

ProRack

User Guide

Revision A

May 1997



NetComm  [®]

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Before You Begin your Installation

The NetComm ProRack User Guide has been designed to take you through hardware installation of the ProRack Modem series. We recommend reading and following these instructions to ensure correct installation of the product.

Introduction

The NetComm Rack Series enables the building of complete data communication networks using NetComm's quality technology in both existing rack and stand-alone environments. The Rack Series offers V.34 technology with a powerful 16-bit processor, 33,600bps data transmission speed, V.42bis data compression, V.42 error correction, and 14,400bps fax transmission.

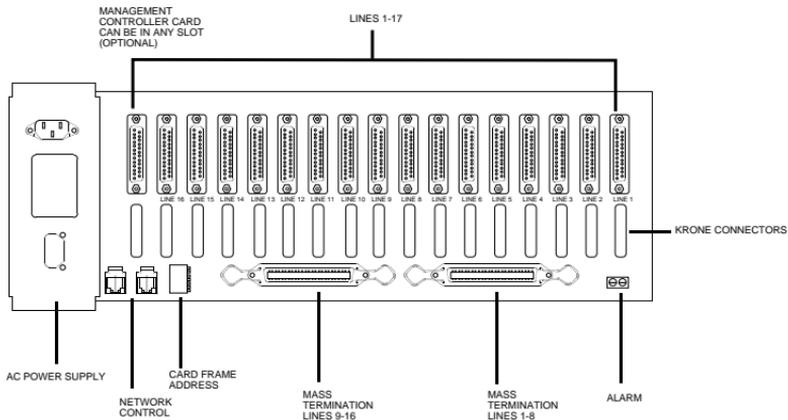
Rack Frame (RK). The Rack Frame supports up to 135 modems with 1 SNMP management card (or 136 modems without a controller card), and two power supplies. It is 19 inches wide and comes with rear-mounted data and telephone interfaces.

Power Supply (RP). The rack frame can hold up to two power supplies thereby minimising disruption to communications should one supply fail.

Modem Cards (RM). Up to 17 modem cards into one rack. Each card is a self-contained modem. Modem cards can be 'hot'-swapped without interrupting the operation of the other modem cards.

Rack Management Module. The Rack Management Module uses SNMP (Simple Network Management Protocol) as defined by RFC 1157. This is a recognized standard of communication between managed devices and the management station over a computer network. It communicates to a TCP/IP network via an RS-232 SL/IP or via ethernet with the Ethernet Management module. The Rack Management Module allows remote diagnosis and configuration, analysis of system usage, malfunction notification, as well as full access to AT commands, S-Registers, and individual modem statistics. (The Rack Management Module cannot be used as a modem.) Refer to the Rack Management Module User Guide for Management installation instructions.

The Rack (RK300)

**Rack Frame - Rear View**

- 17 DCE sockets, corresponding to the 17 card slots.
- 17 Krone phone line connectors, corresponding to the 17 DTE sockets.
- 2 50-way mass termination connectors for groups of 8 modems.
- AC Supply - a standard IEC socket that accepts 240V/60Hz supply via a detachable cord.
- ALARM — a 2-way screw-down type terminal block to control external alarm. The 2 terminals will exhibit a short circuit if there is a failure of an output from the power supply module. If two modules are fitted it will show a fault in either, even though the second module may be operating normally.
- Network Control connectors - serial interface (4P4C connectors) providing for connection of terminators/extensions for Network Management.

- ❑ Card Frame Address Switch - used to identify racks and must be set to the correct address.
- ☞ Use cable ties to secure cables to the rear of the frame. This is recommended to relieve the strain on cables.

Installing the Card Frame and Power Supply

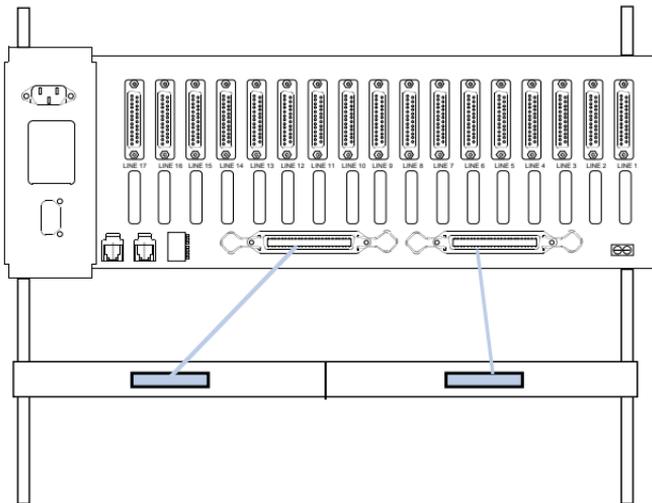
The NetComm card frame is designed to fit into a standard 19-inch wide rack.

1. Select a position on the rack that provides:
 - Sufficient space for cabling at the rear of the frame.
 - Sufficient space above and below the frame to allow air to flow through from the bottom to the top of the frame. One rack unit separation between adjacent card frames is recommended.
2. Mount the empty card frame within the rack, making sure that it is fastened securely with the nuts and bolts supplied with the card frame.
3. Slide the power supply into one empty position on the *right side* of the card frame and tighten the holding screws.
 - ☞ Two power supplies are accommodated for dual redundancy applications.
4. Connect power to the AC socket at the rear of the frame and check that the power supply LEDs at the front of each power module is lit. This ensures that power is available to the modems.
5. Disconnect the power cable.
6. Connect the phone line and DTE cables as appropriate.

Connecting the Mass Termination Block

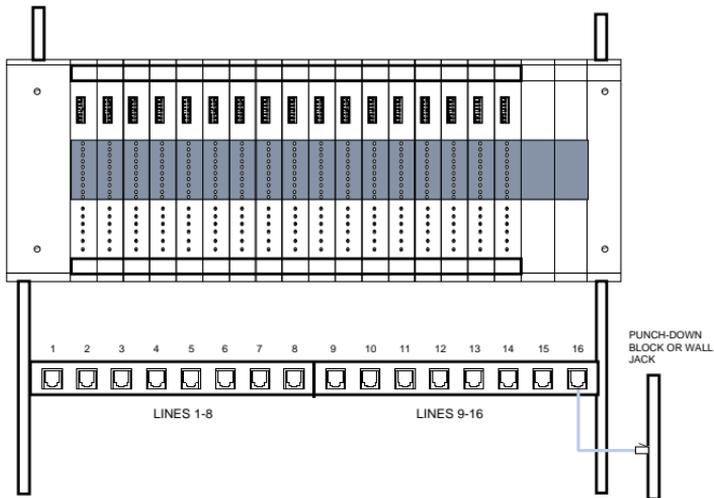
There are two Mass Termination Blocks. Each Mass Termination Block consists of one 50-pin connector on one side of the block and 8 RJ-11 connectors on the other side; one for lines 1-8 and the other for lines 9-16.

Two cables should be used to connect the lines (as pictured below) or, alternatively, the 6-way insulation displacement (Krone) connectors can be used directly.



Connecting Phone Lines

Each Mass Termination Block comes with 16 RJ-11 connectors. One Block connects modem lines 1-8 and the second block connects modem lines 9-16.



When using the Krone connectors and installing the Rack Management Module with the Rack Frame, Krone block of the slot used for the Management Module must **not** be used.

Note also that Slot 17 does not support Leased Line operation.

Krone connection details are as follows.

TERMINAL	2 WIRE MODEMS
Top 1	Leased Line
2	Leased Line
3	PSTN
4	PSTN
5	—
6	—

Two types of phone line connectors are supported — 6-way insulation displacement (Krone) connectors for each modem, or 50-pin mass termination connectors for groups of 8 modems.

☞ See your dealer for your Krone tool information.

Frame Addresses

The Rack System allows you to connect up to 8 full Rack frames, all under the control of a single Rack Controller.

To connect another Rack frame to an existing frame you must first set the “frame address”. This allows the Rack Controller to identify different racks during communication.

1. Set the address switches to match the frame address of the Rack frame for the applicable number of card frames:

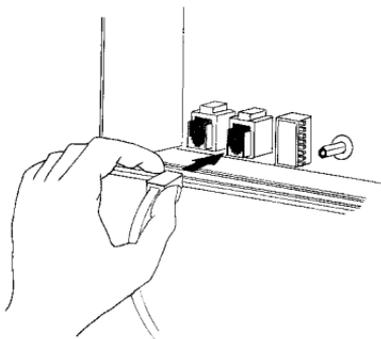
☞ For location of address switches see illustration on next page.

Frame No	Sw 4	Sw 3	Sw 2	Sw 1
1	Down	Down	Down	Down
2	Down	Down	Down	Up
3	Down	Down	Up	Down
4	Down	Down	Up	Up
5	Down	Up	Down	Down
6	Down	Up	Down	Up
7	Down	Up	Up	Down
8	Down	Up	Up	Up

(Down = On)

Default: down.

2. Set the frame address of the Rack frame.
The Rack Controller can be placed in any position. Frame addresses must not be duplicated and we recommend sequential numbering.
3. Having set the frame address of a Rack frame, connect it to the other Rack frames. Two RJ11 frame connectors are provided at the rear of the Rack frame. Connect Rack frames by daisy-chaining them:



Connect the supplied cable between two Rack frames.



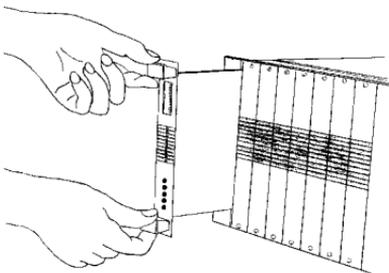
When daisy-chaining racks, the supplied bus termination resistor must be used in the first and last rack. **If using only one rack then both connections must have a termination resistor.**

Installing the Modem Cards

Up to 17 Modem Cards can be installed in the Rack Frame.

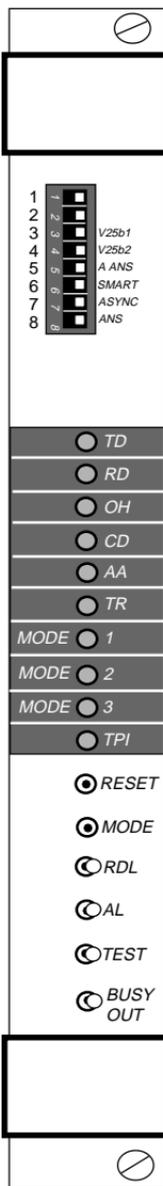
☞ The modem cards are designed for 'hot' insertion and removal. This means that cards may be inserted or removed while the power is on. The modems will reactivate in accordance with their last known configuration.

1. Slide the first modem card into the uncovered slot. The card is right-side up if the eight option switches are at the top when you position the card.



2. Remove the blank card slot covers and install any additional modem cards.
3. Reconnect the AC power.

All modems should initialize and stabilize within a few seconds. If you suspect a modem is faulty, refer to the section on Testing section in the *SmartModem Reference Guide*.



SWITCH 1: Reserved for future use

SWITCH 2: Reserved for future use

SWITCH 3: LEFT (V.25bis command set)/RIGHT (AT command set)

SWITCH 4: LEFT (V.25bis synch bit-oriented)/RIGHT (V.25bis character-oriented)

SWITCH 5: LEFT (Disable auto-answer)/RIGHT (Enable auto-answer)

SWITCH 6: LEFT (DUMB Mode)/RIGHT (SMART Mode)

SWITCH 7: LEFT (Synchronous Mode)/RIGHT (Asynchronous Mode)

SWITCH 8: LEFT (Originate Mode)/RIGHT (Answer Mode)

TD: TRANSMIT DATA. Flashes whenever the local computer, and hence the modem, is sending data

RD: RECEIVE DATA. Flashes whenever the modem is transferring data from the remote to the local computer

OH: OFF HOOK. Glows whenever the the modem is on-line, dialing, or answering calls

CD: CARRIER DETECT. Glows whenever the modem detects a valid carrier signal from a remote modem

AA: AUTO ANSWER. Glows to indicate the modem is selected for auto-answer operation (when S-Register contains a value of 1 or greater; the default is 0). After dialing if call progress monitoring is enabled, the led will reflect ringing or busy tones received from the line

TR: TERMINAL READY. Reflects the state of the DTR signal. Most computers assert the DTR signal when ready to begin communication with the modem

MODE 1, 2, 3: Indicates modem's operating mode (see chart on next page)

TPI: TEST PATTERN INDICATOR. Glows when a redefined test pattern appears at the modem's receiver or is toggled when accessed by the Rack Controller

RESET: Restarts the modem

MODE: Allows selection of line speed when in Dumb mode

RDL: Remote Digital Loopback Test

AL: Analog Loopback Test

TEST: Initiates test functions

BUSY OUT: Takes modem off-hook

Front Panel LEDs Table

Front Panel Mode LEDs			
Line Modulation	Mode1	Mode2	Mode3
33,600bps	*F	*F	o
31,200bps	*F	*F	•
28800bps	*F	o	o
26400bps	*F	o	•
24000bps	*F	•	•
21600bps	*M	o	o
19200bps	*M	•	•
16800bps	*M	o	•
14400bps	o	o	o
12000bps	o	o	•
9600bps	o	•	o
7200bps	o	•	•
4800bps	•	o	o
2400bps	*S	o	o
1200bps	*S	o	o
V23	*S	•	o
V21	*S	•	•
Fax 14400bps	o	*S	*S
Fax 9600bps	o	o	*S
Fax 7200bps	o	•	*S
Fax 4800bps	•	o	*S
Fax 2400bps	•	•	*S

LED: On = o, Off= •,
 Flashing: *S = Slow, *M = Med, *F = Fast

Front Panel Switches

There are four toggle switches, two push-button switches and eight dip (option) switches located on the front panel.

Toggle Switches

The toggle switches are:

RDL	Remote Digital Loopback
AL	Analog Loopback
TEST	Initiate Test Function
BUSY OUT	This switch is used to block the line, thus preventing the modem from being called. Default: when the card is installed correctly, position is the left hand side.

For more information on using the Toggle switches refer to the *SmartModem Reference Guide*.

Push-buttons

MODE	Allows selection of a line mode or speed while operating in Dumb mode (Originate mode only). Repeatedly press the button to step through the selections. The Mode LEDs will display the selection. (Refer to the Mode LED table)
RESET	Resets, or restarts the modem.

Option (Dip) Switches

Switch	Left Position	Right Position
1	—	—
2	—	—
V25b1	V.25bis command set	AT command set
V25b2	V.25bis synch bit-	V.25bis synch
character-	oriented operation	oriented operation
A ANS	Auto-answer disable	Auto-answer enable
Smart	Dumb mode	Smart mode
Async	Synchronous mode	Asynchronous mode
Ans	Originate mode	Answer mode

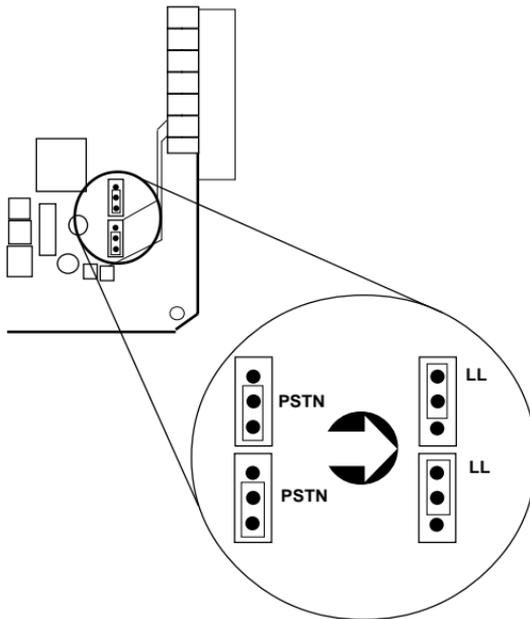
Default: right (see above)

For more information on using the Optional switches refer to the Dumb Mode section of the *SmartModem Reference Guide*.

PSTN or 2 Wire Leased Line

Each modem is fitted two links which define application settings for PSTN or 2 wire leased line. Default (supplied from the factory) is PSTN.

If operating in 2 wire leased line, the jumpers will need to be changed on the modem as illustrated below. The jumpers are located on the lower right-hand corner for Leased Line and PSTN mode:



Where to Now?

If you wish to install a Controller Card, refer to a copy of the *Management Module User Guide*. This is supplied with the Management Module Card and explains Management installation and configuration options.

If the modem is connected to a computer which supports V.25bis commands, refer to a copy of the *SmartModem Reference Guide*. This is supplied with the card frame and explains how to use V.25bis commands.

If the modem is connected to a Unix computer, a mainframe computer or a multiplexer which has synchronous communication ports, turn to the Dumb Mode section of the *SmartModem Reference Guide*. It explains how the modem can operate with these types of computers.

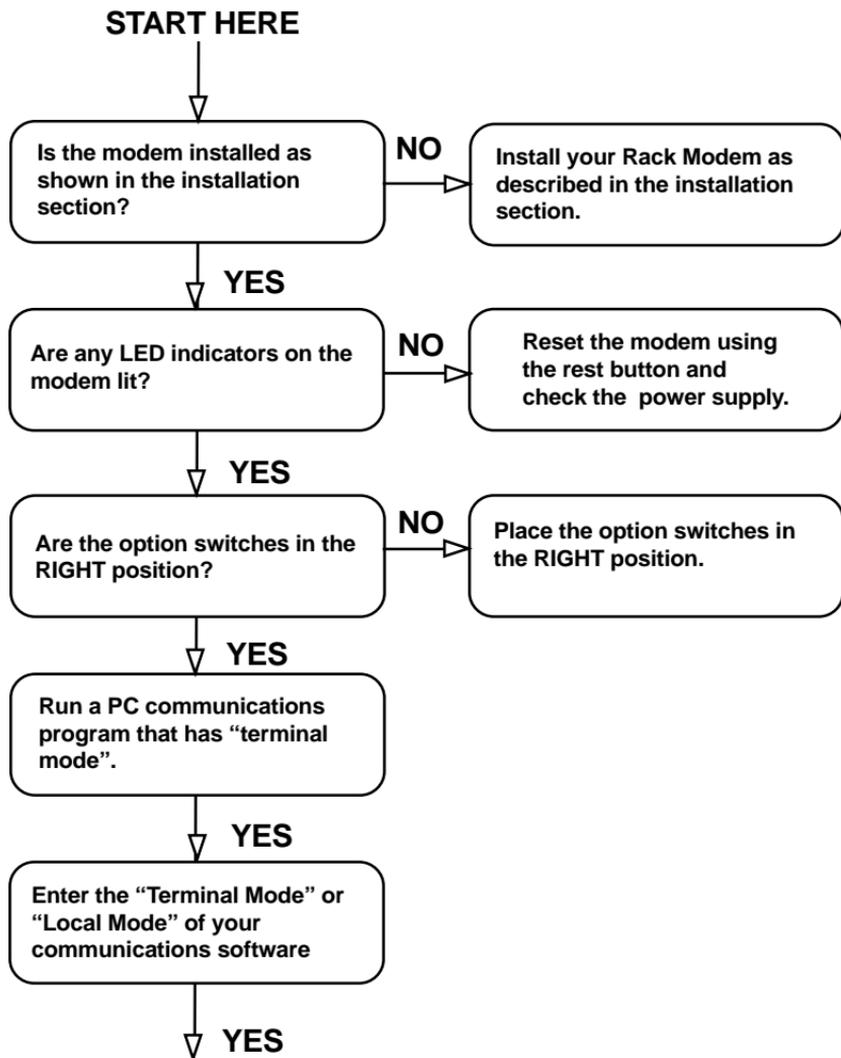
The modem has a number of push buttons and Option switches. Details of how to use the modem Option switches are also included in the Dumb Mode section of the *SmartModem Reference Guide*, supplied with your modem.

Appendix A: Troubleshooting

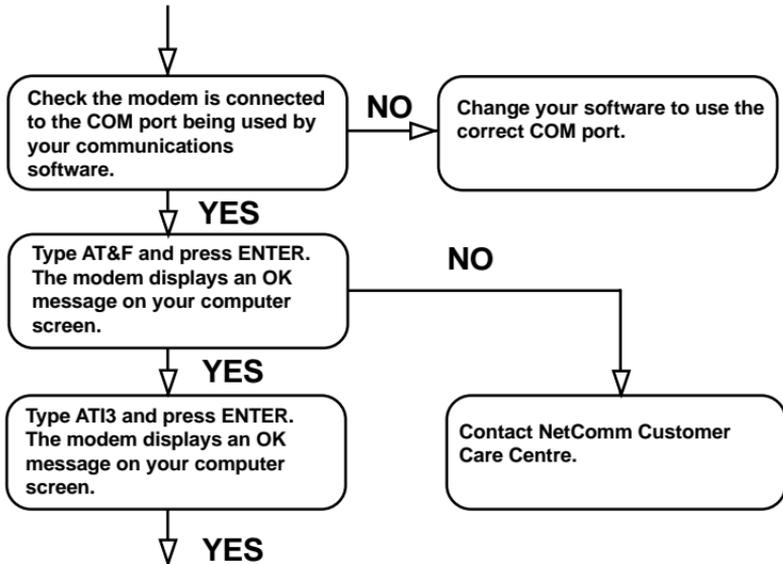
This section is provided to help solve problems you may encounter with your modem. Before you call Customer Support, check to see whether your problem is answered in this section.

Having Problems?

The flow chart on the next page is designed to help you work through installation problems. The most common problems encountered by new users relate to the way the modem is installed. If you are having problems with your modem, work through this chart. It will help you solve any simple installation problems.



FROM PREVIOUS PAGE



Your modem is operating correctly.

Using Other Communications or Fax Programs

The communication programs supplied with your modem have been tested to ensure they work with your modem. Other, special-use, communications programs are available and you may find one of these programs suits your communication needs. In most cases, these “third-party” communication programs will work with your modem.

- In a small number of cases, a special command or Option switch setting may be required to make your communication program work correctly with your modem. If you encounter difficulties with your communication program and modem:
- Check your modem is installed correctly by working through the *Having Problems?* check list
- Using your communications software, dial the NetComm bulletin board to check the modem is working correctly. While connected to the bulletin board, look in the File areas for any modem drivers or modem scripts that are available for your communications program
- If you encounter problems, see *Common Questions and Answers* for a solution. If you have no luck, contact NetComm Technical Support.
- Try your communications program again. If the problem still exists, contact the supplier of your communications program
- If you are having difficulties with a fax program, contact the supplier of the fax program and check that it has been tested with your modem

The NetComm OnLine Bulletin Board

NetComm provides a bulletin board service that you may dial. This bulletin board gives you free access to useful information about your modem and provides a range of modem drivers which may allow you to use your modem with other communications programs.

Using a data communications program, call the NetComm online BBS: (02) 9878 3755

Restoring the Factory Settings

If you are experiencing problems with your modem, it is best to restore your modems factory settings (or “factory defaults” as they are sometimes known). This will ensure your modem is reliably set up. To do this:

- Run a communications program and enter “local mode” or “terminal mode”
- Type: AT&F and press ENTER
- Type: AT&W and press ENTER
- Exit the communications program

This will restore and save the original settings of your modem.

Common Questions & Answers

My modem is not responding.

- If your modem is not responding then make sure that all the cables are firmly plugged into the appropriate ports and sockets.
- If in doubt then remove all the cables and connect them again ensuring they are all socketed firmly.
- Try using another COM Port.
- If you still cannot get a response then contact your dealer for help.
- Check that all dip switches are to the left.

My modem is not dialing out correctly.

- If you are using your modem on a PBX and it is not dialing out correctly, then check to see whether you are placing the necessary digit at the beginning of the telephone number (e.g., 9,5612411601 where 9 is requesting an outside line).
- Also make sure that the PBX is not digital.

My mouse freezes when I load Communications Software.

- The COM ports that the modem and the mouse are on must be using the same IRQ (interrupt).
- If you are unsure of how to configure your ports then check with your dealer.

My modem is not sending faxes properly with 'XYZ' fax software.

- If you are using other fax software and you cannot send faxes properly then install the bundled communications software to test the modem.

- If you can send a fax successfully with bundled software then the problem is with the other fax software that you are using.
- Contact your dealer or distributor of the software for more information on setup.

My modem is not answering calls and connecting properly.

- If your modem is not connecting or answering calls properly, then try removing 'all' devices that are sharing the phone line with the modem and test your connections again.
- Devices such as fax machines, telephone handsets and answering machines can sometimes cause interference with your modems performance.
- More often than not it may come down to a device sharing the phone line with the modem that is causing the problem; such as another fax or phone.

What is Flow Control?

- Flow Control is a means of controlling the data movement between a PC and a modem, so as to allow the data to be handled and processed at the speed that the device is capable of.

For example; using a RM at 28800 bps line speed, but at a terminal speed (between modem and computer) of 38400. The data will be sent to the modem too fast for it to process. Flow Control is used to prevent the data in its buffer being lost.

My modem returns 'NO DIALTONE' when I try to dial?

- It is because your modem is not detecting the dialtone from your exchange, or the phone line is not correctly installed.
- Try turning off dialtone detection by typing 'ATX3&W' in local mode or check the phone line.

My Modem will not work properly with Windows 95.

- You may need an updated INF modem file.
- Call the NetComm BBS for the latest version of the INF modem files that Windows 95 uses.
- These INF files are also available from the NetComm Web site.

My modem does not connect when I dial an information service or bulletin board.

- Your modem may be incorrectly set up.
- Restore the factory settings of your modem.
- Run a communications program and enter “local mode” or “terminal mode”.
- Type: AT&F and press ENTER.
- Run a communications program and enter “local mode” or “terminal mode”.
- Type: AT\N0%C0 and press ENTER.
- Exit the communications program and dial again.

I see garbage characters on the screen after connecting.

The telephone line quality may be causing this problem.

- By using the error correction features of your modem you should never see “garbage” or “rubbish” characters on your computer screen.
- If the other modem does not support error correction, you may see a few unreadable characters. This occurs because of subtle changes in the quality of the telephone line, and can often be corrected by hanging up and redialing.

- If normally when you pick up the telephone handset you can hear a lot of background noise, it is likely you will have trouble with your modem. Contact the supplier of your telephone line for assistance.

If your telephone line is generally noise-free, check the following:

- Check you are using the correct parity for the service you are dialing. Most information services and bulletin boards use either 8 Data/No Parity/1 Stop bit or 7 Data/Even Parity/1 Stop bit. Your communications software user's guide will explain how to set parity.
- Check your communications software is using flow control. Your modem has flow control switched on when it leaves the factory.
- Make sure error correction is switched on (unless the information service does not support it).
- Hang up and dial again. You may get a better connection
- Lower the connection speed and try again.
- Consult your dealer. You may need to have your modem tested.

When I type commands to my modem each character appears twice.

This may be because of an incorrect communications software setting.

- If what you type appears double (tthhiiss iiss wwhhaatt hhaapppeennss), the most probable cause is that your communications program has "character echo" selected. Refer to your communications software Users Guide for details of switching "character echo" or "local echo" off.

Why am I losing characters when sending large files?

You probably need to select flow control.

My communications program does not have a terminal mode. How do I configure the modem?

- If your communications software does not have a terminal mode, it probably requires a special modem script or modem driver. If your modem is not supported by the software, contact your software supplier for help. The NetComm bulletin board provides a variety of modem scripts for various communications programs, that you may obtain using the communications programs supplied with your modem.

My modem hangs up while it is trying to connect to another modem.

Check that no characters are sent by the computer while the modem is connecting; this will cause the modem to hang up. Mainframe computers and multiplexers sometimes do this.

If your modem supports the &N command (the Abort Connection command — check your Command Card):

- Run a communications program and enter “local mode” or “terminal mode”.
- Type: AT&N0&W and press ENTER.
- Exit the communications program.

I am having problems using my modem with a Unix computer.

The Unix computer rejects the CONNECT messages (and other messages) sent to it by your modem.

Some mainframe or Unix/Xenix computers cannot operate with modems which send messages to the computer. If this is the case, switch off character echo response codes:

- Run a communications program and enter “local mode” or “terminal mode”.
- Type: ATE0Q1&W and press ENTER.
- Exit the communications program.

My modem does not dial a stored phone number when used for synchronous communication.

Your computer may not be raising the DTR signal.

- You usually use stored number dialing if you have the modem connected to a synchronous computer.
- In synchronous mode your communications software must be able to assert (or raise) the DTR signal in order to make the modem dial.
- Check your communications software User Guide or contact your computer dealer to be sure your computer can control the DTR signal.
- If your modem has Option switches, check the DTR option switch is in the Up position.

My modem is STILL not working.

- First of all make sure you have followed the Installation section correctly.
- If you are still encountering difficulties then it is suggested to contact your dealer or place of purchase.
- They will be able to test your modem for you to arrange replacement if the unit proves faulty.

I Want More Information

If you want more information about the AT commands supported by your modem, consult the *NetComm Modem Reference Guide*.

This manual provides detailed information about the AT commands and S Registers supported by your modem, as well as information about how to use features such as synchronous mode, security and DES encryption.

To assist in the ordering of the correct manual, please have the model name and number of your modem ready (these are found on the serial plate of your modem).

Before You Call Technical Support

NetComm is committed to continually improving the reliability of its products. We use sophisticated manufacturing techniques to achieve this goal and are confident that each time you use your modem, it will perform reliably and to your satisfaction.

If you do encounter problems, NetComm provides a team of trained technicians. It is their goal to help solve your modem problem as quickly as possible.

Many problems reported to Technical Support are simple installation mistakes — such as not switching on the power at the wall socket — rather than an actual product fault. Before calling Technical Support, please recheck the installation of your modem.

Please have the following information ready when you call

- The model name and number of your modem
- The identity message of your modem. Use the AT19 command to obtain the identity message
- The name and version number of the communications program or fax program you are using
- For what application are you using the modem? (For example, “Dial CompuServe”, or “Set up a bulletin board”, or “Attach the modem to a mainframe computer”)
- The speed at which you are trying to use the modem
- Are you using a dial-up connection (normal telephone line) or a leased line connection?
- The brand and model name of modem or fax machine you are dialing (if known)

If it is necessary to return your modem to NetComm, see Appendix F for procedures.

Appendix B: 50-Pin Telephone Connectors

<i>Slot</i>	<i>Signal</i>	<i>Con</i>	<i>Pin</i>	<i>Slot</i>	<i>Signal</i>	<i>Con</i>	<i>Pin</i>
1	PSTN Line	1	2,27	9	PSTN Line	2	2,27
	Anti-Tinkle	1	3		Anti-Tinkle	2	3
	Leased Line	1	1,26		Leased Line	2	1,26
2	PSTN Line	1	5,30	10	PSTN Line	2	5,30
	Anti-Tinkle	1	6		Anti-Tinkle	2	6
	Leased Line	1	4,29		Leased Line	2	4,29
3	PSTN Line	1	8,33	11	PSTN Line	2	8,33
	Anti-Tinkle	1	9		Anti-Tinkle	2	9
	Leased Line	1	7,32		Leased Line	2	7,32
4	PSTN Line	1	11,36	12	PSTN Line	2	11,36
	Anti-Tinkle	1	12		Anti-Tinkle	2	12
	Leased Line	1	10,35		Leased Line	2	10,35
5	PSTN Line	1	14,39	13	PSTN Line	2	14,39
	Anti-Tinkle	1	15		Anti-Tinkle	2	15
	Leased Line	1	13,38		Leased Line	2	13,38
6	PSTN Line	1	17,42	14	PSTN Line	2	17,42
	Anti-Tinkle	1	18		Anti-Tinkle	2	18
	Leased Line	1	16,41		Leased Line	2	16,41
7	PSTN Line	1	20,45	15	PSTN Line	2	20,45
	Anti-Tinkle	1	21		Anti-Tinkle	2	21
	Leased Line	1	19,44		Leased Line	2	19,44
8	PSTN Line	1	23,48	16	PSTN Line	2	23,48
	Anti-Tinkle	1	24		Anti-Tinkle	2	24
	Leased Line	1	22,47		Leased Line	2	22,47
				17	PSTN Line	2	25,50
					Anti-Tinkle	1	25

Appendix C: Specifications

NetComm Rack

Dimensions:	Rack	Power	Modem
Height	178mm (7.12 inches)		
Board		144mm (5.76 inches)	144mm (5.76 inches)
Front Panel		173mm (6.92 inches)	173mm (6.92 inches)
Length:	360mm (14.4 inches)	292mm (11.68 inches)	297mm (11.88 inches)
Width:	483mm (19.32 inches)	40.6mm (1.62 inches)	20.3mm (.81 inches)
Weight:	4.1kg (9.06 lbs.)	3.2kg (7.07 lbs)	0.42kg (.93 lbs)
Power:			
Rack:	240V (+10/-15% AC 60Hz, 200VA) maximum via standard IEC socket		
Modem:	15V AC (derived from power supply module) typically 3.5W (max 5A) from same source		
DTE Interface:	DB25F socket, conforming to CCITT V.24/V.28		
Telephone			
Interface:	6-pin insulation displacement (Krone) connectors Mass Termination RJ11 connectors		
Rack Frame			
Interface:	6-pin RJ11 connectors		
Environmental:	Operating 0° to +45° C Non-operating: -10° to +50° C		
Humidity:	Operating: 10% to 90% non-condensing Non-operating: 5% to 90% non-condensing		

Appendix D: Regulatory Statements

Australian Customer Information

Some of the modem default settings have been selected to comply with Austel technical specifications. If you intend to change any default settings you must comply with the following rules:

- o The modem must not answer an incoming call less than two seconds after the first ring signal. As a “rule-of-thumb” your modem should be set so it answers incoming calls after the second ring (ATSO=2).
- o If Busy signal detection is switched off, the modem must not attempt more than two automatic redials and must wait at least two seconds before redialling.
- o If Busy signal detection is switched on, the modem must not attempt more than nine automatic redials and must wait at least two seconds before redialling.
- o If, after redialling the maximum number of times, the modem is still unable to establish a connection you must wait 30 minutes before attempting to redial.
- o The use of Bell standard 103 and 212A is not permitted in Australia. Use of these modes will cause your modem to lose its permit status.

Changing the default values of the modem, in such a way as to cause your modem to operate in a non-compliant manner when connected to a telecommunications network operated by a carrier, is contrary to the Telecommunications Act 1991 and may result in penalties of \$12,000.

New Zealand Customer Information

New Zealand Telecom requires you to be aware of these important warnings:

This equipment may not necessarily provide for the effective hand-over of a call to or from a telephone connected to the same line.

The operation of this equipment on the same line as telephones or other equipment with audible warning devices or automatic ring detectors will give rise to bell tinkle or noise and may cause false tripping of the ring detector. Should such problems occur, the user is not to contact Telecom Faults Service.

The telephone associated with the authorised apparatus must be permitted for connection to the New Zealand public telephone network.

The transmit level from this device is set at a fixed level and because of this there may be circumstances where the device does not give its optimum performance. Before reporting such occurrences as faults, please check the line with a standard Telepermitted telephone, and do not report a fault unless the telephone performance is impaired.

If your card frame ever suffers physical damage that causes its internal parts to become exposed, it should be disconnected from the phone lines immediately. The equipment must then be repaired before reconnection to the phone line is permissible.

Should it be necessary to physically move your card frame, disconnect it from the phone lines before disconnecting the power connection. When reconnecting your card frame, reconnect the power before reconnecting it to the phone lines.

Some parameters required for compliance with Telecom's PTC Specifications are dependent on the equipment connected to the RS232 port. The connected equipment shall be set to operate within the following limits for compliance with Telecom Specifications:

1. Equipment connected to the RS232 port shall be certified to meet the requirements of Reg. 18 of the New Zealand Wiring Regulations 1976.

2. When the user manually initiates a call, via equipment connected to the RS232 port, the equipment shall operate within the following restrictions:

- a. Not more than 5 call attempts shall be made to the same number within a one hour period.
- b. There shall be at least 60 seconds between call attempts.
- c. Not more than a total of 10 call attempts shall be made to the same number for any single manual call initiation.
- d. Automatic calls to different numbers shall be not less than 5 seconds apart.

FAILURE TO MEET THE ABOVE REQUIREMENTS MAY NEGATE THE USER RIGHTS UNDER THE TELECOM TERMS OF SERVICE.

Setting the S0 register (auto answer) to S0=1 or to values greater than 5 will render this equipment non-compliant with the Telepermit requirements.

When operating in V.22bis or V.22 mode over some older telephone exchanges, it may be necessary to issue the command.

This equipment does not provide a guard tone with the V.22 and V.22bis answer modes. In some circumstances this could cause interference with the telephone network signalling systems, and could result in lost calls. Telecom will not accept responsibility should such problems occur. Such occurrences will be rare.

The preferred method is to use DTMF tones (ATDT...) as this is faster than pulse (decadic) dialling, and is available on most New Zealand telephone exchanges. Where DTMF is not available and decadic must be used, your communications software must be set up to record numbers according to the following translation table as the modem is not directly compatible with the New Zealand (10-N) Reverse dialling standard.

Number to be dialled	Number to program into computer
0	0
1	9
2	8
3	7
4	6
5	5
6	4

7	3
8	2
9	1

Note that where DTMF dialling is used, the numbers should be entered normally. Telecom Faults Service.

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received including interference that may cause undesired operation.

THIS UNIT COMPLIES WITH FCC PART 68 AS OF DATE OF MANUFACTURE.

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antennae.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Notification to the Telephone Company

Notification to the telephone company is no longer required prior to connecting the registered equipment but upon request from the telephone company the user shall tell the telephone company which line the equipment is connected to as well as the registration number and the ringer equivalence of the registered protective circuitry. In most, but not all areas, the sum of all RENs should be 5.0 or less. The FCC Registration number and Ringer Equivalence number are printed on the main chip in the center of the internal modem board, or on the underside of the modem.

Malfunction of the Equipment

In the event that the MODEM should fail to operate properly, the customer shall disconnect the equipment from the telephone line to determine if it is the customer's equipment which is not working properly, or if the problem is with the MODEM, the user shall discontinue use until it is repaired. In the event service is needed the user should contact the vendor from whom you purchased the MODEM.

Telephone Connection Requirements

Except for telephone company-provided ringers, all connections to the telephone network shall be made through standard plugs and standard telephone company-provided jacks, or equivalent, in such a manner as to allow for easy and immediate disconnection of the terminal equipment. Standard jacks shall also be arranged that, if the plug connected thereto is withdrawn, no interference to the operation of the equipment at the customer's premises which remains connected to the telephone network, shall occur by reason of such withdrawal.

Incidence of Harm

Should terminal equipment or protective circuitry cause harm to the telephone network, the telephone company shall, where practical, notify the customer that temporary discontinuance of service may be required; however, where prior notices are not practical, the telephone company may temporarily discontinue service if such action is deemed reasonable in the circumstances. In the case of such temporary discontinuance, the telephone company shall promptly notify customers and will be given the right to bring a complaint to the FCC if they feel the disconnection is not warranted.

Changes in Telephone Company Equipment or Facilities

The telephone company may make changes in its communications facilities, equipment, operations, or procedures, where such action is reasonably required and proper in its business. Should any such changes render the customer's terminal equipment incompatible with the telephone company facilities, the customer shall be given adequate notice to make modifications to maintain uninterrupted service.

General

The FCC prohibits customer-provided terminal equipment be connected to party lines or to be used in conjunction with coin telephone service.

Installation

The MODEM is equipped with a USOC RJ-11 standard miniature modular jack and is designed to plug directly into a modular jack.

DOC Compliance Statement (Canada)

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunction, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100. The Load number appears on the underside of the NetComm Rack modem..

To be installed in UL-listed and CSA-certified computers with instructions on how to add/remove expansion cards.

Appendix E: Warranty Information

Limited Warranty

NetComm, Inc. (BRI) warrants to the original buyer of this BRI product that the hardware is free of defects in materials and workmanship for a period of five (5) years from the date of purchase from BRI or its authorized dealer. Should the product fail to be in good working order at any time during the five-year period, BRI, will at its option, repair or replace this product as described below. This warranty does not cover defects resulting from misuse, abuse, negligence, accident, repairs, or alterations made by either the customer or another party. NetComm reserves full rights to determine whether a defective product falls into this category.

The entire risk as to the quality and performance of the product rests with the customer. Any written or oral information or advice given by NetComm dealers, distributors, agents, or employees will in no way increase the scope of this warranty. This warranty applies only to the product described in this manual and not to any other value-added software which may be included.

All products will be serviced and returned via UPS-ground at no charge to customers.

All customers are required to demonstrate proof of purchase when requesting a Return Merchandise Authorization (RMA). The period of service commences on the date of purchase. A copy of the sales slip must be included with the returned merchandise.

Products which require Limited Warranty service during the warranty period should be delivered to BRI at the address in the Appendix (Servicing Your Boca Product) with proof of purchase and the Return Merchandise Authorization (RMA) number provided by BRI Technical Support. Refer to the Appendix in your manual. Replacement parts or complete products will be furnished on an exchange basis only. Replaced parts and/or products become the property of BRI.

If the returned product is sent by mail, the purchaser agrees to prepay shipping charges, insure the product or assume the risk of loss or damage which may occur in transit, and to use a shipping container equivalent to the original packaging. ALL EXPRESS AND IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE FOR THE PRODUCT ARE LIMITED IN DURATION TO THE ABOVE FIVE- AND ONE-YEAR PERIODS, RESPECTIVELY.

UNDER NO CIRCUMSTANCES (WHETHER BASED IN CONTRACT OR TORT) SHALL NETCOMM BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS AS A RESULT OF THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR DISRUPTION OF ITS PRODUCTS.

NetComm reserves the right to make periodic changes or enhancements to any NetComm product without prior notification, but has no obligation to modify or update products once sold.

This warranty gives you specific legal rights, and you have other rights which may vary from state to state. This warranty is valid only in the United States.

Appendix F: Servicing Your NetComm Product

If your NetComm Rack requires service, first contact the authorized dealer from whom you purchased the modem. If the dealer is unable to assist you, and you must contact NetComm Ltd, please follow the instructions below.

Call NetComm's electronic BBS on (02) 9878 3755, it supports data transmission speeds up to 33.6Kbps with settings of N, 8, 1. Once your modem is functional, the BBS may be helpful (especially during off hours) if you have a question about product settings, or if you wish to download special software or utilities.

If the Troubleshooting section (Appendix A) did not resolve your problem, you may call our technical support staff for assistance. If you haven't referred to the Troubleshooting section, do so now.

NOTE: CALLING TECHNICAL SUPPORT WITHOUT COMPLETE AND ACCURATE INFORMATION CONCERNING YOUR PROBLEM MAY BE BOTH TIME-CONSUMING AND FRUSTRATING FOR YOU.

1. When calling NetComm's Customer care Centre and have the following information available:
 - **Unit name and part number**
 - **Computer manufacturer**
 - **Computer Model**
 - **Peripherals in system**
 - **Operating system and version**

If you suspect a problem with a specific program or software package, make note of the name, version or release number, and manufacturer of the software.

2. Call NetComm's Customer Care Centre on 1 800 642 067. A trained technician will be available to discuss the problem(s) you are experiencing.

If factory service is required, you will be given a Return Authorization (RA) number. Please place this number on the outside of the package when you return the item(s) for service and reference it on any correspondence included in the package. NetComm Ltd will return any product which is not accompanied by an RMA number.

3. Refer to the Warranty Statement if the product is covered under the five-year NetComm Ltd, Warranty.
4. Certain parts will not be covered under the NetComm Ltd, Warranty. Dealer installed parts are warranted by the dealer. Parts which you have installed yourself are covered only by the supplier's warranties. In these cases, NetComm Ltd, can identify which parts are defective, but will not replace such parts until specific written authorization is received from you. The cost of parts and labor involved in making such repairs will be billed to you C.O.D.
5. When sending the NetComm Rack to NetComm Ltd, for repairs, please be sure to include:
 - the NetComm Rack (unit only)
 - a copy of the original invoice
 - your return street address (for UPS purposes)
 - phone number
 - the RA number mentioned above

Package the product securely in a container equivalent to the original packaging, and insure the package to protect against loss or damage during transit. Shipping charges must be prepaid; C.O.D. shipments will not be accepted. Please use the address below for all correspondence:

NetComm Ltd

RA # _____

Block A, 25 Paul Street North,

North Ryde NSW 2113

AUSTRALIA

6. If the repairs performed on your modem were covered by the warranty, NetComm Ltd, will return it prepaid.

Contact Information

Please contact NetComm for help, information, sales enquiries or to join the NetComm Info Mailing List:

Customer Care Centre

- Updates: Click on the NetConnect icon, located on the front page, to connect to the internet and receive NetComm's latest product information and updates. *Your computer will need to be configured with an internet connection to use this feature.*
- Email: support@netcomm.com.au
- Web Page: <http://www.netcomm.com.au>
- FTP site: <ftp.netcomm.com.au>
- Fax: (02) 9887 4274
- Phone: 1 800 642 067or
9878 7473 in the Sydney metropolitan area
- BBS: (02) 9878 3755

TeleMarketing

- Fax: (02) 9805 0254
- Phone: 1 800 269 950 or
9878 7333 in the Sydney metropolitan area

Mailing List

For the latest sales and technical information, subscribe to the NetComm Info Mailing List by sending an e-mail to:

mailing-list@netcomm.com.au

In the body of the message enter the word:

subscribe

This will add your e-mail address to the NetComm Information Mailing List and you will be e-mailed news and updates regularly.