The FarLinX X25 Gateway Range

Highly flexible range of X.25 Gateways supporting XOT (X.25 over TCP/IP) and TCP/IP to X.25 or XOT data format translation and connection routing

FarSite COMMUNICATIONS

Key Features

- **TCP to X.25 data translation with a very wide variety of modes including: character streaming, RFC1006 (for FTAM, X.400 messaging), Cisco RBP, APACS, ISO 8583, OFTP / OFTP2 (RFC 2204 and 5024 compliant), header stripping and parity conversion and many more**
- **TCP ↔ X.25 and TCP ↔ XOT routing including: fixed routes, dynamic routing and PAD routing**
- **Call routing between XOT (X.25 over TCP/IP) and multiple X.25 lines including X.25 to X.25 switching**
- **X.28 PAD option supporting Telnet access and up to 17 async lines to X.25 or XOT**
- **X.25 line load balancing over XOT or TCP network**
- **X.25 Host PAD emulation support**
- **6 Models, equipped with XOT and up to 8 X.25 lines with X.25 line speeds up to 2 Mbits/s**
- **Choice of X.25 network interface connections: E1, RS232 (V.24), V.35, RS422, RS530, X.21**
- **As well as NRZ line encoding there is support for FM0, FM1, Manchester Encoding and Conditioned Di-phase with the optional FarLinx S4 line card**
- **High performance - over 3,000 messages per second and over 4,000 SVC and PVC connections**
- **Dual Extensive operational health monitoring with rapid auto restart feature for minimal downtimes**
- **Local or Remote activity logging (syslog standard) with configurable log levels, operation analysis and data tracing**
- **Dual Gateways capability, providing resilience and automatic switchover**
- **Remote Line Monitor application or use Wireshark to view and decode X.25 traffic for easy network problem diagnosis**
- **Optional support for TCP/IP authentication and data security using IPSEC**
- **Browser graphical configuration, SNMP alerts for critical events and activity logging**
- **Real time display of current connections, line performance, errors, connections and much more**
- **1U height all metal case, low power consumption, temperature controlled fan activation**

Overview

The FarLinX X25 Gateway product range with firmware version 2.6 is the third generation of X.25 Gateway products from FarSite, providing a very flexible powerful gateway for your X.25 migration needs at a very affordable cost.

The Gateway supports XOT to X.25 switching, X.25 to TCP data translation and connection routing, TCP to XOT an X.28 PAD, a Host PAD and an X.25 switch. All this is easily managed from a browser.

The SNMP support provides alerts for a numerous different conditions including critical events such as line down and line up.

Dual Gateway support allows 2 Gateways to share a common IP address to provide automatic switch over support for a range of conditions including X.25 line down and power failure. Any such failures and switchover events will generate SNMP alerts so the network manager can instantly know what's happened.

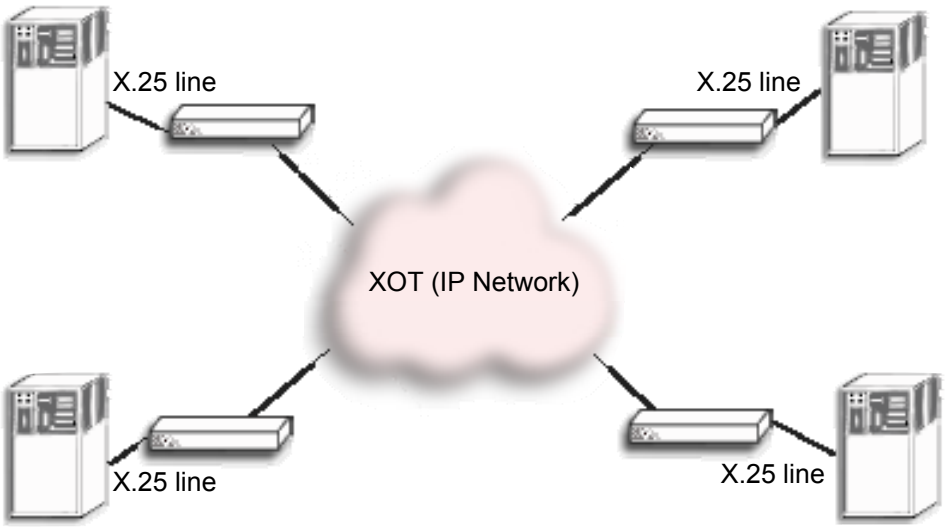
There are 6 main models of the FarLinX X25 Gateway providing scalable solutions plus a number of optional expansion cards.

Typical Applications

- **Replacing a complete X.25 and Triple-X PAD network by using FarLinX X25 Gateways to manage the X.25 and X.28 connections over a TCP/IP network running XOT**
- **Converting Billing System connections, eg from Nortel, Ericsson exchanges from X.25 to TCP/IP**
- **Reduce line costs by replacing expensive X.25 lines with a TCP/IP connection and conversion to X.25 at each terminating node**
- **Conversion of legacy X.25 connections and data for transfer over a TCP/IP network**
- **4 or 8 port X.25 and X.28 switch with migration and selective routing of X.25 traffic to TCP/IP networks**
- **POS Gateway to allow TCP/IP and X.25 based Point of Sale systems to interoperate**
- **Replacing an X.28 PAD over X.25 with an X.28 PAD over XOT with support for up to 17 port async ports**
- **FTAM and X.400 messaging conversion between TCP/IP and X.25**
- **Conversation from TCP to XOT eliminating the need for X.25 lines**
- **OFTP/400 (Odette File Transfer Protocol) and OFTP2 conversion between TCP and X.25 used by automobile manufacturers, domestic appliance manufacturers, the chemical industry and many others**

XOT and X.25 Switching

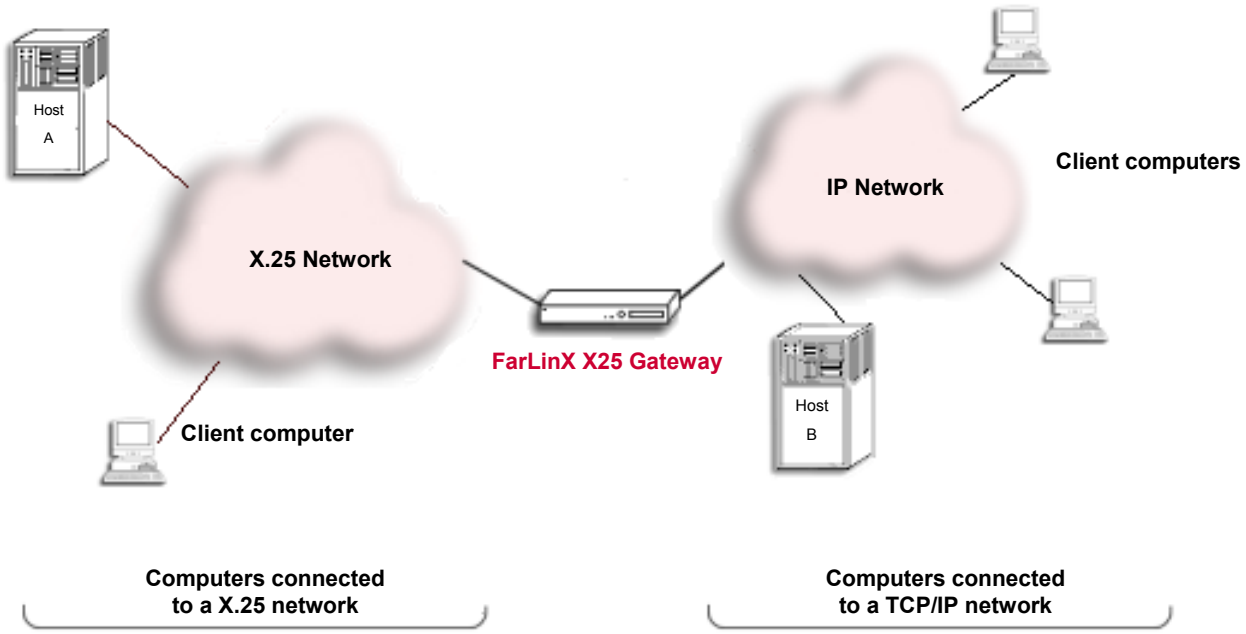
The FarLinX X25 Gateway provides a reliable means of routing connections between X.25 and XOT (X.25 over TCP/IP). Connections can be routed between X.25, X.28 and XOT. The connection routing module supports default routes, hunt groups, X.25 address translation, and routing commands with NUA wildcards for maximum flexibility.



This configuration shows a complete X.25 network simulated by FarLinX X25 Gateways running XOT over an IP network (4 X.25 lines in this example but could be hundreds or thousands). This allows complete X.25 networks to be replaced without affecting the hosts X.25 connections.

Data packetization and routing between TCP and X.25 or XOT

The Gateway provides connection establishment and data packetization services for general protocols to allow applications sending data over TCP/IP to interface to X.25 or XOT connected hosts. The Gateway provides routing facilities to select the appropriate Host from those available and maintains X.25 or XOT sessions to the Host as required.



Example network configuration using the FarLinX X25 Gateway to interconnect a TCP/IP network with an X.25 network

TCP to X.25 or XOT data translation functions

The Gateway supports a wide range of TCP to X.25 or XOT data translation and connection functions, these include:

Character stream
ETX or CR terminated messages
Special character terminated messages (customisable)
Message header conversion - types available 2 or 4 byte ASCII or Binary length representation
Custom message header conversion
RFC1006 - ISO Transport Class 0 protocol data units, using the RFC-1006 encapsulation on the TCP connection
Cisco RBP - Record Boundary Preservation
X.25 Parity conversion - performs any required parity adjustments and removal on the X.25 /XOT connection
OFTP / OFTP2 (Odette File Transfer Protocol) - RFC2204 and RFC5024
POS protocols APACS, ISO 8583, SIBs, HGEPOS plus CTL (Card Tech Ltd) - Requires the POS Firmware Option

Connection Routing and Address Mapping

The FarLinX X25 Gateway can support routes to thousands of different X.25 / XOT hosts. Similarly, when using the called X.25 address as the routing key, incoming X.25 / XOT calls can be routed to thousands of different TCP/IP hosts.

When making connections to the X.25 or XOT network the Gateway has the capability of mapping the source IP address to a calling X.25 address, thus allowing the destination X.25 / XOT host to identify the connection source uniquely.

The Dynamic routing options allow the X.25 address (NUA) and call parameters to be set by the remote application at the time each X.25 / XOT connection is established. These modes allow X.25 packetisation information to be passed to the application. Linux and Windows sample applications are provided.

The main modes supported include:

- Statically defined routing
- XDRPD (eXtended Dynamic Routing Packetized Data) and DRPD - these formats allow TCP connected applications to dynamically setup and control the X.25 or XOT connection
- X.25 Data Switching - allows X.25 devices to be interconnected via an IP network without the overheads associated with XOT
- PAD Routing - PAD or Dynamic routing may be employed to allow the TCP client application to specify the X.25 call parameters

X.28 Host Pad

The FarLinX X25 Gateway can be configured to act as an X.28 host PAD for remote terminals or applications connecting over X.25 or XOT and expecting a host that supports X.28. The host PAD sends X.28 PAD configuration commands over X.25 to the connecting terminals. The host PAD profile is configurable.

X.28 Triple-X PAD

Triple-X PAD (X.28, X.3 and X.29) support is included with the Gateway, accessible over TCP/IP via Telnet or using the single permanent async port. Additional RS232 async ports (9 pin D type) can be ordered with options for 4, 8 or 16 async ports. The connecting terminal is presented with a Triple-X PAD service and can be used to make X.25 connections over the physical X.25 line(s) or via XOT connections to remote hosts. The initial PAD profiles for each async port and for the Telnet access are fully configurable.

Resilience and Load Balancing Options

To permit network line redundancy, a FarLinX X25 Gateway may operate with two or more X.25 lines acting as a hunt group. Calls can optionally be routed over any active line connected to the Gateway so that if one line goes out of operation then the other lines can continue to be used automatically. Backup X.25 lines can also be configured.

Load Balancing and Resilience is achieved using multiple gateways across an XOT or TCP network. The connection load from the X.25 lines is split across the IP network to spread the load across the multiple Gateways receiving the connections. Failing Gateway's are automatically excluded and the connection load balanced across the remainder.

Two Gateways can be used together as an Active and Standby pair sharing a single IP address. Should the active Gateway fail, the standby Gateway will automatically take over.

Encryption over TCP/IP (IPSEC)

The FarLinX X.25 Gateway can also be supplied with support for IPSEC. This capability is an option available at the time of ordering. This can provide communications security in IP networks. It can be especially important when public Internet connections are used for part of the communications path.

IPSEC operates between a pair of devices. Each must know details of the remote device in order to authenticate communications and successfully encrypt/decrypt data being sent and received. In the FarLinX X25 Gateway, the details of multiple partner Gateways can be configured. The pre-shared key used for authentication is unique for each remote partner. Once authentication has completed an exchange of encryption keys takes place under the pre-shared key. The session key is used only for a single session.

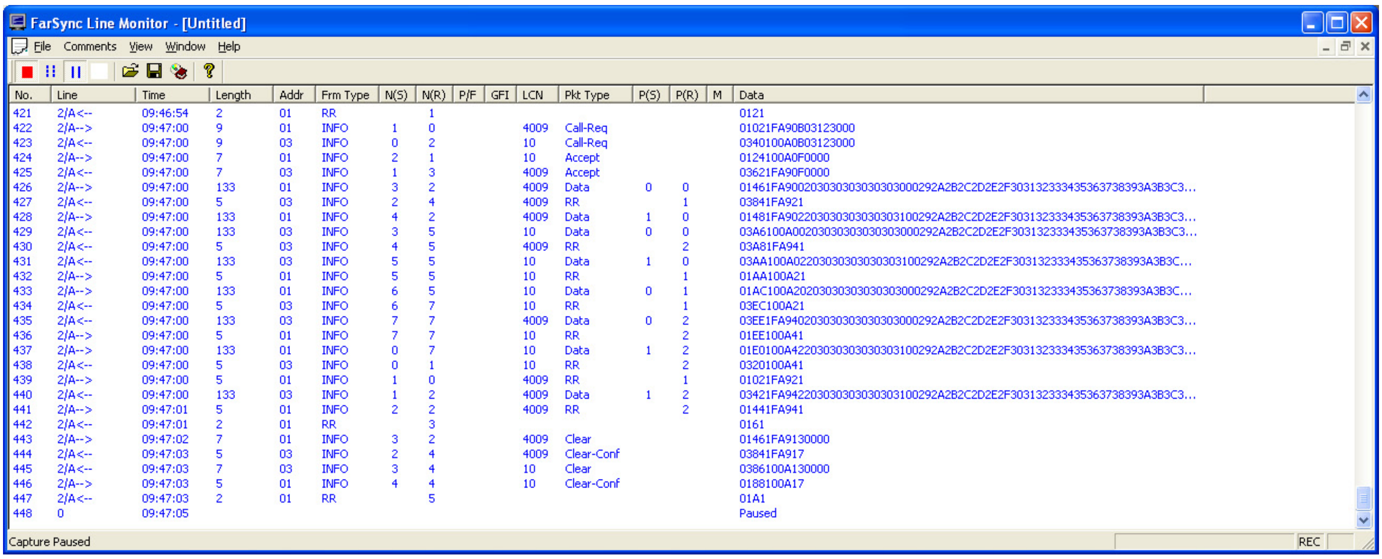
FarLinX Gateway models without IPSEC can be supplied to any country. Models with IPSEC capability can be exported to some countries without a special export licence. Where IPSEC is required and the destination country is not on the pre-approved list, FarSite will apply for an export license for that customer. See Ordering Information table.

Built-in X.25 Line Monitor

The Gateway includes a PC installable Line Monitor that allow the X.25 traffic to be recorded and displayed in real time. Multiple channels from multiple Gateways can be monitored simultaneously. Support is also included to allow the popular Wireshark monitor to record and display the X.25, TCP/IP and XOT line traffic.

This monitoring capability allows Network Managers and System Installers to locally or remotely analyse and rapidly diagnose problems that may occur on the X.25 lines without the need for expensive external line monitors.

The line traces can be saved to disc, for example, in a customer support situation. Any sensitive customer related data can be blanked.



Statistics and Event Logging

The gateway maintains a comprehensive set of statistics and activity counts. This information can be used to indicate the total load on the Gateway and also to give early warning of line performance problems and even misconfigured systems elsewhere in the network.

All connections setup through the Gateway can be logged. The logs are automatically saved on a daily basis, old and current logs can be displayed as required. Log events can also be routed to syslog to allow logging centrally.

The status of current connections / most recent connections / disconnections are displayed in a browser window.

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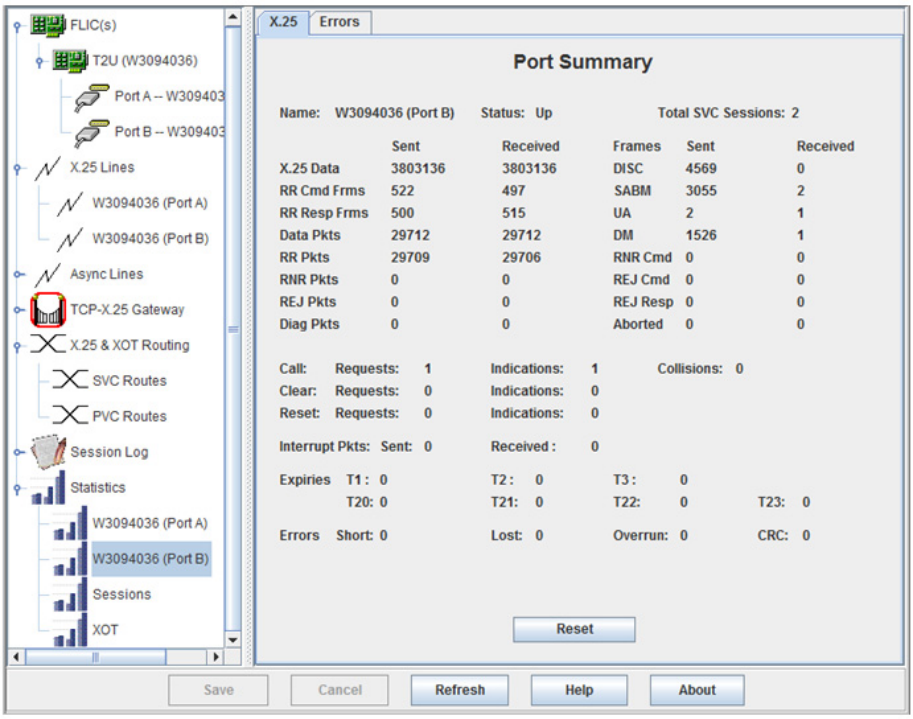
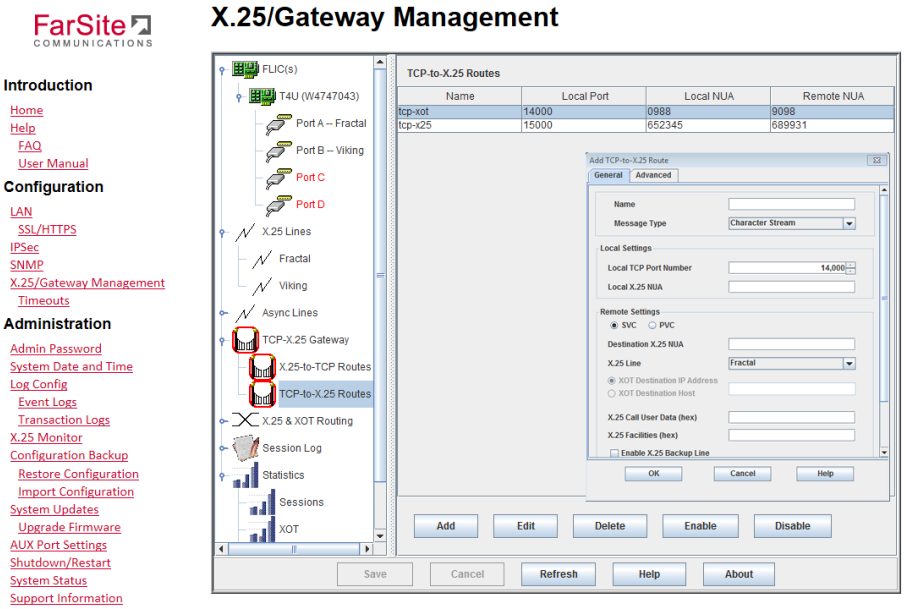


Secure Browser Configuration

The Gateway is configured from a browser, IE, FireFox and Chrome are supported. Access to the configuration is secured through a user name and password. The Gateway can be configured to optionally use HTTPS.

The Configuration Application allows all the features of the Gateway to be managed. The majority of configuration changes to the Gateway are made dynamically so continuous operation of the Gateway can be maintained. For example, where the configuration for one line is changed, only that line alone can be restarted; other lines remain operational.

Configurations can be saved for later use.



Example configuration screen showing the addition of a TCP to X.25 route

SNMP

The Gateway supports SNMP alerts for Error, Warning or Info levels. Alerts can be sent to indicate connection and disconnection of SVCs, PVC errors, connection routing errors, line up and line down events and many others.

System Upgrades

Upgrades to the firmware can be remotely and securely uploaded to the device to allow the latest revision firmware to be used.

Maintenance Contract

FarSite recognises that this product is frequently used as a key component in networked systems and as such a guaranteed response to unexpected problems can be required. Maintenance contracts are available for the FarLinX X25 Gateway for fast hardware swap out, priority service and rapid problem resolution.

Order Information

Name	Description	Product Code
FarLinX XOT Gateway	TCP to XOT Gateway, over 4000 sessions. 1U rack mountable appliance. 2 expansion slot free.	FL2600N FL2600E
FarLinX X25 Gateway-1	1 X.25 line Gateway with supporting X.25 to XOT and X.25 to TCP/IP over 4,000 sessions. 1U rack mountable appliance. Includes 1 async PAD port. Low speed clock generation. 1 expansion slot free.	FL2601N FL2601E
FarLinX X25 Gateway-2	2 X.25 line Gateway supporting X.25 to XOT and X.25 to TCP/IP over 4,000 sessions. 1U rack mountable appliance. Includes 1 async PAD port. Low and high speed clock generation. 1 expansion slot free.	FL2602N FL2602E
FarLinX X25 Gateway-4	4 X.25 line Gateway supporting X.25 to XOT and X.25 to TCP/IP over 4,000 sessions. 1U rack mountable appliance. Includes 1 async PAD port. Low and high speed clock generation. 1 expansion slot free.	FL2604N FL2604E
FarLinX X25 Gateway-8	8 X.25 line Gateway supporting X.25 to XOT and X.25 to TCP/IP over 4,000 sessions. 1U rack mountable appliance. Includes 1 async PAD port. Low and high speed clock generation. All expansion slots used.	FL2608N FL2608E
FarLinX X25 Gateway-E1	E1 X.25 line Gateway supporting X.25 to XOT and X.25 to TCP/IP over 4,000 sessions. 1U rack mountable appliance. Includes 1 async PAD port. RJ48 cable included. 1 expansion slot free.	FL2611N FL2611E

Gateways are available with or without IPSEC encryption over TCP/IP. Product codes ending in **N** indicate no encryption, those ending in **E** indicate with encryption. The Gateway when supplied with encryption requires an export license for some countries.

A **-48** volt DC supply version is available, to order the -48 volt version add -48 to the end of the product code, for example FL2808E-48 for the FarLinX X25 Gateway-8 with encryption with -48v input supply.

Expansion Card Options

FarLinX Async-4	4 port async card, 4 connectors - 9pin D type RS232. Uses 1 expansion slot. Factory fit	FL1004
FarLinX Async-8	8 port async card, 8 connectors - 9pin D type RS232. Uses 1 expansion slot. Factory fit.	FL1008
FarLinX Async-16	16 port async card, 16 connectors - 9pin D type RS232. Uses 1 expansion slot. Factory fit.	FL1016
FarLinX E1	1 port E1 card, presents an RJ48 (RJ45) or dual BNC connector. Uses 1 expansion slot. Factory fit. RJ48 cable included.	FL1011
FarLinX S4	4 port advanced X.25 card, supplied with a 4 port cable that presents 4 RS232/RS530 (DB25M) connections. Supports line encoding modes: NRZ, FM0, FM1, Manchester Encoding, Conditioned Di-phase. Can additionally support X.21, RS449 and V.35 with adapter cables. Requires 1 expansion slot. Factory fit, can be fitted as an alternative to the standard 4 port X.25 card in 4 and 8 port Gateways. See also cable options for this card.	FL1044

Firmware Option

POS Gateway upgrade	POS Software upgrade to the FarLinX X25 Gateway range. Adds Point Of Sale protocol handling including ISO 8583, APACS, SIBs, HGEPOS and CTL	FL2610

Cable Options

UCR1	RS232 DTE (V.24, X.21bis) cable DB25M connector, 1.5 metres	FS6061
UCR1-DCE	RS232 DCE (V.24, X.21bis) cable DB25F connector, 2 metres	FS6071
UCX1	X.21 DTE (V.11) cable DB15M connector, 1.5 metres	FS6062
UCX1-DCE	X.21 DCE (V.11) cable DB15F connector, 2 metres	FS6075
UCV1	V.35 DTE cable M34M connector, 1.5 metres, for external clocks only.	FS6063
UX35C	V.35 DCE cable M34F connector, 1.5 metres, for Gateway generated clocks only.	FS6095
U530	RS530 DTE cable DB25M, 1.5 metres, for external clocks only.	FS6064
UXD1	Cable to connect direct to a Nortel DMS100 (NTFX35AA), 1.5 metres	FS6069

Cable options for FarLinX S4 expansion card only

TCX1	TCX1, X.21 DTE (V.11) transition cable, DB15M connector, 0.5 metres	FS6052
TCV1	TCV1, V.35 DTE transition cable, M34M connector, 0.5 metres	FS6053
TC449	TC449, RS449 DTE transition cable, DB37M connector, 0.5 metres	FS6054

Product Feature Summary

XOT ↔ X.25 routing	PVCs and SVCs; flexible SVC routing with support for wild-cards and address translation.
TCP/IP ↔ XOT routing	SVCs; flexible SVC routing with support for wild-cards and address translation.
X.25 switching	X.25 connection routing between up to 8 X.25 lines and XOT.
TCP/IP ↔ X.25 / XOT call routing	Modes: Statically defined routing, Dynamically configured routing, PAD Routing, X.25 data switching.
Data packetization	Includes Customisable Message Header Conversion, Cisco RBP, RFC-1006 and packetisation of messages terminated by specific characters (ETX, Carriage Return etc), X.25 parity conversion, OFTP / OPTP2 (RFC2204 and RFC5024).
X.28 PAD	X.28 Host PAD and X.28 PAD terminal support. PAD support is available through Telnet and the built in async port. The PAD is also supported with the 4, 8 and 16 port async expansion cards.
POS Protocols	Optional firmware upgrade for Point of Sale protocols APACS, ISO8583, SIBs & CTL (Card Tech Ltd).
TCP/IP	IPv4 and IPv6
Secure connections	IPSEC option selectable for support of authenticated and encrypted data connectivity over TCP/IP.
Packets per second	Over 3,000 messages per second.
Connections	Over 200 calls per second and over 4,000 simultaneous connections; any mix of SVCs and PVCs.
Logging key events	Events log maintained for events such as connections and disconnections; X.25 call failures; X.25 line down; X.25 line up. Log auto archived daily. The most recent events are displayed in real time on a scrolling display in the browser. Can be routed to syslog for remote logging.
Line monitor	Line monitor included for display of frames and packets on X.25 connections, Wireshark supported.
Configuration	Securely configured by a browser and Java applets using XML, login required, HTTPS supported.
SNMP alerts	Configurable, generated for events such as X.25 line down, X.25 line up, disconnections.
Statistics	Statistics provided for line activity, line errors, protocol problems and Gateway activity.
X.25 network connections	Connections for E1 (G.703, G.704), RS232 (V.24), X.21, V.35, RS530, RS422, RS449 available. Line speeds up to 2 Mbits/s; Gateway generated and external line clocks. X.25 network cables are ordered separately, see Order Information.
X.25 connection types	X.25 networks, Leased (fixed) lines
X.25 feature summary	Data packet size up to 4096 bytes, SVC and PVC logical connections, DCE and DTE operation, X.25 CCITT Compliance 1980, 84, 88, 93; X.28, X.3 and X.29 CCITT Compliance, Reverse charging, Closed User Groups (CUG), Network User Identification (NUI), Fast Select, Throughput Class Negotiation, Hunt groups, Backup lines, Compatible with all known public and private X.25 networks.
XOT specification	Complies with RFC 1613 - X.25 over TCP (XOT)
LAN	10/100 BaseT LAN port, RJ45
Approvals	CE: EN55022:2006+A1:2007 Class B, EN55024:1998+A1:2001+A2:2003, EN61000-3-2:2006, EN61000-3-3:1995+A1:2001:A2:2005. FCC part 15 Class B. UL. Safety: EN 60950-1: 2006. RoHS2 compliant.
Physical and Power requirements	1U height all metal case, rack mounting ears supplied. Software selectable power down. Reset to factory defaults switch. Temperature controlled fan operation. Input voltage 100v to 240vac, 50/60Hz or option for -48 volts DC. Power: 1A, 60 watts. Dimensions: metric - 430(W) x 234(D) x 43(H) mm, imperial - 16.9”(W) x 9.2”(D) x 1.7"(H) Weight: 3.4 kg (7.5 lbs). Operating Temperature range: 5 to 40°C (41 to 104°F), Humidity: 20% to 95% RH (non-condensing) Storage Temperature range: 0 to 70°C (32 to 158°F), Humidity: 5% to 95% RH (non-condensing).
Warranty period	1 year

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