

# Rittal – The System.

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## ► EL Electronic Enclosure System



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# The systematic integration can maximize the performance of every product.

The same is true of "Rittal – The System." With this in mind, we have bundled our innovative enclosure, power distribution, climate control and IT infrastructure products together into a single system platform. Complemented by our extensive range of software tools and global service, we create unique added value for trade and industry: Production plant, test equipment, facility management and data centres. In accordance with our simple principle, "Faster – better – everywhere", we are able to combine innovative products and efficient service to optimum effect.

Faster — with our "Rittal – The System." range of modular solutions, which guarantees fast planning, assembly, conversion and commissioning with its system compatibility.

Better — by being quick to translate market trends into products. In this way, our innovative strength helps you to secure competitive advantages.

Everywhere — thanks to global networking:

- 13 production facilities with almost 250,000 m<sup>2</sup> production space worldwide
- 58 subsidiaries
- Around 90 warehouse facilities with more than 180,000 pallet locations and over 260,000 m<sup>2</sup> storage space worldwide



IT INFRASTRUCTURE

SOFTWARE & SERVICES



# Rittal – The System.

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# Rittal, an electronic packaging expert

## Complete system assembly, cable connection, and inspection

By providing you with "complete specialized expertise and know-how" in the electronic packaging field, Rittal Electronic System will offer a variety of assembly enclosure series, different solutions, operations, and display solutions for enclosures, bus backplanes, PSUs, pneumatic control units, and a complete installation system of compact computers including VME bus and Compact PCI.

## Complete Product Used for Electronic Packaging

- Installation System of Compact Computers
- Bus Backplanes B
- PSU
- Assembly Enclosure Series
- System Enclosures/Desktop Enclosures

# Application Cases



- 1U 19" rack-mounted enclosure
- Coated with black or white paint, or a customized color
- Screen-printed aluminum front panels
- Customized perforation



- 9U 19" enclosure
- A 12-slot VME 64x backplane
- 600-watt open-frame PSU
- RiCool Fan's highly-efficient heat dissipation



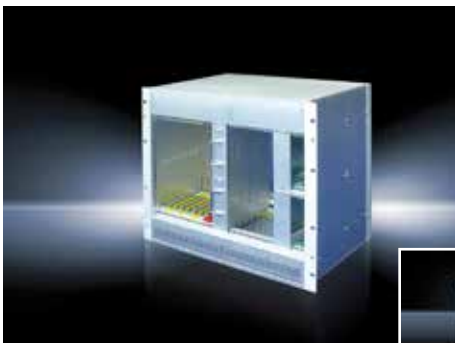
- 4U "Vario Module" instrument enclosure
- Applicable to desktop-based instrument
- Available for PCBs



- 6U 19" rack-mounted enclosure
- Available for a selection of front panels
- Customized perforation and screen printing



- 9U 19" rack-mounted enclosure
- Including an 8-slot compact PCI backplane
- Including hard drive storage racks, supportable for two SCSI hard drives
- Supportable for the dual AC input



- 9U 19" rack-mounted enclosure
- Including an 8-slot compact PCI backplane
- Including hard drive storage racks, supportable for two SCSI hard drives
- Supportable for the dual AC input

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# Rittal China



# Ripac Assembly Enclosure Series

## Design Specification for Plug-In Enclosure and Plug-In Components

### IEC 297-3, plug-in enclosure basics

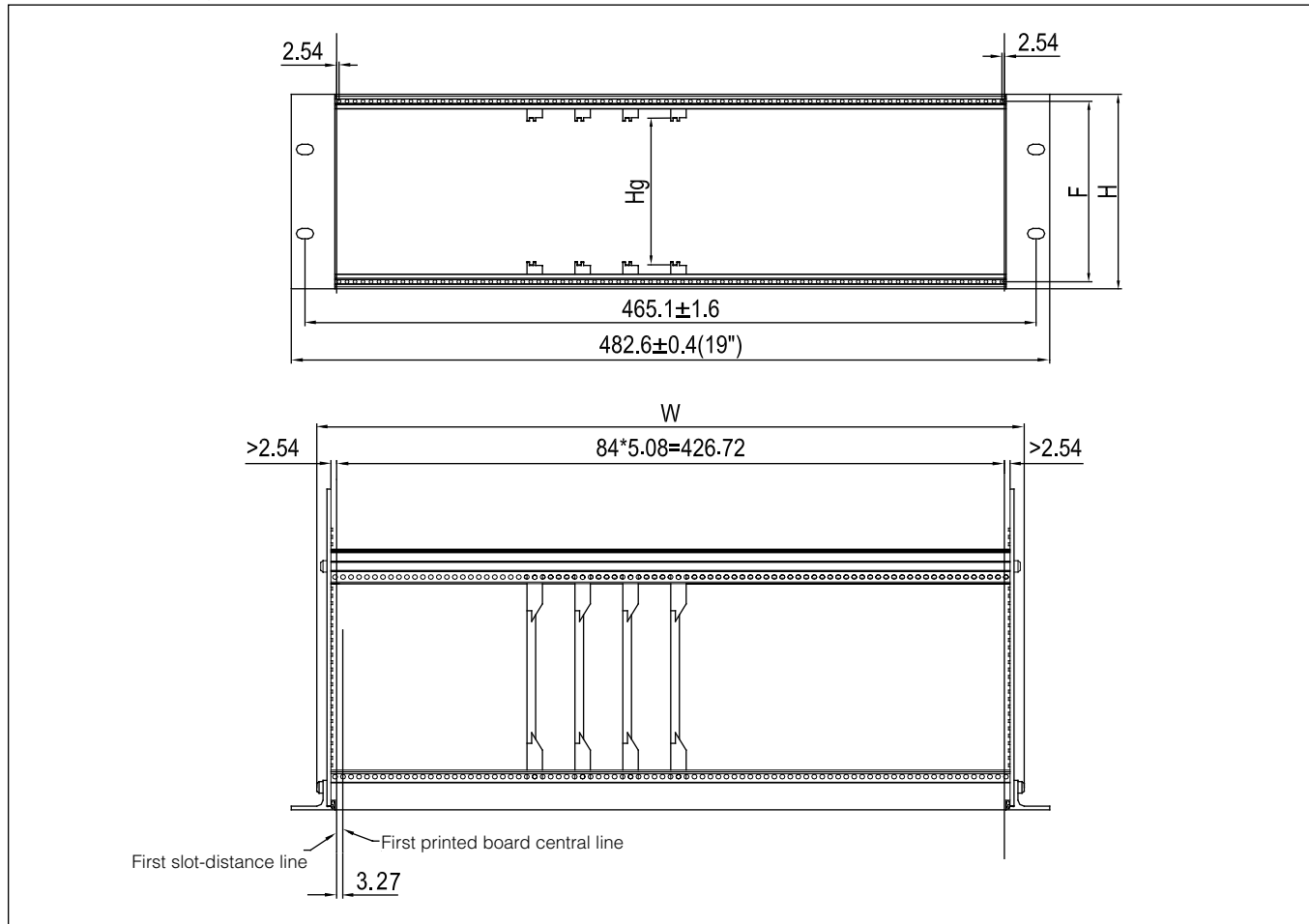


Figure 1

#### 19" system' s dimension and defintion

When flanges are installed, their external width (including mounted racks) is 482.6 mm (19"), it is defined as the 19" system.

#### Plug-In Enclosure

As an important integral part of electronic equipment, the plug-in enclosure is comprised of the beams, top and bottom cover plates, a front panel, a backplane, and side panels. The usable space will be calculated based on the number of slots.

A slot usually contains several horizontal pitches (HP), or designated by the designer.

Internal plug-in components are mainly categorized into a panel model and a case model.

A panel model is comprised of a printed circuit board with a front plane and a connector.

A case model in general is installed with a large number of components or several printed circuit boards.

#### Width W

When flanges are installed, the entire width of their back (including the screws) shall be less than 449 mm. Calculation of the width of the plug-in enclosure is based on the HP. 1 HP=5.08 mm (0.2").

The internal distance  $> 84 * 5.08 = 426.72$  mm

#### Height

The plug-in height is based on U, and  $1U=44.45$  mm (1.75").

Usually, the height  $H = (n * U - 0.8) \pm 0.4$

Rittal' s enclosure height is  $H = (n * U - 1.35) - 0.3$ , details of which can be referred to Figure 1.

#### Depth

Plug-in enclosures do not provide any definite depth, the specifics of which are subject to the depth of the plug-in components and the tail pins of back connectors or the size of back input and output plug-in components.

VI. Installation dimension of plug-in enclosures

Horizontal distance for horizontal installation of a plug-in enclosure is  $465.1 \pm 1.6$  mm.

The distance for vertical mounting hole of a plug-in enclosure is referred to Figure 2 and Table 1.

The mounting-hole dimension of a flange is referred to Figure 2.

## Design Specification for Plug-In Enclosure and Plug-In Components



Note: Within a distance of 1 m, the hole distance tolerance between any two hole distances is  $\pm 0.4$  mm

Table 1

# Ripac Assembly Enclosure Series

## Design Specification for Plug-In Enclosure and Plug-In Components

### Printed circuit boards

The dimension for a printed circuit board is determined under the IEC 60297-3-101, IEC 60297-4, and IEEE 1101.10 specifications. The specific dimensions are referred to Table 2 and Figure 3.

Figure 3 contains the dimensions of the standard 3U and 6 U circuit boards, which are in compliance with the IEC 603-2, or IEC 61076-4-113, and TYPE C specifications, as well as the distribution diagram of three rows and five rows (after expanded) of contact pins of a connector.

Figure 4 contains the dimensions of CPCI 3U and 6U circuit boards, the connectors of which are in compliance with the IEC 61076-4-101 specification.

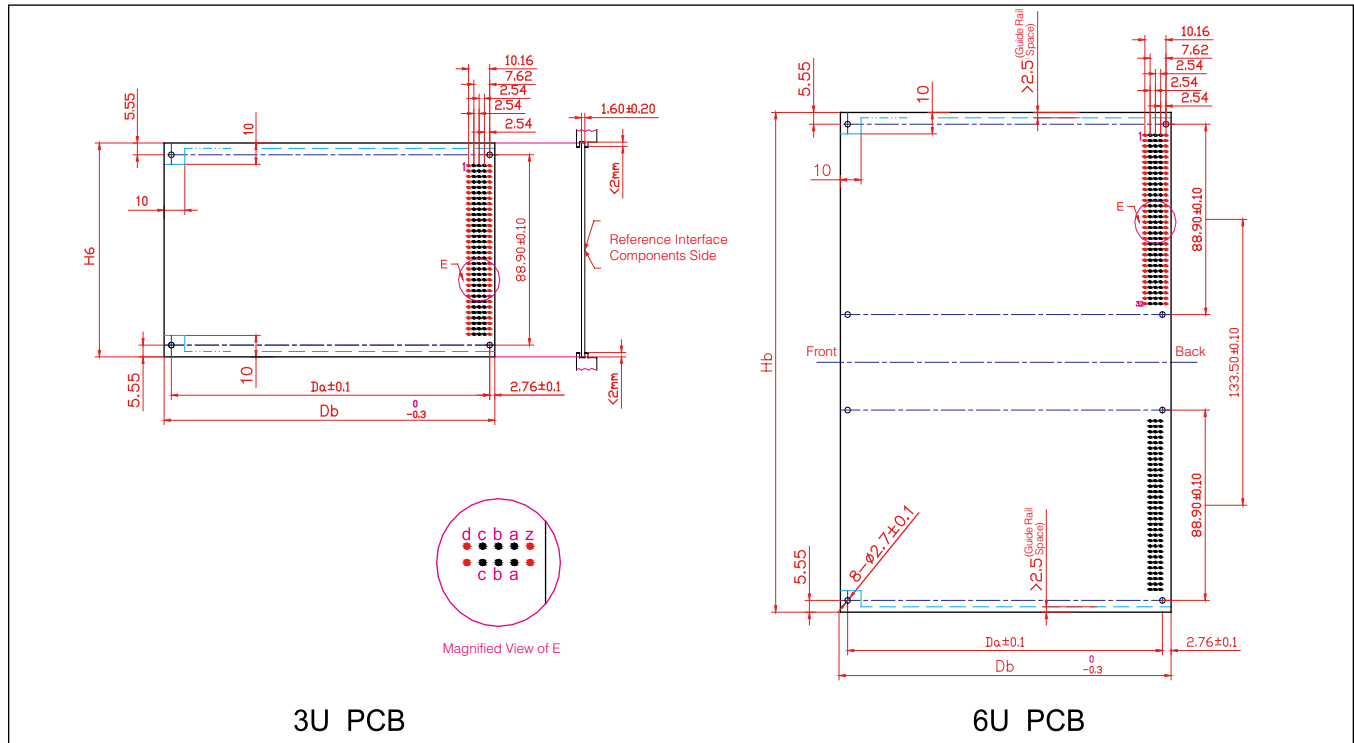


Figure 3

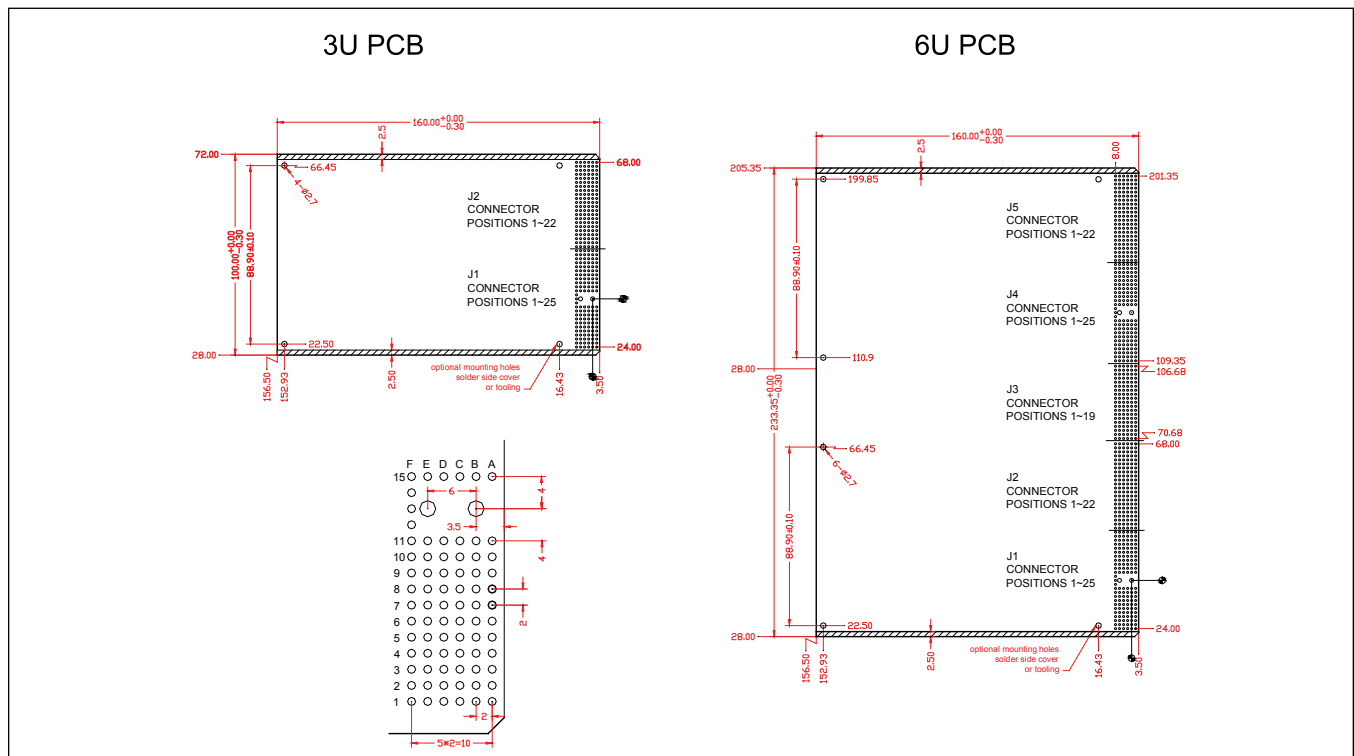


Figure 4

### Backplane

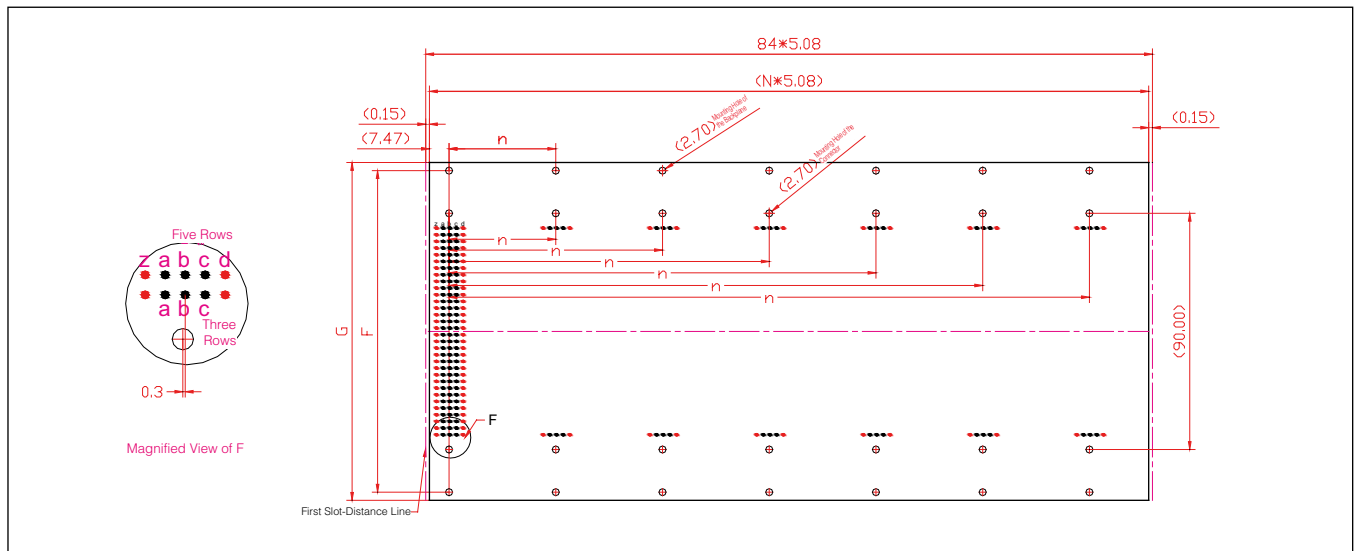


Figure 5 contains the dimensions of the 3U backplane, which is in compliance with the IEC603-2 and TYPE C specifications, as well as the distribution diagram of three rows and five rows (after expanded) of contact pins of a connector.

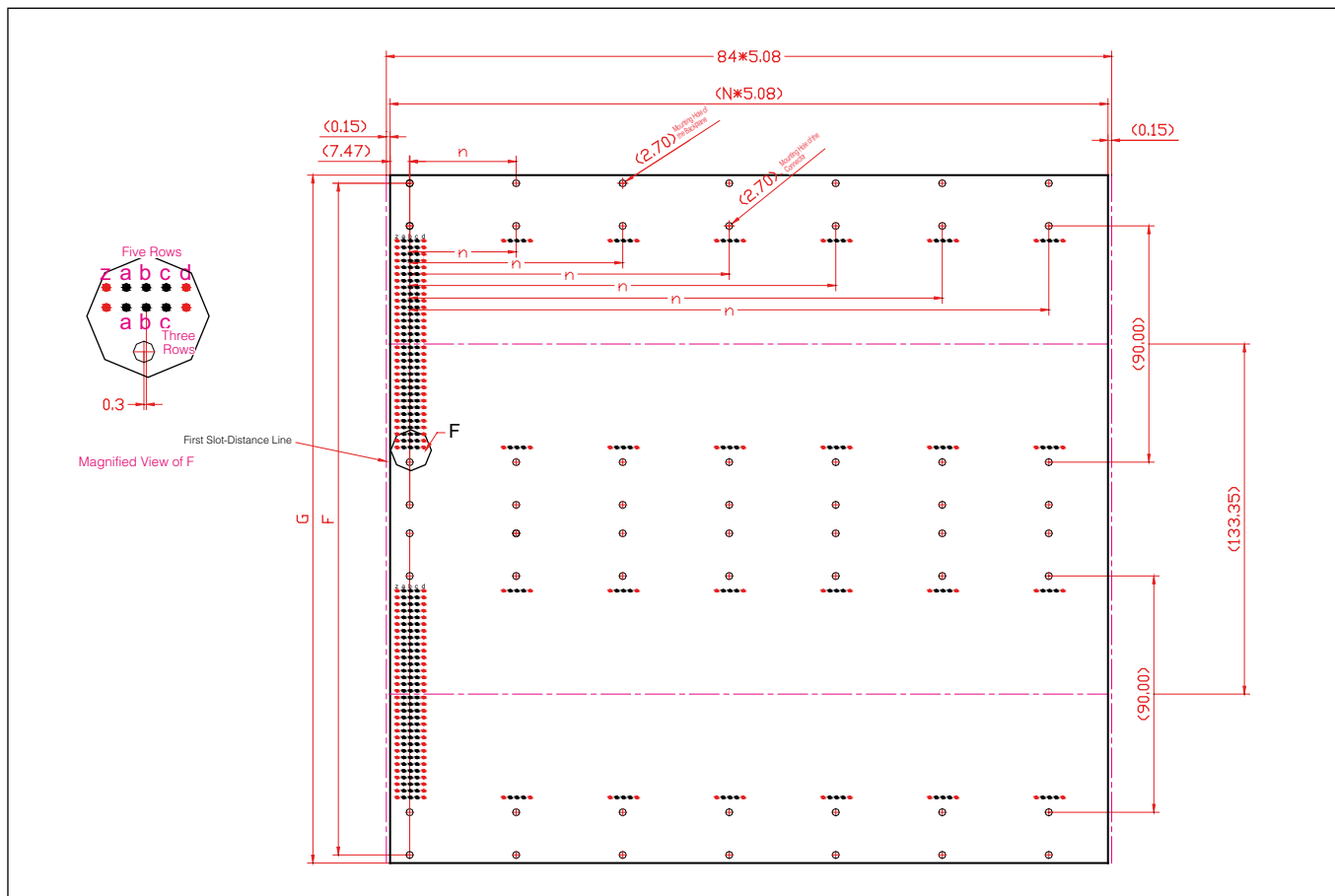


Figure 6 contains the dimensions of the 6U backplane, which is in compliance with the IEC603-2 and TYPE C specifications, as well as the distribution diagram of three rows and five rows (after expanded) of contact pins of a connector.

# Ripac Assembly Enclosure Series

## Design Specification for Plug-In Enclosure and Plug-In Components

Figures 5 and 6 contain the dimensions of typical 3U and 6U backplanes, amongst which, Dimensions G and F are referred to Figure 2.

n*U		2	3	4	5	6	7	8	9	10	11	12	Da±0.1
Hb - 0.3	1	55.55	100.00	144.45	188.90	233.35	277.80	322.25	366.70	411.15	455.60	500.05	
	2	67.31	111.76	156.20	200.65	245.10	289.55	334.00	378.45	422.90	467.35	511.80	
G - 0.3		84.25	128.70	173.15	217.60	262.05	306.05	350.95	395.40	439.85	484.30	528.75	
F±0.2		78.05	122.50	166.95	211.40	255.8	300.30	344.75	389.20	433.65	478.10	522.55	
Db - 0.3	1	160											153.67
	2	220											213.67
	3	280											273.67
	4	340											333.67

Figure 2

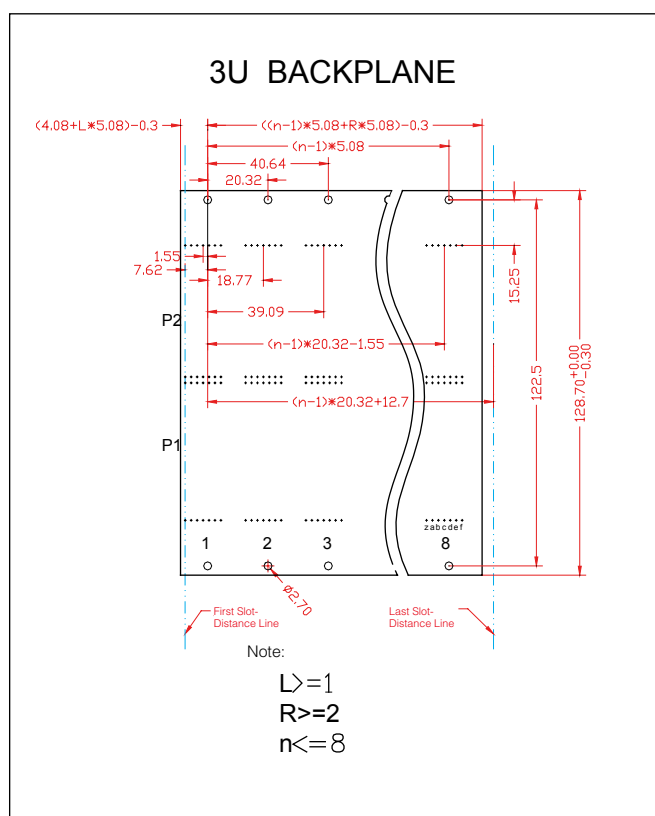


Figure 7

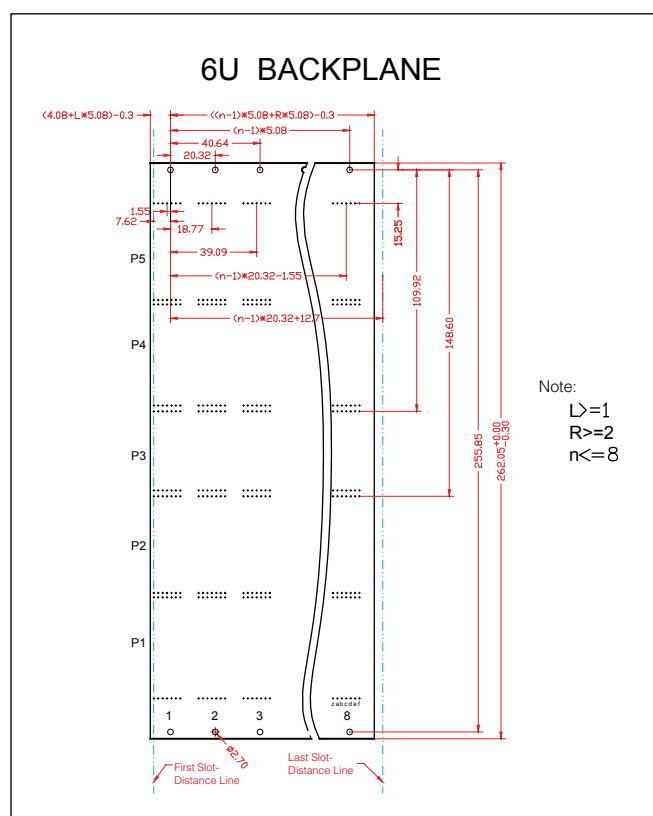


Figure 8

Figures 7 and 8 contain the dimensions of the CPCI 3U and 6U backplanes, the connectors of which are in compliance with the IEC 61076-4-101 specification.

### Inspection of Depth and Dimension of Plug-In Enclosures

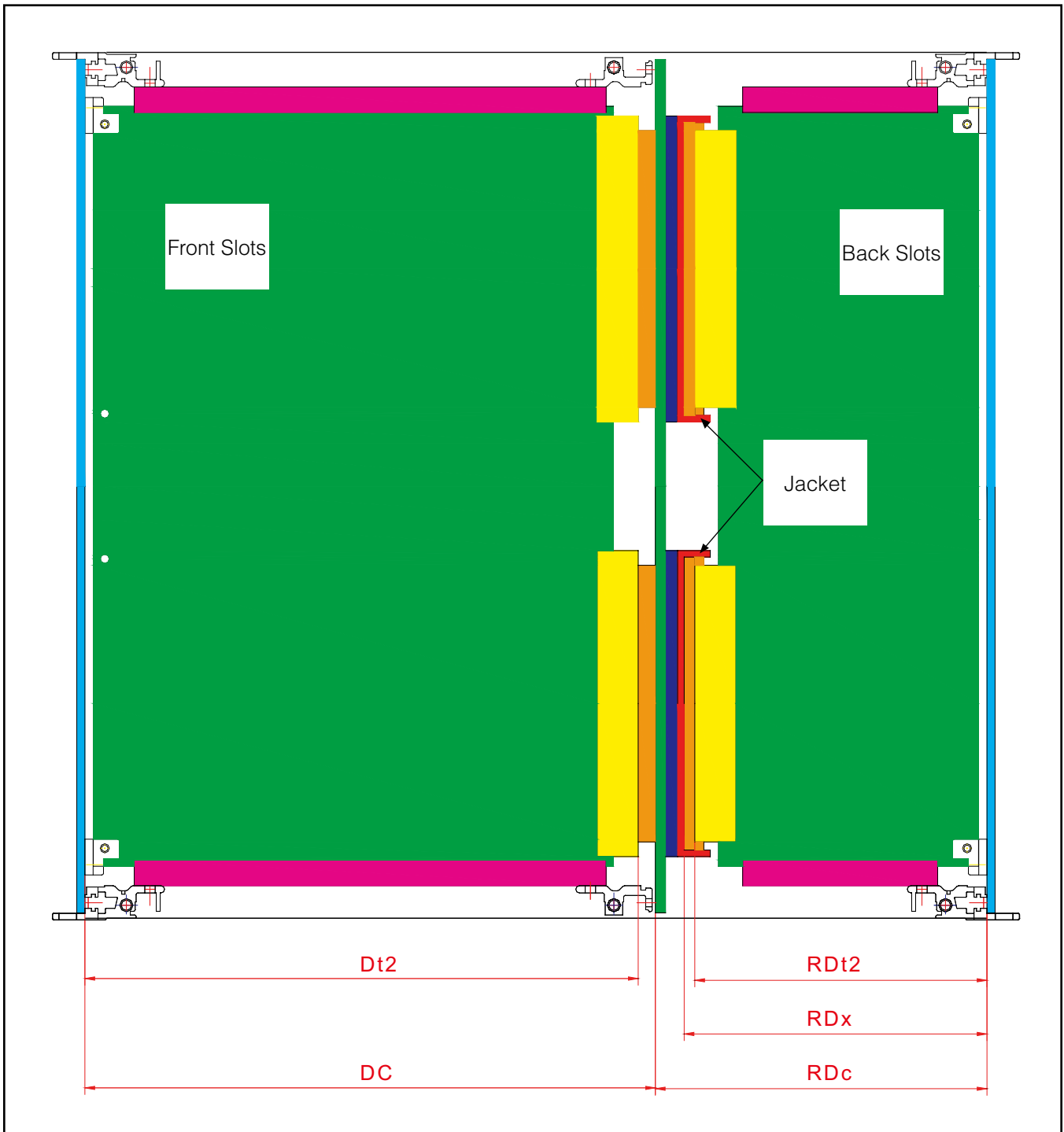


Figure 9: Illustrative for inspecting the depth and dimension of plug-in slots

The  $Dc$  and  $RDc$  values for the verified dimensions and the  $Dt2$  and  $RDt2$  of the verified dimensions of a plug-in enclosure may ensure stable connection of the connectors.

# Ripac Assembly Enclosure Series

## Design Specification for Plug-In Enclosure and Plug-In Components

Db (nominal standards)	60	80	100	120	140	160	220	280	340
Dc(+0.86/-0.14)			115.24			175.24	235.24	295.24	355.24
RDc(+0.5/-0)	82.48	102.48	122.48	142.48	162.48	182.48			
RDx≥									
Type R 3 row									
IEC 603-2	70.30	90.30	110.30	130.30	150.30	170.30			
RDx≥									
Type R 5 row									
IEC61076-4-113	72.80	92.80	112.80	132.80	152.80	172.80			
RDx≥									
Type R 5 row									
IEC61076-4-101	72.14	92.14	112.14	132.14	152.14	172.14			
Dt2±0.4									
Type B,C,D,M,Q,R,S									
IEC 603-2 and IEC61076-4-113 Specifications		89.93	109.93			169.93	229.93	289.93	349.93
Dt2±0.4									
Type F,G									
IEC 603-2		91.93	111.93			171.93	231.93	291.93	351.93
Dt2±0.4									
Type U,V									
IEC 603-2			112.03			172.03	232.03	292.03	352.03
Dt2±0.4									
IEC 61076-4-101		91.74	111.74			171.74	231.74	291.74	351.74
RDt2±0.4									
IEC 61076-4-101	71.74	91.74	111.74	131.74	151.74	171.74			

Table 3

### Note:

- Dc: Distance for correction of the front depth of a plug-in enclosure (which is the distance between the back of the front panel and the end of the backplane connector). When the CPC1 is applied, the distance for correction of the front plug-in card 160 is  $Dc=175.6\pm0.5$ .
- RDc: Distance for correction of the rear depth of a plug-in enclosure (which is the distance between the back of the rear panel and the end of the backplane connector).
- Dt2: Distance for correction of the front plug-in card (which is the distance between the back of the front panel and the end of the movable connector).
- RDt2: Distance for correction of the back plug-in card (which is the distance between the back of the rear panel and the end of the movable connector).
- RDx: Distance for correction of the depth of the back jacket for the plug-in enclosure (which is the distance between the back of the rear panel and the bottom of the jacket). The jacket guides the rear plug-in components for plugging in and protects the end of the connector from being impaired.

## Guide Rail

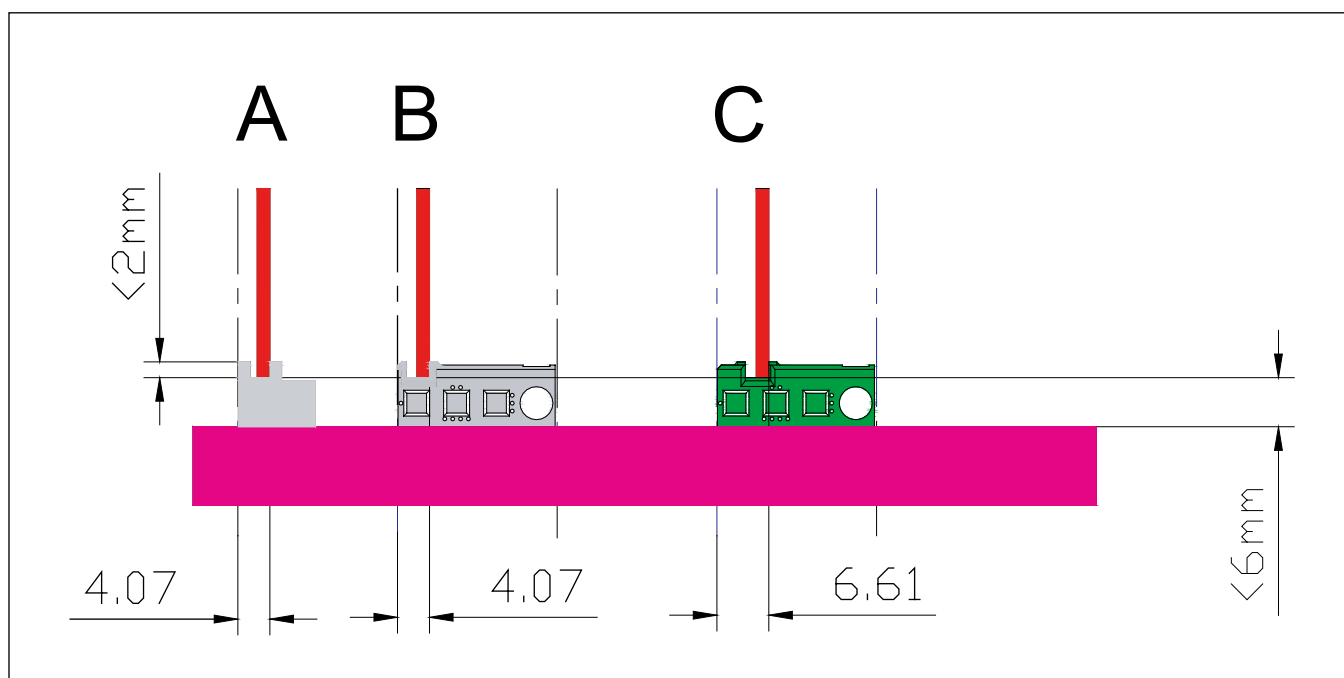


Figure 10

## Design Specification for Plug-In Enclosure and Plug-In Components

The guide rail's guide slot has a width that accommodates the printed boards with a thickness of  $1.6 \pm 0.2$  mm, which is in compliance with the IEC 249-2 specification.

Guide Rail A is in compliance with the IEC 60 297-3-101 specification.

Guide Rail B is equipped with encoded bolt holes and guide pin holes, which are in compliance with the IEC 60 297-3-103 specification.

Guide Rail C deviates by 2.54 mm from the left of Guide Rail B, which is reserved for components on the back of the printed boards.

### Installation Dimension for the Front Part of a Plug-In Enclosure

Dimension F of the fixture hole of the front panel is referred to Table 2, the calculation of which may be based on the following formula:  $F = (n \cdot 44.45 - 10.85) \pm 0.2$

The distance Hs of the two beams must be larger than  $(n \cdot 44.45 - 21.35)$

To select a plug-in enclosure model, two options are available for the front beam. In case that the panel is built with a handle for unplugging and plugging, Beam B shall be selected, or otherwise Beam A shall be selected.

Beam B's detailed hole dimension of the handle for unplugging and plugging is referred to the IEC 60 297-5-101 specification.

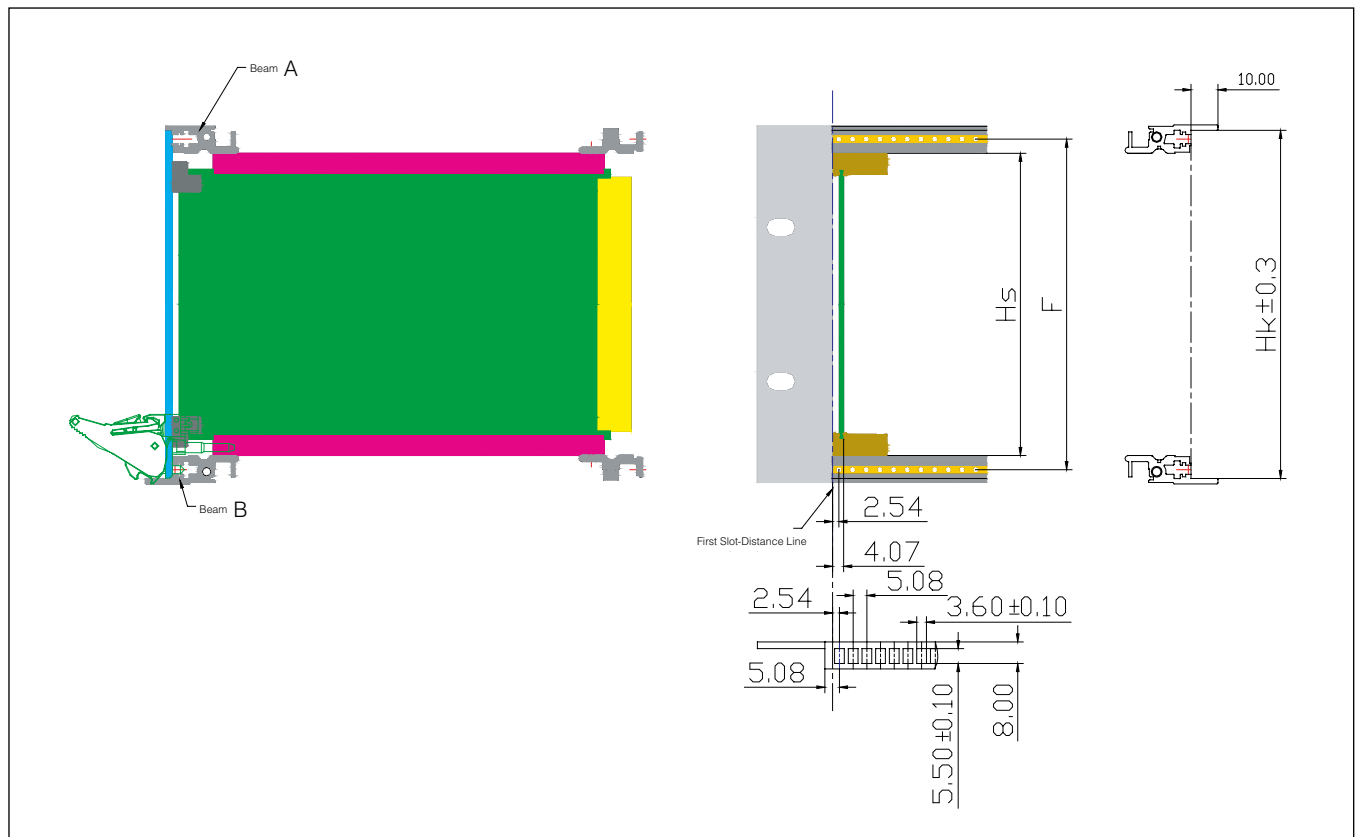


Figure 11

The distance for correction Hk of a plug-in enclosure with a handle for unplugging and plugging is referred to Table 4.

U	3	6	9
Hk ± 0.3	129.2	262.55	395.9

Table 4

EL Electronic Enclosure System

# Ripac Assembly Enclosure Series

## Features



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.

## Design features, Ripac Vario and Vario EMC



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



**Complex applications thanks to** numerous size variants and system accessories.



**EMC shielding** via horizontal and vertical EMC gaskets. May also be retrofitted.

## Design features, 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 (electronic equipment in rail vehicles). Construction of the tested subracks conforms to IEC 60 297-3 and IEC 61 587.

- 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 Assembly Enclosure Series

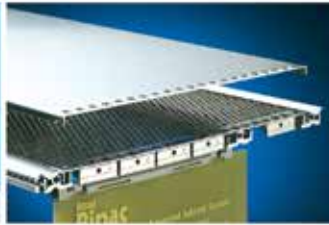
## Features



### System installation, accessories



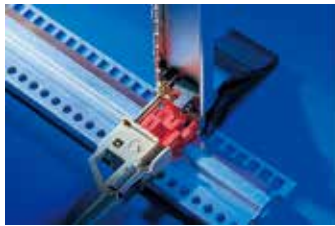
**Guide rails** of plastic or aluminium, also keyable.



**Covers** vented or solid, snapfastening or screw-fastening.



**ESD contacts** for guide rails, to remove electrostatic charges.



**Keys** for keying the board-type plug-in units.



**Front panels** in various versions, e.g. with handles, vented or for EMC applications.



**Injector/extractor handles** selflatching, of plastic or aluminium.



**Mounting kits** for combined installation of Euroboards and double Euroboards, horizontal or vertical.

# Ripac Assembly Enclosure Series

## Ripac ECO 3 U, 6 U, sheetsteel



### Material/surface finish:

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

### Supply includes:

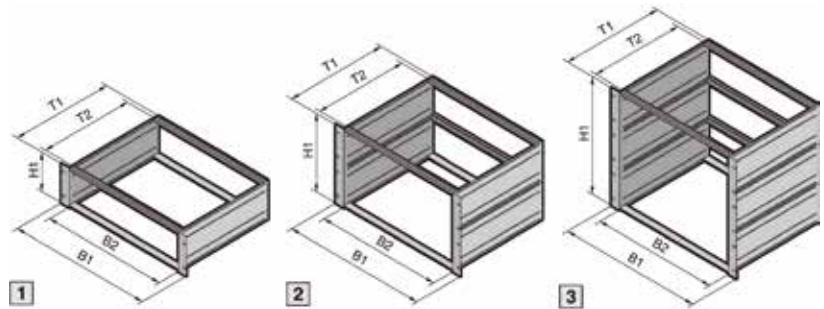
Flanges, side panels,  
horizontal rails, threaded  
inserts, insulating strips  
or Z rails.

### Tests:

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

### Standards:

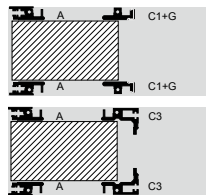
Ripac subracks are based on  
the system dimensions of  
IEC 60 297-3.



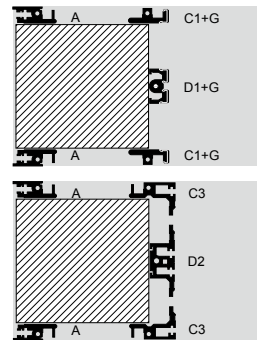
1

2

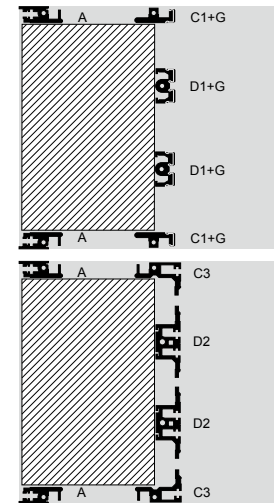
3



1 Top: for backplane  
Bottom: for connector



2 Top: for backplane  
Bottom: for connector



3 Top: for backplane  
Bottom: for connector

					Model No. RP					
U					1		2		3	
Height (H1) mm					132		265,35		398,70	
B1 mm	B2 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2 (DIN 41 612)	For backplane	For connector IEC 60 603-2 (DIN 41 612)	For backplane	For connector IEC 60 603-2 (DIN 41 612)
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 Assembly Enclosure Series

## Ripac Vario 4 U, 7 U



### Material/surface finish:

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

### Supply includes:

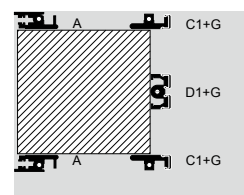
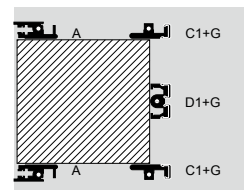
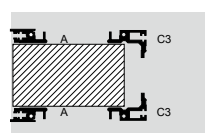
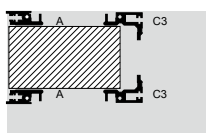
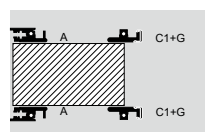
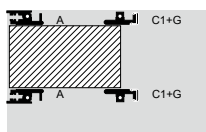
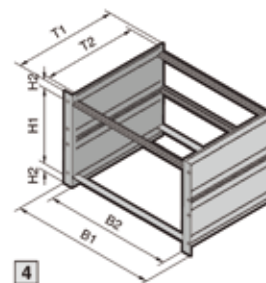
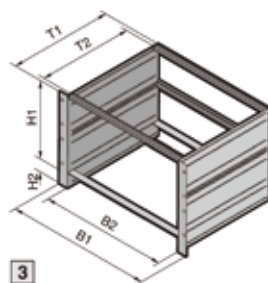
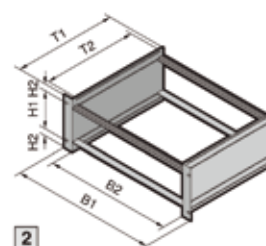
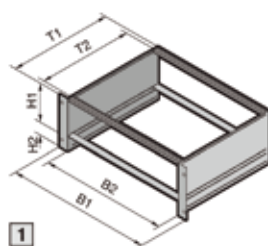
Flanges, side panels,  
horizontal rails, threaded  
inserts, insulating strips  
or Z rails.

### Tests:

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

### Standards:

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



1 Top: for backplane  
Bottom: for connector

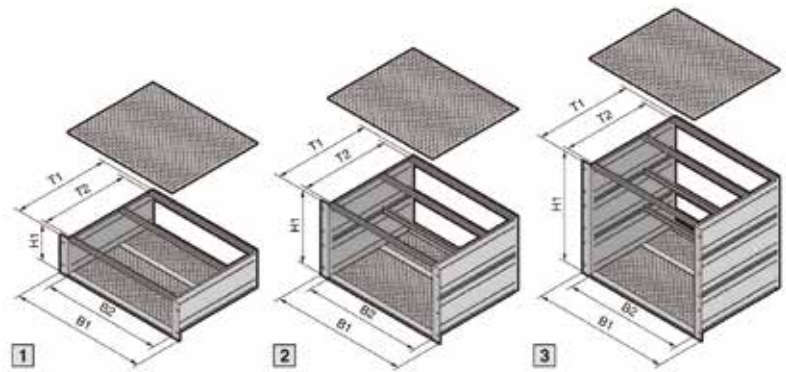
2 Top: for backplane  
Bottom: for connector

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

					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 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connector IEC 60 603-2 (DIN 41 612)	For backplane	For connector IEC 60 603-2 (DIN 41 612)	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 Assembly Enclosure Series

Ripac Vario EMC 3 U, 6 U, 9 U



## Material/surface finish:

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

## Supply includes:

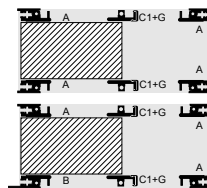
Flanges, rear trim, side panels,  
EMC gaskets, covers, mounting  
blocks, horizontal rails, insulating  
strips.

## Tests:

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

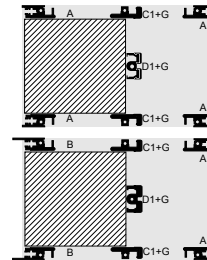
## Standards:

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



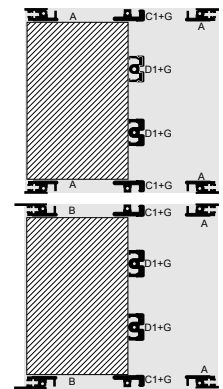
1

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					
					1		2		3	
U					3		6		9	
Height (H1) mm					132		265,35		398,70	
B1 mm	B2 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For backplane <sup>1)</sup>	For backplane	For backplane <sup>1)</sup>	For backplane	For backplane <sup>1)</sup>
482.6 (19")	84	245	220	160	3684.128	3684.142	3684.156	3684.169	—	—
		285	260	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

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

# Ripac Assembly Enclosure Series

## Ripac Vario EMC 4 U, 7 U



### Material/surface finish:

Side panels:

2.5 mm aluminium, clearchromated

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

### Tests:

Vibration and shock-tested to:

IEC 600-68-2-6 test Fc

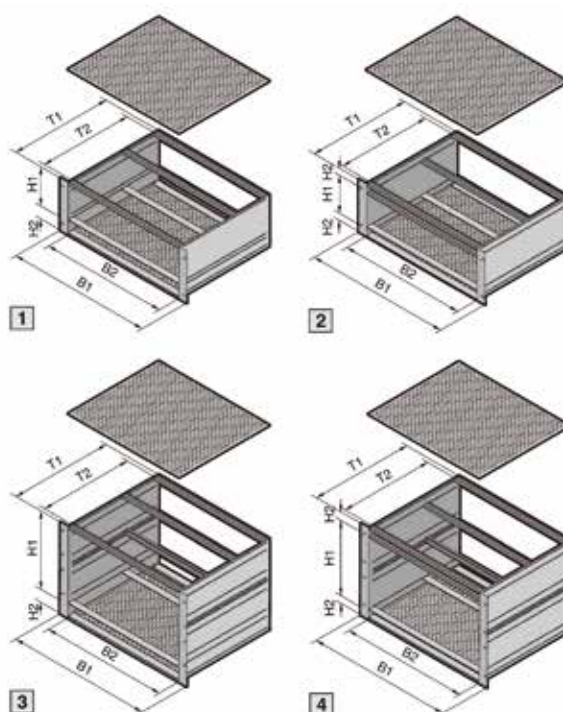
IEC 600-68-2-27 test Ea

### Standards:

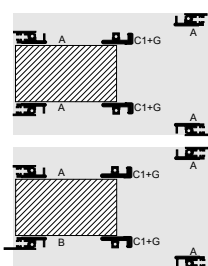
Ripac subracks are based on

the system dimensions of

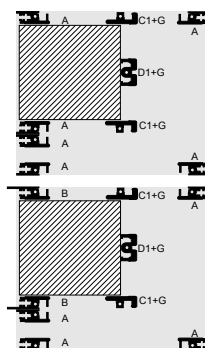
IEC 60 297-3.



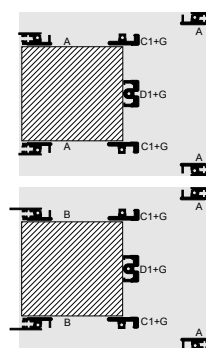
1  
Top: for backplane  
bottom: for backplane/  
front horizontal rail with  
10 mm extension



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 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For backplane <sup>1)</sup>	For backplane	For backplane <sup>1)</sup>	For backplane	For backplane <sup>1)</sup>	For backplane	For backplane <sup>1)</sup>
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

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

# Ripac Assembly Enclosure Series

Ripac Vario Mobil 3 U, 6 U, for mobile use



## Material/surface finish:

Side panels:  
2.5 mm aluminium, clearchromated  
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

## Tests:

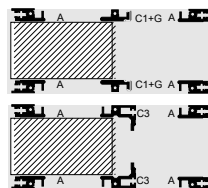
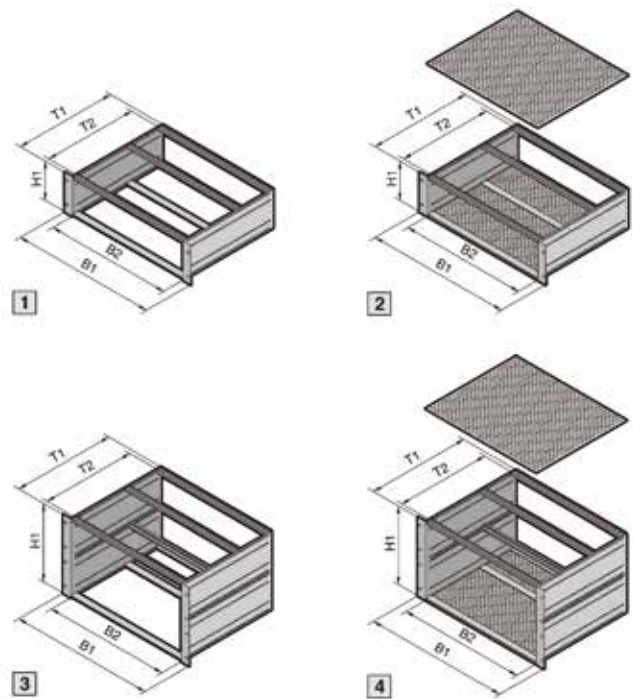
Vibration and shock-tested to:  
IEC 600-68-2-6 test Fc  
IEC 600-68-2-27 test Ea  
The subracks have been tested  
for use in the German national  
railway. Testing was conducted  
in accordance with standard  
EN 50 155, 1996 (Electronic  
Equipment in Rail Vehicles).  
The configuration of the tested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

## Standards:

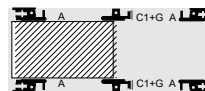
Ripac subracks are based on  
the system dimensions of  
IEC 60 297-3.

## Note:

The subracks are supplied fully  
assembled.



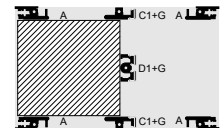
1 Top:  
for backplane  
Bottom:  
for connector



2 EMC for backplane



3 Top:  
for backplane  
Bottom:  
for connector

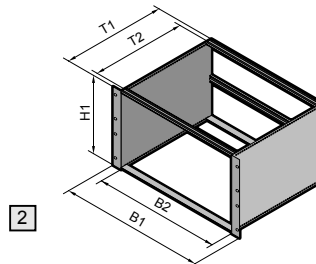
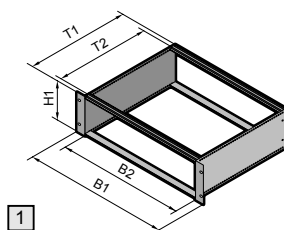


4 EMC for backplane

					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 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	For backplane	For connectors IEC 60 603-2 (DIN 41 612)	For backplane	For backplane	For connectors IEC 60 603-2 (DIN 41 612)	For backplane
482.6 (19")	84	245	220	220	3687.782	3687.780	3687.784	3687.783	3687.781	3687.785

# Ripac Assembly Enclosure Series

## Ripac Solid 3 U, 6 U, for extreme loads



**A Ripac Solid subrack ensures that your top quality electronics are well protected, even with extreme loads, by using horizontal rails with dual screw fastening.**

### Material/surface finish:

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

### Supply includes:

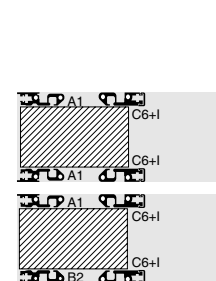
Flanges, side panels, horizontal rails, threaded inserts.

### Tests:

- Mechanical load tests undertaken as per IEC 61 587-1, requirement level SL1.  
Result: Passed (the measured static bowing under load rating is less than the standard rating of 0.4 mm)
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B.  
Result: No damage occurred.

### Standards:

Ripac Solid subracks are based on system dimensions stipulated in IEC 60 297-3-101.



**1**  
Top: Horizontal rails at front with short lip  
Bottom: Horizontal rails at front with 10 mm extension



**2**  
Top: Horizontal rails at front with short lip  
Bottom: Horizontal rails at front with 10 mm extension

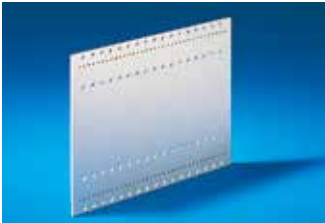


**Horizontal rails**  
with dual screw fastening

### ! Also required:

- Insulating strips (for installing backplanes),
- Z rails (for installing connectors)

					Model No. RP			
U					1		2	
Height (H1) mm					3		6	
					132		265,35	
B1 mm	B2 TE	Side panel (T1) mm	T2 mm	Max. PCB depth mm	Front rail with short lip	Front rail with 10 mm extension	Front rail with short lip	Front rail with 10 mm extension
482.6 (19")	84	245	220	220	<b>9908.517</b>	<b>9908.518</b>	<b>9908.520</b>	<b>9908.521</b>



### Side panels

For Ripac Vario, Ripac Vario EMC, Ripac Compact, Ripac Vario Mobil and Ripac Solid

Mounting holes and anti-twist half-shears on a 10 mm pitch pattern.

#### Material:

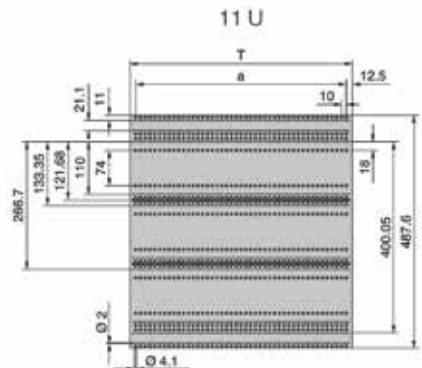
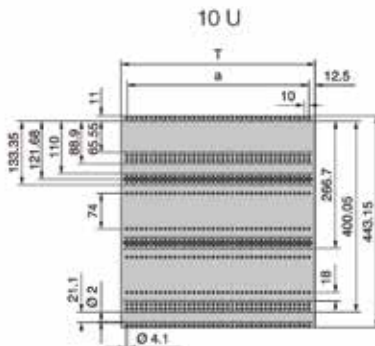
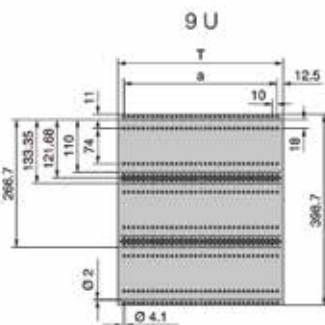
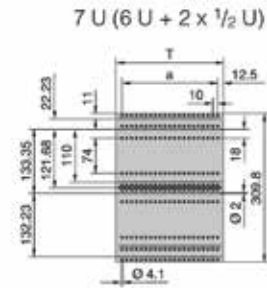
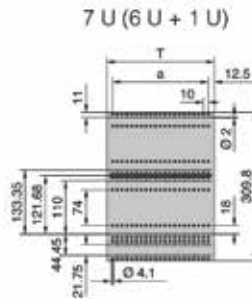
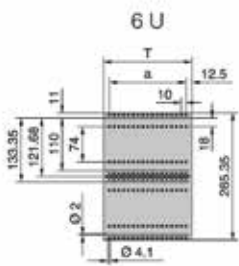
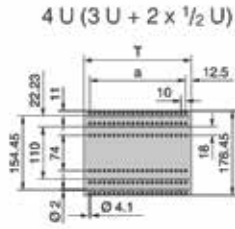
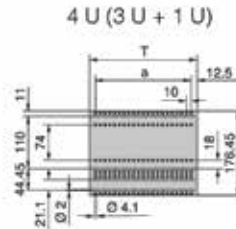
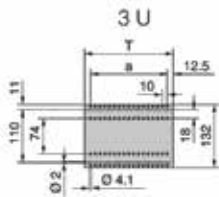
2.5 mm aluminium, clear-chromated

#### Note:

In case of heavy load requirement, the side panel with thickness of 3 mm is selectable. Please contact us for the specific model.

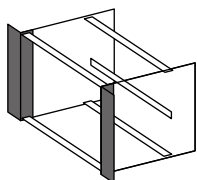
			Model No. RP								
U			3	4(3 + 1)	4(3 + 2 × <sup>1</sup> / <sub>2</sub> )	6	7(6+1)	7(6 + 2 × <sup>1</sup> / <sub>2</sub> )	9	10	11
T mm	a <sup>1)</sup> mm	Packs of									
185	160	1	3684.511	—	—	3684.529	—	—	—	—	—
225	200	1	3684.512	3685.793	3685.890	3684.530	3685.896	3685.893	3685.797	—	—
245	220	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

<sup>1)</sup> a = Distance between the first and last mounting hole.



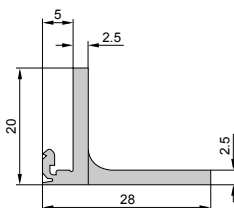
# Subracks, individual components

## Side panels and flanges



### Flange, 482.6 mm (19")

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



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

### Accessories:

EMC gaskets, vertical

Note: In case of heavy load requirement, thickened flanges are selectable and thickened side panel of 3mm is supported. Please contact us for the specific model.



### Handles

#### for subracks and component shelves

For fitting on the subrack flange with handle holes and on all component shelves.

#### Material:

Die-cast zinc

#### Surface finish:

Spray-finished, silver-grey

#### Supply includes:

Assembly parts.

For	Packs of	Model No. RP
Subracks 3 U and 4 U	2	<b>3636.010</b>
Component shelves		
Subracks 6 U and 7 U	2	<b>3666.010</b>



### Trim section, rear

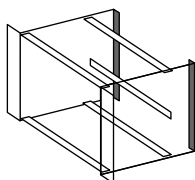
To fit all subrack versions. Ensures 84 HP fit at the rear of the subrack. With integral channel to accommodate EMC gaskets.

#### Material:

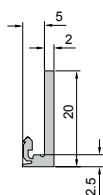
Extruded aluminium section

#### Surface finish:

Clear-chromated



Ripac Vario



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

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

### Accessories:


































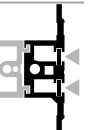















EMC gaskets, vertical

# Subracks, individual components

## Table of horizontal rails

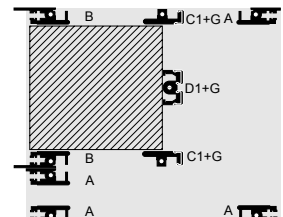
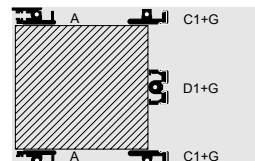
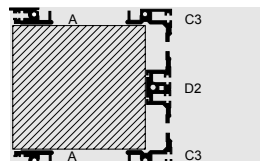
### Ripac extrusion system: Complete, simple and easy to manage

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

Main sections	A	A1	B	B1	B2	C1	C3	C6	D1	D2
	Front horizontal rail	Front horizontal rail, with double screw fastening	Front horizontal rail, with 10 mm extension, for extractor handle type IV or VII	Double front horizontal rail, with 10 mm extension	Front horizontal rail, with 10 mm extension, with double screw fastening	Rear horizontal rail	Rear horizontal rail, with integral Z rail	Rear horizontal rail, with double screw fastening	Rear horizontal rail, centre	Rear horizontal rail, centre, with integral Z rail
Additional sections	Page 27	See Sample 32 page 563	Page 27	Page 28	See Sample 32 page 565	Page 28	Page 29	See Sample 32 page 566	Page 30	Page 31
										
<b>E</b> Rear adaptor rail, centre, to accommodate guide rails 	—	—	—	—	—	—	—	—		
<b>F</b> Z rail for connector 	—	—	—	—	—		—			—
<b>G</b> Insulating strips <sup>1)</sup> 	—	—	—	—	—		—			—
<b>H</b> Conductive strips <sup>1)</sup> 	—	—	—	—	—		—			—
<b>I</b> Threaded insert 						—			—	
<b>J</b> Identification strips 									—	—
<b>K</b> EMC gaskets, horizontal 						—	—	—	—	—

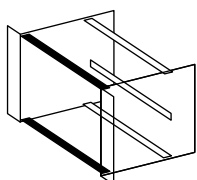
<sup>1)</sup> For conductive or insulated attachment of backplanes.

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



# Subracks, individual components

## Horizontal rails



### Front horizontal rail (A)

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

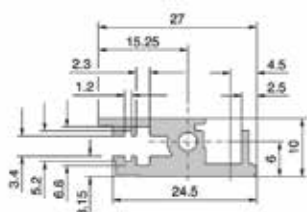
- Front projection 2.5 mm corresponding to IEC 60 297-3
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



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

<sup>1)</sup> Including 4 assembly screws

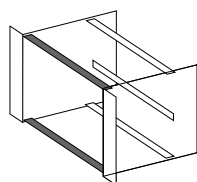
<sup>2)</sup> Anodised

#### ! Also required:

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

#### + Accessories:

Threaded inserts



### 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.

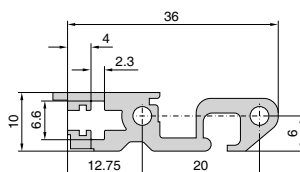
- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection 2.5 mm corresponding to IEC 60 297-3-101
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end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

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated



Usable width (TE)	Packs of	Model No. RP
84	1	<b>9908.721</b>

#### ! Also required:

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

#### + Accessories:

Threaded inserts



### 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.

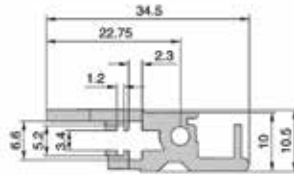
- Front projection and pitch pattern of holes based on IEEE 1101.10 and IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern of holes for the precise installation of guide rails
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without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

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



Usable width (TE)	Packs of	Model No. RP
40	1	<b>3684.961</b>
42	1	<b>3684.565</b>
63	1	<b>3684.566</b>
84	1	<b>3684.567</b>
84	2	<b>3685.269<sup>1)</sup></b>
192	1	<b>3688.001<sup>2)</sup></b>

<sup>1)</sup> Including 4 assembly screws

<sup>2)</sup> Anodised

#### ! Also required:

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

#### + Accessories:

Threaded inserts



### Double front horizontal rail, with 10 mm extension (B1)

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 (TE)	Packs of	Model No. RP
84	1	<b>3687.724</b>

#### ! Also required:

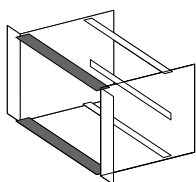
Assembly screws M4 x 12, packs of 100, Model No. RP 3654.300

#### + Accessories:

Threaded inserts

# Subracks, individual components

## 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.

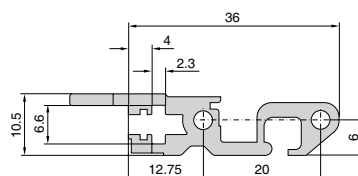
- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection and pitch pattern of holes based on IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern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



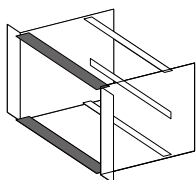
Usable width (TE)	Packs of	Model No. RP
84	1	9908.722

#### ! Also required:

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

#### + Accessories:

Threaded inserts



### Front horizontal rail With extension (B3) 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.

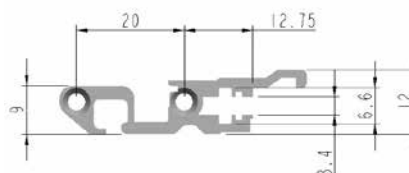
- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Front projection and pitch pattern of holes based on IEC 60 297-3-101, for the use of injector/extractor handles type IV and VII
- HP pitch pattern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



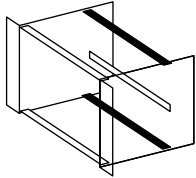
for	Usable width (TE)	Packs of	Model No. RP
VPX ( 1" ), Top	84	1	9922.516
VPX ( 1" ), Bottom	84	1	9922.517
VPX ( 0.8" )/CPCI/VME	84	1	9922.518

#### ! Also required:

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

#### + Accessories:

Threaded inserts



### Rear horizontal rail (C1)

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

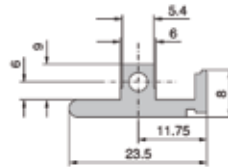
- Tapped holes M2.5 on a 1 HP pitch pattern
- HP pitch pattern of holes for the precise installation of guide rails
- M2.5 thread for the installation of Z rails or backplanes
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for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

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



Usable width (TE)	Packs of	Model No. RP
21	1	<b>3685.991</b>
40	1	<b>3684.962</b>
42	1	<b>3684.570</b>
63	1	<b>3684.571</b>
84	1	<b>3684.572</b>
84	2	<b>3685.268<sup>1)</sup></b>
192	1	<b>3688.002<sup>2)</sup></b>

<sup>1)</sup> Including 4 assembly screws

<sup>2)</sup> Anodised

#### ! Also required:

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



### Rear horizontal rail, with integral Z rail (C3)

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

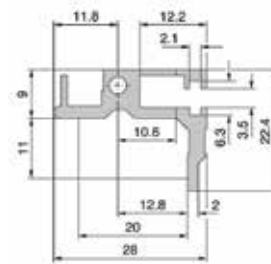
- HP pitch pattern of holes for the precise installation of guide rails
- 84 tapped holes M2.5 for connector mounting
- M4 thread on end face
- Straight-through core hole

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated



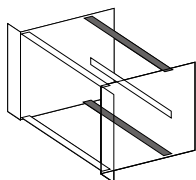
Usable width (TE)	Packs of	Model No. RP
42	1	<b>3686.191</b>
63	1	<b>3686.919</b>
84	1	<b>3686.159</b>

#### ! Also required:

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

# Subracks, individual components

## 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.

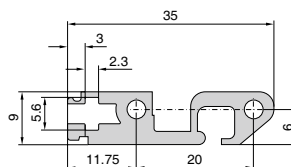
- Load test to DIN EN/IEC 61 587-1, requirement level SL1
- Shock and vibration tests undertaken as per IEC 61 373 (DIN EN 50 155), Category 1, Class B
- Tapped holes M2.5 on an HP pitch pattern
- HP pitch pattern of holes for the precise installation of guide rails
- M2.5 thread for the installation of Z rails or backplanes
- M4 thread on end face
- Straight-through core hole

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



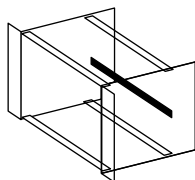
Usable width (HP)	Packs of	Model No. RP
84	1	9908.723

#### ! Also required:

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

#### + Accessories:

Threaded inserts, Model No. RP 3604.830 (packs of 2)



### Rear horizontal rail, centre (D1)

When using 6 U PCBs or box-type plug-in units. Facility for the attachment of Z rails, insulating strips or conductive strips.

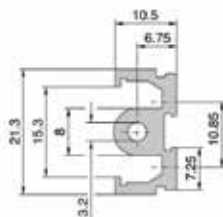
- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole
- Horizontal rail 192 HP for cutting to the required length

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



Usable width (TE)	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 <sup>1)</sup>
858.5 (mm)	1	3684.579
192	1	3688.003 <sup>2)</sup>

<sup>1)</sup> Including 2 assembly screws

<sup>2)</sup> Anodised

#### ! Also required:

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



### 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.

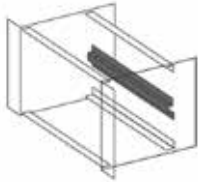
- 84 tapped holes M2.5
- M4 thread on end face
- Straight-through core hole

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated



Usable width (TE)	Packs of	Model No. RP
42	1	<b>3687.600</b>
63	1	<b>3687.601</b>
84	1	<b>3687.602</b>
858.5 mm	1	<b>3687.603</b>

#### ! Also required:

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



### Rear adaptor rail, centre (E)

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

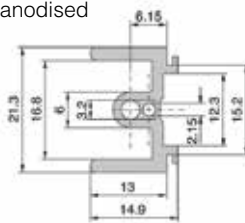
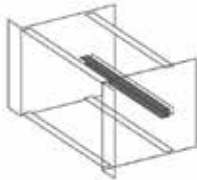
- HP pitch pattern of holes for the precise installation of guide rails
- M4 and M2.5 thread on the end face
- Straight-through core hole
- Horizontal rail 192 HP without machining on the end faces. Suitable for cutting to length

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



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

<sup>1)</sup> Including 2 assembly screws

<sup>2)</sup> Anodised

#### ! Also required:

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



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

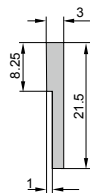
With 84 x M2.5 threaded holes.

#### Material:

Extruded aluminium section

#### Surface finish:

Clear-chromated or anodised



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

#### ! Also required:

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

# Subracks, individual components

## 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 (TE)	Packs of	Model No. RP	
		for horizontal rails	
		Type A, A1, B, B1, B2, B3, C3, C5, D2	Type C2, C6
4	1	<b>3684.603</b>	–
8	1	<b>3684.604</b>	–
12	1	<b>3684.605</b>	–
16	1	<b>3684.606</b>	–
20	1	<b>3684.607</b>	–
21	1	<b>3686.149</b>	–
40	1	<b>3684.966</b>	–
42	1	<b>3684.608</b>	<b>3687.616</b>
63	1	<b>3684.609</b>	<b>3687.617</b>
84	1	<b>3684.610</b>	<b>9901.816</b>
84	2	<b>3650.310</b>	<b>3604.830</b>



### 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	<b>3687.575</b>
Rear	4	1 ... 168	1	<b>3687.577</b>
Front	4	84 ... 1	1	<b>3687.574</b>
Front	2	1 ... 84	1	<b>3687.576</b>



### Conductive strip (H)

For conductive mounting of backplanes.

- 84 HP
- Slides onto the rear horizontal rail

#### Material:

Aluminium

Usable width (TE)	Packs of	Model No. RP
84	1	<b>3684.612</b>
84	2	<b>3685.273</b>





**EMC gaskets, horizontal (K)**  
see page 39.



**Insulating strip (G)**  
For insulated mounting of backplanes.

- 21 HP
- Slides onto the rear horizontal rail

**Material:**  
Plastic, self-extinguishing to UL 94-V0

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

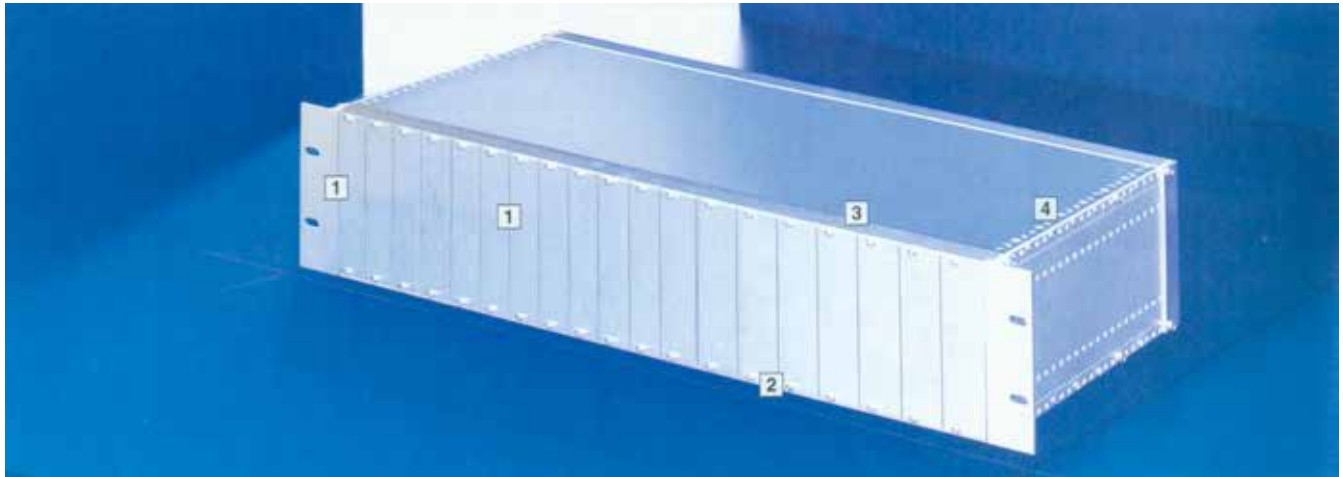


Rear horizontal rail, centre, fitted with insulating strips (top) and conductive strips (bottom).



# Subrack accessories

## Components for EMC installation

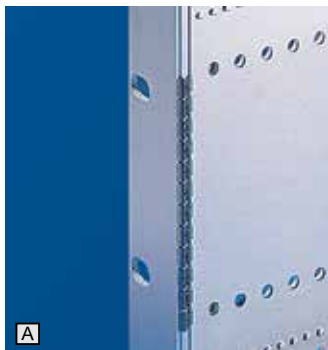


EMC (electromagnetic compatibility) refers to the ability of an electrical device to function satisfactorily in its electromagnetic environment without influencing or being influenced by this environment more than is admissible.

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

#### 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



### EMC contact strip

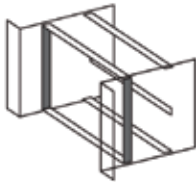
To ensure EMC protection when horizontal rails are set-back.  
Integral channel to accommodate EMC gaskets.

#### Material:

Extruded aluminium section, clear-chromated

#### Note:

2 sections are required for each subrack.



U	Packs of	Model No. RP
3	1	<b>3684.643</b>
6	1	<b>3684.644</b>
9	1	<b>3684.645</b>

#### ! Also required:

EMC gaskets, vertical, see page 38  
Assembly screws M3 x 6, packs of 100,  
Model No. RP 3684.233



### EMC gaskets, horizontal (K)

For horizontal EMC protection. For snapfastening onto the front horizontal rails.

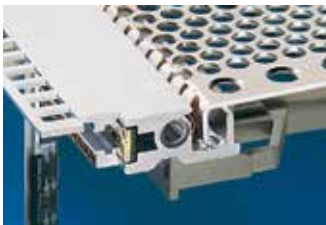
#### Material:

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**



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



### EMC gaskets for covers

For EMC shielding between the horizontal rails and covers.

#### Material:

Stainless steel



TE	Packs of	Model No. RP
84	10	<b>3684.245</b>
84	1	<b>3684.807</b>



### Mounting blocks

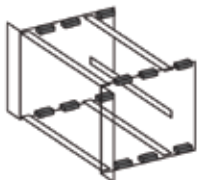
For mounting covers, versions 1 – 4, on the subrack side panel.

#### 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.



	Packs of	Model No. RP
Mounting blocks 28.5 mm long	10	<b>3684.234</b>
	1	<b>3684.884</b>

#### ! Also required:

Assembly screws M3 x 6, packs of 100,  
Model No. RP 3684.233

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

# Subrack accessories

## Mounting kits



### Vertical divider kit

For the combined installation of single and double Euroboards in 6 U and 9 U 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  
EMC gaskets, horizontal

6 U (2 x 3 U)

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

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

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



### 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



### Front panel

To conceal the vertical support of the vertical divider kit.

#### Material:

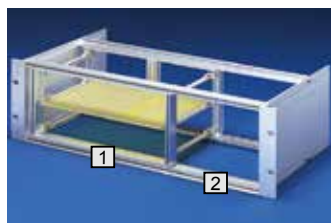
Aluminium, anodised

#### Supply includes:

Assembly parts

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

#### EMC version



### Horizontal mounting kit

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

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

2 Vertical installation space:  
(when installing double Eurocards)  
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

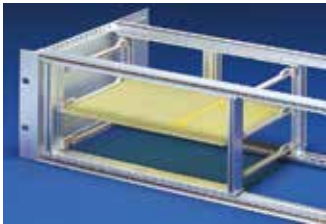
U	Model No. RP	
horizontal	For 3 U subrack	For 4 U subrack
6	3684.206	3685.208
9	3684.207	3685.209

For backplane assembly,  
front horizontal rail with 10 mm extension

U	Model No. RP	
horizontal	For 3 U subrack	For 4 U subrack
6	3684.210	3685.212
9	3684.211	3685.213

#### Accessories:

Trim frame



### Trim frame

#### for horizontal mounting kit

To conceal the front sections of the horizontal mounting kit.

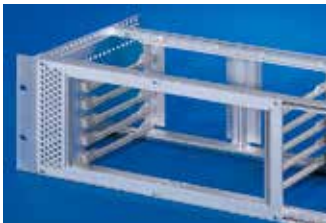
#### Material:

Aluminium, anodised

U	TE	Model No. RP	
		For 3 U subrack	For 4 U subrack
horizontal			
6	56	<b>3685.783</b>	<b>3685.785</b>
9	84	<b>3685.784</b>	<b>3685.786</b>

#### ! Also required:

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



### 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).



U	TE	Model No. RP	
		For 3 U subrack	For 4 U subrack
horizontal			
6	63	<b>3685.787</b>	<b>3685.788</b>

#### ! Also required:

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

#### EMC 电磁兼容形式

U	TE	Model No. RP	
		For 3 U subrack	For 4 U subrack
horizontal			
6	63	<b>3685.291</b>	<b>3685.292</b>

#### ! Also required:

Centering screws,  
packs of 100, Model No. RP 3687.050



### 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 <sup>1)</sup>	Snap-in fastening
160	1	<b>3684.657</b>	<b>3684.654</b>
220	1	<b>3684.658</b>	<b>3684.655</b>
280	1	<b>3684.659</b>	<b>3684.656</b>

#### ! Also required:

<sup>1)</sup> Assembly screws,  
packs of 100, Model No. RP 3654.360,



### 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	1	<b>3684.660</b>
220	1	<b>3684.661</b>
280	1	<b>3684.662</b>

# Subrack accessories

## Guide rails

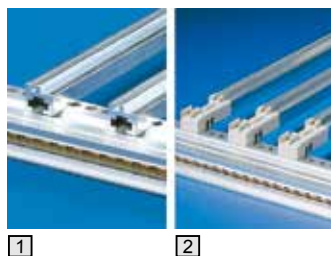


### Contact springs

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	<b>3687.726</b>



### Guide rails, aluminium

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

#### Material:

Aluminium

PCB depth mm	Packs of	Model No. RP	
		<b>1</b> Without end piece <sup>1)</sup>	<b>2</b> Without end piece
160	1	<b>3687.526</b>	<b>3684.663</b>
220	1	<b>3687.527</b>	<b>3684.664</b>
280	1	<b>3687.528</b>	<b>3684.665</b>
1000	1	<b>3684.666</b>	-

#### ! Also required:

<sup>1)</sup> Screw M2.5 x 6, packs of 100, Model No. RP 3654.340

<sup>1)</sup> Nut M2.5, packs of 100, Model No. RP 3654.370

<sup>1)</sup> Retaining cage M2.5, packs of 100, Model No. RP 9901.417



### End pieces

#### for guide rails, aluminium

To discharge static charges, contact springs RP 3687.726 may be used.

#### Material:

Polycarbonate, base material UL 94-V1

	Packs of	Model No. RP
End piece, front	1	<b>3684.668</b>
End piece, rear	1	<b>3685.759</b>

#### + Accessories:

Contact springs



### 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

#### Material:

Polycarbonate, base material to UL 94-V0

#### Note:

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

#### + Accessories:

Keys

ESD contact

Extractor handles type IV, IVs, VII



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

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



### Keyable guide rails

#### with 1/2 HP offset

Guide rails with 1/2 HP offset for use in telecom applications. This allows PCBs to be populated on both sides. Green guide rails with offset are prescribed in the CompactPCI 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	1	Grey	<b>3686.137</b>
		Yellow	<b>3689.090</b>
		green	<b>3687.832</b>
220	1	Grey	<b>3686.136</b>
		Yellow	<b>3689.092</b>

#### Accessories:

Keys

ESD contact

Extractor handles type IVs, VII with 1/2 HP offset



### Keyable guide rails

#### for rear 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
- For CPCI or VME applications

#### 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	<b>3687.936</b>	<b>3687.937</b>
Yellow	80	1	<b>3689.097</b>	<b>3689.098</b>

#### Accessories:

Keys

ESD contact

Ground contact

Extractor handles type IV, IVs, VII



### Keyable guide rails

#### for rear I/O assemblies

Guide rails 4 HP, keyable, to IEEE 1101.10.

- 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
- For CPCI or VME applications

#### 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
Grey	80	1	<b>9920.923</b>
Yellow	80	1	<b>9920.924</b>

#### Accessories:

Keys

ESD contact

Extractor handles type IV, IVs, VII

# Subrack accessories

## 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



### 2 Aluminium centre part

#### for three-part guide rails

For 1.6 – 2.0 mm PCB thickness.

#### Material:

Aluminium, unplated



### 3 Insulated centre part

#### for three-part guide rails

The insulating centre part is pushed onto the aluminium centre piece.  
Length: 60 mm.

#### Material:

Plastic, self-extinguishing to UL 94-V0

	Packs of	Model No. RP
	10 pairs	<b>3685.265</b>
Front end piece	1	<b>3685.790</b>
Rear end piece	1	<b>3684.670</b>

#### Note:

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

For PCB depth mm	Model No. RP	
	Packs of 1	Packs of 10
220	<b>3684.673</b>	<b>3685.260</b>
280	<b>3684.674</b>	<b>3685.261</b>
340	<b>3684.675</b>	<b>3685.262</b>
400	<b>3684.676</b>	<b>3685.263</b>
1000	<b>3684.672</b>	-

Packs of	Model No. RP
1	<b>3684.677</b>
10	<b>3685.264</b>

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



### Guide rails

for box type plug-in units  
For PCB thickness 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	<b>3606.140</b>
220	10	<b>3606.200</b>



### Guide rails for 4.4"

Snap-fastening guide rails to accommodate PCBs and assemblies with a height of 4.4".

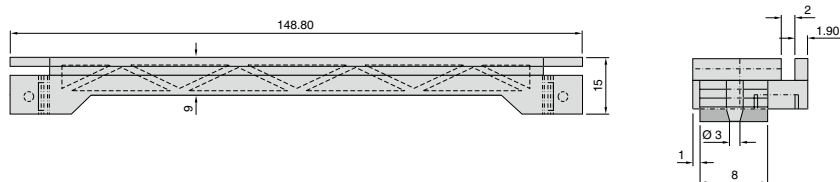
#### Material:

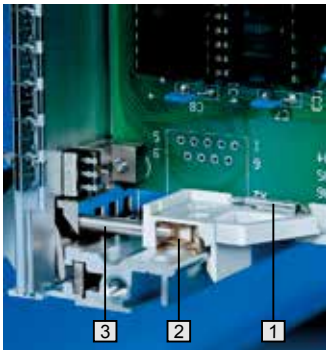
Macrolon

#### Colour:

Dark grey

For PCB depth mm	Packs of	Model No. RP
160	1	<b>3686.990</b>





### ESD contacts

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

#### 1 ESD clip in the guide rail

For permanent direct discharge from the PCB.

#### 2 ESD contact for front panel

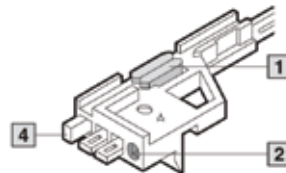
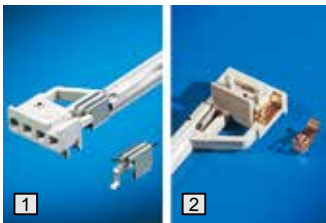
To discharge static charges in conjunction with the ESD pin. For insertion into the end piece of the guide rail.

#### 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	<b>3684.204</b>
Front panel	50	<b>3684.205</b>

#### Note:

Only for use in conjunction with extractor handle with ESD pin (type IV, IVs, VII),



### 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 guide rail	Packs of	Model No. RP
160 mm	1	<b>3687.924</b>



### Earthing

An earthing connection of plug-in module shall be guaranteed.

#### Material:

Zinc die-casting

#### Supply includes:

Mounting socket, contact spring

#### Note:

It can be only used in combination with the variable code plug-in card rack for rear input/ output of board card.



	Model No. RP	
Mounting socket and contact spring	1 set	50 sets
	<b>3689.036</b>	<b>3687.951</b>

#### ! Also required:

Fixed screw 3.5 × 12 mm,  
Each package = 50 pcs, model: RP 3684 .109,  
Please refer to page 78.

# Subrack accessories

## Keying/PCB ejectors



### Keys

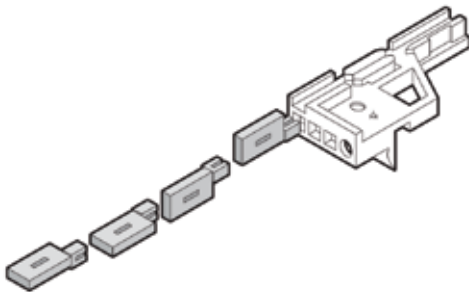
Keys are used for coding of board-type plug-in units and prevent the use of assemblies in incorrect slots. The keys are inserted into the chambers of the keyable guide rails and the injector/extractor handles, types IV, IVs and VII (4 positions are possible). This produces 64 keying combinations per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

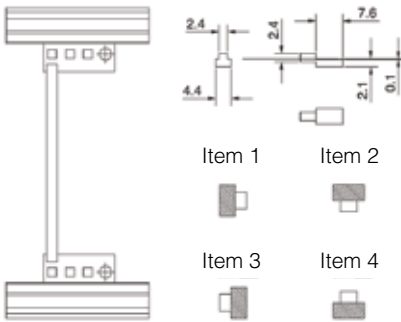
Plastic, PBTP, basic material to UL 94-V0



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

### Accessories:

Keying tool



### 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



1

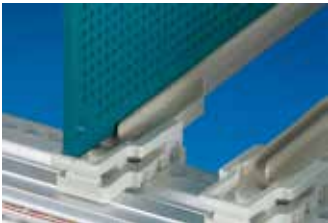
### PCB ejector/retainer

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



2

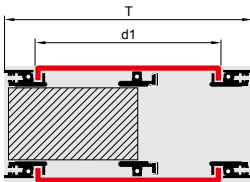
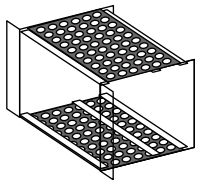


### Covers version 1

For all Ripac Vario, Ripac Vario EMC, Ripac Compact, Ripac Vario Mobil and Ripac Solid 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 cover plates,  
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.

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

#### ! Also required:

<sup>1)</sup> Mounting blocks

<sup>1)</sup> EMC gaskets for cover plates

<sup>1)</sup> Assembly screws,

packs of 100, Model No. RP 3684.233,

# Subrack accessories

## Covers



### Covers version 2

For all Ripac Vario, Ripac Vario EMC, Ripac Compact, Ripac Vario Mobil and Ripac Solid 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:

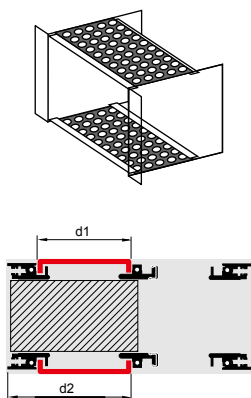
1.0 mm aluminium, unplated, hole diameter 4 mm in perforated version.

#### Each set includes:

2 cover plates,  
8 mounting blocks @ 28.5 mm,  
24 assembly screws.

#### Each individual unit includes:

1 cover.

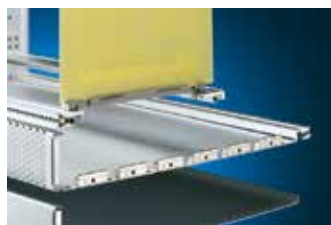


TE	For PCB depth (d2) mm	Cover depth (d1) mm	Model No. RP			
			Single piece <sup>1)</sup>		Set	
			Perforated	Solid	Perforated	Solid
21	160	142	<b>3687.630</b>	<b>3687.634</b>	-	-
21	220	202	<b>3687.631</b>	<b>3687.635</b>	-	-
42	160	142	<b>3684.957</b>	<b>3687.626</b>	-	-
42	220	202	<b>3687.633</b>	<b>3687.637</b>	-	-
42	280	262	<b>3687.638</b>	<b>3687.639</b>	-	-
84	160	142	<b>3684.681</b>	<b>3684.680</b>	<b>3685.245</b>	<b>3685.250</b>
84	220	202	<b>3685.851</b>	<b>3685.813</b>	-	-
84	280	262	<b>3685.855</b>	<b>3685.814</b>	-	-
84	340	322	<b>3685.856</b>	-	-	-
84	400	382	<b>3685.857</b>	-	-	-

#### ! Also required:

<sup>1)</sup> Mounting blocks

<sup>1)</sup> Assembly screws,  
packs of 100, Model No. RP 3684.233



### Covers version 3

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

#### To cover the overall subrack depth (EMC application).

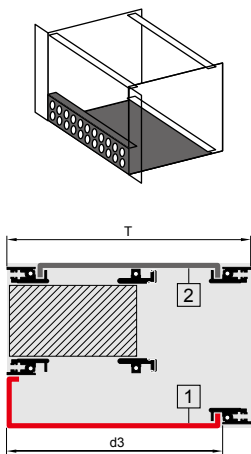
- Cover with 1 U edge fold (item 1), to conceal the 1 U area in the subrack
- A version 1 flat cover (item 2) is additionally required.
- Optionally perforated or solid on the front
- Suitable for subracks 4 U (3 + 1), 7 U (6 + 1)
- For mounting on the subrack side panel with the aid of mounting blocks.

#### 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.



TE	For side panel depth (T) mm	Cover depth (d3) mm	Model No. RP	
			Perforated	Solid
84	285	270	<b>3684.720</b>	<b>3684.714</b>
84	345	330	<b>3684.721</b>	<b>3684.715</b>
84	405	390	<b>3684.722</b>	<b>3684.716</b>
84	465	450	<b>3684.723</b>	<b>3684.717</b>
84	525	510	<b>3684.724</b>	<b>3684.718</b>
84	585	570	<b>3684.725</b>	<b>3684.719</b>

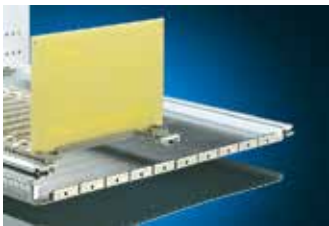
#### ! Also required:

Mounting blocks

EMC gaskets for covers

Assembly screws, packs of 100, Model No. RP 3684.233

Cover, version 1



Covers version 4

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

To cover the overall subrack depth (EMC application).

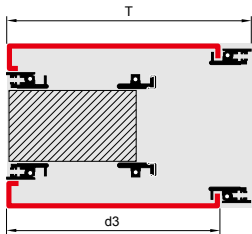
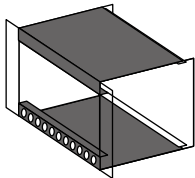
- Cover top/bottom with 1/2 U edge fold to cover the 1/2 U section in the subrack
- Optionally perforated or solid on the front
- Suitable for subracks 4 U (3 + 2 x 1/2), 7 U (6 + 2 x 1/2)
- For mounting on the subrack side panel with the aid of mounting blocks.

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.



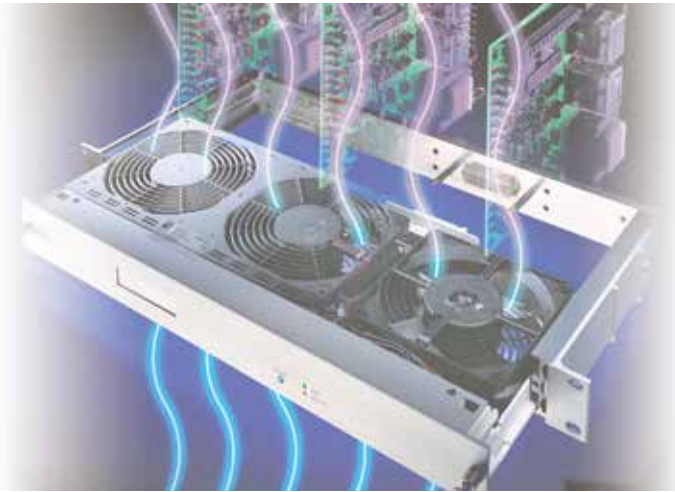
TE	For side panel depth (T) mm	Cover depth (d3) mm	Model No. RP	
			Perforated	Solid
84	285	270	<b>3684.732</b>	<b>3684.726</b>
84	345	330	<b>3684.733</b>	<b>3684.727</b>
84	405	390	<b>3684.734</b>	<b>3684.728</b>
84	465	450	<b>3684.735</b>	<b>3684.729</b>
84	525	510	<b>3684.736</b>	<b>3684.730</b>
84	585	570	<b>3684.737</b>	<b>3684.731</b>

! Also required:

- Mounting blocks
- EMC gaskets for covers
- Assembly screws, packs of 100, Model No. RP 3684.233

# Subrack accessories

## Features



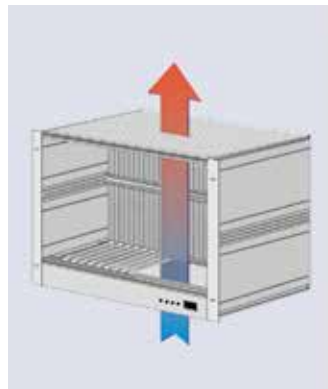
Heat shortens the service life of equipment leading to failure, and also diminishes the high performance of electronics.

The problem lies in high heat losses and compact installation spaces. For this reason, effective heat dissipation is vital to ensure long service life and operational reliability.

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

System climate control, see Sample 33.

### Vertical ventilation



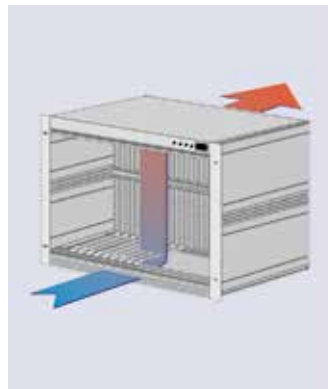
**Rack-mounted fans** are installed below the subrack in the enclosure. This ensures permanent air circulation to prevent the formation of hotspots.



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



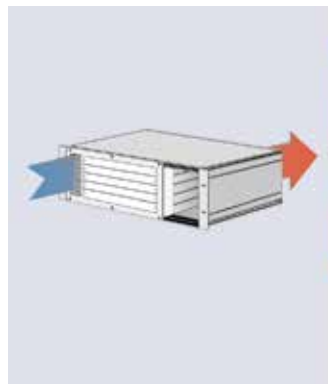
**AC and DC fans** in various output categories, can be retrofitted.



... the **air block panel** ensures targeted air



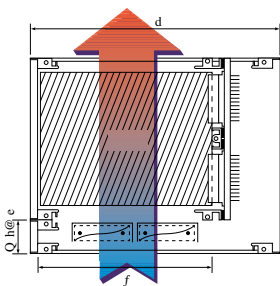
**RiCool high-capacity fan** for heat losses of 700 W or more.



**Front and rear panels** for ventilation – also available in an EMC version.



**Rear panels** with cut-outs for the installation of 80 or 120 mm fans.



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, rack-mounted fans, and rackmounted cooling units, are available. See Sample 33.



Fan mounting plate

For the installation of 120 mm fans and filter modules in 4 U and 7 U subracks. For mounting on the subrack side panels.

**Material:**  
1.5 mm aluminium, anodised

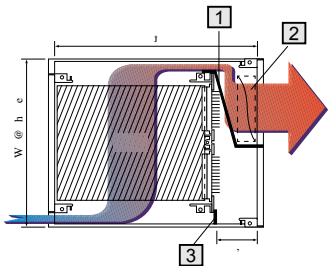
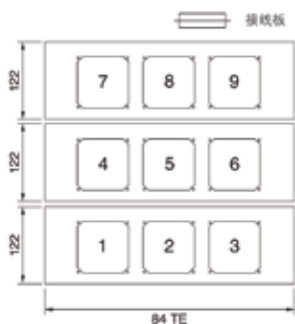
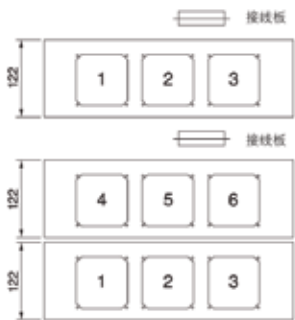
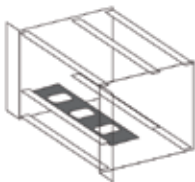


U	For PCB depth mm	No. of fan mounting plates required	TE	Model No. RP
1	160 mm	1	84	3684.317
	220 mm	1		
	280 mm	2		
	340 mm	2		
	400 mm	3		

! Also required:

1 terminal block is required for each subrack.

Packs of	Model No. RP
1	3686.805



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
- 2 Fan (mounted on the rear panel),
- 3 Air partition

# Subrack accessories

## Heat dissipation of assembly parts box



### 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

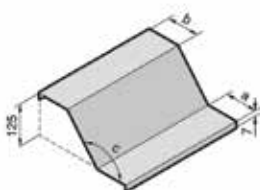
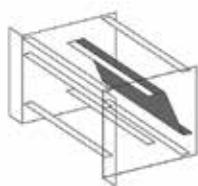
**Supply includes:**

Assembly parts

U	a mm	b mm	c mm	Model No. RP
285	71	56	90	<b>3685.302</b>
345	48	67	120	<b>3685.303</b>
405	108	67	120	<b>3684.320</b>
465	168	67	120	<b>3684.321</b>
525	228	67	120	<b>3684.322</b>

**! Also required:**

Mounting blocks



### Air partition

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

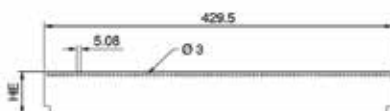
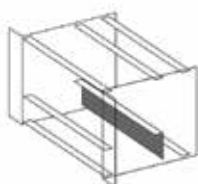
**Material:**

Epoxy

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

**! Also required:**

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



### Front/rear panels for ventilation

**Material:**

2.5 mm aluminium

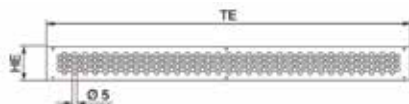
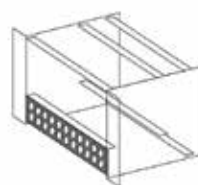
**Surface finish:**

Anodised,  
clear-chromated (EMC version)

U	TE	Packs of	Model No. RP
1	84	1	<b>3684.812</b>
2	84	1	<b>3684.813</b>
3	84	1	<b>3684.814</b>

**! Also required:**

Screws and collars,  
packs of 100 sets, Model No. RP 3658.160



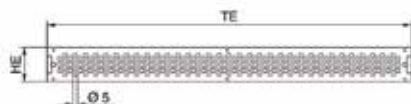
**Scope of supply of the EMC version:**

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

**EMV**

**EMC version:**

U	TE	Packs of	Model No. RP
1	84	1	<b>3684.281</b>
2	84	1	<b>3684.282</b>
3	84	1	<b>3684.283</b>





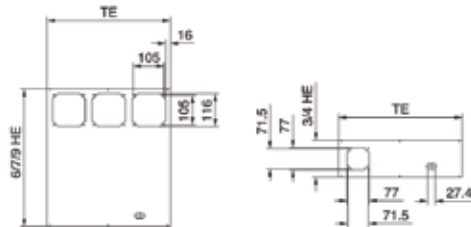
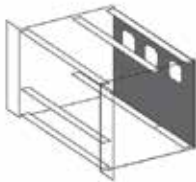
### Rear panels for fan installation

**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.



U	TE	For fans	Packs of	Model No. RP
3	85	80 mm	1	<b>3684.839</b>
4	85	80 mm	1	<b>3684.840</b>
6	85	120 mm	1	<b>3684.841</b>
7	85	120 mm	1	<b>3684.842</b>
9	85	120 mm	1	<b>3684.843</b>

#### ! Also required:

Screws and collars,  
packs of 100 sets, Model No. RP 3658.160,

#### EMC version:

U	TE	For fans	Packs of	Model No. RP
3	84	80 mm	1	<b>3684.284</b>
4	84	80 mm	1	<b>3684.285</b>
6	84	120 mm	1	<b>3684.286</b>
7	84	120 mm	1	<b>3684.287</b>
9	84	120 mm	1	<b>3684.288</b>

#### + Accessories:

Fans



### Rear panels, horizontally hinged for fan installation

**Material:**  
2.5 mm aluminium

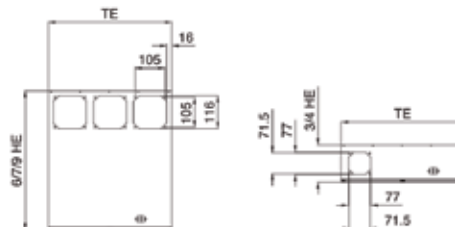
**Surface finish:**  
Anodised,  
clear-chromated (EMC version)

#### 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.



U	TE	For fans	Packs of	Model No. RP
3	85	80 mm	1	<b>3684.304</b>
4	85	80 mm	1	<b>3684.305</b>
6	85	120 mm	1	<b>3684.306</b>
7	85	120 mm	1	<b>3684.307</b>
9	85	120 mm	1	<b>3684.308</b>

#### ! Also required:

Screws and collars,  
packs of 100 sets, Model No. RP 3658.160

#### EMC version:

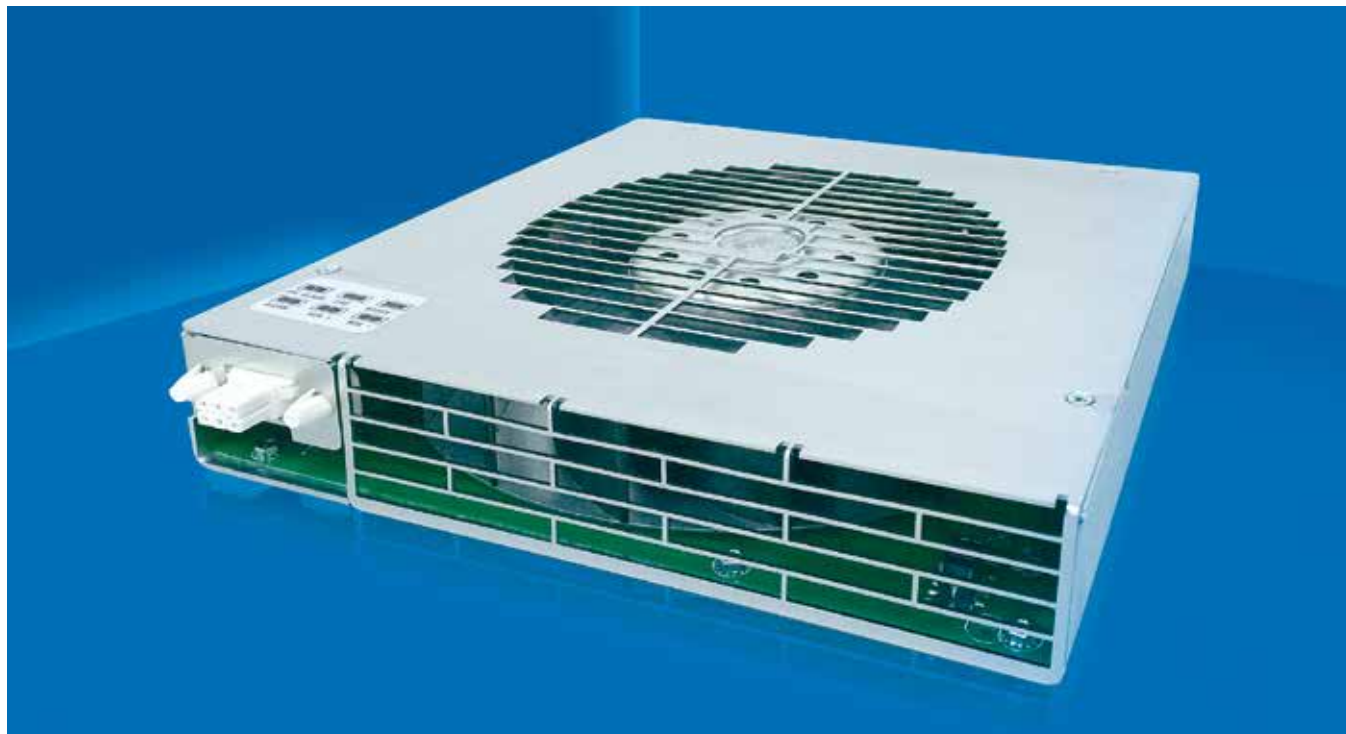
U	TE	For fans	Packs of	Model No. RP
3	84	80 mm	1	<b>3684.311</b>
4	84	80 mm	1	<b>3684.312</b>
6	84	120 mm	1	<b>3684.313</b>
7	84	120 mm	1	<b>3684.314</b>
9	84	120 mm	1	<b>3684.315</b>

#### + Accessories:

Fans

# Subrack accessories

## High-performance fan module Ricool - I



The powerful RiCool-1 blowers have been designed to provide effective cooling for CompactPCI systems which require a redundant cooling feature and/or have a heat dissipation of over 500W.

The ability of the RiCool-1 blower to generate 1.6"/40.64mm (H<sub>2</sub>O) of static pressure confirms that the RiCool-1 blower is able to provide effective cooling in a densely packed CompactPCI system.

By comparison, a typical system cooled with three 4.7" x 4.7" 18W (110cfm at free delivery) muffin fans, generates only 0.22" to 0.40" (H<sub>2</sub>O) static pressure point of a muffin fan assembled, fully loaded CompactPCI system is 0.3" to 0.5" (H<sub>2</sub>O). Under those conditions one RiCool-1 blower provides at least 40% higher airflow.

Each 19" CompactPCI system can accept two RiCool-1 blowers.

### Electromagnetic Emissions For RiCool-1 Blowers

The RiCool-1 blowers comply with the EMI Standard per FCC part 15, subpart J of Docket 20780, Class A & B emissions limit across the frequency spectrum from 30MHz to 1GHz.

### Safety

RiCool-1 is in conformity with the requirements of the Low Voltage Directive, Nr. 73/23/EEC EN 60950: 1992 +A1 +A2 +A3 +A4 +A11.

### 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
- 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: 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-1 Blower Performance Data

**cfm:** 110cfm(190m<sup>3</sup>/h)

**Static Pressure:** 40.64mm (1.6 inch) of H<sub>2</sub>O

**Voltages:** 12, 24, 48V dc

**Rated Current:** 4, 2, 1 Amps

**Noise Level Free Blowing:** 56.2dBa

**Weight:** 5 lbs. (2.3 Kg)

### RiCool-1 Blower Construction

**Housing:** cold rolled steel

**Impeller:** Noryl™ 94V0

**Bearing:** ball bearing

**Power/alarm connector:** Molex15-06-0061

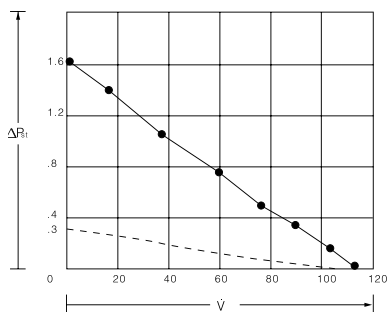
**Alarm Signal:** rpm sensor

**Life At Full Speed:**

60,000 hrs @ 40°C

50,000 hrs @ 50°C

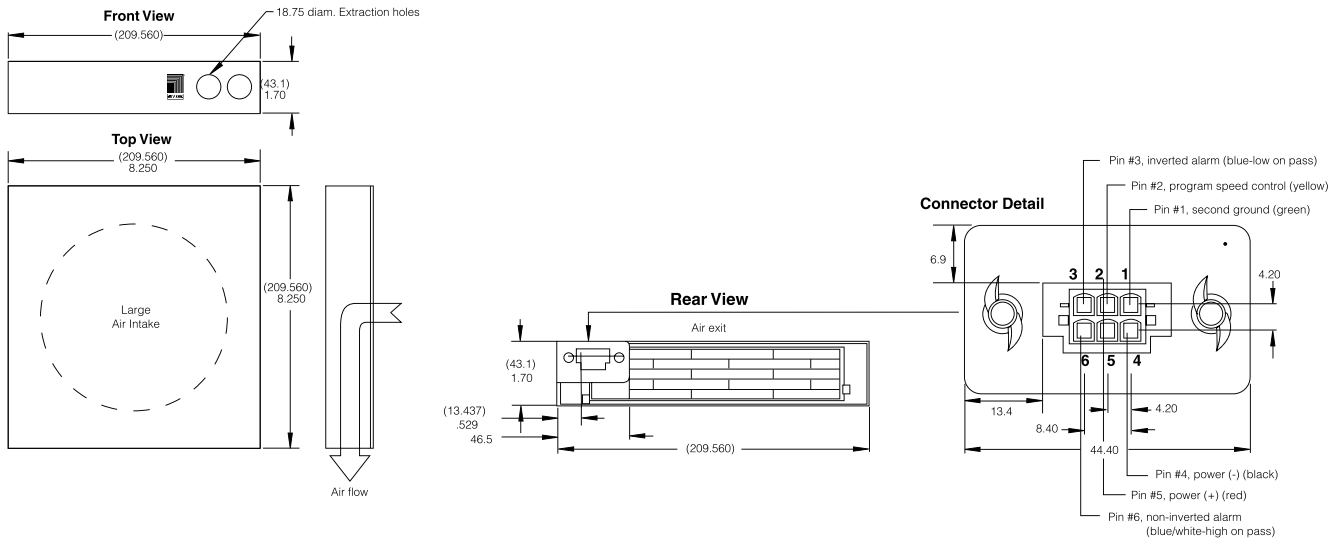
**Performance diagram**  
3344.012/.024/.048



$\dot{V}$  Air displacement (cfm)  
 $\Delta P_{st}$  Static pressure difference (inches of H<sub>2</sub>O)  
 —●— Typical performance diagram of RiCool  
 - - - Typical performance diagram of tubeaxial muffin fans



File No. E191011



### RiCool-1 Blowers

Description	Qty	Model No.
RiCool-1 blower 12V	1	3344012
RiCool-1 blower 24V	1	3344024
RiCool-1 blower 48V	1	3344048
RiCool-1 blower 48V with internal thermistors	1	3688063

### Temperature/Speed Control Thermistors

Description	Qty	Model No.
PTC thermistor for 12V	1	3686887
PTC thermistor for 24V	1	3686888
PTC thermistor for 48V	1	3686889

Note: The thermistors come 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)

### 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 increase 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



### RiCool-I Connector and Cable

Description	Qty	Model No.
6 Pin Molex Connector and Cable	1	610867

Supporting two RiCool-I

# Subrack accessories

## High-performance heat dissipation module Ricool 3



Designed in compliance with PICMG 3.0 R2.0, the RiCool-3 Blower provides cooling of up to 200 Watts per Slot (front) and 50 Watts per Slot (rear). Four Blowers mounted in the top of an AdvancedTCA Shelf provide a hot swappable, redundant, managed cooling solution. Air is pulled upward across the Advanced TCA Boards with sufficient static pressure to overcome air filter congestion and complex board geometries. Air is exhausted via a curved impeller blower, 90 degrees from intake in only 1U of Shelf space.

### Performance

- 325 m<sup>3</sup>/h (191 CFM)
- High static pressure at zero flow of 900 Pa (3.6 inch H<sub>2</sub>O); ideal when air filters are used (typical muffin fans have 0.3 - 0.4 inch H<sub>2</sub>O)
- Hot swap, redundant design
- Full IPMC support as defined in PICMG 3.0 R2.0 Advanced TCA specification.
- Service friendly Field Replaceable Unit (FRU) design
- COTS (Commercial Off The Shelf)

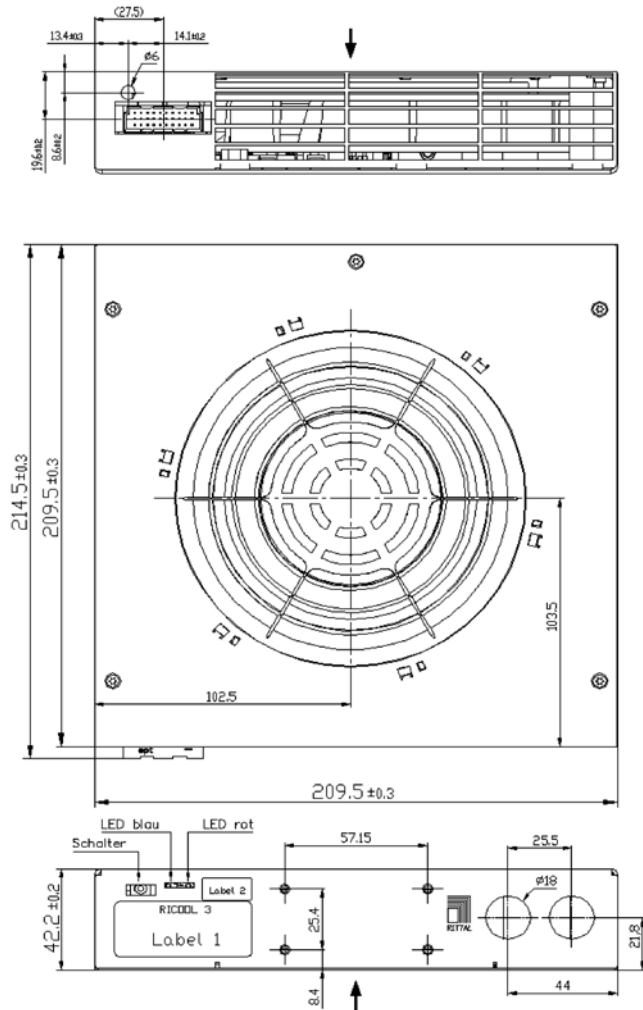
### General Features

- 1 U rack height
- Hot swappable easy access
- For removal, there are finger holes for the upper blowers and handles for lower blowers
- Internal flame sensor and fault interfaces
- Staged 3x10 row Type-C/3 41612 DIN connector (male) for Hot Swap support
- Polarity protected
- Locked rotor protection
- Automatic restart
- Programmability
- Over temperature alarm
- Input fusing
- Wide controller and motor supply voltage input ranges
- Red (OOS) LED for failure (PICMG 3.0)
- Blue (H/S) LED for Hot Swap (PICMG 3.0)
- Toggle switch to initiate Hot Swap
- Mezzanine control board connections
- Thermistor located in outlet air stream
- Dual redundant power input

- The electronic system provides a temperature sensor on the circuit board. In addition, the mains input connector can provide a contact for an external temperature sensor. A connected external temperature sensor always has the higher priority. Should the external temperature sensor be defective, the fan runs with 100% PWM.
- Detects failure in the Intelligent Peripheral Management Controller (IPMC) and/or Management Application (MA). Upon detecting failure, blower immediately goes to full speed.
- Sensors (thermistors, hall-effect switches, voltage, etc.) support all device commands derived by the Intelligent Peripheral Management Controller (IPMC). Sensor device commands are defined in section 3.0 of PICMG 3.0.

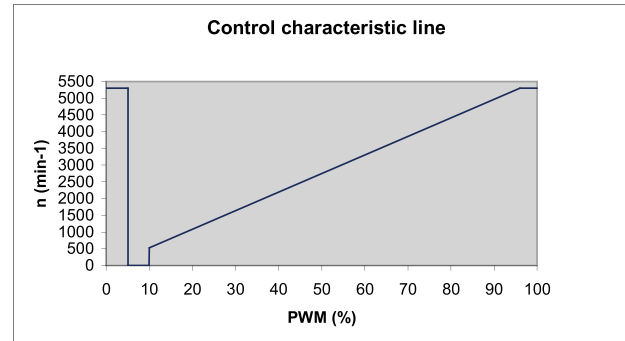
## High-performance heat dissipation module Ricool 3

**Dimensions: W × H × D 209.5 × 209.5 × 42.2**



### Regulatory Compliance

- VDE approval in accordance with VDE60950
- UL/CSA approvals do not concern application areas but products. The following standards govern UL/CSA approvals:
  - Fan: UL 507, UL 508C (including electronics)
  - Motor: UL 1004
  - Electronics: UL 508C



Description	Qty	Model No.
RiCool 3	1	9913316

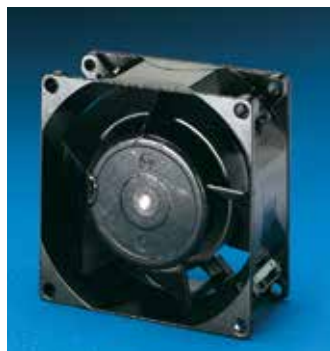
### Interface Connector

Pin	Signal	Pin	Signal	Pin	Signal
A1	VRTN_B (1)	B1	VRTN_A (1)	C1	EN_A (3)
A2	N/C (2)	B2	N/C (2)	C2	EN_B (3)
A3	-48V_B (2)	B3	-48V_A (2)	C3	N/C (2)
A4	N/C (2)	B4	N/C (2)	C4	FPS Ground (1)
A5	GND (1)	B5	Flame Sensor (FS) (2)	C5	IPMB Enable (3)
A6	HA7 (Parity) (2)	B6	HA6 (2)	C6	GND (1)
A7	V_B (2) or N/C	B7	I <sup>2</sup> C 1 Data/ Alarm (2)	C7	I <sup>2</sup> C 1 Clock/ FS(2)
A8	HA5 (2)	B8	HA4 (2)	C8	HA3 (2)
A9	V_A (2) or N/C	B9	I <sup>2</sup> C 0 Data/ PWM (2)	C9	I <sup>2</sup> C 0 Clock//Tacho (2)
A10	HA2 (2)	B10	HA1 (2)	C10	HA0 (2)

The numbers in parentheses are the make/break levels (1)=make first/break last, (2)=make 2<sup>nd</sup>/break 2<sup>nd</sup>, (3)=make last/break first. N/C=No connection.

# Subrack accessories

## Subrack climate control



### AC fans

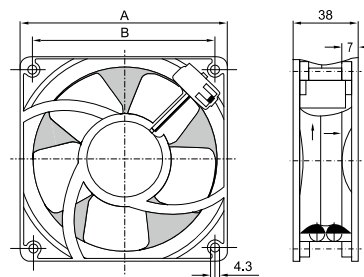
For subracks and microcomputer systems.

#### Supply includes:

1 fan without connection cable.

#### ! Also required:

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



### AC fans

Dimensions			Bearing	Rated voltage V/Hz	Power watts	Noise level dB (A)	Temperature range °C	Volume flow m³/h	Model No. RP
风扇 mm	A mm	B mm							
80	79,5	71,5	Ball bearing	115/60	11,0	42	-40 ~ +95	57	<b>3686.645</b>
80	79,5	71,5	Ball bearing	230/50	12,0	37	-40 ~ +90	48	<b>3686.646</b>
120	119,0	105,0	Ball bearing	115/60	18,0	51	-40 ~ +90	180	<b>3686.643</b>
120	119,0	105,0	Ball bearing	230/50	19,0	47	-40 ~ +85	160	<b>3686.644</b>

### Connection cable

Cable length mm	Packs of	Model No. RP
610	1	<b>3686.658</b>
1000	1	<b>3686.659</b>



### DC fans

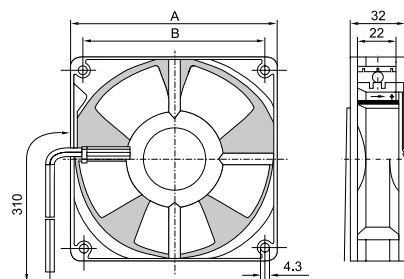
Optionally available with temperature-dependent speed control via additional temperature sensor.

#### Supply includes:

1 fan with connection cable (310 mm).

#### ! Also required:

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



### 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 ~ +65	65	48	<b>3686.649</b>
80	79.5	71.5	Ball bearing	24	21.6 - 26.4	2.4	36	-20 ~ +65	65	54	<b>3686.650</b>
120	119.0	104.8	Ball bearing	12	8.0 - 12.6	5.4	45	-20 ~ +65	65	170	<b>3686.647</b>
120	119.0	104.8	Ball bearing	24	21.0 - 27.0	5.4	45	-20 ~ +65	65	170	<b>3686.648</b>

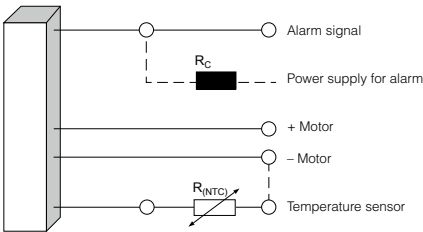
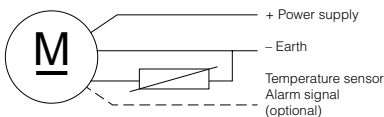
### DC fan without speed control and without alarm signal

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 ~ +75	75	48	<b>3687.612</b>
80	79.5	71.5	Ball bearing	24	12.0 - 28.0	2.1	34	-20 ~ +75	75	48	<b>3687.613</b>
120	119.0	104.8	Ball bearing	12	6.0 - 15.0	2.6	39	-20 ~ +75	75	140	<b>3687.614</b>
120	119.0	104.8	Ball bearing	24	12.0 - 28.0	2.6	39	-20 ~ +75	75	140	<b>3687.615</b>

Temperature sensor

For DC fans 12/24 V with speed control.

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



Finger guard

For AC fans and DC fans.

**Material:**  
Polyamide, self-extinguishing to UL 94-V0

**Colour:**  
Black

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

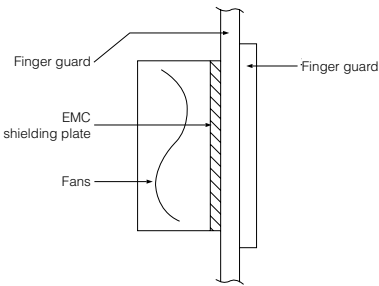


EMC shielding plate

For AC fans and DC fans.

**Material:**  
1 mm aluminium, clear-chromated

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



Air block panel

for unused slots  
see page 45.

# Subrack accessories

## Front panels, handles



### Flat front panels

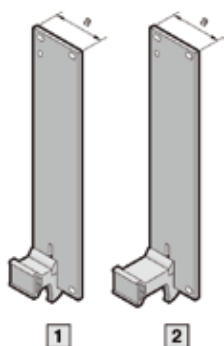
with type I or II extractor handle  
Complete modular systems

#### Material:

Front panel: 2.5 mm aluminium, anodised  
Handle: Plastic, black

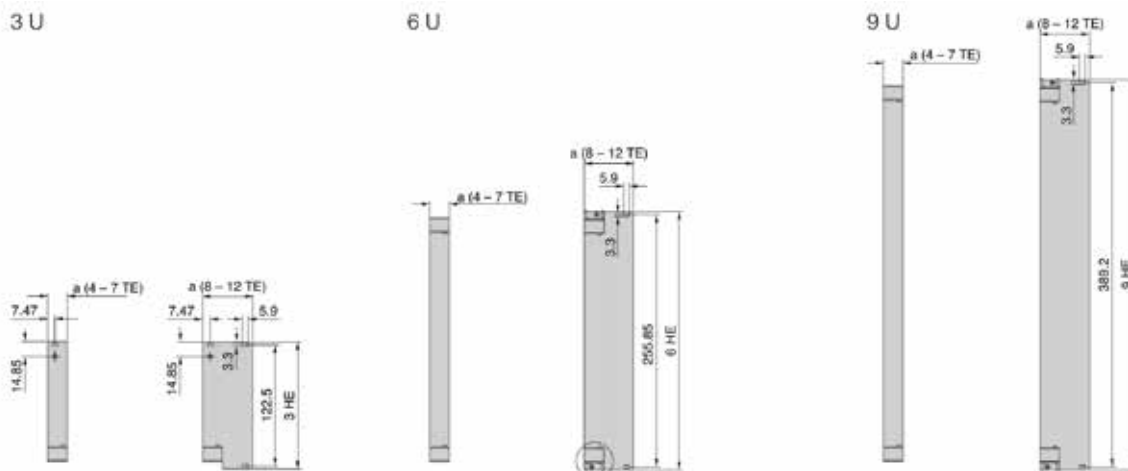
#### Supply includes:

1 front panel,  
2 handles (1 with 3 U),  
1 set of assembly parts,  
1 PCB holder (for 3 U).



U	TE	a mm	Model No. RP	
			1 Type I	2 Type II
3	4	20.0	<b>3684.330</b>	<b>3684.358</b>
3	5	25.1	<b>3684.331</b>	<b>3684.359</b>
3	6	30.2	<b>3684.332</b>	<b>3684.360</b>
3	7	35.3	<b>3684.333</b>	<b>3684.361</b>
3	8	40.3	<b>3684.334</b>	<b>3684.362</b>
3	10	50.5	<b>3684.335</b>	<b>3684.363</b>
3	12	60.7	<b>3684.336</b>	<b>3684.364</b>
6	4	20.0	<b>3684.337</b>	<b>3684.365</b>
6	5	25.1	<b>3684.338</b>	<b>3684.366</b>
6	6	30.2	<b>3684.339</b>	<b>3684.367</b>
6	7	35.3	<b>3684.340</b>	<b>3684.368</b>
6	8	40.3	<b>3684.341</b>	<b>3684.369</b>
6	10	50.5	<b>3684.342</b>	<b>3684.370</b>
6	12	60.7	<b>3684.343</b>	<b>3684.371</b>
9	4	20.0	-	<b>3684.372</b>
9	8	40.3	-	<b>3684.373</b>

### Front panels with type I, II or IV, IVs, VII extractor handles

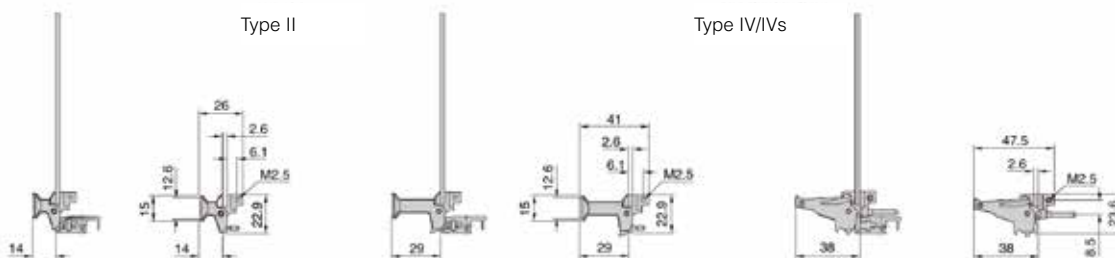


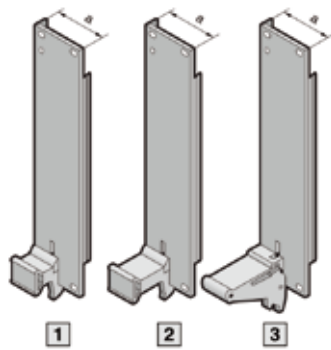
#### Extractor hand

Type I

Type II

Type IV/IVs





### U-channel front panels

with type I, II extractor handle or type IV injector/extractor handle  
Complete modular systems

#### Material:

Front panel: Extruded aluminium section, clear-chromated, or aluminium film  
Handle: Plastic, black

#### Supply includes:

1 front panel,  
2 handles (1 with 3 U),  
1 EMC gasket, vertical, version 1  
1 set of assembly parts,  
1 PCB holder (for 3 U).



#### Note:

Detailed description of the laminated front panels

U	TE	a mm	Model No. RP		
			1 Type I	2 Type II	3 Type IV <sup>1)</sup>
3	4	20.0	3684.344	3684.374	3684.413
3	5	25.1	3684.345	3684.375	3684.414
3	6	30.2	3684.346	3684.376	3684.415
3	7	35.3	3684.347	3684.377	3684.416
3	8	40.3	3684.348	3684.378	3684.417
3	10	50.5	3684.349	3684.379	3684.418
3	12	60.7	3684.350	3684.380	3684.419
6	4	20.0	3684.351	3684.381	3684.420
6	5	25.1	3684.352	3684.382	3684.421
6	6	30.2	3684.353	3684.383	3684.422
6	7	35.3	3684.354	3684.384	3684.423
6	8	40.3	3684.355	3684.385	3684.424
6	10	50.5	3684.356	3684.386	3684.425
6	12	60.7	3684.357	3684.387	3684.426
9	4	20.0	-	3684.388	3684.427
9	5	25.1	-	-	3684.428
9	6	30.2	-	-	3684.429
9	7	35.3	-	-	3684.430
9	8	40.3	-	3684.389	3684.431
9	10	50.5	-	-	3684.432
9	12	60.7	-	-	3684.433

<sup>1)</sup> Can only be inserted in conjunction with front horizontal rails, with 10 mm roof (B), see page 31.



### Flat front panels

for type I, II, IV, IVs or VII handles

#### Material:

2.5 mm aluminium, anodised

TE	a mm	Model No. RP		
		3 U	6 U	9 U
4	20.0	3685.500	3685.508	3685.516
5	25.1	3685.501	3685.509	3685.517
6	30.2	3685.502	3685.510	3685.518
7	35.3	3685.503	3685.511	3685.519
8	40.3	3685.504	3685.512	3685.520
10	50.5	3685.505	3685.513	3685.521
12	60.7	3685.506	3685.514	3685.522

#### ! Also required:

From front panel widths of 4 HP (at 3 U) and 7 HP (at 6 U):

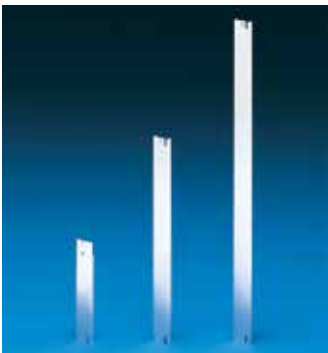
Collar screws and plastic collars,  
packs of 100 sets, Model No. RP 3658.160,  
see page 78.

For 3 U front panels:

PCB holder set, see page 70.

# Subrack accessories

## Front panels, handles



### U-channel front panels

for type I, II, IV, IVs or VII handles

**Material:**  
2.5 mm extruded aluminium section,  
clear-chromated or with aluminium film.



**Note:**  
Detailed description of the laminated front panels

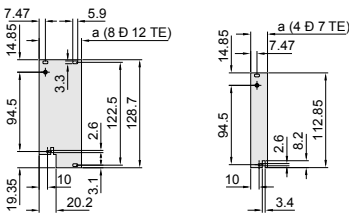
TE	a mm	Model No. RP		
		3 U	6 U	9 U
4	20.0	3685.524	3685.532	3685.540
5	25.1	3685.525	3685.533	3685.541
6	30.2	3685.526	3685.534	3685.542
7	35.3	3685.527	3685.535	3685.543
8	40.3	3685.528	3685.536	3685.544
10	50.5	3685.529	3685.537	3685.545
12	60.7	3685.530	3685.538	3685.546

**! Also required:**

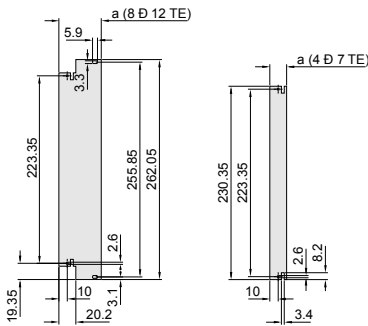
EMC gaskets, see page 38.  
From front panel width 4 HP (for 3 U) and 8 HP  
(for 6 U):  
Slotted centering screws, packs of 100, Model  
No. RP 3687.050, see page 79.  
Posidrive centering screws,  
packs of 100, Model No. RP 3687.051,  
see page 79.  
For 3 U front panels:  
PCB holder set, see page 70.

### Front panels for type I, II, IV, IVs or VII handles

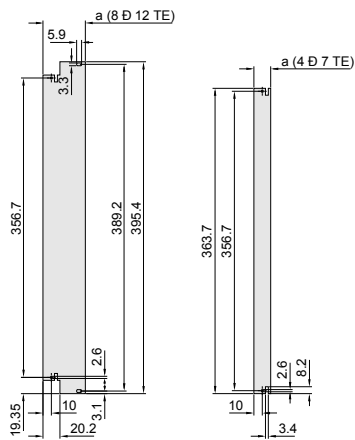
3 U



6 U



9 U



### Flat front panels



### U-channel front panels





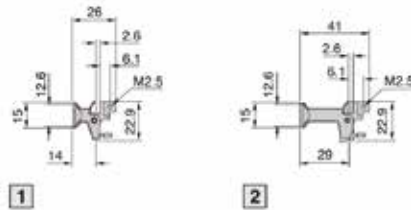
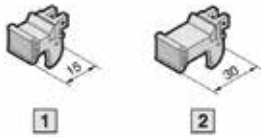
### Extractor handle type I and type II

- Suitable for flat front panels/U-channel front panels
- With removal function
- May be used in combination with horizontal rails with 10 mm extension.

**Supply includes:**  
Assembly parts.

**Note:**

With 3 U, only one extractor handle is required.



#### 1 Type I extractor handle, 15 mm

Colour	Packs of	Model No. RP
Grey	1	3685.587
Black	1	3685.589

#### 2 Type II extractor handle, 30 mm

Colour	Packs of	Model No. RP
Grey	1	3685.588
Black	1	3685.590

#### + Accessories:

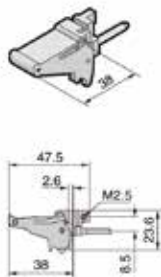
Identification strips for extractor handles



### Injector/extractor handle type IV

Handles with micro-switch  
For inserting and removing connectors with a large number of pins.

- Insertion/removal function
- Integral microswitch for "live insertion" applications
- Self-activation of the micro-switch during insertion/removal
- ESD pin to dissipate static charges before contacting the connectors and for precise positioning of the board type plug-in unit
- Keyable
- Integral PCB attachment
- Self-locking
- Bayable



#### Handle without micro-switch

Description see above. Micro-switch, may be retrofitted.

**Supply includes:**

1 handle without or with micro-switch, assembly parts.

**Note:**

- Insertion only when used with front horizontal rails, with 10 mm extension (B, B1, B2),
- With 3 U front panels, only one extractor handle is required.

#### Handles with micro-switch

Colour	Installation	Packs of	Model No. RP
Grey	Top	1	3686.905
Grey	Bottom	1	3686.904
Black	Top	1	3686.907
Black	Bottom	1	3686.906

#### Handle without micro-switch

Colour	Installation	Packs of	Model No. RP
Grey	Top	1	3686.901
Grey	Bottom	1	3686.900
Black	Top	1	3686.903
Black	Bottom	1	3686.902

#### Enhanced handle with no micro-switch

Colour	Installation	Packs of	Model No. RP
Black	Top	1	9922.071
Black	Bottom	1	9922.072

#### + Accessories:

Keys

Keyable guide rails

Micro-switches

Connector pin for baying

#### ! Also required:

Posidrive centering screws, packs of 100, Model No. RP 3687.051, see page 79.



### Injector/extractor handle type IV

8 HP, bayed

Suitable for front panels 4 HP that must be connected to another mechanically.

**Supply includes:**

2 bayed handles, fully assembled.

Colour	Installation	Packs of	Model No. RP
Black	Bottom	1	3686.908
Black	Top	1	3686.909

#### + Accessories:

Connector pin for baying

# Subrack accessories

## Front panels, handles



### Identification strips

for type I, II extractor handle and  
type IV injector/extractor handle  
Width 4 HP

Packs of	Model No. RP
100	3684.328

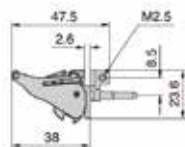


### Injector/extractor handle type IVs

#### with push-button

For inserting and removing connectors with a  
large number of pins. A metal insert ensures  
reliable functioning, even at forces of up to 815 N.

- Insertion/removal function
- Push-button for locking and unlocking the  
board type plug-in unit (cannot be extracted in  
the locked position)
- Optionally with  $\frac{1}{2}$  HP offset PCB attachment,  
e. g. for component mounting on both sides
- Optional integral micro-switch for "live  
insertion" applications
- ESD pin to dissipate static charges before  
contacting the connectors and for precise  
positioning of the board type plug-in unit
- Keyable
- Integral PCB attachment
- Bayable



#### Material:

Plastic/metal

#### Supply includes:

Assembly parts.

#### Note:

- Insertion only when used with front horizontal  
rails, with 10 mm extension (B),
- With 3 U front panels, only one extractor handle  
is required.

### Handles without offset

Colour	Installation	Packs of	Model No. RP
Black	Top	1	3688.770
Black	Bottom	1	3688.771
Grey	Top	1	9922.018
Grey	Bottom	1	9922.019

### Handles with $\frac{1}{2}$ HP offset

Installation	Packs of	Model No. RP
Top	1	3688.772
Bottom	1	3688.773

### + Accessories:

Keys

Keyable guide rails

Keyable guide rails with  $\frac{1}{2}$  HP offset

Micro-switches

Connector pin for baying

### ! Also required:

Posidrive centering screws,  
packs of 100, Model No. RP 3687.051,  
see page 79.



### Connection pin

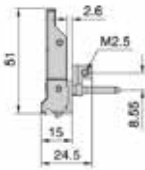
for injector/extractor handles,  
types IV, IVs and VII

The connection pin can be used to connect  
injector/extractor handles, types IV, IVs and VII.

#### Material:

Steel

Packs of	Model No. RP
20	3685.319



### Injector/extractor handle type VII

#### Plastic (telecom)

For inserting and removing connectors with a large number of pins. This handle was specifically designed for use in telecom applications.

- Insertion/removal function
- Optionally with 1/2 HP offset PCB attachment, e. g. for component mounting on both sides
- Minimum front space requirements, due to folduphandle
- Keyable
- Optional integral micro-switch for "live insertion" applications
- ESD pin to dissipate static charges prior to making contact with the connectors and for precise positioning of the board type plug-in unit
- Large labelling area on the front

#### Material:

Plastic

#### Supply includes:

Assembly parts.

#### Note:

Insertion only when used with front horizontal rails, with 10 mm extension (B),

#### Handles without offset

Installation	Packs of	Model No. RP
Top	1	<b>3688.784</b>
Bottom	1	<b>3688.785</b>

#### Handles with 1/2 HP offset

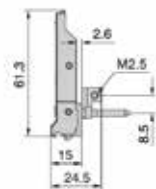
Installation	Packs of	Model No. RP
Top	1	<b>3688.780</b>
Bottom	1	<b>3688.781</b>

#### ⊕ Accessories:

Keys  
Keyable guide rails  
Keyable guide rails with 1/2 HP offset  
Micro-switches  
Connector pin for buying

#### ! Also required:

Posidrive centering screws, packs of 100, Model No. RP 3687.051, see page 79.



### Injector/extractor handle type VII

#### Metal (telecom)

For inserting and removing PCBs with a high connector pin-count (up to 815 N). This handle was specifically designed for use in telecom applications.

- Insertion/removal function
- Optionally with 1/2 HP offset PCB attachment, e. g. for component mounting on both sides
- Minimum front space requirements, due to foldup handle
- Codeable
- Optional integral micro-switch for "live insertion" applications
- ESD pin to dissipate static charges prior to making contact with the connectors and for precise positioning of the board type plug-in unit
- Metal design for use in aggressive atmospheres

#### Material:

Die-cast zinc

#### Supply includes:

Assembly parts.

#### Note:

Insertion only when used with front horizontal rails, with 10 mm extension (B), see page 31.

#### Handles without offset

Installation	Packs of	Model No. RP
Top	1	<b>3688.790</b>
Bottom	1	<b>3688.791</b>

#### Handles with 1/2 HP offset

Installation	Packs of	Model No. RP
Top	1	<b>3688.786</b>
Bottom	1	<b>3688.787</b>

#### ⊕ Accessories:

Keys  
Keyable guide rails  
Keyable guide rails with 1/2 HP offset  
Micro-switches  
Connector pin for buying

#### ! Also required:

Posidrive centering screws, packs of 100, Model No. RP 3687.051, see page 79.



### Micro-switch

For "live insertion" applications. Installation in injector/extractor handles, types IV, IVs and VII. May also be retrofitted.

#### Technical specifications:

Switching load: 50 mA 30 V DC  
Service life:  
At nominal load: 30.000  
mechanical: 50.000

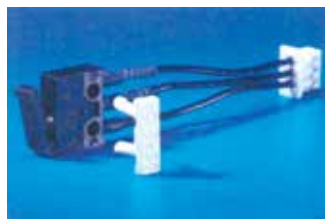
Packs of	Model No. RP
10	<b>3684.410</b>

#### ! Also required:

Micro-switch mounting clip, see page 66.

# Subrack accessories

## Front panels, handles



- 1 Lever not depressed
- 2 Lever hinge
- 3 Lever contact point

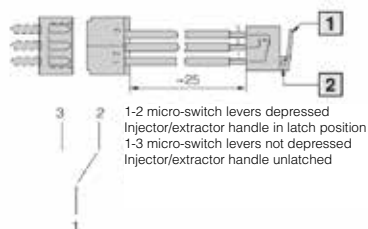
### Micro-switch

#### with cable and connector

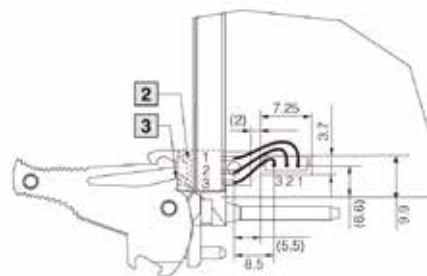
For "live insertion" applications.  
Installation in injector/extractor handles,  
types IV, IVs and VII.

#### Supply includes:

Micro-switch, connector type Molex  
51021-0300,  
mounting clips, 3 cables,  
25 mm x #32 AWG,  
fully assembled.



Packs of	Model No. RP
1	3686.536



### Micro-switch mounting clip

For mounting micro-switches in handles.

Packs of	Model No. RP
10	3684.411



### Plastic covers

#### for PCBs

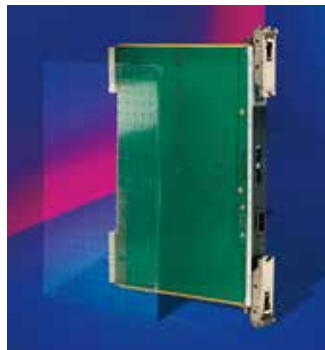
For mechanical protection of the component  
side and of the EMC gaskets.  
Attachment holes as per CPCI or VME-specifi-  
cations. Optionally available as perforated or  
solid version.

#### Material:

0.3 mm plastic, anti-static

<sup>1)</sup> 0.5 mm plastic, anti-static UL 94-V0

<sup>2)</sup> 0.5 mm plastic, anti-static UL 94-V0



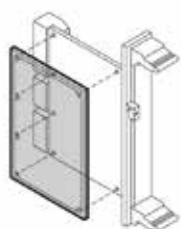
For PCBs	Packs of	Model No. RP			
		for CPCI			for VME
		Perforated <sup>1)</sup>	Solid <sup>1)</sup>	Solid	Solid
3 U x 160 mm	1	3687.932	3686.572	3685.966	3685.626
	5	-	-	-	3685.279
3 U x 220 mm	1	-	-	-	3685.805
	5	-	-	-	3685.266
6 U x 80 mm	1	3687.933	3686.573	3686.037	3685.146
6 U x 160 mm	1	3687.934	3686.574	3685.967	3685.627
	5	-	-	-	3685.280
6 U x 220 mm	1	-	-	-	3685.824
	5	-	-	-	3685.000

#### ! Also required:

Required for mounting the perforated CPCI covers:

#### Mounting clips

Packs of	Model No. RP
100	3687.955





### Flat front panels

with type V handle and PCB holder  
Complete modular systems

#### Material:

Front panel: 2.5 mm aluminium, natural-anodised

Handle: Aluminium, natural-anodised

PCB holder: Polycarbonate

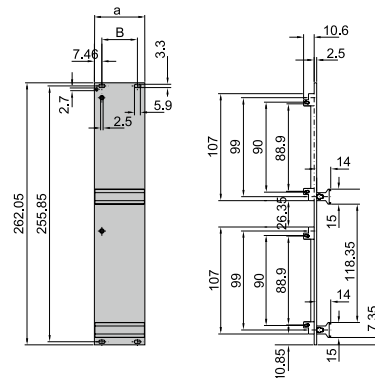
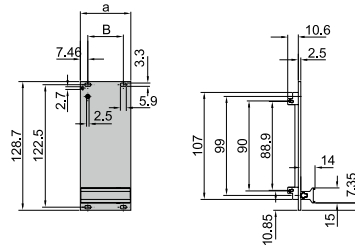
#### Supply includes:

1 front panel,  
1 handle (2 with 6 U),  
1 PCB holder (2 with 6 U),  
assembly parts.

TE	a mm	B mm	Model No. RP	
			3 U H = 128.7	6 U H = 262.05
3	14.9	-	<b>3652.000</b>	<b>3652.200</b>
4	20.0	-	<b>3652.010</b>	<b>3652.210</b>
5	25.1	-	<b>3652.020</b>	<b>3652.220</b>
6	30.1	-	<b>3652.030</b>	<b>3652.230</b>
7	35.2	-	<b>3652.040</b>	<b>3652.240</b>
8	40.3	-	<b>3652.050</b>	<b>3652.250</b>
10	50.5	35.6	<b>3652.060</b>	<b>3652.260</b>
12	60.6	45.7	<b>3652.070</b>	<b>3652.270</b>
14	70.8	55.9	<b>3652.080</b>	-

### Accessories:

Identification strips for handles



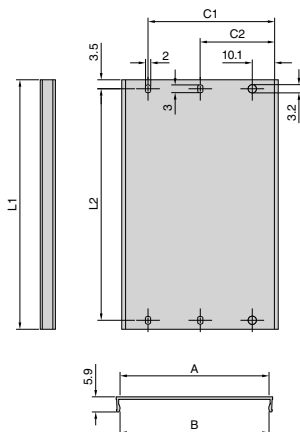
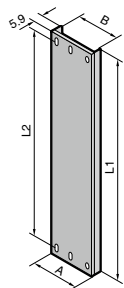
### Front panels for type III extractor handle

#### Material:

1.0 mm extruded aluminium section

#### Surface finish:

Untreated



HP	A mm	B mm	C1 mm	C2 mm	Model No. RP		
					3 U6	U	9 U
3	15.20	12.20	—	—	<b>3685.548</b>	<b>3685.555-</b>	
4	20.22	17.20	—	—	<b>3685.549</b>	<b>3685.556</b>	<b>3685.562</b>
5	25.28	22.28	—	22.68	<b>3685.550</b>	<b>3685.557</b>	<b>3685.563</b>
6	30.36	27.36	—	25.22	<b>3685.551</b>	<b>3685.558</b>	<b>3685.564</b>
8	40.52	37.52	—	30.30	<b>3685.552</b>	<b>3685.559</b>	<b>3685.566</b>
10	50.68	47.68	40.46	25.22	<b>3685.553</b>	<b>3685.560</b>	<b>3685.567</b>
12	60.84	57.84	50.62	30.30	<b>3685.554</b>	<b>3685.561</b>	<b>3685.568</b>
L1 mm					97.00	230.35	363.70
L2 mm					90.00	223.35	356.70

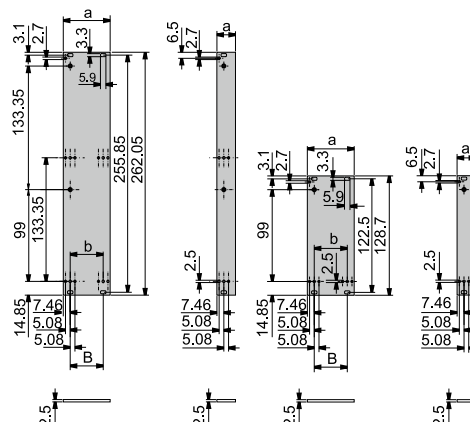
# Subrack accessories

## Front panels, handles



### Flat front panels for type V and VI handle

**Material:**  
2.5 mm aluminium, anodised



TE	a mm	B mm	b mm	Packs of	Model No. RP	
					3 U	6 U
3	14.9	-	-	1	<b>3685.569</b>	<b>3685.578</b>
4	20.0	-	-	1	<b>3685.570</b>	<b>3685.579</b>
5	25.1	-	-	1	<b>3685.571</b>	<b>3685.580</b>
6	30.2	-	15.2	1	<b>3685.572</b>	<b>3685.581</b>
7	35.2	-	20.3	1	<b>3685.573</b>	<b>3685.582</b>
8	40.3	-	25.4	1	<b>3685.574</b>	<b>3685.583</b>
10	50.5	35.6	35.6	1	<b>3685.575</b>	<b>3685.584</b>
12	60.6	45.7	45.7	1	<b>3685.576</b>	<b>3685.585</b>
14	70.8	55.9	55.9	1	<b>3685.577</b>	<b>3685.586</b>

#### ! Also required:

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

#### + Accessories:

Handles type V  
Handles type VI



### U-channel front panels for type V and VI handle

**Material:**  
2.5 mm aluminium, clear-chromated

**Supply includes:**  
1 vertical EMC gasket, version 1.



TE	a mm	B mm	Packs of	Model No. RP	
				3 U	6 U
4	20	-	1	<b>3687.655</b>	<b>3687.660</b>
6	30.2	-	1	<b>3687.656</b>	<b>3687.661</b>
8	40.3	-	1	<b>3687.657</b>	<b>3687.662</b>
10	50.5	35.6	1	<b>3687.658</b>	<b>3687.663</b>
12	60.6	45.7	1	<b>3687.659</b>	<b>3687.664</b>

#### ! Also required:

Slotted centering screws,  
packs of 100, Model No. RP 3687.050

#### + Accessories:

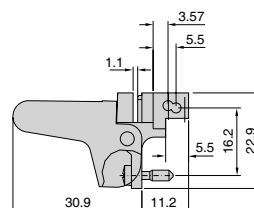
Handles type V  
Handles type VI



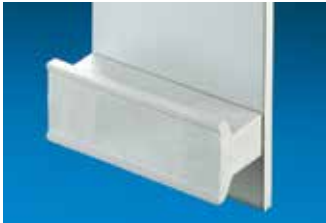
### Type III handle, extractor

**Material:**  
Fibreglass-reinforced polycarbonate  
Base section nickel-plated ABS

**Colour:**  
Grey



HP	Packs of	Model No. RP
3	1	<b>3685.591</b>
4	1	<b>3685.592</b>



### Type V handle

**Plastic**

**Material:**  
Plastic

TE	Colour	Packs of	Model No. RP
3	Grey	1	3685.490
4	Grey	1	3685.491
8	Grey	1	3685.492
12	Grey	1	3685.493
20	Grey	1	3685.494
3	Black	1	3685.495
4	Black	1	3685.496
8	Black	1	3685.497
12	Black	1	3685.498
20	Black	1	3685.499

#### ! Also required:

Mounting kit,  
packs of 1 set, Model No. RP 3687.519

### Identification strips

**for type V handle, plastic**  
self-adhesive

TE	Packs of	Model No. RP
24	1	3687.693



### Type V handle

**Aluminium**

**Material:**  
Aluminium, anodised.



TE	Model No. RP	TE	Model No. RP
3	3685.595	12	3685.602
4	3685.596	14	3685.603
5	3685.597	21	3685.761
6	3685.598	28	3685.762
7	3685.599	42	3685.763
8	3685.600	1 m	3685.604
10	3685.601		

#### ! Also required:

Mounting kit,  
packs of 1 set, Model No. RP 3687.146,  
(from 6 HP 2 packs required)



### Identification strips

**for type V handle, aluminium**  
For individual labelling of the handles.

**Material:**  
0.5 mm aluminium, anodised

TE	Packs of	Model No. RP
3	1	3685.746
4	1	3685.747
5	1	3685.748
6	1	3685.749
7	1	3685.750
8	1	3685.751
10	1	3685.752
12	1	3685.753
14	1	3685.754
21	1	3685.755
28	1	3685.756
42	1	3685.757
1 m	1	3685.758
0.5 m	5	3606.300

# Subrack accessories

## Front panels, handles



### Type VI handle

#### Aluminium

#### Material:

Aluminium, anodised.



TE	Model No. RP	TE	Model No. RP
3	3685.605	12	3685.612
4	3685.606	14	3685.613
5	3685.607	21	3685.614
6	3685.608	28	3685.615
7	3685.609	42	3685.616
8	3685.610	84	3685.617
10	3685.611	1 m	3685.618

#### ! Also required:

Mounting kit,  
packs of 1 set, Model No. RP 3687.146,  
(from 6 HP 2 packs required)



### PCB holder kit

For attaching the PCB to front panels with handle types I, II, IV, IVs, VII.

#### Material:

Die-cast

#### Note:

Only required at the top with 3 U front panels.

Packs of	Model No. RP
10	3685.198
1	3685.619

#### ! Also required:

For attaching the PCB to the PCB holder:  
Pan-head screws,  
packs of 100, Model No. RP 3654.320,  
For attaching the front panel to the PCB holder:  
Pan-head screws,  
packs of 100, Model No. RP 3685.282,



### PCB holder

#### For front panels

For attaching PCBs to front panels (handle type V, VI).

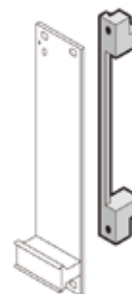
#### Material:

Noryl

#### Supply includes:

Assembly parts.

Packs of	Model No. RP
10	3606.330



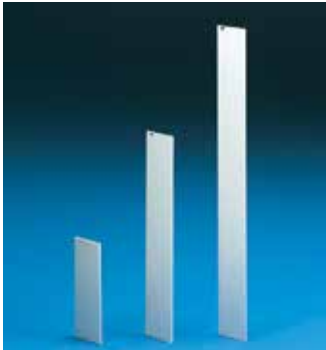
### Covers

#### for panel end spaces

#### Material:

Fibreglass-reinforced polycarbonate

HP	Width mm	Packs of	Model No. RP
1	5	1	3687.529
2	10.08	1	3687.530
4	20.24	1	3687.531

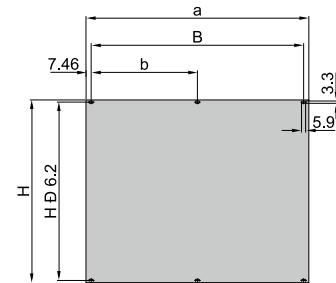


### Front panels

as filler panel, flat

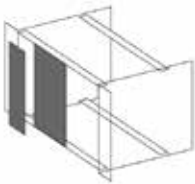
#### Material:

2.5 mm aluminium, natural-anodised.



#### ! Also required:

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



TE	a mm	B mm	b mm	Model No. RP						
				1 U H = 39.8	2 U H = 84.25	3 U H = 128.7	4 U H = 173.15	6 U H = 262.05	7 U H = 306.5	9 U H = 395.4
2	9.8	-	-	-	-	3684.889	-	3684.911	-	3684.738
3	14.9	-	-	-	-	3684.890	-	3684.912	-	-
4	20.0	-	-	-	-	3684.891	-	3684.913	-	3684.739
5	25.1	-	-	-	-	3684.892	-	3684.914	-	-
6	30.1	-	-	-	-	3684.893	-	3684.915	-	-
7	35.2	-	-	-	-	3684.894	-	3684.916	-	-
8	40.3	-	-	-	-	3684.895	-	3684.917	-	3684.740
10	50.5	35.6	-	-	-	3684.896	-	3684.918	-	-
12	60.6	45.7	-	-	-	3684.897	-	3684.919	-	3684.741
14	70.8	55.9	-	-	-	3684.898	-	3684.920	-	-
20	101.3	86.4	-	-	-	3684.899	-	3684.921	-	-
21	106.4	91.4	-	-	3685.350	3684.900	-	3684.922	-	-
24	121.7	106.7	-	-	3685.429	-	-	-	-	-
27	136.8	121.9	-	-	-	3684.901	-	3684.923	-	-
28	141.9	127.0	-	-	-	3684.902	-	3684.924	-	-
40	202.9	188.0	-	-	-	3684.903	-	3684.976	-	3684.977
42	213.0	198.1	-	3684.885	3684.887	3684.904	3684.908	3684.925	3684.928	3684.742
60	304.5	289.6	-	-	-	3684.905	-	-	-	-
63	319.7	304.8	152.4	-	-	3684.906	3684.909	3684.926	3684.929	-
84	426.4	411.5	203.2	3684.886	3684.888	3684.907	3684.910	3684.927	3684.930	3684.743
85	413.5	411.5	203.2	-	-	3684.744	3684.745	3684.746	3684.747	3684.748

# Subrack accessories

## Front panels, handles



### Front panels

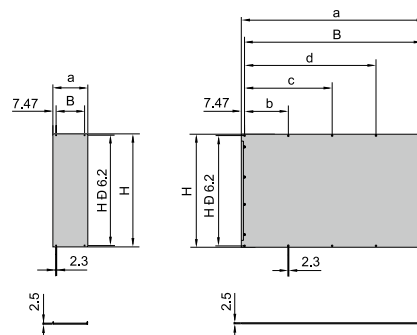
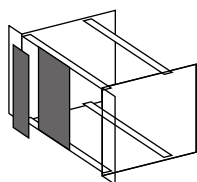
as filler panels, U-shaped

#### Material:

2.5 mm extruded aluminium section,  
clear-chromated or with aluminium film.

#### Supply includes:

1 front panel, one-piece (with 2 – 14 HP version)  
or three-piece (with > 14 HP version),  
1 vertical EMC gasket, version 1,  
1 contact strip (three-piece only)  
1 gasket strip (three-piece only).



#### ! Also required:

Slotted centering screws,  
packs of 100, Model No. RP 3687.050,  
see page 79

TE	a mm	B mm	b mm	c mm	d mm	Model No. RP						
						1 U H = 39.8	2 U H = 84.25	3 U H = 128.7	4 U H = 173.15	6 U H = 262.05	7 U H = 306.5	9 U H = 395.4
2	9.8	-	-	-	-	-	-	<b>3685.177</b>	-	<b>3685.185</b>	-	<b>3685.193</b>
3	14.9	-	-	-	-	-	-	<b>3686.138</b>	-	<b>3686.139</b>	-	<b>3686.140</b>
4	20.0	-	-	-	-	-	-	<b>3685.178</b>	-	<b>3685.186</b>	-	<b>3685.194</b>
5	25.1	-	-	-	-	-	-	<b>3685.179</b>	-	<b>3685.187</b>	-	-
6	30.1	-	-	-	-	-	-	<b>3685.180</b>	-	<b>3685.188</b>	-	-
7	35.2	-	-	-	-	-	-	<b>3685.181</b>	-	<b>3685.189</b>	-	-
8	40.3	25.4	-	-	-	-	-	<b>3685.182</b>	-	<b>3685.190</b>	-	<b>3685.195</b>
10	50.5	35.6	-	-	-	-	-	<b>3685.183</b>	-	<b>3685.191</b>	-	-
12	60.6	45.7	-	-	-	-	-	<b>3685.184</b>	-	<b>3685.192</b>	-	<b>3685.196</b>
14	70.8	55.9	-	-	-	-	-	<b>3684.249</b>	-	<b>3684.258</b>	-	<b>3684.278</b>
16	80.9	66.0	-	-	-	-	-	<b>3685.348</b>	-	<b>3685.349</b>	-	-
20	101.3	86.4	-	-	-	-	-	<b>3684.250</b>	-	<b>3684.259</b>	-	<b>3684.279</b>
21	106.4	91.4	-	-	-	-	-	<b>3684.272</b>	-	<b>3684.275</b>	-	-
28	141.9	127.0	61.0	-	-	-	-	<b>3684.251</b>	-	<b>3684.26</b>	-	-
40	202.9	188.0	91.5	-	-	-	-	<b>3684.273</b>	-	<b>3684.276</b>	-	<b>3684.280</b>
42	213.0	198.1	96.5	-	-	-	-	<b>3684.252</b>	<b>3684.255</b>	<b>3684.261</b>	<b>3684.264</b>	<b>3684.267</b>
60	304.5	289.6	96.5	193.0	-	-	-	<b>3684.274</b>	-	<b>3684.277</b>	-	-
63	319.7	304.8	101.6	203.2	-	-	-	<b>3684.253</b>	<b>3684.256</b>	<b>3684.262</b>	<b>3684.265</b>	<b>3684.268</b>
84	426.4	411.5	101.6	203.2	304.8	<b>3684.247</b>	<b>3684.248</b>	<b>3684.254</b>	<b>3684.257</b>	<b>3684.263</b>	<b>3684.266</b>	<b>3684.269</b>



### Front panels

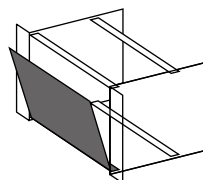
Hinged

#### Material:

2.5 mm aluminium, anodised

#### Supply includes:

1 set of hinges,  
assembly parts.



U	TE	Model No. RP	
		vertically hinged	horizontally hinged
3	42 <sup>1)</sup>	<b>3652.600</b>	<b>3652.500</b>
3	84 <sup>1)</sup>	<b>3652.610</b>	<b>3652.510</b>
3	85	-	<b>3684.291</b>
4	85	-	<b>3684.292</b>
6	42 <sup>1)</sup>	<b>3652.620</b>	<b>3652.520</b>
6	84 <sup>1)</sup>	<b>3652.630</b>	<b>3652.530</b>
6	85	-	<b>3684.293</b>
7	85	-	<b>3684.294</b>
9	85	-	<b>3684.295</b>

#### ! Also required:

<sup>1)</sup> With rear mounting of 42 HP and 84 HP front panels, additional trim sections must be attached at the rear of the subrack.  
Rear trim sections



### Panel

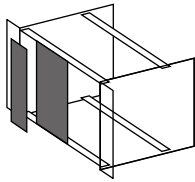
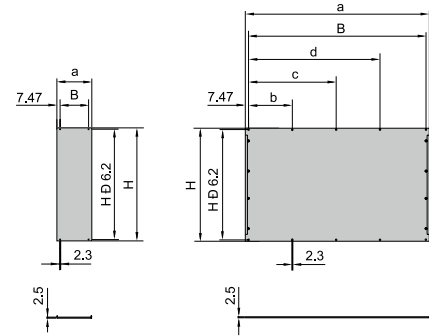
**Type 2 EMC spring is equipped as the cover plate of unused slot position, u type**

#### Material:

2.5 mm extruded aluminium section, clear-chromated or with aluminium film.

#### Supply includes:

1 front panel, one-piece (with 2 – 14 HP version) or three-piece (with > 14 HP version),  
1 vertical EMC gasket, version 2,  
1 contact strip (three-piece only)  
1 gasket strip (three-piece only).



#### ! Also required:

Slotted centering screws,  
packs of 100, Model No. RP 3687.050,  
see page 79

TE	a mm	B mm	b mm	c mm	d mm	Model No. RP						
						1 U H = 39.8	2 U H = 84.25	3 U H = 128.7	4 U H = 173.15	6 U H = 262.05	7 U H = 306.5	9 U H = 395.4
2	9.8	-	-	-	-	-	-	9922.106	-	9922.126	-	9922.146
3	14.9	-	-	-	-	-	-	9922.107	-	9922.127	-	9922.147
4	20.0	-	-	-	-	-	-	9922.108	-	9922.128	-	9922.148
5	25.1	-	-	-	-	-	-	9922.109	-	9922.129	-	-
6	30.1	-	-	-	-	-	-	9922.110	-	9922.130	-	-
7	35.2	-	-	-	-	-	-	9922.111	-	9922.131	-	-
8	40.3	25.4	-	-	-	-	-	9922.112	-	9922.132	-	9922.149
10	50.5	35.6	-	-	-	-	-	9922.113	-	9922.133	-	-
12	60.6	45.7	-	-	-	-	-	9922.114	-	9922.134	-	9922.150
14	70.8	55.9	-	-	-	-	-	9922.287	-	9922.289	-	9922.291
16	80.9	66.0	-	-	-	-	-	9922.288	-	9922.290	-	-
20	101.3	86.4	-	-	-	-	-	9922.115	-	9922.135	-	9922.151
21	106.4	91.4	-	-	-	-	-	9922.116	-	9922.136	-	-
28	141.9	127.0	61.0	-	-	-	-	9922.117	-	9922.137	-	-
40	202.9	188.0	91.5	-	-	-	-	9922.118	-	9922.138	-	9922.152
42	213.0	198.1	96.5	-	-	-	-	9922.119	9922.123	9922.139	9922.143	9922.153
60	304.5	289.6	96.5	193.0	-	-	-	9922.120	-	9922.140	-	-
63	319.7	304.8	101.6	203.2	-	-	-	9922.121	9922.124	9922.141	9922.144	9922.154
84	426.4	411.5	101.6	203.2	304.8	9922.104	9922.105	9922.122	9922.125	9922.142	9922.145	9922.155



### EMC front panels

#### Hinged

#### Material:

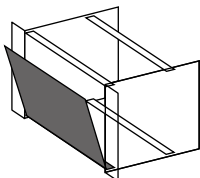
2.5 mm aluminium,  
clear-chromated

#### Supply includes:

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



U	TE	Model No. RP horizontally hinged
3	84	3684.298
4	84	3684.299
6	84	3684.300
7	84	3684.301
9	84	3684.302



# Subrack accessories

## Ripac plug-in module box – type I



### Ripac module box – type I

#### Technical specification:

Mounting depth: 160 and 220 mm

Height: 3 U and 6 U

According to IEC 60 297-3, the rear panel is used to install single connector

#### Materials:

Panel: 2.5 mm aluminum plate, natural anodic oxidation treatment

Rear panel: 2 mm aluminum

Side panel profiles: extrusion aluminum

profile, natural anodic oxidation treatment

Handle: aluminum, natural anodic oxidation treatment

Support of plug-in card: plastic

#### Supply as per the customer's requirements:

- The plug-in module box is processed or printed with letters as per special dimension
- Cassette of EMC plug-in module, EMC panel

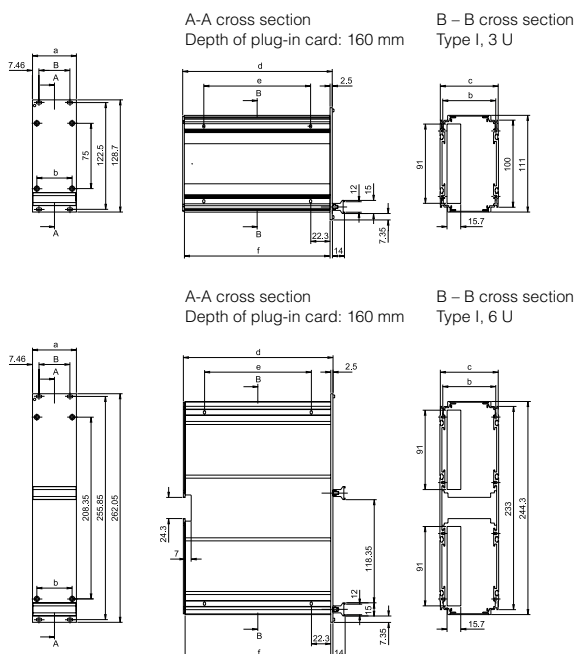
#### Accessory:

Cover plate.

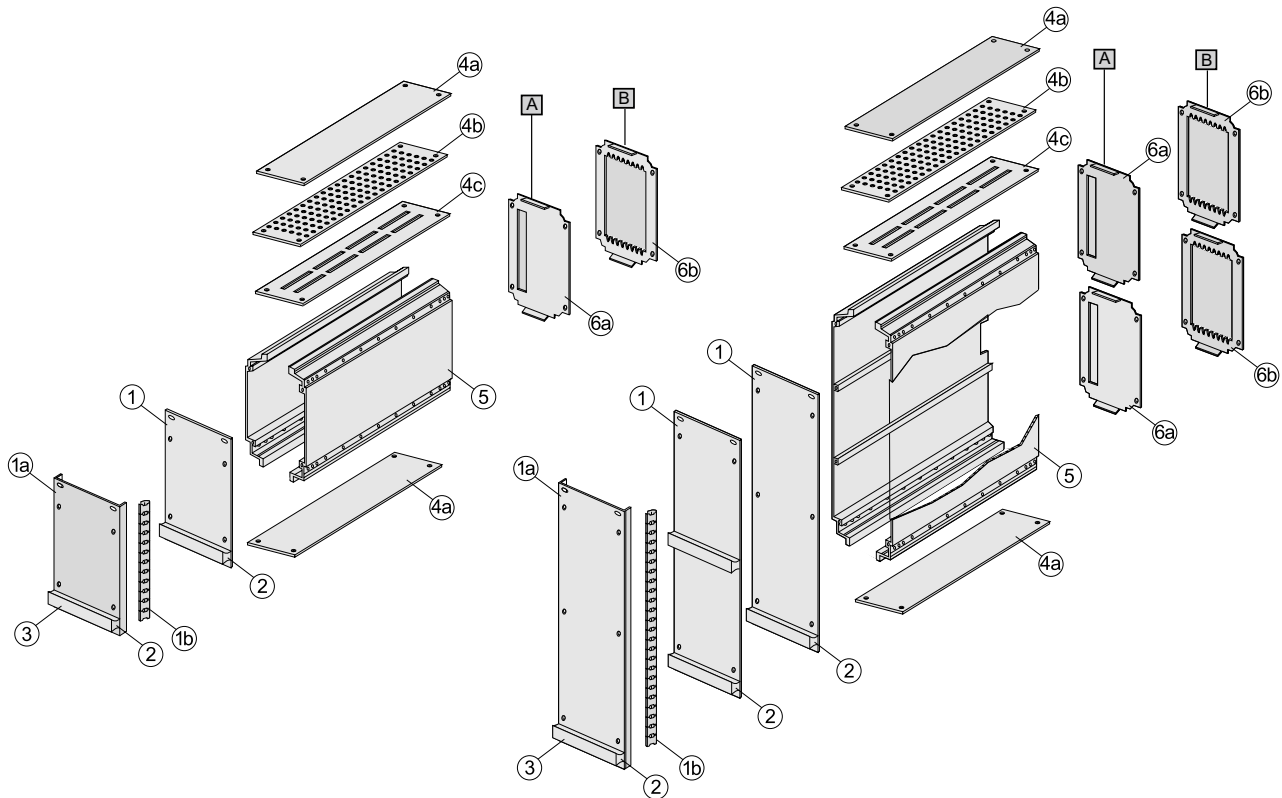
Plug-in card rack.

Parts.

TE	a	B	b	c	C	d	e	f	Model No. RP		
	mm	mm	mm	mm	mm	mm	mm	mm	3 U	3 U	6 U
Depth of plug-in card: 160 mm											
6	32.2	-	20.3	27.5	-	171.5	122	167	3653.000	-	-
8	40.3	-	30.5	36.0	-	171.5	122	167	-	3653.010	-
10	50.5	35.6	40.6	46.2	-	171.5	122	167	-	3653.020	3653.100
12	60.6	45.7	50.8	56.4	-	171.5	122	167	-	3653.030	3653.110
14	70.8	55.9	60.9	66.5	-	171.5	122	167	-	3653.040	3653.120
21	106.3	91.4	96.4	102.0	86.3	171.5	122	167	-	3653.050	3653.130
28	141.9	127.0	132.0	137.6	121.8	171.5	122	167	-	3653.060	3653.140
42	213.1	198.1	203.2	208.8	193.0	171.5	122	167	-	3653.070	3653.150
Depth of plug-in card: 220 mm											
10	50.5	35.6	40.6	46.2	-	231.5	182	227	-	3653.200	3653.300
12	60.6	45.7	50.8	56.4	-	231.5	182	227	-	3653.210	3653.310
14	70.8	55.9	60.9	66.5	-	231.5	182	227	-	3653.220	3653.320
21	106.3	91.4	96.4	102.0	86.3	231.5	182	227	-	3653.230	3653.330
28	141.9	127.0	132.0	137.6	121.8	231.5	182	227	-	3653.240	3653.340
42	213.1	198.1	203.2	208.8	193.0	231.5	182	227	-	3653.250	3653.350
Scope of supply											
Panel									1	1	1
Handle									1	1	2
Side panel									1	2	2
Cover plate, including rear panel									1	-	-
Rear panel									-	1	2
Support of plug-in card									2	2	2
Fixed installation part (assembly part)									1	1	1



## Ripac box type plug-in units – individual components



### Ripac box type plug-in units, types I and II in 3 U and 6 U, individual components

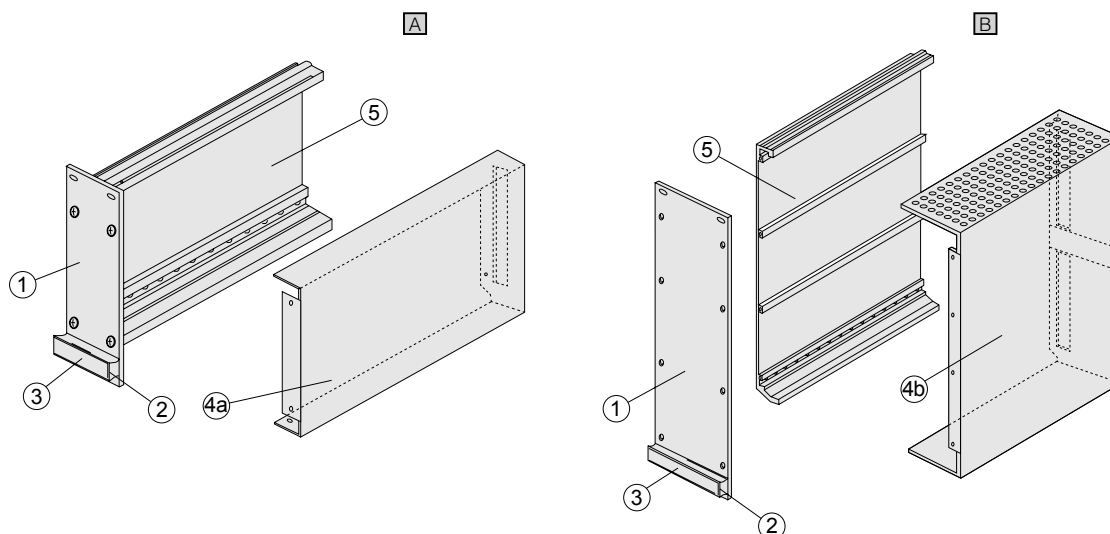
#### Type I for one connector/type II for several connectors

Box type plug-in units, individual components	A Type I	B Type II	Packs of	8 TE	10 TE	12 TE	14 TE	21 TE	28 TE	42 TE	Page
<b>Front panels</b> of 2.5 mm aluminium, anodised surface finish											
1 for 3 U	■	■	1	3685.769	3685.629	3685.630	3685.631	3685.636	3685.637	3685.638	-
1 for 6 U (for 1 handle)	■	■	1	3685.767	3685.633	3685.634	3685.635	3685.639	3685.640	3685.641	-
1 for 6 U (for 2 handles)	■	■	1	-	3687.520	3687.521	3687.522	3687.523	3687.524	3687.525	-
<b>EMC front panels</b> of 2.5 mm aluminium, surface finish clear-chromated (only for use in conjunction with 10 HP box type plug-in unit)											
1a for 3 U/10 HP box type plug-in units	■	■	1	-	-	3687.587	-	-	-	-	-
1a for 6 U/10 HP box type plug-in units	■	■	1	-	-	3687.588	-	-	-	-	-
<b>EMC gaskets, vertical, for front panels</b>											
1b for 3 U	■	■	1	-	-	3686.975	-	-	-	-	38
1b for 6 U	■	■	1	-	-	3686.977	-	-	-	-	38
<b>Handle type V</b>											
2 of aluminium, anodised surface finish	■	■	1	3685.600	3685.601	3685.602	3685.603	3685.761	3685.762	3685.763	69
2 of plastic	■	■	1	3685.492	-	3685.493	-	3685.494	-	-	69
<b>Identification strips</b>											
3 of 0.5 mm aluminium, anodised surface finish	■	■	1	3685.751	3685.752	3685.753	3685.754	3685.755	3685.756	3685.757	69
<b>Covers</b> 4a 4b of 1 mm aluminium, untreated 4c of 1.2 mm sheet steel, painted, RAL 9006 (with vent slots)											
4a unvented, for board depth 160 mm	■	■	1	3687.555	3685.689	3685.690	3685.691	3685.692	3685.693	3685.694	77
4a unvented, for board depth 220 mm	■	■	1	3687.562	3685.701	3685.702	3685.703	3685.704	3685.705	3685.706	77
4b vented, for board depth 160 mm	■	■	1	3687.585	3685.683	3685.684	3685.685	3685.686	3685.687	3685.688	77
4b vented, for board depth 220 mm	■	■	1	-	3685.695	3685.696	3685.697	3685.698	3685.699	3685.700	77
4c vent slots for guide rails, for board depth 160 mm	■	■	1	-	3687.556	3687.557	3687.558	3687.559	3687.560	3687.561	77
4c vent slots for guide rails, for board depth 220 mm	■	■	1	-	3687.563	3687.564	3687.565	3687.566	3687.567	3687.568	77
<b>Side panel</b> of extruded aluminium section, anodised surface finish											
5 3 U, for board depth 160 mm	■	■	1					3685.645			-
5 6 U, for board depth 160 mm	■	■	1					3685.648			-
5 3 U, for board depth 220 mm	■	■	1					3685.646			-
5 6 U, for board depth 220 mm	■	■	1					3685.649			-
<b>Rear panel</b> 6a of 2.0 mm aluminium, untreated 6b of 1.2 mm sheet steel, spray-finished											
6a for 1 connector	■	-	1	3687.536	3685.707	3685.708	3685.709	3685.710	3685.711	3685.712	-
6b for several connectors	-	■	1	-	-	-	-	3687.537	3687.538	3687.539	-

Fixed installation parts for plug-in module box, see page 77.

# Subrack accessories

## Ripac box type plug-in units – individual components



### Ripac box type plug-in units, types V and VI in 3 U and 6 U, individual components

Type V with cover (unvented)/type VI with cover (vented)		A	B	Packs of	6 TE	7 TE	8 TE	10 TE	12 TE	14 TE	Page
Box type plug-in units, individual components		Type V	Type VI								
<b>Front panels</b> of 2.5 mm aluminium, anodised surface finish											
1	for 3 U	■	■	1	3685.768	3685.628	3685.769	3685.629	3685.630	3685.631	-
	for 6 U	■	■	1	3685.766	3685.632	3685.767	3685.633	3685.634	3685.635	-
<b>Handle type V</b>											
2	of aluminium, anodised surface finish	■	■	1	3685.598	3685.599	3685.600	3685.601	3685.602	3685.603	69
	of plastic	■	■	1	-	-	3685.492	-	3685.493	-	69
<b>Identification strips</b> for 3 U											
3	of 0.5 mm aluminium, anodised surface finish	■	■	1	3685.749	3685.750	3685.751	3685.752	3685.753	3685.754	69
<b>Cover</b> of 1 mm aluminium, clear-chromated surface finish											
4a	unvented, 3 U, for board depth 160 mm	■	-	1	3685.774	3685.658	3685.776	3685.659	3685.660	3685.661	-
	unvented, 3 U, for board depth 220 mm	■	-	1	3685.775	3685.674	3685.777	3685.675	3685.676	3685.677	-
	unvented, 6 U, for board depth 160 mm	■	-	1	3685.717	3685.662	3685.764	3685.663	3685.664	3685.665	-
	unvented, 6 U, for board depth 220 mm	■	-	1	3685.718	3685.678	3685.765	3685.679	3685.680	3685.681	-
4b	vented, 3 U, for board depth 160 mm	-	■	1	3685.770	3685.650	3685.772	3685.651	3685.652	3685.653	-
	vented, 3 U, for board depth 220 mm	-	■	1	3685.771	3685.666	3685.773	3685.667	3685.668	3685.669	-
	vented, 6 U, for board depth 160 mm	-	■	1	3685.713	3685.654	3685.715	3685.655	3685.656	3685.657	-
	vented, 6 U, for board depth 220 mm	-	■	1	3685.714	3685.670	3685.716	3685.671	3685.672	3685.673	-
<b>Side panel</b> of extruded aluminium section, anodised surface finish											
5	3 U, for board depth 160 mm	■	■	1			3685.645				-
	6 U, for board depth 160 mm	■	■	1			3685.648				-
	3 U, for board depth 220 mm	■	■	1			3685.646				-
	6 U, for board depth 220 mm	■	■	1			3685.649				-

#### Assembly parts for box type plug-in unit types I, II, V, VI

Description	for installation of:	Packs of	Model No. RP	
Assembly kit for box type plug-in unit I/II, 3 U	Box type plug-in units, type I/II, 3 U	1 set	3687.589	-
Assembly kit for box type plug-in unit I/II, 6 U	Box type plug-in units, type I/II, 6 U	1 set	3687.590	-
Assembly kit for box type plug-in unit type V/VI	Box type plug-in units, type V/VI	1 set	3685.294	-
Assembly kit for box type plug-in unit with EMC front panel	Box type plug-in unit with EMC front panel	1 set	3687.591	-
Assembly kit for plastic handles	Plastic handles on box type plug-in units	1 set	3687.519	78

For more screws

## Ripac box type plug-in units – individual components



### PCB holder

#### for box type plug-in units

For fastening PCBs in box type plug-in units.

#### Material:

PBTP, basic material to UL 94-V0

#### Supply includes:

Assembly parts.

Packs of	Model No. RP
2	3606.321

## Ripac plug-in module box / installation



### Cover plate

#### For type I and type II plug-in module box

#### With no ventilating slot

Plug-in type.

#### Material:

1.0 mm aluminum



#### With ventilating slot

It can be fixed with screw.

It is applicable to the installation of plug-in card rack

#### Material:

1.2 mm steel plate, paint spraying

#### Colour:

RAL 9006

Depth of plug-in module box	Packs of	Model No. RP	
		With ventilating slot <sup>1)</sup>	With no ventilating slot

#### Depth of plug-in card: 160 mm

8 TE	1	-	3687.555
10 TE	1	3687.556	3685.689
12 TE	1	3687.557	3685.690
14 TE	1	3687.558	3685.691
21 TE	1	3687.559	3685.692
28 TE	1	3687.560	3685.693
42 TE	1	3687.561	3685.694

#### Depth of plug-in card: 220 mm

8 TE	1	-	3687.562
10 TE	1	3687.563	3685.701
12 TE	1	3687.564	3685.702
14 TE	1	3687.565	3685.703
21 TE	1	3687.566	3685.704
28 TE	1	3687.567	3685.705
42 TE	1	3687.568	3685.706

#### ! Also required:

1) Fixed screw,

Each package = 100 pc, model: RP 3685.289,



### Cover plate

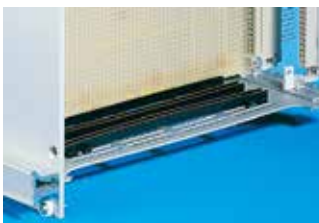
#### For type I and type II plug-in module box

Pug-in type, with ventilation hole (EMC).

#### Material:

1.0 mm aluminum















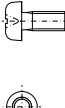



Width of plug-in module box	Packs of	Model No. RP	
		Depth of plug-in card	
		160 mm	220 mm
8 TE	1	3687.585	-
10 TE	1	3685.683	3685.695
12 TE	1	3685.684	3685.696
14 TE	1	3685.685	3685.697
21 TE	1	3685.686	3685.698
28 TE	1	3685.687	3685.699
42 TE	1	3685.688	3685.700






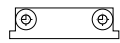

















### Plug-in card rack

For plug-in module box

## Assembly parts

For the attachment of	Description	Dimensions		Model No. RP	Packs of
Front panels to unit side panels	Oval csk-screw ISO 7047-4.8-Z-A2K	M3 x 8		<b>3606.550</b>	100
Rear panels to box-type plug-in units	Panhead screw ISO 7045-4.8-Z-A2K	M3 x 8		<b>3606.560</b>	100
PCB holders (plastic) to front panels, top	Oval csk-screw ISO 7047-4.8-Z-A2K	M2.5 x 10		<b>3606.610</b>	100
– Horizontal rails to side panels – Divider panels to horizontal rails – Horizontal rails to vertical supports	Panhead self-locking screw similar to DIN ISO 7045-8.8-Z-A2K	M4 x 12		3654.300	100
– PCBs to PCB holders (die-cast for 3 U), top – PCBs to extractor handles with 6 U	Panhead posidrive screw ISO 7045-4.8-Z-A2K	M2.5 x 8		<b>3654.320</b>	100
– PCB holder (plastic) to type V/VI handles, bottom – PCBs to PCB holders (plastic) – Backplanes to threaded inserts	Panhead posidrive screw ISO 7045-4.8-Z-A2K	M2.5 x 10		<b>3654.330</b>	100
– Connectors to Z rails – Z rails to horizontal rails – Type V/VI handles to partial front panels, bottom right for 5 HP – Aluminium guide rails to horizontal rails – Mezzanine front panels	Panhead posidrive screw ISO 7045-4.8-Z-A2K	M2.5 x 6		<b>3654.340</b>	100
Aluminium guide rails to horizontal rails (fastening of square nuts)	Retaining cage	M2.5		<b>9901.417</b>	100
Handle type V (plastic) to front panels and box type plug-in units	Mounting kit for type V handle (plastic): Cover black Cover grey Hex nut Screw Screw Square nut DIN 562-04-A2K	M2.5 M2.5 x 16 M2.5 x 12 M2.5		<b>3687.519</b>	1 set
Connectors to PCBs	Panhead posidrive screw ISO 7045-4.8-Z-A2K	M2.5 x 12		<b>3654.350</b>	100
Guide rails (plastic) to horizontal rails	Screw for plastic WN 1413	M2.5 x 6		<b>3654.360</b>	100
– Flat front panels to handles type V, VI – Aluminium guide rails to horizontal rails	Square nut DIN 562-A2K	M2.5		<b>3654.370</b>	100
– Flat front panels to horizontal rails – Trim frame to conceal the front sections of the horizontal mounting kit	Captive screws (cheese-head) and plastic collars	M2.5 x 11		<b>3658.160</b>	100 sets
Flat front panels	Plastic collars			<b>3687.021</b>	100
PCB to type III handle	Screw for plastic WN 1412	M3.0 x 8		<b>3658.190</b>	100
– PCBs to PCB holders (plastic) – PCB holders to front panels, top	Hex nut ISO 4032-8	M2.5		<b>3658.210</b>	100
– Backplanes to threaded inserts – Air partitions to horizontal rails	Mounting kit for backplanes: Panhead posidrive screw ISO 7045-4.8-Z-A2K Washer PE, natural DIN 125	M2.5 x 6  2.7		<b>3684.019</b>	100
– Covers to mounting blocks – EMC contact strips	Flat csk-screw ISO 7046-1-4.8-Z-A2K	M3 x 6		<b>3684.233</b>	100
Covers to side panels	Mounting block			<b>3684.234</b>	10
Type V/VI handle to front panels	Bracket			<b>3684.435</b>	100
Female connector to PCB attachment	Pop rivet DIN 7340-B-CuZn	2.5 x 0.3 x 10		<b>3684.482</b>	100
Ground contact to keyable guide rails	Fastening screw for ground contact	M3.5 x 12		<b>3684.109</b>	50

## Assembly parts

For the attachment of	Description	Dimensions	Model No. RP	Packs of
Fans to fan mounting plate	Mounting kit for fans:  Flat csk-screw ISO 7046-1-4.8-Z-A2K  Hex nut ISO 4032-8  Serrated washer DIN 6798-A-Fst-A2K	M4 x 12   M4   4.3 	3685.197	1 set
Covers to side panels	Mounting kit for covers: Mounting block  Flat csk-screw ISO 7046-1-4.8-Z-A2K	  M3 x 6 	3685.256	24 set
PCB holders (die-cast) to front panels, top	Oval csk-screw ISO 7047-4.8-Z-A2K	M2.5 x 8 	3685.282	100
– Covers box type plug-in units type I/II	Flat csk-screw ISO 7046-1-4.8-Z-A2K	M2.5 x 5 	3685.289	100
– Contact/spring sections for 3-part front panels	Flat csk-screw ISO 7046-1-4.8-Z-A2K	M2.5 x 6 	3685.290	100
– Handles on front panels for box type plug-in units	Flat csk-screw similar to ISO 7046-1-4.8-Z-A2K	M2.5 x 5 	3686.916	100
Holder (horizontal assembly kit) to horizontal rail	Flat csk-screw similar to ISO 7046-1-4.8-Z-A2K	M2.5 x 8 	3686.917	100
Contact and spring sections on 3-part front panels without countersink	Panhead posidrive screw ISO 7046-4.8-Z-A2K	M2.5 x 5 	3686.924	100
Set back flanges to side panels	Mounting kit for set back flanges:  Panhead self-locking screw similar to DIN ISO 7045-8.8-Z-A2K  Hex nut ISO 4032-8 M4  Washer	M4 x 8   M4   4.3 	3687.015	4 set
Fastening the threaded inserts in horizontal rails	Grub screw ISO 7434-14H	M2.5 x 8 	3687.020	100
– EMC front panels to horizontal rails	Centering screw, slotted	M2.5 x 11 	3687.050	100
– EMC trim frame to conceal the front sections of the horizontal mounting kit	Centering screw, posidrive	M2.5 x 11 	3687.051	100
EMC front panels to horizontal rails	Collar screw, cheese-head, slotted	M2.5 x 11 	3685.097	100
Front panels and rear panels to horizontal rails	Mounting kit for type V/VI handles:  Panhead posidrive screw ISO 7045-4.8-Z-A2K  Bracket  Square nut DIN 562-11H-A2K	M2.5 x 6     M2.5 	3687.146	1 set
Type V/VI handles (aluminium) to front panels				



**Performance**

**Customer  
solution**

**Technical expertise**

EMC, seismic  
resistance,  
environmental  
protection

System  
integration

**Service**

Plan and  
recommendation

Quality  
assurance

Assembly

Delivery  
service

**Products**

**Electronic  
device**

Control  
box  
system

Cabinet  
temperature box  
and machine  
recommendation

Power  
distribution  
assembly  
part

IT solution

Outdoor  
enclosure

**We have system partners with comprehensive technical  
expertise and our business covers all over the world**



## **Instrument cases/system enclosures**

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### Features

Ripac Vario - Module 3U, 4U

Ripac Vario - Module 3U, 4U EMC

Ripac Vario - Module 6U, 7U

Ripac Vario - Module 6U, 7U EMC

Ripac Vario - Module accessories

Rittal RiCase 269.2 mm ( $\frac{1}{2}$  19")

Rittal RiCase 482.6 mm (19")

Rittal RiCase accessories

# Instrument cases/system enclosures

## Features



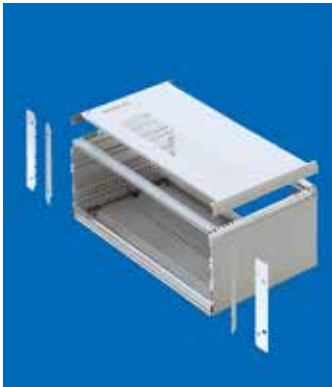
The RiCase instrument case impresses with its modern design and high functionality.

Particular features include the numerous colour variants and the all-metal enclosure construction.

The Ripac Vario-Module system enclosure (desktop or rack-mounted enclosure) is fully compatible with the latest Ripac subrack range, making it ideal for individual configuration and assembly as a microcomputer system.

At just 1 U, the RiBox system enclosure offers a high packaging density in the smallest space.

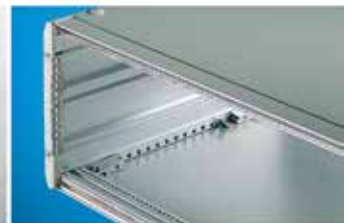
### Ripac Vario-Module



**System enclosure** for direct installation of PCBs or boardtype plug-in units.



**Basic enclosure optionally** for EMC or non-EMC applications and suitable for individual configuration, e. g. with cover plates.



...available for individual configuration with upper and lower cover plates.



The angle plate selectable for installation as desktop enclosure or...

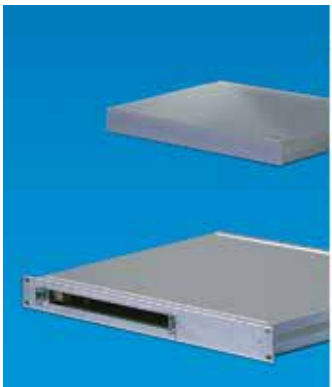


...with **19" flange** for installation as rack-mounted enclosure.

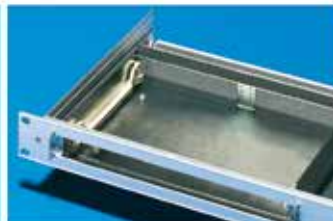


The front door is **made of acrylic glass**, horizontally hinged, for protection of built-in control components.

### RiBox



**System enclosure** for horizontal installation of individual boards, hubs, routers and modems.



**Mounting plate** of sheet steel for individual population.



**Mounting kit** for horizontal installation of boards.

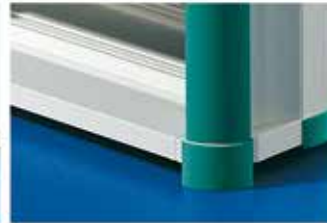


### Rittal RiCase



#### All-metal instrument case for 482.6 mm (19") slide-in equipment

The perfect "safe" for valuable electronics. Extruded aluminium sections and die-cast elements form an extremely robust yet lightweight enclosure.



**Stability and non-slip properties** are guaranteed by 10 mm high corner caps. The distance from the desktop or from the lower enclosure offers excellent ventilation conditions.



Appearance and color add innovative **design feature** and also highlight the high value of internal electronic products.



**Slide-in strips** simply slide into the required profile channel, for the support of any required attachment.



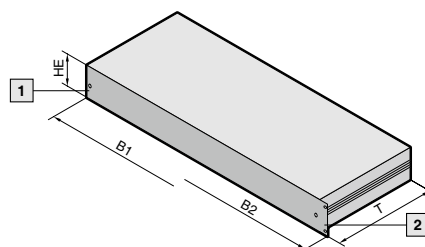
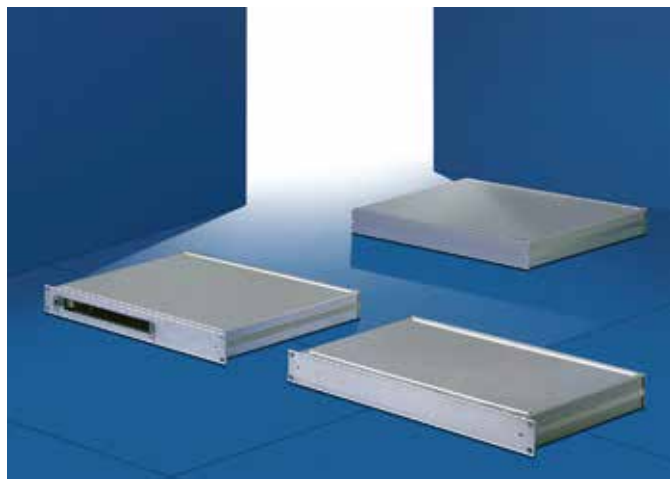
**The natural** convection proceeds through the upper and lower cover plates with holes from bottom to up.



**The rack-mounted fan** provides powerful ventilation.

# Instrument cases/system enclosures

## RiBox system enclosures 1 U



### Technical specifications:

System enclosures 1 U, 150, 200, 250, 300, 350 mm deep Easy to assemble with just 4 screws. Optionally for use as an instrument case or 19" rack-mounted enclosure. Front panel to hold an overlay to conceal the screws. Maximum possible useful interior space. Optional EMC upgrades with additional EMC gaskets. Option of installing 1 VME or CPCI board horizontally.

### Design:

System enclosure 1 U, to IEC 60 297-1. Optionally available for 19" rackmounting in the enclosure or as an instrument case version.

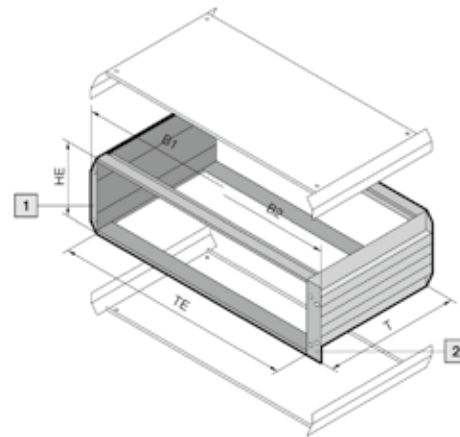
- 1 Equipped as an instrument case**
- 2 Equipped as a rackmounted unit**

### Material/surface finish:

Side panels:  
Extruded aluminium section, untreated  
Base/cover trays:  
Aluminium, clear-chromated  
Front/rear panel:  
Extruded aluminium section, clear-chromated  
Mounting plate:  
Sheet steel

U	1	1	1	1	1	-	-
Width (B1) mm	447	447	447	447	447	-	-
Width (B2) mm	19" (482.6)	19" (482.6)	19" (482.6)	19" (482.6)	19" (482.6)	19" (482.6)	19" (482.6)
Depth (T) mm	150	200	250	300	350	250	350
Model No. RP instrument case	3687.819	3687.820	3687.821	3687.822	3687.823	-	-
Model No. RP rack case	3687.814	3687.815	3687.816	3687.817	3687.818	-	-
Model No. RP rack-mount including mounting kit for double Euroboards	-	-	-	-	-	3684.072	3684.073
<b>Supply includes</b>							
Side panel	2	2	2	2	2	2	2
Font panel	1	1	1	1	1	1	1
Rear panel	1	1	1	1	1	1	1
Base/cover tray	2	2	2	2	2	2	2
Mounting kit	-	-	-	-	-	-	-
<b>Accessories</b>							
EMC set	3684.080	3684.080	3684.080	3684.080	3684.080	3684.080	3684.080
Mounting plate	3684.074	3684.075	3684.076	3684.077	3684.078	-	-

In addition, 2U enclosure with different dimensions can be customized.



### Technical specifications:

May be used as a rack-mounted enclosure or instrument case.  
External dimensions to IEC 60 297-1 for installation in 482.6 mm (19") racks.  
Installation dimensions for board type plug-in assemblies to IEC 60 297-3-101.

### Protection category:

IP 40 for non-vented version.

### Supply includes:

2 side panels,  
4 horizontal rails,  
4 threaded inserts,  
2 corner trims,  
assembly parts.

### Material/Surface finish:

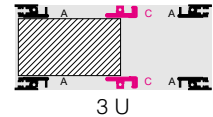
Side panels:  
Extruded aluminium section,  
spray finished in RAL 7035  
Horizontal rails:  
Extruded aluminium section,  
clear-chromated  
Corner trims:  
Die-cast zinc,  
spray-finished in RAL 7035  
Side trims:  
Extruded aluminium section,  
spray-finished in RAL 7035

- 1 Equipped as an instrument case
- 2 Equipped as a rackmounted unit

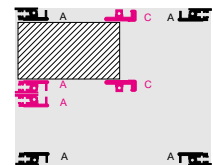
### Horizontal rail configuration

#### Note:

Corner trims, mounting flanges and top and bottom covers must be ordered separately.



3 U



4 U (3 + 1)

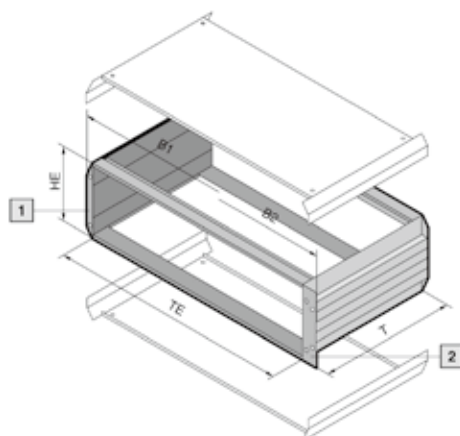
Horizontal rails for further configuration must be ordered separately

Ripac Vario-Module	Packs of	3 U						4 U (3 + 1)			Page
Installation width (TE)		42	42	63	63	84	84	84	84	84	
Width (B1) mm		235.6	235.6	342.3	342.3	449.0	449.0	449.0	449.0	449.0	
Width (B2) mm		251.6	251.6	358.3	358.3	465.1	465.1	465.1	465.1	465.1	
Depth (T) mm		250.4	310.4	250.4	310.4	250.4	310.4	370.4	250.4	310.4	370.4
Model No. VM Basic enclosure	1	3982.040	3982.070	3982.050	3982.080	3982.060	3982.090	3982.100	3982.110	3982.120	3982.130
<b>Also required</b>											
Top covers											
– with vent holes	1	3982.941	3982.951	3982.942	3982.952	3982.940	3982.950	3982.960	3982.940	3982.950	3982.960
– without vent holes	1	3982.901	3982.911	3982.902	3982.912	3982.900	3982.910	3982.920	3982.900	3982.910	3982.920
Bottom covers											
– with vent holes	1	3982.741	3982.751	3982.742	3982.752	3982.740	3982.750	3982.760	3982.740	3982.750	3982.760
– without vent holes	1	3982.701	3982.711	3982.702	3982.712	3982.700	3982.710	3982.720	3982.700	3982.710	3982.720
Front corner trims for assembly as instrument case	2	3981.310	3981.310	3981.310	3981.310	3981.310	3981.310	3981.310	3981.320	3981.320	3981.320
Flanges for configuration as rack-mount											
– without handle holes	2	3981.210	3981.210	3981.210	3981.210	3981.210	3981.210	3981.210	3981.220	3981.220	3981.220
– with handle holes	2	3981.260	3981.260	3981.260	3981.260	3981.260	3981.260	3981.260	3981.270	3981.270	3981.270
<b>Accessories</b>											
Front/rear panels		see page 89-90									
Carrying handles	2	3981.350	3981.360	3981.350	3981.360	3981.350	3981.360	3981.370	3981.350	3981.360	3981.370
Front handles <sup>1)</sup>	2	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010
Rear adjustable feet	4	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000

<sup>1)</sup> Only in conjunction with mounting flanges with handle holes.

# Instrument cases/system enclosures

## Ripac Vario-Module 3 U, 4 U, EMC



**EMV**

### Technical specifications:

May be used as a rack-mounted enclosure or instrument case.  
External dimensions to IEC 60 297-1 for installation in 482.6 mm (19") racks.  
Installation dimensions for board type plug-in assemblies to IEC 60 297-3-101.

### Material/Surface finish:

Side panels:  
Extruded aluminium section, spray finished in RAL 7035  
Horizontal rails:  
Extruded aluminium section, clear-chromated

Corner trims:  
Die-cast zinc, spray-finished in RAL 7035  
Side trims:  
Extruded aluminium section, spray-finished in RAL 7035  
Contact points: Conductive

### Protection category:

IP 40 for non-vented version.

### Supply includes:

2 side panels,  
4 horizontal rails,  
4 threaded inserts,  
2 corner trims,  
assembly parts.

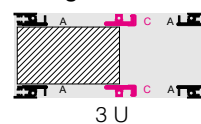
**1** Equipped as an instrument case

**2** Equipped as a rackmounted unit

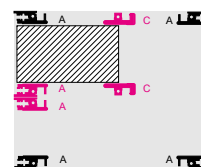
### Note:

Corner trims, mounting flanges and top and bottom covers must be ordered separately.

### Horizontal rail configuration



3 U

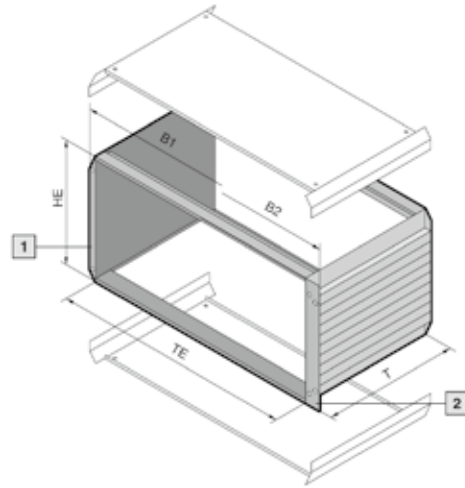
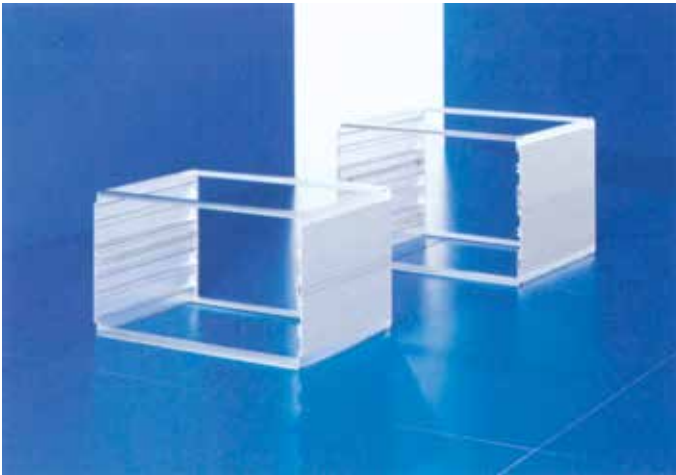


4 U (3 + 1)

Horizontal rails for further configuration must be ordered separately

Ripac Vario-Module	Packs of	3 U						4 U (3 + 1)			Page
Installation width (TE)		42	42	63	63	84	84	84	84	84	
Width (B1) mm		235.6	235.6	342.3	342.3	449.0	449.0	449.0	449.0	449.0	
Width (B2) mm		251.6	251.6	358.3	358.3	465.1	465.1	465.1	465.1	465.1	
Depth (T) mm		250.4	310.4	250.4	310.4	250.4	310.4	370.4	250.4	310.4	370.4
Model No. VM Basic enclosure	1	3983.040	3983.070	3983.050	3983.080	3983.060	3983.090	3983.100	3983.110	3983.120	3983.130
Also required											
Top covers											
– with vent holes	1	3981.941	3981.951	3981.942	3981.952	3981.940	3981.950	3981.960	3981.940	3981.950	3981.960
– without vent holes	1	3981.901	3981.911	3981.902	3981.912	3981.900	3981.910	3981.920	3981.900	3981.910	3981.920
Bottom covers											
– with vent holes	1	3981.741	3981.751	3981.742	3981.752	3981.740	3981.750	3981.760	3981.740	3981.750	3981.760
– without vent holes	1	3981.701	3981.711	3981.702	3981.712	3981.700	3981.710	3981.720	3981.700	3981.710	3981.720
Front corner trims for assembly as instrument case	2	3981.310	3981.310	3981.310	3981.310	3981.310	3981.310	3981.310	3981.320	3981.320	3981.320
Flanges for configuration as rack-mount											
– without handle holes	2	3981.210	3981.210	3981.210	3981.210	3981.210	3981.210	3981.210	3981.220	3981.220	3981.220
– with handle holes	2	3981.260	3981.260	3981.260	3981.260	3981.260	3981.260	3981.260	3981.270	3981.270	3981.270
EMC installation											
EMC gaskets, horizontal											
– for upper/lower horizontal rail	1	3684.808	3684.808	3684.808	3684.808	3684.808	3684.808	3684.808	3684.808	3684.808	3684.808
– between covers and horizontal rails	10	3684.245	3684.245	3684.245	3684.245	3684.245	3684.245	3684.245	3684.245	3684.245	3684.245
EMC gaskets, vertical	1	3686.975	3686.975	3686.975	3686.975	3686.975	3686.975	3686.975	3686.976	3686.976	3686.976
Front/rear panels EMC		see page 89-90									
Accessories											
Front/rear panels		see page 89-90									
Carrying handles	2	3981.350	3981.360	3981.350	3981.360	3981.350	3981.360	3981.370	3981.350	3981.360	3981.370
Front handles <sup>1)</sup>	2	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010	3636.010
Rear adjustable feet	4	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000	3901.000

<sup>1)</sup> Only in conjunction with mounting flanges with handle holes.



### Technical specifications:

May be used as a rack-mounted enclosure or instrument case.  
External dimensions to IEC 60 297-1 for installation in 482.6 mm (19") racks.  
Installation dimensions for board type plug-in assemblies to IEC 60 297-3-101.

### Material/surface finish:

Side panels:  
Extruded aluminium section, spray-finished in RAL 7035  
Horizontal rails:  
Extruded aluminium section, clear-chromated  
Corner trims:  
Die-cast zinc, spray-finished in RAL 7035

### Protection category:

IP 40 for non-vented version.

### Supply includes:

2 side panels,  
4 horizontal rails,  
4 threaded inserts,  
2 rear corner trims,  
2 side trims centre, assembly parts.

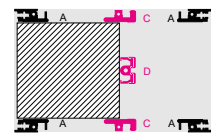
- 1 Equipped as an instrument case
- 2 Equipped as a rackmounted unit

### Note:

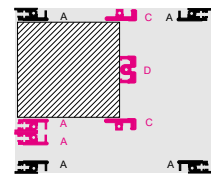
Corner trims, mounting flanges and top and bottom covers must be ordered separately.

Horizontal rails for further configuration must be ordered separately

### Horizontal rail configuration



6 U



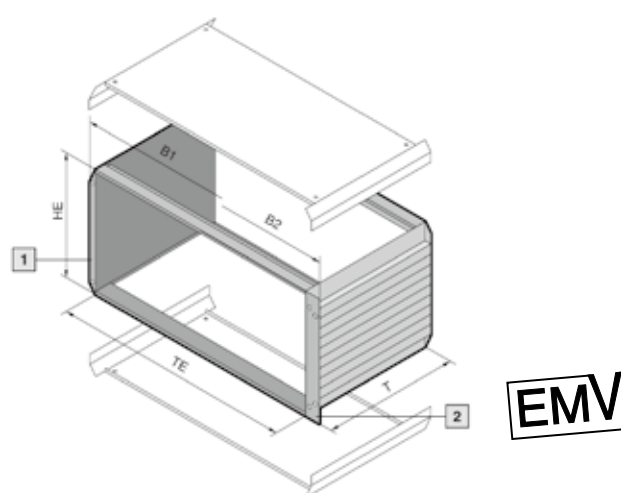
7 U (6 + 1)

Ripac Vario-Module	Packs of	6 U			7 U (6 + 1)		Page
Installation width (TE)		84	84	84	84	84	
Width (B1) mm		449.0	449.0	449.0	449.0	449.0	
Width (B2) mm		465.1	465.1	465.1	465.1	465.1	
Depth (T) mm		310.4	370.4	430.4	310.4	430.4	
Model No. VM Basic enclosure	1	3982.140	3982.150	3982.160	3982.170	3982.190	
<b>Also required</b>							
Top covers							
– with vent holes	1	3982.950	3982.960	3982.970	3982.950	3982.970	
– without vent holes	1	3982.910	3982.920	3982.930	3982.910	3982.930	
Bottom covers							
– with vent holes	1	3982.750	3982.760	3982.770	3982.750	3982.770	
– without vent holes	1	3982.710	3982.720	3982.730	3982.710	3982.730	
Front corner trims for assembly as instrument case	2	3981.330	3981.330	3981.330	3981.340	3981.340	
Flanges for configuration as rack-mount							
– without handle holes	2	3981.230	3981.230	3981.230	3981.240	3981.240	
– with handle holes	2	3981.280	3981.280	3981.280	3981.290	3981.290	
<b>Accessories</b>							
Front/rear panel		see page 89-90					
Carrying handles	2	3981.360	3981.370	3981.380	3981.360	3981.370	
Front handles <sup>1)</sup>	2	3666.010	3666.010	3666.010	3666.010	3666.010	
Rear adjustable feet	4	3901.000	3901.000	3901.000	3901.000	3901.000	

<sup>1)</sup> Only in conjunction with mounting flanges with handle holes.

# Instrument cases/system enclosures

## Ripac Vario-Module 6 U, 7 U, EMC



### Technical specifications:

May be used as a rack-mounted enclosure or instrument case.  
External dimensions to IEC 60 297-1 for installation in 482.6 mm (19") racks.  
Installation dimensions for board type plug-in assemblies to IEC 60 297-3-101.

### Material/surface finish:

Side panels:  
Extruded aluminium section, spray-finished in RAL 7035  
Horizontal rails:  
Extruded aluminium section, clear-chromated

Corner trims:  
Die-cast zinc, spray-finished in RAL 7035  
Contact points: Conductive

**Protection category:**  
IP 40 for non-vented version.

### Supply includes:

2 side panels,  
4 horizontal rails,  
4 threaded inserts,  
2 rear corner trims,  
2 side trims centre,  
assembly parts.

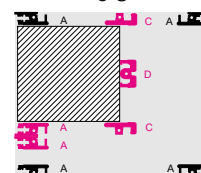
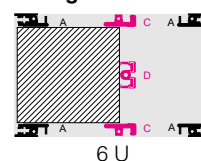
- 1 Equipped as an instrument case
- 2 Equipped as a rackmounted unit

### Note:

Corner trims, mounting flanges and top and bottom covers must be ordered separately.

Horizontal rails for further configuration must be ordered separately

### Horizontal rail configuration



6 U

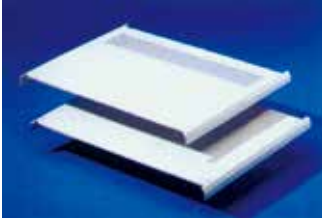
7 U (6 + 1)

Ripac Vario-Module	Packs of	6 U			7 U (6 + 1)		Page
Installation width (TE)		84	84	84	84	84	
Width (B1) mm		449.0	449.0	449.0	449.0	449.0	
Width (B2) mm		465.1	465.1	465.1	465.1	465.1	
Depth (T) mm		310.4	370.4	430.4	310.4	430.4	
Model No. VM Basic enclosure	1	3983.140	3983.150	3983.160	3983.170	3983.190	
Also required							
Top covers							
– with vent holes	1	3981.950	3981.960	3981.970	3981.950	3981.970	
– without vent holes	1	3981.910	3981.920	3981.930	3981.910	3981.930	
Bottom covers							
– with vent holes	1	3981.750	3981.760	3981.770	3981.750	3981.770	
– without vent holes	1	3981.710	3981.720	3981.730	3981.710	3981.730	
Front corner trims for assembly as instrument case	2	3981.330	3981.330	3981.330	3981.340	3981.340	
Flanges for configuration as rack-mount							
– without handle holes	2	3981.230	3981.230	3981.230	3981.240	3981.240	
– with handle holes	2	3981.280	3981.280	3981.280	3981.290	3981.290	
EMC installation							
EMC gaskets, horizontal							
– for upper/lower horizontal rail	1	3684.808	3684.808	3684.808	3684.808	3684.808	39
– between covers and horizontal rails	10	3684.245	3684.245	3684.245	3684.245	3684.245	39
EMC gaskets, vertical	1	3686.977	3686.977	3686.977	3686.978	3686.978	38
Front/rear panels EMC	see page 89-90						
Accessories							
Front/rear panels	see page 89-90						
Carrying handles	2	3981.360	3981.370	3981.380	3981.360	3981.370	
Front handles <sup>1)</sup>	2	3666.010	3666.010	3666.010	3666.010	3666.010	
Rear adjustable feet	4	3901.000	3901.000	3901.000	3901.000	3901.000	

<sup>1)</sup> Only in conjunction with mounting flanges with handle holes.

### Enclosure population

For individual interior installation of the enclosures, system components from the Ripac range may be used.



#### Top covers

for Ripac Vario-Module

##### Standard version

###### Material:

Sheet steel, spray-finished

###### Colour:

RAL 7035

##### EMC version

###### Material:

Sheet steel, spray-finished

Contact points: Conductive

TE	Depth mm	Model No. VM standard		Model No. VM EMC	
		with vent holes	without vent holes	with vent holes	without vent holes
42	250,4	<b>3982.941</b>	<b>3982.901</b>	<b>3981.941</b>	<b>3981.901</b>
	310,4	<b>3982.951</b>	<b>3982.911</b>	<b>3981.951</b>	<b>3981.911</b>
63	250,4	<b>3982.942</b>	<b>3982.902</b>	<b>3981.942</b>	<b>3981.902</b>
	310,4	<b>3982.952</b>	<b>3982.912</b>	<b>3981.952</b>	<b>3981.912</b>
84	250,4	<b>3982.940</b>	<b>3982.900</b>	<b>3981.940</b>	<b>3981.900</b>
	310,4	<b>3982.950</b>	<b>3982.910</b>	<b>3981.950</b>	<b>3981.910</b>
	370,4	<b>3982.960</b>	<b>3982.920</b>	<b>3981.960</b>	<b>3981.920</b>
	430,4	<b>3982.970</b>	<b>3982.930</b>	<b>3981.970</b>	<b>3981.930</b>



#### Bottom covers

for Ripac Vario-Module

##### Standard version

###### Material:

Sheet steel, spray-finished

###### Colour:

RAL 7035

##### EMC version

###### Material:

Sheet steel, spray-finished

Contact points: Conductive

TE	Depth mm	Model No. VM standard		Model No. VM EMC	
		with vent holes	without vent holes	with vent holes	without vent holes
42	250,4	<b>3982.741</b>	<b>3982.701</b>	<b>3981.741</b>	<b>3981.701</b>
	310,4	<b>3982.751</b>	<b>3982.711</b>	<b>3981.751</b>	<b>3981.711</b>
63	250,4	<b>3982.742</b>	<b>3982.702</b>	<b>3981.742</b>	<b>3981.702</b>
	310,4	<b>3982.752</b>	<b>3982.712</b>	<b>3981.752</b>	<b>3981.712</b>
84	250,4	<b>3982.740</b>	<b>3982.700</b>	<b>3981.740</b>	<b>3981.700</b>
	310,4	<b>3982.750</b>	<b>3982.710</b>	<b>3981.750</b>	<b>3981.710</b>
	370,4	<b>3982.760</b>	<b>3982.720</b>	<b>3981.760</b>	<b>3981.720</b>
	430,4	<b>3982.770</b>	<b>3982.730</b>	<b>3981.770</b>	<b>3981.730</b>



#### Feet

with fold-out support stand.  
Load capacity up to 20 kg.

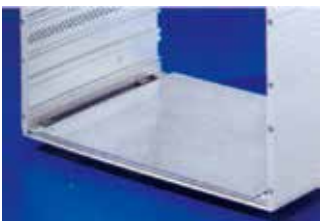
###### Material:

Plastic

###### Colour:

RAL 7035

Packs of	Model No. VM
2	<b>3919.000</b>



#### Mounting plate

For mounting heavy components.

###### Material:

Aluminium

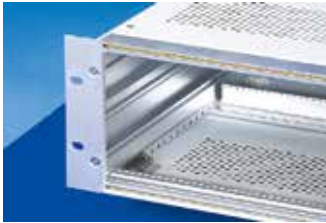
###### Supply includes:

Assembly parts.

TE	Depth mm	Packs of	Model No. VM
42	250	1	<b>3982.370</b>
63	250	1	<b>3982.380</b>
84	250	1	<b>3982.390</b>

# Instrument cases/system enclosures

## Ripac Vario-Module accessories



### Front flanges

Required when the Ripac Vario-Module is to be used as a rack-mounted enclosure. The flanges have a channel to accommodate vertical EMC gaskets.

#### Material:

Aluminium, clear-chromated

U	Packs of	Model No. VM	
		without handle hole	with handle hole
3	2	<b>3981.210</b>	<b>3981.260</b>
4	2	<b>3981.220</b>	<b>3981.270</b>
6	2	<b>3981.230</b>	<b>3981.280</b>
7	2	<b>3981.240</b>	<b>3981.290</b>

#### + Accessories:

Vertical EMC gasket  
Front handles for mounting on front flanges



### Front corner trims

Required when the Ripac Vario-Module is to be used as a desk-top instrument case. The corner trims have a channel to accommodate vertical EMC gaskets.

#### Material:

Aluminium, spray-finished

#### Colour:

RAL 7035

U	Packs of	Model No. VM
3	2	<b>3981.310</b>
4	2	<b>3981.320</b>
6	2	<b>3981.330</b>
7	2	<b>3981.340</b>

#### + Accessories:

Vertical EMC gasket  
Front handles for mounting on front corner trim pieces

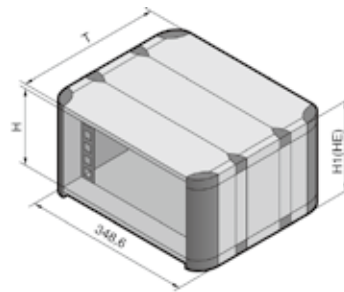


### Front panels/rear panels

To cover the enclosures front and rear. Also available as a hinged or EMC version

# Instrument cases/system enclosures

Rittal RiCase 269.2 mm (1½ 19")



## Technical specifications:

Depth:  
300 mm, 420 mm, 540 mm  
Installation width:  
269.2 mm (1½ 19")  
Installation options:  
269.2 mm (1½ 19") slide-in  
equipment to IEC 60 297-3

## Material/surface finish:

Covers:  
Extruded aluminium section/  
die-cast, spray-finished  
Side panels:  
Extruded aluminium section,  
spray-finished  
Corner caps: Plastic  
482.6 mm (19") mounting  
Bracket:  
Extruded aluminium section,  
clear-chromated

## Colour:

RAL 7035 (pale grey)

## Decorative colours and corner caps:

RAL 5018 (turquoise)  
RAL 5012 (pale blue)  
RAL 7030 (stone grey)

## Protection category:

IP 42 for unvented version.

## Supply includes:

2 side panels,  
2 covers,  
8 corner caps,  
8/12/16 cover caps  
(300/420/540 mm depth),  
4 482.6 mm (19") mounting  
brackets,  
4 threaded inserts,  
2 plain inserts,  
1 rear panel.

## Special sizes and colours available on request.

## Property rights:

German registered design  
no. 96 09 457  
IR reg. design no. DM/039 974  
with validity for FR, IT  
UK reg. design no. 2064682  
US design patents  
Des. 402,640 and Des. 423,464  
Japan. reg. designs  
no. 1045507 and 1045508

Enclosures for subrack width 269.2 mm (1½ 19")	Packs of	1 U		2 U		3 U			4 U		Page
Height (H) mm		77.5	77.5	121.9	121.9	166.4	166.4	166.4	210.8	210.8	
H1 (U) mm		45.0	45.0	89.4	89.4	133.8	133.8	133.8	178.3	178.3	
Depth (T) mm		300.0	420.0	300.0	540.0	300.0	420.0	540.0	420.0	540.0	
<b>Unvented</b>											
Model No.RC, RAL 5018	1	3750.100	-	3750.200	-	3750.210	3750.300	-	3750.400	-	
Model No.RC, RAL 5012 <sup>1)</sup>	1	3750.102	-	3750.202	-	3750.212	3750.302	-	3750.402	-	
Model No.RC, RAL 7030 <sup>1)</sup>	1	3750.104	-	3750.204	-	3750.214	3750.304	-	3750.404	-	
<b>通风</b>											
Model No.RC, RAL 5018	1	-	3750.110	-	3750.220	-	3750.350	3750.360	-	3750.450	
Model No.RC, RAL 5012 <sup>1)</sup>	1	-	3750.112	-	3750.222	-	3750.352	3750.362	-	3750.452	
Model No.RC, RAL 7030 <sup>1)</sup>	1	-	3750.114	-	3750.224	-	3750.354	3750.364	-	3750.454	
Weight (kg)	Vented/	3.3	4.2	3.7	5.4	4.1	5.2	6.1	5.8	6.8	
	unvented	3.4	4.4	3.8	6.1	4.2	5.4	6.8	6.0	7.5	

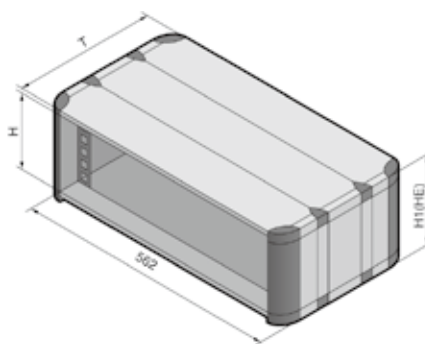
## Accessories

Carrying handles, horizontal	2										
Blanking plates (rear panel)	3	3746.000	3746.000	3747.000	3747.000	3748.000	3748.000	3748.000	3749.000	3749.000	
Front door, vertically hinged	1	-	-	-	-	3751.300	3751.300	3751.300	3751.300	3751.300	
Slide rails	2	3751.500	3751.510	3751.500	3751.520	3751.500	3751.510	3751.520	3751.510	3751.520	
Mounting angles 482.6 mm (19")	2	3751.650	3751.650	3751.660	3751.660	3751.670	3751.670	3751.670	3751.680	3751.680	
Threaded inserts with M4 thread	8	3751.700	3751.700	3751.710	3751.710	3751.720	3751.720	3751.720	3751.730	3751.730	
End section	2	-	-	-	-	3751.900	3751.900	3751.900	3751.910	3751.910	

<sup>1)</sup> Supply period: about 2 weeks

# Instrument cases/system enclosures

## Rittal RiCase 482.6 mm (19")



### Technical specifications:

Depth:  
300 mm, 420 mm, 540 mm  
Installation width:  
482.6 mm (19")  
Installation options:  
482.6 mm (19") slide-in  
equipment to IEC 60 297-3

### Material/surface finish:

Covers:  
Extruded aluminium section/  
die-cast, spray-finished  
Side panels:  
Extruded aluminium section,  
spray-finished  
Corner caps: Plastic  
482.6 mm (19") mounting  
Bracket:  
Extruded aluminium section,  
clear-chromated

### Colour:

RAL 7035 (pale grey)

### Decorative colours and corner caps:

RAL 5018 (turquoise)  
RAL 5012 (pale blue)  
RAL 7030 (stone grey)

### Protection category:

IP 42 for unvented version.

### Supply includes:

2 side panels,  
2 covers,  
8 corner caps,  
8/12/16 cover caps  
(300/420/540 mm depth),  
2 482.6 mm (19") mounting  
brackets,  
2 threaded inserts,  
2 plain inserts.

### Note:

For rear installation, order back  
panel/door separately.

**Special sizes and colours  
available on request.**

Enclosure for subrack width 482.6 mm (19")	Packs of	3 U		4 U		6 U			7 U		9 U		12 U	Page
<b>Height (H) mm</b>		166.4	166.4	210.8	210.8	299.7	299.7	299.7	344.2	344.2	433.1	433.1	566.5	
<b>H1 (U) mm</b>		133.8	133.8	178.3	178.3	267.2	267.2	267.2	311.7	311.7	400.6	400.6	534.0	
<b>Depth (T) mm</b>		300.0	420.0	300.0	420.0	300.0	420.0	540.0	420.0	540.0	420.0	540.0	540.0	
<b>Not vented</b>														
<b>Model No.RC, RAL 5018</b>	1	<b>3750.310</b>	<b>3750.320</b>	<b>3750.410</b>	<b>3750.420</b>	<b>3750.600</b>	<b>3750.610</b>	<b>3750.620</b>	<b>3750.700</b>	<b>3750.710</b>	<b>3750.900</b>	<b>3750.910</b>	<b>3750.000</b>	
<b>Model No.RC, RAL 5012<sup>1)</sup></b>	1	<b>3750.312</b>	<b>3750.322</b>	<b>3750.412</b>	<b>3750.422</b>	<b>3750.602</b>	<b>3750.612</b>	<b>3750.622</b>	<b>3750.702</b>	<b>3750.712</b>	<b>3750.902</b>	<b>3750.912</b>	<b>3750.002</b>	
<b>Model No.RC, RAL 7030<sup>1)</sup></b>	1	<b>3750.314</b>	<b>3750.324</b>	<b>3750.414</b>	<b>3750.424</b>	<b>3750.604</b>	<b>3750.614</b>	<b>3750.624</b>	<b>3750.704</b>	<b>3750.714</b>	<b>3750.904</b>	<b>3750.914</b>	<b>3750.004</b>	
<b>Vented</b>														
<b>Model No. RC, RAL 5018</b>	1	<b>3750.330</b>	<b>3750.340</b>	<b>3750.430</b>	<b>3750.440</b>	<b>3750.630</b>	<b>3750.640</b>	<b>3750.650</b>	<b>3750.720</b>	<b>3750.730</b>	<b>3750.920</b>	<b>3750.930</b>	<b>3750.030</b>	
<b>Model No.RC, RAL 5012<sup>1)</sup></b>	1	<b>3750.332</b>	<b>3750.342</b>	<b>3750.432</b>	<b>3750.442</b>	<b>3750.632</b>	<b>3750.642</b>	<b>3750.652</b>	<b>3750.722</b>	<b>3750.732</b>	<b>3750.922</b>	<b>3750.932</b>	<b>3750.032</b>	
<b>Model No.RC, RAL 7030<sup>1)</sup></b>	1	<b>3750.334</b>	<b>3750.344</b>	<b>3750.434</b>	<b>3750.444</b>	<b>3750.634</b>	<b>3750.644</b>	<b>3750.654</b>	<b>3750.724</b>	<b>3750.734</b>	<b>3750.924</b>	<b>3750.934</b>	<b>3750.034</b>	
<b>Weight (kg)</b>	Vented/	5.3	6.9	5.7	7.5	6.5	8.5	10.8	9.1	11.5	10.1	12.9	15.0	
	unvented	5.4	7.1	7.2	7.7	6.6	8.7	12.2	9.3	12.9	10.3	14.3	16.4	

### Accessories

Back panel, screw- fastened	1	3751.600	3751.600	3751.610	3751.610	3751.620	3751.620	3751.620	3751.630	3751.630	3751.530	3751.530	3751.540	
Rear door, vertically hinged	1	3751.100	3751.100	3751.110	3751.110	3751.120	3751.120	3751.120	3751.130	3751.130	-	-	-	
Rear door for fan installation	1	3751.150	3751.150	3751.160	3751.160	3751.170	3751.170	3751.170	3751.180	3751.180	-	-	-	
Front door, vertically hinged	1	3751.320	3751.320	3751.330	3751.330	3751.340	3751.340	3751.340	3751.350	3751.350	-	-	-	
Slide rails	2	3751.500	3751.510	3751.500	3751.510	3751.500	3751.510	3751.520	3751.510	3751.520	3751.510	3751.510	3751.520	
Mounting angles 482.6 mm (19")	2	3751.670	3751.670	3751.680	3751.680	3751.690	3751.690	3751.690	3751.640	3751.640	3751.780	3751.780	3751.790	
Threaded inserts with M4 thread	8	3751.720	3751.720	3751.730	3751.730	3751.740	3751.740	3751.740	3751.750	3751.750	3751.760	3751.760	3751.770	
End section	2	3751.900	3751.900	3751.910	3751.910	3751.920	3751.920	3751.920	3751.930	3751.930	3751.820	3751.820	3751.830	

<sup>1)</sup> Supply period: about 2 weeks



### Mounting angles for 482.6 mm (19")

For front/rear installation of subracks and blanking plates.

#### Material:

Extruded aluminium section, clear-chromated

#### Supply includes:

Assembly parts.

#### Note:

1 pack of threaded inserts and 2 packs of mounting rails and spacers are required for depth-adjustable installation.

For enclosure height	Packs of	Model No. RC
1 U	2	<b>3751.650</b>
2 U	2	<b>3751.660</b>
3 U	2	<b>3751.670</b>
4 U	2	<b>3751.680</b>
6 U	2	<b>3751.690</b>
7 U	2	<b>3751.640</b>
9 U	2	<b>3751.780</b>
12 U	2	<b>3751.790</b>

#### ! Also required:

Threaded inserts  
Mounting rails  
Spacers



### Threaded inserts with M4 thread for RiCase

For the installation of mounting angles, slide rails, mounting kits, cable ducts etc. Simply slide into the channels in the side panels.

#### Material:

Extruded aluminium section, clear-chromated

For enclosure height	Packs of	Model No. RC
1 U	8	<b>3751.700</b>
2 U	8	<b>3751.710</b>
3 U	8	<b>3751.720</b>
4 U	8	<b>3751.730</b>
6 U	8	<b>3751.740</b>
7 U	8	<b>3751.750</b>
9 U	8	<b>3751.760</b>
12 U	8	<b>3751.770</b>



### Mounting rails

- For depth-variable installation of mounting angles
- For the installation of component shelves, static or pull-out

#### Material:

Aluminium, clear-chromated

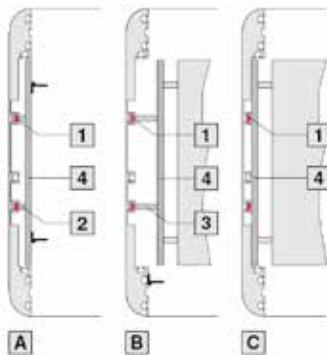
#### Supply includes:

Assembly parts.

For enclosure depth mm	Packs of	Model No. RC
300	2	<b>3751.400</b>
420	2	<b>3751.410</b>
540	2	<b>3751.420</b>

#### ! Also required:

Threaded inserts  
Spacers



- A** Version for depth-variable mounting angles
- B** Component shelf installation for 482.6 mm (19") (width 409 mm, also with telescopic slides)
- C** Direct component shelf installation (width 471 mm)

- 1** Threaded inserts
- 2** Short spacers
- 3** Long spacers
- 4** Mounting rails

# Instrument cases/system enclosures

## Rittal RiCase accessories



### Rear trim

To cover the sides to the left and right of the subrack when no rear door or rear panel is used.

#### Material:

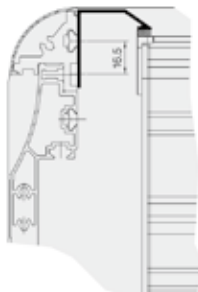
Extruded aluminium section,

#### Colour:

RAL 7035

#### Supply includes:

Assembly parts.



For enclosure height	Packs of	Model No. RC
3 U	2	<b>3751.900</b>
4 U	2	<b>3751.910</b>
6 U	2	<b>3751.920</b>
7 U	2	<b>3751.930</b>
9 U	2	<b>3751.820</b>
12 U	2	<b>3751.830</b>



### Rear door vertically hinged

To close off the rear.

- Hinged, with security lock
- Optionally hinged on the left or right

#### Material:

Aluminium, spray-finished

#### Colour:

RAL 7035

#### Supply includes:

Assembly parts.



For enclosure width mm	H (U)	Packs of	Model No. RC
482.6 (19")	3	1	<b>3751.100</b>
482.6 (19")	4	1	<b>3751.110</b>
482.6 (19")	6	1	<b>3751.120</b>
482.6 (19")	7	1	<b>3751.130</b>



### Carrying handles horizontal

For easy, secure transportation.

- May be retrofitted
- Load capacity 30 kg/pair

#### Material:

Side parts: Die-cast, spray-finished  
Centre part: Extruded aluminium section, spray-finished

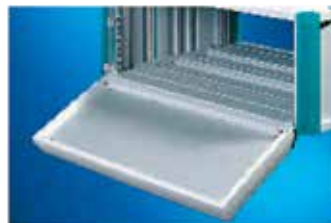
#### Colour:

RAL 7035

For enclosure width mm	Packs of	Model No. RC
300	2	<b>3751.250</b>
420	2	<b>3751.260</b>
540	2	<b>3751.270</b>

#### Supply includes:

Assembly parts.



### Keyboard lid

Suitable for the installation of 482.6 mm (19") keyboards.

- Horizontally hinged with security lock
- Removable cover plate

#### Material:

Frame section: Extruded aluminium section/die-cast, spray-finished  
Base and cover plate: Aluminium, spray-finished

#### Colour:

RAL 7035

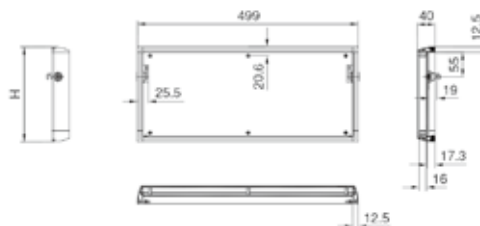
#### Supply includes:

Assembly parts.

For enclosure width mm	H (U)	Packs of	Model No. RC
482.6 (19")	4	1	<b>3751.800</b>
482.6 (19")	6	1	<b>3751.810</b>

#### Note:

Use only in conjunction with support stand/ carrying handle.





### Front door

#### vertically hinged

For mechanical protection of built-in control components.

- Optionally hinged on the right or left
- With security lock

#### Material:

Frame section: Extruded aluminium section, spray-finished

Corner pieces: Die-cast aluminium, spray-finished  
Glazed pane: Smoked acrylic

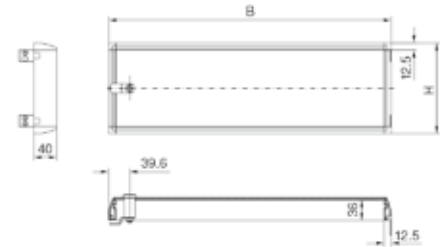
#### Colour:

RAL 7035

#### Supply includes:

Assembly parts.

For enclosure width mm	W ( B ) mm	H ( U )	Model No. RC
269.2 (1 1/2 19")	289	3	<b>3751.300</b>
269.2 (1 1/2 19")	289	4	<b>3751.310</b>
482.6 (19")	503	3	<b>3751.320</b>
482.6 (19")	503	4	<b>3751.330</b>
482.6 (19")	503	6	<b>3751.340</b>
482.6 (19")	503	7	<b>3751.350</b>



### Aluminium front door

#### vertically hinged

For mechanical protection of built-in control components.

- Optionally hinged on the right or left
- With security lock

#### Material:

Frame section: Extruded aluminium section, spray-finished

Corner pieces: Die-cast aluminium, spray-finished  
Aluminium plate

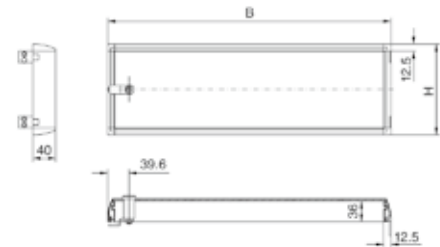
#### Colour:

RAL 7035

#### Supply includes:

Assembly parts.

For enclosure width mm	W ( B ) mm	H ( U )	Model No. RC
482.6 (19")	503	3	<b>3751.360</b>
482.6 (19")	503	4	<b>3751.370</b>
482.6 (19")	503	6	<b>3751.380</b>



### Front door

#### for tower enclosure

For mechanical protection of built-in control components.

- Optionally hinged on the right or left
- With security lock

#### Material:

Frame section: Extruded aluminium section, spray-finished

Corner pieces: Die-cast aluminium, spray-finished

Glazed pane: Smoked acrylic

#### Colour:

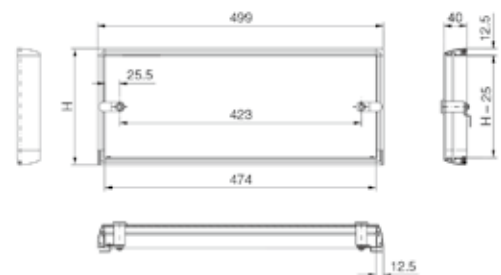
RAL 7035

#### Supply includes:

Assembly parts.

For enclosure width mm	W ( B ) mm	H ( U )	Model No. RC
482.6 (19")	503	3	<b>3751.390</b>
482.6 (19")	503	4	<b>3751.430</b>

W = Overall width of front door



# Instrument cases/system enclosures

## Rittal RiCase accessories



1



2



3

### Tower feet

For vertical siting of enclosures.  
May be retrofitted.

**Material:**

Plastic to UL 94-V0,  
self-extinguishing

**Decorative colours:**

- 1 RAL 7030 (stone grey)
- 2 RAL 5018 (turquoise)
- 3 RAL 5012 (pale blue)

**Supply includes:**

4 tower feet,  
assembly parts.

Decorative colour RAL	Packs of	Model No. RC
5018	1 set	<b>3751.850</b>
5012	1 set	<b>3751.852</b>
7030	1 set	<b>3751.854</b>



### Back panel

**screw-fastened**

To close off the rear.

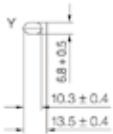
**Material:**

2/3 mm aluminium, natural-anodised

**Supply includes:**

Two 482.6 mm (19") mounting brackets,  
assembly parts.

For enclosure width mm	H (U)	Packs of	Model No. RC
482.6 (19")	3	1	<b>3751.600</b>
482.6 (19")	4	1	<b>3751.610</b>
482.6 (19")	6	1	<b>3751.620</b>
482.6 (19")	7	1	<b>3751.630</b>
482.6 (19")	9	1	<b>3751.530</b>
482.6 (19")	12	1	<b>3751.540</b>



# OpenVPX Products

As one of the global largest manufacturers of 19" enclosures and accessories, Rittal has for many years been committed to perfectly integrating product performances into customer needs, while maximally generating success values for our clients.

Rittal's powerful competitive edges include professionalism, customer affinity, high quality, speedy supplies, product diversity, and global convenient services. By employing over 10,000 staff members in 19 production centers and 60 wholly-owned subsidiaries and 150 distribution and logistics centers across the global, Rittal works with 70 international agencies to provide powerful support to clients' construction of large and complicated industrial systems.

As a leading professional manufacturer in the electronic packaging field, Rittal provides high-performance imbedded enclosure systems in compliance with the open standards and specifications, including such standardized products as VME/VME64/VME64x, PXI, Compact PCI, Compact PCI 2.16, Compact PCI-S, and VPX/OpenVPX.

In addition to standard embedded enclosure systems (including enclosures, backplanes, and PSUs), Rittal provides expedient and flexible customization, which customizes embedded enclosure systems specifically satisfying customer needs and provides customized services in accordance the specifications as provided by the clients.

Boasting over 20 years of experience in designing complicated embedded systems and high-performance backplanes, Rittal will provide its clients with customized design and production services with respect to backplanes for complicated systems, including customized backplane designs, backplane simulation testing, thermal design based on specific architectures, and designs of electromagnetic compatibility.

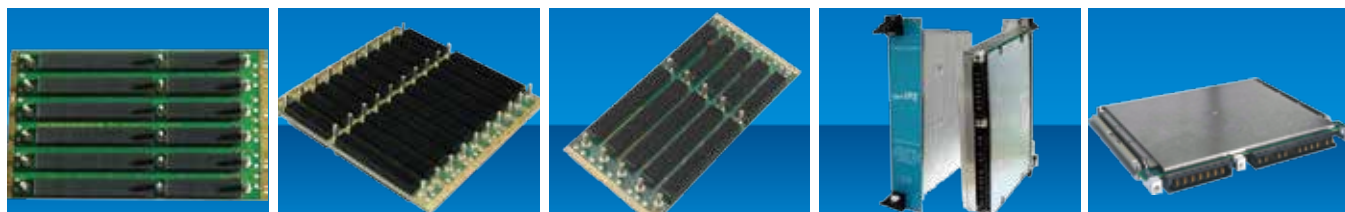
To date, thousands of clients from a variety of industries, including the aerospace and aviation, the military defense, the railway and transportation, and the industrial automation, adopt the systematic backplane designs customized by Rittal for developing their own innovative systems that cater to the changing market demands.



## 9U rack-mounted OpenVPX System Platform



Pictures are for reference only.



### Features

- The enclosure is in complete compliance with the IEEE1101.10/11 specification.
- 19" rack-mounted or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to sixteen 6U5HP VPX slots with the standard backplane slots available from 5, 6, 10, and 16. For customized backplanes, please contact Rittal sales agents.
- It supports many backplane configuration files defined under the VITA65 specification.
- The "Z" air duct will suck the system's cooling air flow in the lower front and vent out from the upper rear.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.
- EMC electromagnetic compatibility protection

### Enclosure Structure

- Dimension (in W × H × D) : 9U x 84HP x 310mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled  
(conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled  
(conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN06-11.2.8-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Quad Star
			Expansion	N/A
BKP6-DIS06-11.2.10-3	Payload	5	Control	2 x TP — Dual Star
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-DIS06-11.2.15-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN10-11.2.6-3	Payload	8	Control	2 x UTP — Dual Star
	Switch	2	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-CEN16-11.2.2-n	Payload	14	Control	2 x UTP —Dual Star
	Switch	2	Data	4 x FP — Dual Star + Daisy Chain
			Expansion	2 x DFP — Daisy Chain

## Models for subscription

### Subscription information:

Model No.	Product Description
RiV-RCK-69xx-F	9U (1U+6U+2U) 84HP, rack-mounted/desktop OpenVPX enclosures, supportable for Open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-RCK-69xx-P	9U (1.5U+6U+1.5U) 84HP , rack-mounted/desktop OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-BKP-6U06 -1	Backplane profile: BKP6-CEN06-11.2.8-3
RiV-BKP-6U06 -2	Backplane profile: BKP6-CEN06-11.2.15-3
RiV-BKP-6U06 -3	Backplane profile: BKP6-DIS06-11.2.10-3
RiV-BKP-6U10	Backplane profile: BKP6-CEN10-11.2.6-3
RiV-BKP-6U16	Backplane profile: BKP6-CEN16-11.2.2-n
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC, conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled

## 10U Portable OpenVPX System Platform



### Features

- The enclosure is in complete compliance with the IEEE1101.10/11 specification.
- The portable or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to sixteen 6U5HP VPX slots with the standard backplane slots available from 5, 6, 10, and 16. For customized backplanes, please contact Rittal sales agents.
- It supports many backplane configuration files defined under the VITA65 specification.
- The "Z" air duct will suck the system's cooling air flow in the lower front and vent out from the upper rear.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.
- EMC electromagnetic compatibility protection

### Enclosure Structure

- Dimension (in W × H × D) : 10U x 45HP x 310mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U Power Supply

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled  
(conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled  
(conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN06-11.2.8-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Quad Star
			Expansion	N/A
BKP6-DIS06-11.2.10-3	Payload	5	Control	2 x TP — Dual Star
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-DIS06-11.2.15-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A

## Models for subscription

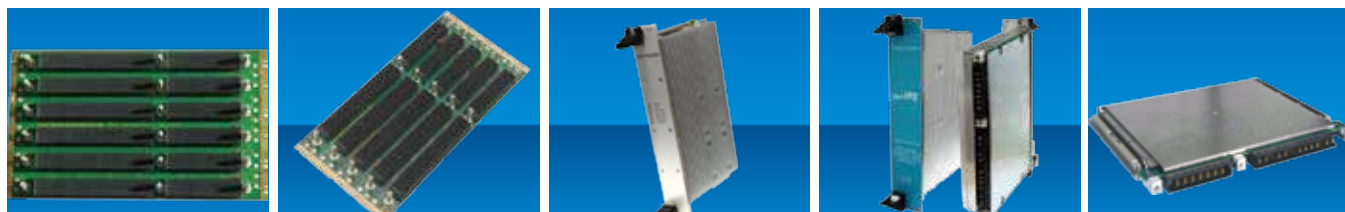
### Subscription information:

Model No.	Product Description
RiV-TOW-690x-F	10U (1.5U+6U+2.5U) 45HP, portable/desktop OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-BKP-6U06 -1	Backplane profile: BKP6-CEN06-11.2.8-3
RiV-BKP-6U06 -2	Backplane profile: BKP6-CEN06-11.2.15-3
RiV-BKP-6U06 -3	Backplane profile: BKP6-DIS06-11.2.10-3
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled

## 10U OpenVPX Testing Platform



Pictures are for reference only.



### Features

- The portable or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports the standard OpenVPX backplanes with 5 slots to 10 slots, which is supportable for multiple backplane configurations as defined under VITA65.
- The enclosure's both sides are open side panels, which support the measurement and testing of the PCBs in operation from both sides. In addition, fast installation and removal of plug-in blanking plates will be available and the open enclosure may be turned into a closed enclosure wherever necessary.
- It features high-performance air-cooled heat dissipation from the bottom to the top.
- Built in with an air deflection system, the enclosure can maximize the flow of cool air through the slot area.
- The variable-speed fan module is available for installation. The smart IPMI fan may adjust the fan speed through the standard IPMI enclosure management module. In addition, the IPMI on the user PCB can manage the spinning speed of the fan and minimize the noise through the IPMB bus.
- The strong and reliable reinforced beam is specifically designed for the VPX PCBs, which ensures the VPX PCBs are easily plugged and unplugged and will never deform after they are repeatedly plugged and unplugged.
- It may be installed to the plastic guide rails and aluminum conduction cooled guide rails of the military air-cooled VPX PCB, which supports the commissioning of the VPX PCB on the open enclosure.

### Enclosure Structure

- Dimension (in W × H × D) : 10U x 63HP x 325mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled (conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled (conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN06-11.2.8-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Quad Star
			Expansion	N/A
BKP6-DIS06-11.2.10-3	Payload	5	Control	2 x TP — Dual Star
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-DIS06-11.2.15-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A

## Models for subscription

### Subscription information:

Model No.	Product Description
RiV-OPN-610x	10U 63HP OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU, or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-BKP-6U06 -1	Backplane profile: BKP6-CEN06-11.2.8-3
RiV-BKP-6U06 -2	Backplane profile: BKP6-CEN06-11.2.15-3
RiV-BKP-6U06 -3	Backplane profile: BKP6-DIS06-11.2.10-3
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC1200W, air cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC1200W, air cooled

## 9U OpenVPX Testing Platform



Pictures are for reference only.



### Features

- Modularized OpenVPX testing platform.
- The portable or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to sixteen 6U5HP VPX slots with the standard backplane slots available from 5, 6, 10, and 16. For customized backplanes, please contact Rittal sales agents.
- It supports many backplane configuration files defined under the VITA65 specification.
- It features high-performance air-cooled heat dissipation from the bottom to the top.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.

### Enclosure Structure

- Dimension (in W × H × D) : 9U x 42HP x 340mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled  
(conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled  
(conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

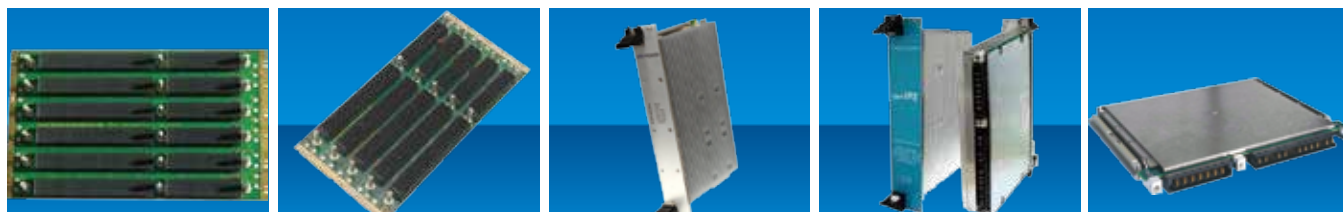
Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN06-11.2.8-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Quad Star
			Expansion	N/A
BKP6-DIS06-11.2.10-3	Payload	5	Control	2 x TP — Dual Star
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-DIS06-11.2.15-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A

## Models for subscription

### Subscription information:

Model No.	Product Description
RiV-OPN-690x-F	9U 42HP OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-BKP-6U06 -1	Backplane profile: BKP6-CEN06-11.2.8-3
RiV-BKP-6U06 -2	Backplane profile: BKP6-CEN06-11.2.15-3
RiV-BKP-6U06 -3	Backplane profile: BKP6-DIS06-11.2.10-3
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled

## 10U portable OpenVPX System Platform



### Features

- The enclosure is in complete compliance with the IEEE1101.10/11 specification.
- The portable or desktop application provides highly strong aluminum architecture, the surface of which is sprayed in the paint color RAL7035.
- The aesthetic outer look may serve as the enclosure of the instrument and equipment.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to nine 6U5HP VPX slots with the standard backplane with 5 and 6 slots available. For customized backplanes, please contact Rittal sales agents.
- It supports many backplane configuration files defined under the VITA65 specification.
- The "Z" air duct will suck the system's cooling air flow in the lower front and vent out from the upper rear.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.
- EMC electromagnetic compatibility protection.

### Enclosure Structure

- Dimension (in W × H × D) : 10U x 45HP x 310mm
- Materials: Aluminum alloys, which are sprayed in the paint color RAL7035

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled  
(conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled  
(conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-CEN06-11.2.8-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Quad Star
			Expansion	N/A
BKP6-DIS06-11.2.10-3	Payload	5	Control	2 x TP — Dual Star
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A
BKP6-DIS06-11.2.15-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A

## Models for subscription

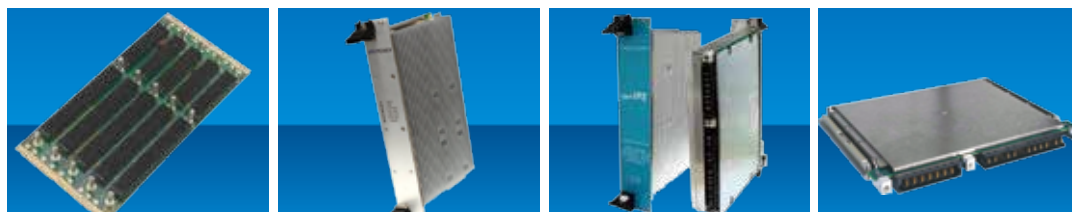
### Subscription information:

Model No.	Product Description
RiV-TOW-610xx-F	10U 45HP portable/desktop OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-BKP-6U06 -1	Backplane profile: BKP6-CEN06-11.2.8-3
RiV-BKP-6U06 -2	Backplane profile: BKP6-CEN06-11.2.15-3
RiV-BKP-6U06 -3	Backplane profile: BKP6-DIS06-11.2.10-3
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC , conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC, conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled

## 5U OpenVPX System Platform



Pictures are for reference only.



### Features

- The enclosure is in complete compliance with the IEEE1101.10/11 specification.
- The 19" rack-mounted or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 6Ux160mm front plug-in cards and the 6Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to five 6U5HP VPX slots.
- It supports many backplane configuration files defined under the VITA65 specification.
- It features high-performance air-cooled heat dissipation from the bottom to the top.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.
- EMC electromagnetic compatibility protection

### Enclosure Structure

- Dimension (in W × H × D) : 5U x 84HP x 310mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 6U 5HP 680W air cooled  
(conduction cooled version available)  
6U10HP 850W air cooled  
DC24V PSU: 6U8HP 1300W air cooled  
(conduction cooled version available)  
DC270V PSU: 6U5HP 730W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

#### Modularized Open-Frame PSU:

600W-1200W Modularized Open-Frame PSU

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP6-CEN05-11.2.5-3	Payload	4	Control	2 x UTP —Dual Star
	Switch	1	Data	4 x FP — Quad Star
			Expansion	2 x DFP — Daisy Chain
BKP6-DIS05-11.2.16-3	Payload	5	Control	N/A
			Data	4 x FP — Mesh (5-Slot Cluster)
			Expansion	N/A

## Models for subscription

### Subscription information:

Model No.	Product Description
RiV-RCK-6505-H	5U 84HP rack-mounted/desktop OpenVPX enclosures, supportable for VPX plug-in horizontal installation, as well as VITA62-compliant pluggable redundant PSU, or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-6U05 -1	Backplane profile: BKP6-CEN05-11.2.5-3
RiV-BKP-6U05 -2	Backplane profile: BKP6-DIS05-11.2.16-3
RiV-PSU-6UAC680-A	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, air cooled
RiV-PSU-6UAC680-C	VITA62 compliant PSU, 6U 5HP 680W, AC/DC, conduction cooled
RiV-PSU-6UAC850-A	VITA62 compliant PSU, 6U 10HP 850W, AC/DC, air cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V)/DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V)/DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V)/DC, conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 600W, air cooled

## 4U Rack-mounted OpenVPX System Platform



### Features

- The enclosure is in complete compliance with the IEEE1101.10/11 specification.
- The 19" rack-mounted or desktop application provides highly strong aluminum architecture, the surface of which is passivated.
- It is applicable to the 3Ux160mm front plug-in cards and the 3Ux80mm rear plug-in cards, which are for vertical installation.
- It supports a backplane up to sixteen 3U5HP VPX slots with the standard backplane with 2, 3, 6, 8, and 9 slots available. For customized backplanes, please contact Rittal sales agents.
- It supports many backplane configuration files defined under the VITA65 specification.
- It features high-performance air-cooled heat dissipation from the bottom to the top.
- The open-frame PSU for fixed installation or the VITA62-compliant VPX pluggable redundant PSU is applicable.
- EMC electromagnetic compatibility protection

### Enclosure Structure

- Dimension (in W × H × D) : 4U x 84HP x 310mm
- Materials: Aluminum alloys, which are passivated with chromic acid

### PSU

#### VITA62 Compliant 6U PSU

- AC/DC: Input range: 90V – 264V  
DC/DC: 24V (48V available on enquiry)
- AC/DC PSU: 3U10HP 600W air cooled  
AC/DC PSU: 3U5HP 200W air cooled  
AC/DC PSU: 3U5HP 200W conduction cooled  
DC/DC PSU: 3U4HP 715W conduction cooled
- Operating temperature: -40°C to 85°C
- Storage Temperature: -55°C to 85°C
- Internal Or-ing DIODEs for N+1 Redundancy
- Active Current Sharing
- PMbus interface for status and control
- Noise & Ripple: Typ 1% pk-pk
- EMI : Meet EN55022 FCC ClassA

**Modularized Open-Frame PSU :** Available on enquiry

## Backplane

- Compliant to VITA 46.0 baseline specification
- Compliant to VITA 65 Open VPX
- M3 studs connector for power entry
- 5 HP from slot to slot (25.40 mm) 1"
- Flexible keying and alignment mechanism
- System Management Interface on the backplane (IPMB)
- with geographical address pins
- Reference clock
- Non-Volatile Memory Read Only signal set by Jumper BR1
- System Reset
- Operating temperature: -40°C - +85°C ;
- Storage temperature: -55°C - +85°C
- Flammability rating: UL94-V0

Backplane Profile Name-Section	Slot Types		Communication Plane Topologies	
BKP3-DIS02-15.2.8-3	Payload	1	Control	N/A
	Peripheral	1	Data	1 x DFP — Mesh
			Expansion	N/A
BKP3-CEN03-15.2.9-3	Payload	1	Control	N/A
	Peripheral	2	Data	1 x FP — Star
			Expansion	N/A
BKP3-DIS06-15.2.14-3	Payload	5	Control	2 x UTP — Dual-Star
	Switch	1	Data	2 x FP — 5-Slot Ring
			Expansion	N/A
BKP3-DIS06-15.2.7-3	Payload	5	Control	2 x TP — Available to RTMs
	Switch	1	Data	2 x FP — 5-Slot Ring
			Expansion	N/A
BKP3-CEN06-15.2.2-3	Payload	5	Control	1 x UTP — Star
	Switch	1	Data	1 x FP — Star
			Expansion	2 x FP — Daisy Chain
BKP3-CEN08-15.2.16-3	Payload	6	Control	2 x UTP — Dual Star
	Switch	2	Data	1 x FP — Star
			Expansion	N/A
BKP3-CEN09-15.2.17-3	Payload	8	Control	1 x UTP - Single Star 1 x UTP - Available to RTM
	Switch	1	Data	1 or 3 x FP — Cascaded Single-Stars
			Expansion	2 x FP - Ring, last four slots only

## Models for subscription

### Subscription information:

Model No.	Product Description
RiV-RCK-34xx-P	4U (1U+4U) 84HP rack-mounted OpenVPX enclosures, supportable for VITA62-compliant pluggable redundant PSU, or modularized open-frame PSU (PSU and backplanes are subject to further subscription)
RiV-BKP-3U02	Backplane profile: BKP3-DIS02-15.2.8-3
RiV-BKP-3U03	Backplane profile: BKP3-CEN03-15.2.9-3
RiV-BKP-3U06 -1	Backplane profile: BKP3-DIS06-15.2.14-3
RiV-BKP-3U06 -2	Backplane profile: BKP3-DIS06-15.2.7-3
RiV-BKP-3U06 -3	Backplane profile: BKP3-CEN06-15.2.2-3
RiV-BKP-3U08	Backplane profile: BKP3-CEN08-15.2.16-3
RiV-BKP-3U09	Backplane profile: BKP3-CEN09-15.2.17-3
RiV-PSU-3UAC600-A	VITA62 compliant PSU, 3U 10HP 600W, AC/DC, air cooled
RiV-PSU-3UAC200-A	VITA62 compliant PSU, 3U 5HP 200W, AC/DC, air cooled
RiV-PSU-3UAC200-C	VITA62 compliant PSU, 3U 5HP 200W, AC/DC, conduction cooled
RiV-PSU-3UDC24-715-C	VITA62 compliant PSU, 3U 4HP715W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC24-1300-A	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, air cooled
RiV-PSU-6UDC24-1300-C	VITA62 compliant PSU, 6U 8HP 1300W, DC (24V) /DC, conduction cooled
RiV-PSU-6UDC270-730-C	VITA62 compliant PSU, 6U 5HP 730W DC (270V) /DC, conduction cooled
RiV-PSU-Modular-AC600	Modularized open-frame PSU, AC 600W, air cooled
RiV-PSU-Modular-AC1200	Modularized open-frame PSU, AC 1200W, air cooled

VPX Attachment

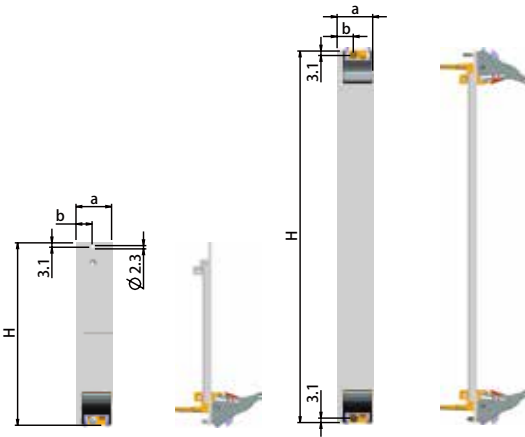


VPX panel, which contains the IVs assistive handle

**Materials:**  
Panel: extruded aluminum profile that is passivated with chromic acid  
Handle: Plastic/Metal

**Supply range:**  
1 panel with 2 IVs handles (3U for 1);  
1 EMC spring under Model II;  
1 set of fixed installation components;  
1 plug-in installation rack (in case of 3U)

U	TE	H mm	a mm	b mm	Model RV
3	4	128.7	20.0	7.47	9922504
3	5	128.7	25.1	11.35	9922505
6	4	262.05	20.0	7.47	9922507
6	5	262.05	25.1	11.35	9922508



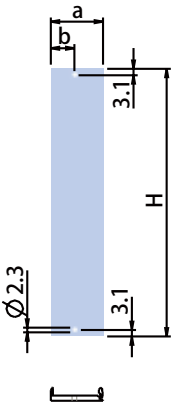
VPX blank panel, EMC

As unused slot cover panel

**Materials:**  
2.5 mm aluminum panel that is passivated with chromic acid

**Supply range:**  
1 panel;  
1 EMC spring under Model II;  
1 set of fixed installation components

U	TE	H mm	a mm	b mm	Model RV
3	4	128.7	20.0	7.47	9922108
3	5	128.7	25.1	11.35	9922506
6	4	262.05	20.0	7.47	9922128
6	5	262.05	25.1	11.35	9922509

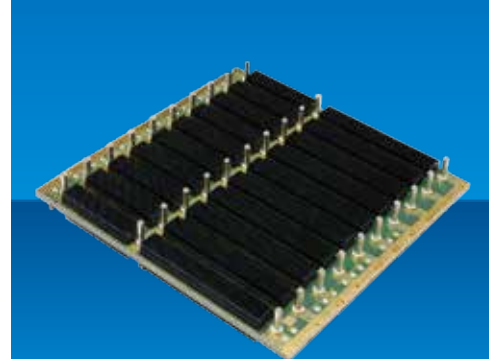


## Customized Design Service

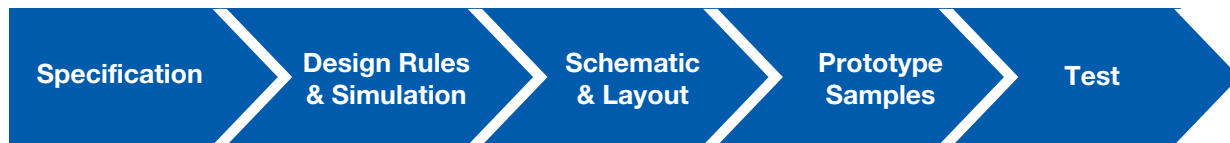
Boasting over 20 years of experience in designing complicated embedded systems and high-performance backplanes, Rittal will provide its clients with customized design and production services with respect to backplanes for complicated systems, including customized backplane designs, backplane simulation testing, thermal design based on specific architectures, and designs of electromagnetic compatibility.

To date, thousands of clients from a variety of industries, including the aerospace and aviation, the military defense, the railway and transportation, and the industrial automation, adopt the systematic backplane designs customized by Rittal for developing their own innovative systems that cater to the changing market demands.

Our design experience in the high-performance backplanes covers all international open standards and specifications, including such standardized products as VPX/OpenVPX, CompactPCI, PXI, VME/VME64x, and AdvancedTCA, while our high-speed serial interface telecommunication technologies include Rapid I/O, Gigabit Ethernet, PCI Express, and Infiniband.



### • OpenVPX Customized Backplane Design Procedure



#### Specification

- Unique customer specification or based on industry standards CPCI, VME, VPX, etc.
- PCB Materials Identified
- Physical layer requirements (i.e. Ethernet, PCIeexpress, RapidIO, SATA, etc.)

#### Design Rules & Simulation

- Stackup definition
- Power planes, signal planes, GND planes
- Impedance calculation
- Pre-Simulations to define design rules

#### Schematic & Layout

- Library Parts
- Schematic entry
- Routing

#### Prototype Samples

- Manufacture initial samples for testing and verification of the simulation results

#### Test

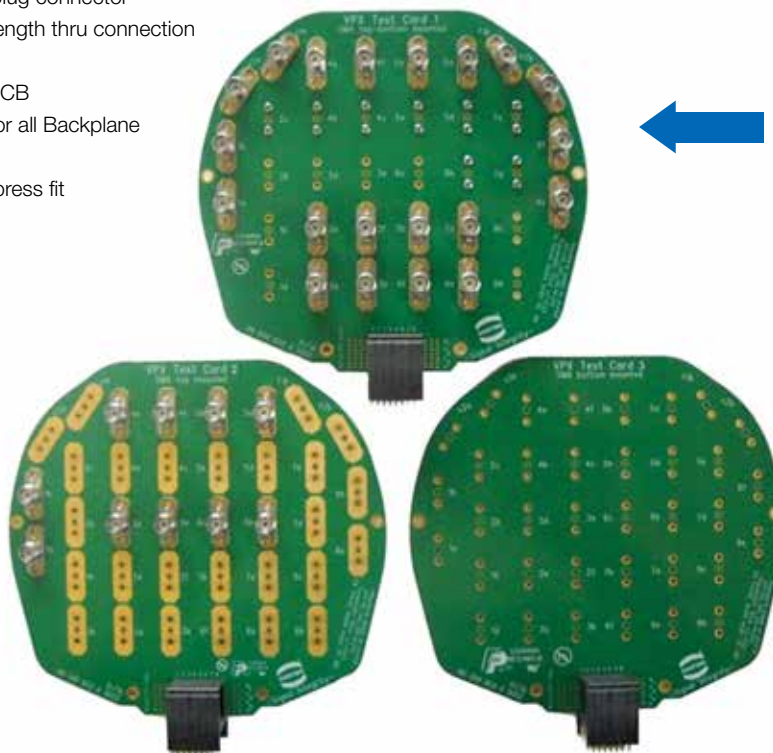
- ROBAT testing
- S-Parameter testing
- TDR measurements
- Protocol testing

## Customized Design Service

### • OpenVPX/VXS Backplane Testing

#### Features:

- MultiGig RT2 7-Row right angled plug connector
- 16 differential pairs + one double length thru connection for proper De-embedding
- 1,5mm Nelco 4000-13, 6-Layer PCB
- three different test cards suitable for all Backplane measurements
- performance optimized SMA and press fit connector footprints



test card 1:  
SMA connectors  
mounted from top  
and bottom side  
if space is not the  
problem

test card 2:  
SMA connectors  
mounted from top side  
to access from the right  
side of the connector-  
backdrilling is used to  
minimize stub effect

test card 3:  
SMA connectors  
mounted from bottom  
side to get access  
from the right side  
of the connector-  
backdrilling is used to  
minimize stub effect

### • Signal Integrity Services

#### Services

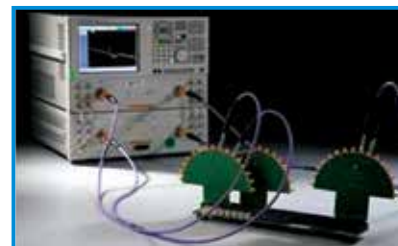
- System and Component Testing
- Simulation and Modelling
- Test Fixture Design
- Design Support
- Compliance Testing

#### Simulation and Modelling

- Full 3D simulation
- Calculation of Field-Distribution
- Interconnect Simulation Models
- Channel Simulations
- RFID Antenna Design

#### Testing

- Frequency-Domain measurements
- S-Parameter Analysis
- Interconnect Channel Characterization
- Time-Domain measurements
- Signal propagation characteristics (TDR, Skew, Crosstalk, etc.)
- Eye analysis



• Signal Integrity Software and Test Equipment:

**Agilent N1955B Physical Layer Test System (PLTS)**

E8363B	Vector Network Analyzer
-PNA N4420B	Test Set
-N1930A	Software – Version 5.000

**Tektronix TDS8200 Digital Sampling Oscilloscope**

2 x 80E04 Sampling Module

2 x Sampling Module Extender Cable (1 meter)

**3D Simulation**

CST Studio Suite	3D full wave FIT Simulation
ANSYS HFSS	3D full wave FEM Simulation
ANSYS Q3D / Q2D	3D / 2D static BEM Simulation
ANSYS Optimetrics	Optimizer

**Circuit- / Channel Simulation**

AGILENT Advanced Design System (ADS) High Speed Analog Designer Pro

HSPICE

# Microcomputing Packaging System

## OpenVPX/VXS Backplane Testing

Slim Box Series is the latest rack-mounted CPCI/VME system platform as developed by Rittal, which is used for horizontal installation of CPCI/VME PCBs. Four models, namely, 1U/2U/3U/4U, may provide 2/4/6/8 horizontal standard CPCI/VME slots under the 6U 64bit/33MHz standard, respectively, all of which support the rear I/O interface. The enclosure uses the air cooling fan for its heat dissipation, where the air duct on the horizontal level guide the air from the left to the right. The heat dissipation is extremely effective. For the PSU, a CPCI/VME PSU or ATX PSU may be available for installation, both of which support the dual output of the PSU and improves the systematic reliability.

In collaboration with the high-performance CPCI/VME mainboard, the Slim Box Series may provide powerful calculation capacity within the 1U to 4U space, which is particularly suitable for Carrier-grade Telecom, internet, and embedded control systems. The Slim Box Series becomes the best high-density calculation platform due to its powerful performance, good compatibility, and compact dimension.

## Modularized 6U CPCI/VME System Platform under the MPS Series

The 6U CPCI/VME system platform under the MPS Series adopts the flexible modularized system configuration. All important components, including the backplane, PSU, and fan, are modularized products, which may configure the systematic architecture to the specific requirements as set by clients. As to the PSU, the CPCI/VME PSU, the ATX CPCI/VME, or the open-frame PSU will be available for selecting. Each power may cover 200 watts to 500 watts, while the PSU input mode may be set as alternating current or direct current. As to heat dissipation, air flow under the air cooling mode may travel from the bottom to the top or from the front to the rear. In addition, this platform supports the SCSI hot pluggable hard drives, IDE hard drives, CD-ROM or floppy drives, or other I/O interfaces.

Therefore, in collaboration with the high-performance mainboard, the modularized CPCI/VME system

platform under the MPS Series enjoys very powerful calculation and expansion capacities, thus representing the best platform for telecommunication value-added businesses, military telecommunication, and embedded application systems.

## Modularized 3U CompactPCI System Platform under the MPS Series

The 3U CompactPCI system platform under the MPS Series mainly focuses on industrial control and measurement & control. Due to the flexibility of the modularized systematic configuration, such important components as the backplane and PSU may configure the systematical architecture to the specific requirements set by the clients. As to the PSU, the CPCI PSU, or the ATX PSU will be available for selecting. the PSU input mode may be set as alternating current or direct current. As to heat dissipation, air flow under the air cooling mode may travel from the bottom to the top or from the front to the rear. In addition, this platform supports hard drives, CD-ROM or floppy drives, or other I/O interfaces.

The 3U CompactPCI system platform under the MPS Series mainly focuses on industrial control and measurement & control. Due to the flexibility of the modularized systematic configuration, such important components as the backplane and PSU may configure the systematical architecture to the specific requirements set by the clients. As to the PSU, the CPCI PSU, or the ATX PSU will be available for selecting. the PSU input mode may be set as alternating current or direct current. As to heat dissipation, air flow under the air cooling mode may travel from the bottom to the top or from the front to the rear. In addition, this platform supports hard drives, CD-ROM or floppy drives, or other I/O interfaces.





## 1U CompactPCI System Platform



### Features

- The 19" rack-mounted or desktop 1U CompactPCI system platform;
- Integrated CPCI backplane; 2 horizontal CPCI slots; 64bit/66MHz; supportable for the rear I/O interfaces; the CPU slot at the bottom;
- Supportable for one 3U × 8HP CPCI PSU;
- Equipped with seven 40-mm fans (with three on the left and four on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation;
- EMC electromagnetic compatibility protection
- ESD electrostatic discharge;
- The CPCI PSU can be AC or DC input;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 1U × 300mm
- Materials: Sheet Steel which is sprayed with black paint

### Backplane

- an integrated backplane in the dimension of 9U by width and 1U by height;
- Two 6U × 4HP 64bit/66MHz CompactPCI slots (one as the system slot and one as the external slot);
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for one 3U × 8HP P47 CPCI PSU;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification.

### Cooling System

- The cool air flow travels through the air duct from the left to the right, with 281 lfm(1.43m/s) per slot;
- 7 × 40mm DC 12V/0.32A fans with 12CFM(21m³/h) each, with three on the left side and four on the right side.

## PSU

### AC220V or DC48V CPCI PSU

- Dimension: 3U (by height); 8HP (by width); 169.40mm (by depth)  
Positronic 47 connector  
Weight: 1.06 Kg max.
- Output power: 200W ( 5V/30A; 3.3V/25A; +12V/5A; -12V/0.5A )
- Input voltage: AC 90V~264V Auto range or DC 48V (40V~72V);
- Efficiency: 75% typical@115V, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;
- Wave: 50mV max. for all outputs, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- Safety: EN60950, UL, CUL approved;
- EMC: Meets IFCC Level A and EN55022 Level A;
- Operating temperature: 0~50°C;
- Storage temperature: -40~+85°C;
- MTBF > 150,000 hours @25C, full power

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim-6102C-AC	9920777	1U Slim Box, 2 CPCI slot, Support AC CPCI Power Supply

Note: Any model in this table excludes the CPCI PSU. For DC input models, please contact the branch offices of our Company.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
PS3312	3688694	3U 200 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3313	3688655	3U 200 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP

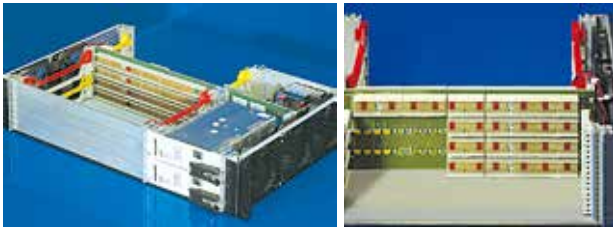
### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

## 2U CompactPCI System Platform



Pictures are for reference only.



### Features

- The 19" rack-mounted or desktop 1U CompactPCI system platform;
- Integrated CPCI backplane; 2 horizontal CPCI slots; 64bit/66MHz; supportable for the rear I/O interfaces; the CPU slot at the bottom;
- Supportable for one 3U × 8HP CPCI PSU;
- Equipped with five 80-mm air cooling fans (with two on the left and three on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation;
- EMC electromagnetic compatibility protection
- ESD electrostatic discharge;
- The CPCI PSU can be AC or DC input;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- Backplanes supportable for H.110 CTBus are available;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 2U × 300mm
- Materials: Sheet Steel which is sprayed with black paint

### Backplane

- Two 6U × 4HP 64bit/66MHz CompactPCI slots (one as the system slot and one as the external slot);
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for one 3U × 8HP P47 CPCI PSU;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- Supportable for H.110 CTBus,
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification.

### Cooling System

- The cool air flow travels through the air duct from the left to the right;
- 5 × 80mm DC 12V/0.29A fans at 39CFM(66m<sup>3</sup>/h) each.

## PSU

- Output power: 200W CPCI PSU  
( 5V/30A; 3.3V/25A; +12V/5A; -12V/0.5A ; )  
( 5V/30A; 3.3V/25A; +12V/5A; -12V/0.5A ; )  
250W CPCI PSU  
( 5V/33A; 3.3V/33A; +12V/6A; -12V/0.5A ; )  
( 5V/33A; 3.3V/33A; +12V/6A; -12V/0.5A ; )
- Input voltage: AC 90V~264V Auto range or DC 48V (40V~72V);
- Efficiency: 75% typical@115V, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on 5V and 3.3V outputs;
- Wave: 50mV max. for all outputs, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- Safety: EN60950, UL, CUL approved;
- EMC: Meets IFCC Level A and EN55022 Level A;
- Operating temperature: 0~50°C;
- Storage temperature: -40~+85°C;
- MTBF > 150,000 hours @25°C, full power

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim-6204C	9920763	2U Slim Box, 4 CPCI slot, Support 1+1 redundant AC CPCI Power Supply
Slim-6204C-CTBus	9920471	2U Slim Box, 4 CPCI slot, Support 1+1 redundant AC CPCI Power Supply, with H.110

Note: Any model in this table excludes the CPCI PSU. Any model marked in blue is available for fast delivery. For DC input models, please contact branch offices of our Company.

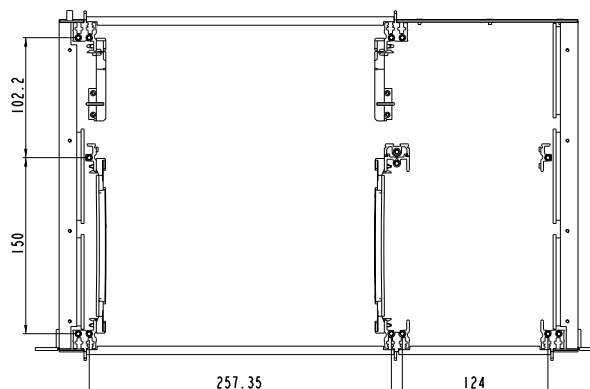
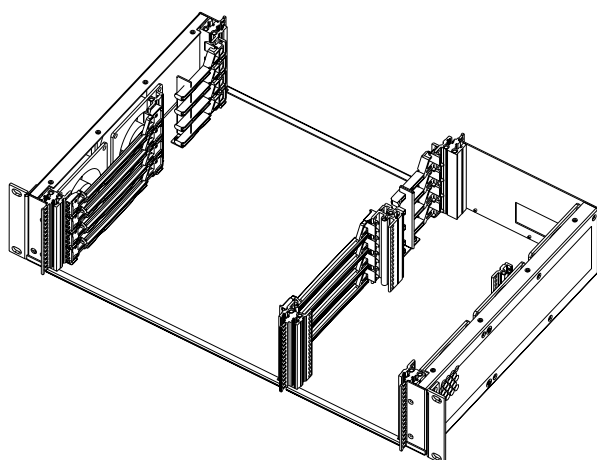
### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
PS3312	3688694	3U 200 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3313	3688655	3U 200 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP
PS3314	3688695	3U 250 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3315	3688696	3U 250 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP

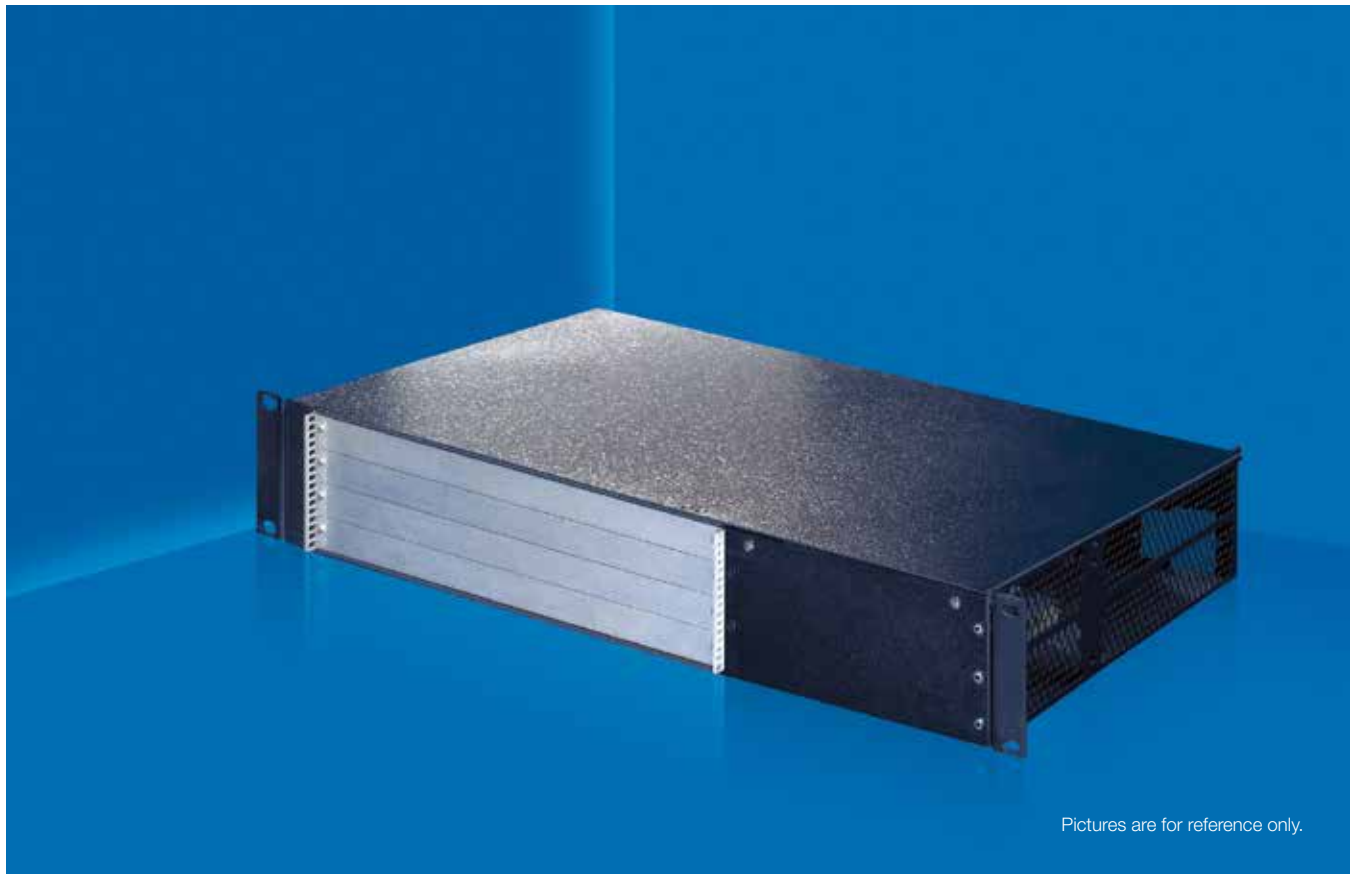
### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

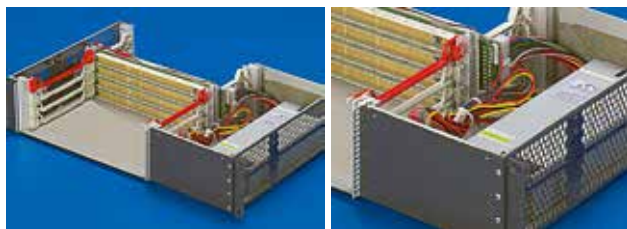
## Diagram of Enclosure Structure



## 2U CompactPCI System Platform



Pictures are for reference only.



### Features

- 19" rack-mounted or desktop 2U CompactPCI system platform;
- 6.5U CPCI backplane; 4 horizontal CPCI slots; 64bit/33MHz; supportable rear I/O interface; the system slot at the bottom;
- Built in with one 250W ATX PSU and one 3.5" IDE HDD mounting rack;
- Equipped with five 80-mm air cooling fans (with three on the left and two on the right), cool air flow of which travels from the left to the right and provides sufficiently effective heat dissipation;
- EMC electromagnetic compatibility protection;
- ESD electrostatic discharge;
- The ATX PSU can be AC or DC input;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification
- Backplanes supportable for H.110 CTBus are available;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 2U × 300mm
- Materials: Sheet Steel which is sprayed with black paint

### Backplane

- Two 6U × 4HP 64bit/66MHz CompactPCI slots (one as the system slot and three as the external slots);
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- Backplanes supportable for H.110 CT bus are available,
- In compliance with the PICMG 2.5 Computer Telephony specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI specification.

### Cooling System

- The cool air flow travels through the air duct from the left to the right;
- 5 × 80mm DC 12V/0.29A fans at 39CFM(66m<sup>3</sup>/h) each, with three on the left and one on the right.

## PSU

- Output power: 250W ( 5V/23A; 3.3V/14A; +12V/16A; -12V/0.5A; )
- Input voltage: AC 90V~264V Auto range;
- Efficiency: 75% typical;
- Remote sense on +5V & +3.3V outputs;
- Wave: 70mV max. for 5V & 3.3V, peak-to-peak; 120mV for +12V & -12V, peak-to-peak;
- Circuit protection for overvoltage and short circuit;
- Safety: UL1950, CSA22.2No/950, TUV IEC-950;
- EMC: Meets FCC class A and CISPR22 Class A;
- Operating temperature: 0~40°C;
- Storage temperature: -20~+80°C;
- MTBF > 100,000 hours.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim -6204A-AC	9920764	2U Slim Box, 4 CPCI slot, with AC ATX 250W Power Supply
Slim -6204A-AC-CTBus	9920767	2U Slim Box, 4 CPCI slot, with AC ATX 250W Power Supply, with H.110

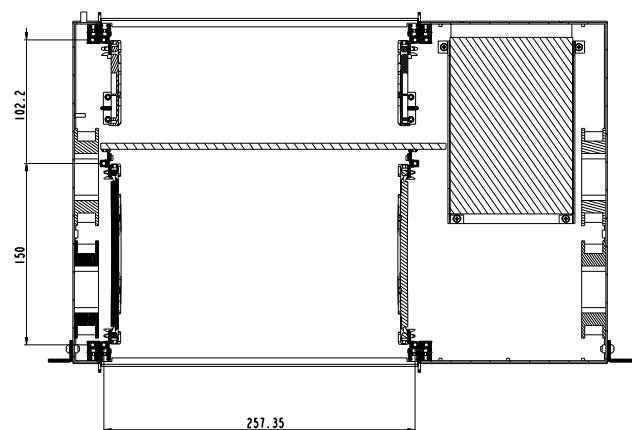
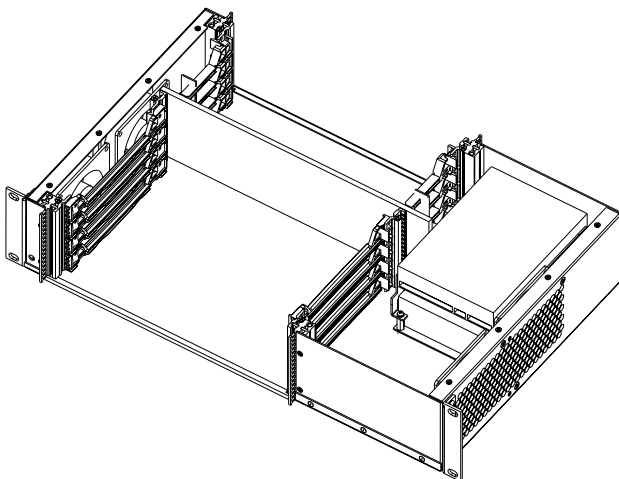
### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel

### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

## Diagram of Enclosure Structure



## 3U CompactPCI System Platform



Pictures are for reference only.



### Features

- 19" rack-mounted or desktop 3U CompactPCI system platform;
- Integrated CPCI backplanes; six horizontal CPCI slots; 64bit/33MHz; supportable for the rear I/O interface; the system slot at the bottom;
- Supportable for installation of two 3U × 8HP 250W CompactPCI PSU;
- Equipped with two 120-mm air cooling fans and one 80-mm air cooling fan (with one on the left and 1+1 on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation;
- EMC electromagnetic compatibility protection;
- ESD eletrostatic discharge;
- The CPCI PSU can be AC or DC input;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- Backplanes supportable for H.110 CTBus are available;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications;
- AC/DC input models are available.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 3U × 300mm
- Materials: Sheet Steel which is sprayed with black paint

### Backplane

- Six 6U × 4HP 64bit/33MHz CompactPCI slots (with one system slot, and five external slots);
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for two 3U × 8HP P47 CPCI redundant PSUs;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI specification;
- Backplanes supportable for H.110 CT bus are available,
- In compliance with the PICMG 2.5 Computer Telephony specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification.

### Cooling System

- The cool air flow travels through the air duct from the left to the right;
- 2 × 120mm DC 12V/0.36A fan at 115CFM(195m<sup>3</sup>/h) each;
- 1 × 80mm DC 12V/0.29A fan at 39CFM(66m<sup>3</sup>/h) each.

## PSU

- Output power: 250W ( 5V/33A; 3.3V/33A; +12V/6A; -12V/1.5A; )
- Input voltage: AC 90V~264V Auto range or DC 48V (40V~72V);
- Efficiency: 75% typical@115V, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;
- Wave: 50mV max. for all outputs, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- Safety: EN60950,UL,CUL approved;
- EMC: Meets IFCC Level A and EN55022 Level A;
- Operating temperature:0~50°C;
- Storage temperature: -40~+85°C;
- MTBF > 150,000 hours @25C, full power.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim -6306C	9920769	3U Slim Box, 6 CPCI slot, support 1+1 redundant AC CPCI Power Supply
Slim -6306C-Dual	9920779	3U Slim Box, 6 CPCI slot, support 1+1 redundant AC CPCI Power Supply,Dual AC input
Slim -6306C-CTBus	9920770	3U Slim Box, 6 CPCI slot, support 1+1 redundant AC CPCI Power Supply, with H.110
Slim -6306C-CTBus-Dual	9920780	3U Slim Box, 6 CPCI slot, support 1+1 redundant AC CPCI Power Supply, with H.110,Dual AC input

Note: Any model in this table excludes the CPCI PSU. Any model marked in blue is available for fast delivery. For DC input models, please contact branch offices of our Company.

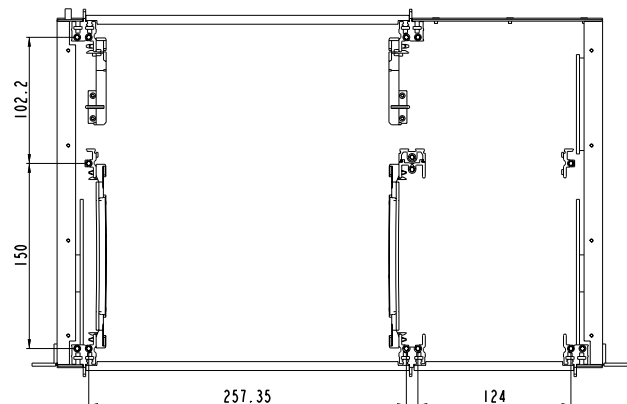
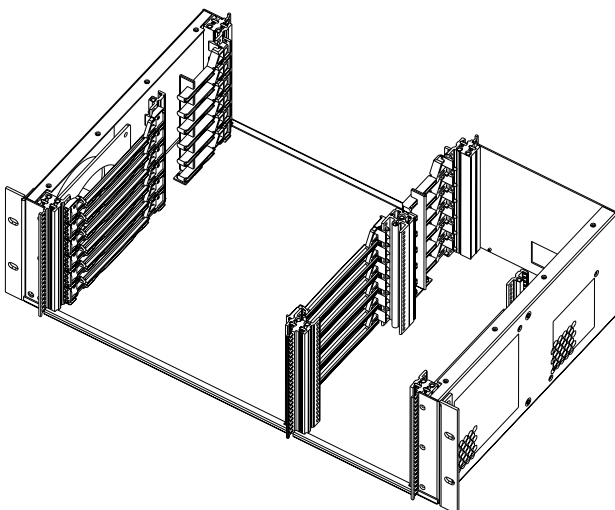
### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
PS3314	3688695	3U 250 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3315	3688696	3U 250 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP

### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

## Diagram of Enclosure Structure



## 4U CompactPCI System Platform



Pictures are for reference only.



### Features

- 19" rack-mounted or desktop 4U CompactPCI system platform;
- Integrated CPCI backplane; 8 horizontal CPCI slots; 64bit/33MHz; supportable for the rear I/O interface; the system slot at the bottom;
- Supportable for installation of two 3U × 8HP 250W CompactPCI PSUs;
- Equipped with ten 80-mm air cooling fans (with four on the left and six on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation;
- EMC electromagnetic compatibility protection;
- ESD eletrostatic discharge;
- The CPCI PSU can be AC or DC input;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- Backplanes supportable for H.110 CTBus are available;
- In compliance with the PICMG 2.9 R1.0 SystemManagement specification;
- Backplanes supportable for Ethernet packet switch, which are in compliance with the PICMG2.16R1.0 CompactPCI Packet Switching Backplane specification;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications;
- AC/DC input models are available.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 4U × 300mm
- Materials: Sheet Steel which is sprayed with black paint

### Backplane

- Eight6U × 4HP 64bit/33MHz CompactPCI slots (with one system slot and seven external slots);
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for two 250W 3U × 8HP P47 CPCI redundant PSUs;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- Backplanes supportable for H.110 CT bus;
- In compliance with the PICMG 2.5 Computer Telephony specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- Backplanes supportable for Ethernet packet switch, which are in compliance with the PICMG2.16 CompactPCI Packet Switching Backplane specification;

### Cooling System

- The cool air flow travels through the air duct from the left to the right;
- 10 × 80mm DC 12V/0.29A fans at 39CFM(66m<sup>3</sup>/h) each.

## PSU

- Output power: 250W ( 5V/33A; 3.3V/33A; +12V/6A; -12V/1.5A; )
- Input voltage: AC 90V~264V Auto range or DC 48V (40V~72V);
- Efficiency: 75% typical@115V, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;
- Wave: 50mV max. for all outputs, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- Safety: EN60950,UL,CUL approved;
- EMC: Meets IFCC Level A and EN55022 Level A;
- Operating temperature:0~50°C;
- Storage temperature: -40~+85°C;
- MTBF > 150,000 hours @25C, full power.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim-6408C	9920608	4U Slim Box, 8 CPCI slot, support 2+1 redundant AC CPCI Power Supply
Slim-6408C-Dual	9920781	4U Slim Box, 8 CPCI slot, support 2+1 redundant AC CPCI Power Supply,Dual AC input
Slim-6408C-CTBus	9920609	4U Slim Box, 8 CPCI slot, support 2+1 redundant AC CPCI Power Supply, with H.110
Slim-6408C-CTBus-Dual	9920782	4U Slim Box, 8 CPCI slot, support 2+1 redundant AC CPCI Power Supply, with H.110,Dual AC input
Slim-6408C-cPSB	9920771	4U Slim Box, 8 CPCI slot, Support 2+1 redundant AC CPCI Power Supply, PICMG 2.16 compliant
Slim-6408C-cPSB-Dual	9902783	4U Slim Box, 8 CPCI slot, Support 2+1 redundant AC CPCI Power Supply, PICMG 2.16 compliant,Dual AC input

Note: Any model in this table excludes the CPCI PSU. Any model marked in blue is available for fast delivery. For DC input models, please contact branch offices of our Company.

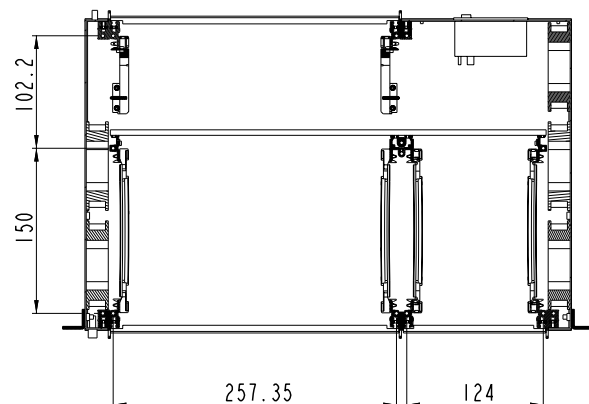
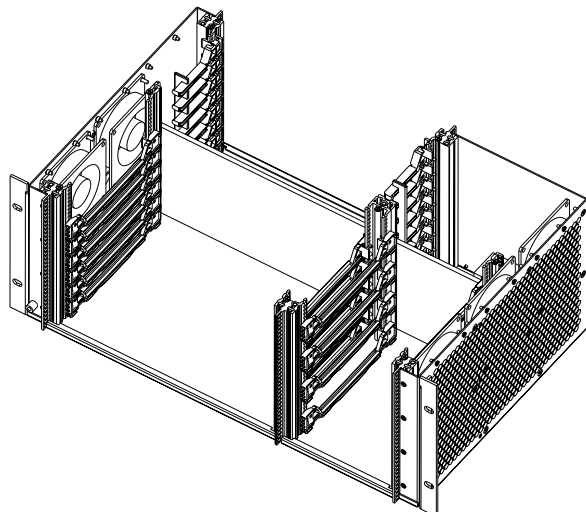
### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
PS3312	3688694	3U 200 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3313	3688655	3U 200 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP
PS3314	3688695	3U 250 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3315	3688696	3U 250 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP

### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

## Diagram of Enclosure Structure



# MPS-6708C Series

## 7U CompactPCI System Platform



Pictures are for reference only.

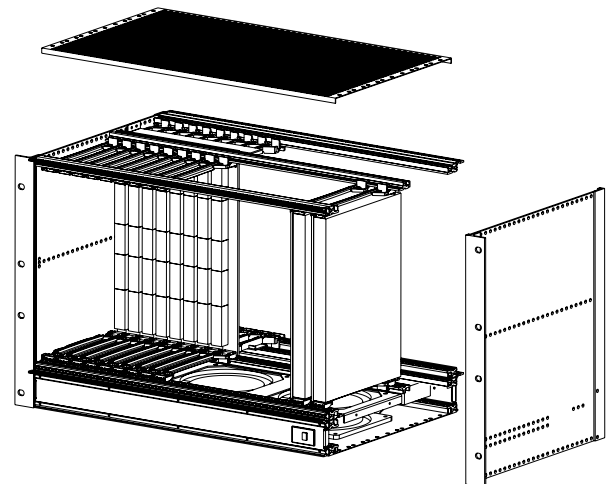
### Features

- 19" rack-mounted or desktop 7U (6U+1U) CompactPCI system platform;
- 6U 8 slot 64bit/33MHz CompactPCI backplanes, supportable for the rear I/O interface; the system slot on the right side;
- Two 500W 1+1 redundant CPCI PSUs, the output of which can be AC or DC input;
- Three 120-mm axial fan installed at the bottom of the system, the cool air flow of which travels from the bottom to the top;
- Supportable for installation of floppy drives, CD-ROM drives, and hard drives;
- EMC electromagnetic compatibility protection;
- ESD electrostatic discharge protection;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- Backplanes supportable for H.110 bus, which are in compliance with the PICMG 2.5 R1.0 Computer Telephony specification;
- Backplanes supportable for Ethernet packet switch, which are in compliance with the PICMG 2.16 R1.0 CompactPCI Packet Switching Backplane specification;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 7U × 300mm
- Materials: Aluminium, which is passivated with chromic acid paint

### Diagram of Enclosure Structure



## Backplane

- 6U 8 slot 64bit/33MHz CompactPCI backplanes;
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for plug-in 500W CPCI PSUs;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- Backplanes supportable for H.110 CT bus;
- Packet switching backplanes supportable for PICMG 2.16.

## Cooling System

- The cool air flow within the system is sucked in at the bottom and vents out from the top;
- 3 × 120mm axial fan; DC 12V/0.45A; 100CFM/each.

## PSU

### CPCI PSU

- Output power: 500W ( 5V/65A; 3.3V/80A; +12V/12A; -12V/1.5A ; )
- Input voltage: AC 90V~264V Auto range;
- Efficiency: 81%, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;
- Wave: 60mV max. for 5V & 3.3V, peak-to-peak; 120mV max. for +12V & -12V, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;

- Safety: UL60950' EN60950' cUL & CE Marking;
- EMC: EN61000-4-3 10V/m; EN61000-4-4 1Kv;
- Shock & Vibration:
- Storage: EN 300 019-2-1 Storage class 1.2' ;  
EN 300 019-2-2 Transportation class 2.3' ;  
EN 300 019-2-3 Use class 3.3;
- Operating temperature: -5~55°C ;
- Storage temperature: -40~+85°C ;
- Humidity: Up to 95% , non-Condensing;
- MTBF > 400,000 Hours per Bellcore Specification B332 Gb 50C.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
MPS-6708C	9920733	7U (6U+1U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply
MPS-6708C-CTbus	9920734	7U (6U+1U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply with H.110
MPS-6708C-cPSB	9920735	7U (6U+1U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply, PICMG 2.16 compliant

Note: Any model in this table excludes the CPCI PSU. Any model marked in blue is available for fast delivery. For DC input models, please contact branch offices of our Company.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3684481	6U x 10HP EMC vertical drive chassis for 5.25 CDRom "
-	3685095	6U x 8HP vertical drive chassis for 2x3.5 IDE HDD "
SCSI HDD Module	9920488	6U x 8HP vertical drive chassis for 2x3.5 SCSI HDD support hot swap "
-	3686989	Guide Rail for drive chassis
CPCI AC-6U-500	9920535	6U 500 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP

# MPS-69xxC Series

## 9U CompactPCI System Platform



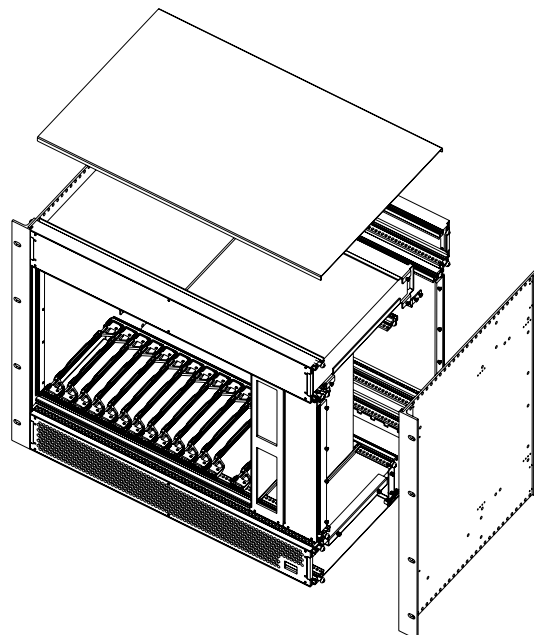
Pictures are for reference only.



### Enclosure Structure

- Dimension (in W × H × D) : 19" × 9U × 300mm
- Materials: Aluminium, which is passivated with chromic acid.

### Diagram of Enclosure Structure



### Features

- 19" rack-mounted or desktop 9U (1.5U+6U+1.5U) CompactPCI system platform ;
- 6U 64bit/33MHz CompactPCI backplanes with 8 slots; supportable for the rear I/O interface; the system slot at the right side;
- Two 500W 1+1 redundant CPCI PSUs, the output of which may be AC or DC input;
- Two 209-mm hot pluggable centrifugal air cooling fans installed to the system top in parallel, which may dissipate a total of 1500W heat;
- Supportable for installation of floppy drives, CD-ROM drives, and hard drives;
- EMC electromagnetic compatibility protection;
- ESD electrostatic discharge protection;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- Backplanes supportable for H.110 bus, which are in compliance with the PICMG2.5R1.0 Computer Telephony specification;
- Backplanes supportable for Ethernet packet switch, which are in compliance with the PICMG 2.16R1.0 CompactPCI Packet Switching Backplane specification;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

## Backplane

- 6U 8 slot 64bit/33MHz CompactPCI backplanes;
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for plug-in 500W CPCI PSU;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- Backplanes supportable for H.110 CT bus;
- Packet switching backplanes supportable for PICMG 2.16.

## Cooling System

- The "Z" air duct will suck the system's cooling air flow in the lower front and vent out from the upper rear.
- 2 × 209mm Ricool Blower DC 12V/4A, 110CFM(190m<sup>3</sup>/h)/each;
- Static pressure: 4.07cm(1.6inch) of H<sub>2</sub>O;
- Life at full speed: 60,000hrs @40C; 50,000hrs @50C;
- Optional speed control and fan failure alarm.

## PSU

### CPCI PSU

- Output power: 500W  
5V/65A; 3.3V/80A; +12V/12A; -12V/1.5A;
- Input voltage: AC 90V~264V Auto range;
- Efficiency: 81%, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;
- Wave: 60mV max. for 5V & 3.3V, peak-to-peak; 120mV max. for +12V & -12V, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;

- Safety: UL60950' EN60950' cUL & CE Marking;
- EMC: EN61000-4-3 10V/m; EN61000-4-4 1Kv;
- Shock & Vibration:
- Storage: EN 300 019-2-1 Storage class 1.2' ;  
EN 300 019-2-2 Transportation class 2.3' ;  
EN 300 019-2-3 Use class 3.3;
- Operating temperature: -5~55°C ;
- Storage temperature: -40~+85°C ;
- Humidity: Up to 95% , non-Condensing;
- MTBF > 400,000 Hours per Bellcore Specification B332 Gb 50C.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
MPS-6908C	9920736	9U (1.5U+6U+1.5U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply
MPS-6908C-CTbus	9920737	9U (1.5U+6U+1.5U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply with H.110
MPS-6908C-cPSB	9920738	9U (1.5U+6U+1.5U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply, PICMG 2.16 compliant

Note: Any model in this table excludes CPCI PSUs. Any model marked in blue is available for fast delivery. For DC input models, please contact branch offices of our Company.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3684481	6U x 10HP EMC vertical drive chassis for 5.25 CDROM "
-	3685095	6U x 8HP vertical drive chassis for 2x3.5 IDE HDD "
SCSI HDD Module	9920488	6U x 8HP vertical drive chassis for 2x3.5 SCSI HDD support hot swap "
-	3686989	Guide Rail for drive chassis
CPCI AC-6U-500	9920535	6U 500 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP

# MPS-34xxCV1 Series

## 4U CompactPCI System Platform



Pictures are for reference only.

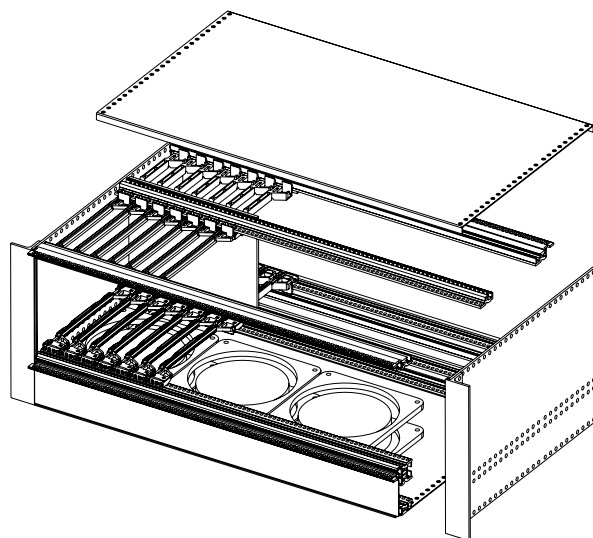
### Features

- 19" rack-mounted or desktop 4U (3U+1U) CompactPCI system platform;
- 3U 32bit/33MHz CPCI backplanes, with 7 and 8 slots available for selection; supportable for the rear I/O interface. The CPU slot at the right side;
- Supportable for installation of two 3U/8HP 200W (or 250W) 1+1 redundant CPCI PSUs, the output of which may be AC or DC input;
- Three 120-mm axial fan installed at the bottom of the system, the cool air flow of which travels from the bottom to the top;
- Supportable of installation of the mounting racks for floppy drives and hard drives;
- EMC electromagnetic compatibility protection;
- ESD eletrostatic discharge protection;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification;
- In compliance with the IEC60297-3 to IEC60297-5, and IEEE1101.1/1101.10/1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 4U × 310mm
- Materials: Aluminium, which is passivated with chromic acid.

### Diagram of Enclosure Structure



## Backplane

- 3U 32bit/33MHz CompactPCI backplanes; 5V VI/O; 7 and 8 slots are available for selection;
- Supportable for 160mm PCB Front Load / 80mm PCB rear connection;
- Supportable for 3U/8HP plug-in CPCI PSUs;
- In compliance with the PICMG 2.0 R3.0 CompactPCI specification;
- In compliance with the PICMG 2.1 R2.0 CompactPCI Hot Swap specification;
- In compliance with the PICMG 2.11 R1.0 Power Interface specification.

## Cooling System

- The cool air flow within the system is sucked in at the bottom and vents out from the top;
- 3 × 120mm axial fan; DC 12V/0.45, 100CFM/each.

## PSU

### 200W/250W CPCI PSU

- Output power: 200W CPCI PSU  
(5V/30A; 3.3V/25A; +12V/5A; -12V/0.5A;)  
250W CPCI PSU  
(5V/33A; 3.3V/33A; +12V/6A; -12V/0.5A;)
- Input voltage: AC 90V~264V Auto range or DC 48V (40V~72V);
- Efficiency: 75% typical@115V, with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on +5V & +3.3V outputs;

- Wave: 50mV max. for 5V & 3.3V, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- safety: EN60950, UL, CUL approved;
- EMC: Meets IFCC Level A and EN55022 Level A;
- Operating temperature: 0~50°C;
- Storage temperature: -40~+85°C;
- MTBF > 150,000 hours @25°C, full power.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
MPS-3407CV1	9920720	4U (3U+1U) CPCI chassis, 7 CPCI slot, support 1+1 redundant AC CPCI Power Supply
MPS-3408CV1	9920721	4U (3U+1U) CPCI chassis, 8 CPCI slot, support 1+1 redundant AC CPCI Power Supply

Note: Any model in this table excludes the CPCI PSU. Any model marked in blue is available for fast delivery.

### Attachment:

Model No.	Part Number	Production Description
-	3685178	3U x 4HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
-	3685091	3U x 8HP Drive Chassis for HDD
-	3685470	3U x 8HP Drive Chassis for Floppy
-	3686989	Guide Rail for drive chassis
PS3312	3688694	3U 200 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3313	3688655	3U 200 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP
PS3314	3688695	3U 250 Watt CompactPCI Pluggable Power Supply, AC 47Pin, 8HP
PS3315	3688696	3U 250 Watt CompactPCI Pluggable Power Supply, DC48V 47Pin, 8HP

### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

# Slim - 63xxV Series

## 3U VME/VME64x System Platform



Pictures are for reference only.



### Features

- 19" rack-mounted or desktop 3 U VME/VME 64 x system platform
- Six horizontal 6U slots, supportable for the rear I/O interface.
- 6U 6-slot VME J1/J2 monolithic backplanes or 6U 5-slot VME64 x backplanes are available for selection,
- Supportable for installation of two 3 U × 8HP 250 W pluggable redundant PSUs
- Equipped with two 120-mm and one 80-mm air cooling fans (with one on the left and 1+1 on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation
- EMC Electromagnetic compatibility protection
- ESD electrostatic discharge protection
- In compliance with the IEEE-1010.1/1101.10 and 1101.11 specifications.

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 3U × 300mm
- Materials: Sheet Steel, which is sprayed with black paint

### Backplane

- 6slots VME J1/J2 monolithic backplanes
- In compliance with the IEEE-1014-1987 and IEC 8 21 specifications
- 5slots VME64x backplanes, with P0 connectors
- In compliance with the ANSI/VITA 1.1-1997 specification

### Cooling System

- The cool air flow within the system is sucked in at the bottom and vents out from the top
- 2 × 120 mm DC 12V/0.36A fan at 115CFM (195m<sup>3</sup>/h) each
- 1 × 80 mm DC 12V/0.29A fan at 39CFM (66m<sup>3</sup>/h) each

## PSU

### Pluggable Redundant PSU

- Output power: 250 W PSU:  
5 V/33 A; 3.3 V/33 A; +12 V/6 A; -12 V/1.5 A ;
- Input voltage: AC 90V ~ 264V Auto range;
- Efficiency: 75% typical @ 115 V with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N + 1 redundant and hot pluggable operations;
- Remote sense on 5 V and 3.3 V outputs;
- Wave: 50 mV max. for all outputs, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;

- Safety: EN 60 950, UL, CUL approved ;
- EMC: Meets IFCC Level A and EN55022 Level A ;
- Operating temperature: 0 ~ 50°C ;
- Storage temperature: -40 ~ +85°C ;
- MTBF > 150,000 hours @ 25°C, full power.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim -6306V	Contact the local sales office	3U Slim Box, 6slots VME J1/J2 monolithic, Support 1+1 redundant AC pluggable Power Supply
Slim -6305V64 – P0	Contact the local sales office	3U Slim Box, 5slots VME64x with P0, Support 1+1 redundant AC pluggable Power Supply

Note: Any model in this table excludes PSUs.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
PS3314	3688695	3U 250 Watt Pluggable Power Supply, AC 47Pin, 8HP

### Customization:

Optimal design is subject to different architectures and dimensions of an enclosure, different widths and depths of the mainboard, different heat dissipation models, and different systematic configurations.

# Slim - 64xxV Series

## 4U VME/VME64x System Platform



### Features

- 19" rack-mounted or desktop 4 U VME/VME64x system platform
- Eight horizontal 6U slots, supportable for the rear I/O interface.
- 6U 8 slots VME J1/J2 monolithic backplanes or 6U 7slotsVME64x backplanes,
- Supportable for installation of two 3 U × 8 HP 250 W Pluggable Redundant PSUs
- Equipped with two 120-mm and one 80-mm air cooling fans (with one on the left and 1+1 on the right), cool air flow of which travels from the left to the right and provides extremely effective heat dissipation
- EMC electromagnetic compatibility protection;
- ESD eletrostatic discharge protection;
- In compliance the IEEE-1010.1/1101.10 and 1101.11

### Enclosure Structure

- Dimension (in W × H × D) : 19" × 4U × 300mm
- Materials: Sheet Steel, which is sprayed with black paint

### Backplane

- 8 slots VME J1/J2 monolithic backplanes
- In compliance with the IEEE-1014-1987 and IEC 8 21 standards
- 7slots VME64x backplanes with P0 connectors
- In compliance with ANSI/VITA 1.1-1997

## PSU

### Pluggable Redundant PSU

- Output Power: 250 W PSU:  
5 V/33 A; 3.3 V/33 A; +12 V/6 A; -12 V/1.5 A ;
- Input voltage: AC 90 V~264 V Auto range;
- Efficiency: 75% typical@115 V with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations
- Remote sense on 5 V and 3.3 V outputs
- Wave: 50 mV max. for all outputs, peak-to-peak
- Circuit protection for overvoltage, overcurrent, and overheating
- Safety: EN 60950, UL, CUL approved

- EMC: Meets IFCC Level A and EN55022 Level A
- Operating temperature: 0~50 C
- Storage temperature: -40~+85 C
- MTBF > 150,000 hours @25C, full power

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
Slim-6408V	Contact the local sales office	4U Slim Box, 8slots VME J1/J2 monolithic, Support 1+1 redundant AC pluggable Power Supply
Slim-6407V64-P0	Contact the local sales office	4U Slim Box, 7slots VME64x with P0, Support 1+1 redundant AC pluggable Power Supply

Note: Any model in this table excludes PSUs

### Attachment:

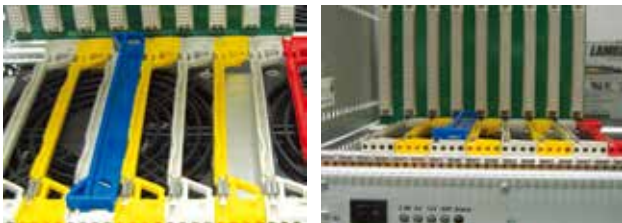
Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
PS3314	3688695	3U 250 Watt Pluggable Power Supply, AC 47Pin, 8HP

# MPS - 67xxV Series

## 7U VME/VME64x System Platform



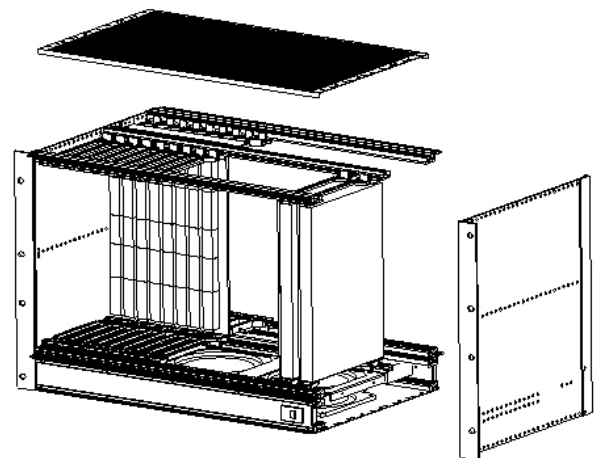
Pictures are for reference only.



### Enclosure Structure

- Dimension (in W × H × D) : 19" × 7U × 310mm
- Materials: Aluminium, which is passivated with chromic acid.

### Diagram of Enclosure Structure



### Features

- 19" rack-mounted or desktop 7 U ( 6 U+ 1 U) VME/VME64x system platform.
- Supportable for 6 U 5~21 slots VMEJ1/J2 monolithic backplanes or VME64x backplanes.
- Two 400 W 1+1 pluggable redundant PSUs, the output of which is AC.
- Three 120-mm axial fan installed at the bottom of the system, the cool air flow of which travels from the bottom to the top.
- EMC electromagnetic compatibility protection.
- ESD eletrostatic discharge protection;
- In compliance with the IEC60 297-3 to IEC60 297-5, and IEEE1101.1/1101.10/1101.11 specifications.

## Backplane

- 8/12slots VME J1/J2 monolithic Backplane
- In compliance with the IEEE-1014-1987 and IEC821 standards
- 7/12slots VME64x backplanes with P0 connectors
- In compliance with ANSI/VITA 1.1-1997

## Cooling System

- The cool air flow within the system is sucked in at the bottom and vents out from the top
- 3 × 120 mm axial fan DC 12V/0.45A, 100CFM/each

## PSU

### 400 W Pluggable Redundant PSU

- Output Power: 400 W  
5 V/50 A; 3.3 V/80 A; +12 V/7 A; -12 V/1 A ;
- Input voltage: AC 90 V~264 V Auto range ;
- Efficiency: 84% with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which shares +5V and +3.3V current;
- Redundancy: supportable for N+1 redundant and hot pluggable operations;
- Remote sense on 5V and 3.3V outputs ;
- Wave: 50mV max. for 5V&3.3V, peak-to-peak; 120mV max. for +12V&-12V, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating ;
- Safety: UL, CSA, TUV, CE marking ;
- EMC: Meets EN55022 Level B and IEC-1000 ;
- Shock&Vibration: Per ETSI, ETS-300 ;
- Operating temperature: -10~55°C ;
- Storage temperature: -40~+85°C ;
- Humidity: Up to 95%, non-Condensing
- MTBF > 500,000 hours Per Bellcore.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
MPS-6708V	Contact the local sales office	7U(6U+1U) VME chassis, 8slots VME J1/J2 monolithic, Support 1+1 redundant AC pluggable Power Supply
MPS-6712V	Contact the local sales office	7U(6U+1U) VME chassis, 12slots VME J1/J2 monolithic, Support 1+1 redundant AC pluggable Power Supply
MPS-6707V64	Contact the local sales office	7U(6U+1U) VME64x chassis, 7slots VME64x without P0, Support 1+1 redundant AC pluggable Power Supply
MPS-6708V64-P0	Contact the local sales office	7U(6U+1U) VME64x chassis, 7slots VME64x withP0, Support 1+1 redundant AC pluggable Power Supply
MPS-6712V64	Contact the local sales office	7U(6U+1U) VME64x chassis, 12slots VME64x without P0, Support 1+1 redundant AC pluggable Power Supply
MPS-6712V64-P0	Contact the local sales office	7U(6U+1U) VME64x chassis, 12slots VME64x withP0, Support 1+1 redundant AC pluggable Power Supply

Note: Any model in this table excludes PSUs. For backplanes under other models, please contact local branch offices of Rittal.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
CPCI AC-6U - 500	9920535	6U 500 Watt Pluggable Power Supply, AC 47Pin, 8HP
VME AC - 400	Contact the local sales office	VME Open Frame Power Supply, 400 W
VME AC - 600	Contact the local sales office	VME Open Frame Power Supply, 600 W

# MPS - 69xxV Series

## 9U VME/VME64x System Platform



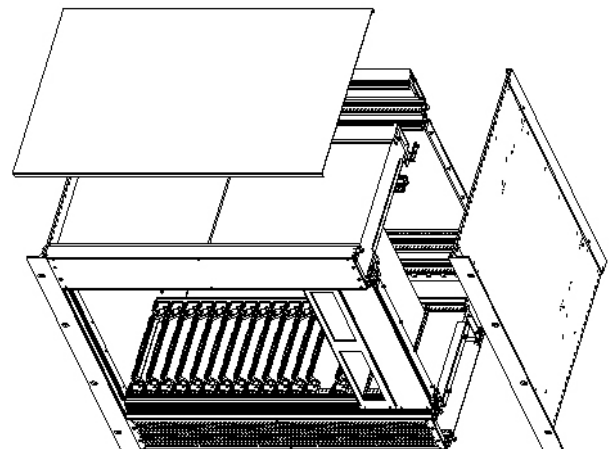
Pictures are for reference only.



### Enclosure Structure

- Dimension (in W × H × D) : 19" × 9U × 310mm
- Materials: Aluminium, which is passivated with chromic acid.

### Diagram of Enclosure Structure



### Features

- 19" rack-mounted or desktop 9 U (1.5 U+6 U+1.5 U)VME/VME 64x system platform
- 6U 21-slot VMEJ1/J2 monolithic backplanes or 12/21-slot VME 64x backplanes
- Supportable for two 500 W 1+1 pluggable redundant PSUs, the output of which is AC, as well as highly reliable and high-performance open-frame PSUs.
- Three 120-mm axial fan installed at the bottom
- EMC electromagnetic compatibility protection;
- ESD electrostatic discharge protection;
- In compliance with the IEC 60297-3 to IEC 60297-5, and IEEE 1101.1/1101.10/1101.11 specifications.

## Backplane

- 21slots VME J1/J2 monolithic backplane
- In compliance with the IEEE-1014-1987 and IEC821 standards
- 12/21slots VME64x backplane with P0 connectors
- In compliance with ANSI/VITA 1.1-1997

## Cooling System

- The cool air flow within the system is sucked in at the lower front and vents out from the upper rear
- 3 × 120 mm axial fan DC 12V/0.45A, 100CFM/each

## PSU

### 400 W Pluggable Redundant PSU

- Output Power: 500W  
5V/65A; 3.3V/80A; +12V/12A; -12V/1.5A;
- Input voltage: AC 90V ~ 264V Auto range;
- Efficiency: 81% with full load;
- Parallel working: supportable for multiple PSUs under the parallel working mode, which has +5V and +3.3V current;
- Redundancy: supportable for N + 1 redundant and hot pluggable operations;
- Remote sense on 5V and 3.3V outputs;
- Wave: 60mV max. for 5V&3.3V, peak-to-peak; 120mV max. for +12V&-12V, peak-to-peak;
- Circuit protection for overvoltage, overcurrent, and overheating;
- Safety: UL60950' EN60950' cUL & CE Marking;
- EMC: EN61000-4-3 10V/m; EN61000-4-4 1Kv;
- Storage: EN 300 019-2-1 Storage class 1.2'  
EN 300 019-2-2 Transportation class 2.3'  
EN 300 019-2-3 Use class 3.3;
- Operating temperature: -5 ~ 55°C ;
- Storage temperature: -40 ~ +85°C ;
- Humidity: Up to 95%, non-Condensing;
- MTBF: > 400,000 Hours per Bellcore Standard B332 Gb 50C.

## Models for subscription

### Subscription information:

Model No.	Part Number	Production Description
MPS-6921V	Contact the local sales office	9U(1.5U+6U+1.5U) VME chassis, 21slots VME J1/J2 monolithic, Support Open Frame Power Supply
MPS-6912V64-P0	Contact the local sales office	9U(1.5U+6U+1.5U) VME64x chassis, 12slots VME64x withP0, Support 1+1 redundant AC pluggable Power Supply
MPS-6912V64-P0	Contact the local sales office	9U(1.5U+6U+1.5U) VME64x chassis, 21slots VME64x withP0, Support Open Frame Power Supply

Note: Any model in this table excludes PSUs. In case of backplanes with different slots, please contact the local branch offices of Rittal.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
AC-6U-500	9920535	6U 500 Watt Pluggable Power Supply, AC 47Pin, 8HP
VME AC - 600	Contact the local sales office	VME Open Frame Power Supply, 600 W
VME AC - 800	Contact the local sales office	VME Open Frame Power Supply, 800 W

# MPS - 610xxV Series

## 10U VME/VME64x System Platform



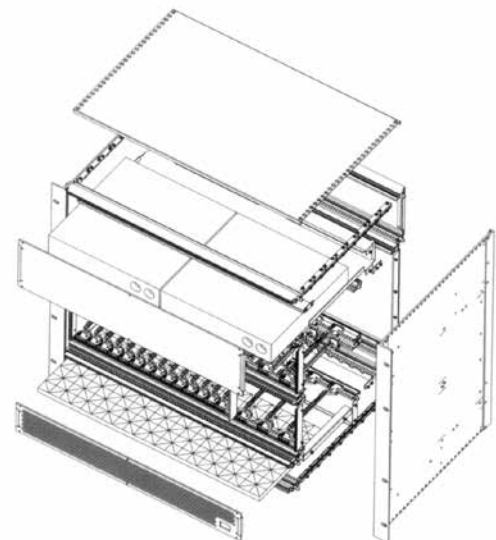
Pictures are for reference only.



### Enclosure Structure

- Dimension (in W × H × D) : 19" × 10U × 490mm
- Materials: Aluminium, which is passivated with chromic acid.  
Cover: STCC, which is coated with zinc

### Diagram of Enclosure Structure



### Features

- 19" rack-mounted or desktop 10 U (2 U+6 U+2 U) VME/VME64x system platform
- 6U 21-slot VMEJ1/J2 monolithic backplanes or 12/21-slot VME64x backplanes
- Supportable for 80-mm or 160-mm rear slots
- Three 120-mm axial fans installed at the bottom
- Front/rear retractable design, which may be installed with hinges
- Fixture design
- Supportable for highly reliable and high-performance open-frame PSUs
- EMC electromagnetic compatibility protection;
- ESD electrostatic discharge protection;
- In compliance with the IEC 60297-3 to IEC 60297-5, and IEEE 1101.1/1101.10/1101.11 specifications

## Backplane

- 21slots VME J1/J2 monolithic backplanes
- In compliance with the IEEE-1014-1987 and IEC 821 standards
- 12/21slots VME64x backplanes with P0 connectors
- In compliance with ANSI/VITA 1.1-1997

## Cooling System

- The cool air flow within the system is sucked in at the lower front and vents out from the upper rear
- 3 × 120 mm axial fan DC 12V/0.45A, 100CFM/each

## PSU

### VME open-frame PSU

- Output Power: 600W/800W  
600W: 5V/60A; 3.3V/60A; +12V/10A; -12V/4A;  
800W: 5V/120A; 3.3V/35A; +12V/27A; -12V/4A ;
- Input voltage: AC 85V ~ 264V Auto range
- Efficiency: 70 – 80% with full load;
- Wave:RMS: 0.1% or 10 mV,  
whichever is greater  
Pk-Pk: 1.0% or 50 mV,  
whichever is greater  
Bandwidth limited to 20 MHz
- Circuit protection for overvoltage, overcurrent, and overheating
- EMI filter Standard: CISPR 22  
EN55022 Level "B"
- Current of electric leakage: 2.0 mA max. @ 240 VAC
- Operating temperature: -20°C to 50°C (start @ 0°C)  
(derate each output linearly to 50% at 70°C)  
(-20°C to 40°C max. with rear air option)
- Storage temperature:-40°C to +85°C
- Humidity: 95% non-condensing  
urs @ C, full power

## Models for subscription

### Subscription information:

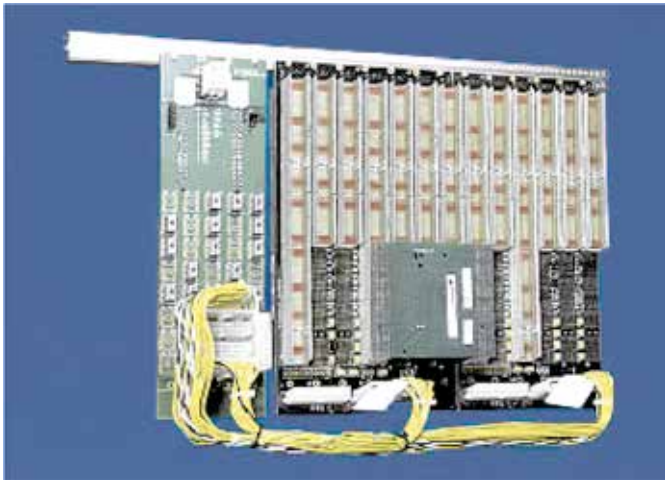
Model No.	Part Number	Production Description
MPS-61021V	Contact the local sales office	10U(2U+6U+2U) CPCI chassis, 21 VME slot, support open frame Power Supply
MPS-61021V64-P0	Contact the local sales office	10U(2U+6U+2U) CPCI chassis, 21 VME64x slot, with P0,support open frame Power Supply

Note: Any model in this table excludes PSUs. In case of backplanes with different slots, please contact the local branch offices of Rittal.

### Attachment:

Model No.	Part Number	Production Description
-	3685186	6U x 4HP EMC filler panel
-	3685190	6U x 8HP EMC filler panel
-	3685182	3U x 8HP EMC filler panel
VME AC - 600	Contact the local sales office	VME Open Frame Power Supply, 600W
VME AC - 800	Contact the local sales office	VME Open Frame Power Supply, 800W

## Blackplanes, technical specifications



Rittal offers an extensive range of powerful backplanes for CompactPCI.

- Modular construction facilitates expansion up to a maximum of 21 slots
- Connection between segments via CPCI or H.110 bridge modules
- Power input via ATX-compatible connectors or screw terminal
- Additional 2 x 3 Mate-N-Lock connector for 48 V with H.110 backplane
- Optional development of customer-specific Monolithic backplanes
- 8 layer multi-layer
- System slot on right (left upon request)

### Modular assembly

The Ripac backplanes in 32 or 64-bit versions allow the configuration of CPCI systems from 2 to 21 slots. This is possible due to the modular design of the backplanes and connection of the individual segments via CPCI or H.110 bridge modules. Each backplane segment contains between 2 and 8 slots and operates in stand-alone mode in conjunction with a CPU board and a power supply unit.

For assembling larger systems, several segments may be joined together via PCI bridge modules fitted at the rear. In such cases, only one of the segments will run in the system slot with a CPU board. The remaining segments will have a subordinate status without CPU boards. However, the first slot on the right of the backplane is available for a standard 32 or 64 bit CompactPCI host CPU.

### Technical specifications

#### CPU slot

A single 3 U or 6 U CPU board with 32 or 64 bits is required for each system. The system slot on the right-hand side ensures that 2-slot or wider system boards do not conceal other slots, thus rendering them unusable.

#### Available slots

Each backplane contains two to eight 3 U or 6 U slots (32 or 64 bit).

#### Data transfer rate

132/264 MBytes for 32/64 bit version

+5 V, 33 MHz PCI bus interface

264/512 MBytes for 32/64 bit version

+3.3 V, 66 MHz (max. 5 Slot) PCI bus interface

#### PCI bridges

Single backplanes do not require bridges. For each additional backplane, however, a bridge fitted at the rear is required.

#### Power supply

Voltage supply via one or more ATX connectors.

#### Control connector

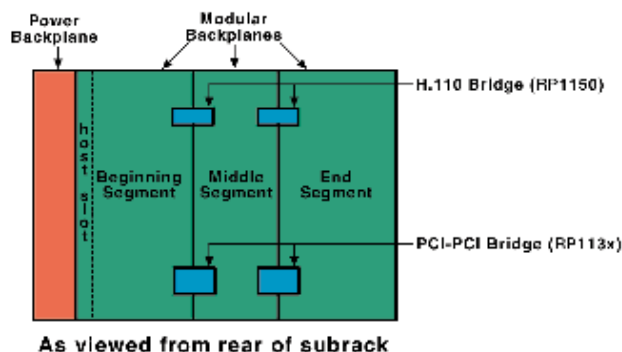
Each backplane has a control connector where +3.3, +5, ±12 V voltages may be picked off, e.g. for the connection of power LEDs.

#### I/O modules for J3 – J5

I/O modules can be connected at the rear of each slot.

#### Standards

- PCI 2.1 (PCI specification)
- PICMG 2.0 (CompactPCI spec.)
- PICMG 2.1 (hot swap spec.)
- IEEE 1101.1, mechanics
- IEEE 1101.10, mechanics
- IEEE 1101.11, mechanics



## Blackplanes, technical specifications

## 32-bit pin assignment

P2 connector<sup>9)</sup>

Pin	Z <sup>6)</sup>	A	B	C	D	E	F
22	GND	GA4 <sup>5)</sup>	GA3 <sup>5)</sup>	GA2 <sup>5)</sup>	GA1 <sup>5)</sup>	GA0 <sup>5)</sup>	GND
21	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	BP(I/O)	GND
20	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
19	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	BP(I/O)	GND
18	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
17	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
16	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
15	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
14	GND	BP(I/O)	BP(I/O)	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
13	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	GND
12	GND	BP(I/O)	BP(I/O)	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
11	GND	BP(I/O)	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	GND
10	GND	BP(I/O)	BP(I/O)	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
9	GND	BP(I/O)	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	GND
8	GND	BP(I/O)	BP(I/O)	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
7	GND	BP(I/O)	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	GND
6	GND	BP(I/O)	BP(I/O)	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
5	GND	BP(I/O)	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	BP(I/O)	GND
4	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	BP(I/O)	<b>BP(I/O)</b>	BP(I/O)	GND
3	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
2	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND
1	GND	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	<b>BP(I/O)</b>	GND

## 32-bit and 64-bit backplane – Technical specifications:

The CPCI specifications define both 32-bit and 64-bit versions. Both versions may be implemented on a 3 U daughterboard. However, the 32-bit version allows the complete P2/J2 connector to be used for user-defined I/O signals (slots 2 – 8). Slot 1 (system slot) uses separate P2/J2 pins for functions such as clock, arbitration, (grant/ requests) and other system functions. These pins are printed in bold in the table. In 32-bit systems the P2/J2 connection may optionally be populated at the rear with 16 mm long pins and a transfer frame.

Signals can be picked off or I/O boards connected at the rear.

## 64-bit pin assignment

P2 connector<sup>9)</sup>

Pin	Z <sup>7)</sup>	A	B	C	D	E	F
22	GND	GA4 <sup>6)</sup>	GA3 <sup>6)</sup>	GA2 <sup>6)</sup>	GA1 <sup>6)</sup>	GA0 <sup>6)</sup>	GND
21	GND	<b>CLK6</b>	GND	RSV	RS	RSV	GND
20	GND	<b>CLK5</b>	<b>GND</b>	RSV	GND <sup>8)</sup>	RSV	GND
19	GND	<b>GND</b>	GND <sup>8)</sup>	RSV	RS	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND <sup>8)</sup>	BRSVP2E18	GND
17	GND	BRSVP2A1	GND <sup>8)</sup>	PRST#	<b>REQ6#</b>	<b>GNT6#</b>	GND
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND <sup>8)</sup>	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	FAL#	<b>REQ5#</b>	<b>GNT5#</b>	GND
14	GND	AD(35)	AD(34)	AD(33)	GND	AD(32)	GND
13	GND	AD(38)	GND	V(I/O) <sup>3)</sup>	AD(37)	AD(36)	GND
12	GND	AD(42)	AD(41)	AD(40)	GND	AD(39)	GND
11	GND	AD(45)	GND	V(I/O) <sup>3)</sup>	AD(44)	AD(43)	GND
10	GND	AD(49)	AD(48)	AD(47)	GND	AD(46)	GND
9	GND	AD(52)	GND	V(I/O) <sup>3)</sup>	AD(51)	AD(50)	GND
8	GND	AD(56)	AD(55)	AD(54)	GND	AD(53)	GND
7	GND	AD(59)	GND	V(I/O) <sup>3)</sup>	AD(58)	AD(57)	GND
6	GND	AD(63)	AD(62)	AD(61)	GND	AD(60)	GND
5	GND	C/BE(5)#	GND	V(I/O) <sup>3)</sup>	C/BE(4)#	PAR64	GND
4	GND	V(I/O) <sup>3)</sup>	BRSVP2B4	C/BE(7)#	–	C/BE(6)#	GND
3 <sup>3)</sup>	GND	<b>CLK4</b>	<b>GND</b>	<b>GNT3#</b>	–	<b>GNT4#</b>	GND
2 <sup>3)</sup>	GND	<b>CLK2</b>	<b>CLK3</b>	<b>SYSEN#<sup>4)</sup></b>	–	<b>REQ3#</b>	GND
1 <sup>3)</sup>	GND	<b>CLK1</b>	GND	<b>REQ1#</b>	–	<b>REQ2#</b>	GND

The signals printed in bold are only assigned in the system slot

1) "Early mate" pin<sup>2)</sup> "Late mate" pin<sup>3)</sup> +3.3 V or 5 V<sup>4)</sup> Earthed with system slot<sup>5)</sup> GND for 33 MHz backplane, bussed in 66 MHz systems

6) Each slot may have its own address code (see CPCI specifications)<sup>7)</sup> Not for daughtercards<sup>8)</sup> Not for CPCI cards after version 1.0

9) All Rittal standard CPCI backplanes are designed for 64-bit applications on the layout side. With 32-bit versions, the P2/J2 connectors are populated on request.

P2 connector<sup>9)</sup>

Pin	Z <sup>6)</sup>	A	B	C	D	E	F
25	GND	5 V	REQ64#	ENUM#	3.3 V	5 V	GND
24	GND	AD(1)	5 V	V(I/O) <sup>3)</sup>	AD(0)	ACK64#	GND
23	GND	3.3 V	AD(4)	AD(3)	5 V	AD(2)	GND
22	GND	AD(7)	GND	3.3 V	AD(6)	AD(5)	GND
21	GND	3.3 V	AD(9)	AD(8)	M66EN <sup>3)</sup>	C/BE(0)#	GND
20	GND	AD(12)	GND	V(I/O) <sup>3)</sup>	AD(11)	AD(10)	GND
19	GND	3.3 V	AD(15)	AD(14)	GND	AD(13)	GND
18	GND	SERR#	GND	3.3 V	PAR	C/BE(1)#	GND
17	GND	3.3 V	SDONE	SBQ#	GND	PERR#	GND
16	GND	DEVSEL	GND	V(I/O) <sup>13)</sup>	STOP#	LOCK#	GND
15	GND	3.3 V	FRAME#	IRDY	GND <sup>2)</sup>	TRDY#	GND
12 – 14			KEY AREA				GND
11	GND	AD(18)	AD(17)	AD(16)	GND	C/BE(2)#	GND
10	GND	AD(21)	GND	3.3 V	AD(20)	AD(19)	GND
9	GND	C/BE(3)#	IDSEL	AD(23)	GND	AD(22)	GND
8	GND	AD(26)	GND	V(I/O) <sup>3)</sup>	AD(25)	AD(24)	GND
7	GND	AD(30)	AD(29)	AD(28)	GND	AD(27)	GND
6	GND	REQ#	GND	3.3 V	CLK	AD(31)	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	BRSVP1A4	GND	V(I/O) <sup>3)</sup>	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5 V	INTD#	GND
2	GND	TCK	5 V	TMS	TDO	TDI	GND
1	GND	5 V	-12 V	TRST#	+12 V	5 V	GND

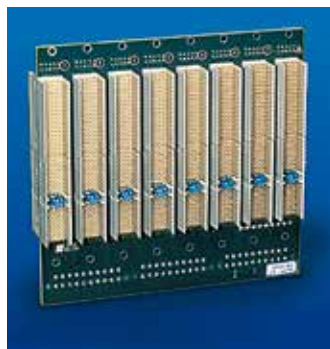
## 64-bit CompactPCI pin assignments – Technical specifications:

With the 64-bit CompactPCI, both P1 and P2 connectors are fully assigned with signals. User-defined I/O signal pins are not available. I/O signals are only available with 6 U boards on connectors P3, P4 and P5.

P1 connector<sup>9)</sup>

Pin	Z <sup>7)</sup>	A	B	C	D	E	F
25	GND	5 V	REQ64#	ENUM#	3.3 V	5 V	GND
24	GND	AD(1)	5 V	V(I/O) <sup>3)</sup>	AD(0)	ACK64#	GND
23	GND	3.3 V	AD(4)	AD(3)	5 V	AD(2)	GND
22	GND	AD(7)	GND	3.3 V	AD(6)	AD(5)	GND
21	GND	3.3 V	AD(9)	AD(8)	M66EN <sup>4)5)</sup>	C/BE(0)	GND
20	GND	AD(12)	GND	V(I/O) <sup>3)</sup>	AD(11)	AD(10)	GND
19	GND	3.3 V	AD(15)	AD(14)	GND	AD(13)	GND
18	GND	SERR#	GND	3.3 V	PAR	C/BE(1)#	GND
17	GND	3.3 V	SDONE	SBO#	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O) <sup>13)</sup>	STOP#	LOCK#	GND
15	GND	3.3 V	FRAME#	IRDY#	GND <sup>2)3)</sup>	TRDY#	GND
12 – 14			KEY AREA				
11	–	AD(18)	AD(17)	AD(16)	GND	C/BE(2)#	GND
10	GND	AD(21)	GND	3.3 V	AD(20)	AD(19)	GND
9	GND	C/BE(3)#	IDSEL	AD(23)	GND	AD(22)	GND
8	GND	AD(26)	GND	V(I/O)	AD(25)	AD(24)	GND
7	GND	AD(30)	AD(29)	AD(28)	GND	AD(27)	GND
6	GND	REQ#	GND	3.3 V	CLK	AD(31)	GND
5	GND	BRSVA5	BRSVB 5	RST#	GND	GNT#	GND
4	GND	BRSVA4	GND	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC	5 V	INTD#	GND
2	GND	TCK	5 V	TMS	TDO	TDI	GND
1	GND	5 V	-12 V	TRST#	+12 V	5 V	GND

## Backplanes



Front view, 3.5 U



Rear view, 3.5 U

## Backplanes 3 U, 3.5 U

Number of layers	8, 10 ( with 3 U )
Layer structure	2 GND layers
PCB thickness	3.2 mm
Data transfer rate	132/264 MBytes/32, 64-bit version
Power inlets	3 U: Via screws and busbars 3.5 U: 2 – 4 slots: 1 x ATX connector 5 – 7 slots: 2 x ATX connector 8 slots: 3 x ATX connector
Control connector	+3.3 V, +5 V, +12 V, –12 V
VI/O (3 U)	Adjustable to +5 V or +3.3 V
CPU slot	on right (left upon request)
Standards	PCI 2.1 (PCI specification) PICMG 2.0 (CompactPCI) PICMG 2.1 (hot swap) IEEE 1101.1/10/11
Installation height	3 U, 3.5 U (150.9 mm)
Distance between slots	4 HP
Connectors	J1, J2 32 or 64 bit No rear I/O
Operating temperature range	0° – 70° C
Relative humidity	90 %, non-condensing
Geographic addressing	64-bit versions

**Material:**

Fibreglass epoxy to IEC 60 249 (type FR4)

**Supply includes:**

Backplane, fully populated.

## Backplanes 3.5 U

Slots	Design	Model No. RP	
		32-bit	64-bit
2	SBE	–	3687.864
3	S	3687.865	3686.578
4	S	3687.863	3686.576
5	S	3687.862	3686.575
6	SBME	3687.861	3686.548
7	SBE	3687.860	3686.547
8	S	3688.419	3686.546

S = Stand alone

B = Beginning segment

M = Middle segment

E = Ending segment

## Backplanes 6 U, 6.5 U

Number of layers	8, 10 ( with 6 U )
Layer structure	2 GND layers
PCB thickness	3.2 mm
Data transfer rate	132/264 MBytes/32, 64-bit version
Power inlets	6 U: Via screws and busbars 6.5 U: 2 – 4 slots: 1 x ATX connector 5 – 7 slots: 2 x ATX connector 8 slots: 3 x ATX connector
Control connector	+3.3 V, +5 V, +12 V, –12 V
VI/O (6 U)	Adjustable to +5 V or +3.3 V
CPU slot	on right (left upon request)
Standards	PCI 2.1 (PCI specification) PICMG 2.0 (CompactPCI) PICMG 2.1 (hot swap) IEEE 1101.1/10/11
Installation height	6 U, 6.5 U (284.3 mm)
Distance between slots	4 HP
Connectors	J1, J2 32 or 64 bit J3, J4, J5 for rear I/O (64 bit only)
Operating temperature range	0° – 70° C
Relative humidity	90 %, non-condensing
Geographic addressing	64-bit versions

**Material:**

Fibreglass epoxy to IEC 60 249 (type FR4)

**Supply includes:**

Backplane, fully populated.

## Backplanes 6 U for low profile bridge

Slots	Design	Model No. RP
		64-bit
8	S	9920.504

## Backplanes 6.5 U for low profile bridge

Slots	Model No. RP
	64-bit
3	3689.209
4	3689.208
5	3689.207
6	3689.206
7	3689.205



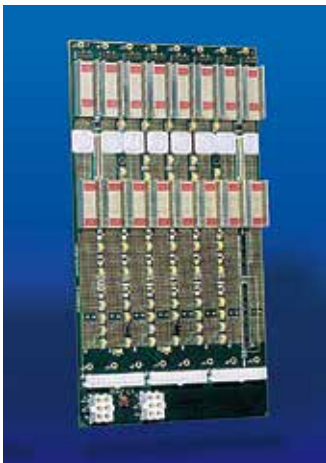
Front view, 6.5 U



Rear view, 6.5 U



Front view



Rear view

## Backplanes 7 U with H.110

Number of layers	10
Layer structure	2 GND layers
PCB thickness	3.2 mm
Data transfer rate	132/264 MBytes/32, 64-bit (for CPCI)
Power inlets	Power 'bugs' plus up to 4 slots: 1 x ATX connector 5 – 7 slots: 2 x ATX connector 8 slots: 3 x ATX connector
CPU slot	Right
Standards	PCI 2.1 (PCI specification) PICMG 2.0 or 3.0 (CompactPCI) PICMG 2.1 (hot swap) PICMG 2.5 (CPCI Computer Telephony) IEEE 1101.1/10/11
Installation height	7 U
Distance between slots	4 HP
Connectors	J1, J2 64 bit J3 rear I/O J4 H.110
Operating temperature range	0° – 70° C
Relative humidity	90 %, non-condensing
Geographic addressing	Yes

### Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

### Supply includes:

Backplane, fully populated.

### J4 pin assignment

No.	Row Z	Row A	Row B	Row C	Row D	Row E	Row F
25	NP	SGA4	SGA3	SGA2	SGA1	SGA0	FG
24	NP	GA4	GA3	GA2	GA1	GA0	FG
23	NP	+12 V	/CT Reset	/CT EN	-12 V	CT_MC	FG
22	NP	PFSO#	RSVD	RSVD	RSDV	RSDV	FG
21	NP	-SEL Vbat	PFS1#	RSDV	RSDV	SEL VbatRtn	FG
20	NP	NP	NP	NP	NP	NP	NP
19	NP	NP	NP	NP	NP	NP	NP
18	NP	VRG	IN/C	IN/C	IN/C	VRGRtn	NP
17	NP	NP	NP	NP	NP	NP	NP
16	NP	NP	NP	NP	NP	NP	NP
15	NP	-Vbat	IN/C	IN/C	IN/C	Vbat Rtn	NP
14	KEY AREA						
13							
12							
11	NP	CT_D29	CT_D30	CT_D31	V (I/O)	/CT_FRAME	GND
10	NP	CT_D27	+3.3 V	CT_D28	+5 V	/C_FRAME B	GND
9	NP	CT_D24	CT_D25	CT_D26	GND	/FR_COMP	GND
8	NP	CT_D21	CT_D22	CT_D23	+5 V	CT_C8 A	GND
7	NP	CT_D19	+5 V	CT_D20	GND	CT_C8 B	GND
6	NP	CT_D16	CT_D17	CT_D18	GND	CT_NETREF	GND
5	NP	CT_D13	CT_D14	CT_D15	+3.3 V	CT_NETREF	GND
4	NP	CT_D11	+5 V	CT_D12	+3.3 V	SCLK	GND
3	NP	CT_D8	CT_D9	CT_D10	GND	SCLK-D	GND
2	NP	CT_D4	CT_D5	CT_D6	CT_D7	GND	GND
1	NP	CT_D0	+3.3 V	CT_D1	CT_D2	CT_D3	GND

### Key to J4 pin assignment

CT_name	= H.110 TDM bus signals
+5 V	= +5 V power
+3.3 V	= +3.3 V power
GND	= logic ground
V (I/O)	= I/O cell power
FG	= frame ground
RSVD	= reserved for future use
NP	= a pin and pad REQUIRED to be not populated to meet safety regulations
IN/C	= No connect required for safety agency insulation requirements

-SELVbat	= short loop battery
SELVbatRtn	= short loop battery return
-Vbat	= telecom power distribution bus
VbatRtn	= return bus pin for -Vbat
SGA0-SGA4	= shelf enumeration bus signals
GA0-GA4	= slot ID signals: not bussed
VRG	= bus for ringing voltage
VRGRtn	= bus for ringing voltage
PFSO#-PFS1#	= busses for power fail sense
KEY AREA	= area utilized for key



PS1222



PS1257



PS1258



PS1248



PS1247

## PS1222 3U 16HP PSU Backplane

PS1222 is a type of PSU backplane at a height of 3.5U and a width of 16HP, which is used for installation of two hot pluggable 3U CompactPCI PSU, and provides DC power to other CompactPCI backplanes. Two 20-pin ATX connectors are connected to CompactPCI backplanes through the 20-pin ATX connecting cable, which provides DC power. The 20-pin ATX connecting cable provides +5V, +3.3V, +12V, and -12V, as well as some control signals that transmit between two backplanes. PS1222, subject to the definition under the PICMG2.11R1.0 PSU interface specification, is connected to the PSU through two Positronic 47 connectors.

## PS1258 6U 8HP PSU backplane (Support 1 × 6U PSU)

PS1258 is a type of PSU backplane at a height of 6.5U and a width of 8HP, which is used for installation of one hot pluggable 6U/8HP CompactPCI PSU, and provides DC power to other CompactPCI backplanes. The AC or DC input power is connected to the PSU backplane through one 6-pin Mate-n-Lok connector. Two 20-pin ATX connectors distribute stable DC power to the modularized CompactPCI backplane through the 20-pin ATX connecting cable. The 20-pin ATX connecting cable provides +5V, +3.3V, +12V, and -12V, as well as some control signals that transmit between two backplanes. PS1258, subject to the definition under the PICMG2.11R1.0 PSU interface specification, is connected to the PSU through one Positronic 47 connector.

## PS1257 6U 8HP PSU backplane (Support 2 × 3U PSU)

PS1257 contains two Positronic47 connectors, which may support two hot pluggable 3U/8HP CompactPCI PSUs, other specifications of which are the same as PS1258. It connects to CompactPCI PSU backplanes for providing power.

## PS1248 6U 16HP PSU backplane (support 2 × 6U PSU)

PS1248 is a type of PSU backplane at a height of 6.5U and a width of 16HP, which is used for installation of two hot pluggable 6U/8HP CompactPCI PSUs, and provides DC power to other CompactPCI backplanes. The AC or DC input power is connected to the PSU backplane through one 6-pin Mate-n-Lok connector. Four 20-pin ATX connectors distribute stable DC power to the modularized CompactPCI backplane through the 20-pin ATX connecting cable. The 20-pin ATX connecting cable provides +5V, +3.3V, +12V, and -12V, as well as some control signals that transmit between two backplanes. . PS1248, subject to the definition under the PICMG2.11R1.0 PSU interface specification, is connected to the PSU through two Positronic 47 connectors.

## PS1247 6U 16HP PSU backplane (support 4 × 3U PSU)

PS1247 contains four Positronic47 connectors, which may support four hot pluggable 3U/8HP CompactPCI PSUs, other specifications of which are the same as PS1248.

## Specification

All PSU backplanes are in compliance with the following specification:

- I PICMG2.0 R2.1 CompactPCI Specification;
- I PICMG2.11 R1.0 Power Interface Specification.

## Models for subscription

### Subscription information:

Model number	Part number	Diemnsion	Power Supply capacity	Input onnector	Output Connector	Power Input	Voltage settings	Hot Swap
PS1222	3688603	3U × 16HP	2 × 3U	P47	ATX	250W	Local/remote	Y
PS1258	3688607	6U × 8HP	1 × 6U	P47	ATX	100W	Local/remote	Y
PS1257	3688602	6U × 8HP	2 × 3U	P47	ATX	250W	Local/remote	Y
PS1248	3688608	6U × 16HP	2 × 6U	P47	ATX	200W	Local/remote	Y
PS1247	3688037	6U × 16HP	4 × 3U	P47	ATX	450W	Local/remote	Y

### Connector configuration

Pin		Pin		Pin		Pin	
1	+5 V	13	+3.3 V	25	Unused	37	Unused
2	+5 V	14	+3.3 V	26	Unused	38	DEG#
3	+5 V	15	+3.3 V	27	R /EN	39	INH#
4	+5 V	16	+3.3 V	28	Unused	40	Unused
5	0 V (Shared)	17	+3.3 V	29	V1-ADI	41	ISHR-2
6	0 V (Shared)	18	+3.3 V	30	+5 V senor	42	FAL#
7	0 V (Shared)	19	0 V (Shared)	31	Unused	43	Unused
8	0 V (Shared)	20	+12 V	32	V2-ADI	44	ISHR-3
9	0 V (Shared)	21	-12 V	33	+3.3 V senor	45	Framework GND
10	0 V (Shared)	22	0 V (Shared)	34	0 V senor	46	AC neutral/+DC
11	0 V (Shared)	23	Unused	35	ISHR-1	47	AC neutral/+DC
12	0 V (Shared)	24	0 V (Shared)	36	+12 V		

## Backplanes, technical specifications

### General technical specifications VMEbus

The VMEbus, based on standard IEEE 1014 and IEC 821, has become established worldwide as an industry standard. The VME64 is a new addition to the VME family to ANSI/VITA 1-1994 and supports 64-bit data traffic. The VME64x extends the VME family to ANSI/VITA 1.1-1997 and is available with the optional 133-pole 2 mm connector J0. 160-pole connectors are used with VME64x. This system remains backward compatible, so that assemblies with 96-pole connectors to IEC 60 603-2 may still be used. All Rittal VMEbus boards are of a **HIGH SPEED DESIGN**. Minimal reflections are achieved, due to even surge impedance of the signal track. The consistent shielding of every signal track ensures minimum coupling and hence guarantees interference-free operation even when extended to 64 bit mode with the **2e protocol** (160 Mbyte/s).

### Daisy-chain circuit

With the daisy-chain circuit, a distinction is made between manual daisy-chaining and automatic daisy-chaining. Automatic daisy-chaining renders the connection of jumpers superfluous, and users are saved the time-consuming task of insertion and extraction. What is more, possible misconnections are avoided. Automatic daisy-chaining can be achieved in two ways. Rittal VME backplanes are generally supplied with automatic daisy-chaining.

### Termination

In order to avoid malfunctions on signal tracks that may arise as a result of reflections on the exposed track end, these must be terminated with the VMEbus. Termination may be either ON-/IN-board (on the backplane) or OFF-board (external). With regard to the type of termination, a distinction is made between passive and active termination. The benefit of active termination lies in the lower closedcircuit current consumption. Passive termination is distinguished by superior frequency response and a broader temperature range.

## Pin assignment J1 and J2

### Pin assignment J1

Pin assignment for J1 connector VME64x					
Pin no.	Row Z	Row a	Row b	Row c	Row d
1	MPR	D00	BBSY	D08	VPC
2	GND	D01	BCLR	D09	GND
3	MCLK	D02	ACFAIL	D10	+ V1
4	GND	D03	BGOIN	D11	+ V2
5	MSD	D04	BGOOUT	D12	RsvU
6	GND	D05	BG1IN	D13	- V1
7	MMD	D06	BG1OUT	D14	- V2
8	GND	D07	BG2IN	D15	RsvU
9	MCTL	GND	BG2OUT	GND	GAP
10	GND	SYSCLK	BG3IN	SYSFAIL	GAO
11	RTRY1	GND	BG3OUT	BERR	GA1
12	GND	DS1	BR0	SYSRESET	+3.3 V
13	RsvBus	DS0	BR1	LWORD	GA2
14	GND	WRITE	BR2	AM5	+3.3 V
15	RsvBus	GND	BR3	A23	GA3
16	GND	DTACK	AM0	A22	+3.3 V
17	RsvBus	GND	AM1	A21	GA4
18	GND	AS	AM2	A20	+3.3 V
19	RsvBus	GND	AM3	A19	RsvBus
20	GND	IACK	GND	A18	+3.3 V
21	RsvBus	IACKIN	SERCLK (1)	A17	RsvBus
22	GND	IACKOUT	SERDAT (1)	A16	+3.3 V
23	RsvBus	AM4	GND	A15	RsvBus
24	GND	A07	IRQ7	A14	+3.3 V
25	RsvBus	A06	IRQ6	A13	RsvBus
26	GND	A05	IRQ5	A12	+3.3 V
27	RsvBus	A04	IRQ4	A11	LI/I
28	GND	A03	IRQ3	A10	+3.3 V
29	SBB	A02	IRQ2	A09	LI/O
30	GND	A01	IRQ1	A08	+3.3 V
31	SBA	-12 V	+5 V STDBT	+12 V	GND
32	GND	+5 V	+5 V	+5 V	VPC

### Pin assignment J2

Pin assignment for J2 connector VME64x					
Pin no.	Row Z	Row a	Row b	Row c	Row d
1	UD	User def.	+5 V	User def.	UD
2	GND	User def.	GND	User def.	UD
3	UD	User def.	Retry	User def.	UD
4	GND	User def.	A24	User def.	UD
5	UD	User def.	A25	User def.	UD
6	GND	User def.	A26	User def.	UD
7	UD	User def.	A27	User def.	UD
8	GND	User def.	A28	User def.	UD
9	UD	User def.	A29	User def.	UD
10	GND	User def.	A30	User def.	UD
11	UD	User def.	A31	User def.	UD
12	GND	User def.	GND	User def.	UD
13	UD	User def.	+5 V	User def.	UD
14	GND	User def.	D16	User def.	UD
15	UD	User def.	D17	User def.	UD
16	GND	User def.	D18	User def.	UD
17	UD	User def.	D19	User def.	UD
18	GND	User def.	D20	User def.	UD
19	UD	User def.	D21	User def.	UD
20	GND	User def.	D22	User def.	UD
21	UD	User def.	D23	User def.	UD
22	GND	User def.	GND	User def.	UD
23	UD	User def.	D24	User def.	UD
24	GND	User def.	D25	User def.	UD
25	UD	User def.	D26	User def.	UD
26	GND	User def.	D27	User def.	UD
27	UD	User def.	D28	User def.	UD
28	GND	User def.	D29	User def.	UD
29	UD	User def.	D30	User def.	UD
30	GND	User def.	D31	User def.	UD
31	UD	User def.	GND	User def.	UD
32	GND	User def.	+5 V	User def.	UD

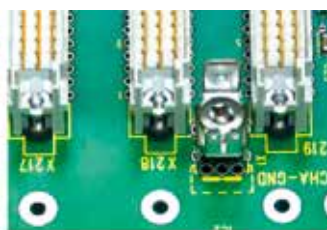
## Backplanes, technical specifications

**Automatic daisy-chaining J1 and J1/J2**

Via the use of connectors with integral mechanical switches, the contact is automatically opened when the daughterboard is inserted, and closed again when it is extracted.

**Automatic daisy-chaining VME64x**

The second option for automatic daisy-chaining is achieved here by an "or" logic integrated onto the backplane. If the daughterboard is extracted, the logic closes the daisy-chain.

**Chassis GND connection**

An electrically conductive chassis GND surface is attached to the subracks in the mounting section of the backplane. This facilitates EMC-sealed mounting of the backplane on the subracks. With VME64x, RF linking of the subracks and system earth is achieved via capacitors (10nF, 200 V at each slot). Static charges are discharged via a resistor ( $\geq 1 \text{ M}\Omega$ ). A combined connection component (screw M4 and Faston 2.8 or 6.3 x 0.8 mm) is provided for connection of the enclosure earth.

**Power connections**

Infeed of the main operating voltage +5 V/+3.3 V and GND is provided via busbars with M6 screw terminal. The auxiliary operating voltages are supplied via double Fastons with additional M4 screw thread. Optimum supply of the daughterboards and hence problem-free operation is ensured, thanks to the arrangement of the infeed modules on the backplane.

**Utility connector**

The special signals to the power pack and to external LEDs are routed on a separate connector on the backplanes.

A 7-pole, a 10-pole or a 14-pole connector with 2.54 mm spacing is provided, depending on the backplane type.

**Pin assignment, 10/14 pins**

GND	1	2	GND sense (5 V)
+5 V	3	4	+5 V sense
ACFAIL-	5	6	ACFAIL-
SYSFAIL-	7	8	SYSFAIL-
SYSRESET-	9	10	SYSRESET-
+3.3 V	11	12	+3.3 V sense
GND	13	14	GND sense (3.3 V)

J1, J1/J2: 10 pins, VME64x: 14 pins

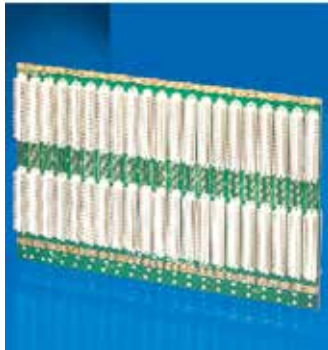
**Geographical address pin assignments (VME64x)**

Slot no.	GAP pin J1-D9	GA4 pin J1-D17	GA3 pin J1-D15	GA2 pin J1-D13	GA1 pin J1-D11	GA0 pin J1-D10
1	Open	Open	Open	Open	Open	GND
2	Open	Open	Open	Open	GND	Open
3	GND	Open	Open	Open	GND	GND
4	Open	Open	Open	GND	Open	Open
5	GND	Open	Open	GND	Open	GND
6	GND	Open	Open	GND	GND	Open
7	Open	Open	Open	GND	GND	GND
8	Open	Open	GND	Open	Open	Open
9	GND	Open	GND	Open	Open	GND
10	GND	Open	GND	Open	GND	Open
11	Open	Open	GND	Open	GND	GND
12	GND	Open	GND	GND	Open	Open
13	Open	Open	GND	GND	Open	GND
14	Open	Open	GND	GND	GND	Open
15	GND	Open	GND	GND	GND	GND
16	Open	GND	Open	Open	Open	Open
17	GND	GND	Open	Open	Open	GND
18	GND	GND	Open	Open	GND	Open
19	Open	GND	Open	Open	GND	GND
20	GND	GND	Open	GND	Open	Open
21	Open	GND	Open	GND	Open	GND

**Pin assignments J0**

Pin no.	ROW Z	ROW A	ROW B	ROW C	ROW D	ROW E	ROW F
1 – 19	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND

## Backplanes



### Backplanes VME64x

#### Technical specifications:

Number of layers	10
Layer structure	Optimised for optimum RF performance. Outer layers designed as shielding surface.
PCB thickness	4.5 mm $\pm$ 10 %
Ohmic resistance of the signal tracks	<1 Ohm
Surge impedance Z of the signal tracks	55 Ohm
Basic power consumption, terminated at both ends	Active: < 200 mA, Passive: < 2 A
Power supply: – Busbar with M6 screw terminal – M4 screw terminal and FASTON 6.3 x 0.8 mm – < 5 slots	+5 V, +3.3 V and 0 V $\pm$ 12 V, +5 V STBY, $\pm$ V1, $\pm$ V2 and case FASTON 6.3 x 0.8 mm
Current carrying capacity of busbar	max. 200 A
Current carrying capacity of a combined double flat-pin connector/screw terminal	25 A
Current carrying capacity of a FASTON flat connector	10 A
Current carrying capacity of the assembly, per slot	+3.3 V 12.5 A +5 V 9.0 A +12 V 1.5 A -12 V 1.5 A +5 VSTDBY 1.5 A +48 V (38 – 75 V) 3.0 A
Termination ON-/IN-board	6 U: active, 6.5 U: active (passive/changeover)
Installation height	6 U/6.5 U
Distance between slots	4 HP
Connectors	Press-fit technique quality class 2, 400 connection cycles 160 pins compatible with C96 P0 spacing 2 mm, 95/133 pins
Operating temperature range	Active termination 0° ... +70°C Passive termination –40° ... +85°C
Relative humidity	90 %, non-condensing

#### VME64x 6 U

Slot	Dimensions		Model No. RP	
	Height mm	Height mm	without P0 connector	with P0 connector
2	261.7	39.5	<b>9912.423</b>	<b>9912.410</b>
3	261.7	59.5	<b>9912.424</b>	<b>9921.571</b>
4	261.7	80	<b>9912.425</b>	<b>9912.362</b>
5	261.7	100	<b>3687.608</b>	<b>3687.609</b>
6	261.7	120.5	<b>9912.426</b>	<b>9922.173</b>
7	261.7	141	<b>3687.610</b>	<b>9921.572</b>
8	261.7	161.5	<b>9912.427</b>	<b>9912.413</b>
9	261.7	181.5	<b>9904.930</b>	<b>9904.932</b>
10	261.7	202	<b>9904.931</b>	<b>9922.174</b>
11	261.7	222.5	<b>9912.428</b>	<b>9912.414</b>

Slot	Dimensions		Model No. RP	
	Height mm	Height mm	without P0 connector	with P0 connector
12	261.7	242.5	<b>3686.634</b>	<b>9921.573</b>
13	261.7	263	<b>9912.429</b>	<b>9912.415</b>
14	261.7	283	<b>9912.430</b>	<b>9912.416</b>
15	261.7	303.5	<b>9912.431</b>	<b>9912.417</b>
16	261.7	324	<b>9912.432</b>	<b>9912.418</b>
17	261.7	344	<b>9912.433</b>	<b>9912.419</b>
18	261.7	364.5	<b>9912.434</b>	<b>9912.420</b>
19	261.7	385	<b>9912.435</b>	<b>9912.421</b>
20	261.7	405	<b>9912.436</b>	<b>9912.422</b>
21	261.7	425.5	<b>3686.635</b>	<b>3686.474</b>

#### VME64x 6.5 U

Slot	Dimensions		Model No. RP	
	Height mm	Width mm	without P0 connector	with P0 connector
5	283.7	100	<b>9910.012</b>	<b>9910.007</b>
7	283.7	141	<b>9910.013</b>	<b>9910.008</b>
9	283.7	181.5	<b>9910.014</b>	<b>9910.009</b>
10	283.7	202	<b>9904.928</b>	<b>9904.929</b>
12	283.7	242.5	<b>9910.015</b>	<b>9910.010</b>
21	283.7	425.5	<b>9910.016</b>	<b>9910.011</b>

#### Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

#### Supply includes:

Backplane, fully populated.



#### Accessories:

For backplane mounting:  
Conductive strips  
Insulating strips



## Backplanes VME J1/J2 Monolithic

### Technical specifications:

Number of layers	6
Layer structure	Optimised for optimum RF performance. Outer layers designed as shielding surface.
PCB thickness	3.2 mm $\pm$ 10 %
Ohmic resistance of the signal tracks	<1 Ohm
Surge impedance Z of the signal tracks	60 Ohm
Basic power consumption, terminated at both ends	Active: < 200 mA Passive: < 1.5 A
Power supply: – Busbar with screw terminal M6 – Screw terminal M4 and FASTON 6.3 x 0.8 mm – < 5 slots	+5 V and 0 V $\pm$ 12 V, +5 V STBY and case FASTON 6.3 x 0.8 mm
Current carrying capacity of busbar	max. 200 A
Current carrying capacity of a combined double flat-pin connector/screw terminal	25 A
Current carrying capacity of a FASTON flat connector	10 A
Current carrying capacity of the assembly, per slot	+5 V 9.0 A +12 V 1.5 A –12 V 1.5 A +5 VSTDBY 1.5 A
Termination ON-/IN-board	active (may be switched to passive)
Installation height	6 U
Distance between slots	4 HP
Connectors	Press-fit technique quality class 2, 400 connection cycles C96
Operating temperature range	Active termination 0° . . . +70°C Passive termination –40° . . . +85°C
Relative humidity	90 %, non-condensing

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
2	261.7	39.5	<b>3686.495</b>
3	261.7	59.5	<b>3686.496</b>
4	261.7	80	<b>3686.497</b>
5	261.7	100	<b>3686.498</b>
6	261.7	120.5	<b>3686.499</b>
7	261.7	141	<b>3686.500</b>
8	261.7	161.5	<b>3686.501</b>
9	261.7	181.5	<b>3686.502</b>
10	261.7	202	<b>3686.503</b>
11	261.7	222.5	<b>3686.504</b>
12	261.7	242.5	<b>3686.505</b>
13	261.7	263	<b>3686.506</b>
14	261.7	283	<b>3686.507</b>
15	261.7	303.5	<b>3686.508</b>
16	261.7	324	<b>3686.509</b>
17	261.7	344	<b>3686.510</b>
18	261.7	364.5	<b>3686.511</b>
19	261.7	385	<b>3686.512</b>
20	261.7	405	<b>3686.513</b>
21	261.7	425.5	<b>3686.514</b>

### Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

### Supply includes:

Backplane, fully populated.



### Accessories:

For backplane mounting:

Conductive strips

Insulating strips



### VME J1 system bus

#### Technical specifications:

	VME J1	VME J2
Number of layers	6	2
Layer structure	Optimised for optimum RF performance. Outer layers designed as shielding surface.	
PCB thickness	3.2 mm $\pm$ 10 %	3.2 mm $\pm$ 10 %
Ohmic resistance of the signal tracks	<1 Ohm	<1 Ohm
Surge impedance Z of the signal tracks	60 Ohm	60 Ohm
Basic power consumption, terminated at both ends	Active: < 150 mA Passive: < 1.2 A	Passive: < 0.6 A
Power supply: – M4 screw terminal and FASTON 6.3 x 0.8 mm – < 5 slots	+5 V, 0 V, $\pm$ 12 V, $\pm$ 5 V STBY and case FASTON 6.3 x 0.8 mm	x FASTON 6.3 x 0.8 mm
Current carrying capacity of a combined double flat-pin connector/screw terminal	25 A	25 A
Current carrying capacity of a FASTON flat connector	10 A	10 A
Current carrying capacity of the assembly, per slot	+5 V                      4.5 A +12 V                    1.5 A –12 V                    1.5 A +5 VSTDBY            1.5 A	+5 V                      4.5 A
Termination ON-/IN-board	active/passive (changeover)	active/passive (changeover)
Installation height	3 U	3 U
Distance between slots	4 HP	4 HP
Connectors	Press-fit technique quality class 2, 400 connection cycles C96	Press-fit technique quality class 2, 400 connection cycles C96
Operating temperature range	Active termination 0° ... +70°C Passive termination –40° ... +85°C	Passive termination –40° ... +85°C
Relative humidity	90 %, non-condensing	90 %, non-condensing

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
3	128.4	59.5	<b>3686.555</b>
4	128.4	80	<b>3686.556</b>
5	128.4	100	<b>3686.557</b>
6	128.4	120.5	<b>3686.558</b>
7	128.4	141	<b>3686.559</b>
8	128.4	161.5	<b>3686.560</b>
9	128.4	181.5	<b>3686.561</b>
10	128.4	202	<b>3686.562</b>

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
12	128.4	242.5	<b>3686.563</b>
13	128.4	263	<b>3686.564</b>
14	128.4	283	<b>3686.565</b>
15	128.4	303.5	<b>3686.566</b>
18	128.4	364.5	<b>3686.567</b>
20	128.4	405	<b>3686.568</b>
21	128.4	425.5	<b>3686.569</b>

#### Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

#### Supply includes:

Backplane, fully populated.



#### Accessories:

For backplane mounting:  
Conductive strips  
Insulating strips

### VME J2 expansion bus

#### Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

#### Supply includes:

Backplane, fully populated.



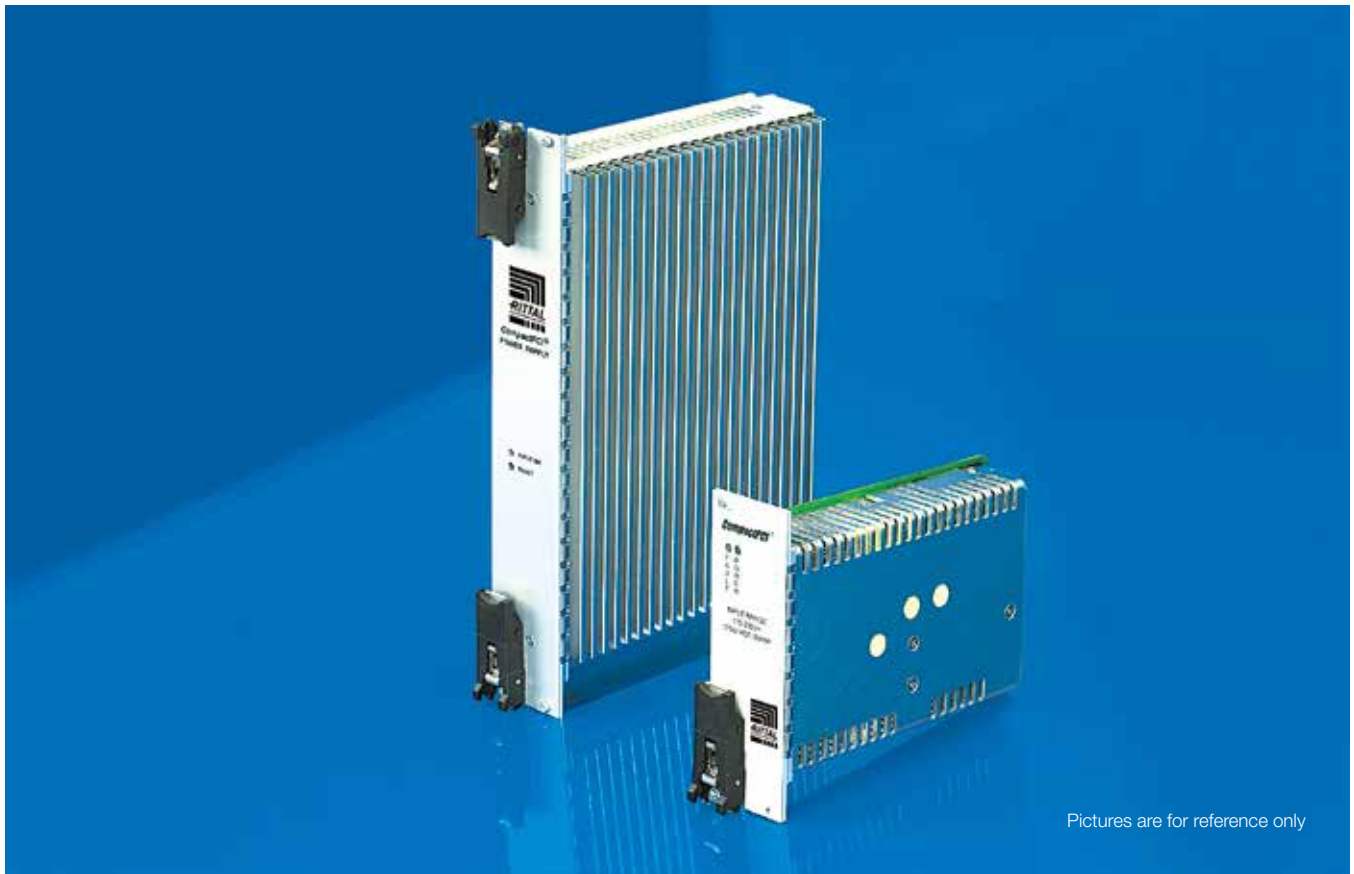
#### Accessories:

For backplane mounting:  
Conductive strips  
Insulating strips

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
3	128.4	59.5	<b>3686.585</b>
4	128.4	80	<b>3686.586</b>
5	128.4	100	<b>3686.587</b>
6	128.4	120.5	<b>3686.588</b>
7	128.4	141	<b>3686.589</b>
8	128.4	161.5	<b>3686.590</b>
9	128.4	181.5	<b>3686.591</b>
10	128.4	202	<b>3686.592</b>

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
12	128.4	242.5	<b>3686.593</b>
13	128.4	263	<b>3686.594</b>
14	128.4	283	<b>3686.595</b>
15	128.4	303.5	<b>3686.596</b>
18	128.4	364.5	<b>3686.597</b>
20	128.4	405	<b>3686.598</b>
21	128.4	425.5	<b>3686.599</b>

## 3U Series CompactPCI PSU



Pictures are for reference only

Rittal's 3U Series CompactPCI PSU provides stable and reliable power to CompactPCI systems. This series of PSUs uses the standard Positronic 47 PSU connectors, which is hot pluggable and supports N+1 redundant working modes. It features overvoltage, overheating, and other protections. The input mode may be the AC of 220V or the DC of 48V. The power width is 8HP (2 slots) with an output power of 200W or 250W.

### Features

- Standard PCI Output Voltages: 5.0V, 3.3V,  $\pm 12.0V$ , with Variable Currents.
- Hot Swap, N+1 Redundant with Internal OR-ing Diodes.
- 99 Power Factor Corrected AC 90-264V Input, or DC 36-72V.
- Current Sharing on 5.0V, 3.3V and  $\pm 12.0V$  Outputs.
- Standard 47 Pin Connector Configuration.
- Custom Configurations To Meet User Specified Requirements.
- Excellent Performance.
- Complies With All Requirements of PICMG Power Interface Specifications.

### Specification

#### Input

- Voltage/Current - AC 90-264V, 2.9A max, 47-63Hz, 1 Phase or DC 36-72, 6.55A @ 48V nom.
- Fusing - Internal line fuse provided, non-user serviceable, AC-4.0A, 250V; DC- 10.0A.
- Power Factor - 0.99 line PFC typical at AC 115V, full load.
- Inrush Current - Thermistor soft start.  $\sim 25^{\circ}\text{C}$  AC cold start current 15Apk @ AC 115V; 30Apk @ AC 230V.
- EMI Filtering - Meets IFCC Level A, and EN 55022 Level A (conducted).
- Efficiency - 78% typical at AC 115V, full load.
- Redundant/Hot Swap - Full power N+1 redundant, hot swap capable.

# 3U Series CompactPCI PSU

## Output

- Voltage/Current (V/A) - See Table Below.
- Line Regulation - At the Sense Point, Over Full Input Range  $< \pm 1\%$ , sense leads connected.
- Load Regulation - Output voltage droops with increasing load.
- Minimum Loading - 5% minimum on V1.
- Ripple and Noise(PARD) - For all outputs, 50mV max or 1% peak-to-peak nominal, which ever is greater, DC to 20MHz bandwidth with a coaxial probe and 0.1  $\mu$ F/22  $\mu$ F capacitors at the output terminals.
- Current Sharing/Parallel N+1 Operation - V1, V2, V3 Outputs. Single wire connection for  $\pm 10\%$  current sharing between any number of units.
- Remote Sense - V1, V2, V3 outputs compensate for up to 0.25V total line drop in the load cables. Outputs are internally sensed if leads are opened.
- Over Current/Short Circuit Protection - Current limit on all outputs. Automatic recovery when overload is removed.
- Over Temperature Protection - Internal temperature sensing. Causes all outputs to shut down. Automatic recovery.
- Over Voltage Protection - Non-crowbar type. Any output that exceeds  $25\% \pm 10\%$  of nominal Vout will cause all outputs to latch off. Remote inhibit, enable or input recycle required to reset.
- Under Voltage Warning - Any output dropping below 10% of nominal triggers the power fail warning signal.

## Signals, Indicators, controls

- Power Fail Warning - Loss of input AC causes a TTL compatible signal to go low  $>4\text{msec}$  prior to V1 or V2 output drop-ping out of regulation. At AC turn-on, signal stays low until outputs are in regulation. AC and DC input: PF signal triggered by an under voltage condition on V1 or V2 outputs.
- LED Indicator - Dual LEDs. Green indicates input power ON and outputs within regulation. Off or Amber indicates input and/or output power fault.

## Operating Environment

- Operating Temperature - 0 ~ 50°C ambient at full load, with specified airflow. Derates linearly to 50% at 70°C.
- Cooling - A minimum of 600 lfm direct forward airflow required to achieve full rated power and specified MTBF.
- Relative Humidity - Up to 90% RH, non-condensing.
- Operational Vibration - 0.75G peak, 5 – 500Hz along three orthogonal axis.
- Storage Temperature - -40 to 85°C.
- Altitude - Operating to 10,000 ft; Storage to 30,000 ft.
- MTBF - Designed for 150,000 hrs at 25°C.

## Interconnect

- I/O connector: Positronic Ind. P/N PCIH47M400A1.  
Mates with PI P/N PCIH47F300A1.

## 47 Pin I/O Connector Functions:

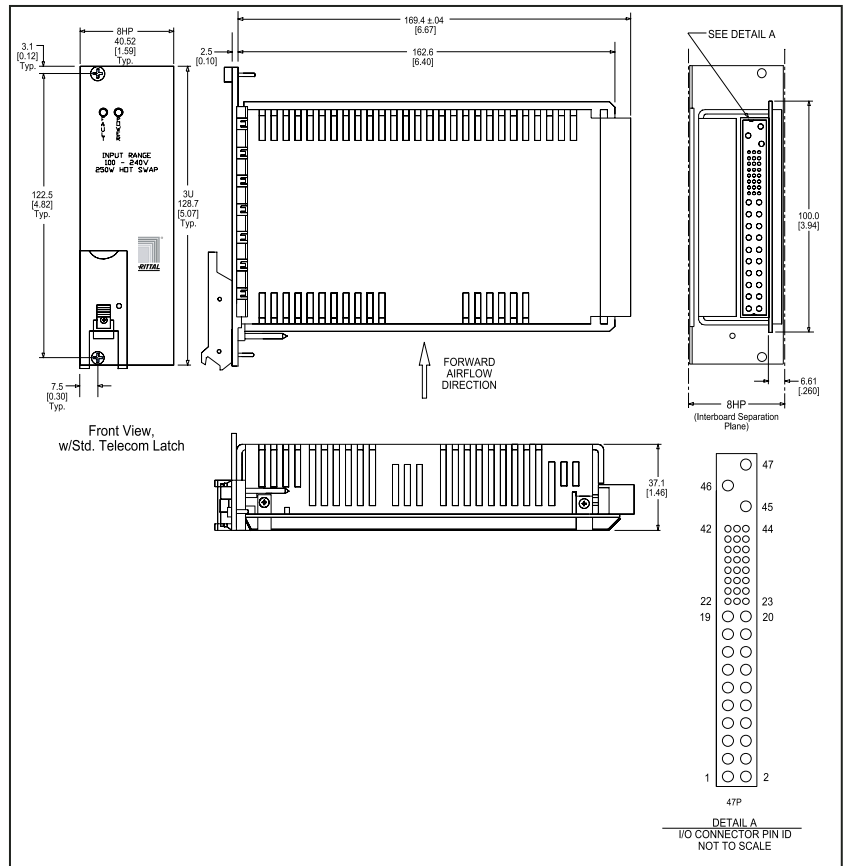
PIN#	SEQ <sup>(1)</sup>	FUNCTION	PIN#	SEQ <sup>(1)</sup>	FUNCTION
01-04	2	+5.0V V1 Output.	33	2	+S2 +3.3V(V2)Remote Sense.
05-12	2	GND V1+V2 Return.	34	2	S-RTN Sense Return for V1,V2,V3.
13-18	2	+3.3V V2 Output.	35	3	ISHR-1 +5.0V(V1) Current Share.
19	2	GND V3 Return.	36	2	+S3 +12.0V(V3) Remote Sense.
20	2	+12.0V V3 Output.	37	2	N/C No Connection(Reserved).
21	2	- 12.0V V4 Output.	38	2	DEG Thermal Degrade Signal.
22	2	RTN Signal Return.	39	2	R/INH Remote Inhibit.(Close circuit to GND.)
23	2	N/C No Connection(Reserved).	40	2	N/C No Connection(Reserved).
24	2	GND V4 Return.	41	3	ISHR-2 +3.3V(V2)Current Share.
25,26	2	N/C No Connection(Reserved).	42	2	PF Power Fail Signal.
27	3	R/EN Remote Enable.Close circuit to GND.	43	2	N/C No Connection(Reserved).
28	2	N/C No Connection(Reserved).	44	3	ISHR-3 +12.0V(V3) Current Share.
29	2	V1-ADJ V1 Remote Voltage Adjust.	45	1	PE Protective Earth(chassis) Ground.
30	2	+S1 +5.0V(V1)Remote Sense.	46	2	Input Pwr PCI: Neutral(N) ACC Power Input DPCI:+DC.
31	2	N/C No Connection(Reserved).	47	2	Input Pwr PCI: Line(L)AC Power Input. DPCI: -DC.
32	2	V2-ADJ V2 Remote Voltage Adjust.			

(1) Contact mating sequence. 1= First to make/Last to break.

## Mechanical

- Outline - 3U x 8HP front panel. Refer to JE Outline Dwg #02638-000 or the Mechanical Outline in this catalog. Complies with all current PICMG® CompactPCI PSU specifications.
- Retaining Latches - Supplied with a single Rittal #3686.135 Type VI I (Telecom) Lower Latch. Other manufacturers and types available. Consult factory.
- Guide Rails - Supplied with .260[6.61] offset guide rails for use with Rittal 3687.832 (or equivalent) PSU guides.
- Weight - Approx: 1.8 lbs / 1.06 kgs.

## Mechanical Dimension

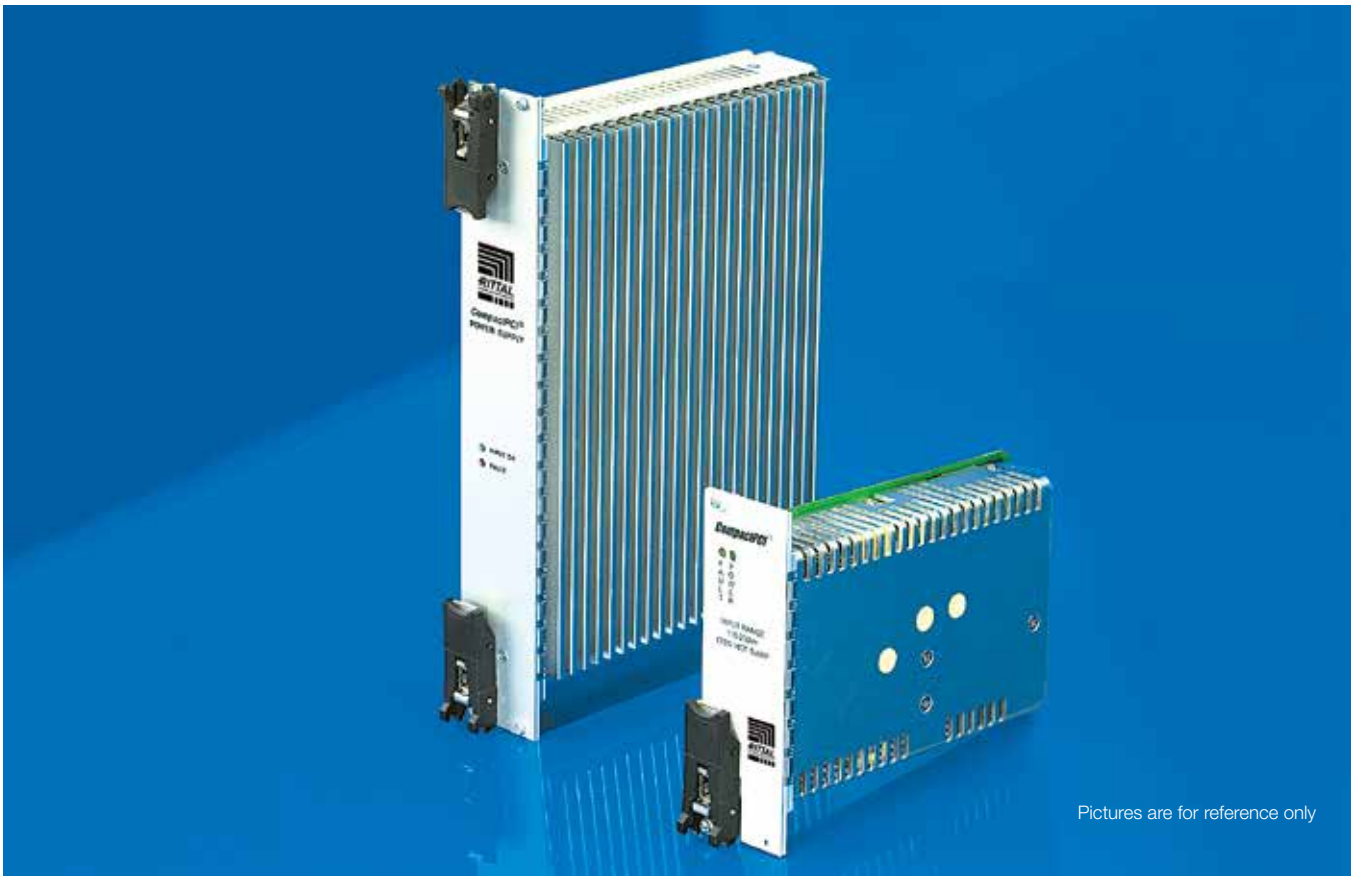


## Subscription information:

Order No.	Dimension	Output connector	Power input	Power Output	Output Power
3688694	3U X 8HP	P47	AC:90 -264V, 47-63Hz	+5V@30A, +3.3V@25A, +12V@5A, -12V@0.5A	200W
3688655	3U X 8HP	P47	DC:36 -72V	+5V@33A, +3.3V@33A, +12V@5A, -12V@0.5A	200W
3688695	3U X 8HP	P47	AC:90 -264V, 47-63Hz	+5V@33A, +3.3V@33A, +12V@6A, -12V@1.5A	250W
3688696	3U X 8HP	P47	DC:36 -72V	+5V@33A, +3.3V@33A, +12V@6A, -12V@1.5A	250W

Note: ● For 3688695/3688696, Total loading on all outputs not to exceed 250W. Combined load on V1 + V2 not to exceed 55.0A.  
 ● For 3688694/3688655, Total loading on all outputs not to exceed 200W. Combined load on V1 + V2 not to exceed 38.0A.

# 6U Series CompactPCI PSU



Pictures are for reference only

Rittal's 6U Series CompactPCI PSU provides stable and reliable power to CompactPCI systems. This series of PSUs uses the standard Positronic 47 PSU connectors, which is hot pluggable and supports N+1 redundant working modes. It features overvoltage, overheating, and other protections. The input mode may be the AC of 220V or the DC of 48V. The power width is 8HP (2 slots) with an output power of 400W or 500W.

## Features

- 400Watts or 500Watts output in 6U × 8HP (2 slots) × 160mm;
- Wide Range AC input;
- 48V versions available;
- Standard Positronic 47 connector per PICMG;
- Superior high efficiency, higher than 81%;
- N+1 redundant and hot swappable;
- Single wire current sharing on +5V, +3.3V and +12V outputs;
- Fully shielded;
- Remote voltage sensing on +5V, +3.3V and +12V supplies;
- IEEE 1101.10 compliant front panels;
- Ruggedized mechanical design;
- Worldwide Safety approval including UL, CSA, TUV, CE mark;
- EMC approved.

## Specifications

### Input

- AC Input Voltage - 85 - 264 V.
- DC 48V input Voltage - 36 - 72V.
- Input Inrush Current - Cold Start 35A @ 110VAC & 65A @ 230VAC.
- Active Power Factor Correction - EN 61000-2-3 >0.95.
- Efficiency @ 230VAC Full Load - 81% Typical.
- Input Reflected Ripple - FCC-68 part 15 & EN55022 Class B with the use of an external line filter.

## Output

- Voltage/Current (V/A) - See Table Below
- Line Regulation - +/- 0.5%
- Load Regulation - V1&V2: +/- 1%; V3&V4: +/- 5%
- Minimum Loading - No
- Ripple and Noise (PARD) - V1&V2: 60mV P-P; V3&V4: 120mV P-P
- Current Sharing/Parallel N+1 Operation - Single wire on V1&V2
- Remote Sense - On +5VDC and +3.3V DC
- Over Current/Short Circuit Protection - Available on all outputs
- Over Temperature Protection - Internal temperature sensing. Causes all outputs to shut down. Automatic recovery.
- Over Voltage Protection - 110% - 125% of V1, V2, V3 with Latched shut down

## Signals, Indicators, controls

- Front Panel Green LED - Outputs OK
- Front Panel Red LED - Outputs Failure

## Operating Environment

- Operating Temperature - -10°C – 55°C with 250lfm forced airflow cooling
- Relative Humidity - Up to 95% RH, non-condensing.
- Shock&Vibration - Storage: EN 300 019-2-1 Storage class 1.2' EN 300 019-2-2, Transportation class 2.3' EN 300 019-2-3 Use class 3.3.
- Conducted & Radiated Emmission - EN55022 Class B and EN-61000. Measured with a mains input filter
- Storage Temperature - -40 to 85°C.
- Altitude - Operating to 10,000 ft; Storage to 30,000 ft.
- MTBF - > 400,000 Hours per Bellcore Standard B332 Gb 50C

## Mechanical Dimension

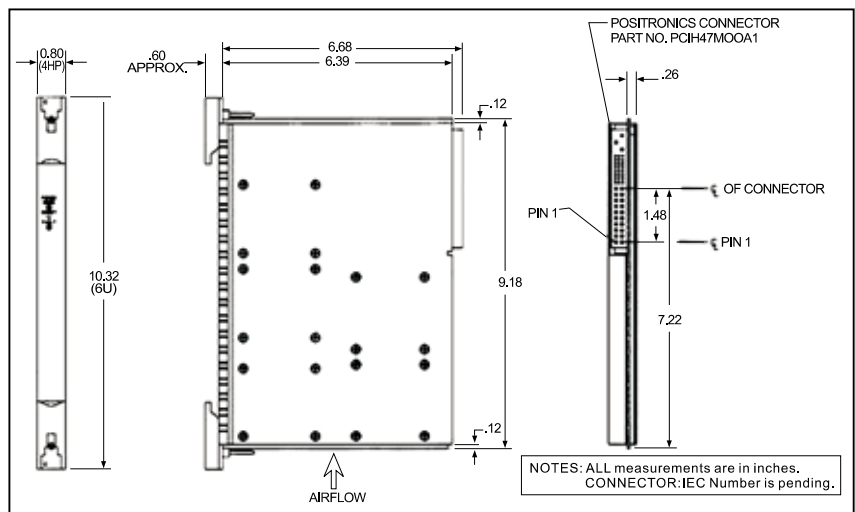
- Size in cm (Inch) - 6U High 8HP wide 169.6mm Deep
- Weight in Grams (Oz) - 1.88Kg. 3.2lbs. Max.

### 47 Pin I/O Connector Functions:

PIN#	SEQ <sup>(1)</sup>	FUNCTION	PIN#	SEQ <sup>(1)</sup>	FUNCTION
01-04	2	+5.0V V1 Output.	33	2	+S2 +3.3V(V2)Remote Sense.
05-12	2	GND V1+V2 Return.	34	2	S-RTN Sense Return for V1,V2,V3.
13-18	2	+3.3V V2 Output.	35	3	ISHR-1 +5.0V(V1) Current Share.
19	2	GND V3 Return.	36	2	+S3 +12.0V(V3) Remote Sense.
20	2	+12.0V V3 Output.	37	2	N/C No Connection(Reserved).
21	2	- 12.0V V4 Output.	38	2	DEG Thermal Degrade Signal.
22	2	RTN Signal Return.	39	2	R/INH Remote Inhibit.(Close circuit to GND.)
23	2	N/C No Connection(Reserved).	40	2	N/C No Connection(Reserved).
24	2	GND V4 Return.	41	3	ISHR-2 +3.3V(V2)Current Share.
25,26	2	N/C No Connection(Reserved).	42	2	PF Power Fail Signal.
27	3	R/EN Remote Enable.Close circuit to GND.	43	2	N/C No Connection(Reserved).
28	2	N/C No Connection(Reserved).	44	3	ISHR-3 +12.0V(V3) Current Share.
29	2	V1-ADJ V1 Remote Voltage Adjust.	45	1	PE Protective Earth(chassis) Ground.
30	2	+S1 +5.0V(V1)Remote Sense.	46	2	Input Pwr PCI: Neutral(N) ACC Power Input
31	2	N/C No Connection(Reserved).			DPCI:+DC.
32	2	V2-ADJ V2 Remote Voltage Adjust.	47	2	Input Pwr PCI: Line(L)AC Power Input.
					DPCI: -DC.

(1) Contact mating sequence. 1= First to make/Last to break.

## Mechanical Dimension



## Subscription information:

Order No.	Dimension	Output connector	Power input	Power Output	Output Power
9920672	6U X 8HP	P47	DC:36 -72V	+5V@50A, +3.3V@80A, +12V@7.5A, -12V@1.5A	400W
9920535	6U X 8HP	P47	AC:85 -264V, 47-63Hz	+5V@65A, +3.3V@80A, +12V@12A, -12V@1.5A	500W

# Monitoring Module

## 3U Pluggable Monitoring Module

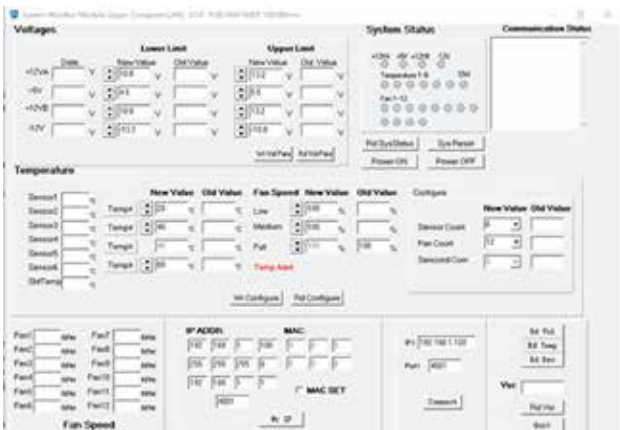


Pictures are for reference only

### Technical Parameter

- Under such four protocols as CPCI/PXI/VME/VXI, the monitoring voltage types may be +5V, +3.3V, +12V, and -12V. with an accuracy of  $\pm 10\text{mV}$ .
- Supportable for monitoring six thermistors with an accuracy of  $\pm 1^\circ\text{C}$
- Supportable for monitoring nine fans with an accuracy of  $\pm 1\text{ RPS}$
- The fan speed is controlled within 0~100%
- Operating temperature: : 0~70°C
- Storage temperature: -20~85°C
- Reletive humidity:  $\leq 85\%$
- Operating voltage: 5VDC ( $\pm 5\%$ ), 12VDC ( $\pm 10\%$ )
- Supportable for sound-based and light-based alarm
- Product dimension: 3U8HP standard board size
- 10M/100M Ethernet interface
- Supportable for telnet protocol (optional)
- Supportable for web access (optional)
- Supportable for serial command line interface (optional)
- Supportable for TCP Server, as well as host computer access
- Supportable for IPMI protocol
- Customized services available

### Host computer interface



### Models for subscription

Subscription information:

Model No.	Product Description
9922510	Standard3U8HP, 160 mm in depth, pluggable, plug-in cards, and backplanes



Pictures are for reference only

Technical Parameter

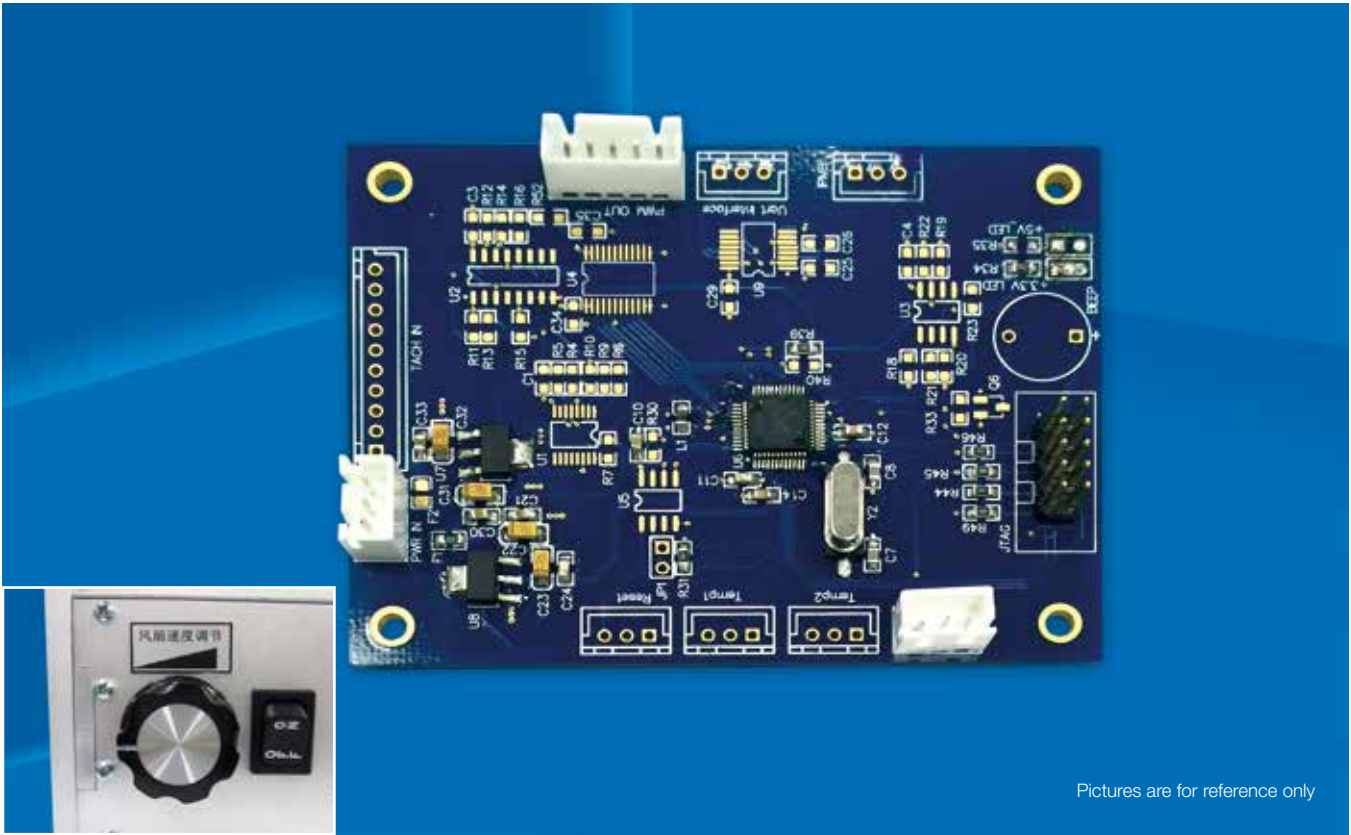
- Supports up to 8 circuits of voltage, 6 circuits of temperature and 18 circuits of fan monitoring
- Provides 12C interface, for communication with board card BMC module
- Supports PWM variable fan speed
- Service conditions: environmental temperature: -40~85℃ ; relative humidity: 85%  
Input voltage DC +5V  
Operating voltage fluctuation: ±5%
- Measurement accuracy:  
voltage measurement accuracy: ±10mV  
Temperature measurement accuracy: ±1℃  
Fan measurement accuracy: ±1RPS
- Status indicator: LED alarm, buzzer alarm
- Remote access into monitoring module of PC through LAN port (providing upper computer software), serial port (serial port command line)
- Communication interface: serial port, 10/100M internet access
- Supports control of system power supply switch
- Supports board card power-on management (optional)
- Supports telnet access (optional)
- Supports basic IPMI protocol (optional)
- Provides function customization service as per the customer's requirement
- Dimension: 100\*80mm
- Optional installation method: fixed installation
- Applicable to the fan management under the CPCI/ATCA/VPX system

Models for subscription

Subscription information:

Model No.	Product Description
9922511	Fixed type 100x80mm, 8 circuits of voltage, 6 circuits of temperature and 18 circuits of fan monitoring

# Variable fan speed module



Pictures are for reference only

## Technical Parameter

- Supportable for monitoring up to 2 temperatures and 10 fans
- Supportable for automated variable fan speed based on the system temperature
- Supportable for adjusting the knob-based fan speed manually
- External watchdog chip may guarantee reliable operation of the fan management module
- The I2C interface provides convenience for communication with the board BMC module, which may be customized to support the basic fan management IPMI protocol,
- Supportable for adjusting speed output up to five PWM-capable fans
- Status indicator: LED alarm with beeping sound
- Telecommunication interface: serial (serial command line) access monitoring module
- Operating conditions: environmental temperature: -40~85°C; relative humidity: ≤85%
- Output voltage: DC +5V or +3.3V(conditional upon the signal strength of the PWM-capable fans)
- Operating voltage fluctuation ±5%
- Measuring accuracy: fan measuring accuracy ±1RPS
- Temperature measuring accuracy ±1°C
- Dimension: 85\*65mm
- Installation: fixed installation
- Applicable to the fan management under the CPC/ATCA/VPX system

## Models for subscription

Subscription information:

Model No.	Product Description
9922519	Fixed 85x65mm, adjustable knob, supportable for 10 fans, and two temperatures



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