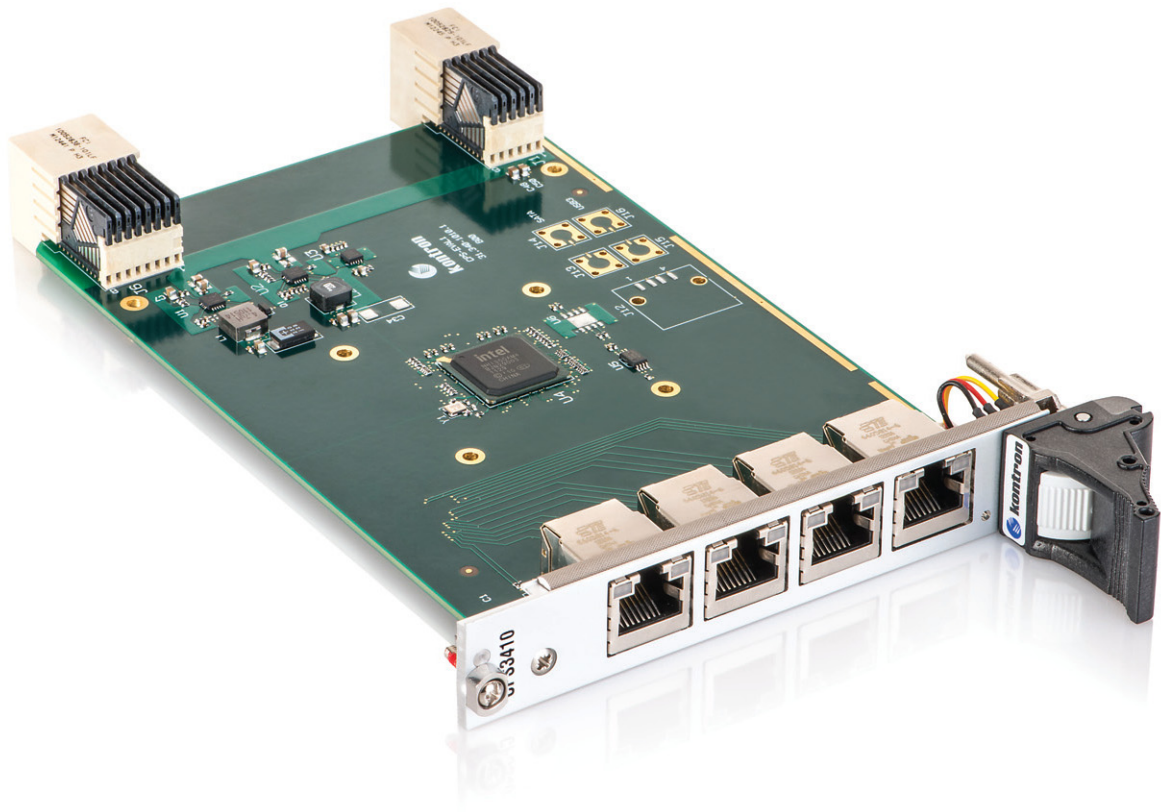


» User Guide «



CPS3410

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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.

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.

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Trademarks

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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

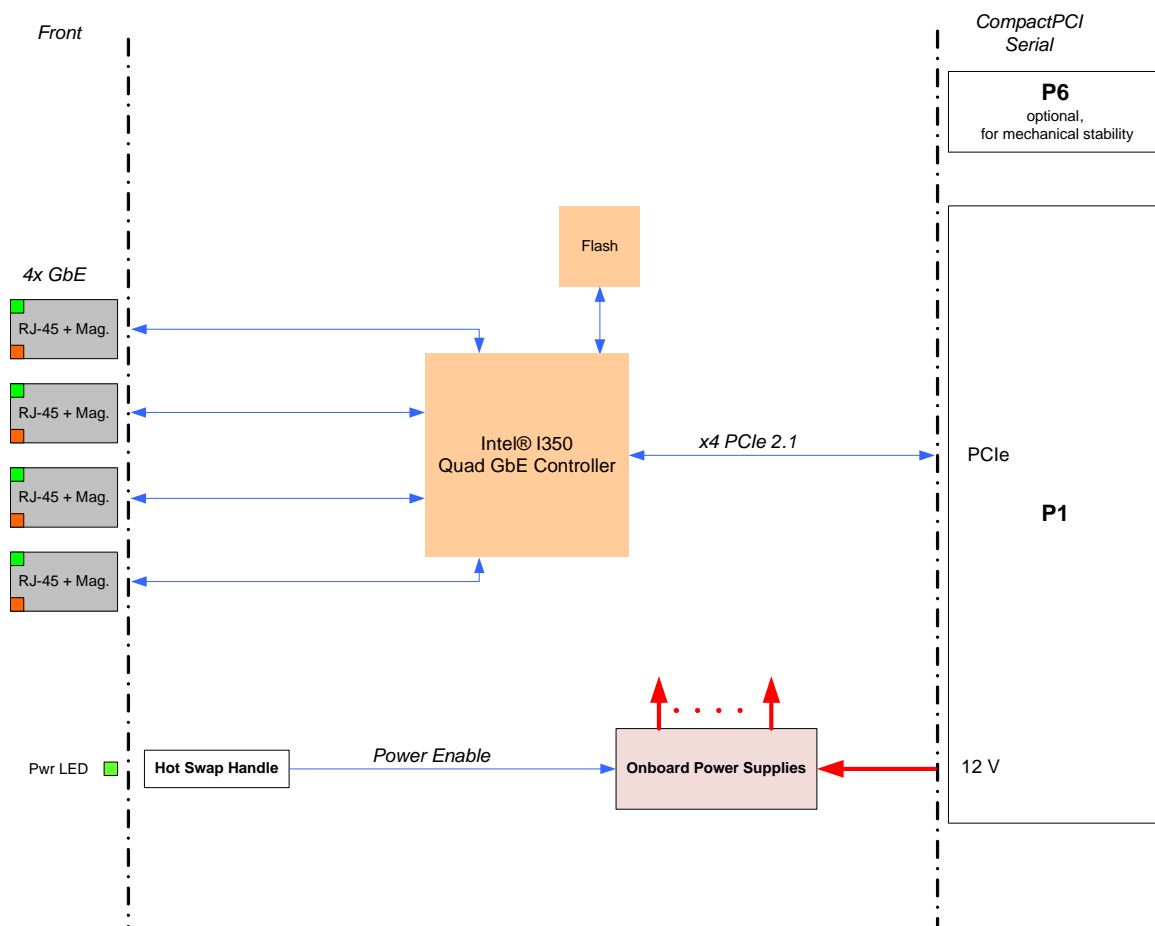
The CPS3410 is a 3U CompactPCI® Serial board providing four Gigabit Ethernet interfaces via RJ-45 connectors on the front panel. All four interfaces are controlled by the Intel® I350 Ethernet controller, which is connected to the backplane via one x4 PCI Express® 2.1 link. The Intel® I350 Ethernet controller provides a powerful set of features that include I/O virtualization and QoS features, Energy Efficient Ethernet (EEE), as well as support for Jumbo Frames (up to 9.5 KB) and PXE boot option. On top of that, the Intel® Advanced Network Services (ANS) software package adds support for Adapter Teaming, Load Balancing or 802.1q VLANs.

1.2 Board Diagrams

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

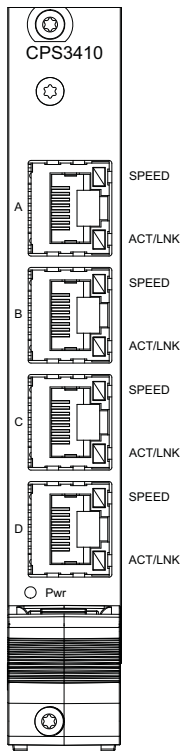
1.2.1 Functional Block Diagram

Figure 1: CPS3410 Functional Block Diagram



1.2.2 Front Panel

Figure 2: 4 HP CPS3410 Front Panel



Integral Ethernet LEDs

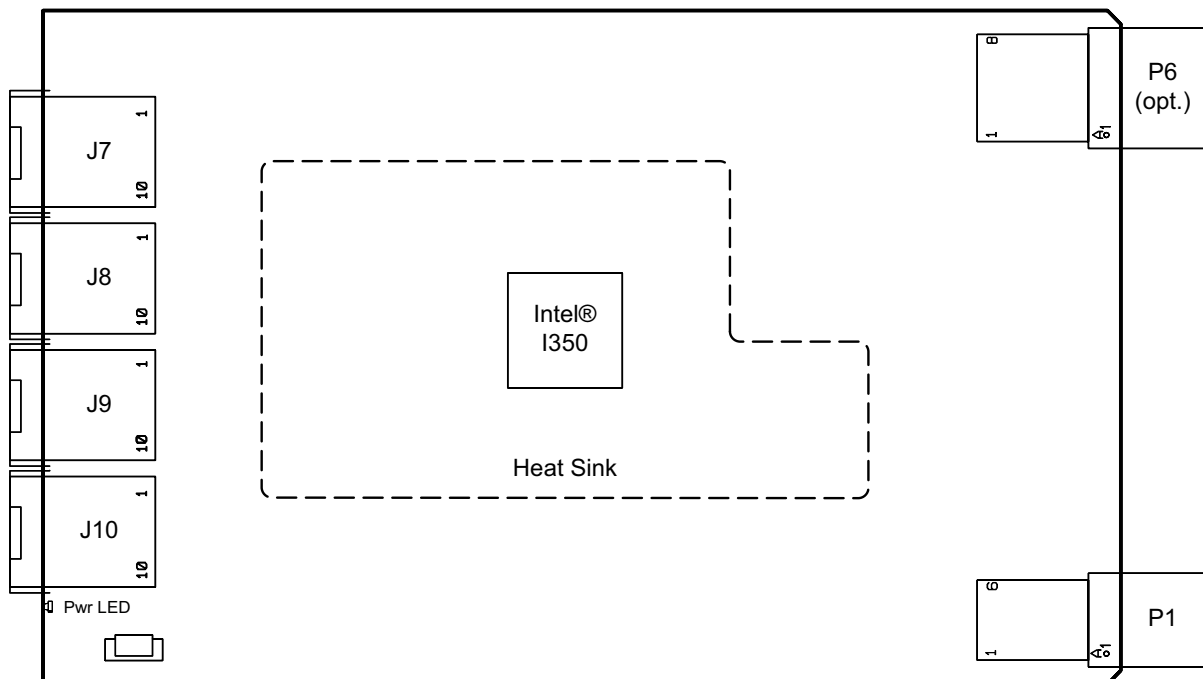
- ACT/LNK (green): Ethernet Link/Activity
- SPEED (orange): 1000Base-T Ethernet Speed
- SPEED (green): 100Base-Tx Ethernet Speed
- SPEED (off) + ACT on: 10Base-T Ethernet Speed

Power Status LED

- Pwr (green): Power Status of the CPS3410

1.2.3 Board Layout

Figure 3: 4 HP CPS3410 Board Layout (Top View)



1.3 Technical Specification

Table 1: CPS3410 Main Specifications

FEATURES		SPECIFICATIONS
Connectors	Gigabit Ethernet	Four 10 Base-T/100 Base-TX/1000 Base-T Gigabit Ethernet interfaces based on the Intel® I350 Ethernet controller. The interfaces are implemented as four front panel RJ-45 connectors with status LEDs, J7, J8, J9, and J10.
	CompactPCI Serial	CompactPCI Serial interface on connectors 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 2.1 interface One optional CompactPCI Serial connector P6 for increased mechanical stability
Hot Swap	Hot Swap	Hot swap handle with integrated hot swap switch for shutting down the power supplies in order to safely remove the CPS3410 from the system
LEDs	Front Panel LEDs	Integral Ethernet LEDs: <ul style="list-style-type: none"> » ACT /LNK(green): Ethernet Link/Activity » SPEED (orange): 1000Base-T » SPEED (green): 100Base-Tx » SPEED (off) + ACT (on): 10Base-T Power Status LEDs: <ul style="list-style-type: none"> » Pwr (green): Power Status of the CPS3410
General	Mechanical	3U, 4 HP, CompactPCI Serial-compliant form factor
	Power Consumption	CPS3410 with no Ethernet port connected: approx. 2.5 W Additionally per 1000 MB/s Ethernet port connected: approx. 0.5 W
	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
	Recommended Airflow	Volumetric Flow Rate: > 5 cfm Sufficient airflow must be provided to ensure optimal operation and long-term reliability of the CPS3410.
	Climatic Humidity	93% RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)
	Dimensions	100 mm x 160 mm
	Board Weight	170 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 CPS3410 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

2 Functional Description

2.1 Board Interfaces

2.1.1 Front Panel LED

The CPS3410 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 Gigabit Ethernet

The CPS3410 includes four 10Base-T/100Base-TX/1000Base-T Ethernet ports based on one Intel® I350 quad-port Gigabit Ethernet controller, which is connected to the CompactPCI Serial connector via a x4 PCI Express 2.1 interface. The interfaces provide automatic detection and switching between 10Base-T, 100Base-TX and 1000Base-T data transmission (Auto-Negotiation). Auto-wire switching for crossed cables is also supported (Auto MDI-X). The Boot from LAN feature is supported.

The Gigabit Ethernet interfaces are implemented as a four standard RJ-45 Ethernet connectors, J7 (GbE A), J8 (GbE B), J9 (GbE C), and J10 (GbE D) on the front panel.

The following table indicates the Gigabit Ethernet port mapping on the CPS3410.

Table 6: Gigabit Ethernet Port Mapping

ETHERNET CONTROLLER	PORT MAPPING
Intel® I350, port 0	Front I/O connector J7 (GbE A)
Intel® I350, port 1	Front I/O connector J8 (GbE B)
Intel® I350, port 2	Front I/O connector J9 (GbE C)
Intel® I350, port 3	Front I/O connector J10 (GbE D)

2.1.3 CompactPCI Serial Interface

The CPS3410 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 CPS3410 require that personnel be familiar with system equipment, safety requirements and the CPS3410.
- » 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 CPS3410 is designed for use in a peripheral slot with support for one PCI Express interface (recommended configuration: x4 PCI Express 2.1/3.0).

3.3.1 Hot Swap Insertion

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

To insert the CPS3410 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 CPS3410 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 CPS3410, 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 CPS3410 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 CPS3410 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.

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