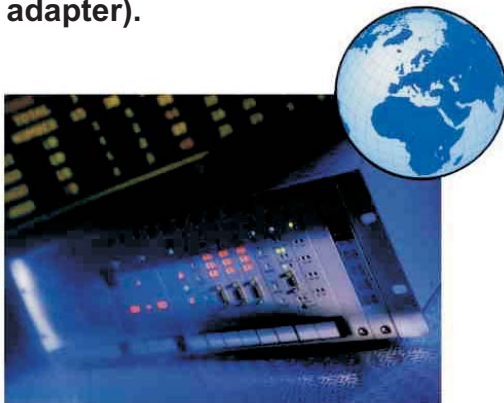




# PatapSCO Databand 120

## Multi-Application ISDN Hub

- Integrated range of ISDN products.
- Backup leased lines at speeds from 64kbps to 2.048Mbps.
- On-Card aggregation so no bottlenecks.
- Low throughput delays.
- G.703, X.21 and V.35 leased circuits.
- Backup of channelised G.704 trunks.
- Primary Rate to Basic Rate ISDN conversion.
- ISDN to V.24 & V.11 (terminal adapter).
- Drop & Insert and share PRI's between DTE's
- "Bandwidth-on-Demand".
- Flexible & modular architecture.
- "Hot swappable".
- Remotely upgradeable.
- Range of "feeder" products.
- Various I/O cards for different interfaces.
- Dual Power.
- Enhanced ISDN security.
- Fast ISDN establishment.
- Easy to configure & manage.
- SNMP.



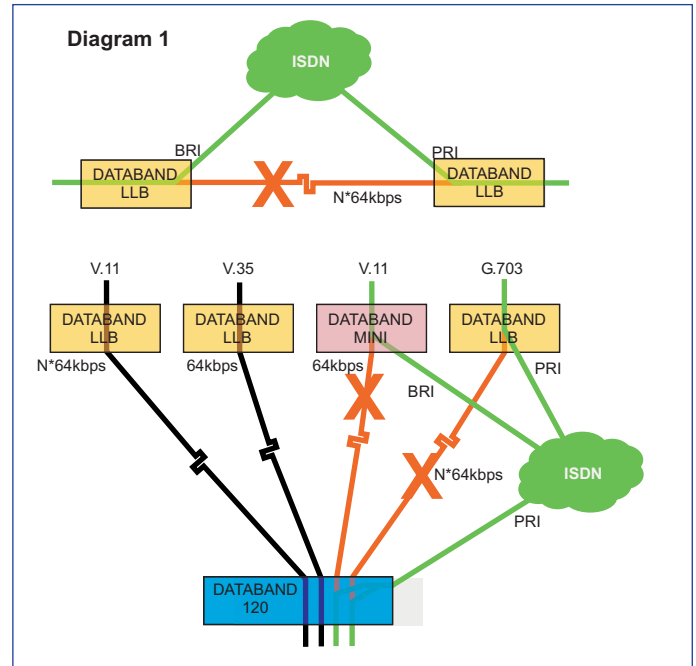
The Databand 120 is capable of supporting multiple user-ports in a cost-effective and upgradable manner. It includes a number of application cards providing the ability to match requirements, combine applications and share network resources more effectively.

Cards which require aggregate capability above 64kbps have their own on-board engine. They do not have to use or contend for a shared resource. As well as making sure the service is available this reduces delays and increases resilience.

Using PRI and/or BRI ISDN connections in conjunction with other network services and application cards, the Databand provides users with ISDN capacity at speeds from 2.4kbps to a full 2.048Mbps.

Databand 120's can be used in conjunction with other DB120's or with associated products in the range such as; the Databand LLB, Databand LL30 and Databand Dial (please see Product Guides).

The Model 120 is a modular, highly compact 3U-high 19" rack-mountable ISDN hub. As a member of the Databand family it benefits from a flexible and expandable architecture and a complimentary range of "feeder products".



## What applications will the 120 support?

The inherent flexibility of the DB120 enables different applications to be addressed and combined within the one system.

Examples are:

1. ISDN backup of leased lines at speeds from 64kbps to a full 2.048Mbps.;
2. Backup of structured (channelised) G.704 trunks with multiple 64k and N\*64k logical circuits;
3. "Bandwidth-on-demand" where ISDN capacity is accessed in response to the DTE request;
4. Conversion of a network PRI interface into multiple BRI presentations (with contention);
5. Multiple V.24/V.11 ISDN terminal adapter.
6. Sharing PRI network access between multiple PRI DTE's

Patapsco are continually enhancing and developing products. Please contact your supplier for updates and any help or advice you may need.

### Application 1 - Back-up of V.11, V.35 and G.703 leased lines.

Digital leased lines are a vital resource to many of the companies who use them. Loss of these circuits, for even a short time, can cause major problems within a business. Using Databand and ISDN as an 'insurance policy' to supply a temporary alternate network maintains key communication links and keeps systems and staff working when circuits fail. A range of LLB (Leased Line Backup) cards are available for the Databand 120. The flexibility of the Databand 120's mid-plane architecture means it is simple to change interface types and increase speeds as requirements grow. Speeds from 64kbps to a full 2.04Mbps are supported.

The DB120's LLB cards (see Technical section below) interface to both the leased line and the DTE/application and continually monitor the circuits for failure. Once the user-set individual failure parameters are met, the DB120 dials the appropriate number of ISDN 'B' channels to the pre-configured destination. Once a number of security checks are passed the high-speed replacement ISDN trunk is routed to the DTE/application. See diagram 1.

The DB120 establishes the temporary ISDN capacity very quickly. Normally sessions are maintained and users are unaware of the network failure.

The network manager is informed of the line failure and that backup has been successfully achieved. All events are reported to the manager via a choice of solutions, including SNMP and a sophisticated but easy-to-use graphical package displaying the whole network and the status of every node and link.

When in backup, the DB120 continues to monitor the leased line for recovery (see the Technical section for details), and will switch the user-traffic back to this link once the recovery criteria are met.

A DB120 chassis will support up to 26 leased lines at N\*64kbps speeds with the added advantage of being able to contend for ISDN channels if required. This user-configurable option means ISDN can be used efficiently.

All LLB cards can support any other interface type and all can be upgraded to support any speed. As your requirements change and grow, the Databand grows with you.

### Application 2 - Back-up of channelised G.704 leased lines.

Where multiple leased lines terminate at a single location, PTTs offer structured, or channelised, high speed trunks. Each of these E1 G.704 trunks contain many lower-speed circuits, each of which usually terminate at different remote locations as conventional leased lines (see diagram 2). The carrier/PTT builds these lines into a high-speed trunk within the carrier network.

Presenting a high-speed trunk with many channels provides significant savings in DCE / DTE ports, simplified installation, management and reduction in space requirements.

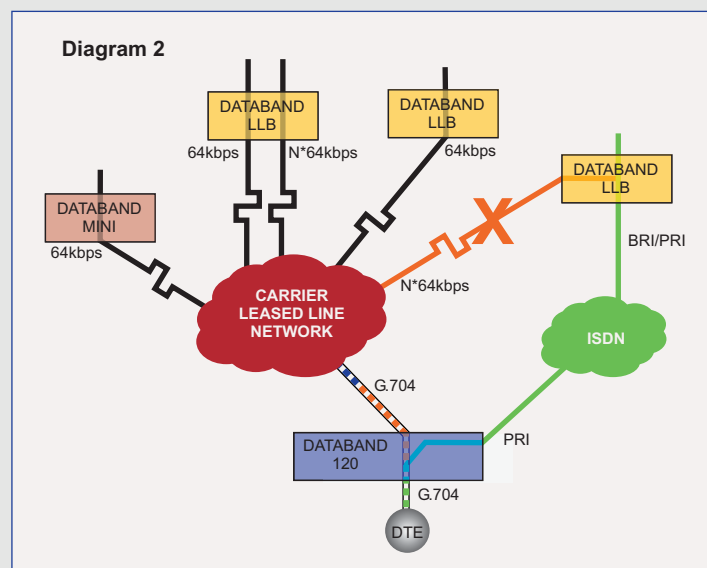
The DB120 offers two cards for this application, depending upon whether the circuits are all 64kbps or there are N\*64k circuits also (see Technical section for SGN and SG30 cards).

Each card interfaces to both the DCE and DTE (with relay protection) and incorporates any necessary aggregation capabilities for N\*64k requirements.

The DB120 chassis will support up to 360 64kbps circuits within 12 G.704 trunks or up to 180 N\*64kbps circuits all within a 3'U' chassis.

Both cards monitor and provide backup capacity for any or all failed circuits within the trunk.

For SDLC/HDLC DTE's (such as frame relay switches) the Databand 120 provides the capability to reduce the speed of backup to reduce ISDN costs. Data is 'load shared' across the timeslots within the DTE interface and 'sync filled' to preserve data integrity. This option can provide significant cost savings both whilst on backup and the costs associated with ISDN provision.



This option can provide significant cost savings both whilst on backup and the costs associated with ISDN provision.

### Application 3 - "Bandwidth-on-Demand".

The Databand 120 Dial card supplies high-speed N\*64kbps capacity by aggregating multiple ISDN channels.

Calls can be instigated by the DTE using a variety of methods, or manually via the management systems. In common with all Databand ISDN calls, a sophisticated security system is in place to ensure only authorised access is permitted (see below).

High-speed dialled capacity is most beneficial for applications where bandwidth is required periodically, for example when transferring large files but where leased circuits are not justified because of the infrequency of use, or because of the cost of line rental.

The DB120 supports three types of Dial Module.

- The Databand 120 Dial supports V.11, V.35 and G.703 interface standards. Calls are received and/or placed via the shared ISDN system ports.
- The Databand 120 Dial SG30 and SGN are used to provide a G.704 interface supporting 64kbps and N\*64kbps rates respectively. Calls are received and/or placed via the shared ISDN system ports.
- The Databand 120 Dial SG30(P) and SGN(P) are used to provide a G.704 interface for high density applications. Each module incorporates it's own dedicated PRI ISDN interface allowing up to 14 G.704 "pipes" to be populated in a single Databand chassis.

#### Application 4 - PRI-to-BRI conversion.

Many companies have a number of data devices that require Basic Rate presentations. Running multiple BRI's into premises can be expensive, inefficient and difficult to manage. Furthermore, each DTE/device will normally have a dedicated BRI with access to both 'B' channels even though the service may only be used periodically and perhaps just one 'B' channel is needed. This can easily lead to the over-provision of BRI services, high recurring rental costs and management, upgrade and billing difficulties. The 120's BRI (NT) card supplies four Basic Rate interfaces for connection to local ISDN equipment. The attached devices have access to the Primary Rate link(s) via the BRI card. Up to 13 cards (104'B'channels) can be populated. Local BRI devices can contend for PRI access in whatever ratio is deemed appropriate, thereby using the ISDN for more effectively whilst making the services easier to control and manage.

Not only does the Databand reduce ISDN costs, but it also saves space and makes the management of services simpler. Additional users can be added quickly, inexpensively and in a controlled manner.

#### Application 5 - V.24 and V.11/X.21 PRI Terminal Adapter.

It is common for users to have devices presenting V.24 or V.11 interfaces, perhaps connected to individual modems and each with their own exchange line. The Databand 120 allows these users to place and/or receive calls via the faster and more reliable ISDN. As with the BRI system described above, users can share and contend for resources in a more cost-effective way. Devices interfacing to either the V.11 or V.24 ports can communicate with any remote device supporting the common V.110 rate adaption protocol. This means they will inter-work with terminal adaptors, providing an ideal solution for high-speed ISDN internet access for current hardware platforms.

As with the BRI ports, it is possible to route calls on an individual port basis, or to treat a number of ports as a 'pool' or 'rotary'. The Databand 120 provides a simple migration path to ISDN services for existing V.11 and V.24 users, and does so in a low-cost, controllable and manageable way.

#### Application 6 - Sharing PRI network access between multiple PRI DTE's.

As ISDN services and equipment become more common there is a growing need to provide services to separate equipment including PABX's for voice services, Codecs for videoconferencing, and routers for data services. Where these services are provided by Primary Rate ISDN this often leads to fragmentation of the ISDN service. This fragmentation results in bandwidth being unavailable to applications when capacity remains completely unused for others.

The Databand 120 may be used to provide a private ISDN exchange, terminating the ISDN services from the PTT and flexibly sharing the capacity between multiple applications. Multiple PTT services are supported and internal switching between them may be dynamic, using DDI, or CLI information to route calls or fixed, based on internal routing tables. These tables may be modified at any time to account for changing needs from the easy to use associated configuration and management system.

#### Combined Applications

Whilst the above example applications are covered separately, the Databand 120 can mix applications and cards within a single chassis. This gives users access to a variety of services and capabilities, with the flexibility to add, modify and grow as required. All developments, both hardware and software, are designed with portability and reusability as a core requirement and this portability enables new products to be developed far more quickly than is usual.

Most developments have been driven by our customers so if you have a requirement that is not covered in this data sheet please contact us.

# Technical Details & Functionality

## Architecture

- The Databand 120 consists of a mid-plane chassis complete with a removable PSU and CPU card. 14 slots are available for use by other application cards and a slot for a second load-sharing PSU. Each application card requires an I/O card to present the physical interfaces. A number of different I/O cards are available to match application and DTEs.
- Any card can be located in any slot and all are 'hot-swappable'.
- The Databand 120 supports up to four PRI ISDN trunks and allocates bandwidth across the chassis with complete flexibility. All user ports have the flexibility to dynamically access the ISDN services and do not need to be pre-configured to use a particular route. It also means that users can, if required, contend for ports on a system-wide basis giving better ISDN use and an improved, more resilient service.

## Dual PRI Card

- This card interfaces to one or two ISDN PRI network ports. Each port can be connected to different carriers for enhanced resilience.
- The Databand 120 supports four fully configured NET5/Q.931 PRI links (120 'B' channels). Country-specific ISDN variations are available please enquire.

## BRI Card (TE)

- Provides four BRI TE ports for connection to ISDN networks.
- ESTI, US and country-specific versions are available.

## LLB Card

- Each LLB card provides leased line backup for one or two lines.
- The LLB provides aggregated backup capacity of up to 1.024Mbps for each leased line when two are configured, or a full 2.048Mbps (as opposed to 1920kbps) for a single leased circuit. Different speed versions of the LLB are available and each is easily upgraded to any other configuration.
- Options exist for V.35, V.11/X.21 and unstructured E1 G.703 interfaces.
- The interfaces to the leased line and its associated DTE are power-failure relay protected.
- The LLB card monitors leased lines for loss of data or clock, control lead changes and G.703 specific alarms. Half-duplex failures are detected. Backup action will be inhibited should the DTE fail/be switched off. Each leased line can be configured with individual parameters.
- When a circuit fails the Databand 120 instigates ISDN calls to a pre-configured back-up location. The user data is routed to the LLB card, aggregated (if the required speed is greater than 64kbps) and passed to the DTE. See also the section on Security. An alternate backup site can be configured.
- The LLB card continually monitors the failed leased line. When it recovers for a user-configured period, data is re-routed via this path and ISDN calls cleared. The system recognises half-duplex recoveries and data is not switched back to the leased line until it is fully restored.
- The Databand 120's LLB card inter-works with other 120s and with the smaller stand-alone low-cost Databand LLB and MINI units. Various models of the LLB card are available to support different speeds. For a detailed description of the back-up functionality, please see the Databand LLB and MINI product data sheets.
- The Databand 120 is capable of supporting up to 13 LLB cards, providing a maximum of 26 simultaneous back-ups.
- Fewer than the maximum number of lines can of course be supported, as can other card types. The ISDN provisioned for back-up purposes can be used by other applications when not needed for recovery purposes.

## SG30 Card

- The SG30 card provides backup for up to 30 x 64kbps circuits within a structured, channelised, G.704 trunk.
- Interfaces to both the network and the DTE are power-failure relay protected. Various I/O card options are available.
- The cards simultaneously monitors all 64kbps circuits, each of which can have individual failure/recovery parameters. The cards will quickly backup any or all circuits and provide replacement capacity to the appropriate timeslots.
- A chassis will support up to 12 cards with ISDN contention, or four cards on a 1:1 basis.
- The cards offer enhanced ISDN security, inter-work with remote Databand LLB units and are upgradable to SGN/STN cards (see below). This gives a simple and easy migration path from 64k to N\*64k circuits.
- The speed of backup normally means that user application sessions are maintained.

## SGN Card

- Similar to the SG30 card above, but supporting multiple N\*64kbps logical circuits within a G.704 trunk
- The card interfaces to both network and DTE with relay protection and performs aggregation for rates higher than 64kbps.
- Logical circuits at speeds from 64kbps to 1.984Mbps are supported in any 64k multiples and in any combination. The largest number of aggregations supported is 15 x 128kbps although the card will support 30 x 64kbps or 28 x 64kbps and 1 x 128kbps, for example.
- A chassis will support up to 12 cards with ISDN contention, or four cards on a 1:1 basis.
- These cards inter-work with the Databand LLB and Mini remote units and offer all the facilities and benefits, such as fast establishment of replacement capacity, enhanced security and simple but sophisticated management packages.

## SGDS Card

- The Databand SGDS (Down Speed) card provides backup for SDLC/HDLC framed data such as Frame Relay. During backup it is possible to define a reduced data rate without any reconfiguration of the DTE equipment. In the receive direction, lower speed data is shared across the defined timeslots, and 'sync filled' to avoid data under-runs. Transmit data arriving at a rate higher than the available ISDN capacity will be buffered, after which it will be discarded.
- 64kbps and N\*64kbps channels are supported to a maximum rate of 1.984Mbps.
- The Databand SGDS is fully compatible with remote Databand 120, Databand LLB and Databand Mini systems.

## Dial Card

- The Databand Dial card provides high speed 'bandwidth-on-demand' for one or two DTEs. Two DTEs are supported at a maximum speed of 1.024Mbps each, or a single DTE at up to 2.048Mbps. The card is able to place and accept calls using control lead dialling or via instructions from the management system.
- The Databand Dial SG30/SGN card provides high speed 'bandwidth-on-demand' for one G.704 DTE. 30 64kbps channels are supported using the SG30 card whilst the SGN provides high speed aggregation at speeds to 1.984Mbps per logical port.
- The Databand Dial SG30(P)/SGN(P) card provides high speed 'bandwidth-on-demand' for one G.704 DTE. Each card also incorporates a dedicated PRI ISDN port allowing for very high chassis density. Up to 14 modules may be populated in each DB120 chassis.

## BRI Card (NT)

- Each BRI card provides local ISDN devices with 4 network (NT) EURO-ISDN interfaces.
- The interfaces on this card present simulated network ports so existing ISDN CPE can access the 'real' network via PRI.
- Incoming and out-going calls are supported with information such as CLI and sub-addressing passed between the PRI interface and the BRI ports.
- The in-built security system can be used to screen calls which are then passed either to a specific port or to the next available port when configured as a 'hunt-group' or 'rotary'.

## V.11 Card

- Provides six synchronous V.11 ports at up to 64kbps. The card supports V.110 rate adaption, 'nailed' circuits, control lead dialling and X.21 dialling, all configurable on a per-port basis.
- The V.11 card inter-works with any remote device (such as BRI terminal adaptors or ISP's) supporting the common V.110 system. Various I/O cards are available.

## V.24 Card

- Six synchronous/asynchronous interfaces are provided at speeds of up to 38.4kbps using V.110 rate adoption. Each port can be configured for 'nailed-up' calls, control lead or DTE initiated dialling where the destination address is supplied in the command string.
- The V.24 card inter-works with any remote device supporting the common V.110 system. Various I/O cards are available.

## Security

- The Databand 120 incorporates systems to ensure only authorised incoming calls are accepted. There are several levels available:
  - CLI, sub-addressing and DDI numbers.
  - In-band password.
  - Unique serial number identifier (factory-set).

## Management

- All Databand members are manageable from a common PC-based platform. More than one management station can be used.
- An intuitive graphical interface represents the entire network. The selection of icons presents greater and greater levels of detail, enabling managers to easily identify problems on specific equipment or circuits. Different levels of alarms and events are reported to the management station and the manager has a complete view of the network and each element's status.
- Units are down-line loadable with new versions of software and many upgrades can also be achieved remotely. All configuration and event information is held in NV memory.
- SNMP is available and access can be via ISDN or through existing X.25 or Frame Relay networks.
- Extensive Test and Loop facilities are available.

## Physical

- The Databand 120 is 19" rack-mountable and 3U high. The depth is adjustable between 435mm and 640mm.

## Power

- Supplied with a removable internal PSU.
- Auto-sensing 100VAC 260VAC 50Hz 60Hz.
- 48V DC supplies are also available.
- A second load-sharing PSU may be populated.
- Each PSU has a separate fused power feed and may be connected to different supplies.
- Either PSU will power a fully populated system.

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