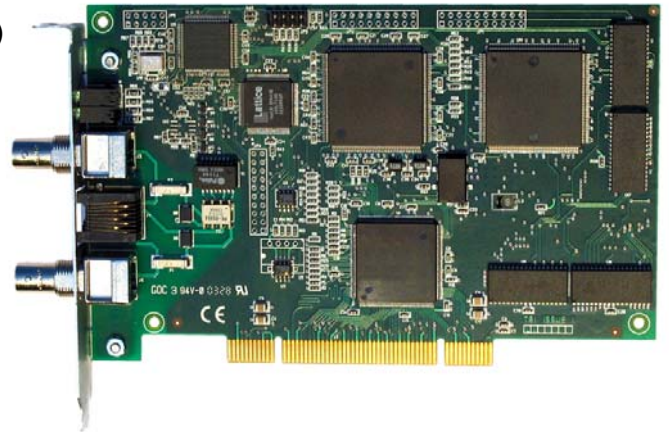


Key Features

- E1 and T1 unstructured and fractional (G.703 and G.704)
- Transparent bitstream and HDLC operation
- Universal PCI Bus mastering DMA Intelligent adapter with support for Windows and Linux
- APIs for Windows and Linux and interoperation with TCP/IP
- Choice of RJ48 or BNC connectors
- Comprehensive Developers Toolkit available
- General purpose bitstream decoding library including support for DAB-ETI



Overview

The intelligent FarSync TE1 card brings comprehensive E1 and T1 support to Linux and Windows to allow your application full access to the E1 and T1 features available on the card. Full bandwidth on unstructured T1 and E1 G.703 lines, T1 and E1 fractional (G.703/G.704), HDLC framed and transparent operation are all supported with easy software configuration. The product includes a low level driver that allows access to the communications features available in the hardware. The card can optionally use the host's standard TCP/IP protocol stack to allow access to IP based networks such as the Internet. The FarSync SDK provides a Developers Toolkit for the product.

The G.703 transparent bitstream option available with the API is suitable for video and voice such as T-DMB (Digital Multimedia Broadcasting), DAB (Digital Audio Broadcasting) ETI (Ensemble Transport Interface - ETSI EN 300 797).

A general purpose bitstream encoding and decoding library including DAB-ETI support to reduce application development timescales is available with the FarSync SDK.

Both the RJ48C (RJ45) and twin coax (BNC) connectors are available on the card so if you are not sure what connector type is going to be required, use the FarSync TE1.

The product is supplied with a 5 year warranty.

Features under Windows: The product includes support for the Microsoft standard Windows SDCI API, providing applications with direct access to the card's communications port/s for bit sync (HDLC) framing and also transparent bitstream operation for video and voice type applications.

The card installs seamlessly under Windows XP, Windows Server 2003, Vista and Windows Server 2008 on both 32 and 64 bit, single and multi-core systems. The FarSync drivers are signed by Microsoft for easy installation.

The low level API is based on an extended SDCI interface and supports bit sync (HDLC) framed and transparent bit stream data.

The FarSync TE1 can also be installed to appear as a NDIS (LAN) interface so it can simply use the TCP/IP stack over PPP to allow access to IP based networks such as the Internet.

Features under Linux: The low level API is based on the raw socket interface and supports bit sync (HDLC) framed and transparent bitstream data. The TE1 card can also use the TCP/IP stack to allow access to IP based networks such as the Internet.

The TE1 card installs seamlessly as a plug and play device under the popular Linux 32 and 64 bit distributions. The cards supports Linux kernel version 2.4 and 2.6 in 32 and 64 bit formats, including the leading distributions supplied by Redhat, SuSE, Mandriva, Debian, Ubuntu, Fedora, Slackware and more. Multi-processor systems are supported.

FarSite is committed to supporting the FarSync TE1 on new versions of Linux and Linux kernels as they are released. The source code for the driver is supplied with the product allowing rebuilding by the end user for use with almost any of the current or future Linux variants.

Developers Toolkit: The FarSync SDK provides a Developers Toolkit with full documentation, a bitstream encoding and decoding library, useful utilities, such as a line monitor, and many sample applications for Linux and Windows. Free support from FarSite's Engineering department is provided to customers purchasing the FarSync SDK who have technical questions using the API.

Typical Applications

The FarSync TE1 adapter is suitable for a very wide variety of applications, including for example:

- **HDLC framing support for non standard or specialist protocols**
- **Interfacing DAB ETI (Ensemble Transport Interface - ETSI EN 300 797) transparent bit streams to Servers**
- **Transparent E1 pipe for ISDN Primary rate use**
- **Integration with embedded Linux and Windows based products**
- **E1 Internet access**
- **E1 Frame Relay Access**
- **Remote office access over leased lines**
- **Server based network hub (Routers and Firewalls)**
- **Satellite Multicasting**
- **Video Teleconferencing**

FarSync TE1 Product Details

The FarSync TE1 is supplied with software drivers for Windows and Linux. This includes a low level driver that allows access to the communications features available in the hardware and an optionally installable driver that connects with the standard TCP/IP protocol stack to allow access to IP based networks such as the Internet.

Card Hardware

The 1 port card runs an AMD processor with SRAM. The card has an embedded HDLC / transparent controller with SDMA access (128 buffers) and a wide range of timers. The whole memory space may be mapped via the PCI interface to the PC/Server.

Network Interfaces

The TE1 supports E1 unstructured (G.703) and Transparent operation at 2.048 Mbits/s, E1 fractional (G.703/G.704) at speeds from 64 Kbits/s to 1.984 Mbits/s, T1 unstructured (G.703) and Transparent operation at 1.544 Mbits/s, T1 fractional (G.703/G.704) at speeds from 64 Kbits/s to 1.536 Mbits/s.

E1 Modes: HDLC-framed or transparent data over G.703 unframed/unstructured or G.703/G.704 framed/structured Doubleframe and CRC4 multiframe modes.

T1 Modes: HDLC-framed or transparent data over G.703 unframed/unstructured or G.703/G.704 framed/structured F4 (FT), F12 (D3/D4, SF), F24 (D5, Fe, ESF) and F72 (SLC96) modes.

PCI Bus Specification

The FarSync TE1 card is suitable for systems with a PCI or PCI-X bus, covering single and multi-processor systems. The card is PCI revision 2.2 compliant with support for both 3.3 and 5 volt signaling, the power for the card is taken from the 3.3 volt supply rail. The FarSync TE1 card may be fitted in either 32-bit PCI bus slots or 64-bit PCI-X bus slots as this Universal PCI card will work perfectly well in both.

Key Features supported on Linux

The FarSync TE1 installs seamlessly under Linux kernel series 2.4 and 2.6 on both single and multi-core 32 and 64 bit systems. All the popular distributions are supported including Red Hat, SuSE, Slackware, Ubuntu, Mandriva, Debian and Fedora.

Installation is simple, the driver is dynamically loadable so a kernel rebuild is not required for the driver to be installed. The driver acts as a dynamically loadable module. The link level protocol can be PPP, Cisco HDLC or Frame Relay with optional authentication by CHAP, MSCHAP or PAP (RFC 1334) providing a standard point-to-point network interface. The driver is supplied with source code.

The Raw Sockets API allows applications developed using the FarSync SDK to access the full feature set of the hardware, these include bit sync (HDLC framed) data, and transparent bitstream data.

A configuration utility is provided to set the line speed, interface type and protocol, after which the ports may be configured with standard networking tools.

Key Features supported on Windows

The FarSync TE1 installs easily under Windows Vista, Windows XP, Windows Server 2003 and Windows Server 2008 on single or multi-core 32 and 64 bit systems. A low level SDCI driver is installed with the optional installation of an NDIS (LAN) driver. The NDIS driver supports TCP/IP running over PPP with optional authentication by CHAP or PAP (RFC 1334) providing a standard point-to-point network interface. The drivers are signed by Microsoft for easy installation.

The product is supplied with a comprehensive configuration utility and its own Line Monitor that allows the user to record, display and store line traffic with WAN protocol decoding for fast debugging.

The FarSync TE1 enhanced SDCI API allows applications developed using the FarSync SDK to exactly control the type of data sent and received in bit sync (HDLC framed) data and transparent bitstream formats.

FarSync SDK - The Developers Toolkit

The SDK includes support for writing applications on both Linux and Windows and contains documentation, working sample applications, development and test utility applications. There is everything a user needs to rapidly develop and test a wide variety of applications such as specialist synchronous (HDLC framed) protocols or transparent bitstream data requirements including Audio, MPEG Video T-DMB and DAB ETI.

The FarSync SDK is ordered separately from the FarSync TE1.

Our Engineering department provides free email and telephone assistance to application developers using the API as part of the package provided when the FarSync SDK is purchased.

Windows SDCI API

The SDCI API allows applications to exactly control the type of data sent and received in both bit synchronous data and transparent bitstream formats. The SDCI API manual in Adobe PDF format provides a comprehensive set of function call definitions and helpful advice on the best way to utilise the interface. The sample applications for HDLC and bitstream operation are written in C.

Synchronous data

The SDCI API has been extended to allow applications to exactly control the type of data sent and received in both bit synchronous (HDLC framed) data and transparent bitstream formats. The SDCI SDK contains everything a user needs to rapidly develop and test applications for such requirements as supporting specialist synchronous protocols or transparent data requirements such as Audio, MPEG Video T-DMB and DAB ETI. The unique clocking options are selectable and configurable from the API.

Sample Applications

A number of easy to follow sample applications are provided demonstrating the wide variety of features available with the adapter. This includes a kernel mode sample for those customers who require the ultimate performance. GUI based demonstration and test utilities are supplied capable of utilizing the wide range of features supported by the adapter.

Linux Raw Sockets API

The Linux API allows applications to send and receive HDLC format (bitsync) frames and also transparent bitstreams with the raw sockets based API. The sample application supplied with the Developers Toolkit demonstrates both modes of operation.

Data rates of up to 10 Mbps/s are supported, with all the ports individually selectable for speed, clocking direction and mode of operation (HDLC or Transparent). Frame sizes up to 32 Kbytes are supported in HDLC mode to allow support for a wide variety of specialist synchronous protocols. The transparent bit stream is suitable for transparent data requirements such as Audio, MPEG Video T-DMB and DAB ETI.

The source for the application and drivers is included, with the Linux API manual provided in Adobe PDF format. The driver is supported under kernel version 2.4 and 2.6 for both single CPU and multi-processor 32 and 64 bit machines. Typically 12 or more adapters (24+ ports) can be supported on a single Server; the adapter limit is only dependent on the PCI slots resources available in the Server, the maximum within Linux is 32.

General Purpose Bitstream Encoding and Decoding Library

A Library is provided that allows low level encoding and decoding of the transparent bitstream for speedy application development. The Library can be configured to identify and extract most fixed-length byte-oriented user frames; where frames can be defined in terms of single or alternate synchronizing patterns, frame length and number of sync patterns to acquire sync. The library can for example provide low level frame handling for DAB-ETI.

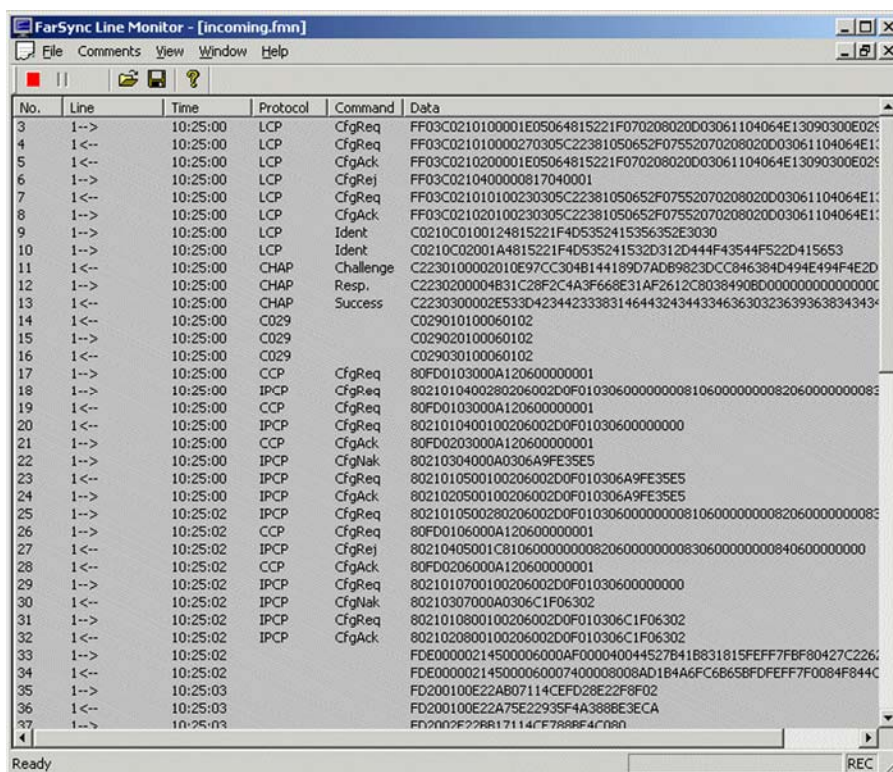
The library is available in Windows and Linux.

Linux Line Monitoring

The Farmon utility allows all data sent and received on the line to be recorded.

Windows Line Monitor

The product is supplied with a high performance multi-channel line monitor that allows the user to record, display, store and replay line traffic with protocol decoding (sample screen below). Comments can even be inserted into the line trace to assist later analysis.



Product Packaging

The FarSync TE1 product includes:

- The TE1 communications card,
- Documentation supplied on CD-ROM,
- A quick start guide,
- RJ48C (RJ45) 2 metre cable
- Windows and Linux driver software (source code is provided for Linux driver)

New versions of the software are made available from the support section on www.farsite.com as they are released.

Order Information		
Name	Description	Product Code
FarSync TE1	Intelligent 1 port E1 / T1 card, Universal PCI with BNC and RJ48C (RJ45) connectors, with an API for customer applications and support for TCP/IP operation. Includes a 2 metre cable with RJ48C Connectors. Supplied with drivers for Linux and Windows XP, Server 2003, Server 2008 and Vista. To develop applications that will use the API the FarSync SDK should be ordered	FS4150
FarSync SDK	Linux and Windows Developers Toolkit for the FarSync TE1 and other FarSync cards, this is required if you want to write software to use the card's API	FS9610

Technical Specifications — Hardware Features

Card type	AMD processor with SRAM and sync controller, Universal PCI (PCI-X compatible, PCI v2.2 compliant), bus mastering, DMA enabled, Supports 3.3 & 5 volt PCI signaling, Suitable for 32 and 64 bit PCI bus slots
Physical size	Short card (height 107mm, length 167mm)
Network connectors	E1: 120-ohm RJ48C (often referred to as RJ45) or Twin 75 ohm BNC T1: 100-ohm RJ48C (RJ45)
Link speed range	E1: unstructured (G.703) : 2.048 Mbits/s, fractional (G.704): 64 Kbits/s to 1.984 Mbits/s, T1: unstructured (G.703): 1.544 Mbits/s, fractional (G.704): 64 Kbits/s to 1.536 Mbits/s
T1 frame structure and modes	T1 - HDLC-framed or transparent data over G.703 unframed/unstructured or G.703/G.704 framed/structured F4 (FT), F12 (D3/D4, SF), F24 (D5, Fe, ESF) and F72 (SLC96) modes
E1 frame structure and modes	E1 - HDLC-framed or transparent data over G.703 unframed/unstructured or G.703/G.704 framed/structured doubleframe and CRC4 multiframe modes
ESD Protection	Sidactor and telelink fuse, designed for zero maintenance. The FarSync TE1 uses solid state fuses unlike many E1 interface cards, no parts need to be replaced after a survivable lightning strike
Back panel Indicators	LEDs for Port open, Loss of Signal (LOS), Receive Remote Alarm (RRA), Alarm Indication Signal (AIS)
Approvals & RoHS	EN55022 class B, CE, FCC class B, TBR12 and TBR13. RoHS compliant.
Power requirements	< 1.4 Amp @ +3.3v, < 5 watts
Cables	2 metre RJ48 cable included
MTBF	273,220 Hours - Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case rise above ambient
Warranty	5 years

Linux Software Features

Distribution support	Distributions by Red Hat, SuSE, Slackware, Mandriva, Ubuntu, Debian, Fedora and more. Drivers for kernel series 2.4 and 2.6 on both single and multi-core 32 and 64 bit systems
Kernel support	All sub versions of kernel releases from 2.4.2 and 2.6.1
Protocols supported	TCP/IP, PPP, Cisco HDLC, Frame Relay, CHAP, MSCHAP, PAP (RFCs 1661, 1332, 1334)
API and interfaces	Raw Sockets API

Windows Software Features

O/S types	Windows XP, Windows Vista, Windows Server 2003, Windows Server 2008 32 and 64 bit (single and multi-core systems)
Protocols supported	TCP/IP, PPP, CHAP, PAP (RFCs 1661, 1332, 1334)
API and interfaces	Extended SDCI API, NDIS (LAN) where the line appears as a LAN interface
Utilities	Multi-channel line Monitoring Utility, with protocol decode

FarSync SDK - Developers Toolkit

API reference manuals	Windows SDCI user manual, Linux Raw Sockets user manual, Bitstream encoder/decoder user guide
Sample programs	Sample applications supplied that use the SDCI and Raw Sockets APIs and card performance and function test applications
Source code	Sample C applications and Linux drivers source code supplied
Customer support	We provide free email and telephone assistance to the application developer using the API as part of the package provided when the FarSync SDK is purchased.

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