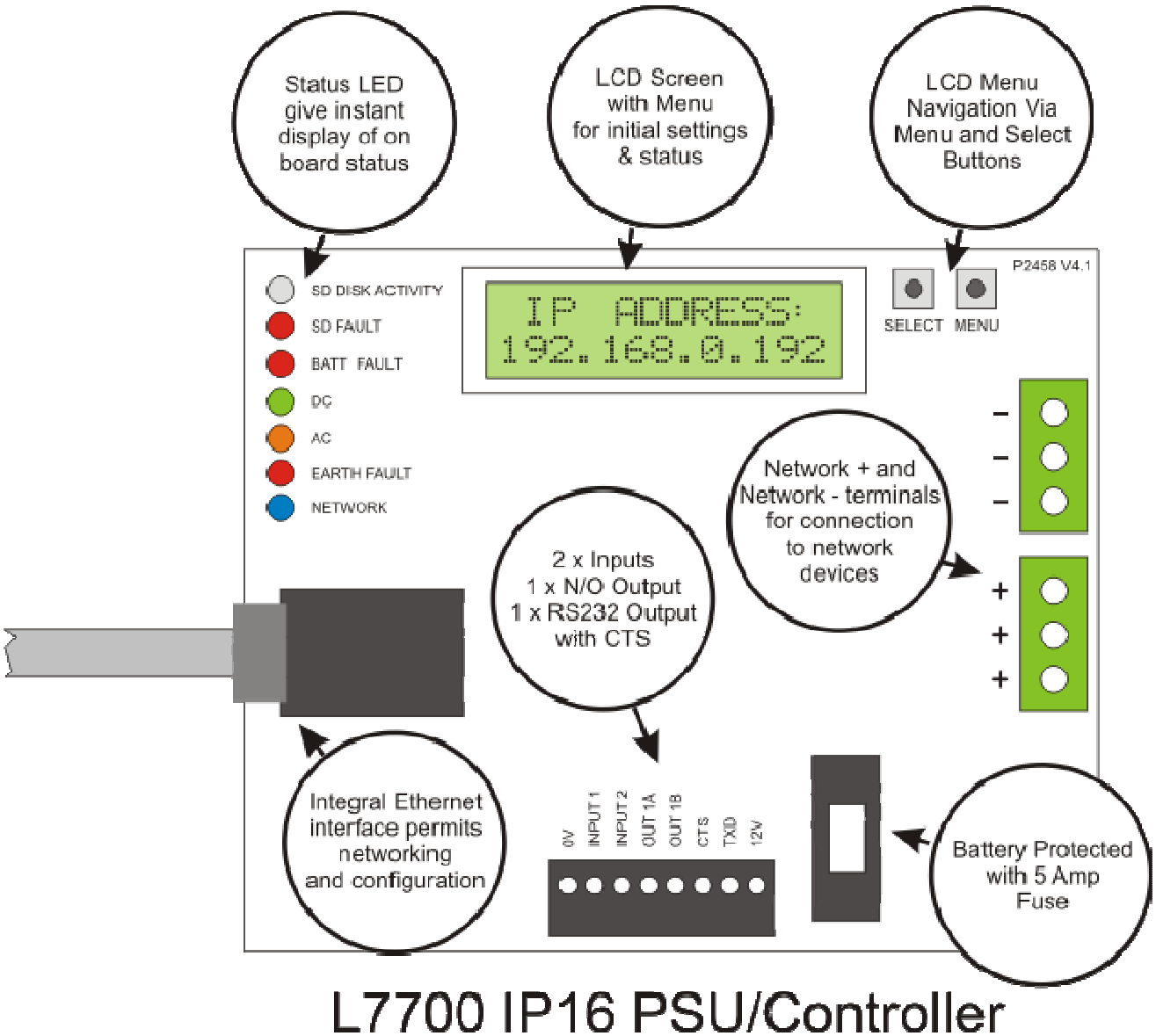
L7700 IP16 CONTROLLER DOCUMENTATION

L7700 IP Power Supply Unit.

The L7700 features integrated **IEEE 802.3** Ethernet controller with **embedded web server** permitting system configuration, datalog access and remote monitoring using a standard web browser. Security is maintained as web access to the setup and configuration screens are password protected. In addition, the Ethernet port may be used to connect IP controllers together, provide an interface to other Intercall IP devices and for connection to third party products such as IP DECT phones and message paging. In addition, the unit features; onboard calendar clock and Secure Data flash disk drive which records all system activity and configuration settings. Day/Night alarm settings may be automatically switched by the on-board clock without the need for a manual switch. The unit features programmable volt free contact inputs and a volt free contact output together with an RS232 interface which can be configured for many baud rate and data formats. The unit supports a VOIP expansion card which allows the audio voice channel conversations to be recorded and/or integrated with other IP devices. The integral float charger supports a single 12Volt 12AH battery and the AC, DC, Battery and Earth continuity are monitored continuously.



L7700 IP16 PSU/Controller

Above drawing showing PCB Detail

MAIN SUPPLY INPUT: **90 – 240VAC** Remove protective cover to gain access to these terminals.

REQUIRED BATTERY: **12Volt 6/12AH** Sealed Lead Acid. **OBSERVE POLARITY!**

OUTPUT TERMINALS: Two parallel terminals provided for convenience, connect to network devices.

ETHERNET: **IEEE 802.3 C**ompatible 10Base-T interface using copper RJ45 connector.

LCD: Two line LCD with menu for essential status & configuration.

MENU & SELECT/OK: Buttons for navigating the LCD Menus.

INPUT TERMINALS:

INPUT 1: Programmable Input No 1 active when connected to 0V.
INPUT 2: Programmable Input No 2 active when connected to 0V.

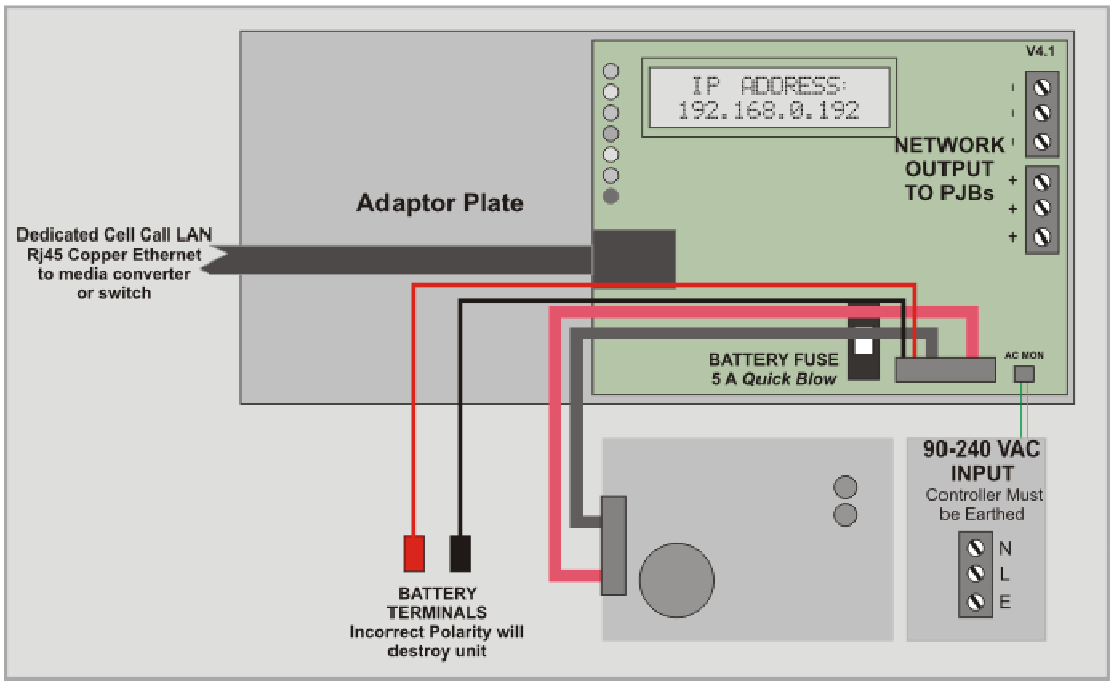
OUTPUT TERMINALS:

OUT 1A & 1B: Programmable Volt Free Normally Open Output Max 24V DC 500mA
TXD: RS232 Output Data which can be many baud rates & data streams.
CTS: RS232 Flow Control Input which can be disabled and/or inverted.

STATUS LEDs:

NET: Blue pulsing indicating the Intercall network processor is running.
EARTH* Indicates too low resistance between the network & protective earth.
AC: Yellow to indicate Mains Supply detected.
DC: Green to indicate DC supply is operating within limits.
BATT* Battery backup fault, battery is not charging.
SD* Fault reported by on-board disk.
DISK: Indicates activity read/write to the on-board SD Disk.
**Red LEDs indicate Fault Conditions.*

Onboard Fuse: 5Amp 20mm Quick Blow protection for Battery, Charger is current limited.
Installation: Self Contained Surface Mounted Case. *(See Below)*
Size & Weights: 370mm x 260mm x 110 mm 4.5Kg



L7700 LCD Display Menu Settings.

The on-board LCD screen, together with the Menu and OK buttons provides access to essential Local Area Network and Power Supply status, together with control over the basic settings of the IP controller. In quiescent condition, the LCD Displays INTERCALL IP and the date and time, to scroll through the menu screens, press the Menu button to activate one of the settings press the Select/OK button.

Menu	Settings	Description
INTERCALL IP16	**17/3 10:32:12**	In quiescent condition, the LCD Displays INTERCALL IP and the date and time. Press the Menu button to move onto the next setting.
IP ADDRESS:	**192.168.0.192**	Displays the current IP address for the IP Controller. *(The default IP Address when no DHCP Server present is **192.168.0.192**)*
SERIAL NUMBER:	**1A7A0000083**	Displays the unique Serial Number / MAC Address
FREE DISK SPACE:	**100%**	Displays the percentage of available Space on the Data Log,
DC RAIL:	**13.8V**	Displays the voltage of incoming DC Supply Rail to the IP16 Printed Circuit Board
BATTERY CHARGE:	**DETECTED**	Displays the status of the sealed lead acid battery charger. A non-charging or not connected battery will show as NOT DETECTED and a fault will be raised.
UNIT TEMPERATURE:	**25.6 Deg**	Displays the ambient temperature of the IP16 controller circuit board.
FIRMWARE VERSION:	**1.0.0.2**	Displays the current installed software version of the IP16 controller.
DEVICE RESET:	**“OK” TO CONFIRM**	Press OK button to reset all network devices connected to this controller.
FULL RESET:	**“OK” TO CONFIRM**	Press OK button to reset IP16 controller and all network devices connected to this controller.

L7700 Revert to Factory Defaults.

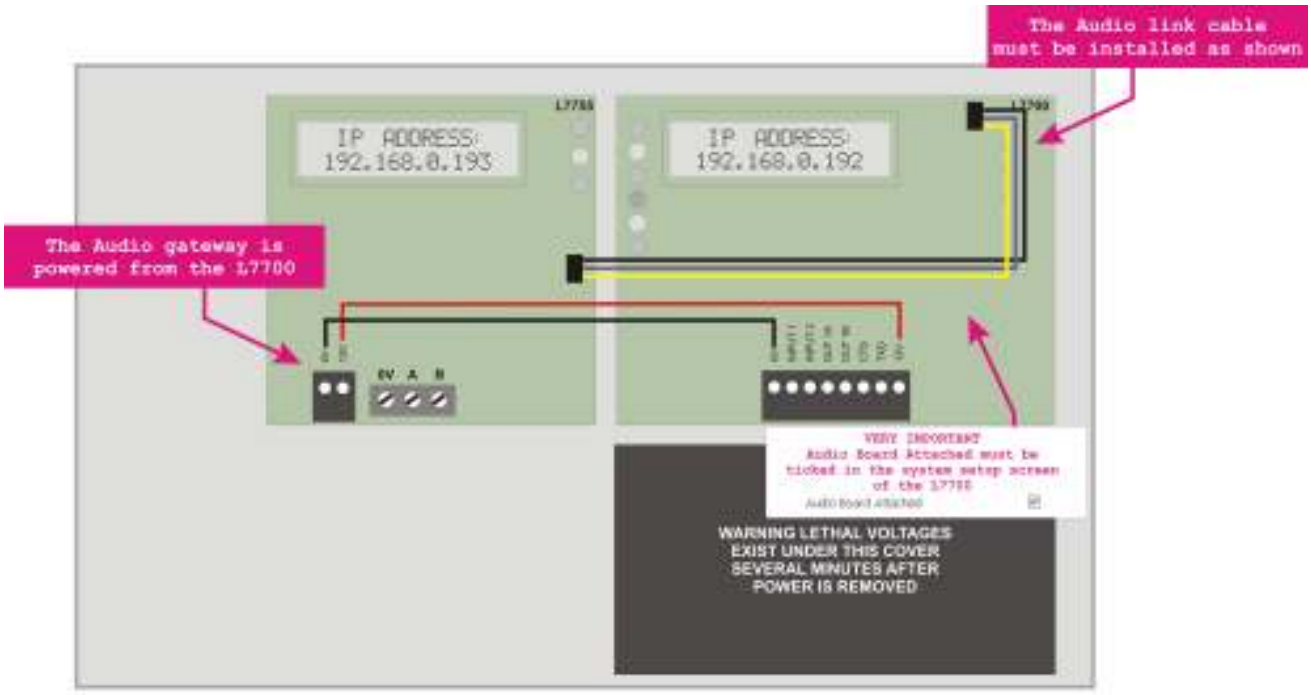
The IP16 can be reverted to factory defaults switching the unit on while holding down the **Menu** button, the following screens will appear on the LCD screen. If a new disk is inserted, the IP16 will automatically go through this process, in which case you must press OK to the first two screens but you may retain the current LAN settings.

Menu	Settings	Description
DISK FORMAT	**OK = Continue**	Press OK to format the SD card and clear *all* user defined data. This screen will automatically appear if a new SD card is fitted.
CLEAR DATALOG	**OK=continue MENU=skip**	Clears all entries from the datalog, press MENU button to Skip or OK button to continue. If this is a new SD card you must press OK to continue.
LAN DEFAULTS	**OK=continue MENU=skip**	The LAN settings are held within the IP16 circuit board and not in the SD card, so if the card is changed, the network settings can be retained. Press OK to load default settings.

L7755 Audio Gateway Circuit Board.

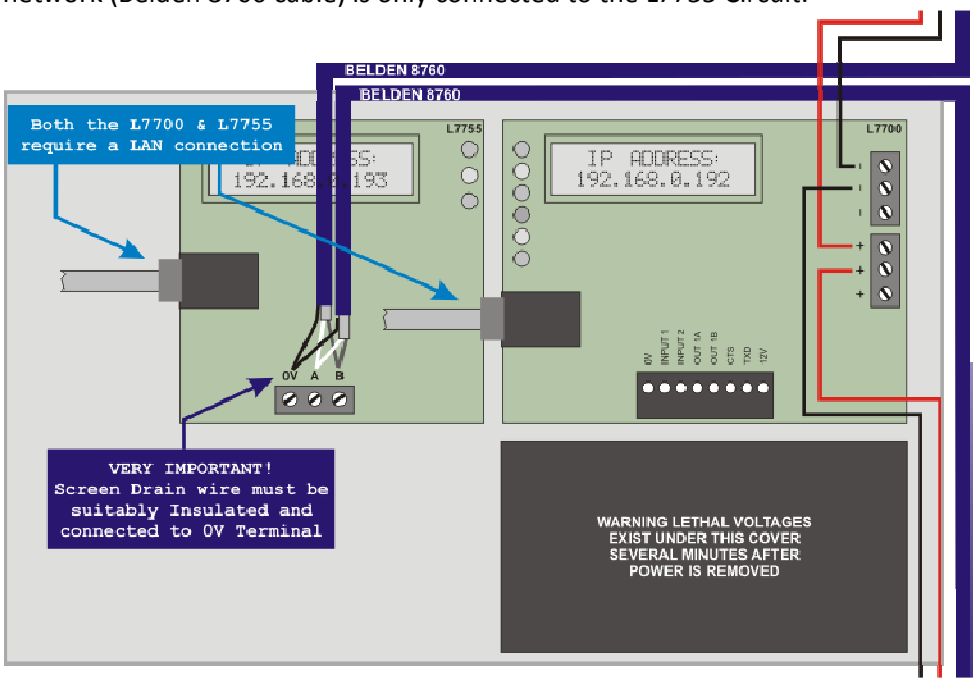
The L7755 Audio Gateway Circuit Board is provides a link between the analogue speech network and the digital IP speech network. This allows the speech to be integrated from the legacy network devices to IP devices such as IP Phones, GUI Front ends, IP DECT Phones and many other modern telephony systems. The L7755 card is located alongside the L7700 circuit board and power and signalling is derived from the L7700 circuit board. The L7755 Audio Gateway requires an additional IEEE 802.3 Compatible 10Base-T interface using copper RJ45 connector in addition to the L7700 circuit board.

The L7700 and L7755 must have a **unique IP Address** on the Local Area Network. Set the L7700 and the L7755 to the same **Channel Number** so they operate together. On the L7700 system setup screen you must tick **Audio Board Fitted**. If you wish to synchronise the time, you can pick a single L7700 and set it to **Time Master** this will automatically update the L7755 internal clock as it a **Time Slave** by default.



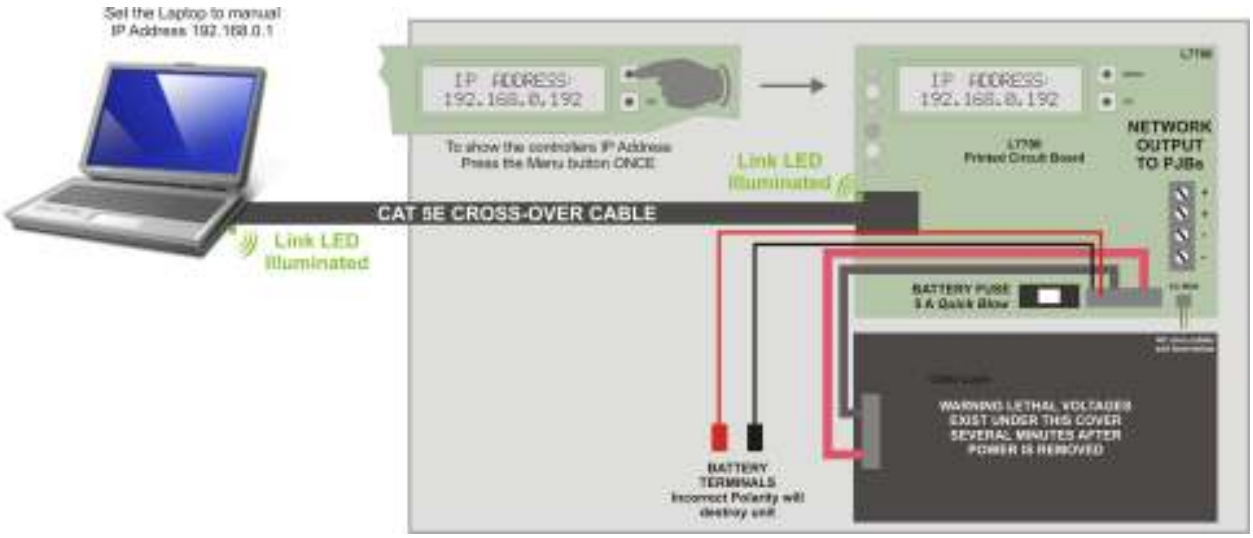
L7700 Power Supply Controller with L7755 Audio Gateway Board fitted on the left

The speech network (Belden 8760 cable) is only connected to the L7755 Circuit.



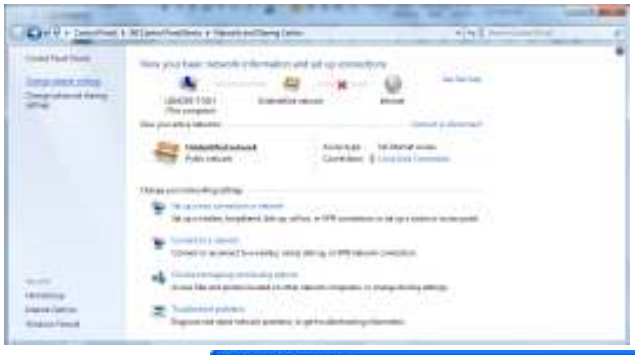
Direct Ethernet Connection between the L7700 and your laptop.

The simplest way to communicate with the L7700 is to use a **RJ45 Cat5E Cross-Over cable** and manually set the **IP Address** of your laptop. Ensure the **Link LEDs** are Illuminated both the Laptop and the IP16 RJ45 connectors before you begin.



Manually Setting your laptop IP Address

Windows XP: *Control Panel – Network Connection* and double click the *Network Connections* icon to open the Network Connections Dialog. Now Select the Wired Local Area Connection. For **Windows Vista / Windows 7**: *Control Panel – Network and Sharing Centre – Change Adaptor Settings* to open the - *Network Connections* dialog shown below right, then follow XP instructions 1 to 4.



1.

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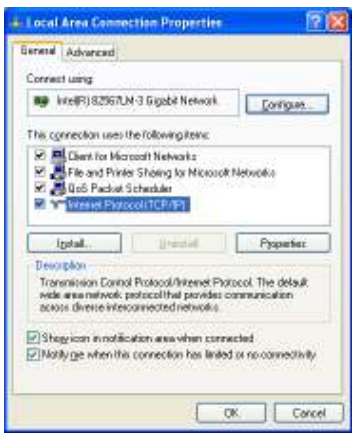

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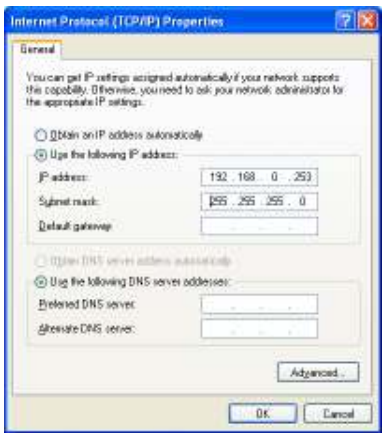


1. The **Network Connections** dialog shows all connections on your laptop including wireless connections and VPN connections, Identify and double click the correct **Local Area Connection** icon. If your laptop has more than one Network Adaptor then ensure you have selected the correct one.

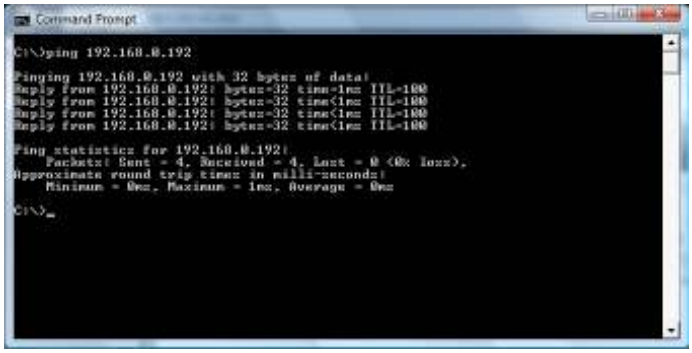
2. The **Local Area Connection Status** dialog will appear – press the **Properties** button at the bottom.

3. The **Local Area Connection Properties** dialog will appear, highlight *Internet Protocol (TCP/IP)* item and select the **Properties** button.

4. The Internet Protocol (TCP/IP) Properties dialog will appear, move the button down to **Use the Following IP address:** and enter **192.168.0.253** and **255.255.255.0** as the subnet mask as shown in diagram 4 above.

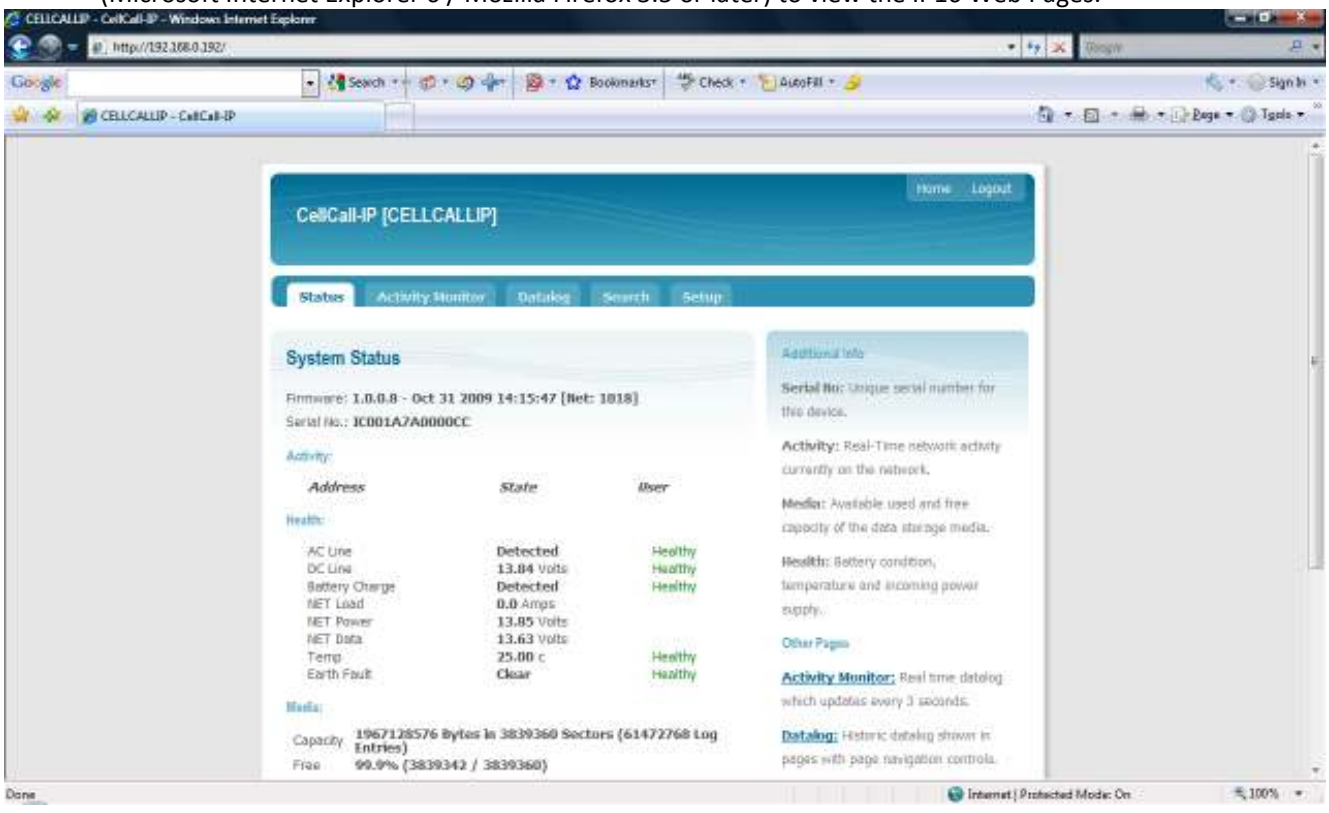
5. Now Select OK and windows will reassign the computers IP address.

6. Select *Start*, *All Programs*, *Accessories*, *Command Prompt* and type **Ping 192.168.0.192** into the command prompt & you should see **Reply from 192.168.0.192: bytes 32.** as below to confirm communication.



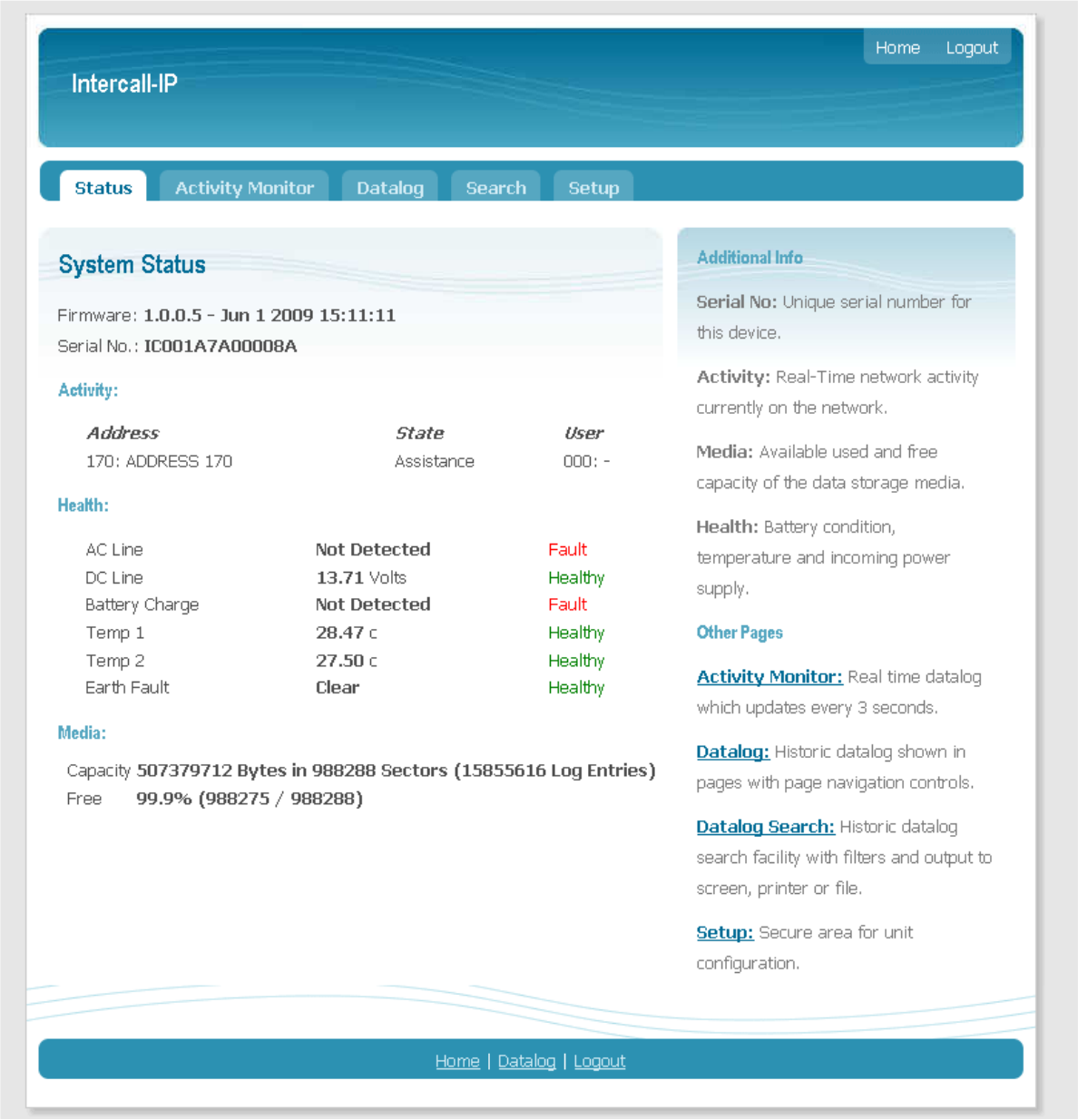
7. If the ping fails with **Destination Host Unreachable**, check the cross over cable is plugged in and the **Link** LED is lit on the IP16 ethernet socket. If the Link LED is lit then try and ping your laptop (ie **Ping 192.168.0.1**) If this also says **Destination Host Unreachable** then there is an incorrect network setting on your laptop, firewall or other software on your laptop preventing communication. Ensure you are configuring the correct network adaptor (see 1 above) and switch off any wireless adaptors.

8. Once the ping command has worked and communication is established, use an Internet browser (Microsoft Internet Explorer 6 / Mozilla Firefox 3.5 or later) to view the IP16 Web Pages.



Intercall IP Embedded Web Server.

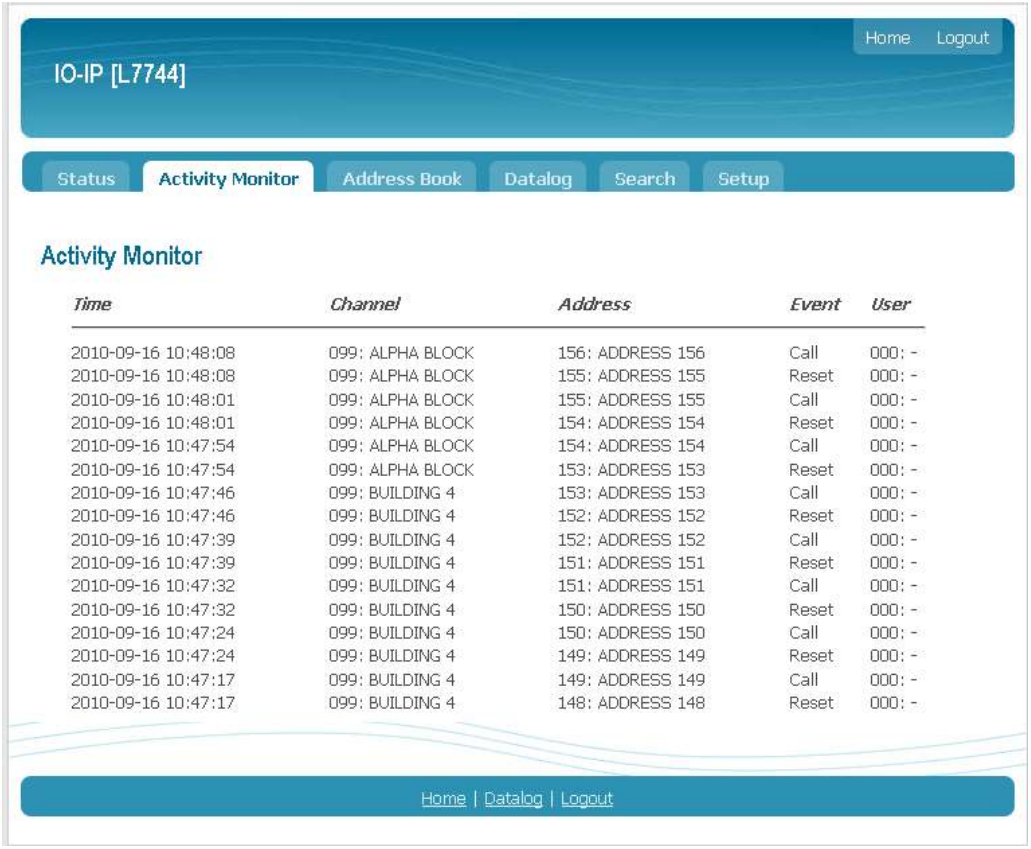
The Intercall IP16 Power Supply Controller contains an embedded web server for system configuration and status monitoring. It is used gain access to the on-board data-logger recording all system activity with the date and time and to allow password protected access to the system configuration and networking pages.

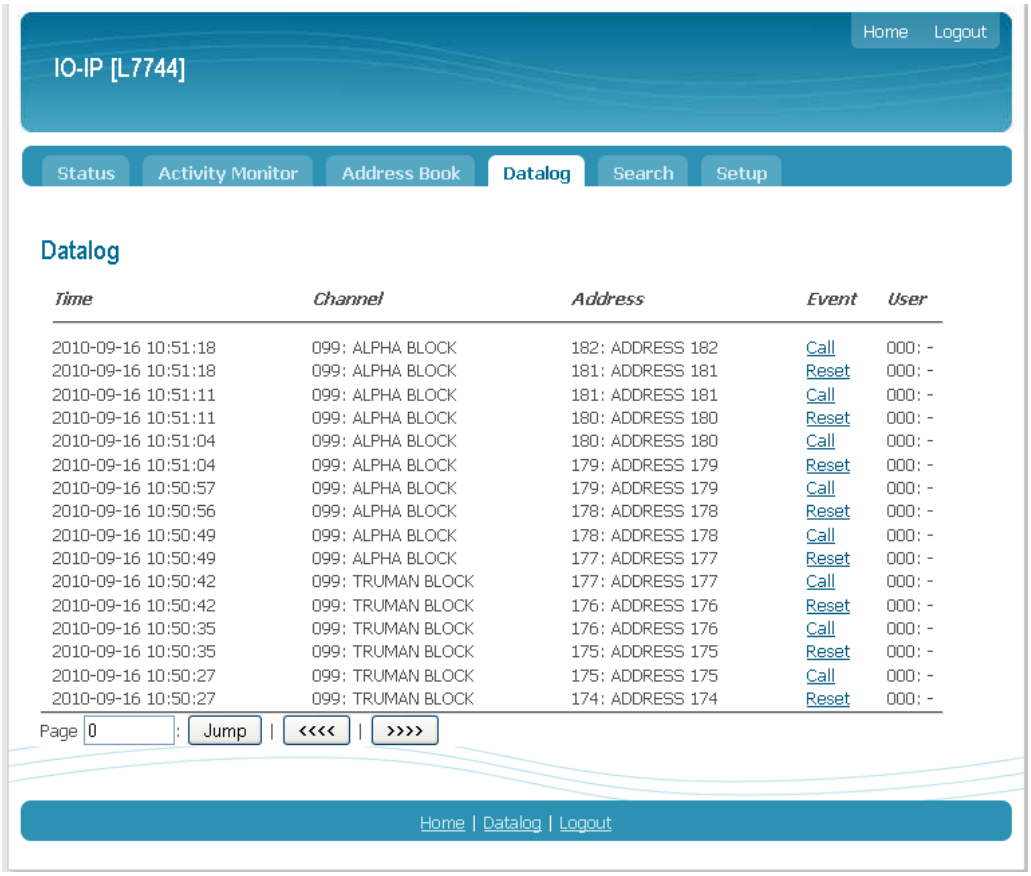


As you can see, the main index screen shows the status of the power supply together with any network device which is active. The HTML pages also contain help text to assist unfamiliar users navigate around the users screens. This controller is used with many different types of network devices and system configurations and not all of the features included in this manual may be applicable to your system.

Intercall IP Embedded Datalog and Search Facility.

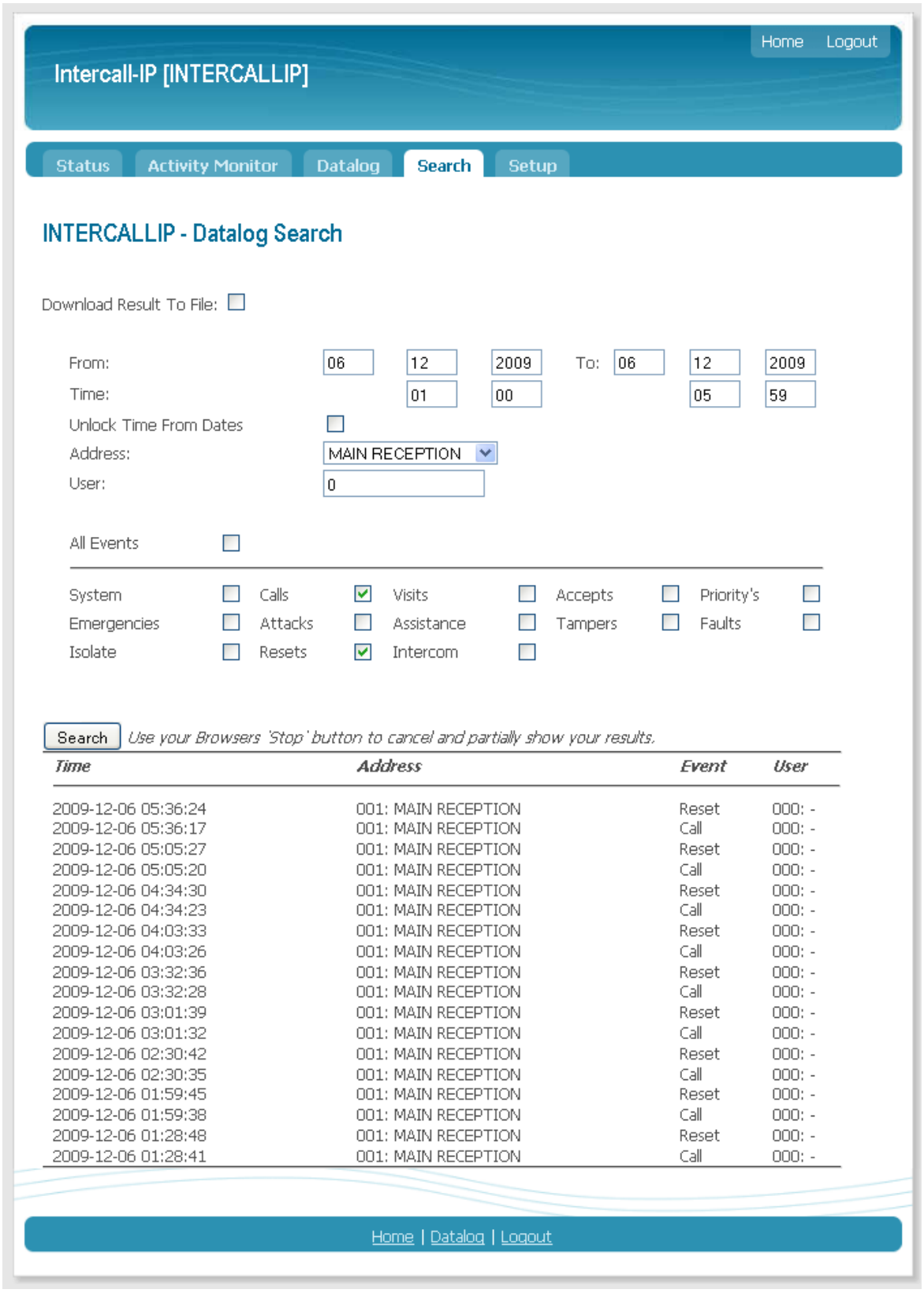
All network activity is recorded internally within the Intercall IP Controller and may be accessed via the web server. The system automatically records a health check every hour together with the status of the power rails, internal temperature etc. The embedded search facility allows a filter to be applied to this data log for retrieval purposes, data can be filtered by date, time, location and event type. The data may be shown on-screen or downloaded and imported directly into Microsoft excel.





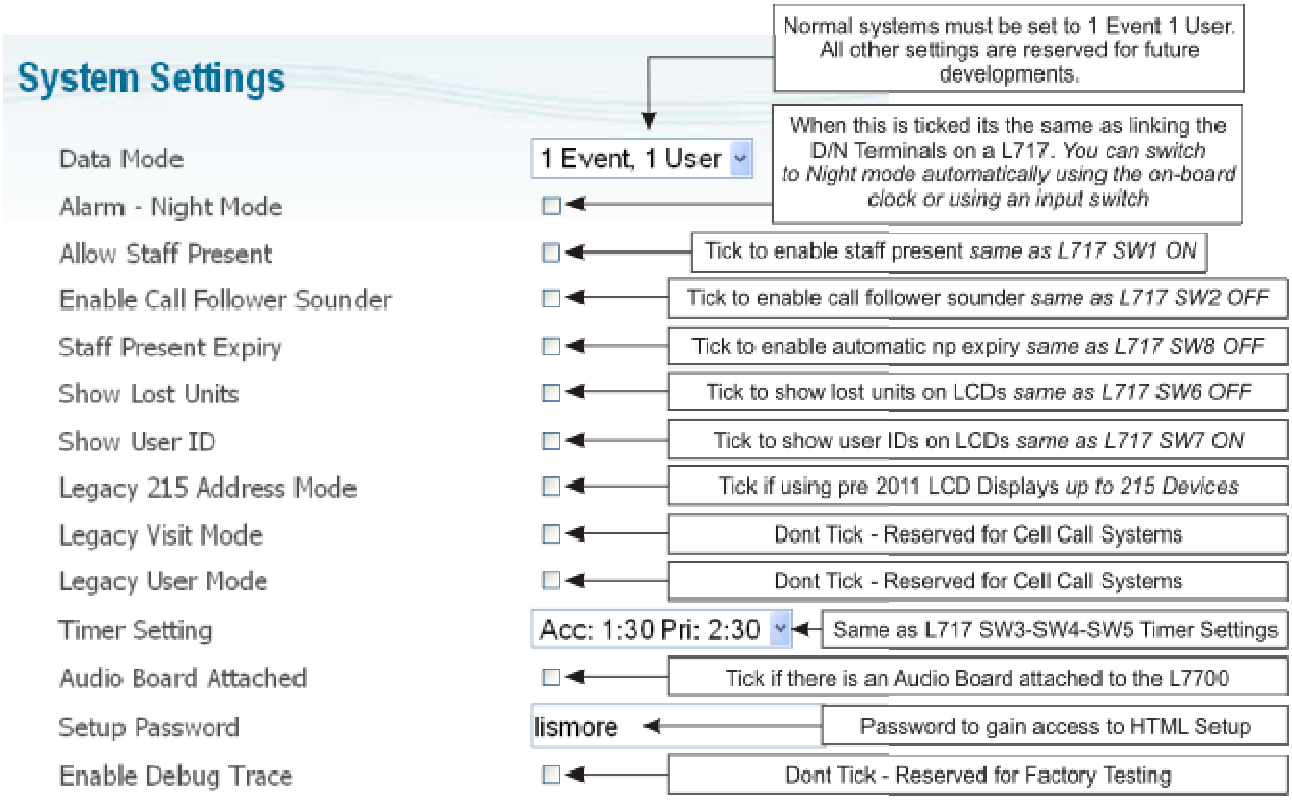
Example of Datlog Search Facility.

The embedded search facility allows a filter to be applied to this data log for retrieval purposes, data can be filtered by date, time, location and event type. The data may be shown on-screen or downloaded as a CSV file and imported directly into Microsoft excel or similar. CSV stands for Comma Separated Values http://en.wikipedia.org/wiki/Comma-separated_values which is a universal file not specific to Excel. CMS-IP Management software can be used to interrogate the embedded data log and produce in depth trending and analysis reports.



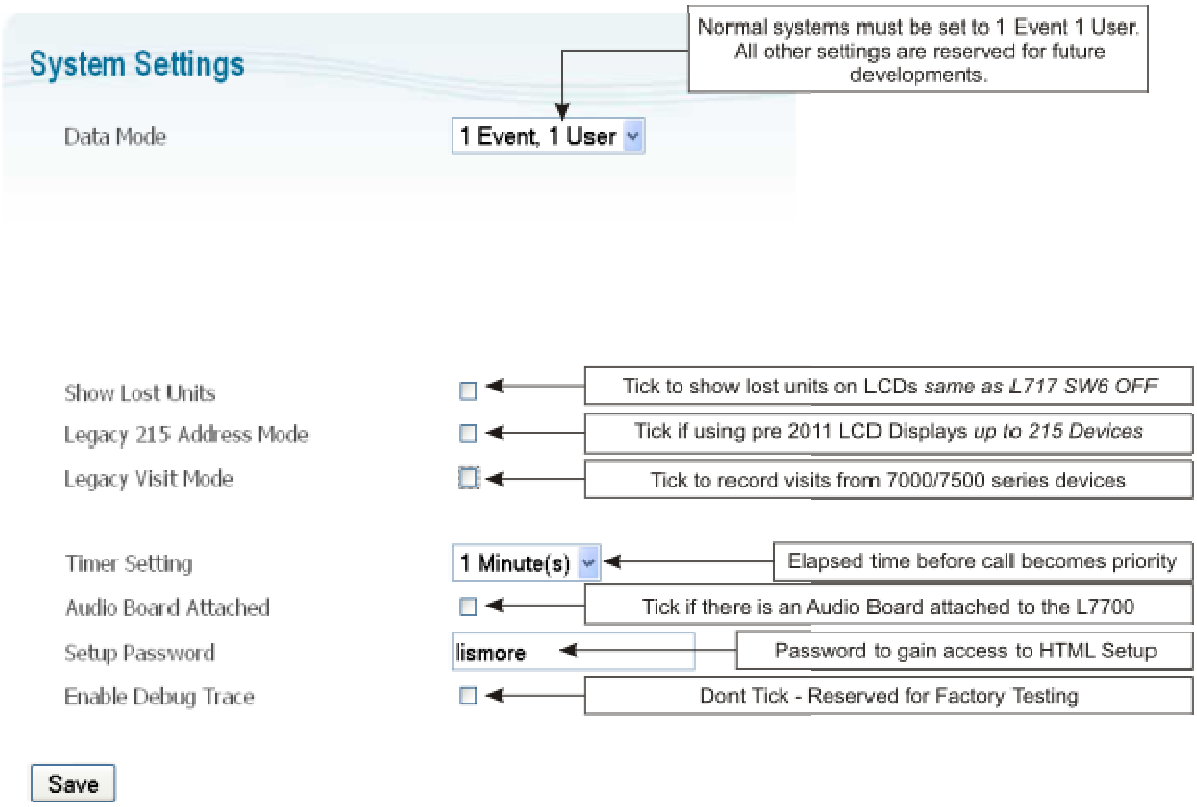
Setup Page.
The Setup tab gives access to the engineering configuration screens and is password protected to prevent unauthorised access. User Name is *admin* and the Password is *lismore* all lower case.

System Configuration Screen – Intercall.
The first screen is the system configuration screen which allows configuration of the global system settings, which previously were configured using the configuration DIP switches in the L7717/L717 Power Supply. The **Day/Night Alarm Schedule** is also accessed from this screen and the setup access password can be changed.



System Configuration Screen – CellCall.

The Cell Call screen is somewhat different from the Intercall screen and only shows dialogs which are relevant to the cell call system. The system configuration screen controls global system settings, which previously were configured using the configuration DIP switches in the L7100 Power Supply Controller. The **Day/Night Alarm Schedule** is also accessed from this screen and the setup access password can be changed.

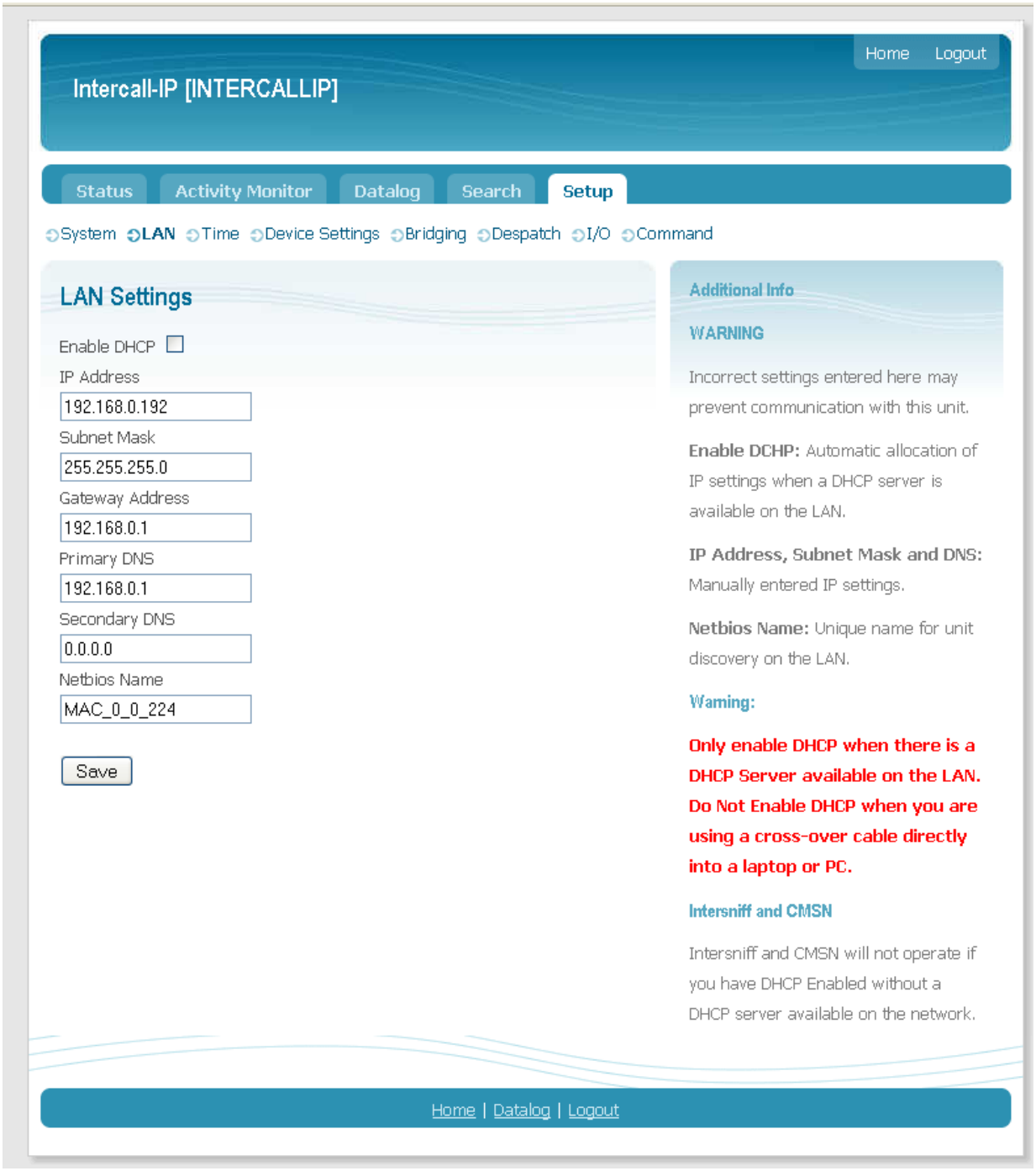


Automatic Day/Night Scheduling.

From the system screen there is a link to the Day/Night Scheduling screen which can be setup to automatically change the system between the Day and Night alarm modes. Enter the Day Mode Start Time and the Night Mode Start Time in 24 hour clock format and select the Enable Auto Change dialogue. The Day/Night mode will now automatically change as the on board clock passes the times entered in this screen.

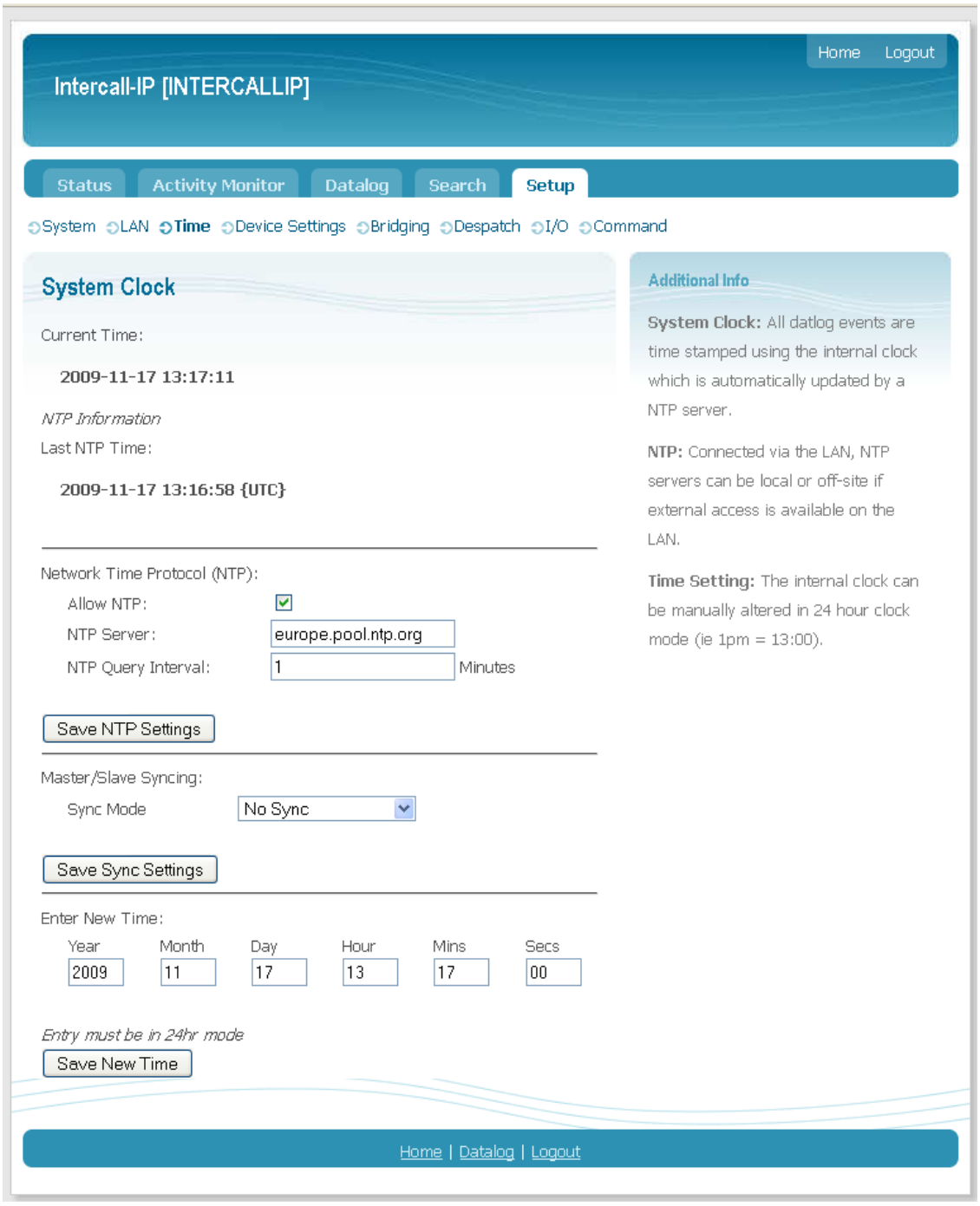
LAN - Local Area Network Screen.

The LAN settings screen controls the essential LAN settings for the IP controller. On a simple one-to-one connection the factory default IP address will be in use (192.168.0.192). You may need to use a cross-over type network cable (depending on the age of your laptop) and you will need to manually assign your laptop with an IP address. On a network where a DHCP server is operating, the IP controller will automatically be assigned an IP address and this will be shown on the LCD screen. Do Not Enable DHCP when you are using a cross over cable directly into a laptop or PC. Do Not Enable DHCP when you are using a stand-alone network without DHCP Server.



Time - System Clock.

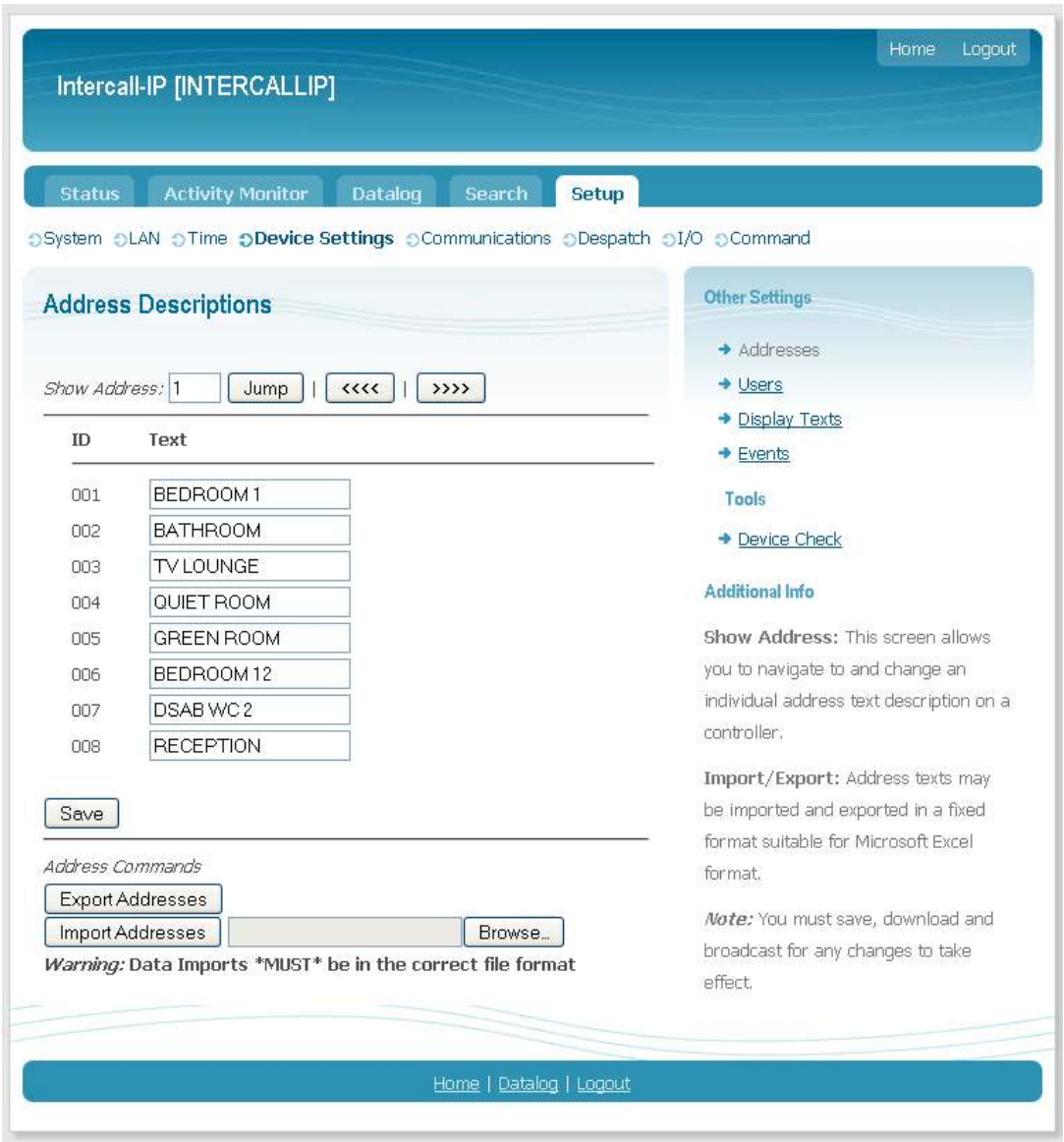
The IP Controller contains an on-board Real Time Clock which can be set manually using this web page. The time will automatically be updated if a NTP (Network Time Protocol) server is available over the Local Area Network. Alternatively one controller can be set to be a *time master* and all other controllers to *time slave* thus synchronising the clocks between controllers.



Using the Master/Slave Sync function, several IP16 Controllers can share a single clock source. Simply set one power supply to *I am a Master* and all other displays to *I am a Time Slave*. Only choose one IP16 to be the time master.

Addresses - Address Descriptions.

The Address and User Descriptions may be manually entered into the web page by page with the **Save button** pressed before exiting each page. Alternatively may be uploaded from a Excel spreadsheet. Please note the Excel Import/Export must be a CSV file formatted correctly and we recommend editing a previously exported spreadsheet rather that creating a new one, to ensure the format is correct. The Screen shows eight addresses descriptions at one time and the pages can be navigated using the Forward and Back arrows or entering a specific address and selecting the Jump button.

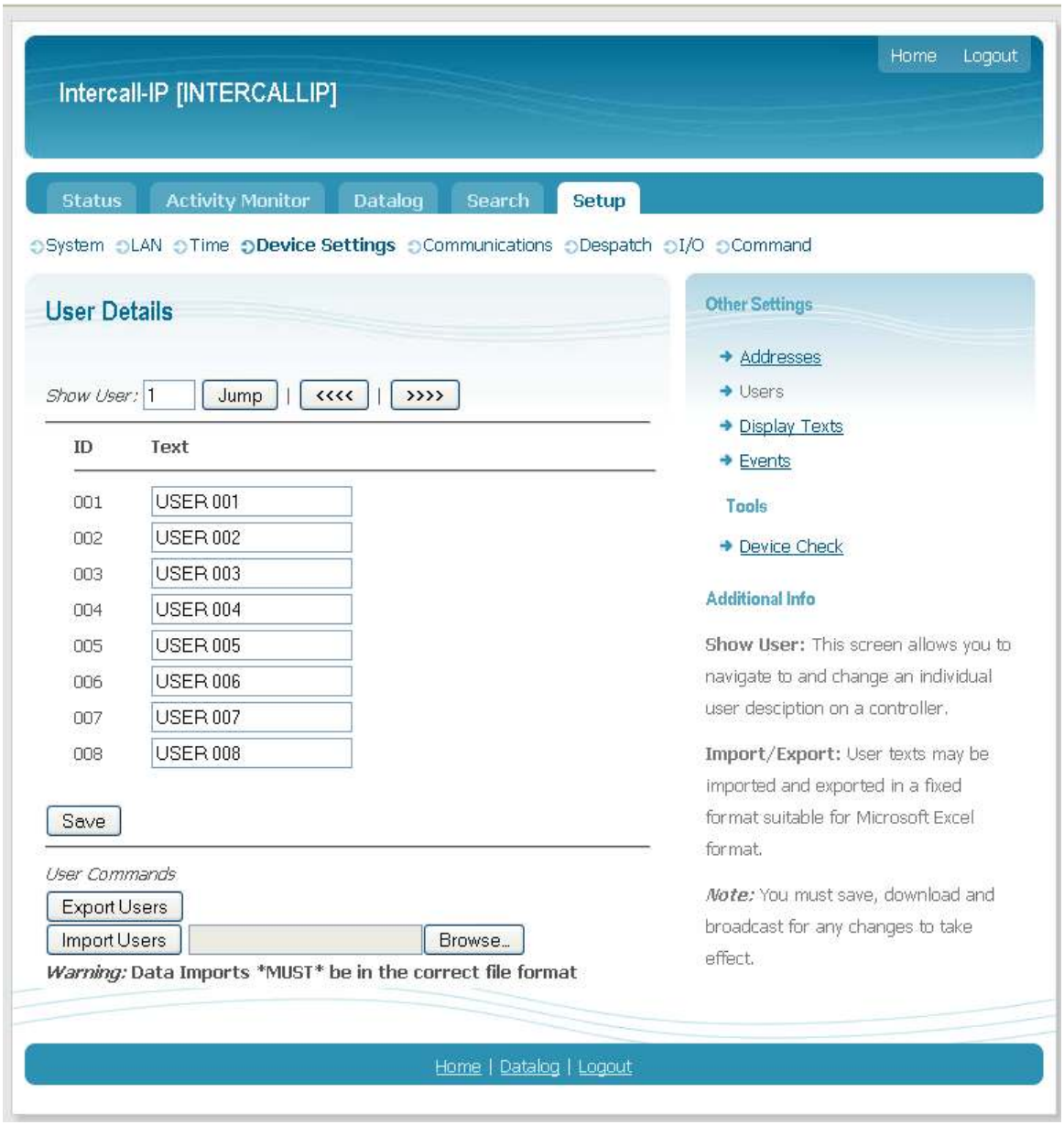


Addresses – CMS IP Monitor Software.

When you are using CMS IP Monitor software, the Address Descriptions and User Descriptions are automatically passed to the computer, there is no need to program or upload the descriptions into the PC database.

Users - User Descriptions.

The User Descriptions (User ID's) may be manually entered into the web pages shown below or alternatively may be uploaded from a Excel spreadsheet. Please note the Excel Import/Export must be a CSV file formatted in the correct manor and we recommend editing a previously exported spreadsheet rather that creating a new one, to ensure the format is correct. The Screen shows eight addresses descriptions at one time and the pages can be navigated using the Forward and Back arrows or entering a specific address and selecting the Jump button.

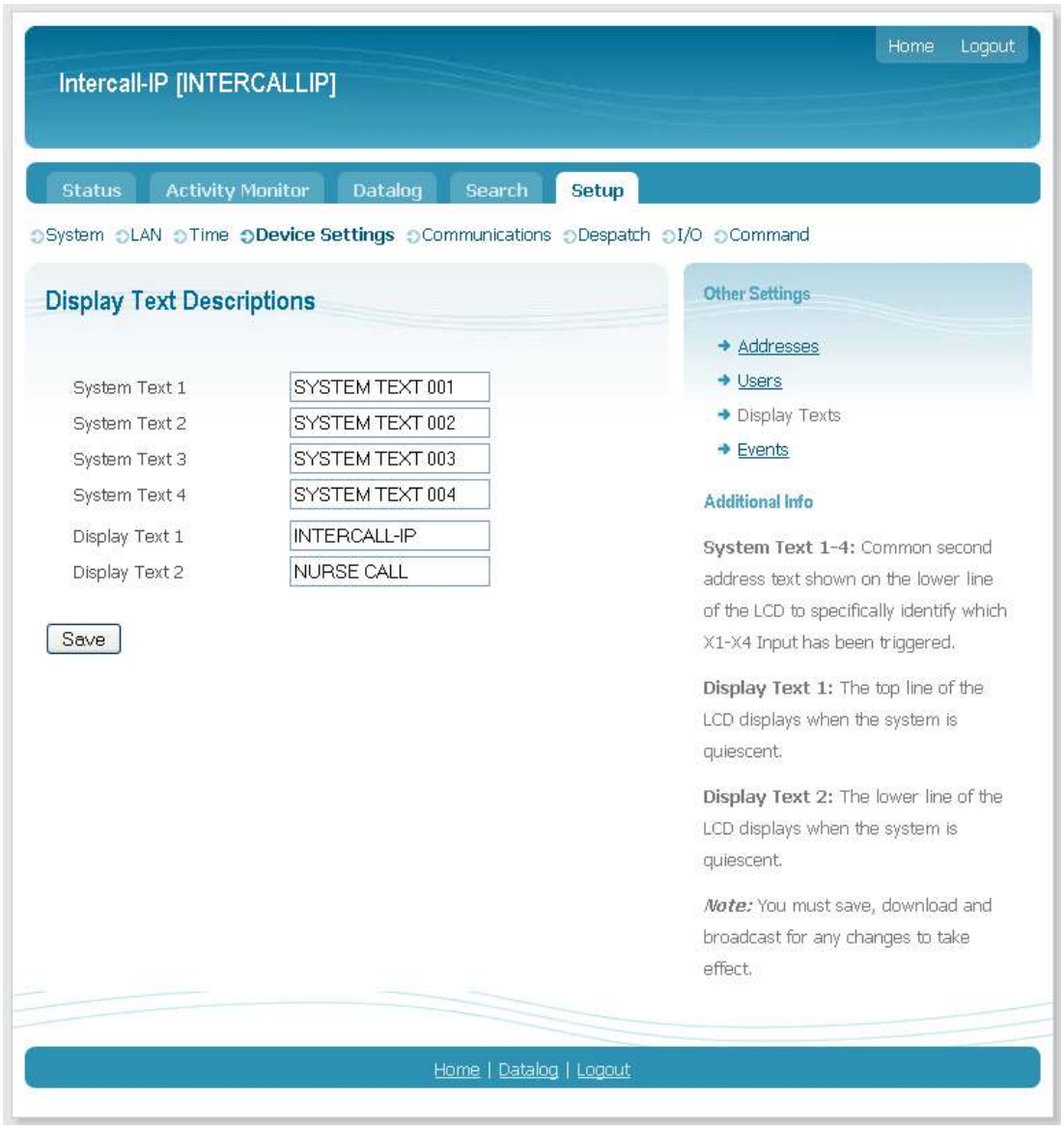


Users – CMS IP Monitor Software.

When you are using CMS IP Monitor software, the User Descriptions are automatically passed to the computer, there is no need to program or upload the descriptions into the PC database.

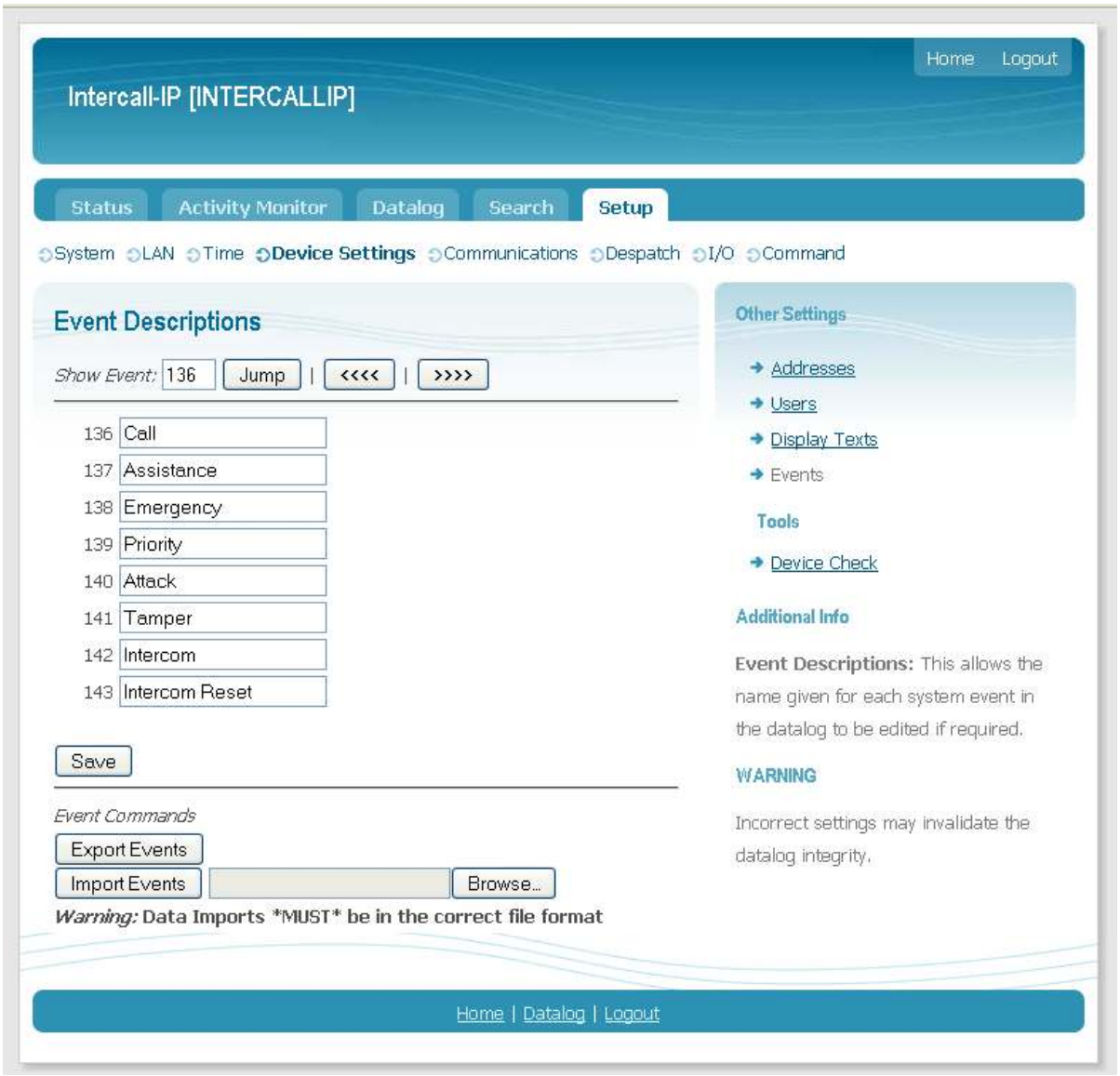
Display – Display Text Descriptions.

The Display Text Descriptions are the four text strings reserved for the *System Text* descriptions which are linked to the X1,X2,X3,X4 external inputs on the call points. These are shown on the lower line of the LCD when the call point is activated using one of these terminals. In addition, the *display text* lines 1 and 2 may be edited which is shown on the LCD displays when there is no calling activity being shown.



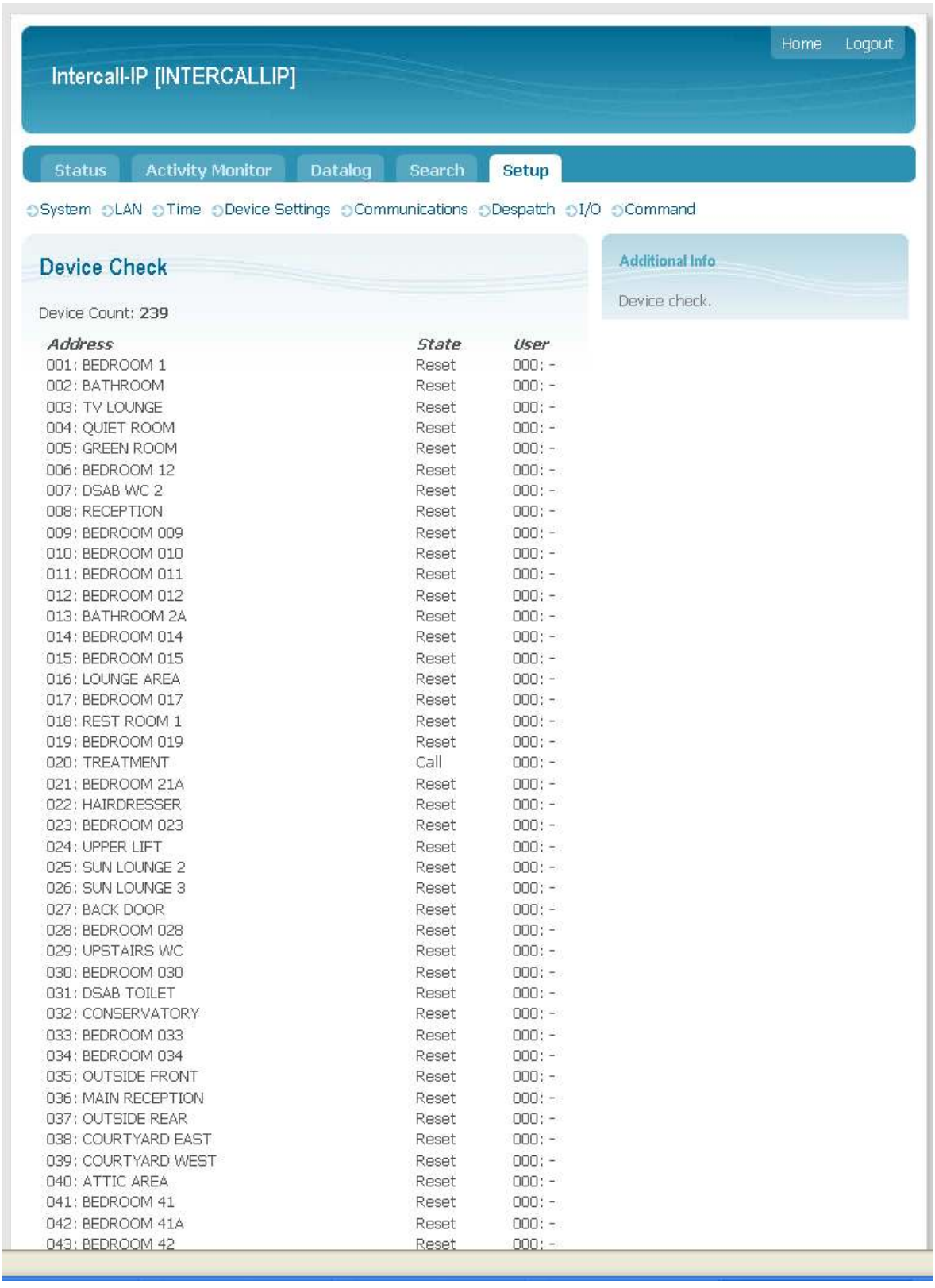
Display – Event Descriptions.

The Event Descriptions are the text strings that are associated with the call types such as *Call* and *Emergency* etc. Changing the descriptions in this page will alter the wording stored in the data log and shown on the activity dialog. It will not change the wording on the LCD Display units.



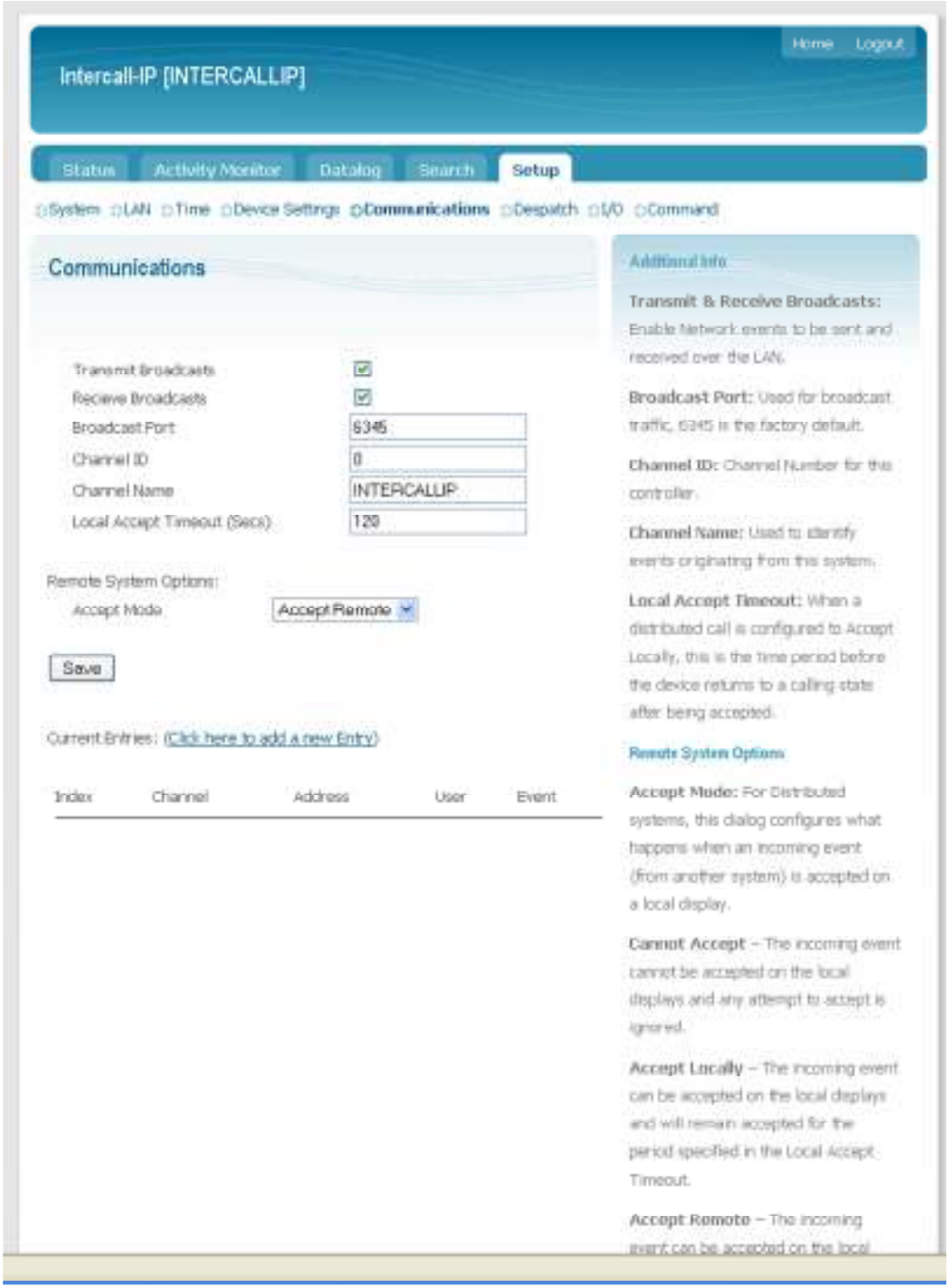
Network Device Check.

Under the Diagnostics tab, the network device check produces a list of the network devices connected to the controller, together with their current state and user information. The total number of network devices is shown at the top of this screen.



Communications.

This screen controls the way that the IP Controllers communicate using the LAN (Local Area Network) The Transmit and Receive Broadcast must be selected and the Broadcast Port set to 6345 to ensure compatibility with other IP devices. Port 6345 must therefore be open on any network security software (ie firewall) and/or equipment such as routers, hubs, gateways & switches etc. The text entered into the **Channel Name** dialog is also shown on the top of all web pages to enable the engineer to identify the power supply.



The text entered into the **Channel Name** dialog is also shown on the top of all web pages to enable the engineer to identify the power supply.

Channel Name – CMS IP Monitor Software.

What is typed into the Channel Name dialog is automatically passed to the computer, if you have many L7700's this is the way to identify each system. It can be used as the establishment name on single systems.

Despatch Engine.

The Despatch Engine controls how events on the Intercall Network are used to drive the outputs from the IP16, including:

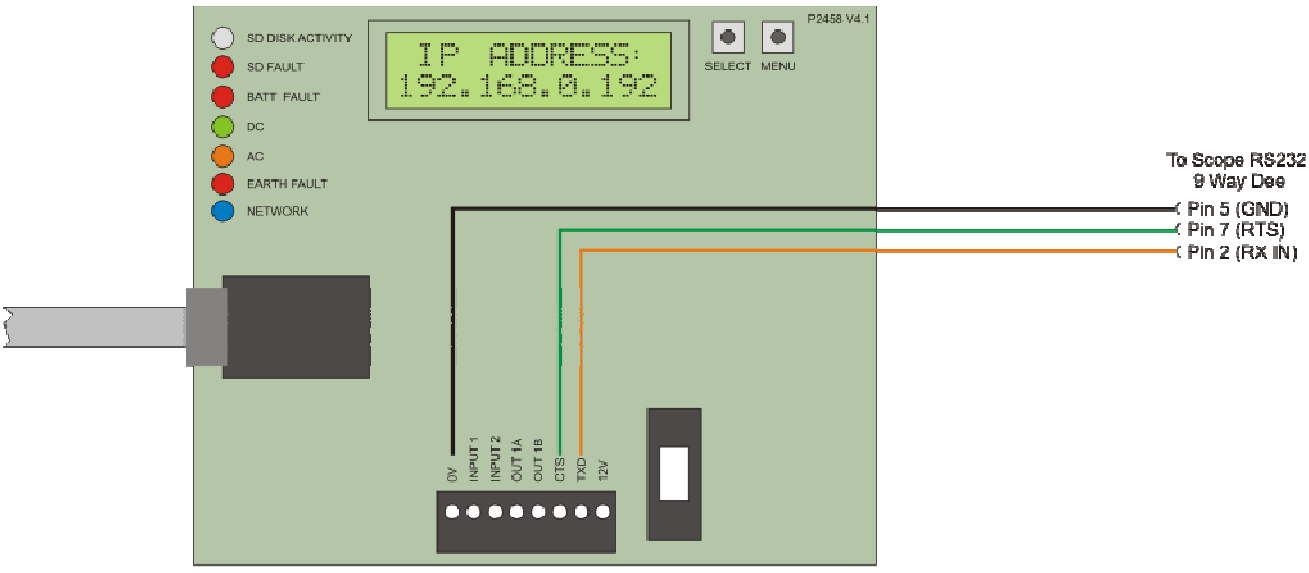
- **Relay Output**
- **RS232 Pager Output [Scope MSP Protocol]**
- **Other RS232 ASCII Output**

Every individual entry may contain a different cause and effect process.

Every individual output is controlled with a separate despatch entry, select ***Click here to add a new Entry*** on the despatch screen to open the Despatch Entry dialog.

Connecting the Scope Transmitter to the L7700 RS232 Port.

The Pager transmitter is connected directly to the L7700 PCB using the on-board RS232 port. The diagram below shows the connections required. Note the CTS line is optional and may not be required – refer to Scope/Paging equipment manual for more information



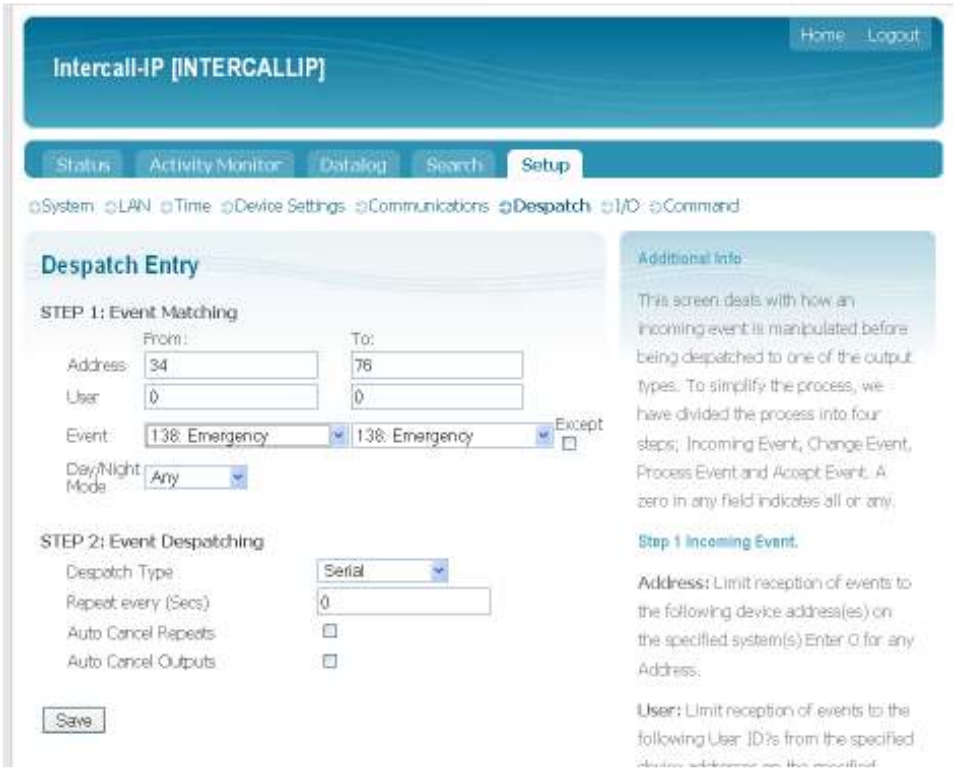
Add a Despatch Entry – RELAY CONTACT OUTPUT

Every output is controlled with a despatch entry, select ***Click here to add a new Entry*** on the despatch screen to open the Despatch Entry dialog which is shown below. In this example, we are creating a **Relay Output** for **Attack** only for any device between **1** and **215** for **any user ID** and is operational in both **Day** and **Night** mode. Tick **Auto Cancel Output** to clear once an **Attack** is no longer active. Press the **Save** button and the Output Despatch Entry screen will appear shown on the right, Tick output state to set the output when this condition is true.

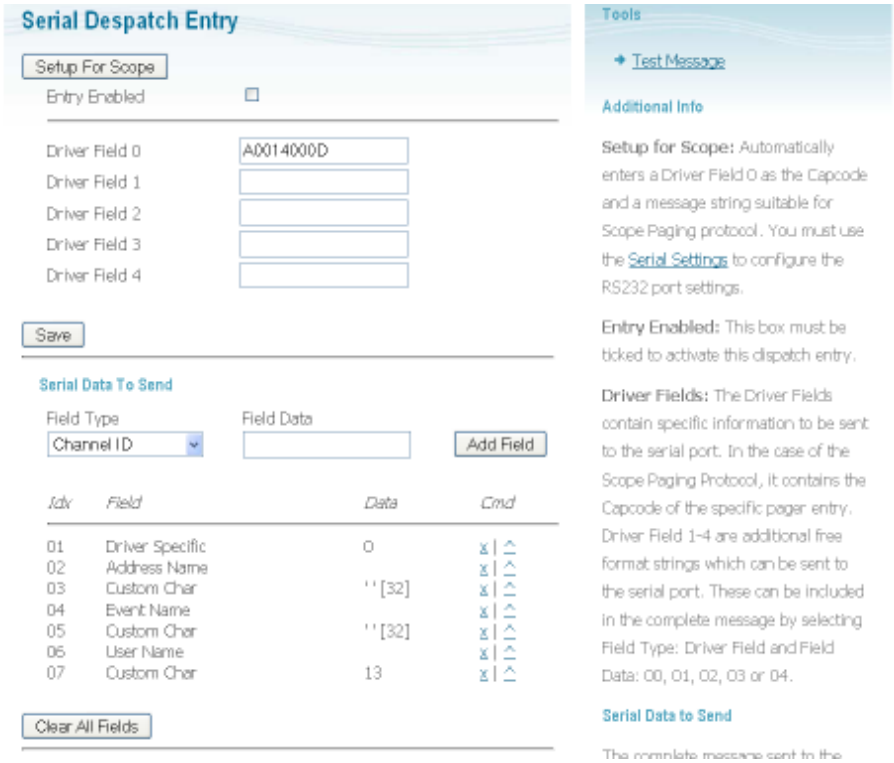
Press the **Save** button and the Output Despatch Entry screen will appear shown below, The IP16 Output is one **Normally Open** Relay Contact. If you wish the contact to close for the attack condition, tick **Output State**. If you wish the relay to Open for the attack leave the Output State un-ticked. You must Enable the entry in order for it to operate. The activation of the relay can be recorded in the datalog by ticking the relevant box.

Add a Despatch Entry – SCOPE PAGER OUTPUT RS232

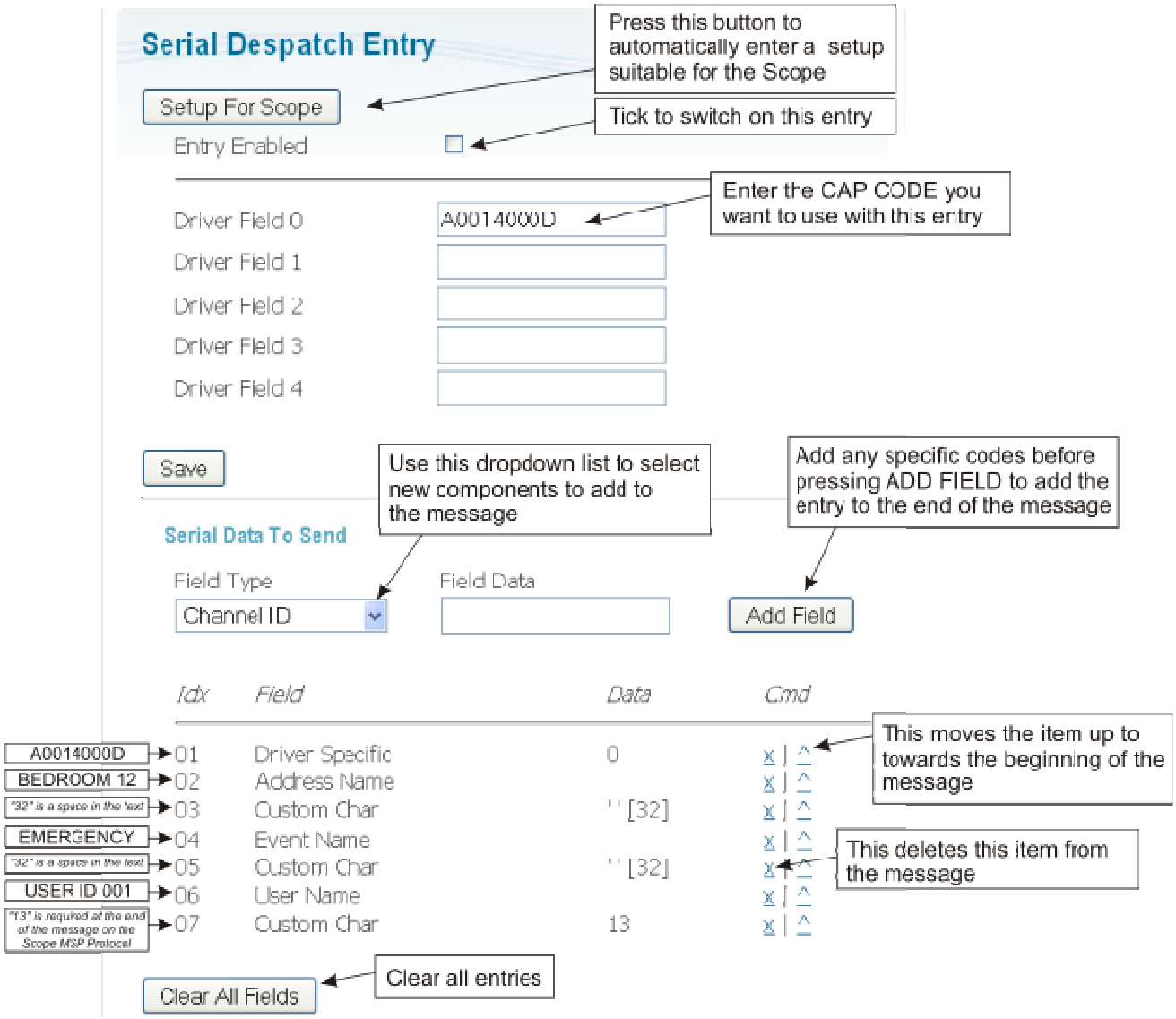
Every type of output is controlled with a despatch entry, select ***Click here to add a new Entry*** on the despatch screen to open the Despatch Entry dialog which is shown below. In this example, we are creating a **Serial** output for **Emergency** only for any device between **34** and **76** for **any user ID** and is operational in both **Day** and **Night** mode. Press the Save button and the Output Despatch Entry screen will appear shown at the bottom of this page.



Press the **Save** button and the **Serial Pager Despatch Entry** screen will appear shown below. Press the **Setup For Scope** button and the fields will automatically be filled. Enter the **capcode** you with to use with this specific entry, tick the **Entry Enabled** box and press the **Save** button. You can manipulate the specific message sent to the pager using the edit functions on the lower part of this screen. See the following pager and refer to the HTML for more information. You must ensure the **Serial Settings** are correct and the **Serial Port** is enabled using the **Serial Settings** dialog.



SERIAL PAGER DESPATCH ENTRY AND MESSAGE MANIPULATION
Below, we show the Serial Pager Despatch Entry in greater detail.



The Choice of **Field types** which can be sent to pager:

Channel Name – The Channel name of this PSU as entered into the communications page Eg "BLOCK 5"
Address Name – The Address description of the calling device – Eg "BEDROOM 34"
User Name – The User ID description of the calling device – Eg "USER ID 001"
Event Name – The Event name of the calling device "Eg CALL"
Hour ASCII – The on board clock Hour count as a printable number.
Minute ASCII – The on board clock Minute count as a printable number.
Second ASCII – The on board clock Hour count as a printable number..
Day ASCII – The on board clock Day as a printable number.
Month ASCII – The on board clock Month as a printable number.
Year YY ASCII – The on board clock Year as a two digit printable number.
Year YYYY ASCII – The on board clock Year as a four digit printable number.
Driver Field – Enter the **Field Data** as 1,2,3 or 4 which picks the string entered into the **Driver Field** 1,2,3,4.
Custom Char – Enter the **Field Data** as the **ASCII** representation of the character
Commonly Used **ASCII** Characters: 32 is a space, 13 is carriage return, 10 is line feed, 11 is form feed refer to http://en.wikipedia.org/wiki/Ascii for more information.

Please note, the use of **Field Types** not listed above in a message may result in spurious pager behaviour and/or spurious characters on the pagers. Custom Characters below 32 or above 127 should not be used.

ON BOARD RS232 SERIAL PORT

The IP16 Power Supply contains a dedicated RS232 Serial Port which is used to send messages to Scope Pagers and other serial devices. The global settings for the serial port are accessed from the Despatch screen and Serial Settings. Here the Baud Rate, Data Bits, Flow Control (CTS) etc are configured. You must tick Enable Serial Port before any data can be sent.

TEST MESSAGE

Using the Test Message function, you can simply sent an RS232 ASCII string to prove the configuration settings and connections. It is not possible to send extended ASCII characters or control characters using the test message function.

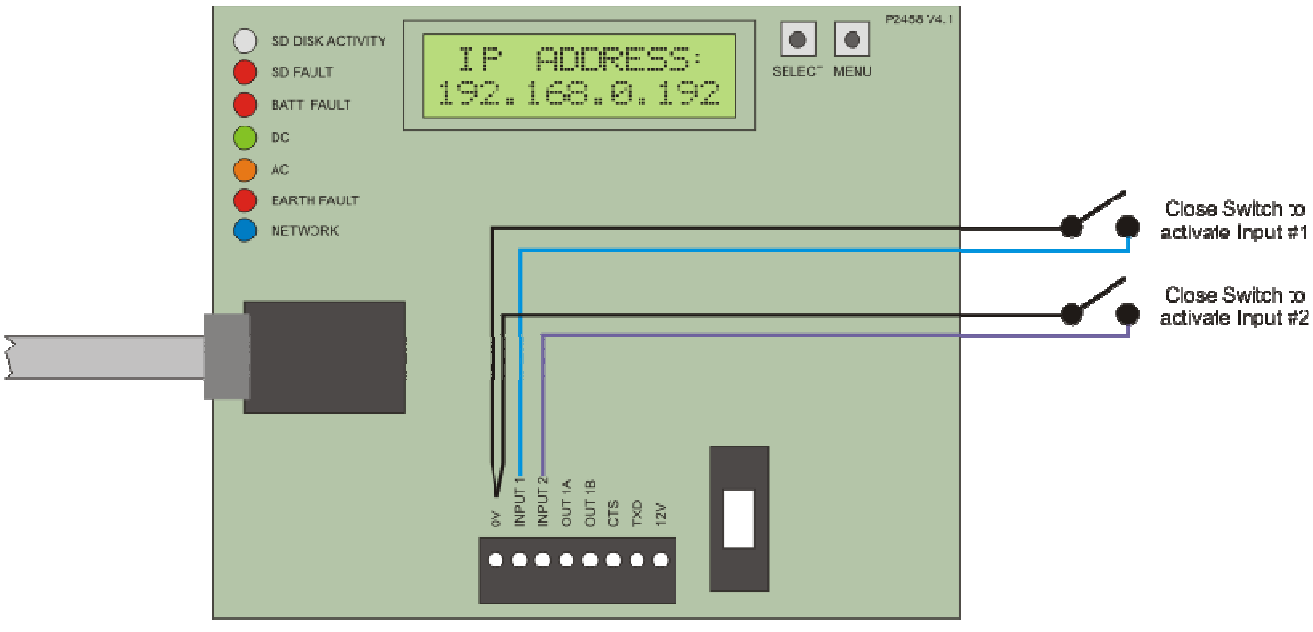
CONTACT INPUTS.

The L7700 features two on-board independent closing contact inputs which may be configured for the following operations:

APPLY EVENT – Create a call on the system, Call type, address and user may be specified using the fields on screen.
RESET UNIT - Perform a hard reset to the L7700.
RESET SLOTS - Reset all incoming events on a bridged or distributed system
RESET OP1 For example an output can be used to activate a strobe or sounder, the input can be configured to reset that output to act as a mute or reset button/key.
RESET NET. Reset all devices (Call Points, Displays etc) on the L7700 Output Network.

CONNECTING THE INPUTS

The inputs are simply closing contacts taken to 0V, there is a 10K pull up resistor to 3.3V on each contact input. Do not apply voltage to these inputs, if connected to other systems they **must be isolated** using a relay or similar.

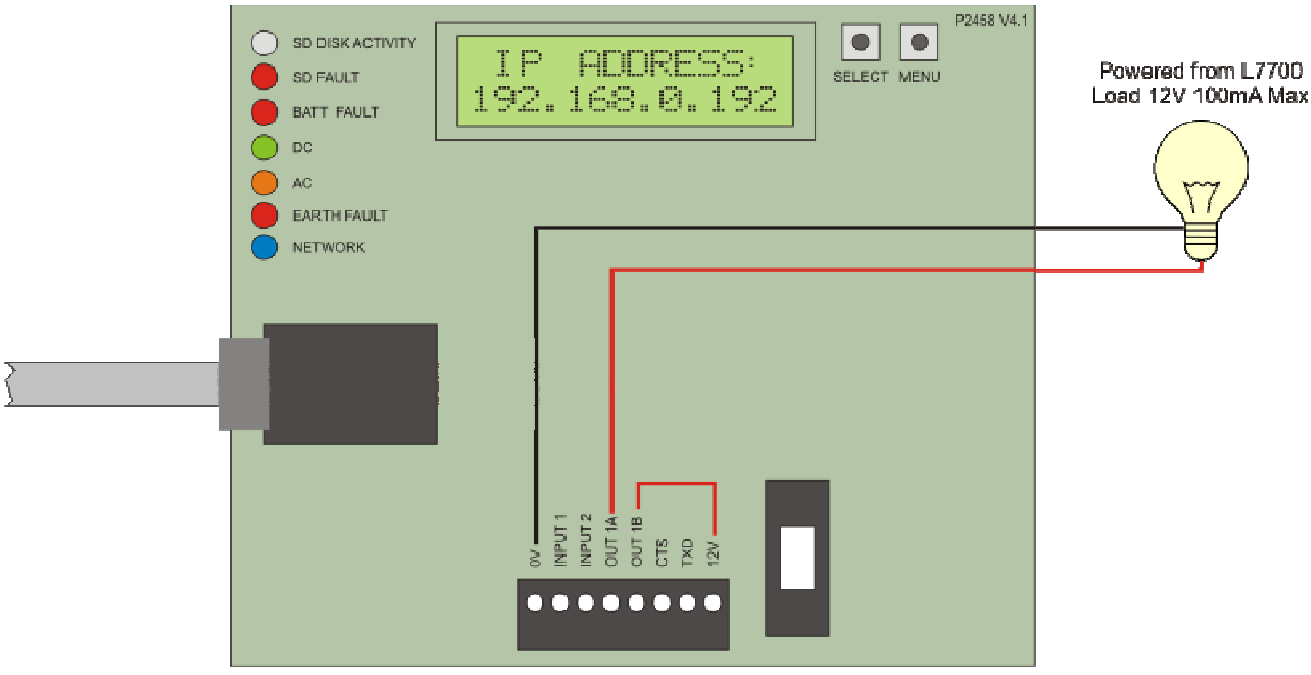


RELAY OUTPUT.

The L7700 features a single normally open volt free relay. This may be used in conjunction with the on-board 12V supply to power up to 100mA, Alternatively, an external power supply may be used to power an external device such as a strobe or sounder etc. As the on-board relay provides isolation, this may be directly connected to third party equipment up to 24V DC 500mA.

CONNECTING THE RELAY OUTPUT.

The L7700 features a single normally open volt free relay, this may be used in conjunction with the on-board 12V supply to operate a 12V up to 100mA load. Larger loads up to 500mA may be switched using an external supply or switched via a power relay.



Command – Network Commands.

The commands page contains four basic commands; Broadcast – Send the current Address, User, System, and display text to the displays. Reboot System – Restart the IP Controller and all Network Devices. Reset Devices - Reset the Network Devices only and Reset Remote Slots – Reset device addresses set by other IP devices and controllers.

Send SysX Command.

The SysX commands are used to configure network devices and alter their default settings. The link opens the following dialog where the message is prepared and sent. This page should only be used after consultation with the factory as illegal settings may render devices inoperable.

Changing the configuration parameters on Lismore Legacy Device.
Fourth generation Lismore legacy network devices have the ability to receive configuration data from the Lismore Network, this is used for example to change the function of an X input or a button etc. We call this data **SysX** or **System Exclusive** messages. The only device capable of sending configuration data is the **L7700 IP16 Power Supply**.

1. Ensure the L7700 IP16 Power Supply and system is running normally and you have the devices you wish to program connected to the output circuit of the L7700 IP16 Power Supply.

2. Ensure you can communicate with the L7700 and view the embedded website.

3. Navigate to the **Setup** – **Commands** page and select the **Send SysX** link on the right hand side of the page.

4. This will bring up the following page:

5. Ensure the equipment you wish to program is connected to the output of the power supply. Enter the numbers you have been given by the factory and select the **Send** button at the bottom of the page:

WARNING: ILLEGAL ENTRIES MAY RENDER THE DEVICE INOPERABLE