

Rack-mount systems for CPCI and VMEbus

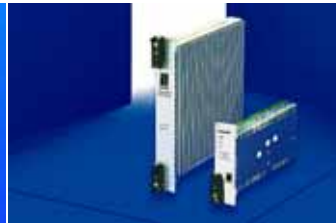
Features



Rittal supplies complete plug & play solutions for VME and CompactPCI applications at a high level – up to Level 5.

The systems are based on standardised components which may be individually combined, depending on requirements. They are supplied complete with power supply, backplane, measures for EMC and ESD protection, as well as climate control; fully assembled, pre-wired and tested.

Systems for CompactPCI



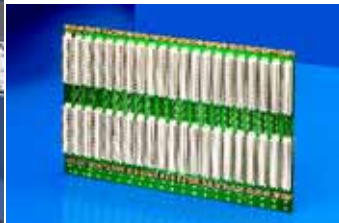
Backplanes
High-speed CompactPCI backplanes. Optionally with H.110 bus and bridges for expansion.

Power supplies in various output categories, plug-in or open frame.

- Systems for the configuration of industrial computers to CompactPCI specifications
- Comply with IEC 60 297-3-101, -102, -103 as well as CompactPCI Spec. Rev. 3.0 (PICMG)



Systems for VMEbus

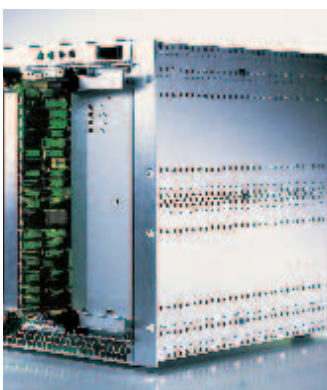


Backplanes
High-speed backplanes to VME/VME64x specifications.

Power supplies in various output categories, plug-in or open frame.

- Systems for the configuration of industrial computers to VME specifications
- Comply with IEC 60 297-3-101, -102, -103

Design features



Side panels and flanges of aluminium, clear-chromated.

10 mm pitch pattern of holes in the side panels allows individual system configuration.

Horizontal rails with 10 mm extension for injector/extractor handles.

Rack-mount systems for CPCI and VMEbus

Features

EMC measures, ESD protection, keying



U-shaped EMC front panels and EMC gaskets ensure reliable contact of all components.



Potential equalisation
ESD pin and ESD clip in the guide rail to discharge static charges before making contact with the board type plug-in unit.



Keyable guide rails for the installation of coding keys.



MPS monitoring – The scalable security concept



Controller module
Monitoring of system voltages.



Temperature module
Forwarding of messages from the temperature sensors.



Fan module
Forwarding of fan alarms. Speed control via temperature sensor.



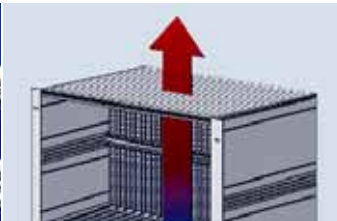
Climate control



Maximum air flow, due to the narrow design of the guide rails and horizontal rails.



Individual air flow management ensures targeted air routing and optimum heat dissipation. Optionally from bottom to top and/or from front to rear.



High-performance RiCool fan ensures optimum ventilation. 1 U, hot swap-compatible 200 m³/h, including speed control and fault alarm signal.



System configuration



Injector/extractor handles to reliably overcome high insertion/extraction forces.



Live insertion
Microswitches in the injector/extractor handle inactivate the hot-swap circuitry.



Keyable, red guide rails for defined positioning of the CPU.



MPS monitoring



MPS Monitoring electronics

In order to ensure maximum system availability and performance in industrial computers, all hardware components must offer functional reliability. The monitoring electronics for microcomputer packaging systems (MPS) offer a highly flexible, scalable security concept for key parameters such as temperature, voltage and fan speed. At the heart of this concept are intelligent function modules such as controller, temperature, fan and LCD display or LED display modules. The system may be polled, or parameters set via the Internet using remote control functions, thanks to compatibility with the Rittal CMC-TC monitoring system. Alternatively, this may be executed directly on the MPS system, via a PC, or with the aid of CMC-TC, directly from a control point. The monitoring electronics are integrated into all Ripac MPS systems as standard.

Benefits at a glance

- Monitoring of temperature, voltage, fan speed and fan alarm
- Flexible, scalable system concept
- Intelligent function modules
- Adjustable temperature limits
- Remote control via the Internet in conjunction with the Rittal CMC-TC enclosure monitoring system
- Choice of parameter levels
- Internal communications via I²C bus

Safety



Controller module

Monitoring of the system voltages, PSU status, RiCool alarm and forwarding of messages from the temperature and/or fan module via RS-232 (to PC) or RS-422 interface (to CMC-TC)



Temperature module (up to 2 modules cascable)

- Forwarding of messages from the individual temperature sensors to the controller module
- Up to 4 temperature sensors
- Internal communications via I²C



Fan module (up to 2 modules cascable)

- Speed control via external temperature sensor or PWM
- Forwarding of fan alarms
- Option of connecting up to three further temperature sensors per fan module
- Internal communications via I²C
- Up to three fans may be connected

Monitoring



Display module

- Operation via 3 keys: Page, Escape, Return
- 3 LEDs: Fan, Temp., Volt for alarm visual display
- Used to display temperature, voltage supply, fan speed
- Brightness and illumination adjustable or may be switched on/off
- Temperature display in °F/°C
- LCD (2 x 20 digits) to display the details



LED display module

- +3.3 V
- +5.0 V
- +12 V
- -12 V
- 2 x alarms (fan, temp.)
- Overvoltage display
- Red: No voltage
- Yellow (1 x flashing): below limit
- Yellow (2 x flashing): Above limit
- Green: Voltage OK



CMC-TC

Remote control via the Internet in conjunction with the Rittal CMC-TC enclosure monitoring system

Rack-mount systems for CPCI and VMEbus

Features



Slim-Box rack-mount systems 1, 2, 3, 4 U

The 300 mm deep Slim-Box Vario enclosures are designed for horizontal installation of CPCI, CPCI Express/VME64x boards (6 U/160 mm). The technical features offered by the enclosures are truly impressive:

2 front and rear slots per U; excellent heat dissipation from left to right due to a fan tray fitted on the left, installation space for slim CD-ROM and 3.5" HDD on the right.

The enclosure is supplied fully assembled and includes the power supply and the backplane. Enclosures can be configured individually using standard components as an extra option.



2 slots per U for CPCI/VME boards at the front and rear.

Keyable plastic guide rail.



Includes backplane for VME64x or CPCI.



Installation space for slim CD-ROM and 3.5" HDD.



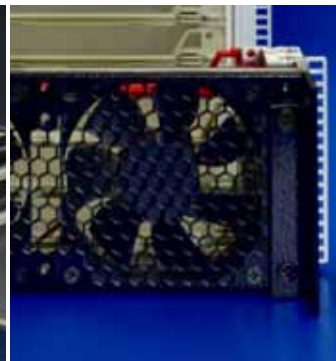
Includes an ATX power supply or . . .



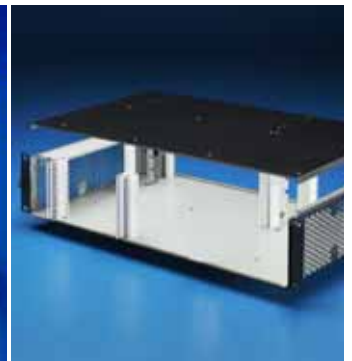
. . . **optional plug-in power supply** (hot swap capability).



Pull-out fan unit and filter mat.

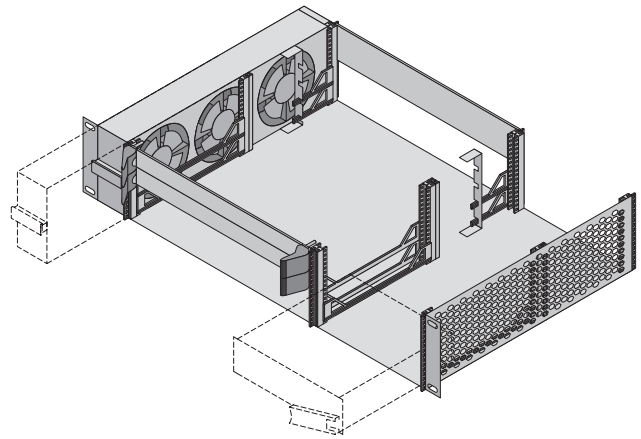


DC fans for optimum horizontal ventilation.



Optional: Basic enclosure can be upgraded separately.

Rack-mount systems, Slim-Box Vario 1 U, 2 U



Technical specifications:

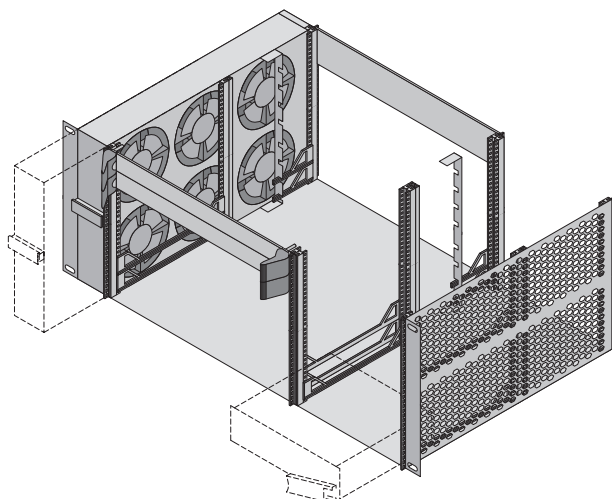
- Rack-mount enclosure 482.6 mm (19") for the horizontal installation of boards
- Front and rear 2 slots per U for CPCI boards
- Enclosure cooling from left to right
- EMC and ESD-compatible design
- Includes fan tray
- Complies with IEC 60 297-3-101, -102, -103

Material:
Sheet steel, spray-finished (black)

Slim-Box Vario CPCI		1 U			2 U		
Model No. RP complete system		With rear I/O 9909.580	With rear I/O 9909.582		With rear I/O 9909.586	Without rear I/O 9909.588	
Item	Package description			Model No. RP			Model No. RP
1	Basic enclosure, EMC, fully assembled, 300 mm deep	1	1	9912.459	1	1	9912.048
2	ATX PSU control front panel, 3 U x 4 HP, EMC (kit)	-	1	9912.049	-	-	9912.049
3	Rear panel for AC/DC ATX PSU, 1 U, 200 W	-	1	9909.961	-	-	9912.050
4	AC Power Entry Module, 3 U x 8 HP, IEC (kit)	1	-	9910.972	1	1	9912.288
5	Slim drive support (kit)	-	-	-	1	1	9912.289
6	Rails for standard 3 U components (kit)	1	1	9912.464	-	-	9912.056
7	Front sub-division rails in 2 x 3 U (kit)	-	-	9912.920	-	1	9912.053
8	Guide supports, rear I/O	1	1	9912.470	1	-	9912.054
9	Fan tray with fan filter and 12 V DC fan, fully wired	1	1	9912.473	1	-	9909.191
10	Fan tray with fan filter and 12 V DC alarm fan, fully wired	-	-	-	-	1	9909.194
Monitoring							
11	EMC front panel, 3 U x 4 HP with MPS controller module	-	-	-	-	1	9909.193
12	MPS display module, EMC, 3 U x 4 HP	-	-	-	-	1	9912.294
13	EMC front panel, 3 U x 4 HP with MPS fan module	-	-	-	-	1	9912.293
Power supplies/backplanes for plug-in power supplies							
14	ATX PSU, AC/DC, wide range, 1 U, 200 W	-	1	9907.585	-	-	-
15	Prepared for plug-in PSU, AC/DC, wide range, 3 U, 200 W ¹⁾	(1)	-	3688.694	(1)	(1)	3688.694
16	PSU backplane 3 U, single	1	-	9905.105	1	-	9905.105
17	PSU backplane 3 U, dual	-	-	-	-	1	3688.603
Guide rails/filler panels							
18	Keyable guide rails, 160 mm, grey	2	2	3684.669	6	6	3684.669
19	Keyable guide rails, 160 mm, red, for system slots	2	2	3686.063	2	2	3686.063
20	Keyable guide rails, 160 mm, green, with offset, for PSU	2	-	3687.832	2	4	3687.832
21	Guide rails for rear I/O, 80 mm, grey, top	2	2	3687.936	4	-	3687.936
22	Guide rails for rear I/O, 80 mm, grey, bottom	2	2	3687.937	4	-	3687.937
23	Grounding bush + contact spring for rear I/O	4	4	3689.036	8	-	3689.036
24	ESD board contact spring	4	4	3684.978	8	8	3684.978
25	ESD contact spring for front panel	2	2	3684.979	4	4	3684.979
26	Guide rails 4.4" for drive support	-	-	-	2	2	3686.990
27	Filler panel, EMC, 3 U x 8 HP (kit)	-	-	-	1	1	3685.182
28	Filler panel, EMC, 6 U x 16 HP (kit)	-	-	-	-	1	3685.349
Backplanes							
29	Backplane CPCI, 3 U, 4 slot, system slot on right, 64 bit	-	-	-	-	1	3689.309
30	Backplane CPCI, 6 U, 2 slot, system slot on right, 64 bit	1	1	3689.321	-	-	-
31	Backplane CPCI, 6 U, 4 slot, system slot on right, 64 bit	-	-	-	1	-	3689.323

¹⁾ Not included in the supply!

Rack-mount systems, Slim-Box Vario 3 U, 4 U



Technical specifications:

- Rack-mount enclosure 482.6 mm (19") for the horizontal installation of boards

- Front and rear 2 slots per U for CPCI boards
- Enclosure cooling from left to right

- EMC and ESD-compatible design
- Includes fan tray
- Complies with IEC 60 297-3-101, -102, -103

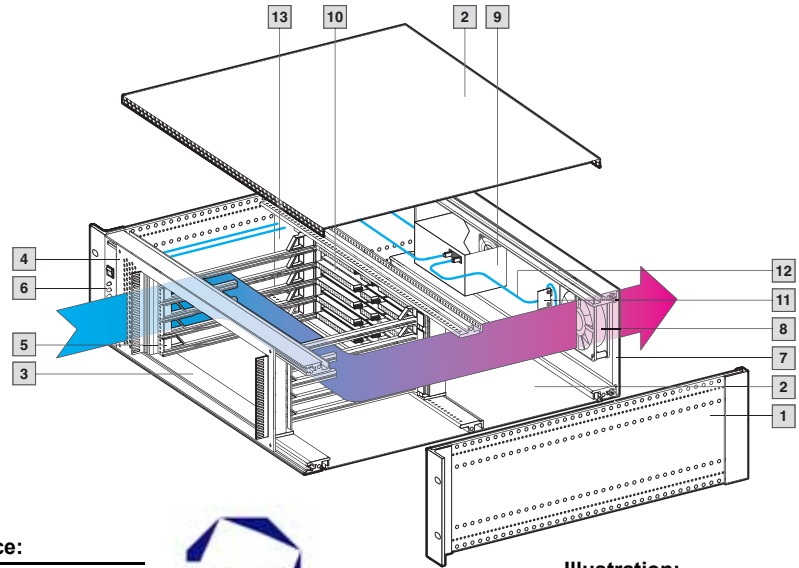
Material:

Sheet steel, spray-finished (black)

Slim-Box Vario CPCI		3 U			4 U		
		With rear I/O 9912.355	With rear I/O 9912.356		With rear I/O 9912.357	With rear I/O 9912.358	
Model No.	RP complete system			Model No. RP			Model No. RP
Item	Package description						
1	Basic enclosure, EMC, fully assembled, 300 mm deep	1	1	9912.460	1	1	9912.461
2	ATX PSU control front panel, 3 U x 4 HP, EMC (kit)	-	1	9912.049	-	-	9912.049
3	Rear panel for AC/DC ATX PSU, 3 U x 8 HP (kit), 300 W	-	1	9912.921	-	-	9912.921
4	AC Power Entry Module, 3 U x 8 HP, IEC (kit)	1	-	9912.288	1	1	9912.288
5	Slim drive support (kit)	1	1	9912.462	1	1	9912.463
6	Guide supports, rear I/O	1	1	9912.471	1	1	9912.472
7	Fan tray with fan filter and 12 V DC fan	1	1	9912.474	-	-	9912.475
8	Fan tray with fan filter and 12 V DC alarm fan	-	-	-	1	1	9912.478
Monitoring							
9	EMC front panel, 3 U x 4 HP with MPS controller module	-	-	-	1	-	9909.193
10	MPS display module, EMC, 3 U x 4 HP	-	-	-	1	-	9912.294
11	MPS controller module and LCD display module, EMC, 6 U x 8 HP	-	-	-	-	1	9912.483
12	EMC front panel, 3 U x 4 HP with MPS fan module	-	-	-	1	1	9912.293
13	EMC front panel, 3 U x 4 HP with MPS temperature module	-	-	-	1	1	9909.230
14	Red temperature sensor, L = 600 mm	-	-	-	2	2	3397.538
Power supplies/backplanes for plug-in power supplies							
15	ATX PSU, AC/DC, wide range, 1 U, 300 W	-	1	9907.584	-	-	-
16	Prepared for plug-in PSU, AC/DC, wide range, 3 U, 200 W ¹⁾	(1)	-	3688.694	(2)	(1)	3688.694
17	PSU backplane 3 U, single	1	-	9905.105	-	1	9905.105
18	PSU backplane 3 U, dual	-	-	-	1	-	3688.603
Guide rails/filler panels/backplanes							
19	Keyable guide rails, 160 mm, grey	10	10	3684.669	14	10	3684.669
20	Keyable guide rails, 160 mm, red, for system slots	2	2	3686.063	2	2	3686.063
21	Keyable guide rails, 160 mm, green, with offset, for PSU	2	-	3687.832	4	2	3687.832
22	Guide rails for rear I/O, 80 mm, grey, top	6	6	3687.936	8	6	3687.936
23	Guide rails for rear I/O, 80 mm, grey, bottom	6	6	3687.937	8	6	3687.937
24	Grounding bush + contact spring for rear I/O	12	12	3689.036	16	12	3689.036
25	ESD board contact spring	24	24	3684.978	32	24	3684.978
26	ESD contact spring for front panel	12	12	3684.979	16	12	3684.979
27	Guide rails 4.4" for drive support	2	2	3686.990	2	2	3686.990
28	Filler panel, EMC, 3 U x 8 HP (kit)	1	-	3685.182	-	-	-
29	Filler panel, EMC, 3 U x 12 HP (kit)	-	1	3685.184	-	-	-
30	Filler panel, EMC, 3 U x 16 HP (kit)	1	1	3685.348	1	1	3685.348
31	Filler panel, EMC, 6 U x 8 HP (kit)	-	-	-	-	1	3685.190
32	Backplane CPCI, 6 U, 6 slot, system slot on right, 64 bit	1	1	3689.325	-	1	3689.325
33	Backplane CPCI, 6 U, 8 slot, system slot on right, 64 bit	-	-	-	1	-	3689.327

¹⁾ Not included in the supply!

Rack-mount systems, Ripac 3 U, 5 slots/4 U, 7 slots horizontal



Technical specifications:
 Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases. Prepared to accommodate CPCI boards and drives. Includes MPS Monitoring (see page 501/502). Complies with IEC 60 297-3-101, -102, -103. Fully assembled, pre-wired and tested.



Rittal service:

Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.



Illustration:
MPS system 3 U for CPCI

B
3.2
CPCI

U	3	4	Page
Side panel depth mm	405	405	
Wiring space (depth in mm)	210	210	
For PCB	6 U x 160 mm	6 U x 160 mm	
MPS system Model No. RP for CPCI	9910.944	9910.945	

Mechanical supply includes

Description	Material	Qty.		
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	1	-
2 Top and bottom covers, solid	Aluminium, unplated	2	2	581
13 Air partition	Aluminium	1	1	586
EMC shielding plate for fan	Aluminium, clear-chromated	1	1	589
3 Horizontal mounting kit	Aluminium, clear-chromated	1	1	574
4 Trim frame for horizontal mounting kit	2.5 mm aluminium, clear-chromated	1	1	575
5 Plastic guide rails, keyable	Polycarbonate UL 94-V0	8	12	576
Plastic guide rails, keyable, red	Polycarbonate	2	2	576
6 EMC front panel 3 U/5 HP for MPS monitoring	2.5 mm aluminium, clear-chromated	1	-	-
EMC front panel 4 U/5 HP for MPS monitoring	2.5 mm aluminium, clear-chromated	-	1	-
7 EMC rear panel 3 U/84 HP with fan and connector cut-out	2.5 mm aluminium, clear-chromated	1	-	-
EMC rear panel 4 U/84 HP with fan and connector cut-out	2.5 mm aluminium, clear-chromated	-	1	-

Electrical/electronic supply includes

Description	Technical specifications	Qty.		
8 DC fan	12 V DC, 48 m³/h, per fan (UL, CSA, VDE) optionally speed-controlled	1	1	588
9 Power supply unit ATX, PS/2 (RP 3687.793)	300 W	1	1	545
10 CPCI backplane	6.5 U, 5 slots	1	-	512
CPCI backplane	6.5 U, 7 slots	-	1	512
LED display module for MPS monitoring	for 3.3 V, +5 V, ±12 V, fan failure	1	1	-
11 Fan module for DC fan	-	1	1	-
12 DC cable harness	-	■	■	-
Controller module	with interface for RS-232 and CMC-TC	1	1	-

■ Included with the supply.

Rack-mount systems, Ripac 4 U/7 U, 8 slots



Technical specifications:
 Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases.
 Prepared to accommodate CPCI boards and drives.
 Includes MPS Monitoring (see page 501/502).
 Complies with IEC 60 297-3-101, -102, -103.
 Fully assembled, pre-wired and tested.

 **Rittal service:**

Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.

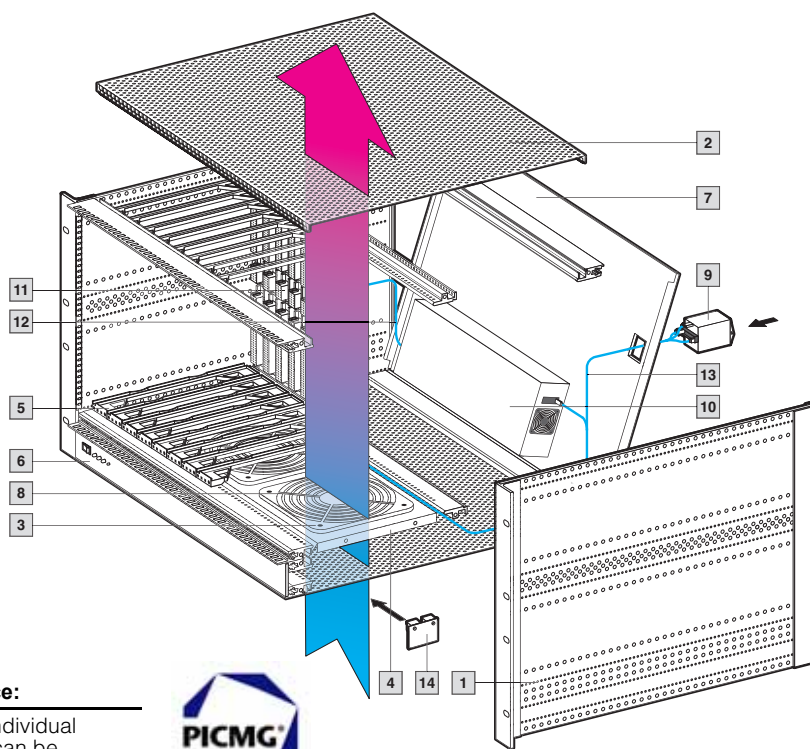


Illustration:
MPS system 7 U for CPCI

B
3.2
CPCI

U	4 (3 + 1)	7 (6 + 1)	Page
Side panel depth mm	405	405	
Wiring space (depth in mm)	210	210	
For PCB	3 U x 160 mm	6 U x 160 mm	
MPS system Model No. RP for CPCI	9910.946	9910.948	

Mechanical supply includes

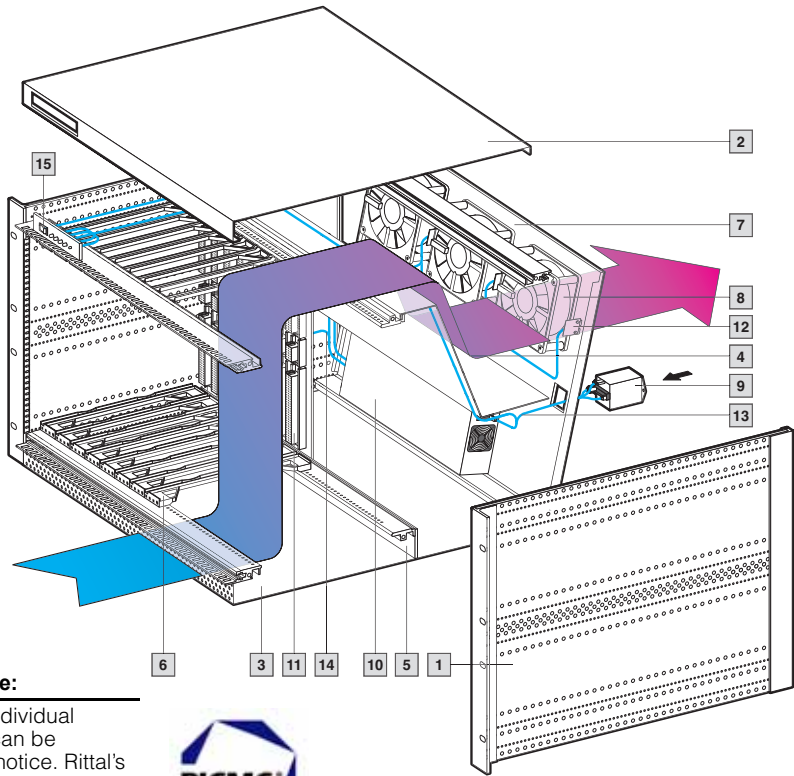
Description	Material	Qty.		
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	1	-
2 Top and bottom covers, vented	Aluminium, unplated	2	2	581
3 Finger guard	Polyamide	3	3	589
4 Fan mounting plate	1 mm aluminium, anodised	1	1	585
5 Plastic guide rails, keyable	Polycarbonate UL 94-V0	14	14	576
Plastic guide rails, keyable, red	Polycarbonate	2	2	576
6 EMC front panel 1 U/84 HP for MPS monitoring	2.5 mm aluminium, clear-chromated	1	1	-
EMC rear panel 4 U/84 HP, horizontally hinged with connector cut-out	2.5 mm aluminium, clear-chromated	1	-	-
7 EMC rear panel 7 U/84 HP, horizontally hinged with connector cut-out	2.5 mm aluminium, clear-chromated	-	1	-

Electrical/electronic supply includes

Description	Technical specifications	Qty.		
8 DC fan	24 V DC, 140 m ³ /h, per fan (VDE, UL, CSA) optionally speed-controlled	3	3	588
9 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	1	529
10 Open frame power supply (RP 3687.695)	400 W, 3.3 V/25 A, 5 V/25 A, 12 V/8 A, -12 V/7 A (VDE, UL, CSA)	-	1	544
Power supply unit ATX PS/2 (RP 3687.793)	300 W with switch connection cable	1	-	545
CPCI backplane	3.5 U, 8 slots	1	-	512
11 CPCI backplane	6.5 U, 8 slots	-	1	512
LED display module for MPS monitoring	for 3.3 V, +5 V, ±12 V, fan failure	1	1	-
12 DC cable harness	-	■	■	-
13 AC cable harness	-	-	■	-
14 Fan module for DC fan	-	1	1	-
Controller module	with interface for RS-232 and CMC-TC	1	1	-

■ Included with the supply.

Rack-mount systems, Ripac 7 U, 8 slots



Technical specifications:
 Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases.
 Prepared to accommodate CPCI boards and drives.
 Includes MPS Monitoring (see page 501/502).
 Complies with IEC 60 297-3-101, -102, -103.
 Fully assembled, pre-wired and tested.

 **Rittal service:**

Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.



Illustration:
MPS system 7 U for CPCI

U	7 (6 + 2 x 1/2)	Page
Side panel depth mm	405	
Wiring space (depth in mm)	210	
For PCB	6 U x 160 mm	
MPS system Model No. RP for CPCI	9910.947	

Mechanical supply includes

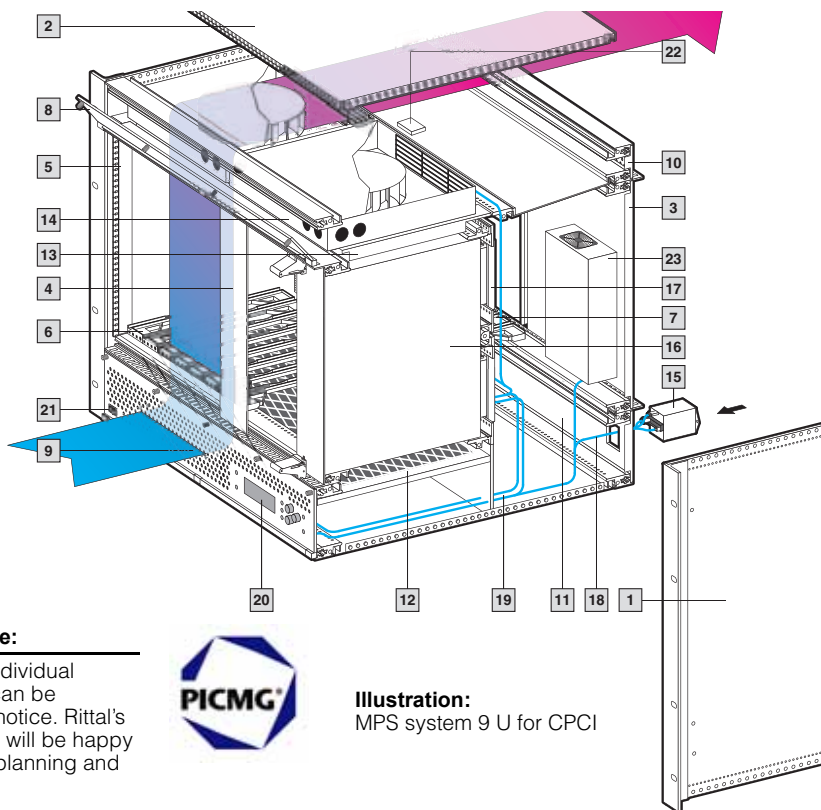
Description	Material	Qty.	
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	-
2 Cover with 1/2 U edge fold and cut-outs for LED/switches	Aluminium, unplated	1	583
3 Bottom cover with 1/2 U edge fold, ventilated at the front	Aluminium, unplated	1	583
EMC shielding plate for fan	Aluminium, clear-chromated	3	589
4 Air baffle	Aluminium	1	586
5 Air block panel 1/2 U	Epoxy	1	586
6 Plastic guide rails, keyable	Polycarbonate UL 94-V0	14	576
Plastic guide rails, keyable, red	Polycarbonate	2	576
7 EMC rear panel, horizontally hinged, 7 U, with fan and connector cut-out	2.5 mm aluminium, clear-chromated	1	

Electrical/electronic supply includes

Description	Technical specifications		
8 DC fan	12 V DC, 140 m ³ /h, per fan (UL, CSA, VDE) optionally speed-controlled	3	588
9 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	529
10 Open frame power supply (RP 3687.695)	400 W, 3.3 V/25 A, 5 V/25 A, 12 V/8 A, -12 V/7 A (VDE, UL, CSA)	1	544
11 CPCI backplane	6.5 U, 8 slots	1	512
12 Fan module for DC fan	-	1	-
13 AC cable harness	-	■	-
14 DC cable harness	-	■	-
15 LED display module for MPS monitoring	for 3.3 V, +5 V, ±12 V, fan failure	1	-
Controller module	with interface for RS-232 and CMC-TC	1	-

■ Included with the supply.

Rack-mount systems, Ripac 9 U, 8 slots, with RiCool radial fan



Technical specifications:
 Subrack, 290.5 mm deep, for installation in 482.6 mm (19") enclosures or cases.
 Prepared to accommodate CPCI boards and drives.
 Includes MPS monitoring (see page 501/502).
 Complies with IEC 60 297-3-101, -102, -103.
 Fully assembled, pre-wired and tested.

 **Rittal service:**
 Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.



Illustration:
 MPS system 9 U for CPCI

B
3.2
CPCI

U	9 (6 + 2 x 1 1/2)	Page
Side panel depth mm	290.5	
Wiring space (depth in mm)	85.5	
For PCB	6 U x 160 mm	
MPS system Model No. RP for CPCI	9909.483	

Mechanical supply includes

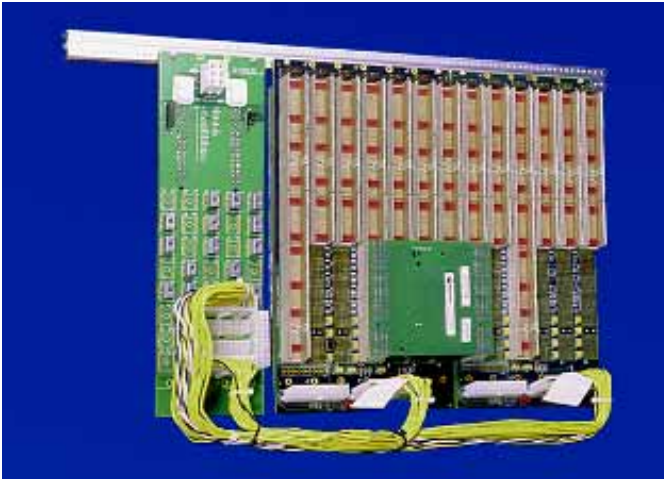
Description	Material	Qty.	
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	-
2 Top and bottom covers	Aluminium, unplated	2	581
3 EMC rear panel 6 U/28 HP + 8 HP	2.5 mm aluminium, clear-chromated	1	-
4 EMC front panel	2.5 mm aluminium, clear-chromated	1	605
5 EMC contact strip	Aluminium, clear-chromated	1	573
6 Plastic guide rails, keyable	Polycarbonate UL 94-V0	14	576
Plastic guide rails, keyable, red	Polycarbonate	2	576
7 Guide rails for I/O transition modules	Polycarbonate UL 94-V0	16	577
Guide rails, keyable, green, for power supply	Polycarbonate	2	576
8 Front panel 1 1/2 U/84 HP, horizontally hinged	2.5 mm aluminium, clear-chromated	1	-
9 Front panel 1 1/2 U/84 HP, vented, horizontally hinged, for MPS monitoring	2.5 mm aluminium, clear-chromated	1	-
10 EMC rear panel 1 1/2 U/84 HP, vented	2.5 mm aluminium, clear-chromated	1	-
11 EMC rear panel 1 1/2 U/84 HP with connector cut-out	2.5 mm aluminium, clear-chromated	-	-
12 Filter mat 84 HP, 160 mm, for slide-in attachment	-	1	-
13 Mounting plate for RiCool	1 mm sheet steel, zinc-plated, passivated	1	-

Electrical/electronic supply includes

Description	Technical specifications		
14 RiCool DC fan, individually removable including fault alarm signal, speed control	24 V DC, 204 m³/h, 48 W	2	-
15 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	529
16 Power supply, plug-in, 6 U/8 HP	350 W	1	543
CPCI backplane	6.5 U, 8 slots	1	512
17 CPCI backplane for power supply	-	1	-
18 AC cable harness	-	■	-
19 DC cable harness	-	■	-
20 Display module	for 3.3 V, +5 V, ±12 V, fan failure	1	-
21 Mains switch	-	1	-
22 Monitoring module for RiCool	-	1	-
23 Power supply for RiCool	-	1	-
Controller module	with interface for RS-232 and CMC-TC	1	-
Temperature module	-	1	-

Accessories CPCI/VME Page 529 Backplanes CPCI Page 510 Slide-in systems VME Page 523 Backplanes VME Page 524 Power supplies Page 540

Backplanes, 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

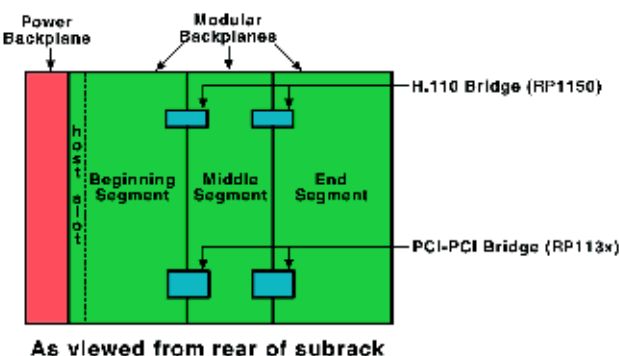
Each backplane has a control connector where +3.3, +5, ±12 V voltages may be picked off, e.g. for the connection of power LEDs.

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



32-bit pin assignment

P2 connector⁹⁾

Pin	Z ⁶⁾	A	B	C	D	E	F
22	GND	GA4 ⁵⁾	GA3 ⁵⁾	GA2 ⁵⁾	GA1 ⁵⁾	GA0 ⁵⁾	GND
21	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
20	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
19	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
18	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
17	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
16	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
15	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
14	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
13	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
12	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
11	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
10	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
9	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
8	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
7	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
6	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
5	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
4	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
3	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
2	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	GND
1	GND	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	BP(I/O)	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 connector⁹⁾

Pin	Z ⁷⁾	A	B	C	D	E	F
22	GND	GA4 ⁶⁾	GA3 ⁶⁾	GA2 ⁶⁾	GA1 ⁶⁾	GA0 ⁶⁾	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND ⁸⁾	RSV	GND
19	GND	GND	GND ⁸⁾	RSV	RSV	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND ⁸⁾	BRSVP2E18	GND
17	GND	BRSVP2A17	GND ⁸⁾	PRST#	REQ6#	GNT6#	GND
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND ⁸⁾	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	FAL#	REQ5#	GNT5#	GND
14	GND	AD(35)	AD(34)	AD(33)	GND	AD(32)	GND
13	GND	AD(38)	GND	V(I/O) ³⁾	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) ³⁾	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) ³⁾	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) ³⁾	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) ³⁾	C/BE(4)#	PAR64	GND
4	GND	V(I/O) ³⁾	BRSVP2B4	C/BE(7)#	-	C/BE(6)#	GND
3 ³⁾	GND	CLK4	GND	GNT3#	-	GNT4#	GND
2 ³⁾	GND	CLK2	CLK3	SYSEN#⁴⁾	-	REQ3#	GND
1 ³⁾	GND	CLK1	GND	REQ1#	-	REQ2#	GND

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

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

⁶⁾ Each slot may have its own address code (see CPCI specifications) ⁷⁾ Not for daughtercards ⁸⁾ 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.

P1 connector⁹⁾

Pin	Z ⁶⁾	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) ³⁾	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 ³⁾	C/BE(0)#	GND
20	GND	AD(12)	GND	V(I/O) ³⁾	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) ¹⁾³⁾	STOP#	LOCK#	GND
15	GND	3.3 V	FRAME#	IRDY#	GND ²⁾	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) ³⁾	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) ³⁾	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 connector⁹⁾

Pin	Z ⁷⁾	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) ³⁾	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 ⁴⁾⁵⁾	C/BE(0)	GND
20	GND	AD(12)	GND	V(I/O) ³⁾	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) ¹⁾³⁾	STOP#	LOCK#	GND
15	GND	3.3 V	FRAME#	IRDY#	GND ²⁾³⁾	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



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 U for low profile bridge

Slots	Design	Model No. RP	
		32-bit	64-bit
2	S	3689.300	3689.307
3	SE	3689.301	3689.308
4	SBME	3689.302	3689.309
5	SBME	3689.303	3689.310
6	SBME	3689.304	3689.311
7	SBE	3689.305	3689.312
8	S	3689.306	3689.313

Backplanes 3.5 U

Slots	Design	Model No. RP	
		32-bit	64-bit
2	SBE	–	3687.864
3	SE	3687.865	3686.578
4	SE	3687.863	3686.576
5	SE	3687.862	3686.575
6	SBME	3687.861	3686.548
7	SBE	3687.860	3686.547
8	S	3687.859	3686.546

S = Stand alone
B = Beginning segment
M = Middle segment
E = Ending segment

+ Accessories:

CPCI/CPCI bridge, RP 3686.571, (for 3.5 U backplanes), see page 515.
CPCI/CPCI low profile bridge (for 3 U backplanes), see page 515.
Accessories for backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.



Front view, 6.5 U



Rear view, 6.5 U

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 connectors
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 Spec) 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	
		32-bit	64-bit
2	S	3689.314	3689.321
3	SE	3689.315	3689.322
4	SBME	3689.316	3689.323
5	SBME	3689.317	3689.324
6	SBME	3689.318	3689.325
7	SBE	3689.319	3689.326
8	S	3689.320	3689.327

Backplanes 6.5 U for low profile bridge

Slots	Design	Model No. RP
		64-bit
3	SE	3689.209
4	SE	3689.208
5	SE	3689.207
6	SBME	3689.206
7	SBE	3689.205

S = Stand alone
B = Beginning segment
M = Middle segment
E = Ending segment

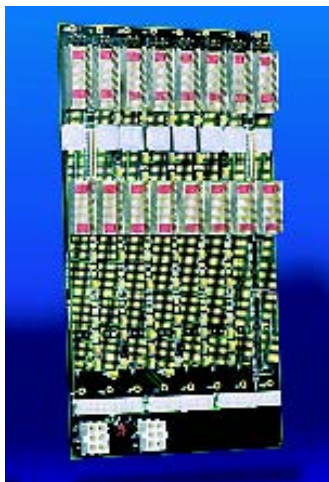
+ Accessories:

CPCI/CPCI low profile bridge, see page 515.
Accessories for backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.
Stiffening kit: RP 3688.088.

Backplanes 7 U with H.110



Front view



Rear view

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.

H.110 connected to system slot

Slots	CPCI design	H.110 design	Model No. RP
3	SE	SE	3688.508
4	SE	SBME	3688.507
5	SE	SBME	3687.875
6	SBME	SBME	3687.874
7	SBE	SBME	3687.873
8	S	SBME	3687.877

H.110 not connected to system slot

Slots	CPCI design	H.110 design	Model No. RP
3	S	S	3688.427
4	S	SB	3688.426
5	S	SB	3688.506
6	SB	SB	3688.505
7	SBE	SB	3688.504
8	S	SB	9805.494

Extendible using low profile bridges, see page 515.

S = Stand alone
M = Middle segment
B = Beginning segment
E = Ending segment

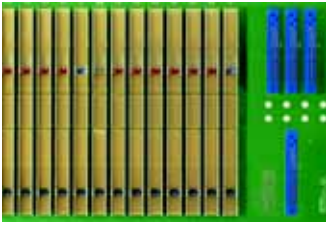
J4 pin assignment

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							
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 AREA

Key to J4 pin assignment

CT_name	= H.110 TDM bus signals	-SELVbat	= short loop battery
+5 V	= +5 V power	SELVbatRtn	= short loop battery return
+3.3 V	= +3.3 V power	-Vbat	= telecom power distribution bus
GND	= logic ground	VbatRtn	= return bus pin for -Vbat
V(I/O)	= I/O cell power	SGA0-SGA4	= shelf enumeration bus signals
FG	= frame ground	GA0-GA4	= slot ID signals: not bussed
RSVD	= reserved for future use	VRG	= bus for ringing voltage
NP	= a pin and pad REQUIRED to be not populated to meet safety regulations	VRGRtn	= bus for ringing voltage
IN/C	= No connect required for safety agency insulation requirements	PFSO#-PFS1#	= busses for power fail sense
		KEY AREA	= area utilized for key



Backplanes 7 U, Switch Fabric to PICMG 2.16

The "Switch Fabric" backplanes comply with PICMG specification 2.16. They support telephony applications and a high level of system availability in which CompactPCI is combined with Ethernet for high-speed applications.

Power inlets	Positronic 47-pole, or ATX
CPU slot	Right
Standards	PCI 2.1 (PCI specification) PICMG 2.0 (CompactPCI) PICMG 2.1 (hot swap) PICMG 2.5 (CPCI Computer Telephony) IEEE 1101.1/10/11 PICMG 2.16
Installation height	7 U (6 U for RP 3686.396 and RP 3689.186)
Distance between slots	4 HP
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.

Technical specifications:

- 7 U, 84 HP/32 HP
- Comply with PICMG 2.1, fully hot swap-compatible
- Selectable voltage V (I/O) (3.3 V or 5 V) where configured for 33 MHz CompactPCI
- Integral Schottky diode bus terminator
- Prepared for up to four backplane reinforcements to avoid bending during card insertion
- H.110 CT bus complies with specification PICMG 2.5 at all node slots
- Support 8 HP CPU boards when one node slot is relinquished
- Twin redundant support for Switch Fabric (2 fabric and 12 basic nodes), as specified in PICMG 2.16
- Support rear transition modules with all board slots
- Configurable for power supply with either two 6 U x 8 HP, three 6 U x 4 HP, three 3 U x 4 HP, three 3 U x 8 HP or four 3 U x 4 HP
- All power supply slots conform to PICMG 2.11
- Power supply connectors for H.110-Vbat, -SELVbat and VRG power signals
- ATX power connector for auxiliary power inlet/outlet
- Two fan power connectors for 12 V and system management support
- System control bus (SMBus) complies with PICMG 2.9 and supports all boards, power supplies, power entry modules, fans and alarm cards
- Support of I²C bridge function on the alarm card for >19 SMBus nodes

Width	Number of slots	Description of slots	Model No. RP
32 HP	8	1 Fabric slot 6 node slots with CPCI and H.110 1 host slot	3689.188
		see RP 3689.188, but without H.110	3686.414
64 HP	16	1 Fabric slot 6 node slots with CPCI and H.110 1 host slot 1 Fabric slot 6 node slots with CPCI and H.110 1 host slot 3 slots for power supplies	3686.396
		see RP 3686.396, but without H.110	3689.186
84 HP	21	7 node slots with CPCI and H.110 1 host slot 1 node slot with H.110 without CPCI 1 Fabric slot 7 node slots with CPCI and H.110 1 host slot 1 node slot with H.110 without CPCI 1 Fabric slot 1 Alarm slot	3686.397
		see RP 3686.397, but without H.110	3689.190
		see RP 3686.397, but without CPCI	3689.191

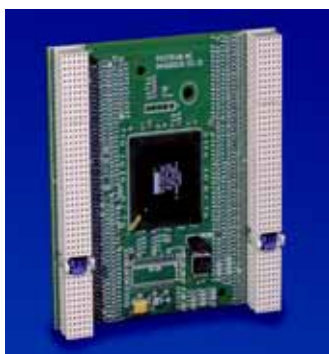
3686.396 configuration as follows:

Front

1	System (CPU) card	12	Node card
2	Node card	13	Node card
3	Node card	14	Node card
4	Node card	15	Node card
5	Node card	16	Fabric card B
6	Node card	17	Blank
7	Node card	18	Power supply 1
8	Fabric card A	19	Power supply 2
9	System (CPU) card	20	Power supply 3
10	Node card	21	Blank
11	Node card		

Rear

1	System RTC	12	Node RTC
2	Node RTC	13	Node RTC
3	Node RTC	14	Node RTC
4	Node RTC	15	Node RTC
5	Node RTC	16	Fabric B RTC
6	Node RTC	17	Alarm card
7	Node RTC	18	PEM 1
8	Fabric A RTC	19	
9	System RTC	20	PEM 2
10	Node RTC	21	
11	Node RTC		



1



2

Modular CPCI bridge

CPCI bridge may be connected to the rear to extend the bus by a maximum of 7 additional slots. The CPCI bridge handles all communications between the individual bus segments. The front slots are freely available for CPCI boards. It supports the 64-bit PCI bus and may be used in conjunction with CPCI backplanes 3.5 U and 6.5 U.

Technical specifications:

- May be connected to the rear of CPCI backplanes
- PCI bridge
- 64 bit "high performance" Intel 21 154
- For use with Rittal CPCI backplanes (not with low profile backplanes)
- Corresponding to PCI specifications 2.1
- Conforms to CPCI
- CPCI bridge connects CPCI backplanes from right to left (as viewed from the front) – i.e. the "left-hand" connector acts as the host board

Material:

Fibreglass epoxy to IEC 60 249 (FR4)

Supply includes:

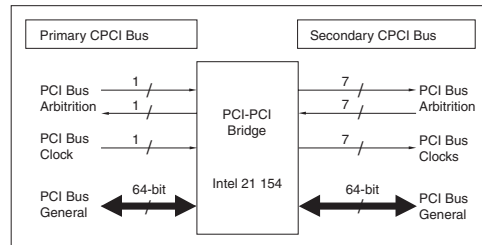
Bridge, fully populated.

1 Front view

2 Rear view

Description	Model No. RP
64-bit CPCI bridge	3686.571

Extended delivery times.



Modular low profile bridge

CPCI bridge may be connected to the rear to extend the bus by a maximum of 7 additional slots, **without any loss of slots:** Optionally available as a 32-bit or 64-bit version. Only suitable for use in conjunction with low profile backplanes. Enables full use of RTM facilities.

Material:

Fibreglass epoxy to IEC 60 249 (FR4)

Supply includes:

Bridge, fully populated.

1 32-bit version

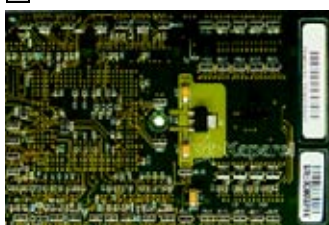
2 64-bit version

Design	Bits	Model No. RP
left-right	32	3689.210
right-left	32	3689.211
left-right	64	9810.637
right-left	64	9812.625
right-left	64	3687.880¹⁾

¹⁾ For backplane H.110



1



2



Power supply board 3 U/3.5 U

- Board 3 U/3.5 U, 16 HP
- For use in conjunction with Rittal CPCI backplanes
- Accommodation of up to two power supplies up to 250 W each
- AC/DC connection is made via two 2 x 3-pole connectors
- Outgoing voltages to supply one or more CPCI backplanes are available at 3 ATX-compatible connectors
- Complies with PICMG 2.0, PICMG 2.11

Technical specifications:

Accommodation of 2 x 3 U, 8 HP CPCI power supplies of up to 250 W.

The second power supply unit may be used for redundancy (with power distribution) or, via parallel connection, to increase the current.

Input voltages:

- AC input via 2 x 3-pole AMP Mate-N-Lock (AMP # 350732-1), connector J12
- Connected via pin 45, 46, 47, type Positronic
- Maximum current load per pin is 25 A, matching counter-connector for cable harness AMP # 350715
- DC input via 2 x 3-pole AMP Mate-N-Lock (AMP # 350732-1), connector J5 connected via pin 46, 47, type Positronic
- Maximum current load per pin is 25 A, matching counter-connector for cable harness AMP # 350715

Output voltage:

- Three 20-pole ATX-compatible connectors for ATX cable harness (connection of power supply board to CPCI backplane)

Description	Model No. RP
Board for plug-in power supply with Positronic connector, 47-pin	3688.603
ATX (12") cable harness	9810.337
ATX (16") cable harness	3686.570
ATX (20") cable harness	9810.338

Material:

Fibreglass epoxy to IEC 60 249 (FR4)

Supply includes:

Board, fully populated.

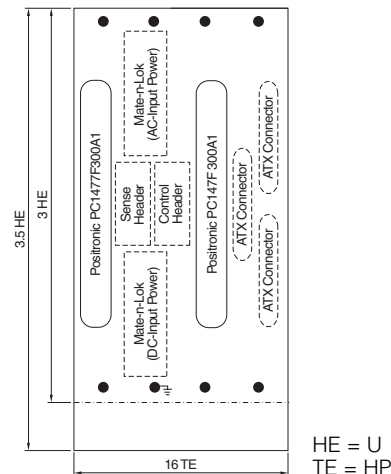
Note:

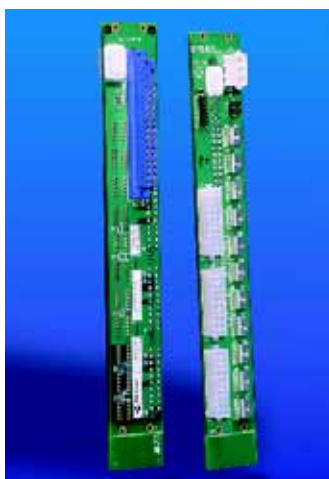
Plug-type power supplies, see page 543.

Connector assignment

Pin		Pin		Pin		Pin	
1	+5 V	13	+3.3 V	25	Not used	37	Not used
2	+5 V	14	+3.3 V	26	Not used	38	DEG#
3	+5 V	15	+3.3 V	27	R/EN	39	INH#
4	+5 V	16	+3.3 V	28	Not used	40	Not used
5	0 V (shared)	17	+3.3 V	29	Not used	41	Not used
6	0 V (shared)	18	+3.3 V	30	+5 V Sense	42	FAL#
7	0 V (shared)	19	0 V (shared)	31	Not used	43	Not used
8	0 V (shared)	20	+12 V	32	Not used	44	Not used
9	0 V (shared)	21	-12 V	33	+3.3 V Sense	45	Chassis GND
10	0 V (shared)	22	0 V (shared)	34	0 V Sense	46	AC neutral/+DC
11	0 V (shared)	23	Not used	35	Not used	47	AC line/-DC
12	0 V (shared)	24	0 V (shared)	36	+12 V Sense		

RP 3688.603





Power supply board 6 U/6.5 U, 8 HP

- Board 6 U/6.5 U, 8 HP
- For use in conjunction with Rittal CPCI backplanes 3.5 U, 6.5 U, H.110
- Accommodation of a power supply with up to 500 W
- AC/DC connection is made via 3-pole connectors
- Outgoing voltages to supply one or more CPCI backplanes are available at 3 ATX-compatible connectors or at special power terminals
- Complies with PICMG 2.0, PICMG 2.11

Technical specifications:

Accommodation of a 6 U CPCI power supply of up to 500 W.

Input voltages:

- AC input via 3-pole AMP Mate-N-Lock connector
Max. current capacity per pin 25 A
- DC input via 3-pole AMP Mate-N-Lock connector
Max. current capacity per pin 25 A

Output voltage:

- Three 20-pole ATX-compatible connectors for ATX cable harness (connection of power supply board to CPCI backplane) and/or special power terminals

Description	Model No. RP
Board for plug-in power supply with Positronic connector, 47-pin	3688.607
ATX (12") cable harness	9810.337
ATX (16") cable harness	3686.570
ATX (20") cable harness	9810.338

Extended delivery times.

Material:

Fibreglass epoxy to IEC 60 249 (FR4)

Supply includes:

Board, fully populated.

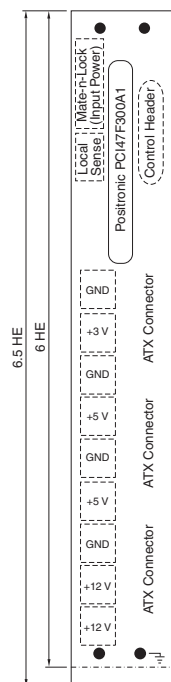
Note:

Plug-type power supplies, see page 543.

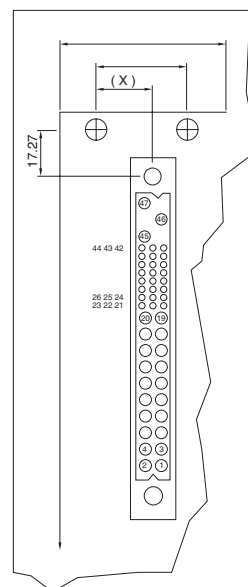
Connector assignment

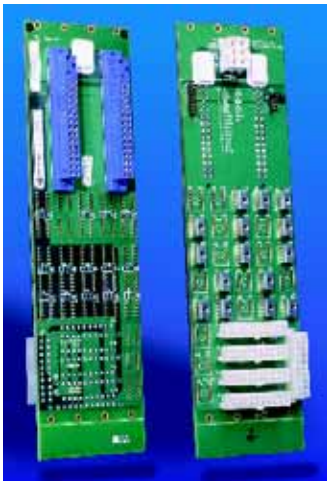
Pin		Pin		Pin		Pin	
1	+5 V	13	+3.3 V	25	Not used	37	Not used
2	+5 V	14	+3.3 V	26	Not used	38	DEG#
3	+5 V	15	+3.3 V	27	R/EN	39	INH#
4	+5 V	16	+3.3 V	28	Not used	40	Not used
5	0 V (shared)	17	+3.3 V	29	V1-ADJ	41	ISHR-2
6	0 V (shared)	18	+3.3 V	30	+5 V Sense	42	FAL#
7	0 V (shared)	19	0 V (shared)	31	Not used	43	Not used
8	0 V (shared)	20	+12 V	32	V2-ADJ	44	ISHR-3
9	0 V (shared)	21	-12 V	33	+3.3 V Sense	45	Chassis GND
10	0 V (shared)	22	0 V (shared)	34	0 V Sense	46	AC neutral/+DC
11	0 V (shared)	23	Not used	35	ISHR-1	47	AC line/-DC
12	0 V (shared)	24	0 V (shared)	36	+12 V		

RP 3688.607



HE = U





Power supply board 6 U/6.5 U, 16 HP

- Board 6 U/6.5 U, 16 HP
- For use in conjunction with Rittal CPCI backplanes
- Accommodation of two power supplies with up to 500 W
- AC/DC connection is made via two 2 x 3-pole connectors
- Outgoing voltages to supply one or more CPCI backplanes are available at 5 ATX-compatible connectors or at special power terminals
- Complies with PICMG 2.0, PICMG 2.11

Technical specifications:

Accommodation of 2 x 6 U CPCI power supplies of up to 500 W

Input voltages:

- AC input via 2 x 3-pole AMP Mate-N-Lock connector
Max. current capacity per pin 25 A
- DC input via 2 x 3-pole AMP Mate-N-Lock connector
Max. current capacity per pin 25 A

Output voltage:

- Five 20-pole ATX-compatible connectors for ATX cable harness (connection of power supply board to CPCI backplane) and/or special power terminals

Description	Model No. RP
Board for 2 x plug-in power supplies with Positronic connector, 47-pin	3688.608
ATX (12") cable harness	9810.337
ATX (16") cable harness	3686.570
ATX (20") cable harness	9810.338

Extended delivery times.

Material:

Fibreglass epoxy to IEC 60 249 (FR4)

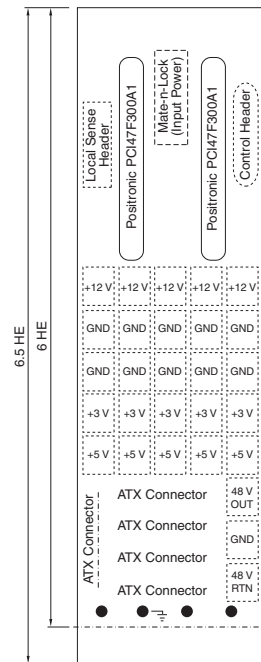
Supply includes:

Board, fully populated.

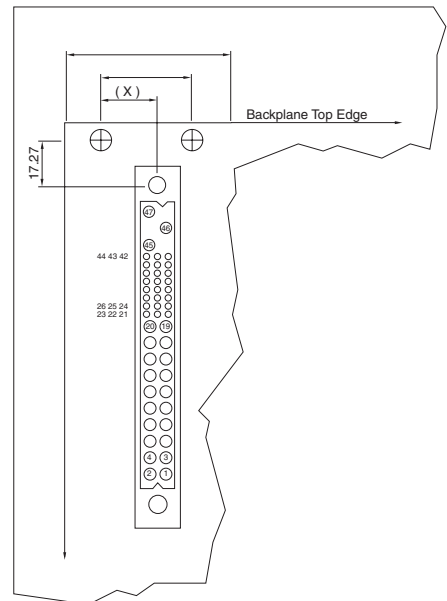
Note:

Plug-in power supplies, see page 543.

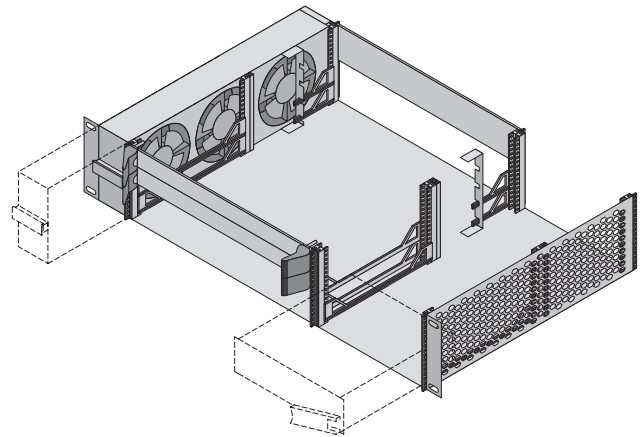
RP 3688.608



HE = U



Rack-mount systems, Slim-Box Vario 2 U, 4 U



Technical specifications:

- Rack-mount enclosure 482.6 mm (19") for the horizontal installation of boards

- Front and rear 2 slots per U for VME64x boards
- Enclosure cooling from left to right

- EMC and ESD-compatible design
- Includes fan tray
- Complies with IEC 60 297-3-101, -102, -103

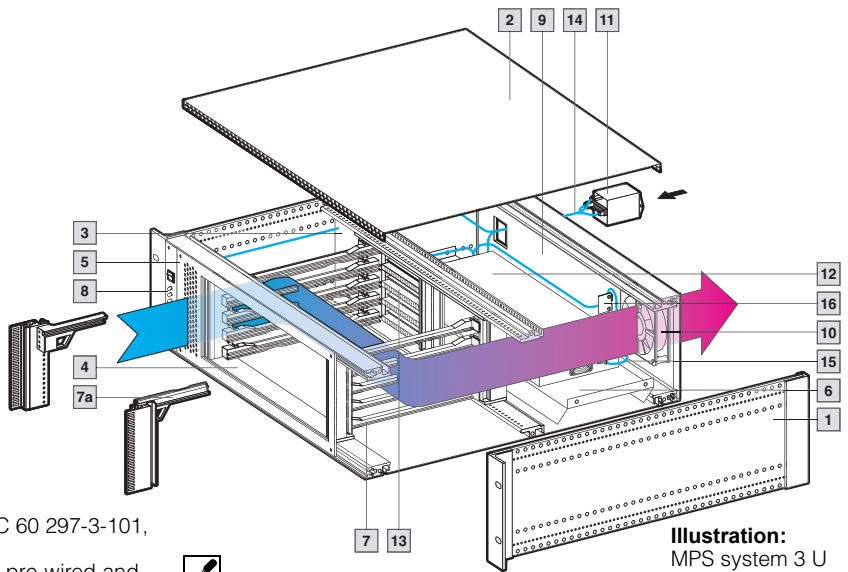
Material:

Sheet steel, spray-finished (black)

Slim-Box Vario VME64x		2 U		4 U	
		VME64x without rear I/O 9912.354	Model No. RP	VME64x without rear I/O 9912.484	Model No. RP
Model No. RP complete system					
Item	Package description		Model No. RP		Model No. RP
1	Basic enclosure, EMC, fully assembled, 300 mm deep, black	1	9912.048	1	9912.461
2	ATX PSU control front panel, 3 U x 4 HP, EMC (kit)	1	9912.049	1	9912.049
3	Rear panel for AC/DC ATX PSU, 3 U x 8 HP (kit), 200 W/300 W	1	9912.050	1	9912.921
4	Slim drive support (kit)	1	9912.289	–	9912.463
5	Rails for standard 3 U components (kit)	–	9912.056	1	9912.466
6	Fan tray with fan filter and 12 V DC fan, fully wired	1	9909.191	1	9912.475
Power supply units					
7	ATX PSU, AC/DC, wide range, 1 U, 200 W	1	9907.585	–	–
8	ATX PSU, AC/DC, wide range, 1 U, 300 W	–	–	1	9907.584
Guide rails					
9	Keyable guide rails, 160 mm, grey	8	3684.669	16	3684.669
10	ESD board contact spring	8	3684.978	32	3684.978
11	ESD contact spring for front panel	4	3684.979	16	3684.979
12	Guide rails 4.4" for drive support	2	3686.990	–	–
Filler panels					
13	Filler panel, EMC, 3 U x 4 HP (kit)	–	–	1	3685.178
14	Filler panel, EMC, 3 U x 8 HP (kit)	1	3685.182	1	3685.182
15	Filler panel, EMC, 3 U x 16 HP (kit)	–	–	1	3685.348
16	Filler panel, EMC, 6 U x 16 HP (kit)	1	3685.349	–	–
17	Filler panel, EMC, 6 U x 28 HP (kit)	–	–	1	3684.260
Backplanes					
18	VME64x backplane, with P0, 6 U, 4 Slot, active/passive	1	9912.362	–	–
19	VME64x backplane, with P0, 6 U, 8 Slot, active/passive	–	–	1	9912.413

VME/VME64x

Rack-mount systems, Ripac 3 U, 5 slots/4 U, 7 slots horizontal



Technical specifications:
Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases. Prepared to accommodate VMEbus boards and drives. Includes MPS monitoring (see page 501/502).

Complies with IEC 60 297-3-101, -102, -103.
Fully assembled, pre-wired and tested.



Rittal service:

Modifications or individual system solutions can be provided at short notice.

Illustration:
MPS system 3 U

Rittal's system specialists will assist you with planning and configuration.

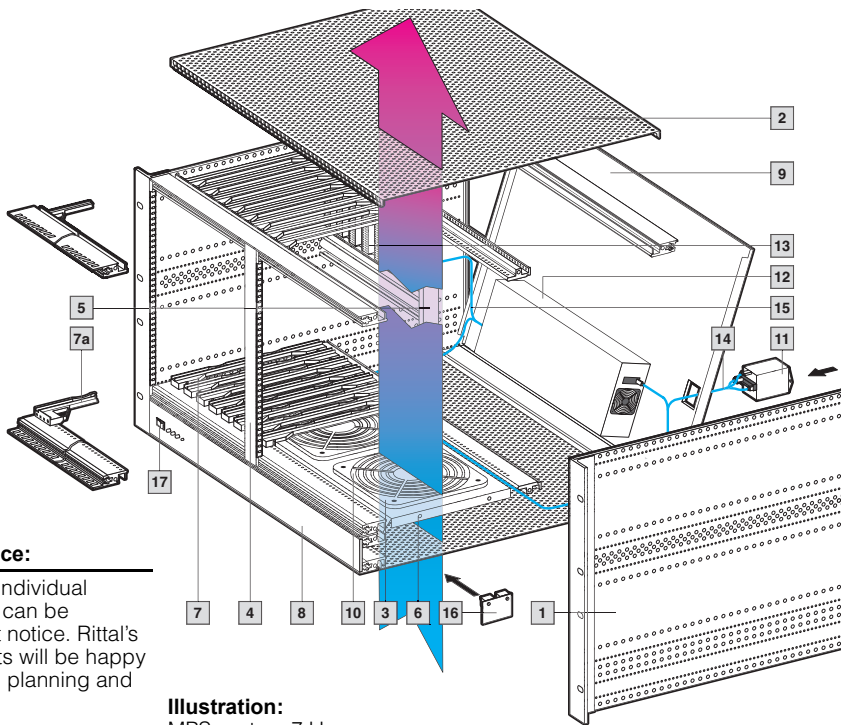
B
3.2
VME/VME64x

U	3	3	4	4	Page
Side panel depth mm	405	405	405	405	
Wiring space (depth in mm)	210	210	210	210	
For PCB	6 U x 160 mm	6 U x 160 mm	6 U x 160 mm	6 U x 160 mm	
MPS system Model No. RP for VME	9910.949	–	9910.954	–	
MPS system Model No. RP for VME64x	–	9910.950	–	9910.955	

Mechanical supply includes						
Description	Material	Qty.				
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	1	1	1	–
2 Top and bottom covers, solid	Aluminium, unplated	2	2	2	2	581
3 Air partition	Aluminium	1	1	1	1	586
4 Horizontal mounting kit	Aluminium, clear-chromated	1	1	1	1	574
5 Trim frame for horizontal mounting kit	2.5 mm aluminium, clear-chromated	1	1	1	1	575
6 Mounting base for power supply unit	2 mm aluminium, anodised	1	1	1	1	547
EMC shielding plate for fan	Aluminium, clear-chromated	1	1	1	1	589
7 Guide rails	Polycarbonate UL 94-V0	10	–	14	–	575
7a Plastic guide rails, keyable	Polycarbonate UL 94-V0	–	10	–	14	576
8 EMC front panel 3 U or 4 U/5 HP, with MPS monitoring	2.5 mm aluminium, clear-chromated	1	1	1	1	–
9 EMC rear panel 3 U/84 HP with fan and connector cut-out	2.5 mm aluminium, clear-chromated	1	1	–	–	–
EMC rear panel 4 U/84 HP with fan and connector cut-out	2.5 mm aluminium, clear-chromated	–	–	1	1	–

Electrical/electronic supply includes						
Description	Technical specifications					
10 DC fan	12 V DC, 48 m ³ /h per fan (UL, CSA, VDE) optionally speed-controlled	1	1	1	1	588
11 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	1	1	1	529
12 Switch mode power supply unit	250 W, 5 V/35 A, +12 V/8 A, –12 V/8 A (VDE, UL, CSA)	1	1	1	1	541
13 VME backplane	J1, 5 slots, IN-board, passive, ADC	1	–	–	–	528
VME64x backplane	J1/J2, 5 slots (without P0)	–	1	–	–	526
VME backplane	J1, 7 slots, IN-board, passive, ADC	–	–	1	–	528
VME64x backplane	J1/J2, 7 slots	–	–	–	1	526
LED display module for MPS monitoring	for +5 V, ±12 V, fan failure	1	1	1	1	–
14 AC cable harness	–	■	■	■	■	–
15 DC cable harness	–	■	■	■	■	–
16 Fan module for DC fan	–	1	1	1	1	–
Controller module	with interface for RS-232 and CMC-TC	1	1	1	1	–

Rack-mount systems, Ripac 4 U/7 U, 12 slots



Technical specifications:
 Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases. Prepared to accommodate VMEbus boards and drives. Includes MPS Monitoring (see page 501/502). Complies with IEC 60 297-3-101, -102, -103. Fully assembled, pre-wired and tested.

Rittal service:
 Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.

Illustration:
 MPS system 7 U

U	4 (3 + 1)	7 (6 + 1)	7 (6 + 1)	Page
Side panel depth mm	405	405	405	
Wiring space (depth in mm)	210	210	210	
For PCB	3 U x 160 mm	6 U x 160 mm		
MPS system Model No. RP for VME	9909.484	9910.956	-	
MPS system Model No. RP for VME64x	-	-	9910.957	

Mechanical supply includes

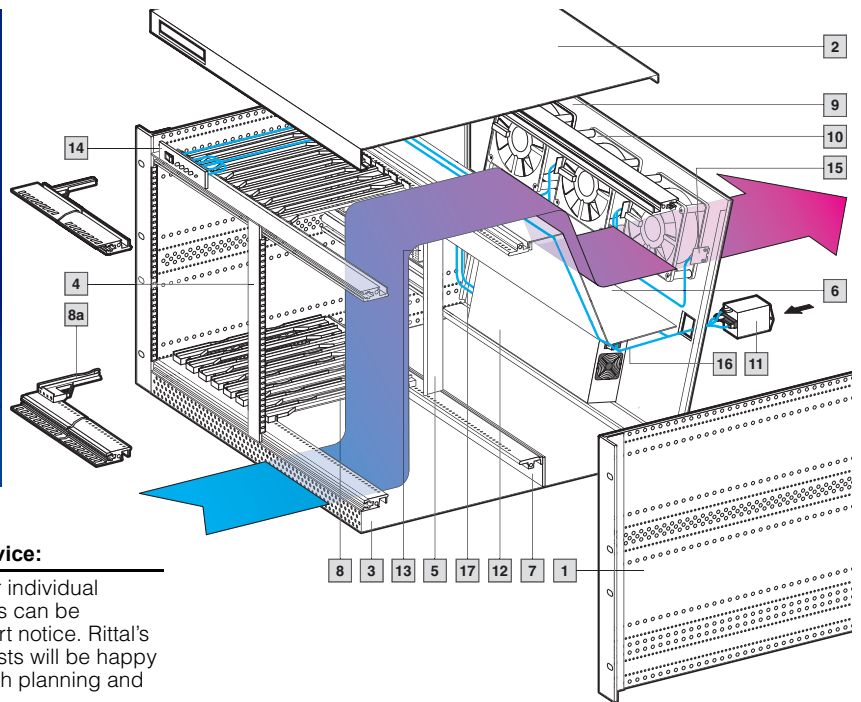
Description	Material	Qty.			
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	1	1	-
2 Top and bottom covers, vented	Aluminium, unplated	2	2	2	581
3 Finger guard	Polyamide	3	3	3	589
4 EMC front panel, 6 U/4 HP (with 7 U)	Aluminium, clear-chromated	-	1	-	-
5 Support, vertical (with 7 U)	Aluminium, clear-chromated	-	1	-	574
6 Fan mounting plate	1 mm aluminium, anodised	1	1	1	585
7 Guide rails	Polycarbonate UL 94-V0	24	24	-	575
7a Plastic guide rails, keyable	Polycarbonate UL 94-V0	-	-	24	576
8 EMC front panel 1 U/84 HP for switches/LED	2.5 mm aluminium, clear-chromated	1	1	1	-
Rear panel 4 U/84 HP, horizontally hinged with connector cut-out	2.5 mm aluminium, clear-chromated	1	-	-	-
9 EMC rear panel 7 U/84 HP, horizontally hinged with connector cut-out	2.5 mm aluminium, clear-chromated	-	1	1	-

Electrical/electronic supply includes

Description	Technical specifications				
10 DC fan	12 V DC, 140 m ³ /h per fan (VDE, UL, CSA) optionally speed-controlled	3	3	3	588
11 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	1	1	529
12 Switch mode power supply unit (RP 3686.629)	400 W, 5 V/80 A, +12 V/8 A, -12 V/8 A (VDE, UL, CSA)	1	1	-	541
Open frame power supply (RP 3687.695)	400 W, 3.3 V/25 A, +5 V/25 A, +12 V/8 A, -12 V/7 A (VDE, UL, CSA)	-	-	1	544
13 VME backplane	J1, 12 slots, IN-board, passive, ADC	1	1	-	528
VME64x backplane	J1/J2, 12 slots	-	-	1	526
17 LED display module for MPS monitoring	for (3.3 V), +5 V, ±12 V, fan failure	1	1	1	-
14 AC cable harness	-	■	■	■	-
15 DC cable harness	-	■	■	■	-
16 Fan module for DC fan	-	1	1	1	-
Controller module	with interface for RS-232 and CMC-TC	1	1	1	-

VME/VME64x

Rack-mount systems, Ripac 7 U, 12 slots



Technical specifications:
 Subrack, 405 mm deep, for installation in 482.6 mm (19") enclosures or cases. Prepared to accommodate VMEbus boards and drives. Includes MPS Monitoring (see page 501/502). Complies with IEC 60 297-3-101, -102, -103.
 Fully assembled, pre-wired and tested.



Rittal service:

Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.

B
3.2
VME/VME64x

U	7 (6 + 2 x 1/2)	7 (6 + 2 x 1/2)	Page
Side panel depth mm	405	405	
Wiring space (depth in mm)	210	210	
For PCB	6 U x 160 mm	6 U x 160 mm	
MPS system Model No. RP for VME	9910.958	–	
MPS system Model No. RP for VME64x	–	9910.959	

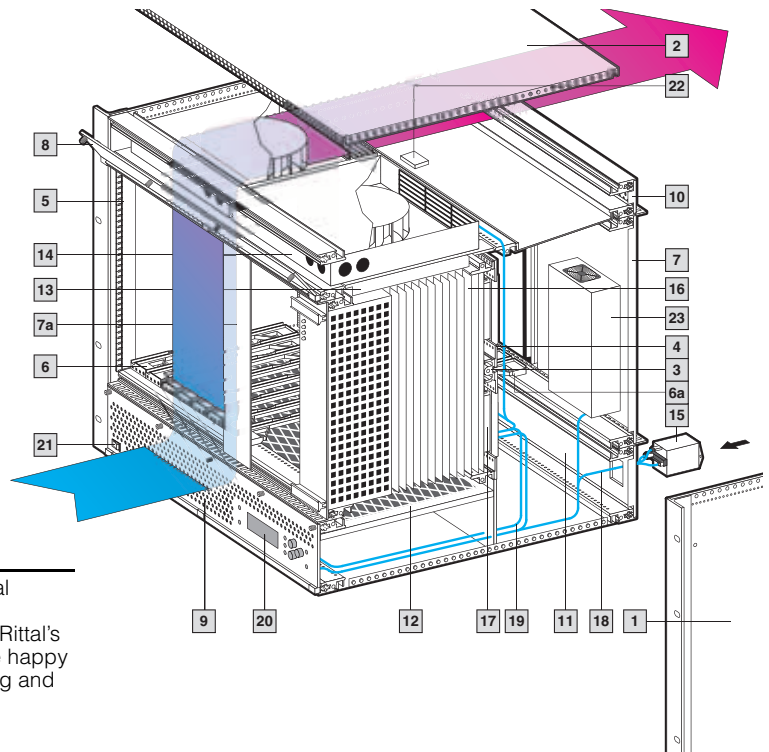
Mechanical supply includes

Description	Material	Qty.		
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	1	–
2 Cover with 1/2 U edge fold and cut-outs for switches/LEDs	Aluminium, unplated	1	1	583
3 Bottom cover with 1/2 U edge fold, ventilated at the front	Aluminium, unplated	1	1	583
4 EMC front panel, 6 U / 4 HP	2.5 mm aluminium, clear-chromated	1	–	–
EMC shielding plate for fan	Aluminium, clear-chromated	3	3	589
5 Vertical support	Aluminium, clear-chromated	1	–	574
6 Air baffle	1 mm aluminium, anodised	1	1	586
7 Air block panel, 1/2 U	Epoxy	1	1	586
8 Guide rails	Polycarbonate UL 94-V0	24	–	575
8a Plastic guide rails, keyable	Polycarbonate UL 94-V0	–	24	576
9 EMC rear panel, horizontally hinged, 7 U, with fan and connector cut-out	2.5 mm aluminium, clear-chromated	1	1	–

Electrical/electronic supply includes

Description	Technical specifications	Qty.		
10 DC fan	12 V DC, 140 m ³ /h per fan, (UL, CSA, VDE) optional speed control	3	3	588
11 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	1	529
12 Switch mode power supply unit (RP 3686.629)	400 W, 5 V/80 A, +12 V/8 A, –12 V/8 A (VDE, UL, CSA)	1	–	541
Open frame power supply (RP 3687.695)	400 W, 3.3 V/25 A, 5 V/25 A, 12 V/8 A, –12 V/7 A (VDE, UL, CSA)	–	1	544
13 VME backplane	J1, 12 slots, IN-board passive, ADC	1	–	528
VME64x backplane	J1/J2, 12 slots (without P0)	–	1	526
14 LED display module for MPS monitoring	for (3.3 V), +5 V, ±12 V, fan failure	1	1	–
15 Fan module for DC fan	–	1	1	–
16 AC cable harness	–	■	■	–
17 DC cable harness	–	■	■	–
Controller module	with interface for RS-232 and CMC-TC	1	1	–

Rack-mount systems, Ripac 9 U, 12 slots, with RiCool radial fan



Technical specifications:
 Subrack, 290.5 mm deep, for installation in 482.6 mm (19") enclosures or cases. Prepared to accommodate VMEbus boards and drives. Includes MPS Monitoring (see page 501/502). Complies with IEC 60 297-3-101, -102, -103. Fully assembled, pre-wired and tested.

Rittal service:
 Modifications or individual system solutions can be provided at short notice. Rittal's system specialists will be happy to assist you with planning and configuration.

U	9 (6 + 2 x 1 1/2)	Page
Side panel depth mm	290.5	
Wiring space (depth in mm)	85.5	
For PCB	6 U x 160 mm	
MPS system Model No. RP for VME64x	9910.960	

Mechanical supply includes			
Description	Material	Qty.	
1 Ripac basic subrack system (side panels, horizontal rails, flanges, EMC gaskets)	Aluminium, clear-chromated/stainless steel	1	-
2 Top and bottom covers, solid	1 mm aluminium, unplated	2	581
3 Centre horizontal rail 12 HP	1 mm aluminium, clear-chromated	1	-
4 Z rail 12 HP	Aluminium, clear-chromated	4	-
5 EMC contact strip	Aluminium, clear-chromated	2	573
6 Plastic guide rails, keyable	Polycarbonate UL 94-V0	24	576
Guide rails, keyable, green, for power supply	Polycarbonate UL 94-V0	2	576
6a Guide rails for I/O transition modules	Polycarbonate UL 94-V0	24	-
7 EMC rear panel 6 U/36 HP	2.5 mm aluminium, clear-chromated	1	-
7a EMC front panel	2.5 mm aluminium, clear-chromated	1	-
8 Front panel 1 1/2 U/84 HP, horizontally hinged	2.5 mm aluminium, clear-chromated	1	-
9 Front panel 1 1/2 U/84 HP, vented, horizontally hinged, for MPS monitoring	2.5 mm aluminium, clear-chromated	1	-
10 EMC rear panel 1 1/2 U/84 HP, vented	2.5 mm aluminium, clear-chromated	1	-
11 EMC rear panel, 1 1/2 U/84 HP, with connector cut-out	2.5 mm aluminium, clear-chromated	1	-
12 Filter mat 160 mm, 84 HP, for slide-in attachment	-	1	-
13 Mounting plate for RiCool	1 mm sheet steel, zinc-plated, passivated	1	-

Electrical/electronic supply includes			
Description	Technical specifications		
14 RiCool DC fan, individually removable. Including fault alarm signal, speed control	24 V DC, 204 m³/h, 48 W	2	-
15 IEC filtered mains inlet	6 A (VDE, UL, CSA)	1	529
16 Power supply, plug-in, 6 U/12 HP	270 W, 5 V/35 A, +12 V/6 A, -12 V/2 A (VDE, IEC)	1	542
Backplane VME64x, without P0	J1/J2, 12 slots	1	526
17 Female connector for power supply unit	H15	2	-
18 AC cable harness	-	■	-
19 DC cable harness	-	■	-
20 Display module	for +5 V, ±12 V, fan failure	1	-
21 Mains switch	-	1	-
22 Monitoring module for RiCool and backplane	-	2	-
23 Power supply for RiCool	-	1	-
Controller module	-	1	-
Temperature module	-	1	-

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 closed-circuit 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	Pin assignment for J1 connector VME			
		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	BG0IN	D11	+ V2
5	MSD	D04	BG0OUT	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	Pin assignment for J2 connector VME			
		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



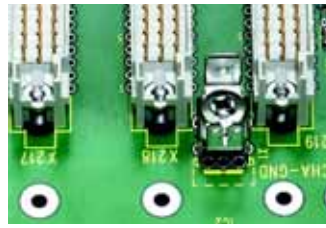
Automatic daisy-chaining J1 and J1/J2

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 sub-racks. 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

Instead 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)

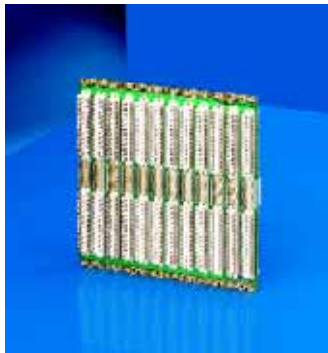
J1, J1/J2: 10 pins, VME64x: 14 pins

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 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 ± 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 ±12 V, +5 V STBY, ±V1, ±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	Width mm	without P0 connector	with P0 connector
2	261.7	39.5	9912.423	9912.410
3	261.7	59.5	9912.424	9912.411
4	261.7	80	9912.425	9912.362
5	261.7	100	3687.608	3687.609
6	261.7	120.5	9912.426	9912.412
7	261.7	141	3687.610	3687.611
8	261.7	161.5	9912.427	9912.413
9	261.7	181.5	9904.930	9904.932
10	261.7	202	9904.931	9904.933
11	261.7	222.5	9912.428	9912.414

Slot	Dimensions		Model No. RP	
	Height mm	Width mm	without P0 connector	with P0 connector
12	261.7	242.5	3686.634	3686.473
13	261.7	263	9912.429	9912.415
14	261.7	283	9912.430	9912.416
15	261.7	303.5	9912.431	9912.417
16	261.7	324	9912.432	9912.418
17	261.7	344	9912.433	9912.419
18	261.7	364.5	9912.434	9912.420
19	261.7	385	9912.435	9912.421
20	261.7	405	9912.436	9912.422
21	261.7	425.5	3686.635	3686.474

VME64x 6.5 U

Slot	Dimensions		Model No. RP	
	Height mm	Width mm	without P0 connector	with P0 connector
5	283.7	100	9910.012	9910.007
7	283.7	141	9910.013	9910.008
9	283.7	181.5	9910.014	9910.009
10	283.7	202	9904.928	9904.929
12	283.7	242.5	9910.015	9910.010
21	283.7	425.5	9910.016	9910.011

Material:

Fibreglass epoxy to IEC 60 249 (type FR4)

Supply includes:

Backplane, fully populated.



Accessories:

For backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.



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 ±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 ±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	3686.495
3	261.7	59.5	3686.496
4	261.7	80	3686.497
5	261.7	100	3686.498
6	261.7	120.5	3686.499
7	261.7	141	3686.500
8	261.7	161.5	3686.501
9	261.7	181.5	3686.502
10	261.7	202	3686.503
11	261.7	222.5	3686.504
12	261.7	242.5	3686.505
13	261.7	263	3686.506
14	261.7	283	3686.507
15	261.7	303.5	3686.508
16	261.7	324	3686.509
17	261.7	344	3686.510
18	261.7	364.5	3686.511
19	261.7	385	3686.512
20	261.7	405	3686.513
21	261.7	425.5	3686.514

Material:
Fibreglass epoxy to IEC 60 249 (type FR4)

Supply includes:
Backplane, fully populated.

+ **Accessories:**

For backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.



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 ±10 %	3.2 mm ±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, ±12 V, ±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	3686.555
4	128.4	80	3686.556
5	128.4	100	3686.557
6	128.4	120.5	3686.558
7	128.4	141	3686.559
8	128.4	161.5	3686.560
9	128.4	181.5	3686.561
10	128.4	202	3686.562

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
12	128.4	242.5	3686.563
13	128.4	263	3686.564
14	128.4	283	3686.565
15	128.4	303.5	3686.566
18	128.4	364.5	3686.567
20	128.4	405	3686.568
21	128.4	425.5	3686.569

Material:
Fibreglass epoxy to IEC 60 249 (type FR4)

Supply includes:
Backplane, fully populated.

Accessories:

For backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.



VME J2 expansion bus

Material:
Fibreglass epoxy to IEC 60 249 (type FR4)

Supply includes:
Backplane, fully populated.

Accessories:

For backplane mounting:
Conductive strips, see page 571.
Insulating strips, see page 571.

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
3	128.4	59.5	3686.585
4	128.4	80	3686.586
5	128.4	100	3686.587
6	128.4	120.5	3686.588
7	128.4	141	3686.589
8	128.4	161.5	3686.590
9	128.4	181.5	3686.591
10	128.4	202	3686.592

Slot	Dimensions		Model No. RP
	Height mm	Width mm	
12	128.4	242.5	3686.593
13	128.4	263	3686.594
14	128.4	283	3686.595
15	128.4	303.5	3686.596
18	128.4	364.5	3686.597
20	128.4	405	3686.598
21	128.4	425.5	3686.599



Mains switch

- Rocker switch 6 A/250 V, 2-pole, FASTON connections, (4.7 x 0.8 mm)
- VDE, UL, CSA, TÜV, SEMKO, DEMCO, SEV, NEMKO, SETI, BEAB approvals
- Insulation resistance: > 10 MΩ
- Test voltage: 1 kV
- Front panel: 21 x 15 mm
- Cut-out: 19.2 x 12.9 mm
- Installation depth: 17 mm

Max. current	Packs of	Model No. RP
6 A	1	3687.711



Filtered IEC mains inlet

for mains input

Combination module consisting of an IEC 320 socket to IEC 60 320 and IEC 60 950 with line filter and 5 x 20 mm G fuse holder.

Technical specifications:

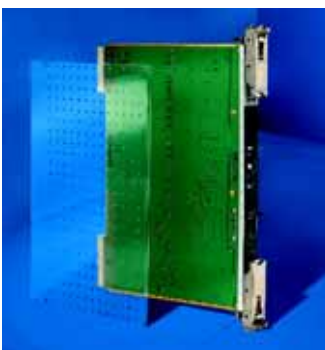
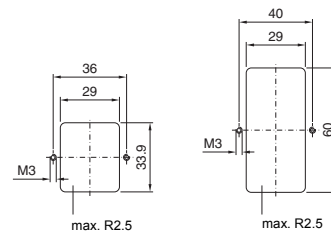
Metal enclosure for screw mounting

Mains input: via IEC 320 socket

Mains output: via 3 FASTON contacts (L, N, PE, 6.3 x 0.8)

Variants available with or without switch
Temperature range: -25°C to +85°C

	Model No. RP	
	with switch	without switch
	3687.709	3687.710
Mains voltage max.	250 V AC	250 V AC
Leakage current	2 x 0.32 mA	∅ 500 µA
Max. current	6 A	6 A
Mounting holes	40 mm	36 mm
Installation depth	90 mm	56 mm
Cut-out	60 x 29 mm	33.9 x 29 mm
Approvals	VDE, SEMKO, SEV, UL, CSA	VDE



Plastic covers

for PCBs,
see page 597.