# Technical Manual

## HMIkit
## Graphic Design.
### (Touch screens)

## Manual



## Graphics Design Manual

# AIRTEK ®

A i r t e k   A u s t r a l i a   -   h t t p : / / w w w . a i r t e k . c o m . a u

**Airtek-AU**

After logging in (Default is User=Admin, Password=pass)



# Chapter 1 Project Management

The first step is to create a project for each screen that will be used on the project. This means that if you have two screens being used in the project, you will need to create a separate project for each screen.

The reason for this is that all pages created in the project will be down loaded into the screen, the other issue is that the screens sizes may be different.

If you are using two screens that will be exactly the same then you can use the same file to down load into several screens.

## I. Create/Switch Project

1. Start the HMIkit software then go to **System >Select Project** to create new project or switch project (Figure 1-1).
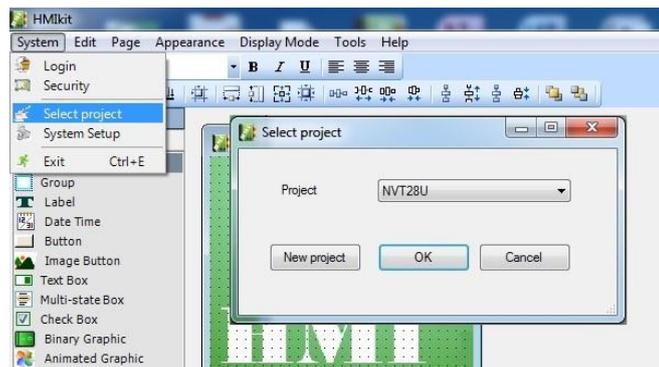


Figure 1-1 Switch Project Window

2. Click on "New project" button to create a project; the user will be asked to input a project name. The project name can contain no more than 8 letters/digits.

3. Or select from the selection box to switch project.

4. After creation/switching project, HMIkit software needs to be restarted to make the software read the data base again with the new settings.

## II.    Project Path and Description

HMIkit software will create a project folder with same name as the new project name under **"AirtechProjects"** (Default installation path is C:/HMIkit/AirtechProjects); and each folder contains all files of the project.

If the user wants to **"Transfer"** or **"Back Up"** the project, the user can move or copy the project or projects to another destination by using the standard Cut/Copy routines.
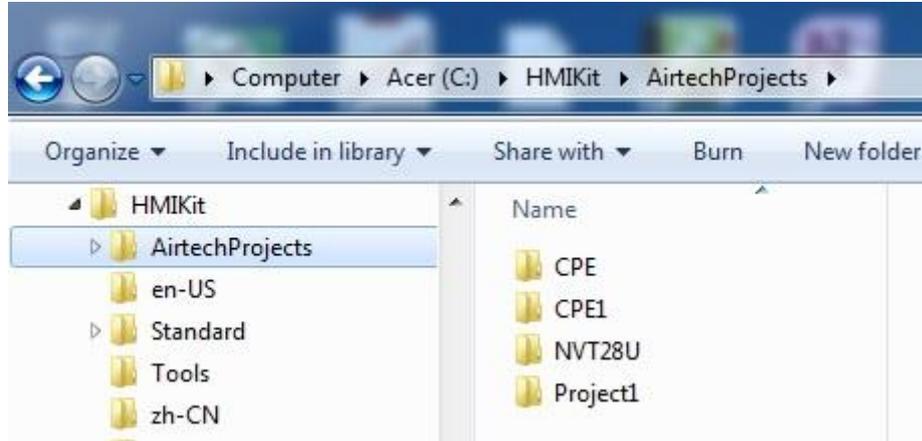


If several screens are to be used and they are similar but NOT exactly the same then the user can copy just the **"Display"** folder to another project to help speed up the design process.
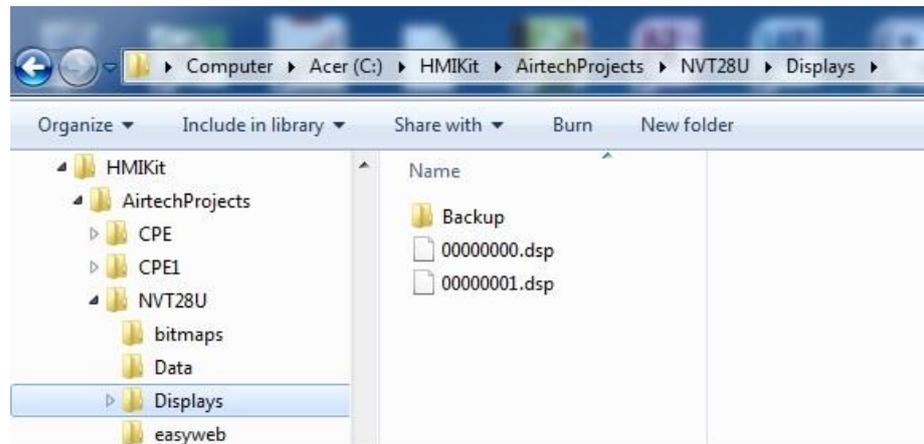


1.    **Screen pages:** HMIkit software stores all page files of the project with extension (.dsp) under the project folder name ie; c:/HMIkit/AirtechProjects/Project1/Displays. If an user wants to use the pages of project A in project B, then she/he just need to copy dsp files of project A into project B directory. When project B is opened, project B will have project A pages for its own.
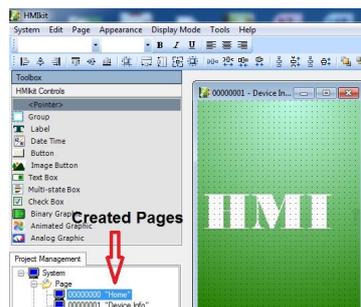
2. **Bitmaps folder:** This is the suggested folder for the user to store all figures and images such as background and button image but not compulsory. It is easier to back up the project if this folder is used.
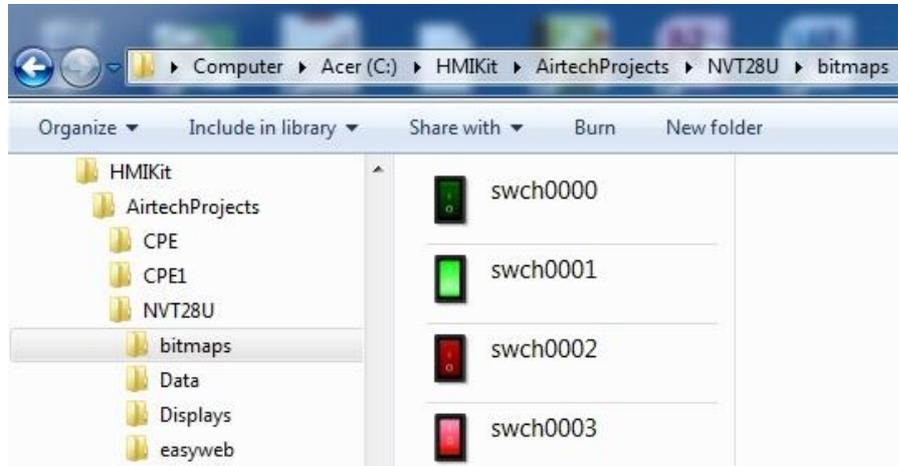
# Chapter 2 Security Control

## I. Security Control

HMIkit software allows for many user groups and passwords, each user can be granted different privileges and writes to each group. Select "System">> "Security" to open "Security Setup window". Below are the control options.
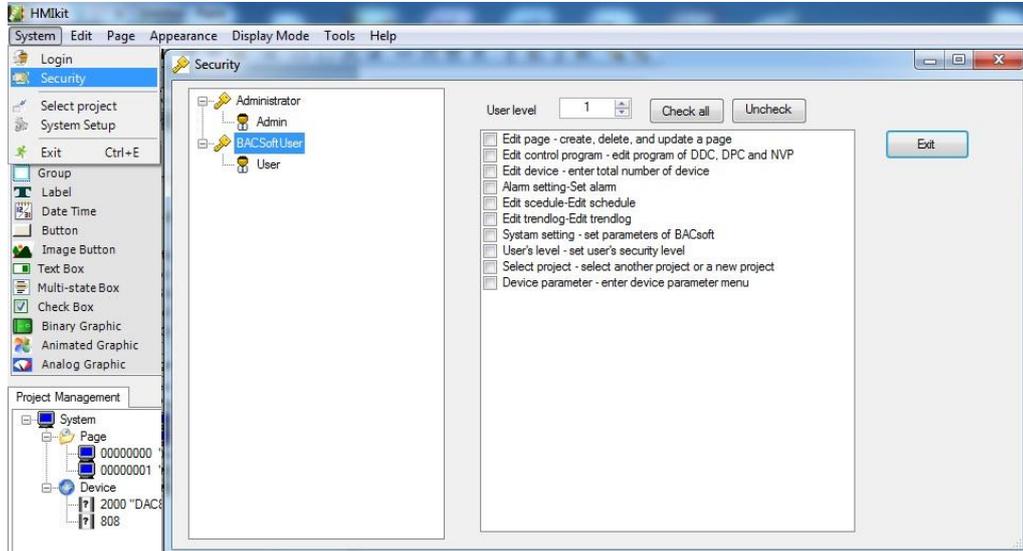


1. **Group/User Modification:** Right click on a group/user; operator is able to add/del/copy user or group from the pop up shortcut menu.

2. **User password Modification:** Click on a user to change user password. If you require a password for the Touch screens, you will need to use **ONLY** numerical numbers for USER and PASSWORD (they need to be the same number). If the User and Password are left to the default, all users will have full access.

3. **Group access control:** HMIkit software allows different groups to have their own privileges and levels and each group can have multiple users with same privileges and levels. The levels are ranked from 0~10, 10 is the highest. For instance, if the level of page is set to 6, then only level 6~10 users are allowed to access it.

   Users below level 6 will be treated as **"Read Only"** users and will **NOT** have access to buttons (Greyed Out) or graphic **"Write"** Functions.

4. **Group privilege control:** A Group can be limited to operate specific control options by security setup.

# Chapter 3 Device Management

Generally devices in a BACnet system are controllers that control and or monitor equipment in the field, therefore the screens need to know what devices they will be required to **"read/Write"** to.

## I. Device List

1. To build up a devices list, the operator needs to click **"Design Mode"** in the top menu of HMIkit. Devices will be listed on lower left panel as shown below.

    Devices must be listed in the Project Manager/Devices before they can be selected in the "**graphic object**" on the screen page.

    To manually **add** devices the user must highlight **"Device"** in the Project Management tab then right click and add a device.
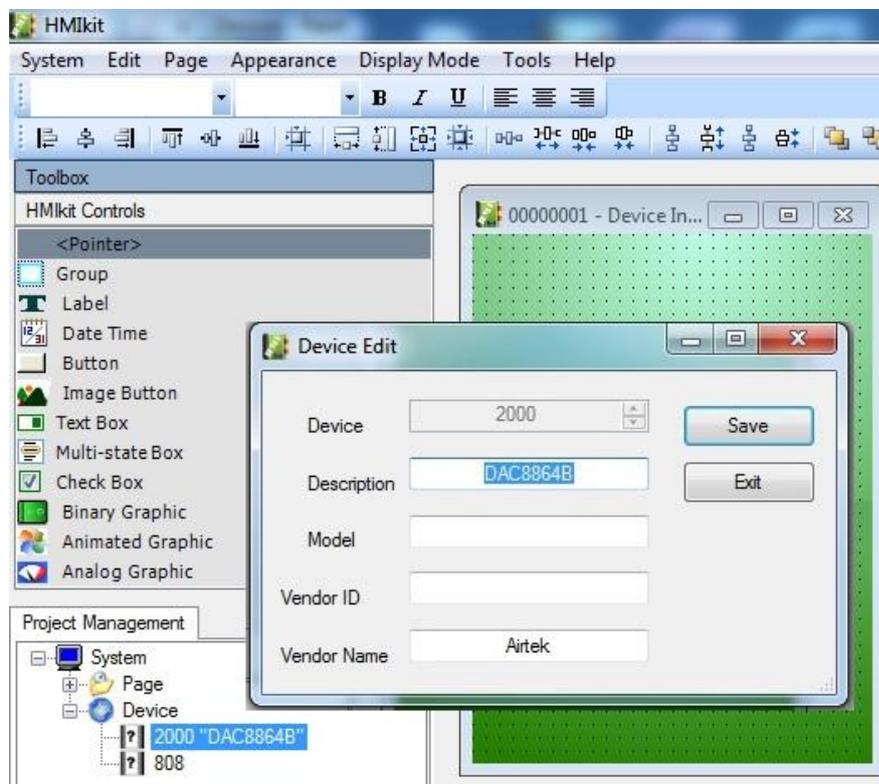


2. HMIkit recognizes standard Airtek devices as listed below.

| Figure | Description |
| --- | --- |
| | BACsoft workstation |
| | AIRTEK GC, DAC, DSC series controller |
| | AIRTEK NVP20V network operator |
| | AIRTEK DPC series controller |
| | Non-AIRTEK device |
| | |
| | |

## II. Add/Del and Edit Device

1. Operator may also add new device from Device Edit Window by right click on any device in list then select "Add Device" in shortcut menu.
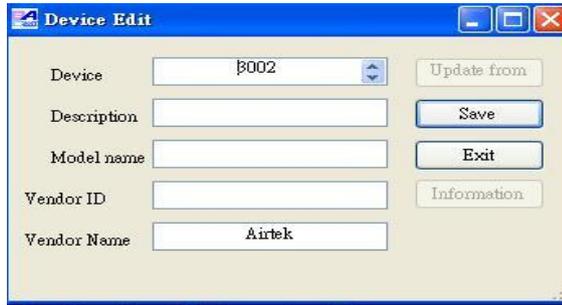


2. **Add new device:** The Instance number is required and should not currently exists in list. The Model name is used in the information list. Vendor Name/ID can also be stored, then click **"Save"** to save device information into device list.

3. **Delete a device:** Click on device then press Delete key from keyboard or select **"Del Device"** from the shortcut menu.

# Chapter 4 Graphic Design and Development

## I. Page Management

1. **HMIkit software Page List:** In design mode, HMIkit lists all pages of the project on lower left panel.

二.
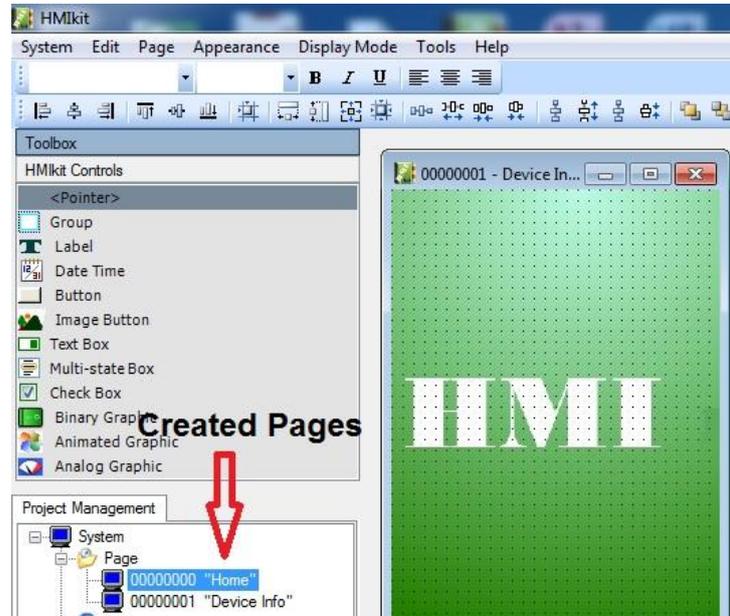


Project Pages List

1.1 Edit page information from the **"Page"** Menu.
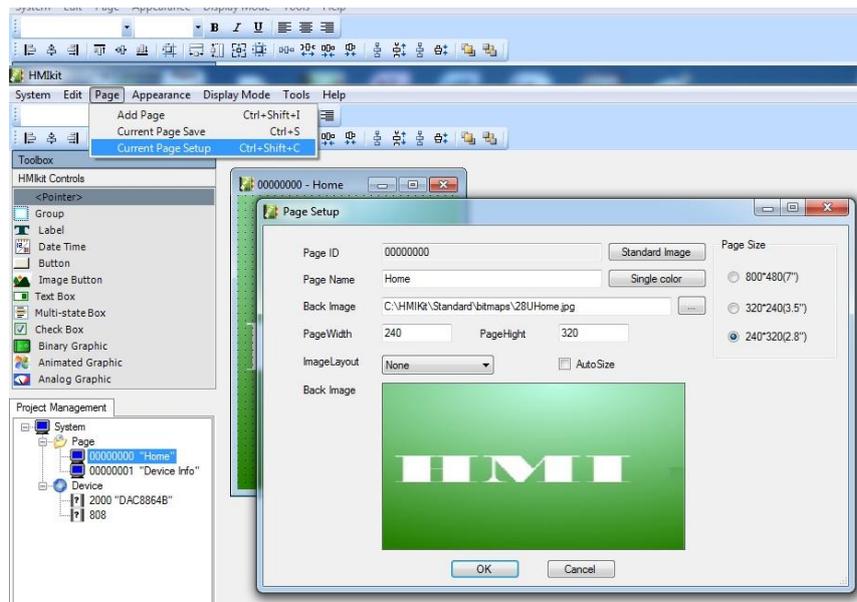


1.2 Pages can be Added or Deleted directly from the **"Project Management"** Tab.

1.3 All pages are stored in the **c:/HMIkit/Airtechprojects/****/Display** folder as .dsp files.
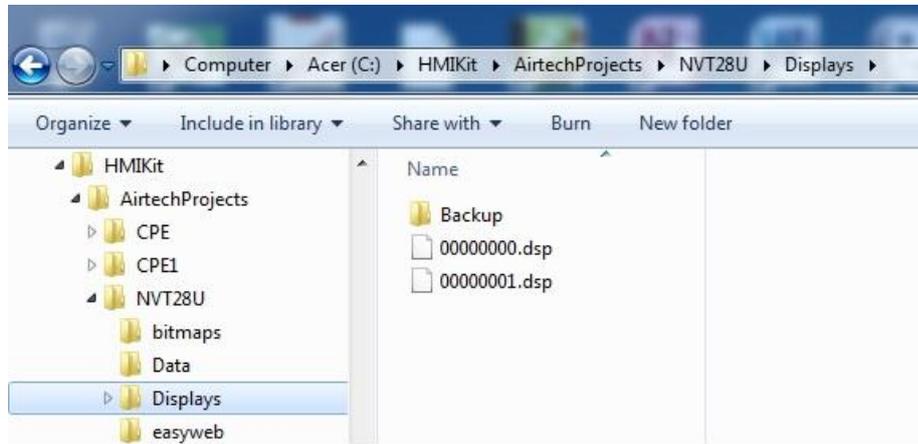
1.4 Page numbering is required while adding a new page. The number range is from 00000000~90000000 (90000001~ 9999999 are reserved for AIRTEK). Also the number must be unique but does not need to be in series.

2. **Page Configuration:** User can change page name, ID, background and size in the Page Setup window.

    i.    **Page ID:** ID is only required to input while adding a new page by HMIkit. Manually changing the page file name may cause the page to be lost in HMIkit software.

    ii.    **Page Name:** This allows a more relevant description of the page but is not displayed on the actual Touch Screen page.

    iii.    **Background Image:** The image can be made by any software package and saved as a JPG (preferred due to smaller file size) or BMP are best. Existing images can be selected from a local computer or the standard images provided. Once selected the image is previewed in the Preview window.

    iv.    **Page Size:** Width/height value can be manually entered in the "Page Width" box's or select from the pre-defined sizes. Pages can be manually changed from the actual page by clicking on the side bars of the page and dragging mouse across to adjust the size.

    v.    **Save Page Information:** User will be asked to save the page when leaving the design mode and back to display mode only if page the page has been changed, or user may select "Page" >> "Save Current Page" from top menu.

## II. Standard Image Files

Standard image files can be used for storing general or commonly use images. This feature enable user to easily manage image for later use.

1. **Standard Image Path:** There is a folder named "bitmap" under HMIkit installation path where commonly used images can be stored. There are 4 standard image files in the Standard folder which are general image files: SinglePic.stn (Background and Graphic Button Control), binary image file: BinaryPic.stn (Binary graphic control), animation image file: AnimatePic.stn (Animation graphic control) and Analog image file: AnalogPic.stn (Analog graphic control).
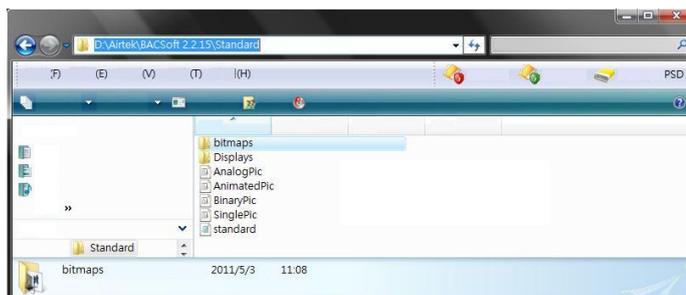


File Path of Standard images and image group files

2. **Open Standard Image Files:** In page setup or adding graphic objects to the existing page the "Standard Image" button will open the folder where all the standard images are stored. Operator can either pick image or manage image in this window.
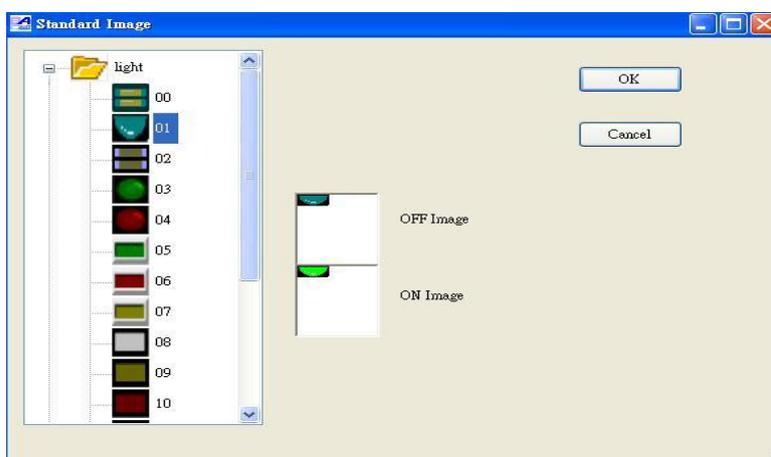


3. **Managing Images :** In the left panel you can **Add/Del/Rename** folders by highlighting the folder then right click to make changes.



   3.1 **Add Group :** Add a new image group, a group name is required. Use this to store your favorite images in.

   3.2 **Delete Group:** Delete selected image group.

   3.3 **Rename Group:** Renames the selected group.
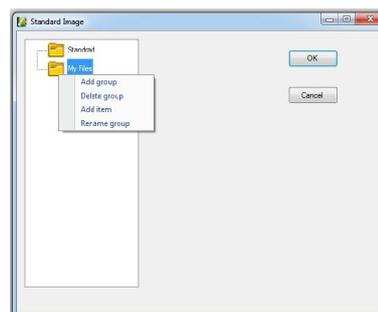
3.4 **Add Item :** Add an item into the group by double clicking on preview window then select image from files ; All default images are stored in the "Standard/bitmaps" folder.

**AIRTEK**®
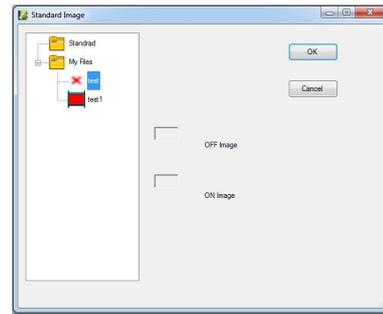
## III. **Control Item Description**:

The major job of graphic design is arranging the control items and buttons on the page. This section is going to introduce the usage and purpose of control item.

HMIkit software control items are listed on left side of page in **"design mode"**. Items can be added onto the page by either double clicking on that item or drag-and-drop the item onto page. Describe of control items as below：
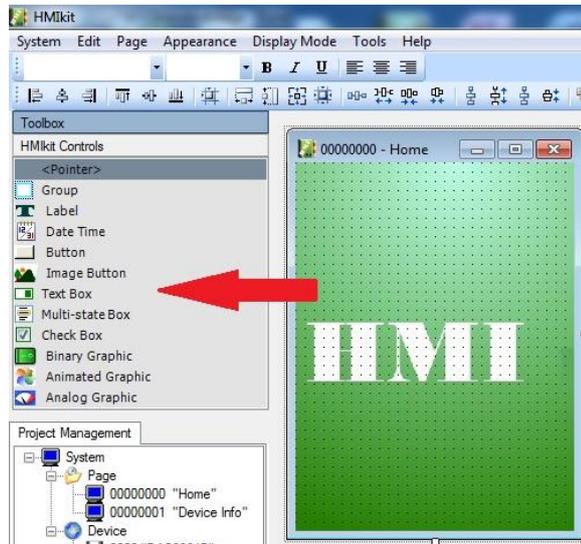


HMIkit Tool Box control Item List

1. **Group Control Box:** This is a way to group items together. All items in the group box will be moved, copied or deleted as a single entity.

   By double clicking on group box the user is able to edit the group name, change fonts and background color.
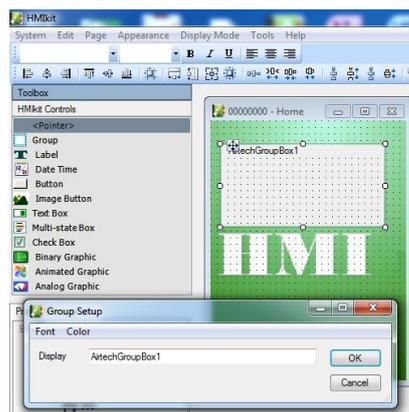


Group Control Box Setup Window

2. **Label:** Text presentation.

   By right clicking on the label the user can enter the required text description. The user can also change font, color and alignment.
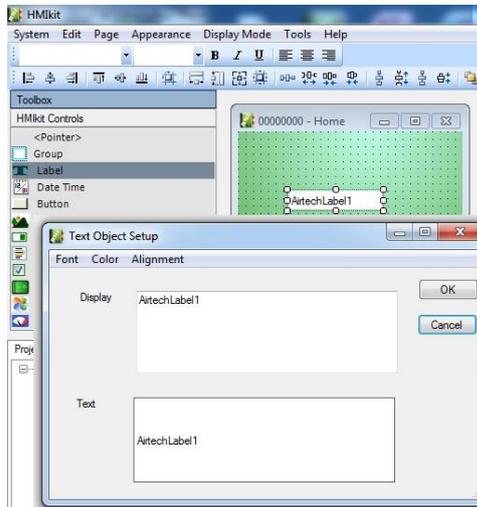
Label Setup Window

3. **System Date/Time:** Displays Touch Screen system Date/Time with a fixed format "Day, Month, DD, YYYY HH : MM : SS AM/PM". User can change font, color and Alignment.
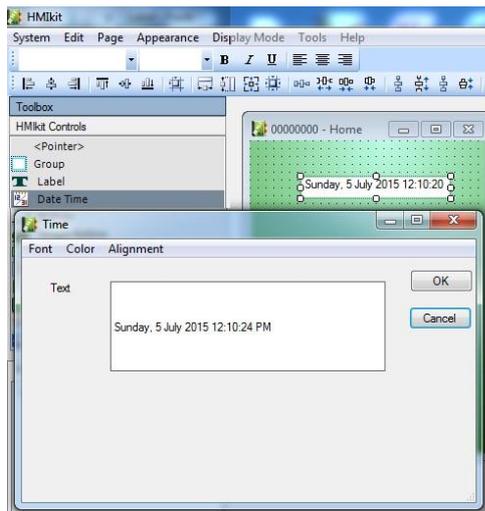

System Time and Setup Window

4. **Button Control:** A powerful item that can jump to selected pages, run a script, Jump to the Alarm History page or Read/Write a Standard BACnet Object/Instance number from a device on the Lan network. (**ONLY** 7" Touch screens can Read/Write BACnet Schedules).
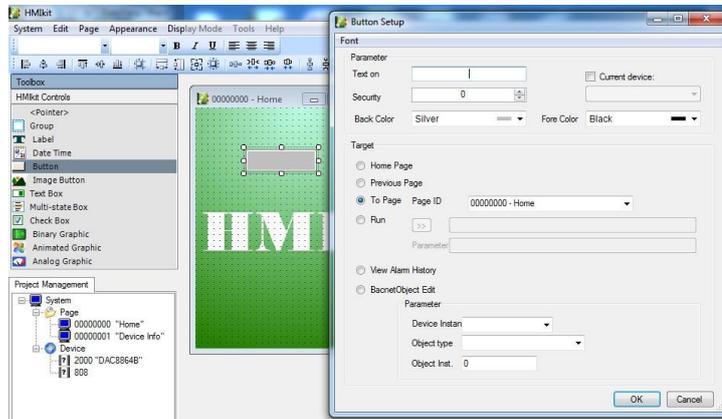
Button Control Item and Setup Window

4.1 **Text on:** Type in the text that will be shown on button in display mode. Font and color selection effects the Text displayed on the button.

4.2 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

4.3 **Home Page:** If selected, when this button is pressed, the Touch screen will jump to the home page. Usually the home page number is 00000001.

4.4 **Previous Page:** If selected, when this button is pressed, the Touch screen will jump to the previous page viewed.

4.5 **To Page:** Select the appropriate page you would like the button to jump to. When this button is pressed the touch screen will jump to the selected page number.

4.6 **Current device:** If checked, the user can select a device number from the drop down box to become the new device to Read/Write.

4.7 **Run:** This option is very limited for Touch screens and basically should not be used.

5. **Image Button Control:** Works similar to the standard Button Control Item but an Image can be used for the Button.
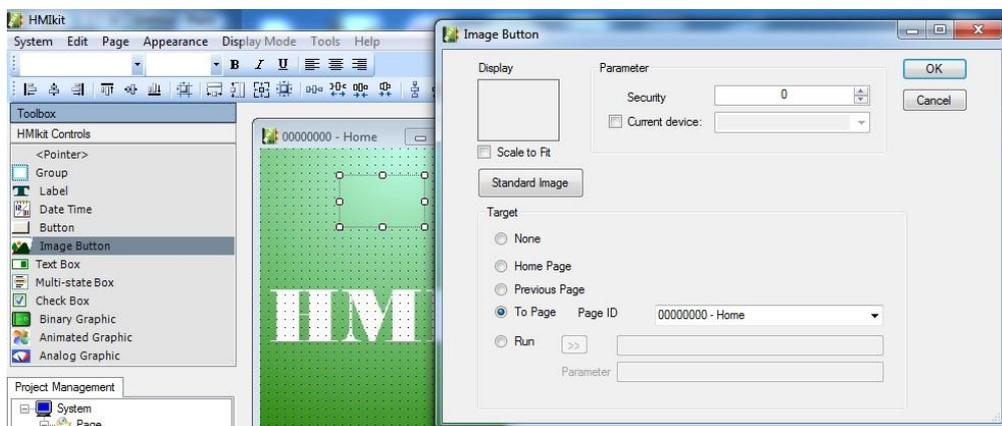


Image Button Control and Setup Window

5.1 **Display Image:** Select an image from windows file manager by double clicking on preview window or directly from Standard Image Files.

5.2 **Scale to Fit:** If "Scale to fit" is checked, when the user resizes the item the button image will resize as well.

5.3 **Standard Image:** Is a short cut to the Standard Image Files.

5.4 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

5.5 **Target:** If option "None" is selected then the Image Button will act as just an image display only.

5.6 **Home Page:** If selected, when this button is pressed, the Touch screen will jump to the home page. Usually the home page number is 00000001.

5.7 **Previous Page:** If selected, when this button is pressed, the Touch screen will jump to the previous page viewed.

5.8 **To Page:** Select the appropriate page you would like the button to jump to. When this button is pressed the touch screen will jump to the selected page number.

5.9 **Current device:** If checked, the user can select a device number from the drop down box to become the new device to Read/Write.

5.10 **Run:** This option is very limited for Touch screens and basically should not be used.

6. **Text Box:** This Item is the most commonly used Item. It can directly read/write to any BACnet device object property then display the values in the control box on page.
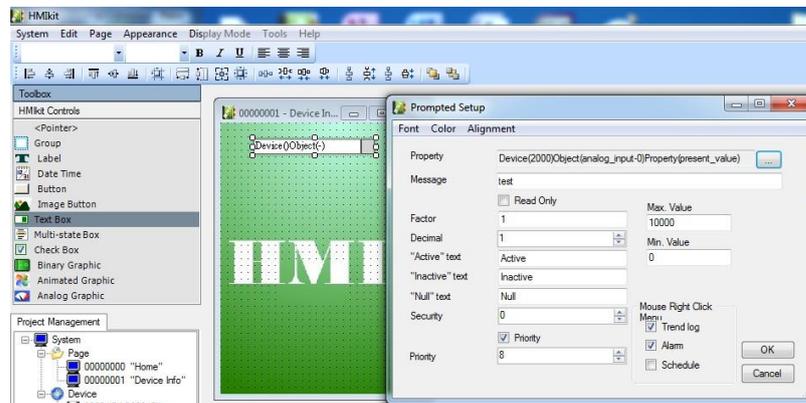


Text Box Control Item and Setup window

6.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.
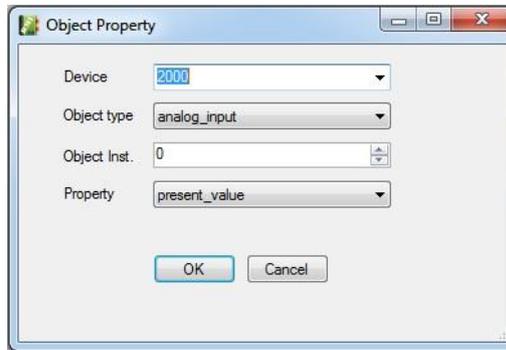
Object Properties.

6.2 **Message:** This is not applicable to Touch screens.

6.3 **Read Only:** If this option checked **ALL** users cannot change the value regardless of the security level.

6.4 **Factor:** This is a multiplier. The value displayed in Text Box Control Item = factor * real value; For example, If the factor is set to 0.5 and real value is 100, then the display is 50, it does not affect the device actual point valve. This setting will be ignored if the value type of Text Box Control Item is not numeric.

6.5 **Decimal:** This is the number of decimal allowed to be displayed in the box. For example, if the number of decimal is 3 and real value is 100 then display would be 100.000. And this setting will be ignored if the value type of Text Box Control Item is not numeric.

6.6 **Max. Value/Min. Value:** This is the Maximum/Minimum value that can be displayed in text box. If the read/write value that has been multiplied by the factor is greater or less than the Max./Min. values then the Text Box will only display the Max./Min. values instead. This setting will be ignored if the value type of Text Box Control Item is not numeric.

6.7 **"Active/Inactive/null" Text:** This is the text displayed in Text Box when the device status is active, inactive or null (The labels can be modified). Generally used with Digital (Binary) points such as Bo, Bi, Bv. This setting will be ignored if the value type of Text Box Control Item is not numeric.

6.8 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

6.9 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

6.10 **Shortcut Menu Options:** Not Applicable to Touch screens.


Shortcut Menu Setup and Display

7. **Multi State Box:** Displays user defined text in drop-down box for the user to select instead of entering a specific value (The appropriate values will be sent when a text is selected).
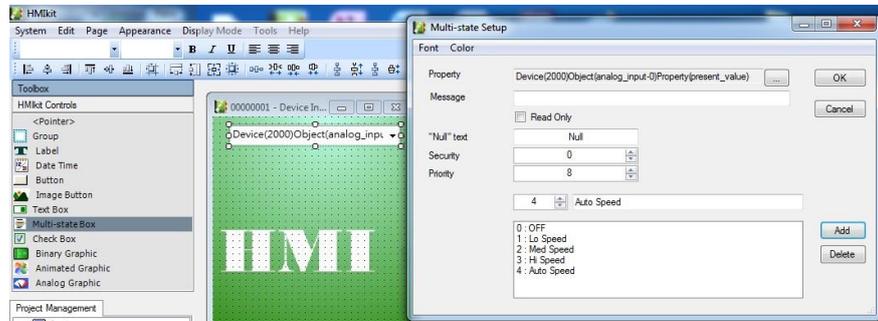
Multi State Box Setup and Display

7.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.

7.2 **Message:** This is not applicable to Touch screens.

7.3 **Read Only:** If this option checked **ALL** users cannot change the selection regardless of the security level. The box read the device and display the present setting only.

7.4 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

7.5 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

7.6 **Labels:** Values are limited from 0-10 therefore there are a maximum of 11 labels allowed. Start from "0" Enter the Label you want to associate with it and click on "Add", select "1" and Enter the new label and "Add". Once completed click "OK" to save.

8. **Check Box:** This is generally used with binary type points such as Bv's or Bo's.

The touch screen will send a "1" or **"**0" to the selected device.
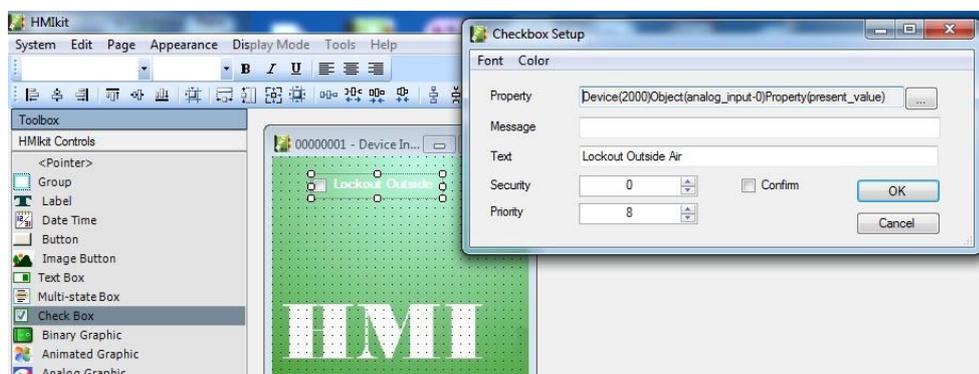


Check Box Configuration Items

8.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.

8.2 **Message:** This is not applicable to Touch screens.

8.3 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

8.4 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

8.5 **Confirm:** If checked the Touch screen will request a confirmation before sending the NEW value.

9. **Binary Graphic Control:** Displays binary data in a graphic form for user to operate on graphic page. It is designed for binary points that can read/write "1" & "0" Typically Bo, Bv or in the case of Bi it will only work as a **"Read only"**.
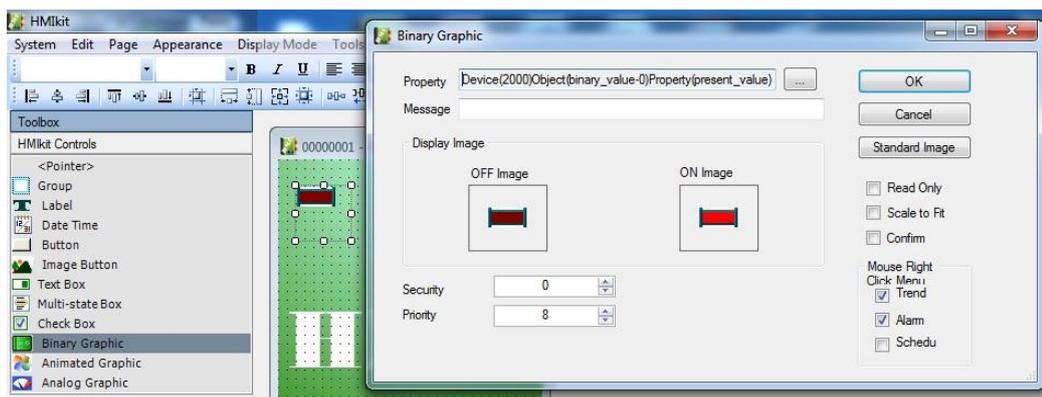


Binary Graphic Control Item Setup

9.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.

9.2 **Message:** This is not applicable to Touch screens.

9.3 **Display Image:** Select an image from windows file manager by double clicking on preview window or directly from Standard Image Files.

If "Scale to fit" is checked, when the user resizes the item the button image will resize as well.

9.4 **Read Only:** If this option checked **ALL** users cannot change the selection regardless of the security level. The box read the device and display the present setting only.

9.5 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

9.6 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

9.7 **Confirm:** If checked the Touch screen will request a confirmation before sending the NEW value.

9.8 **Shortcut Menu Options:** Not Applicable to Touch screens.(Trend, Alarm, Schedule).

10. **Animated Graphic Control:** Binary data is presented in animation form for the user input or status display on the page. The animation is performed by using 3 static pictures and playing them over and over (Do not use **Animated GIF** files as the Touch screen cannot play them).



Animated Graphic Control Item

10.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.

10.2 **Message:** This is not applicable to Touch screens.

10.3 **Display Image:** Select an image from windows file manager by double clicking on preview window or directly from Standard Image Files.

If "Scale to fit" is checked, when the user resizes the item the button image will resize as well.

10.4 **Read Only:** If this option checked **ALL** users cannot change the selection regardless of the security level. The box read the device and display the present setting only.

10.5 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

10.6 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

10.7 **Confirm:** If checked the Touch screen will request a confirmation before sending the NEW value.

10.8 **Shortcut Menu Options:** Not Applicable to Touch screens.(Trend, Alarm, Schedule).

11. Analog Graphic Control Item: Display current status of devices by set of images that each image corresponds to the output value of devices. User first segment the number of device state (i.e. start, fast, slow, stop) then decide the value range corresponding to transition points. Finally, user selects images to present each status.
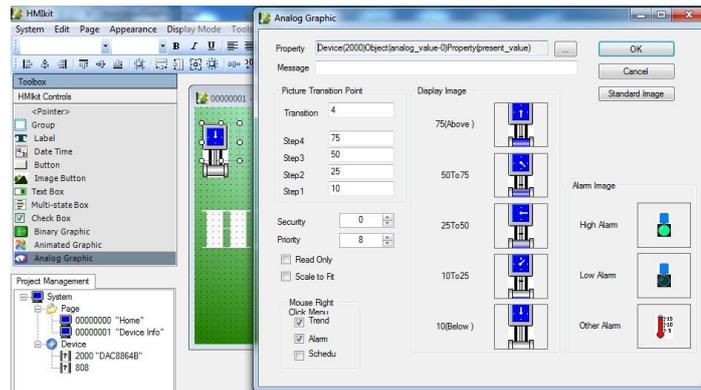


Analog Graphic Control Item

11.1 **Object Property:** This is the device number and properties to read/write. In this window the user is able to define device information including device number, object type, object instance and property. However if the selection does not exist in the device the screen will report a result of "err:object unknown" displayed in text box.

11.2 **Message:** This is not applicable to Touch screens.

11.3 **Display Image:** Select an image from windows file manager by double clicking on preview window or directly from Standard Image Files.

If "Scale to fit" is checked, when the user resizes the item the button image will resize as well.

Select the number of transition Points required and insert the value required to show the appropriate picture. The maximum number of segments is 4.

11.4 **Read Only:** If this option checked **ALL** users cannot change the selection regardless of the security level. The box read the device and display the present setting only.

11.5 **Security:** Is used to limit the user access. If security is set to 6, then only those users whose security is greater than 5 can use this button. For users whose security is less than 6 are not allowed to use it (Greyed out).

11.6 **Priority:** If an object has a "**Priority Array**" property then the number selected will be the Priority Array index number that the Touch screen will **"Write"** to. Typical BACnet points that have "Priority Array" properties are Bo,Bv,Ao.

11.7 **Confirm:** If checked the Touch screen will request a confirmation before sending the NEW value.

11.8 **Shortcut Menu Options:** Not Applicable to Touch screens.(Trend, Alarm, Schedule).

11.9 **Alarm Images:** The corresponding alarm image would be shown if an alarm occurs.

11.10 **Web Browser:** No applicable to Touch Screens.