RELIANCE Touchscreen Airfield Lighting Control and Monitoring Systems (ALCMS)

User Manual

ADB SAFEGATE

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A.0 Disclaimer / Standard Warranty

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The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

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> **ℹ Note**
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ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE L858(L) Airfield Guidance Signs are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition).

ADB SAFEGATE LED light fixtures (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition). .

> **ℹ Note**
>
> See your sales order contract for a complete warranty description.

Liability

> ⚠ WARNING
>
> Use of the equipment in ways other than described in the catalog leaflet and the manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in the manual.

ADB SAFEGATE cannot be held responsible for injuries or damages resulting from non-standard, unintended uses of its equipment. The equipment is designed and intended only for the purpose described in the manual. Uses not described in the manual are considered unintended uses and may result in serious personal injury, death or property damage.

Unintended uses, includes the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine ADB SAFEGATE replacement parts or accessories.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB SAFEGATE equipment.
- Allowing unskilled personnel to perform any task on or with the equipment.

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1.0 RELIANCE ALCMS

Operation Manual

The manual shows the information necessary to:

- Install
- Carry out maintenance
- Carry out troubleshooting on RELIANCE ALCMS.

1.1 How to work with the manual

1. Familiarize yourself with the structure and content.
2. Carry out the actions completely and in the given sequence.

1.2 Definition of Terms

Term or abbreviation	Description
RELIANCE ALCMS	Airfield Lighting Control and Monitoring System
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
C/L	Center Line
CCR	Constant Current Regulator
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organization
LCD	Liquid Crystal Display
SMGCS	Surface Movement Guidance and Control System

1.3 Airport Lighting Control & Monitoring System

Compliance with Standards

FAA:	L-890 AC 150/5345-56 (Current Edition). ETL Certified.
ICAO:	Annex 14, Vol. 1, para. 5.3 and 8.3 and Aerodrome Design Manual part 5, para. 3.4 and 3.7.
Military:	UFC 3-353-01 par. 15-3.

System Overview

The RELIANCE® Elite Airport Lighting Control and Monitoring System (ALCMS) provides state-of-the-art programmable intelligence for control and monitoring of airfield lighting circuits to meet FAA Airport Lighting Control and Monitoring System L-890XY. The ALCMS can automatically control and monitor stop bars or runway guard lights as part of a Surface Movement Guidance and Control System (SMGCS). In addition, the system can control and monitor Land and Hold Short systems (LAHSO) and can be customized to interface with Constant Current Regulators (CCRs), generators, approach lighting, or other devices requiring remote control and/or monitoring. The system can also be used in remote deicing stations and remote air terminal applications. RELIANCE Elite is unmatched in performance, long-term reliability, and flexibility with many standard features and a wide range of innovative, cost-effective options.

Features

- Real-time status of the airfield lighting system

- Distributed control and monitoring PC-based design

- Realistic airfield graphic displays provide detailed information to air traffic controllers and maintenance personnel

- Touchscreen Creations™ software, developed specifically for airfield lighting applications, provides a powerful and flexible means for airport personnel to make modifications to the lighting system after initial installation

- Time-saving diagnostics and monitoring from remote locations

- Redundant network configurations are available using any combination of Ethernet, fiber optics, hard-wire, and wireless

- Easily integrated into existing airport Ethernet networks

Open-architecture design offers easy integration of the latest technology. (Examples: LAHSO, in-pavement and elevated Runway Guard Light systems, Stop Bars, etc.)

Applications

RELIANCE Elite ALCMS offers a modular design that gives airports the flexibility to easily expand their system as their requirements change and as new FAA regulations require additional capabilities. The open architecture of the ALCMS allows the system to be integrated with any of the latest advanced technologies in airport systems.

Such systems include:

- RELIANCE® Intelligent Lighting systems (power-line carrier technology) - Offer individual lamp control/monitoring, sign monitoring, stop bar, in-pavement or elevated runway guard light control/monitoring, and taxiway routing.

- Surface Movement Surveillance Systems - Provide an integrated workstation that allows lighting control, aircraft tracking, aircraft tagging, and ground movement conflict detection (i.e. runway incursion detection).

- Deicing Stations - Advanced routing control and lamps-out monitoring of aircraft deicing station lights.

- Approach Systems - Advanced control and monitoring of the approach system steady burning lights and the strobe system.

- Remote Air Terminals - Using ADB SAFEGATE's surface guidance system, remote air terminal personnel can control and monitor taxi lanes/apron areas between the main airport surface movement area and a remotely-owned/operated air terminal.

- Land and Hold Short Systems - Indicate the location of hold-short points on runways approved for land and hold short operations.

Advanced Control Equipment (ACE™)

RELIANCE Elite design uses the Advanced Control Equipment (ACE) unit to provide distributed control rather than a centralized system of discrete I/O modules. This dramatically simplifies computer system wiring to the airport's CCRs. With the ACE system, all control and monitoring signals are transferred through a pair of redundant high-speed data buses, eliminating the hundreds of discrete wire connections found in traditional installations. The use of quick disconnects and standard 18-20 gauge shielded, twisted-pair cabling for the data buses greatly simplifies installation and maintenance. An unlimited number of CCRs can be accommodated by simply adding additional data buses as required. Data bus redundancy ensures continuous operation in the event one of the buses fails.

The ACE module consists of an integrated control unit that is interfaced to each CCR either internally or within a small external enclosure. Optional packages can be added depending on system requirements. The ACE module features very quick control response, unparalleled monitoring performance (current/voltage is sampled 50.000 times/sec), and built-in programmable fail-safe modes. Configuration and calibration of the ACE system is performed directly through the ALCMS user interface, eliminating the need for dedicated programming devices or laptop computers. For stand-alone ACE applications, configuration is easily performed using buttons on the front of the ACE display. See ADB SAFEGATE data sheet 3097 for additional information on this product.

Control

- Programmable preset lighting controls automate common procedures
- Touchscreen - Single or multiple touchscreen control stations can be integrated within the ALCMS with built-in transfer procedures
- Provisions for air-to-ground radio control of the airport lighting
- Soft-start control feature provides programmable delays between intensity step switching
- Programmable smart fail-safe provides mechanically latching or preset fail-safe design to meet the airport requirements
- Maintenance lock-out feature allows circuit maintenance, graphical maintenance indication and circuit control protection

Monitoring

- Real-time monitoring functions
- Capable of monitoring constant current regulators, circuit selectors and any non-regulated circuit
- Custom monitoring options provide the flexibility to configure for full L-827 monitoring or simple current sensing relay monitoring
- ADB SAFEGATE's optional AirSide® Remote Management System (A-RMS) provides secure remote access to the ALCMS via the airport's secure network. Access is provided via a high-speed VPN connection device and software that allows ADB SAFEGATE service engineers and/or airport personnel to monitor and service an airport's ALCMS from a remote location. For more information about ADB SAFEGATE's A-RMS, see data sheet 3079

Alarm Reporting

- Extensive searching and reporting capabilities
- Alarming capabilities to meet the requirements of each airport
- Alarming tolerances are configurable to adjust sensitivity
- Alarm and event filtering provides the flexibility to control messages to the airport traffic control tower and maintenance

- Search filters can sort based on date, range of dates, circuit, regulator, reported location and type of alarm

- Report hard-copy printing and exporting to electronic file

Ordering Code   ALCMS - X X

Monitoring Option
A = Control Only
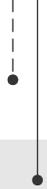B = Basic Monitoring
C = Advanced Monitoring
D = SMGCS Ready

Fail-safe Option
A = Preset
B = Last State

Notes
1.   Call ADB Sales Department for complete description of configuration options.

Touchscreen

Multiple Touchscreen Control Stations (TCS) can be integrated within an ALCMS. Each TCS may share control of an airfield or have a specific area of control. Each TCS operates independently of one another and provides complete redundancy for airfield lighting control and monitoring.

Features

- High-definition airfield graphic representation

- High-contrast, anti-glare monitors

- LCD flat screen displays

- Intuitive user interface provides 'pop-up' buttons that lead the air traffic controllers through lighting control tasks

- Highly flexible preset or selective airfield lighting control

- Programmable event and alarm filters reduce information overload for air traffic controllers

- Easily integrated with SMGCS operation requirements (i.e. stop bar control/monitoring and taxiway routing)

Maintenance Center

The Maintenance Center provides the airport with convenient ALCMS status monitoring from any remote location, on or off the airfield.

The maintenance computer(s) provides real-time and historical information regarding the status of the airfield lighting as well as any other device that is being controlled and/or monitored by the ALCMS.

Graphics

The detailed graphical displays provide quick status of the airfield lighting systems. High-resolution graphics are fully scalable and allow for detailed zooms of any portion of the airfield.

Features

The Maintenance Center provides valuable maintenance tools that allow quick diagnosis and maintenance of the system. Some of the tools available are as follows:

- Remote Lighting Control - A password-protected window allows airport personnel control of the airfield lighting from locations other than the tower, such as the maintenance center, computer operations center, and other lighting vaults

- Report Printing - Flexible report printing capabilities allow specific data to be printed out

- On-line Documentation - Manuals and wiring diagrams are available on-line and provide easy access to important information

- ADB SAFEGATE's optional AirSide® Remote Management System (A-RMS) provides secure remote access to the ALCMS via the airport's secure network. Access is provided via a high-speed VPN connection device and software that allows ADB service engineers and/or airport personnel to monitor and service an airport's ALCMS from a remote location. For more information about ADB SAFEGATE's A-RMS, see data sheet 3079

System Options

In addition to the distributed control system, ADB SAFEGATE continues to offer traditional control systems with any or all of the following features.

- L-821 Airfield Lighting Control Panel

- Support to existing L-827 stand-alone airport monitoring or L-829 Scanning Monitor Ready CCRs

- Industrial style I/O system

Reliance Intelligent Lighting (IL)

ADB SAFEGATE's RELIANCE Intelligent Lighting Platform II System is an integral component in Surface Movement Guidance Control Systems (SMGCS). It is used to precisely control and monitor a single light or groups of lights on the airport runway/taxiway series circuit.

Computerized Taxiway Stop Bar

Several stop bars may be connected to the same series circuit loop while still allowing selective switching and individual monitoring of each stop bar.

When a red stop bar is switched ON, a number of green taxiway centerline lights beyond the stop bar are switched OFF. When the aircraft receives clearance and when the red stop bar lights are extinguished by the air traffic controller, the green centerline lights are illuminated to indicate the aircraft is cleared to proceed. Incorporating a microwave sensor with Reliance IL will allow automatic relighting of the stop bar and extinguishing of the green centerline lights in anticipation of the next aircraft.

Power-line Communication Technology

Controlling and monitoring the stop bar lights, taxiway entry lights, and presence detectors are accomplished by using ADB SAFEGATE's RELIANCE IL Remote control devices. Each device on the airfield that requires individual control and monitoring is interfaced to one of the Remotes. All communication data is superimposed onto the airfield series circuit cabling (power-line) and is received by the RELIANCE IL Remotes. The Remotes can also transmit a variety of monitoring data back to a RELIANCE IL Master. See data sheet 3076 for more information on ADB SAFEGATE's RELIANCE IL System.

Please contact the ADB SAFEGATE Sales Department for more information on ADB SAFEGATE's advanced technology products.

General Application
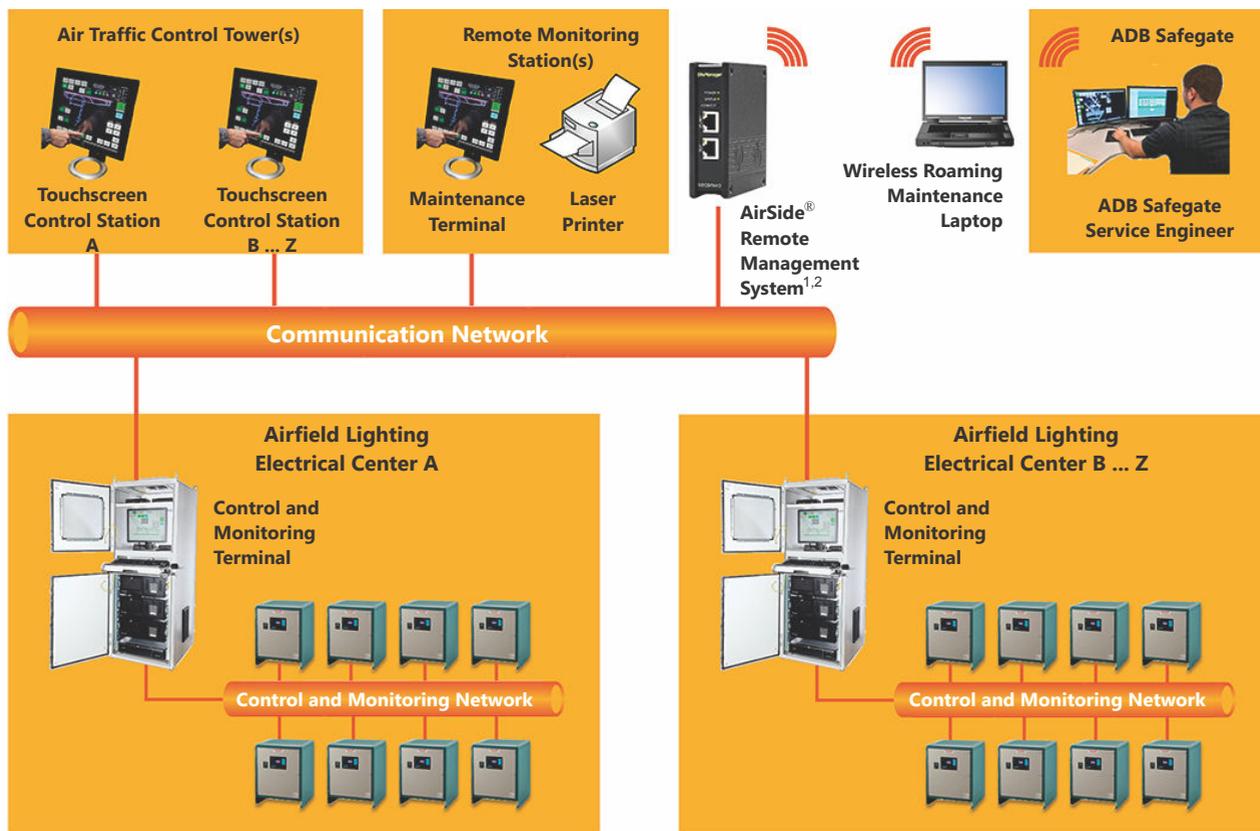
Notes

1 External internet connection is required via firewall of existing wired network infrastructure or wireless 3G network. See A-RMS data sheet (3079) for more details.
2 Typically located in either the airfield lighting electrical center, air traffic control tower or remote monitoring station.

1.3.1 Environmental Protection

- PLC Cabinet: NEMA 12 (IP 40).

1.3.1.1 Environmental Operating Conditions

Table 1: Touchscreen/Panel PC

Operating Temperature:	0°C (+32°F) to +40°C (+104°F)
Relative Humidity:	10-95% at 40°C (non-condensing)

Table 2: PLC Cabinet

Operating Temperature:	-25°C (-13°F) to +50°C (+122°F)
Relative Humidity:	Up to 95%

1.3.1.2 Electrical Supply

Table 3: Touchscreen/Panel PC

Input power:	Single phase, 100-240V AC, 50/60 Hz

Table 4: PLC Cabinet

Input power:	Single phase, 100-264V AC, 50/60 Hz

1.4 Touchscreen Operation

1.4.1 Background

Airfield lighting control for many years was accomplished at lighting control panels (referred to as an L-821) using toggle switches, rotary knobs, and pushbutton switches. Technology has changed and one of the changes has brought touchscreen monitors to the cabs of Air Traffic Control Towers around the world. The Touchscreen is a very flexible tool for air traffic controllers and has reduced the amount of time they spend controlling airfield lighting.

The Touchscreen is basically a simplified operator interface tool. There are no need for keyboards and pointing devices such as a mouse or trackball. All of this is integrated right into the Touchscreen monitor.

1.4.1.1 Five-Wire Resistive Touchscreens

The five-wire resistive touchscreens use a glass panel with a uniform resistive coating. A thick polyester coversheet is tightly suspended over the top of the glass, separated by small, transparent insulating dots. The coversheet has a hard, durable coating on the outer side and a conductive coating on the inner side.

Figure 1: Resistive Touchscreen Composition
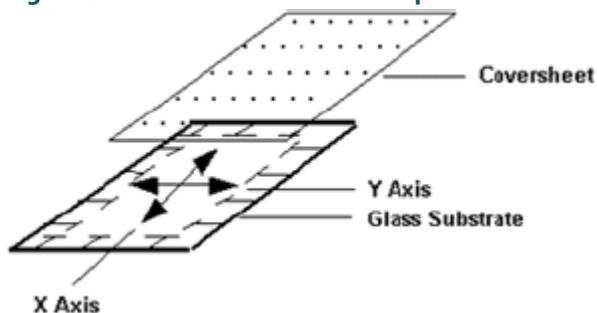
When the screen is touched, the conductive coating makes electrical contact with the coating on the glass. The voltages produced are the analog representation of the position touched. The controller digitizes these voltages and transmits them to the computer for processing. AccuTouch five-wire technology utilizes the bottom substrate for both X and Y-axis measurements. The flexible coversheet acts only as a voltage-measuring probe. This means the touchscreen will continue working properly even with non-uniformity in the coversheet's conductive coating. The result is an accurate, durable and reliable touchscreen that offers drift free operation. AccuTouch screens are sealed against contamination and moisture. This prevents wicking of fluid between the coversheet and glass.

1.4.1.2 Installation

The touchscreen monitors are Liquid Crystal Display (LCD) and are typically located in the tower cab, but can be located anywhere including maintenance centers or electrical airfield lighting vaults. The touchscreen can be rack-mounted, installed in an enclosure or put on a desktop depending on the application.

1.4.1.3 Do's and Don'ts

- Always approach the buttons directly perpendicular to the touchscreen monitor face.
- Remove finger at least one inch from the touchscreen monitor face before making another touch.
- Always keep the touchscreen free of debris such as paper, dust etc.
- Never touch the screen with wet hands.
- Avoid spilling liquids onto the screen including water, coffee etc.
- Never spray cleaner directly onto the touchscreen.

1.4.2 Touchscreen Buttons

A touchscreen *button* is a rectangular area on the touchscreen that is colored differently from the background color, and responds to touch input by the user. A touch button's color can change to indicate status. Touch buttons have two states, released and depressed.

Figure 2 shows two touch buttons, the right button is shown in the released state (also referred to as "up"), and the left button is shown in the depressed state (also referred to as "down"). Note the difference in the shading of the borders of the two buttons..

Figure 2: Touch Buttons: Left depressed, right released

The released button (labeled UP) border colors are reversed from the colors of the depressed button borders. The depressed button (labeled DOWN) shows a dark black shadow on the top and left sides, with a bright white border on the right and bottom sides.

1.4.3 User Input

User input is accomplished by pressing any of the touchscreen touch buttons. The button will only respond when the monitor surface is touched directly on the button. This prohibits sliding into a button, as is the case with a raised mechanical button.

1.4.4 Touchscreen Pages

Depending on the complexity of the airfield lighting control system, all necessary graphics and control buttons may not be able to fit on a single monitor screen. In this situation, the buttons and graphics are separated onto different " *pages* ". The term "pages" denotes the different graphics and button screens that a single touchscreen monitor can display.

Figure 3 is an example of a touchscreen page that will help to illustrate the layouts of the buttons. Take a look at the figure and find the locations of the Circuit Selection, Confirmation and Step Input buttons.

Figure 3: Button Layouts
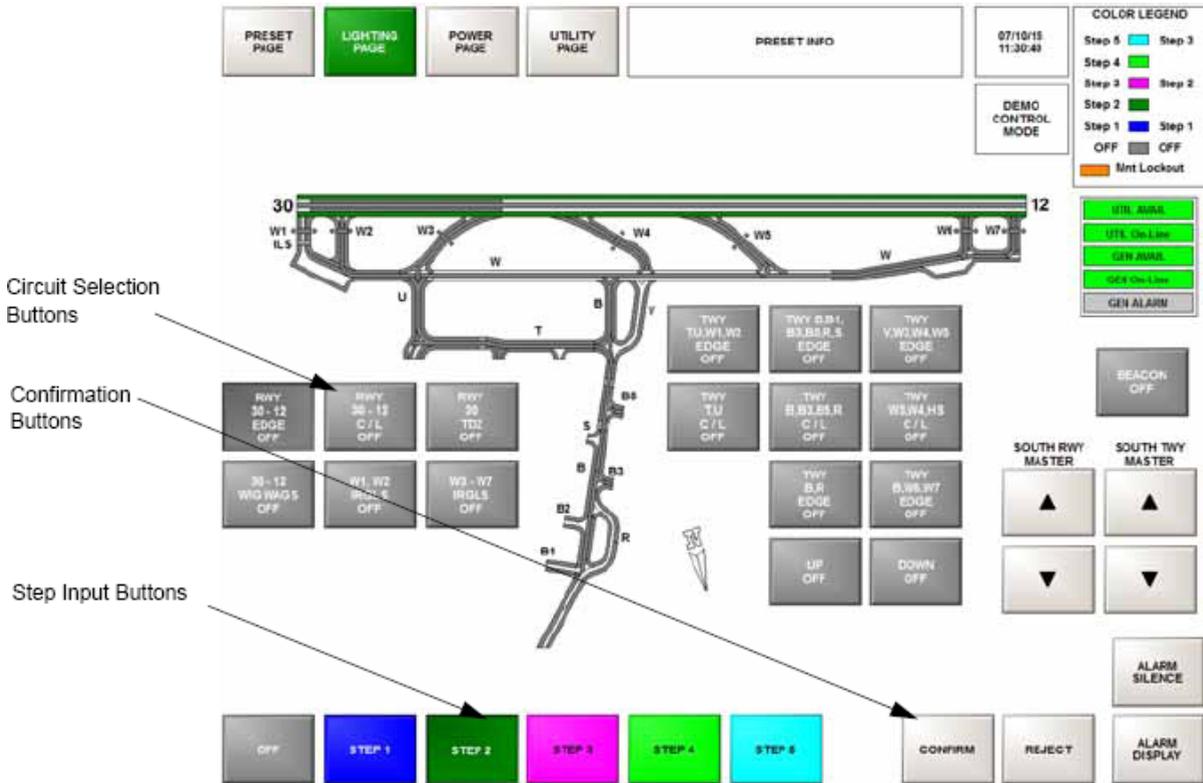
1.4.5 Circuit Selection Buttons

There are different types of touch buttons that have different functions depending on the airfield lighting control application. One type is the *Circuit selection button* . This button is directly associated with an individual airfield lighting group. Circuit selection buttons are used to choose the desired "lighting circuit" (i.e. 08R-26L Centerline lights) to control. An example is shown in Figure 4.

Figure 4: Circuit Selection buttons

Commanded Step: The commanded step of the circuit is displayed at the bottom of the circuit selection button after the desired step selection is confirmed by pressing the "CONFIRM" or "OK" button.

Button and graphics color: Once the step is confirmed, the button will change color and the associated airfield graphics will also change color indicating that the command has been recognized.

Alarm indication: If the circuit is in alarm, the button will change to red and the associated airfield graphics will also change to red.
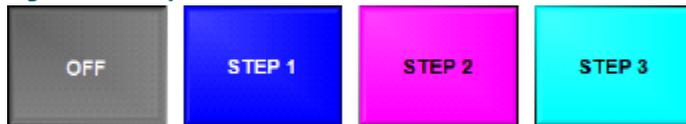
1.4.6 1-Step Brightness Selection Buttons

If the lighting circuit is configured to operate on a 1-step CCR or on/off circuit, the brightness step button group will not appear after selecting the circuit. The user will either "CONFIRM" or "REJECT" the input.

1.4.7 3-Step Brightness Selection Buttons

If the lighting circuit is configured to operate on a 3-step CCR, then the step button group will appear on the touchscreen as seen in Figure 5.

Figure 5: 3 Step Control

1.4.8 5-Step Brightness Selection Buttons

If the circuit button selected controls a 5-step airfield lighting circuit, then the 5-step button group is displayed as seen in Figure 6.

Figure 6: 5-Step Control

1.4.9 Confirmation Buttons

The confirmation buttons will appear after selecting the desired brightness step intensity. These buttons offer the operator a final opportunity to accept or deny the touch inputs. These buttons are two (2) momentary touch buttons labeled "CONFIRM," and "REJECT" as seen in Figure 7.

> ### Note
> Some systems have them labeled as "OK" and "CANCEL"

Figure 7: Confirmation Buttons

To accept the inputs, press the "CONFIRM" button to send the pending command message to the ALCLMS system and make the airfield lighting change.

To deny the inputs, press the "REJECT: button. The touch inputs will be ignored and cleared from the touchscreen.

After either the "CONFIRM" or "REJECT" momentary touch button is depressed, the input step buttons are removed from display, and the affected circuit selector button automatically returns to the released state. The user must press both a circuit selector button and an input step button to modify lighting intensities.

1.4.10 CCR Ramping

The user may freely choose any lighting step regardless of the current step. The computer system will automatically "ramp" each CCR to the commanded step to eliminate stress to the CCR and lights. The operator may command a lighting circuit directly to step five from the off state, and the computer will command the CCR(s) first to step 1, then step 2, then step 3 … until the commanded step 5 is reached. The time delay between each successive step change is not less than 0.5 seconds and may be set longer for older CCR's that require more "warm-up" time.

1.4.11 Airport Operation Status Field

Located on each of the touchscreen pages is the ***airport operation status field*** . This field displays the current airport operation status. This reflects the last preset conditions that have been selected by the operator.

Figure 8: Airport Operation Status Field
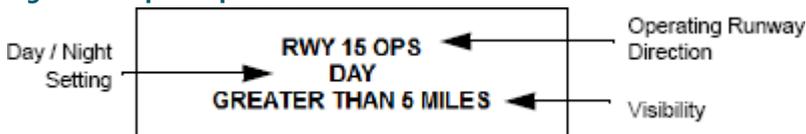
The airport operation status field includes the following information:

- **Operating Runway Direction**: This represents the Runway(s) that are currently being used for airport operations. This is determined by the preset selection.
- **Day / Night Setting**: This represents the current setting for the Day and Night selection. This is determined by the lighting preset selection.
- **Visibility Setting**: This represents the current visibility setting for the airport. This is also set by the lighting preset selection.

1.4.12 Sunrise/Sunset Notification (Optional Feature)

The notification of sunrise and sunset occurrences is a touchscreen option. If elected, the touchscreen can be pre-programmed with the sunrise and sunset times for the installation location. When a sunrise/sunset time occurs, a full screen pop-up window is displayed, and the audible tone is sounded to notify the user of the event. The user must press the CONFIRM button to acknowledge the event and silence the audible tone.

No automatic lighting changes will occur during this condition, this feature is to notify the user when it is time to change from a "DAY" setting to a "NIGHT" setting.

If your touchscreen control system does not have this feature and you wish to enable this option, please contact your local ADB Airfield Solutions sales representative.

1.4.13 Touchscreen Mode Field and Time Field

Located on each of the touchscreen pages is the ***mode field and the time field*** . This field displays the current date and time and also the current operating mode of the touchscreen as seen in Figure 9.

Figure 9: Mode Field and Time Field
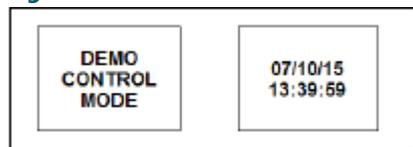
The different operating modes are:

View Only: This indicates that the current touchscreen is operating as a view only station. This means that the user can change between the different pages, but the touchscreen will not allow any touch inputs. The touchscreen will beep each time the screen is touched, but will not register the touch as a valid request.

Control Mode : This indicates that the touchscreen has full control capabilities. Any and all valid touches and airfield lighting requests will be executed.

Demo Control Mode : This indicates that the touchscreen has simulated control capabilities. The touchscreen will "act" as if it has full control capabilities and will accept touch inputs and update graphics. However, the touchscreen is completely isolated from the lighting control system and will not affect any airfield lighting changes. This mode is primarily used for training of ATC and maintenance on the operation of the touchscreen.

1.4.14 Alarm Display and Alarm Silence Buttons

Located on each of the touchscreen pages is the ***alarm display and alarm silence button*** . These buttons are used in conjunction with alarm conditions that are reported to the touchscreen. They operate as follows:

Alarm Silence (Alarm Acknowledge) Button is a button that flashes red when a new alarm is present in the ALCMS. It is pressed to silence the audible alarm and acknowledge the new alarm condition. Once an alarm is acknowledged, the button stays solid red until the alarm is cleared and an indication will then be logged in the database and viewable in the events log.

Alarm Display Button is a button used to view the current alarms in the computer system. When pressed, this button will open the current alarms window which provides a text listing of all currently active alarms in the ALCMS. It is useful for informing maintenance personnel of the exact alarm in the system.

1.5 Touchscreen Pages

1.5.1 Overview

The following section describes the layout and features of the touchscreen operator interface. Included are directions to find your way around the many pages of the touchscreen interface and understanding the graphic representations of the airfields.

Each touchscreen control station is divided into several touchscreen pages. The number and name of the pages are airport specific.

⚠	**CAUTION**
	For an exact representation of your airport, please refer to the touchscreen demonstration CD-ROM provided to your trainer. This CD-ROM has a fully functional touchscreen program that mimics your airport's touchscreens and should be used in conjunction with this manual as part of your training.

The touchscreen pages are broken up into six (6) basic pages as follows:

1. Preset Page

2. Runway Page

3. Taxiway Page

4. Utility Page

5. Power Page (OPTIONAL FEATURE)

6. Stopbar Page (OPTIONAL FEATURE)

1.5.2 Preset Page

The preset page is the primary used page that all lighting command changes should normally take place.

1.5.2.1 What are Preset Controls

Preset controls are developed in conjunction with FAA Document Number 7110.65 and the airport. The FAA 7110.65 document defines what intensities 1-step, 3-step and 5-step circuits should be at during all levels of visibility and day or night conditions.

Preset controls are initiated at the "Preset Page" of the touchscreen and when confirmed, execute several lighting commands based on the preset inputs. The preset controls are developed to reduce ATC workload and decision making that involves the airfield lighting circuits.

1.5.2.2 Selecting a Preset Condition

Preset circuits do not allow the user to specify a specific intensity selection, rather the user inputs the airport's current operating conditions, such as RVR (Visibility) conditions, CAT conditions, Day or Night operation and operating Runway directions. The intensity settings for the selected conditions are "looked up" from a preset look-up table, which is a pre-programmed table in the operating code of the touchscreen. Preset intensity look-up tables are not user alterable.

After a preset condition has been confirmed, the ALCMS system then performs several lighting changes to match the requirements for the airport.
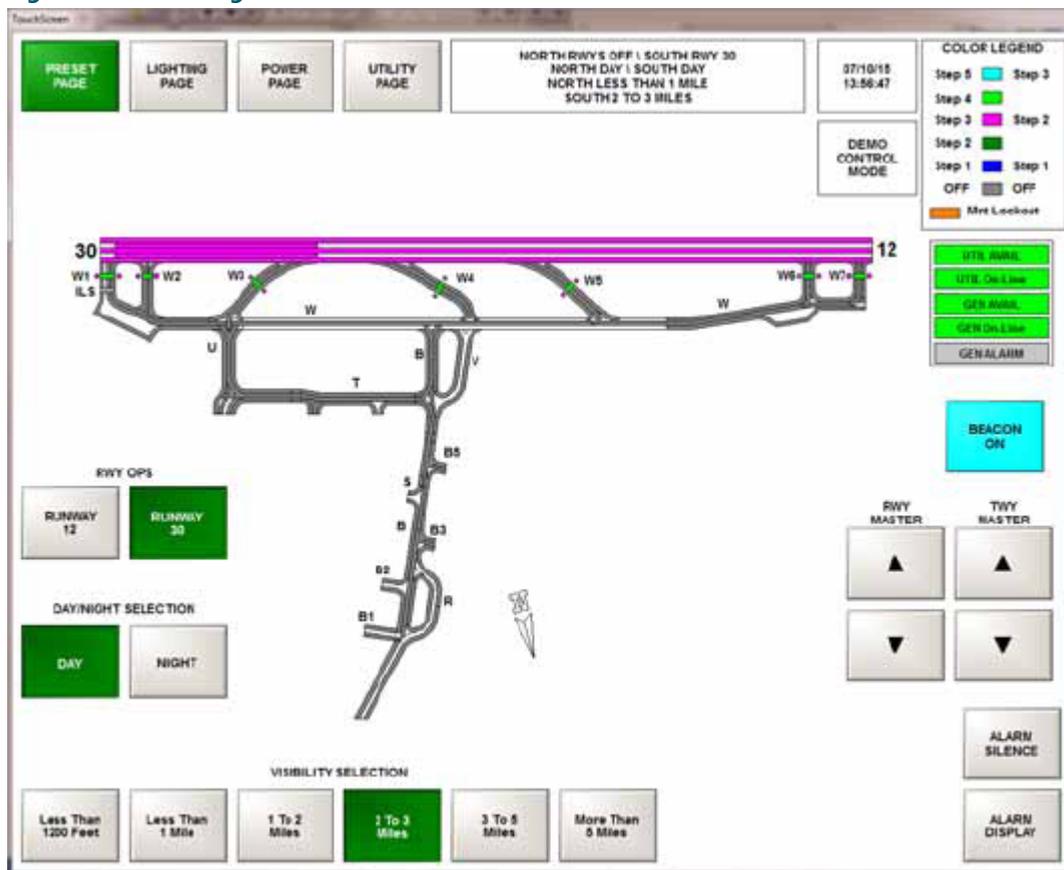
Figure 10: Preset Control Buttons
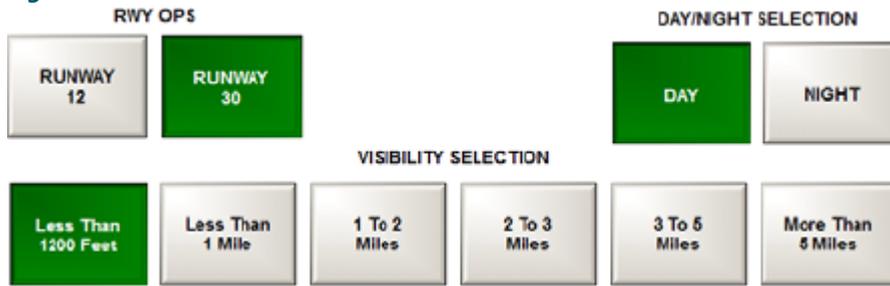
Active Runway Selection : These buttons select which runway or runway direction is desired for airfield operations. Multiple Runways may be selected depending on the airport.

Day / Night Setting : These buttons select between "DAY" airfield operation and "NIGHT" airfield operation. This setting will affect the brightness intensity of the lighting circuits.

Visibility Setting : These buttons select the current airfield visibility setting. This setting will determine what lights are on or off based on the visibility setting.

An example of the "PRESET PAGE" is shown in Figure 11. Notice the Page buttons along the top of the screen and the 'DIRECTION', 'DAY/NIGHT' and 'VISIBILITY' buttons shown down the left side of the screen.

Figure 11: Preset Page

1.5.2.3 Initiating an Airfield Lighting Preset

All lighting commands should primarily be done from the "Preset Page" using the Preset control buttons. This will assure that the correct circuits are on and that they are commanded to the correct brightness intensities.

To initiate an airfield lighting preset...

1. Select a runway from the "ACTIVE RUNWAY SELECTION"

2. Select the appropriate "DAY/NIGHT SETTING"

3. Select the airport's "VISIBILITY SETTING"

4. Select the "CONFIRM" button to send the entire preset lighting command to the ALCMS computer, or press "REJECT" button if it is not desired to make the intensity change.

   After the "CONFIRM" button is pressed, the lighting sequence is executed and the corresponding circuits will turn ON. The step number on the circuit button(s) will change to indicate the new step level.

1.5.3 Lighting Control Pages

The circuit buttons on the lighting control pages are used to manually override any commands that were initiated by the preset commands. Typically the lighting controls are split into a "Runway Page" and a "Taxiway Page." On these pages the user can selectively adjust the lighting of individual runway and/or taxiway circuits.

⚠️	**CAUTION**
	If lighting changes are done using a lighting page they may not meet those required for the airport's operating conditions. If circuits are individually turned on manually via a lighting page there is the possibility that they may be inadvertently turned off if an ATC uses the "Preset Page" to change the lighting. For example, if the runway lights were individually turned on the Step 5 using the "Runway Page" and then an ATC selected "Day", "> 5 miles" visibility, the runway lights would turn OFF.

It is recommended to always use the preset controls for adjusting lighting intensities.

Figure 12: Example of a Lighting Page (Combined RWY/TWY Page)
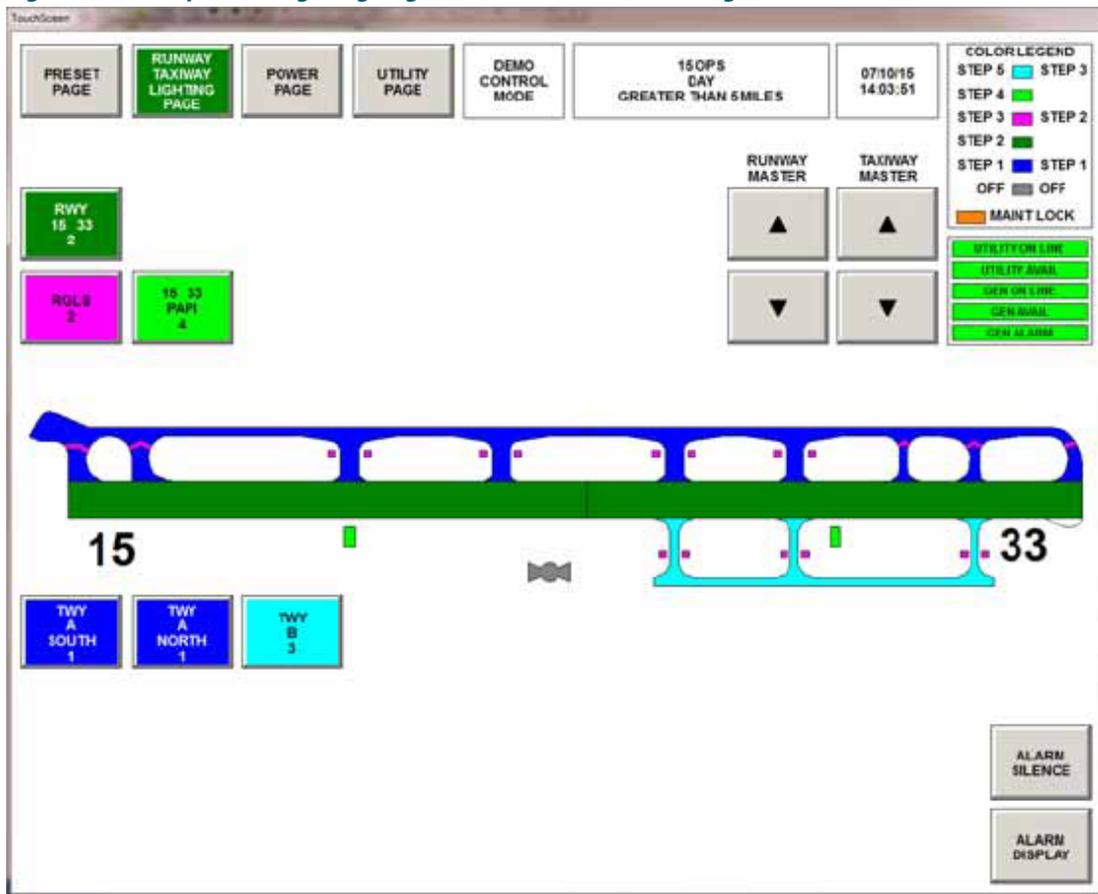
1.5.3.1 Airfield Lighting Circuit Colors

To individually change a runway or taxiway circuit intensity, select the circuit, select the intensity, and select the 'CONFIRM' button.

Displayed on each circuit button is the name of the airfield lighting circuit controlled by the button, and the commanded intensity level expressed as an integer.

In order to simplify the understanding of the graphical representations, different colors are used to highlight and color the touchscreen graphics. Unique colors for each airfield lighting step intensity give graphical indication to the step intensity of the airfield lighting circuit.

1.5.3.2 Changing Intensities of Circuits

The 'Color Legend' illustrates what intensity is displayed in what color.

To change the lighting intensity of a circuit:

1. Press the button associated with the circuit to be controlled.

   The step buttons are then displayed on the page. The step button group contains buttons labeled "OFF", "STEP 1", "STEP 2", "STEP 3", "STEP 4" and "STEP 5". 3 step circuits will only display Steps 1 through 3.

2. The current intensity of the circuit is the step button that is currently depressed.

3. Select a new intensity for the circuit by depressing a step button.

   This button will then remain depressed, while the previously depressed step input button is released. The buttons labeled "CONFIRM" and "REJECT" now appear on the page, and the graphic representation of the circuit will flash.

4. Press the "CONFIRM" button to send the command message to the ALCMS vault computer and make the airfield lighting change.

   After either the "CONFIRM" or "REJECT" button is depressed, the depressed circuit button will automatically return to the released state, and the step buttons will be removed from display.

1.5.3.3 Stacking Commands

It is possible to change intensity of several circuits at once by "stacking" the button selections. Stacking commands is used to select multiple circuit buttons at once and change the step intensities all at the same time. To stack lighting change commands:

1. Depress all of the circuit buttons associated with the circuits that are to be controlled.

   The step button group is displayed on the page as soon as the first circuit is selected. Ignore the step buttons until all of the desired circuits have been depressed.

2. Now select the desired step intensity for all the lighting circuits by depressing a step input button.

   The "CONFIRM" and "REJECT" buttons will appear on the page, and the graphic representation of the selected lighting circuits will begin to flash.

3. Press the "CONFIRM" button to send the command messages to the ALCMS vault computer and make the airfield lighting change.

After the "CONFIRM" button is depressed, all of the selected circuits will be turned on to the selecting intensity.

1.5.4 Utility Page

The Utility Page includes a variety of utility functions that are used for touchscreen maintenance and other control and administrative purposes. To get to the Utility Page, the operator must select the "UTILITY PAGE" button. This button is available from every touchscreen page. When this button is selected, the screen automatically changes to the Utility Page. An example is seen in Figure 13.

Figure 13: Utility Page
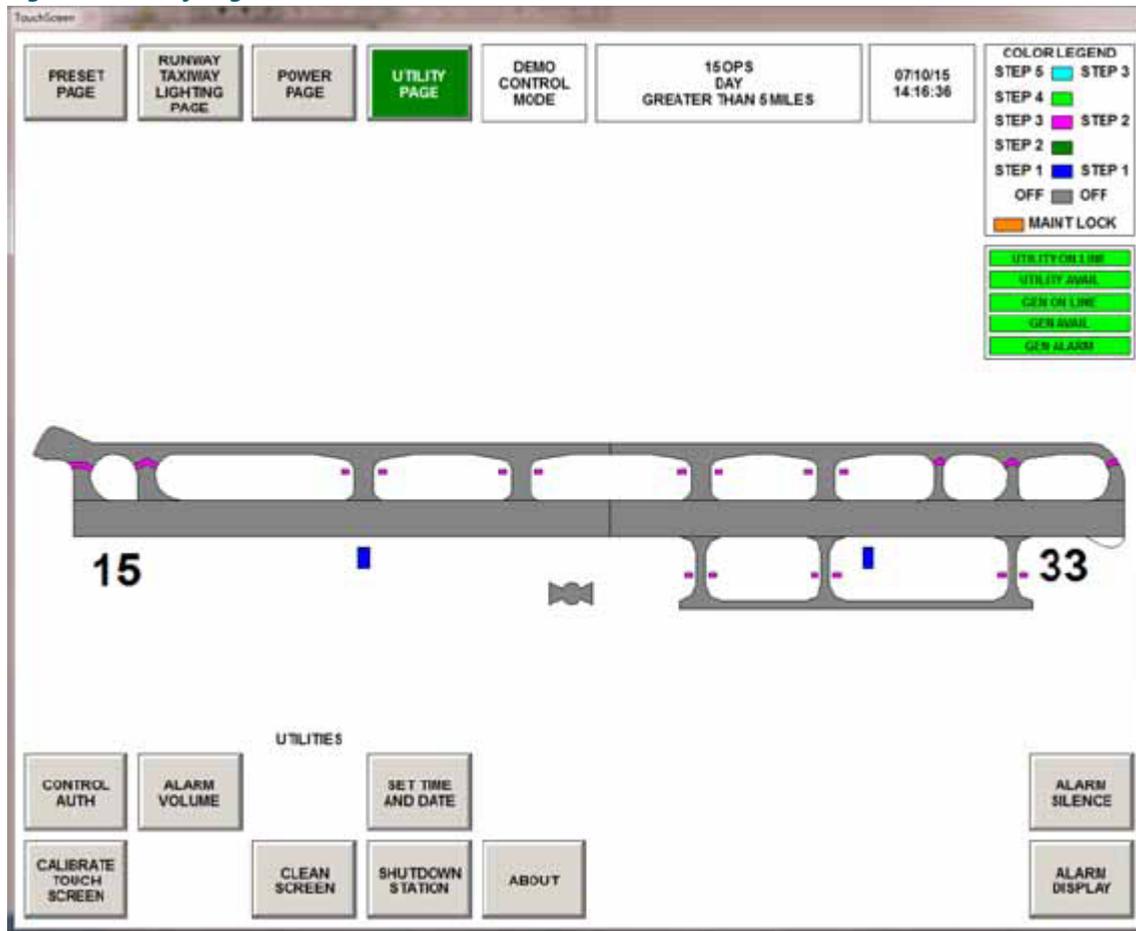
1.5.4.1 Set System Date/Time Button

This button allows ATC personnel to set the ALCMS date and time. The system date and time is normally maintained by airport maintenance personnel, but can be changed from any computer.

To Set Date and Time...

1. Select the "SET SYSTEM DAY/TIME" button.

2. The operator is then required to enter a username and password in the window.

   The operator enters them using the button letters on the touchscreen keyboard. As Figure 14 the password is entered, the password entry field displays '*' for each character entered.

3. Once the password is entered, press the 'ENTER' button.

To exit without entering a password, depress the 'CANCEL' button to return to the Utilities page.

Figure 14: Enter Password Screen
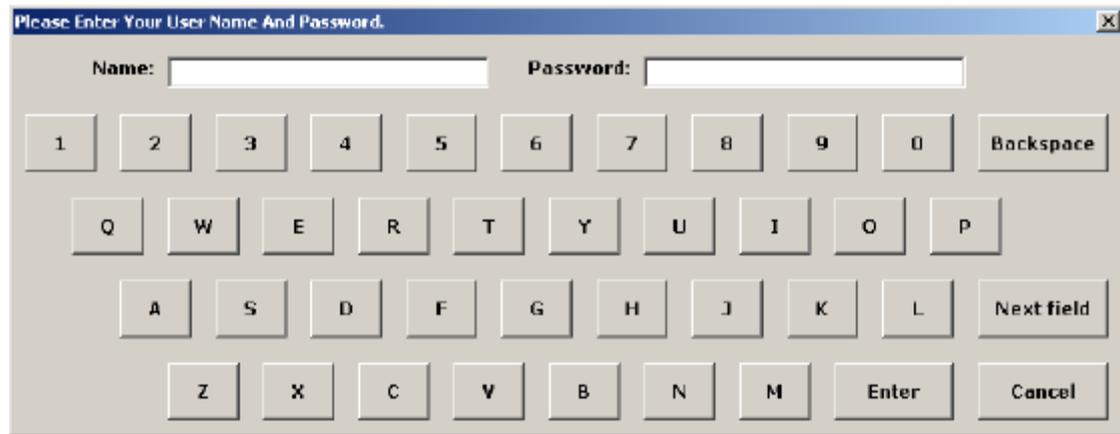
4. To change the system date, type in the date in MM-DD-YY format, then press the 'ENTER' button to move to the Time field as seen in Figure 15.

5. To change the time, type the time in HH:MM format or use the up and down arrows, then press the 'SET' button.

   Note that the touchscreen automatically inserts the '-' and ':' characters in the proper positions.

6. To accept the date and time entries, select the 'SET' button.

Figure 15: Enter Date and Time Screen
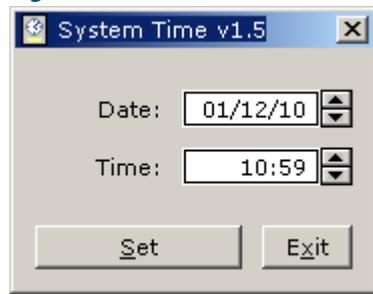
1.5.4.2 About Button

When the "ABOUT" button is depressed from the Utilities window, a pop-up window as seen in Figure 16 displays the manufacturer of the touchscreen operator interface software and the current version of software running. To exit from this screen, the user can press the button labeled "OK" and return to the Utility Page.

Figure 16: About Screen

1.5.4.3 Clean Screen Button

When the "CLEAN SCREEN" button is depressed from the Utilities window, a message directing the user to use a soft cloth and non-abrasive cleaner to clean the touchscreen monitor surface is displayed as seen in Figure 17.

Figure 17: Clean Screen

Clean screen by spraying a SMALL amount of cleaner on a soft cloth and wiping the screen. Clean the DONE button last.

DONE

This screen allows cleaning of the touchscreen monitor without changing lighting controls. When done cleaning, press the "DONE" button to return to the Utility Page.

⚠	**CAUTION**
	Do not spray cleaning liquids onto the touchscreen. Spray cleaner onto a soft cloth and wipe the screen. Do not use abrasive or solvent cleaners.

1.5.4.4 Calibrate Touchscreen Button

Periodically the touchscreen may require calibration, especially if it is noticed that a touchscreen does not seem to be responding as anticipated. It is recommended that this procedure be performed with a keyboard available nearby.

To calibrate, press the "CALIBRATE TOUCHSCREEN" button and then entering the correct user name and password (see Password section discussed previously) at the prompt. The calibration program will then begin and the user will be prompted to follow the on-screen instructions. Based upon the touchscreen brand/configuration the calibration process may vary.

1.5.4.5 Control Authorization Button

The 'CONTROL AUTH' button is used to grant control of the airfield lighting to other computer locations within the ALCS. Remote locations that may have capabilities to control the airfield lighting could be the lighting vault, maintenance center or operations center.

To authorize control to a remote computer...

⚠	**CAUTION**
	This process must be executed within 60 seconds from the time the request control function is initiated. The request control function will time out after 60 seconds and will have to be repeated.

1. Personnel will contact ATC indicating that they have requested control of the airfield lighting using the 'REQUEST CONTROL' button.

2. ATC must now select the 'CONTROL AUTH' button, from the 'UTILITY PAGE'.

3. A 'Control Authorization' window will appear and displays the computer location that is requesting control of the airfield lighting.

4. To authorize control, change the selection button from 'VIEW ONLY' to 'CONTROLLING'.

5. With the 'CONTROLLING' button selected, press the 'OK' button.

6. Upon completion of this, the computer will gain remote control of the airfield lighting circuits.

7. The 'REVOKE CONTROL' window will appear at the Tower ATC touchscreen as outlined in the following section.

   See Revoking Control section to follow

1.5.4.6 Request Control Button

The 'REQUEST CONTROL' button only appears on remote computer locations such as the lighting vault, maintenance center and operations center. It will only appear at those locations that have been authorized to have remote control access. Once a remote location has requested control of the lights, the ATC has to authorize the control using the 'CONTROL AUTH' button as seen in Figure 18 below.

Figure 18: Control Authorization
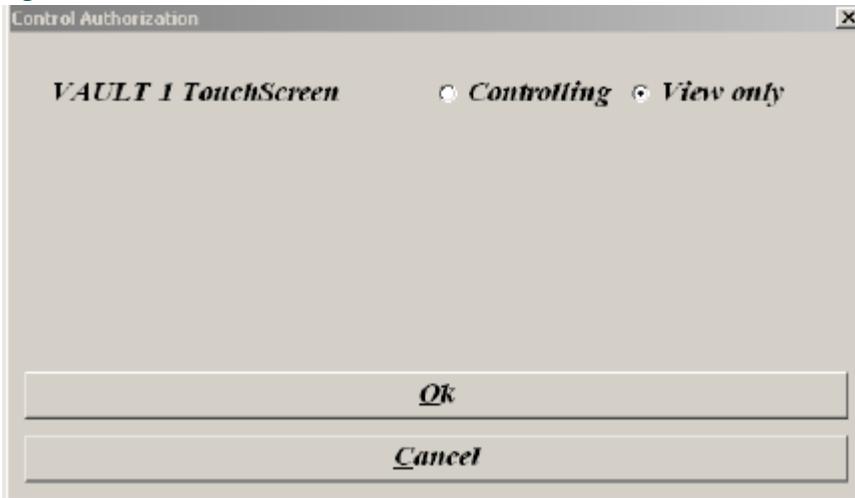
However, in some instances, control authorization is not required by ATC for a remote location to gain control of the airfield lighting. This is an optional feature of the ALCMS is available at the request of the airport/ owner.

To request control of the airfield lighting from a remote computer equipped with this option...

1. Select the "REQUEST CONTROL" button from the 'UTILITY PAGE'.

2. Enter the correct username and password then select 'ENTER'

3. A screen will momentarily pop up, as seen in Figure 19, this indicates that the request has been recognized.

Figure 19: Request Control Window

4. You now have 60 seconds to contact the ATC and have them execute the 'CONTROL AUTH' function as previously discussed.

5. If the ATC grants control within the 60 second time period, the window will disappear and the computer will have control of the airfield lighting.

   At this point, the computer at the remote subsystem will change from "VIEW ONLY" mode to "CONTROL" mode and the user will have control of the airfield lighting.If your computer does not require authorization from the Tower ATC (as requested by the airport/ owner), then that computer will immediately gain control from the tower after the correct password was entered. **How does Remote Control Work?** Once a remote subsystem has taken airfield lighting control, the commands from that location are sent to the lighting vaults similar to how the ATCT tower control the lights. **How do**

you give Remote Control back to the Tower? Personnel can give control back to the tower by simply touching the 'REQUEST CONTROL' button again and entering the correct password. This procedure will put that subsystem back in "VIEW ONLY" mode and will give control back to the ATCT tower.Another method is to simply exit the touchscreen session at the Vault or Maintenance Center by selecting the "EXIT TO MAIN MENU' button from the 'UTILITY PAGE'

1.5.4.7 Revoking Control

The 'REVOKE CONTROL' function is airport specific and is determined by the airport in conjunction with Maintenance and the FAA. This will be discussed during training. If the 'REVOKE CONTROL' function is enabled at the ATCT Tower, then ATC can revoke remote control from any location and immediately gain control of the airfield lighting.

Once personnel have taken control of airfield lighting operations, a window will appear at the Tower touchscreen as seen in Figure 20. This window will indicate which location has control of the airfield lighting and display a 'REVOKE' button if this feature is enabled.

To 'REVOKE' lighting control, select the 'REVOKE' button. No password is required. The remote subsystem's control session is immediately terminated.

Figure 20: Revoke Control Authority
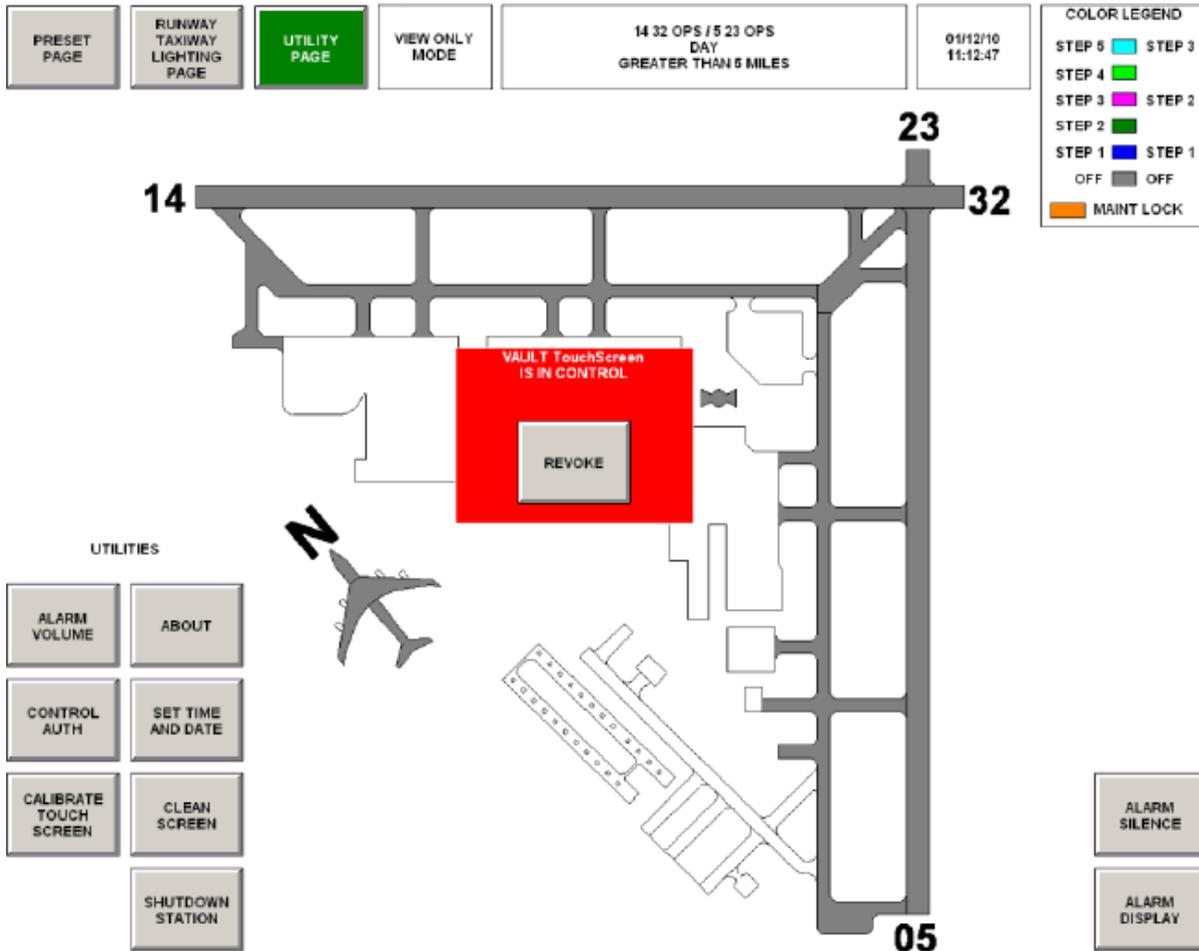
## 1.5.4.8 Alarm Volume Button

If your touchscreen computer system has an audible alarm, this button will appear on your Utility Page. This button is used to adjust the volume of the speakers for the audible alarm.

To adjust audible alarm volume...

1. Select 'ALARM VOLUME' button and enter the correct user name and password in the password window as outlined in the 'Set Date and Time' section.

A window as seen in Figure 21 will appear.
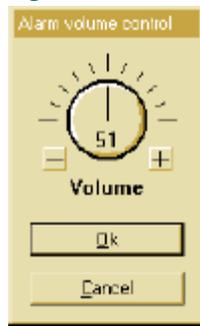
2. To **increase** the volume, select the '+' button.

   Values can be adjusted from 0 to 100%.

3. To **decrease** the volume, select the '-' button.

   Values can be adjusted from 0 to 100%.

4. After the volume is set to the desired intensity, select the 'OK' button to return to the 'Utility Page'.

1.6 Touchscreen Alarms

1.6.1 Overview

The ALCMS system reports alarms of critical nature to the touchscreen operator interface. Alarms related to airfield lighting circuits will cause the corresponding graphic to change to red, the associated circuit selector button will be red, the audible alarm sounds, and the ALARM SILENCE button begins to flash.

The alarms can be viewed by pressing the "ALARM DISPLAY" button on any touchscreen page. The alarm log will appear and display a text listing of the current active alarms in the ALCMS.

This listing is accessible at any ALCMS subsystem location, and airport maintenance personnel will be familiar with the meaning of each alarm text. The extent and repair of each alarm condition is discussed in the ALCMS Maintenance Manual.

⚠	**WARNING**
	Not all alarm conditions will be reported to the Touchscreen at the ATCT Tower. The airport / owner has determined what alarms should be reported to the tower touchscreen. What alarms are reported will be discussed as part of your training.

1.6.1.1 Audible Alarm and Alarm Silence

The audible alarm is configured for a five (5) second delay. After sounding for 5 seconds the audible alarm is automatically silenced. The "ALARM SILENCE" button continues to flash and the associated circuit graphics remains red. This sequence will repeat after 60 seconds if the 'ALARM SILENCE' button is not pressed.

The user then must depress the "ALARM SILENCE" button to stop the button from flashing. The user then has the option to view the alarms display screen to determine the exact cause of the alarm.

1.6.1.2 Failsafe

The ALCMS system features a failsafe function that assures a safe a proper failure state of the system in the event of a communication or computer failure.

The failsafe state of the system is to remain 'LATCHED' to the last commanded state by ATC. When the system is in a failsafe, a window will appear describing that the system is in failsafe. The window will automatically disappear once the failsafe condition has been cleared.

1.6.1.3 Maintenance Lockout

It may be necessary for maintenance personnel to work on a circuit without causing alarms at the ATC touchscreen. This can be done using the 'MAINTENANCE LOCKOUT' feature available at other computer locations in the system.

The method of locking out circuit is detailed in the Maintenance Operator Manual.
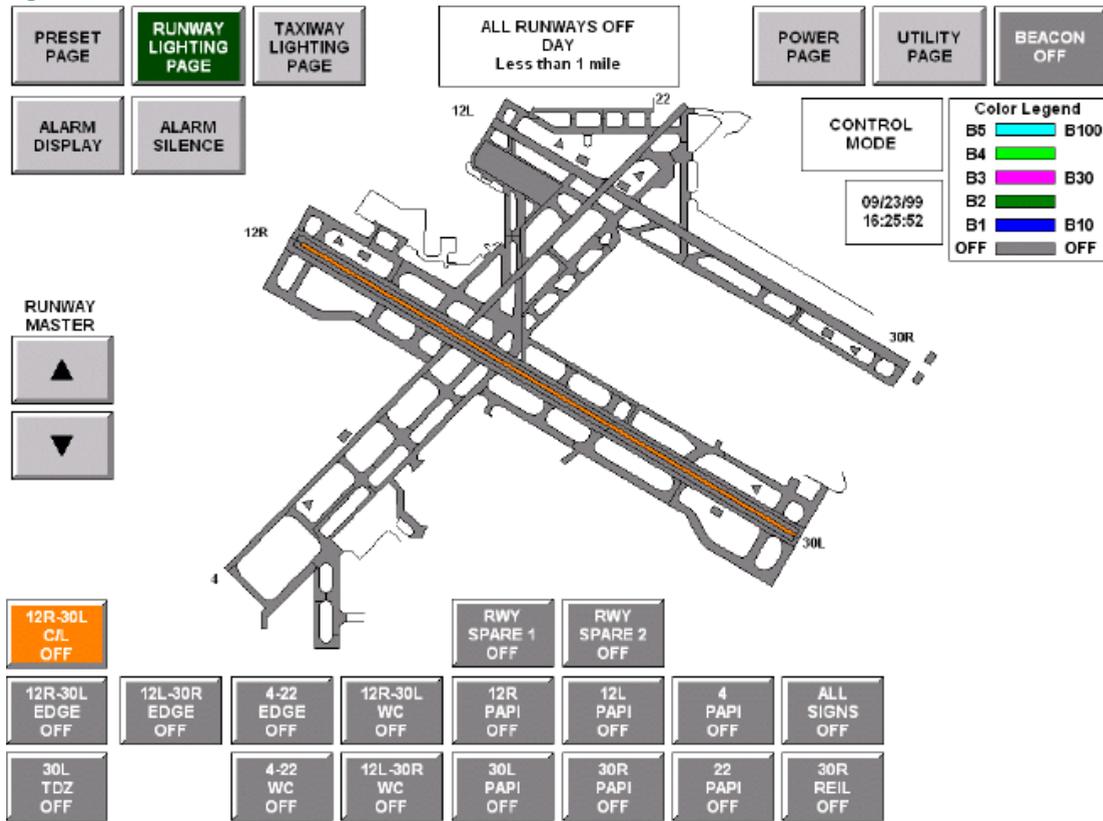
Once a circuit(s) have been locked out, the corresponding circuit button and graphic will change to a unique 'circuit lock out color'. This color is typically orange as seen in Figure 22

> ⚠️ **CAUTION**
>
> During the time of the maintenance lockout, (Displayed by orange graphics) the tower will not have control of the locked out circuit at any time.

Figure 22: Maintenance Lock Out

In the graphic above, circuit 12R-30L C/L is locked out. The color of the button as well as the corresponding graphic depiction of 12R-30L C/L is colored orange. The circuit will continue to show orange until maintenance personnel hands control of the circuit back to the Tower.

1.6.2 Power Page (OPTIONAL PAGE)

The power page contains information as it relates to the airfield lighting vault generator and utility equipment.

Generator control buttons and miscellaneous monitoring points of the generator and utility equipment will appear on this page.

These monitoring points can include generator on-line, generator available, utility on-line, utility available, vault fire Alarm and air conditioner monitoring to name a few.

Some of the monitoring items may be displayed on every touchscreen page. These monitoring items normally relate to critical items such as 'Generator On-line', 'Generator Available', 'Utility On-line' and 'Utility Available'.

Generator Control : This button is used for remotely controlling the airfield lighting generator. The generator can be turned ON and OFF from this button.

Generator and Utility Monitoring : This area of the screen reflects the current status of the generator and utility power at the airfield lighting vault / electrical center. The status is displayed using graphical round indicators or square indicators.

1.6.2.1 Common Indicator Colors

Green- Green represents a normal ON condition for the generator. When the generator points are on and normal, they will take the color green i.e., in normal operation Utility On-line and Utility Available will be lit green. If utility power goes Off-line then Generator On-line and Generator Available will go green indicating that they are on and acting normally.

Red - Red represents an alarm condition for a circuit or a monitored item (i.e. generator). When an alarm condition is detected on a circuit, the associated circuit graphic and circuit button changes to red. The circuit graphic and button will remain red until the alarm has been cleared.

Gray - Gray represents a normal OFF condition for a circuit or other monitored item. When a circuit is turned OFF the graphics is colored gray. Buttons that are available, but are not currently selected are also colored gray.

1.6.2.2 Normal Monitoring Conditions

UTILITY ON-LINE Indicator-green

UTILITY AVAILABLE Indicator-green

GENERATOR ON-LINE Indicator-gray

GENERATOR AVAILABLE Indicator-gray

GENERATOR ALARM Indicator-gray

1.6.3 Stopbar Page (OPTIONAL PAGE)

The stopbar page is primarily used during low visibility conditions. The page can be viewed under any visibility condition, but only typically becomes active when then visibility setting is set below 1200 RVR. Refer to SMGCS manual 96A0208 for further information.

Appendix A: SUPPORT

Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

ADB SAFEGATE Support

Live Technical Support - Americas
If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.
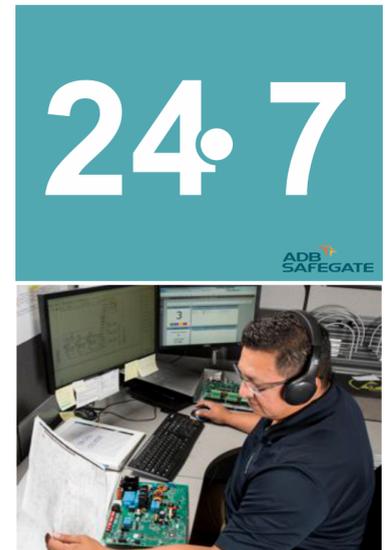ADB SAFEGATE **Americas Technical Service & Support (US & Canada): +1-800-545-4157**
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304
During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!
Before You Call
When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.

- The *airport code*

- If not with an airport, then company name (prefer customer id number)

- Contact phone number and email address

- Product with part number preferable or product number

- Have you reviewed the product's manual and troubleshooting guide

- Do you have a *True RMS* meter available (and any other necessary tools)

- Be located with the product ready to troubleshoot

ℹ️ Note

For more information, see www.adbsafegate.com, or contact ADB SAFEGATE Support via email at support@adbsafegate.com or

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Rest of Europe: +46 (0) 40 699 17 40

Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.

China: +86 (10) 8476 0106

A.1 ADB SAFEGATE Website

The ADB SAFEGATE website, www.adbsafegate.com, offers information regarding our airport solutions, products, company, news, links, downloads, references, contacts and more.

A.2 Recycling

A.2.1 Local Authority Recycling

The disposal of ADB SAFEGATE products is to be made at an applicable collection point for the recycling of electrical and electronic equipment. The correct disposal of equipment prevents any potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of products, contact your local authority city office.

A.2.2 ADB SAFEGATE Recycling

ADB SAFEGATE is fully committed to environmentally-conscious manufacturing with strict monitoring of our own processes as well as supplier components and sub-contractor operations. ADB SAFEGATE offers a recycling program for our products to all customers worldwide, whether or not the products were sold within the EU.

ADB SAFEGATE products and/or specific electrical and electronic component parts which are fully removed/separated from any customer equipment and returned will be accepted for our recycling program.

All items returned must be clearly labeled as follows:

• For *ROHS/WEEE* Recycling

• Sender contact information (Name, Business Address, Phone number).

• Main Unit Serial Number.

ADB SAFEGATE will continue to monitor and update according for any future requirements for *EU directives* as and when *EU member states* implement new *regulations* and or *amendments*. It is our aim to maintain our *compliance plan* and assist our customers.

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