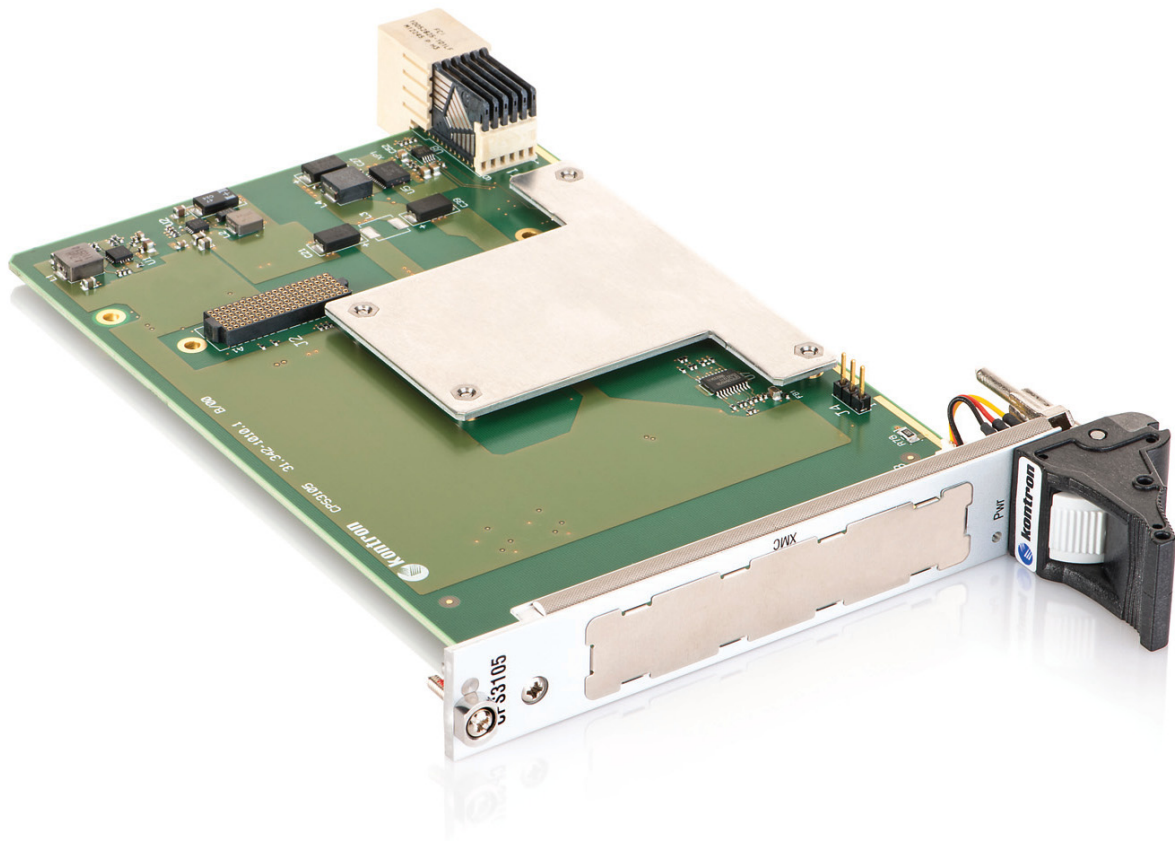


» User Guide «



CPS3105

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Warranty

This Kontron product is 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.

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Environmental Protection Statement

This product has been manufactured to satisfy environmental protection requirements where possible. Many of the components used (structural parts, printed circuit boards, connectors, etc.) are capable of being recycled.

Final disposition of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

1 Introduction

1.1 Board Overview

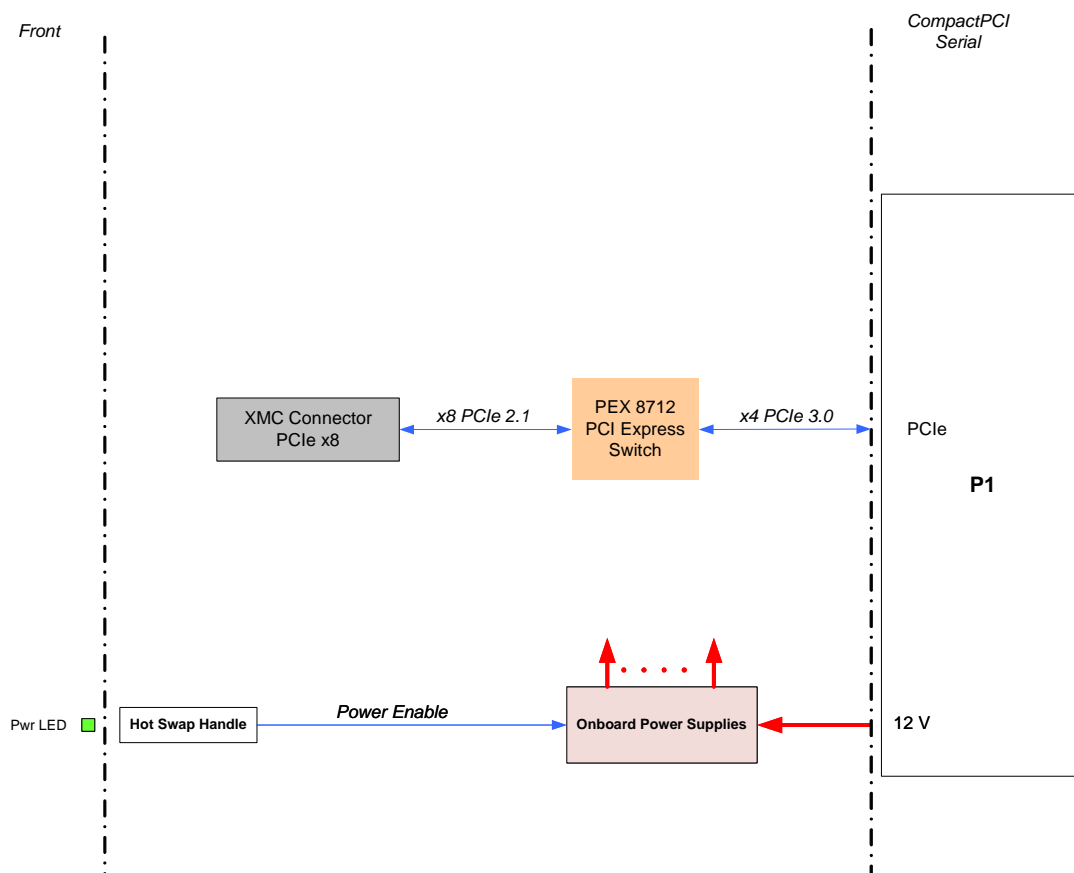
The CPS3105 is a 3U CompactPCI® Serial carrier board that provides support for one XMC module. The carrier board is intended to offer system designers a cost-effective solution to expand the systems I/O capability using a wide range of XMCs available on the market. The CPS3105 is equipped with a dedicated PCI Express switch between the onboard XMC connector and the CPCI-S.0 system connector providing two advantages. First, it decouples and buffers the PCI Express signals and restores signal integrity. Second, it is able to convert one x4 PCI Express 3.0 data stream from the system side into one x8 PCI Express 2.1 data stream to the XMC side. Thus, maximum data bandwidth can be provided to commonly available XMC modules based on PCI Express 2.1.

1.2 Board Diagrams

The following diagrams provide additional information concerning board functionality and component layout.

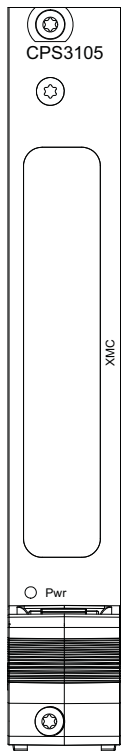
1.2.1 Functional Block Diagram

Figure 1: CPS3105 Functional Block Diagram



1.2.2 Front Panel

Figure 2: 4 HP CPS3105 Front Panel



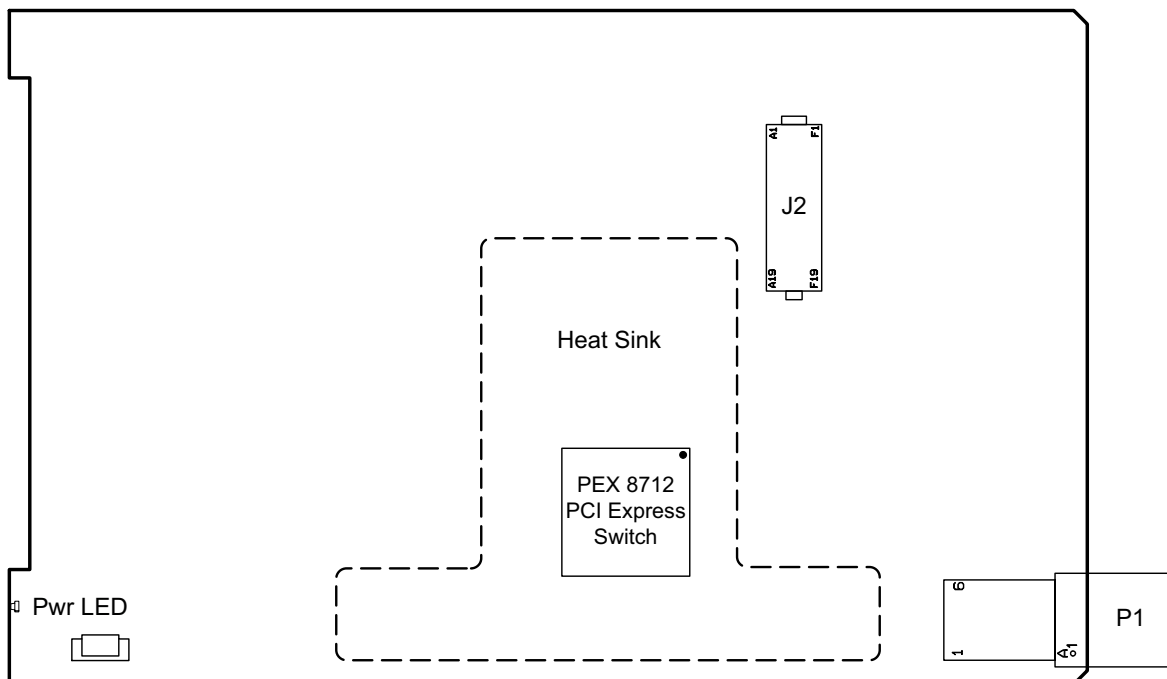
Power Status LED

Pwr (green):

Power Status of the CPS3105

1.2.3 Board Layout

Figure 3: 4 HP CPS3105 Board Layout (Top View)



1.3 Technical Specification

Table 1: CPS3105 Main Specifications

FEATURES		SPECIFICATIONS
Switch	PCI Express Switch	ExpressLane™ PEX 8712 PCI Express 3.0 switch from PLX Technology used to provide maximum performance to an XMC module by spitting down the x4 PCI Express 3.0 interface to a x8 PCI Express 2.1/1.0 interface
Connectors	XMC	XMC connector, J2 (P15), for connecting an XMC module to the CPS3105
	CompactPCI Serial	CompactPCI Serial interface on connector P1: <ul style="list-style-type: none"> » Compliant with PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification » Support for one x4 PCI Express 3.0 interface
Hot Swap	Hot Swap	Hot swap handle with integrated hot swap switch for shutting down the power supplies in order to safely remove the CPS3105 from the system
LED	Front Panel LED	Power Status LED: <ul style="list-style-type: none"> » Pwr (green): Power Status of the CPS3105
General	Mechanical	3U, 4 HP, CompactPCI Serial-compliant form factor
	Power Consumption	approx. 4.7 W (without XMC module)
	Power Supply	+12V DC in accordance with the CompactPCI® Serial Specification
	Temperature Range	Operational: 0°C to +60°C Standard -40°C to +85°C Extended Storage: -40°C to +85°C Without XMC module
	Recommended Airflow	Volumetric Flow Rate: > 10 cfm Sufficient airflow must be provided to ensure optimal operation and long-term reliability of the CPS3105.
	Climatic Humidity	93% RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)
	Dimensions	100 mm x 160 mm
	Board Weight	140 grams

1.4 Standards

This product complies with the requirements of the following standards.

Table 2: Standards

TYPE	ASPECT	STANDARD
CE	Emission	EN55022, EN50121-3-2, EN61000-6-3
	Immission	EN55024, EN50121-3-2, EN61000-6-2
	Electrical Safety	EN60950-1
Mechanical	Mechanical Dimensions	IEEE 1101.10
Environmental	Climatic Humidity	IEC60068-2-78
	WEEE	Directive 2002/96/EC Waste electrical and electronic equipment
	RoHS 2	Directive 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

In addition, boards ordered with the ruggedized service comply with the following standards as well.

Table 3: Additional Standards for Boards Ordered with Ruggedized Service

TYPE	ASPECT	STANDARD	REMARKS
Environmental	Vibration (Sinusoidal)	IEC60068-2-6 IEC61131-2	Ruggedized version test parameters: 9-150 (Hz) frequency range 1 (g) acceleration 1 (oct/min) sweep rate 10 cycles/axis 3 axis
	Single Shock	IEC60068-2-27 IEC61131-2	Ruggedized version test parameters: 15 (g) acceleration 11 (ms) shock duration half sine 3 number of shocks per direction (total: 18) 6 directions 5 (s) recovery time

Note: Customers desiring to perform further environmental testing of the CPS3105 must contact Kontron for assistance prior to performing any such testing.

Boards **without conformal coating** must not be exposed to a change of temperature which can lead to condensation, as it may cause irreversible damage especially when the board is powered up again.

Kontron does not accept any responsibility for damage to products resulting from destructive environmental testing.

1.5 Related Publications

The following publications contain information relating to this product.

Table 4: Related Publications

PRODUCT	PUBLICATION
CompactPCI Serial Systems	PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification
All Kontron products	Product Safety and Implementation Guide, ID 1021-9142
XMC	ANSI/VITA 42.0-200x XMC Switched Mezzanine Card Auxiliary Standard ANSI/VITA 42.3-2006 XMC PCI Express Protocol Layer Standard

2 Functional Description

2.1 Board Interfaces

2.1.1 Front Panel LED

The CPS3105 provides one Power Status LED on the front panel.

Table 5: Power Status LED

LED	COLOR	STATE	FUNCTION
Pwr	green	Off	Power off
		On	Power on

2.1.2 XMC Interface

The CPS3105 uses one x8 PCI Express 2.1 interface operating at 5.0 GT/s and compliant with the ANSI/VITA 42.0 and ANSI/VITA 42.3 specifications.

Table 6: Compatibility Identification Block acc. to ANSI/VITA 42.3

XMC Form Factor	Standard XMC.3		
Connector Identifier	P15 (J2 on the CPS3105)		
Protocol Identifier	PCIe		
Signal Voltage Parameter	Standard		
Keywords 1 - 3	8 Lane	Link 0	5.0Gb/s

XMC modules are based on 3.3 V power along with variable power (VPWR) defined as either 5 V or 12 V in the ANSI/VITA 42.0-200x XMC Switched Mezzanine Card Auxiliary Standard specification. On the CPS3105, the VPWR is configured to 12 V.

Table 7: XMC Module Current

VOLTAGE	CONTINUOUS CURRENT	PEAK CURRENT
3.3 V / 3.3 V AUX	2.0 A	2.5 A
+12 V / VPWR (12 V)	2.5 A	3.0 A
-12 V	0.15 A	0.2 A

Note: XMC integrators should carefully review the power ratings, cooling capacity and airflow requirements in the application prior to installation of an XMC module on the CPS3105.

2.1.3 CompactPCI Serial Interface

The CPS3105 provides a standard CompactPCI Serial interface compliant with the PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification. The interface is comprised of one CompactPCI Serial connector, P1. The pin assignment of the P1 connector is defined in the PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification.

3 Installation

This chapter is oriented towards an application environment. Some aspects may, however, be applicable to a development environment.

3.1 Safety

To ensure personnel safety and correct operation of this product, the following safety precautions must be observed:

- » All operations involving the CPS3105 require that personnel be familiar with system equipment, safety requirements and the CPS3105.
- » This product contains 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 this product 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 this product out of its protective enclosure while it is not used for operational purposes unless it is 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.

3.2 General Instructions on Usage

In order to maintain Kontron's product warranty, this product 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 your warranty.

This device 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 board version, which must not be exceeded.

3.3 Board Installation

The CPS3105 is designed for use in a peripheral slot with support for one PCI Express interface (recommended configuration for maximum bandwidth: x4 PCI Express 3.0).

3.3.1 Hot Swap Insertion

Prior to following the steps below, ensure that the safety requirements are met.

To insert the CPS3105 in a running system proceed as follows:

1. Ensure that the board ejection handle is open.
2. Insert the board into the slot designated until it makes contact with the backplane connectors.
3. Using the ejector handle, engage the board with the backplane. When the ejector handle is closed, the board is engaged.

The green PWR LED turns on indicating that the CPS3105 is operating.

4. Fasten the front panel retaining screws.

3.3.2 Hot Swap Removal

Prior to following the steps below, ensure that the safety requirements are met. When removing a board from the system, particular attention must be paid to the components which may be hot, such as heat sink, etc.

To preclude damage or data loss when removing the CPS3105, ensure that the operating system has been informed of the pending removal and that the OS has indicated that it is safe to proceed.

To remove the CPS3105 from a running system proceed as follows:

1. Unlock the board ejection handle by pressing its release button.
The PWR LED turns off indicating that power has been removed from the CPS3105 and the board may be removed from the system.
2. Unscrew the front panel retaining screws.
3. Using the ejector handle, disengage the board from the backplane and remove it from the system.

3.3.3 XMC Module Installation

The CPS3105 supports the installation of an XMC module via the connector J2. For the initial installation and standard removal of the XMC module, refer to the documentation provided with the module.

Prior to installation or removal, ensure that the safety requirements are met. Particular attention must be paid to the components which may be hot, such as heat sink, etc.

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