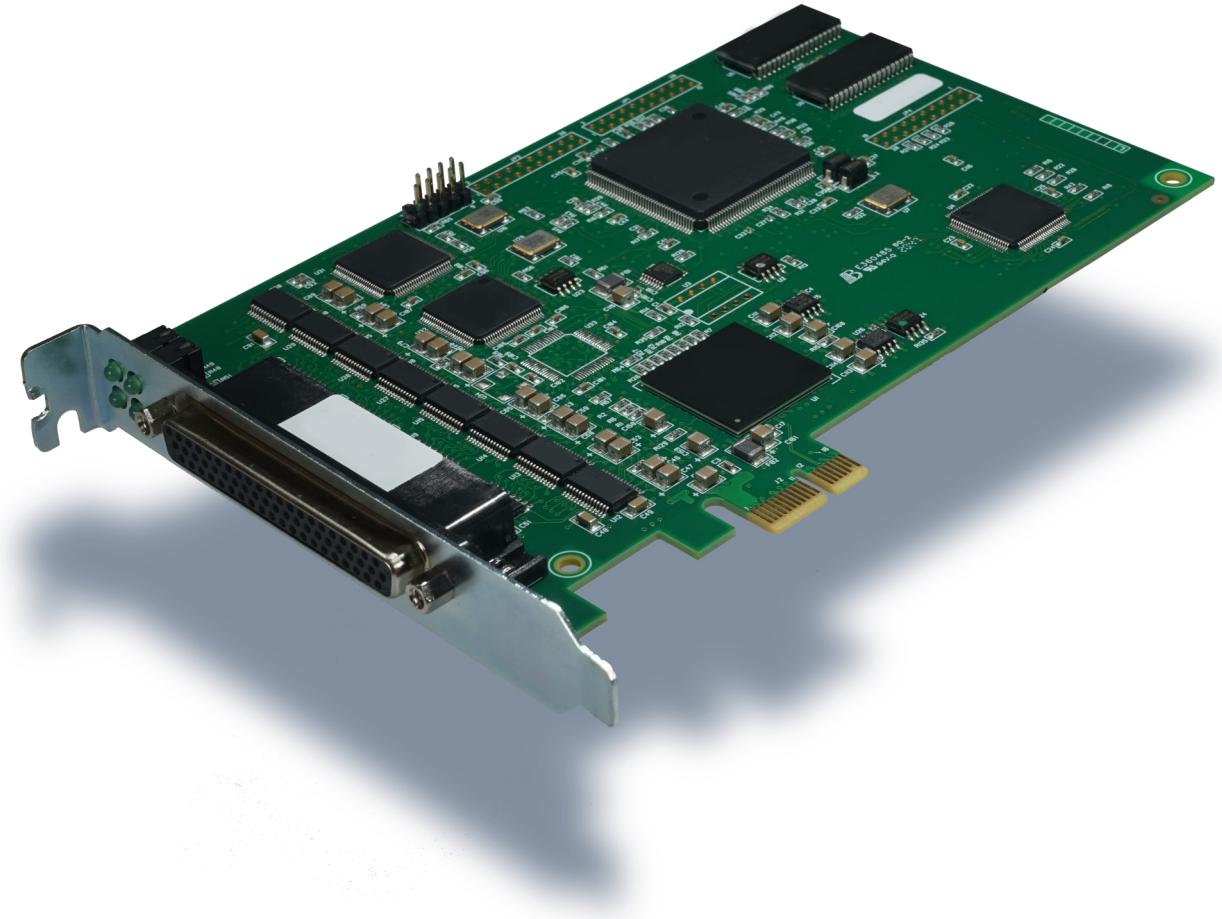
FarSync ® T4Ue

4 port PCIe Synchronous Communications Adapter

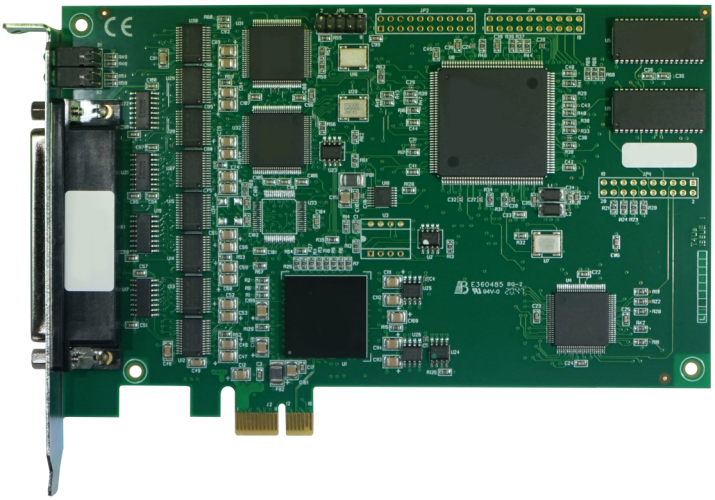
Datasheet Version 2.02



FarSync® T4Ue - 4 Port Synchronous PCIe card

Key Features

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



Overview

The FarSync T4Ue adapter and software is designed to provide high performance hardware communications solutions for business, government and military applications which need a PCIe synchronous communications adapter. The product includes a low level driver that allows access to the communications features available in the hardware.

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.

Typical Applications

The FarSync T4Ue 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

Features under Windows:

The Windows based API common to the entire range of FarSync cards/devices is referred to as the FarSync Windows API (FsWinAPI). This is an extension of the MS COMM API and enables, for example, applications developed to support COM ports, to be easily ported to use FarSync support in synchronous or asynchronous modes. This standardization enables the API to also be readily accessible from higher level environments such as .NET, C#, VB etc.

The **FsWinAPI** provides 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 11, 10, 8, 7; Windows Server 2022, 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. LabVIEW applications can access this adapter.

Features under Linux:

The **Char I/O API** provides a programming language independent, high-level interface to the FarSync base driver it supports access to all the cards modes of operation.

The T4Ue card installs seamlessly as a plug and play device under the popular Linux 32 and 64 bit distributions. The cards supports Linux kernel 2.6 and onwards in 32 and 64 bit formats, including the leading distributions supplied by Red Hat, SuSE, CentOS, Debian, Ubuntu, Fedora, Slackware and more.

FarSite is committed to supporting the FarSync T4Ue 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.

FarSync T4Ue - Product Details

The FarSync T4Ue 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.

The drivers supplied with Windows and Linux allow large numbers of ports to be supported by the installation of multiple FarSync T4Ue 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 PCIe 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 T4Ue 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 Express Bus Specification

The FarSync T4Ue complies with the PCI Express Base Specification Revision 1.0a, x1 (single lane)

Key Features supported on Linux

The FarSync T4Ue installs seamlessly under Linux kernel 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, Slackware, Ubuntu, CentOS, 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 Cisco HDLC or Frame Relay with optional authentication by CHAP, MSCHAP or PAP (RFC 1334) providing a standard point-to-point network interface.

The **Char I/O API** provides a programming language independent, high-level interface to the FarSync base driver it supports access to bit synchronous (HDLC) framed, transparent bitstream and asynchronous data (with the FarSync T4Ue+Async). It also allows selection of the full range of clock modes.

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 T4Ue installs easily under Windows 11, 10; Windows Server 2025, 2022 and 2019 on single or multi-core 32 and 64 bit systems. A FsWinAPI driver is installed with 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 T4Ue **FsWinAPI** allows applications developed using the FarSync SDK 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 with bitstream encoder and decoder.

The FarSync SDK is ordered separately from the FarSync T4Ue, you can find full details in the order details at the end of the datasheet.

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.

Configuration

Windows: Configuration is by a GUI application

The line can be reconfigured and restarted without reloading the software. There is context sensitive help and an on-line manual should it be required. An advanced tab permits users to exactly specify the configuration of the line if necessary.

Linux: Configuration utility is provided, alternatively text files can be used. The line can be reconfigured and restarted without reloading the software.

Technical Specifications—Hardware Features	
Adapter type and PCI specification	AMD processor with SRAM and quad port synchronous controller, PCIe bus compliant with PCI Express Base Specification Revision 1.0a, x1 (single lane), Bus mastering adapter
Physical characteristics	Short adapter: height 107mm, length 167mm
Network connections	4 synchronous ports (FS4450) 4 synchronous or asynchronous ports (FS4451) X.21 (V.11) - DB15M type connector, RS232 (V.24, X.21bis) - DB25M type connector V.35 - M34M V.35 type connector, RS530 (RS422) - DB25M type connector, RS449 (RS422) - DB37M type connector, Cables are required (ordered separately), DTE and DCE cables 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	229,044 hours - Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient
Operating temperature	0 to 50 Deg C An industrial temperature range version is available on special order.
Humidity	Operating humidity 10 to 85% non condensing
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 last page.
Warranty	Free 5 year warranty.
Compliance	RoHS2 and REACH

Technical Specification - Software	
Linux	
Distribution Support	Distributions by Red Hat, SuSE, Slackware, CentOS, Ubuntu, Debian, Fedora and more. Drivers for kernel series 2.6 and onwards on both single and multi-core 32 and 64 bit systems
Protocols Supported	Cisco HDLC, Frame Relay, CHAP, MSCHAP, PAP (RFCs 1661, 1332, 1334)
API and Interfaces	Char I/O API
Windows	
O/S types	All 32 and 64bit versions of Windows 11, 10, ; Windows Server 2025, 2022 and 2019. 32 and 64 bit (single and multicore systems)
Protocols Supported	CHAP, PAP (RFCs 1661, 1332, 1334)
API and Interfaces	FsWinAPI,
Utilities	Line monitor is included to record, display and store line traffic

Order Information		
Name	**Description**	**Product Code**
FarSync T4Ue	**PCIe 4 port bus mastering synchronous card** (X.21 / V.35 / RS232 / RS422 / EIA530 / RS449), bitstream and HDLC run-time support for custom applications on Linux and Windows 11, 10, Server 2025, 2022 and 2019. APIs for Linux, Windows. (For older versions of Windows please contact FarSite) To develop applications to use the APIs order the FarSync SDK.	FS4450
FarSync SDK	Linux and Windows Developers Toolkit for the FarSync T4Ue - this is required if you want to write software to use the card's API	FS9610
Compatible Cables		
MCX4	Quad X.21 (V.11) DTE cable, DB15M connectors.	FS6041
MCX4-DCE	Quad X.21 (V.11) DCE 2.0 metre cable, DB15F connectors.	FS6045
MCV4	Quad V.35 DTE cable, M34M connectors.	FS6042
MCR4	Quad RS232 (V.24) DTE cable, DB25M connectors.	FS6043
MCR4-DCE	Quad RS232 (V.24) DCE 2.0 metre cable, DB25F connectors.	FS6046
A MTU4 conversion cable is available (below) that allows the single cables listed for the FarSync T1U & T2U to also be used		
MTU4	Quad port conversion cable 0.5 metres, allows UCR1, UCV1, UCX1, UX35C and U530 cables to be used	FS6074
Test-T4P	T4U, T4Ue, T4Ue+Async communication ports test connector (loopback)	FS6025
Cross Over Cables (DTE to DCE)		
Null-MX	X.21 (V.11) double shielded crossover cable, DB15F connectors, 0.5 meters. Converts the DTE presentation into a DCE.	FS6090
Null-MR4	RS530 (EIA530, RS422) double shielded crossover cable, DB25F connectors, 0.5 metres. Converts the DTE presentation into a DCE.	FS6097

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