

Liberator S Quickstart Guide V3.2

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1. Introduction

This document is a basic guide for configuring a new Patapsco Liberator S. A full User Manual for configuring all settings on the unit is supplied on the DbManager Installation Disk. Patapsco offers an optional Pre-Configuration Service and optional Telephone Support Agreements at minimal cost. Information on these options can be found in the Support document on the DbManager installation disk.

1.1. Transition Networks - Patapsco

Patapsco Liberator and Simulator products offer a wide range of functions for switching, cross connecting and converting ISDN calls and elements. More than just a PRI/BRI converter; Liberator allows services using different protocols, such as E1 and T1 to be interfaced together and managed using a large suite of call routing and manipulation options. Simulator offers much the same functionality as the Liberator products, but all of its ports are configured as NT (network Termination) for use with end user equipment, offering a completely configurable network simulation environment.

1.2. Safety warnings



Caution: Danger of electric shock. The device may be connected to mains voltages. Switch to power-off state before working on the device.



Caution: Danger of electrostatic discharge. Electronic components are sensitive to electrostatic discharges that might damage the device. Protect the device from electrostatic discharges by wearing an electrostatic wristband.



Caution: Interruption of data transmission. Data transmission will be interrupted during any work on the transmission line and/or deactivation of the power supply. Make sure that that any work will only be carried out on inactive lines (without data transmission) or during quiet times to reduce interference to live systems.



Caution: Danger of damage to devices or service interruption. Access by unauthorized third persons may cause damage to devices and/or interrupt services. Make sure that subracks are only installed in lockable locations.



Caution: Danger of overvoltage. During faults, dangerous unprotected voltages may be present. Ensure sufficient grounding of the housings, i.e. by connecting the grounding contact.

- 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.

2. Getting Started

This section will describe how to make the physical connections between Liberator S and the other system devices, and install the Patapsco management application, DbManager.

2.1. Rack Mounting Instructions

The Rack Mounting Kit is comprised of the following:

Photo	Description	Quantity
	L-Bracket	2
	Long Patapsco case screw	4
	Cage Nut	4
	washer	4
	Rack Mount Screw	4

All Patapsco units can be mounted in a standard 19" rack housing. To allow units to fit into a 19" rack, a Rack Mounting Kit must be purchased for the unit (s). There are various rack mounting options depending on the size of the unit ordered. The following guide will explain how to use the Rack Mounting Kit with Patapsco units.

1. Remove the four short screws near the front or rear panel on the left and right hand sides of the Patapsco unit. The unit can be mounted with the front panel facing forward or with the ports facing forward as required.
2. Fit one of the **L-Brackets** to the side of the unit. The four small fixing holes allow the unit to protrude forward or sit further back depending on the desired position of the unit. The bracket may also face forwards or backwards depending on the desired position of the unit.
3. Fix the **L-Bracket** in place using the **Long Patapsco case screws**.
4. Fix the second **L-Bracket** to the other side of the case in the same way.
5. Put the **Rack Mount screws** through the **Rack Mount washers**.
6. Offer the unit up to the rack and fix it in place using the **Rack Mount Screws** and **Rack Mount cage nuts**.

2.2. Accessories

The following accessories are supplied with all Patapsco units:

Item	Description			
DbManager CD	Installable DbManager application, technical documents and manuals			
Controller Cable	Management cable. Connects to Liberator S's Terminal port	Cable Spec		
		RJ12		DB9S
		Pin	Function	Pin
		1	Rx	3
		2	Tx	2
		3	Gnd	5
IEC Mains Cable	Connects Liberator S to the mains supply			

2.3. Optional Accessories

The following items can be ordered from Patapsco, or will be supplied with some units depending on the nature of the device.

- ISDN Cables -** Cables to connect the Patapsco device to a CPE or network. Please see the full manual for cable specs on all Patapsco cables
- Rack Mounting Kit -** All Patapsco units can be mounted in a 19" rack using this kit

2.4. Making Connections

First, connect the ISDN cables to Liberator S followed by the Terminal Port management cable (if required), LAN Port cable and lastly the Mains cable. If the unit has a DC power supply connection, use the screw terminals to connect the DC power source.



Warning: The -48VDC power terminals are marked **0V**, **-48V**, and **GND**. Patapsco -48VDC products are designed for use with negative voltage DC supplies, and therefore expect the positive voltage to be connected to the **0V** terminal, and the negative connected to **-48V**. Please be sure about the polarity of this connection before connecting power to the terminals. Units which have a positive +24VDC power source will be marked **+24VDC**, **0V** and **GND** respectively. Please ensure that the positive connection is made on the **+24VDC** terminal.

2.5. Installing DbManager

DbManager is required in order to monitor and manage Patapsco devices. Management can be made using the Terminal (serial) port, or using TCP/IP over a LAN or WAN. DbManager is installed using the CD provided with Patapsco equipment.

1. Insert the DbManager Installation Disk into the drive of the PC which will be used for management of Liberator S.
2. InstallShield Wizard will start up. Follow the steps to install DbManager.
3. Serial Number – Enter the Serial Number on the case of the DbMgr Disk.



Info: DbManager is supplied as a 'Lite' version by default. This allows configuration and monitoring of devices, but only allows configuration of a single device node and a single user account. To use DbManager in 'Lite' mode, do not enter a serial number during installation. Please see the full DbManager User Manual for more information on configuring and using DbManager.



Warning: If an older version of DbManager is already installed on the management PC, it is necessary to update to the version supplied on the new DbManager CD. This can be done by consulting the 'Upgrade' folder on the DbManager CD. The 'readme.txt' file explains how to upgrade to the new DbManager without reinstalling the program.

3. Configuring Liberator S

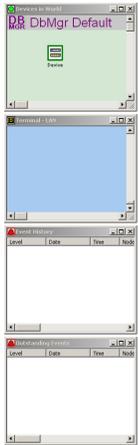
Follow these steps to connect to Liberator S with DbManager and configure the unit for use.

Configuration of Liberator S is carried out by setting up DbManager to make a management connection, and then setting up the elements of Liberator S in this order:

Device Settings -	The unit-specific settings of the Liberator S such as the IP Address and Identifier
Clock Sources -	configure which interface Liberator S is to take synchronisation clock from, typically a PSTN network connection or network
ISDN Ports -	Each ISDN port can be individually configured with the correct settings to interface with another device or network
Link Configuration -	Configure settings to carry ISDN channels across a PSN between Liberator S units
Call Routing -	Configure routes for the traffic Liberator S will pass between connected devices and networks

3.1. Connecting to Liberator S

1. Start up the DbManager Application
2. Login as **Super User** (no password required)
3. Four windows will be displayed:



Map

A network map showing Nodes and Links between Patapsco devices

Terminal

A view of the communications between DbMgr and Liberator S

Event History

All events which occur while connected to Liberator S

Outstanding Events

Current events

4. Select **View** → **Properties** → **Terminal** from the DbMgr toolbar.
5. Choose the COM port which is in use. Leave the **Serial Port Rate** at the default setting of 19200bps. Click **OK**.
6. Select the **Devices in World** window and double click the **Device** node
7. The **Connected to Device** window should appear, showing the front and rear panels of Liberator S. If it does not, check the COM port settings and re-try



Warning: If management via the Terminal port is not possible, it could be that the management PC has another application running which uses the COM ports of the PC. Even when some programs which use the COM ports are closed down, other programs cannot access the COM ports. Rebooting the PC is required in order to release the COM ports so that DbManager can use them.

If the PC and Liberator S are connected to the same LAN, management is possible using TCP/IP. All Patapsco products use the default IP settings:

IP Address	192.168.0.1
Subnet Mask	255.255.0.0
Gateway	0.0.0.0

To configure DbManager to access Liberator S using TCP/IP, please follow these steps:

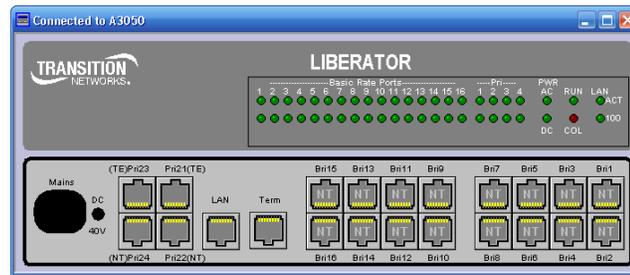
1. Select **View** → **Properties** → **Terminal** → **Device IP Addresses** from the DbMgr toolbar
2. 192.168.0.1 should already be configured. If using another IP address, add it to the list using the **Add** button
3. Click **OK** → **OK**
4. Select the **Devices in World** window and double click the Device node
5. The Connected to Device window should appear, showing the front and rear panels of Liberator S

The Device node can be made to connect to other IP addresses configured in the **Device IP Addresses** list by right-clicking the node, selecting **Properties** and choosing an IP address from the **IP List**.



Info: TCP/IP management requires TCP port 3001 (dec) to be open between the management PC and Liberator S. Any switches, hubs or routers must be configured to allow communication on this port in order to manage Liberator S via TCP/IP.

A successful management connection will open up the **Connected to Device** window:



3.2. Notes on configuring Liberator S

Uploading

Changes to config can be made on each window and saved using the **OK** key when exiting each window. When happy with the configuration, it must be uploaded to Liberator S for the new settings to come into effect.

To upload, go to **File** → **Upload** and wait until the progress bar completes.

Saving Files

Configuration files can be saved in order to backup settings or copy settings across to another unit. Once configuration has been uploaded, go to **File** → **Save File** and choose a location to save the file to. The file extension of any saved config files is **.dbc**

Loading Files

Once connected to a unit, an existing configuration file can be loaded to the device. Go to **File** → **Open File** and navigate to the saved file. Click **Open**. Now the file must be uploaded to Liberator S. Go to **File** → **Upload** and wait until the progress bar completes.



Warning: When loading existing configuration files to a unit, please ensure that the correct configuration files are used for the unit type in use. Liberator S configuration files are not compatible with other Patapsco platforms.

3.3. Device Settings

This menu controls unit-specific features of the Liberator S such as the IP Address, Identifier, Serial Number, Configuration Number, Time & Date and Event Reporting. These features are all fully explained in the Liberator S User Manual on the DbManager Installation Disk.

3.4. Clock Sources

Liberator S must be configured to either receive clock from an ISDN interface (typically a port connected to the PSTN) or generate clock internally. Different priorities can be set for each port, so if one port is unavailable, Liberator S will clock from the next available port in the Clock Source hierarchy.

1. Select **Clock Sources** from the **Terminal** port menu.
2. Enter a digit to mark the priority of each ISDN port and the internal clock. **0** will denote the highest priority Clock Source and **19** will denote the lowest. Ports which are not to be used for clocking can have their values left at **19**.
3. Click **OK** to save the setting.



Warning: Clock Sources must be configured correctly to ensure error-free operation when Liberator S is connected to any other clock-locked system or network. Please consult the full Liberator S manual if unsure how to configure Clock Sources.

3.5. PRI Ports

Liberator S units are switchable between NT and TE operation modes. All PRI ports are switchable between NT and TE modes. Using a port in a mode other than its hardware set port layout will require a crossover cable. Crossover cables will be supplied with units as necessary.

Ports 21 and 22 are TE and NT respectively so that in the event of a power failure they can be connected together by internal relays (Relay Protection). The same is true of ports 23 and 24. If a port is set to run in a mode other than its hardware layout (see above) a Crossover cable must be used. This table shows which cable is required for each operating mode and the colour of any cables ordered with the unit which should be used:

Port	Polarity	Cable Required	Cable Colour
21	TE	Straight	Green
21	NT	Crossover	Yellow
22	TE	Crossover	Yellow
22	NT	Straight	Green
23	TE	Straight	Green
23	NT	Crossover	Yellow
24	TE	Crossover	Yellow
24	NT	Straight	Green

There are two LEDs for each PRI port, and the LED states are as follows:

Top LED on -	Layer 1 and 2 established
Top LED flashing -	Layer 1 established, trying to synchronize with Layer 2
Bottom LED on -	Calls active on interface

1. Click on an enabled PRI port.
2. The configuration settings for the port are displayed.
3. Configure the settings as required for the port.
4. Click **OK** to save the settings.

3.6. BRI Ports

Liberator S units are switchable between NT and TE operation modes. BRI ports are optionally switchable between NT/TE in blocks of 4. If the switchable BRI port option is not taken, all BRI ports will be NT. Using a port in a mode other than its hardware set port layout will require a crossover cable. Crossover cables will be supplied with units as necessary.

BRI ports can have optional Relay Protection in blocks of 4, so BRI 1-4 (NT) can be Relay Protected to BRI 5-8 (TE) for example. If a port is set to run in a mode other than its hardware layout (see above) a Crossover cable must be used. This table shows which cable is required for each operating mode and the colour of any cables ordered with the unit which should be used:

Port	Polarity	Cable Required	Cable Colour
BRI 1-16	TE	Crossover	Red
BRI 1-16	NT	Straight	Green

There are two LEDs for each BRI port, and the LED states are as follows:

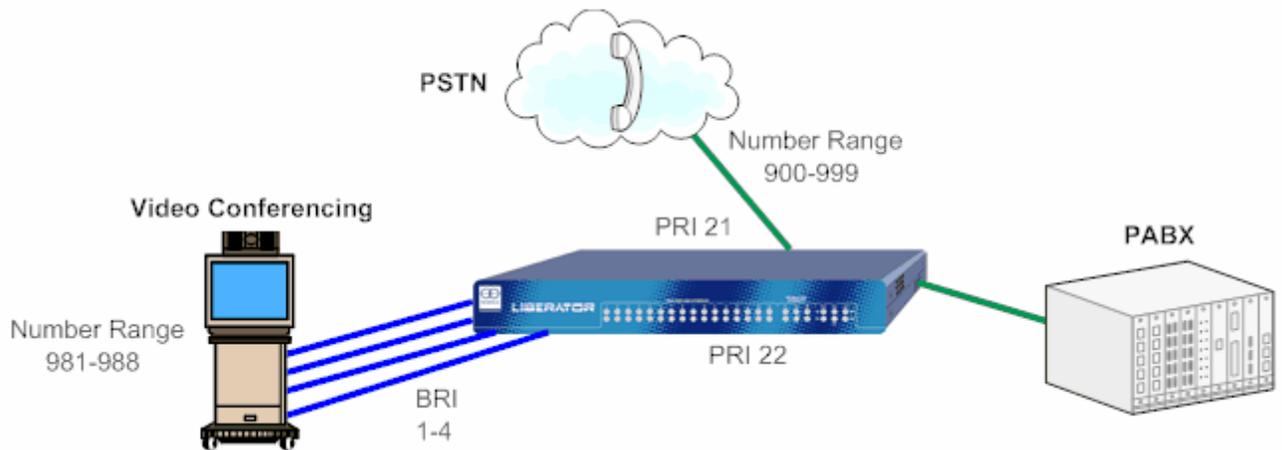
Top LED on -	Calls active on B channel number 1
Bottom LED on -	Calls active on B channel number 2
LEDs off -	No calls active on interface

1. Click on an enabled BRI port.
2. The configuration settings for the port are displayed.
3. Configure the settings as required for the port
4. Click **OK** to save the settings.

Note: Each block of 4 BRI ports can be switched to TE mode (if the switchable BRI option is taken). Switching a single port to TE mode will change the whole block to TE. The setting must then be uploaded, Liberator S must be rebooted and a crossover cable must be used in order to use the port in TE mode.

3.7. Configuring Routing Profiles

It is strongly recommended that you draw a simple diagram showing the Liberator S, its ISDN ports in use, the DDI numbers, and any local devices and the number ranges used to access them. An example is shown below.



This example requires that Liberator S routes calls as follows:

1. Route calls from **PSTN** ending 981-988 to the **VC** (user will dial call ending 981)
2. Route calls from **PSTN** *not* ending 981-988 to the **PABX**
3. Route all calls from the **PABX** to the **PSTN**
4. Route all calls from the **VC** to the **PSTN**

All of these actions can be catered for using three Call Routing Profiles. A Call Routing Profile is used to direct traffic from one port or group of ports to another. A Routing Profile has many options to control how calls are routed, but in this case and in most applications the Routing Profile will consist of the following elements:

Name, Source, Destination(s), DDIs

Click on the **Terminal** port and select **Call Routing** from the Drop-Down menu to configure routing profiles for Liberator S.

1. The Call Routing Profiles List is displayed. This will show all Routing Profile details when they are configured.
2. Select **Add Profile** and choose **Add Routing Profile**.
3. Name the profile and tick the **Enable** check-box.
4. Move the **SOURCE PORTS** radio button to **Select** and enter a source for incoming calls. A source can be designated by entering a port number, port and channel number or by using a **Group** of ports and/or channels:

- To use a port:** Enter the port number (e.g. **21** for PRI 21, **1** for BRI 1)
- To use a port and channel:** Enter the port number followed by a full stop and then the channel number (e.g. **21.1** for PRI 21 channel 1, **1.1** for BRI 1 channel 1)
- To use a Group:** Configure a group and select it from the Drop-Down menu (see 5.2 for instructions on configuring a group)

5. Move the **DESTINATION PORTS** radio button to **Select**, and enter a destination for calls in the same way as the **SOURCE PORTS**
6. Select the **Incoming Numbers** tab to choose numbers which Liberator S will use to route the calls.



Note: If no Incoming Numbers are configured (*/*), Liberator S will route all calls received on the Source ports to the Destination ports, regardless of the DDI, CLI or SubAddress numbers of the call.

7. The DDI Listing defaults to */* which represents any number and any SubAddress (Number/SubAddress).
8. Double click the */* to edit the number values. An entry of ***1234/*** would route any call with a DDI ending in 1234 with any SubAddress. Right-clicking an existing entry will present more options.
9. Enter a CLI value if required. This is entered in the same way as the DDI. The default value; * will route calls with any CLI.



Note: More routing options may be used to configure complex routing profiles. These are all explained in the Liberator S manual on the DbManager installation disk.

10. Click OK on the two active windows and the new routing profile will appear in the Call Routing Profiles List.
11. Click **Exit** to return to the Connected to Device window.

Prioritizing Routing Profiles

The **Call Routing Profiles List** shows all configured Call Routing Profiles in order of priority. These priorities can be rearranged to allow diverse routing possibilities. When Liberator S receives a call, it will check each profile in order from the top of the list for any routing parameters matching those of the call. It will route the call based on the first matching profile.

1. Select **Call Routing** from the **Terminal** port Drop-Down menu.
2. All configured routing profiles are displayed.
3. Right click on a profile in the Type column to display options. The profile can be promoted or demoted in the priority list. There are also options to edit and delete the profile.

This table shows the profiles which would be required to carry out the call routing shown in the diagram above:

Profile Number	Profile Name	Source	Primary Destination	Secondary Destination	DDIs
0	ISDN to VC	21	1	Group: BRI 1-4	*981/* - *988/*
1	ISDN to PABX	21	22		*/*
2	Outgoing	All Ports	21		*/*

Provided profile 0 is at the top of the priority list (see **Prioritizing Routing Profiles**, above), Liberator S will route calls with DDI ending in 981-999 to the VC and all other calls to the PABX. The first profile uses both a Primary and Secondary destination because VC equipment requires the first call from the ISDN to arrive on BRI 1. This VC feature (Channel Bonding) is explained further in the Liberator S manual. Note that in this case, all the DDI numbers from *980/* to *999/* are configured in the DDI list of profile 0. All calls going out to the PSTN from both the VC and PABX will be routed out using profile 2.

With all of these profiles configured, the Call Routing Profile List screen should look like this:

Type	Index	Identifier	Enabled	Source	1st Destination	2nd Destination	DDI Number
ROUTING	0	ISDN to VC	YES	21	1	BRI 1-4	*981/*
ROUTING	1	ISDN to PABX	YES	21	22		Any
ROUTING	2	Outgoing	YES	All Ports	21		Any

Clicking on **Sort on DDIs** shows all of the DDI numbers configured in the **Incoming Numbers** listing:

DDI Number	Index	Identifier	Type	Enabled	Source	1st Destination	2nd Destination
0: *981/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
1: *982/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
2: *983/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
3: *984/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
4: *985/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
5: *986/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
6: *987/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
7: *988/*	0	ISDN to VC	ROUTING	YES	21	1	BRI 1-4
0: */*	1	ISDN to PABX	ROUTING	YES	21	22	
0: */*	2	Outgoing	ROUTING	YES	All Ports	21	

3.8. Using Groups

When more than one port needs to be configured as a source or destination for calls, a Group of ports can be set.

1. Select **Add Group** from the **Add Routing Profile** screen.
2. The **Group Configuration** screen is displayed.
3. Name the Group you wish to configure.



Note: The names of any Routing Profiles, Groups and Identifiers must not contain the following characters: < > ~

4. Use the **All** and **None** buttons to add blocks of PRI and BRI ports to the Group, or select individual channels from each port by using the tick-boxes.
5. Click **OK** to save the group.
6. The new Group will now appear in the **SOURCE** and **DESTINATION** drop-down menus. Select this Group from the drop-down to use it in a Call Routing Profile.

3.9. Finishing Configuration



Note: Please remember to **Upload** when configuration of Liberator S is complete. To upload, go to **File → Upload** and wait until the progress bar completes.

3.10. More Resources

All Patapsco products and the DbManager application have their own User Manuals which can be found in the 'Documents & Manuals' folder on the DbManager installation disk. Please consult these manuals for more detailed information on any aspect of using Patapsco products. All documentation can also be obtained by registering at the Patapsco website:

http://www.patapsco.co.uk/Top_Level/Login_Register.asp

For help with a specific problem, please click on the **On-Line Help** icon on the website, or email a request to support@patapsco.co.uk