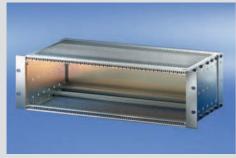
# Subracks – for railway applications

Overview .... 6.70

# 19" subrack for mobile rail applications

- Shock and vibration resistance to IEC 61587-1, EN 50155, NF F 61-005 / NF F 60-002, BN 411002 and BN 411003
- Versions for CompactPCI applications
- Best suited for high mechanical demands



# BN 411002, 411003 subracks



- Height 3 U and 6 U
- Width 84 HP
- Unshielded and shielded versions

BN 411002/-003 subracks unshielded . . . 6.73 shielded . . . . . 6.74

06102008

### EN 50155 subrack

- Height 3 U and 6 U
- Width 84 HP
- Unshielded and shielded versions
- Shielded versions for CompactPCI applications

EN 50155 subracks unshielded . . . . 6.75 shielded . . . . . . 6.76 shielded, for CompactPCI . . . 6.77

**SNCF** subracks unshielded . . . . 6.78

shielded, for CompactPCI.... 6.80

**Accessories** Guide rails . . . . 6.81 Cover plates . . . . 6.82

General accessories in europacPRO section ..... 6.17

Application

shielded . . . . . 6.79

ServicePLUS . . 6.84

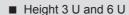
examples . . . . . 6.85

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#### **SNCF** subrack

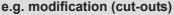




- Width 9 T (36 HP) and 21 T (84 HP)
- Unshielded and shielded versions
- Shielded versions for CompactPCI applications



# ServicePLUS from page 6.84



- e.g. downloads (CAD drawings, user manuals, test reports)
- e.g. custom solutions (special depths, electromagnetically shielded applications)

www.schroff.biz/ServicePLUS



europacPRO europacPRO for industrial applications europacPRO for rugged applications

Main Catalogue E 10/2012

6.6

6.86

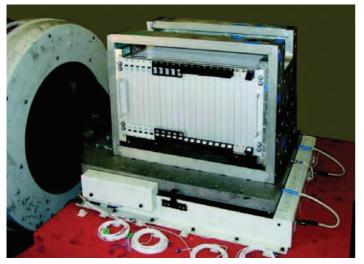
6.92

# Subrack for mobile rail applications



#### Solid mechanical construction

Electronics for mobile applications require robust mechanical construction that can withstand extreme environmental conditions. Our enclosure solutions protect the housed electronics thanks to their high mechanical strength and thus are an important element for secure and trouble-free operation of the entire system. Only dependability, down to the last detail, can make complex safety tasks achievable - and also economic.



#### Shock and vibration resistance

Schroff products assure shock and vibration resistance in mobile applications e.g. by suitable material thicknesses and fixing elements. Tested with typical loads, they offer the best conditions for secure and reliable functioning in individual applications and projects.

#### **Certification of mechanics**

High-quality, robust and durable products are an important component for the certification of a complete application in accordance with the European Railway Standard DIN EN 50155, the German Railway Standards BN 411002 and BN 411003 and the French Railway Standards NF F 61-005 and NF F 60-002.

# Note

fer = ferroviaire (French) = railway 1 T = 4 HP = 20.32 mm



A large amount of general information on our railway systems solutions can be found at www.schroff.co.uk/railway/ and in our "Railway Systems" brochure.



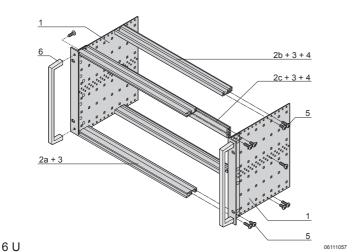


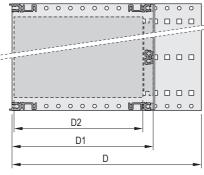


TÜV test report

# Without front handle

With front handle





D=overall depth, D1=insertion depth, D2=board depth = D1 - 15 mm



Rear horizontal rail for backplane mounting with insulation strip



ServicePLUS see page 6.84

# Kit, unshielded, 'heavy', for backplane mounting

Subrack with side panel type H ("heavy"), 19" bracket is firmly connected to side panel (tox-cold welded)



- Rear horizontal rail for backplane mounting with insulation strip
- Tested to German Railway Standards BN 411002, BN 411003
- Versions with/without front handles

NEW

# **Delivery comprises** (Kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H, Al, 2 mm, passivated, with 19" support bracket (tox-cold welded) for textile EMC gasket
2a	2	2	Front horizontal rail (H-KD)
2b	2	2	Rear horizontal rail (H-ST)
2c	-	1	Rear horizontal rail centre (H-ST)
3	4	6	Threaded inserts, front and rear (pre-fitted)
4	2	4	Insulation strip (pre-fitted)
5	1	1	Fixing material kit, user manual
6	2	2	Front handle (on version with front handle only)

# **Order Information**

Height U	Width HP	Depth D mm	Depth D1 mm	Part no. with front handle	Part no. without front handle
3	84	175	175	24567-161	24563-161
3	84	235	175/235	24567-162	24563-162
3	84	295	175/235/295	24567-163	24563-163
3	84	355	175/235/295/355	24567-164	24563-164
6	84	175	175	24567-461	24563-461
6	84	235	175/235	24567-462	24563-462
6	84	295	175/235/295	24567-463	24563-463
6	84	355	175/235/295/355	24567-464	24563-464

#### **Accessories**

ic washers, 8 × cage nuts) rails (standard). FSD clips	21100 400
embly kit (screw, washer, nut) (8 × screws,	21100-435

Sulac rails (Staridard), EOD Clip.	3	
Depth D2	Qty/PU	Part no.
mm	pieces	
160	10	24560-351
220	10	24560-353
280	10	24560-379
340	10	24560-380
ESD clip for guide rails PU 50 pieces	3	24560-255
Torx panhead screw, for extra bolting	24560-141	

# Note

- Perforated rails, cover plates and assembly kit from page 6.34
- Textile EMC gaskets see page 6.21
- Further accessories from page 6.17
- ServicePLUS configuration from page 6.84

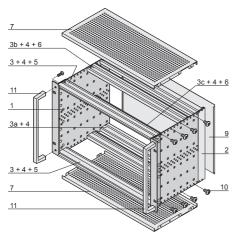


For further information www.schroff.biz/oneclick oneClick search code = Part no.

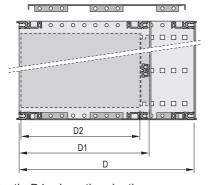


Without front handle

With front handle



6 U



D = overall depth, D1 = insertion depth, D2 = board depth = D1 - 15 mm



Rear horizontal rail for backplane mounting with insulation strip



ServicePLUS see page 6.84

# Kit, shielded, "heavy", for backplane mounting

 Subrack with side panel type H ("heavy"), 19" bracket is firmly connected to side panel (tox-cold welded)



- Horizontal rail rear for backplane mounting with insulating strip
- Shielding typically 40 dB at 1 GHz, 30 dB at 2 GHz (in accordance with VG 95373, part 15 or IEC 61587, part 3), under the condition that the front is closed with shielded front panels
- Tested to German Railway Standards BN 411002, BN 411003
- Versions with/without front handles

# NEW

# **Delivery comprises** (Kit)

ltem	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H, Al, 2 mm, passivated, with 19" support bracket (tox-cold welded); for textile EMC gasket
2	2	2	Rear corner profile for textile EMC gasket
3	2	2	Front horizontal rail (H-KD)
3 a	2	2	Rear horizontal rail (H-KD)
3 b	2	2	Rear horizontal rail (H-ST)
3 c	-	1	Rear horizontal rail centre (H-ST)
4	6	8	Threaded insert (pre-fitted)
5	2	2	Perforated strip (pre-mounted)
6	2	4	Insulation strip (pre-fitted)
7	2	2	EMC cover plate
8	1	1	EMC gasketing material (pre-fitted)
9	1	1	EMC rear panel
10	1	1	Fixing material kit, user manual
11	2	2	Front handle (on version with front handle only)

#### **Order Information**

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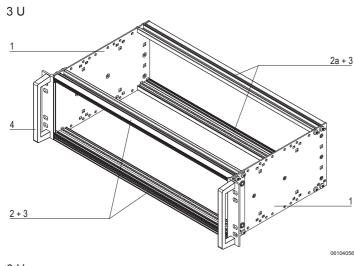
Height	Width	Depth D	Depth D1	Part no.	Part no.
U	HP	mm	mm	with front handle	without front handle
3	84	235	175/235	24567-172	24563-172
3	84	295	175/235/295	24567-173	24563-173
3	84	355	175/235/295	24567-174	24563-174
6	84	235	175/235	24567-472	24563-472
6	84	295	175/235/295	24567-473	24563-473
6	84	355	175/235/295	24567-474	24563-474

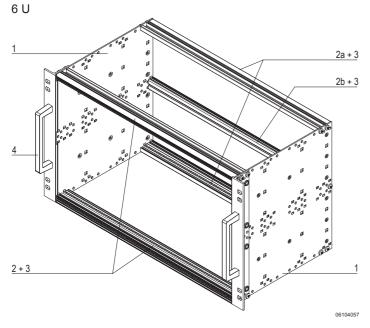
#### Accessories

19" assembly kit (screw, washer, nut 8 × screws, 8 × plastic washers, 8 × ca	21100-435	
Guide rails (standard), ESD clips	3	
Depth D2	Qty/PU	Part no.
mm	pieces	
160	10	24560-351
220	10	24560-353
280	10	24560-379
ESD clip for guide rails PU 50 pieces	24560-255	
<b>Torx panhead screw</b> , for extra bolting 2.5 x 9.3 zinc-plated PU 100 pieces	24560-141	

- Perforated rail for connectors see page 6.34
- Further accessories from page 6.17
- ServicePLUS configuration from page 6.84









# Kit, EN 50155, unshielded

- Subrack in robust "heavy" version, 19" bracket is firmly connected to side panel (tox-cold welded)
- For mobile railway applications
- Tested to EN 50155
- 3 U and 6 U, 84 HP, 235 mm deep, for 220 mm board depth

# **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); prepared for EMC textile gasket
2	2	2	Front horizontal rail (H-KD)
2 a	2	2	Rear horizontal rail (H-VT)
2 b	-	1	Rear centre horizontal rail (VT)
3	4	6	Threaded inserts
4	2	2	Handles
5	1	1	Assembly kit with self-locking screws
6	1	1	User manual

# **Order Information**

Height	Width	Depth	Part no.
U	HP	mm	
3	84	235	21500-077
6	84	235	21500-078

Accessories	
Guide rail, standard, 220 mm deep PBT, UL 94 V-0, red, groove width 2 mm, PU 10 pieces, see page 6.36	24560-353
Panhead screw with Torx M2.5 x 9.3, St, zinc-plated, self-locking, PU 100 pieces	21500-039
ESD clip for guide rails PU 50 pieces	24560-255
Cover plate for screw-fixing onto side panel width 84 HP, depth 220 mm, PU 1 kit	21500-037
Fixing material kit for mounting two subracks in a	21100-/35

# **Note**

■ Test reports online

19" case or cabinet

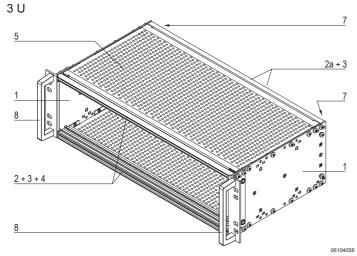
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17

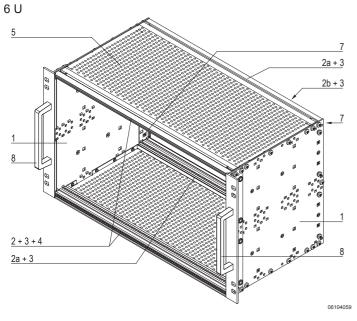


For further information www.schroff.biz/oneclick oneClick search code = Part no.

21100-435







# Kit, EN 50155, shielded

- Subrack in robust "heavy" version,
   19" bracket is firmly connected to side panel (tox-cold welded)
- For mobile railway applications
- Tested to EN 50155
- 3 U and 6 U, 84 HP, 235 mm deep, for 220 mm board depth

# **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); for textile EMC gasket
2	2	2	Front horizontal rail (H-KD)
2 a	2	2	Rear horizontal rail (H-VT)
2 b	-	1	Rear centre horizontal rail (VT)
3	4	6	Threaded inserts
4	2	2	Perforated strip
5	2	2	EMC cover plate 235 T
6	1	1	EMC gasketing kit
7	1	2	Backplane kit – EMC shielding material
8	2	2	Handles
9	1	1	Assembly kit with self-locking screws
10	1	1	User manual

#### **Order Information**

Height	Width	Depth	Part no.
U	HP	mm	
3	84	235	21500-079
6	84	235	21500-080

# Accessories

**Guide rail, standard, 220 mm deep** PBT, UL 94 V-0, red, groove width 2 mm, PU 10 pieces, see page 6.36

Panhead screw with Torx

M2.5 x 9.3, St, zinc-plated, self-locking, PU 100 pieces

ESD clip for guide rails PU 50 pieces

Fixing material kit for mounting two subracks in a 19" case or cabinet

24560-353

21500-039

24560-255

21100-435

#### Note

- Test reports online
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17



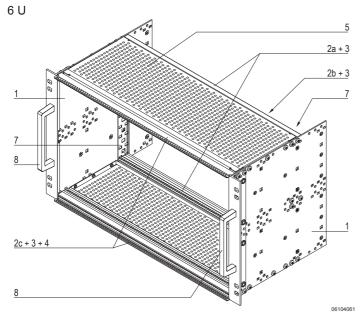
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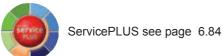


ServicePLUS see page 6.84



# 3 U 2a+3 2c+3+4 2c+3+4





# Kit, EN 50155, shielded, for CompactPCI applications

- Subrack in robust "heavy" version,
   19" bracket is firmly connected to side panel (tox-cold welded)
- For mobile railway applications
- Tested to EN 50155
- 3 U and 6 U, 84 HP, 235 mm deep, for 160 mm board depth
- Subrack in accordance with IEEE 1101.10

# **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); for textile EMC gasket
2	1	-	Front horizontal rail (H-KD)
2 a	2	2	Rear horizontal rail (H-VT)
2 b	-	1	Rear centre horizontal rail (VT)
2 c	1	2	Front horizontal rail (H-LD)
3	4	6	Threaded inserts
4	2	2	Perforated strip
5	2	2	EMC cover plate, 175 T
6	1	1	EMC gasketing kit
7	1	2	Backplane kit – EMC shielding material
8	2	2	Handles
9	1	1	Assembly kit with self-locking screws
10	1	1	User manual

# **Order Information**

Height	Width	Depth	Part no.	
U	HP	mm		
3	84	235	21500-081	
6	84	235	21500-082	
Fixing material kit for mounting two subracks in a				
19" case or cabir	21100-435			

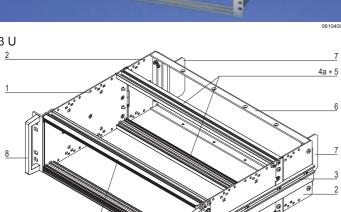
#### Note

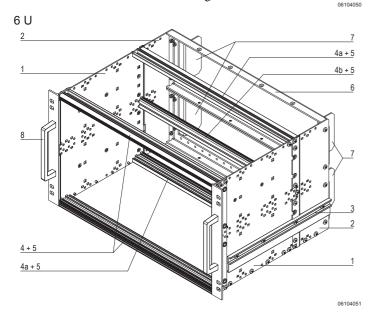
- Please order guide rails and ESD clips separately, see page 6.81
- Test reports online
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17



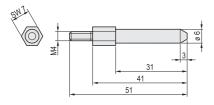
For further information <u>www.schroff.biz/oneclick</u> oneClick search code = Part no.











ServicePLUS see page 6.84

# Kit, SNCF, unshielded

 Subrack, robust "heavy" version,
 19" bracket is firmly connected to side panel (tox-cold welded)



- For mobile railway applications
- SNCF listed, europacPRO-fer, tested to NF F 61-005 and NF F 60-002
- 3 U and 6 U, 9 HP and 21 HP, 320 mm deep, for 220 mm board depth

#### **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); prepared for textile EMC gasket
2	2	2	Side panel extension
3	2	2	Ducting external
4	2	2	Front horizontal rail (H-KD)
4 a	2	2	Rear horizontal rail (H-VT)
4 b	-	1	Rear centre horizontal rail (VT)
5	4	6	Threaded inserts
6	1	2	Rear frame 3 U, 21 T
7	2	4	Protective bracket SNCF
8	2	2	Handle
9	1	1	Assembly kit with self-locking screws
10	1	1	User manual

# **Order Information**

Width	Height	Depth	Part no.
mm	U	mm	
36 HP (9 T)	3	320	21500-067
36 HP (9 T)	6	320	21500-070
84 HP (21 T)	3	320	21500-029
84 HP (21 T)	6	320	21500-027
<del>.</del> .			

#### Accessories

**Guide rail, standard, 220 mm deep** PBT, UL 94 V-0, red, groove width 2 mm, PU 10 pieces, see page 6.36

Panhead screw with Torx

M2.5 x 9.3, St, zinc-plated, self-locking, PU 100 pieces

ESD clip for guide rails PU 50 pieces

Coding peg for rear frame, St, white zinc-plated, 1 piece

Fixing material kit for mounting two subracks in a

19" case or cabinet



24560-353

21500-039

24560-255 60895-018

21100-435

# Note

- fer = ferroviaire = French Railways, 1 T = 4 HP = 20.32 mm
- Receptacle/mounting frame for subracks, stainless steel, 9 T or 21 T on request
- Test reports online
- Cover plates for bolting on to side panel see page 6.82
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17



For further information <u>www.schroff.biz/oneclick</u> oneClick search code = Part no.



# Kit, SNCF, shielded

Subrack, robust "heavy" version, 19" bracket is firmly fixed to side panel (tox-cold welded)

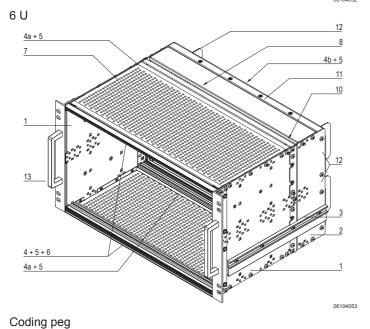


- For mobile railway applications
- SNCF listed, europacPRO-fer, tested to NF F 61-005 and NF F 60-002
- 3 U and 6 U, 9 T and 21 T, 320 mm deep, for 220 mm board depth

# 3 U

### **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); for textile EMC gasket
2	2	2	Side panel extension
3	2	2	Ducting external
4	2	2	Front horizontal rail (H-KD)
4 a	2	2	Rear horizontal rail (H-VT)
4 b	-	1	Rear centre horizontal rail (VT)
5	4	6	Threaded inserts
6	2	2	Perforated strip
7	2	2	EMC cover plate 235 T
8	2	2	Rear cover plate, 55 T
9	1	1	EMC gasketing kit
10	1	2	Backplane kit – EMC shielding material
11	1	2	Rear frame, 3 U, 21 T
12	2	4	Protective bracket SNCF
13	2	2	Handles
14	1	1	Assembly kit with self-locking screws
15	1	1	User manual



# **Order Information**

Width	Height	Depth	Part no.
	U	mm	
36 HP (9 T)	3	320	21500-068
36 HP (9 T)	6	320	21500-071
84 HP (21 T)	3	320	21500-030
84 HP (21 T)	6	320	21500-028
Accessories			
O ! . ! !			

Guide rail, standard, 220 mm deep PBT, UL 94 V-0, red, groove width 2 mm, PU 10 pieces, see page 6.36 Panhead screw with Torx M2.5 x 9.3, St, zinc-plated, self-locking, PU 100 pieces

ESD clip for guide rails PU 50 pieces

24560-353 21500-039 24560-255

Coding peg for rear frame, St, white zinc-plated, 1 piece Fixing material kit for mounting two subracks in a 19" case or cabinet

60895-018 21100-435

Note

- fer = ferroviaire = French Railways, 1 T = 4 HP = 20.32 mm
- Receptacle/mounting frame for subracks, stainless steel, 9 T or 21 T on request
- Test reports online
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17



ServicePLUS see page 6.84



# Kit, SNCF, shielded, for CompactPCI applications

 Subrack, robust "heavy" version,
 19" bracket is firmly fixed to side panel (tox-cold welded)

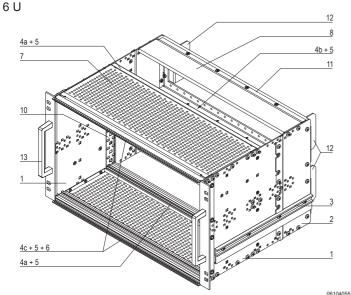


- For mobile railway applications
- SNCF listed, europacPRO-fer, tested to NF F 61-005 and NF F 60-002
- 3 U and 6 U, 9 HP and 21 HP, 320 mm deep, for 160 mm board depth
- CompactPCI subrack conforming to 1101.10

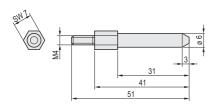
# **Delivery comprises** (kit)

Item	Qty		Description
	3 U	6 U	
1	2	2	Side panel type H with 19" support bracket (tox-cold welded); for textile EMC gasket
2	2	2	Side panel extension
3	2	2	Ducting external
4	1	-	Front horizontal rail (H-KD)
4 a	2	2	Rear horizontal rail (H-VT)
4 b	-	1	Rear centre horizontal rail (VT)
4 c	1	2	Front horizontal rail (H-LD)
5	4	6	Threaded inserts
6	2	2	Perforated strip
7	2	2	EMC cover plate, 175 T
8	2	2	Rear cover plate, 55 T
9	1	1	EMC gasketing kit
10	1	2	Backplane kit – EMC shielding material
11	1	2	Rear frame, 3 U, 21 T
12	2	4	Protective bracket SNCF
13	2	2	Handles
14	1	1	Assembly kit with self-locking screws
15	1	1	User manual

# 3 U 4a+5 7 8 11 10 12 4+5+6 4c+5+6



# Coding peg



ServicePLUS see page 6.84

# **Order Information**

Width	Height	Depth	Part no.	
	U	mm		
36 HP (9 T)	3	320	21500-069	
36 HP (9 T)	6	320	21500-072	
84 HP (21 T)	3	320	21500-047	
84 HP (21 T)	6	320	21500-046	
Coding peg for rear frame, St, white zinc-plated, 1 piece 60895-018				
Fixing material kit for mounting two subracks in a 19" case or cabinet 21100-435				

# Note

- Please order guide rails and ESD clips separately, see page 6.81
- fer = ferroviaire = French Railways, 1 T = 4 HP = 20.32 mm
- Receptacle/mounting frame for subracks, stainless steel, 9 T or 21 T on request
- Test reports online
- ServicePLUS configuration see from page 6.84
- Further accessories see from page 6.17



06104062

For further information <u>www.schroff.biz/oneclick</u> oneClick search code = Part no.



# **Guide rails**

Material PBT, UL 94 V-0, red, groove width 2 mm, for 1.6 mm board thickness

# **Order Information**

Description	Depth mm	Qty/PU	Part no.
Guide rails, accessories, 160 mm deep	160	10	24560-351
Guide rails, standard, 220 mm deep	220	10	24560-353
ESD clip for guide rails PU 50 pied	ces		24560-255



For further information <u>www.schroff.biz/oneclick</u> oneClick search code = Part no.

# Guide rails with coding for CompactPCI and VME64x

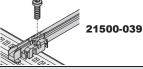
- The guide rails conform to IEC 60297-3-100 and IEEE 1101.10/11, are 4 HP wide and can be fitted with keying/coding pegs
- Material PBT UL 94 V-0, groove width 2 mm, for board thickness 1.6 mm
- Colour:
  - red (CPU board)
  - grey (periphery board)
  - green (CompactPCI power supply unit, 0.1" offset)

# **Order Information**

Description	Depth	Qty/PU	Part no.
	mm		
Guide rails with coding, red	160	10	24560-356
Guide rails with coding, grey	160	10	24560-358
Guide rails with coding, green, offset	160	10	24560-359

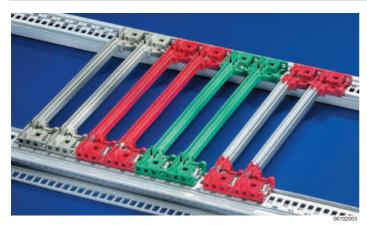
# Panhead screw with Torx

M2.5 x 9.3, St, zinc-plated, self-locking, PU 100 pieces

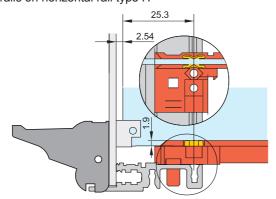


ESD clip for guide rails PU 50 pieces	24560-255
ESD clip for alignment pin of CPCI/VME64x handle PU 50 pieces	24560-256
Coding peg PC, UL 94 V-0, RAL 7035, PU 100 pieces	20817-501

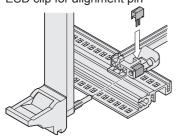
- More guide rails see page 6.36
- For inserter/extractor handle type IEL/IET for CompactPCI or VME64x applications see Subracks/Plug-in units section, page 7.18



Guide rails on horizontal rail type H



ESD clip for alignment pin



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# d = D - 250 0 0 . . . . . 3 HE / U 0000 160 / 220 50000

Side view for 175 mm and 235 mm depths

# Cover plate for screw-fixing onto side panel

- Suitable for use with all horizontal rails
- Cover plate for mounting of 160 mm, 220 mm or 280 mm deep
- Lateral notch to mount the horizontal rails in depths of 160 mm
- Shielding by optional EMC stainless steel contact strips between cover plate and horizontal rail

# **Delivery comprises**

Item	Qty	Description
1	2	Cover plate, Al, 1.0 mm, clear chromated,
		hole diameter 4.0 mm,
		(no perforation at 55 mm depth)
2	16/32	Torx M4 x 6 pentaform bolts, St, zinc-plated

# **Order Information**

Width HP	Depth D mm	Application	Part no.
84	55	-	21500-038
84	175	160	21500-048
36	235	160, 220	21500-037
36	55	_	21500-123
36	175	160	21500-124
36	220	160, 220	21500-122

■ 4 stainless steel EMC gaskets are necessary per subrack, see page 6.82

# EMC gasket (stainless steel) between cover plate and horizontal rail

- Stainless steel gasket is clipped into horizontal rail and forms the contact cover plate
- Fits all horizontal rails

#### **Order Information**

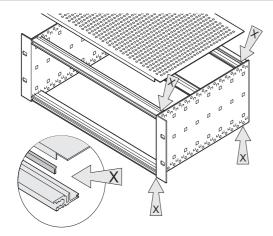
Width	Length	Qty/PU	Part no.	
HP	mm	pieces		
42	182.4	10	24560-241	
63	284.0	10	24560-243	
84	395.7	10	24560-245	
84	395.7	100	24560-246	
Assembly tool For mounting of				
EMC sealing	24560-271			
1 piece				

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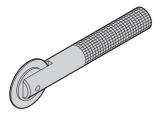
■ When a rear hood is used, the stainless steel EMC gasket ensures the conductive connection between horizontal rail and rear hood



For further information www.schroff.biz/oneclick oneClick search code = Part no.



Assembly tool



# **Coding peg for rear frame (NFF standard)**

# 31 41 51

# **Order Information**

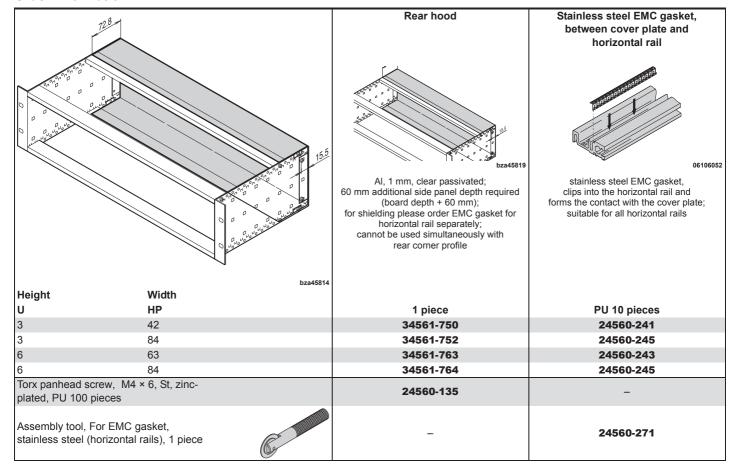
Description	Qty/PU	Part no.
Coding peg, St, white zinc-plated	1	60895-018



For further information <u>www.schroff.biz/oneclick</u> oneClick search code = Part no.

# Rear hood for 3 U and 6 U subracks (for stainless steel EMC gasket)

# **Order Information**



#### Note

Other dimensions of rear hood available on request

# Subracks - for railway applications ServicePLUS



# configuration

Components can be varied and combined

# Simple. Fast. For the product you want.

- Configuration tables from page 6.17
- Online configuration: <u>www.schroff.co.uk/configuration</u>



# assembly

Fitting of all mechanical, electrical and electronic components by our specialists

- **Assembled by professionals. Double benefit!**
- Professional and reliable from quantity 1Ready for despatch within 5 working days



# modification

Custom drillings, cut-outs and special colours for off-the-shelf products

- **Small changes. Large impact.**
- Custom modifications from quantity 1Ready for despatch within 10 working days



# solution

Integration and custom developments

- Simple. Fast. From one source.
- Special sizes (depth and width)
- Individual heat dissipation concepts
- Ready for despatch within 10 working days



# **express**

Delivery time to customer's request

# When fast has to be faster.

■ Express logistics



# academy

Knowledge transfer and partnership

# **Knowledge. Sharing. Partnerships.**

■ Seminars, CAD drawings, test reports, user reports

# Subracks - for railway applications ServicePLUS

# **Application examples**



Application: Subrack receptacle/mounting frame



Application: Automatic train control system



Application: Signalling control systems



Application: Mobile telephony system



Application: Control system



Application: Train control system