PRO-100
Home Automation
Controller

HomeSeer technologies
Home Automation Software & Systems


# Getting Started Guide
# Series II

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# Introduction

The PRO-100 is a hardware controller designed to incorporate all the power and flexibility of HomeSeer PRO software into a very compact, rugged, and easy-to-install unit. The PRO-100 is designed to control lighting, appliances, security, HVAC, and infrared (IR) devices, such as home theatre equipment. Since the PRO-100 is an open standards system, the system can be integrated with numerous technologies from scores of industry leaders, such as Lutron, Leviton, Intermatic, Lightolier®, HAI, JDS, Global Caché and many more.

An open Application Program Interface (API) is included for professional integrators to add support for just about any custom or proprietary systems that may be needed in the customer's solution.

## What's Included

**The PRO-100 is shipped with the following parts:**

- One PRO-100 Home Automation Controller Unit
- One Power Supply Unit
- One Power Cord
- One Speaker Client Installation CD
- One PRO-100 Getting Started Manual

**The following software add-ons are also included with the PRO-100. Plug-ins may be installed from within the PRO-100 Updater:**

**Plug-ins to support the following:**

- Global Cache IR Controller
- HAI Thermostat Plug-In
- HAI Omni Panel
- HomeVision Plug-in
- HouseLinc Plug-in
- Insteon Basic Plug-in
- IRLinc 1623PC Plug-in
- Is Speaking Plug-in
- iTunes® Media Player
- JDS IR XPander Plug-in
- JDS Stargate Plug-in
- Lightolier Compose Plug-in
- Lutron RadioRA
- Marrick LynX10-PLC X10 Plug-in
- Windows Media Center (MCE) 2005
- Windows Media Player 9/10
- MR26A Plug-in
- Napco Gemini
- NEOSpeech Dictionary Editor
- Ocelot Plug-in
- OnQ Panel Plug-in
- PowerLinc USB Plug-in
- RCS Serial Thermostat Plug-In

- RCS X-10 Thermostat Plug-In
- Shopping list script
- Slinke Plug-in
- TempLinc Plug-in
- TI103 X10 Plug-in
- TouchPad Interface
- UPB (Universal Powerline Bus)
- WebCam Plug-in
- Weather script
- Z-Wave USB Drivers

**3rd Party Plug-ins are also available for the PRO-100. Contact HomeSeer Technologies for the latest list of these.**

**Additional Software:**

- RealVNC (Remote Access Tool)
- MS Internet Explorer
- MS Outlook Express
- MS Windows Media Player

# Key Features

## *Reliability*

The PRO-100 was designed to be the most reliable home controller available. The hardware is free from any moving parts. There is no hard drive or cooling fan to break down and an embedded operating system provides a reliable software platform. The operating system runs on write protected flash memory so it cannot be corrupted.

## *Web-Based Management*

The system may be managed using any web browser. This allows for easy unit management and configuration on- or off-site. Easily add/change schedules or troubleshoot issues from anywhere.

## *Mechanical Design*

The PRO-100 has a very small footprint (11" wide x 7" deep x 2" high) and can installed or mounted in a variety of locations. Since the unit is fan-less, it can be mounted inside a structured wiring cabinet or in other areas with limited ventilation.

## *Software Features*

The PRO-100 offers many features not found in other stand-alone automation controllers such as:

- Remote access
  The entire system can be monitored and controlled from the web. Users can check on their homes when they are away at work or on vacation. This is an excellent solution for vacation or 2nd homes.

- Text-To-Speech
  The included text-to-speech engine allows for whole house announcements using synthesized or (optionally) concatenated human speech models. This can be used for

announcing incoming phone calls, motion at the front door, news, weather, etc. Announcements can also be sent to any computer on the home network (LAN) or on the internet (WAN). The unit includes the best sounding voice available, which is natural and easy to understand.

- Voice Recognition
  Any computer on the home network (LAN) or on the internet (WAN) can be used to control the system with voice commands. Voice commands may also be issued by telephone using HomeSeer Phone software (optional).

- Powerful event mechanism
  Trigger event actions based on any of the following:
  - Conditions (many)
  - Status change of any device
  - Absolute time
  - Sunrise/sunset (with offset)
  - By email received
  - Security panel events
  - By matched infrared
  - Recurring at regular second/minute intervals
  - I/O events from controllers
  - Events from plug-ins

- Event Actions
  In response to event triggers, these actions (and more) may be performed:
  - Send lighting control signals (operate devices)
  - Play sounds or speak using text-to-speech
  - Send email
  - Run a script
  - Trigger another event
  - Dial a network connection
  - Media Player functions
  - Plug-in functions
  - Web Camera functions
  - Phone functions such as dialing a phone number or extension phone

## *Customizable Software*

The system software is totally customizable. The user interface is web-based and may be changed using cascading stylesheet (CSS) commands. The included software API allows for the creation of custom software "plug-ins" using the .NET development environment. These plug-ins are used to provide additional support for custom hardware and software. The system also includes a powerful scripting interface that supports popular scripting languages such as VBScript, JavaScript, and Perl. Scripts provide a quick way to add custom functionality such as complex if-then-else logic, or for sending binary or ASCII text to a serial port. The user interface and custom interfaces are built or modified using simple web (HTML) technologies.

## *Add-Ons*

The PRO-100 includes all software add-ons that are distributed through HomeSeer Technologies. These add-ons are provided free of charge for owners of the PRO-100 unit. Software add-ons are referred to as Plug-Ins. They enhance the operation of the PRO-100 by adding functionality such as interfacing with a security panel, infrared controller, or media player application such as Windows Media Player or iTunes. To see the latest list of plug-ins available, click on the Updater button and follow the prompts. 3$^{Rd}$ party plug-ins may require a nominal fee.

## Control Unit Specifications Series II

| | | | |
|---|---|---|---|
| Size: | 11” W, 2” H, 7” D | Processor: | 1.5 GHz Celeron M |
| Flash: | 2 GB | Fans: | None |
| Memory: | 1 GB DDR | OS: | Embedded Windows XP |
| Serial Ports: | 4 | Video Out: | VGA |
| USB Ports: | 2 | | |
| Audio: | In/Out | | |
| Network (2 ports): | 10/100 Ethernet | | |
| PS/2 Keyboard and Mouse ports | | | |

# Installation

## Mounting the PRO-100

The PRO-100 can be set on a shelf-mounted, wall-mounted or installed in a structured wiring cabinet. While the unit can be located just about anywhere, these simple installation tips should be observed:

- Allow for adequate airflow around the unit and do not obstruct the round finned heat sinks on either side of the case.
- If possible, install an uninterruptible power supply or surge suppressor to protect the unit from power outages or line voltages fluctuations.
- Locate near other home automation equipment for easier connectivity.

## Rear Panel Layout

A description of each port is included below.


Figure 1: Rear Panel of PRO-100 Series II

1. **Power**: Connect the included power supply cable to this jack.

2. **Monitor**: To monitor the unit directly, plug a VGA monitor into this port. This is not necessary for home network (LAN) or internet (WAN) control.

3. **Keyboard**: To control the unit directly, plug a PS/2 keyboard into this port. This is not necessary for home network (LAN) or internet (WAN) control.

**Mouse**: To control the unit directly, plug in a PS/2 mouse into this port. This is not necessary for home network (LAN) or internet (WAN) control.

4. **Serial Ports**: Thermostats, controllers, security systems and other technology interfaces can communicate with the PRO-100 through these RS-232 serial ports. Two ports are provided. Additional ports may be added by using USB-to-serial port converters.

5. **USB 2.0**: Allows the PRO-100 to monitor and control USB-style home automation interfaces and peripherals.

6. **LAN**: Connect a standard 10/100 network cable into this jack for home network (LAN) and internet (WAN) operation. A second 10/100 connection is available for using the PRO-100 as a network firewall.

7. **Audio In – Microphone**: Connect a microphone to this port for voice control of the PRO-100.

8. **Audio Out** : Connect this to the audio on connection on your audio receiver or whole house audio system for text-to-speech announcements or music.

## Perform a System Test

Once the PRO-100 is mounted and home automation devices have been attached, follow the steps below to perform a system test.

1. Turn on the unit. The blue light on the front should be on.

2. If connected to a monitor and keyboard, the startup screen will appear and the unit will automatically log in. The default login is *administrator* for user and *admin* for the password.

   If connecting remotely from another computer, launch the web browser and enter the URL of the box using its name or IP address. The default name set for the unit is *pro100 + the last digits of the units serial number following the last 0* (`http://pro1005`). The IP address can be set manually or a dynamic (DHCP) address can be used.

3. The main status screen will appear.

4. Follow the steps below to test the built-in audio function of the PRO-100
   a. Attached speakers or headphones to the appropriate “audio out” jack(s)
   b. From the PRO-100 web interface, click the “Control” button to open the Control Panel.
   c. In the “Immediate Script Execution” box, type: [hs.speak "Pro 100 test"] without the brackets.
   d. Click the “Execute Command” button. The PRO-100 should now speak “Pro 100 test”.

## Accessing the PRO-100

There are several graphical user interfaces (GUIs) for controlling the PRO-100. Some interfaces, however, are only available in certain situations, as explained below.

## Web Browser

PRO-100 can be controlled using a web browser on the PRO-100 or from any other web browser anywhere in the world. The built-in web server is enabled by default. To configure it, navigate to the *Setup* area and click on the *Web Server* tab. Options in this screen determine the port the web browser will use to access the PRO-100 and whether or not guests can view events. The features accessible through the web browser depend on options set in the *Web Server Setup* screen and access rights of the user as set in the *Web Users Setup* screen.

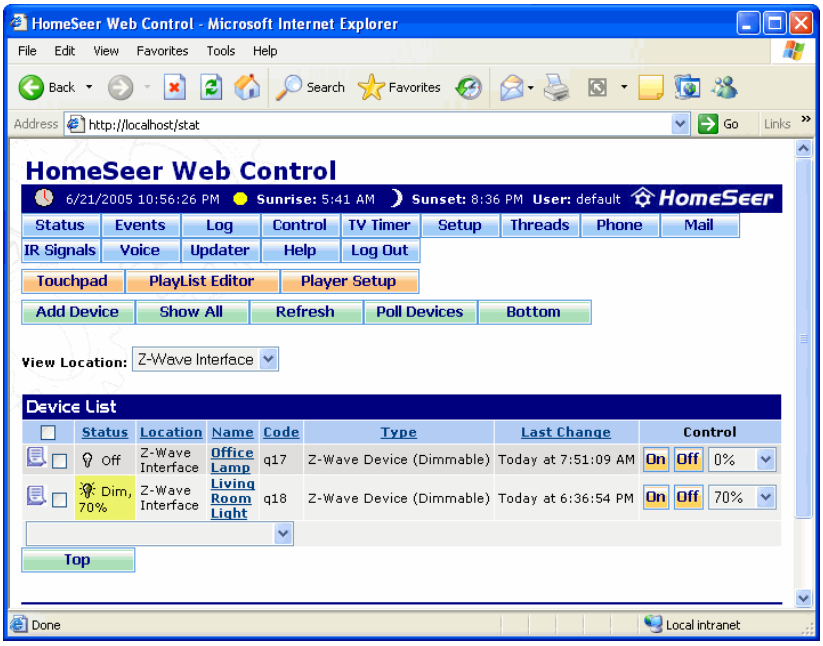



Figure 2: PRO-100 Web Browser

The PRO-100 web page can be accessed using one of the following methods:

- On the computer running the PRO-100, launch Internet Explorer and type `http://localhost` or `http://127.0.0.1` in the *Address* bar and press `Enter` or click `Go`.
- On a computer on the same network as the PRO-100 (home network), type `http://hostname` where "hostname" is the name of the PRO-100 (`pro100##`, by default, replace `##` with the last two digits of the units serial number). Alternatively, type `http://192.168.0.n`, where "n" is the last number of the IP address of the PRO-100 on the home network. This IP address is typically assigned by your home network router.
- On a computer other than the one running the PRO-100, launch Internet Explorer and type `http://` followed by the IP address of the PRO-100.

> Which buttons appear at the top of the web page depends on which options are enabled in the *Web Site Setup* screen. This Getting Started Guide assumes that all available buttons have been enabled.

## Touchscreens and Pocket PCs

The PRO-100 can also be controlled through touchscreens and pocket computers (or PDAs). These interfaces are similar to controlling the PRO-100 through web browsers, but the layout of

the screens is adjusted for easy control through touchscreens or PDAs. The appearance of the screens is set in the *Touchpad Display Setup Admin* screen, by selecting a specific "skin".

> Selecting a skin in the *Touchpad Display Setup Admin* screen sets a "cookie" on the computer in which the skin was selected. In this manner, a touchscreen monitor can be set to the "Americana" skin while a PDA is set to the "Pocket PC" skin.

To control the PRO-100 from a touchpad or pocket computer, set it up to access the PRO-100 web pages by going to `http://localhost/touchpad_control` or `http://127.0.0.1/touchpad_control` or `http://yourIPaddress/touchpad_control`. The URL to use depends on if you're accessing the web pages through the home network or over the Internet. A port number will need to be added to the URL address if the PRO-100 web server is set up on a port other than the default port of `80` (specified in the *Web Server Setup Screen*).

Note: The TouchPad interface is not installed on the PRO-100 by default. To install the TouchPad interface, select the Updater button and follow the prompts until a list of updates appears. Check the TouchPad Interface update then click Next to download this update. You then need to restart the unit to install the update. Now go into the PRO-100 Setup, click the Interfaces tab and enable the TouchPad Interface. Note that you need to be connected to the Internet to install updates.

# Disabling / Enabling PRO-100 Flash Protection (HSProtect)

The operating system (OS) of the PRO-100 is stored on a protected flash memory module (identified as drive "C") and is shipped in a "Read-Only" state. This state prevents unauthorized or accidental changes to the OS or "C" drive. However, there may be times when it is necessary to make changes to the OS or add additional files/programs to the "C" drive. When this happens, follow this procedure:

### Disabling Flash Protection

1. Restart the system. This step is **VERY IMPORTANT** as it will reset the OS to its original (or previous) state. **DO NOT SKP THIS STEP!**
2. After restart is complete, close the Internet Explorer® browser window on top to reveal the HomeSeer Event Log window underneath.
3. Open the "Tools" menu in the HomeSeer Event Log window and select "**Disable** Flash Protection". If you have the HSProtect system icon (looks like a hard disk), right click on this and select "Commit Changes and Disable HSProtect".
4. Now restart the PRO-100 again.
5. After restart is complete, the "C" drive will be in a "Read-Write" full-access state. At this point, you can make the necessary OS changes or add files and programs to the "C" drive. Once this is done, you must immediately **Enable** Flash Protection again.

### Enabling Flash Protection

1. Open the "Tools" menu in the HomeSeer Event Log window and select "**Enable** Flash Protection". If you have the HSProtect system icon, right click on the icon and select "Enable HSProtect".
2. Now restart the PRO-100 again. After restart, the "C" drive will once again be set to a "Read-Only" state.

# HSSentry

HSSentry is a system watchdog that will reset the system if the HomeSeer application stops running for any reason. HSSentry uses the hardware to monitor the system. This is enabled from the General tab in Setup. Once enabled, the system will restart in 5 minutes if HomeSeer stops running.

# Setting the Time Zone

The PRO-100 is pre-configured for the correct date and time for Eastern Standard Time (US). To change the time zone for your unit, follow these steps:

1) **Disable Flash Protection** for the PRO-100 using the procedure outlined in "Enabling/Disabling PRO-100 Flash Protection" earlier in this manual.
2) Double Click on the clock in the lower right hand corner of the screen. Set the time zone from the Time Zone tab.
3) Finally, **Enable Flash Protection** using the procedure outlined in "Enabling/Disabling PRO-100 Flash Protection" earlier in this manual.

# Using RealVNC for Remote Access

RealVNC is a freeware software tool that will allow you to access the Windows® interface of the PRO-100 from any remote computer via home network (LAN) or the internet (WAN). The PRO-100 is shipped with RealVNC pre-installed for remote access.

### To Access the PRO-100 from Any Computer on your Home Network

1. Open any Java-compatible browser and in the address box enter http://PRO100##:5800 (where '##' represents the last 2 digits of the unit's serial number). Alternately, you may use the LAN IP address for your PRO-100. Example: http://192.168.0.100:5800
2. If a security message appears, click the run button.
3. A small box titled "VNC Viewer: Connection Details". Click 'OK' in this box.
4. Another small box titled "VNC Authentication" now appears. Use the password "admin" and hit the 'enter' key. The Windows interface for the PRO-100 should now appear.

### To Access the PRO-100 from Any Computer on the Internet

1. Open any Java-compatible browser and in the address box enter http://[IP Address]:5800 (where [IP Address] represents the physical or virtual internet IP Address for your PRO-100). Example: http://77.324.445.103:5800 or http://mydomain.com:5800
2. If a security message appears, click the run button.
3. A small box titled "VNC Viewer: Connection Details". Click 'OK' in this box.
4. Another small box titled "VNC Authentication" now appears. Use the password "admin" and hit the 'enter' key. The Windows interface for the PRO-100 should now appear.

NOTE: If your internet connection is protected by a firewall or router, you'll need to open port 5800 to allow internet access to your PRO-100. Check with your firewall or router manufacturer for details on how to do this.

# Adding and Configuring Devices

## About Devices

Devices are objects that hold information. Often these objects are tied to a real, physical device in your home, such as a light switch, garage door, or television. The information the device object holds is the status of that real device. A device can also hold information such as a weather forecast or the winning lottery numbers that were downloaded from the Internet.

Various types of devices can be used with the PRO-100, such as lights, appliances, security, HVAC, and infrared.

## Supported Technologies and Manufacturers

Hardware support is accomplished through the use of software plug-ins or scripts. This allows for easy upgrades in the future. A software API (Application Programming Interface) is available for developers to create their own plug-ins.

The following technologies and manufacturers are supported. Please check our website for the latest supported hardware list as support for new hardware is constantly being added.

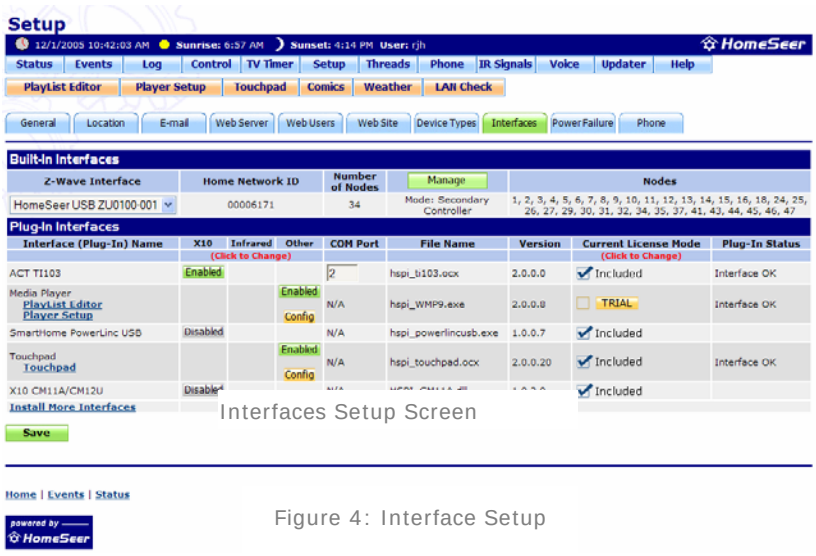
| Technologies | Lighting | Security | HVAC | Infrared | RFID | A/V Software |
|---|---|---|---|---|---|---|
| Compose | Centralite | Elk | Aprilaire | Applied Digital | iAutomate.com | Apple iTunes ® |
| Infrared | HAI | Napco | Enerzone | Global Caché | | Windows Media Center 2005 |
| INSTEON | HomePro | HAI | HAI | Home Electronics | | Windows Media Player 9/10 |
| Radio RA | Intermatic | On-Q | HomePro | IR Trans | | |
| RFID | Lightolier | GE/Caddx | RCS | JDS Inc. | | |
| Text-to-Speech | Lutron | | | Nirvis Inc. | | |
| UPB | PCS | | | SmartHome | | |
| Voice Recognition | Smarthome | | | UIRT | | |
| X-10 | Simply Automated | | | | | |
| Zigbee | Vantage | | | | | |
| Z-Wave | X-10 | | | | | |

Figure 3: Supported Hardware List

# Configuring Devices

## *Specifying Device Types*

Before adding devices to the PRO-100, you must first specify the types of devices that will be used. The *Interfaces Setup* screen is where you enable and configure plug-in programs that can be used with the PRO-100. Plug-ins are designed to integrate the PRO-100 with other hardware and software and to add additional functionality to the PRO-100.




Interfaces Setup Screen

Figure 4: Interface Setup

To get to this screen, launch the web interface (see page 7), click the Setup button beneath the time and date bar, then click the Interfaces tab.

Buttons appear under the columns for the type of hardware or software the particular plug-in supports. By default, the button will be labeled *Disabled*, which indicates that the plug-in is not enabled or not active. Click the button to enable the plug-in.

Click the SAVE button to save the changes.

## *Z-Wave Devices*

Follow the steps below to set up the PRO-100 to use and learn Z-Wave devices. Before following these steps, Z-Wave devices should be installed around the house and learned into the Z-Wave Master Remote Control Unit, and the Z-Wave USB or Serial interface should be connected to the PRO-100.

1. In the *Interfaces Setup* screen (see above), select a Z-Wave interface from the drop-down box and click SAVE at the bottom of the screen. If you are installing a serial Z-Wave interface, be sure and select the proper COM port. The screen will expand to display buttons for learning or reloading devices or resetting the controller. Clicking the MANAGE button will also display these buttons.

2. Click the LEARN DEVICES button. A screen will appear indicating that the interface is ready to receive information.

3. On the Z-Wave ZTH100 Master Remote Control Unit, press the MENU button, then press the right arrow button until the display says “Setup”. Press OK to go into the *Setup* sub-menu. If you are using a different master controller, follow the instructions included with the controller to start the sending of device information and skip to step 8. If you are using a Z-Troller, simply connect the Z-Troller to a free COM port, set the COM port in Setup and click “Load Devices”. You do not need to copy information from a remote control. Follow the steps outlined in the Z-Troller documentation. You do not need to follow the rest of these steps.

4. Press the right arrow button until the display shows “Copy Remote Ctrl.”. Press OK.

5. The display will show “Send Information”. Press OK again.

6. Press the right arrow button until “Only System Information” appears. Press OK.

7. The Remote Control Unit will show “Sending...”. Point the Remote Control Unit toward the USB Interface. Watch the display on the Remote Control Unit to make sure there are no errors. If the transfer is successful, the Remote Control Unit’s display will show “Send Completed” and the screen above will change to show that the transfer was successful and will indicate how many devices were added. The PRO-100 is now set up to control Z-Wave devices.

8. You can now click the Status button to display all the devices that were just learned. These devices can be edited and given new names and locations are required.

# Creating Devices

The *Add Device* screen is where you create devices in the PRO-100. Once a device has been added, it can be used in events and controlled by voice. For the Z-Wave system, devices are automatically added to the PRO-100 through the Interfaces tab (see page 11). You cannot manually add Z-Wave devices through this screen. You can modify some properties of a Z-Wave device that has already been created.

To get to this screen, launch the web interface to get to the *Status* screen (see page 7 for a screenshot), then click the Add Device button. The appearance of the screen and the fields available will vary depending on the type of device selected.

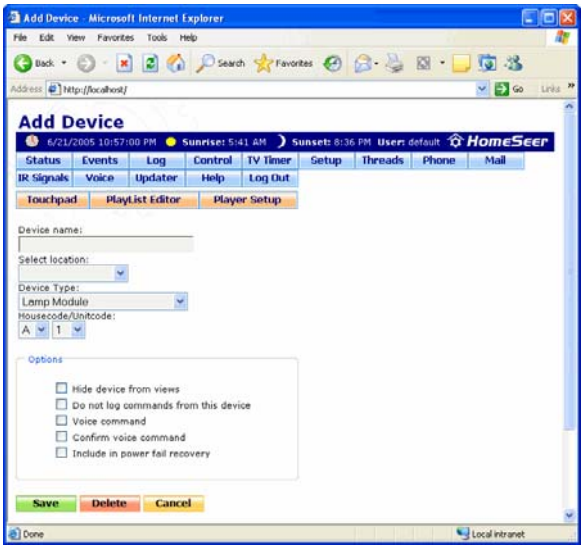



Figure 6: Add Device Screen

## *Lighting*

In the *Add Device* screen (see above), select from the *Device Type* field the type of lighting device you’re creating, such as “Lamp Module”, “PCS Light Switch”, “LM465”, etc. Give the device a name, such as “Living Room Light”; specify its Super location (Second Floor, Outside, East Wing, etc.) and then specify its Sub location (Timmy’s Bedroom, Garage, Den, etc.); and select its House Code and Unit Code from the drop-down menus. Select any other options you’d like to enable for this device by checking the appropriate check box in the *Options* field. Click the SAVE button to finish creating the device. The Device Type normally only pertains to X10 type devices and thermostats. Most other lighting systems will create devices automatically. See the *Climate* section for more information about thermostat devices. To create devices for other lighting systems, make sure that system is enabled on the Interfaces tab in Setup. Once enabled, devices for that system will be automatically added, or click on the *Config* button for the appropriate system to create devices. For example, if a UPB lighting system is used the UPB Configuration will ask for the location of your UPStart configuration file. Once this file is given, all your UPB devices will be created automatically after reading the UPStart file.

## Infrared/Home Theatre

> Before creating infrared devices, you must first enable an infrared device in the *Interfaces Setup Screen* and create infrared buttons (signals) in the *Infrared Signal Configuration* screen.

In the *Add Device* screen (see page 12), select Infrared Device from the *Device Type* field. Give the device a name, such as "Family Room TV", and specify its location (living room, bedroom, etc.). Select any other options you'd like to enable for this device by checking the appropriate check box in the *Options* field. In the *Infrared Keys* area, select an infrared button that was previously created in the *Infrared Signal Configuration* screen from the drop-down menu, then click the ADD button. Click the SAVE button to finish creating the device. Note that Infrared devices cannot be configured until an Infrared controller is selected on the Interfaces page in Setup.

## Security

In the *Add Device* screen (see page 12), select from the *Device Type* field the type of security device you're creating, such as "Motion Sensor". Give the device a name, such as "Porch Sensor"; specify its location (front porch, sidewalk, etc.); and select its House Code and Unit Code from the drop-down menus, if the security device is an X-10 device. Select any other options you'd like to enable for this device by checking the appropriate check box in the *Options* field. Click the SAVE button to finish creating the device. If a security panel is being used such as an HAI or NAPCO Gemini panel, make sure the appropriate plug-in is enable for the panel you are using. Select the panel from the Interfaces tab in Setup and enable the plug-in. The PRO-100 communicates with most panels through the serial interface. Once the interface is enable, devices that represent the panels zones will automatically be created. You can view and control these devices from the *Status* page.

## Climate

In the *Add Device* screen (see page 12), select from the *Device Type* field the type of thermostat device you're creating, such as "RCS TR15 Thermostat". Give the device a name, such as "Guest Room Thermostat"; specify its location (first floor, guest room, etc.); and select its House Code and Unit Code from the drop-down menus. Select any other options you'd like to enable for this device by checking the appropriate check box in the *Options* field. If the thermostat is connected to a COM Port on the PRO-100, then specify the port number in the *Thermostat COM Port* field. Click the SAVE button to finish creating the device. Thermostats are supported in 2 ways. The most basic support is through a script file. This file may be modified by you if required. Once a thermostat device is created, one device appears on the status page and displays the current status of the thermostat. Buttons are also provided for setting the mode and temperature setback.

Some thermostats may also be controlled though a special software plug-in. Thermostat plug-ins provide more control over the thermostat and also provide feedback to the PRO-100. This allows events to be triggered on changes made to the thermostat externally, such as a set point change. Click on the Updater button to get a list of available thermostat plug-ins. Plug-ins are available for RCS and HAI thermostats.

## Virtual Devices

Virtual devices don't have a corresponding physical device, but hold values and states. For instance, a virtual device could be created to hold the status of a motion sensor flag. An event could then be created that increments the value of the flag when the corresponding motion sensor detects motion. The number of visitors that approached the house could then be determined by viewing the value of the virtual flag device.

To create a virtual device, go to the *Add Device* screen (see page 12) and select `Virtual` from the *Device Type* field. Give the device a name, such as “Front Sidewalk Motion Flag”; specify its location (sidewalk, driveway, etc.); and select its House Code and Unit Code from the drop-down menus. Select any other options you’d like to enable for this device by checking the appropriate check box in the *Options* field. Click the SAVE button to finish creating the device. This device can not be used in events. The most likely use is when applying a condition to an event. The condition can look at the state of a virtual device and control whether or not the event triggers. One example is a Home/Away device. Setting this device can alter events based on whether the home owner is home or away.

# Controlling Devices with Events

Events are one or more actions that are carried out in response to specific trigger, such as an absolute time, Dawn or Dusk, push of a button, change in status of a device (something turned on or off), voice command or receipt of an email. Events are sometimes referred to as “macros” by other programs.

Each event is triggered in some manner (see *Triggers* below). Each event can carry out one or more actions (see *Event Actions* below). Event triggers and actions are set in the *Events* screen.

## Elements of an Event

### Triggers

A trigger is used to tell the event to perform some action. Triggers are selected from the *Event Trigger* screen.

### Conditions

Conditions give more flexibility in determining when an event should trigger. You can set as many conditions as you want on a trigger. The event will trigger only when all of the conditions are true. One or more conditions can be added to each event. Multiple conditions can be set up so that they’re all required to be true (conditions separated by AND) or only one condition is required to be true (conditions separated by OR). Conditions can be added to events when the *Apply conditions* field is enabled in the *Trigger* screen for that event.

### Event Actions

There are several types of actions that can be carried out in an event and events can contain one or more actions. Actions are added to events from the *Event Actions* screen.

### Event Groups

Each event may be assigned to a specific group. The group is simply a name and has no other significance. This allows you to put all related events into the same group. For example, you may have a bunch of events that control all of the lights on the first floor. You could put them all in your downstairs lights group. There is no limit to the number of groups you can create.

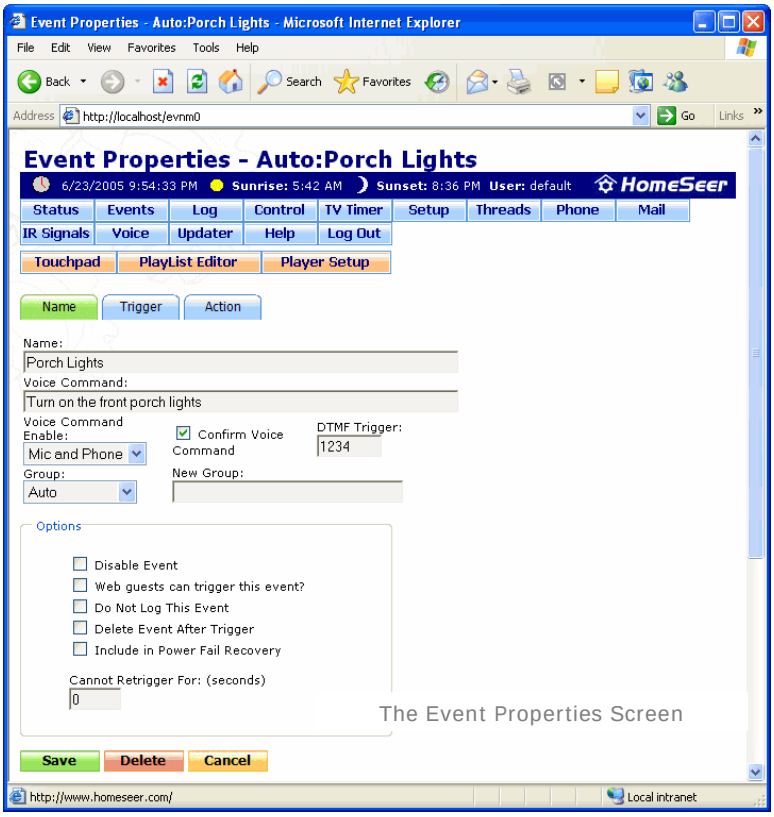
Events are assigned to groups in the *Event Properties* screen.

You can view the events in a specific group by selecting the group name from the drop-down *Groups* box at the top of the *Events* screen. Selecting `All Groups` from the drop down list will display all of your events.

# Creating an Event

### Naming the Event

The *Event Properties* screen is where basic options for the specified event can be set, such as the name of the event, whether or not it will respond to voice commands, and so on.



The Event Properties Screen

To get to the screen, click `Add Event` from the *Events* screen to create a new event, or click the `Name` tab from the *Event Trigger* and *Event Actions* screens.

Give the event a name, such as "Porch Lights On". To be able to run the event by voice, specify the voice command that will be used to trigger the event and select whether the voice command can be given via microphone, telephone, or both. To have the PRO-100 confirm the command before running the event, enable the *Confirm Voice* field. Type a four-digit number in the *DTMF Trigger* field to be able to run the event by pressing the corresponding buttons on telephone keypad. Select any other options you'd like to enable for this event by checking the appropriate check box in the *Options* field.

### Specifying the Event's Trigger

The *Event Trigger* screen lists all the trigger and condition types available in the PRO-100. To get to this screen, click the `Trigger` tab from the *Event Properties* or *Event Actions* screens.

In this screen, select the type of trigger that will run the event, such as a specific point in time, an email message is received, a device changes status, etc. Select which days of the week the event can run, whether the trigger has additional conditions that must be met, and whether the events start time is to be randomized based on the value set in the *General Setup* screen. Additional fields will appear in the screen, depending on which type of trigger is selected. For triggering on the status change of a Z-Wave device, enable polling for the Z-Wave device in the devices properties screen. This will ensure that the PRO-100 sees any changes to the device's status. You can then set a trigger on that particular device changing status, such as someone arriving home. The status change trigger can be used on any device.

### Setting the Event's Actions

The *Event Actions* screen is where actions are added to an event. Select an action to be carried out when the event runs by making a selection in the *Add Action* drop-down menu, setting the appropriate values for the action, and clicking `UPDATE`. More than one action can be carried out

when an event is triggered; to add more actions, select them from the drop-down menu and click UPDATE after adding each action.

Once finished naming an event, specifying its trigger, and adding actions, click the SAVE button at the bottom of the screen to finish adding the event.

# Voice Recognition

## The Speaker Client Application

The Speaker Client is a separate application that works with the PRO-100. This application is used by the PRO-100 to control all audio functions including voice recognition, text-to-speech announcements and playing audio files. . The Speaker Client can be run on the PRO-100 and/or on any number of remote computers. Events in the PRO-100 can send audio to a specific computer, a group of computers, or to all computers currently running the Client. If a computer contains multiple sound cards then multiple instances of the Client can run on that computer; each instance of the Client can control a different sound card.

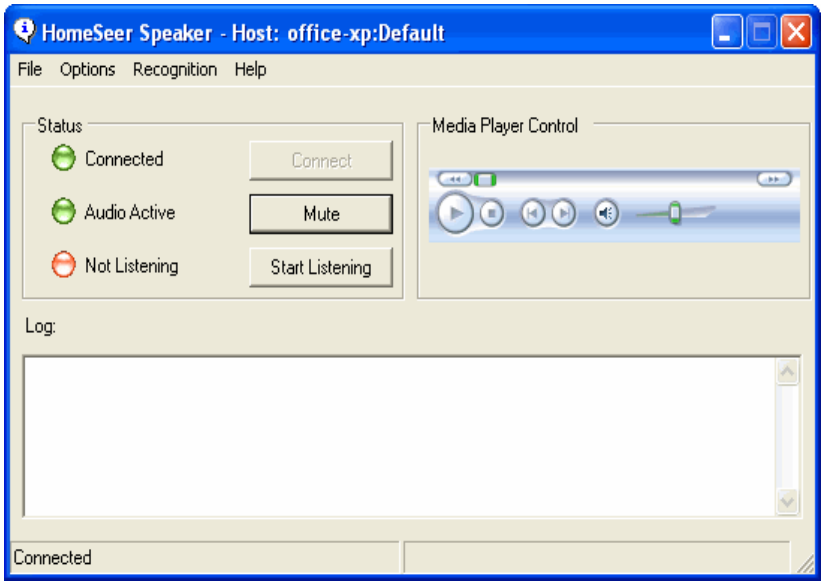



Figure 8: Speaker Client Main Screen

### *Installation*

The PRO-100 is shipped with its own Speaker Client pre-installed. However, the Speaker Client may also be installed on any remote computer to allow remote voice recognition, remote text-to-speech announcements and remote audio file playing from the PRO-100. Use the included Speaker Client Installer CD to install the Speaker Client on all your remote computers.

### *Event Actions*

Event actions for the Speaker Client contain an optional parameter named *Host*. This parameter can be used to specify the Client to which the audio will be sent.

The format of the parameter is `host:instance`, where "host" is the host name or IP addresses of the computer running the Client and "instance" is the instance name of the Client, for those computers running multiple instances. When the Client is first run, the instance name is set to "default". To send the audio to all the Clients running on all the computers, leave the Host parameter blank or use an asterisk (*) for the instance.

**Examples:**

```
127.0.0.1
127.0.0.1:default
```

```
127.0.0.1:*
```

To send audio to the specific PC named “myserver”:

```
myserver
```

To send audio to the specific instance named “soundcard1” on the PC “myserver”:

```
myserver:soundcard1
```

## Speaker Client Settings

The *Speaker Options* screen is where parameters can be set for a Client. Different parameters can be set for each Client, including the voice selection and the attention and ignore phrases and acknowledgements. Click the Options menu item in the *Speaker* screen to get to the *Speaker Options* screen.

If the speaker client PC needs to run multiple speaker client applications (such as to support more than one sound card), the speaker client needs to be launched with its instance name. Launch the speaker client with a parameter to the exe file with the instance name like:

*Speaker.exe soundcard1*

This can be done with a shortcut or from a command prompt. The above command launches the speaker client with a new instance named *soundcard1*. This new instance has totally separate settings from any other instance running on the same computer.

## Remote Connections

The Speaker client may be accessed from ANY OTHER COMPUTER in the word! This will allow you to receive text-to-speech announcements and control your PRO-100 by voice from your work computer (for example). To configure the speaker client for remote connections, you must follow these guidelines:

1) Install the speaker application client on the remote computer. This is accomplished by running the installer on the CD supplied with your PRO-100 and selecting the option to install only the speaker application.
2) Make note of the “Speaker Client Port” number on the PRO-100 Setup screen (on the General Tab in the “Other Settings” section),
3) Run the speaker application client on the remote screen and open the “Options” screen (see Figure 9 below). In this screen, enter the static IP address or dynamic DNS address of your HomeSeer PRO-100. IMPORTANT: If the homeowner uses conventional broadband service, their IP address will likely change from time to time. In this case, it is recommended you establish a dynamic DNS address for the PRO-100. There are a number of dynamic DNS services to choose from on the internet.
4) For security purposes, you’ll need to enter a “Connection Username” and “Connection Password” on this screen also. Be sure to enter a username and password from the “Web Users” tab of the Setup screen in your PRO-100. NOTE: This login must have ‘normal’ or ‘admin’ privileges.
5) Click “OK” to save your settings and then click “Connect” on the main speaker application client screen to establish a connection to your PRO-100.

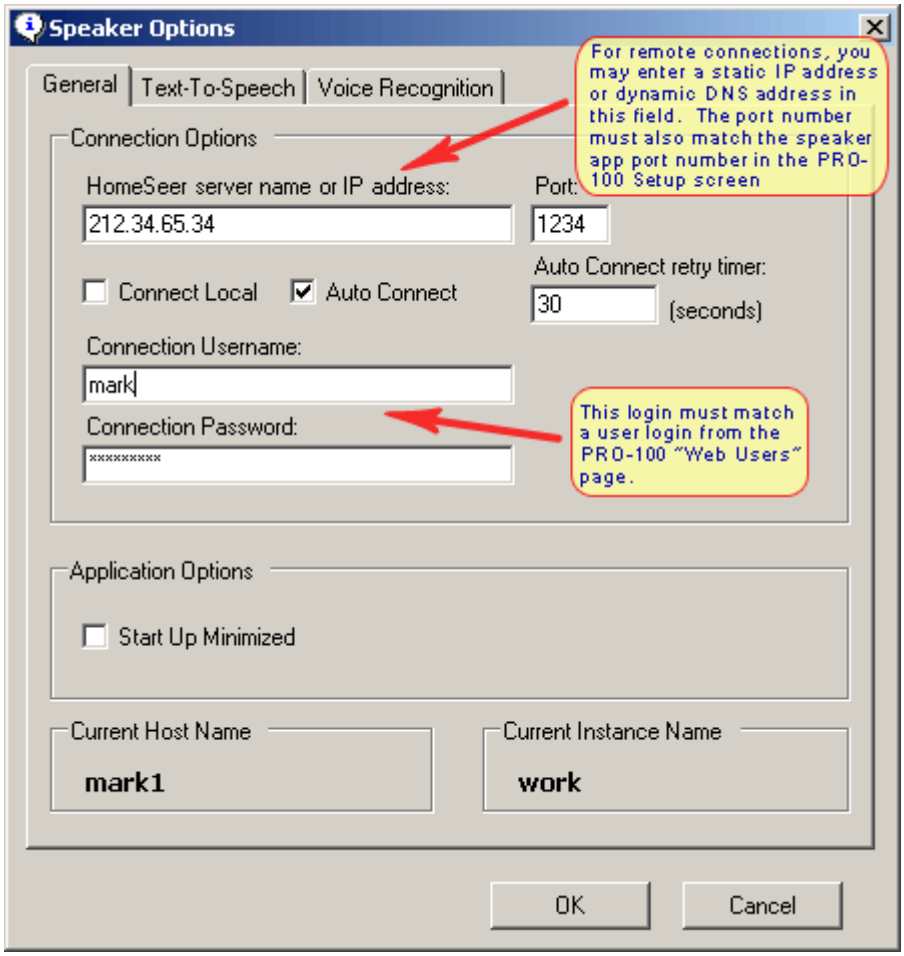



Figure 9: Speaker Client Options Screen

# Voice Recognition Events

Events can be triggered by voice command via microphone or telephone (or both). For microphone use, the Speaker Client application must first be installed and configured. By default, the speaker client is already running on the PRO-100. If the client is not needed on the PRO-100 system, edit the file startup.txt in the scripts folder and remove the launch command. For telephone use, HomeSeer Phone software and the Way2Call Hi-Phone USB voice interface must first be installed and configured.

To control an event by voice, go to the *Event Properties* screen for that event (see page 15), type the voice command to use to run the event, and specify whether the command has to be spoken through a microphone or a telephone or either. Click the SAVE button to save the changes to the event.

# Command Syntax

## *Formatting Commands*

There are some tricks you can use to format voice commands.

For instance, say you would like to give a command that changes your television to a specific channel. You could do this by creating a voice command for every possible channel, but that's impractical. Instead, your voice command can contain ranges of words. The recognition engine will accept any one of the words. The command that will change your television to any channel would look like this:

```
TV channel (0|1|2|3|4|5|6|7|8|9)+
```

This configuration will accept any command like "tv channel 0 1", or "tv channel 1 3 6". You can substitute the actual word for the number in the command like this:

```
TV channel (zero|one|two) etc.
```

It works the same either way.

Brackets are used for optional words such as:

```
[please] turn on the TV
```

The word please is optional and required to be spoken

> Nested parentheses "()" and brackets "[]" are not allowed. For example, the following configuration will not work: (hello|(bill|sue))

To have the TV voice command actually change a channel using an infrared command, you will need a small script to convert the voice command to an infrared command. Run the following script as an action to the event that contains the TV Channel voice command:

```
sub main()
      dim s

      ' get the last voice command recognized
      s=hs.lastvoicecommand

      hs.SendIR "tv," & "$3,$4,$5"

end sub
```

The "$#" tell the system to substitute the proper voice command string into the infrared command. In this case, the first channel number is at location 3 in the voice command. So the first channel number will be inserted where $3 is located. Note that the voice recognition system replaces numbers with their text equivalents, so you will need to name your infrared keys with these names. For example, keypad number "1" should be defined as "one". This conversion can also be done in the above script if necessary.

## *Special Characters and Alternative Strings*

The string expression you supply can include square bracket characters ([ ]) to indicate optional words and vertical bar characters, (|) to indicate alternative strings. Alternates must be enclosed in parentheses. For example, "(hello [there] | hi)" tells the speech engine to accept "hello," "hello there," or "hi" for the command. Remember to include appropriate spaces between the text that's in brackets or parentheses and the text that's not in brackets or parentheses.

You can use the star (*) operator to specify zero or more instances of the words included in the group or the plus (+) operator to specify one or more instances. For example, the following

expression results in grammar that supports “try this”, “please try this”, and “please please try this”, with unlimited iterations of “please”:

```
please* try this
```

The following grammar format excludes “try this” (spoken by itself) because the + operator defines at least one instance of “please”. So, the only allowable phrases are “please try this” or “please please try this”:

```
please+ try this
```

The repetition operators follow normal rules of precedence and apply to the immediately preceding text item. For example, the following grammar results in “New York” and “New York York”, but not “New York New York”:

```
New York+
```

Therefore, you typically want to use these operators with the grouping characters. For example, the following grammar includes both “New York” and “New York New York”:

```
(New York)+
```

Repetition operators are useful when you want to compose an expression that includes a repeated sequence such as a phone number or specification of a list of items:

```
call (one|two|three|four|five|six|seven|eight|nine|zero|oh)*

Id like (cheese|pepperoni|pineapple|canadian bacon|mushrooms|and)+
```

Although the operators can also be used with the optional square brackets grouping character, doing so may reduce the efficiency of the Speaker Client as it processes the grammar.

## *Word Spotting*

You can also use ellipses (…) to support word spotting. Word spotting is where you tell the speech recognition engine to ignore words spoken in this position in the phrase (sometimes called garbage words). When you use ellipses, the speech engine recognizes only specific words in the string regardless of whether they’re spoken with adjacent words or phrases. For example, if you set this property to “[…] check mail […]”, the speech recognition engine will match phrases like “please check mail” or “check mail please” to this command. Ellipses can be used anywhere within a string.

> Be careful when using this technique as voice settings with ellipses may increase the potential of unwanted matches.

## *Tips and Suggestions*

- When defining the expression for your command, include at least one word that is required; that is, avoid supplying only optional words.
- Make sure that the word includes only pronounceable words and letters. For numbers, it is better to spell out the word than use an ambiguous representation. For example, “345” is not a good grammar form. Similarly, instead of “IEEE”, use “I triple E”.

- Omit any punctuation or symbols. For example, instead of “the #1 $10 pizza!” use “the number one ten dollar pizza”. Including non-pronounceable characters or symbols for one command may cause the speech engine to fail to compile the grammar for all your commands.

- Make your voice parameter as distinct as reasonably possible from other voice commands you define. The greater the similarity between the voice grammars for commands, the more likely the speech engine will make a recognition error. You can also use the confidence scores to better distinguish between two commands that may have similar or similar-sounding grammar.

# HomeSeer Phone

HomeSeer Phone is an add-on application to the PRO-100 that adds telephone control. With this application you can:

- Control the PRO-100 with voice commands or touch-tones from any phone from outside or inside your home (if the Way2Call Hi-Phone voice interface is installed).

- Create events in the PRO-100 that are triggered by phone events, such as:

    - When the phone first rings
    - On each phone ring
    - When a caller leaves a voice message
    - When a voice message is read
    - When caller ID information is available
    - When a phone goes off hook

- Caller ID can be used to play special greetings to callers or hang-up on the caller. Caller ID information can be announced by the Speaker Client or displayed on the screen.

- A complete scripting interface is available so you can create your own scripts to handle calls.

- Two built-in answering systems are available to allow a user to leave a message in a mailbox, or just simply leave a message in the default mailbox.

## Connecting the Telephone Voice Interface

The Way2Call Hi-Phone USB Voice Interface is required to enable the telephone functions of HomeSeer Phone software. The Voice Interface is designed to connect to one of the PRO-100’s USB ports and the phone connections may be configured for whole-home use or for use with one specific telephone. The Voice Interface must be installed in series with the phone or phones you wish to control. Installation and configuration instructions are included with the Voice Interface.

# Enabling the Phone Feature

HomeSeer Phone software is required to enable the phone functions of the PRO-100. *Information on purchasing this software may found on the HomeSeer website (www.homeseer.com).*

To start HomeSeer Phone, access the PRO-100's "Setup" screen (General tab). Find the option that says "Launch HomeSeer Phone at startup" and change the setting to "Yes". (this option may not be available on later versions of the software.) Now, restart the PRO-100 and access the "Setup" area again. Now click on the "Phone" tab and scroll to the "Line Specific Settings" section. Pull open the menu in this section and select the Hi-Phone Voice Interface. Additional configuration options will appear below. Once you've adjusted your settings, click the SAVE button at the bottom.

# Running Events by Phone

Events can be run by voice command spoken over a telephone if the HomeSeer Phone Software and Way2Call Hi-Phone Voice Interface are installed.

To control any event for voice control by telephone, go to the *Event Properties* screen for that event (see page 15), type the voice command to use to run the event, and specify whether the command has to be spoken through a microphone or a telephone or either. Click the SAVE button to save the changes to the event.

# The Address Book

HomeSeer Phone software includes an *Address Book* for maintaining contact information for family, friends, colleagues and companies. The feature allows dialing by voice (ie "call Mom", "call Steve at work", "call the pizza parlor", etc) and can work with caller ID (CID) to create text-to-speech announcements (ie "a call is coming in from your mother in law").

To get to this screen, launch the web interface (see page 7), click the Phone button under the time and date bar then click the Address Book button.

> Some of the advanced features available in the Address Book require Caller ID to be available on the phone line. This feature also requires purchase of the HomeSeer Phone and a Way2Call Voice Interface.

# Receiving Phone Messages

If the voice messaging functions of HomeSeer Phone software are enabled, the PRO-100 can serve as the message center for the family. The *Messages* screen appears when the Phone button is clicked at the top of the web interface. From here, you can view the number of voice messages recorded in the system and play them back. You can do this from any computer in your home AND from any computer on the internet! A default mailbox is created when the HomeSeer Phone software is installed, and additional mailboxes can be created in the *Mailbox Admin* screen.

## Caller Announcements

The PRO-100 can be set to announce an incoming call. The HomeSeer Speaker Client application must be installed and configured on the PRO-100 (or any PC on your home network) in order for it to announce the caller. In addition, the option to announce callers and the specific Speaker Client(s) to make the announcement through must be specified in the *Phone Setup* screen.

# Customizing the PRO-100

## ASCII Scripting

At times it may be necessary to send ASCII strings out a serial port to control a particular device, such as a DVD changer, or audio receiver. This is accomplished using some simple script commands. The following script will open a COM port, send a text string, then close the COM port:

```
Sub Main()
      ‘ open com port 2 at 9600 baud. Check the result for errors
      e=hs.OpenComPort(2,"9600,n,8,1",1,"","")
      if e <> "" then
            hs.writelog "Error opening com port",e
      end if
      ‘ send the text string “!CH12” [carriage return]
      hs.SendToComPort 2,"!CH12" & vbcrlf
      ‘ close the com port
      hs.CloseComport 2
End Sub
```

## Scripting

See the complete documentation for the HomeSeer software for details on all the scripting commands available to you and your scripts. The scripting interface is very robust and contains hundreds of script calls to accomplish just about any automation task.

## Digital I/O

Digital I/O is best accomplished with the Applied Digital controller. This external controller connects to the PRO-100 through the serial port. The device supports a wide range of digital inputs, analog inputs, and relay outputs. Once the controller is added, devices are automatically created that represent the I/O points in the controller. Standard events can be created to trigger on the inputs changing, and actions are available to control relay outputs.

Some security panels also support digital I/O, and the outputs on those panels can be controlled using the appropriate plug-in for the panel in use.

## Advanced Programming

If scripting does not provide a robust enough programming environment, custom plug-ins may be developed using the .NET development environment. Plug-Ins may be written in VB.NET or C#. Contact HomeSeer Technologies for a software developers kit that contains documentation and sample plug-ins to get you started.

# Technical Support

## Priority Support

The PRO-100 is sold and supported through a network of authorized HomeSeer dealers. We recommend you contact your HomeSeer dealer for support.

## Other Support

Limited message board support is available through http://board.homeseer.com.

# Information

## FCC/CE Regulations

This unit has been tested to comply with FCC standards for home or office use.

## Warranty Information

HomeSeer Technologies warrants to the original purchaser or, for products purchased from a reseller, to the original end-user that the HomeSeer Technologies-branded PRO-100 will be free from defects in materials and workmanship for one (1) year from the date of purchase. During the warranty period, HomeSeer Technologies will, at its option: (1) provide replacement parts necessary to repair the product or (2) replace the product with a comparable product. You must assist HomeSeer Technologies in diagnosing issues with your HomeSeer Technologies product and follow HomeSeer Technologies' warranty processes. If HomeSeer Technologies determines your product requires service, you may be required to ship it to HomeSeer Technologies' service facility. You are responsible for properly packaging your product, paying all shipping costs, any other taxes, fees or charges associated with transporting the product to HomeSeer Technologies' service facility. If you live in the United States, HomeSeer Technologies will pay the costs of returning the product to you from our service facility. If HomeSeer Technologies determines that you need a replacement part or unit, HomeSeer Technologies will ship the part and installation instructions to you. Replacement parts and products will be new or serviceably used, comparable in function and performance to the original part and warranted for the remainder of the original warranty period or, if longer, 30 days after they are shipped to you.

You authorize HomeSeer Technologies to send replacement parts and products to an authorized third party service provider. If HomeSeer Technologies asks you to return defective parts or products, you must do so within 7 days after you receive the replacement parts or products. HomeSeer Technologies will charge you for replacement parts or products if you fail to do so. If you live outside the United States, you will be charged the cost for returning the product to you from our service facility.

**THIS LIMITED WARRANTY COVERS NORMAL USE. HOMESEER TECHNOLOGIES DOES NOT WARRANT AND IS NOT RESPONSIBLE FOR DAMAGES CAUSED BY MISUSE, ABUSE, ACCIDENTS, VIRUSES, UNAUTHORIZED SERVICE OR PARTS, OR THE COMBINATION OF HOMESEER TECHNOLOGIES BRANDED PRODUCTS WITH OTHER PRODUCTS. THIS LIMITED WARRANTY DOES NOT COVER SOFTWARE OR NON-HOMESEER TECHNOLOGIES BRANDED PRODUCTS. ANY WARRANTY APPLICABLE TO SOFTWARE OR NON-HOMESEER TECHNOLOGIES BRANDED PRODUCTS IS PROVIDED BY THE ORIGINAL MANUFACTURER.**