Key Features

- ✓ **PCI / PCI-X (Universal PCI) 4 port X.25 card**
- ✓ **Network interfaces for RS232, X.21, RS530, RS422, RS449 and V.35**
- ✓ **Wide speed range - 150 baud to 2 Mbits/s**
- ✓ **APIs to X.25 - Sockets and Java**
- ✓ **APIs to ISO Transport**
- ✓ **32 and 64 bit drivers for Linux and Windows**
- ✓ **Up to 4095 simultaneous sessions per port**
- ✓ **Includes IP over X.25**
- ✓ **Support for *open*FT/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 RS232, 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 adapter supports Linux kernel 2.6 onwards in 32 and 64 bit formats, including the leading distributions supplied by Red Hat, SuSE, Debian, Ubuntu, Fedora, Slackware 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 10, 8, 7; Windows Server 2019, 2016 and 2012. 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 LAPB layer 2 (HDLC) that is also directly accessible by its own 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, Radar, 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**
- ✓ **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, RS232 (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 multiprocessor 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.
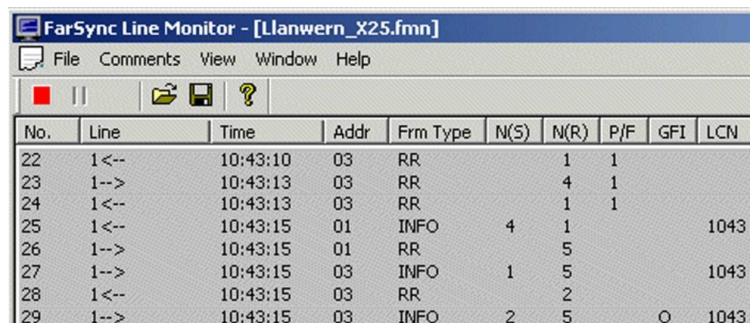
Windows version only features:

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 li

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. www.farsite.com/datasheets/FarSync_X.25_Developers_Toolkit_Datasheet.pdf 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.

X.25 lines 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 with the FarSync card. Cables are ordered separately.

The software and documentation is downloaded from this website using a code supplied with the FarSync adapter it includes:

Drivers for Linux and Windows
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. X.25 T4U

Software Technical Specifications

Operating System support	Windows 10, 8, 7; Windows Server 2019, 2016 and 2012. Linux distributions supplied by Red Hat, SuSE, CentOS Debian, Ubuntu, Fedora, Slackware and others with kernel version 2.6 onwards.
Linux kernel support	All sub versions of kernel releases from 2.6.12 onward.
32 and 64 bit systems	The FarSync X25 T4U can be used on 32 and 64 bit systems using Intel/AMD X86/x64 type processors under Linux and Windows with 32 or 64 bit applications.

X.25 Features

Data Packets per Second throughput	> 2000 pps
X.25 CCITT Compliance	1980, 84 & 88
DTE/DCE Operation	Both & Automatic detection and selection
Maximum SVCs (all types)	254 per port, any mix of bothway, incoming & outgoing. 4,095 per port with the High Capacity Pack (any mix of bothway, incoming & outgoing)
Maximum PVCs	254 per port, 4,095 per port with the High Capacity Pack
Logical Channel Numbers (LCN)	From 1 to all 4095 LCNs can be specified on each port. Allows incoming calls to be accepted on any channel
Data Packet size range	0 to 4096 bytes
X25 facilities support	Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Throughput Class Negotiation.
Extended sequence numbering (128)	Yes
IP over X.25	Supported, complies with RFC 1356
Accessible via API	3 APIs, a Sockets based interface, a Java API and a legacy NCB based API
X.25 switch	X.25 Switch daemon available on Linux for free download

XOT Option Features

XOT Specification	Complies with RFC 1613 - X.25 over TCP (XOT)
Maximum XOT connections	4095 on Linux, 4095 on Windows
Maximum SVCs and PVCs	4095, any mix of SVCs and PVCs
Data packets size range	0 to 4,096 bytes
OOB (Out of Band) data	Supported for Interrupts, Resets and the D bit
X.25 facilities support	Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Throughput Class Negotiation.
Accessible via API	2 APIs, a Sockets based interface and a Java API

ISO Transport Features

Standard supported	ISO 8073 (connection oriented)
Classes supported	Classes 0, 1, 2 and 3
Negotiation between classes	Yes
Transport connections	254 per port, 4,095 per port with the High Capacity Pack
TPDUs in a NSDU	1
Accessible via API	Yes

Developers Toolkit API Summary

X.25 API - Linux and Windows	The **Sockets API** is easy to use and provides access to the majority of X.25 features. This is recommended for most developments. Accessible from .NET applications. The **Java API**, specially developed for Java applications (J2SE, J2EE), is quick and easy to use. Legacy **NCB based API** providing low level access to all the features of X.25.
ISO Transport API - Linux and Windows	Using a **Sockets API on Windows, NCB API on Linux.** Provides access to ISO Transport features.
API Manuals	**Manuals included, one for each API** plus an API selector guide.
Sample programs	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

Card type and PCI Specification	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 signalling, Suitable for 32 and 64 bit PCI bus slots
Physical characteristics	Short card (height 107mm, length 167mm)
Network connections supported	X.21 (V.11) - DTE DB15M type connector, V.35 - DTE M34M type connector, RS232 (V.24, X.21bis) - DTE DB25M type connector, RS530 (RS422) - DTE DB25M type connector, RS449 - DTE DB37M type connector.
Link speed range	RS232: 75 baud to 128 Kbits/s X21, V35, RS530: 75 baud to over 2.048 Mbits/s
ESD Line Protection	Yes, Littelfuse high speed ESD and over-voltage protection
Multiple cards	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
LEDs	4 line status indicators
Approvals and Compliance	EN55022 class B, CE, FCC class B, RoHS2, REACH
Power requirements	< 1.75 A @ +3.3v < 10mA @ +/- 12v (for ESD suppression only) < 6 watts
MTBF	238,319 hours — calculation based on Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient
Line clocking (internal / external)	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 RS232, 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.
Cables	Cables are ordered separately, see the Cables section on the last page for details
Warranty	Free 5 year warranty

Ordering Information

Product Name	Description	Product Code
FarSync X25 T4U	Intelligent 4 X.25 line Universal PCI card with X.25 Software supplied with the X.25 Developers Toolkit for Windows and Linux	FS6440

Software Options

FarSync X.25 High Capacity Pack -Windows	Upgrade to the standard Windows FarSync X.25 software that allows up to 4095 simultaneous sessions	FS9504
FarSync X.25 High Capacity Pack - Linux	Upgrade to the standard Linux FarSync X.25 software that allows up to 4095 simultaneous sessions	FS9505
FarSync XOT Extension for Linux	Upgrade to add XOT (X.25 over TCP/IP) to FarSync X.25 cards on Linux. A FarSync X25 card must be purchased.	FS9508
FarSync XOT Runtime - Windows	XOT (X.25 over TCP/IP) Runtime support on Windows	FS9511

Cables

Product Name	Description of cable types available for the FarSync X25 T4U	Product Code
MCX4	**Quad X.21 (V.11) DTE cable** - DB15M type connectors, 1.5 metres	FS6041
MCV4	**Quad V.35 DTE cable -** M34M type connectors, 1.5 metres	FS6042
MCR4	**Quad RS232 (V.24, X.21bis) DTE cable** - DB25M type connectors, 1.5 metres	FS6043
MTU4	**Quad port adapter cable** 0.5 metres, allows single cables UCR1, UCV1, U530, UCX1 and UX35C to be used	FS6074
UCR1	**Single RS232 (V.24, X.21bis) DTE cable -** DB25M type connector, 1.5 metres	FS6061
UCX1	**Single X.21 (V.11) DTE cable** - DB15M type connector, 1.5 metres	FS6062
UCV1	**Single V.35 DTE cable** - M34M type connector, 1.5 metres	FS6063
U530	**Single RS-530 (EIA530, RS422) DTE cable -** DB25M type connector, 1.5 metres	FS6064
UX35C	**Single V.35 special DCE cable** where the DCE generates clocks, M34F type connector, 1.5 metres.	FS6095
UXD1	Single cable to **connect direct to a Nortel DMS100 (NTFX35AA)**, 1.5 metres.	FS6069
	Crossover (Null Modem) DTE to DCE conversation cables	
Null-MX	**X.21 (V.11) crossover DTE to DCE conversion cable**, DB15F type connectors, 0.5 metres.	FS6090
Null-MR4	**Combined RS232 (V.24) and RS530 (EIA530, RS422) crossover DTE to DCE conversion cable**, DB25F type connectors, 0.5 metres.	FS6097

T   +49 (8241) 91 83 501
Fax: +49 (8241) 96 00 263
Ema   farsite@B-NetCons.de
Web: www.B-NetCons.de

B-NetCons GmbH
Business - NetzwerkConsulting