# HA Series HMI Device

## User Manual (HA-401)

# HA Series User Manual

## Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

## Warning

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If you encounter any difficulties while using this device, or have any questions, feel free to contact your local agent, or contact ICPDAS by email at service@icpdas.com or service.icpdas@gmail.com. We will respond within two working days. For more product information, refer to the ICPDAS website at www.icpdas.com.

HA-401 User Manual/Data Sheet/Tools:
http://ftp.icpdas.com/pub/cd/ba-ha/ha-401/

HA-401 Web Page:
https://www.icpdas.com/en/product/HA-401

# Table of Contents

# Chapter 1: Introduction

The **HA** series of products from ICP DAS provide an intelligent host solution for indoor and outdoor Smart Building and Smart Home applications. By combining the **HA** series of products with Internet of Things (IoT) technologies, an entire intelligent system platform can be created to enhance the efficiency of building management.

**The HA-401 is an intercom host that supports security situation control** by integrating six important functions into a single solution, including device control (e.g., lighting and IR appliances), video calling, community bulletins, security system control, energy consumption monitoring, and environmental information.

The **Device Control options** allow LC series lighting control modules to be used for two-way switch or dimming control, and for IR series learning remote modules to be used to control home appliances, e.g., televisions or air conditioners. These can then be combined with the situation and scheduling settings to achieve automatic control.

The **Video Calling** function provides a platform for both a householder-to-householder and householder-to-caretaker communication based on two-way audio and video communication.

The **Community Bulletins** function can be used issue reminders to householders related to mail deliveries, administrative expenses, or subscribed topics. Householders subscribed to particular topics can receive information using the minimum required number of packages based on standard IBM publish/subscribe functionality.

The **Security System** function provides two arming modes – Arm Away and Arm Night, as well as displaying alert messages related to incidents involving fire, earthquakes, and gas leaks, etc.

The **Energy Consumption Monitoring** function can be used to measure, record, and display details related to electricity, natural gas, and water usage.

The **Environmental Information** function can be used to display information related to a range of environmental conditions, including indoor/outdoor temperature, humidity, $PM_{2.5}$, CO2 levels, rainfall, wind speed, and current weather, etc. When used in conjunction with the television, air conditioning, or central ventilation system, the details can be viewed allowing the indoor environment to be adjusted.



**HA Series**

**HA-401 Security Situation Control Intercom Host**

## 1.1 Hardware Features

### HA-401

**The HA-401** is an intercom host that supports security situation control, integrating functions related to message notifications, security alarms, community bulletins, interior environment control, visitor intercom, and push advertising. The HA-401 uses advanced automatic control, database software, computer network communication technology, and building message management, combined with a Smart Home system, to achieve intelligent indoor control.

The HA-401 provides support for a number of standard communication protocols, such as the Modbus RTU/ASCII and Modbus TCP protocols. When used in conjunction with 3rd –party software such as SCADA, or ERP, etc., the HA-401 is able to provide support for a range of smart phones. The phone can then be used to integrate with local or remote software to provide control functions for home lighting, air conditioning, television, electronic curtains, noise, and security alerts, delivering a more stylish and comfortable smart home experience based on science and technology.

- Full-duplex voice and video intercom
- 10.1" WXGA color TFT-LCD touch screen
- Support for SIP communications architecture
- RJ45 network interface
- Full HD Front-facing camera (1080p)
- Display for the date, time, temperature, humidity, $PM_{2.5}$, and noise levels.
- Intelligent home control
- Energy monitoring and management capabilities
- Community announcements and push advertising features
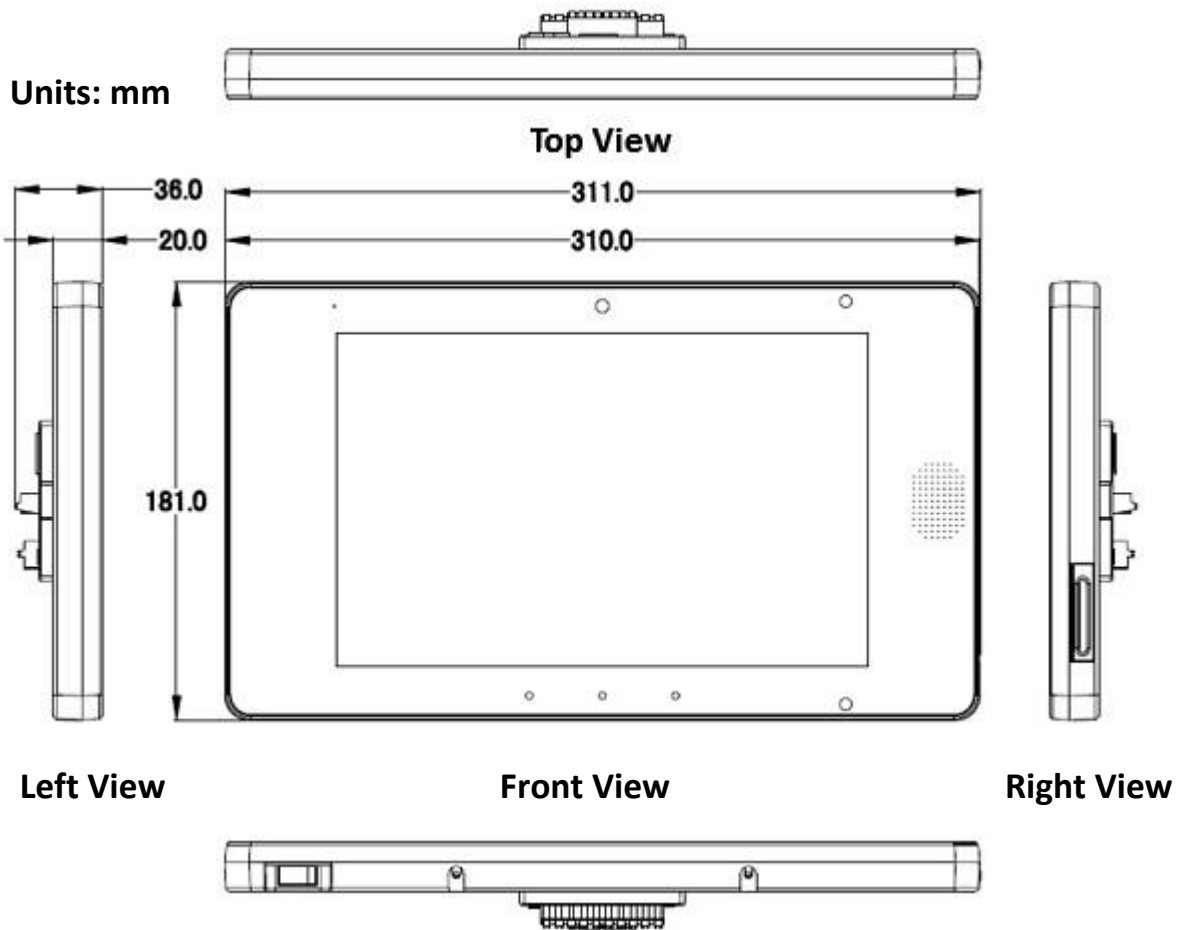- Interactive M2M transmission technology: MQTT

## 1.2    Specifications

| Model | HA-401 | |
|---|---|---|
| **Controller** | | |
| CPU | 32-bit, 1000 MHz | |
| DDR3 SDRAM | 512 MB | |
| NAND Flash | 4 Gbit | |
| EEPROM | 128 KB; Data Retention: 40 years; 1,000,000 erase/write cycles | |
| RTC | Provides seconds, minutes, hours, date, day of the week, month, year | |
| **Communication Interface** | | |
| Ethernet | RJ45 x 1, 10/100 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED Indicators) | |
| USB 1.1 | 1 (Client/Mini-USB) | |
| COM1 | RS-485 x1 (TB and RJ11) | |
| COM2 | RS-232/485 x1 (TB) | |
| **Digital Input** | | |
| Channels | 2 | |
| Input Type | Dry contact (Source) | |
| Dry Contact Level | Off Voltage Level: Open | On Voltage Level: Close to GND |
| **Relay Output** | | |
| Channels | 2 | |
| Output Type | 1 Form A | 1 Form C |
| Contact Capacity | 5A @ 250 VAC; 5A @ 30 VDC | 0.6A @ 125 VAC; 2A @ 30 VDC |
| Endurance | Mechanical: 2 x 107 ops. Electrical: 1 × 105 ops. | Mechanical: 1 x 108 ops. Electrical: 5 × 105 ops. |
| **HMI** | | |
| LCD | 10.1" TFT (Resolution 1280 x 800) | |
| Backlight Life | 20,000 hours | |
| Brightness | 350 cd/m2 | |
| Camera | 1080p (1920 x 1080), CMOS Sensor | |
| Touch Screen | 5-wire, analog resistive; Light Transmission: 80% | |
| Audio | AMP 2.5 W; Digital microphone | |

| Power Supply | |
|---|---|
| Input Range | 12 ~ 48 VDC |
| Consumption | 4.0 W |
| Protection | Reverse Polarity Protection |
| Power Switch | Yes |
| **Mechanical** | |
| Installation | Wall Mounting (Suitable for European 86 mm x 86 mm outlet boxes) |
| Dimensions (mm) | 311 x 36 x 181 (W x L x H) |
| **Environment** | |
| Operating Temperature | -10 to +60°C |
| Storage Temperature | -20 to +70°C |
| Humidity | 10% to 90% RH, Non-condensing |

## 1.3    Dimensions

### HA-401

**Units: mm**

**Top View**

**Left View**          **Front View**          **Right View**

Units: mm



**Recommended Panel Cutout**



[9]
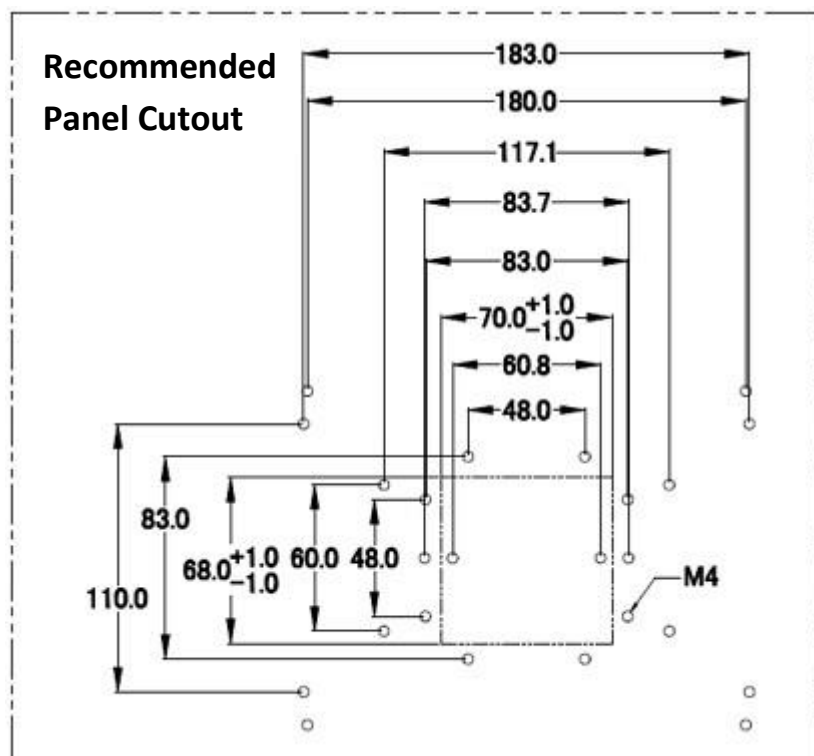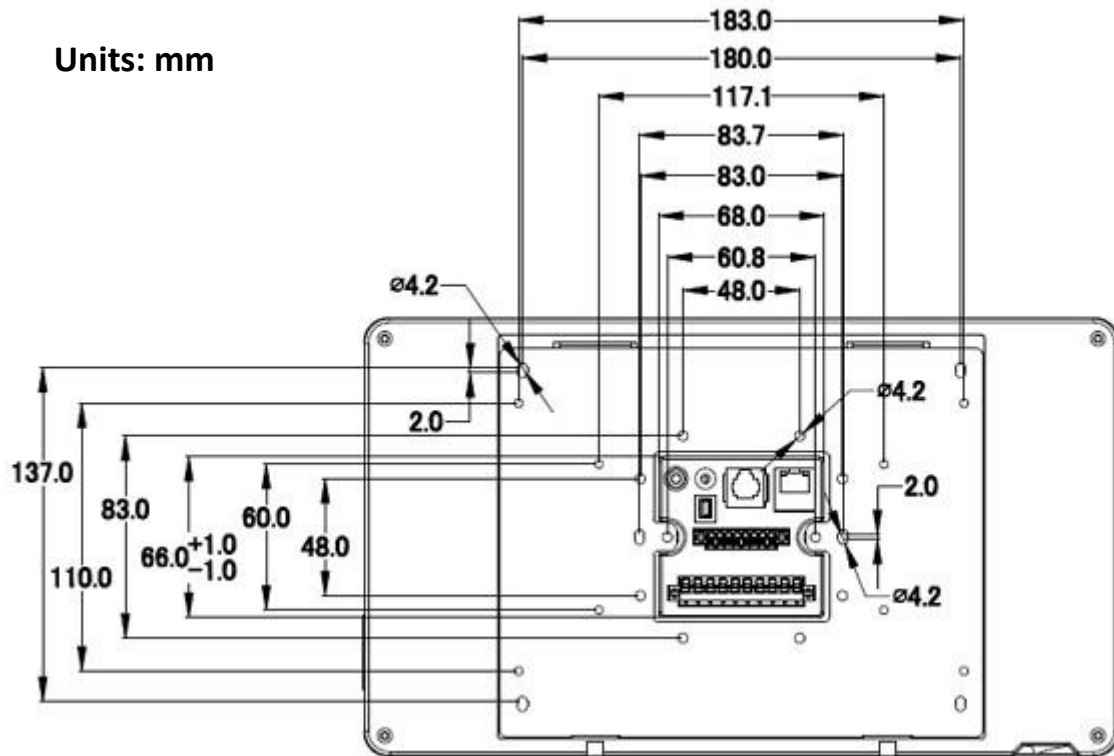
# Chapter 2: Software Installation

**Creator** is a cross-platform Web HMI Integrated Development Environment (IDE) that can be used for designing Windows- or Linux-based HMI Panels. **Creator** provides an easy-to-use Graphical User Interface (GUI) and a diverse array of objects for developing customized **HA-401 screens** that can be integrated into an HMI application without the need for any coding knowledge.

To download the latest version of the Creator software from the FTP site:
http://ftp.icpdas.com/pub/cd/ba-ha/ha-401/tools/creator/

Install the **Creator** development software on the PC.

Double-click the Creator_Setup.exe file to launch the installation file, and then follow the instructions on the Setup Wizard screen to install the Creator software. The Setup Wizard will display a progress bar to indicate the status of the installation process. Once the installation has been completed, click the Finish button to exit the Setup Wizard.
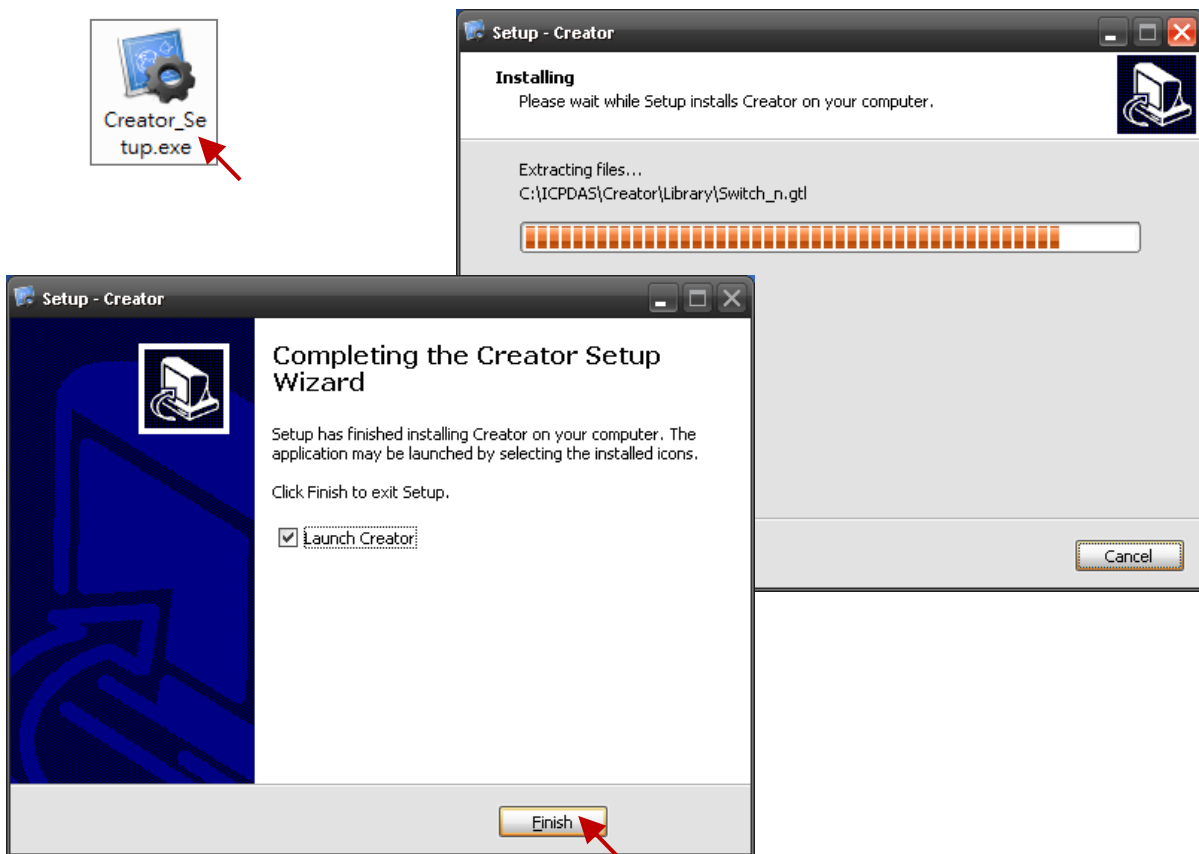


For more details related to the Creator software, go to the Creator website at:
http://www.icpdas.com/root/product/solutions/software/creator/creator.html

For details of how to download the Creator software and the User Manual, go to the Creator download website at:
http://www.icpdas.com/root/product/solutions/software/creator/download.html

# Chapter 3: System Functions

The following diagram gives an overview of the system architecture for the HA-401. It is recommended that you familiarize yourself with the structure of the system before operating it for the first time.

## System Architecture
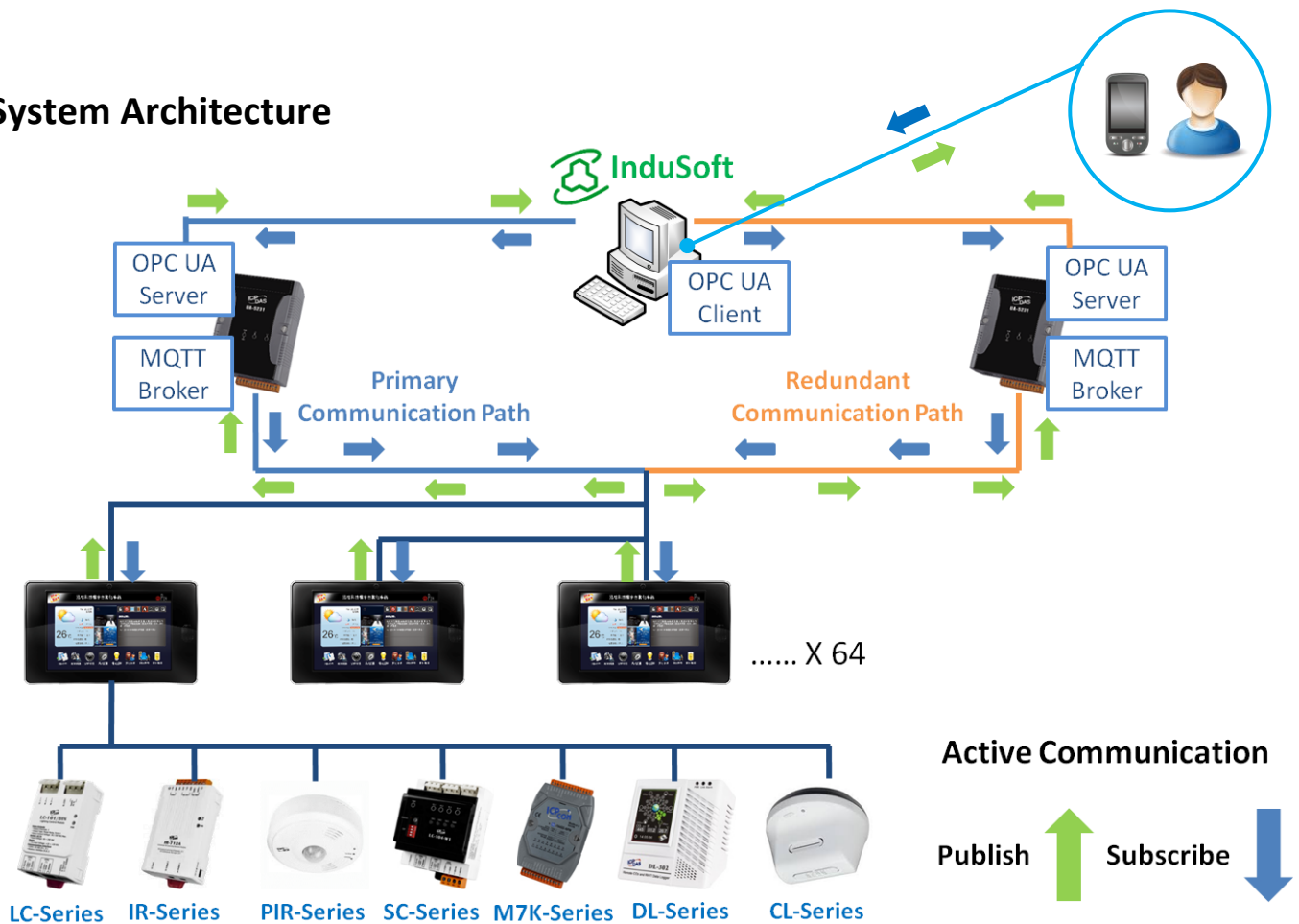
## 3.1    Welcome Screen

If the HA-401 is already operating, or if it is exiting power saving mode, the Smart Home System Welcome screen will be displayed. Tap the screen to access the Home Screen.



## 3.2    Home Screen

The Home Screen is the first screen that will be displayed after accessing the Smart Home System on the HA-401.

As illustrated above, the Home Screen contains three sections. The following is an overview of the functionality of each of the sections that are displayed on the Home Screen:

1) **Notice:**

   The icons in the Notice section will display the status of warnings and alerts, such as security alerts, emergency alerts, warnings related to doors and windows, fire alerts, earthquake notifications, new message alerts, and scheduled notifications.

2) **Data:**

   The data area provides some useful information, including the system date, current weather, the temperature, humidity, wind speed, air quality, PM2.5 (optional), Rainfall, UV and noise levels. Note that the icons for weather and air quality can be customized where necessary.

3) **Navigation:**

   This section contains eight buttons that are used to access additional details related to a specific function of the HA-401, including the system configuration and scheduling, etc. These functions will be described in more detail in the following sections.

| News | Intercom | Scheduling | System |
|------|----------|-----------|--------|
| | | | |
| Lighting | Security | Environment | Energy |
| | | | |

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## 3.3    News

The News screen is used to display messages from the various news sources that you are subscribed to. Refer to Part A in Section 3.6 System  for more details related to Subscriptions. This screen also allows you to delete any messages that are no longer needed.
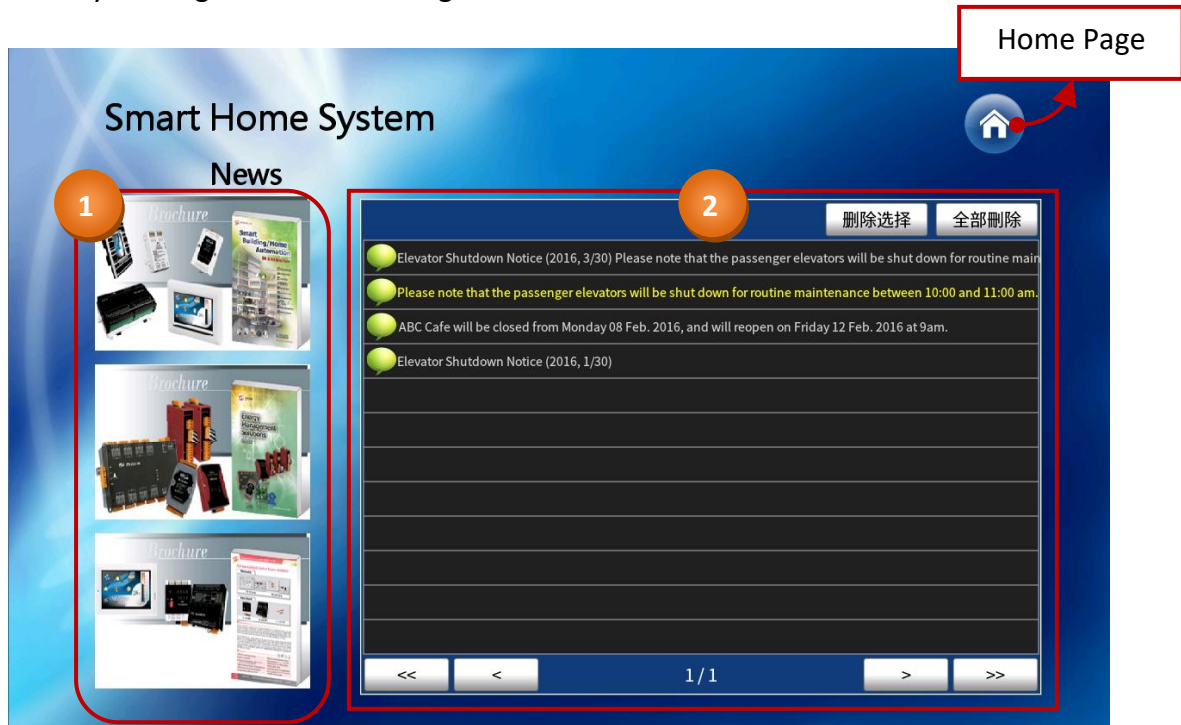


As illustrated above, the News Screen contains two sections. The following is an overview of the functionality of each of the sections that are displayed on the News Screen:

1) **Advertising:** This section is used to display any images from the caretaker or from vendors related to advertised products and services, etc. (See Appendix B – "typeid=0002" for more details)

2) **Subscriptions:** After subscribing to a particular topic (see Part A in Section 3.6 System for more details), any messages received that are related to this topic will be listed in this area.
Tap the title of the message to display the contents of the message in a dialog box.



[14]
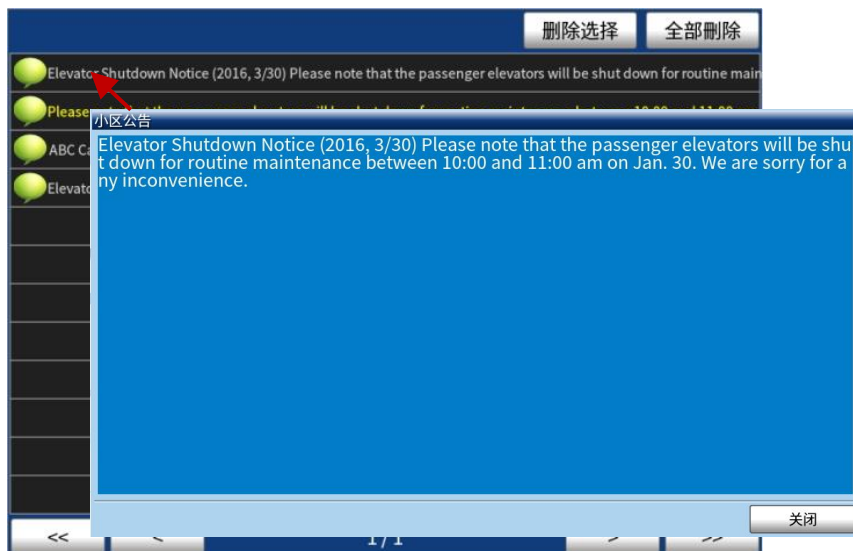
To delete a message, tap the icon next to the message to select it, and then tap the **Delete** button. The Delete Message dialog box will be displayed, tap the Yes button to delete the selected message(s).

Tap the Delete All button to clear all messages.



Delete / Delete All

删除选择    全部删除

Elevator Shutdown Notice (2016, 3/30) Please note that the passenger elevators will be shut d    routine main

Please note that the passenger elevators will be shut down for routine maintenance between    nd 11:00 am.

ABC Cafe will be closed from Monday 08 Feb. 2016, and will reopen on Friday 12 Feb. 2016 at 9am.

Elevator Shutdown Notice (2016, 1/30)

B

C

A

讯息删除

您是否要删除选取的讯息?

Do you want to delete the selected message(s)?

No    Yes

[15]

## 3.4    Intercom

The Intercom screen allows you to make a video call to any of the other households in the community, or to the caretaker. This screen can also be used to open the door.
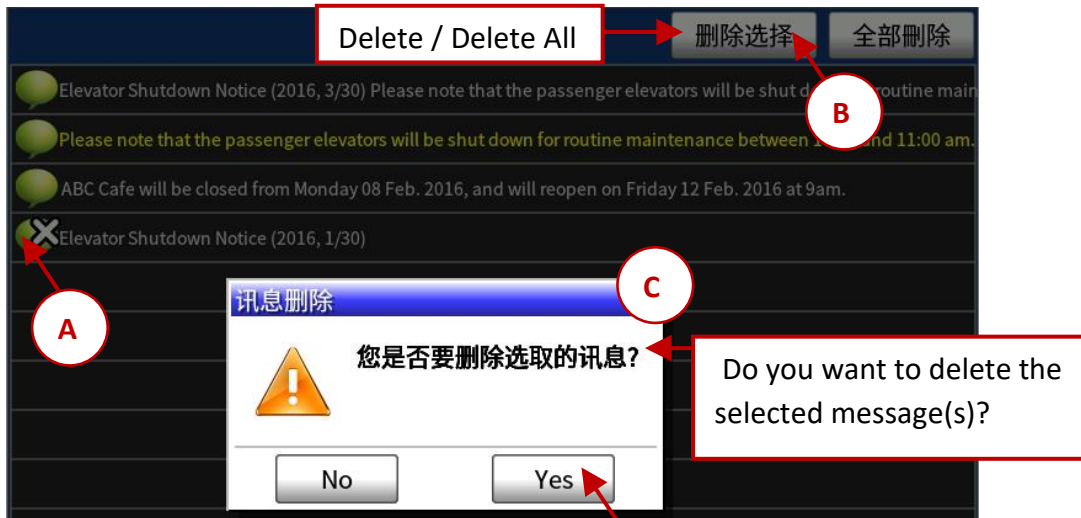


As illustrated above, the Intercom screen contains four sections. The following is an overview of the functionality of each of the sections that are displayed on the Intercom screen:

1) **Screen:**
   This the video screen. An image of the person you are calling will be displayed in this section during a video call.

2) **Keypad:**
   The keypad used to enter a 4-digit keypad code when making a video call to other households or to the caretaker. Tap the **BKSP** button to erase a single digit, or tap the **CLR** button to erase all digits.

3) **Intercom:**
   This section contains four buttons, **Caretaker, Open Door, Answer/Call,** and **Reject**.
   A description of each is provided below.

   **Caretaker:**
   Tap the **Caretaker** button to automatically connect to the building caretaker. To manually contact the caretaker, enter the code "0000" using the keypad.

   **Open Door:**
   Tap the **Open Door** button to disengage the electronic lock that is connected to an access device. Note that this function requires the installation of an external access device and an electronic lock.

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**Answer/Call:**

Tap the **Answer/Call** button either to answer an incoming call, or to make a call to another household. To make a call, enter the 4-digit code for the other household (note that the other household must also have an HA-401 installed) and then tap the **Answer/Call** button. For more details, see Appendix A.

**Reject:**

Tap the **Reject** button to decline an incoming call.

## 3.5    Scheduling

The Scheduling Screen is one of the most important features of the Smart Home System and is the engine that allows you complete control over the timing for when the indoor lights will be automatically turned on or off.
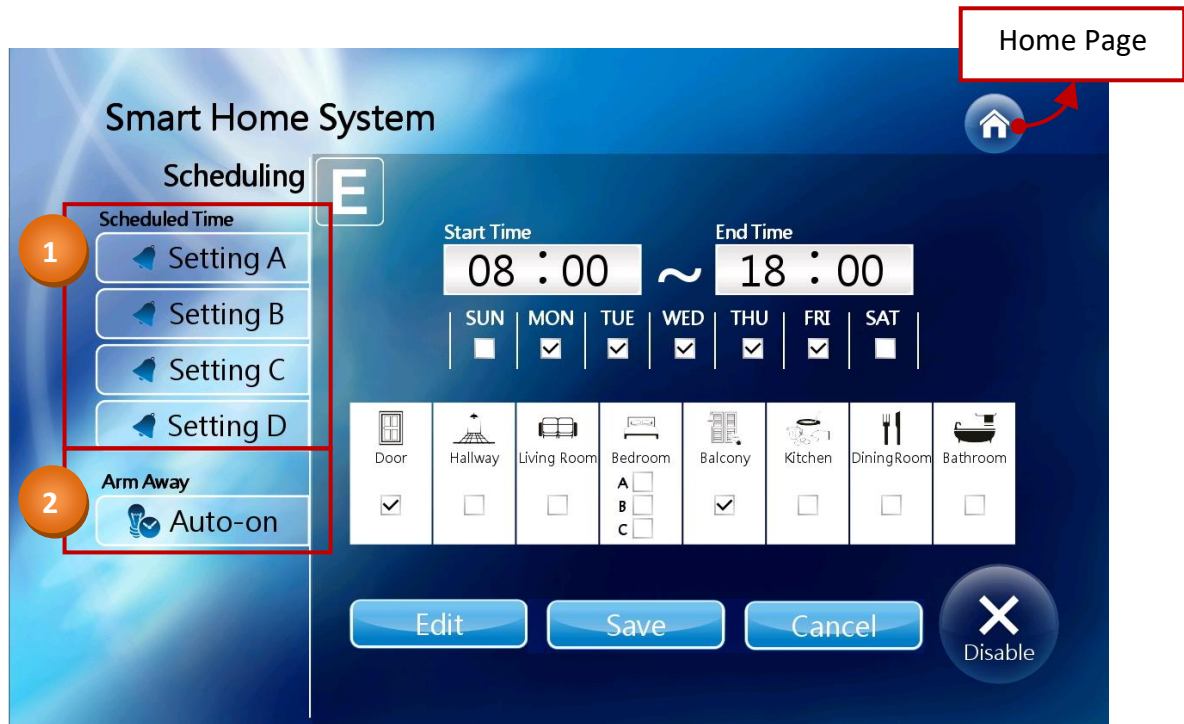


As illustrated above, the Scheduling Screen contains two sections. The following is an overview of the functionality of each of the sections that are displayed on the Scheduling Screen:

1)  **Scheduled Time:**

    The **Scheduled Time** section provides access to four configuration screens (A to D), each of which is the same, and can be used to configure the on/off times for the lights.

    To configure the lighting schedule, tap the **Edit** button, enter the time when the lights should turn on, check the checkbox(es) for both the desired day of the week and the lights that are to be controlled, and then tap the **Save (or Cancel)** button to save (or cancel) the settings.

    To enable or disable the settings, tap the **Enable/Disable** button.

2)  **Arm Away:**

    The **Auto-on** Screen is used to configure the settings for the lighting for when the householder is absent, and is similar to the **Scheduled Time** Screen, but allows an **End Time** to be set. The configuration process is similar to that of the **Scheduled Time** section. Follow the procedure described above to set an end time (i.e., the time when the lights will turn off).

## 3.6    System

The System Screen provides three major functions: system configuration, including the subscriptions and environmental functions, password, and engineering settings.
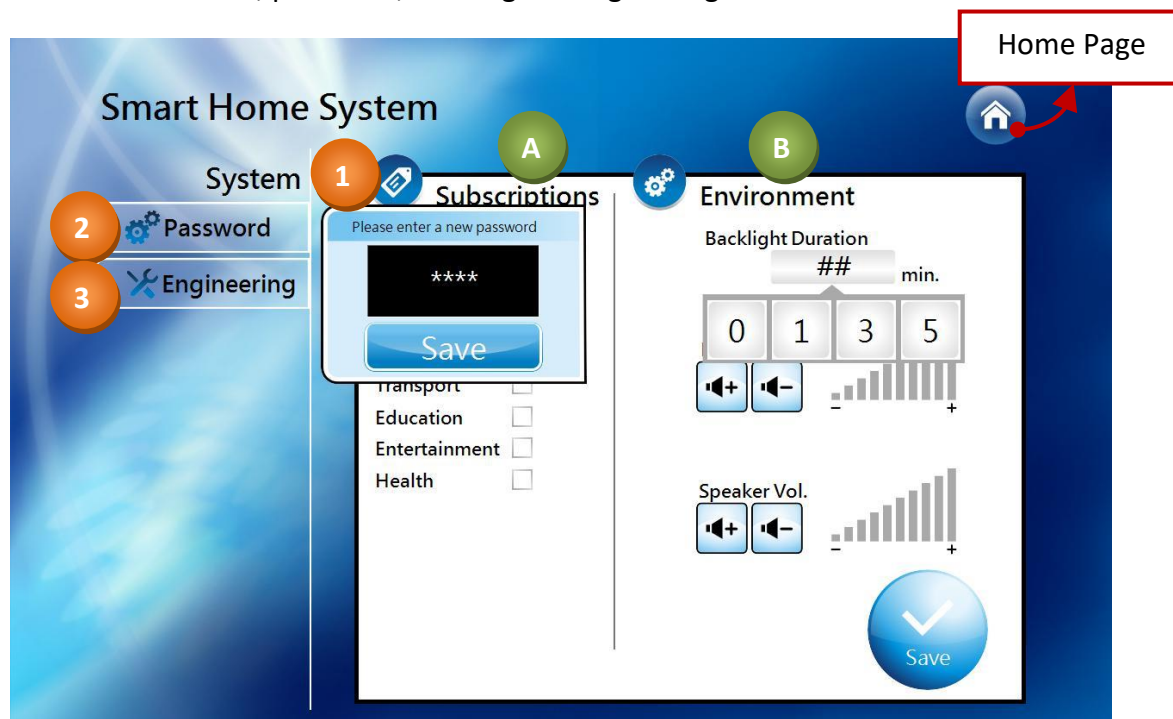


As illustrated above, the System Screen contains three sections. The following is an overview of the functionality of each of the sections that are displayed on the System Screen:

1)    **System:**

The **System** section contains two subsections, Subscriptions and Environment, details of which are provided below.

A. **Subscriptions:**

The **Subscriptions** section provides the ability to subscribe to a particular topic, e.g., Food or Health. After selecting the desired items, tap the OK button. The News Screen will display any messages or news items from topics that you are subscribed to. See Section 3.3 News for details.

B. **Environment:**

The **Environment** section allows you to adjust the values for the backlight, microphone, and speaker.

| | |
|---|---|
| **Backlight Duration**: | This item allows you to change the duration that the backlight will be active. After tapping on the text box, a numeric keypad will be automatically displayed allowing you to enter the desired value for the backlight duration. The valid values are 0, 1, 3, or 5 minutes. |
| **Mic. Level**: | This item is used to adjust the input level of the microphone. Tap the " + " or " – " button to increase or decrease the level. |
| **Speaker Volume**: | This item is used to adjust the volume level of the speaker. Tap the " + " or " – "button to increase or decrease volume. |

After adjusting the settings, tap the OK button to save the new values.

1) **Password:**

   The **Password** section allows you to change the password that is used to disarm the Smart Home System. See Section 3.8 Security - Disarm for more information.

2) **Engineering:**

   The **Engineering** section is used to configure the settings for the Room ID, the IP address, the mask address, the password for the Disarm screen (see Section 3.8 Security), the password for the Engineering screen, and the language to be used for the HMI screens.

   After tapping the **Engineering** button, an on-screen keypad will be displayed allowing you to enter the password. Enter the password (the default is "0000") to access the configuration screen.

   Where necessary, adjust the settings for the Room ID, the IP address, the mask address, and the language, and then tap the **Save** button to save the changes.

   **Note that** you should contact your system integrator (SI) to modify these settings.



   Room ID:           This is a 4-digit value used to identify different households.

   IP / Mask address: These are the IP and Mask address details for the HA-401 device.

   Password (D):      This is the password used to access the Disarm screen.
                       See Section 3.8 Security - Disarm for more information.

   Password (E):      This is the password used to access the Engineering screen.

   Language:          This allows you to set the language to be used for the HMI screens.

## 3.7 Lighting

The Lighting Screen provides various functions that allow the lighting system to be controlled, including options to turn all lights on or off, or to turn on desired lights using the Custom mode.
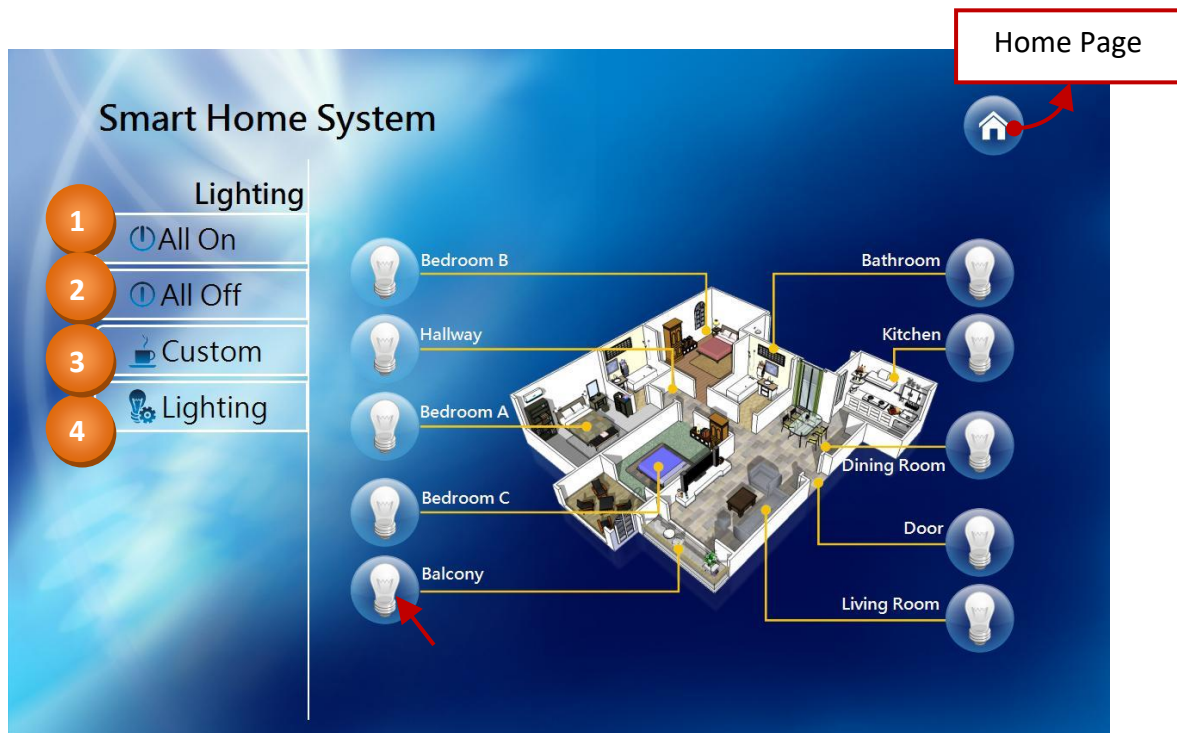


**Notes:**

Individual lights can be controlled by clicking the bulb icon for the specific light. **These icons include a button protection function, which means that the same button cannot be tapped again within 2 seconds. This protects against the button being tapped accidentally.**

As illustrated above, the Lighting Screen contains four sections. The following is an overview of the functionality of each of the sections that are displayed on the Lighting Screen:

1) **All On:**

    The **All On** button is used to switch on all controlled lights. After tapping the All On button, the system will turn on all lamps based on the **Lighting** - **All On** settings (see Item 4A below).

2) **All Off:**

    The **All Off** button is used to switch off all controlled lights. After tapping the All Off button, the system will turn off all lamps.

3) **Custom:**

    The **Custom** button is used to switch on specific controlled lights. After tapping the Custom button, the system will turn on the lamps specified in the **Lighting** - **Custom** settings (see Item 4B below).

4) **Lighting:**

The **Lighting** section contains two subsections, All On and Custom, details of which are provided below.



A. **All On:**

The **All On** option allows you to specify which lights will be controlled when the All On button is used. Check the desired items in the **All On** area, and then tap the **Save** button to save the settings.

B. **Custom:**

The **Custom** option is used to specify which lights will be switched on or off in Custom mode. Check the checkboxes for the required lights and then click the **Save** button to save the settings.

[22]

# 3.8 Security

The Security Screen allows you to arm or disarm the Smart Home system, as well providing information related to the status of the security, emergency alerts, and door and window warnings.
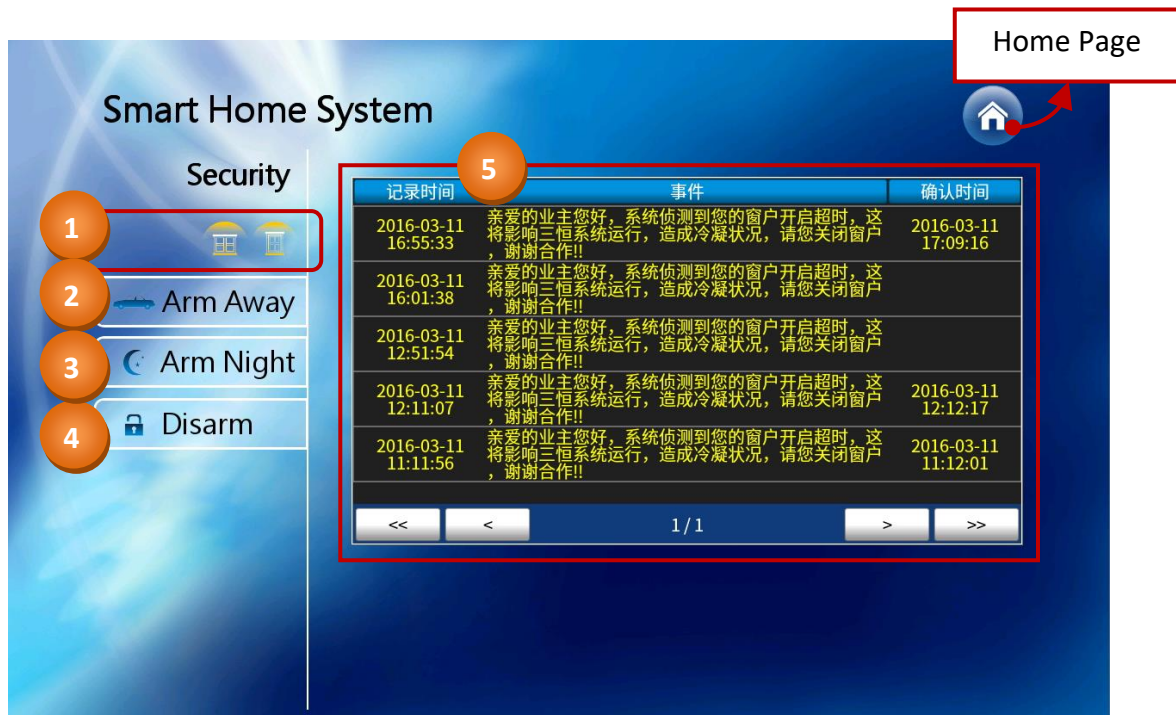


As illustrated above, the Security Screen contains four sections. The following is an overview of the functionality of each of the sections that are displayed on the Security Screen:

1) **Notice:**

The icons in this section are used to indicate the status of the security, emergency alert, doors, and windows. For example, if the system detects that one of the windows is open, the window icon will be highlighted on the screen.

2) **Arm Away:**

The **Arm Away** button is used to activate the security system when leaving the home. After tapping the Arm Away button, the Smart Home system will display a countdown screen for a fixed duration (300 seconds), which will allow sufficient time for you to depart before the alarm is activated. To disable the security system, tap the **Cancel** button at any point during the countdown.

<u>Note:</u>    Ensure that doors or windows have been closed before tapping the **Arm Away** button. During the countdown, a warning message will be displayed if the Smart Home system detects that a door or window is open and the Smart Home system will not be armed so as to prevent the alarm from being triggered.

3) **Arm Night:**

The **Arm Night** button is used to activate the security system in a night time situation. After tapping the Arm Night button, the Smart Home system will display a countdown screen for a fixed duration (60 seconds). Tap the **OK** button at any point during the countdown to immediately arm the security system, or tap the **Cancel** button to disable the security system.

[23]
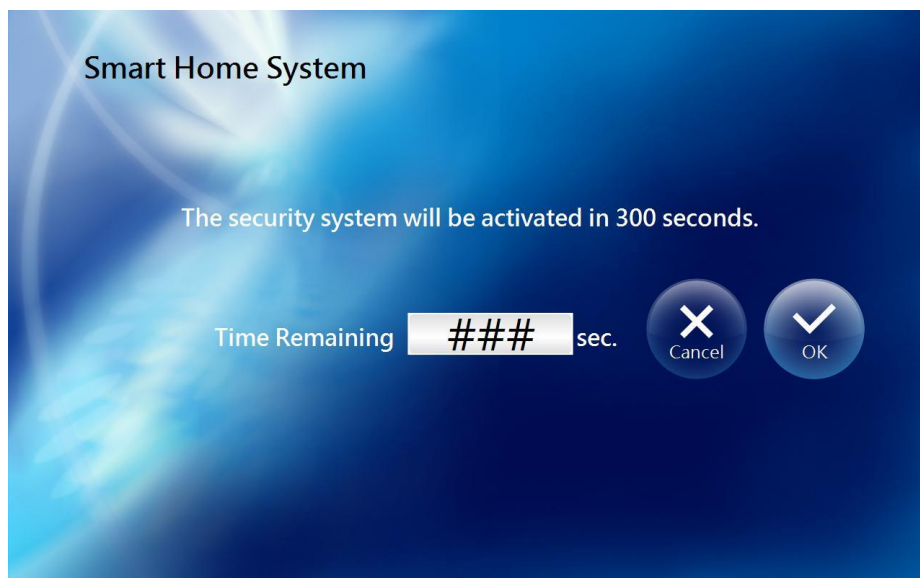
**If an intruder is detected once the Smart Home system is armed,** a countdown screen will be displayed for a fixed duration (60 seconds). The Smart Home system can be disarmed during the countdown period by tapping the **Disarm** button and entering the default password "1234" (see Section 3.6 System). If the Smart Home system is not disarmed within the fixed period, an alarm message will be sent to the building caretaker.



4)  **Disarm:**
    The **Disarm** button is used to deactivate the alarm system. To disarm the system, tap the Disarm button, and then enter the password (the default value is "1234"). The **Disarmed Successfully** dialog box will then be displayed. Tap the **OK** button to close the dialog box. For more details of how to change the password, see Section 3.6 System – Engineering.

5) **Security Alert Message:**

The **Security Alert Message** object on the Security Screen is used to display messages related to security alerts, such as fire and earthquakes, etc. If a security event occurs, the date and time of the occurrence will be shown in this event table, together with an alert message, and a Confirmation dialog box will be displayed. After tapping the **OK** button, the confirmation date/time will be shown in the event table.



[25]
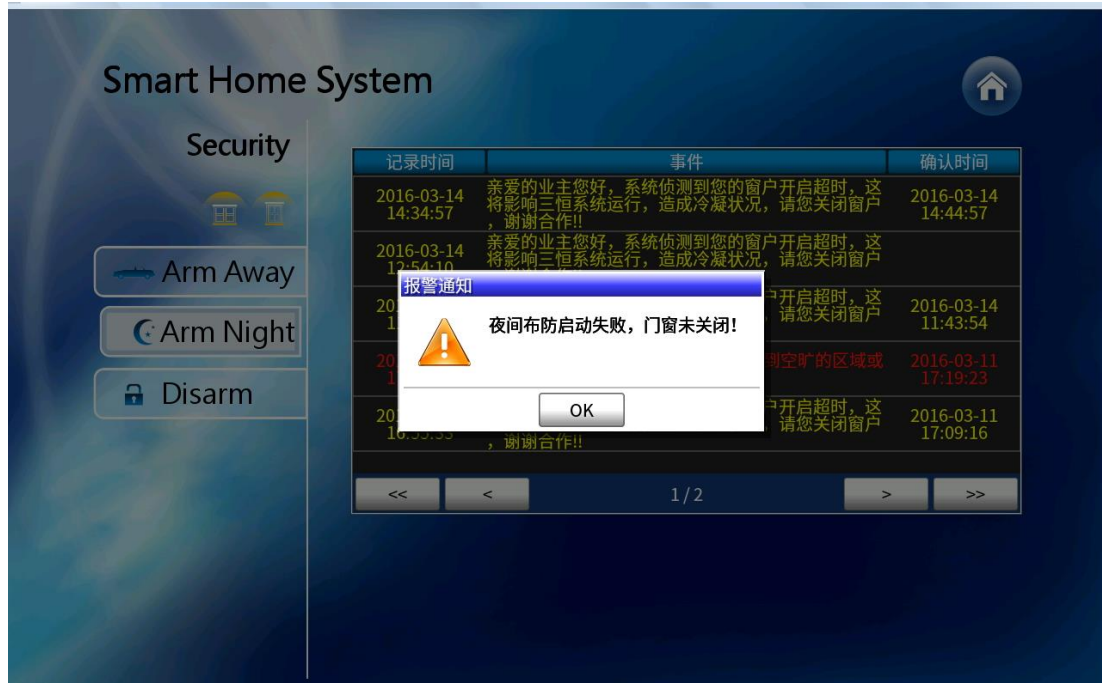
## 3.9    Environment

The Environment Screen allows you to view details relating to a range of indoor and outdoor environmental conditions, as well as providing functions that allow you to control certain features, such as the curtains, TV, and air conditioning.
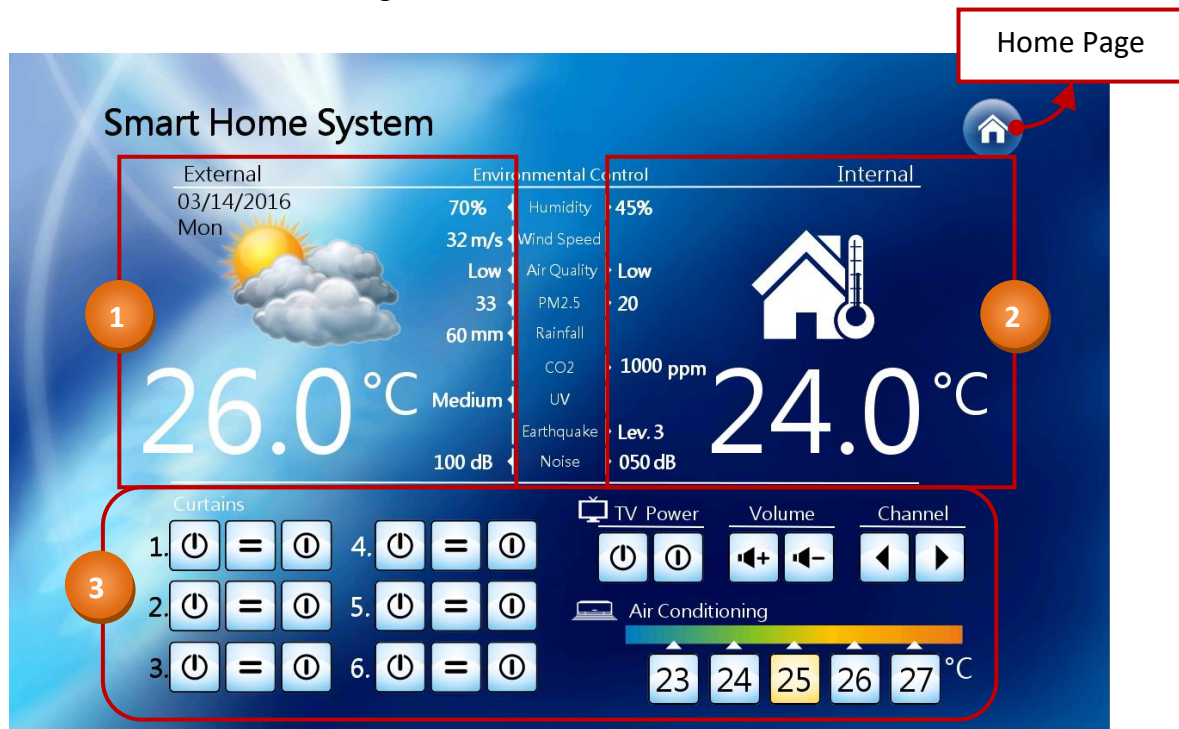


As illustrated above, the Environment Screen contains three sections. The following is an overview of the functionality of each of the sections that are displayed on the Environment Screen:

1) **External Data:**
   The external data section provides useful information related to external conditions, including the system date, current weather, the temperature, humidity, wind speed, air quality, PM2.5 (optional), rainfall, UV and noise levels. Note that the icons for weather and air quality can be customized where necessary.

2) **Internal Data:**
   The internal data section provides useful information related to the internal conditions of the household, including the indoor temperature, humidity, air quality, PM2.5 (optional), $CO_2$ levels, earthquake notifications, and noise levels.  Note that the icon for air quality can be customized where necessary.

3) **Environmental Control:**
   The Environmental Control section allows you to control certain features, such as the curtains, TV, and air conditioning. An overview of the functionality of each feature is provided below:

   **Curtains**:
   The following buttons can be used to control the motorized curtains if installed.



[26]
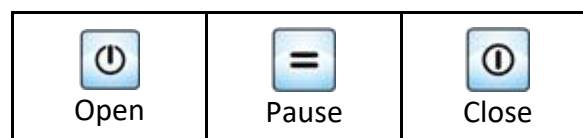
**TV**:

The following buttons can be used to configure the TV settings.

| Power | | Volume | | Channel | |
|---|---|---|---|---|---|
| On | Off | Up | Down | Up | Down |

**Air Conditioning**:

Five temperature settings are provided, i.e., 23°C to 27°C. Tap the relevant button to set the desired temperature.

## 3.10   Energy

The Energy Screen is used to display data related to energy consumption, and includes details such as electricity, natural gas, and water usage.

# Appendix A    Description of the SIP File

The Session Initiation Protocol (SIP) is a standard communications protocol that is used for initiating, managing, and terminating interactive user sessions that involves multimedia elements such as video, voice, chat, gaming, and virtual reality. These sessions could involve something such as a simple two-way telephone call, or they could be used for a collaborative session such as a multimedia conference. The most common applications for SIP are in Internet telephony for voice and video calls, as well as for instant messaging over Internet Protocol (IP) networks where participants are identified by SIP addresses. The SIP protocol establishes the call parameters at either end of the communication, and then handles all transfer and termination activities during the call.

The HA series of products from ICP DAS support VoIP (or Video) functionality. When compiling a project in the Creator software (see Chapter 2 for details of how to download and install the Creator software), the application will automatically generate an "sip_map.xml" file in the **[drive]:\ICPDAS\Creator\ Output\Project** folder. The "sip_map.xml" file is used to assign the dialled numbers to the matched IP address on the device. The xml file can be edited depending on individual application needs, and then the project can be uploaded to the HA-401 device via FTP.

**Note:** **Each time the compile function is executed in Creator, a new "sip_map.xml" file will be generated which will overwrite the original file. To prevent custom settings from being lost, it is recommended that you copy the xml file to a different location before editing it, and then copy it to the Project folder before uploading it to the HA-401.**

The code example below allows the householder to enter a 4-digit number (e.g., 0000) on the **Intercom** screen (see Section 3.4 Intercom for more details) to contact to the caretaker (e.g., 192.168.100.1).

```xml
<?xml version="1.0" encoding="utf-8"?>
<SIP_MAP>

    <room id="0000" ip="192.168.100.1"> </room>

    <room id="0101" ip="192.168.101.1"> </room>
    <room id="0102" ip="192.168.101.2"> </room>
    <room id="0103" ip="192.168.101.3"> </room>
    <room id="0104" ip="192.168.101.4"> </room>
    <room id="0105" ip="192.168.101.5"> </room>
    <room id="0106" ip="192.168.101.6"> </room>
    <room id="0107" ip="192.168.101.7"> </room>
    <room id="0108" ip="192.168.101.8"> </room>
    <!--  Add more settings here depending on the needs of your application  -->
                    .
                    .
                    .
    </SIP_MAP>
```

# Appendix B    Using the Extend Object function in Creator

The Creator software (see Chapter 2 for details of how to download and install the Creator software) allows customized HMI pages to be created.

Additionally, the HMI pages currently used in the HA-401 device can be adjusted by editing the Creator project file, i.e., SmartHomeSystem_Type1_V.X.X.X.sfp, which is located in the *[drive]*:**\tools\Creator\** folder. The new or revised files can then be uploaded to the HA-401 as a project.

The **Extend Object** that can be found in the Creator toolbox is specifically designed for HA series devices. If this object is used in a project, a white rectangle will be displayed in the screen design area, as illustrated in the figure below. In later versions of Creator, a specific function icon will be provided for this object depending on the "typeid" value selected.

The following provides a description of the functions for each **"typeid"**:

| "General" | Function |
|---|---|
| **typeid = 0001** | This object allows the building caretaker to send different messages to your HA-401 device.<br><br>The image below illustrates the Welcome screen where one **Extend Objects** are used.<br><br> |

The image below illustrates the News screen where four **Extend Objects** are used. The "typeid" parameter of each object can be configured in the **Property View** window.
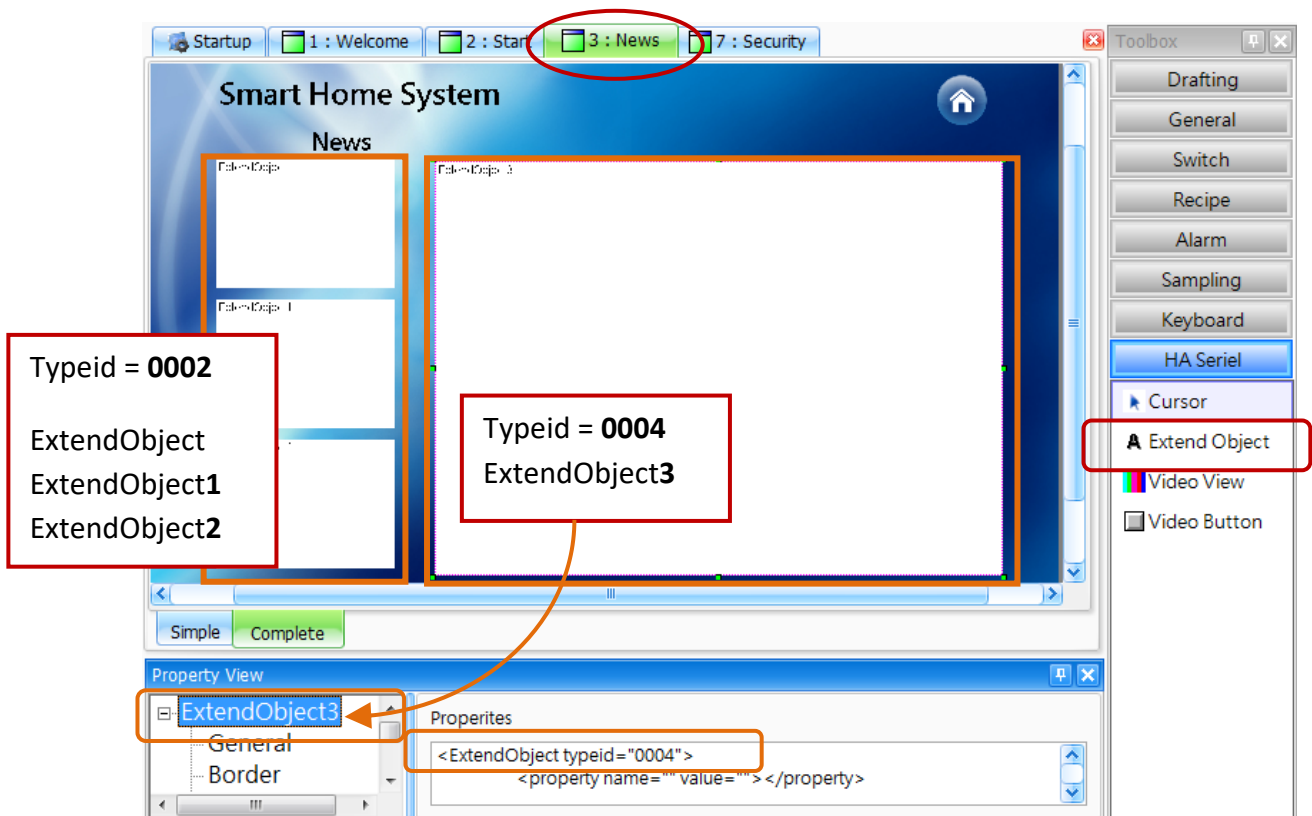


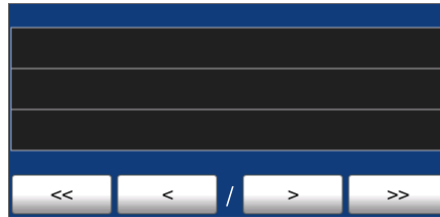| | |
|---|---|
| **typeid = 0002** | This object is used to display images in a random order. However, any images to be displayed must first be stored in the **/mnt/HmiRT_install/hmi/advertisting/** folder on the HA-401 device. See Section 3.3 News for more details.<br>Note that the size or quality of the image used will affect the speed when switching between screens, i.e., using large images on a screen can result in a slower performance. |
| **typeid = 0004** | This object is used to display messages from a subscription service, and includes the Delete button. See Section 3.3 News for more details. |



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| | |
|---|---|
| **typeid = 0006** | This object is used to display messages from a subscription service, but does not include the Delete button.<br><br> |
| **typeid = 0007** | This object is used to display messages related to security alerts. See Section 3.8 Security for more details.<br><br> |

# Appendix C    The Variable Names and Topics ID Used in the HA-401 Device

In the HA-401 system, we use several variables and MQTT Topics ID that are listed in the following tables. See Appendix B for details of how to find the Creator project, and go to the Creator download website at http://www.icpdas.com/root/product/solutions/software/creator/download.html for details of how to download the Creator software and the User Manual.

**The Variable names used in the HA-401 device**

The following table shows variables which are defined in the Creator project. Some variable names are used for particular purposes; therefore, do not change the variable names that are marked in red.

See the Creator User Manual- Chapter7 for details of how to configure variables.

| VT-DOxx_I | | VT-DIxx_I | | VT-STRxx_I | |
|---|---|---|---|---|---|
| VT-DO01_I | Reserved | VT-DI01_I | Fire Alarm | VT-STR01_I | Reserved |
| VT-DO02_I | Reserved | VT-DI02_I | Reserved | VT-STR02_I | Reserved |
| VT-DO03_I | Reserved | VT-DI03_I | Reserved | VT-STR03_I | Reserved |
| VT-DO04_I | Reserved | VT-DI04_I | Reserved | VT-STR04_I | Reserved |
| VT-DO05_I | Reserved | VT-DI05_I | Reserved | VT-STR05_I | Reserved |
| VT-DO06_I | Reserved | VT-DI06_I | Reserved | VT-STR06_I | Reserved |
| VT-DO07_I | Reserved | VT-DI07_I | Reserved | VT-STR07_I | Reserved |
| VT-DO08_I | Reserved | VT-DI08_I | Reserved | VT-STR08_I | Seismic Signals |
| VT-DO09_I | Reserved | VT-DI09_I | Reserved | VT-STR09_I | Reserved |
| VT-DO10_I | Reserved | VT-DI10_I | Reserved | VT-STR10_I | Reserved |

| VT-STRxx_I | | ESxx | | Others | |
|---|---|---|---|---|---|
| VT-STR01_I | Reserved | ES01 | Reserved | House_Noise | Indoor Noise |
| VT-STR02_I | Reserved | ES02 | Gas Alarm | Sys_SpeakerVolume | Speaker Volume |
| VT-STR03_I | Reserved | ES03 | Reserved | Sys_MicVolume | Microphone Volume |
| VT-STR04_I | Reserved | ES04 | Door | PIR-DO01 | PIR-Detection |
| VT-STR05_I | Reserved | ES05 | Window | Tag_LostConnection | Modbus disconnected |
| VT-STR06_I | Reserved | ES06 | Reserved | | |
| VT-STR07_I | Reserved | ES07 | Reserved | | |
| VT-STR08_I | Seismic Signals | ES08 | Reserved | | |
| VT-STR09_I | Reserved | ES09 | Reserved | | |
| VT-STR10_I | Reserved | ES10 | Reserved | | |

**Topic ID**

The following table shows the Topics ID which are configured in the MQTT function in the Creator project. Some Topics ID are used for particular purposes; therefore, do not change the name of Topics ID that are marked in red.

For details of how to download the Creator software and the User Manual, go to the Creator download website at: http://www.icpdas.com/root/product/solutions/software/creator/download.html

| Topic ID | |
|---|---|
| VT-STR01/ | Reserved |
| VT-STR02/ | The Advertising Subscriptions used in the Intercom Host |
| VT-STR03/ | Public Status Variable |
| VT-STR04/ | Reserved |
| VT-STR05/ | Reserved |
| VT-STR06/ | Reserved |
| VT-STR07/ | Reserved |
| VT-STR08/ | Reserved |
| VT-STR09/ | Reserved |
| VT-STR10/ | Reserved |
| VT-STR11/ | Reserved |
| VT-STR12/ | Reserved |
| VT-STR13/ | Reserved |
| VT-STR14/ | Reserved |
| VT-STR15/ | Reserved |
| VT-STR16/ | Reserved |
| VT-STR17/ | For the Welcome object |
| VT-STR18/ | Reserved |
| VT-STR19/ | Reserved |
| VT-STR20/ | Reserved |

**Note:** In the Appendix D, the Topic ID " VT-STR18/ " is used for the Extend object (Typeid=0004).

# Appendix D    The Settings of the MQTT_Topics File

When you configure the MQTT settings (see Section 11.5 MQTT in the Creator user manual), and compile the project in the Creator software, the application will automatically generate an "MQTT_Topics.xml" file in the **[drive]:\ICPDAS\Creator\Output\Project** folder.

Before downloading the project to the HA-401 device, you must find the Topic ID which used for the Extend object (Typeid=0004, see Appendix B for more details), and modify the **action** attribute in this "MQTT_Topics.xml" file. In this case, find out the Topic ID "**VT-STR18/**" in the <subscribe_list> label, and then configure the attribute **action="SaveToTag"** to **action="sms"**.

```
<subscribe_list>
        .
        .
<subscribe id="CTN-DO08">
    <onreceive   action="SaveToTag"   tag="Trigger_OFF_to_LC" />
</subscribe>
<subscribe id="LC04_DO/W/">
    <onreceive   a ction="SaveToTag"   tag="LC04_DO" />
</subscribe>
<subscribe id="VT-STR18/">
    <onreceive   action="sms"   tag="VT-STR18_I" />
</subscribe>
        .
        .
        .
</subscribe_list>
```

After completing this settings and downloading the project to the HA-401 device, you can receive the subscribed messages in the Extend object (Typeid=0004, see Appendix B for more details) in the News screen.
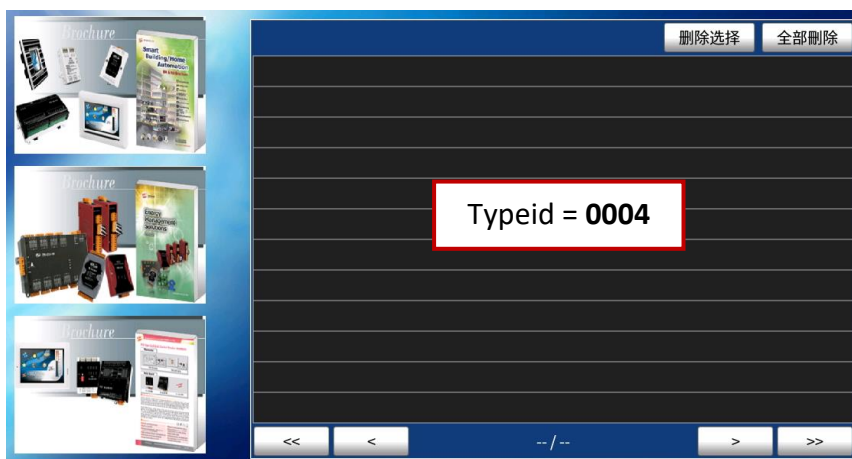
# Appendix E    HA-401 Operations

After you power on the HA-401 device, the Smart Home System Welcome screen will be displayed. Follow the steps to access the **Control Panel** Screen.

     1. Tap and hold the top left-hand corner of the screen (A)

     2. Slide your finger to the bottom left-hand corner of the screen (B)

     3. Release your finger to exit the project screen



The following provides an overview of the operations that can be performed on the HA-401 device, including how to execute a project automatically, together with details of the functions available in the Control Panel of the HA-401 device.

# E.1 Control Panel

The **Control Panel** is used to configure a variety of functions related to the HA-401 device, each of which are described in more detail below, and include options such as changing the system date and time, configuring the IP settings and calibrating the sensitivity and accuracy of the touch screen, etc.

To access the Control Panel, tap the Control Panel icon and the settings screen will be displayed.
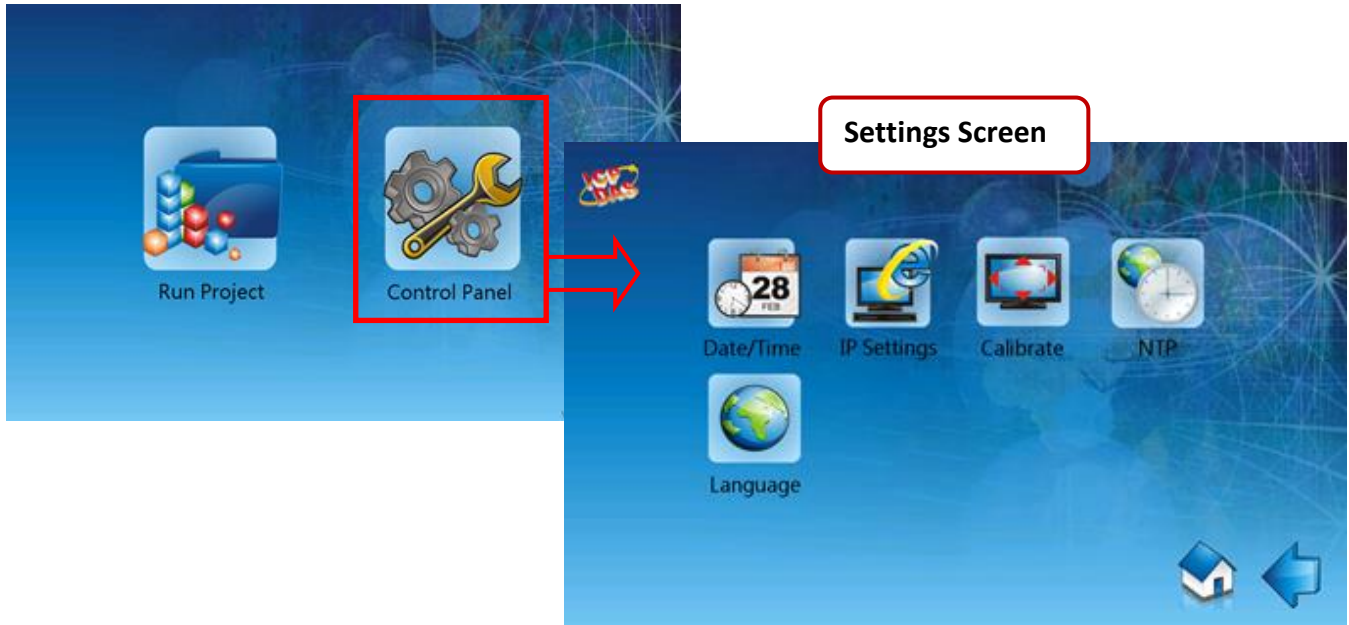
The following is an overview of the options available in the **Control Panel** of the HA-401 device.

| | |
|---|---|
| Date/Time | Used to adjust the system date and time settings |
| IP Settings | Used to configure the IP address, etc. for the HA-401 device |
| Calibrate | Used to calibrate the sensitivity and accuracy of the touch screen |
| NTP | Used to specify the NTP server and the time zone for the HA-401 device |
| Language | Used to specify the language settings for the HA-401 device |

## E.1.1 Date/Time Settings

The **Date/Time Settings** function is used to adjust the system date and time for the HA-401 device.

To adjust the Date and Time Settings for the HA-401 device, tap the **Date/Time Settings** icon in the **Control Panel** to open the Date/Time Settings screen.

After tapping the value you want to adjust, the Numeric Keyboard will be displayed as below. Input the value for the year (or month / day / hour / minutes / seconds) field, and then tap the **Enter** button to complete the setting. Finally, click the **OK** button to apply the settings.

The following is an overview of the options available in the Date/Time Settings screen for the **Date/Time Settings** function in the **Control Panel**

| | |
|---|---|
| **Date** | Used to adjust the system date |
| **Time** | Used to adjust the system time |
| **OK** | Used to apply the settings and exit the screen |
| **Cancel** | Used to exit the screen without saving the configuration settings |

## E.1.2  IP Settings

The **IP Settings** function is used to configure the IP address, Network Mask, Gateway address and DNS Server address for the HA-401 device.

To configure the IP address, tap the **IP Settings** icon in the **Control Panel** to open the IP Settings screen. Enter the relevant details in the respective fields and then tap the **OK** button to apply the settings.



The following is an overview of the options available in the IP Settings screen for the **IP Settings** function in the **Control Panel**.

| | |
|---|---|
| **IP Address** | Used to specify the IP address for the HA-401 device |
| **Network Mask** | Used to specify the Network Mask for the HA-401 device |
| **Gateway** | Used to specify the Gateway address for the HA-401 device |
| **DNS Server** | Used to specify the address of the DNS Server for HA-401 device |
| **Obtain an IP address via DCHP** | Used to specify whether or not the IP address for the project should be obtained via a DCHP server |
| **OK** | Used to apply the configuration settings and exit the screen |
| **Cancel** | Used to exit the screen without saving the configuration settings |

# E.1.3 Screen Calibration

The Screen Calibration function is used to calibrate the sensitivity of the touch screen and can be used to adjust the accuracy of the response to user input.

To calibrate the sensitivity and accuracy of the touch screen, tap the **Calibrate** icon in the **Control Panel** to open the Screen Calibration screen.

On the Calibration screen, tap and briefly hold the target (cross) in the center of the screen. Repeat this process as the target moves around the screen.

After completing the process, it will automatically return to the **Control Panel**.

Carefully press and briefly hold stylus on the center of the target.
Repeat as the target moves around the screen.
Press the Esc key to cancel.
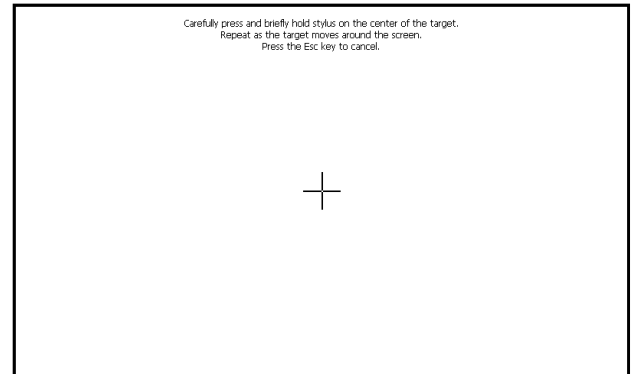
# E.1.4 NTP Server

The NTP (Network Time Protocol) server can be used to automatically synchronize the system time of the HA-401 device with a remote server.

To configure the NTP server, tap the **NTP** icon in the **Control panel** to open the NTP screen.

Choose one of the NTP server and the time zone, and check the Enable NTP checkbox and then tap the **OK** button to apply the settings.
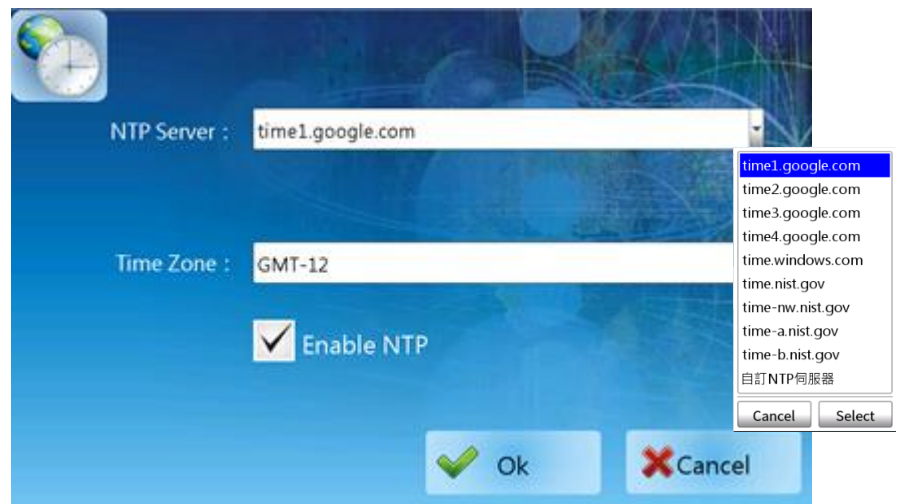
The following is an overview of the options available in the NTP screen for the **NTP** function in the **Control Panel**.

| NTP Server | Used to specify the NTP Server for updating the system time |
| --- | --- |
| Time Zone | Used to specify the Time Zone |
| Enable NTP | Used to enable the NTP function |
| OK | Used to apply the settings and exit the screen |
| Cancel | Used to exit the screen without saving the configuration settings |

## E.1.5 Language Settings

The **Language** function is used to configure the language used for the HA-401 device and can be selected from English, Traditional Chinese, or Simplified Chinese.

To adjust the interface language, tap the **Language** icon in the **Control panel** to open the Language screen. Choose the desired language in the drop-down list, tap the **Select** button to select it, and then tap the **OK** button to apply the settings.
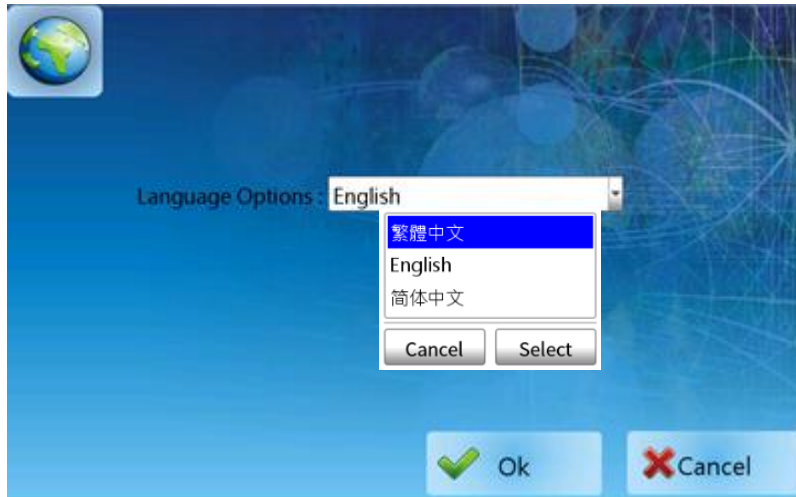
## E.2 Executing a Project Manually

After completing the settings in the Control Panel, the user can tap the Run Project icon to manually execute a project.