EKF SYSTEM

Product Information CP3-HOUSE

CompactPCI ® Dual Slot PC Card™ Hostadapter

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*Furthermore PC Cards are widely in use within industrial systems. The **CP3-HOUSE** is an universal PCMCIA/CardBus™ dual-bay host adapter (PC Card drive) for **CompactPCI** ® systems.*
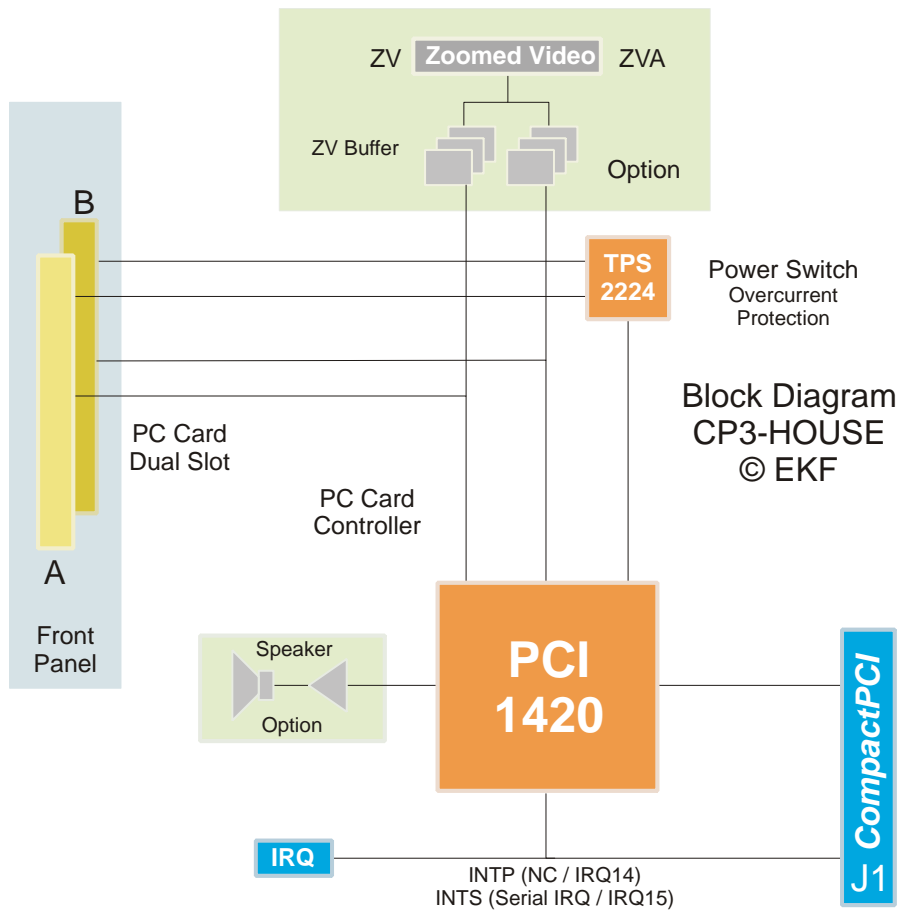
The PC Card™ standard comprises both, the 16-bit version PCMCIA 2.1 (JEIDA 4.2), and the improved 32-bit CardBus™ specification (off PC Card 5.0). By employing a simple adapter, also CompactFlash™ cards can be used.

The CP3-HOUSE supports any combination of 16-bit PCMCIA and 32-bit CardBus PC Cards in its two sockets, automatically powered at 5V or 3.3V, as required. Hot swap (hot insertion and removal) of the PC Cards is allowed.

Designed for industrial use, the CP3-HOUSE is a rugged and reliable PC Card drive, suitable for any *CompactPCI*® system. For usage together with an ExpressCard™, EKF offers a similar host adapter named CP5-GLAM.

CP3-HOUSE

ZV **Zoomed Video** ZVA

ZV Buffer

Option

B

A

Front
Panel

PC Card
Dual Slot

PC Card
Controller

TPS
2224

Power Switch
Overcurrent
Protection

Block Diagram
CP3-HOUSE
© EKF

Speaker

**PCI
1420**

CompactPCI

J1

Option

IRQ

INTP (NC / IRQ14)
INTS (Serial IRQ / IRQ15)

The PC Card specification defines three card sizes (3.3/5.0/10.5mm thick), referred to as type I...III. Type I typically can be found with memory cards, and type II with I/O products such as wireless LAN or networking adapters. Type III often will be used with ATA hard disks.

The dual slot of the CP3-HOUSE accepts two PC Cards of the type I/II, or a single type III PC Card.

The PC Card represents a flexible method for external system expansion, without any need to open the case, or power down and reboot the whole system. While the 32-bit CardBus PC Card is equivalent to a modern PCI slot board, the 16-bit PCMCIA PC Card could be loosely compared to a vintage ISA slot board.

The CP3-HOUSE recognizes automatically the PC Card type in use and configures itself for PCMCIA or CardBus operation dynamically. Mix and match operation of 5V/3.3V 16-bit PCMCIA cards and 3.3V CardBus cards is guaranteed. When serving 32-bit PC Cards (CardBus), the CP3-HOUSE acts as a PCI bridge. This allows direct access to the PC Card by the host CPU. Vice versa CardBus cards can become DMA bus masters in order to transfer data at full 133MBps bandwidth across the PCI system bus.

The CP3-HOUSE therefore is well-suited as universal system expansion port, be it I/O function PC Cards, or as an easy way for saving data to a removable memory card or disk drive.

The CP3-HOUSE is equipped with the popular PCI1420 (Texas Instruments) controller chip. Among other features, *Hot Insertion and Removal* and the *Exchangeable Card Architecture* (ExCA) are supported by the PCI1420. Both PCI1420 PC Card device drivers, PCMCIA and CardBus, are integral parts of current Windows operating systems.

Slot Vcc and Vpp are controlled by the programmable power switch TPS2224, including over-current protection. Green LEDs in the front panel adjacent to each slot indicate the present slot power status. Yellow LED's signal the PC Card activity.

In order to use the CP3-HOUSE in 6U systems, a front panel expansion kit is additionally available (CR9-ADAPT).
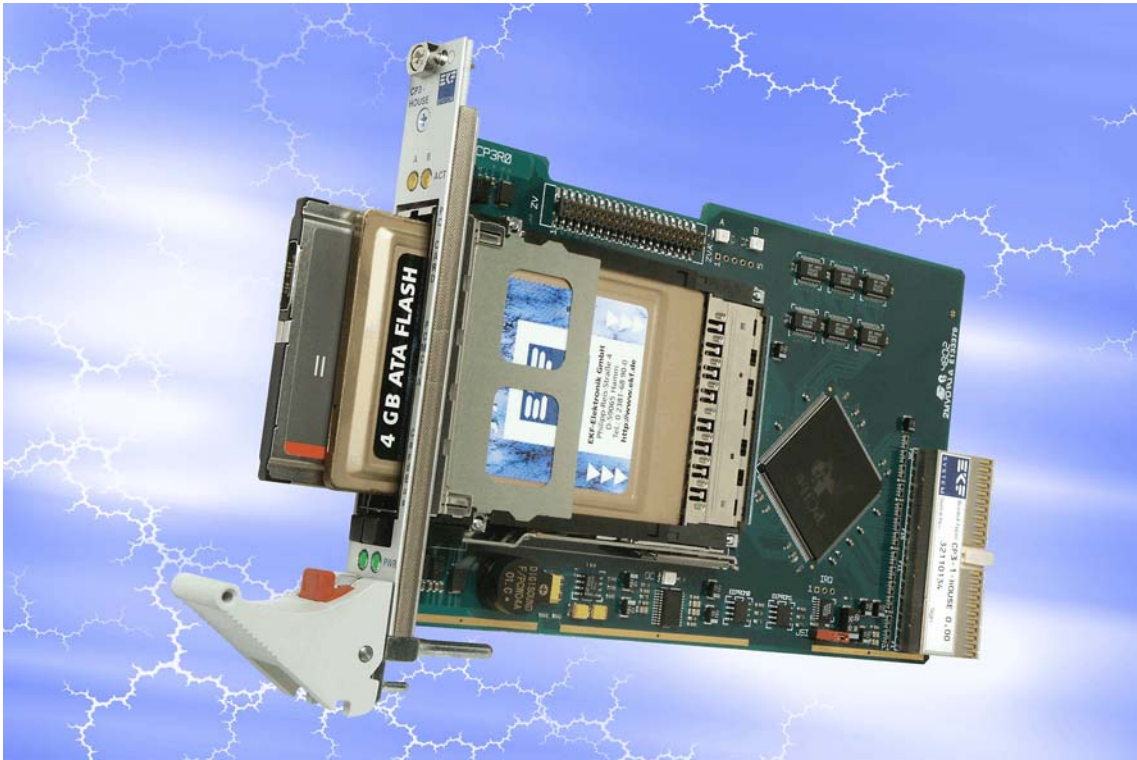
Optionally, the board is provided with a Zoomed Video (ZV) connector. ZV, as an extension to the PC Card standard, is a fast one-way data path from a ZV card to any ZV compliant display controller. ZV allows for real-time, uninterrupted full frame-rate (live video) display, without charging the PCI system bus or spending CPU calculation time. PCM audio data can be derived from the optional Zoomed Video Audio (ZVA) connector.
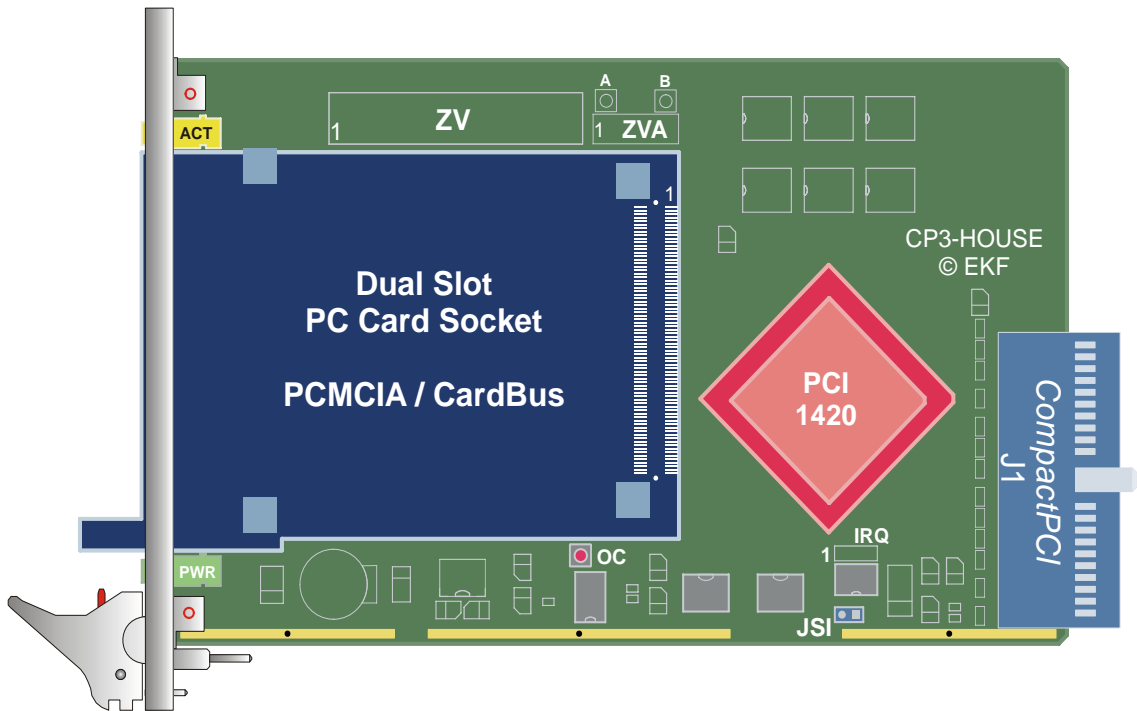
PC Cards with built-in audio function, e.g. Modem cards, profit from the optional on-board miniature speaker of the CP3-HOUSE.

When older software (legacy drivers) is in use, especially in combination with 16-bit PCMCIA I/O cards (e.g. Modem cards), ISA interrupts may be activated. However, due to restrictions of the CPCI bus specification, the CP3-HOUSE is capable of routing PC Card interrupts to the *CompactPCI*® bus interrupt lines INTA and INTP/INTS only. The CPCI bus does not at all support legacy ISA interrupts (with the exception of the primary/secondary IDE IRQ14/15, which can be optionally processed as INTP/INTS). A solution to this limitation is to transfer serialized ISA interrupts across INTS to the host CPU, which requires that the CPU board can be configured for receiving serial IRQs. ISA service requests typically are caused by legacy software drivers for 16-bit (PCMCIA) I/O PC Cards. When using recent drivers, serialized ISA IRQ jumpering should be superfluous. This also applies for most PCMCIA memory cards, ATA harddisks, and CardBus products.

Due to the huge variety of PC Card products available, often 16-bit (low cost) PCMCIA products, potential conflicts between PC Card application software, the operating system and the system BIOS can arise. In addition, CPCI systems use a PCI bridge to isolate the backplane from the primary (host) PCI bus. Stipulated for CPCI passive backplanes, this is an important improvement in reliability, but not typical for desktop- and notebook-computers. As it appears, this feature remains untested sometimes by the producers of software. However, at least the manufacturers of BIOS software seem to be aware of the emerging role of CPCI systems and PCI bridges, and have eliminated most of the related bugs. If in doubt, use recent software/drivers only and consider a CPU BIOS upgrade.

Component Assembly

ZV

A B

1 ZVA

1

**Dual Slot
PC Card Socket**

PCMCIA / CardBus

ACT

1

CP3-HOUSE
© EKF

PCI
1420

CompactPCI
J1

OC

IRQ

1

PWR

JSI

Front Panel Elements

CP3-
HOUSE

EKF
SYSTEM

AA   AB

P
C

C
A
R
D

S
L
O
T

A

P
C
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B

PA   PB
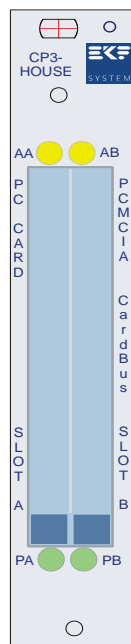
Technical Specifications		
PC Board	Dimensions	3U Eurocard (100x160mm^2), front panel width 20.2mm (4HP), mechanics constructed with respect to EMC requirements, ejector lever
PC Card Host Interface	Bus Type	PC Card Standard 1997 16/32-Bit 5V/3.3V - PCMCIA / PC Card R2 (16-Bit) - CardBus (32-Bit)
	Connector	Dual slot with ejectors, external insertion/removal (front panel extrusion), 2 x 68-position
	Card Types	PC Card: 2 x Type I (3.3mm) and II (5.0mm), or 1 x Type III (10.5mm). CompactFlash: Adapter required (not included with CP3-HOUSE)
	PC Card Socket Power Interface	Texas Instruments TPS2224 short circuit and thermal protection +5V/3.3V 1A (each slot) +12V 100mA (each slot)
	PC Card Socket Controller	Texas Instruments PCI1420 - Intel 82365SL-DF register compatible - PC Card Hot Insertion / Removal - Exchangeable Card Architecture (ExCA) - Microsoft PC99 - PCI Local Bus Specification 2.2 - Supports DMA on both PC Card sockets - Multifunction PCI device with separate configuration spaces for each socket - Uses serial interface to Texas Instruments TPS2224 Dual Power Switch
	Zoomed Video Connector ZV/ZVA	40-pos. metric header 2.0mm (ZV) (optional) 5-pos. pin row 2.54mm (ZVA) (optional)
	Speaker	Miniature speaker and amplifier (optional)
CompactPCI® Bus	Connector J1	32-Bit DMA bus master (133MByte/s), PCI Burst Mode 3.3V or 5V interface
Power Consumption	without PC Cards	+5V ±5% 0.2A max. +3.3V ±0.3V 0.2A max. +12V ±5% 10mA max.
Temperature Humidity	Commercial Version	Operating temperature 0-70°C Humidity 5-90% non condensing

subject to technical changes

PC Card Connector, CardBus Emulation

GND	35	1	GND
CCD1#	36	2	CAD0
CAD2	37	3	CAD1
CAD4	38	4	CAD3
CAD6	39	5	CAD5
Reserved	40	6	CAD7
CAD8	41	7	CCBE0#
CAD10	42	8	CAD9
CVS1	43	9	CAD11
CAD13	44	10	CAD12
CAD15	45	11	CAD14
CAD16	46	12	CCBE1#
Reserved	47	13	CPAR
CBLOCK#	48	14	CPERR#
CSTOP#	49	15	CGNT#
CDEVSEL#	50	16	CINT#
VCC	51	17	VCC
VPP2	52	18	VPP1
CTRDY#	53	19	CCLK
CFRAME#	54	20	CIRDY#
CAD17	55	21	CCBE2#
CAD19	56	22	CAD18
CVS2	57	23	CAD20
CRST#	58	24	CAD21
CSERR#	59	25	CAD22
CREQ#	60	26	CAD23
CCBE3#	61	27	CAD24
CAUDIO	62	28	CAD25
CSTSCHG	63	29	CAD26
CAD28	64	30	CAD27
CAD30	65	31	CAD29
CAD31	66	32	Reserved
CCD2#	67	33	CCLKRUN#
GND	68	34	GND

PC Card Connector, 16-Bit I/O Emulation

GND	35	1	GND
CD1#	36	2	D3
D11	37	3	D4
D12	38	4	D5
D13	39	5	D6
D14	40	6	D7
D15	41	7	CE1#
CE2#	42	8	A10
VS1#	43	9	OE#
IORD#	44	10	A11
IOWR#	45	11	A9
A17	46	12	A8
A18	47	13	A13
A19	48	14	A14
A20	49	15	WE#
A21	50	16	IREQ#
VCC	51	17	VCC
VPP2	52	18	VPP1
A22	53	19	A16
A23	54	20	A15
A24	55	21	A12
A25	56	22	A7
VS2#	57	23	A6
RESET	58	24	A5
WAIT#	59	25	A4
INPACK#	60	26	A3
REG#	61	27	A2
SPKR#	62	28	A1
STSCHG#	63	29	A0
D8	64	30	D0
D9	65	31	D1
D10	66	32	D2
CD2#	67	33	IOIS16#
GND	68	34	GND

Pinbelegung PC Card Steckverbinder, 16-Bit Memory Emulation

GND	35	1	GND
CD1#	36	2	D3
D11	37	3	D4
D12	38	4	D5
D13	39	5	D6
D14	40	6	D7
D15	41	7	CE1#
CE2#	42	8	A10
VS1#	43	9	OE#
Reserved	44	10	A11
Reserved	45	11	A9
A17	46	12	A8
A18	47	13	A13
A19	48	14	A14
A20	49	15	WE#
A21	50	16	READY
VCC	51	17	VCC
VPP2	52	18	VPP1
A22	53	19	A16
A23	54	20	A15
A24	55	21	A12
A25	56	22	A7
VS2#	57	23	A6
RESET	58	24	A5
WAIT#	59	25	A4
Reserved	60	26	A3
REG#	61	27	A2
BVD2	62	28	A1
BVD1	63	29	A0
D8	64	30	D0
D9	65	31	D1
D10	66	32	D2
CD2#	67	33	WP
GND	68	34	GND

Pinbelegung PC Card Steckverbinder, 16-Bit Memory Emulation

Connector ZV (Zoomed Video)

ZV			
ZV Y0	1	2	GND
ZV Y1	3	4	GND
ZV Y2	5	6	GND
ZV Y3	7	8	GND
ZV Y4	9	10	GND
ZV Y5	11	12	GND
ZV Y6	13	14	GND
ZV Y7	15	16	GND
ZV UV0	17	18	GND
ZV UV1	19	20	GND
ZV UV2	21	22	GND
ZV UV3	23	24	GND
ZV UV4	25	26	GND
ZV UV5	27	28	GND
ZV UV6	29	30	GND
ZV UV7	31	32	GND
ZV HREF	33	34	GND
ZV VSYNC	35	36	GND
ZV PixCLK	37	38	GND
NC	39	40	NC

Luminance	Y(0..7)
Chrominance	UV(0..7)
Horizontal Sync	HREF
Vertical Sync	VSYNC
Video Clock	PixCLK

This connector is optional (not filled by default)

Connector ZVA (Zoomed Video Audio I²S)

ZVA	
GND	1
ZVA SCLK	2
ZVA MCLK	3
ZVA LRCLK	4
ZVA SDATA	5

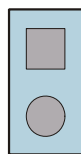|	
Serial Digital Audio Clock	SCLK
Master Clock	MCLK
Left/Right Clock	LRCLK
Serial Audio Data	SDATA

This connector is optional (not filled by default)

Connector IRQ

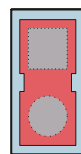| IRQ	
GND	1
MF3	2
MF6	3

MF3	IRQ14 (primary IDE) Serial IRQ
MF6	IRQ15 (secondary IDE)

Jumper JSI (Serialized Interrupts)

JSI

INTP = IRQ14   INTP = NC
INTS = IRQ15   INTS = Serial IRQ

Connector J1 (CompactPCI Bus)

| #J1	A	B	C	D	E
25	5V	*REQ64#*	*ENUM#*	3.3V	5V
24	AD1	5V	VI/O	AD0	*ACK64#*
23	3.3V	AD4	AD3	5V	AD2
22	AD7	GND	3.3V	AD6	AD5
21	3.3V	AD9	AD8	M66EN	C/BE0#
20	AD12	GND	VI/O	AD11	AD10
19	3.3V	AD15	AD14	GND	AD13
18	SERR#	GND	3.3V	PAR	C/BE1#
17	3.3V	*SDONE*	*SBO#*	GND	PERR#
16	DEVSEL#	GND	VI/O	STOP#	LOCK#
15	3.3V	FRAME#	IRDY#	GND	TRDY#
14					
13					
12					
11	AD18	AD17	AD16	GND	C/BE2#
10	AD21	GND	3.3V	AD20	AD19
9	C/BE3#	IDSEL	AD23	GND	AD22
8	AD26	GND	VI/O	AD25	AD24
7	AD30	AD29	AD28	GND	AD27
6	REQ#	GND	3.3V	CLK	AD31
5	*BRSVP1A5*	*BRSVP1B5*	RST#	GND	GNT#
4	*BRSVP1A4*	GND	VI/O	INTP [1]	INTS [2]
3	INTA#	*INTB#*	*INTC#*	5V	*INTD#*
2	TCK	5V	*TMS*	*TDO*	*TDI*
1	5V	-12V	*TRST#*	+12V	5V

[1] Function of INTP depends on Jumper JSI: IRQ14 / Primary IDE (JSI removed), NC (JSI set)
[2] Function INTS depends on Jumper JSI: IRQ15 / Secondary IDE (JSI removed), Serial IRQ (JSI set)

coloured/italic: not connected

Ordering Information

Ordering No.	Description
CP3-1-HOUSE	3U *CompactPCI* dual slot PC Card PCMCIA/CardBus hostadapter
CR9-1-ADAPT	Mechanical kit, expands front panel to 6U height
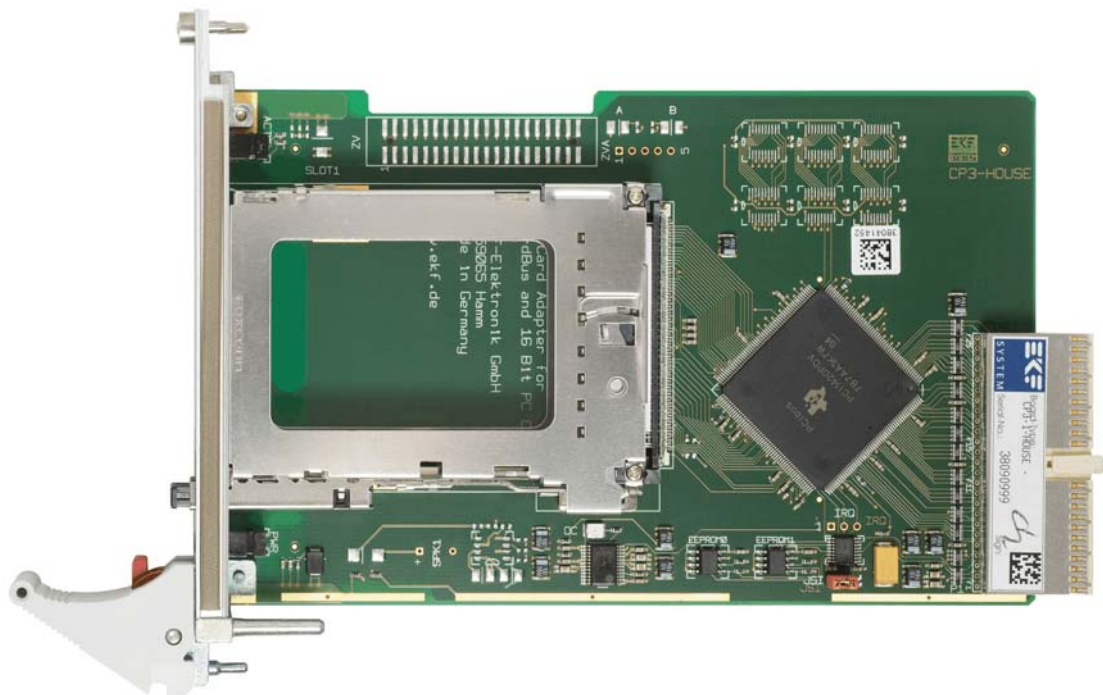
Links to CP3-HOUSE and Similar Products

Product	Link
CP3-HOUSE Dual Bay PC Card Host Adapter	www.ekf.com/c/cpcc/cp3/cp3_e.html
CP5-GLAM ExpressCard Host Adapter	www.ekf.com/c/cpcc/cp5/cp5_e.html
CR9-1-ADAPT 6U Front Panel Kit	www.ekf.com/c/csys/cr9/cr9_e.html

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