



Product Information CM1-COMBO

CompactPCI® Intelligent Mezzanine Carrier Board for PC•MIP Modules

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Because the customer can profit from both, individual configuration of the system and moderate cost, mezzanine concepts are very popular for industrial grade computers. Another advantage is the high density packaging as a result.

*At the top of the evolution, the PC•MIP concept gathers the best characteristics of several classic mezzanine standards. The CM1-COMBO from EKF is an i960® based, intelligent **CompactPCI**® carrier board, holding up to four PC•MIP modules.*

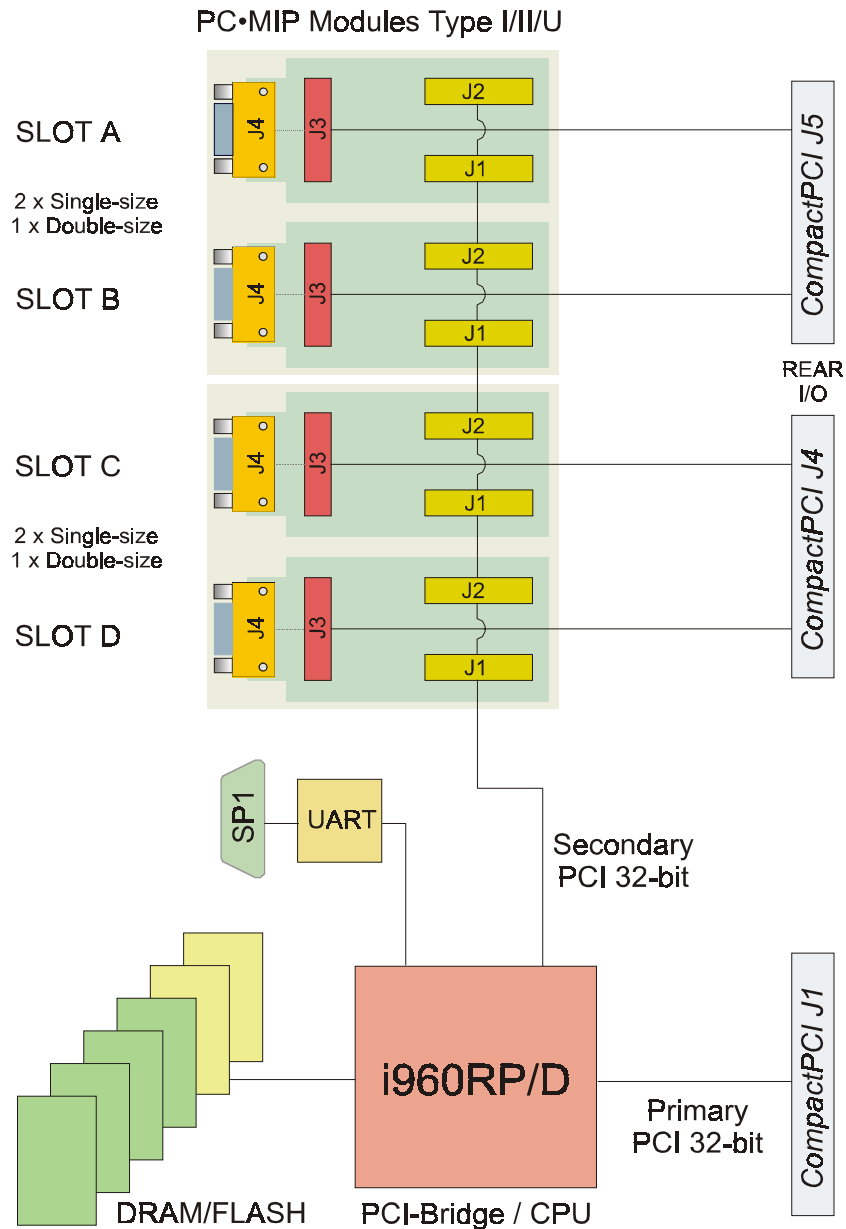
The PC•MIP (PCI and M-Modules and Industry Packs) electrical characteristics are derived from the well known PCI specification. Due to their significant smaller board outside, PC•MIP modules surpass by far comparable mezzanine standards as PMC with respect to the integration level which can be achieved on a single 3U or 6U carrier board.

For best results, PC•MIP mezzanine modules should be used in combination with an intelligent carrier board as the CM1-COMBO.



CM1-COMBO

Block Diagram CM1-COMBO



Based on the i960RP embedded processor on-board, the CM1-COMBO is equipped with both, a powerful CPU, and a PCI bridge used as interface to the **CompactPCI**[®] system bus. 8MB DRAM and 4MB Flash EEPROM build a generous local memory resource for program and data. Three on-board LEDs signal i960 status information. Reset- and NMI- push button switches can be a help for testing purposes. The on-board RS-232 serial interface allows for connecting to external peripherals, e.g. as a diagnostic port.

The CM1-COMBO can be populated with up to four single-size PC•MIP modules of the type I (I/O wired across the rear **CompactPCI**[®] connectors J4/J5), or type II (with front panel mounted connectors). Neighboured PC•MIP slots can hold double-size modules.

The CM1-COMBO hardware supports the I₂O interface. This is a layered, standardized driver concept, modeled after the OSI reference, suitable especially for intelligent I/O sub-processors.

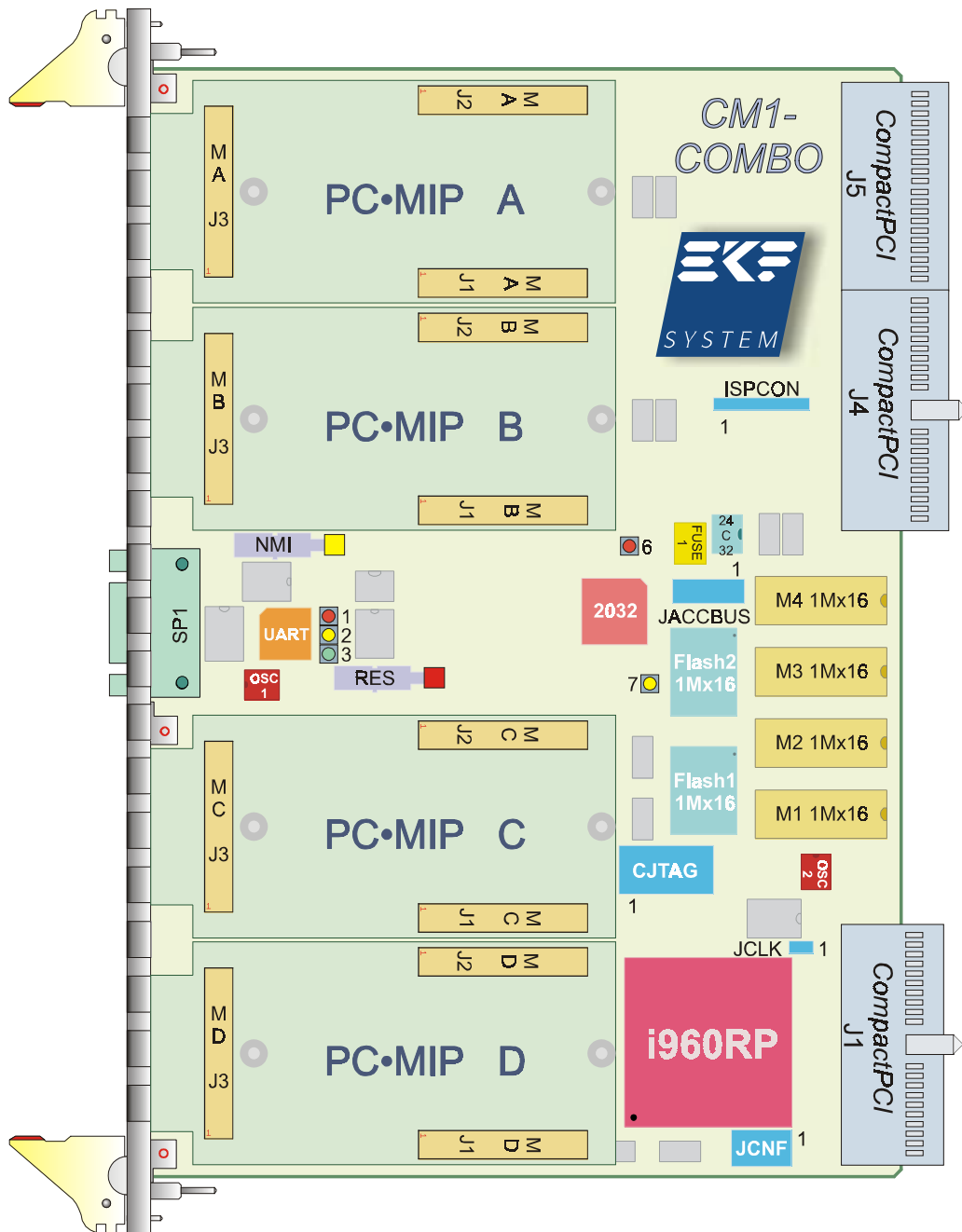
For any individual class of I₂O devices, the hosts operating system has to be provided with an **Operating System Service Module** (OSM). This is a hardware abstract I₂O driver layer, just converting standardized I₂O commands to proprietary I/O system calls of the individual OS.

On the target device side runs a **Hardware Device Module** (HDM). This driver interprets commands of the I₂O abstract OSM layer, with concrete I/O activities as the result. The HDM layer does not depend on any specific OS.

An I₂O communications layer between the OSM and HDM layers allows for flexible data exchange, not only between host-CPU and I/O subsystem, but also between the sub-processors without charging the host (with version 2.0 of the I₂O specification).

Use of the intelligent CM1-COMBO frees the host-CPU from critical low level tasks, an essential criterion for real-time applications. Because the COMBO can be equipped with a wide variety of PC•MIP modules, it is a smart and flexible solution to many different industrial applications, offering a fast time to market at moderate cost.





Technical Specifications		
Printed Circuit Board	Dimensions	6U Eurocard (233x160mm ²), front panel width 20.2mm (4HP), mechanics constructed with respect to EMC requirements, ejector lever
Processor	Type	Intel i960RP/RD 33/66MHz, clocked by system bus (local oscillator provided when operated as stand-alone)
	Memory	8MB FPM/EDO DRAM, 4MB FLASH ROM (on-board programmable)
	Utilities	watchdog and 5V/3.3V voltage-supervisor MAX705, serial EEPROM 4KByte I ² C, optional: ACCESS.bus interface
	Debugging	red LED: i960RP initializing fault yellow LED: access to PC•MIP module green LED: access to local memory and peripherals reset push-button switch (front panel), NMI push-button switch
	Firmware	Mon960 Monitor/Debugger available flash programming tool
Serial Interface SP1	Controller	16C550 compatible UART
	Physical I/F	RS-232, PC compatible D-Sub connector 9-pin (front panel)
	Drivers	serial drivers (COM port emulation) available for NT4.0, others forthcoming
PC•MIP	Module Type	4 PC•MIP slots (A-D) for single-size type I or type II modules (I/O either across rear CPCI J4/J5 or front panel connector), neighbored slots (A-B & C-D) alternatively allow for double-size modules, module-connectors triple 64-pin IEEE 1386 (each module-slot), according to the <i>PC•MIP Specification</i> (VITA 29 Draft 0.92)
CompactPCI [®] Bus	Connector J1	32-Bit, 33MHz, bus master, 133MBps 5V interface
Power Consumption	Connector J1	+5V ±5% 0.6A max. (PC•MIP modules not included) +3.3V ±0.3V 1.1A max. (PC•MIP modules not included) +12V ±5% (required for PC•MIP modules only) -12V ±5% (required for PC•MIP modules only)
Temperature Humidity	Operating	operating temperature 0-70°C humidity 5-90% non condensing

specifications are subject to change without further notice

Ordering Information

Short Alias	Ordering Number	Short Description
COMBO	CM1-1-COMBO	6U, intelligent <i>CompactPCI</i> carrier for up to 4 PC•MIP modules, CPU i960RP 33MHz, 8MB DRAM, 4MB Flash ROM, RS232 serial port
TRIO	CM5-1-TRIO	3U, CPCI PC•MIP carrier board, 3 slots, passive
SEXTET	CM6-1-SEXTET	6U, CPCI PC•MIP carrier board, 6 slots, passive
	CMA-USB	PC•MIP Module, USB 1.1 host adapter
	CMF-1394	PC•MIP Module, IEEE 1394 FireWire HA
	CMI-ISDN	PC•MIP Module, basic rate ISDN S/T TA
	CMN-ETH	PC•MIP Module, 10/100Mb/s Ethernet NIC



CMA-USB PC•MIP Module

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