User's Guide for the

EnergyPro

Server and PC Computer Control and Monitoring Software for the

ADRES Automated Demand Response and
Energy Savings Solution

W*i*N

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ADRES
**Automated Demand Response
and Energy Savings Solution**

The Automated Demand Response and Energy Savings (ADRES) energy management system for local or remote control, monitoring, alarming and data logging of single or multiple heating, ventilating and air conditioning (HVAC) systems, lighting systems and sub-metering building parameters. Private Cellular WAN gateway standard and local wireless RF communication between ADRES controllers standard.

A Master Control "thermostat type" interface for local control and programming is optional. The *EnergyPro* PC computer based "Windows" program for local or remote interface is standard.

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Setup Building, Security and Preferences

Setup Communication Parameters

Setup Projects

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Perform Automatic Polling

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Appendix I

Glossary of Terms

Getting Started

Minimum System Requirements

- A Windows XP, 7, 8 or MS Server OS compatible computer system.
- IBM-compatible PC 486 or higher processor.
- 8 MB RAM.
- A hard drive with at least 80 MB free.
- Unused serial port optional for Local PC control.
- Ethernet communication
- Windows 95, 98, 2000, ME, XP, 7, 8, or any Windows Server operating system.
- CDRom drive optional.

Installing the *EnergyPro* Program in Windows XX

1. Before installing, close all other applications.
2. Insert the **EnergyPro** CD disk into your computer's CD Rom drive (D or CD drive letter) or download the EnergyPro setup files from the Internet.
3. From Windows Start, select Run and Type D:\Setup and Press Return.

- *Note: Once the EnergyPro program begins the installation, you will be asked to accept or change several installation options.*

First things first: Call us to get registered.

After installation of the *EnergyPro* program has been successfully completed, the *EnergyPro* program will need to be registered if more than one building is to be programmed and controlled. You can register by calling us at (800) 770-2828 or email us your Product ID Number at support@winnenergy.com.

To start the *EnergyPro* program, from the Windows xx Start, select Programs, EnergyPro directory and then the EnergyPro executable file.

The few things you should know before you call:

1. If the *EnergyPro* program is to be installed on more than one PC, each PC will have to be registered individually.

2. A unique Product Registration number will be provided by Winn Energy Controls for each individual PC and will correspond to the Number of Buildings authorized.

3. If additional buildings are to be added to an existing program, a new Product Registration number will be required to open up the additional buildings.

4. If you are upgrading from a previous version with more than one building you will not have to obtain a new Product Registration number.

What you should have handy:

1. Your *EnergyPro* program Product ID number.

2. How many buildings will be registered for control and monitoring.

Starting the *EnergyPro* Program:

The *EnergyPro* program installation has to be successfully completed prior to running the program. To start the *EnergyPro* program execute the following steps:

- Turn on the PC and allow Windows to startup.
- From the Windows Start button, select from the start menus:

    Programs   (sub-directory)

        EnergyPro   (sub-directory)

            EnergyPro   (executable file)

- The *EnergyPro* program will automatically startup and present a menu of selections to you.

  The first time you run the program you will have to define at least one building before the program will allow you to access the other menu selections.

  To setup a building, select the New Building from the File menu. A minimum of entries must be completed including the Building Name, Number of Units, Type of Unit. In the Communications Tab the following must be defined, Telephone Number and or Comport or TCP/IP Address and Port.

  After you have defined the building, define each type of unit (HVAC, Analog / Digital, A/D with Lighting etc.) within the building under *EnergyPro* system control. Optional information to enter includes, make, model, serial number, filter quantity and size, type or unit, number of stages and individual equipment energy consumption data.

  Note: Energy consumption is calculated by the program from performance data entered for each unit in the Unit setup forms.

- Additional buildings and unit setups and definitions do not have to be entered for the program to control or monitor the units. This data can be added at a later time. A data collection sheet is provided in the back of this guide to use to collect the specific information requested by the program.

  Note: More detailed procedures for building and unit setup can be found in the "How to" sections later in the on-line help.

EnergyPro Program Main Menus

Main Menus: What they do

The **EnergyPro** program presents several main menu selections. Each choice allows you to select the appropriate form to setup the program, configure, control, monitor or generate reports from the ADRES system hardware. A step by step detailed procedure to perform each setup, configure, program, control or monitoring function is provided in the on-line help within the **EnergyPro** program. A glossary of terms and definitions is also provided within the on-line help file. The following is a summary of the main menu and form selections.

File Menu

New Building...	Ctrl+N
Edit Building...	Ctrl+E
Select Building	Ctrl+B
Setup Projects...	Ctrl+J
Edit Current Building/Project	
Save	Ctrl+S
Print Setup...	
Print	Ctrl+P
Transmit Information	Ctrl+T
Disconnect	Ctrl+D
Show Floorplans...	
Communications Setup...	
Reset Modem/Port	
Preferences...	
Security...	
Increase Building Count...	
Exit	

New Building - This selection is used to open the Building List setup form to create the first building or add a new building to an existing building list.

Edit Building - This selection is used to open the Building List setup form to edit an existing building.

Select Building - This selection is used to open the Building List box and allow the user to change to another building.

Setup Projects - This selection is used to open the Projects Setup form. This form allows the user to group Buildings and Units into a single collection or "Project".

Edit Current Building / Project - This selection is used to open the Building List setup form to edit the current building or project displayed.

Save - This selection is used to save all data to the data base prior to closing the program.

Print Setup - Select or setup a Printer for printing reports.

Print - This selection is used to Print.

Transmit Information - This selection is used to execute the Transmit Information command to send or receive information from the PC to the ADRES system hardware. The program will automatically interface the PC's modem and telephone line if the PC is not directly connected to the ADRES system hardware.

Disconnect - This selection will disconnect the PC from the building by closing the comport if the PC is directly connected to the building. The PC will also disconnect the modem and hang-up the telephone line if connected to a building via modem.

Show Floorplans - This selection will pop-up on the display screen, floor plan graphic images of the location and areas serviced within the building by individual HVAC equipment for the current building selected. It floor plan graphical images have not been linked during the Building setup, then a text description of the location and areas serviced will be provided.

Communications Setup - This selection is used to setup the individual comports to be used and define each comport as a direct connect or modem connect. The local area code of the PC is also recorded to allow the program to only dial long distance if the PC is out of the building's area code. The type unit communication protocol is also selected from the CM1, CM3 or CM4 series ADRES hardware.

Reset Modem/Port - This selection is used to Reset each modem and comport in the case of a malfunction of the comport or if the modem gets hung and won't respond.

Preferences - This selection is used to select operational and program Preferences within the *EnergyPro* program.

Security Settings - This selection is used to set Security access within the *EnergyPro* program.

Increase Building Count - This selection is used to increase the number of buildings. A new registration number must be obtained to increase the number of buildings from the previous authorized number.

Exit - This selection is used to Exit the *EnergyPro* program.

Monitor Menu

```
Monitor HVAC Performance...
HVAC System Status...
Lighting System Status...
Analog Readings...
Digital Readings...

HVAC Energy Data...
Lighting Data...

Automatic Polling...

Show Missed Commands
Clear Missed Cmd Log
```
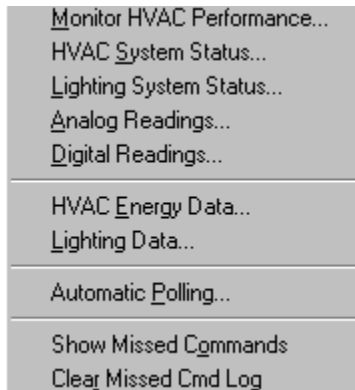
Monitor HVAC Performance - This selection is used to monitor HVAC system performance for the most important parameters. Multiple HVAC unit performance is shown in tabular form and is color-coded for quick evaluation to highlight acceptable or unacceptable performance.

HVAC System Status - This selection is used to monitor an individual HVAC unit for all of its system performance parameters including operating modes, alarms, temperature sensor calibrations and parameter settings.

Lighting System Status - This selection is used to monitor an individual Lighting unit for all of its system performance parameters including description of each of the four individual lighting circuits, on or off operating status and operating mode.

Analog Readings - This selection is used to monitor the current readings from the eight analog signals from an Analog/Digital unit.

Digital Readings - This selection is used to monitor the current readings from the eight digital signals from an Analog/Digital unit.

HVAC Energy Data - This selection is used to download and display accumulated equipment operating times and to provide resulting calculated energy consumption. (Monthly, Yearly or Test).

Lighting Data - This selection is used to download and display accumulated individual lighting circuit operating times and to provide resulting calculated monthly energy consumption. (Current or Previous Monthly Data).

Auto Polling - This selection is used to setup, start, stop or monitor the automatic polling of buildings or projects from the PC. It is also used to view a log of alarms reported during the automatic polling.

Show Missed Commands - This selection is used to show the missed commands from the automatic polling sessions. It is also used to view a log of alarms reported during the automatic polling.

Clear Missed Cmd Log - This selection is used to delete the Missed Commands Log.

Control Menu

Temperature...
Lighting...
HVAC Unit...
Indoor Fan...

Temperature - This selection is used to set or read the current temperature control modes for each HVAC unit. (Program, Override and Manual)

Lighting - This selection is used to set or read the current Lighting unit availability control modes. (Manual or Program)

HVAC Unit - This selection is used to set or read the current HVAC unit availability control modes. (Off, Heat Only, Cool Only or Automatic Changeover)

Indoor Fan - This selection is used to set or read the current Indoor Fan control modes. (Automatic, Continuous, Timed On and Off, and Duty Cycle)

Program Menu

Times and Temps...
Time/Light...
Date/Time...
Vacation/Holidays...
Comfort/Economy...

HVAC Energy Test...

Time/Temps - This selection is used to program or read the four daily and individual weekday and weekend time and temperature schedules for each HVAC unit. The Time/Temp schedule is implemented when the Program temperature control mode is selected.

Time/Light - This selection is used to program or read the four individual lighting circuit daily and weekday / weekend time and light schedules for each Lighting unit. The Time/Light schedule is implemented when the lighting Program control mode is selected.

Date / Time - This selection is used to set or read the current Day, Date and Time for the ADRES system hardware to maintain correct Program and Vacation schedules.

Vacation / Holiday - This selection is used to program, read and display or clear the Vacation and Holiday schedules for each HVAC unit.

Comfort/Economy - This selection is used to program or read and display the current Comfort and Economy Temperatures for each HVAC unit.

HVAC Energy Test - This selection is used to start, stop or display the status of an energy test for individual or multiple HVAC units.

Configure Menu

```
HVAC Parameters...

Digital Signal Monitoring...
Analog Signal Monitoring...
Pulse Signal Monitoring...
```
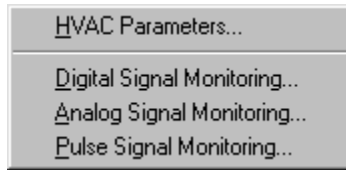
HVAC Parameters - This selection is used to set or read and display individual HVAC, A/D and Lighting with A/D unit system operating parameters.

Digital Signal Monitoring - This selection is used to setup and define or edit the eight individual digital signal channels being monitored and alarmed by the ADRES system hardware.

Analog Signal Monitoring - This selection is used to setup and define or edit the eight individual analog signal channels being monitored by the ADRES system hardware.

Pulse Signal Monitoring - This selection is used to setup and define or edit the six individual digital signal channels which will count and accumulate individual pulses from electric, gas and water metering devices.

Reports Menu

```
Select...
```
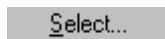
Select - This selection is used to view or make a hard copy printout of a report. Currently available pre-formatted reports include monthly and yearly energy consumption reports and individual HVAC unit energy test reports.

Windows Menu

```
1 Monitor Equipment Performance
2 Time/Temp Settings
3 Set HVAC Equipment Parameters
✓ 4 HVAC Equipment Control
```
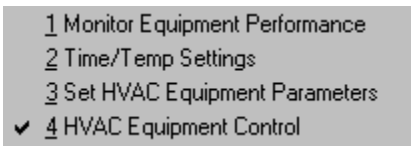
Windows - This selection is used to switch between forms which have been opened but not currently displayed.

Help Menu
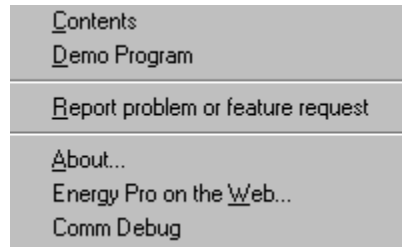
Contents
Demo Program

Report problem or feature request

About...
Energy Pro on the Web...
Comm Debug

Contents - This selection will provide a table of contents from which to select specific help.

Demo Program - This selection will execute a demonstration program of how the *EnergyPro* program works.

Report problem or feature request - This selection is used to report problems encountered in using the *EnergyPro* program. It is also used to request features or functions.

About - This selection will open the program splash screen and show the current version number of *EnergyPro* installed.

EnergyPro on the Web - This selection will take you to the Winn Energy Controls web site, www.winnenergy.com, to obtain program upgrades.

Comm Debug - This selection will open a dialog box to track all activity on the comports. This is useful in troubleshooting communication problems.

EnergyPro Program Icons

Program Icons: What they do

The *EnergyPro* program provides several "toolbar" function icons. Function icons are all the graphic symbols that show up on your display screen just below the main menu toolbar. Each function icon will execute a specific task immediately when selected by the mouse.

Communication Setup Icon

**Communication Setup - ** The communication setup Icon takes you to the Communication Setup menu to define or edit individual comport, modem and communication settings.

Building List Icon

**Building List - ** The building list Icon provides takes you to the Building Setup menu to define or edit building information and data.

Floor Plan Icon

**Floor Plan - ** Selection of this icon will pop-up on the display screen floor plan graphic images of the location and areas serviced within the building by individual HVAC equipment for the current building selected. It floor plan graphical images have not been linked during the Building setup, then a text description of the location and areas serviced will be provided.
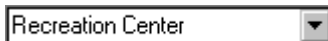
Building Selection Box

**Building or Project Selection Box - ** The building or project selection box provides you with a pull down menu from which to select any one of the buildings or projects available to the PC. The box works in conjunction with the Building / Project Selection Icon.

Building / Project Selection Icons

Select Building or Project - This icon toggles between selection of the building or project selection box. The user is then able to communicate with either the building selected or the project selected.

Monitor System Performance Icon

Monitor System Performance - The monitor system performance icon is a short cut that takes you to the Monitor HVAC Performance form without having to use the main menu.

Modem / Direct Connect Icon

Modem / Direct Connect - Selection of this icon will toggle the current building selected from either a direct connect to a modem communication configuration or from a modem to a direct connect configuration. One comport must be configured as a direct connect (Comport #1) and a second must be configured as a modem connection (Comport #2).

Transmit Icon

Transmit - Selection of this icon will automatically connect your PC to the ADRES system hardware in the building selected. After the connection is made, (direct or modem) data or information will be sent or received.

Cancel Icon

Cancel - Selection of this icon will automatically cancel the current command being sent to the ADRES system hardware but will not disconnect or hang-up the modem from the building.

Disconnect Icon

Disconnect - Selection of this icon will automatically disconnect the modem and hang-up the telephone from the ADRES system hardware in the building which a modem telephone connection had been established.

Help Icon

Help - Selection of this icon will take you to the on-line help.

 Exit Icon

Exit - Selection of this icon will close the *EnergyPro* program and return you back to Windows.

Setup Building, Security and Preferences

Description of the Building List, Security Settings and Preferences Forms

The **File** main menu selection option is where the user can select and define for the program, information about the buildings and their HVAC, lighting or A/D monitoring equipment. Specific data will be input to define how the PC will communicate with the ADRES hardware, the program password security protection, and the preferences such as automatic polling time intervals, modem automatic hang-up delays and removal of old database history.

After selection of the **Edit Building, Security or Preferences** forms from the **File** main menu option, the user is presented with three tabs from which to configure specific setup information for the program. Also shown on the form is the current list of buildings and associated program parameters. The three tabs available from this form are **Building List, Security Settings** and **Preferences** and are described below:

⇒ Building List tab selection is used to define the building (s) and enter data on each individual HVAC, lighting or monitoring unit that will be monitored and controlled by the PC. The Building List selection has several additional forms to define specific HVAC equipment identification, configuration and operating performance data. This HVAC unit data is used to track maintenance scheduled or performed, equipment performance and efficiencies and calculate energy consumption and resulting savings. There is also a tab selection that provides the user with the ability to link floor plan "bitmap" graphical images. These "bitmap" pictures are for on screen display to show equipment location and associated floor plan areas serviced within the building by each HVAC unit. These floor plans are available at anytime from the different monitoring or control forms within the program.

⇒ Security Settings tab selection is used to establish password protection for each individual main menu form. Two levels of password protection are provided.

⇒ Preferences tab selection provides the user the ability to custom tailor various program operating parameters.

Description of the Building List Form
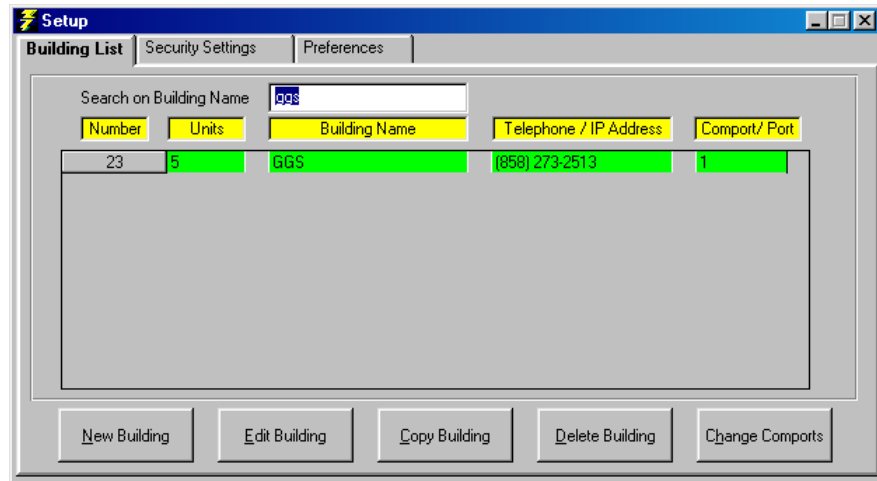
The **Building List** tab selection shows the current building (s) defined and the minimum setup parameters that the program requires to communicate with the HVAC, Lighting, Analog/Digital and other equipment.

The **Building List** form displays the building **Number**, number of heating, ventilation and air conditioning (HVAC), lighting (LIGHTING) or analog/digital (A/D) **Units** controlled within the building. The **Building Name** or description of the building. The **Telephone / IP Address** to reach either the modem connected to the ADRES equipment or server, and computer **Comport / Port** that will be used by the PC to communicate with the associated building.

This data is entered in the **Building Setup** form that can be opened by selecting either the **New Building** or **Edit Building** command buttons. The **New Building** command button can only be selected if there is not a building previously defined and saved. The **New Building** command button should be selected if adding additional new buildings. The **Edit Building** command button should be selected if editing an existing building already defined and saved. The **Copy Building** command button will copy and duplicate all building and unit data using the building highlighted. This can be a quick way to add buildings and input the majority of data into the *EnergyPro* database. Use the editing functions to change specific data that is not identical such as the telephone number, unit serial number, etc. The **Delete Building** command will delete the building highlighted permanently from the database.

Function of the Building Setup Form

The **Building Setup** form is used to enter the **Building Name**, **Building Number, Number of Units**, for each building being defined. After entering the building setup data, this form is used to enter the **Communications** and **Unit Basics** form to define or edit individual HVAC, Lighting or Analog / Digital units which will be controlled or monitored within the building from the PC. An additional **Floor Plans** tab is available to the user to associate graphical "floor plan" images or pictures of the building, location of HVAC equipment, Lighting service areas and areas serviced by the HVAC equipment within the building.

Operation of the Building Setup Form

To operate the **Building Setup** form perform the following:

1. Position the cursor in the Building Name text box and type the name, location or description of the building. Press the Tab button to move to the next data entry text box location. Note: The cursor will be in this box when you first enter this form.

2. Next, position the cursor in the Building Number text box and type the building number. Press the Tab button to move to the next data entry text box location.

3. The next input is the Number of Units. Type in the total number of HVAC, Lighting or Analog/Digital units (ADRES Control Modules) the PC will communicate with in the text box provided. Press the Tab button to move to the next data entry text box location.

4. Select the Communications Tab and input either the Telephone Number and Comport or IP Address and Port. For the telephone number, type in the number that the PC and its attached modem will call to reach the modem attached to the ADRES controls in the building. Include the area code and number. If you are using a ComSwitch to share a telephone line with a voice or fax machine, type in

,,,#111 or ,,,#222 after the telephone number. No spaces are required to separate the numbers. Even if the PC is to be directly connected to the ADRES controls occasionally, leave the telephone number text box completed. You may toggle between modem and direct connect communications with the Modem/Direct Toggle Icon.
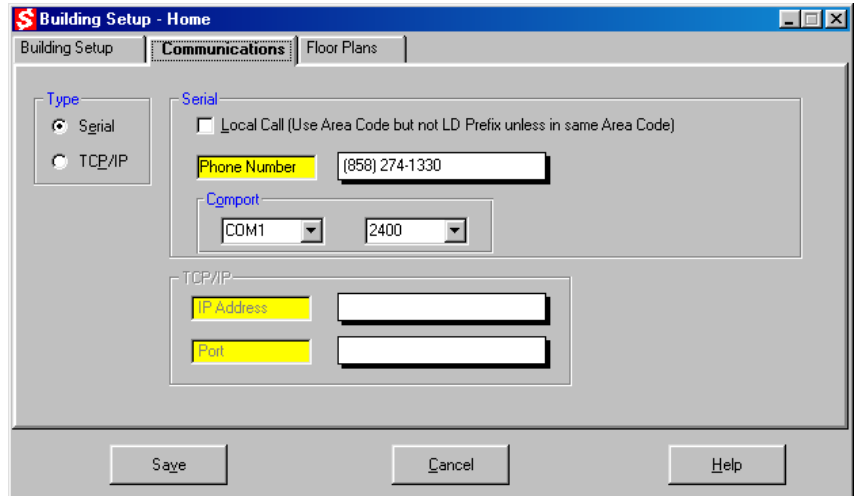
5. Using the mouse, move the pointer to select a radio button adjacent to the PC Comport to be used to communicate with the building. Double click the left mouse button to make the actual selection. Note, only one comport can be selected. You can also select the comport by pressing and holding down the ALT key while pressing the underlined number of the comport desired.

6. To operate the **EnergyPro** program, as a minimum each Unit must be defined in the Unit Basics form. To retain the building setup parameters, press the Save button which will record the building data and operating parameters to the database and automatically return control back to the Building List form. If individual HVAC or Analog/Digital equipment identification and operating data is to be entered, begin by pressing the New Unit command button.

Function of the Floor Plan Form
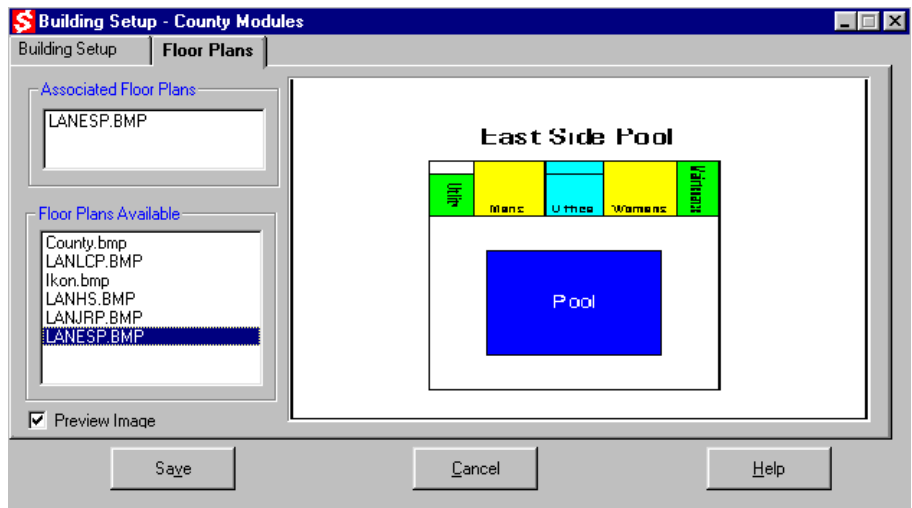
The **Floor Plan** form is available to the user to associate graphical "floor plan" images or pictures of the building, location of HVAC equipment and areas serviced by the equipment within the building. Multiple floor plan "bitmap" images can be associated with individual buildings for viewing during normal program operation using any other form. Additionally, digital photographs or wiring diagrams can be associated for on-line troubleshooting of equipment.

Operation of the Floor Plan Form

To operate the **Floor Plan** form perform the following:

1. Select the **Floor Plan** form from the **Building Setup** form**,** with the mouse.

2. Position the cursor over the bitmap which is to be associated with the building currently being setup.

3. Double click with the mouse on the bitmap or jpeg file name to move the file into the associated floor plan list box. If you would like to view the bitmap or jpeg prior to associating with a building just Click the Preview Image check box with the mouse. Multiple bitmap or jpeg files can be associated with a building.

4. To remove a bitmap or jpeg from the associated floor plans list box just Double click with the mouse on the file name to move the file back into the floor plans available plan list box.

5. To save the setup Click the OK button. To cancel the setup Click the Cancel button.

Function of the Unit Basics Form

The **Unit Basics** form is used to enter unique identification, make, model and serial numbers as well as descriptions of service areas within the building, for each individual HVAC, Lighting or Analog/Digital units being controlled by the ADRES system. The form also defines the Unit Type, HVAC, Analog Digital or Lighting with A/D control module. A log is also available within the form to track noteworthy maintenance or performance information for each unit. The **Unit Basics** form is opened by selecting either the **New Unit** or **Edit Unit** command button from the **Building Setup** form.

Operation of the Unit Basics Form

To operate the **Unit Basics** form perform the following:

1. Position the cursor in the **Unit Number Designation** text box and type the unit number or name used by the building personnel for the HVAC unit being defined. This is used to conveniently cross-reference the ADRES unit address or Control Module number with a predefined HVAC, A/D or Lighting with A/D unit number. Press the **Tab** button to move to the next data entry location upon completion. Note: the cursor will be in this text box when you first enter the form.

2. The next input is a short **Description of Service Area** or rooms or areas in the building which are serviced by the HVAC unit. This description will be referenced in the program if no graphical floor plans are associated with the building. Press the **Tab** button to move to the next data entry location upon completion.

3. The next input is the name of the **Manufacturer** of the HVAC unit. Type in the name of the manufacturer or select

one from a predefined list in the pull down combo box. Press the **Tab** button to move to the next data entry location.

4. The next input is the **Model number** of the HVAC unit. Type in the model number in the text box. Press the **Tab** button to move to the next data entry location upon completion.

5. The next input is the **Serial Number** of the HVAC unit. Type in the serial number in the text box. Press the **Tab** button to move to the next data entry location upon completion.

6. Select using the mouse or tab button to define the unit type as a HVAC or A/D unit. Press the **Tab** button to move to the next data entry location upon completion.

7. A **Notes** section is available to record information on the unit for later retrieval.

8. Additional performance and energy consumption data can be entered for the HVAC units by using the **Tabs** available at the top of the form.

9. To database additional HVAC unit configuration and energy consumption and performance information, proceed by selecting from the **Tabs** across the top of the form. To setup each Analog/Digital or Lighting unit, proceed to the Configure menu and select the Analog / Digital Signal Monitoring or Lighting forms.

Function of the Unit Configuration Form

The **Unit Basics** form is used to enter specific equipment configuration, filter quantity and sizes, and rated outputs for each individual HVAC unit or lighting system being controlled by the ADRES system. The **Unit Configuration** form is opened by selecting the **Unit Configuration** tab.

Operation of the Unit Configuration Form

To operate the **Unit Configuration** form perform the following:

1. Position the cursor in the **Rated Cooling Tons** of the HVAC unit. Type in the rated cooling tons in the text box. Press the **Tab** button to move to the next data entry location upon completion.

2. The next input is the **Rated Heating BTUs** of the HVAC unit. Type in the rated heating BTUs for the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

3. The next input is the **Filter Data**, quantity and size, for the HVAC unit. Type in the quantity and size of filters required by the unit in the text boxes provided. Two different quantities and sizes can be recorded. A pull down combo box is available to select from predefined filter sizes. Press the **Tab** button to move to the next data entry location upon completion.

4. Using the mouse, point and click to choose the **System Type** as either **Gas/Electric** or **Heat Pump, Packaged** or **Split.** Then select the number of cooling and heating stages. Also select if the unit has an **Economizer Installed**. Press the **Tab** button to move to the next data entry location upon completion.

5. Additional performance and energy consumption data can be entered for the HVAC unit by using the remaining **Tabs** available at the top of the form. If performance information is not entered, then press the **Save** command button. This will record all data entered in the form to the database and return control back to the **Building Setup** form to allow a new HVAC unit to be defined or make a copy of the last HVAC unit listed to create the next new unit.

6. To database HVAC unit energy consumption and performance information, proceed by selecting from the **Tabs** across the top of the form.

Function of the A/C Cool Form

The **A/C Cool** form is used to enter individual electric motor power consumption requirements during the air conditioning operation of the HVAC unit only.

The performance information entered is utilized to calculate the actual monthly and yearly power consumption of the HVAC unit during its air conditioning operation. Note, only enter data for the electric motor types which the unit has to provide air conditioning. If the unit has only one controlled stage of air conditioning, then enter the total motor power consumption data in the **Compressor 1st Stage** table only. If the unit has only one stage of air conditioning but has two compressors, then total the amperage of both compressors and enter that value in the **Compressor 1st Stage Amps** table. If the unit has two compressors and each one is controlled separately, (first and second stage) then enter the motor power consumption values separately in the **Compressor 1st Stage** and **Compressor 2nd Stage** tables.

Operation of the A/C Cool Form

To operate the **A/C Cool** form perform the following:

1. Position the cursor in the **Compressor 1st Stage Volts** data entry table and type the supply or line voltage providing electrical power to the HVAC unit. The pull down combo box can also be utilized to select from a predefined list of voltages. Press the **Tab** button to move to the next data entry location upon completion.

2. Type in the number of **Phases** for the **Compressor 1st Stage** motor requirements of the HVAC unit. The pull down combo box can also be utilized to select either single or three phase electrical power. Press the **Tab** button to move to the next input data location upon completion.

3. Type in the **Amps** for the **Compressor 1st Stage** for the total 1st stage compressor amperage draw for the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

4. Continue to type in the **Volts, Phase** and **Amps** for the **Compressor 2nd Stage** motor data for the HVAC unit by repeating steps 1 through 3 above.

5. Repeat step 4 for the **Indoor Fan, Outdoor Fan 1st** and **Outdoor Fan 2nd Stages**.

6. After completing the **A/C Cool** (Air Conditioning) input table proceed to either the **G/E Heat** (Gas/Electric heat) tab or **HP Heat** (Heat Pump heat) tab to complete the energy consumption inputs for the heating components in the HVAC unit. If it is an Air Conditioning only unit, then press the **Save** command button and the program will return to the **Building Setup** form.

Note, if the resulting calculated KW value is shown in red then one or all the inputs has not been correctly entered. Repeat steps 1 through 3 until the KW value is shown in green.

Function of the G/E Heat Form

The **G/E Heat** form is used to enter individual gas BTU and electric motor power consumption requirements during the gas or oil heating operation of the HVAC unit. This form is only made available if the **Gas/Electric** system type is selected in the **Unit Configuration** form.

The performance information entered is utilized to calculate the actual monthly and yearly power consumption of the HVAC unit during its heating operation only. Only enter data for the gas or fuel oil valves and electric motors that the unit has to provide heating. If the unit has only one controlled stage of heating, then enter the total gas BTU or fuel oil BTU input and electrical motor power consumption performance data in the **Gas/Fuel Input 1st Stage** table and **Combustion Fan 1st Stage** tables only. If the unit has

two gas or fuel oil valves and each one is controlled separately, (first and second stage) then enter the gas BTU or fuel oil BTU fuel consumption values separately in the **Gas/Fuel Input 1st Stage** and **Gas/Fuel Input 2nd Stage** tables. Note, the **Gas/Fuel Heat Output** data entry inputs are used as reference only to calculate heating system efficiencies.

Operation of the G/E Heat Form

To operate the **G/E Heat** form perform the following:

1. Position the cursor in the **Gas/Fuel Input 1st Stage** data entry table, and type the Gas or Oil BTU consumption for 1st stage heating of the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

2. Type in the **Gas/Fuel Input 2nd Stage** data entry table, the Gas or Oil BTU consumption for the 2nd stage heating of the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

3. Type in the **Heat Output 1st Stage** data entry table, the Gas or Oil BTU output for the 1st stage heating from the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

4. Type in the **Heat Output 2nd Stage** data entry table, the Gas or Oil BTU output for the 2nd stage heating from the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

5. Position the cursor in the **Combustion Fan 1st Stage Volts** data entry table and type the supply voltage for the combustion fan. The pull down combo box can be also be utilized to select from a list of predefined voltages. Press the **Tab** button to move to the next data entry location upon completion.

6. Type in the number of **Phases** for the Combustion Fan 1st Stage electric motor. The pull down combo box can be also be utilized to select from either single or three phase electrical power. Press the **Tab** button to move to the next data entry location upon completion.

7. Type in the **Amps** for the Combustion Fan 1st Stage for the electric motor. Press the **Tab** button to move to the next data entry input location upon completion.

8. Continue to type in the **Volts**, **Phase** and **Amps** for the **Combustion Fan 2nd Stage** for the HVAC unit by repeating steps 5 through 7 above.

9. After completing the **Gas / Electric Heat** input table, press the **Save** command button which will first save the data to the database and then return control back to the **Building Setup** form.

Note, if the resulting calculated KW value is shown in red then one or all the inputs has not been correctly entered. Repeat steps 5 through 7 until the KW value is shown in green.

Function of the H/P Heat Form

The **H/P Heat** form is used to enter individual electric motor power consumption requirements during the heating operation of the unit only. This form is only available if in the **Unit Configuration** form the **Heat Pump** system type is selected.

This performance information entered is utilized to calculate the actual monthly and yearly power consumption of the particular HVAC unit during its heating operation. Note, only enter data for the electric motors types that the unit has to provide heating. The indoor fan power consumption is entered in the **A/C Cool** form. If the unit has only one controlled stage of heating, then enter the total motor power consumption data in the **Compressor 1st Stage** table and **Outdoor Fan 1st Stage** tables only. If the unit has two compressors or a backup electric strip heater and each one is controlled separately, (first and second stage) then enter the compressor electric power consumption separately in the **Compressor 1st Stage** and **Compressor 2nd Stage** or **Backup Strip Heat** tables.

Operation of the H/P Heat Form

To operate the **H/P Heat** form perform the following:

1. Position the cursor in the **Compressor 1st Stage Volts** data entry table and type the supply or line voltage providing electrical power to the HVAC unit. The pull down combo box can also be utilized to select from a predefined list or voltages. Press the **Tab** button to move to the next data entry location upon completion.

2. Type in the number of **Phases** for the **Compressor 1st Stage** motor requirements of the HVAC unit. The pull down combo box can also be utilized to select either single or three phase electrical power. Press the **Tab** button to move to the next input data location upon completion.

3. Type in the **Amps** for the **Compressor 1st Stage** for the total 1st stage compressor amperage draw for the HVAC unit. Press the **Tab** button to move to the next data entry location upon completion.

4. Continue to type in the **Volts, Phase** and **Amps** for the **Compressor 2nd Stage** for the HVAC unit by repeating steps 1 through 3 above.

5. Repeat step 4 for the **Backup Strip Heat, Outdoor Fan 1st** and **Outdoor Fan 2nd Stages**.

6. After completing the H/P Heat data entry table, press the **Save** command button which will first save the data to the database and then return control back to the **Building Setup** form.

Note, if the resulting calculated KW value is shown in red then one or all the inputs has not been correctly entered. Repeat steps 1 through 3 until the KW value is shown in green.

Function of the Lighting Form

The **Lighting** form is used to enter total electric energy consumption for each of the four lighting circuits being controlled from each Lighting unit. The high voltage lighting contactors may be configured to switch several individual light circuits as one. This form is only available if in the **Unit Configuration** form the **A/D with Lighting** unit type is selected.

This performance information entered is utilized to calculate the actual monthly energy consumption of the particular Lighting circuit being controlled. Note, only enter data for the lighting circuits that the unit has to provide control.
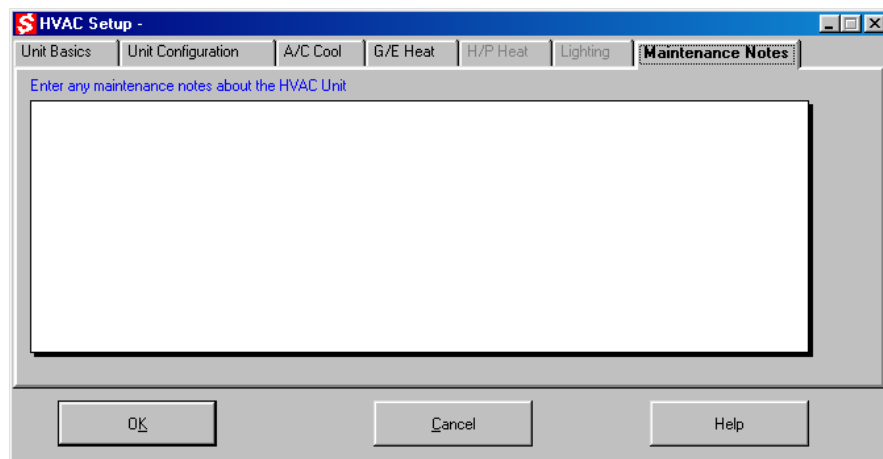
Operation of the Lighting Form

To operate the **Lighting** form perform the following:

1. Position the cursor in the **Description** data entry table and type the name to be used to describe the circuit or lighting zone being controlled. Press the **Tab** button to move to the next data entry location upon completion.

2. Position the cursor in the **Volts** data entry table and type the supply or line voltage providing electrical power to each of the four Lighting circuits. The pull down combo box can also be utilized to select from a predefined list or voltages. Press the **Tab** button to move to the next data entry location upon completion.

3. Type in the number of **Phases** for each of the four Lighting circuits. The pull down combo box can also be utilized to select either single or three phase electrical power. Press the **Tab** button to move to the next input data location upon completion.

4. Type in the **Amps** for the total amperage draw for the lighting circuit being switched on or off. Press the **Tab** button to move to the next data entry location upon completion.

5. Continue to type in the **Description, Volts, Phase** and **Amps** for each of the final three lighting circuits by repeating steps 1 through 4 above.

6. After completing the Lighting data entry table, press the **Save** command button which will first save the data to the database and then return control back to the **Building Setup** form.

Note, if the resulting calculated KW value is shown in red then one or all the inputs has not been correctly entered. Repeat steps 1 through 3 until the KW value is shown in green.

Function of the Maintenance Notes Form

The **Maintenance Notes** form is used to enter text notes on each individual HVAC unit. All notes are stored in the database for future reference and use. Typical notes include major maintenance performed on the unit with listings for replacement component part numbers, description, date and cost of repairs and performance trend information.

Operation of the Maintenance Notes Form

To operate the **Maintenance Notes** form perform the following:

1. Position the cursor in the **Maintenance Notes** text box and use the computer keyboard to type in data and information. Press the **Save** command button to save the data and information and return the control back to the **Building Setup** form.

Function of the Security Settings Form

The **Security Settings** form is used to establish password protection for each individual main menu selection. Two levels of password protection are provided. Note, upon opening the program from MS Windows 95, 98 or NT each time, if a password has been set, the program will ask for the password prior to allowing access to the selected main menu command button. The program will not ask for the password again after correctly providing the password once, unless the program was closed or fifteen minutes have passed since the last keyboard entry or mouse movement. Recommended security settings are as follows:

❑ New/Edit Building, Security and Preferences   2nd Level

❑ Monitor   No Protection

❑	Control	1st Level
❑	Program	1st Level
❑	Configure	2nd level
❑	Reports	1st Level
❑	Windows	No Protection
❑	Help	No Protection

Operation of Security Settings Form

To operate the **Security Settings** form perform the following:

1. Using the mouse, position the cursor over the **Level** of protection desired for each main menu command button. Click the left mouse button once to enable the selection. Repeat the procedure for each main menu command button. Notice only one level can be selected for each main menu command.

2. To set the first level password, move the mouse cursor over the **Set Passwd** command button and double click the left mouse button to open up the security settings menu.

3. Position the cursor in the **Set New Password** text box and type in the first level password. Press the **Tab** button to move to the **Verify New Password** text box upon completion.

4. Type in the first level **Verify New Password** identical to the set new password just completed. The passwords are case sensitive. After typing in the verification, press the **OK** command button to retain the password or **Cancel** command button to cancel the operation.

5. Pressing the **OK** command button will return control to the **Security Settings** form.

6. Repeat steps 3 though 5 for the second level password selection.

7. Protection can be turned on or off after initial setting by moving the check box to the desired protection level setting with the mouse.

Function of the Preferences Form
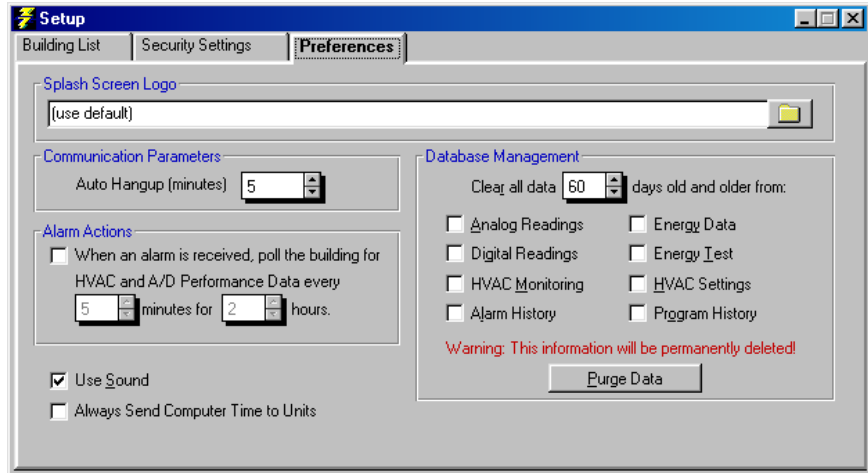
The **Preferences** form is used to custom tailor the program to desired setup preferences. The parameters currently available to set are as follows:

⇒ Select the Auto Hang-up time delay to disconnect the modem connection.

⇒ Select the time interval between Automatic Polling cycles.

⇒ Turn the Sound On or Off.

⇒ Select to Always Send Computer Time to Units.

⇒ Purge historical data from the database for selected data sets.

Operation of the Preferences Form

To operate the **Preferences** form perform the following:

1. Type in the **Auto Hang-up** time delay in minutes to hang-up the modem and telephone line in the case of inactivity by the *EnergyPro* program. Press the **Tab** button to move to the next data entry location upon completion.

2. Type in the **Auto Polling** time interval in minutes. Press the **Tab** button to move to the next data entry location upon completion.

3. Check the box adjacent to the Sound to turn the sound on or off.

4. Check each box adjacent to the database which previous historical data is to be deleted. Select the number of days to retain as current history. A backup of the MS Access

database (EnergyPro.mdb) can be made prior to deleting for permanent archiving purposes.

5. After all selections are made in the **Preferences** form, press the **Return** command button to return to the **Main Menu** form.

Setup Communication Parameters

Description of the Communications Setup Form

This form is used to setup the communication parameters the PC will use to communicate with the ADRES hardware via modem or direct connect connections. The **EnergyPro** program allows four comports to be used to accommodate any combination of modem or direct connect. The parameters that are available to setup or select are defined below:

⇒ **Comports #1 through #4 -** Determine the comport (s) available in the PC and modem (s) connected to the PC to allow setup of each comport. The factory default setting has no comports selected.

⇒ **Modems -** The Modems pull down boxes allow the selection of various pre-qualified modems and their

respective setup strings to optimize communication protocols for use with the ADRES hardware and ADRES modem.

⇒ **Emergency Comport -** The Emergency Comport spinner box is used to select the comport with PC modem to notify a pager of ADRES hardware alarms reported to the PC.

⇒ **Pager Number to Call in Emergency -** The Pager Number to Call in Emergency is used to type in the pager number desired to report ADRES alarm conditions.

⇒ **Area Code -** The Area Code text box is used to record the telephone area code where the PC is calling from. This is used by *EnergyPro* to compare with the building area code recorded during the building setup. *EnergyPro* determines if the area code is necessary to dial to reach the specific building. The user can change this area code if the PC is calling from a different location with new area code.

⇒ **Notify Via TCP/IP -** The TCP/IP check box is used if you would like to forward alarms to an IP Address in XML format. The IP Address and Port must be input to notify of ADRES hardware alarms reported to the PC.

⇒ **Prefix Dial -** The Prefix Dial text box is used to record any telephone system prefix numbers required to access an outside telephone line connected to the PC's modem.

⇒ **Type of Command Modules -** The Type of Command Modules is used to select the ADRES Control Module series which *EnergyPro* is communicating with. Each type of ADRES Control Module uses a different communication protocol.

Operation of the Communication Setup Form

The **Communication Setup form** is where the user can select and setup PC comports and modems to establish communication with ADRES hardware. After selection of the **Communication Setup** form from the **File** main menu option, the user is presented with the **Communication Setup** form.

To operate the **Communication Setup** form perform the following:

NOTICE

This form must be completed with at least one comport initialized for the PC to communicate with ADRES hardware.

1. Select the **Comport** (s) that will be used to connect and communicate with ADRES hardware. The Use Port check box should be checked for each Comport to be initialized.

2. Select the **Direct Connect** check boxes for each of the Comport (s) to be directly connected to ADRES Control Modules or Master Control Units.

3. Select the **Auto Answer** check box for one of the Comport connected to a modem to be used to answer all ADRES

alarms called into the PC from ADRES hardware. Only one Comport should be setup for **Auto Answering**.

4. Using the **Modem** pull down boxes, select the modem that is connected to the PC's comport. If the modem being used is not listed, use the Generic #1 modem.

5. If a pager is to be used to receive forwarded ADRES alarms, select the **Emergency Comport**, with a modem attached, to call out and forward the alarm to a pager.

6. If a pager is to be used to receive forwarded ADRES alarms, type in the pager number to be called to receive alarm indications in the **Pager Number to call in Emergency** text box. Note that the pager number should be followed by three commas (555-1212,,,).

7. Type in the area code that the PC will be calling from in the **Area Code** text box. *EnergyPro* will determine if the area code for the building to be reached is necessary to dial to reach the building.

8. Select the **Type of Command Modules** series that *EnergyPro* is communicating with. Each type of ADRES Control Module uses a different communication protocol.

Setup Projects

Description of the Project Setup Form
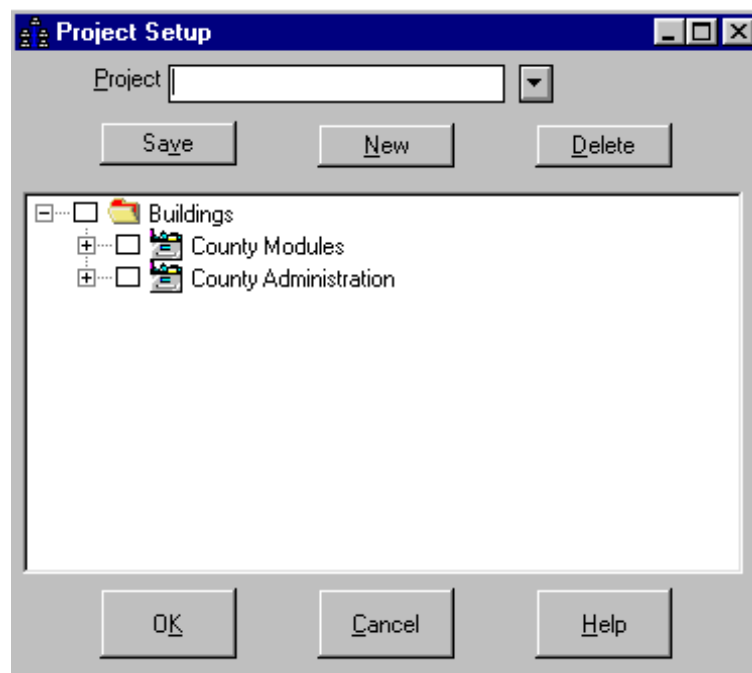
This form is used to setup individual projects the PC will use to communicate with a select "group" of building and units. The **EnergyPro** program provides the user the ability to setup and define as many Projects as desired. Projects can group buildings and select specific units within the buildings. Projects can be used to format and group the buildings and units into specific reports. Projects can also be used to send new setpoints or operating parameters without having to manually operate the **EnergyPro** program. The Project Setup form selections are defined below:

⇒ **Project pull down box** - The Project pull down box is used to select an existing project to edit, add or delete buildings or units within the buildings. The factory default setting has no projects setup.

$\Rightarrow$ **Save Button -** The Save button, saves the new Project defined.

$\Rightarrow$ **New Button -** The New button clears the Project pull down box and places the cursor in the box to allow the user to type in the name given to define a new Project.

$\Rightarrow$ **Delete Button -** The Delete button erases the Project shown in the Project pull down box and deletes the project from the database.

$\Rightarrow$ **Building Tree -** The Building Tree box shows all the buildings and units currently available for selection into a Project. Any of the Buildings or Units can be selected to add or remove from the Project being defined.

$\Rightarrow$ **OK Button -** The OK button accepts the current project selection and returns the user to the Main Menu.

$\Rightarrow$ **Cancel Button -** The Cancel Button cancels a new project being developed or modifications being made to an existing Project.

$\Rightarrow$ **Help Button -** The Help Button will take the user to the on-line Help.

Operation of the Project Setup Form

To operate the **Project Setup** form perform the following:

1. Select either an existing **Project** to **Edit** or a **New** project to define.

2. Use the **New Button** to setup a new Project.

3. Use the **Project pull down box** to select an existing Project to edit.

4. Select the **Buildings** to add to a Project by checking the box adjacent to each Building shown in the **Building Tree**.

5. To add or delete individual Units with a Building, Double Click on the Building to open the tree to show individual Units. Select the individual **Units** to add to a Project by checking the box adjacent to each Unit shown below each Building listed in the **Building Tree**.

6. Use the **Save Button** to save the project to the database.

7. Use the **Cancel Button** to cancel the Project setup.

8. Use the **OK Button** to Save the Project to the database and return to the Main Menu.

9. Use the Help button to reach the on-line Help file.

Configure HVAC System Parameters

Description of the HVAC System Parameter Settings

The **HVAC System Parameters** form is used to change or modify any of the HVAC system operating parameters. This form is also used to configure several **A/D Monitor** and **Lighting with A/D Monitor** settings. The parameters that are available to modify are defined below:

⇒ **Cooling On/Off Differential Temperature (Cool Diff)   -** The cooling on/off differential temperature (Anticipation Temperatures) are the number of degrees above the cooling setpoint temperature (On Temp) and below the cooling setpoint temperature (Off Temp) which will turn the air conditioning system on and off. The factory default setting is 1 ^{o}F On and 2 ^{o}F Off.

$\Rightarrow$ **Heating On/Off Differential Temperature (Heat Diff) -** The heating on/off differential temperature (Anticipation Temperatures) are the number of degrees below the heating setpoint temperature (On Temp) and above the heating setpoint temperature (Off Temp) which will turn the heating system on and off. The factory default setting is 1 ^{o}F On and 2 ^{o}F Off.

$\Rightarrow$ **Stage 2 On Differential Temperature (Stage 2 Diff) -** The stage 2 on differential temperature is the number of degrees the room temperature is above the cooling setpoint temperature, or below the heating setpoint temperature, which will turn on the 2nd stage of cooling or heating, if the HVAC system is a two stage unit. The factory default setting is 2 ^{o}F for Cooling and 2 ^{o}F for Heating.

$\Rightarrow$ **Minimum Energy Recovery Stop Differential Temperature (Min ER Stop Diff) -** The minimum energy recovery stop differential temperature is the difference in degrees between the supply air temperature and room temperature at which energy recovery is terminated and the mechanical cooling (compressors and outdoor fans) or heating (gas valves and combustion fans) are turned on. The factory default setting for 6 ^{o}F in Cooling and 12 ^{o}F for Heating.

$\Rightarrow$ **Minimum Energy Recovery Start Differential Temperature (Min ER Start Diff) -** The minimum energy recovery start differential temperature is the difference in degrees between the supply air temperature and room temperature at which energy recovery is initiated and the mechanical cooling (compressors and outdoor fans) or heating (gas valves and combustion fans) are turned off to recover available cool or heat energy. The factory default setting is 12 ^{o}F for Cooling and 20 ^{o}F for Heating.

$\Rightarrow$ **Economizer On Temperature (Economizer Temp) -** The economizer on temperature is the ambient or outdoor temperature at which the economizer is opened to allow outdoor air at sufficiently low temperature to provide air conditioning in place of normal mechanical cooling (compressors and outdoor fans operating). When the economizer is open, the compressors and outdoor fans are turned off. The ADRES Control Module must be in control of the economizer. The factory default setting is 48 ^{o}F.

$\Rightarrow$ **Minimum Off Times (Min Off Times) -** The minimum off times are the times which the compressors in air conditioning and gas valves or compressors in heating are held off between cooling or heating calls. The minimum off time protects the HVAC unit from short cycling the compressors in air conditioning or for heat pumps in heating. The factory default setting is 3 minutes for Cooling and 3 minutes for Heating.

$\Rightarrow$ **Minimum Run Times (Min Run Times) -** The minimum on times are the times which the compressors in air conditioning and gas valves or compressors in heating are

held on before allowing them to shut off once started. The minimum on time protects the HVAC unit by ensuring lubricating oils in the refrigerant are circulated in the compressors in air conditioning or for heat pumps in heating. For gas/electric units it ensures evaporation of any condensation in the furnace heat exchanger to eliminate corrosion while heating. The factory default setting is 4 minutes for Cooling and 5 minutes for Heating.

⇒ **Minimum Call Times (Min Call Times) -** The minimum call times is the minimum total time between calls for air conditioning or heating. The minimum call time should at least equal the minimum off time plus the minimum on time. The factory default setting is 6 minutes for Cooling and 6 minutes for Heating.

⇒ **Blackout Restart Stagger (Restart Stagger) -** The blackout restart stagger is the time delay between bringing each HVAC unit on after a utility power outage. This time delay will restart each HVAC unit beginning with address #1 and delay each subsequent HVAC unit from coming on by the amount of blackout restart stagger time delay in seconds. This prevents electrical power surges and possible blown fuses upon return of electrical power to the building and HVAC units. The factory default setting is 10 seconds.

⇒ **Type of HVAC Unit (HVAC Unit) -** The type of HVAC unit parameter will define the type of HVAC system for which each ADRES Control Module will be controlling. There are three available selections:

⇒ Gas / Electric

⇒ Heat Pump with an "O Type" reversing valve

⇒ Heat Pump with a "B Type" reversing valve

⇒ The number of stages of air conditioning and heating are also set with this parameter. The factory default setting is Gas/Electric and 2 Stages.

⇒ **Set Control Module Address (Address of Unit) -** The set address of HVAC unit parameter will set each ADRES Control Module to a unique "computer address" to allow both the ADRES Master Control Unit or a remote PC computer to communicate with each Control Module on an individual basis. It is important to note that this parameter should only be used when ONLY ONE control module is connected to the Master Control Unit or PC computer to avoid setting the same address to more than one Control Module. The factory default setting is address #1. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Room Temperature Sensor Override Temperature (Room Temp Sensor Override) -** The Room Temperature Sensor override temperature parameter sets the maximum number of degrees which the occupant is allowed to override current heating or cooling setpoint temperatures. To override current setpoint temperatures, the Room Temperature Sensor's warmer or cooler keys are pressed

and held for at least a half second to allow the control to adjust the current setpoints 1 ^{o}F up in heating or 1 ^{o}F down in cooling for each time the sensor's warmer or cooler key is pressed, up to the maximum number of override degrees allowed. The Room Temperature Sensor override will stay in effect until the next program time/temperature change. The factory default setting is 3 ^{o}F .

$\Rightarrow$ **Calibrate Room Temperature Sensor (Calibrate Rm Sensor) -** The calibrate Room Temperature Sensor parameter is used to adjust the reported room temperature from the Room Temperature Sensor to the Master Control Unit or PC Computer to the actual or desired room temperature. This parameter is typically used if the Room Temperature Sensor is located on a wall that is warmer or cooler than the actual room temperature. The factory default setting is 0 ^{o}F of offset calibration.

$\Rightarrow$ **Calibrate Supply Temperature Sensor (Calibrate Supply Temp Sensor) -** The calibrate Supply Temperature Sensor parameter is used to adjust the reported supply temperature from the Supply Temperature Sensor to the Master Control Unit or PC to the actual or desired supply temperature. This parameter is typically used if the Supply Temperature Sensor is located in a warmer or cooler section of the supply air ductwork. The factory default setting is 0 ^{o}F of offset calibration.

$\Rightarrow$ **Calibrate Roof Temperature Sensor (Calibrate Roof Temp Sensor) -** The calibrate Roof Temperature Sensor parameter is used to adjust the reported roof temperature from the Roof Temperature Sensor to the Master Control Unit or PC to the actual or desired roof temperature. This parameter is typically used if the Roof Temperature Sensor is located in a warmer or cooler roof location. The factory default setting is 0 ^{o}F of offset calibration.

$\Rightarrow$ **Set Output Control (Set Output Control) -** The set output control is used to select HVAC unit control from either the ADRES control module or a backup thermostat. This selection only functions with a 43032 Motherboard. The 43033 Motherboard has manually selected switches to change between EMS control and Thermostat control. Reading the output control can be performed on both Motherboards. The factory default setting is ADRES control.

$\Rightarrow$ **Set Modem Control (Modem Type) -** The set modem control is only used without a Master Control Unit to set the first control module with a plug-in modem to Modem Control. This will allow telephone access to a string of units via modem. The factory default setting is Direct Connect.

$\Rightarrow$ **Set Alarm Send Mode (Alarm Send Mode) -** The set alarm send mode is used without a Master Control Unit to set the first control module with a plug-in modem to send alarms to the monitoring PC. The factory default setting is Monitor Only. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Set Alarm Phone Number (Alarm Phone Number) -** The set alarm phone number is used without a Master Control Unit to program the telephone number the first control module with a plug-in modem will call to send alarms to the monitoring PC. The factory default setting is No Number. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Set Alarm Temperatures (Alarm Temperatures) -** The set alarm temperatures is used with or without a Master Control Unit to program the high or low room alarm temperatures. The factory default setting is 55 ^{o}F for the low temperature or heating alarm and 90 ^{o}F for the high temperature or cooling alarm.

⇒ **Set Heating Differential Temperatures (Alarm Heating Diff) -** The set heating differential alarm temperatures is used with or without a Master Control Unit to program the heating 1st and 2nd stage differential alarm temperatures. The factory default setting is 20 ^{o}F DeltaT for the 1st stage of heat and 32 ^{o}F DeltaT for the 2nd stage of heat.

⇒ **Set Cooling Differential Temperatures (Alarm Cooling Diff) -** The set cooling differential alarm temperatures is used with or without a Master Control Unit to program the cooling 1st and 2nd stage differential alarm temperatures. The factory default setting is 10 ^{o}F DeltaT for the 1st stage of cool and 15 ^{o}F DeltaT for the 2nd stage of cool.

⇒ **Set Alarms Enable / Disable (Alarms Enabled) -** The set alarms enabled is used without a Master Control Unit to set each control module to send the alarms which are enabled to the monitoring PC. The factory default setting is all alarms off.

⇒ **Set Alarm Delay Timer (Alarm Delay) -** The set alarm delay timer is used without a Master Control Unit to set each control module to delay sending any alarms until the alarm delay timer has expired. No alarms will be sent until after the alarm time delay. The factory default alarm delay setting is 10 minutes.

⇒ **Set Alarm Repeat Timer (Alarm Repeat) -** The set alarm repeat timer is used without a Master Control Unit to set each control module to re-send alarms after the alarm repeat timer has expired. The factory default alarm delay setting is 30 minutes. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Set Building Number (Building Number) -** The set building number will set each ADRES Control Module to a unique building number to allow both the monitoring PC to determine which building is sending an alarm condition. The factory default building number is #1. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Settings Enable / Disable (Setting Enabled) -** The settings enable / disable command will set each ADRES Control Module to turn on or off the cooling energy recovery ,

heating energy recovery or economizer functions. The factory default is the heating and cooling energy recovery control function is on and the economizer control is off.

⇒ **Set the Modem Rings to Answer (Rings to Answer) -** The set modem rings to answer is enabled with the CM4 module type and is used without a Master Control Unit to set the plug-in modem to answer after the desired number of rings set. The factory default alarm delay setting is 1 ring prior to modem answer. **This command is available to also set A/D and Lighting with A/D units.**

⇒ **Set the Tries to Dial Alarm (Tries to Dial Alarm) -** The setting of the tries to dial alarm is selected with the CM4 module type and is used without a Master Control Unit to set the plug-in modem and control module to repeatedly dial and report the alarm for the desired number of tries. The factory tries to dial alarm setting is 10. **This command is available to also set A/D and Lighting with A/D units.**

Operation of the Set HVAC System Parameters Form

The **Configure** main menu selection option is where the user can select and setup new HVAC unit system operating parameters. After selection of the **HVAC Parameters** from the **Configure** main menu option, the user is presented with the **Set HVAC Equipment Parameters** form.

To operate the **Set HVAC System Parameters** form perform the following:

WARNING

This form is typically only utilized during the installation and should only by changed by qualified HVAC service technicians.

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **HVAC System Parameters** form from the **Main Menu,** with the mouse.

3. **Select the HVAC unit** (s) by Clicking once on the Unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Double Click with the left mouse button the HVAC unit number to return its box color to (Green). Those units selected will have their system operating parameters changed. If all units are to be changed, Click with the left mouse button once the **All** check box next to HVAC unit number 1.

4. **Select the HVAC Parameter to Set** by moving the mouse cursor over the **List Box** and Clicking the left mouse button once to select one of the thirty parameters. The large yellow label box at the bottom of the form will show the parameter that is selected to modify, and present one or two spinner combo boxes to change the current parameter values.

5. When the spinner combo box opens, select the desired parameter value by using the up or down arrow in the spinner box to increase or decrease to the value desired. Alternatively, you can highlight the box and type in the desired value directly. The selected value will be shown in the box.

6. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

7. To exit this form and return to the main menu Click on the **X** in the upper right hand corner of the form with the left mouse button.

8. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

    If the HVAC units received the parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box . If the new values are not shown in the data table, then the procedure should be repeated.

Special Reminder Note: Do Not Use the (Address of Unit) selection unless only one HVAC Control Module is connected to its Master Control or computer.

Configure Digital Signal Monitoring Channels

Description of the Digital Signal Monitoring Setup Form

This **Digital Signal Monitoring Setup** form is used to setup and configure each of the eight Digital channels available in an Analog/Digital and Lighting with Analog / Digital units. The Lighting with A/D unit has only six digital channels available to configure as either digital or pulse or any combination. To configure the Lighting with A/D unit pulse channel refer to the Configure Digital Pulse Monitoring Form. The individual digital channel setup parameters are defined below:

⇒ **Channel Number (Channel) -** The Channel Number is hard coded to reference each of the eight channels available to be configured and then monitored by an Analog/Digital Unit.

⇒ **Channel Description (Parameter) -** The Parameter (Channel Description) is used to type a specific name to describe the individual channels.

⇒ **Alarm Description On (Description On) -** The Alarm Description On parameter is used to define a specific name to describe the On or Alarm condition of the individual channel. An Alarm or On state is when the individual channel voltage at the Analog / Digital terminal strip is greater than 4.5 VDC.

⇒ **Alarm Description Off (Description Off) -** The Alarm Description Off parameter is used to define a specific name to describe the Off or Normal condition of the individual channel. An Normal or Off state is when the individual channel voltage at the Analog / Digital terminal strip is less than 0.5 VDC.

⇒ **Alarm Delay Timer (Alarm Delay) -** The Alarm Delay Timer parameter is used to delay sending an alarm until the alarm condition has persisted longer than the Alarm Delay time. The Alarm Delay is in minutes. An Alarm Delay of less than 10 minutes will cause the alarm to be called continuously.

⇒ **Define Alarm Condition (Alarm Condition) -** The Alarm Condition can be selected from one of three modes:

❑ None - No alarms only monitoring

❑ On Only - Indicate an Alarm in the On state

❑ Off Only - Indicate an Alarm in the Off state

Operation of the Digital Signal Monitoring Configuration Form

To operate the **Digital Signal Monitoring Configuration** form perform the following:

NOTICE

An Analog / Digital Unit must be setup and defined under the Unit Basics form.

1. Select the **Digital Signal Monitoring** form from the **Configure Menu,** with the mouse.

2. **Select the Digital Unit** by typing in the Unit Number in the **Select Digital Unit** text box. Pressing the Tab button will move the cursor to the Channel #1 Parameter text box.

3. Type in the name to be given to Channel #1 to describe the channel **Parameter**. Pressing the Tab button will move the cursor to the **Description On** text box.

4. Type in the name to be given to describe the **Description On** or (+5 VDC) condition. Pressing the Tab button will move the cursor to the **Description Off** text box.

5. Type in the name to be given to describe the **Description Off** or (+0 VDC) condition. Pressing the Tab button will move the cursor to the **Alarm Delay** text box.

6. Type in the time in minutes to set the **Alarm Delay** Time. Pressing the Tab button will move the cursor to the **Alarm Condition** pull down box.

7. Select the Alarm Condition using the pull down menu.

8. Repeat steps 3 through 7 to define each of the remaining Digital Channels. If channels are unused and not defined they will not be shown.

9. The **Save Button** is used to save the configuration to the database.

10. To **Program** the actual **Analog / Digital Unit** with the configuration settings, Transmit the configuration to the A/D Unit using the **Transmit Button**.

Special Reminder Note: To set the address of an Analog / Digital Unit, set the preceding HVAC unit to the next address and the Analog / Digital Unit will be programmed automatically to the next sequential address number. (i.e. if Unit #1 is an HVAC Unit, the Analog/Digital Unit will be automatically programmed to Unit #2 when the address for Unit #1 is set).

Configure Analog Signal Monitoring Channels

Description of the Analog Signal Monitoring Setup Form

This **Analog Signal Monitoring Configuration** form is used to setup and configure each of the eight Analog channels available in an Analog/Digital and Lighting with Analog / Digital units.   The individual setup parameters are defined below:

⇒ **Channel Number (Channel)   -** The Channel Number is hard coded to reference each of the eight channels available to be configured and then monitored by an Analog/Digital Unit.

⇒ **Channel Description (Parameter)   -** The Parameter (Channel Description) is used to type a specific name to describe the individual channels.

⇒ **Channel Units Description (Units) -** The Units description is used to type a specific name to describe the individual channel engineering units (i.e. psig, °F, VDC).

⇒ **Low Alarm Description (Low Cond.) -** The low Alarm Condition parameter is used to set the low alarm level. An Alarm state is achieved when the individual channel input drops to the low alarm level.

⇒ **High Alarm Description (High Cond.) -** The high Alarm Condition parameter is used to set the high alarm level. An Alarm state is achieved when the individual channel input rises to the high alarm level.

⇒ **Alarm Delay Timer (Alarm Delay) -** The Alarm Delay Timer parameter is used to delay sending an alarm until the alarm condition has persisted longer than the Alarm Delay time. The Alarm Delay is in minutes. An Alarm Delay of less than 10 minutes will cause the alarm to be called continuously.

⇒ **Define Alarm Condition (Alarm Condition) -** The Alarm Condition can be selected from one of three modes:

❑ None - No alarms only monitoring

❑ Low Only - Alarms only for the Low state

❑ High Only - Alarms only in the High state

❑ Both On - Alarms in either to Low or High state

⇒ **Signal Low Conversion (Low Conversion) -** The Conversion Low parameter assigns the low limit value desired to equate the zero voltage signal input to the engineering units conversion. (example, a 0 VDC channel input = 22.0 VDC battery voltage).

⇒ **Signal High Conversion (High Conversion) -** The Conversion High parameter assigns the high limit value desired to equate the +5 VDC signal input to the engineering units conversion. (example, a +5 VDC channel input = 28.0 VDC battery voltage).

Operation of the Analog Signal Monitoring Configuration Form

To operate the **Analog Signal Monitoring Configuration** form perform the following:

NOTICE

An Analog / Digital Unit must be setup and defined under the Unit Basics form.

1. Select the **Analog Signal Monitoring** form from the **Configure Menu,** with the mouse.

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2. **Select the Analog Unit** by typing in the Unit Number in the **Select Analog Unit** text box. Pressing the Tab button will move the cursor to the Channel #1 Parameters text box.

3. Type in the name to be given to Channel #1 to describe the channel **Parameter**. Pressing the Tab button will move the cursor to the **Units** text box.

4. Type in the name to be given to describe the **Units** the signal is being represented. Pressing the Tab button will move the cursor to the **Low Alarm Condition** text box.

5. Type in the value in engineering units to be given to define the **Low Alarm Condition** for the signal. Pressing the Tab button will move the cursor to the **High Alarm Condition** text box.

6. Type in the value in engineering units to be given to define the **High Alarm Condition** for the signal. Pressing the Tab button will move the cursor to the **Alarm Delay** text box.

7. Type in the time in minutes to set the **Alarm Delay** Time. Pressing the Tab button will move the cursor to the **Alarm Condition** pull down box.

8. Select the **Alarm Condition** using the pull down menu. Pressing the Tab button will move the cursor to the **Low Conversion** test box.

9. Type in the **Channel Low Conversion** number. Pressing the Tab button will move the cursor to the **High Conversion** text box.

10. Type in the **Channel High Conversion** number.

11. Repeat steps 3 through 10 to define each of the remaining Analog Channels. If channels are unused and not defined they will not be shown.

12. The **Save Button** is used to save the configuration to the database.

13. To **Program** the actual **Analog / Digital Unit** with the configuration settings, Transmit the configuration to the A/D Unit using the **Transmit Button**.

Special Reminder Note: To set the address of an Analog / Digital Unit, set the preceding HVAC unit to the next address and the Analog / Digital Unit will be programmed automatically to the next sequential address number. (i.e. if Unit #1 is an HVAC Unit, the Analog/Digital Unit will be automatically programmed to Unit #2 when the address for Unit #1 is set).

Configure Pulse Signal Monitoring Channels

Description of the Pulse Signal Monitoring Setup Form

This **Pulse (Digital) Signal Monitoring Setup** form is used to setup and configure any of the six Digital channels available in the Lighting with Analog / Digital units. After the pulse digital signal channels have been configured, use the Monitor Digital Signal to display pulse and digital data. The individual pulse channel setup parameters are defined below:

⇒ **Channel Number (Channel)   -** The Channel Number is hard coded to reference each of the six digital or pulse channels available to be configured and then monitored by a Lighting with Analog/Digital Unit.

⇒ **Channel Description (Parameter)   -** The Parameter (Channel Description) is used to type a specific name to describe the individual pulse channels.

⇒ **Watts per Pulse (Conversion Factor)   -** The Watts per Pulse is a conversion factor to calculate the energy consumption per pulse and display the result in engineering units in the Monitor Digital Channel form.

$\Rightarrow$ **Kwh Conversion -** The Kwh Conversion parameter is used to display the resulting watts per pulse conversion in Kwh. This conversion can also be used for gas, water or any other meter readings.

Operation of the Pulse Signal Monitoring Configuration Form

To operate the **Pulse Signal Monitoring Configuration** form perform the following:

NOTICE

A Lighting with Analog / Digital Unit must be setup and defined under the Unit Basics form.

1. Select the **Pulse Signal Monitoring** form from the **Configure Menu,** with the mouse.

2. **Select the Digital/Pulse Unit** by typing in the Unit Number in the **Select Digital Unit** text box. Pressing the Tab button will move the cursor to the Channel #1 Parameter text box.

3. Type in the name to be given to Channel #1 to describe the channel **Pulse Parameter**. Pressing the Tab button will move the cursor to the **Watts per Pulse** text box.

4. Type in the conversion factor for the pulse digital channel. Pressing the Tab button will move the cursor to the **Kwh Conversion** text box and display the resulting conversion.

5. Repeat steps 3 through 7 to define each of the remaining Pulse Digital Channels. Those digital channels that are configured as pulse channels will be shown in grey in the digital channel configuration form. If channels are unused and not defined as pulse channel they will be available to be configured in the digital channel configuration form.

11. The **Save Button** is used to save the configuration to the database.

12. To **Program** the actual **Lighting with Analog / Digital Unit** with the configuration settings, Transmit the configuration to the Lighting with A/D Unit using the **Transmit Button**.

Monitor HVAC System Performance

Description of the HVAC System Performance Form

This form is used to retrieve and display current HVAC system operating data from individual HVAC Control Modules within each building. The following are the system monitoring parameters that are read and displayed each time the information is requested by the computer:

⇒ **Unit Number (Unit)** - The unit number is the ADRES Control Module's address and corresponding HVAC unit it is controlling.

⇒ **Service Area Description (Service Area)** - The service area is a short description of the rooms or areas within the building which the HVAC unit is providing air conditioning or heating. This description is entered in the Unit Basics form found in the Setup Program Parameters main menu selection.

⇒ **Room Temperature (Room Temp)** - The room temperature is the temperature in degrees reported by the ADRES Room Temperature Sensor mounted in the service area.

⇒ **HVAC Unit Supply Temperature (Supply Temp)** - The HVAC unit supply or discharge temperature is the temperature in degrees reported by an ADRES sensor mounted in the duct work leaving the HVAC unit and going to the service area. The sensor is typically located 12 to 18 inches downstream of the heat exchangers to sense the temperature of the air leaving the unit.

⇒ **Roof, Outdoor or Ambient Temperature (Roof Temp)** - The roof (outdoor or ambient) temperature is the temperature in degrees reported by an ADRES sensor mounted somewhere on the roof to sense the ambient or outdoor temperature. The sensor is typically located out of direct sunlight.

⇒ **Heating Setpoint Temperature (Heat Setpoint)** - The heating setpoint temperature is the current fixed temperature in degrees at which the ADRES Control Module is controlling the heating system to maintain the room temperature equal to the setpoint temperature.

⇒ **Cooling Setpoint Temperature (Cool Setpoint)** - The cooling setpoint temperature is the current fixed temperature in degrees for which the ADRES Control Module is controlling the air conditioning system to maintain the room temperature equal to the setpoint temperature.

⇒ **Heating Stage 1 Operating Status (Heat Stage 1)** - The heating stage one operating status will indicate if the first stage or the heating system is on or off. If the Heat Stage 1 display shows (Off), then the ADRES Control Module is not calling for either the first or second stage of the heating system to run. If the Heat Stage 1 display shows (On), then the ADRES Control Module is calling for at least the first stage of the heating system to be (On) or running.

⇒ **Heating Stage 2 Operating Status (Heat Stage 2)** - The heating stage two operating status will indicate if the heating system is on or off. If the Heat Stage 2 display shows (Off), then the ADRES Control Module is not calling for the second stage of the heating system to run. If the Heat Stage 2 display shows (On), then the ADRES Control Module is calling for both the first and second stage of the heating system to be (On) or running.

⇒ **Heating Energy Recovery Operating Status (Heat Energy Recvry)** The heating energy recovery operating status will indicate if the heating system is in the low energy or energy recovery operating state. If the Heat Energy Recovery display shows (Off), then the ADRES Control Module is not in the low or energy recovery state. If the Heat Energy Recovery display shows (On), then the ADRES Control Module is in the low or energy recovery heating mode .

⇒ **Cooling Stage 1 Operating Status (Cool Stage 1)** - The cooling stage one operating status will indicate if the cooling system is on or off. If the Cool Stage 1 displays shows (Off), then the ADRES Control Module is not calling for either the

first of second stage of the cooling system to run. If the Cool Stage 1 display shows (On), then the ADRES Control Module is calling for at least the first stage of the cooling system to be (On) or running.

⇒ **Cooling Stage 2 Operating Status (Cool Stage 2)** - The cooling stage two operating status will indicate if the cooling system is on or off. If the Cool Stage 2 displays shows (Off), then the ADRES Control Module is not calling for the second stage of the cooling system to run. If the Cool Stage 2 display shows (On), then the ADRES Control Module is calling for both the first and second stage of the cooling system to be (On) or running.

⇒ **Cooling Energy Recovery Operating Status (Cool Energy Recvry)**   The cooling energy recovery operating status will indicate if the cooling system is in the low energy or energy recovery state. If the Cool Energy Recovery display shows (Off), then the ADRES Control Module is not in the low or energy recovery state. If the Cool Energy Recovery display shows (On), then the ADRES Control Module is in the low or energy recovery cooling mode.

Operation of the HVAC System Performance Form

To operate the **HVAC System Performance** Monitor form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **HVAC System Performance** form from the **Main Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to monitor by Clicking once on the Unit address number (Yellow) text boxes with the left button on the mouse. After selection is made the (Yellow) text box will turn (Blue). To deselect, Click once with the left mouse button the HVAC unit number to return its box color to (Yellow). If all units are to be monitored, Click once with the left mouse button the Unit or Service Area (Yellow) text box.

4. Select the send current computer time to all units if desired by checking to box.

5. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

6. When good data is received, the values are color coded to assist in evaluating the performance of each Unit. The color-coded evaluation is described below.

7. If a hard copy of the data is desired select the **Print Status** button with the mouse. A report of this performance data is available under the **Reports Menu**.

8. The **HVAC System Performance** Monitor does not automatically continue to update the data from each unit. Repeat Steps 1 though 5 to refresh the data.

9. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once with the left mouse button.

10. To exit the form and return to the main menu, Click once on the **X** in the top right corner of the form with the left mouse button.

11. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

Room Temperature text box colors:

Green = Temperature is within 2 ^{o}F of the heating or cooling setpoint temperatures.

Yellow = Temperature is 2 ^{o}F lower than the heating setpoint or 2 ^{o}F higher than the cooling setpoint temperatures.

Red = Temperature is 4 ^{o}F or more lower than the heating setpoint or 4 ^{o}F or more higher than the cooling setpoint temperatures.

Heat Stage 1, 2 and Heat Energy Recovery text box colors:

Green = Unit status is Off and not calling for heating.

Red = Unit status is On and calling for heating.

Cool Stage 1, 2 and Cool Energy Recovery box colors:

Green = Unit status is Off and not calling for air conditioning.

Blue = Unit status is On and calling for air conditioning.

If the HVAC units received the parameters sent then the new values will be shown in solid colors (Red, Yellow, Blue or Green with Black numbers). If the new values were not received, then the boxes will be colored as (Light Red with White numbers) and the procedure should be repeated.

Monitor HVAC System Status

Description of the HVAC System Status Form
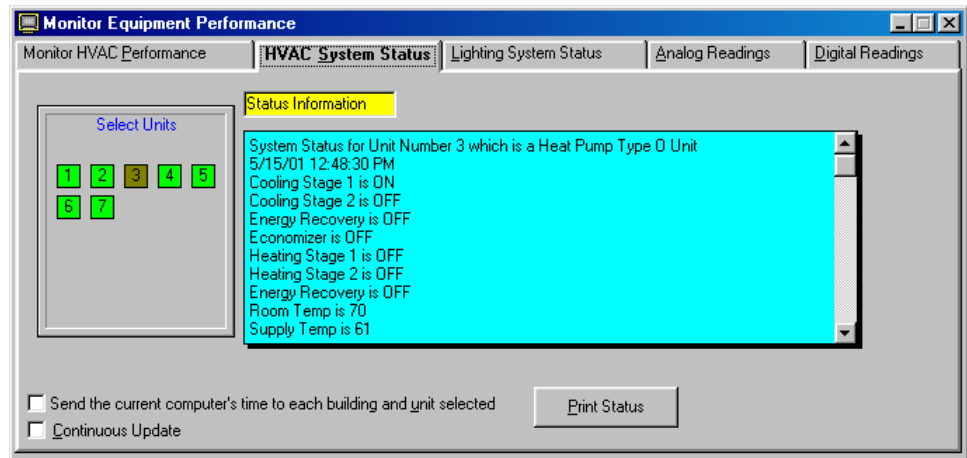
This form is used to retrieve and display current and complete HVAC system operating data from specific HVAC Control Modules within each building. The following are the system status and monitoring parameters which are read from the HVAC Unit each time the information is requested by the PC:

⇒ **System Status for Unit Number (System Status for Unit Number X)** - The unit number is the ADRES Control Module's address and corresponding HVAC unit it is controlling. The Unit also reports its type, Gas/Electric, Heat Pump "O" Type or "B" Type reversing valve.

⇒ **Cooling Stage 1 Operating Status (Cooling Stage 1)** - The cooling stage one operating status will indicate if the cooling system is on or off. If the Cool Stage 1 displays shows (Off), then the ADRES Control Module is not calling for either the first of second stage of the cooling system to run. If the Cool Stage 1 display shows (On), then the ADRES Control Module is calling for at least the first stage of the cooling system to be (On) or running.

⇒ **Cooling Stage 2 Operating Status (Cooling Stage 2)** - The cooling stage two operating status will indicate if the cooling system is on or off. If the Cool Stage 2 displays shows (Off), then the ADRES Control Module is not calling

for the second stage of the cooling system to run. If the Cool Stage 2 display shows (On), then the ADRES Control Module is calling for both the first and second stage of the cooling system to be (On) or running.

⇒ **Cooling Energy Recovery Operating Status (Energy Recovery)** The cooling energy recovery operating status will indicate if the cooling system is in the low energy or energy recovery state. If the Cool Energy Recovery display shows (Off), then the ADRES Control Module is not in the low or energy recovery state. If the Cool Energy Recovery display shows (On), then the ADRES Control Module is in the low or energy recovery cooling mode.

⇒ **Heating Stage 1 Operating Status (Heat Stage 1)** - The heating stage one operating status will indicate if the first stage or the heating system is on or off. If the Heat Stage 1 display shows (Off), then the ADRES Control Module is not calling for either the first or second stage of the heating system to run. If the Heat Stage 1 display shows (On), then the ADRES Control Module is calling for at least the first stage of the heating system to be (On) or running.

⇒ **Heating Stage 2 Operating Status (Heat Stage 2)** - The heating stage two operating status will indicate if the heating system is on or off. If the Heat Stage 2 display shows (Off), then the ADRES Control Module is not calling for the second stage of the heating system to run. If the Heat Stage 2 display shows (On), then the ADRES Control Module is calling for both the first and second stage of the heating system to be (On) or running.

⇒ **Heating Energy Recovery Operating Status (Energy Recovery)** The heating energy recovery operating status will indicate if the heating system is in the low energy or energy recovery operating state. If the Heat Energy Recovery display shows (Off), then the ADRES Control Module is not in the low or energy recovery state. If the Heat Energy Recovery display shows (On), then the ADRES Control Module is in the low or energy recovery heating mode .

⇒ **Room Temperature (Room Temp)** - The room temperature is the temperature in degrees reported by the ADRES Room Temperature Sensor mounted in the service area.

⇒ **HVAC Unit Supply Temperature (Supply Temp)** - The HVAC unit supply or discharge temperature is the temperature in degrees reported by an ADRES sensor mounted in the duct work leaving the HVAC unit and going to the service area. The sensor is typically located 12 to 18 inches downstream of the heat exchangers to sense the temperature of the air leaving the unit.

⇒ **Roof, Outdoor or Ambient Temperature (Roof Temp)** - The roof (outdoor or ambient) temperature is the temperature in degrees reported by an ADRES sensor mounted somewhere on the roof to sense the ambient or

outdoor temperature. The sensor is typically located out of direct sunlight.

⇒ **Heating Setpoint Temperature (Active Heating Setpoint Temp)** - The heating setpoint temperature is the current fixed temperature in degrees at which the ADRES Control Module is controlling the heating system to maintain the room temperature equal to the setpoint temperature.

⇒ **Cooling Setpoint Temperature (Active Cooling Setpoint Temp)** - The cooling setpoint temperature is the current fixed temperature in degrees for which the ADRES Control Module is controlling the air conditioning system to maintain the room temperature equal to the setpoint temperature.

⇒ **Temperature Control Mode (Temperature Control)** - The temperature control mode will indicate which control mode the ADRES Control Module is operating in. The modes are Program, Override, Manual or Vacation.

⇒ **Indoor Fan Operating Status (Indoor Fan)** - The indoor fan operating status will indicate if the indoor fan is on or off. If the Indoor Fan display shows (Off), then the ADRES Control Module is not calling for the indoor fan to run. If the Indoor Fan display shows (On), then the ADRES Control Module is calling for the Indoor Fan to be (On) or running.

⇒ **Indoor Fan Control Mode (Indoor Fan Mode)** - The indoor fan control mode will indicate which control mode the ADRES Control Module is active. The modes are Automatic, Continuous, Timed On/Off or Duty Cycle.

⇒ **Heat / Cool Control Mode (Heat / Cool Mode)** - The Heat / Cool control mode will indicate which control mode the ADRES Control Module is active. The modes are automatic changeover between either heating or the cooling system (Auto Changeover), cooling system only (Cool Only), heating only system (Heat Only) or both systems off (Both Off).

⇒ **Output Control Mode (Output Control)** - The output control operating status will indicate if the ADRES system or backup Thermostat is in control.

⇒ **Alarm Status (Alarm Status)** - The alarm status will indicate the current status of each alarm parameter. The alarm parameters are:

    ❑ **Room Temperature**

    ❑ **Cooling Stage 1 and 2 Temperature Difference**

    ❑ **Heating Stage 1 and 2 Temperature Difference**

    ❑ **Backup Thermostat Alarm**

    ❑ **Loss of Primary or Utility Power**

⇒ **Last System Used (Last System Used)**   The last system called for by the ADRES Control Module, either heating or cooling.

⇒ **Room Temperature Calibration Offset (Room Temp Calibration) -** The temperature offset calibrated into the

ADRES Control Module to adjust the room temperature measured by the sensor to the desired room temperature reading.

⇒ **Roof Temperature Calibration Offset (Roof Temp Calibration) -** The temperature offset calibrated into the ADRES Control Module to adjust the roof temperature measured by the sensor to the desired roof temperature reading.

⇒ **Supply Temperature Calibration Offset (Supply Temp Calibration) -** The temperature offset calibrated into the ADRES Control Module to adjust the supply temperature measured by the sensor to the desired supply temperature reading.

Operation of the HVAC System Status Form

To operate the **HVAC System Status Monitor** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **HVAC System Status** form from the **Monitor Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to monitor by Clicking once on the Unit address number text boxes with the left button on the mouse.

4. Select the send current computer time to all units if desired by checking to box.

5. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

6. When good data is received, the values are color coded to highlight out-of-range parameters or alarm conditions with the equipment.

7. If a hard copy of the HVAC Unit data is desired, select the **Print Status** button with the mouse. A report of this performance data is available under the **Reports Menu** and titled HVAC System Monitor Report.

8. The **HVAC System Status** Monitor does not automatically continue to update the data from each unit. Repeat Steps 1 though 6 to refresh the data.

9. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once with the left mouse button.

10. To exit the form and return to the main menu, Click once on the **X** in the top right corner of the form with the left mouse button.

12. To determine location of HVAC equipment, areas the HVAC units service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross reference of HVAC unit number and description of areas service will appear, or the graphical picture of the floor plan will be shown.

Monitor Lighting System Status

Description of the Lighting System Status Form

This form is used to retrieve and display current and complete Lighting system operating data from specific Lighting Control Modules within each building. The following are the system status and monitoring parameters which are read from the Lighting Unit each time the information is requested by the PC:

⇒ **Lighting Status for Unit Number (System Status for Unit Number X)** - The unit number is the ADRES Control Module's address and corresponding Lighting unit it is controlling.

⇒ **Lighting Circuit Number is Controlling (Circuit Name)** - The lighting circuit description is displayed for each individual circuit previously configured in the Lighting Setup form.

⇒ **Lighting Circuit Number is (Current On/Off Status)** - The current On or Off status for each individual lighting circuit being controlled.

⇒ **Lighting Circuit Number is (Control Mode Status)** The current Control Mode, either manual or program, for each lighting circuit.
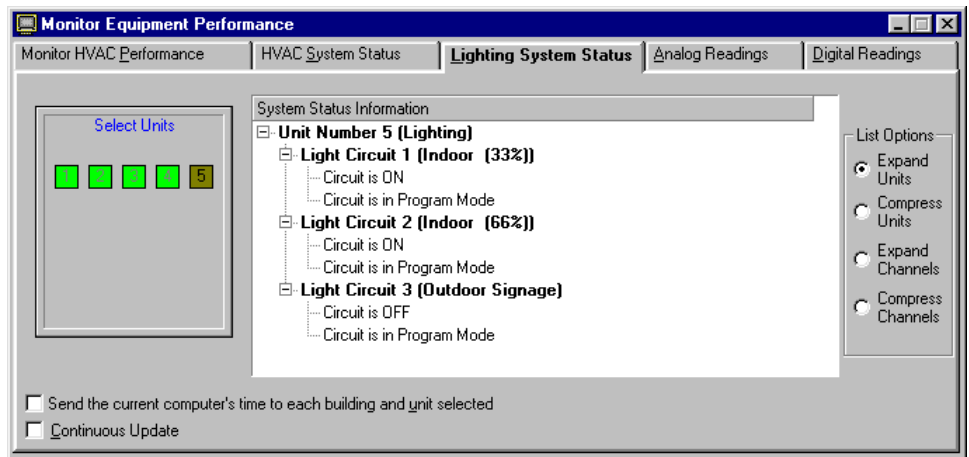
Operation of the Lighting System Status Form

To operate the **Lighting System Status** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Lighting System Status** form from the **Monitor Menu,** with the mouse.

3. **Select the Lighting Unit** (s) to monitor by Clicking once on the Unit address number text boxes with the left button on the mouse.

4. Select the send current computer time to all units if desired by checking to box.

5. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

6. When good data is received, the lighting circuit status is presented with current data.

7. If a hard copy of the Lighting Unit data is desired, select the **Print Status** button with the mouse. A report of this performance data is available under the **Reports Menu** and titled Lighting System Monitor Report.

8. The **Lighting System Status** Monitor does not automatically continue to update the data from each unit. Repeat Steps 1 though 6 to refresh the data.

9. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once with the left mouse button.

10. To exit the form and return to the main menu, Click once on the **X** in the top right corner of the form with the left mouse button.

11. To determine location of Lighting systems, areas the Lighting circuits serviced within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of Lighting unit number and description of area serviced will appear, or the graphical floor-plan.

Monitor Analog Readings

Description of the Monitor Analog Readings Form
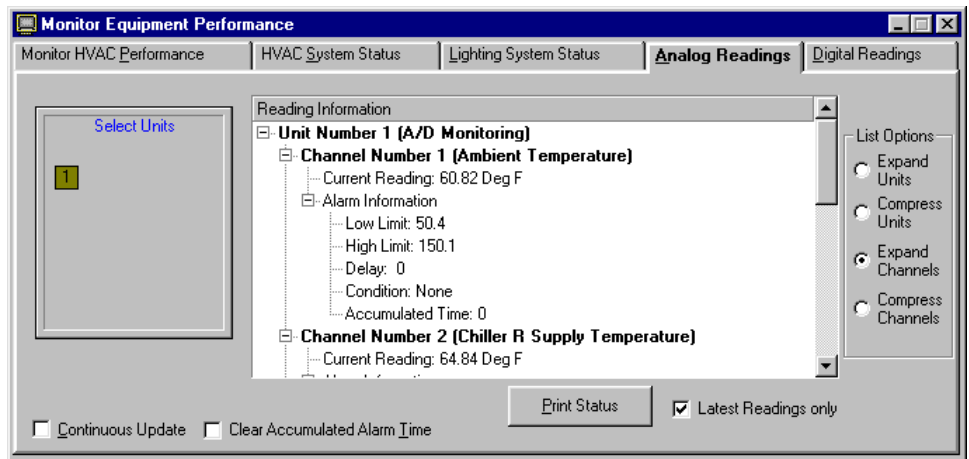
This form is used to retrieve and display current and complete Analog Channel Readings from specific Analog / Digital Control Modules within each building. The following are the individual channel readings and alarm conditions which are read from the Analog/Digital Unit each time the information is requested by the PC:

⇒ **Unit Number (Unit)** - The unit number is the ADRES Control Module's address of the corresponding Analog/Digital Unit being monitoring.

⇒ **Analog Channel Description (Channel Description)** - The channel description is displayed for each individual channel previously configured in the Configure Analog Signal Monitoring form.

⇒ **Current Analog Reading (Current Reading)** - The current analog reading for each individual channel is displayed. The engineering units description follows the reading.

⇒ **Alarm Limits Low / High (Alarm Limits L/H)** - The current low and high alarm limits are displayed for each

channel for quick reference. The low and high alarm limits are the setpoints that the channel will go into an alarm condition and begin accumulating alarm time. The Alarm Condition sending mode in the Configure Analog Signal Monitoring form has to be configured to have the alarm reported to the monitoring PC.

⇒ **Alarm Delay (Alarm Delay)** - The alarm delay time in minutes is displayed for reference. The alarm delay time is the time that the channel was in the alarm condition prior to calling the monitoring PC.

⇒ **Accumulated Alarm Time (Accumulated Alarm Time)** - The accumulated alarm time is the total time which the channel has been in the alarm condition.

Operation of the Monitor Analog Readings Form

To operate the **Monitor Analog Readings** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Monitor Analog Readings** form from the **Monitor Menu,** with the mouse.

3. **Select the Analog/Digital Unit** (s) to monitor by Clicking once on the Unit address number text boxes with the left button on the mouse.

4. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

5. When good data is received, the readings are displayed and color-coded to assist in evaluating the readings and alarm conditions for each channel.

6. If a hard copy of the Analog/Digital Unit data is desired, select the **Print Status** button with the mouse. A report of the data is available under the **Reports Menu** and titled Analog Status Report.

7. The **Analog Readings** do not automatically continue to update the data from each unit. Repeat Steps 1 though 4 to refresh the data.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once with the left mouse button.

9. To exit the form and return to the main menu, Click once on the **X** in the top right corner of the form with the left mouse button.

Monitor Digital Readings

Description of the Monitor Digital Readings Form
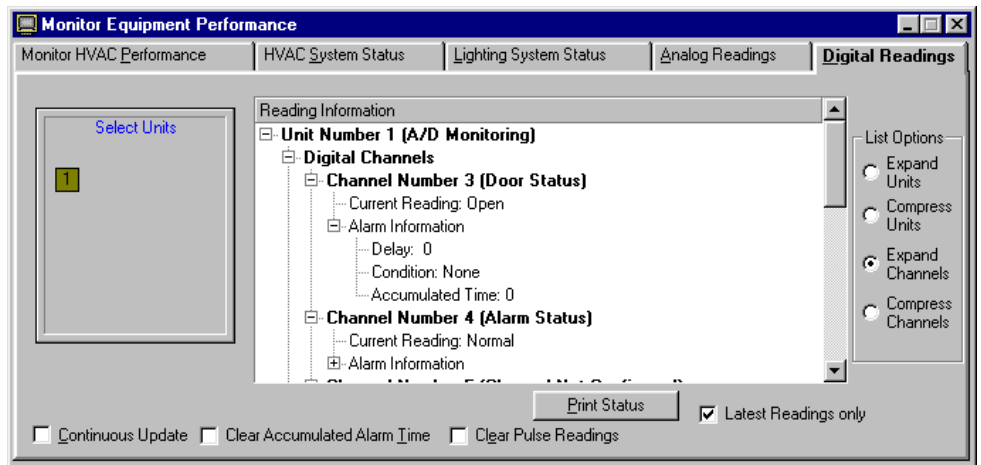
This form is used to retrieve and display current and complete Digital Channel Readings from specific Analog / Digital Control Modules within each building. The following are the individual channel readings and alarm conditions which are read from the Analog/Digital Unit each time the information is requested by the PC:

⇒ **Unit Number (Unit)** - The unit number is the ADRES Control Module's address of the corresponding Analog/Digital Unit being monitoring.

⇒ **Digital Channel Description (Channel Description)** - The channel description is displayed for each individual channel previously configured in the Configure Digital or Pulse Signal Monitoring form.

⇒ **Current Digital Reading (Current Reading)** - The current digital reading for each individual channel is displayed. The reading is displayed in the text used to describe the On and Off condition during the Configure Digital Monitoring form.

⇒ **Pulse Reading (Converted Result)** - The current accumulated pulse reading converted and displayed in engineering units for each individual pulse channel. The reading is displayed in the text used to describe the pulse channel from the Configure Pulse Monitoring form.

⇒ **Actual Pulse Reading (Actual Pulse Count)** - The current accumulated pulse reading for each individual channel is displayed. The reading is displayed in the text used to describe the pulse channel from the Configure Pulse Monitoring form.

⇒ **Alarm Delay (Alarm Delay)** - The alarm delay time in minutes is displayed for reference. The alarm delay time is the time that the channel was in the alarm condition prior to calling the monitoring PC.

⇒ **Accumulated Alarm Time (Accumulated Alarm Time)** - The accumulated alarm time is the total time which the channel has been in the alarm condition.

Operation of the Monitor Digital Readings Form

To operate the **Monitor Digital Readings** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Monitor Digital Readings** form from the **Monitor Menu,** with the mouse.

3. **Select the Analog/Digital Unit** (s) to monitor by Clicking once on the Unit address number text boxes with the left button on the mouse.

4. After all units to be monitored have been selected, Click on the **Transmit** command button in the Icon toolbar.

5. When good data is received, the readings are displayed and color-coded to assist in evaluating the readings and alarm conditions for each channel.

6. If a hard copy of the Analog/Digital Unit data is desired, select the **Print Status** button with the mouse. A report of the data is available under the **Reports Menu** and titled **Digital Status Report**.

7. The **Digital Readings** do not automatically continue to update the data from each unit. Repeat Steps 1 though 4 to refresh the data.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once with the left mouse button.

9. To exit the form and return to the main menu, Click once on the **X** in the top right corner of the form with the left mouse button.

Monitor Energy Consumption HVAC Data

Description of the HVAC Data Form

This form is used to retrieve and display historical test, monthly and yearly energy data from individual ADRES Control Modules and their HVAC units.

Each Control Module has on-board (non-volatile) memory capacity to store and retain the current and previous months cumulative energy data and the current cumulative yearly data even on a loss of power. On the fifth day of the current month, the Control Module will transfer the previous months total accumulated energy data and write it to the previous month's memory location. The current month's data will be accumulating in the current month's memory location.

The Yearly Energy Data is retained until January 15th of the current year. After January 15th the data for the prior year is cleared and overwritten with the accumulated yearly energy data for the current year.

The Monthly and Yearly Energy Data can be permanently retained for future reference by downloading the data from each Control Module on a regular monthly and yearly basis.

Energy Test Data is stored in volatile memory and can be lost if the Control Module loses power. To prevent loss of the test data while conducting an energy test, install a 9 volt DC battery at the Control Module to maintain its power.

The three type of energy data and associated information stored is listed below:

⇒ **Monthly Energy Data (Monthly Data)** - The following monthly energy data is stored on a cumulative and temporary basis in the ADRES Control Modules:

❑ Cooling Run Time Stage 1 - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner's first stage to provide cooling. This will include any cooling energy recovery time.

❑ Cooling Run Time Stage 2 - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner's second stage to provide additional cooling.

❑ Heating Run Time Stage 1 - Total accumulated hours the ADRES Control Module was calling for the Heater's first stage to provide heating. This will include any heating energy recovery time.

❑ Heat Energy Recovery Time - Total accumulated hours the ADRES Control Module was calling for the Heater to run, but the heating was being provided in the low or energy recovery mode (gas valves, compressors and outdoor fans all off).

❑ Cool Energy Recovery Time - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner to run, but the cooling was being provided in the low or energy recovery mode (compressors and outdoor fans both off).

❑ Indoor Fan Run Time - Total accumulated hours the indoor fan operated for heating, cooling or ventilation.

❑ Maximum Demand Minutes - Total maximum continuous heating and cooling call times performed during the month.

❑ Cooling or Heating Degree Days - The total accumulated Cooling Degree Days for the month. The calculation of this parameter is (maximum outdoor temperature - minimum outdoor temperature over the 24 hour period) - 65 ^{o}F. The calculation of this parameter is (maximum temperature - minimum temperature over a 24 hour period) - 65 ^{o}F equals the degree days. If the average daily temperature is above 65 ^{o}F then the degree days would be cooling degree days. If the average daily temperature is below 65 ^{o}F then the degree days would be heating degree days.

⇒ **Yearly Energy Data (Yearly Data)** - The following yearly energy data is stored on a cumulative and temporary basis in the ADRES Control Modules:

❑ Cooling Run Time Stage 1 - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner's first stage to provide cooling. This will include any cooling energy recovery time.

❑ Cooling Run Time Stage 2 - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner's second stage to provide additional cooling.

❑ Heating Run Time Stage 1 - Total accumulated hours the ADRES Control Module was calling for the Heater's first stage to provide heating. This will include any heating energy recovery time.

❑ Heat Energy Recovery Time - Total accumulated hours the ADRES Control Module was calling for the Heater to run, but the heating was being provided in the low or energy recovery mode (gas valves, compressors and outdoor fans all off).

❑ Cool Energy Recovery Time - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner to run, but the cooling was being provided in the low or energy recovery mode (compressors and outdoor fans both off).

❑ Indoor Fan Run Time - Total accumulated hours the indoor fan operated for heating, cooling or ventilation.

❑ Maximum Demand Minutes - Total maximum continuous heating and cooling call times performed during the current year.

❑ Cooling or Heating Degree Days - The total accumulated Cooling Degree Days for the current year. The calculation of this parameter is (maximum daily temperature - minimum daily temperature over a 24 hour time period) - 65 ^{o}F equals the degree days. If the average daily temperature is above 65 ^{o}F then the degree days would be cooling degree days. If the average daily temperature is below 65 ^{o}F then the degree days would be heating degree days.

⇒ **Energy Test Data (Test Data)** ⇒ The following energy test data is stored on a cumulative and temporary basis in the ADRES Control Modules:

❑ Cooling Hours with Energy Recovery - Total accumulated hours the ADRES Control Module was calling for normal or mechanical cooling (with compressor (s) running) minus the energy recovery time, or time the cooling was being met without mechanical cooling (compressor (s) off), during the days energy recovery was being performed.

❑ Cooling Hours Normal - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner to provide normal mechanical cooling during the days energy recovery was not being performed.

❑ Heating Hours with Energy Recovery - Total accumulated hours the ADRES Control Module was calling for normal or mechanical heating (with gas valve or compressors running), minus the energy recovery time or time the heating was being met without mechanical or gas heating (compressors

or gas valves off), during the days energy recovery was being performed.

❑ Heating Hours Normal - Total accumulated hours the ADRES Control Module was calling for the Heater to provide normal mechanical or gas heating during the days energy recovery was not being performed.

❑ Indoor Fan Run Time with Energy Recovery - Total accumulated hours the indoor fan operated for heating, cooling or ventilation during the days energy recovery was being performed.

❑ Indoor Fan Run Time Normal - Total accumulated hours the indoor fan operated for heating, cooling or ventilation during the days energy recovery was not being performed.

❑ Maximum Demand Minutes with Energy Recovery - Total maximum continuous heating and cooling call times performed during the days energy recovery was being performed.

❑ Maximum Demand Minutes Normal - Total maximum continuous heating and cooling call times performed during the days energy recovery was not being performed.

❑ Cooling and Heating Degree Days with Energy Recovery - The total accumulated Cooling Degree Days accumulated during the test days where energy recovery was being performed.

❑ Cooling and Heating Degree Days Normal - The total accumulated Cooling Degree Days accumulated during the test days where energy recovery was being performed.

Operation of the HVAC Data Form

To operate the **HVAC Data** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Energy Consumption** form from the **Monitor Menu,** with the mouse.

3. **Select the Data Type** to be retrieved. Test, Monthly or Yearly data types can be selected by moving the mouse button over the radio button adjacent to the data type desired and with the left mouse button Click once.

4. **Select the Current or Previous month's data** to be retrieved by moving the mouse button over the radio button

adjacent to the current or previous monthly selection desired and with the left mouse button Click once.

5. **Select the HVAC Unit** to retrieve data by Clicking on the unit's address number (Green) text boxes with the left button on the mouse. After selecting the unit the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button, the HVAC unit number to return its text box color to (Green). Note, only data from one unit can be collected at a time.

6. After the Unit to retrieve data from has been selected, Click once on the **Transmit** command button in the Icon toolbar.

7. To view the last data collected from a specific unit, use the **Select Unit** box in the lower right corner of the form. The data shown is the last data collected for the unit. A report of this data is available under the **Reports Menu**.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once the left mouse button.

9. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

10. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program HVAC Energy Tests

Description of the HVAC Test Form
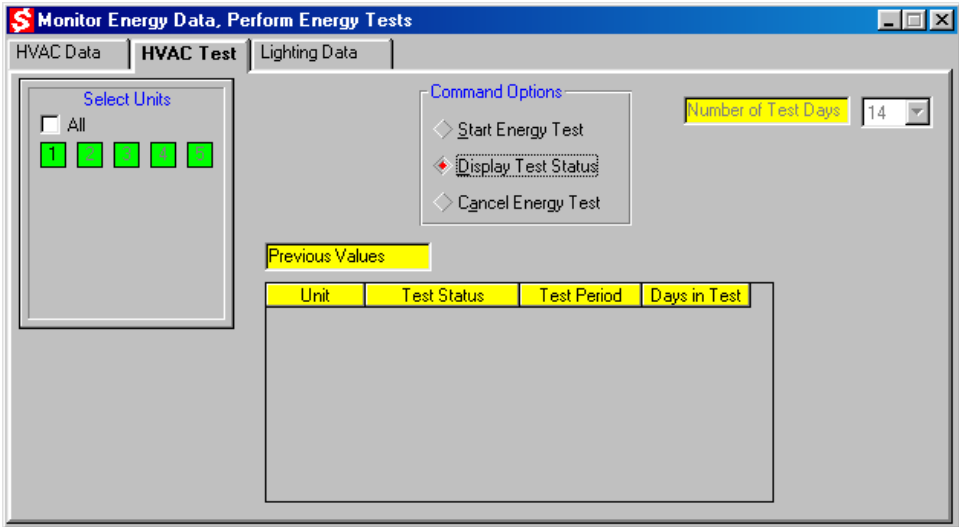
The **HVAC Test** form is used to start, display or cancel an energy test for multiple or individual HVAC systems. The ADRES can conduct energy performance testing to measure energy consumption both with and without the energy savings features built into the ADRES.

An energy test is conducted over an even number of days. During the test, the ADRES will operate the HVAC system as a normal programmable thermostat would, on the odd numbered test days, and will operate the HVAC system on an optimum basis, or with Energy Recovery, on the even numbered test days. During the even numbered test days, the ADRES will control the HVAC system in an energy recovery, or low energy consumption mode, typically 20% to 30% of the total heating or cooling call time.

During the test, the ADRES will record the cumulative operating times for the odd numbered days (Normal Days) and even numbered days (Energy Recovery Days). Results of the energy tests can be produced using the **Display HVAC Test** and **View or Print Reports** main menu command selections.

Operation of the HVAC Test Form

To operate the **HVAC Test** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Energy Test** form from the **Main Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to start or cancel an energy test or determine the test status of the unit. First, Click once on the unit address number (Green) text box with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed to start or cancel an energy test or monitored to check test status, Click with the left mouse button the **All** check box.

4. If it is desired to start an energy test, set the **Number of Test Days** from the pull down combo box by Clicking on one of the four test day selections (2, 4, 14 or 28 days) with the left mouse button.

5. To start an energy test, select all units to begin an energy test and Click once on the **Start Energy Test** radio command button with the left mouse button.

6. To **cancel an energy test** in progress, select all units which will have their energy tests canceled and Click once on the **Cancel Energy Test** radio command button with the left mouse button.

7. To **display the status of a energy test** in progress, select all units for which an energy test may be in progress and Click once the **Display Test Status** radio command button with the left mouse button.

8. After the Units to start, display or cancel an energy test has been selected, Click once on the **Transmit** command button in the Icon toolbar.

9. A report of the energy test results can be produced under the **Reports** form.

10. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once the left mouse button.

11. To exit the form and return to the **Main Menu**, Click once on the **X** in the top right hand corner of the form with the left mouse button.

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12. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the start, stop or display test status command sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Special Note: To view Energy Test Data at completion of a test, select the Display Energy Data form from the adjacent Tab.

Monitor Energy Consumption Lighting Data

Description of the Lighting Data Form

This form is used to retrieve and display historical monthly energy data from individual ADRES Lighting Control Modules and their individual lighting circuits.

Each Control Module has on-board (non-volatile) memory capacity to store and retain the current and previous months cumulative energy data and the current cumulative yearly data even on a loss of power. On the fifth day of the current month, the Control Module will transfer the previous months total accumulated energy data and write it to the previous month's memory location. The current month's data will be accumulating in the current month's memory location.

The Monthly Data can be permanently retained for future reference by downloading the data from each Control Module on a regular monthly basis.

The lighting energy data and associated information stored is listed below:

⇒ **Monthly Energy Data (Monthly Data)** - The following monthly energy data is stored on a cumulative and temporary basis in the ADRES Control Modules:

❑ Circuit Run Time - Total accumulated hours the ADRES Lighting Control Module held the circuit ON to provide lighting. The accumulated hours are for each individual circuit.

Operation of the Lighting Data Form

To operate the **Lighting Data** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down box.

2. Select the **Monitor Lighting Data** form from the **Monitor Menu,** with the mouse.

3. **Select the Current or Previous month's data** to be retrieved by moving the mouse button over the radio button adjacent to the current or previous monthly selection desired and with the left mouse button Click once.

4. **Select the Lighting Unit** to retrieve data by Clicking on the unit's address number (Green) text boxes with the left button on the mouse. After selecting the unit the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button, the Lighting unit number to return its text box color to (Green). Note, only data from one unit can be collected at a time.

11. After the Unit to retrieve data from has been selected, Click once on the **Transmit** command button in the Icon toolbar.

12. To view the last data collected from a specific unit, use the **Select Unit** box in the lower right corner of the form. The data shown is the last data collected for the unit. A report of this data is available under the **Reports Menu**.

13. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button and Click once the left mouse button.

14. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

15. To determine location of Lighting equipment, areas the Lighting equipment services within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click

once the left mouse button. Either a cross-reference of Lighting unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the Lighting units received the parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program Times and Temperature Schedules

Description of the Time / Temp Settings Form

The **Time/Temp Settings** form is used to set the daily and weekly time and temperature programs for individual, multiple, or all HVAC systems within a building. The Time and Temperature program schedules available are defined below:

$\Rightarrow$ **Program Daily / Weekly Time and Temperature Schedules (Time/Temp) -** Each HVAC Control Module has four independent time and temperature schedules available to set for each day of the week. When programming the time and temperature schedules, all four daily programs (Program 1, 2, 3 and 4) have to be set with valid times and desired setpoint temperatures. If all four programs are not set, then the default program time and setpoints temperatures will be used. Programs 1, 2, 3, and 4 can be set with identical times and setpoint temperatures.

The factory default time and temperature settings for all four daily program periods is 6:00 AM 74 °F for Cooling and 68 °F for Heating.

Operation of the Time / Temp Form

To operate the **Times / Temp** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Time / Temp** form from the **Program Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. To **Program Time and Temperature** schedules, start by selecting with the mouse, one of the four daily programs **Radio** buttons. Set the Hour, Minute, Heat Setpoint and Cool Setpoint from the pull down combo boxes with the mouse. Select the days of the week for which the program should apply by using the mouse to Click once on the **Check** box next to each applicable day desired. Click once on the **All** check box if the schedule is to apply to all days of the week.

5. After all program selections have been made, Click once on the **Transmit** command button in the Icon toolbar. Note, only one daily program schedule can be sent at a time.

6. Repeat Step 4 and 5 for each of the four daily programs and remember that all four programs have to be set with valid values or the factory default time / temperatures will be applied during program temperature control operation.

7. To get and display the current HVAC unit's time / temperature schedule, select the **Show Curr. Prgrm** check box and execute the Transmit command. Note: the schedule for all seven days will be retrieved.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

9. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

10. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program Times and Light Schedules

Description of the Time / Light Settings Form

The **Time/Light Settings** form is used to set the daily and weekly timed On and Off programs for individual, multiple, or all Lighting circuits within a building. The Time and Light program schedules available are defined below:

⇒ **Program Daily / Weekly Time and Light Schedules (Time/Light)** - Each Lighting Control Module has two independent time and light schedules available to set for each day of the week for each of the four lighting circuits. When programming the time and lighting schedules, each lighting circuit (Schedule Program 1, 2, 3 and 4) has to be set with valid times for both the On and Off setpoints. If all four programs are not set, then the default program time and setpoints temperatures will be used. Programs 1, 2, 3, and 4

can be set with identical times and setpoint temperatures. The factory default time and lighting program settings for all four lighting circuits is 5:30 AM Morning On, 8:00 Morning Off, 7:30 Night On, 10:00 PM Night Off.

Operation of the Time / Light Form

To operate the **Times / Light** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Time / Light** form from the **Program Menu,** with the mouse.

3. **Select the Lighting Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the Lighting unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. To **Program Time and Light** schedules, start by selecting with the mouse, one of the four individual lighting circuit daily program **Radio** buttons. Set the Morning On Hour, On Minute, Off Hour, Off Minute and Night On Hour, On Minute, Off Hour, Off Minute from the pull down combo boxes with the mouse. Select the days of the week for which the program should apply by using the mouse to Click once on the **Check** box next to each applicable day desired. Click once on the **All** check box if the schedule is to apply to all days of the week.

5. After all program selections have been made, Click once on the **Transmit** command button in the Icon toolbar. Note, only one lighting circuit program schedule can be sent at a time.

6. Repeat Step 4 and 5 for each of the individual lighting circuit daily programs and remember that all four circuit programs have to be set with valid values or the factory default time / light schedules will be applied during program program operation.

7. To get and display the current Lighting unit's time / light schedule, select the **Show Curr. Prgrm** check box and execute the Transmit command. Note: the schedule for all seven days will be retrieved.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

9. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

10. To determine location of Lighting systems, areas the Lighting systems service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of Lighting unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the Lighting units received the parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program Current Date and Time

Description of the Date / Time Form
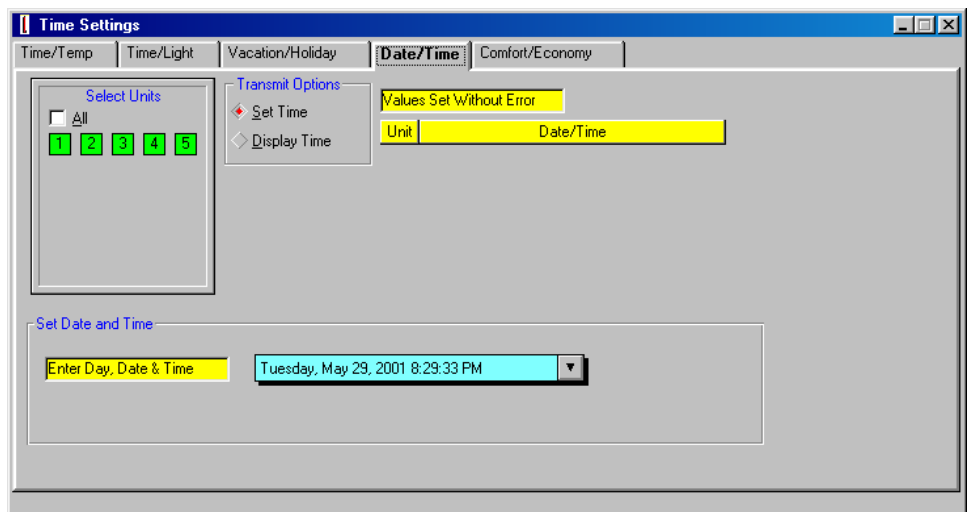
The **Date / Time** form is used to set or display the time, date and day of the week for individual, multiple or all HVAC, Lighting and A/D control modules. The date / time parameter is defined below:

⇒ **Set the Time of Day and Date (Date/Time) -** Each Control Module has its own yearly clock which has to be begin after power is applied to the module. The clock is used to maintain the daily time, and change temperature and vacation setpoints correctly during program operation. If power is lost to a Control Module, the time will be reset to the factory default upon return of power. The factory default setting is 12:00 PM Monday, January 1, 2001. The ADRES system and **EnergyPro** software is Y2K compliant.

Operation of the Date / Time Form

To operate the **Date / Time** form perform the following:

1. Select a Building from the Select a Building pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Date / Time** form from the Program Menu, with the mouse.

3. Select the **Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the All check box.

4. To program the time and date, start by selecting with the mouse, the **Date / Time** pull down combo boxes with the mouse. Type in the current weekday, month, date, and year followed by the current hour, minute and AM or PM.

5. To display the current time and date, start by selecting the check box adjacent to the Display Time. After the check box has been selected, Click once on the **Transmit** command button in the Icon toolbar.

6. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

7. To exit the form and return to the Main Menu, Click once on the X in the upper right hand corner of the form with the left mouse button.

8. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the units received the new date and time sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program Vacation and Holidays

Description of the Vacation / Holiday Form

The **Vacation/Holiday** form is used to set, clear or display the vacation and holiday schedules for individual, multiple or all HVAC systems. The vacation and holiday parameters to set are defined below:

⇒ **Clear Vacation or Holiday Schedules (Clear Vacation)   -** The clear vacation schedule command erases any of the twelve holiday or vacations schedules previously set. The clear vacation schedule will eliminate only one programmed vacation or holiday schedule at a time. The factory default setting is not applicable.

⇒ **Program Vacation or Holiday Schedules (Set Vacation) -** The set vacation schedule command will set any of the twelve holiday or vacations schedules. The program vacation schedule will set only one programmed vacation or holiday schedule at a time. The factory default is no programmed holiday schedules are set.

⇒ **Display Vacation or Holiday Schedules (Display Vacation) -** The display vacation schedule command will retrieve all twelve holiday or vacation schedules.

Operation of the Vacation / Holiday Form

To operate the **Vacation / Holiday** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Vacation / Holiday** form from the **Main Menu,** with the mouse.

3. Select the **Vacation / Holiday** parameters by moving the mouse button over the desired vacation number combo box, and with the left mouse button, Click once to open the combo boxes to enter a specific vacation or holiday number.

4. To **Set a Vacation or Holiday**, start by setting the vacation number, start month and day and stop month and day using the pull down combo boxes with the mouse.

5. After all vacation and holiday program selections have been made, Click once on the **Transmit** command button in the Icon toolbar. Note, only one vacation or holiday program schedule can be sent at a time.

6. Repeat Step 4 and 5 for each of the twelve vacation or holiday programs available. Note, none of the vacation or holidays have to be programmed.

7. To **Clear a Vacation or Holiday**, set the vacation number to be cleared using the combo box spinner and select the Clear Vacation radio button with the mouse.

8. To **Display the Vacation or Holidays**, select the Display Vacation radio button with the mouse.

9. After all vacation and holiday program selections have been made, Click once on the **Transmit** command button in the Icon toolbar. Note, only one vacation or holiday program schedule can be cleared at a time.

10. Repeat Step 7 to **Clear** each of the twelve vacation or holiday programs set.

11. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

12. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

13. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the program parameters sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Program Comfort and Economy Temperatures

Description of the Comfort / Economy Form

The **Comfort / Economy** form is used to set or display the comfort and economy temperatures for individual, multiple or all HVAC systems. The comfort and economy temperatures to set are defined below:

⇒ **Economy Setpoint Temperature Settings (Comfort/Economy)** - The economy temperature settings are the heating and cooling setpoints which are utilized when the HVAC Control Module is in program mode and begins a vacation or holiday schedule. The economy temperatures are loaded as the setpoints and maintained during the vacation or holiday. The factory default setting is 85 °F for Cooling and 58 °F for Heating.

⇒ **Comfort Setpoint Temperature Settings (Comfort/Economy)** - The comfort temperature settings are the heating and cooling setpoints which are utilized when the ADRES Room Temperatures Sensor's Warmer or Cooler

key is pressed and the current setpoints are in a night time, vacation or holiday setback condition. The comfort temperature setpoints are loaded as the new setpoints for a period of two hours. After the two hour override time period expires, the previous program setpoints will resume. The Room Temperature Sensor's Warmer or Cooler key can again be pressed to start another two hours of override with the comfort temperature settings. The factory default setting is 72 $^{\circ}$F for Cooling and 68 $^{\circ}$F for Heating.

Operation of the Comfort / Economy Form

To operate the **Comfort / Economy** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Comfort / Economy** form from the **Program Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. To **program the comfort and economy temperatures**, start by selecting with the mouse, the **Comfort / Economy** command button.

5. Set the Comfort Heating Setpoint, Comfort Cooling Setpoint, Economy Heating Setpoint and Economy Cooling Setpoint temperatures from the combo box spinner control with the mouse.

6. After all comfort and economy temperature selections have been made, Click once on the **Transmit** command button in the Icon toolbar.

7. To **display** the **current comfort and economy temperatures**, start by selecting with the mouse the Display Setting check box.

8. After the **display comfort and economy temperatures** selection has been made, Click once on the **Transmit** command button in the Icon toolbar.

9. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

10. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

11. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the new comfort and economy settings sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Control Temperature

Description of the Temperature Control Form

The **Temperature Control** form is used to set or display the current temperature control operating modes and associated heating and cooling setpoints for single or multiple HVAC units within a building. The ADRES system provides three modes of temperature control defined below:

⇒ **Program Operation (Program)** - The program operating mode will control the setpoint temperatures using the daily and weekly time and temperature program schedules and the vacation and holiday schedules.

⇒ **Override Operation (Override)** - The override operating mode will override either the program or manual temperature control modes and control both setpoint temperatures using temporary heating and cooling setpoints selected. The override will last until the next scheduled time and temperature program change.

⇒ **Manual Operation (Manual)** - The manual operating mode will control temperatures using the manual heating

and cooling setpoints selected. The manual setpoint temperatures will run indefinitely until changed to new manual setpoint temperatures or taken out of manual temperature control.

Operation of the Temperature Control Form

To operate this form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Temperature Control** form from the **Main Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. Select the check box to either **Set Settings** or **Display Settings** for each system with the mouse.

5. If the **Set Settings** check box is selected then to change the temperature control mode, start by selecting with the mouse from the pull down combo box, one of the three control mode options, **Program**, **Manual** or **Override**.

6. Set the associated heating and cooling setpoints with the combo box spinner control and the mouse. Note, if program mode is selected than heating and cooling setpoints will be obtained from the Program Time/Temp schedules.

7. After the mode and all heating and cooling temperatures selections have been made, Click once on the **Transmit** command button in the Icon toolbar.

8. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

9. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

10. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the

left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the temperature control mode sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Control Lighting

Description of the Lighting Control Form

The **Lighting Control** form is used to set or display the current lighting control operating modes for all Lighting circuits within a building. The ADRES system provides three modes of lighting control defined below:

⇒ **Program Operation (Program) -** The program operating mode will control the Lighting using the daily and weekly time and light program schedules.

⇒ **Manual Operation (Manual) -** The manual operating mode will allow the user to control the lighting manually. The Lighting control unit will not turn on the circuit for which the manual mode is selected.

⇒ **Unchanged (Unchanged) -** The unchanged selection will allow the user not change the current control mode for each circuit which the unchanged radio button is selected.

Operation of the Lighting Control Form

To operate this form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Lighting Control** form from the **Main Menu,** with the mouse.

3. **Select the Lighting Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. Select the check box to either **Set Settings** or **Display Settings** for each system with the mouse.

5. If the **Set Settings** check box is selected then to change the lighting control mode for each circuit, start by selecting with the mouse one of the three control mode radio buttons, **Program, Manual** or **Unchanged** for each lighting circuit.

6. After the mode selections have been made, Click once on the **Transmit** command button in the Icon toolbar.

7. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

8. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

9. To determine location of Lighting systems, areas the Lighting systems service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of Lighting unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

Control HVAC Unit Availability

Description of the HVAC Unit Control Form

The **HVAC Unit Control** form is used to set or display the current HVAC Unit availability for single or multiple HVAC units within a building. The ADRES system provides four modes of control over the heating and air conditioning systems defined below:

⇒ **Both Heating and Air Conditioning Systems Turned Off (Both Off) -** The both off system control mode will not allow either the heater or air conditioner to operate even if the setpoint temperatures are calling for the systems to operate in heating or cooling.

⇒ **Heating System Available Only (Heat Only) -** The heating system only control mode will only allow the heater to operate. The air conditioner would not be available to satisfy a call for cooling even if the setpoint temperatures are calling for the air conditioning system to operate.

⇒ **Cooling System Available Only (Cool Only)   -** The cooling system only control mode will only allow the air

conditioner to operate. The heater would not be available to satisfy a call for heating even if the setpoint temperatures are calling for the heating system to operate.

⇒ **Heating and Cooling Automatic Changeover (Auto Changeover) -** The automatic changeover system control mode will allow either the heater or air conditioner to operate when the setpoint temperatures are calling for the systems to operate.
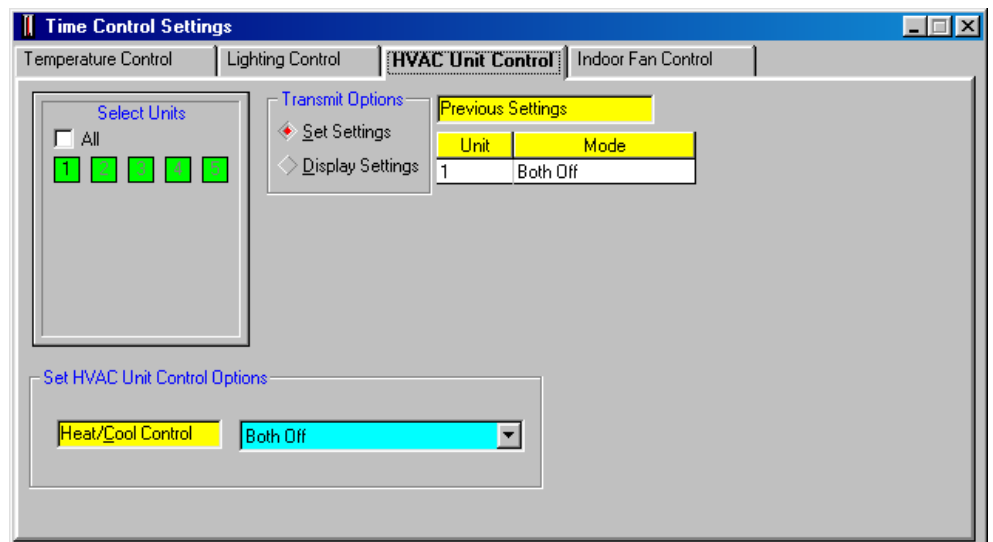
Operation of the HVAC Unit Control Form

To operate this form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **HVAC Unit Control** form from the **Main Menu,** with the mouse.

3. **Select the HVAC Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

4. Select the check box to either **Set Settings** or **Display Settings** for each system with the mouse.

5. If the **Set Settings** check box was selected, then to change the **HVAC Unit Control** mode, start by selecting with the mouse from the pull down combo box, one of the four control mode options, Both Off, Heating Only, Cooling Only or Automatic Changeover.

6. After the control mode selection have been made, Click once on the **Transmit** command button in the Icon toolbar.

7. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

8. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

9. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the

left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the HVAC unit control mode sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

Control Indoor Fan Operation

Description of the Indoor Fan Control Form

The **Indoor Fan Control** form is used to set or display the current Indoor Fan Control mode for single or multiple HVAC units within a building. The ADRES system provides four modes of control over the indoor fan are defined below:

⇒ **Automatic Operation (Automatic)   -** The indoor fan will operate only during a call for heating or cooling and will not operate at any other times.

⇒ **Continuous Operation (Continuous)   -** The indoor fan will operate continuously.

⇒ **Timed On and Off Operation (Timed On and Off)   -** The indoor fan operates in the continuous mode between the timed on and off hours and will operate in the automatic mode for all other times on the weekdays and weekends.

⇒ **Duty Cycle Operation (Duty Cycled)   -** The indoor fan will operate for the desired minimum number of minutes per hour.

Operation of the Indoor Fan Control Form

To operate the **Indoor Fan Control** form perform the following:

1. Select a Building from the **Select a Building** pull down combo box. Place the mouse cursor over the pull down arrow and Click once with the left mouse button. When the pull down list opens, select the desired building by moving the mouse button over the building to highlight it, and with the left mouse button Click once. The building selected will have its name shown in the pull down combo box.

2. Select the **Indoor Fan Control** form from the **Control Menu,** with the mouse.

3. Select the check box to either **Set Settings** or **Display Sched** for each system with the mouse.

4. If the **Set Settings** check box was selected, then to change the **Indoor Fan Control** mode, start by selecting with the mouse from the pull down combo box, one of the four indoor fan control mode options (Automatic, Continuous, Timed On and Off or Duty Cycle).

5. **Select the HVAC Unit** (s) to apply the programmed settings by Clicking on the unit address number (Green) text boxes with the left button on the mouse. After selection the (Green) text box will turn (Brown). To deselect, Click once with the left mouse button the HVAC unit number to return its text box color to (Green). If all units are to be programmed, Click once with the left mouse button the **All** check box.

6. If the **Timed On and Off control mode** was selected, the start hour, start minute, stop hour and stop minute parameters must be set using the pull down combo boxes. Select the days of the week for which the program should apply by using the mouse to Click on the **Check** box next to each applicable day desired. Click on the **All** check box if the schedule is to apply to all days of the week.

7. If the **Duty Cycled control mode** was selected, the minutes per hour run time parameter must be set using the combo spinner box.

8. After the indoor fan mode and all other parameter selections have been made, Click once on the **Transmit** command button in the Icon toolbar.

9. To disconnect the communications to a building such as a telephone modem connection, select the **Disconnect** command button from the Icon toolbar and Click once, the left mouse button.

10. To exit the form and return to the **Main Menu**, Click once on the **X** in the upper right hand corner of the form with the left mouse button.

11. To determine location of HVAC equipment, areas the HVAC equipment service within the building, or show a building graphical floor plan if available, move the mouse over the **Show Floor Plan** command Icon button and Click once the left mouse button. Either a cross-reference of HVAC unit number and description of service area will appear, or the graphical picture of the floor plan will be shown.

If the HVAC units received the new indoor fan control mode sent, then the new values will be shown in the data table displayed under the Values Set Without Error label box. If the new values are not shown in the data table, then the procedure should be repeated.

View or Print Reports

Description of the Reports Form
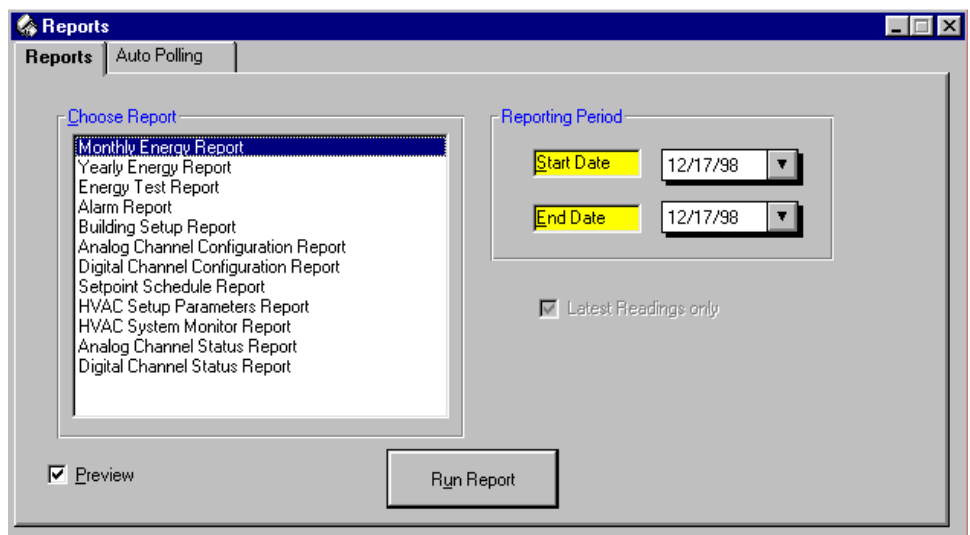
The **Reports** form selection is used to preview or print various preformatted reports. The user can select the time period for which to generate a report. The reports available are defined below:

⇒ **Monthly Energy Report** - The following monthly energy report contains the following information for each building and each HVAC unit within the building:

❑ Cooling Call Time Total Hours - Total accumulated call time in hours the ADRES Control Module was calling for the Air Conditioner's first stage to provide cooling. This will include any cooling energy recovery time.

❑ Cooling System Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing air conditioning. The calculation multiplies the 1st and 2nd stage accumulated cooling hours by the individual motor power requirements (compressors, outdoor fans and

indoor fans) and subtracts off the savings produced by the energy recovery.

- ❑ Cooling System Energy Recovery Savings % - The percentage of Cooling Call Hours divided by the Cooling Energy Recovery Hours.

- ❑ Heating Call Time Total Hours - Total accumulated call time in hours the ADRES Control Module was calling for the Heater's first stage to provide heating. This will include any heating energy recovery time.

- ❑ Heating System Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing heating. The calculation multiplies the 1st and 2nd stage accumulated heating hours by the individual motor power requirements (compressors, outdoor fans, backup strip heaters and indoor fans) and subtracts off the savings produced by the energy recovery.

- ❑ Heating System Electric Usage in BTU - Total calculated energy consumption in Therms for the HVAC unit for providing heating. The calculation multiplies the 1st and 2nd stage accumulated heating hours by the individual gas or fuel oil BTU inputs and subtracts off the savings produced by the energy recovery.

- ❑ Heating System Energy Recovery Savings % - The percentage of Heating Call Hours divided by the Heating Energy Recovery Hours.

- ❑ Indoor Fan Run Time Total Hours - Total accumulated indoor fan run time in hours the ADRES Control Module was calling for the Indoor Fan to provide heating, cooling or ventilation.

- ❑ Indoor Fan Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing ventilation. The calculation multiplies the Indoor Fan accumulated operating hours by the individual motor power requirement.

⇒ **Yearly Energy Report** - The following yearly energy report contains the following information for each building and each HVAC unit within the building:

- ❑ Cooling Call Time Total Hours - Total accumulated call time in hours the ADRES Control Module was calling for the Air Conditioner's first stage to provide cooling. This will include any cooling energy recovery time.

- ❑ Cooling System Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing air conditioning. The calculation multiplies the 1st and 2nd stage accumulated cooling hours by the individual motor power requirements (compressors, outdoor fans and indoor fans) and subtracts off the savings produced by the energy recovery.

❑ Cooling System Energy Recovery Savings % - The percentage of Cooling Call Hours divided by the Cooling Energy Recovery Hours.

❑ Heating Call Time Total Hours - Total accumulated call time in hours the ADRES Control Module was calling for the Heater's first stage to provide heating. This will include any heating energy recovery time.

❑ Heating System Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing heating. The calculation multiplies the 1st and 2nd stage accumulated heating hours by the individual motor power requirements (compressors, outdoor fans, backup strip heaters and indoor fans) and subtracts off the savings produced by the energy recovery.

❑ Heating System Electric Usage in BTU - Total calculated energy consumption in Therms for the HVAC unit for providing heating. The calculation multiplies the 1st and 2nd stage accumulated heating hours by the individual gas or fuel oil BTU inputs and subtracts off the savings produced by the energy recovery.

❑ Heating System Energy Recovery Savings % - The percentage of Heating Call Hours divided by the Heating Energy Recovery Hours.

❑ Indoor Fan Run Time Total Hours - Total accumulated indoor fan run time in hours the ADRES Control Module was calling for the Indoor Fan to provide heating, cooling or ventilation.

❑ Indoor Fan Electric Usage in kWh - Total calculated energy consumption in kilowatt hours for the HVAC unit for providing ventilation. The calculation multiplies the Indoor Fan accumulated operating hours by the individual motor power requirement.

⇒ **Energy Test Data** - The following energy test report contains the following information an individual HVAC unit within the building:

❑ Cooling Hours with Energy Recovery - Total accumulated hours the ADRES Control Module was calling for normal or mechanical cooling (with compressor (s) running) minus the energy recovery time, or time the cooling was being met without mechanical cooling (compressor (s) off), during the days energy recovery was being performed.

❑ Cooling Hours Normal - Total accumulated hours the ADRES Control Module was calling for the Air Conditioner to provide normal mechanical cooling during the days energy recovery was not being performed.

❑ Heating Hours with Energy Recovery - Total accumulated hours the ADRES Control Module was calling for normal or mechanical heating (with gas valve or compressors running), minus the energy recovery time or time the heating was being met without mechanical or gas heating (compressors

or gas valves off), during the days energy recovery was being performed.

❑ Heating Hours Normal - Total accumulated hours the ADRES Control Module was calling for the Heater to provide normal mechanical or gas heating during the days energy recovery was not being performed.

❑ Indoor Fan Run Time with Energy Recovery - Total accumulated hours the indoor fan operated for heating, cooling or ventilation during the days energy recovery was being performed.

❑ Indoor Fan Run Time Normal - Total accumulated hours the indoor fan operated for heating, cooling or ventilation during the days energy recovery was not being performed.

❑ Maximum Demand Minutes with Energy Recovery - Total maximum continuous heating and cooling call times performed during the days energy recovery was being performed.

❑ Maximum Demand Minutes Normal - Total maximum continuous heating and cooling call times performed during the days energy recovery was not being performed.

❑ Cooling and Heating Degree Days with Energy Recovery - The total accumulated Cooling Degree Days accumulated during the test days where energy recovery was being performed.

❑ Cooling and Heating Degree Days Normal - The total accumulated Cooling Degree Days accumulated during the test days where energy recovery was being performed.

⇒ **Alarm Report** - The alarm report contains all the building and unit information and alarm data with the date and time the alarm was reported to the PC:

⇒ **Building Setup Report** - The building setup report contains all the data recorded during the building and unit setup in the Building Setup form.

⇒ **Analog Channel Configuration Report** - The analog unit setup report contains all the data recorded during the analog channel configuration and setup.

⇒ **Digital Channel Configuration Report** - The digital unit setup report contains all the data recorded during the digital channel configuration and setup.

⇒ **Setpoint Schedule Report** - The setpoint schedule report contains all the time / temperature setpoint schedules downloaded from the HVAC Units and recorded in the database for each HVAC unit.

⇒ **HVAC Unit Setup Report** - The HVAC Unit setup report contains all the data recorded for each HVAC unit in the Unit Basics form.

⇒ **HVAC System Monitor Report** - The HVAC System Monitor report contains all the HVAC system status data downloaded

from the HVAC Units and recorded in the database with corresponding date and time stamps.

⇒ **Analog Channel Status Report** - The Analog Channel Status report contains all the Analog data downloaded from the Analog units and recorded in the database with corresponding date and time stamps.

⇒ **Digital Channel Status Report** - The Digital Channel Status report contains all the Digital channel data downloaded from the Digital units and recorded in the database with corresponding date and time stamps.

⇒ **HVAC System Status Report** - The HVAC System Status report contains a detailed status of an individual HVAC system which includes control settings and alarm conditions. The downloaded data is recorded in the database with a corresponding date and time stamp.

⇒ **Lighting Schedule Report** - The lighting schedule report contains all the time / light schedules downloaded from the Lighting Units and recorded in the database for each Lighting unit.

Operation of the Reports Form

To operate the **Reports** form perform the following:

1. Select the **Reports** form from the **Reports Menu,** with the mouse.

2. **Select the Report Type** to be previewed or printed. Individual report types can be selected by moving the mouse button over the desired **Report** and with the left mouse button Click once.

3. **Select the Time Period** from the **Reporting Period** panel. The starting month and year and ending month and year should then be selected by typing in the desired dates from the keyboard. Individual report types can be selected by moving the mouse button over the desired **Report** and with the left mouse button Click once.

4. After the time period as been selected by typing in the starting and ending month and year, a preview of the report can be viewed by selecting the **Check** box adjacent to the Preview with the mouse.

5. To print the report click once on the **Run** command button.

6. To exit the form and return to the **Main Menu**, Click once on the **Return** command button with the left mouse button.

Perform Automatic Polling

Description of the Auto Polling Form

The **Auto Polling** form is used to start an automatic polling of each Project or Buildings and associated Units from the **Project Setup** form. The automatic polling feature allows the user to setup the PC to automatically call at a predefined time interval each Project and collect the specific data desired when setting up and defining Scenarios. This data is collected and written to a database for printout under the Reports form for future reference and analysis.

If the ADRES system is installed without Master Control Units, there is an option to have the computer send out the computer's time and date to refresh and update all Control Modules with current time in case of electrical power outages at the control modules.

Note, if you are polling buildings which are not in the time zone of the computer which is performing the polling, the time sent to the ADRES Control Modules will be off by the difference in time zones. Additionally, be sure to check the time and date on the computer is correct.

Once polling is initiated, the Polling Status panel will begin to provide real time status of the polling by showing the number of buildings and number of units in each building completed. Due to the speed of the polling, the last building and last unit in a building will not register as 100% completed although it will have been done. If you are only polling a project with one building and one HVAC unit, then there will not be any indication of completing the polling for that building.

The View Alarm Log provides a log of all alarm conditions detected during the polling period. This log is available for review at any time. The alarm log is not available if there have not been any alarms registered.
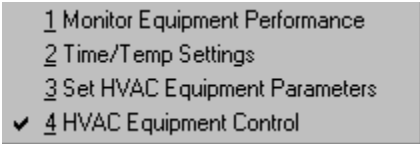
Operation of the Auto Polling Form

To operate the **Auto Polling** form perform the following:

1. Select the **Automatic Polling** form from the **Monitoring Menu,** with the mouse.

2. Select the **Scenario** to add, edit or delete using the **Scenario** pull down box. When defining a new Scenario, a window opens to setup, define and then name each Scenario including the individual data command to be executed and the time interval frequency to collect the data.

3. After the scenarios has been defined select the **Projects** to automatically poll by highlighting each Project with the mouse using a single click with the left mouse button. To deselect just click again on the Project to deselect it.

4. To begin **Automatic Polling**, Click once on the **Start Automatic Polling** command button with the left mouse button.

5. To cancel **Automatic Polling**, Click once on the **Stop Automatic Polling** command button with the left mouse button.

6. To **View the Alarm Log**, Click once on the **View Alarm Log** command button with the left mouse button.

7. To exit the form and return to the **Main Menu**, Click once on the **Return** command button with the left mouse button.

Windows

Description of Switching Between Forms

```
1 Monitor Equipment Performance
2 Time/Temp Settings
3 Set HVAC Equipment Parameters
✓ 4 HVAC Equipment Control
```

Switching Between forms

Switching between forms using Windows

Use the **Windows** main menu selection when you want to switch between forms that have been previously opened but are not currently displayed.

To switch between opened forms follow these steps.

1. From the main menu toolbar, select and open any of the available forms.

2. After the first form opens, select another form to open and then open a second form.

3. After the second form opens, notice the first form disappears. The first form is actually still open (its running in the background) with the new form being displayed on the screen "on top" of the first form.

4. To switch back to the first form from the second form, which is currently displayed, select the Windows main menu function and then select the name of the first form. Notice that all the forms currently opened will be displayed in the Windows menu list.

5. Repeat step 4 to switch to another opened form for display on the screen.

Help

Description of the On-Line Help

```
Contents
Demo Program

Report problem or feature request

About...
Energy Pro on the Web...
Comm Debug
```
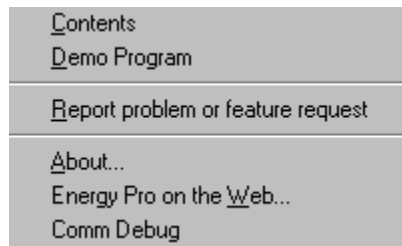
Use this main menu selection when you want to obtain on-line help about the operation of the program, procedures to perform various tasks, or definitions on a particular word, term or subject. The selections available are defined below:

⇒ **Contents** - This selection will provide a table of contents from which to select specific help.

⇒ **Demo Program** - This selection will execute a demonstration program of how the *EnergyPro* program works.

⇒ **Report problem or feature request** - This selection is used to report problems encountered in using the program. It is also used to request features or functions.

⇒ **About** - This selection will open the program splash screen and show the current version number of *EnergyPro* currently installed.

⇒ **EnergyPro on the Web** - This selection will take you to the Winn Energy Controls web site, www.winnenergy.com, to obtain program upgrades.

⇒ **Comm Debug** - This selection will open a dialog box to track all activity on the comports. This is useful in troubleshooting communication problems.

Operation of the on-line Help

To go to the on-line help, follow these steps.

1. From the main menu toolbar select the Help function.

2. Once the Help menu opens, select one of the following options presented, Contents, Search or About.

3. If you selected Contents, a "table of contents" list of available program forms including setup, monitoring, control, program or reporting tasks will be presented.

4. Select from the list, the form that contains the tasks or procedure you would like help on. A detailed explanation of the function of the form or the procedure to operate the form will be provided.

5. If you selected the Search option, then an entry box will appear to allow you to type in the key word you would like help on finding.

6. If you selected the About option, then the program opening screen will appear and will contain the version number of the program you currently have running on your computer.

7. If you selected the Demo Program option, the Demonstration Program will launch and demonstrate how many of the program features function.

8. If you selected the Report Problem or Feature Request, then the Report Problem / Feature input windows opens. When filled out and saved, the resulting file can be emailed to us for resolution or upgrade.

9. If you selected the *EnergyPro* on the Web, then the program will launch the PC's web browser if installed and take the user to the Winn Energy Controls web site for *EnergyPro* upgrades, hardware upgrades or technical assistance.

10. If you selected the Comm Debug, the program will open a window and track the comport data being sent and received from the PC.

Appendix I

Miscellaneous Forms

Building Setup

Building Name: _____
Number of HVAC Units: _____
Telephone Modem Number: _____
Comport for Communications: _____
IP Address: _____
IP Port for Communications: _____

Unit Basics (HVAC Unit)

Unit Number Designation: _____
Manufacturer: _____
Model: _____
Serial Number: _____
Description of Service Area: _____

Unit Configuration (HVAC Unit)

Rated Cooling Tons: _____
Rated Heating BTU's: _____
Filter #1 Quantity: _____
Filter #1 Size: _____
Filter #2 Quantity: _____
Filter #2 Size: _____
System Type: Gas/Electric   _____   Heat Pump   _____
                       Packaged   _____   Split   _____
Economizer Installed: Yes   _____   No   _____
Number of Cooling Stages: _____
Number of Heating Stages: _____

A/C Cool   (HVAC Air Conditioning Performance)

Compressor 1st Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Compressor 2nd Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Indoor Fan	Volts	_____	Amps	_____	Phase	_____	KW _____
Outdoor Fan 1st Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Outdoor Fan 2nd Stage	Volts	_____	Amps	_____	Phase	_____	KW _____

G/E Heat   (HVAC Gas / Electric Heating Performance)

Gas Fuel Input 1st Stage   BTU   _____
Gas Fuel Input 2nd Stage   BTU   _____
Heat Output 1st Stage   BTU   _____
Heat Output 2nd Stage   BTU   _____
Combustion Fan 1st Stage Volts _____ Amps _____ Phase _____ KW _____
Combustion Fan 2nd Stage Volts _____ Amps _____ Phase _____ KW _____

H/P Heat   (HVAC Heat Pump Heating Performance)

Compressor 1st Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Compressor 2nd Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Backup Strip Heat	Volts	_____	Amps	_____	Phase	_____	KW _____
Outdoor Fan 1st Stage	Volts	_____	Amps	_____	Phase	_____	KW _____
Outdoor Fan 2nd Stage	Volts	_____	Amps	_____	Phase	_____	KW _____

Building Setup

Building Name: _____
Number of Lighting Units: _____
Number of A/D Units: _____
Telephone Modem Number: _____
Comport for Communications: _____
IP Address: _____
IP Port for Communications: _____

Unit Basics (Lighting Unit)

Unit Number Designation: _____
Description of Circuit #1:   _____
Description of Circuit #2:   _____
Description of Circuit #3:   _____
Description of Circuit #4:   _____

Lighting Circuit Data   (Lighting Circuit Energy Consumption)

Circuit #1   Description _____   Volts   _____   Amps   _____   Phase   _____   KW   _____
Circuit #2   Description _____   Volts   _____   Amps   _____   Phase   _____   KW   _____
Circuit #3   Description _____   Volts   _____   Amps   _____   Phase   _____   KW   _____
Circuit #4   Description _____   Volts   _____   Amps   _____   Phase   _____   KW   _____

Building Setup

Building Name: _____
Number of A/D Units: _____
Telephone Modem Number: _____
Comport for Communications: _____
IP Address: _____
IP Port for Communications: _____

Unit Basics (Analog / Digital Unit)

Unit Number Designation: _____

Digital Channel Worksheet

Channel	Parameter Name	Description On	Description Off	Alarm Delay	Alarm Condition
1	_____	_____	_____	____	_____
2	_____	_____	_____	____	_____
3	_____	_____	_____	____	_____
4	_____	_____	_____	____	_____
5	_____	_____	_____	____	_____
6	_____	_____	_____	____	_____
7	_____	_____	_____	____	_____
8	_____	_____	_____	____	_____

Analog Channel Worksheet

Channel	Parameter Name	Units	Low Cond	High Cond	Alarm Delay	Conv. Low	Conv. High
1	_____	_____	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____	_____	_____

Glossary of Terms

Analog Signal	A signal which can infinitely vary between the minimum and maximum range.
Baud Rate	The number of times per second a signal changes in a communications channel. The term baud is often erroneously used to describe the speed at which the modem can transfer data. The correct measure for data rate is bits per second (bps).
Bit	A computer sends electrical current that is understood as a series of one and zeros. The number one represents an "on" charge or bit (binary digit), while a zero represents an "off" bit.
Bitmap	An image stored as a pattern of dots (or pels)
Browse	To look through files and directories. Some dialog boxes have a Browse button, which opens another dialog box that lists files and directories so that you can easily select the file you want.
BTU	British Thermal Unit The amount of heat required to raise the temperature of 1 lb. of water one degree F.
Carrier Detect	The connection detection method used by most modems. Carrier Detect is a signal indicating that two modems have detected one another.
Check Box	A small, square box that appears in a dialog box and that can be selected or cleared. When a check box is selected, an X appears in the box. A check box represents an option that you can turn on or off.
Comfort Temperature	The temperature you want to maintain during the day when the building is occupied.
Command Button	In a dialog box, a button that carries out an action. A command button often has a label that describes the action it carries out.
Comport	Also known as a serial port. DOS references these ports by the names COM1, COM2, COM3 and COM4.
Digital Signal	A signal which is either on or off.
Direct Connect	A form of data communication in which one computer (PC) is directly connected to another (ADRES system hardware).
Display	The PC screen or monitor
Double Click	To rapidly press and release a mouse button twice without moving the mouse.
Economy Temperature	The lower (heating) or higher (cooling) temperature that lets you save on heating and cooling costs when the building is unoccupied. Also called the setback (heating) or setup (cooling) temperature.
ADRES System Hardware	The energy management control system hardware which the PC is communicating with to send commands to control, program, configure and monitor and to receive data or acknowledgment.
Hard Disk	A disk that is permanently mounted in its drive. Also known as a fixed disk.
HVAC	Heating, Ventilation and Air Conditioning
Icons	Graphical representations of various elements in Windows, such as Floor Plans, Help and Close command buttons.
Indoor Fan	The blower fan which is used by the heating and air conditioning system to move

	air from the HVAC unit into and out of the occupied space.
List Box	Within an application window or dialog box, a type of box that lists available choices, for example, a list of all files in a directory. If all the choices do not fit in the list box, there is a scroll bar.
Main Menu	The window containing the work area and menu bar for the program. The name of the program appears at the top of this window.
Menu	A list of available commands in an application window. Menu names appear in the menu bar near the top of the window.
Menu Bar	The horizontal bar containing the names of the program's menus for example, File, Monitor, Program, etc.
Modem	Short for modulator / demodulator, a communications device that enables a computer to transmit information over a standard telephone line. A modem translates (modulates) digital data to an analog signal for transmission over telephone lines, then translates back to digital (demodulates) at the other end.
Mouse	A hand held device used to control a cursor on the screen.
Network	A group of computers and other devices that are connected by communications facilities (hardware and software) for the purpose of sharing information and peripheral devices such as printers and modems.
Password	A password is a unique string of characters that a user types as an identification code. The system compares the code against a stored list of authorized passwords. If the code is legitimate, the system allows access, at whatever security level has been approved for the owner of the password.
Program	The times and temperatures you set to define the comfort and economy periods for each of the four daily periods.
Program Periods	One of the four time periods available for setting set point temperature changes during a 24 hours period. One period begins when the previous period ends.
Program Schedule	This is the daily and weekly time and temperature schedule programmed into each ADRES control module from the Master Control or PC.
Radio Button	A small, round button that appears in a dialog box. Within a group of related option buttons, you can select only one.
Return Temperature	The temperature of the air coming back to the HVAC unit from the occupied conditioned space. The return temperature is typically measured within 12 inches of the HVAC unit or air handler.
Select	To mark an item so that a subsequent action can be carried out on that item. You usually select an item by clicking it with a mouse or pressing a key.
Serial Port	A location for sending and receiving serial data transmissions.
Set Point	The temperature you set on the ADRES or "thermostat". The ADRES turns the heating or cooling equipment on and off to maintain this temperature at the room temperature sensor (or thermostat) location until another temperature setting goes into effect.
Setback	Reducing the temperature in the building for a set period every day in winter for energy savings.
Setup	Raising the temperature in the building for a set period every day in summer for energy savings.
Supply Temperature	The temperature of the air discharging or leaving from the HVAC unit and going into the occupied space to provide either heating or cooling. The supply temperature is typically measured 12 to 18 inches downstream of the HVAC unit's heat exchanger.
Text Box	In a dialog box, a box in which you type information needed to carry out a command. The text box may be blank or may contain text when the dialog box opens.
Thermostat	A device designed for controlling heating and air conditioning equipment to a fixed temperature.
Title Bar	The horizontal bar at the top of a window that contains the title for the window of form. On many forms, the title bar also contains the Control menu box, and Maximize, Minimize and Close buttons.