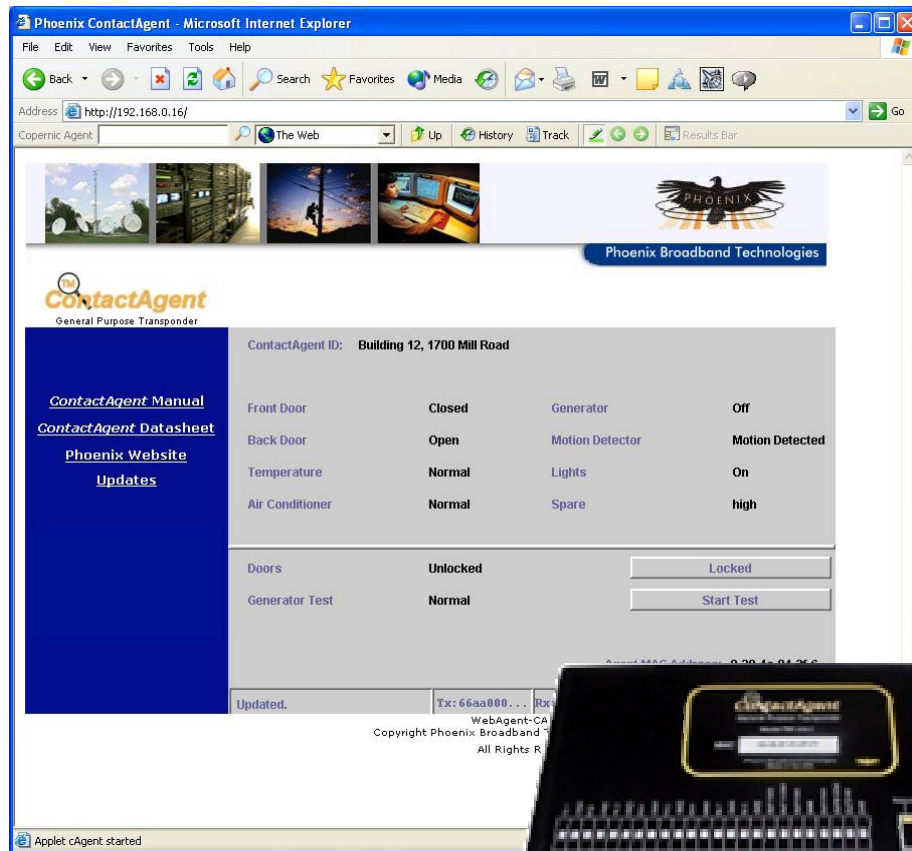


Installation & Operation Manual



General Purpose Monitoring Agent



Phoenix Broadband Technologies, L.L.C
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Montgomeryville, PA USA
Rev. 1.1

Revision History

Release	Date	Revision Description
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Rev 1.1	06/17/2005	Added information on setting Gateway and Network Mask.

TABLE OF CONTENTS

1. FOREWORD	1
1.1. Some Notes About This Document	1
2. UNPACKING & INSPECTION.....	2
2.1. Package Contents	2
2.2. Inspection	2
3. INSTALLATION	3
3.1. Connecting to the Target Equipment	3
3.2. Electrical Considerations	3
3.2.1. Inputs	3
3.2.2. Outputs	4
3.3. Connecting to the Network	4
3.4. Connecting the Power	4
4. OPERATION	5
4.1. LED Operation	5
4.2. IP Address Options	6
4.3. Configuring the ContactAgent.....	6
4.3.1. Running the ContactAgent Telnet Setup	6
4.3.2. Setting the ContactAgent IP Address	9
4.3.3. SNMP Agent Configuration	11
4.3.4. Time Server Configuration	13
4.4. Using the ContactAgent Web Server.....	15
4.4.1. Computer Requirements	15
4.4.2. Accessing the ContactAgent Web Server	15
4.4.3. Web Page Layout	15
4.4.4. Web Page Features	16
4.5. Using the SNMP Interface	17
5. FIRMWARE AND WEB PAGE UPDATING	19
6. SPECIFICATIONS.....	20

1. FOREWORD

1.1. Some Notes About This Document

This document will always be a work in process. The printed form of the document that you are reading is not necessarily the most up-to-date version available. The most recent version can always be downloaded from the Phoenix Broadband Technologies web site at:

<http://www.phoenixbroadband.com/Downloads/Manuals/ContactAgentManual.pdf>

2. UNPACKING & INSPECTION

2.1. Package Contents

Each **ContactAgent** unit is individually packed in a corrugated cardboard container. The **ContactAgent** power pack (Model PBT-WT-1) is packed separately.



2.2. Inspection

Verify that the corrugated carton contains one **ContactAgent** Model PBT-CA-1.

A label on the outside of the individual shipping carton indicates the MAC address of the **ContactAgent** unit contained inside. This MAC address matches the MAC address printed on the front panel of the **ContactAgent**. It is suggested that MAC addresses be recorded before the unit is sent out for installation so that the provisioning process can proceed in parallel with the hardware installation process.

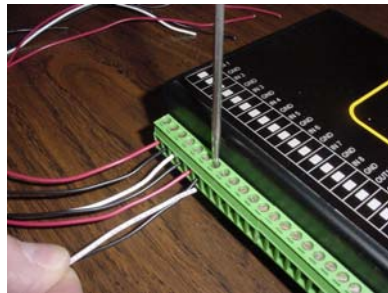
3. INSTALLATION

3.1. Connecting to the Target Equipment

The **ContactAgent** monitoring and control interface consists of 24 interface points arranged as two plug-removable 12-point interface blocks. See the picture to the right.



Each interface point consists of a wire



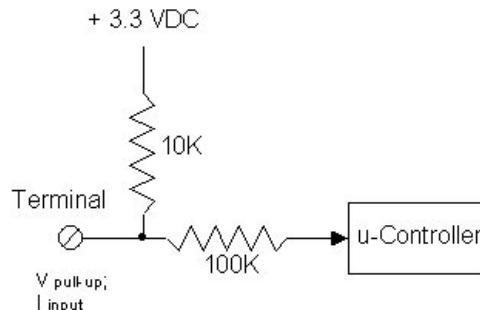
clamping receptacle and a clamp screw. The interface is arranged as 8 contact-

closure inputs and 2 sets of Form-C (SPDT) relay outputs. 10 common ground points are interspersed among the input and output interface points. See the picture to the left.

3.2. Electrical Considerations

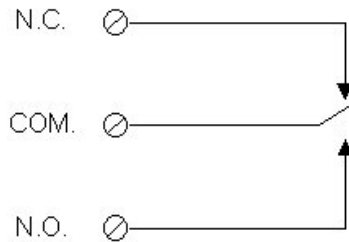
3.2.1. Inputs

The input interface points are designed to be connected to a switch, relay, or solid-state device that can provide a switched DC connection to the unit's common ground lines. The equivalent circuit of the inputs is shown below:



3.2.2. Outputs

The ContactAgent has two sets of Form-C (SPDT) relay contact outputs that can be used to control devices that require a floating AC or DC switch path. The equivalent circuit of the outputs is shown below:



3.3. Connecting to the Network

Connect the **ContactAgent** Ethernet connection to an Ethernet hub, switch, or router using a standard Ethernet cable. Make this connection before applying power to the **ContactAgent**.

3.4. Connecting the Power

The **ContactAgent** is powered from 5 volts DC provided by a plug-in switching power supply (Model PBT-WT-1). Connect the cable from the power supply to the PWR connector on the **ContactAgent**. Make sure that the black plug is firmly seated in the power socket. Plug the power supply into a power outlet.

The green Power LED will light when power is applied.

4. OPERATION

4.1. LED Operation

LED Operation

There are two LEDs on the Ethernet connector. The left LED is the Link LED.

LED Color	Meaning
Off	No Link
Amber	10 Mbps
Green	100 Mbps

The right LED is the Activity LED.

LED Color	Meaning
Off	No Activity
Amber	Half Duplex
Green	Full Duplex

4.2. IP Address Options

The **ContactAgent** is shipped from the factory configured to obtain an IP address automatically from a DHCP server. There are several ways to handle the IP address.

- You can pre-configure your DHCP server to assign a static IP address to the **ContactAgent** MAC Address. The MAC address is printed on the **ContactAgent** label. This is the method most commonly used for field installations.
- You can let your DHCP server assign an address and then interrogate the DHCP server to determine what address was used. This technique works well in the lab environment where the DHCP server may be in a router. For field installations you obviously do not want the IP address to keep changing.
- You can program a fixed IP address in the **ContactAgent** using a temporary connection to a router with a built-in DHCP server and the **ContactAgent** Telnet configuration port.
- You can program a fixed IP address in the **ContactAgent** directly using a special cable and a PC as described in the next section.

4.3. Configuring the **ContactAgent**

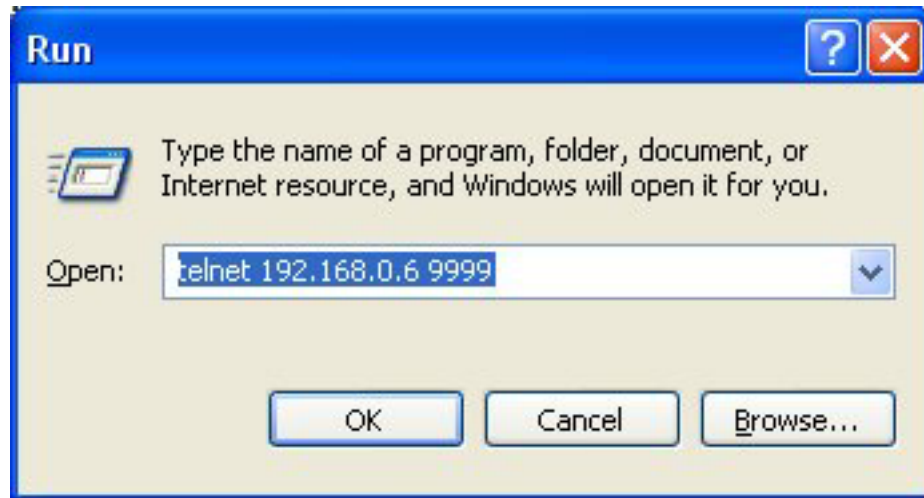
The **ContactAgent** is normally configured over the network through a telnet connection. Support of telnet is a standard part of Windows so virtually any PC can configure the **ContactAgent**.

The **ContactAgent** is also equipped with a local interface that allows a PC to be connected directly to the **ContactAgent** to access the configuration program described below. A PC with a serial communications program such as HyperTerminal is required. The serial port uses 9600 baud, 8 data bits, 1 stop bit, and no parity. A special cable is required which may be obtained by contacting Phoenix Broadband. To use the local interface to program the **ContactAgent**, connect the special cable to the PC serial port and hold down the “x” key while connecting the power to the **ContactAgent**. Follow the Telnet instructions below.

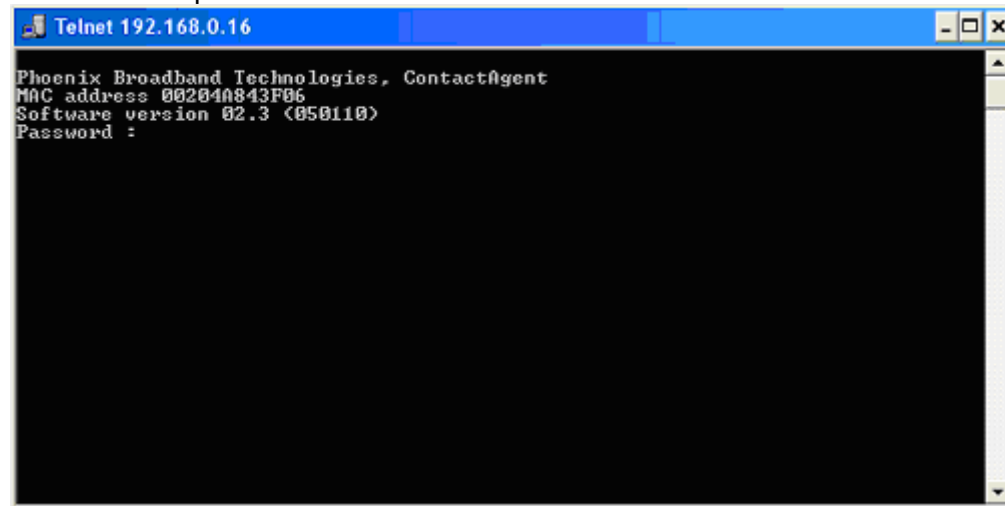
4.3.1. Running the **ContactAgent** Telnet Setup

To open a telnet connection to the **ContactAgent** select “Run” from the Windows ‘Start’ menu. Enter “telnet” followed by a space, then, the IP

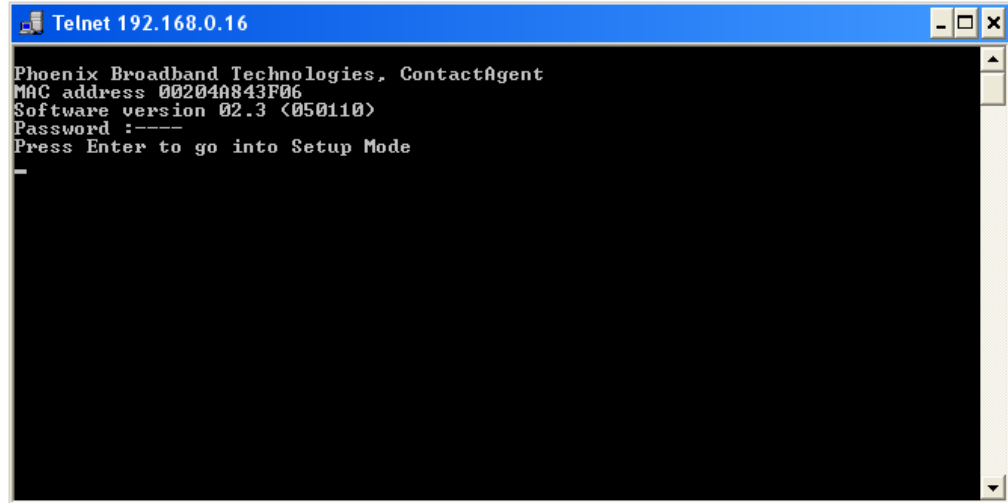
address on the **ContactAgent** followed by a space, and then the port number “9999” followed by “Enter”.



If the **ContactAgent** is on-line and the telnet password is enabled, the following screen will be displayed. If the telnet password is not enabled skip to the next step.



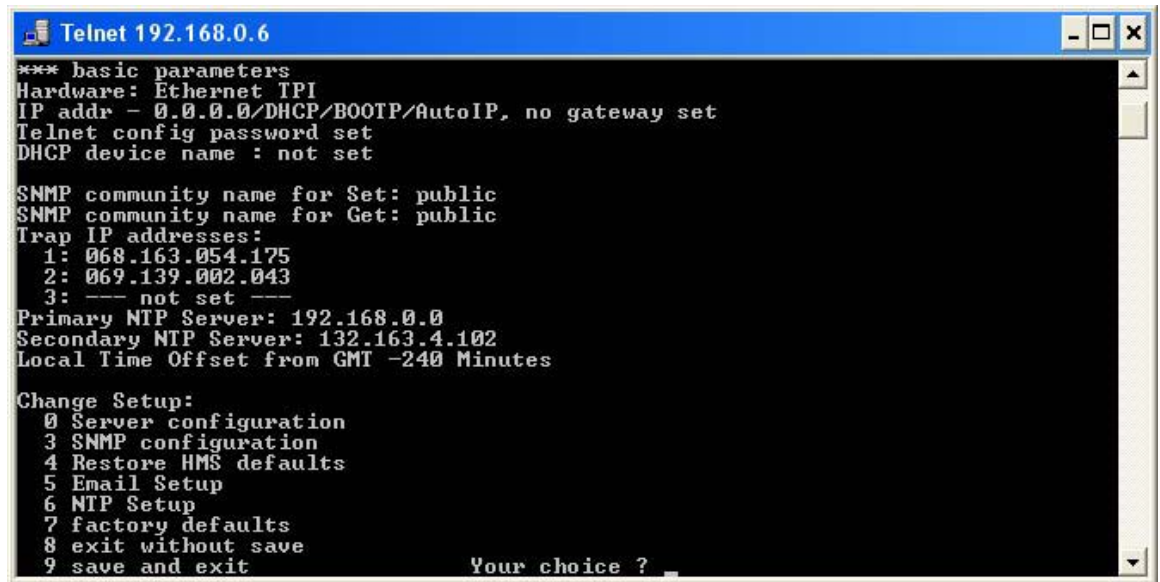
Enter the password. If the password is accepted the following screen will be displayed, if the password is not accepted the telnet session will be terminated.



```
Telnet 192.168.0.16
Phoenix Broadband Technologies, ContactAgent
MAC address 00204A843F06
Software version 02.3 (050110)
Password :----
Press Enter to go into Setup Mode
_
```

Type “Enter” to begin the setup process. If “Enter” is not typed in a few seconds the telnet session will be terminated by the **ContactAgent**.

The Setup Menu will then be displayed as shown below.



```
Telnet 192.168.0.6
*** basic parameters
Hardware: Ethernet TPI
IP addr - 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
Telnet config password set
DHCP device name : not set

SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
 1: 068.163.054.175
 2: 069.139.002.043
 3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
 0 Server configuration
 3 SNMP configuration
 4 Restore HMS defaults
 5 Email Setup
 6 NTP Setup
 7 factory defaults
 8 exit without save
 9 save and exit
Your choice ? _
```

4.3.2. Setting the ContactAgent IP Address

The **ContactAgent** can be configured with a fixed IP address or it can obtain an IP address automatically. When the **ContactAgent** IP address is set to 0.0.0.0 the IP address will be obtained automatically from the DHCP server or by AutoIP. The **ContactAgent** is shipped with the IP address set to 0.0.0.0.

To change the IP Address select option 0 from the setup menu by typing a 0 followed by "Enter". The following screen will appear.

```

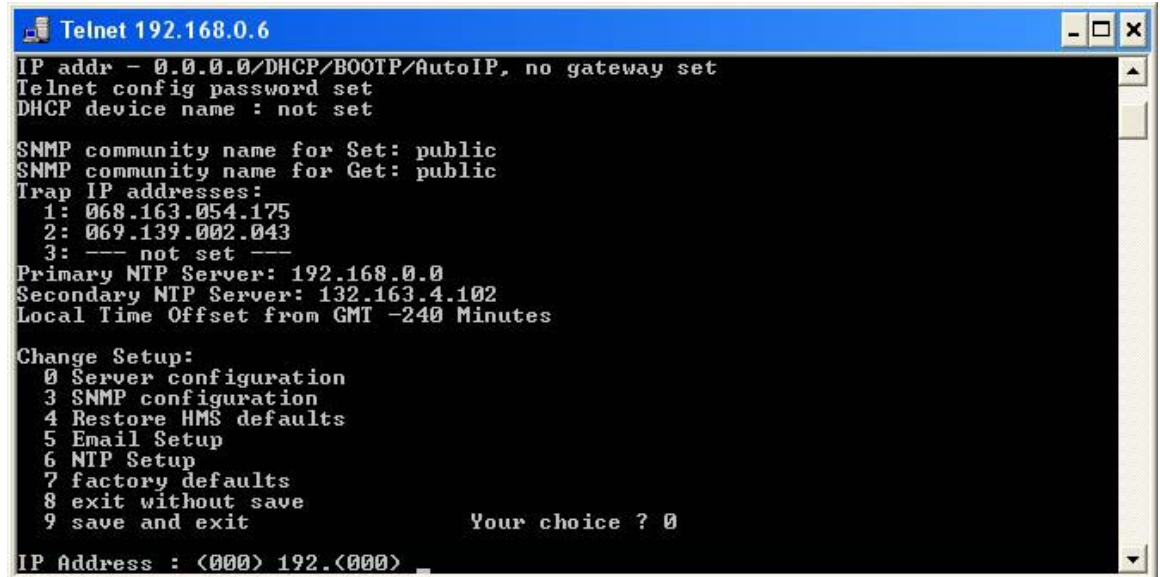
Telnet 192.168.0.6
IP addr - 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
Telnet config password set
DHCP device name : not set

SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
  1: 068.163.054.175
  2: 069.139.002.043
  3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
  0 Server configuration
  3 SNMP configuration
  4 Restore HMS defaults
  5 Email Setup
  6 NTP Setup
  7 factory defaults
  8 exit without save
  9 save and exit
                                Your choice ? 0

IP Address : <000>
    
```

The current value of the first byte of the IP address will be shown in parenthesis. This indicates that the first byte of the IP address is 0. To change the byte, type the new number followed by "Enter". To move on without making any changes, just type "Enter". In the following example the first byte of the IP address was changed to 192.



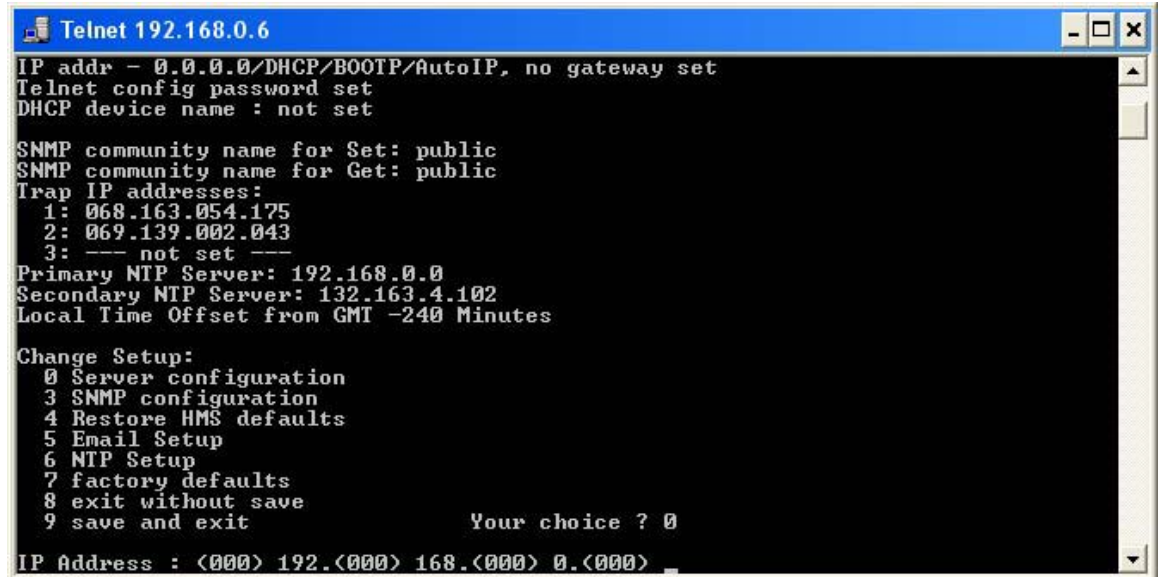
```
Telnet 192.168.0.6
IP addr - 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
Telnet config password set
DHCP device name : not set

SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
  1: 068.163.054.175
  2: 069.139.002.043
  3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
  0 Server configuration
  3 SNMP configuration
  4 Restore HMS defaults
  5 Email Setup
  6 NTP Setup
  7 factory defaults
  8 exit without save
  9 save and exit
                                Your choice ? 0

IP Address : <000> 192.<000>
```

Continue entering each byte of the IP address until all 4 bytes have been entered. To skip any entry without making any changes type "Enter" without typing any numbers.



```
Telnet 192.168.0.6
IP addr - 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
Telnet config password set
DHCP device name : not set

SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
  1: 068.163.054.175
  2: 069.139.002.043
  3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
  0 Server configuration
  3 SNMP configuration
  4 Restore HMS defaults
  5 Email Setup
  6 NTP Setup
  7 factory defaults
  8 exit without save
  9 save and exit
                                Your choice ? 0

IP Address : <000> 192.<000> 168.<000> 0.<000>
```

Next the **ContactAgent™** will ask if you would like to set the Gateway IP Address. The Gateway address is required for the **ContactAgent™** to

initiate communications with other devices on the network; such as the time or email servers. This address is obtained automatically when running with DHCP, however when a static IP address is assigned to the **ContactAgent™** the Gateway Address must be set manually. The Gateway Address is normally set to the IP Address of the first router encountered by outbound network traffic. To change the address, type a “Y” and enter the IP address as described above. To skip the address, type an “N”.

The **ContactAgent™** will now ask for the Network Mask. To change the mask, enter the number of bits required for the local network. Example; For 255.255.255.0 enter 8, for 255.255.252. 0 enter 10. Verify the net mask was set correctly by observing the displayed value when the menu returns to the screen.

Next the **ContactAgent™** will ask if a telnet password is desired. A four character password can be selected to secure telnet access to the Agent. Use caution when selecting a password. If you forget the password or enter it incorrectly the **ContactAgent™** must be returned to the factory for repair. To set the password enter a “Y” and then the password following the prompt. To remove a password enter a “Y” and then an enter at the prompt.

Finally the **ContactAgent™** will ask if you would like to change the DHCP device name. We recommend that you do not change this setting. Type enter to return to the menu.

To save your changes type “9” when you reach the menu. The changes will be saved in nonvolatile memory, the telnet session will be terminated, and the **ContactAgent** will reset.

4.3.3. SNMP Agent Configuration

The SNMP Community Strings and Trap destinations are configured from the SNMP Configuration.

The default community strings are set to public. To change the community string type “3” followed by “Enter”. The present read (Set) community string will be displayed in parenthesis as shown below.

```

Telnet 192.168.0.6
Hardware: Ethernet TPI
IP addr - 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
DHCP device name : not set

SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
 1: 068.163.054.175
 2: 069.139.002.043
 3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
 0 Server configuration
 3 SNMP configuration
 4 Restore HMS defaults
 5 Email Setup
 6 NTP Setup
 7 factory defaults
 8 exit without save
 9 save and exit
                                Your choice ? 3

SNMP community name for read <public>:
    
```

To change the community string, type the new string followed by “Enter”. To move to the next item without changing the community string just type “Enter”. The write (Set) community string is next and is handled the same way.

Up to 3 Trap destinations can be configured. The IP address of the Trap destinations are set similar to the **ContactAgent** IP address described above. To disable sending Traps to any of the three IP address enter zeros for the IP address.

```

Telnet 192.168.0.6
SNMP community name for Get: public
Trap IP addresses:
 1: 068.163.054.175
 2: 069.139.002.043
 3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
 0 Server configuration
 3 SNMP configuration
 4 Restore HMS defaults
 5 Email Setup
 6 NTP Setup
 7 factory defaults
 8 exit without save
 9 save and exit
                                Your choice ? 3

SNMP community name for read <public>:
SNMP community name for write <public>:
Enter IP addresses for SNMP traps:
 1: <068>
    
```

The menu will be redisplayed at the end of the SNMP Configuration. Select "9" to save the changes and close the telnet session.

4.3.4. Time Server Configuration

The **ContactAgent** can set its internal clock from any internet time server that supports Network Time Protocol (NTP). There are many such servers around the world. Many of these servers are operated by government standards organizations.

The **ContactAgent** is shipped with the NTP configuration set to get the time from two different US National Institute of Standards time servers. The IP addresses of these servers can be changed in the NTP Configuration. If the time server addresses are not configured or the **ContactAgent** is unable to contact either time server the **ContactAgent** will initialize the time to 00:00:00 GMT 6/30/04. If communications is not established with a time server the internal clock will run from this point.

The time provided by most time servers is Greenwich Mean Time (GMT). The **ContactAgent** will convert this to Local Time using a time offset that can be entered in the NTP Configuration.

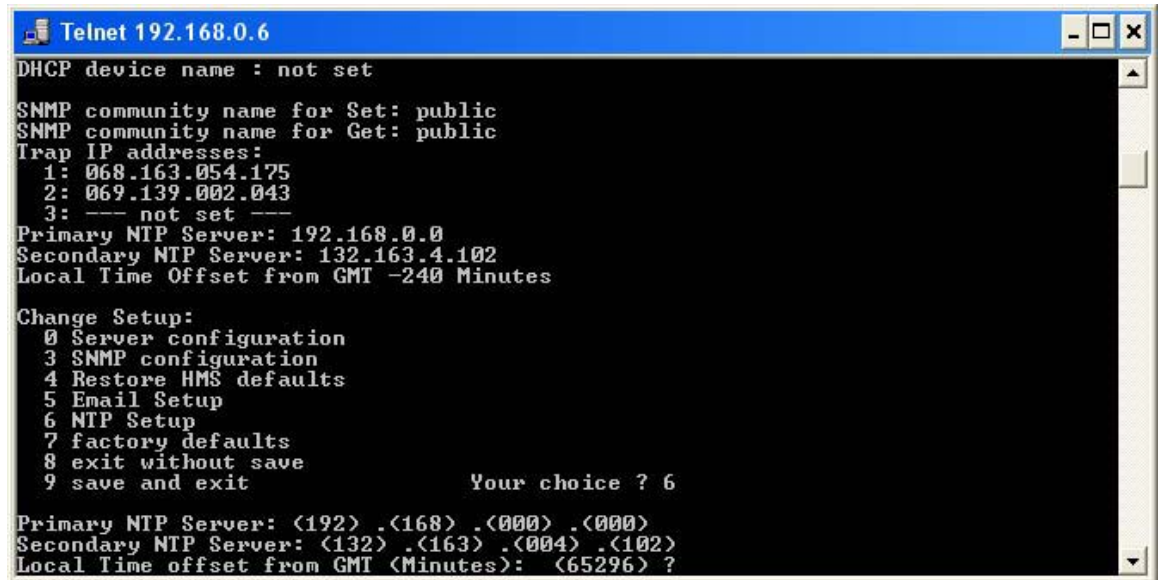
To configure the NTP select option 6 from the Configuration Main Menu.

There are two Time Server addresses. The **ContactAgent** will use the primary server unless it fails to respond and then it will switch to the secondary. It will not switch back unless the secondary server fails to respond or the **ContactAgent** is reset. To change a default Time Server IP Address to undefined enter zeros for the IP address.

The **ContactAgent** will reset itself if there is no communications with either time server for a little over 2 hours. To disable the reset function enter zero for the primary time server IP address. The **ContactAgent** will use the secondary Time Server to set the time if the second IP Address valid.

The time read from the time servers is GMT. There is an option in the NTP Setup to enter a time offset to correct for this. If the time offset is positive, east of the UK, simply enter the offset in minutes. If the time offset is negative, west of the UK, the offset must be entered in 2's compliment form.

To compute the value subtract the time offset in minutes from 65536 and enter the result. For example the offset to Eastern Daylight time is 4 hours. $65536 - 240 = 65296$ Enter 65296 as the time offset for Eastern Daylight time.



```
Telnet 192.168.0.6
DHCP device name : not set
SNMP community name for Set: public
SNMP community name for Get: public
Trap IP addresses:
  1: 068.163.054.175
  2: 069.139.002.043
  3: --- not set ---
Primary NTP Server: 192.168.0.0
Secondary NTP Server: 132.163.4.102
Local Time Offset from GMT -240 Minutes

Change Setup:
  0 Server configuration
  3 SNMP configuration
  4 Restore HMS defaults
  5 Email Setup
  6 NTP Setup
  7 factory defaults
  8 exit without save
  9 save and exit
                                Your choice ? 6

Primary NTP Server: <192> .<168> .<000> .<000>
Secondary NTP Server: <132> .<163> .<004> .<102>
Local Time offset from GMT <Minutes>: <65296> ?
```

4.4. Using the *ContactAgent* Web Server

4.4.1. Computer Requirements

The **ContactAgent** Web Server uses a Java applet to communicate between the Web Browser on your PC and the **ContactAgent**. For this to operate, the Java Runtime Environment must be installed on your PC. This is a common function of many Web Sites so it is likely that the Java Runtime Environment is already loaded on your PC.

If you need to load the Java Runtime Environment go to the Sun Java Web Site at:

http://java.com/en/download/windows_automatic.jsp

and follow the directions to download and install the latest version of the J2SE JRE. This is a free download.

Caution!: The *ContactAgent* web server has been tested to work with Sun Java Runtime Environment Version 1.4.2. Older versions of the Java Runtime Environment may not function properly with the *ContactAgent* Web Server.

To check which version you are using on your PC open a Microsoft Internet Explorer and select Tools -> Internet Options -> Advanced. Scroll down to the line that displays Java (Sun). The version number of the Java Runtime environment installed on your PC will be shown. If this line is not present the Sun Java Runtime Environment is not installed on your PC.

4.4.2. Accessing the *ContactAgent* Web Server

To access the **ContactAgent** Web page type:

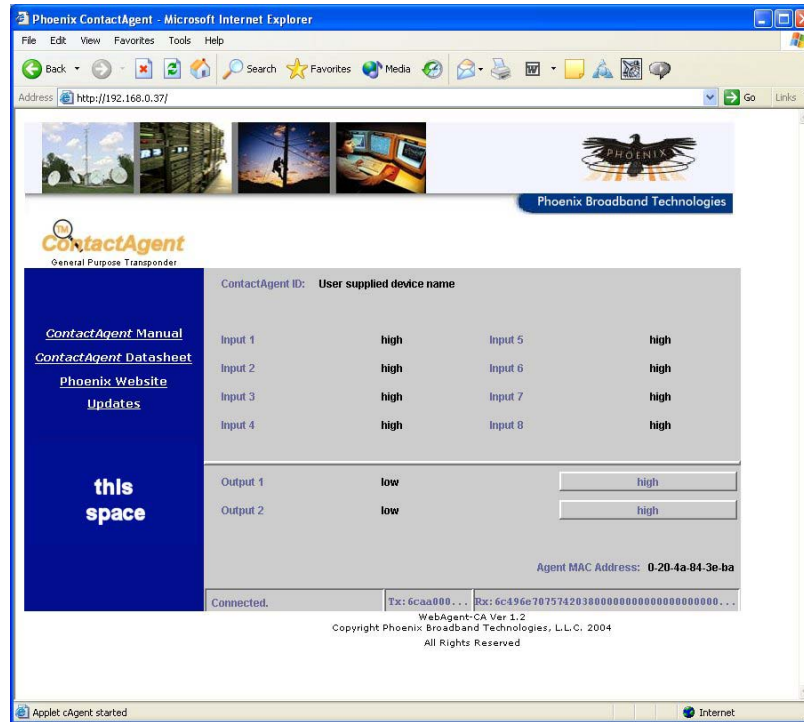
“http://192.168.0.5”

from your web browser. Substitute your **ContactAgent**'s IP address in place of “192.168.0.5”.

4.4.3. Web Page Layout

The **ContactAgent** Web page is divided into 4 main sections. The top graphic banner and the left-side blue menu bar are common to all versions.

The gray area to the right of the menu bar is a container for a Java applet that communicates with the **ContactAgent** and displays real-time information about the status of the equipment.

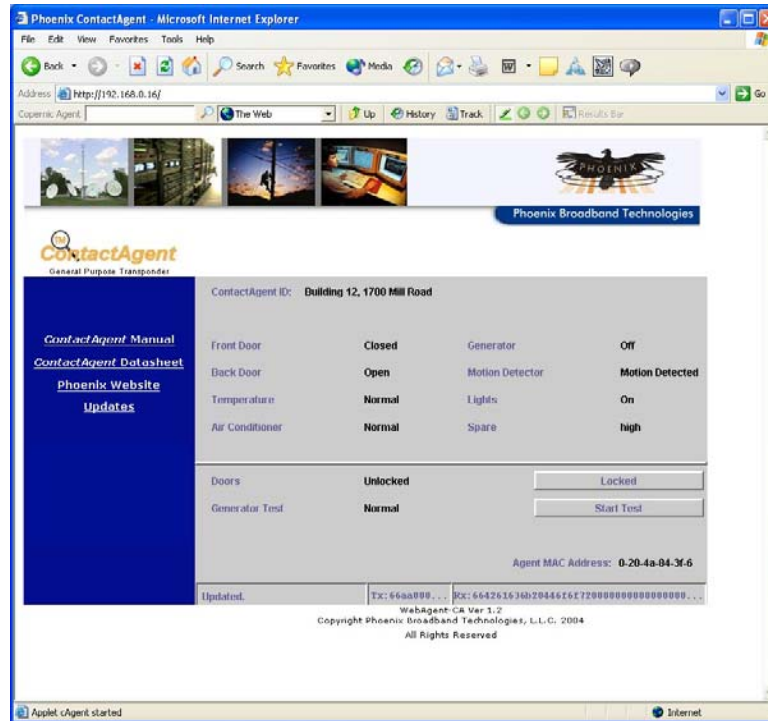


The bottom 'footer' section contains information about the version number of the web server running in the specific **ContactAgent**.

4.4.4. Web Page Features

The blue menu bar contains internet hyperlinks to useful information such as the latest version of the **ContactAgent** manual served by Phoenix Broadband's web site, Phoenix Broadband's Home page, and a link to **ContactAgent** product and firmware version information served from Phoenix Broadband's web site.

The Java applet area of the web page shows each digital input, its user-defined label, a user-defined text string describing its present state, and color-coding of the description text to indicate alarm status. The alarm color coding displays black text to indicate a non-alarm condition, yellow text to indicate a minor alarm condition, and red text to indicate a major alarm condition.



All user-defined text labels and alarm setups are done through the SNMP interface.

4.5. Using the SNMP Interface

The alarm configuration and the text strings displayed in the Web page can be modified using SNMP. For users experienced with SNMP Management Systems this is a simple task. For users with no SNMP experience some assistance may be required. Please contact Phoenix Broadband if you need additional assistance.

The objects can be configured from the SNMP Management System or with a simple MIB Browser. A free evaluation version of a MIB browser can be downloaded from <http://www.nudesignteam.com/walker.html> or <http://www.mg-soft.com/download.html>.

The ContactAgent uses a combination of standard and proprietary MIBs which can be found at <http://www.PhoenixBroadband.com/Downloads/MIBs/ContactAgent/ContactA>

[gentMIBs.zip](#). These MIBS can also be obtained at no charge by contacting Phoenix Broadband.

The ContactAgent uses the following MIBS:

- HMS 028, SCTE 36 2002, SCTE Root MIB
- HMS 072, SCTE 37 2002, HMS Tree MIB
- HMS 026, SCTE 38-1 2002, HMS Property MIB
- HMS 023, SCTE 38-2 2002, HMS Alarm MIB
- HMS 024, SCTE 38-3 2002, HMS Common MIB
- pbtRootMIB
- pbtContactAgentMIB

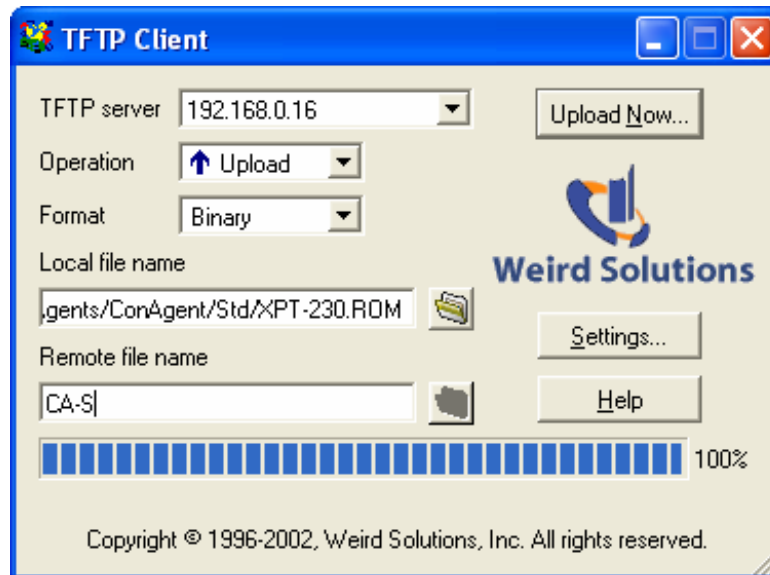
For each input the label can be changed as well as the text associated with the high and low states. These strings can be found in the pbtCaInputTable. The pbtCaInputText object is the label displayed for each input. The pbtCaInputLowText object is the text displayed when the Input is pulled low. The pbtCaInputHighText object is the text displayed when the input is pulled High or not connected. Each of these can be a maximum of 32 characters. All of these objects are stored in nonvolatile memory.

A similar set of objects for the output labels can be found in the pbtCaOutputTable.

The alarms are configured using the discreteAlarmEnable object in the discretePropertyTable. There are two objects for each input. The first object (.1) is used to enable alarms on the low state of the input. The second object (.2) is used to enable alarms on the high state of the input. Each alarm can be set to one of 3 states Disabled(1), EnableMajor(2), or EnableMinor(3). Major Alarms appear in red on the Web page, and Minor Alarms appear in yellow.

5. FIRMWARE AND WEB PAGE UPDATING

The **ContactAgent** Firmware can be updated remotely using TFTP. To perform this update you will need a TFTP Client. A free TFTP Client can be downloaded from “<http://www.weird-solutions.com/download/index.html>”.



- Set the “TFTP Server” to the IP Address of the **ContactAgent** to be updated.
- Set “Operation” to **Upload**.
- Set “Format “ to **Binary**.
- Set “Local File Name” so it contains a valid path to the file to be uploaded. For a firmware update the file name is normally path\Xpt.rom. For a Web page update, the file name is normally path\web1.cob.
- The parameters accessed from the “Settings” button should be left at their default values.
- Set “Remote File Name” to **CA-S** for a firmware update or to **WEB1** for a web page update.

Push the “Upload Now” button to perform the upload. The firmware upload normally only takes a few seconds. The Web page upload may take 15 or 20 seconds.

6. SPECIFICATIONS

Electrical:

- Inputs (8 ea) Contact closure to ground or CMOS logic levels
- Outputs (2 ea) Form-C floating relay contacts; 100V, 1A max
- Power 5-12 volts AC or DC; 500ma max; typically powered by wall transformer
- Network Interface 10/100 Ethernet
- Monitoring Protocol SNMP
- Other Monitoring Interfaces
 - Web Server
 - SMTP E-mail

Mechanical:

- Size 8.4"x 4.2"x1.5"
- Construction Molded plastic
- Connectors
 - Contact I/O Plug-in terminal block
 - Serial I/O RJ-45
 - Ethernet RJ-45
 - Power Male coaxial barrel type
- Weight 1.0 lb nominal

Indicators:

- Ethernet link activity
- Power/Status LED

Environmental:

- Operating Temperature -40C to +60C
- Humidity 0 to 95%; non-condensing