

General

CompactPCI (CPCI) is the specification for an industrial computer bus developed by PCI Industrial Computer Manufacturers Group (PICMG). CPCI is an adaptation of the Peripheral Component Interconnect (PCI) for industrial and/or embedded applications that require a more robust mechanical form factor than Desktop PCI. Elma offers backplanes for operation at 33 MHz with 2-8 slots. Backplanes with 2-5 slots are available for 66 MHz bus frequency. All Elma backplanes have 64-bit routing and are hot swap capable.

Connectors

The CompactPCI connector is a shielded 2 mm pitch and 5+2 rows connector compliant to IEC 917 and IEC 61076-4-101. The connector includes the following features:

- Coding mechanism and guiding device for rear cards
- Pin staging for hot swap
- Shrouds for rear I/O
- Shielding for EMI/RFI protection

EMI filter

Elma CPCI backplanes have excellent EMI properties. They are designed in a way to allow virtually zero crosstalk and extra low HF radiation. These features are realized thanks to an optimized structure with different types of capacitors well distributed on the entire surface of the backplane.

Climatic

- Operating temperature -40 °C up to +85 °C
- Storage temperature -55 °C up to +85 °C
- Climatic conditions category to IEC 68/1: 25/085/21

MECHANICAL

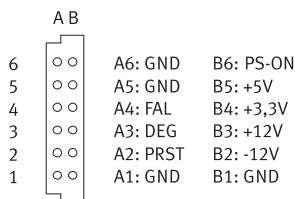
Flammability:

- PCB: UL 94 V-0
- Connectors: UL 94 V-0/-1
- Vibration:
 - According to DIN 41640 part 15:
 - 10 Hz to 500 Hz 5 g rms
 - Impact (10 impacts per axis x,y,z) 50 g, 6 ms
- Layerstackup 10 layers/8 layers (2 Slot)
- Connector: 2 mm pitch, 7 rows,
 - Quality class 2 compliant to spec. IEC 61076-4-101 and BELLCORE GR-1217-CORE
 - Insertion force 0.75 N and extraction force 0.15 N of every contact

ELECTRICAL

- According to PICMG 2.0 R.3.0
- VI/O configurable to +3.3 V or +5 V (+5 V factory settings)
- Clock frequency: 33 MHz or 66 MHz (2-5 Slot)
- Bus width: 32/64 bit
- Data transfer rate: max. 533 Mbyte/s (66 MHz/64 bit)
- Impedance Z0 without connectors and daughter cards: 65 Ohm +/-10%
- Termination with Schottky Diode Array: only optional for 8 slot with rear card
- Current carrying capacity of power planes
 - +3.3 V/GND: 10 A/slot
 - +5 V/GND: 8 A/slot
- Max. voltage drop (center to boardout): 20 mV

Pinout 12-way header (FCON):



AVAILABLE SLOTS

No. of slot	2	3	4	5	6	7	8
PCB width (mm)	39.64	59.96	80.3	100.6	120.92	141.24	161.56

P1 / P2 connectors – Pin Assignment

CompactPCI 64-bit System Slot IP1 Connector Pin Assignment

	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND
24	GND	AD1	5V	V(I/O)	AD0	ACK64#	GND
23	GND	3.3V	AD4	AD3	5V	AD2	GND
22	GND	AD7	GND	3.3V	AD6	AD5	GND
21	GND	3.3V	AD9	AD8	M66EN	C/BE[0]#	GND
20	GND	AD12	GND	V(I/O)	AD11	AD10	GND
19	GND	3.3V	AD15	AD14	GND	AD13	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMB_SCL*	IPMB_SDA*	GND	PER#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12-14							
11	GND	AD18	AD17	AD16	GND	C/BE[2]#	GND
10	GND	AD21	GND	3.3V	AD20	AD19	GND
9	GND	C/BE[3]#	GND*	AD23	GND	AD22	GND
8	GND	AD26	GND	V(I/O)	AD25	AD24	GND
7	GND	AD30	AD29	AD28	GND	AD27	GND
6	GND	REQ0#	GND	3.3V	CLK0	AD31	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT0#	GND
4	GND	IPMB_PWR*	HEALTHY#*	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

CompactPCI 64-bit System Slot IP2 Connector Pin Assignment

	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND	RSV	GND
19	GND	GND	GND	RSV	RSV	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND	BRSVP2E18	GND
17	GND	BRSVP2A17	GND	PRST#	REQ6#	GNT6#	GND
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	FAL#	REQ5#	GNT5#	GND
14	GND	AD35	AD34	AD33	GND	AD32	GND
13	GND	AD38	GND	V(I/O)	AD37	AD36	GND
12	GND	AD42	AD41	AD40	GND	AD39	GND
11	GND	AD45	GND	V(I/O)	AD44	AD43	GND
10	GND	AD49	AD48	AD47	GND	AD46	GND
9	GND	AD52	GND	V(I/O)	AD51	AD50	GND
8	GND	AD56	AD55	AD54	GND	AD53	GND
7	GND	AD59	GND	V(I/O)	AD58	AD57	GND
6	GND	AD63	AD62	AD61	GND	AD60	GND
5	GND	C/BE[5]#	GND	V(I/O)	C/BE[4]#	PAR64	GND
4	GND	V(I/O)	BRSVP2B4	C/BE[7]#	GND	C/BE[6]#	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

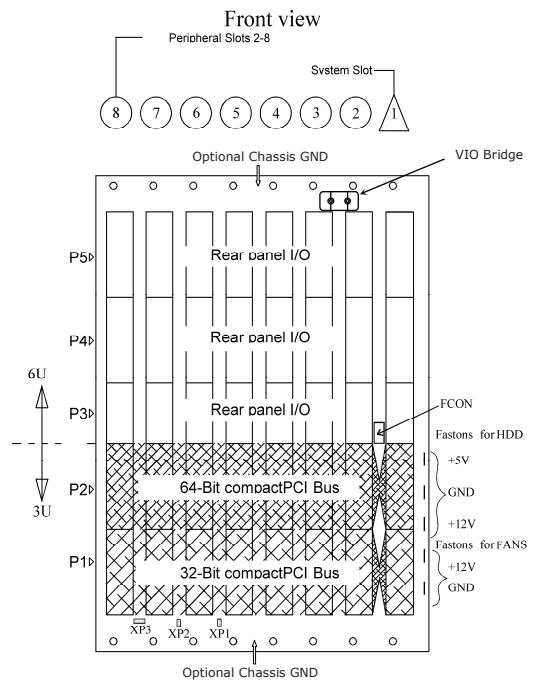
Note: For a 32-bit backplane, all the pins of the P2 peripheral connector are used as BP(I/O), except rows Z and F (connected to GND) and the GA pins (row 22).

CPCI Standard Backplanes - Power Options

Elma Trenew Electronic CompactPCI Standard Backplane

1. General overview:

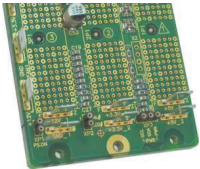
8-slots system slot right backplane example



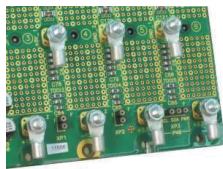
www.elma.de info@elma.de www.elmashop.de

CompactPCI Power Options

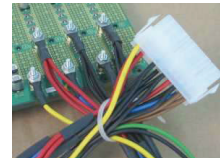
POWER CONNECTION VIA POWERBOLTS AND FASTONS (M3 CABLE LUGS, WASHER AND NUTS ENCLOSED)



6 – Fastons, 2-3 slot
10 A max./Faston

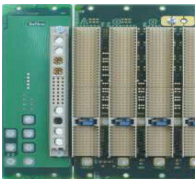


8 – Power bolts, 4-8 slot
30 A max./M3 Power bolts
H – ATX cable, 2-8 slot



H – ATX cable, 2-8 slot

POWER CONNECTION VIA INTERCONNECTION- AND POWER BOARD

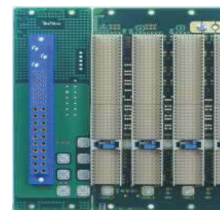


9 – DIN 41612
Type M, 4-8 slot
3U: Lower position
6U: Upper und lower position



J – Positronic P47, 4-8 slot
6U: Upper position

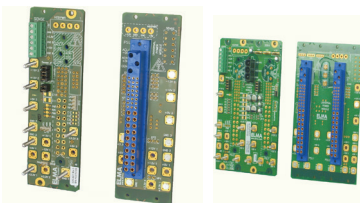
L – Positronic P47,
4-8 slot 6U: 2x Upper position



K – Positronic P47, 4-8 slot
3U: Lower position

M - Positronic P47, 4-8 slot
6U: 2x Lower position

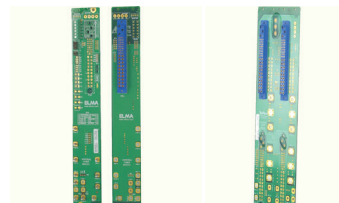
POWER CONNECTION „STAND ALONE“ (HAS TO BE WIRED)



Power Boards 3U

020-927 (8HP, 1x P47)

020-071 (16HP, 2x P47)



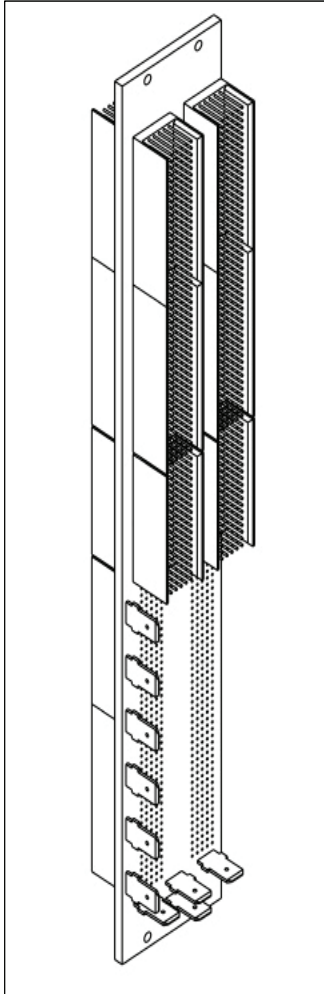
Power Boards 6U

020-929 (8HP, 1x P47)

019-748 (16HP, 2x P47)

2. Power Option 6 (Fastons)

- for backplanes with 2 and 3 slots, 3U or 6U



2 Slots

Voltage	Fastons
GND	4
+5V	2
+3.3V	1
+12V	2
-12V	1

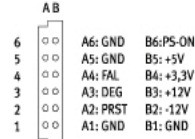
3 Slots

Voltage	Fastons
GND	3
+5V	3
+3.3V	3
+12V	2
-12V	1

Current rating for one faston is max. 10A

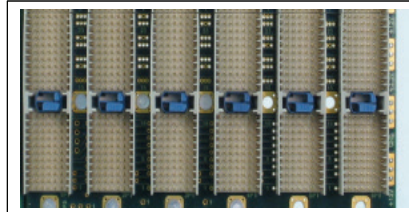
3. Additional Connectors – Pin Assignment

FCON (12-way Header); part number of mating connector including 1m cable: 008-083

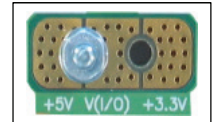


2 slot		3-8 slot	
XP1	1. PS-CN	XP1	1. PS-CN
	2. FAL#		2. PS-CN
	3. DEG#	XP2	1. FAL#
XP2	1. IPMB0_SCL	XP3	1. IPMB0_SCL
	2. IPMB0_SDA		2. IPMB0_SDA
	3. IPMB0_PWR	3. IPMB0_PWR	

4. VIO Settings



The VIO voltage can be set either to +5V or to +3.3V



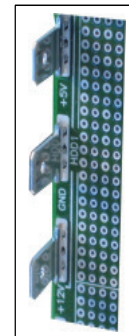
Coding for P1 connectors:

Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



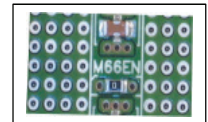
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND, +5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)

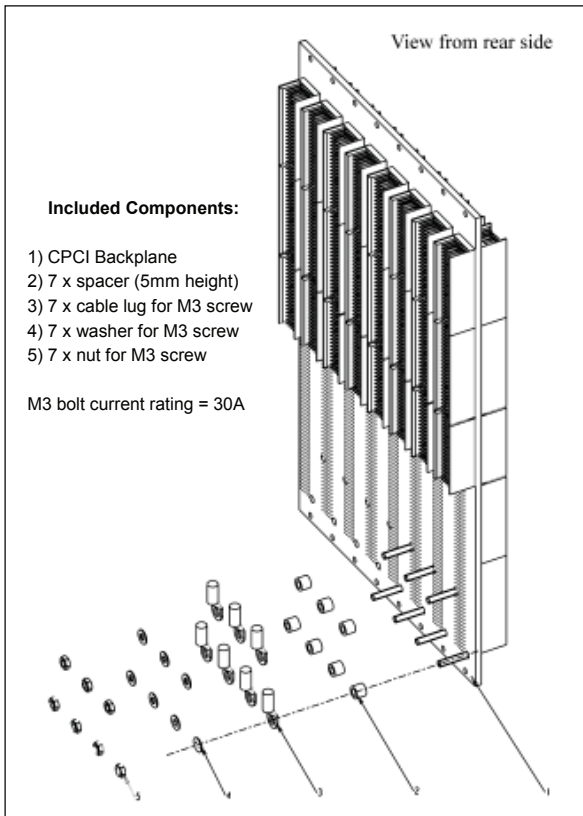


M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

Note: the 66MHz backplanes have always VIO set to +3.3V

2. Power Option 8 (Power Bolts)

- for backplanes with more than 4 slots, 3U or 6U



3. Additional Connectors – Pin Assignment

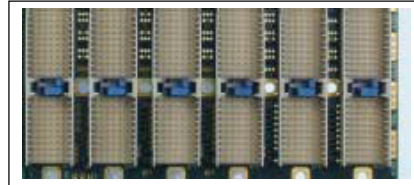
FCON (12-way Header); part number of mating connector including 1m cable: 008-083

	A	B
6	○	○
5	○	○
4	○	○
3	○	○
2	○	○
1	○	○

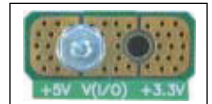
A6: GND	B6: PS-ON
A5: GND	B5: +5V
A4: FAL	B4: +3.3V
A3: DEG	B3: +12V
A2: PRST	B2: -12V
A1: GND	B1: GND

XP1	1. PS-ON 2. PS-ON
XP2	1. FAL# 2. DEG#
XP3	1. IPMB0_SCL 2. IPMB0_SDA 3. IPMB_PWR

4. VIO Settings



The VIO voltage can be set either to +5V or to +3.3V

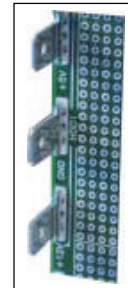


Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



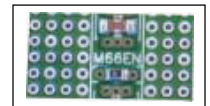
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND, +5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)



M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

Note: the 66MHz backplanes have always VIO set to +3.3V

2. Power Option 9 – M24/8 6U or 3U x 8HP

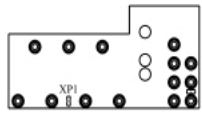
- for backplanes with 4-8 slots, 3U or 6U

Included components

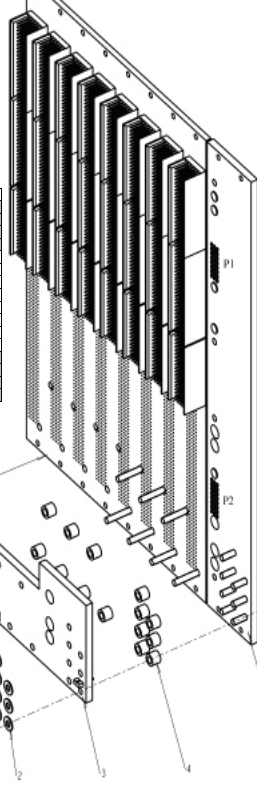
- 1) 14 x nut for M3 screw
- 2) 14 x washer for M3 screw
- 3) Power dieevback
- 4) 14 x spacer (5mm height)
- 5) Power back (with type M connector)
- 6) cPCI backplane

Pinout of the M connectors

3U or 6U-lower connector				6U-upper connector			
	A	B	C		A	B	C
31		-DC		31		+3.3V	
28		NC		28		+3.3V	
25		GND		25		GND	
22		+5V		22		GND	
20	-12V	-12V	-12V	20	SIOU	SERB	GND
19	+12V	+12V	+12V	19	-12VS	SERA	-12VS+
18	+3.3V	+3.3V	+3.3V	18	+12VSH	IDBUS+	3.3VSH+
17	+3.3V	+3.3V	SVS+	17	+12VSL	IDBUS-	3.3VSL-
16	+3.3V	+3.3V	SVS-	16	GND	ID1	MSV1
15	FAL#	+3.3V	ISH	15	NC	NC	MSV1
14	DEG#	+3.3V	INHP	14	NC	NC	ISH12V
13	EN#	+3.3V	NC	13	NC	NC	ISH3.3V
11		CG		11		+5V	
8		NC		8		+5V	
5		ACN		5		GND	
2		ACL		2		+12V	

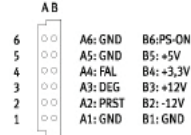


View from rear side



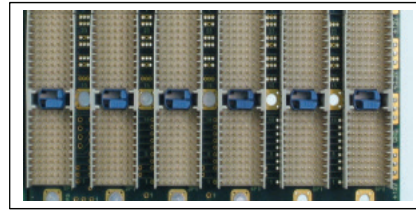
3. Additional Connectors – Pin Assignment

FCON (12-way Header); part number of mating connector including 1m cable: 008-083

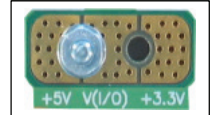


XP1	1. PS-ON
	2. PS-ON
XP2	1. FAL#
	2. DEG#
XP3	1. IPMB0_SCL
	2. IPMB0_SDA
	3. IPMB_PWR

4. VIO Settings



The VIO voltage can be set either to +5V or to +3.3V



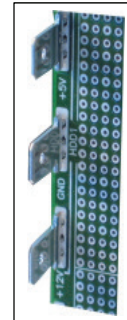
Coding for P1 connectors:

Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



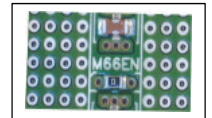
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND,+5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)



M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

Note: the 66MHz backplanes have always VIO set to +3.3V

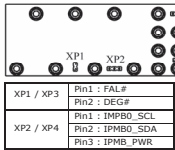
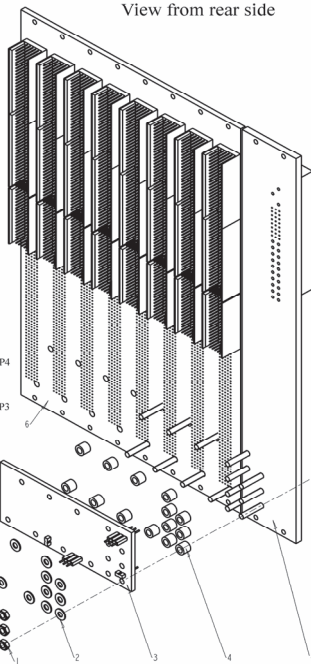
2. Power Option J – Positronic 6U x 8HP

– for backplanes with 4-8 slots, 6U

Pinout of the Positronic connector

Pin	Signal	Description
14	+5V	+5V Output
5-12	GND	+5V sense / +3.3V Return
15-18	+3.3V	+3.3V Output
19	GND	+12V Return
20	+12V	+12V Output
21	+5V	+5V Output
22	GND	Signal Return
23	Reserved	Reserved
24	GND	-12V Return
25	CSAD	Geographical Address Bit 0
26	Reserved	Reserved
27	ENP	Enable
28	CSAT	Geographical Address Bit 1
29	NC	+5V Adjust
30	+5V Sense	+5V Remote Sense
31	CSKP	Geographical Address Bit 2
32	NC	+3.3V Adjust
33	+3.3V Sense	+3.3V Remote Sense
34	GND	Sense Return
35	+5V Share	+5V Current Share
36	+12V Sense	+12V Remote Sense
37	IPMB_SCL	System Management Bus
38	DEGP	Degrade signal
39	Share	Remote Signal
40	IPMB_SDA	System Management Bus
41	+3.3V Sense	+3.3V Current Sense
42	FAL#	Fault Signal
43	IPMB_PWR	System Management Bus
44	+12V Sense	+12V Current Sense
45	CHND	Chassis Ground
46	ACN	AC Neutral / +DC Input
47	ACLN	AC Line / +DC Input

View from rear side



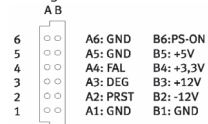
XP1 / XP3	Pin1 : FAL#
	Pin2 : DEG#
XP2 / XP4	Pin1 : IPMB0_SCL
	Pin2 : IPMB0_SDA
	Pin3 : IPMB_PWR

Included Components:

- 1) 14 x nut for M3 screw
- 2) 14 x washer for M3 screw
- 3) Power piggyback
- 4) 14 x spacer (5mm height)
- 5) Power backplane
- 6) CPCI backplane

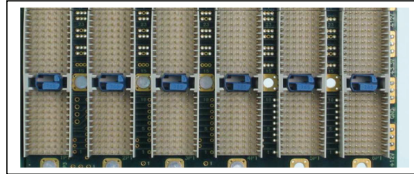
3. Additional Connectors – Pin Assignment

FCON (12-way Header); part number of mating connector including 1m cable: 008-083

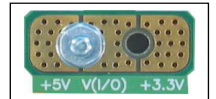


XP1	1. PS-ON
	2. PS-ON
XP2	1. FAL#
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XP3	1. IPMB0_SCL
	2. IPMB0_SDA
	3. IPMB_PWR

4. VIO Settings



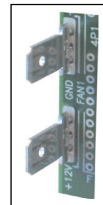
The VIO voltage can be set either to +5V or to +3.3V



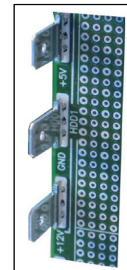
Coding for P1 connectors:

Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



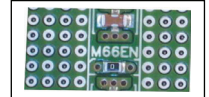
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND, +5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)



M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

Note: the 66MHz backplanes have always VIO set to +3.3V

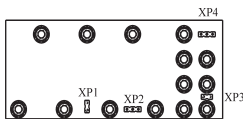
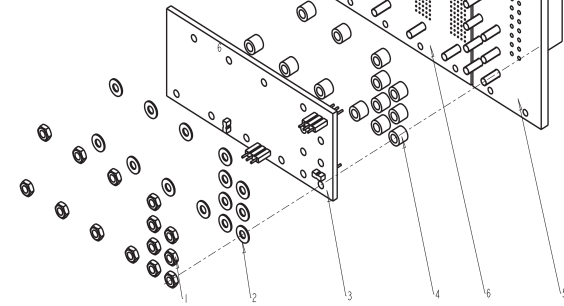
2. Power Option K – Positronic 3U x 8HP

– for backplanes with 4-8 slots, 3U

Pinout of the Positronic connector

Pin	Signal	Description
1-4	+5V	+5V Output
5-12	GND	+5V and +3.3V Return
13-18	+3.3V	+3.3V Output
19	GND	+12V Return
20	+12V	+12V Output
21	+5V	+5V Output
22	GND	Signal Return
23	Reserved	Reserved
24	GND	+12V Return
25	GND	Geographical Address Bit 0
26	Reserved	Reserved
27	EN#	Enable
28	GAT	Geographical Address Bit 1
29	WC	+5V Adjust
30	+5V Sense	+5V Remote Sense
31	GNA	Geographical Address Bit 2
32	WC	+3.3V Adjust
33	+3.3V Sense	+3.3V Remote Sense
34	GND	Sense Return
35	+5V Share	+5V Current Share
36	+12V Sense	+12V Remote Sense
37	IPMB_SCL	System Management Bus
38	DEG#	Degrade signal
39	RP#	Reset Signal
40	IPMB_SDA	System Management Bus
41	+3.3V Share	+3.3V Current Share
42	FAL#	Fair Signal
43	IPMB_PWR	System Management Bus
44	+12V Share	+12V Current Share
45	CGND	Chassis Ground
46	ACN	AC Neutral / HDG Input
47	ACL	AC Line / SDC Input

View from rear side



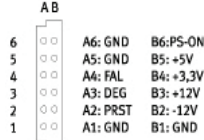
Included Components:

- 1) 14 x nut for M3 screw
- 2) 14 x washer for M3 screw
- 3) Power piggyback
- 4) 14 x spacer (5mm height)
- 5) Power backplane
- 6) CPCI backplane

XP1 / XP3	Pin1 : FAL#
	Pin2 : DEG#
XP2 / XP4	Pin1 : IPMB0_SCL
	Pin2 : IPMB0_SDA
	Pin3 : IPMB_PWR

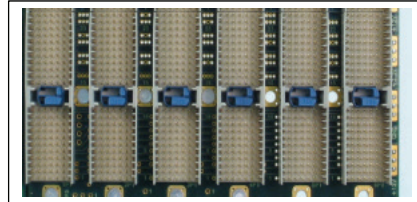
3. Additional Connectors – Pin Assignment

FCON (12-way Header); part number of mating connector including 1m cable: 008-083

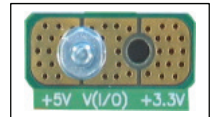


2 slot		3-8 slot	
XP1	1. PS-ON	XP1	1. PS-ON
	2. FAL#	XP2	1. FAL#
	3. DEG#	XP2	2. DEG#
XP2	1. IPMB0_SCL	XP3	1. IPMB0_SCL
	2. IPMB0_SDA	XP3	2. IPMB0_SDA
	3. IPMB0_PWR	XP3	3. IPMB0_PWR

4. VIO Settings



The VIO voltage can be set either to +5V or to +3.3V



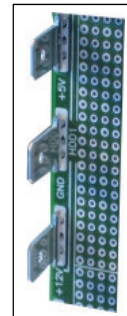
Coding for P1 connectors:

Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



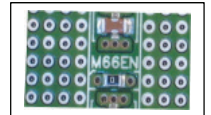
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND, +5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)

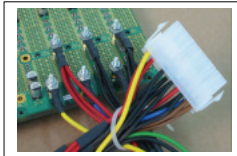


M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

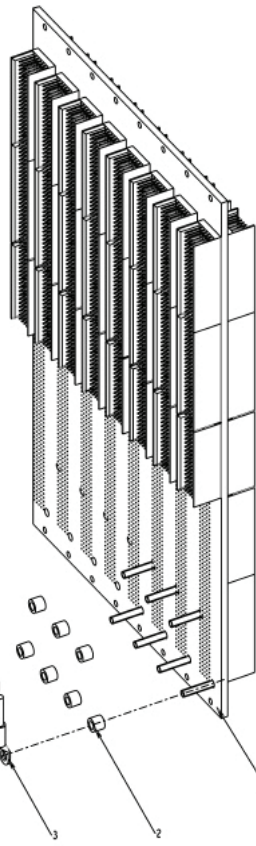
Note: the 66MHz backplanes have always VIO set to +3.3V

2. Power Option H – ATX Cable

- for backplanes with 2-8 slots, 3U or 6U



View from rear side

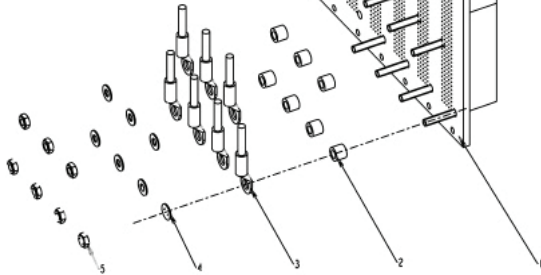


- Included Components:
- 1) CPCI Backplane
 - 2) 7 x spacer (5mm height)
 - 3) ATX cable
 - 4) 7 x washer for M3 screw
 - 5) 7 x nut for M3 screw

Pinout of the ATX connector

Yellow +12V	10	20	+5V Red
NC	9	19	+5V Red
NC	8	18	NC
Black COM	7	17	COM Black
NC	6	16	COM Black
Black COM	5	15	COM Black
Red +5V	4	14	PS-ON Green
Black COM	3	13	COM Black
+3.3V Brown	2	12	-12V Blue
+3.3V Brown	1	11	+3.3V Brown

Pins 13 and 14 are to be used to switch ON/OFF the ATX power supply



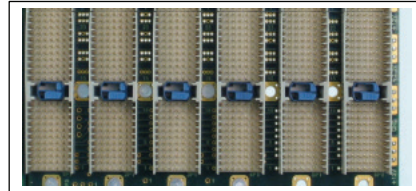
3. Additional Connectors – Pin Assignment

FCON (12-way Header); part number of mating connector including 1m cable: 008-083

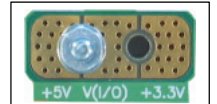
	A B		
6	○	A6: GND	B6: PS-ON
5	○	A5: GND	B5: +5V
4	○	A4: FAL	B4: +3.3V
3	○	A3: DEG	B3: +12V
2	○	A2: PRST	B2: -12V
1	○	A1: GND	B1: GND

2 Slot			3-8 slot		
XP1	1. PS-ON		XP1	1. PS-ON	
	2. FAL#			2. PS-ON	
	3. DEG#		XP2	1. FAL#	
				2. DE G#	
XP2	1. IPMB0_SCL		XP3	1. IPMB0_SCL	
	2. IPMB0_SDA			2. IPMB0_SDA	
	3. IPMB0_PWB			3. IPMB0_PWB	

4. VIO Settings



The VIO voltage can be set either to +5V or to +3.3V



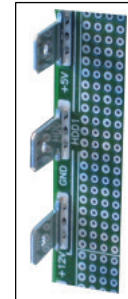
Coding for P1 connectors:

Coding Device	VIO
Cadmium Yellow RAL 3456	+3.3V
Brilliant Blue RAL 1567	+5V

5. Power connections for additional devices



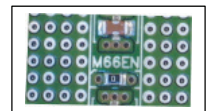
Fastons for Fan Connection (+12V, GND)



Fastons for HDD Connection (+12, GND,+5V)

6. 33 / 66MHz Operation

(for BPs with 5 slots or less)



M66 fitted	33MHz Operation
M66 not fitted	66MHz Operation

Note: the 66MHz backplanes have always VIO set to +3.3V