

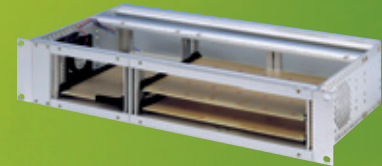
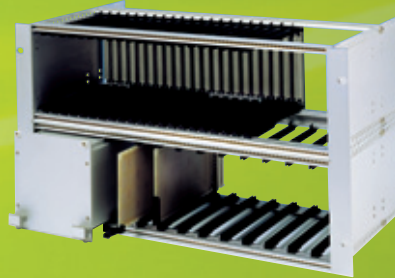
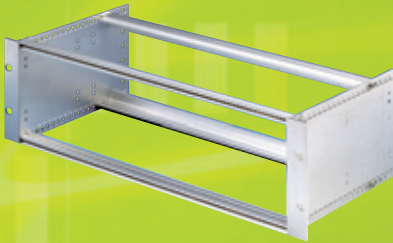
# 19" Electronic Packaging



... the perfect shell for valuable electronics



## 19" subracks



### 3 U subrack 245

page 4

- Width: 84 HP or 42 HP
- can be used for backplanes and connectors in compliance with DIN 41612
- available as:
  - standard subrack ..... 4
  - for wall mounting ..... 8
  - EMC subrack ..... 10

### 6 U subrack 245

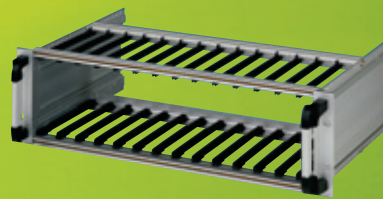
page 13

- Width: 84 HP
- can be used for backplanes and connectors in compliance with DIN 41612
- available as:
  - single-row subrack ..... 13
  - double-row subrack ..... 16
  - subrack with expansion kit ..... 19
  - EMC subrack ..... 22

### 2 U subrack 245

page 25

- Width: 84 HP or 42 HP
- Depth: 236 / 296 mm
- can be used for backplanes and connectors in compliance with DIN 41612
- horizontal expansion kits 3 U / 6 U available



### Individual Configuration 245

page 27

Based on a wide range of components you will be able to exactly fit your needs. Just contact us if there are any questions about customizing your subrack.

### 3 U subrack 270/271

page 52

- Width: 84 HP or 42 HP
- large Depth of up to 448 mm
- can be used for backplanes and connectors in compliance with DIN 41612
- specially designed for the use of sliding rails

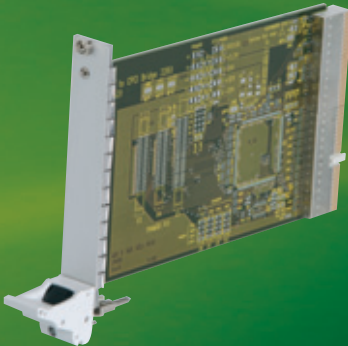
### Frames

page 55

- easy installation into instrument panels or front doors
- The frame is designed for the installation of active components, plug-in units or Euroboards 100 x 160 mm.



## Plug-in units



### Front panels, handles

page 61

- Front panels.....62
- EMC front panels .....65
- Front panels IEEE.....70
- Profile front panels IEEE.....71
- injector / extractor handle IEEE .....72

## Systems



### VME bus systems

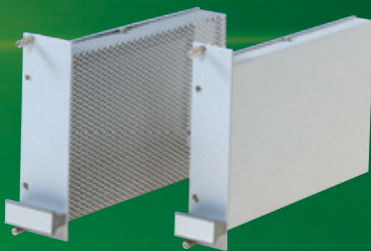
page 83

- 3 U ..... 84
- 7 U ..... 85

### CompactPCI systems

page 86

- 1 U ..... 86
- 1 U ATX ..... 87
- 2 U ..... 88
- 3 U ..... 89
- 6 U ..... 90
- 7 U ..... 91
- 8 U ..... 92
- Desktop system 3 U ..... 93



### Sub-units, plug-in units

page 73

- EMC Sub-units 3 U / 6 U .....73
- Sub-units 3 U .....76
- Sub-units 6 U .....77
- EMC plug-in units 3 U / 6 U .....78
- plug-in units 3 U.....80
- plug-in units 6 U.....81



### System development

page 94

- Based on customer's requirements, apra-norm designs complete systems with electromechanical and electronic components. This includes modifying or redesign of existing products but also the complete new design of enclosure systems.
- In addition to this, we offer system integration of components such as cabling, connectors, switches, backplanes, power supplies, control units and cooling solutions.



## 19" subrack 245



## Reference analyses

The standard subrack 24-5312-11  
underwent the following reference analyses:

- DIN EN 50155  
Railway use of electrical equipment on rail vehicles  
the following were tested: vibrations · broadband noise · long-term test Fh  
shock stressing - Ea test in compliance with DIN 61 373

- DIN EN 61587-1  
Electromechanical designs for electronic systems:  
Tests for mechanical, climate and safety requirements for cabinets, racks  
and plug-in units  
Requirements for shock and vibration stability:  
the following were tested: dynamic tests, DL 4 · resonance analysis - test Fc  
sine wave-form - test Fc  
vibrations, sine wave-form - test Fc  
shock stressing - test Ea  
static test SL1: maximum deflection < 0.4mm

All tests were passed with excellent results.  
The independent test laboratory did not discover any defects.

### 19" subrack 245

- for plug-in units in compliance with IEC 297-3-101/-102/-103 and IEEE 1101.10/1101.11
- EMC-compliant design
- complete solutions with integrated ventilation
- wide range of standard products
- individual configurations available
- also available as VME bus or CompactPCI system
- wide range of accessories



### 19" subrack, 3 U

- high stability
- basic kit with a wide range of accessories
- easy and quick assembly
- depth mounting increment  $d = 10\text{mm}$
- side panels with twist lock for module rails
- Please ask for our assembly service.



### Specifications

#### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

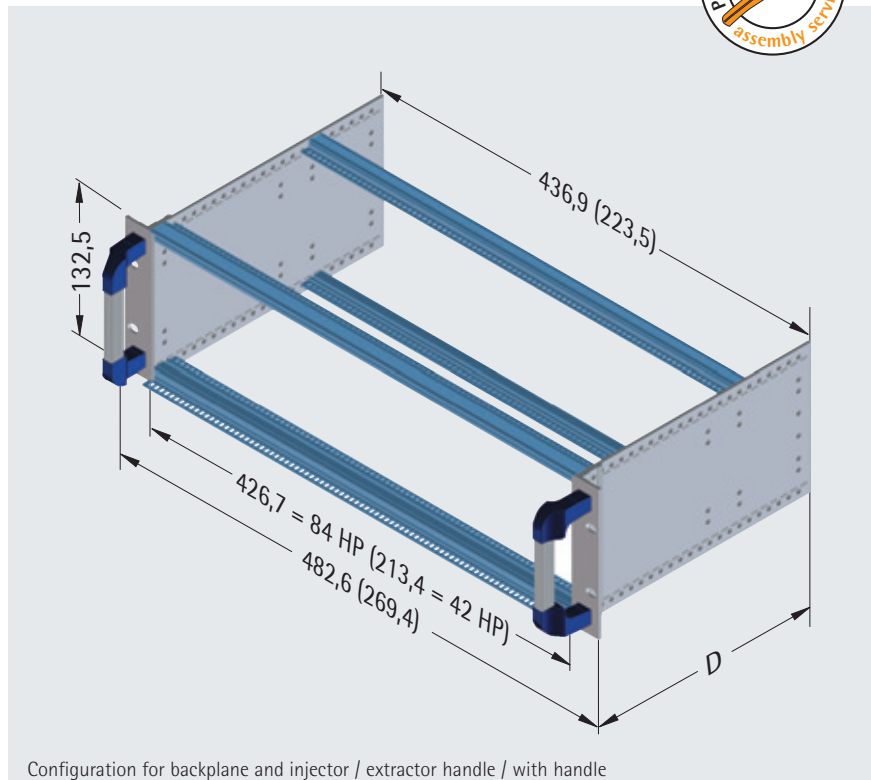
#### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated  
 Module rail: aluminium extrusion transparent chromated  
 Front fixing brackets: aluminium extrusion transparent chromated

Delivery: kit

### Included in delivery

Item	Pc.	Description
1	2	Module rails, front
2	2	Module rails, rear
3	2	Side panels
4	2	Front fixing bracket with or without handle
5	8	Oval-head screws, M 4 x 12 self-locking
6	2	Threaded inserts, M 2.5 7 mm x 2 mm
7	2	Threaded inserts, M 2.5 5 mm x 1,5 mm (for rear BUS module rails)
8		Assembly material



### Accessories

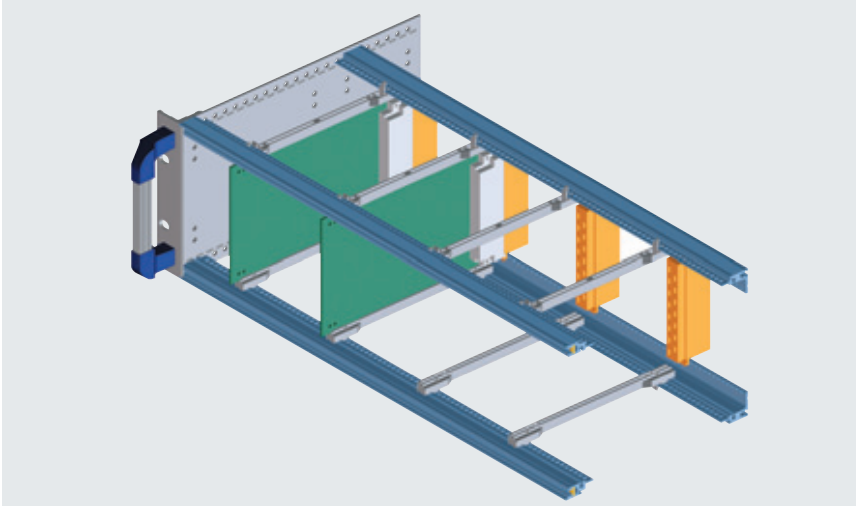
Expansion kit for 3 U subracks p. 38  
 Cover panels EMC p. 36  
 Rear panels p. 36  
 Card guides p. 44  
 Insulating strips p. 43

### Suitable components

Front panels p. 62  
 Injector / extractor handle p. 72  
 Sub-units p. 73  
 EMC plug-in units p. 78



### Configuration for connectors according to DIN 41612



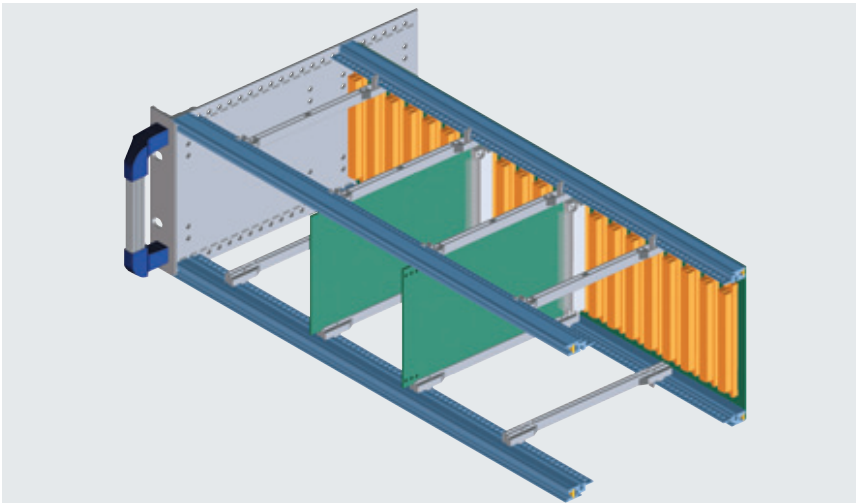
**front**

standard module rails 241-022  
threaded inserts, M 2.5

**rear**

narrow module rails 241-019  
with built-in mounting rails for connectors in compliance with  
DIN 41612

### Configuration for backplane



**front**

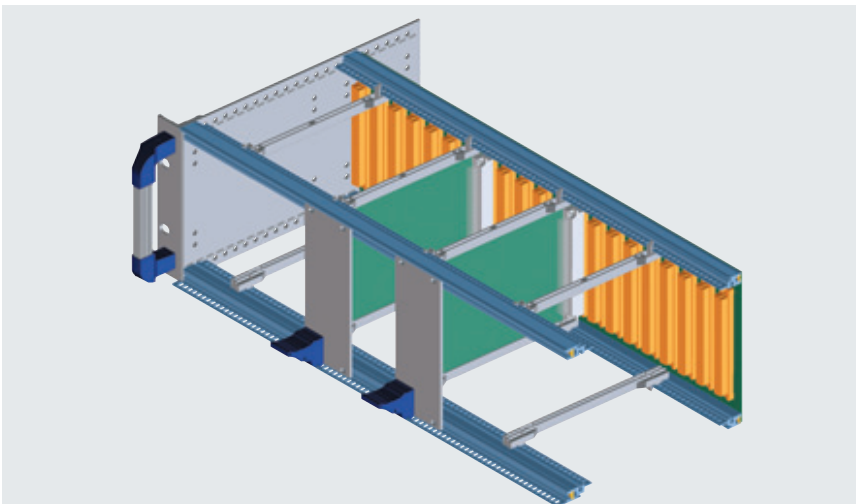
standard module rails 241-022  
threaded inserts, M 2.5

**rear**

BUS module rails 241-013  
threaded inserts, M 2.5

**Note:** Please order insulating strips or EMC gas-kets separately (see p. 43).

### Configuration for backplane and injector / extractor handle



**front**

standard module rail 241-022,  
standard module rail 241-049  
with 10mm clearance for insertion/  
extraction handle  
threaded inserts, M 2.5

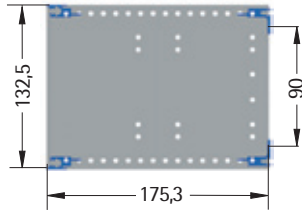
**rear**

BUS module rails 241-013  
threaded inserts, M 2.5

**Note:** Please order insulating strips or EMC gas-kets separately (see p. 43).

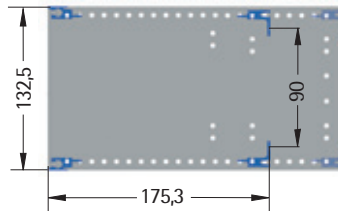


176 mm depth



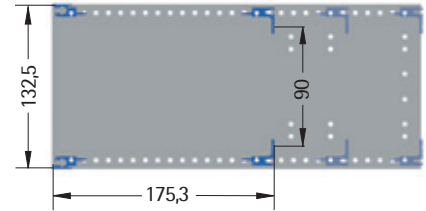
Description	Part no.
84 HP, with handle	24-5314-11
84 HP, without handle	24-5311-11
42 HP, with handle	24-5334-11
42 HP, without handle	24-5331-11

236 mm depth



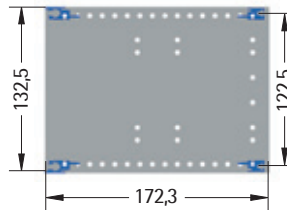
Description	Part no.
84 HP, with handle	24-5315-11
84 HP, without handle	24-5312-11
42 HP, with handle	24-5335-11
42 HP, without handle	24-5332-11

296 mm depth



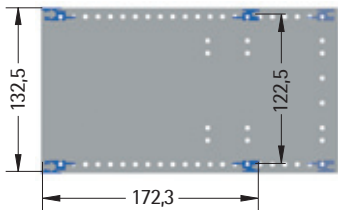
Description	Part no.
84 HP, with handle	24-5316-11
84 HP, without handle	24-5313-11
42 HP, with handle	24-5336-11
42 HP, without handle	24-5333-11

176 mm depth



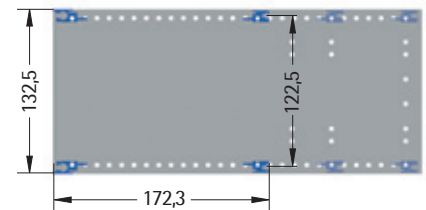
Description	Part no.
84 HP, with handle	24-5314-21
84 HP, without handle	24-5311-21
42 HP, with handle	24-5334-21
42 HP, without handle	24-5331-21

236 mm depth



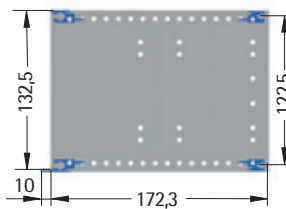
Description	Part no.
84 HP, with handle	24-5315-21
84 HP, without handle	24-5312-21
42 HP, with handle	24-5335-21
42 HP, without handle	24-5332-21

296 mm depth



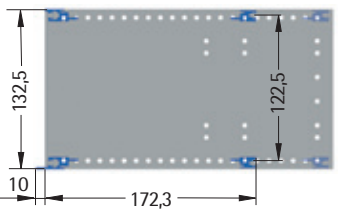
Description	Part no.
84 HP, with handle	24-5316-21
84 HP, without handle	24-5313-21
42 HP, with handle	24-5336-21
42 HP, without handle	24-5333-21

176 mm depth



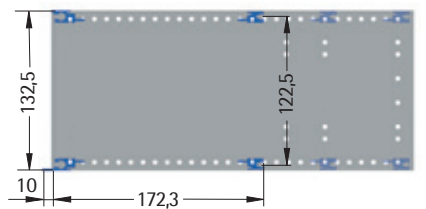
Description	Part no.
84 HP, with handle	24-5314-31
84 HP, without handle	24-5311-31
42 HP, with handle	24-5334-31
42 HP, without handle	24-5331-31

236 mm depth



Description	Part no.
84 HP, with handle	24-5315-31
84 HP, without handle	24-5312-31
42 HP, with handle	24-5335-31
42 HP, without handle	24-5332-31

296 mm depth

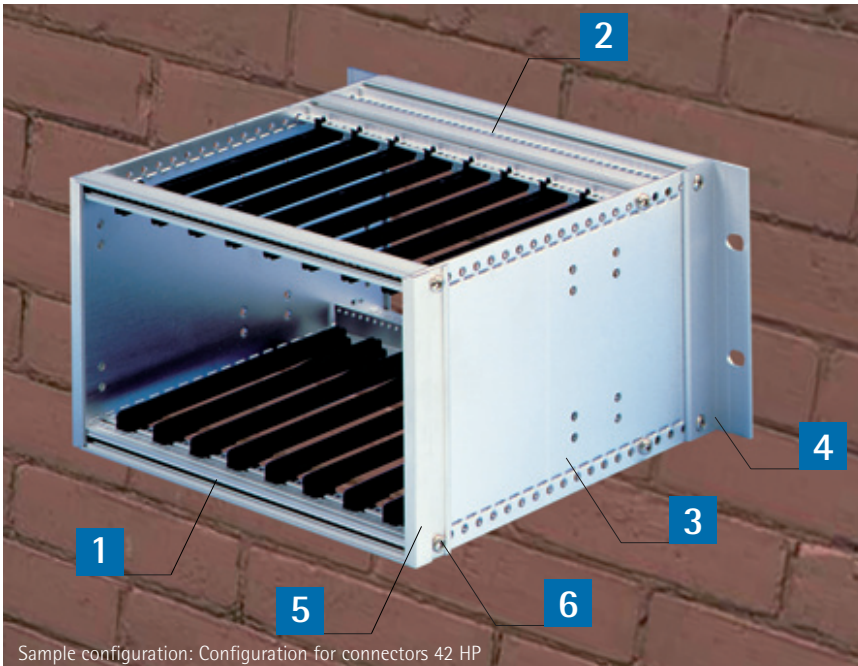


Description	Part no.
84 HP, with handle	24-5316-31
84 HP, without handle	24-5313-31
42 HP, with handle	24-5336-31
42 HP, without handle	24-5333-31

**Note:** All drawings shown in side view. The lighter colour rear rails show optional installation positions. Please order insulating strips and EMC gaskets separately.



## 245 • 19" subrack 3 U, for wall mounting

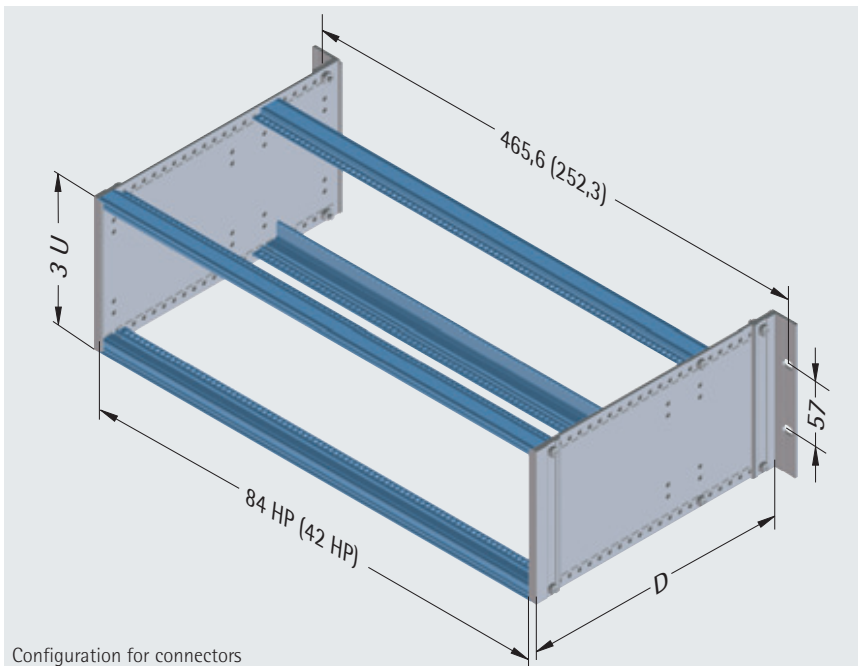


Sample configuration: Configuration for connectors 42 HP

### 19" subrack 3 U for wall mounting

- depth mounting increment  $d = 10\text{mm}$
- can be easily expanded
- side panels with twist lock for module rails

### Specifications



Configuration for connectors

#### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

#### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated  
 Module rail: aluminium extrusion transparent chromated  
 Front / cover, bracket: aluminium extrusion transparent chromated

Delivery: kit

### Included in delivery

Item	Pc.	Description
1	2	Module rails, front
2	2	Module rails, rear
3	2	Side panels
4	2	Front bracket
5	2	Rear bracket
6	8	Oval-head screws M 4 x 12 self-locking

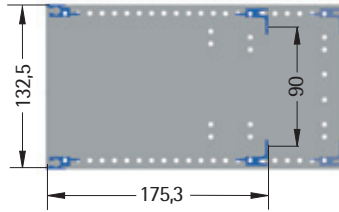
Item	Pc.	Description
7	2	Threaded inserts, M 2.5 7 mm x 2 mm
8	2	Threaded inserts, M 2.5 5 mm x 1,5 mm (for rear BUS module rail)
9		Assembly material

**Note:** Please order insulating strips or EMC gas-kets separately (see p. 43).



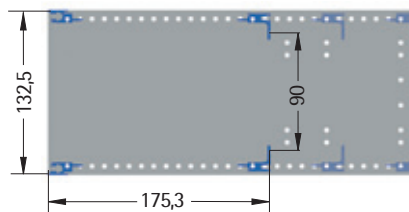
**Configuration for connectors according to DIN 41612**

236 mm depth



Description	Part no.
84 HP	24-5312-17
42 HP	24-5332-17

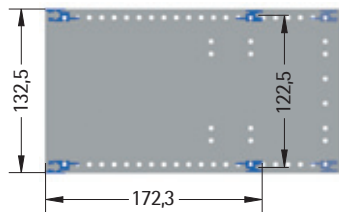
296 mm depth



Description	Part no.
84 HP	24-5313-17
42 HP	24-5333-17

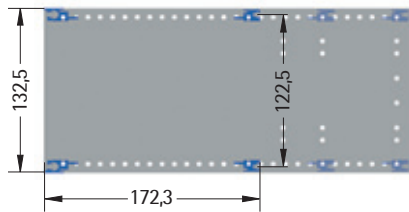
**Configuration for backplane**

236 mm depth



Description	Part no.
84 HP	24-5312-27
42 HP	24-5332-27

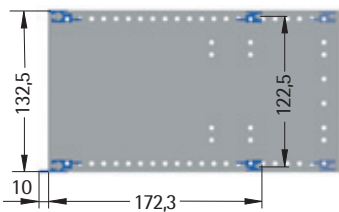
296 mm depth



Description	Part no.
84 HP	24-5313-27
42 HP	24-5333-27

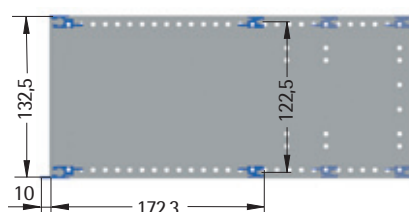
**Configuration for backplane and injector / extractor handle**

236 mm depth



Description	Part no.
84 HP	24-5312-37
42 HP	24-5332-37

296 mm depth



Description	Part no.
84 HP	24-5313-37
42 HP	24-5333-37

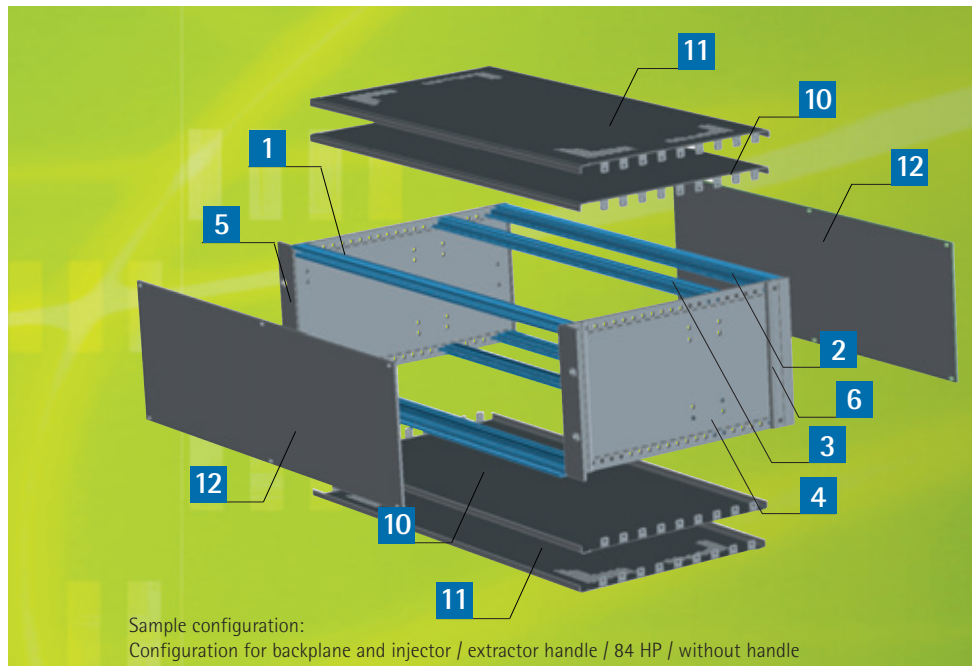
**Accessories**

6 U expansion kit for 3 U subracks	p. 38
Cover panels EMC	p. 36
Rear panels	p. 36
EMC contact gaskets	p. 40
Card guides	p. 44
Insulating strips	p. 43

**Suitable components**

Front panels	p. 62
Injector / extractor handle	p. 72
Sub-units	p. 73
EMC plug-in units	p. 78

**Note:** Other depths available on request. All drawings shown in side view. The lighter colour rear rails show optional installation positions.

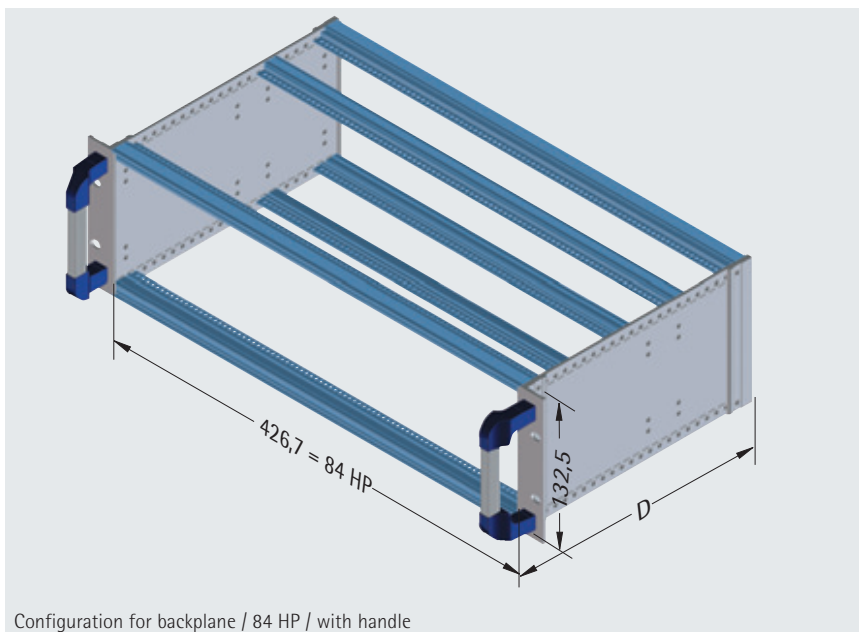


Sample configuration:  
Configuration for backplane and injector / extractor handle / 84 HP / without handle

### 19" subrack, 3 U, 84 HP – EMC

- protection against electromagnetic environmental influences
- protects the environment from internal radiation
- chromated surfaces connect all components
- expanded EMC delivery:
  - module rail, rear **2**
  - cover bracket **6**
- side panels with twist lock for module rails

### Specifications



Configuration for backplane / 84 HP / with handle

#### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

#### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated  
 Module rail: aluminium extrusion transparent chromated  
 Front / cover bracket: aluminium extrusion transparent chromated

Delivery: kit

### Included in delivery

Item	Pc.	Description
<b>1</b>	2	Module rails, front
<b>2</b>	2	Module rail, rear
<b>3</b>	2	Module rails, middle
<b>4</b>	2	Side panels
<b>5</b>	2	Front bracket with or without handle
<b>6</b>	2	Rear bracket

Item	Pc.	Description
<b>7</b>	4	Threaded inserts, M 2.5 7 mm x 2 mm
<b>8</b>	2	Threaded inserts, M 2.5 5 mm x 1,5 mm (for middle BUS module rail)
<b>9</b>	12	Oval-head screws M 4 x 12 self-locking Assembly material

#### Note:

For high EMC shielding, please order cover plates, front plates and other EMC-shielding material separately (see page 40).



### Configuration for connectors according to DIN 41612

**front**

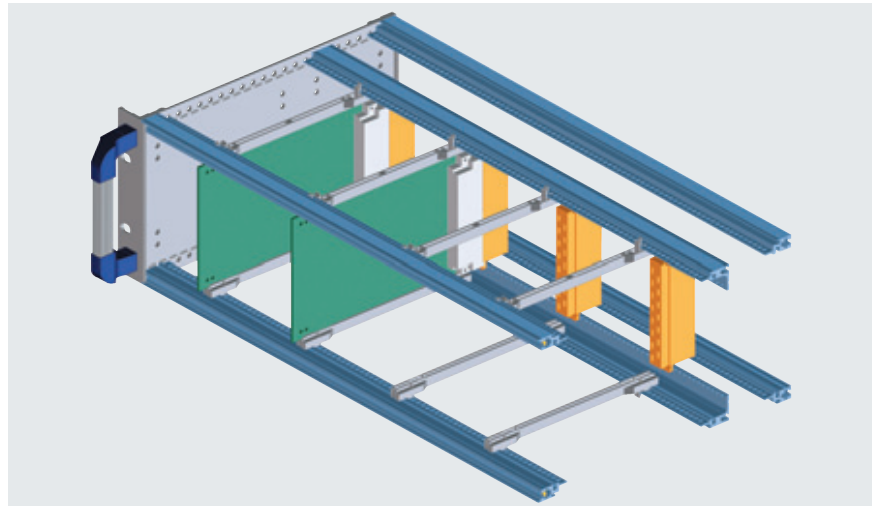
standard module rails 241-022  
threaded inserts, M 2.5

**middle**

narrow module rails 241-019  
with integrated mounting rails for connectors in compliance with DIN 41612

**rear**

standard module rails 241-022



### Configuration for backplane

**front**

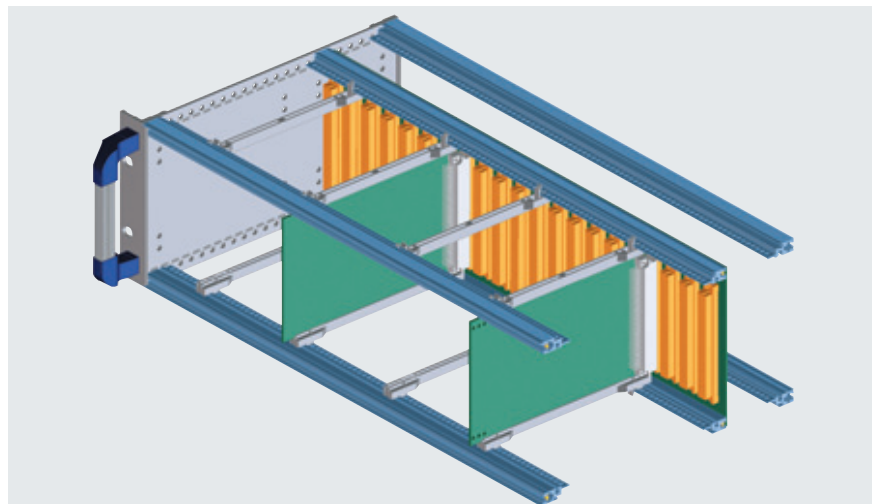
standard module rails 241-022  
threaded inserts, M 2.5

**middle**

BUS module rails 241-013  
threaded inserts, M 2.5

**rear**

standard module rails 241-022



### Configuration for backplane and injector / extractor handle

**front**

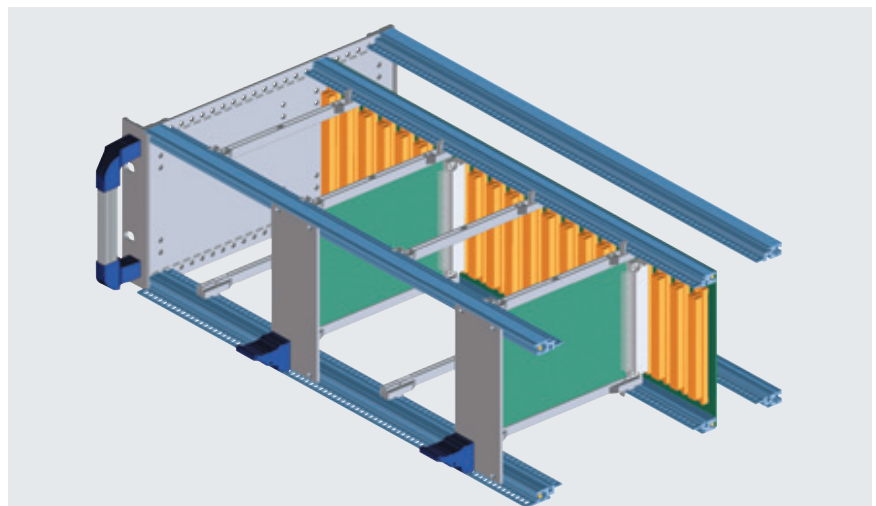
standard module rail 241-022,  
standard module rail 241-049  
with 10 mm clearance for insertion/  
extraction handle  
threaded inserts, M 2.5

**middle**

BUS module rails 241-013  
threaded inserts, M 2.5

**rear**

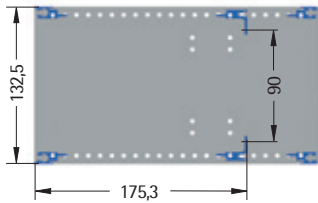
standard module rails 241-022





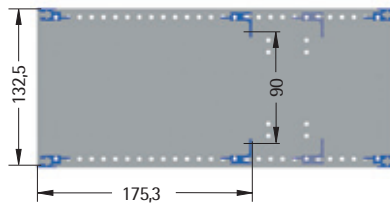
**Configuration for connectors according to DIN 41612**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5315-16
84 HP, without handle	24-5312-16

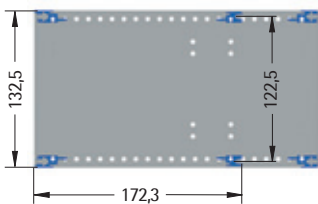
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5316-16
84 HP, without handle	24-5313-16

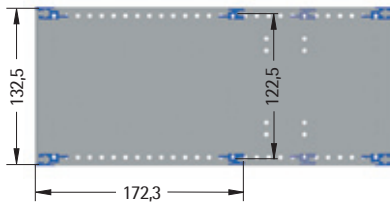
**Configuration for backplane**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5315-26
84 HP, without handle	24-5312-26

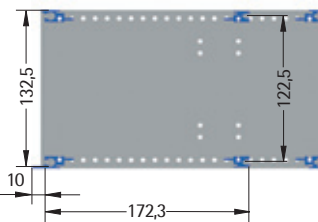
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5316-26
84 HP, without handle	24-5313-26

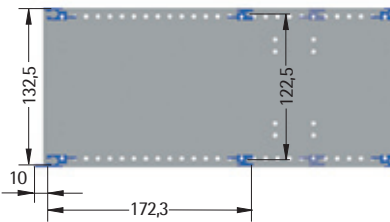
**Configuration for backplane and injector / extractor handle**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5315-36
84 HP, without handle	24-5312-36

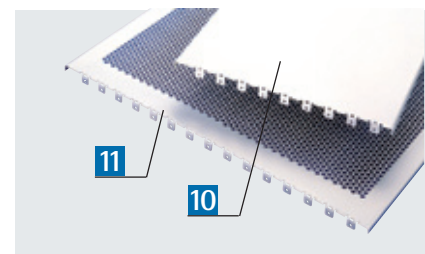
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5316-36
84 HP, without handle	24-5313-36

**Accessories**

**Cover panel EMC, 84 HP**



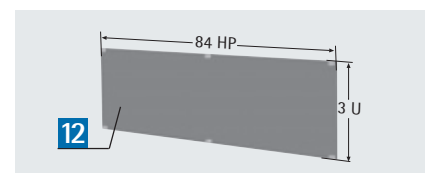
The ventilated EMC cover panels have honeycomb perforations, which allow maximum air flow. They also provide good EMC protection.

**Finish:** transparent chromated  
**Material:** aluminium

Item	Pc.	Description
10	1	Cover panel, solid
<b>Depth</b>	<b>D=236 mm</b>	<b>D=296 mm</b>
<b>Part no.</b>	24-5012-40	24-5013-40

Item	Pc.	Description
11	1	Cover panel, perforated
<b>Depth</b>	<b>D=236 mm</b>	<b>D=296 mm</b>
<b>Part no.</b>	24-5012-48	24-5013-48

**Front/rear shielding panel, 84 HP**

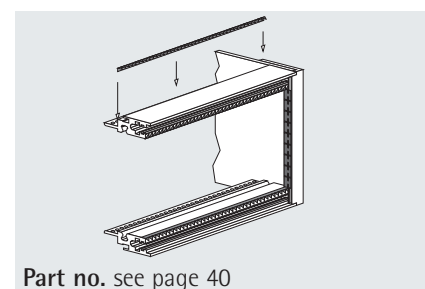


**Finish:** anodized exterior, transparent chromated interior

**Material:** aluminium, 2.5mm

Item	Pc.	Height	Part no.
12	1	3 U	24-3884-13

**EMC contact gasket set**



**Part no.** see page 40

**Note:** All drawings shown in side view. The lighter colour rear rails show optional installation positions.



## 19" subrack, 6 U single row

- high stability
- basic kit with a wide range of accessories
- easy and quick assembly
- depth mounting increment  $d = 10\text{mm}$
- side panels with twist lock for module rails



## Specifications

### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

### Material/Finish:

Side panels: aluminium 2,5 mm  
transparent chromated  
Module rail: aluminium extrusion  
transparent chromated  
Front fixing brackets:  
aluminium extrusion  
transparent chromated

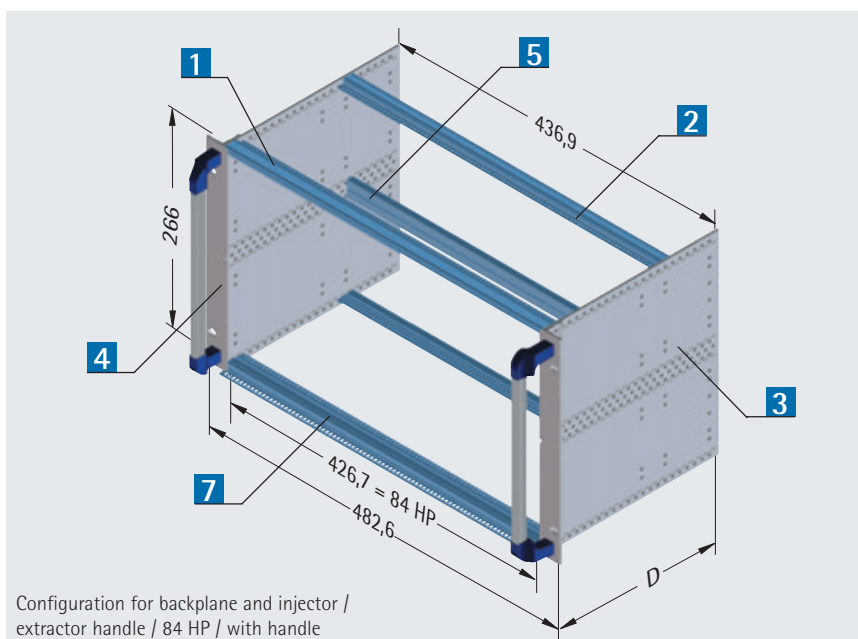
Delivery: kit

## Accessories

Expansion kit for 6 U subrack p. 38  
Cover panels EMC p. 36  
Rear panels p. 36  
EMC contact gaskets p. 40  
Card guides p. 44  
Insulating strips p. 43

## Suitable components

Front panels p. 62  
Injector / extractor handle p. 72  
Sub-units p. 73  
EMC plug-in units p. 78



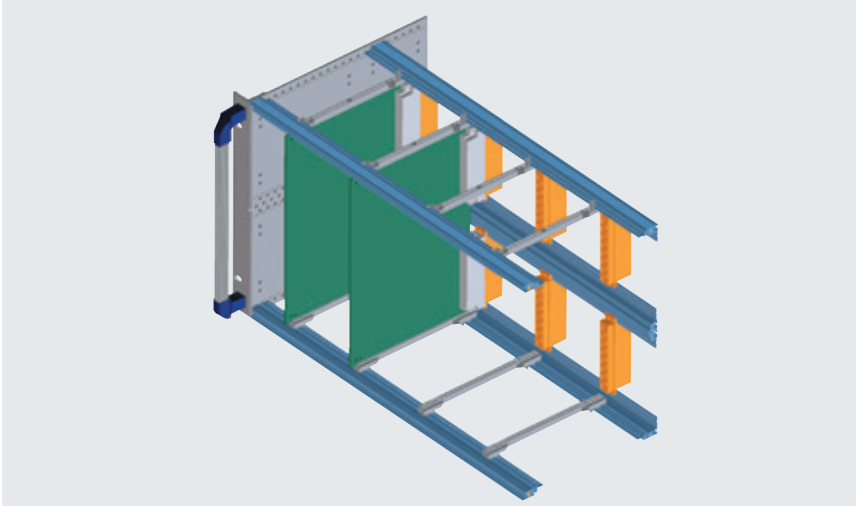
## Included in delivery

Item	Pc.	Description
1	2	Module rails, front
2	2	Module rails, rear
3	2	Side panels
4	2	Front bracket with or without handle
5	1	Mounting rail
6	8	Oval-head screws M 4 x 12 self-locking

Item	Pc.	Description
7	2	Threaded inserts, M 2.5 7 mm x 2 mm
8	4	Threaded inserts, M 2.5 5 mm x 1,5 mm (for rear BUS module rail)
9		Assembly material



### Configuration for connectors according to DIN 41612



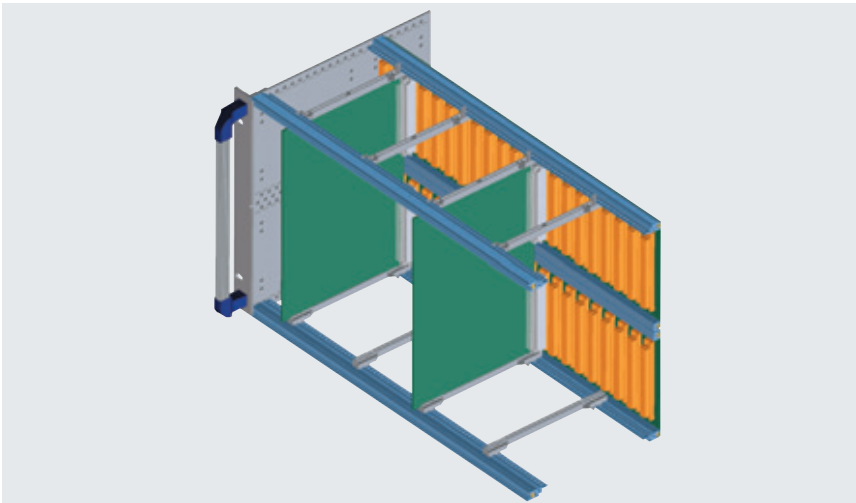
**front**

standard module rails 241-022  
threaded inserts, M 2.5

**rear**

narrow module rails 241-019  
and support rail with integrated mounting  
rails for connectors in compliance with  
DIN 41612

### Configuration for backplane



**front**

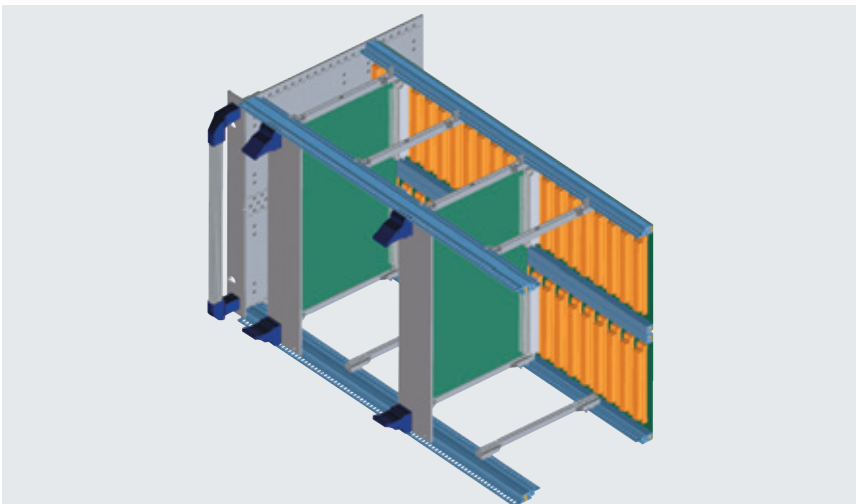
standard module rails 241-022  
threaded inserts, M 2.5

**rear**

BUS module rails 241-013  
threaded inserts, M 2.5

and BUS support rail 241-020  
threaded inserts, M 2.5

### Configuration for backplane and injector / extractor handle



**front**

standard module rails 241-049  
with 10mm clearance for insertion/  
extraction handle  
threaded inserts, M 2.5

**rear**

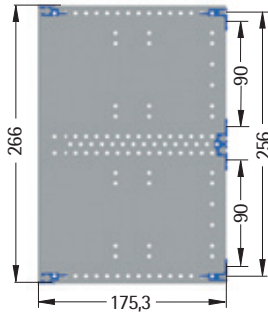
BUS module rails 241-013  
threaded inserts, M 2.5

and BUS support rail 241-020  
threaded inserts, M 2.5

**Note:** Please order insulating strips or EMC gas-  
kets separately (see p. 43).

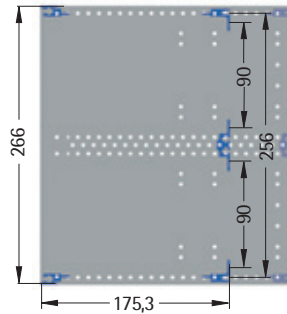


176 mm depth



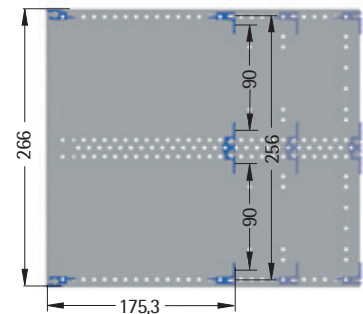
Description	Part no.
84 HP, with handle	24-5614-11
84 HP, without handle	24-5611-11

236 mm depth



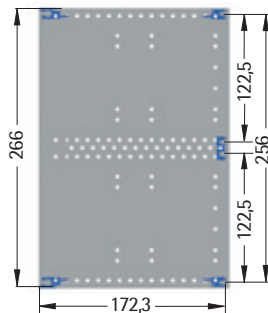
Description	Part no.
84 HP, with handle	24-5615-11
84 HP, without handle	24-5612-11

296 mm depth



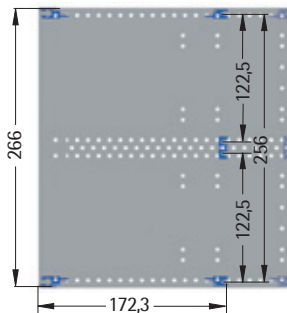
Description	Part no.
84 HP, with handle	24-5616-11
84 HP, without handle	24-5613-11

176 mm depth



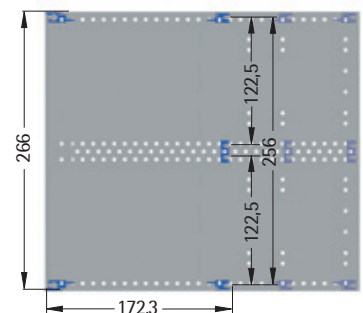
Description	Part no.
84 HP, with handle	24-5614-21
84 HP, without handle	24-5611-21

236 mm depth



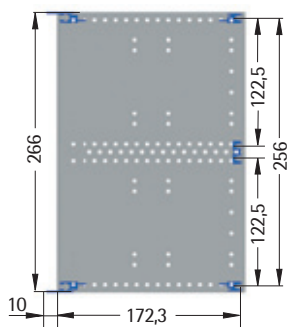
Description	Part no.
84 HP, with handle	24-5615-21
84 HP, without handle	24-5612-21

296 mm depth



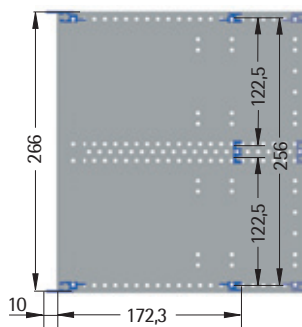
Description	Part no.
84 HP, with handle	24-5616-21
84 HP, without handle	24-5613-21

176 mm depth



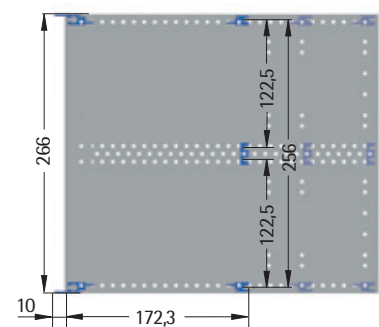
Description	Part no.
84 HP, with handle	24-5614-31
84 HP, without handle	24-5611-31

236 mm depth



Description	Part no.
84 HP, with handle	24-5615-31
84 HP, without handle	24-5612-31

296 mm depth



Description	Part no.
84 HP, with handle	24-5616-31
84 HP, without handle	24-5613-31

**Note:** Other depths available on request. All drawings shown in side view. The lighter colour rear rails show optional installation positions.



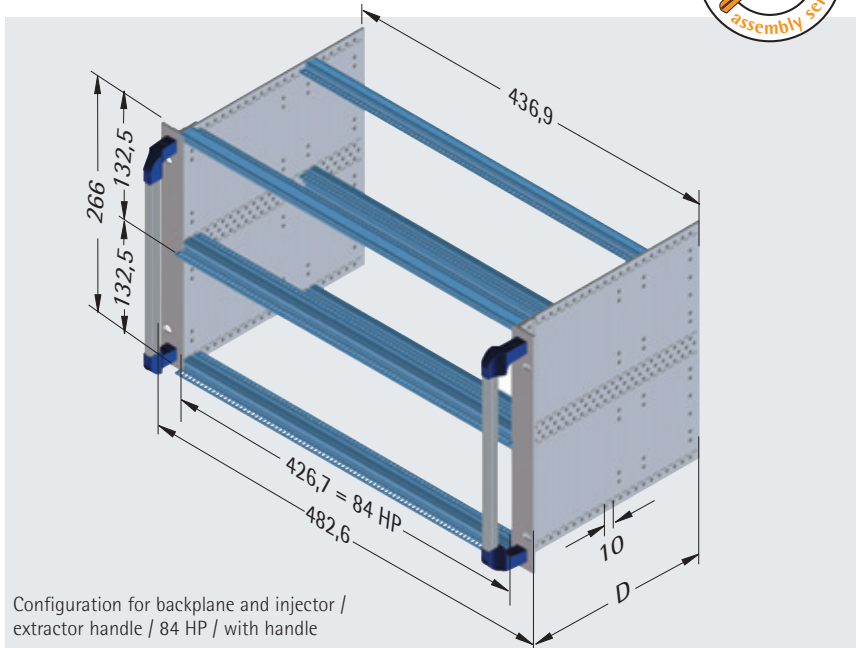
## 245 • 19" subrack 6 U, double row



Sample configuration: Configuration for backplane / 84 HP / without handle



### Specifications



Configuration for backplane and injector / extractor handle / 84 HP / with handle

### Included in delivery

Item	Pc.	Description
1	4	Module rails, front
2	4	Module rails, rear
3	2	Side panels
4	2	Front brackets with or without handle
5	16	Oval-head screws M 4 x 12 self-locking

Item	Pc.	Description
6	4	Threaded inserts, M 2.5 7 mm x 2 mm
7	4	Threaded inserts, M 2.5 5 mm x 1,5 mm (for rear BUS module rail)
8		Assembly material

### 19" subrack 6 U, double row

- high flexibility
- can be extended to EMC model, even between 2 x 3 U front partitions
- depth mounting increment  $d = 10\text{mm}$
- side panels with twist lock for module rails

### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated  
 Module rail: aluminium extrusion transparent chromated  
 Front brackets: aluminium extrusion transparent chromated

Delivery: kit

### Accessories

Cover panels EMC	p. 36
Rear panels	p. 36
EMC contact gaskets	p. 40
Card guides	p. 44
Insulating strips	p. 43

### Suitable components

Front panels	p. 62
Injector / extractor handle	p. 72
Sub-units	p. 73
EMC plug-in units	p. 78



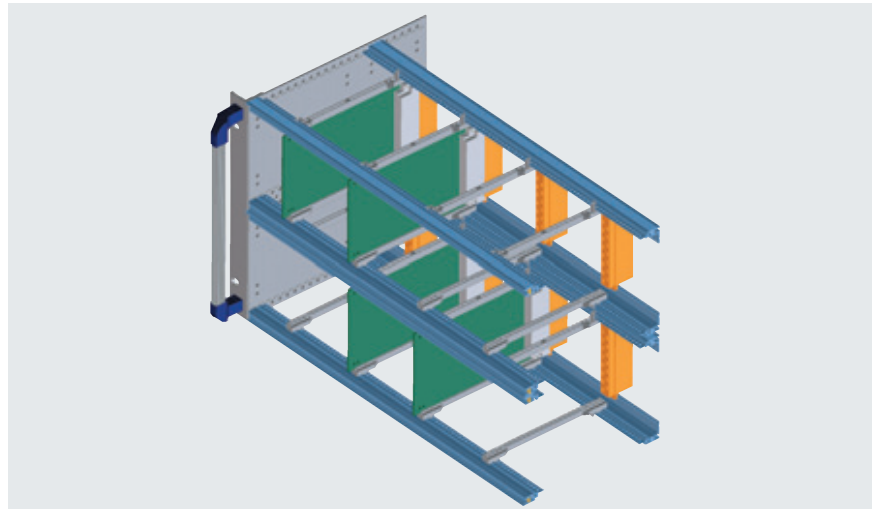
### Configuration for connectors according to DIN 41612

**front**

standard module rails 241-022  
threaded inserts, M 2.5

**rear**

narrow module rails 241-019  
with integrated mounting rails for  
plug-in connections in compliance  
with DIN 41612



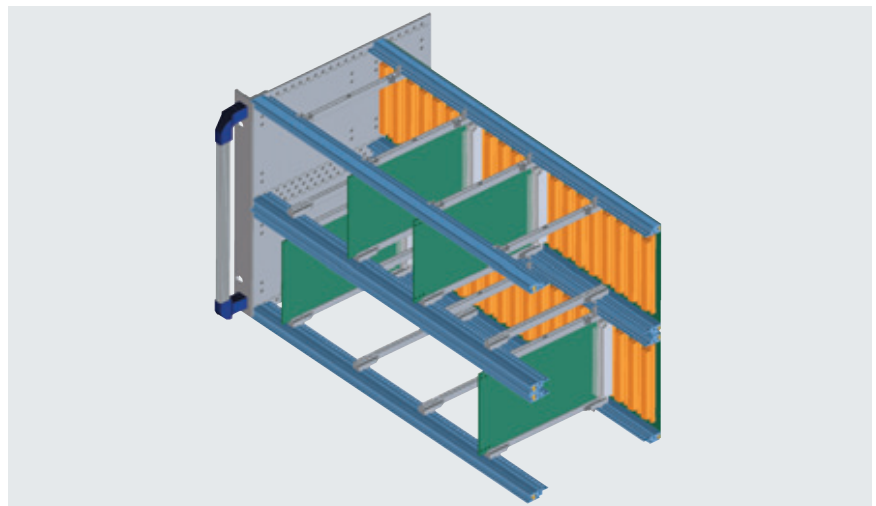
### Configuration for backplane

**front**

standard module rails 241-022  
threaded inserts, M 2.5

**rear**

BUS module rails 241-013  
threaded inserts, M 2.5



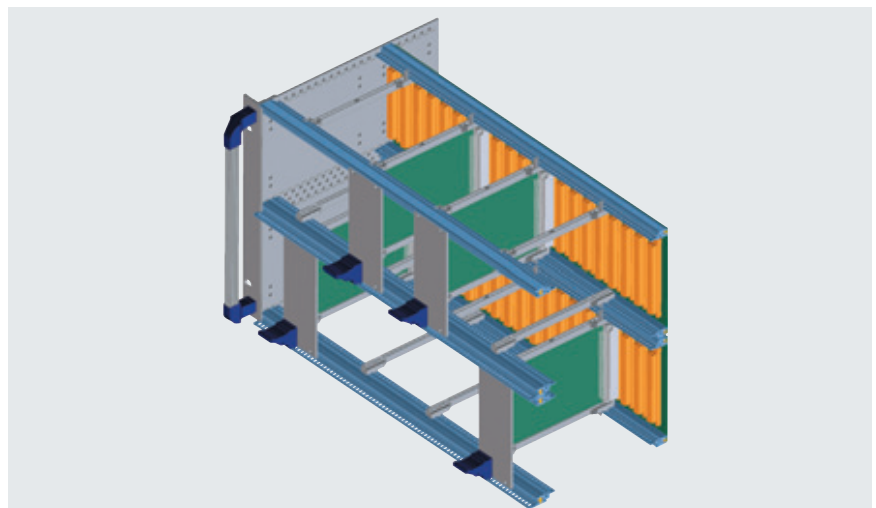
### Configuration for backplane and injector / extractor handle

**front**

standard module rails 241-022,  
standard module rails 241-049  
with 10mm clearance for handles for  
inserting/ removing cards  
threaded inserts, M 2.5

**rear**

BUS module rails 241-013  
threaded inserts, M 2.5

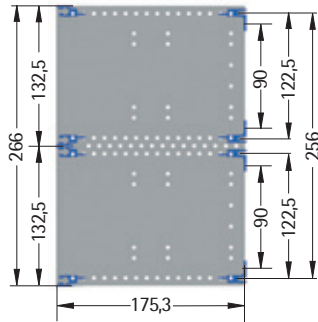


**Note:** Please order insulating strips or EMC gas-kets separately (see p. 43).



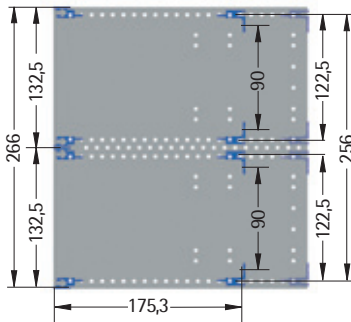
**Configuration for connectors according to DIN 41612**

**176 mm depth**



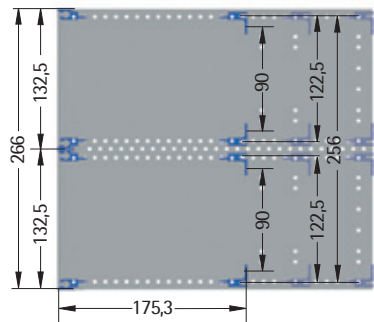
Description	Part no.
84 HP, with handle	24-5614-12
84 HP, without handle	24-5611-12

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-12
84 HP, without handle	24-5612-12

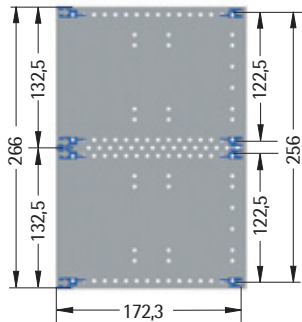
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-12
84 HP, without handle	24-5613-12

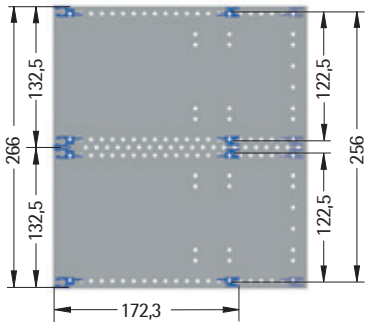
**Configuration for backplane**

**176 mm depth**



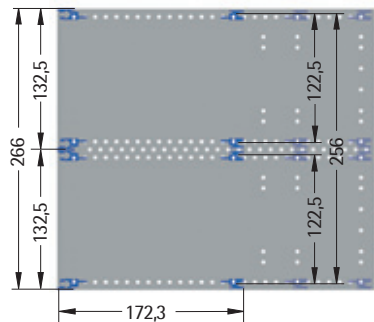
Description	Part no.
84 HP, with handle	24-5614-22
84 HP, without handle	24-5611-22

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-22
84 HP, without handle	24-5612-22

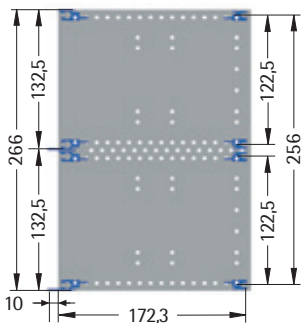
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-22
84 HP, without handle	24-5613-22

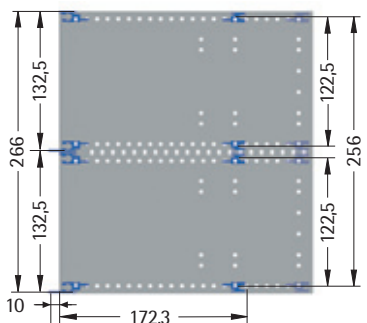
**Configuration for backplane and injector / extractor handle**

**176 mm depth**



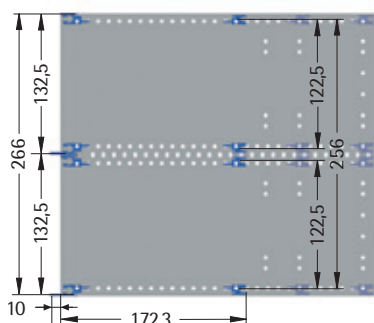
Description	Part no.
84 HP, with handle	24-5614-32
84 HP, without handle	24-5611-32

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-32
84 HP, without handle	24-5612-32

**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-32
84 HP, without handle	24-5613-32



## 19" subrack with 2 x 3 U expansion kit

- high flexibility
- depth mounting increment  $d = 10\text{mm}$
- can be expanded to EMC model, even between the front 2 x 3 U partitions
- side panels with twist lock for module rails

### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

- Euroboards, 100 mm x 160 mm
- double Euroboards, 233.35 mm x 160 mm

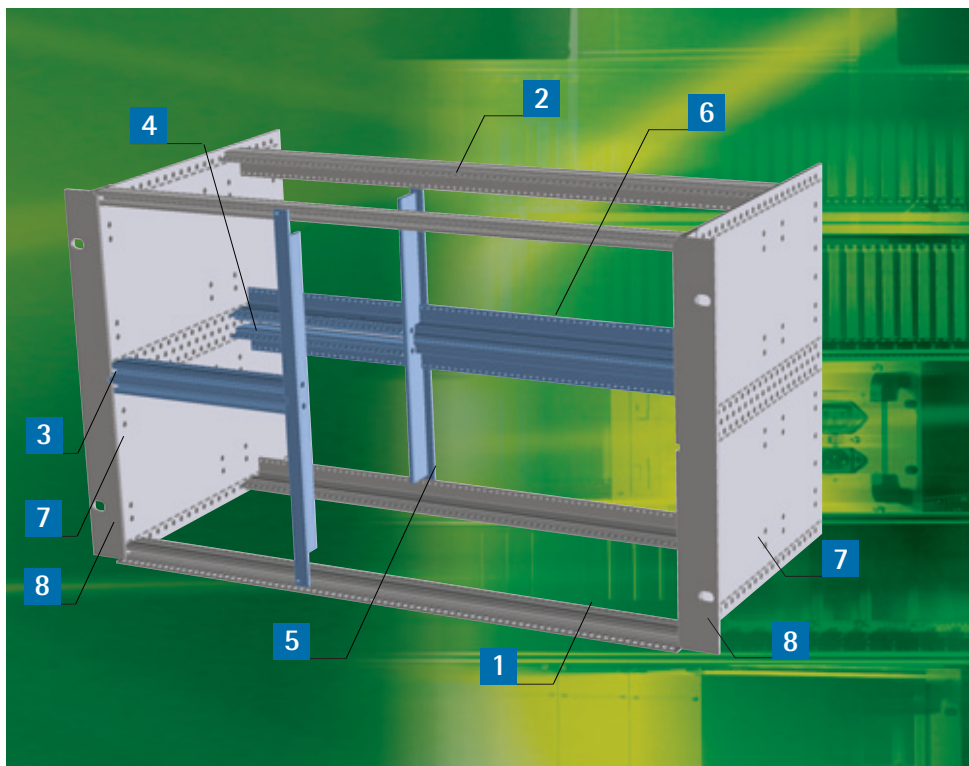
### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated

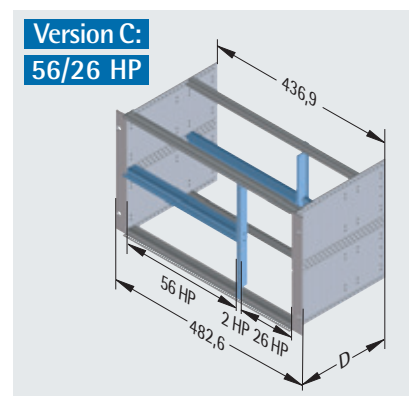
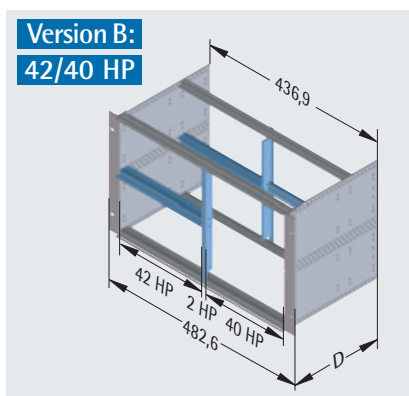
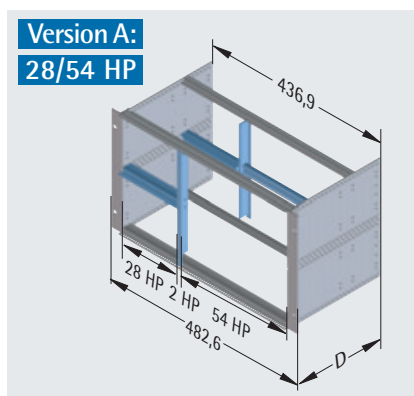
Module rail: aluminium extrusion transparent chromated

Front brackets: aluminium extrusion transparent chromated

Delivery: kit



## Specifications



### Accessories

Cover panels EMC	p. 36
Rear panels	p. 36
EMC contact gaskets	p. 40
Card guides	p. 44
Insulating strips	p. 43

### Suitable components

Front panels	p. 62
Injector / extractor handle	p. 72
Sub-units	p. 73
EMC plug-in units	p. 78

**Note:** By use of front brackets, the usable width is reduced to 82 HP.

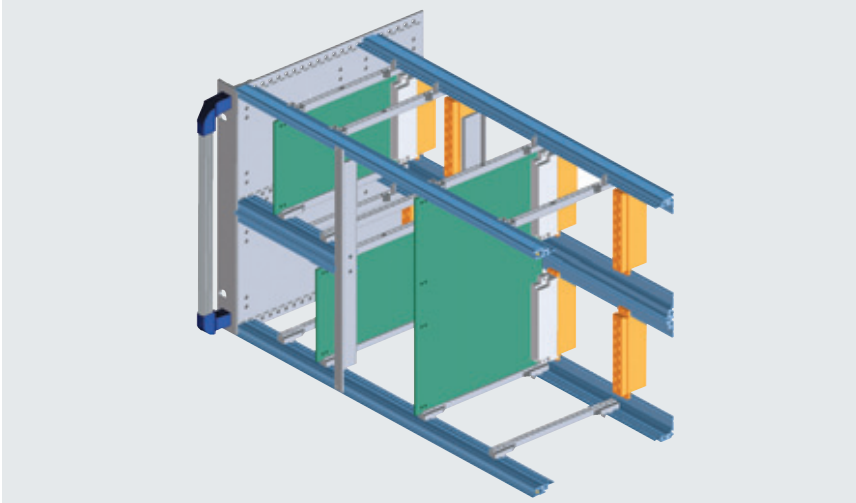
### Included in delivery

Item	Pc.	Description
1	2	Module rails, front, 85 HP
2	2	Module rails, rear, 85 HP
3	2	Module rails, front 29/43/57 HP
4	2	Module rails, rear 29/43/57 HP
5	2	Mounting struts
6	1	Support rail 55,5/41,5/27,5 HP
7	2	Side panels
8	2	Front bracket with / without handle
9	17	Oval-head screws M 4 x 12

Item	Pc.	Description
10	2	Threaded inserts M 2.5 84 HP
11	2	Threaded inserts M 2.5 84 HP (for rear BUS module rail)
12	2	Threaded inserts M 2.5 27/41/55 HP
13	2	Threaded inserts M 2,5 54/40/26 HP (for rear BUS module rail)
14	2	Threaded inserts M 2.5 55/41/27 HP (for rear BUS support rail)
15		Assembly material



### Configuration for connectors according to DIN 41612



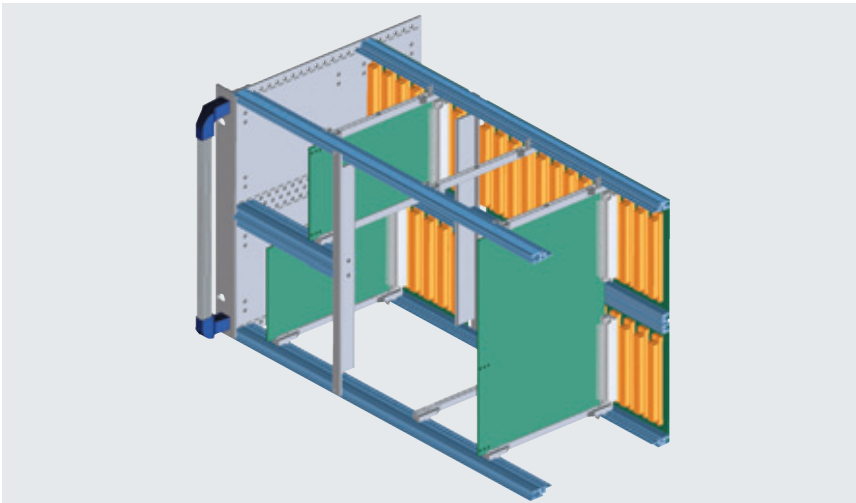
**front**

standard module rails 241-022  
threaded inserts, M 2.5

**rear**

narrow module rails 241-019 and  
support rail with integrated mounting  
rails for connectors in compliance with  
DIN 41612

### Configuration for backplane



**front**

standard module rails 241-022  
threaded inserts, M 2.5

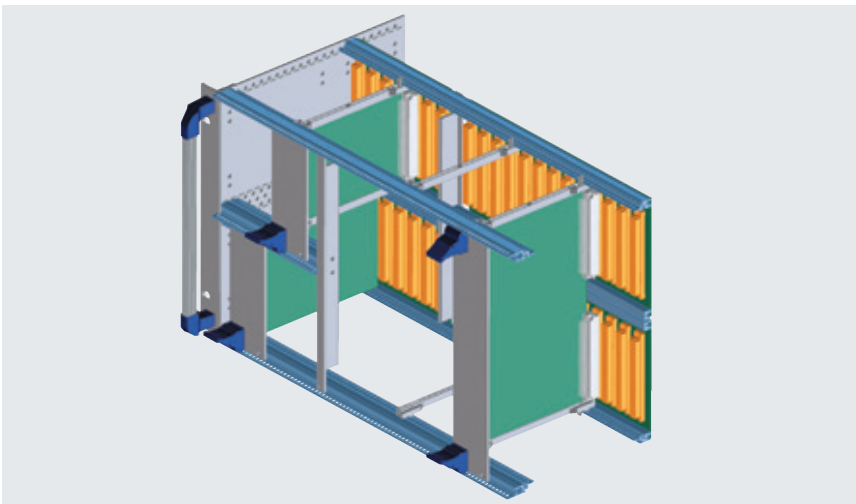
**rear**

BUS module rails 241-013  
threaded inserts, M 2.5

and BUS support rail 241-020  
threaded inserts, M 2.5

**Note:** Please order insulating strips or EMC gas-  
kets separately (see p. 43).

### Configuration for backplane and injector / extractor handle



**front**

standard module rails 241-022,  
standard module rail 241-049  
with 10mm clearance for insertion/  
extraction handle and for threaded  
threaded inserts, M 2.5

**rear**

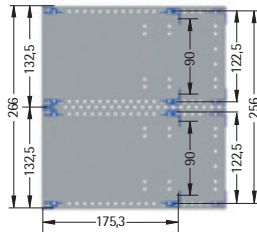
BUS module rails 241-013  
threaded inserts, M 2.5

and BUS support rail 241-020  
threaded inserts, M 2.5

**Note:** Please order insulating strips or EMC gas-  
kets separately (see p. 43).

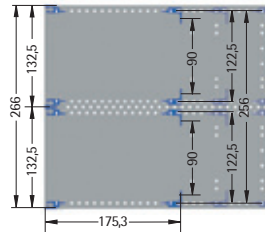


## 236 mm depth



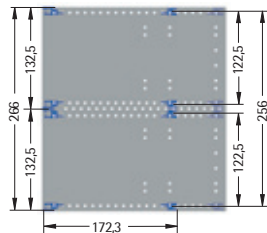
Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5615-13
28/54 HP, without handle	24-5612-13
<b>B</b> 42/40 HP, with handle	24-5615-14
42/40 HP, without handle	24-5612-14
<b>C</b> 56/26 HP, with handle	24-5615-15
56/26 HP, without handle	24-5612-15

## 296 mm depth



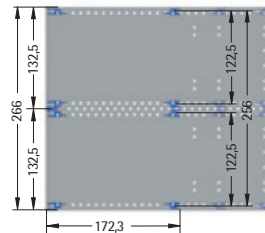
Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5616-13
28/54 HP, without handle	24-5613-13
<b>B</b> 42/40 HP, with handle	24-5616-14
42/40 HP, without handle	24-5613-14
<b>C</b> 56/26 HP, with handle	24-5616-15
56/26 HP, without handle	24-5613-15

## 236 mm depth



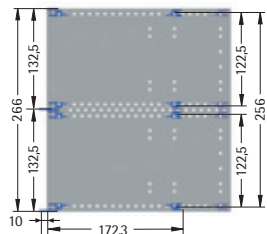
Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5615-23
28/54 HP, without handle	24-5612-23
<b>B</b> 42/40 HP, with handle	24-5615-24
42/40 HP, without handle	24-5612-24
<b>C</b> 56/26 HP, with handle	24-5615-25
56/26 HP, without handle	24-5612-25

## 296 mm depth



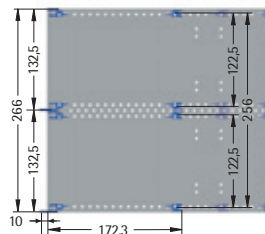
Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5616-23
28/54 HP, without handle	24-5613-23
<b>B</b> 42/40 HP, with handle	24-5616-24
42/40 HP, without handle	24-5613-24
<b>C</b> 56/26 HP, with handle	24-5616-25
56/26 HP, without handle	24-5613-25

## 236 mm depth



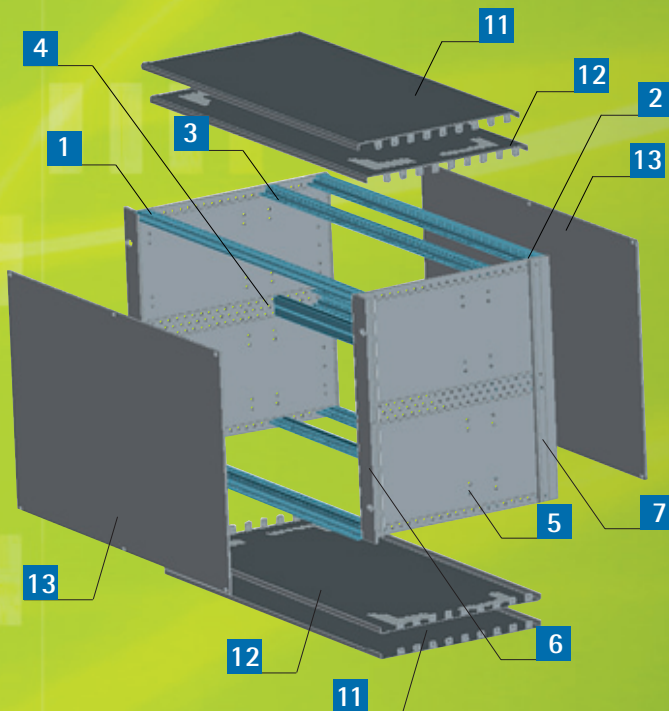
Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5615-33
28/54 HP, without handle	24-5612-33
<b>B</b> 42/40 HP, with handle	24-5615-34
42/40 HP, without handle	24-5612-34
<b>C</b> 56/26 HP, with handle	24-5615-35
56/26 HP, without handle	24-5612-35

## 296 mm depth



Description	Part no.
<b>A</b> 28/54 HP, with handle	24-5616-33
28/54 HP, without handle	24-5613-33
<b>B</b> 42/40 HP, with handle	24-5616-34
42/40 HP, without handle	24-5613-34
<b>C</b> 56/26 HP, with handle	24-5616-35
56/26 HP, without handle	24-5613-35

**Note:** Other depths available on request. All drawings shown in side view. The lighter colour rear rails show optional installation positions.



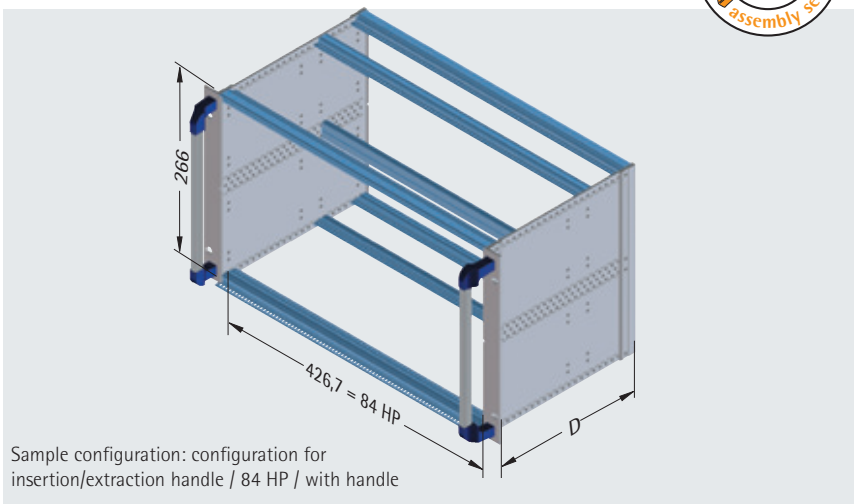
### 19" subrack, 6 U, 84 HP - EMC

- protection against electromagnetic environmental influences
- protects the environment from internal radiation
- chromated surfaces connect all components
- expanded EMC delivery:
  - module rails, rear **2**
  - cover bracket **7**
- side panels with twist lock for module rails

#### Shielding attenuation measurement:

An independent institute conducted shielding attenuation measurements on the subrack in compliance with VG 95373 Part 15 in the frequency range of 30 MHz to 1000 MHz. The resulting shielding attenuation curve is available on request.

### Specifications



Sample configuration: configuration for insertion/extraction handle / 84 HP / with handle

#### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

#### Material:

Side panels: aluminium 2,5 mm transparent chromated  
 Module rail: aluminium extrusion transparent chromated  
 Front / cover bracket: aluminium extrusion transparent chromated

Delivery: kit

### Included in delivery

Item	Pc.	Description
<b>1</b>	2	Module rails, front
<b>2</b>	2	Module rails, rear
<b>3</b>	2	Module rails, middle
<b>4</b>	1	Support rail, middle
<b>5</b>	2	Side panels
<b>6</b>	2	Front bracket with or without handle
<b>7</b>	2	Rear bracket

Item	Pc.	Description
<b>8</b>	4	Threaded inserts, M 2.5 7 mm x 2 mm
<b>9</b>	4	Threaded inserts, M 2.5 5 mm x 1,5 mm (for middle BUS module rail)
<b>10</b>	14	Oval-head screws M 4 x 12 self-locking Assembly material

#### Note:

For high EMC shielding, please order cover plates, front plates and other EMC-shielding material separately (see page 40).



### Configuration for connectors according to DIN 41612

**front**

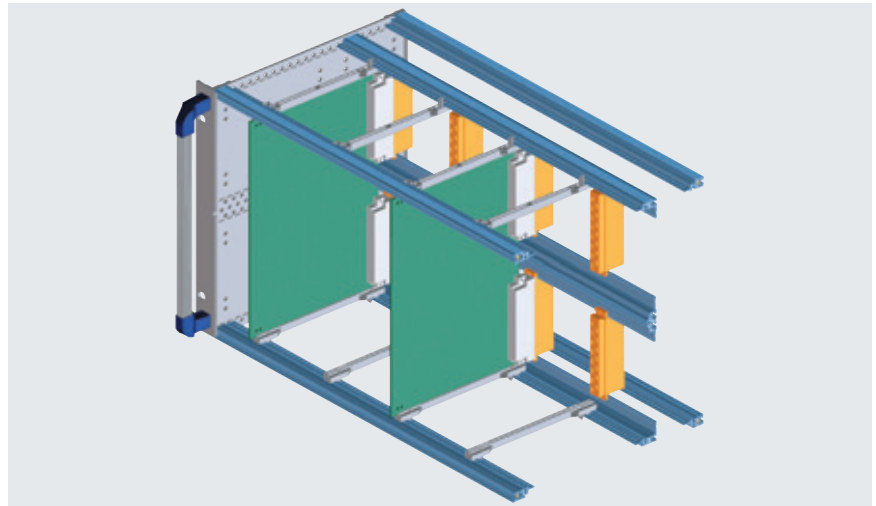
standard module rails 241-022  
threaded inserts, M 2.5

**middle**

narrow module rails 241-019  
and support rail 241-008  
with integrated mounting rails for con-  
nectors in compliance with DIN 41612

**rear**

standard module rails 241-022  
threaded inserts, M 2.5



### Configuration for backplane

**front**

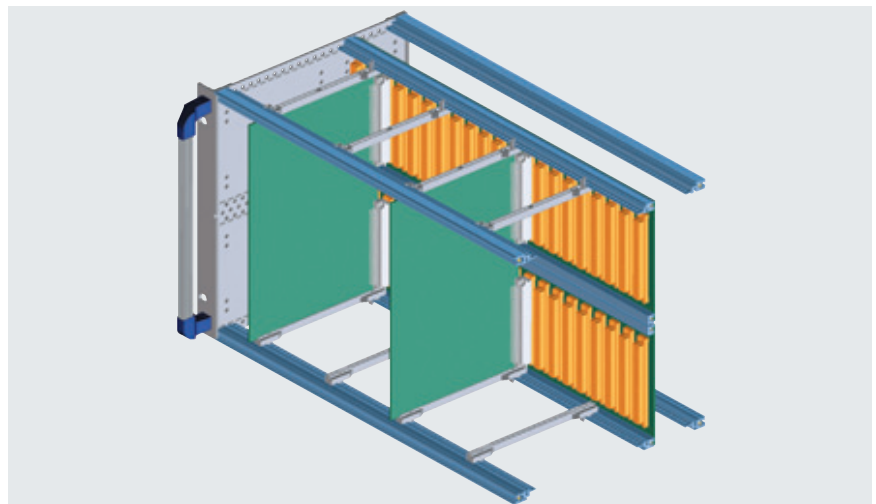
standard module rails 241-022  
threaded inserts, M 2.5

**middle**

BUS module rails 241-013,  
BUS support rail 241-020  
threaded inserts, M 2.5

**rear**

standard module rails 241-022  
threaded inserts, M 2.5



### Configuration for backplane and injector / extractor handle

**front**

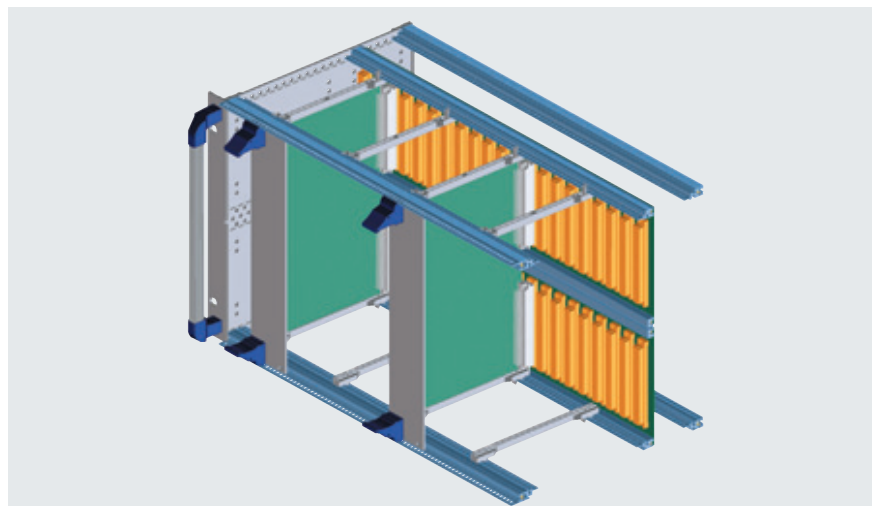
standard module rails 241-049  
with 10mm clearance for insertion/  
extraction handle  
threaded inserts, M 2.5

**middle**

BUS module rails 241-013,  
BUS support rail 241-020  
threaded inserts, M 2.5

**rear**

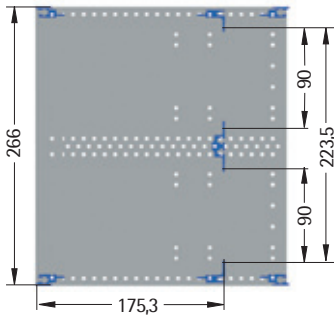
standard module rail 241-022  
threaded inserts, M 2.5





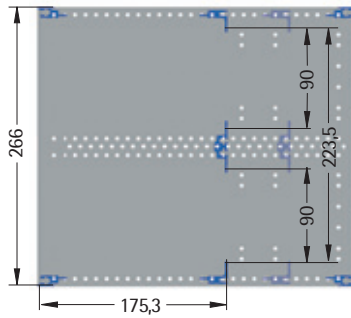
**Configuration for connectors according to DIN 41612**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-16
84 HP, without handle	24-5611-16

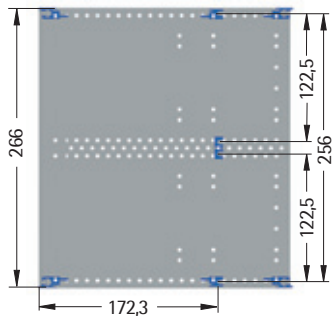
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-16
84 HP, without handle	24-5612-16

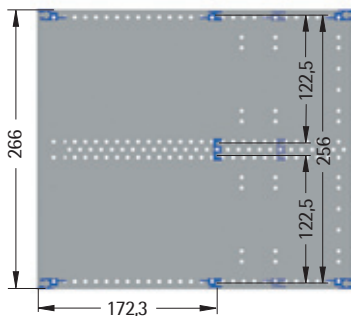
**Configuration for backplane**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-26
84 HP, without handle	24-5611-26

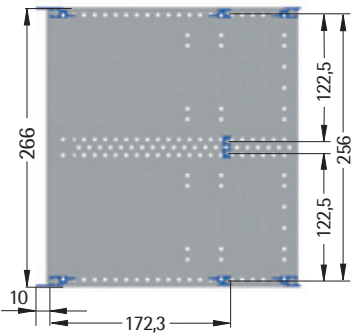
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-26
84 HP, without handle	24-5612-26

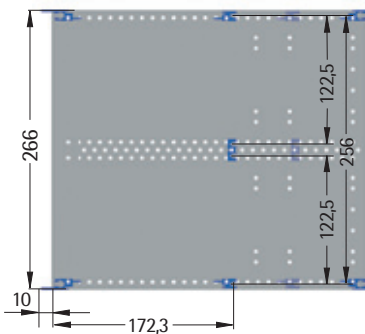
**Configuration for backplane and injector / extractor handle**

**236 mm depth**



Description	Part no.
84 HP, with handle	24-5615-36
84 HP, without handle	24-5611-36

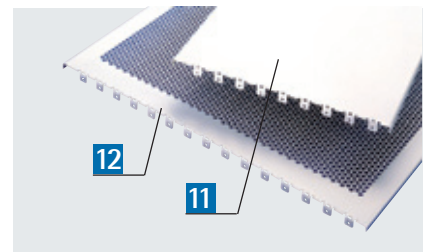
**296 mm depth**



Description	Part no.
84 HP, with handle	24-5616-36
84 HP, without handle	24-5612-36

**Accessories**

**Cover panel EMC, 84 HP**



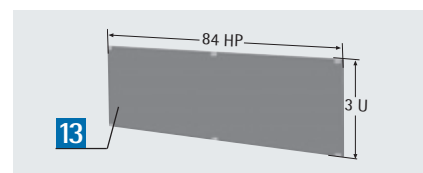
The ventilated EMC cover panels have honeycomb perforations, which allow maximum air flow. They also provide good EMC protection.

**Finish:** transparent chromated  
**Material:** aluminium

Item	Pc.	Description
11	1	Cover panel, solid
<b>Depth</b>	<b>D=236 mm</b>	<b>D=296 mm</b>
<b>Part no.</b>	24-5012-40	24-5013-40

Item	Pc.	Description
12	1	Cover panel, ventilated
<b>Depth</b>	<b>D=236 mm</b>	<b>D=296 mm</b>
<b>Part no.</b>	24-5012-48	24-5013-48

**Front/rear 2, 84 HP**

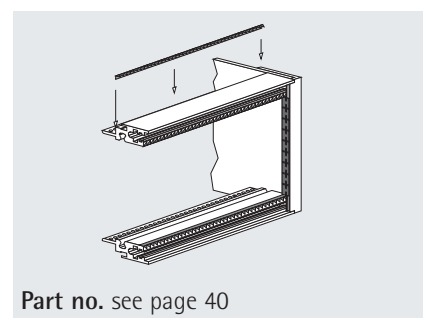


**Finish:** anodized exterior, transparent chromated interior

**Material:** aluminium 2.5 mm

Item	Pc.	Height	Part no.
13	1	6 U	24-3884-16

**EMC contact gasket set**

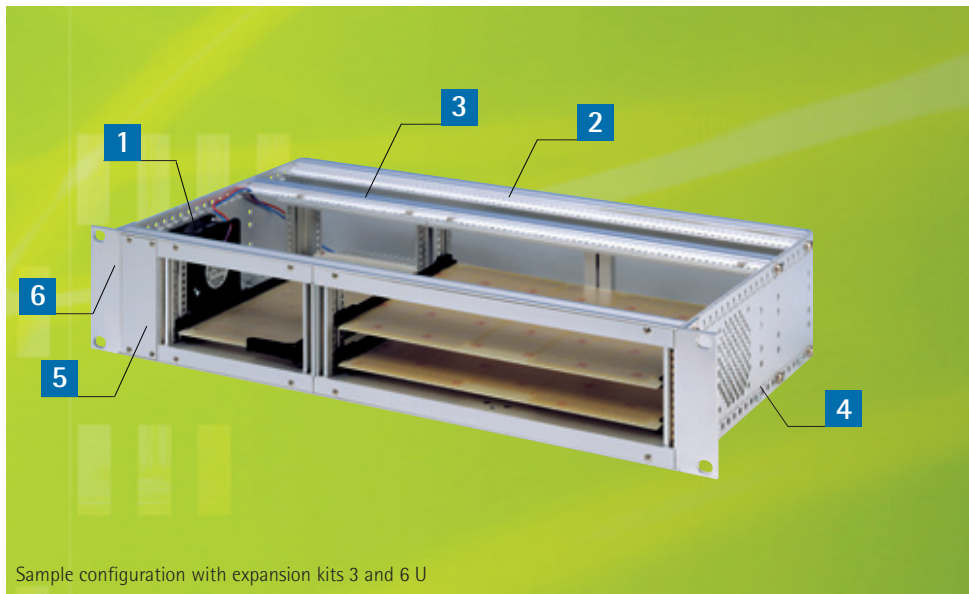


**Part no.** see page 40



### 19" subrack 2 U, 84 HP

- ventilated side panels with fan option
- ideal for installing subracks vertically in appropriate 19" apra-norm wall-mounted enclosures
- side panels with twist lock for module rails



### Specifications

#### Application:

for plug-in units in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

#### Material/Finish:

Side panels: aluminium 2,5 mm transparent chromated

Module rail: aluminium extrusion transparent chromated

Front / rear bracket: aluminium extrusion transparent chromated

Delivery: kit

### Versions

#### front

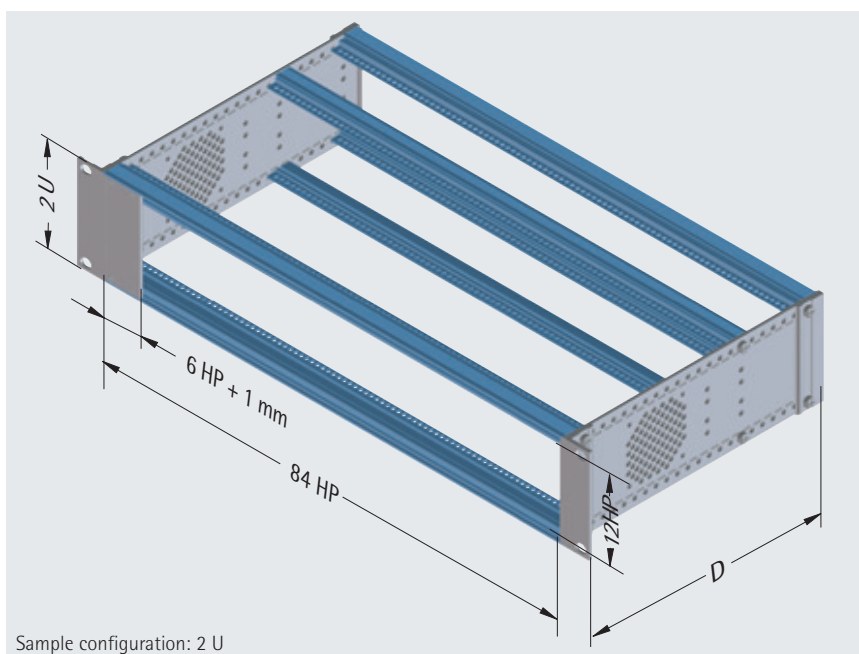
standard module rails 241-022  
threaded inserts, M 2.5

#### middle

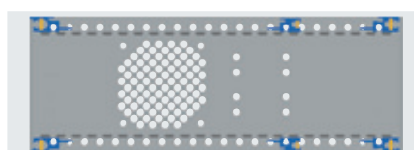
BUS module rails 241-013  
threaded inserts, M 2.5

#### rear

standard module rails 241-022  
threaded inserts, M 2.5



### Included in delivery



Description	Part no.
D=236 mm	24-5212-28
D=296 mm	24-5213-28

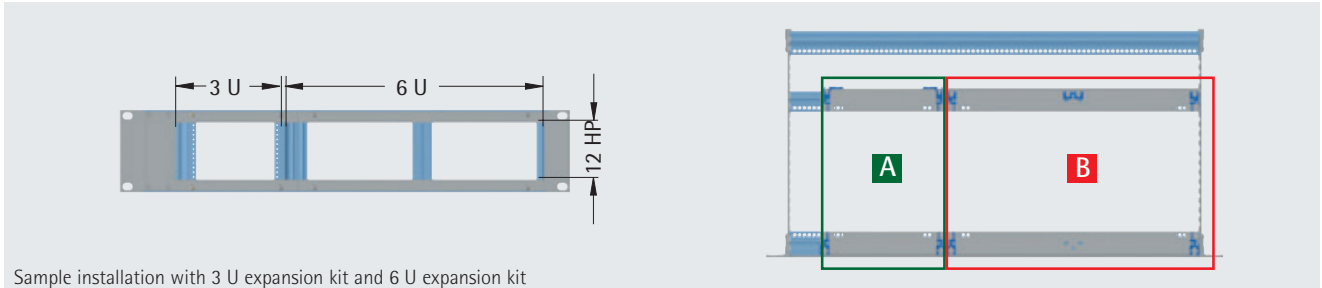
Item	Pc.	Description
1	2	Module rails, front
2	2	Module rails, rear
3	2	Module rails, middle
4	2	Side panels, ventilated
5	1	Front panel 6 HP
6	2	Front bracket
7	2	Rear bracket
8	4	Threaded inserts, M 2.5 7 mm x 2 mm

Item	Pc.	Description
9	2	Threaded inserts, M 2.5 5 mm x 1,5 mm (for rear BUS module rail)
10	12	Oval-head screws M 4 x 12 self-locking
11		Assembly material



Accessories

Expansion kits



Sample installation with 3 U expansion kit and 6 U expansion kit

- for installing Euroboards or double Euroboards horizontally in a 2 U sub-rack
- the following combinations are possible in 84 HP subracks:

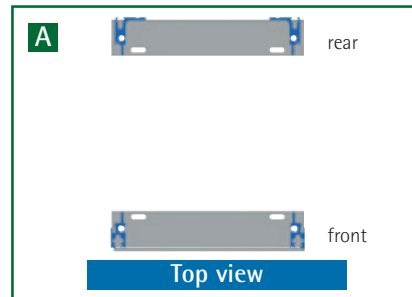
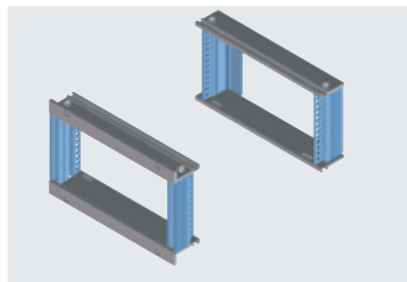
one 3 U expansion kit + one 6 U expansion kit

up to three 3 U expansion kits

**Note:** Horizontal expansion kits for 3 U subracks on p. 38.

**Expansion kit, 3 U/12 HP**

- for installing Euroboards horizontally



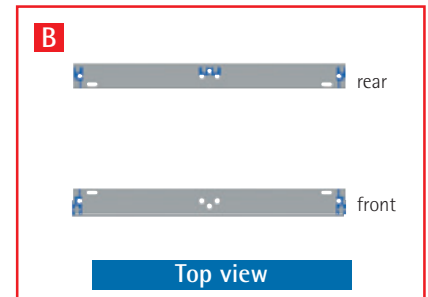
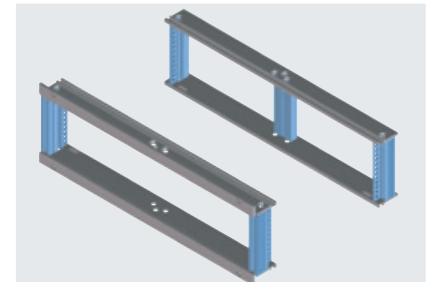
front standard module rails  
profile no. 241-022

rear narrow module rails  
with integrated mounting rail for connectors in compliance with DIN 41612, profile no. 241-019

<b>Part no.</b>	
24-5312-61	

**Expansion kit, 6 U/12 HP**

- for installing double Euroboards horizontally

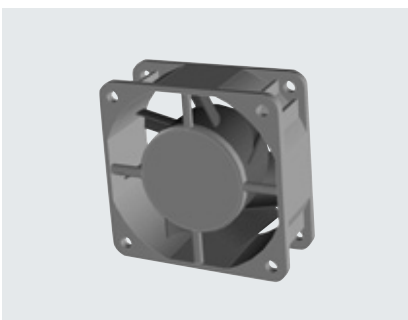


front standard module rails  
profile no. 241-022

rear BUS module rails  
profile no. 241-013 and BUS support rail  
profile no. 241-020

<b>Part no.</b>	
24-5612-62	

Fan, 12V



- for mounting on side panel
- flow rate: 40m<sup>3</sup>/h
- noise level: 40dB(A)
- assembly material included

<b>Dimensions</b> mm	<b>Part no.</b>
60 x 60 x 25	230-825

Accessories

- Cover panels EMC p. 36
- EMC contact gaskets p. 40
- Card guides p. 44

Suitable components

- Front panels p. 62

**Note:** Other expansion kits available on request.



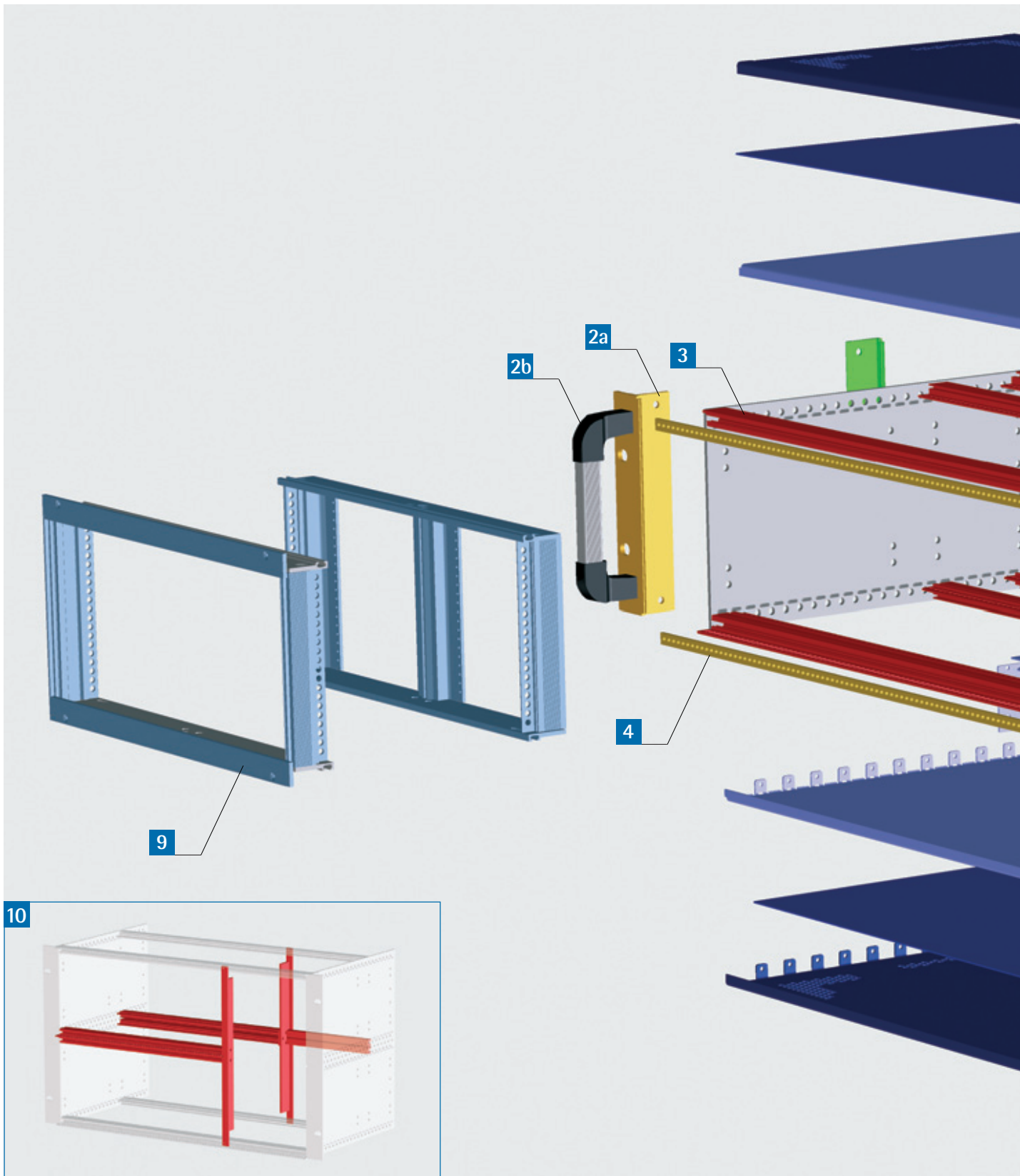
# Individual configuration 245



... the perfect shell for valuable electronics

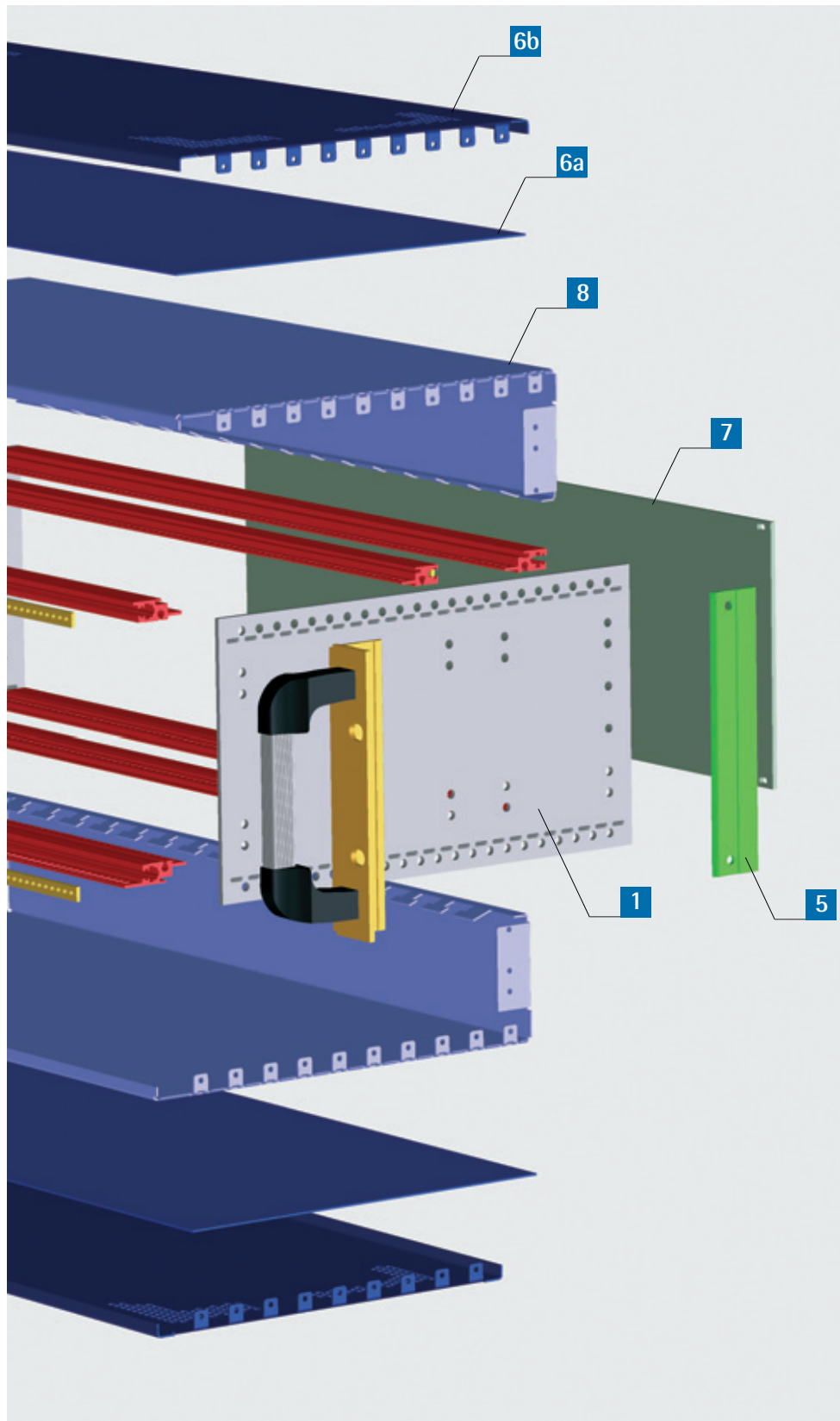


Individual configuration: Design your customized subrack 245.





Select your required enclosure components step by step:



Item	Description	Seite
1	Side panel	30
2a	Front bracket	31
2b	Front panel handle	31
3	Module rails	32
4	Threaded inserts	33
5	Rear bracket	34
6a	Cover panel	35
6b	Cover panel EMC	36
7	Rear panel	36
8	Combination covers	37
9	Horizontal expansion kit (3 U)	38
10	Vertical expansion kit (6 U)	39
11	EMC contact gaskets (not shown in drawing)	40
12	Assembly material (not shown in drawing)	40
<b>Accessories</b> (not shown in drawing)		
	Z-rails	42
	Insulating strips	43
	Contact strips	43
	Card guides:	
	- Standard	44
	- integrated	45
	- with coding	46
	- divided	46
	Card lock	49
	Extraction handle	49
	Group lock	49
	Extension kit	50
	Connecting kit	50

Other dimensions and electromechanical components on request!



Customized front panels including print, foils, input systems or keyboards –

please ask for our front panel express!





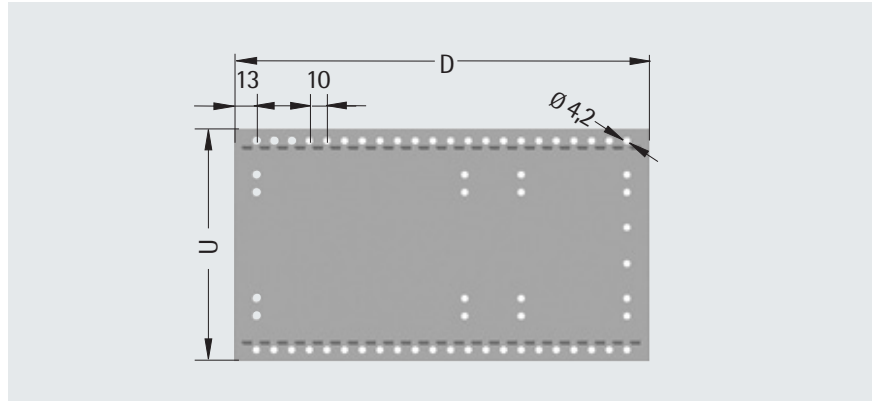
**1a Side panel, solid**

- Side panels can be expanded by use of the expansion kit (see page 50)

**Finish:** transparent chromated

**Material:** aluminium 2,5 mm

Other dimensions on request!



U	H mm	D mm	Part no.
3	132,5	176	24-5301-50
		236	24-5302-50
		296	24-5303-50
		356	24-5304-50
4	177	296	24-5403-50
		356	24-5404-50
6	266	176	24-5601-50
		236	24-5602-50
		296	24-5603-50
		356	24-5604-50
7	310,5	296	24-5703-50
		356	24-5704-50

**1b Side panel, perforated**

- prepared with ventilation holes and studs for the mounting of fans
- Side panels can be expanded by use of the expansion kit (see page 50)

**Finish:** transparent chromated

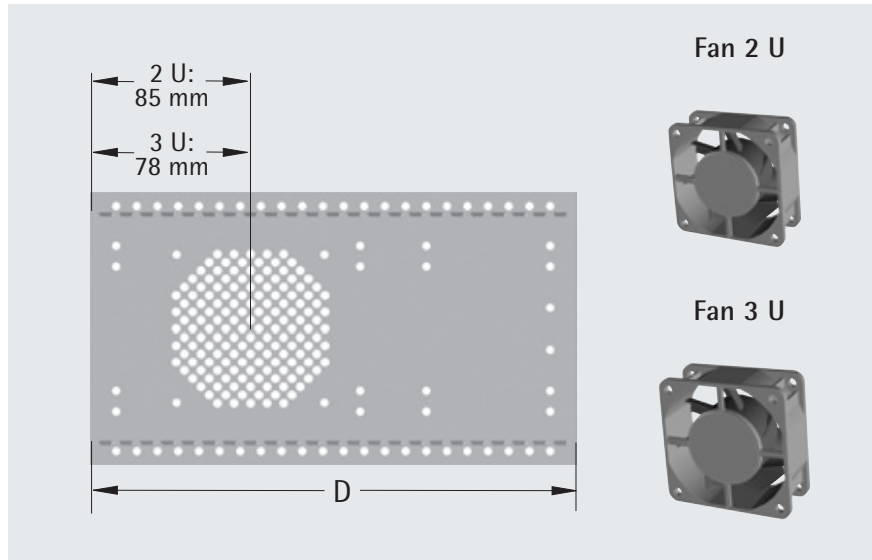
**Material:** aluminium 2,5 mm

**Matching fan, 2 U**

- Dimensions: 60 x 60 x 25 mm
- Voltage: 12 V
- Flow rate: 40 m<sup>3</sup>/h

**Matching fan, 3 U**

- Dimensions: 80 x 80 x 25 mm
- Voltage: 12 V
- Flow rate: 58 m<sup>3</sup>/h

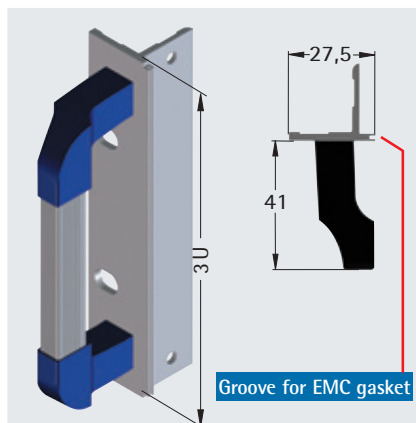


U	H mm	D mm	Side panel perforated	Fan 2 U 60x60x25 mm	Fan 3 U 80x80x25 mm
2	88	236	24-5202-50	230-825	-
		296	24-5203-50	230-825	-
3	132,5	176	24-5301-58	-	230-828
		236	24-5302-58	-	230-828
		296	24-5303-58	-	230-828
		356	24-5304-58	-	230-828



## 2a/b Front bracket

### bracket with handle



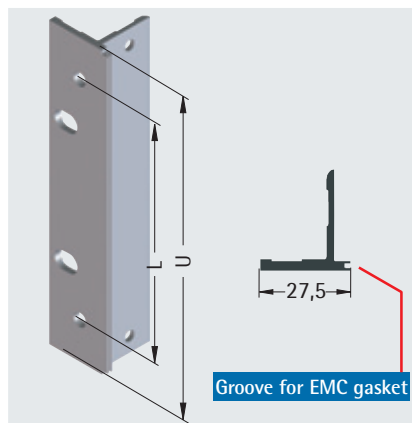
- with integrated groove for inserting EMC contact gaskets **11** (see p. 40)

**Material:** aluminium/plastic

**Finish:** transparent chromated

U	H mm	Part no. (1 piece)
3	132,5	24-1002-23
4	177	-
4 (3+2x 1/2)	177	24-1002-34
6	266	24-1002-26
7	310,5	-
7 (6+2x 1/2)	310,5	24-1002-37

### bracket with holes for handle



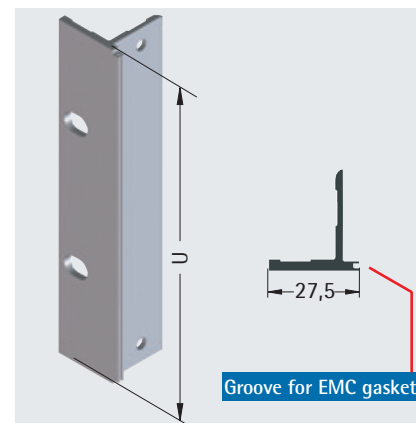
- with integrated groove for inserting EMC contact gaskets **11** (see p. 40)

**Material:** aluminium/plastic

**Finish:** transparent chromated

U	H mm	Dist. b/w holes mm	Part no. (1 piece)
3	132,5	98	24-1002-03
4	177	142,5	24-1002-04
4 (3+2x 1/2)	177	142,5	24-1002-44
6	266	231,5	24-1002-06
7	310,5	276	24-1002-07
7 (6+2x 1/2)	310,5	276	24-1002-47

### bracket without holes for handle



- with integrated groove for inserting EMC contact gaskets **11** (see p. 40)

**Material:** aluminium/plastic

**Finish:** transparent chromated

U	H mm	Part no. (1 piece)
2	2	24-1002-12
3	132,5	24-1002-13
4	177	24-1002-14
4 (3+2x 1/2)	177	24-1002-54
6	266	24-1002-16
7	310,5	24-1002-17
7 (6+2x 1/2)	310,5	24-1002-57

## 2b Front panel handle

- fits 19" front panels, subracks and 19" plug-in units
- with a combined installation of 19" plug-in units and subracks, the handle has an elegant and smooth profile (see illustration)

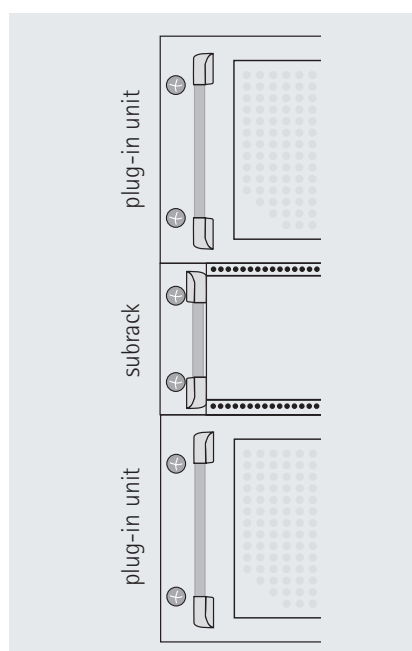
**Material:**

End pieces: plastic, black

Handle extrusion: anodized aluminium

### Included in delivery

Item	Pc.	Description
1	2	End pieces
2	1	Handle extrusion



Size U	Dist. between holes mm	Part no. (1 piece)
3	98	61-1336-00
4	142,5	61-1334-00
6	231,5	61-1337-00
7	276	61-1337-10

Description	Part no.
matching oval head screws M 5 x 12	630-097 (100 pieces)



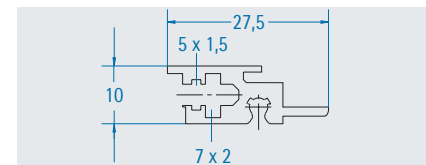
**3** Module rails



**Standard module rail**

- for mounting plug-in units and back panels
- with grooves for threaded inserts / sliding nuts
- printed with HP-division for easy assembly of card guides
- mounting in upper or lower position possible

**Finish:** transparent chromated



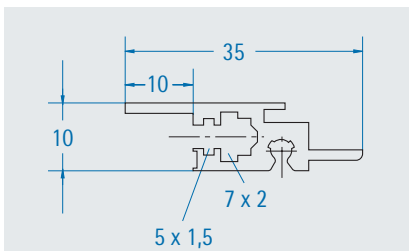
HP	Length mm	Part no.
85	431,9	24-1022-01
64	325,2	24-1022-05
57	289,7	24-1022-02
43	218,5	24-1022-03
29	147,4	24-1022-04

**Standard module rail with 10 mm extension**

- for plug-in units with IEEE-handle
- with grooves for threaded inserts / sliding nuts
- printed with HP-division for easy assembly of card guides
- mounting in upper or lower position possible

Matching IEEE handles: see page 72!

**Finish:** transparent chromated



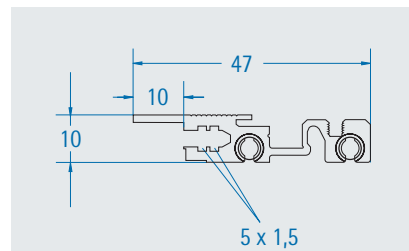
HP	Length mm	Part no.
85	431,9	24-1049-85
64	325,2	24-1049-64
57	289,7	24-1049-57
43	218,5	24-1049-43
29	147,4	24-1049-29

**Reinforced module rail with 10 mm extension**

- for plug-in units with IEEE-handle
- for higher mechanical loads
- with grooves for threaded inserts / sliding nuts
- printed with HP-division for easy assembly of card guides
- mounting in upper or lower position possible

Matching IEEE handles: see page 72!

**Finish:** transparent chromated

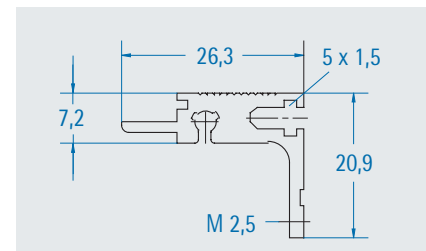


HP	Length mm	Part no.
85	431,9	24-1500-85
64	325,2	24-1500-64
57	289,7	24-1500-57
43	218,5	24-1500-43
29	147,4	24-1500-29

**Narrow module rail, integrated**

- with integrated mounting rail for connectors according to DIN 41612 and EN 60603
- with grooves for threaded inserts / sliding nuts
- printed with HP-division for easy assembly of card guides
- mounting in upper or lower position possible

**Finish:** transparent chromated



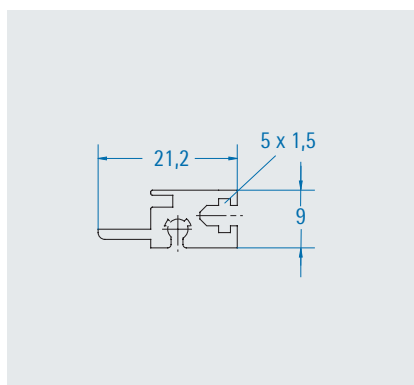
HP	Length mm	Part no.
85	431,9	26-7919-01
64	325,2	26-7919-05
57	289,7	26-7919-02
43	218,5	26-7919-03
29	147,4	26-7919-04



## BUS module rail

- for mounting BUS boards and back-planes using EMC gaskets, mounting rails or insulating strips (see section beginning on p. 42)
- with grooves for threaded inserts / sliding nuts
- printed with HP-division for easy assembly of card guides
- mounting in upper or lower position

**Finish:** transparent chromated

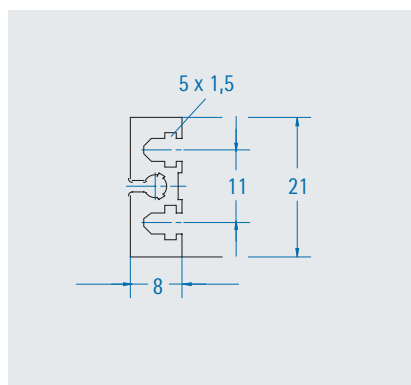


HP	Length mm	Part no.
85	431,9	24-1013-01
64	325,2	24-1013-05
57	289,7	24-1013-02
43	218,5	24-1013-03
29	147,4	24-1013-04

## BUS support rail

- for mounting BUS boards and back-planes using EMC gaskets, mounting rails or insulating strips (see section beginning on p. 42)
- with grooves for threaded inserts / sliding nuts
- mounting in middle position

**Finish:** transparent chromated

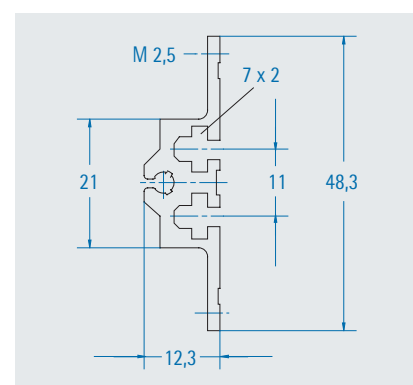


HP	Length mm	Part no.
85	431,9	24-1020-01
64	325,2	24-1020-64
57	289,7	24-1020-57
43	218,5	24-1020-43
29	147,4	24-1020-29

## Support rail connectors

- with integrated mounting rail for plug-in connections in compliance with DIN 41612 and EN 60603
- with grooves for threaded inserts / sliding nuts
- mounting in middle position

**Finish:** transparent chromated



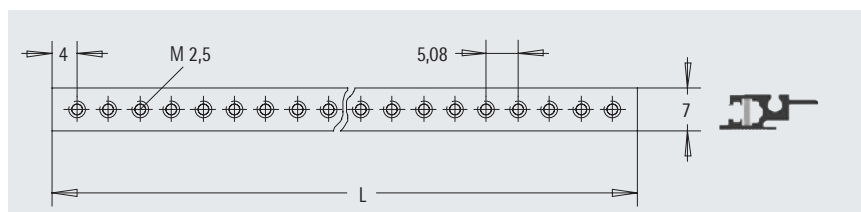
HP	Length mm	Part no.
85	431,9	24-1108-85
64	325,2	24-1108-64
57	289,7	24-1108-57
43	218,5	24-1108-43
29	147,4	24-1108-29

**Note:** Module rails are 1 HP longer than the subrack's nominal width. Other lengths available on request.

## 4 Threaded inserts M 2.5

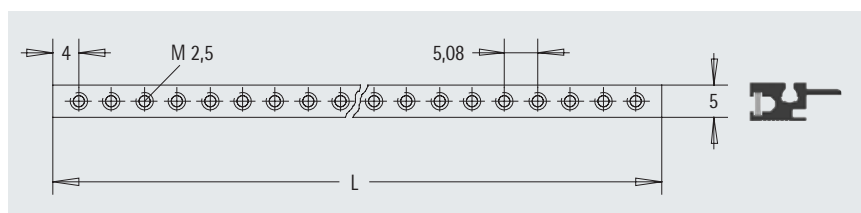
### M 2.5 Threaded inserts 7 x 2 mm (for standard module rails)

HP	Length L mm	Part no.
85	429,9	240-051
64	323,2	240-055
57	287,7	240-052
43	216,5	240-053
29	145,4	240-054



### M 2.5 Threaded inserts 5 x 1,5 mm (for bus module rails and support rails)

HP	Length L mm	Part no.
85	429,9	240-061
64	323,2	240-065
57	287,7	240-062
43	216,5	240-063
29	145,4	240-064

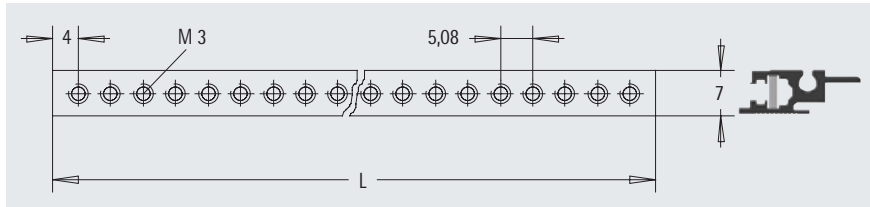




**4** Threaded inserts M 3

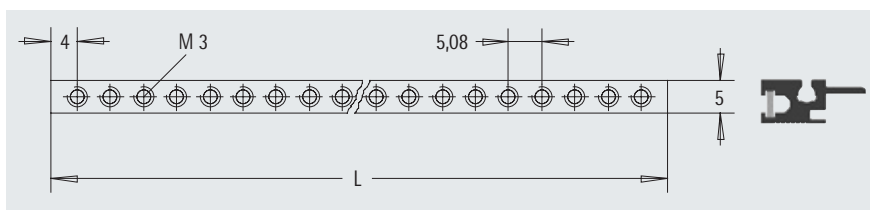
**M 3** Threaded inserts 7 x 2 mm (for standard module rails)

HP	Length L mm	Part no.
85	429,9	24-0059-85
64	323,2	24-0059-64
57	287,7	24-0059-57
43	216,5	24-0059-43
29	145,4	24-0059-29

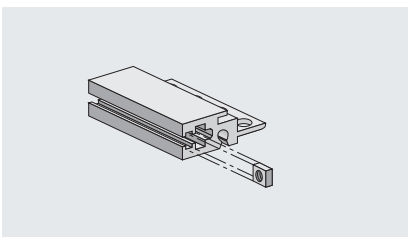


**M 3** Threaded inserts 5 x 1,5 mm (for bus module rails and support rails)

HP	Length L mm	Part no.
85	429,9	24-0069-85
64	323,2	24-0069-64
57	287,7	24-0069-57
43	216,5	24-0069-43
29	145,4	24-0069-29



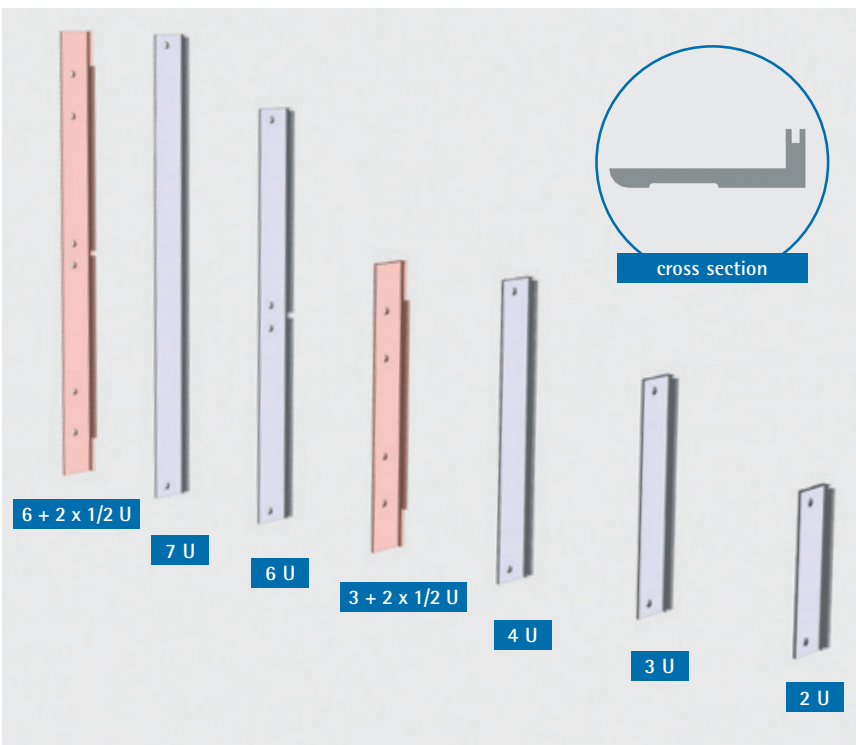
Sliding nut M 2,5



- Sliding nuts are alternatively usable instead of threaded inserts.
- Nuts can be inserted in the grooves of the module rail.

groove	Description	Part no. (100 pieces)
5 x 1,5	sliding nut M 2.5	630-192
7 x 2	nut holder with nut M 2.5	250-704

**5** Rear bracket



- for covering the gap between the side panel and the rear panels
- with groove for EMC contact gaskets **11** (see p. 40) for EMC protection of the rear side

**Finish:** transparent chromated

**Material:** aluminium

**Note:**  
Please order contact gaskets separately (see p. 40).

U	H mm	Part no. (1 pc.)
2	88	24-1037-02
3	132,5	24-1037-03
4	177	24-1037-04
4	177	24-1037-54
3 + 2 x 1/2	177	24-1037-54
6	266	24-1037-06
7	310,5	24-1037-07
7	310,5	24-1037-57
6 + 2 x 1/2	310,5	24-1037-57



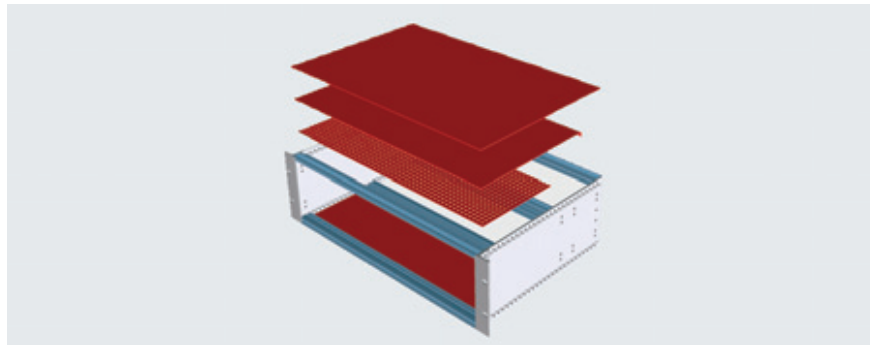
**6a Cover panel**

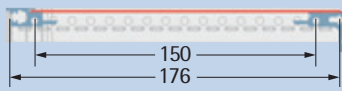
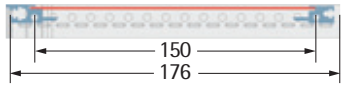
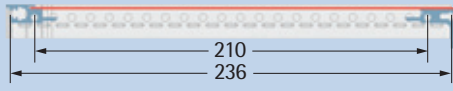
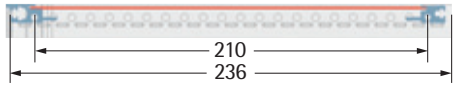
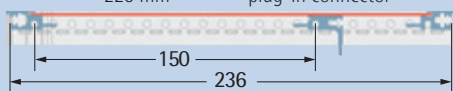
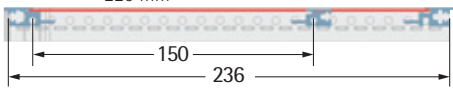
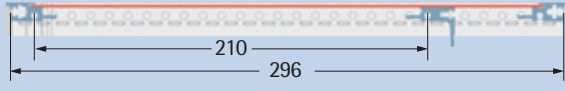
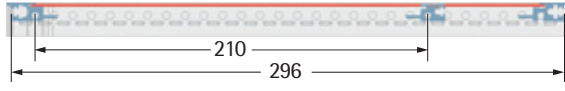
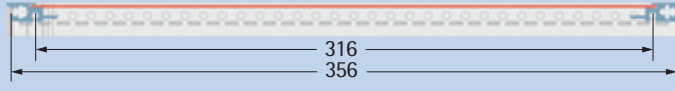
- for mechanical shielding of subracks
- perforated or solid

**Finish:** transparent chromated

**Material:** perforated aluminium panel  
or aluminium panel

**Degree of protection:** IP 30: solid  
IP 20: perforated



Application	84 HP		42 HP	
	solid	perforated	solid	perforated
Card depth 160 mm      DIN 41612 plug-in connector 	24-5011-10	24-5011-18	24-5031-10	24-5031-18
Card depth 160 mm      BUS 	24-0662-85	24-0468-85	24-0662-43	24-0468-43
Card depth 220 mm      DIN 41612 plug-in connector 	24-5012-10	24-5012-18	24-5032-10	24-5032-18
Card depth 220 mm      BUS 	24-0672-85	24-0478-85	24-0672-43	24-0478-43
Card depth 160 mm / 220 mm      DIN 41612 plug-in connector      Standard 	24-0671-85	24-0475-85	24-0671-43	24-0475-43
Card depth 160 mm / 220 mm      BUS      Standard 	24-0671-85	24-0475-85	24-0671-43	24-0475-43
Card depth 220 mm      DIN 41612 plug-in connector      Standard 	24-5013-10	24-5013-18	24-5033-10	24-5033-18
Card depth 220 mm      BUS      Standard 	24-5013-10	24-5013-18	24-5033-10	24-5033-18
Card depth > 220 mm      Standard 	24-5014-10	24-5014-18	-	-

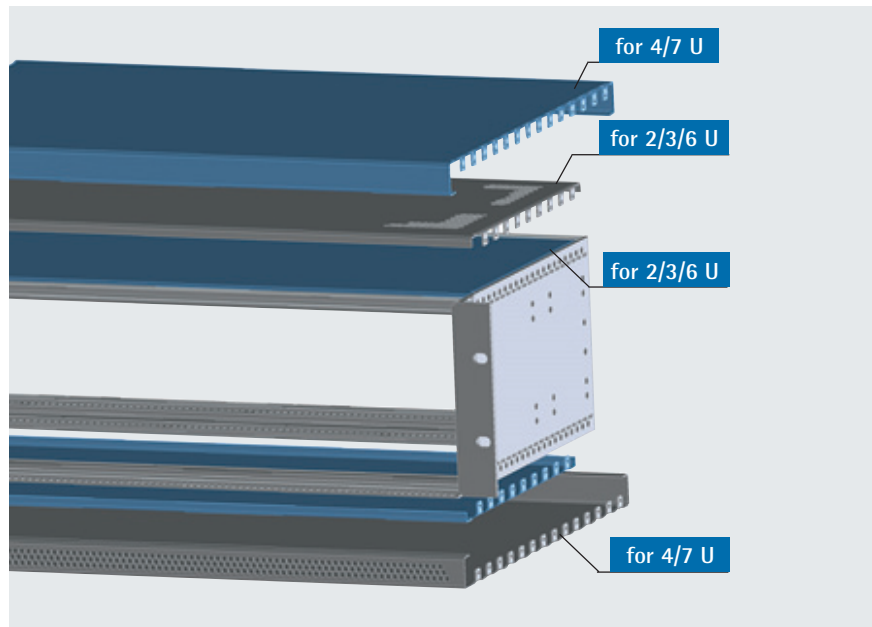
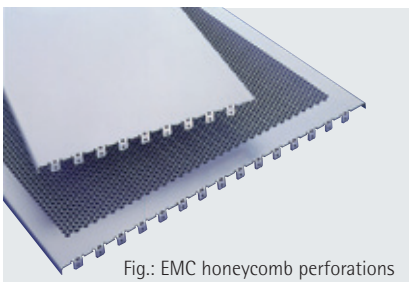


### 6b EMC cover panel

- perforated/solid
- with honeycomb perforations for optimum air flow (approx. 63%)
- EMC-compliant design
- incl. assembly material

Finish: transparent chromated

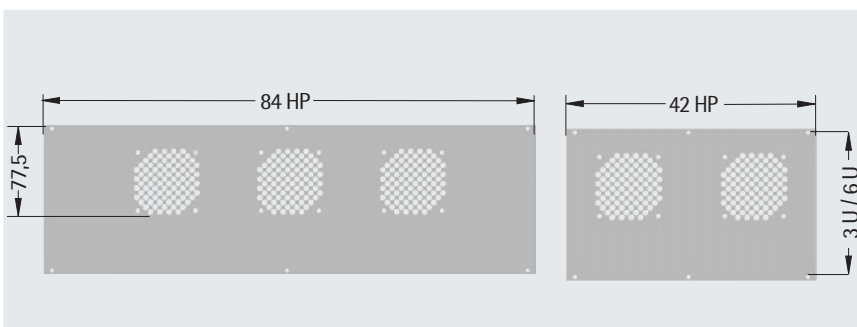
Material: aluminium



### Order information

Depth Height	Part no. 84 HP				Part no. 42 HP		
	D=176 mm	D=236 mm	D=296 mm	D=356 mm	D=176 mm	D=236 mm	D=296 mm
2, 3, 6 U solid	24-5011-48	24-5012-48	24-5013-48	24-5014-48	24-5031-48	24-5032-48	24-5033-48
perforated	24-5011-40	24-5012-40	24-5013-40	24-5014-40	24-5031-40	24-5032-40	24-5033-40
4 U, 7 U solid	-	-	24-5413-48	-	-	-	-
perforated	-	-	24-5413-40	-	-	-	-

### 7 Rear panel



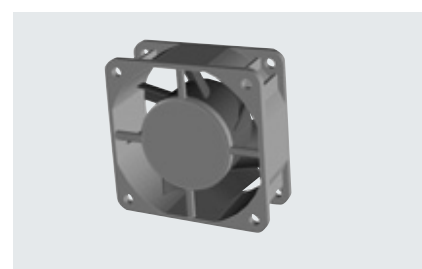
- up to 3 fans can be installed in 84 HP subracks and 2 fans in 42 HP
- incl. assembly material

Finish:  
 Front side: anodized  
 Rear side: transparent chromated

Material: aluminium, 2.5mm

HP	Rear panel perforated		Rear panel solid	
	3 U	6 U	3 U	6 U
84	24-3803-01	24-3806-01	24-3084-45	24-3684-45
42	24-3803-02	24-3806-02	24-3042-45	24-3642-45

### Matching fan, 12V



- for installation in the rear panel
- high-power **PAPST** fan
- flow rate: 40m<sup>3</sup>/h
- noise level: 40dB(A)
- W x H x D: 60 mm x 60 mm x 25 mm
- incl. assembly material

Description	Part no.
Fan 12 V	230-825

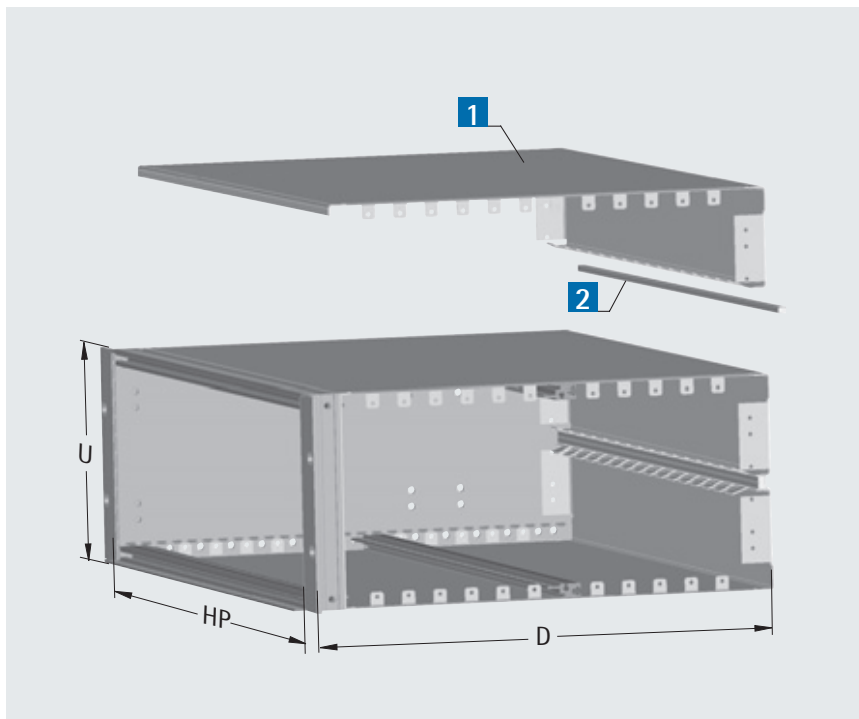


## 8 Combination cover

- top/bottom cover with integrated rear panel
- no rear module rails required
- integrated cable management bar with straps (see fig. 1)
- customized, shielded cable access opening due to flexible EMC textile seal (see fig. 2)
- entry for cables up to 10 mm in diameter
- incl. assembly material

**Finish:** transparent chromated

**Material:** aluminium



### Included in delivery

Item	Pc.	Description
1	1	Combination cover
2	1	EMC textile gasket
3		Assembly material



Fig. 1: integrated cable management bar with straps

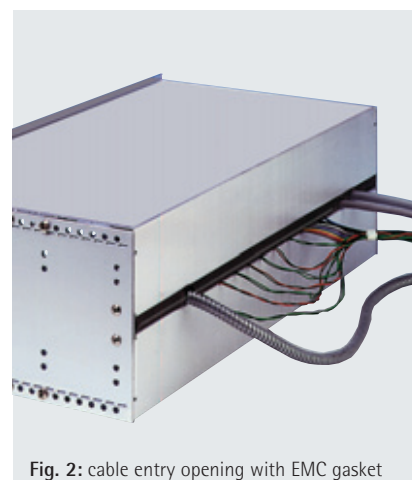


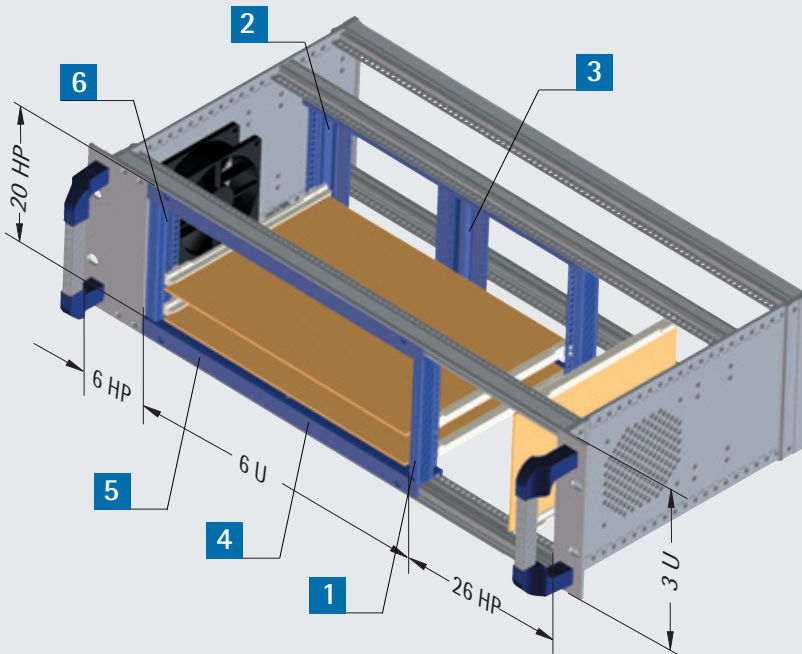
Fig. 2: cable entry opening with EMC gasket

### Order information

Depth \ Height	Part no. 84 HP		Part no. 42 HP	
	D=236 mm	D=296 mm	D=236 mm	D=296 mm
3 U	perforated	24-5312-48	24-5313-48	24-5332-48
	solid	24-5312-40	24-5313-40	24-5333-48
6 U	perforated	24-5612-48	24-5613-48	24-5632-48
	solid	24-5612-40	24-5613-40	24-5633-40



**9** Horizontal expansion kit 6 U/20 HP



Sample configuration: 6 U expansion kit

- for installation in 3 U subracks with BUS module rail
- for installing double Euroboards horizontally
- PCB's cooled optimally when installed in a subrack with perforated side panels (see fig.)

**Application:**

for plug-in modules in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11

**Finish:**

Module rails, support rails and flat rails: transparent chromated

**Panels:**

anodized exterior  
transparent chromated interior

**Delivery:** kit

**Order information**

Model 1	Model 2
front standard module rails profile no. 241-022	front standard module rails profile no. 241-022
rear narrow module rails with integrated mounting rails profile no. 241-019 and support rail with integrated mounting rail, profile no. 241-008 for plug-in connections in compliance with DIN 41612	rear BUS module rails profile no. 241-013 and BUS support rail profile no. 241-020
<b>Depth 236 mm</b>	<b>Depth 236 mm</b>
<b>Part no.</b> 24-5620-61	<b>Part no.</b> 24-5620-62

**Included in delivery**

Item	Pc.	Description
<b>1</b>	2	Module rails, front
<b>2</b>	2	Module rails, rear
<b>3</b>	1	Support rail, rear
<b>4</b>	4	Flat rails, chromated
<b>5</b>	2	Panels, anodized exterior chromated interior
<b>6</b>	2	Threaded inserts M 2,5 7 mm x 2 mm
<b>7</b>	4	Threaded inserts M 2,5 5 mm x 1,5 mm (Model 2)
<b>8</b>		Assembly material

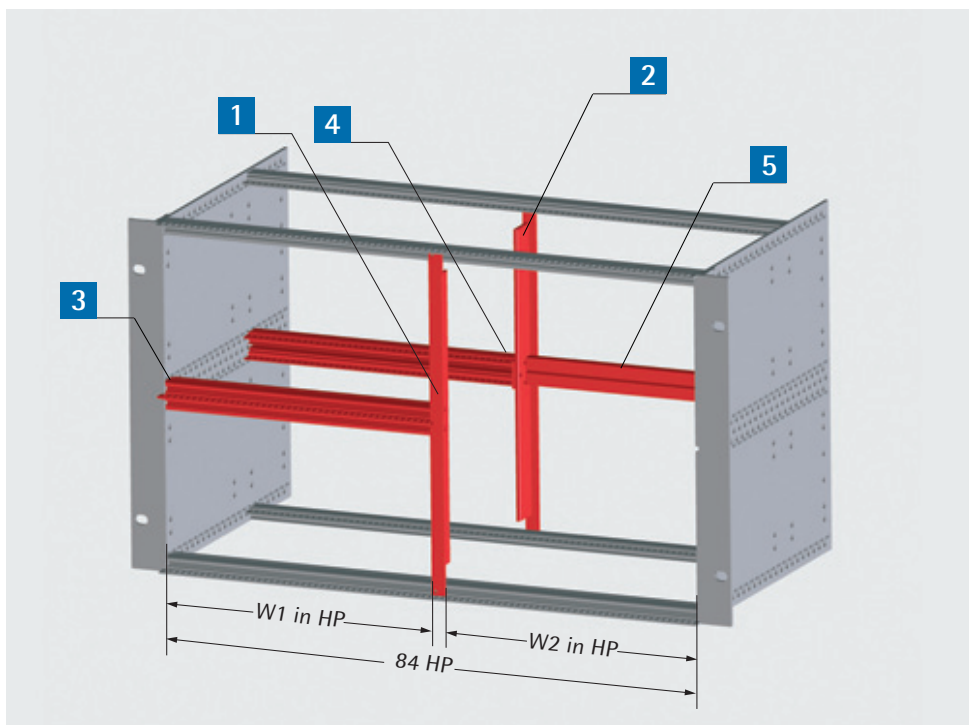


## 10 Vertical expansion kit 2 x 3 U

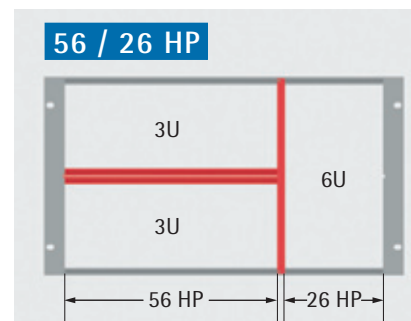
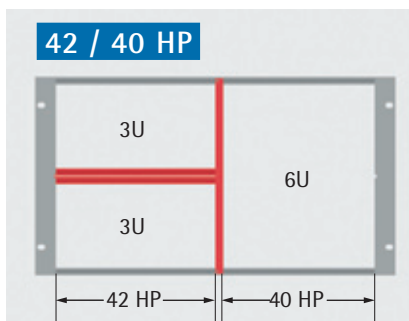
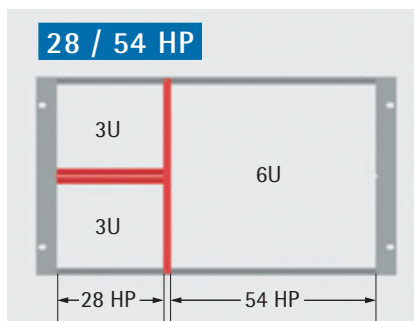
- for the separation of the 6 U installation space into 2 x 3 U and 1x 6 U

### Application:

for plug-in modules in compliance with IEC 60297-3-101/-102/-103 and IEEE 1101.10/1101.11



### Versions



### Mounting struts

Item		Part no.
1	front mounting strut	241-087
2	rear mounting strut for narrow module rail with integrated mounting rail	241-088
	rear mounting strut for BUS module rail	241-089

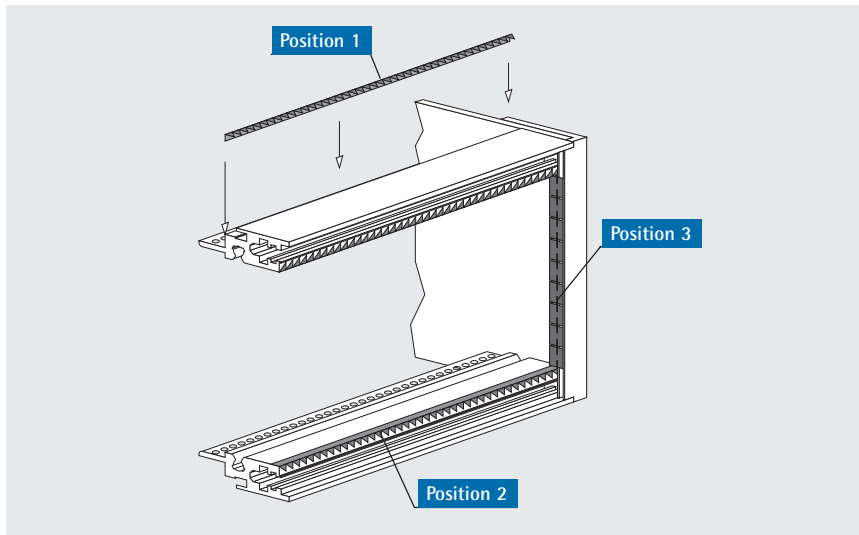
### Module rails

Installation space B1	Installation space B2	Standard module rail	Threaded insert M 2,5	Narrow module rail with integrated mounting rail	BUS Module rail	Threaded insert M 2,5	Mounting rail integrated	support rail BUS	Threaded insert M2.5
2x 3 U	6 U	Item 3			Item 4		Item 5		
28 HP	54 HP	24-1022-04	240-054	26-7919-04	24-1013-04	240-064	24-1108-02	24-1020-02	25-0060-54
42 HP	40 HP	24-1022-03	240-053	26-7919-03	24-1013-03	240-063	24-1108-03	24-1020-03	25-0060-40
56 HP	26 HP	24-1022-02	240-052	26-7919-02	24-1013-02	240-062	24-1108-04	24-1020-04	25-0060-26

**Note:** By use of the mounting rails, the usable installation space will be reduced to 82 HP.



**11** EMC contact gaskets



High-quality EMC contact gaskets increase shield attenuation by bringing individual components into continuous contact with each other.

**Material:**  
Copper Beryllium

**Finish:**  
tin-plated

**Position 1**

Horizontal EMC contact gasket 1 contacts module rail and cover panel.

HP	Length mm	Part no.
84	427	671-182
63	318	671-163
42	210,3	671-142

**Position 2**

Horizontal EMC contact gasket 2 contacts module rail and front panel or rear panel.

HP	Length mm	Part no.
84	427	671-183
63	318	671-164
42	204	671-143

**Position 3**

Vertical EMC contact gasket for connecting all front panels with each other and with the front or rear brackets.

U	Length mm	Part no.
3	97,0	671-184
6	232,0	671-185

**EMC contact gasket set**

- for fitting a complete 3 U or 6 U single-row subrack

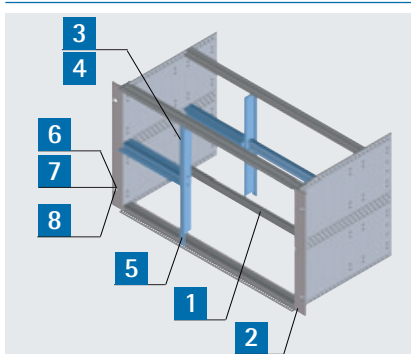
Description	HP	Part no.
Set for 19" subrack <b>3 U</b>	84	671-190
	63	671-191
	42	671-192
Set for 19" subrack <b>6 U</b>	84	671-193
	63	671-194
	42	671-195

**Included in delivery**

Pc.	Description
4	Position 1
4	Position 2
4	Position 3

**Note:** For EMC front panels, see 65.

**12** Mounting screws for subracks



Item	Description	Part no. (100 pc.)
1	Oval-head screw, M 4 x 12, self-locking	630-096
2	Countersunk screw, M 5 x 12 (for mounting handle)	630-121
3	Oval-head screw, M 2.5 x 10	630-094
4	Washer, 2.6 diameter	630-152
5	Countersunk screw, M 4 x 10	630-119
6	Oval-head screw, M 5 x 16	630-098
7	Decorative washer with collar	610-095
8	Captive nut, M 5 for increasing the mounting bracket thickness 0.7 mm - 1.7 mm	630-359
8	Captive nut, M 5 for increasing the mounting bracket thickness 1.8 mm - 2.6 mm	630-362

**Note:** For your custom subrack design, you will find additional components and parts at page 41



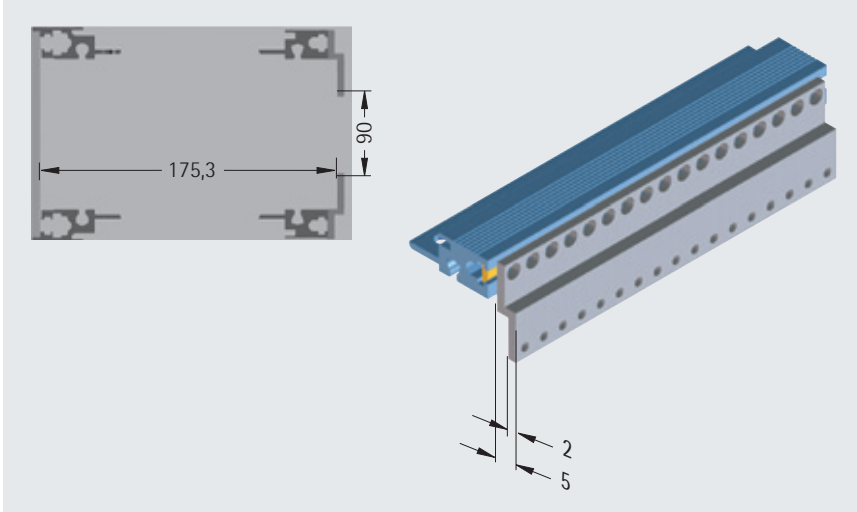
## Accessories 245



... the perfect shell for valuable electronics



Z-rails

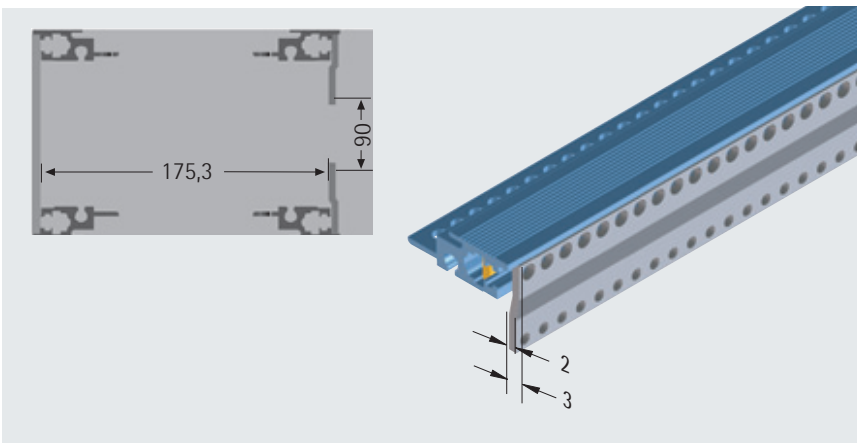


for 32-, 64- and 96-pole plug-in connectors acc. to DIN 41612

- fits when used with **BUS module rails** without insulating or EMC gas-kets

Material: aluminium

HP	Part no. (1 piece)
85	240-411
64	240-415
57	240-412
43	240-413
29	240-414
10	24-0410-10
8	24-0410-08
6	24-0410-06
4	24-0410-04

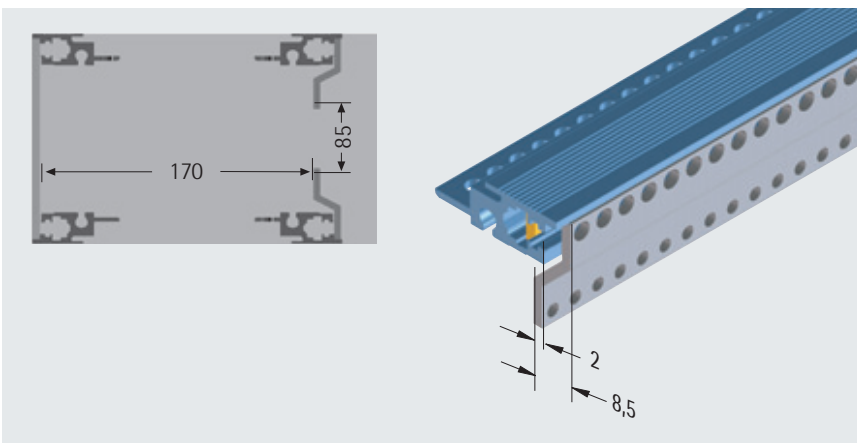


for 32-, 64- and 96-pole plug-in connectors acc. to DIN 41612

- fits when used with **Standard module rails**

Material: aluminium

HP	Part no. (1 piece)
85	240-441
57	240-442
43	240-443
29	240-444



for 31-pole plug-in connectors acc. to DIN 41617

- fits when used with **Standard module rails**

Material: aluminium

HP	Part no. (1 piece)
85	240-451
57	240-452
43	240-453
29	240-454

Assembly material

- Rails are mounted on threaded inserts or sliding nuts (see p. 33/34).

Mounting screws	Part no. (100 pc.)
M 2,5 x 12	630-082



### Insulating strips

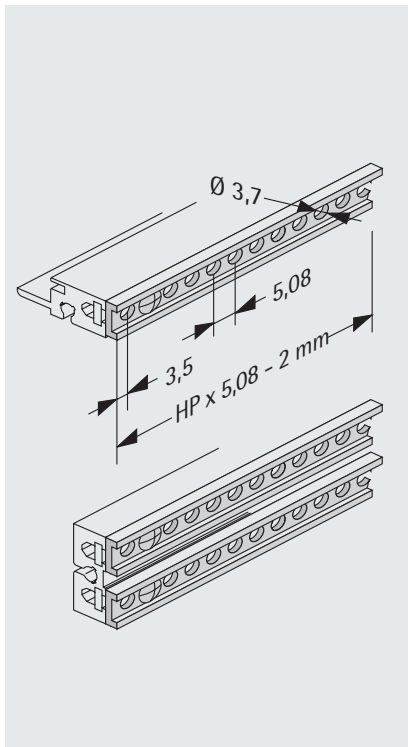
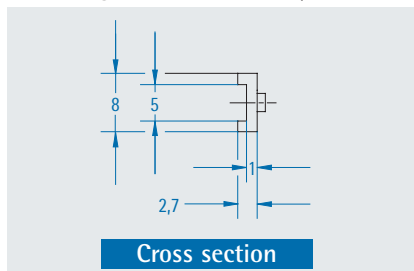
- for insulating backplanes and module rails
- for BUS subracks
- to be used as spacer in order to achieve the required installation depth for plug-in units

**Finish:** black

**Material:** plastic, Noryl UL 94 V-0

HP	Part no. (1 piece)
84	250-719
42	250-720
28	25-0719-28

Other lengths available on request.



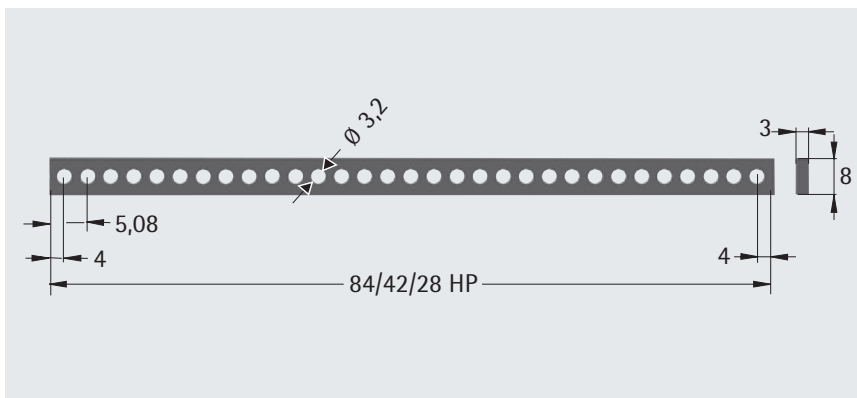
### Contact strips

- for contacting backplanes and module rails
- to be used as spacer in order to achieve the required installation depth for plug-in units

**Material:** aluminium, transparent chromated

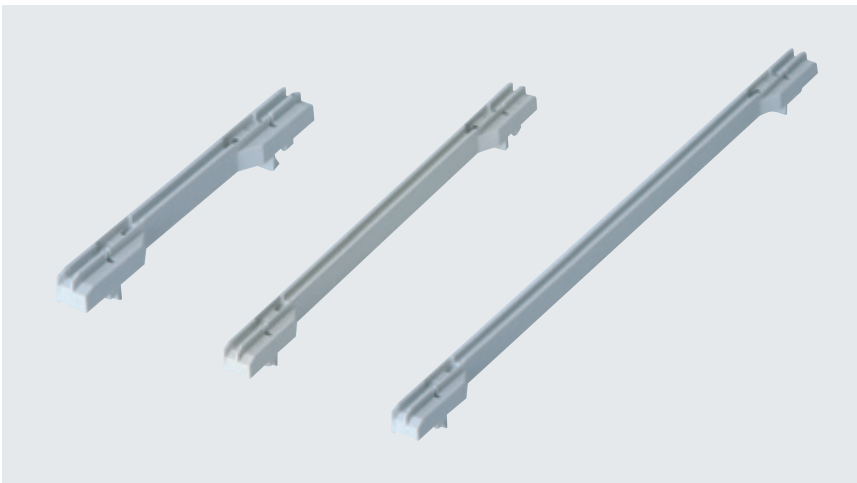
HP	Part no.
84	25-0725-84
42	25-0725-42
28	25-0725-28

Other lengths available on request.





Card guides



Available card guides:

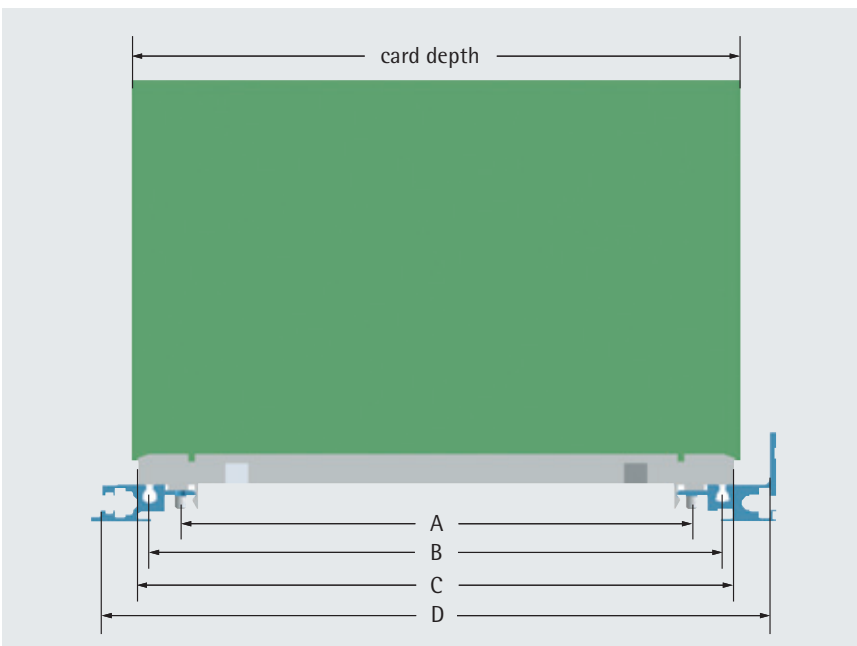
- Standard card guide
- integrated card guide
- card guide with coding
- divided card guide

Standard card guide

- for installing plug-in modules in compliance with IEC 297-3-101/-102/-103
- Groove width 2,6 mm for PCB thickness 1,6 mm
- for each card guide two ESD clips can be mounted, in order to achieve totally four ESD contact points for the PCB
- card guides can be easily assembled with the module rails by simple clip-fixation. If required, card guides can be secured with additional screws

Colour: similar RAL 7035 light grey

Material: plastic, Valox UL 94-V 0



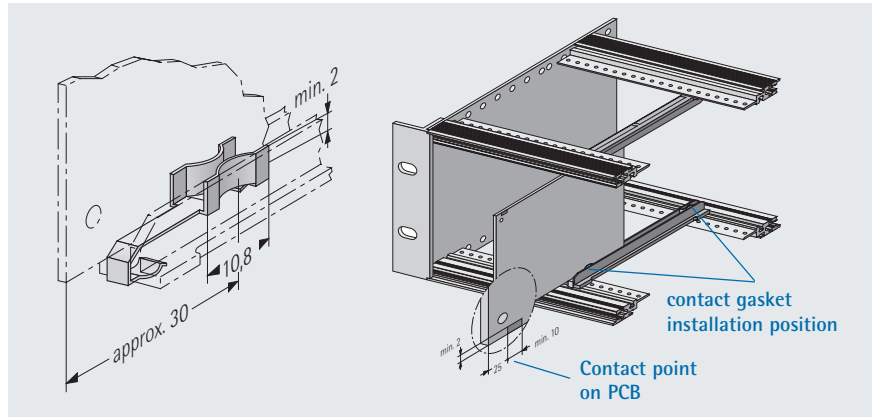
for Card depth mm	Part no.
220	24-0406-00
160	24-0401-00
100	24-0402-00

for Card depth mm	Dimensions mm			
	A	B	C	D
220	194	210	216,5	235,3
160	134	150	156,5	175,3
100	74	90	96,5	115,3



### ESD clips for card guide

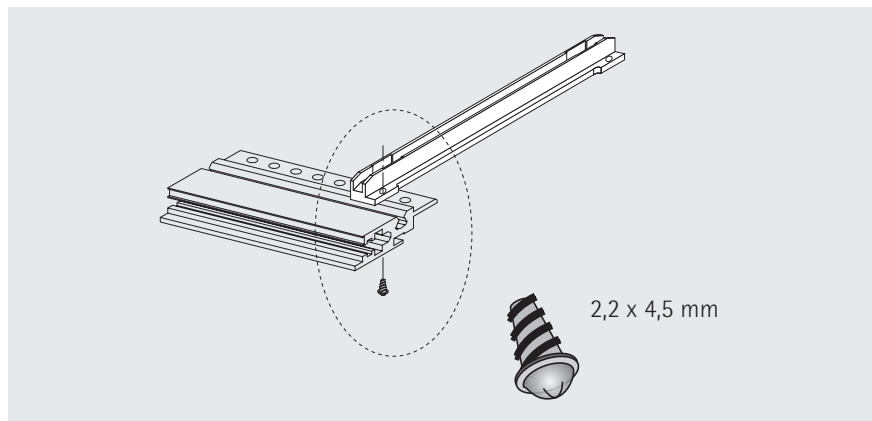
- allows PCB and module rail to contact at up to 4 positions
- two contact gaskets per card guide possible



<b>Part no. (1 piece)</b>
24-0400-00

### Plastic connecting screw

- for fastening standard card guides



<b>Part no. (100 pc.)</b>
631-200

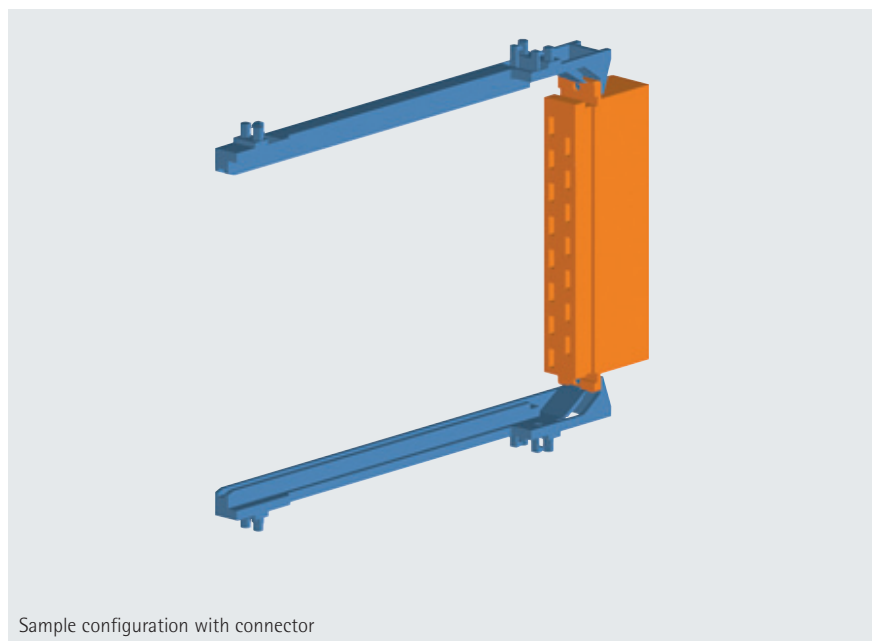
### Card guide, integrated

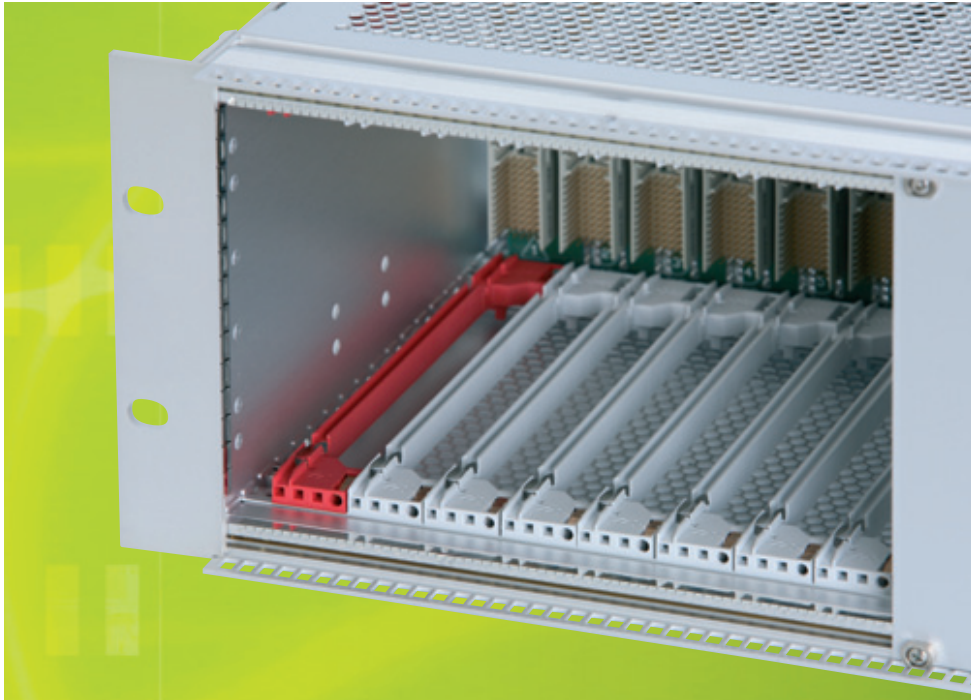
- with integrated attachment for connectors in compliance with DIN 41612 (cannot be used with profile no. 241-019)
- can be used instead of a z-shaped module rail or the integrated module rail
- particularly suitable for extending a plug-in location of a 3 U backplane (for example power supply)

**Colour:** similar RAL 7035 light grey

**Material:** plastic, Valox UL 94-V 0

for card depth mm	Part no. (pair)
160	24-0407-00
220	24-0408-00



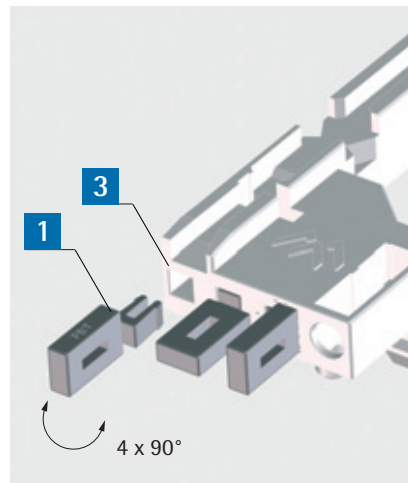
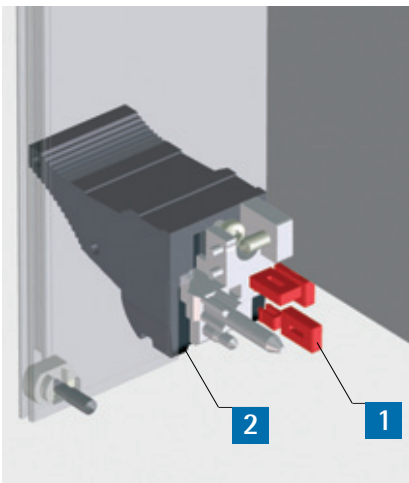


### Card guide with IEEE coding

- with coding function in accordance with IEEE 1101.10/11
- Groove width 2,6 mm for PCB thickness 1,6 - 2,0 mm
- can be used for card depths of 160 mm and 220 mm
- can be fitted with 2 ESD clips for discharge of electrostatic charges
- can be used with ESD clip for alignment pin of the CompactPCI/ VME64x handles

**Material:**

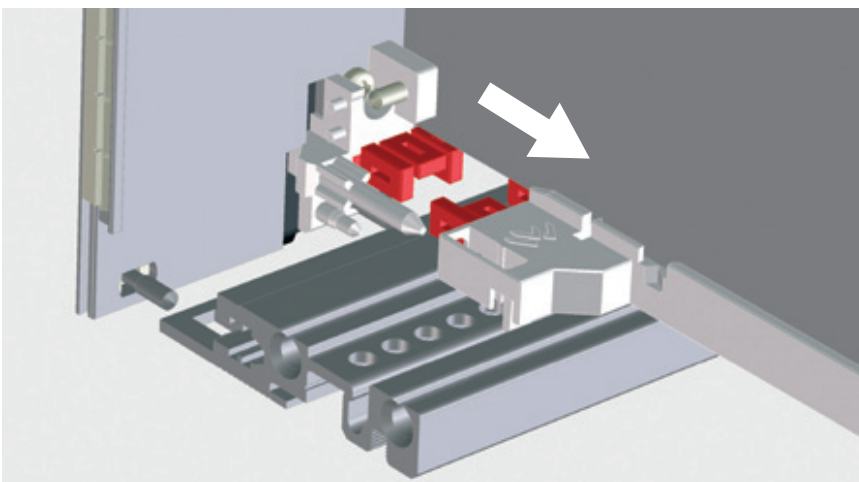
plastic, Valox UL 94-V 0



### Specifications

Coding pins **1** can be inserted into the pin-chambers of the handle **2** and the card guide **3** with function in accordance with IEEE 1101.10/1.

By use of the coding pins, the PCB is protected and it is not possible to insert boards by mistake at the wrong position.





**Card guide with IEEE coding 4 HP • for card depths of 160 mm**

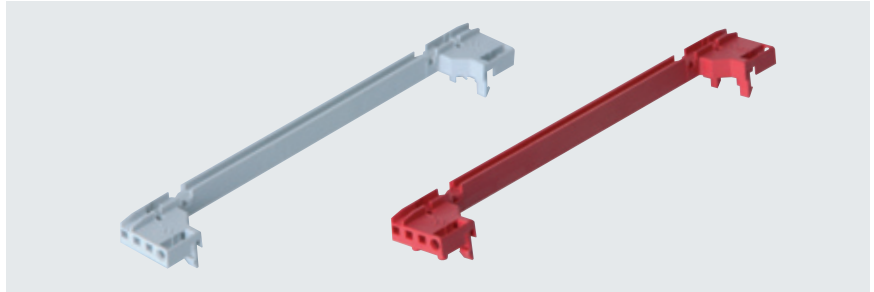
Colour: similar RAL 7035 light grey

<b>Part no.</b>
24-0160-10

- red colour for system slot / CPU-boards

Colour: RAL 3001 signal red

<b>Part no.</b>
24-0160-20



**Card guide with IEEE coding 4 HP • for card depths of 220 mm**

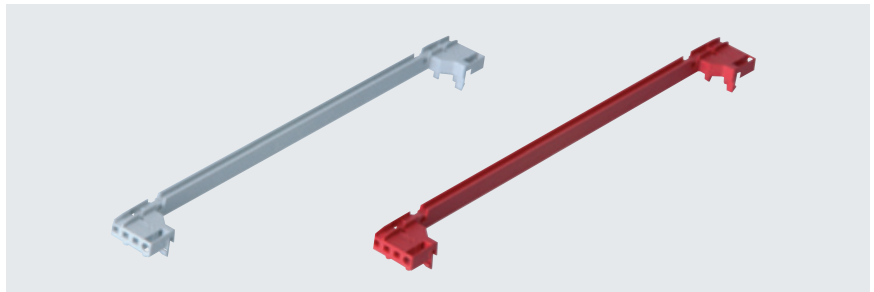
Colour: similar RAL 7035 light grey

<b>Part no.</b>
24-0220-10

- red colour for system slot / CPU-boards

Colour: RAL 3001 signal red

<b>Part no.</b>
24-0220-20

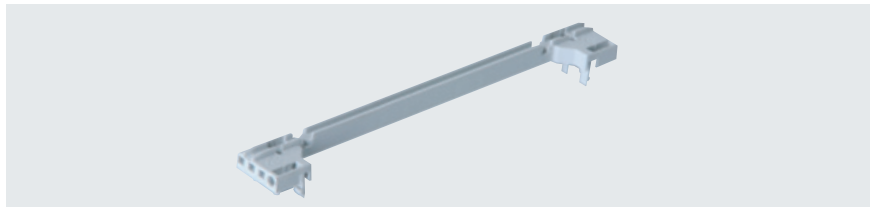


**Card guide with IEEE coding, offset 0.1" (1/2 HP) • for card depths of 160 mm**

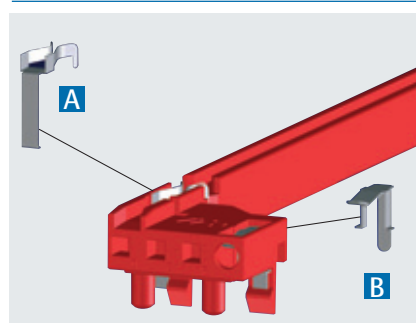
- allows PCB to be populated on both sides
- for power supplies acc. to IEEE 1101.10

Colour: similar RAL 7035 light grey

<b>Part no.</b>
24-0160-50



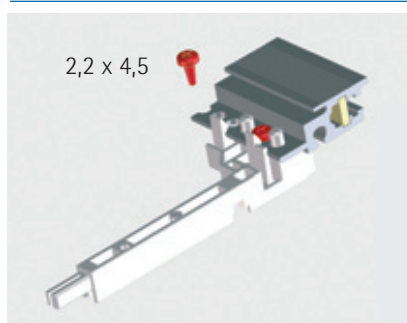
**ESD clip**



- A** • for discharging electrostatic charges from the PCB
- B** • for discharging electrostatic charges in conjunction with an ESD pin of an injector/extractor handle

Description	Part no.
<b>A</b> ESD clip	24-0161-03
<b>B</b> ESD clip (Alignment-Pin)	24-0162-00

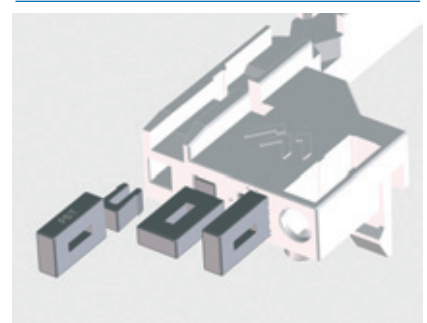
**Fixing screw**



- for fixing the IEEE card guide

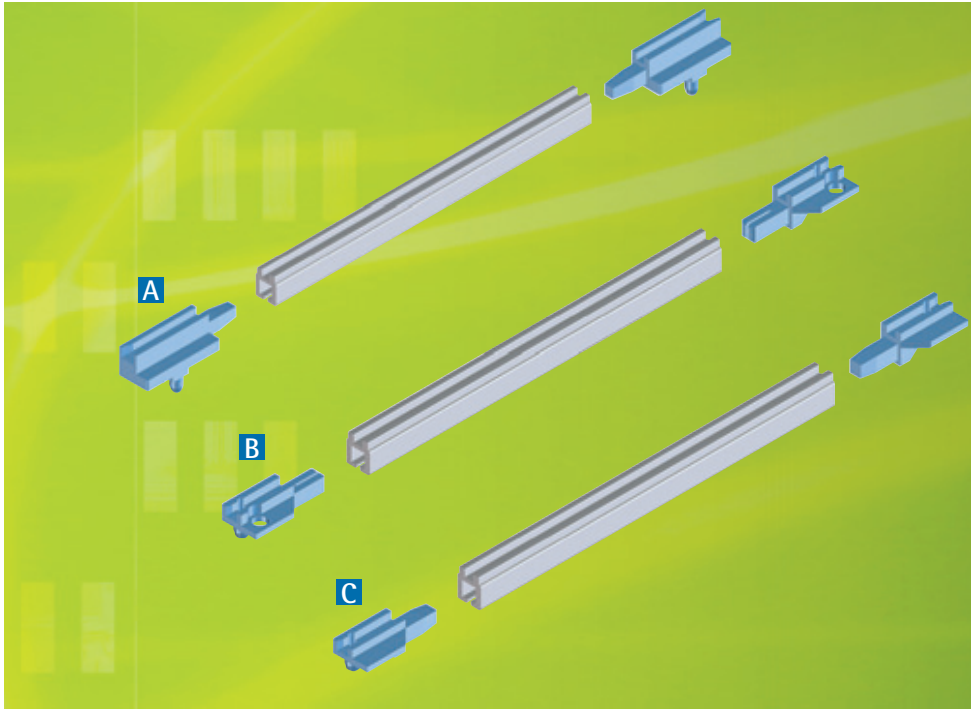
<b>Part no. (100 pc.)</b>
631-200

**Coding pin**



**Finish:** similar RAL 7035 light grey  
**Material:** polycarbonate UL 94-V 0

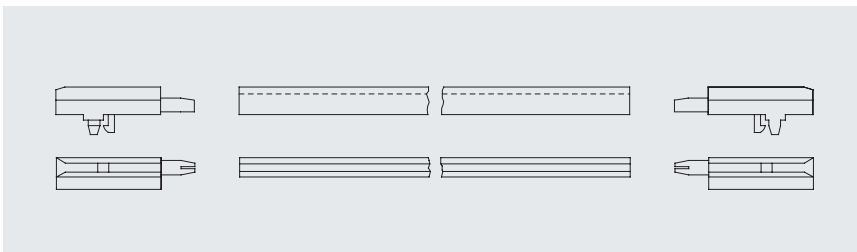
<b>Part no. (100 pc.)</b>
24-0163-50



### Divided card guides

- consists of 2 end pieces and an aluminium or plastic middle extrusion piece

#### A Divided card guide (standard) for any card depth



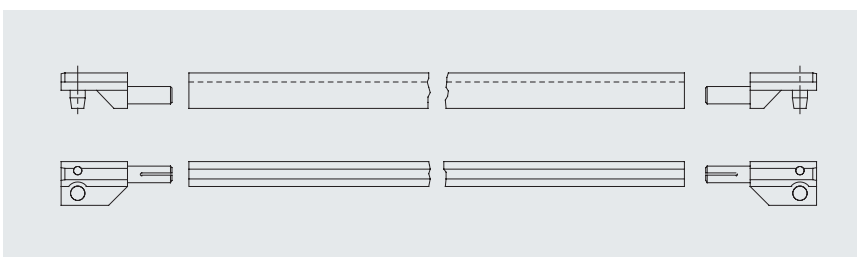
End pieces (plastic)

<b>Part no. (pair)</b>
250-721

Extrusion piece 1000 mm for adjusting

Material	Part no.
aluminium	24-0005-00
plastic	25-0723-00

#### B Card guide for ISEP PCB's (PCB height in 3 U subracks is 110.49 mm)



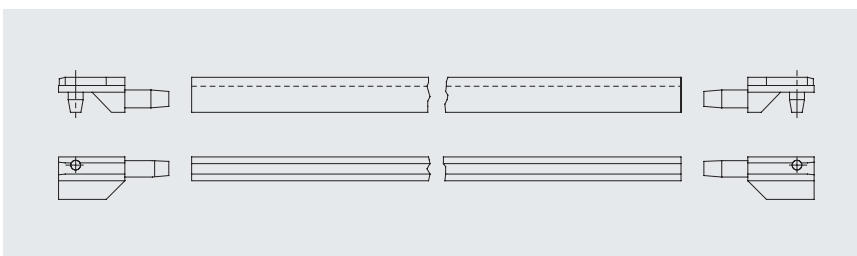
End pieces (plastic)

<b>Part no. (pair)</b>
250-722

Extrusion piece 1000 mm for adjusting

Material	Part no.
aluminium	24-0005-00
plastic	25-0723-00

#### C Card guide for 112.5mm installation headroom in 3 U subrack



End pieces (plastic)

<b>Part no. (pair)</b>
250-724

Extrusion piece 1000 mm for adjusting

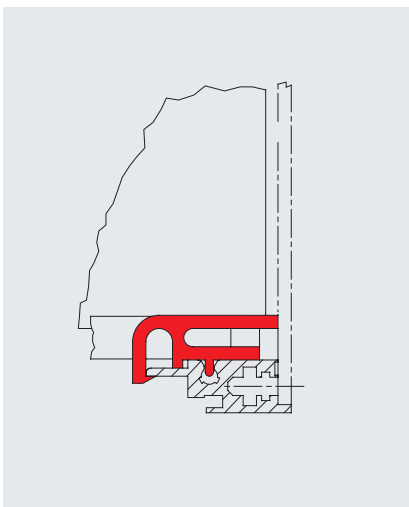
Material	Part no.
aluminium	24-0005-00
plastic	25-0723-00



### PCB lock

- can be used with front panels
- for fastening PCB's to prevent them from falling out
- snaps into place easily

**Material:** plastic, UL 94-V 0  
**Colour:** similar RAL 7035 light grey

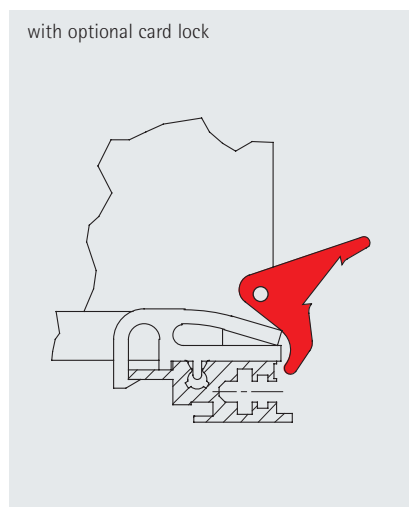


**Part no. (1 piece)**  
250-716

### Extraction handle

- for extracting PCB's
- the optional PCB lock is opened automatically
- with space for attaching designation strips

**Material:** plastic  
**Finish:** black



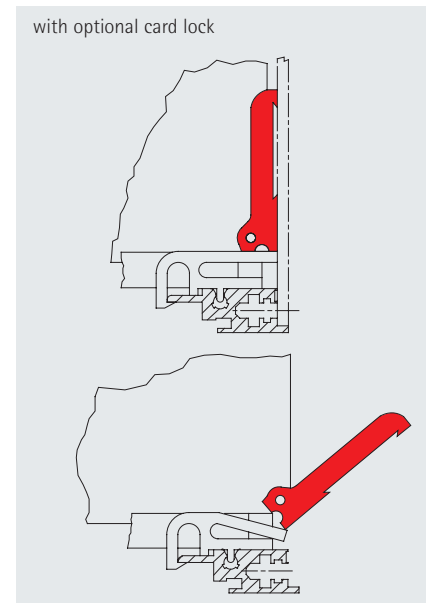
**Note:** cannot be used with front plates.

**Part no. (1 piece)**  
250-715

### Extraction handle, flat version

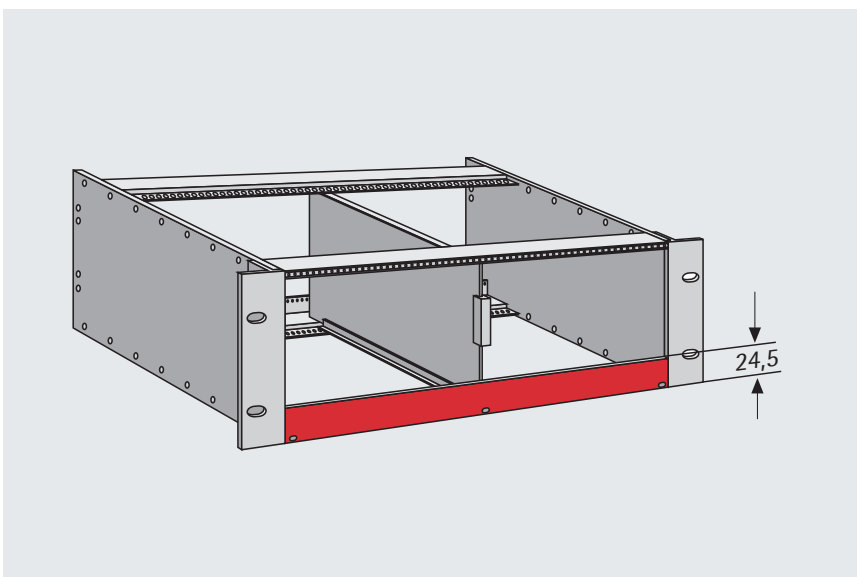
- can be used with front panels
- the optional PCB lock is opened automatically

**Material:** plastic, UL 94-V 0  
**Colour:** similar RAL 7035 light grey



**Part no. (1 piece)**  
250-717

### Group lock extrusion



- the aluminium group lock extrusion secures all PCB's
- can be printed with customer-specific information if required

#### Included in delivery

Pc.	Description
1	Group lock extrusion, anodized
1	Rubber seal
3/4	Knurled screw
3/4	Screw holder

HP	Part no.
84	24-0110-84
63	24-0110-63
42	24-0110-42



### Extension kit

- for extending the side wall of the 245 subrack

**Finish:**  
transparent chromated

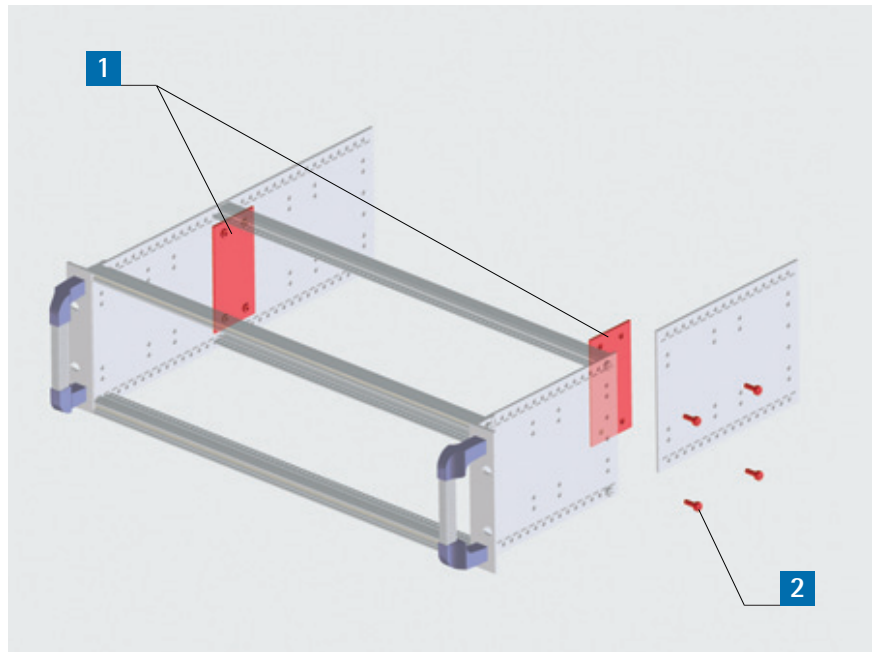
**Material:**  
aluminium

### Included in delivery

Item	Pc.	Description
1	2	Extension plates
2	8	Oval-head screws M 4 x 5

### Order information

Part no.
24-5000-70



### Connecting kit

- for connecting individual subracks to a module subrack

**Finish:**  
transparent chromated

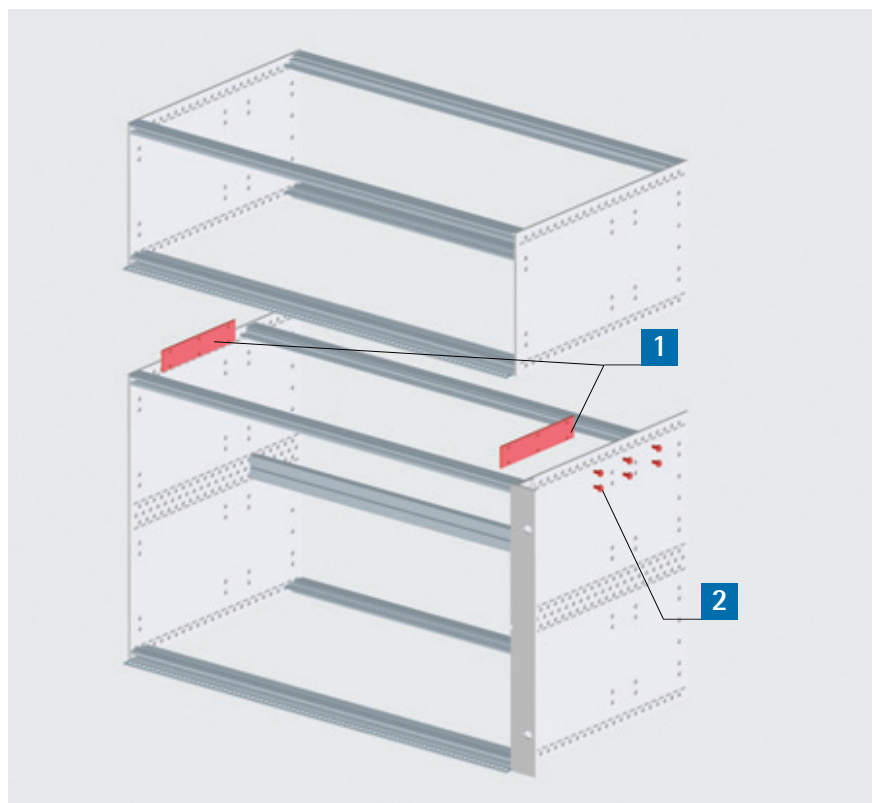
**Material:**  
aluminium

### Included in delivery

Item	Pc.	Description
1	2	Connecting plates
2	12	Oval-head screws M 3 x 6

### Order information

Part no.
24-5000-80



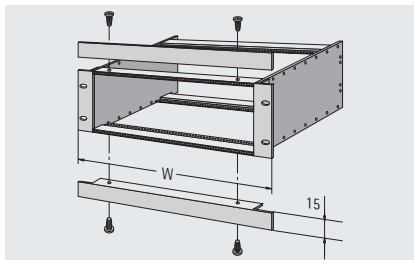
### Additional components

Additional components and parts i.e. ETSI adapters or 23" adapters and other parts can be supplied, please ask us for detailed information and specifications, we will be glad to design your customized product.



## Cover bracket

- for subbracks in control panels, bracket 15 x 15 x 2
- bracket overlap the cut-out in a control panel



HP	Width W mm	Part no. (1 piece)
84	482,6	240-111
42	269,4	240-112

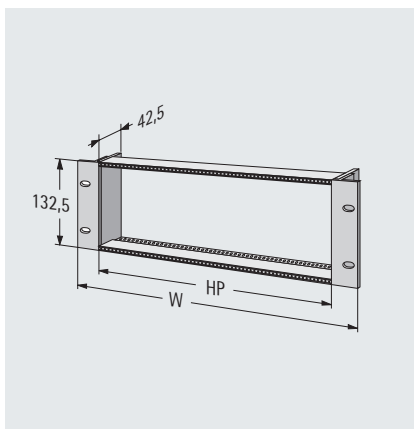
**Note:** For the installation of the mounting brackets, additional M3 threads need to be added in the front module rails. The module rail 241-113 (84 HP) can be used alternatively.

## Frame, 3 U

- single row with 2 threaded inserts

### Included in delivery

Item	Pc.	Description
1	2	Front bracket
2	2	Module rails, chromated
3	2	Side pieces
4	2	Threaded inserts
5		Assembly material



HP	Width (W) mm	Part no.
84	482,6	242-901
42	269,4	242-911

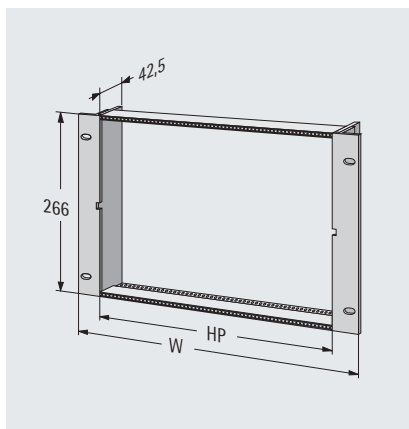


## Frame, 6 U

- single row with 2 threaded inserts

### Included in delivery

Item	Pc.	Description
1	2	Front bracket
2	2	Module rails, chromated
3	2	Side pieces
4	2	Threaded inserts
5		Assembly material



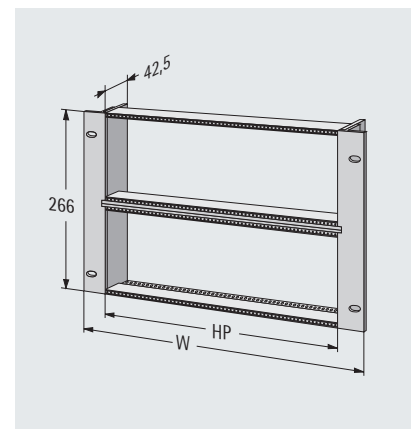
HP	Width (W) mm	Part no.
84	482,6	242-903
42	269,4	242-913

## Frame, 6 U

- double row with 4 threaded inserts

### Included in delivery

Item	Pc.	Description
1	2	Front bracket
2	4	Module rails, chromated
3	2	Side pieces
4	4	Threaded inserts
5		Assembly material



HP	Width (W) mm	Part no.
84	482,6	242-902
42	269,4	242-912



## 201 • Frame, 4 U (for front mounting using screws)



Sample configuration: 19" frame, 4 U

### 19" frame, 4 U

- This frame is the ideal supplement for control panel enclosures.
- It can be installed in switch cabinet doors or similar applications.
- available installation height: 3 U / 126 mm
- for installing active components and/or 100 mm x 160 mm Euroboards
- installed in a 445 mm x 135 mm cut-out and attached on the front using four screws

Delivery: kit form

### Included in delivery

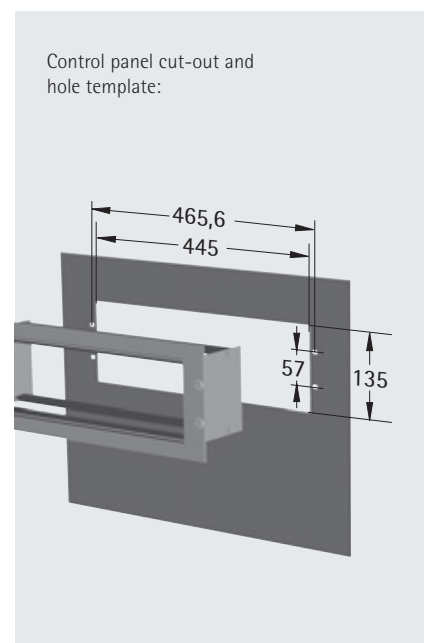
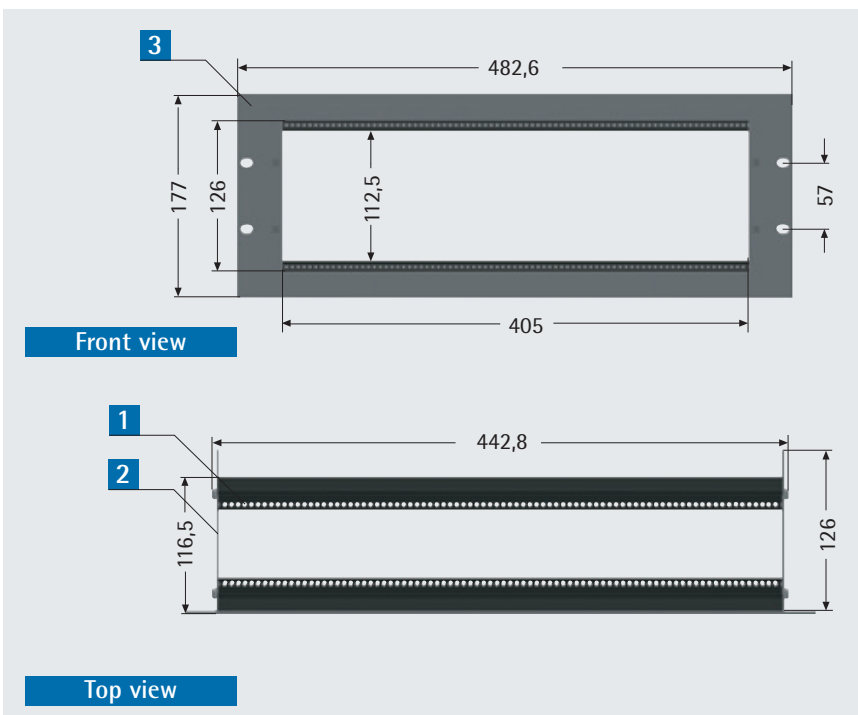
Item	Pc.	Description
1	4	Module rails profile no. 241-030
2	2	Side panels
3	1	19" front plate d=2.5 mm
4		Assembly material

### Order information

Depth mm	Part no.
126	20-1075-00

Other sizes on request!

### Specifications



Control panel cut-out and hole template:



## 19" carrier frame "apra-frame"

- solid carrier frame made of black glass-fiber-reinforced plastic (ABS)
- UL 94 V-2
- 2 integrated 84 HP – threaded rails M 2,5 (optional M3) for holding 3 U electrical components
- The frame is fastened to the cabinet door with four M 6 screws. The cutting edges are covered by the frame.
- optionally available: lockable, anti-reflection coated viewing door made from polycarbonate:
  - opens with 170 degree hinge
  - IP 54 protection of the built-in components against dust and moisture
  - protection against unauthorized access
- Individual finish is possible, if desired.
- also available as 19" subrack with aluminium side panels

### Dimensions:

outside dimensions: 178 x 482,6 mm  
 hole interval: 464 x 101 mm  
 visible area: 450 x 150 mm  
 assembly depth: 32 mm  
 total depth: 86 mm

Delivery: unmounted

Finish: black

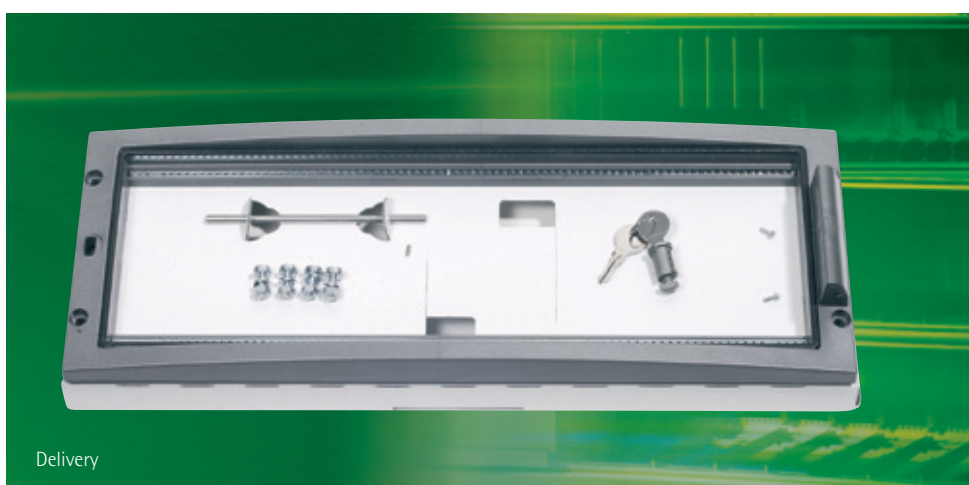
### Order information

Description	Part no.
Frame with visual cover	24-5754-84
Frame without visual cover	24-5753-84

Description	Part no.
subrack module 3 U/84 HP	24-5754-80

### Available Accessories (on request):

- spare key
- panels for front cover
- 2 threaded rails M 3



**Note:** Can not be used with plastic screw holder 25-0697-02 and -05.



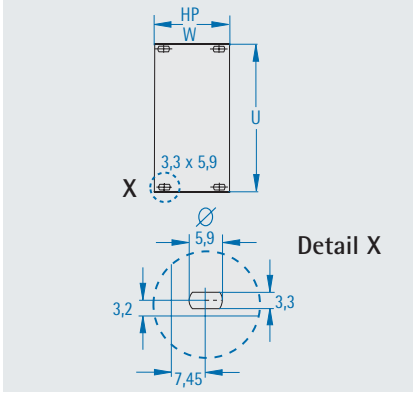
**Front panels**

- anodized front  
transparent chromated rear

**Material:** aluminium 2,5 mm  
**Delivery:** not assembled

**Customized front panels including print, foils, input systems or keyboards – please ask for our front panel express!**

**Type A**

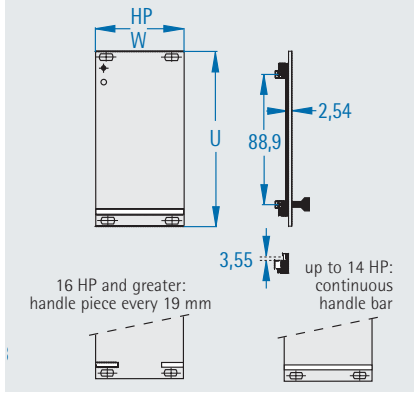


Included in delivery

Item	Pc.	Description
1	1	Front panel

**Type C**

- plastic handle bar
- plastic PCB mounting plate



Included in delivery

Item	Pc.	Description
1	1	Front panel
2	1/2	plastic handle
3	1/2	Identification plates
4	1/2	PCB mounting bracket
5		Assembly material

**Order information**

HP	Width mm	2 U H = 84,5 mm		3 U H = 129,0 mm		4 U H = 173,5 mm	6 U H = 262,5 mm	
		Type A	Type C	Type A	Type C	Type A	Type A	Type C
2	10,0	-	-	24-3002-45	-	-	24-3602-45	-
3	15,0	-	-	24-3003-45	24-3703-45	-	24-3603-45	24-3603-65
4	20,1	-	-	24-3004-45	24-3704-45	24-3404-45	24-3604-45	24-3604-65
5	25,1	-	-	24-3005-45	24-3705-45	-	24-3605-45	24-3605-65
6	30,2	-	-	24-3006-45	24-3706-45	-	24-3606-45	24-3606-65
7	35,2	-	-	24-3007-45	24-3707-45	-	24-3607-45	24-3607-65
8	40,3	-	-	24-3008-45	24-3708-45	24-3408-45	24-3608-45	24-3608-65
10	50,4	-	-	24-3010-45	24-3710-45	-	24-3610-45	24-3610-65
12	60,6	-	-	24-3012-45	24-3712-45	-	24-3612-45	24-3612-65
14	70,8	24-3214-45	-	24-3014-45	24-3714-45	24-3414-45	24-3614-45	24-3614-65
16	80,8	-	-	24-3016-45	24-3716-45	-	24-3616-45	24-3616-65
18	91,1	-	-	24-3018-45	24-3718-45	-	24-3618-45	24-3618-65
20	101,2	-	-	24-3020-45	24-3720-45	-	24-3620-45	24-3620-65
21	106,3	-	-	24-3021-45	24-3721-45	24-3421-45	24-3621-45	24-3621-65
24	121,5	-	-	24-3024-45	24-3724-45	24-3424-45	24-3624-45	-
26	131,7	-	-	24-3026-45	-	-	24-3626-45	-
28	142,0	24-3228-45	-	24-3028-45	24-3728-45	24-3428-45	24-3628-45	24-3628-65
30	152,0	-	-	24-3030-45	-	-	24-3630-45	-
35	177,5	-	-	24-3035-45	-	-	24-3635-45	-
40	202,8	-	-	24-3040-45	-	-	24-3640-45	-
42	213,0	24-3242-45	-	24-3042-45	24-3742-45	24-3442-45	24-3642-45	24-3642-65
48	243,5	-	-	24-3048-45	-	-	24-3648-45	-
54	274,0	-	-	24-3054-45	-	-	24-3654-45	-
56	284,1	24-3256-45	-	24-3056-45	-	-	24-3656-45	-
63	319,7	24-3263-45	-	24-3063-45	24-3763-45	24-3463-45	24-3663-45	24-3663-65
84	426,4	24-3284-45	-	24-3084-45	24-3784-45	24-3484-45	24-3684-45	24-3684-65



### EMC front panels

- anodized front, transparent chromated rear
- with side grooves for clipping on EMC contact gaskets

Material: aluminium, 2.5mm  
Delivery: not assembled

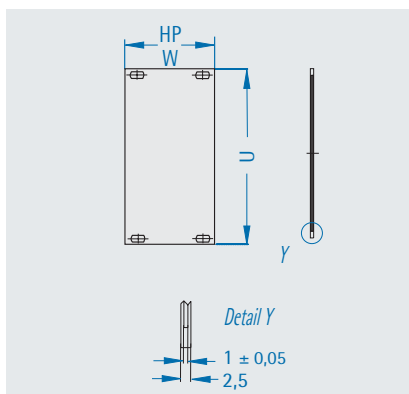


Customized front panels including print, foils, input systems or keyboards –

please ask for our front panel express!



### Type A - EMC

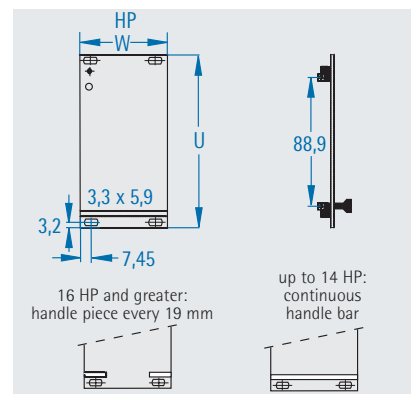


Included in delivery

Item	Pc.	Description
1	1	Front panel

### Type C - EMC

- plastic handle bar
- PCB mounting bracket



Included in delivery

Item	Pc.	Description
1	1	Front panel
2	1/2	Plastic handle
3	1/2	Identification plates
4	2/4	PCB mounting bracket
5		Assembly material

### Order information

HP	Width mm	3 U H = 129,0 mm		6 U H = 262,5 mm	
		Type A	Type C	Type A	Type C
2	10,0	24-3802-13	-	-	-
3	15,0	24-3803-13	-	24-3803-16	-
4	20,1	24-3804-13	24-3804-33	24-3804-16	24-3804-36
5	25,1	24-3805-13	24-3805-33	24-3805-16	24-3805-36
6	30,2	24-3806-13	24-3806-33	24-3806-16	24-3806-36
7	35,2	24-3807-13	24-3807-33	24-3807-16	24-3807-36
8	40,3	24-3808-13	24-3808-33	24-3808-16	24-3808-36
10	50,4	24-3810-13	24-3810-33	24-3810-16	24-3810-36
12	60,6	24-3812-13	24-3812-33	24-3812-16	24-3812-36
14	70,8	24-3814-13	24-3814-33	24-3814-16	24-3814-36
16	80,8	24-3816-13	24-3816-33	24-3816-16	24-3816-36
21	106,3	24-3821-13	-	24-3821-16	-
28	142,0	24-3828-13	-	24-3828-16	-
42	213,0	24-3842-13	-	24-3842-16	-
63	319,7	24-3863-13	-	24-3863-16	-
84	426,4	24-3884-13	-	24-3884-16	-

### Accessories

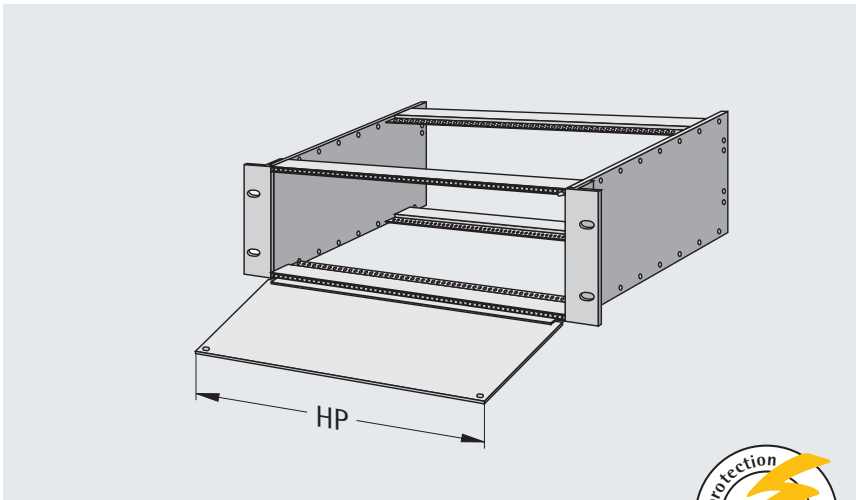
#### EMC contact gaskets

The contact gaskets are clipped onto the side grooves so that the front panels contact one another.

U	Length mm	Part no. (1 piece)
3	97	671-184
6	232	671-185



**Note:** See p. 67 for matching screw holder and neck screws.

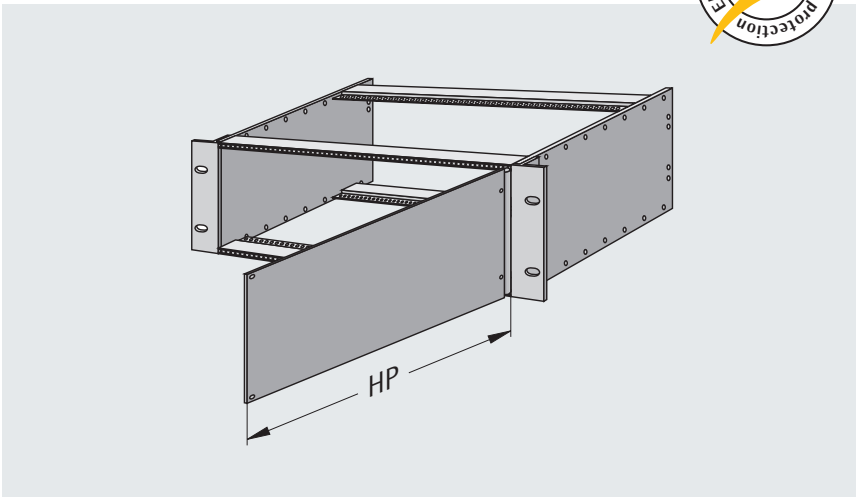


### Front panel, bottom-hinged

- with side groove for EMC gaskets
- can be mounted on top or bottom
- plate is mounted to the module rail; installation width is therefore not decreased
- opening angle = 180°, if not limited by other components

**Finish:** anodized front  
transparent chromated rear

Width (W)	Part no.	
	3 U	6 U
42 HP	24-4342-13	24-4742-16
84 HP	24-4384-13	24-4784-16



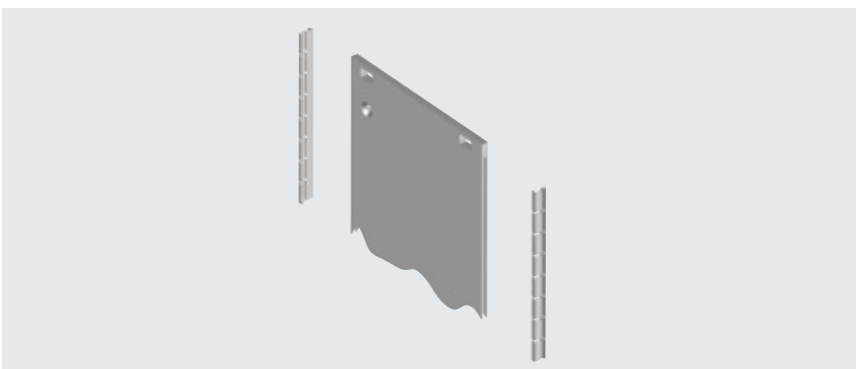
### Front panels, hinged

- with side slit for EMC gaskets
- can be mounted on the right or left
- hinge requires 2 HP width
- mounted on module rails (M 2.5)
- opening angle = 180°, if not limited by other components, for example handles

**Finish:** anodized front  
transparent chromated rear

Width (W)	Part no.	
	3 U	6 U
42 HP	24-4142-13	24-4542-16
84 HP	24-4184-13	24-4584-16

### Accessories



### EMC contact gasket

The contact gaskets are clipped into the side grooves so that the front panels contact one another.

U	Length mm	Part no.
3	97	671-184
6	232	671-185



Custom designed front panels including silk screen printing, foils or input systems on request.





## Fastening front panels

### 1 Screw holder, plastic

- fits all front panels with hole  $\emptyset$  5,9 mm x 3,3 mm
- can be pressed-in manually

<b>Part no. (100 pc.) white</b>
25-0697-02

<b>Part no. (100 pc.) black</b>
25-0697-05

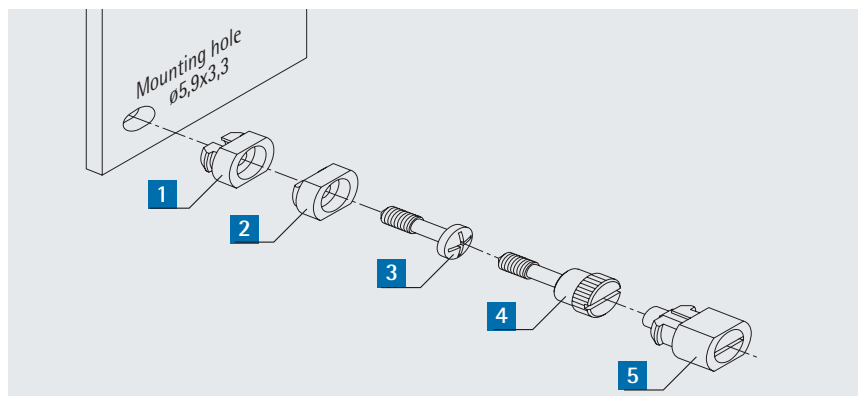
### 2 Screw holder, brass

- fits all front panels with hole  $\emptyset$  5,9 mm x 3,3 mm
- nickel-plated
- brass screw holders must be pressed into place with a tool or a level press

Description	Part no.
1 piece	250-697
100 piece	25-0697-03

- when ordering front panels and screws, panels come fitted with screw holders

<b>Part no. (1 piece)</b>
25-0697-04



### 3 Neck screw, M 2.5 x 12

- Phillips head
- nickel-plated

<b>Part no. (100 pc.)</b>
250-602

### 4 Knurled screw M 2.5

- knurled and slotted
- nickel-plated brass

<b>Part no. (100 pc.)</b>
25-0611-02

### 5 Quick closure

- no threaded inserts or sliding nuts required
- open and close with a quarter turn
- protected against twisting
- vibration-free
- cannot be lost
- easy and quick mounting

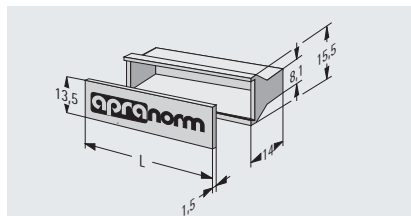
Finish: RAL 7035 light grey

<b>Part no. (100 pc)</b>
25-0607-00

## Handle bar, plastic

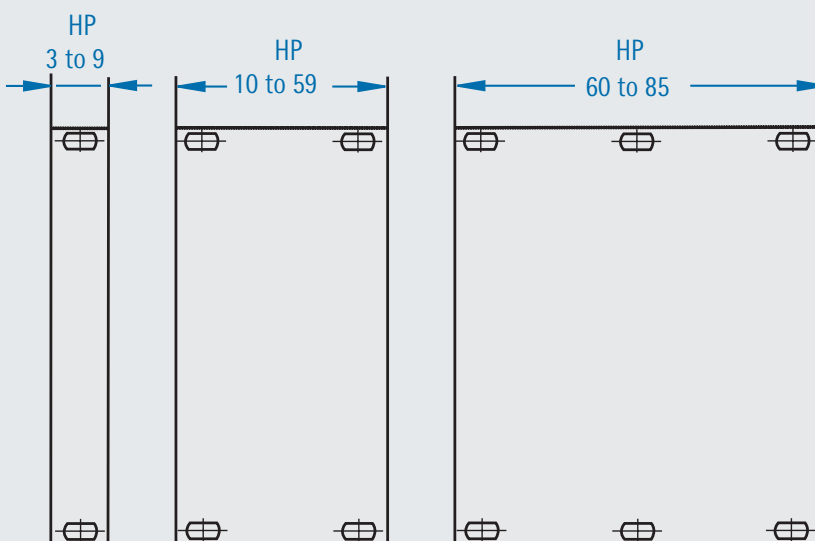
- with insertable aluminium strip allowing easy custom printing
- handle centred easily using painted positioning pins

Finish: handle bar, grey aluminium strips, 2.5mm, natural colour anodized



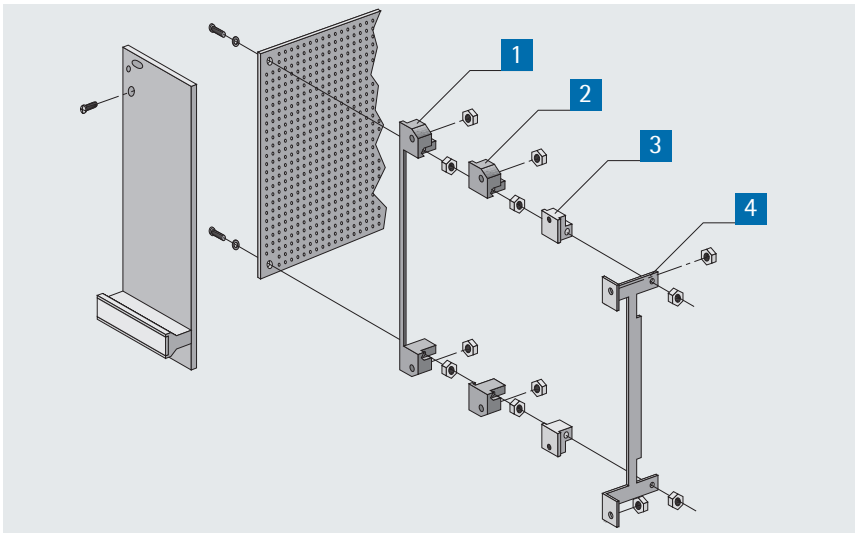
HP	Length (L) mm	Part no.
3	13,9	25-0750-03
4	19,1	25-0750-04
5	24,1	25-0750-05
6	30,0	25-0750-06
7	34,2	25-0750-07
8	39,3	25-0750-08
10	49,5	25-0750-10
12	59,7	25-0750-12
14	69,9	25-0750-14

Number of fixing holes for the positioning pins vary according to the number of screw holders and/or screws required in the front panel





PCB mounting bracket



**3** PCB mounting bracket

- zinc die cast
- Attention:**  
can only be used with handle bar 25-0750-... (see p. 67)
- if the front panel is designed as an electrical conductor, it can be integrated into the contact-voltage protection or screening measures using a conductor track on the PCB
- with M 2.5 thread for fixing front panel and PCB

Description	Part no. (1 piece)
PCB mounting plate	250-698

**1** PCB mounting bracket

- plastic, single piece

Description	Part no. (1 piece)
PCB mounting plate	250-701

**2** PCB mounting bracket

- plastic, divided

Description	Part no. (pair)
PCB mounting plate	250-700

**4** PCB mounting bracket

- sheet steel, galvanized
- for 20 mm deeper installation

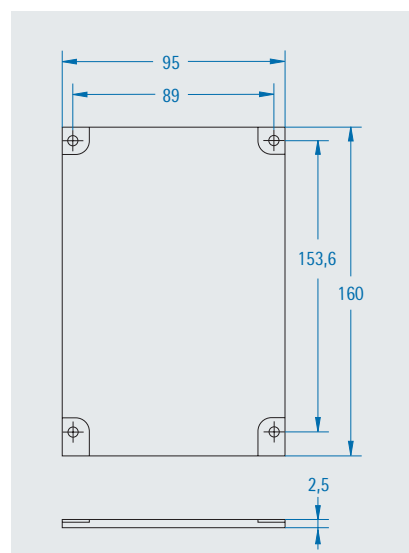
Description	Part no. (1 piece)
PCB mounting plate	250-702

Assembly material for items **1 - 4**  
250-707

PCB cover

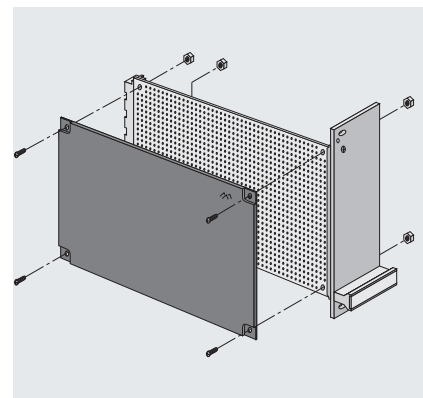
- protects the PCB's solder side
- electrically insulated
- protects from damage and short circuits
- can be coated with copper conductive paint
- fits 100 x 160 mm, 233,35 x 160 mm, 100 x 220 mm and 233,35 x 220 mm PCBs with plug-in connection in compliance with DIN 41612

**Material:** plastic, black  
Plastic, black UL 94 V-0  
**Surface resistance:**  $10^{15}$  Ohm  
**ASTM D 149 dielectric strength:** 20 kV  
**DIN 53460 heat distortion temperature:** 130 °C



PCB cover, shortened model

We recommend mounting a 1.5 mm shortened cover when using cards with front panels that are mounted with plastic PCB mounting plates (item 1 above).



Part no.
258-199

Description	Part no.
for PCB 100 x 160 mm	258-200
for PCB 100 x 160 mm, with copper conductive paint	25-8200-51
for PCB 100 x 220 mm	258-250
for PCB 100 x 220 mm, with copper conductive paint	25-8250-51
Assembly material for PCB cover	250-711