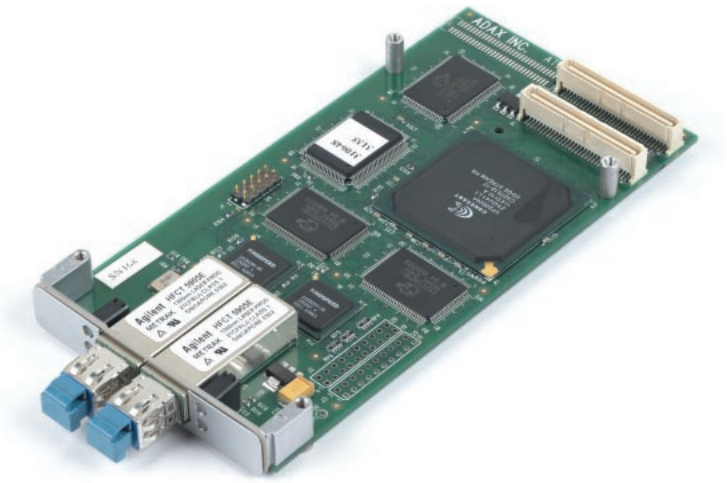
data sheet **hardware**

Foundations for Signaling Networks

ATMII-PMC

Controller for real-time Voice and Video over ATM AAL2; Signaling and IP over AAL5



Overview

The ATMII-PMC card is a high performance PCI Mezzanine Controller for Wireless, Internet Access and Next Generation Networks. The ATMII-PMC integrates easily to CompactPCI carrier boards and Single Board Computers (SBCs) for the optimal processing of high volume, multi media traffic on new mobile networks. With support for AAL2, as well as AAL5, the board has the capability for real-time voice and video over AAL2, as well as signaling and IP over AAL5 in 3G networks. The ATMII-PMC has been designed specifically for Node-B, RNC, SGSN and MSC applications over ATM. The PMC form factor enables the full utilization of slot space in a system, and multiple ATM cards can be installed together to provide a highly scalable, flexible and cost effective 3G solution. The ATMII-PMC complements the existing PCI and cPCI intelligent controller family from Adax, giving customers maximum flexibility in platform choice.

The ATMII-PMC enables development flexibility in building next generation infrastructure and can be configured in many ways depending on customer specification and their preferred architecture. This enables integrators to satisfy a wide range of requirements with a single common core architecture, saving development time and increasing the capability of customers to integrate their solutions ahead of competition.

Features

- AAL2 and AAL5 supported concurrently on a single ATM link.
- Support for up to 672 AAL2 voice channels.
- Available with SAAL software modules including SSCOP, SSCF/SSCS and SSSAR/SSTED/SSADT.
- Supports SSCOP/SSCF creating High Speed Links for broadband SS7 in accordance with Telcordia GR-2878-CORE.
- Supports IP over AAL5; passing of AAL2 multiplexed voice traffic; Classical IP over ATM.
- Supports RFC2225 (Classical IPoA).
- Support for User-to-User (UU) information field.
- Compatible with SIGTRAN and Frame Relay software modules.
- IP Inverse Address Resolution and Discovery for ATM, for learning target IP addresses of the remote end.
- AAL5 API is completely compatible with all current ATM PCI and cPCI protocols therefore applications run unchanged.
- 2,048 Virtual Circuits (VCs) for signaling and/or other protocols.
- Two OC3/STM-1/STS-3c interfaces split over total 155Mbps bandwidth for reliability, availability and multi-functionality.
- Four full E1/T1 trunks – software selectable G.703/G.704 compliant.
- Comprehensive alarms and status reporting capabilities for OC3, T1 and E1.
- Utilizes on board AAL2 and AAL5 communications processor.
- Support for Solaris x86, Solaris SPARC, Linux, VxWorks Operating Systems.
- 32-bit PMC board.
- Compatible with PMC on CompactPCI® Specification PICMG 2.3 R1.0 Table 4, August 7, 1998 (T1/E1 only).
- Compatible with PTMC PICMG 2.15 Revision 1.0, April 11, 2001 (T1/E1 only).
- One or two ATMII-PMC cards can be mounted on an SBC for a signaling blade solution or on a cPCI carrier to provide a high density cPCI I/O card.

Application Overview

The ATMII-PMC is the ideal solution for wireless networks and is able to accommodate different types of system architecture depending on customer requirements. This flexibility of the ATMII-PMC results in a high performance, cost effective solution, with minimal customer development time and costs, whilst reducing time to market.

The different architecture options for using the ATMII-PMC include the following scenarios. Up to two PMC modules can be attached to a carrier card, with communication to the CPU occurring across the bus interface. For a higher performing solution, the Operating System of the application can be independent to that of the I/O by attaching the PMC module to a Single Board Computer (SBC). This means the most suitable OS can be selected for different parts of the system. Through attaching the ATMII-PMC to an SBC, which is PICMG2.16 compliant, communication between the boards in the chassis occurs over the J3 port/via Ethernet, minimizing the bus as a point of failure in the system and increasing the reliability and availability of the solution. Ultimately, the ATMII-PMC can be configured as a broadband signaling solution on a card. In the case of a SBC with Ethernet ports for connection to IP networks, the set up can act as a gateway between IP based networks and broadband 3G Nodes.

The Adax ATMII-PMC can be implemented throughout UMTS/3G network nodes, offering unparalleled flexibility for building SGSNs, MSCs, RNCs and Node-Bs and making it the ideal solution for developers looking to build crucial 3G infrastructure.

Serving GPRS Support Nodes (SGSN) and Mobile Switching Centers (MSC)

The ATMII-PMC has the capability to sit beneath all the signaling protocol stacks in the SGSN and MSC in a UMTS network, with support for a variety of protocols simultaneously on the card. The Radio Access Network Application Part is the Radio Access Layer for the Iu Interface and is found in both the SGSN and MSC. Here, integration is at the MTP3b and M3UA level via SSCOP/SSCF and SCTP respectively. SSCOP/SSCF runs over AAL5 on the Adax ATM card. The Gateway Tunneling Protocol (GTP) in the SGSN runs over IP over Ethernet, and over AAL5 over ATM using Adax Frame Relay. GTP is supported by the Ga, Gn and Gp interfaces, which interconnect the SGSN to the GGSN and charging gateways.

Radio Network Controllers (RNC)

The Adax ATMII-PMC supports both the Iu-PS and Iu-CS interfaces for which RANAP is the Radio Network Layer signaling protocol. As described above Adax can fully support the RANAP stack using AAL5. In addition to this, the Iu-CS requires AAL2 transport, and the ATMII-PMC can support the passing of AAL2 multiplexed traffic. This further completes the ability for the ATMII-PMC to offer a solution for every node in a UMTS network. With the option of either OC3/STM-1/STS-3c single/ multi mode interfaces or T1/E1 interfaces, it provides the ideal solution for any customer requiring 3G signaling.

Node-B

With support for AAL2 on the ATMII-PMC it can provide the foundation for the Node-B in UMTS networks. The Adax SSCOP UNI software is integrated to the higher layer framing protocols, which connect the Node-B to the RNC. Consequently, the ATMII-PMC has the ability to be deployed within every UMTS network node, from the edge of the Radio Network Subsystem, right through into the heart of the Core Network.

Single Board Signaling Gateway

The commonality of software between the Adax products means that the ATMII-PMC can be used to migrate narrowband SS7/IP signaling gateways to broadband solutions with minimal change in higher layers. This not only protects a customer's investment in higher layer software and design time, but also enables customers to quickly and seamlessly utilize the higher bandwidth of broadband ATM solutions.

Adax has a complete set of solutions for next generation network infrastructure in a compact, reliable and scalable format using the ATMII-PMC cards, which can be configured according to a customers preferred architecture.

Technical Specifications

Protocol Support

- ATM AAL2, ITU-T I.363.2
- ATM AAL5, ITU-T I.363.5
- SSCOP, Q.2110
- SSCF NNI, Q.2140
- SSCF at UNI per Q.2130
- SSCS Layer Management, Q.2144
- SSSAR/SSTED/SSADT, ITU-T I.366.1
- HSL over AAL5, Telcordia GR-2878-Core
- SCTP, RFC 2960, RFC 3309
- Classical IP over ATM, RFC 2225
- Frame Relay over ATM AAL5, FRF.5
- IP over ATM AAL5, RFC 1577
- SCTP over IP over AAL5
- B-ISDN ATM Layer Specification, I.361
- ATM cell mapping into PDH, G.804

Interface

- 4 x T1/E1 (software selectable) or 2 x OC3/STM-1/STS-3c
- T1, ANSI T1.102, T1.403, AT&T TR62-411, Bellcore TR-TSY-000170
- E1, ITU G.703, G.704 and G.705 including CRC4, ETSI TBR 12 and 13
- Support for single mode fiber and multi-mode fiber (ITU G.957).

Power Requirements

- Universal card for 3.3 and 5 volts systems
- 1.6 Amps at 5 volts dc
- 0.3 Amps at +/- 12 volts dc
- Conforms to EN55022 for EMC
- Conforms to EN60950 for safety
- Compliant with Low Voltage directive

Standards

- PCI Mezzanine Card (PMC) IEEE P1386.1
- PCI Revision 2.2
- PMC on CompactPCI® Specification PICMG 2.3 R1.0
- CompactPCI PCI Telecom Mezzanine card specification PICMG2.15

Quality

Adax manufacturing Quality Assurance is approved in accordance with the provisions of EC Council Directive 91/263/EEC.
Adax Europe Limited is an ISO 9001:2000 registered company

Temperature Range

-5° to +50°

Board Dimensions

PMC – 14.9 cm x 7.4 cm

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All specifications are subject to change without notice.