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FTC 121-1 System Controller



User Manual

Front Matter

Abstract

This manual describes the *Operation, Installation, and Maintenance*, of the FTC 121-1 System Controller.

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Applicable Specification

This equipment meets or exceeds requirements for controlling FAA Type L-856 high intensity white obstruction lights, L-865 medium intensity obstruction lights, and L-864 red obstruction lights described in Advisory Circular 150/5345-43E.

Disclaimer

While every effort has been made to ensure that the information in this manual is complete, accurate and up-to-date, Flash Technology Corporation of America assumes no liability for damages resulting from any errors or omissions in this manual, or from the use of the information contained herein. Flash Technology Corporation of America reserves the right to revise this manual without obligation to notify any person or organization of the revision.

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Warranty

All components are fully warranted, under normal operating conditions, for two years.

Replacement Parts

The use of parts not manufactured or supplied by FTCA or unauthorized modification of this equipment voids the warranty and could invalidate the assurance of complying with FAA requirements for controlling high and medium intensity lights as published in Advisory Circular 150/5345-43.

PERSONNEL HAZARD WARNING

Dangerous Voltages

Dangerous line voltages reside in certain locations in this equipment. Although FTCA has incorporated every practical safety precaution, exercise extreme caution at all times when you expose circuits and components, and when you operate, maintain, or service this equipment.

Avoid Touching Live Circuits

Avoid touching any component or any part of the circuitry while the equipment is operating. Do not change components or make adjustments inside the equipment with power on.

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Section 1 — Introduction

The FTC 121-1 SMART (System Monitoring And Reporting Telemetry) Controller is a comprehensive technical solution for monitoring and controlling your obstruction lighting system.

System

The FTC 121-1 can control either a standard or a dual system. A *standard* system consists of multiple white flashing lights located on one or more structures. All of the strobe lights interact with a system controller.

A *dual* system consists of a standard system that has been expanded to include a system of red obstruction lights. The red lights are operated at night and includes incandescent red marker lights (side lights).

Features include:

- Monitoring, diagnosing, storing and communicating system events with no human intervention.

- Polling continually each light for adequate daytime intensity; and checking the photocell for daily operation.
- Issuing commands to the lighting units and routinely polling them for status information on vital functions.
- Restarting the system and resuming normal operation in the event of an operational disruption (for example, power line surges).

Remote Monitoring and Control Option: Eagle Software

The FTC 121-1 allows the EAGLE software to operate it by computer from a remote location over a telephone line. This software runs on IBM PC-compatible personal computers and interfaces with one or more FTC 121-1 systems by using a modem and a telephone line, allowing you to monitor and control your lighting systems *from any distance*. EAGLE allows you to permanently store, analyze and print any of the information collected by the FTC 121-1 Controller about your beacons.

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Section 2 — Outline, Mounting, and Installation

Unpacking

Inspect shipping cartons for signs of damage before opening. Check package contents against the packing list and inspect each item for visible damage. Damage claims should be reported promptly to the freight handler.

Tools

The following hand tools are suggested for installation:

- Phillips-head screwdriver, #2
- Medium (# 2 - 3/16"), flat-blade screwdriver
- Medium (# 3 - 5/16"), flat-blade screwdriver
- Medium, slip joint pliers
- 8-in. adjustable wrench
- A professional-quality terminal crimper
- Hand tools for electrical wiring

Access

WARNING

STOP: Before proceeding, disconnect the primary power before removing the controller cover.

FTC 121-1R Controller

For the rack-mounted controller, four screws fasten the front face plate of the controller to the mounting rack. To remove the controller, you must first disconnect the wires connected to the rear terminals. These wires may have enough slack to allow you to slide the controller out from the rack without disconnecting them first. However, the best procedure would be to disconnect them first to avoid breakage.

Six screws secure the flat top cover that is fastened over the controller chassis. Remove these screws to access the interior of the controller.

FTC 121-1W Controller

The wall-mounted controller is packaged inside a stainless steel case. Latches secure the cover of the case. Open the cover for access to the screws that mount the controller to the inside of the case. You may need to loosen the cable clamps that secure the cables at their entry into the underside of the case.

Mounting

Each structure lighting system uses one FTC 121-1 System Controller and one PEC 510 Photocell. Ground the equipment to the site grounding system. Verify that adequate space surrounds the equipment for access during installation, maintenance, and servicing. Do not block air flow around the controller. Ground the controller chassis to the site grounding system.

FTC 121-1R Controller

Mounting and outline dimensions for the controller are shown in *Figure 2-1 FTC 121-1R Controller Mounting and Outline* on Page 2-3.

FTC 121-1W Controller

Mounting and outline dimensions for the controller are shown in *Figure 2-2 FTC 121-1W Controller Mounting and Outline* on Page 2-4.

PEC 510 Photocell

Mounting dimensions for the PEC 510 Photocell are shown in *Figure 2-3 PEC 510 Photocell Mounting and Outline* on Page 2-5. Mount the photocell vertically at the top end of a vertical length of conduit to prevent water from entering and damaging the unit. Point the photocell toward the polar sky and ensure that the cell is not struck by artificial light.

Wiring

FTCA wiring diagrams define minimum requirements recommended for satisfactory equipment operation. Minimum requirements may not be enough, by themselves, to comply with local electrical codes. ***It is the responsibility of the installer to comply with all applicable electrical codes.***

All installation wiring should have an insulation rating of 600 volts.

External Connections

Refer to Figures 2-4 and 2-5. The connections on the rear panel have the following functions:

- TB2-1 to TB2-2: Connection for the PEC 510 Photocell
- TB2-5 to TB2-6: Connections for the Communications Link shielded cable or twisted pair to the beacons.
- TB2-8 to TB2-10: Alarm relay contacts. TB2-8 to TB2-9 close on alarm. TB2-9 to TB2-10 open on alarm. These contacts are not connected to any internal circuits; they merely serve as transfer contacts for your external alarm circuitry. These contacts are rated at 120VAC, 1A.
- TB2-11 to TB2-12: Master/slave interconnect input connections. One controller is designated a master, the other a slave. These connections accept input from a master. Not implemented.
- TB3-13 to TB3-14: Master/slave interconnect output connections. One controller is designated a master, the other a slave. These con-

nections send output to a slave. Not implemented.

- TB3-15 to TB3-16: Red System Start — Provides contact that open or close to control the coil on a start relay of an external red system controller.
- TB3-17 to TB3-30: Not implemented.

Installation Checklist

Complete the following steps before applying power:

1. Inspect all equipment for damage.
2. Check the equipment that you received against the packing list to ensure completeness.
3. Be sure that the voltage and frequency marked on the rear panel of the controller agrees with the service power provided.
4. Consult site installation drawings for placement, mounting, wiring details, and power phasing.
5. Position and mount the controller correctly, allowing adequate clearance for air circulation, for sliding out the controller from the rack, for access to the rear panel wiring, and for opening the controller cover.
6. Ground the controller chassis.
7. Ensure that the photocell is mounted vertically at the top end of a vertical length of conduit to prevent water from entering and damaging the unit. Point the photocell toward the horizon of the polar sky and ensure that the cell is not struck by artificial light.

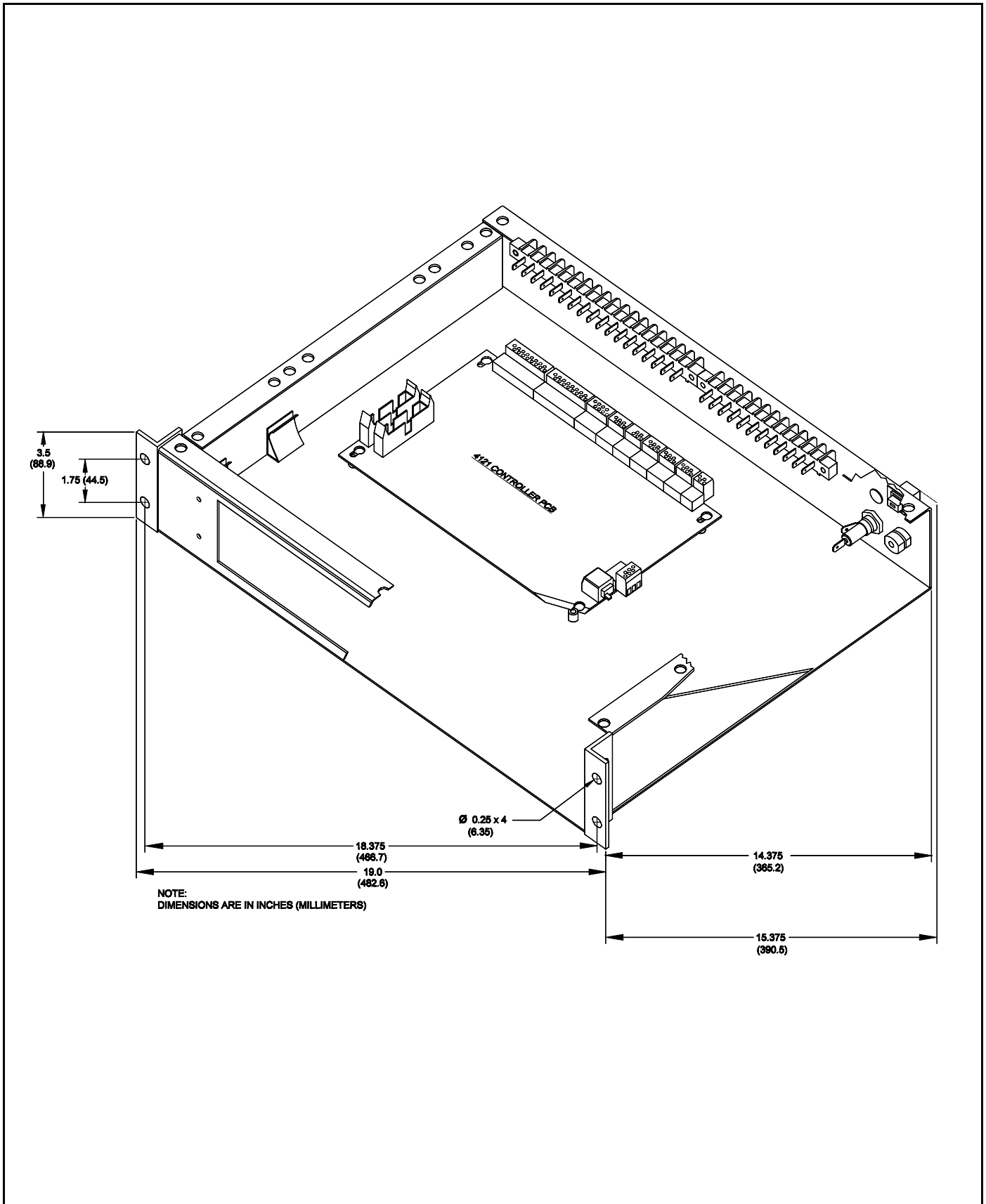


Figure 2-1 FTC 121-1R Controller Mounting and Outline

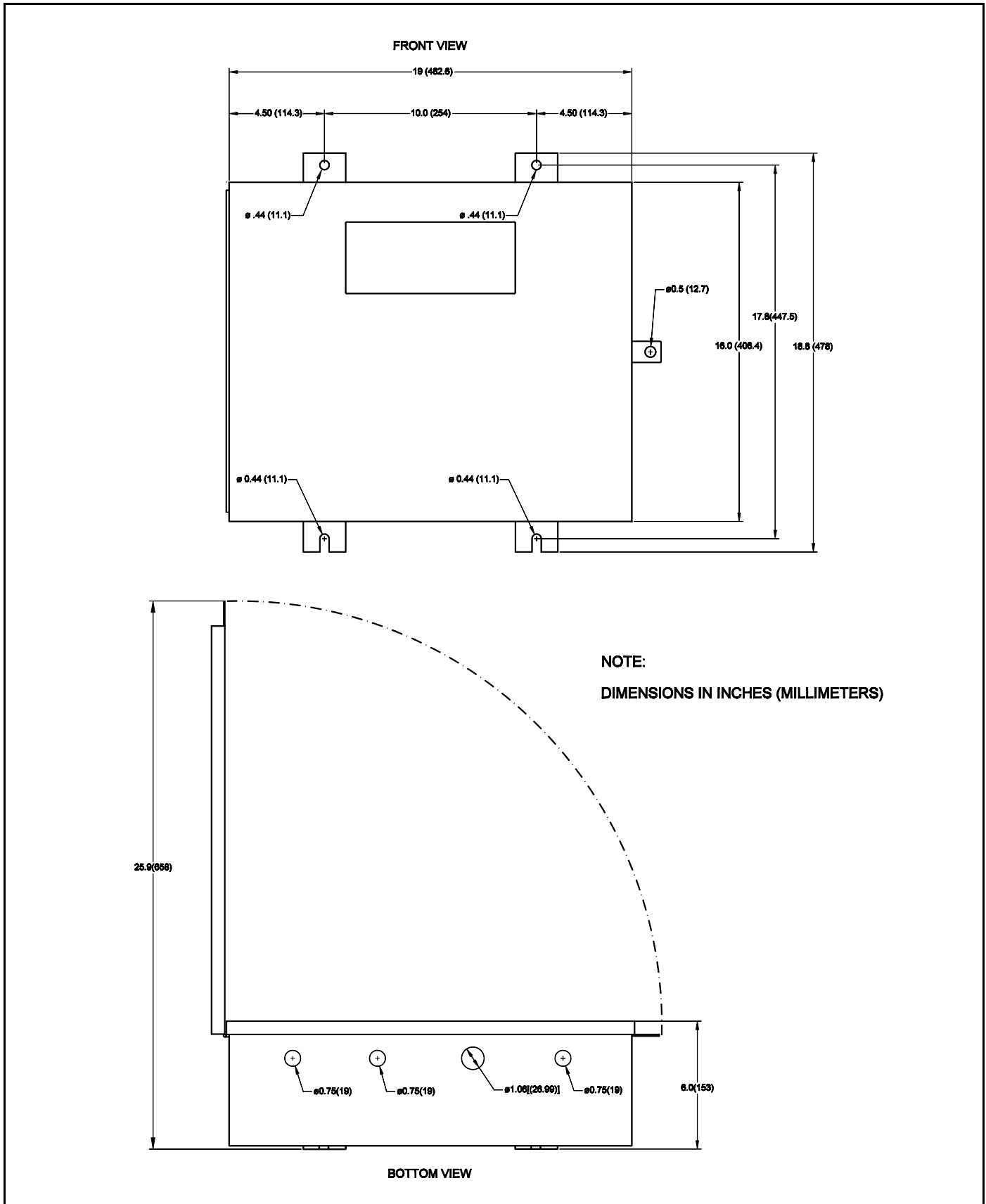


Figure 2-2 FTC 121-1W Controller Mounting and Outline

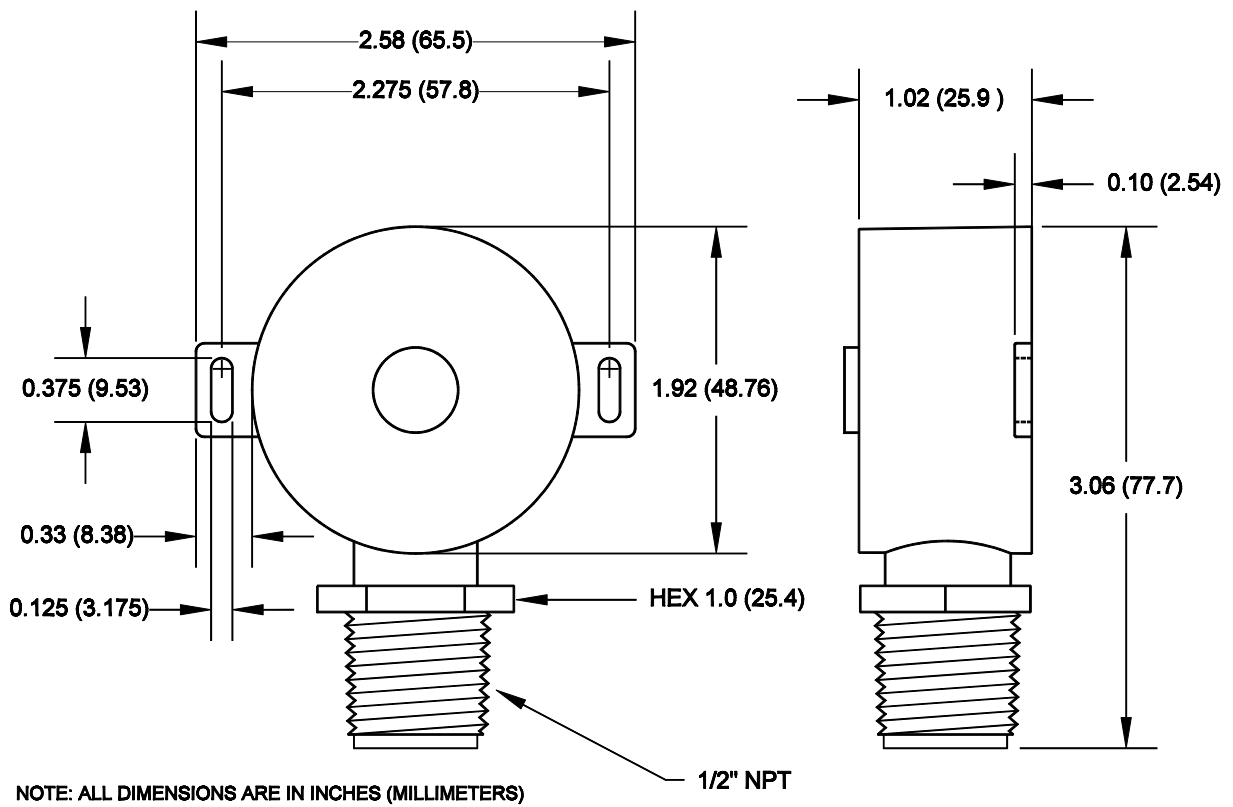


Figure 2-3 PEC 510 Photocell Mounting and Outline

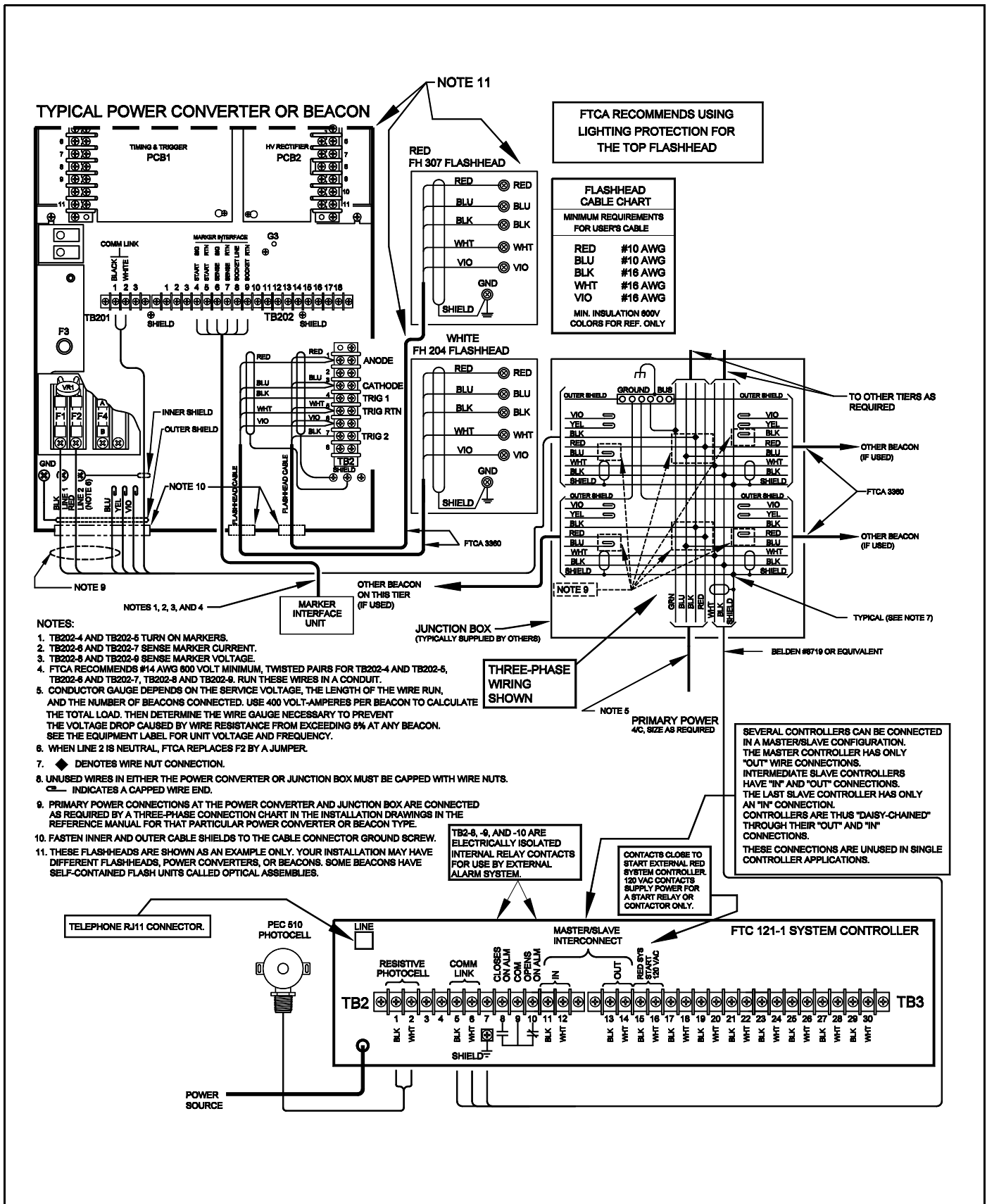


Figure 2-4 Installation Wiring

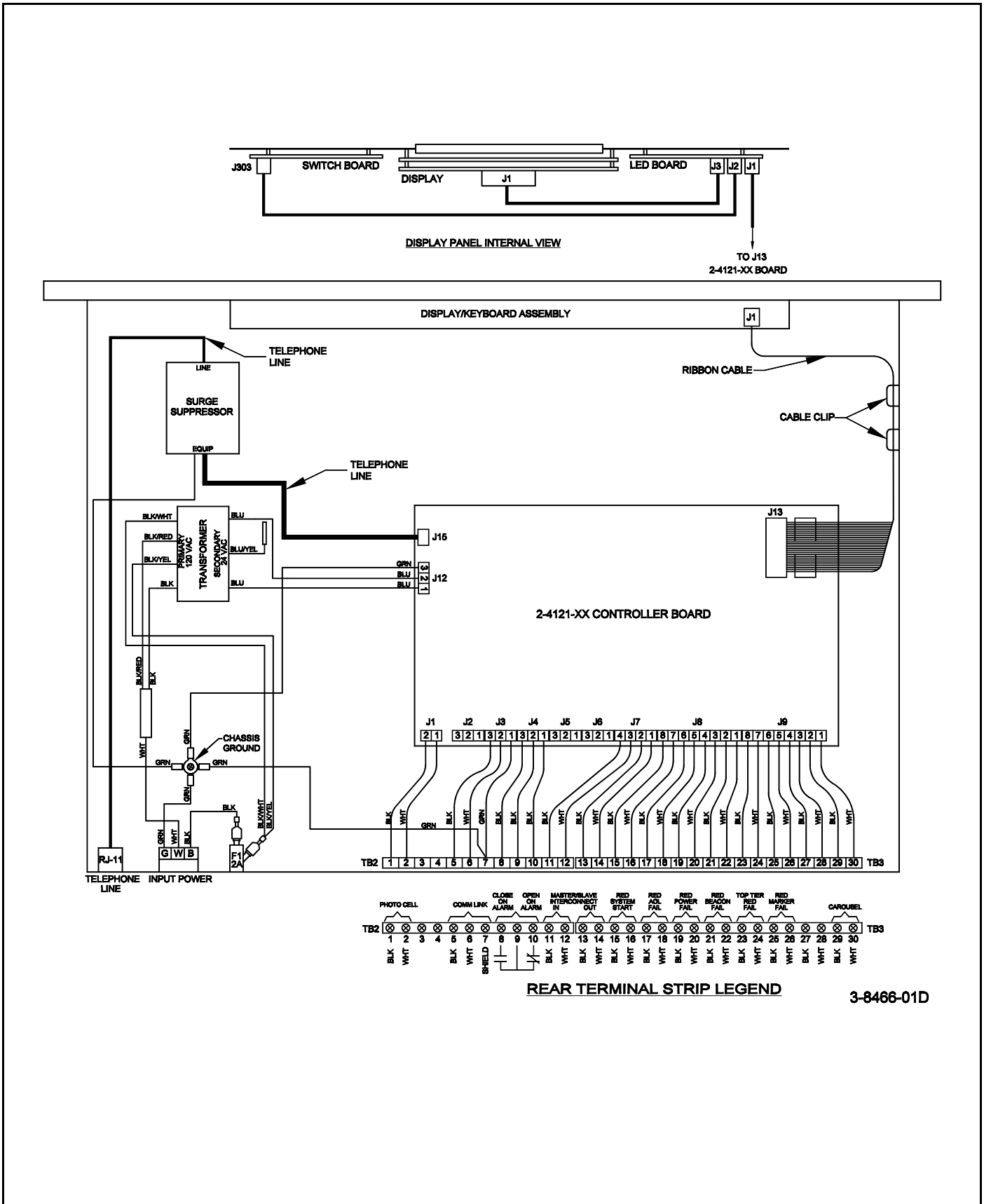


Figure 2-5 FTC 121-1R/W Internal Wiring

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Section 3 — Operation

This section of the manual provides general information about the operation of the front panel of the FTC 121-1 System Controller. The controller provides a screen on which it displays a series of menus. From the menus, you select a screen that is either a *display screen* or a *function-setting screen*. A display screen shows information. A function-setting screen allows changing a setting.

This section presents the initial screens and functions of the controller. Sections 4 and 5 provide the screens and menus in the order of their appearance on the front panel of the controller.

Thus:

- Section 4 provides the screens and functions of the View Menu, which is available to any user.
- Section 5 provides the screens and functions of the User Menu, which is available to an authorized user by entering a password at the last selection on the View Menu (...more...).

Menu Functions

The FTC 121-1 allows you to view and change some operations of the system. Details of menu and screen selection and operation follow in Sections 4 and 5. However, the following list briefly explains these functions:

View Menu

- Alarm displays — Show alarms for specific beacons. You first acknowledge the presence of the alarm, then you reset the alarm after fixing the problem.
- Graphic display — Shows the beacon arrangement in a tower structure. Failing beacons are indicated.
- Manual Intensity Select — Sets the intensity of the operation to one of three modes regardless of photocell control: night, twilight, or day.

- Display Brightness — Sets the brightness of the display screen on the controller.
- Date/Time Display — Shows and allows changing the date and time of the controller's screen display and current operation.
- Intensity Change Times — Shows the times at which the controller changes intensity from day to twilight, twilight to night, and night to day, if operating without a PEC. These can be changed in the User Menu.
- Communications Status — Checks whether the communications between the controller and the connected beacons is functioning properly.
- ...more... — Allows entering the user password to view the User Menu.

User Menu

- Diagnostics — Screens that show various operating parameters of the beacons on the tower. These are indicated for each beacon.
- Set Intensity Change Times — Changes the times at which the controller changes intensity of operation if the PEC is disconnected.
- Alarm Call Out Phone Numbers — Enters the phone numbers of the remote location to which alarms are reported. The remote location must have EAGLE Software installed on a PC-compatible computer.
- Status Call Out Phone Numbers — Enters the phone numbers of the remote location to which status codes are reported. The remote location must have EAGLE Software installed on a PC-compatible computer.
- Install PEC — Informs the controller that the PEC is installed or not installed. If not installed, the controller uses the default intensity change times previously set.

- **Set Tower Name** — Names the tower for unique identification of the installation for service and remote control.
- **Change Password** — Changes the password required to access the User Menu.
- **Set Number of Rings** — Sets the number of rings accepted before the internal modem answers a call from the remote computer location.
- **Set Construction Mode** — Informs the controller that tower construction is in progress. This

setting prevents alarms and status codes while the tower is under construction.

- **Logoff** — Allows logging off all menu systems and returns the controller to displaying the View Menu only.

Directory of Available Screens

A directory of available screens and subscreens in *Table 3-1 Sequential Directory of View and User Screens* on Page 3-2 helps you to locate the menus and screens available to you. The table shows only those screens available through the View and User Menus.

Table 3-1 Sequential Directory of View and User Screens

Menu	Main Screen or Menu Line	Screen Reference	Sub-Screen
View	<i>New Starting Screen</i>	Figure 3-2 Page 3-6	Figure 3-3 <i>No Alarms Present Screen</i> on Page 3-6
	<i>ALARM Display Selection Screen</i>	Figure 4-2 Page 4-3	Figure 4-3 <i>Alarms Present Screen</i> on Page 4-4
			Figure 4-4 <i>Alarm to be Acknowledged Screen</i> on Page 4-4
			Figure 4-5 <i>Alarm Reset Screen</i> on Page 4-4
			Figure 4-6 <i>Ensure Alarm Reset Screen</i> on Page 4-5
			Figure 4-7 <i>Alarm to be Reset Screen</i> on Page 4-5
			Figure 4-8 <i>Alarm is Reset Screen</i> on Page 4-5
	<i>Graphic Display Selection</i>	Figure 4-1 Page 4-1	Figure 4-9 <i>Graphic Display Screen</i> on Page 4-6
	<i>Manual Intensity Selection</i>	Figure 4-1 Page 4-1	Figure 4-10 <i>Intensity Select Screen</i> on Page 4-7
	<i>Display Brightness Selection</i>	Figure 4-1 Page 4-1	Figure 4-11 <i>Display Brightness Screen</i> on Page 4-7
<i>Date/Time Display Selection</i>	Figure 4-1 Page 4-1	Figure 4-12 <i>Date/Time Display Screen</i> on Page 4-8	
<i>Intensity Change Times Selection</i>	Figure 4-1 Page 4-1	Figure 4-13 <i>Intensity Change Times Display Screen</i> on Page 4-9	
<i>General Information Selection</i>	Figure 4-1 Page 4-1	Figure 4-14 <i>General Information Screen</i> on Page 4-9	

Table 3-1 Sequential Directory of View and User Screens (Continued)

Menu	Main Screen or Menu Line	Screen Reference	Sub-Screen
	<i>Communications Status</i>	Figure 4-1 Page 4-1	Figure 4-15 <i>Communication Status Screen - No Problems</i> on Page 4-10
			Figure 4-16 <i>Communication Status Screen - Problems</i> on Page 4-10
	<i>Password Selection</i>	Figure 4-1 Page 4-1	Figure 5-1 <i>Enter Password Screen</i> on Page 5-1
			Figure 5-2 <i>Incorrect Password Screen</i> on Page 5-2
User	<i>User Menu Selections</i>	Figure 5-3 Page 5-3	Figure 5-3 <i>User Menu Selections</i> on Page 5-3
	<i>Diagnostics Displays</i>	Figure 5-3 Page 5-3	Figure 5-4 <i>Total Flashes Screen</i> on Page 5-5
			Figure 5-5 <i>Day Flashes Screen</i> on Page 5-5
			Figure 5-6 <i>Twi Flashes Screen</i> on Page 5-6
			Figure 5-7 <i>Nite Flashes Screen</i> on Page 5-6
			Figure 5-8 <i>Red Flashes Screen</i> on Page 5-6
			Figure 5-9 <i>Internal Temp Screen</i> on Page 5-7
			Figure 5-10 <i>Line Voltage Screen</i> on Page 5-7
			Figure 5-11 <i>Trig. Voltage Screen</i> on Page 5-7
			Figure 5-12 <i>Bank Voltage Screen</i> on Page 5-7
			Figure 5-13 <i>Day Energy Screen</i> on Page 5-8
			Figure 5-14 <i>Twi Energy Screen</i> on Page 5-8
			Figure 5-15 <i>Night Energy Screen</i> on Page 5-8
			Figure 5-16 <i>Red Energy Screen</i> on Page 5-9
			Figure 5-17 <i>Mode Flashes Screen</i> on Page 5-9
			Figure 5-18 <i>Mode Triggers Screen</i> on Page 5-9
			Figure 5-19 <i>Marker Voltage Screen</i> on Page 5-10
			Figure 5-20 <i># Marker Bulbs Screen</i> on Page 5-10
			Figure 5-21 <i>Firmware Number and Version Screen</i> on Page 5-10
	<i>Set Intensity Change Times Selection</i>	Figure 5-3 Page 5-3	Figure 5-22 <i>Set Intensity Change Times Screen</i> on Page 5-11
	<i>Alarm Call Out Phone Numbers Selection</i>	Figure 5-3 Page 5-3	Figure 5-23 <i>Alarm Call Out Phone Numbers Screen</i> on Page 5-12
	<i>Status Call Out Phone Number Selection</i>	Figure 5-3 Page 5-3	Figure 5-24 <i>Status Call Out Phone Numbers Screen</i> on Page 5-12

Table 3-1 Sequential Directory of View and User Screens (Continued)

Menu	Main Screen or Menu Line	Screen Reference	Sub-Screen
	<i>Status Call Out Phone Number Selection</i>	Figure 5-3 Page 5-3	Figure 5-25 <i>Install PEC Screen</i> on Page 5-13
	<i>Set Tower Name Selection</i>	Figure 5-3 Page 5-3	Figure 5-26 <i>Set Tower Name Screen</i> on Page 5-13
	<i>Set Tower Name Selection</i>	Figure 5-3 Page 5-3	Figure 5-27 <i>Change Password Type Screen</i> on Page 5-14
			Figure 5-28 <i>Change Password Screen</i> on Page 5-14
	<i>Set Number of Rings Selection</i>	Figure 5-3 Page 5-3	Figure 5-29 <i>Set Number of Rings Screen</i> on Page 5-15
	<i>Set Construction Mode Selection</i>	Figure 5-3 Page 5-3	Figure 5-30 <i>Set Construction Mode Screen</i> on Page 5-15
			Figure 5-31 <i>Logoff Screen</i> on Page 5-16

Operation Panel

The operation panel, located on the front of the FTC 121-1 Controller, consists of six LED indica-

tors on the left, four buttons on the right, and an LCD display between them. See *Figure 3-1 Operation Panel*.

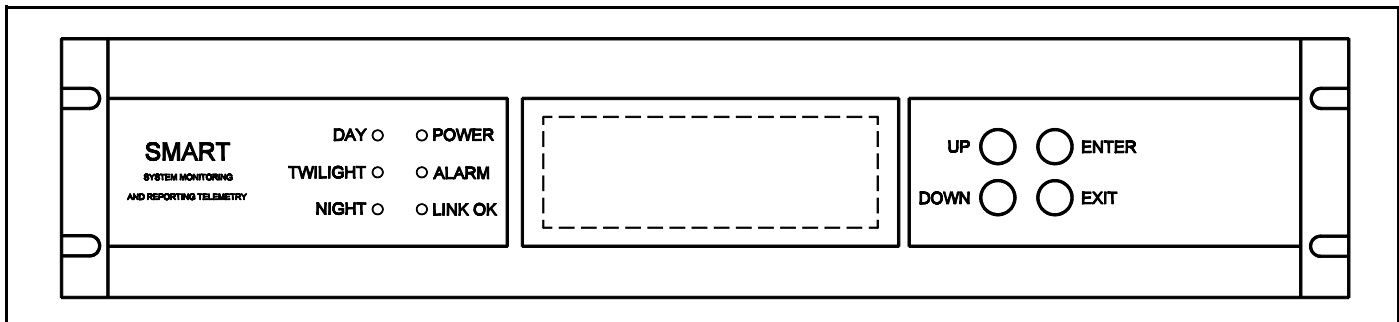


Figure 3-1 Operation Panel

30001

LED Indicators and Front Panel Buttons

front panel UP, DOWN, ENTER, and EXIT Buttons are described next in *Table 3-3 Front Panel Button Functions*.

The Operation Panel LEDs are described next in *Table 3-2 LED Indicators*. The functions of the

Table 3-2 LED Indicators

LED	Color	Purpose
POWER	Steady green	Indicates that power is on.
ALARM	Blinking red	Indicates an alarm condition is present.
LINK OK	Steady green	Indicates that the communications link between the controller and the light units is operating correctly. If this LED is <i>off</i> , an alarm or status code is generated.
DAY	Steady or blinking yellow	Steady yellow when the system is in <i>Day</i> intensity under automatic <i>photocell</i> control. It blinks yellow if the system is in <i>manual Day</i> mode.
TWILIGHT	Steady or blinking yellow	Steady yellow when the system is in <i>Twilight</i> intensity under automatic <i>photocell</i> control. It blinks yellow if the system is in <i>manual Twilight</i> mode.
NIGHT	Steady or blinking yellow	Steady yellow when the system is in <i>Night</i> intensity under automatic <i>photocell</i> control. It blinks yellow if the system is in <i>manual Night</i> mode.

Table 3-3 Front Panel Button Functions

Button	General Function	Specific Function
UP	These buttons select menu choices from a <i>menu</i> screen, or modify the value of a setting in a <i>function-setting</i> screen.	• Selects the previous menu choice or function, or adjusts the value of a setting upward in a <i>function-setting</i> screen.
DOWN		• Selects the next menu choice or function, or adjusts the value of a setting downward in a <i>function-setting</i> screen.
ENTER	This button functions differently in different situations. Typically, from a <i>menu</i> screen, the ENTER Button accesses the selected menu choice, which is a <i>display</i> screen or a <i>function-setting</i> screen, as described in the next column. The use of the ENTER Button is described in detail with the specific instances where you use it.	<ul style="list-style-type: none"> • From within a <i>display</i> screen, the ENTER Button may access a <i>function-setting</i> screen if one is available. If there is no <i>function-setting</i> screen, the ENTER Button returns the screen to the menu. • From within a <i>function-setting</i> screen, the ENTER Button accepts the current setting and advances to the next function, or accepts the current setting of the last function and (in most cases) exits the screen, confirming all changes.
EXIT	This button functions differently in different situations, as described in the next column.	<ul style="list-style-type: none"> • From within a <i>display</i> screen, Exit returns the screen to the menu from which that screen was accessed. • From within a <i>function-setting</i> screen, Exit usually returns the screen to the <i>display</i> screen from which you entered the <i>function-setting</i> screen, <i>canceling any changes</i> made while in the <i>function-setting</i> screen. Press Enter to accept the changes, or Enter to accept the changes and then Exit to return to the menu screen.

Menus and Screens

You can see three types of screens: *menus*, from which a given display or function-setting screen

may be selected; *display screens*, which present information; and *function-setting screens*, in which settings of various system parameters may be changed.

As a user, two menus concern you: the View Menu and User Menu. The View Menu gives access to functions largely concerned with viewing and responding to system information rather than changing a system setting. You access the User Menu through the View Menu with a password, and then access all the functions of the View Menu and the various additional functions of the User Menu. The User Menu allows you to change a number of system settings.

Cursor

In menus and function-setting screens, the cursor is a blinking square light, usually in the left-most column. It denotes the menu choice currently selected, or the parameter that may currently be changed. The cursor (or the blinking light) moves directly on top of the value to be changed.

Screen Saver

If you see a rapidly spinning bar cursor, it is a screen-saver function. To restore the text, press any button.

If you do not operate the controller front panel for a time, the screen reverts to the View Menu only. You then must reenter the password to see the User Menu. However, note that to return to only the View Menu display you must logoff from the User Menu (see *Section Logoff Screen* on Page 5-16).

Opening Screens

Before you access the View Menu or User Menu, the controller displays the opening screen shown in *Figure 3-2 New Starting Screen*.

New Starting Screen

The first screen to appear with a new controller is shown in *Figure 3-2 New Starting Screen*. This screen displays the tower name, which can be changed (see *Section Set Tower Name Selection* on Page 5-13).

Alarms

Alarms are important to know about. Thus, the first screen after the New Starting Screen, when you press a button, shows you whether alarms are present in the system.

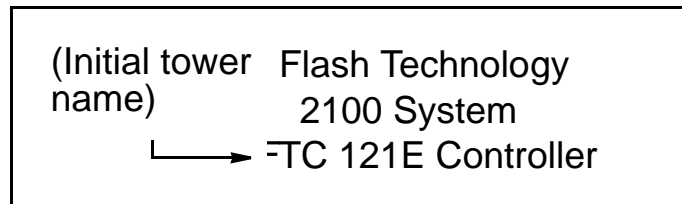


Figure 3-2 New Starting Screen

Button Functions:

- Any button displays the next screen, which is shown in either *Figure 3-3 No Alarms Present Screen* or *Figure 4-3 Alarms Present Screen* on Page 4-4.

No Unacknowledged Alarms or Status Codes are Present

If no unacknowledged alarms or status codes are present, pressing any button displays the screen shown in *Figure 3-3 No Alarms Present Screen*.

No Alarms Present Screen

Pressing any button from the New Starting Screen or from the ALARM Display Selection Screen, if no unacknowledged alarms or status codes are present, causes the display of the screen shown in *Figure 3-3 No Alarms Present Screen*.

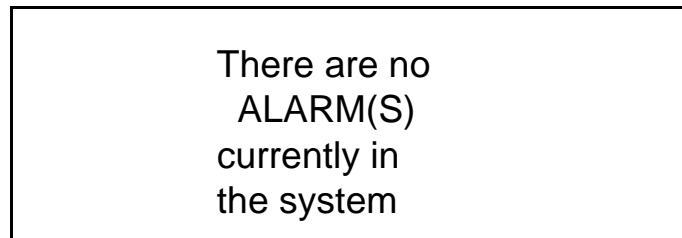


Figure 3-3 No Alarms Present Screen

Button Functions:

- Any button returns the display to the View Menu at the ALARM Display line.

View and User Menus

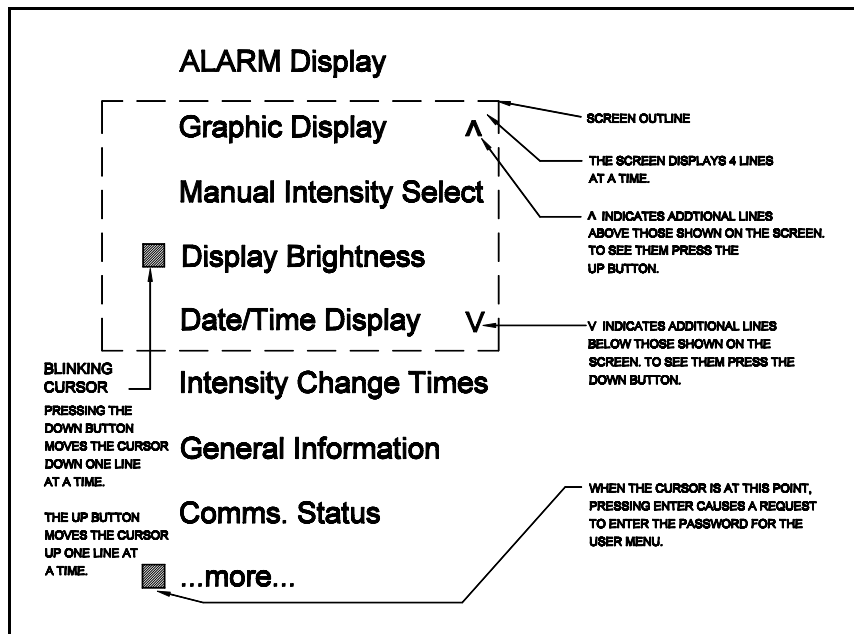
See *Section View Menu* on Page 4-1 for a discussion of the remaining lines in the View Menu. See also *Figure 5-3 User Menu Selections* on Page 5-3 for a discussion of the selections in the User Menu.

Section 4 Operation — View Menu

View Menu

You use the *View Menu* shown in *Figure 4-1 View Menu Selections* to perform certain system house-keeping functions, such as:

- Acknowledge and reset alarms.
- View a graphic display of the lights.
- Select a manual intensity mode.
- Select a display brightness for the screen.
- Display or set the correct date and time for the controller.
- Display the times that intensity changes should occur for your structure lights.
- Display general system information (master or slave, type of strobes, controller version).
- Status of the communications between the controller and lights.
- Enter a password to view the User or Service menus.



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Figure 4-1 View Menu Selections

Front Panel Button Functions

For most menu and screen selections, the front panel buttons have the functions discussed in the following list. Each screen explanation in this manual discusses the function of the buttons for that screen. The functions are as follows:

1. The **UP** or **DOWN** Button moves the blinking cursor, which is in the left-most column, to the desired line or item choice.
2. The **ENTER** Button accesses that menu choice.
3. The **EXIT** Button returns the screen to the menu from the screen previously selected from the menu choice.
4. A “v” in the lower right corner indicates that scrolling with the **DOWN** Button reveals additional items.
5. A “^” in the upper right corner indicates that scrolling with the **UP** Button reveals additional items.

You enter the *User Menu* from the *View Menu* by selecting ...more... then entering a password. The ...more... selection is discussed in *Section Accessing the User Menu (...more...)* on Page 5-1.

After the initial screen discussed in *Section New Starting Screen* on Page 3-6, the first available selection in the *View Menu* is the **ALARM Display**. If you press a key, the controller displays unacknowledged alarms. Otherwise, it tells you that no alarms are present. Alarms are discussed next.

Handling Alarms

Handle alarms in a three-step process, as follows:

1. Acknowledge the alarm when you first note the condition. Doing this informs the system that you have seen the alarm and are aware that the condition exists.
2. Correct the condition that caused the alarm.
3. Reset the alarm only after correcting it.

Acknowledge or Reset an Alarm

To acknowledge and reset an alarm, or both, press the **ENTER** Button at the **ALARM Display** line in the *View Menu* twice and follow the directions in *Section Alarm Displays*. The opening screen after the **ALARM Display** line in the *View Menu* continues to be that shown in *Figure 4-3 Alarms Present Screen* on Page 4-4 until you *reset* the alarm. If no unacknowledged alarms are present, but one or more unreset alarms are present, the opening screen remains that shown in *Figure 4-3 Alarms Present Screen* on Page 4-4.

Remote Notification of Alarms

The FTC 121-1 Controller allows you to specify phone numbers for remote alarm notification. If an alarm occurs, the controller dials the previously specified phone numbers to notify appropriate personnel. You set the phone numbers as shown in *Figure 5-23 Alarm Call Out Phone Numbers Screen* on Page 5-12.

Additionally, alarms transfer a set of isolated relay contacts in the controller. The connections to these contacts are available at the terminal strip connections on the back of the FTC 121-1 Controller for application at your discretion. The connections are TB2-8, TB2-9, and TB2-10. They are labelled respectively **CLOSES ON ALM**, **COM**, and **OPENS ON ALM**.

Alarm Displays

Alarm Messages report system conditions that are either failures or may indicate approaching failures. The controller indicates an alarm when a strobe misses three consecutive flashes. When an alarm is active, the *alarm* LED on the operation panel is blinking red. No corresponding LED is present for status codes.

Alarm Screens

Alarm screens (Figures 4-2 to 4-8) provide a convenient method of viewing, acknowledging and resetting alarms. For alarms, you have three stages of response: *viewing*, *acknowledging* and *resetting*. At each stage, you have a choice of whether to go further. If several alarm messages are present, you can *view* all of them and decide when and in what order to acknowledge or reset them.

Alarms that have been previously acknowledged but not reset can be accessed through the *View Menu*

NOTE

Unless otherwise indicated, you should notify FTCA Service in the case of any alarms. The controller notifies FTCA by telephone if the FTCA Service phone number is programmed as an Alarm Call Out phone number.

Unacknowledged System Alarm Screen

To see if any alarms are unacknowledged, do the following:

Press the **ENTER** Button at the ALARM Display line in the View Menu as shown in *Figure 4-2 ALARM Display Selection Screen*.

From the Alarms Present Screen, you can enter the View Menu by pressing the **EXIT** Button once. If you press the **ENTER** Button at this screen, you display a screen that asks if you want to acknowledge the alarm as shown in *Figure 4-4 Alarm to be Acknowledged Screen* on Page 4-4. If you acknowledge the alarm, the controller then prompts you to determine if you want to reset the alarm as shown in *Figure 4-5 Alarm Reset Screen* on Page 4-4. If all alarms are acknowledged, an unreset alarm causes the display of the screen in *Figure 4-3 Alarms Present Screen* on Page 4-4.

Alarm Conditions

Alarm conditions close or open the alarm contacts available as connections at TB2-8, TB2-9, and TB2-10 on the rear panel of the controller. Conditions causing *alarms* include:

- Power Restored — The strobe lost power.
- Strobe COMM Failure — Communication between FTC 121-1 Controller and a beacon repeatedly failed.
- Strobe DAY Alarm — A beacon failed to flash in day mode.
- Strobe TWI Alarm — A beacon failed to flash in twilight mode.
- Strobe NITE Alarm — A beacon failed to flash in white night mode.
- Strobe RED Alarm — A beacon failed to flash in red night mode.
- Marker Alarm — The number of burned out markers in a tier have exceeded the lower limit alarm threshold for that tier.
- Filter Alarm — The filter in a flashhead with a filter actuator mechanism has failed.
- Strobe Failure — A strobe has failed to flash three consecutive times.
- Ext Beacon Fail—The external red light controller signalled that a red beacon in a dual system has failed.

- Twilight PEC Error —The photocell failed to signal the a transition from day to twilight
- Night PEC Failure—The photocell failed to signal the transition from twilight to night.
- Photocell Failure — The photocell failed to change state within a 19-hour period.
- Invalid PEC Response—The photocell is operating incorrectly or is connected incorrectly.

Specific Beacon Alarm

When a faulty condition involves a particular beacon (as opposed to the system as a whole), the screen shown in *Figure 4-4 Alarm to be Acknowledged Screen* on Page 4-4 specifies the beacon and the time of occurrence of the condition. Beacons are specified by their tier and their position in the tier. For example, T2B3 is the third beacon on tier two. The FTC 121-1 Controller can operate a system of up to 7 tiers, with up to 4 beacons per tier, for a total of up to 28 beacons.

Alarm Display Selection Screen

If you press the **ENTER** Button at the initial screen shown in *Figure 3-2 New Starting Screen* on Page 3-6, and system alarms are present, the controller displays the screen shown in *Figure 4-3 Alarms Present Screen* on Page 4-4. Or, if alarms are present and you press the **ENTER** Button with the cursor at the ALARM Display line in the View Menu as shown in *Figure 4-1 View Menu Selections* on Page 4-1, the controller displays the *Figure 4-3 Alarms Present Screen* on Page 4-4.

Otherwise, if you press the **ENTER** Button without alarms present, the controller displays *Figure 3-3 No Alarms Present Screen* on Page 3-6.

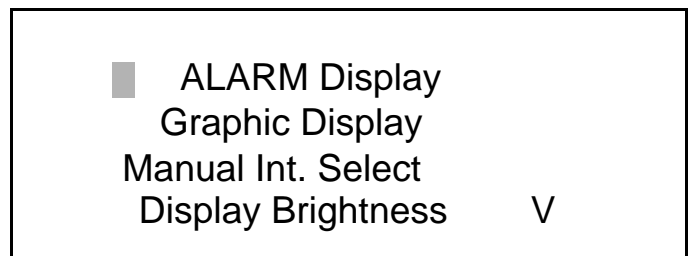


Figure 4-2 ALARM Display Selection Screen

Button Functions:

- If no alarms are present, the **ENTER** Button displays *Figure 3-3 No Alarms Present Screen* on Page 3-6.
- If alarms are present, the **ENTER** Button displays *Figure 4-3 Alarms Present Screen* .
- If alarms are present, but unacknowledged, the **ENTER** Button causes the display of *Figure 4-4 Alarm to be Acknowledged Screen* .
- If alarms are present, acknowledged, but unreset, the **ENTER** Button causes the display of *Figure 4-5 Alarm Reset Screen* .

Unacknowledged System Alarms Present Screen

If alarms are present (unacknowledged or unreset), and you press the **ENTER** Button with the cursor at the ALARM Display line on the screen, the screen displays *Figure 4-3 Alarms Present Screen* .

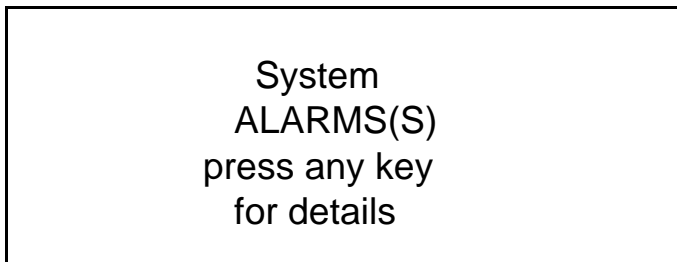


Figure 4-3 Alarms Present Screen

Button Functions:

- Any button displays an alarm acknowledgment screen similar to the one shown in *Figure 4-4 Alarm to be Acknowledged Screen* or *Figure 4-7 Alarm to be Reset Screen* on Page 4-5.
- Pressing the **EXIT** Button at the screen shown in *Figure 4-4* returns the screen to the View Menu with the cursor at the ALARM Display line.
- Pressing the **EXIT** Button at the screen shown in *Figure 4-7* returns the screen to the View Menu with the cursor at the ALARM Display line.

Alarm to be Acknowledged Screen

The Alarm to be Acknowledged screen displays the strobe location as TxBx, where Tx is the Tier

number, and Bx is the Beacon number on that tier. The screen displays a brief description of the alarm; the one in *Figure 4-4* shows Strobe COMM Failure indicating that the controller is failing to communicate with the strobe. The problem may be the strobe, the controller, or the connecting cable.

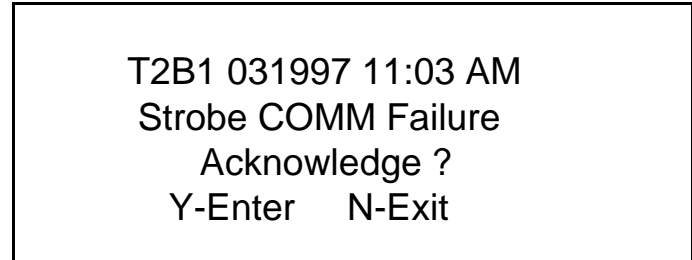


Figure 4-4 Alarm to be Acknowledged Screen

Button Functions:

- The **ENTER** Button acknowledges the alarm and shows the Alarm Reset Screen in *Figure 4-5 Alarm Reset Screen* .
- The **EXIT** Button does not acknowledge the alarm and returns the screen to the View Menu at the ALARM Display line.

Alarm Reset Screen

The Alarm Reset Screen shows that the alarm has been acknowledged and allows you to reset the alarm by pressing the **ENTER** Button. The service number shown is that of Flash Technology. Generally, you should not reset the alarm unless the alarm condition has been corrected.

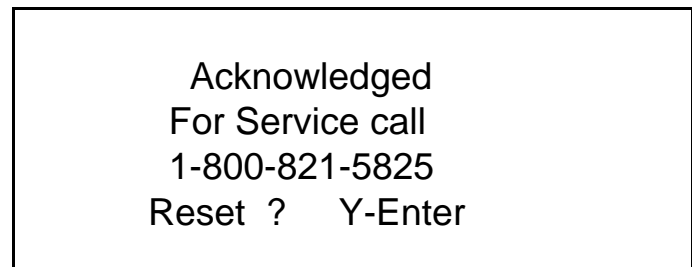


Figure 4-5 Alarm Reset Screen

Button Functions;

- The **ENTER** Button prompts you again to make sure that you really want to reset this alarm as shown in *Figure 4-6 Ensure Alarm Reset Screen* on Page 4-5.

- The **EXIT** Button displays the screen similar to the one shown in *Figure 4-7 Alarm to be Reset Screen* where the alarm is again displayed and you are asked whether you want to now reset it.

Ensure Alarm Reset Screen

The Ensure Alarm Reset Screen is an additional prompt to make certain that you really want to reset this alarm. Additionally, it informs you that you should reset the alarm only after repairs are performed.

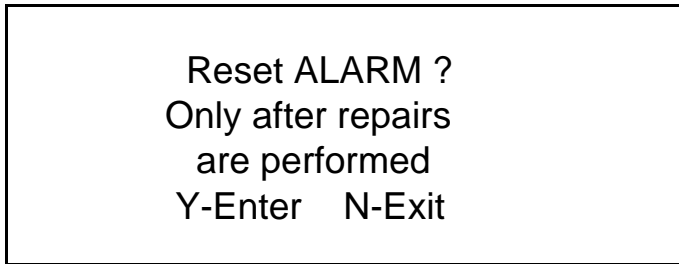


Figure 4-6 Ensure Alarm Reset Screen

Button Functions:

- The **ENTER** Button displays the Alarm is Reset Screen as shown in *Figure 4-8 Alarm is Reset Screen*.
- Pressing the **ENTER** Button resets the alarm, if the condition has been corrected. If the condition is not corrected, the alarm is reinstated and must be re-acknowledged.
- Pressing the **EXIT** Button twice does *not* reset the alarm but returns the screen to the View Menu with the cursor at the ALARM Display line.

Alarm to be Reset Screen

The controller displays this screen after you have acknowledged a specific alarm and pressed the **ENTER** Button at the screen shown in *Figure 4-5 Alarm Reset Screen* on Page 4-4.

Or, it displays this screen for acknowledged but unreset alarms if you press the **ENTER** Button twice at the ALARM Display line in the View Menu.

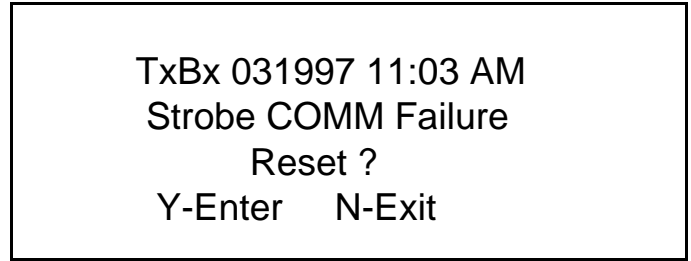


Figure 4-7 Alarm to be Reset Screen

Button Functions:

- The **EXIT** Button returns the screen to the View Menu with the cursor at the ALARM Display line. At this point the alarm is still to be reset, but it has been acknowledged.
- The **ENTER** Button displays the screen shown in *Figure 4-6 Ensure Alarm Reset Screen* to make certain that you really want to now reset the alarm. After pressing the **ENTER** Button, the screen shown in *Figure 4-8 Alarm is Reset Screen* appears. Press the **ENTER** Button twice to return to the ALARM Display line in the View Menu. If you really did not correct the problem, you must press the Reset Button twice to return to the View Menu with the cursor at the ALARM Display line. A solid alarm returns quickly.

Alarm is Reset Screen

This is an information screen that informs you that you have reset the alarm.

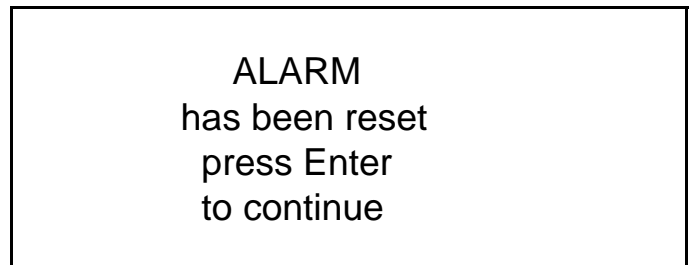


Figure 4-8 Alarm is Reset Screen

Button Functions:

- Pressing the **ENTER** Button twice returns the screen to the View Menu with the cursor at the ALARM Display line, if the alarm condition has been corrected. If it has not been corrected, the alarm is redisplayed as shown in *Figure*

4-4 Alarm to be Acknowledged Screen on Page 4-4.

Graphic Display

The *Tower Graphic Display* screen in *Figure 4-9 Graphic Display Screen* shows the current status of all installed strobes. The screen depicts the tower graphically as lying on its side, with the top AOL if any, at the right. Each column on the screen is a tier; tier 1 is the left-most column. Each symbol in a column represents one beacon. The strobes are indicated by one of three blinking symbols (**O**, **X**, **P**, **S** or **i**).

- O/●** A circle that “flashes” (fills solid) at a regular flash rate indicates a properly working beacon (no alarms).
- X** The beacon is not communicating. The problem could be in the controller, the beacon, or the communication cable.
- P** A “P” indicates a failed strobe. It has reported an alarm.
- S** An “S” indicates Service Mode.
- i** An “i” indicates a strobe in which the trigger has been inhibited and the beacon is no longer flashing. Service personnel may invoke this condition.

Graphic Display Screen

The drawing in *Figure 4-9 Graphic Display Screen* shows 17 installed beacons. The beacon on tier 2, beacon 1 is not communicating. The beacon on tier 5, beacon 2 (an AOL) has reported an alarm. The beacon on tier 1, beacon 4 is inhibited. All other beacons are functioning correctly.

Graphic Display Selection

Pressing the **ENTER** Button with the cursor at the Graphic Display line shown in *Figure 4-1 View Menu Selections* on Page 4-1 displays a graphic screen that shows the position of the beacons on your tower as described in *Figure Graphic Display Screen*. This display matches

your tower configuration only if Service Personnel have configured the controller for your particular installation.

Graphic Display Screen

The Graphic Display Screen shows the tower configuration of beacons as though the tower were lying on its side. In the tower light configuration shown in *Figure 4-9* the AOL light is failing. Failures (alarms) are shown as a “P”. An AOL is usually set up as beacon 2 on the top tier. In *Figure 4-9* the AOL is in Tier 5 Beacon 2.

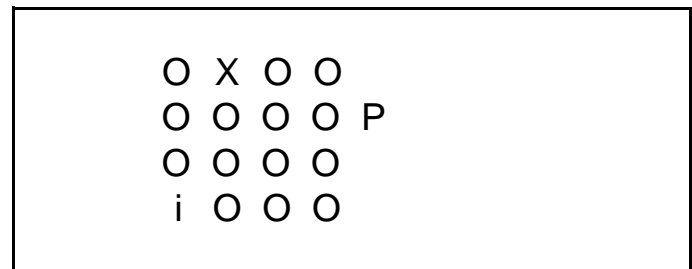


Figure 4-9 Graphic Display Screen

Button Functions:

- Any button returns the screen to the View Menu.

Manual Intensity Select

The strobes flash at one of three intensities depending on the light level: day, twilight, or night. Normally, the FTC 121-1 switches between these intensities according to information from a photocell (PEC). However, *Manual Intensity Select* allows you to select the intensity of the strobes manually for testing purposes. The system stays in manual mode for only 2 hours and then reverts back to automatic mode. When you enter the screen, the cursor indicates the mode in which the system currently operates. The cursor at the first line (Auto PEC Control) indicates that the system is under control of the PEC.

Manual Intensity Selection

To change to a manually selected intensity by entering the Intensity Select Screen, move the cursor down to the Manual Int. Select line in the View Menu shown in *Figure 4-1 View Menu Selections* on Page 4-1. Press the **ENTER** Button.

Intensity Select Screen

The example screen shown in *Figure 4-10 Intensity Select Screen* allows you to manually operate the structure in any of three modes, assuming that your structure lights are installed to operate in all three. The first line, Auto (PEC control), selects automatic mode under control of the photocell (PEC). Manual Day operates the structure in day mode. Manual Twi-light operates the structure in twilight mode. Manual Night operates the structure in night mode.

The LED associated with DAY, TWILIGHT, or NIGHT on the front panel *blinks* to show that its associated current operating mode is manually selected.

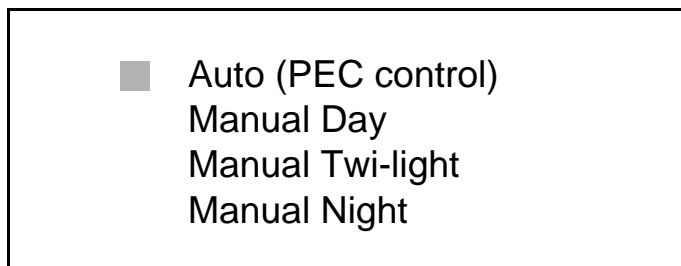


Figure 4-10 Intensity Select Screen

Button Functions:

- The **UP** or **DOWN** Button moves the cursor to the mode you require.
- The **ENTER** Button turns on that mode.
- The **EXIT** Button returns the screen to the Manual Int. Select line in the View Menu.

Display Brightness

The screen in *Figure 4-11 Display Brightness Screen* allows you to adjust the brightness of the display on the controller to your preference from BRIGHTEST, through BRIGHT and MEDIUM, to DIM DISPLAY.

Display Brightness Selection

To adjust display brightness on the controller screen, first move the cursor to the Display Brightness line in *Figure 4-1 View Menu Selections* on Page 4-1. Press the **ENTER** Button.

Display Brightness Screen

This screen allows you to change the brightness of the display on the controller screen. After entering this screen, move the cursor to the brightness you want and press the **ENTER** Button. The screen immediately changes to that brightness.



Figure 4-11 Display Brightness Screen

Button Functions:

- To change the brightness, select the desired brightness by moving the cursor with the **UP** or **DOWN** Button, then press the **ENTER** Button. You remain in this screen, and pressing the **ENTER** Button again has no effect (unless you first select a different brightness).
- The **EXIT** Button returns the screen to the *View Menu*.

Date/Time Display

The screen shown in *Figure 4-12 Date/Time Display Screen* on Page 4-8 allows you to display the date and time, or change them.

Date/Time Display Selection

To view or change the date and time, move the cursor to the Date/Time Display line shown in *Figure 4-1 View Menu Selections* on Page 4-1 and press the **ENTER** Button. The controller displays the screen in *Figure 4-12 Date/Time Display Screen* on Page 4-8 with the cursor blinking on the second digit of the month.

Date/Time Display Screen

This screen shows the system calendar date and clock time at the time that you select the screen. When you select the screen, the cursor is blinking on the second digit of the month.

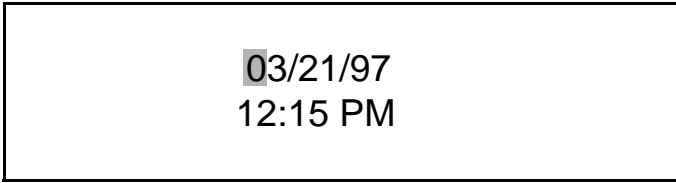


Figure 4-12 Date/Time Display Screen

Button Functions:

- To leave this menu option without making any changes and return to the *View Menu*, press the **EXIT** Button.
- To cycle forward through the date and time digits in the display press the **ENTER** Button. After cycling through the entire display, the last pressing of the **ENTER** Button accepts the values and returns the screen to the *View Menu*.
- To change any digit in the display, use the **UP** or **DOWN** Button when the cursor is covering that digit.
- To change the time from AM to PM, or PM to AM, place the cursor on the hour digit, and press and hold the **UP** or **DOWN** Button until the AM or PM changes appropriately. Continue to hold the **UP** or **DOWN** Button until the hour is set correctly.
- To cycle backward through the date and time digits in the display press the **EXIT** Button.

Once you press the **ENTER** Button on the Date/Time Display line in the *View Menu*, the cursor is displayed on the date.

- Press the **UP** or **DOWN** Buttons to modify the value and press the **ENTER** Button to cycle through the other digits on the screen
- Again, press the **UP** or **DOWN** Buttons to modify the selected value.
- To save changes, cycle through the entire field with the **ENTER** Button until the screen returns to the *View Menu*.

NOTE

Pressing the **EXIT** Button before changing anything or pressing any other Button, returns the screen to the *View Menu*.

Intensity Change Times

The screen shown in *Figure 4-13 Intensity Change Times Display Screen* on Page 4-9 displays the times that the intensity of the strobes (night, day or twilight) are changed during a 24 hour period, as triggered by default settings in case of PEC failure. If the system is not currently under PEC control for any reason, the default times specified in the *Figure 5-22 Set Intensity Change Times Screen* on Page 5-11 appear here.

Because the system follows these default times exactly in case of PEC failure, it is important to note that the default settings do not advance or regress several minutes each day as the PEC does by following the daylight conditions. Thus, the PEC should be repaired as soon as possible, and in the meantime you may want to adjust the settings periodically if the repair delay is rather long.

Note that you cannot change the default settings with this screen. You can change the times by using the display line in the *User Menu* called *Set Intensity Change Times* shown in *Figure 5-3 User Menu Selections* on Page 5-3.

Intensity Change Times Selection

To display intensity change times, move the cursor down to the *Int. Change Times* line shown in *Figure 4-1 View Menu Selections* on Page 4-1. Press the **ENTER** Button.

Intensity Change Times Display Screen

This screen allows you to view the default intensity change times for the structure lights. You cannot change the times from this screen, but can change them as discussed in *Section Set Intensity Change Times* on Page 5-10.

■	NIGHT-TWI	05:00 AM
	TWI-DAY	05:30 AM
	DAY-TWI	04:30 PM
	TWI-NIGHT	05:00 PM

Figure 4-13 Intensity Change Times Display Screen

Button Functions:

- The **UP** or **DOWN** Buttons only move the cursor.
- The **EXIT** Button returns the screen to the View Menu.

General Information

The *General Information* screen in *Figure 4-14 General Information Screen* on Page 4-9 shows whether the system is a master or slave system, the number of strobes or dual (white/red) beacons currently installed, and the current software version and revision (shown as X.X.X).

General Information Selection

To display general system information, move the cursor in the View Menu with **UP** or **DOWN** Button to the General Information line shown in *Figure 4-1 View Menu Selections* on Page 4-1. Press the **ENTER** Button. The **ENTER** Button display the screen in *Figure 4-14 General Information Screen*.

General Information Screen

The screen shown in *Figure 4-14* provides information about the type of system (master or slave or dual), operating mode, the kind of strobes, and the version of the software.

Dual System

In a *dual system*, each strobe beacon has a corresponding red beacon. A typical dual system tower may have three FTB 225 Beacons on each tier. Two of the FTB 225 Beacons have red FH 307

Flashheads. The third beacon controls a set of three marker lights, but does not itself flash.

Structure Operating Modes

The FTC 121-1 has two operating modes: normal and catenary.

Normal Mode

In *normal* mode, all strobe lights flash simultaneously 40 times per minute during daylight.

Catenary Mode

In *catenary* mode, the lights flash sequentially by tiers at 60 flashes per minute.

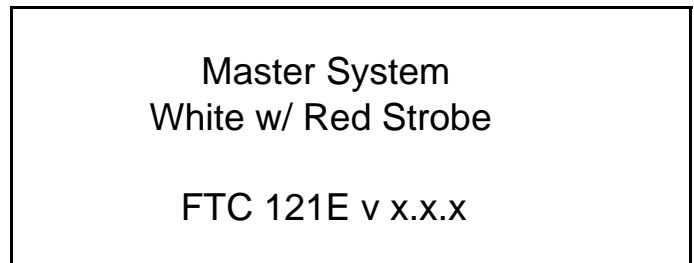


Figure 4-14 General Information Screen

Button Functions:

- The **UP** or **DOWN** Buttons are inactive in this screen.
- The **ENTER** Button or **EXIT** Button returns the screen to the menu.

Communications Status

To display Communications Status, move the cursor in the View Menu with **UP** or **DOWN** Button to the Comms. Status line shown in *Figure 4-1 View Menu Selections* on Page 4-1. Press the **ENTER** Button. The **ENTER** Button displays the screen in *Figure 4-15 Communication Status Screen - No Problems* on Page 4-10 or *Figure 4-16 Communication Status Screen - Problems* on Page 4-10.

Communications Status Screen—No Problems

The screen shown in *Figure 4-15 Communication Status Screen - No Problems* on Page 4-10 shows that the communications path between the FTC 121-1 Controller and the strobe units is functioning properly.

Note that this screen may indicate proper operation if the tower has no strobes connected and installed by the controller. In this case the controller assumes an empty tower and therefore shows correct communication for that condition.

Controller
communicating
with ALL beacons
properly

Figure 4-15 Communication Status Screen - No Problems

Button Functions:

- The **ENTER** Button or the **EXIT** Button returns the screen to the View Menu

Communications Status Screen—Problems

The *Communications Status* screen in *Figure 4-16* shows that the communications path between the FTC 121-1 Controller and the strobe units is failing.

Communications
problems exist
see ALARM display
for details

Figure 4-16 Communication Status Screen - Problems

Button Functions:

- The **UP** or **DOWN** Buttons are inactive in this screen.
- The **ENTER** Button or **EXIT** Button returns the screen to the View Menu.

User Menu

See *Section 5 — Operation; User Menu* for a discussion of the items in the User Menu after you enter the correct password to display the User Menu.

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