
xTCA Workshop Topic Suggestions

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Issues impacting future P4P WIP

- ATCA hardware (ATCA3.8 Draft)
 - Goal: RTM Interface IO specification to work for ~80% of use cases plus management interface
 - Fabric IO, power & management connectors
 - Document being edited by Dick Somes, former Technical Officer of PICMG. Invaluable.
 - Should be sent to PICMG as soon as MTCA.4 is out (Committee priority decision)
 - Interoperability protected by mechanical, E-keying
 - Power managed like another AMC
 - Industry physics members serving on other committees assure solutions compatible w/existing base specs
- Conclusion – Document will be fine as is. However...

WG item 1

- Physics community *using* ARTMs need to discuss future needs to help promote common solutions
 - e.g. M. Huffer (SLAC) just announced he wants more channels for DAQ MPP processing than ZDs provide
 - Can get some improvement with FCI Airmax series
 - Physically more dense, seem to work just as well (BW, crosstalk)
 - Recommend WG add to list to discuss. Give feedback
 - Data connectors a moving target

ATCA3.8

xTCA™

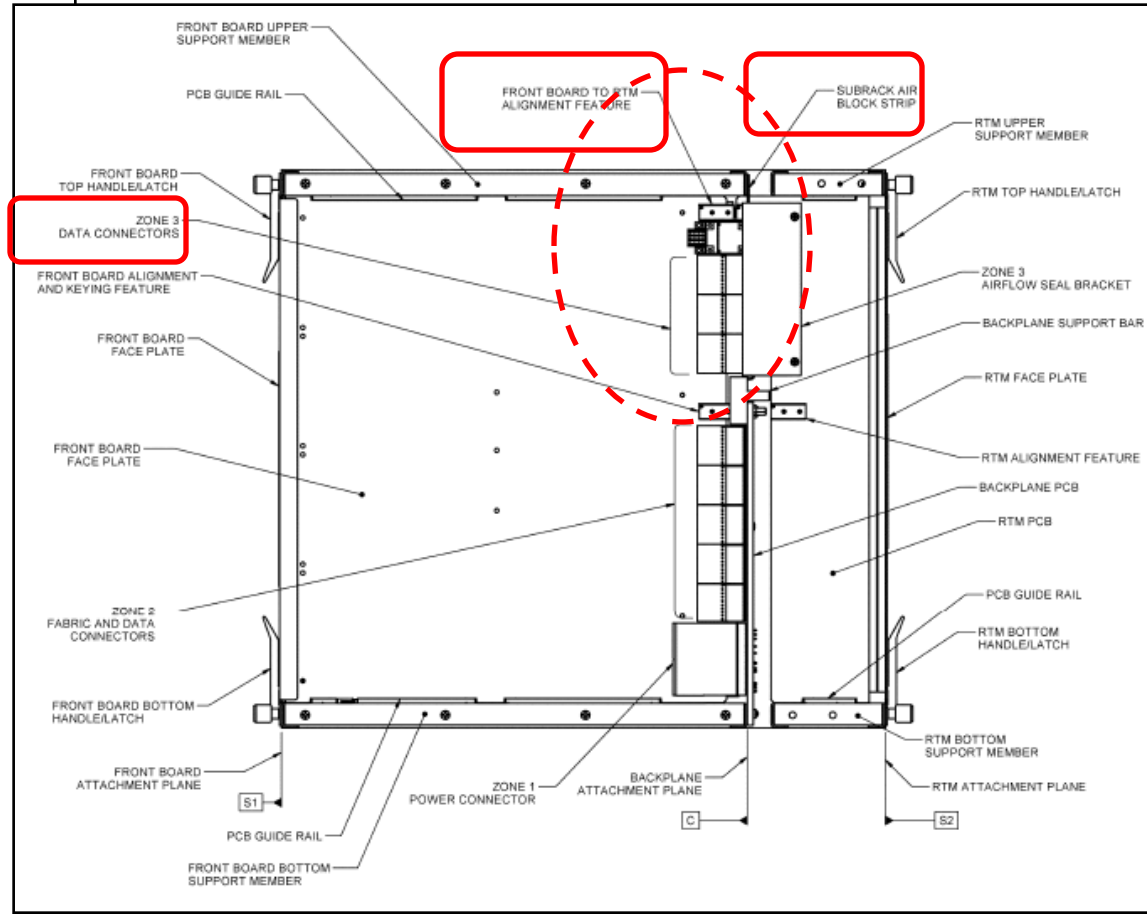
PICMG® 3.8
R1.0 D0.7

AdvancedTCA Rear Transition Module
for Physics

10 September 2010



Open Modular
Computing Specifications



ATCA RTM Connector Details

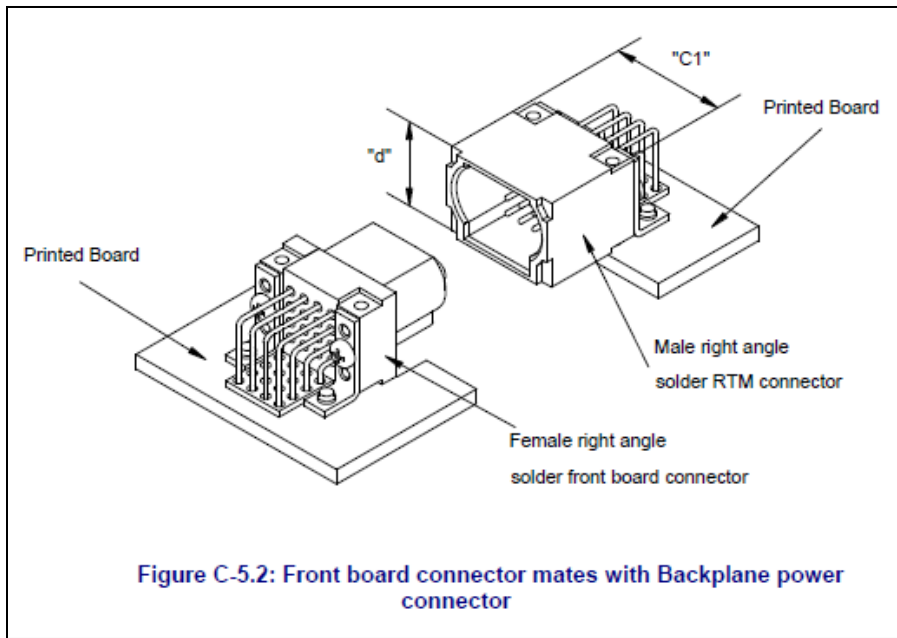


Figure C-5.2: Front board connector mates with Backplane power connector

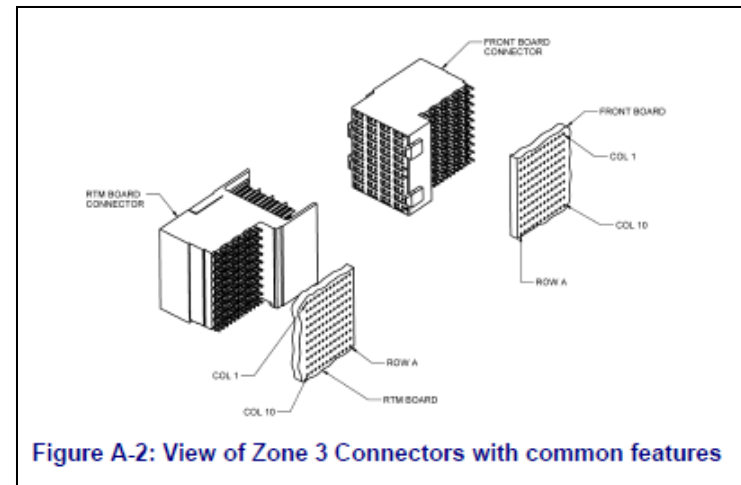


Figure A-2: View of Zone 3 Connectors with common features

Table 2-1: Power/Management Connector Pin Assignments

Pin #	Use	Pin #	Use	Pin #	Use	Pin #	Use
A4	MP	A3	PS0#	A2	ENABLE#	A1	JTAG TMS
B4	+ 12V	B3	PS1#*	B2	Reserved	B1	JTAG TDI
C4	+ 12 V Rtn	C3	SDA_L	C2	Logic Gnd	C1	JTAG TDO
D4	MP Rtn	D3	SCL_L	D2	Shelf Gnd	D1	JTAG TCK

- This is a short pin for last mate that fulfills the hot swap requirement (see Section 3.1.1).

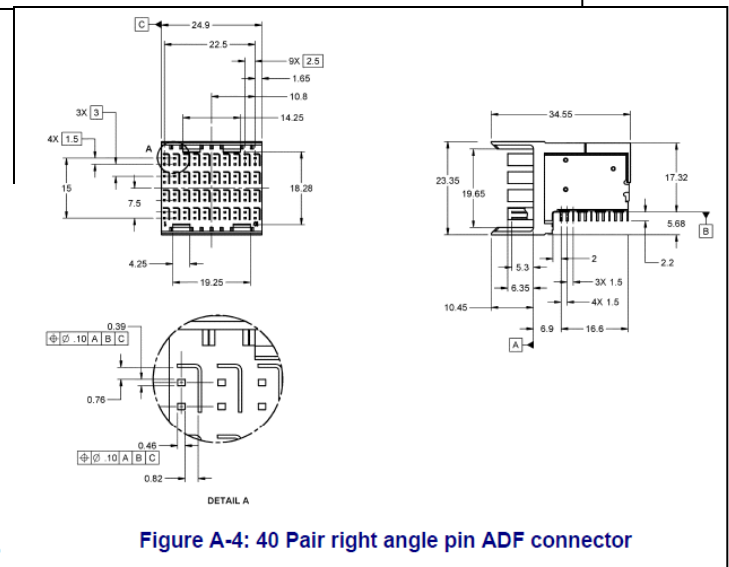


Figure A-4: 40 Pair right angle pin ADF connector

Item 2: ATCA Timing Distribution Proposal

- Jorge Sousa of IPFN Lisbon proposal discussed at Lisbon meetingExamines several approaches
 - Concludes on one that uses lines normally found in standard BP and results in 100psec performance with improvement possible
 - Has internal agreement from very small committee
 - Fast clock lines inside MTCA backplane on MicroResearch Event Receiver good to 10 psec
 - (RF short term stability goals for LCLS <100 fsec range)
- Need more user discussion and FB on JS proposal

Item 3: FPGA Remote Config, Diagnostics

- Problems in large systems in radiation environment
 - detecting ``sleeping errors`` due to SEU errors radiation environment.
 - Unacceptably slow download via management channel
 - Manual not an option for 1000s of devices
- Solutions:
 - Redundant voting systems, e.g. 2/3 voting for interlocks (XFEL)
 - Local RAM holding reference image and constant checking in background against actual image (dual redundancy)
 - Fast LAN extension of IPMI for downloads
- Suggest WG study use cases & give FB to PICMG Committees

Item 4: System wide software, IPMI

- Major *guidelines* goals covered in roadmap
 - Ref Gus Lowell talk given recently at LBNL (will circulate later)
 - Define system-wide architectures for high availability
 - Define APIs for virtual devices, e.g. ADCs, that can easily accept a different ADC by filling in description
 - Define IPMI implementations enterprise-wide
 - i.e. Should be able to install equivalent of BMC in any device, e.g. pulsed power Marx Modulator cells, capture waveforms on fault or demand, read out routinely in control room or maintenance depot
- Software group needs help
 - Small number of people seem overloaded, not making promised deliverables, Gus doing most of the work and is not a lab guy so needs more lab people involved.
 - IPMI has special issue of proprietary commercial code that we try to avoid for lab use because inhibits sharing, want a true open source product.