

# ViaLite SNMP Network Monitoring Module

## User Manual

LRC – 1 – HB-3

CR2874

Version 3

14/04/11



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## Instrument Care and Safety Information

*Please read the whole of this section before using your **ViaLite** product. It contains important safety information and will enable you to get the most out of your product.*

### Electrical Safety



The **ViaLite** 19" Rack Case power supply units are Safety Class 1 products (having a metal case that is directly connected to earth via the power supply cable).

When operating the equipment note the following:

- Hazardous voltages exist within the equipment. There are no user serviceable parts inside, and the covers should only be removed by suitably qualified personnel.
- The equipment does not have an isolating switch on the mains inlets. Equipment must be installed within easy reach of a clearly labelled dual pole mains isolation switch.
- Make sure that only fuses of the required rated current, and of the specified type (anti-surge, quick blow, etc.) are used for replacement.

**Adjustment, maintenance and repair of the equipment should only be carried out by suitably qualified personnel.**

**For more information on the *ViaLite* range of products, please refer to the *ViaLite* system handbook Lxx-HB.**

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# 1 Introduction

## 1.1 *ViaLite* SNMP control module

PPM's *ViaLite* SNMP control module enables monitoring of the *ViaLite* communications equipment via Ethernet network. The LRC-1 module uses standard Ethernet LAN to bring the monitored equipment within the view of the system manager. Implemented SNMP protocol allows for very easy integration with existing Network Management Systems while the onboard web server offers even more flexibility presenting rack status using a standard web browser via a local laptop or PC.

The LAC-1 can monitor up to two fully populated *ViaLite* racks, 7 RF modules and 2 PSUs in the primary rack, 8 RF modules and 2 PSUs in the secondary rack. If a second rack is not required to be monitored, external voltage free contacts can be monitored instead of the secondary rack.

### Complementary PPM *ViaLite* Products

- RF Signal modules for RF GPS, L Band, 70/140MHz, Broadband 2kHz-1500MHz and 10MHz-4.2GHz.
- 19" Rack Chassis
- Redundancy Switch Module for fully automated 1:1 redundant operation.
- Dual redundant power supplies for maximum availability
- 15-way to USB active programming cable (part number 73693 included)
- 25-way to 15-way monitoring cable for second rack monitoring (not included, should be ordered separately, part number 73694)



(a)



(b)

Cables shown above are (a) the 15-way to USB active programming cable (part number 73693 included with LRC-1 module) and (b) the 25-way to 15-way monitoring cable for second rack monitoring (not included, should be ordered separately, part number 73694).

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## 1.2 Part Numbers

This handbook covers the following modules:

### LRC-1 SNMP Network Monitoring Module

Refer to the **ViaLite** System Handbook Lxx-HB for further details on the following **ViaLite** items:

Part Number	Description
LRK2S	Chassis for 19" rack installation. Accommodates up to 8 plug-in modules and 2 mains power supplies.
LPS-M	Main Power Supply plug-in for LRK1S or LRK2S.
LPS-R	Reserve Power Supply plug-in for LRK1S or LRK2S.

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## 2 Product Installation

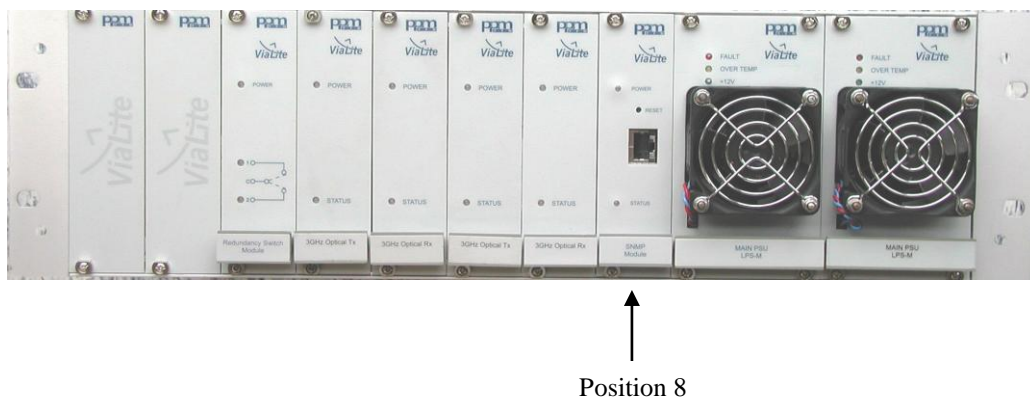
### 2.1 System requirements

The LRC-1 module requires a PC with a terminal emulation program installed to configure the LRC-1 and a network connection with a Network Management System (NMS) or web browser for operation of the LRC-1. The following is a description of all required components:

- Connection to 10BaseT Ethernet network
- Configuration cable (USB to 15 way HD connector) included with LRC-1
- An SNMP-based management station or computer with web browser installed
- A PC with a terminal emulation package (e.g. Windows HyperTerminal) and USB port
- Network identification values that should be allocated by the network administrator are:  
IP Address for the LRC-1  
IP Address for the NMS station  
Net Mask  
Gateway Address

### 2.2 Unit installation

The SNMP module must be inserted into position 8 (immediately to the left of the power supplies) as shown in the picture below. Push in the module firmly and then tighten the unit using the 2 fitting screws.

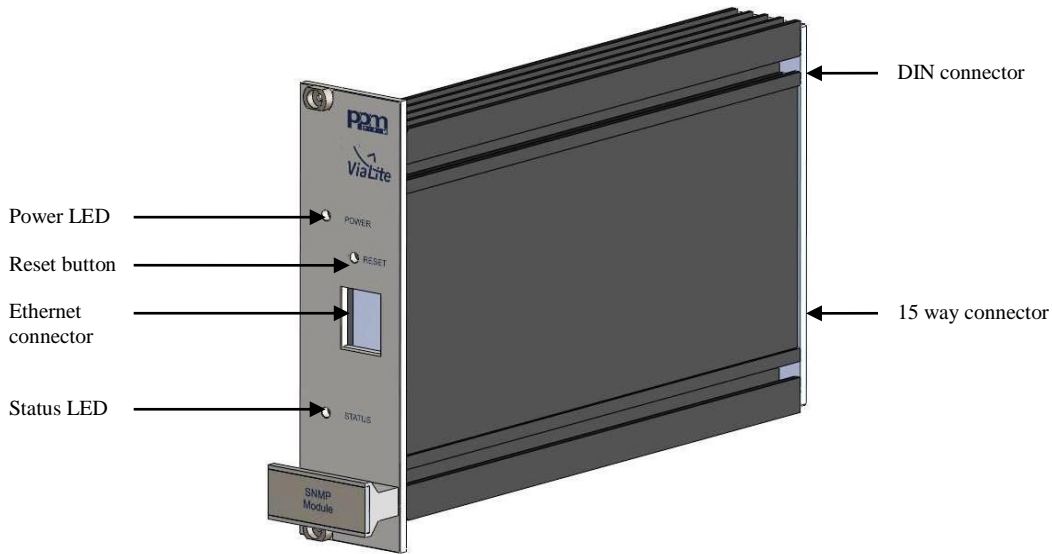


### 2.3 Module connectors and indicators

There are two LEDs on the front panel as shown in the diagram below. The power LED lights green when the module is powered. The status LED flashes periodically during normal operation to indicate communication between the **ViaLite** rack, RF modules, Power Supplies and the LRC-1. When the LRC-1 module is being configured the status LED will be OFF to represent 'configuration mode'. Configuration mode is only ever used when installing the module or when updating the software on the module.

The Reset button is used either to enter 'configuration mode' or to initialise the module. When using the module to relay alarm information the Ethernet connector on the front of the module should be used to connect to the local Ethernet network.

There are two connectors on the rear side of the unit. The DIN connector is used to connect the unit with the backplane of the **ViaLite** rack and self locates when the module is pushed into the rack. The 15way connector is used to connect the USB to 15way cable that comes with the module, needed for module set up. This 15 way connector is also used when connecting a second rack or external contacts using cable 73694 (sold separately). The exact locations of all these connections are show in the diagram below.

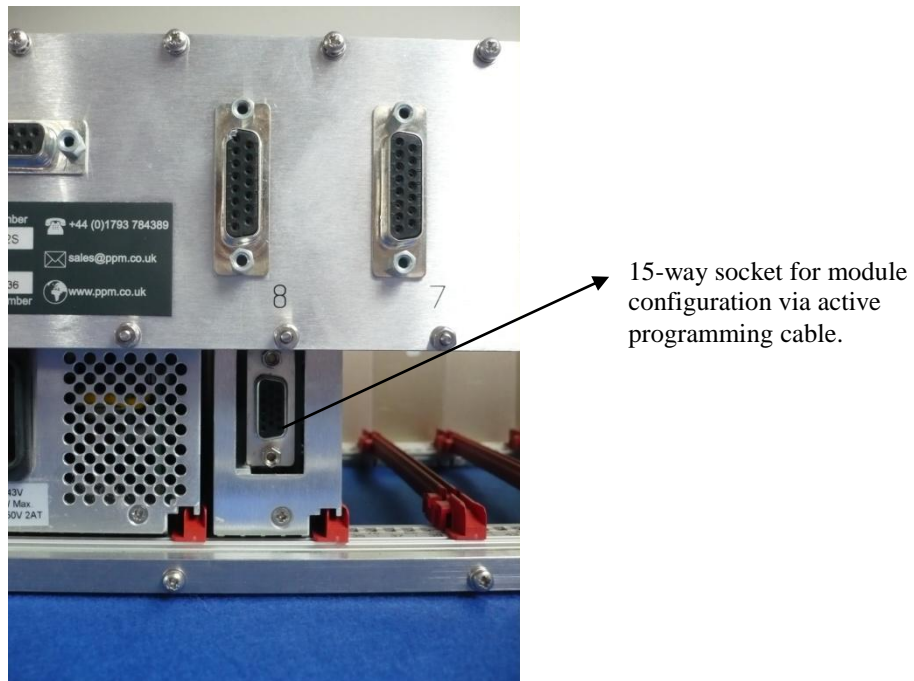


## 2.4 Configuration

Before setting up the LRC-1 module make sure you have the 15-way to USB active programming cable (part number 73693) that is included with module and a laptop/PC with a spare USB port. The laptop/PC also must have terminal emulation software installed (e.g. Windows HyperTerminal).

### Step 1

Once the LRC-1 module is fitted into the **ViaLite** rack as described previously in section 2.2 connect the active programming cable to the USB port on the PC. Next connect the 15-way connector of the active programming cable to the 15-way socket on the back of the LRC-1 module. For reference, the 15-way socket on the LRC-1 module can be seen at the bottom of the modules when looking at the back of the **ViaLite** rack with the LRC-1 fitted. An illustration of the location of this connector is shown below.



Back view of the **ViaLite** rack with the LRC-1 module fitted into slot 8. The 15-way socket at the bottom of the module is shown where the active programming cable should be connected.

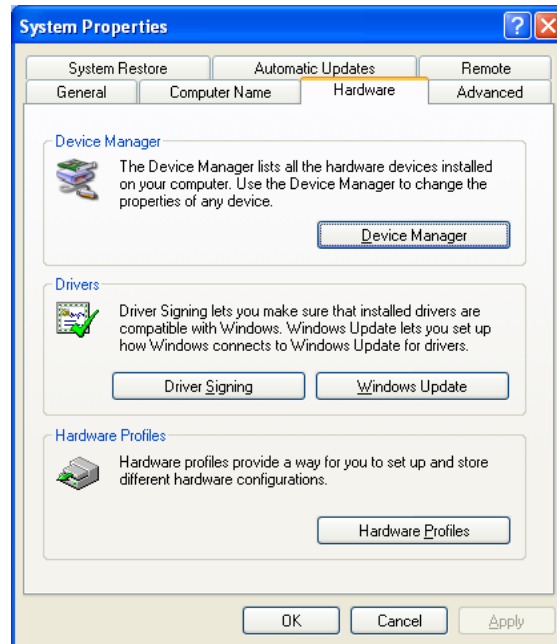
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### Step 2

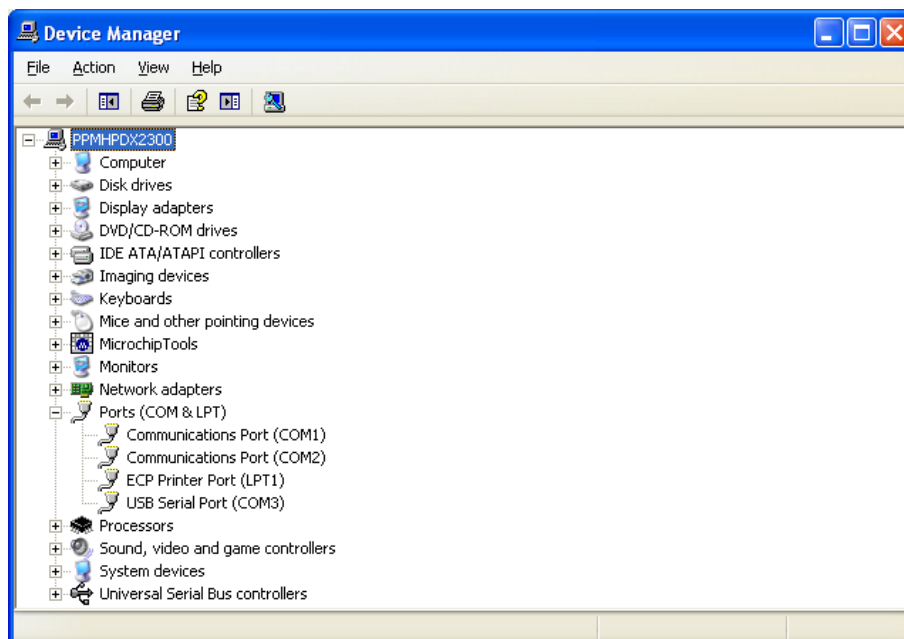
Once the active programming cable is connected between the laptop/PC and the LRC-1 module, turn on the power to the **ViaLite** rack. The LRC-1 software will automatically load on the PC/laptop and a pop up box will show that 'new hardware has been found and is ready for use'. If there is a problem and the LRC-1 software does not automatically appear to load on the laptop/PC the drivers can also be found on the CD that came with the module or downloaded from the Internet using the support section of the **ViaLite** website [www.vialite.com](http://www.vialite.com).

### Step 3

Now the Virtual Com Port assigned to the USB port on the PC needs to be checked. To verify its assigned value, while the active programming cable is still connected, open the **Control Panel** on the laptop/PC and choose the **System** icon and then click on the **Hardware** tab as shown below.



Next, open the **Device Manager** and check which communications port has been assigned to the USB port that you are using. This step is shown below in an example, where you will see COM3 has been assigned.

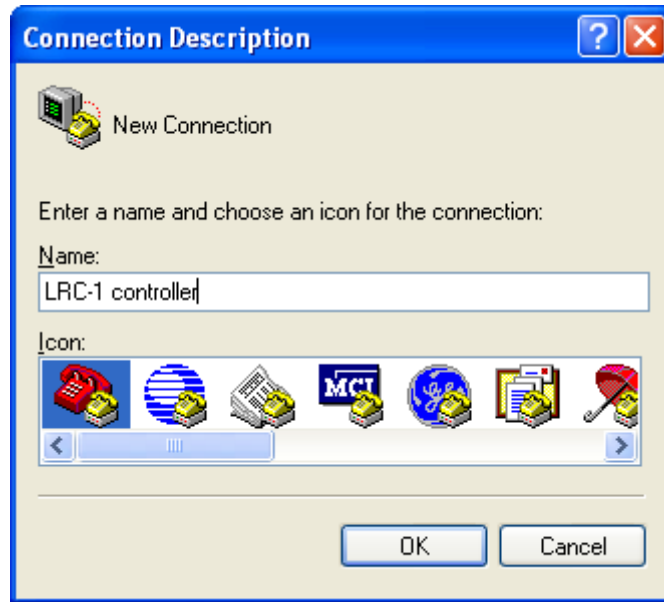


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In the steps that follow the examples given assume HyperTerminal is being used. If another terminal software package is chosen, slight differences might be seen, please refer to the manual for the terminal emulation software package you are using.

**Step 4**

Open HyperTerminal (or other terminal emulation software) that is installed on the laptop/PC. The 'Connection Description' dialogue box will open, as shown below. Input a name for the connection and choose an icon, then click OK.



After clicking OK the 'Connect To' dialog box will open, as shown below. Using the drop down make sure the same communications port that was allocated in step 3 is selected. In the example below this is COM3 in line with the example in Step 3. Then click OK.



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### Step 5

The communications port properties dialogue box will now open and the connection parameters have to be set. Use the following settings:-

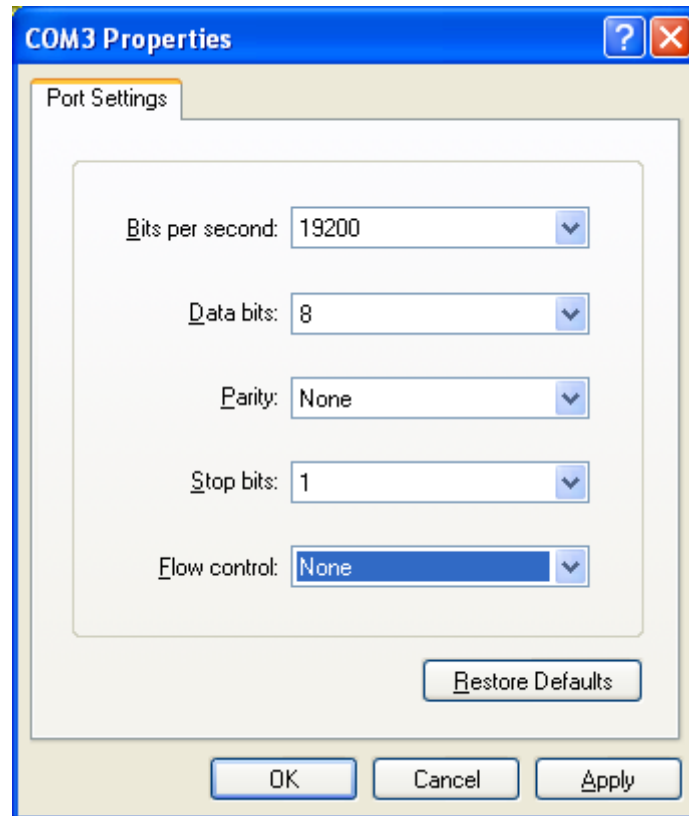
Bits per second - 19200

Data bits - 8

Parity - None

Stop bits - 1

Flow control - None

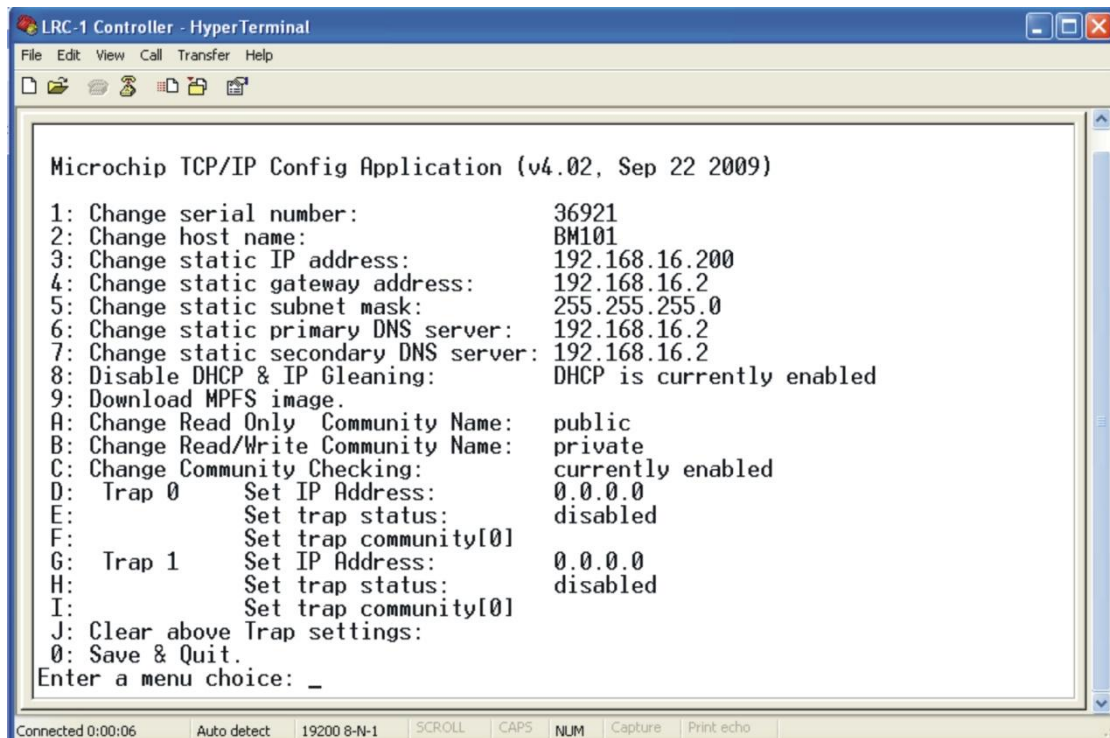


When completed, click OK.

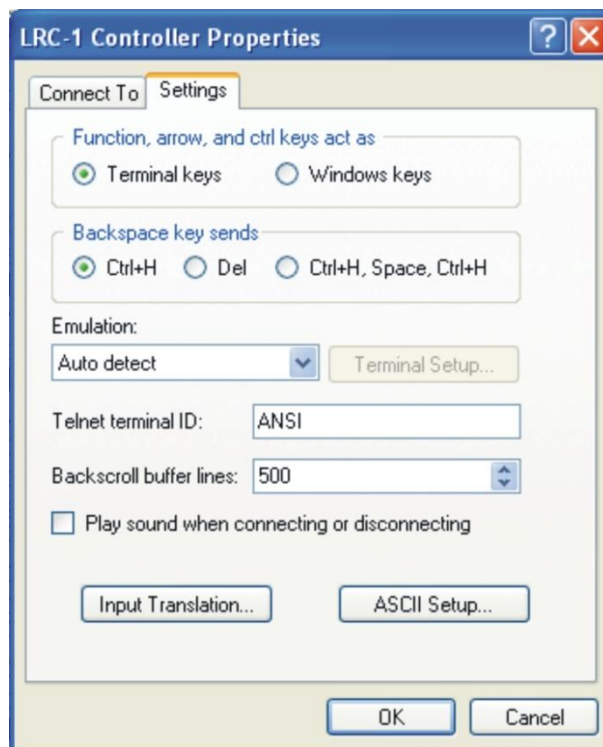
Note - If you are using other terminal emulation programs use the settings from above and configure the program according to the manual for the program being used.

### Step 6

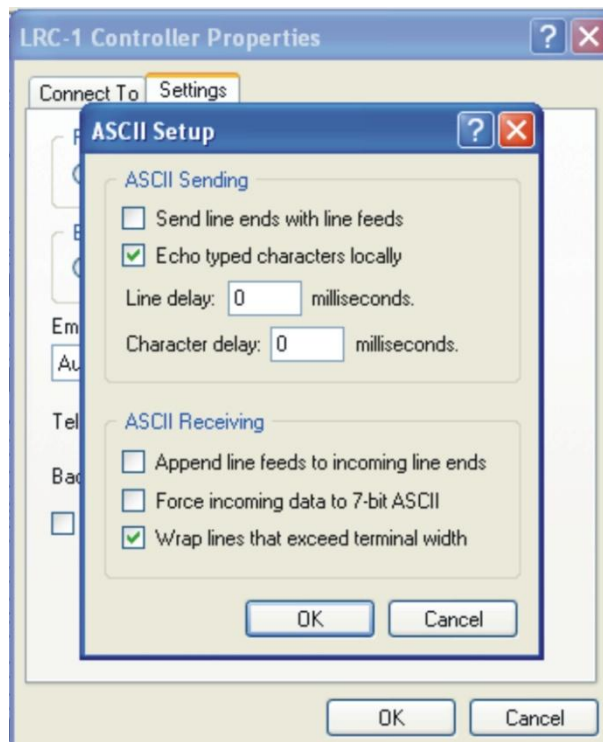
After clicking OK a blank HyperTerminal window will automatically open. Press the reset button on the front panel of the LRC-1 module and the Configuration menu should appear in the terminal window as shown below.



Select File/Properties and the dialogue box shown below opens.

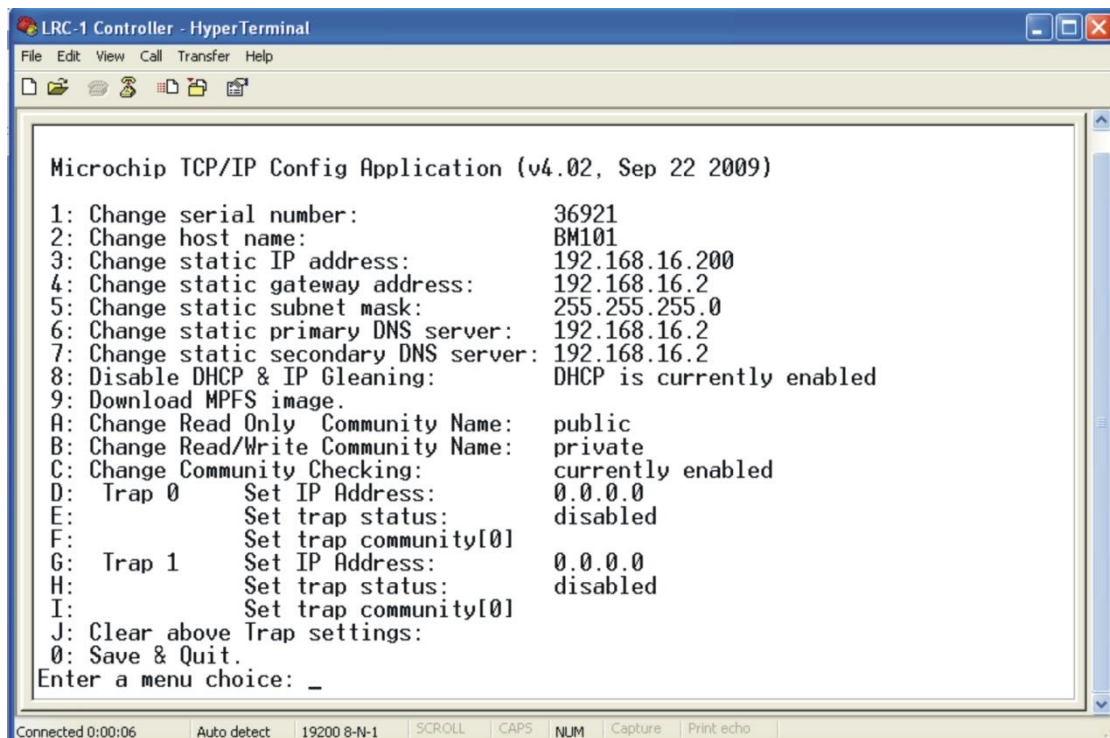


In the settings tab click on the ASCII Setup button and the window below will open.



**Make sure that the ‘Echo typed characters locally’ box is checked.**

Click OK twice to go back the Configuration menu shown below.

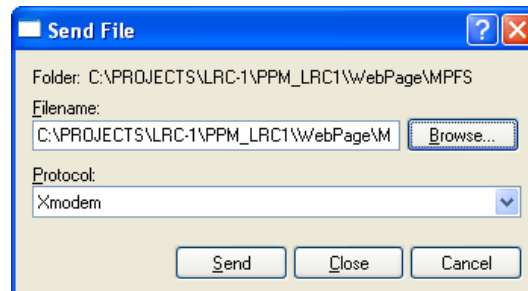


By using the ‘Enter menu choice’ command the appropriate IP parameters should be set for the LRC-1 to allow the module be used on a network. The IP parameters will need to be obtained from your network administrator to allow options 3 to 8 to be set specifically for your network.

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Option 'J' clears the content of the trap table, this disables traps and sets receiving trap addresses to 0.0.0.0.

Option '9' allows the user to upload a new web page layout to the unit. This feature enables the user to have their own customised web browser interface page, for example using their own logo and layout on the page rather than the PPM version that comes pre-loaded. To upload a new web page image, choose option 9 and wait for the '\$' signs to appear on the screen indicating that the module is waiting for the file to upload. In your terminal emulation program select the **Send File** command (in HyperTerminal this is found at **Transfer|Send File** menu), use browse to select the file to upload and set the Protocol as Xmodem as shown below.



**Caution: Uploading a file with an incompatible format will prevent unit from working. File type normally used for web page layouts is a binary file (.bin).**

When the IP parameter configuration is complete the changes must be saved to take effect. This is done by selecting the 'Save and Quit' command option '0'. The LRC-1 will now enter normal operation mode and this will be seen by the status LED on the front panel of the module constantly flashing. If you need to return to configuration mode the reset button on the front of the module needs to be pressed again.

Once configuration is complete, disconnect the active programming cable and press the reset button again. The status LED will be seen constantly flashing to indicate normal operation mode.

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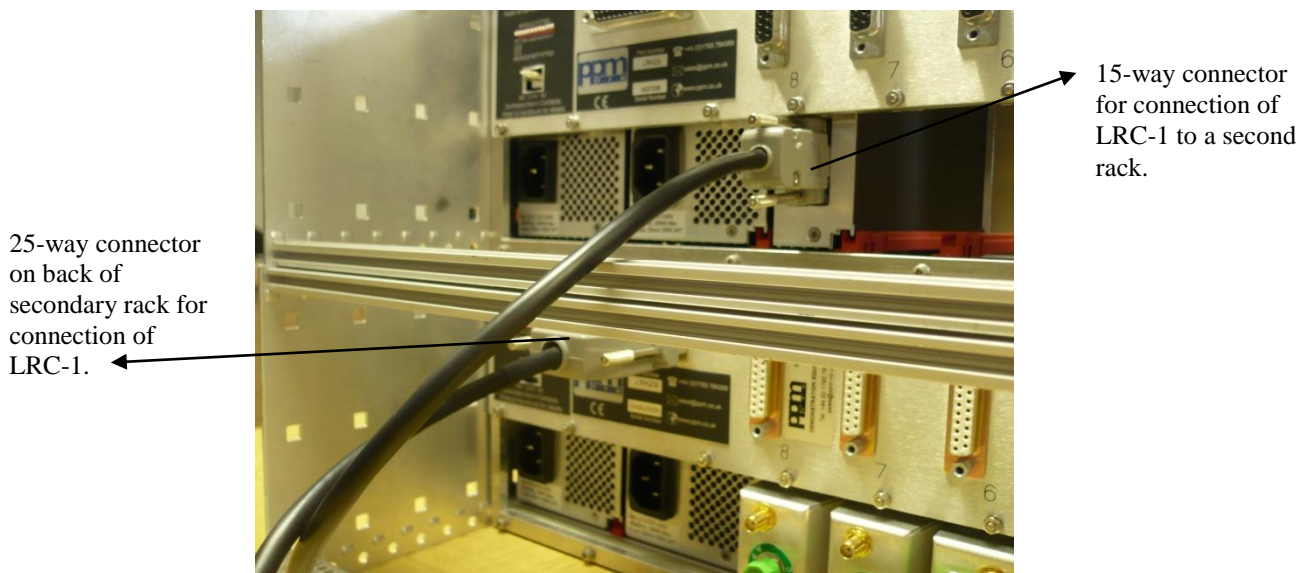
## 2.5 Using the LRC-1 Module to Monitor Two ViaLite Racks

The LRC-1 can collect and monitor alarms from one or two **ViaLite** LRK-2S racks. The LRC-1 module should be placed in slot 8 of the primary rack and configured as above where it will monitor the 7 remaining RF module slots and the two power supplies in the primary rack. To monitor a secondary rack an additional monitoring cable is necessary to connect the second rack with the LRC-1. This cable is not supplied with the unit but available as an option, the part number is 73694 and the cable is shown below.



Cable shown above is the 25-way to 15-way monitoring cable for second rack monitoring (not included, should be ordered separately, part number 73694).

To monitor a second rack, connect the 15-way connector of the 73694 cable shown above to the 15-way socket on the back of the LRC-1 as shown below. Also connect the 25-way connector of the 73694 cable to the 25-way socket on the back of the secondary rack.



### 3 Unit Operation

The LRC-1 enables monitoring of RF to fibre modules and power supplies fitted to **ViaLite** LRK-1S and LRK-2S racks via SNMP or by using a web browser.

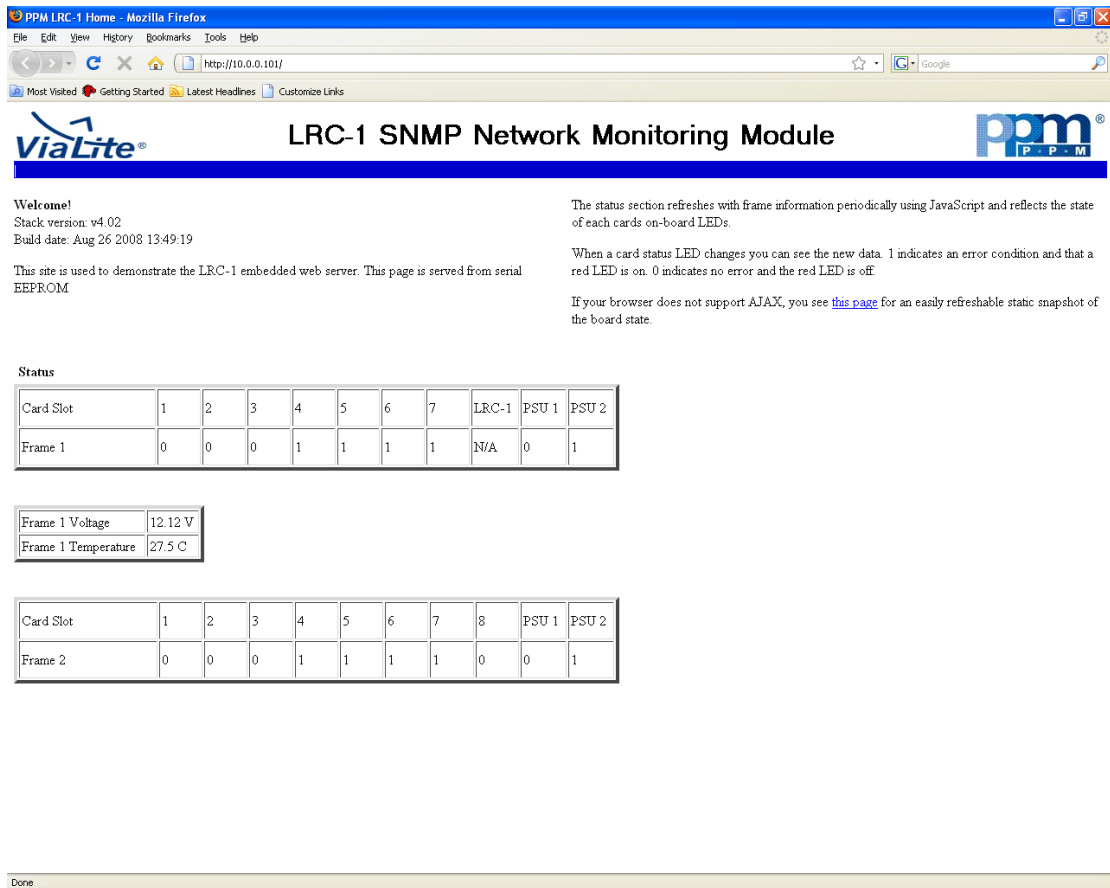
To start operation, connect the LRC-1 unit to either an Ethernet network or a laptop/PC using the RJ45 connector on the front panel of the LRC-1. Note that the LRC-1 is 10BaseT compliant device.

**ViaLite Ethernet modules LSX-E2-6R and LSX-E2-7R are 100BaseT only devices. Should the LRC-1 be used in conjunction with these modules, an Ethernet switch compatible with both standards is required to connect the LRC-1 with the Ethernet over fibre module.**

#### 3.1 Monitoring Using a Web Browser

Simply type in the allocated IP address of the LRC-1 module in your web browser and a web page as shown below will appear. This page contains all monitored parameters from the **ViaLite** rack (or both racks if the LRC-1 is being used to monitor two racks).

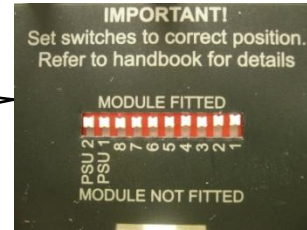
More information about how to allocate the LRC-1's IP address can be found in the Configuration section of this manual.



The alarm status is instantly viewed for the seven modules in slots 1 to 7 and the two power supplies in the primary rack. If a secondary rack is connected the alarm status for the eight modules and both power supplies is also easily viewed. The alarm for LRC-1 itself in the primary rack is not available. Additionally DC voltage on the backplane and the temperature of the primary rack can be monitored. When slot status '1' is displayed this indicates an alarm condition has been triggered or a module is not fitted to the slot. When slot status '0' is displayed this indicates a module is fitted but no alarm condition is being reported. Refer to the specific rack and/or RF Module handbook for a more detailed description of alarm conditions.

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If slots in a rack are left empty the default situation is for the LRC-1 to report status '1', which is the same status as an alarm. This can be confusing for the user. To avoid this situation it is possible using DIP switches in the rack hardware to register the slot as occupied. In order to take this action, simply switch the relevant DIP switch to the 'module not fitted' position, as shown below. The DIP switches are located in the top right position on the back of every **ViaLite** rack.



DIP switch position selector and location of DIP switches on **ViaLite** rack

### 3.2 Monitoring using SNMP

The LRC-1 can be used with any common network management system (NMS). Again the first step is to connect the network cable to the LRC-1 via the RJ45 connector on the front panel of the LRC-1. The MIB for the LRC-1 can be found on the CD supplied with the unit. Refer to the manual for your Network Management System to find out how to integrate the PPM MIB with your specific NMS.

The alarms available via SNMP are the alarms from the seven modules in slots 1 to 7 and the two power supplies in the primary rack and for the eight modules in slots 1 to 8 and both power supplies for a secondary rack where fitted. The alarm for LRC-1 itself in the primary rack is not available.

**Note: DC voltage and temperature of the primary *ViaLite* rack are accessible via web browser only, not via SNMP.**

**All Network Management Systems are different and so the following information is for guidance only to help the user integrate the LRC-1 into their NMS.**

**During integration of the LRC-1 into the users NMS the configuration mode may need to be entered to input settings via the configuration page on the terminal server program. This can be done at any time by reconnecting the LRC-1 to the laptop/PC using the 15-way to USB cable, and then pressing the reset button on the front panel of the LRC-1. The configuration page will then automatically appear in the terminal emulation window on the laptop/PC, as show below.**

```
Microchip TCP/IP Config Application (v4.02, Sep 22 2009)

1: Change serial number:          36921
2: Change host name:             BM101
3: Change static IP address:     192.168.16.200
4: Change static gateway address: 192.168.16.2
5: Change static subnet mask:    255.255.255.0
6: Change static primary DNS server: 192.168.16.2
7: Change static secondary DNS server: 192.168.16.2
8: Disable DHCP & IP Gleaning:    DHCP is currently enabled
9: Download MPFS image.
A: Change Read Only Community Name: public
B: Change Read/Write Community Name: private
C: Change Community Checking:    currently enabled
D: Trap 0 Set IP Address:        0.0.0.0
E: Set trap status:              disabled
F: Set trap community[0]
G: Trap 1 Set IP Address:        0.0.0.0
H: Set trap status:              disabled
I: Set trap community[0]
J: Clear above Trap settings:
0: Save & Quit.
Enter a menu choice: _
```

### Community Names

SNMP offers two levels of access to devices that are being managed. In 'Read Only' mode all available data on the device can be read, but write requests will be ignored. 'Read/Write' mode gives full access to the device, data can be read from the device when requested, and all write operations are supported.

The authentication of access to allow either 'Read Only' mode or 'Read/Write' mode is performed using a 'Community String', which effectively is a type of password. There are different community string names that are used to enable 'Read Only' and 'Read/Write' operations. Commonly used community names are **public** to enable 'Read Only' and **private** to enable 'Read/Write'. However, the user needs to contact their network administrator to obtain the correct community names used in their network.

Once the community names are obtained these can be set on the LRC-1 module using the configuration menu above. In order to set the correct 'Read Only' community term select option A and input the correct term as advised by your network administrator. In order to set the correct 'Read/Write' community term select option B and input the correct term as advised by your network administrator.

**Note:- the LRC-1 default name for 'Read' communities is "public" and for 'Read/Write' communities is "private". Community names may be up to a maximum of 32 characters.**

When settings are complete always remember to save them using option '0', 'Save and Quit'. Finally to enter the LRC-1 into normal operation mode, the programming cable should be removed and the reset button pressed. The status LED will flash continually to indicate normal operation mode.

### Trap configuration

In SNMP a trap is a message sent by the device being monitored when a predefined event occurs. In the **ViaLite** LRC-1 traps are generated when any of the input lines change state, so when the alarm status changes between being either 1 or 0. The trap sent contains a package of information about the nature of the event that has occurred. Traps are sent to the Trap Receiver in the users Network Management System. Up to two trap receivers can be defined in during LRC-1 setup, 'Trap0' and 'Trap1'. These traps can be configured by selecting options D, E, F and G, H, I respectively in the

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configuration program. When an event occurs that triggers a trap, exactly the same information is sent to both Trap0 and Trap1 receiver, if both are enabled.

It is important to contact your network administrator to obtain IP addresses and trap community names when configuring traps in the LRC-1.

Enabling or disabling of the trap is done by means of option E for Trap0 and option H for Trap1.

In order to configure and use a trap the IP address of the trap receiver must first be set. This is done using option D to set the IP address of Trap0 or option G to set the IP address of Trap1. The IP addresses for the trap receivers must be allocated by the users' network administrator.

The trap community term can be used in some Network Management Systems to filter traps. For such advanced management features all network systems differ slightly so refer to your Network Management System manual for more information on how to use trap communities for trap filtering.

Once determined, the trap community can be changed by selecting option F for Trap0 or I for Trap1. The trap community term from your network administrator can then be entered.

**Note that traps may be ignored if an incorrect trap community is used.**

## 4 LRC-1 Technical data

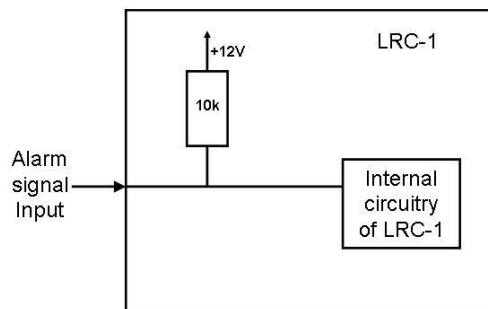
### 4.1 Specification

Parameter	Value	Comments
Dimension WxHxD [mm]	35.22x128.4x170.8	Depth excluding front panel handle
Connectors	RJ-45	Ethernet 10BaseT
	Socket 15 way high density D Type (female)	
	48 way DIN41612	
Monitored inputs number	9	Accessible via DIN connector
	10	Accessible via 15 way connectors. Accept voltage free contacts
Maximum contact resistance [kΩ]	1	Max resistance of the voltage free contact connected to the alarm inputs
Power consumption [W]	< 0.8	

### 4.2 15 way connector pinout

Pin no.	Description	Pin no.	Description
1	Frame 2 Alarm 1	9	GND
2	Frame 2 Alarm 2	10	Frame 2 PSU 1
3	Frame 2 Alarm 3	11	Frame 2 PSU 2
4	Frame 2 Alarm 4	12	Reserved
5	Frame 2 Alarm 5	13	Reserved
6	Frame 2 Alarm 6	14	Reserved
7	Frame 2 Alarm 7	15	GND
8	Frame 2 Alarm 8		

It is possible to use the 15-way socket on the back of the LRC-1 to input alarms from a second **ViaLite** rack or other external alarms. When monitoring a secondary **ViaLite** rack a 25-way to 15-way monitoring cable should be used. This cable should be ordered separately, part number 73694. Using the cable to monitor a secondary **ViaLite** rack is explained in section 2.5 of this manual. If using the 15-way connector to input external alarms from other equipment the pin outs above should be used for reference with pins 1 to 8 and pins 10 and 11 being available to input external alarms. For reference when connecting to these pins the electrical structure of the pins is shown below.



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## 5 Maintenance and Fault-Finding Guide

Refer to the following table that gives a list of commonly encountered problems and suggested solutions.

<b>Fault</b>	<b>Possible Causes</b>	<b>Solution</b>
Power LED does not light.	Power source not connected.	Connect power source.
Module not accessible via Ethernet	Ethernet cable not connected	Connect the Ethernet cable
	Wrong IP settings	Set right IP values in consultation with your network administrator
	Module in configuration mode	Disconnect configuration cable, reset the unit
Status LED does not light	Module in configuration mode	Disconnect configuration cable, reset the unit
	Internal fault	Consult local PPM office.

The **ViaLite** range of equipment is precision engineered and calibrated for optimum performance and accuracy before dispatch. However, in the event of any problems or queries arising about the equipment, please contact PPM or your local agent.

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## **6 Product Warranty**

The Company guarantees its products, and will maintain them for a period of three years from the date of shipment at no cost to the customer. Extended warranty options are available at the time of purchase.

Please note that the customer is responsible for shipping costs to return the unit to PPM.

The Company or its agents will maintain its products in full working order and make all necessary adjustments and parts replacements during the Company's normal working hours provided that the Customer will pay at the rates currently charged by the Company for any replacements made necessary by accident, misuse, neglect, wilful act or default or any cause other than normal use.

Claims must be made promptly, and during the guarantee period.

### **IMPORTANT: -**

**Please contact both your selling agent and PPM prior to returning any goods for Warranty or Non-Warranty repairs. Goods will not be accepted without a valid Goods Return Number (GRN).**

**ViaLite** ALARM CONCENTRATOR HANDBOOK (LRC-1-HB) ISSUE 3 CR2874

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