DEVICE·MASTER® ATS-LNX

Installation and Configuration Guide for Linux

COMTROL

Table of Contents

Installation and Setup

This section discusses the following topics:

- Audience
- Product overview.
- Installing the hardware.
- Configuring the network settings on the ATS-LNX.
- Setting up remote management.

Audience

The DeviceMaster ATS-LNX requires that you have a working knowledge and familiarity with the Linux operating system including areas such as:

- System administration
- Network configuration
- Operating system installation

Product Overview

The DeviceMaster ATS-LNX is a standalone, user-programmable microcomputer designed to run Linux applications in a solid-state environment. The ATS-LNX model provides built-in Ethernet connectivity and is designed for remote deployment and management of local programs and the attached serial devices.

The ATS-LNX is designed as a deployment platform, not a development platform. The solid-state compact flash technology does not support an unlimited number of writes. While development could be done on the ATS-LNX, it is recommended that application development is conducted on a different machine and the resulting application moved to and tested on the ATS-LNX.

The ATS-LNX is running Comtrol Corporation's customized version of the Debian 3.0 operating system. See *Appendix B. Specifications and Notices* starting on Page 31 for detailed default system information.

If you are unfamiliar with using an embedded operating system, you should review information about the operating system before installation. Please refer to the existing documentation provided by Debian at http://www.debian.org.

Installation

Installation of the hardware may vary depending on the configuration you ordered from Comtrol. Although the ATS-LNX can be placed in a remote location, you will need to configure the ATS-LNX before it is placed into service.

Use the following procedures to setup the DeviceMaster ATS-LNX.

Note: *If you need pin out information about any of the connectors on the ATS-LNX, see* *Appendix A. Connectors* *starting on Page 27.*

Initial Hardware Installation to Configure the ATS-LNX

1. Place the DeviceMaster ATS-LNX on a stable surface or attach it to a suitable surface using the mounting brackets shipped with the device.

2. Verify that the compact flash is fully inserted. When installed correctly, the compact flash is recessed into the ATS-LNX and the eject button protrudes about 1/4 inch. If necessary, without using excessive force or sharp objects, seat the compact flash in its socket. Too much force can damage the device.

3. Use one of the following methods to set up communications:
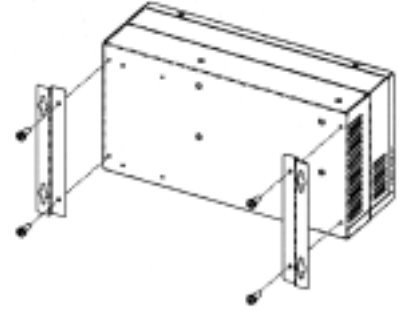
    ASCII Terminal

    You can use a VT100 compatible terminal to perform the system configuration.

    a. Configure the terminal for these port attributes:

        -   Bits per second = 57600
        -   Data bits = 8
        -   Parity = None
        -   Stop bits = 1
        -   Flow control = None

    b. Connect the ASCII terminal to the **CONSOLE** port.

    PC COM Port

    You can connect the ATS-LNX to a PC COM port to perform the system configuration.

    a. Connect a null-modem cable from a COM port on a PC or laptop to the port labeled **CONSOLE** on the ATS-LNX. See AUX A and CONSOLE Port Connectors on Page 29 for connector information.

    b. Start a terminal program, for example, Minicom and configure the following port attributes:

        -   Bits per second = 57600
        -   Data bits = 8
        -   Parity = None
        -   Stop bits = 1
        -   Flow control = None

    Monitor and Keyboard

    You can connect a standard monitor and keyboard to perform the system configuration.

    a. Connect the 15-pin monitor cable from a standard VGA monitor to the **VGA** connector.

    b. Connect a standard PS/2 compatible keyboard (6-pin mini DIN) into the **KEYBOARD** connector or a USB keyboard to one of the **USB** ports.

    c. Optionally, connect a PS/2 compatible mouse (6-pin mini DIN) into the **MOUSE** connector or a USB mouse to one of the **USB** ports.

    Network

    You can configure the ATS-LNX through the network, if you can communicate to one of the default IP addresses. Connect an Ethernet cable between the port that corresponds to the IP address to which you want to communicate and a NIC or Ethernet hub.

    -   eth0: 192.168.255.252 (port labeled Ethernet #2)

- eth1: 192.168.250.251 (port labeled Ethernet #1)

Connecting Optional Devices to the ATS-LNX

Connect the devices appropriate for how you plan to use the ATS-LNX:

1. To dial-in and manage the ATS-LNX through a modem, connect an external modem to the **AUX A** connector of the ATS-LNX.

   If you want to connect a serial device (other than a modem) to this port, see Using the AUX A Port as a Standard tty Port on Page 22 to change the default port set up.

2. If you want to connect a parallel printer to the system, connect the printer cable to the **PARALLEL** connector.

   Note: Go to www.debian.org to download a print spooler or printer driver.

3. Optionally, insert a PCMCIA device into one of the **PCMCIA** slots. See *PCMCIA/USB Package Supported* on Page 45 for detailed information.

4. Optionally, connect up two USB devices to the **USB** ports.

5. If the PC104 RocketPort® option is installed, connect the PC104 RocketPort cable (quad- or octacable) to the **SERIAL PORTS 1-8** connector.

   Note: If you have the PC104 RocketPort card option installed, do not connect any RS-422 or RS-485 devices to the serial ports until you have configured the driver.

Powering on and Configuring the ATS-LNX

After connecting the cables and devices, you can power on the ATS-LNX and log in to the operating system.

1. Connect the power cable into the power supply and connect the power supply (with the latch and key up) into the **POWER** connector.

2. Connect the power cable to a power source.

   Note: The system beeps during the power on cycle. If you have the RocketPort PC104 option installed, solid yellow Tx LEDs also indicate that you have power to the unit.

3. If connected to the **CONSOLE** port, press any key when this message appears:

   `Press key to activate this console.`

4. Select the kernel that you want to run:

   - **/boot/vmlinuz-2.4.18-comtrol-dm-ats** (VGA) - Default

     Boots a kernel that has been compiled specifically for the ATS-LNX platform, which selects the VGA graphics adapter as the system console.

   - **/boot/vmlinuz-2.4.18-comtrol-dm-ats** (serial)

     Same kernel as the above selection, but the **CONSOLE** serial port is selected as the system console.

   - **/boot/vmlinuz-2.4.18-bf2.4**

     Boots the standard **bf2.4** kernel distributed by the Debian project, which selects the VGA adapter as the system console.

   In all three cases, kernel messages are sent to both the serial and VGA consoles. The *system console* selection controls which device is used by daemons and the syslog facility. You can modify the console settings by editing the **/boot/grub/menu.lst** file.

5. Log in as **root** at the Debian prompt. The default system password is **devicemaster** and it is case-sensitive.

6. Change the default system password.

```
dm-ats:~# passwd
Enter new UNIX password: [enter new_password]
Retype new UNIX password: [retype new_password]
passwd: password updated successfully
dm-ats:~#
```

7. Run the ./newsshkeys.sh shell script in the user root home directory, which automatically generates a new SSH key.

   Note: *All ATS-LNX units are shipped with the same default SSH key. If you do not change the key, somebody else will be able to decrypt your SSH traffic.*

8. Run the **./netconfig.sh** shell script in the user root home directory to configure the network settings on the ATS-LNX. The default network settings are:

   - eth0: 192.168.255.252 (Ethernet #2)
   - eth1: 192.168.250.251 (Ethernet #1)

   Note: *The ATS-LNX provides Ethernet ports that function as two independent Ethernet network interface cards.*

   See Network Card Installation and Configuration on Page 19 for PCMCIA network configuration

9. Edit the **/etc/resolv.conf** file to modify the IP address.

10. Confirm that the **/etc/nsswitch.conf** file contains this line:

    ```
    hosts: files dns
    ```

11. Connect Ethernet cables to the ports that you configured.

PCMCIA knock-out removed, if option ordered

SERIAL PORTS 1-8 connector and fanout cable, if RocketPort PC104 option ordered.

eth1   **eth0**
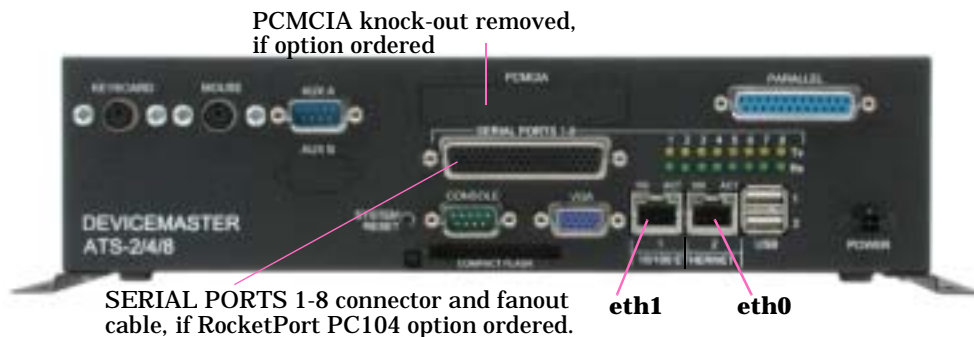
12. Ping the ATS-LNX to verify proper network configuration.

Webmin

The ATS-LNX is shipped with the **Webmin** remote administration package http://www.webmin.net/. It listens for https connections on Port 10000. If you plan on leaving Webmin on the system, you should change the default root Webmin password.

Use this procedure to change the root **Webmin** password from a remote PC.

1. Point your browser at: **https://*dm-ats*:10000/**

   where *dm-ats* is the IP address or host name of the ATS-LNX.

   Depending on your browser, you may get a security alert and be advised that the device does not have a security certificate.

2. Log in as **root**; **devicemaster** is the default Webmin password and it is case-sensitive.

3. Under the **Webmin** tab, select **Webmin Users**.

4. In the left column of the user list, select **root**.

5. Enter a new password in the *Password* field and select the **Save** button at bottom of page.

Note: *If you want to remove* *Webmin* *you can use the shell script* ***uninstall-webmin.sh*** *found in the user root home directory. When removing* *Webmin* *(or other packages) you can ignore warnings about non-empty directories.*

Hints and Tips

This section discusses the following topics:

- Telnet and ftp (servers and clients)
- Parallel port information
- Installing and adding packages
- Default device names

Telnet and FTP

The ATS-LNX is shipped with telnet and ftp client and server packages installed. However, the telnet and ftp servers and the ftp client have been disabled since the **ssh** package provides the same functionality in a much more secure manner.

Note: *The ftp client is enabled by default.*

Enabling Telnet and FTP Servers

To enable the telnet and ftp servers, use the following commands:

```
# update-inetd --enable telnet
# update-inetd --enable ftp
```

By default, you can not ftp to root, a user must be created with the proper permissions.

Removing Telnet and FTP Packages

To remove the telnet or ftp server packages entirely use the following commands:

```
# dpkg --purge wu-ftp
# dpkg --purge telnetd
```

To remove the telnet and ftp client package:

```
# dpkg --purge telnet
# dpkg --purge ftp
```

PARALLEL Port Information

The parallel port works as-is, and you can send data to a printer using commands like:

```
# echo "Hi there" >/dev/lp0
# cat myfile.txt >/dev/lp0
```

If you want print-spooling (queuing of print jobs) you have to download a package (e.g. **lpr**). If you want to be able to print graphics or use different fonts, you have to download a graphics converter for your printer (usually the **ghostscript** package is used, possibly with another package that automatically detects the format of files to be printed).

Windows SSH Client

You can use **PuTTY** as a Windows **ssh** or telnet client, which can be found at: http://www.chiark.greenend.org.uk/~sgtatham/putty/

The http://linux.rice.edu/help/tips-ssh.html page also has links to various SSH clients.

Installing and Adding Packages

To install packages from the main Debian archive at ftp://ftp.debian.org:

1. Verify that the network is configured (including DNS server) so that you have http access to the server **ftp.debian.org** with the command:

   ```
   # telnet ftp.debian.org http
   ```

2. Connect to the server by typing **GET** and pressing the **Enter** key. You should see something like this:

   ```
   # telnet ftp.debian.org http
   Trying 128.101.80.131...
   Connected to ftp.debian.org.
   Escape character is '^]'.
   GET
   <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
   <HTML><HEAD>
   <TITLE>302 Found</TITLE>
   </HEAD><BODY>
   <H1>Found</H1>
   The document has moved <A HREF="http://www.debian.org/distrib/
   ftplist">here</A>.<P>
   </BODY></HTML>
   Connection closed by foreign host.
   ```

3. Update the available package list:

   ```
   # apt-get update
   ```

   - **apt-get** downloads the list of available packages.
   - The list of available packages is in **/var/lib/dpkg/available**, which may be searched with the **apt-cache search** command.
   - See the **apt-cache** manual page if you need assistance.

4. Install the desired package:

   ```
   # apt-get install jed
   ```

   apt-get will download and install **jed** and any other packages required by **jed**.

5. You may also download and install any package updates that have been released by doing:

   ```
   # apt-get upgrade
   ```

PC104 RocketPort Option

The PC104 RocketPort serial card is optional in the DeviceMaster ATS-LNX.

Note: *This option can only be installed by Comtrol.*

This section discusses the following topics:

- Configuring the serial ports for your serial devices.
- Connecting your serial devices to the ATS-LNX.
- RocketPort quad- or octacable:
    - Connector pinouts
    - Building loopback plugs
    - Building cables (null-modem and straight-through).
- Testing PC104 serial ports.

Configuring the RocketPort PC104 Serial Ports

Use one of the following methods if you need to configure any of the RocketPort PC104 serial ports for RS-422 or RS-485 use.

Note: *The device driver is installed and loads on demand when /dev/ttyRxx devices are opened. The port default is RS-232.*

- The initial configuration used by the driver is specified in **/etc/modules.conf**:

  ```
  options rocket board1=0x180 pc104_1=232,232,232,232,232,232,232,232
  ```

  To change **/dev/ttyR3** to RS-422, modify the options line like this:

  ```
  options rocket board1=0x180 pc104_1=232,232,232,422,232,232,232,232
  ```

  Changes to the options line in **modules.conf** will not take effect until the next time the driver module is loaded. You may manually unload or load the driver:

  ```
  # rmmod rocket
  # modprobe rocket
  ```

- The **setrocket** utility may be used to change the mode at anytime. Changes made by **setrocket** are not persistent, that is, the next time the driver is loaded, the setting reverts to those specified in the **/etc/modules.conf** file. An example of **setrocket** usage is shown below:

  ```
  # setrocket /dev/ttyR2 rs485
  # setrocket /dev/ttyR5 rs232
  ```

  To display the current configuration of a port, use **setrocket** with the device name:

  ```
  # setrocket /dev/ttyR4
  ```

  Invoking **setrocket** with no arguments displays a summary of the options.

  Note: *Settings changes using setrocket are only valid during the current login session.*

- An **ioctl()** call may be used to read or write the port configuration (this is what is done by the **setrocket** utility):

  ```
  #include "rocket.h"
  void set485(int fd)
  {
      struct rocket_config config;

      ioctl(fd, RCKP_GET_CONFIG, &config);
  ```

```
                      config.flags &= ~ROCKET_MODE_MASK;
                      config.flags |= ROCKET_MODE_RS485;
                      ioctl(fd, RCKP_SET_CONFIG, &config);
              }
```

For a more detailed example, see the **setrocket** source code available in the Linux driver at ftp://ftp.comtrol.com/RPort/Drivers/PC104/Linux.

Connecting Serial Devices

There is a remote possibility that connecting a peripheral using the wrong configuration (***RS-232 device connected to a RS-422 configured port***) could damage the peripheral. Configure each serial port specifically for the peripheral that will be connected prior to connecting the peripheral to the ATS-LNX.

Connect your serial devices to the configured ports using the appropriate cables. If you need to build cables, see *RocketPort Serial Port Connectors* on Page 15.

RocketPort Serial Port Connectors

The following subsections illustrate the pinouts for the quad- and octacable connector types and how to build loopback plugs for testing serial ports.

DB9 Connectors

This illustrates the pinouts for DB9 quad- or octacables.

RS-232

GND	RI
DTR	CTS
TxD	RTS
RxD	DSR
CD	
Pin 1	Pin 6

RS-422

Not used*	Not used
Not used	RxD+
TxD-	TxD+
RxD-	Not used
Not used	
Pin 1	Pin 6

RS-485

Not used*	Not used
Not used	Not used
TxD/RxD-	TxD/RxD+
Not used	Not used
Not used	
Pin 1	Pin 6
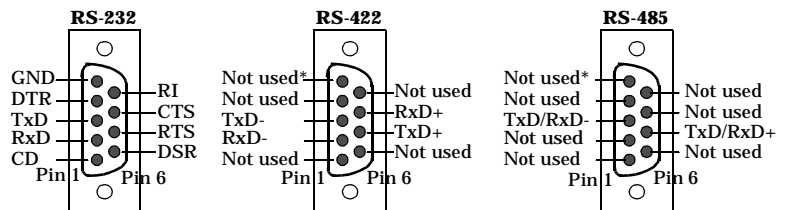
* Pin 5 is tied to ground on the board, but is not used in the cable.

Building Additional DB9 Loopback Plugs

Loopback connectors are DB9 female serial port plugs that you can use to test serial ports. The ATS-LNX is shipped with a a single loopback plug (RS-232/422) that corresponds to your quad- or octacable type.

Note: *You can run loopback tests with minicom.*

Wire the following pins together to build additional plugs or replace a missing RS-232 loopback plug:

* Pins 1 to 4 to 6
* Pins 2 to 3
* Pins 7 to 8 to 9
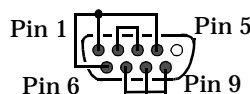
Pin 1 / Pin 5 / Pin 6 / Pin 9 — **RS-232 Only (Back View)** — *The RS-232 loopback plug also works for RS-422.*

Wire the following pins together for an RS-422 loopback plug:

* Pins 2 to 3
* Pins 7 to 8
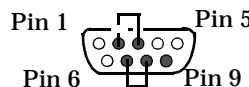
Pin 1 / Pin 5 / Pin 6 / Pin 9 — **RS-422 Only (Back View)**

DB25 Connectors This illustrates the pinouts for DB25 quad - or octacables.
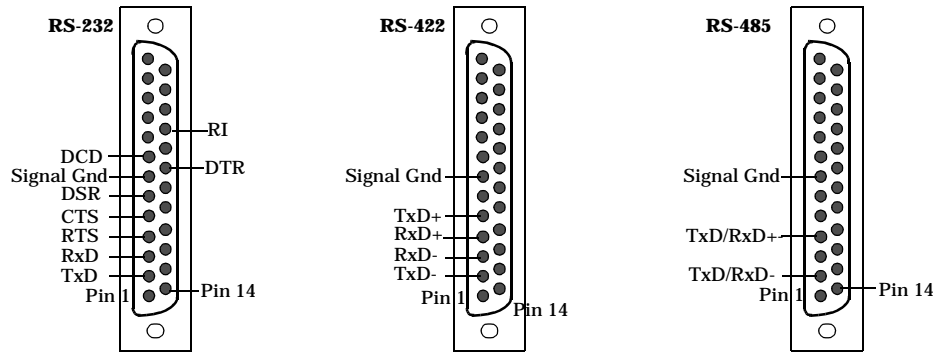
Building Additional DB25 Loopback Plugs

Loopback connectors are DB25 female serial port plugs that you can use to test serial ports. The ATS-LNX is shipped with a a single loopback plug (RS-232/422) that corresponds to your quad- or octacable type.

Note: *You can run loopback tests with minicom.*

Wire the following pins together to build additional plugs or replace a missing RS-232 loopback plug:

• Pins 2 to 3

• Pins 4 to 5 to 22

• Pins 6 to 8 to 20
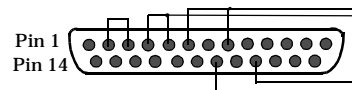
RS-232 Only (Back View)

The RS-232 loopback plug also works for RS-422.

Wire the following pins together for an RS-422 loopback plug:

• Pins 2 to 3

• Pins 4 to 5
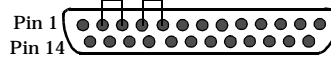
RS-422 Only (Back View)

RJ45 Connectors This illustrates the pinouts for RJ45 quad- or octacables.
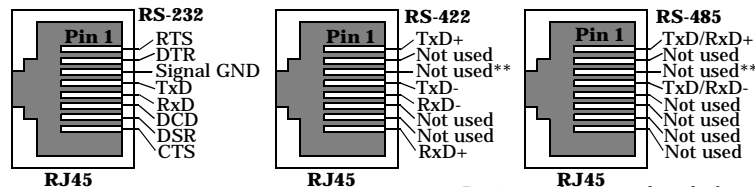
** *Pin 3 is tied to ground on the board, but is not used in the cable.*

Building Additional RJ45 Loopback Plugs

Loopback connectors are RJ45 serial port plugs that can be used to test serial ports. The ATS-LNX is shipped with a a single loopback plug (RS-232/422) that corresponds to your quad- or octacable type.

Note: *You can run loopback tests with minicom.*

• Pins 4 to 5

• Pins 1 to 8

• Pins 2 to 6 to 7
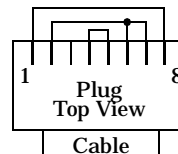
The RS-232 loopback plug also works for RS-422.

Building an RS-485 Test Cable

You can use a straight-through cable as illustrated previously, or build your own cable.

Signal	RJ45 Pins		DB9 Pins	RJ45 Pins	DB25 Pins	Signal
TxD or TRX-	4	→	3	4	2	TxD or TRX-
RTS or TRX+	1	→	7	1	4	RTS or TRX+
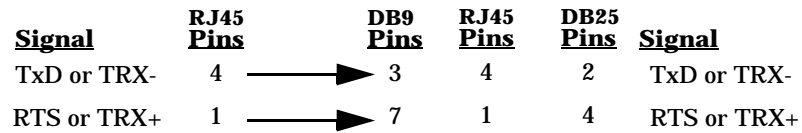
Building Null-Modem Cables

Use the following figure if you need to build a null-modem cable. A null-modem cable is required to connect the **CONSOLE** port to a PC COM port or to connect DTE devices.

	Signal	DB9 Pins	DB25 Pins	RJ45 Pins		DB9 Pins	DB25 Pins	RJ45 Pins	Signal	
ATS Female	TxD	3	2	4	→	2	3	5	RxD	PC COM Port
	RxD	2	3	5	←	3	2	4	TxD	
	RTS	7	4	1	→	8	5	8	CTS	
	CTS	8	5	8	←	7	4	1	RTS	
	DSR	6	6	7	←	4	20	2	DTR	
	DCD	1	8	6	←	1	8	6	DCD	
	DTR	4	20	2	→	6	6	7	DSR	
	GND	5	7	3		5	7	3	GND	
	RI	9	22	N/A	←	9	22	N/A	RI	
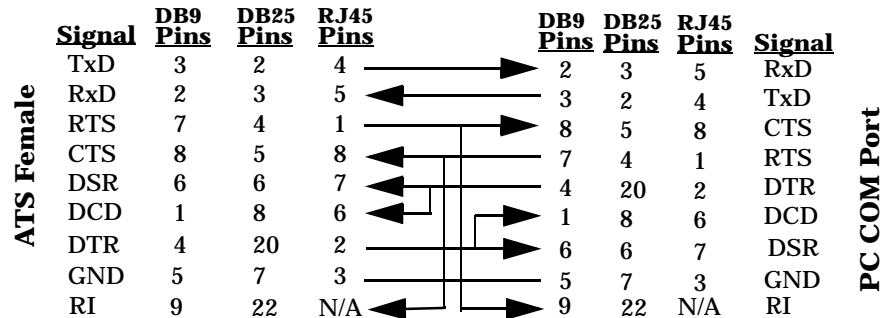
Note: *You may want to purchase or build a straight-through cable and purchase a null-modem adapter.*

Building Straight-Through Cables

Use the following figure if you need to build a straight-through cable. Straight-through cables are used to connect DCE devices.

	Signal	DB9 Pins	RJ45 Pins		DB9 Pins	RJ45 Pins	DB25 Pins	Signal	
ATS Female	DCD	1	6	→	1	6	8	DCD	Device
	RxD	2	5	→	2	5	3	RxD	
	TxD or TRx-	3	4	→	3	4	2	TxD or TRx-	
	DTR	4	2	→	4	2	20	DTR	
	GND	5	3	→	5	3	7	GND	
	DSR	6	7	→	6	7	6	DSR	
	RTS or TRx+	7	1	→	7	1	4	RTS or TRx+	
	CTS	8	8	→	8	8	5	CTS	
	RI	9	N/A	→	9	N/A	22	RI	
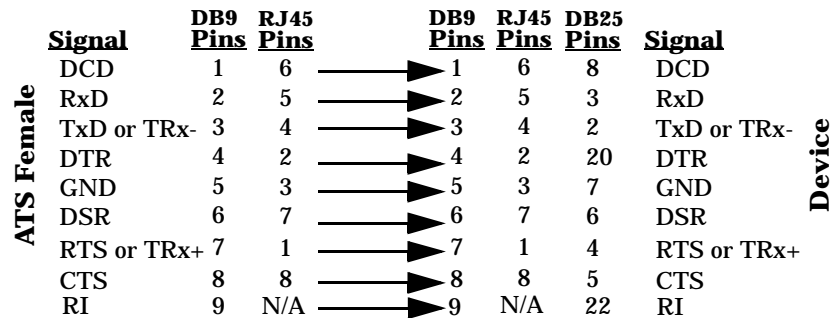
Testing Serial Ports

You can use the following subsections to test the PC104 serial ports.

lcom(1)

Comtrol has available **lcom**(1), which is a multiport serial I/O test program. You can use **lcom** in **test** mode to send test data to any ATS-LNX serial port. See *Appendix C. lcom(1)* on Page 60 for information on how to use **lcom**.

File Transfer

You can transfer a file using the following information. The default settings are 9600, 8, n, 1, and no parity.

To send a file you can redirect output to a device; for example:

```
Cat /etc/inittab > /dev/ttyR0
```

Sends the contents of the **/etc/inittab** file to the **ttyR0** device at 9600 baud, 8, n, 1, and no parity.

Changing Serial Port Settings (stty)

Use the following information if you need assistance changing or viewing the baud rate settings.

To change the baud rate, use the following example, which changes the baud rate to 19200:

```
stty 19200 </dev/ttyR0
```

To view the current serial port settings for **ttyR0**, enter:

```
stty -a </dev/ttyR0
```

Note: *Settings changes via stty are only valid during current log in session. For permanent setting changes, use the /etc/inittab file.*

Setting Up Terminals and Modems (mgetty, getty)

Add the appropriate line or lines to the **/etc/inittab** then restart:

Terminal Example:

```
T0:23:respawn:/sbin/getty -L ttyR0 57600 vt100
```

Modem Example:

```
T1:23:respawn:+/sbin/mgetty -m '"" AT&F OK' -D -x9 -s 115200 ttyR0
```

Note: *If necessary, see the manual pages for more information on mgetty.*

PCMCIA Network Cards

The ATS-LNX includes drivers for a variety of ethernet cards, and a driver for modem and serial port cards. All **modems should work with the supplied driver.**

For overall PCMCIA information, refer to: http://pcmcia-cs.sourceforge.net/.

Network Card Installation and Configuration

1. Configure IP address information as describe below.
2. For 802.11 wireless cards, configure **ESSID** and **Key** as described below.
3. Insert PCMCIA network card.
4. Examine **/var/log/daemon.log** to see if card was recognized.
5. Use **ifconfig** and **iwconfig** (802.11 only) commands to see if card was configured properly.

ESSID and Encryption Key (802.11)

Settings used for PCMCIA 802.11 wireless networking cards are stored in the **/etc/pcmcia/wireless.opts** file. Two values will usually have to be placed in this file, the ESSID and encryption key.

There are multiple configurations in the **wireless.opts** file. The first configuration that matches the PCMCIA card's MAC address is used. If the same configuration is to be used for any PCMCIA wireless card, then the section starting with *,*,*,*) may be used.

1. Remove the following four lines from the **wireless.opts** file.

```
# --------- START SECTION TO REMOVE -----------
*,*,*,*)
    ;;
# ---------- END SECTION TO REMOVE ------------
```

2. Add the following lines in the **wireless.opt** file for the ESSID and encryption key for your device.

```
*,*,*,*)
ESSID="your_ESSID"
KEY="your_key_number"
;;
```

IP Configuration (802.11 and Ethernet)

IP configuration information for PCMCIA network interface cards is stored in the **/etc/pcmcia/network.opts** file. The layout of this file is similar to that of **wireless.opts**: there is a **case** statement which can contain multiple configurations. The system uses the first configuration that matches the card's mode and MAC address information. If you want the same network configuration used for all PCMCIA network cards, put the configuration in the *,*,*,*) section at the top of the file.

The **/etc/pcmcia/network.opts** file looks something like this:

```
# Network adapter configuration
#
# The address format is "scheme,socket,instance,hwaddr".
#
#  the "network address" here is NOT the same as the IP address.
# See the Networking HOWTO.  In short, the network address is the IP
# address masked by the netmask.
#
case "$ADDRESS" in
*,*,*,*)
    logger -p daemon.info "network.opts ADDRESS='$ADDRESS'"
    INFO="Sample private network setup"
    # Transceiver selection, for some cards -- see 'man ifport'
    IF_PORT=""
    # Use BOOTP (via /sbin/bootpc, or /sbin/pump)? [y/n]
    BOOTP="n"
    # Use DHCP (via /sbin/dhcpcd, /sbin/dhclient, or /sbin/pump)?
[y/n]
    DHCP="n"
    # If you need to explicitly specify a hostname for DHCP requests
    DHCP_HOSTNAME=""
    # Use PPP over Ethernet (via the pppoe package)? [y/n]
    PPPOE="n"
    # Use WHEREAMI (via the whereami package)? [y/n]
    WHEREAMI="n"
    # Host's IP address, netmask, network address, broadcast address
    IPADDR="1921.68.4.97"
    NETMASK="255.255.0.0"
    NETWORK="192.168.0.0"
    BROADCAST="192.168.255.255"
    # Gateway address for static routing
    GATEWAY="192.168.0.1"
    # Things to add to /etc/resolv.conf for this interface
    DOMAIN=""
    SEARCH=""
    # The nameserver IP addresses specified here complement the
    # nameservers already defined in /etc/resolv.conf.  These nameservers
    # will be added to /etc/resolv.conf automatically when the PCMCIA
    # network connection is established and removed from this file when
    # the connection is broken.
    DNS_1=""
    DNS_2=""
    DNS_3=""
    # NFS mounts, should be listed in /etc/fstab
    MOUNTS=""
    # If you need to override the interface's MTU...
    MTU=""
    # For IPX interfaces, the frame type and network number
    IPX_FRAME=""
    IPX_NETNUM=""
    # Run ipmasq? [y/n]  (see the Debian ipmasq package)
    IPMASQ="n"
    # Extra stuff to do after setting up the interface
```

```
                              start_fn () { return; }
                              # Extra stuff to do before shutting down the interface
                              stop_fn () { return; }
                              # Card eject policy options
                              NO_CHECK=n
                              NO_FUSER=n
                              ;;
                   esac
```

If no configuration is found in **/etc/pcmicia/network.opts**, the system will try to use configuration information found in **/etc/network/interfaces**. This method has not proved successful with wireless cards (though it seems to work with normal Ethernet cards).

If you put IP configuration in **/etc/pcmcia/network.opts**, make sure it is not duplicated in **/etc/network/interfaces**. Having configurations in both places (that is, **eth2** configuration in **/etc/network/interfaces**) has been known to cause problems for 802.11 wireless networking cards.

AUX A Port

This section discusses the following topics:

- How to change the default function of the **AUX A** port from the default configuration to a standard RS-232 serial port.
- The default modem initialization string.

By default, **AUX A (ttyS1)** is configured for use with a modem.

Using the AUX A Port as a Standard tty Port

To disable the dial-in support on the **AUX** port, use a # character to comment out the **ttyS1** line in the **/etc/inittab** file.

```
#T1:23:respawn:+/sbin/mgetty -x0 -s 115200 ttyS1
```

In both cases you will have to either reboot or do one of the following:

- Notify **init** of the changes with this command:

  ```
  # telinit q
  ```

- Kill any **getty** or **mgetty** running on the port in question:

  ```
  # ps
  PID TTY        STAT   TIME COMMAND
  1 ?          S      0:05 init [2]
  2 ?          SW     0:00 [keventd]
  [...]
  1149 ttyS0    S       0:00 /sbin/getty -L ttyS0 57600 vt100
  [...]
  # kill 1149
  ```

Modem Initialization

The ATS-LNX **mgetty** configuration uses the **AT&F1** command to set the externally attached modem to factory defaults.

Note: If factory default initialization string is not working, consult your modem's manual for the proper initialization string.

The initialization string should set the modem to:

- Locked DTE baud rate.
- Hardware flow control (RTS/CTS).
- Verbose result codes.
- Reset when DTR dropped.

The modem initialization string is contained in the **/etc/inittab** file:

```
T1:23:respawn:+/sbin/mgetty -m '"" AT&F1 OK' -D -x0 -s 115200 ttyS1
```

*Note: Other modem types may work with the **AT&F** modem initialization command.*

CONSOLE Port

This section contains information about how to use the **CONSOLE** port. In addition, this section discusses how to change the default configuration and use it as a standard RS-232 serial port.

By default, the **CONSOLE (ttyS0)** port is configured for serial console administration.

Using the CONSOLE Port as a Standard TTY Port

To disable the login prompt on the **CONSOLE** port, comment out the **ttyS0** line in the **/etc/inittab** file.

```
#T0:23:respawn:/sbin/getty -L ttyS0 57600 vt100
```

In both cases you will have to either reboot or do one of the following:

*   Notify **init** of the changes with this command:

    ```
    # telinit q
    ```

*   Kill any **getty** or **mgetty** running on the port in question:

    ```
    # ps
    PID TTY        STAT    TIME COMMAND
    1 ?          S       0:05 init [2]
    2 ?          SW      0:00 [keventd]
    [...]
    1149 ttyS0     S        0:00 /sbin/getty -L ttyS0 57600 vt100
    [...]
    # kill 1149
    ```

Troubleshooting and Technical Support

This section contains troubleshooting information for your Comtrol device. You should review the following subsections before calling Technical Support because they will request that you perform many of the procedures or verifications before they will be able to help you diagnose the problem.

- Troubleshooting checklist
- Using the recovery CD
- Customer support policy

Note: *To test serial ports on the ATS-LNX, see Appendix C. lcom(1) on Page 60 and use* test *mode to diagnose the problem.*

If you cannot diagnose the problem, you can contact Technical Support using *Technical Support* on Page 26.

Troubleshooting Checklist

The following checklist may help you diagnose your problem:

- Verify that you are using the correct types of cables on the correct connectors and that all cables are connected securely using the hardware documentation.

   Note: *Most customer problems reported to Comtrol Technical Support are eventually traced to cabling or network problems. Use a standard Ethernet cable to connect from the 1 or 2 port to an Ethernet hub or a cross-over cable if connected directly to a NIC in a server.*

- Verify that the Ethernet hub and any other network devices between the server and the Comtrol device are powered up and operating.
- Reset the power on the Comtrol device by disconnecting and reconnecting the power cord.
- Verify that the network IP address is correct. If IP addressing is being used, the server should be able to ping the Comtrol device.
- Verify that the IP address programmed into the Comtrol device matches the unique reserved IP configured address assigned by the system administrator.

Note: *See Default Device Names on Page 67, if you need to verify device names. Also see Testing Serial Ports on Page 17, if you need to test the PC104 ports.*

Using the Recovery CD

Comtrol ships a Recovery CD with each ATS-LNX system. You can use the Recovery CD to:

- Reflash the compact flash in the event that the Linux Embedded system becomes corrupt.
- Recover the default image to the ATS-LNX compact flash.
- Replace the existing flash with a larger flash using the larger image file.

To use the Recovery CD, you will need the following:

- A PC with a Linux operating system.

    Note: *Make sure that the PC is dd capable and is able to access a compact flash adapter or reader as a block device.*

- One of the compact flash adapters or readers:
    - IDE

        Note: *The IDE flash adapter must be a master with no other devices on that channel because the recovery process is propagated to all devices on the channel.*

    - USB
    - PCMCIA
- A compact flash.

Use the following procedure to recover the default ATS-LNX image onto a compact flash.

1. Install the compact flash adapter or reader using the instructions that came with the device.

2. Insert a compact flash into the compact flash adapter or reader.

3. Log in with root privileges.

4. Mount the CD-ROM drive. For example, on a Redhat machine:

    ```
    mount /dev/cdrom
    ```

5. Change the directory on the CD-ROM:

    ```
    cd /mnt/cdrom
    ```

6. Determine the IDE drive by entering:

    ```
    ls /proc/ide
    ```

7. Reformat the compact flash using this command:

    ```
    dd if=/dev/zero of=/dev/hdc
    ```

    where *hdc* is the IDE drive from the previous step.

    Step 7 takes five or more minutes to complete. The screen does not show process, but the compact flash adapter or reader may have an LED that shows activity. The reformat has completed when the system prompt returns.

    ```
    hdc: hdc1
    dd: writing to '/dev/hdc': no space left on device
    0+62977 records in
    0+62976 records out
    ```

    Note: *The device name should reflect your device and the number of records may be different depending on the version or compact flash.*

8. Change to the appropriate image directory on the CD.

    ```
    cd /256_Image
    ```

    or

    ```
    cd /512_Image
    ```

    Note: *Make sure that you change to the directory that contains the image size that reflects the size of the flash that you want to burn.*

9. Determine the name of the file in the directory:

    ```
    ls
    ```

10. Enter the following command using the file name from Step 9:

```
bzcat atslinuxXXX.img.bz2 | dd of=/dev/hdc bs=64k
```

where:

atslinuxXXX.img.bz2 = Image file name on the CD.
hdc = block device for compact flash.

Step 9 takes five or more minutes to complete. The screen does not show process, but the compact flash adapter or reader may have an LED that shows activity. The reformat has completed when the system prompt returns.

```
hdc: unknow partition table
dd: writing '/dev/hdc': no space left on device
0+62977 records in
0+62976 records out
```

Note: *The device name should reflect your device and the number of records may be different depending on the version or compact flash.*

Customer Support Policy

Comtrol will provide no charge support on the installation, use, and configuration of the ATS-LNX product with the original operating system and any "Comtrol Tested" hardware options.

Support beyond normal installation and configuration, including operating system modifications and installation or use of untested hardware options will be provided on a fee for services basis.

Fees will be $100 per hour with a $100 minimum per case. Customers wishing support on a fee for services basis must be pre-approved by Comtrol prior to receiving support. Please contact Comtrol Customer Service for information on fees for services.

Technical Support

If you need technical support, contact Comtrol using one of the following methods.

Contact Method	Corporate Headquarters	Comtrol Europe
FAQ/Online	http://support.comtrol.com/support.asp	
Downloads	ftp://ftp.comtrol.com/Dev_Mstr/ATS/LNX	
Email	support@comtrol.com	support@comtrol.co.uk
Web site	http://www.comtrol.com	http://www.comtrol.co.uk
Fax	(763) 494-4199	+44 (0) 1 869-323-211
Phone	(763) 494-4100	+44 (0) 1 869-323-220

Appendix A. Connectors

This section contains information about the standard connectors on the ATS-LNX. For connector information for the optional **SERIAL PORTS 1-8** connector, see the section that discusses the PCMCIA option.

VGA Connector

This table illustrates the 15-pin female **VGA** connector pinouts.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Ground	11	Not connected
2	Green	7	Ground	12	DDCDAT
3	Blue	8	Ground	13	HSYNC
4	Not connected	9	Not connected	14	VSYNC
5	Ground	10	Ground	15	DDCCLK

PS/2 Keyboard and Mouse Connectors

This table illustrates the DIN 6-pin (PS/2) keyboard and mouse connector pinouts.

Pin	Signal	Pin	Signal
1	Keyboard Data	4	+5V
2	Mouse Data	5	Keyboard Clock
3	Ground	6	Mouse Clock

Ethernet Connectors

This table illustrates the RJ45 LAN connector pinouts.

Pin	Signal	Pin	Signal
1	TX+	5	Not connected
2	TX-	6	RX-
3	RX+	7	Not connected
4	Not connected	8	Not connected

USB Interfaces

The USB interfaces provide plug and play for up to 127 external devices.

Pin	Description	Pin	Description
1	USBVCC1	2	D1F-
3	D1F+	4	GND
5	USBVCC2	6	D2F-
7	D2F+	8	GND
9	GND	10	GND

Compact Flash Disk Connector

This table illustrates the compact flash connector pinouts.

Pin	Signal	Pin	Signal
1	Ground	26	VCC-IN, CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	Not connected	33	Not connected
9	Ground	34	IOR#
10	Not connected	35	IOW#
11	Not connected	36	Not connected
12	Not connected	37	Interrupt
13	VCC_COM	38	VCC_COM
14	Not connected	39	CSEL
15	Not connected	40	Not connected
16	Not connected	41	HDD_RESET
17	Not connected	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	Not connected
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	Not connected	49	DATA 10
25	VCC-IN, CHECK2	50	Ground

AUX A and CONSOLE Port Connectors

This table illustrates the DB9 pinouts for the **AUX A** and **CONSOLE** connectors.

Pin	Signal	Pin	Signal	Pin	Signal
1	CD	4	DTR	7	RTS
2	RxD	5	Ground	8	CTS
3	TxD	6	DSR	9	RI

PARALLEL Port

This table illustrates the DB25 **PARALLEL** pinouts.

Pin	Signal	Pin	Signal
1	Strobe#	14	Auto form feed #
2	Data 0	15	Error#
3	Data 1	16	Initialize
4	Data 2	17	Printer select line#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper empty	25	Ground
13	Printer select	26	Not connected

Serial Ports 1-8 Connector (Optional)

This table lists the pinouts for the DB78 connector.

Pin	Signals			Pin	Signals		
	RS232	RS422	RS485		RS232	RS422	RS485
1	DTR 7	NC	NC	40	TXD 4	TXD- 4	TX/RX- 4
2	TXD 5	TXD- 5	TX/RX- 5	41	RTS 5	TXD+ 5	TX/RX+ 5
3	DTR 5	NC	NC	42	DSR 5	NC	NC
4	CTS 5	RXD+ 5	NC	43	CD 4	NC	NC
5	DSR 4	NC	NC	44	RI 4	NC	NC
6	CD 7	NC	NC	45	CTS 7	RXD+ 7	NC
7	RI 7	NC	NC	46	RXD 6	RXD- 6	NC
8	RXD 5	RXD- 5	NC	47	RI 6	NC	NC
9	CTS 6	NC	NC	48	CD 6	NC	NC
10	TXD 3	TXD- 3	TX/RX- 3	49	DTR 0	NC	NC
11	TXD 2	TXD- 2	TX/RX- 2	50	TXD 1	TXD- 1	TX/RX- 1
12	RTS 2	TXD+ 2	TX/RX+ 2	51	RTS 0	TXD+ 0	TX/RX+ 0
13	DTR 2	NC	NC	52	DTR 3	NC	NC
14	RTS 3	TXD+ 3	NC	53	CTS 1	RXD+ 1	NC
15	RI 1	NC	NC	54	DSR 0	NC	NC
16	CTS 0	RXD+ 0	NC	55	RXD 0	RXD- 0	NC
17	RXD 1	RXD- 1	NC	56	RXD 3	RXD- 3	NC
18	CD 3	NC	NC	57	CTS 3	RXD+ 3	NC
19	RI 3	NC	NC	58	DSR 2	NC	NC
20	RI 2	NC	NC	59	CTS 2	RXD+ 2	NC
21	RTS 4	TXD+ 4	TX/RX+ 4	60	RTS 7	TXD+ 7	TX/RX+ 7
22	DTR 4	NC	NC	61	DTR 6	NC	NC
23	CD 5	NC	NC	62	RTS 6	TXD+ 6	TX/RX+ 6
24	RI 5	NC	NC	63	TXD 6	TXD- 6	TX/RX- 6
25	CTS 4	RXD+ 4	NC	64	TXD 7	TXD- 7	TX/RX- 7
26	DSR 7	NC	NC	65	Ground	Ground	Ground
27	RXD 7	RXD- 7	NC	66	Ground	Ground	Ground
28	RXD 4	RXD- 4	NC	67	8 PORT	8 PORT	8 PORT
29	DSR 6	NC	NC	68	Ground	Ground	Ground
30	TXD 0	TXD- 0	TX/RX- 0	69	Ground	Ground	Ground
31	RTS 1	TXD+ 1	TX/RX+ 1	70	Ground	Ground	Ground
32	DTR 1	NC	NC	71	Ground	Ground	Ground
33	CD 1	NC	NC	72	Ground	Ground	Ground
34	DSR 1	NC	NC	73	Ground	Ground	Ground
35	CD 0	NC	NC	74	Ground	Ground	Ground
36	RI 0	NC	NC	75	Ground	Ground	Ground
37	RXD 2	RXD- 2	NC	76	Ground	Ground	Ground
38	DSR 3	NC	NC	77	Ground	Ground	Ground
39	CD 2	NC	NC	78	Ground	Ground	Ground

Note: *This option must be ordered or installed at the Comtrol factory.*

Appendix B. Specifications and Notices

This section discusses the following topics:

- Product specifications
    - Electromagnetic compliances
    - Environmental condition specifications
    - Hardware specifications
    - Technical specifications
    - Default operating system configuration
- FCC Part 15 Class A notices

Product Specifications

The following subsections provide a variety of information about the DeviceMaster ATS-LNX.

Electromagnetic Compliances

The following table illustrates the status of electromagnetic compliance for the ATS-LNX.

Electromagnetic Compliances	Status
Emission:	
Canadian EMC requirements	Yes
CISPR-22/EN55022 Class A	Yes
FCC Part 15 Class A	Yes
Immunity (motherboard):	
EN55024: 1998	
EN61000-4-2: 1995 ESD	Yes
EN61000-4-3: 1996 RF	Yes
EN61000-4-4: 1994 Fast Transient	Yes
EN61000-4-5: 1995 Surge	Yes
EN61000-4-6: 1996 Conducted disturbance	Yes
EN61000-4-8: 1993 Magnetic field	Yes
EN61000-4-11: 1994 Dips and Voltage Variations	Yes
Safety (power supply):	
EN60950	Yes
UL / C-UL Listed	Yes

Environmental Condition Specifications

The following table illustrates environmental condition specifications for the DeviceMaster ATS-LNX.

Environmental Condition	Value

Air temperature:
    System on (operational)
    System off (storage)
	0 to 60°C
	
	-20 to 85°C

Altitude	0 to 10,000 feet
Heat output	47 BTU/Hr

Humidity (non-condensing):
    System on (operational)
    System off (storage)
	8% to 80%
	20% to 80%

Hardware Specifications

This table lists hardware specifications for the ATS-LNX.

Specification	Description

Baud rates (default):
    ttyS1 - AUX A
    ttyS0 - CONSOLE
    ttyS2 - PCMCIA modem
        (optional)*
    ttyR0 - ttR7 - SERIAL PORTS 1-8
        (optional)
	57.6 Kbps
	28.8 Kbps
	57.6 Kbps
	
	300 bps to 230.4 Kbps

Optional PC104 driver control	Data bits: 7 or 8 Parity: Odd, even, none Stop bits: 1 or 2

Power input:
        Frequency
        Voltage
	50/60 Hz
	5 VDC

Power consumption	13.75 W
Current consumption	2.75 A
Dimensions	11" x 5.69" x 2.75" (W x L x H)

Weight:
 	
    Fully-configured system with
        RocketPort PC104 and
        PCMCIA options installed
    Power supply
 	
    Octacable
	
	3.52 lbs
	0.62 lbs
	
	1.12 lbs

Technical Specifications

This subsection lists the DeviceMaster ATS-LNX technical specifications.

- Compact flash (256 MB or 512 MB) with pre-configured Debian operating system. See *Default Operating System Configuration* on Page 33 for detailed information.

- NS GXLV/GX1-300 MMX 32-Bit x86 Processor that supports the Intel® MMX instruction set extension for the acceleration of multi media applications. It has 16 KB unified L1 cache, five-stage pipe lined integer unit, and an integrated Floating Point Unit (FPU).

- 128 MB SDRAM system memory

- AWARD 256 Kb flash memory BIOS

- Display controller that has a MediaGx processor with 4 MB memory that supports non-interlaced CRT monitors resolutions up to 1280 x 1024 @ 256 colors or 1024 x 768 @ 16 bpp.

- 10/100M bps Ethernet Controller, with two Realtek™ RTL8139 IEEE802.u 100 BASE-TX standard dual auto-sensing interface to 10 Mbps or 100 Mbps networks. On board RJ45 connectors provide for easy connection.

- Serial ports on the motherboard.
    - **AUX A** (COM2) is pre-configured for a modem.
    - **CONSOLE** (COM1) is for serial console administration. See Using the CONSOLE Port as a Standard TTY Port on Page 23, for information.

- Parallel port (DB25), which supports SPP/EPP/ECP mode.

- PS/2 mouse connector (6-pin mini DIN) connector.

- PS/2 keyboard connector (6-pin mini DIN) connector.

- USB connector, which supports up to two USB devices.

- Optional PC104 serial ports with a quadcable or octacable interface that is software configurable with speeds up to 230.4 Kbps.

- Optional PCMCIA slot for devices that are pre-configured in the ATS-LNX system.

    Note: *The ATS-LNX PCMCIA option supports two Type II PCMCIA slots or one Type III slot, which is installed at the factory. Drivers for Comtrol tested PCMCIA devices are installed in the system.*

Default Operating System Configuration

The following list is a baseline operating system configuration for the ATS-LNX. For information about the operating system, see http://www.Debian.org

The ATS-LNX is shipped with **sshd** enabled. SSH encryption keys are identical on all units shipped.

Installed Packages

The following is a list of installed packages with their version number:

Package	Version	Description
adduser	3.47	Add and remove users and groups
apt	0.5.4	Advanced front-end for dpkg
apt-utils	0.5.4	APT utility programs
at	3.1.8-11	Delayed job execution and batch processing
base-config	1.33.18	Debian base configuration package
base-files	3.0.2	Debian base system miscellaneous files
base-passwd	3.4.1	Debian Base System Password/Group Files
bash	2.05a-11	The GNU Bourne Again SHell
bsdmainutils	5.20020211-4.9	More utilities from FreeBSD.
bsdutils	2.11n-4	Basic utilities from 4.4BSD-Lite.
console-common	0.7.14	Basic infrastructure for text console configuration.
console-data	1999.08.29-24	Keymaps, fonts, charset maps, fallback tables for console-tools.

Package	Version	Description
console-tools	0.2.3-23.3	Linux console and font utilities.
console-tools-lib	0.2.3-23.3	Shared libraries for Linux console and font manipulation.
cpio	2.4.2-39	GNU cpio -- a program to manage archives or files.
cramfsprogs	1.1-3	Tools for CramFs (Compressed ROM File System.
cron	3.0pl1-72	Management of regular background processing.
debconf	1.0.32	Debian configuration management system.
debianutils	1.16	Miscellaneous utilities specific to Debian.
dhcp-client	2.0pl5-11	DHCP Client.
diff	2.7-29	File comparison utilities.
dpkg	1.9.21	Package maintenance system for Debian.
e2fsprogs	1.27-2	The EXT2 file system utilities and libraries.
ed	0.2-19	The classic unix line editor.
exim	3.35-1	An MTA (Mail Transport Agent).
fdutils	5.3-7	Linux floppy utilities.
fileutils	4.1-10	GNU file management utilities.
findutils	4.1.7-2	Utilities for finding files--find, xargs, and locate.
gettext-base	0.10.40-5	GNU Internationalization utilities for the base system.
grep	2.4.2-3	GNU grep, egrep and fgrep.
groff-base	1.17.2-15	Wood GNU troff text-formatting system (base system components).
grub-vga-serial	0.91-1	A Comtrol customized version of the Grub 0.91 bootloader with VGA16 and serial fixes made to the serial console handling features.
gzip	1.3.2-3	The GNU compression utility.
hostname	2.09	A utility to set or show the host name or domain name.
hotplug	0.0.20020401-4	Linux Hotplug Scripts
ifupdown	0.6.4-4	High-level tools to configure network interfaces.
info	4.1-2	Standalone GNU Info documentation browser.
ipchains	1.3.10-15	Network firewall for Linux 2.2.x.
iptables	1.2.6a-5	IP packet filter administration tools for 2.4.4+ kernels
kernel-image-2.4.18-comtrol-dm-ats	1.01	Comtrol customized Linux kernel binary image for version 2.4.18.
klogd	1.4.1-10	Kernel Logging Daemon

Package	Version	Description
libauthen-pam-perl	0.12-2	This module provides a Perl interface to the PAM library
libc6	2.2.5-14.3	GNU C Library: Shared libraries and Timezone.
libcap1	1.10-12	Support for getting/setting POSIX.1e capabilities.
libdb1-compat	2.1.3-5	The Berkeley database routines [glibc 2.0/2.1 compatibility].
libdb2	2.7.7.0-7	The Berkeley database routines (run-time files).
libdb3	3.2.9-16	Berkeley V3 Database Libraries (runtime)
libdigest-md5-perl	2.13-2	MD5 Message Digest for Perl.
libgdbmg1	1.7.3-27	GNU dbm database routines (runtime version). [libc6 version]
libident	0.22-2	Simple RFC1413 client library - runtime
libldap2	2.0.23-6	OpenLDAP libraries.
liblockfile1	1.03	NFS-safe locking library, includes dotlockfile program.
libmd5-perl	2.02-3	Backwards-compatible wrapper for Digest: MD5.
libncurses5	5.2.20020112a-	Shared libraries for terminal handling.
libnet-ssleay-perl	1.17-1	Perl module for Secure Sockets Layer (SSL).
libnewt0	0.50.17-9.6	Not Erik's Windowing Toolkit - text mode windowing with slang.
libpam-modules	0.72-35	Pluggable Authentication Modules for PAM.
libpam-runtime	0.72-35	Runtime support for the PAM library.
libpam0g	0.72-35	Pluggable Authentication Modules library.
libpcap0	0.6.2-2	System interface for user-level packet capture.
libpcre3	3.4-1.1	Philip Hazel's Perl Compatible Regular Expression library.
libpopt0	1.6.2-7	Lib for parsing cmdline parameters.
libreadline4	4.2a-5	GNU readline and history libraries, run-time libraries.
libsasl7	1.5.27-3	Authentication abstraction library.
libssl0.9.6	0.9.6e-1	SSL shared libraries.
libstdc++2.10-glibc2.2	2.95.4-7	The GNU stdc++ library.
libwrap0	7.6-9	Wietse Venema's TCP wrappers library.
login	20000902-12	System login tools.
logrotate	3.5.9-8	Log rotation utility.
mailx	8.1.2-0.200204	A simple mail user agent.
makedev	2.3.1-58	Creates device files in /dev.
man-db	2.3.20-18	The on-line manual pager.

Package	Version	Description
man2html	1.5-23.2	Turns a web-browser and an httpd-server into a man pager.
manpages	1.39-1.1	Man pages about using a Linux system.
mawk	1.3.3-8	A pattern scanning and text processing language.
mbr	1.1.5-1	Master Boot Record for IBM-PC compatible computers.
mgetty	1.1.27-4.1	Smart Modem getty replacement.
modconf	0.2.43	Device Driver Configuration.
modutils	2.4.15-1	Linux module utilities.
mount	2.11n-4	Tools for mounting and manipulating file systems.
nano	1.0.6-2	Free Pico clone with some new features.
ncurses-base	5.2.20020112a-	Descriptions of common terminal types.
ncurses-bin	5.2.20020112a-	Terminal-related programs and man pages.
net-tools	1.60-4	The NET-3 networking toolkit.
netbase	4.07	Basic TCP/IP networking system.
netkit-inetd	0.10-9	The Internet Superserver.
netkit-ping	0.10-9	The ping utility from netkit.
nvi	1.79-20	4.4BSD re-implementation of vi.
passwd	20000902-12	Change and administer password and group data.
pciutils	2.1.9-4	Linux PCI Utilities (for 2.[1234].x kernels).
pcmcia-cs	3.1.33-6	PCMCIA Card Services for Linux.
perl	5.6.1-7	Larry Wall's Practical Extraction and Report Language.
perl-base	5.6.1-7	The Pathologically Eclectic Rubbish Lister.
perl-modules	5.6.1-7	Core Perl modules.
ppp	2.4.1.uus-4	Point-to-Point Protocol (PPP) daemon.
pppconfig	2.0.14	A text menu based utility for configuring ppp.
pppoe	3.3-1.1	PPP over Ethernet driver.
pppoeconf	0.9.10.6	Configures PPPoE/ADSL
procps	2.0.7-8	The /proc file system utilities.
psmisc	20.2-2.1	Utilities that use the proc file system.
rocketats	1.27-1	The device driver for the Comtrol PC-104 RocketPort multiport serial board. Loaded on-demand when /**dev/ttyRxx** devices are opened.
sed	3.02-8	The GNU sed stream editor.
setserial	2.17-24	Controls configuration of serial ports.
shellutils	2.0.11-11	The GNU shell programming utilities.

Package	Version	Description
slang1	1.4.4-7.2	The S-Lang programming library - runtime version.
ssh	3.4p1-2	Secure rlogin/rsh/rcp replacement (OpenSSH).
sysklogd	1.4.1-10	System Logging Daemon.
syslinux	1.66-1	Bootloader for Linux/i386 using MS-DOS floppies.
sysvinit	2.84-2woody1	System-V like init.
tar	1.13.25-2	GNU tar.
tasksel	1.18	Tool for selecting tasks for installation on Debian systems.
tcpd	7.6-9	Wietse Venema's TCP wrapper utilities.
telnet	0.17-19	The telnet client.
telnetd	0.17-19	The telnet server.
textutils	2.0-12	The GNU text file processing utilities.
tmpfs-support	1.00-1	Support for a RAM-based **tmpfs** file system that contains **/tmp**, **/var/lock**, and **/var/log** directories. Includes **cron** tasks that back up log files to **/var/oldlogs** that resides on the Compact Flash.
util-linux	2.11n-4	Miscellaneous system utilities.
webmin	0.990-2	Web-based administration toolkit.
webmin-core	0.990-1	Core modules for webmin.
webmin-grub	0.990-1	Grub control module for webmin.
webmin-inetd	0.990-1	Inetd control module for webmin.
webmin-ppp	0.990-1	PPP configuration module for webmin.
webmin-software	0.990-1	Software packages control module for webmin.
webmin-sshd	0.990-1	SSH server control module for webmin.
whiptail	0.50.17-9.6	Displays user-friendly dialog boxes from shell scripts.
wireless-tools	24-1	Tools for manipulating Linux Wireless Extensions.
wu-ftpd	2.6.2-3	Powerful and widely used FTP server.
zlib1g	1.1.4-3	Compression library - runtime

Additional Installed Packages

The root home directory contains some shell scripts that may be useful or instructive:

- **netconfig.sh** to reconfigure network
- **newsshkeys.sh** to re-generate ssh keys
- **uninstall-webmin.sh** to uninstall **webmin**

Kernel Configuration

The following illustrates the Kernel configuration for the ATS-LNX.

```
#
# Automatically generated make config: don't edit
#
CONFIG_X86=y
CONFIG_ISA=y
CONFIG_UID16=y

#
# Code maturity level options
#
CONFIG_EXPERIMENTAL=y

#
# Loadable module support
#
CONFIG_MODULES=y
CONFIG_MODVERSIONS=y
CONFIG_KMOD=y

#
# Processor type and features
#
CONFIG_M486=y
CONFIG_X86_WP_WORKS_OK=y
CONFIG_X86_INVLPG=y
CONFIG_X86_CMPXCHG=y
CONFIG_X86_XADD=y
CONFIG_X86_BSWAP=y
CONFIG_X86_POPAD_OK=y
CONFIG_RWSEM_XCHGADD_ALGORITHM=y
CONFIG_X86_L1_CACHE_SHIFT=4
CONFIG_X86_USE_STRING_486=y
CONFIG_X86_ALIGNMENT_16=y
CONFIG_X86_PPRO_FENCE=y
CONFIG_NOHIGHMEM=y

#
# General setup
#
CONFIG_NET=y
CONFIG_PCI=y
CONFIG_PCI_GOANY=y
CONFIG_PCI_BIOS=y
CONFIG_PCI_DIRECT=y
CONFIG_PCI_NAMES=y
CONFIG_HOTPLUG=y

#
# PCMCIA/CardBus support
#
CONFIG_PCMCIA=m
CONFIG_I82365=y

#
# PCI Hotplug Support
#
CONFIG_SYSVIPC=y
CONFIG_SYSCTL=y
CONFIG_KCORE_ELF=y
CONFIG_BINFMT_ELF=y
CONFIG_BINFMT_MISC=y

#
# Memory Technology Devices (MTD)
#

#
# Parallel port support
#
CONFIG_PARPORT=y
```

```
CONFIG_PARPORT_PC=y
CONFIG_PARPORT_PC_CML1=y
CONFIG_PARPORT_1284=y

#
# Plug and Play configuration
#
CONFIG_PNP=y
CONFIG_ISAPNP=y

#
# Block devices
#
CONFIG_BLK_DEV_FD=y

#
# Multi-device support (RAID and LVM)
#

#
# Networking options
#
CONFIG_PACKET=y
CONFIG_PACKET_MMAP=y
CONFIG_NETLINK_DEV=y
CONFIG_FILTER=y
CONFIG_UNIX=y
CONFIG_INET=y
CONFIG_IP_MULTICAST=y

#
#
#

#
# QoS and/or fair queueing
#

#
# Telephony Support
#

#
# ATA/IDE/MFM/RLL support
#
CONFIG_IDE=y

#
# IDE, ATA and ATAPI Block devices
#
CONFIG_BLK_DEV_IDE=y

#
# Please see Documentation/ide.txt for help/info on IDE drives
#
CONFIG_BLK_DEV_IDEDISK=y
CONFIG_BLK_DEV_IDECS=m
CONFIG_BLK_DEV_IDECD=m
CONFIG_BLK_DEV_IDESCSI=m

#
# IDE chipset support/bugfixes
#
CONFIG_BLK_DEV_IDEPCI=y
CONFIG_IDEPCI_SHARE_IRQ=y
CONFIG_BLK_DEV_IDEDMA_PCI=y
CONFIG_BLK_DEV_ADMA=y
CONFIG_BLK_DEV_IDEDMA=y
CONFIG_BLK_DEV_CS5530=y
CONFIG_BLK_DEV_IDE_MODES=y
```

```
#
# SCSI support
#
CONFIG_SCSI=m

#
# SCSI support type (disk, tape, CD-ROM)
#
CONFIG_BLK_DEV_SD=m
CONFIG_SD_EXTRA_DEVS=40
CONFIG_CHR_DEV_ST=m
CONFIG_CHR_DEV_OSST=m
CONFIG_BLK_DEV_SR=m
CONFIG_SR_EXTRA_DEVS=2
CONFIG_CHR_DEV_SG=m

#
# Some SCSI devices (e.g. CD jukebox) support multiple LUNs
#

#
# SCSI low-level drivers
#

#
# PCMCIA SCSI adapter support
#
CONFIG_SCSI_PCMCIA=y
CONFIG_PCMCIA_AHA152X=m
CONFIG_PCMCIA_FDOMAIN=m
CONFIG_PCMCIA_NINJA_SCSI=m
CONFIG_PCMCIA_QLOGIC=m

#
# Fusion MPT device support
#

#
# IEEE 1394 (FireWire) support (EXPERIMENTAL)
#

#
# I2O device support
#

#
# Network device support
#
CONFIG_NETDEVICES=y

#

# ARCnet devices
#
CONFIG_ARCNET=m
CONFIG_ARCNET_1201=m
CONFIG_ARCNET_1051=m
CONFIG_ARCNET_RAW=m
CONFIG_ARCNET_COM90xx=m
CONFIG_ARCNET_COM90xxIO=m
CONFIG_ARCNET_RIM_I=m
CONFIG_ARCNET_COM20020=m
CONFIG_ARCNET_COM20020_ISA=m
CONFIG_ARCNET_COM20020_PCI=m
CONFIG_DUMMY=y

#
# Ethernet (10 or 100Mbit)
#
CONFIG_NET_ETHERNET=y
CONFIG_NET_PCI=y
```

```
CONFIG_NE2K_PCI=m
CONFIG_8139TOO=y


#
# Ethernet (1000 Mbit)
#
CONFIG_FDDI=y
CONFIG_DEFXX=m
CONFIG_SKFP=m
CONFIG_HIPPI=y
CONFIG_ROADRUNNER=m
CONFIG_PLIP=m
CONFIG_PPP=m
CONFIG_PPP_MULTILINK=y
CONFIG_PPP_ASYNC=m
CONFIG_PPP_SYNC_TTY=m
CONFIG_PPP_DEFLATE=m
CONFIG_PPP_BSDCOMP=m
CONFIG_PPPOE=m
CONFIG_SLIP=m
CONFIG_SLIP_COMPRESSED=y
CONFIG_SLIP_SMART=y


#
# Wireless LAN (non-hamradio)
#
CONFIG_NET_RADIO=y
CONFIG_AIRONET4500=m
CONFIG_AIRONET4500_PROC=m
CONFIG_AIRO=m
CONFIG_HERMES=m


#
# Wireless Pcmcia cards support
#
CONFIG_PCMCIA_HERMES=m
CONFIG_AIRO_CS=m
CONFIG_NET_WIRELESS=y


#
# Token Ring devices
#
CONFIG_NET_FC=y
CONFIG_RCPCI=m
CONFIG_SHAPER=m


#
# Wan interfaces
#


#
# PCMCIA network device support
#
CONFIG_NET_PCMCIA=y
CONFIG_PCMCIA_3C589=m
CONFIG_PCMCIA_3C574=m
CONFIG_PCMCIA_FMVJ18X=m
CONFIG_PCMCIA_PCNET=m
CONFIG_PCMCIA_AXNET=m
CONFIG_PCMCIA_NMCLAN=m
CONFIG_PCMCIA_SMC91C92=m
CONFIG_PCMCIA_XIRC2PS=m
CONFIG_ARCNET_COM20020_CS=m
CONFIG_NET_PCMCIA_RADIO=y
CONFIG_PCMCIA_RAYCS=m
CONFIG_PCMCIA_NETWAVE=m
CONFIG_PCMCIA_WAVELAN=m
CONFIG_AIRONET4500_CS=m


#
# Amateur Radio support
```

```
#

#
# IrDA (infrared) support
#

#
# ISDN subsystem
#

#
# Old CD-ROM drivers (not SCSI, not IDE)
#

#
# Input core support
#
CONFIG_INPUT=m
CONFIG_INPUT_KEYBDEV=m
CONFIG_INPUT_MOUSEDEV=m
CONFIG_INPUT_MOUSEDEV_SCREEN_X=1024
CONFIG_INPUT_MOUSEDEV_SCREEN_Y=768
CONFIG_INPUT_JOYDEV=m
CONFIG_INPUT_EVDEV=m

#
# Character devices
#
CONFIG_VT=y
CONFIG_VT_CONSOLE=y
CONFIG_SERIAL=y
CONFIG_SERIAL_CONSOLE=y
CONFIG_UNIX98_PTYS=y
CONFIG_UNIX98_PTY_COUNT=256
CONFIG_PRINTER=y

#
# I2C support
#

#
# Mice
#
CONFIG_MOUSE=y
CONFIG_PSMOUSE=y

#
# Joysticks
#

#
# Joysticks
#
CONFIG_INPUT_IFORCE_USB=m

#
# Watchdog Cards
#
CONFIG_RTC=y

#
# Ftape, the floppy tape device driver
#

#
# PCMCIA character devices
#
CONFIG_PCMCIA_SERIAL_CS=m

#
# Multimedia devices
```

```
#

#
# File systems
#
CONFIG_EXT3_FS=y
CONFIG_JBD=y
CONFIG_FAT_FS=m
CONFIG_MSDOS_FS=m
CONFIG_VFAT_FS=m
CONFIG_TMPFS=y
CONFIG_ISO9660_FS=m
CONFIG_JOLIET=y
CONFIG_PROC_FS=y
CONFIG_DEVPTS_FS=y
CONFIG_EXT2_FS=y

#
# Network File Systems
#
CONFIG_NFS_FS=m
CONFIG_SUNRPC=m
CONFIG_LOCKD=m
CONFIG_SMB_FS=m

#
# Partition Types
#
CONFIG_MSDOS_PARTITION=y
CONFIG_SMB_NLS=y
CONFIG_NLS=y

#
# Native Language Support
#
CONFIG_NLS_DEFAULT="cp437"
CONFIG_NLS_CODEPAGE_437=y
CONFIG_NLS_ISO8859_1=y
CONFIG_NLS_ISO8859_15=y

#
# Console drivers
#
CONFIG_VGA_CONSOLE=y
CONFIG_VIDEO_SELECT=y

#
# Frame-buffer support
#
CONFIG_FB=y
CONFIG_DUMMY_CONSOLE=y
CONFIG_FB_VESA=y
CONFIG_FB_VGA16=y
CONFIG_VIDEO_SELECT=y
CONFIG_FBCON_ADVANCED=y
CONFIG_FBCON_MFB=y
CONFIG_FBCON_CFB2=y
CONFIG_FBCON_CFB4=y
CONFIG_FBCON_CFB8=y
CONFIG_FBCON_CFB16=y
CONFIG_FBCON_CFB24=y
CONFIG_FBCON_CFB32=y
CONFIG_FBCON_VGA=y
CONFIG_FONT_8x8=y
CONFIG_FONT_8x16=y

#
# Sound
#

#
```

```
# USB support
#
CONFIG_USB=y

#
# Miscellaneous USB options
#
CONFIG_USB_DEVICEFS=y

#
# USB Controllers
#
CONFIG_USB_OHCI=y

#
# USB Device Class drivers
#
CONFIG_USB_STORAGE=m
CONFIG_USB_STORAGE_DATAFAB=y
CONFIG_USB_STORAGE_FREECOM=y
CONFIG_USB_STORAGE_ISD200=y
CONFIG_USB_STORAGE_DPCM=y
CONFIG_USB_STORAGE_HP8200e=y
CONFIG_USB_STORAGE_SDDR09=y
CONFIG_USB_STORAGE_JUMPSHOT=y
CONFIG_USB_ACM=m
CONFIG_USB_PRINTER=m

#
# USB Human Interface Devices (HID)
#
CONFIG_USB_HID=m
CONFIG_USB_HIDDEV=y
CONFIG_USB_KBD=m
CONFIG_USB_MOUSE=m

#
# USB Imaging devices
#
CONFIG_USB_DC2XX=m
CONFIG_USB_MDC800=m

#
# USB Multimedia devices
#

#
#   Video4Linux support is needed for USB Multimedia device support
#

#
# USB Network adaptors
#
CONFIG_USB_PEGASUS=m
CONFIG_USB_KAWETH=m
CONFIG_USB_CATC=m
CONFIG_USB_CDCETHER=m
CONFIG_USB_USBNET=m

#
# USB port drivers
#
CONFIG_USB_USS720=m

#
# USB Serial Converter support
#
CONFIG_USB_SERIAL=m
CONFIG_USB_SERIAL_GENERIC=y
CONFIG_USB_SERIAL_BELKIN=m
CONFIG_USB_SERIAL_WHITEHEAT=m
```

```
CONFIG_USB_SERIAL_DIGI_ACCELEPORT=m
CONFIG_USB_SERIAL_EMPEG=m
CONFIG_USB_SERIAL_FTDI_SIO=m
CONFIG_USB_SERIAL_IR=m
CONFIG_USB_SERIAL_EDGEPORT=m
CONFIG_USB_SERIAL_MCT_U232=m
CONFIG_USB_SERIAL_KLSI=m
CONFIG_USB_SERIAL_PL2303=m
CONFIG_USB_SERIAL_CYBERJACK=m
CONFIG_USB_SERIAL_XIRCOM=m
CONFIG_USB_SERIAL_OMNINET=m

#
# USB Miscellaneous drivers

#
# Bluetooth support
#

#
# Kernel hacking
#
```

File Systems   This is the list of how the file systems are configured and mounted:

```
/dev/hdd1 on / type ext3 (rw,errors=remount-ro)
proc on /proc type proc (rw)
devpts on /dev/pts type devpts (rw,gid=5,mode=620)
tmpfs on /dev/shm type tmpfs (rw,size=32m)
/dev/shm/tmp on /tmp type none (rw,bind)
/dev/shm/var/log on /var/log type none (rw,bind)
/dev/shm/var/run on /var/run type none (rw,bind)
/dev/shm/var/lock on /var/lock type none (rw,bind)
usbdevfs on /proc/bus/usb type usbdevfs (rw)
```

PCMCIA/USB Package Supported

The **pcmcia-cs-3.1.33** package is installed and configured on the ATS-LNX. If the PCMCIA device that you want to use is not included on the supported device list, you can download and install a new version. There are many web sites from which you can download the latest version, including: http://pcmcia-cs.sourceforge.net/.

The following lists are copyrighted material downloaded from the *Linux PCMCIA Supported Device List* provided by David Hinds located at http://pcmcia-cs.sourceforge.net/ftp/SUPPORTED.CARDS. The following PCMCIA cards are known to work in at least one actual system. Comtrol does not provide support of this package.

Note: *For a list of supported USB devices, see* http://www.linux-usb.org/devices.html.

For installation and configuration information, you can see: http://www.tldp.org/HOWTO/Wireless-HOWTO.html.

Ethernet Cards   Following Ethernet cards should work with the ATS-LNX.

[3c589_cs driver] [x86,ppc]

- 3Com 3c589, 3c589B, 3c589C, 3c589D
- 3Com Megahertz 3CXE589D, 3CXE589EC, 3CCE589ET, 3CCE589EC
- Farallon EtherWave, EtherMac
- Hitachi HT-4840-13

[fmvj18x_cs driver] [x86,ppc]

- Access/CARD Ethernet
- CONTEC C-NET(PC)C
- Eagle NE200 Ethernet
- Eiger Labs EPX-10BT, EPX-ET 10BT, EPX-ET 10TZ
- Fujitsu FMV-J181, FMV-J182, FMV-J182A
- Fujitsu Towa LA501, FMV-1080, FM50N-183
- Hitachi HT-4840-11 EtherCard
- NextCom NC5310, NC5310B
- RATOC REX-9822, REX-5588A/W, REX-4886, REX-R280
- TDK LAC-CD02x, LAK-CD021, LAK-CD022A, LAK-CD021AX, LAK-CD021BX
- TDK LAC-CF010 Compact Flash

[nmclan_cs driver] [x86,ppc]

- New Media EthernetLAN
- New Media LiveWire[NOT the LiveWire+]
- Portable Add-ons Ethernet+

[pcnet_cs driver] [x86,ppc,axp]

- 4Lan EP100 Ethernet
- Accton EN2212, EN2216 EtherCard
- Accton SOHO BASIC EN220
- Actiontec FastNet PE200A
- Addtron Ethernet
- AIBrain EPCM-T
- Allied Telesis CentreCOM CE6001, LA-PCM, LA-PCM V2
- AmbiCom AMB8002, AMB8002T, AMB8010, AMB8610
- AnyCom ECO Ethernet
- Apollo RE450CT
- Archtek Ethernet
- Argosy EN210
- Ark Sky-Link Express PA2100
- Arowana RE 450 Ethernet
- Asante FriendlyNet[new cards seem to not work!!]
- AST 1082 Ethernet
- Atelco ethernet
- Billionton LNT-10TB, LNT-10TN
- Buffalo LPC2-CLT
- CADMUS Micro LNT-10T2C
- California Access LAN Adapter
- CeLAN EPCMCIA
- CNet CN30BC, CN40BC Ethernet
- Compex/ReadyLINK Ethernet Combo
- Compex LinkPort Ethernet

- COMPU-SHACK BASEline Ethernet
- Connectware LANdingGear Adapter
- Corega Ether PCC-T, PCM-T
- CyQ've ELA-010 10baseT
- Danpex EN-6200P2 Ethernet
- Datatrek NetCard
- Dayna Communications CommuniCard E
- Digital DEPCM-AA, PCP78-AC Ethernet
- Digital EtherWORKS Turbo Ethernet
- D-Link DE-650, DE-660, DE-660CT, DE-660+
- DynaLink L10C, L10BC Ethernet
- Edimax Technology Ethernet Combo
- EFA InfoExpress 205, 207 Combo
- Eiger Labs EPX-ET10T2 Combo
- ELECOM Laneed LD-CDWA, LD-CDX, LD-CDNIA, LD-CDY, LD-CDF
- EP-210 Ethernet
- Epson Ethernet
- EtherPRIME Ethernet
- Explorer NE-10000 Ethernet
- EZLink 4109 Ethernet
- Fiberline FL-4680
- Gateway 2000 Ethernet
- Genius ME3000II Ethernet
- Grey Cell Ethernet
- GVC NIC-2000P Ethernet Combo
- Hamlet LM560
- Hawking PN650TX
- Hypertec HyperNet
- IBM CreditCard Ethernet Adapter
- IC-Card Ethernet
- Infotel IN650ct Ethernet
- IO DATA PCLA/T, PCLA/TE
- iPort 10Mbps Ethernet
- Katron PE-520 Ethernet
- KingMax Technology EN10-T2 Ethernet
- Kingston KNE-PCM/M, KNE-PC2, KNE-PC2T, KNE-PC2BT
- Kingston CIO10T CF Ethernet
- KTI PE-520 Plus
- LANEED LD-CDW Ethernet
- LanPro EP4000A
- Lantech Ethernet
- Level One EPC-0100TB
- Linksys EtherCard, EC2T Combo, NP10T

- Logitec LPM-LN10T, LPM-LN10BA, LPM-LN20T Ethernet
- Longshine ShineNet LCS-8534TB Ethernet
- Macnica ME-1 Ethernet
- Maxtech PCN2000 Ethernet
- Melco LPC-TJ, LPC-TS, LPC-T, LPC2-T
- Microdyne NE4200 Ethernet
- Micronet SP122, SP125
- Midori LANNER LT-PCMT
- NDC Instant-Link
- NEC PC-9801N-J12
- Network General "Sniffer"
- Network Everywhere NP10T
- New Media LanSurfer
- Novell/National NE4100 InfoMover
- OvisLink Ethernet
- Panasonic CF-VEL211P-B
- Planet SmartCOM 2000, 3500, ENW-3501-T, ENW-3502-T
- Planex ENW-3503-T
- Pretec Ethernet, CompactLAN Ethernet
- PreMax PE-200 Ethernet
- Proteon Ethernet
- Psion Gold Card Ethernet
- Relia RE2408T Ethernet
- Reliasys 2400A Ethernet
- RPTI EP400, EP401, 1625B Ethernet
- SCM Ethernet
- Sky Link Express
- Skymaster DPP216
- SMC 8022 EZCard-10, 8040TX
- Socket Communications EA LAN Adapter
- Socket Communications LP-E Ethernet
- Socket Communications LP-E CF+ Ethernet
- SOHOware ND5120-E Ethernet
- SuperSocket RE450T
- Surecom Ethernet
- SVEC PN605C
- Target 24007 Ethernet
- TDK LAK-CD031
- Thomas-Conrad Ethernet
- TRENDnet Ethernet
- Trust Ethernet Combo
- UNEX NexNIC MA010
- Vegas Technology Ethernet

- Volktek NPL-402CT Ethernet
- W-LINX LinxPRO Ethernet
- Xircom CompactCard CFE-10

[smc91c92_cs driver] [x86,ppc]

- Farallon Enet
- Megahertz XJ10BT, XJ10BC, CC10BT Ethernet
- New Media BASICS Ethernet
- Ositech Four of Diamonds
- SMC 8020BT EtherEZ[NOT the EliteCard!]

[xirc2ps_cs driver] [x86,axp]

- Compaq Ethernet Adapter
- Xircom CreditCard CE2, CE IIps, RE-10

Fast Ethernet (10/100baseT) Adapters

Following fast Ethernet (10/100baseT) cards should work with the ATS-LNX.

[3c574_cs driver] [x86,ppc]

- 3Com 3c574TX
- 3Com Megahertz 3CCFE574BT, 3CXFE574BT, 3CCSH572BT, 3CXSH572BT

[axnet_cs driver]

- AmbiCom AMB8110
- Billionton LNA-100B
- Buffalo LPC3-CLX
- Edimax EP-4101
- CNet CNF301
- FEP501 Fast Ethernet
- KingMax Fast Ethernet
- Linksys NP100 Network Everywhere v2
- Linksys PCMPC100 EtherFast v3
- Melco LPC3-TX
- New Media LiveWire 10/100
- Planex FNW-3700-T
- Repotec RP-1638
- Surecom EP-427X

[pcnet_cs driver] [x86,ppc,axp]

- Abocom LinkMate FE1000, FE1500
- Allied Telesis CentreCOM LA100-PCM-T V2
- Alloy FE-6305M
- AnyCom ECO Ethernet 10/100
- Apollo Fast Ethernet
- Ark Sky Link Express PA2600
- COMPU-SHACK FASTline 10/100
- Corega FastEther PCC-TX, FEther PCC-TXF, FEther PCC-TXD
- CyQ've ELA-110E 10/100
- Digicom Palladio

- D-Link DFE-650, DFE-670-TXD, DRP-16TX
- EXP ThinLan 100
- Fiberline Fast Ethernet
- Hamlet FE1000 10/100
- Hawking PN652TX
- IO DATA PCET/TX
- iPort 10/100 Ethernet
- KTI KF-C16
- Laneed LD-10/100CD
- LevelOne FPC-0100TX
- Linksys PCMPC100 EtherFast
- Linksys PCM100H1 HomeLink 10/100
- Linksys NP100 Network Everywhere
- Logitec LPM-LN100TX
- Melco LPC2-TX
- Microcom TravelCard 10/100
- Micronet EtherFast Adapter
- Micronet SP162A
- NetGear FA410TXC, FA411
- Net-Lynx 10/100 Fast Ethernet
- New Media LiveWire 10/100
- Planex FNW-3600T
- WiseCom iPort 10/100
- ZONET Fast Ethernet

[smc91c92_cs driver] [x86,ppc]

- Argosy EN220
- dit Co., Ltd. PC Card-10/100BTX
- Dynalink L100C
- EXP ThinLan-110
- Lantech FastNet/TX
- Melco/SMC LPC-TX
- Ositech Seven of Diamonds
- Psion Gold Card NetGlobal 10/100
- WiseCom WC-PC400

[xirc2ps_cs driver] [x86,axp]

- Accton Fast EtherCard-16
- Compaq Netelligent 10/100
- Intel EtherExpress PRO/100 Mobile Adapter 16-bit
- Toshiba IPC5008A, Advanced Network 10/100
- Xircom CreditCard CE3-100, CE3B, RE-100, R2E-100BTX, XE2000

[3c575_cb driver] [x86]

- 3Com 3c575TX
- 3Com Megahertz 3CCFE575BT, 3CXFE575BT, 3CCFE575CT, 3CXFE575CT

- 3Com Megahertz 3C3FE575CT

[eepro100_cb driver] [x86]

- Fujitsu FMV-J185
- Intel EtherExpress PRO/100 CardBus II

[epic_cb driver] [x86] (somewhat experimental)

- Ositech Seven of Spades CardBus

[tulip_cb driver] [x86,ppc]

- Accton EN2220 CardBus
- Allied Telesyn AT-2800
- AmbiCom AMB8100, CB100-EZ EzPort
- Apollo FE2000
- Asante FriendlyNET CardBus
- Billionton LND-100B
- Compex Linkport TX
- Corega FEther CB-TXL
- D-Link DFE-660TX, DFE-680TX
- Farallon EtherTX
- Fujitsu FMV-J184
- Genius MF3000
- Gericom Fast Ethernet
- Kingston KNE-CB4TX
- Laneed LD-10/100CB
- LevelOne FPC-0101TX, FPC-0103TX 10/100Mbps CardBus
- Linksys PCMPC200 EtherFast CardBus
- Macsense MPC-200
- NDC Communications Sohoware NCB100
- NetGear FA510C
- OvisLink LFS PCM 32
- PLANET ENW-3502-FC
- PrimeXpress Fast Ethernet
- RATOC REX-CB80
- Silicom Fast Ethernet
- SMC EZ CardBus 10/100 Ethernet
- SVEC FD606 10/100 Ethernet
- TDK NetworkFlyer LAK-CB100X, LAK-CB100AX CardBus
- TRENDnet TE100-PCBUSR
- UMAX Technologies UMAX250
- ZEUS CardBus 10/100 LAN

Ethernet Cards - Not Recommended

Support is experimental and unreliable:

- IBM 10/100 EtherJet CardBus
- Intel EtherExpress PRO/100 CardBus
- Xircom CBE2-100BTX, RBE-100BTX, R2BE-100BTX

Token-Ring Adapters

Following token-ring adapters should work with the ATS-LNX.

[ibmtr_cs driver] [x86]

Wireless Network Adapters

Following Wireless Network adapters should work with the ATS-LNX.

[airo_cs driver] [x86]

• Aironet PC4500, PC4800

• Cisco 340

• Xircom Wireless Ethernet Adapter

[netwave_cs driver] [x86]

• Breezenet SA-PX

• Xircom CreditCard Netwave

[ray_cs driver] [x86,axp]

• BUSlink Wireless LAN Adapter

• Raytheon Raylink

• WebGear Aviator 2.4, Aviator Pro

[wavelan_cs driver] [x86,smp]

• AT&T / NCR / Lucent WaveLAN version 2.0

• DEC RoamAbout/DS

[wvlan_cs driver] [x86,axp,ppc,smp]

• 1stWave 1ST-PC-DSS11IS, DSS11IG, DSS11ES, DSS11EG

• ARtem Onair ComCard STD & EMB versions, 128- & 64-bit

• Cabletron/Enterasys RoamAbout 802.11 DS

• ELSA AirLancer MC-11

• HP F2136B

• IBM High Rate Wireless LAN

• Lucent Orinoco WaveLAN/IEEE 802.11(b)

• Melco WLI-PCM-L11, WLI-PCM-L11G

• NCR WaveLAN/IEEE 802.11

• PLANEX GeoWave/GW-CF110

PrismII based cards: limited functionality:

• Addtron AWP-100

• Ambicom WL1100 PC

• Compaq WL100

• Dell TrueMobile 1150 Series

• D-Link DWL-650

• Linksys WPC11 Instant Wireless

• SMC2632W

• ZCOMAX AirRunner/XI=300

[orinoco_cs driver]

Experimental backport of 2.4 driver for 2.2 kernels, supports same cards as wvlan_cs, requires wireless extensions version 10 or later).

Modem and Serial Cards

Virtually all modem cards, simple serial port cards, and digital cellular modems should work. The only exceptions are *Win-modems* that require special drivers. ISDN modems that emulate a standard UART are also supported. Some *Win-modem* drivers do exist (that is, the **ltmodem** driver for Lucent chipsets). For more information about WinModems, drivers, see http://www.linmodems.org.

[serial_cs driver] [x86,axp,ppc,smp]

- Advantech COMpad-32/85 dual port, COMpad-32/85B-4 quad port
- Argosy dual serial
- Black Box I114A RS-422/485
- Brain Boxes 2-Port RS-232
- Brain Boxes BL-500 Bluetooth Adapter
- National Instruments PCMCIA-232, PCMCIA-232/2, PCMCIA-232/4
- National Instruments PCMCIA-485, PCMCIA-485/2
- Omega Engineering QSP-100
- Quatech, IOTech dual RS-232 cards
- Quatech quad RS-232 card, dual and quad RS-422 cards
- Socket Communications dual RS-232 card
- Trimble Mobile GPS

[serial_cb driver] [x86]

- Xircom RBM56G, CBM56G

Modem and Serial Cards - Not Supported

The following cards are WinModems and are **NOT** supported by the serial drivers included in the PCMCIA package:

- 3Com/Megahertz 3CXM356/3CCM356, 3CXM656/3CCM656
- 3Com/Megahertz XJ/CC2560, 3013, 3014
- 3Com/USRobotics 3014A, 3056, 3057
- Abocom FM560CB
- ActionTec CM560LH
- Billionton 56K HSP
- Com1 Platinum MC221 Discovery 56K
- Compaq 192
- IBM 10L7393, 10L7394
- Lucent LT Winmodem
- Motorola Montana
- New Media WinSurfer
- Paradise CW56K HSP
- Xircom R2BM56W, R2BM56WB

Parallel Port Cards

[parport_cs driver] [x86] requires a 2.2 or later kernel

- Quatech SPP-100
- IOtech DBK35, WBK20A
- Trans Digital Trans PC Card

Memory Cards   All SRAM cards should work. Unsupported flash cards can be read but not written.

[memory_cs driver] [x86,axp,ppc]

- Intel Series 2, Series 2+, and Value Series 100 Flash
- Maxtor MobileMax 16MB Flash
- IBM 8MB Flash
- TDK Flash Memory SFM20W/C 20MB

SCSI Adapters   Be careful. Many vendors (particularly CD-ROM vendors) seem to switch controller chips frequently. Generally, they'll use a different product code, but not always. Older New Media Bus Toaster cards use the aha152x_cs driver; medium old ones use the sym53c500_cs driver; and new ones are not supported at all.

[aha152x_cs driver] [x86]

- Adaptec APA-1460, APA-1450A, APA-1460A/B/C/D SlimSCSI
- Iomega Zip and Jaz Cards
- New Media Bus Toaster SCSI[older cards]
- New Media Toast 'n Jam[SCSI only]
- Noteworthy Bus Toaster SCSI
- Sony CD-ROM Discman PRD-250
- Toshiba HandyCard SCSI

[fdomain_cs driver] [x86]

- Future Domain SCSI2GO
- IBM SCSI
- Simple Technologies SCSI

[qlogic_cs driver] [x86]

- Eiger Labs SCSI, only cards w/FCC ID LXL...
- Epson SC200
- MACNICA mPS110, mPS110-LP SCSI
- Midori CN-SC43
- NEC PC-9801N-J03R
- Qlogic FastSCSI
- Panasonic KXL-D740, KXL-DN740A, KXL-DN740A-NB 4X CD-ROM
- Panasonic KXL-D745, KXL-810AN, KXL-783A
- Pioneer PCP-PR2W
- Raven CD-Note 4X
- RATOC REX-9530 SCSI-2
- Toshiba NWB0107ABK, SCSC200A, SCSC200B

[not sure which driver]

- Digital SCSI II adapter
- IO DATA PCSC-II, PCSC-II-L
- IO DATA CDG-PX44/PCSC CD-ROM
- Logitec LPM-SCSI2
- Logitec LCD-601 CD-ROM
- Melco IFC-SC2, IFC-DC

- Pioneer PCP-PR1W, PCP-PR2W CD-ROM
- Taxan ICD-400PN

[apa1480_cb driver] [x86,ppc,smp] recommend 2.2 or later kernel

- Adaptec SlimSCSI 1480 CardBus

IEEE 1394 (FireWire) Cards

[pcilynx_cb driver] [x86,ppc] Requires kernel ieee1394 patches, experimental!

- Newer Technology FireWire 2 Go

[ohci1394_cb driver] [x86,ppc] Requires kernel ieee1394 patches, experimental!

- Belkin F5U512
- Cherri IEEE-1394
- Evergreen Technologies fireLINE CardBus Kit
- Margi 1394-to-Go Adapter
- Orange Micro OrangeLink
- Western Digital 1394 Adapter

Multifunction Ethernet/Modem Cards

[3c589_cs driver] [x86]

- 3Com 3c562, 3c562B/C/D, 3c563B/C/D
- 3Com Megahertz 3CCEM556, 3CXEM556, 3CCEM556B, 3C3FEM556C
- Motorola Marquis

[3c574_cs driver] [x86,ppc]

- 3Com Megahertz 3CCFEM556B

[pcnet_cs driver] [x86,axp]

- Accton EN2218, UE2218
- ActionTec ComNet 33.6
- AnyCom Fast Ethernet + 56K Combo
- Asus combo card
- Billionton LM5LT-10B
- Dayna Communicard
- D-Link DME-336T, DMF-560TX, DMF-560TXD
- Grey Cell GCS3400
- GVC LAN modem
- IBM Home and Away
- IBM Home and Away 28.8
- IO DATA PCEM-336T
- Linksys LANmodem 28.8 (PCMLM28), 33.6 (PCMLM336)
- Linksys EtherFast LANmodem 56K (PCMLM56)
- New Media LANSurfer 10+56 Combo
- PLANET ENW-3503
- PREMAX LAN modem
- Psion V.34 Gold Card
- Rover ComboCard 33.6
- SMC 8034TX-56K 10/100
- Socket Communications ES-1000 (E-I/O) Ethernet/RS-232

- TDK 3000/3400/5670
- TDK DFL5610WS Fast Ethernet/Modem
- Telecom Device SuperSocket LM336

[smc91c92_cs driver] [x86]

- Gateway Telepath Combo
- Megahertz/U.S. Robotics EM1144, EM3288, EM3336
- Motorola Mariner
- Ositech Jack of Diamonds, Jack of Hearts
- Psion Gold Card Netglobal 56K+10Mb

[xirc2ps_cs driver] [x86]

- Compaq Microcom CPQ550 Modem + 10/100 LAN
- Intel EtherExpress PRO/100 16-bit LAN/Modem
- Xircom CreditCard CEM28, CEM33, CEM56, XEM5600
- Xircom RealPort REM10BT, REM56G-100

[3c575_cb driver] [x86] Ethernet only: the modem is a WinModem!

- 3Com 3CCFEM656B, 3CXFEM656C

[eepro100_cb driver] [x86]

- Intel EtherExpress PRO/100 CardBus LAN/Modem

[epic_cb driver] [x86] Requires a 2.2 kernel, experimental!

- Ositech Jack of Spades CardBus
- Psion Gold Card Netglobal 56K+10/100Mb

[tulip_cb driver] [x86,ppc] Ethernet only

- Silicom FEM56 Fast Ethernet

Multifunction Ethernet/Modem Cards - Not Recommended	Support is experimental and unreliable: - IBM EtherJet CardBus with 56K Modem - Xircom RBEM56G-100BTX, CBEM56G-100BTX, R2BEM56G-100
ATA/IDE Card Drives	[ide_cs driver] [x86,ppc,smp] Most cards should work fine, including adapters for external IDE devices. Both Flash-ATA cards and rotating-media cards are supported, including "Smartmedia" flash and Compact flash cards. The very old Western Digital 40MB drives are not supported, because they do not conform to the PCMCIA ATA specification.
ATA/IDE Interface Cards	[ide_cs driver] [x86,ppc,smp] - Apricorn ATA card, EZ-GIG transfer kit - Archos Zip100 MiniDrive - Argosy PnPIDE card, HD530 HardDisk - Microtech International XpressDock - DataStor Technology PCMCIA ATA/ATAPI Card - Creo DNBoy - GREYSTONE DD-25 - IBM Portable Drive Bay[only CD-ROM tested]

- Iomega Zip-250
- MCE DataShuttle
- Shining Technology CitiDISK 250PE, PMIDE-ASC
- Sicon Periperal Micro Mate
- Sony MSAC-PC2 Memory Stick Adapter

ATA/IDE CD-ROM and DVD Adapters

[ide_cs driver] [x86,ppc,smp]

- Archos 24x MiniCD
- Argosy EIDE CD-ROM
- Caravelle CD-36N
- CNF CARDport CD-ROM[6/10/20/32X, but NOT 2X!]
- Creative Technology CD-ROM
- Digital Mobile Media CD-ROM
- EXP CD940 CD-ROM[Some work, some do NOT!]
- EXP Traveler 620, 3220 CD-ROM
- Freecom IQ Traveller CD-ROM
- H45 Technologies Quick 2X CD-ROM
- H45 Technologies QuickCD 16X
- IBM Max 20X CD-ROM
- IO DATA CDP-TX4/PCIDE, CDP-TX6/PCIDE, CDV-HDN6/PCIDE
- IO DATA CDP-TX10/PCIDE, CDP-FX24/CBIDE, MOP-230/PCIDE
- IO DATA HDP-1G/PCIDE, HDP-1.6G/PCIDE
- MCD601p CD-ROM
- Microtech International MicroCD
- Microtech Mii Zip 100
- NOVAC NV-CD410, DVD Powerstation
- Sony PCGA-CD5, PCGA-CD51, CRX50A CD-ROM
- Sony CRX75A[16-bit mode only!]
- TEAC IDE Card/II
- Toshiba PA2673UJ CD-ROM

ATA/IDE Interface - Not Supported

The following cards are NOT supported. This list is not meant to be comprehensive but provided because people frequently ask about them.

- Adaptec/Trantor APA-460 SlimSCSI
- Eiger Labs SCSI w/FCC ID K36...
- New Media .WAVjammer and all other sound cards
- New Media LiveWire+
- Nikon CoolPix100
- Panasonic KXL-D720
- RATOC SMA01U SmartMedia Adapter
- SMC 8016 EliteCard
- Xircom CEM II Ethernet/Modem
- Xircom CE-10BT Ethernet [but try xircce_cs contrib driver]

- Xircom CBE-10/100 CardBus

The following vendors have assisted in the development of the Linux PCMCIA driver package by contributing hardware and/or technical documentation about their products. It could be inferred that since these vendors support Linux development and have provided technical help, that their cards are likely to be better supported under Linux.

- 3Com/Megahertz   Ethernet and multifunction cards
- Adaptec   SCSI adapter cards
- Intel   Linear flash memory cards
- Linksys   Ethernet and multifunction cards
- Ositech   Ethernet/modem combo cards
- Sandisk   ATA/IDE flash cards
- Quatech   Parallel port, data acquisition cards
- Xircom   Ethernet and multifunction cards

Notices

Radio Frequency Interference (RFI) (FCC 15.105)

This equipment has been tested and found to comply with the limits for Class A digital devices pursuant to Part 15 of the FCC Rules.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, 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 and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- 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.

Labeling Requirements (FCC 15.19)

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Modifications (FCC 15.21)

Changes or modifications to this equipment not expressly approved by Comtrol Corporation may void the user's authority to operate this equipment.

Serial Cables (FCC 15.27)

This equipment is certified for Class A operation when used with unshielded cables.

Underwriters Laboratory

This equipment is Underwriters Laboratory "UL" listed.

Important Safety Information

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install the power plug in wet locations.
- Use a screwdriver and other tools with insulated handles.

Warning

Appendix C. lcom(1)

Name

lcom(1) - multi-port serial I/O test program.

Synopsis

```
lcom [options] [dev [...]]
```

Description

lcom is a program that can open multiple serial ports or TCP/IP connections and exercise them in different ways. lcom uses ncurses to provide a text-mode windowed user interface. Each open channel (tty device or TCP/IP connection is displayed in its own window. Each window has a status line at the top and the remainder of the window displays data received on that channel (unless the quiet flag is selected for that window).

Channel Modes

Each of the channels will be in one of the following modes:

test   The test mode performs a rudimentary self-test on the connection using an external loopback connector. Modem control lines are exercised for tty devices, and a block of data is transmitted to the port and will be verified when it is received back from the loopback connector. The results of the tests are displayed in the channel's window (data is not displayed).

echo   The echo mode transmits any data it receives. Received data is displayed unless the quiet flag is set.

term   The terminal mode acts as a simple dumb terminal. Received data is displayed and any input received from the keyboard is transmitted.

mon   The monitor mode displays received data (unless the quiet flag is set). No data is transmitted.

tput   The throughput mode transmits a continuous stream of test data and optionally verifies receive data against the pattern that was transmitted. If the verify option is enabled, the test will fail (and stop) if received data doesn't match.

All of the modes maintain transmit and receive byte counts and calculate transmit and receive throughput (averaged over 5-second intervals).

Options

A summary of command-line options will be displayed if lcom is invoked with the -? option. That summary is authoritative. If there are discrepancies between the displayed summary and this manual page, believe the summary.

The available command-line options are:

-x level   Specifies a debugging level from 0 (least verbose) to 9 (most verbose).

-B   Use the top window border for status information rather than using the first line of the window interior.

-a   Automatically raises the active window to the top when a different window is made active.

-q   Enable quiet operation. Serial data will not be displayed, though data counters and throughput values will. Depending on the terminal connection being used, displaying data at high baud rates may not be practical or may use up an undesirable amount of CPU time.

-v   Verify received data against the transmitted data against the expected test pattern.

-m mode Specifies the channel mode. Available modes are **mon**, **tput**, **echo**, **test**, and **term** (the default if no mode is specified).

-f flow Set the flow control to be used. Available flow control modes are **sw** (xon/xoff), **hw** (RTS/CTS) or **none** (the default). [Affects tty devices only.]

-w csize Set the character size. Legal values are 5,6,7,8. [Affects tty devices only.]

-p parity Set the parity for the port. Available values are **even**, **odd**, and **none** (the default). [Affects tty devices only.]

-b baud Set the baud rate for the port. [Affects tty devices only.]

-d device Specifies a device path to open. May be a tty device (e.g. **/dev/ttyS1**) or a TCP/IP destination (e.g. 192.168.0.2:8000). The **-d** option is only required if you wish to intersperse device paths with other options. Device paths that are not followed by any other options may be specified on the command line without using **-d**.

Command Line Examples

This example starts **lcom** and opens the three devices specified using default port settings [**lcom -?** will show available port settings and their default values].

```
lcom /dev/ttyS0 /dev/ttyS1 /dev/ttyR5
```

This example opens the two ports in throughput mode at 115200 baud with hardware flow control.

```
lcom -b115200 -f hw -m tput /dev/ttyS0 /dev/ttyR0
```

This example opens two ports at 115200 baud with hardware flow control. **ttyS0** is opened in throughput mode, and **ttyR0** is opened in echo mode. This may be useful if you have **ttyS0** and **ttyS0** connected to each other through a null-modem cable and are using **ttyR0** to echo data rather than using a loopback connector.

```
lcom -b115200 -f hw -m tput -d /dev/ttyS0 -m echo -d /dev/ttyR0
```

This example opens eight ports (**ttyR0** through **ttyR7**) in throughput mode (you probably have loopback connectors plugged into them). The **-q** option prevents test data from being displayed.

```
lcom -b230400 -f hw -m tput -q /dev/ttyR[0-7]
```

This example runs a loopback test. You must have a loopback plug installed on the port for this test to pass. See *RocketPort Serial Port Connectors* on Page 15 if you need to build loopback plugs for the serial ports on the ATS-LNX.

```
lcom -m test /dev/ttyR0
```

This example runs a stream of ASCII data to the port. You must have a loopback plug installed on the port for this test to pass.

```
lcom -m tput /dev/ttyR0
```

This example runs a stream of ASCII data to multiple ports. You must have a loopback plug installed on the port for this test to pass.

```
lcom -m tput /dev/ttyR[0-7]
```

This example runs a stream of ASCII data at a specific baud rate. You must have a loopback plug installed on the port for this test to pass.

```
lcom -m tput -b9600 /dev/ttyR0
```

This example runs a stream of ASCII data with hardware flow control. You must have a loopback plug installed on the port for this test to pass.

```
lcom -m tput -b9600 -f hw /dev/ttyR0
```

This example runs a stream of ASCII data with software flow control. You must have a loopback plug installed on the port for this test to pass.

```
lcom -m tput -f sw /dev/ttyR0
```

Channel Window

Below is a typical **lcom** screenshot showing two open channels:

```
+------------------------------------------------------------------+
|S1 [term]  CD DTR DSR RI RTS CTS 163/163 0.0/0.0        |
|asd;lfkjsa;ldkfjsadl;jfasl;dkjfasl;dkjfasl;djflas;kjfasl;dkjfasl;dj|
|fas;ldkjfasl;dkjfasl;kjfasl;kdjfas;ldkjfas;dlkjfasl;dkfjasl;fdkjsl;|
|adfkjasl;dfkjas;dlkjflas;djkf                |
|               |
|               |
|               |
|               |
|               |
+------------------------------------------------------------------+
+------------------------------------------------------------------+
|R2 [tput]  CD DTR DSR ri RTS CTS 70656/70103 970.9/959.9       |
|EFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|} !"#$%&'()|
|*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abc !"#$%&'(|
|)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijk|
|lmnopqrstuvwxyz{|} !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP|
|QRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|} !"#$%&'()*+,-./012345|
|6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abc !"#$%&'()*+,-./01234|
|56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw|
|xyz{|} !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\|
|]^_`abcdefghijklmnopqrstuvwxyz{|} !"#$%&'()*+,-./0123456789:    |
+------------------------------------------------------------------+
```

In the example show above, the devices **/dev/ttyS0** and **/dev/ttyR0** have been opened. Both ports have loopback connectors attached. **/dev/ttyS0** is in **terminal** mode and some text has been entered on the keyboard which has been sent and then received and displayed in the window. **/dev/ttyR0** is in **throughput** mode, and the test data is seen in the window.

Each window has a status line at the top. The status line may be in place of the upper window border or immediately below it (as shown above) depending on the **-B** command line option. The layout of the status line is:

```
Dev [Mode] <Flags> <Modem> TxCnt/RxCnt TxThr/RxThr
```

Dev   is the device name or IP destination. If the device path starts with '**/dev/tty**', that portion will not be shown as a space saving measure.

Mode   is the mode in which that port is operating. See modes under the command line options section.

Flags is a set of single-character flags that are shown only when they are active. The **flag** characters are

    Q   Quiet-mode

    P   Paused

    V   Verify failure

    R   Read error

    W   Write error

    E   EOF detected

Modem	Shows the state of the six modem control lines [only shown for tty devices]. Uppercase means the signal is active, lowercase means inactive.
TxCnt	The total number of bytes transmitted since the port was opened or restarted.
RxCnt	The total number of bytes received since the port was opened or restarted.
TxThr	The transmit throughput in bytes/second. Updated once every 5 seconds.
RxThr	The receive throughput in bytes/second. Updated once every 5 seconds.

Operation

The **lcom** program is entirely keyboard driven. One of the open windows will be **active**. The active window is indicated by having its status line displayed in reverse-video. Keyboard commands always apply to the active window (unless otherwise noted).

All commands except for the **next window** command consist of an **Escape** followed by a single character. **Escape-H** will display a screen showing the key bindings. On many PC platforms, holding down the **ALT** key while striking another key will prefix that key with **Escape** (e.g. pressing **Alt-x** will send **Escape-x**). On some terminals, the **Meta** will work in the same way.

The following commands are available. Except for the **next window** command, all commands must be prefixed by **Escape**:

Ctrl-I Next window

> Selects next window as active. Most terminals send **Control-I** when the **TAB** key is pressed.

s   Stack windows

> Arranges all windows in a stacked manner. Each window will be full width and they will have enough vertical displacement so that all status lines are visible.

t   Tile windows

> Arranges all windows so that they do not overlap.

w   Waterfall windows

> Arranges all windows so that the status lines and left hand column of the data window are visible.

c   Close port

> Closes the active window and its associated port or TCP/IP connection.

o   Open port

> Opens a new window with a new tty device or TCP/IP connection.

r   Raise window

> Raises the active to the top of the display stack.

l   Lower window

> Lower the active window to the bottom of the display stack.

m   Maximize window

> Resizes the active window so that it takes up the entire screen.

n   Restore window

> Resizes the active window to the size it was before it was maximized.

p   Pause (or resume) channel

> Toggles the **Pause** flag for the channel. If the **Pause** flag is true (**P** displayed in **flags** field of status line), data input/output will be stopped.

M   Move window

> Moves the active window using the cursor keys.

S	**Size window**
	Resizes the active window using the cursor keys.
D	**Toggles DTR**
R	**Toggles RTS**
h	**Shows help screen**
	Displays the **keyboard->command** mapping. The information displayed is authoritative. In case of disagreement between the help display and this man page, don't believe the man page.
i	**Reinitialize channel**
	Stops and re-initializes the test running in the active window (clears error, zeros counters and throughput numbers).
I	**Reinitializes channel (all windows)**
q	**Toggles Quiet mode**
Q	**Toggles Quiet mode (all windows)**
e	**Edit port configuration**
	Can be used to change serial port parameters or mode parameters. Test will be re-initialized when edit operation is done.
x	**Exit program**
X	**Exit program**

Environment

lcom does not use any environment variables.

FTP Location

ftp://ftp.comtrol.com/Utilities/Linux/lcom/

Appendix D. Changing the WatchDog Timer

The hardware watch-dog timer is not supported by the installed Linux kernel. However, it may be accessed directly by user applications if desired.

The Watch-Dog Timer is a device used to ensure that standalone systems can reset themselves and recover from catastrophic conditions that cause the CPU to hang or crash. The Watch-Dog Timer is a countdown timer that will reset the CPU when it times out.

The Watch-Dog Timer is enabled by reading port **443H**. It should be triggered before the time-out period ends, otherwise it will assume that the program operation is abnormal and will issue a reset signal to restart, or activate NMI to CPU.

The Watch-Dog Timer is disabled by reading port **843H**.

JP4	Watch-Dog Timer Settings Description
1-2	Activate NMI to CPU when WDT times-out.
2-3	**Reset when WDT time-out.**
Open	Disable WDT.

Note: Bold text (shaded green in the online version) illustrates the default value.

Three I/O ports control the Watch-Dog Timer and are accessed using the addresses defined in the following table.

Hex Address	Read/Write	Description
443H	Write	Set Watch-Dog Time period
443H	Read	Enable and refresh the Watch-Dog Timer.
843H	Read	Disable the Watch-Dog Timer.

Prior to enabling the Watch-Dog Timer, the user has to define the time interval to be used. The timer interval is defined by writing a value to address 443H. This value is within the range from 01 (hex) to FF (hex) and defines an interval between 1 second to 255 seconds, respectively. The following table illustrates this correlation:

Hex Value	Time Interval
01	1 sec
02	2 sec
03	3 sec
04	4 sec
.	.
.	.
.	.
FF	255 sec

The Watch-Dog Timer is activated by reading the value at address 443H. To ensure that a reset condition does not occur, the timer must be periodically reset to restart the countdown at the beginning of the defined interval before the time out period has expired. This is achieved by first disabling the timer by reading address 843H and then re-enabling it by reading the value at 443H before the timer reaches zero. Refer to the example of the assembly program below.

A tolerance of at least 5% must be maintained to avoid unknown routines within the operating system, such as disk I/O that can be very time consuming. Therefore if the time out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Note: *When exiting a program it is necessary to disable the Watch-Dog Timer,*
otherwise the system will reset.

Example of Assembly Program

```
TIMER_PORT =  443H
TIMER_START = 443H
TIMER_STOP =   843H

;;INITIAL TIME PERIOD COUNTER

MOV DX, TIME_PORT
MOV AL, 8:;;8 SECONDS
OUT DX,AL

;;ADD YOUR APPLICATION HERE

MOV DX, TIMER_START

IN  AL, DX.;;START COUNTER

;;ADD YOUR APPLICATION HERE

W_LOOP:
MOV DX, TIMER_STOP
IN  AL, DX
MOV DX, TIMER_START
IN  AL,  DX.
;;RESTART COUNTER
;;ADD YOUR APPLICATION HERE

CMP EXIT_AP, 0
JNE W_LOOP
MOV DX,      TIMER_STOP
IN  AL,       DX

;;EXIT AP
```

Appendix E. Default System Values

This subsection contains the following information:

- Device names
- System I/O address map
- First MB memory map

Default Device Names

Use the following table if you need the default device names.

Device Name	Device Name
AUX A	**/dev/ttyS1**
CONSOLE	**/dev/ttyS0**
Ethernet #2	**eth0**
Ethernet #1	**eth1**
PARALLEL	**/dev/lp0**
PCMCIA NICs	**eth2**
PCMCIA Modem	**/dev/ttyS2**
PCMCIA to compact flash adapter 1	**/dev/hde**
PCMCIA to compact flash adapter 2	**/dev/hdg**
SERIAL PORTS 1-8	**ttyR0 - ttyR7**
USB #1 and #2	Dependent on device

System I/O Address Map

This table illustrates the system I/O address map for the ATS-LNX.

I/O Address	Map Description
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
022-023	Chipset address
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2

I/O Address	Map Description
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-OFF	Math Coprocessor
1F0-1F8	VIR BUS Master PCI IDE Controller
200-207	Game I/O
278-27F	Reserved
2F8-2FF	Serial Port 2
378-37F	Parallel Printer Port 1
3B0-3DF	Cyrix Graphic Adapter
3F0-3F7	Available
3F8-3FF	Serial Port 1
443	Watch-Dog timer enable
843	Watch-Dog timer disable

First MB Memory Map

This table illustrates the first MB memory map.

Address	Description
F000h-FFFFh	System ROM
D800h-EFFFh	Unused
C800h-D7FFh	Ethernet ROM
C000h-C7FFh	Expansion ROM
B800h-BFFFh	CGA/EGA/VGA text
B000h-B7FFh	Unused
A000h-AFFFh	EGA/VGA graphics
0000h-9FFFh	Base memory

Appendix F. Changing BIOS Configuration

This section discusses using the BIOS to change the system defaults. The DeviceMaster ATS-LNX uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected to meet your requirements.

Note: *The information in this appendix is for reference only. The DeviceMaster ATS-LNX is pre-configured before shipment. If you need to recover the Comtrol BIOS default, use this Appendix to reconstruct the proper BIOS settings.*

The Recovery CD does not recover the Comtrol BIOS settings.

Getting Started

When you apply power on the DeviceMaster ATS-LNX, the BIOS enters Power-on--Self Test (POST) routines. These routines are executed for system test, initialization, and system configuration verification. After the POST routines are completed, the following message appears:

> **" Hit DEL if you want to run SETUP"**

To access the **AWARD BIOS SETUP UTILITY**, press the <**Del**> key. This screen displays.

```
                      ROM PCI/ISA BIOS (2A434I9F)
                        CMOS SETUP UTILITY
                        AWARD SOFTWARE, INC.
    ┌────────────────────────────────────────────────────────────────┐
    │   STANDARD CMOS SETUP              INTEGRATED PERIPHERALS        │
    │                                                                  │
    │   BIOS FEATURES SETUP              SUPERVISOR PASSWORD           │
    │                                                                  │
    │   CHIPSET FEATURES SETUP           USER PASSWORD                 │
    │                                                                  │
    │   POWER MANAGEMENT SETUP           IDE HDD AUTO DETECTION        │
    │                                                                  │
    │   PNP/PCI CONFIGURATION            SAVE & EXIT SETUP             │
    │                                                                  │
    │   LOAD BIOS DEFAULTS               EXIT WITHOUT SAVING           │
    │                                                                  │
    │   LOAD SETUP DEFAULTS                                            │
    ├────────────────────────────────────────────────────────────────┤
    │   Esc : Quit                     ↑ ↓ → ←   : Select Item        │
    │   F10 : Save & Exit Setup        (Shift)F2 : Change Color       │
    ├────────────────────────────────────────────────────────────────┤
    │                                                                  │
    │                                                                  │
    └────────────────────────────────────────────────────────────────┘
```

Standard CMOS Setup

The **Standard CMOS Setup** screen is used for basic hardware system configuration, such the Date and Time settings.

```
                        ROM PCI/ISA BIOS (2A434I9F)
                            STANDARD CMOS SETUP
                            AWARD SOFTWARE, INC.

      Date (mm:dd:yy) : Thu, Apr 26 2001
      Time (hh:mm:ss) : 11 : 25 : 55

      HARD DISKS            TYPE     SIZE    CYLS HEAD PRECOMP LANDZ SECTOR  MODE

      Primary Master   : None        0 M     0    0      0      0      0   -----
      Primary Slave    : None        0 M     0    0      0      0      0   -----
      Secondary Master : None        0 M     0    0      0      0      0   -----
      Secondary Slave  : Auto        0 M     0    0      0      0      0   AUTO

      Drive A : None
      Drive B : None

      Video   : EGA/VGA
      Halt On : No Errors

      ESC : Quit              ↑ ↓ → ←   : Select Item      PU/PD/+/- : Modify
      F1  : Help              (Shift)F2 : Change Color
```

This figure illustrates the DeviceMaster ATS-LNX factory defaults.

Use the following procedure to change the system date.

1. Press either the Arrow or <**Enter**> key on your keyboard to select one of the fields (Month, Date or Year).

2. Press either <**PgUp**> or <**PgDn**> to increase or decrease the value of that field.

3. Use the same key sequence to change the time setting.

BIOS Features Setup

The **BIOS Features Setup** screen is designed for fine-tuning your system and improving its performance. Typically, you do not have to change the default settings, which are pre-set for the most reliable operation.

```
                        ROM PCI/ISA BIOS (2A434I9F)
                            BIOS FEATURES SETUP
                            AWARD SOFTWARE, INC.

      Virus Warning             : Disabled   Video  BIOS Shadow   : Enabled
      CPU Internal Cache        : Enabled    C8000-CBFFF Shadow   : Disabled
                                             CC000-CFFFF Shadow   : Disabled
      Quick Power On Self Test  : Enabled    D0000-D3FFF Shadow   : Disabled
      Boot From LAN First       : Disabled   D4000-D7FFF Shadow   : Disabled
      Boot Sequence             : C only     D8000-DBFFF Shadow   : Disabled
      Swap Floppy Drive         : Disabled   DC000-DFFFF Shadow   : Disabled
      Boot Up Floppy Seek       : Disabled   Cyrix 6x86/MII CPUID: Enabled
      Boot Up NumLock Status    : On
      Boot Up System Speed      : High
      Gate A20 Option           : Fast
      Memory Parity Check       : Enabled
      Typematic Rate Setting    : Disabled
      Typematic Rate (Chars/Sec): 6
      Typematic Delay (Msec)    : 250
      Security Option           : Setup       ESC : Quit        ↑↓→← : Select Item
      PCI/VGA Palette Snoop     : Disabled    F1  : Help        PU/PD/+/- : Modify
      OS Select For DRAM > 64MB : Non-OS2     F5  : Old Values  (Shift)F2 : Color
      Report No FDD For WIN 95  : Yes         F6  : Load BIOS  Defaults
                                              F7  : Load Setup Defaults
```

This figure illustrates the DeviceMaster ATS-LNX factory defaults.

Chipset Features Setup

The **Chipset Features Setup** screen primary controls the board's chipset and is used to change the chipset configuration.

This figure illustrates the DeviceMaster ATS-LNX factory defaults.

```
                    ROM PCI/ISA BIOS (2A434I9F)
                       CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.

 SDRAM CAS latency Time   : 3 T
 SDRAM Clock Ratio Div By : 4

 16-bit I/O Recovery (CLK): 5
 8-bit  I/O Recovery (CLK): 5

 USB Controller           : Enabled
 USB Legacy Support       : Disabled




                                      ESC : Quit        ↑↓→← : Select Item
                                      F1  : Help         PU/PD/+/- : Modify
                                      F5  : Old Values  (Shift)F2 : Color
                                      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Note: *Changing these default setting improperly can result in an unstable system.*

Power Management Setup

The **Power Management Setup** screen helps you handle the ROCKY-568SEV board's "green" function. This feature can shut down the video display and hard disk to save energy.

This figure illustrates the DeviceMaster ATS-LNX factory defaults.

```
                    ROM PCI/ISA BIOS (2A434I9F)
                       POWER MANAGEMENT SETUP
                        AWARD SOFTWARE, INC.

 Power Management       : Disabled    IRQ1  (KeyBoard)    : ON
                                      IRQ3  (COM 2)       : OFF
        ** PM Timers **              IRQ4  (COM 1)       : OFF
 Doze Mode              : Disabled    IRQ5  (LPT 2)       : OFF
 Standby Mode           : Disabled    IRQ6  (Floppy Disk): OFF
 HDD Power Down         : Disabled    IRQ7  (LPT 1)       : OFF
 MODEM Use IRQ          : NA          IRQ9  (IRQ2 Redir)  : OFF
                                      IRQ10 (Reserved)    : OFF
 Throttle Duty Cycle    : 33.3 %      IRQ11 (Reserved)    : OFF
                                      IRQ12 (PS/2 Mouse)  : OFF
                                      IRQ13 (Coprocessor): OFF
                                      IRQ14 (Hard Disk)   : OFF
                                      IRQ15 (Reserved)    : OFF

                                      ESC : Quit        ↑↓→← : Select Item
                                      F1  : Help         PU/PD/+/- : Modify
                                      F5  : Old Values  (Shift)F2 : Color
                                      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

PNP/PCI Configuration

This menu is used to assign IRQ numbers to your PNP/PCI devices manually. This figure illustrates the DeviceMaster ATS-LNX factory defaults.

```
                        ROM PCI/ISA BIOS (2A434I9F)
                          PNP/PCI CONFIGURATION
                           AWARD SOFTWARE, INC.

 PNP OS Installed         : No        PCI IRQ Actived By  : Level
 Resources Controlled By  : Manual
 Reset Configuration Data : Disabled

 IRQ-3  assigned to : PCI/ISA PnP
 IRQ-4  assigned to : PCI/ISA PnP
 IRQ-5  assigned to : Legacy ISA     Used MEM base addr      : N/A
 IRQ-6  assigned to : Legacy ISA
 IRQ-7  assigned to : Legacy ISA
 IRQ-9  assigned to : PCI/ISA PnP
 IRQ-10 assigned to : PCI/ISA PnP
 IRQ-11 assigned to : PCI/ISA PnP
 IRQ-12 assigned to : PCI/ISA PnP
 IRQ-14 assigned to : PCI/ISA PnP
 IRQ-15 assigned to : PCI/ISA PnP
 DMA-0  assigned to : PCI/ISA PnP
 DMA-1  assigned to : PCI/ISA PnP     ESC : Quit        ↑↓→← : Select Item
 DMA-3  assigned to : PCI/ISA PnP     F1  : Help         PU/PD/+/- : Modify
 DMA-5  assigned to : PCI/ISA PnP     F5  : Old Values  (Shift)F2 : Color
 DMA-6  assigned to : PCI/ISA PnP     F6  : Load BIOS  Defaults
 DMA-7  assigned to : PCI/ISA PnP     F7  : Load Setup Defaults
```

- *PNP OS Installed:* If you install a Plug and Play operating system (OS), the OS will reassign the interrupt even if you choose **Yes** for this option. If you install a non-Plug and Play OS or if you want to prevent the OS from reassigning the board's IRQ settings, choose **No** for this option.

- *Resources Controlled By:* Select **Auto** if you want the computer to assign the IRQs.

- *Reset Configuration Data:* Enabling this field means you allow the configuration data to be reset.

- *IRQ-xx assigned to*: These fields show whether a certain IRQ is used by a PCI/ISA card.

Load BIOS Defaults

If you choose to activate the **Load BIOS Defaults** menu and then answer **Y** to load the Load BIOS Defaults prompts, the AWARD defaults load with the exception of the Standard CMOS setup.

```
                          ROM PCI/ISA BIOS (2A434I9F)
                              CMOS SETUP UTILITY
                              AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP                    INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP                    SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP                 USER PASSWORD

   POWER MANAGEMENT SETUP                 IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURA                                      ETUP
                      Load BIOS  Defaults (Y/N)? N
   LOAD BIOS DEFAULT                                      SAVING

   LOAD SETUP DEFAULTS

  Esc : Quit                          ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup             (Shift)F2 : Change Color
```

Note: *If you load the default BIOS, you will change Comtrol™ Corporation's default settings and may experience unreliable results and an unstable platform.*

Select **N** to abort this screen.

Load Setup Defaults

If you select **Y** to this field, the **Setup Defaults** load except Standard CMOS SETUP.

```
                          ROM PCI/ISA BIOS (2A434I9F)
                              CMOS SETUP UTILITY
                              AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP                    INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP                    SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP                 USER PASSWORD

   POWER MANAGEMENT SETUP                 IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURA                                      ETUP
                      Load SETUP Defaults (Y/N)? N
   LOAD BIOS DEFAULT                                      SAVING

   LOAD SETUP DEFAULTS

  Esc : Quit                          ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup             (Shift)F2 : Change Color
```

Note: *If you load the Setup defaults, you will change Comtrol Corporation's default settings.*

The screens in this document illustrate the Comtrol default setting, which are optimal configuration settings for your system.

Integrated Peripherals

This option is used to assign Onboard I/O, IRQ, DMA, etc.

```
                    ROM PCI/ISA BIOS (2A434I9F)
                     INTEGRATED PERIPHERALS
                      AWARD SOFTWARE, INC.

 IDE HDD Block Mode        : Enabled
 Primary IDE Channel       : Enabled    Onboard Parallel Port    : 378/IRQ7
    Master Drive PIO Mode   : Auto      Parallel Port Mode       : SPP
    Slave Drive PIO Mode    : Auto
 Secondary IDE Channel     : Enabled
    Master Drive PIO Mode   : Auto
    Slave Drive PIO Mode    : Auto

 IDE Primary Master UDMA   : Auto
 IDE Primary Slave  UDMA   : Auto
 IDE Secondary Master UDMA : Auto
 IDE Secondary Slave  UDMA : Auto

 KBC input clock           : 8 MHz      Multiple Monitor Support : M/B First
 Onboard FDC Controller    : Enabled
 Onboard Serial Port 1     : 3F8/IRQ4   Video Memory Size        : 2.5 M
 Onboard Serial Port 2     : 2F8/IRQ3   Flat Panel Status        : Both
 UART Mode Select          : Normal     Flat Panel Resolution    : 800x600
```

This figure illustrates the DeviceMaster ATS-LNX factory default settings.

*   Multiple Monitor Support -- No Onboard, PCI first, M/B first
    Use to select the primary VGA for multiple monitor support in Windows.
*   Video Memory Size -- 4.0M
    Use to select the size of video memory.

Supervisor Password and User Password

The **Supervisor Password** screen sets a password that is used to protect your system and Setup Utility. The Supervisor Password has higher priority than User Password. Once you setup the Supervisor password, the system will always ask you to key-in the Supervisor Password every time you enter the BIOS SETUP.

If you enter the BIOS SETUP with Supervisor Password, you can choose every setup/option on the main menu. When entering the BIOS with the User Password, however, you can only choose three setup/options (USER PASSWORD, SAVE & EXIT SETUP and EXIT WITHOUT SAVING).

Use the following procedure to disable the Supervisor and User passwords:

1. Enter the BIOS SETUP program with the Supervisor password.
2. Press the <**Enter**> key when prompted for a new password.

SVGA Setup Introduction

The DeviceMaster ATS-LNX is equipped with an on-board LCD/VGA interface. The following subsections discuss its specifications and features.

Chipset

The DeviceMaster ATS-LNX uses a Cyrix™ CX5530 chipset as its SVGA controller. The chipset is compatible with most traditional analog CRT monitors and also accepts most interlaced and non-interlaced analog monitors (color and monochrome VGA) with high-resolution quality while maintaining complete IBM™ VGA compatibility.

Digital monitors (i.e. MDA, CGA, and EGA) cannot be supported. Multiple frequency (multisync) monitors operate as if they are analog monitors.

Display Memory

With the 4 MB UMA memory, the VGA controller can make CRT displays or color panel displays perform with resolutions up to 1024 x 768 at 64K colors.

Display Driver

This device supports a MediaGX driver.

PCI Bus Ethernet Interface

The DeviceMaster ATS-LNX provides a high performance 32-bit Ethernet chipset which is fully compliant with the IEEE 802.3 standard. The Ethernet port supports a standard RJ45 connector and is both 100Base-T and 10Base-T compatible. The major network operating system fits it. The Ethernet port supplies a standard RJ45 connector on board.

Index