

## CompactPCI Serial power backplane and power adapter boards



Front view



Rear view

63972-334 (User Guide CPCI Serial PowerBP Rev 1.91)

### Information about producer

Schroff GmbH  
D-75334 Straubenhardt

The details in this manual have been carefully compiled and checked - supported by certified Quality Management System to EN ISO 9001/2000.

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## About CompactPCI Serial

CompactPCI Serial is a new standard that supports the fast serial protocols PCI Express, Serial ATA, USB and Ethernet. The payload power is +12 V. For wake-up events an additional +5 V Standby voltage is defined.

The Schroff CompactPCI Serial power backplane accepts a pluggable power supply with FCI PwrBlade connector and the pinout is specified in this user guide. nVent offers a range of Schroff pluggable power supplies for CompactPCI Serial applications with AC and DC input and different output power that fit to the power backplanes. Please refer to [schroff.nvent.com](http://schroff.nvent.com) for further information.

The Schroff pluggable CompactPCI Serial power supplies and the Schroff CompactPCI Serial power backplane is developed in accordance to the power definition within the CompactPCI Serial Specification PICMG CPCI-S.0.

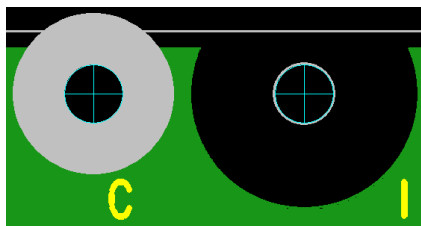
## Assembly instructions & general information

### Mounting

Attach the power backplane using every non-plated mounting hole at the top and the bottom to fix the backplane to the system / subrack with M2.5 screws.

### Chassis GND

If only the non-plated mounting holes are used the digital GND (backplane GND) will be isolated from the chassis GND. On the top and bottom mounting hole rows there are 2 mounting holes near each other, one with plated pad, marked with a "C" (Connected to Chassis GND) and one non-plated, marked with an "I" (Isolated from Chassis GND).

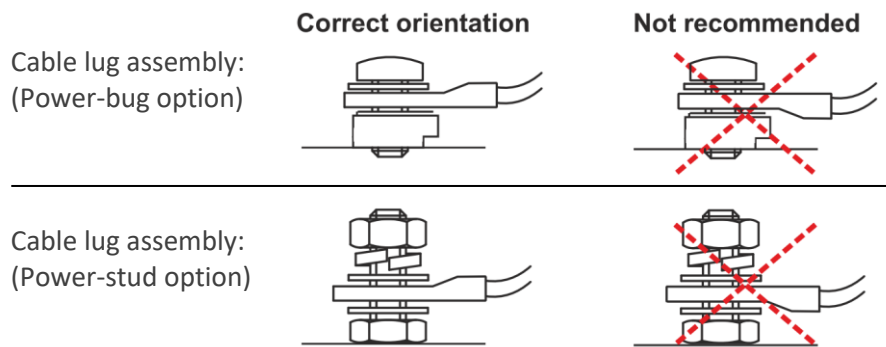


*Mounting holes for „I“  
isolated or „C“ connected  
mounting of backplane  
GND to Chassis GND*

If a connection of digital GND (backplane GND) to chassis GND is required, please assemble screws in each mounting hole of the backplane marked with a "C". Spring washers are recommended instead of flat washers. If both grounds are isolated, creepage and clearance between screw and digital GND are in accordance to EN60950.

### Power output

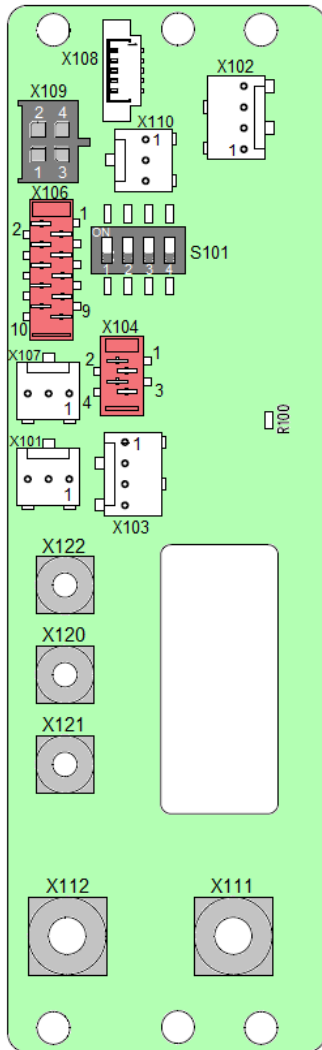
The backplane provides power terminals with M4 thread power bugs to connect power cables for +12 V and GND. M4 cable lugs should be used to connect the power cables to the power bugs. A maximum of 2 cable lugs are recommended per power bug. Please assemble the cable lugs with the flat side to the power bug to ensure the correct isolation distance between the not insulated part of the power cable and not insulated parts of the backplane.



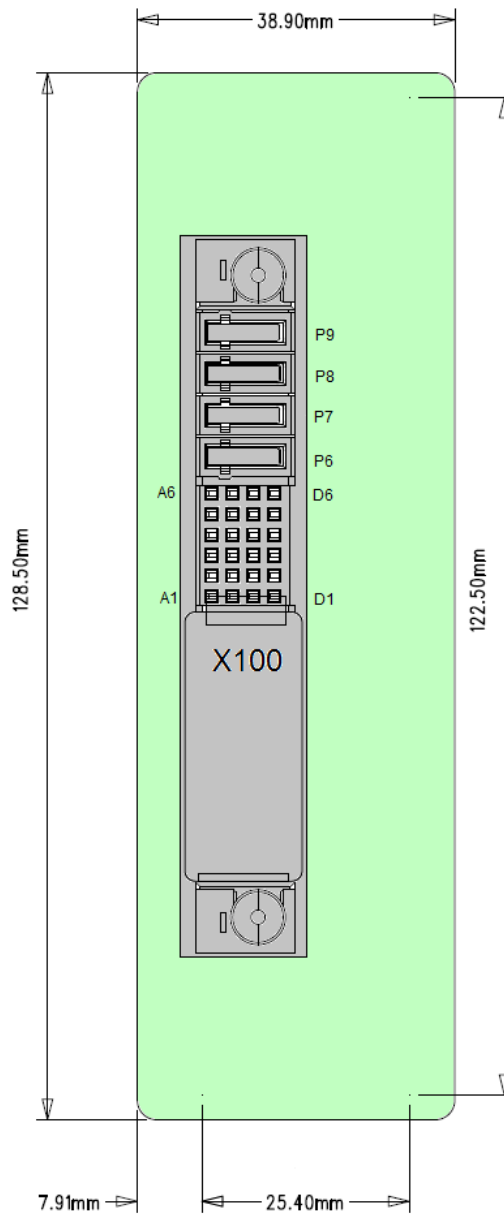
For harsh environments with very high shock and vibration values a power stud with nuts is recommended. Schroff CompactPCI Serial backplanes are already prepared to accept a power stud instead of the power bugs assembled as standard option. Please ask your Schroff sales contact for a configured version with M4 power studs assembled or send an inquiry to [backplanes@nvent.com](mailto:backplanes@nvent.com). The power stud accepts a maximum of two cable lugs.

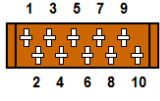
## Power backplane connectors


Rear view





Front view

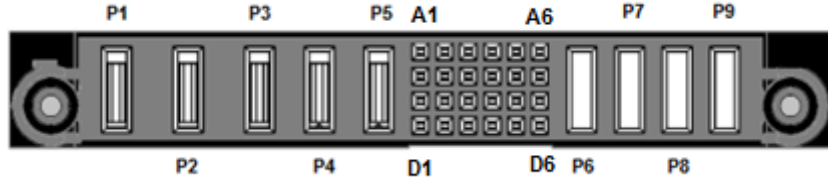


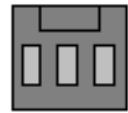
Utility connector (X106)	
Tyco 8-338069-0	
	
Pin	Signal
1	RTN_Sense (GND)
2	STNDBY / IPMB_PWR (+5V)
3	+12V Sense
4	INH/PS_ON#
5	PWRBTN#
6	PWR_FAIL#
7	WAKE_IN#
8	PRST#
9	IPMB_SDA
10	IPMB_SCL

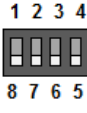

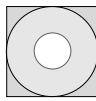
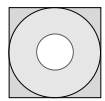
+5 V standby (X109)	
Molex: 44914-0401	
	
Pin	Signal
1	GND
2	STNDBY / IPMB_PWR (+5V)
3	GND
4	STNDBY / IPMB_PWR (+5V)
Max. 8.55 Amp per contact	

IPMB connector (X108)	
Molex: 53398-0571	
	
not assembled by default	
Pin	Signal
1	IPMB_SCL
2	GND
3	IPMB_SDA
4	STNDBY / IPMB_PWR (+5V)
5	n.c.

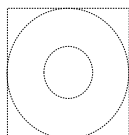
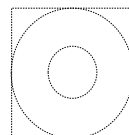
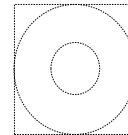
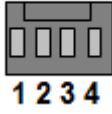

UPS connector (X101)	
	
not assembled by default	
Pin	Signal
1	UPS_TX
2	GND
3	UPS_RX

Power connector (X100)					
FCI: 51940-473ULLH					
					
Pin	Signal	Pin	Signal	Pin	Signal
P1	L	D6	STNDBY/IPMB_PWR (+5V)	B6	GND
P2	N	D5	DEG#	B5	IPMB_SCL
P3	PE	D4	GND	B4	A1
P4	DC_RTN	D3	PSPRESENT	B3	INH/PS_ON#
P5	DC_IN	D2	PWR_FAIL#	B2	+12V_SHARE
P6	GND	D1	DIO1	B1	DIO3
P7	GND	C6	STNDBY/IPMB_PWR (+5V)	A6	EN#
P8	+12 V	C5	STNDBY/IPMB_PWR (+5V)	A5	IPMB_SDA
P9	+12 V	C4	A0	A4	A2
		C3	UPS_TX	A3	+12V_Sense
		C2	UPS_RX	A2	RTN_Sense (GND)
		C1	DIO2	A1	DIO4

Power button (X107)	
	
1 2 3	
Pin	Signal
1	PWRBTN#
2	GND
3	PRST#

PSU address (S101)			+12 V Current share (X104)		+12 V connector (X112)		GND connector (X111)	
								
Signal	Switch	default	Pin	Signal	Pin	Signal	Pin	Signal
A0	1 — 8	open	1	+12V_SHARE	1	+12 V	1	GND
A1	2 — 7	open	2	+12V_SHARE	max. 120 Amp		max. 120 Amp	
A2	3 — 6	open	3	GND				
INH/ PS_ON#	4 — 5	closed (GND)	4	GND				

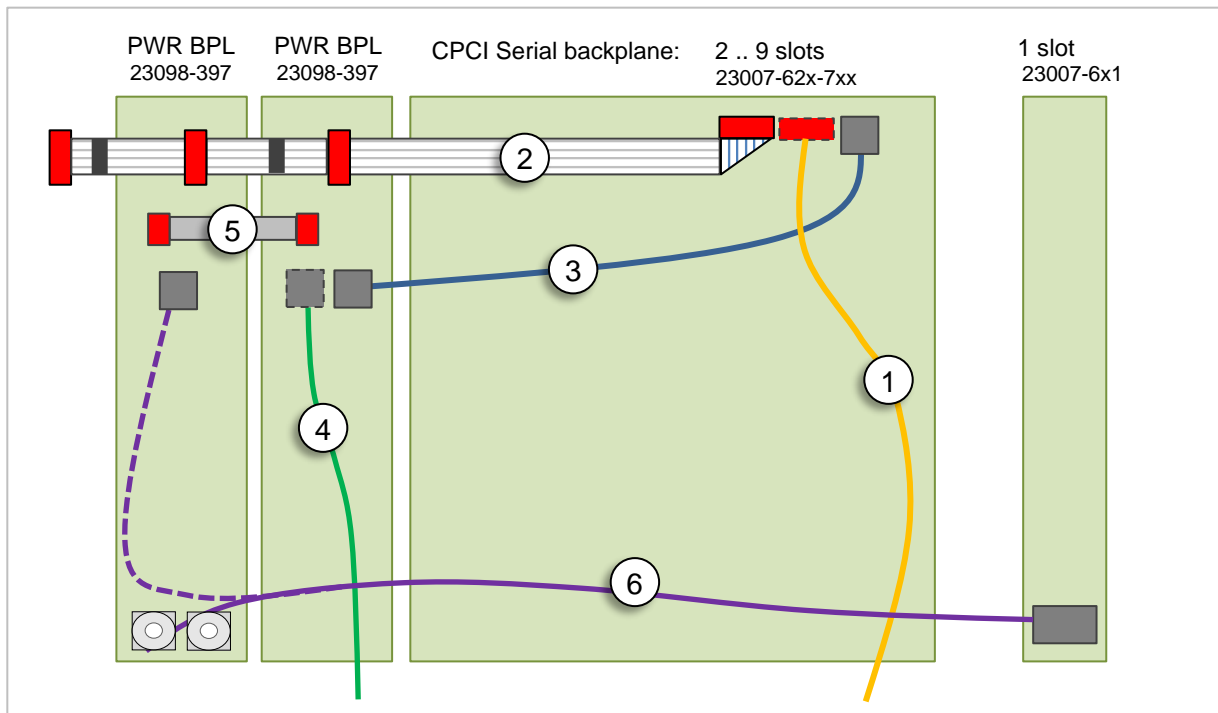
+12 V connector (X120)		GND connector (X121)		STNDBY connector (X122)		PWR status connector (X103)		PWR PSU ON/OFF (X110)	
 not assembled by default		 not assembled by default		 not assembled by default					
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	+12 V	1	GND	1	STNDBY / IPMB_PWR (+5V)	1	DEG#	1	INH/PS_ON#
						2	PSPRESENT	2	GND
						3	STNDBY / IPMB_PWR (+5V)	3	EN#
						4	PWR_FAIL#		

**Signal description**

- **+12V\_SHARE:** Cable between PSU1-> PSU2. Current share connects several PSU's of the same type. The current share bus ensures load balancing for a constant output voltage and increases the life span of the PSU's.
- **EN#:** Tied to GND by default on PWR BPL. If En# (Enable) and INH/PS\_ON# are tied to GND -> operational!
- **INH/PS\_ON#:** Tied to GND on PWR BPL via Switch S101 by default. When PS\_ON# is connected to GND, the 12V operating voltage is switched on. When PS\_ON# is high, only 5V-Standby is active. The 12V can also be activated with an external switch attached to X110. In this case, the switch S101 must be pulled into the position open.
- **PWRBTN# (X107):** Connector for power button / push button. If this signal is temporary tied to GND the System board gets the command to activate PS\_ON# to activate the operating voltage.
- **PRST#:** If tied to GND the System board will reboot.
- **PSPRESENT (X103):** indicating that the PSU is plugged. The PSU pulls this signal low.
- **FAL#/PWR\_FAIL:** Open Collector, driven high when outputs are inside the tolerances. It will go low a minimum of 1 ms prior to output going out of its tolerances. The intention of this signal is to create a warning for the System Board to allow actions before the main voltage gets switched off.

## Accessories

Pos	Item number	Description	Connector 1	Connector 2	Connector 3	Connector 4	Cable type	Length mm
1	23204-852	Utility cable	10 pin Micromatch	Open end	-	-	Discrete wire	600
2	23204-875	Utility cable	10 pin Micromatch	10 pin Micromatch	10 pin Micromatch	10 pin Micromatch	Ribbon cable	650
3	23204-866	Standby cable	4 pin Microfit	4 pin Microfit	4 pin Microfit	-	Discrete wire	400
4	23204-853	Standby cable	4 pin Microfit	2x loop terminal	-	-	Discrete wire	600
5	23204-867	Current share cable	4 pin Micromatch	4 pin Micromatch	-	-	Ribbon cable	150
6	23204-869	1 slot power cable	6 pin Microfit	2x loop terminal	4 pin Microfit	-	Discrete wire	600



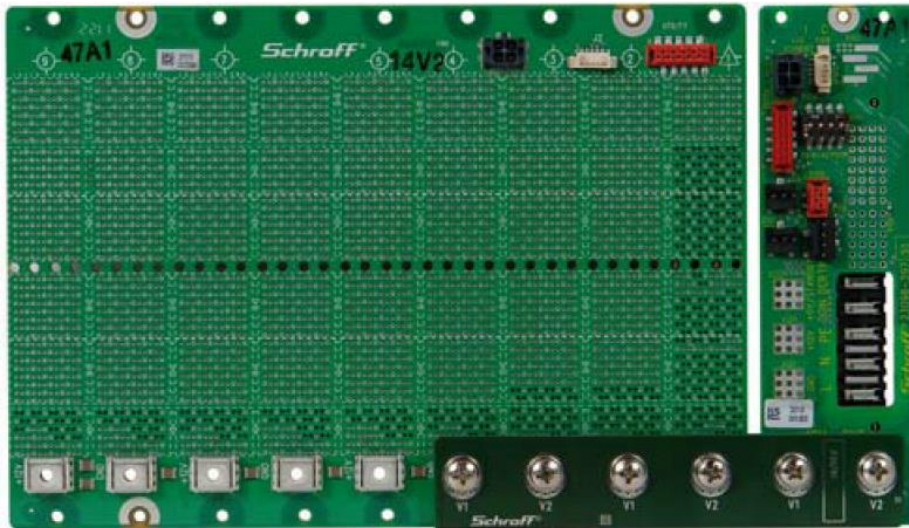
*Cable connectors on the backplane rear side*

### Connection of two or more PSU's:

- If two or more Power Supplies shall be used in parallel to increase the power for the CPCI Serial boards a 12V current share cable should be used to connect the Power Backplanes.
- If 2 or more Power Supplies should run in redundant mode the 12V current share cable is not required but recommended.

## Power adapter boards

The easiest way to connect the 12 V payload power between the CompactPCI Serial backplanes and the corresponding power backplane is the use of the Schroff power adapter boards. Those PCBs have voltage rails for 2 voltages inside (12 V and GND). They are mounted on the power bugs of the backplane and power backplane.



3U CompactPCI Serial backplane with power backplane connected by power adapter board, rear view

Description	Item number
Power adapter board, 3x V1, 3x V2, <b>121212</b>	23098-399
Power adapter board, 2x V1, 2x V2, <b>1212</b>	23098-400
Power adapter board, 3x V1, 3x V2, <b>122121</b>	23098-401
Power adapter board, 2x V1, 2x V2, <b>1221</b>	23098-402
Power adapter board, 4x V1, 4x V2, <b>12121212</b>	23098-405
Power adapter board, 4x V1, 4x V2, <b>12122121</b>	23098-406

### Current carrying capacity

Power adapter boards: 60 Amp with < 25 K temperature rise, 70 Amp with < 32 K temperature rise

Power backplane power bug (X111, X112): 120 Amp

CompactPCI Serial backplane power bug: 30 Amp



## Power adapter board configurations

All information in this chapter refer to the view on the rear side of the backplane

				12V		GND		Compact PCI Serial power backplane				
		<u>GND</u>		12V		GND		12V		CompactPCI Serial backplane system slot right		
		12V		GND		12V		<u>GND</u>		CompactPCI Serial backplane system slot left		
		V1		V2		V1		V2		23098-400		
		V1		V2		V2		V1		23098-402		
V1		V2		V1		V2		V1		V2		23098-399
V1		V2		V2		V1		V2		V1		23098-401
V1		V2		V1		V2		V1		V2		23098-405
V1		V2		V1		V2		V2		V1		23098-406

The following table shows the possible combinations of Schroff CompactPCI Serial backplanes with Schroff CompactPCI Serial power backplanes and the power adapter boards. All information in this chapter refer to the view on the rear side of the backplane. For some configuration the power adapter board must be mounted with the item number label visible, others with the label oriented to the backplane. For some configurations, the orientation of the power adapter board doesn't matter. This information is included in the column "PAB orientation". The underlined GND is referencing the system slot. Inside the power adapter boards two voltages are routed separately, V1 and V2, which are dependent on the configuration connected to 12 V and GND.

### Configurations with one power backplane

<b>2 slot backplane system slot right, power backplane on right-hand side</b> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: #ADD8E6;">12V</td> <td style="background-color: #ADD8E6;">GND</td> <td style="background-color: #90EE90;"><u>GND</u></td> <td style="background-color: #90EE90;">12V</td> </tr> <tr> <td style="background-color: #D8BFD8;">V1</td> <td style="background-color: #D8BFD8;">V2</td> <td style="background-color: #D8BFD8;">V2</td> <td style="background-color: #D8BFD8;">V1</td> </tr> </table>	12V	GND	<u>GND</u>	12V	V1	V2	V2	V1	<b>PAB orientation</b> -	<b>Item number</b> 23098-402		
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12V	GND	12V	GND	12V	GND													
		V1	V2	V1	V2													
	-	23098-400																
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12V	GND	GND	12V	GND	12V	GND												
V1	V2	V2	V1	V2	V1													
	-	23098-401																
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GND	12V	GND	12V	GND	12V	GND												
	V1	V2	V1	V2	V1	V2												
	-	23098-399																
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12V	GND	GND	12V	GND	12V	GND												
V1	V2	V2	V1	V2	V1													
	Label visible	23098-401																
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	V1	V2	V1	V2	V1	V2												
	-	23098-399																
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12V	GND	GND	12V	GND	12V	GND	12V											
V1	V2	V2	V1	V2	V1													
	Label visible	23098-401																

<b>6 slot backplane system slot right, power backplane on left-hand side</b> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: #d9ead3;">GND</td><td style="background-color: #d9ead3;">12V</td><td style="background-color: #d9ead3;">GND</td><td style="background-color: #d9ead3;">12V</td><td style="background-color: #d9ead3;">GND</td><td style="background-color: #d9ead3;">12V</td><td style="background-color: #d9ead3;">12V</td><td style="background-color: #d9ead3;">GND</td> </tr> <tr> <td></td><td></td><td style="background-color: #d9ead3;">V1</td><td style="background-color: #d9ead3;">V2</td><td style="background-color: #d9ead3;">V1</td><td style="background-color: #d9ead3;">V2</td><td style="background-color: #d9ead3;">V2</td><td style="background-color: #d9ead3;">V1</td> </tr> </table>	GND	12V	GND	12V	GND	12V	12V	GND			V1	V2	V1	V2	V2	V1	<b>PAB orientation</b>	<b>Item number</b>						
GND	12V	GND	12V	GND	12V	12V	GND																	
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	Label to backplane	23098-401																						
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12V	GND	12V	GND	12V	GND	12V	GND																	
V1	V2	V1	V2	V1	V2																			
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12V	GND	12V	GND	12V	GND	12V	GND																	
		V1	V2	V1	V2	V1	V2																	
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12V	GND	GND	12V	GND	12V	GND	12V	GND																
V1	V2	V2	V1	V2	V1																			
	Label visible	23098-401																						
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	-	23098-399																						
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12V	GND	GND	12V	GND	12V	GND	12V	GND	12V															
V1	V2	V2	V1	V2	V1																			
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GND	12V	GND	12V	GND	12V	GND	12V	12V	GND															
			V1	V2	V1	V2	V2	V1																
	Label to backplane	23098-401																						
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12V	GND	12V	GND	12V	GND	12V	GND	12V	GND															
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12V	GND	12V	GND	12V	GND	12V	GND	12V	GND															
				V1	V2	V1	V2	V1	V2															
	-	23098-399																						
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12V	GND	GND	12V	GND	12V	GND	12V	GND	12V	GND														
V1	V2	V2	V1	V2	V1																			
	Label visible	23098-401																						

<b>9 slot backplane system slot right, power backplane on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
<u>GND</u> 12V GND 12V GND 12V						V1 V2 V1 V2 V1 V2						-	23098-399
<b>9 slot backplane system slot left, power backplane on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND GND 12V GND 12V GND 12V GND 12V <u>GND</u>												Label visible	23098-401
V1 V2 V2 V1 V2 V1													
<b>9 slot backplane system slot left, power backplane on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
<u>GND</u> 12V GND 12V GND 12V						V1 V2 V1 V2 V1 V2						-	23098-399

**Configurations with two power backplanes**

<b>2 slot backplane system slot right, power backplanes on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND 12V GND <u>GND</u> 12V						V1 V2 V1 V2 V2 V1						Label to BPL	23098-401
<b>2 slot backplane system slot right, power backplanes on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
<u>GND</u> 12V 12V GND 12V GND						V1 V2 V2 V1 V2 V1						Label visible	23098-401
<b>2 slot backplane system slot left, power backplanes on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND 12V GND 12V <u>GND</u>						V1 V2 V1 V2 V1 V2						-	23098-399
<b>2 slot backplane system slot left, power backplanes on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V <u>GND</u> 12V GND 12V GND						V1 V2 V1 V2 V1 V2						-	23098-399
<b>3 slot backplane system slot right, power backplanes on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND 12V GND <u>GND</u> 12V GND						V1 V2 V1 V2 V2 V1						Label to BPL	23098-401
<b>3 slot backplane system slot right, power backplanes on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
<u>GND</u> 12V GND 12V GND 12V GND						V1 V2 V1 V2 V1 V2						-	23098-399
<b>3 slot backplane system slot left, power backplanes on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND 12V GND GND 12V <u>GND</u>						V1 V2 V1 V2 V2 V1						Label to BPL	23098-401
<b>3 slot backplane system slot left, power backplanes on left-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
<u>GND</u> 12V <u>GND</u> 12V GND 12V GND						V1 V2 V1 V2 V1 V2						-	23098-399
<b>4 slot backplane system slot right, power backplanes on right-hand side</b>												<b>PAB orientation</b>	<b>Item number</b>
12V GND 12V GND <u>GND</u> 12V GND 12V						V1 V2 V1 V2 V2 V1						-	23098-406



**SCHROFF**

<p><b>4 slot backplane system slot right, power backplanes on left-hand side</b></p> <table border="1"> <tr> <td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td> </tr> <tr> <td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td> </tr> </table>	GND	12V	GND	12V	12V	GND	12V	GND	V1	V2	V1	V2	V2	V1	V2	V1	PAB orientation	Item number						
GND	12V	GND	12V	12V	GND	12V	GND																	
V1	V2	V1	V2	V2	V1	V2	V1																	
-	-	23098-406																						
<p><b>4 slot backplane system slot left, power backplanes on right-hand side</b></p> <table border="1"> <tr> <td>12V</td><td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td> </tr> <tr> <td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td><td>V2</td> </tr> </table>	12V	GND	12V	GND	12V	GND	12V	GND	V1	V2	V1	V2	V1	V2	V1	V2	PAB orientation	Item number						
12V	GND	12V	GND	12V	GND	12V	GND																	
V1	V2	V1	V2	V1	V2	V1	V2																	
-	-	23098-405																						
<p><b>4 slot backplane system slot left, power backplanes on left-hand side</b></p> <table border="1"> <tr> <td>12V</td><td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td> </tr> <tr> <td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td><td>V2</td> </tr> </table>	12V	GND	12V	GND	12V	GND	12V	GND	V1	V2	V1	V2	V1	V2	V1	V2	PAB orientation	Item number						
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V1	V2	V1	V2	V1	V2	V1	V2																	
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<p><b>5 slot backplane system slot right, power backplanes on right-hand side</b></p> <table border="1"> <tr> <td>12V</td><td>GND</td><td>12V</td><td>GND</td><td>GND</td><td>12V</td><td>GND</td><td>12V</td><td>GND</td> </tr> <tr> <td>V1</td><td>V2</td><td>V1</td><td>V2</td><td>V2</td><td>V1</td><td>V2</td><td>V1</td><td></td> </tr> </table>	12V	GND	12V	GND	GND	12V	GND	12V	GND	V1	V2	V1	V2	V2	V1	V2	V1		PAB orientation	Item number				
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GND	12V	GND	12V	GND	12V	12V	GND	12V	GND															
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	-	23098-405																										

## Revision history

	Date	Description
R1.0		
R1.1		
R1.2		
R1.3		
R1.4		
R1.5		
R1.6	June 2016	Removed legal information about entity from footer
R1.7	March 2017	Correction of errors in connector pinouts
R1.8	Sept 2018	Correction of errors in connector pinout, cable drawings
R1.9	Dec 2018	Correction of I/O connector pinouts and signal description added
R1.91	March 2020	Pinout DC input on CPCI Serial Power connector corrected