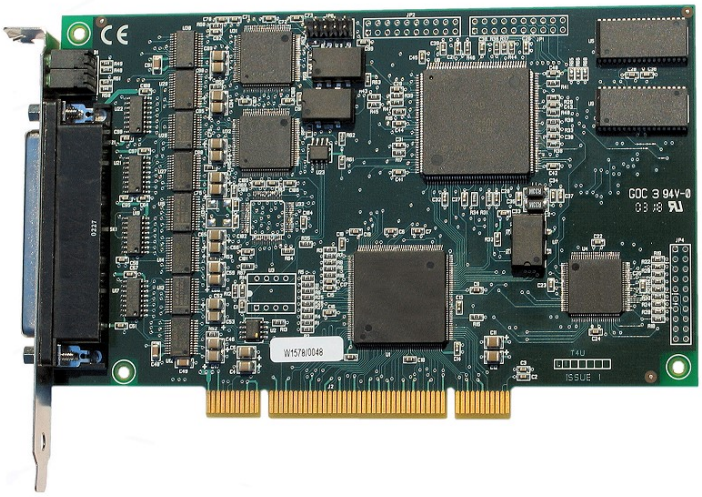
FarSync ® T4U

A 4 port PCI synchronous communications adapter

FarSite COMMUNICATIONS

Key Features

- **Universal PCI bus mastering WAN adapter**
- **4 synchronous ports**
- **Network interfaces for RS232, X.21, RS530, RS449 and V.35**
- **Wide speed range - up to 10 Mbits/s**
- **Transparent bitstream & HDLC framed data**
- **APIs for Windows and Linux**
- **Interoperates with TCP/IP**
- **Comprehensive Developers Toolkit available**



Overview

The FarSync T4U adapter and software is designed to provide high performance hardware communications solutions for business, government and military applications which need a PCI synchronous communications adapter. The product includes a low level driver that allows access to the communications features available in the hardware. The adapter 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 adapter will support a synchronous line at speeds of up to 10Mbits/s continuous. The highly flexible universal network connector supports RS232, X.21, RS530 (RS422 signalling), RS449 and V.35 network interfaces.

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

The adapter installs seamlessly under Windows 10, 8, 7 and Windows Server 2019, 2016 and 2012 on both 32 and 64 bit, single and multi-core systems. The FarSync drivers are signed by Microsoft for easy installation.

The FarSync T4U can also be installed to appear as a NDIS (LAN) interface so it can simply use the TCP/IP stack 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 synchronous (HDLC) framed and transparent bit stream data. The adapter can also use the TCP/IP stack to allow access to IP based networks such as the Internet.

The T4U adapter installs seamlessly as a plug and play device under the popular Linux 32 and 64 bit distributions. The adapters supports Linux kernel version 2.6 in 32 and 64 bit formats. Multi-processor systems are supported.

FarSite is committed to supporting the FarSync T4U 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, 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 T4U adapter is suitable for a very wide variety of applications, including, for example:

- **High speed multi-port HDLC framing support for non standard or specialist protocols**
- **Interfacing DAB ETI (Ensemble Transport Interface - ETSI EN 300 799) transparent bit streams to Servers**
- **Interfacing MPEG Video bit streams T-DMB ETI to Servers**
- **Interfacing high speed MPEG Video bit streams to Servers**
- **Watchdog systems**
- **Data generators for test systems**
- **Engineering monitoring and control systems**
- **HDLC framing support for non standard or specialist protocols**

FarSync T4U - Product Details

The FarSync T4U 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.

The drivers supplied with Windows and Linux allow large numbers of ports to be supported by the installation of multiple FarSync T4U adapters in a Server. Typically 12 or more adapters (48+ ports) can be supported; the adapter limit is only dependent on the resources available in the host Server and the total bandwidth of the PCI bus.

Network Interfaces

The multi function line drivers available on all 4 ports support **RS232 (V.24), X.21 (V.11), V.35, EIA530 (RS422) and RS449 network interfaces, all soft configurable** and ESD protected from static charges. The maximum supported line speed is 10 Mbits/s full duplex.

Clock Generation

The T4U supports **accurate internal clock generation at a wide range of standard frequencies from 9,600 baud to 8.192 Mbits/s** and dual clocks can be generated in V.11 mode if required. The clocking speed of all ports is individually selectable.

PCI Bus Specification

The FarSync T4U card is suitable for systems with a PCI or PCI-X bus, covering single processor systems, multi-processor systems. The card is PCI revision 2.2 compliant with support for both 3.3 and 5 volt signalling, the power for the card is taken from the 3.3 volt supply rail. The FarSync T4U 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 T4U installs seamlessly under Linux kernel series 2.6 and onwards on both single and multi-core 32 and 64 bit systems. All the popular distributions are supported including Red Hat, SuSE, CentOS, Ubuntu, Debian, Fedora, Slackware.

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 synchronous (HDLC framed) data, and transparent bitstream data in signal mode NRZ.

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 T4U installs easily under Windows 10, 8, 7 and Windows Server 2019, 2016 and 2012 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 T4U enhanced SDCI API allows applications to exactly control the type of data sent and received in bit synchronous (HDLC framed) data and transparent bitstream formats in NRZ signal mode.

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 T4U.

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 Mbits/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 2.6 and onwards for both single CPU and multi-processor 32 and 64 bit machines. Typically 12 or more adapters (48+ 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.

For further details see FarSync_SDK_Datasheet.

Order Information

Name	Description	Product Code
FarSync T4U	4 port synchronous Universal PCI adapter, supplied with drivers and utilities for Windows and Linux	FS4440
FarSync SDK	Linux and Windows Developers Toolkit	FS9610
Compatible Cables		
MCX4	Quad X.21 (V.11) DTE cable with DB15M connectors, 1.5m	FS6041
MCV4	Quad V.35 cable DTE with M34M V.35 connectors, 1.5m	FS6042
MCR4	Quad RS232 (V.24, X.21bis) DTE DB25M connectors, 1.5m	FS6043
MTU4	Quad port conversion cable 0.5 metres. *This conversion cable allows the single port cables listed below to also be used, useful for mixed connection type requirements*	FS6074
UCR1	Single RS232 (V.24, X.21bis) DTE cable DB25M connector, 1.5m	FS6061
UCX1	Single X.21 (V.11) DTE cable with DB15M connector, 1.5m	FS6062
UCV1	Single V.35 DTE cable with M34M V.35 connector, 1.5m	FS6063
UX35C	Single V.35 DCE cable where the DCE generates clocks, M34F V.35 connector, 1.5m	FS6095
U530	Single RS530 (EIA-530, RS422) DTE cable DB25M connector, 1.5m	FS6064
X21-449-INT	X.21 - RS449 DCE - conversion cable when the adapter generates the clock DB37F connector, 0.5m	FS6093
X21-449-EXT	X.21 - RS449 DTE - conversion cable for externally generated clock (DTE Clock) DB37M connector, 0.5m	FS6094
Cross Over Cables (DTE to DCE)		
Null-MX	X.21 (V.11) double shielded crossover cable, DB15F connectors, 0.5m. Converts the DTE presentation into a DCE.	FS6090
Null-MR4	RS530 (EIA530, RS422) double shielded crossover cable, DB25F connectors, 0.5m. Converts the DTE presentation into a DCE.	FS6097

Technical Specification - Software

Linux	
Distribution Support	Distributions by Red Hat, SuSE, CentOS, Ubuntu, Debian, Fedora, Slackware and more. Drivers for kernel series 2.6 and onwards on both single and multi-core 32 and 64 bit systems
Protocols Supported	TCP/IP, PPP, Cisco HDLC, Frame Relay, CHAP, MSCHAP, PAP (RFCs 1661, 1332, 1334)
API and Interfaces	Raw Sockets API
Windows	
O/S types	All 32 and 64bit versions for Windows 10, 8, 7; Windows Server 2019, 2016 and 2012
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	Line monitor is included to record, display and store line traffic
FarSync SDK - Developers Toolkit	
API reference manuals	Windows SDCI user manual, Linux Raw Sockets user manual
Sample programs	Sample applications that use the SDCI and Raw Sockets APIs. Adapter 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.

Technical Specifications—Hardware Features	
Adapter type and PCI specification	AMD processor with SRAM and quad port synchronous controller, Universal PCI (PCI-X compatible, PCI v2.2 compliant), bus mastering, DMA enabled, Supports 3.3 & 5 volt PCI signalling, Suitable for 32 and 64 bit PCI bus slots
Adapter Size	Short adapter: height 107mm, length 167mm
Network connections	X.21 (V.11) - DB15M connector, RS232 (V.24, X.21bis) - DB25M connector, V.35 - M34M V.35 connector, RS530 (RS422) - DB25M connector, RS449 (RS422) - DB37M connector, Cables are required; DCE cables also available.
Link speed range Sync	RS232: up to 128 Kbits/s; X21, V35, RS530 (RS422), RS449: up to 10 Mbits/s
Line signal mode	NRZ
ESD line protection	Yes, Littelfuse high speed ESD and over-voltage protection
Indicators	4 LEDs indicating line status
Approvals	EN55022 class B, CE, FCC class B
Power requirements	< 1.75 A @ +3.3v, < 10mA @ +/- 12v, < 6 watts
MTBF	238,319 hours - Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient
Line clocking (internal / external)	External and adapter generated line clocking is supported. The clock speed is independently selectable on each port. Adapter generated clock range 9,600 baud to 8,192 Mbits/s. No special cables are required to use adapter generated clocks on RS232, X.21 and RS530 (RS422). Internal clocking is supported on V.35 and RS449 with the use of cables designed for adapter generated clocks.
Cables	Cables are ordered separately, see the Order Information section on the page 4
Warranty	5 years
Compliance	RoHS2, REACH

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