Liberator Models 2P8B, 2P8B/U and 2P16B

1. OVERVIEW

The Liberator models detailed within this document support up to 2 E1/PRI interfaces and either 8 BRI, 8 BRI remotely upgradeable to 16, or 16 BRIs.

The unit will connect any port to any port. Through the intuitive GUI, different options can be set to tailor the use, connectivity, least cost routing and other features.

The platform supports many applications, some of which are covered in Application Notes 6(a) through to 6(j) available on the web site www.isdnconnect.com or directly from Patapsco.

If your requirement is not specifically identified here, or in the Application Notes, please contact Technical Support or Sales at Patapsco as the flexibility and modularity of the system may mean it can meet the requirement.

Model Illustrated is the 2P/16B

2. OPERATION

• 2.1 ISDN Services

Signalling is carried/converted between ports and ISDN types.

Supplementary services are passed transparently.

Sub-addressing is supported.

Bearer capability (data or voice).

• 2.2 Configuration/Management

Liberator is configured and managed by Patapsco's DbManager Version 8.0 or above. See separate Tech Sheets.

DbManager is an intuitive GUI which supports multiple real-time workstations and is the common platform for all Patapsco products.

Versions are available which can be configured for the smallest installation, or up to many thousands of devices.

Configuration/management sessions can be established remotely via an ISDN call or locally through one of the Control Ports (Asynchronous RJ, USB or Ethernet).

SNMP Traps & Alarms are supports as is a call analysis tool.

• 2.3 Ports, Channels, Groups and Calls

A Port is defined as a BRI, PRI or E1 interface. A Port may, or may not, have access to the ISDN network.

A Channel is an individual timeslot or "B" channel within a Port.

A Group is one or more Channels or Ports. A Group consisting of multiple Channels can be in more than one Port.

Contents:

Channels or Ports within a Group are treated identically so this simplifies configuration and allows shared access to ISDN and for local hunt-groups or rotaries to be established.

Individual Ports and Channels can belong to more than one group and the use of Groups can be prioritised.

Up to 255 Groups per unit can be configured.

An "in-coming call" is generated by any external device connected to any Port, be it local BRI/PRI units or a call from an ISDN exchange. This Port is referred to as a "Source Port".

An "out-going call" is the result of an in-coming call, and is generated by Liberator. It is directed to what is referred to as a "Destination Port".

There is the option to route calls to the first Port in a Group, and if busy to the second etc, or to any available Port.

• 2.4 Cross-Connection

Any Channel can be connected to any other Channel, Port or timeslot.

Any Channel can be barred from calling any other Channel, Port or number.

Any call can be routed to a Group of channels or "hunt-group". Multiple devices can be configured to accept calls dialling to a range of numbers.

Calls can be automatically re-routed to an alternate pre-programmed number, based on the original number dialled.

Calls can be routed to a particular port or channel depending upon the numbers dialled. Options exist to specify the ordering of calls to a group of ports (ie cyclical or always in a certain order).

• 2.5 Nailed Calls

Calls can be placed or received by devices which are unable to handle dialling protocols. This includes setting up timeslots for Fractional E1 (FE1) circuits.

These "Nailed" calls can be configured as temporary or permanent.

• 2.6 Channel Reservation and Scheduling

Time-of day
A Group can reserve a number of Channels (on specific Ports if required), based on the time-of-day.

The period that these Channels will be held, without use, is configurable.

Maximum & Minimum
A Group can be configured to have a number of destination Channels, permanently available or reserved for the Group's use.

A maximum capacity can also be set.

These Maximum and Minimum access rates available to any ISDN device (typically a PRI or Group) can be varied based on day and time and up to eight different profile schedules can be configured per Group.

If any schedules overlap, a warning is given.

• 2.7 Least-Cost-Routing

A number of options are available to assist with selecting the best route.

Calls beginning or ending with particular numbers can be routed to a specific Port. Additional Ports can be configured as secondary/tertiary destinations should the preferred Port(s) be busy or unavailable.

Calls beginning or ending with particular numbers can have the dialled number modified by the Liberator and routed to specific Ports.

• 2.8 Redirecting

In-coming calls for a Port or Channel can be re-routed to any other Port or Channel if the primary is busy, unavailable or not answering.
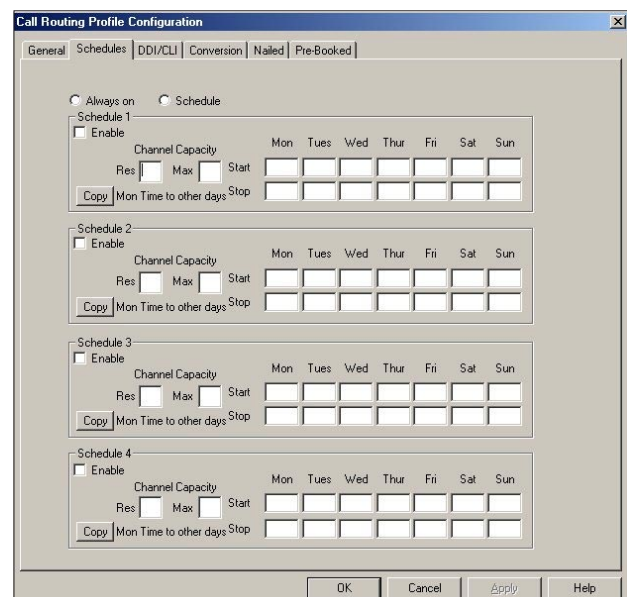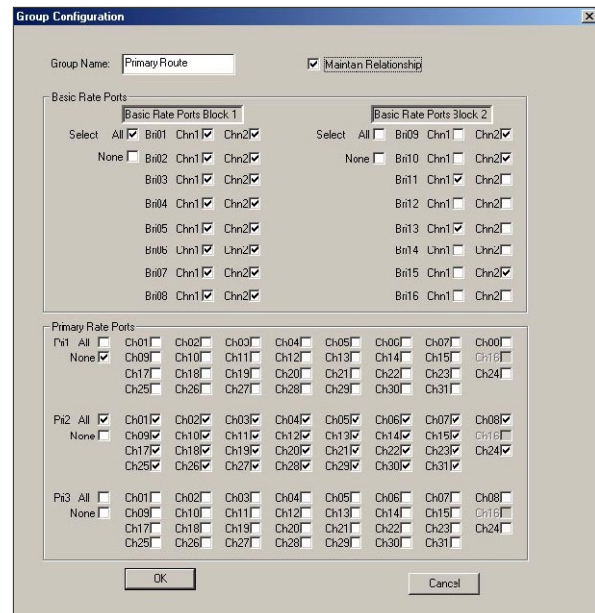
In-coming calls can be re-directed, and translated to another number, if the primary destination is busy or unavailable. For example, an in-coming call from the exchange can be forwarded by Liberator to a separate location via ISDN. The original caller believes they are connected to the dialled destination whereas they may be connected to a different site.

3. General

• 3.1 Clocking

Software-selectable clock source using any E1/PRI/BRI interface or Internal Clock

Auto-switchover to secondary/tertiary clocks on clock loss

Up to 19 different hierarchical clock sources can be configured

Internal clock accurate to +/- 50ppm

• 3.2 Real-Time Clock

Internal real-time clock for Event Log

• 3.3 Events

Up to 5000 Events are held within the Liberator in NV RAM on a FIFO basis
Events include all call information.

Events are reported automatically to the DbManager or other tools via an ISDN call or through the local Console ports. This can be on a timed schedule or when the Event Log reaches 90%.

Once Events are successfully reported the log is cleared.

• 3.4 Configuration

Held in NV RAM and downloadable

Held in the DbManager system

• 3.5 Software

New versions of software can be remotely uploaded to Liberator via the DbManager. This is loaded to an off-line sector of FLASH and a confirmation check-sum given. The operator can switch software banks at any time and revert to the original software at any time. If the Liberator is unable to run from the new software, it will revert to the original.
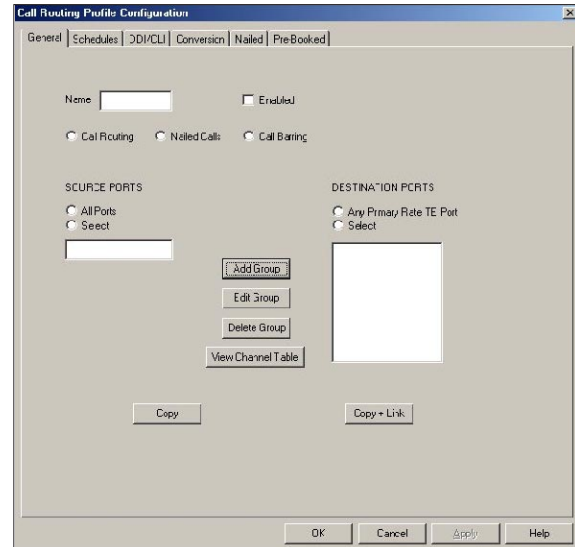
4. SPECIFICATION

### • 4.1 Interfaces

4.1.1 PRI/E1 - 2 X G.704 HDB3 encoded

• Marked as "PRI1" "PRI2" and "PRI3".

• Depending upon the protocol stacks required, two of the PRI ports will be populated/enabled.

• PRI1 supports TE ISDN stack (user-side); PRI2 NT (network-side) and PRI3 is software switchable TE/NT.

• Interfaces PRI1 and PRI2 are protected against power failure.

• RJ45 120Ohm balanced.

• Software selectable CRC4 or non-CRC4 framing.

• Configurable with/without t/s16 signalling for PRI on a per port basis.

• Support of E1 and Fractional E1 services.

• ISDN PRI ETSI Q.931/921.

4.1.2 BRI 8 or 16 Ports (depending upon Model)

• Marked as "BRI1" through to "BRI16".

• RJ45.

• 4-wire S0 compatible NT (presents as a network).

• Point-to-Point or Multi-Point (MP available July '03).

• Terminal Power-Feed with optional 40VDC supply.

• Driving distance typically 100m on UTP CAT5.

4.1.3 Control Ports

• **RJ11.**
  Marked "Cmd".
  Asynchronous.
  8 data, 1 stop bit no parity.
  19.2kbps to 64kbps.
  Password protected.

• **Ethernet RJ45**
  Marked "LAN".
  10baseT or 100baseT.
  Password protected.

• **USB (Available July '03)**
  Marked "USB".
  Asynchronous.
  8 data, 1 stop bit no parity.
  USB Type 1.
  Password protected.
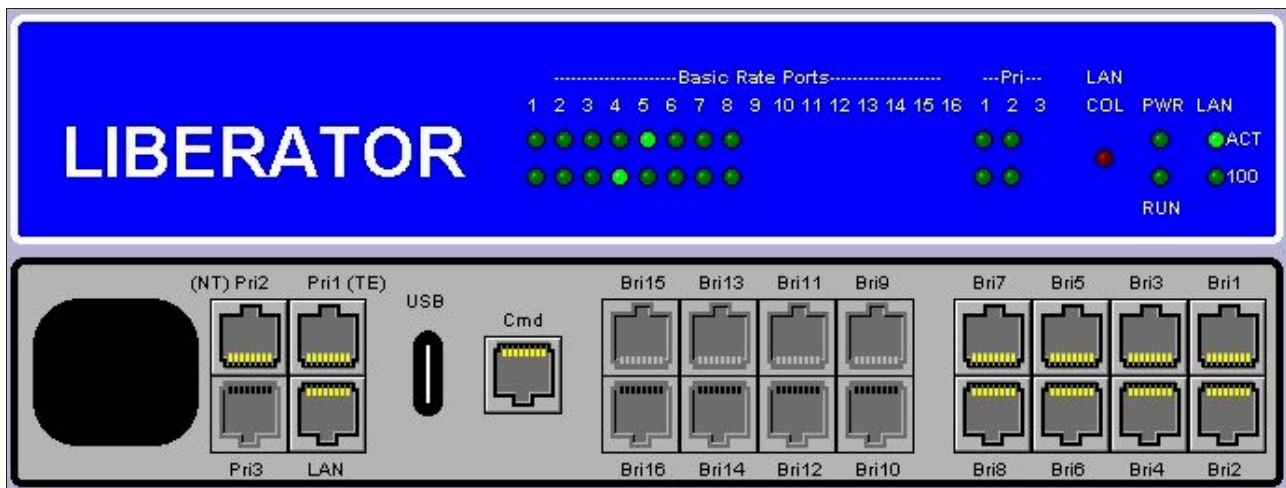
Model Illustrated is either the 2P/8B or 2P/8B/U

• 4.2 LEDs

PRI x 2

Each PRI has 2 associated LEDs.
Upper LED – fl=synchronising to Layer 1; solid=Layer 2 established.
Lower LED – fl=call establishing; solid=at least 1 call in place.

BRI x 8 or 16

Each BRI has 2 associated LEDs, 1 for each "B" channel.
Fl=call establishing/dialling; solid=call in place.

LAN COL x 1

Red=data collision on LAN.

PWR x 1

Unlit=no power.
Green=power on unit.

Run x 1

Slow flash=microprocessor OK and configured; fast flash=internal error or lost base configuration.

LAN ACT x 1

Activity on the LAN.

LAN 100 x 1

Off=LAN running at 10baseT; on= LAN running at 100baseT.

- ### 4.3 Relays

Interfaces PRI1 and PRI2 (if used – see 4.1.1 above) are Power-Failure Relay protected. On power-loss, a critical failure or under operator control, the relays close forming a metallic path between the two interfaces.

- ### 4.4 Power

Power (mains)

Internal

IEC connector

Voltage range 85-264VAC

Input frequency 47-63Hz

Max current consumption 200mA @ 230VAC

Power (optional for Power Feed)

External in-line supply

Input

    IEC connector

    Voltage range 90-264VAC

    Input frequency 47-63Hz
    Current consumption 700mA @230VAC
Output
    2.1mm jack
    40VDC
    0.6A 24W maximum

Max DTE draw 1W @ 40VDC

- ### 4.5 Environment

Operating 0 – 45 °C

Humidity 10-90% non-condensing

EMC/EMI EN55022 EN50082

Safety EN60950

CE Marked

Natural convection cooling

- ### 4.6 Physical

290mm wide x 199mm deep x 41mm high.

Weight 1.2kgs

- ### 4.7 Maintenance

There are no serviceable parts or maintenance required.

The battery used for the real-time clock and some NV RAM elements has a 10 year (typical) life-time.

5. Safety

- ### 5.1 Warnings

Safety requirements are not fulfilled unless this equipment is connected to a wall socket outlet with a protective earth (PE) contact.

The power cord used to connect this equipment must be HAR marked and fitted with an IEC320 connector and an ASTA approved moulded plug.

There are no user serviceable parts in this equipment. All servicing and repair tasks must be undertaken by qualified service personnel.

Isolation from mains power is achieved by the removal of the main power cord.

- ### 5.2 Telecommunications Safety

The safety status of ports in Liberator systems are according to EN60950.

Connections to these ports must be made such that the equipment continues to comply with the standard defined by EN60950 for SELV/TNV circuits after such connections have been made.

Any equipment which is connected to Databand systems should be separately approved for connection.

Ports	Safety Status
ISDN Network Ports	TNV
Control/Alarm Port	SELV
Ethernet Port	SELV

6. Part Numbers and Price

Model	Part Number	Price £ UKP	Price US$	Price Euro
2P8B	LIB/2P8B/1	2100	3360	2940
2P8B With Power Feed	LIB/2P8B/1PF	2250	3600	3270
2P16B	LIB/2P16B/1	3000	4800	4350
2P16B With Power Feed	LIB/2P16B/1PF	3200	5120	4640
8 BRI field-upgradeable to 16 BRI	Lib/2P8B/U	2600	4160	3770
2P8B/U With Power Feed	Lib/2P8B/UPF	2800	4480	4060
Manager	DBM/1/1/Lib	included	included	included
All units shipped with 2m PRI/BRI cables (see below for other lengths) but **no** power cord. Please add an RJ11, USB or Ethernet controller cable to your order.				
ISDN/Ethernet Cable 5m	ISDN/05	15	24	22
ISDN/Ethernet Cable 10m	ISDN/10	18	29	26
ISDN/Ethernet Cable 20m	ISDN/20	20	32	29
RJ11 Control Cable 2m	CONT/02	25	40	37
RJ11 Control Cable 5m	CONT/05	30	48	44
RJ11 Control Cable 10m	CONT/10	35	56	51
USB-USB Cable 5m	USB/05	15	24	22
USB-USB Cable 10m	USB/10	18	29	26

Prices subject to exchange rate changes without notification. Please check.

7. References

Application Notes 6(a) through to 6(j)

8. History

Release 1.1 March '03
Release 1.2 June '03 New Power Feed and upgrade part numbers and Euro pricing.