

MultiCom LAN Access Center



User's Manual

PACKING LIST

- 1 **MultiCom LAN Access Center**
- ... LACxPRI with one shielded ISDN cable (option)
- ... LACx4BRI with four ISDN cables (option)
- 1 Power cable
- 1 Straight Ethernet cable
- 1 DB9 console cable
- 2 Rack mount metal pieces with 8 screws
- 4 Plastic legs
- 1 User's Manual with Warranty Registration Card for one free update
- 1 CD-ROM including the Reference Manual and configuration software
- ... CBL-530F-V35M (option)
- ... CBL-530F-X21M (option)

Warranty

Warranty



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In no event shall Lightning be liable for costs incurred by a user on its ISDN line. The **MultiCom LAN Access Center** is designed to open and close ISDN lines automatically, depending on traffic on the Ethernet and ISDN line and on parameters set in the configuration. Front-panel signals and specific commands may indicate the current state and activity of the ISDN line, and the user should keep an eye on those status indications to avoid excessive bills, due to misconfiguration, protocol errors, polling applications, potential software or firmware errors and so forth. **THE USER AND THE USER ONLY IS SOLELY RESPONSIBLE FOR ALL INCURRED ISDN COSTS.**

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LIGHTNING Instrumentation SA

Avenue des Boveresses 50

1010 Lausanne

SWITZERLAND

Phone: +41 21 654-2000

Fax: +41 21 654-2001

E-mail: info@lightning.ch

Web: www.lightning.ch



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Installation



*The **MultiCom LAN Access Center** is a device designed to connect remote Ethernet networks through Basic-Rate ISDN, Primary-Rate ISDN or synchronous serial leased lines. It is easy to install and works with standard TCP/IP and IPX/SPX software. To set up your **MultiCom LAN Access Center**, simply follow the steps described in the following chapter.*

CHECKING YOUR PACKAGE CONTENTS

1.1

Firstly, please check the packing list on the reverse side of the cover.

If something is missing or if the product is received damaged, forward an immediate request to the delivering carrier to perform an inspection and prepare a report. Save the container and packing material until contents are verified.

Report the nature and extent of the damage to Customer Support so that action can be initiated to repair or replace damaged or missing items, or instructions issued for returning items.

The responsibility of the manufacturer ends at the delivery to the first carrier. ALL CLAIMS for loss, damage, or nondelivery must be made against the delivering carrier WITHIN 8 DAYS OF RECEIPT of shipment.

TO RETURN THE PRODUCT

1.2

Please obtain instructions from Customer Support before returning any item(s). Report the fault or deficiency along with the model, type, and serial number of the item(s) to Customer Support. Upon receipt of this information, Customer Support will provide service instructions or shipping information.

CONNECTING THE CONSOLE

1.3

The console port is used to connect a terminal to your **MultiCom**. The standard DB-9 connector for this port is located on the rear panel, as shown in Figure 1. The pin-out for the console connector is shown in Figure 2. The fifth slot is reserved for future use and cannot accept standard expansion modules.

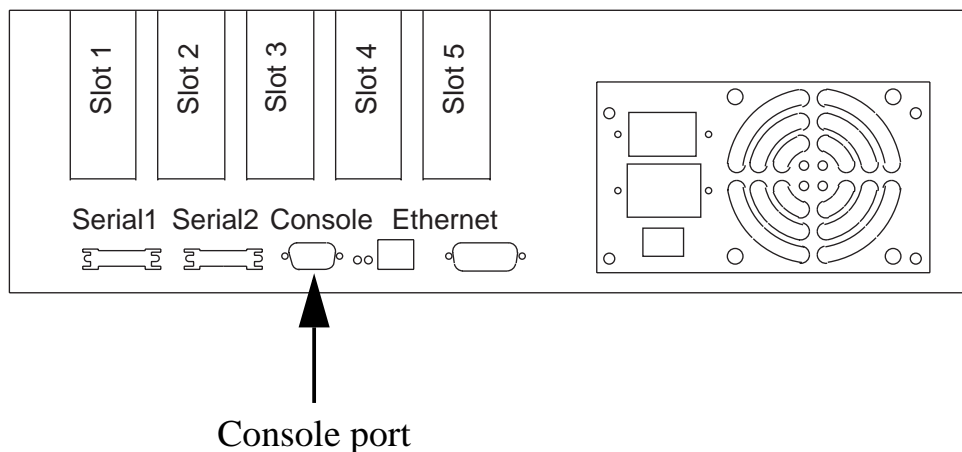


Figure 1 Location of the console connector

Pin #	Description
1	(not connected)
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	(not connected)
7	(reserved)
8	(reserved)
9	(not connected)

The diagram shows a DB-9 male connector with nine pins numbered 1 through 9. Pin 1 is at the top left, pin 2 is at the top, pin 3 is at the top right, pin 4 is at the right, pin 5 is at the bottom right, pin 6 is at the bottom, pin 7 is at the bottom left, pin 8 is at the left, and pin 9 is at the top left.

DB-9 male

Figure 2 Pin-out of the console connector.

The protocol used by this port is a standard asynchronous serial protocol with the following parameters :

Protocol	Asynchronous
Baud rate	9600 bps
Number of data bits	8
Parity	No parity
Number of stop bits	1
Handshake	None
Line drivers	RS-232, V.28

Figure 3 Serial configuration

CONNECTING THE ETHERNET NETWORK 1.4

ETHERNET PORTS 1.4.1

The connection to an Ethernet network may be done in two ways:

1. With the RJ-45 connector, to connect directly a Twisted-Pair (10-Base-T) Ethernet link.
2. With the Adapter Unit Interface (AUI) connector, to connect an adapter to a Thick (10-Base-5), a Thin (10-Base-2) or an Optical Fiber (10-Base-FL) Ethernet link.

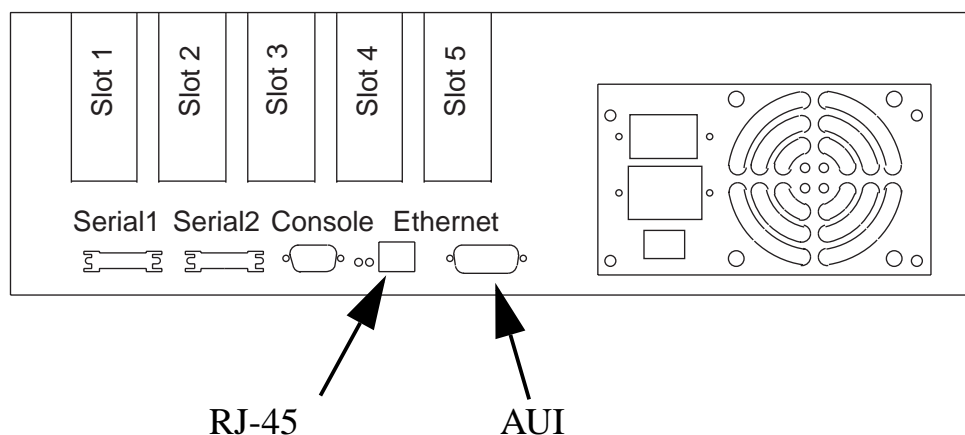


Figure 4 Ethernet connectors

NOTE - The **MultiCom LAN Access Center** automatically detects the type of Ethernet connection used. When both connectors are used, 10-Base-T takes precedence over AUI. If the 10-Base-T link goes down, the AUI connector will be used instead, providing backup functionality over AUI.

ETHERNET LEDS

1.4.2

- Front-panel Ethernet LED

This LED indicates all Ethernet traffic to and from the *MultiCom*.

- Rear-panel Link LED

This LED indicates that the Ethernet connection is properly wired. The Link detection is only possible on the 10-Base-T connector.

- Rear-panel Rx LED

This LED indicates all Ethernet traffic on the connected network.

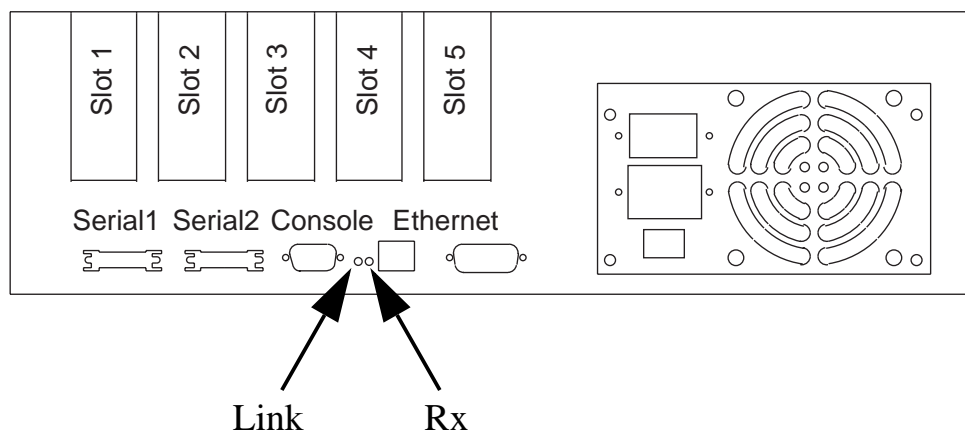


Figure 5 Rear-panel Ethernet LEDs



WARNING — Do not connect the *MultiCom* to an ISDN line with any cable other than the one delivered with the *MultiCom*. Twisted pair Ethernet (10-Base-T) cables use the same RJ-45 connectors as ISDN but they are **not** compatible. Using the wrong cable or connecting the ISDN port to an Ethernet Hub may damage the *MultiCom*.

INSTALLATION FOR THIN ETHERNET

1.4.3

1. Make sure that your network is functioning without your **MultiCom**.
2. Plug a Thin Ethernet AUI adaptor into the AUI connector (as shown in Figure 4) of your **MultiCom**.
3. Connect a “T” connector to the AUI adaptor.
4. Open your network and connect both ends to the “T” connector.

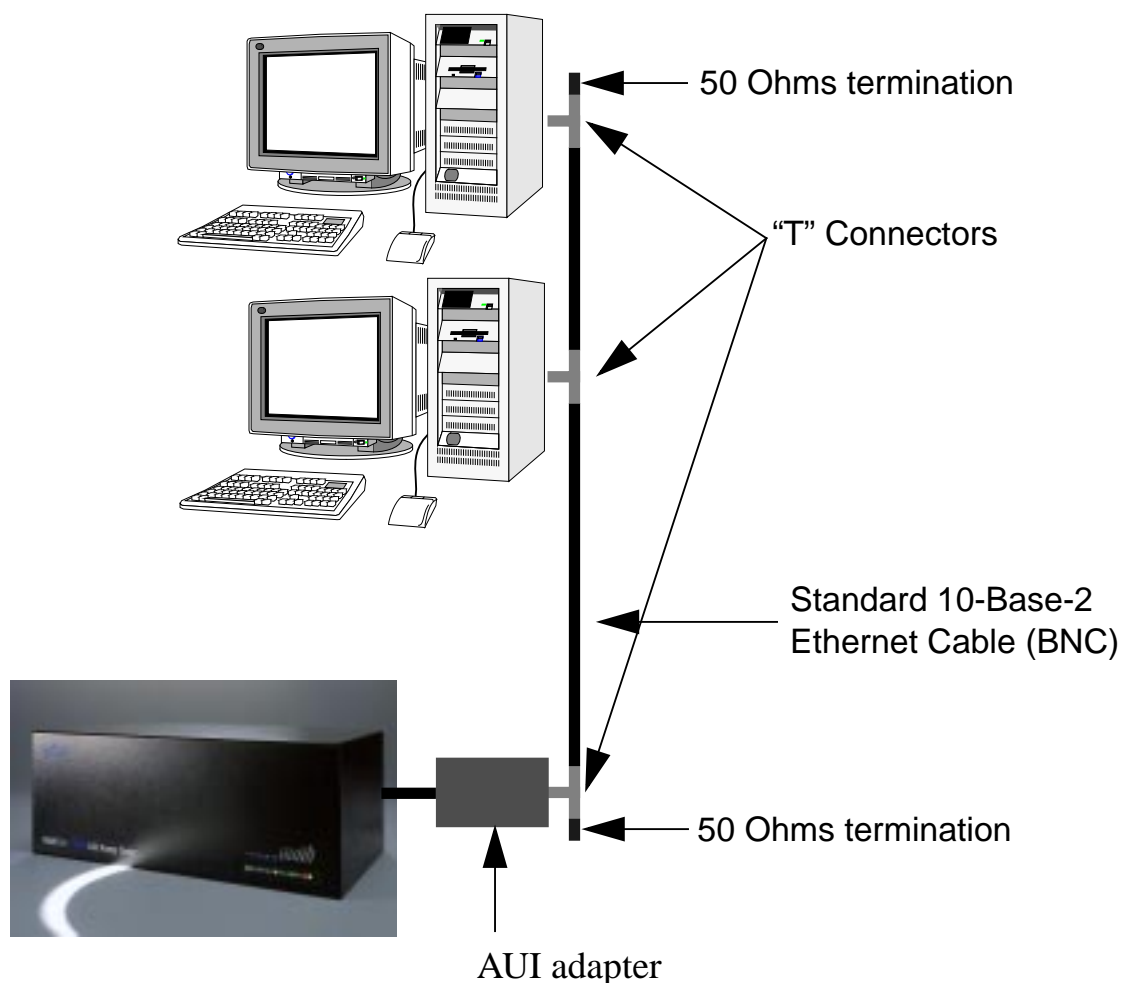


Figure 6 Typical Thin Ethernet network

INSTALLATION FOR TWISTED-PAIR ETHERNET

1.4.4

1. Make sure that your Ethernet Hub is functioning.
2. Plug the provided gray Ethernet cable into your Ethernet Hub.
3. Plug the other end into the RJ-45 connector on your **MultiCom LAN Access Center**, as shown in Figure 4.

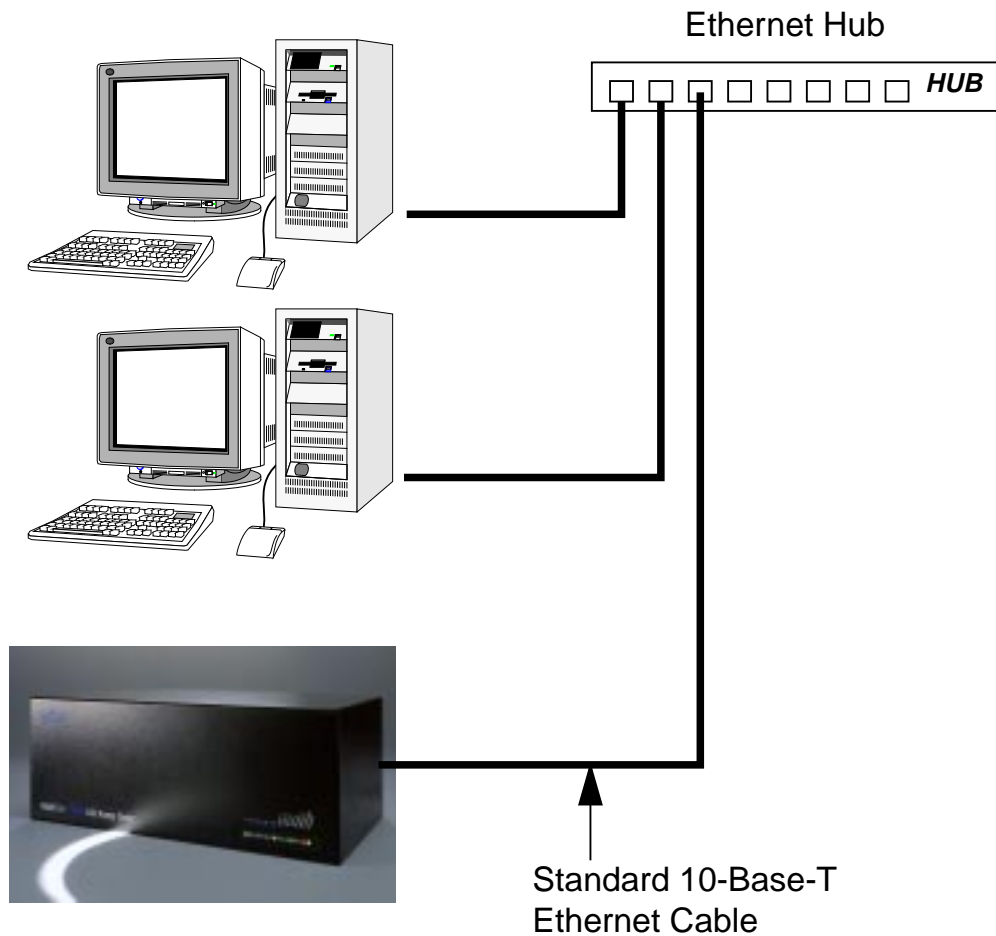


Figure 7 Typical twisted-pair Ethernet network

CONNECTING SERIAL DEVICES

1.5

The serial ports are used for connecting your *MultiCom* to synchronous leased line modems.

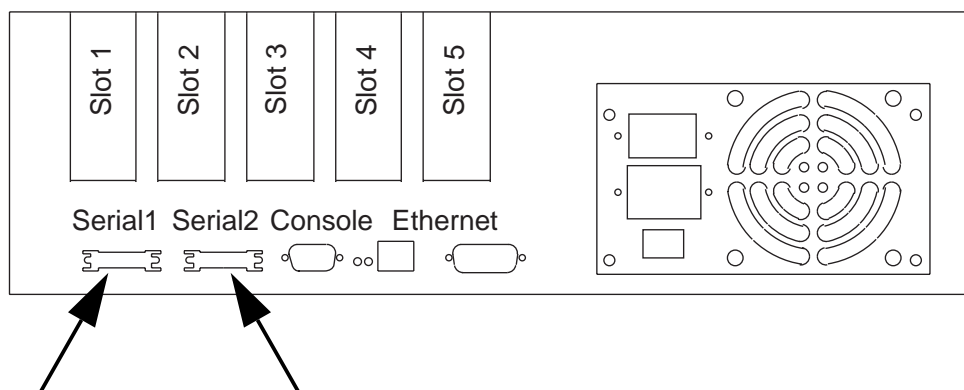


Figure 8 Serial port connectors

The ports conform to the EIA 530 Alt A standard. Lightning sells the following adaptor cables for standard modem interfaces:

Table 6. Serial port cables

Reference	Description	Connector types
CBL-530F-V35M	V.35 adaptor cable (2 meters)	EIA 530 Alt A female <-> V.35 male
CBL-530F-X21M	X.21 adaptor cable (2 meters)	EIA 530 Alt A female <-> X.21 male

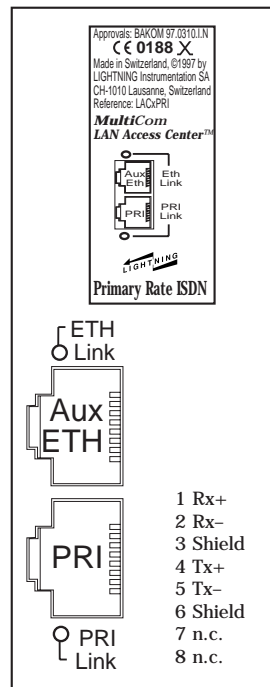
These cables are available through your distributor. Please be sure to order the right cable, corresponding to your modem.

NOTE - Digital modems may require special cables. Contact Lightning's Technical Support in that case.

CONNECTING PRI CARDS

1.6

There are two RJ-45 connectors on the PRI card, as can be seen below. The lower one is the ISDN S_{2m} connector, the upper one is an auxiliary Ethernet port (reserved for future use).



The PRI LED can be in the following four states:

- **Red**
This indicates that the ISDN link is not connected or not properly wired.
- **Off**
This indicates that the ISDN link has been deactivated by the remote switch. This is rare but may happen with some switches. When needed, the link should automatically be reactivated.
- **Green**
This indicates that the ISDN link is OK.
- **Orange**
This indicates that there is traffic on the D channel.

Depending on your country, you may need a special adaptor cable to connect the S_{2m} to your local carrier. Please contact your local Distributor in that case.

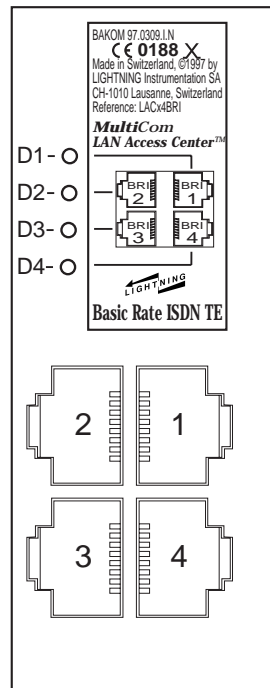
Here is the pin-out of the S_{2m} RJ-45 connector:

Pin #	Description
1	Rx -
2	Rx+
3	Shield
4	Tx+
5	Tx -
6	Shield
7	(not connected)
8	(not connected)

CONNECTING 4BRI CARDS

1.7

There are four RJ-45 S₀ connectors on the 4BRI card, as can be seen below:



The BRI LEDs can be in the following four states:

- Red
This indicates that the ISDN link is not connected or not properly wired.
- Off
This indicates that the ISDN link has been deactivated by the remote switch. When needed, the link should automatically be reactivated.
- Green
This indicates that the ISDN link is OK. It may become red after a certain time. **THIS IS NORMAL** . It should become green again, as soon as you need it.
- Orange
This indicates that there is traffic on the D channel.

Here is the pin-out of an S₀ RJ-45 connector:

Pin #	Description
1	(not connected)
2	(not connected)
3	Tx+
4	Rx+
5	Rx -
6	Tx -
7	(not connected)
8	(not connected)

CONNECTING THE POWER CABLE

1.8

Connect the Power Cable to an AC wall socket and then to the power connector on your **MultiCom LAN Access Center**

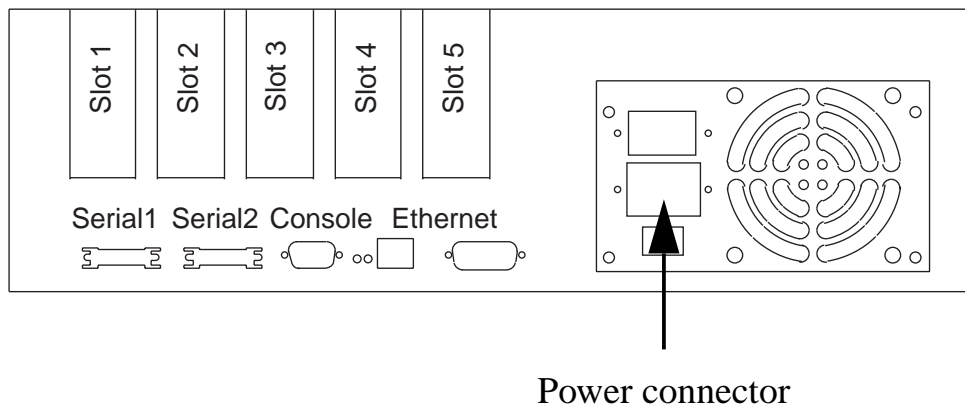


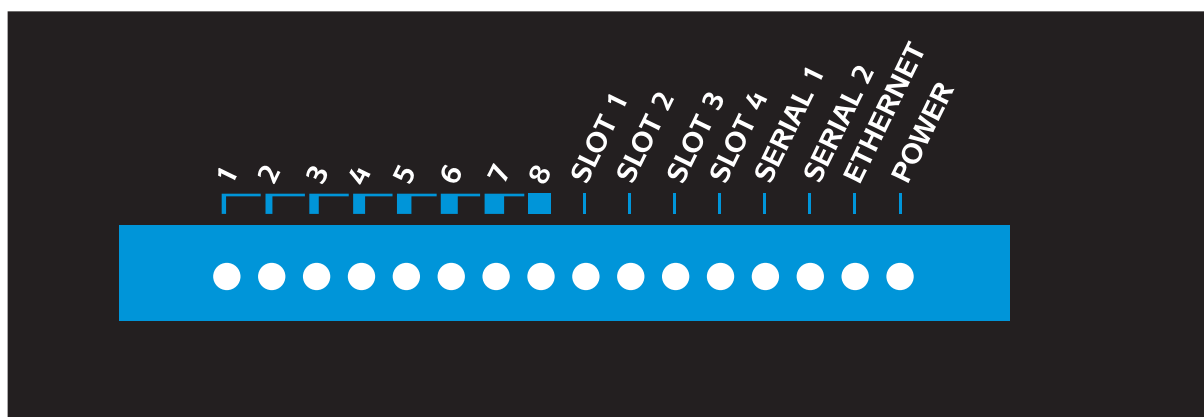
Figure 9 Power connector

This will launch the start-up operation for your **MultiCom LAN Access Center**, described in the next paragraph.

STARTING UP YOUR *MultiCom*

1.9

The *MultiCom* launches the start-up operation when you power it on. The following signals on the front panel provide information on the status of the operation:



- **All LEDs become red, green and then orange**
This is to test the LED display.
- **The Power LED turns green while other LEDs turn green and red**
This indicates that your *MultiCom* is carrying out system tests.
- **The left LEDs (1..8) are blinking orange**
This is the test for the default configuration (see section 4.3 on page 37).
- **The slot LEDs turn green or off (depending on your configuration)**
This indicates that the *MultiCom* has detected and initialized the corresponding optional expansion modules.
- **The Ethernet LED turns green**
This indicates that the Ethernet connection is properly wired.
- **The Serial LEDs turn green (depending on your configuration)**
If they are not used, they will remain off. Otherwise they should turn green or orange when there is traffic on the serial link. If they turn red, you should check your serial configuration, your modems and your leased line.
The other LEDs are reserved for future uses.

Getting Started



*This chapter describes the installation procedure for your **MultiCom** in a few simple steps.*

DO NOT CONNECT TO A NETWORK BEFORE... 2.1

Your **MultiCom** must be configured before being connected to an existing Ethernet network . You may do it yourself or ask your dealer or network specialist to configure it for you.

EASYCONFIG 2.2

The EasyConfig™ wizard takes your router's actual configuration, allows you to modify it through some simple dialog boxes and saves the modified configuration back into the router.

INSTALLING EASYCONFIG ON WINDOWS 95/98/NT 2.2.1

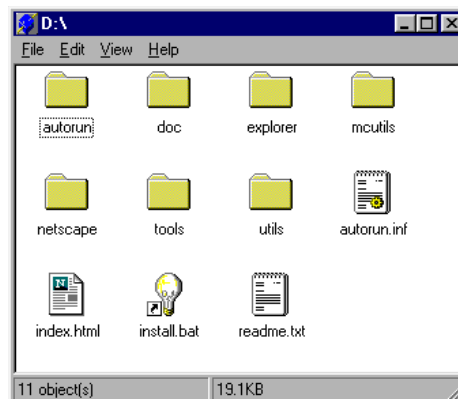
NOTE - EasyConfig runs also on Apple PowerMacintosh™ using the Windows 95/98 emulator “Virtual PC 2.1.2”™ (earlier versions are not fully compliant) by Connectix™ Corp.

To install the EasyConfig wizard on your computer, execute the following operations:

1. Insert the CD-ROM in your computer.
2. Your CD-ROM's content is displayed on the screen.
 - If this doesn't happen so, open your CD by double-clicking on “Desktop” and then on “Whoop_2.5 (D:)”.



3. Double-click on the icon labelled `install.bat` in the root directory of the CD.



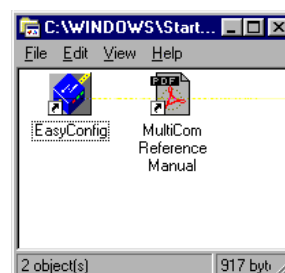
4. Then install the MultiCom Utilities by following the instructions. If possible, don't modify the proposed values:



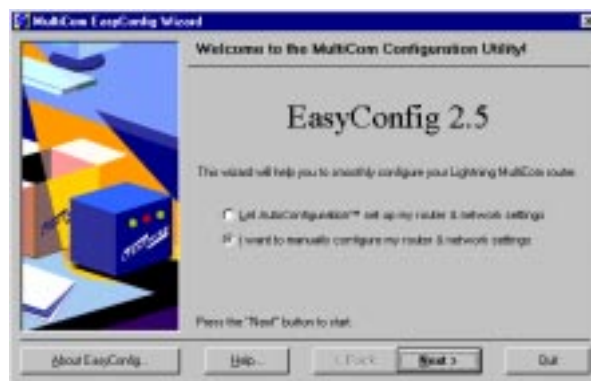
USING EASYCONFIG

2.2.2

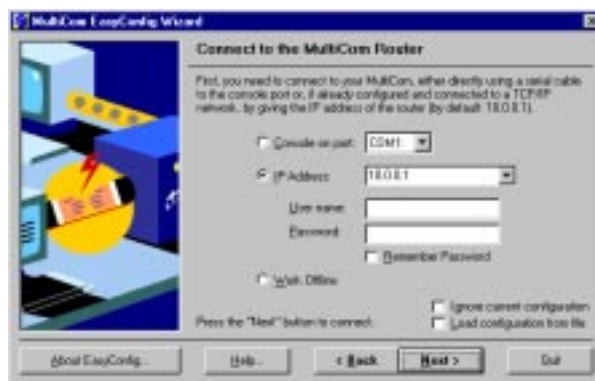
1. Start the EasyConfig from the place it has been installed in, by default:
“Start” / “Programs” / “MultiCom Utilities” / “EasyConfig”.



2. Choose “I want to manually configure my router & network settings” and press on “Next”.



3. If this hasn't been done yet, choose the IP address 10.0.0.1 to communicate with the router.
4. Press on “Next”.
5. The EasyConfig wizard takes the configuration from the router. By clicking on “Next” you can see the configuration step by step and adapt it to your needs.



By clicking on “Help” you get help on the settings that you are currently editing.

USING EASYCONFIG TO SET STATIC IP ADDRESSING 2.2.3

On the CD-ROM, in the “doc” folder, you will find an Acrobat PDF file with a short tutorial on using EasyConfig, and particularly an example on how to configure your Pocket MultiCom for static IP addressing.

USING EASYCONFIG WITH EXAMPLE CONFIGURATIONS 2.2.4

On the CD-ROM, you will also find in the “mcutils\Examples” folder all the example configuration files (*.LCF) of the “Examples” chapter of the Reference Manual. You may read these files, and adapt them for your own router setup using EditConfig™, also part of the MultiCom Utilities, installed from the CD-ROM. Please be advised that this requires some networking expertise and a good understanding of the examples, and associated commands explained in the Reference Manual (on CD-ROM).

REFERENCE MANUAL, WEB, AND FAQ 2.3

A detailed description of your router capabilities can be found in the Reference Manual on the CD-ROM. A copy of this manual has been made on your hard disk where the MultiCom Utilities EasyConfig and EditConfig have been installed.

Please also check the Technical Support area of our Web server at:

<http://www.lightning.ch/support/>

for future improvements in configuration, software, and the latest list of Frequently Asked Questions (FAQ). A short list of these can also be found in §3.

FINE-TUNING THE CONFIGURATION 2.4

For further configuration, you can use the router's built-in Web server at the router's IP address (by default <http://10.0.0.1/>), or use the EditConfig™ Windows application, which both let you modify the configuration file generated by EasyConfig.

CONNECTING TO THE COMMAND INTERFACE 2.5

For detailed control of the router, as well as interactive debugging and statistics, you must use the Command Line Interface of your **MultiCom**. It can be reached either through Telnet or with a direct console connection.

USING TELNET TO ACCESS THE COMMAND INTERFACE 2.5.1

If you **MultiCom** is correctly configured, you can run a Telnet program (e.g. "C:\\WINDOWS\\telnet") to connect to it.

NOTE - By default your router has IP address 10.0.0.1

USING THE CONSOLE

2.5.2


To use the console, you need either a terminal or a computer with a terminal emulation software (this is included with most computers, like “Programs”/“Accessories”/“Hyper Terminal”™ with Windows™).

Once connected, your **MultiCom** displays its user interface on your terminal screen. You can now auto-configure your **MultiCom** the commands “Upgrade Key” (if needed) and “Setup”, or use EasyConfig with the “COM” port. You can also reset the default configuration, as described in §4.

NOTE - If you see messages from the MultiCom in your terminal emulator window, but cannot type-in commands, check that the terminal handshake is set to “XON/XOFF”, instead of “RTS/CTS” or “Hardware”.

Testing

Chapter 3



*This chapter provides instructions for checking whether your **MultiCom LAN Access Center** is correctly configured and that the Ethernet and ISDN connections are working correctly.*

FREQUENTLY ASKED QUESTIONS (FAQ)

3.1

Please also consult the Technical Support area of the Lightning web site at: <http://www.lightning.ch/support/> for an up-to-date list of the FAQ.

1. **The IP address of the *MultiCom* is 10.0.0.1 by default.**
2. **Can I connect my *MultiCom* router to a Fast Ethernet network?**

Your *MultiCom* router is built for 10 Mbps Ethernet, thus it will not work if connected to a 100 Mbps-only Ethernet port. Most Ethernet ports can do both 10 and 100 Mbps Ethernet. Your router will work if connected to such a port, but only when using a 4-wires cable like the grey Ethernet cable delivered with your router.

3. **Which Stac compression do you support?**

We support the standard Stac LZS[®] compression (RFC1974). We do not support the obsolete draft-09 version of Stac (sometimes called Stac-9) neither Microsoft PPC (also know as MPPC or MS-Stac).

4. **The ISDN line keeps up or opens periodically even if I don't access the Internet**

There can be multiple causes for such a behaviour. First of all, make sure that you have chosen a small timeout value for closing the line. The default value is 90 seconds. If the line stays open longer than that, you may have an internal problem (e.g. a misconfigured machine on your local network) or an external problem (a misconfigured router talking to your *MultiCom*). To find out where the problem comes from, disconnect the Ethernet cable from the router and check if the line still keeps up. If the line goes down after a few minutes, then the problem is internal, if not then it is external. Use the command: `Info Site Internet Frames` to check which IP packets are opening the line, and `Info Site Internet Frame n` to display the most frequent one.

Common internal problems are:

- A mail program (e.g. Netscape, Eudora, MS Exchange) that is configured to check mail every few minutes.
- A Web browser that has a starting page with an address that is outside your network. Use a blank page or a local file as start page instead, e.g. `file://mystartpage.html`. Do not use an URL like `http://localhost/mystartpage.html`, as your computer will have to contact an external DNS server to resolve the name "localhost"!

- A Web page that updates automatically. Some Web pages, e.g. home pages, live images, update themselves automatically and can keep the line open. Don't keep a window with such a page open while you are not using it.

External problems may be:

- You are talking to a MaxPro RWS-NT V1.0.0.4 router. That router recognises "Echo Requests" as traffic and incorrectly keeps the line up. If you can make sure that the router on the other end of the line is a MaxPro RWS-NT V1.0.0.4, put the command "PPP EchoRequest Off" into the part of the configuration file relating to that site.
- If it is another external problem, try contacting the owner of the router at the other end of the line and make sure that the router does not send unsolicited traffic. Try setting the timeout to a small value e.g. by adding the following command to your configuration file: "ISDN IdleCloseTime 10".

5. I cannot connect to Telia with AutoConfiguration, why?

Telia is using the private A-class IP range 10.0.0.0, which is a non-routable subnet that is also used locally by the AutoConfiguration setup! To connect anyway, you can manually change the generated configuration to use the private B-class 192.168.0.0 subnet with SubnetMask 255.255.0.0. Such a configuration is given in the examples section of the Reference Manual on the CD-ROM.

6. When I use the SecureWall function, sending mail is very slow, why?

Some external mailers check the source port #113 to verify the identity of the sender. Since the SecureWall drops unsolicited incoming packets, the mailer will experience a timeout before giving up and accepting the mail anyway. If you are in that case, you can simply map this port to the *MultiCom*, which will signal that the port is not reachable and cause the mailer not to wait. To do so add the following line to your configuration or chose the equivalent option in the EasyConfig wizard:

```
IP Translation Map 113/tcp To <IP address of your MultiCom>
```

7. The SecureWall prevents some types of FTP connections.

As with most firewalls, FTP transfers can only succeed if the FTP program is set to passive mode for gets and active mode for puts (these are standard in Internet Explorer, Netscape, pftp, CuteFTP and Fetch in firewall mode).

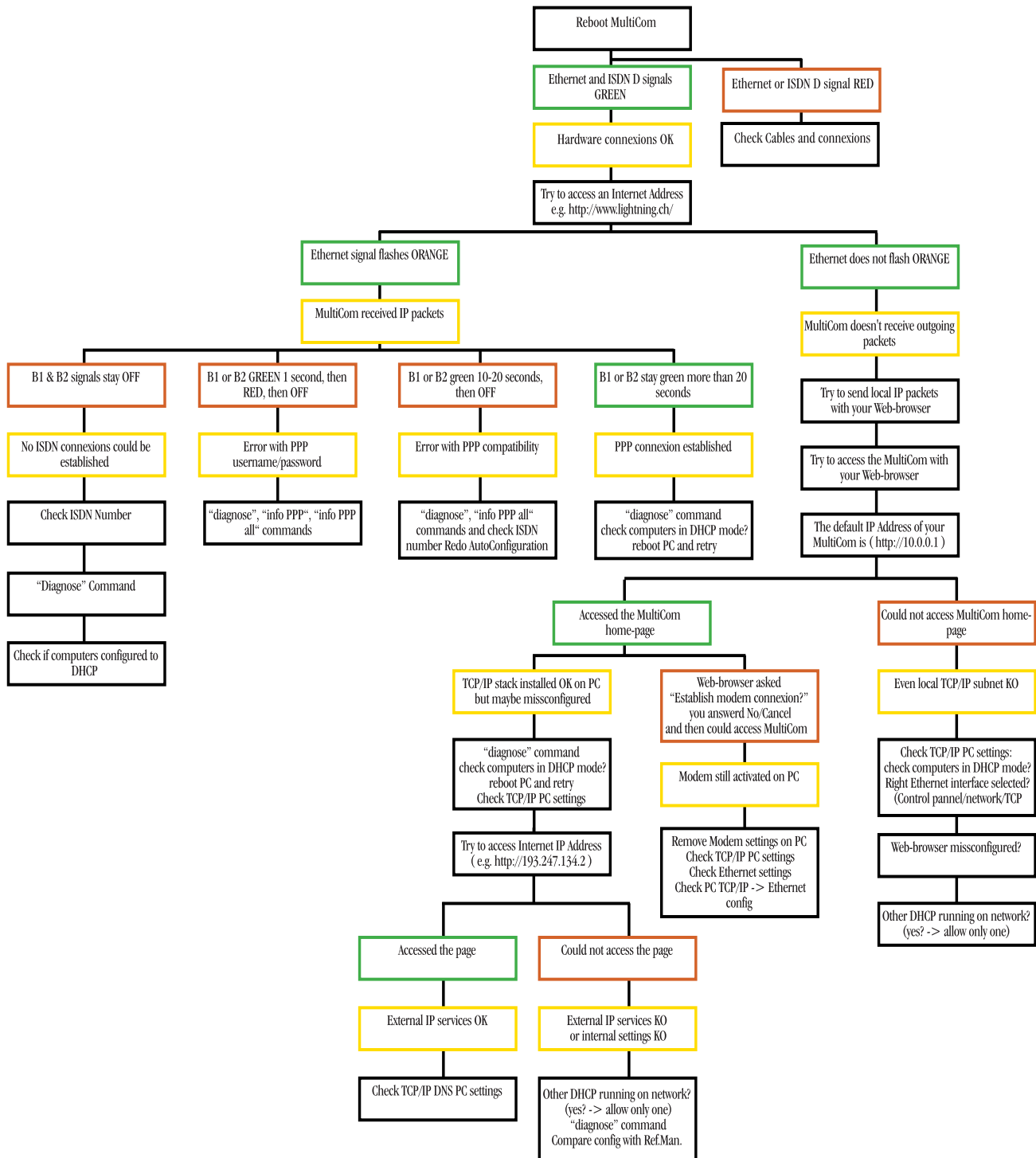
8. Is the *MultiCom LAN Access Center* Year 2000 compliant?

Yes

GENERAL TROUBLE-SHOOTING SCHEME

3.2

In case of connection problems, just looking at the signals behaviour can give useful hints for finding your configuration problem. A general scheme, valid for AutoConfiguration setting with DHCP and SIUA is shown below:



CONNECTING TO A DISTANT SITE

3.3

Connecting to a distant site using Telnet, FTP, Ping, a Web browser, or your particular software is the quickest and easiest ways to ensure that your Ethernet and ISDN connections are both functioning correctly:

If you could not connect, try connecting to another site to make sure that the problem does not reside on the other side of the line. If you can not connect on your second attempt, carry out the following tests.

CHECKING THE ETHERNET CONNECTION

3.4

You can use either a Web-browser, Telnet, FTP or ping, specifying the IP address of your **MultiCom LAN Access Center**, to connect to it directly. If the connection opens, this confirms that your Ethernet software is working correctly.

If the connection does not open, make sure that you typed in the correct IP address. If you did, there is probably a problem with either the configuration of your **MultiCom LAN Access Center** or your computer. Refer to § 3.2, "General Trouble-Shooting Scheme" on page 32 for details.

If you still can't access your **MultiCom LAN Access Center**, you can reset it to factory default address 10.0.0.1 and DHCP mode by following section 4.3 on page 37.

CHECKING THE ISDN CONNECTION

3.5

Carry out the following test if your Ethernet connection is functioning correctly but you cannot connect to a distant site:

1. Run Telnet or a console connection, specifying the IP address of your **MultiCom LAN Access Center**, following instructions in section 1.3 on page 9.

2. The connection opens and asks for the user name and password, if set.
3. At the next prompt, type in the following command: `ISDN Conn`
A B-channel signal should turn green, indicating a successful connection.

If the *ISDN connection is not OK*, check the configuration of your **MultiCom** for problems. Check also to see if there is a problem with your telephone wires.

If the *ISDN connection is OK*, but you still cannot connect to a distant site, it is probably because there is either a problem with your computer's configuration, or with the configuration of the other site's router or computer.

FURTHER TROUBLE-SHOOTING

3.6

Please refer to the Reference Manual for further trouble-shooting. Especially, try first the `Diagnose` command:

1. Run a Web-browser, specifying the IP address of your **MultiCom**.
2. The connection opens and asks for your user name and password, if set.
3. The **MultiCom LAN Access Center** home-page appears.
4. Click on the link: "Diagnostics", corresponding to the `Diagnose` command.
5. You will receive basic diagnostics: Follow the suggestions provided.
6. You may need to run Telnet, specifying the IP address of your **MultiCom**



LAN Access Center, logging-in, and typing some "info" commands, like:

- `isdn info`
- `isdn info history`
- `site stats Internet`
- `ppp info`
- `ppp info all`
- `site info internet frames`
- `dhcp info`
- `info ip`
- `site info internet frame n`
- `dns info`
- `info ip router`
- `info site internet`
- `cat boot.rpt`
- `ip siteAddr info`
- `ip translation info`

These commands and more are documented in the "Commands" chapter of the Reference Manual on CD, including also a trouble-shooting chapter.

Configuration

Chapter 4



*This chapter describes how to install your **MultiCom LAN Access Center** in order to set the configuration for the first time or to modify the existing configuration. It also provides instructions for resetting the default configuration.*

INSTALLING FOR CONFIGURATION

4.1

Configuring your **MultiCom LAN Access Center** for the first time can be done with a direct console port connection or a direct Ethernet connection.

NOTE - For a direct connection, you need either a terminal or a computer with a terminal emulation software (this is included with most computers). the serial port of your computer must have a specific configuration, see Figure 3 on page 10 for details.

Once the start-up process is finished, your **MultiCom LAN Access Center** will displays its user interface on your screen. You can now configure your **MultiCom LAN Access Center** using the “EasyConfig” Windows wizard or manually, according to the instructions in the “Configuration” section of the Reference Manual.

DEFAULT CONFIGURATION

4.2

When shipped, your **MultiCom LAN Access Center** has a *default configuration file*, with the following informations set:

- IP address of the router: **10.0.0.1**
- No User Account
- ISDN NumberEnabled: * (all)
- Site protocol: PPP
- Authentication: None
- DHCP server: On

This allows you to connect to your **MultiCom** without security checking, either from Ethernet or the console, for local configuration, or from the ISDN connection, for remote configuration.



CAUTION — All these parameters must be changed later to suit your needs. In particular, **it is strongly advised to create a user account** , for security reasons!

NOTE - You cannot access the private 10.0.0.1 address, unless you are in the same IP subnet. You must either use the console to change it, change your own IP address to be in the same subnet as your *MultiCom*, or configure your computer to be a DHCP client.

RESETTING THE DEFAULT CONFIGURATION 4.3

If you want to return to a safe configuration or if you have forgotten your password, you can temporarily restart your *MultiCom* in its default configuration by using the console:

1. Install your *MultiCom LAN Access Center* for a console connection, as described in § 1.1, "Checking Your Package Contents" on page 8.
2. ~~During start-up operation when the LED is blinking orange~~
— **press the minus key (-) 10 times.**

Upon initialization, your *MultiCom LAN Access Center* will be reset to the default configuration.

You can then start a new configuration or upload a backup of the last working configuration.

NOTE - For that reason, always keep a backup of your working configuration.

To permanently reset your **MultiCom LAN Access Center** with the default configuration, follow the standard set of instructions for modifying configuration, as described in the “Config” section of your Reference Manual.

NOTE - The user’s configuration file is not overwritten by this manipulation. It will be available again the next time you reboot your **MultiCom**.

Appendix



*You will find here the Warranty Registration Card
(if you cannot use the on-line registration form)
and detailed technical information.*

SPECIFICATIONS

5.1

MULTICOM LAN ACCESS CENTER HARDWARE

5.1.1

Dimensions	44.4 x 13.3 x 24 cm (19" x 3U)
Weight	6.8 kg
Power Requirements	230 VAC, max 3 A, 50 Hz
Temperature Ranges	5 to 40 °C
Humidity	10% to 85% non-condensing
Approvals	CE 0188 X EuroISDN LACx4BRI : BAKOM 97.0309.I.N (NET3) LACxPRI : BAKOM 97.0310.I.N (NET5) Pending for USA, Japan and Taiwan (ROC)

CONSOLE PORT

5.1.2

Connector	EIA-574
Protocol	Asynchronous RS-232
Speed	9600 bps
Number of Data Bits	8
Number of Stop Bits	1
Parity Bit	No parity
Handshake	None
Line Drivers	RS-232, V.28

ETHERNET PORTS 5.1.3

Connectors	AUI / 10-Base-T
Protocol	IEEE 802.3
Speed	10 Mbits/s

SERIAL PORTS 5.1.4

Connectors	EIA-530 Alt A
Protocol	Synchronous (V.35 / V.36 / X.21)
Clock speed	Up to 2 Mbits/s

ISDN (BRI) 5.1.5

Connectors	FCC68 (EuroISDN RJ-45)
Protocol	S ₀ TE DDI
Speed	2 x 64 Kbits/s

ISDN (PRI) 5.1.6

Connectors	FCC68 (EuroISDN RJ-45)
Protocol	S _{2m} TE DDI
Speed	30 x 64 Kbits/s

DECLARATION OF CONFORMITY

5.2

Conforms to EN45014 of the ISO/IEC

Manufacturer	LIGHTNING Instrumentation SA
Address	Avenue des Boveresses 50 CH-1010 Lausanne Switzerland

declares that the products:

Name of Product	<i>LAN Access Center MultiCom</i>
Reference Number	LAC-IPIPXB and LAC-IPIPXB/E

and

Name of Product	4-BRI ISDN Interface module
Reference Number	LACx4BRI

and

Name of Product	PRI ISDN Interface module
Reference Number	LACxPRI

conform all to the following specifications:

Security Norms	IEC 950 / EN 60950 EN41003
EMC	EN 55022 Class B / CISPR-22 Class B EN 50082-1
French ISDN Deltas	For VN4 ITAAB: Advisory Note Number 054 rev. 1
Commentary information	none

Lausanne, Switzerland	April 1997
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WARRANTY REGISTRATION CARD

The user (purchaser) must fill out and return this warranty registration card by post or by fax within 10 days after the purchase date for activating your warranty and/or update or upgrade. Upon receipt of this Registration Card, LIGHTNING Instrumentation SA will register the product in the name of the purchaser.

Registered users will be notified when FREE UPDATES are available.

You can also register on-line at

<http://www.lightning.ch/register.html>

Name: _____

Job Title: _____

Company Name: _____

Address: _____

Post Code/City: _____ Country: _____

Phone: _____ Fax: _____

E-mail: _____

Product type: _____ Serial number: LI-MU2-CH- _____

Date of delivery¹: _____ Supplier¹: _____

We would like to be kept aware of information (new products, upgrades) about the **MultiCom** product range:

Yes No

Please send this page (or a copy) by post or fax within 10 days of purchase to:

LIGHTNING Instrumentation SA

Avenue des Boveresses 50

CH-1010 Lausanne

Switzerland

Phone: + 41 21 654-2000

Fax: + 41 21 654-2001

E-mail: info@lightning.ch

1. In case of warranty repair, a proof of purchase with date may additionally be requested.

↑
3) Tape Together here on top only (no staples please)

1) Fill-in completely opposite side (you may also just register on-line or fax)

2) Cut page and Fold in two here ↓

4) stamp appropriately and ship

WARRANTY REGISTRATION

LIGHTNING Instrumentation SA
Sales Department
Avenue des Boveresses 50
CH-1010 Lausanne
Switzerland