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Product Catalog

October 2006

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OTX-Platform

Award winning OTX (Odin Telecom frameworX) software platform provides a flexible open software platform, which allows rapid software application development and deployment reducing the time to market.

OTX platform consists of interchangeable building blocks comprised of the hardware driver, software development kit, and application program interfaces. OTX-Plus adds support for 32-bit DMA burst which drastically increases data throughput performance.

OTX platform provides a convenient way to develop voice, call processing and DSP applications.

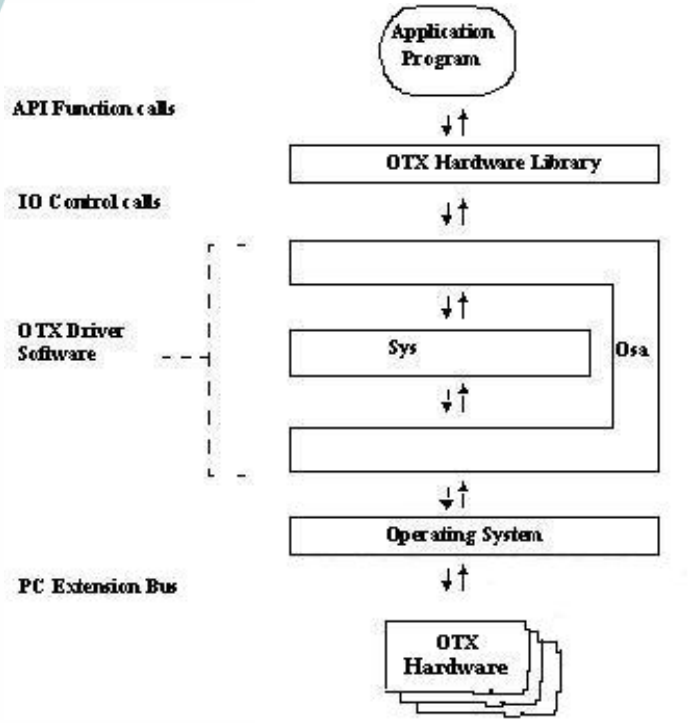
OTX platform is a scalable platform. OTX manages hardware resources allowing multiple applications and/or multiple processes and threads to use multiple adapter boards with minimum blocking.

OTX platform uses system resources efficiently thereby lowering the CPU load and provides for higher channel densities.

The OTX platform allows direct access to all devices on the boards. The OTX platform allows the developer to configure and load each DSP with separate firmware modules to perform simultaneous multiple tasks. The OTX platform also allows customized DSP programs to be development through the OTX DSP software development kit.

Benefits of OTX:

- OTX supports multiple Operating System platforms, Windows98/Me/2000/NT/XP/2003, Vista, and Linux 2.4.x and Linux 2.6.x. Allows developer to compile the same application for multiple platforms thus reducing development time.
- A single programming platform across the entire family of Odin's OTX hardware cards.
- Extensive documentation, demonstration programs with sample code reducing the developer's effort.



OTX Hardware Driver Interfaces

Feature Highlights

- H.100 (CT Bus) switching support
- Support for super-channels and sub-channels.
- Tone detection and generation.
- Support for ring tone, busy tone and FSK (Caller ID).
- BER Testing.
- File recording and playback.
- CAS signaling and Robbed Bit signaling.
- DSP SDK available for Texas Instruments C54x and C55x DSPs.
- Dynamic link libraries (DLL).
- HDLC generators and receivers.
- Silence detection.
- Audio Mixing.
- Trunk interface (onhook/offhook)
- ISDN Call Control (Provided as an add-on).
- Supports Windows98/2000/2003/ Vista/NT/Me/XP, Linux 2.4.x and Linux 2.6.x operating systems.
- C# and VB interface wrapper examples

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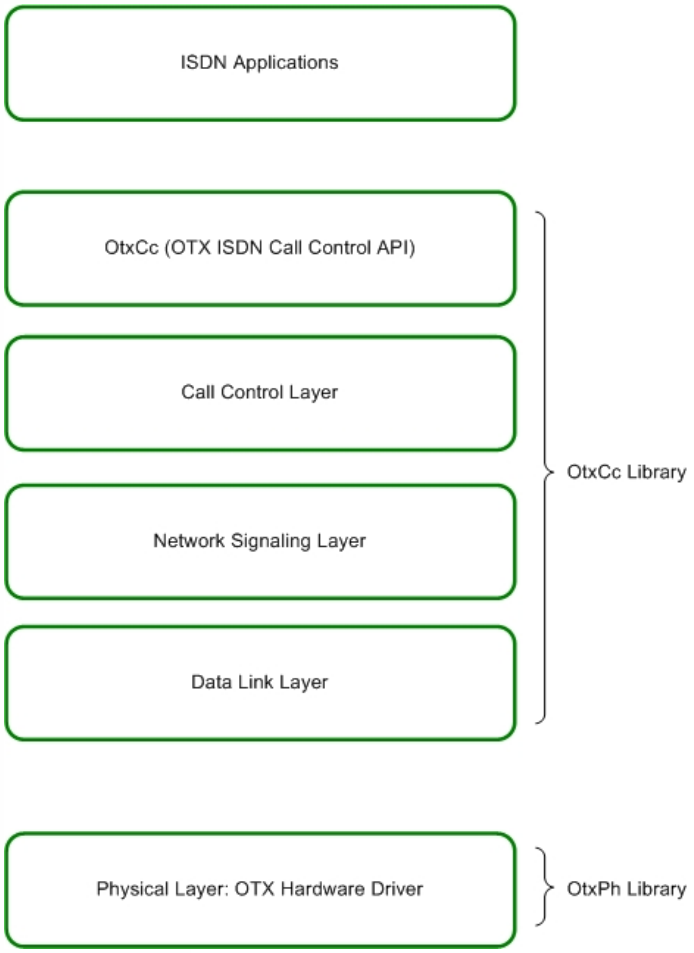
OTX-ISDN

The OTX ISDN call control API provides a rapid and easy way to develop ISDN applications targeted for Odin TeleSystems' powerful OTX hardware. It allows developers to develop innovative applications which include voice messaging systems, automatic call distribution systems, telephony switching, signaling engines, call simulators, etc.

The OTX ISDN call control API is designed using the well-known ISDN stack provided by Netbricks (formerly Omnitel).

The API uses standard OTX methods for event notification. Simple API functions are provided to place and answer calls.

OTX-ISDN is supported on multiple popular operating systems and uses the same API across the entire span of Odin's OTX Thor family of ISDN PRI network cards. These two features combined, provide an easy migration path from one network interface card to another, and application platform independence.



OTX-ISDN Architecture

Feature Highlights

- OTX-ISDN facilitates easy application development and hence reduces time to market.
- C/C++ language support
- Integrated with Odin's award winning telecom OTX software platform.
- Demonstration programs with source code.
- Support for multiple operating systems.
- Compliance with most North American ISDN PRI (23B+D) standards.

Technical Specifications

Standards	OTX ISDN is in conformance with the following ISDN variants: • AT&T 4ESS (PRI only) AT&T TR41459, August 1995 • AT&T 5ESS5 Custom AT&T 801-802-100, June 1998 • AT&T 5ESS9 Custom AT&T 235-900-341 Feb 94 and 235-900-342 Dec94 • Bellcore National 1 sr-nwt-001953 issue 1, June 91 • Bellcore National 2 SR-3887 and SR-3888 Nov96 • Northern Telecom DMS 100 NIS S208-6 (BCS 34) issue 1.1 1992 and NIS A211-1 v6 (BCS 36) Mar 1994
OTX-ISDN Call Control Functions	• OtxCcInit() : Function call to initialize OTX hardware • OtxCcConnect(), OtxCcOpenService(), OtxCcInitService() are function calls to open and initialize ISDN call control service. • OtxCcPlaceCall() : Function to place a call with calling number and called number. • OtxCcDisconnectCall() : Function to release call. • OtxCcAnswerCall() : Function call used to answer a call when an incoming call is detected.
TDM Highway Support	The CT bus API in the OTX platform allows developers to easily interconnect multiple boards over the H.100 computer telephony bus. TDM switching on Odin hardware is provided by Lucent's Ambassador integrated circuit. The API's provided by the OTX platform gives complete control over the TDM integrated circuit. OTX ISDN supports H.100 Computer Telephony bus. H.100 bus is backward compatible with SC bus and MVIP.
Operating Systems Supported	• Windows 2000 • Windows NT • Windows 98 • Red Hat Linux 2.2.x • Red Hat Linux 2.4.x
Hardware Supported	Sleipnir-1-PCI-Plus/HAA-1051-x-1.0 Thor-2-PCI-Plus/HAA-1048-1-1.0 Thor-8-PCI-Plus/HAA-1094-1-1.0 Thor-2-PCMCIA-EX/HAA-1058-1-1.0 Thor-2-PCMCIA-PRO/HAA-1060-1-1.0
Software Package Supplied	• OTX ISDN Call Control API Library • OTX software development platform
Other Features	Support for tone detection/generation and various voice functions.
Documents providing additional information	• OTX ISDN Programmers Guide (Doc No. 1412-1-SCA-1003-1) • OTX Programmers Guide (Doc No. 1412-1-SAA-1006-1 • OTX-Platform Product Brief (Doc No. 2020-1-SCA-1001-1)

Ordering Information

Product Name/Product Category	OTX-ISDN Call Control

Contact Information

For more information on the OTX-ISDN product, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

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The Thor-2-ExpressCard, a prominent member of the Odin Telecom Frameworks (OTX) family of industry award-winning products provides T1/E1/J1 connectivity in the ExpressCard/54 form factor, the official standard for modular expansion for desktop and mobile systems. The ExpressCard technology provides a compact, yet high performance solution for expansion adapter cards for today's PC laptops.

With two T1/E1/J1 links integrated directly into the case of the ExpressCard/54 card, DMA burst data transfer capability, and built-in circuitry to handle attenuated signal levels, the Thor-2-ExpressCard is ideal for mobile monitoring applications like SS7/ISDN analyzers, call tapping, call logging, surveillance, and digital recording and playback. The card also packs a total of 400 MIPS of DSP processing power, which makes it equally suitable for low latency terminating applications such as network testing, remote maintenance, and telecom device simulators.

The Thor-2-ExpressCard delivers exceptional results for a vast range of modern mobile telephony applications in a completely mobile package.

Thor-2-ExpressCard

Thor-2-ExpressCard Adapter for Mobile Applications

Feature Highlights

- 2 T1/E1/J1 interfaces. Software switchable between all modes.
- High-impedance mode for monitor applications.
- Signal amplifiers for attenuated T1/E1/J1 monitor conditions (–20dB or –30dB).
- ExpressCard/54 bus interface.
- Onboard DSP with 400 MIPS processing power.
- 32-bit DMA burst data transfer for efficient data transfer of T1/E1/J1 bit-data.
- DSP-based support for HDLC encoding/decoding
- DSP-based support for tone generation and tone detection (e.g. DTMF, MF, and custom tones)
- Support for custom DSP applications

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications.	The Thor-2-ExpressCard driver is available for Windows 98, Windows NT, Windows 2000, Windows XP, Windows 2003 Server, Windows Vista, Pocket PC 2002 and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• ExpressCard/54 extended module (54mm x 118.5mm x 18mm)
Host Bus Interface	• PCI Express r1.0a, single lane, 2.5 Gbps data rate • Hot-pluggable • 32-bit burst DMA
Network Interfaces	• 2 T1, E1, or J1 (software configurable)
Line Termination	• 75ohm, 100/120 Ohm, high-Z termination, monitor amplifier (-20dB and –30dB modes)
DSP	• 1 x TI TMS320VC5510 (400 MIPS processing power)
DSP Programming Interface	• Software development kit in ANSI C and C++ • Open interface with standard third-party tools
DSP Applications	• DTMF, MF, and generic tone (e.g., dial-tone and call progress tone) generation and detection • G.711 Speech compression, encoding and decoding • HDLC processing • BERT, G.723.1, G.729 (as part of add-on SDK)
T1/E1/J1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1/J1 mode)
T1/E1/J1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS
T1/E1/J1 Signaling Types	• Channel associated (robbed bit) • Common channel
Clocking sources	• Onboard oscillator • Incoming T1/E1/J1 span (either span)
Connector	• Two RJ45/RJ48C connectors (in extension of case)
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 mode (including support for the DL-channel protocol according to T1.403-1989 ANSI or to AT&T TR54016 specification), and programmable line build-out in T1/J1 mode • Transparent mode and programmable transmit pulse shape and input threshold • Alarm insertion and detection • Loop codes, channel loopback and PRBS
Power Requirements/Environmental Data	• Power consumption: TBD • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters (50,000 feet)

Ordering Information

Product Name/Product Category	Thor-2-ExpressCard/HAA-1074-1

Contact Information

For more information on the Thor-2-ExpressCard products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA	Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

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The Thor-2-PCI-Express computer telephony adapter is a member of the Odin Telecom Frameworks Plus (OTX-Plus) product family. OTX-Plus is an enhanced version of the industry award-winning OTX platform with products that represents outstanding cost and performance value for today's service providers and telecom equipment manufacturers.

Whether you need reliable VoIP trunking gateway capabilities, testing and measurement capabilities or superior passive monitoring, the Thor-2-PCI-Express series delivers exceptional results.

When adding DSP resources for VoIP and TDM processing and keeping PCI slots free is critical, Thor-2-PCI-Express allow for connectivity to various OTX daughter-boards. Thor-2-PCI-Express also provides software-switchable features that result in highly configurable systems, ones recognized for their convenience and flexibility.

The Thor-2-PCI-Express boards offer the maximum levels of frequency stability through their optional on-board stratum oscillators – the levels you expect in the most demanding applications and testing environments.

So for the best in VoIP, CTI, and Internet telephony applications, the Thor-2-PCI-Express series delivers economy, value, and performance.

Thor-2-PCI-Express

Thor-2-PCI-Express Adapter for demanding VoIP, Data, and Voice communication applications

Feature Highlights

- 2 T1/E1/J1 interfaces. Software switchable between T1, E1, and J1.
- PCI-Express host bus interface, master capable.
- H.100 Computer Telephony bus interface.
- 32-bit data DMA burst feature significantly reduces host CPU load.
- Voltage and Frequency measurements of the T1/E1/J1 span.
- Signal amplifiers for attenuated T1/E1/J1 monitor conditions.
- Odin ASM daughterboard socket. Can be used with the following:
  - ⇒ Alvis-6x4-ASM: VoIP. 4 x TI TMS320DM6443 DSPs with 4752 MIPS each.
  - ⇒ Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416 DSP with 160 MIPS each.
  - ⇒ Vidar-5x4-ASM-EX: 4 x TI TMS320C5410A DSP with 160 MIPS each.
  - ⇒ Vidar-55x4-ASM: 4 x TI TMS320VC5510 DSP with 400 MIPS each.

Thor-2-PCI-Express Product Brief

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications	The OTX driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• Half-size PCI-Express board
Host Bus Interface	• Supports PCI Express r1.0a (single channel) • 32-bit burst DMA
Network Interfaces	• 2 T1/J1 or E1 interfaces (software switchable); • 75 Ohm, 100/120 Ohm, high-z termination, monitor amplifier
H.100 Interface	• 32 x 2, 4, or 8 Mbit/s board-to-board highways • 256 duplex channels switchable between adapters, 1024 channels switchable locally
DSP Resources (with optional ASM daughterboard)	• Vidar-55x4-ASM: 4 x TI TMS320VC5510 (400 MIPS) with 16MB SDRAM each • Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416 (160 MIPS) with up to 512KB SRAM each • Alvis-6x4-ASM: VoIP 4 x TI TMS32DM6443 (4752 DSP MIPS and 1200 ARM MIPS)
HDLC Resources	• Support for 1 HDLC channel per access port • ASM modules offer additional HDLC channels with support for super- and sub-channels
T1/E1/J1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1/J1 mode)
T1/E1/J1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS
T1/E1/J1 Signaling Types	• Channel associated (robbed bit) and Common Channel
Clocking Sources	• On-board oscillator (high-stability oven-controlled oscillator option available) • Incoming T1/E1/J1 • H.100 Clock • External clock
Connector	• 50-pin Centronix, 3-foot cable to harmonica with RJ45/RJ48C connectors for E1/T1/J1 and Ethernet (VoIP), and RJ11 connectors for handsets
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 mode (including support for the DL-channel protocol according to T1.403-1989 ANSI or to AT&T TR54016 specification), and programmable line build-out in T1/J1 mode • Transparent mode and programmable transmit pulse shape and input threshold • Alarm insertion and detection, loop codes, channel loopback and PRBS • T1/E1 span frequency measurement. • T1/E1 signal voltage measurement.
Phone Features	• 4 analog interfaces (Codecs) for speaker, microphone, handset, or modem connections (2 channels if the Alvis-6x4-ASM is populated)
Power Requirements/Environmental Data	• Power consumption: 2.3W • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters 50,000 feet)

Ordering Information

Product Name/Product Category	Thor-2-PCI-Express/HAA-1072-1-1.0-1

Contact Information

For more information on the Thor-2-PCI-Express products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1016-1-1.0-1.0

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Gimle-16-PCI-Plus

The Gimle-16-PCI-Plus card allows PCs and other systems with a PCI bus to monitor up to 8 T1/E1 links. Gimle-16-PCI-Plus has 16 T1/E1/J1 receive interfaces which can be used for non-intrusive monitoring of ISDN, Frame Relay, SS7 links and other protocols. The Gimle-16-PCI-Plus provides the highest integration solution where monitoring of multiple links is required.

Where adding DSP resources and keeping PCI slots free is critical, Gimle-16-PCI-Plus allows for connectivity to Odin's ASM daughter boards. Gimle-16 provides software-selectable features that result in highly configurable systems, ones recognized for their convenience and flexibility.

HDLC or voice packets on the T1/E1 interface are transferred to the host PC over the PCI bus using 32-bit DMA burst transfers. The packet size is variable making it suitable for both voice and data applications.

Gimle-16-PCI-Plus offers the highest T1/E1 PCI integration in the industry which allows monitoring of 8 T1/E1 links simultaneously.

Gimle-16-PCI-Plus is supported by the award winning OTX software platform. The OTX platform supports Microsoft Windows98/2000/Me/NT/XP and Linux operating systems.

Gimle-16-PCI-Plus is the best solution for non-intrusive link monitoring.

Gimle-16-PCI-Plus Adapter for T1/E1 monitoring

Feature Highlights

- Software configurable 16 T1 or E1 receive accesses.
- Ideal for non-intrusive monitoring of ISDN, SS7, Frame Relay links.
- Full or fractional T1 or E1.
- Integrated CSU/DSU.
- BNC or RJ-48C rack-mountable connector option.
- PCI 32-bit DMA Burst capable (PCI Master).
- 3.3V and 5.0V PCI slot tolerant.
- On-board DSP option (TMS320VC5510 with 400 MIPS processing power and 16Mbyte external SDRAM).
- Multiple clocking options.
- T1/E1 span voltage meters and frequency counters.

Gimle-16-PCI-Plus Product Brief

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications	The OTX driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• Gimle-16-PCI-Plus: Full-size PCI board
Host Bus Interface	• Supports PCI rev 2.1, rev 2.2, rev 2.3 (3volt signaling) and rev 3.0 • 32-bit burst DMA
Network Interfaces	• Gimle-16-PCI-Plus: 16 T1/J1 or E1 receive interfaces (software switchable) • Both: 75 Ohm, 100/120 Ohm, high-z termination, monitor amplifier
H.100 Interface	• 32 x 2, 4, or 8 Mbit/s board-to-board highways • 256 duplex channels switchable between adapters, 1024 channels switchable locally
DSP Resources (with optional ASM daughterboard)	• Vidar-55x4-ASM: 4 x TI TMS320VC5510 (400 MIPS) with 16MB SDRAM each • Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416 (160 MIPS) with up to 512KB SRAM each
HDLC Resources	• 3 (Thor-8-PCI-Plus) HDLC channel(s) per access port. • ASM modules offer additional HDLC channels with support for super- and sub-channels
T1/E1/J1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1/J1 mode)
T1/E1/J1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS
T1/E1/J1 Signaling Types	• Channel associated (robbed bit) and Common Channel
Clocking Sources	• On-board oscillator (high-stability oven-controlled oscillator option available) • Incoming T1/E1/J1 • H.100 Clock • External clock
Connector	• 50-pin Centronix, 3-foot cable to harmonica with RJ45/RJ48C connectors for E1/T1/J1, and RJ11 connectors for handsets
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 mode (including support for the DL-channel protocol according to T1.403-1989 ANSI or to AT&T TR54016 specification), and programmable line build-out in T1/J1 mode • Alarm detection • Frequency and Voltage measurement
Power Requirements/Environmental Data	• Power consumption: 4.4W • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters 50,000 feet)

Ordering Information

Product Name/Product Category	Gimle-16-PCI-Plus/HAA-1050-1-1.0

Contact Information

For more information on Gimle-16-PCI product, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1013-1-1.1-1.2

Odin TeleSystems Inc.

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The Odin Telecom frameworX (OTX) family of industry award-winning products represents outstanding cost/ performance value for today's service providers and telecom equipment manufacturers. A powerful member of this product family are the Sleipnir-1-PCI-Plus boards.

Sleipnir-1-PCI-Plus is a single-span T1/E1 adapter. Delivered with a C-language API, and an optional DSP, makes it an ideal solution for standard or customized single span T1/E1 connectivity.

HDLC or voice packets on the T1/E1 interface are transferred to the host PC over the PCI bus using 32-bit DMA burst transfers. The packet size is variable making it suitable for both voice and data applications.

Whether your requirements calls for T1 or E1 connectivity for servers, routers and broadband testing equipment, or an implementation of a customized voice or data application using a single E1 or T1 interface, the Sleipnir-1-PCI-Plus board is the product of choice.

So for the best in single access T1/E1 communication adapters, the Sleipnir-1-PCI-Plus delivers performance, value and flexibility.

Sleipnir-1-PCI-Plus

Sleipnir-1-PCI-Plus Adapter for T1/E1 access

Feature Highlights

- Software configurable T1 or E1 access.
- Full or fractional T1 or E1.
- Integrated CSU/DSU.
- BNC or RJ-48C connector option.
- PCI 32-bit DMA Burst capable (PCI Master).
- 3.3V and 5.0V PCI slot tolerant.
- On-board DSP option (TMS320VC5510 with 400 MIPS processing power and 16Mbyte external SDRAM).
- Multiple clocking options.
- Link status LEDs.

Sleipnir-1-PCI-Plus Product Brief

Software Support

Includes the OTX driver with a C-language API to build customized data, telephony, or telecom applications.	The Sleipnir-1-PCI-Plus driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems. For the DSP option of the card customized DSP voice and data applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• Half-size PCI board
Host Bus Interface	• Supports PCI rev 2.1, rev 2.2, rev 2.3 (3 volt signaling) and rev 3.0 • 32-bit PCI DMA burst transfers • 3.3V and 5V PCI slot compatible
Network Interface	• Single T1 or E1 interface (75 Ohm or 100/120 Ohm option) • Short haul or long haul compatible • Integrated CSU/DSU functionality
DSP Resources (optional)	• On-board TI TMS320VC5510 DSP (400 MIPS) with 16MB SDRAM
HDLC Resources	• Support for full or fractional T1 or E1
T1/E1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1 mode)
T1/E1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS (Zero Code Suppression)
T1/E1 Signaling Types	• Channel associated (robbed bit) • Common channel
Clocking Sources	• Incoming T1/E1 span • On-board oscillator • External clock
Connectors	• 2 BNC (transmit and receive) or RJ45/RJ48C connectors for E1/T1 • Pin header for recovered clock output and external clock input
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 and programmable line build-out in T1 mode • Transparent mode and programmable transmit pulse shape and input threshold • Alarm insertion and detection, Loop codes, channel loopback and BERT patterns
EMC and Safety Testing/Certification (planned)	• FCC Part 15 (CFR47, Part 15, Subpart B) • CE EMC (EN61326-1, AS/NZS 2064) • Safety EN60950 and UL6095
Power Requirements/Environmental Data	• Power consumption: 1.3W (DSP option) • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters; non-operating, up to 12,192 meters

Ordering Information

Product Name/Product Category	Sleipnir-1-PCI-Plus/HAA-1051-1-1.0 (OTX; RJ45/RJ48C connectors) Sleipnir-1-PCI-Plus/HAA-1051-2-1.0 (OTX; BNC connectors) Sleipnir-1-PCI-Plus/HAA-1051-3-1.0 (OTX; RJ45/RJ48C connectors and DSP) Sleipnir-1-PCI-Plus/HAA-1051-4-1.0 (OTX; BNC connectors and DSP)

Contact Information

For more information on the Sleipnir-1-PCI-Plus product, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1012-1-1.0-1.2

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Thor-2-PCI-Plus
Thor-8-PCI-Plus

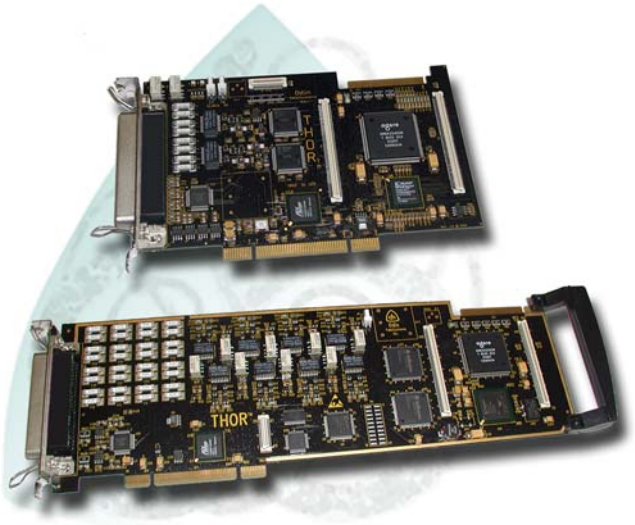
The Thor-2-PCI-Plus and Thor-8-PCI-Plus computer telephony adapters are members of the Odin Telecom Frameworks Plus (OTX-Plus) product family. OTX-Plus is an enhanced version of the industry award-winning OTX platform with products that represents outstanding cost/performance value for today's service providers and telecom equipment manufacturers.

Whether you need reliable testing and measurement capabilities or superior passive monitoring, the Thor PCI series delivers exceptional results. With its half-size foot-print, the Thor-2 PCI-Plus is the choice where space is at a premium. And the Thor-8-PCI-Plus provides the highest integration solution where high port density of T1/E1/J1 interfaces is required.

Where adding DSP resources and keeping PCI slots free is critical, Thor-2-PCI-Plus and Thor-8-PCI-Plus allow for connectivity to daughter-boards. And both Thor-2-PCI-Plus and Thor-8-PCI-Plus provide software-switchable features that result in highly configurable systems, ones recognized for their convenience and flexibility.

Both versions of the Thor PCI Plus boards offer the maximum levels of frequency stability through their optional on-board stratum oscillators – the levels you expect in the most demanding applications and testing environments.

So for the best in CTI and Internet telephony applications, the Thor PCI Plus series delivers economy, value, and performance.



Thor-2-PCI-Plus andThor-8-PCI-Plus Adapters for demanding Data and Voice communication applications

Feature Highlights

- 8 T1/E1/J1 interfaces (Thor-8-PCI-PLUS). Software switchable between T1, E1, and J1.
- PCI host bus interface, master capable.
- H.100 Computer Telephony bus interface.
- 32-bit data DMA burst feature significantly reduces host CPU load.
- Voltage and Frequency measurements of the T1/E1/J1 span.
- Signal amplifiers for attenuated T1/E1/J1 monitor conditions.
- Odin ASM daughterboard socket. Can be used with the following:
  - ⇒ Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416 DSP with 160 MIPS each.
  - ⇒ Vidar-5x4-ASM-CST: 4 x TI TMS320C54CST DSP with 120 MIPS each.
  - ⇒ Vidar-5x4-ASM-EX: 4 x TI TMS320C5410A DSP with 160 MIPS each.
  - ⇒ Vidar-55x4-ASM: 4 x TI TMS320VC5510 DSP with 400 MIPS each.

Thor-2-PCI-Plus and Thor-8-PCI-Plus Product Brief

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications	The OTX driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• Thor-2-PCI-Plus: Half-size PCI board • Thor-8-PCI-Plus: Full-size PCI board
Host Bus Interface	• Supports PCI rev 2.1, rev 2.2, rev 2.3 (3.3volt signaling) and rev 3.0 • 32-bit burst DMA
Network Interfaces	• Thor-2-PCI-Plus: 2 T1/J1 or E1 interfaces (software switchable); • Thor-8-PCI-Plus: 8 T1/J1 or E1 interfaces (software switchable) • Both: 75 Ohm, 100/120 Ohm, high-z termination, monitor amplifier
H.100 Interface	• 32 x 2, 4, or 8 Mbit/s board-to-board highways • 256 duplex channels switchable between adapters, 1024 channels switchable locally
DSP Resources (with optional ASM daughterboard)	• Vidar-55x4-ASM: 4 x TI TMS320VC5510 (400 MIPS) with 16MB SDRAM each • Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416 (160 MIPS) with up to 512KB SRAM each
HDLC Resources	• Support for 1 HDLC channel per access port • ASM modules offer additional HDLC channels with support for super- and sub-channels
T1/E1/J1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1/J1 mode)
T1/E1/J1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS
T1/E1/J1 Signaling Types	• Channel associated (robbed bit) and Common Channel
Clocking Sources	• On-board oscillator (high-stability oven-controlled oscillator option available) • Incoming T1/E1/J1 • H.100 Clock • External clock
Connector	• 50-pin Centronix, 3-foot cable to harmonica with RJ45/RJ48C connectors for E1/T1/J1, and RJ11 connectors for handsets
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 mode (including support for the DL-channel protocol according to T1.403-1989 ANSI or to AT&T TR54016 specification), and programmable line build-out in T1/J1 mode • Transparent mode and programmable transmit pulse shape and input threshold • Alarm insertion and detection, loop codes, channel loopback and PRBS • T1/E1 span frequency measurement. T1/E1 signal voltage measurement (Thor-2-PCI-Plus).
Phone Features	• 4 analog interfaces (Codecs) for speaker, microphone, handset, or modem connections
Power Requirements/Environmental Data	• Power consumption: 4.1W (Thor-8-PCI-Plus) 2.2W (Thor-2-PCI-Plus) • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters 50,000 feet)

Ordering Information

Product Name/Product Category	Thor-2-PCI-Plus/HAA-1048-1-1.0-1 Thor-8-PCI-Plus/HAA-1094-1-1.0-1

Contact Information

For more information on the Thor-2-PCI-Plus and Thor-8-PCI-Plus products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1013-1-1.1-1.3

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Thor-2-PCMCIA
(EX, CST and PRO)

The Odin Telecom Frameworks (OTX) family of industry award-winning products represents outstanding cost/ performance value for today's service providers and telecom equipment manufacturers. Leading this product line for mobile applications are the Thor-2-PCMCIA (EX, CST and PRO) adapter cards.

With their ability to interface laptop and hand-held computers to T1/E1/J1 links, the Thor-2-PCMCIA series provide remarkably portable solutions. Whether you need reliable network testing and simulation capabilities or superior monitoring and maintenance, the Thor-2-PCMCIA cards deliver exceptional results in a completely mobile package.

All the cards offer software switchable convenience between T1, E1 and J1 modes. The Thor-2-PCMCIA is offered in different variants: EX, CST and the PRO versions. Each of these variants differ mainly upon DSP power and available memory resources. The PRO and EX version packs a total of 320 MIPS of DSP processing power while the CST version offers a host of telephony algorithms packed in ROM.

The Thor PCMCIA series delivers economy, value, and performance for mobile telephony applications.

Thor-2-PCMCIA Adapter Cards for Mobile Applications

Feature Highlights

- 2 T1/E1/J1 interfaces. Software switchable between all modes.
- High-impedance mode for monitor applications.
- Software-switchable 20dB signal amplifier for monitor applications.
- PCMCIA host bus interface.
- Two onboard DSPs with 120 MIPS processing power each (Thor-2-PCMCIA-CST).
- Two onboard DSPs with 160 MIPS processing power each (Thor-2-PCMCIA-EX and PRO).
- Thor-2-PCMCIA-CST contains the most popular telephony algorithms like G.726 ADPCM, G.168 line echo canceller, DTMF, VAD, CNG, AGC etc.

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications.	The Thor-2-PCMCIA driver is available for Windows 98, Windows NT, Windows 2000, Windows XP, Windows 2003 Server, Pocket PC 2002 and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Technical Specifications

Board Specification	• PCMCIA Type II card
Host Bus Interface	• PCMCIA electrical interface • I/O mapped, SW configurable IRQ
Network Interfaces	• 2 T1, E1, or J1 (software configurable)
Line Termination	• 75 Ohm and 100/120 Ohm or high impedance
DSP	• Thor-2-PCMCIA-CST: 2 x TI TMS320C54CST with 120 MIPS processing power each • Thor-2-PCMCIA-EX: 2 x TI TMS320C5410A with 160 MIPS processing power each • Thor-2-PCMCIA-PRO: 2 x TI TMS320VC5416 with 160 MIPS processing power each
DSP Programming Interface	• Software development kit in ANSI C and C++ • Open interface with standard third-party tools
DSP Applications	• DTMF, MF, FSK, and generic tone (e.g., dial-tone and call progress tone) generation and detection • Speech compression, encoding and decoding • HDLC processing • G.726 ADPCM, G.168 line echo canceller, VAD, AGC, CNG, CPTD etc. (as part of the CST DSP ROM)
T1/E1/J1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1/J1 mode)
T1/E1/J1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS
T1/E1/J1 Signaling Types	• Channel associated (robbed bit) • Common channel
Clocking sources	• Onboard oscillator • Incoming T1/E1/J1 span
Connector	• RJ45/RJ48C in dongle (two dongles per board)
Testing Features	• Full access to F, Y, S_i, and S_a bits in E1 mode • Full access to FS/DL-bits in T1 mode (including support for the DL-channel protocol according to T1.403-1989 ANSI or to AT&T TR54016 specification), and programmable line build-out in T1/J1 mode • Transparent mode and programmable transmit pulse shape and input threshold • Alarm insertion and detection • Loop codes, channel loopback and PRBS
EMC and Safety Testing/Certification	• FCC Part 15 (CFR47, Part 15, Subpart B) • CE EMC (EN61326-1 Class B Equipment, AS/NZS 2064 Class B Limits) • Safety EN60950 and UL60950 (dongle only)
Power Requirements/Environmental Data	• Power consumption: 3.0W • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters (50,000 feet)

Contact Information

For more information on the Thor-2-PCMCIA-CST, Thor-2-PCMCIA-EX and Thor-2-PCMCIA-PRO products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1010-1-1.0-1.2

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The Odin Telecom frameworX (OTX) family of industry award-winning products represents outstanding cost/ performance value for today's service providers and telecom equipment manufacturers. Two powerful members of this product family are the Vidar-5x8-PCI and Vidar-5x16-PCI resource boards.

A high-density digital signal processing (DSP) board for PCI-based systems, the Vidar-PCI opens new possibilities in application areas such as IP telephony, computer telephony, wireless/cellular base stations and gateways, and intelligent networks. Or if you need reliable tone generation and detection, voice/data encoding and decoding, or dependable HDLC signaling, the Vidar-PCI delivers outstanding results.

This extensive range of application capability is powered by 8 or 16 Texas Instruments TMS320C548 DSPs, with a total of 640 or 1280 MIPS. With this kind of performance factor, the Vidar-5x16-PCI and Vidar-5x8-PCI provides excellent value in today's demanding computer telephony environment.

Vidar-5x8-PCI and Vidar-5x16-PCI

Vidar-5x16-PCI Resource Board

Feature Highlights

- 8 or 16 Texas Instruments TMS320C548 DSPs with 80 MIPS processing power each
- 4 analog front-ends for handsets and/or external speaker connections
- PCI host bus interface
- H.100 computer telephony bus interface
- Non-blocking time-space switch. Any time slot from the H.100 interface can be cross-connected for processing on any DSP. Any DSP can be connected to transmit on any H.100 time slot
- ASM (application specific module) daughter board socket

Vidar-5x8-PCI and Vidar-5x16-PCI Product Brief

Applications

Provides applications capabilities for the following, plus others:	• IP telephony • Computer Telephony • Wireless/cellular base stations, gateways • Intelligent networks • Tone generation/detection • Voice/data encoding/decoding • HDLC signaling

Software Support

Includes the OTX driver and the OTX Software Development Kits (SDK) for the host PC, and the DSP SDK for the on-board digital signal processors.	The OTX driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems.

Technical Specifications

Host Bus Interface	• PCI Rev. 2.1 electrical interface • PCI full-size form factor • Memory mapped interface • SW configurable IRQ and memory window
H.100 Interface	• 32 x 8.196 Mbps highways
DSP Resources	• 8 or 16 x TI TMS320C548; 80 MIPS processing power each
DSP Memory	• 32 Kword internal on-chip (per DSP) • Up to 256Kword external (per DSP)
DSP Programming Interface	• Texas Instruments C and C++ Compiler, Assembler, Linker • Texas Instruments Code Composer Studio debugger
Included DSP Applications	• DTMF generation and detection • MF generation and detection • FSK detection • HDLC sending/receiving • Raw data sending/receiving
Switching Matrix	• 2048x2048 byte time-space switch
Clocking sources	• On-board oscillator • H.100 bus
Phone Features	• 4 analog interfaces (Codecs) for handset/speaker connections
Power Requirements/Environmental Data	• Power consumption: 8.8W • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters (50,000 feet)

Ordering Information

Product Name/Product Category	Vidar-5x8-PCI/HAA-1025-1-1.0 Vidar-5x16-PCI/HAA-1020-1-1.0

Contact Information

For more information on the Vidar-5x8-PCI and Vidar-5x16-PCI please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

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Vidar-5x4-ASM (EX, CST and PRO) and Vidar-55x4-ASM

The Odin Telecom frameworX (OTX) family of industry award-winning products represents outstanding cost/ performance value for today's service providers and telecom equipment manufacturers. Leading this product line for a variety of voice and data applications are the Vidar-5x4-ASM (EX, CST and PRO) and Vidar-55x4-ASM daughter boards.

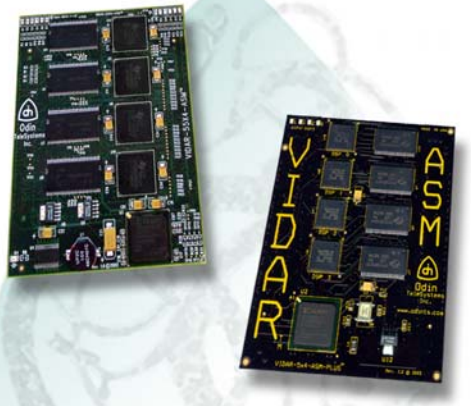
The Vidar products can be attached to network interface cards within the OTX adapter family, providing powerful DSP resources. Whether you need reliable tone generation and detection, or voice/data encoding and decoding, or dependable HDLC signaling, the Vidar-ASM daughter boards deliver exceptional results.

And for the more powerful processing required for VoIP applications and data programming and storage, the Vidar-55x4-ASM commands a full 1600 MIPS performance factor through its leading-edge Texas Instruments DSPs.

Vidar-5x4-ASM-CST contains the most popular telephony algorithms like the G.726 ADPCM Codec, G.168 line echo canceller, Automatic gain control and other telephony algorithms.

Both Vidar-5x4-ASM-EX and Vidar-5x4-ASM-PRO offer a total of 640 MIPS of processing power each.

So for the best in DSP resourcing and Internet telephony application capability, the Vidar-5x4-ASM (Ex, CST and Pro) and Vidar-55x4-ASM deliver true value and top performance.



Vidar-5x4-ASM and Vidar-55x4-ASM Daughterboards for OTX Adapters

Feature Highlights

- 4 Texas Instruments TMS320VC5510 DSPs with 400 MIPS processing power each (Vidar-55x4-ASM)
- 4 Texas Instruments TMS320C54CST DSPs with 120 MIPS processing power each (Vidar-5x4-ASM-CST)
- 16 MB (8 MWords) external SDRAM memory per DSP (Vidar-55x4-ASM)
- 128KB (64 KWords) external SDRAM per DSP (Vidar-EX/PRO)
- Vidar-5x4-ASM-CST contains the most popular telephony algorithms like G.726 ADPCM, G.168 line echo canceller, DTMF, VAD, CNG, AGC etc..
- 4 Texas Instruments TMS320C5410A DSPs with 160 MIPS of processing power each (Vidar-5x4-ASM-EX)
- 4 Texas Instruments TMS320C5416 DSPs with 160 MIPS of processing power each (Vidar-5x4-ASM-PRO)
- Odin ASM (application specific module) interface:
  - ⇒ Data: 4 PCM highways
  - ⇒ Control: 16-bit processor bus

Applications

Provides applications capabilities for the following, plus others:	• Tone generation/detection • Voice/data encoding/decoding • HDLC signaling • VoIP (Vidar-55x4-ASM/Vidar-CST-ASM)

Technical Specifications

Board Connector	• Odin ASM interface • Two 2x70 board stack connectors
Data Interface	• 4 x 2/4/8 Mbit/s PCM highways switchable in the time-space switch of the host board
Control Interface	• Odin ASM 16-bit processor bus. Memory mapped to the host
DSP Resources	• Vidar-5x4-ASM-EX: 4 x TI TMS320C5410A; 160 MIPS processing power each • Vidar-5x4-ASM-CST: 4 x TI TMS320C54CST; 120 MIPS processing power each • Vidar-5x4-ASM-PRO: 4 x TI TMS320C5416; 160 MIPS processing power each • Vidar-55x4-ASM: 4 x TI TMS320VC5510; 400 MIPS processing power each
DSP Memory	• Vidar-5x4-ASM-EX: 64 Kword internal RAM and 128KB external per DSP • Vidar-5x4-ASM-CST: 40 Kword internal RAM and 128KB external per DSP • Vidar-5x4-ASM-PRO: 128 Kword internal RAM and 128KB external per DSP • Vidar-55x4-ASM: 160 Kword internal RAM per DSP and 16MB external SDRAM per DSP
DSP Programming Interface	• Texas Instruments C and C++ Compiler, Assembler, Linker • Texas Instruments Code Composer Studio debugger
Debugging Interface	• JTAG connection on host card, which allows connectivity to standard third-party emulator cards
Power Requirements/Environmental Data	• Power consumption: 2.2W • Temperature: operating, 0°C to +50°C; non-operating, -40°C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30°C, and 5% to 30% RH above +30° C up to +50°C non-condensing; non-operating, 5% to 80% RH at up to +30°C, and 5% to 30% RH above +30°C up to +50°C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters (50,000 feet)

Ordering Information

Product Name/Product Category	Vidar-5x4-ASM-EX/HAA-1056-1-1.0 Vidar-5x4-ASM-CST/HAA-1054-1-1.0 Vidar-5x4-ASM-PRO/HAA-1061-1-1.0 Vidar-55x4-ASM/HAA-1045-1-1.0

Contact Information

For more information on the Vidar-5x4-ASM and Vidar-55x4-ASM products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1009-1-1.0-1.1

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Arni-6x6-PCI-Plus

Arni-6x6-PCI-Plus is a state-of-the-art analog phone interface card for PCI based systems. With 6 analog phone interfaces (FXO), 6 station interfaces (FXS), and fail-over relays between each FXO and FXS pair, the Arni-6x6-PCI-Plus board offers a unique platform for a variety of VXML and computer telephony applications.

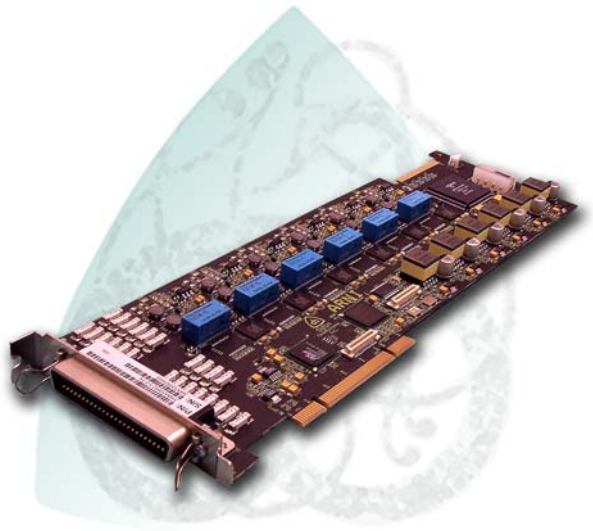
The Arni-6x6-PCI-Plus adapter board is a member of the award-winning OTX (Odin Telecom frameworX) adapter family implementing the open OTX architecture, allowing you to easily connect POTS and T1/E1/J1 boards in one single PC system.

The Arni-6x6-PCI-Plus board is also equipped with 6 powerful TMS320C54CST DSPs which provide support for virtually any voice and data application that can be associated with POTS interfaces on a global spectrum, e.g. G.165/G.168 Echo cancellation, DTMF, Caller ID, Call progress tone, Voice Activity Detector, Comfort Noise Generator, and Voice Mixer.

The 32-bit burst DMA feature over the PCI bus allows for consistent data transfer of recorded or played voice without sacrificing host CPU MIPS cycles. The support for Ground start, as well as Loop start, makes the Arni-6x6-PCI-Plus board highly suitable for world-wide implementations.

Whether your requirements calls for implementing a Voice XML gateway, flexible high density call generator, or a powerful and extendible Interactive Voice Response (IVR) Systems the Arni-6x6-PCI-Plus board is the product of choice.

So for the best in POTS Data and Voice Communication Adapters, the Arni-6x6-PCI-Plus delivers performance, value and flexibility.



Arni-6x6--PCI-Plus Adapter for POTS applications

Feature Highlights

- 6 FXS POTS interfaces.
- 6 FXO POTS interfaces.
- 6 DSPs (TMS320C54CST) with support for G.165/G.168 Echo Cancellation, DTMF, CID, CPT, VAD, CNG, and Voice Mixer.
- Fail-over relays between each FXO and FXS pair.
- H.100 interface.
- 32-bit burst DMA support.
- 3.3V and 5.0V PCI slot tolerant.
- Support for Loop Start as well as Ground Start.
- Support for measuring Loop current and Line voltage.
- Support for on-hook line monitoring.

Software Support

Includes the OTX software driver, the OTX and DSP software development kits (SDKs), as well as a variety of host and DSP demo applications	The OTX driver is available for Windows 98, Windows NT 4.0, Windows 2000, Windows XP, Windows 2003 Server, and Linux operating systems. Customized DSP applications can be developed using ANSI C and C++ language and standard third-party development tools.

Ordering Information

Board Specification	• Full-size PCI board
Host Bus Interface	• PCI Rev. 2.1 electrical interface , 3.3V and 5V compliant • 32-bit burst DMA support • Memory mapped interface
Network Interfaces	• 6 full duplex analog phone interfaces (FXO) with 16-bit DAA • 6 full duplex station interfaces (FXS)
H.100 Interface	• 32 x 2, 4, or 8 Mbit/s board-to-board highways • 256 simplex channels switchable between adapters • 1024 channels switchable locally • Backwards compatible with MVIP and SC-Bus
Analog Interface functions	• Ring detection • Pulse dialing • DTMF dialing • 16-bit linear DAA • Loop current and Line Voltage measurement
DSP Applications supplied with the OTX driver	• DTMF detection and generation • Dial tone and Call Progress tone detection and generation • Caller ID (Type I and II) detection and generation • G.165/G.168 Echo Cancellation • G.711 PCM compression (u-law/a-law) • Voice Activity Detector • Voice Mixer • Comfort Noise Generator
Clocking Sources	• On-board oscillator • H.100 Clock
Power Requirements/Environmental Data	• 12V externally powered from PC power supply (standard HDD power supply connector) • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters (15,333 feet); non-operating, up to 12,192 meters (50,000 feet)
Other hardware features	• Fail-over relays between each FXS and FXO pair • Hardware watchdog timer to be continuously reset by software to keep relays out fail-over state

Ordering Information

Product Name/Product Category	Arni-6x6-PCI-Plus/HAA-1064-1-1.0 (6 FXS and 6 FXO interfaces) Arni-6-FXS-PCI-Plus/HAA-1066-1-1.0 (6 FXS interfaces) Arni-6-FXO-PCI-Plus/HAA-1067-1-1.0 (6 FXO interfaces)

Contact Information

For more information on the Arni-6x6-PCI-Plus product, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-HCA-1014-1-1.0-1.0

Odin TeleSystems Inc.

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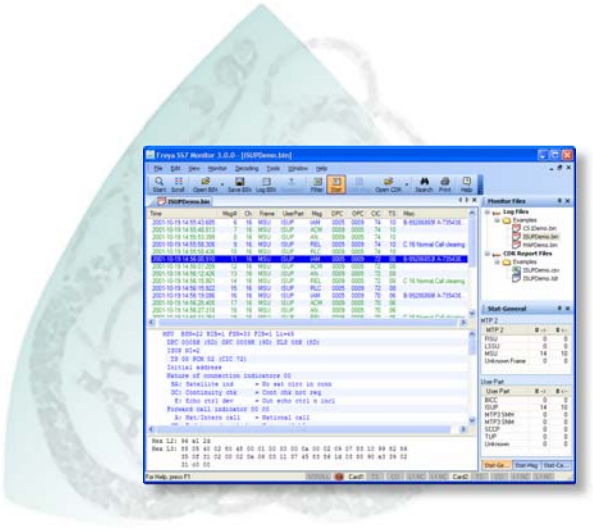
Stinga SS7 and Stinga ISDN

The Stinga line of test software for SS7 and ISDN network protocols is a software package integrated with the industry award-winning Odin Telecom frameworX (OTX) family of hardware products. Designed to maximize the usability and operability of these hardware adapters, Stinga extends the value of this entire product line.

Providing a complete and homogenous multi-protocol simulation and monitoring environment, Stinga SS7 (C7) and Stinga ISDN bring leading-edge functionality for such areas as: protocol simulation and filtering, scripting for repetitive simulation tasks, and protocol analysis. All these functions are available through remote access over LAN/WAN topology.

And to maximize performance efficiency, these simulation and monitoring functions can be performed simultaneously on the same system.

So whether you are looking for the best in error tracking and regression testing, or IN and interconnect testing, the Stinga SS7 (C7) and Stinga ISDN software applications deliver results in a complete and value-based package.



Feature Highlights

- SS7 and ISDN PRA protocol simulation of multiple (up to 8) T1 or E1 spans.
- SS7 and ISDN PRA protocol monitoring of multiple (up to 4) T1 or E1 spans.
- Supported by multiple types of Odin's OTX Telecom Adapter Boards.
- Conformance Test Suite framework for interconnect testing (according to ITU-T Q.78x series specifications) is included with the protocol simulators.
- CDR Statistics Reports can be generated with the Stinga SS7 Monitor application.
- Monitoring and simulation can be performed simultaneously on the same system.
- Remote operation and control via LAN/WAN through standard operating system mechanisms.
- Two software modules, SS7 (C7) and ISDN PRA, provides a complete and homogenous multi-protocol simulation and monitoring environment.

Applications

Error Tracking

Comprehensive protocol decoding of user parts and protocol layers enables the user to track and search for protocol irregularities. Recorded irregular messages may be regenerated using the simulator, providing a convenient way of reproducing errors in the network.

Regression Testing

The user can perform automated and rapid regression testing by building libraries of scripts. The included conformance test suite framework can be used as a basis for these libraries.

Simultaneous Protocol Simulation and Analysis

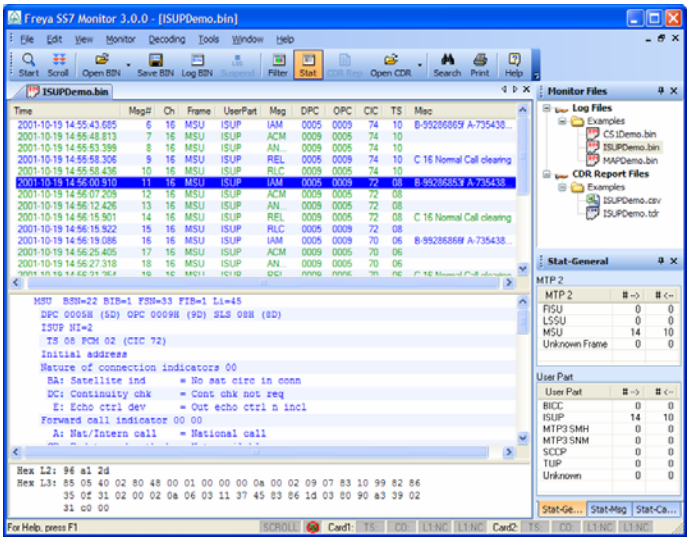
Dependent of the number and type of the OTX cards installed, the user is able to simulate on one link and concurrently monitor a different link. This enables the user to simulate on one interface of a switch and monitor on another.

IN-Testing

Using the simulator, the user may build IN-messages to perform IN script testing.

Interconnect Testing

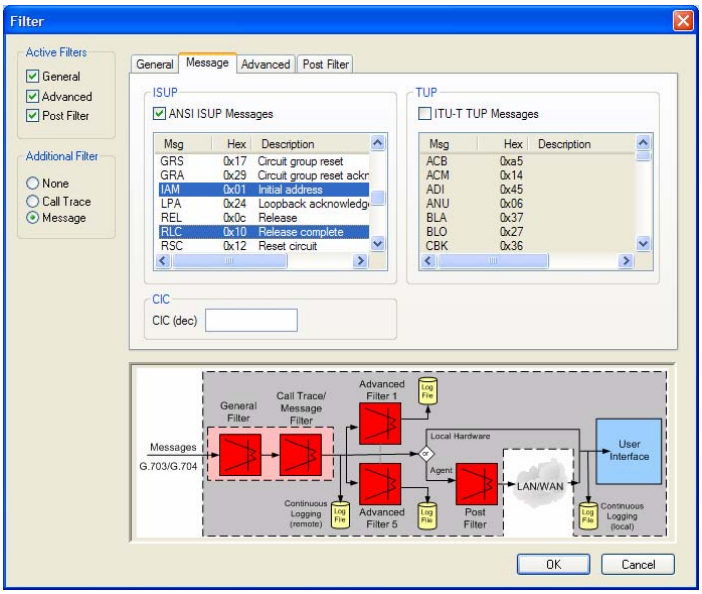
Automated SS7 and ISDN end-to-end interconnect testing is possible using the included Conformance Test Suite frameworks.



Remote Control

Both the Stinga SS7 and Stinga ISDN software applications can be controlled remotely using an IP connection. For example, the user can control two separate Stinga SS7 or Stinga ISDN PRA systems from a local PC using two channels on a single access.

Protocol Simulation



The simulator behavior is controlled by means of a powerful and easy-to-use script language. The script language makes it possible to set up required or desired protocol states; both normal and error states. There are minimal restrictions of the format and contents of the protocols transmitted or received. The script language makes it possible to arbitrarily manipulate message contents, information elements, and message sequences of all of the supported protocols.

The scripts may be started in two different ways: 1) manually from the graphical user interface, or 2) automatically triggered by incoming messages. The different simulator applications comprise functionality for MTP, ISUP, TUP, SCCP, TCAP and MAP simulation.

Conformance Test Suite Frameworks

Repetitive simulation tasks (tests of similar nature) are significantly alleviated if a library structure of test scripts is constructed. Examples of situations where this is recommended are interconnect testing between carriers as well as functional testing, regression testing and conformance testing of terminal equipment and/or network elements.

A library of scripts is included as a Conformance Test Suite framework for building a dedicated test environment. The library is based on the Eurescom P.412/P.104 (ISDN end-to-end testing), ITU-T Q.782 (MTP Level 3), ITU-T Q.784 (ISUP, Basic Call), ITU-T Q.785 (ISUP, Supplementary Services) and ITU-T Q.788 (ISDN end-to-end testing).

Protocol Analyzer

Comprehensive decoding of inclusive MTP, ISUP (v1, 2 and 3), TUP, SCCP, TCAP, INAP, MAP, CCBS and MWI is provided for the SS7 version. The decoding is displayed in plain English.

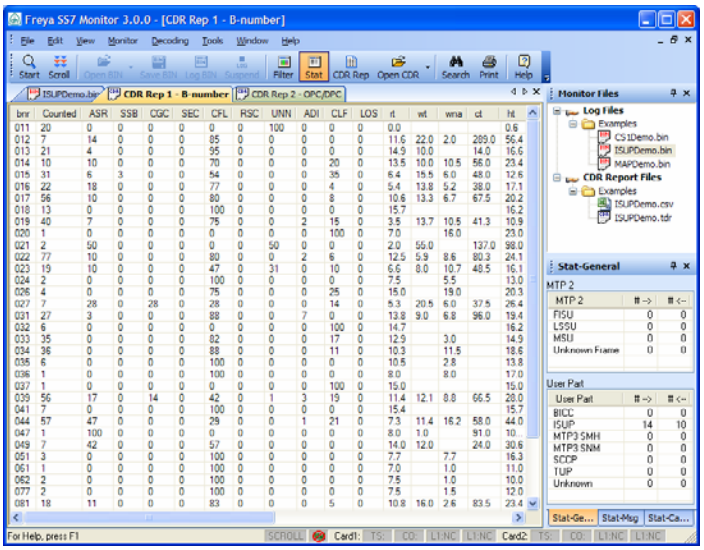
For the ISDN Stinga application, the PRA protocol analyzer, or monitor, analyzes and decodes the signaling and displays it for the user in English. The degree of details is user
controlled, from INFO frames on Layer 1 to detailed decoding of supplementary services on Layer 6/7 (ASN.1 decoding).

A monitored signaling sequence can be stored on hard disk either as screen dumps (ASCII) or binary files containing the complete detailed decoding. The stored information can be retrieved at any time using the same monitor or a standard text editor.

Long duration monitoring by automatic storage to hard disk is also possible. The amount of information that can be collected is then only limited by the size of the hard disk.

Finding errors and signaling problems is as simple as searching for a text string in the log file. If the simulator is installed, it is possible to copy data from a monitored sequence into the simulator in order to re-generate the sequence. This is useful in situations where rare and difficult errors need to be reproduced.

CDR statistics reports can be generated from the Stinga SS7 protocol analyzer. Filtering can be specified for individual



Filters

CDRs, B-number reports, and different OPC/DPC reports.

The protocol monitor includes filtering options for:

SS7

- User part filter
- Call trace filter (whole or parts of the B-number)
- TCAP sub-system number (MAP, INAP CS1, INAP CS1 + Ericsson, CS1 + Alcatel)
- LSSU, FISU and PCR
- Point codes (OPC/DPC)

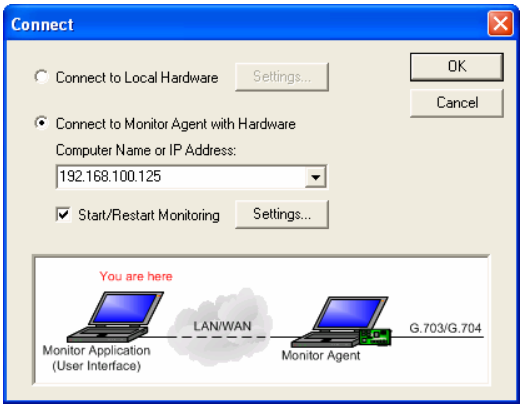
ISDN PRA

- LIC

Remote Use

- DIX
- RR

The simulator and monitor applications are both constructed to be used over a LAN/WAN access. The graphical user interface can be installed on one PC and the simulation or monitor agent run on another Windows PC connected to the test object. The WAN connection can be any IP connection via standard mechanism such as dial-up networking (RAS) in Windows.



Stinga SS7 (C7) and Stinga ISDN Product Brief

Hardware and Software Specifications

The software is supported by the following operating systems:	• Windows 2000 • Windows XP Professional
The software can be configured to run with the following Odin TeleSystems' board combinations:	• Thor-2-PCMCIA versions, which provides simulation capability for 2 T1 or E1 spans, or monitoring capability for 1 T1 or E1 span. • Thor-2-PCI version equipped with a Vidar daughter board, which provides simulation capability for 2 T1 or E1 spans, or monitoring capability for 1 T1 or E1 span. • Thor-8-PCI versions equipped with a Vidar daughter board, which provides simulation capability for 8 T1 or E1 spans, or monitoring capability for 4 T1 or E1 spans.

Supported Protocols

The SS7 applications support the following protocols:	• Layer 1 (Frame Sync, AIS, loss of layer 1, i.e.) • MTP (ITU "blue and white book") • SCCP (CCITT blue and white book) • ISUP v3 and TUP (CCITT blue and white book) • UK ISUP (PD 6623.2000) • IUP (PND-ISC 006 and 004) • ANSI ISUP (T1.113-1995) • TCAP (CCITT blue and white book). • MAP (Mobile Application Part) • INAP (Intelligent Network Application Protocol) • SSUTR2
The ISDN PRA simulator and monitor supports the following protocols:	• DSS1 layer 1 (e.g. Frame Sync, AIS, loss of layer1) • DSS1 layer 2 (Q.921/I.441) • Euro-ISDN layer 2, LAPD, LAPDE, LAPB, LAPBE • DSS1 layer 3 (Q.931/I.451) • Euro-ISDN layer 3 • X.25 (B- and D-channel, layer 3) • Layer 6 and 7, ASN.1 (supplementary services) • PPP, IPX and IP in the B-channel

Related Stinga Software Modules

	• SS7 protocol simulator software module • SS7 protocol analyzer software module • Conformance test suite framework for ISUP interconnect testing (ITU-T Q.78x series) • ISDN PRA protocol simulator software module • ISDN PRA protocol analyzer software module • Conformance test suite framework for ISDN PRA interconnect testing (Eurescom P.412/P.104)

Ordering Information

Product Name / Product Category	• Stinga SS7 Simulator Software Package / SAA-1009-2 • Stinga SS7 Monitor Software Package / SAA-1009-1 • ISUP Interconnect Test (Q.78x series) Script Package / SAA-1009-9 • Stinga ISDN PRA Simulator Software Package / SAA-1009-4 • Stinga ISDN PRA Monitor Software Package / SAA-1009-3 • ISDN End-to-End Interconnect Test Script Package / SAA-1009-8 • Thor-2-PCMCIA-PRO Card, 2 T1/E1 Interfaces / HAA-1060-1 • Thor-2-PCI Card, 2 T1/E1 Interfaces / HAA-1022-1 • Thor-8-PCI Card, 8 T1/E1 Interfaces / HAA-1019-1 • DSP Daughterboard for Thor-2-PCI and Thor-8-PCI/HAA-1009-1

Contact Information

For more information on the Stinga SS7 (C7) and Stinga ISDN products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

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OTX T1E1 Analyzer

The OTX T1E1 Analyzer is a software package for analysis of E1 and T1 spans designed to integrate with the industry award-winning Odin Telecom frameworX (OTX) family of hardware products.

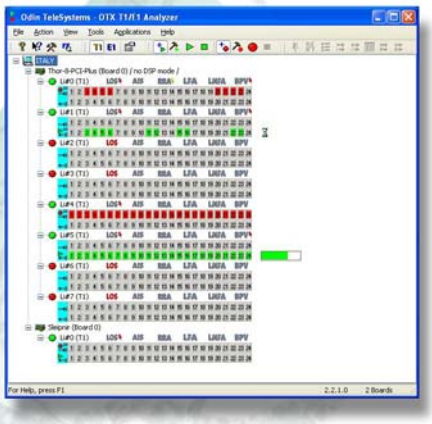
The OTX T1E1 Analyzer provides a feature-rich and complete set of tools for low level T1 and E1 analysis. It contains modules such as Record and Playback of individual timeslots, Bit Error Rate Testing (BERT), and HDLC transmission and reception.

Recorded data can be viewed in a hexademical spreadsheet form, or as a waveform in an oscilloscope display. The playback module supports playback of multiple formats, such as raw binary, or WAV format.

The BERT module features transmission and reception of a variety of common bit patterns, and the auto-detection feature of a test pattern makes BERT testing a simple and easy-to-use operation.

The graphical interface is designed to provide a comprehensive view of the status of multiple T1 and E1 spans; possibly hosted by multiple OTX boards.

So whether you are looking for the best in T1/E1 BER testing or T1/E1 Record/Playback testing, the OTX T1E1 Analyzer software application deliver results in a complete and value-based package.



Feature Highlights

- Recording of individual or multiple timeslots over multiple T1/E1spans.
- Playback of individual or multiple timeslots over multiple T1/E1 spans.
- Bit Error Rate Test module with support for a variety of standard test patterns as well as customized patterns.
- Recorded data can be saved in a variety of formats making it easy to export the recorded data into other tools.
- The Playback module can play file of various formats imported from other tools.
- HDLC module providing encoding/decoding over multiple timeslots and multiple spans.
- Listen to selected timeslots via the soundcard in the PC.
- Support for multiple OTX boards in the same system.
- Supported by multiple types of Odin's OTX Telecom Adapter Boards.

OTX T1E1 Analyzer Product Brief

Hardware and Software Specifications

The software is supported by the following operating systems:	• Windows 2000 • Windows XP • Windows 2003 Server
The software can be configured to run with the following Odin TeleSystems' board combinations:	• Thor-2-PCMCIA-CST/EX/PRO versions, which provides analysis capability for 2 T1 or E1 spans and recording/playback limited to 15 spans. • Thor-2-PCI-Plus and Thor-2-PCI-Express, which provides analysis capability (recording/playback/BERT/HDLC) for 2 full T1 or E1 spans. • Thor-8-PCI-Plus, which provides analysis capability (recording/playback/BERT/HDLC) for 8 full T1 or E1 spans. • Sleipnir-1-PCI-Plus, which provides analysis capability (recording/playback/BERT/HDLC) for 1 full T1 or E1 span. • Gimle-16-PCI-Plus, which provides recording, BERT reception, and HDLC reception capability for 16 full E1 spans.

Function Modules

Record/Playback:	• Flexible timeslot selection dialog for recorded data. • Recording setup can be saved for consistent regression tests. • Optional Time or Byte count recording limit. • Multiple data format for recorded data (Binary, SingleFolder, MultiFolder). • Flexible timeslot selection dialog for playback of data. • Playback compilation with support for multiple format (Binary, WAV, SingleFolder, MultiFolder) of playback files. • Optional continuous looping option for played data. • Timeslot compilation can be saved for consistent regression tests.
HDLC:	• Transmit a specified byte pattern in HDLC frames in one or more timeslots • Receive (byte decoding) of HDLC frames from one or more timeslots • Support for sub-channels (8, 16, 32 kbps) and super-channels (N*64kbps)
BERT:	• QRSS, 2^6-1, 2^9-1, 2^10-1, 2^11-1, 2^15-1, 2^20-1, 2^23-1, All Ones, All Zeros, 1:1, 1:3, 3:1, 1:7, 7:1, 3-in-24 and 2-in-8 bit patterns. • Timeslot selection for bit patterns. • Ability to insert single BPV or CRC error. • Auto-detection mode for automatic detection of bit patterns. • Ability to construct and transmit custom bit pattern.

Other features

	• Synchronous start of recording and playback between separate E1 and T1 spans. • Hex Viewer for recorded data. • T1E1 Line Status and History information. • Oscilloscope viewer for recorded voice data. • Snapshot viewer of all timeslots on a T1 or E1 span.

Ordering Information

Product Name / Product Category	• OTX T1E1 Analyzer Base Application / SAA-1011-1 • Record/Playback Module / SMA-1026-1 • HDLC Encoding/Decoding Module / SMA-1014-1 • BERT Module / SMA-1015-1

Contact Information

For more information about the OTX T1E1 Analyzer, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA	Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-SAA-1011-1-1.0-1.1

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The OtxHdlcEx library is an HDLC decoding and encoding software library designed to integrate with the Hardware API for the industry award-winning Odin Telecom frameworX (OTX) .

The OtxHdlcEx library provides highly optimized code for HDLC encoding and decoding with support for low-level SS7 (MTP-L2) functionality such as FISU filtering and FISU generation.

Integration with the burst functionality of Odin's OTX-Plus PCI cards allow the OtxHdlcEx library to operate on a vast number of HDLC channels simultaneously at the cost of relatively few host CPU processing cycles. The OtxHdlcEx library can easily operate on 31 timeslots per span without overloading the host CPU. With the proper host CPU, the OtxHdlcEx library can support applications up to 744 HDLC channels in one system.

So if you are looking for a powerful HDLC decoding or encoding library, the OtxHdlcEx library deliver results in a complete and value-based package.

OtxHdlcEx Library

Feature Highlights

- Support for multiple HDLC channels—can operate on all timeslots of multiple T1 and E1 spans .
- Highly optimized implementation which results in low CPU MIPS consumption .
- Support for FISU filtering/generation.
- Support for LSSU filtering/generation.
- Support for multiple OTX boards in the same system.
- Supported by multiple types of Odin's OTX-Plus PCI Adapter Boards.

OtxHdlcEx Library Product Brief

Hardware and Software Specifications

The library is supported by the following operating systems:	• Windows 2000, XP, 2003 Server • Linux
The library can be configured to run with the following Odin TeleSystems' board combinations:	• Thor-2-PCI-Plus, which provides HDLC capability (decoding/encoding) for 2 full T1 or E1 spans. • Thor-8-PCI-Plus, which provides HDLC capability (decoding/encoding) for 8 full T1 or E1 spans. • Sleipnir-1-PCI-Plus, which provides HDLC capability (decoding/encoding) for 1 full T1 or E1 spans. • Gimle-16-PCI-Plus, which provides HDLC decoding capability for 16 full E1 spans.

Features

Decoding:	• Payload of decoded HDLC frames delivered via API function. • Optional FISU and LSSU filtering (SS7 MTP-L2). • Accepts both Flags and All Ones as Timefill character. • CRC check. • Accurate timestamp of decoded frames based on the E1 and T1 frame counter.
Encoding::	• Multiple HDLC frames queued up for transmission. • Optional FISU and LSSU generation (SS7 MTP-L2) following MSUs. • Selectable Timefill character (Flags and All Ones) . • Automatic CRC generation, or optional manual CRC generation.

Other features

	• Support for multiple channels (all timeslots of a T1 and E1 span) • Low CPU load consumption

Ordering Information

Product Name / Product Category	• OtxHdlcEx Library / SMA-1014-1

Contact Information

For more information on the OtxHdlcEx library, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA	Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

2020-1-SMA-1014-1-1.0-1.1

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The Sleipnir-1-WAN products bridges the gap between LAN (Local Area Network) and WAN (Wide Area Network) by providing network connectivity using E1 or T1 service. The Sleipnir-1-WAN cards are supplied with a network driver to allow T1/E1 network connectivity.

No programming is needed. The T1/E1 interface is fully configurable with integrated CSU/DSU functionality.

The Sleipnir-1-WAN cards are available as a PCI card or a compact PCMCIA card.

Whether your requirements calls for WAN connectivity over leased T1 or E1 between home or small business offices, or WAN connectivity from a laptop, the Sleipnir-1-PCI-Plus boards are the products of choice.

So for the best in single access T1/E1 WAN communication adapters, the Sleipnir-1-PCI-WAN and Sleipnir-1-PCMCIA-WAN delivers performance, value and flexibility.

Sleipnir-1-PCI-WAN
Sleipnir-1-PCMCIA-WAN

Sleipnir-1-PCI-WAN and Sleipnir-1-PCMCIA-WAN T1/E1 WAN Adapters

Feature Highlights

- Software configurable for T1 or E1 access.
- Full or fractional T1 or E1.
- Integrated CSU/DSU.
- PCI 32-bit DMA Burst capable (Sleipnir-1-PCI-WAN).
- 3.3V and 5.0V PCI slot tolerant (Sleipnir-1-PCI-WAN).
- Windows (NDIS miniport) driver.
- Multiple clocking options.
- Link status LEDs (Sleipnir-1-PCI-WAN only).

Software Support

Includes a configurable Sleipnir-1-WAN network driver.	The Sleipnir-1-WAN network driver is available for Windows 2000, Windows XP, and Windows 2003 Server operating systems.

Technical Specifications

Board Specification	• Half-size PCI board (Sleipnir-1-PCI-WAN) • PCMCIA Type II card (Sleipnir-1-PCMCIA-WAN)
Host Bus Interface	• Supports PCI rev 2.1, rev 2.2, rev 2.3 (3 volt signaling) and rev 3.0, 32-bit PCI DMA burst transfers**,** 3.3V and 5V PCI slot compatible (Sleipnir-1-PCI-WAN) • Supports PCMCIA rev 2.0, I/O mapped (Sleipnir-1-PCMCIA-WAN)
Network Interface	• Single T1 or E1 interface (100/120 Ohm termination) • Short haul or long haul compatible • Integrated CSU/DSU functionality
HDLC Resources	• Support for full or fractional T1 or E1
T1/E1 Frame Formats	• Doubleframe, CRC Multiframe (E1 mode) • F4, SF (or D4), ESF (or F24), SLC96 (T1 mode)
T1/E1 Line Codes	• HDB3, B8ZS, AMI, AMI with ZCS (Zero Code Suppression)
Clocking Sources	• Incoming T1/E1 span • On-board oscillator
Indicators	• 4 LEDs for T1/E1 line status (Sleipnir-1-PCI-WAN only)
Connectors	• Dongle with RJ45/RJ48C connectors for E1/T1 connection (Sleipnir-1-PCMCIA-WAN) • RJ45/RJ48C connector for E1/T1 connection (Sleipnir-1-PCI-WAN)
EMC and Safety Testing/Certification (planned)	• FCC Part 15 (CFR47, Part 15, Subpart B) • CE EMC (EN61326-1, AS/NZS 2064) • Safety EN60950 and UL6095
Power Requirements/Environmental Data	• Power consumption: 1.3W (Sleipnir-1-PCI-WAN), 2.5W (Sleipnir-1-PCMCIA-WAN) • Temperature: operating, 0° C to +50° C; non-operating, -40° C to +60° C • Humidity: operating, 5% to 80% RH (%relative humidity) at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing; non-operating, 5% to 80% RH at up to +30° C, and 5% to 30% RH above +30° C up to +50° C non-condensing • Altitude: operating, up to 4,600 meters; non-operating, up to 12,192 meters

Ordering Information

Product Name/Product Category	Sleipnir-1-PCI-WAN/HAA-1051-6-1.0	PCI WAN adapter; RJ45 connectors
	Sleipnir-1-PCI-WAN/HAA-1051-5-1.0	PCI WAN adapter; BNC connectors
	Sleipnir-1-PCMCIA-WAN/HAA-1065-1-1.0	PCMCIA WAN adapter

Contact Information

For more information on the Sleipnir-1-WAN products, please contact:	Odin TeleSystems Inc. 800 E. Campbell Road, Suite 334 Richardson, TX 75081-1873 USA	Tel: +1-972-664-0100 Tel: 1-888-ODINTSM Fax: +1-972-664-0855 Email: info@odinTS.com Web: www.odinTS.com

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