



Central Site I-Mux

Product Overview

- ISDN inverse multiplexer or I-Mux
- Central site system high port density
- Multiple PRI (E1/T1) ISDN
- Multiple V.35, RS530, X.21/V.11 interfaces
- Speeds to 1.024Mbps
- Supports BONDing standard and 64K 'clear'
- Option to clock or not clock idle ports
- RS366 dialling*
- Calls on any PRI can be aggregated
- Ability to isolate PRI's from data ports via fibre link
- Dual load-sharing hot-swappable AC/DC PSUs
- Inter-works with other I-Muxes, including Adtran® ISU and KLAS® adaptors
- Interworks with DataBand ISU
- Intuitive GUI
- Local serial port and optional Ethernet port for management
- Optional fibre port for management
- Password protected
- Encrypted Management protocol
- NV RAM stores configuration
- Dual FLASH banks for updates
- New design using latest supportable components
- Extensive Approvals incl Telecoms
- Low power usage
- RoHS compliant

Other Configurations

- [2-wire "U" BRI](#) interfaces see DataBand ISU 512U
- [4-wire "S" BRI](#) interfaces see DataBand ISU 512S
- [Stand-alone PRI inverse mux](#) with optional BRI ports DataBand ISU 1024
- ISDN satellite splitter see DataBand Splitter
- For other ISDN switch, conversion and sharing capabilities see our [Liberator](#) range

Typical Applications

- Video conferencing and MCUs
- Inter-connectivity of encryptors
- Fibre isolation
- High speed file transfer
- Central site Terminal Adaptor
- Reduce ISDN costs and space

*Under development



Patapsco's DataBand CSI and ISU range connect high speed serial data devices together using multiple ISDN calls, in effect dialling a high-speed "leased line" between non-ISDN devices.

A single CSI (Central Site I-Mux) supports from 1 to 8 ISDN PRI's for network access, and from 8 to 16 serial data ports with data rates of up to 1.024Mbps per port. CSIs can be linked together to form larger systems.

Easy to manage and configure, the CSI is an ideal central-site solution for:

- New Inverse multiplexing and Terminal Adaptor applications
- Replacement of existing unsupported legacy platforms
- Migrate and free-up multiple single port I-Muxes/aggregators at central sites and redeploy them at remote sites

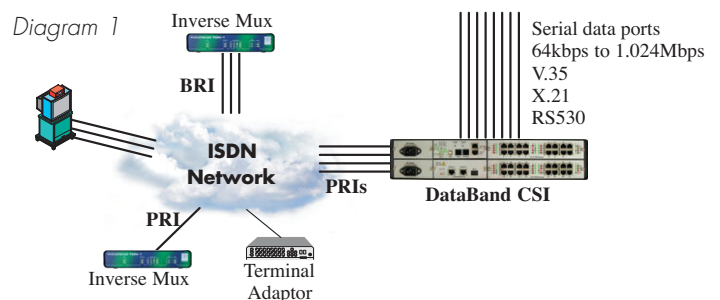
Compatible with other vendors' remote equipment as well as Patapsco's stand-alone DataBand ISU range.

[Register](#) for downloadable manual.

Configuration Examples

1. Standalone Use

The I-Mux capability, using industry standard BONDing algorithms, aggregates the individually dialled and routed ISDN channels, re-ordering them and handling the differential delays between all of the ISDN calls.



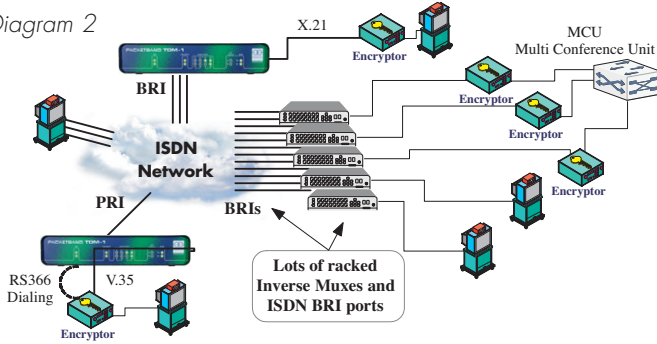
2. Typical Current Central Site Installations

By way of an example, Diagram 2 (overleaf) shows inverse multiplexers with encryptors (such as KIV's and Thamers) and video conference units.

Currently many users populate multiple BRIs and stand-alone inverse multiplexers at the central site. This has several issues:

- Not easy to manage
- Large space and power requirements for muxes
- Space and cable problems with multiple BRI ISDN
- Reliability issues of multiple BRIs
- Costs of muxes and BRI ISDN connections

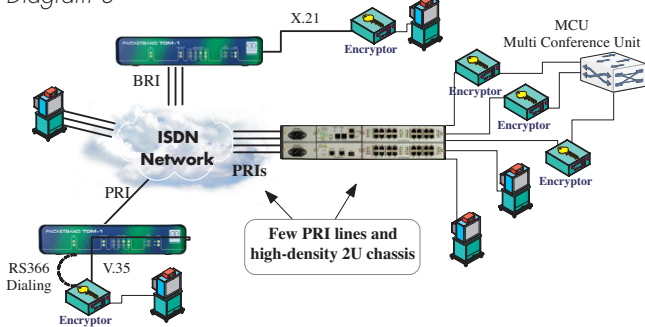
Diagram 2



3. PatapSCO CSI

Replace the multiple central site muxes with the compact DataBand.

Diagram 3

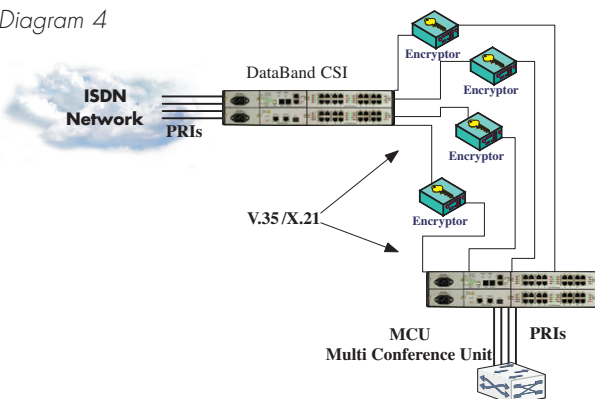


The DataBand CSI simplifies the installation and delivers:

- An easy to manage and configure solution with specific GUI designed for ease of arranging and reserving calls.
- Huge space savings
- Cost benefits
- Easily expandable
- PRI is a fully managed/monitored service and more reliable than BRIs
- Any installed central site stand-alone muxes can be re-deployed at remote locations

Some secure installations also need an inverse multiplexer to re-convert the serial output from the encryptor back to ISDN for use by the VC or MCU. In which case the DataBand is an equally effective unit on the "Red" side of the encryptor, as shown below.

Diagram 4



4. Other Legacy Central Site Equipment

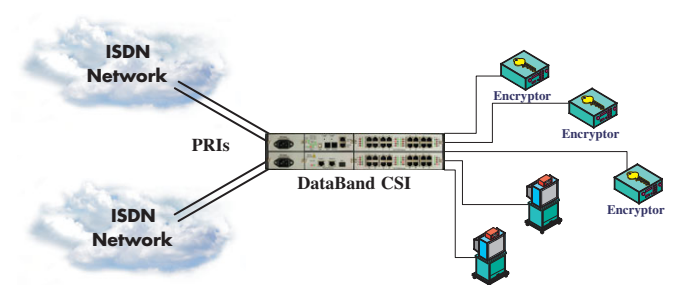
There are several very old central-site platforms in the field (for example Oasis and AccessSwitch). However, they have been obsolete and unavailable for many years and are naturally becoming increasing unreliable, difficult to support and maintain.

The DataBand CSI is a new design, using the latest modern components. It will be available for many years to come and PatapSCO and our partners provide excellent support. Furthermore, the management and control of the CSI is more up-to-date via an intuitive GUI. The GUI is designed specifically for the application, making the job of operators simple and intuitive with excellent visibility of status of all the ports and calls.

5. Network Resilience

Unlike BRIs, PRIs can often be sourced from more than one carrier, so it is easy to add resilience by dual-sourcing the PRI network access or by diversely routing circuits.

Diagram 5

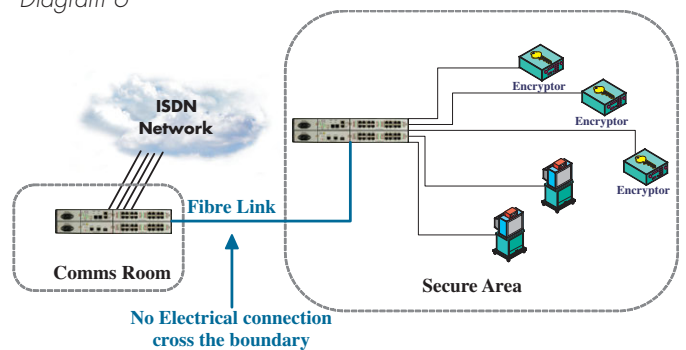


6. Isolation and Boundary Issues

Some applications, particularly those involving the military, government or security organisations, have to be careful about radiated emissions and will often either only allow fibre-based circuits across the boundary or will add fibre links into the system for isolation.

DataBand CSI can be configured with two chassis, one for the PRI ISDN and one for the data services. The two separate devices are then completely isolated and linked via fibre.

Diagram 6



The configuration adds little cost and can protect all data interfaces.



General

The DataBand CSI is a flexible system so customers can order the capabilities they require now, often with the ability to field upgrade via a software key and/or to add further cards.:

- Chassis (Example configurations shown overleaf)
 - o The 2U 19" rack-mountable chassis comes complete with an Ethernet RJ45 port for management (can be disabled) and an RJ12 for serial access
 - o Each 2U chassis supports up to 2 cards, (PRI or Data) cards.
 - o Some PRI cards are field upgradeable to support more ports and an 8 port data card can be field upgraded to support 16 ports
 - o Two or more chassis can be inter-linked via fibre connections using a single or dual port Cascade card
 - o Each chassis supports one or two AC/DC PSUs (in any combination). One PSU will run a fully populated chassis. Two PSUs can be populated for resilience and are hot-swappable and load-sharing
- ISDN PRI cards
 - o Select a card with 1 PRI (field upgradeable to 2 or 4 PRIs), 2 PRIs (field upgradeable to 4), 4 PRI (field upgradeable to 8), or 8
 - o Ports can be individually configured to TE or NT and E1 or T1
 - o E1 Ports are RJ45 120Ohm but can be user-switched to 75Ohm with a converter cable to provide co-ax

- o Calls arriving on any PRI port can be built into an aggregation
- o Outgoing calls can be spread across any number of PRIs
- Data or Serial Interfaces
 - o 8 port card (field upgradeable to 16) or 16 port card
 - o HDMI connector. Specify interface type
 - o Cables provide:
 - V.35 "MRAC"
 - RS530 25-way "D" – standard pin-out
 - RS530 25-way "D" – Adtran compatible
 - X.21/V.11 15-way "D"
 - o Various aggregation speeds (all include 64K clear)
- A card supporting 8 data ports and 8 associated RS366 dialling ports is under development.
- Cascade Card
 - o Enables Chassis to be inter-linked via fibre
 - o Provides electrical isolation
 - o Available with one or two SFP modules

The GUI (Dblite) is free of charge on the included CD and provides configuration of one unit at a time. A networking version is available which gives visibility of multiple DataBand ISUs and central site CSIs – contact for information.

An optional SFP port is available as a fibre link for management purposes.

The traffic between the Manager GUI and the device can be optionally encrypted via an AES256bit system with key exchange routines.

Unlike most other devices, the DataBand has formal Telecommunications Approvals for direct connection to carrier ISDN services.

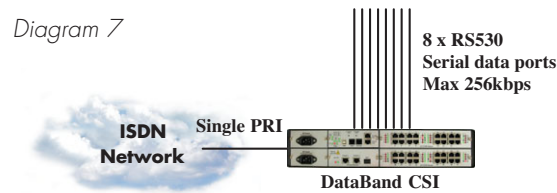
Ordering Information

| | |
|--------------------|---|
| DB/CSI/CHA/1 | Base chassis |
| DB/CSI/AC/1 | AC PSU |
| DB/CSI/DC/1 | DC PSU |
| DB/CSI/PRI/1 | Card with a single PRI. Field upgradeable to 2 or 4 PRIs |
| DB/CSI/PRI/2 | Card with a 2 PRIs. Field upgradeable to 4 PRIs |
| DB/CSI/PRI/4 | Card with 4 PRIs. Field upgradeable to 8 PRIs |
| DB/CSI/PRI/8 | Card with 8 PRIs enabled |
| DB/CSI/8/256/xxx | 8 Ports (field upgradeable to 16) 256kbps maximum BONDing speed |
| DB/CSI/8/384/xxx | 8 Ports (field upgradeable to 16) 384kbps maximum BONDing speed |
| DB/CSI/8/512/xxx | 8 Ports (field upgradeable to 16) 512kbps maximum BONDing speed |
| DB/CSI/8/1024/xxx | 8 Ports (field upgradeable to 16) 1.024M max |
| DB/CSI/16/256/xxx | 16 Ports 256kbps maximum BONDing speed |
| DB/CSI/16/384/xxx | 16 Ports 384kbps maximum BONDing speed |
| DB/CSI/16/512/xxx | 16 ports 512kbps maximum BONDing speed |
| DB/CSI/16/1024/xxx | 16 ports 1.024Mbps maximum BONDing speed |
| Where xxx = | RS5 (RS530) or V35 or X21 |
| DB/CSI/SFM/1 | Single fibre SFP for management |
| DB/CSI/SFC/1 | Single fibre Cascade |
| DB/CSI/DFC/1 | Dual fibre Cascade |
| DB/CSI/SEC | Security Management Pack |
| DB/CSI/C/V35 | 2m cable with V.35 "MRAC" female DCE connector |
| DB/CSI/C/X21 | 2m cable with V.11/X.21 15-way "D" female DCE connector |
| DB/CSI/C/RS5 | 2m cable with RS530 25-way "D" female DCE connector |

- Includes Manual and other documentation on CD, paper Quick Start guide, serial port Controller Cable.

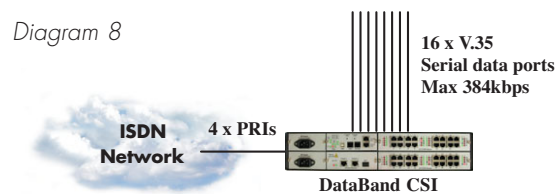
Example Configurations

1. Single chassis with dual AC PSUs, 8 x 256kbps RS530 aggregations and a single PRI



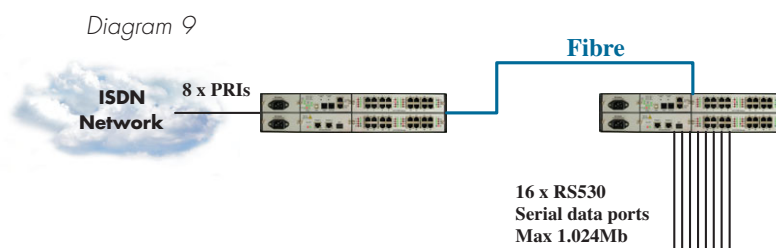
| | | |
|-----|------------------|--|
| 1 x | DB/CSI/CHA/1 | Base chassis |
| 2 x | DB/CSI/AC/1 | AC PSU |
| 1 x | DB/CSI/PRI/1 | Card with a single PRI. Field upgradeable to 2 or 4 PRIs |
| 1 x | DB/CSI/8/256/RS5 | 8 Ports (field upgradeable to 16) 256k max |
| 8 x | DB/CSI/C/RS5 | 2m cable with RS530 25-way "D" female DCE connector |

2. Single chassis with single AC and single DC PSU, 16 x 384kbps V.35 aggregations and 4 x PRIs



| | | |
|------|-------------------|--|
| 1 x | DB/CSI/CHA/1 | Base chassis |
| 1 x | DB/CSI/AC/1 | AC PSU |
| 1 x | DB/CSI/DC/1 | DC PSU |
| 1 x | DB/CSI/PRI/4 | Card with 4 PRIs. Field upgradeable to 8 PRIs |
| 1 x | DB/CSI/16/384/V35 | 16 Ports 384kbps maximum BONDing speed |
| 16 x | DB/CSI/C/V35 | 2m cable with V.35 "MRAC" female DCE connector |

3. Dual inter-linked chassis each with dual DC PSU, a total of 48 data ports (16 x 512k X.21, 16 x 384K V.35 and 16 x 256k RS530) and 8 x PRIs.



| | | |
|------|-------------------|---|
| 2 x | DB/CSI/CHA/1 | Base chassis |
| 4 x | DB/CSI/DC/1 | DC PSU |
| 1 x | DB/CSI/PRI/8 | Card with 8 PRIs enabled |
| 1 x | DB/CSI/16/256/X21 | 16 ports 256kbps maximum BONDing speed |
| 2 x | DB/CSI/SFC/1 | Single fibre Cascade |
| 16 x | DB/CSI/C/X21 | 2m cable with V.11/X.21 15-way "D" female DCE connector |
| 16 x | DB/CSI/C/V35 | 2m cable with V.35 "MRAC" female DCE connector |
| 16 x | DB/CSI/C/RS5 | 2m cable with RS530 25-way "D" female DCE connector |



Product Specifications

A single chassis supports two Interface cards.
Two chassis can be interlinked via the fibre Cascade capability to isolate data ports from ISDN ports.

A. Network Interfaces

- PRI RJ45 ISDN interface
- User switchable E1/T1 per port
- 1, 2, 4, 8 ports

B. DTE Interfaces

- 8 or 16 HDMI with supporting:
 - V.35 "MRAC"
 - RS530 25-way "D" – Adtran compatible
 - X.21/V.11 15-way "D"
- Speeds to 1.024Mbps each interface
 - Includes 64K clear

C. Out-going Dialling Options

- GUI (operator controlled)
- Control lead – pre-stored
- RS366 - under development

D. In-coming Call Options

- GUI (operator controlled)
- Accept all
- Accept authorised (CLI)
- Reject all

E. Data rates

64kbps to 1.024Mbps per data port (BONDing)
64kbps 'clear'

F. Inter-operability

BONDing compatible devices, including inverse multiplexers

G. ISDN switch compatibility

National 1 (USA), 5ESS, DMS100, Euro-ISDN
Patapsco have been shipping ISDN products across the world for over 17 years and have experienced most "issues". DataBand GUI has many options to cater for different country's implementations and is extremely flexible.

H. Management

- RJ12 serial port
 - RJ45 Ethernet port 10/100/1GE
 - Optional SFP port for fibre access
- Optional Security pack encrypts Management traffic using AES 256byte

I. Configuration

Held in NV Memory

J. Firmware

Held in dual FLASH banks

K. Power

Support for one or two PSUs in any combination complying to ATCA. One supply will power a fully populated CSI.
Dual hot-swappable supplies for load-sharing and resilience

- **AC**
 - Internal switch mode supply
 - Standard IEC connector
 - 96-240VAC auto-sensing
 - Max current consumption 0.2A RMS @230VAC
- **DC**
 - Internal supply
 - Standard 4mm Terminal Block
 - -36 to -57 VDC
 - 1.2A max consumption

L. Cascade/Fibre Card

- Single or dual-port card with SFP cage
- Customer or optionally Patapsco supplied SFP modules
- Customer or optionally Patapsco supplied SFP fibre

M. Physical

- 225w x 320d (300 from mounting) x 88h
- Metal chassis, front & rear panels
- 10.5Kg max

N. Environment

- Operating -20° to 55°C radiated cooling
- Natural convection cooling
- Optional fans are available for higher temp environments
- Humidity 10-90% non-condensing

O. Maintenance

There are no serviceable parts or maintenance required.
The battery used for the real-time clock and some NV RAM elements have a 10 year (typical) life-time.

P. Approvals

- **Safety**
 - CE marked
 - IEC60950-1:2nd Edition
 - ACS/NZS60950:1:2003
- **Emissions**
 - FCC Part 15 Class A
 - EN55022:1998
 - EN55024:1998-A12001
 - EN61000-3-2/3:1995
 - AS/NZS CISPR22:2000
- **Telecoms**
 - TBR12/TBR13
 - TIA/E1A-IS/968
 - TNA117
 - AS-ACIF-S006/S016
 - CS-03 Canada
 - TIA-968-A USA
- **RoHS**
 - Compliant

All details subject to change without notification E&OE

© Patapsco Designs Ltd 2011 and Databand ® is a registered Trademark of Patapsco Designs Ltd. Patapsco reserve the right to change any specification without notice. V1.4



Patapsco Communications,

Passfield Oak, Passfield, Near Liphook, Hampshire, GU30 7RL England

Tel: +44 (0) 1428 752900 Fax: +44 (0) 1 428 752901

info@patapsco.co.uk www.patapsco.co.uk