

## HDCII-PCI and HDCII-PCle

### High density narrowband channelized controllers for all signaling protocols



#### Overview

The Adax HDCII card is a new generation of SS7 controller card designed to handle the increased demands of IP convergence. It is the card that allows operators and service providers to achieve the promise of SIGTRAN cost savings immediately. Specifically designed for wireless, wireline and converging PSTN/IP network platforms, the Adax HDCII also supports traditional SS7 and SIGTRAN protocols. At the same time, it provides a high performance signaling solution for narrowband and SS7 over IP applications. The HDCII provides one of the highest densities available on the market today, making it ideal for demanding telecommunications systems that have high capacity and throughput requirements. On-board processors perform many thousands of transactions per second, with minimal load on the host, maximizing the performance of the applications for customers without compromising reliability.

The HDCII is dynamically configurable and is capable of delivering up to 128 channels of multiple protocols, including SS7 MTP2, SCTP, LAPB/D/V5, Frame Relay, X.25 and HDLC per card. With the ability to install multiple cards in a system it provides a totally scalable, flexible and cost-effective solution. The HDCII is ideal for Signaling Gateways, Media Gateway Controllers, and SGSN, GGSN, MSC, HLR/VLR and BSS nodes in Next Generation Networks.

#### Features

- Up to 124 MTP2 links per card with high line utilization.
- Up to 4 HSL MTP2 links per card.
- Available in PCI/PCI-X and PCI Express formats
- Support for up to 128 channels of one or a combination of protocols on one card, including Frame Relay, HDLC, X.25, LAPB/D/F/V5, SCTP, M3UA, M2UA and M2PA.
- The ability to pass PCM voice traffic.
- Dynamically configurable per port and per channel protocol assignment.
- Transparent field upgrades, without host rebooting, saving downtime.
- Multiple cards per system providing for highly flexible and completely scalable solutions.
- On-board RISC processor and Streams environment for local MTP2 and LAPB/D protocol execution, reduces CPU overhead and maximizes performance.
- Channelized HDLC processor, providing time domain multiplexing, buffer re-queuing and management, further reducing host CPU overhead and maximizing capacity to perform application functions.
- Three T1/E1 and twin 10/100/1000 BaseT Ethernet interfaces, or, four T1/E1 interfaces and one 10/100/1000 BaseT Ethernet, all compliant to G.703/G.704 per card.
- Bandwidth allocation of multiple 64 Kbps channels to create fractional T1/E1 links.
- User configurable support for Drop and Insert for the separation of content and signaling.
- High Impedance Monitoring Ports option.
- User configurable support for Frame Time-Stamping.
- User configurable support for FISU Filtering for SS7 traffic.
- Red, Yellow and AIS alarm detection and externally visible trunk status LEDs.
- Support for MTP2 PCR and BEC error correction.
- Provides diagnostic, line loopbacks and per DSO loopbacks.
- PCI 2.2 and PCI Express 1.1 industry standard architecture compliant.
- Single HDCII driver supports PCI/PCI-X, PCI Express and PMC form factors, so applications run unchanged.
- Support for Solaris X.86, Solaris SPARC, Linux. Other Operating Systems on request include HP-UX, VxWorks and IBM AIX.



## Application overview

The comprehensive and superior design of the HDCII, with its powerful features is the ideal product for demanding, high-end signaling server solutions for GSM, GPRS, UMTS/3G and converging PSTN/IP networks.

## Next Generation Network applications

The HDCII provides a high performance and cost-effective single slot solution for SGSN and GGSNs, MSC, HLR/VLR and BSS nodes in GPRS networks. For the Gb interface the HDCII can support simultaneous Frame Relay alongside SS7 for the Gc/Gd/Gf/Gr and Gs interfaces. The HDCII provides 128 DSO connections over 4 T1/E1 links per slot, and multiple cards can support up to 2048 Frame Relay channels and thousands of DLCIs per system. This provides a completely scalable Gb interface solution and enables large numbers of BSSs to be connected to a single SGSN. For the SGSN, GGSN and MSC where SS7 is also required the HDCII provides up to 128 64 Kbps SS7 links or 4 HSL MTP2 links per card.

The incredible density of the HDCII and its ability to run high volumes of network traffic makes it perfect for narrowband signaling between 3G SGSNs and HLR/VLR and MSCs in the Core Network. The very high density (124 MTP2 links) of the HDCII card, coupled with its superb performance for large numbers of small transactions (as is common in Telecom transaction operations) means that it is particularly appropriate for HLRs that need to support an increasing number of subscribers.

## SS7 over IP applications

As networks converge and operators are beginning to use IP as a form of transport, developers need to implement solutions that seamlessly bridge circuit switched and packet based networks. The HDCII supports the latest SIGTRAN protocol suite including SCTP, M3UA, M2UA and M2PA, in addition to traditional SS7 MTP2 64k and 2Mb HSL signaling. It represents a highly reliable and effective foundation for SS7 over IP solutions, such as Signaling Gateways and Media Gateway Controllers. The card operates as a gateway between two networks: with support for both SS7 over T1/E1 interfaces for connecting to STPs/SCPs in the PSTN network, and SIGTRAN protocols over Gigabit Ethernet ports for SS7 transport over IP, it is perfect for interfacing Media Gateway Controllers to IP and SS7 networks.

## Future proof Adax product family combination

The Adax HDCII is an entirely future proof solution due to the commonality of the APIs between Adax software products and customer applications. SS7-only solutions can be quickly and easily IP-enabled and can be easily migrated to be a broadband SS7 or SS7/IP solution with minimal changes to the higher layers. All of this protects the customer's investment in their signaling infrastructure and delivers a future proof solution.

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## Technical Specifications

### Protocol Support

- SS7 MTP2: ITU-T Q.703, ETSI 300 008, 300 008-1, ANSI T1.111, TTC JT-Q.703, ITU Q.703 Annex A 1996, China SS7 YD/T 1125 – 2001
- SS7 MTP3: ITU-T Q.704, Q.707, ETSI 300 008, 300 008-1, ANSI T1.111, Bellcore GR246, GR606, GR82
- SS7 MTP signaling performance ITU-T Q.706
- M3UA: RFC 3332
- M2PA: IETF Draft 6-13
- SCTP: RFC 2960, RFC 3309
- LAPB/D: Q.921, TR 41449, TR 62411
- LAPF: Q.922
- LAPV5
- HDLC
- Passing of PCM voice traffic according to G.711
- X.25: CCITT 1980, 1984 and 1988
- Frame Relay/PPP: T1.606, T1.617, T1.618, Q.922, Q.933, RFC1293, RFC2427
- Up to 128 channels of one of the above or a combination of multiple protocols per board.

### Interface

- 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.
- High impedance ports in accordance with G.772

### Power Requirements

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

### Standards

- PCI Specification Revision 2.2
- PCI Express Electromechanical Specification Revision 1.1

### Quality

Adax manufacturing Quality Assurance is approved in accordance with the provisions of the EC Council Directive 91/263/EEC.

Adax Europe is an ISO 9001:2000 registered company.

### Temperature Range

- -5°C to +55°C

### Board Dimensions

- PCI – 10.67 cm x 17.46 cm
- PCI Express – 11.11 cm x 16.77 cm