



INTELPAGE IP 5

Contains Instructions For:

-Configuration

-Installation

-Operation

For v2.03 Unit Firmware, PLASTIC EDITION

(Manual Revision 2.10)

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ACN 064 705 924

Australian Office

PO Box 1037

OPDC WA 6916

AUSTRALIA

Phone +61 8 6240 0000

Fax +61 8 6240 0001

Email sales@commtechwireless.com

Web www.commtechwireless.com

United States Office

8301 Cypress Plaza Drive, Suite 105

JACKSONVILLE, FLORIDA 32256-4416

UNITED STATES

Phone +1 904 281 0073

Fax +1 904 281 0074

Email sales@commtechwireless.com

Web www.commtechwireless.com

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This class B digital apparatus complies with Canadian ICES-003. IC: 4767A-PT5

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Commtech Wireless declare under our sole responsibility that the product Intelpage to which this declaration relates, is in conformity with the following standards and/or other normative documents.

- EN 300 224-2 v1.1.1 (2001-01)
- EN 55022: 1994 +A1: 1995 +A2: 1997
- EN 301 489 -2 v1.3.1 (2002-08)
- EN 60950-1: 2001

We hereby declare that all essential radio test suites have been carried out and that the above named product is in compliance to all the essential requirements of Directive 1999/5/EC.

The conformity assessment procedure referred to in Article 10(5) and detailed in Annex IV of Directive 1999/5/EC has been followed with the involvement of the following notified body:

Bay Area Compliance Laboratory Corporation, 1274 Anvilwood Ave., Sunnyvale, CA 94089, USA

Identification mark: 1313 (*Notified Body Number*)

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SAFETY AND GENERAL INFORMATION

Important information on safe and efficient operation. Read this information before using the unit

Exposure To Radio Frequency Energy

Your Intelpage IP contains a low power radio transmitter. When it is ON, it transmits radio frequency (RF) energy. Your Intelpage IP is designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy (EME):

- United States Federal Communications Commission, Code of Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- National Radiological Protection Board of the United Kingdom 1995
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation-Human Exposure) Standard 1999

The maximum power density for a VHF or UHF Intelpage IP is 4.0 watts power output at a distance of 20cm (7.9 inch) is calculated at 0.79mW / cm². The recommended minimum distance between the Intelpage IP antenna and the human body or face is 30cm (12inches).

To assure optimal performance and make sure human exposure to radio frequency electromagnetic energy is within the guidelines set forth in the above standards, always adhere to the following procedures:

Antenna Care

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the device. Do NOT hold the antenna when the device is in use. Holding the antenna affects signal quality and may cause the Intelpage IP to operate at a higher power level than needed. Do not use Intelpage IP with a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result. The Intelpage IP antenna port shall only be connected to internal antennas located with the same building as the main equipment.

Electromagnetic Interference/Compatibility

Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility.

SELV warning

The Fusion Intelpage IP and Alarm Dispatch modules have been assessed as SELV throughout, all ports shall be connected to approved SELV circuits or an approved isolation unit shall be used.

Potentially Explosive Atmospheres

Do not operate the Intelpage IP in any area with a potentially explosive atmosphere. Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death. Areas with potentially explosive atmospheres include fueling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles such as grain, dust, or metal powders, and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often but not always posted.

Blasting Caps and Areas

To avoid possible interference with blasting operations, do not use the Intelpage IP near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio." Obey all signs and instructions.

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About This Handbook

This manual is designed to assist with installation of the Intelpage IP. Every component of the system is described in a separate section of the manual with step-by-step instructions to facilitate hardware installation and software configuration..

Conventions.

 **NOTE:** A note preceded with this symbol indicates secondary information pertaining to the topic under discussion.

 **IMPORTANT:** A Right-pointing arrow followed by text in this manner presents important information.

 **WARNING:** Warnings like this alert you to the fact that you might damage your equipment or lose data if you don't follow instructions carefully.

1 ABOUT INTELPAGE IP 5 (IP5)



1.1 Introduction

The Fusion Series Intelpage IP 5 is a paging transmitter capable of encoding serial or TCP/IP data into POCSAG.

Intelpage IP 5 supports numerous industry standard protocols such as TAP (a.k.a. PET or IXO), COMP, SCOPE, TNPP, Waveware (a.k.a. Tekk) and SMTP (a.k.a. Email).

Intelpage IP 5 includes both an RJ45 Ethernet port and an RJ45 RS232 port. This enables system programming and Ethernet or serial input from third party systems. In addition, both ports can be used simultaneously and may be set to different protocols, thus allowing greater flexibility.

On-Site Programmable

Intelpage IP 5 can be programmed on-site with a PC or laptop via either an Ethernet or serial port connection. In addition, the configuration screens may be utilized for message dispatch. Sending messages is as simple as entering the cap code for which the pager that is to receive the message and typing in the message that you want to be displayed.

Pager database

Intelpage IP 5 supports up to 1000 pagers in its database.

Simultaneous Ethernet and Serial Support

Intelpage IP 5 has both an RJ45 Ethernet and an RJ45 serial port which operate simultaneously. This provides great flexibility in terms of the type of equipment that Intelpage IP 5 can be connected to. TCP/IP allows messages to be sent through the internet or local area network easily. This permits use of the SMTP (email) protocol.

Multiple Protocol Support

Intelpage IP 5 supports the use of the TAP (a.k.a. PET or IXO), COMP, SCOPE, Waveware, TNPP (duplex or simplex) and SMTP protocols. Protocols may be assigned to the two ports concurrently, thereby increasing functionality.

1.2 Intelpage IP 5 Kit

Your Fusion Series Intelpage IP 5 Kit will contain:

- Intelpage IP 5 Unit
- 12 VDC power supply with mains cable
- Plastic wall mount bracket
- Whip antenna with 90deg adapter
- Communications cables
 - Green – Crossover serial cable (RJ45 to RJ45)
 - Black – Serial cable (RJ45 to DB9 female)
 - Blue – Straight through Ethernet cable (RJ45 to RJ45)
 - Red – Crossover Ethernet cable (RJ45 to RJ45)
- This Intelpage IP 5 Installation Manual
- CD containing manuals and configuration programs

As part of the installation of your Intelpage IP 5 unit you may also require:

- A PC with terminal software installed, e.g. HyperTerminal.
and/or
- A PC with Ethernet capabilities and a browser installed, e.g. Internet Explorer.
- A POCSAG receiver (i.e. pager) on the same frequency as the transmitter.

1.2.1 Front Panel

1.2.2 LED Indicators

- **Power LED (Yellow)**
Indicates that power is applied to the back of the unit and that it is operational.
- **Ethernet Indicators**
 - IP Act LED (Green)
Indicated activity on the network
 - IP Link LED (Green)
Indicates device is successfully connected to the network
- **Serial Indicators**
 - RS232 Tx LED (Red)
Indicates the receive line of the serial port is active
 - RS232 Rx LED (Green)
Indicates the transmit line of the serial port is active
- **Transmitter Indicators**
 - PTT LED (Yellow)
Indicates that the externally connected POCSAG transmitter is currently busy transmitting (“Keyed up”)
 - Data LED (Red)
Indicates POCSAG data activity.
 - Carrier Detect LED (Yellow)
 - State 1) The unit is initializing. (may remain on for 30 secs if DHCP is used)
 - State 2) Indicates channel is busy.

1.3 Rear Panel



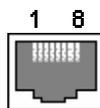
1.3.1 Connectors

- **Ethernet**

The RJ45 Ethernet port may be used for connection to a PC or external system for configuration or operational purposes.

- **RS232**

The RS232 port may be used for connection to a PC or external system for configuration or operational purposes. Details of the required RS232 pins are as follows:



The pinouts are described below.

Abbreviation	Pin Number
GND	4
RX	5
TX	6
CTS	7
RTS	8

Antenna Port

The antenna port is an opening to allow connection of the antenna to the internal transmitter. The connector is a standard BNC 50ohm.

1.3.2 DC Input

This connector is used to supply power to the unit. The CMM requires 12VDC @ 2amps regulated. You will have been supplied with a suitable power supply with mains lead which will plug straight into this socket.

2 INTELPAGE IP 5 INSTALLATION

2.1 Enclosure Mounting

Before mounting the enclosure, you will need to decide where to place the unit. The Intelpage IP comes default with rubber feet installed, allowing it to sit on a desk or table, or be stacked upon other plastic Fusion Series modules.

The kit also includes a wall mounting bracket. To install this bracket:

1. Use a philips screwdriver to remove the four screws holding the rubber feet
2. Seat the bracket on the base of the unit. It will only fit one way around.
3. Use the screws that used to hold the rubber feet in position, to hold the wall mount bracket in position.



2.2 Antenna

A suitable antenna capable of handling 5 watts must be connected to the BNC connector on the rear panel. The antenna for the unit must not be mounted within 5 metres of any other sensitive electronic equipment including other Fusion series products, routers, computers or phone systems. See the technical information section below for further information.

▲ WARNING: The antenna must be placed at least 5 metres away from other electronic equipment to prevent interference.

3 SOFTWARE CONFIGURATION

To configure Intelpage IP 5, you will need a PC with either:

1. A terminal program with a straight-through serial cable

The terminal interface has one extra field compared to the HTML interface below which is the *MAC address* for the unit. The MAC address is a unique networking address assigned to each unit. This is factory set and will not normally require alteration. For this reason it is recommended that the www/HTML interface described below be used.

2. An Ethernet connection to the unit through an RJ45 cable (www/HTML)

This is the recommended method for setting up you Intelpage IP 5.

Skip to the required section below for more information on these two methods.

3.1 Configuring through a Terminal Program

❖ **NOTE: HyperTerminal is used as the terminal emulator in this example. If it is not installed, it can be added by changing your Windows settings. Other terminal programs may be used.**

1. Using a straight-through serial cable, connect the Intelpage IP 5 unit to the serial port of a PC. A straight-through serial cable must be used – a null modem cable will not work. See the *Technical Information* section for information regarding making up or obtaining a suitable serial lead.
2. Make sure that the power is not currently plugged into the Intelpage IP 5 unit at this stage.
3. Start HyperTerminal. It can generally be found from the Windows start menu by selecting *Start -> Programs -> Accessories -> Communications -> HyperTerminal*
4. At the *Connection Description* window, add a name for the entry (such as Intelpage IP 5) and click [OK].

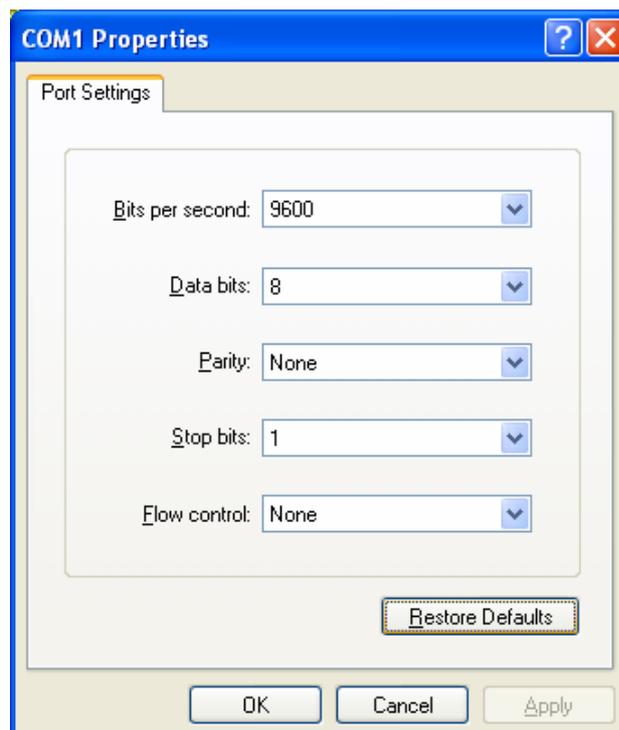


5. At the *Connect To* window, go to *Connect Using* and scroll to your serial port (normally COM1 or COM2). Usually, this information is written next to the serial port on the back of the computer. Then click **[OK]**.

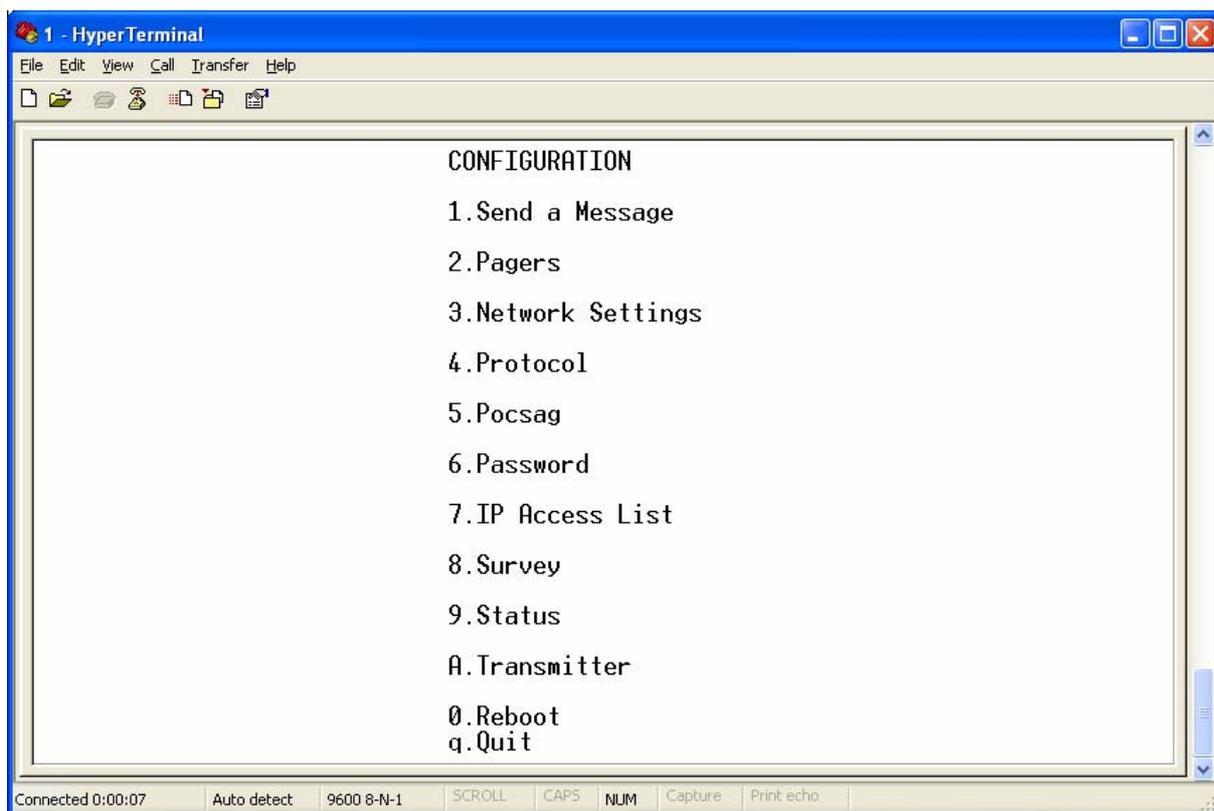


6. At the COM port properties window, click the **[Restore Defaults]** button. This will automatically update the screen with the correct settings below.
 - *Bits per second* should match that of Intelpage IP 5 (default is 9600).
 - *Data bits* should be 8
 - *Parity* should be None
 - *Stop bits* should be 1
 - *Flow control* should be None

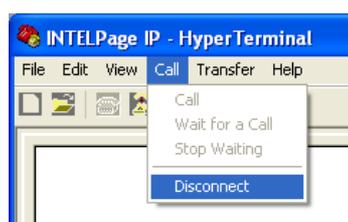
When the correct settings have been entered, click **[OK]** to proceed.



7. You should then see a HyperTerminal window as shown below. If no errors were encountered, HyperTerminal will display *Connected* in the bottom left corner (status bar).
8. At this point, connect the power to the Intelpage IP 5 unit. Within the next five seconds, press the **[Escape]** key four times to bring up a password request screen. By default, the password is “public” (without the quotations). If the password request does not come up, check your serial cable and your connection settings.
9. From the *Main Menu*, a selection is made by pressing the number corresponding to the settings you want to edit (e.g. to select *Network* you would press **[3]**). Once selected, the fields within can be navigated by pressing the **[TAB]** or **[Enter]** key. To change the values of fields that only allow toggling, use the **[SPACE]** bar. Generally, pressing **[s]** will save and bring you back to the *Main Menu*, whilst **[x]** will not save any changes.



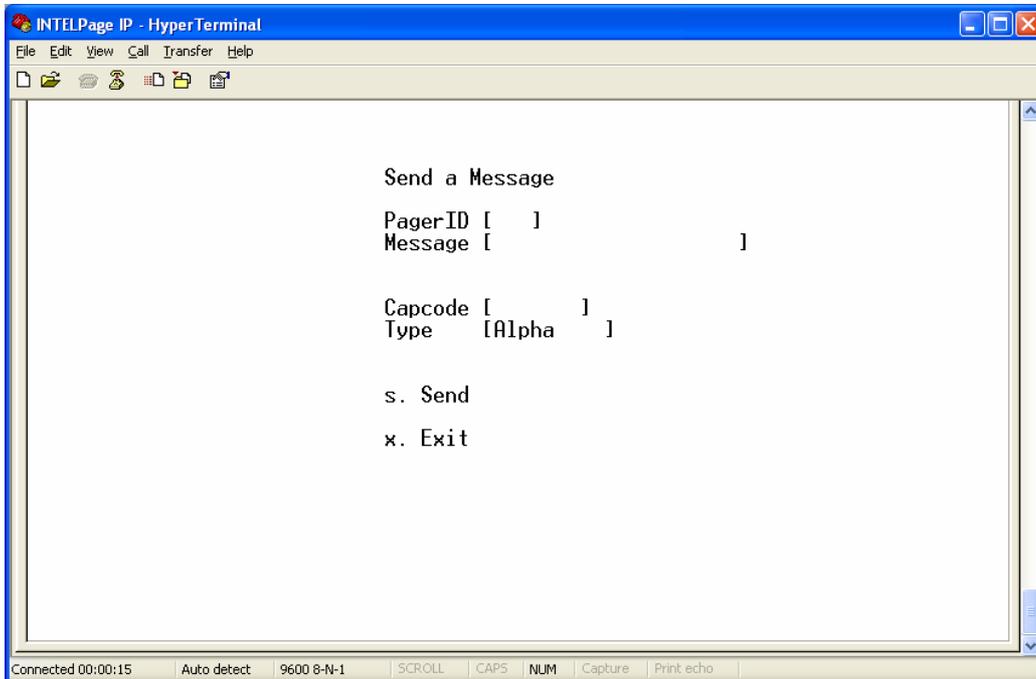
10. The menu structure and fields are much the same as in the HTML (web) interface and will be described in more detail below.
11. Once you have finished making settings changes in HyperTerminal, go to the main menu and select *Reboot* (if need be) or *Quit*. Then go to the *Call* menu in the HyperTerminal window and select *Disconnect*.



3.1.1 User Interface Fields

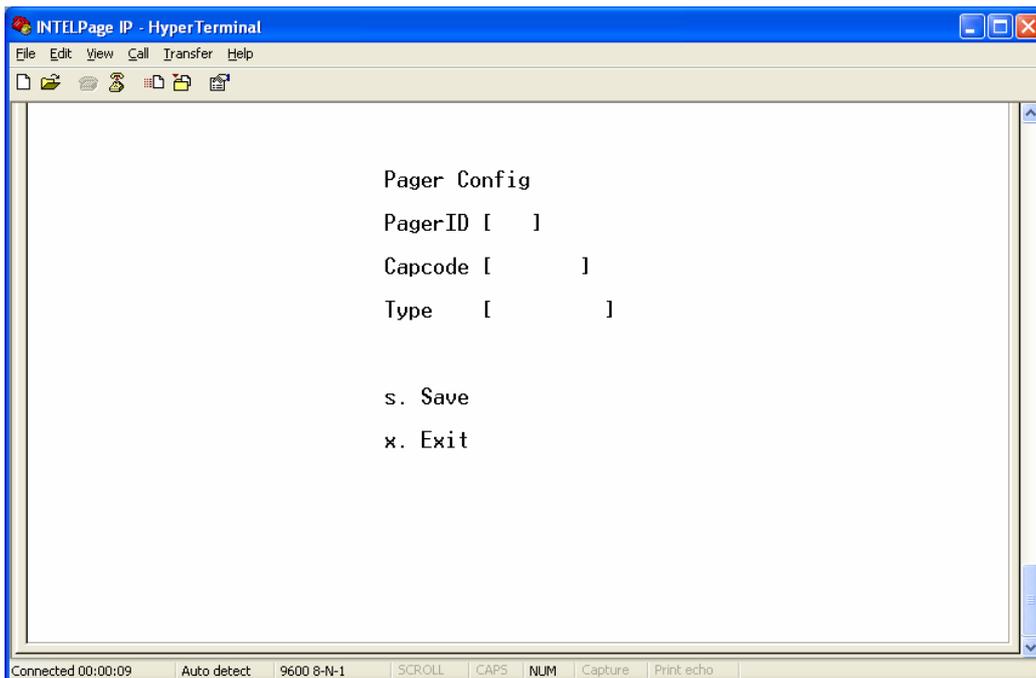
Manual Paging

From the *Main Menu*, select [1] to enter the manual paging screen. This screen is used to send out manual pages to either entries in the pager database or to a specific cap code.



Pager Database Editing

From the *Main Menu*, select [2] to enter the pager database edit screen. This screen is used to edit Intelpage IP 5's internal pager database. By selecting a pager ID, you can edit the cap code and pager type. (alpha, numeric, tone)



Network Settings

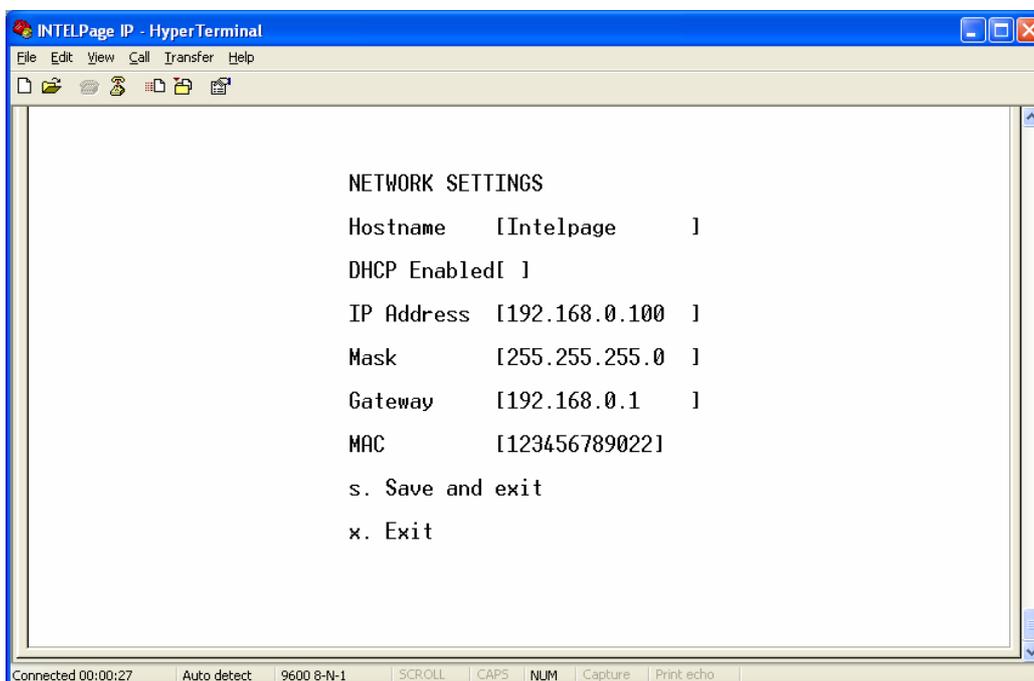
From the *Main Menu*, select [3] to enter the network settings screen.

- **Hostname** - The hostname is a unique name that identifies a device on the network.
- **DHCP Enabled** – Dynamic Host Configuration Protocol. If this service exists on your network it can provide the device an IP address, mask and gateway automatically. Some DHCP servers allow the reservation of an IP address for a specified MAC address. If DHCP is not used (box unchecked), the IP address, mask and gateway have to be manually configured. Please consult your IT administrator for these settings. (default Off)
- **IP Address** - The IP Address of the Intelpage IP 5 unit. (default 192.168.0.100)
- **Mask** - The network mask of the network you are connected to. (default 255.255.255.0)
- **Gateway** - If the device is to be accessed from the internet or another network, the gateway is the route used to reach the external network. (default 192.168.0.1)

❖ NOTE: The IP address, mask and gateway fields will display the current settings. If DHCP is enabled, any changes to the fields will not be saved as they are server assigned.

- **MAC** - This is the Intelpage IP 5's unique hardware number on the network. The Media Access Control address is factory set and should not need to be changed.

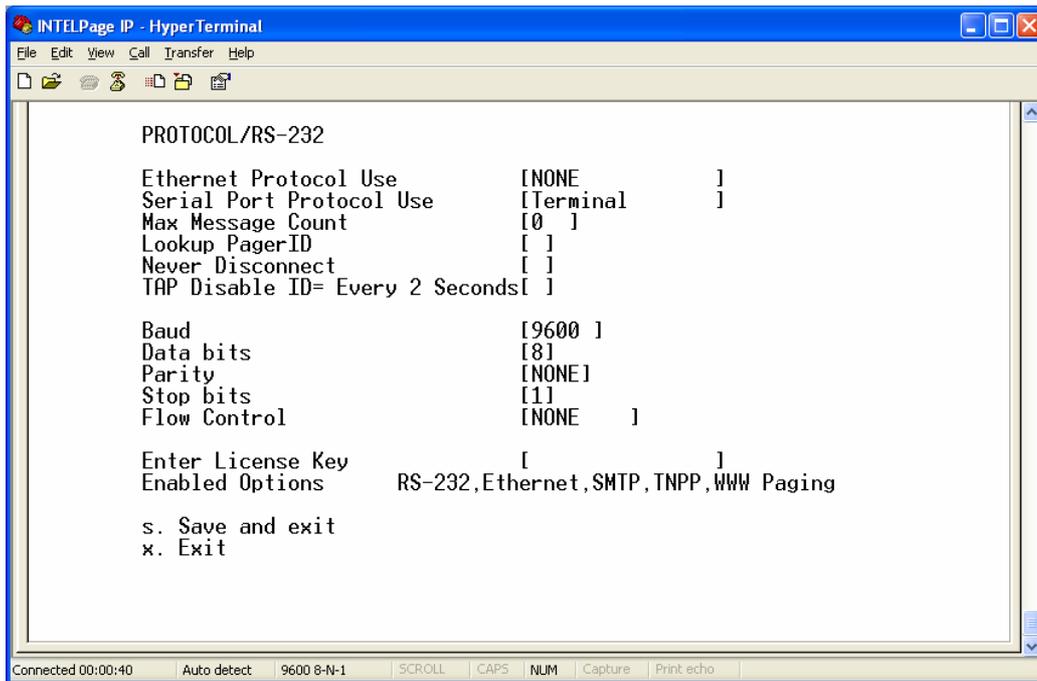
⚠ WARNING: Care should be taken if altering the MAC address, as it can result in the unit no longer being addressable.



Protocol/RS232

From the *Main Menu*, select [4] to enter the protocol and rs232 setup screen.

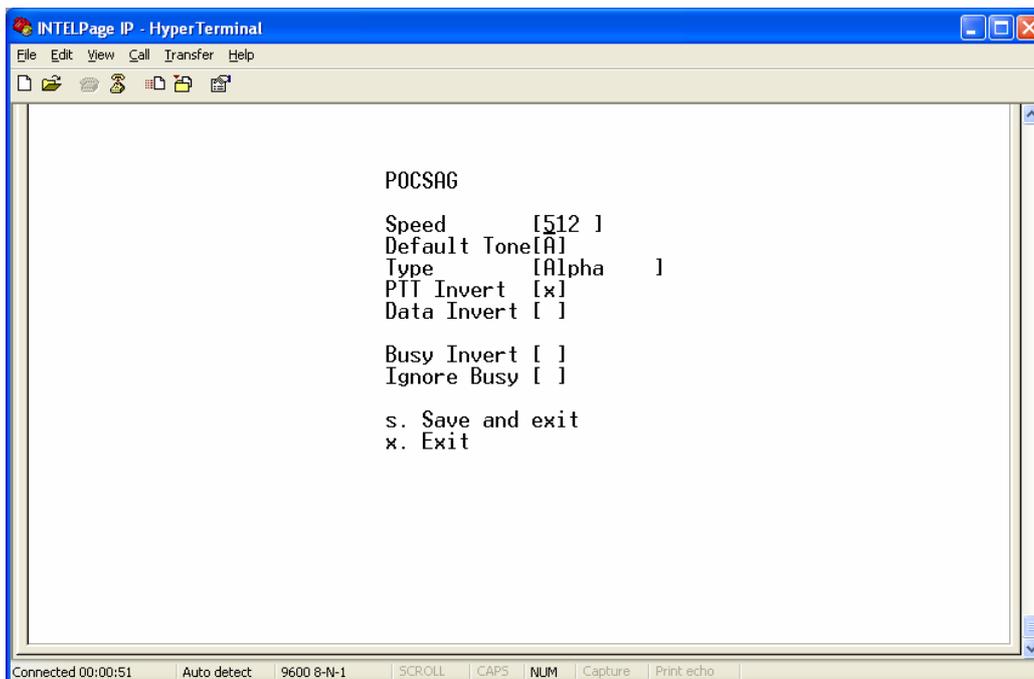
- **Ethernet Protocol Use** - The protocol that the Ethernet port (RJ45) will use. The options available are COMP1, COMP2, SCOPE, TAP, TNPP Duplex, TNPP Simplex, Terminal, Tekk and SMTP. All the protocols will use TCP port 6000 (this port is adjustable within the HTML interface) with the exception of SMTP which uses port 25.
- **Serial Port Protocol Use** - The protocol that the RS232 port will use. Options are the same as TCP only that SMTP is not available. (default TAP)
 - ❖ **NOTE: The password in the TAP protocol is ignored.**
 - ❖ **NOTE: Pager 0 must be configured for COMP1.**
 - ❖ **NOTE: The TNPP device address is 1234. TNPP received address is ignored. ALL messages are accepted.**
 - ➡ **IMPORTANT: If you are sending to a combination of numeric, alpha and tone pagers, you will need to use TNPP or SCOPE.**
- **Max Message Count** - This refers to the maximum number of messages that can be sent by a protocol in a single session/connection. A value of '0' means no maximum limit. (default 0)
- **Lookup PagerID** - If checked, the system will look up Pager ID's in the pager database. Otherwise the system will use the cap code supplied in the message.
- **Never Disconnect** - If checked, the Intelpage IP 5 will never disconnect itself. It will only disconnect when the system Intelpage IP 5 is connected to does. (default OFF)
- **TAP Disable ID= Every 2 Seconds**- If left unchecked and the TAP protocol is being used, a carriage return resulting in an "ID=" will be issued every 2 seconds. (default OFF)
- **Baud** - The transmission speed of the RS232 port on the Intelpage IP 5. (default 9600)
- **Data bits** - The number of bits that actually contain information pertaining to the message rather than to the transmission (e.g. stop bits). (default 8)
- **Parity** - A method of verifying the accuracy of the data sent. In this case it is either none (not used), odd or even. (default NONE)
- **Stop bits** - The number of bits sent at the end of each byte and is used for synchronization purposes. In this case it is either 1 or 2. (default 1)
- **Flow Control** - This refers to the "flow control" property of the connection.
 - ➡ **IMPORTANT: Baud, data bits, parity and stop bits must all match that of the system's port that the Intelpage IP 5 is connected to on the other end.**
- **Enter License Key** - Some of the features on the INTELPage are licensable. This means they can be enabled or disabled by applying for a new license key from you place of purchase. By default, the HTML and Terminal interfaces are turned on but all other options are disabled. The available license options are RS232 protocols, Ethernet protocols, STMP protocol, TNPP protocol, WWW Manual Paging



POCSAG

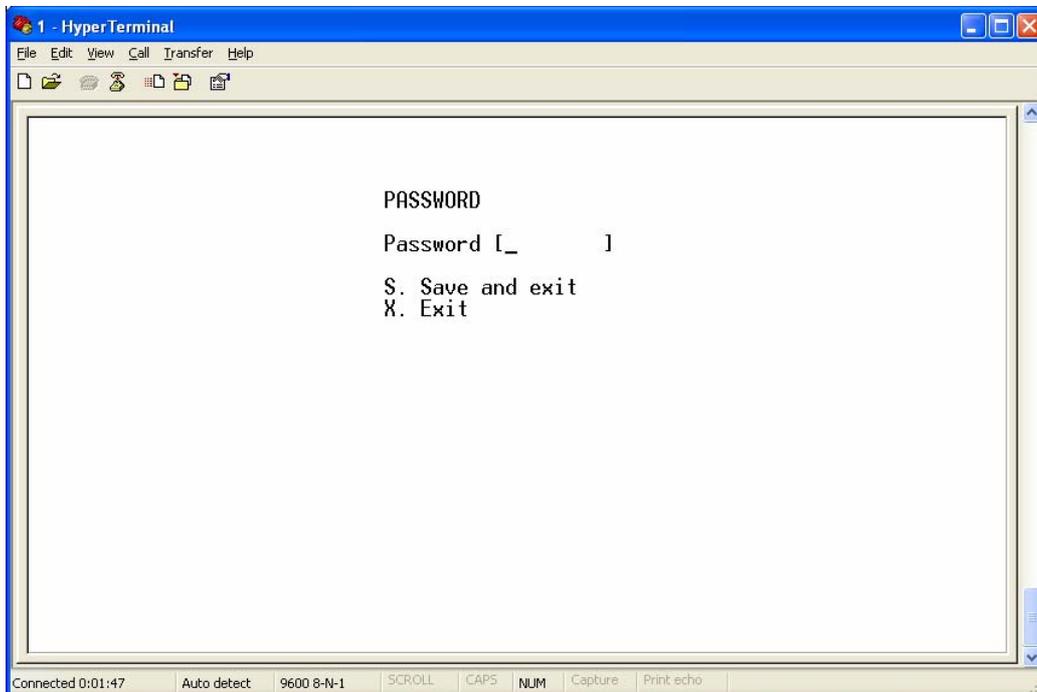
From the *Main Menu*, select [5] to enter the pocsag setup screen.

- **Speed** - The speed of transmission. This value must match that of the pagers receiving the messages. (default 512)
 - **Default Tone** - The tone type that the pager will emit when the message is received. (default A)
 - **Type** - The type of message to send. Tone only, Numeric or Alpha. This should match the type of the pager. (default Numeric)
- ❖ **NOTE: If the SCOPE protocol is chosen, speed, tone and type are specified along with the message and will override the POCSAG settings values.**
- **PTT / Data / Busy Invert** - If checked, these invert the respective signal. This may need to be done if third party transmitters are used. (Maxon transmitter must have PTT invert ticked)
 - **Ignore Busy** - If checked, send the message regardless of whether or not the channel is busy. (default OFF)



Password

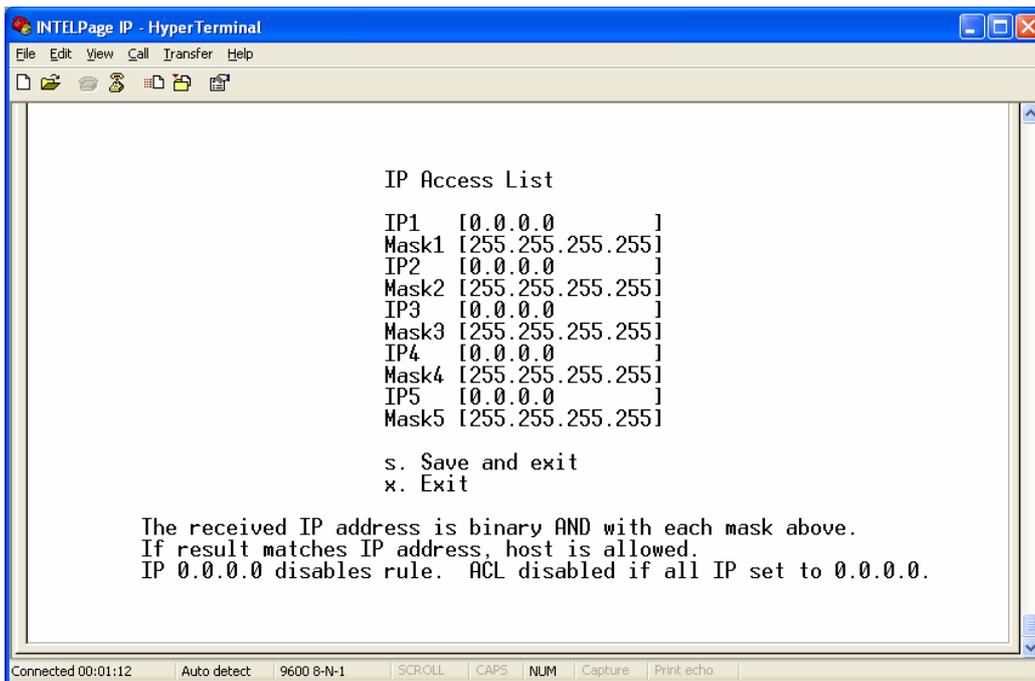
From the *Main Menu*, select **[6]** to enter the password screen. This is the password that must be entered in order to edit the Intelpage IP 5 settings. It has a maximum length of 8 characters. A reboot is needed before the new password can take effect. (default: no password)



IP Access List

From the *Main Menu*, select [7] to enter the ip access list screen. This is the list of IP addresses that are allowed to use the Intelpage IP 5. A received IP address is binary AND with each of the Masks. If the result matches one of the IP addresses in the control list, then the host is allowed. A brief explanation of binary AND masking can be found in the Appendix.

An IP of 0.0.0.0 disables the rule. If all IP addresses are set to 0.0.0.0, then the entire access control list is disabled.



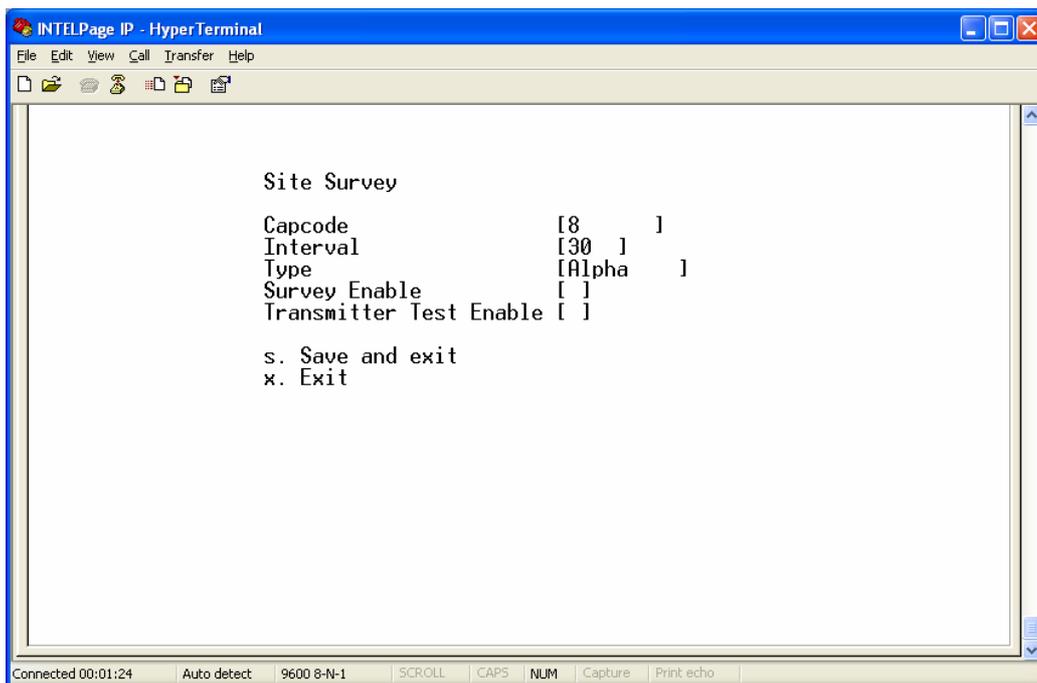
```
INTELPage IP - HyperTerminal
File Edit View Call Transfer Help
IP Access List
IP1 [0.0.0.0 ]
Mask1 [255.255.255.255]
IP2 [0.0.0.0 ]
Mask2 [255.255.255.255]
IP3 [0.0.0.0 ]
Mask3 [255.255.255.255]
IP4 [0.0.0.0 ]
Mask4 [255.255.255.255]
IP5 [0.0.0.0 ]
Mask5 [255.255.255.255]
s. Save and exit
x. Exit
The received IP address is binary AND with each mask above.
If result matches IP address, host is allowed.
IP 0.0.0.0 disables rule. ACL disabled if all IP set to 0.0.0.0.
Connected 00:01:12 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

Site Survey

From the *Main Menu*, select [8] to enter the site survey screen. This screen is used to test a site by sending messages periodically. One person is required for a site survey. Once you have triggered the site survey, walk around the area intended to be covered by the transmitter making particular note of the quality of messages received by the test pager. The *Troubleshooting Guide* later on in this manual contains some useful tips on improving coverage and performance.

- **Capcode** - Enter the cap code of the test pager that you wish to use in the site survey.
- **Interval** - Enter the time between test messages sent out in seconds here.
- **Type** - Enter the encoding type used on the pager. Select between Alpha, Numeric, Tone Only or Disabled.
- **Survey Enable** - Check this option to enable the site survey with the above settings.
- **Transmitter Test Enable** - Check this option to force the transmitter to send out a constant preamble signal. This is useful when testing the transmitter on a test set.

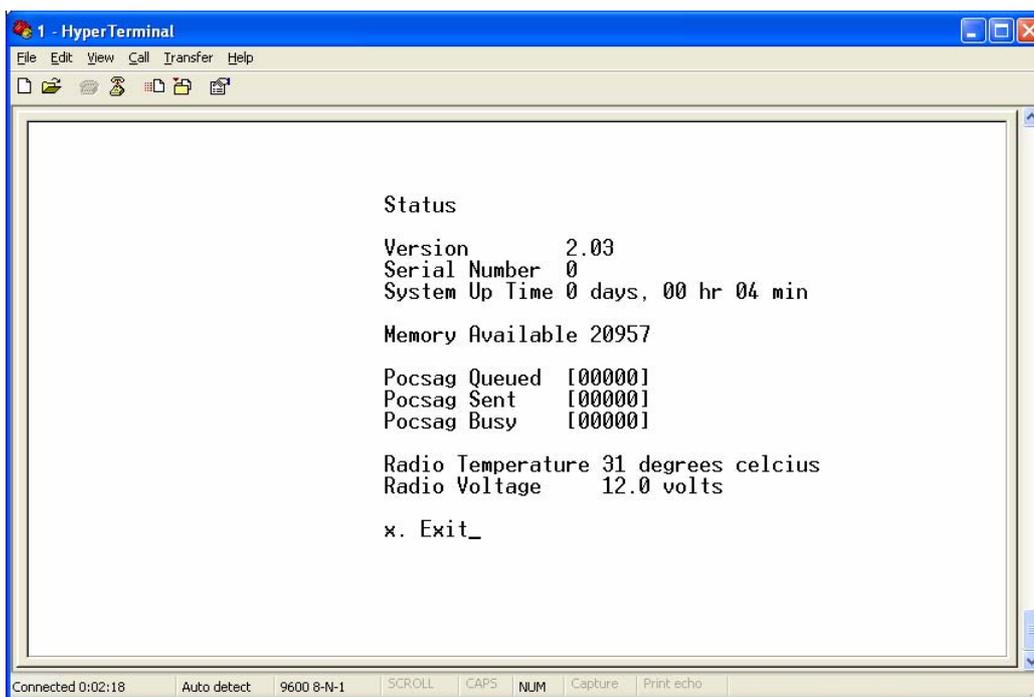
▲ WARNING: This test mode causes the transmitter to heat up rapidly. Do not use this test for extended periods of time as it may damage the transmitter.



Status

From the *Main Menu*, select [9] to enter the status screen. This screen is used to show some useful statistics about the Intelpage IP 5 unit such as:

- **Version** - Version of the firmware.
- **Serial Number** – Serial number of the unit.
- **System Up Time** - Duration device has been on.
- **Memory Available** - RAM that is available to store and send messages, and server web pages.
- **POCSAG Queued** - The number of messages that are queued, waiting to be sent.
- **POCSAG Sent** - The total number of messages sent since power on.
- **POCSAG Busy** - The total number of messages that have failed to send due to the channel being busy.
- **Radio Temperature** – Displays the current temperate of the internal transmitter.
- **Radio Voltage** – Displays the voltage that is driving the internal transmitter.

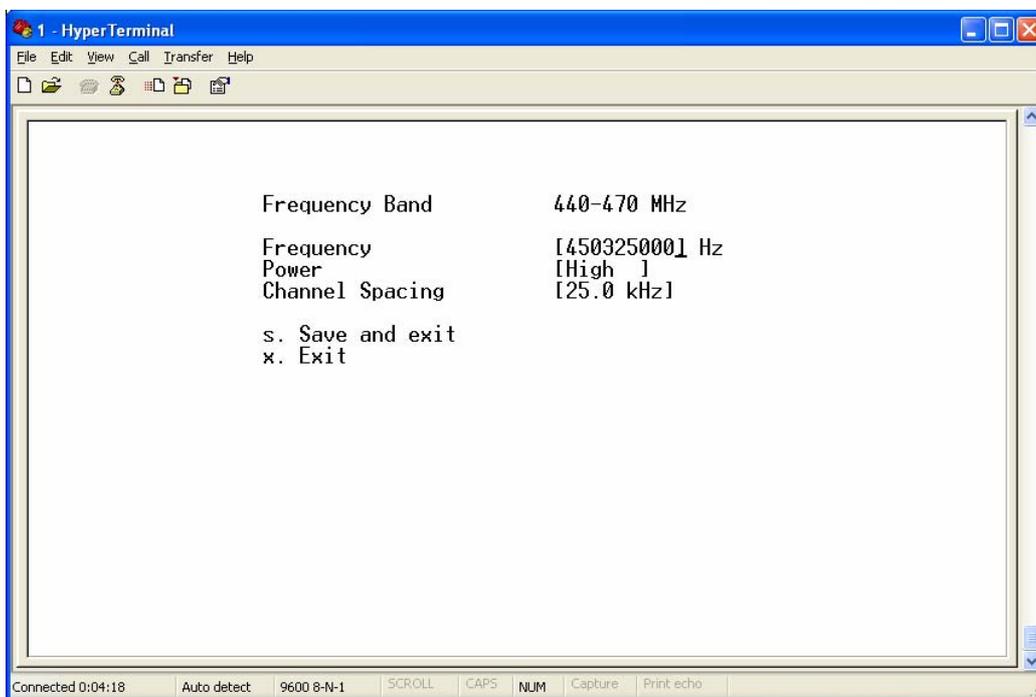


```
1 - HyperTerminal
File Edit View Call Transfer Help
Status
Version      2.03
Serial Number 0
System Up Time 0 days, 00 hr 04 min
Memory Available 20957
Pocsag Queued [00000]
Pocsag Sent   [00000]
Pocsag Busy   [00000]
Radio Temperature 31 degrees celcius
Radio Voltage   12.0 volts
x. Exit_
Connected 0:02:18  Auto detect  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

Transmitter

From the *Main Menu*, select [A] to enter the transmitter screen. This screen is used to configure the transmitter

- **Frequency Band** – After the Intelpage IP unit has read the data from the internal transmitter, it will display the band of the radio inside. This will either be 148-174MHz or 440-470MHz
- **Frequency** – Here you can type the frequency required for the site. For example if your pagers are operating on 450.325MHz, then you would type in 450325000.
- **Power** – Press the [SPACE BAR] to toggle between Low, Medium or High power levels. These values typically correspond to power output levels of 500mW, 2W and 5W respectively.
- **Channel Spacing** - This field refers to the space between adjacent channels. In the majority of applications, 25kHz should be selected here (for ± 4.5 kHz FSK). If you are using pagers capable of narrow band (± 2.5 kHz FSK) you can select 12.5kHz in this field.



3.2 Configuring through TCP/IP

If this is the first time configuring, there are several things to note. By default, Intelpage IP 5 assumes a DHCP server has already been set up and an IP address reserved for the Intelpage IP 5. If it can't get an IP address from the DHCP server (may not be set up properly or not connected), Intelpage IP 5 will use the default settings.

Therefore if you wish to configure through TCP/IP, either:

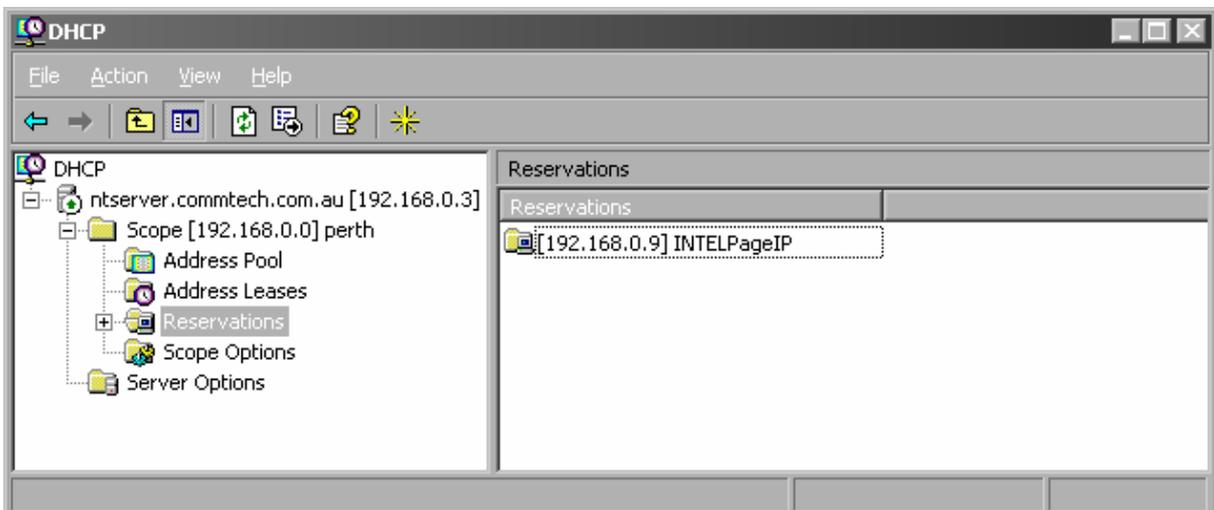
- 1) Set up a DHCP server and reserve an IP address for Intelpage IP 5 first, *or*
- 2) Manually configure the IP address through terminal, *or*
- 3) Ensure that no other device or PC on the network has the same IP address as the Intelpage IP 5 unit (by default it is 192.168.0.100 if a DHCP server is not found).

❖ **NOTE: Most servers are likely to have an IP address of 192.168.0.100. Therefore, 1 and 2 would be the easier options.**

3.2.1 Reserving an IP address using Microsoft DHCP Server (Windows 2000 Server)

This assumes you already have the Microsoft DHCP Server running on your network. If you do not, but want IP addresses to be assigned to client automatically, please consult your IT administrator to configure DHCP. Alternatively, turn off *DHCP Enabled* in the Intelpage IP 5 settings and configure an IP address manually.

1. Run *DHCP* manager under *Start -> Programs -> Administrator Tools*.
2. Under *Scope*, right click on *Reservations* and select *New Reservation*.



3. Enter name, IP address to be assigned and the MAC address of the hardware (in this case, the Intelpage IP 5 – it is written on the side of unit). The IP address must not be assigned to any other device, and must be within the address scope of the DHCP server. The MAC address should be written on the case of the Intelpage IP 5 unit or can be found under network settings in the device. Click **[Add]** when finished.

New Reservation

Provide information for a reserved client.

Reservation name: INTELPagelP

IP address: 192.168.0.9

MAC address: 000E82000009

Description:

Supported types:

- Both
- DHCP only
- BOOTP only

Add Close

4. A reservation has been created. The next time the transmitter is re-powered with DHCP enabled, the DHCP server should assign the device an IP address automatically. In the example, this would be 192.168.0.9.

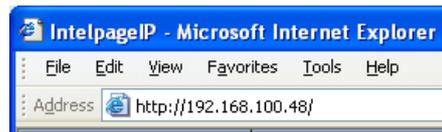
3.2.2 Configuring through TCP/IP Example

❖ **NOTE: Internet Explorer is used in the following example. If it is not installed, it can be added by changing your Windows settings. Other browser programs may be used.**

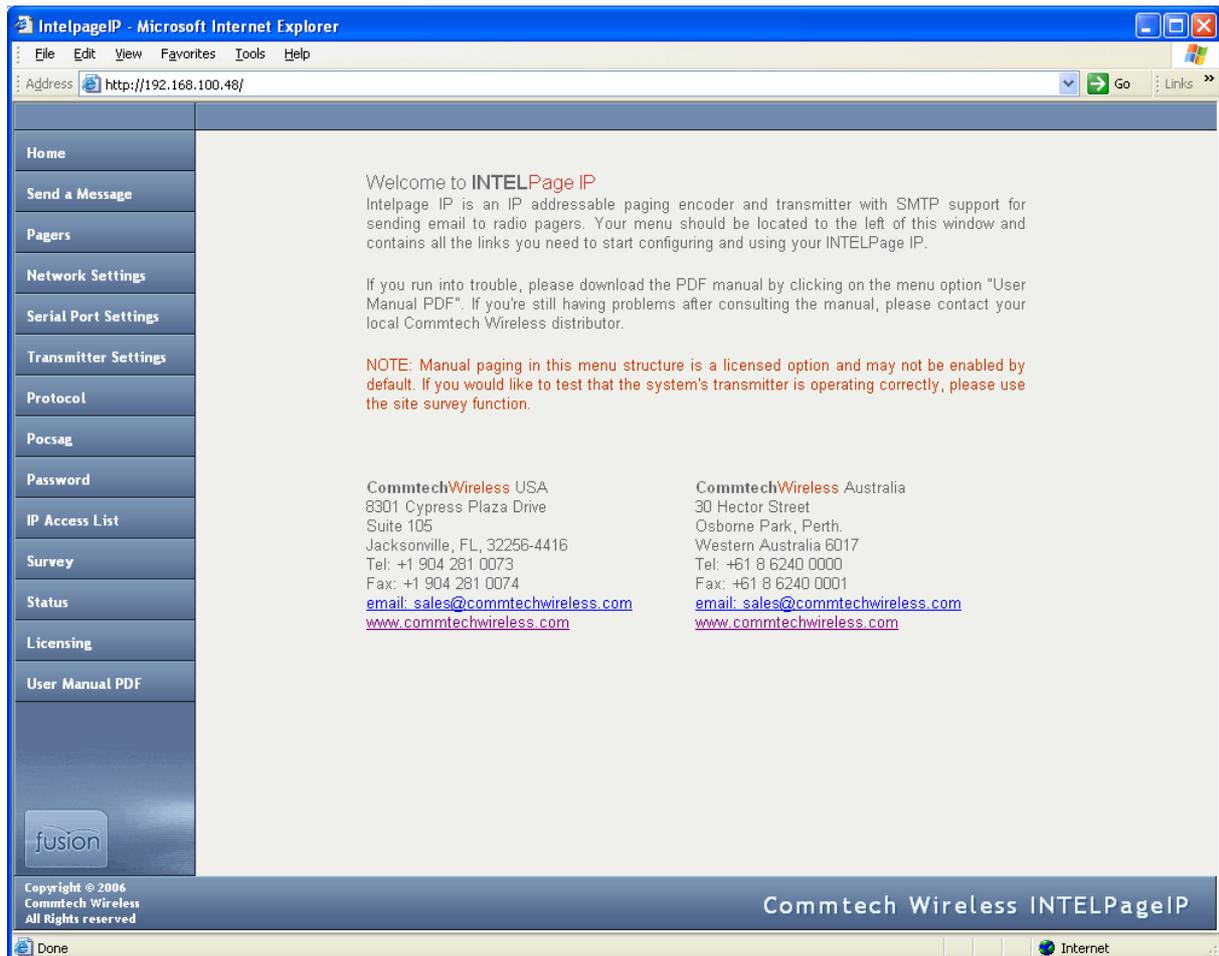
1. Using an RJ45 cable, connect the Intelpage IP 5 unit to the network (LAN).

❖ **NOTE: You can also connect the Intelpage IP 5 directly to a PC's network card if you use a "crossover networking cable" if you do not have access to a HUB or LAN.**

2. If you have set up DHCP and reserved an IP address for the Intelpage IP 5, skip to step 3.
If you are manually setting up the IP address, mask and gateway (DHCP disabled or not set up) ensure that no other PC on the network has the same IP address as that of the Intelpage IP 5 unit (by default it is 192.168.0.100).
3. Make sure that the power is currently plugged into the Intelpage IP 5 unit at this stage. Check that the power LED is on and the busy LED has turned off after initializing.
4. Start Internet Explorer. It can generally be found from the Windows start menu by selecting *Start -> Programs -> Internet Explorer*.
5. In the *Address* field of the Internet Explorer window, type in the IP address of the Intelpage IP 5 unit (by default it is 192.168.0.100) and press **[Enter]**.



➔ **IMPORTANT:** If you cannot connect to the Central, you should set your PC's network card IP Address to be on the same subnet as the Central. For example if the Central is set to 192.168.1.100 you should set your PC IP Address to 192.168.1.x. (where x is 1-255)



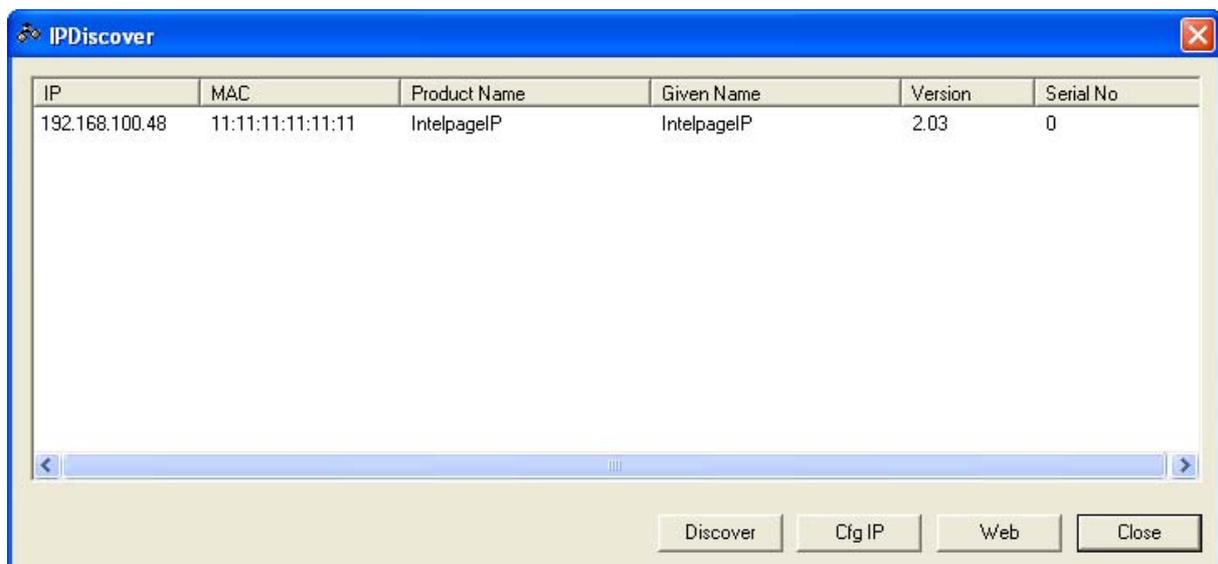
6. Clicking on any of the *Menu* links in the left menu will bring up an authorization window like the one in the figure below. For the *User name* enter maint and leave the password blank.



7. The **[Save]** button found at the bottom of the main frame saves/commits all changes. **[Undo]** will revert all the on-screen field values back to that when last submitted. Changing between the *Menu* options on the left menu without submitting also has a similar effect to *Undo*.
8. Once you have finished making changes in Internet Explorer, simply close the browser.

3.2.3 Using IPDiscover

IPDiscover is a handy tool available for download from the **CommtechWireless** website. When this program is run, it will sniff out any Intelpage IP 5's on the local network and show there details. You can even remotely change the IP address and other network details on the fly. As you can see you can also view the serial number, firmware version, IP address, given name & the MAC address (unique network address given to each Intelpage IP 5).



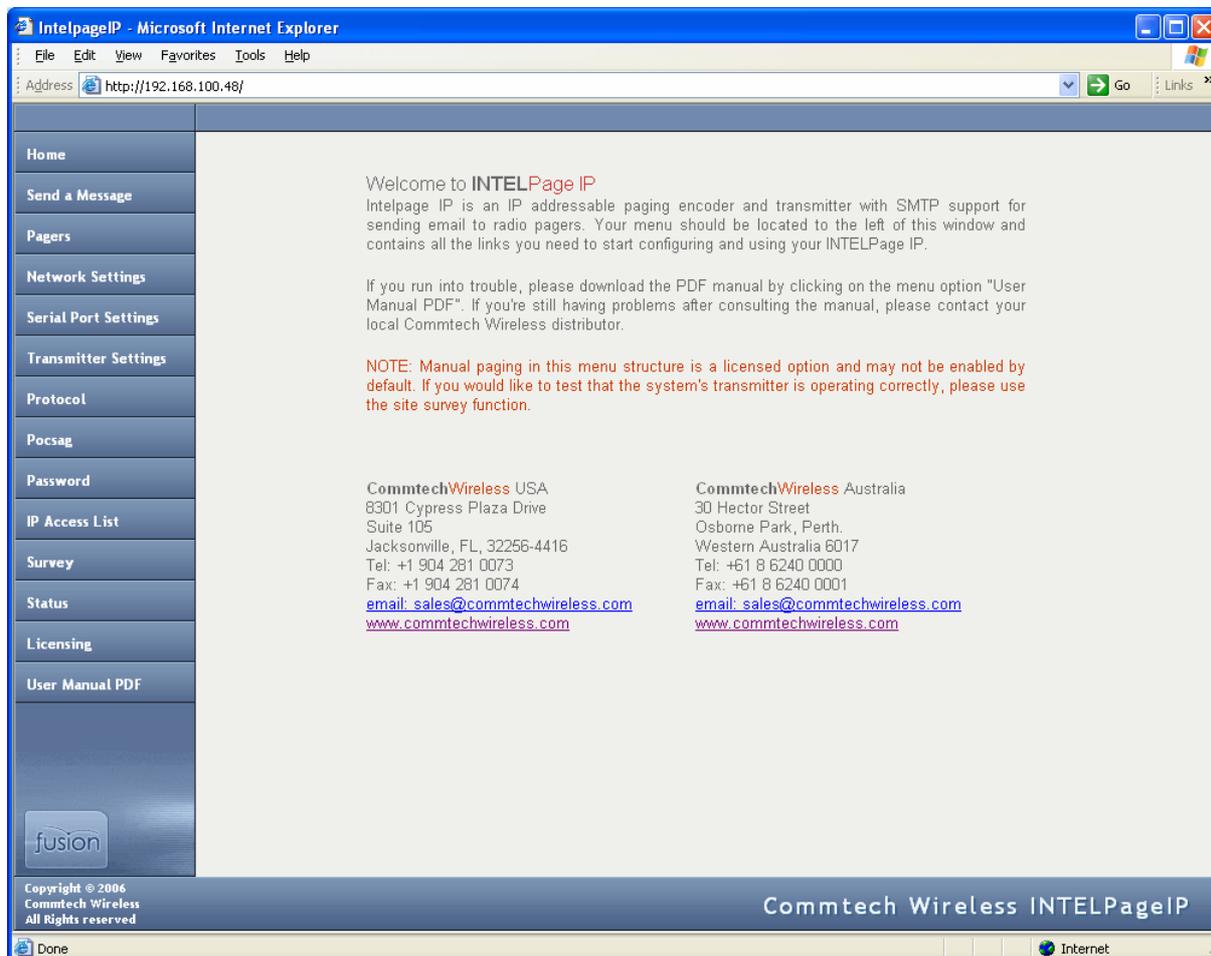
3.2.4 User Interface Fields

The sections below will explain the various menus and fields on the HTML interface.



Home

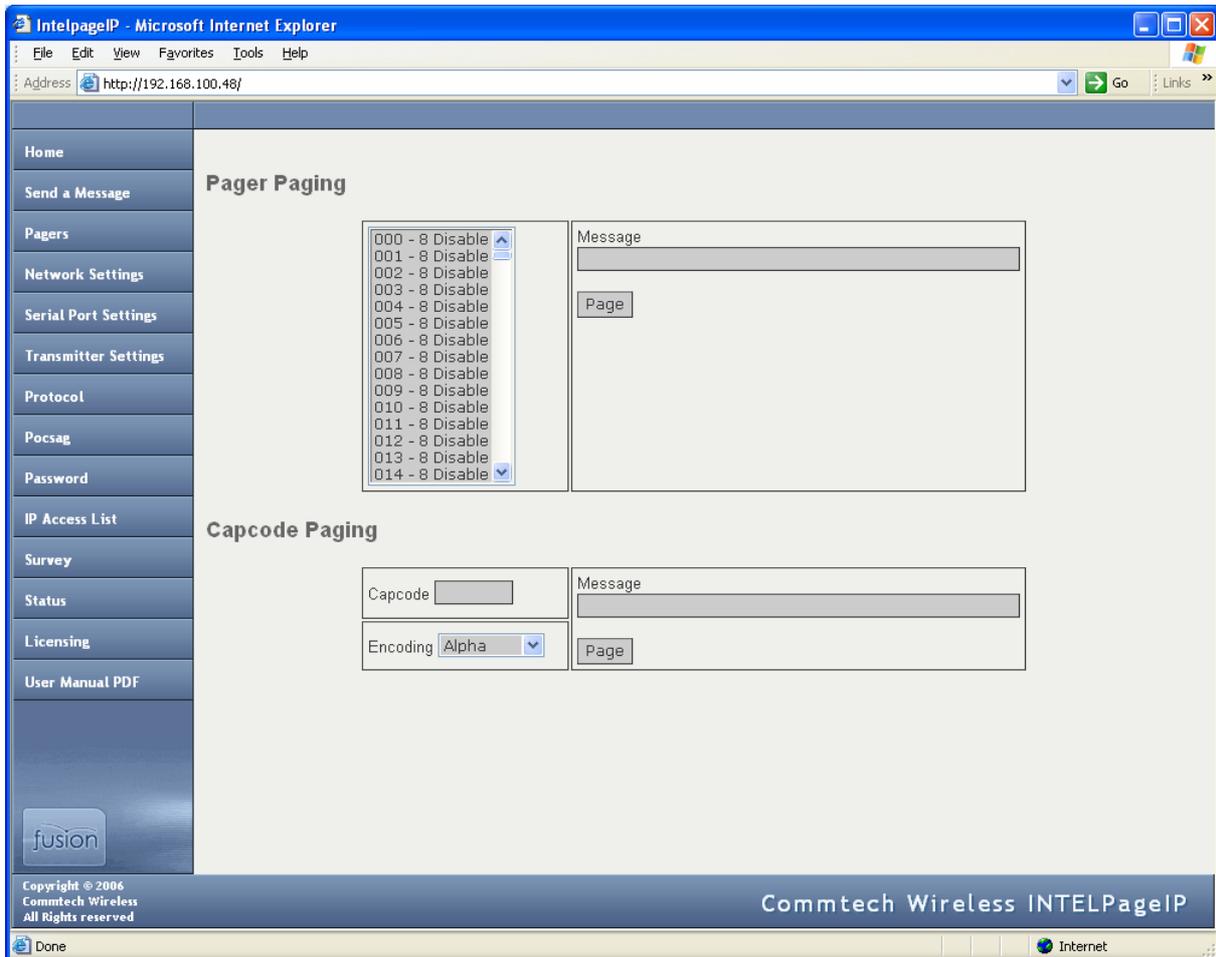
Clicking this menu will return you to the main page.



Send a Message

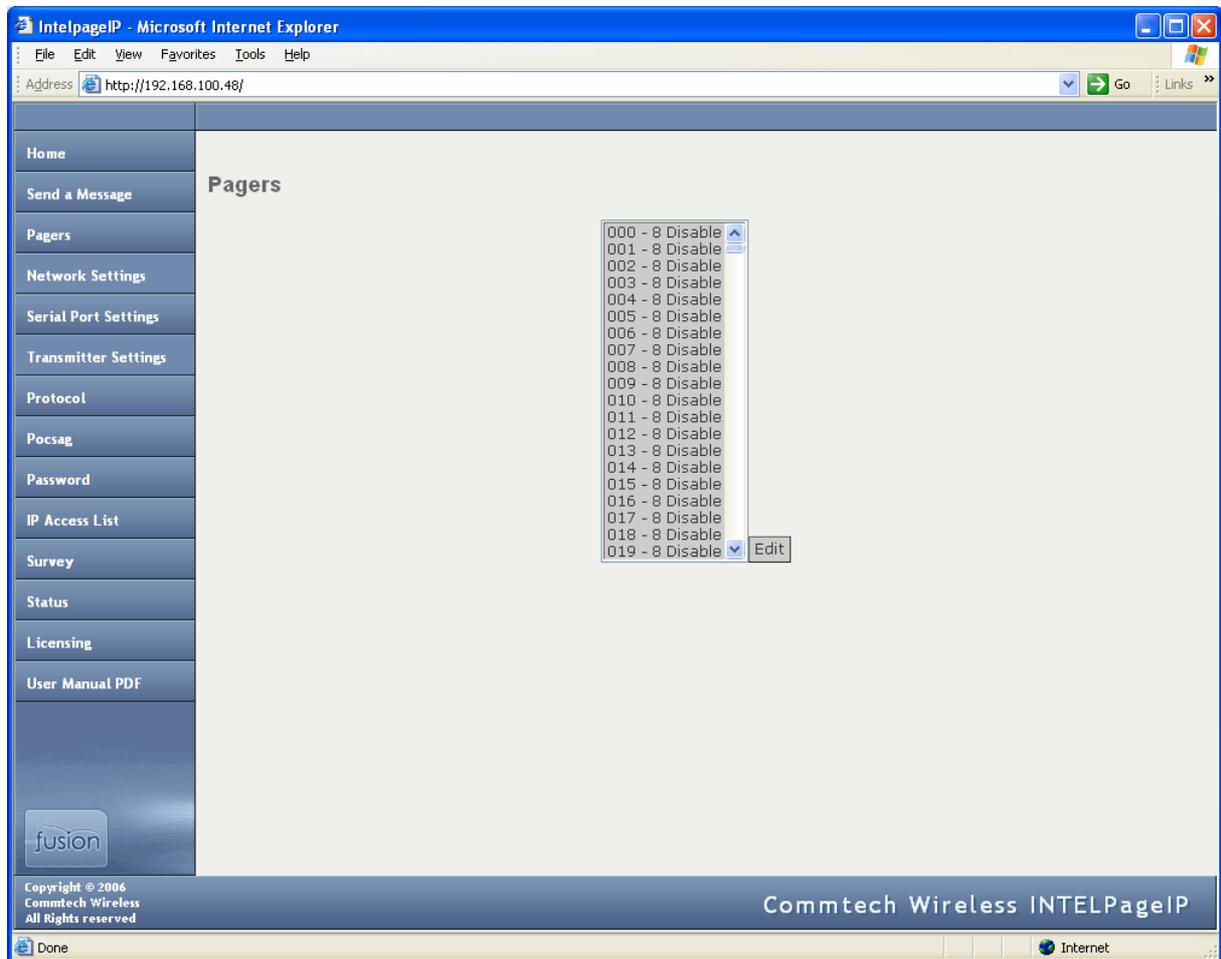
This screen is used to send out manual pages to either entries in the pager database or to a specific cap code.

▲ WARNING: Manual paging in this menu structure is a licensed option and may not be enabled by default. If you would like to test that the systems transmitter is operating correctly, please use the site survey function.



Pagers

This screen is used to edit Intelpage IP 5's internal pager database.



Network Settings

- **Hostname** - The hostname is a unique name that identifies a device on the network.
- **DHCP Enabled** – Dynamic Host Configuration Protocol. If this service exists on your network it can provide the device an IP address, mask and gateway automatically. Some DHCP servers allow the reservation of an IP address for a specified MAC address. If DHCP is not used (box unchecked), the IP address, mask and gateway have to be manually configured. Please consult your IT administrator for these settings. (default Off)
- **IP Address** - The IP Address of the Intelpage IP 5 unit. (default 192.168.0.100)
- **Ethernet Protocol Port** - This is the TCP port that Intelpage IP 5 listens on for Ethernet protocol information. By default this is 6000. This port will need to be configured on the system connecting to Intelpage IP 5 over the network.
- **Mask** - The network mask of the network you are connected to. (default 255.255.255.0)
- **Gateway** - If the device is to be accessed from the internet or another network, the gateway is the route used to reach the external network. (default 192.168.0.1)

NOTE: The IP address, mask and gateway fields will display the current settings. If DHCP is enabled, any changes to the fields will not be saved as they are server assigned.

- **MAC** - This is the Intelpage IP 5's unique hardware number on the network. The Media Access Control address is factory set and should not need to be changed. This can only be changed through the terminal interface (via serial port).

WARNING: Care should be taken if altering the MAC address, as it can result in the unit no longer being addressable.

The screenshot shows the 'Network Setting' page in a web browser. The address bar shows 'http://192.168.100.48/'. The sidebar on the left contains the following menu items: Home, Send a Message, Pagers, Network Settings (selected), Serial Port Settings, Transmitter Settings, Protocol, Pocsag, Password, IP Access List, Survey, Status, Licensing, and User Manual PDF. The main content area displays a form with the following fields:

Host name	IntelpageIP
DHCP Enabled	<input checked="" type="checkbox"/>
IP Address	192.168.100.48
Ethernet Protocol Port	6000
Mask	255.255.255.0
Gateway	192.168.100.1
MAC	11:11:11:11:11:11
Reboot?	<input type="checkbox"/>

Below the form are 'Save' and 'Undo' buttons. At the bottom of the page, there is a footer with 'fusion' logo, 'Copyright © 2006 Commtch Wireless All Rights reserved', and 'Commtch Wireless INTELPageIP'. The browser status bar at the bottom shows 'Done' and 'Internet'.

Serial Port Settings

- **Baud** - The transmission speed of the RS232 port on the Intelpage IP 5. (default 9600)
- **Data bits** - The number of bits that actually contain information pertaining to the message rather than to the transmission (e.g. stop bits). (default 8)
- **Parity** - A method of verifying the accuracy of the data sent. In this case it is either none (not used), odd or even. (default NONE)
- **Stop bits** - The number of bits sent at the end of each byte and is used for synchronization purposes. In this case it is either 1 or 2. (default 1)
- **Flow Control** - This refers to the “flow control” property of the connection.

➔ **IMPORTANT: Baud, data bits, parity and stop bits must all match that of the system’s port that the Intelpage IP 5 is connected to on the other end.**

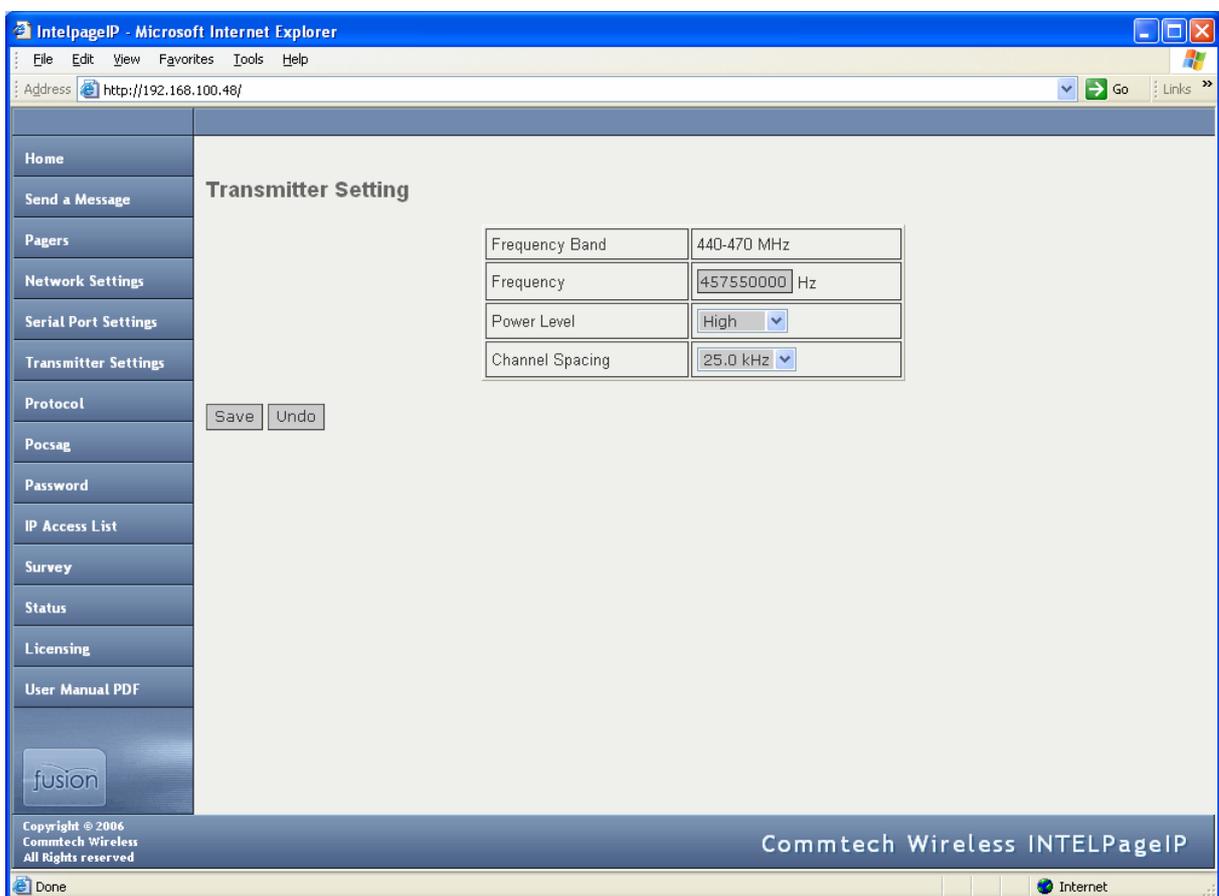
The screenshot shows a web browser window titled "IntelpageIP - Microsoft Internet Explorer" with the address bar displaying "http://192.168.100.48/". The main content area is titled "Serial Port Setting" and contains a form with the following fields:

Baud	9600
Data bits	8
Parity	NONE
Stop bits	1
Flow control	NONE
Reboot?	<input type="checkbox"/>

Below the form are "Save" and "Undo" buttons. The left sidebar contains a navigation menu with items: Home, Send a Message, Pagers, Network Settings, Serial Port Settings (highlighted), Transmitter Settings, Protocol, Pocsag, Password, IP Access List, Survey, Status, Licensing, and User Manual PDF. The footer includes the "fusion" logo, copyright information "Copyright © 2006 Commtech Wireless All Rights reserved", and the text "Commtech Wireless INTELPageIP". The browser status bar shows "Done" and "Internet".

3.2.5 Transmitter Settings

- **Frequency Band** – After the Intelpage IP unit has read the data from the internal transmitter, it will display the band of the radio inside. This will either be 148-174MHz or 440-470MHz
- **Frequency** – Here you can type the frequency required for the site. For example if your pagers are operating on 450.325MHz, then you would type in 450325000.
- **Power Level** – Use the drop down menu to toggle between Low, Medium or High power levels. These values typically correspond to power output levels of 500mW, 2W and 5W respectively.
- **Channel Spacing** - This field refers to the space between adjacent channels. In the majority of applications, 25kHz should be selected here (for ± 4.5 kHz FSK). If you are using pagers capable of narrow band (± 2.5 kHz FSK) you can select 12.5kHz in this field.



3.2.6 Protocol

- **Ethernet Protocol Use** - The protocol that the Ethernet port (RJ45) will use. The options available are COMP1, COMP2, SCOPE, TAP, TNPP Duplex, TNPP Simplex, Terminal, Tekk and SMTP. All the protocols will use TCP port 6000 (this port is adjustable within the HTML interface) with the exception of SMTP which uses port 25.
- **Serial Port Protocol Use** - The protocol that the RS232 port will use. Options are the same as TCP only that SMTP is not available. (default TAP)
 - ❖ **NOTE: The password in the TAP protocol is ignored.**
 - ❖ **NOTE: Pager 0 must be configured for COMP1.**
 - ❖ **NOTE: The TNPP device address is 1234. TNPP received address is ignored. ALL messages are accepted.**
 - ➔ **IMPORTANT: If you are sending to a combination of numeric, alpha and tone pagers, you will need to use TNPP or SCOPE.**
- **Max Msg Count** - This refers to the maximum number of messages that can be sent by a protocol in a single session/connection. A value of '0' means no maximum limit. (default 0)
- **Lookup PagerID** - If checked, the system will look up Pager ID's in the pager database. Otherwise the system will use the cap code supplied in the message.
- **Never Disconnect** - If checked, the Intelpage IP 5 will never disconnect itself. It will only disconnect when the system Intelpage IP 5 is connected to does. (default OFF)
- **TAP Disable ID= every 2 seconds** - If left unchecked and the TAP protocol is being used, a carriage return resulting in an "ID=" will be issued every 2 seconds. (default OFF)
- **Email Domain** - If SMTP is selected and an email is sent to <cap code>@<email domain>, the message will be encoded into POCSAG and transmitted to the pager with the corresponding cap code. (default intelpage.mycompany.com)

See the *Technical Information* section for more information.
- **Priority Keywords** - Priority keywords are a useful function of INTELPage which allows a different beep code to be sent if a certain word is received in a message. For example, most messages may be sent through to users with the default beep code (tone) A. But for important messages containing, say the word "fire" you might want to be sent with the beep code D so that the users pager will beep in a different manner. In this case you would type in the *Priority Keyword* field "fire" and select *D* in the *Tone Replacement* field.

Protocol Selection

Ethernet Protocol Use	NONE
Serial Port Protocol Use	Terminal
Reboot?	<input type="checkbox"/>

Protocol Settings

Max Message Count	0
Lookup PagerID	<input type="checkbox"/>
Never Disconnect	<input type="checkbox"/>
TAP Disable ID= Every 2 Seconds	<input type="checkbox"/>

Email Settings

Email Domain	intelpageip.mycompany.com
Forward Email From	<input checked="" type="checkbox"/>
Forward Email Subject	<input checked="" type="checkbox"/>
Forward Email Body	<input checked="" type="checkbox"/>

Priority Keywords

	Priority Keyword	Tone Replacement
1		A
2		A

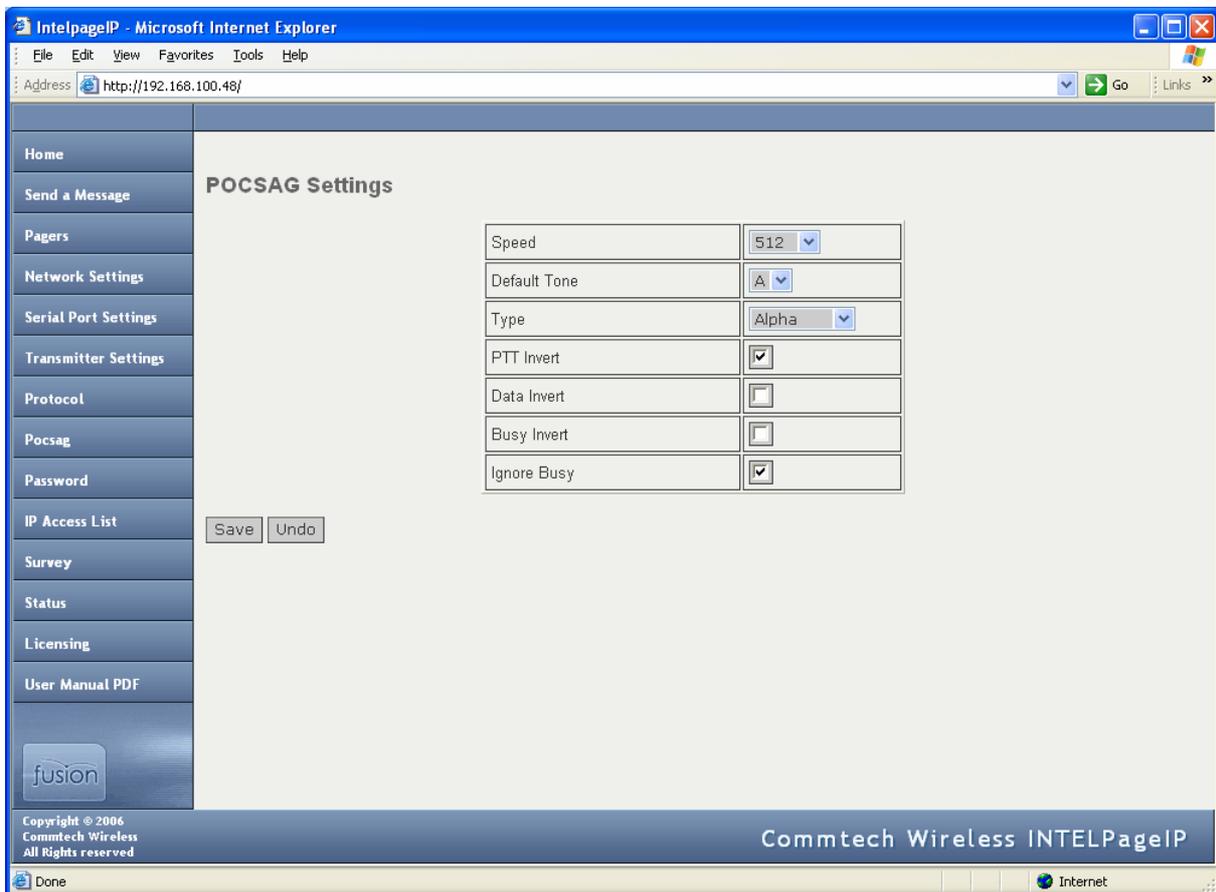
Save Undo

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All Rights reserved

Commtech Wireless INTELPageIP

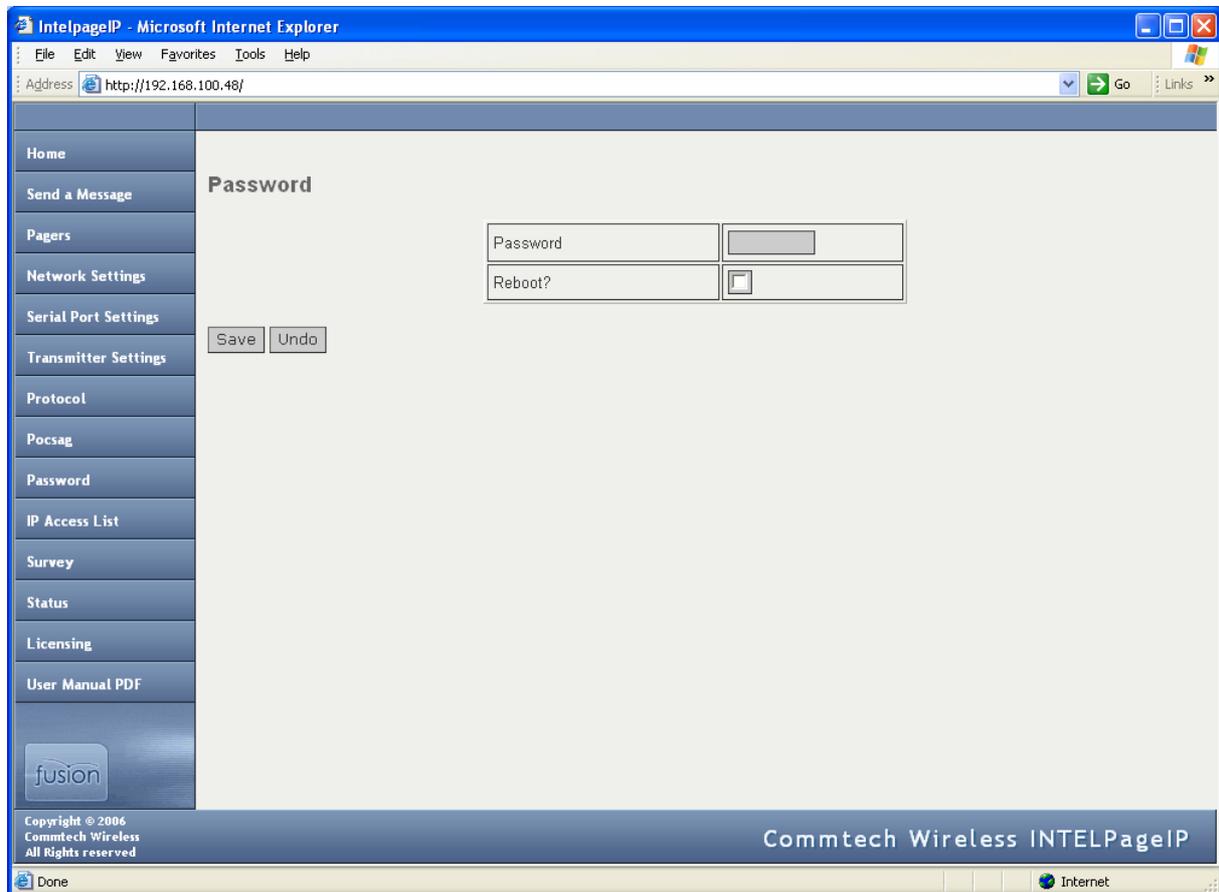
Pocsag

- **Speed** - The speed of transmission. This value must match that of the pagers receiving the messages. (default 512)
 - **Default Tone** - The tone type that the pager will emit when the message is received. (default A)
 - **Type** - The type of message to send. Tone only, Numeric or Alpha. This should match the type of the pager. (default Numeric)
- ❖ **NOTE: If the SCOPE protocol is chosen, speed, tone and type are specified along with the message and will override the POCSAG settings values.**
- **PTT / Data / Busy Invert** - If checked, these invert the respective signal. This may need to be done if third party transmitters are used. (Maxon transmitter must have PTT invert ticked)
 - **Ignore Busy** - If checked, send the message regardless of whether or not the channel is busy. (default OFF)



Password

This is the password that must be entered in order to edit the Intelpage IP 5 settings. It has a maximum length of 8 characters. A reboot is needed before the new password can take effect. (default: no password)



IP Access List

This is the list of IP addresses that are allowed to use the Intelpage IP 5. A received IP address is binary AND with each of the Masks. If the result matches one of the IP addresses in the control list, then the host is allowed. A brief explanation of binary AND masking can be found in the Appendix.

An IP of 0.0.0.0 disables the rule. If all IP addresses are set to 0.0.0.0, then the entire access control list is disabled.

IntelpageIP - Microsoft Internet Explorer

Address <http://192.168.100.48/>

IP Access List

The received IP address is binary AND with each mask below. If result matches IP address, host is allowed.
IP 0.0.0.0 disables rule. ACL disabled if all IP set to 0.0.0.0.

IP Address	Mask
<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.255"/>
<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.255"/>
<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.255"/>
<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.255"/>
<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.255"/>

fusion

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Commtech Wireless INTELPageIP

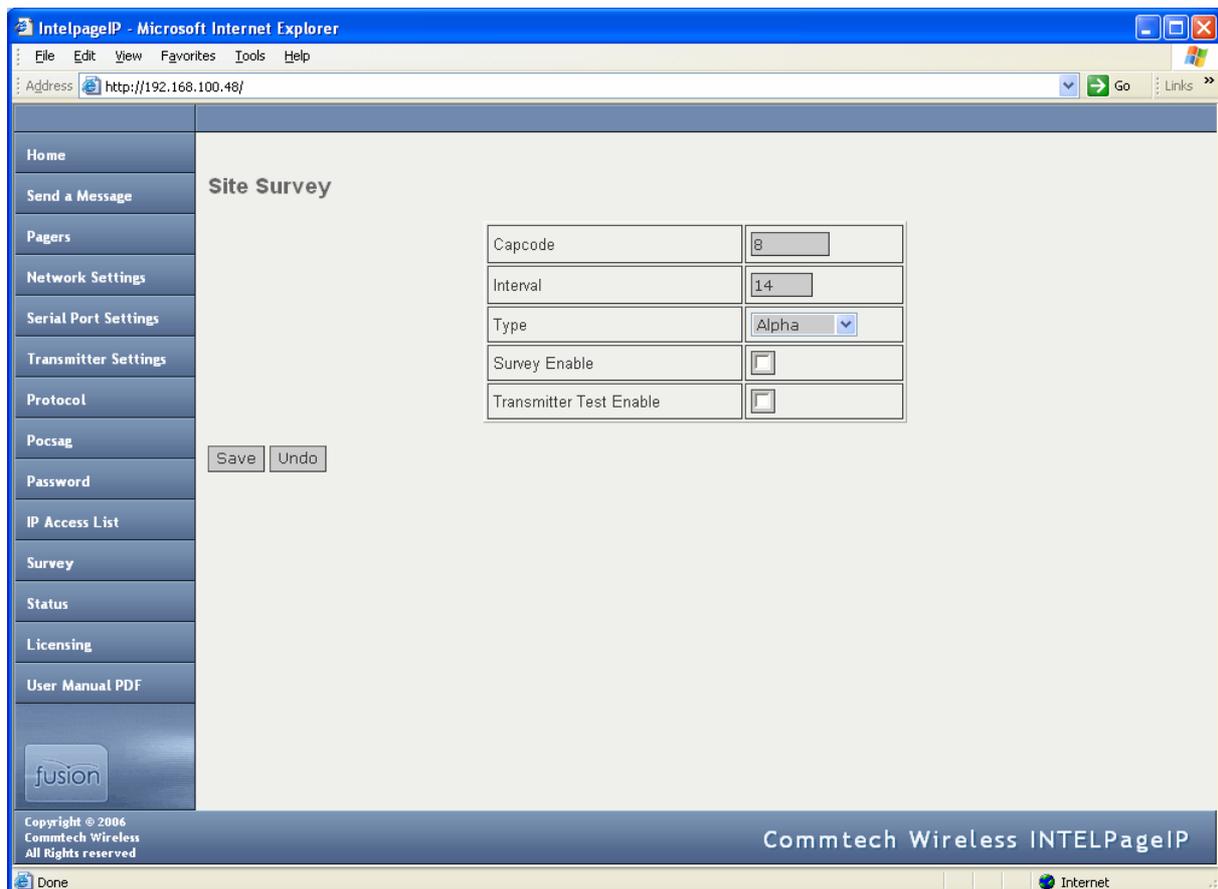
Done Internet

Survey

This section is used to test a site by sending messages periodically. One person is required for a site survey. Once you have triggered the site survey, walk around the area intended to be covered by the transmitter making particular note of the quality of messages received by the test pager. The *Troubleshooting Guide* later on in this manual contains some useful tips on improving coverage and performance.

- **Capcode** - Enter the cap code of the test pager that you wish to use in the site survey.
- **Interval** - Enter the time between test messages sent out in seconds here.
- **Type** - Enter the encoding type used on the pager. Select between Alpha, Numeric, Tone Only or Disabled.
- **Survey Enable** - Check this option to enable the site survey with the above settings.
- **Transmitter Test Enable** - Check this option to force the transmitter to send out a constant preamble signal. This is useful when testing the transmitter on a test set.

⚠ WARNING: This test mode causes the transmitter to heat up rapidly. Do not use this test for extended periods of time as it may damage the transmitter.



Status

The status screen shows some useful statistics about the Intelpage IP 5 unit.

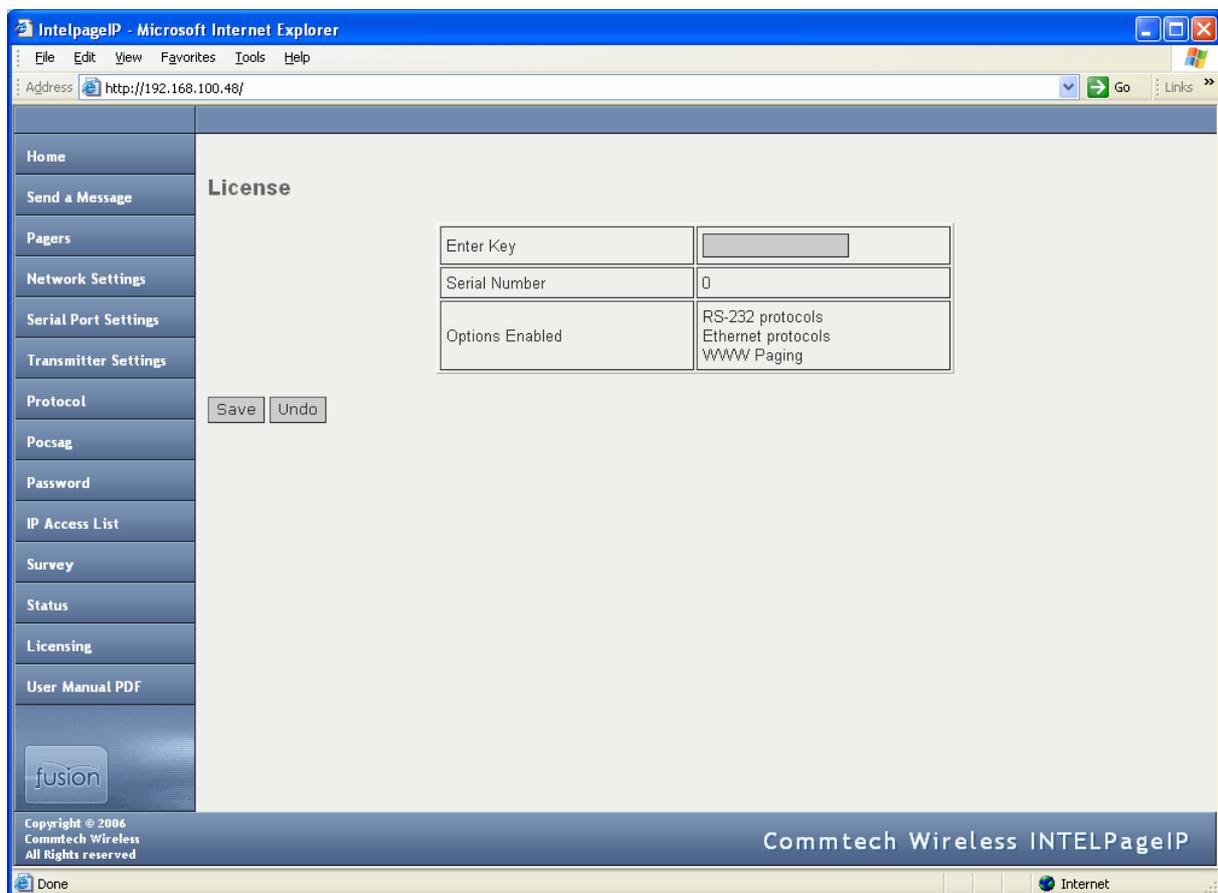
- **Version** - Version of the firmware.
- **System Up Time** - Duration device has been on.
- **Memory Available** - RAM that is available to store and send messages, and server web pages.
- **POCSAG Queued** - The number of messages that are queued, waiting to be sent.
- **POCSAG Sent** - The total number of messages sent since power on.
- **POCSAG Busy** - The total number of messages that have failed to send due to the channel being busy.
- **UART Status** - Indicates whether flow control is inhibiting transmit or receive of data.
- **PT5 Temperature** – Displays the current temperate of the internal transmitter.
- **PT5 Voltage** – Displays the voltage that is driving the internal transmitter.

Version	2.03
System Up Time	0 days, 05 hr 53 min
Memory Available	19443
POCSAG Queued	00000
POCSAG Sent	00045
POCSAG Busy	00000
LAN	10MB Half Duplex
UART Status	Rx: On Tx: On Rts: On Cts: Off
PT5 Temperature	31 °C
PT5 Supply	12.0 Volts

Licensing

Some of the features on the INTELPage are licensable. This means they can be enabled or disabled by applying for a new license key from your place of purchase. By default, the HTML and Terminal interfaces are turned on but all other options are disabled. The available license options are:

- RS232 protocols
- Ethernet protocols
- STMP protocol
- TNPP protocol
- WWW Manual Paging



User Manual PDF

Click this menu item to download and view the latest PDF manual for the product.

4 TECHNICAL INFORMATION

4.1 Binary AND Masking

The four numerical values of an IP address range between 0-255. These are all decimal numbers (base 10). Most scientific calculators (including the one found in Windows) allow conversion to and from decimal to binary (base 2).

After conversion, the range in binary is 0000 0000 to 1111 1111. The decimal values of the 8 bits from right to left are: 1, 2, 4, 8, 16, 32, 64, 128. These numbers are actually 2^0 , 2^1 , 2^2 , 2^3 etc. The value of a binary number in decimal can be calculated by summing the decimal values of the bits that are '1'. An IP address of say 192.168.0.52 would be 1100 0000 1010 1000 0000 0000 0011 0100 in binary.

Masking involves a binary AND of two numbers, in this case, a received IP and the mask. Any binary value AND with a '0' becomes '0'. Any binary value AND with a '1' remains the same.

Consider the following example:

Received IP (192.168.0.123)	1100 0000 1010 1000 0000 0000 0111 1011
Mask (255.255.255.0)	1111 1111 1111 1111 1111 1111 0000 0000
AND Result (192.168.0.0)	1100 0000 1010 1000 0000 0000 0000 0000

From the example, we can see that regardless of the last (right most) 8 bits, the Mask will always set them all to '0'. So even if the received IP was say 192.168.0.234, the AND result will still be 192.168.0.0.

Therefore, if 192.168.0.0 is placed in the access list with the mask 255.255.255.0, all the received IP addresses from 192.168.0.0 to 192.168.0.254 will be accepted (a 255 on the end means broadcast).

4.2 Communications

Both the Ethernet and serial connections allow a cable to transfer data between two systems in close proximity. Intelpage IP 5 can receive TAP, COMP, WAVEWARE, SCOPE, TNPP and SMTP messages as IP or serial (excluding SMTP) data from other systems.

4.2.1 Ethernet Connection

The RJ45 port on Intelpage IP 5 is an Ethernet port like any other that may be found on a PC or network device. The Intelpage IP 5 supports 10Mbps Ethernet connections.

If the Intelpage IP 5 is to be connected to a PC network (i.e.. into a switch or hub), then a straight-through cable should be used. A straight through Ethernet cable is included in the package. (red cable)

If the Intelpage IP 5 is to be connected directly to a single PC or directly to another Ethernet enabled Fusion Series product, an RJ45 crossover cable should be used. An Ethernet crossover cable is included in the package. (red cable)

4.2.2 Serial Connection

The 9-Pin RS232 port on Intelpage IP 5 is a serial port like any other that may be found on a PC or other modem.

Serial and null modem cables can be purchased at any electronics or computer store. Alternatively, you can build your own if you have the parts around.

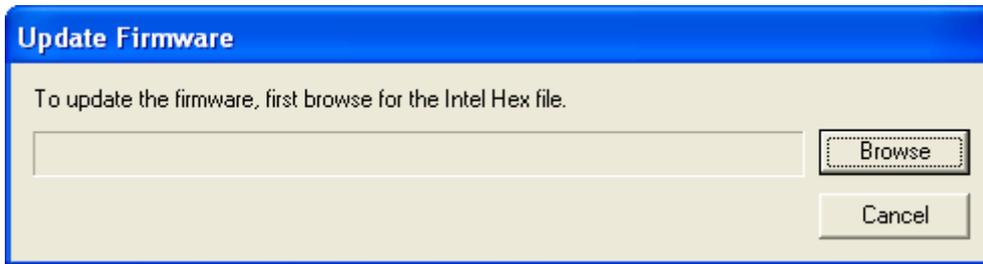
There are two types of serial cable:

- Most serial connections you will require a straight through cable, on which each pin is wired straight through with TX-TX, RX-RX and so on.
- Some systems require a null modem crossover cable that has all pins wired straight through except for the transmit and receive lines which are crossed (TX-RX and RX-RX).

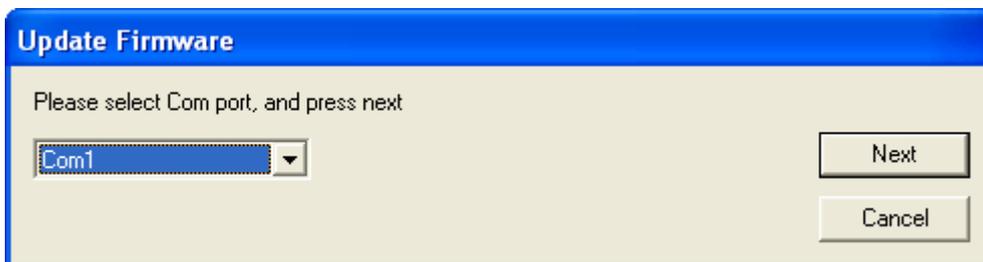
➔ IMPORTANT: When connecting Intelpage IP 5 to a PC (e.g. when programming through HyperTerminal or manual paging), a straight-through cable will be required. A null modem cable will not work.

4.3 Updating Firmware

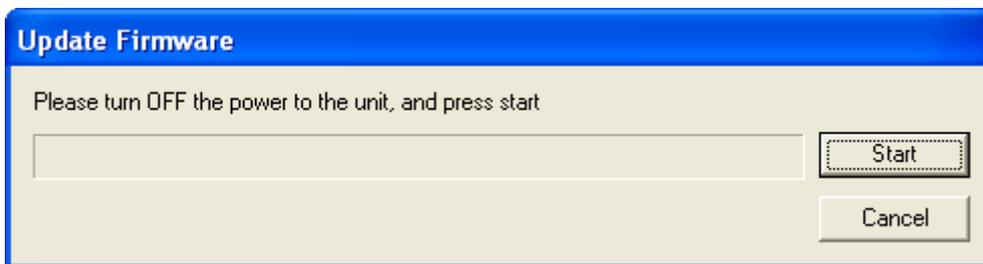
To update the firmware of the INTELPage unit, run FirmUpd.exe. The window shown below will then appear.



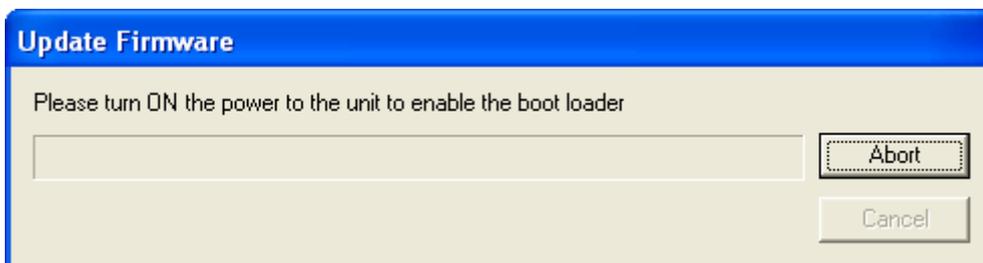
Click on the *Browse* button and select the “ethertx.hex” file. The COM port selection screen will then appear as shown in the figure below.



From the drop down menu, select the COM port that the INTELPage unit is connect to and click on *Next*. You will then be informed to turn OFF power to the unit first and then click *Start*.



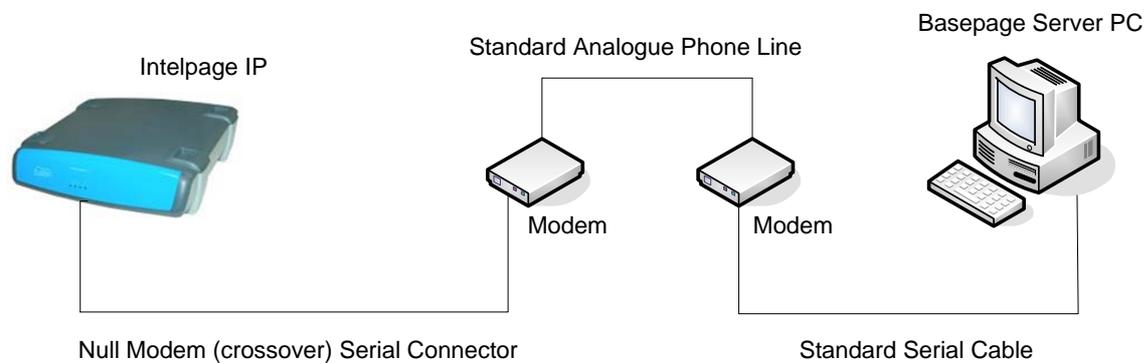
After clicking *Start*, you will then be presented with a window asking you to turn ON the power to the unit in order to start the boot loader.



Once there is power to the unit, the firmware will begin to be sent. A blue progress bar will indicate how long there is left to go. Once finished, you will be informed that the Firmware load is complete.

4.4 Setting up Dial-in TAP to Intelpage IP 5 from BASEPage

A TAP link can be created over an analogue phone line between a BASEPage and Intelpage IP 5 for remote message capability. The system is setup as described below.



1. The Intelpage IP 5 must have its RS232 port settings as follows:
 - a. Serial Port Protocol Use = TAP
 - b. Baud = 9600
 - c. Parity = None
 - d. Data bits = 8
 - e. Stop bits = 1
 - f. Flow control = None
 - g. TAP Disable ID every 2 seconds = Yes

2. The modem connected to the Intelpage IP 5 must be setup in the following manner.
 - a. Connect this modem to a PC and use HyperTerminal (or any other communications package capable of communicating over a serial port) to execute the commands below:
 - b. AT&F Ensures factory default settings
 - c. ATSO=1 Enable auto answer (after 1 ring) ATSO=2 for 2 rings etc
 - d. ATV0 Turn off verbose mode (responses will be 0 instead of OK)
 - e. ATE0 Turns off local echo
 - f. AT&W Save configuration to memory

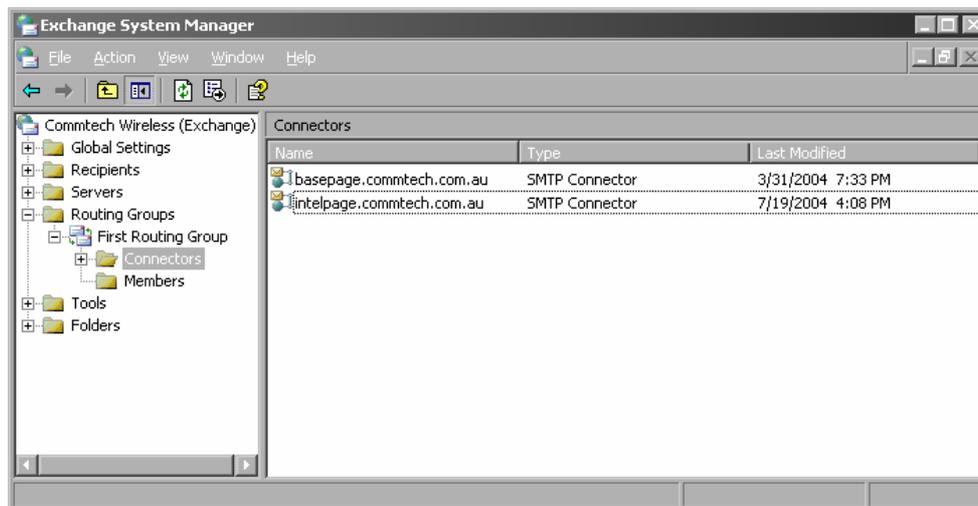
3. Power off the modem and connect to the Intelpage IP 5 unit.
4. A null modem adapter or null modem serial lead must be used between the Intelpage IP 5 and the modem.
5. The modem connected to the BASEPage PC must be setup in the following manner.
 - a. Connect the modem to the PC using a standard serial cable and setup a TAP contact as normal.

- b. The default BASEPage TAP gateway settings will work fine. The telephone number simply needs to be entered into the “Phone” field.
- c. Any other settings can be changed as required.

4.5 Setting up Email Paging

The networking administrator will normally set this up. Below is an explanation of the configuration process.

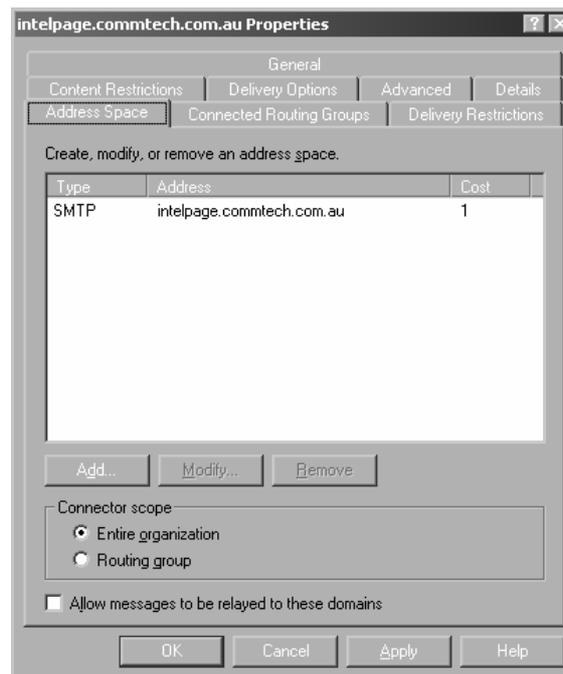
1. Login into the Exchange Server machine and run the *System Manager* program from the *Start Menu*.
2. The window below will be shown. Click the *Routing Groups* folder. Then double click *First Routing Group*.



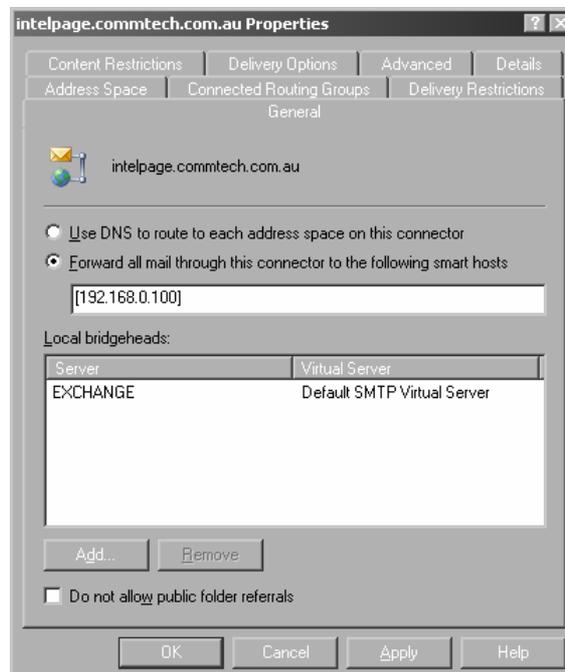
3. Now double click *Connectors*. Right click on the *Connectors* folder and select *New -> SMTP Connector*. A new window will be shown as seen below.

❖ NOTE: You will need to fill out the fields differently to those shown below as your units IP address and network domain names will be different to those shown.

4. The information in the *Address* field shown below must match that of the *Email Domain* field described in the user interface.



5. In the *Forward all mail through this connector to the following smart hosts* field, type the IP address of the Intelpage IP 5 unit.
6. In the *Local Bridgeheads* section, select the main email server that email messages are sent to on the network.
7. This will allow all emails sent to the intelpage.<companyname>.com to be forwarded to the Intelpage IP 5 unit.



Forward Email From/Subject/Body

If checked, it determines which part of the email details will be sent via POCSAG.

❖ NOTE: All email related settings can only be changed through the HTML interface.

4.5.1 Testing SMTP

❖ **NOTE: Outlook is used as the e-mail program in this example. Other e-mail programs may be used.**

1. Open up Outlook and go to *Tools -> E-mail Accounts*
2. Select *Add a new e-mail account* and click **[Next]**
3. Select *POP3* and click **[Next]**
4. Enter in the Intelpage IP 5's IP address as the *Outgoing Mail Server (SMTP)*. All other fields can be filled out with anything you like. Click **[Next]** and then **[Finish]** to create your test account.
5. Click on *New* to start writing a new e-mail message. In the *To* field, enter in <pager cap code>@<email domain>. Fill out the subject and body fields with whatever you like.
6. Send the email from the newly created test account (accounts can be selected via a drop down menu next to the *Send* button). In a few seconds, your test email should be sent to your pager.

4.5.2 Multi-User SMTP

To make SMTP accessible to multiple users on your local area network, generally the existing company email server is configured to forward email to this device for a specific sub-domain. Please consult your IT administrator for details on how to do this.

4.6 Transmitters

Thick steel and concrete, large magnetic and electric fields, and terrain and weather conditions will affect transmitter efficiency, so you will need to test the coverage of your local area transmitter at some stage of installation.

When you perform the test you should pay particular attention to the quality of the messages that you receive on the test pager. If you receive corrupted messages then it is possible that you will have problems sending messages to that region.

If you find that you are receiving corrupted messages then you should consider the following methods for improving transmission quality:

- Move the antenna to a position that gives it a clear line of site to all areas you wish to cover.
- Reduce the length of the cable connecting the aerial to transmitter.
- Use the appropriate coaxial cable to connect the aerial to transmitter which will suit the length of the cable run. For example use RG213 for runs up to 20 meters and use LDF440 for runs over 20 meters.
- Choose another type of antenna for the transmitter.
- Position the antenna in a higher location or use an antenna with a higher gain.

Increase the transmitter power. There are a number of objections to this method, such as local restrictions on aerial power. In addition, doubling the transmitter power to the aerial only gives an increase in range of a factor of 1:19 (fourth root).

4.6.1 The installation of Multiple Transmitters and Aerials

For buildings in an area with good field strength outside but weak reception within, possibly caused by shielding due to reinforcement in suspended slabs, metal plating and other building materials:

- The supply lead to the aerial can serve as a radiator, effectively providing a 5 meter (yard) range from the cable.
- The supply from open (leaky) coaxial cable as a line radiator lead to a 50 Ω terminator (the cable is in effect the aerial).

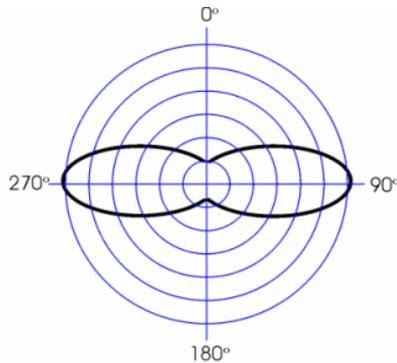
4.6.2 VSWR

▲ WARNING: VSWR is a measure of impedance mismatch between the transmission line and its load. The higher the VSWR, the greater the mismatch. A high VSWR means some of the transmitted signal is being reflected at the antenna, back down the coax line and back into the transmitter itself. If this value is too high, the amount of power reflected back into the transmitter can damage the transmitter. The minimum VSWR, i.e., that which corresponds to a perfect impedance match is 1. It is essential that the VSRW of the antenna and coax connected to the amplifier is set to 1.5 or better using a SWR meter. If this test is skipped, permanent damage may result to the amplifier. Damage will also occur to the unit if the amplifier is set to transmit if no antenna is connected to the unit. To transmit without an antenna connected to the unit, use a dummy load capable of handling at least 5 watts.

4.7 Types of Antennas

Co-linear (Commtech part #'s CL-A-VHF and CL-A-UHF)

Co-linear antennas are most suited for installations which require maximum range. The general coverage pattern for this type of antenna is shown below.

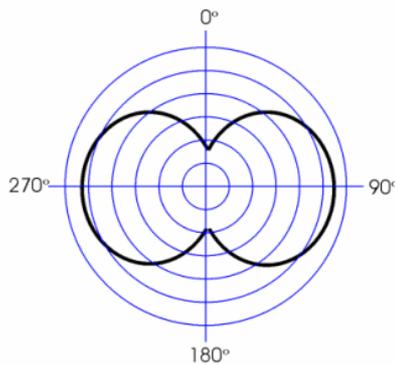


(side view of site)



Mopole (Commtech part #'s MO-GIA-VHF or MO-GIA-UHF)

Mopole antennas are most suited for installations which require good building penetration and range. It is a good general purpose antenna. The general coverage pattern for this type of antenna is shown below.

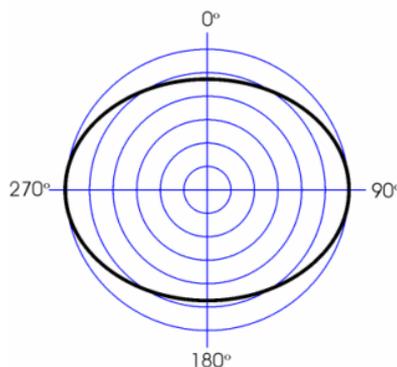


(side view of site)



Side Mounted / Unity Gain Dipole (Commtech part #'s DIPOLE-VHF or DIPOLE-UHF)

Dipole antennas are most suited for installations which require excellent building penetration. The general coverage pattern for this type of antenna is shown below.



(side view of site)



5 APPENDIX

5.1 Further Help and Support

Contact your Place of Purchase

A Commtech Wireless Authorized Distributor or Dealer sets up most systems. Contact your place of purchase with inquiries beyond the scope of this manual.

This Product is Not Field Serviceable

Should a fault develop with the hardware or software, contact your place of purchase for the most appropriate form of action. Do not attempt to open or repair any of the products as this may void any warranty.

5.2 Technical Specifications

Note: Specifications subject to change without any notice

Equipment type.....	IP and serial based POCSAG encoder
Ethernet Port	IEEE 802.3, 10 Base-T, RJ45
Serial Port	RS232C, 300-57600 Baud (default 9600bps), RJ45
Signaling Level	0-5V CMOS
Status LEDs	Power, Busy, PTT, Data, RS232 Tx, RS232 Rx, IP Activity, IP Link
Programming	Via Terminal or Internet Browser
Internal Transmitter	adjustable up to 5 watts
External antenna connector.....	BNC Female 50ohm
Frequency range	VHF – 148-174 MHz. UHF - 440-470MHz Synthesized
Supported Protocols.....	POCSAG 512, 1200 or 2400bps TAP (PET, IXO) / COMP1 / COMP2 / SCOPE / TNPP (duplex or simplex) / Terminal / Tekk (Waveware) / SMTP (Email)
Message capacity	No capacity
Pager Database.....	1000 pager ID's
Power supply	12VDC @ 2Amps regulated
Dimensions.....	255 x 230 x 70 mm / 10 x 8 x 2.7 inches
Weight	700g / 1.5lb nett
Ambient temperature operating range.....	0 – 50 °C (20-90% RH non condensing)
Storage temperature range	-10 – 60 °C (10-95% RH non condensing)