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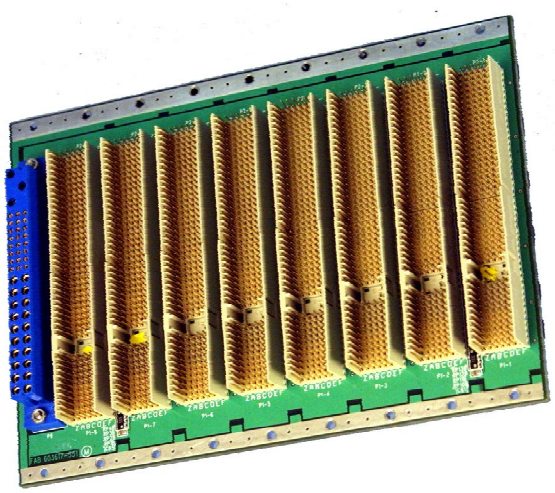
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HARDWARE REFERENCE MANUAL

UMAC CPCI Accessory Cx



Compact UBUS Backplane Boards

4Ax-603617-xHxx

January 28, 2003

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INTRODUCTION

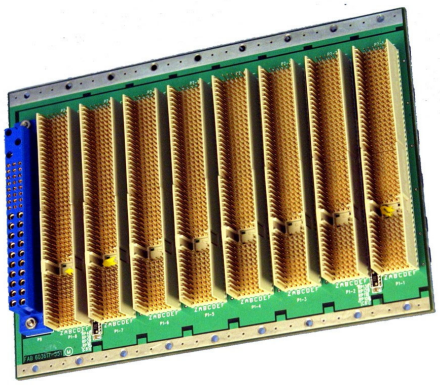
The Acc-Cx family of backplane boards for the UMAC CPCI controller provides the connection means for field wiring, power supply and interboard communications for this controller. These backplane boards implement the Compact UBUS communications bus that enables the UMAC CPCI CPU board to communicate with the motion and I/O interface boards. The x in the accessory name refers to the number of Compact UBUS slots (including the slot for the CPU) on the board.

For each 3U-format board installed in the backplane, there is also a pass-through connector on the backplane board that permits a distribution system for the field wiring from the rear of the rack. With the proper system engineering, this results in a very neat, hidden system of distribution wiring.

The Acc-Cx also provides the power-input connector and the power-supply installation connector for the system.

The Acc-C8 8-slot Compact UBUS Backplane board (part number 300-603617-10x) was the first of this family to be designed. Others may be available. Contact a Delta Tau distributor for details.

The Acc-C8 8-slot backplane board:



The Compact UBUS is a high-density version of Delta Tau's UBUS backplane bus for the original UMAC controller. Whereas the original UBUS utilizes a VME-style 96-pin DIN connector that occupies the full height of a 3U-format board, the Compact UBUS uses a Compact PCI-style 110-pin high-density connector that occupies only the bottom half of a 3U-format slot. The Compact UBUS is identical in operation, both electrically and in software, to the original UBUS; only the form factor has changed.

While the Compact UBUS uses the same connections as the Compact PCI bus, and uses the same power-supply and return pins, it is designed as a terminated bus, whereas the Compact PCI bus is un-terminated. Every signal line on the Compact UBUS has a 330-ohm pull-up resistor at each end, and a 470-ohm pull-down resister at each end.

CONNECTIONS

In a typical configuration, the Acc-Cx Compact UBUS backplane board is installed into a standard 3U-format Eurorack with screws and the 3U-format UMAC CPCI boards are slid into the rack so that their J1 and J2 rear connectors mate with the P1-n and P2-n connectors on the front side of the backplane board. A rack-mounted power supply is installed into the P47-style power connector and the power source is connected into the rear-side J1 connector. Distribution boards or cables for the field wiring are connected to the rear-side P2-n connectors.

In a typical installation, the UMAC CPCI CPU board is simply slid into a slot of a 3U-Eurocard rack until it inserts into the mating connectors on the backplane board already installed in the rack. In actual operation, all signals to the board come into the CPU board through the backplane. (The front-panel RS-232 connector is intended for test and debugging purposes.)

Compact UBUS Connectors

The P1-n Compact UBUS connectors along the bottom half of the front side of the backplane board provide the means for the UMAC CPCI CPU board to communicate with axis and I/O boards through the backplane. They also provide the 3.3V and 5V (and optionally the +/-12V) power supply lines to the 3U-format boards. Matching pins on all P1-n (n = 1 to x on an Acc-Cx board) connectors are bussed together.

Because of the design of the Compact UBUS, the CPU board can operate in any slot of the bus. However, if the CPU board has the CPCI bridge board installed on it, the CPU board must be installed in the end slot of the Compact UBUS backplane immediately adjacent to the Compact PCI bus backplane board, so the bridge board can be installed in the adjacent CPCI end slot.

Field Wiring Connectors

The P2-n field-wiring connectors at the top of the back edge of the board provide the path for all of the signals between each 3U-format board and the outside system. These are pass-through connectors, so that the same signals are available on matching pins on the front and back of the same connector. Each P2-n connector is electrically independent of all the other P2-n connectors. In a typical configuration, a system-specific distribution system is installed behind the backplane for each P2-n connector used.

Power Supply Connector

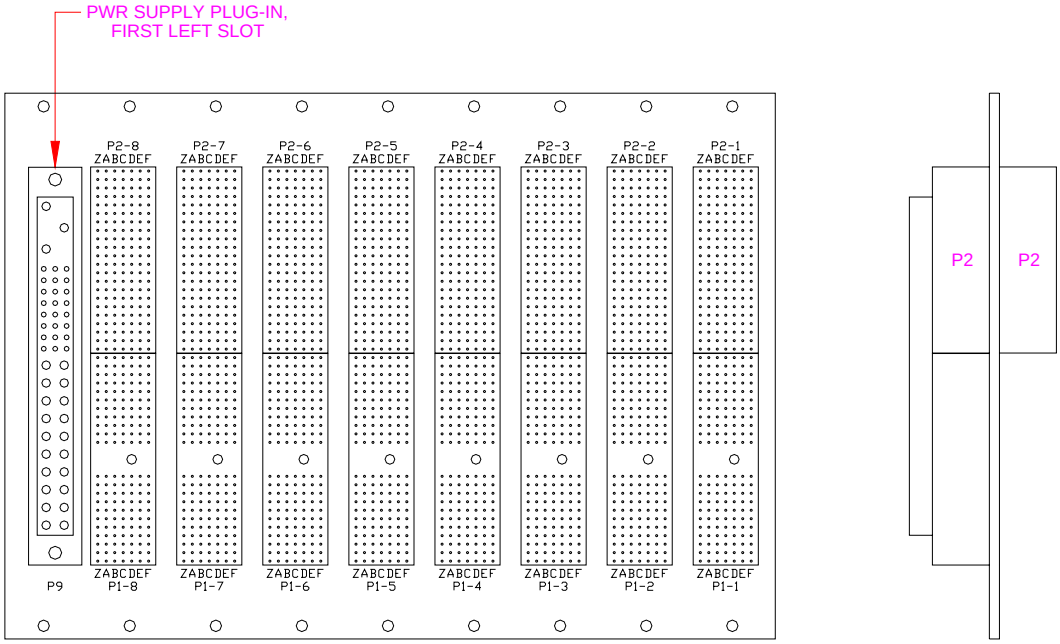
The P{x+1} connector on the Acc-Cx (e.g. P9 for the 8-slot Acc-C8 board) connector is a P47-style power-supply connector. It is designed so that standard 3U-format CPCI power supplies can be installed, with voltage level V1 as +5V; V2 as +3.3V; V3 as +12V; and V4 as –12V.

Power-Input Connector

The J1 connector on the rear side of the Acc-Cx board opposite the power-supply connector provides the means to bring in the power input to the UMAC CPCI system. These pins simply provide a pass-through of the power-input to the rack-mounted power supply. Depending on the power supply used, an AC or DC power input may be used.

BACKPLANE BOARD LAYOUT

This diagram of the UMAC CPCI Acc-C8 backplane board shows the locations of the connectors. Detailed information about each connector follows:



CONNECTOR SUMMARY

P1-n:	Compact UBUS Backplane Connectors
P2-n:	Thru-Backplane Field Wiring Connectors
P{x+1}	Rack-Mounted Power Supply Connector
J1:	Line Supply Input Connector
J2:	Alternate Analog Power Connector

CONNECTOR PINOUTS

Compact UBUS Connector (P1-n) Pin-Out

For a backplane board with x data slots, the connector P1-n (n = 1 to x) is the Compact-UBUS connector for each 3U-format board. Like signals on all P1-n connectors are bussed together.

Row	Z	A	B	C	D	E	F
25	GND	5V			3.3V	5V	GND
24	GND	BD02	5V	V(I/O)	BD01	BD00	GND
23	GND	3.3V	BD05	BD04	5V	BD03	GND
22	GND	BD09	BD08	3.3V	BD07	BD06	GND
21	GND	3.3V	BD13	BD12	BD11	BD10	GND
20	GND	BD17	GND	BD16	BD15	BD14	GND
19	GND	3.3V	BD20	BD19	GND	BD18	GND
18	GND	BD23	GND	3.3V	BD22	BD21	GND
17	GND	3.3V	{BD26}	{BD25}	GND	{BD24}	GND
16	GND	{BD30}	GND	{BD29}	{BD28}	{BD27}	GND
15	GND	3.3V	BWR-	BRD-	GND	{BD31}	GND
14	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*
13	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*
12	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*	*(KEY)*
11	GND	CS10-	CS4-	CS3-	GND	CS2-	GND
10	GND	CS16-	GND	3.3V	CS14-	CS12-	GND
9	GND	IREQ2-	IREQ1-	MEMCS1-	GND	MEMCS0-	GND
8	GND	PHASE+	GND	SERVO+	WAIT-	IREQ3-	GND
7	GND	PHASE-	WDO	SERVO-	GND		GND
6	GND	BA02	GND	3.3V	BA01	BA00	GND
5	GND	BA04	BA03	RESET-	GND	BX/Y	GND
4	GND	BA07	GND	V(I/O)	BA06	BA05	GND
3	GND	BA11	BA10	BA09	5V	BA08	GND
2	GND	{BA15}	5V	{BA14}	BA13	BA12	GND
1	GND	5V	-12V	PWRGUD	+12V	5V	GND

Notes:

1. Row 25 is physically at the top of the connector in its normal orientation; Row 1 is at the bottom. Looking from the front of the rack, Column Z is on the left; Column F is on the right.
2. Supply (Vxx and xxV) and ground pins are in the same locations as the Compact PCI bus.
3. Spaces marked *(KEY)* are for the mechanical key; these are not pins.
4. Pins marked with {} brackets are reserved for future use; the signals inside the brackets are proposed for future expansion to a 32-bit data bus and 16-bit address bus.

Pass-Through (P2-n) Connectors

For a backplane board with x data slots, the connector P2-n (n = 1 to x) is the pass-through connector for field wiring for each 3U-format board.

Row	Z	A	B	C	D	E	F
22	GND	*	*	*	*	*	GND
21	GND	*	*	*	*	*	GND
20	GND	*	*	*	*	*	GND
19	GND	*	*	*	*	*	GND
18	GND	*	*	*	*	*	GND
17	GND	*	*	*	*	*	GND
16	GND	*	*	*	*	*	GND
15	GND	*	*	*	*	*	GND
14	GND	*	*	*	*	*	GND
13	GND	*	*	*	*	*	GND
12	GND	*	*	*	*	*	GND
11	GND	*	*	*	*	*	GND
10	GND	*	*	*	*	*	GND
9	GND	*	*	*	*	*	GND
8	GND	*	*	*	*	*	GND
7	GND	*	*	*	*	*	GND
6	GND	*	*	*	*	*	GND
5	GND	*	*	*	*	*	GND
4	GND	*	*	*	*	*	GND
3	GND	*	*	*	*	*	GND
2	GND	*	*	*	*	*	GND
1	GND	*	*	*	*	*	GND

Notes:

1. Row 25 is physically at the top of the connector in its normal orientation; Row 1 is at the bottom. Looking from the front of the rack, Column Z is on the left; Column F is on the right.
2. The pins labeled as * simply pass through the Acc-Cx backplane board, without connecting to any other signal on the board.

P{x+1}: Power Supply (P47-Style) Connector

For a backplane board with x data slots, the connector P{x+1} (e.g. P9 for the Acc-C8 8-slot board) is the power-supply connector.

Pins 1-20: Size 16 Power-Supply Outputs to Backplane			
Pin No.	**Description**	**Pin No.**	**Description**
1	+5V (V1)	11	+5V/+3.3V Return (ground plane)
2	+5V (V1)	12	+5V/+3.3V Return (ground plane)
3	+5V (V1)	13	+3.3V (V2)
4	+5V (V1)	14	+3.3V (V2)
5	+5V/+3.3V Return (ground plane)	15	+3.3V (V2)
6	+5V/+3.3V Return (ground plane)	16	+3.3V (V2)
7	+5V/+3.3V Return (ground plane)	17	+3.3V (V2)
8	+5V/+3.3V Return (ground plane)	18	+3.3V (V2)
9	+5V/+3.3V Return (ground plane)	19	+12V Return (ground plane)
10	+5V/+3.3V Return (ground plane)	20	+12V (V3)
Pins 21-44: Size-20 Signal Interface Pins			
21	-12V (V4)	33	+3.3V Sense (connect to center of +3.3V power plane)
22	Signal Return	34	Sense Return
23	Reserved (no connection)	35	V1 Share (no connection on single-supply backplane)
24	-12V Return (ground plane)	36	+12V Sense (connect to center of +12V power plane)
25	GA0 (Supply slot address bit 0 – ground for supply slot 0)	37	SMB SCL (no connection)
26	Reserved (no connection)	38	DEG#
27	EN# (ground plane)	39	INH# (leave open for no inhibit function)
28	GA1 (Supply slot address bit 1 – ground for supply slot 0)	40	SMB SCL (no connection)
29	V1 ADJ (no connection – for nominal voltage)	41	V2 Share (no connection on single-supply backplane)
30	+5V Sense (connect to center of +5V power plane)	42	FAL#
31	GA2 (Supply slot address bit 2 – ground for supply slot 0)	43	SMB PWR (no connection)
32	V2 ADJ (no connection – for nominal voltage)	44	V3 Share (no connection on single-supply backplane)
Pins 45-47: Size-16 Power-Supply Inputs from Backplane			
45	Chassis GND		
46	ACN / +DC In (AC Neutral/ Positive DC input)		
47	ACL / -DC In (AC Line/ Negative DC input)		

J1 Line Supply Input Connector

Pin #	Symbol	Function	Description	Notes
1	CHASSIS GND	EARTH	Connection to earth ground	Important safety connection
2	ACN / DC IN+	INPUT	Neutral input for AC supply; positive input for DC supply	Signal level and type dependent on power supply installed.
3	ACL / DC IN-	INPUT	Line input for AC supply; negative input for DC supply	Signal level and type dependent on power supply installed.
This connector on the rear side of the Acc-Cx backplane board provides the means for bringing power into the UMAC CPCI system. These signals are simply passed through the backplane board to the power supply.				

J2 Alternate Analog Power Connector

Pin #	Symbol	Function	Description	Notes
1	+12V RETURN	Common	Reference for +12V Supply	Usually tied to –12V RETURN
2	+12V	Input / Output	+12V analog supply for backplane	This pin can be used as input if the rack supply does not have +12V; it can be used as output if the rack supply provides it.
3	-12V	Input / Output	-12V analog supply for backplane	This pin can be used as input if the rack supply does not have +12V; it can be used as output if the rack supply provides it.
4	-12V RETURN	Common	Reference for -12V Supply	Usually tied to +12V RETURN

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