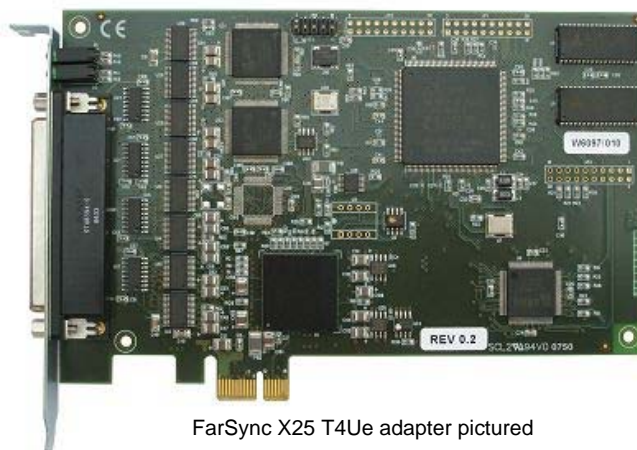


Key Features

- **Wide speed range - 150 baud to 2.048 Mbits/s**
- **PCI Express 2 and 4 port adapters**
- **PCI / PCI-X (Universal PCI) 1, 2 and 4 port adapters**
- **Network interfaces for RS232C, X.21, RS530, RS422 and V.35**
- **254 & 4095 VCs per line (logical channels) options**
- **IP over X.25 and an XOT extension option**
- **Includes a Developers Toolkit and Line Monitor**
- **Sockets and Java APIs to access X.25**
- **API to ISO Transport**
- **Supported on multi-processor, 32 and 64 bit systems**
- **Supported distributions: Redhat, SuSE, Mandrake, Debian, Fedora, Ubuntu, Slackware and more**



FarSync X25 T4Ue adapter pictured

Overview

The FarSync X.25 T-Series range of adapters has been developed to provide high performance and very reliable **X.25 connectivity for Linux and Windows** (for Windows features see separate datasheet).

The competitively priced **1, 2 and 4 port PCI / PCI-X (Universal PCI) and PCIe adapters** in the range are capable of driving each line at speeds of up to 2.048 Mbits/s with support for **RS232C, X.21, RS530 (RS422) and V.35 network interfaces**.

There are 2 main APIs to the X.25 layer, a Sockets based interface and a Java API. There is also an APIs to the ISO Transport layers (ISO 8073 - connection oriented). A comprehensive Developers Toolkit is included with the product.

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

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

The T-Series adapters are supported on **Linux kernel versions 2.4 and 2.6, including the leading distributions supplied by Redhat, SuSE, Mandriva, Debian, Ubuntu, Slackware, Fedora and others.** multi-processor 32 and 64 bit systems are supported. The source code for the driver and the libraries for the API are supplied with the product. FarSite is committed to supporting the FarSync X25 T-Series products on new versions of Linux as they are released.

The FarSync X.25 Switch software for Linux is available for free download when a FarSync X25 adapter is purchased.

The adapters are compatible with all public X.25 networks, such as Datex-P, BT X.25 Direct, Eirpac, Austpac and Transpac and Itapac to name just a few.

Typical Applications

The FarSync X25 T-Series adapters are suitable for connection to all types of **X.25 networks, X.25 over the ISDN D channel and leased lines.** Typical applications include:

- **Lottery, Police, Customs, Military, Financial, Government and Airline applications on private X.25 networks**
- **E-Commerce gateways for credit verification**
- **Telecom billing and mediation**
- **High speed Stock Exchange data feeds**
- **PC / Server based X.25 Switch with XOT**

High Performance

The intelligent FarSync T-Series adapters have been designed with performance in mind. The adapters are driven by AMD processors with on board zero state SRAM memory mapped to the PC. There are 5 adapters in the T-Series range offering from 1 to 4 ports.

- 254 simultaneous SVC and PVC virtual connections per line or 4,095 per port with the High Capacity Pack
- Well over 2,000 pps (X.25 packets per second)
- PCI Bus mastering DMA interface on all the adapters
- RS232C (V.24 / X.21bis), X.21 (V.11), V.35, RS530 (EIA530, RS422)
- Line speeds of up to 2.048 Mbits/s
- 12 or more adapters can be installed in a PC / Server, PCI slot count dependant only
- Supported on Linux multi-processor 32 and 64 bit systems

FarSync X.25 High Capacity Pack for Linux

A High Capacity Pack upgrade option is available for all the adapters. **A best in class 4,095 X.25 VCs can be supported per line**, the maximum that the X.25 standard permits. This means for example 8,190 VCs on the 2 port FarSync X25 T2U where the standard version supports 508. The expanded capacity applies to X.25 SVC, PVC and ISO Transport connections.

The FarSync X.25 High Capacity Pack is available under product code FS9505, it should be ordered at the same time that the FarSync X.25 adapter is purchased although a retrofit upgrade is possible. One FarSync X.25 High Capacity Pack is required per X.25 adapter.

FarSync XOT Extension for Linux

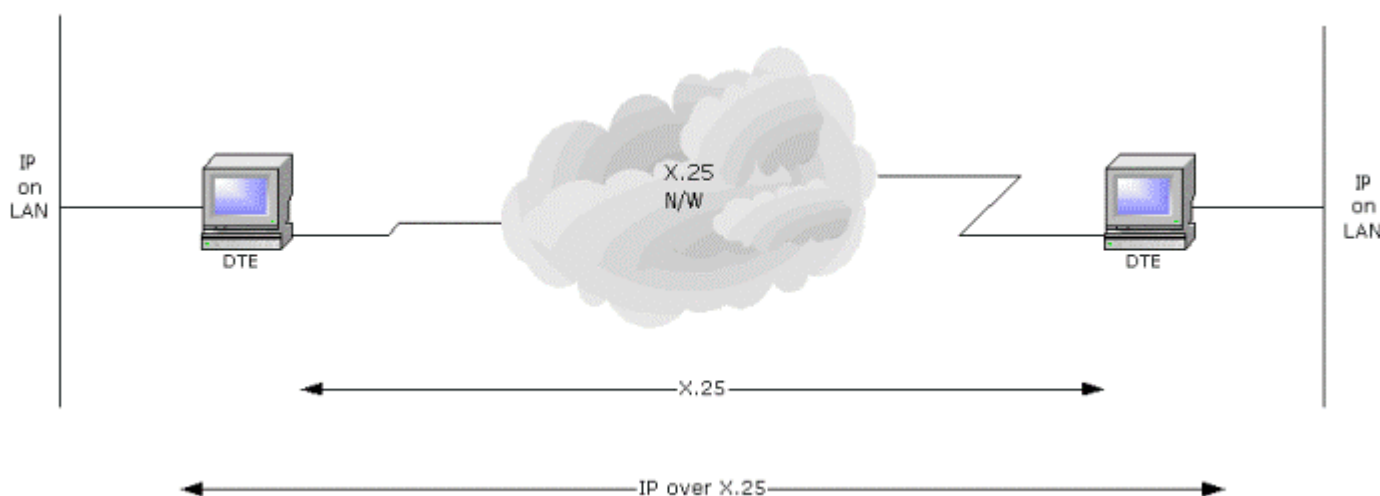
The XOT extension allows applications using the same API to transmit data over XOT (X.25 over TCP/IP). TCP/IP is normally routed over Ethernet on PCs and Servers. The XOT support is compatible with FarSite's FarLinX X25 Gateway and also other manufactures XOT products. The XOT and X.25 interfaces can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

The FarSync XOT Extension for Linux is available under product code FS9508, it should be ordered at the same time that the FarSync X25 adapter is purchased although a retrofit is possible.

TCP/IP over X.25

IP over X.25 support is included as part of the FarSync X25 T-Series product.

The 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.



Developers Toolkit

The developers toolkit is included free with the FarSync X25 product and features:

- Documented working C and Java source sample programs. Source code from these samples can be used to fast-track your development process
- Comprehensive API manuals with function call definitions and helpful advice on the best way to utilise the various interfaces
- Source code for the drivers and API libraries
- Free email and telephone assistance to application developers

APIs for Application Development

For application developers needing to access X.25 or XOT there is a choice of a **Sockets API** and a **Java API** available, for compatibility with legacy application a NCB (Network Control Block) based API is available. All the interfaces may be used simultaneously by different programs if required. API manuals and many example applications are included in the Developers Toolkit for both types of interface.

Sockets API - X.25 and XOT

The **Sockets interface provides a programming language independent high level connection orientated interface with access to a comprehensive set of X.25 features.** The FarSync Sockets implementation is compatible with the BSD Sockets interface and allows the very basic Kernel X.25 module to be replaced by the much more comprehensive and flexible FarSync X.25 module while still running any applications developed for the Kernel X.25 module unchanged on a FarSync adapter.

It is easy to convert applications written for TCP/IP to instead use X.25 or XOT as the transport mechanism. In many cases the only change required is to the parameters provided when the socket is created to reference the X.25 address family and protocol. Multi-threaded applications are supported.

Java API - X.25 and XOT

The **Java API allows applications written in Core Java Software (J2SE) and Enterprise Java Software (J2EE) easy access to the functions and features of FarSync X.25 adapters and XOT.** Full documentation and sample applications are provided.

Configuration

Configuration is by a Java and XML-based GUI configuration application. A typical screen is shown on the right. XOT and Individual X.25 lines can be reconfigured and restarted without reloading the software and disrupting other lines.

Text file based configuration is also available if required.

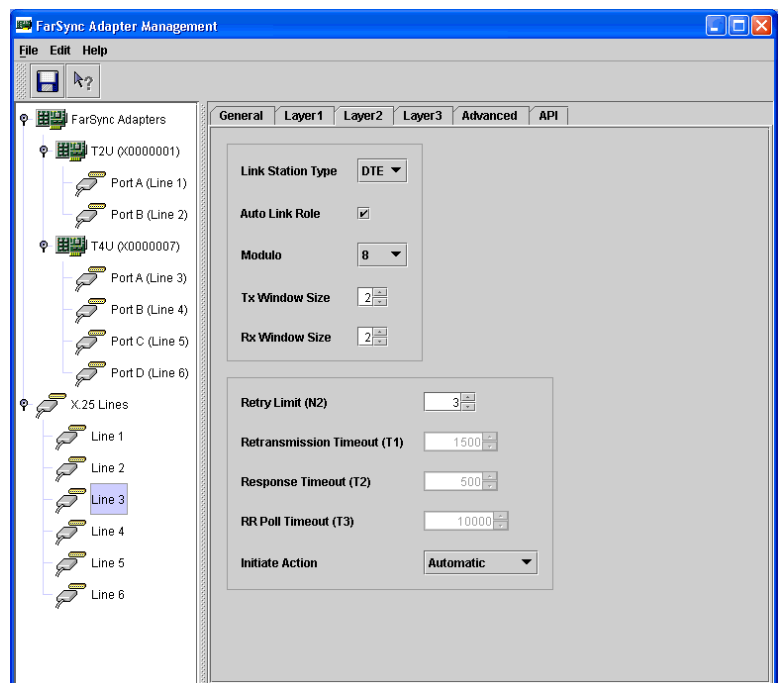
A comprehensive configuration guide, commands reference and configuration examples are provided as part of the HTML documentation pack.

Installation

Installation scripts adapt to install the software on the major Linux distributions and a manual install option is available using the scripts as a guide available on the CD-ROM or for download from the Support section of www.farsite.com.

Source code is available as a .tar.gz.


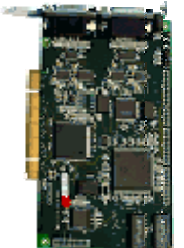



PCI card hardware detection, download and configuration is performed automatically at system startup once the software has been installed.



Utilities

A line monitor utility is included, this can display data sent over the XOT and X.25 lines at the frame and packet level, it is invaluable when developing and debugging applications.

A status utility allows display of the channel connection status and statistics of user data, packet and frame types.

| Technical Specifications - Hardware Features | | | | | |
|---|--|--|---|---|---|
| Product name | FarSync X25 T1U | FarSync X25 T2U | FarSync X25 T4U | FarSync X25 T2Ue | FarSync X25 T4Ue |
| Adapter Photo |  |  |  |  |  |
| Product code | FS6140 | FS6240 | FS6440 | FS6250 Available Aug 08 | FS6450 |
| Warranty | 5 years | 5 years | 5 years | 5 years | 5 years |
| Number of ports | 1 port | 2 ports | 4 ports | 2 ports | 4 ports |
| Hardware Features | | | | | |
| Adapter type and PCI Specification | PCI-X compatible, PCI v2.2 compliant, AMD Processor, 1 Mbyte zero wait state SRAM, Intelligent Universal bus mastering adapter, Short adapter (height 107mm, length 167mm), Supports 3.3 & 5 volt signaling, Suitable for 32 and 64 bit PCI bus slots | | | PCI Express AMD Processor, 1 Mbyte zero wait state SRAM, Intelligent bus mastering adapter, Short adapter (height 107mm, length 167mm), Suitable for 1x to 32x PCIe bus slots | |
| Network connectors available | X.21 (V.11) - 15 pin male D type, V.35 - MRAC-34 male 'brick' type , RS232C (V.24, X.21bis) - 25 pin male D type, RS530 (RS422 signaling) - 25 pin male D type, RS449 (RS422 signaling) - 37 pin male D type | | | | |
| Link speed range | RS232C: up to 128 Kbits/s X21, V35, RS530 (RS422), RS449 (RS422): up to 2.048 Mbits/s | | | | |
| Line Protection | Yes, Littelfuse high speed ESD and over-voltage protection | | | | |
| Multiple cards | Yes, 12 or more, any mix of FarSync X25 adapters | | | | |
| LEDs | 1 line status | 2 line status | 4 line status | 2 line status | 4 line status |
| Approvals | EN55022 class B, CE, FCC class B | EN55022 class B, CE, FCC class B | EN55022 class B, CE, FCC class B | EN55022 class B, CE, FCC class B | EN55022 class B, CE, FCC class B |
| Power requirements | 850mA @ +3.3v < 5mA @ +/- 12v 2.8 watts max | < 1.2 A @ +3.3v < 5mA @ +/- 12v < 4 watts | < 1.75 A @ +3.3v < 10mA @ +/- 12v < 6 watts | < 1.2 A @ +3.3v < 5mA @ +/- 12v < 4 watts | < 1.75 A @ +3.3v < 10mA @ +/- 12v < 6 watts |
| MTBF | 339,766 hours ¹ | 295,857 hours ¹ | 238,319 hours ¹ | 229,044 hours ¹ | 284,027 hours ¹ |
| | ¹ Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient | | | | |
| Line clocking (internal / external) | Both, internal clock range 9600, 19200, 38400 & 76800 baud. ² | Both, all ports selectable. Internal clock range 9600 baud to 8 Mbits/s on V24, X.21, RS530 and V.35 connections. ² | | | |
| | ² No special cables are required to use internal clocks for X.21, RS530 and RS232C. For V.35 internally generated clocks a UX35C cable is required. | | | | |
| Cables | Cables are ordered separately, see the Cables table on the last page for details | | | | |

| Software Specifications for FarSync X25 T-Series for Linux | |
|---|---|
| Operating Systems supported | Linux distributions supplied by Redhat, SuSE, Mandriva, Debian, Ubuntu, Slackware, Fedora and others. others with kernel versions 2.4 and 2.6. FarSite is committed to supporting the FarSync X25 T-Series products on new versions of Linux as they are released. Windows support is included with the product, see the separate Windows datasheet. |
| Linux Kernel support | All sub versions of kernel releases from 2.4.2, and 2.6.1 onward. The product may operate successfully with earlier versions of the kernel but no specific testing has been undertaken. |
| 64 bit and multi-processor systems | Designed for and tested on single and multi-processor Servers, 32 and 64 bit systems |
| Multiple adapters | Yes, limited only by PCI resources, typically up to 12 FarSync adapters per Server |
| X.25 Features | |
| X.25 CCITT compliance | 1980, 84 & 88 |
| DTE/DCE operation | Both and Automatic detection and selection |
| Maximum SVCs / PVCs | 254 per line, any mix of bothway, incoming and outgoing 4,095 per line using the High Capacity Pack, any mix of bothway, incoming and outgoing |
| Simultaneous connections | 254 per line, 4,095 per line using the High Capacity Pack |
| Data Packet size range | 16 to 4096 bytes |
| Data packets per second | > 2,000 pps |
| OOB (Out of Band) data | Supported for Interrupts, Resets and the D bit |
| X25 facilities supported | Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Extended sequence numbering (128), Throughput Class Negotiation. |
| Types of network connection | X.25 packet switch, leased line, dial up (X.32, dial on DTR) |
| Accessible via API | Yes, two APIs, a Sockets based interface and a Java API |
| IP over X.25 | IP over X.25 support compliant with RFC 1356 |
| XOT Option Features | |
| XOT Specification | Complies with RFC 1613 - X.25 over TCP (XOT) |
| Maximum SVCs / PVCs | 4,095, any mix of SVC and PVC |
| Maximum XOT connections | 4,095 |
| Data Packet size range | 16 to 4096 bytes |
| OOB (Out of Band) data | Supported for Interrupts, Resets and the D bit |
| XOT (X25) facilities supported | Closed User Group (CUG), Network User Identifier (NUI), Fast Select, Packet and Windows size negotiation, Throughput Class Negotiation. |
| Accessible via API | Yes, a Sockets based interface and a Java API |
| ISO Transport Features | |
| Standard supported | ISO 8073 (connection oriented), Classes 0, 1, 2 and 3 with negotiation between classes |
| Simultaneous connections | 254 per line, 4,095 per port using the High Capacity Pack |
| Accessible via API | Yes |
| Developers Toolkit | |
| X.25 API | Sockets API , easy to use, provides access to the X.25 and XOT features Java API , allows easy access to X.25 and XOT from Java applications. |
| ISO Transport API | API providing access to all the features of the ISO Transport support. Can operate simultaneously with access to the X.25 layer. |
| API reference manuals | Manuals: X.25 Sockets API, ISO Transport API and Java API documentation |
| Sample programs | Included, large number of example applications are available for driving the various APIs. |
| Source code | Included for drivers, the API libraries and sample C and Java applications |

Packaging

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

The X.25 software for the adapters is regularly updated and available for downloading from the Download page in the Support section of www.farsite.com.

Cables

The cable and connector configurations available for each adapter type are detailed in the Order Information table below. Crossover cables, sometimes referred to as null modem cables which can be very useful for bench testing solution are also available.

| Order Information | | |
|--|---|---------------------|
| Product Name | Description | Product Code |
| FarSync X25 T1U | Intelligent 1 port PCI-X (Universal PCI) X.25 adapter includes software for Linux & Windows | FS6140 |
| FarSync X25 T2U | Intelligent 2 port PCI-X (Universal PCI) X.25 adapter includes software for Linux & Windows | FS6240 |
| FarSync X25 T4U | Intelligent 4 port PCI-X (Universal PCI) X.25 adapter includes software for Linux & Windows | FS6440 |
| FarSync X25 T2Ue | Intelligent 2 port PCIe (PCI Express) X.25 adapter includes software for Linux & Windows | FS6250 |
| FarSync X25 T4Ue | Intelligent 4 port PCIe (PCI Express) X.25 adapter includes software for Linux & Windows | FS6450 |
| FarSync X.25 High Capacity Pack | An optional upgrade to the standard X.25 software supplied with the adapter, allows up to 4,095 X.25 virtual connections (VCs) per line on Linux. | FS9505 |
| FarSync XOT Extension | An optional upgrade to add XOT (X.25 over TCP/IP) with FarSync X.25 adapters on Linux. A FarSync X25 adapter must be purchased with this product. | FS9508 |

Cable Type and Adapter Compatibility

| Product Name | Cable types available for the T1U, T2U and T2Ue | Product Code |
|--|---|---------------------|
| UCR1 | Single RS232C (V.24, X.21bis) cable with male 25 pin D type connector, 1.5 metres | FS6061 |
| UCX1 | Single X.21 (V.11) cable with male 15 pin D type connector, 1.5 metres | FS6062 |
| UCV1 | Single V.35 cable with standard MRAC-34 (brick) male connector, 1.5 metres | FS6063 |
| U530 | Single RS-530 (EIA530, RS422) cable with male 25 pin D type connector, 1.5 metres | FS6064 |
| UX35C | Single V.35 special DCE cable where the DCE generates clocks, MRAC-34 (brick) female connector, 1.5 metres. | FS6095 |
| UXD1 | Single cable to connect direct to a Nortel DMS100 (NTFX35AA, V.35 signalling) , 1.5 metres | FS6069 |
| Cable types available for the T4U and T4Ue | | |
| MCX4 | Quad X.21 (V.11) cable with male 15 pin D type connectors, 1.5 metres | FS6041 |
| MCV4 | Quad V.35 cable with standard MRAC-34 (brick) male connectors, 1.5 metres | FS6042 |
| MCR4 | Quad RS232C (V.24, X.21bis) cable with male 25 pin D type connectors, 1.5 metres | FS6043 |
| <i>A MTU4 conversion cable is available allowing the cables listed for the T1U, T2U and T2Ue to also be used</i> | | |
| MTU4 | Quad port conversion cable 0.5 metres, allows UCR1, UCV1, U530 and UCX1 to be used | FS6074 |
| Crossover (Null Modem) cables - Suitable for all FarSync T-Series adapters | | |
| Null-MX | X.21 (V.11, RS422) double shielded crossover cable, 15 pin D type female connectors, 0.5 metres | FS6090 |
| Null-MR3 | RS232C (V.24) double shielded crossover cable, 25 pin D type female connectors, 0.5 metres | FS6092 |
| Null-MR4 | RS530 (RS422, EIA530) double shielded crossover cable, 25 pin D type female connectors, 0.5 metres | FS6097 |

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