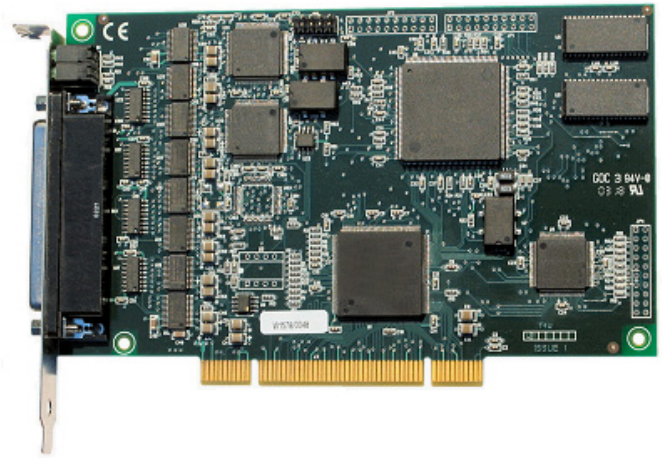


## Key Features

- PCI / PCI-X (Universal PCI) 4 port X.25 card
- Network interfaces for RS232C, X.21, RS530, RS422, RS449 and V.35
- Wide speed range - 150 baud to 2 Mbits/s
- APIs to X.25 - Sockets, Java and COM Port
- APIs to ISO Transport
- 32 and 64 bit drivers for Linux and Windows 7, Vista, XP, Server 2003 and Server 2008
- Up to 4095 simultaneous sessions per port
- Includes IP over X.25
- Support for *openFT/FTAM*
- Developers Toolkit and Line monitor included



## Overview

The FarSync X.25 T4U product is a high quality X.25 solution for business, government and military applications, it has been developed to provide high performance, versatile X.25 connectivity for Linux and Windows systems.

The Universal PCI card will support 4 X.25 lines at speeds to over 2.048 Mbits/s. The highly flexible universal network connector supports RS232C, X.21, RS530, RS449 and V.35 network interfaces.

A Developers Toolkit is provided with the product including a multi port Line Monitor application.

### Features under Linux:

The card supports Linux kernel 2.6 in 32 and 64 bit formats, including the leading distributions supplied by Redhat, SuSE, Mandriva, Debian, Ubuntu, Fedora, Slackware, CentOS and more. SMP (multi-processor) and multi-core systems are supported. Configuration is by a Java based GUI or via text files for embedded use.

There are APIs to the X.25 layer, a Sockets based interface and a Java API. There is also an API to the ISO Transport layers (ISO 8073 - connection oriented).

IP over X.25 support is included permitting TCP/IP operation over an X.25 network.

XOT (X.25 over TCP/IP) support is available as an option, using the same APIs as X.25. XOT can operate at the same time as X.25.

Up to 254 connections per line are supported as standard or up to 4095 connections using the FarSync X25 High Capacity Pack.

FarSite is committed to supporting the FarSync X25 T4U on new versions of Linux and Linux kernels as they are released. The source code for the driver and the libraries for the API are supplied with the product, allowing rebuilding by the end user for use with almost any of the current or future Linux variants.

### Features under Windows:

The T4U card installs seamlessly as a plug and play device under Windows 7, Vista, XP, Server 2003 and Server 2008. 32 and 64 bit Windows operating systems are supported.

The X.25 software has a host of features including ISO Transport (classes 0 to 3), support for OpenFT FTAM, a WinSock2 compliant Sockets API, a Java API, and a COM Port API. The Sockets API is also accessible from .NET applications.

Up to 4095 connections can be supported using the FarSync X25 High Capacity Pack or 254 per line as standard.

IP over X.25 support is included permitting TCP/IP operation over an X.25 network.

## Typical Applications

The FarSync X25 T4U adapter is suitable for connection to all types of **X.25 networks, X.25 over the ISDN D channel, and leased lines**. FarSync X.25 adapters are in use today in a variety of applications, including:

- **X.25 networks such as Lottery, Police, Customs, Military, Fishery, Financial, Government and Airline**
- **E-Commerce gateways for credit card verification**
- **Mixed X.25 and IP networks**
- **SMS message gateways**
- **Billing and Mediation**
- **FTAM access**
- **Low cost PC / Server based X.25 switches**
- **Control applications requiring HDLC links**
- **X.400**
- **PC / Server based X.25 switch with an XOT option**

The adapter is compatible with all public X.25 networks.

## FarSync X25 T4U - Hardware Details

The FarSync X25 T4U 4 port card runs an AMD processor with SRAM and an embedded HDLC controller connected to the Server/PC through a Universal PCI bus.

### Network Interfaces

The 4 multi function line drivers support X.21 (V.11), V.35, RS232C (V.24, X.21bis), RS530 (EIA530, RS422), RS449 (RS422), network interfaces, all soft configurable and ESD protected from static charges. Line speeds to over 2.048Mbits/s are supported.

### Clock Generation

External (line generated) clocking is supported. The T4U also supports card generated clocks speeds from 9600 baud to over 2.048 Mbits/s, each line can be set to a different speed.

### PCI Bus Specification

The FarSync X25 T4U card is suitable for systems with a PCI or PCI-X bus, covering single processor 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 X25 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.

### Multiple Cards

The drivers supplied with Windows and Linux allow large numbers of lines to be supported by the installation of multiple FarSync X25 T4U cards in a Server. Typically 12 or more cards can be supported (48+ lines); the card limit is only dependent on the PCI / PCI-X slot count and resources available in the host Server and the total bandwidth of the PCI bus.

## Line Monitor and Network Statistics Utilities

The multi-port line monitor included for Windows and Linux is an invaluable tool. Line traces can be displayed in real time, recorded and reviewed with full protocol decoding.

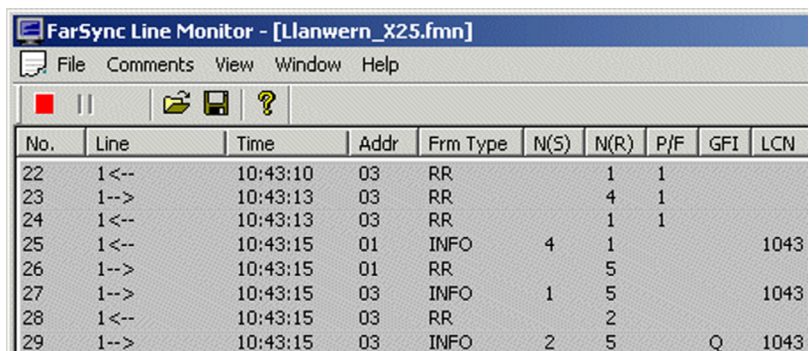
### Windows version only features:

Recording in pcap format

Wireshark can be used to trace X.25 line activity in real time.

### A connection status and statistics utility

is also provided. It's functions include the display of the channel connection status and statistics of user data, packet and frame types passed over the X.25 lines.



The screenshot shows the 'FarSync Line Monitor - [Llanwern\_X25.fmn]' application window. It has a menu bar with 'File', 'Comments', 'View', 'Window', and 'Help'. Below the menu bar is a toolbar with icons for a red square, a play button, a save icon, and a help icon. The main area contains a table with the following columns: No., Line, Time, Addr, Frm Type, N(S), N(R), P/F, GFI, and LCN. The table contains 8 rows of data.

No.	Line	Time	Addr	Frm Type	N(S)	N(R)	P/F	GFI	LCN
22	1<--	10:43:10	03	RR		1	1		
23	1-->	10:43:13	03	RR		4	1		
24	1<--	10:43:13	03	RR		1	1		
25	1<--	10:43:15	01	INFO	4	1			1043
26	1-->	10:43:15	01	RR		5			
27	1-->	10:43:15	03	INFO	1	5			1043
28	1<--	10:43:15	03	RR		2			
29	1-->	10:43:15	03	INFO	2	5		Q	1043

Screen shot extract from the Windows Line Monitor application

## TCP/IP over X.25

The IP over X.25 support is included as part of the FarSync X25 T4U product and is integrated into Linux and Windows.

**Linux Features:** IP over X.25 support complies with RFC 1356 (IP over X.25). Higher level protocols that run over IP including TCP, UDP, HTTP and FTP are supported.

**Windows Features:** The IP over X.25 support complies with RFC 1356 (IP over X.25), for single and multiple X.25 destinations. Higher level protocols that run over IP including TCP, UDP, HTTP and FTP are supported.

## API and Developers Toolkit

Application developers have a choice of APIs for X.25 and ISO Transport. An API selector guide is provided to assist the developer in choosing the most appropriate interface. The comprehensive Developers Toolkit is included with the product. See the [FarSync X.25 Developers Toolkit and API Datasheet](#) for full details.

## FarSync XOT Extension option

The XOT extension allows applications using the same API to transmit data over XOT (X.25 over TCP/IP). TCP/IP is normally routed over Ethernet on PCs and Servers. The XOT support is compatible with FarSite's FarLinX X25 Gateway and also other manufacturers' XOT products. The XOT and X.25 interfaces can be used simultaneously.

**For Linux** use the **FarSync XOT Extension for Linux**, it should be ordered at the same time that the FarSync X25 card is purchased, although a retrofit is possible.

**For Windows** use the **FarSync XOT Runtime - Windows** product.

## FarSync X.25 High Capacity Pack option

An optional high capacity pack is available for the FarSync X25 T4U. The **FarSync X.25 High Capacity Pack** allows up to 4,095 simultaneous connections to be made; a huge increase from the standard 254 on each line. The expanded capacity applies to SVC, PVC and ISO Transport connections.

Customer applications developed to use the standard X.25 Sockets API are compatible with the FarSync X25 High Capacity Pack.

Order the **FarSync X.25 High Capacity Pack - Windows** or **FarSync X.25 High Capacity Pack - Linux**. These products should be ordered at the same time that the FarSync X.25 T4U is purchased although a retrofit upgrade is possible. One FarSync X.25 High Capacity Pack is required per card.

## Configuration

For both Windows and Linux, configuration is by a GUI configuration application, rapid installation and easy configuration are key features of the product.

The X.25 line can be reconfigured and restarted without reloading the software.

Many of the parameters such as DTE / DCE selection are determined automatically. Selecting the line speed by default automatically sets suitable timer and retry values. An advanced tab permits users to exactly specify the configuration of the line if necessary.

## Cables

The cable and connector configurations available for the FarSync X25 T4U are described in the **Order Information Table** on the last page of the datasheet.

## Packaging

The X.25 software, firmware, drivers, utilities and the X.25 Developers Toolkit are all included on the CD-ROM supplied with the FarSync card. Cables are ordered separately.

The CD-ROM supplied with the FarSync X25 T4U includes:

- Drivers for Linux, Windows 7, XP, Vista, Server 2003 and Server 2008
- Numerous example applications with source code
- Documentation for all the APIs in Adobe PDF format
- Source code for Linux drivers and API Libraries
- Network monitor and various useful utility programs

New releases of the software are made available for free download from [www.farsite.com](http://www.farsite.com).

## Software Technical Specifications

<b>Operating System support</b>	Windows 7, Vista, XP, Windows Server 2003, Windows Server 2008. Linux distributions supplied by Redhat, SuSE, Mandriva, Debian, Ubuntu, Fedora, Slackware, CentOS and others with kernel version 2.6.
<b>Linux kernel support</b>	All sub versions of kernel releases from 2.6.1 onward.
<b>32 and 64 bit systems</b>	The FarSync X25 T4U can be used on 32 and 64 bit Linux and Windows systems.
<b>X.25 Features</b>	
<b>Data Packets per Second throughput</b>	> 2000 pps
<b>X.25 CCITT Compliance</b>	1980, 84 & 88
<b>DTE/DCE Operation</b>	Both & Automatic detection and selection
<b>Maximum SVCs (all types)</b>	254 per port, any mix of bothway, incoming & outgoing. 4,095 per port with the High Capacity Pack (any mix of bothway, incoming & outgoing)
<b>Maximum PVCs</b>	254 per port, 4,095 per port with the High Capacity Pack
<b>Logical Channel Numbers (LCN)</b>	From 1 to all 4095 LCNs can be specified on each port. Allows incoming calls to be accepted on any channel
<b>Data Packet size range</b>	0 to 4096 bytes
<b>X25 facilities support</b>	Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Throughput Class Negotiation.
<b>Extended sequence numbering (128)</b>	Yes
<b>IP over X.25</b>	Supported, complies with RFC 1356
<b>Accessible via API</b>	Four APIs, a Sockets based interface, a Java API, a COM Port API and a legacy NCB based API
<b>X.25 switch</b>	X.25 Switch daemon available on Linux for free download
<b>XOT Option Features</b>	
<b>XOT Specification</b>	Complies with RFC 1613 - X.25 over TCP (XOT)
<b>Maximum XOT connections</b>	1,000 on Linux, 4095 on Windows
<b>Maximum SVCs and PVCs</b>	4095, any mix of SVCs and PVCs
<b>Data packets size range</b>	0 to 4,096 bytes
<b>OOB (Out of Band) data</b>	Supported for Interrupts, Resets and the D bit
<b>X.25 facilities support</b>	Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Throughput Class Negotiation.
<b>Accessible via API</b>	Two APIs, a Sockets based interface and a Java API
<b>ISO Transport Features</b>	
<b>Standard supported</b>	ISO 8073 (connection oriented)
<b>Classes supported</b>	Classes 0, 1, 2 and 3
<b>Negotiation between classes</b>	Yes
<b>Transport connections</b>	254 per port, 4,095 per port with the High Capacity Pack
<b>Accessible via API</b>	Yes

## Developers Toolkit API Summary

<b>X.25 API - Linux and Windows</b>	<p>The <b>Sockets API</b> is easy to use and provides access to the majority of X.25 features. This is recommended for most developments. Accessible from .NET applications.</p> <p>The <b>Java API</b>, specially developed for Java applications (J2SE, J2EE), is quick and easy to use.</p> <p>Legacy <b>NCB based API</b> providing low level access to all the features of X.25.</p> <p>Quick and simple to use <b>COM Port API (Windows only)</b> suitable for many applications particularly those based on Visual Basic and similar languages.</p>
<b>ISO Transport API - Linux and Windows</b>	Using a <b>Sockets API on Windows, NCB API on Linux</b> . Provides access to ISO Transport features.
<b>API Manuals</b>	<b>Manuals included, one for each API</b> plus an API selector guide.
<b>Sample programs</b>	A large number of example applications are available for driving all the various APIs. Includes samples using SVC and PVC operation.

## Technical Specifications - Hardware Features

<b>Card type and PCI Specification</b>	Universal PCI (PCI-X compatible, PCI v2.2 compliant), AMD Processor embedded communications controller, Intelligent Universal bus-mastering PCI card, Supports 3.3 & 5 volt signaling, Suitable for 32 and 64 bit PCI bus slots
<b>Physical characteristics</b>	Short card (height 107mm, length 167mm)
<b>Network connections supported</b>	X.21 (V.11) - DTE 15 pin male D type, V.35 - DTE MRAC-34 male 'brick' type, RS232C (V.24, X.21bis) - DTE 25 pin male D type, RS530 (RS422) - DTE 25 pin male D type, RS449 - DTE 37 pin male D type
<b>Link speed range</b>	RS232C: 75 baud to 128 Kbits/s X21, V35, RS530: 75 baud to over 2.048 Mbits/s
<b>ESD Line Protection</b>	Yes, Littelfuse high speed ESD and over-voltage protection
<b>Multiple cards</b>	Yes, typically 12 or more cards (48+ lines) can be supported; the card limit is only dependent on the resources available in the host Server
<b>LEDs</b>	4 line status indicators
<b>Approvals</b>	EN55022 class B, CE, FCC class B
<b>Power requirements</b>	< 1.75 A @ +3.3v < 10mA @ +/- 12v (for ESD suppression only) < 6 watts
<b>MTBF</b>	238,319 hours — calculation based on Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient
<b>Line clocking (internal / external)</b>	Card generated and External supported Card generated clock range 9,600 baud to over 2.048 Mbits/s. No special cables are required to use card generated clocks on RS232C, X.21 and RS530 (RS422). Card generated clocking is supported on V.35 and RS449 with the use of cables designed for card generated clocks.
<b>Cables</b>	Cables are ordered separately, see the Cables section on the last page for details
<b>Warranty</b>	Free 5 year warranty
<b>RoHS compliant</b>	Yes

<b>Ordering Information</b>		
<b>Product Name</b>	<b>Description</b>	<b>Product Code</b>
<b>FarSync X25 T4U</b>	Intelligent 4 X.25 line Universal PCI card with X.25 Software supplied with the X.25 Developers Toolkit for Windows and Linux	FS6440
<b>Software Options</b>		
<b>FarSync X.25 High Capacity Pack -Windows</b>	Upgrade to the standard Windows FarSync X.25 software that allows up to 4095 simultaneous sessions	FS9504
<b>FarSync X.25 High Capacity Pack - Linux</b>	Upgrade to the standard Linux FarSync X.25 software that allows up to 4095 simultaneous sessions	FS9505
<b>FarSync XOT Extension for Linux</b>	Upgrade to add XOT (X.25 over TCP/IP) to FarSync X.25 cards on Linux. A FarSync X25 card must be purchased.	FS9508
<b>FarSync XOT Runtime - Windows</b>	XOT (X.25 over TCP/IP) Runtime support on Windows	FS9511

<b>Cables</b>		
<b>Product Name</b>	<b>Description of cable types available for the FarSync X25 T4U</b>	<b>Product Code</b>
<b>MCX4</b>	<b>Quad X.21 (V.11) DTE cable</b> - male 15 pin D type connectors, 1.5 metres	FS6041
<b>MCV4</b>	<b>Quad V.35 DTE cable</b> - standard MRAC-34 (brick) male connectors, 1.5 metres	FS6042
<b>MCR4</b>	<b>Quad RS232C (V.24, X.21bis) DTE cable</b> - male 25 pin D type connectors, 1.5 metres	FS6043
<b>MTU4</b>	<b>Quad port adapter cable</b> 0.5 metres, allows single cables UCR1, UCV1, U530, UCX1 and UX35C to be used	FS6074
<b>UCR1</b>	<b>Single RS232C (V.24, X.21bis) DTE cable</b> - male 25 pin D type connector, 1.5 metres	FS6061
<b>UCX1</b>	<b>Single X.21 (V.11) DTE cable</b> - male 15 pin D type connector, 1.5 metres	FS6062
<b>UCV1</b>	<b>Single V.35 DTE cable</b> - standard MRAC-34 (brick) male connector, 1.5 metres	FS6063
<b>U530</b>	<b>Single RS-530 (EIA530, RS422 ) DTE cable</b> - male 25 pin D type connector, 1.5 metres	FS6064
<b>UX35C</b>	<b>Single V.35 special DCE cable</b> where the DCE generates clocks, female connector, 1.5 metres.	FS6095
<b>UXD1</b>	Single cable to <b>connect direct to a Nortel DMS100 (NTFX35AA)</b> , 1.5 metres.	FS6069
<b>Crossover (Null Modem) DTE to DCE conversation cables -</b>		
<b>Null-MX</b>	<b>X.21 (V.11) crossover DTE to DCE conversion cable</b> , 15 pin D type female connectors, 0.5 metres.	FS6090
<b>Null-MR3</b>	<b>RS232C (V.24) crossover DTE to DCE conversion cable</b> , 25 pin D type female connectors, 0.5 metres.	FS6092
<b>Null-MR4</b>	<b>RS530 (EIA530, RS422) crossover DTE to DCE conversion cable</b> , 25 pin D type female connectors, 0.5 metres.	FS6097

Microsoft, Windows, and the Windows logo are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

All trademarks and registered trademarks are acknowledged.

Changes are periodically made to the information herein; these changes will be incorporated into new editions of the publication. FarSite Communications may make improvements and/or changes in the products and/or programs described in this publication at any time.