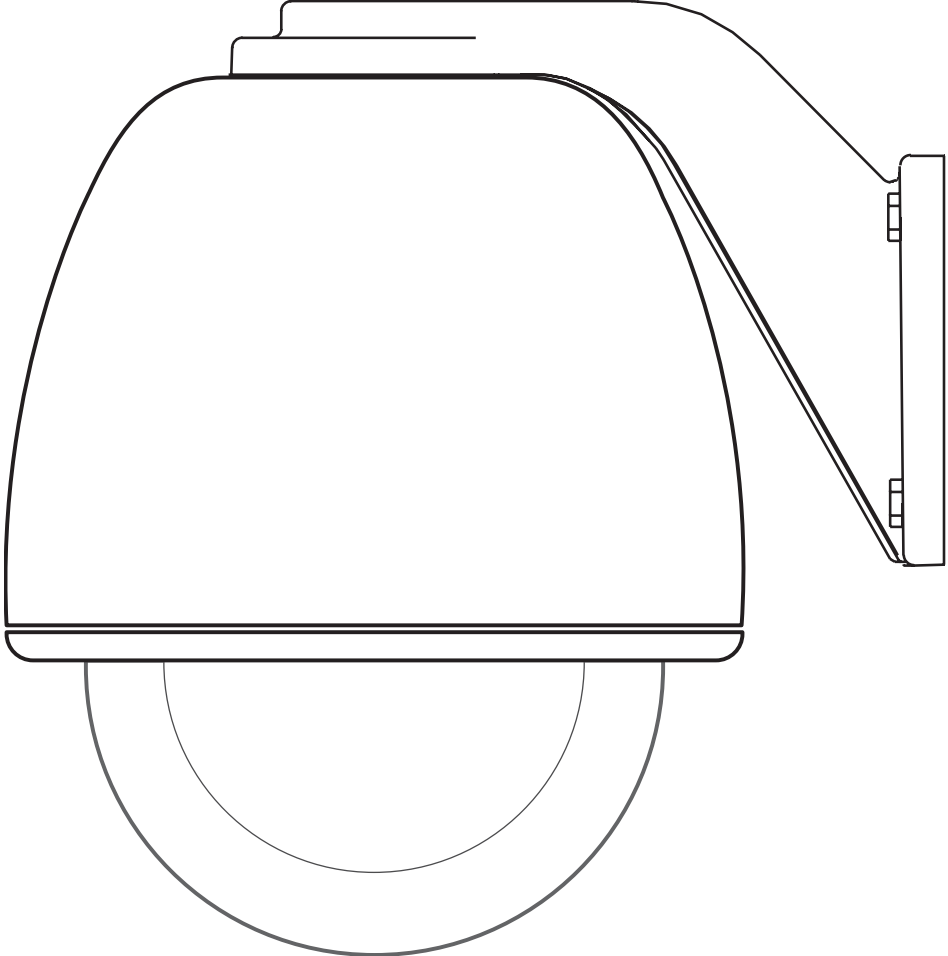


Legend
User Manual



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FCC compliance This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Preface

This is the *GE Legend User Manual* for all models with v2.1.9 software. This document includes an overview of the product and detailed instructions explaining:

- how to program; and
- how to operate.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of CCTV systems and components; and
- a basic knowledge of electrical wiring and low-voltage electrical connections.

Read these instructions and all ancillary documentation entirely before installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to [Online publication library](#) on page 8 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Conventions used in this document

The following conventions are used in this document:

Bold	Menu items and buttons.
<i>Italic</i>	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
<i>Blue italic</i>	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
Monospace	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:



CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.



WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.

References

If you want to investigate related topics, these other documents may prove helpful:

- GE Security. *Legend v2.1.9 Software Upgrade Installation Instructions* (1054754)
- GE Security. *Legend AHC Retrofit Installation Instructions* (1055588)
- GE Security. *Legend Installation Manual* (1052026)
- GE Security. *KTD-405 Controller Keypad User Manual* (1036547)
- GE Security. *Networking Cable Types Technical Reference Guide* (1047213)

Chapter 1 Introduction

This chapter provides an overview of your Legend dome system and what is new in this release of the product. Refer to the *Legend Installation Manual* (1052026) for the detailed product contents and system requirements.

In this chapter:

- Product overview* 2
- What's new in this release* 3
- Changed protocol switch assignments* 4

Product overview

Legend™ is a line of advanced PTZ domes. Besides powerful cameras, Legend domes feature SilkTrak™ direct-drive positioning for smoother camera travel, a graphical programming interface (*Figure 1*) for easier customization of camera settings, passcodes for protection against unauthorized access, and an Ethernet connection for flashing software upgrades over a standard IP network using a standard web browser.



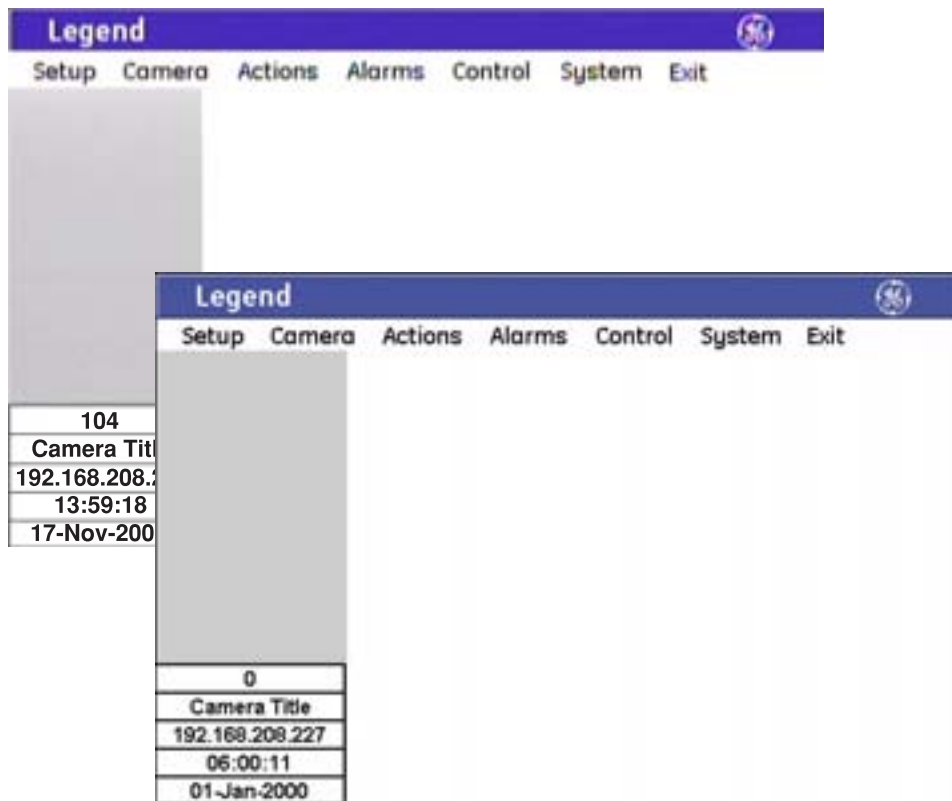
CAUTION: When flashing software upgrades to the dome over a standard IP network via the dome's Ethernet connection, ensure that the network is secured from unauthorized access. Consider connecting the Ethernet cable only when you are flashing the dome, unless you have the dome connected to a secure, isolated network.

The Legend protocol is backward compatible with the Digiplex protocol. You can replace older domes in an existing Digiplex system with Legend domes. You must, however, replace the entire dome (camera and housing). The hardware is not backward compatible.

The end-user's system administrator and/or the installer will do the programming. Be aware that the installer may have enabled passcodes for the system during installation by specifying them. There are no passcodes by default.

For additional details, refer to the data sheet and the *Legend Installation Manual* (1052026) for product specifications and installation instructions.

Figure 1. Main menu of the graphical programming interface



What's new in this release

The major changes to this release of the Legend software are:

- time scheduling added ([Time schedule page](#) on page 57);
- image freeze on presets added ([Edit page](#) on page 44);
- Pelco D (autobaud), Pelco P, and Tyco/AD (RS-422) ([Appendix B, Compatible commands](#)) protocols added ([Table 2](#) on page 4)¹;
- streaming position reporting added when data is connected to the AUX RS-485 connections;
- alarm reporting added for the Impac (RS-485) and Tyco/AD (RS-422) protocols; and
- overall performance increased.

Note: The Pelco D autobaud protocol provides autobaud detection between 2400, 4800, and 9600 baud. Alarm reporting is a nonprogrammable feature. Refer to the protocol's manual for details. Streaming position reporting is disabled when the protocol switch is set to A for the Tyco/AD protocol. On-request position reporting continues to be available with the Impac (RS-485) protocol delivered through the MAIN RS-485 connections. It is not in ASCII format as is the streaming position reporting data.

If you purchased a v2.1.9 or later Legend dome, then you have the new AHC (active housing card) that is required for some of the recent software changes. If you are upgrading a Legend dome that has an earlier version of software, you may or may not have to retrofit the dome with a new AHC. It depends upon what features you want to use. The most commonly used features do not require the new AHC.

Table 1 lists what software upgrade changes are usable with the current AHC and which are usable if you retrofit the AHC.

Table 1. Upgrade features available with and without retrofitting the AHC

Upgrade software only	Upgrade software and retrofit AHC
Time scheduling	Time scheduling
Image freeze on presets	Image freeze on presets
Pelco D and Pelco P protocols	Pelco D and Pelco P protocols
	Tyco/AD protocol
	Streaming position reporting with AUX RS-485
Alarm reporting with Impac (RS-485)	Alarm reporting with Impac (RS-485)
	Alarm reporting with Tyco/AD (RS-422)
Increased performance	Increased performance

If you need to retrofit the AHC, it can be retrofitted in the field. Contact GE Technical Support for one AHC retrofit it per dome. See [Appendix C, Software upgrade instructions](#).

1. The version numbers of these protocols are as follows: Pelco D as documented in the Pelco **Engineering Design Standard** numbered TF-0002 version 1 rev 1; Tyco/AD as documented in the American Dynamics user guide numbered 8000-2694-01 rev. B; and Ultrak as documented in the Diamond Electronics **FastScan/SmartScan Communication Protocol Document** dated August 13, 1994.

Changed protocol switch assignments

With the addition of new protocols, the assignments of the rotary protocol switch have changed.

Be aware that if you were using Pelco D 2400 baud protocol, which was originally assigned to switch 6, you will need to change the DIP switch setting in the housing. It is now incorporated into the Pelco D autobaud protocol and assigned to switch 9.

Here are the new protocol switch assignments.

Table 2. Protocol switch assignments

Switch	Protocol
0	Digiplex (RS-422) @ 4800 baud
1	Impac (RS-485) @ 9600 baud
2	For future use
3	For future use
4	For future use
5	ASCII @ 9600 baud
6	For future use
7	Ultrak @ 9600 baud (even parity)
8	Pelco P @ 4800 baud
9	Pelco D autobaud @ 2400, 4800, and 9600
A	Tyco/AD (RS-422) @ 4800 baud
B	For future use
C	For future use
D	For future use
E	For factory use
F	For factory use

Moving camera assemblies between domes

Legend domes consist of two primary operational components: the housing cards mounted up in the housing and the camera assembly (PTZ unit). So that camera assemblies can be replaced quickly without reprogramming custom settings, all memory for IP addresses and programmable operations, such as presets and tours, are stored in the housings. If you move camera assemblies that are loaded with different software versions between housings, you need to be aware of the behavioral differences that you can expect to see. Refer to *Table 3*.

Table 3. Behavioral differences seen when cameras loaded with different software versions are replaced in housings

Software version of existing camera assembly	Software version of replacement camera assembly	Change in boot up and memory behavior	Intervention required
1.8.5	1.8.5	Boot-up time remains the same and memory is preserved.	No user intervention is required. The new camera assembly will inherit all of the settings from the previous camera assembly.
1.8.5	2.1.X	Boot-up time may be longer for the initial boot up and memory is preserved.	No user intervention is required. Any housing data formatted with v1.8.5 will be migrated automatically to v2.1.X during the initial boot up. These settings will then be stored in the housing memory. All custom settings are preserved.
2.1.X	1.8.5	Boot-up time may be longer and memory of custom settings is lost. All custom settings will revert to factory defaults.	Some user intervention may be required. Any housing data formatted with v2.1.X is ignored, but not erased. If the housing contains settings with v1.8.5, then they will be used. Otherwise, factory default settings are enabled. BE AWARE: Storing data in this scenario may create setting conflicts and indeterminate results when a camera assembly formatted with v2.1.x is again placed into the housing. It is recommended to erase all settings if a housing is inserted with camera assemblies containing v.2.1X followed by v1.8.5 followed by v2.1.X. To erase all settings, see Memory page on page 22.
2.1.X	2.1.X	Boot-up time remains the same and memory is preserved.	No user intervention is required. The new camera assembly will inherit all of the settings from the previous camera assembly.

Chapter 2 Accessing the programming interface

This chapter provides instructions for accessing the dome’s programming interface. Logging on may not be necessary.

- When is logging on necessary* 8
- Starting from a keypad* 8

When is logging on necessary

If passcodes were turned on (that is, specified) during installation or later, access to the programming interface will be passcode-protected and you will have to log on to the dome to program it. Otherwise, you will be taken directly to the main programming page from the keypad. The passcodes control who has access to the features of your dome. See [Passcode page](#) on page 23.

Starting from a keypad

The steps for accessing the programming interface from all GE keypads are similar. The following procedure is based on the KTD-405 keypad, which is currently GE’s most popular keypad. Exceptions to the procedure for other GE keypads are noted. You can also use the GE KTD-400 and KTD-404/304 keypads and other manufacturers’ keypads and controllers using the Pelco D (autobaud), Pelco P, Tyco/AD (RS-422), Ultrak, Impac (RS-485), and ASCII protocols. When using these other protocols, all common commands used for accessing programming, operating the joystick and iris key on the keypad, and controlling presets are supported by the Legend protocol. For an up-to-date list of compatible keypads and protocols, please contact your GE sales representative or Technical Support.

To access the programming interface from a KTD-405 keypad:

1. At the normal display, press and hold the **set** (←) key on the keypad until you hear a beep and the programming code display appears on the keypad’s LCD.

Figure 2. Normal display (programming interface accessed)



2. At the *ENTER PROGRAMMING CODE* display, enter the programming access code by pressing the **9**, **5**, **1**, and **seq** keys.

This code is the same for all GE keypads.

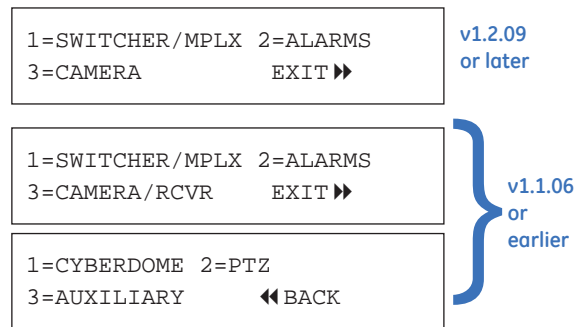
Figure 3. ENTER PROGRAMMING CODE display



3. At the equipment selection display, press **3** to select CAMERA (keypad v1.2.09 or later) or CAMERA/RCVR (keypad v1.1.06 or earlier).

If you have an older keypad (v1.1.06 or earlier), you will have a second equipment selection display, at which you need to press **1** for CYBERDOME.

Figure 4. Equipment selection display



- At the *ENTER CAMERA SITE NUMBER* display, enter the number for the camera site you are programming. This is a 3-digit number (for example, 007, 021, 243).

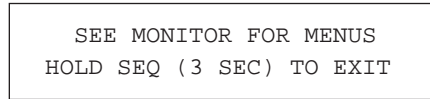
You can enter one, two, or three digits and press **set** (←).

- Continue entering commands with the joystick.

Figure 5. *ENTER CAMERA SITE NUMBER* display



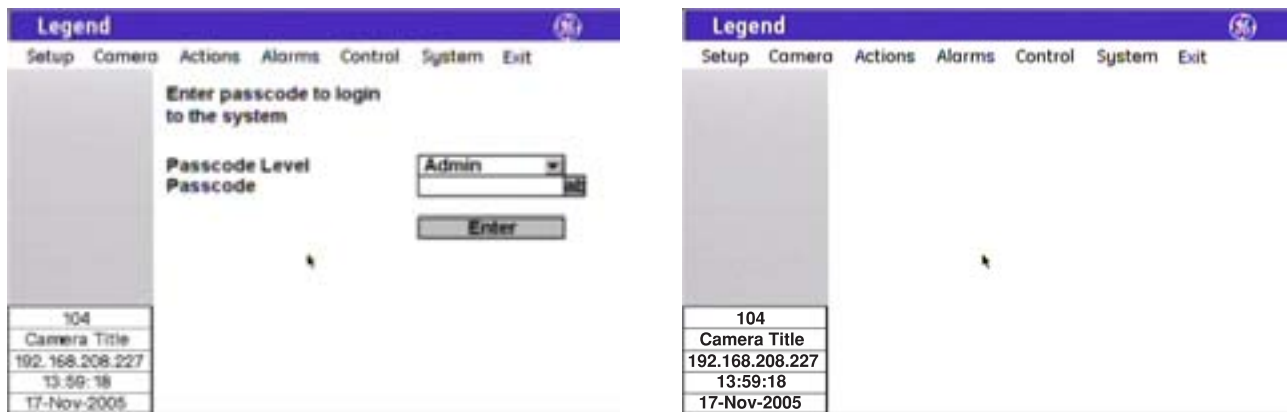
Figure 6. *SEE MONITOR FOR MENUS* display



- If passcodes are turned on, they are required. Select your passcode level and enter your passcode (Figure 7). You will be taken to the main programming page. If passcodes are turned off, they are not required and you will be taken directly to the main programming page.

From the main programming page, you can access any programming parameters that are allowed by your passcode.

Figure 7. *Log on (if passcode required) and main programming pages*



Chapter 3 Programming tools

This chapter provides instructions for how to use the keypad joystick and graphical programming interface to program domes.

In this chapter:

- Joystick modes* 12
- Joystick as simulated mouse* 12
- Joystick as PTZ controller* 12
- Using the graphical keyboard* 13
- Inactivity timer* 13
- Keypad shortcuts* 14

Joystick modes

While you are in the graphical programming interface, the joystick of your keypad operates in two modes depending upon what your current action is. While moving among the menus of the programming interface, the joystick is a simulated mouse and you enter commands using the joystick. While controlling live video, the joystick is a PTZ controller. So, whenever you are positioning titles or privacy masks, or programming live video features such as presets and ShadowTours, the joystick is a PTZ controller, in which case, you will use the keypad's keys to enter commands.

Joystick as simulated mouse

When the joystick is simulating a mouse within the programming interface, it can move the cursor, move a title, or make a selection in the menus.

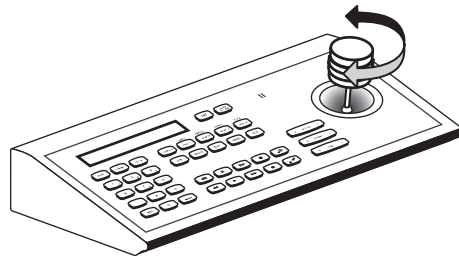
Moving the cursor or a title

To move the cursor (onscreen arrow) across the menus, or to move a title across the screen during title positioning, push or pull the joystick in any direction. The farther you move the joystick, the faster the cursor will move.

Making a selection

To make a selection in the menus, place the cursor over a menu, button, checkbox, item in a list, or arrow of a drop-down box by pushing or pulling the joystick in any direction, then twist the knob on the joystick.

Figure 8. Twisting the joystick knob to make selection



You can also use the **zoom+/-** key on the keypad to make selections.

Joystick as PTZ controller

When the joystick is controlling the PTZ movements of the camera within the programming interface, use the keypad's keys to enter the save and cancel programming commands.

Saving live video programming

To save live video programming, such as positioned titles, privacy masks, presets, and ShadowTours, press the **iris +** or the **set** (←) key on the keypad.

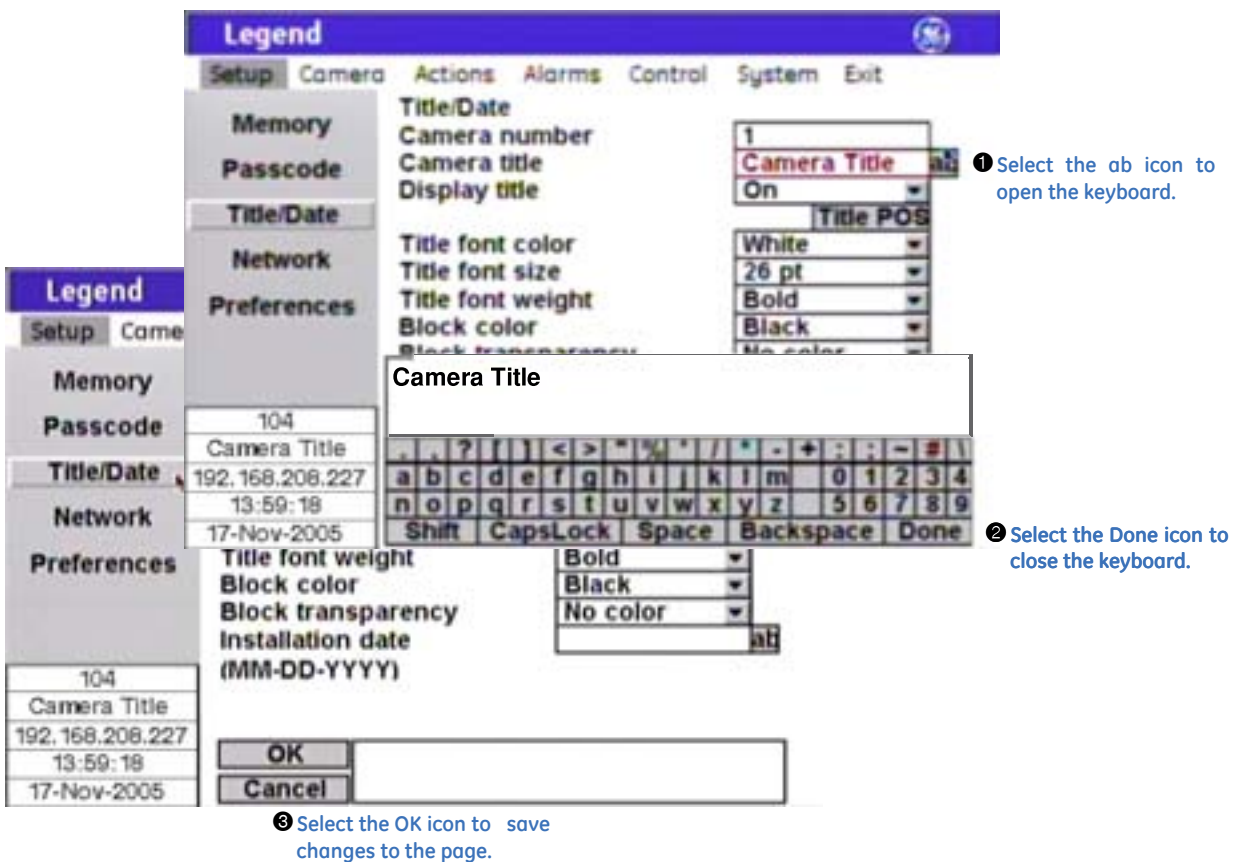
Canceling live video programming

To cancel live video programming, such as positioned titles, privacy masks, presets, and ShadowTours, press the **iris -** or the **esc** key on the keypad.

Using the graphical keyboard

The programming interface has an internal graphical keyboard for entering passcodes, network data, and custom titles. Open the graphical keyboard (*Figure 9*) by selecting the icon ❶. After you have entered the necessary characters, select **Done** on the keyboard or press the **set** (←) key on the keypad to return to the page. Then select **OK** to save the changes made to the page. Pressing **esc** on the keypad while you are still in the keyboard erases the characters shown. You must select **OK** or **Cancel** to save or cancel the changes entered on the page.

Figure 9. Using the keyboard of the programming interface



Inactivity timer

The programming interface has a 10-minute keypad inactivity timer. When being used with keypads that do not have their own inactivity timer, the programming interface will time out after 10 minutes of inactivity. When being used with keypads that do have their own inactivity timer and it is less than the 10-minute timer of the programming interface, the programming interface will time out when the keypad does. When being used with keypads that have a longer inactivity timer, the programming interface will time out after 10 minutes of inactivity. Refer to your keypad's manual to see if it has an inactivity timer and what the duration is so that you know when you can expect the programming interface to time out.

Keypad shortcuts

The following are keypad shortcut commands carried over from CyberDome programming. Where keypad shortcuts exist for a feature, such as setting presets, you can use keys from the keypad, instead of menus from the programming interface, to program the feature. See *Table 4*. You can then go into the programming interface and customize the programmed feature with titles and other attributes.

Table 4. Keypad shortcuts

Command	Keypad shortcut ^a
Set a preset	store (number) store
Set the left autopan limit	store ◀ store
Set the right autopan limit	store ▶ store

^aFor details, see the *KTD-405 Controller Keypad User Manual*(1036547).

See [Autopan limitations](#) on page 80 for restrictions for setting autopan limits.

Chapter 4 Basic programming

This chapter provides programming instructions for the most commonly used dome operations (presets and ShadowTours). The dome is otherwise ready to operate using its defaults. If you want to customize the dome's programming for advanced surveillance applications, go to *Advanced programming* on page 21.

In this chapter:

- Presets* 16
 - Programming presets from the keypad* 16
 - Programming presets with the programming interface* 16
- ShadowTours* 18

Presets

You can set presets from the keypad or with the graphical programming interface. If you set your presets from the keypad, you may want to go into the programming interface to customize them with titles and exposure settings.

There are a total of 127 presets (1 through 127) that you can define for your dome. If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 presets that you can define.

The dome also provides the ability to remap any preset or tour command coming in from a keypad to activate any of the 127 presets, 16 tours, or 32 macro actions. This enables you to manually initiate any of the expanded capabilities of the dome from keypad controllers with limited command capability. See [Command Map page](#) on page 68.

Note: Most keypads have a limited number of preset numbers they can call. If you have a GE KTD-405 keypad with firmware v1.2.09 or later, and it is operating with Impac RS-485 protocol, then you can call up all 127 preset numbers (1 through 127) directly from the keypad. If, however, you have a GE KTD-405 keypad with an earlier version of firmware, or it is operating with Digiplex RS-422 protocol, then you can use the keypad to call up only the first 63 preset numbers (1 through 63). If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 or 61 preset numbers that you can call up from the keypad. To verify your keypad's version, press and hold the **mon** key on the keypad, until the keypad beeps, then press the **>>** key.

Programming presets from the keypad

To program presets from the KTD-405 keypad, do the following:


1. Use the joystick to pan, tilt, and zoom the camera to the desired view.
2. Press **store** on the keypad.
3. Press the number keys on the keypad that correspond to the preset number you want to assign for this position.
4. Press **store** again.

Note: If the keypad does not allow you to program a desired preset, you may need to change the lowest user-definable preset in the keypad program menus. Refer to the keypad manual.

5. After programming your presets, you can verify them, one at a time, by pressing the **find** key on the keypad and then pressing the number keys that correspond to each preset. If you are not satisfied with any views, you can reprogram those preset positions starting with step 1 above.
6. If desired, go into the programming interface to customize the preset with a title and exposure settings. See [Presets page](#) on page 42.

Programming presets with the programming interface

To program presets with the programming interface, do the following:

1. Access the programming interface. See [Accessing the programming interface](#) on page 7.
 - a. Press and hold the **set** () key on the keypad until you hear a beep and the programming code display appears on the keypad's LCD.
 - b. Press the **9**, **5**, **1**, and **seq** keys on the keypad.

- c. Press **3** to select **CAMERA**.

Note: If you have an older keypad, the LCD will say CYBERDOME, instead of CAMERA, and you will have an additional self-explanatory screen to step through.

- d. Enter the number for the camera site you are programming.

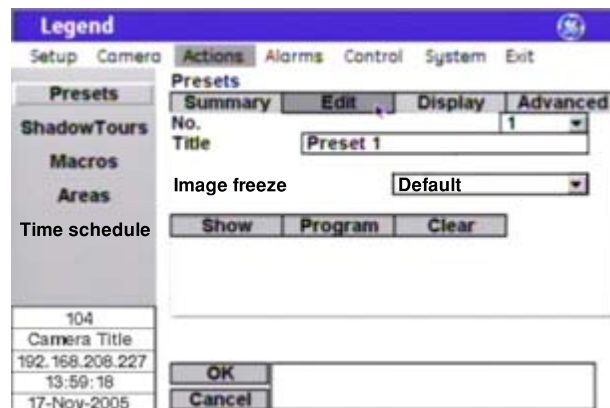
The programming interface will appear on the monitor screen and you will start using the joystick to enter commands.


- e. If passcodes are turned on, select your passcode level and enter your passcode. If passcodes are turned off, you will be taken directly to the main programming page.

The programming interface will appear on the monitor screen and you will start using the joystick to enter commands.

2. Select **Actions** by guiding the joystick to move the cursor over the *Actions* menu and twisting the joystick knob.

Figure 10. Preset programming page




3. Select **Presets**.
4. Select the **Edit** tab.
5. Select a preset number.
6. Select **Program**.
7. Use the joystick to pan, tilt, and zoom the camera to the desired view.
8. Press the **iris+** or **set** () key on the keypad to save the preset position or press the **iris-** or **esc** key to cancel the preset position. Both canceling and saving the preset position returns you to the *Edit* page.
9. After you have saved a preset position, then you can use the features on the *Edit*, *Display*, and *Advanced* tab pages to customize the preset's title, duration, and exposure settings. See [Presets page](#) on page 42.

ShadowTours

You have a total of 16 ShadowTours (totaling 20 minutes) that you can define for the dome. A ShadowTour is a tour that the camera learns by recording your manual operation of the camera. Use a keypad to manually direct the camera through the desired PTZ movements. The camera stores those movements in memory. The recorded tour can be replayed at any time.

To program ShadowTours with the programming interface, do the following:

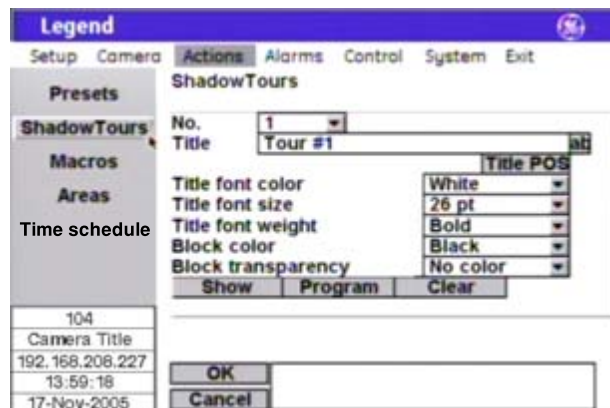
1. Access the programming interface. See [Accessing the programming interface](#) on page 7.
 - a. Press and hold the **set** () key on the keypad until you hear a beep and the programming code display appears on the keypad's LCD.
 - b. Press the **9**, **5**, **1**, and **seq** keys on the keypad.
 - c. Press **3** to select CAMERA.


Note: If you have an older keypad, the LCD will say CYBERDOME, instead of CAMERA, and you will have an additional self-explanatory screen to step through.
 - d. Enter the number for the camera site you are programming.


The programming interface will appear on the monitor screen and you will start using the joystick to enter commands.
 - e. If passcodes are turned on, select your passcode level and enter your passcode. If passcodes are turned off, you will be taken directly to the main programming page.

The programming interface will appear on the monitor screen and you will start using the joystick to enter commands.
2. Select **Actions** by guiding the joystick to move the cursor over the *Actions* menu and twisting the joystick knob.

Figure 11. ShadowTour programming page



3. Select **ShadowTours**.
4. Select a ShadowTour number.
5. Select **Program**.
6. Press and release the **set** () key on the keypad to start the ShadowTour timer.
7. Use the joystick to manually direct the camera through the desired PTZ movements

8. Press the **iris+** or **set** () key on the keypad to save the ShadowTour or press the **iris-** or **esc** key to cancel the ShadowTour. Both canceling and saving the ShadowTour returns you to the *ShadowTour* page.
9. After you have saved a ShadowTour, then you can use the features on the *ShadowTour* page to customize the tour's title. See [ShadowTours page](#) on page 49.
10. After programming your tours, you can verify shorter tours (see [Inactivity timer](#) on page 13) from within the programming interface by selecting a tour number and **Show**. View longer ShadowTours out of the programming interface by pressing the **tour** key on the keypad and the tour number.

Chapter 5 Advanced programming

This chapter provides programming instructions for customizing the dome’s programming for advanced surveillance applications. You will be using the graphical programming interface. Keypad shortcuts do exist for some programmable features (*Keypad shortcuts* on page 14), if you prefer to use them. Shortcuts can be quicker when setting a large number of preset positions, but you will use the programming interface to customize such features as exposure settings.

In this chapter:

- Confirming settings* 22
- Setup menu* 22
- Camera menu* 31
- Actions menu* 42
- Alarms menu* 60
- Control menu* 68
- System menu* 74
- Exit* 77

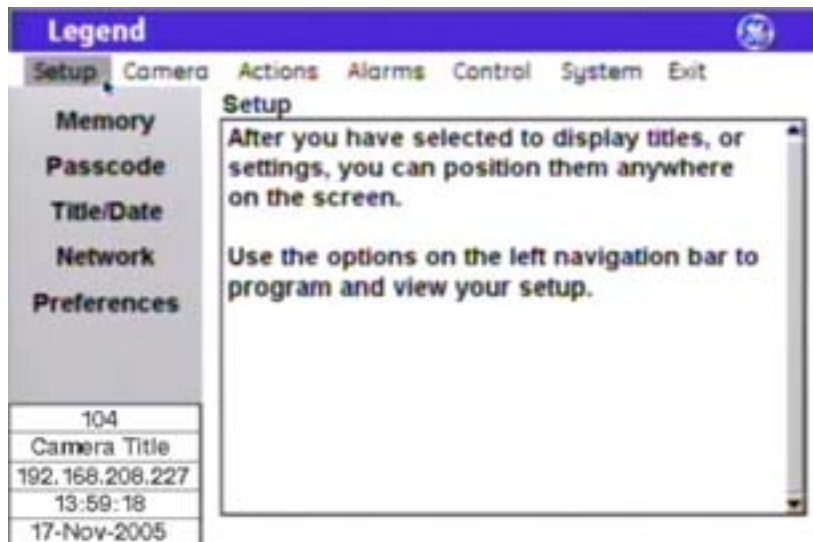
Confirming settings

When changing settings on any programming page, you need to confirm the new settings by selecting **OK** on that page. When establishing live video settings (for example, ShadowTours), you need to save the live video settings (by pressing the **iris +** or the **set** (←) key on the keypad), then save the changes made on the programming page (by selecting **OK** in the programming interface) when you return to programming mode from live video mode.

Setup menu

This is the beginning of your system's setup. Start here to title your dome, turn on/off or change passcodes, establish network connectivity, set the north point, and manage your dome's memory.

Figure 12. Setup menu



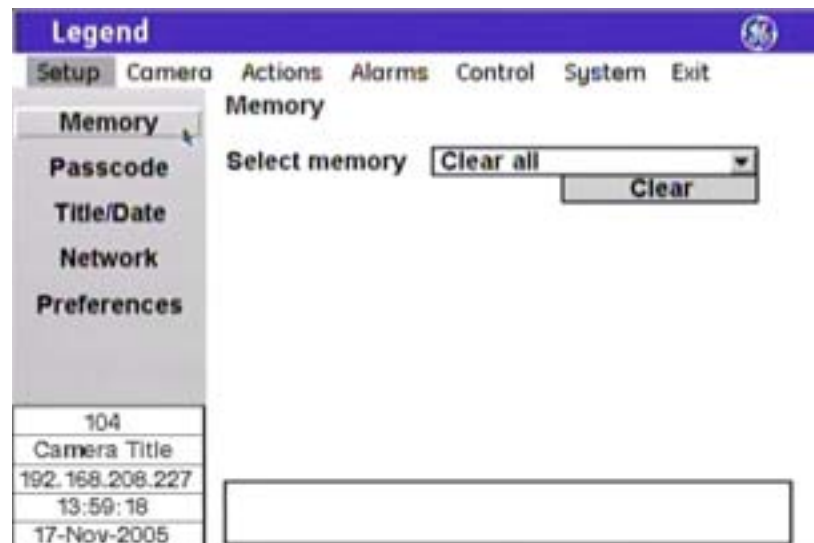
Memory page

Programming and addressing for the dome are stored to the housing. Having the memory stored in the housing allows you to replace cameras or move them between sites without having to reprogram cameras for each new site, because the camera will operate using the housing memory.

The *Memory* page allows you to manage your dome's memory during setup and operation. When you clear part or all of your dome's memory, you are overwriting your custom programmed settings with the factory default settings.

To access the *Memory* page, select **Setup** and **Memory**.

Figure 13. *Memory* page



CAUTION: Clearing memory replaces your custom programmed settings with the factory default settings.

Select memory. You can clear all or specific portions of your dome's programming, which is saved in the housing's memory. After selecting a setting, select **Clear**. Choices are Clear all (default), Clear setup options, Clear presets, Clear macros, Clear ShadowTours, Clear areas, Clear alarm actions, and Clear privacy masks.

Note: *Clear all* clears all settings, except passcodes, installation date, and network settings.

Passcode page

You can control who has access to the features of your dome by distributing passcodes that allow varying degrees of access. The dome ships with no default passcodes. When you enter the programming interface for the first time during installation and go to *Setup / Passcode*, the passcode fields are blank. Blank passcode fields mean the passcodes are turned off (disabled). You can choose to enter passcodes into the blanks. This turns passcodes on (enabled) and a passcode will be required to enter the programming interface the next time you access it.



CAUTION: If you use passcodes, record them in a secure place. If you forget the passcodes for a dome, you will need to send the dome back to the factory so that it can be reset with no passcodes.

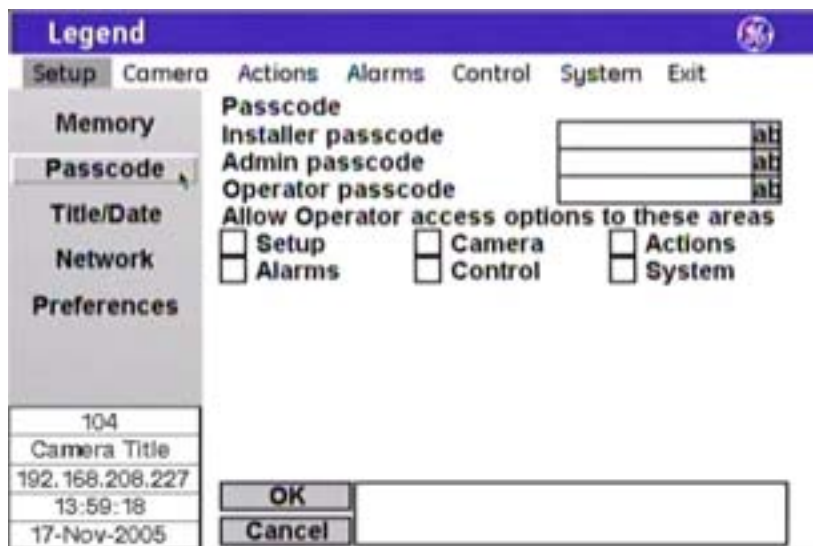
If no passcodes are programmed, all users are given installer access and are not required to log on. If only the Admin and Operator passcodes are programmed, then anyone can still access the entire programming interface as an installer, since the Installer passcode is not programmed.

You can turn on one installer passcode, one admin passcode, and one operator passcode. They have the following permissions:

- **Installer:** The installer passcode allows access to all dome features.
- **Admin:** The admin passcode allows access to all dome features, except passcodes and firmware upgrades.
- **Operator:** The operator passcode allows no access until it is granted access to specific features on an area-by-area basis.

To access the *Passcode* page, select **Setup** and **Passcode**.

Figure 14. Passcode page



Note: Remember to select **OK** to save any changes you make on the page.

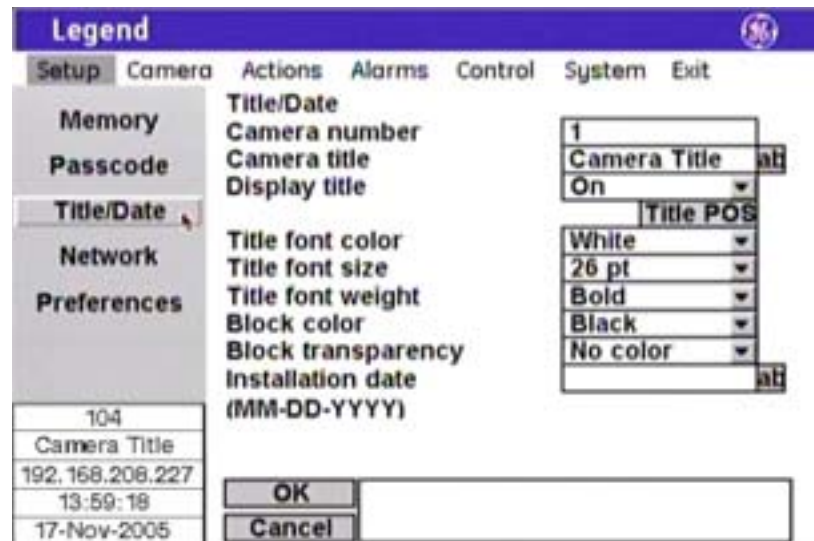
- **Installer passcode.** The *Installer passcode* feature allows the installer to operate and change all dome features, including all three default passcodes (installer, admin, and operator). There is a 4-digit limit.
- **Admin passcode.** The *Admin passcode* feature allows your system administrator to operate and change all dome features, except passcodes and firmware upgrades. There is a 4-digit limit.
- **Operator passcode.** The *Operator passcode* feature allows the operator to operate and change only those dome features that have been enabled for the operator passcode. There is a 4-digit limit.
- **Operator access options.** The *Operator access options* feature allows the installer to choose which features an operator has access to operate and change. Choices are as shown onscreen.

Title/Date page

The *Title/Date* page establishes the camera number, title, and installation date for the dome.

To access the *Title/Date* page, select **Setup** and **Title/Date**.

Figure 15. *Title/Date* page



Note: Remember to select **OK** to save any changes you make on the page.


Camera number. The programming interface reads the address number set in the camera with the rotary address switches and displays that address as the camera number. The camera number is not editable.

Camera title. The *Camera title* box allows you to give each camera a unique title. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Display title. The *Display title* feature enables or disables the display of individual camera titles on the monitor screen. Choices are On (default) and Off.

Title POS. The camera title will appear on screen in a default position on the monitor screen (upper center), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (privacy masks, presets, tours, macros, areas, and alarms) positioned.

To set the position of the camera title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or the **esc** key to cancel the new position.

Title font color. The camera title will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. The camera title will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. The camera title will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Block color. You can create a block (background) that offsets the camera title from the video behind it. The block will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.

Block transparency. You can set the block (background) to be a solid color or a transparency. The block will appear on screen in the transparency selected. Choices are as shown onscreen. Default is No color.

Installation date. Enter the actual date of installation for your camera. Include the punctuation in the format shown onscreen.

Network page

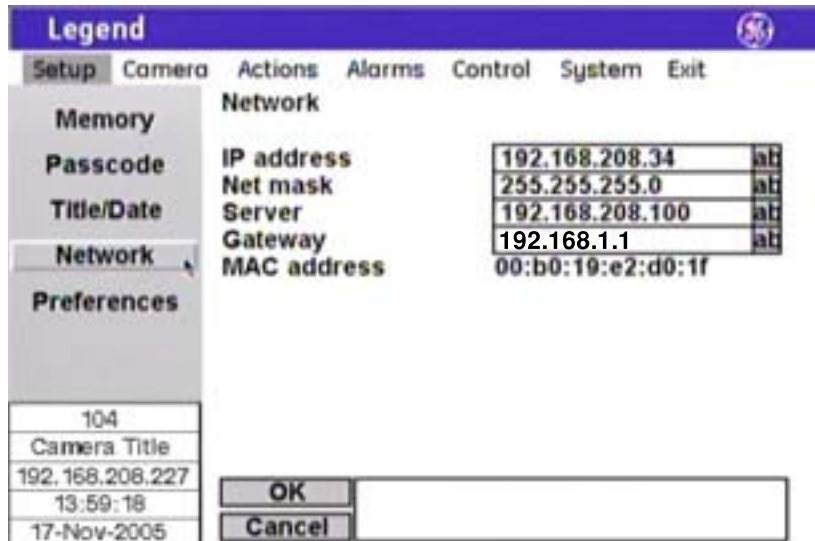
The *Network* page establishes the IP addressing for a network connection that you can use to flash software upgrades over a standard IP connection to the dome via its Ethernet connection.



CAUTION: When flashing software upgrades to the dome over a standard IP network via the dome's Ethernet connection, ensure that the network is secured from unauthorized access. Consider connecting the Ethernet cable only when you are flashing the dome, unless you have the dome connected to a secure, isolated network.

To access the *Network* page, select **Setup** and **Network**.

Figure 16. Network page



IP address. Enter the IP address of the dome.

Net mask. Enter the subnet mask address of the network subdivision that the dome is assigned to. This is assigned by your network administrator.

Server. Enter the IP address of the network server.

Gateway. Enter the address of the gateway between the dome and the network server. This is assigned by your network administrator.

MAC address. Provided as a unique hardware address for the dome, the MAC address allows you to connect to the dome before you have set up its network addressing. The MAC address is assigned at the factory. The installer establishes the overriding IP address during installation. See the above *IP address* item.

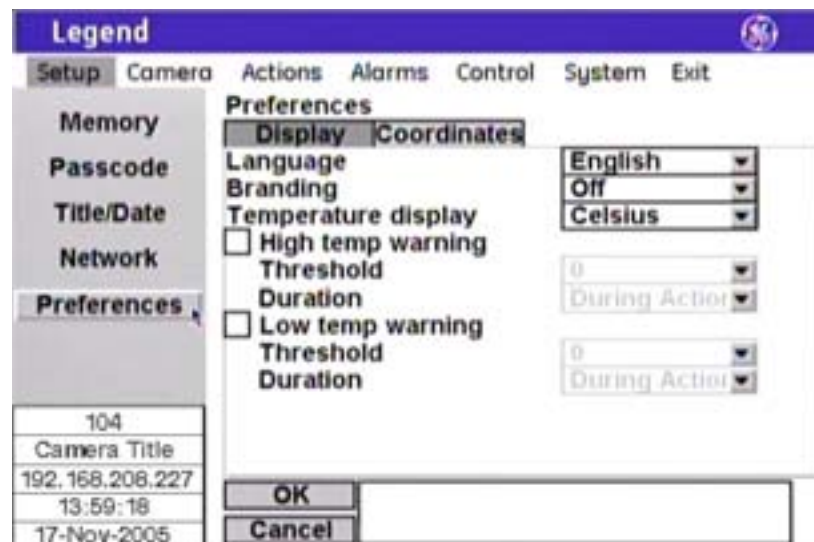
Preferences page

The *Preferences* page establishes the systemwide features of language and the display of the camera's spatial coordinates.

Display page

To access the *Display* page, select **Setup**, **Preferences**, and **Display**.

Figure 17. *Display* page



Note: Remember to select **OK** to save any changes you make on the page.

Language. The *Language* feature sets which language the programming interface uses to display its content and your entries. Choice is English.

Branding. The *Branding* feature displays GE branding during product demonstrations. Choices are Off (default) and On.

Temperature display. The *Temperature display* feature sets which unit is used to display the current operating temperature for the dome on the monitor screen. Choices are Off (default), Celsius, and Fahrenheit. If Off is selected while the high and low thresholds are being used and are exceeded, the Off selection will default to Celsius.

High temp warning. The *High temp warning* feature allows you to display a high-temperature reading on the monitor screen when the temperature in the dome has reached a set high threshold. Place a

checkmark in the checkbox to display this warning. The threshold and duration features then become available.

Threshold (high-temp). The high-temperature *Threshold* feature allows you to set the high boundary of the allowable temperature range for the dome. Choices are in 10-degree increments. Default is 0.

Duration (high-temp). The high-temperature *Duration* feature allows you to set how long the warning appears on the monitor screen. Choices are During action (default) and Indefinite.

- **During action:** Displays the temperature warning only while the temperature is above the threshold.
- **Indefinite:** Displays the temperature warning even after the temperature drops below the threshold.

Low temp warning. The *Low temp warning* feature allows you to display a low-temperature reading on the monitor screen when the temperature in the dome has reached a set low threshold. Place a checkmark in the checkbox to display this warning. The threshold and duration features then become available.

Threshold (low-temp). The low-temperature *Threshold* feature allows you to set the low boundary of the allowable temperature range for the dome. Choices are in 10-degree increments. Default is 0.

Duration (low-temp). The low-temperature *Duration* feature allows you to set how long the warning appears on the monitor screen. Choices are During action (default) and Indefinite.

- **During action:** Displays the temperature warning only while the temperature is below the threshold.
- **Indefinite:** Displays the temperature warning even after the temperature rises above the threshold.

Coordinates page

You can display the dome’s pan, tilt, or zoom coordinates on the monitor screen, if desired. You can display any or all of the coordinates. You can also choose how to display each one.

To access the *Coordinates* page, select **Setup, Preferences, and Coordinates**.

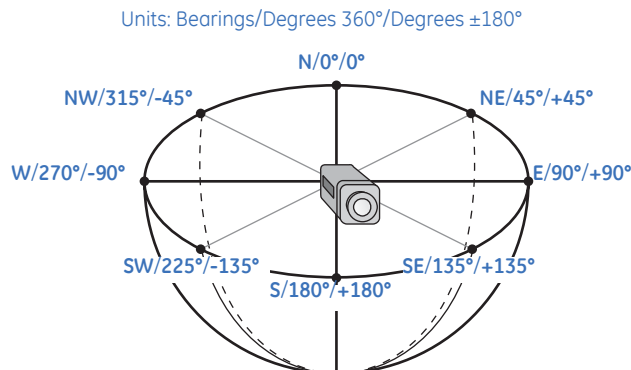
Figure 18. *Coordinates page*



Note: Remember to select **OK** to save any changes you make on the page.

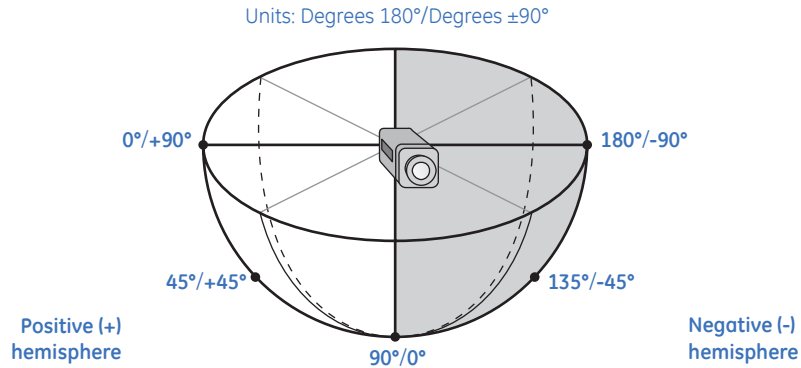
Pan. The *Pan* feature displays the pan coordinate of the dome. Choices are Off, Bearings (compass directions, such as N, NE, E), Degrees 360 (default), and Degrees \pm 180.

Figure 19. *Pan coordinates*



Tilt. The *Tilt* feature displays the tilt coordinate of the dome. Choices are Off, Degrees 180 (default), and Degrees \pm 90.

Figure 20. Tilt coordinates



Zoom. The *Zoom* feature displays the zoom coordinate of the dome. Choices are Off and Power (default).

Set north. The *Set north* button programs the north (0°) pan point for the camera.

Note: When using bearings for your pan coordinates, they are easier to interpret if you set the true due north point as the 0° point. If, however, you are using degree pan coordinates, you can set the 0° point anywhere along the scale. For example, you may want the 0° point to be a main entrance of a facility.

To program the north point:

1. Select **Set north**. The programming interface will be replaced by live video that asks you to aim the camera to the due north point.
2. At the live video screen, use the joystick to pan the camera to the desired position.
3. Press the **iris +** or the **set** (←↘) key on the keypad to save the north point or press the **iris -** or **esc** key to cancel the north point. Both canceling and saving the north point returns you to the *Coordinates* page of the *Preferences* page.

Coordinate font color. Coordinates will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Coordinate font size. Coordinates will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Coordinate font weight. Coordinates will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

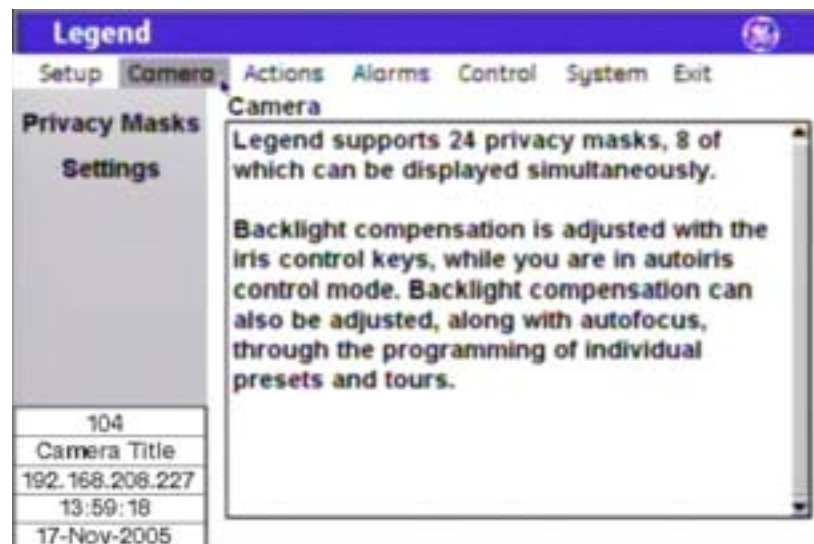
Block color. You can create a block (background) that offsets the coordinates from the video behind it. The block will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.

Block transparency. You can set the block (background) to be a solid color or a transparency. The block will appear on screen in the transparency selected. Choices are as shown. Default is No color.

Camera menu

The dome is ready to operate with its default settings. The defaults are optimized for general applications. You can customize the dome's performance for advanced applications by changing the dome's camera features in the *Camera* menu. One camera feature, however, is adjusted with the keys on your keypad. Backlight compensation is adjusted with the iris control key, while you are in auto exposure mode. Backlight compensation can also be adjusted through the programming of individual presets and tours.

Figure 21. Camera menu

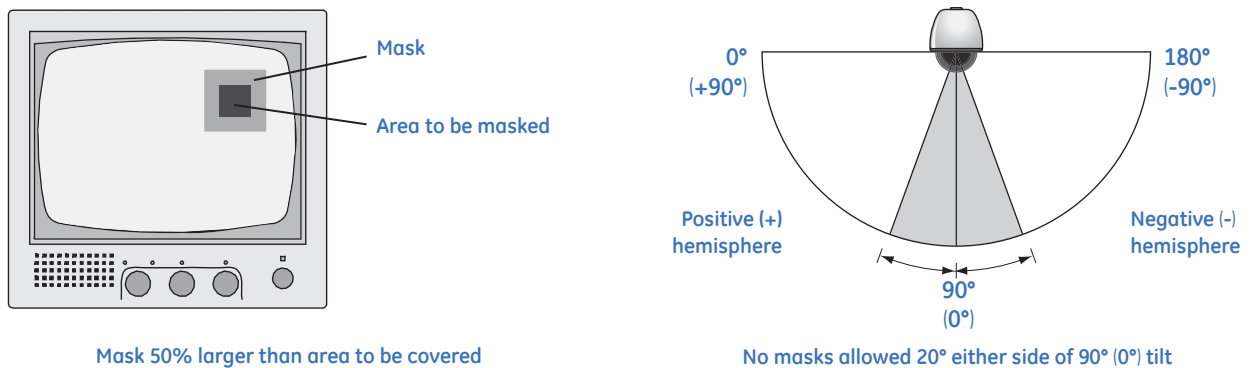


Privacy Masks page

Privacy masks let you conceal sensitive areas (such as neighboring windows) to protect them from view on the monitor screen and in the recorded video. You can create 24 privacy masks (numbered 1 to 24) per dome. A maximum of eight privacy masks can be displayed at one time.

When creating your masks, it is a common practice to make them 50% larger than the areas you wish to cover so that the masked areas remain concealed at all times. Also, be aware that masks cannot be created in the area directly below the dome. See *Figure 22*.

Figure 22. Masks should be 50% larger than the areas to be covered and are not allowed directly below the dome



To access the *Privacy Masks* page, select **Camera** and **Privacy Masks**.

Figure 23. Privacy masks page



Note: Remember to select **OK** to save any changes you make on the page.

Mask number. The *Mask number* drop-down box allows you to select the mask number that you want to program.

Mask title. The *Mask title* box allows you to give each mask a unique title. Default numerical titles are provided. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Title POS. The mask title will appear on screen in a default position on the monitor screen (upper center), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, presets, tours, macros, areas, and alarms) positioned.

To set the position of the mask title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** (←) key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.

Title font color. Individual mask titles will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. Individual mask titles will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. Individual mask titles will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Mask color. You can customize the color of each mask. Individual masks will appear on screen in the color selected. Choices are Gray (default) and Red.

Show. The *Show* button displays the mask that is currently selected. The screen will say “Privacy mask preview” in the upper left corner. Press **iris +**, **iris -**, **esc**, or **set** (←) to return to the menus.

Program. The *Program* button programs the mask. There are two screens for programming masks. The first screen positions the camera view and the second screen sizes the mask.

To program masks:

1. Select **Program** on the programming interface.
The programming interface will be replaced by live video overlaid with a grid that asks you to establish the center of the privacy mask area.
2. Use the joystick to pan, tilt, and zoom the camera to the desired view.
3. Press the **iris +** or the **set** (←) key on the keypad to save the center position of the mask or press the **iris -** or **esc** key to cancel the center position of the mask.
Canceling the camera view returns you to the *Privacy Masks* page. Saving the camera view advances you to the second mask-programming screen, which will set the mask size.
4. At the second screen (if you saved the camera view), use the joystick to adjust the height and width of the mask. Remember to make the mask 50% larger than the area you want to conceal.
Move the joystick up to increase the height, down to decrease the height, left to decrease the width, and right to increase the width.
5. Press the **iris +** or the **set** (←) key to save the mask at the set size or press the **iris -** or **esc** key to cancel the mask.
Canceling the mask returns you to the first mask-programming screen, where you reposition the camera view. Saving the mask size saves the mask at the set size and returns you to the *Privacy Masks* page.

Clear. The *Clear* button deletes the mask that is currently selected.

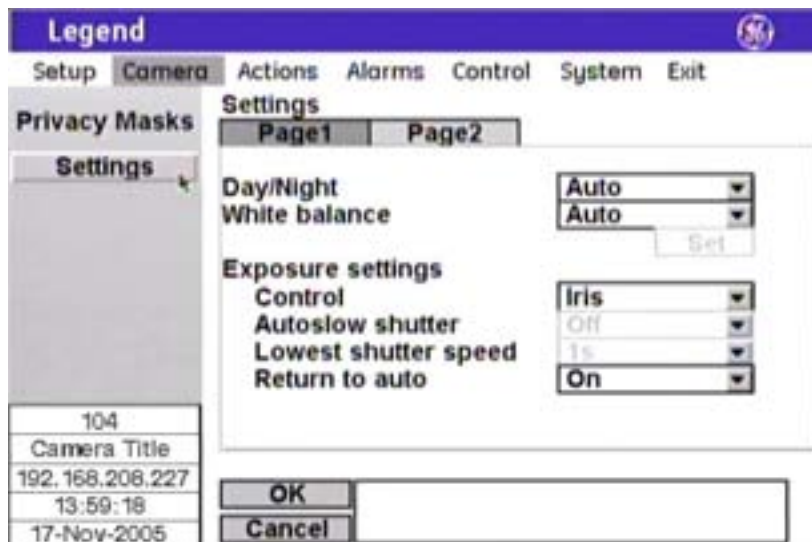
Settings page

The features on Page1 and Page2 of the *Settings* page allow you to customize the dome's performance for advanced applications.

Page1 page

To access the *Page1* page of *Settings*, select **Camera**, **Settings**, and **Page1**.

Figure 24. Page1 page



Note: Remember to select **OK** to save any changes you make on the page.

Day/Night. *Day/Night* is a camera feature that switches the camera mode from color (day) to monochrome (night) and removes the IR cut filter, which increases the camera's sensitivity in low light. It also allows the camera to function with IR lighting. Choices are Auto (default), Manual, and Off.

- **Auto:** Enables the camera to automatically switch between day (color) and night (monochrome) modes at a factory default light level. The factory default is not changeable. You can briefly override the day/night setting from a GE KTD-405 or 404 keypad. Within a few seconds, the dome will return to the mode (day or night) determined by the Auto setting.

Note: If the *Day/Night* feature's Auto setting switches between color and monochrome eight times within a minute, the Auto setting will be disabled for 30 minutes. After 30 minutes, the Auto setting will be enabled, if it is still programmed. Manual control of the *Day/Night* feature is available while the Auto setting is disabled.

The *Day/Night* feature's Auto setting works **only if** the *Exposure Control* feature is set to Auto or the *Return to auto* feature is set to On. While other features are controlling the exposure, the camera cannot use the *Day/Night* feature automatically. See *Table 5* on page 35 for the interactions between the *Day/Night* feature's Auto setting and the settings of the *Control* and *Return to auto* features.

Two conditions can prevent the camera from switching between the color and monochrome modes according to the *Day/Night* feature's Auto setting. One, if you've overridden the *Control* feature's Auto setting with manual commands from the keypad. Two, if you've called a preset (or a command containing a preset) that is programmed to override the *Control* feature's Auto setting.

In the second scenario, the camera returns to the Auto setting of the *Control* feature after you leave the preset. In the first scenario, you must issue a command to return to the Auto setting of the *Control* feature. Using the iris key on the keypad manually adjusts the camera's iris setting or shutter speed, overriding the Auto setting of the *Control* feature. You must issue a pan or tilt command from the keypad to leave the manual override and return to the Auto setting of the *Control* feature. While you remain in the manual override, the camera will not switch between the day and night modes according to the changes in the lighting conditions.

- **Manual:** Allows you to manually switch the camera between day (color) and night (monochrome) modes using a command from the controlling device (keypad, ASCII control software, etc.).
- **Off:** Allows you to disable both the automatic and manual modes. The camera cannot be switched between the day and night modes. Switching commands from the keypad are ignored. The dome remains in the mode that it was in when Off was selected.

Table 5. Interactions between the *Day/Night* Auto setting and the *Exposure Control* feature

Primary settings	Return to auto setting	Onscreen message	Interaction
Both <i>Day/Night</i> and <i>Control</i> /set to Auto.	Not available	None	Works without issue.
<i>Day/Night</i> set to Auto, but <i>Control</i> /set to Shutter, Iris, or Manual.	Off	Warning: Auto day/night mode will not function with current settings!	If <i>Return to auto</i> is set to Off, then the exposure control never attains the auto state. The <i>Day/Night</i> Auto setting will not work.
	On	Warning: Auto day/night mode will not function when exposure has not returned to auto mode.	If <i>Return to auto</i> is set to On, then the <i>Day/Night</i> Auto setting will work only if the exposure control returns to the auto state. You can return the exposure control to the auto state by sending a manual pan or tilt command from the keypad.

White balance. *White balance* is another camera feature that compensates for lighting conditions. It adjusts the quality of all of the colors in the video by balancing the colors to achieve the truest white possible for the available lighting conditions (Tungsten, fluorescent, natural). To correctly set the white balance, focus the camera on a white object. Choices are Auto (default), Indoor, Outdoor, ATW, and Manual.

- **Auto:** This mode automatically adjusts the color within the 3000 to 7500 Kelvin color temperature range.
- **Indoor:** This mode provides you with a fixed cooler color temperature setting.
- **Outdoor:** This mode provides you with a fixed warmer color temperature setting.
- **ATW** (autotracking white balance): This mode automatically adjusts the color, while the images change, within the 2000 to 10000 Kelvin color temperature range.
- **Manual:** This mode allows you to manually adjust the current blue and red settings. After selecting the Manual mode, select **Set** to access the red and blue scales.

- **Red:** This adjustment is available only if Manual white balance is selected. Settings range from 0 to 127. Default is 64.
 - Move the joystick right to increase and left to decrease the red value.
 - Press the **iris +** or the **set** (←) key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.
- **Blue:** This adjustment is available only if Manual white balance is selected. Settings range from 0 to 127. Default is 64.
 - Move the joystick up to increase and down to decrease the blue value.
 - Press the **iris +** or the **set** (←) key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.

Exposure settings. *Exposure* is a camera feature that establishes what controls the light coming into the camera through the lens. Depending on your exposure selection under *Control*, one or more of the light controlling features (*Autoslow shutter*, *Lowest shutter speed*, and *Return to auto*) will be available.

Exposure/Control. *Control* is an exposure feature that determines which exposure control setting takes priority in automatic and manual operation. Choices are Auto, Shutter, Iris (default), and Manual. See *Table 6* on page 37 and *Table 7* on page 37 for details about the exposure settings.

Exposure/Autoslow shutter. This feature is available only if the *Exposure Control* feature is set to Auto. *Autoslow shutter* is a camera feature that compensates for lighting conditions. It automatically slows the shutter speed as the light level entering the camera decreases so that more light can be gathered to increase image clarity. This feature works best when the camera is stationary. Because of the slowing shutter speed, any motion in the image will begin to blur. As the light level and the shutter speed continue to decrease, the blur of the video will gradually increase. Choices are Off (default) and On. See *Table 6* on page 37 and *Table 7* on page 37 for details about the exposure settings.

Exposure/Lowest shutter speed. This feature is available only if the *Exposure Control* feature is set to Shutter or Manual. *Lowest shutter speed* is a camera feature that sets the lowest allowable shutter speed that can be used. Choices are as shown onscreen and are different for NTSC and PAL domes. See *Table 6* on page 37 and *Table 7* on page 37 for details about the exposure settings.

Exposure/Return to auto. This feature is available for all control settings, except Auto. *Return to auto* is a camera feature that returns the dome to the Auto exposure mode when the camera is manually moved. Choices are Off and On (default). See *Table 6* on page 37 and *Table 7* on page 37 for details about the exposure settings.

Table 6. Exposure control settings

Operation	Exposure control setting			
	Auto	Shutter	Iris	Manual
Function controlled by the iris keys	Backlight compensation (iris + for on and iris - for off)	Shutter speed (sec)	Iris setting (F-stop)	First, iris setting (F-stop), until limit reached. Second, shutter speed (sec), until limit reached. Third, gain (dB).
Automatic adjustments	<ul style="list-style-type: none"> Iris setting (F-stop) Shutter speed (sec) Gain (dB) Except when the shutter speed is below 1/60 sec. NTSC or 1/50 sec. PAL.	<ul style="list-style-type: none"> Iris setting (F-stop) Gain (dB) 	<ul style="list-style-type: none"> Shutter speed (sec) Gain (dB) 	N/A
Available controls	Autoslow shutter	<ul style="list-style-type: none"> Lowest shutter speed Return to auto 	Return to auto	<ul style="list-style-type: none"> Lowest shutter speed Return to auto

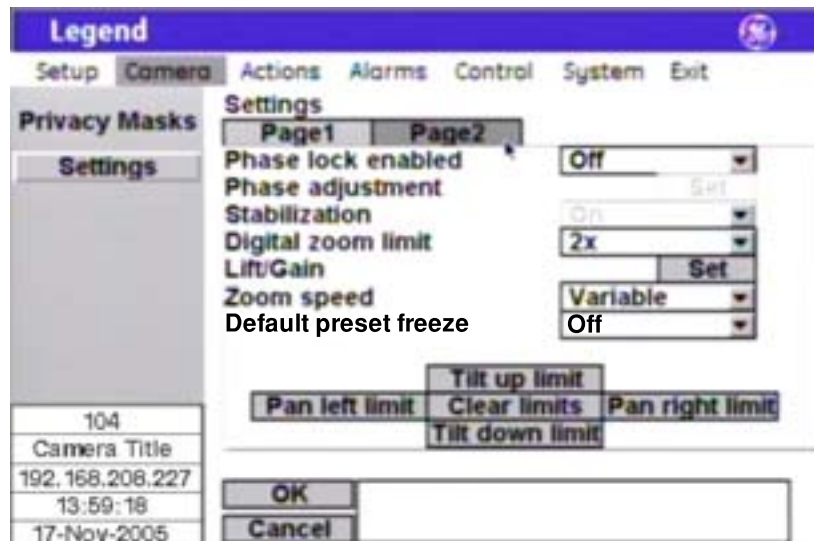
Table 7. Exposure options

Operation	Exposure option		
	Autoslow shutter	Lowest shutter speed	Return to auto
Available for which control setting	Auto	<ul style="list-style-type: none"> Shutter Manual 	<ul style="list-style-type: none"> Shutter Iris Manual
How it works	Automatically slows the shutter speed below the normal setting as needed to compensate for low-light conditions.	Sets the lowest allowable shutter speed.	Returns the dome to Auto exposure mode with any manual pan or tilt movement, thereby returning the iris toggle key to function as a control for the shutter speed, iris setting, or gain, depending on the exposure mode selected.

Page2 page

To access the *Page2* page of *Settings*, select **Camera**, **Settings**, and **Page2**.

Figure 25. Page2 page



Note: Remember to select **OK** to save any changes you make on the page.

Phase lock enabled. *Phase lock enabled* is a camera feature that allows synchronization of the video signal to reduce picture roll on analog video switchers.

By default, the phase lock is off. As such, each camera synchronizes its video signal to its own internal clock crystal. This is called internal synchronization. If you enable phase lock (select On), you are selecting what is called line lock synchronization and the camera will synchronize its video signal to the AC input voltage. With line lock synchronization, you also adjust the vertical phase shift of a camera's video signal to coordinate with other cameras. Due to differences in cameras, environments, and cable lengths, the phase shift will not be the same for all cameras being synchronized. Use an oscilloscope or a GE Security vertical phase adjustment tool (KTS-56). Contact your GE Security sales representative.

Phase adjustment. The *Phase adjustment* feature is available only if On is selected for *Phase lock enabled*. Choices range from 0 to 127°. Default is 50°. These settings map to the angle adjustment range of 0 to 360°. Use your oscilloscope or vertical phase adjustment tool to verify settings.

Stabilization. *Stabilization* is an optional camera feature that reduces video shaking for cameras that are located in areas prone to vibration. It works best for low frequency vibration (3 to 10 Hz). If it is available for your camera, it creates a slight lag and movement backward when a pan/tilt movement stops. Choices are Off and On.

Digital zoom limit. *Digital zoom limit* is an electronic camera feature that increases the apparent size of images beyond the magnification of the camera's optical lens. Because image information is not also increased, there is some loss of image resolution. So test the different settings for suitability. Selecting a digital zoom setting that is too high can result in the loss of video clarity for some scenes. To test:

Select a setting and use your keypad's zoom key to zoom in and out. Choices range from 1x to 12x (default).



CAUTION: Lift and gain compensate for long runs of video coaxial cable. Only qualified personnel should adjust these settings. Incorrect adjustments can impair video quality.

Lift. *Lift* is a camera feature that optimizes the video's color over long runs of coaxial cable. Use the joystick to adjust the lift. Right increases and left decreases the lift. Choices range from 0 to 7. Default is 0.



CAUTION: Lift and gain compensate for long runs of video coaxial cable. Only qualified personnel should adjust these settings. Incorrect adjustments can impair video quality.

Gain. *Gain* is a feature that optimizes the video's brightness over long runs of coaxial cable. Gain increases the video signal's amplitude to increase the brightness of darkened video and to reduce the noise of weakened video. Use the joystick to adjust the gain. Up increases and down decreases the gain. Choices range from 0 to 31. Default is 0.

Zoom speed. *Zoom speed* is a feature that sets the rate at which the zoom motors operate. There are three fixed settings and one variable setting. If your keypad provides variable-speed control for zooming, you can use the Variable setting and the joystick's range of motion for operation. Twist the joystick farther for faster zoom changes and less far for slower zoom changes. Choices are Variable (default), Slow, Medium, and Fast.

Note: If your keypad does not provide variable-speed control for zooming, then you must select one of the other settings. The variable setting will not work.

Default preset freeze. *Default preset freeze* is a global setting that sets a default for image freeze to Off or On. This setting works in conjunction with the *Image freeze* feature (see [Edit page](#) on page 44), which you can set to Default, Off, or On for individual presets. Be aware that the *Transition* feature (Freeze or Zoom out) must be programmed separately when presets are programmed into macros. See [Program page](#) on page 51. Choices are Off (default) and On.

Tilt up limit. *Tilt up limit* is a feature that sets a programmable stop for the camera at the highest point that you want it to tilt up. By default, the pan and tilt limits are off. Programming them turns them on.

If E-flip (see [Speeds/Tracking page](#) on page 72) is enabled (checkbox checked), constraints are placed upon the tilt limits. See [Table 8](#) on page 40 for constraints. To review tilt coordinates, see [Coordinates page](#) on page 29.

Note: The dome prevents any hourglassing behavior by restricting the tilt limit to 90°, when necessary, to accommodate some pan limits set to less than 180°. To avoid setting tilt limits too tightly, we recommend that you set the pan limits first, then set the tilt limits.

Tilt down limit. *Tilt down limit* is a feature that sets a programmable stop for the camera at the lowest point that you want it to tilt down. By default, the pan and tilt limits are off. Programming them turns them on.

If E-flip (see [Speeds/Tracking page](#) on page 72) is enabled (checkbox checked), constraints are placed upon the tilt limits. See [Table 8](#) on page 40 for constraints. To review tilt coordinates, see [Coordinates page](#) on page 29.

Note: The dome prevents any hourglassing behavior by restricting the tilt limit to 90°, when necessary, to accommodate some pan limits set to less than 180°. To avoid setting tilt limits too tightly, we recommend that you set the pan limits first, then set the tilt limits.

Pan left limit. *Pan left limit* is a feature that sets a programmable stop for the camera at the leftmost point that you want it to pan left. By default, the pan and tilt limits are off. Programming them turns them on.

Note: The dome prevents any hourglassing behavior by restricting the tilt limit to 90°, when necessary, to accommodate some pan limits set to less than 180°. To avoid setting tilt limits too tightly, we recommend that you set the pan limits first, then set the tilt limits.

Pan right limit. *Pan right limit* is a feature that sets a programmable stop for the camera at the rightmost point that you want it to pan right. By default, the pan and tilt limits are off. Programming them turns them on.

Note: The dome prevents any hourglassing behavior by restricting the tilt limit to 90°, when necessary, to accommodate some pan limits set to less than 180°. To avoid setting tilt limits too tightly, we recommend that you set the pan limits first, then set the tilt limits.

Clear limits. *Clear limits* is a feature that clears all programmable stops that have been set for the camera.

Table 8. Tilt limit constraints with E-flip enabled (arrow shows resulting tilt range)

Tilt limits set	How the limits are used	Illustration
Either the top or bottom limit is set, but not both.	The one limit becomes the top limit for both hemispheres.	
Both the top and bottom limits are set, but one in the positive hemisphere and one in the negative hemisphere.	Only the top limit is used, and it is used for both hemispheres.	

Table 8. Tilt limit constraints with E-flip enabled (arrow shows resulting tilt range)

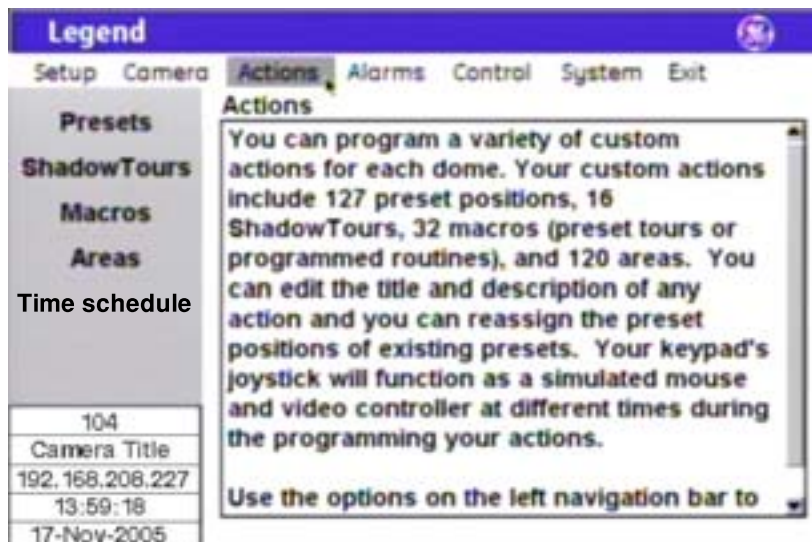
Tilt limits set	How the limits are used	Illustration
Both the top and bottom limits are set, but the top limit is set lower on the horizon than the bottom limit is.	Both limits are used, but they are reversed.	<p>Positive (+) hemisphere Negative (-) hemisphere</p> <p>0° (+90°) 180° (-90°)</p> <p>Top set (used as bottom) Bottom set (used as top)</p> <p>90° (0°)</p>
Both the top and bottom limits are set in the same hemisphere.	Both limits are used as set.	<p>Positive (+) hemisphere Negative (-) hemisphere</p> <p>0° (+90°) 180° (-90°)</p> <p>Top set (used) Bottom set (used)</p> <p>90° (0°)</p>

Actions menu

You can program a variety of custom actions for each dome. Your custom actions include 127 preset positions, 16 ShadowTours, 32 macros, and 120 areas. You can edit the title and description of any action and you can reassign the positions of existing presets.

Remember that the keypad's joystick will function as a simulated mouse or PTZ controller at different times during the programming of your actions.

Figure 26. Actions menu



Presets page

There are a total of 127 presets (1 through 127) that you can define for your dome. If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 presets that you can define.

The dome also provides the ability to remap any preset or tour command coming in from a keypad to activate any of the 127 presets, 16 tours, or 32 macro actions. This enables you to manually initiate any of the expanded capabilities of the dome from keypad controllers with limited command capability. See [Command Map page](#) on page 68.

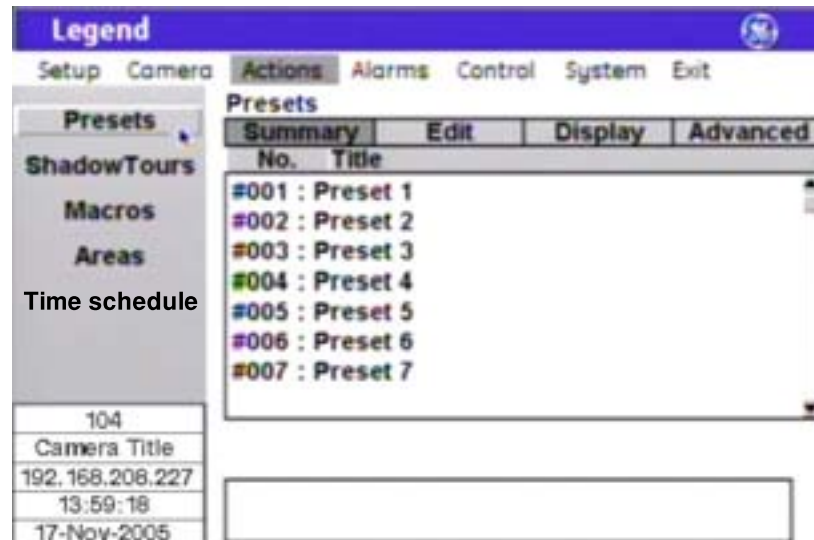
Note: Most keypads have a limited number of preset numbers they can call. If you have a GE KTD-405 keypad with firmware v1.2.09 or later, and it is operating with Impac RS-485 protocol, then you can call up all 127 preset numbers (1 through 127) directly from the keypad. If, however, you have a GE KTD-405 keypad with an earlier version of firmware, or it is operating with Digiplex RS-422 protocol, then you can use the keypad to call up only the first 63 preset numbers (1 through 63). If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 or 61 preset numbers that you can call up from the keypad. To verify your keypad's version, press and hold the **mon** key on the keypad, until the keypad beeps, then press the **>>** key.

Summary page

The summary page provides the number and title of all 127 presets (1 through 127) that are available for the dome, whether or not they are programmed or titled.

To access the *Summary* page of *Presets*, select **Actions**, **Presets**, and **Summary**.

Figure 27. Summary page



No. The *No.* column of the summary page lists all 127 presets (1 through 127) in numerical order, whether or not they are programmed.

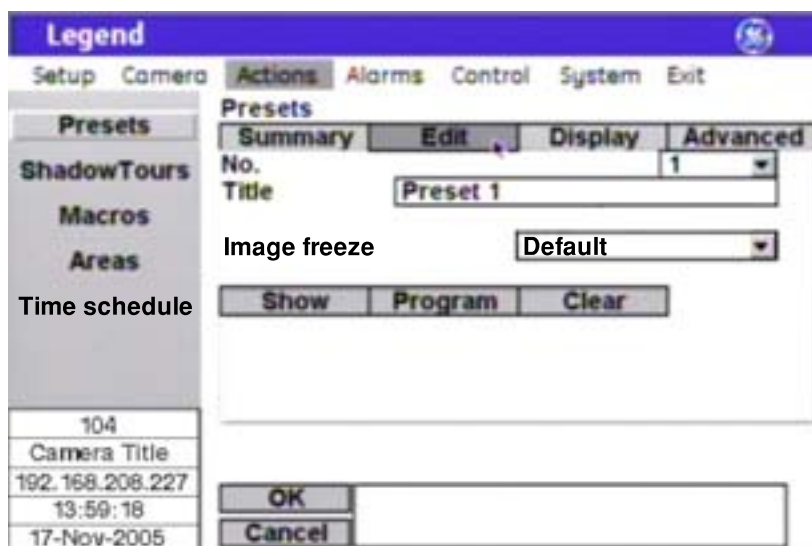
Title. The *Title* column of the summary page lists the titles of all 127 presets. The default titles are listed if they have not been retitled.

Edit page

The *Edit* page is where you program your presets. You can select any preset number, whether previously programmed with a preset position or not. You can reassign new positions to existing presets. After you have selected a number, you will select the Program button and program the preset position. After setting the position, you can use the *Display* and *Advanced* pages to program additional characteristics for the preset such as title and specific exposure modes, if needed.

To access the *Edit* page of *Presets*, select **Actions**, **Presets**, and **Edit**.

Figure 28. Edit page



Note: Remember to select **OK** to save any changes you make on the page.

No. The *No.* drop-down box allows you to select the preset number that you want to program or reprogram.

Title. The *Title* box shows you the existing title for the selected preset number. You can customize the default title on the *Display* page.

Image freeze. The *Image freeze* feature enables or disables image freeze, or uses a default freeze setting, for displaying the video on the monitor screen as the camera travels between presets.

Selecting On (enabling *Image freeze*) sets the camera to freeze the last image while the camera is moving. A static image will show on the monitor screen until the camera stops. Selecting Off (disabling *Image freeze*) sets the camera to zoom out as it is moving and to zoom in when it arrives at its destination. Selecting Default uses the setting selected for the *Default preset freeze* feature under *Camera | Settings | Page2* (see [Page2 page](#) on page 38).

Be aware that the *Transition* feature (Freeze or Zoom out) must be programmed separately when presets are programmed into macros. See [Program page](#) on page 51. Choices are Default, Off (default), and On.

Show. The *Show* button displays the preset that is currently selected. The screen will say “Show preset” in the upper left corner. Press **iris +/-**, **esc**, or **set** (←) to return to the menus.

Program. The *Program* button programs the preset. There is one screen for programming presets.

To program a preset:

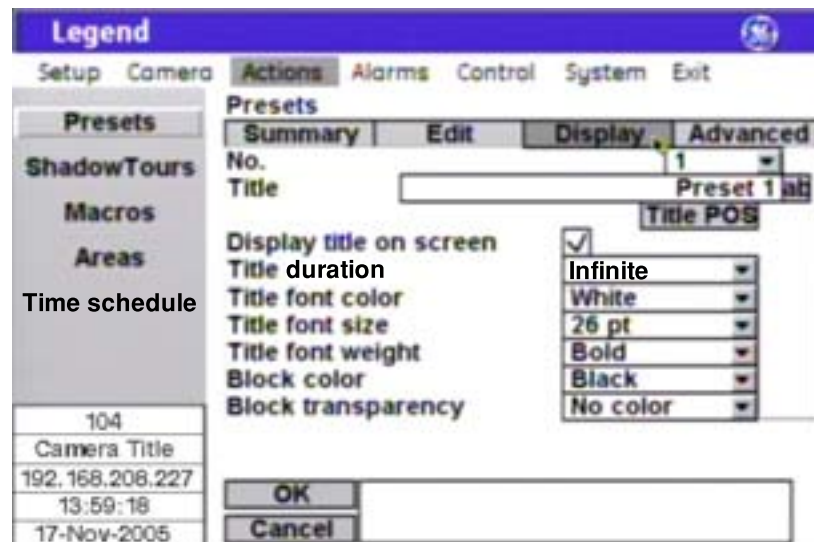
1. Select **Program**. The programming interface will be replaced by live video that asks you to set the desired position for the preset.
2. At the live video screen, use the joystick to pan, tilt, and zoom the camera to the desired position.
3. Press the **iris +** or the **set** (←) key on the keypad to save the preset position or press the **iris -** or **esc** key to cancel the preset position. Both canceling and saving the preset position returns you to the *Edit* page of the *Presets* page.

Clear. The *Clear* button deletes the preset that is currently selected.

Display page

To access the *Display* page of *Presets*, select **Actions**, **Presets**, and **Display**.

Figure 29. Display page



Note: Remember to select **OK** to save any changes you make on the page.


No. The *No.* drop-down box allows you to select the preset number that you want to program.

Title. The *Title* box allows you to give each preset a unique title. Default numerical titles are provided. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Title POS. The preset title will appear on screen in a default position on the monitor screen (bottom center), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, privacy masks, tours, macros, areas, and alarms) positioned.

To set the position of the preset title:

1. Select **Title POS**.

2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.

Display title on screen. The *Display title on screen* feature sets the preset title to appear on the monitor screen, if checked. Choices are checked (default) and unchecked.

Title duration. The *Title duration* feature defines how long the preset title appears on the monitor screen. Choices are Infinite (default) and 5 to 120 seconds in 5-second increments.

Title font color. The preset title will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. The preset title will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. The preset title will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Block color. You can create a block (background) that offsets the preset title from the video behind it. The block will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.

Block transparency. You can set the block (background) to be a solid color or a transparency. The block will appear on screen in the transparency selected. Choices are as shown onscreen. Default is No color.

Advanced page

The *Advanced* page of the *Presets* page (under the *Actions* menu) allows you to change a camera's feature settings for individual presets.

To access the *Advanced* page of *Presets*, select **Actions**, **Presets**, and **Advanced**.

Figure 30. Advanced page



Note: Remember to select **OK** to save any changes you make on the page.

No. The *No.* drop-down box allows you to select the preset number that you want to program.

Title. The *Title* box shows you the existing title for the selected preset number. You can customize the default title on the *Display* page.

Use custom camera state for preset. The *Use custom camera state for preset* feature overrides the settings that were set for the camera's normal operation under *Camera | Settings*, if checked. You must check this feature to make the other features on this page available.



Night mode. For individual presets, you can use the *Night mode* feature to change the camera's *Day/Night* setting. See [Page 1 page](#) on page 34 for details about the *Day/Night* feature and its interactions with the *Exposure* feature settings. Choices are Off (default) and On.

When you turn on the *Night mode* feature, you are telling the camera to override the normal *Day/Night* operating setting as follows:


- **Auto:** If the *Day/Night* feature is set to Auto under *Camera | Settings*, then the *Night mode* feature will use the *Day/Night* setting customized for the preset for 5 to 10 seconds. After 5 to 10 seconds, the camera will revert to the normal operating setting and adjust for the current light conditions.
- **Manual:** If the *Day/Night* feature is set to Manual under *Camera | Settings*, then the *Night mode* feature will use the *Day/Night* setting customized for the preset until the preset is left. After the preset is left, the camera will revert to the *Day/Night* setting that it was using before the preset was called.
- **Disabled:** If the *Day/Night* feature is set to Manual under *Camera | Settings*, then the *Night mode* feature will do nothing.


Backlight. For individual presets, you can change the camera's *Backlight compensation* setting. *Backlight compensation* is a feature that illuminates the display so that the foreground appears sharper in contrast with the background. Choices are Off (default) and On.

White balance. For individual presets, you can use this *White balance* feature to change the camera's *White balance* setting. *White balance* is the feature that compensates for lighting conditions. See [Page 1 page](#) on page 34. Choices are Auto (default), Indoor, Outdoor, ATW, and Manual.

- **Auto:** This mode automatically adjusts the color within the 3000 to 7500 Kelvin color temperature range.
- **Indoor:** This mode provides you with a fixed cooler color temperature setting.
- **Outdoor:** This mode provides you with a fixed warmer color temperature setting.
- **ATW** (autotracking white balance): This mode automatically adjusts the color, while the images changes, within the 2000 to 10000 Kelvin color temperature range.
- **Manual:** This mode allows you to manually adjust the current blue and red settings. After selecting the Manual setting, select **Set** to access the red and blue scales.
 - **Red:** This adjustment is available only if Manual white balance is selected. Settings range from 0 to 127. Default is 64.
 - Move the joystick right to increase and left to decrease the red value.
 - Press the **iris +** or the **set** () key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.
 - **Blue:** This adjustment is available only if Manual white balance is selected. Settings range from 0 to 127. Default is 64.
 - Move the joystick up to increase and down to decrease the blue value.
 - Press the **iris +** or the **set** () key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.

Exposure. For individual presets, you can use this *Exposure Control* feature to change the camera's *Exposure* setting. See [Page 1 page](#) on page 34 for details about the *Exposure* features. Choices are Auto (default), Shutter, Iris, and Manual.

- **Auto:** Selecting this setting makes the camera determine what features (iris aperture, gain, shutter speed, or combination thereof) control the incoming light. You will not be able to set values for iris, gain, or shutter speed.
- **Shutter:** The shutter speed controls the length of time that the aperture is open to let light into the camera through the lens. You will not be able to set values for iris or gain. The choices for shutter speed are as shown onscreen.
- Use the **zoom +/-** key on the keypad to scroll through the choices, then press the **iris +** or the **set** () key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.
- **Iris:** The iris F-stop controls the size of the aperture that lets light into the camera through the lens. You will not be able to set values for gain or shutter speed. The choices for iris F-stop are as shown onscreen.

Use the **zoom +/-** key on the keypad to scroll through the choices, then press the **iris +** or the **set** () key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.

- **Manual:** You control the light coming into the camera through the lens by setting specific values for iris, gain, and shutter speed. The choices are as shown onscreen. After selecting the Manual setting, select **Set** to access each shutter, iris, and gain controls. The choices for each are as shown onscreen.

Use the **zoom +/-** key on the keypad to scroll through the choices, then press the **iris +** or the **set** (←) key on the keypad to save the changed value or press the **iris -** or **esc** key to cancel the changed value.

ShadowTours page

You have a total of 16 ShadowTours (totaling 20 minutes) that you can define for the dome.

To access the *ShadowTours* page, select **Actions** and **ShadowTours**.

Figure 31. *ShadowTours* page



Note: Remember to select **OK** to save any changes you make on the page.


No. The *No.* drop-down box allows you to select the ShadowTour number that you want to program.

Title. The *Title* box allows you to give each ShadowTour a unique title. Default numerical titles are provided. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Title POS. The ShadowTour title will appear on screen in a default position on the monitor screen (center, above the macro title default position), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, privacy masks, presets, macros, areas, and alarms) positioned.

To set the position of the preset title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.

3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.


Title font color. The ShadowTour title will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. The ShadowTour title will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. The ShadowTour title will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Block color. You can create a block (background) that offsets the ShadowTour title from the video behind it. The block will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.



Block transparency. You can set the block (background) to be a solid color or a transparency. The block will appear on screen in the transparency selected. Choices are as shown onscreen. Default is No color.

Show. The *Show* button displays the ShadowTour that is currently selected. Press **iris +**, **esc**, or **set** () to return to the menus.

Note: If your ShadowTour is longer than the inactivity timer of the keypad or the programming interface, you may not see the entire tour, unless you exit the programming interface and view the ShadowTour from the video screen. See [Inactivity timer](#) on page 13.

Program. The *Program* button programs the ShadowTour.

To program a ShadowTour:

1. Select **Program**. The programming interface will be replaced by live video.
2. At the live video screen, use the joystick to pan, tilt, and zoom the camera to the desired starting point of the ShadowTour.
3. Press the **iris +** or the **set** () key on the keypad to start the timer for the ShadowTour.
4. Use the joystick to pan, tilt, and zoom the camera through the desired views.
5. Press the **iris +** or the **set** () key on the keypad to stop the timer and save the ShadowTour, or press the **iris -** or **esc** key to cancel the ShadowTour.

Clear. The *Clear* button deletes the ShadowTour that is currently selected.

Macros page

You can program 32 macros per dome. Each macro can contain up to 16 steps. Each step can contain a preset, ShadowTour, relay action, jump command, or macro command. These are the step types. The step type determines what additional features are available for programming.

Program page

Select a macro (1 through 32), and if no steps already exist, select **Append** to add the first step and make the other programming features available.

To access the *Program* page of *Macros*, select **Actions**, **Macros**, and **Program**.

Figure 32. Program page



Note: Remember to select **OK** to save any changes you make on the page.

No. The *No.* drop-down box allows you to select the macro number that you want to program.

Title. The *Title* box shows you the existing title for the selected macro number. You can customize the default title on the *Display* page.

Macro list. The macro list (step, type, no., speed, zoom, and duration) shows the defined steps for the macro in sequential order. You can use the buttons and drop-down boxes located below the summary to add, delete, move up, or move down individual steps. The **Append** button adds steps.

Step. The *Step* box selects the step number you want to program. If no steps already exist, you must select **Append** to add the first step and make the other programming features available.

Type. The *Type* box selects the action for the selected step. It determines what additional features appear (are available) for programming. Choices are Preset (default), Tour, Macro, Relay, and Jump (jumps to a prior step).

Type #. The *Type #* feature selects which of the group defined by the Type selection (for example, presets) is to be assigned to the step. The type number changes its name depending on the type selected under Type (Preset, Tour, Macro, Relay, or Jump).

Repeats. The *# Repeats* feature appears if the Jump type is selected and allows you to repeat a jump step up to 49 times.

Speed. The *Speed* feature appears if the Preset or Tour type is selected and allows you to set how fast the camera will move to the preset step or to the start position of a tour. Choices are Slow, Medium, Fast, and Max.

Transition. The *Transition* feature appears if the Preset or Tour type is selected and allows you to set how the video will be seen on the monitor screen between presets or tours. Choices are Freeze (default) and Zoom out.

- **Freeze:** Selecting this setting freezes the last image on the monitor screen while the camera is moving. A static image will show on the monitor screen until the camera stops.
- **Zoom out:** Selecting this setting zooms the camera out before it moves, remains zoomed out during travel, and reestablishes the set zoom when it arrives at its destination.

Duration. The *Duration* feature defines how long the action for the step continues.

- For *presets*, the duration is the dwell time that the camera remains at a preset before continuing on to the next macro step. Choices are 1 to 60 seconds in 1-second increments.
- For *relays*, the duration is a timer for the relay action. The next macro step is immediately performed after the relay timer runs out. Choices are Infinite (default) and seconds (5 to 120 in 5-second increments).

Energize. The *Energize* feature appears if the Relay type is selected and, if checked, sets the relay to its energized state. Which is closed for a normally open connection and open for a normally closed connection.

Display title. The *Display title* feature sets the macro title to appear on the monitor screen, if checked.

Append. The *Append* button adds one step to the bottom of the list of macro steps.

Remove. The *Remove* button deletes the currently selected step.

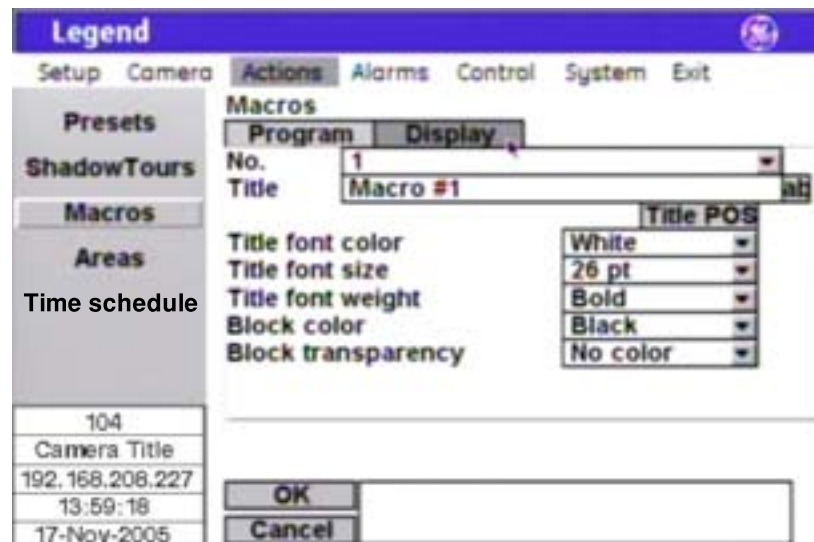
Move up. The *Move up* button moves the currently selected step up one step number in the macro sequence each time it is selected.

Move down. The *Move down* button moves the currently selected step down one step number in the macro sequence each time it is selected.

Display page

To access the *Display* page of *Macros*, select **Actions**, **Macros**, and **Display**.

Figure 33. *Display* page




Note: Remember to select **OK** to save any changes you make on the page.

No. The *No.* drop-down box allows you to select the macro number that you want to program.

Title. The *Title* box allows you to give each macro a unique title. Default numerical titles are provided. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Title POS. The macro title will appear on screen in a default position on the monitor screen (center, below the tour title default position), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, privacy masks, presets, tours, areas, and alarms) positioned.

To set the position of the macro title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.

Title font color. The macro title will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. The macro title will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. The macro title will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Block color. You can create a block (background) that offsets the ShadowTour title from the video behind it. The block will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.

Block transparency. You can set the block (background) to be a solid color or a transparency. The block will appear on screen in the transparency selected. Choices are as shown onscreen. Default is No color.

Areas page

Areas are used primarily to provide onscreen titles of camera views. They can also serve to conceal sensitive areas like privacy masks do. When using areas to conceal sensitive areas, they replace the entire video image with a blue screen, whereas privacy masks cover only a portion of the video displayed. As with privacy masks, areas are triggered by the camera passing through a defined center point. You can create 120 areas.

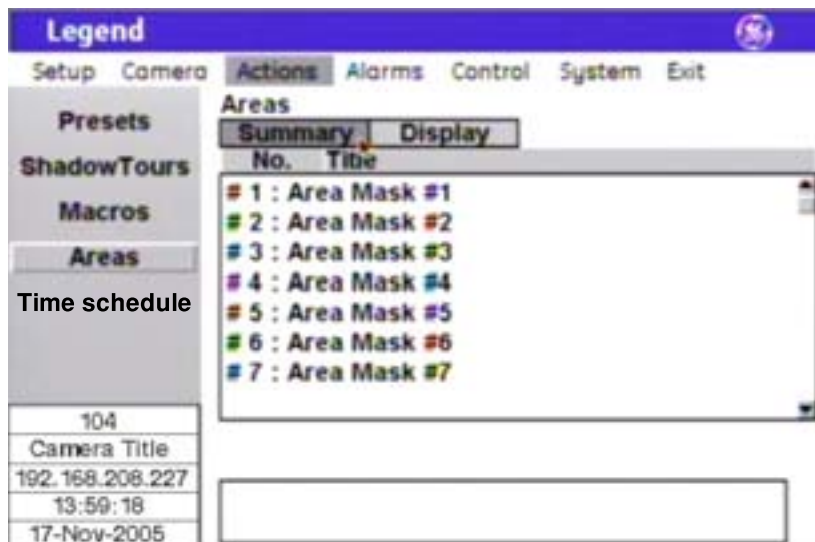
When creating your areas, be aware that they are triggered by their center viewpoint. Therefore, it is a common practice to make areas twice the size of the area that you wish to conceal so that the areas are properly triggered when the camera enters the trigger zone.

Summary page

The summary page provides the number and title of all areas that are programmed for the dome.

To access the *Summary* page of *Areas*, select **Actions**, **Areas**, and **Summary**.

Figure 34. Summary page



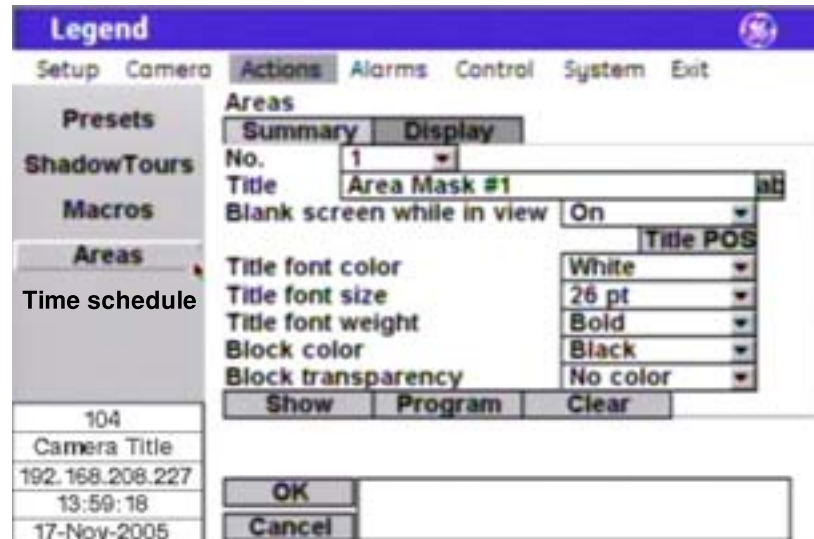
No. The *No.* column of the summary page lists all 120 areas in numerical order, whether programmed or not.

Title. The *Title* column of the summary page lists the titles of all 120 areas. The default titles are listed if they have not been retitled.

Display page

To access the *Display* page of *Areas*, select **Actions**, **Areas**, and **Display**.

Figure 35. *Display page*



Note: Remember to select **OK** to save any changes you make on the page.

No. The *No.* drop-down box allows you to select the area number that you want to program.


Title. The *Title* box allows you to give each area a unique title. Default numerical titles are provided.

There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Blank screen while in view. The *Blank screen while in view* feature replaces the video of a selected area with a blue screen. Choices are On (default) and Off. When on, the video is replaced with a blue screen and title when the camera enters the masked area. When off, the video is not blanked, but an area title appears in an area that is programmed.

Title POS. The area title will appear on the monitor screen in a default position (upper center), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, privacy masks, presets, tours, macros, and alarms) positioned.

To set the position of the macro title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.


Title font color. Individual area titles will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Title font size. Individual area titles will appear on screen in the font size selected. Choices are as shown onscreen. Default is 14 pt.

Title font weight. Individual area titles will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.



Block color. You can create a block (background) that offsets the title from the video behind it. Individual area blocks will appear on screen in the color selected. Choices are as shown onscreen. Default is Black.

Block transparency. You can set the block (background) to be a solid color or a transparency. Individual area blocks will appear on screen in the transparency selected. Choices are as shown onscreen. Default is No color.

Show. The *Show* button displays the area that is currently selected. Press **iris +**, **esc**, or **set** () to return to the menus.

Program. The *Program* button programs the area. There are two screens for programming areas.

To program an area:

1. Select **Program**. The programming interface will be replaced by live video overlaid with a grid that asks you to establish the upper left corner of the area.
2. At the first screen (live video), use the joystick to pan, tilt, and zoom the center of the grid to the upper left corner of the desired view.
3. Press the **iris +** or the **set** () key on the keypad to save the upper left corner position or press the **iris -** or **esc** key on the keypad to cancel it. Canceling the position returns you to the *Display* page of the *Areas* page. Accepting the position advances you to the second area-programming screen.
4. At the second screen, use the joystick to pan, tilt, and zoom the center of the grid to the lower right corner of the desired view.
5. Press the **iris +** or the **set** () key on the keypad to save the lower right corner position or press the **iris -** or **esc** key on the keypad to cancel it. Canceling the position returns you to the first area-programming screen, where you reposition the camera view. Accepting the position returns you to the *Display* page.

Clear. The *Clear* button deletes the area that is currently selected.

Time schedule page

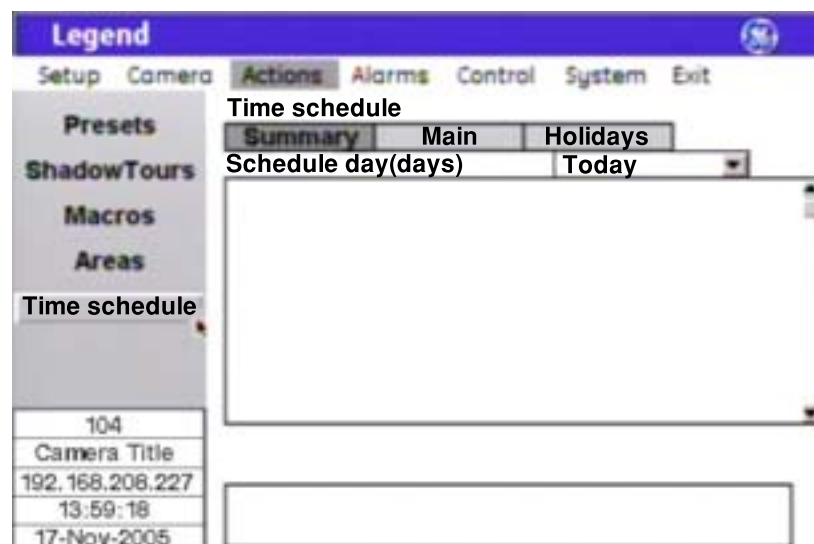
You can program 64 schedules per dome. Time scheduling automatically drives your cameras for expected events, like scheduled deliveries, shift changes, and the opening and closing of malls and schools. You schedule individual domes to automatically initiate presets, ShadowTours, or macros toward specific entry and exit points on any recurring day so that your operators can keep their attention on surveying and other activities.

Legend domes need to synchronize once every 24 hours for the time schedules to operate. Therefore, you must install time synchronization equipment if you want to use time schedules. If you need recommendations for time synchronization equipment, contact your GE sales representative or Technical Support.

Summary page

To access the *Summary* page of *Time schedule*, select **Actions**, **Time schedule**, and **Summary**.

Figure 36. Summary page



Schedule days. The *Schedule days* drop-down box allows you to select which schedule summary you wish to view. Choices are Today (default), Daily, Weekdays, Weekends, Holidays, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.

Schedule list. The schedule list shows the schedules that are programmed in sequential order (1 through 64) with recurrence, action, and time.

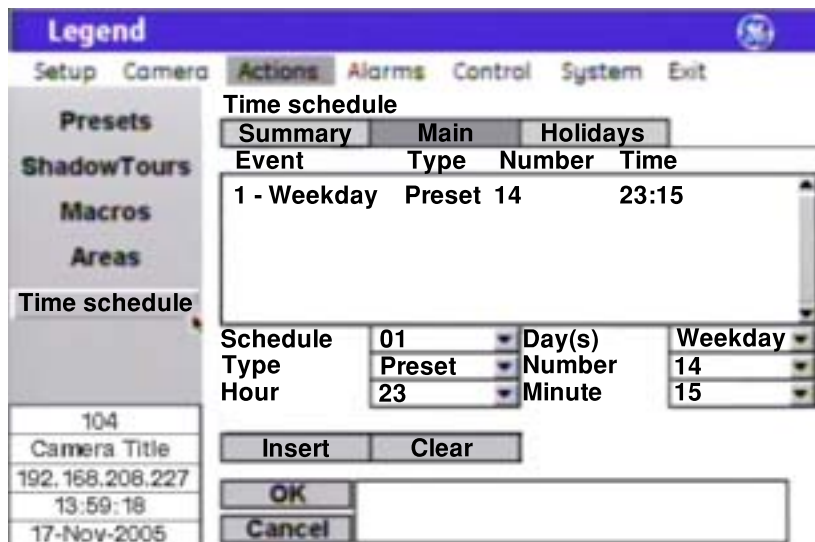
Main page

The *Main* page schedules automatic dome actions that coordinate with regular day-to-day activities, while the *Holidays* page schedules exceptions to those regularly scheduled dome actions.

Select a schedule (1 through 64), and if no event already exists, select **Insert** to add an event and reveal the programming features.

To access the *Main* page of *Time schedule*, select **Actions**, **Time schedule**, and **Main**.

Figure 37. Main page



Note: Remember to select **OK** to save any changes you make on the page.

Schedule list. The schedule list shows the schedules that are programmed in sequential order (1 through 64) with recurrence, action, and time.

Schedule. The *Schedule* feature selects the schedule number you want to program. Choices are 1 through 64.

Days. The *Days* feature selects the recurrence of the scheduled action. Choices are Daily (default), Weekdays, Weekends, Holidays, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.

Type. The *Type* feature selects the action to recur. Choices are Preset (default), Macro, ShadowTour, and Autopan.

Number. The *Number* feature selects which member of the action group (preset, macro, or ShadowTour) is to recur, if Autopan is not selected as the *Type*. The choices are based on the selected *Type*.

Hour. The *Hour* feature selects the hour in a 24-hour day (0 through 23) that the schedule is to be initiated. Also see the *Minute* feature.

Minute. The *Minute* feature selects the minute (00 through 59) during the hour that the schedule is to be initiated.

Insert. The *Insert* button adds one schedule to the bottom of the list of schedules. Until you change the selected schedule number, changes to page features will be applied to the last step inserted.

Clear. The *Clear* button deletes the schedule that is currently selected with the *Schedule* feature.

Holidays page

The *Holidays* page schedules exceptions to the regularly scheduled dome actions, while the *Main* page schedules the automatic dome actions that coordinate with regular day-to-day activities. On the days that holiday exceptions are programmed, the actions that are regularly scheduled will be superseded by the holiday action.

To access the *Holidays* page of *Time schedule*, select **Actions**, **Time schedule**, and **Holidays**.

Figure 38. Main page



Note: Remember to select **OK** to save any changes you make on the page.

Holiday list. The holiday list shows the dates that are programmed as exceptions to the programmed schedules.

Holiday. The *Holiday* feature allows you to specify calendar dates for individual holidays. Select the month, day, and year, then select the **Insert** button.

Insert. The *Insert* button adds the holiday that is currently selected by the month, day, and year drop-down boxes to the list of holidays. Holidays are added to the bottom of the list.

Erase. The *Erase* button deletes the holiday that is currently selected by the month, day, and year drop-down boxes.

Clear all. The *Clear all* button deletes all of the holidays.

Alarms menu

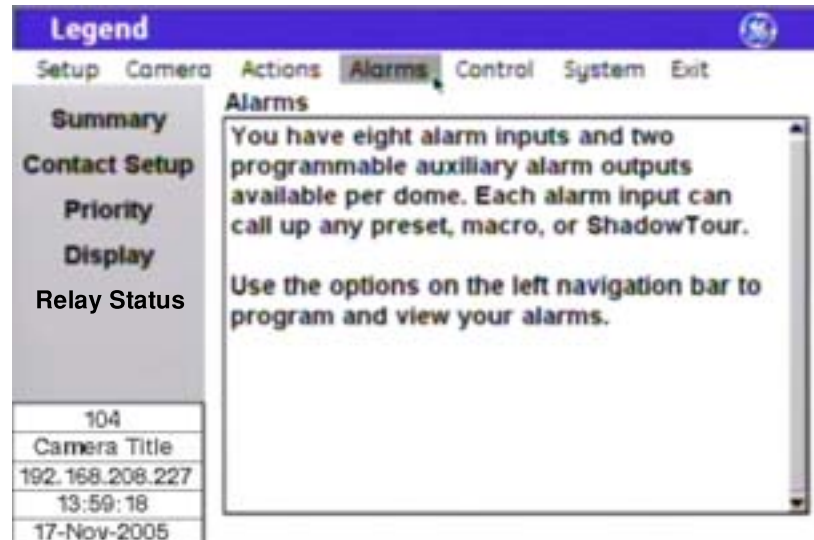
You can program up to eight alarm inputs and two relay outputs per dome. Each alarm input can call up any preset, macro (preset tour or programmed routine), or ShadowTour. The eight alarms are numbered from 1 to 8.

Programming tips for dome alarms

Legend domes do not handle alarms the same way as most other alarm equipment. You need to be aware of the differences to manage the dome's inputs and outputs effectively. Here are some key concepts.

- You can set each alarm to have up to three components: a dome action (preset, tour, or macro), a relay 1 action (on or off), and a relay 2 action (on or off). The relays can be used to trip such devices as lights, doors, or alarm inputs on other devices. A dome action is not required. You could have an alarm action one or both relays. An alarm with no action or relay settings does not affect dome operation.
- The priority that you set for the alarms determines which one is actioned.
- When an alarm action is set to a preset, tour, or macro, the camera will remain with that action until the operator issues another camera command from the keypad. The *Resume* feature is disabled by alarms.
- Alarms are not held in a queue. Only the highest priority alarm that is activated is actioned. If several alarms are activated at the same time, then the one with the highest priority is actioned. After that alarm has finished, the next highest priority alarm will be actioned **only if** it is still active. If a higher priority alarm is activated while a lower priority alarm is being actioned, then the higher priority alarm overrides the lower priority alarm and is actioned instead. After the higher priority alarm has finished being actioned, then the lower priority alarm will have its action restarted. **But only if** it is still active.
- You do not need to acknowledge dome alarms in the same sense as required by typical alarm equipment. To move the camera from the position of the alarmed action and reenable the *Resume* feature, however, you do need to issue a command from the keypad.
- Faulty dome alarms cannot be shunted. If you cannot readily repair the alarm wiring and/or contact of a faulty dome alarm, you can lower its priority and program the alarm box to display only the highest priority alarms, or you can reprogram the faulty alarm with no action or relays.
- The only time you need to “clear” a relay state is when you have set a relay with the Infinite duration.
- If you have a relay set to the Infinite duration, you can clear it one of three ways. One, you can manually clear it by selecting a **Relay Off** button on the *Relay State* page. Two, you can automatically clear it by using another programmed alarm number that sets that relay with a duration of at least five seconds. And three, you can clear it with a remapped preset command that activates a macro from the keypad. To remap preset commands, see [Command Map page](#) on page 68. An example of the second scenario would be Alarm 1 being used with a badge reader to open a door and Alarm 2 being used with a PIR on the other side of the door to lock the door. Alarm 1 would energize a relay with an infinite duration to open the electronic door lock and Alarm 2 would deenergize the relay with at least a five-second duration to close the electronic door lock.
- If you select the **Relay 1 on** or the **Relay 2 on** button on the *Relay Status* page, and select **OK**, then you are programming the dome to activate either or both of these relays each time the dome is powered up. The relay action becomes a default.
- Even though you can create an alarm block title and alarm titles that are up to 60 characters, we suggest limiting titles to 15 characters to reduce the size of the video obstruction.

Figure 39. Alarms menu



Summary page

You can view the status of alarms from the summary page. Alarms are presented in numerical order with whatever titles have been assigned. Statuses are as follows:

- **On:** Status shows as On if the contact for the alarm is in its active state. So, for a NO (normally open) contact that is closed, the status reports as on, because it is in its activated, abnormal state.
- **Off:** Status shows as Off if the contact for the alarm is in its inactive state. So, for a NC (normally closed) contact that is closed, the status reports as off, because it is in its normal state.

Upon initial installation, all alarm contacts are NO. All changes will refresh immediately.

To access the *Summary* page of *Alarms*, select **Alarms** and **Summary**.

Figure 40. Summary page

No.	Title	Status
# 1 :	Alarm 1	Off
# 2 :	Alarm 2	Off
# 3 :	Alarm 3	Off
# 4 :	Alarm 4	Off
# 5 :	Alarm 5	Off
# 6 :	Alarm 6	Off
# 7 :	Alarm 7	Off
# 8 :	Alarm 8	Off

104
Camera Title
192.168.208.227
13:59:18
17-Nov-2005

- No.** The *No.* column of the summary page lists all alarms in numerical order, whether programmed or not. The eight alarms are numbered from 1 to 8.
- Title.** The *Title* column of the summary page lists the titles for all available alarms, whether programmed or not.
- Status.** The *Status* column of the summary page lists the status of each programmed alarm as either on (active) or off (inactive).

Contact Setup page

The *Contact Setup* page is where you define the individual alarms. For tips, see *Programming tips for dome alarms* on page 60.

To access the *Contact Setup* page of *Alarms*, select **Alarms** and **Contact Setup**.

Figure 41. Contact Setup page

Legend	
Setup	Camera
Alarms	Control
System	Exit

Summary	Contact Setup
Contact Setup	Contact no.
Priority	Contact type
Display	Contact name
Relay Status	Action
	Action number
	Relay 1
	Duration
	Relay 2
	Duration

104	OK
Camera Title	Cancel
192.168.208.227	
13:59:18	
17-Nov-2005	

Note: Remember to select **OK** to save any changes you make on the page.

Contact no. The *Contact no.* drop-down box allows you to select the alarm number that you want to program.

Contact type. Alarm contacts are identified as NO (normally open) or NC (normally closed). Default is NO.

Contact name. The *Contact name* box allows you to give your alarms unique titles. Default numerical titles are provided. There is a 60-character limit for all titles, but be aware of how much video you want to cover with your titles.

Action. The *Action* feature can associate a programmed action with an alarm. An action is not required. Choices are None (default), Preset, Tour, and Macro. If you select Preset, Tour, or Macro, the *Action number* feature is activated to let you select a specific one.

Action number. The *Action number* feature lets you select a specific preset, tour, or macro, if you selected Preset, Tour, or Macro in the *Action* feature.

Relay 1. Each *Relay* feature can associate one relay action with an alarm. Relays can be used to trip such devices as speakers, doors, and DVMRs. You can set both relays to activate with an alarm. Choices are No action (default), On, and Off.

Duration. The *Duration* feature defines how long the relay is active. Choices are Infinite (default) and seconds (5 through 120 seconds in 5-second increments). The Infinite duration does not end unless another alarm is tripped.

Relay 2. Each *Relay* feature can associate one relay action with an alarm. Relays can be used to trip such devices as speakers, doors, and DVMRs. You can set both relays to activate with an alarm. Choices are No action (default), On, and Off.

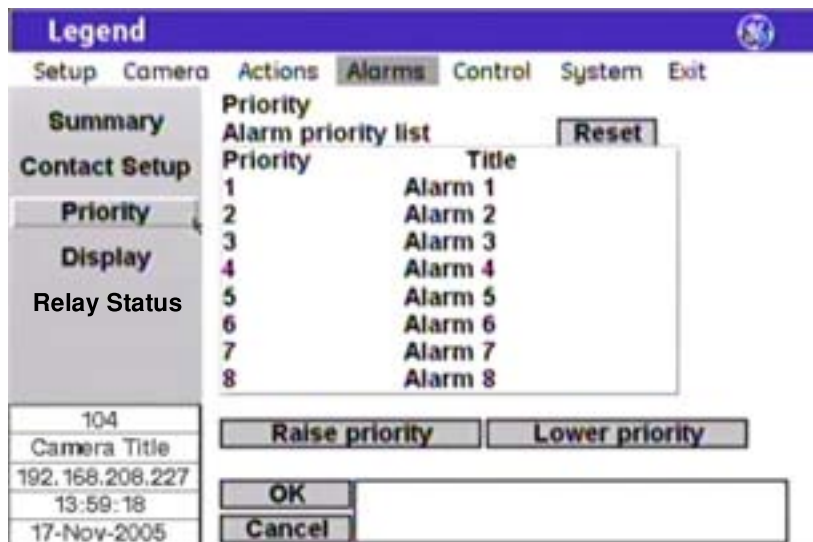
Duration. The *Duration* feature defines how long the relay is active. Choices are Infinite (default) and seconds (5 through 120 seconds in 5-second increments). The Infinite duration does not end unless another alarm is tripped.

Priority page

You can assign a priority ranking to your alarms that is independent of their contact numbers. The topmost alarm in the priority list is the highest priority regardless of the alarm’s number, while the bottommost alarm is the lowest priority. If more than one alarm is activated sequentially, only the highest priority alarm is actioned. If several alarms are activated at the same time, then the one with the highest priority is actioned. After that alarm has cleared, the next highest priority alarm will be actioned **only if** it is still active (for instance, a door is still open). Alarms are not held in a queue.

To access the *Priority* page of *Alarms*, select **Alarms** and **Priority**.

Figure 42. Priority page



Note: Remember to select **OK** to save any changes you make on the page.

Reset. The *Reset* button reorders the alarms in numerical order.

Raise priority. The *Raise priority* button moves a selected alarm up in the priority list. Select an alarm by its title, then select **Raise priority** to move it up in the list.

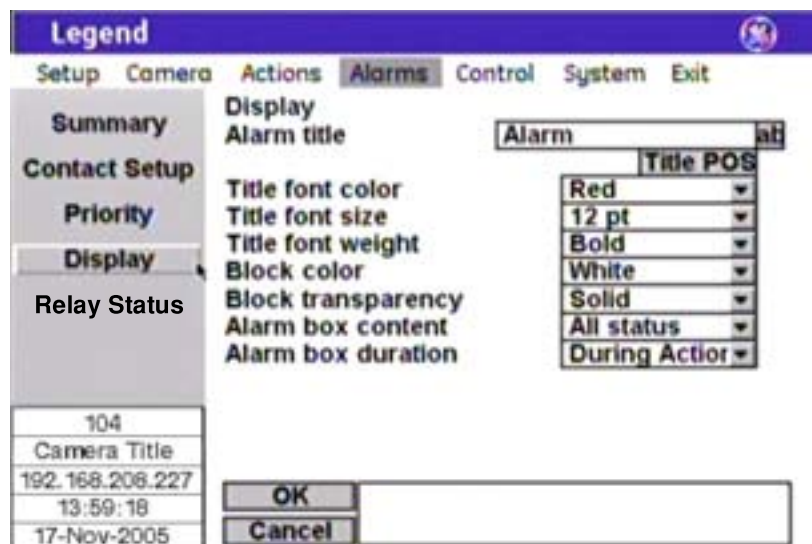
Lower priority. The *Lower priority* button moves a selected alarm down in the priority list. Select an alarm by its title, then select **Lower priority** to move it down in the list.

Display page

The *Display* page is where you define the appearance of the block of alarms and relays that displays on the monitor screen. To display the alarm block at all times, you must set the *Alarm box content* to **All status** and the *Alarm box duration* to **Indefinite**.

To access the *Display* page of *Alarms*, select **Alarms** and **Display**.

Figure 43. *Display* page




Note: Remember to select **OK** to save any changes you make on the page.

Alarm title. This *Alarm title* feature does not title the individual alarms. Alarms appear in a list (or block) on the monitor screen according to the display settings you set. You can give this alarm block a title with this feature to identify the group of alarms displayed. There is a 60-character limit, but be aware of how much video you want to cover with your alarm block.

Title POS. The alarm block will appear on screen in a default position on the monitor screen (upper right), but you can reposition it with the *Title POS* button. Be aware of where you already have other titles (camera, privacy masks, presets, tours, macros, and areas) positioned.

To set the position of the alarm box title:

1. Select **Title POS**.
2. Use the joystick to move the title to the desired position.
3. Press the **iris +** or the **set** () key on the keypad to save the new position or press the **iris -** or **esc** key to cancel the new position.

Title font color. Alarm titles will appear on screen in the color selected. Choices are as shown onscreen. Default is Red.

Title font size. Alarm titles will appear on screen in the font size selected. Choices are as shown onscreen. Default is 12 pt.

Title font weight. Alarm titles will appear on screen in the font weight selected. Choices are as shown onscreen. Default is Bold.

Note: If All status is selected for the *Alarm box content* feature, then the selected *Title font weight* is overridden and all alarms are listed in the alarm box with normal weight and only the active alarms are listed with bold weight.

Block color. You can create a block (background) that offsets the alarm block from the video behind it. The blocks will appear on screen in the color selected. Choices are as shown onscreen. Default is White.

Block transparency. You can set the block (background) to be a solid color or a transparency. The blocks will appear on screen in the transparency selected. Choices are as shown onscreen. Default is Solid.

Alarm box content. The *Alarm box content* feature sets how many alarms will display on the monitor screen in the alarm block. Choices are Off (displays no alarms, whether active or inactive), All status (displays all alarms, whether active or inactive), Highest priority (displays only the highest priority alarm, when active), and Active only (displays all active alarms). Active alarms appear as bold in the list when All status is selected. Default is All status.

Alarm box duration. The *Alarm box duration* feature sets how long the alarm block will display on the monitor screen, when All status is selected for the *Alarm box content* feature. Choices are During action (default) and Indefinite (always displayed).

Relay Status page

To access the *Relay Status* page of *Alarms*, select **Alarms** and **Relay Status**.

Figure 44. Relay State page (Alarms | Relay State)

Legend	
Relay State	
Name	State
Relay 1	Off
Relay 2	Off

Relay 1 on | Relay 1 off | Relay 2 on | Relay 2 off

Show relay state?

OK Cancel

Note: Remember to select **OK** to save any changes you make on the page.

Name. The *Name* column of the summary page lists both relays in numerical order, whether programmed or not. The two relays are numbered 1 and 2.

State. The *State* column of the summary page lists the status of each programmed relay as either on (active) or off (inactive).

Relay 1 on. The *Relay 1 on* button lets you turn relay 1 on regardless of the current state of any associated alarm.

Note: If you select **Relay 1 on** and select **OK**, then you are programming the dome to activate this relay each time the dome is powered up.

Relay 1 off. The *Relay 1 off* button lets you turn relay 1 off regardless of the current state of any associated alarm.

Relay 2 on. The *Relay 2 on* button lets you turn relay 2 on regardless of the current state of any associated alarm.

Note: If you select **Relay 2 on** and select **OK**, then you are programming the dome to activate this relay each time the dome is powered up.

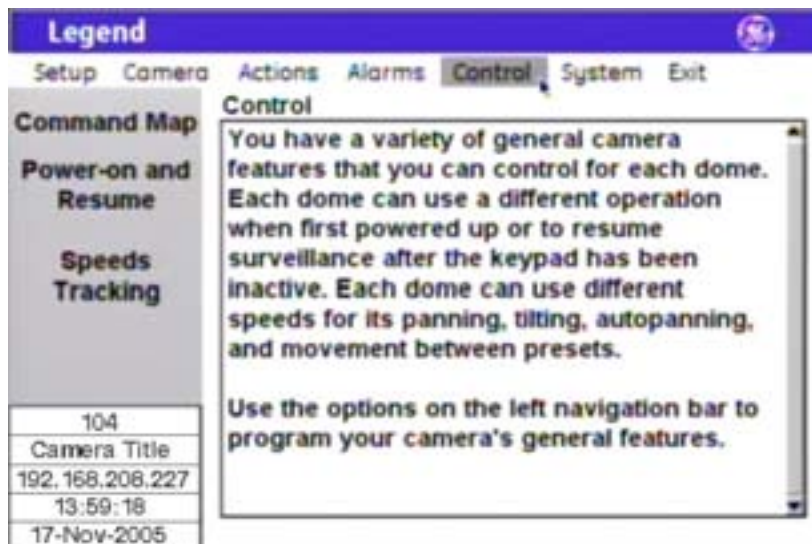
Relay 2 off. The *Relay 2 off* button lets you turn relay 2 off regardless of the current state of any associated alarm.

Show relay state. The *Show relay state* feature, when checked, lets you display the status of the relays on the monitor screen at all times. If the status of alarms is also being displayed, the relays will be listed at the bottom of the list after the alarms.

Control menu

You can program a variety of general camera features that control each dome. These general features include a specific operation for the camera to execute when it is first powered up (Power-on), a specific operation for the dome to execute when the dome has been inactive for a specified period of time (Resume), and speed settings for panning, tilting, autopanning, and moving between presets.

Figure 45. Control menu



Command Map page

The dome provides the ability to remap any preset or tour command coming in from a keypad to activate any of the 127 presets, 16 tours, or 32 macro actions. This enables you to manually initiate any of the expanded capabilities of the dome from keypad controllers with limited command capability. The command mapping does not affect any of the internal command operations the dome performs, such as resume and alarm actions. It only affects the actions the dome will perform when it receives a command from an external device (keypad or alarm interface). An example of remapping is using a preset command from the keypad to run Macro 1. In the command map programming, you would select the preset number you wish to use and remap that command to activate Macro 1.

Note: Most keypads have a limited number of preset numbers they can call. If you have a GE KTD-405 keypad with firmware v1.2.09 or later, and it is operating with Impac RS-485 protocol, then you can call up all 127 preset numbers (1 through 127) directly from the keypad. If, however, you have a GE KTD-405 keypad with an earlier version of firmware, or it is operating with Digiplex RS-422 protocol, then you can use the keypad to call up only the first 63 preset numbers (1 through 63). If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 or 61 preset numbers that you can call up from the keypad. To verify your keypad's version, press and hold the **mon** key on the keypad, until the keypad beeps, then press the **>>** key.

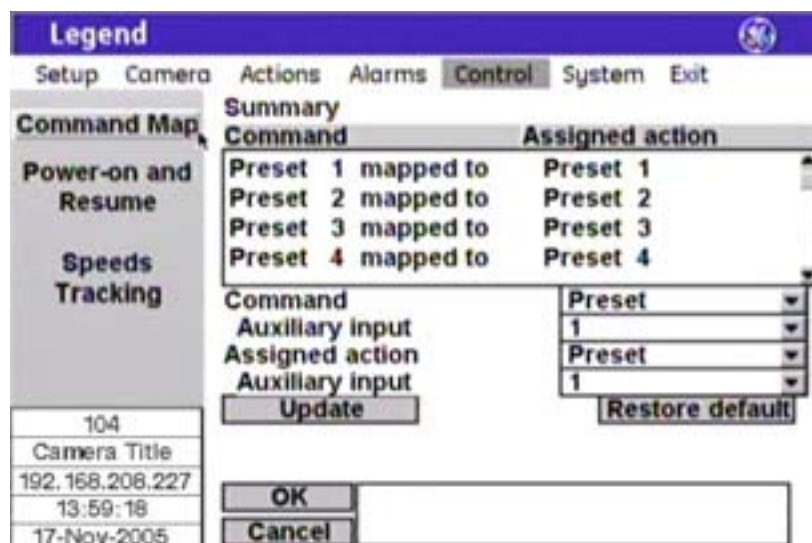
To create your presets, see [Presets page](#) on page 42.

To create your tours, see [ShadowTours page](#) on page 49.

To create your macros, see [Macros page](#) on page 51.

To access the *Command Map* page, select **Control** and **Command Map**.

Figure 46. *Command Map* page



Note: Remember to select **OK** to save any changes you make on the page.

Summary. The *Summary* feature lists what actions are currently assigned to each command. It lists presets and tours separately, according to whichever list (preset or tour) you currently have selected under the *Command* feature.

Command. The *Command* feature changes the group of commands listed in the summary between presets and tours.

Auxiliary input (for command). The *Auxiliary input* feature specifies the number of the command (for example, Preset 2 or Preset 102) that is to be remapped.

Note: To see the title of the selected command, go to the corresponding summary or list under the *Actions* menu.

Assigned action. The *Assigned action* feature remaps the selected command (preset or tour) to the same type of command or to another type of command (for example, from a preset to a tour or macro).

Auxiliary input (for assigned action). The *Auxiliary input* feature specifies the number of the command that is assigned.

Note: To see the title of the selected command, go to the corresponding summary or list under the *Actions* menu.

Update. The *Update* feature remaps the selected command with the selected action.

Restored default. The *Restore default* feature unmaps all commands in the current list (preset or tour). Any commands remapped in the other list (tour or preset) are not restored.

Power-on and Resume page

The *Power-on* feature provides the ability to have an assigned operation performed by the dome every time the dome is powered up. The *Resume* feature provides the ability to have an assigned operation performed by the dome every time the dome has sat inactive for a specified period of time.

Actions versus commands

It will help you understand how to program your dome and how it is responding, if you understand the difference between actions and commands. Actions and commands are both dome operations. Some dome operations override others, however. Actions and commands can be distinguished by their function and priority. *Actions* are programmed operations, such as presets, ShadowTours, and macros. *Commands* are orders that come from protocol (control data transmission) devices, such as keypad controllers and alarm equipment. Protocol-based commands have priority over programmed actions.

While you are in the menus of the graphical programming interface, all of the dome's programmed actions and protocol-based commands are disabled. While you are viewing live video, some dome operations take priority over others.

Priority of dome operations

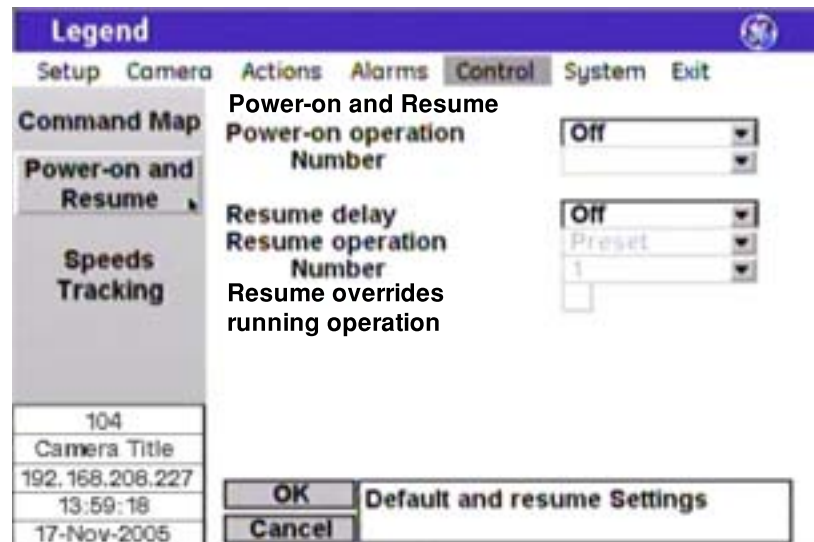
The following list defines the priority of dome operations when the resume override is disabled.

1. **Protocol-based commands:** First priority is the manual control of the dome by any data protocol using any control device (keypad, ASCII control software, etc.). The control device sends protocol-based commands. Protocol-based commands (like pan, tilt, and zoom) will override all programmed dome actions (like presets, tours, and macros). When an alarm is occurring, protocol-based commands are a shared priority with alarms.
2. **Alarms:** Second priority is an alarm. Alarms generated by the dome will override all other programmed dome actions. When an alarm is occurring, it is a shared priority with joystick control after the instant that the alarm command is initiated. After an alarm is resolved, the timer for the resume operation begins.
3. **Time scheduling and programmed actions:** Third priority is any time schedule or action (preset, tour, or macro) that has been programmed for the dome.
4. **Resume:** Fourth priority is the programmed operation that resumes the dome after a period of dome inactivity.
5. **Power-on:** Fifth priority is the programmed operation that is performed by the dome after it is powered up.

If *Resume overrides running operation* is enabled (checkbox checked), then the resume operation moves from fourth priority to second priority. The priority of operations then becomes: protocol-based commands, resume, alarms, time scheduling and programmed actions, and power-on.

To access the *Power-on and Resume* page, select **Control** and **Power-on and Resume**.

Figure 47. *Power-on and Resume* page



Note: Remember to select **OK** to save any changes you make on the page.

Power-on operation. *Power-on* defines the first operation that the dome performs after it is powered up and initialized. Choices are Off (default), Preset, Macro, ShadowTour, and Autopan.

Number (power-on operation). Enter a number for the operation selected under *Power-on operation*. Choices are based on the selection made under *Power-on operation*.

Resume delay. *Resume delay* is a feature that sets how long the dome is inactive before the *Resume operation* is performed. Choices are Off (default), 15 sec, 30 sec, 1 min, 2 min, 3 min, 4 min, and 5 min.

Resume operation. *Resume operation* defines the operation for the dome to perform after the dome has been inactive for a specified period of time. Choices are available only if a *Resume delay* time is selected and include Preset (default), Macro, ShadowTour, and Autopan.

Note: If the *Resume overrides running operation* feature is enabled (checkbox checked), then the *Resume operation* feature will interrupt presets, tours, autopanning, and alarms. See [Priority of dome operations](#) on page 70.

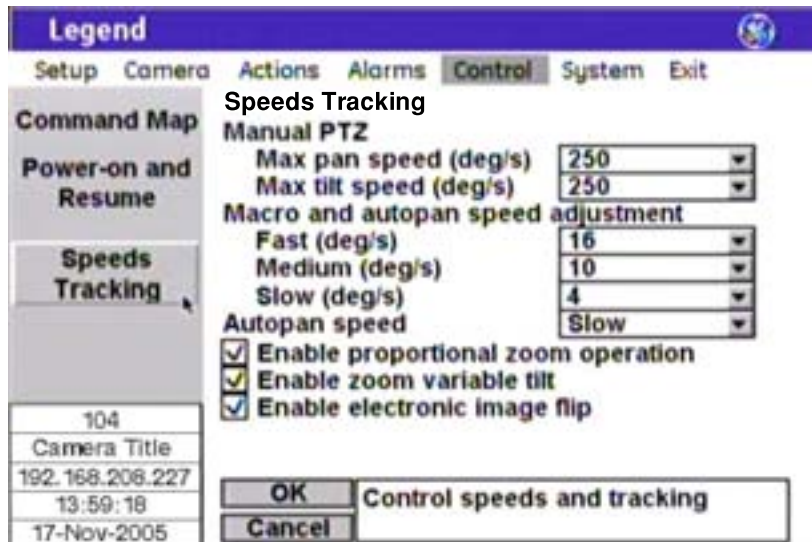
Number (resume operation). Enter a number for the operation selected under *Resume operation*. Choices are based on the selection made under *Resume operation*.

Resume overrides running operation. *Resume overrides running operation* is a feature that allows the *Resume operation* feature to interrupt presets, tours, autopanning, and alarms. See [Priority of dome operations](#) on page 70. Choices are checked and unchecked (default).

Speeds/Tracking page

To access the *Speeds/Tracking* page, select **Control** and **Speeds/Tracking**.

Figure 48. *Speeds/Tracking* page



Note: Remember to select **OK** to save any changes you make on the page.

Max pan speed (deg/s). *Max pan speed* is a feature that sets the fastest the camera will move (in degrees per second) while manually panning. Choices are 100 through 250 (default) in increments of 10.

Max tilt speed (deg/s). *Max tilt speed* is a feature that sets the fastest the camera will move (in degrees per second) while manually tilting. Choices are 100 through 250 (default) in increments of 10.

Fast (deg/s). *Fast* is a feature that sets the speed at which the camera moves (in degrees per second) when it is set for fast speed between presets in macros and while autopanning. Choices are 0 through 20 in increments of 2. Default is 16. A setting of 0 (degrees/second) makes the camera move as slowly as possible. This is not a stop-motion command.

Medium (deg/s). *Medium* is a feature that sets the speed at which the camera moves (in degrees per second) when it is set for medium speed between presets in macros and while autopanning. Choices are 0 through 20 in increments of 2. Default is 10. A setting of 0 (degrees/second) makes the camera move as slowly as possible. This is not a stop-motion command.

Slow (deg/s). *Slow* is a feature that sets the speed at which the camera moves (in degrees per second) when it is set for slow speed between presets in macros and while autopanning. Choices are 0 through 20 in increments of 2. Default is 4. A setting of 0 (degrees/second) makes the camera move as slowly as possible. This is not a stop-motion command.

Autopan speed. *Autopan speed* is a feature that sets how fast the camera moves while autopanning. Choices are Slow (default), Medium, and Fast. These settings are scaled according to the settings set for the *Slow*, *Medium*, and *Fast* features of the *Macro and autopan speed* feature. If the numbers in the *Macro and autopan speed* boxes are lower, then the corresponding *Autopan speed* settings will be slower. For example, if the *Fast* feature setting of the *Macro and autopan speed* feature were

set to 1, instead of 16, then the *Fast* feature setting of the *Autopan speed* feature would operate proportionately slower.

Enable proportional zoom operation. *Proportional zoom* is a feature that slows the pan and tilt speeds as you zoom in. This makes it easier to follow far off moving targets when you are zoomed in to them. Choices are checked (default) to enable and unchecked to disable.

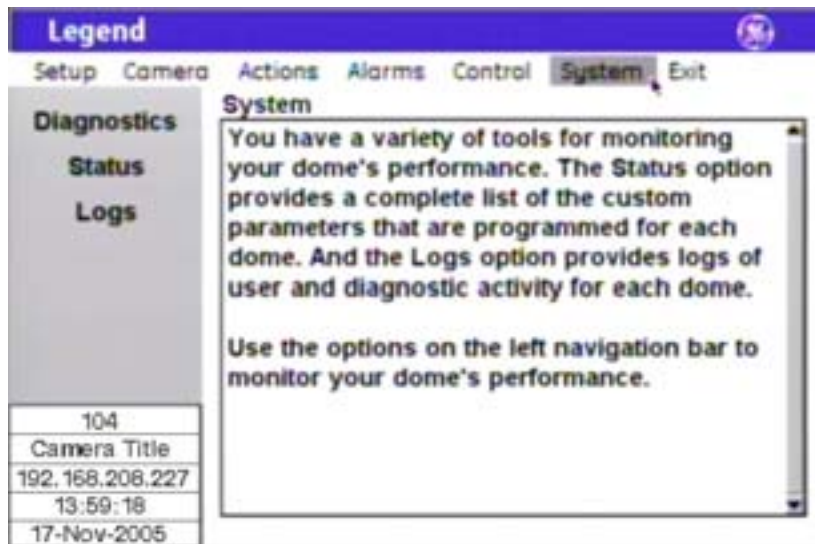
Enable zoom variable tilt. *Zoom variable tilt* is a feature that lowers the upper tilt limit when the camera is zoomed out to a wide angle of view so that the trim ring of the dome is not in view. The feature raises the upper tilt limit when the camera zooms in to a narrower angle of view, because the trim ring recedes out of view. Choices are checked (default) to enable and unchecked to disable.

Enable electronic image flip (E-flip). *Electronic image flip* (E-flip) is a feature that electronically flips the video image when the camera is looking straight down so that the camera does not have to physically spin 180° to follow an object that is passing under the dome. Choices are checked (default) to enable and unchecked to disable.

System menu

You can access diagnostics, status, and communication logs of your system's features through the *System* menu pages. Under *Diagnostics*, you can see what temperature your dome is operating at. Under *Status*, you can see a detailed listing of your dome's site (camera) information such as title and IP address, customized settings, alarm settings, and customized presets, tours, masks, and macros. Under *Logs*, you can see a history of the command, protocol, and motor messages being managed by the dome.

Figure 49. System menu

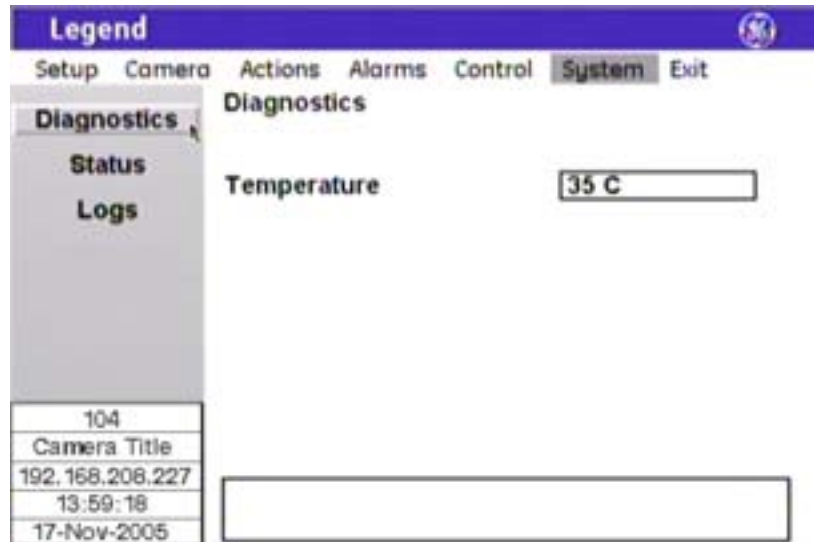


Diagnostics page

The *Diagnostics* page provides the operating temperature of your dome.

To access the *Diagnostics* page, select **System** and **Diagnostics**.

Figure 50. Diagnostics page

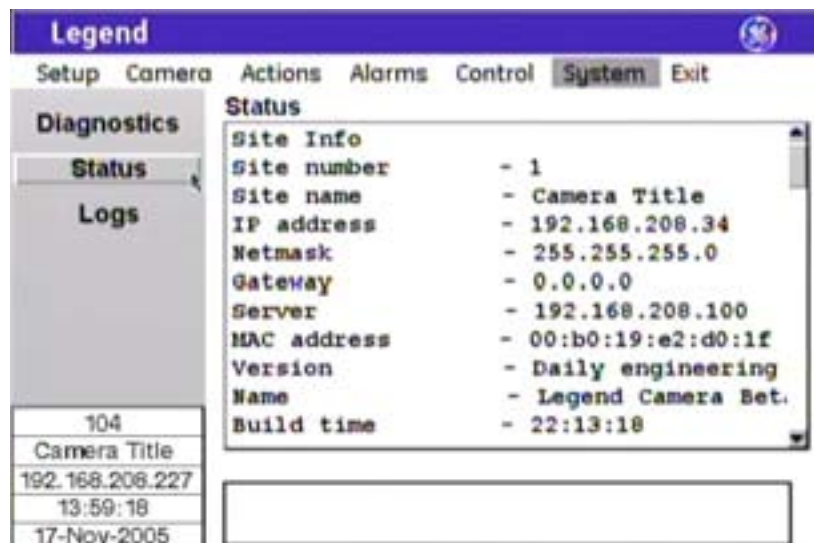


Status page

The *Status* page provides a detailed listing of your dome’s site (camera) information such as title and IP address, customized settings, alarm settings, and customized presets, tours, masks, and macros.

To access the *Status* page, select **System** and **Status**.

Figure 51. Status page



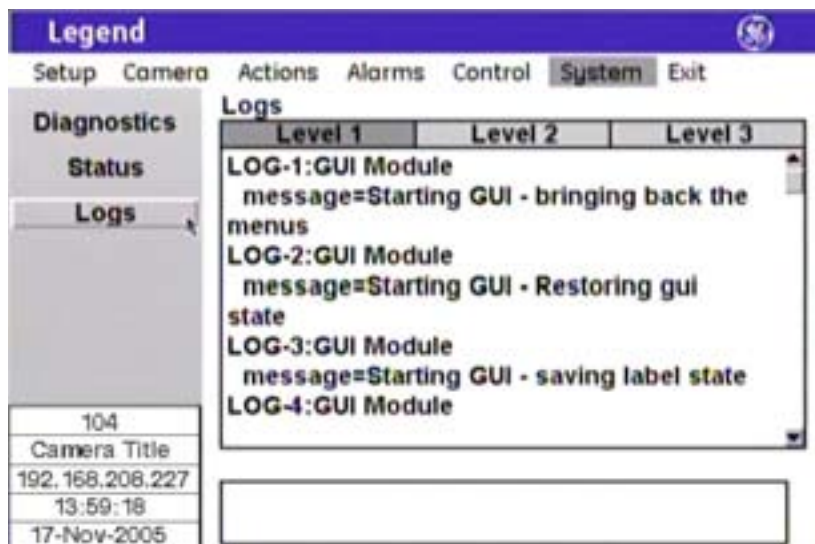
Logs page

The *Logs* page provides a history of the command, protocol, and motor messages of the dome's most recent operations. The level 1 log lists the most restrictive and important messages, the level 2 log lists those of medium restriction and importance, and level 3 lists those of least restriction and importance.

Note: The time and date may not be accurate if the dome is not time synchronized.

To access the *Logs* page, select **System** and **Logs**.

Figure 52. Log page

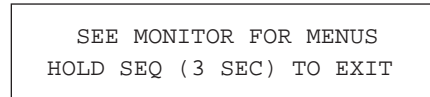


Exit

To exit the programming interface, do the following:

1. You can exit the programming interface two ways. Select **Exit** or go directly to step 2.
2. At the *SEE MONITOR FOR MENUS* display on the keypad LCD (*Figure 53*), press and hold the **seq** key on the keypad (if you are using a GE KTD-405 keypad).

Figure 53. SEE MONITOR FOR MENUS display



SEE MONITOR FOR MENUS
HOLD SEQ (3 SEC) TO EXIT

3. At the *ENTER CAMERA SITE NUMBER* display (*Figure 54*), press **◀◀**.

Figure 54. ENTER CAMERA SITE NUMBER display

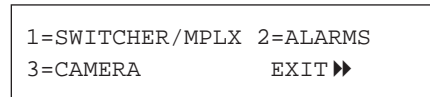


ENTER CAMERA SITE
NUMBER _ _ _ ◀◀BACK

4. At the equipment selection display (*Figure 55* or *Figure 56*), press **▶▶**.

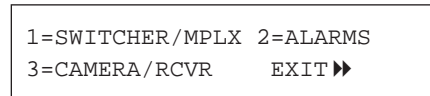
Note: This display will be slightly different depending on the version of your keypad. See *Figure 55* and *Figure 56*.

Figure 55. Equipment selection display (v1.2.09 or later)



1=SWITCHER/MPLX 2=ALARMS
3=CAMERA EXIT ▶▶

Figure 56. Equipment selection display (v1.1.06 or earlier)



1=SWITCHER/MPLX 2=ALARMS
3=CAMERA/RCVR EXIT ▶▶

Chapter 6 System operation

This chapter provides some general guidelines and restrictions for operating Legend domes.

In this chapter:

- Controllers and commands* 80
- Autopan limitations* 80
- Keypad limitations for calling up presets* 80
- Rebooting versus resetting a dome* 81
 - Rebooting the dome* 81
 - Resetting the dome* 81

Controllers and commands

Legend domes are typically controlled from at least one controller keypad. See [Starting from a keypad](#) on page 8 for a list of compatible keypads and controller protocols. Refer to your keypad’s manual for instructions for operating domes.

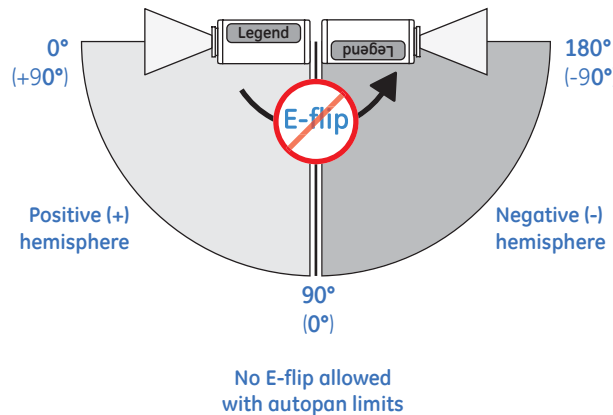
Also, to help you understand the difference between actions versus commands and their priority, see [Actions versus commands](#) on page 70.

Autopan limitations

When setting autopan limits, be aware that you must set both the right and left limit in the same tilt hemisphere. You can set them in either tilt hemisphere, but you cannot cross tilt hemispheres, meaning that you cannot pass the bottommost point or turn the camera upside down. Allowing the camera to E-flip will create an invalid set of autopan limits that may cause unexpected camera performance. See [Speeds/Tracking page](#) on page 72.

Remember that there is a positive and a negative hemisphere. Depending on what coordinates you selected under *Setup / Preferences / Coordinates*, the positive hemisphere will be identified by a tilt position of 0° to 90° or +90° to 0°.

Figure 57. No E-flip with autopan limits





Keypad limitations for calling up presets

Most keypads have a limited number of preset numbers they can call up. (When you *call up* a preset, you are using a preset command to move the dome’s camera to a preset position.) If you have a GE KTD-405 keypad with firmware v1.2.09 or later, and it is operating with Impac RS-485 protocol, then you can call up all 127 preset numbers (1 through 127) directly from the keypad. If, however, you have a GE KTD-405 keypad with an earlier version of firmware, or it is operating with Digiplex RS-422 protocol, then you can use the keypad to call up only the first 63 preset numbers (1 through 63). If you are using presets 62 and 63 for your left and right autopan limits, then you have a total of 125 or 61 preset numbers that you can call up from the keypad.

To verify your keypad’s version, press and hold the **mon** key on the keypad, until the keypad beeps, then press the **▶▶** key.

To call up presets using a GE KTD-405 keypad:

1. Press the **find** key on the keypad.
2. Press the number keys for the desired preset number. You can either:
 - Press the preceding zeros and the number. For instance, if you have more than a 100 domes in your system, press **0, 0,** and **7** for camera number 7.
 - Press the number without the preceding zeros and also press the **set** () key. For instance, press **7** and **set** ().

To create presets, see [Presets page](#) on page 42.

To use the KTD-405 keypad, see *KTD-405 Controller Keypad User Manual* (1036547).


Rebooting versus resetting a dome

Rebooting a dome requires that you have valid communication between the keypad and the dome. You can reset a dome with or without valid communication between the keypad and dome.

Rebooting the dome

You cannot currently reboot Legend domes from other keypads.

To reboot a dome, do the following from the KTD-405 keypad:

1. At the normal display (CAMERA #/MONITOR #), press and hold the **set** () key on the keypad until you hear a beep and the programming code display appears on the keypad's LCD.
2. At the *ENTER PROGRAMMING CODE:* display, enter the reset access code by pressing the **1, 4, 7, 6,** and **seq** keys.
3. At the *RESET TO DEFAULTS?* display, press **iris +** for yes.
4. At the display that asks what to reset, press **3** to select CAMERA.
5. At the *RESET CAMERA #? ARE YOU SURE?* display, press **iris +** to select yes.

The camera reboots in about 60 seconds. You will see the *RESETTING CAMERA #* display on the keypad LCD and the color bars and splash screen on the monitor screen as the camera reinitializes itself.

Resetting the dome

You can reset the dome whether or not you have valid communication between the keypad and the dome.

To reset the dome, cycle the power to the dome by turning the power off then on.

Chapter 7 Troubleshooting, maintenance, support

This chapter provides information to help you troubleshoot problems, perform simple preventive maintenance procedures, and contact technical support in case you need assistance with your GE equipment.

In this chapter:

- Troubleshooting* 84
 - Identifying a dome* 84
 - Troubleshooting your Legend system* 84
- Maintenance* 85
 - Updating the software* 85
- Contacting technical support* 88
 - Online publication library* 88

Troubleshooting

This section provides information to help you diagnose and solve various problems that may arise while configuring or using your GE product and offers technical support contacts in case you need assistance. (See [Contacting technical support](#) on page 88.)

Identifying a dome

You can find a dome's version, protocol, site address, IP address, and MAC address while in the programming interface or while viewing video.

- From the video screen, press and hold the **view** key on the GE KTD-405 keypad.
- From the programming interface, select **System | Status** and scroll down to view the camera identification section.

Troubleshooting your Legend system

Following are the most common troubleshooting issues and their solutions.

- *I forgot my passcode.*

If you forget the passcodes for a dome, you will need to send the dome back to the factory so that it can be reset with no passcodes.

- *I can't get the programming interface to open.*

Contact technical support. See [Contacting technical support](#) on page 88 for web, e-mail, fax, and phone information.

- *I can't get the programming interface to respond.*

First, reboot the camera with the keypad using the procedure in [Rebooting the dome](#) on page 81. If that doesn't work, then reset (cycle) the power to the dome by turning the power off then on.

- *I can't get the programming interface to close.*

Reset (cycle) the power to the dome by turning the power off then on.

Maintenance

Perform the following maintenance, when necessary or directed to.

Updating the software

To update software, do the following:



CAUTION: DO NOT interrupt the update purpose until it has completed. Don't use the keypad, don't break the network connection, and don't cycle the power to the dome.

CAUTION: When flashing software upgrades to the dome over a standard IP network via the dome's Ethernet connection, ensure that the network is secured from unauthorized access. Consider connecting the Ethernet cable only when you are flashing the dome, unless you have the dome connected to a secure, isolated network.

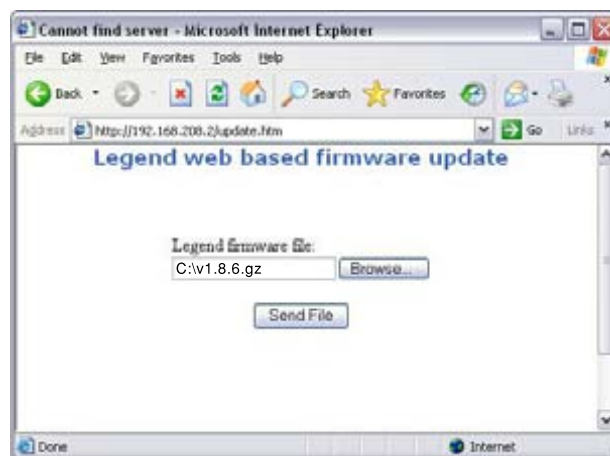
1. If possible, set up your computer and video monitor near each other so that you can see all messaging.
2. Connect a computer (laptop or desktop) to the Ethernet connection on the housing board in the housing.
 - Use a crossover cable if you are connecting the computer directly to the dome.
 - Use a standard Ethernet cable if you are connecting the computer to the dome through a hub device.
3. Make sure that the computer you are using has the same IP subnet and the same IP range as the dome.
The default addresses are:
 - IP for domes: 192.168.208.XXX, where XXX is the site number (or camera address) of the dome.
 - Subnet mask for domes: 255.255.255.0
4. The update file may be available on the GE Security website and/or on a CD. Refer to the announcement for individual updates. Either download the update file from www.gesecurity.com or copy it from a Legend update CD to your computer. It will usually be named in the format of v#.#.#.ge (for example, v2.1.9.ge) with some variations.
5. Open Microsoft Internet Explorer.
6. Enter your dome's IP address into the address box in the form of **http://XXX.XXX.XXX.XXX/update.htm**.
7. Press **Enter** or click **Go**.
8. If this is the first time you are accessing the web browser for the dome after it has rebooted, you will be asked to log on to the dome (*Figure 58* on page 86).
 - Only installers have passcode permission to update software.
 - You need to type in the user name, which is *Installer*, with a capital letter **I**.
 - Finally, you need to use the same passcode as is used for accessing the dome's programming interface. If the Installer passcode was not specified for the programming interface, leave the password box blank.

Figure 58. Legend web-based login screen



9. At the *Legend web-based firmware update* page:
 - a. Click the **Browse** button to locate the update file.
 - b. Click **File | Open** to populate the filename entry.
 - c. Click **Send File**.

Figure 59. Legend web-based firmware update page



10. At this point, ensure that the update process is *not interrupted*. The unit is not safe to interact with until after the system is successfully rebooted. Wait until after you see the color bar and splash screens on the monitor screen, and live video is again showing normally.

You may see the color bars or a blank or gray screen for up to five minutes. Do nothing until you see live video again. Only after 10 minutes have elapsed without a successful update should you cycle power to restart the dome.

After you click *Send File*, the update can continue processing in one of two ways:

- In most cases, a notice will appear on the security monitor screen saying that the update is in progress, while another message appears on the computer screen in Internet Explorer saying that the update is proceeding successfully.

- In some cases, the camera may not have enough memory to process the update files, in which case a camera memory low message is displayed. If you get this message, the camera will automatically reset (reboot) itself. When it is again displaying live video, you will need to go back to the address box in Internet Explorer and reselect the dome's IP address with the correct file extension, which should now appear beside the IP address. The update should process normally after selecting the update file this second time.

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact technical support during normal business hours (Monday through Friday, excluding holidays, between 6 a.m. and 5 p.m. Pacific Time).

Table 9. Sales and support contact information

	Sales	Technical support
Phone	Toll-free: 888.GESECUrity (888.437.3287 in the US, including Alaska and Hawaii; Puerto Rico; Canada). Outside the toll-free area: 503.885.5700.	
E-mail	info@gesecurity.com	generaltech@ge.com
Fax	800.483.2495	541.752.9096 (available 24 hours a day)

Note: Be ready at the equipment before calling for technical support.

Online publication library

Another great resource for assistance with your GE product is our online publication library, available to all of our customers. To access the library, go to our website at the following location:

<http://www.gesecurity.com>

In the **Tools** area at the top, click the *Publication Library* link. After you register and log on, you may search through our online library for the documentation you need.²

2. Many GE documents are provided as PDFs (portable document format). To read these documents, you will need Adobe Acrobat Reader, which can be downloaded free from Adobe's website at www.adobe.com.

Appendix A System defaults

This appendix provides a comprehensive list of the factory defaults for the dome.

In this appendix:

- Default programming settings* 90
- Default title positions* 91

Default programming settings

Table 10 lists the system's programming defaults.

Table 10. Default programming settings

Setting	Default
Alarm box content	All status
Alarm box duration	During action
Alarm contact type	NO
Autopan speed	Slow
Autoslow shutter	Off
Backlight compensation	Off
Block color	Black
Block transparency	No color
Branding	Off
Contact type (alarms)	NO
Day/Night	Automatic
Digital zoom limit	12x
Electronic image flip (E-flip)	On
Exposure control	Iris
Gain	0
Language	English
Lift	0
Night mode	Off
IP address	192.168.1.2
Pan coordinates	Degrees 360
Pan limits	Off
Passcodes	Off (blank)
Phase adjustment	50°
Phase lock enabled	Off

Setting	Default
Power-on	Off
Preset title duration	Infinite
Privacy mask color	Gray
Relay 1/Relay 2	No action
Relay duration	Infinite
Resume	Off
Resume delay	Off
Resume operation	Preset
Return-to-auto	On
Subnet mask	255.255.255.0
Temperature display	Off
Temperature display duration	During action
Temperature thresholds (high and low)	0
Tilt coordinates	Degrees 180
Tilt limits	Off
Title font color	White
Title font weight	Bold
Title font size	14 pt
Title length	60 characters
White balance	Auto
Zoom coordinates	Power
Zoom proportional	On
Zoom speed	Variable
Zoom variable tilt	On

Default title positions

Figure 60 shows you all of the titles that you can turn on to make appear on the monitor screen.

Figure 60. Default title positions



Appendix B Compatible commands

Legend supports all standard pan, tilt, lens, and preset commands for the specified third party protocols. This appendix lists all additional commands that are supported for each third party protocol.

In this appendix:

<i>Additionally supported Pelco D and Pelco P commands</i>	94
<i>Additionally supported Tyco/AD commands</i>	94
<i>Additionally supported Ultrak commands</i>	95

Additionally supported Pelco D and Pelco P commands

These Pelco D (autobaud at 2400, 4800, and 9600) and Pelco P (at 4800 baud) commands are compatible with the Legend protocol.

Table 11. Pelco D and Pelco P commands that are compatible with the Legend protocol

Legend command	Pelco D and P command
autopan	99 preset go
enter menus	95 preset set
exit menus	95 preset set
pan flip	33 preset go
set left autopan limit	62 preset set
set right autopan limit	63 preset set
tour 1	98 preset go

Additionally supported Tyco/AD commands

These Tyco/AD 4-wire (RS-422 at 4800 baud) commands are compatible with the Legend protocol.

Note: Legend domes appear in Tyco networks as SpeedDome Ultra VII domes.

Table 12. Tyco/AD commands that are compatible with the Legend protocol

Legend command	Tyco/AD command
alarm 1	alarm 1
alarm 2	alarm 2
alarm 3	alarm 3
alarm 4	alarm 4
autopan	view 64
escape	iris close
enter menus	view 94
exit menus	view 95
set	iris open

Additionally supported Ultrak commands

These Ultrak Rapid Scan (RS-422 at 9600 baud with even parity) commands are compatible with the Legend protocol.

Table 13. Ultrak commands that are compatible with the Legend protocol

Legend command	Ultrak command
day/night toggle	PShot 94
enter menus	PShot 90
exit menus	PShot 90
macro 1	PShot 87
macro 2	PShot 88
macro 3	PShot 89
tour 1	PShot 80
tour 2	PShot 81
tour 3	PShot 82


Appendix C Software upgrade instructions

This appendix provides the instructions that are to be used in conjunction with the software upgrade file that you download from www.gesecurity.com.

If you purchased a v2.1.9 or later Legend dome, then you have the new AHC (active housing card) that is required for some of the recent software changes. If you are upgrading a Legend dome that has an earlier version of software, you may or may not have to retrofit the dome with a new AHC. It depends upon what features you want to use. The most commonly used features do not require the new AHC. See [What's new in this release](#) on page 3 for a list of which features require a new AHC.

For additional upgrade details, you can also refer to the specific instructions that come with the software upgrade file or the AHC retrofit kit, which currently are the *Legend v2.1.9 Software Upgrade Installation Instructions* (1054754) and the *Legend AHC Retrofit Installation Instructions* (1055588).

If you need to retrofit the AHC, it can be retrofitted in the field. Contact GE Technical Support for one AHC retrofit it per dome.

 **CAUTION:** If you retrofit the AHC, you will lose all custom programming. All settings will revert to factory default settings. We recommend that you record your custom settings prior to retrofitting the AHC.

In this appendix:

- [Installation overview](#) 98
- [Upgrading from v1.8.5 to v1.8.6](#) 99
- [Upgrading from v1.8.6 to v2.1.9](#) 101

Installation overview

The v2.1.9 software upgrade process has two steps. First, you will upgrade the software from v1.8.5 (or v1.8.5.1) to v1.8.6. Second, you will upgrade the software from v1.8.6 to v2.1.9. You cannot upgrade the software directly from v1.8.5 to v2.1.9.

Required equipment (not provided)

The required equipment that is not provided, includes:

- Computer (laptop or desktop)
- Crossover cable (if connecting the computer directly to the dome)
- Standard Ethernet cable (if connecting the computer through a hub device to the dome)

Two upgrade anomalies with v2.1.9

There are two minor upgrade anomalies that you may notice with the upgrade to v2.1.9.

- One, this upgrade removes the 8 and 10 pt. options from the font size selections throughout the software. Any type previously assigned 8 or 10 pt. will remain 8 and 10 pt., despite the selection for that type now reading the first selection in the drop-down box. These settings will change only if you change the setting and click **OK** on the page. If you click **Discard** (for discard change) after viewing the page, the 8 or 10 pt. type will remain.
- Two, this upgrade removes the 1, 2, and 3 second options from the relay duration selection on the *Contact Setup* screen of the *Alarms* menu. Any relay durations previously assigned those times will remain active as 1, 2, and 3 second durations, despite the selection for that duration now reading the first selection in the drop-down box, which is 5 seconds. The settings will change only if you change the setting and click **OK** on the page. If you click **Discard** (for discard change) after viewing the page, the 1, 2, or 3 second duration will remain.

Upgrading from v1.8.5 to v1.8.6

To upgrade the software from v1.8.5 to v1.8.6, do the following:



CAUTION: DO NOT interrupt the upgrade process until it has completed. Don't use the keypad, don't break the network connection, and don't cycle the power to the dome.

CAUTION: When flashing software upgrades to the dome over a standard IP network via the dome's Ethernet connection, ensure that the network is secured from unauthorized access. Consider connecting the Ethernet cable only when you are flashing the dome, unless you have the dome connected to a secure, isolated network.

1. Download the filename *v1.8.6.gz* from www.gesecurity.com to your computer. You can at the same time also download *v2.1.9.ge* to have it readily available.
2. If possible, set up your computer and video monitor near each other so that you can view all upgrade messaging.



CAUTION: Do not use the TFTP programming interface option from the **Firmware Update** feature of the **System** menu for this software upgrade. This upgrade will be removing that option.

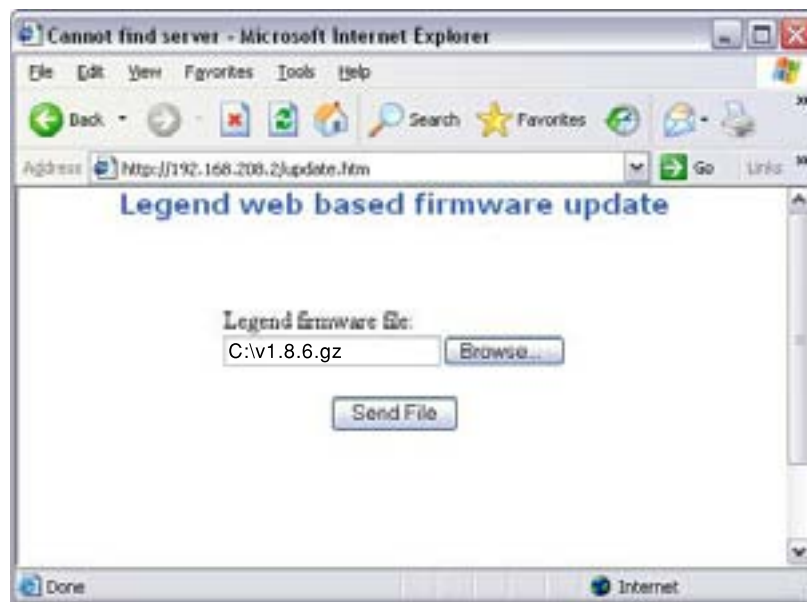
3. Connect a computer (laptop or desktop) to the Ethernet connection on the housing board in the housing.
 - Use a crossover cable if you are connecting the computer directly to the dome.
 - Use a standard Ethernet cable if you are connecting the computer to the dome through a hub device.
4. Make sure that the computer you are using has the same IP subnet and the same IP range as the dome. The default addresses are:
 - IP for domes: 192.168.208.XXX, where XXX is the site number (or camera address) of the dome.
 - Subnet mask for domes: 255.255.255.0.
5. Open Microsoft Internet Explorer.
6. Enter your dome's IP address into the address box in the form of `http://XXX.XXX.XXX.XXX/update.htm`.
7. Press **Enter** or click **Go**.
8. If this is the first time you are accessing the web browser for the dome after it has rebooted, you will be asked to log on to the dome. See *Figure 61* on page 100.
 - Only installers have passcode permission to upgrade software.
 - You need to type in the user name, which is *Installer*, with a capital letter **I**.
 - Finally, you need to use the same passcode as is used for accessing the dome's programming interface. If the Installer passcode was not specified for the programming interface, leave the passcode box blank.

Figure 61. Legend web-based log in screen



9. At the Legend web-based firmware update page (Figure 62):
 - a. Click the **Browse** button to locate the filename of the existing software.
 - b. Click **File | Open** to populate the filename entry.
 - c. Click **Send File**.

Figure 62. Legend web-based firmware update page



10. At this point, the Legend graphical programming interface will appear on the security monitor screen and messages will appear on both the computer and security monitors. You will know that the existing software has been successfully prepared after you see:
 - A message similar to *Upgrade uploaded successfully, please wait while flash is updated* on the computer monitor screen.
 - A refreshing message similar to *Beginning HTTP firmware update. Do not cycle power.* followed by a message similar to *Resetting camera. Please standby.* on the security monitor screen. The *Please standby* message may appear and disappear so quickly that you may miss it.

You are ready to proceed with the upgrade after you see live video again on the security monitor screen and no message boxes. If you have any question about the success of preparing the existing software, wait for at least 10 minutes before assuming that the procedure failed and before cycling the power to restart the dome.

Upgrading from v1.8.6 to v2.1.9

Make sure that you have upgraded the software from v1.8.5 to v1.8.6 (see [Upgrading from v1.8.5 to v1.8.6](#) on page 99) before upgrading the software to v2.1.9.

After a successful upgrade to v2.1.9, the camera assembly will reboot with a new default IP address, which is **192.168.1.2**. Also, the IP address will now be stored in the AHC, not in the camera. Regardless of what IP address is stored in the AHC, a camera assembly will use the IP address of the housing that it is placed into.

To upgrade the software to v2.1.9, perform the same steps as in [Upgrading from v1.8.5 to v1.8.6](#) on page 99 with these substitutions:

- At step 1, copy the upgrade file named *v.2.1.9.ge* to your computer, if you have not already done so.
- At step 9, enter the upgrade file named *v.2.1.9.ge* into the Legend web-based firmware update page.
- At step 10, ensure that the upgrade process is not interrupted. The unit is not safe to interact with until after the system is successfully rebooted. Wait until after you see the splash and color bar screens on the security monitor screen, and live video is again showing normally.

You may see the color bars for up to five minutes. Longer, if your dome contains extensive custom programming. Do nothing until you see live video again.

Only after 10 minutes have elapsed without a successful upgrade should you cycle power to restart the dome.

After you click **Send File**, the upgrade can continue processing in one of two ways:

- In most cases, a notice will appear on the security monitor screen saying that the upgrade is in progress, while another message appears on the computer screen in Internet Explorer saying that the upgrade is proceeding successfully.
- In some cases, the camera may not have enough memory to process the upgrade files. In which case, a camera memory low message is displayed. If you get this message, the camera will automatically reboot itself. When it is again displaying live video, you will need to go back to the address box in Internet Explorer and reselect the dome's IP address with the correct file extension, which should now appear beside the IP address. The upgrade should process normally after selecting the upgrade file this second time.

After the upgrade is successful, confirm the resulting IP address. If you are using a dome stand to upgrade all of your domes, you may have to reset the IP addresses.

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