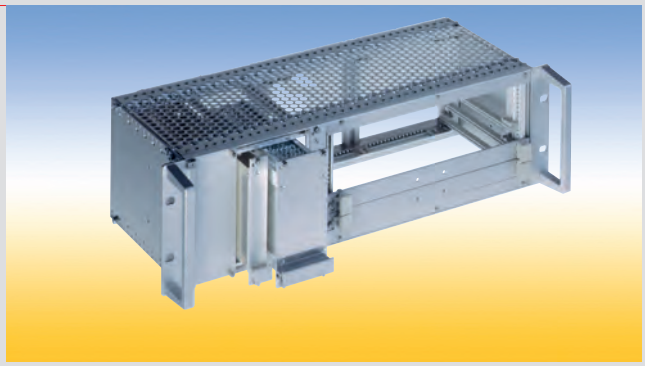
Intermas Subracks

Subrack *FLEXIBLE*

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

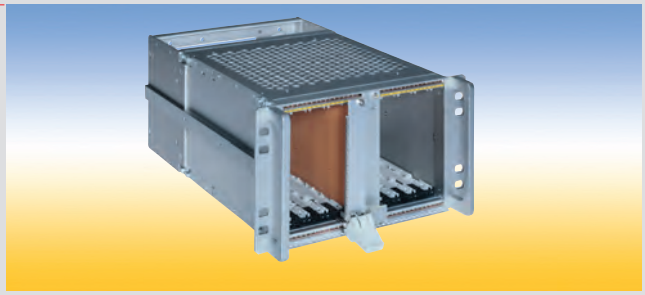


Subrack *RFI-SHIELDED*

- √ 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

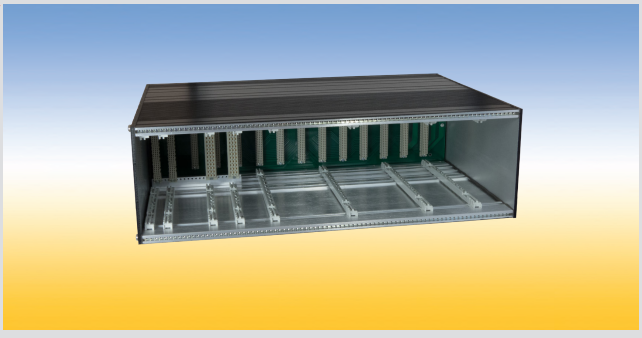


System-Modules CompactPCI

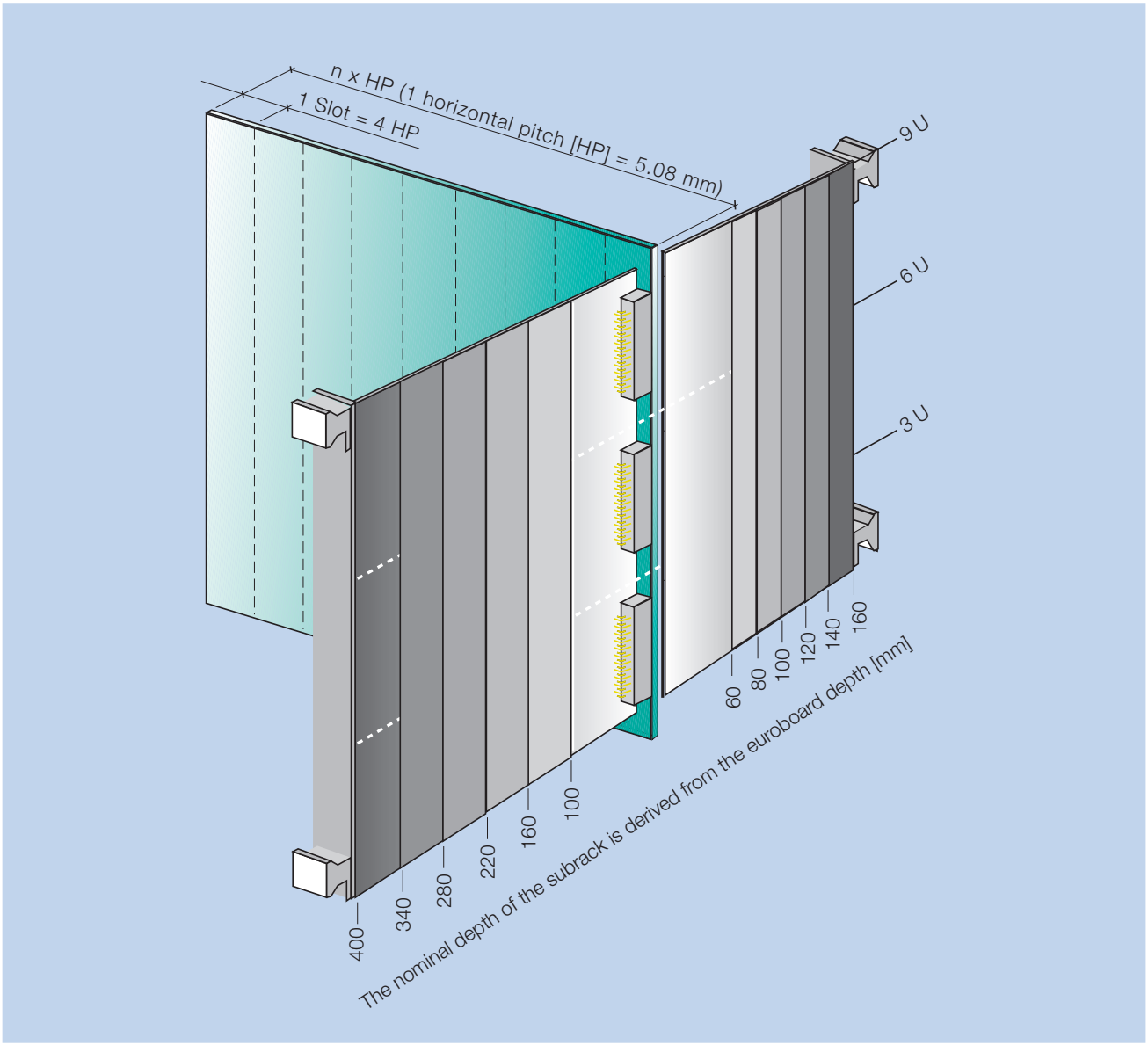
- √ Integrated bus board
- √ Integrated power supply unit
- √ Wired and tested
- √ Optionally with active cooling

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 aquivalent to 44.45 mm.

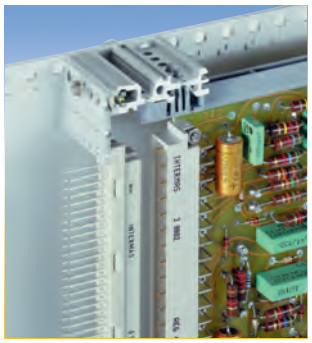
The nominal depth of the subracks is derived from the euroboard depth. Front inserted PCB's are generally specified in 60 mm-steps and for rear stucked PCB's in 20 mm-steps.
For Intermas subracks depths in 10 mm-steps can be realized.

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

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

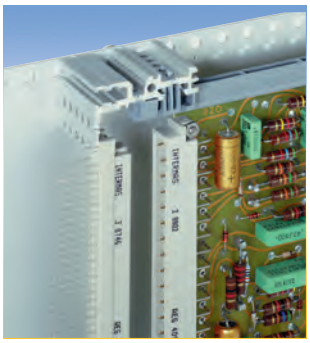
Structual Shapes of Subracks

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



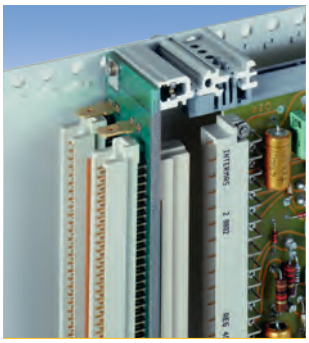
1. Type *alpha*

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.

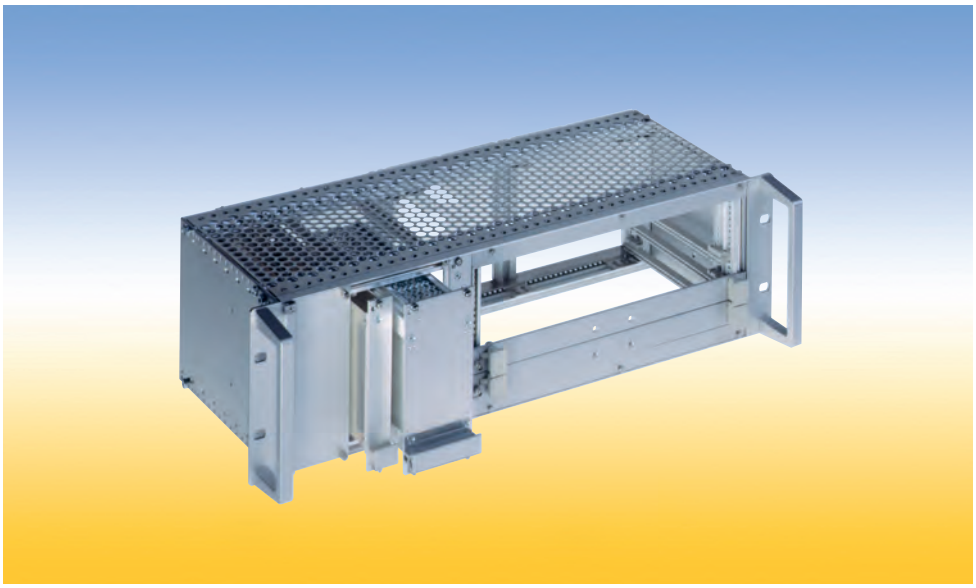


3. Type *delta*

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.

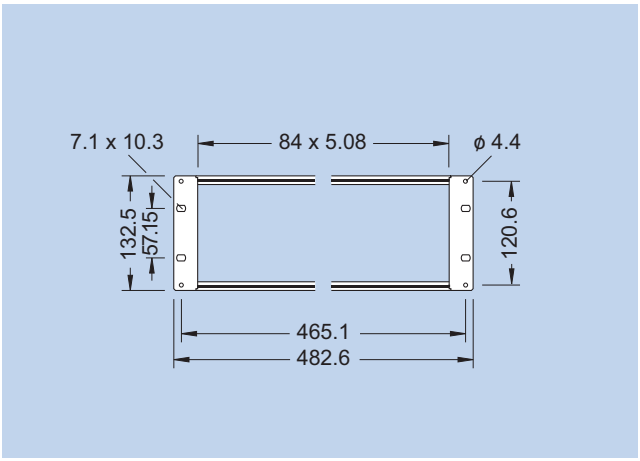
Delivery
Supplied as unassembled kits.
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

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

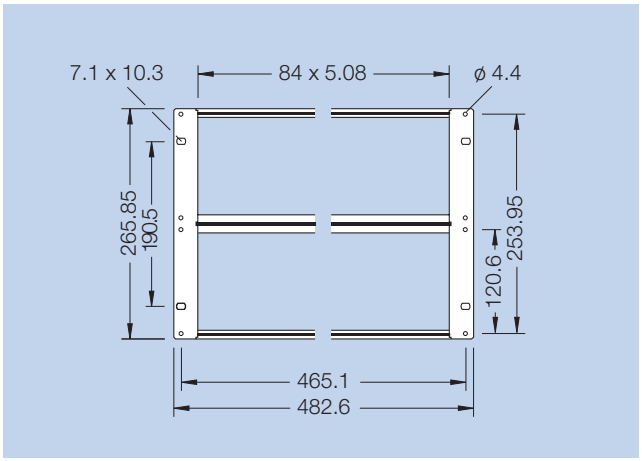
Technical data

Standards	compliant with DIN 41 494 D 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 41612, VG 95324 and EC 60603-2 connectors
Materials	screws: steel other parts: aluminum
Finish	screws: galvanized and chromated 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

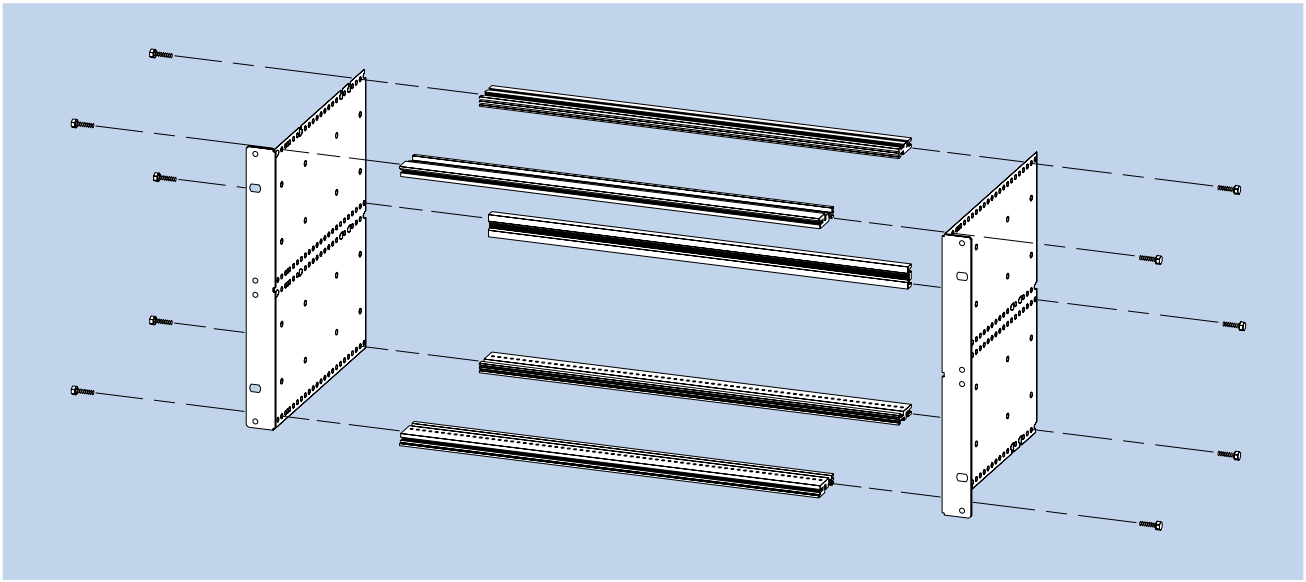


Front of subrack 3 U

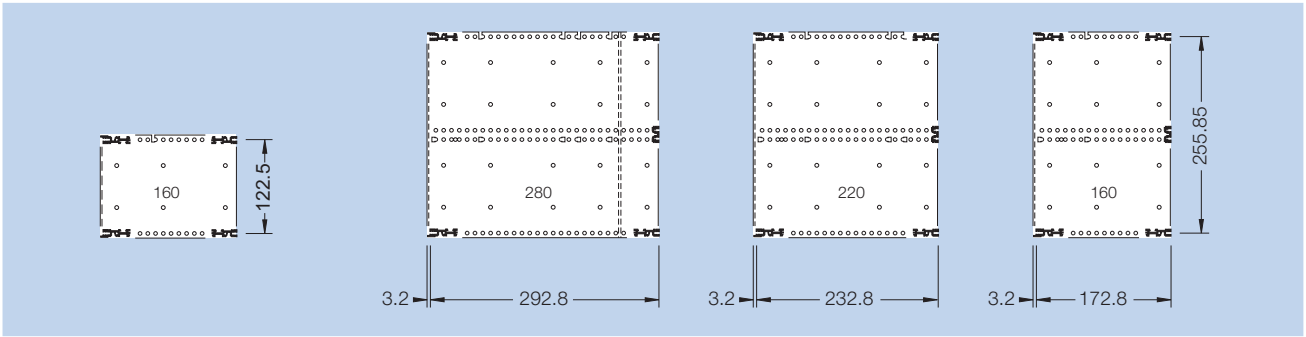


Front of subrack 6 U

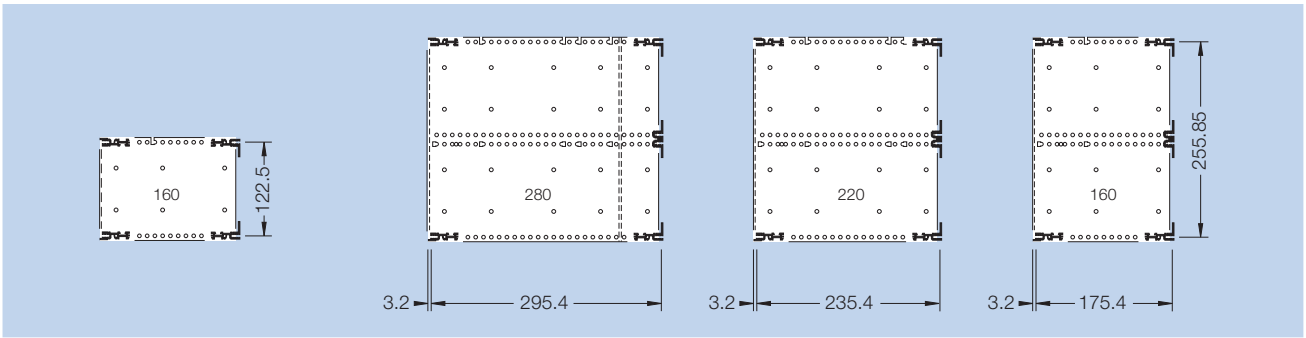
Subrack *FLEXIBLE Fi*



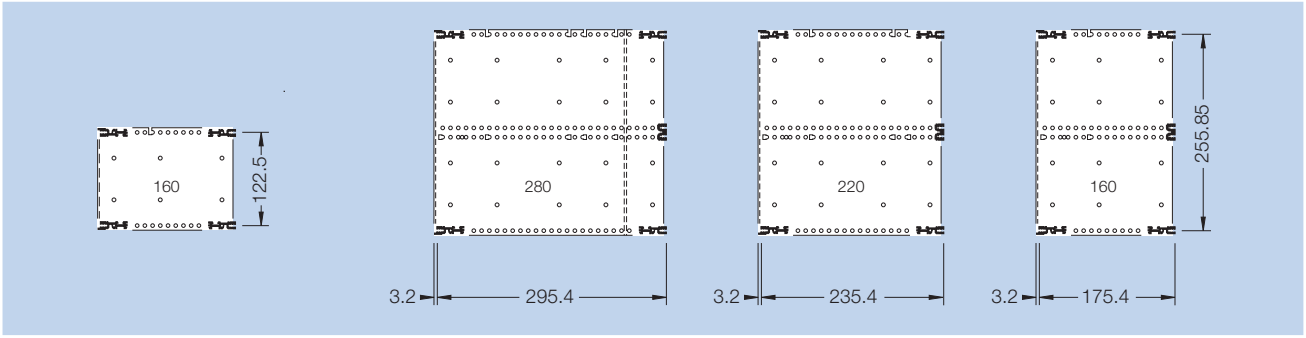
Subrack FLEXIBLE Fi



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

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

Ordering details for kits

	nom. depth [mm]	type *alpha* order no. **409.**	type *beta* order no. **409.**	type *delta* order no. **409.**
3 U - subrack				
FLEXIBLE Fi - 84-3-160	160	**087 340**	**087 440**	**087 388**
FLEXIBLE Fi - 84-3-220	220	**087 341**	**087 441**	**087 389**
FLEXIBLE Fi - 84-3-280	280	**087 342**	**087 442**	**087 390**
6 U - subrack				
FLEXIBLE Fi - 84-6-160	160	**087 364**	**087 446**	**087 462**
FLEXIBLE Fi - 84-6-220	220	**087 365**	**087 447**	**087 463**
FLEXIBLE Fi - 84-6-280	280	**087 366**	**087 448**	**087 464**

Delivery

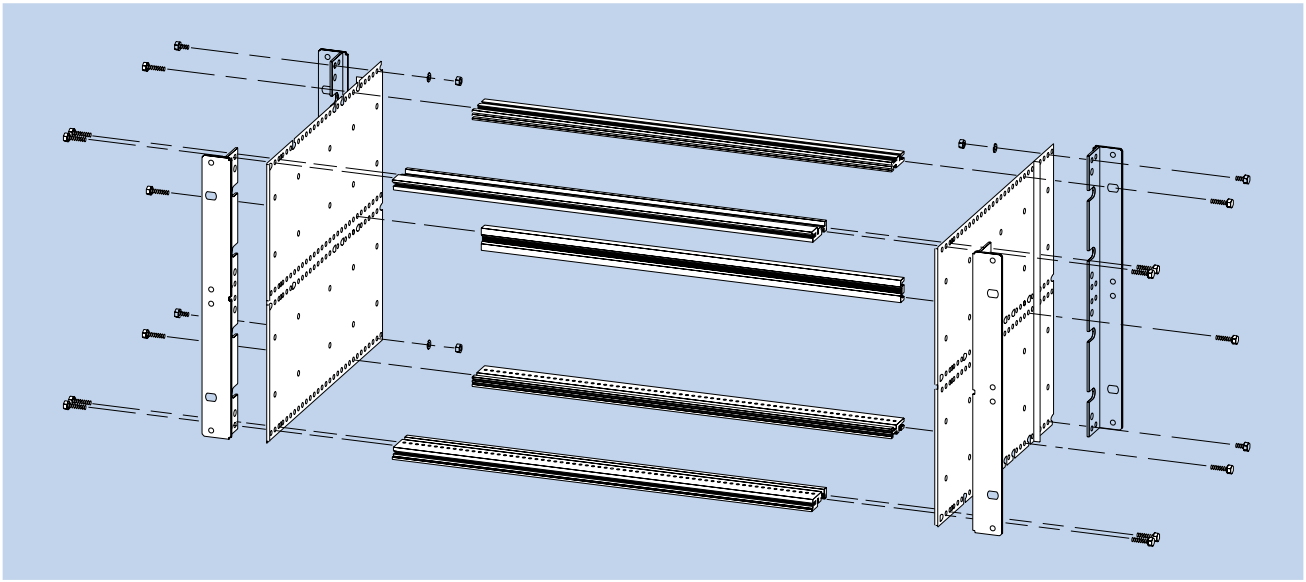
	pieces per kit *alpha* 3 HE	pieces per kit *alpha* 6 HE	pieces per kit *beta* 3 HE	pieces per kit *beta* 6 HE	pieces per kit *delta* 3 HE	pieces per kit *delta* 6 HE
Side panel Fi, anodized	2	2	2	2	2	2
Front pr	2	2	2	2	2	2
Rear pr	2	2	-	-	-	-
Rear pr	-	-	2	2	-	-
Rear pr	-	-	-	-	2	2
Center pr	-	1	-	-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

Accessories

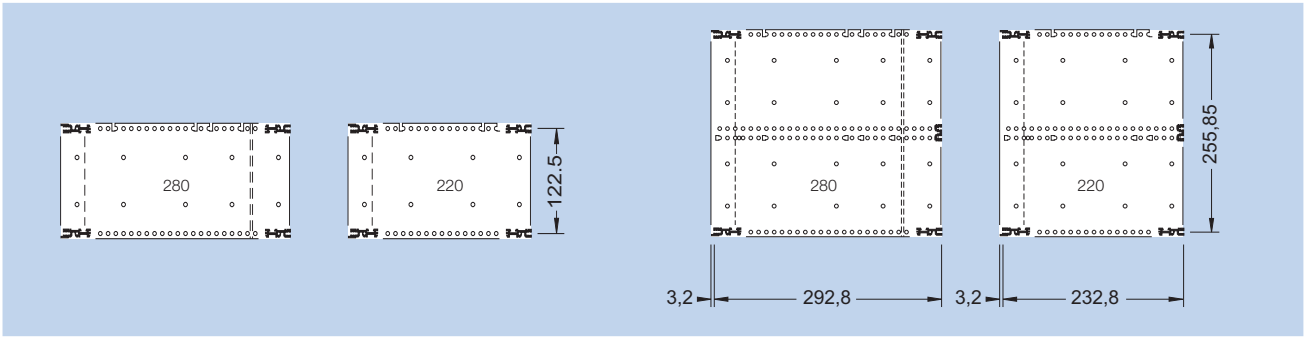
	order no. **409.**
Threaded strip 84 x M 2.5	**091 255**
Insulating strip 84 HP	**051 981**
Kits with 2 cover plate ø 8.5 mm and mounting parts	
Cover plates kit slide-in 160	**162 700**
Cover plates kit slide-in 220	**162 701**
Cover plates kit screw-on 160	**162 703**
Cover plates kit screw-on 220	**162 704**
Cover plates kit screw-on 280	**162 705**

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

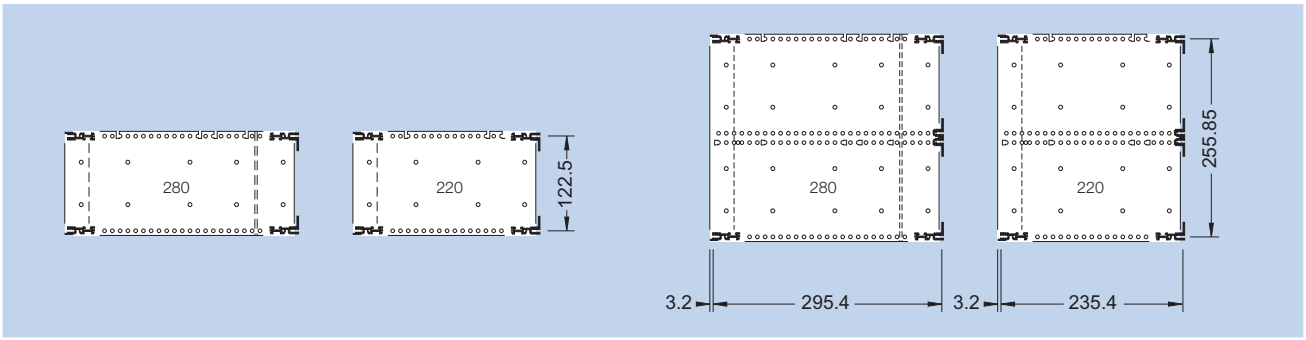
Subrack *FLEXIBLE Fs*



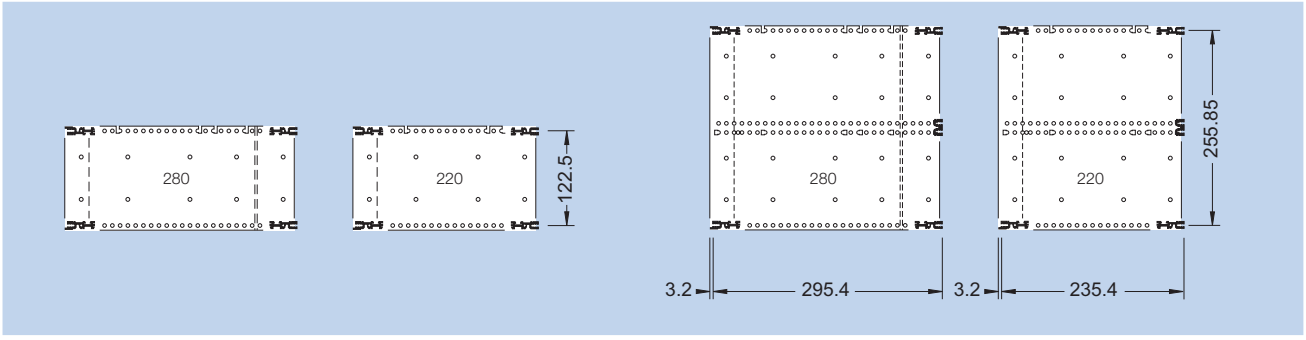
Subrack FLEXIBLE Fs



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 *alpha* order no. **409.**	type *beta* order no. **409.**	type *delta* order no. **409.**
3 U - subrack				
FLEXIBLE Fs - 84-3-220	220	**094 700**	**094 704**	**094 708**
FLEXIBLE Fs - 84-3-280	280	**094 701**	**094 705**	**094 709**
6 U - subrack				
FLEXIBLE Fs - 84-6-220	220	**094 702**	**094 706**	**094 710**
FLEXIBLE Fs - 84-6-280	280	**094 703**	**094 707**	**094 711**

Delivery

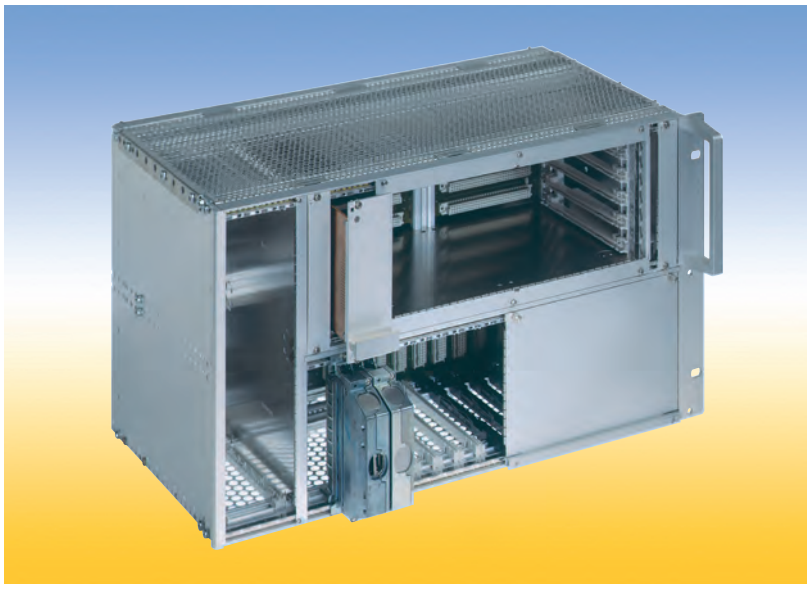
	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U	pieces per kit *beta* 3 U	pieces per kit *beta* 6 U	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
Side panel Fs, chromated	2	2	2	2	2	2
Flange separated, anodized	2	2	2	2	2	2
Front pr	2	2	2	2	2	2
Rear pr	2	2	-	-	-	-
Rear pr	-	-	2	2	-	-
Rear 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	**091 255**
Insulating strip 84 HP	**051 981**
Kits with 2 cover plates ø 8.5 mm and mounting parts	
Cover plates kit screw-on 220	**162 704**
Cover plates kit screw-on 280	**162 705**

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.

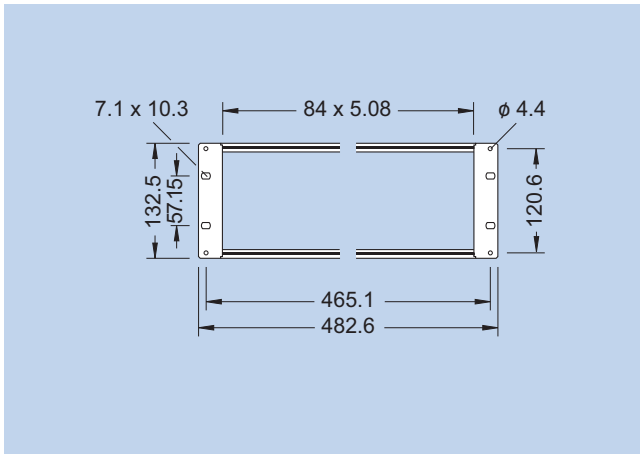
Delivery
Supplied as unassembled kits.
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

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

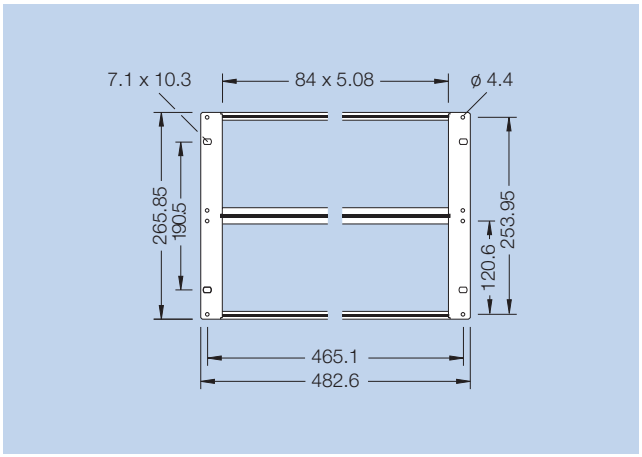
Technical data

Standards	compliant with DIN 41 494 D IEC 60 297-3, 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 60 603-2 connectors
Materials	screws: steel contact springs: stainless steel other parts: aluminum
Finish	screws: galvanized und chromated side panels and cover plates: blank (seawater-resistant) other parts: chromated
Protection class	DIN 40 050 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

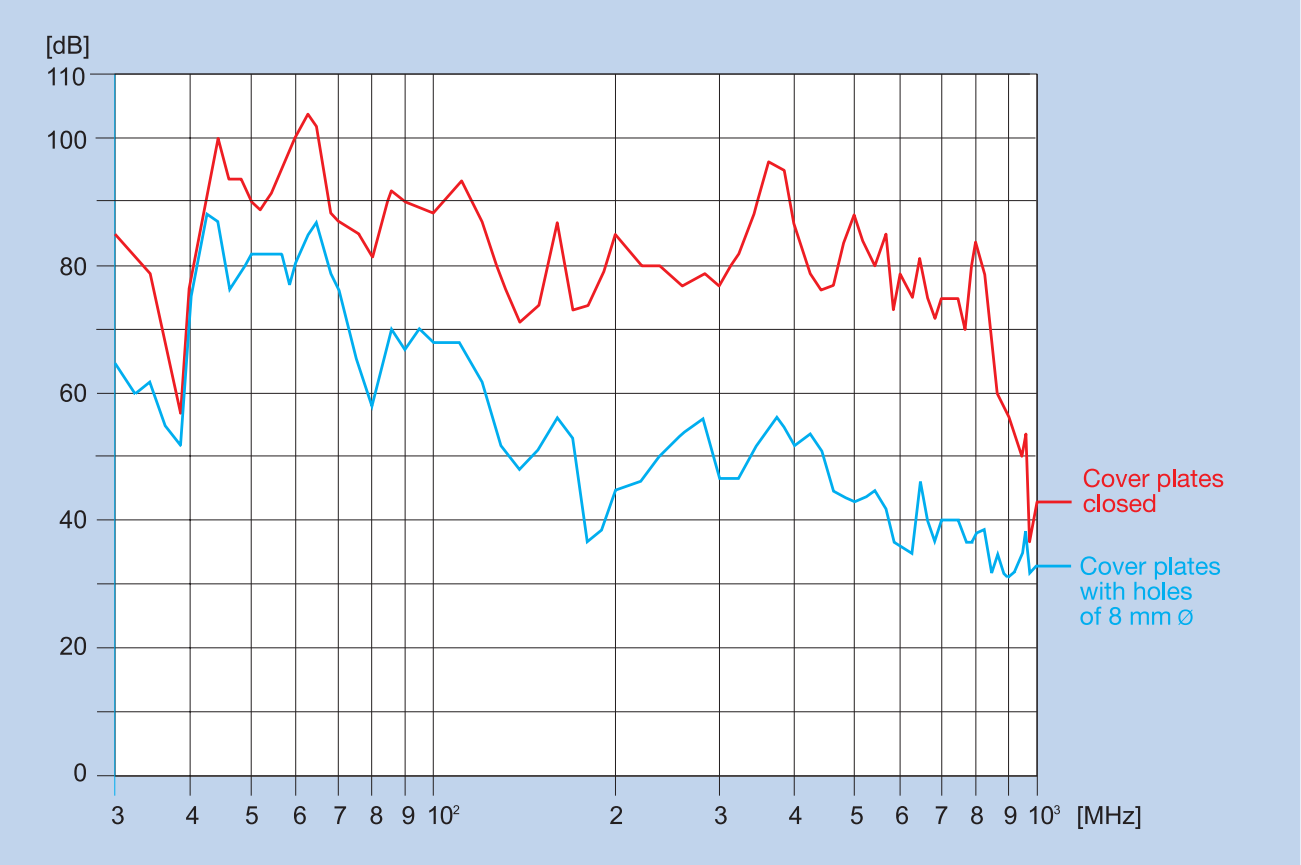


Front of subrack 3 U



Front of subrack 6 U

Measurement Configuration, Tests, Measurement Results



Shielding efficiency as function of grade of perforation of the covers

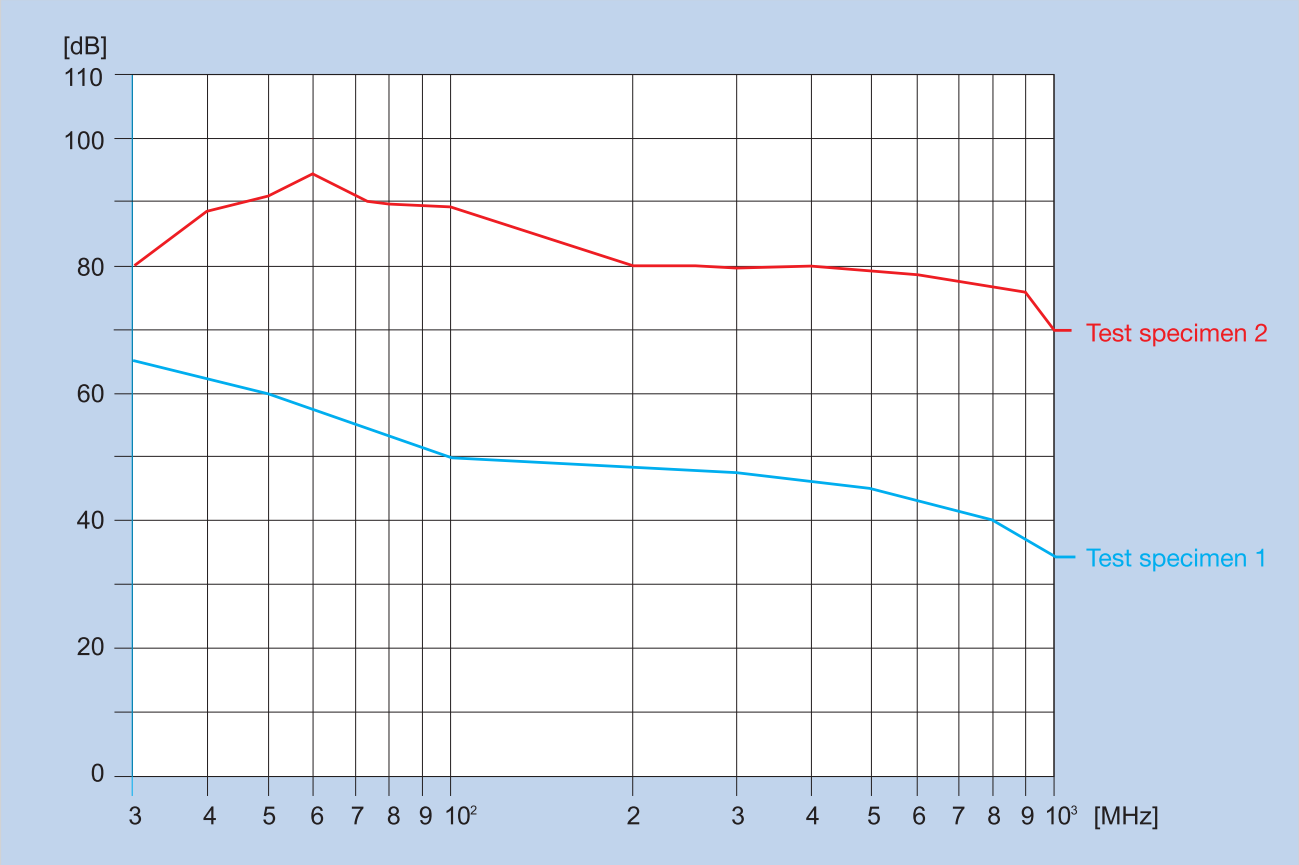
1. Measurement configuration
The measurement configuration fundamentally complies with the requirements of VG 95 373, Part 15, measurement method KS 04 G.
The subrack stood in the middle of a shielded anechoic chamber. The receiver antenna was in the center of the subrack and the transmitter antenna 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.

Frequenzy steps

Frequenzy 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:

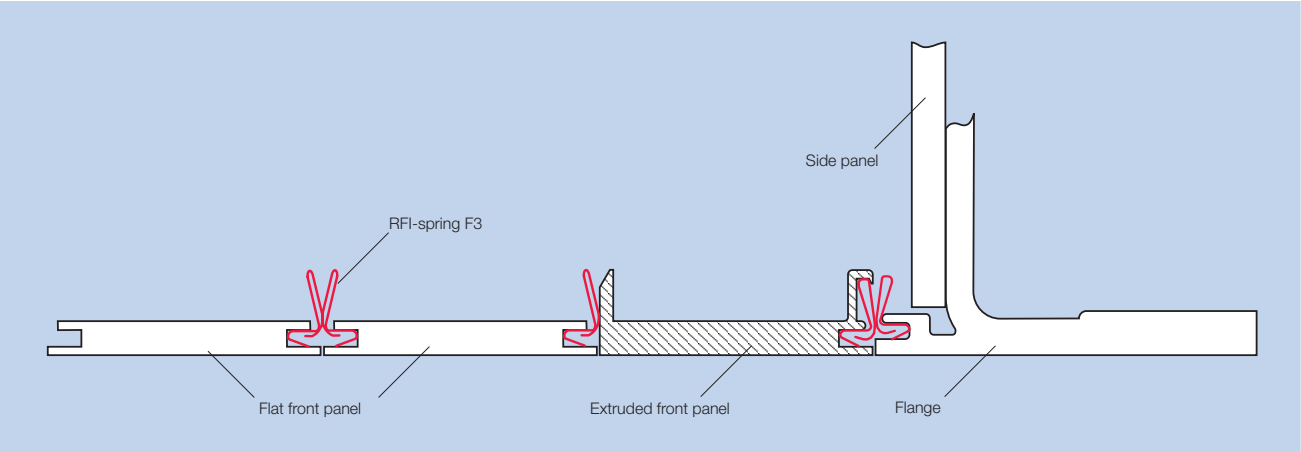
1. Bonding of the cover panel to the profile channel. via the RFI spring A2 which is inserted into the groove of the profile.

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.

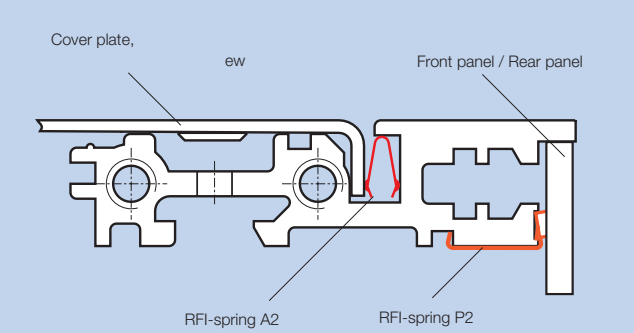
3. The RFI spring F3 is used in the subrack flange. This spring is also used at the sides of the RFI front panels and creates the bonding between the front panels and between the front panel and the flange or side panel.

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

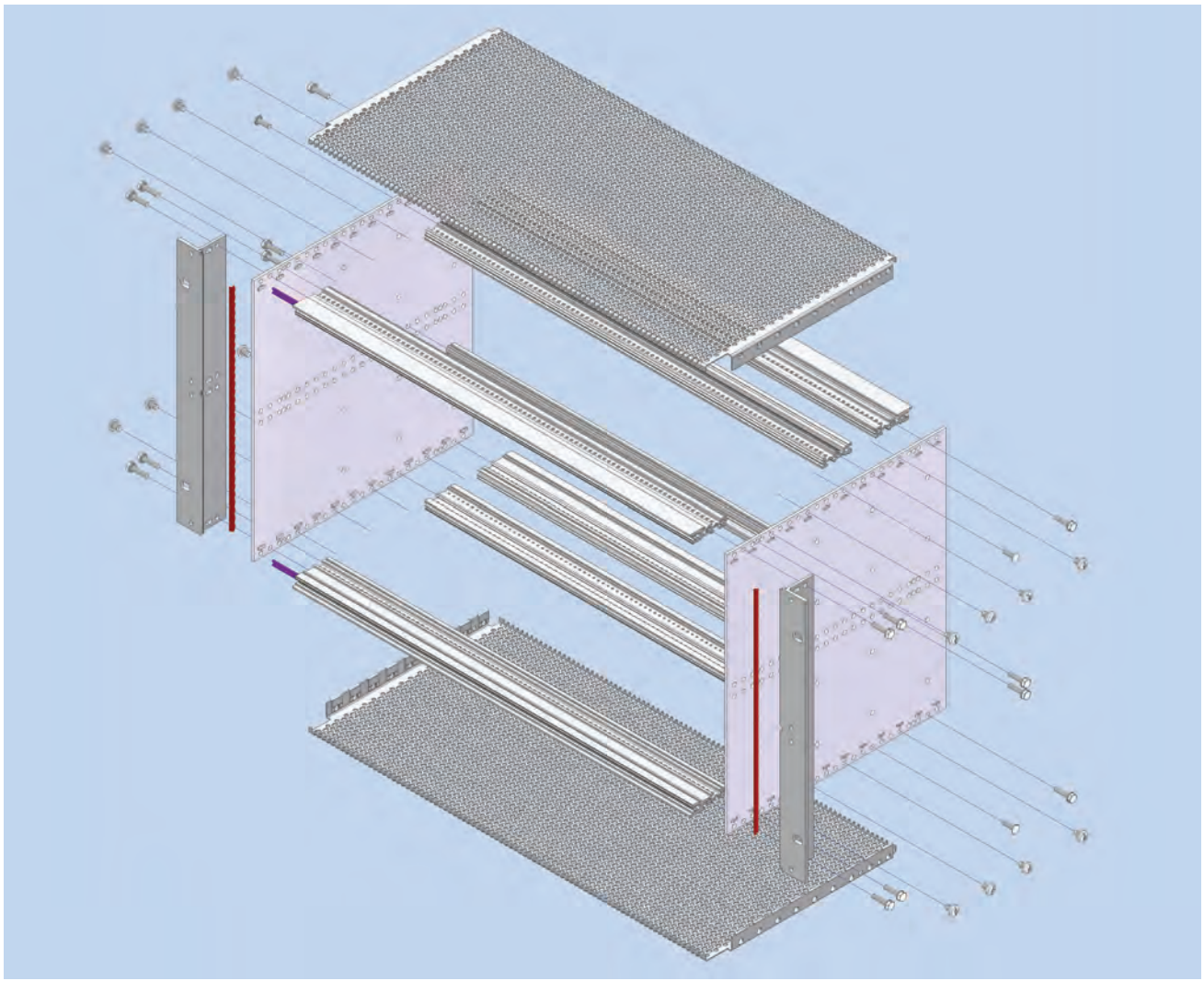
The subrack, its paneling elements and the cover panels are made of high-quality seawater-resistant aluminum alloys.
The spring strips are made of stainless steel.
This well-balanced combination of materials and surface treatment ensures high corrosion and ageing resistance and achievement of the necessary low contact resistance between the individual elements.



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



Bonding with RFI-springs

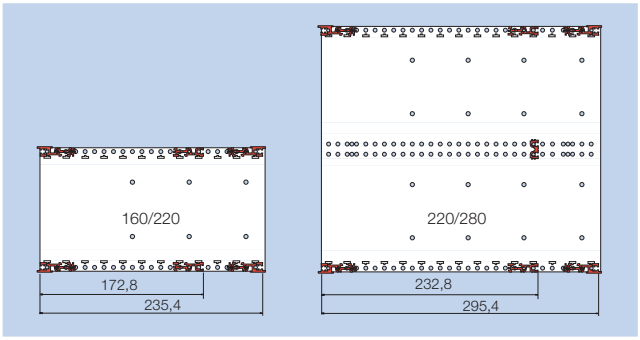


Assembling example

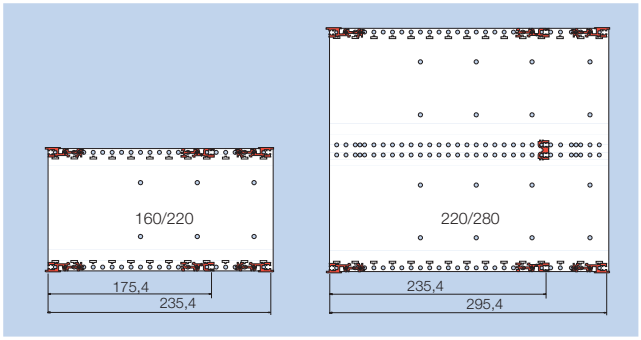
Delivery example

	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 *alpha* order no. **409.**	type *delta* order no. **409.**
3 U - subrack			
RFI-SHIELDED - 84-3-220	160/220	**162 708**	**162 710**
RFI-SHIELDED - 84-3-280	220/280	**162 709**	**162 711**
6 U - subrack			
RFI-SHIELDED - 84-6-220	160/220	**162 712**	**162 714**
RFI-SHIELDED - 84-6-280	220/280	**162 713**	**162 715**

Delivery

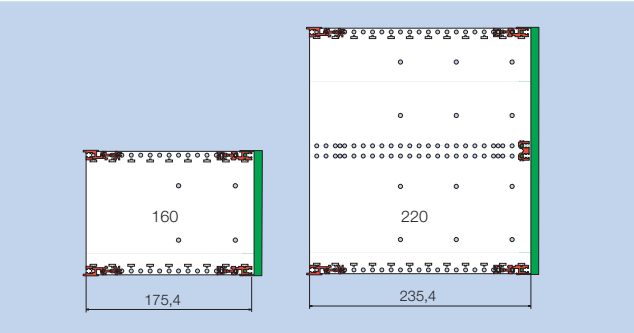
	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2	2	2
Cover plate punched 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	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**

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 *delta* order no. **409.**
3 U - subrack		
RFI-SHIELDED - 84-3-160	160	**162 716**
RFI-SHIELDED - 84-3-220	220	**162 717**
6 U - subrack		
RFI-SHIELDED - 84-6-160	160	**162 718**
RFI-SHIELDED - 84-6-220	220	**162 719**

Delivery

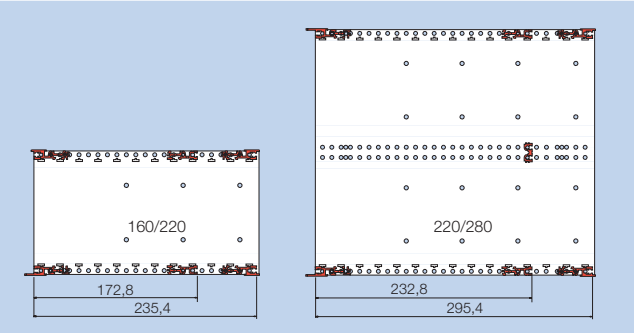
	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
Side panel	2	2
Flange	2	2
Cover	1	1
RFI-spring F3 (flange/front panel)	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2
Cover plates punched holes Ø 4 / 5.2 x 4 mm	2	2
RFI-spring A2 (cover plate/profile)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

Accessories

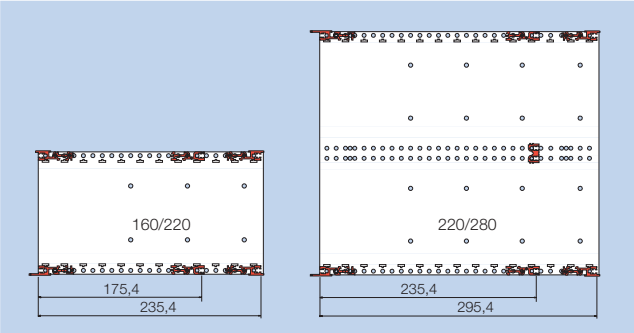
	order no. **409.**
Threaded strip 84 x M 2.5	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**

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 *alpha* order no. **409.**	type *delta* order no. **409.**
3 U - subrack			
RFI-SHIELDED - IEEE - 84-3-220	160/220	**162 720**	**162 722**
RFI-SHIELDED - IEEE - 84-3-280	220/280	**162 721**	**162 723**
6 U - subrack			
RFI-SHIELDED - IEEE - 84-6-220	160/220	**162 724**	**162 726**
RFI-SHIELDED - IEEE - 84-6-280	220/280	**162 725**	**162 727**

Delivery

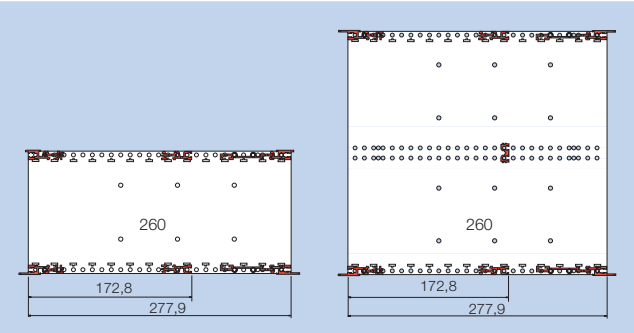
	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2	2	2
Cover plates punched holes ⌀ 4 / 5.2 x 4mm	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

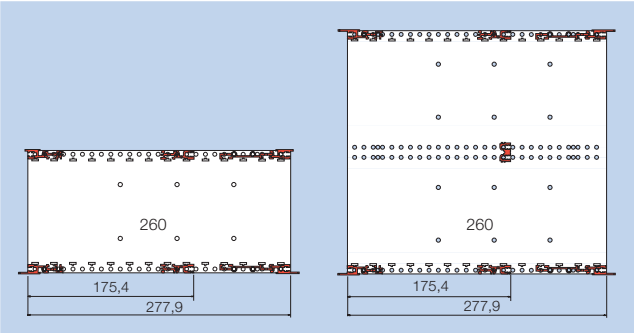
	order no. **409.**
Threaded strip 84 x M 2.5	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**

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

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



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 *alpha* order no. **409.**	type *delta* order no. **409.**
3 U - subrack			
RFI-SHIELDED Rear I/O-84-3-160+80	260	**162 728**	**162 729**
6 U - subrack			
RFI-SHIELDED Rear I/O-84-6-160+80	260	**116 484**	**161 034**

Delivery

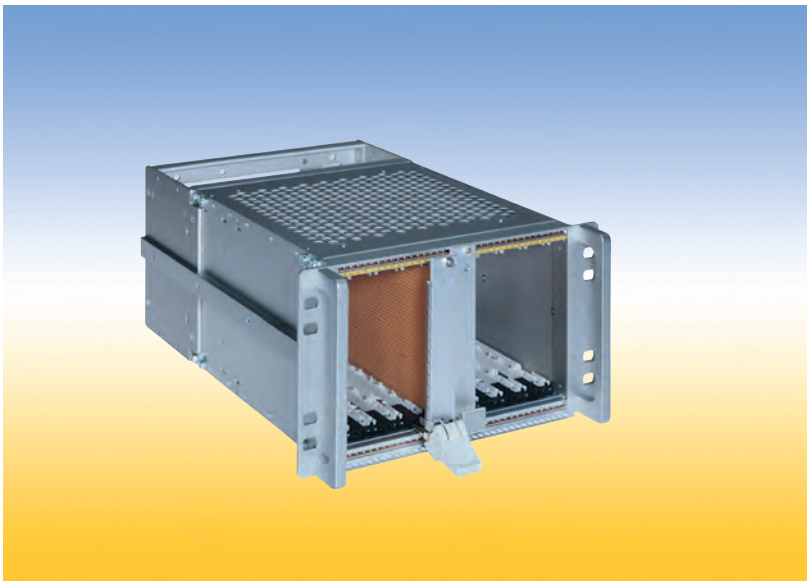
	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
Side panel	2	2	2	2
Flange	2	2	2	2
RFI-spring F3 (flange/front panel)	2	2	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2	2	2
Cover plates punched holes ⌀ 4 / 5.2 x 4mm	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	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**

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

Subrack *InterRail*®



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.

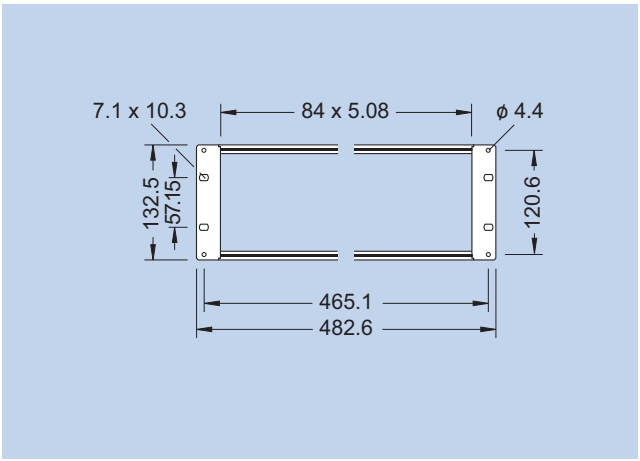
Delivery
Supplied as unassembled kits.
These are either packed as a kit of parts for one unit or as individual components, whereby parts of similar type are packed together.

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

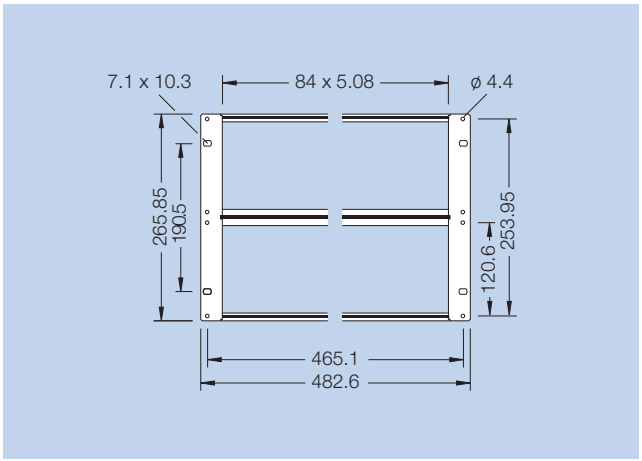
Technical data

Standards	IEC 60297, DIN 41494, IEEE 1101.10, DIN EN 50155 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 chromated other parts: chromated
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

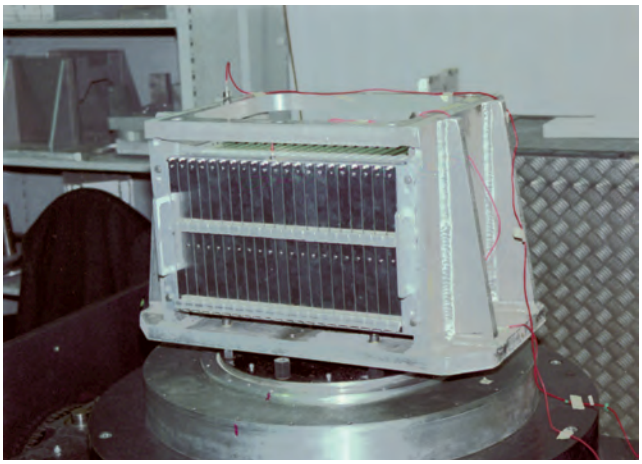


Front of subrack 6 U

Subrack *InterRail*®
Tests in accordance with SNCF NF standards and DIN EN 50155

- **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:
a) Determination of the critical resonance frequency
b) 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:

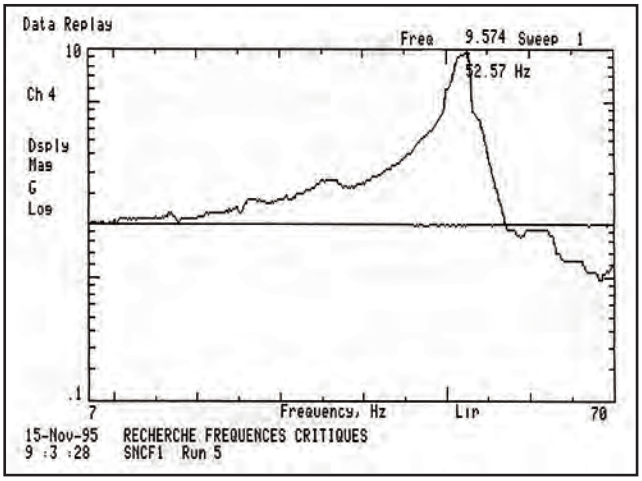
1. In the X-axis
   21 x 420 g boards
2. In the Z-axis
   21 x 420 g boards
3. In the Y-axis
   21 x 240 g boards
4. In the Z-axis
   4 x 420 g boards plus a 6.22 kg cassette installed in the center.

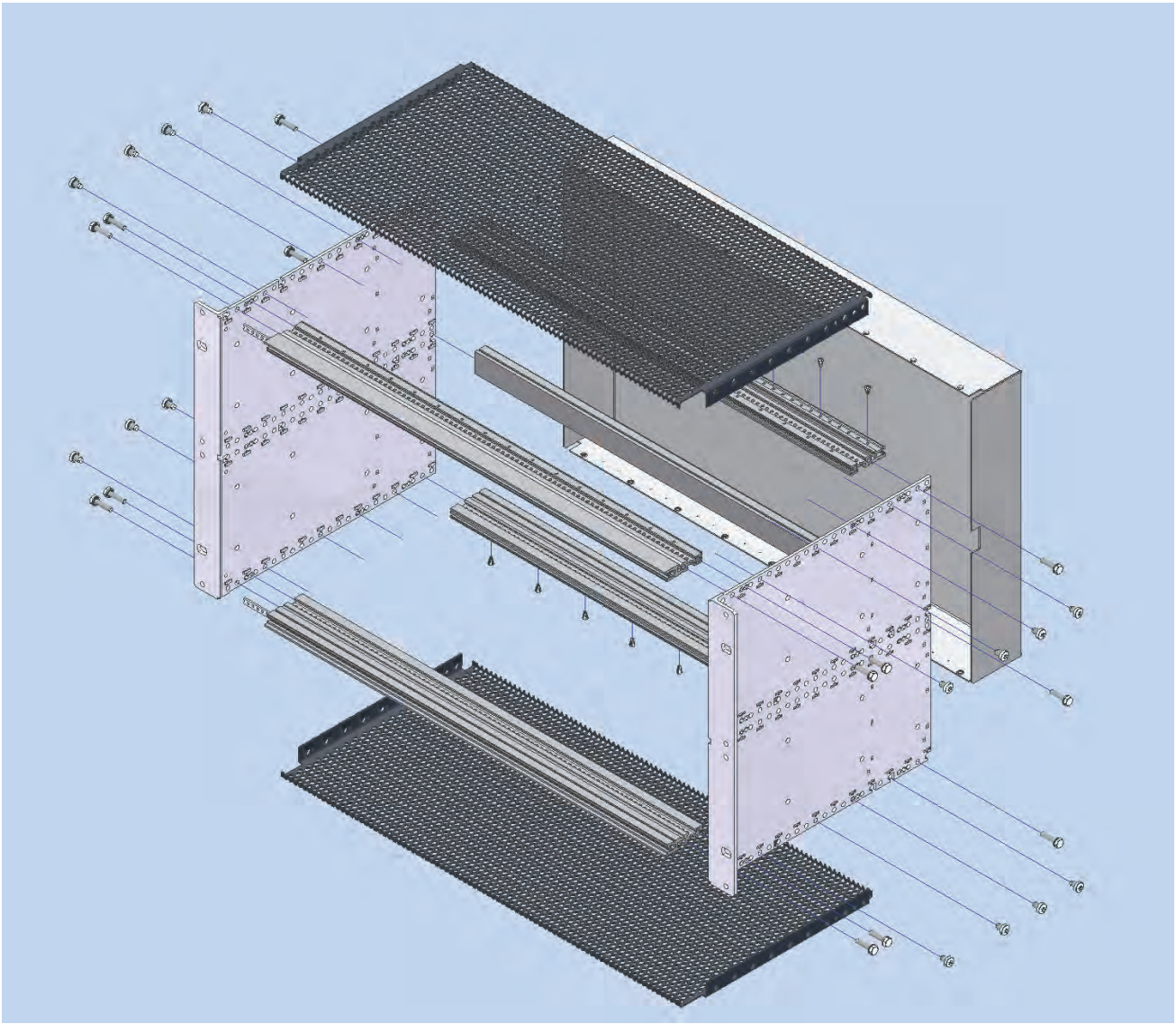
Measurement results with non-stiffened boards
Excerpt from the results of the measurements in the Y-axis, measurement on the front profile rail:
Maximum resonance sharpness 10.8 g at 52.5 Hz.
Measurement at the rear on the side panel extension:
Maximum resonance sharpness 9.6 g at 52.5Hz (see the measurement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

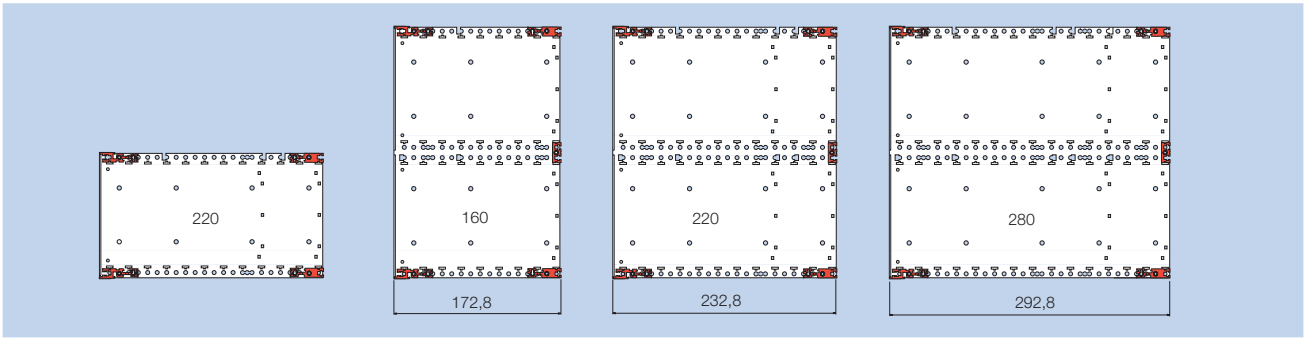




Delivery example

	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

Subrack *InterRail*®



Depth dimensions type alpha 3 U and 6 U

Ordering details for kits

	nom. depth [mm]	type *alpha* order no. **409.**
3 U - subrack		
InterRail - 84-3-160	160	**162 610**
InterRail - 84-3-220	220	**162 611**
InterRail - 84-3-280	280	**162 612**
6 U - subrack		
InterRail - 84-6-160	160	**162 613**
InterRail - 84-6-220	220	**162 614**

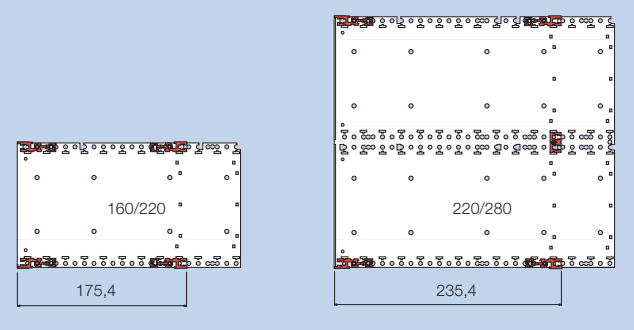
Delivery

	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U
Side panel	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	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	**091 255**
Insulating strip 84 HP	**051 981**

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 *delta* order no. **409.**
3 U - subrack		
InterRail RFI-84-3-220	160/220	**162 730**
InterRail RFI-84-3-280	220/280	**162 731**
6 U - subrack		
InterRail RFI - 84-6-220	160/220	**162 732**
InterRail RFI - 84-6-280	220/280	**162 733**

Delivery

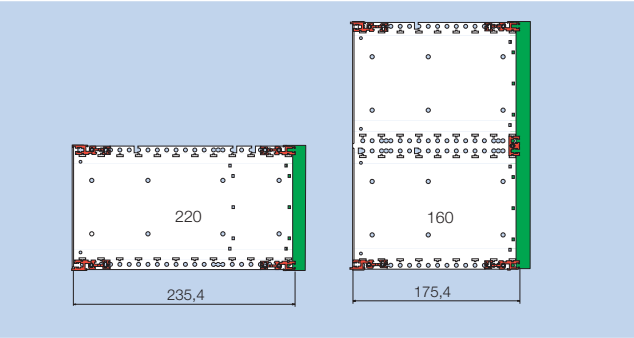
	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2
Cover plates punched holes ⌀ 4 / 5.2 x 4mm	2	2
RFI-spring A2 (cover plate/profile)	4	4
Mounting parts kit	1	1
Front profile V12S-RFi-85	2	2
Rear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

Accessories

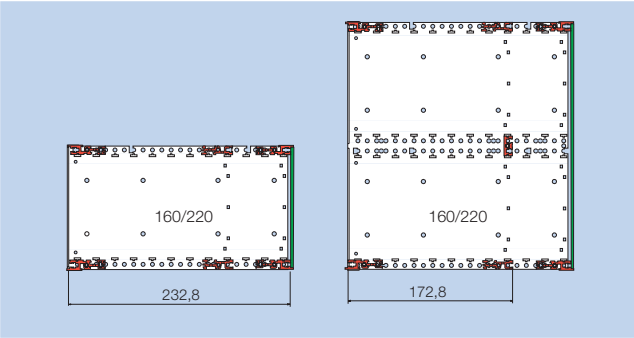
	order no. **409.**
Threaded strip 84 x M 2.5	**091 255**
RFI-spring P2 - 84 (profile/front panel)	**106 547**
Shielding kit F1 3 U (side panel/front panel)	**093 605**
Shielding kit F1 6 U (side panel/front panel)	**093 606**
Shielding kit 3 U (side panel/backplane)	**108 274**
Shielding kit 6 U (side panel/backplane)	**108 275**

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 *delta* with cover order no. **409.**	f. front panel PCB depth/ nom. depth [mm]	type *alpha* f. front panel order no. **409.**
3 U - subrack				
InterRail RFI 84-3-160	160	**162 734**	-	**-**
InterRail RFI 84-3-220	220	**162 735**	160/220	**162 738**
6 U - subrack				
InterRail RFI 84-6-160	160	**162 736**	-	**-**
InterRail RFI 84-6-220	220	**162 737**	160/220	**162 739**

Delivery

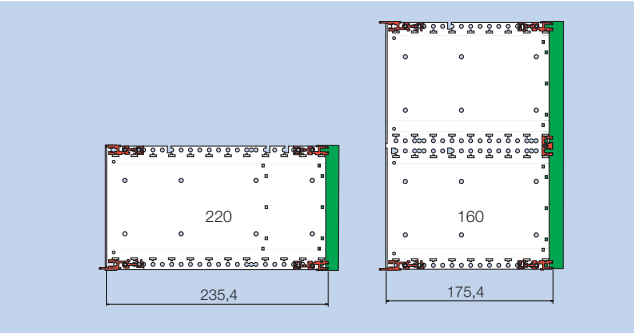
	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
	2	2	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2	2	2
Cover plates punched holes ⌀ 4 / 5.2 x 4mm	2	2	2	2
RFI-spring A2 (cover plate/pr	4	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

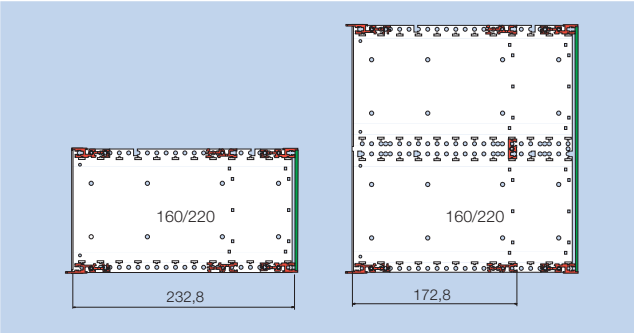
	order no. **409.**
Threaded strip 84 x M 2.5	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**
Shielding kit F1 3 U (side panel/front panel)	**093 605**
Shielding kit F1 6 U (side panel/front panel)	**093 606**

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

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



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 *delta* with cover order no. **409.**	f. front panel PCB depth/ nom. depth [mm]	type *alpha* f. front panel order no. **409.**
3 U - subrack				
InterRail RFI 84-3-160	160	**162 740**	-	**-**
InterRail RFI 84-3-220	220	**162 741**	160/220	**162 744**
6 U - subrack				
InterRail RFI 84-6-160	160	**162 742**	-	**-**
InterRail RFI 84-6-220	220	**162 743**	160/220	**162 745**

Delivery

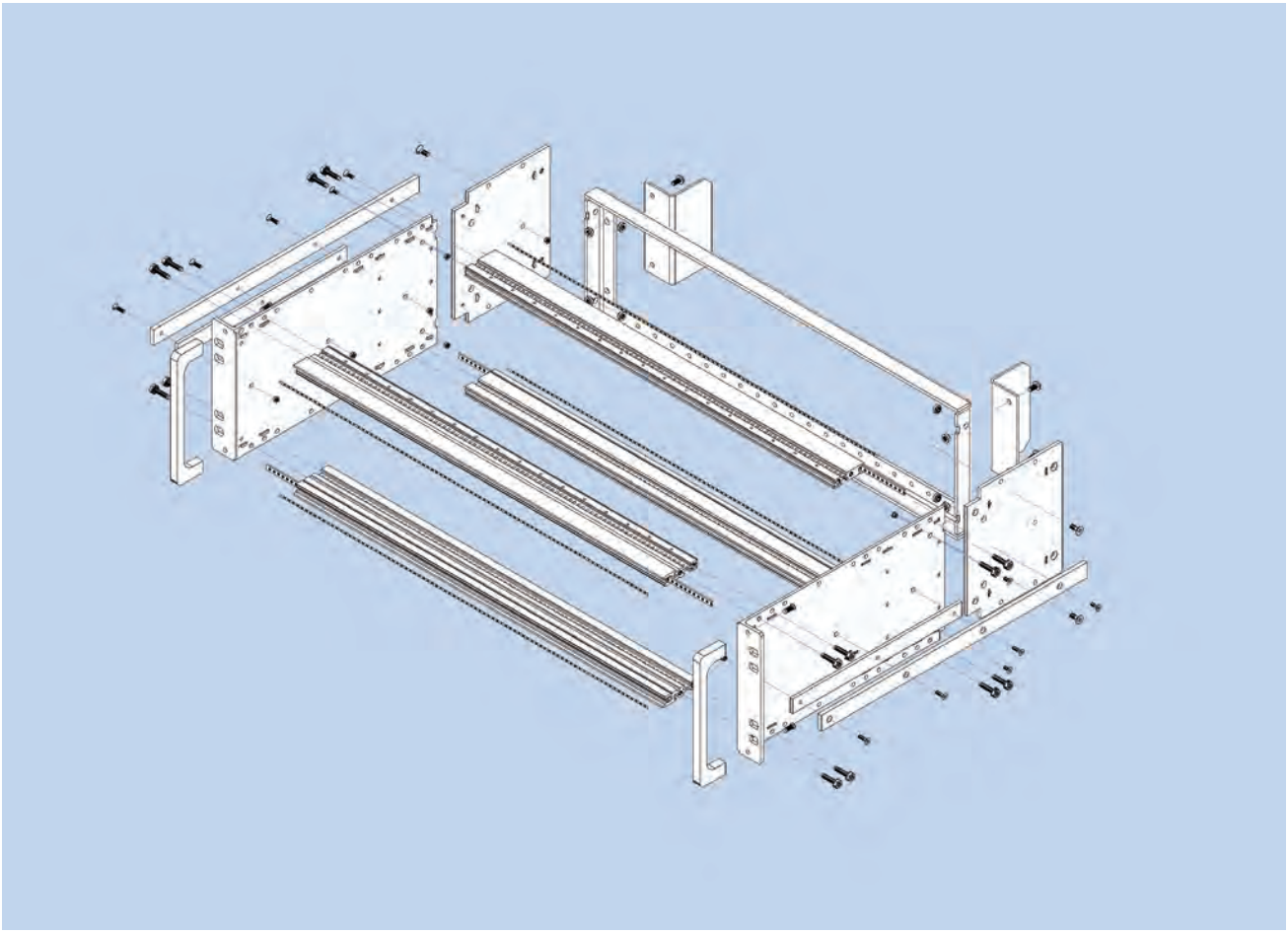
	pieces per kit *with cover* 3 U	pieces per kit *with cover* 6 U	pieces per kit *f. front panel* 3 U	pieces per kit *f. front panel* 6 U
	2	2	2	2
Threaded strip (front only) For your custom subrack please order threaded strips separately.	2	2	2	2
Cover plates punched holes ⌀ 4 / 5.2 x 4mm	2	2	2	2
RFI-spring 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	**091 255**
Insulating strip 84 HP	**051 981**
RFI-spring P2 - 84 (profile/front panel)	**106 547**
Shielding kit F1 3 U (side panel/front panel)	**093 605**
Shielding kit F1 6 U (side panel/front panel)	**093 606**

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

Subrack *InterRail*® - *SNCF*



Delivery

	pieces per kit *alpha* 3 U	pieces per kit *alpha* 6 U
	2	2
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

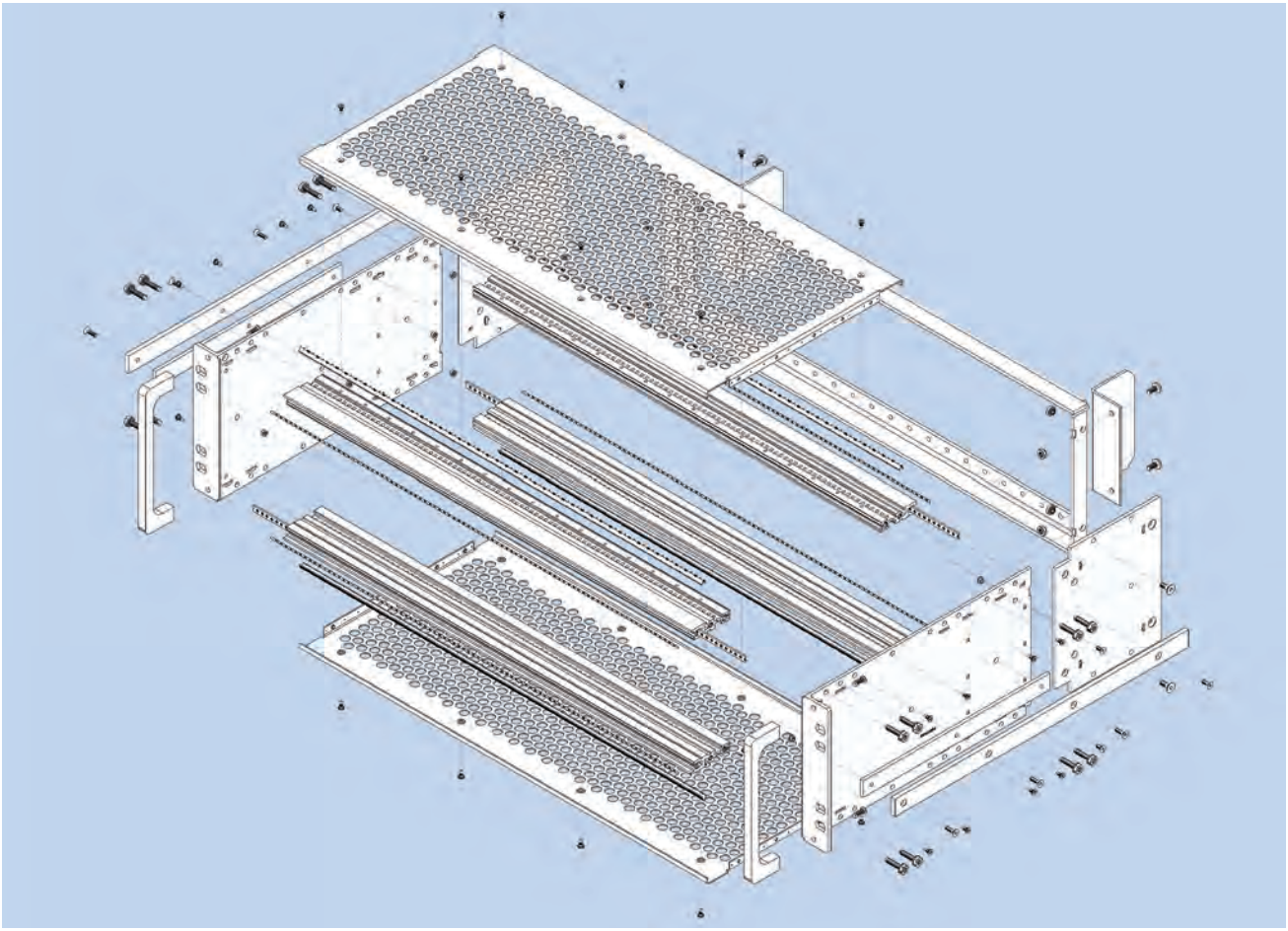
Ordering details for kits

	nom. width/ nom. depth [mm]	type *alpha* order no. **409.**
3 U - subrack		
InterRail SNCF-36-3-220	36 - 220	**108 251**
InterRail SNCF-84-3-220	84 - 220	**108 250**
6 U - subrack		
InterRail SNCF-36-6-220	36 - 220	**107 716**
InterRail SNCF-84-6-220	84 - 220	**102 822**

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

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

Subrack *InterRail*® - *SNCF RFI*



Delivery

	pieces per kit *delta* 3 U	pieces per kit *delta* 6 U
	2	2
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 ⌀ 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

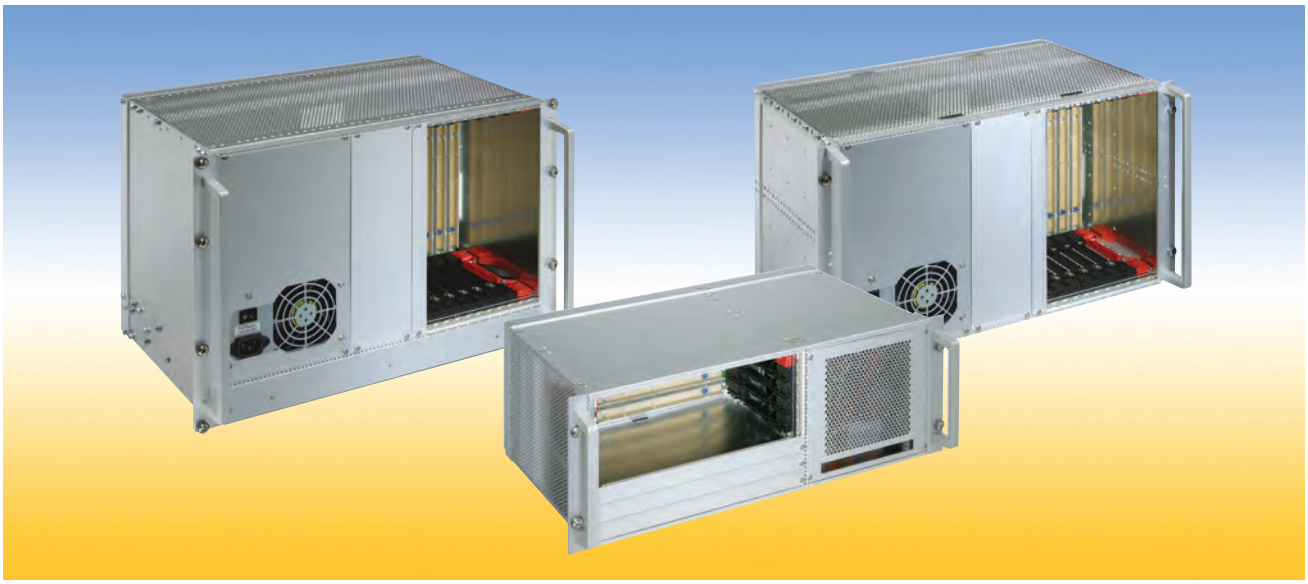
	nom. width/ nom. depth [mm]	type *delta* order no. **409.**
3 U - subrack		
InterRail SNCF RFI-36-3-220	36 - 220	**108 255**
InterRail SNCF RFI-84-3-220	84 - 220	**108 254**
6 U - subrack		
InterRail SNCF RFI-36-6-220	36 - 220	**108 253**
InterRail SNCF RFI-84-6-220	84 - 220	**108 252**

Accessories

	order no. **409.**
Card guide VIB 1.6-220 without nut	**058 944**
Screw M 3.2 x 12 for card guide SNCF	**102 432**
RFI-spring P2 - 84 (pr ont panel)	**106 547**
Shielding kit F1 3 U (side panel/front panel)	**093 605**
Shielding kit F1 6 U (side panel/front panel)	**093 606**

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 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

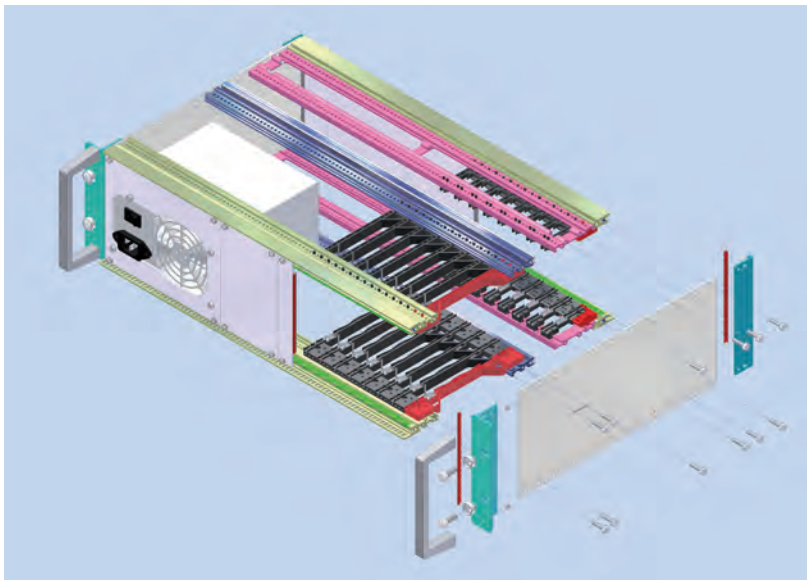
√ Convection or active ventilation

Delivery
The subrack is delivered assembled.

Other systems on request.

Technical data

Standards	compliant with DIN 41 494, IEC 60297-3, 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 chromated side panels and cover plates: blank (seawater resistance) other parts: chromated
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.: **409. 122 295**

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.: **409. 122 297**

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.: **409. 122 301**

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 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-4 U-Rear I/O

order no.: **409. 122 300**

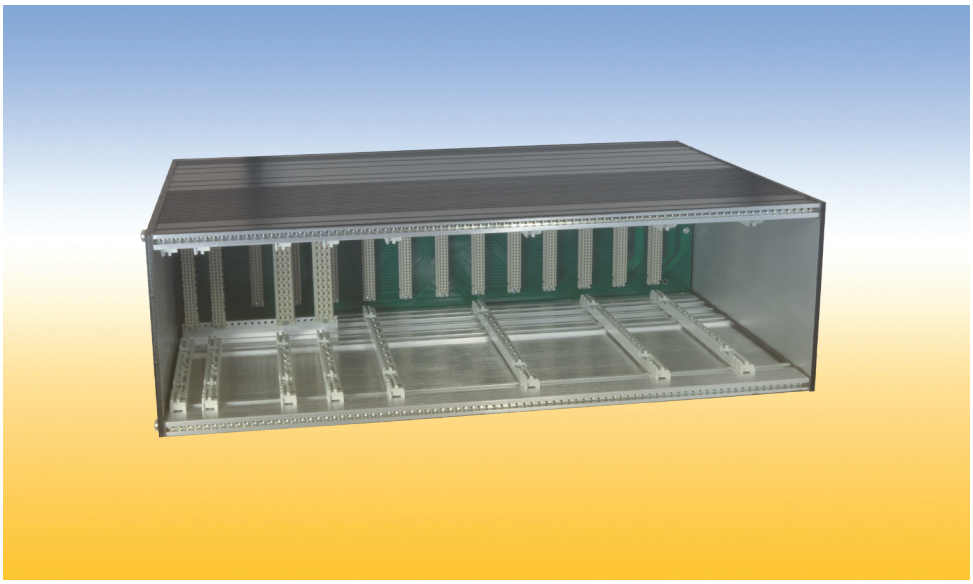
Consists of:

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, 6 U, 64 Bit, system slot right
(1 Slot free e. g. for hard disk or driver)
2 Front panels 6 U - 4 HP (1 at the front, 1 at the rear)
1 ATX 300 W 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

❑ **Housing** ❑ **Subrack**	pieces _____ pieces _____
Dimensions	**height:** ❑ 3 U ❑ 6 U ❑ other _____ U **width:** ❑ 84 HP ❑ 42 HP ❑ other _____ HP **depth:** ❑ 260 mm ❑ other _____ mm
Backplane	❑ **CPU** number of slots _____ ❑ **J1 VME** number of slots _____ ❑ **J1/J2 Monilithic VME** number of slots _____ ❑ **VME64x** number of slots _____ Rear I/O: ❑ 80 mm ❑ other _____ mm ❑ **CPCI** number of slots _____ System slot: ❑ right ❑ left Width system slot: ❑ 4 HP ❑ 8 HP Rear I/O : ❑ 80 mm ❑ other _____ mm
Mounting position PCB	❑ horizontal ❑ vertical
Depth of the PCB	❑ 160 mm ❑ other_____ mm
Power supply / PSU	❑ AC / DC ❑ DC / DC ❑ ATX ❑ 300 Watt ❑ 400 Watt ❑ 19“ ❑ 300 Watt ❑ 400 Watt ❑ other Watt _____ ❑ active ventilation of the system
Accessories	❑ Harddisc ❑ CD-ROM ❑ 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 par-ticles 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.

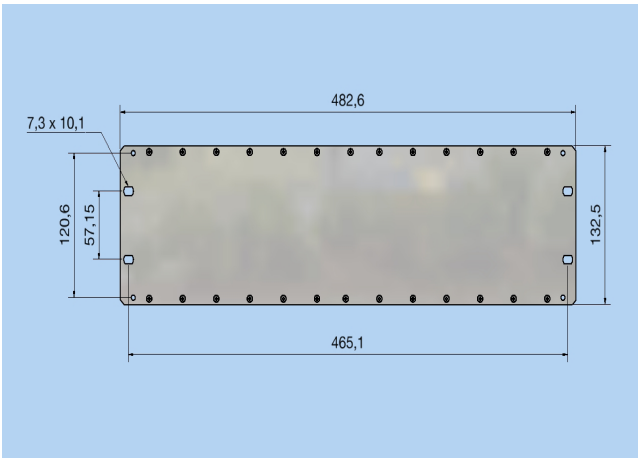
On request, delivered as assembled and wired subrack according your requirements.

Subrack *InterProtect*®

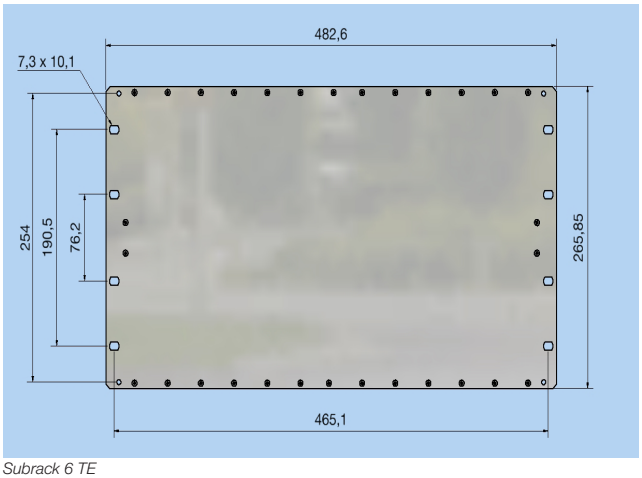
Technical Data

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

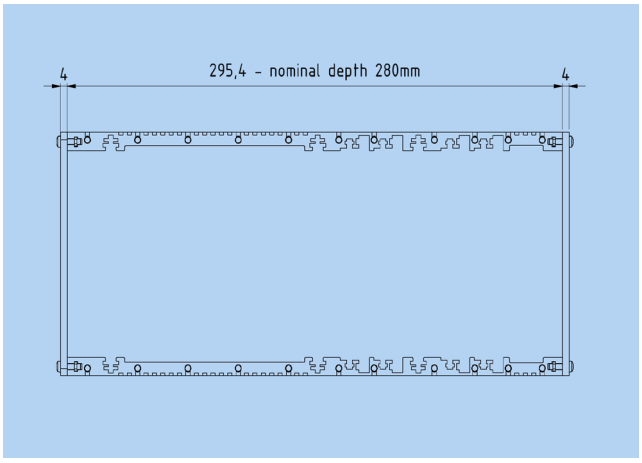
Dimension



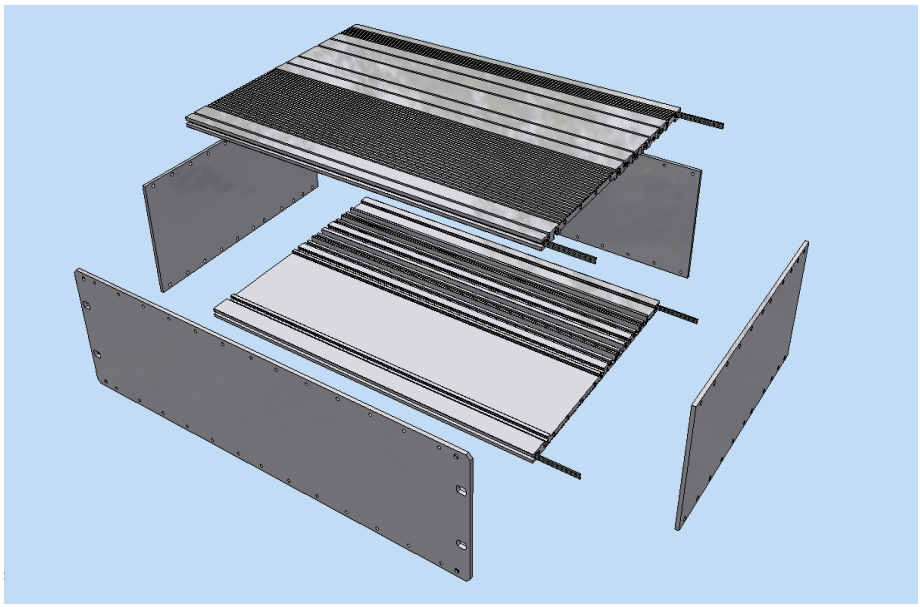
Subrack 3 TE



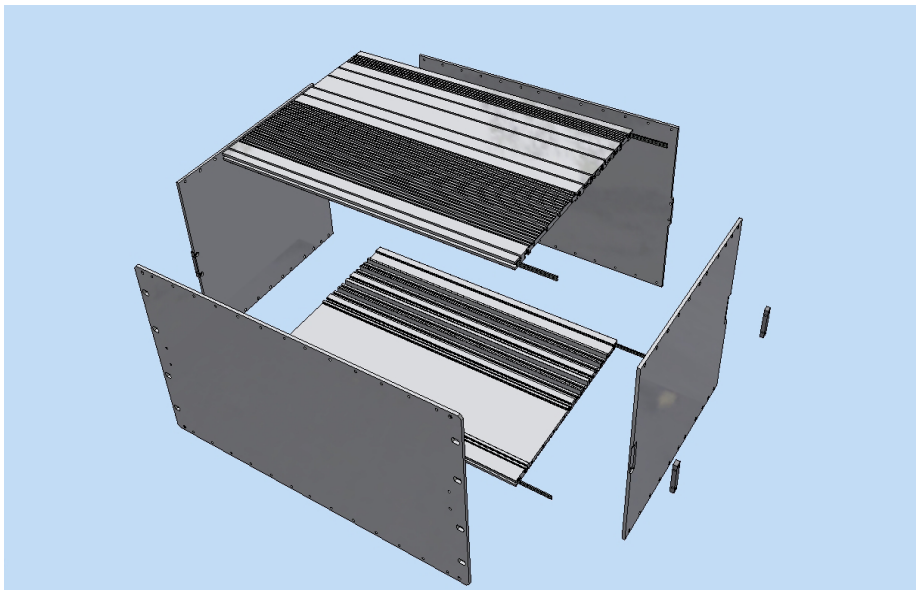
Subrack 6 TE



Depth dimensions of subrack



Subrack 3U



Subrack 6 U

Ordering details for kits

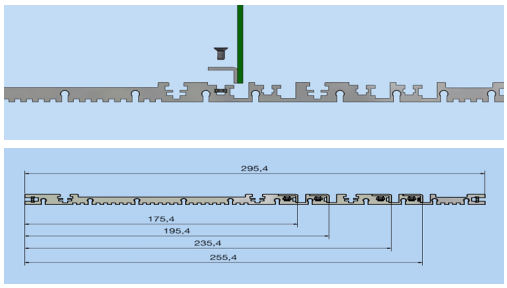
	nom. depth [mm]	order no. **409.**
3 U - subrack		
42-3-280	280	**138 802**
84-3-280	280	**138 803**
6 U - subrack		
42-6-280	280	**138 821**
84-6-280	280	**138 822**

Subrack *InterProtect*®

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 scew 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

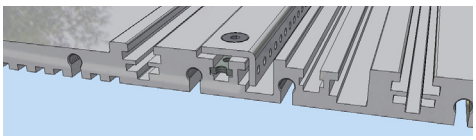


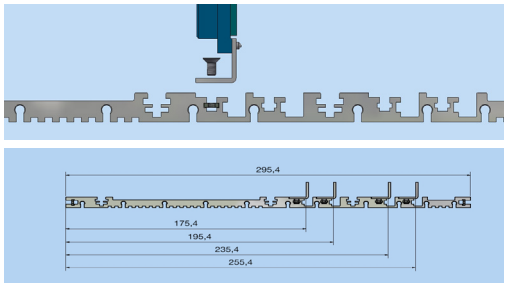
Kit for backplane fixing bar
Material: aluminium
Finish: passivated (TCP)

Scope of delivery:
2 backplane fixing bars
2 treaded strips
Fixing screws

Ordering details for kits

	order no. **409.**
Backplane-fixing bars 42HP	**138 976**
Backplane-fixing bars 84HP	**138 977**





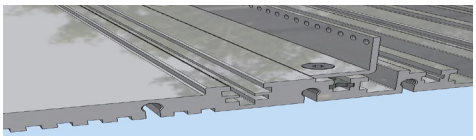
Kit for pin assignment

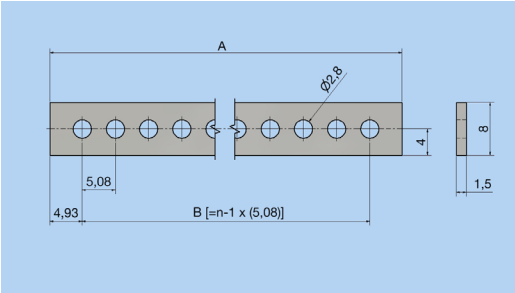
Material: aluminium
Finish: passivated (TCP)

Scope of delivery:
2 connector fixing
2 treaded strips
Fixing screws

Ordering details for kits

	order no. **409.**
connector fixing 42HP	**138 978**
connector fixing 84HP	**138 979**





Mounting strip for snap-in card guide

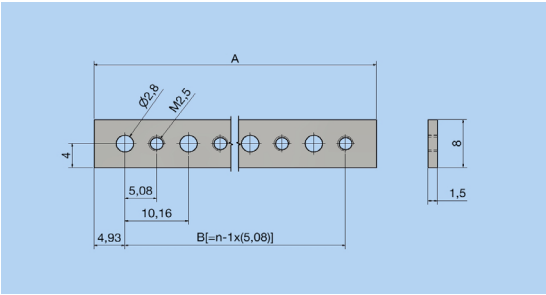
Material: steel or stainless steel
Finish: electrogalvanized, passivated resp. stainless steel blank

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	**138 811**	**138 872**
84	431,50	421,64	**138 812**	**138 873**

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	**138 870**	**138 874**
84	431,50	421,64	**138 871**	**138 875**

Other lengths on request.

Subrack *InterProtect*® Sealing

Ordering details for kits

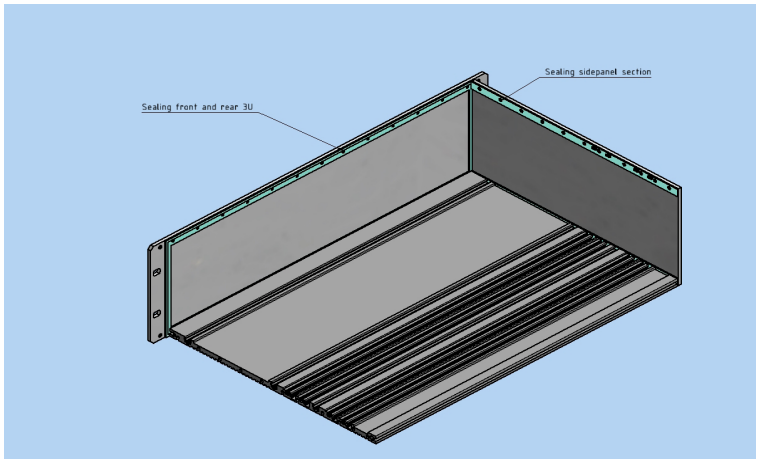
Sealing kit	*Sealing kit* IP * order no. **409.**	*Sealing kit* IP/EMV ** order no. **409.**
3U-42HP	**138 905**	**138 906**
3U-84HP	**138 908**	**138 909**
6U-42HP	**138 911**	**138 912**
6U-84HP	**138 914**	**138 915**

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

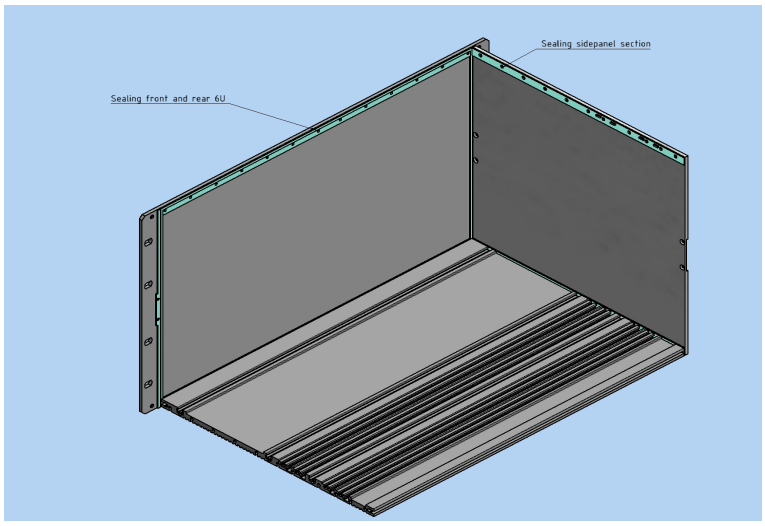
Scope of dedelivery:

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

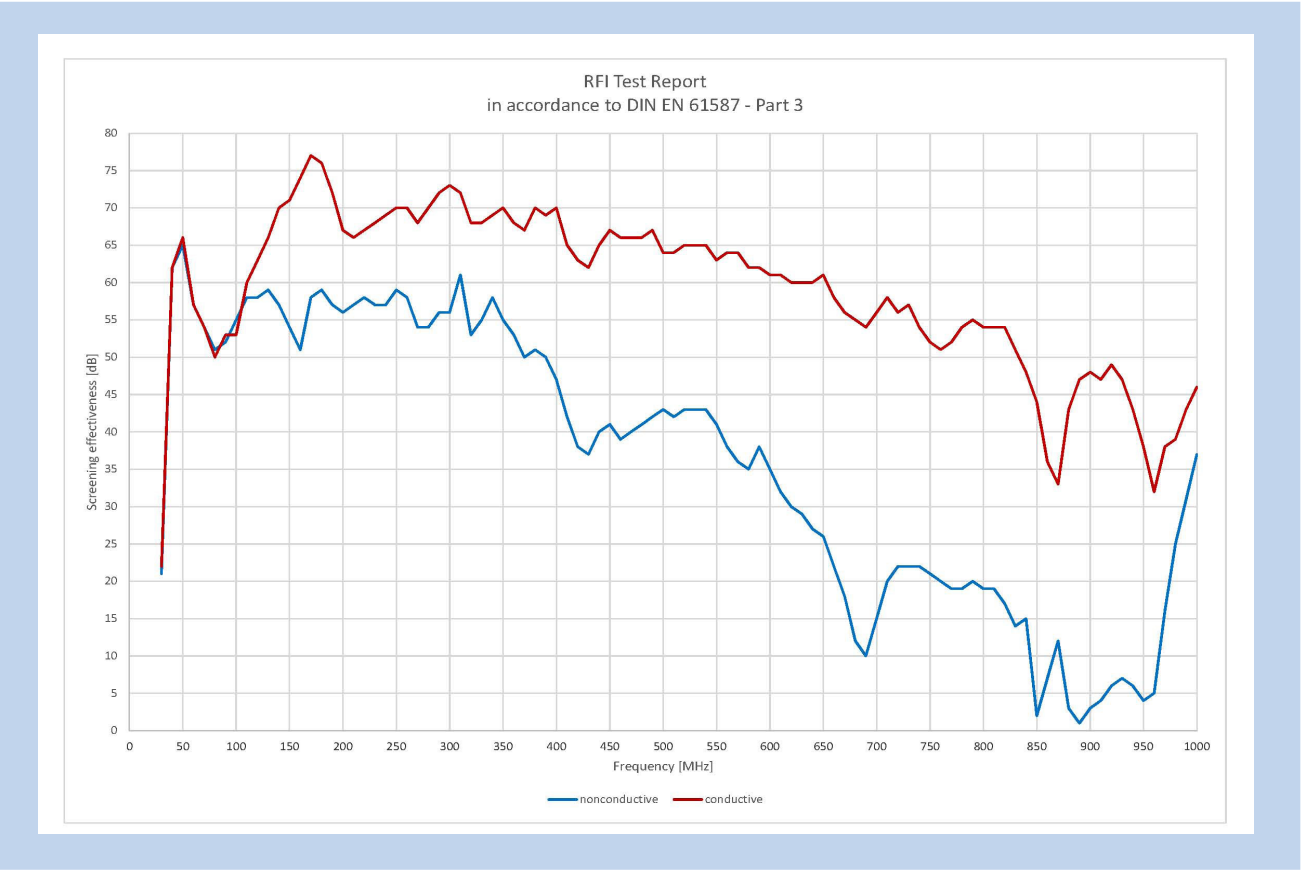
Realisation of the shielding



Subrack 3U



Subrack 6U



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*®

Configuration module

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