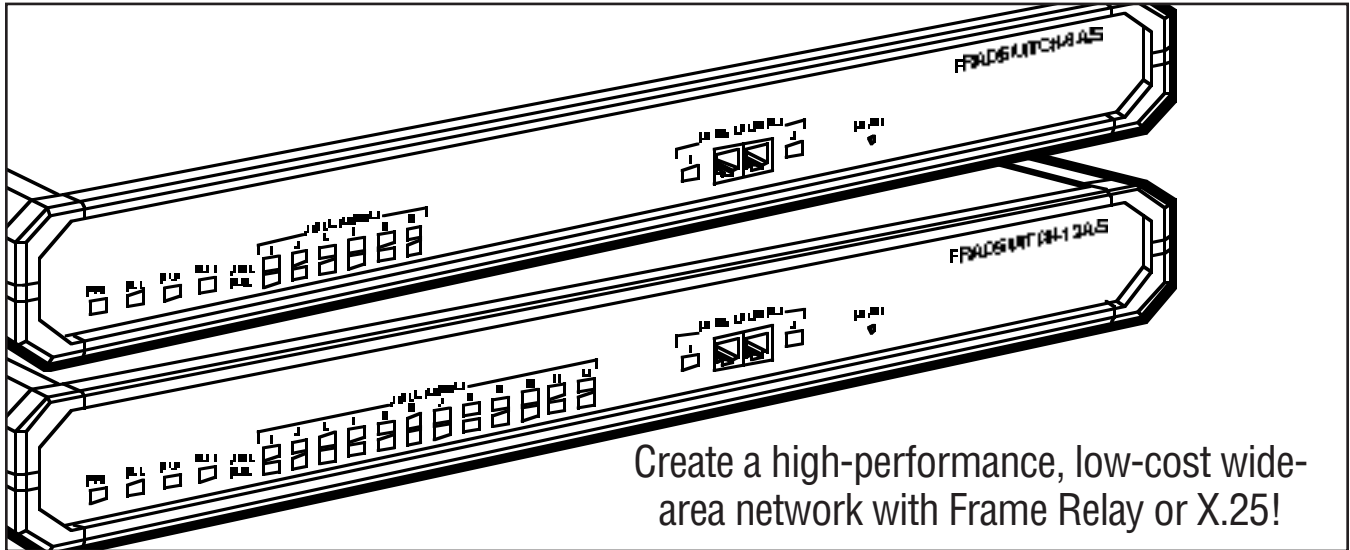


BLACK BOX[®]

NETWORK SERVICES

6- AND 12-PORT FRADSWITCH A/S



Create a high-performance, low-cost wide-area network with Frame Relay or X.25!

Key Features

- ▶ Connect up to 6 or 12 devices to X.25 or Frame Relay.
- ▶ Modular ports can be RS-232, V.35, or X.21—order as many of each kind of Interface Module as you need.
- ▶ Supports async, X.25, Frame Relay, HDLC, SDLC, STM, and SLIP.
- ▶ Aggregate data rates up to 2.15 Mbps for each three ports.
- ▶ Built-in management agent for configuration, monitoring, diagnostics, statistics, and reports.

Do you have X.25 or Frame Relay service? Would you like to be able to attach different kinds of devices, or connect to different service types or access points, and switch between them all?

Allow us to introduce the Fradswitch Asynchronous/Synchronous (Fradswitch A/S). It's a high-performance, modular X.25/Frame Relay switch that you can use for routing between X.25 or Frame Relay connections.

Here's how the "modular" part works: When the Fradswitch A/S comes from the factory, it has empty slots where its main-link ports will go. Depending on what types of devices or services you need to attach to the Fradswitch, order any combination of RS-232, V.35, and X.21 Interface Modules and install them in these slots.

The 6-Port Fradswitch A/S (our product code MT726A-R2) can hold (and switch between) as many as six main links. (These are usually set up as synchronous, but

can be async instead.) The 12-Port Fradswitch-A/S (MT727A-R2) has the capacity for up to twelve main links. Each model also has two hardwired RS-232 channels (pinned on RJ-45 connectors) that operate in async mode only.

The main-link ports can be set to use any of several protocols: Besides the standard ones for X.25 and Frame Relay, the Fradswitch also supports HDLC and SDLC, the proprietary stat-mux protocol STM (for use with our Stat-4, Stat-8, and Stat-24 muxes), and SLIP/encapsulated IP.

The maximum data rate for each async channel is 38.4 kbps; the maximum *async* data rate for each main-link port is 115.2 kbps. Maximum *sync* data rates for the main-link ports are determined for each set of three ports (1 through 3, 4 through 6, 7 through 9, and 10 through 12) rather than for every individual port. The total of the three ports' data rates, added together, can't exceed 2.15 Mbps.

The Fradswitch A/S has a powerful terminal-based menu system that lets you configure it for many types of packet-switching applications, then operate it with little or no maintenance. The unit supports:

- Permanent virtual circuits (PVCs) and switched virtual circuits (SVCs).
- Call IDs.
- IP routing and routing tables.
- Frame Relay funneling.
- X.32 (XID) tables.
- SNMP management and event reporting.
- X.25 multicasting.
- And much, much more.

Multi-session is also provided on each async channel; each channel can access up to four separate sessions simultaneously. This Fradswitch feature makes it easy for you to compare data from different sources.

Specifications

Interfaces —

Async channels: EIA/TIA RS-232, DCE, proprietary pinned on RJ-45;

Main-link ports: Depends on which Interface Modules are installed (all interfaces are DTE or DCE, user-selectable): MT728C-232:

EIA/TIA RS-232/ITU-T V.24;

MT728C-V35: ITU-T V.35 proprietary pinned on DB25 and patched to M/34; MT728C-X21: EIA/TIA RS-530 patched to ITU-T X.21

Protocols —

Async channels (async only) and main-link ports set as async:

ITU-T X.28 or IP/SLIP, user-selectable; supports IP encapsulation over X.25 (as per RFC 1356) or Frame Relay (as per RFC 1490); also supports dialup links for X.25 with X.32 protocols;

Main-link ports set as sync: Packet-switching: ITU-T X.25 or Frame Relay (user-selectable);

X.25: Complies with ITU-T

X.25 (1988), LAP-B; Frame Relay: Complies with ANSI T1.606, T1.617 Annex D, and T1.618, as well as ITU-T Q.922 Annex A; also supports CLLM, LMI, and ANSI PVC management protocols;

Protocols Main-link ports, sync (continued): Data link (optional): HDLC, SDLC,

or STM (proprietary, user-selectable):

STM: Compatible with Stat-4 (our product code MX864A), Stat-8 (MX866A), and Stat-24 (MX868A) statistical multiplexors;

Management: SNMP

Packet Size — X.25: Up to 4096 bytes (4 KB); Other protocols: Up to 8192 bytes (8 KB)

Data Rate —

Each async channel: 75, 110, 150, 300, or 600 bps, or 1.2, 2.4, 4.8,

9.6, 19.2, or 38.4 kbps, user-selectable;

Each main-link port set to async: 75, 110, 150, 300, or 600 bps, or

1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6,

or 115.2 kbps, user-selectable; Each set of three main-link ports (Ports 1 through 3, 4 through

6, 7 through 9, and 10 through

12) set to sync: Any combination of data rates that, when added together, does not exceed 2.15 Mbps (user-selectable)

Clock Source — Internal or recovered from receive signal (independently user-selectable for receive and transmit paths)

Flow Control — Async channels only: X-ON/X-OFF

Logon Messages — Async channels only: Herald and bulletin (user-

definable)

Command Modes — Async channels only: ITU-T X.28 and proprietary extensions; ITU-T X.29

Terminal Handling — Enhanced, beyond ITU-T X.3 requirements

Maximum Distance — Standard maximum for each interface

Memory — 2 MB RAM

User Controls —

On-screen terminal-based menu system, including SNMP management;

(1) Front-mounted recessed reset pushbutton;

(1) Internal jumper on motherboard for power-up configuration loading;

(1) Jumper bank on each Interface Module board for DTE vs. DCE

Indicators —

(18) or (30) Front-mounted LEDs: Both models:

(1) for unit power;

(1) for hardware error;

(1) for buffer overflow;

(1) for test mode;

(1) for async channel 1 activity;

(1) for async channel 2 activity;

MT726A-R2:

(6) for main-link synchronization;

(6) for main-link activity;

MT727A-R2:

(12) for main-link synchronization;

(12) for main-link activity

Connectors —

Both models: (2) Front-mounted RJ-45 female for async channels;

MT726A-R2: (6) Rear-mounted DB25 female for main-link ports (how many are active depends on how many Interface Modules you install);

MT727A-R2: (12) Rear-mounted DB25 female for main-link ports (how many are active depends on how many Interface Modules you install);

MT728C-V35 Interface Modules come with a 1-ft. (30.5-cm) DB25 male to M/34 female adapter cable;

MT728C-X21 Interface Modules come with a 1-ft. (30.5-cm) DB25 male to DB15 female adapter cable

Power —

From utility-power (mains) outlet, through included 2-m (6.5-ft.) power cord and rear-mounted IEC 320 male inlet, to internal transformer:

Input: 100 to 240 VAC, 50 or 60 Hz

(autosensing);

Fuse: Internal;

Consumption: Up to 20 watts

Temperature Tolerance —

0 to 50°C

Humidity Tolerance —

Up to 90% noncondensing

Size —

4.4H x 43.2W x 29.8D cm

Weight —

MT726A-R2: 1.8 kg;

MT727A-R2: 2.2 kg

The complete package

The Fradswitch A/S:

- The Fradswitch A/S itself.
- Its power cord.
- A control cable.
- A rackmount kit.
- A user's manual.
- The Packet Switching Guide.

Each Interface Module:

- The Module's daughterboard.
- An interface-identifier tag.

The V.35 Interface Module also comes with:

- A DB25 to M/34 adapter cable.

The X.21 Interface Module also comes with:

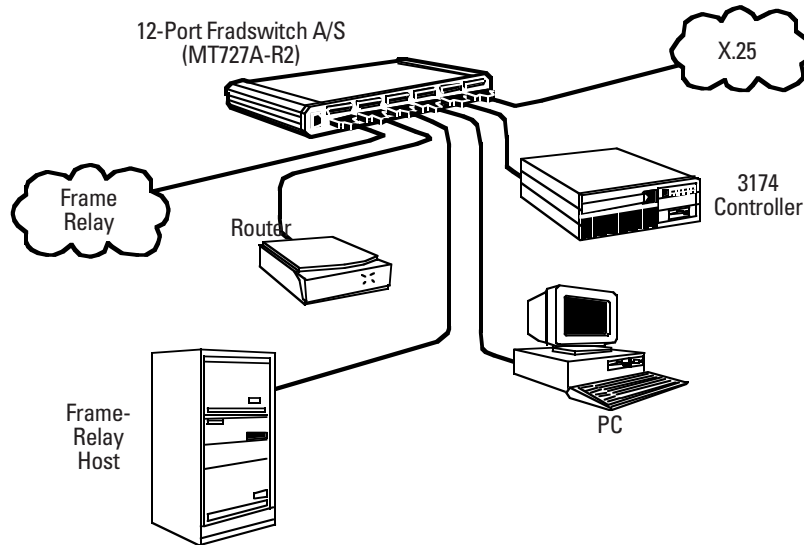
- A DB25 to DB15 adapter cable.

What else you might need

- A CSU/DSU, sync modem, or other WAN-access device.
- An STM-compatible statistical multiplexor such as our Stat-4, Stat-8, or Stat-24.
- Async shielded twisted-pair cables and modular adapters.

- Depending on which model you have, RS-232, V.35, or X.21 cable to run from the Fradswitch to your WAN device.
- Power-line and data-line surge protectors.

The Fradswitch can be the centerpiece of just about any packet-switched network.



Ordering Information

ITEM	CODE
Fradswitch A/S:	
6-Port	MT726A-R2
12-Port	MT727A-R2
Fradswitch A/S Interface Modules:	
RS-232	MT728C-232
V.35	
MT728C-V35	
X.21	
MT728C-X21	
Modular Statistical Multiplexors:	
Stat-4	MX864AE
Stat-8	MX866AE
Stat-24	MX868AE
Cables (specify length):	
RS-232 (async, modular): Straight-pinned RJ-45 male to RJ-45 male shielded twisted-pair cable	EVNSL60
<i>To purchase a modular adapter, or for help building one, call Black Box Technical Support.</i>	
RS-232 (sync): Straight-pinned DB25 male to DB25 male shielded RS-232 cable	EDN25C
V.35: Straight-pinned M/34 male to M/34 male cable	EYN450-MM
X.21: Straight-pinned DB15 male to DB15 male cable	ESX213MM
Surge Protectors:	
RS-232 (on RJ-45)	SP250A
RS-232 (on DB25)	SP360A
V.35	SP143A
X.21	SP508A