

» User Guide «



CompactPCI[®] Serial Systems

Doc. ID: 1054-8971

Release Set: RS-02

Date: October 21, 2013

Release Set (RS) Revision History

The following table provides the release set (RS) revision history for this User Guide.

Release Set Revision History

RELEASE SET	ISSUE DATE	REMARKS
01	8. Aug. 2013	Initial issue
02	21. Oct, 2013	Updated product names; replaced data sheets, minor text changes, revised release set content status

Release Set (RS) Content Status

The following table provides content status information for the latest release set (RS) indicated in the table above.

Release Set Content Status

RS	CHAPTER	TITLE	STATUS	REMARKS
02	-	Preface	revised	updated to reflect changes to user guide
02	-	PART 1 - System Introduction	revised	changes to chapter 5
PART 2 - SYSTEM ELEMENTS				
CHASSIS				
02	A01	CPS-ASM4-84F	rescinded	Document removed from release set
02	A02	Chassis 42HP	revised	STATUS: element name changed Description: 4U, 42HP chassis with fan tray D02
02	A03	Chassis 44HP	revised	STATUS: element name changed Description: 4U, 44HP table-top chassis, with rear IO and built-in fans
02	A04	Chassis 84HP	revised	STATUS: element name changed Description: 4U, 84HP chassis, with rear IO and fan-tray D03 or D04 (for hybrid systems)
BACKPLANES				
02	B01	CPS3-BP9-SL-ESS	revised	STATUS: element name changed Description: 9-slot CPCI-S.0, single star for Ethernet, system slot left
02	B02	CPS3-BP5-SR-RIO(P)S	revised	STATUS: element name changed; connector part number changed Description: 5-slot CPCI-S.0 backplane with Kontron specified rear IO capability on P6, system slot right

Release Set Content Status

RS	CHAPTER	TITLE	STATUS	REMARKS
BACKPLANES				
02	B03	CP3-BP5	revised	STATUS: element name changed Description: 5 slot CPCI backplane, system slot left (used only in hybrid system)
02	B04	CP-ADAP-P47-PB	revised	STATUS: element name changed Description: Power adapter with a Positronic PCIH47 PSU connector; used only in hybrid systems
02	B05	CPS3-BPP	revised	STATUS: element name changed; connector part number changed Description: Power adapter with an SSI-type PSU connector
POWER SUPPLIES				
02	C01	(ATX) 300AC	rescinded	Document removed from release set
02	C02	CPS3-SVE-S300AC	revised	STATUS: element name changed; replaced linked document Description: 3U, 8HP 300W AC pluggable power supply, SSI-type connector
02	C03	CP3-SVE-P200AC	revised	STATUS: element name changed Description: 3U, 8HP 200W AC pluggable power supply, Positronic PCIH47 connector; used only in hybrid systems
02	C04	CPS3-SVE-250AC	revised	STATUS: element name changed; replaced linked document Description: 3U, 8HP 200W AC open frame power supply
AUXILIARY ELEMENTS				
02	D01	Fan Assembly 1	rescinded	Document removed from release set
01	D02	Fan Assembly 2	initial issue	STATUS: no change Description: Fan assembly for 42HP chassis
01	D03	Fan Assembly 3	initial issue	STATUS: no change Description: Fan assembly for 84HP chassis
01	D04	Fan Assembly 4	initial issue	STATUS: no change Description: Fan assembly for 84HP chassis; used only with hybrid systems

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User Guide Structure and Scope

This user guide is divided into two parts:

- » Part 1 - System Introduction
- » Part 2 - System Elements

Part 1 contains general information applicable to the system elements presented in Part 2.

Part 2 contains information specific to the individual system elements which are comprised of system sub-racks, backplanes, power supplies and auxiliary components.

System elements such as CPU modules, IO modules, or other application specific modules or devices are not within the scope of this user guide.

PART 1

SYSTEM INTRODUCTION

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1 General

This user guide is intended to familiarize users with the basic composition of Kontron's CompactPCI® Serial Systems and to assist integrators in the selection of components appropriate for the intended application. In addition it contains information to be considered when implementing CompactPCI® Serial systems.

2 System Concept

The basic mechanical design concept for CompactPCI® Serial system racks and sub-racks is the same as that for CompactPCI® systems.

The electrical design is in accordance with the CompactPCI® Serial specification except as noted. This applies to the backplanes, power supplies and to application elements such as CPU modules, IO boards and other pluggable devices.

Due to the compatibility of the mechanical design, it is possible to implement a hybrid system consisting of a CompactPCI® Serial backplane and a CompactPCI® backplane.

The system elements presented in PART 2 of this user guide are suitable for implementing a variety of application systems from a compact 4U 44HP stand-alone system to an 19" rack mount 4U 84HP hybrid system with rear IO capability.

3 System Chassis

The system chassis is the basis for the infrastructure of each CompactPCI® Serial system. Kontron offers a variety of chassis which are described in PART 2, Chapters *Ann* of this guide. The basic types are:

- » 4U 84HP with a detachable fan assembly; with rear IO area
- » 4U 44HP table top standalone; built-in fan assembly; with rear IO area
- » 4U 42HP with a detachable fan assembly; rear wall mounting; without rear IO area

The chassis with detachable fan assemblies consist of a 3U rack and a separate 1U sub-rack which is designed to be attached to the 3U rack using screws. This results in a 4U chassis. If required, the 1U sub-rack may be removed for maintenance of the fans.

4 Backplanes

4.1 CPCI-S.0 and CPCI

The CompactPCI® Serial standard specifies a very different type of backplane, physically and electrically, than that of the CompactPCI® PICMG 2.0 standard. The connector types, signal routing, and power requirements are completely different.

Kontron has designed a backplane, CPS3-BP5-SR-RIO(P)S, which is compliant with the CPCI-S.0 specification with the exception of the J6/rP6 signal usage and routing.

The Kontron design realizes the following:

- » All pins on the J6 connector of each slot are routed straight through the backplane to the corresponding rP6 connector
- » All J6 GND pins as set forth in CPCI-S.0 are connected with the backplane GND, except for pins J6-08A and J6-08D which are used as detection pins

In addition to the CPS3-BP5-SR-RIO(P)S backplane, Kontron provides a 9-slot CPCI-S.0 compliant backplane CPS3-BP9-SL-ESS and a CPCI backplane CP3-BP5 for use in hybrid systems.

Refer to PART 2, Chapters *Bnn* for further information.

4.2 Power Adapters

To support power input requirements, Kontron supplies two types of power input adapters: an SSI-type adapter which uses a certain SSI-type connector, and a P47-type with a Positronic connector which is used only with the hybrid system.

Both of these adapters have various interfaces for power monitor and control and support various system configurations and types of power supplies.

Refer to PART 2, Chapters B04 and B05 for further information.

5 Power Supplies

The CompactPCI® Serial-S.0 standard specifies a single +12V DC rail as main input power to the backplane for power distribution to the individual backplane slots. In addition, +5V DC STANDBY power may be available. Neither the power supply itself nor the means of connecting to the backplane are at the moment part of a specification. However, a full set of power supply features, including redundancy, hot-plug, monitoring, and a related SSI-type backplane connector are defined and recommended by the CompactPCI® Serial community.

With this in mind, Kontron provides a number of power supplies to satisfy various application requirements. At least the following configurations are currently available:

- » CPS3-SVE-S300AC: full featured, SSI type connector, for CPCI-S.0 backplanes only
- » CPS3-SVE-250AC: reduced features for cost sensitive solutions, with mounting kit, supports CPCI-S.0 backplanes only
- » CP3-SVE-P200AC: with a P47Positronic connector, to support only hybrid systems of CPCI-S.0 and CPCI backplanes together

As the power requirements of a system are a function of the application, the implementer is responsible for ensuring proper and adequate system power.

Refer to PART 2, Chapters *Cnn* for further information.

6 Auxiliary Elements: Fan Assemblies

Each chassis version is provided with its own appropriate fan assembly which fulfills basic cooling requirements. As application requirements can vary considerably it is the responsibility of the implementer to ensure adequate cooling in the application environment.

The fan assemblies provided with the various chassis are considered to be integral elements of each chassis. For this reason it is not foreseen to provide chassis without their corresponding fan assembly.

Refer to PART 2, Chapters *Dnn* for further information.

7 Installation

7.1 Safety

To ensure personnel safety and correct operation of the Kontron products described in this user guide, the following safety precautions must be observed:

- » All operations involving these products require that personnel be familiar with system equipment, safety requirements and the product(s) involved.
- » The systems requiring AC main input power are designed for operation in the range from 85 to 264 VAC. As this is considered to be a hazardous voltage, personnel must ensure that the main input power is disconnected (line, neutral and PE) prior to initiating any actions involving power related components, wiring, fuses, etc.
- » These products may contain electrostatically sensitive components which can be seriously damaged by electrical static discharge (ESD). Therefore, proper handling must be ensured at all times.
- » Whenever possible, unpack or pack these products only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.
- » Do not handle these products out of their protective enclosure when not used for operational purposes unless otherwise protected.
- » Do not touch components, connector-pins or traces.

Kontron assumes no liability for any damage resulting from failure to comply with these requirements.

7.2 General Instructions on Usage

In order to maintain Kontron's product warranty, the products involved must not be altered or modified in any way. Changes or modifications to the device, which are not explicitly approved by Kontron and described in this manual or received from Kontron's Technical Support as a special handling instruction, will void their warranty.

These products should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This applies also to the operational temperature range of the specific product version, which must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

7.3 System Installation

As the actual installation of a CompactPCI® Serial system is a function of the application itself, detailed procedures here are not possible. Instead, guidelines are provided which include prerequisites which must be complied with in order to achieve proper equipment installation and operation.

- » The safety requirements contained in this user guide must be adhered to.
- » The system or any of the other application equipment must not exhibit any kind of physical damage. Damaged equipment must be replaced prior to operating the system.
- » The system itself must be securely affixed: in a cabinet, on a wall or a flat surface such as a table top.
- » There must be free circulation of ambient air in and around the system. In particular, there must be at least ½ U free air space above and below the system. For table top systems with extendable feet, the feet must be extended when the system is operated.
- » Additional equipment that is required by the application to be installed in the system must be installed prior to operating the system.
- » All of the front panels (both front and rear) of the system must be installed and secured prior to operating the system.
- » All required cables must be properly installed and secured prior to system operation.
- » Prior to deinstallation ensure that there is no power applied to the system. Then ensure that all cables are disconnected prior to deinstalling the system.

Once the above prerequisites have been fulfilled, the system is now ready for operation.

7.4 Earthing and Grounding

The CompactPCI® (Serial) grounding concept calls for the system chassis to be connected to an external PE (protective earth) interface. Depending on application requirements, the 0V DC (SGND) may or may not be connected to PE. If required, this is normally accomplished by a jumper on the system backplane.

To make it easier to accomplish this, some chassis have an isolated SGND terminal lug placed near the external chassis PE terminal lug. This permits connecting of the SGND with PE if required by the application without opening the system chassis.

Note: System integrators should be aware that some power supplies have the 0V DC (SGND) connected internally to the power supply front panel. In this case the SGND is permanently connected to the chassis and external PE (through the power input PE line of the mains power connector).

If this is not desired, a power supply without this feature must be used.

8 Maintenance

With the exception of pluggable devices such as power supplies, fan trays, or application elements, there are no user serviceable system components. Systems with faulty built-in components must be returned to the factory for repair.

9 Warranty

The Kontron products described in this user guide are warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron will at its discretion decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron will not be responsible for any defects or damages to other products not supplied by Kontron that are caused by a faulty Kontron product.

10 Environmental Protection Statement

The Kontron products described in this user guide have been manufactured to satisfy environmental protection requirements where possible. Many of the components used (structural parts, printed circuit boards, connectors, batteries, etc.) are capable of being recycled.

Final disposition of these products after their service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

11 Related Publications

The following publications contain information relating to the products described in this user guide.

Table 1: Related Publications

PRODUCT	PUBLICATION
CompactPCI® Serial Systems	PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification
CompactPCI® Systems	PICMG 2.0, Rev. 3.0 CompactPCI® Specification

PART 2

SYSTEM ELEMENTS

A02 Chassis 42HP

A02.1 Description

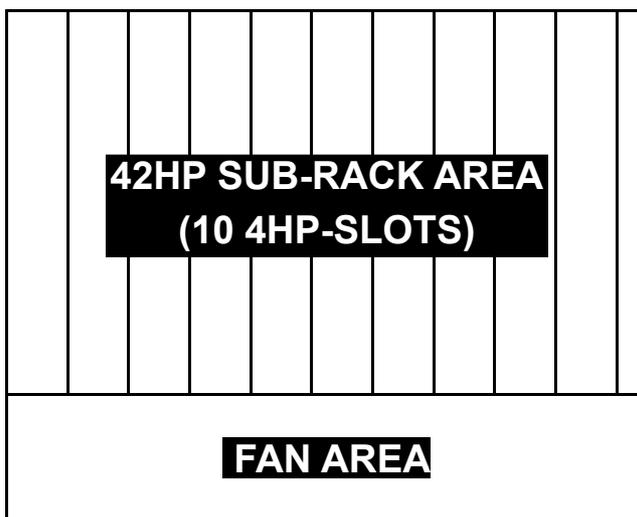
The Chassis 42HP consists of the following:

- » A 4U high, 42HP wide, rack divided into
 - » A 3U-sub-rack
 - » A 1U fan area located under the 3U-area
- » Rear mounting brackets for wall installation
- » EMC shielding

The 3U sub-rack can be populated as required to satisfy application requirements. The fan area is equipped with a detachable sub-rack.

The following figure illustrates the basic chassis layout.

Figure A02.1: Front Layout of Chassis 42HP



A02.2 Specifications

Table A02.1: Chassis 42HP Specifications

FEATURES	SPECIFICATIONS
Dimensions	Height: 177.8 mm (4U) Width: 269.24 mm with mounting brackets (42HP sub-rack) Depth: 241.3 mm
Weight	apx. 2.1 kg
Card Cage	3U high, 42HP wide, can be configured as required (the 2HP area on the right is not available for use)
Protection Classification	IP20 (with all front panels installed)

A02.3 Implementation Considerations

A02.3.1 Chassis Configuration

The system integrator is responsible for the chassis configuration. For application element configuration, refer to the application system documentation for further information.

A02.3.2 Safety

A02.3.2.1 Hazardous Voltage

Depending on the chassis configuration hazardous input power voltage may present in the chassis. Disconnect the mains power from the power supply before performing any operation on this chassis, e.g. maintenance, configuration changes, inspection, etc.

A02.3.2.2 Grounding/Earthing

This chassis as delivered is designed in accordance with protection class 1. It must therefore only be operated with a protective earth connection.

A02.3.2.3 Cooling

This chassis is designed for forced ambient air cooling which is normally provided by a fan.

To ensure adequate air flow through the chassis there must be at least ½U unobstructed clearance above and below the chassis and all empty slots must have front panels with airflow baffles installed.

Kontron rejects liability for any type of damage resulting from system or component overheating.

A02.3.3 Chassis Installation

This chassis is designed to be mounted on a wall using the permanently fixed rear brackets. Always ensure that there is adequate clearance above and below the chassis before putting into operation.

Connect all cables, input power and application, before applying power to the system.

For installation or removal of application elements, follow the instructions provided with the application system.

A03 Chassis 44HP

A03.1 Description

The Chassis 44HP consists of the following:

- » A 4U high, 44HP wide, front and rear IO rack divided into
 - » A 3U-sub-rack (front and rear)
 - » A ½U dual fan area located above the 3U-area
 - » A ½U air intake area located below the 3U-area
- » Front mounted handles
- » Special “feet” mounted on the bottom of the chassis for table top use (two fixed, two extendable)
- » EMC shielding

The 3U sub-rack can be populated as required to satisfy application requirements. The cooling fans are built into the top of the sub-rack.

The following figures illustrate the basic chassis layout.

Figure A03.1: Front Layout of Chassis 44HP

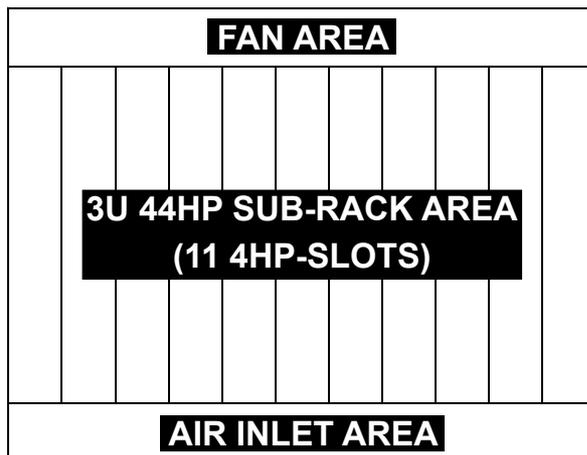
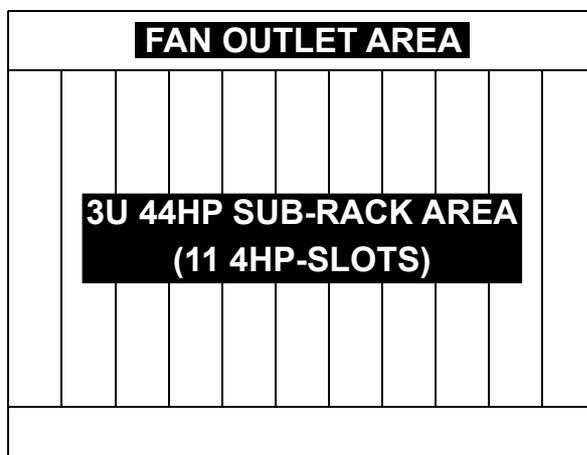


Figure A03.2: Rear Layout of Chassis 44HP



A03.2 Specifications

Table A03.1: Chassis 44HP Specifications

FEATURES	SPECIFICATIONS
Dimensions	Standard: Height: 177.8 mm (4U) (½U above and below 3U sub-rack) Width: 245.0 mm (44HP sub-rack) Depth: 295.0 mm (front IO and rear IO sub-racks) With additional features: Height: 192.0 mm / 225.0 mm (with feet / with front feet extended) Width: 260.0 mm (with handles) Depth: 343.0 mm (with handles)
Weight	apx. 3.3 kg
Card Cage	3U high, 44HP wide, front and rear IO areas (can be configured as required)
Cooling	2 radial fans built into the upper ½U sub-rack area; air intake bottom front, air exhaust upper rear
Protection Classification	IP20 (with all front panels installed)

A03.3 Implementation Considerations

A03.3.1 Chassis Configuration

The system integrator is responsible for the chassis configuration. For application element configuration, refer to the application system documentation for further information.

A03.3.2 Safety

A03.3.2.1 Hazardous Voltage

Depending on the chassis configuration hazardous input power voltage may present in the chassis. Disconnect the mains power from the power supply before performing any operation on this chassis, e.g. maintenance, configuration changes, inspection, etc.

A03.3.2.2 Grounding/Earthing

This chassis as delivered is designed in accordance with protection class 1. It must therefore only be operated with a protective earth connection.

A03.3.2.3 Cooling

This chassis is designed for forced ambient air cooling which is provided by the built-in fans.

To ensure adequate air flow through the chassis there must be unobstructed clearance in front of and to the rear of the chassis, and all empty slots must have front panels with airflow baffles installed.

Kontron rejects liability for any type of damage resulting from system or component overheating.

A03.3.3 Chassis Installation

This chassis is designed for table top usage or other secure flat level surface. Always ensure that there is adequate clearance in front and behind the chassis before putting into operation.

Connect all cables, input power and application, before applying power to the system.

For installation or removal of application elements, follow the instructions provided with the application system.

A04 Chassis 84HP

A04.1 Description

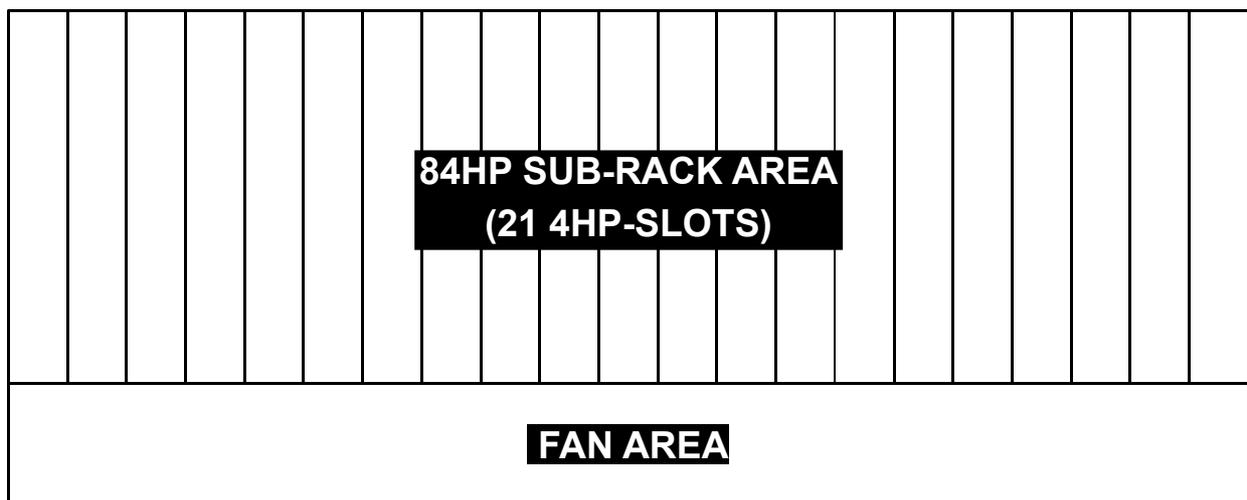
The chassis Chassis 84HP consists of the following:

- » A 4U high, 84HP wide, front and rear IO rack divided into
 - » A 3U-sub-rack (front and rear)
 - » A 1U fan area located under the 3U-area
- » Front mounting brackets for installation in a 19" cabinet
- » EMC shielding

The 3U sub-rack (front and rear) can be populated as required to satisfy application requirements. The fan area is equipped with a detachable sub-rack.

The following figure illustrates the basic chassis layout.

Figure A01.1: Front and Rear Layout of Chassis 84HP



A04.2 Specifications

Table A01.1: Chassis 84HP Specifications

FEATURES	SPECIFICATIONS
Dimensions	Height: 177.8 mm (4U) Width: 482.6 mm with mounting brackets (84HP sub-rack) Depth: 282.0 mm (without handles)
Weight	apx. 4.5 kg
Card Cage	2 card cages (front and rear) 3U high, 84HP wide, can be configured as required
Protection Classification	IP20 (with all front panels installed)

A04.3 Implementation Considerations

A04.3.1 Chassis Configuration

The system integrator is responsible for the chassis configuration. For application element configuration, refer to the application system documentation for further information.

A04.3.2 Safety

A04.3.2.1 Hazardous Voltage

Depending on the chassis configuration hazardous input power voltage may present in the chassis. Disconnect the mains power from the power supply before performing any operation on this chassis, e.g. maintenance, configuration changes, inspection, etc.

A04.3.2.2 Grounding/Earthing

This chassis as delivered is designed in accordance with protection class 1. It must therefore only be operated with a protective earth connection.

A04.3.2.3 Cooling

This chassis is designed for forced ambient air cooling which is normally provided by fans.

To ensure adequate air flow through the chassis there must be at least ½U unobstructed clearance above and below the chassis and all empty slots must have front panels with airflow baffles installed.

Kontron rejects liability for any type of damage resulting from system or component overheating.

A04.3.3 Chassis Installation

This chassis is designed to be installed in a 19" cabinet using the fixed mounted front brackets. Always ensure that there is adequate clearance above and below the chassis before putting into operation.

Connect all cables, input power and application, before applying power to the system.

For installation or removal of application elements, follow the instructions provided with the application system.

B01 Backplane: CPS3-BP9-SL-ESS

B01.1 Description

This backplane is a 9-slot 3U 36HP CompactPCI® Serial backplane with the system slot located on the left side of the backplane. The serial links (SATA, USB, PCIe as well as Ethernet) are realized as Single Star on the backplane. For further information refer to the linked document 1 (Chapter B01.3.1).

B01.2 Implementation Considerations

As this is a factory installed element there are no special installation considerations

B01.3 Documentation Links

This chapter identifies linked documentation which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_B01_LD1 Page <n>

where: 1054-8971 is the ID for this System User Guide
B01 identifies the chapter to which the linked document belongs
LD<n> unique number for each linked document within a given chapter
Page <n> is a running page number within the linked document

The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

B01.3.1 Backplane CPS3-BP9-SL-ESS Linked Document 1

Attached is a multi-page document provided by the backplane supplier describing this backplane on an "as is" basis. Kontron accepts no responsibility for the correctness or completeness of this document.

Assembly Instructions & General Information

Mounting: Attach the Backplane, using at least every second mounting hole at the top and the bottom, with M2.5 screws and isolating washers.

Note: Do not tighten the screws.

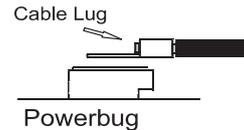
Align the Backplane by inserting Boards in the outer guide rails at the left and the right and tighten all screws.

Note: We recommend to use the Schroff mounting kit (screws/washers), see catalog or at www.schroff.biz.

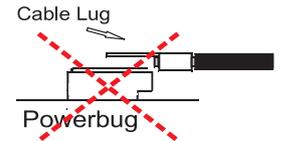
Chassis GND: If noise reduction shall be achieved by connecting digital GND to Chassis GND, use conductive washers instead of isolating washers for the mounting screws. Spring washers are recommended instead of flat washers. If both grounds are isolated, creepage and clearance between screw and digital GND are in accordance with EN60950.

Power input: The Backplane provide power terminals with an M4 thread (power bugs) to connect power cables. 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.

Correct orientation



Not recommended



Logical Addressing GA[3:0]: The highest slot number within a CPCI-S.0 system has geographic address 0. The next lower slot number has the geographic address 1 up to the first peripheral slot.

Example 9 slot Backplane

Physical Slot#	9	8	7	6	5	4	3	2
GA[3] (J1-3L)	GND	GND	GND	GND	GND	GND	GND	GND
GA[2] (J1-3I)	GND	GND	GND	GND	open	open	open	open
GA[1] (J1-3F)	GND	GND	open	open	GND	GND	open	open
GA[0] (J1-3C)	GND	open	GND	open	GND	open	GND	open

Example 5 slot Backplane

Physical Slot#	5	4	3	2
GA[3] (J1-3L)	GND	GND	GND	GND
GA[2] (J1-3I)	GND	GND	GND	GND
GA[1] (J1-3F)	GND	GND	open	open
GA[0] (J1-3C)	GND	open	GND	open

Pinout IPMB and Utility connectors

IPMB Connector	
Pin	
1	I ² C_SCL
2	GND
3	I ² C_SDA
4	STNDBY (+5V)
5	n.c.

Mating connector:
 Crimp housing: Molex 0510210500
 Crimp terminal: Molex 0500798100
 Schroff 23204-113
 (connector with 750 mm single wires)

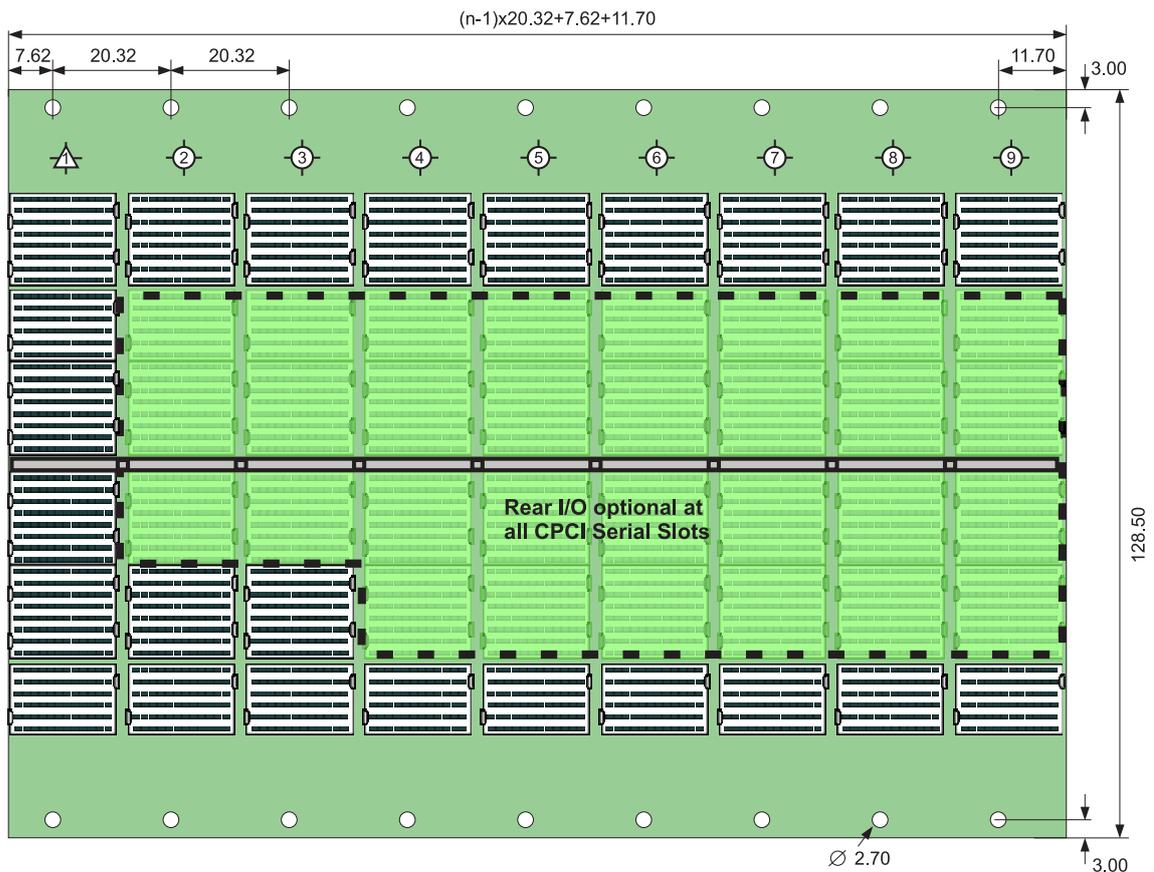
Utility connector	
Pin	
1	GND
2	STNDBY (+5V)
3	+12 V
4	PS_ON#
5	PWRBTN#
6	PWR_FAIL#
7	WAKE_IN#
8	PRST#

Utility connector = Tyco 1-188275-8
 Mating connectors:
 Schroff 23204-811
 (connector with 600 mm ribbon cable)
 Schroff 23204-812
 (connector with 600 mm single wires)

Applicable Specifications:

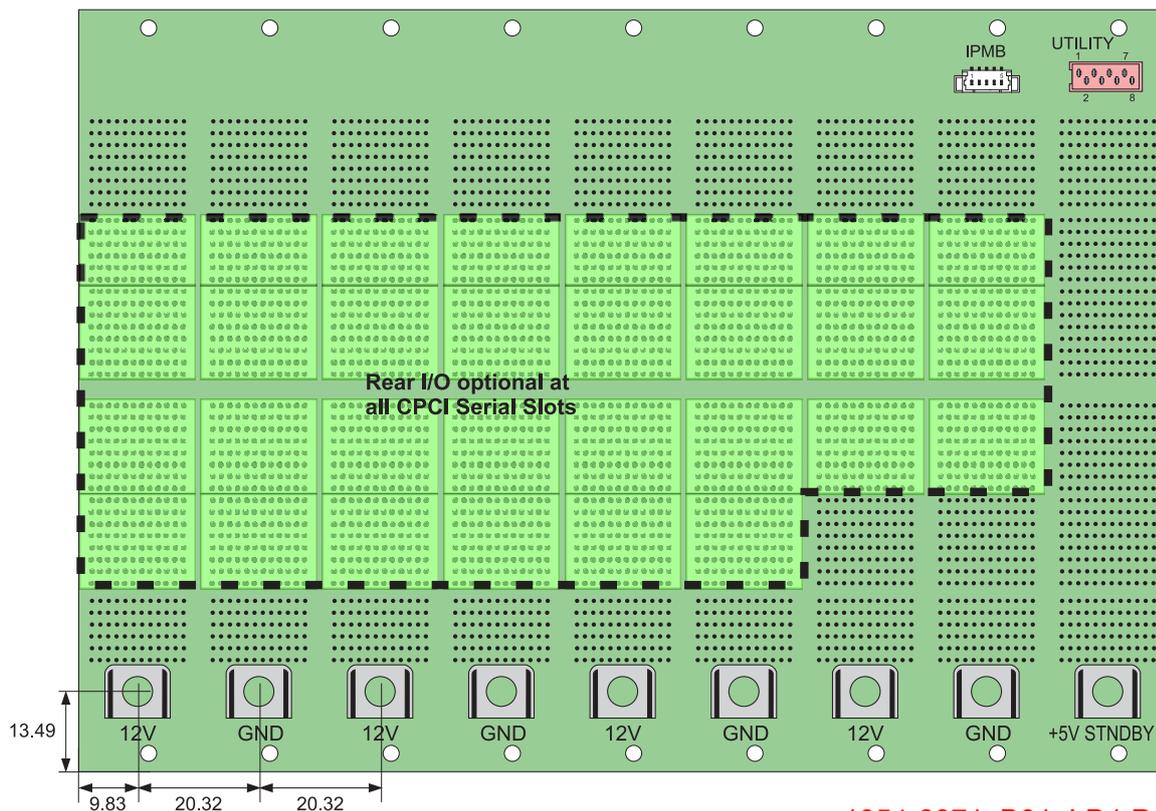
- PICMG 2.0 R3.0 CPCI Core Specification
- PICMG 2.01 R2.0 Hot Swap
- PICMG 2.09 R1.0 System Management Bus
- PICMG 2.10 R1.0 Keying
- PICMG CPCI-S.0

Backplane Front View



Graphic shows a 9 slot backplane. The overall width with different slot configuration is: $7.02 + 11.70 + (n-1) \times 20.32$ mm
 n = number of slots.

Backplane Rear View



System Slot Pin Assignment

Pin	A	B	C	D	E	F	G	H	I	J	K	L
6-08	GND	8_ETH_A+	8_ETH_A-	GND	8_ETH_B+	8_ETH_B-	GND	8_ETH_C+	8_ETH_C-	GND	8_ETH_D+	8_ETH_D-
6-07	7_ETH_A+	7_ETH_A-	GND	7_ETH_B+	7_ETH_B-	GND	7_ETH_C+	7_ETH_C-	GND	7_ETH_D+	7_ETH_D-	GND
6-06	GND	6_ETH_A+	6_ETH_A-	GND	6_ETH_B+	6_ETH_B-	GND	6_ETH_C+	6_ETH_C-	GND	6_ETH_D+	6_ETH_D-
6-05	5_ETH_A+	5_ETH_A-	GND	5_ETH_B+	5_ETH_B-	GND	5_ETH_C+	5_ETH_C-	GND	5_ETH_D+	5_ETH_D-	GND
6-04	GND	4_ETH_A+	4_ETH_A-	GND	4_ETH_B+	4_ETH_B-	GND	4_ETH_C+	4_ETH_C-	GND	4_ETH_D+	4_ETH_D-
6-03	3_ETH_A+	3_ETH_A-	GND	3_ETH_B+	3_ETH_B-	GND	3_ETH_C+	3_ETH_C-	GND	3_ETH_D+	3_ETH_D-	GND
6-02	GND	2_ETH_A+	2_ETH_A-	GND	2_ETH_B+	2_ETH_B-	GND	2_ETH_C+	2_ETH_C-	GND	2_ETH_D+	2_ETH_D-
6-01	1_ETH_A+	1_ETH_A-	GND	1_ETH_B+	1_ETH_B-	GND	1_ETH_C+	1_ETH_C-	GND	1_ETH_D+	1_ETH_D-	GND
5-06	5_PE_CLKE#	5_PE_CLK+	5_PE_CLK-	6_PE_CLKE#	6_PE_CLK+	6_PE_CLK-	7_PE_CLKE#	7_PE_CLK+	7_PE_CLK-	8_PE_CLKE#	8_PE_CLK+	8_PE_CLK-
5-05	1_PE_CLK+	1_PE_CLK-	1_PE_CLKE#	2_PE_CLK+	2_PE_CLK-	2_PE_CLKE#	3_PE_CLK+	3_PE_CLK-	3_PE_CLKE#	4_PE_CLK+	4_PE_CLK-	4_PE_CLKE#
5-04	GND	8_PE_Tx02+	8_PE_Tx02-	GND	8_PE_Rx02+	8_PE_Rx02-	GND	8_PE_Tx03+	8_PE_Tx03-	GND	8_PE_Rx03+	8_PE_Rx03-
5-03	8_PE_Tx00+	8_PE_Tx00-	GND	8_PE_Rx00+	8_PE_Rx00-	GND	8_PE_Tx01+	8_PE_Tx01-	GND	8_PE_Rx01+	8_PE_Rx01-	GND
5-02	GND	7_PE_Tx02+	7_PE_Tx02-	GND	7_PE_Rx02+	7_PE_Rx02-	GND	7_PE_Tx03+	7_PE_Tx03-	GND	7_PE_Rx03+	7_PE_Rx03-
5-01	7_PE_Tx00+	7_PE_Tx00-	GND	7_PE_Rx00+	7_PE_Rx00-	GND	7_PE_Tx01+	7_PE_Tx01-	GND	7_PE_Rx01+	7_PE_Rx01-	GND
4-08	GND	6_PE_Tx02+	6_PE_Tx02-	GND	6_PE_Rx02+	6_PE_Rx02-	GND	6_PE_Tx03+	6_PE_Tx03-	GND	6_PE_Rx03+	6_PE_Rx03-
4-07	6_PE_Tx00+	6_PE_Tx00-	GND	6_PE_Rx00+	6_PE_Rx00-	GND	6_PE_Tx01+	6_PE_Tx01-	GND	6_PE_Rx01+	6_PE_Rx01-	GND
4-06	GND	5_PE_Tx02+	5_PE_Tx02-	GND	5_PE_Rx02+	5_PE_Rx02-	GND	5_PE_Tx03+	5_PE_Tx03-	GND	5_PE_Rx03+	5_PE_Rx03-
4-05	5_PE_Tx00+	5_PE_Tx00-	GND	5_PE_Rx00+	5_PE_Rx00-	GND	5_PE_Tx01+	5_PE_Tx01-	GND	5_PE_Rx01+	5_PE_Rx01-	GND
4-04	GND	4_PE_Tx02+	4_PE_Tx02-	GND	4_PE_Rx02+	4_PE_Rx02-	GND	4_PE_Tx03+	4_PE_Tx03-	GND	4_PE_Rx03+	4_PE_Rx03-
4-03	4_PE_Tx00+	4_PE_Tx00-	GND	4_PE_Rx00+	4_PE_Rx00-	GND	4_PE_Tx01+	4_PE_Tx01-	GND	4_PE_Rx01+	4_PE_Rx01-	GND
4-02	GND	3_PE_Tx02+	3_PE_Tx02-	GND	3_PE_Rx02+	3_PE_Rx02-	GND	3_PE_Tx03+	3_PE_Tx03-	GND	3_PE_Rx03+	3_PE_Rx03-
4-01	3_PE_Tx00+	3_PE_Tx00-	GND	3_PE_Rx00+	3_PE_Rx00-	GND	3_PE_Tx01+	3_PE_Tx01-	GND	3_PE_Rx01+	3_PE_Rx01-	GND
3-08	GND	7_SATA_Tx+	7_SATA_Tx-	GND	7_SATA_Rx+	7_SATA_Rx-	GND	8_SATA_Tx+	8_SATA_Tx-	GND	8_SATA_Rx+	8_SATA_Rx-
3-07	5_SATA_Tx+	5_SATA_Tx-	GND	5_SATA_Rx+	5_SATA_Rx-	GND	6_SATA_Tx+	6_SATA_Tx-	GND	6_SATA_Rx+	6_SATA_Rx-	GND
3-06	GND	3_SATA_Tx+	3_SATA_Tx-	GND	3_SATA_Rx+	3_SATA_Rx-	GND	4_SATA_Tx+	4_SATA_Tx-	GND	4_SATA_Rx+	4_SATA_Rx-
3-05	8_USB3_Tx+	8_USB3_Tx-	GND	8_USB3_Rx+	8_USB3_Rx-	GND	2_SATA_Tx+	2_SATA_Tx-	GND	2_SATA_Rx+	2_SATA_Rx-	GND
3-04	GND	6_USB3_Tx+	6_USB3_Tx-	GND	6_USB3_Rx+	6_USB3_Rx-	GND	7_USB3_Tx+	7_USB3_Tx-	GND	7_USB3_Rx+	7_USB3_Rx-
3-03	4_USB3_Tx+	4_USB3_Tx-	GND	4_USB3_Rx+	4_USB3_Rx-	GND	5_USB3_Tx+	5_USB3_Tx-	GND	5_USB3_Rx+	5_USB3_Rx-	GND
3-02	GND	2_USB3_Tx+	2_USB3_Tx-	GND	2_USB3_Rx+	2_USB3_Rx-	GND	3_USB3_Tx+	3_USB3_Tx-	GND	3_USB3_Rx+	3_USB3_Rx-
3-01	5_USB2+	5_USB2-	GND	6_USB2+	6_USB2-	GND	7_USB2+	7_USB2-	GND	8_USB2+	8_USB2-	GND
2-08	GND	1_DDP_01+	1_DDP_01-	GND	2_USB2+	2_USB2-	GND	3_USB2+	3_USB2-	GND	4_USB2+	4_USB2-
2-07	1_DDP_00+	1_DDP_00-	GND	1_DDP_02+	1_DDP_02-	GND	1_DDP_03+	1_DDP_03-	GND	1_DDP_AUX+	1_DDP_AUX-	GND
2-06	GND	2_PE_Tx06+	2_PE_Tx06-	GND	2_PE_Rx06+	2_PE_Rx06-	GND	2_PE_Tx07+	2_PE_Tx07-	GND	2_PE_Rx07+	2_PE_Rx07-
2-05	2_PE_Tx04+	2_PE_Tx04-	GND	2_PE_Rx04+	2_PE_Rx04-	GND	2_PE_Tx05+	2_PE_Tx05-	GND	2_PE_Rx05+	2_PE_Rx05-	GND
2-04	GND	2_PE_Tx02+	2_PE_Tx02-	GND	2_PE_Rx02+	2_PE_Rx02-	GND	2_PE_Tx03+	2_PE_Tx03-	GND	2_PE_Rx03+	2_PE_Rx03-
2-03	2_PE_Tx00+	2_PE_Tx00-	GND	2_PE_Rx00+	2_PE_Rx00-	GND	2_PE_Tx01+	2_PE_Tx01-	GND	2_PE_Rx01+	2_PE_Rx01-	GND
2-02	GND	1_PE_Tx06+	1_PE_Tx06-	GND	1_PE_Rx06+	1_PE_Rx06-	GND	1_PE_Tx07+	1_PE_Tx07-	GND	1_PE_Rx07+	1_PE_Rx07-
2-01	1_PE_Tx04+	1_PE_Tx04-	GND	1_PE_Rx04+	1_PE_Rx04-	GND	1_PE_Tx05+	1_PE_Tx05-	GND	1_PE_Rx05+	1_PE_Rx05-	GND
1-06	GND	1_PE_Tx02+	1_PE_Tx02-	GND	1_PE_Rx02+	1_PE_Rx02-	GND	1_PE_Tx03+	1_PE_Tx03-	GND	1_PE_Rx03+	1_PE_Rx03-
1-05	1_PE_Tx00+	1_PE_Tx00-	GND	1_PE_Rx00+	1_PE_Rx00-	GND	1_PE_Tx01+	1_PE_Tx01-	GND	1_PE_Rx01+	1_PE_Rx01-	GND
1-04	GND	1_USB2+	1_USB2-	GND	reserved	reserved	GND	1_SATA_Tx+	1_SATA_Tx-	GND	1_SATA_Rx+	1_SATA_Rx-
1-03	1_USB3_Tx+	1_USB3_Tx-	PWRBTN#	1_USB3_Rx+	1_USB3_Rx-	PWR_FAIL#	SATA_SDI	SATA_SDO	GND (GA2*)	SATA_SCL	SATA_SL	GND (GA3*)
1-02	GND	PC_SCL	PC_SDA	GND	PS_ON#	RST#	GND	PRST#	WAKE_IN#	GND	reserved	GND (SYSEN#)
1-01	+12V	STNDBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND
Pin	A	B	C	D	E	F	G	H	I	J	K	L

Peripheral Slot 1 Pin Assignment

Pin	A	B	C	D	E	F	G	H	I	J	K	L
6-08	GND	8_ETH_A+	8_ETH_A-	GND	8_ETH_B+	8_ETH_B-	GND	8_ETH_C+	8_ETH_C-	GND	8_ETH_D+	8_ETH_D-
6-07	7_ETH_A+	7_ETH_A-	GND	7_ETH_B+	7_ETH_B-	GND	7_ETH_C+	7_ETH_C-	GND	7_ETH_D+	7_ETH_D-	GND
6-06	GND	6_ETH_A+	6_ETH_A-	GND	6_ETH_B+	6_ETH_B-	GND	6_ETH_C+	6_ETH_C-	GND	6_ETH_D+	6_ETH_D-
6-05	5_ETH_A+	5_ETH_A-	GND	5_ETH_B+	5_ETH_B-	GND	5_ETH_C+	5_ETH_C-	GND	5_ETH_D+	5_ETH_D-	GND
6-04	GND	4_ETH_A+	4_ETH_A-	GND	4_ETH_B+	4_ETH_B-	GND	4_ETH_C+	4_ETH_C-	GND	4_ETH_D+	4_ETH_D-
6-03	3_ETH_A+	3_ETH_A-	GND	3_ETH_B+	3_ETH_B-	GND	3_ETH_C+	3_ETH_C-	GND	3_ETH_D+	3_ETH_D-	GND
6-02	GND	2_ETH_A+	2_ETH_A-	GND	2_ETH_B+	2_ETH_B-	GND	2_ETH_C+	2_ETH_C-	GND	2_ETH_D+	2_ETH_D-
6-01	1_ETH_A+	1_ETH_A-	GND	1_ETH_B+	1_ETH_B-	GND	1_ETH_C+	1_ETH_C-	GND	1_ETH_D+	1_ETH_D-	GND
5-06	GND	IO	IO									
5-05	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
5-04	GND	IO	IO									
5-03	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
5-02	GND	IO	IO									
5-01	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
4-08	GND	IO	IO									
4-07	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
4-06	GND	IO	IO									
4-05	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
4-04	GND	IO	IO									
4-03	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
4-02	GND	IO	IO									
4-01	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
3-08	GND	IO	IO									
3-07	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
3-06	GND	IO	IO									
3-05	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
3-04	GND	IO	IO									
3-03	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
3-02	GND	IO	IO									
3-01	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
2-08	GND	IO	IO									
2-07	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
2-06	GND	IO	IO									
2-05	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
2-04	GND	IO	IO									
2-03	IO	IO	GND	IO	IO	IO	GND	IO	IO	GND	IO	IO
2-02	GND	1_PE_Tx06+	1_PE_Tx06-	GND	1_PE_Rx06+	1_PE_Rx06-	GND	1_PE_Tx07+	1_PE_Tx07-	GND	1_PE_Rx07+	1_PE_Rx07-
2-01	1_PE_Tx04+	1_PE_Tx04-	GND	1_PE_Rx04+	1_PE_Rx04-	GND	1_PE_Tx05+	1_PE_Tx05-	GND	1_PE_Rx05+	1_PE_Rx05-	GND
1-06	GND	1_PE_Tx02+	1_PE_Tx02-	GND	1_PE_Rx02+	1_PE_Rx02-	GND	1_PE_Tx03+	1_PE_Tx03-	GND	1_PE_Rx03+	1_PE_Rx03-
1-05	1_PE_Tx00+	1_PE_Tx00-	GND	1_PE_Rx00+	1_PE_Rx00-	GND	1_PE_Tx01+	1_PE_Tx01-	GND	1_PE_Rx01+	1_PE_Rx01-	GND
1-04	GND	1_USB2+	1_USB2-	GND	PE_CLKIN	PE_CLKIN	GND	1_SATA_Tx+	1_SATA_Tx-	GND	1_SATA_Rx+	1_SATA_Rx-
1-03	1_USB3_Tx+	1_USB3_Tx-	GA0	1_USB3_Rx+	1_USB3_Rx-	GA1	SATA_SDI	SATA_SDO	GA2	SATA_SCL	SATA_SL	GA3
1-02	GND	PC_SCL	PC_SDA	GND	reserved	reserved	GND	RST#	WAKE_OUT#	GND	PCIE_EN#	SYSEN# (*)
1-01	+12V	STNDBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND
Pin	A	B	C	D	E	F	G	H	I	J	K	L

Table shows peripheral slot 1 (1_PE/slot1 = 2_PE/slot2)

Connector J2 only at peripheral slots 1 and 2 (Fat Pipe). At peripheral slots 3-8, connectors J2 only I/O, pin-out equal J3

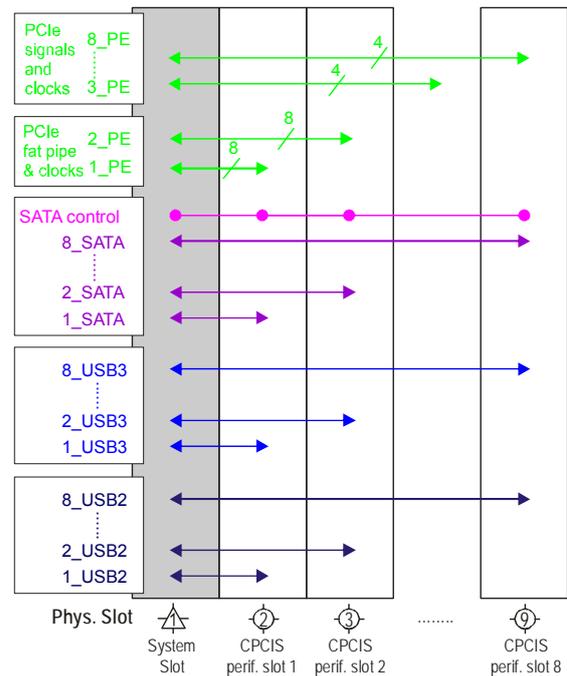
Backplane Topology

CPCI Serial backplanes with a maximum of 9 slots support the full set of serial links at all slots.

The serial links (SATA/SAS, USB2/3, PCIe) are arranged as a simple star architecture.

Rear I/O at the CPCI Serial peripheral slots is possible as an option.

CPCI Serial serial link routing

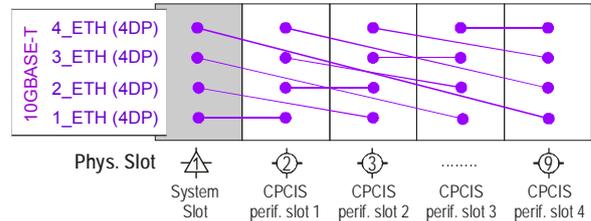


Ethernet is implemented at connector J6 by 4 differential pairs to support 10/100/1000Base-T and 10GBase-T.

Ethernet is routed in a Single Star or Full Mesh topology depending on the backplane part number.

(See also connector J6 pinout).

CPCI Serial Ethernet routing shown at a 5 slot backplane



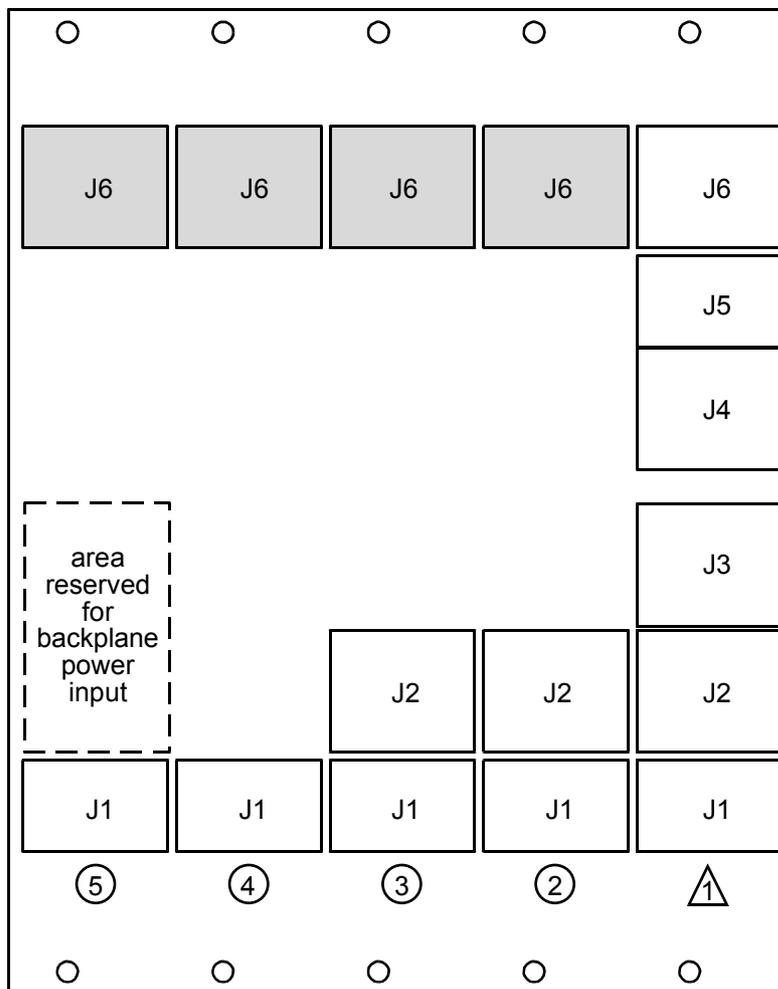
B02 Backplane: CPS3-BP5-SR-RIO(P)S

B02.1 Description

B02.1.1 Backplane Layout

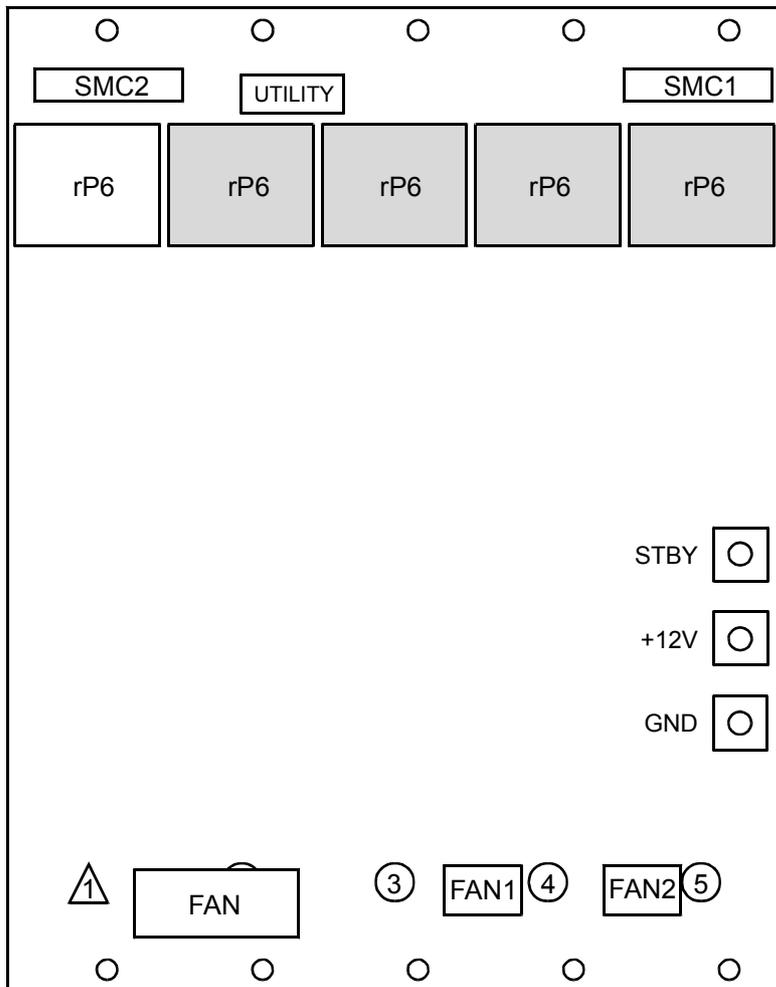
This backplane is a 5-slot 3U CompactPCI® Serial backplane with the system slot located on the right side of the backplane. J1 to J5 are used as specified in the CompactPCI® Serial specification. In addition, all J6/rP6 connectors are specified for rear IO. This means Ethernet is not routed on the backplane. Refer to the J6/rP6 connector pinout (Chapter B02.1.2.2) for further information.

Figure B02.1: Backplane CPS3-BP5-SR-RIO(P)S Layout Front View



System Element: Backplane: CPS3-BP5-SR-RI0(P)S

Figure B02.2: Backplane CPS3-BP5-SR-RI0(P)S Layout Rear View



The slots 2 to 5 J6/rP6 connectors are optional and must be specified when ordering.

- » CPS3-BP5-SR-RIOPS = connectors J6/rP6 are populated on all slots
- » CPS3-BP5-SR-RIOS = connectors J6/rP6 are populated only on slot 1

The slot 5, J2/J3 area (front and rear) is reserved for backplane input power distribution.

System Element: Backplane: CPS3-BP5-SR-RIO(P)S

B02.1.2 Backplane Connector Descriptions**B02.1.2.1 Connectors J1 to J5**

The connector layouts and pinouts are compliant with the CompactPCI® Serial specification. Refer to the specification for further information.

B02.1.2.2 Connectors J6 and rP6

The connector layouts are compliant with the CompactPCI® Serial specification.

These connectors are configured for rear IO in accordance with the following:

All J6/rP6 GND signals as set forth in the CompactPCI® Serial specification are connected to the backplane GND with the exception of signals J6/rP6-08A and J6/rP6-08D. These two pins, as well as all pins assigned for Ethernet data signals in the CompactPCI® Serial specification are routed through the backplane to the rP6 connector for rear I/O use.

The slot 1 J6 and rP6 connectors are always populated. The slots 2 to 5 J6 and rP6 connectors are optional and must be specified when ordering. They cannot be retrofitted. The following table indicates the pinout of connector J6.

Table B02.1: Pinout for CompactPCI Serial® Connector J6 (RIO Backplane)

8	DECT_RIO	IO	IO	DECT_BPR	IO	IO	GND	IO	IO	GND	IO	IO
7	IO	IO	GND									
6	GND	IO	IO									
5	IO	IO	GND									
4	GND	IO	IO									
3	IO	IO	GND									
2	GND	2_ETH_A+	2_ETH_A-	GND	2_ETH_B+	2_ETH_B-	GND	2_ETH_C+	2_ETH_C-	GND	2_ETH_D+	2_ETH_D-
1	1_ETH_A+	1_ETH_A-	GND	1_ETH_B+	1_ETH_B-	GND	1_ETH_C+	1_ETH_C-	GND	1_ETH_D+	1_ETH_D-	GND
	A	B	C	D	E	F	G	H	I	J	K	L

The usage of the signals DECT_RIO and DECT_BPR is as follows:

Ethernet backplanes (full mesh or single star):

- » Both of these signals are routed to ground within the backplane on all slots indicating that the backplane is an Ethernet backplane

RIO backplanes:

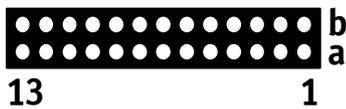
- » Both of these signals are routed through the backplane to the rP6 connector for use by an RIO board

System Element: Backplane: CPS3-BP5-SR-RIO(P)S

- » The DECT_BPR signal is used to indicate that the front board is either installed in an Ethernet backplane or an RIO backplane (tied to GND, is installed in an Ethernet backplane; floating, is installed in an RIO backplane)
- » If the front board is installed in an RIO backplane, the DECT_RIO signal is used to indicate the presence of an RIO board or not (tied to GND, RIO board is installed; floating, RIO board is not installed)

B02.1.2.3 System Monitor and Control Connectors SMC1 (J102) and SMC2 (J103)

These connectors provide power monitor and control signals.

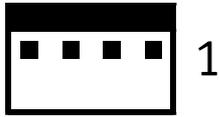
Figure B02.3: Connectors SMC 1 and 2**Table B02.1: Pinout of SMC Connectors 1 and 2**

PIN	SIGNAL	
	PIN ROW A	PIN ROW B
1	I2C_SCL	GND
2	I2C_SDA	+5V STANDBY
3	Vaux	GND
4	PS_ON#	GND
5	PWRBTN#	GND
6	WAKE_IN# / WAKE_OUT#	GND
7	PWR_FAIL#	DEG#
8	PRST#	GND
9	GND	NC
10	+5V STANDBY	-VSENSE
11	+VSENSE	GND
12	NC	+5V STANDBY
13	12VCS	GND

System Element: Backplane: CPS3-BP5-SR-RI0(P)S

B02.1.2.4 Connectors FAN 1 (J104) and FAN 2 (J105)

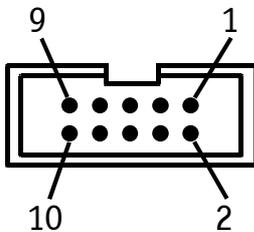
These connectors can be used to supply power and control to external fans if required.

Figure B02.4: Connectors FAN 1 and 2**Table B02.2: Pinout of FAN Connectors 1 and 2**

PIN	SIGNAL
1	GND
2	+12V
3	FAN_SENSE
4	PWM_OUT

B02.1.2.5 Connector FAN (J106)

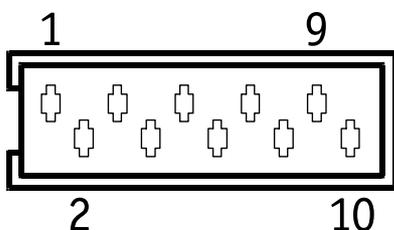
This connector can be used to supply power and control to external fans if required. In addition IPMBO is available on this connector.

Figure B02.5: Connector FAN**Table B02.3: Pinout of FAN Connector**

PIN	SIGNAL
1	+12V
2	+12V
3	GND
4	GND
5	FAN_SENSE1
6	PWM_OUT1
7	FAN_SENSE2
8	PWM_OUT2
9	I2C_SCL
10	I2C_SDA

B02.1.2.6 Utility Connector (J101)

This connector provides power monitor and control signals.

Figure B02.6: Connector UTILITY**Table B02.4: Pinout of UTILITY Connector**

PIN	SIGNAL
1	GND
2	+5V STANDBY
3	+12V
4	PS_ON#
5	PWRBTN#
6	PWR_FAIL#
7	WAKE_IN# / WAKE_OUT#
8	PRST#
9	I2C_SDA
10	I2C_SCL

System Element: Backplane: CPS3-BP5-SR-RIO(P)S**B02.1.2.7 Power Supply Connectors**

The power bugs STBY (X113), 12V (X111) and GND (X112) provide power entry points to the backplane. All of the bugs are M3 threaded posts.

B02.2 Specifications**Table B02.5: Backplane CPS3-BP5-SR-RIO(P)S Specifications**

FEATURES	SPECIFICATIONS
Type	CompactPCI® Serial S.0 compliant except for connectors J6/rP6 Connectors J6/rP6 are configured for rear IO use and not Ethernet. Refer to Chapter B02.1.2.2 for further information
Slots	5 3U 4HP slots; system slot on the right side
Dimensions	Height: 128.5 mm Width: 100.6 mm
Weight	ca. 200 g

B02.3 Implementation Considerations**B02.3.1 Installation**

As this is a factory installed element, the required location of the backplane within the chassis must be specified when ordering. If retrofitting is required, contact Kontron for further assistance before performing any retrofitting actions.

Kontron disclaims all liability for any damages as a result of customer or in the field retrofitting of the backplane without explicit written permission from Kontron.

B02.3.2 Power Monitor and Control Signals

This backplane is supplied with various connectors which make numerous power monitor and control signals available for application use. As their usage is a function of the application and the configuration of the chassis, it is the responsibility of the system integrator to ensure their proper implementation.

The following table provides manufacturer/supplier connector type reference information for backplane to cable connections.

System Element: Backplane: CPS3-BP5-SR-RI0(P)S

Table B02.6: Connector Type Cross Reference Listing

BACKPLANE CONNECTOR	CONNECTOR TYPE	MATING CONNECTOR	ALERNATIVE MATING CONNECTOR - CABLE
UTILITY	Micro-MaTch 1-338069-0	Micro-MaTch 1-338095-0	
FAN	DIN 41651 / IEC 60603-13 Pin row 2x5 2.54mm	DIN 41651 / IEC 60603-13 Female Socket 2x5 2.54mm	
FAN 1 and 2	Tyco MTA 3-647166-4	TE MTA 3-640469-4	
SMC	ERNI SMC 064003 1.27mm Pin row	Erni SMC 214346 1.27mm Female Socket	Erni 173796 (connector with 100 mm ribbon cable) Erni 163371 (connector with 400 mm ribbon cable)

B03 Backplane: CP3-BP5

B03.1 Description

This backplane is a 5-slot 3U 24HP CompactPCI® backplane with the system slot located on the left side of the backplane. For further information refer to the linked document 1 (Chapter B03.3.1).

B03.2 Implementation Considerations

This backplane is designed for use only in conjunction with the CPS3-BP5-SR-RIO(P)S backplane to form a hybrid system which is comprised of a CompactPCI® Serial backplane and CompactPCI® backplane where the system controller is a CompactPCI® Serial CPU with a bridge extension module for interfacing to the standard CompactPCI® backplane.

As this is a factory installed element there are no special installation considerations.

B03.3 Documentation Links

This chapter identifies linked documentation which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_B03_LD1 Page <n>

where: 1054-8971 is the ID for this System User Guide
B03 identifies the chapter to which the linked document belongs
LD<n> unique number for each linked document within a given chapter
Page <n> is a running page number within the linked document

The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

B03.3.1 Backplane CP3-BP5 Linked Document 1

Attached is a two-page document provided by the backplane supplier describing this backplane on an “as is” basis. Kontron accepts no responsibility for the correctness or completeness of this document.

3 U CompactPCI with 5 Slots

State of the art design for a wide range of applications

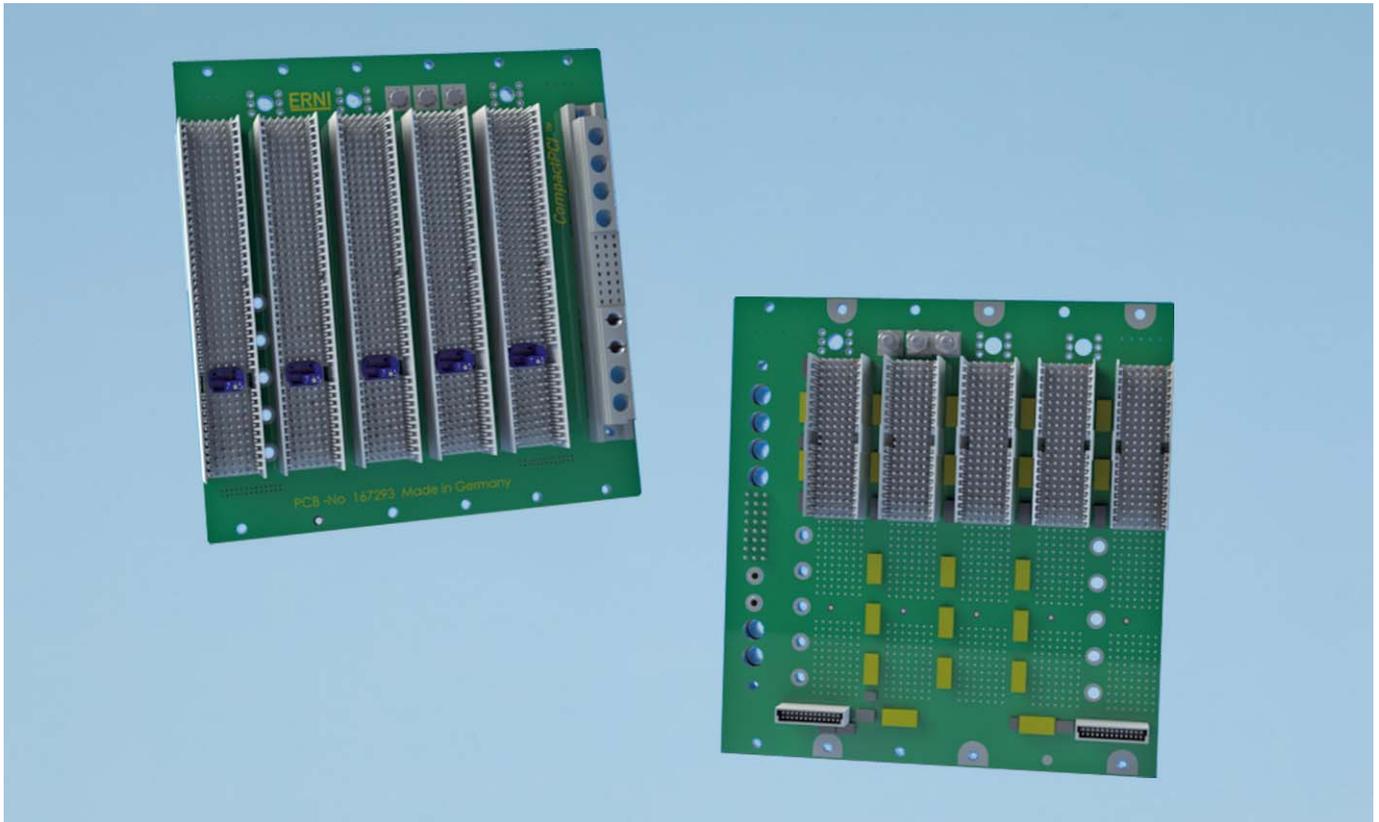


Image for visualization only

General Description

This standard backplane is member of the ERNI backplane family for use in Compact PCI computer systems. Its high-performance features make it ideally suited for telecom, data-com, and industrial applications like CNCs, robotic controls, and video image processing.

ERNI develops and manufactures backplanes according to ISO 9001 at three production sites around the world.

Custom and semi-custom designs based on our standard backplanes are possible in various configurations.

Part No: 167292

Features

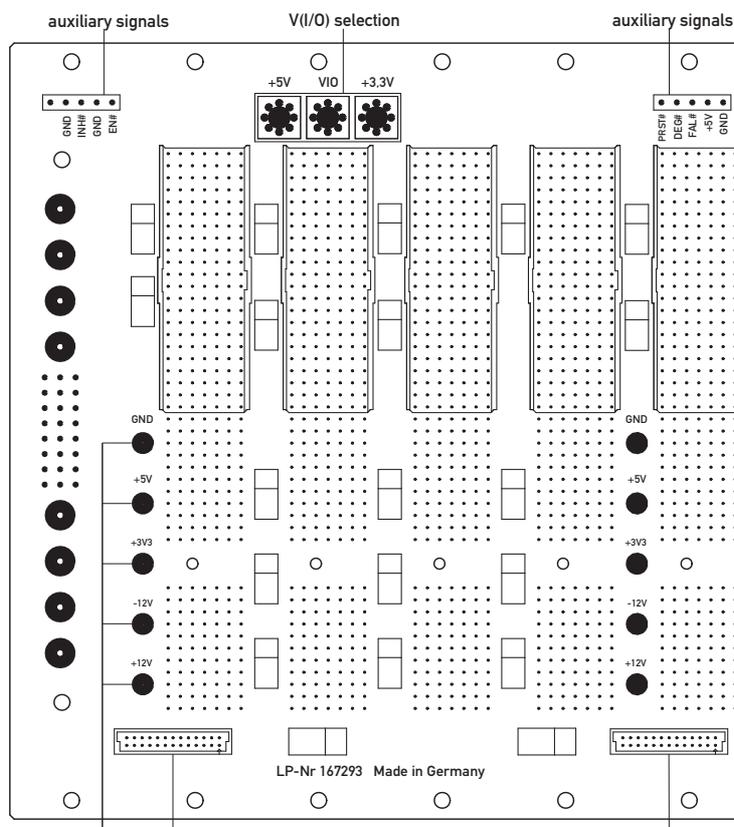
- Form factor 3 U
- Dimension (WxH): 120.92 mm x 128.7 mm
- 5 slots, 4 peripheral slots; system slot on left hand side
- Operates at 66 MHz clock frequency
- All slots with 32-bit implementation
- All slots with rear I/O capability
- AB-shrouds with guides for safe mating of rear I/O transition modules
- Controlled impedance of 65 Ohm implemented in stripline-topology
- Hot-swap features according to PICMG 2.0 R3.0 and PICMG 2.1 R2.0
- Best decoupling of supply voltages
- High-quality design with best EMC-characteristics by fully shielded PCB
- Flexible grounding to chassis by fixing screws
- Connectors according to IEC 61076-4-101 and PICMG 2.0 R3.0
- V(I/O) selectable by jumper element: 3.3 V or 5 V
- Frontpower entry for use with modular power supply acc. to PICMG 2.11 R1.0 with DIN Type M connector
- Auxilliary signals accessible at headers
- Extension/cascading feature with other cPCI backplane or power backplane
- Safe separation between hazardous voltages in mains supply and SELV circuit according to IEC 60950

3 U CompactPCI with 5 Slots

State of the art design for a wide range of applications

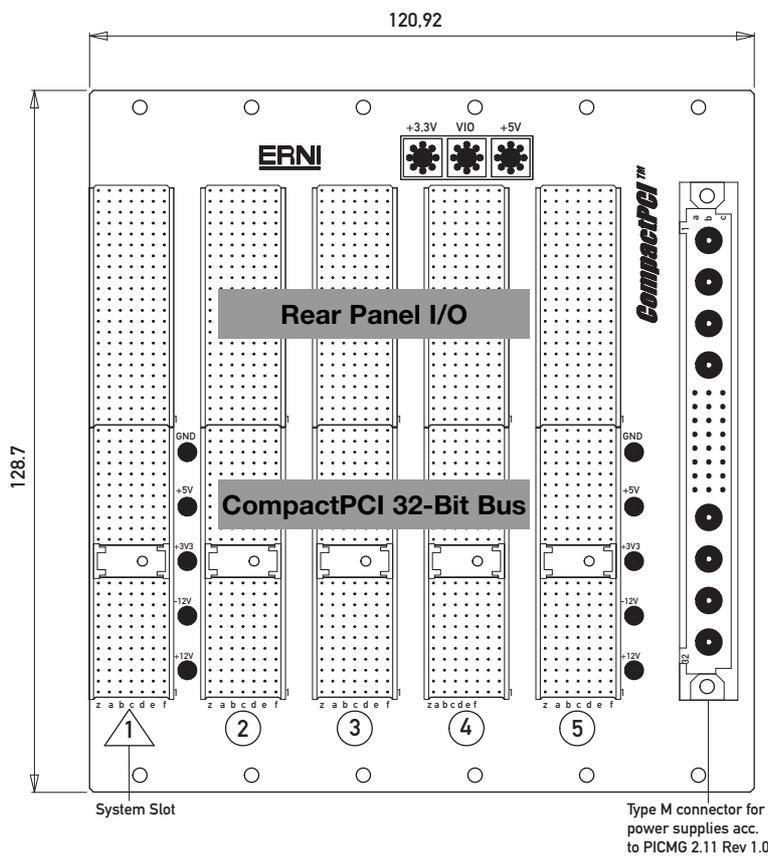


Rear view



connections for extensions to other modular backplanes.
includes system management bus acc. to PICMG 2.9

Front view



B04 Backplane: CP-ADAP-P47-PB

B04.1 Description

This power adapter is a 3U 8HP backplane which is designed for removable Eurocard package power supplies to provide power and power monitor and control interfacing to main system backplanes.

It has a Positronic PCIH47 connector on the front side and five standard CPCI configured power terminals (threaded posts) on the rear side. The power terminals are rastered so that power bars may be used to connect to the main backplane.

In addition there is a 26-pin connector available which provides power monitor and control signals. This adapter is only used in hybrid systems.

For further information refer to the linked document 1 (Chapter B04.3.1).

B04.2 Implementation Considerations

B04.2.1 Power Supplies

This backplane is designed for use only with power supplies which have a Positronic PCIH47 interfacing connector.

B04.2.2 Installation

As this is a factory installed element, the required location of the backplane within the chassis must be specified when ordering. If retrofitting is required, contact Kontron for further assistance before performing any retrofitting actions.

Kontron disclaims all liability for any damages as a result of customer or in the field retrofitting of the backplane without explicit written permission from Kontron.

B04.3 Documentation Links

This chapter identifies linked documentation which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_B04_LD1 Page <n>

where: 1054-8971 is the ID for this System User Guide
B04 identifies the chapter to which the linked document belongs
LD<n> unique number for each linked document within a given chapter
Page <n> is a running page number within the linked document

The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

B04.3.1 Backplane: CP-ADAP-P47-PB Linked Document 1

Attached is a multi-page document provided by Kontron (formerly PEP Modular Computers GmbH) describing the backplane power adapter.

CPCI Backplane Manual

PRODUCT DOCUMENTATION

PD14 CP-ADAP-P47-PB (3U)

Reference ID: 24229 PD14

Revision: 01

Issued: August 29, 2003



The product described in this manual is in compliance with all applied CE standards.



Revision History

Manual/Product Title:		CPCI Backplane Manual: Product Documentation: CP-ADAP-P47-PB (3U)
Reference ID:		24229 PD14
Rev. Index	Brief Description of Changes	Date of Issue
01	Initial Issue	Aug. 29, 2003

Imprint

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This manual was realized by: **TPD/Engineering, PEP Modular Computers GmbH.**



1. CPCI Backplane Introduction

The specific product description provided with this product documentation is part of the PEP's CPCI Backplane manual. For further information, in particular regarding general details as well as safety and warranty statements, refer to the CPCI Backplane Manual, ID 24229.

2. CP-ADAP-P47-PB (3U) Power Distribution Adapter

The main features of the 3U CP-ADAP-P47-PB power distribution adapter which is designed for applications requiring input power distribution via power bars are described in the following table:

Table 1: Distinctive Features of Backplane CP-ADAP-P47-PB (3U)

Feature	Specification
Form Factor	3U
Size	39.6*128.7 mm
Number of Slots	1, 4HP PSU slot
Bus Resolution	–
Bus Frequency	–
Rear I/O Connectivity	–
Hot-Swap Capability	Yes
Power Supply Connectors	47-pin Positronic PCIH47 (input) Power bar, 5 terminals (output)
Redundant Power Supply	Optional
Flexible Grounding Option	Yes
Fan Connector	Optional
MSD Connector	Optional
PS-ON Connector	–
Reset Function Connector	–
IPMB Extension Connector	Optional (IPMB0)
System MON-CTRL Connector	Yes



3. Board Layout

Figure 1: CP-ADAP-P47-PB (3U) Board Layout (Front)

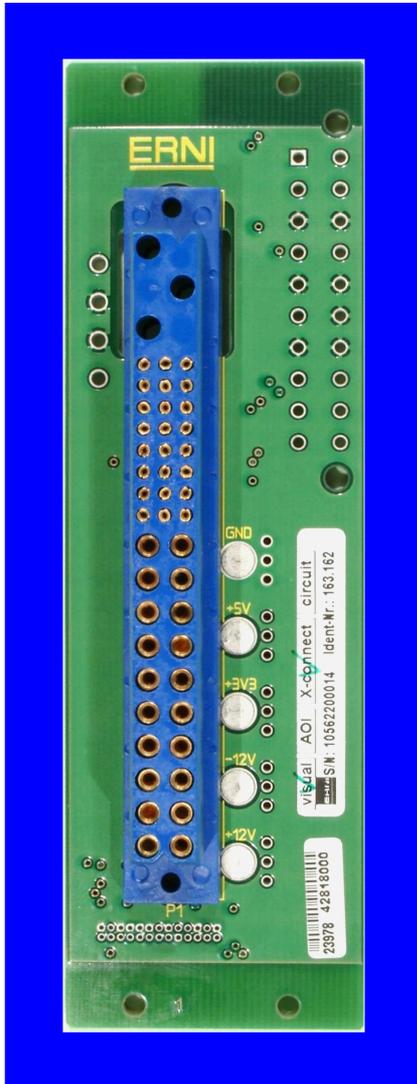


Figure 2: CP-ADAP-P47-PB (3U) Board Layout (Reverse)





4. Interfaces

4.1 Power Supply and Line Input

The V1 ... V4 output voltages from the power supply unit to the backplane are connected via a 47-contact, female, Positronic type power supply connector.

The main power supply input power is connected directly to pins 45, 46, and 47 of the power supply connector. This is accomplished by means of a single, closed barrel pass-through contact for each pin via the reverse side of the backplane.

Figure 3: Orientation and Pinouts of the Positronic 47-pin Connector

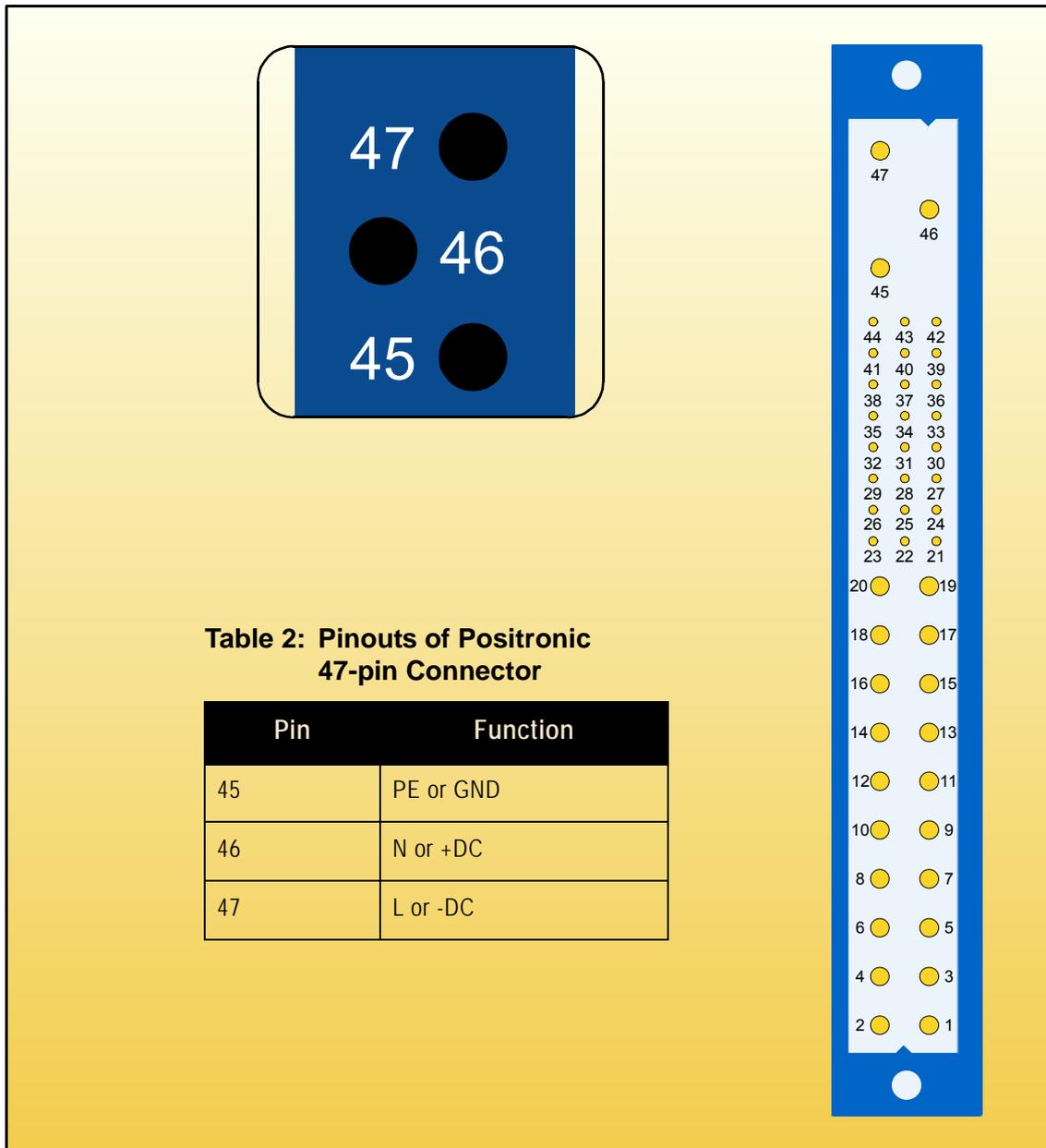




Table 3: Positronic 47-Pin Connector Pinout

PIN	SIGNAL NAME	DESCRIPTION	PIN	SIGNAL NAME	DESCRIPTION
1 - 4	V1	V1 OUTPUT (+5V)	32	V2ADJ	V2 ADJUST
5 - 12	RTN	V1 and V2 RETURN	33	V2 SENSE	V2 REMOTE SENSE
13 - 18	V2	V2 OUTPUT (+3.3V)	34	S RTN	SENSE RETURN
19	RTN	V3 RETURN	35	V1 SHARE	V1 CURRENT SHARE
20	V3	V3 OUTPUT (+12V)	36	V3 SENSE	V3 REMOTE SENSE
21	V4	V4 OUTPUT (-12V)	37	IMPB_SCL	IMPB SYS CLOCK
22	RTN	SIGNAL RETURN	38	DEG#	DEGRADE SIGNAL
23	RESERVED	RESERVED	39	INH#	INHIBIT
24	RTN	V4 RETURN	40	IMPB_SDA	IMPB SYS DATA
25	GA0	GA BIT 0	41	V2 SHARE	V2 CURRENT SHARE
26	RESERVED	RESERVED	42	FAL#	FAIL SIGNAL
27	EN#	ENABLE	43	IMPB_PWR	IMPB POWER
28	GA1	GA BIT 1	44	V3 SHARE	V3 CURRENT SHARE
29	NC	NOT CONNECTED	45	CGND	CHASSIS GROUND
30	V1SENSE	V1 REMOTE SENSE	46	ACN / +DC IN	AC INPUT NEUTRAL / +DC INPUT
31	GA2	GA BIT 2	47	ACL / -DC IN	AC INPUT LINE / +DC INPUT



Note...

The signal pinout assignment is a function of the power supply actually utilized with this backplane. Refer to the corresponding power supply documentation for the applicable signal pinout.



4.2 Fan Connectors (Optional)

The backplane can be equipped with connectors for supplying power for fan(s) and for connecting a fan speed control device. JP21 (FAN1), a 3-contact, male connector, supplies +12V for fan operation as well as the possibility to connect to a speed control device for regulating air flow within the system sub-rack. JP22 (NTC1), a 2-contact male connector, provides a separate connection for a speed control device and is designed to be used in conjunction with JP21.

For fans that have their own speed control or where no control is required, pins 1 and 2 of JP21 can be used. For external speed control of fans, pins 2 and 3 of JP21 and pins 1 and 2 of JP22 are used. Pin 3 of JP21 and pin 2 of JP22 are connected internally on the board side to each other.

External air flow regulation can be accomplished using a negative thermal coefficient (NTC) device connected to JP22

Figure 4: Orientation and Pinouts of Connectors JP21 and JP22

Table 4: Pinout of JP21 Connector

Pin	Function
1	GND
2	+12V
3	NTC1

Table 5: Pinout of JP22 Connector

Pin	Function
1	GND
2	NTC1



4.3 MSD Connector JP3 (Optional)

One 4-contact female connector can be installed on the backplane for the connection of mass storage devices (drives) to the +5V/+12V power supply of the bus.

Figure 5: Orientation and Pinout of the MSD Connector JP3

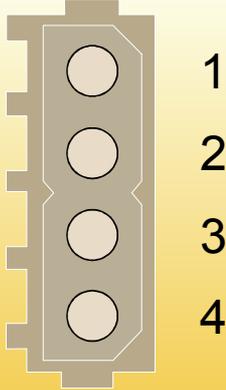


Table 6: Pinout of the JP3 Connector

Pin	Function
1	+12V
2	GND
3	GND
4	+5V

4.4 System Management Connector JP19 (Optional)

One five-contact male system management bus (IPMB0) connector, JP19, can be provided for external interfacing to this bus.

Figure 6: Orientation and Pinout of the CP3-BP8-P47-RIO IMPB0 Connector JP19



Table 7: Pinout of CP3-BP8-P47-RIO IMPB0 Connector JP19

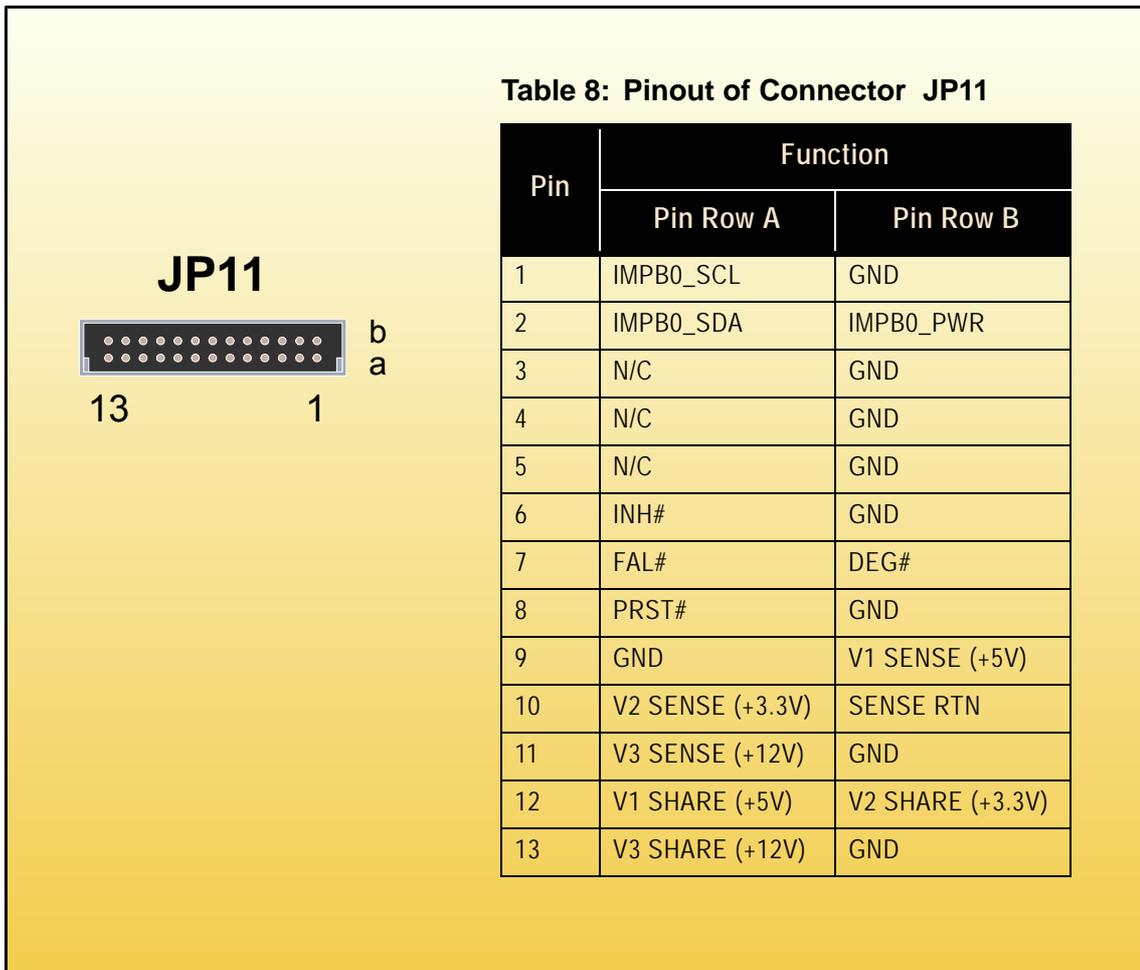
Pin	Function
1	IMPB0_SCL
2	GND
3	IMPB0_SDA
4	IMPB0_PWR
5	SMB_ALERT



4.5 System Monitor and Control Connector JP11

This backplane is provided with a connector for system monitor and control signal interfacing to external devices. This is a 26-contact, male, double pin-row connector. The system management bus (IPMB0), the power supply monitor and control signals, and push button reset (PRST#) signal are all implemented on these connector.

Figure 7: Orientation and Pinout of the CP3-BP8-P47-RIO SMC Connectors JP11 and JP12



Note...

The signal pinout assignment is a function of the power supply actually utilized with this backplane. Refer to the corresponding power supply documentation for the applicable signal pinout.



5. Optional System Configurations

5.1 Power Supply Options

The design of this power distribution backplane allows for several different power supply options:

1. The default configuration of a single compatible pluggable power supply.
2. Addition of compatible pluggable power supplies installed either to the left or right of the backplane.

Option 1 is the standard configuration which is delivered with a 47-contact female Positronic type power supply connector.

Option 2 requires the installation of an additional power distribution backplane for each additional power supply.

B05 Backplane: CPS3-BPP

B05.1 Description

This power adapter is a 3U 8HP backplane which is specially designed for use with power supplies that have an SSI-type connector (e.g. FCI PwrBlade®). This adapter is intended for use with removable Eurocard package power supplies to provide power and power monitor and control interfacing to main system backplanes.

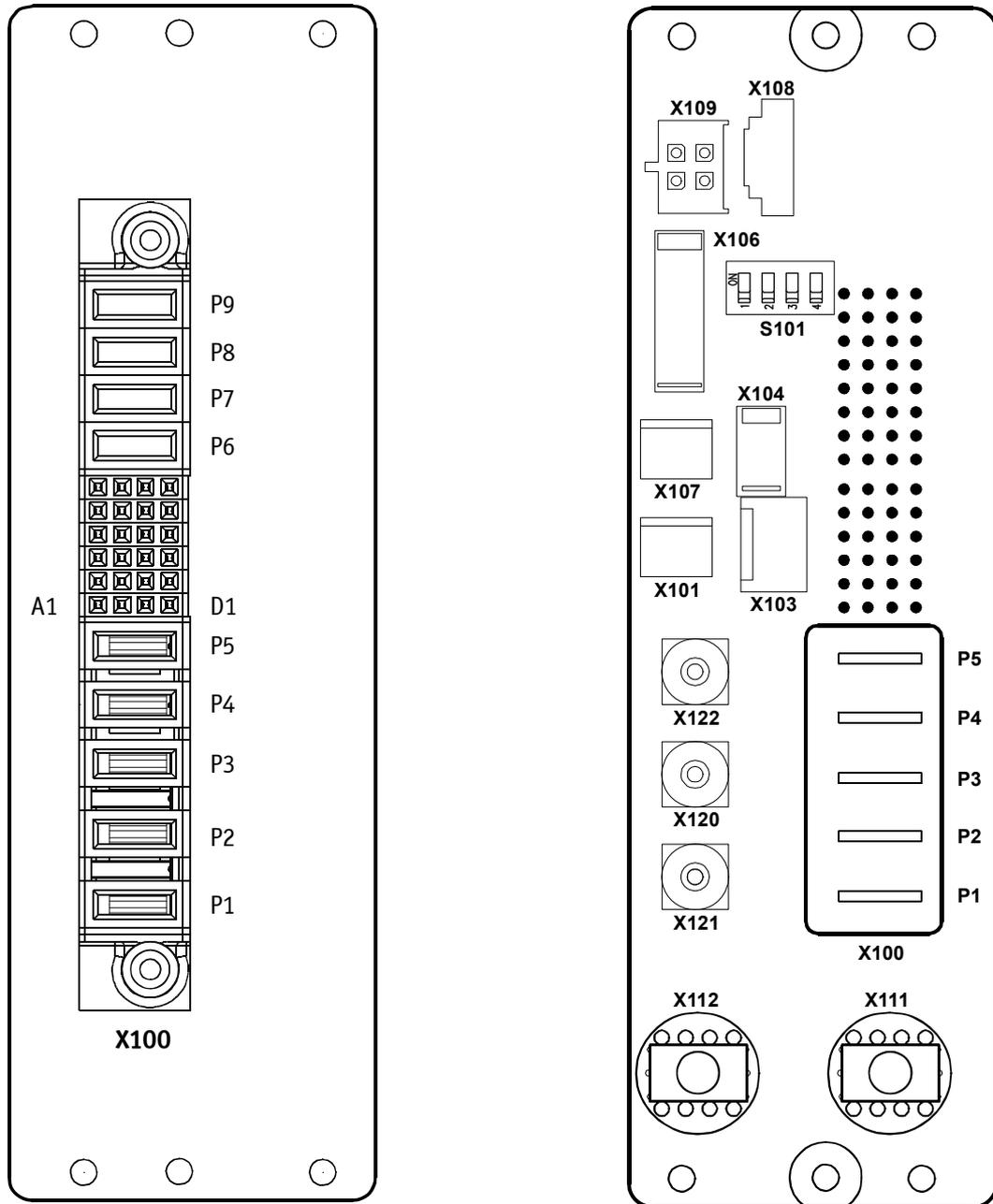
B05.1.1 Backplane Layout

This backplane has an SSI-type connector on the front side and various power, monitor and control connectors on the rear side.

In addition there are main power input Faston terminals routed through an opening in the backplane. The +12V DC, GND and +5V STANDBY output power terminals are rastered so that power bars may be used to connect to the main backplane.

System Element: Backplane: CPS3-BPP

Figure B05.1: Backplane: CPS3-BPP Layout Front and Rear Views



B05.1.2 Backplane Connector Descriptions

B05.1.2.1 Connector X100 - Front and Rear Sides

The following tables provide pinout information for this connector.

Table B05.1: Pinout of Connector X100 Front Side

P9	+12V
P8	+12V
P7	GND
P6	GND

A6	EN#	B6	GND	C6	+5V STANDBY	D6	+5V STANDBY
A5	I2C_SDA	B5	I2C_SCL	C5	VAUX	D5	DEG#
A4	A2	B4	A1	C4	A0	D4	GND
A3	+12V_Sense	B3	PS_ON#	C3	UPS_TX	D3	PSPRESENT
A2	RTN_Sense	B2	+12V_Share	C2	UPS_RX	D2	PWR_FAIL#
A1	DI04	B1	DI03	C1	DI02	D1	DI01

P5	Reserved
P4	Reserved
P3	PE
P2	N
P1	L

Table B05.2: Pinout of Connector X100 Rear Side

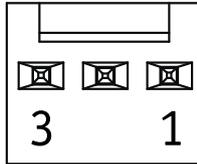
P5	Reserved
P4	Reserved
P3	PE
P2	N
P1	L

Terminals P1 to P5 are power input interfaces to the power supply, whereas terminals P6 to P9 are power output interfaces to the backplane

System Element: Backplane: CPS3-BPP

B05.1.2.2 Connector X101 - UPS

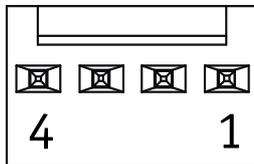
This connector provides monitor and control interfacing for a UPS power source.

Figure B05.2: Connector X101 - UPS**Table B05.3: Pinout Connector X101 - UPS**

PIN	SIGNAL
1	UPS_TX
2	GND
3	UPS_RX

B05.1.2.3 Connector X103 - AUX

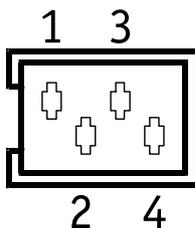
This connector provides auxiliary monitor and control interfacing.

Figure B05.3: Connector X103 - AUX**Table B05.4: Pinout Connector X103 - AUX**

PIN	SIGNAL
1	DEG#
2	PSPRESENT
3	VAUX
4	PWR_FAIL#

B05.1.2.4 Connector X104 - +12V_CS

This connector provides +12V current share interfacing.

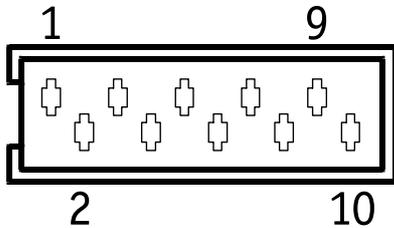
Figure B05.4: Connector X104 - +12V_CS**Table B05.5: Pinout Connector X104 - +12V_CS**

PIN	SIGNAL
1	+12V_SHARE
2	+12V_SHARE
3	GND
4	GND

System Element: Backplane: CPS3-BPP

B05.1.2.5 Connector X106 - UTILITY

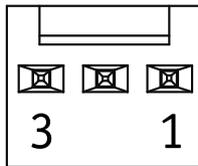
This connector provides various power and power monitor and control signals.

Figure B05.5: Connector X106 - UTILITY**Table B05.6: Pinout Connector X106 - UTILITY**

PIN	SIGNAL
1	RTN_Sense
2	+5V_STANDBY
3	+12V_Sense
4	PS_ON#
5	PWRBTN#
6	PWR_FAIL#
7	WAKE_IN# / WAKE_OUT#
8	PRST#
9	I2C_SDA
10	I2C_SCL

B05.1.2.6 Connector X107 - PWR BUTTON

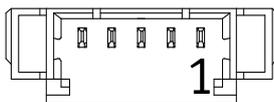
This connector provides power button interfacing.

Figure B05.6: Connector X107 - PWR BUTTON**Table B05.7: Pinout Connector X107 - PWR BUTTON**

PIN	SIGNAL
1	PWRBTN#
2	GND
3	PRST#

B05.1.2.7 Connector X108 - IPMB

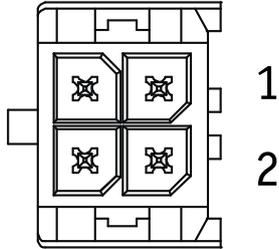
This connector provides IPMB interfacing.

Figure B05.7: Connector X108 - IPMB**Table B05.8: Pinout Connector X108 - IPMB**

PIN	SIGNAL
1	I2C_SCL
2	GND
3	I2C_SDA
4	+5V_STANDBY
5	NC

B05.1.2.8 Connector X109 - STANDBY

This connector provides STANDBY interfacing.

Figure B05.8: Connector X109 - STANDBY**Table B05.9: Pinout Connector X109 - STANDBY**

PIN	SIGNAL
1	GND
2	+5V STANDBY
3	GND
4	+5V STANDBY

B05.1.2.9 Connectors X111, X112, X120, X121 and X122 - Power

These connectors provide power interfacing to the main backplane.

Table B05.10: Pinout Power Connectors

CONNECTOR	SIGNAL
X111	GND
X112	+12V
X120	+12V (power bar raster)
X121	GND (power bar raster)
X122	+5V STANDBY (power bar raster)

B05.1.2.10 Matching Cable Connectors

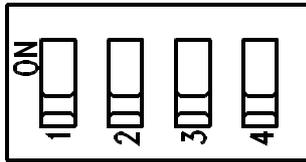
The following table provides information concerning matching cable connectors for the adapter's connectors.

Table B05.11: Matching Cable Connectors

CONNECTOR	SOURCE	SOURCE TYPE	SOURCE ORDER NR.
X100	FCI	51939	FCI 51939-667C
X101	TE (TYCO)	MTA	3-640440-3
X103	TE (TYCO)	MTA	3-640469-4
X104	TE (TYCO)	Micro Match	338095-4
X106	TE (TYCO)	Micro Match	1-338095-0
X107	TE (TYCO)	MTA	3-640440-3
X108	Molex	51021	51021-0500
X109	Molex	43025	43025-0400
X111	-	M4 screw	M4 screw
X112	-	M4 screw	M4 screw
X120	-	M3 screw	M3 screw
X121	-	M3 screw	M3 screw
X122	-	M3 screw	M3 screw

B05.1.2.11 DIP Switch S101

These switches control the power supply address assignment and routing of the PS_ON# signal.

Figure B05.9: DIP Switch S101 Layout

The following table indicates the functionality of the four switches integrated in the DIP switch.

Table B05.12: DIP Switch S101 Functionality

SWITCH	SETTING	FUNCTIONALITY
1	OFF	A0 address signal (high)
	ON	A0 address signal (low)
2	OFF	A1 address signal (high)
	ON	A1 address signal (low)
3	OFF	A2 address signal (high)
	ON	A2 address signal (low)
4	OFF	No forced assertion of the PS_ON# signal line on the power supply (PS must be turned on using other PS_ON# signal source)
	ON	Forcibly asserts PS_ON# signal line on the power supply (PS always on when power available; no remote on/off capability)

The default setting is indicated by using italic bold.

B05.2 Specifications**Table B05.13: Backplane Power Adapter Specifications**

FEATURES	SPECIFICATIONS
Type	CompactPCI® 3U 8HP power adapter backplane Main power connector is SSI-type with 5P+24S+4P configuration. Refer to Chapter B05.1.2.1 for further information
Dimensions	Height: 128.5 mm Width: 38.9 mm
Weight	apx. 55 g

B05.3 Implementation Considerations

B05.3.1 Power Supplies

This backplane is designed for use only with power supplies which have an SSI-type (5P+24S+4P configuration) interfacing connector.

B05.3.2 Installation

As this is a factory installed element, the required location of the backplane power adapter within the chassis must be specified when ordering. If retrofitting is required, contact Kontron for further assistance before performing any retrofitting actions.

Kontron disclaims all liability for any damages as a result of customer or in the field retrofitting of the backplane without explicit written permission from Kontron.

C02 Power Supply: CPS3-SVE-S300AC

C02.1 Description

This is a 300 watt, AC input, 3U 8HP Eurocard package power supply with an SSI-type connector for backplane interfacing. The SSI-type connector has a 5P 24S 4P configuration. For further information refer to the linked document 1 (Chapter C02.3.1).

C02.2 Implementation Considerations

C02.2.1 Safety

C02.2.1.1 Hazardous Voltage

This power supply unit is designed for operation with AC voltage in the range from 90 to 264 VAC. Therefore when connected to the mains power source hazardous AC voltage is present. Disconnect the mains power from the power supply before performing any operation such as maintenance, configuration changes, inspection, etc.

C02.2.1.2 Grounding/Earthing

This power supply is designed in accordance with protection class 1. It must therefore be operated with a protective earth connection. Use only a three conductor AC power cable with a protective earth (PE) conductor.

C02.2.1.3 Cooling

This power supply requires forced air cooling to operate. For further information refer to the linked document 1 (Chapter C02.3.1).

Kontron rejects liability for any type of damage resulting from system or component overheating.

C02.2.2 Power Supply Installation

This power supply is intended to be installed in a 3U high sub-rack. Appropriate guide rails and a corresponding backplane mating connector must be available. Installation is achieved by inserting the power supply in the designated slot until it makes contact with the backplane connector and then use the ejector handle to fully engage the power supply. Finally the retaining screws must be tightened accordingly.

This power supply is hot pluggable provided all necessary prerequisites are satisfied within the system before and during operation.

C02.3 Documentation Links

This chapter identifies a linked Kontron Data Sheet which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_C02_LD1 Page <n>

where: 1054-8971 is the ID for this System User Guide
C02 identifies the chapter to which the linked document belongs
LD<n> unique number for each linked document within a given chapter
Page <n> is a running page number within the linked document

The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

C02.3.1 Power Supply CPS3-SVE-S300AC Linked Document 1

Attached is a four page Kontron Data Sheet describing this power supply.

» CPS3-SVE-S300AC «



300W AC Power Supply for CompactPCI® Serial

- » Hot-plug and redundancy
- » Advanced monitoring I²C/PMBUS
- » Wide input range 90 – 264 VAC
- » Extended temperature, full rating
- » EMI EN55022 Class B, UL, cUL, DEMKO

CPS3-SVE-S300AC

300W AC Power Supply for CompactPCI® Serial

Flexible usage

The 300 Watt power supply CPS3-SVE-S300AC is flexible for many operational conditions. It has a wide input range of 90-264 VAC, and operates under extended temperature from -40°C to +70°C at full rating. It provides 12V output and 5V standby as defined for CompactPCI® Serial.

Advanced feature set for high system reliability

The CPS3-SVE-S300AC provides the full feature set as recommended by the CompactPCI® Serial community. This includes the specification of the power supply rear connector. Redundancy and hot-plug, several protection and regulation features, advanced monitoring functions via I²C/PMBUS as well as its hold-up time make the power supply a reliable backbone of every CompactPCI® Serial platform.

Easy system integration and field maintenance

Integration by hot-plug from the frontside to a backplane connector - no cabling, no power down of redundant systems - this makes the application more reliable and maintenance in the field an easy matter.

Mating backplane connector and AC input

The respective mating connector is required on the system backplane. This can be provided either as part of the CompactPCI® Serial backplane, or by a one-slot power backplane which is connected to the CompactPCI® Serial backplane. CP-MKIT-AC-IN is the related AC Input Kit and Integration Service for any integrated card cage requested from Kontron, suitable for CPS-SVE-S300AC or any other AC power supply.

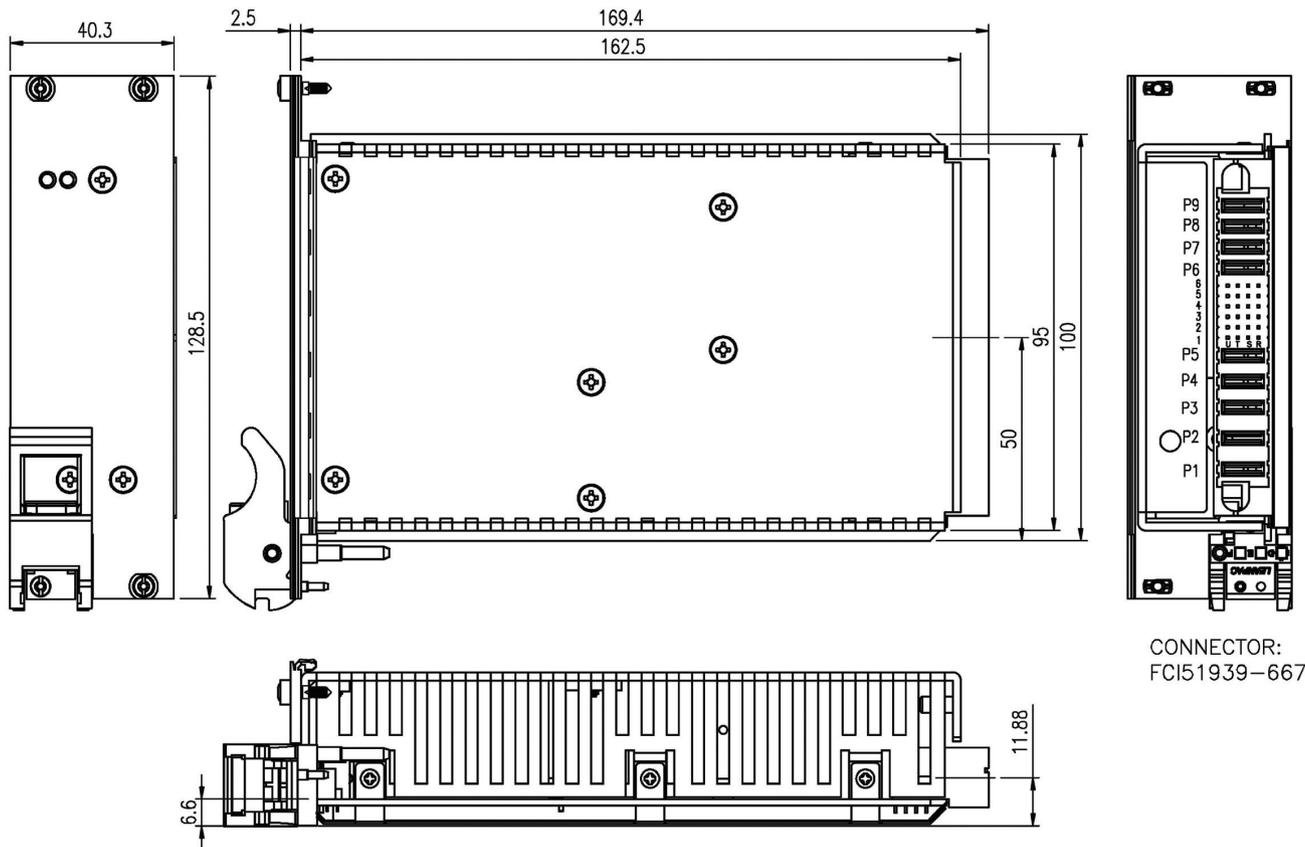


Figure: Mechanical dimensions, CPS3-SVE-S300AC

Technical Information

NOTE: Preliminary version. Specification subject to change without notice.

Mechanical

Formfactor	3U 8HP Cassette
Mounting	Plug into power supply slot, to backplane mating connector
Connector	SSI-type connector (FCI 51939-667 or identical). The mating connector is either included in the CompactPCI® Serial backplane, or available with a one-slot power backplane to be mounted into the chassis and connected to the CompactPCI® Serial backplane. Reference of the mating connector: Power Backplane CPS3-BPP
Dimension LxWxH	169.4 x 128.5 x 40.3 mm including face plate and connector
Weight	TBD

Input

AC Input Voltage	90 - 264 VAC
Input Frequency	50 - 440 Hz
EMI Filter	EN55022 Class B, FCC Part 15
Inrush Current	32A at 230 VAC
Input Current	1.3 A
Isolation	4242 VDC (input to output)
Leakage	<0.3mA

Output and Regulation

DC Output Power	Maximum continuous output power 300W full rating, with 20CFM fan cooling required
Output Voltage	12V
Auxiliary Supply	5V/2.5A
Hold Up Time	20 ms min.
Temperature Coefficient	+0.01% / °C
Long Term Stability	0.01% after 20 minutes warm-up
Output Current	0A min., 24A max.
Load Regulation	+1%
Line Regulation	+0.5%
Ripple&Noise	1% Pk to Pk
Transient Response	2% Maximum deviation; returns to initial conditions in 1 msec max.
Efficiency	90% (for 220 VAC)
Active PFC	0.99
Switching Frequency	134 KHz
ORing FET	Provided for redundant operation
Active Current Share (S2)	12V Output will current share within 5% when interconnected by a single wire
Passive Current Share	5V SBY droop type

Protection and Control

Overload Protection	The feature will reduce the output voltage to a safe dissipation level when the output power rating exceeds 125% of maximum rated power. The unit will automatically return to regulation upon removal of the overload.
Overvoltage Protection	Set at 115% to 135%. Latching method (recycle AC to restart)
Short-circuit Protection	The units will withstand a continuous short without damage, it will automatically return to regulation upon removal of the short
Thermal Protection	Yes, built in thermal sensor to protect abnormal temperature conditions
Remote Sensing (R2/E3)	On 12V output only
PS_ON (F3)	Digital input: A logic low enables the main output, a low shall not source > 1 mA
Enable (R6)	Digital input: when driven high, main output is disabled, when low, main output state is as controlled by PS_ON
FAL/PWR_FAIL (U2)	Digital output, Open Collector, driven high when outputs are in regulation. It will go low minimum 1 ms prior to output going out of regulation
DEG (U5)	Digital output, Open Collector, temperature warning signal. A TBD temperature will change signal state from Hi to Low or Low to Hi (programmable preferences)
PS Present (H3)	Digital Output, pulled low via 100 Ohm resistor
I ² C / PMBUS	Monitors temperature, output voltage, and output current; connects to a serial NVRAM which is programmed with serial number, PMBUS Standard to allow monitoring of overall operation of power supply
LED Indicators	Bicolor LED: Green LED: all outputs operating within specifications, Red LED: power supply out of specification

Safety, Regulatory, and EMI

Safety Agency Approvals	To be submitted: UL 60950-1 2nd Edition, UL508. CUL 60950-1 2nd Edition, UL508. DEMKO EN60950-1 2nd Edition; CE
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Environmental

Operating Temperature	-40°C to +70°C continuous duty, full rating
Storage Temperature	-40°C to +85°C
Humidity	Up to 95% non-condensing
Cooling	20CFM forced air cooling required

C03 Power Supply: CP3-SVE-P200AC

C03.1 Description

This is a 200 watt, AC input, 3U 8HP Eurocard package power supply with a P47 connector for backplane interfacing.

This power supply is intended for use in hybrid systems where +3.3 and +5V as well as +12V are required. The +12V output is limited to 5.5A. If more +12V power is required a second power supply must be installed in the system.

For further information refer to the linked document 1 (Chapter C03.3.1).

C03.2 Implementation Considerations

C03.2.1 Safety

C03.2.1.1 Hazardous Voltage

This power supply unit is designed for operation with AC voltage in the range from 90 to 264 VAC. Therefore when connected to the mains power source hazardous AC voltage is present. Disconnect the mains power from the power supply before performing any operation such as maintenance, configuration changes, inspection, etc.

C03.2.1.2 Grounding/Earthing

This power supply is designed in accordance with protection class 1. It must therefore be operated with a protective earth connection. Use only a three conductor AC power cable with a protective earth (PE) conductor.

C03.2.1.3 Cooling

This power supply requires forced air cooling to operate. For further information refer to the linked document 1 (Chapter C03.3.1).

Kontron rejects liability for any type of damage resulting from system or component overheating.

C03.2.2 Power Supply Installation

This power supply is intended to be installed in a 3U high sub-rack. Appropriate guide rails and a corresponding backplane mating connector must be available. Installation is achieved by inserting the power supply in the designated slot until it makes contact with the backplane connector and then use the ejector handle to fully engage the power supply. Finally the retaining screws must be tightened accordingly.

C03.3 Documentation Links

This chapter identifies linked documentation which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_C03_LD1 Page <n>

where: 1054-8971 is the ID for this System User Guide
C03 identifies the chapter to which the linked document belongs
LD<n> unique number for each linked document within a given chapter
Page <n> is a running page number within the linked document

The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

C03.3.1 Power Supply CP3-SVE-P200AC Linked Document 1

Attached is a multi-page document provided by Kontron (formerly PEP Modular Computers GmbH) describing the power supply.

CPCI Power Supply Manual

PRODUCT DOCUMENTATION

PD05 CP3-SVE-P200AC

Reference ID: 24139 PD05

Revision: 01

Issued: February 01, 2002



The product described in this manual is in compliance with all applied CE standards.



Revision History

Manual/Product Title:		CPCI Power Supply Manual: Product Documentation: CP3-SVE-P200AC
Reference ID:		24139 PD05
Rev. Index	Brief Description of Changes	Date of Issue
01	Initial Issue	Feb. 01, 2002

Imprint

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PEP Modular Computers GmbH rejects any liability for the correctness and completeness of this manual as well as its suitability for any particular purpose.

This manual was realized by: **TPD/Engineering, PEP Modular Computers GmbH.**



1. Introduction

The specific product description provided with this product documentation is part of the PEP's CPCI Power Supply manual. For further information, in particular regarding general details as well as safety and warranty statements, refer to the CPCI Power Supply Manual, ID 24139.

2. 200W P-Type Power Supply Unit

The main features of the 3U P-type, 120V/230V input, 200W output AC/DC power supply unit CP3-SVE-P200AC are described in the following table:

Table 1: Distinctive Features of Power Supply Unit CP3-SVE-P200AC

Feature	Specification
Form Factor	3U
Frontpanel Size	40.6 * 128.7 mm
Mechanics	19" rack
Plug-In Compatibility	Yes
Power Supply Connector	Positronic 47-pin connector
Input Voltage	V = 85V..264V AC Frequency: 47Hz..63Hz
Voltage Switching	Continuous input range
Output Power	200W with 250 LFM forced-air cooling
Output Voltages / Currents	V1 = +5V at 40A V2 = +3.3V at 40A V3 = +12V at 5.5A V4 = -12V at 1.5A
Cooling	250 LFM forced-air cooling
Redundant Supply Capability	Always
Status Indication	LED's for input good and power fail
Special Feature(s)	Power sharing



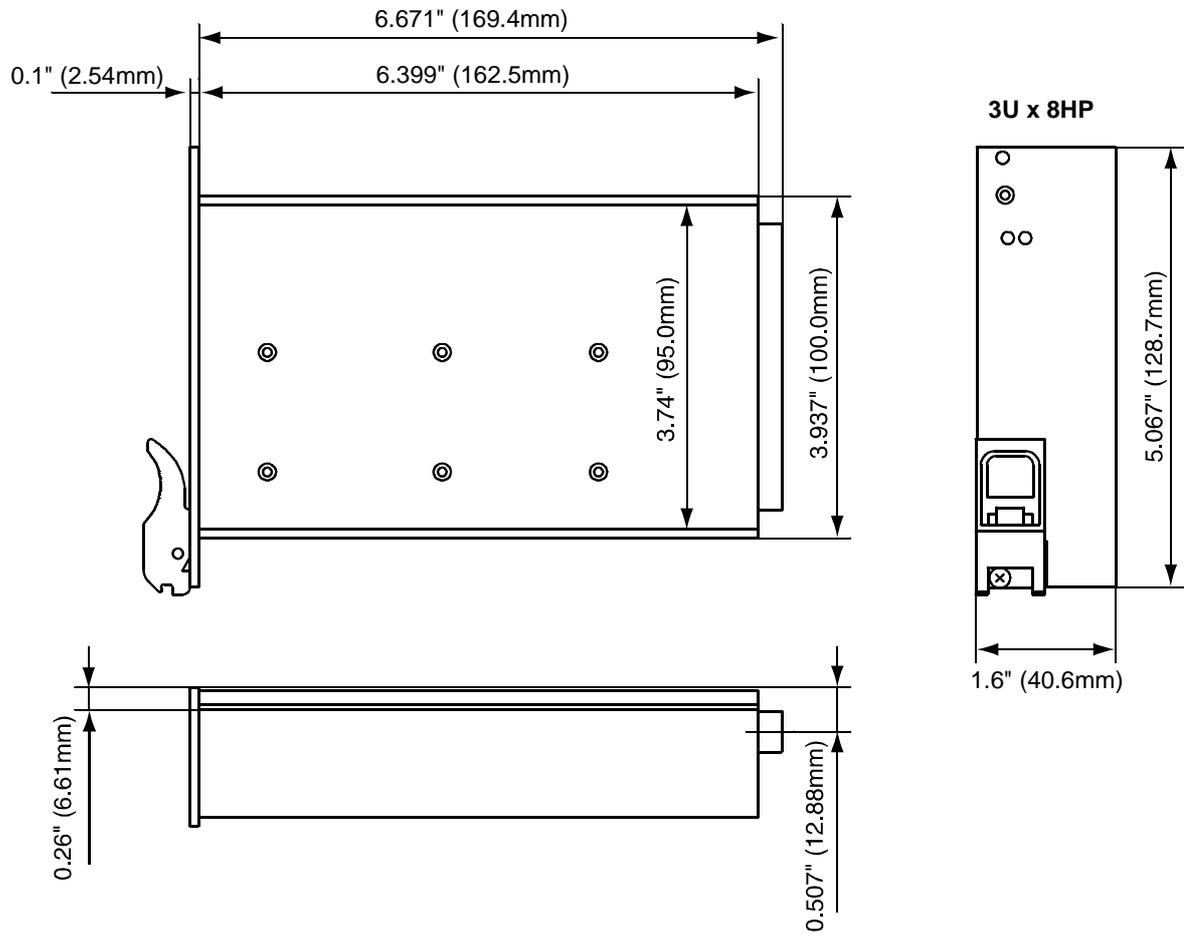
2.1 Mechanical Specifications

Figure 1: View of Power Supply Unit CP3-SVE-P200AC





Figure 2: Power Supply Dimensions





2.2 Power Supply Connector

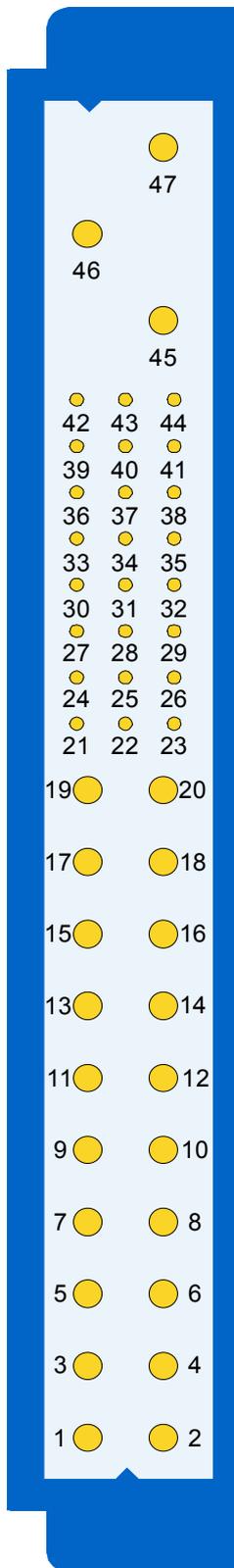


Figure 3: Orientation of the Positronic P-47 Power Supply Connector

The V input voltage to the power supply unit and the V1 ... V4 output voltages from the power supply unit to the back-plane are connected via a 47-pin Positronic male power supply connector.

For the pinouts of the Positronic P-47 power supply connector please refer to the following table.



Table 2: Positronic 47-Pin Connector Pinout

PIN	SIGNAL NAME	DESCRIPTION	PIN	SIGNAL NAME	DESCRIPTION
1 - 4	V1	V1 OUTPUT (+5V)	32	NC	NOT CONNECTED
5 - 12	RTN	V1 and V2 RETURN	33	V2 SENSE	V2 REMOTE SENSE
13 - 18	V2	V2 OUTPUT (+3.3V)	34	S RTN	SENSE RETURN
19	RTN	V3 RETURN	35	V1 SHARE	V1 CURRENT SHARE
20	V3	V3 OUTPUT (+12V)	36	V3 SENSE	V3 REMOTE SENSE
21	V4	V4 OUTPUT (-12V)	37	NC	NOT CONNECTED
22	RTN	SIGNAL RETURN	38	DEG#	DEGRADE SIGNAL
23	RESERVED	RESERVED	39	INH#	INHIBIT
24	RTN	V4 RETURN	40	NC	NOT CONNECTED
25	NC	NOT CONNECTED	41	V2 SHARE	V2 CURRENT SHARE
26	RESERVED	RESERVED	42	FAL#	FAIL SIGNAL
27	EN#	ENABLE	43	NC	NOT CONNECTED
28	NC	NOT CONNECTED	44	V3 SHARE	V3 CURRENT SHARE
29	NC	NOT CONNECTED	45	CGND	CHASSIS GROUND
30	V1SENSE	V1 REMOTE SENSE	46	ACN	AC INPUT NEUTRAL
31	NC	NOT CONNECTED	47	ACL	AC INPUT LINE

2.3 Installation

Thanks to its plug-in compatibility this P-type power supply unit allows for an easy installation, by which the power supply unit's male Positronic 47-pin power connector is inserted into the backplane's mating female connector without the need of any intermediate adaptation.



Warning!

If this type of power supply is removed for any reason from an operating system, do not reinstall immediately. Wait 1 to 2 minutes before reinstalling. Failure to comply with this may result in an Output Failure indication on the power supply. This is due to an internal protection feature of the power supply which requires time to cool down before the power supply is put back into operation.



2.4 Electrical Specifications

INPUT

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Input Voltage - AC	Continuous input range.	85		264	VAC
Input Frequency		47		63	Hz
Hold-up Time		20			ms
Input Protection	Non-user serviceable, internally-located input line fuse.				
Inrush Surge Current	Internally limited by thermistor and electronic switch.			30	A
Operating Frequency	Switching frequency of main output transformer.	125		145	kHz

OUTPUT

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Efficiency	Full rated load, 115 VAC.	80			%
Minimum Load; V1, V2, V3	Minimum load required to maintain regulation with no load on V4.	None			A
Minimum Load, V3	Minimum load on V3 required to maintain regulation on V4.	50% of V4 Load			A
Ripple and Noise	Full load, 20 MHz bandwidth.	See Regulation table			
Output Power	250 LFM forced-air cooling.			200	W
Overshoot / Undershoot	Output voltage overshoot / undershoot at turn-on.			0	%
Regulation	Varies by output. Total regulation includes: line changes over the specified input range, changes in load starting at 50% load and changing to 100% load.	See Regulation table			
Turn-on Delay	Time required for initial output voltage stabilization.		150	ms	
Initial Setting Accuracy			±1		%

REGULATION

OUTPUT VOLTAGE	ADJUSTMENT RANGE	OUTPUT CURRENT	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE %pk-pk (NOTE 1)
V1 +5V	N/A	40A	0.5%	1%	2%
V2 +3.3V	N/A	40A	0.5%	1%	2%
V3 +12V	N/A	5.5A	0.5%	1%	1.3%
V4 -12V	N/A	1.5A	0.5%	1%	1.3%



PROTECTION AND CONTROL

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Overvoltage Protection	Latch style overvoltage protection.	120		130	%Vnom
Overload Protection	Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition.	Available			
Overtemperature Protection	System shutdown due to excessive internal temperature, automatic reset.	Available			
Power Fail (FAL#)	TTL compatible signal, open collector active low signal. Indicates any output below 90% and/or a low input <85VAC.	Available			
Current Share	Accuracy of shared current with up to 6 parallel units of the same type of power supply. Single wire current share on V1, V2, and V3.			10	%
Remote Sense	Available on V1, V2, and V3. Total voltage compensation for cable losses with respect to the main output.			150	mV
Inhibit (INH#)	TTL-compatible signal inhibited with GND or TTL "0".	Available			
Enable (EN#)	Contact closure to external ground to start unit. On shortest pin (last make, first break).	Available			
Overtemperature Warning (DEG#)	Provides warning when power supply temperature exceeds rating. TTL-compatible open.	Available			
Front Panel LED Status Indicators	Input OK (Green), Output Failure (Red). In redundant setups, Output Failure may also indicate that there is no main power input to the power supply.	Available			

SAFTEY, REGULATORY, AND EMI

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	UL1950, cUL1950, EN60950 (TÜV).	Approved			
Dielectric Withstand Voltage	Input to Output per EN60950.	4243			VDC
Electromagnetic Interference	EN55022 / CISPR 22 Conducted: Radiated:	A A			Class
ESD Susceptibility	Per EN61000-4-2, level 4, contact discharge.	8			kV
Radiated Susceptibility	Per EN61000-4-3, level 3.	10			V/m
EFT/Burst	Per EN61000-4-4, level 3.	± 2			kV
Input Surge	Per EN61000-4-5, level 3. Line to Line Line to Ground	1 2			kV



SAFTEY, REGULATORY, AND EMI

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Conducted Disturbance	Per EN61000-4-6, level 2.			3	V
Insulation Resistance	Input to Output.		10		MΩ

ENVIRONMENTAL

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating. Non-Operating.			10k 40k	ASL Ft.
Operating Temperature	With 250 LFM forced-air cooling At 100% load: Derate linearly above 50°C by 2.5% per °C. At 50% load:	0		50 70	°C
Storage Temperature		- 40		+ 85	°C
Relative Humidity	Non-Condensing.	5		95	%RH
Shock	Peak acceleration.			20	GPK
Vibration	Random vibration, 10 Hz to 2 kHz, 3 axis.			6	GRMS



Warning!

Adequate thermal cooling of the power supply must be ensured. Therefore do not obstruct or hinder cooling air circulation or heat conduction within the power supply or surrounding equipment.

Failure to comply with this warning may result in damage to your equipment.

C04 Power Supply: CPS3-SVE-250AC

C04.1 Description

This is a 250 watt, AC input, open frame power supply with screw terminals for power interfacing. In addition there is an 8-pin connector which provides monitor and control signals.

This power supply requires a specially designed 3U 24HP installation kit. For this reason it can only be installed at the factory. Retrofitting is not possible.

For further information refer to the linked document 1 (Chapter C04.3.1).

C04.2 Implementation Considerations

C04.2.1 Safety

C04.2.1.1 Hazardous Voltage

This power supply unit is designed for operation with AC voltage in the range from 90 to 264 VAC. Therefore when connected to the mains power source hazardous AC voltage is present. Disconnect the mains power from the power supply before performing any operation such as maintenance, configuration changes, inspection, etc.

C04.2.1.2 Grounding/Earthing

This power supply is designed in accordance with protection class 1. It must therefore be operated with a protective earth connection. Use only a three conductor AC power cable with a protective earth (PE) conductor.

C04.2.1.3 Cooling

This power supply requires convection cooling to operate. For further information refer to the linked document 1 (Chapter C04.3.1).

Kontron rejects liability for any type of damage resulting from system or component overheating.

C04.2.2 Power Supply Installation

If the power supply requires maintenance, it must be returned along with the chassis to the factory for repair. It is not field serviceable.

C04.3 Documentation Links

This chapter identifies a linked Kontron Data Sheet which is included in this user guide.

Each page of the linked document has a stamp identifying it as being a part of this user guide (see below):

1054-8971_C04_LD1 Page <n>

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The linked documentation is embedded in its corresponding chapter immediately following the chapter Documentation Links.

C04.3.1 Power Supply CPS3-SVE-250AC Linked Document 1

Attached is a four page Kontron Data Sheet describing this power supply.

» CPS3-SVE-250AC «



250W AC Power Supply for CompactPCI® Serial

- » Easy mounting cartridge
- » High efficiency up to 92%
- » Wide input range 85 - 264 VAC
- » Extended temperature - fanless
- » EMI EN55022 Class B, UL, CSA

CPS3-SVE-250AC

250W AC Power Supply for CompactPCI® Serial

For flexible, reliable, and energy saving usage

The CPS3-SVE-250AC provides all basic features to run a CompactPCI® Serial system. Several protection and regulation options, basic monitoring functions, and its hold-up time make the power supply a reliable system component. It provides +12V output and +5V standby, and therefore is not intended for use in classic CompactPCI® systems. The product meets EMI EN55022 Class B, a must for any Industrial Computer platform. High efficiency and low standby input power is energy-saving and makes system cooling easier. Its wide input range of 85-264 VAC, and its operating temperature range of -25°C up to 70°C, even fanless with convection cooling, show how flexibly this power supply can be deployed.

Whenever cost saving is more important

Whenever some advanced features like hot-plug, redundancy, and PMBUS support are not required, and cost saving is more important, CPS-SVE-250AC is the right choice for CompactPCI® Serial systems.

Easy system integration and field maintenance

The power supply comes horizontally mounted in a cartridge to enable convection cooling, with a guide rail and backplane connection cable. It can be easily exchanged for maintenance in the field. For integration into Kontron's CompactPCI® Serial systems, the PSU is prepared to be combined with Kontron's AC Input Kit and Integration Service CP-MKIT-AC-IN.

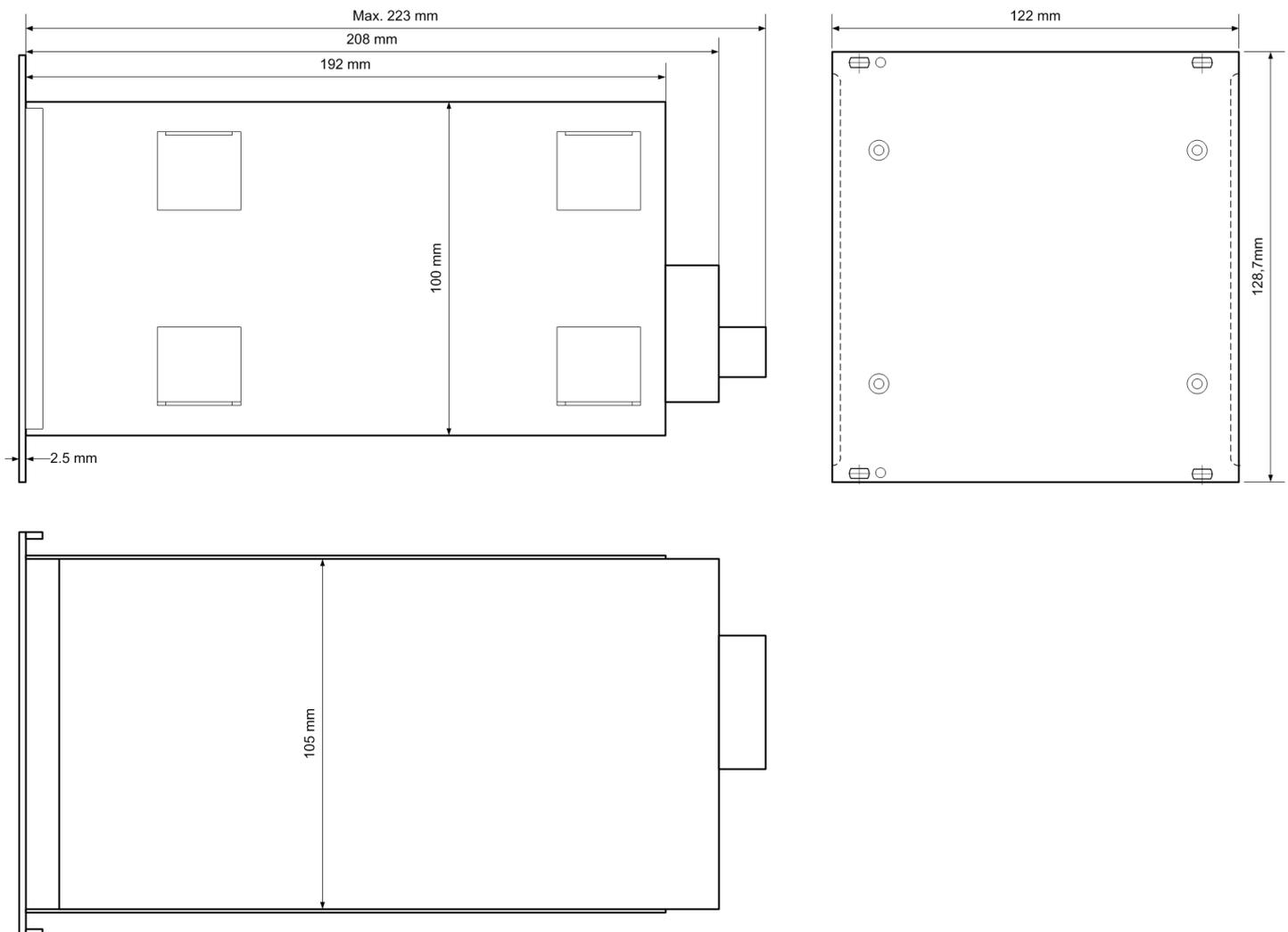


Figure: Mechanical dimensions, CPS3-SVE-250AC

Technical Information

Mechanical

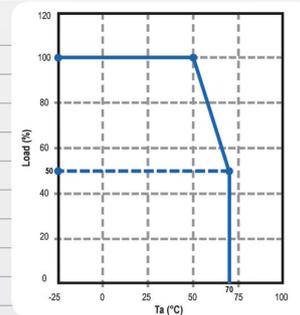
Formfactor	3U 24HP Cartridge
Mounting	Front access via guide rail (attached)
System connection	cable to backplane (attached)
Dimension LxWxH	225 x 122 x 128,7 mm
Front panel size	122 x 128,7 mm
Weight	1.250 g

Input

AC Input Voltage	85 - 264 VAC (300VAC for 5s)
Input Frequency	47 - 63 Hz
DC Input Voltage	120 - 373 VDC
Inrush Current (cold start)	20A at 115 VAC, 40A at 230 VAC
Power Factor	Meets EN61000-3-2 (Typical PF 0.98/0.95 at 115/230VAC) Class A, Class C > 25% Load
Input Current	3.0 / 1.4 A (at 115/230VAC)
Leakage Current (Typ)	0.75mA at 230VAC
Standby Input Power	<0.5W when remote off and 5V Aux supply at no load

Output and Regulation

Output Power	250 W max. Linear derating from 50°C to 50% power at 70°C (attached: output derating curve)
Output Voltage	12V
Auxiliary Supply	5V/0.3A
Hold Up Time	16 ms
Temperature Coefficient	<0.02%/°C
Adjustment Range	10.8V - 13.2V
Output Current	21A max.
Load Regulation	96mV
Line Regulation	48mV
Ripple&Noise	120mV
Efficiency (230VAC)	92% (for 230 VAC)



Protection and Control

Overcurrent Protection	>105% rated output power or >101% of peak output power
Overvoltage Protection	13.8 - 16.2V (recycle AC, or use remote on/off to reset)
Overtemperature Protect	Yes (recycle AC, or use remote on/off to reset)
Remote Sense	No
Remote On/Off	Active Low
Monitoring Signal	DC OK, open collector signal, High on Fail (Active Low)

Safety, Regulatory, and EMI

Withstand Voltage	Input to FG 1.5kVAC (20mA), Input to Output 3kVAC (20mA), output to FG 500VAC (100mA) for 1 min
Isolation Resistance	>100MΩ at 25°C & 70%RH
Immunity	Built to meet EN61000-4-2 (Level 2,3), -3 (Level 3), -4 (Level 3), -5 (Level 4), -6 (Level 3), -8 (Level 4), -11
Safety Agency Approvals	UL60950-1, CSA C22.2 No.60950-1-07 (2nd Edition), EN60950-1, IEC60950-1 (2nd Edition), CE
Conducted & Radiated EMI	Built to meet EN55022-B, CISPR22-B

Environmental

Operating Temperature	-25°C to +70°C. (Refer to Output Derating Curve) Guaranteed Start Up at -40°C
Storage Temperature	-30°C to +85°C
Operating Humidity	30 - 90% RH (non condensing)
Storage Humidity	10 - 95% RH (non condensing)
Cooling	Convection
Vibration (non operating)	10 - 55Hz: 19.6m/s ² Constant sweep 1 min X, Y, Z for 1 hour each
Shock (in package)	< 196.1 m/s ² (20G)

Ordering Information

Article	Description
CPS3-SVE-250AC	Power Supply for CompactPCI-Serial. 250W, 85-240 VAC, 3U 24HP. Nominal voltage/max current: +12V/21A, Standby +5V/0.3A. Operating temperature -25°C to 70°C, startup from -40°C, linear derating from 50°C. Hold-up time 16 ms. Cartridge with guide rail for field exchange.
Related product option: CP-MKIT-AC-IN	AC Input Mounting Kit and Rack Integration Service for 3U CPCI and CPCI-Serial. AC Input Kit 8HP, front or rear side. Integration and connecting of PSU and backplane. System drawing mandatory!

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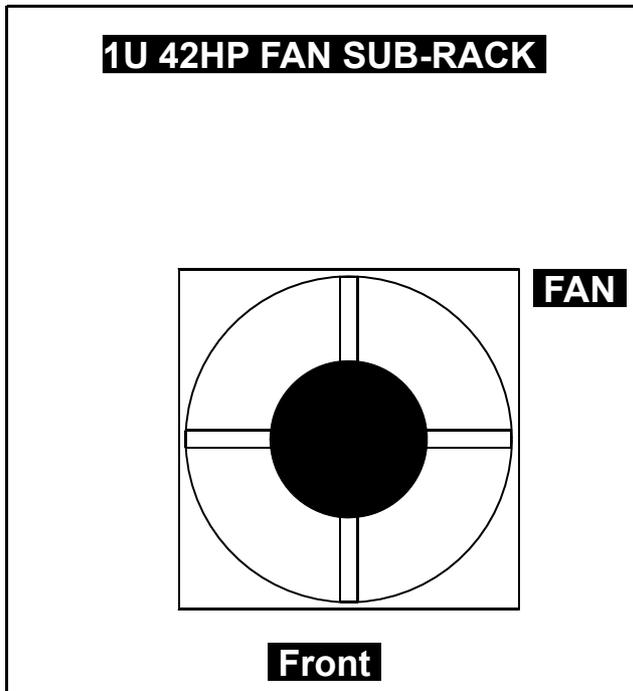
D02 Auxiliary Element: Fan Assembly 2

D02.1 Description

This auxiliary element is a 42HP wide single fan assembly which is designed to be an integral element of the Chassis 42HP. It consists of a detachable 1U sub-rack and a single fixed mounted fan.

The following figure illustrates the location of the fan within the 1U sub-rack.

Figure D02.1: Fan Assembly 2 as Installed in the Chassis (Top View)



D02.2 Specifications

Table D02.1: Fan Assembly 2 Specifications

FEATURES	SPECIFICATIONS
Dimensions	Height: 44.45 mm (1U) Width: 222.25 mm (42HP sub-rack) Depth: 241.30 mm
Fan	1 axial fan fixed mounted to the 1U sub-rack Air Flow: 95 m ³ /h (56 cfm), non-regulatable Voltage: 12 VDC Power: 5 Watts
Protection Classification	IP20 (when installed)

D02.3 Implementation Considerations

As this is a factory installed element there are no special installation considerations.

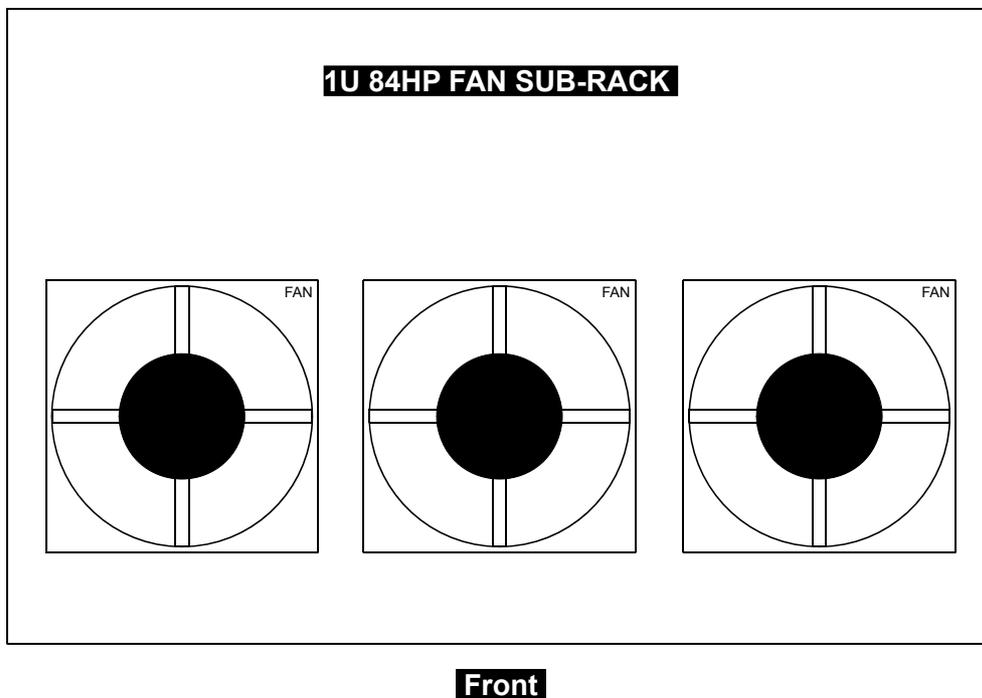
D03 Auxiliary Element: Fan Assembly 3

D03.1 Description

This auxiliary element is a detachable 84HP wide triple fan assembly which is designed for use with Chassis 84HP. When installed it becomes an integral element of the chassis. It consists of a 1U sub-rack and three fixed mounted fans.

The following figure illustrates the location of the fans within the sub-rack.

Figure D03.1: Fan Assembly 3 as Installed in the Chassis (Top View)



D03.2 Specifications

Table D03.1: Fan Assembly 3 Specifications

FEATURES	SPECIFICATIONS
Dimensions	Height: 44.45 mm (1U) Width: 432.0 mm (84HP sub-rack) Depth: 278.0 mm
Fans	3 axial fans fixed mounted to the 1U sub-rack Air Flow: 95 m ³ /h (56 cfm) each, non-regulatable Voltage: 12 VDC Power: 3.6 Watt (300 mA) total
Protection Classification	IP20 (when installed)

D03.3 Implementation Considerations

As this is a factory installed element there are no special installation considerations.

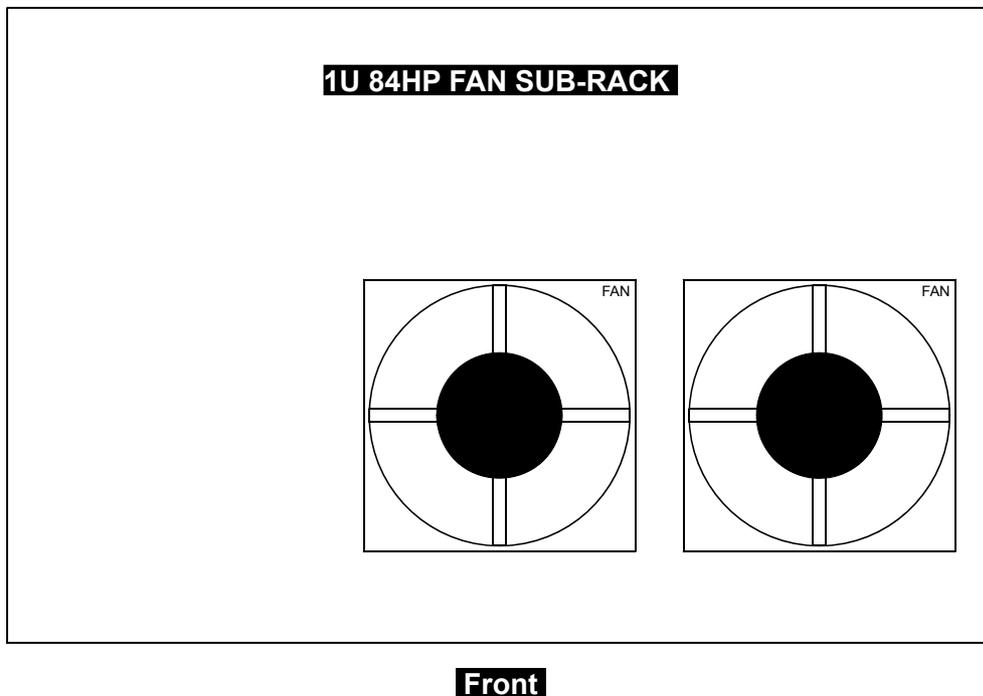
D04 Auxiliary Element: Fan Assembly 4

D04.1 Description

This auxiliary element is a detachable 84HP wide dual fan assembly which is designed for use in hybrid systems. When installed it becomes an integral element of the chassis. It consists of a 1U sub-rack and two fixed mounted fans.

The following figure illustrates the location of the fans within the sub-rack.

Figure D04.1: Fan Assembly 4 as Installed in the Chassis (Top View)



D04.2 Specifications

Table D04.1: Fan Assembly 4 Specifications

FEATURES	SPECIFICATIONS
Dimensions	Height: 44.45 mm (1U) Width: 432.0 mm (84HP sub-rack) Depth: 278.0 mm
Fans	2 axial fans fixed mounted to the 1U sub-rack Air Flow: 95 m ³ /h (56 cfm) each, non-regulatable Voltage: 12 VDC Power: 10 W total (2 x 5 watts)
Protection Classification	IP20 (when installed)

D04.3 Implementation Considerations

As this is a factory installed element there are no special installation considerations.

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