



# PatapSCO's LIBERATOR® 'C'

## Technical Specification

### E1 T1 Converter – ISDN

Convert between one or two pairs of T1 E1 ISDN interfaces



#### Features

- Supports 2 or 4 interfaces
- Each pair converts between E1 PRI ISDN and T1 PRI ISDN
- Available in NT-only and NT/TE variations
- A-Law to  $\mu$ -Law voice conversion
- Support for Fractional PRIs
- Any timeslot to any timeslot cross-connectivity
- Controllable via Ethernet port or serial port
- AC or DC PSU options
- Clocking hierarchy
- Local Call Progress Tone generation
- Overlap and en-block dialling supported.
- Optional sophisticated number manipulation/conversion/LCR
- ISDN Layer 2 and Layer 3 message capture and log for analysis
- Easy and intuitive to configure via
- GUI management package and optionally centralised control of many Liberators
- Very attractive pricing
- Approved (Telecoms, Emissions, Safety)
- RoHS compliant for Europe

#### Overview

Liberator "C" is a T1 to E1 PRI (Primary Rate) ISDN converter with advanced routing and conversion options.

Using flexible Routing Profiles, individual "B" channels or timeslots can be switched to any PRI within the unit or simply passed between the E1 and T1 on corresponding timeslots.

Calls can be accepted/rejected and routed based on DDI/DID (dialled number), CLI, sub-address, call type (voice, data etc), originating port – or any combination.

Liberator "C" optionally provides a great deal of flexibility for number manipulation.

The product is available in 4 basic configurations:

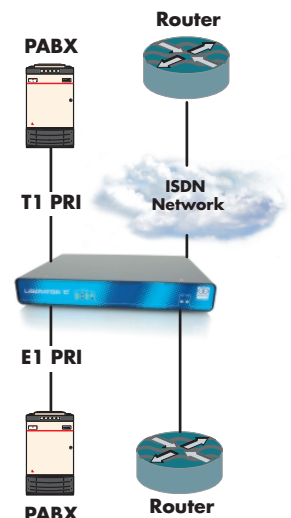
With a single pair of 1/T1 ports

With two pairs of ports

Each of the above with NT only presentations where the Liberator connects to two pieces of customer equipment and their TE ports



Or with user-switchable NT/TE ports where the Liberator can also connect TE interfaces directly to a network (Telecoms Approvals are required)



DbManager is a high-quality intuitive GUI that connects to and manages/monitors Liberator "C". Several versions are available in addition to the free DbLite supplied.

All PatapSCO products are designed and manufactured to the highest standards and all have the necessary Safety, Emissions and Telecoms approvals.

### Operation

#### ISDN Services

Signalling is carried/converted between ports.

Supplementary Services from the network are passed.

Sub-addressing handling and routing is supported, as is the ability to route on Bearer Capability (call type).

CLIs can be locally generated.

Data is passed transparently.

#### Configuration/Management

Liberator "C" is configured and managed by PatapSCO's DbManager. See separate Tech Sheets and movie.

DbManager is a real-time GUI which can optionally support and provide centralised control, Alarm/Event gathering and diagnostics for many Liberators. Versions with multiple management stations is also available.

Configuration/management sessions can be established remotely via an ISDN call, through its local Ethernet/LAN ports or through its serial RJ12 port. SNMP Traps & Alarms are optionally supported and a call analysis tool is available.

DbLite is supplied FoC with each unit. See DB Manager Comparison Chart

#### Number Manipulation

Liberator "C" has a very flexible option to convert and manipulate many numbers and in many fields. It can add/delete/convert digits at the start, middle or end of numbers; it can generate and manipulate CLIs; it can change the numbers if it has to route to Secondary or Tertiary destinations or channels. If your application needs or can benefit from any form of number management, Liberator "C" can probably achieve your required result.

#### A-Law and $\mu$ -Law Voice Encoding

The voice channels are encoded differently on T1 and E1 interfaces. Liberator "C" performs the necessary conversion.

#### Tone Generation

Liberator normally passes the tones transparently between ISDN points but this is not always possible in all instances. Where tones are not available Liberator can be configured to generate dial, ring, busy, N/U.

#### Clocking

Software-selectable clock source using any interface or Internal Clock.

Auto-switchover to secondary/tertiary clocks on clock loss.

Internal clock accurate to +/- 10ppm.

#### Real-Time Clock

Internal battery-backed realtime clock for Event Log time-stamps and debugging purposes.

#### Events

Up to 5000 Events are held within the Liberator in NV RAM on a FIFO basis Events include all call information such as port dialling, number dialled, subaddress, time of call and time of call clear-down, time of incoming call and to which port and if there is a CLI attached, time of clear-down and which 'end' cleared.

Events can be reported automatically to the DbManager or other tools via an ISDN call, the local Console port or across the LAN.

This can be on a timed schedule or when the Event Log reaches 90%.

Once Events are successfully reported to the DbManager the log is cleared. DbManager can also access the logs and download them when required. DbManager writes all Events and Alarms to a flat .csv file in real-time and this file can be manipulated by external tools to format and extract information,, for example for billing.

#### Diagnostics

Liberator provides excellent diagnostic and debug tools with visibility of all routing decisions taken across the unit and all messages from attached devices.

PatapSCO have available a conversion program that can convert raw ISDN Layer 2 and 3 messages into more comprehensible English.

#### Approvals

The Liberator "C" benefits from a wide range of approvals for connection to ISDN services. See specifications below. All PatapSCO equipment is RoHS compliant.

#### Configuration

Held in non-volatile RAM (retained during power-off ) and downloadable to/from the DbManager. Configuration files can be saved to a file on a PC.

#### 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.





### Specification

#### E1

RJ45 1200hm balanced (E1)  
G.704 HDB3 encoded  
Auto-detect CRC4 or non- CRC4 framing (Multiframe or Doubleframe)  
Support of non-switched E1 and Fractional E1 services  
ISDN PRI ETSI Q.931/921, ETSI-DSS1, ETSI 300-011, ETSI300-125, ETSI 300-102, approved to TBR4  
A-Law and  $\mu$ -Law tones

#### T1

RJ45 1000hm balanced T1  
ESF or D4 Framing selectable  
B8ZS or AMI Line code selectable  
NI-2, DMS-100, AT&T 5ESS Switch selectable  
AT&T TR-62411 and ANSI T1.403 Compliant  
Hong Kong variant available  
A-Law and  $\mu$ -Law tones

#### Control Ports

RJ11 Marked 'Cmd'  
Asynchronous 8 data, 1 stop bit no parity 19.2kbps to 115kbps  
Password protected  
Dry contact alarm relay  
Ethernet RJ45 Marked 'LAN' 10baseT or 100baseT  
Password protected

#### LEDs

PRI x 4  
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  
LAN ACT x 1  
Activity on the LAN  
LAN 100 x 1  
Off=LAN running at 10baseT; on=LAN running at 100baseT

#### Power

##### 1. Mains AC

Internal switch-mode supply IEC connector  
Voltage range 95-240VAC autosensing  
Input frequency 47-63Hz  
Max current consumption 200mA @ 230VAC

##### 2. Power – DC

-48VDC nominal

-33VDC to -75VDC

0.35A max

4mm Terminal Block

MTBF – 1,790,000 hrs

##### 3. Power - DC

-24VDC nominal

-18VDC to -75VDC

0.55A max

4mm Terminal Block

MTBF – 800,000 hrs

#### Environment

Operating 0 – 55 °C

Humidity 10-90% non-condensing

Natural convection cooling

#### Physical

292mm wide x 200mm deep x 44mm high

Metal chassis, front and rear panels

Weight is 1.1Kgs 2.4lb

Optional 19' rack-mounting kit

#### 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.

#### Approvals

All approvals completed in UK

Accredited laboratory - reports available

##### 1. Telecomms

TBR12/TBR13

TBR4:1995, 1997 Amendment

TIA/E1A-IS/968

TNA117

AS-ACIF-S006/S016

CS-03 Canada

TIA-968-A USA

##### 2. EMC

EN55022:1998

EN55024:1998

A12001

EN61000-3-2/3:1995

AS/NZS CISPR22:2000

##### 3. Safety

IEC60950-1:2007

ACS/NZS60950:2000

AS/NZS3260:1993

ACA TS001:1997

All details subject to change without notification E&OE

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