

Key Features

- **Highly flexible sync / async port USB attached adapter**
- **USB bus powered, 1.1 and 2.0 compliant**
- **Network interface choice: X.21, V.35, RS530 (RS422), RS449, RS232C and RS485**
- **Handles NRZ, NRZI, FM0 and FM1 line signals**
- **Line speeds up to 2 Mbits/s**
- **Support for Linux, Windows 7, Vista, XP, Server 2003 and Server 2008**
- **APIs to access to HDLC, Transparent Bitstream and Async**
- **Interoperates with TCP/IP**
- **Line Monitor capability - compatible with Wireshark**
- **BERT Line testing option**
- **Strong and durable aluminium case**



Overview

The FarSync Flex USB adapter is a high quality sync and async solution for business, government and military applications, it has been developed to provide a high performance, robust and versatile connectivity for Linux and Windows systems.

The bus powered USB adapter will support a sync line at speeds of up to 2.048 Mbits/s continuous; higher speeds can be supported in bursts; and async operation up to 115.2 Kbits/s. The highly flexible universal network connector supports RS232C, X.21, RS530 (RS422), RS449, RS485 and V.35 network interfaces.

The adapter can support the host computer's TCP/IP protocol stack or an Application can be written to use the API for a variety of different functions. The FarSync Flex SDK provides the Developers Toolkit for the product.

The FarSync Flex supports PC connections to secure BRENT units using an X.21 connection.

For DAB connections the FarSync Flex supports ETI (NI, V.11) and STI (PI, V.11).

The Flex can be used for line monitoring with the addition of a special Monitor cable. A monitoring application is included. The monitoring support is also compatible with Wireshark.

BERT Line testing is also possible using the [FarSync BERT Test software \(separate datasheet\)](#).

Features under Linux: The Flex adapter installs seamlessly as a plug and play device under all the popular Linux 32 and 64 bit distributions. The 2.0 USB adapter supports Linux kernel version 2.6 in 32 and 64 bit formats, SMP (multi-processor) systems are supported.

The API is based on the raw socket interface supports HDLC framed, transparent bitstream and async data.

FarSite is committed to supporting the FarSync Flex 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.

Features under Windows: The adapter installs seamlessly as a plug and play device under Windows on 32 and 64 bit, single and multi-core systems. The FarSync Flex drivers are signed by Microsoft for easy installation.

The API is based on an extended SDCI interface that supports HDLC framed, transparent bit stream and async data.

Developers Toolkit: The FarSync SDK provides a Developers Toolkit with full documentation, a bitstream encoding and decoding library, useful utilities such as a line monitor and many sample applications for Linux and Windows. Support from FarSite's engineering department is provided to customers purchasing the FarSync SDK who have technical questions using the API, full SDK details are on a separate datasheet.

Typical Applications

The FarSync Flex adapters are suitable for a very wide range of uses. Typical applications include:

- Internet access and remote office access over leased lines
- HDLC framing support for non standard or specialist protocols
- Connection to secure BRENT units
- Interfacing video and voice bitstreams such as T-DMB, DAB ETI (N1, V.11) and STI (P1, V.11)
- Interfacing high speed MPEG Video bitstreams to Servers
- Line monitoring
- Data generators for test systems
- Engineering monitoring and for control of systems
- Master or slave in a RS485 half duplex multi-drop environment
- BERT Line Testing (software option)

FarSync Flex - The product in more detail

The FarSync Flex is supplied with support for Windows and Linux. This includes a driver that allows access to the communications features available in the hardware and an optionally installable driver that connects with the standard TCP/IP protocol stack to allow access to IP based networks.

Hardware Features

The intelligent FarSync Flex is designed for reliability, high performance and flexibility. The adapter uses a fast ARM processor with Flash and RAM for the onboard code.

- Network interfaces for X.21 (V.11), V.35, RS530 (EIA530, RS422), RS449, RS485 and RS232C (V.24)
- Multiple FarSync Flex units may be connected to a single server
- High efficiency, USB Bus powered, energy saving design
- NRZI, NRZ, FM0 and FM1 line signalling formats, tri-state transmitters and receivers
- Sync line speeds up to 2 Mbits/s
- Async line speeds up to 115.2 Kbits/s
- Half duplex multi-drop for 2 wire (NRZI, FM0 or FM1) RS485 operation
- Internal and external clocking with many clock selection options
- Soft selectable Async, Sync HDLC and transparent bitstream formats
- Dual bank flash for secure in field upgrades and previous system restore capability
- USB 2.0 high-speed mode (480Mb/s) and 1.1 compatible
- Optional mounting brackets (factory fitted)

Key Features supported on Linux

The FarSync Flex installs seamlessly under Linux kernel series 2.6 on both single and multi-core 32 and 64 bit systems. All the popular distributions are supported including Red Hat, SuSE, Slackware, Ubuntu, Mandriva, 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 PPP, Cisco HDLC or Frame Relay with optional authentication by CHAP, MSCHAP or PAP (RFC 1334) providing a standard point-to-point network interface. The driver is supplied with source code.

The Raw Sockets API allows applications developed using the FarSync Flex SDK to access the full feature set of the hardware, these include bit synchronous (HDLC framed) data, transparent bitstream formats (eg DAB STI, ETI on V.11) and asynchronous data.

Key Features supported on Windows

The FarSync Flex installs easily under Windows 7, Vista, Windows XP, Windows Server 2003 and Windows Server 2008 on single or multi-core 32 and 64 bit systems. A SDCI driver is installed with the optional installation of an NDIS (LAN) driver. The NDIS driver supports TCP/IP running over PPP with optional authentication by CHAP or PAP (RFC 1334) providing a standard point-to-point network interface. The drivers are signed by Microsoft for easy installation.

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. The Line Monitor application is also suitable for standalone use with a special cable. The line monitor function is compatible with Wireshark via a DLL supplied with the Flex.

FarSync Flex's enhanced SDCI API allows applications developed using the FarSync Flex SDK to exactly control the type of data sent and received in bit synchronous (HDLC framed) data, transparent bitstream formats (eg DAB STI, ETI on V.11) or asynchronous data.

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 and STI with bitstream encoder and decoders. Also included are details on using the Flex with RS485 networks.

Our Engineering department provides free email and telephone assistance to application developers using the API as part of the package when the FarSync SDK is purchased.

The FarSync SDK is ordered separately from the FarSync Flex, full details are available on a [separate datasheet](#).

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.

FarSync Flex Hardware Technical Specifications	
General	Intelligent USB adapter with ARM processor, dedicated RAM and dual bank Flash memory, Field upgradeable onboard firmware, USB bus powered, USB 2.0 (high-speed - 480Mb/s mode) and 1.1 compatible, Network line connector: HD26 for connection of network cables (see Order Information)
Physical details	Construction: Very strong, extruded aluminium case Size: - Height 30mm, Length 126 mm, Width 62mm Weight: 190g 0.6 Metre A to B USB cable with a thumb screw secured B connector.
Network connections types available	X.21 (V.11) - DTE 15 pin male D type, V.35 - MRAC-34 DTE male 'brick' type, RS530 (EIA-530, RS422) - DTE 25 pin male D type, RS449 - DTE 37 pin male D type, RS232C (V.24, X.21bis) - DTE 25 pin male D type, RS485. DCE type cables are also available
Link speed range	Sync RS232C: up to 128 Kbits/s, Sync X.21, V.35, RS530, RS422, RS449 and RS485: up to 2.048 Mbits/s Sync RS485: up to 512 Kbits/s Async: up to 115.2 Kbits/s
Line signal modes	NRZI, FM0 and FM1 up to 512 Kbits/s, NRZ up to 2.048 Mbits/s
ESD protection	Littelfuse high speed ESD and over-voltage protection
Indicators	LED displaying network line status
Approvals	EN55022 class B, CE, FCC Class B
Reliability	MTBF: 308,000 hours - calculation based on Bellcore Method 1 Case 3, 40 deg.C ambient, 15 deg.C case temperature rise above ambient.
Power requirements	USB Bus powered, <100 mA on startup, <500 mA on full load, < 1.6 watt
Line clocking	Internal and externally generated line clocking is supported. Internal clock range 75 baud to 2.048 Mbits/s on X.21, V.35, RS530, RS422 and RS449 Internal clock range 75 baud to 128 Kbits/s on RS232C (V.24) Internal clock range 75 baud to 512 Kbits/s on RS485
Extra line control features	Bit reversal, receive clock inversion, configurable resistive interface signal termination. Clocking source for receive and transmit channels can be independently set.
Cables	Cables are ordered separately, see the Cables section of Order Information on last page.

FarSync Flex - Software Specifications

Linux

Distribution Support	Distributions by Red Hat, SuSE, Slackware, Mandriva, Debian, Ubuntu, Fedora and more. Drivers for kernel series 2.6 on both single and multi-core 32 and 64 bit systems
Kernel Support	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
Protocols Supported	TCP/IP, PPP, Cisco HDLC, Frame Relay, CHAP, MSCHAP, PAP (RFCs 1661, 1332, 1334)
API and Interfaces	Raw Sockets API

Windows

O/S types	Windows 7, XP, Vista, Server 2003 and Server 2008. 32 and 64 bit (single and multi-core systems)
Protocols Supported	TCP/IP, PPP, CHAP, PAP (RFCs 1661, 1332, 1334)
API and Interfaces	NDIS (LAN), the line appears as a LAN interface, Extended SDCI API
Utilities	Line monitor to record, display and store line traffic included. Compatible with Wireshark.

Order Information

Product Name	Product Code	Description
FarSync Flex	FS4100	1 port sync and async USB Adapter with Linux and Windows software. This is the base product, it includes the Flex hardware, USB cable, drivers, utility programs, documentation on CD-ROM and a quick start guide.
FarSync SDK	FS9610	Developers Toolkit for the FarSync Flex and other FarSync adapters - required if you want to write software to use the adapters API
FarSync Flex X25	FS6100	Same features as FarSync Flex plus X.25 support and X.25 SDK for Linux and Windows, see separate datasheet
FarSync BERT	FS9509	BERT line test software for use with the FarSync Flex on Windows, see separate datasheet
		Compatible Cables
KCR1	FS6011	Cable - RS232C (V.24, X.21bis) and RS530 (RS422) DTE , (same cable), 1.5 metres
UCX1	FS6062	Cable - X.21 (V.11) DTE , 1.5 metres
UCV1	FS6063	Cable - V.35 DTE , with standard MRAC-34 (brick) male connector, 1.5 metres
KC449	FS6019	Cable - RS449 DTE , 1.5 metres
KCR1-DCE	FS6070	RS232C (V.24, X.21bis) and RS530 (EIA530, RS422) DCE cable , same cable for both interfaces, 2 metres
UCX1-DCE	FS6075	Single X.21 (V.11) DCE cable , female connector, 2 metres.
KCR-MON	FS6016	Monitor Cable - RS232C (V.24) and RS530 (RS422) with DB25M to DB25F passthrough, 1.5 metres
KCX-MON	FS6017	Monitor Cable - X.21 (V.11) with DB15M to DB15F passthrough, 1.5 metres
		Accessories
Mounting Brackets	FS4901	A pair of FarSync Flex mounting brackets, factory fitted, must be ordered with the FarSync Flex

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