EKF SYSTEM

Product Information

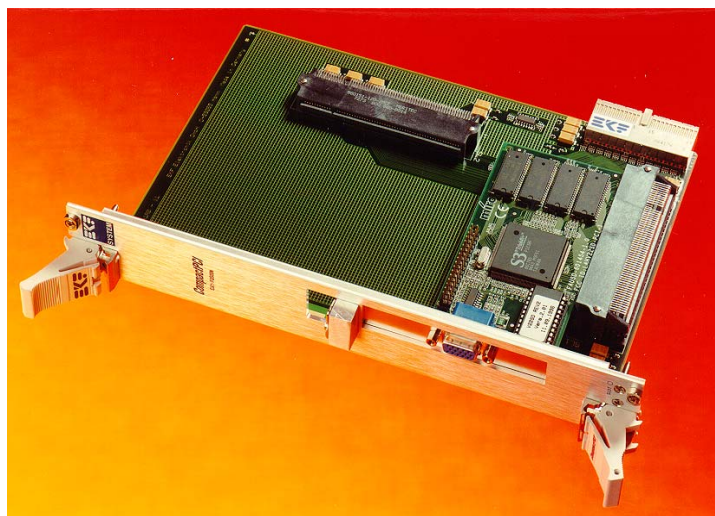## CA1-FUSION • *CompactPCI* ® to PCI Adapter/Bridge

Document No. 2392 • Edition 11-2000

*As a new emerging universal standard, the **CompactPCI**® bus is a modular solution for configuring industrial grade PC systems. While offering similar flexibility and performance compared to the well known VMEbus boards, considerable savings in software development costs can be achieved due to the total compatibility with the desktop PC standard.*
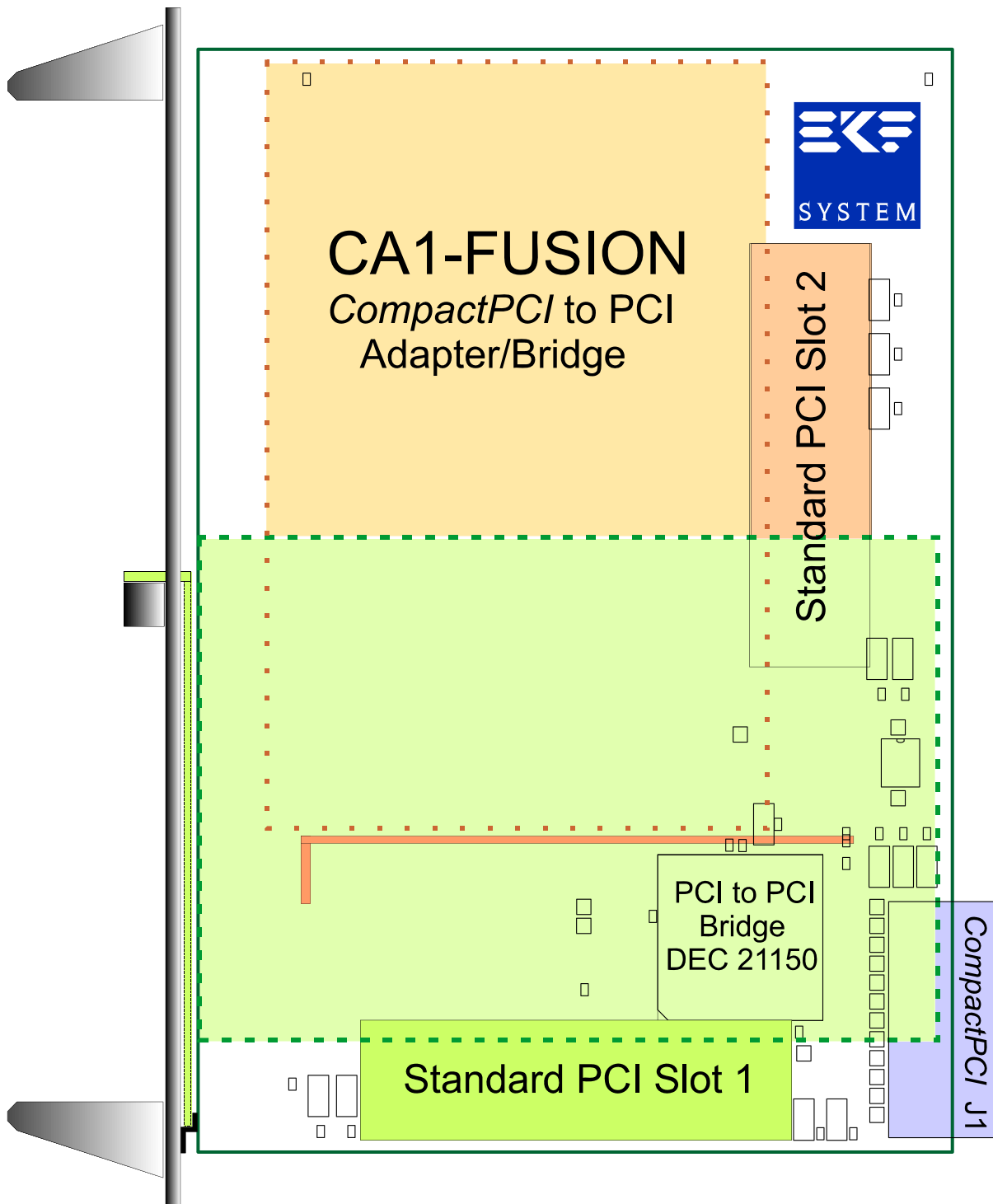
***CompactPCI**® printed circuit boards are single or double size Eurocards, thus allowing 19-inch industrial rack mounting technology for professional packaging.*

Meanwhile there are a lot of **CompactPCI**® products available on the market. Proprietary I/O hostadapter boards, however, are rarely to find as **CompactPCI**® based cards.

EKF offers a solution to this problem: The CA1-FUSION is a carrier board, allowing the operation of virtually any standard (desktop) PCI card in a **CompactPCI**® system. The CA1-FUSION for this acts as a PCI bridge, beeing as well electrically and mechanically a perfectly smooth interface between the worlds of PCI and **CompactPCI**® .

CA1-FUSION * *CompactPC*I to PCI Adapter/Bridge

CA1-FUSION
CompactPCI to PCI
Adapter/Bridge

Standard PCI Slot 2

Standard PCI Slot 1

PCI to PCI Bridge DEC 21150

CompactPCI J1

CA1-FUSION * Connector Assembly

A major goal to be solved was the fastening of the PCI card on the CA1-FUSION carrier board in a reliable manner, withstanding mechanical shock and vibrations. PCI cards sized up to 160x106mm find their place in the slot 1 socket (see figure above). Using this mounting place, the bracket of the PCI board is fixed directly behind the CA1-FUSION double width front panel. An extrusion allows access to the connectors of the PCI board, which is fixed to the CA1-FUSION carrier board by a single screw, locked to the front panel.

CA1-FUSION

The majority of the commercially available PCI hostadapters (e.g. graphics-, Ethernet-, SCSI-boards) fits into slot 1.

The PCI specification, however, defines a maximum length of 167,64mm for so called Short Cards. This size exceeds the Eurocard standard depth (160mm). Longer PCI boards therefore must use slot 2 of the CA1-FUSION. When using slot 2, wiring of the PCI card I/O connectors to the CA1-FUSION front panel has to be done by means of suitable cable assemblies and mounting brackets.

In order to fully comply with both, PCI and *CompactPCI*® specifications, the CA1-FUSION is provided with a PCI bridge chip (DEC21150 PCI to PCI bridge, 32-Bit). By its built-in buffers, the bridge can speed up system data transfer rates compared to the individual PCI board in use.

All modern operating systems can treat a PCI bridge in a plug and play manner (meaning that the bridge remains virtually transparent, as if the PCI component(s) behind the bridge on the secondary PCI bus were part of the primary PCI bus).

Some competitors products do not provide a PCI bridge, thus reducing adapter costs (by tolerating a violation of the PCI specs). Overall PCI compatibility however is a must in order to achieve total system reliability. Please bear these facts in mind, when comparing prices with the CA1-FUSION.
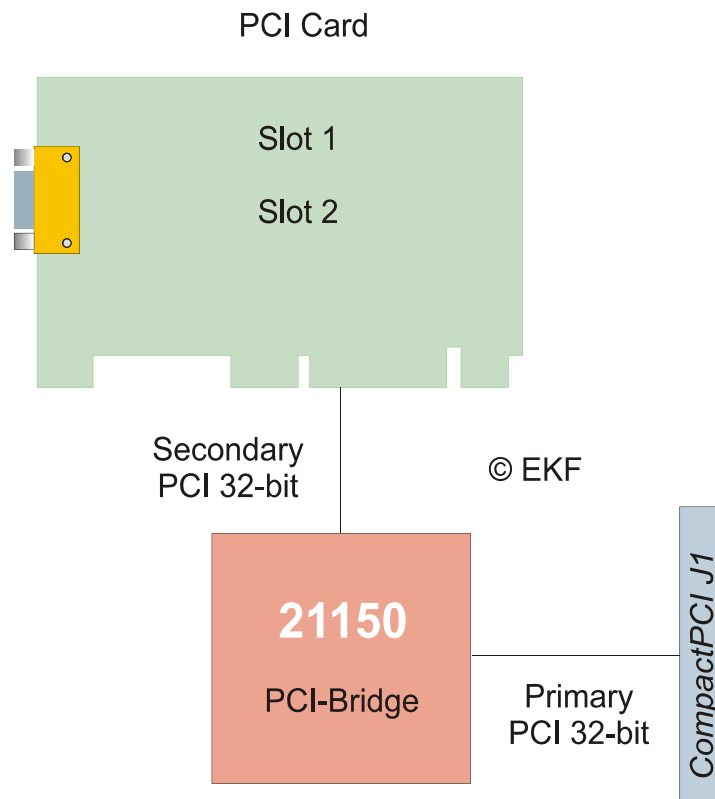
Use of the CA1-FUSION adapter/bridge in order to allow standard PCI boards to work in a CompactPCI® system is both an absolutely smooth technical solution, and a smart economical decicision. The CA1-FUSION totally frees the system integrator from the need of a redesign of PCI cards already available to the CompactPCI® standard. This is a great advantage, especially when time to market counts, or the number of systems to be built is limited, or the function to be implemented underlies fast innovation cycles.
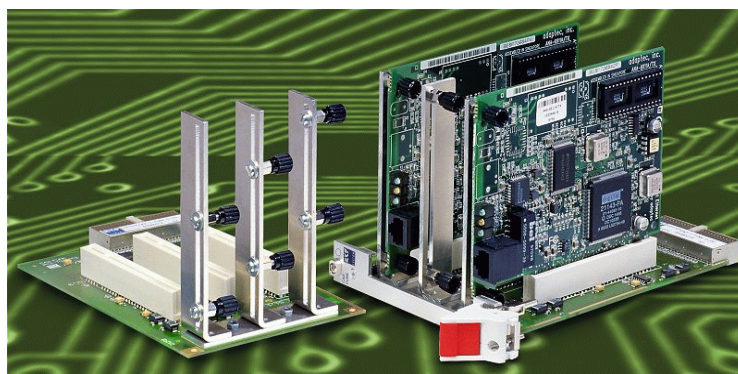
Technical Specifications

- **Printed Circuit Board**
  - 6U Double-Size-Eurocard (ca. 233x160mm^2)
  - Frontpanel Width 40,3mm

- **PCI Bus** (internal)
  - Bus Type: PCI 2.1, 32-Bit, 33MHz (133MB/s), 3,3V or 5V Interface
  - Connectors: 2-fold 90°, either Slot 1 or Slot 2 to be used
  - Maximum Card Size: Slot 1 for Boards up to 160x106mm^2, I/O externally available, Slot 2 for Boards up to 167,64mm Length (Short Card), I/O internally

- **PCI Bridge**
  - DEC 21150 PCI-to-PCI Bridge Chip (32/32-Bit), Delayed Transactions Feature, 88 Bytes Buffer (Data/Address) for Posted Write Transactions, 72 Bytes Buffer for Read Data

- *CompactPCI*$^®$ **Bus** (external)
  - 32-Bit, 33MHz (133MB/s)
  - 32-Bit DMA Bus Master (133MB/s)
  - PCI Burst Mode
  - 3,3V or 5V Interface

- **Power Supply** (PCI Board Power Consumption not taken into consideration)
  - +5V ±5% (required by PCI Board only)
  - +3,3V ±0,3V 0,2A max.
  - Vio (+5V or +3,3V) 0,1A max
  - +12V ±5% (required by PCI Board only)
  - -12V ±5% (required by PCI Board only)

- **Temperature/Humidity**
  - Temperature Range 0-70 °C
  - Relative Humidity Range 5-90% non-condensing

- **MTBF (50°C)**
  - 650 000 Hours (70 Years)

Technical specifications are subject to change without further notice

Block Diagram CA1-FUSION

PCI Card

Slot 1

Slot 2

Secondary
PCI 32-bit

© EKF

21150

PCI-Bridge

Primary
PCI 32-bit

CompactPCI J1

The CA1-FUSION is a 6U board. For 3U systems, use the CA2-FUNK instead. When the PCI cards are mounted vertically, the CA2-FUNK can hold up to 3 standard PCI boards. However, if the metal bracket of a PCI card cannot be removed, The CA1-FUSION is the unique solution.

CA2-FUNK * 3U Triple PCI to CPCI Adapter

Ordering Information

Short Alias	Ordering Number	Short Description
FUSION	CA1-1-FUSION	6U *CompactPCI* to PCI Adapter, 1 PCI Slot for a PCI card max. 168x107mm^2, horizontal mounting

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