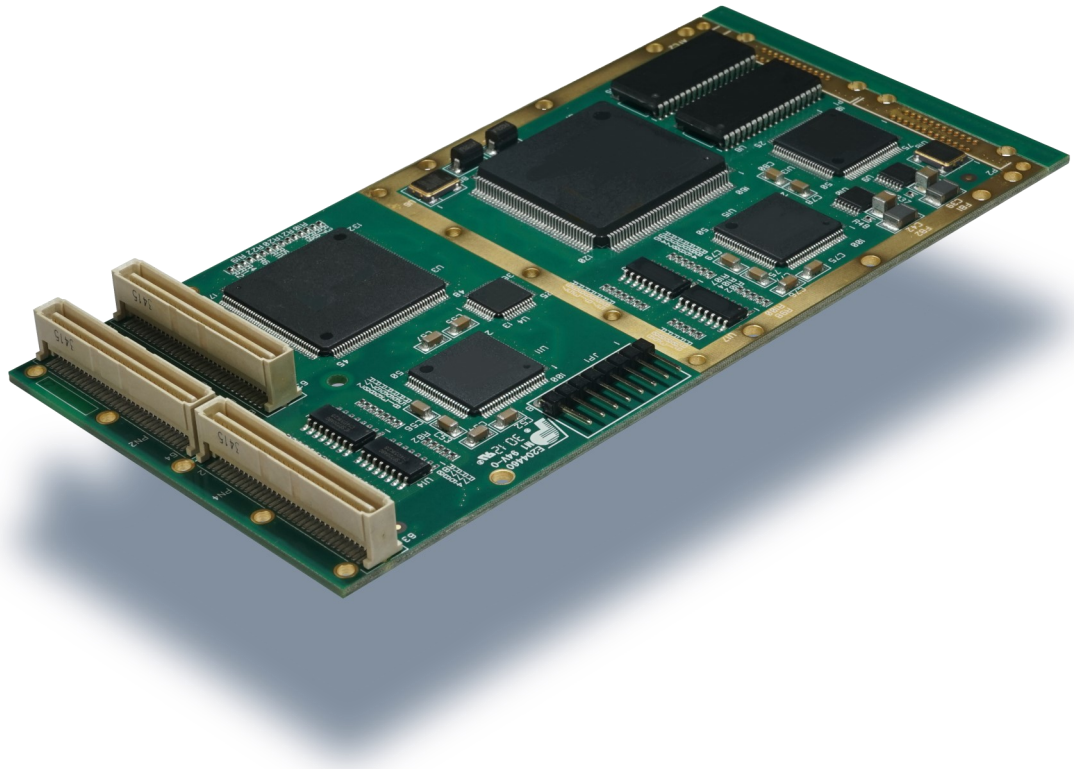
FarSync ® T2U-PMC

2 port PMC adapter

Datasheet Version 2.11



FarSync® T2U-PMC - 2 Port PMC adapter

Key Features

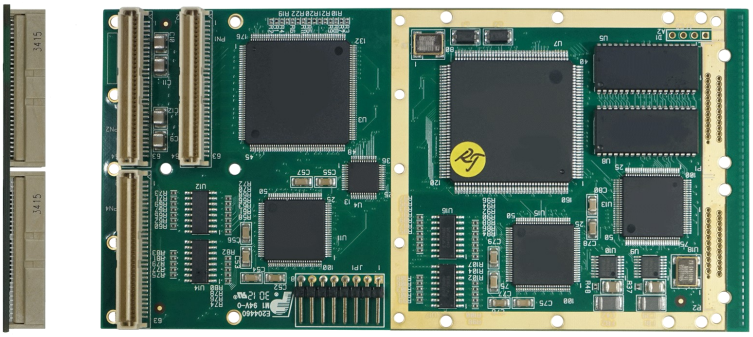
- **NRZ, PMC (PCI Mezzanine) 2 synchronous port adapters**
- **Front I/O or Rear I/O versions**
- **Network interfaces for RS232, X.21, RS530, RS422, RS449 and V.35**
- **Wide speed range up to 10 Mbits/s**
- **Transparent bitstream and HDLC framed data**
- **Industrial temperature range, low power consumption, conduction or air cooling**
- **APIs for Windows and Linux**
- **Interoperates with TCP/IP**
- **Comprehensive Developers Toolkit available**

Overview

The FarSync T2U-PMC adapters offer a high quality PCI Mezzanine adapter solution for business, government and military applications. They have been developed to provide high performance, versatile synchronous connectivity for Linux and Windows systems using industrial quality components providing wide temperature range operation.

The products include low level drivers 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 PMC adapters will support 2 synchronous ports at speeds of up to 10 Mbits/s. Two versions of the adapter are available - the FarSync T2U-PMC-R supporting rear I/O and the FarSync T2U-PMC-F supporting both rear and front I/O. Both the front and rear I/O connectors can support RS232, X.21, RS530, RS422, RS449 and V.35 network interfaces.



Typical Applications

The FarSync T2U-PMC adapters are suitable for a very wide variety of applications, including, for example:

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

Features under Windows

The FarSync T2U-PMC adapters supports a **Windows based API,** common to the entire range of FarSync adapters/ devices - it is referred to as the FarSync Windows API (FsWinAPI). This is an extension of the MS Win32 COMM API and enables, for example, applications developed to support COM ports, to be easily ported to use FarSync support in synchronous 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 adapter's communications port/s for bit sync (HDLC) framing, LAPB, V.120, ETI (NI, V.11) and also transparent bitstream operation for video and voice type applications.

FarSync T2U-PMC adapters can also be installed to appear as a NDIS (LAN) interface so it can simply be used with the **TCP/IP stack over PPP** to allow access to IP based networks such as the Internet.

LabVIEW applications can also access these adapters.

The products are supplied with a comprehensive configuration utility. The lines 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 further specify extended configuration features of the line.

The product is supplied with its own Line Monitor that allows the user to record, display and store line traffic with WAN protocol decoding for fast debugging.

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 bit synchronous (HDLC) framed and transparent bitstream data.

The adapters can also use the TCP/IP stack to allow access to IP based networks such as the Internet. It also allows selection of the full range of clock modes.

The link level protocol used can be PPP, Cisco HDLC, LAPB or Frame Relay with optional authentication by CHAP, MSCHAP or PAP (RFC 1334) thus providing a standard point-to-point network interface. Bitstream, ETI (NI, V.11) is supported with the FarSync SDK.

The adapter installs seamlessly as a plug and play device. The driver supports Linux kernel versions 2.6 and onwards including the leading distributions supplied by Red Hat, SuSE, CentOS, Debian, Ubuntu, Fedora, Slackware and more. Multi-processor systems are supported. The driver is dynamically loadable so a kernel rebuild is not required for the driver to be installed.

Big Endian and Little Endian drivers are supplied.

FarSite is committed to supporting the adapters 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.

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.

Developers Toolkit

The FarSync SDK provides a Developers Toolkit with full documentation, useful utilities, such as a line monitor, and many sample applications using the APIs 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 APIs. See full details in: https://farsite.com/products/farsync-sdk/.

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Adapter Hardware

The adapter comprises an AMD processor with no wait state SRAM. The whole memory space may be mapped via the PMC interface to the PC/Server. The AMD processor contains a dual embedded HDLC / transparent controller with SDMA access (128 buffers per port) and a full range of timers.

The T2U-PMC supports two synchronous ports which can run to speeds of up to 10 Mbits/s full duplex internally clocked and 10 Mbits/s externally clocked. Total bandwidth supported by the adapter is 40 Mbits/s.

Multiple Adapters

The drivers supplied with Windows and Linux allow large numbers of ports to be supported by the installation of multiple FarSync T2U-PMC adapters in a Server. Typically 12 or more adapters (24+ 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 both 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. Line termination resistors are software selectable.

Terminal Timing

Terminal Timing is supported on the network interfaces to enable system-wide clock synchronisation.

Internally Sourced Clocks

Internally generated clocks to drive a serial communications port can be derived from an on-board 8.192MHz clock (25ppm) and can be set to hundreds of different frequencies between 100 baud and 10 Mbits/s, 160 are preset, many other frequencies can be synthesized to order, contact us to discuss your requirements.

PMC Specification

The FarSync T2U-PMC (PCI Mezzanine card) adapters are suitable for systems with a PMC connector, covering single processor and multi-processor systems. The adapter is 33/66Mhz PCI bus revision 2.2 compliant with support for both 3.3 and 5 volt signalling, the power for the adapter is taken from the 3.3 volt supply rail.

Cables

Cables can be supplied to connect to the Front I/O connector (FarSync T2U-PMC-F) to support RS232, X.21, RS422, RS530, RS449 and V.35 connections, see the order information for details on the last page.

Cables are not supplied for the Rear I/O only version (FarSync T2U-PMC-R), full connection details on the IEEE 1386 connector for operation with RS232, X.21, RS422, RS530, RS449 and V.35 are supplied.

Configuration

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

Lines can be reconfigured and restarted without reloading the software.

Technical Specifications - Software Features	
Linux	
Distribution Support	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. Big Endian and Little Endian drivers are supplied.
Kernel Supported	All sub versions of kernel releases from 2.6.12 onward. The product may operate successfully with earlier versions of the kernel but no specific testing has been undertaken by FarSite.
Protocol Supported	TCP/IP, PPP, Cisco HDLC, LAPB, Frame Relay, CHAP, MSCHAP, PAP (RFCs 1661, 1332, 1334), Bitstream. ETI (NI, V.11) with FarSync SDK.
API and Interfaces	Char I/O API, hdlcX.
Windows	
O/S Types	Windows 10, 8.1, Windows Server 2012 and 2008, LabVIEW running on a Windows O/S, 32 and 64 bit (single and multi-core systems).
Protocol Supported	TCP/IP, PPP, LAPB, V.120, CHAP, PAP (RFCs 1661, 1332, 1334), ETI (NI, V.11), Bitstream.
API and Interfaces	FsWinAPI, NDIS (LAN) where the line appears as a LAN interface.
Utilities	Line Monitor to record, display and store line traffic included.

Technical Specifications - Hardware Features	
Adapter type & specification	PMC adapter 33/66Mhz PCI Mezzanine Card, AMD Processor embedded communications controller, Intelligent bus-mastering adapter, Conduction cooled or air cooled, Conduction cooling based on ANSI VITA 20-2001 (R2005), Supports 3.3 & 5 volt signalling, Rear I/O and Front and Rear I/O versions, Front I/O connectors 2 MD25M (Micro D).
Network connection types supported	2 synchronous ports, soft switchable line termination. Interface types supported on the FarSync T2U-PMC-F using FarSite supplied cables: **RS232** (V.24, X.21bis) - DTE DB25M connector, DCE DB25F connector, **X.21** (V.11) - DTE DB15M connector, DCE DB15F connector, **V.35** - DTE M34M V.35 connector, **RS530** (EIA530, RS422) - DTE DB25M connector, DCE DB25F connector, **RS449** (RS422) - DTE DB37M connector.
Link speed range	X21, RS530, RS449, V.35, RS422: up to 10 Mbits/s internally or externally clocked, RS232: up to 128 Kbits/s.
Line Clocking - Internal	Internal clock range: over 160 different frequencies between 100 baud & 10 Mbits/s. No special cables are required to use internal clocks. Internally generated clocking is supported on RS530, RS422, RS232, X.21, V.35 and RS449 connections.
Line Clocking - External	External clocks received from a serial port and used to a drive serial communication port can be any frequency up to 10MHz.
ESD Line Protection	Littelfuse high speed ESD and over-voltage protection
Terminal Timing	Terminal Timing is supported to enable system-wide clock synchronisation.
Multiple adapters	Yes, typically 12 or more adapters (24+ lines) can be supported; the adapter limit is only dependent on the resources available in the host Server
Approvals and Compliance	EN55022 class B, CE, FCC class B Designed to comply with: Vibration standard: 0.1g 2/Hz Random, 5-2000Hz 5 g Sine, Shock standard: 40g, 11 msec sawtooth.
Temperature range	Operating temperature range: -40°C to 85°C (Case/Frame Temperature), Storage temperature range: -55°C to 105°C.
Power requirements	< 850mA @ +3.3v < 2.8 watts.
MTBF	284,027 hours — calculation based on Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient
Cables	Supplied for the FarSync T2U-PMC-F only, see the Order Information on the last page.
Warranty	Free 5 year warranty
Compliance	RoHS2, REACH

Order Information		
Name	**Description**	**Product Code**
FarSync T2U-PMC-F	PMC 2 port synchronous bus mastering adapter with Front and Rear I/O (X.21 / V.35 / RS232 / EIA530 / RS422 / RS449), bitstream and HDLC run-time support for custom applications Linux and Windows. FsWinAPI for Windows 10, 8.1, 7 Windows Server 2012 and 2008. Char I/O API, hdlcX for Linux, Cables are ordered separately.	FS4280
FarSync T2U-PMC-R	PMC 2 port synchronous bus mastering adapter with Rear I/O (X.21 / V.35 / RS232 / EIA530 / RS422 / RS449), bitstream and HDLC run-time support for custom applications on Linux and Windows. FsWinAPI for Windows 10, 8.1, 7 Windows Server 2012 and 2008. Char I/O API, hdlcX for Linux.	FS4281
FarSync SDK	Linux and Windows Developers Toolkit for all FarSync adapters, see https://farsite.com/products/farsync-sdk/	FS9610

Compatible Cables		
Product Name	**Description of cable types available for the FarSync T2U-PMC-F**	**Product Code**
DCR1	**Single RS232 (V.24, X.21bis) and RS530 (EIA530, RS422) DTE cable**, same cable for both, DB25M connector, 1.8 metres.	FS6031
DCX1	**Single X.21 (V.11) DTE cable** - DB15M connector, 1.8 metres.	FS6032
DCV1	**Single V.35 DTE cable** - M34M V.35 connector, 1.8 metres.	FS6033
DC449	**Single RS449 DTE cable** - DB37M connector, 1.8 metres.	FS6034
Null-MX	**X.21 (V.11) crossover DTE to DCE conversion cable**, DB15F to DB15F connectors, 0.5 metres.	FS6090
Null-MR4	**RS530 (EIA530, RS422) and RS232 (V.24) crossover DTE to DCE conversion cable**, DB25F to DB25F connectors, 0.5 metres.	FS6097

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