



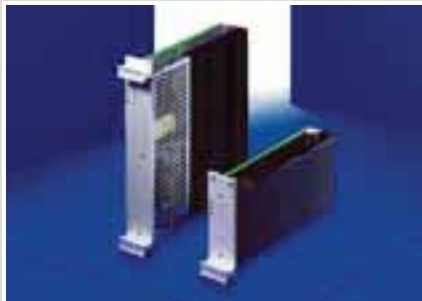
Power Supplies

System												Power supplies	Design	Page
cPCI	VME	ATX	1	2	3	4	5	6	7	9	13			
	■				■			■				Ripac power supplies	plug-in	74
■					■			■				Ripac power supplies	plug-in	74
												Accessories		75



Overview

3U, 6U plug-in (VME)



130, 160, 270 watts
See page 74 for details

Applications

Plug-in power supply units for VMEbus systems with integral VMEbus signalling.

Design features

- 130, 160, 270 watts
- 482.6 mm (19") module to IEC 60 297-3
- Installation depth 160 mm
- Mounting in the subrack with the aid of guide rails
- Connection via connectors H15, IEC 60 603-2
- 3 outputs

User benefits

- 482.6 mm (19") compatible
- Quick exchange
- Approvals: EN 60 950, VDE 0805 and IEC 950



3U, 6U plug-in (cPCI)



175, 200, 250, 350 watts
See page 75 for details

Applications

Plug-in power supply units for cPCI systems.

Design features

- 175, 200, 250, 350 watts
- 482.6 mm (19") module to IEC 60 297-3
- Installation depth 160 mm
- Mounting in the subrack with the aid of guide rails
- Connection via Positronic connector 47-pole PICMG 2.9
- 4 outputs

User benefits

- 482.6 mm (19") compatible
- Quick exchange
- Approvals: EN 60 950 A1 – A4, CSA 22.2, UL 1950, C
- Complies with PICMG specifications



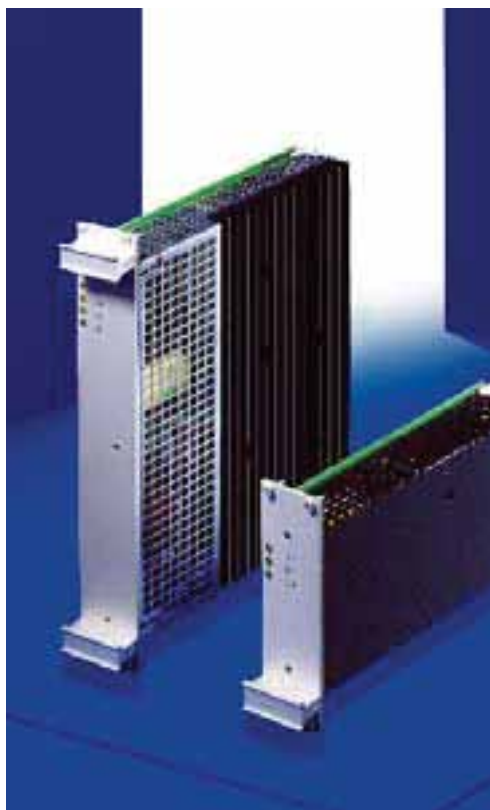


Pixus offers an extensive range of power supply units in various designs. The range includes 482.6 mm (19") compatible and open frame.

130, 160, 270 W, plug-in,
integral VMEbus signalling

Design features

- 482.6 mm (19") module to IEC 60 297-3
- Mounting in the subrack with the aid of guide rails
- Connection via connectors H15, IEC 60 603-2
- 3 outputs



Overview of benefits

Open Frame (VME)

- 250, 600, 400, 1000 watts
- Minimal space requirements with a high power output
- Universal applications
- Approvals: UL 1950, IEC 60 950 and CSA 22.2 No. 234

3U, 6U (VME), plug-in

- 482.6 mm (19") compatible
- Quick exchange
- Approvals: IEC 60 950

3U, 6U (cPCI), plug-in

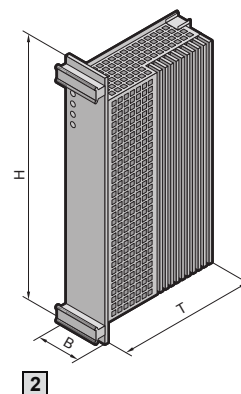
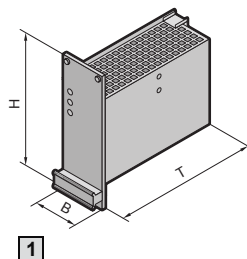
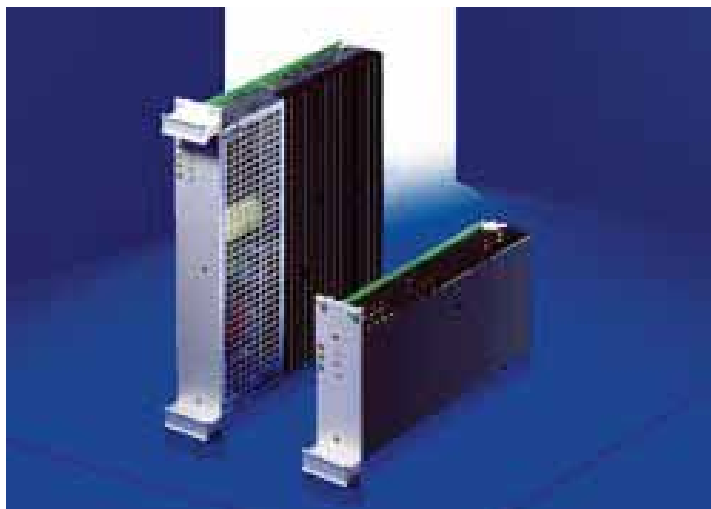
- 482.6 mm (19") compatible
- 175, 200, 250, 350 W
- Quick exchange

- Approvals: IEC 60 950 A1 – A4, CSA 22.2, UL 1950, CE
- PICMG specification

PS/2 (AT/ATX)

- 550W – 1000W
- Universal applications
- Approvals: CSA

Power supplies for VME, plug-in



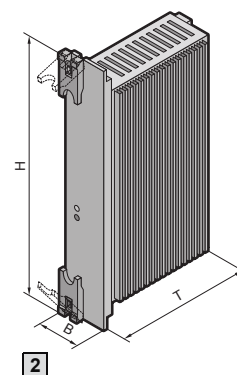
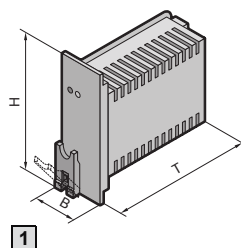
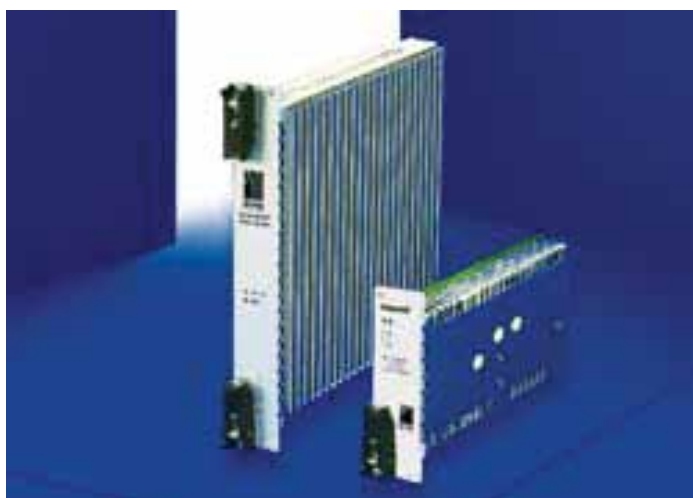
Connector assignment, see page 186

Characteristic curve diagram, see page 186

Detailed drawing, see page 186

	1			2		
Height (H)	3U			6U		
Width (B)	10 HP		12 HP	8 HP		12 HP
Depth (T) mm	170.0		170.0	170.0		170.0
Model No. RP power supply	3686.469		3686.470	3686.471		3685.306
Model No. RP front panel	3685.304		3685.305	3686.472		3685.307
Output sizes						
Output	1	2	3	1	2	3
Output voltage	5 V	+12 V	−12 V	5 V	+12 V	−12 V
Output current 3U, 10 HP/6 U, 8 HP	14 A	5 A	2 A	20 A	5 A	2 A
Output current 3U, 12 HP/6 U, 12 HP	20 A	5 A	2 A	35 A	6 A	2 A
Maximum power output	130 W (10 HP), 160 W (12 HP)			160 W (8 HP), 270 W (12 HP)		
Setting range of output voltage	± 5 %		–	± 5 %		–
Load compensation (load variation 0 – 100 %)	< 0.1 %	< 1 %		< 0.1 %	< 1 %	
Line regulation (U _{e min.} – U _{e max.})	< 0.2 % at 230 V AC + 15 % – 19 %			< 0.2 % at 99 – 138/187 – 264 V AC		
Base load	–					
Compensation time	< 1 ms at I _a 20 – 80 %					
Infeed compensation (Sense)	± 0.25 V		–	± 0.25 V		–
Residual ripple (max.)	< 35 mV		< 20 mV	< 45 mVss	< 30 mVss	< 15 mVss
Interference voltage	50 mV typ. (bandwidth 20 MHz)			< 80 mV typ. (bandwidth 20 MHz)		
Temperature coefficient	0.025 %/K					
Overvoltage protection (automatically recovery)	125 % + 5 %	125 % + 10 %		125 % ± 5 %	120 % ± 10 %	
Overload protection	typ. 110 % I _{a rated} , U/I characteristic curve acting on all outputs, outputs short circuit-resistant					
Overtemperature protection	Cuts out if the internal temperature is too high, cuts in again with hysteresis					
AC-FAIL, SYSRESET	TTL signals with 48 mA drive current, active low					
ON delay	typ. 500 ms			< 0.5 s		
Ramp-up time	< 30 ms			≤ 50 ms		
Input variables						
Mains voltage U _e	AC 187 – 264 V, 50/60 Hz with automatic changeover to AC 90 – 138 V (in the range 90 – 94 V AC only 85 % rated load) or 264 – 347 V DC			AC 187 – 264 V, 50/60 Hz with automatic changeover to AC 99 – 138 V		
Mains frequency	47 – 63 Hz					
Efficiency (typ.)	80 %					
Startup current limitation	< 10 As typ. – in cold state < 15 As typ. – in warm state			< 25 As typ. – in cold state < 35 As typ. – in warm state		
Fuse	3.15 AT			4 AT		

Ripac Power supplies



Connector assignment, see page 185

Detailed drawing, see page 185

	[1]												[2]			
Height (H)	3U												6U			
Width (B)	8 HP												8 HP			
Depth (T) mm	170.0												170.0			
Model No. RP AC power supply	3688.534				3688.694				3688.695				3688.528			
Model No. RP DC power supply	3688.537				3688.655				3688.696				3688.530			
Output sizes																
Output	U ₁	U ₂	U ₃	U ₄	U ₁	U ₂	U ₃	U ₄	U ₁	U ₂	U ₃	U ₄	U ₁	U ₂	U ₃	U ₄
Output voltage	5 V	3.3 V	12 V	–12 V	5 V	3.3 V	12 V	–12 V	5 V	3.3 V	12 V	–12 V	5 V	3.3 V	12 V	–12 V
Output current	25 A	20 A	6 A	1 A	30 A	25 A	6 A	1 A	33 A	33 A	6 A	1 A	40 A	40 A	9 A	1 A
Output current U ₁ and U ₂	30 A max.				38 A max.								80 A max.			
Maximum power output	175 W				200 W				250 W				350 W			
Base load (only U ₁)	5 %	–			5 %	–			5 %	–			10 %			
Load compensation (dyn.)	< 3 % at 25 % load variation (1 A/μs) 1 % after 300 μs															
Line regulation	< ± 1 % (90 – 264 V AC)												< ± 1 % (90 – 264 V AC) U ₁ , U ₂ , U ₃			
Infeed compensation (Sense)	0.25 V	0.25 V	0.25 V	–	0.25 V	0.25 V	0.25 V	–	–	–	–	–	0.25 V	0.25 V	0.25 V	–
Residual ripple (PARD)	50 mV or 1 % (bandwidth 20 MHz)															
Temperature coefficient	< ± 0.02 %/K (0° – 50°C) after 20 min. start-up time															
Overvoltage protection	125 % ± 10 %, reset by switching on again															
Overload protection	Current limiting of all outputs, automatic return at normal load															
Overtemperature protection	At overtemperature switches of all outputs, automatic return at normal temperature															
Input variables																
Mains voltage or DC input	90 – 264 V AC, 47 – 63 Hz, 3.2 A max. 36 – 72 V DC, 7.9 A												90 – 264 V AC, 47 – 63 Hz, 7 A 40 – 72 V DC, 14 A			
Power Factor	0.99 at V AC 115 V, full load															
Starting current	15 A (115 V AC) cold start, 30 A (230 V AC) cold start															
Fuse	3.15 A, 250 V AC or 10 A, DC												10 A, 250 V AC or 20 A, DC			
Signals and control cables																
Power Fail (Pin 42)	In the event of a mains failure > 4 ms before output voltages exit control range. Power fail also triggered by failure or undervoltage of V1 or V2 (3 U) or any output (6 U)															
DEG (pin 38)	In case of overtemperature												–			
Remote enable	Use logic “0” (TTL level)															
Remote inhibit	Use logic “1” (TTL level)															
LED displays, two-colour	Green: “Power ON” and output voltages present Red: Error															
General specifications, see page 185.																

cPCI power supplies



Plug-type, 180 W

- Module, 3 U, 12 HP, plug-in
- Connector M24/8/IEC 60 603-2
- Automatic changeover 120/230 V AC
- All outputs permanently short-circuit resistant
- SELV outputs to EN 60 950
- Overvoltage protection on the primary and secondary circuits
- Overtemperature protection
- Control inputs: ENABLE, INHIBIT
- Signal output: DERATE
- EMC standards EN 50 081-1 and EN 50 082-2
- IEC 60 950/VDE 0805-SELV, protection category I, VDE 0100

Technical specifications:

180 W max.

5.1 V/20 A

3.3 V/14 A

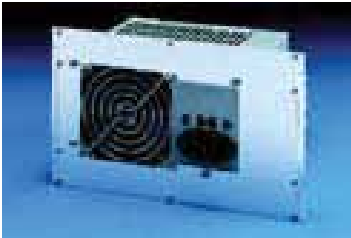
12.0 V/2 A

-12.0 V/1 A

Detailed data specification sheet available on request.

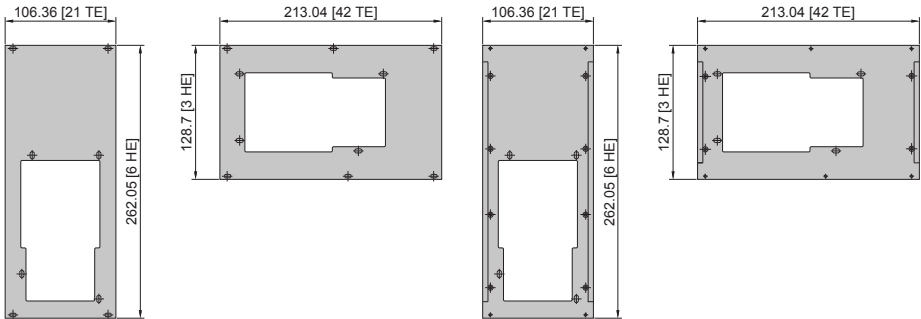
Height U	Width HP	Model No. RP	
		Power supply	Front panel for power supply
3	12	3686.682	3685.330

ATX power supplies

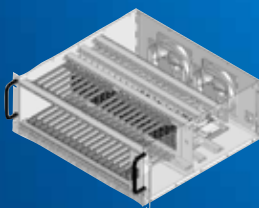


for ATX power supply
Front panel with cut-outs for mounting the ATX power supply units in the subrack.
Material:
Aluminium, clear-chromated
Supply includes:
Assembly parts,
EMC gaskets (with EMC version).

U	HP	Model No. RP	
		EMC	Non-EMC
3	42	3685.331	3685.328
6	21	3685.332	3685.329



Rugged Enclosures Overview



Pixus offers custom and standard ruggedized chassis in rackmount, portable, and ATR enclosure formats. Utilizing our backplane design expertise, convection and conduction cooling capabilities, and superb rugged solutions with key partners, Pixus has a solution for you.

The enclosures can be designed to meet:

- MIL-STD-810 for shock/vibration, environmental
- MIL-STD-901D for shock/vibration
- MIL-STD-461 for EMC
- ARINC 404 and 600 requirements
- Much more, contact Pixus for details

Whether its an ITAR requirement, a standard product, or a custom design, contact our team to discuss your rugged application. Pixus can also provide various conduction-cooled boards from processors/SBCs, graphics, FPGAs, and more.



19" Rugged Rackmount Systems

The Pixus 19" rugged rackmount systems are based on the modular open-standard COTS (Commercial Off the Shelf) Eurocard approach. This allows us to configure virtually unlimited tailored configurations of a chassis with little to no customization. This provides standardization with the benefits of an open-standard architecture, which include:

- Multi-vendor options, more choices
- Less risk, not relying on one vendor
- Selection options of "best in class" for all modules
- Proven design in commercial, industrial, and MIL/Aero
- Less obsolescence risk with multiple vendors
- Lower prototyping/development costs and time-to-market
- Typical plug-in modules are 3U or 6U with a 160mm depth.

Rugged 19" Rackmount

Height	Architecture Options	Slots	Ruggedization	Notes	Part Number Prefix	Part No.
1U	MicroTCA/AMC	6	MIL-810/901 for shock vibration	GPS/IEEE1588/ SyncE/NTP	PXS01R6	PSM_VTAP10
5U	OpenVPX or other Eurocard	Up to 20	MIL-810/901 for shock vibration, MIL 461 for EMI	Accepts 3U Boards	PXS05R20	PSM_VTAP40
8U	OpenVPX or other Eurocard	Up to 20	MIL-810/901 for shock vibration, MIL 461 for EMI	Accepts 6U Boards	PXS08R20	PSM_VTFC03



ATR ENCLOSURES

Modular ATR sizes of 1/2 and 3/4 with various heights and depths. Contact Pixus to discuss your application. The HEX version is a top-of-the-line MIL qualified unit with heat exchangers for high wattage requirements.

SMALL FORM FACTOR SOLUTIONS

From Small Form Factor solutions to application-specific conduction cooled solutions, Pixus offers a wide range of configurations. Give us a call at 916-297-0020 to discuss your SWaP requirements and performance specifications.

Rugged ATR or Purpose-built

Size	Architecture Options	Slots	Ruggedization	Notes	Part Number Prefix	Part No.
1/2 ATR*	MicroTCA/AMC	6	MIL-810/901 for shock vibration	GPS/IEEE1588/ SyncE/NTP	ATRM12	PSM_VTAP10
1/2 ATR*	OpenVPX or other Eurocard	Up to 6	MIL-810/901 for shock vibration, MIL 461 for EMI	Accepts 3U Boards, Sealed conduction	ATR012	PSM_VTAP40
1/2 ATR*	OpenVPX or other Eurocard	Up to 6	MIL-810/901 for shock vibration, MIL 461 for EMI	Accepts 3U Boards, Sealed conduction with heat exchanger	ATR012-HEX	PSM_VTFC03

*consult factory for other size or cooling options

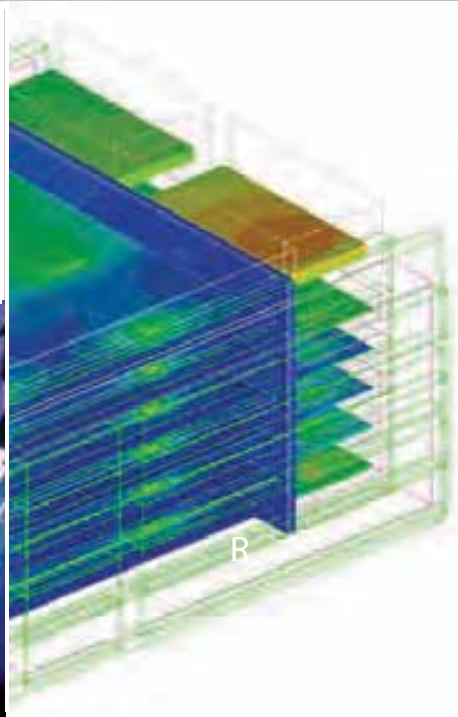
Climate control for Subracks



Heat shortens the service life of equipment leading to failure, and also diminishes the high performance of electronics.

The problem lies in high heat losses and compact installation spaces. Effective heat dissipation is therefore essential to ensure long service life and operational reliability.

As well as the components shown below, Pixus also offers a range of other 482.6 mm (19") cooling systems and rack-mounted fans.

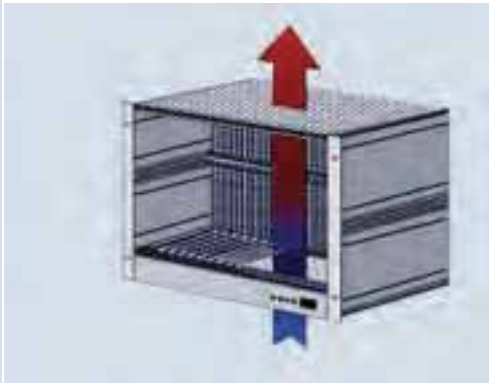


Diagonal cooling

The air baffle plate in combination with..

... the air block panel ensures targeted air routing inside the subrack.

RiCool high-capacity fan for heat losses of 700 W or more.



CFD (Computational Fluid Dynamics)

With the aid of CFD, climate control solutions may be optimised even before the first prototype has been built.

The Pixus portfolio of services includes:

- Visualisation of temperature variations
- Visualisation of air flows
- Localisation and elimination of heat accumulation and hotspots
- Targeted optimisation of climate control
- Positioning of temperature sensors and smoke alarms.



Vertical ventilation

Rack-mounted fans are installed below the subrack in the enclosure. This ensures permanent air circulation to prevent the formation of hotspots.

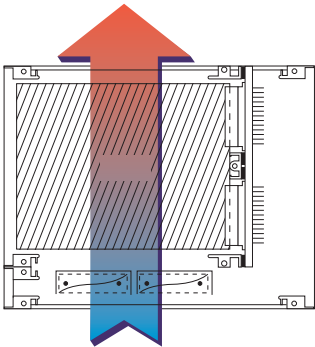
Fans are installed directly in the subrack, below or above the PCBs, with the aid of fan mounting plates, thereby preventing heat accumulation.

AC and DC fans in various output categories, can be fitted.



Overview of benefits

- Climate control solutions for a variety of applications (vertical cooling, diagonal cooling)
- Detailed solutions for targeted air routing
- The RiCool flat-pack offers maximum performance (204 m³/h) coupled with minimal space requirements (1 U).



Vertical cooling from bottom to top

- Air flow via normal convection or forced cooling devices in the enclosure or housing outside of the subrack.

- Vertical forced air flow, supported by fans installed at the bottom of the subrack (1 U). For the cooling of enclosures and housings, rackmounted fans, see page 88 and rack-mounted cooling units are available.



Fan mounting plate

For the installation of 120 mm fans and filter modules in subracks. For mounting on the subrack side panels.

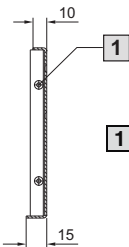
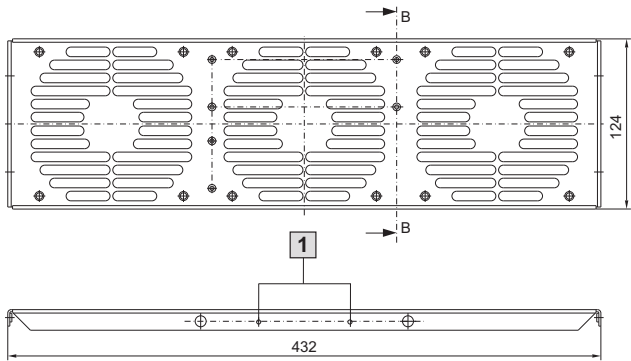


U	For PCB depth mm	No. of fan mounting plates required	HP	Model No. RP
1	160	1	84	3684.317
	220	1		
	280	2		
	340	2		
	400	3		

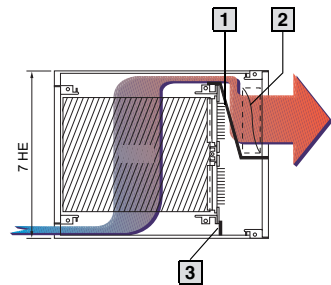
! Also required:

1 terminal block is required for each subrack.

Packs of	Model No. RP
1	3686.805



1 M3 Einpressmutter
M3 Pem Nut



Diagonal cooling from front to back

Diagonal air flow from front to back allows individual cooling of PCBs in vertical installation position. An air baffle and air partition ensure controlled air flow.

- 1** Air baffle, see page 83
- 2** Fan (mounted on the rear panel), see page 85
- 3** Air partition, see page 83

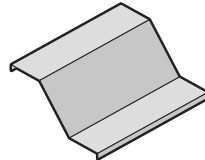
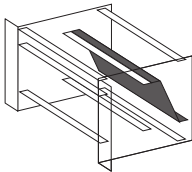


Air baffle

For controlled air flow in 7 U subracks.
For mounting on subrack side panels with the aid of mounting blocks.

Material:
1 mm aluminium

Supply includes:
Assembly parts.



Subrack depth mm	Model No. RP
285	3685.302
345	3685.303
405	3684.320
465	3684.321
525	3684.322

☒ Custom versions available upon request.

! Also required:

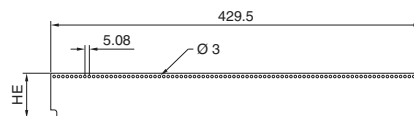
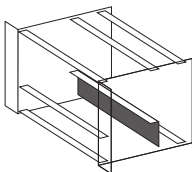
Mounting blocks, see page 125



Air partition

For controlled air flow in the subrack. The partitions are mounted on the horizontal rails together with the backplanes.

Material:
Epoxy



U	Model No. RP
1/2	3684.870
1	3684.871
3	3684.872

☒ Custom versions available upon request.

! Also required:

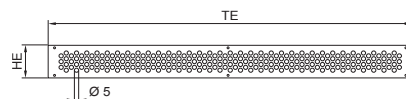
Fastening screws and washers,
packs of 100, Model No. RP 3684.019,
see page 159



Front/rear panels for ventilation

Material:
2.5 mm aluminium

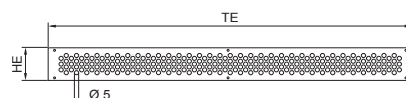
Surface finish:
Anodised,
clear-chromated (EMC version)



EMC version supply includes:

1 front panel,
1 contact strip,
1 gasket strip,
1 vertical EMC gasket,
assembly parts.

EMC



U (HE)	HP (TE)	Packs of	Model No. RP
1	84	1	3684.812
2	84	1	3684.813
3	84	1	3684.814

☒ Custom versions available upon request.

! Also required:

Collar screws (slotted) and plastic collars,
packs of 100 sets, Model No. RP 3658.160,
see page 159

EMC version:

U (HE)	HP (TE)	Packs of	Model No. RP
1	84	1	3684.281
2	84	1	3684.282
3	84	1	3684.283

☒ Custom versions available upon request.

! Also required:

Centering screws, see page 160



Rear panels for fan installation

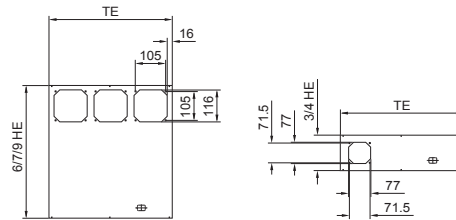
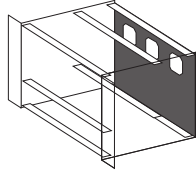
Material:
2.5 mm aluminium

Surface finish:
Anodised,
clear-chromated (EMC version)

EMC version supply includes:

1 rear panel,
1 contact strip,
1 gasket strip,
1 vertical EMC gasket,
assembly parts.

EMC



U (HE)	HP (TE)	For fans mm	Packs of	Model No. RP
3	85	80	1	3684.839
4	85	80	1	3684.840
6	85	120	1	3684.841
7	85	120	1	3684.842

☒ Custom versions available upon request.

! Also required:

Collar screws (slotted) and plastic collars, packs of 100 sets, Model No. RP 3658.160, see page 159

EMC version:

U (HE)	HP (TE)	For fans mm	Packs of	Model No. RP
3	84	80	1	3684.284
4	84	80	1	3684.285
6	84	120	1	3684.286
7	84	120	1	3684.287

☒ Custom versions available upon request.

! Also required:

Centering screws, see page 160

+ Accessories:

Fans, see page 85



Rear panels, horizontally hinged for fan installation

Material:
2.5 mm aluminium

Surface finish:
Anodised,
clear-chromated (EMC version)

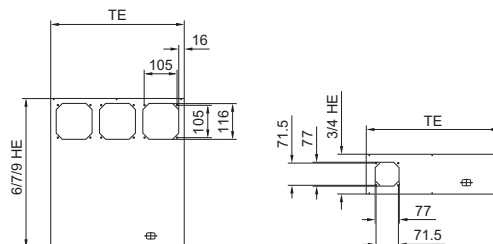
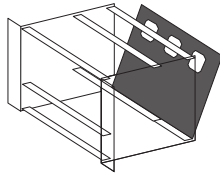
Supply includes:

1 rear panel,
1 set of hinges,
assembly parts.

EMC version supply includes:

1 rear panel,
1 contact strip,
1 gasket strip,
1 vertical EMC gasket,
1 set of hinges,
assembly parts.

EMC



U (HE)	HP (TE)	For fans mm	Packs of	Model No. RP
3	85	80	1	3684.304
4	85	80	1	3684.305
6	85	120	1	3684.306
7	85	120	1	3684.307

☒ Custom versions available upon request.

! Also required:

Collar screws (slotted) and plastic collars, packs of 100 sets, Model No. RP 3658.160, see page 159

EMC version:

U (HE)	HP (TE)	For fans mm	Packs of	Model No. RP
3	84	80	1	3684.311
4	84	80	1	3684.312
6	84	120	1	3684.313
7	84	120	1	3684.314

☒ Custom versions available upon request.

! Also required:

Centering screws, see page 160

+ Accessories:

Fans, see page 85



AC fans

For subracks and microcomputer systems.

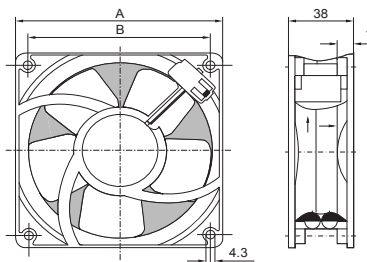
Supply includes:

1 fan without connection cable.



Also required:

Assembly screws,
packs of 1 set, Model No. RP 3685.197,
see page 160



AC fans

Dimensions			Bearing	Rated voltage V/Hz	Power watts	Noise level dB (A)	Temperature range °C	Volume flow m³/h	Model No. RP
Fan mm	A mm	B mm							
80	79.5	71.5	Ball bearing	115/60	11.0	42	-40 to +95	57	3686.645
80	79.5	71.5	Ball bearing	230/50	12.0	37	-40 to +90	48	3686.646
120	119.0	105.0	Ball bearing	115/60	18.0	51	-40 to +90	180	3686.643
120	119.0	105.0	Ball bearing	230/50	19.0	47	-40 to +85	160	3686.644

Connection cable

Cable length mm	Packs of	Model No. RP
610	1	3686.658
1000	1	3686.659



DC fans

Optionally available with temperature-dependent speed control via additional temperature sensor.

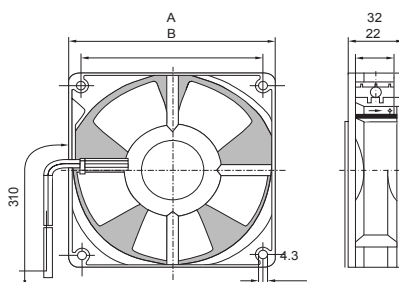
Supply includes:

1 fan with connection cable (310 mm).



Also required:

Assembly screws,
packs of 1 set, Model No. RP 3685.197,
see page 160
Temperature sensor for DC fans
with speed control,
see page 86



DC fan with speed control and alarm signal

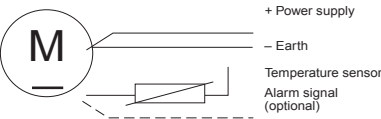
Dimensions			Bearing	Rated voltage V (DC)	Voltage range Volt	Power watts	Noise level dB (A)	Temperature range °C	Temperature max. °C	Volume flow m³/h	Model No. RP
Fan mm	A mm	B mm									
80	79.5	71.5	Ball bearing	12	8.0 – 14.0	2.2	34	-20 to +65	65	48	3686.649
80	79.5	71.5	Ball bearing	24	21.6 – 26.4	2.4	36	-20 to +65	65	54	3686.650
120	119.0	104.8	Ball bearing	12	8.0 – 12.6	5.4	45	-20 to +65	65	170	3686.647
120	119.0	104.8	Ball bearing	24	21.0 – 27.0	5.4	45	-20 to +65	65	170	3686.648

DC fan without speed control and without alarm signal

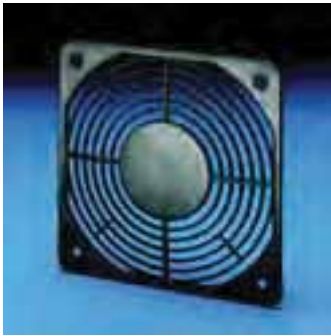
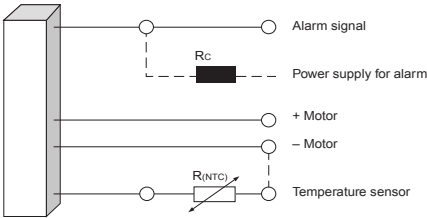
Dimensions			Bearing	Rated voltage V (DC)	Voltage range Volt	Power watts	Noise level dB (A)	Temperature range °C	Temperature max. °C	Volume flow m³/h	Model No. RP
Fan mm	A mm	B mm									
80	79.5	71.5	Ball bearing	12	6.0 – 15.0	1.8	34	-20 to +75	75	48	3687.612
80	79.5	71.5	Ball bearing	24	12.0 – 28.0	2.1	34	-20 to +75	75	48	3687.613
120	119.0	104.8	Ball bearing	12	6.0 – 15.0	2.6	39	-20 to +75	75	140	3687.614
120	119.0	104.8	Ball bearing	24	12.0 – 28.0	2.6	39	-20 to +75	75	140	3687.615

Temperature sensor

For DC fans 12/24 V with speed control.
Temperature sensor:for DC fans



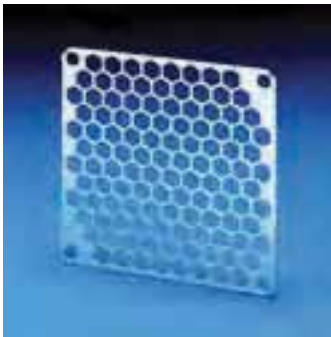
Voltage	Packs of	Model No. RP
12 V/24 V (DC)	1	3686.657



Finger guard

For AC fans and DC fans.
Material:
Polyamide, self-extinguishing to UL 94-V0
Colour:
Black

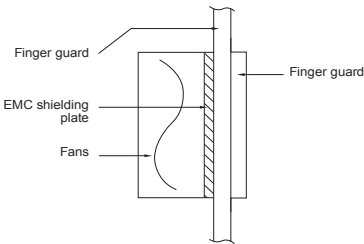
For fans mm	Packs of	Model No. RP
80	1	3686.656
120	1	3686.655



EMC shielding plate

For AC fans and DC fans.
Material:
1 mm aluminium, clear-chromated

For fans mm	Packs of	Model No. RP
80	1	3686.359
120	1	3686.329



Air block panel
for unused slots
see page 131



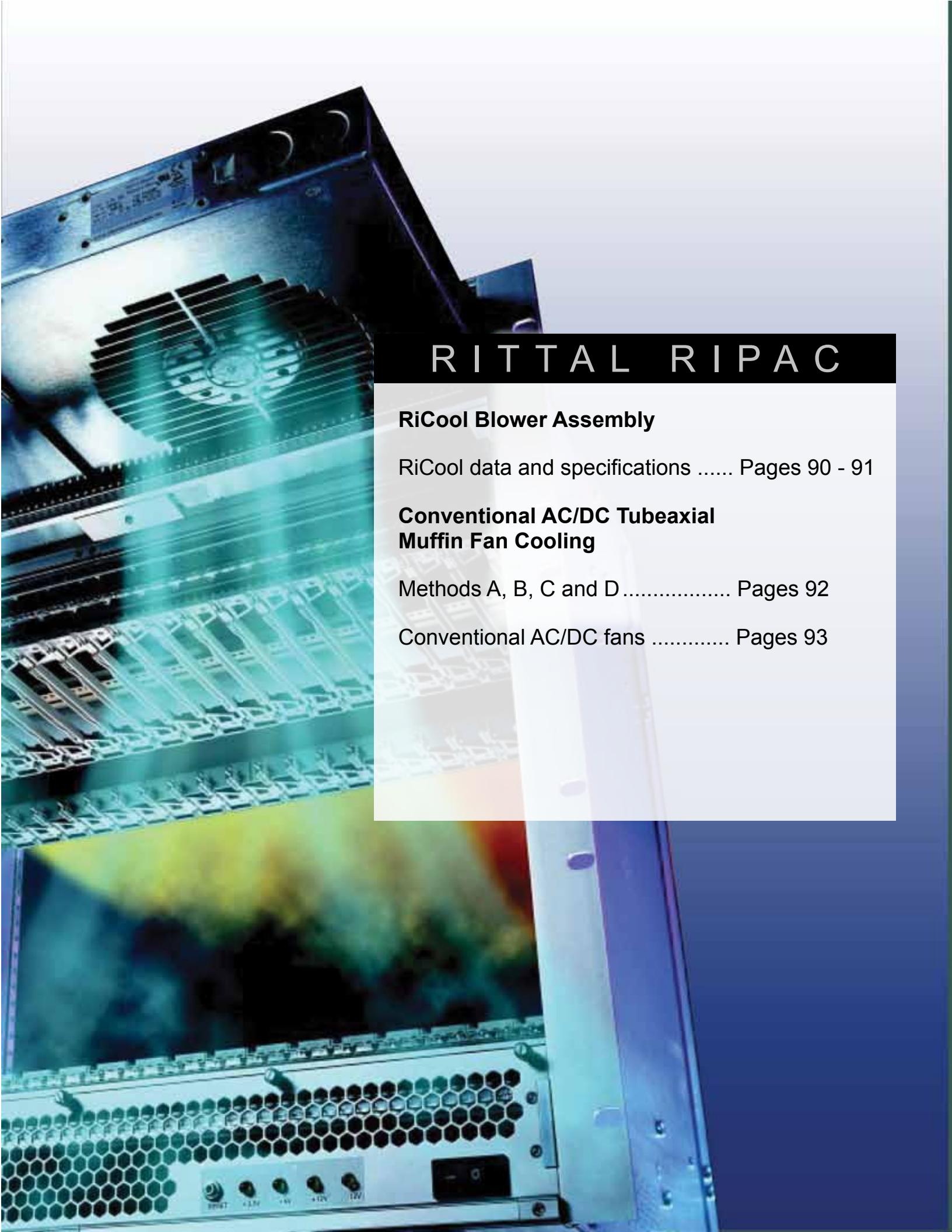
Supercool, Hot Swappable RiCool System Blowers...

COOL SOLUTIONS.

Cool Off With Rittal RiCool.

Rittal Ripac has literally set the standard for packaging solutions. And our new RiCool Blower Assembly helps to keep the innovations coming. These supercool, hot swappable blowers deliver 220CFM system airflow at 70% efficiency (versus 20% when using typical 4.7" tubeaxial muffin fans) in only a 1U form factor. RiCool is an ideal solution for systems with PCBs exceeding 35W to 70W (average at 21 slots) heat loss and requiring a hotplug redundant blower. In addition, Rittal also offers a wide variety of conventional AC and DC fan solutions for applications which do not exceed 30W (average at 21 slots) heat dissipation. So when things heat up, cool them off with Rittal Ripac cooling solutions.





RITTAL RIPAC

RiCool Blower Assembly

RiCool data and specifications Pages 90 - 91

Conventional AC/DC Tubeaxial Muffin Fan Cooling

Methods A, B, C and D Pages 92

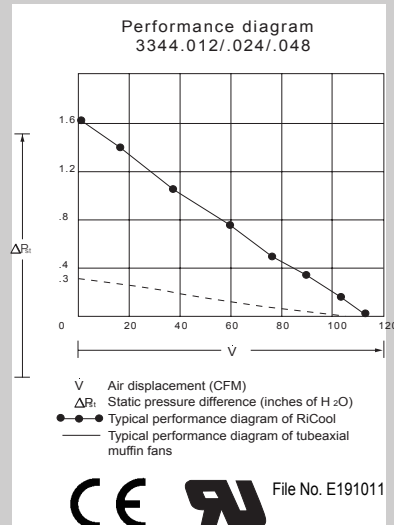
Conventional AC/DC fans Pages 93



The powerful RiCool blower assembly is specially designed to provide effective cooling in densely packed systems where the average board has a heat loss of above 30 Watts at 21 slots and performs well at an average heat loss at 70W per PCB (at 21 slots). Low noise (48dBA at $\frac{3}{4}$ speed and a life of approx. 60,000 hrs at 40°C) makes this blower the ideal solution for today's systems.

Air is drawn through the PCBs and then exhausted out the back of the system via a powerful curved impeller blower, while using only 1U rack space.

Especially effective for such applications as telecommunications where rack height restrictions exist. Also targeted for industrial and scientific research applications.



Features And Benefits

- Uses only 1U of rack height
- Available in 12V, 24V and 48V DC
- Fan alarm via fan speed sensor
- Optional speed control
- Designed to move air effectively through densely packed subracks
- Easy access
- Hot swappable for fast and easy maintenance
- No extra ducting required
- Ability to use two blowers in 19" applications
- Locked rotor protection
- Polarity protection
- Automatic restart capability

Configuration

Material:

Clear zinc chromate steel housing

Includes:

Complete fan assembly: weight 5 lbs.
ready for mounting in subrack, with Molex 15-06-0061 6 pin male mini-fit connector

Airflow Direction:

Exhausts outward from back of subrack

Power Consumption:
48W

Operating Temperature:
-10°C to +60°C / +14°F to +140°F

RiCool Blower Performance Data

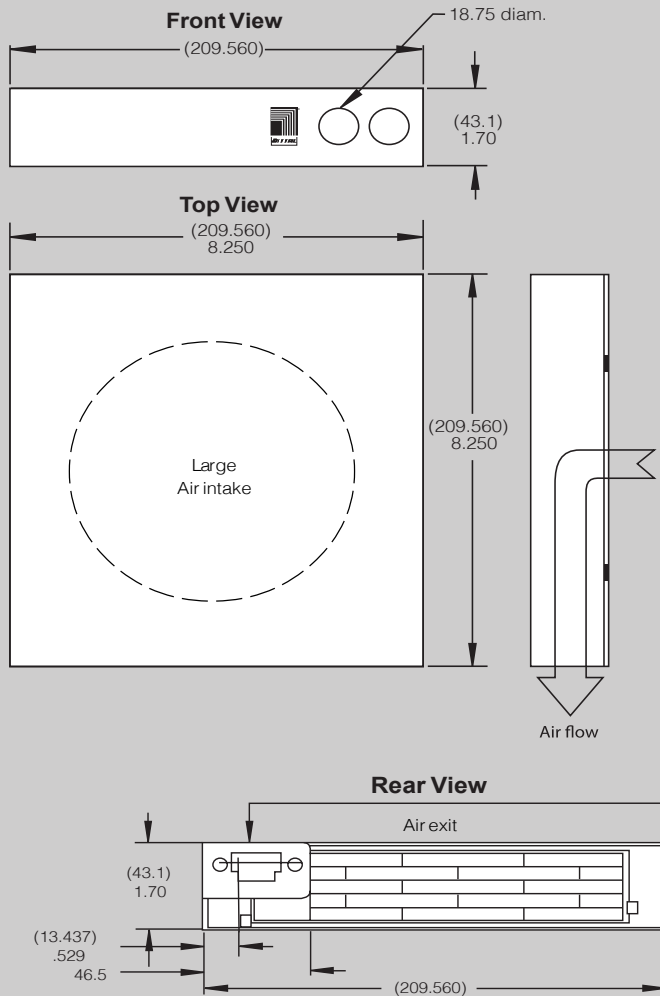
- CFM..... 110CFM (190m³/h)
- Static pressure 4.07 CM (1.6 inch) of H₂O
- Voltages 12, 24, 48V DC
- Rated current 4, 2, 1 Amps
- Noise level free blowing .. 56.2dBA
- Weight 5 lbs. (2.3 Kg)

RiCool Blower Construction

- Housing Cold rolled steel
- Impeller Noryl™ 94V0
- Bearing Ball bearing
- Power/alarm connector Molex15-06-0061
- Alarm signal rpm sensor
- Life at full speed ... 60,000 hrs @ 40°C
50,000 hrs @ 50°C

Please inquire for separate AC/DC RiCool power supply.

RiCool is also available in 19" blower trays (see inset photo at top). Please note that the airflow, power consumption, rated current and weight are double for the 19" fan trays.



Thermistors needed for RiCool speed control:

PTC thermistor for 12V **Part No. 3686887**

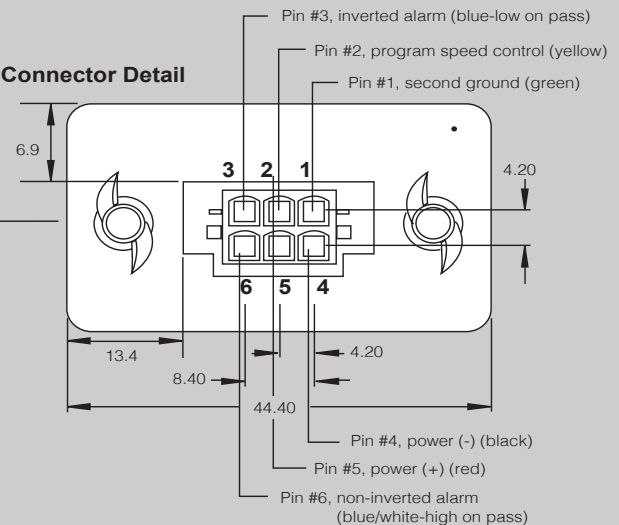
PTC thermistor for 24V **Part No. 3686888**

PTC thermistor for 48V **Part No. 3686889**
Note: the thermistor comes with a 600mm (2') cable.

Pin Location Description

Pin #1, second motor ground (green)
Pin #2, program speed control (yellow)
Pin #3, inverted alarm (blue-low on pass)
Pin #4, power (-) (black)
Pin #5, power (+) (red)
Pin #6, non-inverted alarm (blue/white-high on pass)

Connector Detail



Individual RiCool Blowers

Part No.	3344.012	3344.024	3344.048
Voltage	12V DC(6-14V)	24V DC(16-28V)	48V DC(32-56V)
Airflow (free airdelivery)	110CFM/190m ³ /h	110CFM/190m ³ /h	110CFM/190m ³ /h
Power consumption	48W	48W	48W
Rated current	4.0A	2.0A	1.0A
Noise level (dBa)	56dBa	56dBa	56dBa
Temperature range	-10 °C to +60°C	-10°C to +60°C	-10°C to +60°C
Weight	5 lb. (2.3 kg)	5 lb. (2.3 kg)	5 lb. (2.3 kg)
Power/alarm connector	Molex 15-06-006	Molex 15-06-006	Molex 15-06-0061
Alarm signal	rpm sensor, non-isolated high on pass	rpm sensor, non-isolated high on pass	rpm sensor, non-isolated, high on pass

19" RiCool Blower Trays

Part No.	3686.879	3686.880	3686.881
Voltage	12V DC(6-14V)	24V DC(16-28V)	48V DC(32-56V)
Airflow (free airdelivery)	220CFM/380m ³ /h	220CFM/380m ³ /h	220CFM/380m ³ /h
Power consumption	96W	96W	96W
Rated current	8.0A	4.0A	2.0A
Noise level (dBa)	56dBa	56dBa	56dBa
Temperature range	-10 °C to +60°C	-10°C to +60°C	-10°C to +60°C
Weight	10 lb. (4.6 kg)	10 lb. (4.6 kg)	10 lb. (4.6 kg)
Power/alarm connector	Molex 15-06-006	Molex 15-06-006	Molex 15-06-0061
Alarm signal	rpm sensor, non-isolated high on pass	rpm sensor, non-isolated high on pass	rpm sensor, non-isolated, high on pass

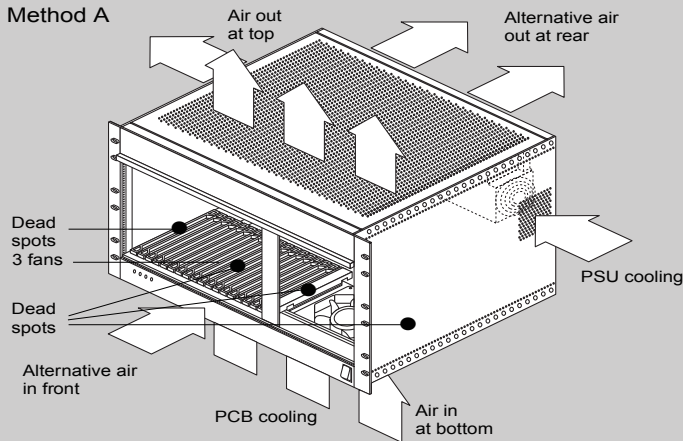
Alarm Characteristics

- Pin #3 inverted alarm, max load of 0.05A at 60V DC
- Pin #6 non-inverted alarm, max load of .015A at 5.5V DC
- Trigger speed at 40% of max speed
- 10 second signal delay
- Alarm condition causes +5V DC rise in supply voltage measured between pin #3 and pin #1
- Customer supplied pull-up resistor at interfacing alarm required to limit current to blower alarm circuit

Conventional AC/DC Tubeaxial Muffin Fans....

SYSTEM COOLING

Method A



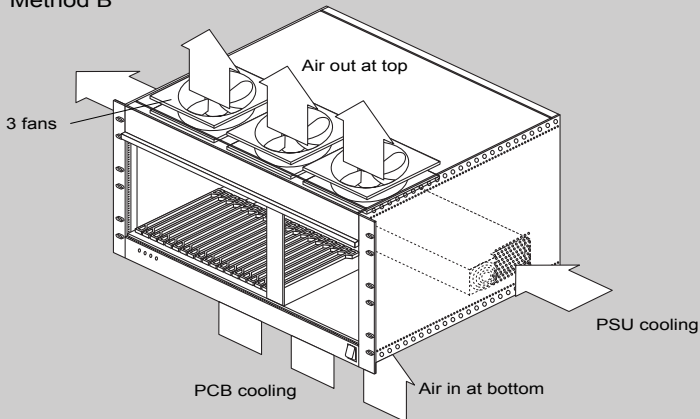
System Cooling Method A

Method A is the most common way of system cooling and good for PCBs which do not exceed 30 Watt heat dissipation, since the fans have a "dead" spot over the center of the fan and typically "dead" spots between the fans (4 dead spots) at 21 slots. It is advisable to place the fans at least 50mm (2") below the boards so that the air can "fan" out, thus air will reach all parts of the boards (this will add overall system height).

The efficiency of these tubeaxial muffin fans operating at maximum generated 7.62mm/0.3" of H₂O of static pressure under these conditions may be as little as 20%. An additional metal fan chassis design is required making replacement of failed fans difficult and time consuming.

System shut down at fan replacement may be required.

Method B

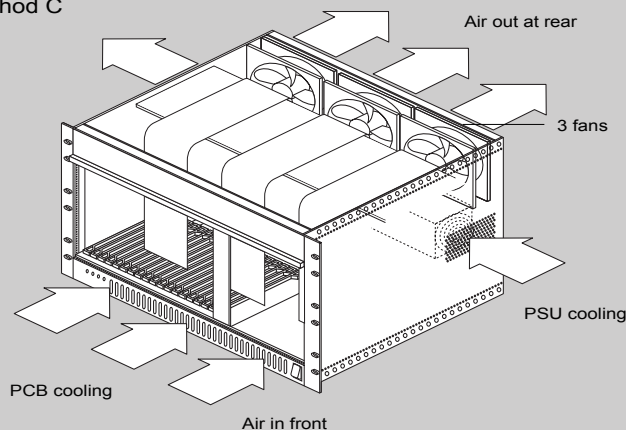


System Cooling Method B

Method B is not often used, as the fans may be in the way of top mounted drives, power supplies, etc.

However, this method is an improvement over Method A, as the efficiency of these muffin fans may be as much as 30%. The reason is there are no dead spots to deal with and less back pressure. However, the maximum generated static pressure of the tubeaxial muffin fans remains at 7.62mm/0.3" of H₂O.

Method C



System Cooling Method C

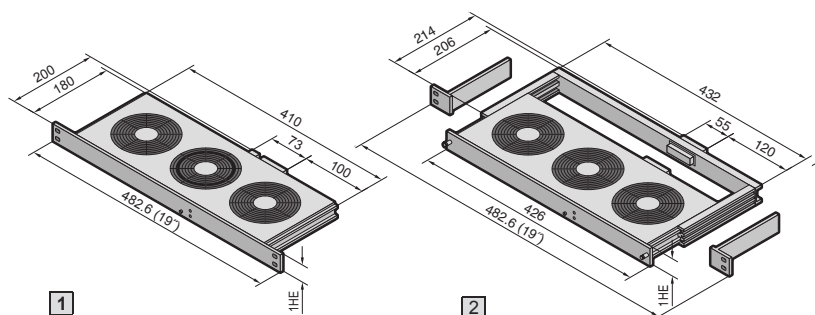
Method C is perhaps the most popular for VME solutions. However, it is not suitable when extensive rear panel I/O or CompactPCI rear mounted I/O boards are used.

Fan efficiency is approx 30%.

The RiCool Advantage Method D

The ability of the RiCool blower to generate 40.64mm/1.6" (H₂O) of static pressure confirms that the RiCool blower is able to provide effective cooling in densely packed enclosures and subracks. By comparison, a typical 19" rackmount fan tray, consisting of (3) 4.7" x 4.7" 18W (110CFM at free delivery) fans, generates only 0.22"-0.40" (H₂O) of static pressure. The estimated (operating) static pressure point of a fan assembly mounted inside a fully loaded subrack is 0.3-0.5" (H₂O). Under those conditions one RiCool blower assembly provides at least 40% higher airflow than a typical 19" rackmount fan tray with 3 tubeaxial muffin fans.

Rackmounted fan 482.6 mm (19")



**Rack-mounted fan/
Vario rack-mounted fan**
supply includes:
Wired unit ready for connection,
including terminal strip and
assembly parts.

Guide frame supply includes:
Guide frame including connector and fitted connection
cable (3 m), bracket for
optional attachment to the
482.6 mm (19") system,
assembly parts.



Also required:

Remember to order the
appropriate guide frame for
your chosen application.

	[1] Rack-mounted fan module						[2] Vario rack-mounted fan			
	Model No. SK						Model No. SK			
2 fans Distance between axes 85 mm	3340.024 ¹⁾	3340.115 ¹⁾	3340.230	–	–		3350.024 ¹⁾	3350.115 ¹⁾	3350.230	–
3 fans Distance between axes 85 mm	3341.024 ¹⁾	3341.115	3341.230	–	9769.002 ¹⁾²⁾		3351.024 ¹⁾	3351.115 ¹⁾	3351.230	–
3 fans Distance between axes 105 mm	3342.024	3342.115 ¹⁾	3342.230	3342.500 ²⁾³⁾	–		3352.024 ¹⁾	3352.115 ¹⁾	3352.230	3352.500 ¹⁾³⁾
Rated operating voltage V	24 V (DC)	115 V (AC)	230 V (AC)	24 V (DC) 115 – 230 V (AC)	36 V (DC) up to 72 V (DC)		24 V (DC)	115 V (AC)	230 V (AC)	24 V (DC) 115 – 230 V (AC)
Model No. SK matching guide frame	–	–	–	–	–		3356.100 ¹⁾	3355.100	3355.100	3357.100 ¹⁾
Accessories Page										
Temperature indicator 230 V (AC)		3114.100	3114.115	3114.100	3114.024	–	3114.100	3114.115	3114.100	3114.024
Thermostat		3110.000								
Speed control		3120.000	3120.115	3120.000	–	–	3120.000	3120.115	3120.000	–

Technical specifications								
Model No. SK/CS	3340.230 3350.230	3340.115 3350.115	3340.024 3350.024	3341.230 3351.230 3342.230 3352.230	3341.115 3351.115 3342.115 3352.115	3341.024 3351.024 3342.024 3352.024	3342.500 ²⁾ 3352.500 ²⁾	9769.002
Rated operating voltage V, Hz	AC 230 V 50/60 Hz	AC 115 V 50/60 Hz	DC 24 V —	AC 230 V 50/60 Hz	AC 115 V 50/60 Hz	DC 24 V —	DC 24 V AC 115 – 230 V 50/60 Hz	36 V (DC) up to 72 V (DC)
Rated current max.	0.24 A/ 0.22 A	0.46 A/ 0.46 A	0.49 A	0.36 A/ 0.33 A	0.69 A/ 0.69 A	0.74 A	0.85 A	0.28 A
Pre-fuse T	6.0 A							6.0 A
Number of fans	2			3				3
Air throughput, unimpeded air flow	320 m³/h			480 m³/h				250 m³/h
Temperature range	–10°C to +55°C							–33°C to +55°C
Noise level	51 dB (A)	52 dB (A)	51 dB (A)	51 dB (A)	52 dB (A)	51 dB (A)		52 dB (A)

¹⁾ Delivery times available on request.

²⁾ Rack-mounted fan for metric mounting angles available on request.

³⁾ Version with monitoring.





Cases, Subracks, & Rittal Brand Components



Instrumentation Cases

Pixus provides modular cases, sold as kits or assembled, for the electronics packaging of your instrumentation solution and specialty electronics. There are rackmount and desktop versions with a wide selection of configurations, sizes, and accessories utilizing Rittal brand enclosure components (including Vario, Kaparel, RiPac, and RiCase brands). Accessories include mounting kits, earthing kits, flanges for rackmount, feet, front handles, EMC gasketing, and panels.



Heat shortens the service life of equipment leading to failure, and also diminishes the high performance of electronics. The problem lies in high heat losses and compact installation spaces. Effective heat dissipation is therefore essential to ensure long service life and operational reliability.

As well as the components shown below, Pixus also offers a range of other 482.6 mm (19") cooling systems and rack mounted fans.

Rittal Brand Components – Subracks & Components

Pixus offers the Rittal brand components for standard embedded boards, subracks, enclosures, cases, etc in individual piece parts. This includes rails, card guides, panels/handles, fillers, and much more.

Pixus Technologies

Subrack Systems

EMC	U								Subracks	Design	Page
	1	2	3	4	5	6	7	9			
			■			■			Ripac Easy	aluminium	101
			■			■		■	Ripac Vario	aluminium	102
				■			■		Ripac Vario	aluminium	103
■			■			■		■	Ripac Vario EMC	aluminium	104
■				■			■		Ripac Vario EMC	aluminium	105
			■			■			Ripac Compact	aluminium	106
			■			■			Ripac Vario Mobil	aluminium	107

EMC	U								Subracks, individual components	Page
	1	2	3	4	5	6	7	9		
			■	■		■	■	■	Table of horizontal rails	108
			■	■		■	■	■	Side panels and flanges	110
			■	■		■	■	■	Horizontal rails	113

EMC	U								Subrack accessories	Page
	1	2	3	4	5	6	7	9		
	■	■	■	■		■	■	■	Components for EMC installation	124
						■		■	Mounting kits	126
									Guide rails	127
									Keying/PCB ejectors	132
									Covers	133
									Subrack climate control	88
									Front panels, handles	139
			■			■			Ripac box type plug-in units	156
									Assembly parts	159

Overview

Ripac EASY



For standard applications or demanding mechanical requirements
see page 101

Applications

Subrack system for standard applications or for high mechanical loads. Also suitable for applications requiring simple handling and fast assembly. Suitable for the installation of standardised PCBs or board type plug-in units up to 400 mm deep.

Design features

- 482.6 mm (19") to IEC 60 297-3
- Height: 3 and 6U
- For board depth: 160 mm, 220 mm, 280 mm, 340 mm, 400 mm
- Fast, simple assembly thanks to pre-assembled screws and slots in the side panels
- Cover plates simply slide into place
- Horizontal rails with double screw-fastening
- Material: Aluminium, corrosion-resistant
- Mounting positions for horizontal rails on a 60 mm pitch pattern
- Horizontal rails at the rear with integral contact surface
- Installation of backplanes/midplanes or connectors
- Separate 482.6 mm (19") gland plate

User benefits

- Simple, fast assembly thanks to pre-assembled screws
- Slide-in cover plates
- Horizontal rails with integral contact surface (no insulating strips required)
- Double screw-fastening of the horizontal rails ensures stability even under heavy loads



Ripac Vario



For standard applications or complex configurations
see pages 102-103

Applications

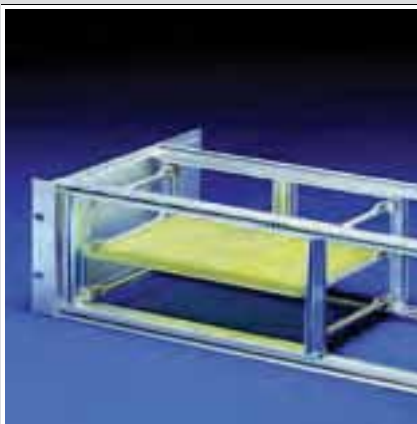
Subrack system for standard applications or complex configurations. Suitable for the installation of standardised PCBs or board type plug-in units up to 400 mm deep.

Design features

- 482.6 mm (19") rack-mount system to IEC 60 297-3
- 3, 4, 6, 7 and 9U
- For board formats up to 400 mm deep
- Side panels of aluminium, clear-chromated
- Mounting positions for horizontal rails on a 10 mm pitch pattern
- Installation of backplanes/midplanes or connectors
- Separate 482.6 mm (19") gland plate

User benefits

- Side panels with 10 mm pitch pattern of holes for variable system installation
- EMC upgradable
- 482.6 mm (19") gland plate may optionally be mounted on the front or rear
- Many size variants available as standard
- For backplane or connector mounting
- Extensive range of accessories



Ripac Vario EMC



For EMC applications and complex configurations
see pages 104-105

Applications

Subrack system for EMC applications or complex configurations. Suitable for the installation of standardised PCBs or board type plug-in units up to 400 mm deep.

Design features

- 482.6 mm (19") EMC rack-mount system to IEC 60 297-3
- 3, 4, 6, 7 and 9U
- For board formats up to 400 mm deep
- Side panels of aluminium, clear-chromated
- Mounting positions for horizontal rails on a 10 mm pitch pattern
- Installation of backplanes/midplanes or connectors
- Separate 482.6 mm (19") gland plate
- Including EMC springs

User benefits

- EMC version
- Side panels with 10 mm pitch pattern of holes for variable system installation
- 482.6 mm (19") gland plate may optionally be mounted on the front or rear
- Many size variants available as standard
- For backplane or connector mounting
- Extensive range of accessories



Overview

Ripac Compact



For mounting plates or top hat rails
see page 106

Applications

Subrack system for direct mounting in the enclosure. May optionally be mounted on a top hat rail or mounting plate. Suitable for the installation of standardised PCBs or board type plug-in units.

Design features

- Rack-mount system to IEC 60 297-3
- Prepared for mounting on top hat rails or directly on the mounting plate
- 3 and 6U
- For board formats up to 160 mm deep
- Installation width: 21 and 42 HP
- Side panels of aluminium, clear-chromated
- Installation of backplanes/midplanes

User benefits

- Direct mounting on mounting plates or rails
- Variable cable entry from below or above
- Side panels with 10 mm pitch pattern of holes for variable system installation
- For backplane mounting
- EMC version optional



Ripac Vario Mobil



For mobile applications
see page 107

Applications

Subrack system for use in rail vehicles. Suitable for the installation of standardised PCBs or board type plug-in units.

Design features

- 482.6 mm (19") rack-mount system to IEC 60 297-3
- Tested to EN 50 155, 1996 (electronic equipment for rail vehicles)
- 3 and 6U
- For board formats up to 220 mm deep
- Side panels of aluminium, clear-chromated
- Installation of backplanes/midplanes or connectors
- Fully assembled

User benefits

- Suitable for use in rail vehicles
- EMC versions available
- Side panels with 10 mm pitch pattern of holes for variable system installation
- Fully assembled
- For backplane or connector mounting





Ripac Vario/Vario EMC

Complex applications thanks to numerous size variants and system accessories.

Depth-variable system installation is supported by the 10 mm pitch pattern of holes in the side panels.

EMC shielding via horizontal and vertical EMC gaskets. Also suitable for retrofitting (with Ripac Vario).

Ripac Vario Mobil

- The subracks have been tested for use in the German national railway. Testing was conducted in accordance with standard EN 50 155, 1996 (electronic equipment in rail vehicles). The construction of the subracks tested conforms to IEC 48D.
- Vibration and shock-tested to: IEC 600-68-2-6, test Fc IEC 600-68-2-27, test Ea
- Supply includes:
Subrack, fully assembled.



Ripac Compact

Subracks for mounting on mounting plates or top hat rails.



Ripac EASY

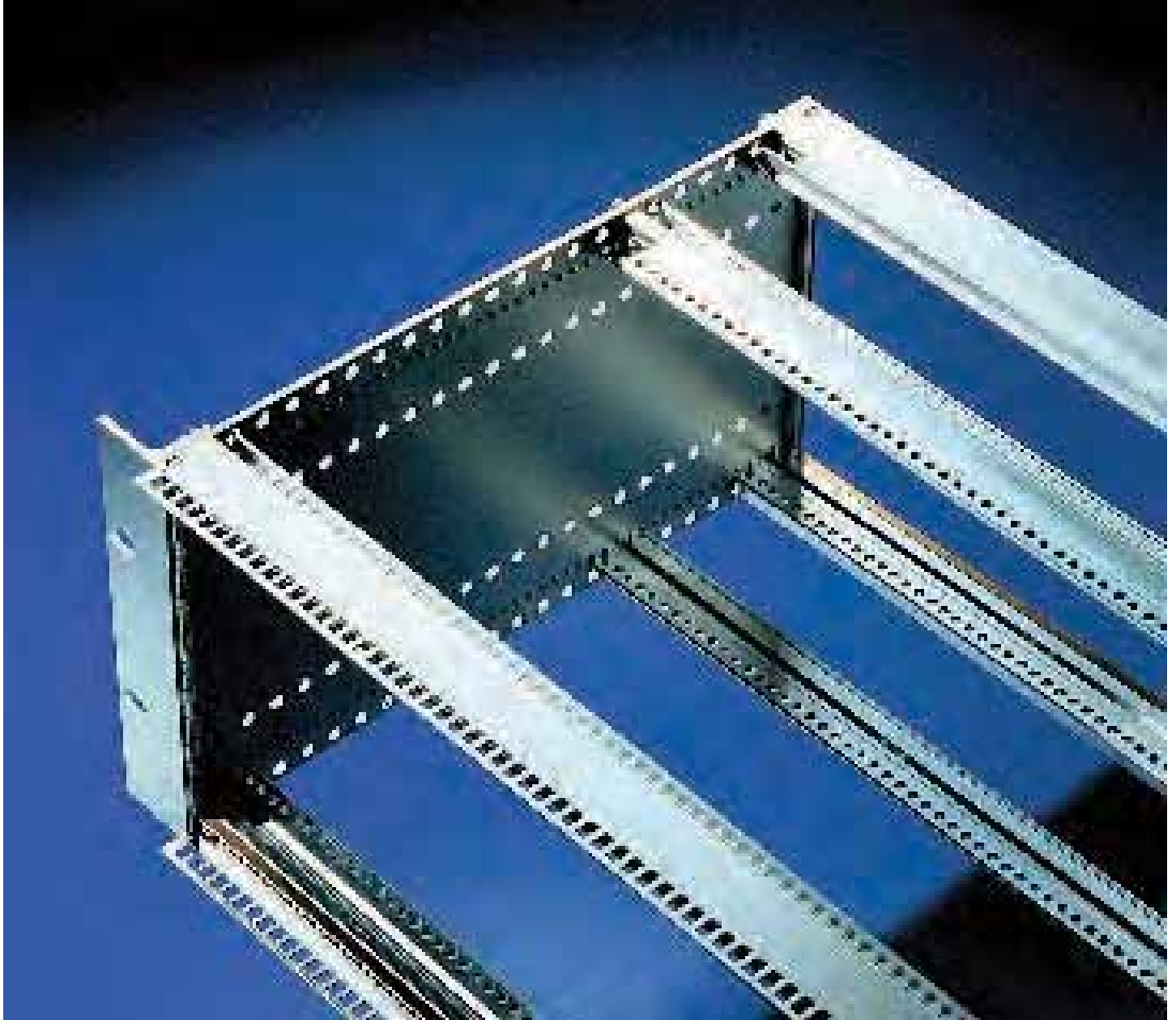
Simple handling thanks to pre-assembled screws. Double screw-fastening of the rails ensures safety even under heavy loads



Overview of benefits

- Modular subrack systems for individual configuration
- 5 basic versions for a variety of application areas
- Horizontal rails and accessories to fit all variants
- Prepared for or upgradable to EMC
- Fully assembled and wired on request
- Vibration and shock-tested

Ripac EASY



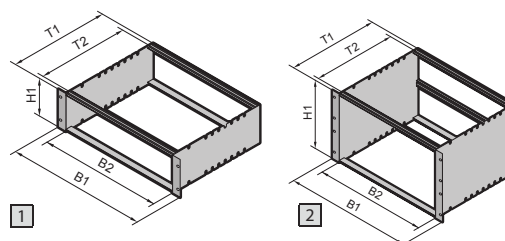
The modular concept of Ripac subracks facilitates a wide range of application options with a minimum of components.

All Ripac subracks are based on the same horizontal rails and system components.

The difference lies in the design of the side panels and installation options.

The subracks are shock and vibration-tested and comply with IEC 60 297-3-101, -102, -103.

Ripac EASY 3U, 6U



Material/Surface finish:

Side panels:
2 mm aluminium, corrosion-resistant
Horizontal rails:
Extruded aluminium section, corrosion-resistant
Flanges: Pre-anodised

Supply includes:

Side panels, flanges, horizontal rails, threaded inserts, assembly screws.
Rear horizontal rails (C4, C5) including prefitted assembly screws, front horizontal rails (A2) including prefitted assembly screws and threaded inserts.

Tests:

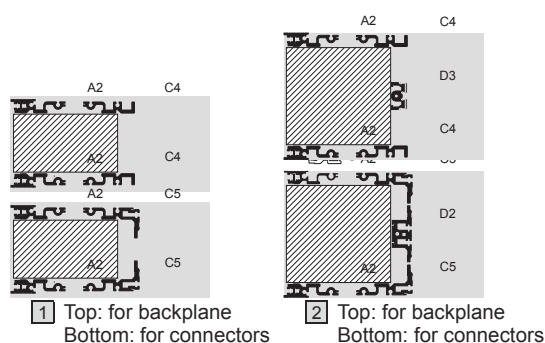
Vibration and shock-tested to:
IEC 600-68-2-6 test Fc
IEC 600-68-2-27 test Ea

Standards:

Sub racks are based on the system dimensions of IEC 60 297-3.

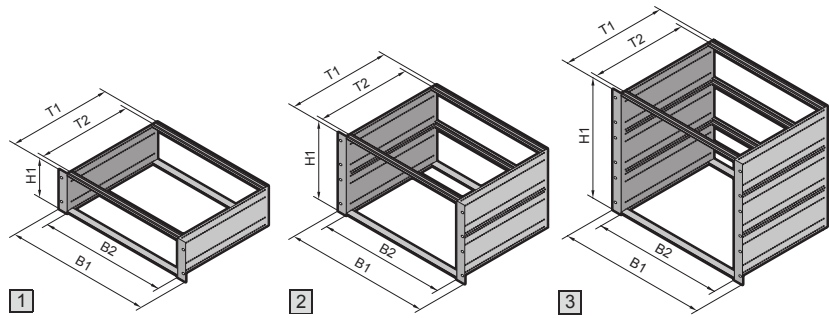
Note:

The backplanes may be fitted in direct contact with the rear horizontal rails. No additional insulating strips are required.



☒ Custom configuration available upon request.

					Model No. RP				Page
U (H1)					1		2		
					3		6		
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2	For backplane	For connector IEC 60 603-2	
482.6 (19")	84	175	160	160	3634.100	3634.150	3634.180	3634.230	
		235	220	220	3634.110	3634.160	3634.190	3634.240	
		295	280	280	3634.120	3634.170	3634.200	3634.250	
		355	340	340	3634.130	—	3634.210	—	
		415	400	400	3634.140	—	3634.220	—	
Accessories									
Covers									135
Horizontal rails									113
Guide rails									127



EMC upgradable

B = Width
H = Height
T = Depth

Material/Surface finish:

Side panels:
2.5 mm aluminium,
clear-chromated
482.6 mm (19") flanges and
horizontal rails:
Extruded aluminium section,
clear-chromated

Supply includes:

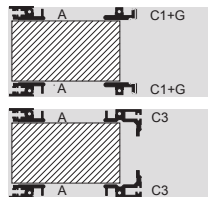
Flanges, side panels, horizontal
rails, threaded inserts,
insulating strips or Z rails.

Tests:

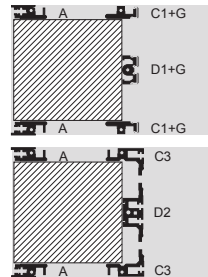
Vibration and shock-tested to:
IEC 600-68-2-6 test Fc
IEC 600-68-2-27 test Ea

Standards:

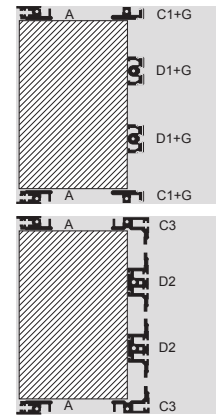
Ripac sub racks are based
on the system dimensions
of IEC 60 297-3.



1 Top: for backplane
Bottom: for connectors



2 Top: for backplane
Bottom: for connectors



3 Top: for backplane
Bottom: for connectors



Custom configuration available upon request.

					Model No. RP					
					1		2		3	
U					3	3	6	6	9	9
Height (H1) mm					132		265.35		398.70	
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2	For backplane	For connector IEC 60 603-2	For backplane	For connector IEC 60 603-2
482.6 (19")	84	185	160	160	3684.020	3684.034	3684.043	3684.056	—	—
		225	200	160	3684.021	3684.035	3684.044	3684.057	—	—
		245	220	220	3684.022	3684.036	3684.045	3684.058	—	—
		285	260	220	3684.023	3685.281	3684.046	—	—	—
		305	280	280	3685.231	3685.233	3685.238	3685.240	—	—
		345	320	280	3684.024	—	3684.047	—	3684.051	3684.059
		365	340	340	3685.232	3685.234	3685.239	—	—	—
		405	380	340	3684.025	—	3684.048	—	3684.052	3684.060
		465	440	400	3684.026	—	3684.049	—	3684.053	3684.061
		525	500	400	3684.027	—	3684.050	—	3684.054	—
		585	560	400	—	—	—	—	3684.055	—

Ripac Vario 4U, 7U



Material/Surface finish:

Side panels:
2.5 mm aluminium,
clear-chromated
482.6 mm (19") flanges and
horizontal rails:
Extruded aluminium section,
clear-chromated

Supply includes:

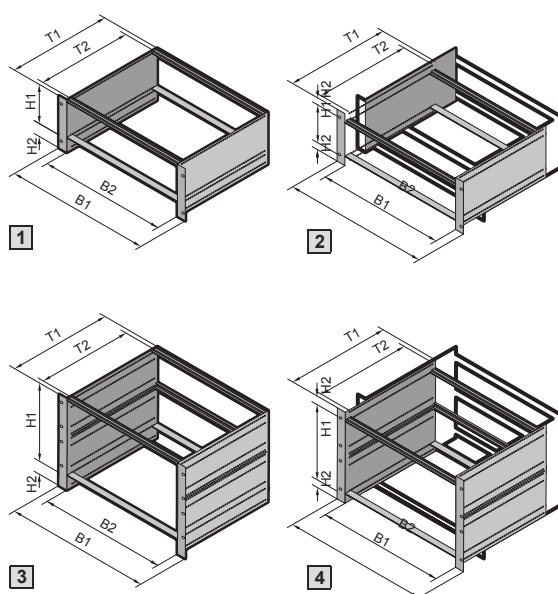
Flanges, side panels, horizontal
rails, threaded inserts,
insulating strips or Z rails.

Tests:

Vibration and shock-tested to:
IEC 600-68-2-6 test Fc
IEC 600-68-2-27 test Ea

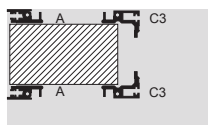
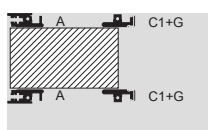
Standards:

Ripac sub racks are based
on the system dimensions
of IEC 60 297-3.

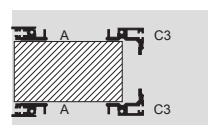
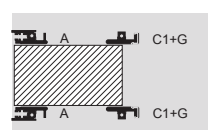


B = Width
H = Height
T = Depth

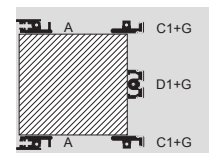
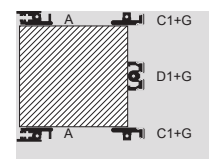
EMC upgradable



1 Top: for backplane
Bottom: for connectors



2 Top: for backplane
Bottom: for connectors



3 Top: for backplane
(6U + 1U)

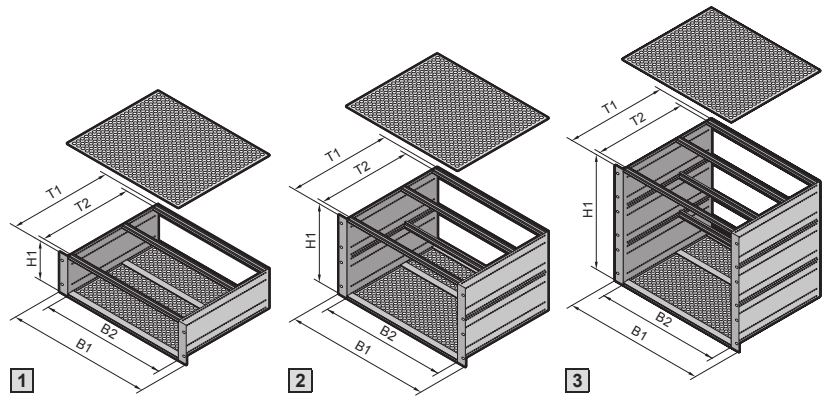
4 Bottom: for backplane
(6U + 2 x 1/2U)



Custom configuration available upon request.

					Model No. RP					
					1	2	3	4		
U (H1 + H2)					4 (3 + 1)	4 (3 + 1)	4 (3 + 2 x 1/2)	4 (3 + 2 x 1/2)	7 (6 + 1)	7 (6 + 2 x 1/2)
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2	For backplane	For connector IEC 60 603-2	For backplane	For backplane
482.6 (19")	84	245	220	220	3685.235	—	—	—	—	—
		285	260	220	3684.028	3684.037	3684.031	3684.040	—	—
		305	280	280	3685.236	—	—	—	—	—
		345	320	280	3684.029	3684.038	3684.032	3684.041	—	—
		365	340	340	3685.237	—	—	—	—	—
		405	380	340	3684.030	3684.039	3684.033	3684.042	3684.064	3684.062
		465	440	400	—	—	—	—	3684.065	3684.063

Ripac Vario EMC 3U, 6U, 9U



B = Width
H = Height
T = Depth

Material/Surface finish:

Side panels:
2.5 mm aluminium,
clear-chromated
Flanges and horizontal rails:
Extruded aluminium section,
clear-chromated
Covers: Aluminium, unplated

Supply includes:

Flanges, rear trim, side panels,
EMC gaskets, covers, mounting
blocks, horizontal rails,
insulating strips.

Tests:

Vibration and shock-tested to:
IEC 600-68-2-6 test Fc
IEC 600-68-2-27 test Ea

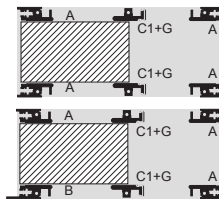
Standards:

Ripac sub racks are based
on the system dimensions
of IEC 60 297-3.

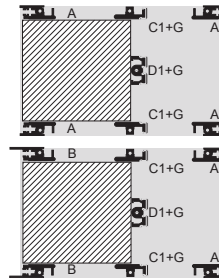
Detailed drawing,
see page 182.

EMC diagram,
see page 194.

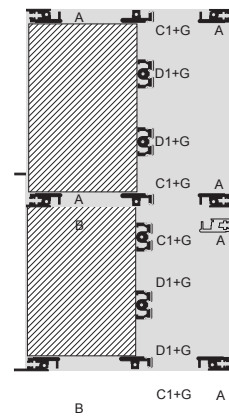
EMC



1
Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension



2
Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension



3
Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension

					Model No. RP					
U					1	2		3		
Height (H1) mm					3	6		9		
					132	265.35		398.70		
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For backplane ¹⁾	For backplane	For backplane ¹⁾	For backplane	For backplane ¹⁾
482.6 (19")	84	245	220	180	3684.128	3684.142	3684.156	3684.169	—	—
		285	280	220	3684.129	3684.143	3684.157	3684.170	—	—
		305	280	220	3685.241	3685.243	3685.242	3685.244	—	—
		345	320	280	3684.130	3684.144	3684.158	3684.171	3684.162	3684.175
		405	380	340	3684.131	3684.145	3684.159	3684.172	3684.163	3684.176
		465	440	400	3684.132	3684.146	3684.160	3684.173	3684.164	3684.177
		525	500	400	3684.133	3684.147	3684.161	3684.174	3684.165	3684.178
		585	560	400	—	—	—	—	3684.166	3684.179

¹⁾ Front horizontal rails with 10mm extension for injector/extractor handles (B)

Ripac Vario EMC 4U, 7U



Material/Surface finish:

Side panels:

2.5 mm aluminium,
clear-chromated

Flanges and horizontal rails:
Extruded aluminium section,
clear-chromated

Covers: Aluminium, unplated

Supply Includes:

Flanges, rear trims, side panels,
EMC gaskets, covers, mounting
blocks, horizontal rails, threaded
inserts, insulating strips.

Detailed parts lists,

see page 183.

Tests:

Vibration and shock-tested to:

IEC 600-68-2-6 test Fc

IEC 600-68-2-27 test Ea

Standards:

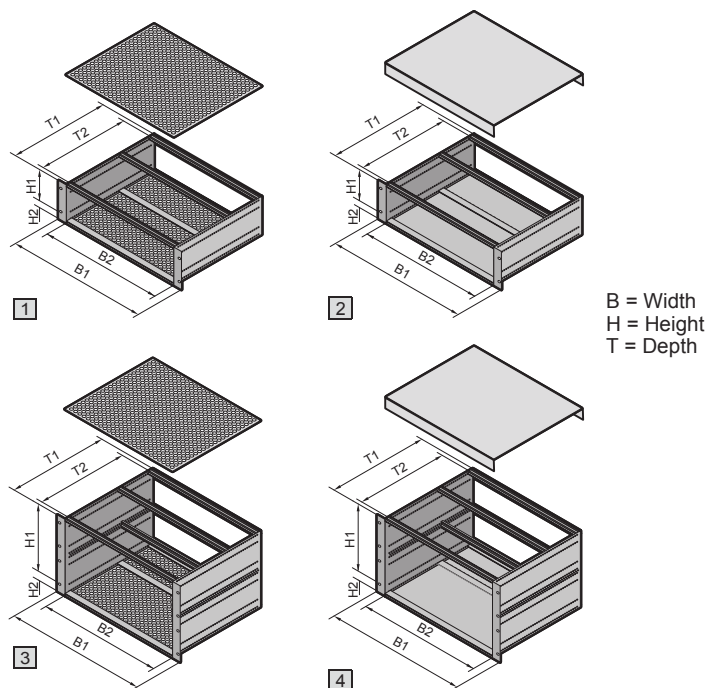
Ripac sub racks are based
on the system dimensions
of IEC 60 279-3.

Detailed drawing,

see page 182.

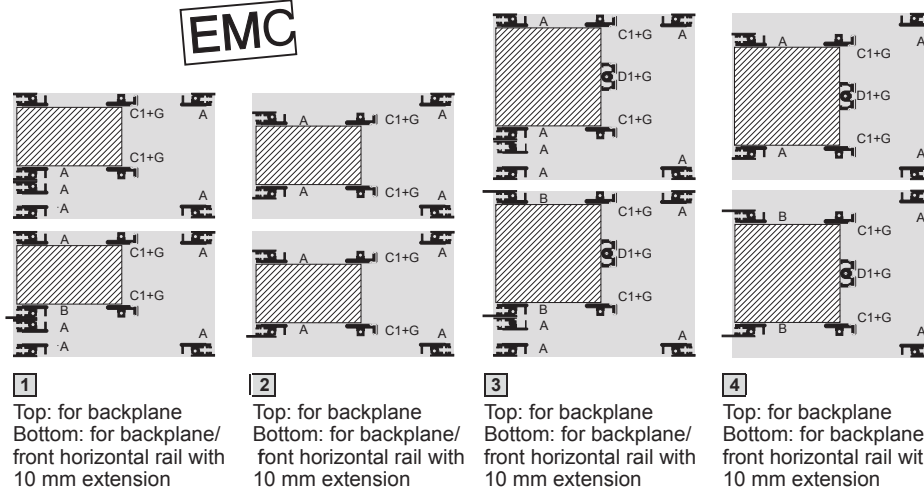
EMC diagram,

see page 194.



B = Width
H = Height
T = Depth

EMC



1 Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension

2 Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension

3 Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension

4 Top: for backplane
Bottom: for backplane/
front horizontal rail with
10 mm extension

					Model No. RP							
					1		2		3		4	
U (H1 + H2)					4 (3 + 1)	4 (3 + 1)	4 (3 + 2 x 1/2)	4 (3 + 2 x 1/2)	7 (6 + 1)	7 (6 + 1)	7 (6 + 2 x 1/2)	7 (6 + 2 x 1/2)
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For backplan ¹⁾	For backplane	For backplan ¹⁾	For backplane	For backplan ¹⁾	For backplane	For backplan ¹⁾
482.6 (19")	84	285	260	220	3684.134	3684.148	3684.137	3684.151	3684.187	3684.192	—	—
		345	320	280	3684.135	3684.149	3684.138	3684.152	3684.188	3684.193	3684.189	3684.196
		405	380	340	3684.136	3684.150	3684.139	3684.153	3684.180	3684.194	3684.190	3684.197
		465	440	400	—	—	—	—	3684.181	3684.195	3684.191	3684.198

¹⁾ Front horizontal rails with 10mm extension for injector/extractor handles (B)

**Material/Surface finish:**

Side panels:

2.5 mm aluminium,

clear-chromated

Flanges and horizontal rails:

Extruded aluminium section,

clear-chromated

Supply includes:

Side panels, rear trims, flanges for mounting plates or top-hat rail adaptors, EMC front/rear panels, EMC gaskets, covers, horizontal rails, threaded inserts, insulating strips.

Tests:

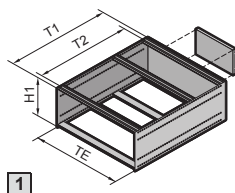
Vibration and shock-tested to:

IEC 600-68-2-6 test Fc

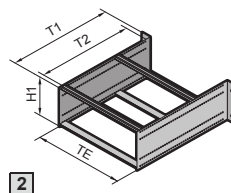
IEC 600-68-2-27 test Ea

Standards:

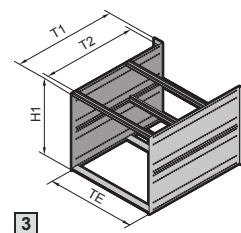
Ripac subracks are based on the system dimensions of IEC 60 297-3.



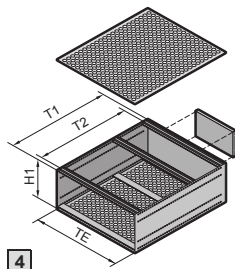
1



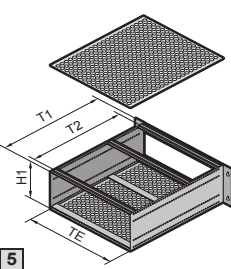
2



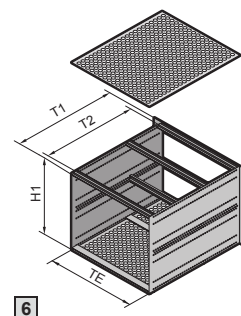
3



4



5



6

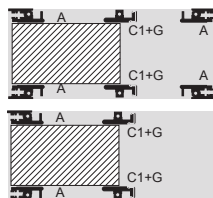
B = Width
H = Height
T = Depth

1 4

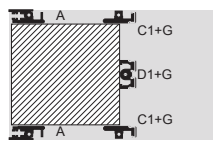
Ripac Compact 3 U
for top-hat rail

2 3 5 6

Ripac Compact 3 U
for mounting plate

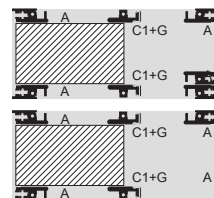


1 Top:
for top-hat rail



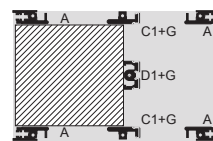
2 Bottom:
for mounting plate

3 For mounting plate



4 Top: EMC for
top-hat rail

5 Bottom: EMC for
mounting plate



6 EMC for
mounting plate



Custom configuration available upon request.

			Model No. RP					Model No. RP EMC				
			1	2	1	2	3	4	5	4	5	6
U			3	3	3	3	6	3	3	3	3	6
Height (H1) mm			132				265.35	132				265.35
HP			21	21	42	42	42	21	21	42	42	42
Attachment			Top-hat rail	Mounting plate	Top-hat rail	Mounting plate	Mounting plate	Top-hat rail	Mounting plate	Top-hat rail	Mounting plate	Mounting plate
Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane									
225	200	160	3687.667	3687.669	3687.671	3687.673	3687.680	3687.682	3687.684	3687.686	3687.688	3687.690
285	260	220	3687.668	3687.670	3687.672	3687.674	3687.681	3687.683	3687.685	3687.687	3687.689	3687.691

Ripac Vario Mobil 3U, 6U



Material/Surface finish:

Side panels:
2.5 mm aluminium,
clear-chromated
482.6 mm (19") flanges and
horizontal rails:
Extruded aluminium section,
clear-chromated
Covers: Aluminium, unplated

Supply includes:

Flanges, rear trims, side panels,
EMC gaskets, covers, mounting
blocks, horizontal rails, threaded
inserts, insulating strips,
fully assembled.

Tests:

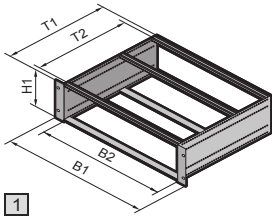
Vibration and shock-tested to:
IEC 600-68-2-6 test Fc
IEC 600-68-2-27 test Ea
The sub racks have been tested
for use in the German national
railway. Testing was conducted
in accordance with standard
EN 50 155, 1996 (Electronic
Equipment in Rail Vehicles).
The configuration of the tested
sub racks conforms to IEC 48 D.

Standards:

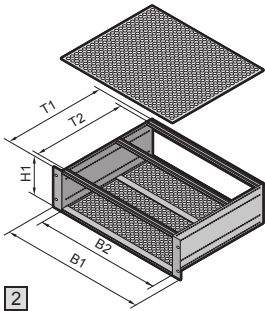
Ripac sub racks are based
on the system dimensions
of IEC 60 297-3.

Note:

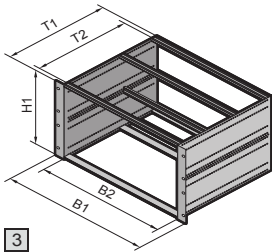
The sub racks are supplied
fully assembled.



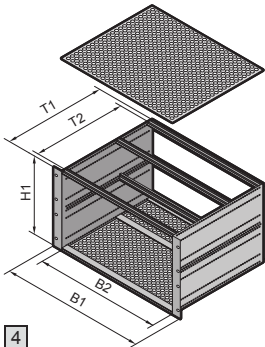
1



2

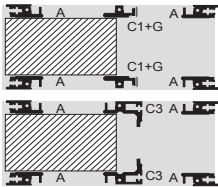


3

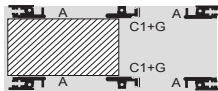


4

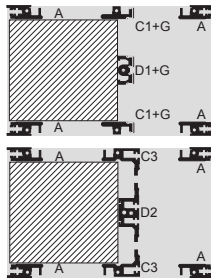
B = Width
H = Height
T = Depth



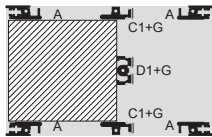
1 Top:
for backplane
Bottom:
for connector



2 EMC for backplane



3 Top:
for backplane
Bottom:
for connector



4 EMC for backplane

☒ Custom configuration available upon request.

					Model No. RP		Model No. RP EMC	Model No. RP		Model No. RP EMC
					1		2	3		4
U					3		3	6		6
Height (H1) mm					132			265,35		
B1 mm	B2 HP	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2	For backplane	For backplane	For connector IEC 60 603-2	For backplane
482.6 (19")	84	245	220	220	3687.782	3687.780	3687.784	3687.783	3687.781	3687.785

Table of Horizontal Rails

Ripac extrusion system: Complete, simple and easy to manage

To fit all subrack systems as well as the Ripac Vario-Module instrument case/system enclosure range

Main sections	A Front horizontal rail	A1 Front horizontal rail, double screw-fastening	A2 Front horizontal rail, double screw-fastening (Ripac EASY)	W (B) Front horizontal rail, with 10 mm extension, for extractor handle type IV or VII	B1 Double front horizontal rail, with 10 mm extension	B2 Front horizontal rail, with 10 mm extension, double screw-fastening	C1 Rear horizontal rail
							
Additional sections							
E Rear adaptor rail, centre, to accommodate guide rails 	-	-	-	-	-	-	-
F Z rail for connector 	-	-	-	-	-	-	
G Insulating strips ¹⁾ 	-	-	-	-	-	-	
H Conductive strips ¹⁾ 	-	-	-	-	-	-	
I Threaded insert 							-
J Identification strips 			-				
K EMC gaskets, horizontal 			-				-

¹⁾ For conductive or insulated attachment of backplanes.

All system requirements may be covered with just a few basic types of horizontal rail. A cost-effective, easy-to-manage range.

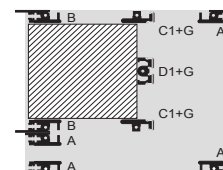
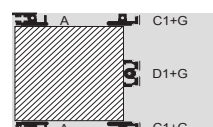
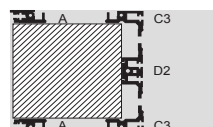
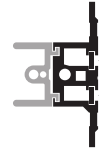


Table of Horizontal Rails

Ripac extrusion system: Complete, simple and easy to manage

To fit all subrack systems as well as the Ripac Vario-Module instrument case/system enclosure range

Main sections	C3 Rear horizontal rail, with integral Z-rail	C4 Rear horizontal rail, double screw-fastening, for back-plane mounting (Ripac EASY)	C5 Rear horizontal rail, with integral Z-rail, double screw-fastening (Ripac EASY)	C6 Rear horizontal rail, double screw-fastening	D1 Rear horizontal rail, centre	D2 Rear horizontal rail, centre, with integral Z-rail (also for Ripac EASY)	D3 Rear horizontal rail, centre, with integral contact surface (Ripac EASY)	D4 Rear horizontal rail, for back-plane mounting, double screw-fastening (Ripac EASY)
Additional sections								
E Rear adaptor rail, centre, to accommodate guide rails 	-	-	-	-				-
F Z rail for connector 	-	-	-			-	-	-
G Insulating strips ¹⁾ 	-	-	-			-	-	-
H Conductive strips ¹⁾ 	-	-	-			-	-	-
I Threaded insert 		-			-		-	
J Identification strips 		-	-		-	-	-	-
K EMC gaskets, horizontal 	-	-	-	-	-	-	-	-

¹⁾ For conductive or insulated attachment of backplanes.

Side Panels and Flanges



Side Panels

For Ripac Vario, Ripac Vario EMC,
Ripac Compact, Ripac Vario Mobil
Mounting holes and anti-twist half-shears
on a 10 mm pitch pattern.

Material:

2.5 mm aluminium, clear-chromated

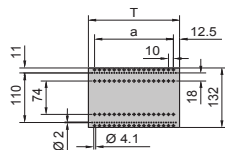


Custom versions available upon request.

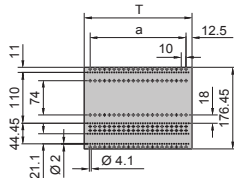
			Model No. RP								
U			3	4 (3 + 1)	4 (3 + 2 x 1/2)	6	7 (6 + 1)	7 (6 + 2 x 1/2)	9	10	11
D mm	a ¹⁾ mm	Packs of									
185	160	1	3684.511	—	—	3684.529	—	—	—	—	—
225	200	1	3684.512	3685.793	3685.890	3684.530	3685.896	3685.893	3685.797	—	—
245	220	1	3684.513	3685.850	3685.891	3684.531	3685.897	3685.894	—	—	—
285	260	1	3684.514	3684.523	3684.526	3684.532	3685.743	3685.895	—	—	—
305	280	1	3684.515	3685.794	—	3684.533	—	—	3685.798	—	—
345	320	1	3684.516	3684.524	3684.527	3684.534	3685.744	3685.745	3684.547	—	—
365	340	1	3684.517	3685.795	—	3684.535	—	—	3685.799	—	—
405	380	1	3684.518	3684.525	3684.528	3684.536	3684.541	3684.543	3684.548	3684.545	—
425	400	1	3684.519	—	—	3684.537	—	—	—	—	—
465	440	1	3684.520	3685.796	3685.892	3684.538	3684.542	3684.544	3684.549	3684.546	3684.552
525	500	1	3684.521	—	—	3684.539	3685.898	3685.959	3684.550	3685.899	3684.553
585	560	1	3684.522	—	—	3684.540	—	—	3684.551	—	3684.554

¹⁾ a = Distance between the first and last mounting hole

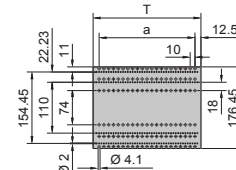
3U



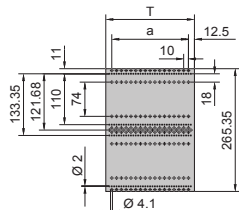
4U (3U + 1U)



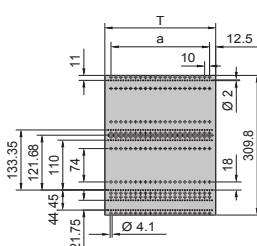
4U (3U + 2 x 1/2U)



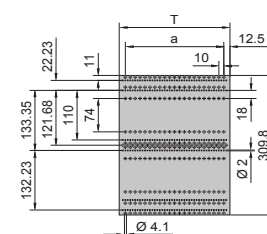
6U



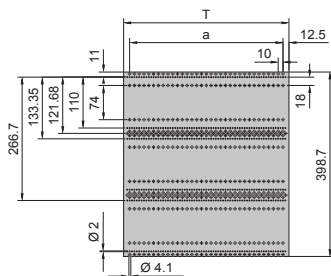
7U (6U + 1U)



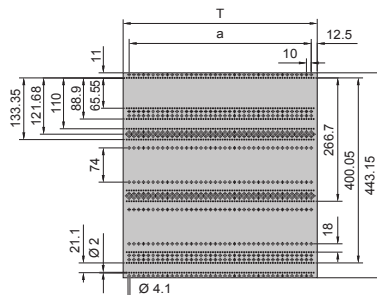
7U (6U + 2 x 1/2U)



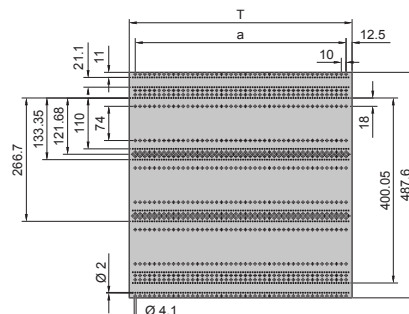
9U



10U



11U



Side Panels and Flanges

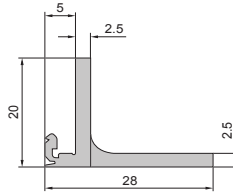
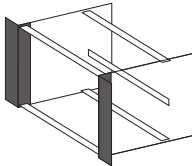


Flange
482.6 mm (19") flange

To fit all Ripac Vario, Ripac Vario EMC, Ripac Compact and Ripac Vario Mobil subracks. With integral channel to accommodate EMC gaskets.

Material:
Extruded aluminium section

Surface finish:
Clear-chromated



U	Packs of	Model No. RP	
		with handle holes	without handle holes
2	1	—	3684.614
3	1	3684.622	3684.615
4	1	3684.623	3684.616
6	1	3684.624	3684.617
7	1	3684.625	3684.618
9	1	—	3684.619
10	1	—	3684.620
11	1	—	3684.621

☒ Custom versions available upon request.

+ **Accessories:**

EMC gaskets, vertical,
see page 124.
Handles for subracks,
see page 112.

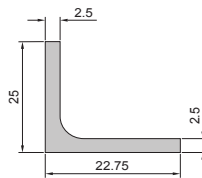
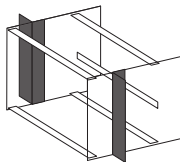


Flange
482.6 mm (19") flange

Recessed
To fit all Ripac Vario, Ripac Vario EMC and
Ripac Vario Mobil subracks.

Material:
Extruded aluminium section

Surface finish:
Clear-chromated



U	Packs of	Model No.	RP
3	1	3684.62	6
4	1	3684.62	7
6	1	3684.62	8
7	1	3684.62	9
9	1	3684.63	0
10	1	3684.63	1
11	1	3684.63	2

☒ Custom versions available upon request.

 Also required:required:

Assembly screws, nuts and washers.
Packs of 4 sets, Model No. RP 3687.015.
see page 160.



Side Panels for Ripac EASY

- Mounting holes spaced 60 mm apart as slots
- Holes for telescopic slide mounting

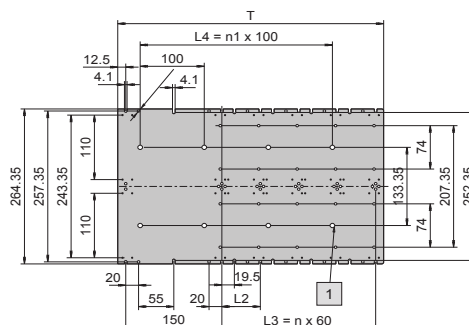
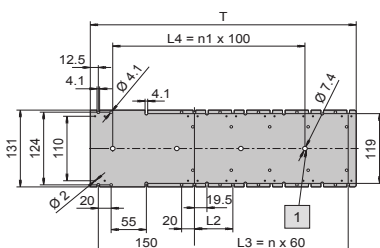
Material:
1.5 mm aluminium, corrosion-resistant

D mm	L2	n	n1	Packs of	Max. PCB depth mm	Model No. RP	
						3U	6U
175	—	—	—	2	160	3634.695	3634.720
235	60	—	—	2	220	3634.700	3634.725
295	60	2	2	2	280	3634.705	3634.730
355	60	3	3	2	340	3634.710	3634.735
415	60	4	3	2	400	3634.715	3634.740

☒ Custom versions available upon request.

Accessories:

Flange for Ripac EASY.
see page 112.



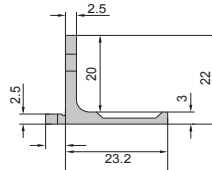
Side Panels and Flanges



Flange
482.6 mm(19")
for Ripac EASY
 Integral holes for mounting handles.

Material:
 Extruded aluminium section

Surface finish:
 Anodised



U	Packs of	Model No. RP
3	2	3634.745
6	2	3634.750

☒ Custom versions available upon request.

☒ **Accessories:**

Handles for sub racks.
 see page 112.



Handles

To fit all sub racks and component shelves
 For fitting on the sub rack flange with handle holes
 and on all component shelves.

Material:
 Die-cast zinc

Surface finish:
 Spray-finished, silver-grey

Supply includes:
 Assembly parts.

U	Packs of	Model No. RP
Sub racks 3U and 4U	2	3636.010
Component shelves		
Sub racks 6U and 7U	2	3666.010

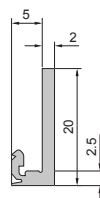
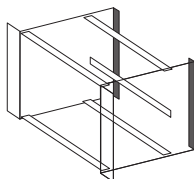


Trim section, rear

To fit all Ripac Vario, Ripac Vario EMC,
 Ripac Compact and Ripac Vario Mobil sub racks.
 Ensures 84 HP fit at the rear of the sub rack.
 With integral channel to accommodate
 EMC gaskets.

Material:
 Extruded aluminium section

Surface finish:
 Clear-chromated



U	Model No. RP	
	Packs of 1	Packs of 2
2	3684.633	—
3	3684.634	3685.276
4	3684.635	—
6	3684.636	3685.277
7	3684.637	—
9	3684.638	—
10	3684.639	—
11	3684.640	—

☒ Custom versions available upon request.

☒ **Accessories:**

EMC gaskets, vertical.
 see page 124.

Horizontal Rails



Front horizontal rail,
double screw-fastening (A2)

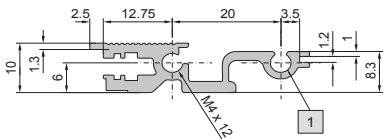
To accommodate guide rails and for the attachment of front panels.

- Pre-assembled screws M4 x 12 for fast mounting on the subrack side panel
- Front projection 2.5 mm corresponding to IEC 60 297-3
- Optional double screw-fastening ensures a high level of stability
- HP pitch pattern of holes for the precise installation of guide rails
- 1 x M4 thread on end face
- Straight-through core hole for optional second screw-fastening

Material:
Extruded aluminium section

Surface finish:
Corrosion-resistant

Supply includes:
2 horizontal rails with pre-assembled threaded inserts and screws M4 x 12.



1 Core hole M4

Usable width (HP)	Packs of	Model No. RP
84	2	3634.600

☒ Custom lengths available upon request.

Accessories:

Assembly screws M4 x 12,
Model No. RP 3634.430 (packs of 100).

Note:
Additional assembly screws are required for double screw-fastening, Model No. RP 3634.430 (packs of 100).



Rear horizontal rail
for backplane mounting,
double screw-fastening (C4)

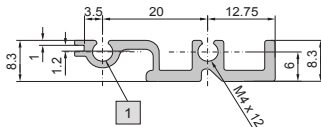
To accommodate guide rails and for direct mounting of backplanes.

- Pre-assembled screws M4 x 12 for fast mounting on the subrack side panel
- The mounting of insulating strips is not necessary, thanks to the integral contact surface
- Tapped holes M2.5 on a 1 HP pitch pattern for mounting backplanes
- HP pitch pattern of holes for the precise installation of guide rails
- Optional double screw-fastening ensures a high level of stability
- 1 x M4 thread on end face
- Straight-through core hole for optional second screw-fastening
- The height of the extrusion allows top-mounting with cover plates

Material:
Extruded aluminium section

Surface finish:
Corrosion-resistant

Supply includes:
1 horizontal rail with pre-assembled crews M4 x 12.



1 Core hole M4

Usable width (HP)	Packs of	Model No. RP
84	2	3634.615

☒ Custom lengths available upon request.

Note:
Additional assembly screws are required for double screw-fastening, Model No. RP 3634.430 (packs of 100.).

Horizontal Rails for Ripac EASY



Rear horizontal rail, with integral Z-rail, double screw-fastening (C5)

To accommodate guide rails, integral Z rail for mounting connectors.

- Pre-assembled screws M4 x 12 for fast mounting on the subrack side panel
- HP pitch pattern of holes for the precise installation of guide rails
- Optional double screw-fastening ensures a high level of stability
- 1 x M4 thread on end face
- Straight-through core hole for optional second screw-fastening
- The height of the extrusion allows top-mounting with cover plates

Material:

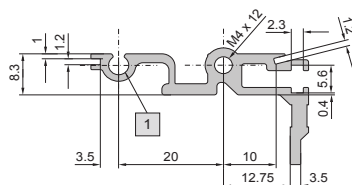
Extruded aluminium section

Surface finish:

Corrosion-resistant

Supply includes:

2 horizontal rail with pre-assembled screws M4 x 12.



1 Core hole M4

Usable width (HP)	Packs of	Model No. RP
84	2	3634.620

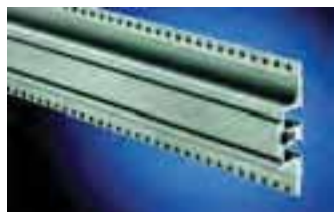
☒ Custom lengths available upon request.

+ Accessories:

Threaded inserts, Model No. RP 9901.816 (packs of 1). see page 122.

Note:

Additional assembly screws are required for double screw-fastening, Model No. RP 3634.430 (packs of 100).



Rear horizontal rail, centre, with integral Z-rail (D2)

When using 6 U PCBs or box-type plug-in units. Integral Z rail for mounting connectors to IEC 60 603-2.

- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole

Material:

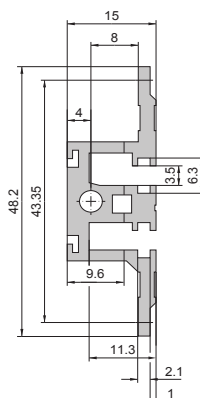
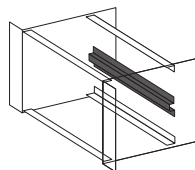
Extruded aluminium section

Surface finish:

Corrosion-resistant

Supply includes:

1 horizontal rail, 2 assembly screws.



Usable width (HP)	Packs of	Model No. RP
84	1	3634.085

☒ Custom lengths available upon request.

Horizontal Rails for Ripac EASY



Rear horizontal rail, centre (D3) for backplane mounting

When using 6U PCBs or box-type plug-in units.
For mounting backplanes.

- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole
- The mounting of insulating strips is not necessary, thanks to the integral contact surface

Material:

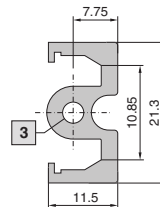
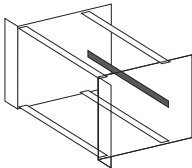
Extruded aluminium section

Surface finish:

Corrosion-resistant

Supply includes:

1 horizontal rail,
2 assembly screws.



Usable width (HP)	Packs of	Model No. RP
84	1	3634.045



Custom lengths available upon request.



Rear horizontal rail, for rear panel mounting

For the attachment of rear front panels.

- Optional double screw-fastening ensures a high level of stability
- With screw channel for roof plate attachment
- 1 x M4 thread on end face
- Straight-through core hole for optional second screw-fastening
- Pre-assembled screws M4x12 for fast mounting on the subrack side panel

Material:

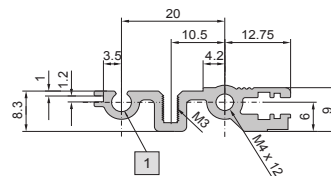
Extruded aluminium section

Surface finish:

Corrosion-resistant

Supply includes:

2 horizontal rails with pre-assembled threaded inserts and screws.



1 Core hole M4

Usable width (HP)	Packs of	Model No. RP
84	1	3634.510



Custom lengths available upon request.


Accessories:

Assembly screws M4 x 12,
Model No. RP 3634.430 (packs of 100).

Note:

Additional assembly screws are required
for double screw-fastening,
Model No. RP 3634.430 (packs of 100).



Threaded inserts for Ripac EASY

With M2.5 threaded holes on an HP pitch pattern.

- For sliding into the front horizontal rails (A2) and rear horizontal rails (D4, C5)
- Size: 5 x 2 mm

Material:

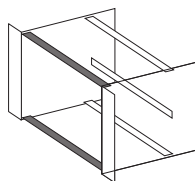
Sheet steel, zinc-plated

Usable width (HP)	Packs of	Model No. RP
84	1	9901.816



Custom lengths available upon request.

Horizontal Rails



Front horizontal rail (A)

To accommodate guide rails and for the attachment of front panels.

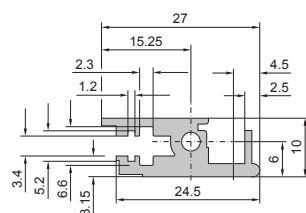
- Front projection 2.5 mm corresponding to IEC 60 297-3
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

Material:

Extruded aluminium section

Surface finish:

Clear-chromated or anodised



Usable width (HP)	Packs of	Model No. RP
4 (left)	1	3684.592
4 (right)	1	3684.955
8 (left)	1	3684.593
8 (right)	1	3684.956
12	1	3684.594
16	1	3684.595
20	1	3684.596
21	1	3685.985
40	1	3684.960
42	1	3684.560
63	1	3684.561
84	1	3684.562
84	2	3685.267 ¹⁾
192	1	3688.000 ²⁾

¹⁾ Including 4 assembly screws

²⁾ Anodised

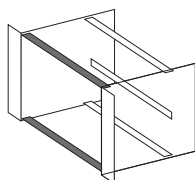
☒ Custom lengths available upon request.

! Also required:

Assembly screws M4 x 12
packs of 100, Model No. RP 3654.300.
see page 159.

+ Accessories:

Threaded inserts (packs of 1).
see page 122.



Front horizontal rail, with double screw-fastening (A1)

To accommodate guide rails and for the attachment of front panels. The double screw-fastening ensures a high level of stability even under extreme loads.

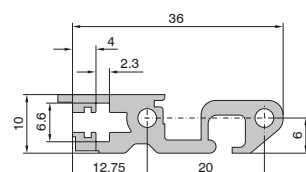
- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection 2.5 mm corresponding to IEC 60 297-3-101
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole

Material:

Extruded aluminium section

Surface finish:

Clear-chromated



Usable width (HP)	Packs of	Model No. RP
84	1	9908.721

☒ Custom lengths available upon request.

! Also required:

Assembly screws M4 x 12,
packs of 100, Model No. RP 3654.300.
see page 159.

+ Accessories:

Threaded inserts, Model No. RP 3684.610.
see page 122.

Horizontal Rails


**Front horizontal rail,
with 10 mm extension (B)**

for type IV, IVs and VII injector/extractor handle
To accommodate guide rails and for the attachment of front panels.

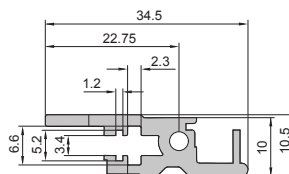
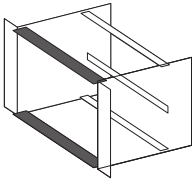
- Front projection and pitch pattern of holes based on IEEE 1101.10 and IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

Material:

Extruded aluminium section

Surface finish:

Clear-chromated or anodised



Usable width (HP)	Packs of	Model No. RP
40	1	3684.961
42	1	3684.565
63	1	3684.566
84	1	3684.567
84	2	3685.269 ¹⁾
192	1	3688.001 ²⁾

¹⁾ Including 4 assembly screws

²⁾ Anodised



Custom lengths available upon request.


Also required:

Assembly screws M4 x 12,
packs of 100, Model No. RP 3654.300.
see page 159.


Accessories:

Threaded inserts (packs of 1).
see page 122.


**Double front horizontal rail,
with 10 mm extension (B1)
- Version 1**

To accommodate guide rails and for the attachment of front panels.

- Front projection and pitch pattern of holes based on IEEE 1101.10 and IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole

Material:

Extruded aluminium section

Surface finish:

Clear-chromated

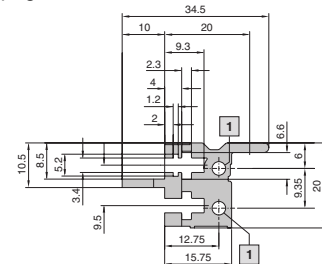
Usable width (HP)	Packs of	Model No. RP
84	1	3687.724



Custom lengths available upon request.


Also required:

Assembly screws M4 x 12,
packs of 100, Model No. RP 3654.300.
see page 159.


**Double front horizontal rail,
with 10 mm extension (B1)
- Version 2**

To accommodate guide rails and for the attachment of front panels.

- Front projection and pitch pattern of holes based on IEEE 1101.10 and IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole

Material:

Extruded aluminium section

Surface finish:

Clear-chromated

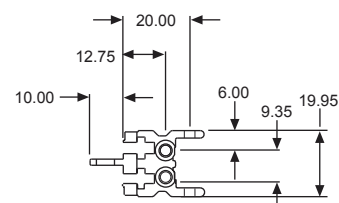
Usable width (HP)	Packs of	Model No. RP
84	1	3688.704



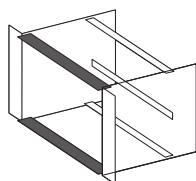
Custom lengths available upon request.


Also required:

Assembly screws M4 x 12,
packs of 100, Model No. RP 3654.300.
see page 159.



Horizontal Rails



Front horizontal rail, with 10 mm extension (B2), with double screw-fastening

for type IV, IVs and VII injector/extractor handle
To accommodate guide rails and for the attachment of front panels. The double screw-fastening ensures a high level of stability even under extreme loads.

- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection and pitch pattern of holes based on IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole

Material:

Extruded aluminium section

Surface finish:

Clear-chromated

Usable width (HP)	Packs of	Model No. RP
84	1	9908.722



Custom lengths available upon request.



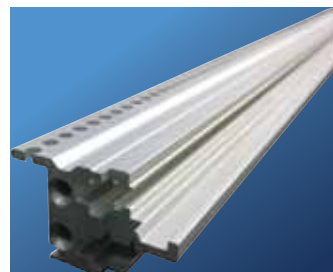
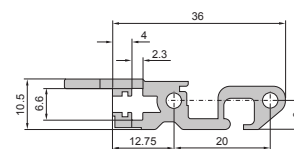
Also required:

Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.



Accessories:

Threaded inserts, Model No. RP 3684.610 (packs of 1). see page 122.



Front Rail 84HP Type (B4) VPX *

For Type IVs or Type VII metal handles.
To accommodate guide rails and for the attachment of front panels.

- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection and pitch pattern of holes based on IEC 60 297-3-101, for the use of injector/extractor handles type IVs and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole

Material:

Extruded aluminum section

Surface finish:

Clear-chromated

Description	Length	Model Number
Front Rail Type B4 VPX	84HP	PMP00003



Custom lengths available upon request.



Also required:

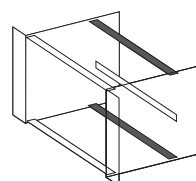
Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. See pg 159



Accessories:

Threaded inserts, Model No. RP 3684.610 (packs of 1). 36 2.3 4 12.75 20 6.6 10.5 6 Usable width (HP) Packs of Model No. RP 84 1 9908.722

* Not sold individually



Rear horizontal rail (C1)

To accommodate guide rails and for the attachment of Z rails, insulating strips or conductive strips and backplanes.

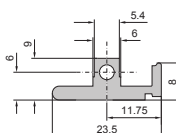
- Tapped holes M2.5 on a 1 HP pitch pattern
- HP pitch pattern of holes for the precise installation of guide rails
- M2.5 thread for the installation of Z rails or backplanes
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

Material:

Extruded aluminium section

Surface finish:

Clear-chromated or anodised



Usable width (HP)	Packs of	Model No. RP
21	1	3685.991
40	1	3684.962
42	1	3684.570
63	1	3684.571
84	1	3684.572
84	2	3685.268 ¹⁾
192	1	3688.002 ²⁾

¹⁾ Including 4 assembly screws

²⁾ Anodised



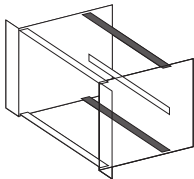
Custom lengths available upon request.



Also required:

Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.

Horizontal Rails



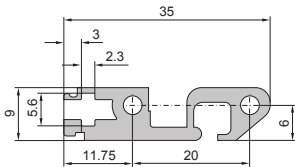
Rear horizontal rail, with double screw-fastening (C6)

To accommodate guide rails and for the attachment of Z rails, insulating strips or conductive strips and backplanes. The double screw-fastening ensures a high level of stability even under extreme loads.

- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 60,155), Category 1, Class B
- Tapped holes M2.5 on an HP pitch pattern
- HP pitch pattern of holes for the precise installation of guide rails
- M2.5 thread for the installation of Z rails or backplanes
- M4 thread on end face
- Straight-through core hole

Material:
Extruded aluminium section

Surface finish:
Clear-chromated or anodised



Usable width (HP)	Packs of	Model No. RP
84	1	9908.723

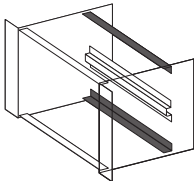
☒ Custom lengths available upon request.

Also required:

Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.

Accessories:

Threaded inserts, Model No. RP 9901.816 (packs of 2). see page 122.



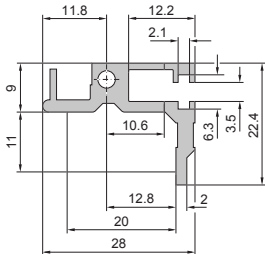
Rear horizontal rail, with integral Z rail (C3)

To accommodate guide rails. Integral Z rail for mounting connectors to IEC 60 603-2.

- HP pitch pattern of holes for the precise installation of guide rails
- 84 tapped holes M2.5 for connector mounting
- M4 thread on end face
- Straight-through core hole

Material:
Extruded aluminium section

Surface finish:
Clear-chromated



Usable width (HP)	Packs of	Model No. RP
42	1	3686.191
63	1	3686.919
84	1	3686.159

☒ Custom lengths available upon request.

Also required:

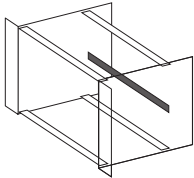
Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300, see page 159.

Horizontal Rails



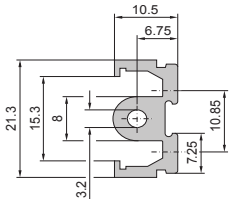
Rear horizontal rail, centre (D1)
When using 6U PCBs or box-type plug-in units. Facility for the attachment of Z rails, insulating strips or conductive strips.

- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP for cutting to the required length



Material:
Extruded aluminium section

Surface finish:
Clear-chromated or anodised

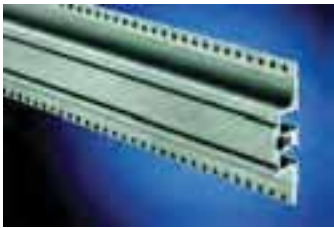


Usable width (HP)	Packs of	Model No. RP
40	1	3684.963
42	1	3684.580
63	1	3684.581
84	1	3684.582
84	1	3685.270 ¹⁾
858.5 mm	1	3684.579
192	1	3688.003 ²⁾

¹⁾ Including 2 assembly screws
²⁾ Anodised

☒ Custom lengths available upon request.

! Also required:
Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.

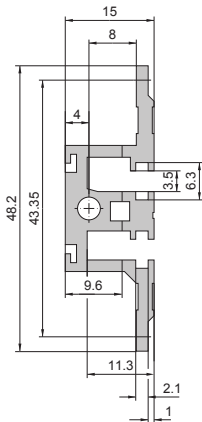
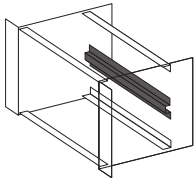


Rear horizontal rail, centre, with integral Z rail (D2)
When using 6U PCBs or box-type plug-in units. Integral Z rail for mounting connectors to IEC 60 603-2.

- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole

Material:
Extruded aluminium section

Surface finish:
Clear-chromated



Usable width (HP)	Packs of	Model No. RP
42	1	3687.600
63	1	3687.601
84	1	3687.602
858.5 mm	1	3687.603

☒ Custom lengths available upon request.

! Also required:
Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.

Horizontal Rails



Rear horizontal rail, centre (E)

When subdividing 6U into 2 x 3U, the adaptor rail accommodates the guide rails when fastened to the centre horizontal rail.

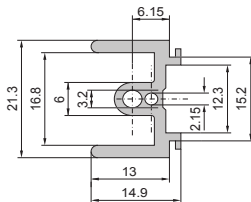
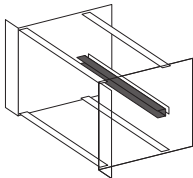
- HP pitch pattern of holes for the precise installation of guide rails
- M4 and M2.5 thread on the end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

Material:

Extruded aluminium section

Surface finish:

Clear-chromated or anodised



Usable width (HP)	Packs of	Model No. RP
12	1	3684.587
16	1	3684.588
20	1	3684.589
40	1	3684.964
42	1	3684.590
63	1	3686.005
84	1	3684.591
84	1	3685.272 ¹⁾
858.5 mm	1	3684.584
192	1	3688.004 ²⁾

¹⁾ Including 2 assembly screws

²⁾ Anodised



Custom lengths available upon request.



Also required:

Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300. see page 159.



Z rail for connector IEC 60 603-2 (F)

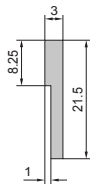
With 84 x M2.5 threaded holes.

Material:

Extruded aluminium section

Surface finish:

Clear-chromated



Usable width (HP)	Packs of	Model No. RP
4	1	3684.597
8	1	3684.598
20	1	3684.599
40	1	3684.965
42	1	3684.600
63	1	3684.601
84	1	3684.602
84	2	3685.271



Custom lengths available upon request.



Also required:

Assembly screws M2.5 x 6, packs of 100, Model No. RP 3654.340. see page 159.

Horizontal Rails



Threaded insert (I)

With M2.5 threaded holes on an HP pitch pattern. For sliding into the horizontal rail. There are two threaded insert versions, which are distinguished by their height.

Material:

Sheet steel, zinc-plated

Usable width (HP)	Packs of	Model No. RP	
		6 x 2 mm	5 x 2 mm
		for horizontal rails	
		Type A, A1, B, B1, B2, C3	Type A2, C5, C6, D4
4	1	3684.603	–
8	1	3684.604	–
12	1	3684.605	–
16	1	3684.606	–
20	1	3684.607	–
21	1	3686.149	–
40	1	3684.966	–
42	1	3684.608	–
63	1	3684.609	–
84	1	3684.610	9901.816



Custom lengths available upon request.



Threaded insert 6mm 84HP VPX *

Threaded inserts for VPX Rails. With M2.5 threaded holes on an HP pitch pattern.

* Special OpenVPX offset spacing

- For sliding into the VPX front horizontal rails (B4)
- Size: 6 x 2 mm

Material:

Sheet steel, zinc-plated

Usable width	Packs of	Model No.
84HP	1	PMP00004

* Not sold individually



Identification strip (J)

To identify the slots on the subrack, self-adhesive. The following versions are available.

4 mm wide:

- for horizontal rails
- for rear horizontal rails

2 mm wide:

- for front horizontal rails (channel on front face)

For horizontal rail	Width mm	Label	Packs of	Model No. RP
Front	4	1 ... 84	1	3687.575
Rear	4	1 ... 168	1	3687.577
Front	4	84 ... 1	1	3687.574
Front	2	1 ... 84	1	3687.576



Custom lengths available upon request.



EMC gaskets, horizontal (K)

see page 125.



Conductive strip (H)

For conductive mounting of backplanes.

- 84 HP
- Slides onto the rear horizontal rail

Material:

Aluminium

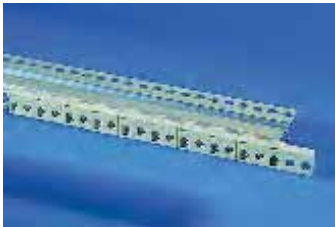
Usable width (HP)	Packs of	Model No. RP
84	1	3684.612
84	2	3685.273



Custom lengths available upon request.



Horizontal Rails



Insulating strip (G)

For insulated mounting of backplanes.

- 21 HP
- Can be shortened (4 x 4HP segments 1 x 5HP segment).
- Slides onto the rear horizontal rail

Material:

Plastic, self-extinguishing to UL 94-V0



Rear horizontal rail, centre, fitted with insulating strips (top) and conductive strips (bottom).



Usable width (HP)	Packs of	Model No. RP
21	1	3684.611
21	8	3685.274



Punched strip

Material:

Aluminium

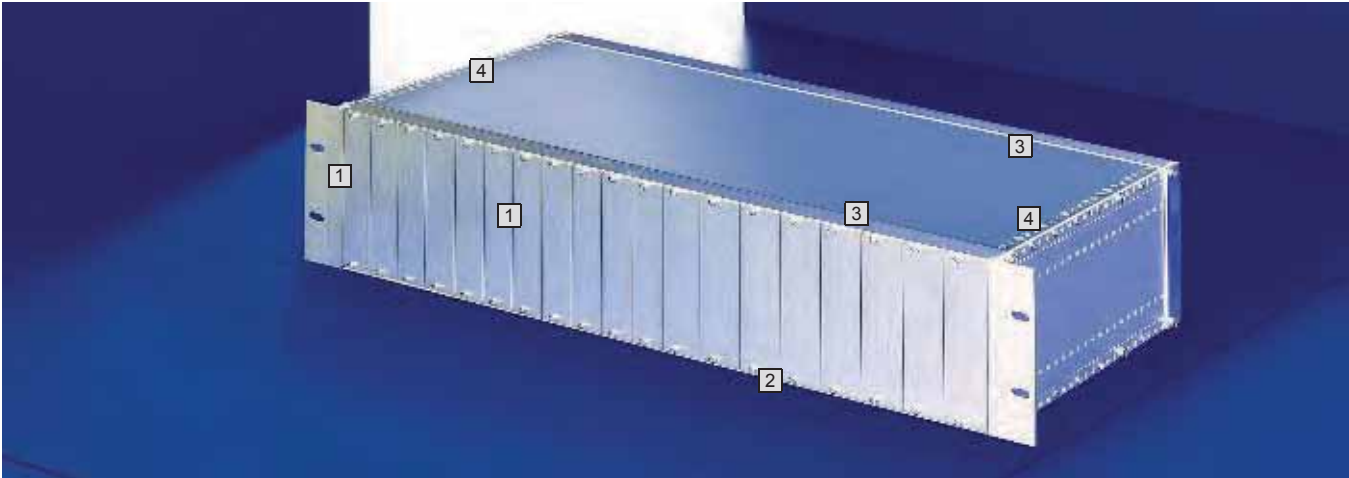


Usable width (HP)	Packs of	Model No. RP
84	2	3685.275



Custom lengths available upon request.

Components for EMC Installation

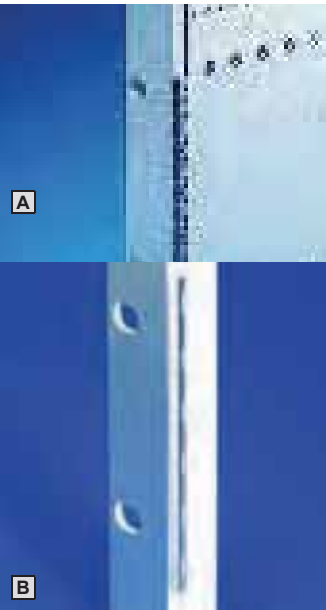


EMC (electromagnetic compatibility) refers to the ability of an electrical device to function satisfactorily in its electromagnetic environment without influencing or being influenced by this environment more than is admissible.

These requirements were taken into account when developing the Rittal subracks. They are made entirely from metal and coated with a conductive surface finish.

Stainless steel EMC gaskets ensure conductive connection of the separate parts.

- 1 EMC gaskets, vertical
- 2 EMC gaskets, horizontal
- 3 EMC gaskets for covers
- 4 Mounting blocks



EMC gaskets, vertical

To ensure EMC protection between the subrack side panel and the front/rear panels. There are two versions available.

- Suitable for mounting on:**
- 482.6 mm (19") flanges for subracks
 - Corner trims, rear
 - EMC contact strip
 - U-channel front panels
 - Trim panels for Ripac Vario-Module
 - Flanges for Ripac Vario-Module

Material:
Stainless steel

German patent
no. 101 15 525 and
no. 198 46 627
US patent no. 6,500,012
US patent no. 7,044,753



A Version 1: Segmented

U	Model No. RP Packs of 1	Model No. RP Packs of 10
1	3686.973	3684.236
2	3686.974	3684.237
3	3686.975	3684.238
4	3686.976	3684.239
6	3686.977	3684.240
7	3686.978	3684.241
9	3686.979	3684.242
10	3686.980	3684.243
11	3686.981	3684.244

- ☒ Custom lengths available upon request.

B Version 2: One-piece

U	Model No. RP Packs of 1
2	3688.610
3	3688.611
4	3688.612
5	3688.613
6	3688.614
7	3688.615
8	3688.634
9	3688.616
10	3688.609
11	3688.633
12	3688.606

Components for EMC Installation

**EMC contact strip**

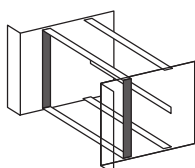
To ensure EMC protection when horizontal rails are set-back. Integral channel to accommodate EMC gaskets.

Material:

Extruded aluminium section, clear-chromated

Note:

2 sections are required for each subrack.



EMC

U	Packs of	Model No. RP
3	1	3684.643
6	1	3684.644
9	1	3684.645



Custom lengths available upon request.

**Also required:**

EMC gaskets, vertical.

Assembly screws M3 x 6, packs of 100.

Model No. RP 3684.233.

see page 159.

**EMC gaskets, horizontal (K)**

For horizontal EMC protection. For snap-fastening onto the front horizontal rails.

Material:

Stainless steel

European patent no. 0 937 375

with validity for DE

US patent no. 6,137,052

Chinese patent

no. ZL 97 1 98582.0

EMC

Usable width (HP)	Packs of	Model No. RP
For top/bottom horizontal rail		
40	1	3684.974
84	1	3684.808
84	10	3684.246
For sub-division of 6 U into 2 x 3 U, between 2 horizontal rails		
84	1	3685.789
84	10	3685.229



Custom lengths available upon request.

**EMCgaskets**

for covers

For EMC shielding between the horizontal rails and covers.

Material:

Stainless steel

EMC

HP	Packs of	Model No. RP
84	10	3684.245



Custom lengths available upon request.

**Mounting blocks**

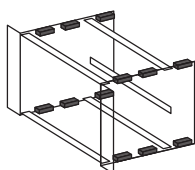
For mounting covers, versions 1 – 4, on the subrack side panel.

Material:

Die-cast zinc, nickel-plated

Note:

For EMC applications, mounting blocks must be fitted across the entire subrack depth. The table here shows the number of mounting blocks required to install 1 cover plate with EMC shielding.



EMC

	Packs of	Model No. RP
Mounting blocks 28.5 mm long	10	3684.234

**Also required:**

Assembly screws M3 x 6, packs of 100.

Model No. RP 3684.233.

see page 159.

Number of mounting blocks for max. EMC protection	Cover plate depth mm
4	142
8	192
10	212
12	252
14	272
16	312
18	332
20	372
24	432
28	492
32	552

Mounting kits



Vertical mounting kit

For the combined installation of single and double Euroboards in 6U and 9U subracks.

Material:
Aluminium, clear-chromated

Supply includes:
2 front horizontal rails,
1 adaptor rail,
2 threaded inserts,
1 vertical support (from 12 HP),
assembly parts.



Accessories:

Front panel, see page 126.
EMC gaskets, horizontal, see page 125.

6U (2 x 3U)

HP	HP	Model No. RP
1 (2 x 3U)	2 (6U)	
14	68	3684.220
21	61	3684.221
28	54	3684.222
40	42	3684.223
42	40	3684.224

9U (1 x 6U + 1 x 3U)

HP	HP	Model No. RP
(9U)	(1 x 6 + 1 x 3U)	
80	4	3684.225
76	8	3684.226
70	12	3684.227
66	16	3684.228
62	20	3684.229



Custom versions available upon request.



Vertical support

Required for the combined installation of single, double and triple Euroboards in one subrack.

Material:
Aluminium, extruded

Surface finish:
Clear-chromated

U	Packs of	Model No. RP
6	1	3684.678
9	1	3684.679



Custom versions available upon request.



Front panel

To conceal the vertical support of the vertical divider kit.

Material:
Aluminium, anodised

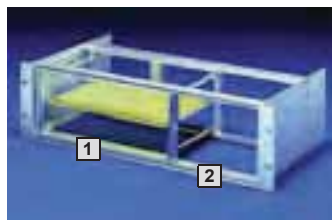
Supply includes:
Assembly parts.

U	HP	Packs of	Model No. RP
6	2	1	3685.176
9	2	1	3685.286



Custom versions available upon request.

EMC version.
see page 152.



Horizontal mounting kit

For the horizontal installation of 6U/9U PCBs in 3U/4U subracks.

1 Horizontal installation space:
3U subrack: 20 HP (5 slots)
4U subrack: 28 HP (7 slots)

2 Vertical installation space:
(when installing double Euroboards)
31 HP (without trim frame)
28 HP (with trim frame)

Material:
Aluminium, clear-chromated

Supply includes:
2 horizontal rails, front,
2 horizontal rails, rear,
1 or 2 horizontal rails, rear, centre,
2 threaded inserts,
4 or 6 insulating strips,
4 connecting parts,
assembly parts.

For backplane assembly
with standard horizontal rail, front

U horizontal	Model No. RP	
	for 3U subrack	for 4U subrack
6	3684.206	3684.208
9	3684.207	3684.209

For backplane assembly,
front horizontal rail with 10 mm extension

U horizontal	Model No. RP	
	for 3U subrack	for 4U subrack
6	3684.210	3684.212
9	3684.211	3684.213



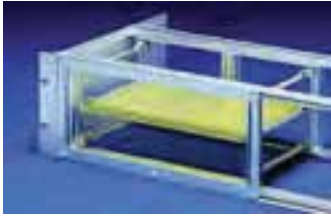
Custom versions available upon request.



Accessories:

Trim frame.
see page 127.

Mounting kits/guide Rails

**Trim frame**

for horizontal mounting kit
To conceal the front sections of the horizontal mounting kit.

Material:
Aluminium, anodised

U horizontal	HP	Model No. RP	
		for 3U subrack	for 4U subrack
6	56	3685.783	3685.785
9	84	3685.784	3685.786



Custom versions available upon request.

**Also required:**

Collar screws and plastic collars,
packs of 100 sets, Model No. RP 3658.160.
see page 159.

**Trim frame, vented**

for horizontal mounting kit
To conceal the front sections of the horizontal mounting kit.

Material:
Aluminium

Surface finish:
Anodised,
clear-chromated (EMC version)

Supply includes:
EMC accessories
(with EMC version).

EMC

U horizontal	HP	Model No. RP	
		for 3U subrack	for 4U subrack
6	63	3685.787	3685.788

**Also required:**

Collar screws and plastic collars,
packs of 100 sets, Model No. RP 3658.160.
see page 160.

EMC version

U horizontal	HP	Model No. RP	
		for 3U subrack	for 4U subrack
6	63	3685.291	3685.292



Custom versions available upon request.

**Also required:**

Centering screws,
packs of 100, Model No. RP 3687.050.
see page 160 .

**Plastic guide rails**

For 160, 220 and 280 mm PCBs up to 2 mm nominal thickness.

2 versions are available:

- Snap-in-fastening and screw-fastening
- Snap-in-fastening

Material:
Polycarbonate, base material to UL 94-V0

PCB depth mm	Packs of	Model No. RP	
		Snap-in- fastening/ screw-fastening ¹⁾	Snap-in- fastening
100	1	—	3688.005
160	10	3688.048	3688.045
220	10	3688.049	3688.046
280	10	3688.052	3688.047

**Also required:**

¹⁾ Assembly screws,
packs of 100, Model No. RP 3654.360.
see page 159.

**Plastic guide rails**

For contact spring fitting
For 160, 220 and 280 mm PCBs up to 2 mm nominal thickness. By installing contact springs, an electrical connection can be made between the PCB and the assembly.

Material:
Polycarbonate, base material to UL 94-V0

PCB depth mm	Packs of	Model No. RP
160	10	3688.053
220	10	3688.054
280	10	3688.056

**Accessories:**

Contact springs.
see page 128.

Guide Rails

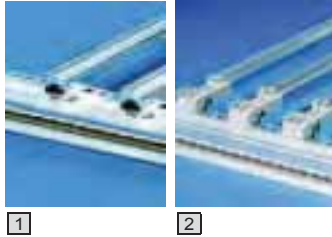


Contact springs

For electrical connection between the PCB and the subrack, or to discharge static charges from the PCB.

Suitable for installation in "guide rails for contact spring fitting" and "end pieces for guide rails".

Packs of	Model No. RP
10	3687.726



Guide rails, aluminium

For high loads. Suitable for a nominal PCB thicknesses of 1.6 mm. A distinction is made between guide rails for and without end pieces. The guide rails without end pieces are screw-fastened directly into the horizontal rail.

Material:
Aluminium

PCB depth mm	Packs of	Model No. RP	
		1 Without end piece ¹⁾	2 For end pieces
160	1	3687.526	3684.663
220	1	3687.527	3684.664
280	1	3687.528	3684.665
160	10	3688.064	3688.057
220	10	3688.065	3688.058
280	10	3688.066	3688.059
1000	1	3684.666	—



Also required:

- ¹⁾ Screw M2.5 x 6, packs of 100.
Model No. RP 3654.340, see page 159.
- ¹⁾ Nut M2.5, packs of 100.
Model No. RP 3654.370, see page 159.
- ¹⁾ Retaining cage M2.5, packs of 100.



End pieces

for guide rails, aluminium
To discharge static charges, contact springs RP 3687.726 may be used.

Material:
Polycarbonate, base material to UL 94-V1

	Packs of	Model No. RP
End piece, front	1	3684.759
End piece, rear	1	3685.668
End pieces, pairs	10	3688.028



Accessories:

Contact springs.
see page 128.

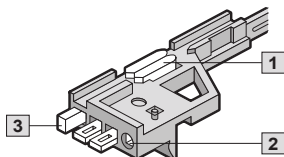


Keyable guide rails, plastic

Guide rails 4 HP, keyable, to IEEE 1101.10.

- For 1.6 – 2.0 mm nominal thickness
- Chambers for the installation of keys
- Option of installing ESD contacts to discharge static charges
- Narrow design for maximum air flow
- Various colour variants to identify the slots:
 - Red for system slot
 - Green for power supply
 - Yellow and grey for board-type plug-in units

- 1 ESD contact for guide rails
- 2 ESD contact for front panel
- 3 Keys



Material:

Polycarbonate, base material to UL 94-V0

Note:

Only for use in conjunction with type IV, IVs, VII injector/extractor handles.



Accessories:

Keys, see page 132.
ESD contact, see page 131.
Extractor handles type IV, IVs, VII, see pages 142 - 149.

For PCB depth mm	Packs of	Model No. RP			
		Grey	Red	Green	Yellow
160	10	3685.257	—	—	—
220	10	3685.258	—	—	—
280	10	3685.259	—	—	—
160	1	3684.669	3686.063	3688.055	3689.089
220	1	3684.953	9902.240	—	3689.091
280	1	3684.954	—	—	3689.093

Guide Rails

**Keyable guide rails**

with 1/2 HP offset

Guide rails with 1/2 HP offset for use e.g. in telecom applications. This allows PCBs to be populated on both sides. Green guide rails with offset are prescribed in the specification (PICMG 2.11) for the installation of power supply units.

- For 1.6 – 2.0 mm PCB thickness
- 4 HP x 160/220 mm
- Narrow design for maximum air flow
- Chambers for the installation of keys
- Option of installing ESD contacts to discharge static charges

Material:

Polycarbonate, base material to UL 94-V0

Note:

Only suitable for use in conjunction with extractor handles type IV, IVs, VII with 1/2 HP offset.

For PCB depth mm	Packs of	Colour	Model No. RP
160	10	Grey	3688.062
		Grey	3686.137
	1	Yellow	3689.090
		Green	3687.832
20	10	Grey	3688.060
	1	Grey	3686.136
		Yellow	3689.092

**Accessories:**

Keys, see page 132.

ESD contact, see page 131.

Extractor handles type IVs, VII

with 1/2 HP offset, see pages 143 - 144.

**Keyable guide rails**

For I/O assemblies

Guide rails 4 HP, keyable, to IEEE 1101.10.

Prepared to accommodate a ground contact for assembly of a plug-type connection.

- For 1.6 – 2.0 mm nominal thickness
- For 80 mm deep PCBs
- Chambers for the installation of keys
- Option of installing ESD contacts to discharge static charges
- Narrow design for maximum air flow

Material:

Polycarbonate, base material to UL 94-V0

Note:

Only for use in conjunction with type IV, IVs, VII injector/extractor handles.

Colour	For PCB depth mm	Packs of	Model No. RP	
			Guide rails	
			Top	Bottom
Grey	80	1	3687.936	3687.937
Yellow	80	1	3689.097	3689.098

**Accessories:**

Keys, see page 132.

ESD contact, see page 131.

Ground contact, see page 129.

Extractor handles type IV, IVs, VII.

see pages 142 - 149.

**Ground contact**

Ensures a plug-in ground connection. UL-approved.

Material:

Die-cast zinc

Supply includes:

Grounding bush, contact spring.

Note:

Only suitable for use in conjunction with keyable guide rails for rear I/O assemblies.



	Model No. RP	
	1 set	50 sets
Grounding bush and contact spring	3689.036	3687.951

**Also required:**

Assembly screws 3.5 x 12 mm,

packs of 50, Model No. RP 3684.109.

see page 160.

**VPX 5HP Card Guide ***

Card guides to accommodate VPX's unique offset panel spacing. Allows standard (non-VPX) panels to be plugged into the slots.

VPX 5HP Card Guide, Front	PMP00005
VPX 5HP Card Guide, Rear Top	PMP00007
VPX 5HP Card Guide, Rear Bottom	PMP00008

* Not sold individually

Guide Rails



Keyable guide rails, aluminium, three-part
Keyable guide rails with aluminium centre part, for high mechanical loads.
Suitable for 1.6 – 2.0 mm PCB thickness.

The guide rails are compiled from the following individual components:

- 1 2 end pieces
- 2 1 aluminium centre part
- 3 Insulating centre part(s)



1 End Pieces for three-part guide rails
For 1.6 – 2.0 mm PCB thickness.
Material:
Polycarbonate, base material to UL 94-V0

	Packs of	Model No. RP
	10 pairs	3685.265
front end piece	1	3685.790
rear end piece	1	3684.670

Note:
A front and a rear end piece is required for each guide rail.



2 Aluminium centre part for three-part guide rails
For 1.6 – 2.0 mm PCB thickness.
Material:
Aluminium, unplated

For PCB depth mm	Model No. RP	
	Packs of = 1	Packs of = 10
220	3684.673	3685.260
280	3684.674	3685.261
340	3684.675	3685.262
400	3684.676	3685.263
1000	3684.672	–



3 Insulated centre part for three-part guide rails
The insulated centre part is pushed onto the aluminium centre part.
length: 60 mm.
Material:
Plastic, self-extinguishing to UL 94-V0

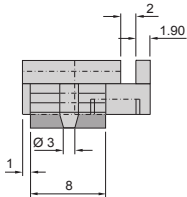
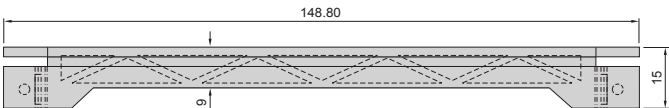
Packs of	Model No. RP
1	3684.677
10	3685.264

For PCB depth mm	Number of insulating strips required
160	1
220	2
280	3
340	4
400	5

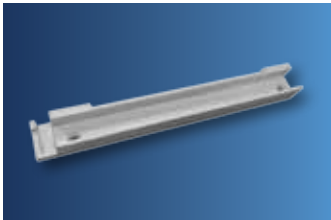


Guide rails for 4.4"
Snap-fastening guide rails to accommodate PCBs and assemblies with a height of 4.4".
Material:
Macrolon
Colour:
Dark grey

For PCB depth mm	Packs of	Model No. RP
160	1	3686.990



Guide Rails



Conduction cooled card guides *

Conduction cooled card guides. Allow conduction-cooled boards to be used in an air-cooled system for development/testing purposes.

Type	Model Number
Standard IEEE bottom	9922514
Standard IEEE top	9922515
OpenVPX bottom	9922667
OpenVPX top	9922668

* Not sold individually



Guide rails

for box type plug-in units
For PCB depth 1.6 mm.
For insertion into covers with vent slots (from 12 HP).

Material:
Noryl

For PCB depth mm	Packs of	Model No. RP
160	10	3606.140
220	10	3606.200



Air block panel

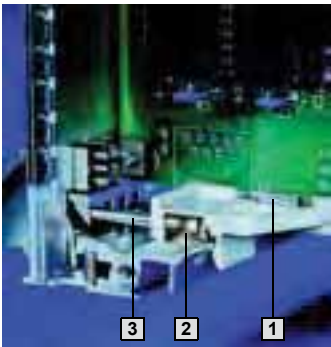
for unused slots
To conceal unused slots and prevent unwanted airflow. The air block panel simply snaps into position on the guide rails.

Material:
Polycarbonate, self-extinguishing to UL 94-V0

Colour:
Blue

Note:
Not suitable for use in conjunction with guide rails with 1/2 HP offset.

For keyable guide rails	Packs of	Model No. RP
160 mm	1	3687.924



ESD contacts

for installation in keyable guide rails.
To discharge static charges.

1 ESD contact for guide rail
For permanent direct discharge via the PCB.

2 ESD contact for front panel
To discharge static charges in conjunction with the ESD pin. For insertion into the end piece of the guide rail.

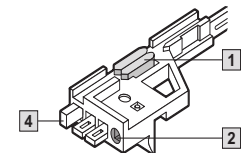
3 ESD pin

4 Keys

Material:
1 Stainless steel
2 Tin bronze, tin-plated

ESD contact for	Packs of	Model No. RP
Guide rail	50	3684.204
Front panel	50	3684.205

Note:
Only for use in conjunction with extractor handle with ESD pin (type IV, IVs, VII), see pages 142 - 149.



Keying/PCB ejectors

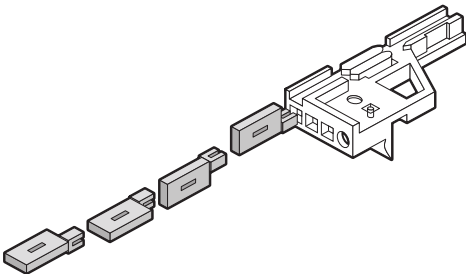


Keys

Keys are used for coding of board-type plug-in units and prevent the use of assemblies in incorrect slots. The keys are inserted into the chambers of the keyable guide rails and the injector/extractor handles, types IV, IVs and VII (4 positions are possible). This produces 64 keying combinations per guide rail. When keying the top and bottom guide rail, 4096 potential combinations are possible.

Standards:
IEEE 1101.10, IEC 60 297-5-104

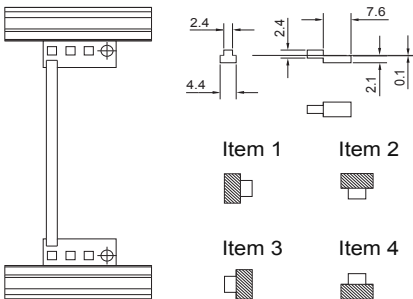
Material:
Plastic, PBTP, basic material to UL 94-V0



Colour	Packs of	Model No. RP
Grey	100	3684.325
Red	100	3684.326

Accessories:

Keying tool,
see page 132.



Keying tool

For simple assembly of keys. Up to 3 coding keys may be fitted simultaneously. An integral alignment pin makes positioning easier.

Material:
Polycarbonate, base material to UL 94-V0

Packs of	Model No. RP
1	3687.956



PCB ejector/retainer

The two-piece PCB ejector is used for securing and extracting PCBs without front panels. The base section may also be used separately for board retention only.

Material:
Polycarbonate, base material to UL 94-V0

	Packs of	Model No. RP
1 PCB ejector/retainer	10	3687.014
2 PCB retainer	10	3687.052

Covers for subracks

**Cover**

For subrack Ripac EASY

- Perforated or solid
- Optional screw-fastening to the side panels with mounting clips for additional support

Cover plates, version 1, slide-in:

The cover plates simply slide into the front horizontal and rear horizontal rails for backplane/connector mounting.

**Cover plates, version 2, slide-in/screw-fastened:**

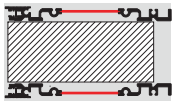
In this application example, additional horizontal rails for backplane mounting are fitted at the rear. The horizontal rails for backplane/connector mounting are available for top-mounting.

The cover plates simply slide into the front and rear horizontal rails for backplane mounting.

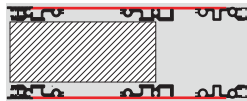
Material:
Aluminium

Supply includes:
2 covers

Version 1



Version 2

**Version 1**

HP	For side panel depth mm	Model No. RP	
		Perforated	Solid
84	175	3634.685	3634.675
84	235	3634.690	3634.680

Version 2

HP	For side panel depth mm	Model No. RP	
		Perforated ¹⁾	Solid ¹⁾
84	175	3634.650	3634.625
84	235	3634.655	3634.630
84	295	3634.660	3634.635
84	355	3634.665	3634.640
84	415	3634.670	3634.645



Custom versions available upon request.

**Also required:**

¹⁾ Assembly screws, packs of 100, Model No. RP 3634.233, see page 159.

**Accessories:****Mounting clips**

Packs of	Model No. RP
50	3634.450

Assembly screws for mounting clips

Packs of	Model No. RP
100	3634.420

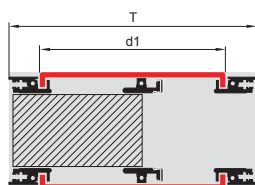
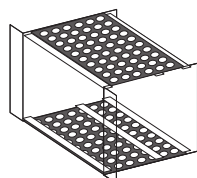
Covers for subracks

**Covers version 1**

For all Ripac Vario, Ripac Vario EMC, Ripac Compact and Ripac Vario Mobil subracks.

To cover the overall subrack depth
(EMC application) or as connector protection.

- Flat design for top and bottom
- Optionally solid or perforated
- For mounting on the subrack side panel with the aid of mounting blocks.

**Material:**

1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version

Each set includes:

2 covers,
8 mounting blocks @ 28.5 mm,
24 assembly screws

Each individual unit includes:

1 cover

Note:

For EMC applications, additional mounting blocks must be fitted across the entire subrack depth.

HP	For side panel depth (T) mm	Cover depth (d1) mm	Model No. RP			
			Individual unit ¹⁾		Set	
			perforated	solid	perforated	solid
21	225	192	3687.618	3687.620	—	—
21	285	252	3687.619	3687.621	—	—
42	175	142	3684.957	3687.626	—	—
42	225	192	3687.623	3687.627	—	—
42	245	212	3684.958	3687.628	—	—
42	285	252	3685.642	3687.629	—	—
84	175	142	3684.681	3684.680	3685.245	3685.250
84	225	192	3684.694	3684.683	—	—
84	235	202	3685.851	3685.813	—	—
84	245	212	3684.695	3684.684	3685.246	3685.251
84	285	252	3684.696	3684.685	—	—
84	295	262	3685.855	3685.814	—	—
84	305	272	3685.852	3684.686	3685.247	3685.252
84	345	312	3684.698	3684.687	—	—
84	365	332	3685.853	3684.688	3685.248	3685.253
84	405	372	3684.700	3684.689	3685.249	3685.254
84	465	432	3684.701	3684.691	—	—
84	525	492	3684.702	3684.692	—	—
84	585	552	3684.703	3684.693	—	—

☒ Custom versions available upon request.

**Also required:**

¹⁾ Mounting blocks, see page 127.

¹⁾ EMC gaskets for cover plates, see page 127.

¹⁾ Assembly screws,
packs of 100, Model No. RP 3684.233,
see page 159.

Covers for subracks

**Covers version 2**

For all Ripac Vario, Ripac Vario EMC, Ripac Compact and Ripac Vario Mobil subracks.

To cover the PCB depth.

- Flat design for top and bottom
- Optionally solid or perforated
- For mounting on the subrack side panel with the aid of mounting blocks.

Material:

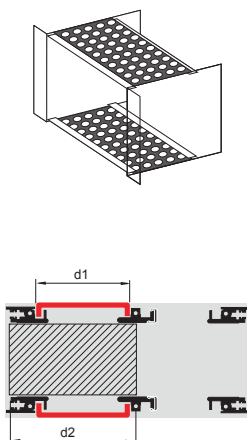
1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version

Each set includes:

2 covers,
8 mounting blocks @ 28.5 mm,
24 assembly screws

Each individual unit includes:

1 cover.



HP	For PCB depth (d2) mm	Cover depth (d1) mm	Model No. RP			
			Individual unit ¹⁾		Set	
			perforated	solid	perforated	solid
21	160	142	3687.630	3687.634	–	–
21	220	202	3687.631	3687.635	–	–
42	160	142	3684.957	3687.626	–	–
42	220	202	3687.633	3687.637	–	–
42	280	262	3687.638	3687.639	–	–
84	160	142	3684.681	3684.680	3685.245	3685.250
84	220	202	3685.851	3685.813	–	–
84	280	262	3685.855	3685.814	–	–
84	340	322	3685.856	–	–	–
84	400	382	3685.857	–	–	–



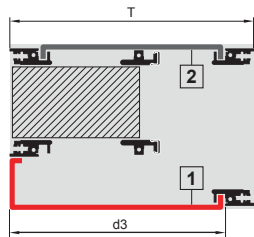
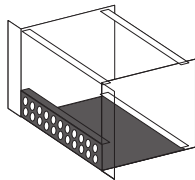
Custom versions available upon request.

**Also required:**

¹⁾ Mounting blocks, see page 127.

¹⁾ Assembly screws, packs of 100, Model No. RP 3684.233, see page 159.

Covers



Covers version 3

For all Ripac Vario, Ripac Vario EMC and Ripac Vario Mobil subracks.

To cover the overall subrack depth (EMC application).

- Cover with 1U edge fold (item 1), to conceal the 1U area in the subrack
- A version 1 flat cover (item 2) is additionally required
- Optionally perforated or solid front
- Suitable for subracks 4U (3 + 1), 7U (6 + 1)
- For mounting on the subrack side panel with the aid of mounting blocks.

Material:

1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version

Note:

For EMC applications, mounting blocks must be fitted across the entire subrack depth.

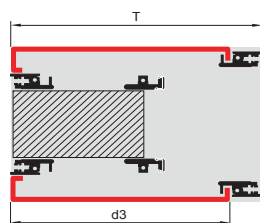
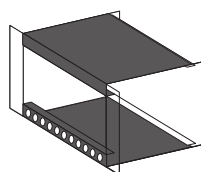
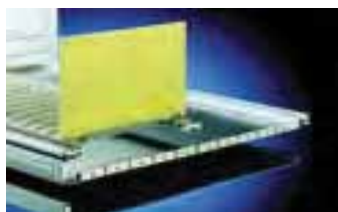
HP	For side panel depth (T) mm	Cover depth (d3) mm	Model No. RP	
			perforated	solid
84	285	270	3684.720	3684.714
84	345	330	3684.721	3684.715
84	405	390	3684.722	3684.716
84	465	450	3684.723	3684.717
84	525	510	3684.724	3684.718
84	585	570	3684.725	3684.719

☒ Custom versions available upon request.

Also required:

Mounting blocks, see page 127.
EMC gaskets for covers, see page 127.
Assembly screws.
packs of 100, Model No. RP 3684.233, see page 159.
Cover, version 1, see page 134.

Covers

**Covers version 4**

For all Ripac Vario, Ripac Vario EMC and Ripac Vario Mobil subracks.

To cover the overall subrack depth
(EMC application).

- Cover top/bottom with $\frac{1}{2}$ U edge fold to cover the $\frac{1}{2}$ U section in the subrack
- Optionally perforated or solid front
- Suitable for subracks 4U ($3 + 2 \times \frac{1}{2}$), 7U ($6 + 2 \times \frac{1}{2}$)
- For mounting on the subrack side panel with the aid of mounting blocks.

Material:

1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version.

Note:

For EMC applications, mounting blocks must be fitted across the entire subrack depth.

HP	For side panel depth (T) mm	Cover depth (d3) mm	Model No. RP	
			perforated	solid
84	285	270	3684.732	3684.726
84	345	330	3684.733	3684.727
84	405	390	3684.734	3684.728
84	465	450	3684.735	3684.729
84	525	510	3684.736	3684.730
84	585	570	3684.737	3684.731



Custom versions available upon request.

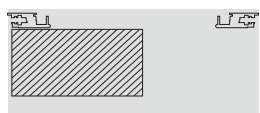
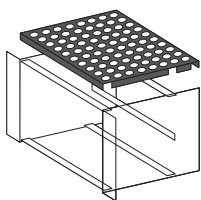
**Also required:**

Mounting blocks, see page 127.

EMC gaskets for covers, see page 127.

Assembly screws.

packs of 100, Model No. RP 3684.233, see page 159.

**Covers version 5**

(snap-fastening)

For all Ripac Vario, Ripac Vario EMC and Ripac Vario Mobil subracks.

To cover the overall subrack depth or PCB depth.

Simple assembly:

- Side edge fold with half shears facilitates fast assembly (without mounting blocks) by simply snap-fastening
- Side notches for fitting horizontal rails in 160, 220 or 280 mm depth
- Optionally solid or perforated.

Material:

1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version.

Supply includes:

2 gaskets.

HP	Position of side notches for horizontal rails mm	For side panel depth mm	Model No. RP	
			perforated	solid
21	160	175/185	3687.624	—
21	160/220	235	3687.692	—
42	160	175/185	3687.625	—
42	160/220	235	3687.677	—
42	160	245	3687.640	—
84	160	175/185	3687.641	3687.647
84	160	245	3687.642	3687.648
84	160/220	235	3687.643	3687.649
84	160/220	285	3687.644	3687.650
84	160/220	305	3687.645	3687.651
84	160/220/280	345	3687.646	3687.652



Custom versions available upon request.