User Manual

ASeries A1400e*L*

Ethernet Data Logger
with Battery Backup

the interfacing specialists

ALFATRON

A1400e*L* User Manual

Version 1.00

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1.0   PRODUCT DESCRIPTION

The ASeries A1400e*L* Data Logger has one RS-232 Serial input port and one Ethernet output port and a battery backed in-line data buffer. It will accept data through its independent input port, store the data in its buffer and send it to the Ethernet port when an active Ethernet connection is made. The A1400eL is fully battery backed for up to twelve hours of continuous operation.

It has been optimised to handle Call Accounting infromation which is output from PBX equipment but its generic design makes it suitable for many other applications.

The physical layout of the ASeries A1400e*L* is as follows:
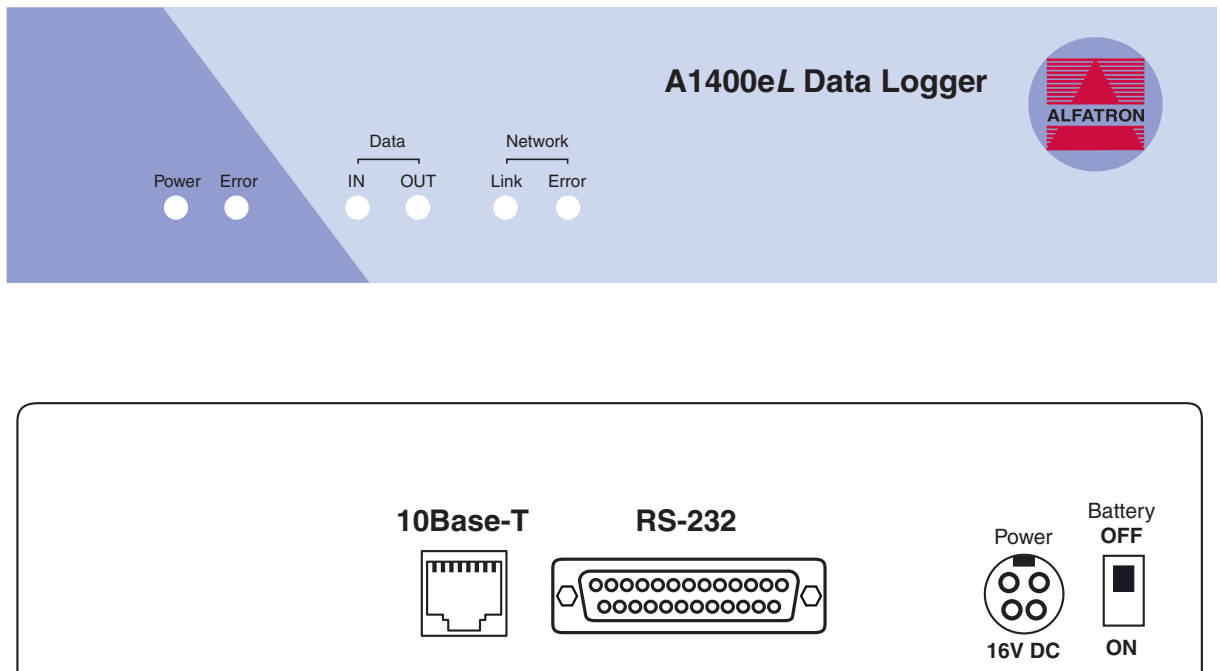
Figure 1 - A1400e*L* viewed front & rear

1.1   RS-232 Serial Port Features

•   baud rate speeds from 1200bps to 115,200bps

•   supports Hardware (DTR/DSR) and Software (Robust Xon/Xoff) handshaking protocols

•   switch selected to either DCE or DTE to simplify cabling requirements

1.2   Ethernet Port Features

•   Ethernet compatibility: Version 2.0/IEEE 802.3

•   10Base-T with an RJ-45 connector for use with standard CAT5 cabling

•   Protocols include: ARP, UDP, TCP, Telnet, ICMP, SNMP, DHCP, TFTP and HTTP

•   Management: HTTP, SNMP(read only), Serial Login, Telnet Login

2.0   PROTOCOLS and ADDRESSES used in the A1400e*L*

IP   Internet Protocol (IP) is responsible for basic network connectivity and defines addressing, routing and data block handling over the network.

TCP   Transmission Control Protocol (TCP) uses IP to deliver data packets to computer applications and assures that none of the data is lost or duplicated while being sent to a computer on the network.

FTP   File Transfer Protocol (FTP) is used to copy data files between two computers on a network.

TFTP   Trivial File Transfer Protocol (TFTP) is a version of FTP. It is commonly used to install a computer's operating system from a TFTP server file. Firmware updates can be performed using TFTP.

Telnet   Telnet has two hats (a) it is a TCP/IP protocol for connecting to a remote computer, (b) a TCP/IP application which lets you connect to a remote computer and work as if you were sitting in front of that computer.

SMTP   Simple Network Management Protocol (SMTP) is used to manage and monitor various devices connected to the network.

HTTP   HyperText Transfer Protocol (HTTP) transfers HyperText Markup Language (HTML) and various other components from servers on the internet or intranet environment to your local browser program.

BOOTP   Boot Protocol (BOOTP) is used to load an operating system onto a diskless computer via a network connection.

UDP   User Datagram Protocol (UDP) uses IP to deliver data packets to computer applications and provides a flow of data among computers on a network. UDP does not provide error checking it is simply a delivery mechanism.

2.1   Ethernet (MAC) Address

The Ethernet address is also referred to as the hardware address or the Media Access Controller (MAC) address. The first three bytes of the Ethernet address are fixed (e.g. 00-20-4A), identifying the unit as an Alfatron/Lantronix product. The fourth, fifth and sixth bytes are a unique number assigned to each A1400e*L*. This Ethernet/MAC address is clearly labeled on the rear of the A1400e*L*.

Examples of Ethernet Addresses:

                    00-20-4A-14-01-18   OR   00:20:4A:14:01:18

2.2   Internet Protocol (IP) Address

Every device on an IP network must have a unique IP address which is used to individually talk to that device, i.e. a A1400e*L*. See Section 7.0 for more information on IP addressing.

2.3   Default Port Number

A computer application communicates with services, such as Telnet or FTP, via a *port ID number.* The *port ID numbers* 1 through 255 are reserved for the most commonly used services, such as Telnet or FTP, for example, a Telnet application commonly uses port 23.

Every TCP connection and UDP datagram is defined by a destination IP address and a *port ID number*.

The default port number for a A1400eL is 10001.

3.0   **INSTALLATION**

To prevent battery discharge during storage and transportation the A1400e*L* is factory shipped with the backup battery 'Disabled'. For installation and normal operation simply slide the switch at the rear of the unit to the 'Battery ON' position.

Apply power to the A1400e*L* and observe the LED's. The 'Power' LED should light up and remain alight, as will the 'Network Link' LED if the network cable is connected to an active network. All other LED's should light up and then extinguish within 2 seconds. The 'Network Error' LED will flash 3 times as the Ethernet interface powers up and it too will then extinguish. After this power up sequence the A1400e*L* is ready for operation.

Power off the A1400e*L* and connect the correct cables between it and the target devices. Use only cables that have the correct pin configurations. Pin assignments and cable requirements are discussed in Sections X and X.

3.1   **How To Reset The A1400EL**

Once the battery has been enabled the A1400e*L* cannot be hardware reset by disconnecting the power adaptor. The following procedure must be used instead:

- Move the Battery selector to the 'Disable' position. (Factory Setting)
- Remove the power jack from the unit and wait 5 seconds.
- Move the Battery selector to the 'Enable' position and insert power jack.

3.2   **Power Up Self Test Feature**

During the power up sequence described above the A1400e*L* performs a Power Up Self Test.

- The Static Ram (SRAM) is checked for any errors. If an error occurs during this test the unit will enter 'SRAM Error Mode', which is indicated by the 'Receive Data', 'Transmit Data', and 'Data Error' LED's all flashing simultaneously. This indicates that the A1400e*L* has a fault.

At the end of a normal Power Up Self Test the 'Power' LED and 'Network Link' LED's only will remain alight, provided the network cable is connected. The unit is ready for normal operation.

3.3   **LED's and Indicators**

The front panel of the A1400e*L* houses six LED indicators, which function as follows:

Power   Lights yellow to indicate the unit is powered up either from battery or supply.

Error   Lights red to indicate a data or configuration error on the RS-232 serial port.

Data In   Lights green to indicate data received on the RS-232 serial port.

Data Out   Lights green to indicate data is being transmitted via the Ethernet port.

N/W Link   Lights green to indicate the Ethernet port is connected to the network.

N/W Error   Lights red to indicate a network error or flashes in self-test/diagnostics mode.

4.0   CONFIGURATION OF PORTS

4.1   Location of Serial Configuration Switches

The following diagram shows the location of the various switches on the A1400e*L* Printed Circuit Board (PCB). These switches can only be accessed with the cover removed as shown here:
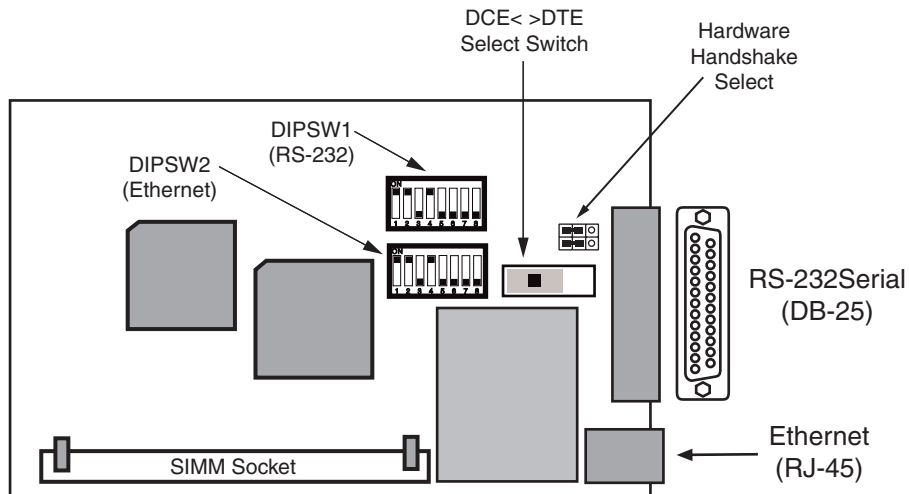
Figure 4-1.   Location of Switches on Printed Circuit Board

4.2   Setting the DIP Switch

The A1400e*L* has an independent DIP switch bank on the PCB for the Input RS-232 Serial Port and the Ethernet Port, see Figure 4-1 above.

NB.   The Ethernet Switch settings must NOT be changed from factory setting.

Before changing the DIP switch settings, move the 'Battery Selector' to the 'Disable' position and disconnect the power supply. Change the settings as required and then 'Enable' the battery and re-insert the supply power. The DIP Switch settings are read only when the A1400e*L* is powered ON.

4.3   Factory DIP Switch Settings

The RS-232 Serial and Ethernet port DIP-Switches are factory pre-set as follows:

9600 bps

8 Data Bits

No Parity

DTR/DSR Hardware Handshaking

1 Stop Bit
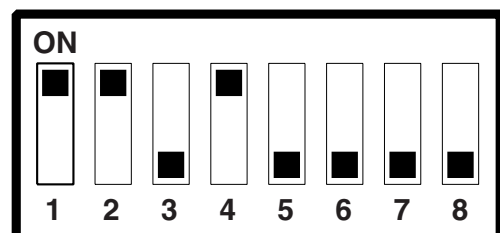
4.4 DIP SWITCH SETTINGS

Table 4-1

Switch	Function	OFF	ON
1	Baud Rate Setting	See Table 4-2 below	
2			
3			
4	Data Bits	7	8
5	Parity & Test Mode	See Table 4-3 below	
6			
7	Handshaking	Hardware	Xon/Xoff
8	Stop Bits	1	2

Table 4-2

Switch	1200	2400	4800	9600	19,200	38,000	57,600	115,200
1	ON	OFF	OFF	ON	OFF	ON	OFF	ON
2	OFF	ON	OFF	ON	OFF	OFF	ON	ON
3	OFF	OFF	OFF	OFF	ON	ON	ON	ON

Table 4-3

Switch	Odd	Even	None	Test
5	OFF	ON	OFF	ON
6	ON	ON	OFF	OFF

4.5 DCE / DTE Input Port Selection

To make cabling easier the Input RS-232 Serial port may be switch selected as either DCE or DTE. The slide switch is located on the printed circuit board behind the serial port connector. The diagram below shows the switch set to the DCE selection:

DCE < > DTE

4.6   General Handshake Information

The A1400e*L* does not require any handshake in many applications. Many PBX's will output ASCII data as a single stream with no flow control. As this is often the case the unused A1400e*L* handshake lines are biased high so that the unit will always receive data.

4.6.1   RS-232 Serial Handshake Selection

The hardware handshake pair on the INPUT RS-232 Serial Port may be jumper selected as either DTR/DSR or RTS/CTS.

The jumpers J1 and J2 are located directly behind the DB-25 serial port connector.

- •   J1 is used to select either CTS or DSR
- •   J2 is used to select either RTS or DTR
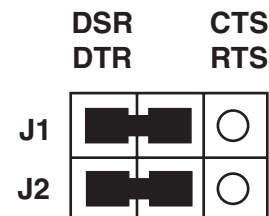
The diagram above shows the selection of the DTR/DSR handshake pair.

4.7   EXPLAINING SERIAL FLOW CONTROL (Handshaking)

4.7.1   Hardware (DTR/DSR) Handshaking

Hardware DTR/DSR handshaking uses the Data Terminal Ready (DTR) and Data Set Ready (DSR) signal lines to control the flow of data between devices.

On the A1400DL*plus*, DTR is an output signal line which is ready to receive data when the RS-232 level is 'high', greater than +3Volts. Conversely, a DTR 'low', less than -3Volts, indicates that the unit is temporarily unable to receive data.

DSR is an input signal line which controls the output of the A1400DL*plus*. A 'high' RS-232 level, greater than +3Volts, indicates that data may be sent to the connected device. A 'low' RS-232 level, less than -3Volts, indicates that data cannot be sent to the connected device. Hardware DTR/DSR is the preferred method of handshaking under the DOS operating system.

4.7.2   Software (Xon/Xoff) Handshaking

Software Xon/Xoff handshake uses 'Xon' and 'Xoff' ASCII characters to control the flow of data. The A1400e*L* uses 'Robust Xon/Xoff' which differs from 'Standard Xon/Xoff' in that the unit will repeatedly send Xon or Xoff character. When the unit is ready to receive data an Xon character will be sent every 5 seconds. Similarly, every 5 seconds the A1400e*L* is unable to receive data, an Xoff character will be sent to the connected device.

5.0   RS-232 SERIAL PORT PIN ASSIGNMENTS

Pin	*Type*	*Status*	*DCE*	*DTE*
1		Ground	FG	FG
2	Data	Data	RD (in)	TD (out)
3	Data	Data	TD (out)	RD (in)
4	Handshake	Used - Pulled High	CTS (in)	RTS (out)
5	Handshake	Used - Pulled High	RTS (out)	CTS (in)
6	Handshake	Used - Pulled High	DTR (out)	DSR (in)
7		Ground	SG	SG
8	Handshake	Not Used - Pulled High	DCD (out)	DCD (in)
20	Handshake	Used	DSR (in)	DTR (out)
22	Handshake	Not Used - Pulled High	RI (out)	RI (in)

6.0   CABLE REQUIREMENTS

6.1   Cable Shielding

Alfatron recommends using shielded cable with all its products. Shielding reduces Electro Magnetic Radiation and improves noise immunity. This helps minimise interference to other equipment and will improve communications reliability.

The recommended cable construction is as follows:

- Take the shield (surrounding cable wires) and solder it to the Frame Ground (FG) pin. If FG is not available, use Signal Ground (SG) but in this case always use a separate wire for ground which is connected at both ends.

- The shield must be connected at both ends of the cable.

6.2   Cable Examples

6.2.1   RS-232 Connection to a PC with a DB-25 Serial Connector
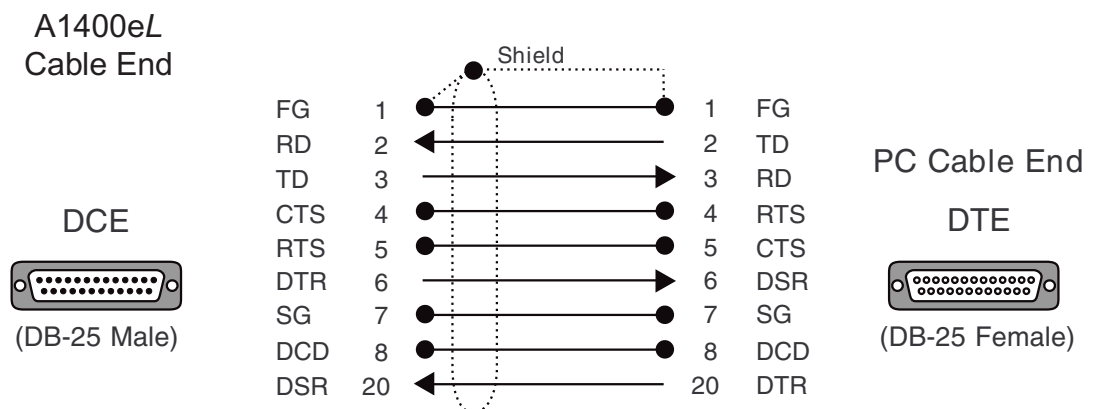
6.2.2   RS-232 Connection to a PC with a DB-9 Serial Connector

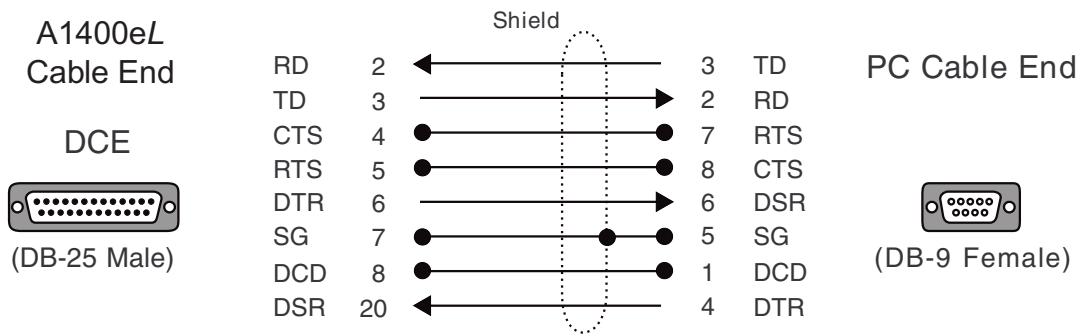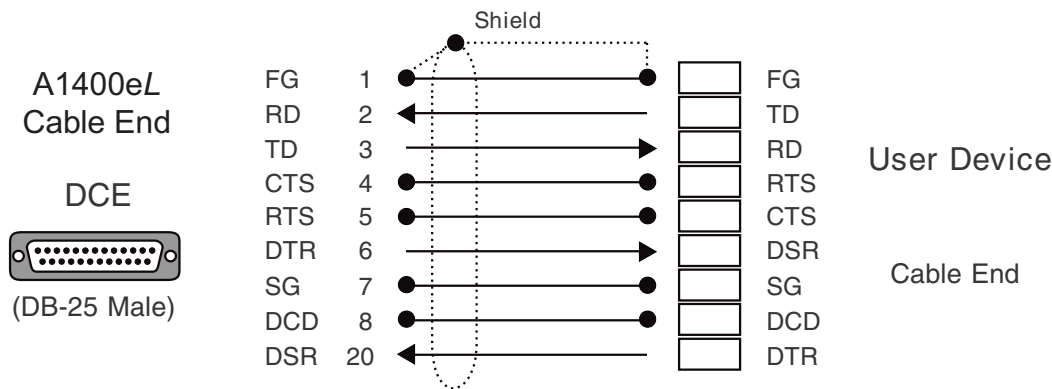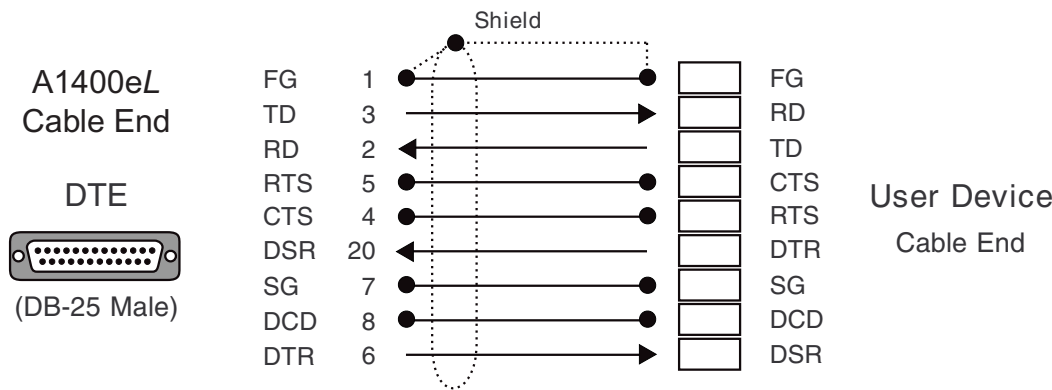| A1400e*L* Cable End DCE (DB-25 Male)			Shield				PC Cable End (DB-9 Female)
	RD	2	←	3	TD		
	TD	3	→	2	RD		
	CTS	4	● ──── ●	7	RTS		
	RTS	5	● ──── ●	8	CTS		
	DTR	6	→	6	DSR		
	SG	7	● ─── ● ─── ●	5	SG		
	DCD	8	● ──── ●	1	DCD		
	DSR	20	←	4	DTR		

6.2.3   A1400e*L* as DCE - Serial Cable to Other Devices

A1400e*L* Cable End DCE (DB-25 Male)			Shield			User Device Cable End
	FG	1	● ──── ●	FG		
	RD	2	←	TD		
	TD	3	→	RD		
	CTS	4	● ──── ●	RTS		
	RTS	5	● ──── ●	CTS		
	DTR	6	→	DSR		
	SG	7	● ──── ●	SG		
	DCD	8	● ──── ●	DCD		
	DSR	20	←	DTR		

6.2.4   A1400e*L* as DTE - Serial Cable to Other Devices

A1400e*L* Cable End DTE (DB-25 Male)			Shield			User Device Cable End
	FG	1	● ──── ●	FG		
	TD	3	→	RD		
	RD	2	←	TD		
	RTS	5	● ──── ●	CTS		
	CTS	4	● ──── ●	RTS		
	DSR	20	←	DTR		
	SG	7	● ──── ●	SG		
	DCD	8	● ──── ●	DCD		
	DTR	6	→	DSR		

7.0   ASSIGNING THE IP ADDRESS TO THE ETHERNET PORT

This section covers the steps required to get the A1400e*L* on-line and working. There are two methods used to login to the A1400e*L* and setup the IP address.

(1)   Ethernet Port Login: Make a Telnet Connection to the ethernet port (9999).

(2)   Serial Port Login: Connect a terminal or a PC running a terminal emulation program to the serial port of the A1400e*L*.

It is important to consider the following points before logging into and configuring the A1400e*L*.

·   The IP address of the A1400e*L* must be configured before a network connection is available.

·   Only one person at a time may be logged into the network port. This eliminates the possibility of several people simultaneously attempting to configure the A1400e*L*.

·   Network port logins can be disabled. The system manager will not be able to access the unit. The network port can also be password protected.

7.1   Default IP Address

The A1400e*L* is factory shiped with a default IP address of 0.0.0.0 which automatically enables DHCP within the A1400e*L*.

Provided a DHCP server exists on the network, it will supply the A1400EL with an IP address, gateway address, and a subnet mask when the A1400e*L* boots up. (If no DHCP server exists, the A1400e*L* will respond with a diagnostic error: the red Diagnostic error LED blinks continuously)

This IP address will not appear in the A1400e*L*'s configuration screens: however, if you enter Monitor Mode from the serial port with network connection enabled (see Monitor Mode on page XXX), and issue the NC (Network Connection) command, you will see the A1400e*L*'s IP configuration.

7.2   AutoIP

AutoIP allows a A1400e*L* to obtain an IP address in a network that does not have DHCP server. (Windows 98 and 2000 also support AutoIP)

AuotIP assigns a random valid address to the A1400e*L* in the range of 169.254.x.1 to 169.254.x.1 (x can be between 0 and 255). This range of IP addresses is not to be used over the Internet. If a A1400e*L* has not been configured manually and cannot find a DHCP server, it automatically chooses an IP address from the reserved range. The A1400e*L* then uses the Address Resolution Protocol (ARP) to send out a request asking whether any node is using that same address. If another node is using the same address, the A1400e*L* assigns another IP address, reboots, and repeats the sequence.

NOTE: AutoIP-enabled A1400e*L*'s are constantly looking for DHCP servers. If a DHCP server becomes available on the network, the Auto IP-enabled A1400e*L* switches to the DHCP server provided address, and the unit reboots. If the DHCP server exists but denies the A1400e*L*an IP address, the A1400e*L* does not attatch to the network, but waits and retries.

AutoIP allows a small network of AutoIP-enabled devices to be setup without any need for a DHCP server or a static IP address.

AutoIP can be disabled by setting the IP address to 0.0.1.0. The 1 in the third octet is the disabling factor.

7.3   Setting The IP Address

The A1400e*L*'s IP address must be configured before a network connection is available. If the IP address was not set automatically via DHCP, set it now using a network or serial port login and the setup (configuration) menu.

7.3.1   DHCP Naming

The DHCP name of the A1400e*L* can be changed. The default name of the A1400e*L* is Cxxxxxx, where xxxxxx is the last 6 digits of the MAC address. This option can be changed to LTXdd, where 0.0.0.dd is the IP address assigned (dd should be a number between 1 and 99). For example, if the IP address is set to 0.0.0.5, the resulting DHCP name is LTX05.

A DHCP name of the customers own choosing (up to eight characters) can also be designed. This option can be set in the server configuration menu.

7.3.2   Network Port Login

The ARP method is available under UNIX and Windows based systems. The A1400e*L* will set its address from the first directed TCP/IP packet it receives.

1.   On a UNIX host, create an entry in the hosts ARP table using the intended IP address and the hardware address of the A1400e*L* (which is found on the rear of the unit).

ARP on UNIX

Arp -s 172.16.16.200 00:20:4a:xx:xx:xx

In order for the ARP command to work in Windows, the ARP table on the PC must have at least one IP address defined other than its own. If the ARP table is empty, the command will return an error message.

Type 'ARP -A' at the DOS command prompt to verify that there is at least one entry in the ARP table.

If the local machine is the only entry, ping another IP address on your network to build a new entry in the ARP table; the IP address must be a host other than the machine you are working on. Once there is at least one additional entry in the ARP table, use the following command to ARP an IP address to the A1400e*L*.

ARP on Windows

ARP -s 172.16.16.200 00-20-4a-xx-xx-xx

2.   Now open a Telnet connection to port 1. The connection will quickly fail (3 seconds), but the A1400e*L* will temporarily change its IP address to the one designated in this step.

Telnet to Port 1

telnet 172.16.16.200 1

3.   Finally, open a Telnet connection to Port 9999 and set all required parameters.

Telnet to Port 9999

telnet 172.16.16.250 9999

NOTE: This IP address is temporary and will revert to the default value when the A1400e*L*'s power is reset, unless you log into the A1400e*L* and store changes permanently.

7.3.3   Serial Port Login

1. Connect a console terminal or a PC running a terminal emulation program to the A1400e*L*'s serial port. The factory settings for the RS232 serial port are 9600 baud, no parity, 8 bits, 1 stop bit.

2. To enter Setup (configuration) Mode, cycle the A1400e*L*'s power (power off and back on). After power the self-test begins and the red diagnostic (Network ERROR) LED starts blinking. You have one second to enter 3 lower case "x" characters.

NOTE: The easiest way to enter setup mode is to hold down the "x" key at the terminal while powering up the A1400e*L*.

3. Select 0 (Server Configuration) and follow the prompts until you get to IP address.

4. Enter the new IP address.

5. Select 9 to save the configuration and exit setup mode.

The A1400e*L*'s Ethernet port then performs a power reset.

8.0   CONFIGURATION OF ETHERNET PORT

Certain parameters must be configured before the A1400e*L* can function on a network and these may be locally or remotely configured using the following procedures:
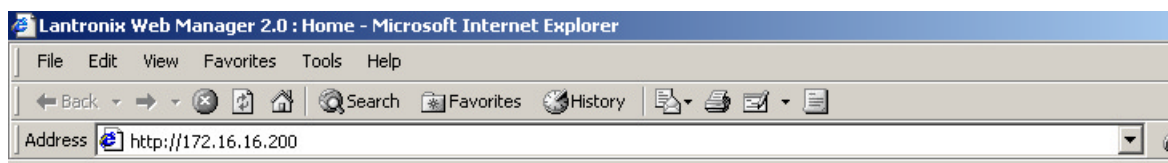
- use a Telnet connection to configure the A1400e*L* over the Network. This is done after the IP address has been assigned.

- use a terminal or terminal emulation program to access the RS-232 Serial port locally.

- use a standard Web Browser to access the A1400e*L*'s internal Web pages and configure the unit over the Network (after the IP address has been assigned) - *this is the easiest and preferred option*.

- use UDP datagrams to configure the unit over the Network (after the IP address has been assigned).

- use a HEX file to configure the unit over the Network (after the IP address has been assigned).

The configuration of the A1400e*L* Ethernet port is stored in non-volatile memory (NVRam) and is retained without power. The configuration can be changed at any time. The A1400e*L* performs a reset after the configuration has been changed and stored.
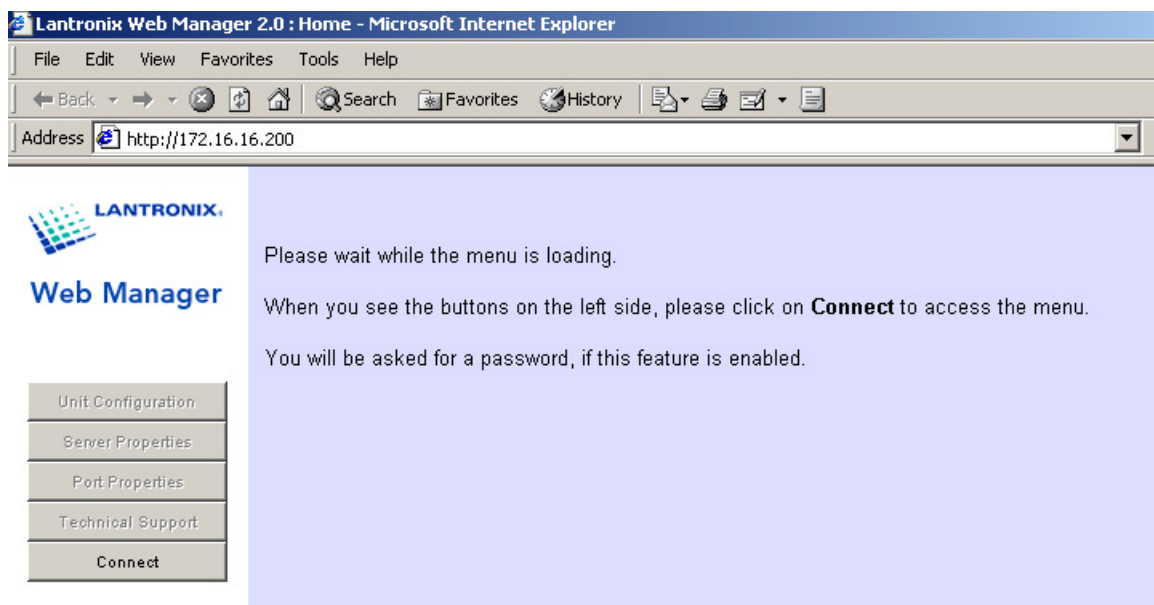
8.1   Network Configuration Using a Web Browser

If your A1400eL already has an IP address (see paragraph 7.0) then you can log into it using a standard Web Browser with Java enabled.

1. Type the IP address of the A1400e*L* into the URL field of your Web Browser and once connected to the A1400e*L* you will see the Lantronix Web Management Interface:
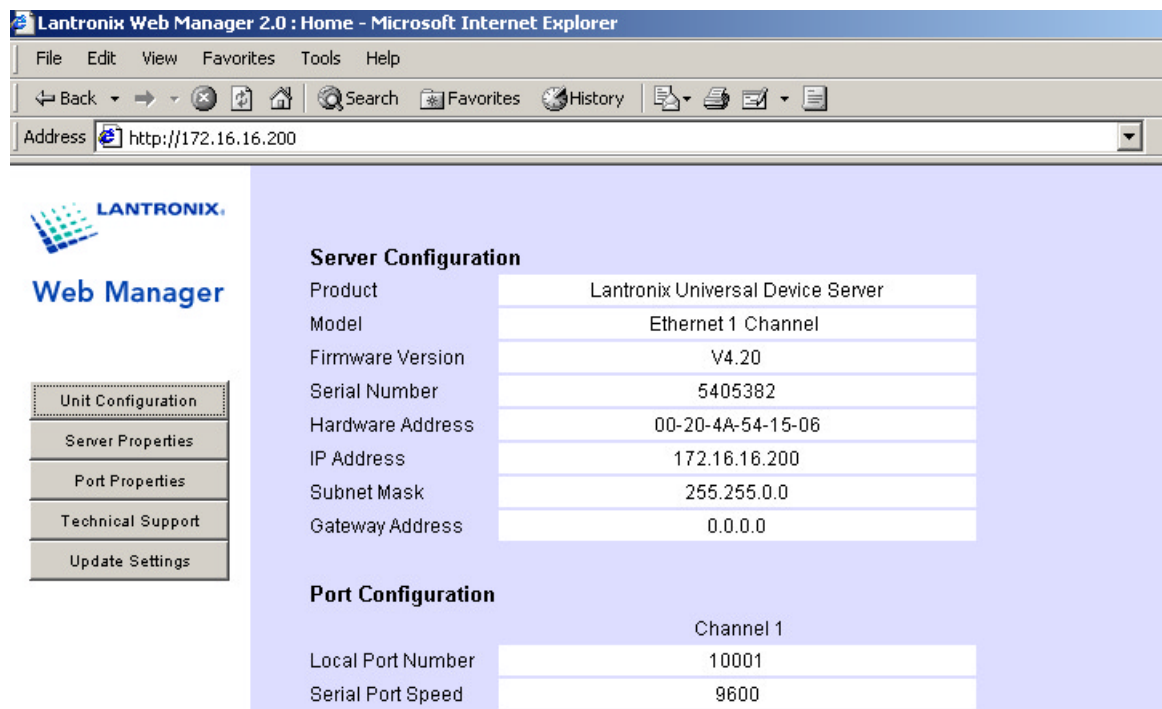

2. Select 'Connect' to log in and gain access to the Configuration Menu:

Web Browser Login Screen

3. Use the menu to navigate to sub-pages where you can configure the A1400e*L*:


Web Manager Interface

8.2   Network Configuration Using a Telnet Connection

To configure the A1400e*L* using Telnet establish a connection to port 9999.

For example, using Microsoft Telnet, clink on the 'Start' menu, then click 'Run' and type in the following command:

        telnet x.x.x.x 9999

where x.x.x.x is the IP address and 9999 is the A1400e*L*'s fixed network configuration port number.
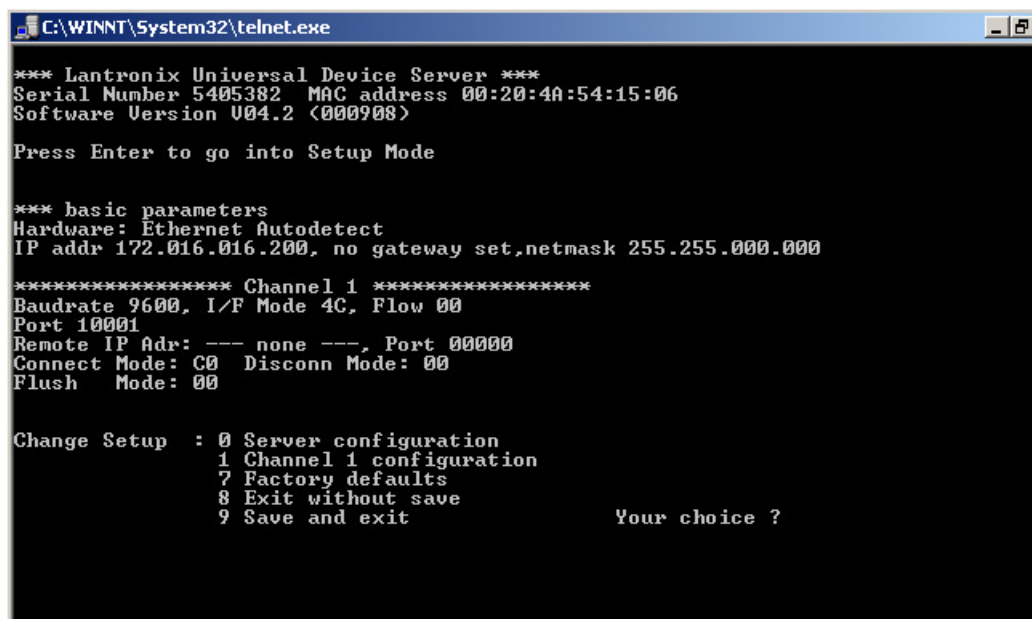

Microsoft Telnet Session example

8.3   Ethernet Configuration via the RS-232 Serial Port

Connect a terminal or a PC running a terminal emulation program to the RS-232 serial port of the A1400e*L*. The factory settings for the serial port are 9600baud, No Parity, 8 Data bits, 1 Stop bit.

To enter Setup (Configuration Mode), turn off the power to the A1400eL and then turn it back on again. After powerup the self-test begins and the 'Red' diagnostic (Network ERROR) LED will start blinking. You then have one second to enter 3 lower case "x" characters. The easiest way to do this is simply hold down the "x" key at you terminal while powering up the A1400e*L*.

Note: If your A1400e*L* contains a version of the firmware that buffers in 'sessions' then the RS-232 Serial port configuration is not possible. This is because bi-directional serial communication is being delayed due to 'session' logging.
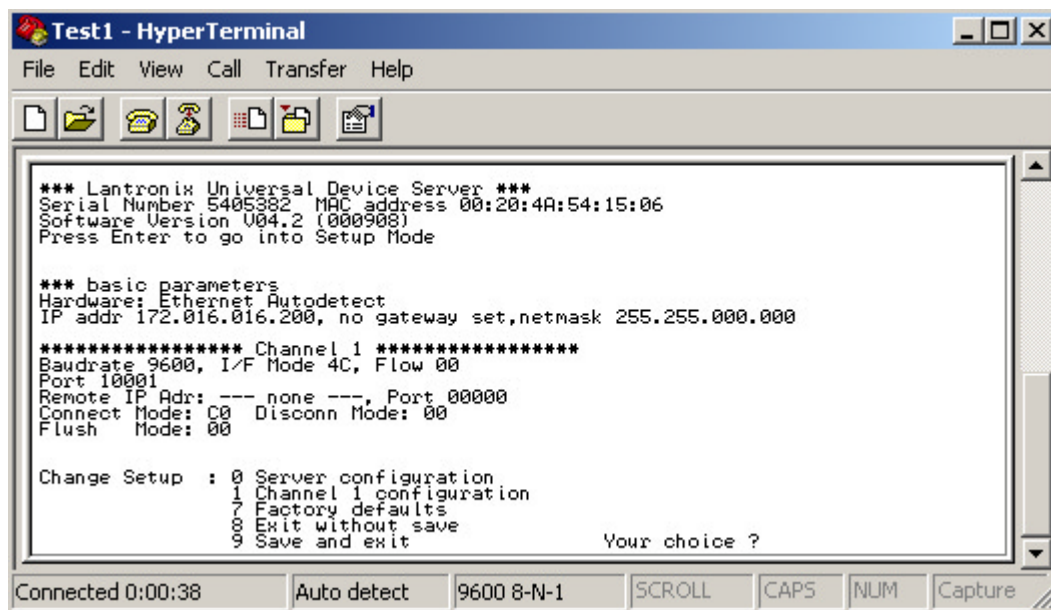
RS-232 Serial Port Connection Screen

9.0   CONFIDENCE TESTING THE A1400e*L*

The A1400e*L* incorporates two Self Diagnostic features designed to assist with an installation when troubleshooting is required. These features will assist in establishing the correct operation of the A1400e*L* before connecting to other equipment. Both tests are described below.

9.1   Character Generation Function Test

The Character Generation Function Test will output a continuous stream of printable ASCII characters from both the RS-232 Serial and Ethernet ports. This function may be used to confidence test both ports of the A1400e*L* or test the operation of attached devices. It is activated in the following manner:

1.   Power OFF the unit, "disable' the battery and then make a note of the original DIP Switch settings of the A1400e*L*.

2.   Select 'Test Mode' on the DIP Switch 1 (Switch 5 ON).

3.   Configure the RS-232 serial port via the DIP Switches. Ensure that the cable pinouts are correct for all attached equipment. Ensure that attached equipment is configured to match the port of the A1400e*L* and is able to receive ASCII characters.

4.   Power ON the A1400e*L*. The Yellow Power LED and the Green Transmit LED will light and the A1400e*L* will produce a continuous stream of output as follows:

```
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
01234567890:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_' abcedfghijklmnopqrstuvwxyz{|}~
```

This output will continue for as long as the A1400e*L* is powered ON. To stop the continuous output stream simply power OFF the A1400e*L*.

5.   Power OFF the A1400e*L* and re-configure it for normal use using the DIP Switch settings noted in Step 1 above. 'Enable' the battery and restore power for normal operation.

9.2   DRAM Confidence Test

This test will detect and display the buffer memory (SIMM) size and then proceed to perform a memory test, taking approximately ten minutes for each 4MB. Therefore this test is not recommended unless the buffer memory is suspected of being faulty.

Test results will be sent to the INPUT serial port and will repeat as long as the A1400DL*plus* is powered on. The test is activated in the following manner:

1.   Power OFF the unit, "disable' the battery and then make a note of the original DIP Switch settings of the A1400DL*plus*.

2.   Select 'Test Mode' on the DIP Switch of the OUTPUT port only. Refer to tables 3-1 and 3-3 in this manual for these switch settings.

3.   Configure the INPUT serial port via the DIP Switches. Ensure that cable pinouts are correct for all attached equipment. Ensure that attached equipment is configured to match the port of the A1400DL*plus* and is able to receive ASCII characters.

4.   Power ON the A1400DL*plus*. The Yellow Power LED and the Green Transmit LED will flash for each 64KB of buffer memory tested. The following message will be output from the INPUT serial port and displayed/printed on any attached equipment:

> **Random DRAM test DRAM_SIZE = *'size'* KB**

Where *'size'* is the total size of SIMM Memory installed. If no SIMM Memory is installed then the displayed size will be '0'. This message will be repeated.

The Memory Test has four distinct stages. First the buffer memory is cleared, then loaded with random test values, held for 5 seconds and finally verified. This cycle is then repeated. The INPUT serial port will display this information with one line of data for each 64KB of buffer memory tested.
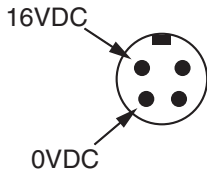
If a problem is detected with the memory the INPUT serial port will display the memory location, expected contents and corrupted value. The test will continue until the end of that stage and the INPUT serial port will display:

> **Self test failed on pass *'XX'***

Where *'XX'* is the number of times the buffer test has completed. The test will stop and the Transmit and Error LEDs will flash rapidly. This test will continue for as long as the A1400DL*plus* is powered ON. To stop the Buffer Memory Test simply power OFF the A1400DL*plus*.

5.   Power OFF the A1400DL and re-configure it for normal use using the DIP Switch settings noted in Step 1 above. 'Enable' the battery and restore power for normal operation.

10.0   SPECIFICATIONS

CPU:	Z8S180 Microprocessor @ 18.432MHz

Buffer Size: 4Mb, 8Mb, 16Mb and 32Mb via 72-pin SIMMs, STD/EDO, No Parity

RS-232 Serial Port: RS-232C (CCITT V.24)
Input is switch selectable DTE / DCE
Input is jumper selectable DTR / DSR or CTS / RTS
Output port is fixed as DCE
DB-25 Female connector
DIP Switch selection of:
- 300 to 115,200 bps baud rate
- 7 or 8 Data Bits
- None, Odd or Even Parity
- Hardware or Xon/Xoff handshaking

LED Indicators:
Power On   (Yellow)
Error   (Red)
Data In   (Green)
Data Out   (Red)
Network Link   (Green)
Network Error   (Red)

Power Supply: Power Supply 16V (750mA) DC
PCB is fuse & reverse polarity protected
Plug jack - 4-pin mini power DIN

16VDC

0VDC

Battery: Rechargeable Sealed Lead-Acid
12V, 2.2Ah/20HR
Intelligent battery charging circuit
12 hour memory storage time

Dimensions: 47mm x 199mm x 201mm

Weight: 1850 grams

Operating Temperature: 10° to 35° C

Storage Temperature: 0° to 45° C

All specifications subject to change without notice

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DECLARATION OF CONFORMITY
according to the European Commissions EMC Directive 89/336/EEC

We,   Name of Manufacturer: ALFATRON PTY. LTD

of,   Address of Manufacturer: UNIT 9, 36 NEW ST.
                                          RINGWOOD VIC 3134
                                          AUSTRALIA

              Australian Company Number: ABN: 65 005 410 819

declare under sole responsibility that the product:

                  Product Name: ASeries A1400eL Data Logger
                                        with Battery Backup

                  Model Number: A1400eL

to which this declaration relates is in conformity with the following standards:

CISPR-22 / EN 55022 class B   EMI from Information Technology Equipment (ITE)
IEC 801-2 / prEN55024-2   Electro Static Discharge Immunity
IEC 801-3 / prEN55024-3   Radiated RF Immunity
IEC 801-4 / prEN55024-4   Electrical Fast Transients Immunity

FCC Information

This equipment has been tested and found to complywith the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against 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 required to correct the interference at their own expense.