

# HDC3: 8 Trunk SS7 Signaling & I-TDM Controller

**adax**  
Legacy to LTE

**For AMC, PMC, PCI and PCIe (Full height, Low-Profile and ExpressModule)**



## Overview

The HDC3 is the third generation of the highly successful Adax SS7 controller and offers up to 8 T1, E1 or J1 trunks per card. Specifically designed to meet the demands of wireline, wireless and convergence platforms, the HDC3 excels at traditional TDM SS7, High-Speed ATM SS7 as well as I-TDM voice interworking. The HDC3 provides a high density, high performance solution for signaling and interworking applications.

Delivering up to 248 LSL MTP2 links, I-TDM flows or 8 HSLs (Q.703 Annex A or 64 VCs of ATM AAL5) per card, the HDC3 provides one of the highest densities on the market today, making it ideal for demanding telecommunications applications with high capacity and throughput requirements. The low-power on-board processor performs many thousands of transactions per second, with minimal load on the host, maximizing the performance of the applications and reducing system costs without compromising reliability.

The HDC3 is available in PMC, AMC, PCI and PCIe form factors, all of which share a common software driver and have a consistent API for application portability. This makes the HDC3 card a highly flexible, scalable and portable signaling solution for all system architectures that maximizes protection of investment.

The board is dynamically configurable and can deliver up to 248 channels of multiple protocols, including SS7 MTP2, LAPB/D/V5, Frame Relay, X.25 and HDLC per card (plus 8 channels for framing). With the ability to install multiple cards in a system, the HDC3 provides a totally scalable, flexible and cost-effective solution that is ideal for any signaling node.

The HDC3 controller card offers unparalleled reliability and excellent price performance ratios. The HDC3 allows customers to satisfy a wide range of requirements with common core architecture, a single software driver, and a common API, saving development time, and providing fast time to market and rapid return on investment.

## HDC3 Features

- 8 software selectable trunks of full E1, T1, or J1 per card\*
- Up to 2 Ethernet ports per PCI, PCIe and PCIe ExpressModule card
- AMC, PMC, PCI and PCIe (Full height, Low-Profile\* and ExpressModule) board formats
- Up to 248 LSL MTP2 links per card with high line utilization\*
- Up to 8 HSL (Q.703 Annex A and ATM AAL5) links per card\*
- On-board processor and STREAMS environment for local MTP2 protocol execution, reduces CPU overhead and maximizes performance
- Support for up to 64 VCC's of broadband SS7 ATM AAL5
- Support for up to 128 channels of Frame Relay or a combination of 248 channels of HDLC, X.25, LAPB/D/F/V5 protocols
- Support for M3UA, M2PA, SCTP and M2UA
- Dynamically configurable per port and per channel protocol assignment for Transparent, HDLC, & MTP2 modes
- Single HDC3 driver supports PCI, PCIe, PMC and AMC form factors, so applications run unchanged across all architectures
- Compatible with existing Adax APIs for all previous generation HDC boards
- Supports PCM Voice traffic termination
- Supports I-TDM SFP.1, 125uS for PCM to Ethernet voice traffic Interworking
- Optional support for Drop and Insert to separate content from signaling
- Designed to operate in master, slave, or independent clocking modes
- IPMI subsystem provides ATCA/AMC.0 hot swap and board management services (AMC version only)
- High Impedance Monitoring Ports option
- User configurable support for Frame Time-Stamping and FISU Filtering for monitoring SS7 traffic
- Red, Yellow and AIS alarm detection and externally visible trunk status LEDs
- Support for MTP2 PCR and BEC error correction
- Provides diagnostic and line loopbacks
- Software Drivers for Linux, MontaVista CGE, Solaris X.86 and Solaris SPARC as standard. Other OS support on request

\*Low-Profile PCIe (LPe) board offers 4 T1, E1 or J1 trunks; 124 LSL MTP2 links or 4 HSL links.

## Technical Specifications

### Protocol Support

- SS7 MTP2: ITU-T Q.703, ETSI 300 008, 300 008-1, ANSI T1.111, TTC JTQ. 703, NTT-Q.703, ITU Q.703 Annex A 1996, China SS7 YD/T 1125 - 2001
- Broadband SS7 ATM AAL5: ITU I.363.5, I.361, I.150, I.432.1, ITU-T Q.2110 SSCOP, ITU-T Q.2130/Q.2140 SSCF
- 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
- LAPB/D: Q.921, TR 41449, TR 62411
- LAPF: Q.922
- LAPV5
- HDLC
- X.25: CCITT 1980, 1984 and 1988
- Frame Relay/PPP: T1.606, T1.617, T1.618, Q.922, Q.933, RFC1293, RFC2427
- M3UA: RFC 4666
- M2PA: drafts 6-13/RFC4165
- SCTP: RFC 2960, RFC 3309
- M2UA: RFC 3331
- Passing of PCM voice traffic according to G.711
- Passing of I-TDM traffic according to PICMG SFP.1
- Up to 248 channels of one of the above or a combination of multiple protocols per board (plus 8 channels for framing).

### Interfaces

- T1: ANSI T1.102, T1.403, AT&T TR62-411 Bellcore TR TSY-000170
- E1: ITU Structured G.703; G.704 and G.705 including CRC4, ETSI TBR 12 and 13
- J1: ITU TTC JT-G.703, JT-G.704, including alternate CRC-6 calculation for Japanese applications, and detection of the "Japanese Yellow" alarm
- 8 E1/T1/J1 interfaces (software selectable) per HDC card (LPe has 4 E1/T1/J1 interfaces per card)
- Jitter and Wander in accordance with ITU-T G.823
- High impedance ports in accordance with G.772
- Up to 2 10/100/1000 BaseT Ethernet interfaces per PCI, PCIe, EM card
- Up to 2 1000 BaseX Ethernet interfaces per AMC card

### Power Requirements

#### PMC/LPe

- 6-10 watts typical-maximum power consumption

#### PCI/PCIe/EM

- 7-12 watts typical-maximum power consumption

#### AMC

- 8-14 watts typical-maximum power consumption

### Electrical and Safety

- UL Certified US/16222/UL
- IEC 60950-1 (2011) Second Edition
- Designed to meet:
- FCC Part 15B, Class A
- VCCI (Voluntary Control Council for Interference)
- EN55022:2006 +A1
- EN55024 :1998 +A1:2001, +A2 :2003
- EN61000-4-2, 3, 4, 6

### Compliance

#### PMC

- PCI Mezzanine Card (PMC) IEE P1386.1
- PCI Specification Revision 2.2
- PMC on CompactPCI Specification PICMG 2.3 R1.0
- CompactPCI PCI Telecom Mezzanine card specification PICMG 2.15

#### PCI/PCIe

- PCI Specification Revision 2.3
- PCI Express Electromechanical Specification Revision 1.1
- PCISIG PCI Express ExpressModule Electromechanical Specification Revision 1.0

#### AMC

- PICMG AMC.0 Specification R2.0, mid-size and full-size
- PICMG AMC.1 PCI Express and Advanced Switching R1.0
- PICMG AMC.2 Gigabit Ethernet R1.x
- PICMG AMC.3 Storage Interfaces R1.x
- IPMI Intelligent Platform Management Interface Specifications, V1.5

#### Bus Type:

**PMC** – PMC 3.3V 66/33MHz 32-bit

**PCI** – Full Height, Half Length

**PCIe** – Full Height, Half Length

**PCIe EM** – PCI-e single lane

**LPe** – Half Height, Half Length

**AMC** – PCI-e single lane

#### AMC System Interconnect

PCI Express One x1 PCI Express Interface  
AMC fat pipes region port 4

Gigabit Ethernet: Two Gigabit Ethernet 1000Base-BX

#### AMC Front Panel Interfaces

LEDs: Standard AMC

LED 0 (blue) Hot Swap

LED 1 (amber)

Four trunk status LEDs

One board status LED

#### AMC Telecom Clocks

- Support for TCLKA, TCLKB, TCLKC, TCLKD at 8KHz

#### Environmental Conditions

- Operating Temperatures -5C to 55C
- Storage Temperatures -40C to 65C
- Relative Humidity 10% to 90% (non-condensing)
- Vibration: Operating: 5-100Hz: 0.25G RMS, Passive: 100-500Hz: 1G RMS

#### Flammability

- All components meet a flammability rating of UL 94-V0

#### Board Dimensions

**PMC** –14.9 cm x 7.4 cm

**PCI** – 17.46 cm x 10.67 cm

**PCIe** – 16.77 cm x 11.11 cm

**PCIe EM** – 16.82 cm x 10.8 cm

**LPe** – 16.77 cm x 6.89 cm

**AMC** –18.15 cm x 7.35 cm mid-size, single module

All specifications are subject to change without notice.

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**Adax** is an industry leader in high performance packet processing, security and network infrastructure for Legacy to LTE networks. Modular, scalable and flexible, the Adax LTE-EPC solutions, SIGTRAN and SS7 Signaling platforms, as well as the DPI, IPsec Security, and GTP acceleration products enable customers to build the solutions they need, creating a smarter network infrastructure for all.



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