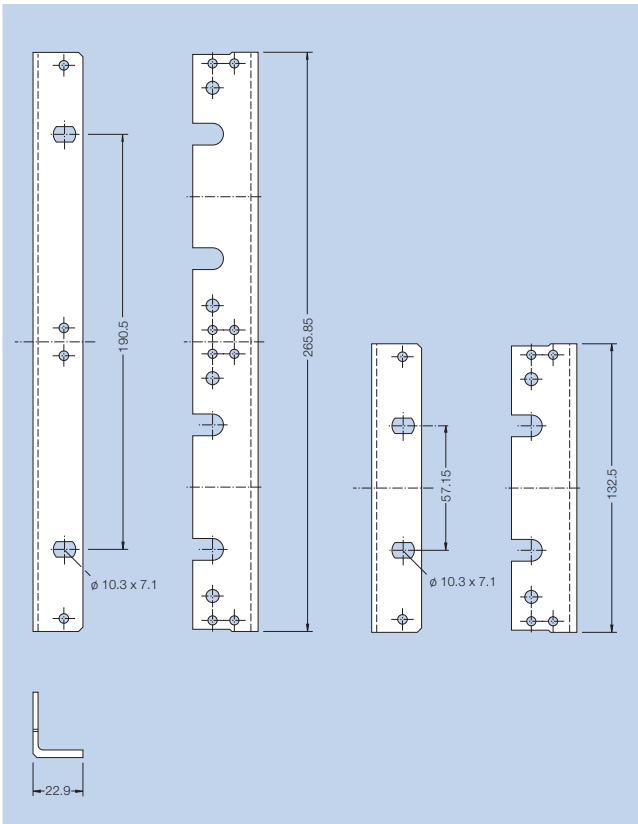
Flange F

The flange can be mounted to the side panel by means of the mounting screws for the horizontal rails.

Material: aluminum, extruded
Finish: anodized

Ordering details

	order no. 409
Flange F - 3 U	086787
Flange F - 6 U	086791



Flange without Nose

This flange can be mounted at various depth on the side panel grid.

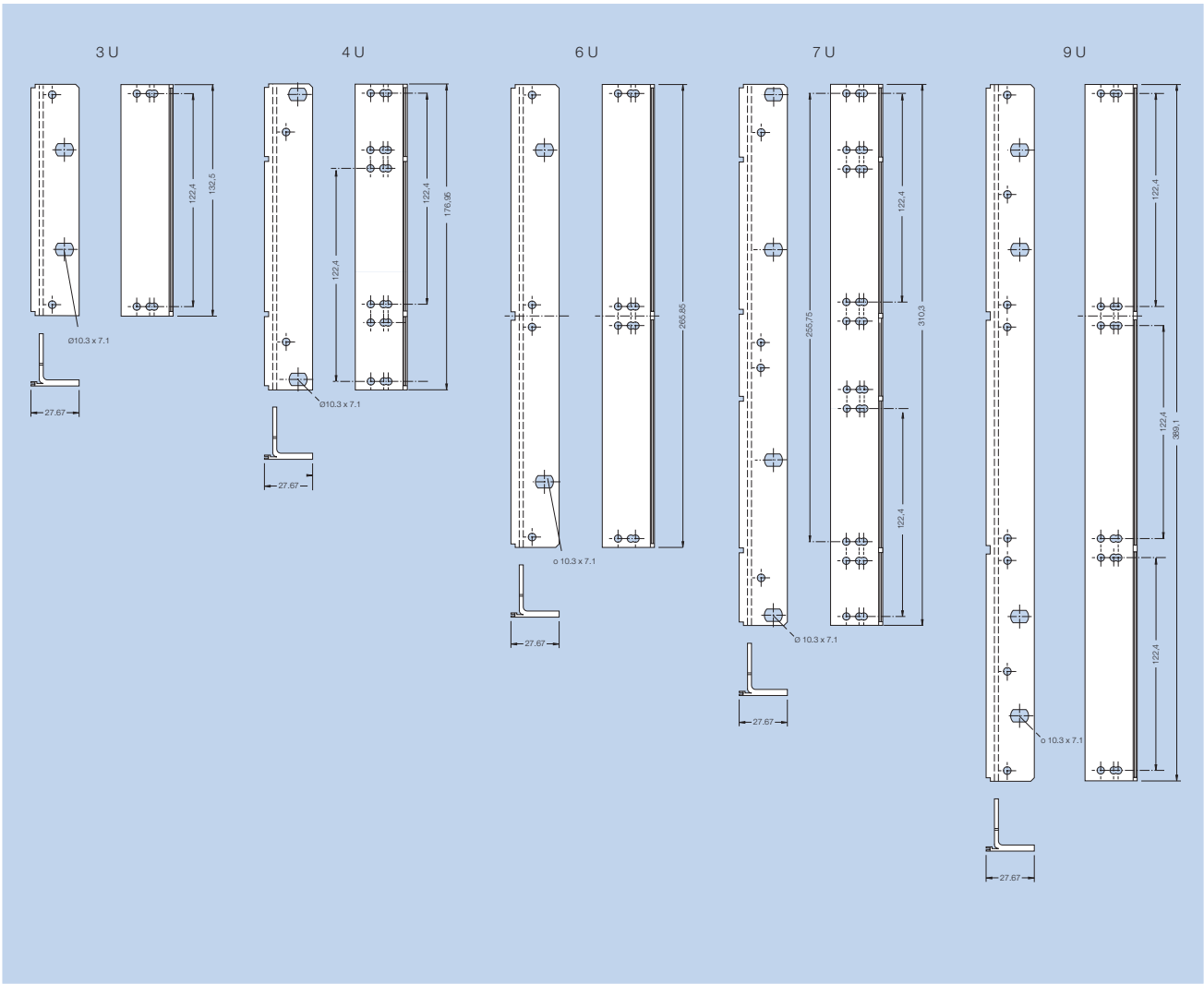
Material: aluminum, extruded
Finish: anodized

Ordering details

	order no. 409
Flange without nose - 3 U	087802
Flange without nose - 6 U	087824

Flange RFI

Subrack Accessories



for subrack *RFI-SHIELDED*

Flange RFI

The flange can be mounted to the side panel by means of the mounting screws for the horizontal rails. With slits in the side edges for insertion of RFI springs.

Material: aluminum, extruded
Finish: passivated

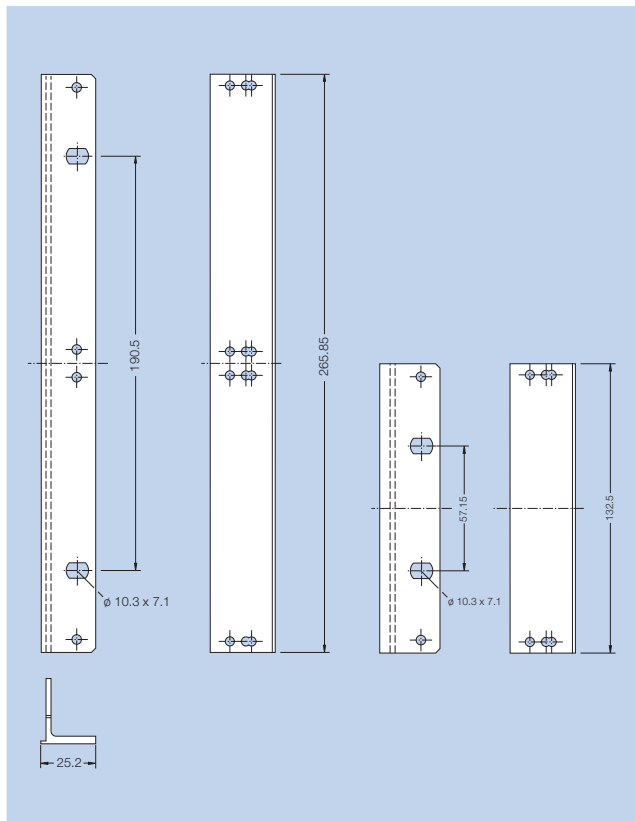
Ordering details

	nom. height [U]	order no. 409
Flange RFI - 3	3	112202
Flange RFI - 4	4	114612
Flange RFI - 6	6	112205
Flange RFI - 7	7	114618
Flange RFI - 9	9	112234

Accessories

	order no. 409
RFI-spring F3 - 2 U	112386
RFI-spring F3 - 3 U	111636
RFI-spring F3 - 4 U	112387
RFI-spring F3 - 6 U	111637

Flange RFI - FP, Flange for Wall Mounting



Flange RFI - FP

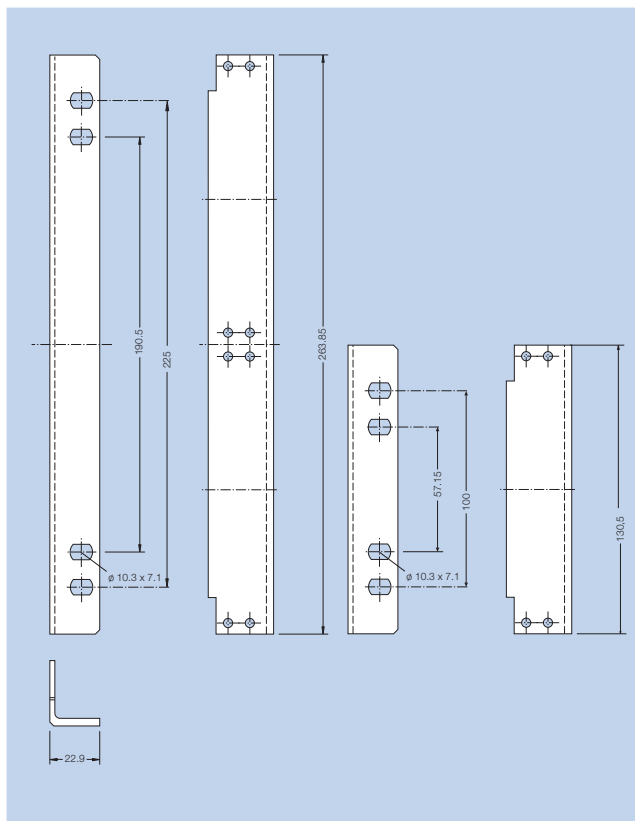
This flange is suitable for mounting of a continuous front panel of 85 HP and a hinged front panel of 85 HP in a subrack. The flange will be mounted to the side panel by means of the mounting screws for the horizontal rails.

Material: aluminum, extruded

Finish: passivated

Ordering details

	order no. 409
Flange RFI - FP - 3 U	114708
Flange RFI - FP - 6 U	114715



Flange for Wall Mounting

For mounting of a subrack on a wall.

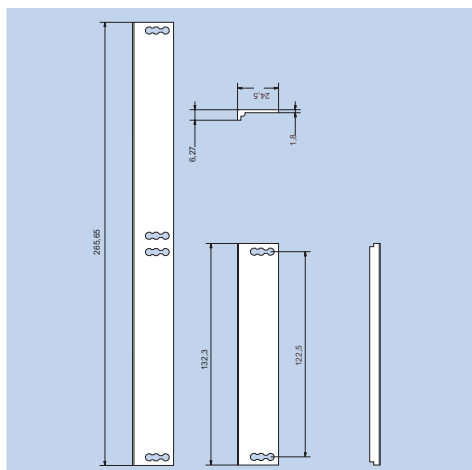
Material: aluminum

Finish: blank, seawater resistant

Ordering details

	order no. 409
Flange for wall mounting - 3 U	161110
Flange for wall mounting - 6 U	161113

Closing Profiles F and RFI -F3 Handle



Closing Profile F

For covering the slit between front panel and side panel.

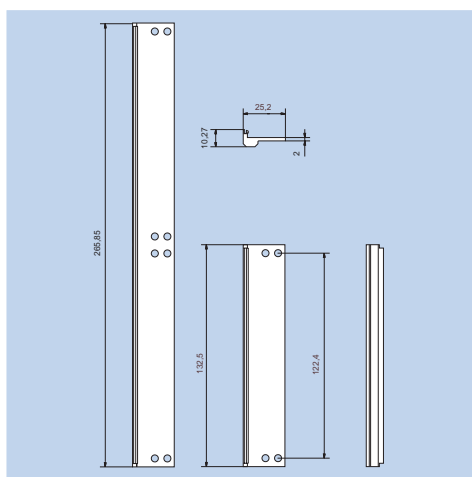
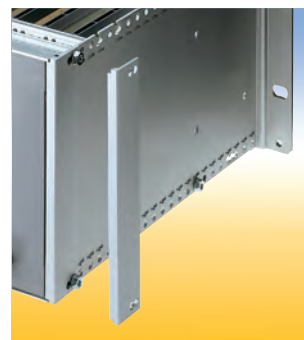
The closing profile will be mounted to the side panel by means of the mounting screws for the horizontal rails.

Material: aluminum, extruded

Finish: anodized

Ordering details

	order no. 409
Closing profile F - 3 U	085695
Closing profile F - 6 U	085696



Closing Profile RFI -F3

For covering the slit between front panel and side panel.

The closing profile will be mounted to the side panel by means of the mounting screws for the horizontal rails. With slits for insertion of RFI-springs.

Material: aluminum, extruded

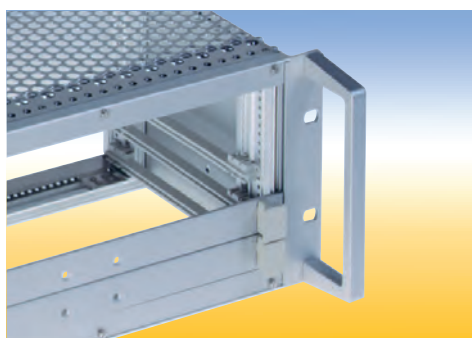
Finish: passivated

Ordering details

	order no. 409
Closing profile RFI - F3 - 3 U	122131
Closing profile RFI - F3 - 6 U	118374

Accessories

	order no. 409
RFI-spring F3 - 3 U	111636
RFI-spring F3 - 6 U	111637



Handle

Material: aluminum

Finish: anodized

Ordering details

	order no. 409
Handle -3 U	040419
Handle -6 U	040420

Accessories

Counter sunk screw M4 x 10, Torx

Minimum order quantity 100 pieces

order no.: **409105789**



Mounting parts for fastening a subrack into a housing

Screw retractor M6

Color: black

Material: POM

Minimum order quantity 10 pieces

order no.: **409074387**

Oval head screw

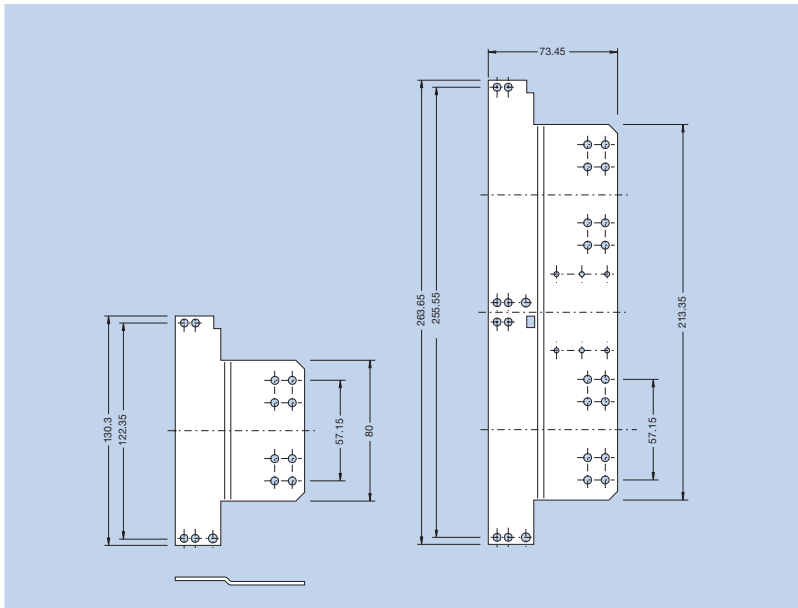
M6 x 16 DIN 7985

steel, nickel plated

Minimum order quantity 10 pieces

order no.: **409013919**

Side Panel Extender, Side Panel Connector



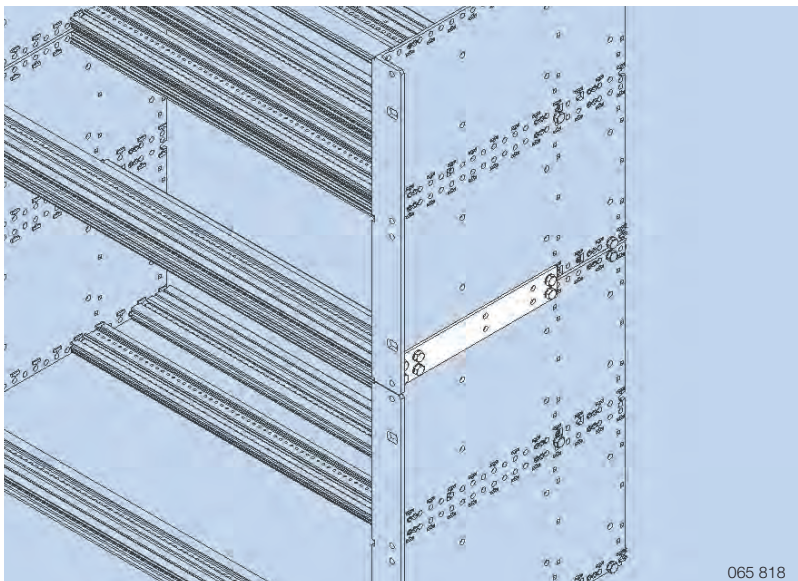
Side Panel Extender

Elongate a side panel about 60 mm to obtain a larger cabling space. The side panel extender is mounted to the side panel by means of the mounting screws for the horizontal rails.

Material: aluminum, 2 mm thick
Finish: passivated

Ordering details

	order no. 409
Side panel extender 3 U	087820
Side panel extender 6 U	087821



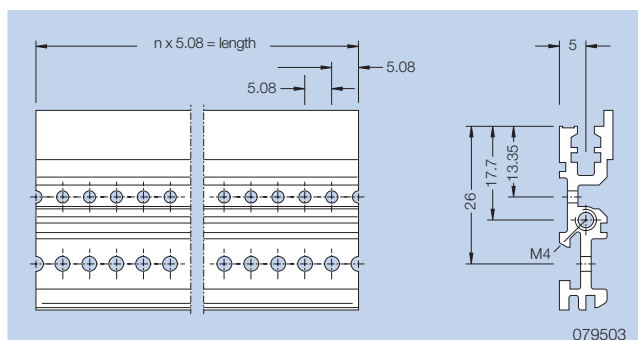
Side Panel Connector

Join two subracks, one above the other. The side panel connector is mounted to the side panels by means of the mounting screws for the horizontal rails. (nom. depth 160 mm).

Material: aluminum, 2 mm thick
Finish: blank

order no.: **409065819**

Horizontal Rails



for subrack *FLEXIBLE Fi*

Front Profile VE1

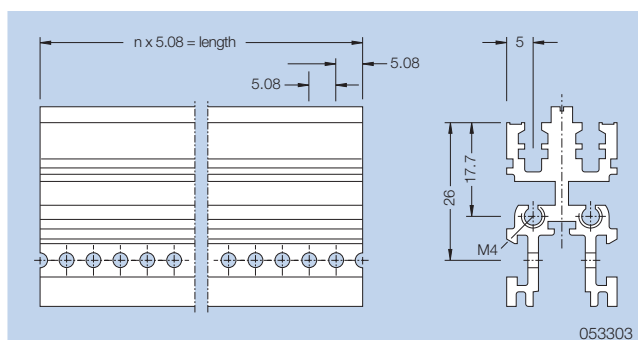
(also rear profile by using a front panel on the rear).

Material: aluminum

Finish: anodized

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Front profile VE1	21	106.68	079521
Front profile VE1	43	218.44	079543
Front profile VE1	85	431.80	079585



for subrack *FLEXIBLE, RFI-SHIELDED and InterRail*

Front Profile 2xVE1

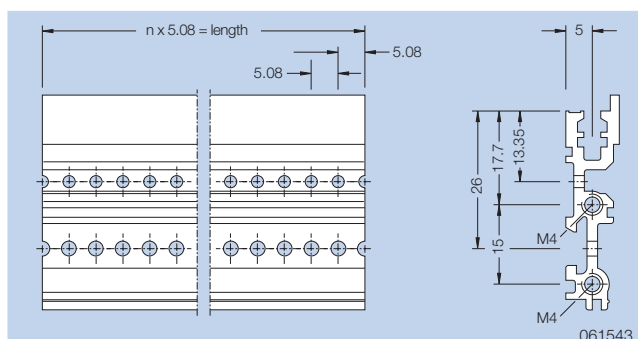
For partition e.g. 6 U subracks into two fields of 3 U.

Material: aluminum

Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Front profile 2xVE1	21	106.68	053321
Front profile 2xVE1	29	147.32	053329
Front profile 2xVE1	43	218.44	053343
Front profile 2xVE1	85	431.80	053385



for subrack *FLEXIBLE*

Front Profile VE12

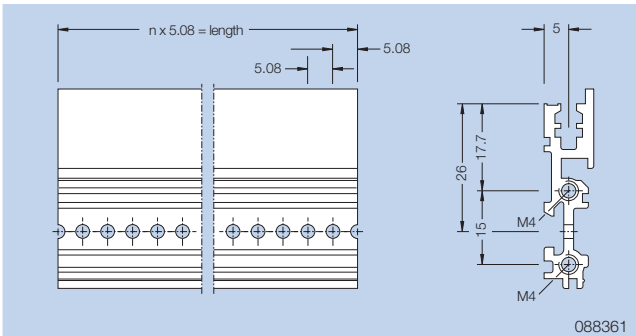
With 2 tapped holes.

Material: aluminum

Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Front profile VE12	43	218.44	062043
Front profile VE12	85	431.80	062085



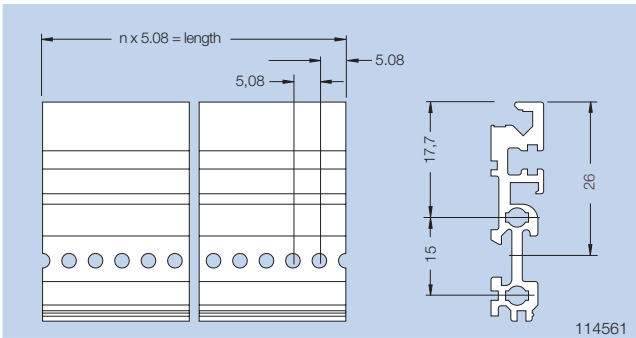
for subrack *RFI-SHIELDED*

Front Profile V12-RFI
(also rear profile by using a front panel on the rear).
With retainer for RFI-spring A2

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no.
Front profile V12-RFI	43	218.44	090799
Front profile V12-RFI	85	431.80	088365



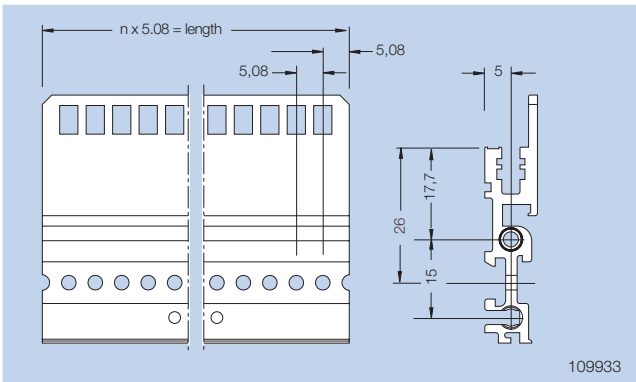
for subrack *RFI-SHIELDED*

Front Profile V12-SFP-RFI
For adapting a plug in front panel.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no.
Front profile V12-SFP-RFI	85	431.80	114562



for subrack *RFI-SHIELDED* and *InterRail*

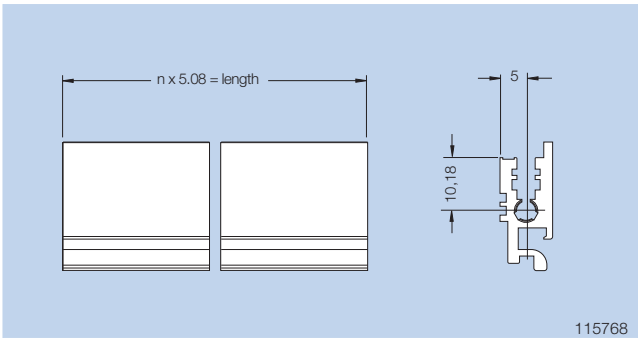
Front Profile V12-IEEE
With grid holes for IEEE handle.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no.
Front profile V12-IEEE-RFI	43	218.44	111182
Front profile V12-IEEE-RFI	85	431.80	109934

Horizontal Rails



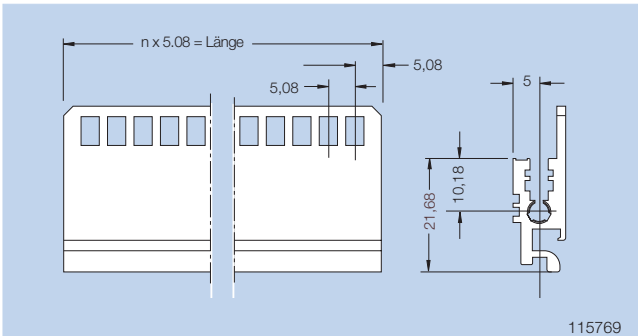
for subrack *InterRail*

Front Profile V1-HUCK
For subrack Rear I/O.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Front profile V1-HUCK	43	218.44	116588
Front profile V1-HUCK	85	431.80	115823



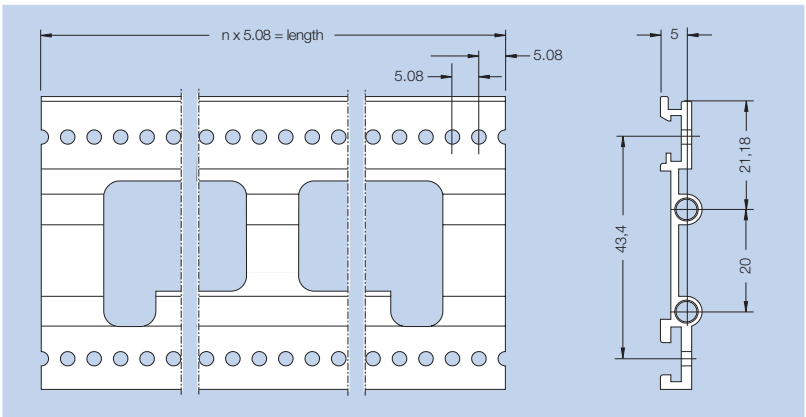
for subrack *RFI-SHIELDED* and *InterRail*

Front Profile V1-HUCK-IEEE
For subrack Rear I/O subrack. With grid holes for IEEE handle. Strengthened version.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Front profile V1-HUCK-IEEE	43	218.44	116507
Front profile V1-HUCK-IEEE	85	431.80	115824



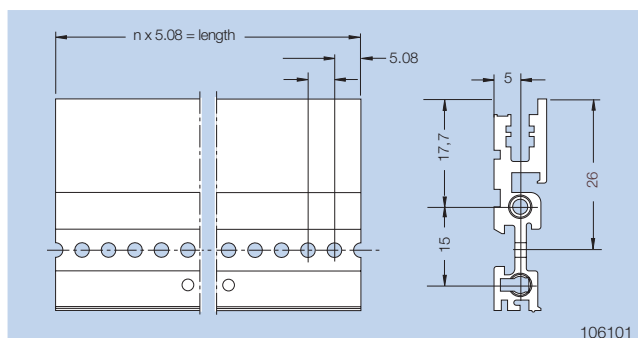
for subrack *RFI-SHIELDED* and *InterRail*

Support Profile
For insertion of card guides in subrack Rear I/O.

Material: aluminum
Finish: blank

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Support profile	43	218.44	122421
Support profile	85	431.80	115771



for subrack **RFI-SHIELDED** and **InterRail**

Front Profile V12-S-RFI

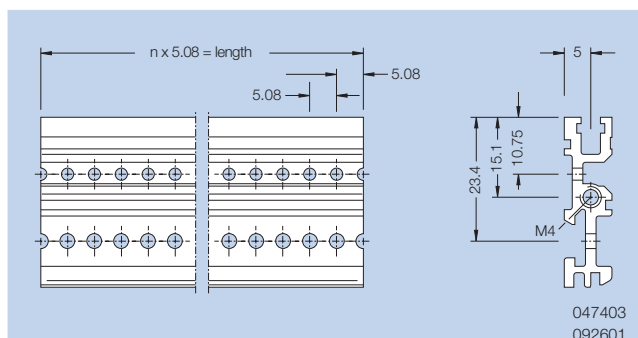
(also rear profile by using a front panel on the rear).
Strengthened version.

Material: aluminum

Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no.
Front profile V12-S-RFI	37	187.96	106102
Front profile V12-S-RFI	43	218.44	116586
Front profile V12-S-RFI	85	431.80	106103



for subrack **FLEXIBLE** and **RFI-SHIELDED**

Rear Profile HE1

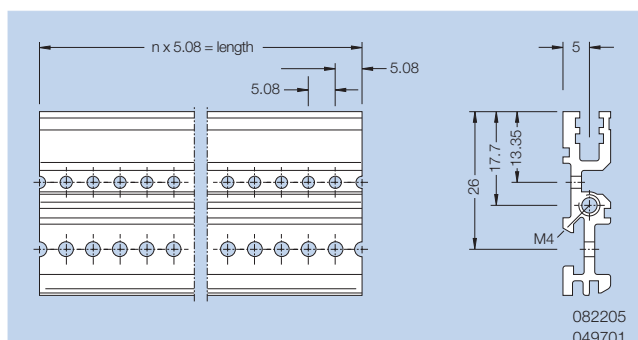
(type *alpha*).

Material: aluminum

Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]	anodized order no.	passivated order no.
Rear profile HE1	21	106.68	047421	161245
Rear profile HE1	43	218.44	047443	104994
Rear profile HE1	85	431.80	047485	092602



for subrack **FLEXIBLE** and **RFI-SHIELDED**

Rear Profile HE2

(type *delta*).

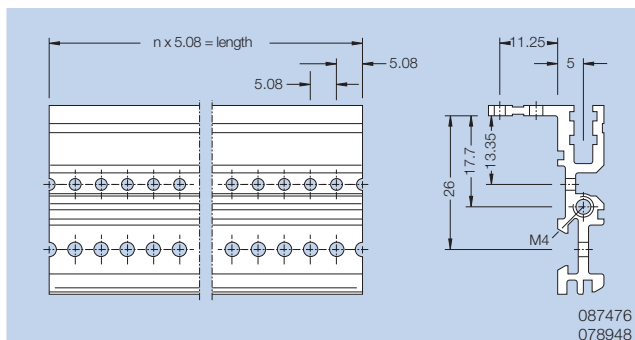
Material: aluminum

Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]	anodized order no.	passivated order no.
Rear profile HE2	21	106.68	049721	082121
Rear profile HE2	43	218.44	049743	082143
Rear profile HE2	85	431.80	049785	082185

Horizontal Rails



for subrack **FLEXIBLE**

Rear Profile HZE

(type *beta*) with integrated connector attachment.

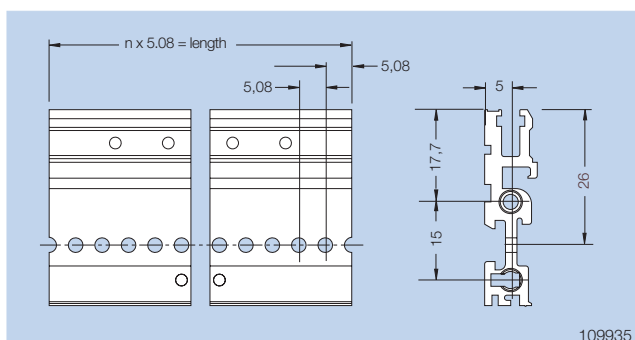
Material: aluminum

Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]
Rear profile HZE	21	106.68
Rear profile HZE	43	218.44
Rear profile HZE	85	431.80

anodized order no.	passivated order no.
409	409
047221	108061
047243	104030
047285	087475



for subrack **RFI-SHIELDED** and **InterRail**

Rear Profile H22-RFI for screw on rear cover

(type *delta*) For use with a rear cover.

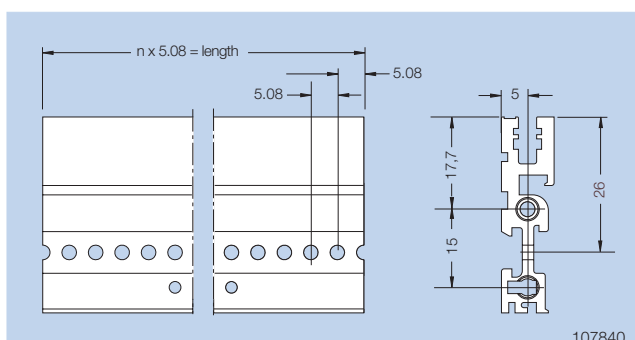
Material: aluminum

Finish: passivated

Ordering details

	nom. width [HP]
Rear profile H22-RFI for screw on rear cover	43
Rear profile H22-RFI for screw on rear cover	85

length [mm]	order no.
409	409
218.44	109 937
431.80	108 246



for subrack **InterRail**

Rear Profile H22-S-RFI

(type *delta*). Strengthened version.

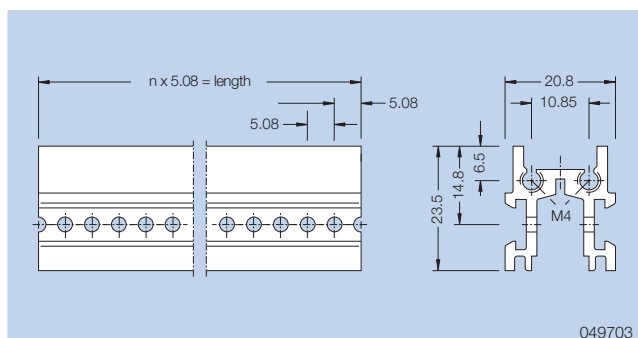
Material: aluminum

Finish: passivated

Ordering details

	nom. width [HP]	length [mm]
Rear profile H22-S-RFI	37	187,95
Rear profile H22-S-RFI	43	218.44
Rear profile H22-S-RFI	85	431.80

order no.
409
107721
107841
107842



for subrack *FLEXIBLE* and *RFI-SHIELDED*

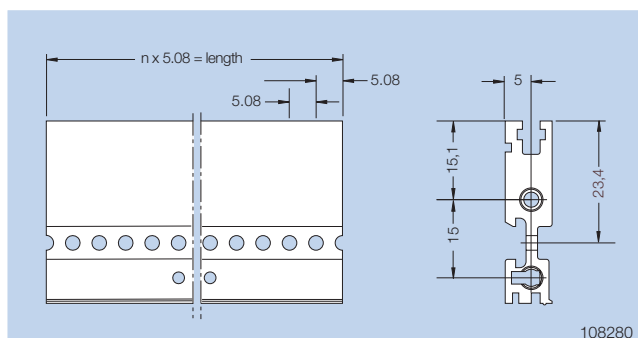
Rear Profile 2xHK

For partition, e.g. 6 U subracks into two fields of 3 U.

Material: aluminum
Finish: anodized

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Rear profile 2xHK	21	106.68	050121
Rear profile 2xHK	29	147.32	050129
Rear profile 2xHK	43	218.44	050143
Rear profile 2xHK	85	431.80	050185



for subrack *InterRail*

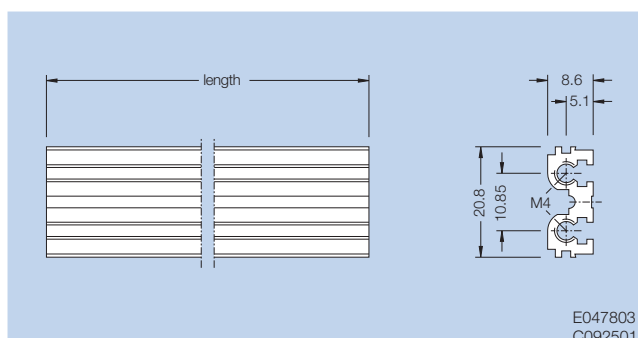
Rear Profile H12-S

(type *alpha*) Strengthened version.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Rear profile H12-S	37	187.96	108987
Rear profile H12-S	43	218.44	121519
Rear profile H12-S	85	431.80	108988



for subrack *FLEXIBLE* and *RFI-SHIELDED*

Center Profile ME1

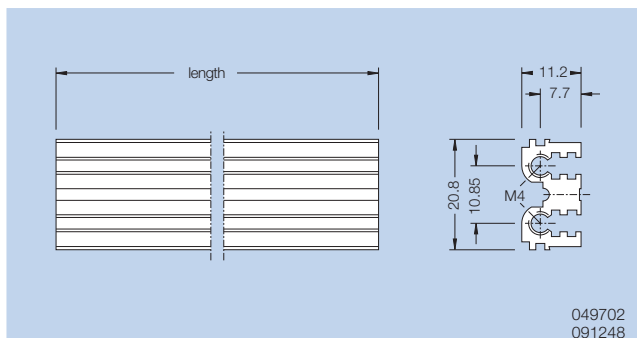
(type *alpha*) Mounted in the rear of a 6 U subrack .

Material: aluminum
Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]	anodized order no. 409	passivated order no. 409
Center profile ME1	21	106.68	047821	161059
Center profile ME1	43	218.44	047843	115042
Center profile ME1	85	431.80	047885	092502

Horizontal Rails



for subrack *FLEXIBLE* and *RFI-SHIELDED*

Center Profile ME2

(type delta) Mounted in the rear of a 6 U subrack.

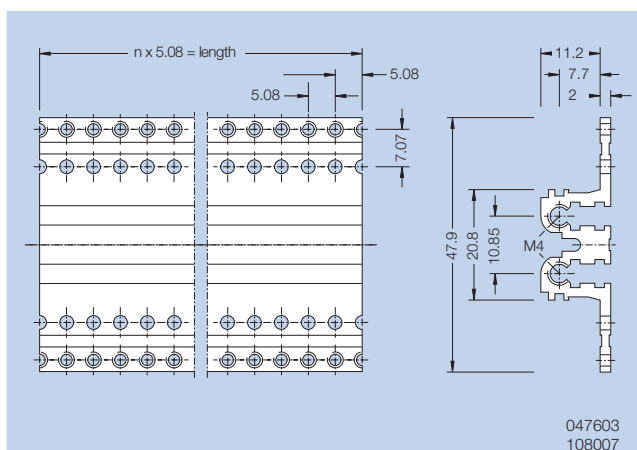
Material: aluminum

Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]
Center profile ME2	21	106.68
Center profile ME2	43	218.44
Center profile ME2	85	431.80

anodized order no. 409	passivated order no. 409
049921	115701
049943	111199
049985	093548



for subrack *FLEXIBLE* and *RFI-SHIELDED*

Center Profile MZE

(type beta) Mounted in the rear of a 6 U subrack, with integrated connector attachment.

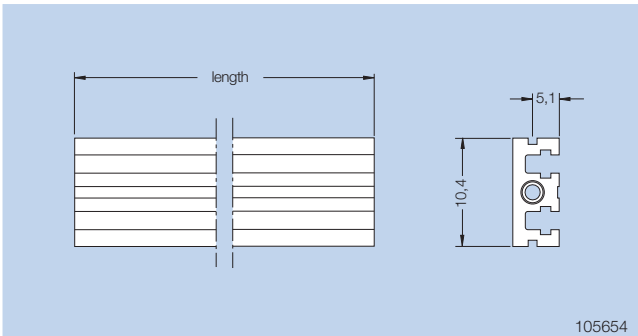
Material: aluminum

Finish: anodized or passivated

Ordering details

	nom. width [HP]	length [mm]
Center profile MZE	21	106.68
Center profile MZE	43	218.44
Center profile MZE	85	431.80

anodized order no. 409	passivated order no. 409
047621	122377
047643	122378
047685	108008



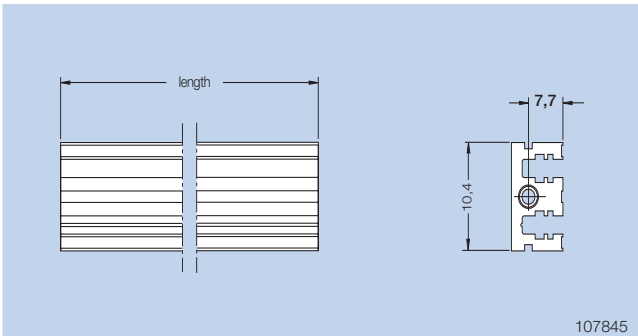
for subrack *InterRail*

Center Profile M1-S
(type alpha) Mounted in the rear of a 6 U subrack.
Strengthened version.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Center profile M1-S	37	187.96	105655
Center profile M1-S	43	218.44	122379
Center profile M1-S	85	431.80	105656



for subrack *InterRail*

Center Profile M2-S
(type delta) Mounted in the rear of a 6 U subrack.
Strengthened version.

Material: aluminum
Finish: passivated

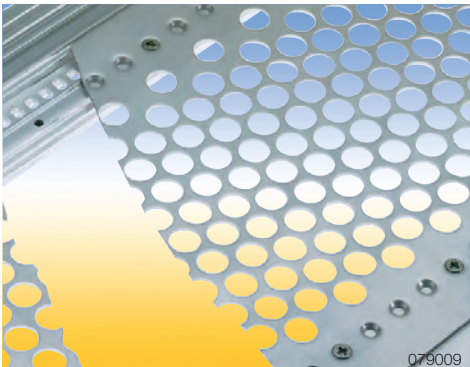
Ordering details

	nom. width [HP]	length [mm]	order no. 409
Center profile M2-S	37	187.96	107722
Center profile M2-S	43	218.44	107846
Center profile M2-S	85	431.80	107847

Accessories

	order no. 409
For contact between pront panel	
RFI-spring P2 - 42 HP	106546
RFI-spring P2 - 84 HP	106547
For contact between pr	
RFI-spring A2 - 42 HP	090800
RFI-spring A2 - 84 HP	085011

Cover Plates



Accessories

Self tapping counter sunk screw M 2.5x10

Minimum order quantity 100 pieces

order no.: **409105790**

for subrack *FLEXIBLE*

Cover Plate F, screw on

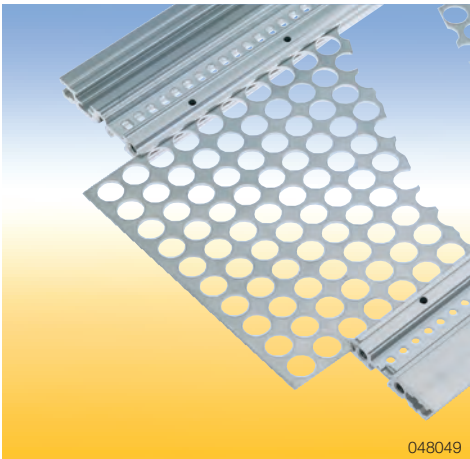
Hole diameter 8.0 mm.

The cover plate is mounted on the horizontal rails with self tapping countersunk screws at special holes

Material: aluminum, 1 mm thick
Finish: blank, seawater resistant

Ordering details

	nom. width [HP]	nom. depth [mm]	order no. 409
Cover plate F, screw on	84	160	079184
Cover plate F, screw on	84	220	079284
Cover plate F, screw on	84	280	079384



for subrack *FLEXIBLE Fi*

Cover Plate Fi, slide-in

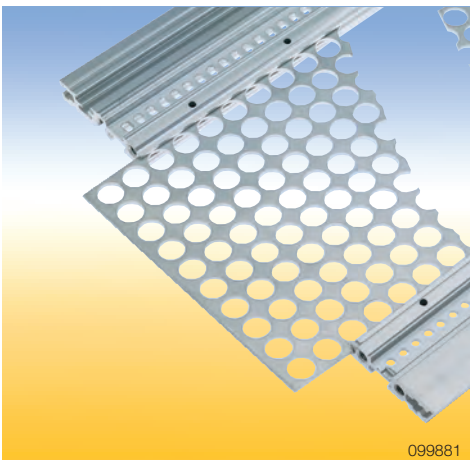
Hole diameter 8.5 mm

The cover plate slides in special slots in the profiles.

Material: aluminum, 1.5 mm thick
Finish: blank, seawater resistant

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Cover plate Fi, slide-in	84	160	048684
Cover plate Fi, slide-in	84	220	048784



for subrack *FLEXIBLE Fs*

Cover Plate Fs, slide-in

Hole diameter 8.5 mm.

The cover plate slides in special slots in the profiles.

Material: aluminum, 1.5 mm thick
Finish: blank, seawater resistant

Ordering details

	nom. width [HP]	length [mm]	order no. 409
Cover plate Fs, slide-in	84	160	099883



for subrack *RFI-SHIELDED* and *InterRail*

Cover Plate, inside

Hole diameter 4 / 5.2 x 4 mm. The cover plate is mounted with self tapping counter sunk screws on the inside of the side panels. Additionally the cover plate is secured to the horizontal rails by clips.

Material: aluminum, 1 mm thick

Finish: passivated, seawater resistant

Ordering details

	nom. width [HP]	nom. depth [mm]	order no. 409
Cover plate, inside	84	160	115270
Cover plate, inside	84	220	116603
	nom. width [HP]	PCB depth/ nom. depth [mm]	order no. 409
Cover plate, inside	84	160 / 220	121329
Cover plate, inside	84	160 / 280	122549
Cover plate, inside	84	220 / 280	122550

Accessories

	order no. 409
For assembling the cover plate to the side panel. Minimum order quantity 100 pieces	
Self tapping counter sunk screw M 2.5 x 6	067624
For assembling the cover plate to the horizontal rails. Minimum order quantity 10 pieces	
Clip	115224



for subrack *RFI-SHIELDED*

Cover Plate, outside

Hole diameter 4 / 5.2 x 4 mm. The cover plate will be mounted with self tapping counter sunk screws outside of the side panels. Additionally the cover plate is secured to the horizontal rails by clips.

Material: aluminum, 1 mm thick

Finish: blank, seawater resistant

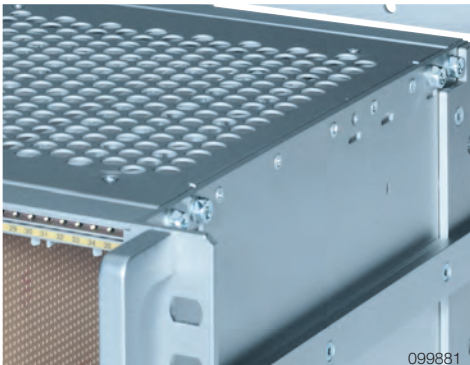
Ordering details

	nom. width [HP]	nom. depth [mm]	order no. 409
Cover plate, outside	84	240	161104
Cover plate, outside	84	260	161105
Cover plate, outside	84	340	115540
Cover plate, outside	84	460	115542

Accessories

	order no. 409
For assembling the cover plate to the side panel. Minimum order quantity 100 pieces	
Self tapping counter sunk screw M 4.7 x 6.5	111184
For assembling the cover plate to the horizontal rails. Minimum order quantity 10 pieces	
Clip	115224

Cover Plates, Rear Cover



for subrack *InterRail*

Cover Plate *InterRail*

Hole diameter 8.0 mm.
The cover plate is mounted with self tapping counter sunk screws at the side panels and at the horizontal rails.

Material: aluminum, 1 mm thick
Finish: blank, seawater resistant

Ordering details

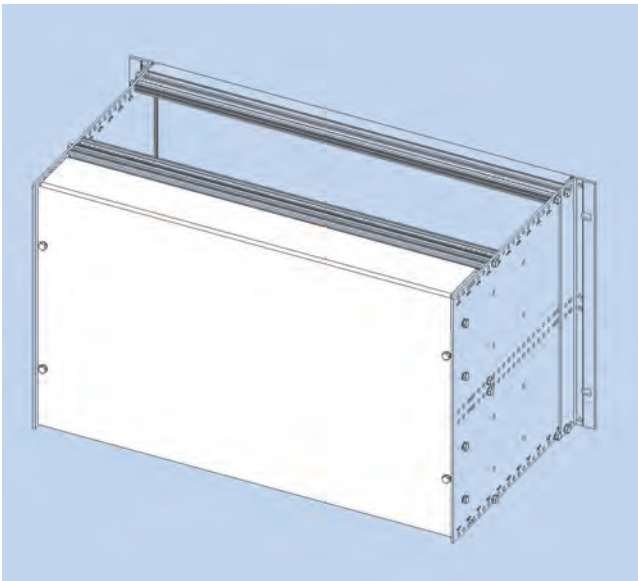
	nom. width [HP]	nom. depth [mm]	order no. 409
Cover plate <i>InterRail</i>	84	160	107906
Cover plate <i>InterRail</i>	84	220	107905
Cover plate <i>InterRail</i>	36	220	107723

Accessories

Self tapping counter sunk screw M 2.5 x 6

Minimum order quantity 100 pieces

order no.: **409067624**



for subrack *FLEXIBLE*

Rear Cover F 84 HP

Technische Daten

Material	Rear cover: aluminum: Holding angle: steel
Finish	Rear cover: passivated Holding angle: galvanized, passivated

Delivery:
Unassembled as single parts or as kit.

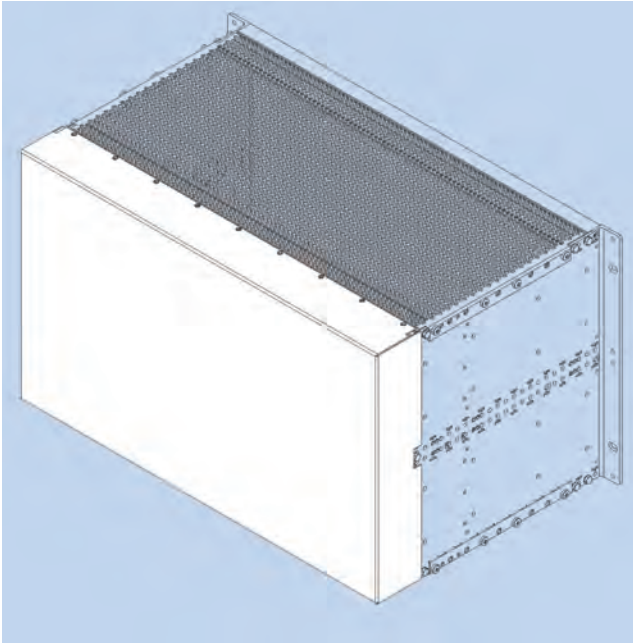
Ordering details

	nom. height [U]	height [mm]	order no. 409
Rear cover F	3	125.0	088190
Rear cover F	6	258.5	089244

Delivery kit rear cover F 84 HP

	3 U Stück	6 U Stück
Rear cover 84 HP	1	1
Holding angle	2	4
Mounting parts	1	1

Rear Cover



Rear Cover RFI 84 HP

Protective wiring rear cover for RFI shielded enclosure.

Material: aluminum, 1 mm thick

Finish: passivated

Delivery:

Unassembled as single parts or as kit.

Delivery:

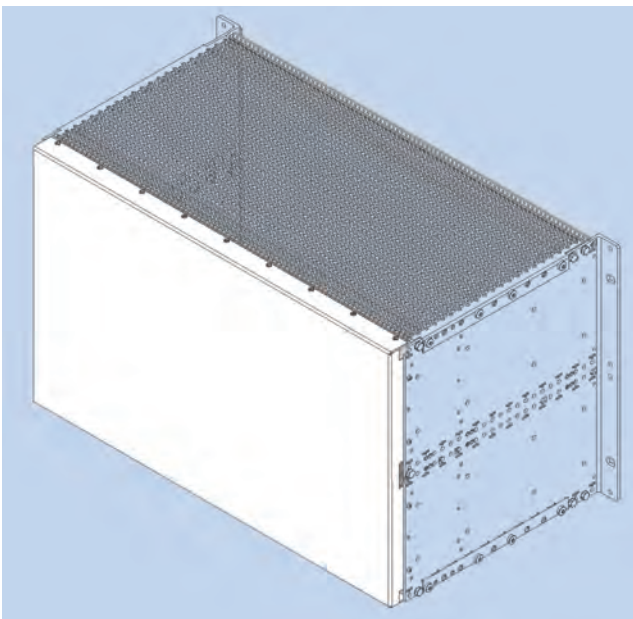
1 rear cover 84 HP

2 RFI-spring U2 (4 for 6 U)

Mounting parts

Ordering details kit rear cover RFI 84 HP

	nom. height [U]	height [mm]	order no. 409
Rear Cover RFI	3	125.0	115898
Rear Cover RFI	6	258.5	115899



Rear Cover RFI 84 HP, inside

Protective wiring rear cover for RFI shielded enclosure.

Material: aluminum, 1 mm thick

Finish: passivated

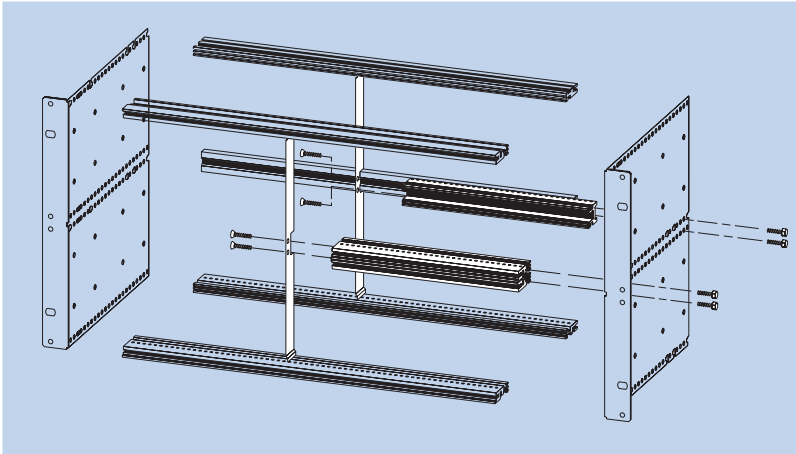
Ordering details rear cover RFI 84 HP, inside

	nom. height [U]	height [mm]	order no. 409
Rear Cover RFI	3	133.15	108875
Rear Cover RFI	6	266.5	108876

Accessories

	order no. 409
For assembling the rear cover to the pr der quantity 100 pieces	
Counter sunk screw M 2.5 x 6	067624
For assembling the rear cover to the side panel. Minimumm order quantity 100 pieces	
Self tapping Taptite screw M 2.5 x 6	082239

Subrack Divider



Assembly:

The short horizontal rails are assembled to the side panel. The dividing strip is inserted into the horizontal rail groove, fixed with a rotating motion and mounted on the short horizontal rails.

Positioning note:

For optimum use of available space in the subrack, PCB's of 6 U should be mounted left, and the 3 U on the right. In this case the dividing strip requires only 1 HP, otherwise 2 HP for the necessary air and leakage paths.

for subrack **FLEXIBLE** and **RFI-SHIELDED**

Subrack Divider Kit

2 x 3 U - 42 HP and 6 U - 40 HP

The divider separates a 6 U subrack into a field for 6 U PCB's and 2 fields of 3 U.

Finish: passivated

Delivery:

- 1 double front profile
- 2xVE1-43 HP passivated
- 1 double rear profile
- 2xHK-43 HP anodized
- 2 divider strips
- Mounting parts

order no.: **409082063**

Single Parts

Blind Front Panel for Subrack Divider

For covering of the divider strip.
Optional with RFI-springs for a RFI shielded front.

Material: aluminum
Finish: passivated
Dimensions: 2 HP x 6 U

order no.: **409116319**

Accessories

order no. **409**

RFI-spring F3 - 3U

111112

RFI-spring F3 - 6U

111116

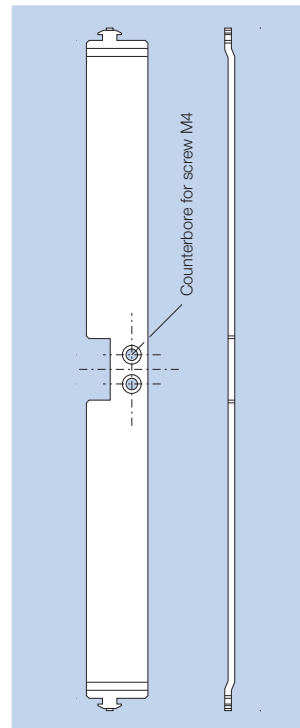
Needed 1 x 6 U and 2 x 3 U RFI-springs

For assembly of the front panel to the horizontal rail

Minimum order quantity 100 pieces

Pan head screw
M 2.5 x 11.3

101917



Divider Strip

Material: aluminum
passivated

Dimensions: 6 U

order no.: **409078942**

Accessories

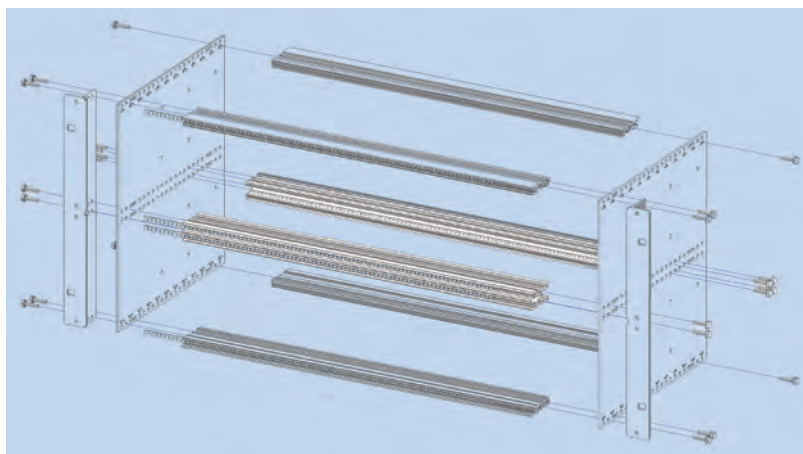
**Counter sunk screw
M 4 x 16**

For assembly of the divider strip to the horizontal rail:

Minimum order quantity 100 pieces

order no.: **409107342**

Subrack Divider, Horizontal Mounting Frame



for subrack **FLEXIBLE** and
RFI-SHIELDED

Subrack Divider Kit 2 x 3 U - 84 HP

For partitioning a 6 U subrack in 2x3U.

Delivery:

1 double front profile
2xVE1 - 85HP colorless passivated 1
double rear profile
2xHK - 85HP anodized
Mounting parts

order no.: **409166270**



Horizontal Mounting Frame

20 HP for horizontal mounting of 6 U
PCB's in 3U subracks.

The horizontal mounting frame needs
52 HP in the width.

For 84 HP subracks are available

Placed right:

52 HP for horizontal mounting frame,
32 HP for 3 U-PCB's

Placed left:

52 HP for horizontal mounting frame,
1 HP for air and leakage paths,
31 HP for 3 U-PCB's.

Ordering details for horizontal mounting frame kits

		nom. depth [mm]	type <i>alpha</i> order no. 409	type <i>beta</i> order no. 409	type <i>delta</i> order no. 409
6 U	anodized	user-	069047	064947	064687
6 U RFI	passivated	160	161161	-	161165
6 U RFI	passivated	220	161162	-	161166

Accessories

Threaded strip 20 x M 2.5

order no.: **409131688**

Partition Wall, Separating Wall Wall and Door Installation Profiles



Partition Wall

For partitioning of a subrack part.
The partition wall 6 U can also be used as a RFI shielded subrack divider in 6 U and 2x3 U parts.

Delivery:

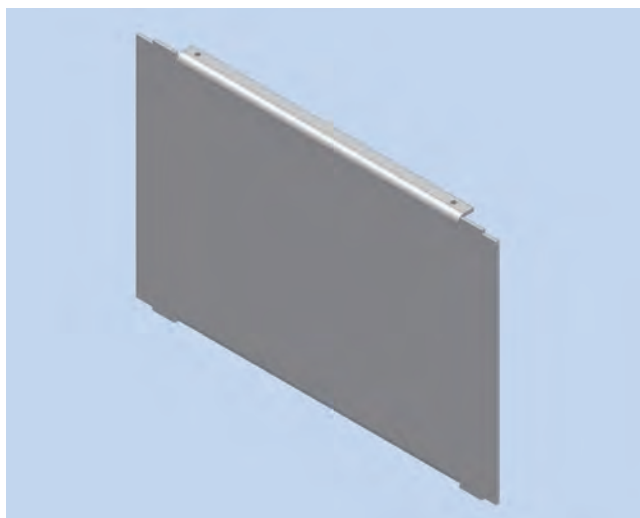
1 partition wall
1 front panel 2 HP
Mounting parts

Accessories

	3 U order no. 409	6 U order no. 409
Shielding kit	116416	116418
consists of:	pieces	pieces
RFI-spring F3 - 3 U	2	2
RFI-spring F3 - 6 U	-	1
RFI-spring M - P1	1	2
Clamping plate	1	2
Mounting parts	1	1

Ordering details kit

	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
Partition wall 3 U	116333	116334
Partition wall 6 U	116335	116336



Separating Wall

Material: aluminum

Finish: blank

Delivery: 1 separating wall
Mounting parts

Ordering details kit

	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
Separating wall 3 U	122648	122649
Separating wall 6 U	122650	122651



for subrack *FLEXIBLE Fs*, *RFI-SHIELDED* and *InterRail*

Wall and Door Installation Profile Kit

For mounting subracks in a door, switch panel etc.
The installation profiles are mounted to the side panel by means of the mounting screws to the horizontal rails.

Material: aluminum

Finish: anodized

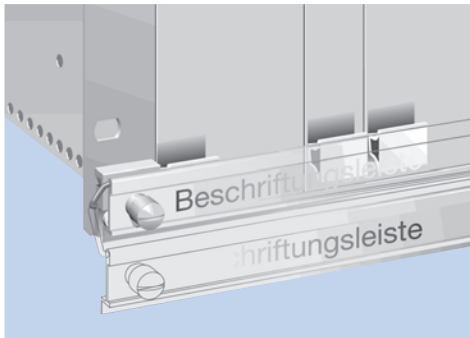
Delivery:

2 wall installation profiles

Ordering details kit

	order no. 409
Wall installation profile 42 HP	108045
Wall installation profile 84 HP	108012

Labelling Rail, Locking Rail Label Strip



for subrack *FLEXIBLE Fs*, *RFI-SHIELDED*, *InterRail*

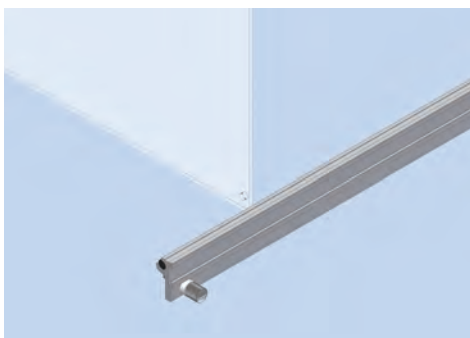
Labelling Rail 84 HP

This hinged labelling rail is mounted on the subrack flanges. Normally, it is placed in front of the front panels. For ejecting a PCB, the rail is turned down.

order no.: **409121941**

Delivery:

1 labelling rail
2 mounting flanges
2 hinge brackets
Mounting parts



Locking Rail 84 HP

For locking of PCB's without front panels. The locking rail is mounted at the horizontal rail in front of the PCB's. A labeling strip can be insert into a groove.

order no.: **409120790**

Delivery:

1 locking rail
1 rubber
Mounting parts



Label Strip

Self adhesive. For identifying PCB slots in the subrack. The PCB slot number can be read through the hole in the front panel.

Note:

The label strip cannot be read while using the RFI spring P2.

Material: PC/PE-foil

Color: yellow/black

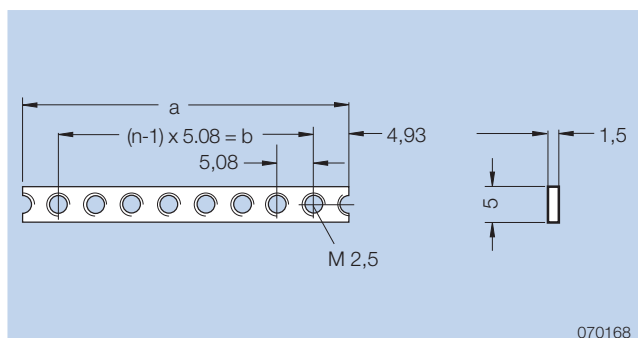
Delivery

Minimum purchase: 18 pieces on a papersheet.

Ordering details kit

	order no. 409
Label strip 01 - 84	024738
Label strip 84 - 01	024740

Threaded Strips



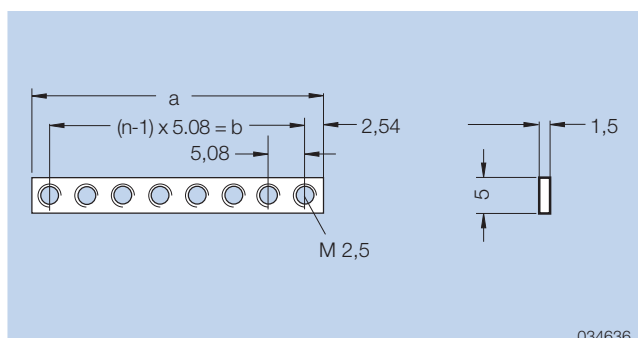
Threaded Strip M 2.5

For attaching the front panels and assembly parts at the wiring field.

Material: steel
Finish: galvanized, passivated

Ordering details threaded strip M 2.5

n = number of threads	a [mm]	b [mm]	order no. 409
20	106.38	96.52	131688
21	111.46	101.60	130883
28	147.02	137.16	131701
32	167.34	157.48	131548
36	187.66	177.80	103777
42	218.14	207.28	100843
84	431.50	421.64	091255



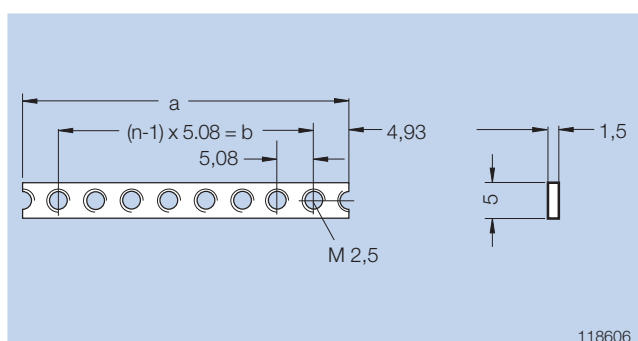
Threaded Strip M 2.5 addable

This threaded strip could be added to other strips and the space between the holes always adds up 5.08 mm.

Material: steel
Finish: galvanized, passivated

Ordering details threaded strip M 2.5 addable

n = number of threads	a [mm]	b [mm]	order no. 409
10	50.80	45.72	131836
20	101.60	96.52	131845
28	142.24	137.16	106751
42	213.36	207.28	131813
84	426.72	421.64	131478



Threaded Strip M 2.5 - stainless steel

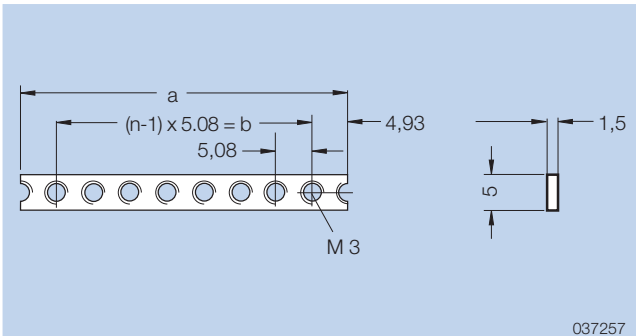
For attaching the front panels and assembly parts at the wiring field
This threaded strip is for nonmagnetic applications.

Material: stainless steel
Finish: blank

Ordering details threaded strip M 2.5 - stainless steel

n = number of threads	a [mm]	b [mm]	order no. 409
84	431.50	421.64	118608

Threaded Strips

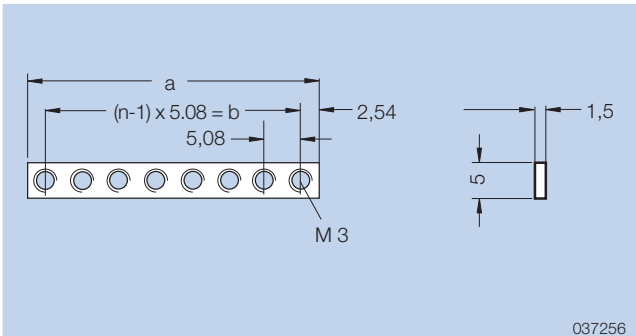


Threaded Strip M 3

Material: steel
Finish: galvanized, passivated

Ordering details threaded strip M 3

n = number of threads	a [mm]	b [mm]	order no. 409
84	431.50	421.64	130890



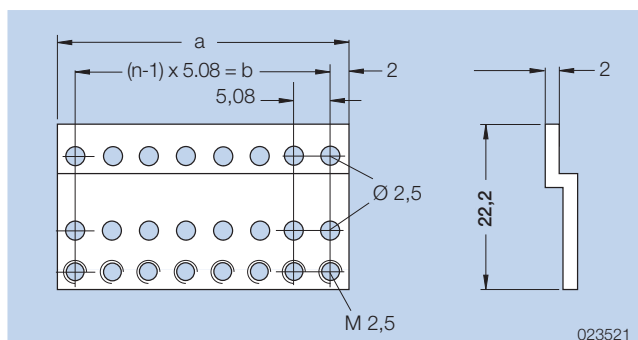
Threaded Strip M 3 addable

Material: steel
Finish: galvanized, passivated

Ordering details threaded strip M 3 addable

n = number of threads	a [mm]	b [mm]	order no. 409
84	426.72	421.64	132038

Z-Rail A, Mounting Rail B



Z-Rail A tapped M 2.5

For mounting connectors in accordance to IEC 60 603/ DIN 41 612 in subracks type *alpha*.
Mounted on the rear profile.

Material: aluminum
Finish: passivated

Ordering details Z-rail A tapped M 2.5

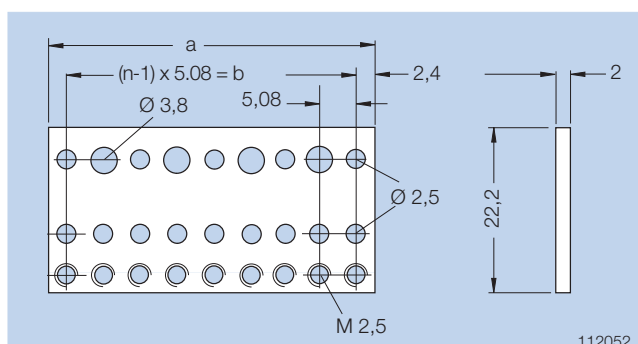
n [HP]	a [mm]	b [mm]	Order no. 409
22	110.68	106.68	024361
42	212.28	208.28	024380
84	426.44	421.64	026586

Accessories

Mounting parts for assembling the Z-rail A:
for 84 HP Z-rail, 5 places suggested.

Minimum order quantity 100 pieces

	order no. 409
Oval head screw M 2.5 x 8 ISO 7045	094602
Washer 2.7	013911
Fitting bolt M 2.5 x 6.5 (for connectors)	032708



Mounting Rail B tapped M 2.5

For mounting connectors in accordance to IEC 60 603/ DIN 41 612.

For mounting at the rear profile on subracks type *alpha* with insulating strip and insulating bushings.

For mounting at the rear profile on subracks type *delta*.

Material: aluminum
Finish: blank

Ordering details mounting rail B tapped M 2.5

n [HP]	a [mm]	b [mm]	order no. 409
42	212.28	208.28	112054
84	426.44	421.64	112055

Accessories

Mounting parts for assembling the mounting rail B:
for 84 HP Z-rail, 5 places suggested.

Minimum order quantity 100 pieces

	order no. 409
Washer 2.7	013911
Fitting bolt M 2.5 x 6.5 (for connectors)	032708
for type <i>alpha</i>	
Oval head screw M 2.5 x 12 ISO 7045	094604
for type <i>delta</i>	
Oval head screw M 2.5 x 8 ISO 7045	094602



Insulating Strip

For insulated mounting of wiring supports, e. g. of the mounting rail B. Mounted between horizontal rail and wiring support.

Technical data

Material	PPO / PC
Continuous temperature	– 40 °C up to + 105 °C
Fire protection class	UL 94 V–1
Color	gray

Ordering details

	length [HP]	order no. 409
Insulating strip-40	40	061541
Insulating strip-84	84	051981



Insulating Bushing 2.6

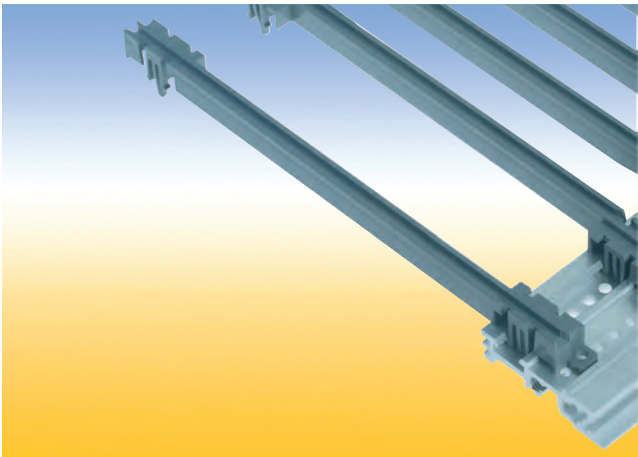
For use together with mounting rail B and insulating strip.

Technical data

Material	PC
Continuous temperature	– 40 °C up to + 115 °C
Fire protection class	UL 94 V–0
Color	transparent

order no.: **409018055**

Card Guide ECONOMY



for subrack *FLEXIBLE*

Card Guide ECONOMY

An inexpensive snap-in card guide that can also be secured to the horizontal rails with self tapping screws.

Technical data

Material	PC
Color	gray
Continuous temperature	– 40 °C up to + 115 °C
Fire protection class	UL 94 V–0

Ordering details

	nom. length [mm]	PCB thickness [mm]	order no.
Card guide ECONOMY	160	1.6	108173
Card guide ECONOMY	220	1.6	047601

Accessories

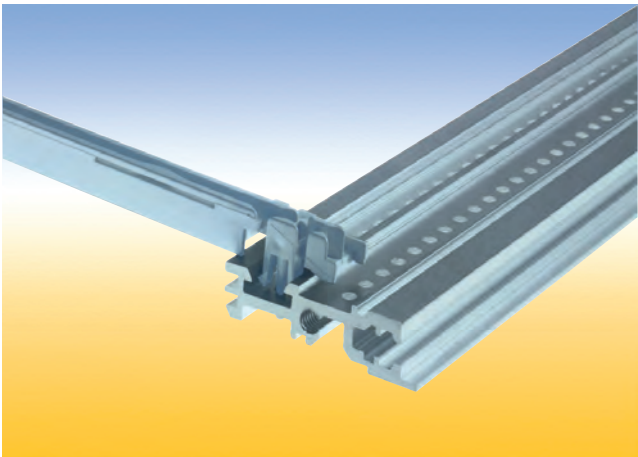
Self tapping oval head screw M 2.5 x 5

For assembling the card guides to the horizontal rails

Minimum order quantity 100 pieces

order no.: **409039691**

Card Guide UNIVERSAL



Card Guide UNIVERSAL

This is an all-purpose card guide with provision for a spring to contact front panels.

Technical data

Material	PC
Color	gray
Continuous temperature	– 40 °C up to + 115 °C
Fire protection class	UL 94 V–0

Ordering details

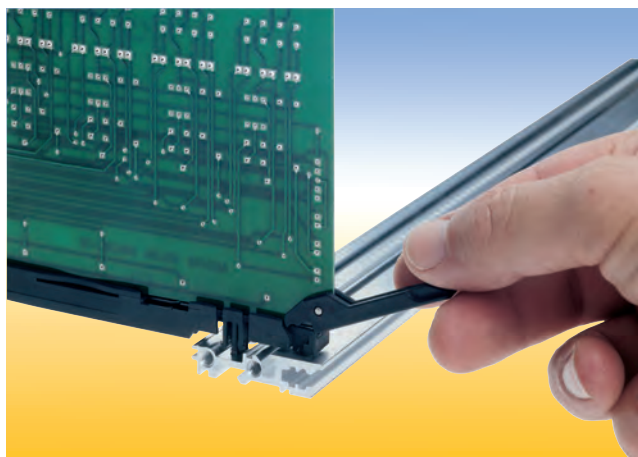
	nom. length [mm]	PCB thickness [mm]	order no. 409
Card guide UNIVERSAL	160	1.6 - 2.0	061468
Card guide UNIVERSAL	220	1.6 - 2.0	061469
Card guide UNIVERSAL	280	1.6 - 2.0	061526

Accessories

Grounding contact for front panels

order no.: **409058102**

Card Guide with integrated push and pull assist



Card Guide with integrated push and pull assist

This special card guide with an integral small lever aids in the handling of PCB's with high pin plug in connectors.

The lever is supported by the walls of a special guide chamber when the board is pulled out or pushed in. It is suitable for a spring to contact a track near the PCB edge.

This card guides are snap-in and can be secured with screws.

Delivery:

- 1 card guide top
- 1 card guide bottom

Technical data

Material	card guide: PBT lever: PPO grooved pin: steel, blank
Color	black
Continuous temperature	- 40 °C up to + 130 °C
Fire protection class	UL 94 V-0



Ordering details kit

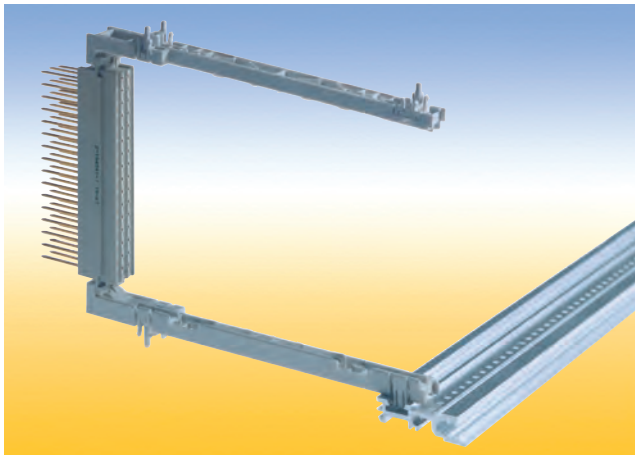
card guide with integrated push and pull assist

	nom. length [mm]	PCB thickness [mm]	order no. 409
Card guide 160	160	1.6	112453
Card guide 220	220	1.6	112454
Lever with grooved pin	-	1.6	111157

For a card guide kit needed 2 levers

Accessories

	Order no. 409
PCB track contact PROFIL	103358
For assembling the card guides to the horizontal rails. Minimum order quantity 100 pieces	
Oval head screw M 2.5 x 12	094604
Hexagonal nut M 2.5	013938
Washer 2.7	013911



Card Guide CONN

For easy screwless snap-on mounting of connectors accordance to IEC 60 603/ DIN 41 612.

With a provision for a spring to contact front panels and for contacting a track near the PCB edge.

This snap-in card guides can also be secured with screws.

Delivery:

1 card guide CONN top

1 card guide CONN bottom

Technical data

Material	nom. length 160: PC nom. length 220: PBT
Color	gray
Continuous temperature	Lexan: - 40 °C up to + 115 °C PBT: - 40 °C up to + 130 °C
Fire protection class	UL 94 V-0

Ordering details kit card guide CONN

	nom. length [mm]	PCB thickness [mm]	order no. 409
Card guide CONN	160	1.6	083091
Card guide CONN	220	1.6 - 2.4	116200

Accessories

	order no. 409
Grounding contact for front panels	058102
PCB track contact PROFIL	103358
For assembling the card guides to the horizontal rails. Minimum order quantity 100 pieces	
Oval head screw M 2.5 x 12	094604
Hexagonal nut M 2.5	013938
Washer 2.7	013911

Card Guide VIB



Card Guide VIB

New model with improved flammability properties in accordance with EN45545-2 and low halogen content.

Lattice construction for heavy mechanical loads.

With a provision for a spring to contact front panels and for contacting a track near the PCB edge.

Card guides can additionally be fixed with screw and nut for increased shock and vibration requirement. Exception: Nominal length 280 always needs to be fixed by screws.

Technical data

Material	PC glass fiber reinforced
Color	black
Continuous temperature	up to + 125 °C
Fire protection class	UL 94 V-0
Halogen content	halogen free (IEC 61249-2-21)
Fire protection on railway vehicles (DIN EN 45545-2) R22, R23, R24	HL3

Two versions:

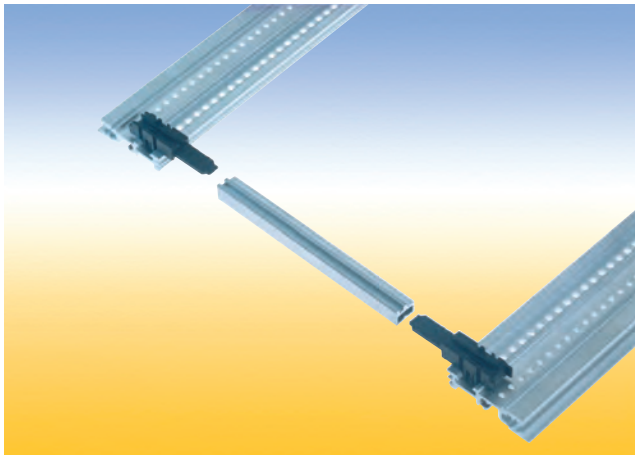
1. Without nut: Can be added subsequently in the existing hexagonal molding.
2. With nut: For assembly to the horizontal rail by oval head screws M 2.5 x 12.

Ordering details card guide VIB

nom. length [mm]	PCB thickness [mm]	snap-in	1. without nut	2. with nut
			order no. 409	order no. 409
80	1.6 - 2.4	yes	140967	-
80	1.6 - 2.4	yes	140968	-
100	1.6	yes	140964	140993
160	1.6	yes	140986	141001
160	2.0	yes	140987	141002
160	2.4	yes	140965	140994
220	1.6	yes	140969	140996
220	2.4	yes	140970	140997
280	1.6	-	-	140998

Accessories

	order no. 409
Grounding contact for front panels	058102
PCB track contact PROFIL	103358
For assembling the card guides to the horizontal rails. Minimum order quantity 100 pieces	
Oval head screw M 2.5 x 12	094604
Hexagonal nut M 2.5	013938
Washer 2.7	013911



Card Guide VARIO

This is a length variable card guide constructed from 3 pieces. The center piece can be cut to any length. With a provision for a spring to contact front panels. These snap-in end pieces can also be secured with screws.

Two versions:

1. With pressed-in nut M 2.5
for assembly to the horizontal rail with oval head screws M 2.5 x 12
2. Without a nut, but one can be added in the existing hexagonal molding.

Technical data

Material	end pieces: PPO center piece: aluminum or PPO
Color	end pieces: black center piece: black, silver
Continuous temperature	– 40 °C up to + 105 °C
Fire protection class	UL 94 V-1

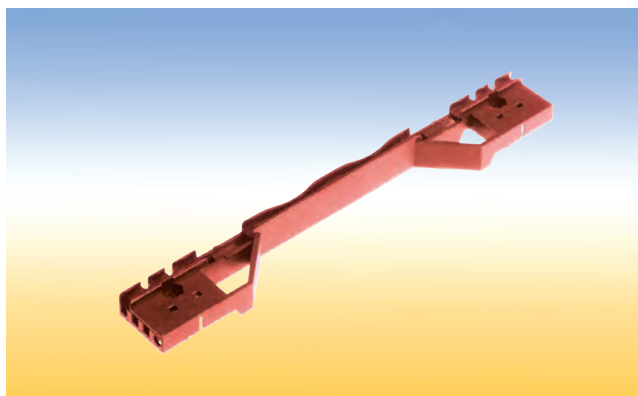
Ordering details card guide VARIO

	length [mm]	PCB thickness [mm]	order no. 409
Pair of end pieces			
with nut M 2.5	-	1.6	061086
without nut	-	1.6	061051
with nut M 2.5	-	2.4	061088
without nut	-	2.4	061052
center piece			
plastic	1000	1.6	061061
aluminum	1000	1.6	061059
plastic	1000	2.4	061062
aluminum	1000	2.4	061060

Accessories

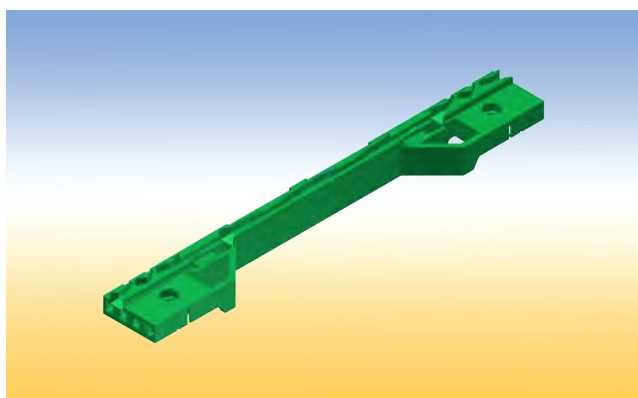
	order no. 409
Grounding contact for front panels	058102
For assembling the card guides to the horizontal rails. Minimum order quantity 100 pieces	
Oval head screw M 2.5 x 12	094604
Hexagonal nut M 2.5	013938
Washer 2.7	013911

Card Guide IEEE and Card Guide IEEE with 1/2 HP lateral offset



Technical data

Material	PBT
Color	black or red
Continuous temperature	– 40 °C up to + 115 °C
Fire protection class	UL 94 V-0



Technical data

Material	PBT
Color	green
Continuous temperature	– 40 °C up to + 115 °C
Fire protection class	UL 94 V-0

Accessories for Card Guide IEEE

	order no. 409
contact spring IEEE	113450
coding pin IEEE gray	113713
coding pin IEEE red	116442
PCB track contact PROFIL	103358
For assembling the card guides to the horizontal rails. Minimum order quantity 100 pieces	
Lens head screw M 2.5 x 12	094604
Hexagonal nut M 2.5	013938
Washer 2.7	013911

Card Guide IEEE

This card guide is in accordance to specification IEEE 1101.10.

The required coding of the IEEE is integrated in the card guide head.

With provision for the IEEE contact spring for grounding of the alignment-pins of the PCB's front panel. Also with a provision for contacting a track near the PCB edge. This snap-in card guides can be secured with screws.

Ordering details for card guide IEEE

color	nom. length [mm]	PCB thickness [mm]	order no. 409
black	160	1.6 - 2.4	113400
black	220	1.6 - 2.4	131973
red	160	1.6 - 2.4	116440

Card Guide IEEE with 1/2 HP lateral offset

This card guide is also in accordance to specification IEEE 1101.10.

For CompactPCI-power supplies and for Plug-in units fitted with SMD.

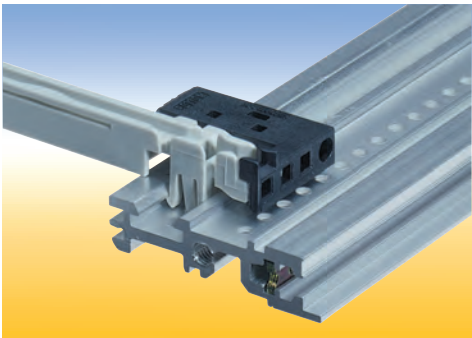
With provision for the IEEE contact spring for grounding of the alignment-pins of the PCB's front panel.

Also with a provision for contacting a track near the PCB edge.

This card guide is secured with screws.

Ordering details for card guide IEEE with 1/2 HP lateral offset

color	nom. length [mm]	PCB thickness [mm]	order no. 409
green	160	1.6 - 2.4	130889



for card guide **UNIVERSAL, CONN, VIB and VARIO**

Coding Head IEEE

Snapped on the head of standard card guides to comply to the requirements of the specification IEEE 1101.10

Functions:

- 1. Holding the IEEE contact spring for grounding the alignment pins of the front panel.
- 2. Adapting the IEEE coding pin.
- 3. Guiding the 1.6 to 2.4 mm thick PCB.

Technical data

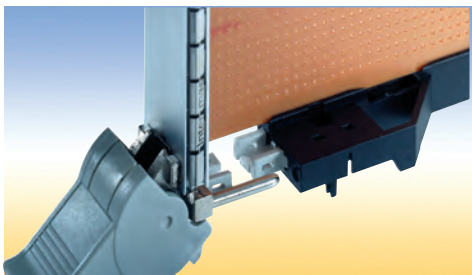
Material	PC
Color	black, red
Fire protection class	UL 94 V-0

Ordering details kit

	order no. 409
coding head IEEE - black	113905
coding head IEEE - red	116441

Delivery:

- 1 coding head IEEE top
- 1 coding head IEEE bottom



Contact Spring IEEE

Snapped into the IEEE card guide or IEEE coding head to ground the alignment pin of the front panel.

Material: tin-bronze

order no.: **409113450**

Coding Pin IEEE

Snapped into the IEEE card guide or IEEE coding head.

Technical data

Material	PC
Fire protection class	UL 94 V-0

Ordering details

	order no. 409
coding pin IEEE - gray	113713
coding pin IEEE - red	116442

Accessories for Card Guides



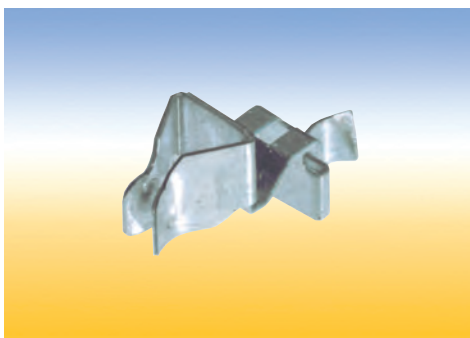
PCB Track Contact PROFIL

Snapped into a card guide, connecting a PCB's edge to the horizontal rail of a subrack.

Technical data

Material	tin-bronze
Finish	tin-plated
Fire protection class	UL 94 V-0

order no.: **409103358**



Grounding Contact for Front Panels

For pre-mating grounding. In connection with front connector with male contact.

Material: tin-bronze
tin-plated

order no.: **409058102**

Accessories

Front connector with male contact

	order no. 409
top	107728
bottom	107727



Cover for Ventilation Openings

Snapping into the horizontal rails. Covers the ventilation openings between card guides.

Material: plastic
Fire protection class: UL 94 V-0

Ordering details

	nom. length [mm]	order no. 409
Front connector with male contact 4 HP	160	106530
Front connector with male contact 4 HP	220	106531



PCB Lead-In

For easy lead-in of the PCB into the card guide.

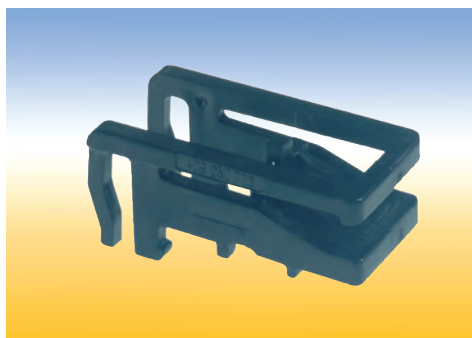
Technical data

Material	PC, 10% fiber glass reinforced
Color	gray, similar RAL 7044
Fire protection class	UL 94 V-0

Delivery:

1 PCB lead-in top
1 PCB lead-in bottom

order no.: **409092785**



PCB Locking Spring, plastic
Secures PCB without front panels.

Technical data

Material	PC
Color	black
Fire protection class	UL 94 V-0

order no.: **409052720**



PCB Locking Device Kit

Secures PCB's without front panels. Used for easy locking and ejecting of PCB's

Technical data

Material	handle: PBT pin: steel
Color	black
Fire protection class	UL 94 V-0

Delivery

Kit, unassembled

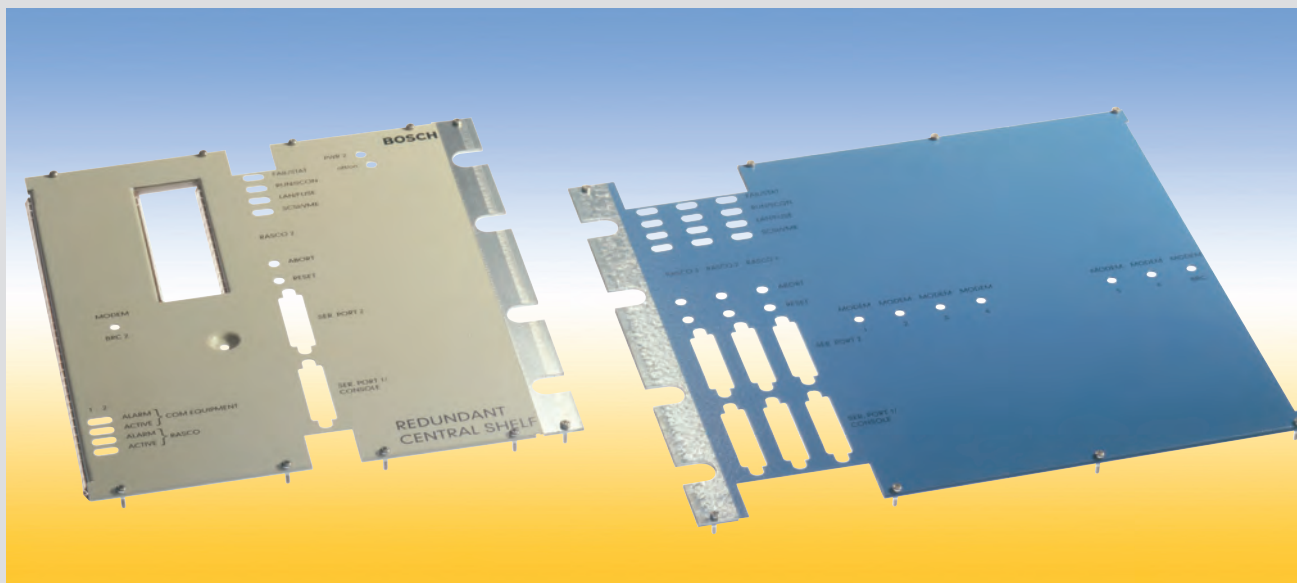
Delivery:

2 handles
2 pins
2 PCB locking springs

Ordering details kit

	order no. 409
PCB locking device 1.6	068698
PCB locking device 2.4	102297

Front Panels



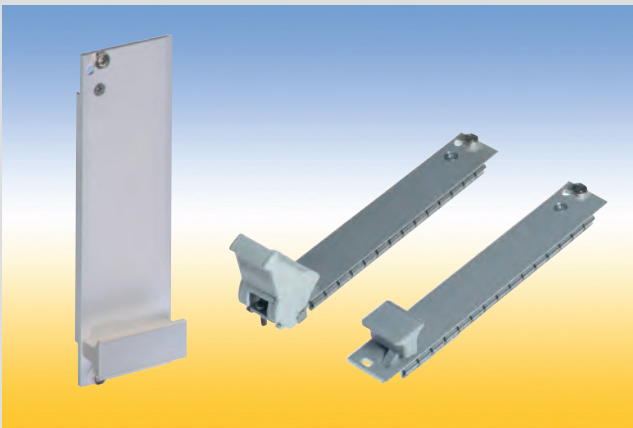
In addition to the wide range of standard front panels we also provide on request individual customer specific front panels with punching, surface finish and silk screening.
Textured or smooth painted in all relevant RAL-colors, abrasion-resistant silk-screen printing as well as color coordinated engraving give your front panel an individual appearance.

Please ask your local representative for your
individual front panel design.
You find your contact person on our homepage:
www.intermas-el.com

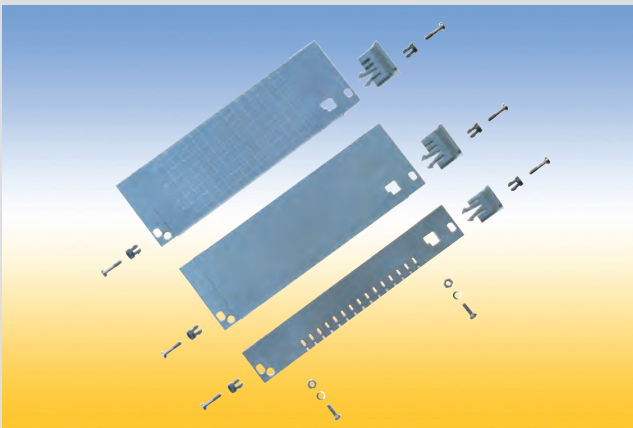
Front Panels and Handles



- ✓ Blind Front Panels

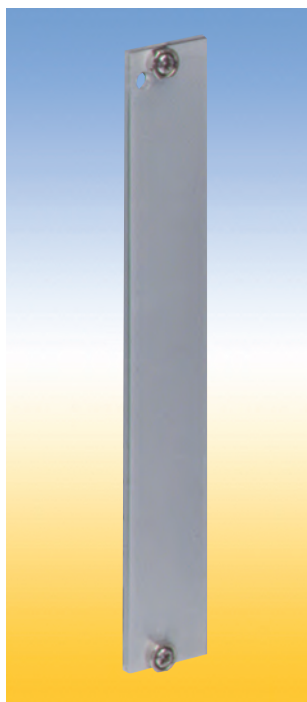


- ✓ Front Panels with Handle
- ✓ Handles
- ✓ Front Panels with Ejector Handle
- ✓ Ejector Handles
- ✓ Front Panels with IEEE Handle
- ✓ IEEE-Handles



- ✓ Plastic Front Panels

Blind Front Panels



Blind Front Panels

For covering empty sections or to carry various components in subracks.

Four versions are available:

1. Flat front panel blank

The front side is covered with a removable transparent foil.

2. Flat front panel anodized

Front anodized, rear conductive.

3. Flat front panel RFI

Front anodized, rear conductive, with slits in the side edges for insertion of RFI springs.

4. Extruded front panel RFI

Made of extruded aluminum alloy, with slits in the side edges for insertion of RFI springs for contact.

Surface finish is passivated.

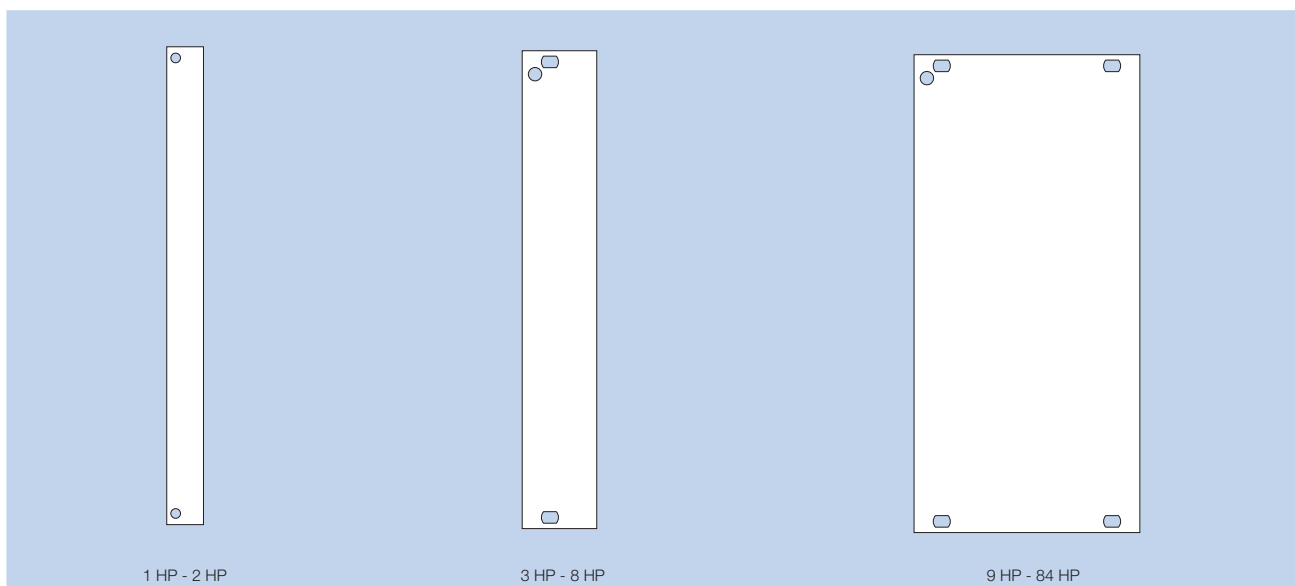
Material

Flat front panel: aluminum 2.5 mm thick

Extruded front panel: aluminum

Delivery

Front panels are delivered unassembled as single parts or as a kit.



Blind Front Panels

Ordering details blind front panels (flat front panel)

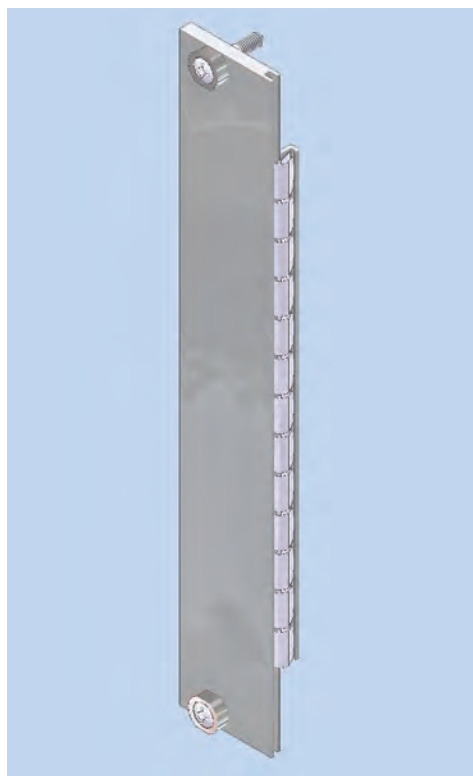
		3 U	3 U	6 U	6 U
	nom. width [HP]	blank order no. 409	anodized/ conductive order no. 409	blank order no. 409	anodized/ conductive order no. 409
Blind front panel	1	097201	-	097601	-
Blind front panel	2	097202	-	097602	-
Blind front panel	3	097203	-	097603	-
Blind front panel	4	097204	097404	097604	097804
Blind front panel	5	097205	-	097605	-
Blind front panel	6	097206	097406	097606	097806
Blind front panel	7	097207	-	097607	-
Blind front panel	8	097208	097408	097608	097808
Blind front panel	10	097210	-	097610	-
Blind front panel	12	097212	097412	097612	097812
Blind front panel	14	097214	097414	097614	097814
Blind front panel	21	097221	097421	097621	097821
Blind front panel	28	097228	097428	097628	097828
Blind front panel	42	097242	097442	097642	097842
Blind front panel	84	097284	097484	097684	097884

Accessories

Minimum order quantity 100 pieces

	pieces for 1-2 HP	pieces for 3-8 HP	pieces for 9-85 HP	order no. 409
Screw retainer M2.5 gray	-	2	4	100539
Screw retainer M2.5 black	-	2	4	100538
Pan Head Screw M 2.5 x 11.3	2	2	4	101917

Blind Front Panels RFI



Subrack Accessories

Ordering details kit - blind front panel RFI

nom. width [HP]	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
1	114453	-	114464	-
2	114454	-	114465	-
3	114455	-	114466	-
4	114361	113583	114387	-
5	114362	-	114388	-
6	114363	113586	114389	-
7	114365	-	114390	-
8	114366	-	114391	-
9	114367	-	114392	-
10	114368	-	114393	-
12	-	113589	-	113608
14	-	113590	-	113609
21	-	113592	-	113611
28	-	113593	-	113612
42	-	113594	-	113613
43	-	114487	-	-
84	-	113595	-	113614
85	-	113596	-	-

Finish: flat front panel: front side anodized, rear side conductive
extruded front panel: passivated

Delivery kit - blind front panel RFI:

	pieces for 1-2 HP	pieces for 3-8 HP	pieces for 9-43 HP	pieces for 44-85 HP
Front panel	1	1	1	1
	1 / 2	1 / 2	1 / 2	1 / 2
Press-fit bushing M2.5	-	2	4	6
Mounting parts-kit	1	1	1	1

Accessories

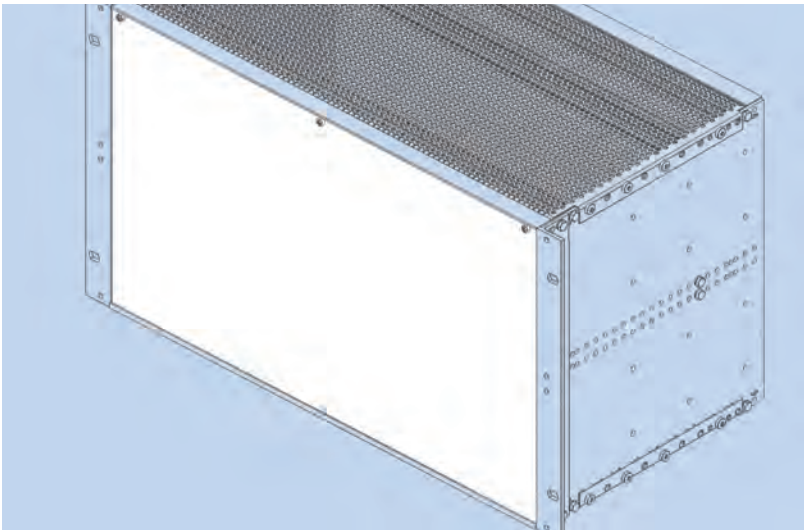
Roller cutter to assemble
the RFI spring F3

order no.: 409118433

Ordering details single part blind front panel RFI

nom. width [HP]	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
1	114458	-	114469	-
2	114459	-	114470	-
3	113027	-	114476	-
4	111608	112252	111618	-
5	113028	-	114384	-
6	111609	112258	111619	-
7	111610	-	111620	-
8	111611	-	111621	-
9	113029	-	114385	-
10	113030	-	114386	-
12	-	112551	-	112611
14	-	112557	-	112617
21	-	112578	-	112638
28	-	112821	-	112943
42	-	112581	-	112641
43	-	114082	-	-
84	-	113598	-	113617
85	-	113599	-	-

Front Panels plug-in, hinged



Plug-in Front Panel 85 HP

The front panel bottom edge is inserted in the groove of a specially profiled rail. With slits in the side edges for insertion of RFI springs. To be used in combination with below mentioned flanges only.

Finish:
front side anodized, rear side conductive

Delivery:
1 front panel
3 press-fit bushing M 2.5
3 cross-head screw M 2.5 x 11.3

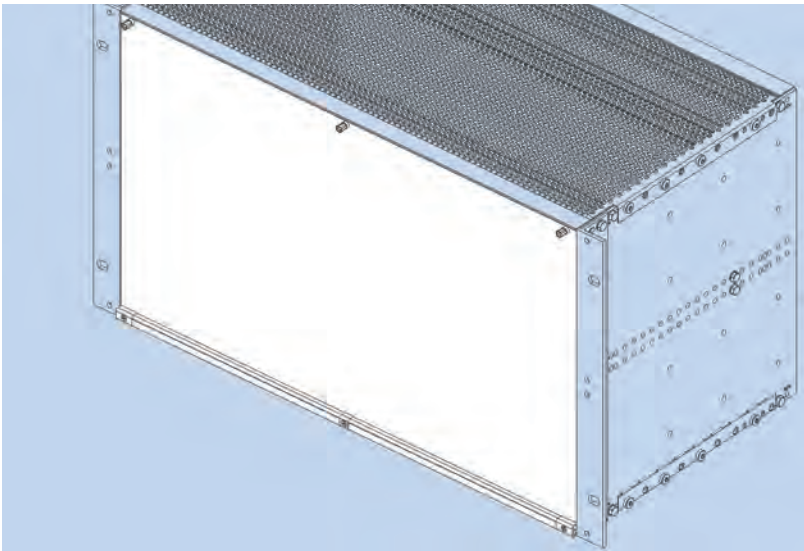
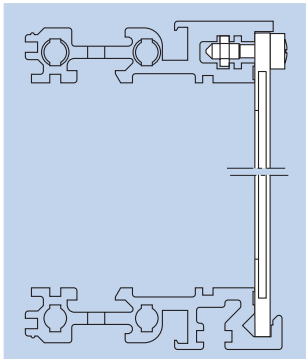
Ordering details for kit

	order no. 409
Plug-in front panel 3 U	113948
Plug-in front panel 6 U	113950

Accessories

	order no. 409
Pr rail VE12SFP-RFI-85	114562
Flange RFI - FP - 3 U	114708
Flange RFI - FP - 6 U	114715
RFI spring F3 - 3U	111112
RFI spring F3 - 6U	111116

For one front panel 2 RFI springs are needed.



Hinged Front Panel 85 HP

With slits in the side edges for insertion of RFI springs. The hinge is screwed to the prprofiled rail of the subrack. An 84 HP threaded strip is needed. To be used in combination with below mentioned flanges only.

Finish:
front side anodized, rear side conductive

Delivery:
1 front panel
1 hinge
3 press-fit bushings
Mounting parts

Delivery: as unassembled kit.
Assembled kits on request.

Ordering details for kit

	order no. 409
Hinged front panel 3 U	113705
Hinged front panel 6 U	113706

Accessories

	order no. 409
Threaded strip 84 HP	131478
Flange RFI - FP - 3 U	114708
Flange RFI - FP - 6 U	114715
RFI spring F3 - 3U	111112
RFI spring F3 - 6U	111116

For one front panel 2 RFI springs are needed.

Front Panels with Handle



Front Panels with Handle

For assembly on a PCB.

Handle and front connector are screwed on the front panel.

The plain front panel is easy to modify.

Four versions are available:

1. Flat front panel blank

The front side is covered with a removable transparent foil.

2. Flat front panel anodized

Front anodized, rear conductive.

3. Flat front panel RFI

Front anodized, rear conductive.

With slits in the side edges for insertion of RFI springs.

4. Extruded front panel RFI

Made of extruded aluminum alloy, with slits in the side edges

for insertion of RFI springs for contact.

Surface finish is passivated.

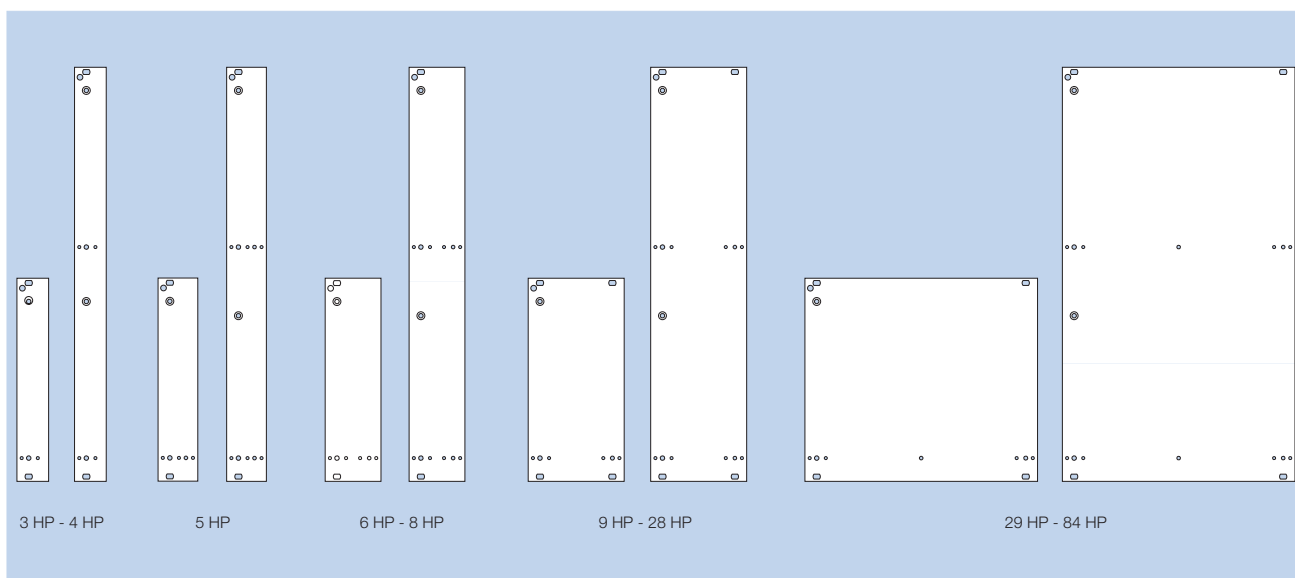
Material

Flat front panel: aluminum 2.5 mm thick

Extruded front panel: aluminum

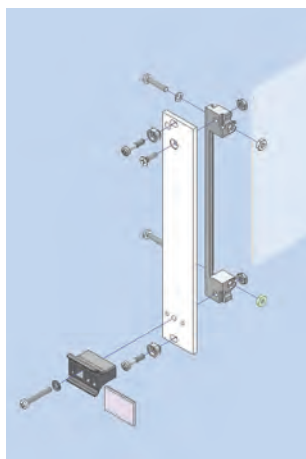
Delivery

Front panels are delivered unassembled as single parts or as a kit.



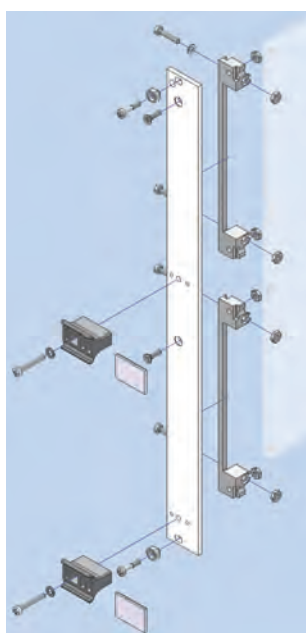
Hole pattern of the front panels

Front Panels with Handle



Ordering details kit - front panel with handle (flat front panels)

nom. width [HP]	3 U anodized/ conductive order no. 409	6 U anodized/ conductive order no. 409
4	107518	122624
6	122622	122625
8	107520	122626
10	107521	122627
12	107522	122628



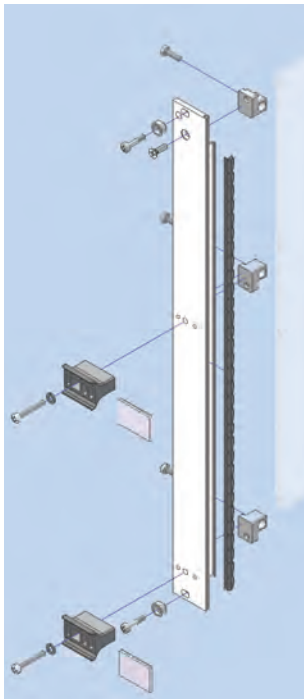
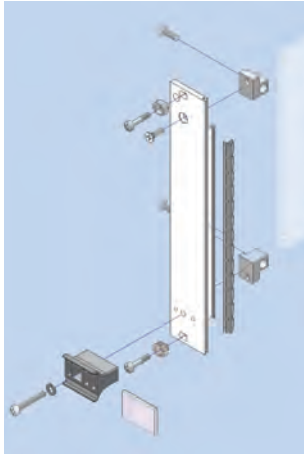
Delivery kit - front panel with handle

	3 U pieces for 3-8 HP	3 U pieces for 9-12 HP	6 U pieces for 3-8 HP	6 U pieces for 9-12 HP
Front panel	1	1	1	1
Handle gray	1	1	2	2
Ident-plate aluminum	1	1	2	2
Front connector FEE	1	1	2	2
Screw retainer M 2.5	2	4	2	4
Mounting parts	1	1	1	1

Ordering details - single part front panel for handle (flat front panel)

nom. width [HP]	3 U blank order no. 409	3 U anodized/ conductive order no. 409	6 U blank order no. 409	6 U anodized/ conductive order no. 409
3	096403	-	096703	-
4	096404	096604	096704	096904
5	096405	096605	096705	096905
6	096406	096606	096706	096906
7	096407	-	096707	-
8	096408	096608	096708	096908
10	096410	096610	096710	096910
12	096412	096612	096712	096912
16	096416	-	096716	-
21	096 421	-	096721	-

Front Panels RFI with Handle



Ordering details kit - front panel RFI with handle

	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
nom. width [HP]				
3	114537	-	114541	-
4	114377	-	114404	-
5	114378	-	114405	-
6	114379	-	114406	-
7	114380	-	114407	-
8	114381	-	114408	-
10	114383	-	114410	-
12	-	113685	-	113693

Finish:

Flat front panel: front side anodized, rear side conductive
Extruded front panel: passivated

Delivery kit - front panel RFI with handle

	3 U pieces for 3-8 HP	3 U pieces for 9-12 HP	6 U pieces for 3-8 HP	6 U pieces for 9-12 HP
Front panel	1	1	1	1
Handle gray	1	1	2	2
Ident-plate aluminum	1	1	2	2
Front connector metal	2	2	3	3
Press-fit bushing M 2.5	2	4	2	4
Mounting parts	1	1	1	1

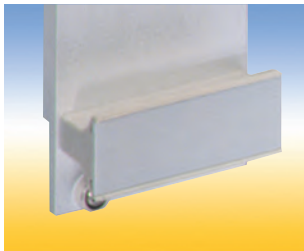
Accessories

	order no. 409
For one flat front panel 2 RFI-springs are needed.	
RFI spring F3 - 3U	111112
RFI spring F3 - 6U	111116
For assemble the RFI spring F3	
Roller cutter	118433

Ordering details single part front panel RFI for handle

	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
nom. width [HP]				
3	114538	-	114540	-
4	114370	113711	114396	-
5	114371	-	114397	-
6	114372	113723	114399	-
7	114373	-	114400	-
8	114374	113725	114401	-
10	114376	-	114403	-
12	-	113729	-	113762

Handle and Handle Strip

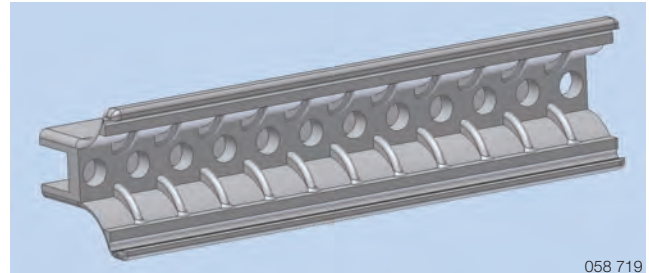
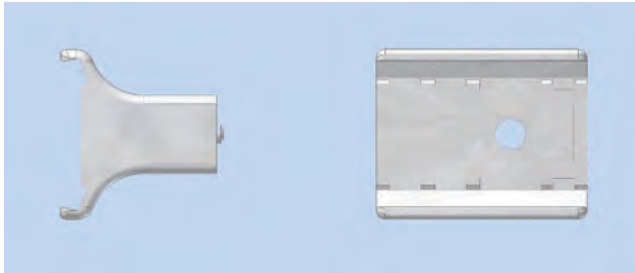


Handle FP

Assembled with M2.5 screws and with 1 additional self tapping screw from 6 HP. The handle is held against torsion by means of two nipples.

Technical data

Material	Polycarbonate, 10% fiber-glass reinforced
Color	gray RAL 7032, black
Continuous temperature	- 40 °C to + 100 °C
Fire protection class	UL 94 V-0



058 719

Ordering details handle FP

width [HP]	length [mm]	gray order no. 409	black order no. 409
3	13.80	102115	041657
4	18.88	102114	100667
5	23.96	103005	103205
6	29.04	103006	103206
7	34.12	103007	103207
8	39.20	103008	103208

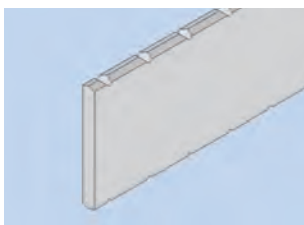
Ordering details handle strip FP

width [HP]	length [mm]	gray order no. 409	black order no. 409
10	49.36	103810	058910
12	59.52	103812	058912
16	79.84	103816	058916
21	105.24	103821	058921
42	211.92	103842	058942

Accessories handles:

Minimum order quantity each 100 pieces

	order no. 409
Pan head screw M 2.5 x 16	094605
Washer 2.7	013911
Hexagonal nut M 2.5 DIN 439	013938
Self tapping screw M 2.5 x 10	040401



Ident Plate

for handle FP.
The ident plate is markable and printable, snapped in after mounting the handle to the front panel.

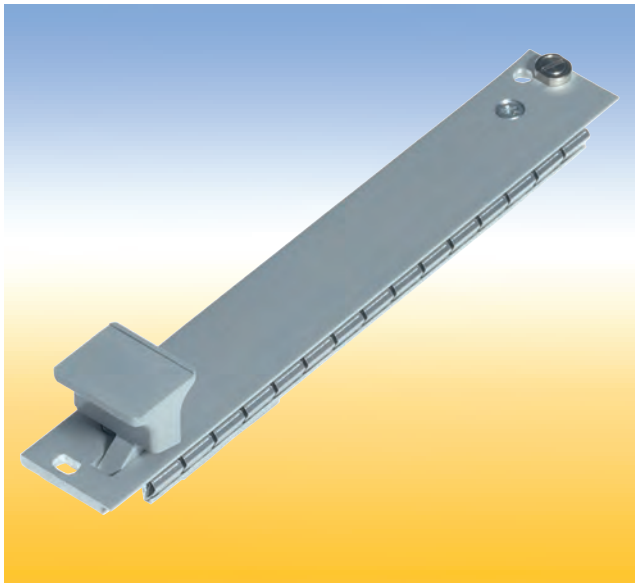
Technical data

Material	aluminum or Polycarbonate, crystal clear
Finish	Alu: silver silk-anodized
Continuous temperature	PC: - 40 °C to + 115 °C
Fire protection class	PC: UL 94 V-2

Ordering details ident-plate

width [HP]	length [mm]	aluminum order no. 409	crystal clear order no. 409
3	13.80	017929	089238
4	18.88	017956	089240
5	23.96	022791	-
6	29.04	022792	-
7	34.12	022793	-
8	39.20	022794	-
10	49.36	022796	-
12	59.52	022798	-
16	79.84	022802	-
21	105.24	022807	-
42	211.92	040652	-

Front Panels with Ejector Handle



Front Panels with Ejector Handle

For easy release of PCB's with high pin connections. The ejector handle is extends through the front panel and is screwed together with the bearing bushing at the front connector.

Four versions are available:

1. Flat front panel blank.
The front side is covered with a removable transparent foil.
2. Flat front panel anodized.
Front anodized, rear conductive.
3. Flat front panel RFI
Front anodized, rear conductive. With slits in the side edges for insertion of RFI springs.
4. Extruded front panel RFI
Made of extruded aluminum alloy, with slits in the side edges for insertion of RFI springs for contact. Surface finish is passivated.

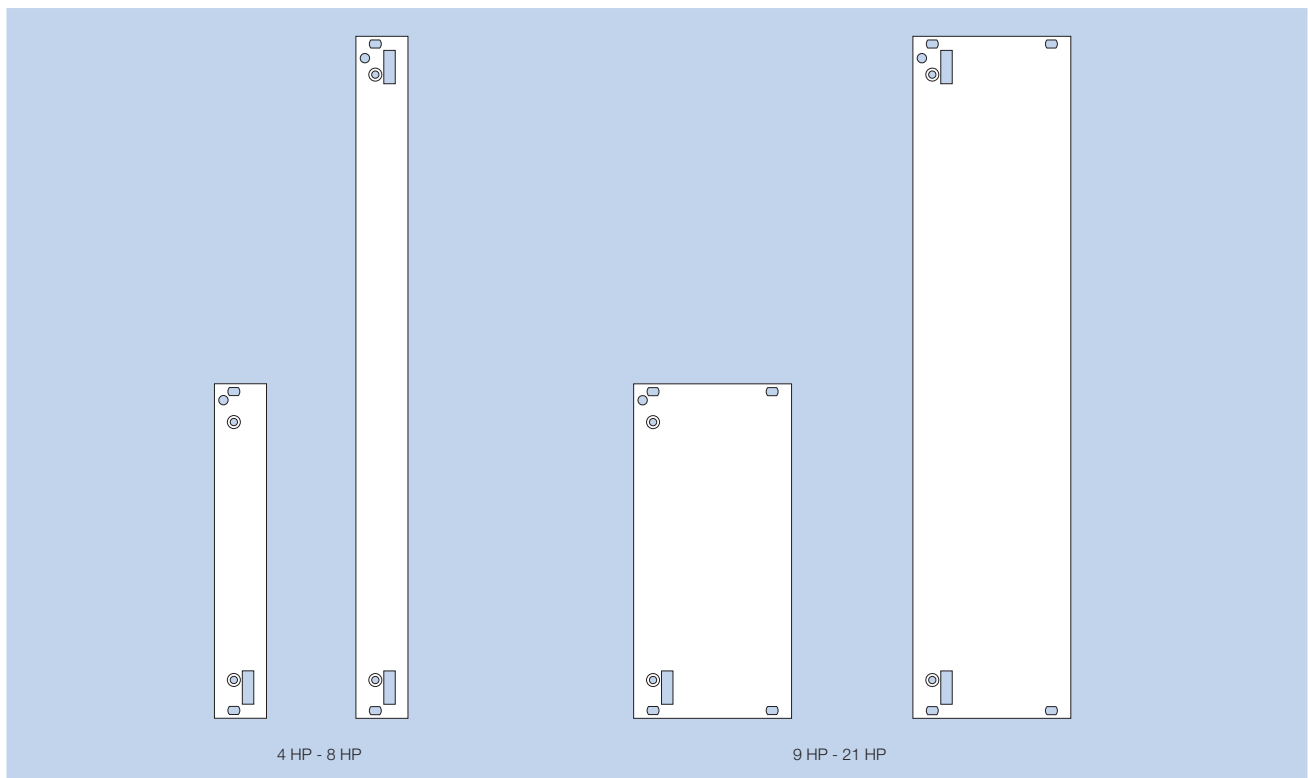
Material

Flat front panel: aluminum 2.5 mm thick

Extruded front panel: aluminum

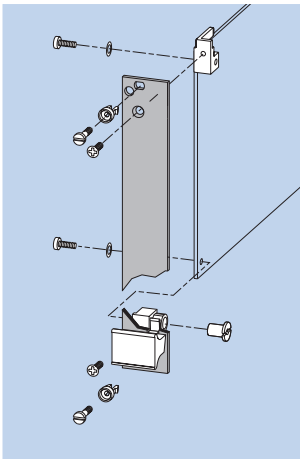
Delivery

Front panels are delivered unassembled as single parts or as a kit.



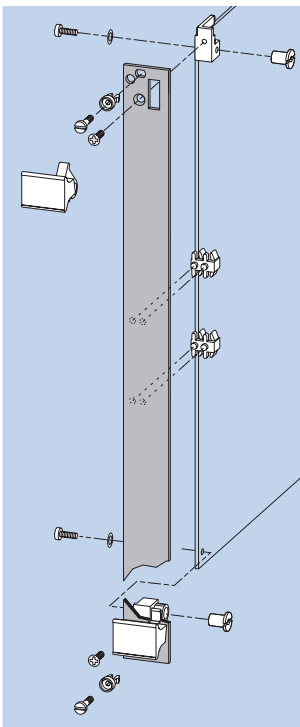
Hole pattern of the front panels

Front Panels with Ejector Handle



Ordering details kit - front panel with ejector handle (flat front panels)

	3 U	3 U	6 U	6 U
nom. width [HP]	blank order no. 409	anodized/ conductive order no. 409	blank order no. 409	anodized/ conductive order no. 409
4	168913	168919	122639	122645
5	168914	-	122640	-
6	168915	-	122641	-
8	168916	168920	122642	122646
10	168917	-	122643	-
12	168918	168921	122644	122647



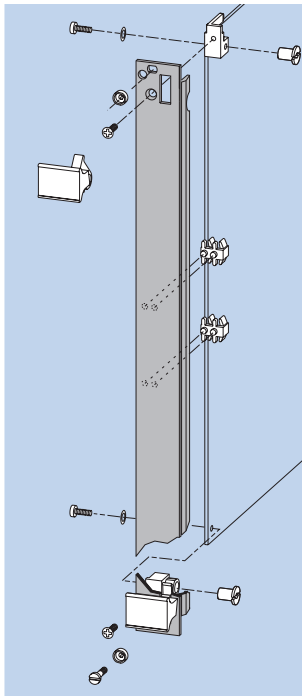
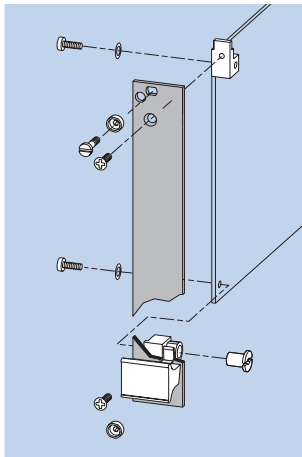
Delivery kit - front panel with ejector handle

	3 U	3 U	6 U	6 U
	pieces for 4-8 HP	pieces for 9-12 HP	pieces for 4-8 HP	pieces for 9-12 HP
Front panel	1	1	1	1
Ejector handle top, gray	-	-	1	1
Ejector handle bottom, gray	1	1	1	1
Bearing bushing	1	1	2	2
Front connector metal	2	2	2	2
Front panel support plug-in	-	-	2	2
Screw retainer M 2.5	2	4	2	4
Mounting parts	1	1	1	1

Ordering details single part front panel for ejector handle (flat front panels)

	3 U	3 U	6 U	6 U	6 U	6 U
	blank	anodized/ conductive	for support plugged-in blank	for support plugged-in anodized/ conductive	for support screwed blank	for support screwed anodized/ conductive
nom. width [HP]	order no. 409	order no. 409	order no. 409	order no. 409	order no. 409	order no. 409
4	168900	168908	102404	102344	102454	102384
5	168901	-	102405	-	-	-
6	168902	-	102406	-	-	-
8	168903	168909	102408	102348	102458	102388
10	168904	-	102410	-	-	-
12	168905	168910	102412	102352	102462	102392
16	168906	168911	102416	102356	-	-
21	168907	168912	102421	102361	-	-

Front Panels RFI with Ejector Handle



Ordering details - kit front panel RFI with ejector handle

nom. width [HP]	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
4	113655	113620	113662	-
5	113656	-	113663	-
6	113657	113622	113665	-
7	113658	-	113667	-
8	113659	-	113668	-
9	113660	-	113669	-
10	113661	-	113670	-
12	-	113626	-	113640

Finish:

Flat front panel: front side anodized, rear side conductive
Extruded front panel: passivated

Delivery kit - front panel RFI with ejector handle

	3 U pieces for 4-8 HP	3 U pieces for 9-12 HP	6 U pieces for 4-8 HP	6 U pieces for 9-12 HP
Front panel	1	1	1	1
ejector handle top, gray	-	-	1	1
ejector handle bottom, gray	1	1	1	1
Bearing bushing	1	1	2	2
Front connector metal	2	2	2	2
Front panel support plug-in	-	-	2	2
Press-fit bushing M 2.5	2	4	2	4
Mounting parts	1	1	1	1

Accessories

	order no. 409
For one flat front panel 2 RFI-springs are needed.	
RFI spring F3 - 3 U	111112
RFI spring F3 - 6 U	111116
For assemble the RFI spring F3	
Roller cutter	118433

Ordering details single part front panel RFI for ejector handle

nom. width [HP]	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
4	111847	112644	111613	-
5	113170	-	113147	-
6	111604	112650	111614	-
7	111605	-	111615	-
8	111606	-	111616	-
9	113171	-	113148	-
10	113172	-	113149	-
12	-	112668	-	112725

Ejector Handle 4 HP

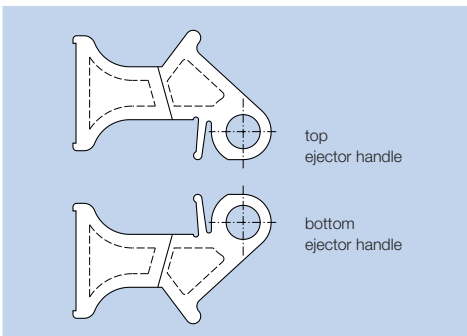


Ejector Handle

The ejector handle extends through the front panel and is screwed together with the bearing bushing at the front connector.

Technical data

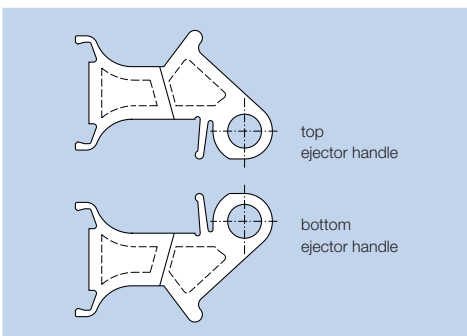
Material	Polycarbonate, 10% fiber-glass reinforced
Color	gray, black
Continuous temperature	– 40 °C to + 100 °C
Fire protection class	UL 94 V-0



Ordering details ejector handle 4 HP

version	gray order no. 409	black order no. 409
top	101923	094458
bottom	101924	094459

Mounting parts see front connectors



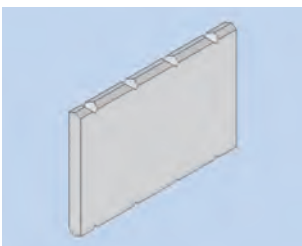
Ejector handle 4 HP

Front side open, for assembly with an ident-plate.

Ordering details ejector handle 4 HP

version	gray order no. 409	black order no. 409
top	102117	101843
bottom	102118	101844

Mounting parts see front connectors



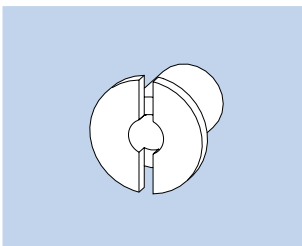
Ident-plate 4 HP

The ident-plate is markable and printable. Snapped in after mounting the handle at the front panel.

Material: aluminum

Finish: silver silk-matt anodized

order no.: **409017956**



Bearing Bushing 4

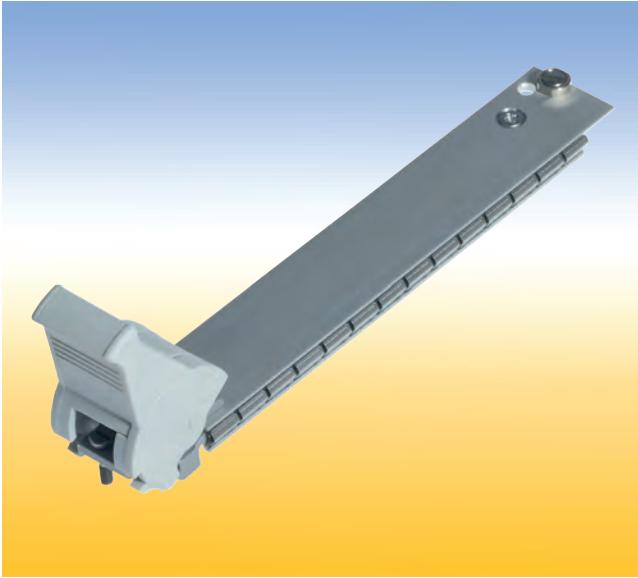
for handle 4 HP

Material: steel, galvanized

Finish: passivated

order no.: **409065888**

Front Panels RFI with IEEE Handle



Front Panels with IEEE Handle

For easy pull of PCB's with high density connectors in accordance to specification IEEE 1101.10. The assembled handle kit is stuck in the milled space of the front panel and is secured with a clamped spring. Afterwards the PCB are screwed on the integrated front connector.

Two versions with IEEE handle are available:

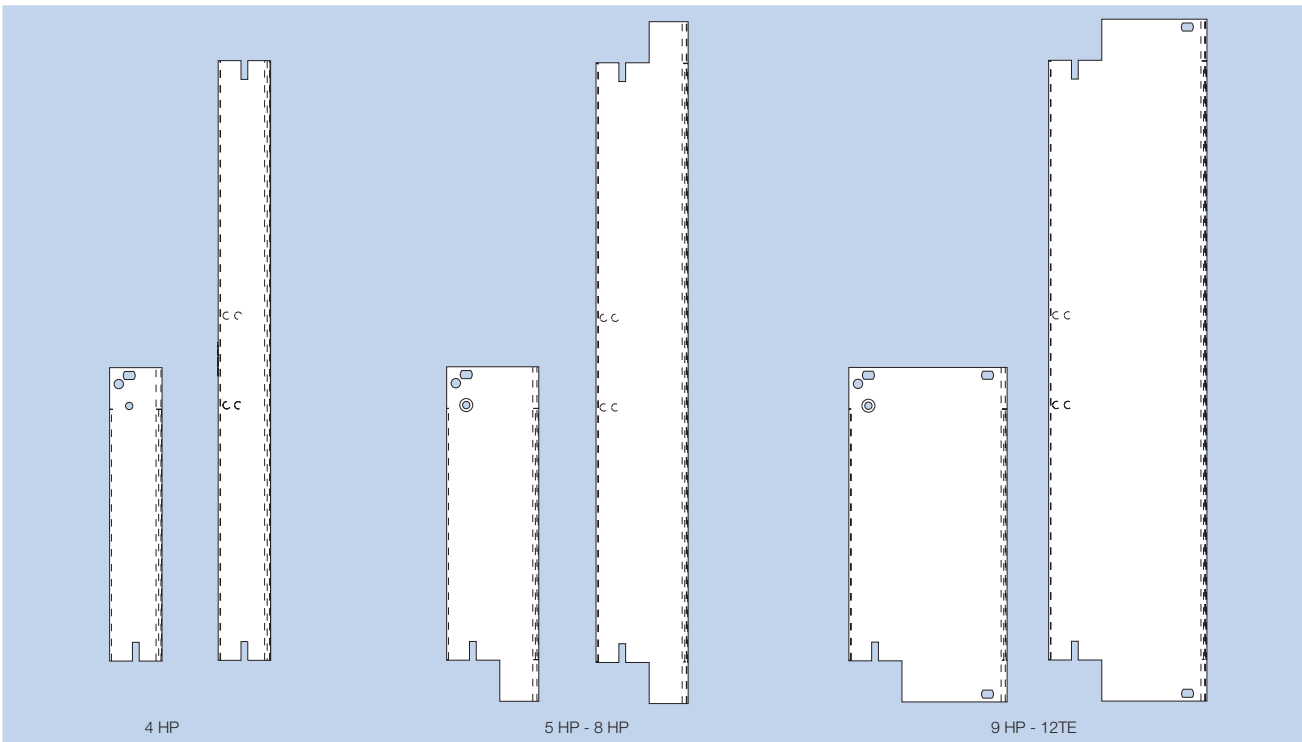
1. Flat front panel RFI
Front anodized, rear conductive. With slits in the side edges for insertion of RFI springs.
2. Extruded front panel RFI
Made of extruded aluminum alloy, with slits in the side edges for insertion of RFI springs or for contacting. Surface finish is passivated.

Delivery

Front panels are delivered with the assembled IEEE handle as single parts or as a kit.

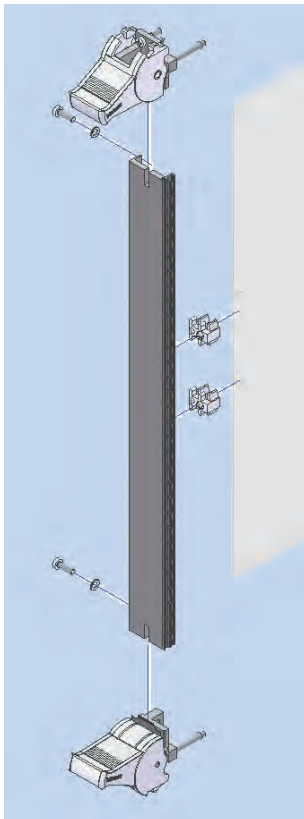
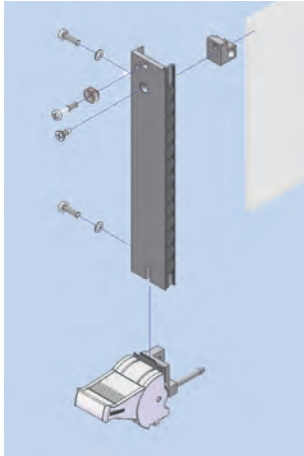
Technical data

Material	Front panel: aluminum Handle: Polycarbonate
Finish	Front panel: <i>flat</i> : front side anodized, rear side conductive <i>extruded</i> : passivated
Color	handle: RAL 7035 or black
Continous temperature	- 40 °C to + 100 °C
Fire protection class	UL 94 V-0



Hole pattern of the front panels

Front Panels RFI with IEEE Handle gray without hot-swap



Ordering details kit - front panel RFI with IEEE-handle, gray, without hot-swap

	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
nom. width [HP]				
4	113671	113641	113674	-
6	113672	-	113675	-
8	113673	-	113676	-
10	114463	-	114475	-
12	-	113647	-	113654

Delivery kit front panel RFI with IEEE-Handle without hot-swap

	3 U pieces for 4-8 HP	3 U pieces for 9-12 HP	6 U pieces for 4-8 HP	6 U pieces for 9-12 HP
Front panel	1	1	1	1
IEEE-handle top gray	-	-	1	1
IEEE-handle bottom gray	1	1	1	1
Front connector metal	1	1	-	-
Front panel support plug-in	-	-	2	2
Press-fit bushing M 2.5	1	3	-	2
Mounting parts	1	1	1	1

Accessories

	order no. 409
<i>For one flat front panel 2 RFI-springs are needed.</i>	
RFI spring F3 - 3 U	111112
RFI spring F3 - 6 U	111116
<i>For assemble the RFI spring F3</i>	
Roller cutter	118433

Ordering details single part front panel RFI for IEEE handle

	3 U extruded order no. 409	3 U order no. 409	6 U extruded order no. 409	6 U order no. 409
nom. width [HP]				
4	112152	113079	112154	-
5	112408	-	112400	-
6	112409	112778	112401	-
7	112410	-	112402	-
8	112411	-	112403	-
9	112412	-	112404	-
10	112413	-	112405	-
12	-	112790	-	112773

IEEE Handle 4 HP without hot-swap

Color: gray, RAL 7035

Delivery:

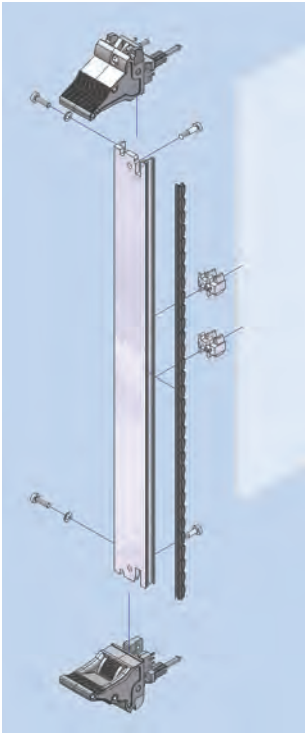
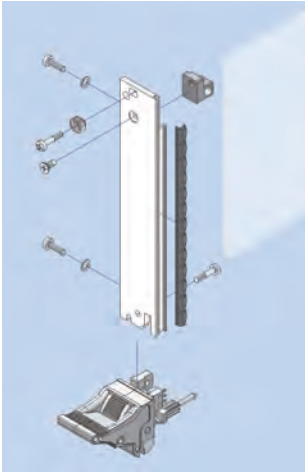
Assembled handle with mounting parts.

Ordering details

	order no. 409
IEEE handle 4HP bottom	114413
IEEE handle 4HP top	114415

Front Panels RFI with IEEE Handle black with hot-swap

Subrack Accessories



Ordering details kit - extruded front panel RFI with IEEE handle, black, hot-swap in the bottom handle

nom. width [HP]	3 U order no. 409	6 U order no. 409
4	122607	122610
6	122608	122611
8	122609	122612

Delivery kit

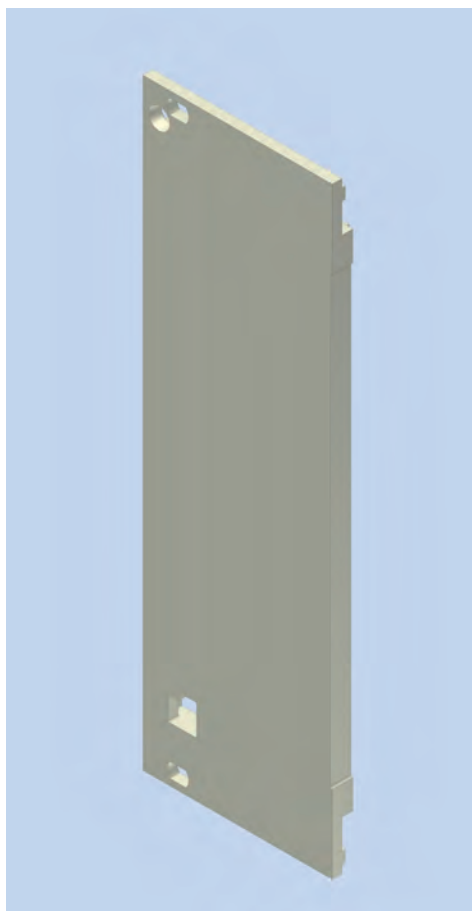
	3 U pieces for 4-8 HP	6 U pieces for 4-8 HP
Front panel	1	1
IEEE handle topblack	-	1
IEEE handle bottom black	1	1
Micro switch	1	1
Front connector metal	1	-
Front panel support plug-in	-	2
Press-fit bushing M 2.5	1	-
Mounting parts	1	1

Accessories

	order no. 409
RFI spring F3 - 3U	111112
RFI spring F3 - 6U	111116
For assemble the RFI spring F3	
Roller cutter	118433

For one flat front panel 2 RFI-springs are needed.

Plastic Front Panel, Snap-in Handle



Plastic Front Panels

On the rear side of the 2 mm thick front panel is an integrated front connector for attaching 1.6 mm thickness 3 U PCBs. The handle snaps in into the front panel, therefore the front panel can be modified easily.

Delivery

As single part

Technical data

Material	Polycarbonate, 10% fiber-glass reinforced
Color	RAL 7032, pearl gray or black
Continuous temperature	- 40 °C to + 115 °C
Fire protection class	UL 94 V-0

Ordering details plastic front panel

nom. width [HP]	3 U pearl gray order no. 409	3 U black order no. 409
3	035004	-
4	-	-
8	035665	040387

Accessories

Minimum order quantity 100 pieces

	order no. 409
Screw retainer 2 - M 2.5, gray	085689
Cross-head screw M 2.5 x 10. 8	056135



Snap-in Handle

For use with 2 mm thick front panels of plastic. The handle snaps in into the front panel.

Front panels aluminum on request

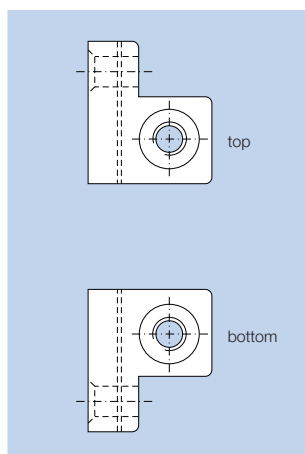
Technical data

Material	Polycarbonate, 10% fiber-glass reinforced
Color	RAL 7032, pearl gray or black
Continuous temperature	- 40 °C to + 105 °C
Fire protection class	UL 94 V-0

Ordering details snap-in handle

nom. width [HP]	RAL 7032 order no. 409	pearl gray order no. 409	black order no. 409
3	043035	035528	040385
4	043036	035529	040386

Front Connector



Front Connector

Material: zinc die-cast
Finish: untreated

Ordering details

Front connector top
Front connector bottom

order no.
409

099731

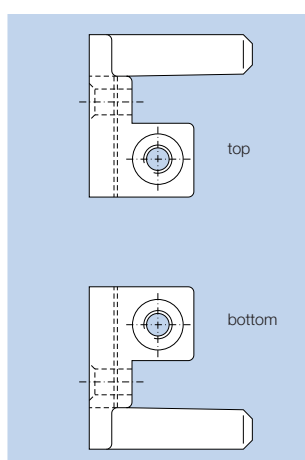
099730

Accessories

Counter sunk screw M 2.5 x 6
self tapping

Minimum order quantity 100 pieces

order no.: **409067624**



Front Connector with Male Contact

For pre-mating front panel grounding.

Material: zinc die-cast
Finish: tin-plated

Ordering details

Front connector top
Front connector bottom

order no.
409

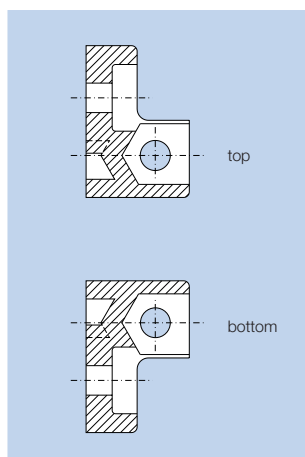
107728

107727

Accessories

	order no. 409
Front panel grounding contact	058102
Self tapping counter sunk screw M 2.5 x 6	067624

Minimum order quantity 100 pieces



Plastic Front Connector

Technical data

Material	Polycarbonate, 10% fiber-glass reinforced
Color	gray
Continuous temperature	- 40 °C to + 100 °C
Fire protection class	UL 94 V-0

Ordering details

Front connector top
Front connector bottom

order no.
409

065883

065882

Accessories

Minimum order quantity 100 pieces

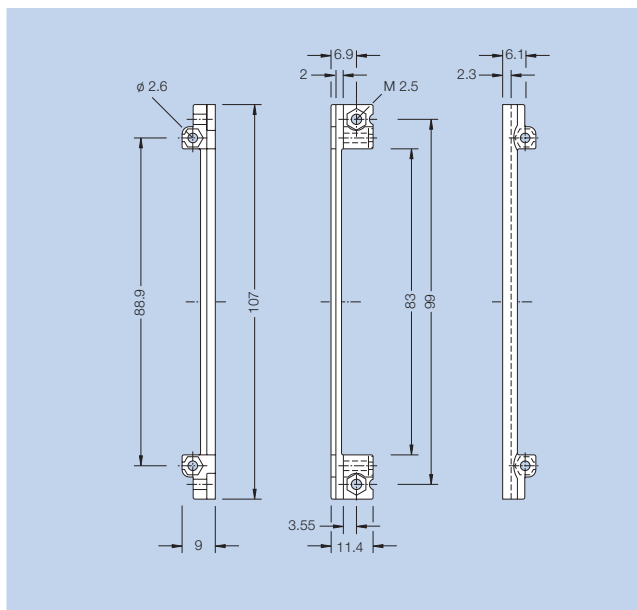
Hexagonal nut M 2.5
Counter sunk screw M 2.5 x 6

order no.
409

013938

067624

Front Connector FEE, Front Panel Support



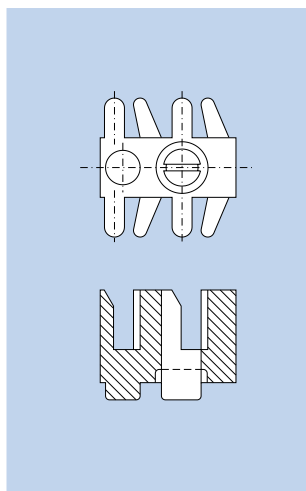
Front Connector FEE

With inserted nut M 2.5 for fastening to the front panel.
Also for use with front mounted Elements (FEE).

Technical data

Material	Polycarbonate, 10% fiber-glass reinforced nut: steel, galvanized and passivated
Color	gray
Continuous temperature	– 40 °C to + 115 °C
Fire protection class	UL 94 V-0

order no.: 409024830



Front Panel Support

For PCB's with a height over 3 U used with two-piece front connector.
Prevents deflection of the front panel when inserting the PCB.

Technical data

Material	Polycarbonate, 10% fiber-glass reinforced
Color	gray
Continuous temperature	– 40 °C to + 100 °C
Fire protection class	UL 94 V-0

order no.: 409092786

Screw Retainer, Press-fit Bushing, Quick Lock E



Screw retainer, press-fit bushing and Screw

Subrack Accessories

Screw Retainer 2.5 - M 2.5

For 2.5 mm thick front panels, for plugging in the screw

Technical data

Material	POM
Color	gray or black
Continuous temperature	- 40 °C to + 100 °C

Ordering details

Minimum order quantity 100 pieces

	Color	order no. 409
Screw retainer 2.5 - M 2.5	gray	100539
Screw retainer 2.5 - M 2.5	black	100538

Press-fit bushing M 2.5

Pressed into the front panel. Secures the screw M 2.5 and provides electrical bounding between the screw and front panel and subrack; even when the front panel is anodized.

Material: brass (lead-free), nickel plated

Minimum order quantity 10 pieces

order no.: **409140266**

Screw M 2.5 x 11.3

for 2.5 mm thick front panels

Material: knurled head screw: steel, nickel plated
others: stainless steel

Ordering details

Minimum order quantity 100 pieces

	head form	order no. 409
Cylinder head screw	slotted	100540
Pan head screw M 2.5 x 11.3	cross slot	101917
Knurled head screw	knurled	101918



Quick Lock E

for 2.5 mm thick front panels.
Slot head.

Minimum order quantity 10 pieces

order no.: **409097957**

Technical data

Material	sleeve: POM bolt: steel, galvanized
Color	gray
Continuous temperature	- 40 °C to + 100 °C

Cassettes

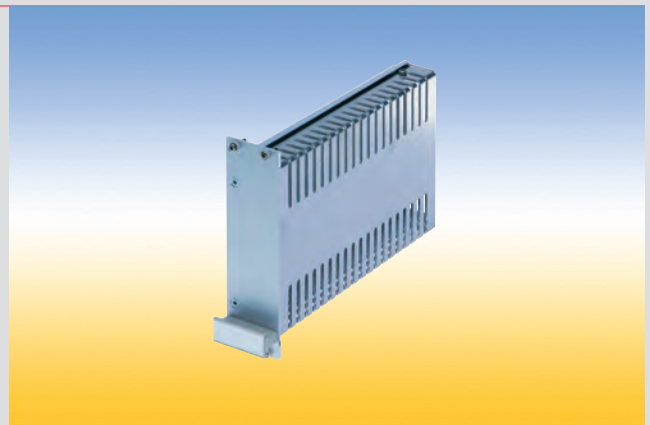
Cassette with Extruded Side Walls



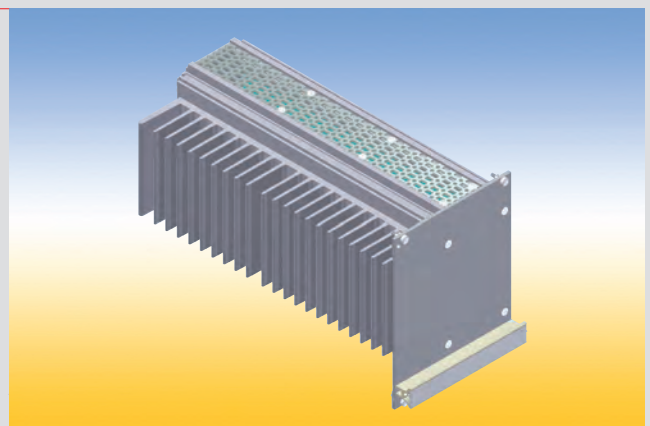
Cassette with four Depth Profiles



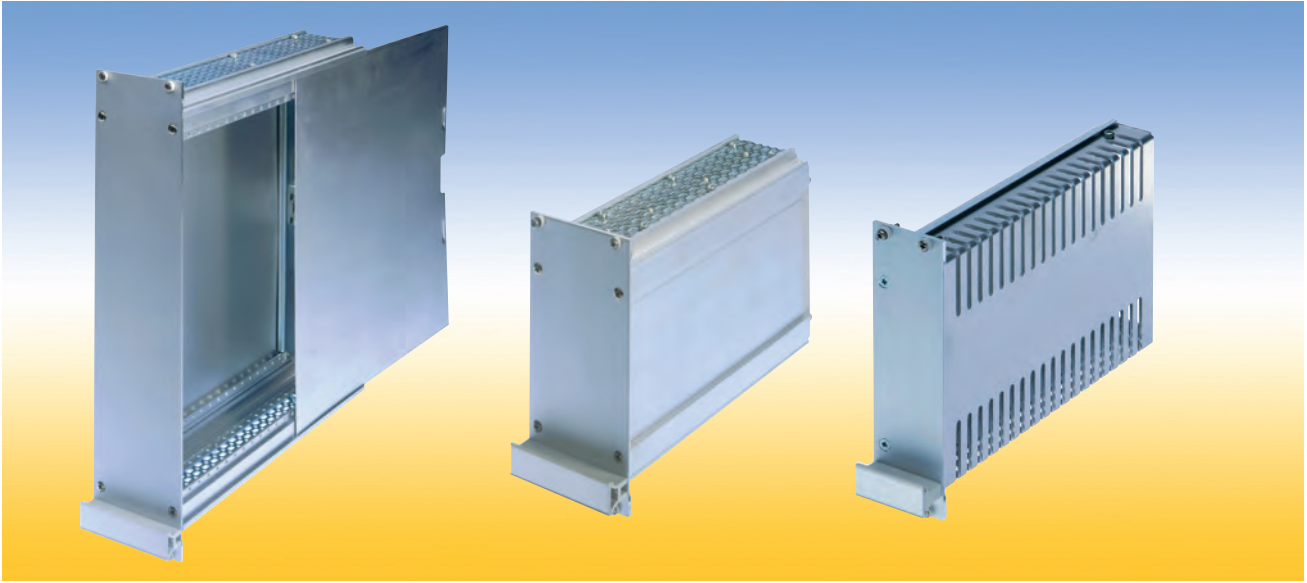
Cassette with Cover Hood



Cassette with Heat Sink



Cassettes



Description

The cassette has two functions:
It can be inserted into a subrack just like a PCB and it can accommodate plug-in boards.

Three cassette versions are available:

1. A cassette with extruded side walls
Extruded side walls in combination with a front panel and a rear panel make up the basic cassette which is then fitted with top and bottom plates.
2. A cassette with four depth profiles
Four identical depth profiles in combination with a front panel and a rear panel make up the basic cassette which is then fitted with top and bottom plates.
Two side service apertures are created which make the interior of the cassette easily accessible for inspection purposes. These apertures can be closed off using slide-in panels.
3. Cassette with cover hood
This version consists of a extruded side wall at the left to which the protective cover with an integrated rear wall is attached. The rear has a 4 HP aperture for installing an IEC 60 603-2 type B, C, D or F connector.

The special design features of the cassettes:

- ✓ The side edges of the front panel are slit for insertion of RFI gaskets which harmonically blend into the front panel grid and which require no additional space.
- ✓ The cassettes fit into all IEC 60 297 subracks.

- ✓ The cassette is fitted in the subrack using PCB guide mounts. For the right side of the cassette the guide mount is installed rotated by 180°.

- ✓ Suitable for accommodating Euroboards (3U, 6U) in accordance with IEC 60 297.
- ✓ The side walls and depth profiles have guide channels for insertion of 3U or 6U boards; only installation at the left is standardized.
- ✓ Additional guide mounts can be snapped into the top and bottom cover panels to accommodate internal boards.
- ✓ When used in a subrack the distance between the cassette and the PCB to the right of it is 2.47 mm.

Rear panel:

Three different rear panels are available:

1. Cassette „RG“ (rear panel closed):
This cassette is particularly suitable for any installation.
2. Cassette „RT“ (rear panel with partial aperture):
The rear panel has a 4HP aperture for installation of a connector.
3. Cassette „RV“ (rear panel with full aperture):
The rear panel has an aperture across its full width and is perforated for installation of connectors.

Dimensions

The cassette design is based on the following grid:

Horizontal pitch 5.08 mm
Height pitch 44.45 mm
Depth pitch 10.00 mm

Technical data

Standards	IEC 60297, Part 3
Material	„RV“ rear panel, top and bottom panels: sheet steel mounting parts: steel handles: plastic other parts: aluminum
Finish	side panel, covers, „RV“ rear panel: untreated front panel: front anodized, rear and edges untreated other parts: passivated
Protection class	IP 30
Utilization category	-25 °C to 70 °C, =< 75 % relative humidity, condensation possible
Electrical requirements	all parts are electrically bonded to one another following assembly in accordance with VDE 100 § 8 Nb.

RFI shielding of Cassettes.

The Cassettes are manufactured from electrically conductive materials and screwed together. The RFI shielding can be further enhanced by increasing the number of screws used in vulnerable areas to obtain a superior RFI seal:

1. Top and bottom plates / front panels
Additional mounting blocks can be used between the top and bottom covers and the front plate. The top and bottom covers are pierced every 5.08 mm and by drilling extra holes in the front plane, additional contact points can be made.
2. Top and bottom plates / rear panels
Additional mounting blocks can be used between the top and bottom plates and the rear panels. The top and bottom plates are pierced every 5.08 mm

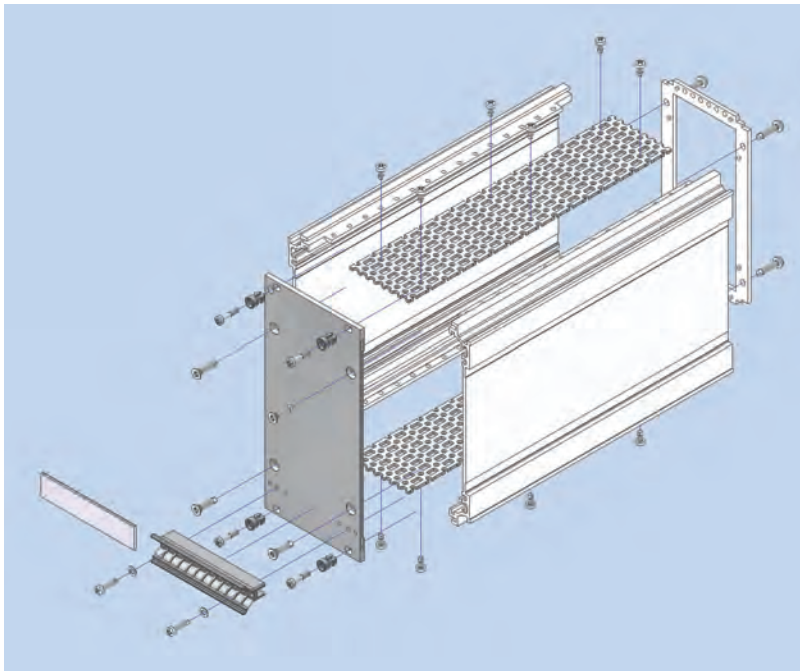
and by drilling extra holes in the rear panel types “R” and “RT”, additional contact points can be made. Rear panel type “RV” are pre-punched at 5.08 mm as standard and require no further modification.

3. 6 U Side wall / front panel
Two additional screws can be used in the front panel (one each side) to gain extra contact points to the side extrusion. Both the front panel and the extrusion require additional drilling.

Intermas Cassettes have excellent RFI Shielding properties as standard. But should you wish to enhance the RFI shielding, then please contact one of our specialists for further assistance.

Please ask your local representative for your
personal assistance.
You find your contact person on our homepage:
www.intermas-el.com

Cassette with Extruded Side Walls



Cassette with Extruded Side Walls

The cassette kits includes following rear panels:

1. Rear panel with partial aperture (RT)
2. Rear panel closed (RG)
3. Rear panel with full aperture (RV).

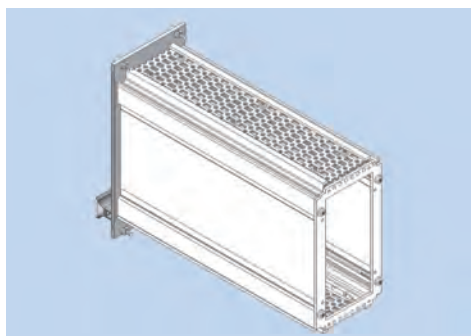
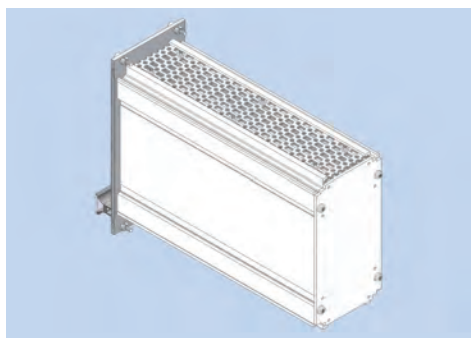
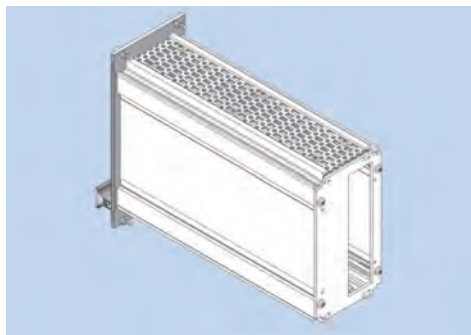
Kit consists of:

- 2 extruded side walls
- 1 rear panel
- 2 top/bottom plate
- 1 front panel, with slits in the side edges for insertion of RFI gaskets
- 1 handle
- 1 aluminum ident-plate
- Mounting parts

Delivery

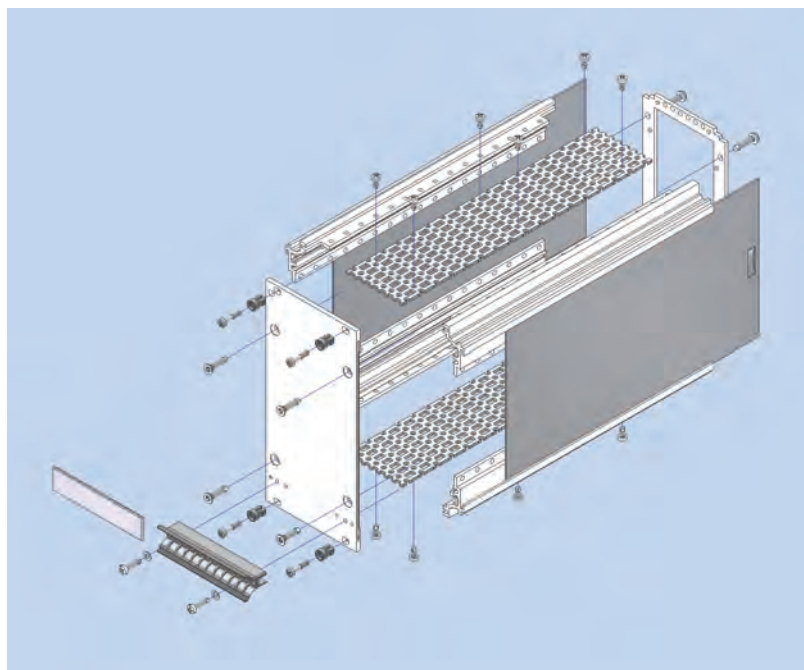
The cassette is delivered unassembled as individual parts or as a kit.

Ordering details kit cassette with extruded side walls



	nom. height [U]	nom. width [HP]	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
RT	3	08	165617	165625
RG	3	10	165602	165610
RG	3	12	165603	165611
RG	3	14	165604	165612
RG	3	21	165605	165613
RG	3	28	165606	165614
RG	3	42	165607	165615
RV	3	10	165634	165642
RV	3	12	165635	165643
RV	3	14	165636	165644
RV	3	21	165637	165645
RV	3	28	165638	165646
RV	3	42	165639	165647

Cassette with four Depth Profiles



Cassette with four Depth Profiles

The cassette kits includes following rear panels:

1. Rear panel with partial aperture (RT)
2. Rear panel closed (RG)
3. Rear panel with full aperture (RV).

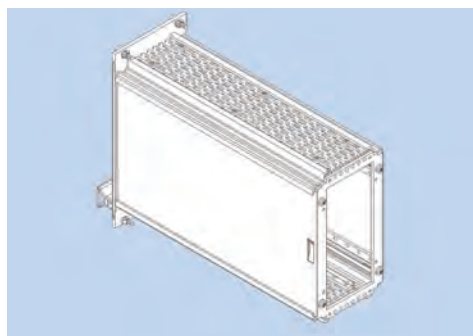
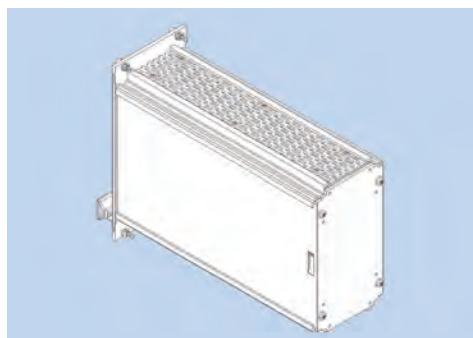
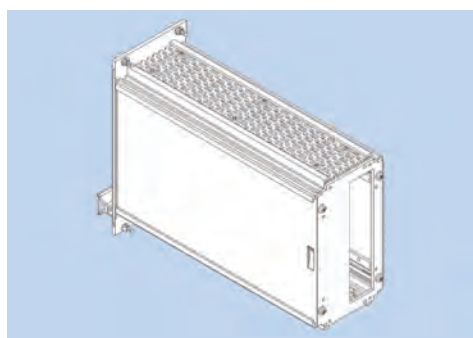
Kit consists of:

- 4 depth profiles
- 2 struts
- 2 side plates
- 1 rear panel 3 U / 2 rear panels 6 U
- 2 top/bottom plate
- 1 front panel, with slits in the side edges for insertion of RFI gaskets
- 1 handle
- 1 aluminum ident-plate
- Mounting parts

Delivery

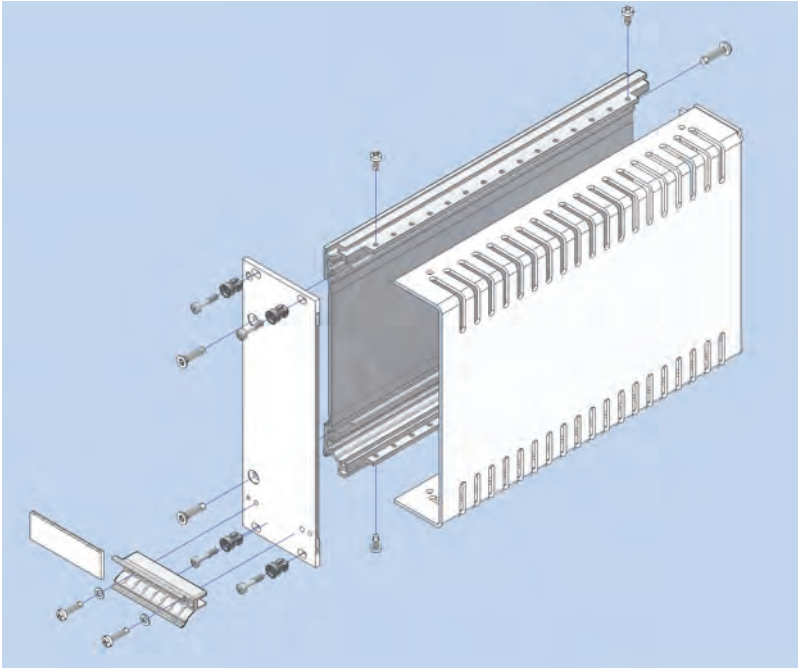
The cassette is delivered unassembled as individual parts or as a kit.

Ordering details kit cassette with four depth profiles



	nom. height [U]	nom. width [HP]	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
RT	3	08	165713	165721
RG	3	10	165698	165706
RG	3	12	165699	165707
RG	3	14	165700	165708
RG	3	21	165701	165709
RG	3	28	165702	165710
RG	3	42	165703	165711
RV	3	10	165730	165738
RV	3	12	165731	165739
RV	3	14	165732	165740
RV	3	21	165733	165741
RV	3	28	165734	165742
RV	3	42	165735	165743
RT	6	08	165873	165881
RG	6	10	165842	165850
RG	6	12	165843	165851
RG	6	14	165844	165852
RG	6	21	165845	165853
RG	6	28	165846	165854
RG	6	42	165847	165855
RV	6	10	165858	165866
RV	6	12	165859	165867
RV	6	14	165860	165868
RV	6	21	165861	165869
RV	6	28	165862	165870
RV	6	42	165863	165871

Cassette with Cover Hood



Cassette with Cover Hood

Kit consists of:

- 1 extruded side wall
- 1 cover hood
- 1 front panel, with slits in the side edges for insertion of RFI gaskets
- 1 handle
- 1 aluminum ident-plate
- Mounting parts

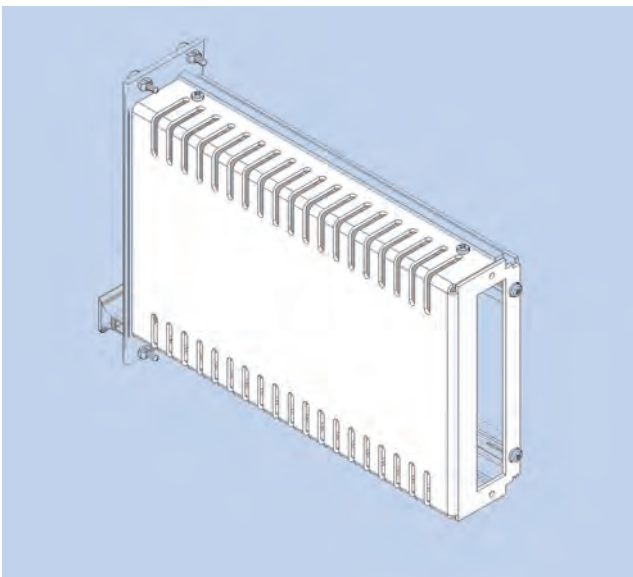
Delivery

The cassette is delivered unassembled as individual parts or as a kit.

Ordering details kit cassette with cover hood

nom. height [U]	nom. width [HP]	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
3	6	166112	166116
3	7	166113	166117
3	8	166114	166118

Individual parts of the cassettes



Cover Hood

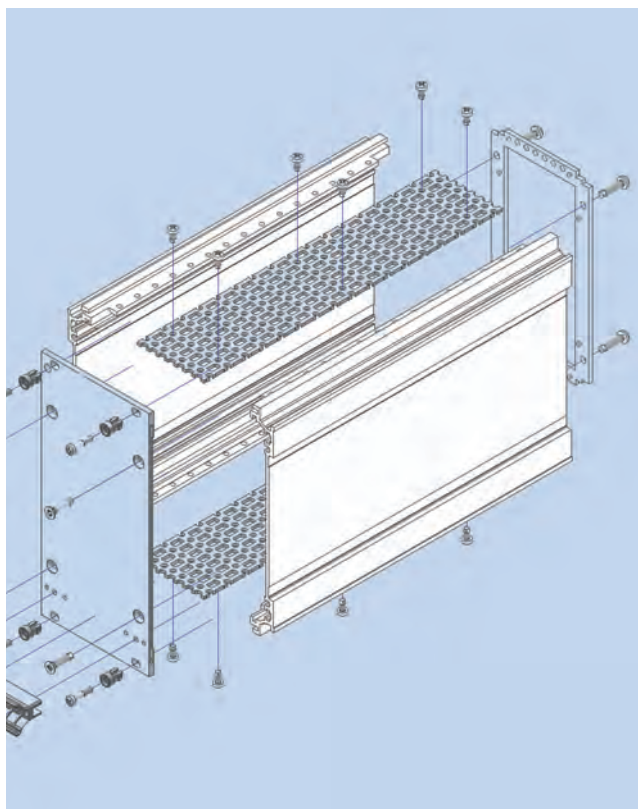
Material: aluminum

Finish: blank

Ordering details cover hood

nom. height [U]	nom. width [HP]	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
3	6	165896	166100
3	7	165897	166101
3	8	165898	166102

Individual Parts of the Cassette

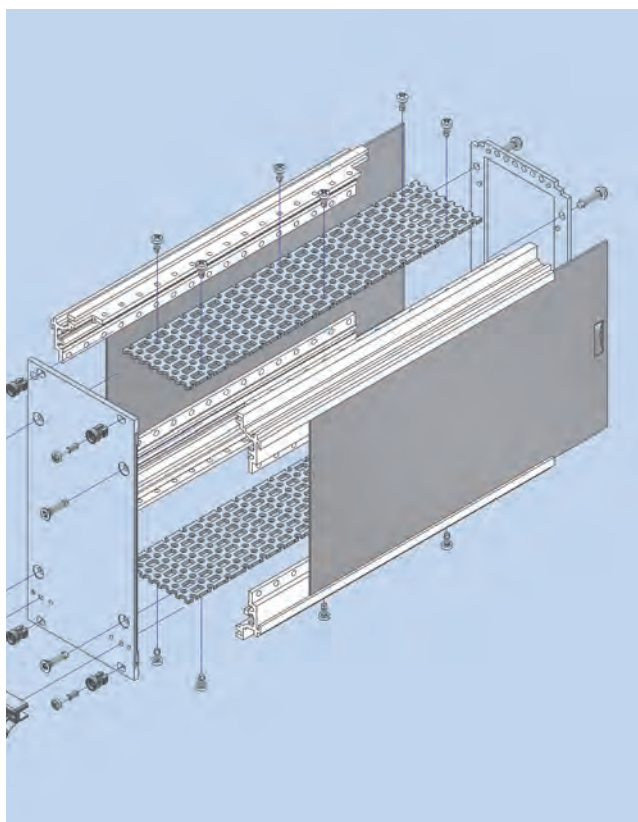


Extruded Side Wall

Material: aluminum
Finish: passivated

Ordering details extruded side walls

nom. depth [mm]	3 U order no. 409
160	079202
220	079203



Depth Profiles

Material: aluminum
Finish: passivated

Ordering details depth profiles

nom. depth [mm]	order no. 409
160	039603
220	039604

Side Plates

Material: aluminum
Finish: blank

Ordering details side plates

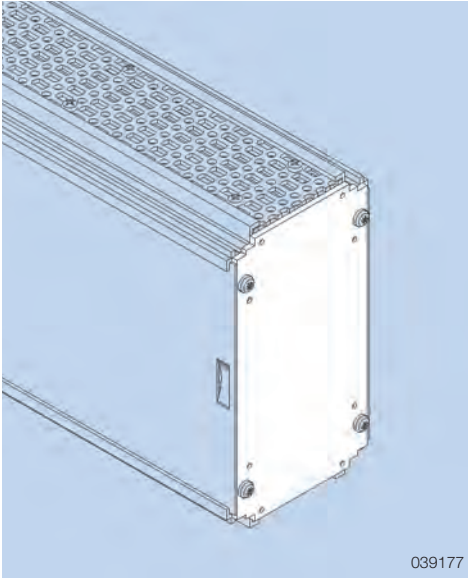
nom. depth [mm]	3 U order no. 409	6 U order no. 409
160	039542	039546
220	039543	039547

Strut 6 U

Material: aluminum
Finish: passivated

order no.: 409039540

Individual Parts of the Cassettes



Rear Panel RG

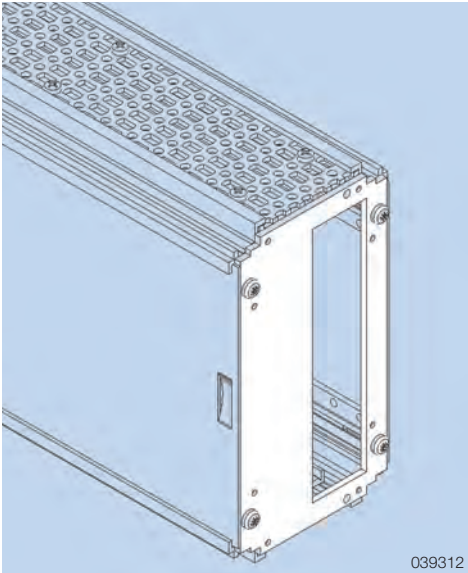
3 U panel wall closed. 6 U cassettes require two 3 U rear panels.

Material: aluminum

Finish: blank

Ordering details rear panel RG

nom. width [HP]	order no. 409
8	-
10	166237
12	166238
14	166239
21	166240
28	166241
42	166242



Rear Panel RT

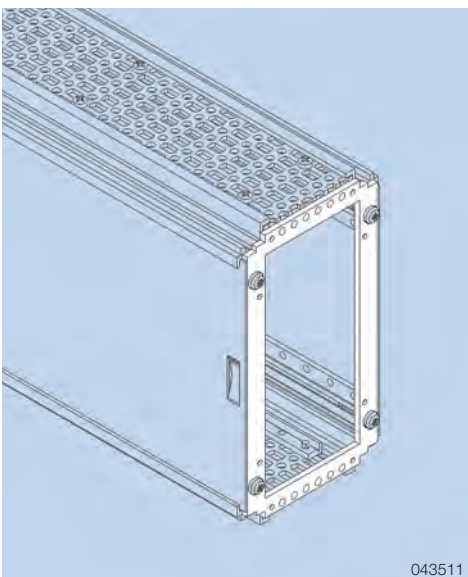
3 U rear panel with partial aperture. 6 U cassettes require two 3 U rear panels.

Material: aluminum

Finish: blank

Ordering details rear panel RT

nom. width [HP]	order no. 409
8	166243
10	-
12	-
14	-
21	-
28	-
42	-



Rear Panel RV

3 U Rear panel with full aperture. 6 U cassettes require two 3 U rear panels.

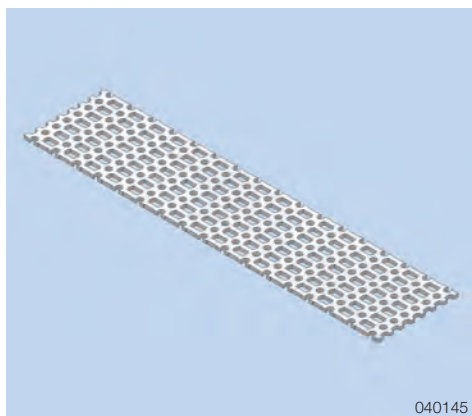
Material: steel

Finish: galvanized und passivated

Ordering details rear panel RV

nom. width [HP]	order no. 409
8	-
10	043514
12	043516
14	043518
21	043525
28	043532
42	043546

Individual Parts of the Cassettes



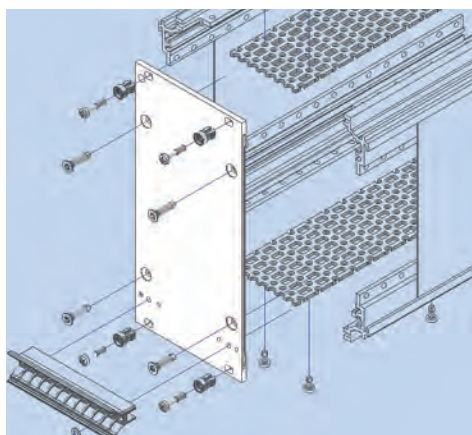
040145

Top/Bottom Plate

Material: steel
Finish: galvanized and passivated

Ordering details top/bottom plate

nom. width [HP]	nom. depth 160 mm order no. 409	nom. depth 220 mm order no. 409
8	038687	038763
10	038689	038765
12	038691	038767
14	038693	038769
21	038700	038776
28	038707	038783
42	038721	038797



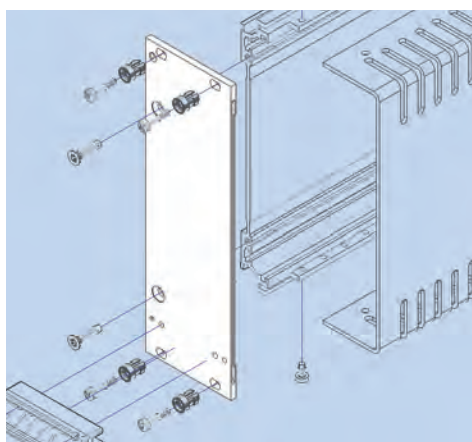
Front Panel

For cassette with extruded side panel or depth profiles.

Material: aluminum
Finish: front anodized, rear and edges blank

Ordering details front panel for cassette

nom. width [HP]	3 U order no. 409	6 U order no. 409
8	115005	119024
10	115007	119026
12	115009	119028
14	115011	119030
21	115018	119037
28	115025	119044
42	115039	119058



Front Panel

For cassette with cover hood.

Material: aluminum
Finish: front anodized, rear and edges blank

Ordering details front panel for cassette cover hood

nom. width [HP]	3 U order no. 409
6	122380
7	120282
8	120283

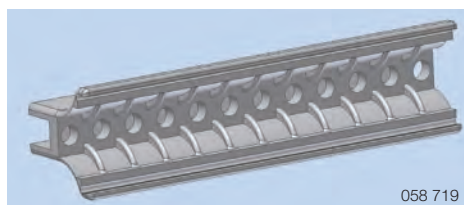
Individual Parts of the Cassettes

Handle FP for Front Panels

Assembled with M 2.5 screws and with 1 additional self tapping screw from 6 HP. The handle is held against torsion by means of two nipples.

Technical data

Material	Polycarbonate, colored 10% fiber-glass reinforced
Color	gray RAL 7032, black
Continuous temperature	– 40 °C to + 100 °C)
Fire protection class	UL 94 V-0

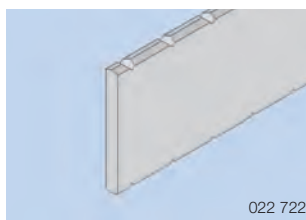


Ordering details handle FP

width [HP]	length [mm]	gray order no. 409	black order no. 409
6	29.04	103006	103206
7	34.12	103007	103207
8	39.20	103008	103208

Ordering details handle strip FP

width [HP]	length [mm]	gray order no. 409	black order no. 409
10	49.36	103810	058910
12	59.52	103812	058912
14	69.68	103814	058914
21	105.24	103821	058921
28	150.80	103828	058928
42	211.92	103842	058942



Ident-Plate

for handle FP.
The ident-plate is markable and printable, snapped in after mounting the handle to the front panel.

Material: aluminum
Finish: anodized

Ordering details ident-plate

width [HP]	length [mm]	order no. 409
6	29.04	022792
7	34.12	022793
8	39.20	022794
10	49.36	022796
12	59.52	022798
14	69.86	022800
21	105.24	022807
28	150.80	022814
42	211.92	040652

Mounting parts of the cassette

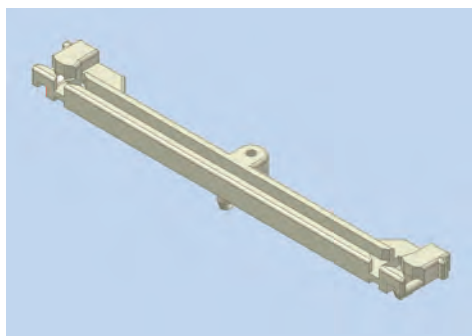
Minimum order quantity each 100 pieces

	order no. 409
To assemble the strut and the top/bottom plates to the pr	
Oval head screw M 2.5 x 5	039691
To assemble the rear plate to the pr	
Oval head screw M 3 x 12	108963
Spring washer A 3	040969
To assemble the front panel to the pr	
Counter sunk screw M 3 x 12	108962
To assemble the cassette into the subrack	
Screw retainer 2.5, gray	100539
Pan Head Screw M 2.5 x 11.3	101917

Mounting parts for handles:

Minimum order quantity each 100 pieces

	order no. 409
Washer 2.7	013911
Self tapping screw M 2.5 x 10	040401



Accessories

Pan head screw M2,2 x 6,5

Minimum order quantity 100 pieces

order no.: 409022672

Card Guide for Cassette

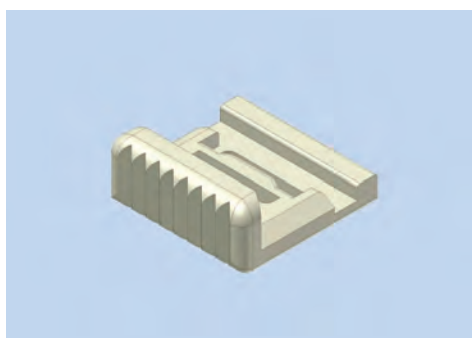
This card guide is snap-in and screw-on type.

Technical data

Material	Noryl
Color	RAL 7035
Continuous temperature	- 40 °C to + 115 °C
Fire protection class	UL 94 V-0

Ordering details

	nom. length [mm]	PCB thickness [mm]	order no. 409
Card guide for cassette	100	1.6	041012
Card guide for cassette	160	1.6	041008



PCB Retainer

To secure PCB's inside the cassette.
Assembled together with the card guide.

Technical data

Material	Noryl
Color	RAL 7035
Continuous temperature	- 40 °C to + 115 °C
Fire protection class	UL 94 V-0

order no.: 409043488



Male Connector Assembly Kit

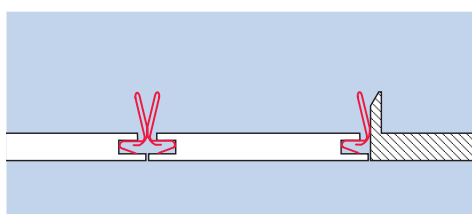
To assemble male connectors of type B, C, D, E, F, G, or H
reg. DIN EN 60603 in rear panels.

Material: steel

Finish: galvanized und passivated

Delivery: 1 male connector bracket top
1 male connector bracket bottom
Mounting parts

order no.: 409046098



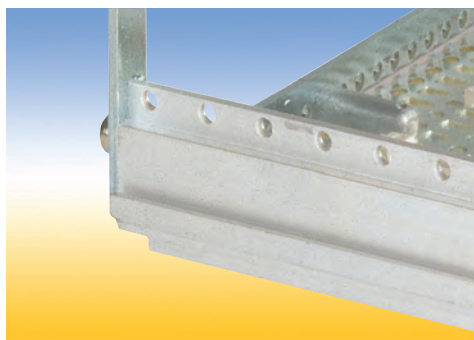
RFI-Spring F3

The RFI-contact spring for inserting into the side edges of the front panel.

Ordering details

	order no. 409
ont panel 2 RFI-springs are needed.	
RFI spring F3 - 3U	111112
RFI spring F3 - 6U	111116
For assemble the RFI spring F3	
Roller cutter	118433

Accessories for Cassettes



Mounting Block

To connect top/bottom plate with rear panel.
The mounting block can also be used to enhance RFI shielding in conjunction with blank rear panel RG. The rear panel can be additionally drilled for extra contact points.

order no.: **409044090**

Backplane Holder

To assemble backplanes on top/bottom plate.

order no.: **409119013**

Accessories

Minimum order quantity each 100 pieces

order no.
409

To assemble the rear plate and the backplane holder at the top/bottom plates

Oval head screw M 2.5 x 6

046999

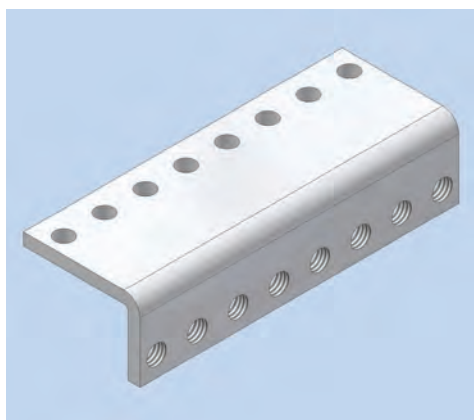
To assemble the backplane or the rear panel at the mounting block or backplane holder

Oval head screw Taptite M 2.5 x 10

040401

Spring washer 2.7

013911



Cassette Angle

To assembly a free wiring level inside of the cassette.
Mounted on the top/bottom plate.

Material: steel

Finish: galvanized and passivated

Ordering details cassette angle

length [mm]	for cassette nom. width [HP]	order no. 409
9.18	8	039851
19.34	10	039853
29.50	12	039855
39.66	14	039857
75.22	21	039864
110.78	28	039954
181.90	42	039968

Accessories

Minimum order quantity each 100 pieces

order no.
409

To assemble the cassette angle at the top/bottom plates

Oval head screw M 2.5 x 5

039691

To assemble the connectors at the cassette angle

Tapered screw M 2.5 x 6.5

032708



040346

Shell

To cover the open space between the top and bottom rear panels for 6-U-cassette. The shell is assembled at the strut.

Material: aluminum
Finish: passivated

Ordering details

	nom. width [HP]	order no.
		409
Shell 08	8	040348
Shell 10	10	040350
Shell 12	12	040352
Shell 14	14	040354
Shell 21	21	040361
Shell 28	28	040368
Shell 42	42	040382

Accessories

Oval head screw M 3 x 12

Minimum order quantity 100 pieces

order no.: **409108963**



Screw retainer, press-fit bushing and screw

Screw retainer 2.5 - M 2.5

To 2.5 mm thickness front panels, for pushing in the screw

Technical data

Material	POM
Color	gray or black
Continuous temperature	- 40 °C to + 100 °C

Ordering details

Minimum order quantity 100 pieces

	Color	order no.
		409
Screw retainer 2.5 - M 2.5	gray	100539
Screw retainer 2.5 - M 2.5	black	100538

Press-fit bushing M 2.5

To press in to the front panel in order to get electrical bounding to the cassette even when the front panel is anodized.

Material: brass (lead-free), nickel plated

Minimum order quantity 10 pieces

order no.: **409140266**

Screw M2.5 x 11.3

for 2.5 mm thick Front panels

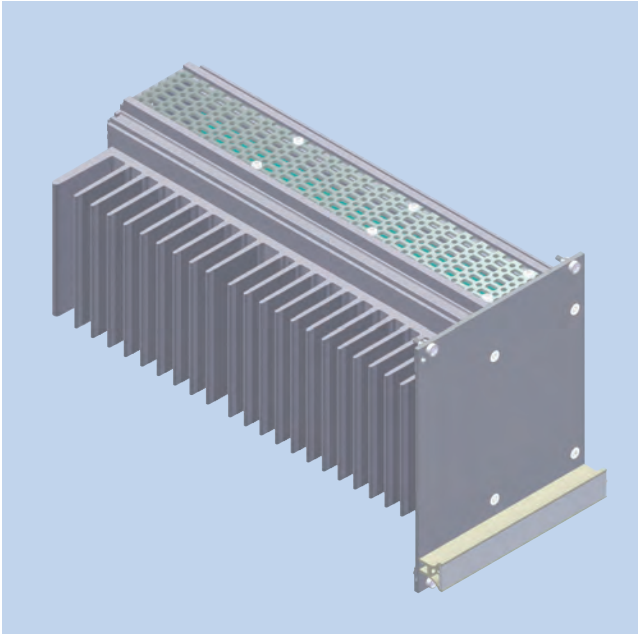
Material: Knurled head screw:
steel nickel plated
Others: stainless steel

Ordering details

Minimum order quantity 100 pieces

	head form	order no.
		409
Cylinder head screw	slotted	100540
Pan head screw M 2.5 x 11.3	cross slot	101917
Knurled head screw	knurled	101918

Cassette with Heat Sink



Cassette with Heat Sink

This cassette is designed for passive cooling of electronic sub assemblies and systems. The thermal power loss which is generated in the 19" cassette is dissipated by a heat sink which also serves as sidewall. The heat sink is covered by an asymmetric front panel. Euroboards are being fitted into card guides which can be snapped in every possible position in the cassette. A wide range of accessories, for example rear cover, handle and handle strip in different colors and types are available. The front panel can be fitted with RFI springs to realize RFI shielding of the front of the subrack. Optionally the complete cassette can be RFI shielded.

Delivery

- 4 depth profiles
- 1 side plates
- 1 heat sink, aluminum blank
- 1 rear panel 3 U
- 2 top/bottom plate
- 1 front panel, with slits in the side edges for insertion of RFI gaskets
- 1 handle
- 1 aluminum ident-plate
- Mounting parts

Delivery

The cassette is delivered unassembled as individual parts or as a kit.

Ordering details cassette with heat sink

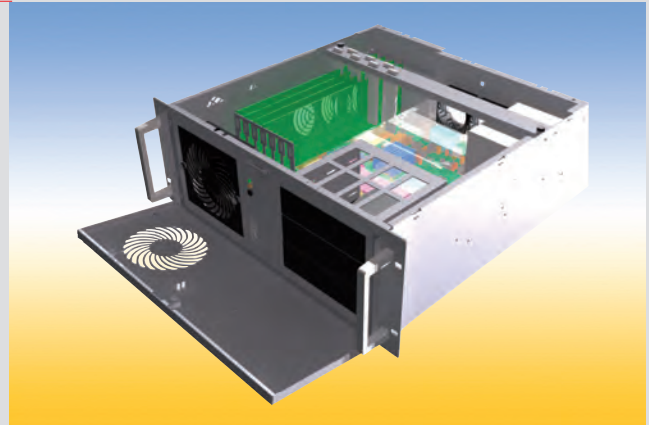
height [U]	depth [mm]	cassette + heat sink- width [HP]	order no. 409
3	160	12 + 8	168938
3	160	28 + 8	168939
3	220	12 + 8	168940
3	220	28 + 8	168941

Accessories

	order no. 409
For one flat front panel 2 RFI-springs are needed.	
RFI spring F3 - 3U	111112
For assemble the RFI spring F3	
Roller cutter	118433

Customer specific electronic systems

- ✓ Electronic products according to your requirements
- ✓ Consulting service and development for mechanics, electronics and wiring
- ✓ Professional electronic integration and wiring
- ✓ Certifications (CE, UL, shock, vibration, etc.) on request



Customer specific electronic systems

System consulting

- ✓ Project planning combining your specifications and our know-how

Development

- ✓ Mechanics, customer specific electronics, prototype construction
- ✓ Consider environmental conditions like shock, vibration, temperature and RF-signals

Production

Metal processing, surface refinement, assembly

✓ Electronics and wiring

- ✓ ESD compliant electronic assembly and wiring

Quality assurance

- ✓ Electrical safety tests, component test, system test, Burn-In



Application examples

High speed data acquisition system

- Customer specific design with PCI slots at front side
- High EMI requirements because of high frequency clocking
- Optimized cooling for high-quality components

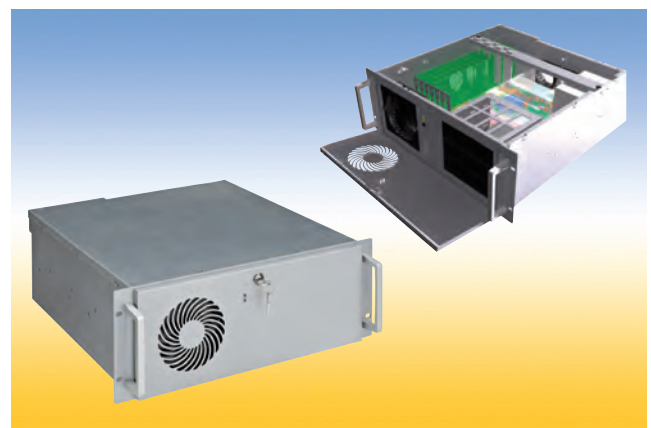
Control system with touch operation

- 2,5 U height and only 6 cm depth
- High performance in a small housing
- Development of a cooling concept
- Reliable touch operation



Highly available Industrial PC

- Lockable front door to prevent unauthorized access
- System with shock and vibration dampers
- High reliability by using RAID and redundant power supply



Please ask your local representative for your
individual system configuration.
You find your contact person on our homepage:
www.intermas-el.com

AC/DC converters

- ✓ PK MONOVOLT
- ✓ PK BIVOLT
- ✓ PK TRIVOLT
- ✓ VP 40
- ✓ VP 50



AC/DC converters with active PFC

- ✓ VP 80
- ✓ VP 150



AC/DC converters economy

- ✓ EC MONOVOLT
- ✓ EC TRIVOLT



DC/DC converters

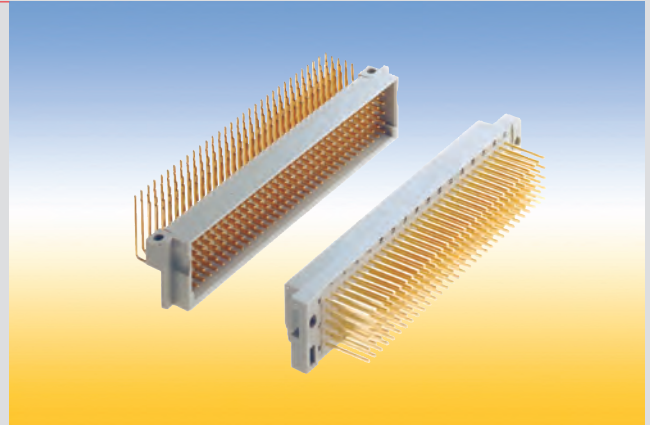
- ✓ GK TRIVOLT



Wiring and Accessories

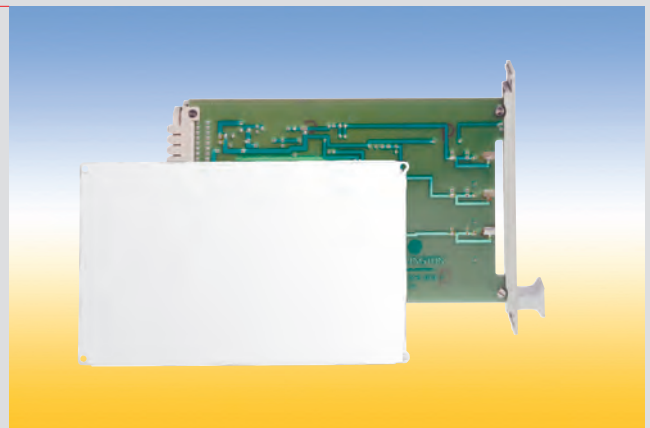
Connectors and Accessories

- ✓ In accordance with IEC 60 603-2 / DIN 41 612
- ✓ Designs supplementing the standards



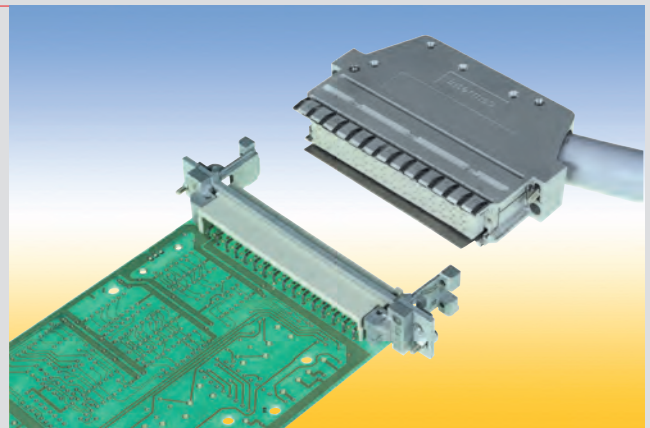
Cover for Euroboards

- ✓ Self-extinguishing in accordance with UL 94-V0
- ✓ For use with or without a coding strip



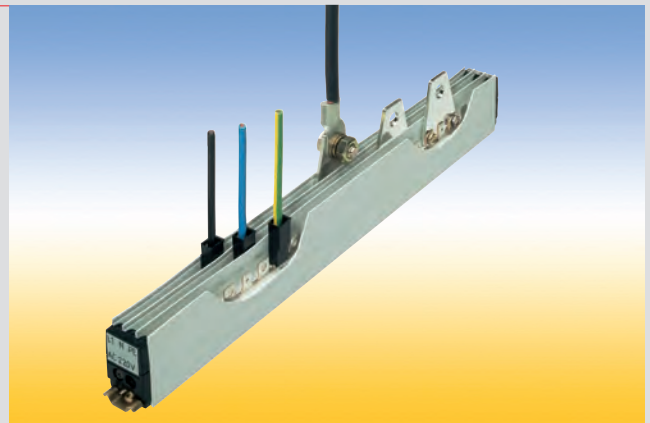
Interface Housings for IEC 60 603-2 / DIN 41 612 Connectors

- ✓ Plastic version
- ✓ Metal version
- ✓ Shielding concept
- ✓ Also for railway applications in accordance with BN 74 016



SE Bus Bars

- ✓ High current capacity up to 120 A
- ✓ Two connection types
- ✓ 2 or 3-pole



Connectors

Coding key for IEC 60 603-2 / DIN 41 612 connectors

Since this catalog not only contains DIN 41612 connectors but also connectors which supplement the standard, the coding key has been extended accordingly.

Ordering example

Female connector C 0 6 4 M S - C 1 A - 1 A U - A 0 1



Connector
Male connector
Female connector

Position of the premating contact

style

Termination pin's surface

AU Gold
AG Silver
NI Nickel
SN Tin

Performance level

1 500 contact durability
2 400 contact durability
3 50 contact durability

Type of termination

A For soldering into PCB's up to 1.6 mm thick
D For soldering into PCB's up to 1.6 mm thick
E For soldering into PCB's up to 2.4 mm thick
F For soldering into PCB's up to 2.4 mm thick
H For wire wrap technique to DIN 41611, part 2
L For SMD-technique
M For termi-point connection to DIN 41611
Q For crimp-connection to DIN 41611, part 3
S For fast-on technique to DIN 46244
T By screw connection
U For interfacing
V For metal plate
W For soldering wires crimp
X For ribbon cable connection to DIN 41611
Y For solid pr
Z For compliant pr

Contact surface

1 Gold or gold alloy
2 Silver or silver alloy
3 Tin or tin alloy

Loading and contacts

B connector housing, unloaded
C connector housing, loaded
S single contact

B
C
D
E
F
F/H
G
H
M
P
Q
R
S
U
V
Z,C

Number of poles

Number of contacts

Type of contact

Female
Male

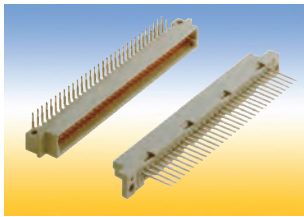
F
M

Termination technique

Crimp
Termi-Point
Pr
Solder
Fast-on
Wire wrap
without

C
K
P
S
T
W
O

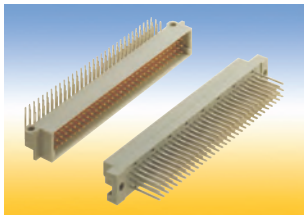
Connectors Styles B, C, D and E



Connectors style B

Ordering details

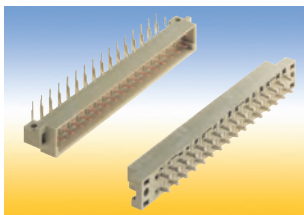
	no.poles: assignment:	064 ab 1...32
	terminations [mm]	order no. 409
Male connector B MS - C1A - 2 SN	0.6 x 0.6 x 2.9	043586
Female connector B FS - C1D - 2 SN	0.25 x 0.7 x 2.5	105380



Connectors style C

Ordering details

	no.poles: assignment:	032 ac 2...32	064 ac 1...32	096 abc 1...32
	terminations [mm]	order no. 409	order no. 409	order no. 409
Male connector C MS - C1A - 2 SN	0.6 x 0.6 x 2.9	043598	043606	043610
Female connector C FS - C1E - 2 SN	0.25 x 0.7 x 4	-	068108	068089
FW - C1H - 2 SN	0.6 x 0.6 x 13	045891	045894	045897



Connectors style D

Ordering details

	no.poles: assignment:	032 ac 2...32
	terminations [mm]	order no. 409
Male connector D MS - C1A - 2 SN	0.6 x 0.6 x 2.9	043622
Female connector D FW - C1H - 2 SN	1 x 1 x 20	070323
FC - B	f. male 0.6 x 0.6	031022
FC - B	f. male 0.6 x 1/1.5	031031

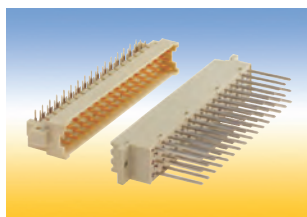


Connectors style E

Ordering details

	no.poles: assignment:	048 row separation 5,08 ace 2...32	048 row separation 2.54 ace 2...32
	terminations [mm]	order no. 409	order no. 409
Male connector E MS - C1A - 2 SN	0.6 x 0.6 x 2.9	045210	045235
Female connector E FW - C1H - 1 SN	1 x 1 x 20	025919	-
FW - C1H - 2 SN	0.6 x 0.6 x 13	-	-
FC - B	f. male 1 x 1	031030	-
FC - B	f. male 0.6x1/1.5	031021	-

Connectors Styles F, H and R



Connectors style F

Ordering details

	terminations [mm]	no.poles: assignment:	032 zb 2...32	048 zbd 2...32
			order no. 409	order no. 409
Male connector F				
MS - C1A - 2 SN	0.6 x 0.6 x 2.9		022622	041660
Female connector F				
FW - C1E - 2 SN	1 x 1 x 4.5		070969	024567
FW - C1H - 2 SN	1 x 1 x 22		042219	042218
FC - B	f. male 0.6x1/1.5		-	031015



Connectors style H

Ordering details

	terminations [mm]	no.poles: assignment:	011 b 2.5,8...32	015 dz 4...32
			order no. 409	order no. 409
Male connector H				
MS -C2A - 1 AG z32 at 3.5 mm premating	1.2 x 0.8 x 3.5		098989	-
MS - C2A - 1 SN z32 at 1.5 mm premating	1.2 x 0.8 x 2.9		-	101385
MT - C2S - 1 AG b32 at 3.5 mm premating	6.3 x 0.8 x 8		098986	-
MT - C2S - 1 AG z32 at 1.5 mm premating	6.3 x 0.8 x 8		-	094628
Female connector H				
FT - C2S - 1 AG	6.3 x 0.8 x 8		098991	-
FT - C2S - 2 AG	6.3 x 0.8 x 8		-	071015

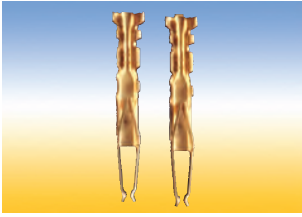


Connectors style R

Ordering details

	terminations [mm]	no.poles: assignment:	032 ac 2...32	064 ac 1...32	096 abc 1...32
			order no. 409	order no. 409	order no. 409
Male connector R					
C1E - 2 SN	0.6 x 0.6 x 4		077051	077055	077058
C1H - 2 SN	0.6 x 0.6 x 13		077045	074202	077048
Female connector R					
C1A - 2 SN	0.6 x 0.6 x 6		077038	074203	077042

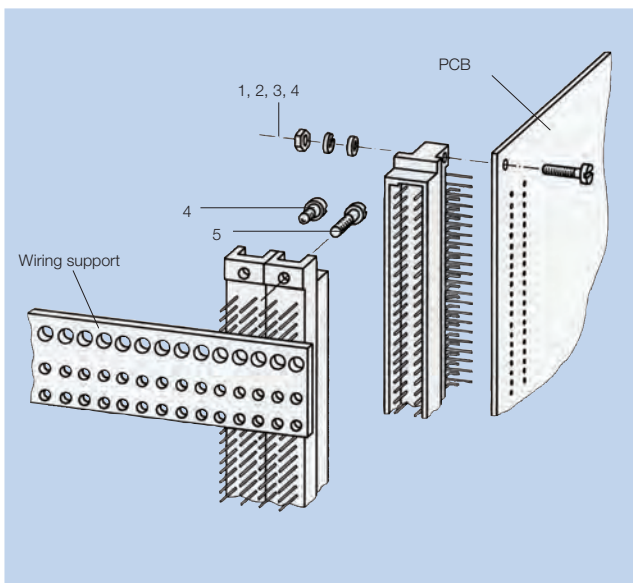
Crimp-Snap-In-Contacts, Crimp-Pliers Accessories for Connectors



Crimp-Snap-In-Contacts for Connectors style C, D, E, and F, Pliers and Unlocking Tool

Ordering details

	for connector style	conductor cross sec- tion [AWG]	order no. 409	Pliers order no. 409
Crimp-snap-in-male MC - S1Q - 2 NI	F	16 - 18	077112	035630
MC - S1Q - 2 NI	F	20 - 24	077111	035630
Crimp-snap-in-female for male contact 0.6x1/0.6x1.5				
FC - S1Q - 1 SN	D, E, F	16 - 18	031019	035630
FC - S1Q - 1 SN	D, E, F	20 - 26	031018	035630
FC - S1Q - 1 SN	D, E, F	26 - 28	031020	031120
Crimp-snap-in-female for male contact 1 x 1				
MC - S3Q - 3 SN	D, E, F	16 - 18	031024	035630
MC - S3Q - 3 SN	D, E, F	20 - 26	031023	035630
unlocking tool			031123	-



Mounting of Connectors

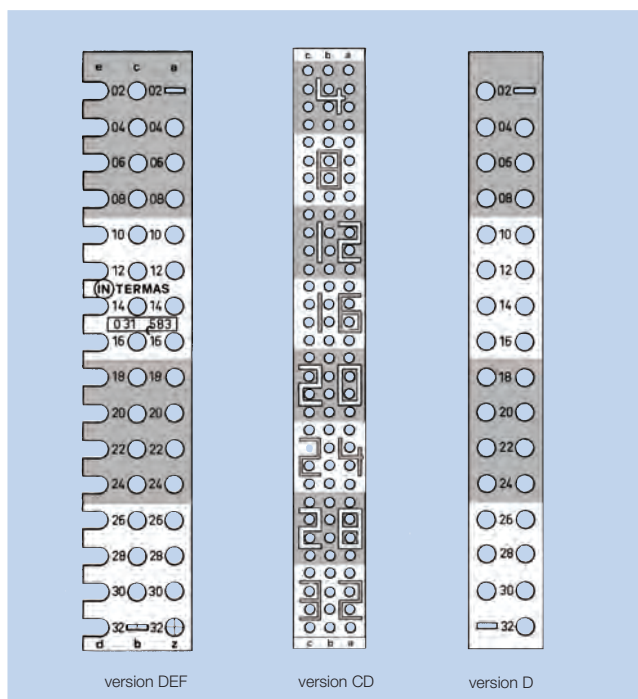
Connectors in accordance to DIN 41612 can be mounted with commercial DIN screws. Using tapered screw, the connectors can be mounted in correct position without any adjustment or alignment.

Ordering details

Minimum order quantity each 100 pieces

	position	order no. 409
Hexagonal nut M 2.5 DIN439	1	013938
Spring washer 2.5 DIN 127	2	118506
Washer 2.7 DIN 433	3	111089
Pan head screw M 2.5x12 DIN 84	4	013904
Tapered screw M 2.5 x 6.5	5	032708
Tapered screw M 2.5 x 9	5	070476

Accessories for Connectors



Marking Strips

IEC 60603-2 / DIN 41612 provides labeling for connectors on their wiring side. Marking strips, made of thin plastic foil (Astralon), ensure the perfect designation of pin positions.

1. Type DEF

for connectors styles D, E and F with pin cross section 1,0 x 1,0 and 0,8 x 1,6 and 0,8 x 2,4 mm and for connectors with the type of termination V.

order no.: **409031583**

2. Type CD

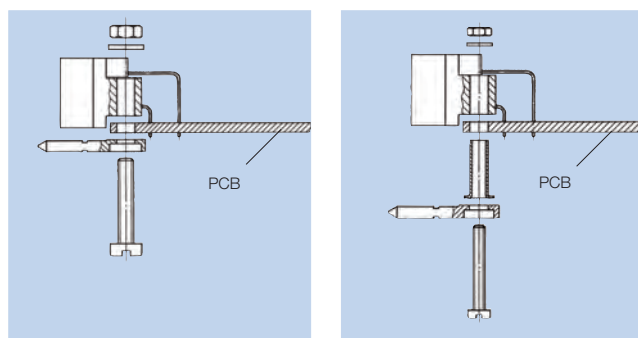
for connectors styles C and D with pin cross section 0,6 x 0,6 u. 1,0 x 1,0 mm and for connectors with the type of termination V.

order no.: **409022714**

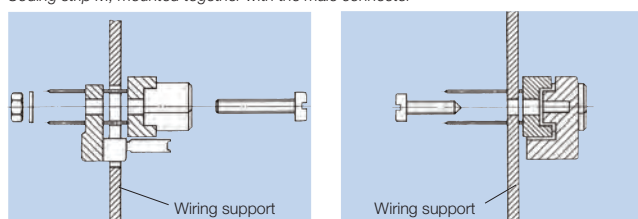
3. Typ D

for connectors style D

order no.: **409044214**



Coding strip M, mounted together with the male connector



Coding strip F, mounted together with the female connector

Coding Strips

The coding strip is designed for attachment to connectors in accordance with IEC 60603-2 / DIN 41612 and is to be mounted together with the connector to the PCB. Also the mating coding part is mounted together with the connector to the wiring support. Each coding strip has 16 coding teeth, that can be broken off as necessary

Ordering details

	order no. 409
Coding strip M ¹⁾	033188
Coding strip F ¹⁾	033189
Coding strip F-plate ^{1) 2)}	070617
Coding strip F-plate 2 ^{1) 3)}	064740

¹⁾ one functional unit comprises 1 coding strip M and one coding strip F

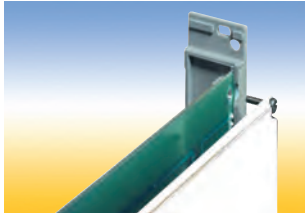
²⁾ for attaching with self tapping screws

³⁾ attaching at through hole

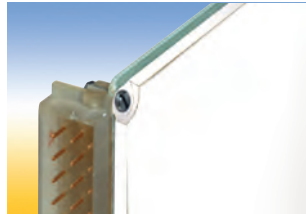
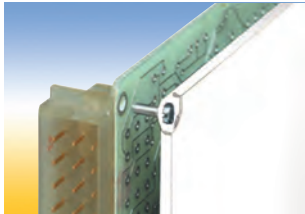
Cover for Euroboards

Description

This PCB cover protect the soldered side against dirt and contact. Two versions are available:
A standard PCB cover and a PCB cover for use with a coding strip.
The coding strip PCB cover can be used in connection with a coding strip on the connector.



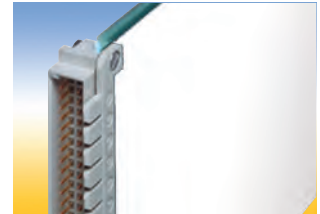
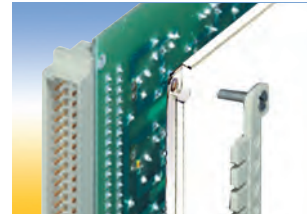
Mounting of PCB cover standard at the front panel



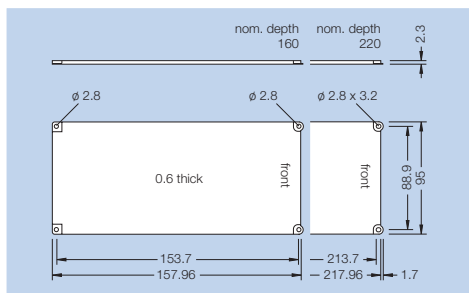
Mounting of PCB cover standard at side of the connector

Technical data

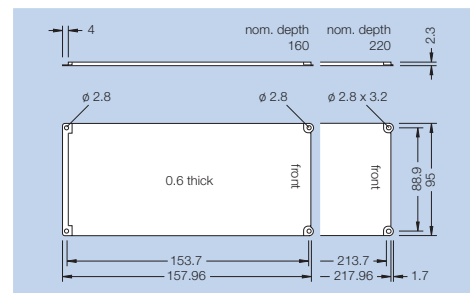
Material	PBT (Polyester)
Continuous temperature	-40 °C to <+60 °C
Fire protection class	UL 94 V-0 at 0.8 mm
Color	white



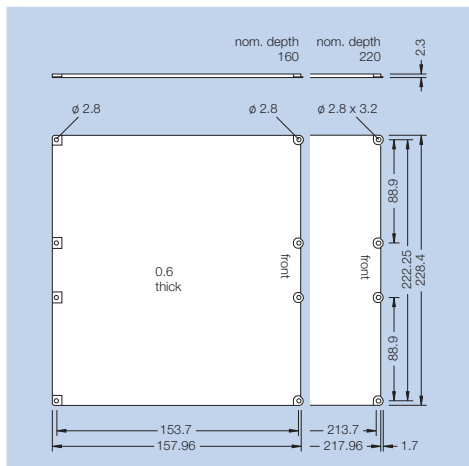
Mounting of PCB cover for coding strip jammed under the recess of the coding strip



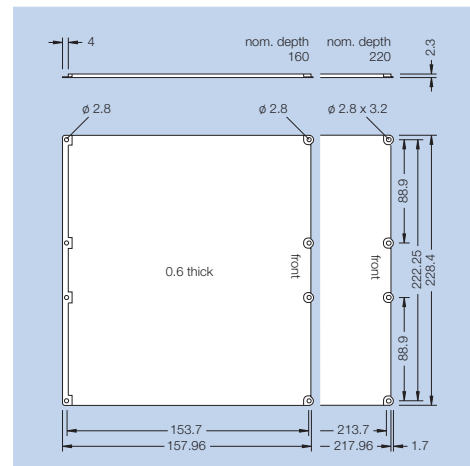
PCB cover standard 3U



PCB cover for coding strip 3U



PCB cover standard 6U



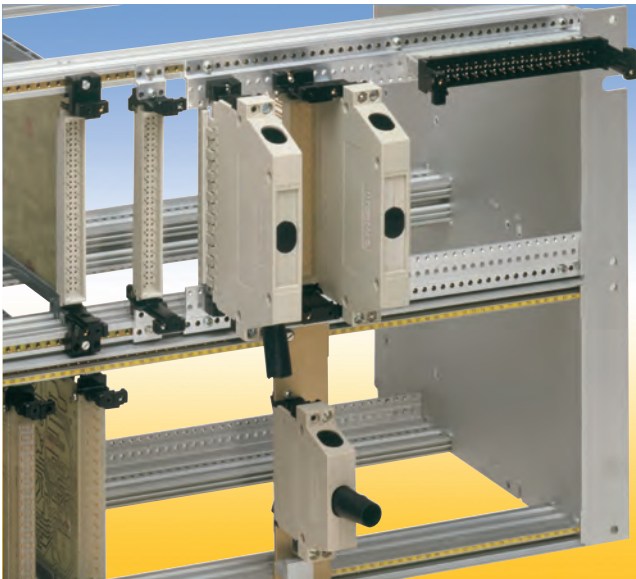
PCB cover for coding strip 6U

Ordering details

	PCB height [mm]	standard order no.	coding strip order no.
Cover for Euroboards		409	409
3-160	100	100652	100650
3-220	100	100662	100660
6-160	233.35	102110	102109
6-220	233.35	102113	102112

Metallized PCB cover on request.

Plastic Interface Housings



Description

This compact and insulating interface housing is designed to accommodate DIN 41 612 / IEC 60 603-2 connectors. It is physically clamped into position between guide elements. The interface housings have the following advantages:

- ✓ Accommodation of either female or male connectors of any type of connection technology.
- ✓ Protects the connector during insertion and operation.
- ✓ Lifting screws ease insertion and removal.
- ✓ Three cable feed apertures.
- ✓ Strain relief.
- ✓ Allows installation of display and operating elements.
- ✓ Codable.

Metallized plastic interface housing for RFI-shielding available.

Technical data

Dimensions	IEC 60 297 / DIN 41 494
Material	interface housing: PC, pebble gray guide components: PC, black
Fire characteristics:	UL 94 V-1
Utilization category:	-25 °C, 100 °C, 90% relative humidity

Delivery kit interface housing

	pieces per kit style B	pieces per kit style C, E, F1, F	pieces per kit style C1, F2
Interface housing shells	2	2	2
Cover strip	1	-	-
Cable clamp	2	2	-
Blind plug	2	2	-
Strain relief kit	1	1	-
Mounting parts	1	1	1

Delivery

Interface housings:
As a kit of unassembled components, without guide components.

Guide components:
As an assembled kit.

Delivery kit guide elements

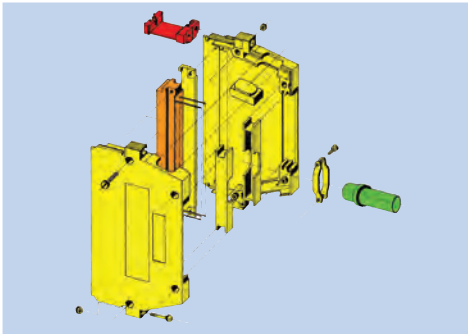
	pieces per kit
Guide element top	1
Guide element bottom	1
Mounting parts	1

Color code:

yellow: interface housing
orange: male connector
blue: female connector
red: guide components
green: accessories

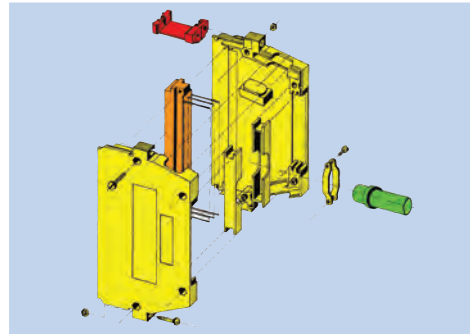
Plastic Interface Housings

Ordering details for interface housing kits (yellow: interface housing kit)



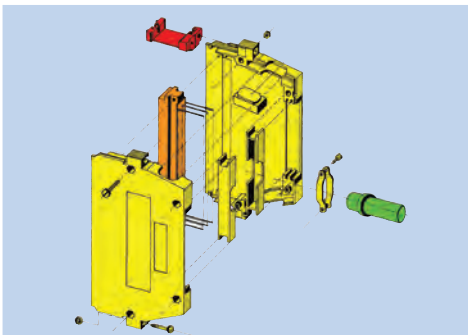
Interface Housing B

order no.: 409077516



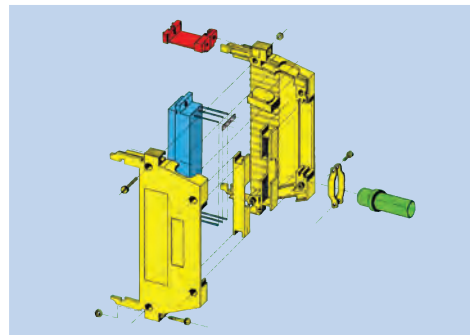
Interface Housing C

order no.: 409031124



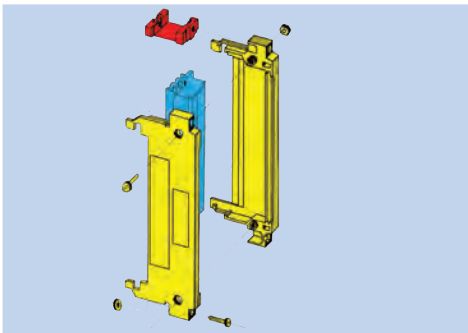
Interface Housing E

order no.: 409031125



Interface Housing F

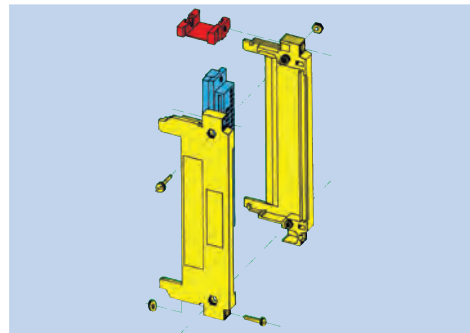
order no.: 409070620



Interface Housing F2

for termination technique with ribbon cable

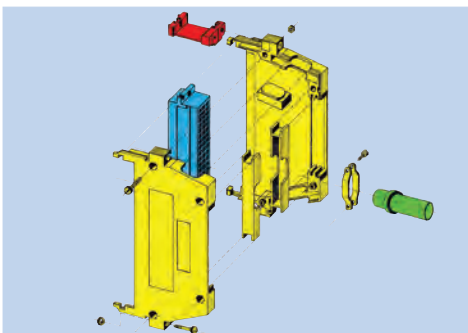
order no.: 409073659



Interface Housing C1

for termination technique with ribbon cable

order no.: 409070621

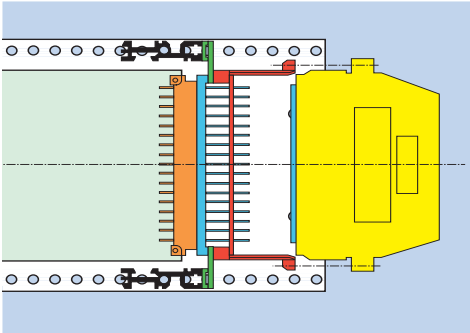


Interface Housing F1

for crimp-snap-in termination technique

order no.: 409071876

Plastic Guide Components

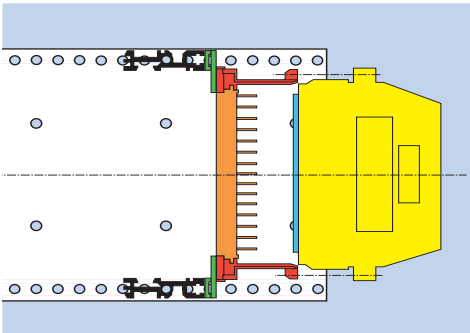


Application

For interface housings with female connector, to attach on the connecting pins of a female connector subrack.

Ordering details for kits

	length spacer	for interface housings	order no. 409
Guide component C-Huk 13	6	C, C1	032563
Guide component C-Huk 17	9	C, C1	032564
Guide component D-Huk 20	11	D	032565
Guide component D-Huk 26	17.5	D	032566
Guide component E-Huk 20	11	E	032567
Guide component E-Huk 26	17.5	E	032568
Guide component F-Huk 22	22	E	032569

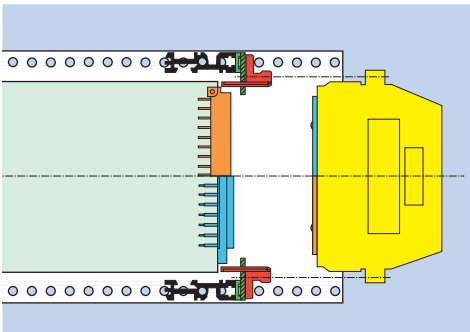


Application

For interface housings with female connector, to attach on the connecting pins of a *U-element* rack.

Ordering details for kits

	for interface housings	order no. 409
Guide component U-element	F, F1, F2	035207

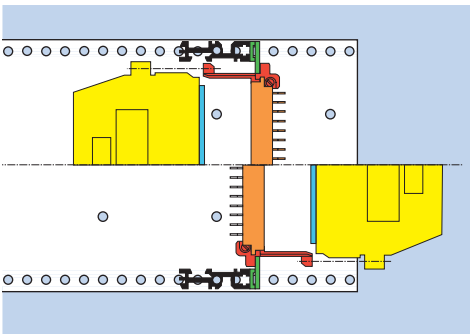


Application

For interface housings with female or male connector, for mating directly to the PCB (LP) connector subrack.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDFHR-LP	C, C1, D, M, F, F1, F2, H, R	032553
Guide component E-LP	E	032554



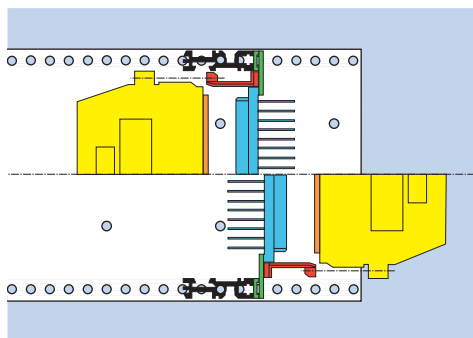
Application

For interface housings with female connector, for mating with a male connector, who is installed on the *connector attachment* (SB).

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component BDR-M-SB/FP	B, Q, C, C1, R, D, M	032520
Guide component E-M-SB/FP	E	032551
Guide component F-M-SB/FP	F, F1, F2, U, H	032575

Plastic Guide Components

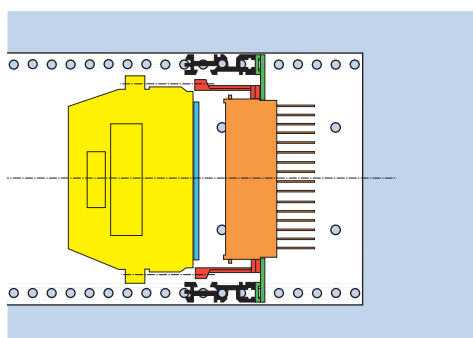


Application

For interface housings with male connector, for mating with a male connector, that is installed on the *connector attachment* (SB).

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDHR-F-SB	C, C1, R, D, M, H, B, Q	032555
Guide component E-M-F-SB	M	032556

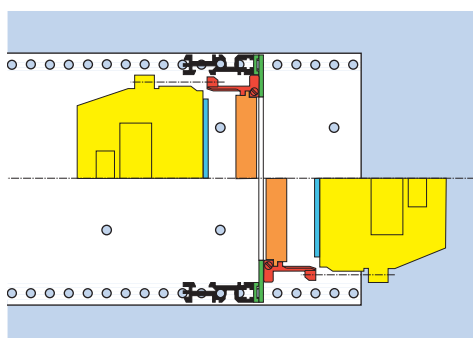


Application

For interface housings with female connector, for mating with an *I-element*. Installation in the wiring field of the subrack.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component I-unit	F, F1, F2	035206

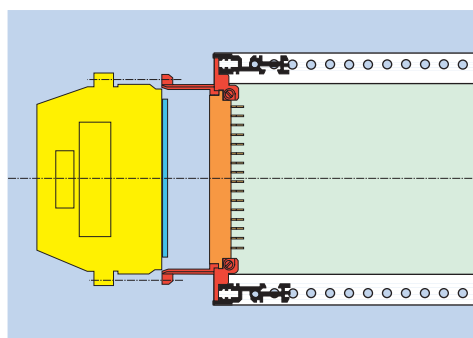


Application

For interface housings with female connector, for mating with a male connector, on *Backplane* (BP).

Ordering details for kits

	order no. 409
Guide component CDHR-M-BP	072620
Guide component E-M-BP	072619



Application

For interface housings with female connector, for mating with a male connector, serves as a handle (*GL*), mounted on the service side of the subracks.

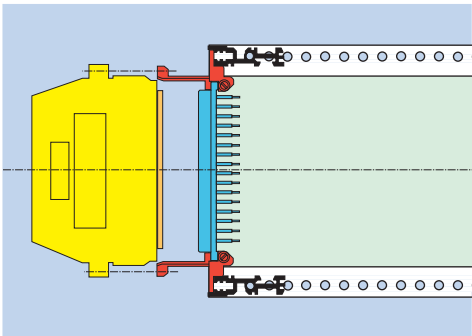
Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDR-M-GL	B, C, C1, R, Q, D, M	032518
Guide component E-M-GL	E	032549
Guide component F-M-GL	F, F1, F2, U, H	032574

Color code:

yellow:	interface housing
orange:	male connector
blue:	female connector
red:	guide components
green:	accessories

Plastic Guide Components

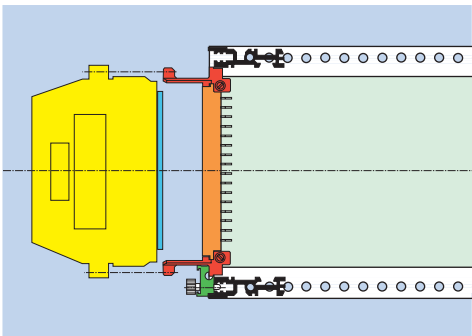


Application

For interface housings with male connector, for mating with a female connector, serves as a handle (*GL*), mounted on the service side of the subracks.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDHR-F-GL	B, Q, C, C1, R, D, M	032519
Guide component E-F-GL	E	032550

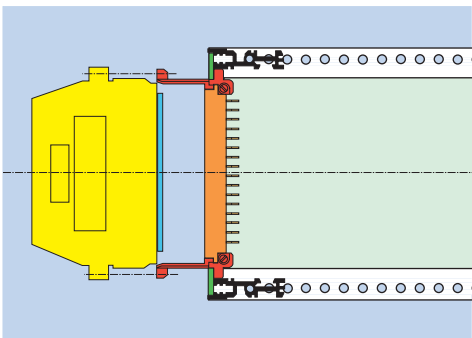


Application

For interface housings with female connector, for mating with a male connector, serves as a handle (*GL*) the subrack.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component F-M-GL	F, H15, U	035316

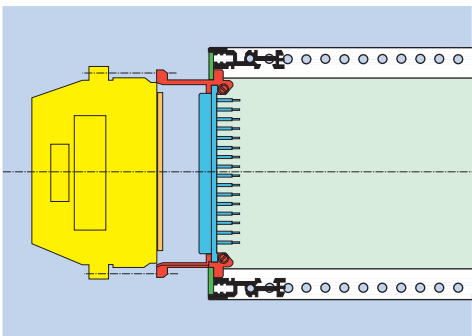


Application

For interface housings with female connector, for mating with a male connector, that is mounted on a *front panel (FP)*.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDR-M-SB/FP	B, Q, C, C1, R, D, M	032520
Guide component E-M-SB/FP	E	032551
Guide component F-M-SB/FP	F, F1, F2, H, U	032575



Application

For interface housings with male connector, for mating with a female connector, that is mounted on a *front panel (FP)*.

Ordering details for kits

	for interface housings and connectors	order no. 409
Guide component CDFHR-FP	B, C, C1, D, M, H11, Q, R	032523
Guide component E-FP	E	032552

Color code:

yellow:	interface housing
orange:	male connector
blue:	female connector
red:	guide components
green:	accessories

Accessories for Plastic Interface Housings



Cable Sleeve

Material: black rubber

for housing styles C, F, B

order no.: 409032766

for housing style E

order no.: 409032767



Cable Clamp Kit

consists of:
2 brackets and mounting parts

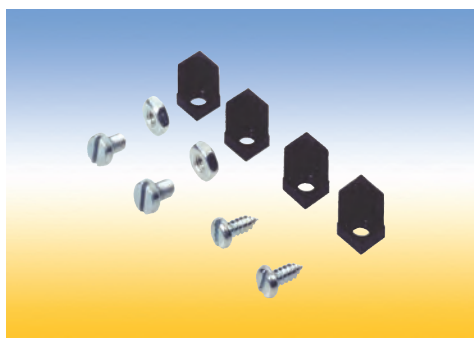
Material: metal

for housing styles C,D, F, H

order no.: 409034532

for housing style E

order no.: 409034533



Coding Kit

with 16 possibilities
consists of:
4 coding elements and mounting parts

Material: plastic

order no.: 409069755



Coding Kit

with 32 possibilities
consists of:
4 coding elements and mounting parts

Material: metal

order no.: 409034724

Metal Interface Housings



Description

The metal interface housing was developed on the basis of the plastic interface housing design as a totally metal housing with metal guide elements for heavy-duty use. It has the following advantages:

- ✓ Suitable for all 19" front panels in accordance with IEC 60 297-3 and IEEE fronts in accordance with P1101.10.
- ✓ For shielding between the interface housing and the front panel, in the E and F1 style RFI shielding panels can be added at the transfer side
- ✓ Coding already integrated or can be added, depending on the style
- ✓ Three cable feed apertures
- ✓ For cable diameters up to 17 mm
- ✓ For heavy-duty applications such as railway engineering, power station engineering etc.

Technical data

Dimensions	IEC 60 297 / DIN 41 494
Material	housing shells: die-cast zinc guide components: die-cast zinc or metallized plastic other parts: stainless steel, steel, brass
Finish:	housing shells: drum-polished or galvanized and passivated or or nickel plated other parts: galvanized, nickel-plated

Delivery kit interface housings metal

	pieces per kit standard	pieces per kit shielded
Interface housing shells	2	2
Cable clamps	1	1
Blind plug	2	2
Shielding plate	-	1
RFI-spring	-	1
Mounting parts	1	1

Delivery kit guide element

	pieces per kit
Guide component top	1
Guide component bottom	1
Mounting parts	1

Delivery

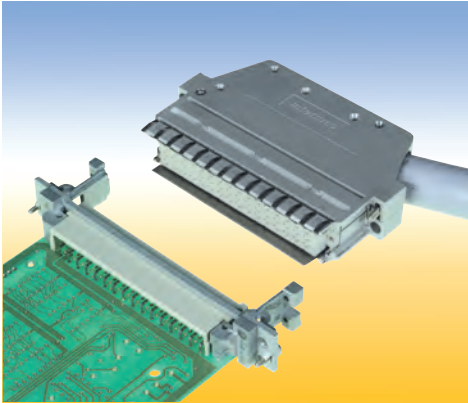
Interface housings:

As a kit of unassembled components, without guide components.

Guide components:

As an assembled kit.

Metal Interface Housings RFI



Metal interface housings metal RFI

Metal Interface Housings RFI E

For connectors styles E 48 and E 160.

Ordering details for kits

	width [HP]	drum- polished order no. 409	galvanized+ passivated order no. 409
Metal interface housings			
RFI E-standard	4	113860	113824
RFI E-shielded	4	-	113849

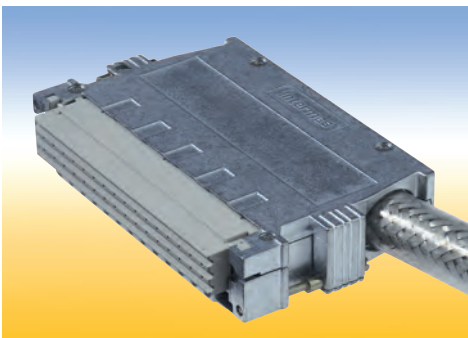
Metal Interface Housings RFI F1

For connector styles F 48, C96, H11, H15, and F24/H7.

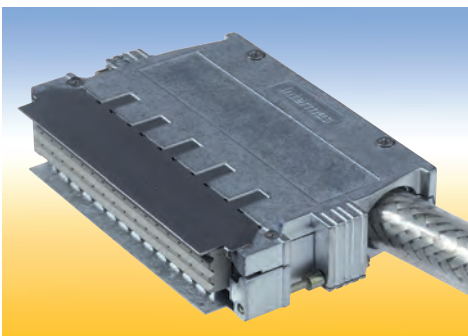
Ordering details for kits

	width [HP]	drum- polished order no. 409	galvanized+ passivated order no. 409
Metal interface housings			
RFI F1-standard	3	113838	111775
RFI F1-standard	4	113840	111245
RFI F1-shielded	4	-	113841

Nickel plated metal interface housings RFI F1 on request.



RFI 20 COD-standard,
codable with marketables coding elements



RFI 20 COD-shielded, codable

Metal Interface Housings RFI 20 COD

With integrated coding,
for connector styles F 48, H15 and F24/H7

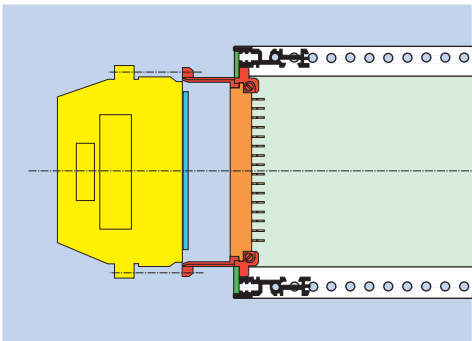
The Metal interface housings RFI 20 - standard are *not* supplied with RFI springs.

Ordering details for kits

	width [HP]	drum- polished order no. 409	galvanized+ passivated order no. 409
Metal interface housings			
HF20COD-standard	4	114775	112321
HF20COD-shielded	4	-	114255

Nickel plated metal interface housings RFI 20 COD - standard on request.

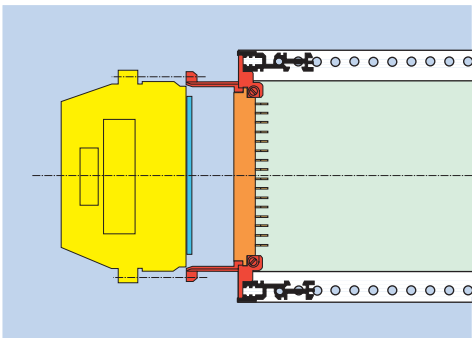
Metallized Guide Components



Application
Guide component F for mounting of a 3 HP metal interface housing in any position of the mounting area.

Ordering details for kits

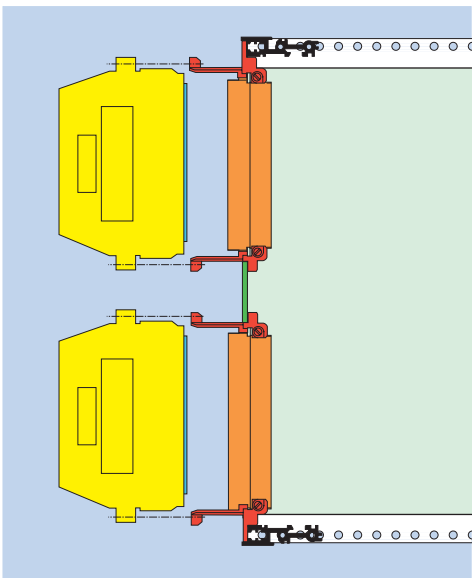
	for metal interface housing RFI	order no. 409
Guide component F metal-lized	F1- 3 HP	114122



Application
Guide component F with integrated front panel for mounting of a 3 HP metal interface housing RFI in a 3 U subrack..

Ordering details for kits

	for metal interface housing RFI	order no. 409
Guide component F metal-lized	F1- 3 HP	114121



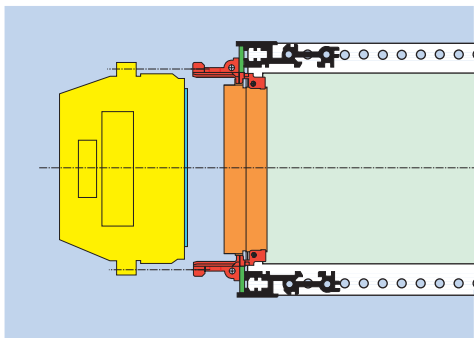
Application
Guide component F for mounting of a 3 HP metal interface housing RFI in the upper or lower area of 6 U subracks.gers.

Ordering details

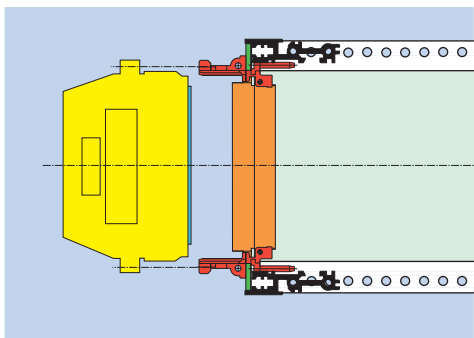
	for metal interface housing RFI	order no. 409
Guide component F metal-lized	top - F1- 3 HP	114119
Guide component F metal-lized	bottom - F1- 3 HP	114120

Color code:	
yellow:	interface housing
orange:	male connector
blue:	female connector
red:	guide components
green:	accessories

Metal Guide Components



without coding



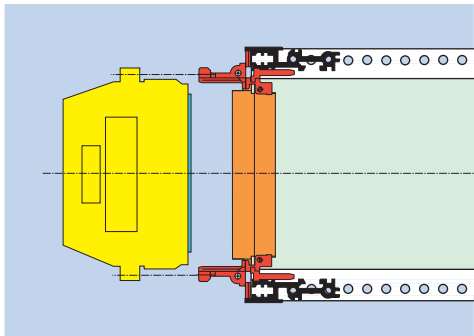
with coding

Application

Guide component F/E for mounting of a 4 HP metal interface housing RFI in any position of the mounting area.

Ordering details for kits

	for metal interface housing RFI	order no. 409
Guide component F/E metal	E, F1- 4 HP	114933
Guide component F/E metal with coding	E, F1- 4 HP	114007

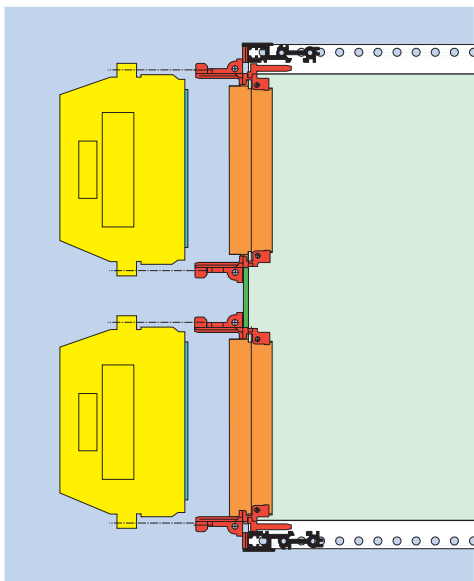


Application

Guide component F/E with integrated front panel for mounting of a 4 HP metal interface housing RFI in a 3 U subrack.

Ordering details for kits

	for metal interface housing RFI	order no. 409
Guide component F/E metal	F1- 4 HP	113826



Application

Guide component F/E for mounting of a 4 HP metal interface housing RFI in the upper or lower area of 6 U subracks.

Ordering details for kits

	for metal interface housing RFI	order no. 409
Guide component F/E metal	top - F1- 4 HP	113830
Guide component F/E metal	bottom - F1- 4 HP	113828

Accessories for Metal Interface Housings RFI E and F



Cable Clamp Kit

consists of:
2 brackets and mounting parts

Material: zink die-cast
Finish : galvanized

Ordering details for kits

	order no. 409
Cable clamp 3 HP	113788
Cable clamp 4 HP	112279



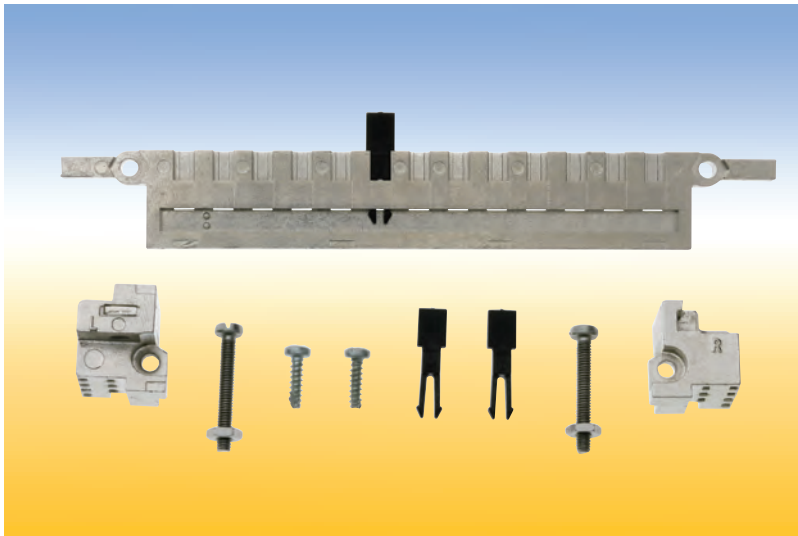
Coding Kit

with 32 possibilities
consists of:
4 coding elements and mounting parts

Material: metal

order no.: **409034724**

Accessories for Metal Interface Housings RFI 20 COD



Retaining Parts Kit for mounting in subrack

Material: plastic
Finish: metallized

order no.: **409114983**

Coding Strip RFI 20 for the male connector

Material: plastic
Finish: metallized

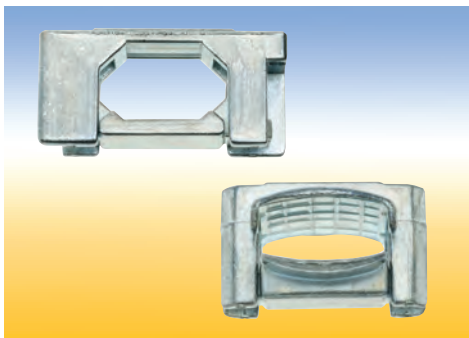
order no.: **409114985**

Coding Pin RFI 20

Material: plastic

Packing unit: 100 pieces

order no.: **409115095**



Cable Clamp Kit 4 HP - RFI 20

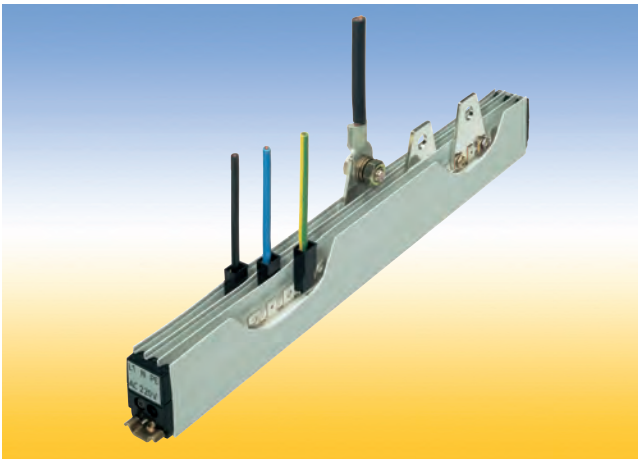
consists of:
2 brackets and mounting
parts

Material: zinc die-cast
Finish: metallized

Ordering details for kits

	order no. 409
Cable clamp smal	114982
Cable clamp wide	118544

Insulated Bus Bar



Description

Insulated bus bar kit for the power supply in housings and cabinets.

The features of the bus bars:

- ✓ High current capacity up to 120 A.
- ✓ Safe against accidental hand contact up to 500 V in accordance with VDE 0106.
- ✓ The protective profile makes the bus bar safe against accidental finger contact up to 220 V in accordance with VDE 0470.
- ✓ Deliverable in any desired length.
- ✓ With a width of 25 mm, 3-pole use is possible.
- ✓ Insulating materials in accordance with the stipulations of VDE 0606.

Two connection versions are available:

1. Connection version A:

Alternating terminal lugs for A 6.3 x 0.3 flat push-on connectors and screw attachment.

2. Connection version B:

Alternating terminal lugs for A 6.3 x 0.3 flat push-on connectors and double terminal lugs for A 2.8 x 0.8 flat push-on connectors or one A 6.3 x 0.8 flat push-on connector. Intermediate lengths can be produced by simply sawing.

Technical data

Number of poles	2- or 3-pole
Connection version A	A 6.3 x 0.8 DIN 46244/connection Ø 4.2 mm
Connection version B	A 6.3 x 0.8 / 2 x A 2.8 x 0.8 DIN 46244
Utilization category	-25 °C, +70°C, no condensation
Phase current	120 A at an ambient temperature of 20 °C; 80 A at 55 °C; 70 A at 70 °C
Max. operating voltage	500 V
Insulation class	group C in accordance with DIN/VDE 0110
Test voltage	3.1 kV
Amp capacity at 20°C	25 A per pin connection A 6.3 x 0.8
Material	bus bar: SE-Cu F37, hot-dip tinned insulating body: PP end cap: PC, black mounting parts: steel, galvanized, passivated
Fire protection class	insulating UL 94 V-0

Delivery

assembled

Kit consists of:

- Rails
- 1 Plastic body
- 2 End caps
- Mounting parts

Accessories

	order no. 409
Mounting parts 401 (2 position points)	065430
Mounting parts from 1600 mm (4 position points)	059270
Connection lug 100 A	057680

Ordering details for kits

	nom. length [mm]	for cabinet height	A 2poles order no. 409	A 3poles order no. 409	B 2poles order no. 409	B 3poles order no. 409
Bus bar 100 A-	401	-	-	061443	-	080695
Bus bar 100 A-	1600	1800	062093	058447	-	080939
Bus bar 100 A-	1800	2000	062094	058449	080696	080941
Bus bar 100 A-	2000	2200	062095	058451	080697	080943

Accessories

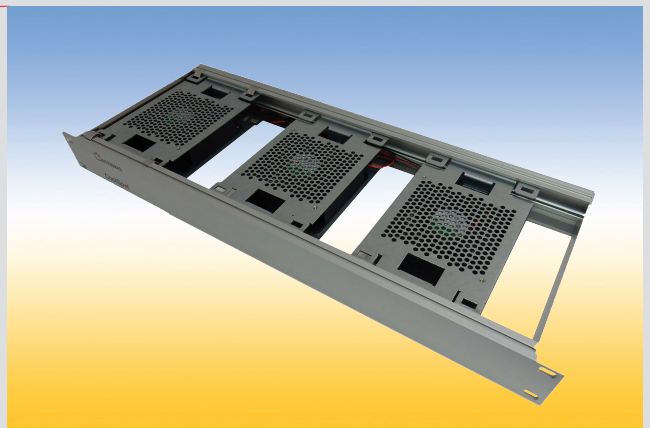
19" Cross-Flow Fan



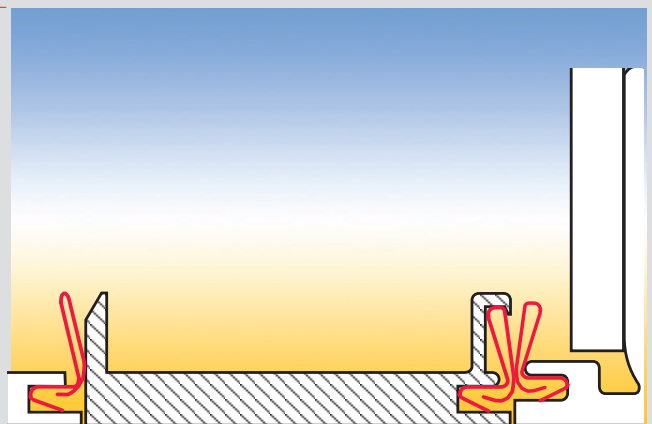
19" Fan Unit 1 U



CoolSpot



RFI Springs



19" Cross-Flow Fan



19" Cross-Flow Fan

For cooling of 160 mm deep modules.

Fan for cooling of 220 mm deep modules on request.

Delivery:

Cross-flow fan

Filter mat

Support grille for filter mat

Technical data

Power plant	current: squirrel-cage motor direct current: non commutator DC motor
Ambient temperature	current: -25 to +65 °C direct current: -25 to +55 °C
Bearings	grooved ball bearing
Life Expectancy	20.000 h
Protection class	IP 10 accordance to DIN 40050
Filter mat	Viledon PSB 145-S
Electrical connection	terminal strip on the back
Material	ventilator housing: steel side panel, flange, support grille, front grille: plastic
Finish	housing: galvanized and passivated

Ordering details 19" Cross-Flow Fan

	nom. depth [mm]	voltage [V]	frequency [Hz]	airflow [m³/h]	order no. 409
for mounting into a cabinet EQR -160 KS	160	AC 230	50/60	260	091833
GQR - 160 KS 24 VG	160	DC 24	-	260	091844
for mounting into a housing EQR - 160 KG	160	AC 230	50/60	235	091834

Accessories

	order no. 409
Protection grille	091836
Plastic motor protection hood	091835
per pack 10 pieces	
Filter mat for EQR and GQR	026519
Filter mat for EQR -160 KG	026520

19" Fan Unit 1 U



Technical data

Ambient temperature	max. 70 °C
Max. static pressure	73 - 88 Pa
Noise level	56.5 - 60.2 dB (A)
Power consumption	45 / 42 W
Materials	front panel: 3 mm aluminum anodized, housing: 1 mm steel, al-zinc

Ordering details

	depth [mm]	voltage [V]	frequency [Hz]	airflow [m³/h]	order no.
Fan unit 1U	193	AC 230	50/60	440-520	409 166274

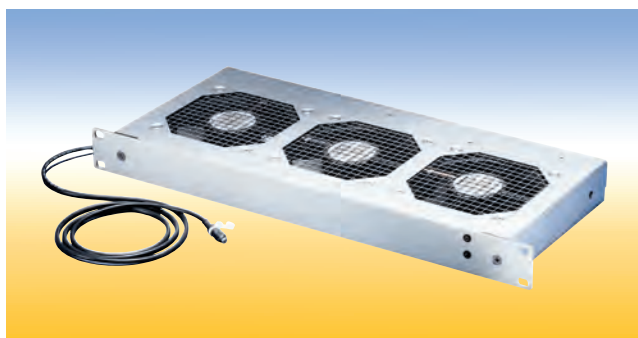
19" Fan Unit 1 U

For cooling of modules in cabinets or housings.

Delivery:

- 1 front panel
- 1 housing with grille
- 3 fans
- 1 power connector
- 1 strain-relief

Fan unit with 6 fans and other voltages on request.



Technical data

Ambient temperature	max. 65 °C
Max. static pressure	70 Pa
Noise level	63.5 dB (A)
Power consumption	15.9 W
Materials	front panel: 3 mm aluminum anodized, housing: 1 mm steel, al-zinc

Ordering details

	depth [mm]	voltage [V]	airflow [m³/h]	order no.
Fan unit 1 U with speed monitoring and control	193	DC 24	467	409 166276

19" Fan Unit 1 U with speed monitoring and control

For cooling of modules in cabinets or housings.

Delivery:

- 1 front panel
- 1 housing with grille
- 3 fans
- 1 connection cable, cable length 2.5 m, open end
- 1 temperature sensor external, NTC resistor, cable length 1.5 m

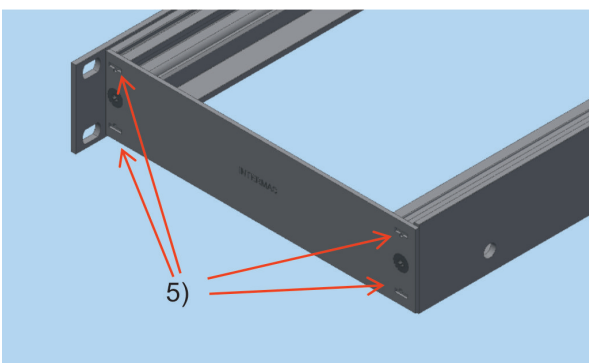
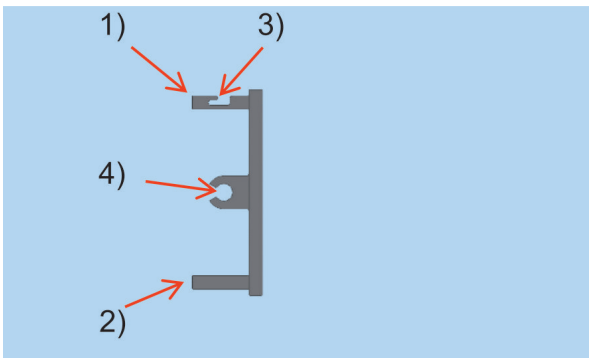
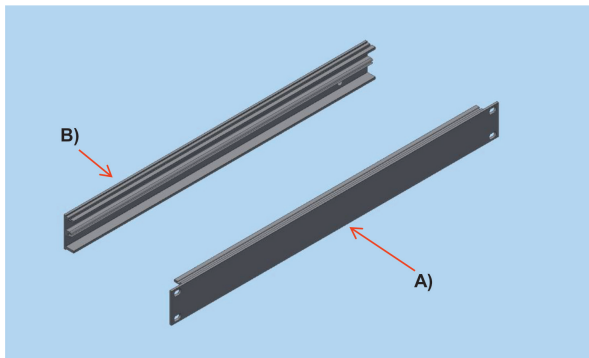
Technical Data, Control & Monitoring

Switching control range	20 - 40 °C to 30 - 50 °C
Sensor connection	rear connector for temperature sensor
Signal for	speed < 20 % of the nom. speed; switch-on delay < 4 s, signal delay < 1 s
Signaling	display via LEDs floating contact switching capacity 20 W switching voltage max. 100 V

CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules



CoolSpot is a 19" 1U fan tray with the possibility to vary the number and position of fans according to the current heat load. It is designed for an economical but highly effective and precise cooling of electronic components within 19" cabinets and housings. Cooling air is directly supplied at the hot spots due to the infinitely variable positioning of the fans.

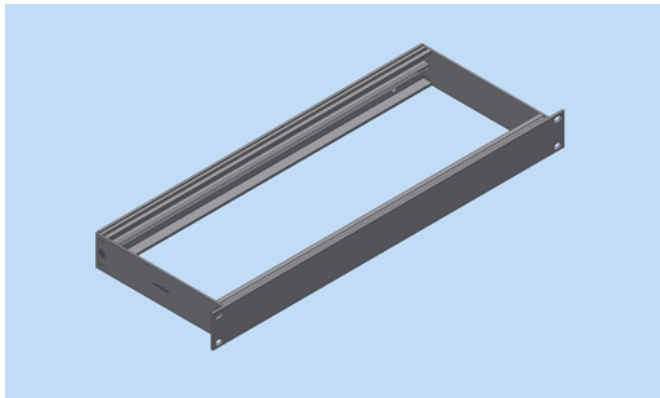
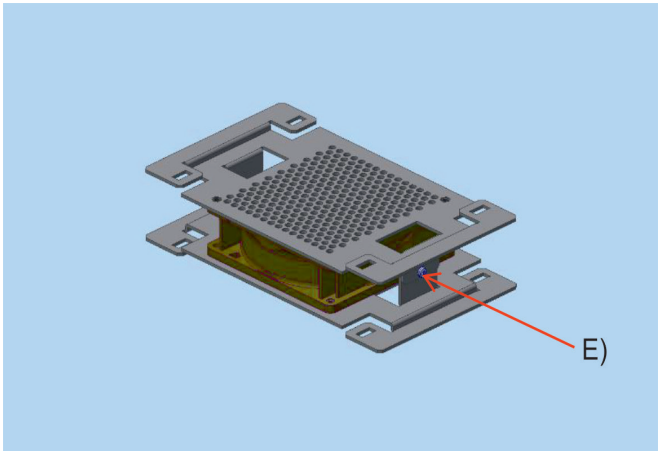
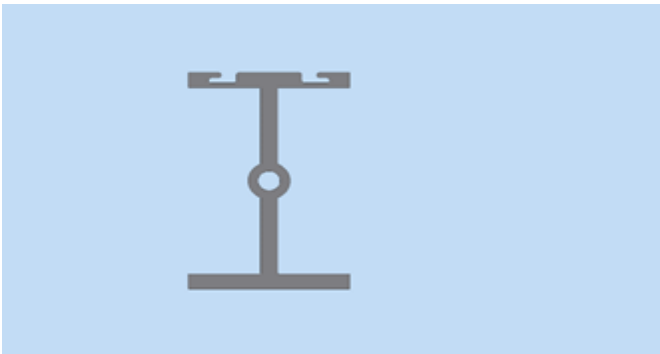
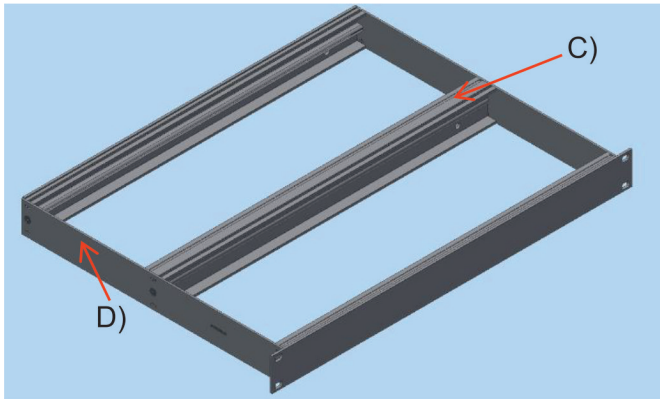


Specification CoolSpot basic frame

The CoolSpot fan tray is characterized by the following constructive features:

- ✓ The fan tray's basic frame consists of a front panel, two side stripes and an end profile.
- ✓ The side stripes are made of colorless pre-anodized aluminum. The cutting edges, which are a result of processing, are blank. Front panel and end profile are also colorlessly anodized.
- ✓ Front panel A as well as end profile B are manufactured from the same source profile in order to keep the construction as cost-effective as possible. The cutting edges are blank due to the necessary machining.
- ✓ There are two wings (pos. 1 & 2) on the profiles' inside to enable a linear guidance of the fan modules.
- ✓ The upper wing has a groove (pos. 3) to include retaining clips. These retaining clips secure the fan modules against unintended shifting.
- ✓ There is a screw channel in the centre (pos. 4) which enables the assembly of thread-forming screws to the side strips.
- ✓ Each side strip has four stamped nubs (pos. 5). These guarantee a sufficient protection against twisting during the basic frame's assembly, even though the entire basic frame is put together installation-friendly with only four screws.

CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules



Specification CoolSpot extension kit

An extension kit is available as the CoolSpot basic frame only allows an installation of a maximum of four fan modules in a single-row arrangement.

- ✓ The extension kit uses the already existing basic frame's front panel and end profile and adds an intermediate profile C.
- ✓ The basic frame's both side panels are replaced by longer side panels D.
- ✓ These reconstruction measures enable the installation of a maximum of eight fan modules in a two-row arrangement.

Specification CoolSpot fan module

- ✓ The CoolSpot fan module is characterized by its easy assembly.
- ✓ The fan module either consists of a fan in the standard measures of 92x92x25 mm and two mounting plates or of a fan in the standard measures of 120x120x32 mm and the corresponding mounting plates.
- ✓ Each of both mounting plates has two pins. These pins are used for positioning the fan and act as protection against twisting when assembling the fan module.
- ✓ Both mounting plates are connected with two thread-forming screws E. Thus the fan is clamped between both mounting plates. There is no additional screw connection necessary for the fan itself.
- ✓ Any desired fan up until a height of 32 mm can be inserted by exchanging the mounting plates.
- ✓ Every fan module's construction kit contains four retaining clips in order to secure the fan modules against unintended shifting within the fan tray.
- ✓ We use either SEPA oder EBM-Papst fans in our fan trays to satisfy all demands regarding long service life and cost-benefit ratio. Other fan types can be delivered on request.

CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules

Specification CoolSpot wiring kit

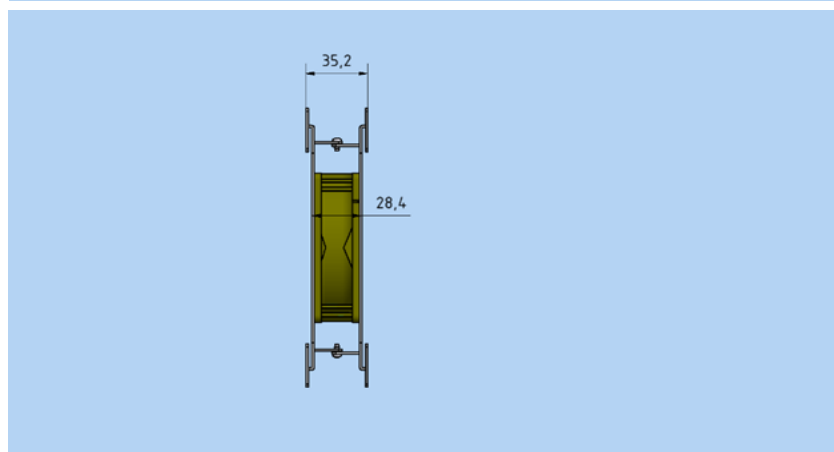
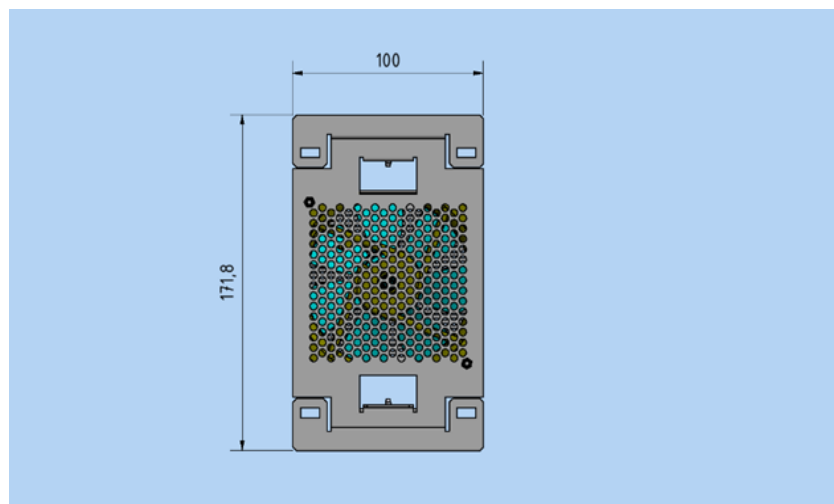
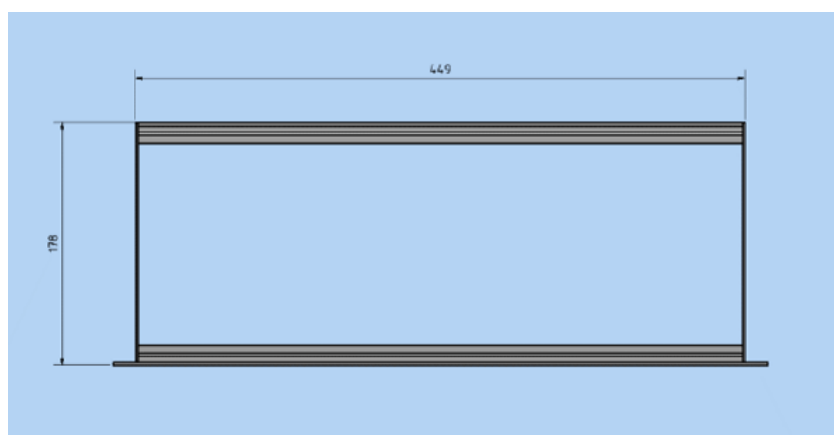
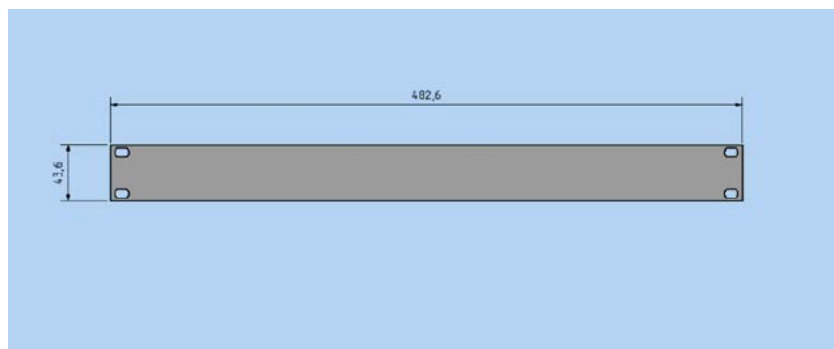
- ✓ By default the wiring kit contains a 2-pole Phoenix plug for the fan tray's power connector.
- ✓ Different connectors can be ordered optionally.
- ✓ Small parts such as cable holders, cable ties, cable glands etc. are also part of the wiring kit.

Technical data

Dimensions of front panel	Width: 19" (482,6 mm) Height: 1 U (43,6 mm)
Housing depth basic frame	single row 92 fan size: 178 mm single row 120 fan size: 205 mm
Housing depth incl. assembled extension kit	two-rowed 92 fan size: 353,2 mm two-rowed 120 fan size: 407,2 mm
Materials	Screws: steel, galvanized with user-friendly torx drive Retaining clips: stainless steel Mounting plates: galvanized steel sheet All other parts: aluminum
Surfaces	Aluminum parts anodized natural Steel parts galvanized and passivated
Rated voltage	12 VDC (other voltages on request)
Rated output	dependent upon fan module
Protection class	IP20
Operating temperature	-10°C ... +70°C
Storage temperature	-40°C ... +70°C
Level above mean sea level	until 2000 m
volume flow	dependent upon fan module

CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules

Dimensions



CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules

Ordering details assembly kit

CoolSpot basic frame	order no. 409
92 fan size	208590
120 fan size	146533

Delivery basic frame

1 front panel
2 side stripes
1 end profile
4 countersunk screws Taptite M4x16 Torx

Ordering details assembly kit

CoolSpot extension kit	order no. 409
92 fan size	208380
120 fan size	146534

Delivery extension kit

1 intermediate profile
2 side stripes long
2 countersunk screws Taptite M4x16 Torx

Ordering details assembly kit

	order no. 409
CoolSpot wiring kit	208591

Delivery wiring kit

1 cable gland
1,5 m 2-wire cable flexible
3 mini cable holder
3 cable ties
2 ferrules
1 Phoenix Combicon connector, 2-pole, grid 5,08 mm
0,1 m heat-shrink tubing
2 connecting clamps

Ordering details assembly kit

CoolSpot fan module 92 fan size	order no. 409
with SEPA fan	208592
with EBM-Papst fan	146537

CoolSpot fan module 120 fan size	order no. 409
with SEPA fan	146538
with EBM-Papst fan	146539

Delivery fan module 92

2 mounting plates
1 fan 92x92x25 mm
2 oval-head screws Taptite M2,5x5 Torx
4 retaining clips

Delivery fan module 120

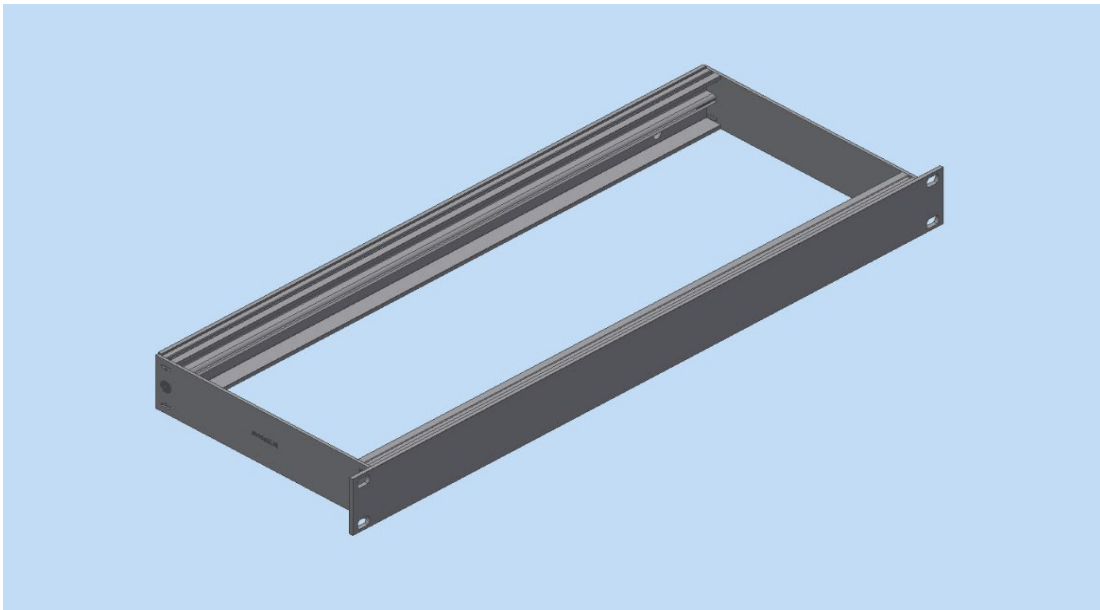
2 mounting plates
1 fan 92x92x25 mm
2 oval-head screws Taptite M2,5x5 Torx
4 retaining clips

CoolSpot - 19" 1 U Fan Tray with infinitely variable Fan Modules

Configuration example

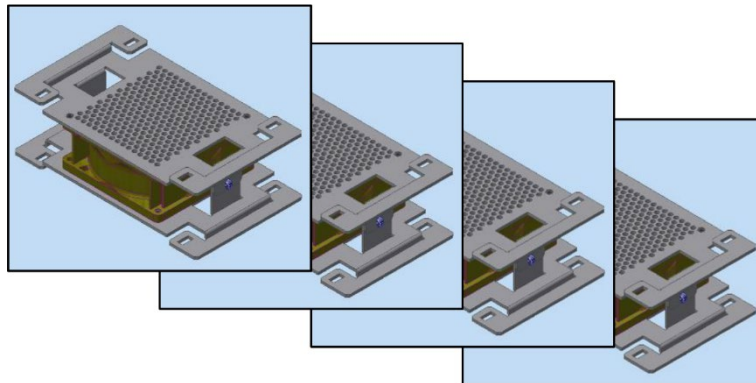
Step 1: Selection of required CoolSpot basic frame.

In this example: simple basic frame 409 208 590 for a fan size of 92 mm.

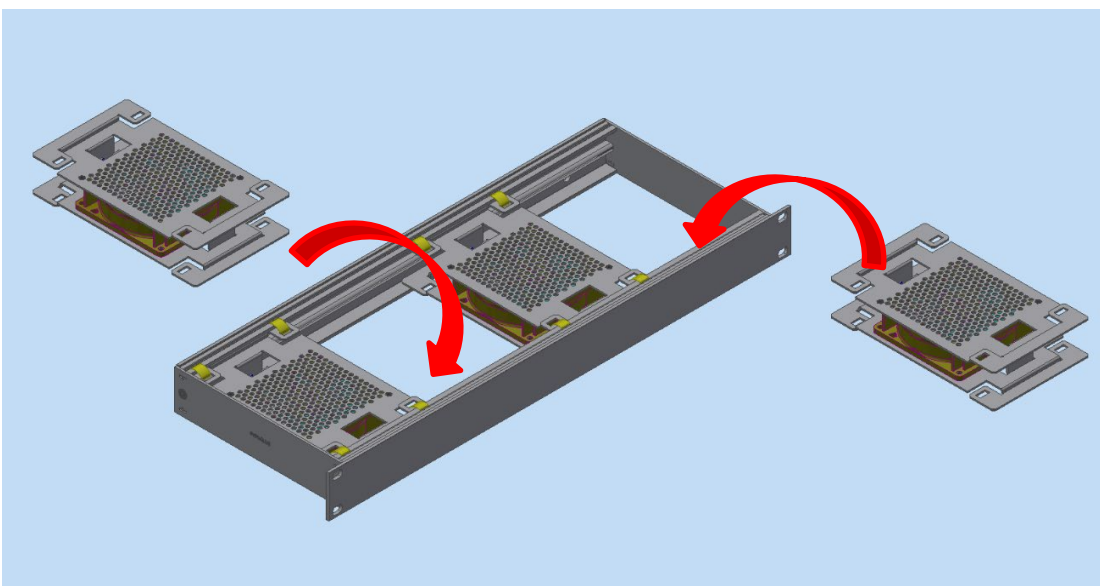


Step 2: Selection of required CoolSpot fan module in desired quantity (maximum of 4).

In this example: fan module 409 208 592 with SEPA fan in size 92 mm.

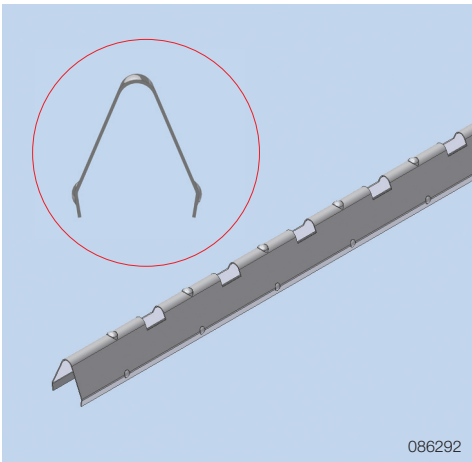


The configured fan of choice can also be delivered as an assembled version.



This catalog contains stock and standard parts. Other products and sizes on request.

RFI Spring A2 and F3



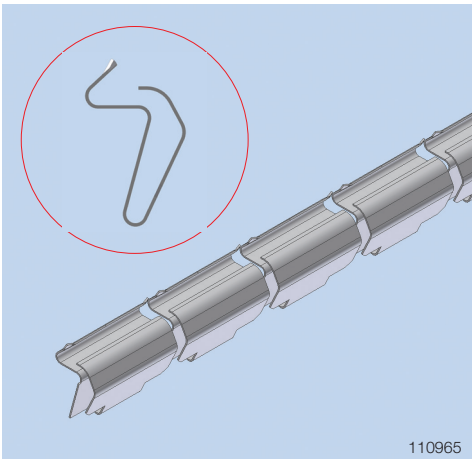
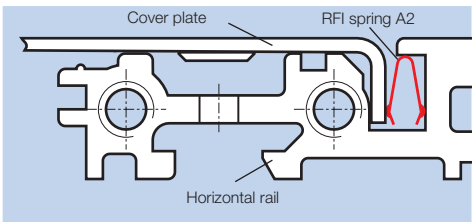
RFI Spring A2

Shielding between the cover plates and the subrack. The spring is snapped into the profile channel at the horizontal rail. It can be cut in 10 mm lengths.

Material: stainless steel, 0.1 mm thick

Ordering details

	nom. width [HP]	length [mm]	order no. 409
RFI spring A2	36	182	107724
RFI spring A2	42	217	090800
RFI spring A2	84	427	085011



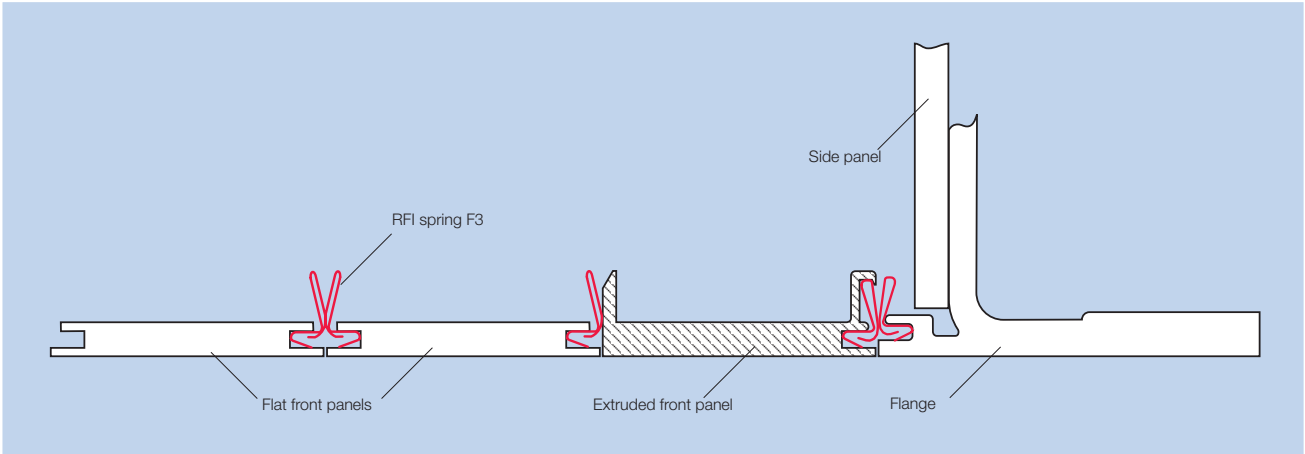
RFI Spring F3

Shielding between the front panels and between front panel and flange as well as shielding the cover plates of the *DiVar* housing. It can be cut in 7.41 mm lengths.

Material: stainless steel, 0.08 mm thick

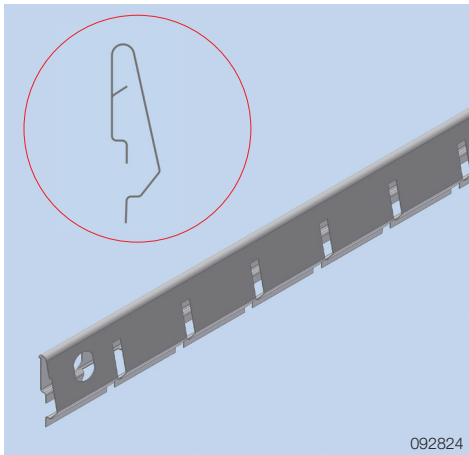
Ordering details

	nom. height [U]	height [mm]	order no. 409
RFI spring F3-2	2	51.37	112386
RFI spring F3-3-IEEE	3	95.83	111112
RFI spring F3-3	3	110.65	111636
RFI spring F3-4	4	155.11	112387
RFI spring F3-6-IEEE	6	229.21	111116
RFI spring F3-6	6	244.03	111637



Shielding between the front panel and between front panel and flange

RFI Spring F1, Contact Profile and RFI Spring P2



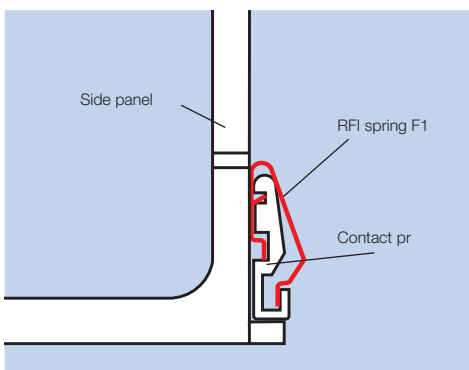
RFI Spring F1

Shielding between the front panel and side panel with the contact profile of the *InterRail* subrack.

Material: CuSn 0.1 mm thick

Ordering details

	nom. height [U]	height [mm]	order no. 409
RFI spring F1-3	3	106.9	093400
RFI spring F1-6	6	240.25	093401



Contact Pr

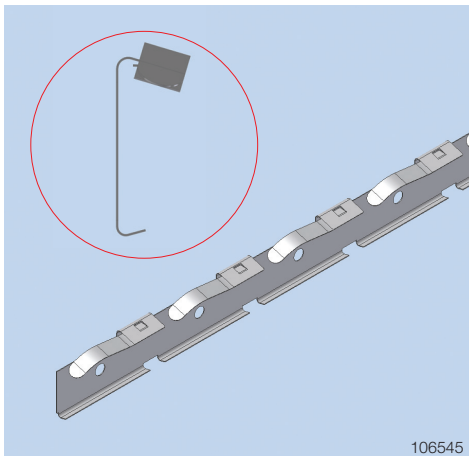
Shielding between front panel and side panel with the RFI spring F1 of the *InterRail* subrack.

Material: aluminum

Finish: passivated

Ordering details

	nom. height [U]	height [mm]	order no. 409
Contact pr -3	3	107.5	092923
Contact pr -6	6	240.85	092924



RFI Spring P2

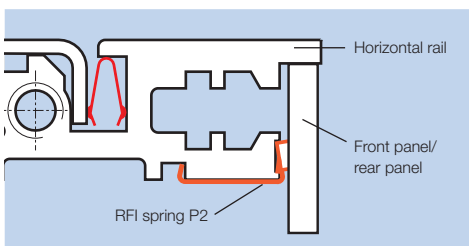
Shielding front panels and rear panel to the horizontal rail.

The spring is snapped into the pr
It can be cut in 15.24 mm lengths.

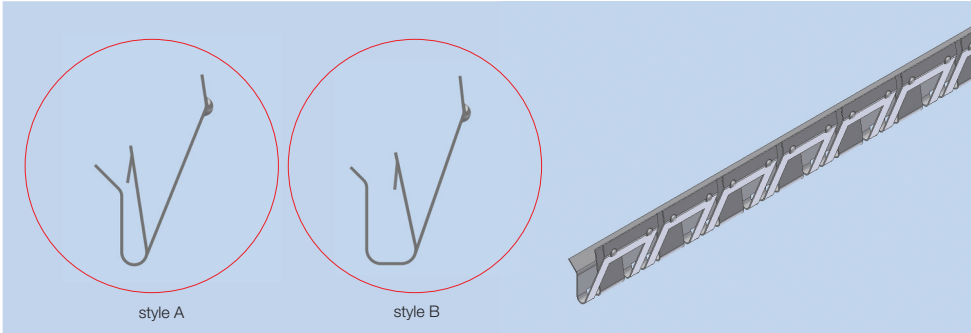
Material: stainless steel, 0.08 mm thick

Ordering details

	nom. width [HP]	length [mm]	order no. 409
RFI spring P2	42	212.36	106546
RFI spring P2	84	425.72	106547



RFI Spring U1 and U2

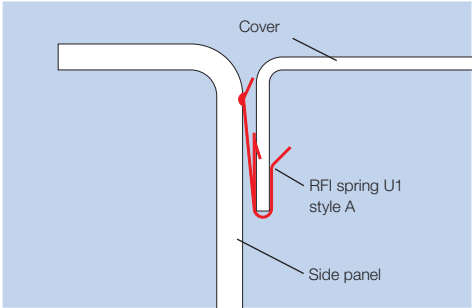


RFI Spring U1
Multiple applications. Shielding subracks, housings and cabinets with 1 mm - 2.5 mm sheet thickness. The spring can be cut in 10 mm lengths.

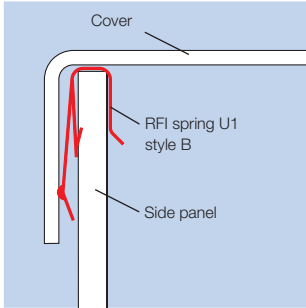
Material:
stainless steel, 0.1 mm thick

Ordering details

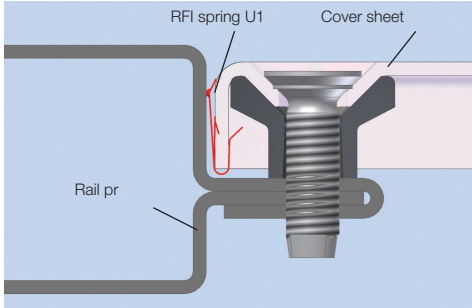
	style	sheet thick- ness [mm]	length [mm]	order no. 409
RFI spring U1-1,0-230	A	1.0	229	114840
RFI spring U1-1,5-400	A	1.5	399	101830
RFI spring U1-2,0-270	B	2.0	269	107323



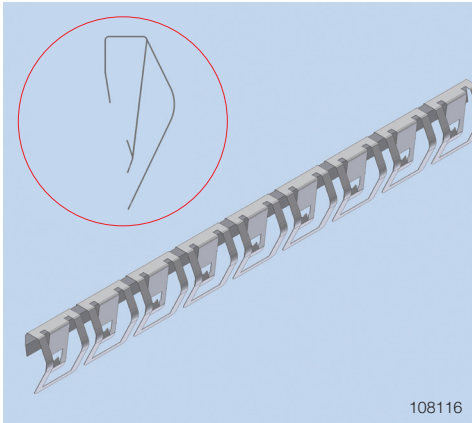
Subrack example of use



Subrack example of use



System cabinet example of use



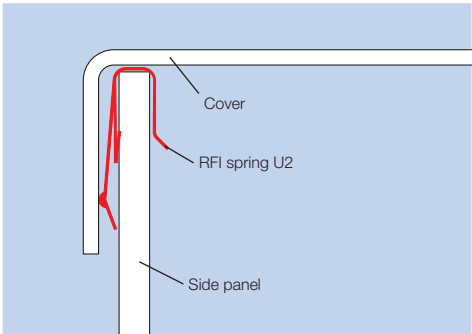
108116

RFI Spring U2
Multiple applications. Shielding subracks, housings and cabinets with 2.5 mm sheet thickness. The spring can be cut in 10 mm lengths.

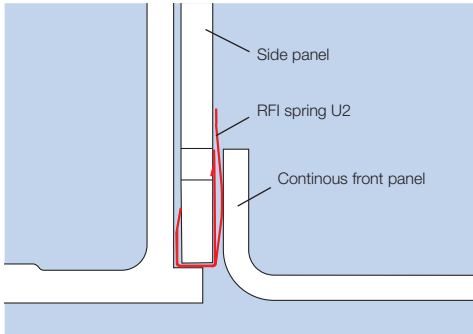
Material: stainless steel, 0.08 mm thick

Ordering details

	sheet thick- ness [mm]	length [mm]	order no. 409
RFI spring U2	2.5	98.79	108107
RFI spring U2	2.5	232.14	108108
RFI spring U2	2.5	632.19	109537

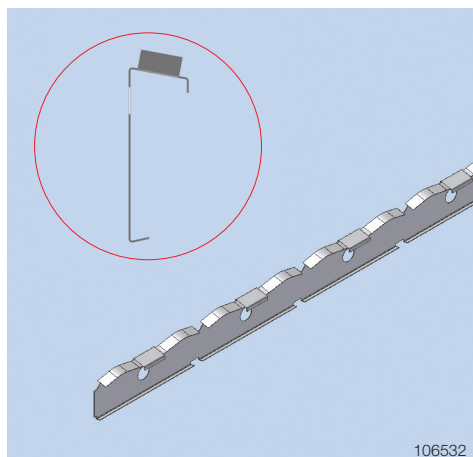


Subrack example of use



Subrack example of use

RFI Spring M-P2, G-A2, G-P2 and RFI Fabric Gasket



RFI Spring M-P2

Shielding between side panel and backplane with a mounting strip.
The spring can be cut in 25 mm lengths.

Material: stainless steel, 0.08 mm thick

Dimensions: 85 x 5 mm

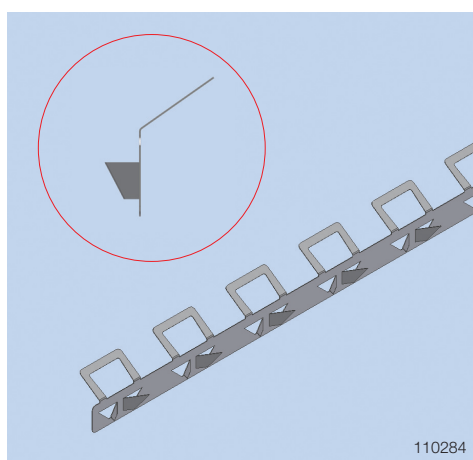
Length: 424 mm

order no.: **409106533**

Accessories

Mounting strip

order no.: **409111691**



RFI Spring G-A2

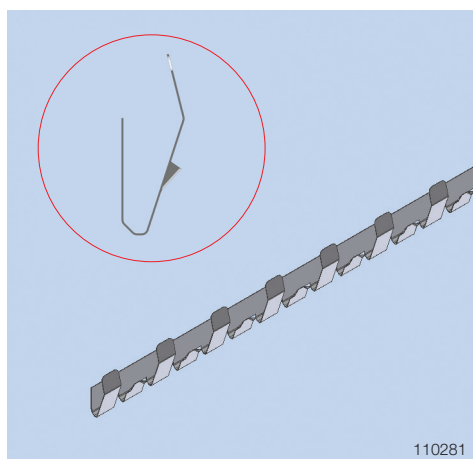
Shielding between the profiles and the cover plates of the *InterMeZo* housing.

The spring can be cut in 25 mm lengths.

Material: stainless steel, 0.15 mm thick

Length: 469 mm

order no.: **409110960**



RFI Spring G-P2

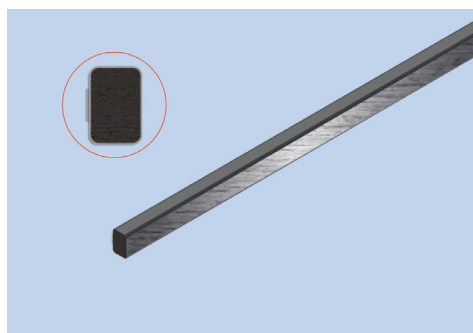
Shielding between the door/rear panel and the profile of the *InterMeZo* housing.

The spring can be cut in 14.815 mm lengths.

Material: stainless steel, 0.15 mm thick

Length: 471.83 mm

order no.: **409111534**



RFI Fabric Gasket, self-adhesive

Shielding between the door/rear panel and the profile of the housing.

Material: polyurethane foam core covered with copper-nickel (CuNi) metal fabric

Dimensions: height 9.5 x width 6.4 x length 1000 mm

Fire protection class: UL 94 V-0

order no.: **409175397**

List of Order-Numbers

Order no. 409	Order no. 409	Order no. 409	Order no. 409
013	031	035	
013904 7.5	031015 7.4	035004 3.101	040386 3.101
013911 3.72, 3.76	031018 7.5	035206 7.11	040387 3.101
3.77, 3.78	031019 7.5	035207 7.10	040401 3.93, 4.10
3.79, 3.80	031020 7.5	035316 7.12	4.12
3.93, 4.10	031021 7.3	035528 3.101	040419 3.52
4.12	031022 7.3	035529 3.101	040420 3.52
013919 3.52, 2.7	031023 7.5	035630 7.5	040652 3.93
013938 3.76, 3.78	031024 7.5	035665 3.101	040969 4.10
3.79, 3.80	031030 7.3		041
3.93, 3.102	031031 7.3	038	041008 4.11
7.5	031120 7.5	038687 4.9	041012 4.11
017	031123 7.5	038689 4.9	041657 3.93
017929 3.93	031124 7.9	038691 4.9	041660 7.4
017956 3.93, 3.97	031125 7.9	038693 4.9	
	031583 7.6	038700 4.9	042
	032	038707 4.9	042218 7.4
018	032518 7.11	038721 4.9	042219 7.4
018055 3.73	032519 7.12	038763 4.9	
	032520 7.10, 7.12	038765 4.9	043
	032523 7.12	038767 4.9	043035 3.101
022	032549 7.11	038769 4.9	043036 3.101
022622 7.4	032550 7.12	038776 4.9	043488 4.11
022672 4.11	032551 7.10, 7.12	038783 4.9	043514 4.8
022714 7.6	032552 7.12	038797 4.9	043516 4.8
022791 3.93	032553 7.10	039	043518 4.8
022792 3.93, 4.10	032554 7.10	039540 4.7	043525 4.8
022793 3.93, 4.10	032555 7.11	039542 4.7	043532 4.8
022794 3.93, 4.10	032556 7.11	039543 4.7	043546 4.8
022796 3.93, 4.10	032563 7.10	039546 4.7	043586 7.3
022798 3.93, 4.10	032564 7.10	039547 4.7	043598 7.3
022800 4.10	032565 7.10	039547 4.7	043606 7.3
022802 3.93	032566 7.10	039603 4.7	043610 7.3
022807 3.93, 4.10	032567 7.10	039604 4.7	043622 7.3
022814 4.10	032568 7.10	039691 3.74, 3.77	
024	032569 7.10	4.10, 4.12	044
024361 3.72	032574 7.11	039851 4.12	044090 4.12
024380 3.72	032575 7.10, 7.12	039853 4.12	044214 7.6
024567 7.4	032708 3.72, 4.12	039855 4.12	
024738 3.69	7.5	039857 4.12	045
024740 3.69	032766 7.13	039864 4.12	045210 7.3
024830 3.103	032767 7.13	039954 4.12	045235 7.3
	033	039968 4.12	045891 7.3
025	033188 7.6	040	045894 7.3
025919 7.3	033189 7.6	040348 4.13	045897 7.3
	034	040350 4.13	
026	034532 7.13	040352 4.13	046
026519 8.2	034533 7.13	040354 4.13	046098 4.11
026520 8.2	034724 7.13, 7.18	040361 4.13	046999 4.12
026586 3.72		040368 4.13	
		040382 4.13	047
		040385 3.101	047221 3.58
			047243 3.58

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Order no. 409		Order no. 409		Order no. 409		Order no. 409	
047285	3.58	053329	3.54	062094	7.20	074	
047421	3.57	053343	3.54	062095	7.20	074056	1.7
047443	3.57	053385	3.54			074057	1.7
047485	3.57			064		074202	7.4
047601	3.74	056		064687	3.67	074203	7.4
047621	3.60	056135	3.101	064740	7.6	074387	2.7, 3.52
047643	3.60			064947	3.67		
047685	3.60	057				077	
047821	3.59	057680	7.20	065		077038	7.4
047843	3.59			065430	7.20	077042	7.4
047885	3.59	058		065819	3.53	077045	7.4
048		058102	3.75, 3.77	065882	3.102	077048	7.4
048684	3.62		3.78, 3.79	065883	3.102	077051	7.4
048784	3.62		3.82, 3.102	065888	3.97	077055	7.4
		058447	7.20			077058	7.4
049		058449	7.20	067		077111	7.5
049668	1.10	058451	7.20	067624	3.63, 3.64	077112	7.5
049670	1.10	058910	3.93, 4.10		3.65, 3.102	077516	7.9
049677	1.9	058912	3.93, 4.10				
049679	1.9	058914	4.10	068		078	
049680	1.9	058916	3.93	068089	7.3	078641	1.8
049681	1.9	058921	3.93, 4.10	068108	7.3	078646	1.8
049682	1.9	058928	4.10	068698	3.83	078942	3.66
049721	3.57	058942	3.93, 4.10	068760	1.10		
049743	3.57	058944	3.29				
049785	3.57			069		079	
049921	3.60	059		069047	3.67	079184	3.62
049943	3.60	059270	7.20	069302	1.10	079202	4.7
049985	3.60	059640	2.9	069369	1.9	079203	4.7
				069755	7.13	079284	3.62
050						079384	3.62
050121	3.67			070		079521	3.54
050129	3.67	061		070323	7.3	079543	3.54
050143	3.67	061051	3.79	070476	7.5	079585	3.54
050185	3.67	061052	3.79	070617	7.6		
050688	1.8	061059	3.79	070620	7.9	080	
		061060	3.79	070621	7.9	080695	7.20
051		061061	3.79	070969	7.4	080696	7.20
051981	3.7, 3.9	061062	3.79			080697	7.20
	3.16, 3.17	061086	3.79	071		080939	7.20
	3.18, 3.19	061088	3.79	071015	7.4	080941	7.20
	3.24, 3.26	061443	7.20	071876	7.9	080943	7.20
	3.27, 3.73	061468	3.75				
052		061469	3.75	072			
052156	3.44, 3.45	061526	3.75	072619	7.11	082	
	3.47	061541	3.73	072620	7.11	082063	3.66
052720	3.83	062				082121	3.57
		062043	3.54	073		082143	3.57
053		062085	3.54			082185	3.57
053321	3.54	062093	7.20	073659	7.9	082239	3.65

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Order no. 409		Order no. 409		Order no. 409		Order no. 409	
083		087639	3.44, 3.48	094604	3.72, 3.76	097	
083091	3.77	087802	3.49		3.77, 3.78	097201	3.87
		087820	3.53		3.79, 3.80	097202	3.87
085		087821	3.53	094605	3.93	097203	3.87
085001	3.44	087824	3.49	094628	7.4	097204	3.87
085002	3.44	088		094700	3.9	097205	3.87
085011	3.61, 8.10	088190	3.64	094701	3.9	097206	3.87
085095	3.44	088365	3.55	094702	3.9	097207	3.87
085096	3.44	089		094703	3.9	097208	3.87
085689	3.101	089238	3.93	094704	3.9	097210	3.87
085695	3.52	089240	3.93	094705	3.9	097212	3.87
085696	3.52	089244	3.64	094706	3.9	097214	3.87
		090		094707	3.9	097221	3.87
086		090799	3.55	094708	3.9	097228	3.87
086333	3.45	090800	3.61, 8.10	094709	3.9	097242	3.87
086334	3.45	091		094710	3.9	097284	3.87
086336	3.45	091255	3.7, 3.9	094711	3.9	097286	3.45
086337	3.45		3.16, 3.17	096		097404	3.87
086513	2.6		3.18, 3.19	096403	3.91	097406	3.87
086514	2.6		3.24, 3.25	096404	3.91	097408	3.87
086516	2.6		3.26, 3.27	096405	3.91	097412	3.87
086517	2.6	091833	8.2	096406	3.91	097414	3.87
086519	2.6	091834	8.2	096407	3.91	097421	3.87
086522	2.6	091835	8.2	096408	3.91	097428	3.87
086787	3.49	091836	8.2	096410	3.91	097442	3.87
086791	3.49	092		096412	3.91	097484	3.87
		092502	3.59	096416	3.91	097601	3.87
087		092602	3.57	096421	3.91	097602	3.87
087340	3.7	092785	3.82	096604	3.91	097603	3.87
087341	3.7	092786	3.103	096605	3.91	097604	3.87
087342	3.7	092923	8.11	096606	3.91	097605	3.87
087364	3.7	092924	8.11	096608	3.91	097606	3.87
087365	3.7	093		096610	3.91	097607	3.87
087366	3.7	093400	8.11	096612	3.91	097608	3.87
087388	3.7	093401	8.11	096703	3.91	097610	3.87
087389	3.7	093548	3.60	096704	3.91	097612	3.87
087390	3.7	093605	3.25, 3.26	096705	3.91	097614	3.87
087440	3.7		3.27, 3.29	096706	3.91	097621	3.87
087441	3.7	093606	3.25, 3.26	096707	3.91	097628	3.87
087442	3.7		3.27, 3.29	096708	3.91	097642	3.87
087446	3.7	094		096710	3.91	097684	3.87
087447	3.7	094458	3.97	096712	3.91	097804	3.87
087448	3.7	094459	3.97	096716	3.91	097806	3.87
087462	3.7	094464	3.101	096721	3.91	097808	3.87
087463	3.7	094602	3.72	096904	3.91	097812	3.87
087464	3.7			096905	3.91	097814	3.87
087475	3.58			096906	3.91	097821	3.87
				096908	3.91	097828	3.87
				096910	3.91	097842	3.87
				096912	3.91	097884	3.87
						097957	3.104

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Order no. 409		Order no. 409		Order no. 409		Order no. 409	
098		102297	3.83	105655	3.61	108246	3.58
098986	7.4	102344	3.95	105656	3.61	108250	3.28
098989	7.4	102348	3.95	105789	3.52	108251	3.28
098991	7.4	102352	3.95	105790	3.62	108252	3.29
		102356	3.95			108253	3.29
099		102361	3.95	106		108254	3.29
099730	3.102	102384	3.95	106102	3.57	108255	3.29
099731	3.102	102388	3.95	106103	3.57	108274	3.25
099883	3.102	102392	3.95	106530	3.82	108275	3.25
		102404	3.95	106531	3.82	108875	3.65
100		102405	3.95	106533	8.13	108876	3.65
100538	3.87, 3.104	102406	3.95	106546	3.61, 8.11	108962	4.10
	4.13	102408	3.95	106547	3.16, 3.17	108963	4.10, 4.13
100539	3.87, 3.104	102410	3.95		3.18, 3.19	108987	3.59
	4.13	102412	3.95		3.25, 3.26	108988	3.59
100540	3.104, 4.13	102416	3.95		3.27, 3.29		
100650	7.7	102421	3.95		3.61, 8.11		
100652	7.7	102432	3.29	106750	3.45	109	
100660	7.7	102454	3.95	106751	3.70	109537	8.12
100662	7.7	102458	3.95			109934	3.55
100667	3.93	102462	3.95	107		109937	3.58
100843	3.80	102822	3.28	107323	8.12	109984	2.6
				107342	3.66	109985	2.6
		103		107518	3.91	109986	2.6
		103005	3.93	107520	3.91	109987	2.6
101		103006	3.93, 4.10	107521	3.91	109988	2.6
101385	7.4	103007	3.93, 4.10	107522	3.91		
101830	8.12	103008	3.93, 4.10	107716	3.28	110	
101843	3.97	103205	3.93	107719	3.48	110201	3.44
101844	3.97	103206	3.93, 4.10	107721	3.58	110234	3.44
101917	3.66, 3.87	103207	3.93, 4.10	107722	3.61	110238	3.44
	3.104, 4.10	103208	3.93, 4.10	107723	3.64	110248	3.44
	4.13	103358	3.76, 3.77	107724	8.10	110360	2.7
101918	3.104, 4.13		3.78, 3.80	107727	3.102	110361	2.7
10923	3.97		3.82	107728	3.102	110366	2.7
101 924	3.97	103777	3.70	107841	3.58	110367	2.7
		103 810	3.93, 4.10	107842	3.58	110368	2.7
		10812	3.93, 4.10	107846	3.61	110370	2.7
		103814	4.10	107847	3.61	110372	2.7
		103816	3.93	107905	3.64	110375	2.7
		103821	3.93, 4.10	107906	3.64	110376	2.7
		103828	4.10	108		110378	2.7
		103842	3.93, 4.10	108008	3.60	110379	2.7
102				108012	3.68	110381	2.7
102109	7.7	104		108045	3.68	110382	2.7
102110	7.7	104030	3.58	108061	3.58	110392	2.6
102112	7.7	104994	3.57	108107	8.12	110395	2.6
102113	7.7			108108	8.12	110452	2.6
102114	3.93	105		108173	3.74	110453	2.6
102115	3.93	105380	7.3			110454	2.6
102117	3.93	105602	3.48			110455	2.6
102118	3.93						

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Order no. 409		Order no. 409		Order no. 409		Order no. 409	
110456	2.6	112		113027	3.88	113672	3.99
110457	2.6	112054	3.72	113028	3.88	113673	3.99
110960	8.13	112055	3.72	113029	3.88	113674	3.99
111		112092	2.7	113030	3.88	113675	3.99
111089	7.5	112093	2.7	113079	3.99	113676	3.99
111112	3.66, 3.89	112094	2.7	113147	3.96	113685	3.92
	3.92, 3.96	112152	3.99	113148	3.96	113693	3.92
	3.99, 3.100	112154	3.99	113149	3.96	113705	3.89
	4.11, 4.14	112202	3.50	113170	3.96	113706	3.89
	8.10	112205	3.50	113171	3.96	113711	3.92
111116	3.66, 3.89	112234	3.50	113172	3.96	113713	3.80, 3.81
	3.92, 3.90	112252	3.88	113400	3.80	113723	3.92
	3.99, 3.100	112258	3.88	113450	3.80, 3.81	113725	3.92
	4.11, 8.10	112279	7.18	113583	3.88	113729	3.92
111157	3.76	112321	7.15	113586	3.88	113762	3.92
111182	3.55	112386	3.50, 8.10	113589	3.88	113788	7.18
111184	3.73	112387	3.50, 8.10	113590	3.88	113824	7.15
111199	3.60	112400	3.99	113592	3.88	113826	7.17
111245	7.15	112401	3.99	113593	3.88	113828	7.17
111285	2.6	112402	3.99	113594	3.88	113830	7.17
111286	2.6	112403	3.99	113595	3.88	113838	7.15
111287	2.6	112404	3.99	113596	3.88	113840	7.15
111534	8.13	112405	3.99	113598	3.88	113841	7.15
111556	2.6	112408	3.99	113599	3.88	113849	7.15
111557	2.6	112409	3.99	113608	3.88	113860	7.15
111559	2.6	112410	3.99	113609	3.88	113905	3.81
111560	2.6	112411	3.99	113611	3.88	113948	3.89
111561	2.6	112412	3.99	113612	3.88	113950	3.89
111562	2.6	112413	3.99	113613	3.88		
111604	3.96	112453	3.76	113614	3.88	114	
111605	3.96	112454	3.76	113617	3.88	114007	7.17
111606	3.96			113620	3.96	114082	3.88
111608	3.88	112551	3.88	113622	3.96	114119	7.16
111609	3.88	112557	3.88	113626	3.96	114120	7.16
111610	3.88	112578	3.88	113640	3.96	114121	7.16
111611	3.88	112581	3.88	113641	3.99	114122	7.16
111613	3.96	112611	3.88	113647	3.99	114240	3.47
111614	3.96	112617	3.88	113654	3.99	114241	3.47
111615	3.96	112638	3.88	113655	3.96	114242	3.47
111616	3.96	112641	3.88	113656	3.96	114243	3.47
111618	3.88	112644	3.96	113657	3.96	114255	7.15
111619	3.88	112650	3.96	113658	3.96	114361	3.88
111620	3.88	112668	3.96	113659	3.96	114362	3.88
111621	3.88	112725	3.96	113660	3.96	114363	3.88
111636	3.50, 3.52	112773	3.99	113661	3.96	114365	3.88
	8.10	112778	3.99	113662	3.96	114366	3.88
111637	3.50, 3.52	112790	3.99	113663	3.96	114367	3.88
	8.10	112821	3.88	113665	3.96	114368	3.88
111691	8.13	112872	3.47	113667	3.96	114370	3.92
111774	2.9	112876	3.47	113668	3.96	114371	3.92
111775	7.15	112943	3.88	113669	3.96	114372	3.92
111847	3.96	113		113670	3.96	114373	3.92
				113671	3.99	114374	3.92

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114376	3.92	114715	3.51, 3.89	116769	3.47	122609	3.100
114377	3.92	114758	3.47			122610	3.100
114378	3.92	114759	3.47	118		122611	3.100
114379	3.92	114760	3.47	118374	3.52	122612	3.100
114380	3.92	114762	3.47	118433	3.88, 3.92	122622	3.91
114381	3.92	114766	3.47		3.96, 3.99	122624	3.91
114383	3.92	114775	7.15		3.100, 4.11	122625	3.91
114384	3.88	114840	8.12		4.14	122626	3.91
114385	3.88	114933	7.17	118506	7.5	122627	3.91
114386	3.88	114982	7.19	118544	7.19	122628	3.91
114387	3.88	114983	7.19	118608	3.70	122639	3.95
114388	3.88	114985	7.19			122640	3.95
114389	3.88			119		122641	3.95
114390	3.88	115		119013	4.12	122642	3.95
114391	3.88	115005	4.9	119024	4.9	122643	3.95
114392	3.88	115007	4.9	119026	4.9	122644	3.95
114393	3.88	115009	4.9	119028	4.9	122645	3.95
114396	3.92	115011	4.9	119030	4.9	122646	3.95
114397	3.92	115018	4.9	119037	4.9	122647	3.95
114399	3.92	115025	4.9	119044	4.9	122648	3.68
114400	3.92	115039	4.9	119058	4.9	122649	3.68
114401	3.92	115042	3.59			122650	3.68
114403	3.92	115095	7.19	120		122651	3.68
114404	3.92	115224	3.63	120282	4.9		
114405	3.92	115270	3.63	120283	4.9		
114406	3.92	115540	3.63	120790	3.69	130	
114407	3.92	115542	3.63			130883	3.70
114408	3.92	115701	3.60	121		130889	3.80
114410	3.92	115771	3.56	121329	3.63	130890	3.70
114413	3.99	115823	3.56	121519	3.59		
114415	3.99	115824	3.56	121808	2.10		
114453	3.88	115898	3.65	121941	3.69	131	
114454	3.88	115899	3.65			131354	1.8
114455	3.88			122		131478	3.70, 3.89
114458	3.88			122131	3.52	131548	3.70
114459	3.88			122295	3.32	131550	1.9
114463	3.99	116		122297	3.32	131652	2.7
114464	3.88	116200	3.77	122300	3.33	131688	3.70, 3.67
114465	3.88	116319	3.66	122301	3.33	131701	3.70
114466	3.88	116333	3.68	122356	2.10	131813	3.70
114469	3.88	116334	3.68	122357	2.10	131836	3.70
114470	3.88	116335	3.68	122358	2.10	131845	3.70
114475	3.99	116336	3.68	122359	2.10	131973	3.80
114476	3.88	116416	3.68	122360	2.10		
114487	3.88	116418	3.68	122377	3.60		
114537	3.92	116440	3.80	122378	3.60	132	
114538	3.92	116441	3.81	122379	3.61	132038	3.70
114540	3.92	116442	3.80, 3.81	122380	4.9	132240	1.9
114541	3.92	116484	3.19	122421	3.56	132464	1.10
114562	3.55, 3.89	116507	3.56	122549	3.63	132601	1.9
114612	3.50	116586	3.57	122550	3.63	132603	1.9
114618	3.50	116588	3.56	122607	3.100	132604	1.9
114708	3.51, 3.89	116603	3.63	122608	3.100		

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Bestell-Nr. 409		Bestell-Nr. 409		Bestell-Nr. 409		Bestell-Nr. 409	
132605	1.9	140993	3.78	162711	3.16	165636	4.4
132606	1.9	140994	3.78	162712	3.16	165637	4.4
132735	1.10	140996	3.78	162713	3.16	165638	4.4
132778	1.8	140997	3.78	162714	3.16	165639	4.4
133		140998	3.78	162715	3.16	165642	4.4
133305	2.9	141		162716	3.17	165643	4.4
133306	2.9	141001	3.78	162717	3.17	165644	4.4
133307	2.9	141002	3.78	162718	3.17	165645	4.4
133308	2.9	146		162719	3.17	165646	4.4
137		146533	8.8	162720	3.18	165647	4.4
137981	2.13	146534	8.8	162721	3.18	165698	4.5
137982	2.13	146537	8.8	162722	3.18	165699	4.5
138		146538	8.8	162723	3.18	165700	4.5
138020	2.13	146539	8.8	162724	3.18	165701	4.5
138021	2.13	161		162725	3.18	165702	4.5
138022	2.13	161034	3.19	162726	3.18	165703	4.5
138802	3.45	161059	3.59	162727	3.18	165706	4.5
138803	3.45	161104	3.63	162728	3.19	165707	4.5
138811	3.47	161105	3.63	162729	3.19	165708	4.5
138812	3.47	161110	3.51	162730	3.25	165709	4.5
138821	3.45	161113	3.51	162731	3.25	165710	4.5
138822	3.45	161155	3.47	162732	3.25	165711	4.5
138870	3.47	161156	3.47	162733	3.25	165713	4.5
138871	3.47	161157	3.47	162734	3.26	165721	4.5
138872	3.47	161160	3.47	162735	3.26	165730	4.5
138873	3.47	161161	3.67	162736	3.26	165731	4.5
138874	3.47	161162	3.67	162737	3.26	165732	4.5
138875	3.47	161165	3.67	162738	3.26	165733	4.5
138905	3.48	161166	3.67	162739	3.26	165734	4.5
138906	3.48	161173	3.47	162740	3.27	165735	4.5
138908	3.48	161174	3.47	162741	3.27	165738	4.5
138909	3.48	161188	3.47	162742	3.27	165739	4.5
138911	3.48	161189	3.47	162743	3.27	165740	4.5
138912	3.48	161193	3.47	162744	3.27	165741	4.5
138914	3.48	161245	3.57	162745	3.27	165742	4.5
138915	3.48	162		165		165743	4.5
138976	3.46	162610	3.24	165602	4.4	165842	4.5
138977	3.46	162611	3.24	165603	4.4	165843	4.5
138978	3.46	162612	3.24	165604	4.4	165844	4.5
138979	3.46	162613	3.24	165605	4.4	165845	4.5
140		162614	3.24	165606	4.4	165846	4.5
140266	3.104, 4.13	162700	3.7	165607	4.4	165847	4.5
140964	3.78	162701	3.7	165610	4.4	165850	4.5
140965	3.78	162703	3.7	165611	4.4	165851	4.5
140967	3.78	162704	3.7, 3.9	165612	4.4	165852	4.5
140968	3.78	162705	3.7, 3.9	165613	4.4	165853	4.5
140969	3.78	162708	3.16	165614	4.4	165854	4.5
140970	3.78	162709	3.16	165615	4.4	165855	4.5
140986	3.78	162710	3.16	165617	4.4	165858	4.5
140987	3.78			165625	4.4	165859	4.5
				165634	4.4	165860	4.5
				165635	4.4	165861	4.5
						165862	4.5

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165863	4.5	167		175		
165866	4.5	167416	1.8	175397	8.13	
165867	4.5					
165868	4.5	168				
165869	4.5	168900	3.95			
165870	4.5	168901	3.95	180		
165871	4.5	168902	3.95	180910	2.16	
165873	4.5	168903	3.95	180911	2.17	
165881	4.5	168904	3.95	180913	2.17	
165896	4.6	168905	3.95	180914	2.17	
165897	4.6	168906	3.95	180918	2.17	
165898	4.6	168907	3.95	180919	2.17	
166		168908	3.95	180965	2.16	
166100	4.6	168909	3.95	180966	2.17	
166101	4.6	168910	3.95	180967	2.16	
166102	4.6	168911	3.95	180968	2.17	
166112	4.6	168912	3.95	180969	2.19	
166113	4.6	168913	3.95	180970	2.19	
166114	4.6	168914	3.95	180971	2.21	
166116	4.6	168915	3.95	180972	2.20	
166117	4.6	168916	3.95	180973	2.20	
166118	4.6	168917	3.95	180974	2.19	
166208	2.5	168918	3.95	180975	2.20	
166209	2.5	168919	3.95	180976	2.20	
166210	2.5	168920	3.95	180977	2.21	
166211	2.5	168921	3.95	180978	2.18	
166212	2.5	168935	2.9	180979	2.18	
166213	2.5	168936	2.9	180981	2.21	
166214	2.5	168937	2.9	180982	2.19	
166215	2.5	168938	4.14			
166216	2.5	168939	4.14	182		
166217	2.5	168940	4.14	182910	3.44	
166218	2.5	168941	4.14	182911	3.44	
166219	2.5					
166220	2.5	172				
166237	4.8	172548	2.8	208		
166238	4.8	172610	2.8	208380	8.8	
166239	4.8	172620	2.8	208590	8.8	
166240	4.8	172621	2.8	208591	8.8	
166241	4.8	172630	2.8	208592	8.8	
166242	4.8	172631	2.8			
166243	4.8	172640	2.8			
166261	1.6	172641	2.8			
166262	1.6	172650	2.8			
166263	1.6	172651	2.8			
166264	1.6	172660	2.8			
166265	1.6	172661	2.8			
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