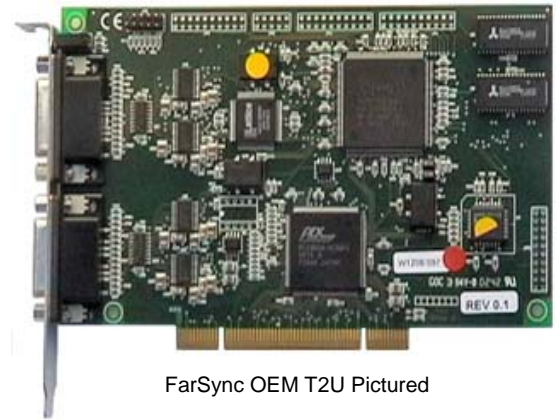


Key Features

- Very high performance, competitive pricing
- PCI / PCI-X (Universal PCI) bus mastering WAN adapters
- 1, 2 and 4 port adapters in the range
- Network interfaces for RS232C, X.21, RS530 and V.35
- Synchronous and asynchronous capability
- Wide speed range - up to 10 Mbits/s
- Transparent bitstream and HDLC framed data options
- APIs - Windows SDCI, Linux Raw Sockets
- Embedded development option
- Options to customise the adapter
- Comprehensive Developers Toolkit included



FarSync OEM T2U Pictured

Overview

The FarSync OEM T1U, T2U and T4U adapters and software are **designed to provide high performance hardware communications solutions for companies who wish to quickly develop their own communications products** without incurring the cost of having to develop and approve hardware.

The products include support for the standard **Windows SDCI API**, providing applications with direct access to the card's communications port/s for bit synchronous (HDLC) framing and also transparent bitstream operation for video and voice type applications.

Support is included for the **Linux Raw Sockets API** that allows HDLC frames and transparent bitstreaming data to be sent and received. Full documentation, source code for the driver and a sample application demonstrating both modes of operation is provided.

For embedded development royalty **free source code is provided for the executive and synchronous line drivers** with sample application, test programs and utilities that allow you to get the adapter working straight out of the box.

Typical Applications

The FarSync OEM T-Series 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
- Interfacing Audio, DRM or DAB bit streams to Servers
- Interfacing high speed MPEG Video bit streams to Servers
- Watchdog systems
- Data generators for test systems
- Engineering monitoring and control systems

Adapter Hardware

The adapters comprise a **50 MHz AMD Am186CC/CH processor with 1 Mbyte** of on board no wait state 15ns SRAM. The whole memory space may be mapped via the PCI / PCI-X interface to the PC/Server. The Am186CC/CH contains a **dual/quad embedded HDLC / transparent controller with SDMA access** (128 buffers per port), an asynchronous controller and a full range of timers.

The T1U supports a single synchronous port which can run to speeds of up to 10 Mbits/s full duplex, soft selectable asynchronous operation up to 115 Kbits/s is also supported. Total bandwidth supported by the adapter 20 Mbits/s.

The T2U supports two synchronous ports which can run to speeds of up to 10 Mbits/s full duplex, soft selectable asynchronous operation up to 115 Kbits/s is also supported on one of the ports. Total bandwidth supported by the adapter 40 Mbits/s.

The T4U supports four synchronous ports which can run to speeds of up to 10 Mbits/s full duplex. Total bandwidth supported by the adapter 64 Mbits/s. Optionally a quad port UART (async controller) can be fitted to permit software selectable async or sync operation.

Network Interfaces

The multi function line drivers available on both adapters support **RS232C (V.24), X.21 (RS422, V.11), V.35, EIA530 and RS449 network interfaces all soft configurable** and protected from static charges by ESD protection devices. The lines may be driven at speeds up to 10 Mbits/s

Clock Generation

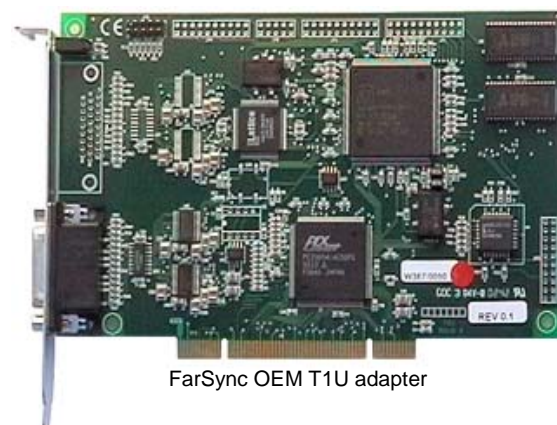
The T2U and T4U support **accurate internal clock generation at a wide range of standard frequencies from 9,600 baud to 8.192 Mbits/s** and dual clocks can be generated in V.11 mode if required. The clocking speed of all ports are individually selectable. The T1U supports clock generation at speeds of 9600, 19200, 38400 and 76800 baud.

PCI Bus Specification

A wide range of PCI bus specifications can be catered for with the FarSync T-Series range.

The FarSync OEM T1U, FarSync OEM T2U and FarSync OEM T4U are PCI version 2.2 compliant and PCI-X compatible, these universal adapters can operate in PCs / Servers using either 3.3 volt or 5 volt signalling. The adapters are suitable for PCs with both 32 bit bus and 64 bit bus configurations. Power for the adapters is derived from the 3.3 volt supply rail, other FarSync PCI OEM adapters are available that derive the power from the 5 volt supply rail.

The PCI / PCI-X bus access is controlled by a PLX bus mastering PCI9054 PCI DMA enabled, universal signalling controller. Interrupts generated by the adapter can be reset by either the PC or the adapter to simplify driver design.



FarSync OEM T1U adapter

Multiple Adapters

The drivers supplied with Windows and Linux allow large number of ports to be supported by the installation of multiple FarSync T-Series adapters in a Server. Typically 12 or more adapters (48+ ports) can be supported; however, the adapter limit is only dependent on the resources available in the host Server.

Linux Raw Sockets API

The Linux API allows applications to send and receive HDLC format (bitsync) frames and also transparent bitstreams with the raw sockets based API. The sample application supplied with the Developers Toolkit demonstrates both modes of operation.

Data rates of up to 10 Mbits/s are supported, with all the ports individually selectable for speed, clocking direction and mode of operation (HDLC or Transparent). Frame sizes up to 32 Kbytes are supported in HDLC mode to allow support for a wide variety of **specialist synchronous protocols**. The transparent bit stream is suitable for **transparent data requirements such as Audio, MPEG Video, DAB and DRM**.

The source for the application and drivers is included, with the Linux API manual provided in pdf format. The driver is supported under kernel version 2.4 and 2.6 for both single CPU and SMP 32 and 64 bit machines. Multiple adapters can be installed up to the maximum slot count for the Server. For further information on the API see the Linux HDLC / Transparent API Manual available online at www.farsite.co.uk

Windows SDCI API

The FarSync OEM T-Series adapters and software provides support for an enhanced SDCI (Synchronous Dumb Card Interface) API. The API has been extended to allow applications to exactly control the type of data sent and received in both **bit synchronous (HDLC framed) data and transparent bitstream formats**. The SDCI SDK contains everything a user needs to rapidly develop and test applications for such requirements as supporting **specialist synchronous protocols or transparent data requirements such as Audio, MPEG Video, DAB and DRM**.

Drivers for the FarSync OEM T-Series range of adapters are provided for Windows XP, 2000, Server 2003 and NT4. An easy to follow sample application with support for both modes of operation is provided complete with source code to illustrate how the interface can be used.

Easy installation and fast configuration are features when using the SDCI Interface on Windows, On-line help, documentation and GUI based test utilities are provided. **T-Series adapters are 'plug-and-play' compatible for Windows XP, 2000 and Server 2003.**

Embedded Software

The adapter is supplied with a comprehensive suite of software to keep your development timescales and costs to a minimum. This includes an executive, communications drivers, sample on board application, code downloader for DOS and Windows, code relocater, event log viewer and adapter test program utilities.

Executive

An executive is supplied with the adapter, it is written in Assembler requiring no more than 4 Kbytes at run time. The executive provides: CPU initialisation, interrupt vector control, memory allocation control, an event log (accessible from the PC), illegal instruction notification, undefined interrupt handling, PC controlled embedded application initiation and status notification. For configurations using a small shared memory window executive provides an application bootstrap loader. The source code may be modified or adapted for use on the FarSync adapters on a royalty free basis.

HDLC Drivers

Drivers for the HDLC controllers are provided. The code which is written in C utilises the SDMA (Smart DMA) linked buffer list system feature of the Am186CC/CH. The source code may be modified or adapted for use on the FarSync adapter on a royalty free basis.

Sample Application

An easy to follow sample embedded application written in C is included. The application which can easily be modified uses the HDLC drivers to transmit and receive frames between ports whilst also driving the LEDs and providing status information to the event log.

Application Loaders

Windows and DOS utilities are provided to download the embedded executive and application from files on the Server. The application code is automatically initiated on completion of the download operation.

Utilities

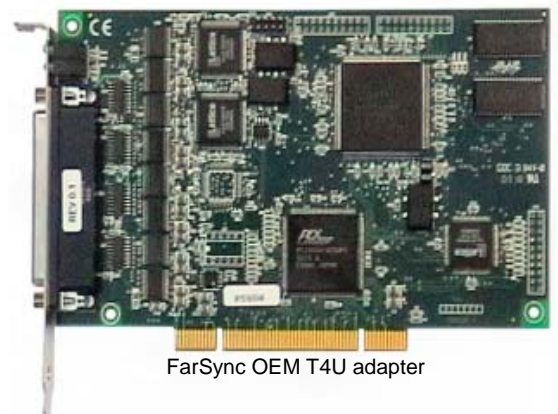
Utility programs are provided to relocate the embedded code and view the Event Log.

Test Program

A full functional adapter test program is provided. The software which runs on DOS verifies all the functions of the adapter. The loopback connector supplied with the product is used to check for correct operation of the communications ports.

Manuals

The adapters technical specification and programming guide are provided in a pdf format manual. Also included are the technical and programming details of the major devices used on the FarSync adapter.



Technical Specifications - Hardware Features			
Product name	FarSync OEM T1U	FarSync OEM T2U	FarSync OEM T4U
Product code	FS5140	FS5240	FS5440
Warranty	5 years	5 years	5 years
Port count and features	1 Sync port, also configurable for Async	2 Sync ports, 1 of the ports configurable for Async	4 Sync ports, Optional quad Async controller (UART) to allow soft configurable Sync and Async operation.
Hardware Features			
Adapter type and PCI specification	1 Mbyte zero wait state 15 ns SRAM, Intelligent bus mastering Universal PCI adapter, Short adapter (height 107mm, length 167mm), PCI-X compatible, PCI v2.2 compliant , Supports 3.3 & 5 volt signalling, Suitable for 32 and 64 bit PCI bus slots		
PC interface	Memory mapped and DMA		
Network connectors	X.21 (V.11, RS422) - 15 pin male D type, RS232C (V.24, X.21bis) - 25 pin male D type, V.35 - MRAC-34 male 'brick' type, RS530 - 25 pin male D type, RS449 - 37 pin male D type		
Link speed range Sync	RS232C: up to 128 Kbits/s X21, V35, RS530, RS449: up to 10 Mbits/s		
Link speed range Async	RS232C, X.21: 9,600, 19,200, 38.4K, 57.6K and 115.2 Kbits/s		
ESD line protection	Yes, Littelfuse high speed ESD and over-voltage protection		
Multiple adapters	Yes, 12 or more		
Adapter processor	50MHz AMD Am186-CH with built in HDLC and Async controller	50MHz AMD Am186-CH with dual built in HDLC and a Async controller	50MHz AMD Am186-CC with built in quad HDLC controllers
Maximum total bandwidth	20 Mbits/s	40 Mbits/s	64 Mbits/s
LEDs	1 LED – soft configurable	2 LEDs – soft configurable	4 LEDs – soft configurable
Approvals	EN55022 class B, CE, FCC class B	EN55022 class B, CE, FCC class B	EN55022 class B, CE, FCC class B
Power requirements	< 1 A @ +3.3v < 5mA @ +/- 12v < 3.3 watts Note: 5 V supply not required	< 1.2 A @ +3.3v < 5mA @ +/- 12v < 4 watts Note: 5 V supply not required	< 1.75 A @ +3.3v < 10mA @ +/- 12v < 6 watts Note: 5 V supply not required
MTBF	265,965 hours ¹	233,833 hours ¹	187,427 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 and 76800 baud. ²	Both, all ports speed independently selectable. Internal clock range 9,600 baud to 8.192 Mbits/s. ²	
	² No special cables are required to use internal clocks. Internal clocking is supported on RS232C, X.21 and RS449		
Cables	Cables are ordered separately, see the Cables section on the last page for details		

Technical Specifications - Software Features

Example Applications	Linux Raw Sockets sample application, Windows SDCI sample application, Simple embedded application, uses the executive and line drivers. All example applications are in C, source provided.
Test software	Full functional adapter test software included, uses the single port loopback test connector (supplied).
Executive	Downloadable executive supplied, includes source (Assembler), uses 4 Kbyte including interrupt vector
Line Drivers	Fully functional bit sync and transparent bitstreaming line drivers supplied for Windows XP, 2000, Server 2003, NT 4.0 and Linux. The Linux driver includes source and is supported under kernel versions 2.4 and 2.6 for both single CPU and SMP 32 and 64 bit machines.
Utility Applications	Code relocater, Embedded software downloader for DOS and Windows and an Event log reader.
Manuals	
Programming Manuals	Programming Reference manuals in PDF format provided, includes details on the hardware and sample software.
API Manuals	FarSync OEM Linux Raw Sockets Reference Manual, FarSync Windows SDCI SDK Reference Manual.
Chip Specifications	Datasheets and programming guides for the main devices on the adapter.

Packaging

The product includes:

Drivers to the adapter for Windows SDCI and Linux Raw Sockets APIs, documentation supplied on CD-ROM, a quick start guide, the communications adapter, Loopback connector for test use, the Developers Toolkit for the SDCI API, Raw Sockets API and Embedded development.

Any cables required are ordered separately.

New releases of OEM software in support of the Windows SDCI API and the Linux Raw Sockets API are made available for downloading from the Support section of www.farsite.co.uk.

Cables

The cable and connector configurations available for each adapter type are described here. The table below lists the cables available for each adapter type. Crossover cables, sometimes referred to as null modem cables, are also detailed in the table.

FarSync OEM T1U This one port adapter has a single high density D type connector on the adapter. Cables supporting RS232C (V.24, X.21bis), X.21 (V.11, RS422), RS530, RS449 and V.35 are available.

FarSync OEM T2U This two port adapter has two high density D type connectors on the adapter. Cables supporting RS232C (V.24, X.21bis), X.21 (V.11, RS422), RS530, RS449 and V.35 are available.

FarSync OEM T4U This four port adapter uses a single large high density D type connector, all four lines are available though this connector. The quad port cables splits out the four network interfaces into separate network connectors. Cables supporting RS232C (V.24, X.21bis), X.21 (V.11, RS422), V.35, RS530 and RS449 are available (cables are FarSync X25 T4P compatible).

Cable Type and Adapter Compatibility Matrix

Name	Cable types available for the FarSync OEM T1U and T2U	Product Code
UCX1	Single X.21 (V.11, RS422) 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
UCR1	Single RS232C (V.24, X.21bis) cable with male 25 pin D type connector, 1.5 metres	FS6061
U530	Single RS530 (EIA-530) cable with male 25 pin D type connector, 1.5 metres	FS6064
Cable types available for the FarSync OEM T4U		
MCX4	Quad X.21 (V.11, RS422) 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 that allows the cables listed for the FarSync T1U & T2U to also be used</i>		
MTU4	Quad port conversion cable 0.5 metres, allows UCR1, UCV1, UCX1 and U530 to be used	FS6074
Special Purpose 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
X21-449-INT	X.21 to RS449 - conversion cable for use when FarSync adapter generates the clock, 0.5 metres	FS6093
X21-449-EXT	X.21 to RS449 - conversion cable for use when the clock externally generated (DCE Clock), 0.5 metres	FS6094

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