



Airfield Lighting Computer and Monitoring System (ALCMS)

# User Manual

96A0272, Rev. K, 2020/06/26





## A.0 Disclaimer / Standard Warranty

### CE certification

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

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ADB SAFEGATE will correct by repair or replacement per the applicable guarantee above, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE further reserves the right to require the return of such goods to establish any claim.

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### Standard Products Guarantee

Products of ADB SAFEGATE manufacture are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.



#### Note

See your sales order contract for a complete warranty description.

### FAA Certified product installed in the United States and purchased or funded with monies through the Airport Improvement Program (AIP) installations guarantee

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).



## Note

See your sales order contract for a complete warranty description.

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## Liability

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### 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.

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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 Safety

## Introduction to Safety

This section contains general safety instructions for installing and using ADB SAFEGATE equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

## 1.1 Safety Messages

### HAZARD Icons used in the manual

For all HAZARD symbols in use, see the Safety section. All symbols must comply with ISO and ANSI standards.

Carefully read and observe all safety instructions in this manual, which alert you to safety hazards and conditions that may result in personal injury, death or property and equipment damage and are accompanied by the symbol shown below.



**WARNING**

Failure to observe a warning may result in personal injury, death or equipment damage.



**DANGER - Risk of electrical shock or ARC FLASH**

Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage. ARC Flash may cause blindness, severe burns or death.



**WARNING - Wear personal protective equipment**

Failure to observe may result in serious injury.



**WARNING - Do not touch**

Failure to observe this warning may result in personal injury, death, or equipment damage.



**CAUTION**

Failure to observe a caution may result in equipment damage.

### Qualified Personnel



**Important Information**

The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements.

Always use required personal protective equipment (PPE) and follow safe electrical work practice.

### 1.1.1 Introduction to Safety



## CAUTION

### Unsafe Equipment Use

This equipment may contain electrostatic devices, hazardous voltages and sharp edges on components

- Read installation instructions in their entirety before starting installation.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

**Failure to follow this instruction can result in serious injury or equipment damage**

### Additional Reference Materials



#### Important Information

- IEC - International Standards and Conformity Assessment for all electrical, electronic and related technologies.
- IEC 60364 - Electrical Installations in Buildings.
- FAA Advisory: AC 150/5340-26 (current edition), Maintenance of Airport Visual Aid Facilities.
- Maintenance personnel must refer to the maintenance procedure described in the ICAO Airport Services Manual, Part 9.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- National and local electrical codes and standards.

### 1.1.2 Intended Use



## CAUTION

### Use this equipment as intended by the manufacturer

This equipment is designed to perform a specific function, do not use this equipment for other purposes

- Using this equipment in ways other than described in this manual may result in personal injury, death or property and equipment damage. Use this equipment only as described in this manual.

**Failure to follow this instruction can result in serious injury or equipment damage**



## 2.0 ALCMS

ADB's 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. ADB's ALCMS is unmatched in performance, long-term reliability, and flexibility with many standard features and a wide range of innovative, cost-effective options.

### 2.1 About this manual

#### 2.1.1 Introduction

The manual shows the information necessary to:

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

#### 2.1.2 How to work with the manual

1. Become familiar with the structure and content.
2. Carry out the actions completely and in the given sequence.

#### 2.1.3 Terms

General Aviation Terms and Acronyms that you may encounter using our manuals.

<b>ACE</b>	Advanced Control Equipment
<b>AIS</b>	ACE Interface Server
<b>ALCMS</b>	Airfield Lighting Computer Monitoring System
<b>ALV</b>	Airfield Lighting Vault
<b>ATCT</b>	Air Traffic Control Tower
<b>CCR</b>	Constant Current Regulator
<b>CSE</b>	Circuit State Engine
<b>GUI</b>	Graphical User Interface
<b>IPC</b>	Inter-Process Communication
<b>IRMS</b>	Insulation Resistance Monitoring System
<b>UI</b>	User Interface
<b>VCP</b>	Vault Control Process

#### 2.1.4 Customer Support Services

To obtain product information, or for ordering, please contact the ADB Safegate customer service department or the nearest manufacturer representative. The customer service staff is available between 8:00 AM and 5:00 PM Eastern time, Monday through Friday. The telephone number is (800) 545-4157. The fax number is (614) 864-2069.

#### 2.1.5 Product Support Services

For technical assistance with an ADB Safegate product, please contact the ADB Safegate Technical Service Department. The Technical Service staff is available 8am-5pm EST Monday - Friday for routine assistance and 24 hours a day, 7 days a week for urgent situations. The telephone number is (800) 545-4157 and select the Technical Service option.

### 2.1.6 Telephoning Customer Service

When you call for technical assistance, you should have the appropriate product documentation at hand. Be prepared to give the following information:

- To what product does the question relate?
- The exact wording of any messages that appeared on the Operator Interface screens (Computer System related assistance only).
- What happened, and what you were doing before and during when the problem occurred.
- How have you tried to solve the problem.

## 2.2 Introduction

This section provides an introduction to the Airfield Lighting Control Monitoring System (ALCMS).

### 2.2.1 Touchscreen

#### Overview

The Airfield Lighting Control Monitoring System (ALCMS) is designed using "industrial hardened" computer components providing a system that is unmatched in performance, long-term reliability, and flexibility. The ALCMS provides state-of-the-art programmable intelligence for precision control and monitoring of airfield lighting circuits. The ALCMS is customized to interface with many systems such as Regulators, Circuit Selectors, Generator equipment, Runway Visual Range (RVR) equipment and the Power Line Carrier equipment.

The primary purpose of the ALCMS is to control and monitor the airfield lighting. In addition, the ALCMS provides a historical archive of operation and maintenance activities, time-saving diagnostic and troubleshooting aids, report printouts, and video displays of the airfield lighting system's status.

This Operation Manual is designed to familiarize the user with the ALCMS Graphical User Interface, commonly called the GUI. The user is recommended to read this manual with the ALCMS in close proximity to allow experimentation with the material presented.

The section are as follows:

#### System Overview

Presents a brief description of the ALCMS layout and functions, enough to introduce the system, and presents all concepts necessary for the understanding of the material presented in this manual.

#### Operator Interface Basics

Provides instructions on basic computer concepts, navigation using pointing devices and the basic layouts of the ALCMS user interface screens.

#### ALCMS Graphical User Interface (GUI)

Constitutes the majority of this manual. It presents a detailed description of the ALCMS Graphical User Interface (GUI) and instructions on how to utilize them.

#### 2.2.1.1 System Overview

The following pages are an overview of the ADB ALCMS. This section provides an outline of the functionality of the ALCMS and discusses the operation of the system in reference to the airport system block diagram. An Airfield Lighting Control Monitoring System consists of a minimum of two major subsystems. These subsystems will be available in the system block diagram available in the ALCMS prints.

The ALCMS is designed using Touchscreen Control Station(s)

The Touchscreen Control Station(s) will be located in the Air Traffic Control Tower (ATCT) and will consist of the following:

- Communication equipment for communication with other subsystems
- Industrial grade computer
- Touchscreen

- Video extension equipment necessary to transmit and receive the video and serial signal from the industrial computer to the Touchscreen located in the tower cab
- LCD service monitor to be used for maintenance purposes (optional)

The preceding equipment is airport specified. Please reference the ALCMS airport system prints for specific hardware and specifications.

### 2.2.1.2 Airfield Lighting Vault

The airfield lighting vault(s) contain the following:

- Communication equipment for communication with other subsystems
- Advanced Control Equipment (ACE) or Programmable Logic Controller (PLC) for vault regulator control and monitoring.
- Industrial grade computer
- LCD monitor
- Control and Monitoring Equipment (optional)
- Insulation Resistance Monitoring System (IRMS) (optional)

The preceding equipment is airport specified. Please reference the ALCMS airport system prints for specific hardware and specifications.

### 2.2.1.3 Miscellaneous Subsystems

The airport ALCMS can contain miscellaneous subsystems that serve specific purposes in the ALCMS operations. An example of these subsystems is a Maintenance Center or Flight Service Station. These substations are available at the airport's request. These substations will consist of the following:

- LCD monitor
- Industrial grade computer
- Communication equipment for communication with other substations

The preceding equipment is airport specified. Please reference the ALCMS airport system prints for specific hardware and specifications.

## 2.2.2 General Theory of Operation

During normal operation, commands are initiated by the air traffic controller(s) at the Touchscreen control station in the Tower Cab. The Touchscreen detects the touch input on the monitor surface and determines if the touches constitute a request to change the airfield lighting. When a Touchscreen detects a request for lighting change, the user is prompted to confirm their selection. Once the lighting change is confirmed, the Touchscreen sends a message to the Touchscreen processor.

The Touchscreen processor then assembles and sends a control command message to the Airfield Lighting Vault. In addition, the Touchscreen processor causes the appropriate button on the Touchscreen to graphically depress and the associated airfield graphical representation will be colored, indicating that the Touchscreen processor has received the commands from the Touchscreen.

### 2.2.3 Airfield Lighting Vault (ALV) Activities

Upon receipt of the control command message from the Tower, the Vault computer then sends the corresponding message to the ACE server. From here, the ACE Server performs communication checks with ACE™ equipment and reports the status to the vault computer. It then processes the message and initiates the ACE™. From this point, the corresponding message is received by the ACE™, and it then reacts accordingly.

Once the correct action has been detected, a message is sent to the Tower Touchscreen processor indicating that the correct airfield circuits have been activated. When the Touchscreen processor receives this message, it paints the appropriate runway or taxiway graphics on the Touchscreen with the designated color representing the circuit type (Edge, centerline, approach etc.) and also intensity (B1, B2, B3 etc.).

Within the ALV, the ACE™ units continuously check the output of all monitored lighting circuits. Should an incorrect condition be detected within any monitored lighting circuit, an appropriate message is transmitted immediately to the Tower Touchscreen processor. The Touchscreen processor then initiates the predetermined alarm indicator on the Touchscreen. When the operator acknowledges the alarm condition by depressing the alarm silence touch button, the alarm indication will remain visible, but will cease to flash, and any audible alarm will be silenced.

### 2.2.4 Advanced Control Equipment ACE™

The ACE™ represents the heart of ADB's airfield lighting distributed control system. The ACE™ is a universal device that can be used to control any type of CCR and/or controlled element regardless of the manufacturer. The ACE™ printed circuit boards are mounted inside a small and rugged environmental enclosure that can be wall mounted or directly attached to the door of a CCR. The ACE™ consists of a microprocessor-based module(s) that includes all of the communication, control commands, input/output interface, and failsafe functionality for the controlled element.

For more specific operation and troubleshooting instructions please reference your ACE™ manual; the ACE manual is 96A0245 and ACE2 manual is 96A0357.

#### 2.2.4.1 Failsafe Situations

The ALCMS with Advanced Control Equipment (ACE) is equipped with an onboard latching failsafe system. In the event of a catastrophic hardware failure at the ALV, the associated Constant Current Regulators (CCRs) will automatically remain at the last valid step received by the Vault computer. When the alarm that forced the system into failsafe is cleared, the system will automatically return control to the Tower Touchscreen.



#### Note

When failsafe is enabled, it is important to remember that ATC will lose control of all airfield lighting operations until the system is returned to normal operating conditions.

---

#### 2.2.4.2 Sequence of Events

The entire sequence of events from: the Touchscreen entry, Touchscreen processor decoding, Vault computer communication with the ACE server and then the ACE™ ramping of the CCRs to its desired intensity, the Touchscreen receipt of alarm status information, to the graphical update of the Touchscreen monitor takes only a few seconds.

### 2.2.5 System Overview

This section describes basic operator interface concepts and is intended for the novice computer user and provides an introduction to the basics of graphic user interface standards.

#### 2.2.5.1 Computer Monitor

The computer monitor will be an LCD style monitor and will display text and graphical information. Each subsystem in the ALCMS may have a monitor, which can be located at any desired subsystem.

#### 2.2.5.2 Computer Keyboard

The computer keyboard is used to enter text into the Graphical User Interface when prompted.

#### 2.2.5.3 Computer Chassis

The computer chassis houses the central processing unit of the computer. It also contains the video graphics card responsible for generating the video signals displayed on the computer monitor.

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#### CAUTION

The Reset key switch and On/Off switch must be treated with caution as both can turn the computer off for a period of time. If this were to happen, a loss of lighting control would occur.

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#### 2.2.5.4 Pointing Devices

One advantage of a Graphical User Interface is the ability to allow input from the user to be made by pointing and clicking. Options are presented to the user in the form of regions on the monitor called buttons. The ALCMS can utilize many types of pointing devices including Touchscreens, a mouse, an integrated track point device in the keyboards, and an integrated glide point device in the keyboards.

#### 2.2.5.5 Touchscreen

The Touchscreen provides the most intuitive pointing interface available. Touchscreens look no different from a regular monitor, but have touch sensitive detectors mounted on the monitor surface. The user simply extends their finger and touches the computer monitor in the regions where the monitor has buttons displayed. This action is called a "touch" or a "click," and causes the computer to respond with new information.

#### 2.2.5.6 Mouse

The Mouse is the most commonly used type of pointing device. The cursor is an image of a small arrow as seen here.

### 2.2.6 Graphical User Interface Basics

---



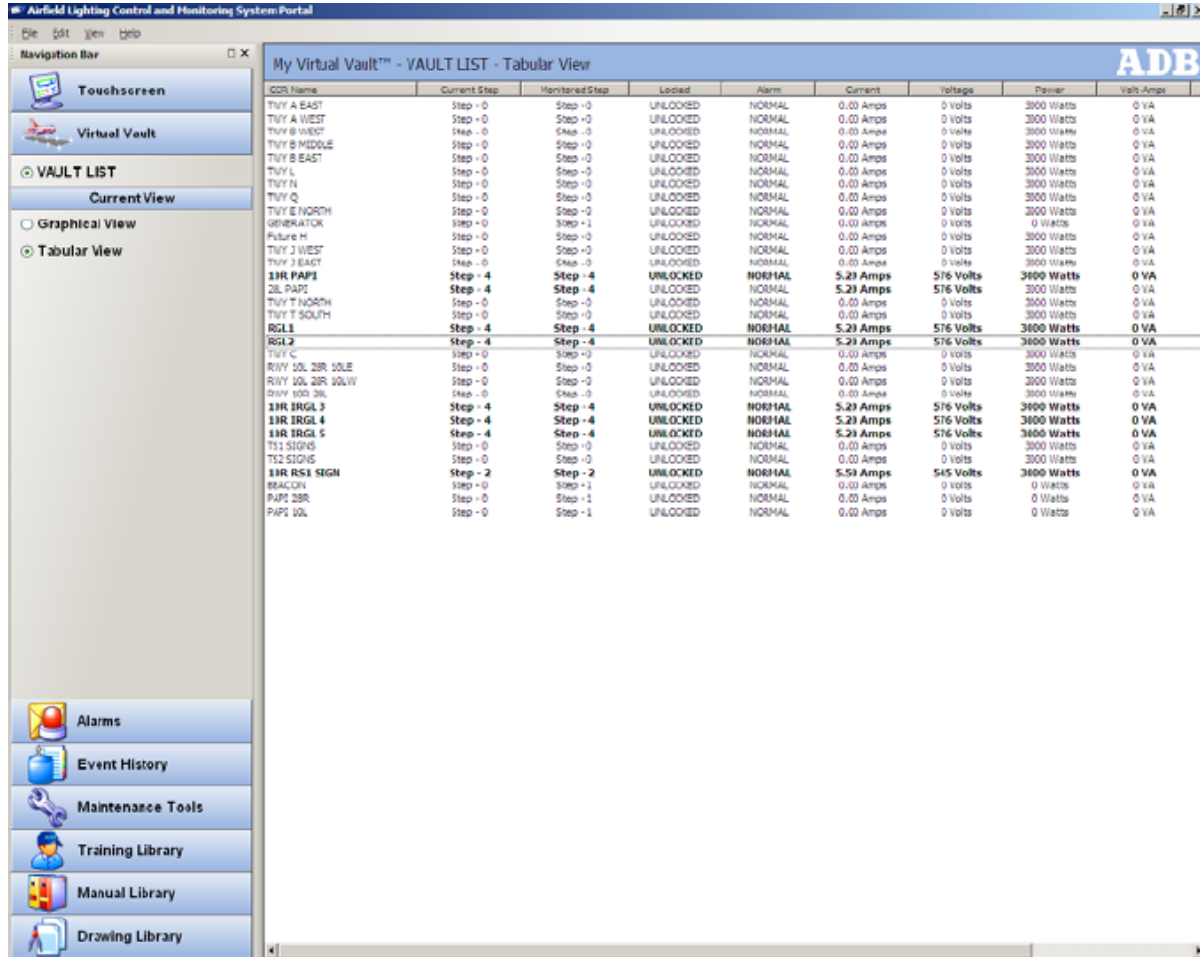
#### Note

The following interface descriptions will assume the user is performing the operations with a mouse. If the user is at a station with an alternate pointing device, be sure to review previous sections to note the differences in pointing device types.

---

The ALCMS uses the graphical user interface standards adopted by the computer software industry. The operator accesses information through these screens with mouse and keyboard entries. Although each window performs a separate task within the ALCMS, all the ALCMS windows have similar layouts that are discussed in reference to [Figure 1](#).

**Figure 1: Basic ALCMS window layout**



### 2.2.6.1 Title Bar

Located at the top of each window is the Title bar. The title bar displays the name of the current section or function of the operator interface that is being displayed.

### 2.2.6.2 Menu Bar

Located just below the Title bar, is the Menu bar. The menu bar contains a list of menu choices available for this function of the operator interface. Each word in the menu bar hides a sub-menu containing more functions. The menu bar allows functions to be grouped according to related activities. Clicking on the menu name listed in the Menu bar accesses the sub-menus. This means to move the cursor to a position on top of the desired menu name, and then press or click the mouse button.

### 2.2.6.3 Pull Down Menus

Once a menu choice has been clicked the sub-menu appears directly below the selected menu choice.

The mouse is then used to choose (highlight) and select (click left mouse button) from the newly displayed menu options.

### 2.2.6.4 Scroll Bars

The scroll bars are used to view data that does not fit in the window and therefore is not currently visible. The scroll bars are the shaded bars positioned along the right and bottom of the window with arrows at each end.

To view data not displayed in the current window, click on the arrows at the ends of the scroll bars. This will move the window in the direction of the arrow. Note that the data has shifted in the opposite direction to the clicked arrow. This process can best be thought of as the data remaining stationary and a small window being moved around to reveal portions of the data. Advanced technique: click and drag the scroll bar box up or down to move greater distances.

### 2.2.6.5 Data Viewing Area

The data viewing area consumes the majority of each window. This area displays ALCMS data, which was selected by the menu and sub-menu choices. Viewing areas are divided into columns, each column with a header identifying the information contained within.

## 2.3 Airport Lighting Control & Monitoring System

### Compliance with Standards

<b>FAA:</b>	L-890 AC 150/5345-56 (Current Edition). ETL Certified.
<b>ICAO:</b>	Annex 14, Vol. 1, para. 5.3 and 8.3 and Aerodrome Design Manual part 5, para. 3.4 and 3.7.
<b>Military:</b>	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

#### Monitoring Option

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

#### Fail-safe Option

- A = Preset
- B = Last State

#### Notes

- <sup>1</sup> Call ADB Sales Department for complete description of configuration options.

ALCMS - X X



## 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.

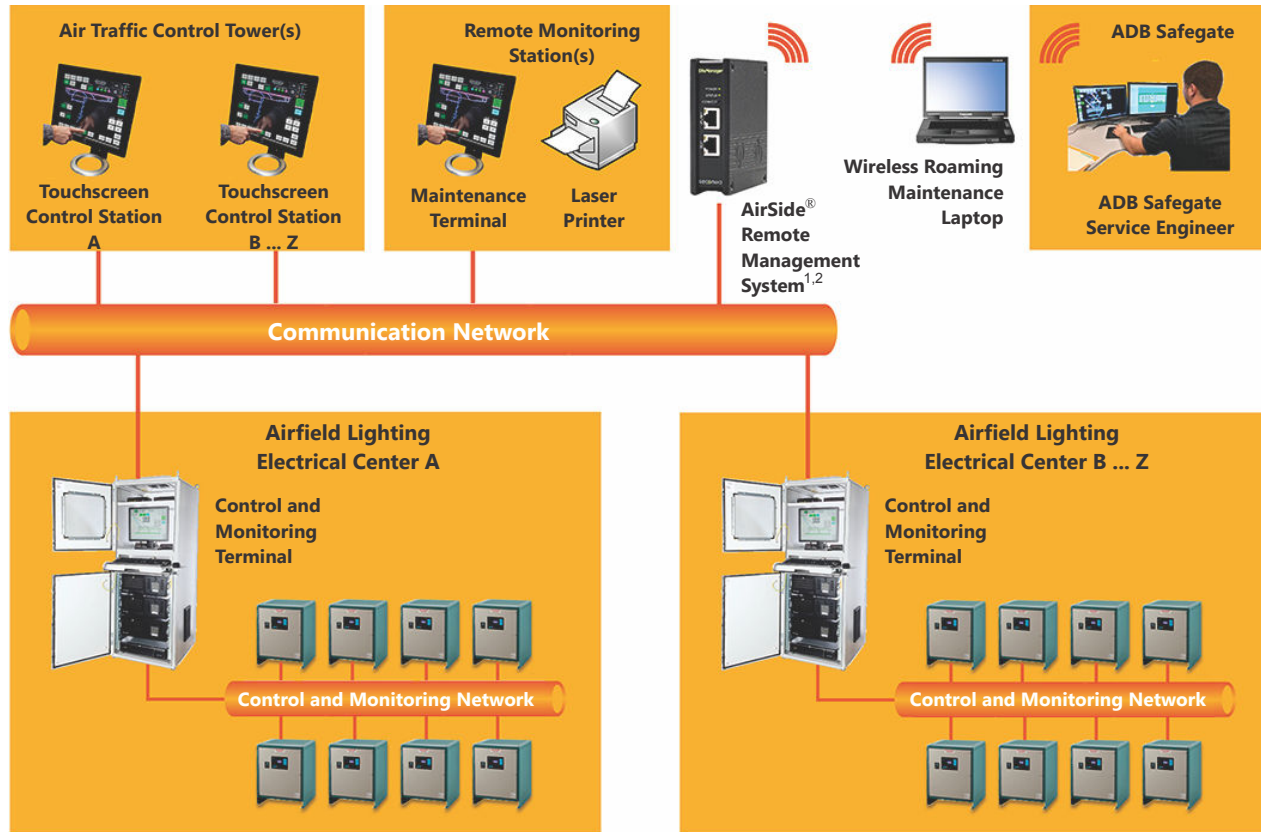
When a red stop bar is switched ON, a number of green taxiway centerline lights beyond the stop bar are switched OFF. When the aircraft receives clearance and when the red stop bar lights are extinguished by the air traffic controller, the green centerline lights are illuminated to indicate the aircraft 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.

## 2.4 ALCMS Graphical User Interface (GUI)

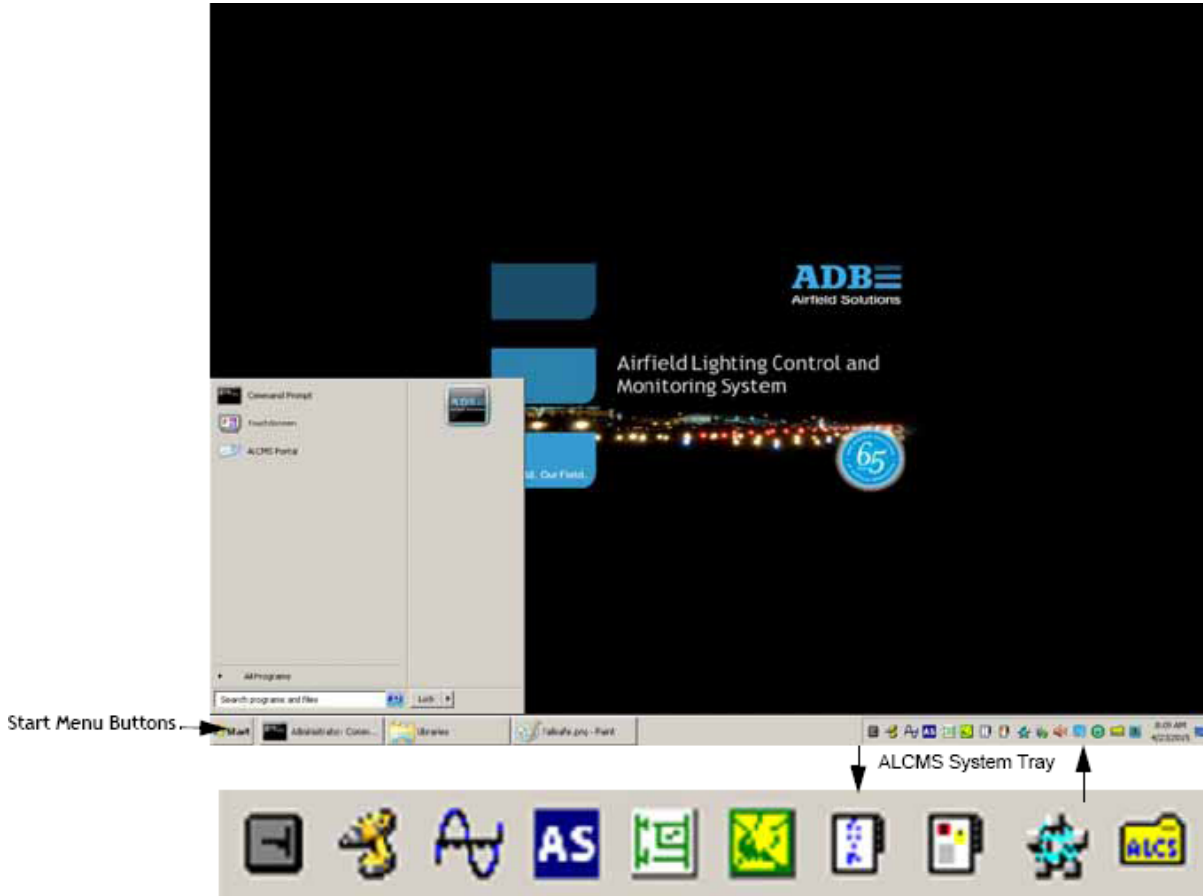
The following pages are an overview of the ADB ALCMS. This section provides an outline of the functionality of the ALCMS and discusses the operation of the system in reference to the airport system block diagram. An ALCMS has a minimum of one Vault node but typically consists of at least two major subsystems (i.e. ATCT, Vault). These subsystems will be available in the system block diagram available in the ALCMS prints.

### 2.4.1 ALCMS System Tray and Start Menu

When the ALCMS software is started, the ALCMS System Tray is displayed. The menu bar will be different for each Subsystem depending on the various options available at each location. To follow is a basic illustration of a System Tray for a typical airfield lighting vault. The menu bar is comprised of various applications and current date and time box.

The Start Menu includes functions available include data viewing and system interaction. The operator can access any of the options by first clicking on the start menu and when the menu is expanded clicking the left mouse button on the desired application

**Figure 2: Typical Airfield Lighting Vault System Tray/Start Menu.**



### 2.4.2 Configuration Manager



The Configuration Manager is the first application that runs upon startup. This base application calls up all the necessary applications to startup on the computer node.

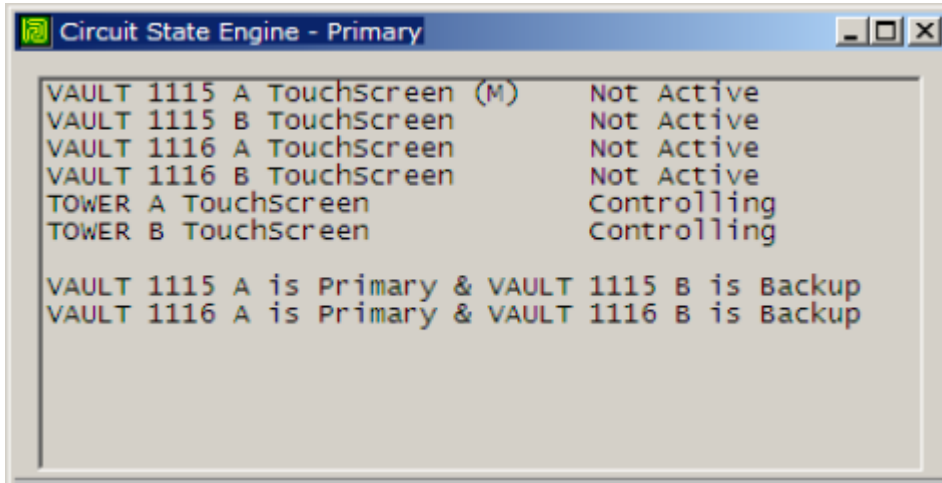
### 2.4.3 Circuit State Engine (CSE)



The Circuit State Engine (CSE) is the central body of control knowledge for the ALCMS and is responsible for interpreting Touch Screen commands. Once the commands have been received and interpreted by the CSE, the CSE module sends the proper messages to the Vault Control Process (VCP) in order to control the affected hardware (i.e. CCR).

Additionally, the CSE application will show a maintenance lock indicator (M) for the node who is currently registered with the lockout utility. While the majority of the CSE functions are behind the scenes, the user interface portion of the CSE allows the user to view the current operating state of all the computer nodes in the system.

**Figure 3: Circuit State Engine - Primary**



#### 2.4.4 ACE Interface Server (AIS)



The ACE Interface Server (AIS) provides a real-time environment for communicating with ACE units. The AIS is responsible for constantly polling the ACE units in the system via a configuration message then relays the status of the ACE units to the database. The AIS is also the mechanism to send failsafe messages to the ACE units which alerts the ACE units to enter or exit their failsafe mode (i.e. latching, preset).

ACE Interface Server

```

AS AceServer Version 3.2.0
Apr 23 15:54:14 AceServer Version 3.2.0
Apr 23 15:54:14 Flash load inhibited
Apr 23 15:54:14 AceServer will be using node:1 and port:82 for IPC communications
Apr 23 15:54:14 Started Failsafe Alive Sender Thread
Apr 23 15:54:14 Started IPC Link Reader Thread
Apr 23 15:54:14 ALCS back on line
Apr 23 15:54:14 ais_cfgrequired(): Flash: e6 15 Packet: d9 54
Apr 23 15:54:16 rewriting configuration
Apr 23 15:54:16 Sending deconfiguration to all clients
Apr 23 15:54:16 ais_loadconfig(): begin (number of records=10)
Apr 23 15:54:16
Apr 23 15:54:16 ace id = 1
Apr 23 15:54:16 type = 1
Apr 23 15:54:16 outputs = 0x0000
Apr 23 15:54:16 inputs = 0x0000
Apr 23 15:54:16 primary port: COM7, flags=64, addr=1001
Apr 23 15:54:16 secondary port: COM8, flags=0, addr=2001
Apr 23 15:54:16 ccrState=1, cssState=255, maxState=5, ioState=0xff00
Apr 23 15:54:16
Apr 23 15:54:16 ace id = 2
Apr 23 15:54:16 type = 1
Apr 23 15:54:16 outputs = 0x0000
Apr 23 15:54:16 inputs = 0x0000
Apr 23 15:54:16 primary port: COM7, flags=64, addr=1002
Apr 23 15:54:16 secondary port: COM8, flags=0, addr=2002
Apr 23 15:54:16 ccrState=1, cssState=255, maxState=5, ioState=0xff00
Apr 23 15:54:16
Apr 23 15:54:16 ace id = 3
Apr 23 15:54:16 type = 1
Apr 23 15:54:16 outputs = 0x0000
Apr 23 15:54:16 inputs = 0x0000
Apr 23 15:54:16 primary port: COM7, flags=64, addr=1003
Apr 23 15:54:16 secondary port: COM8, flags=0, addr=2003

```

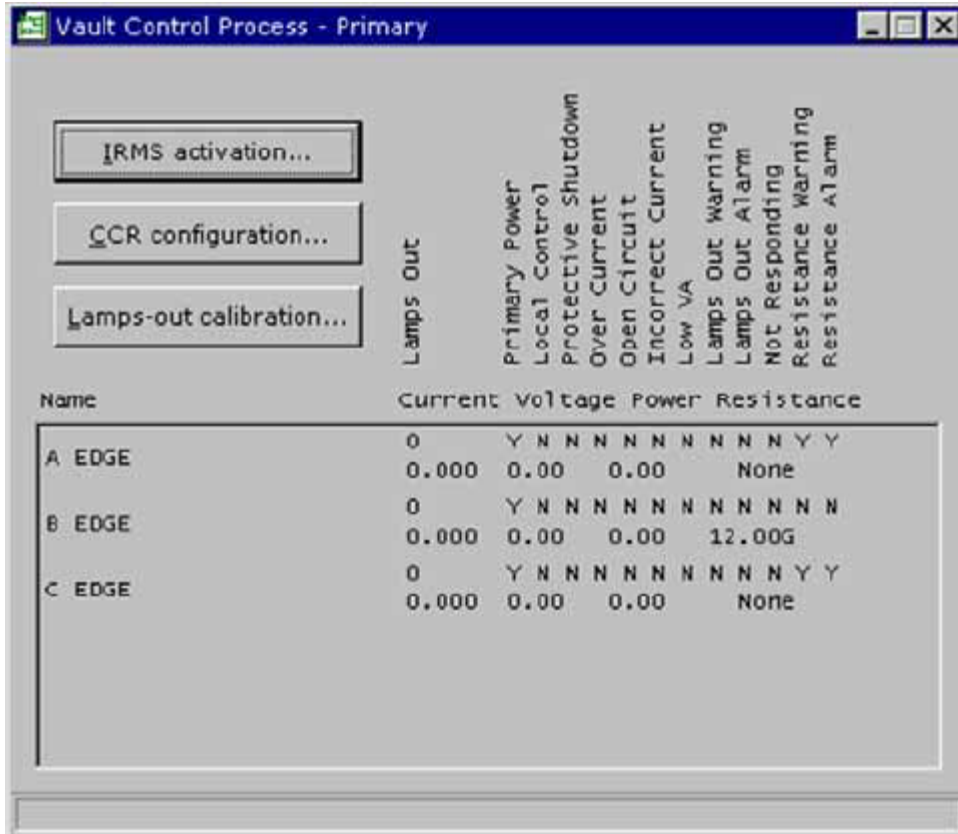
AceServer Version 3.2.0 Hide

### 2.4.5 Vault Control Process (VCP)



The VCP is responsible for controlling and monitoring all hardware in a single airfield lighting vault. The vault receives control messages from the master CSE and issues the state changes to the AIS. The AIS responds with the most recent monitored status of all the ACE units. If any of the status has changed since the last update the VCP will forward the information to the master CSE for processing. The Vault Control Process monitors everything from CCR current, voltage and Power to Lamps out on the airfield lighting circuit. This tool will enable maintenance personnel to view exact current, voltage and power and will give the status of every CCR. (i.e. primary power, over current, etc.). The VCP is also one of the two available interfaces for calibrating regulators and configuring the IRMS.

**Figure 4: Vault Control Process**



### 2.4.6 VCP IRMS Activation (Optional)

Using the IRMS activation button, the user can enable/disable a circuit from the auto-megging schedule by moving circuits between the associated circuit lists. This can be done one circuit at time using the "Disable" or "Enable" buttons or all at once using the "Disable All" or "Enable All" buttons.

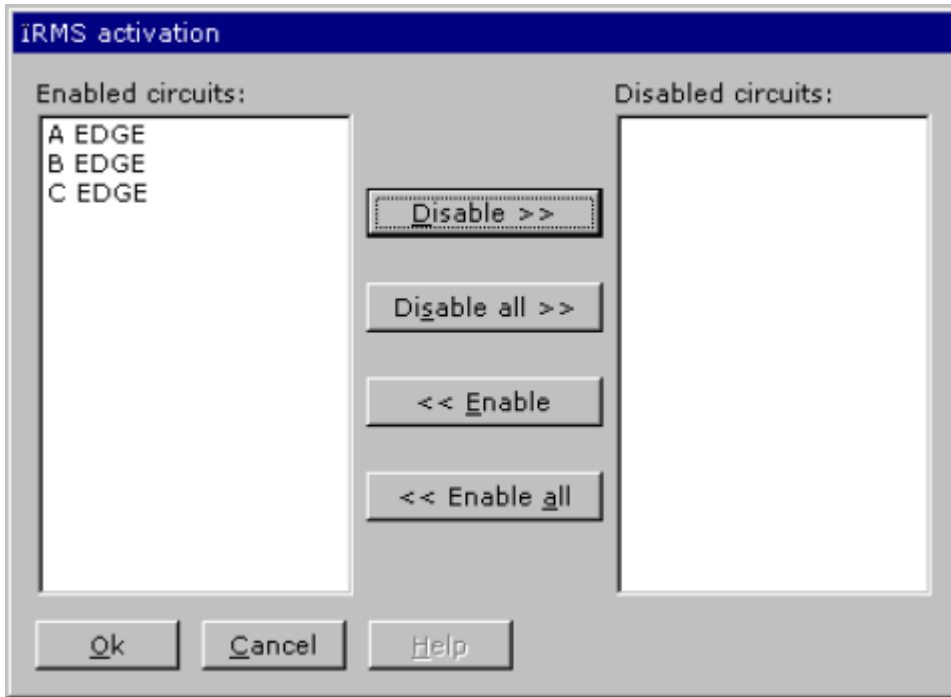


**Note**  
**ADB ALCMS**

**Troubleshooting Tips**

The ALCMS will NOT auto-meg a disabled circuit even when reapplying a schedule in the CCR Configuration.

**Figure 5: VCP IRMS activation**



**2.4.7 VCP CCR Configuration**

Using the CCR Configuration button, the user can set CCR warning/alarm parameters. The configurable parameters are number of Lamps Out, Current thresholds and Insulation Resistance thresholds. The top drop-down menu (CCR to Configure) contains a list of all the circuits located in the ALV where this application is running. Once the desired circuit is selected the user is able to adjust the parameters for that circuit. While it is possible to utilize the VCP for these adjustments, this procedure is recommended to be done utilizing the ALCMS Portal feature (reference sections [Incorrect Output Current Settings - Setting Incorrect Output Current Thresholds](#)).

**ADB ALCMS Troubleshooting Tips:**

**Note**

Make sure that when adjusting the threshold that you adjust them for all steps by clicking the up/down arrow by Step Number.

Also note if the CCR is a 20A circuit the thresholds are much different than a 6.6A circuit.

**Figure 6: CCR Configuration**

CCR Configuration

CCR to Configure: TWY A EAST

Lamps Out Configuration

Warning Level: 5 Alarm Level: 10

Incorrect Current Configuration

Step Number: 1 Low Current Threshold: 4.6

Actual Current: 4.8 High Current Threshold: 5

Insulation Resistance Configuration

Warning Level: 0 K Ohm M Ohm G Ohm

Alarm Level: 0 K Ohm M Ohm G Ohm

First Sample

Day: Thursday Time: 10:00 Period: Hourly

Enable Second Sample Voltage applied to Circuit: 1000 Volts DC

Second Sample

Day: Sunday Time: 10:00 Period: Hourly

Apply IRMS CFG To All CCRs Meg this CCR Now

Close Help Apply Configuration

**Adjustable Parameters:**

Lamps Out Configuration (Optional):

Set the number of lamps that will trigger a warning and an alarm condition in the database.

**Incorrect Current Configuration:**

Set the Low, Actual and High Threshold that will trigger an Incorrect Current alarm in the database.

**Insulation Resistance Configuration (Optional):**

Set the Ohm level that will trigger a warning and alarm condition in the database. The radio button toggles between K Ohm, M Ohm and G Ohm.

This is also where the Day/Time/Frequency/Voltage is set for the ALCMS auto-meg feature. Select Day/Period/Voltage level from the associated drop-down menus. Time can be typed in using hh:mm format.

If it is desired to meg multiple times per day or on two different days during the week a second sample can be enabled by checking the associated box.

**2.4.8 VCP Lamps Out Configuration (Optional)**

Using the Lamps-out Configuration button, the user can calibrate a circuit to determine how many incandescent lights have failed in a given circuit. Before the calibration process is started a few preliminary steps must be taken.

1. Verify the CCR steps are within tolerance levels at each step.
2. Verify that no more than 5 lamps are out in the circuit to be calibrated.
3. Inform ATCT that the calibration will be taking place.
4. Lockout circuit via maintenance lockout.

5. Ensure CCR has power and is in Remote mode.
6. If redundant Vault is present: Disable or disconnect redundant vault CPU.

Once these steps have been taken the user will select the desired circuit to be calibrated from the drop-down menu and fill out the parameters.

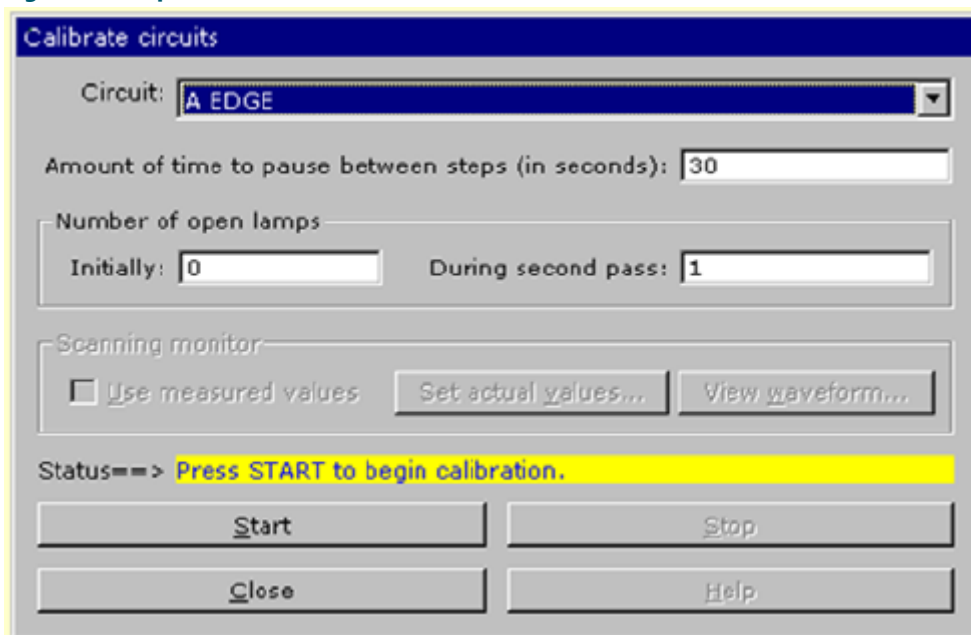
**Note**  
**ADB ALCMS**

**Troubleshooting Tips:**

*If your ALCMS has "Low VA" alarms, a "0-0" Lamps out Calibration can be performed to reset the baseline Volts\*Amps (VA). This is done by running through the entire Lamps Out Calibration procedure with putting in 0 for both the initial and second pass open lamps parameters. The user will not need to pull any lamps to run this calibration.*

*If a mistake is made inputting parameters and the Start button has already been pressed, it is best to perform the full calibration and reject instead of accept.*

**Figure 7: Lamps Out Calibration**



**Amount of time to pause between steps:** Enter a "settling" time in seconds to record a stable VA reading. Default is 30 seconds, but larger circuits may require more time.

**Number of Open Lamps - Initially:** Number of lamps known to be out during calibration

**Number of Open Lamps – During Second Pass:** Number of lamps that will be pulled during the second phase of the calibration.

When the parameters are input, the user will press the Start button. At this time the selected CCR will turn on to its highest step intensity and step down after the set pause time until the CCR turns off.

The calibration window will then prompt the user to pull the appropriate number of lamps as documented in the second pass field. Once the lamps have been pulled, the user will press the Start button once again and the CCR will run through the steps in the same manner as Phase 1.

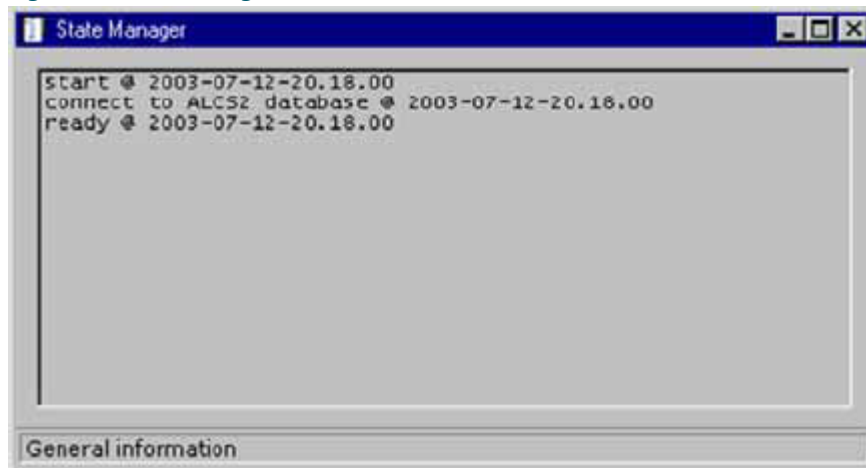
Once Phase 2 of the calibration is complete the user can accept the calibration or reject the calibration.

## 2.4.9 State Manager



State Manager runs at the database node and is responsible for all state-related interactions with the database. It maintains a current representation of the state of several types of ALCMS components including CCRs, circuits, I/O points and IPC links. The GUI displays if the computer connected to database and after a reboot shows it will show ready @ Date/Time.

**Figure 8: State Manager**

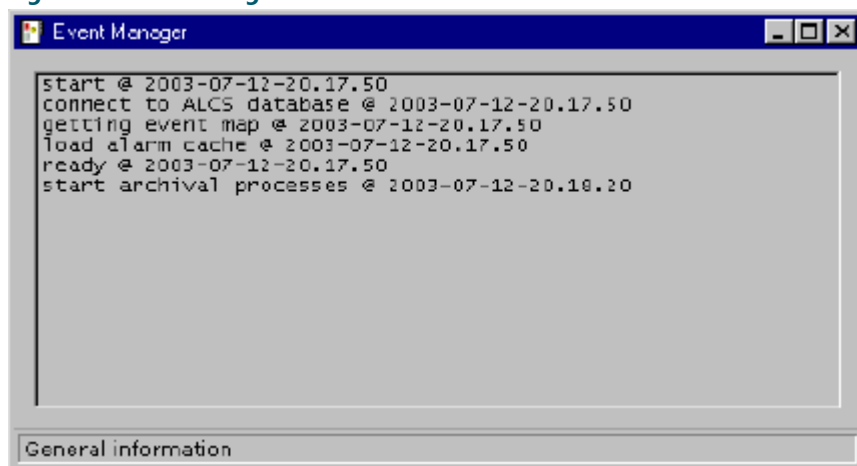


## 2.4.10 Event Manager



Event Manager runs at the database node and is Responsible for all transaction type interactions with the database. All processes that log events send them to the event manager and the event manager inserts a record into the event table. The GUI displays if the computer connected to database and after a reboot shows it will show ready @ Date/Time

**Figure 9: Event Manager**

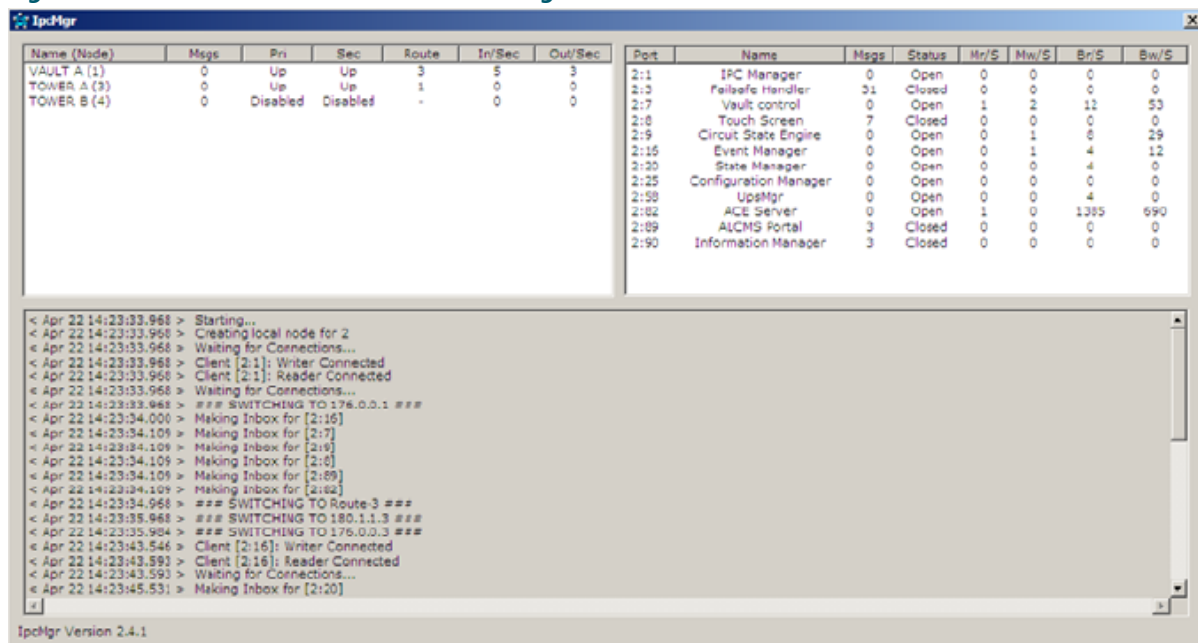


## 2.4.11 Inter-Process Communications Manager (IPC)



The Inter-Process Communications Manager (IPC) process runs on every ALCMS computer. It is responsible for message routing and delivery between processes on the same computer and processes on remote computers. The IPC Manager has a user interface, an example of which is shown in [Figure 10](#).

**Figure 10: Inter-Process Communications Manager Window**



The IPC Manager user interface is divided into two main regions, the message window, and the list windows. The list windows display the status of the Links, Nodes, and Ports.

### Links :

Links are the physical hardware used to communicate to other computers. The Links list contains an entry for each communications path that the computer can use, including separate entries for the redundant paths between subsystems. The status column will report either Up or Down for each Link

### Nodes:

Nodes are the individual subsystems in the ALCMS, such as the Tower, Maintenance Center or Lighting Vault. The Nodes list contains an entry for each subsystem that the local computer sends messages to. This does not necessarily mean every node is listed, as some nodes do not send information to other node types.

### Ports:

Ports are the means by which processes internal to the computer attach to the IPC manager. Ports come and go as different applications, such as the Event Viewer, are started and then exited. Ports are listed as either open or closed. An open port indicates an active connection between the IPC manager and a client process. A closed port, means that there is a message waiting to be delivered to a process which is not running. An example of when a message would be waiting to be delivered to a non-operating process is as follows. There are some messages, such as event messages to the data base at the Maintenance subsystem, that are held while the data base process is not accepting messages. This is done so as not to lose any system event messages.

### Message Area:

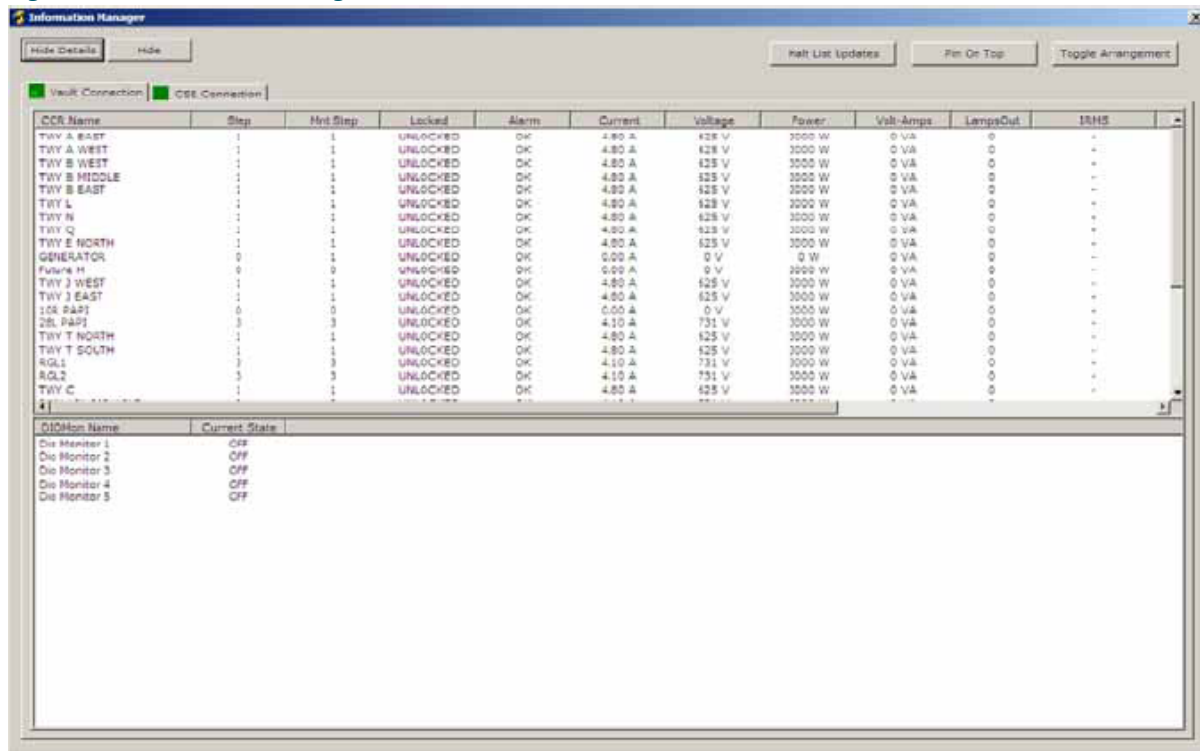
The message area located at the bottom of the IPC manager window lists messages indicating the internal activities of the IPC manager process as it open and closes Port connections, and determines the Up/Down status of the Nodes and Links. This information is provided as an advanced trouble shooting aid, to be used in Consultation with ADB.

### 2.4.12 Information Manager



The Information Manager gathers data from various application and sends that data to the ALCMS Portal. There is a GUI for Information Manager, but it is presented in the ALCMS Portal in a more user friendly manner.

Figure 11: Information Manager Window



### 2.4.13 Link Monitor & Switch Monitor (Optional)



Link Monitor and Switch Monitor are optional monitoring application which monitor the TCP connectivity of underlying Networks. Link Monitor can monitor specific CAT 5 Ethernet connections by pinging IP addresses of nodes and/or devices. Switch Monitor can ping specific ports on Managed Ethernet switches. By monitoring this network activity via Link or Switch Monitor, the user can see a visual indication of any Network failures on the ALCMS Portal System Overview page if available.

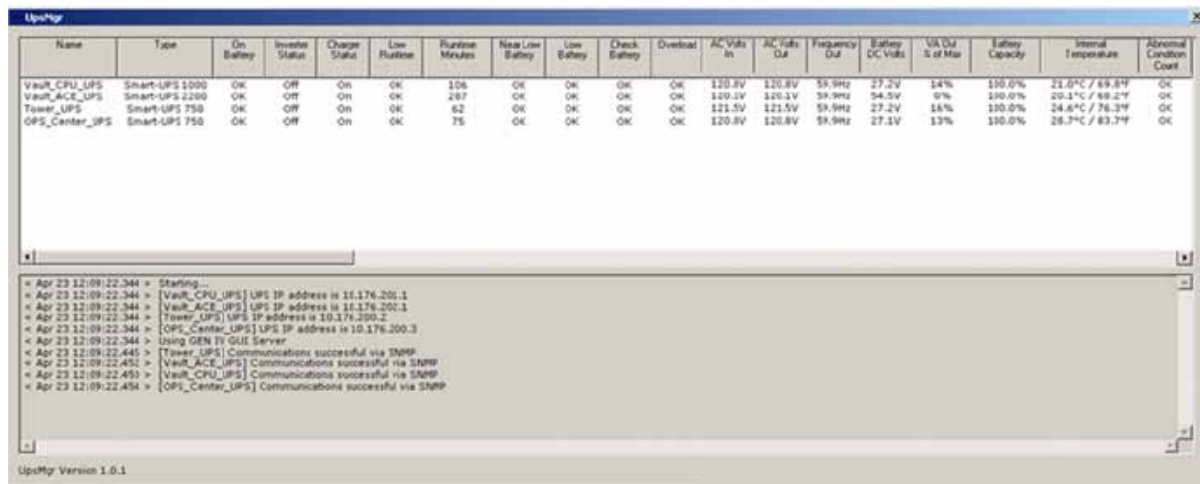
### 2.4.14 UPS Manager



The UPS Manager application is another option that is utilized in most ALCMSs.

The UPS Manager process communicates with the local UPS, which directly powers the ALCMS equipment. It reports the current status of the operating parameters including alarm conditions. The UPS Manager window appears as in [Figure 12](#).

**Figure 12: UPS Manager**



The UPS manager interface is setup similar to the IPC Manager interface. There is the data display area, the message window, and the input buttons

**Message Area:**

The message window at the bottom provides messages indicating the internal operations of the process to allow advanced trouble shooting, and the data display area displays the status of all operating parameters.

**Data Display Area :**

The data display area lists the following operating parameters:

UPS Name	Overload [OK/ALARM]
UPS Type (Size)	AC volts in
On Battery [OK/ALARM]	AC volts out
Inverter is [ON/OFF]	Frequency out HZ
Charger is [ON/OFF]	DC volts
Low Runtime [OK/ALARM]	VA out %
Minutes of runtime	Battery Capacity %
Near Low Battery [OK/ALARM]	Internal temp
Low Battery [OK/ALARM]	Abnormal Condition [OK/ALARM]
Check Battery [OK/ALARM]	

When the Inverter is on, the UPS is supplying power from the batteries. When the Charger in on, the UPS is charging the batteries. The Automatic system mode indicates the UPS is automatically determining when to use battery power and when to only line condition. The System mode parameter indicates when the UPS is using battery power, or simply performing line conditioning. The "Alarms are" parameter indicates whether the UPS is to report alarms. If the alarms are Disabled the UPS will not report alarm conditions to the ALCMS.

The remaining parameter fields are all the possible alarm conditions reported by the UPS, and are followed by a green "OK" if not in alarm, or by a red "ALARM" if that alarm condition is present.

Configurable UPS operating parameters are set at installation and do not need user adjustment.

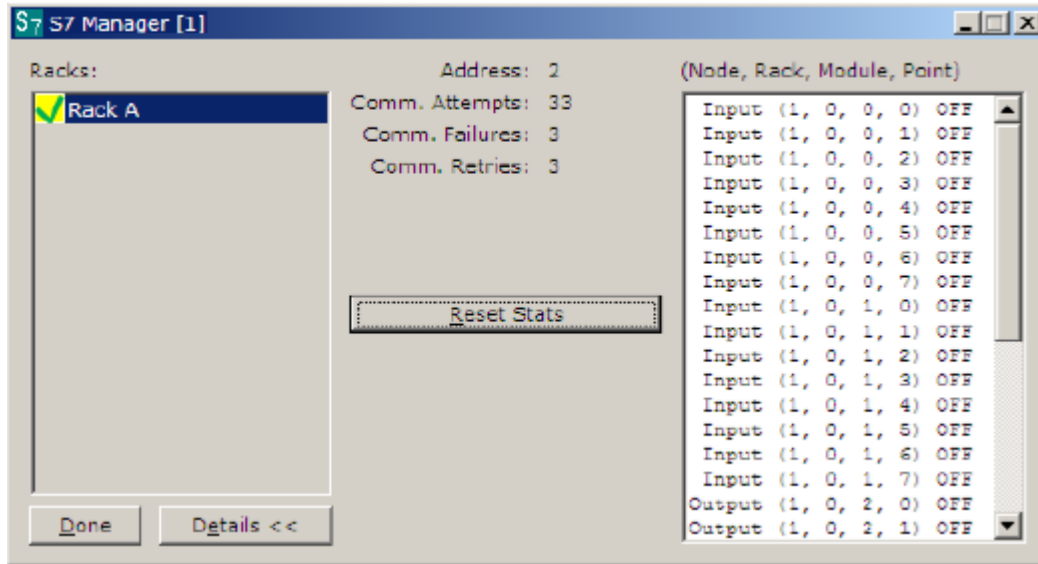
### 2.4.15 S7 Manager & ADAM Manager (Optional)



The S7 and ADAM Manager Applications are for communication with a Programmable Logic Controller (PLC) or ADAM unit for the purpose of controlling/monitoring I/O devices such as a Beacon. This is convenient when the I/O unit being controlled is in a location other than the ALV.

The S7 manager communicates with one or many PLC units over RS232 serial cable. It also provides the status of the PLC communication, including the number of communication attempts, failures and retries, and the status of the input/output points.

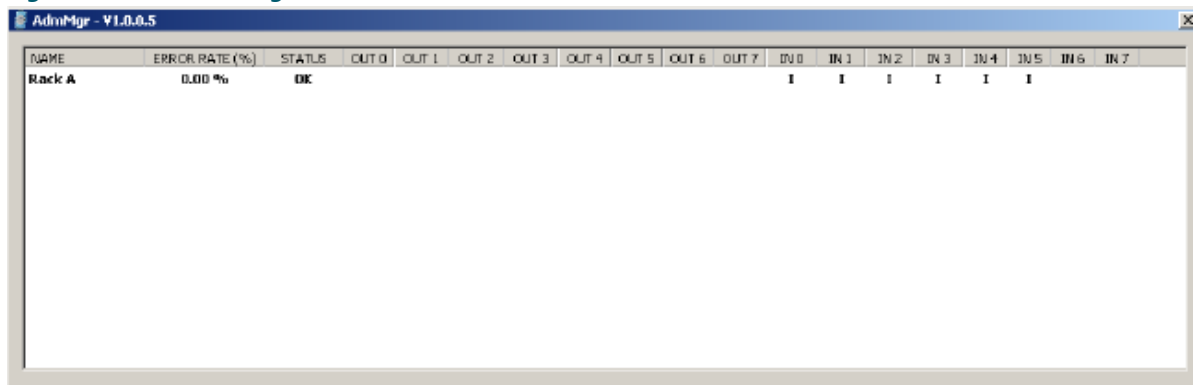
**Figure 13: S7 Manager Window**



### 2.4.16 ADAM Manager

The ADAM Manager communicates with one or many ADAM units using MODBUS TCP Ethernet. It provides the status of the ADAM communication by showing the Error Rate %. The ADAM Manger also shows the state of the ADAM unit itself as well as the state of the inputs/output points.

**Figure 14: ADAM Manager Window**



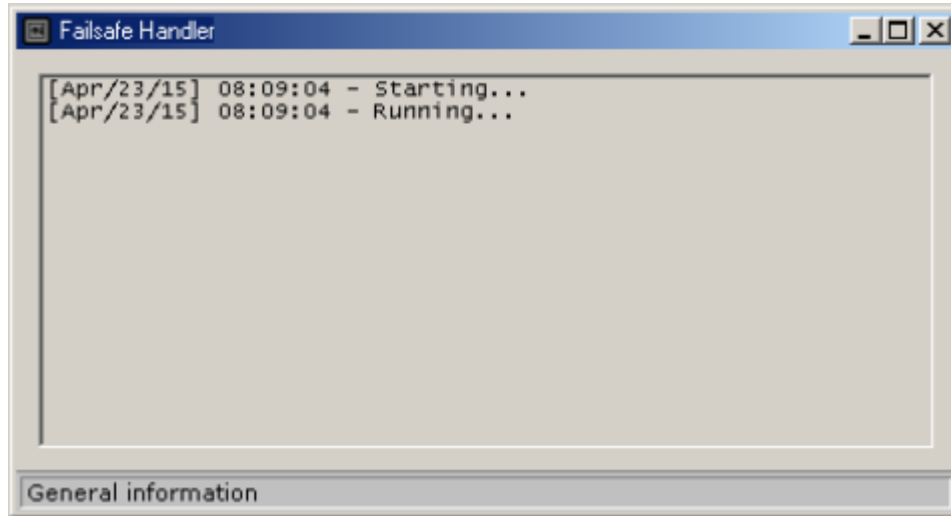
### 2.4.17 Failsafe Handler





The Failsafe Handler ensures that all critical application are running properly. If the Failsafe Handler finds an application error, the ALCMS will reboot to correct any issues. The GUI simply shows the time stamp of when the application started and if the application is running.

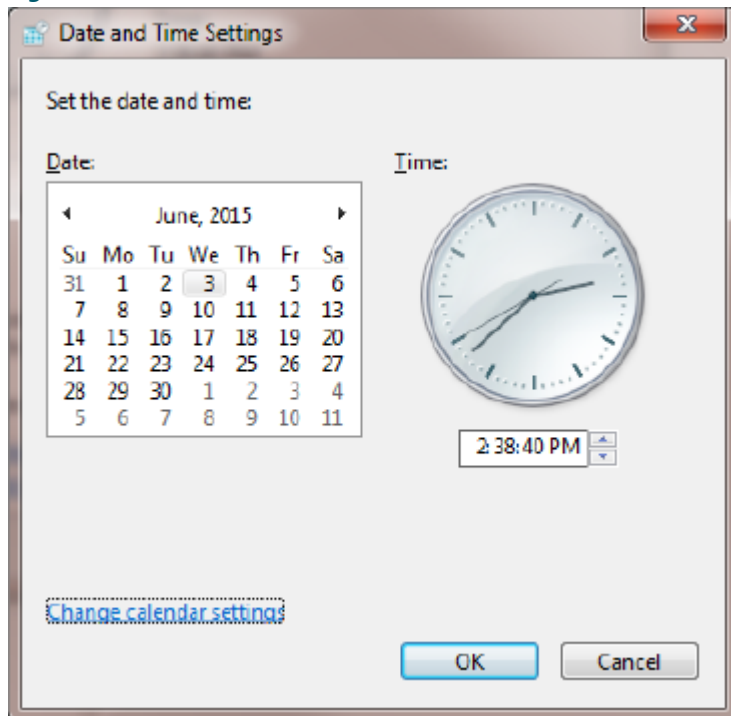
**Figure 15: Failsafe Handler**



### 2.4.18 Set Date and Time

The SET DATE and TIME functions are accessed on from the UTILITY page. The user can set the ALCMS date and time by double-clicking the TIME box in the bottom right-hand corner of the system tray. At that point the window shown in [Figure 16](#) is displayed.

**Figure 16: Set Date and Time Window**



The user can now enter the new date and/or time using the mouse or the up/down increment buttons. Once the correct date and time have been entered, the user must click on the "Apply" button to accept the change. If it is desired not to change the date or time, click on the "Cancel" button and no change will be made.

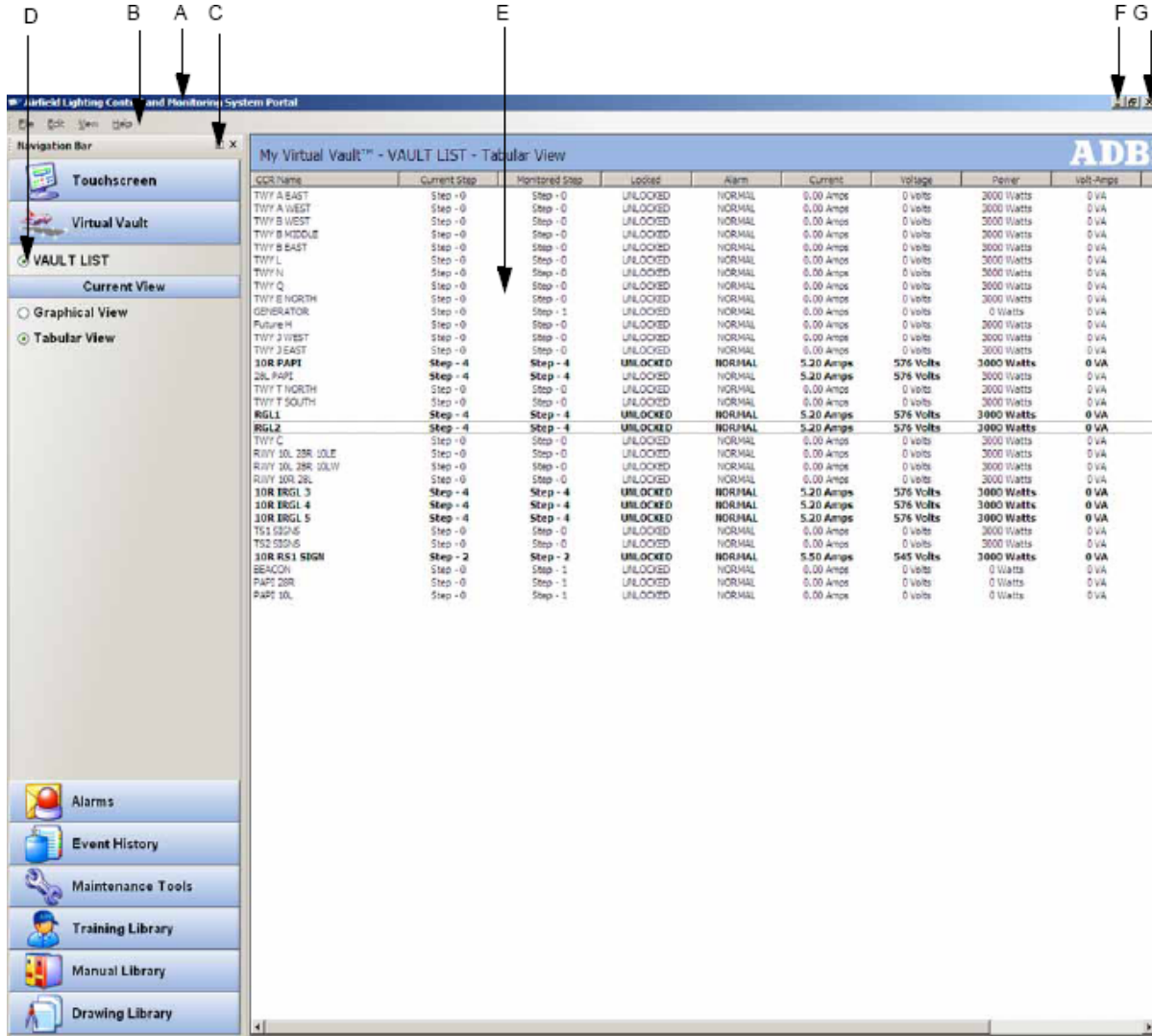
Once the "Apply" button is chosen, select the "O.K." button. System Date and Time is now set.

## 2.5 ALCMS Portal

### 2.5.1 Navigating the ALCMS Portal GUI

Refer to Figure 17. The user accesses information through the ALCMS My Virtual Vault screens with the mouse and keyboard entries.

Figure 17: ALCMS Portal UI Overview



The ALCMS My Virtual Vault User Interface (UI) uses several basic window navigation methods as follows

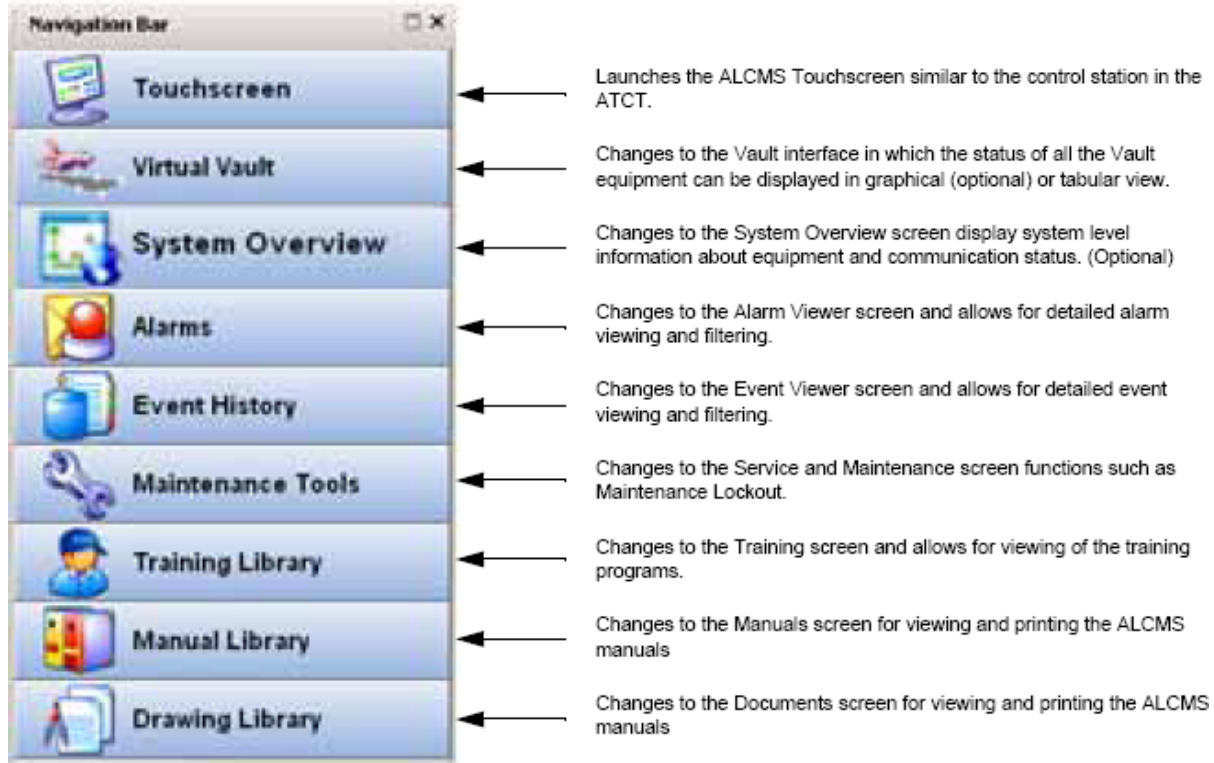
- [A] Title Bar** Located at the top of each window is the Title bar. The title bar displays the name of the current section or function of the operator interface that is being displayed.
- [B] Drop-down Menu** The drop-down menu bar contains a list of menu choices available for the current screen of the UI. Select the drop-down menu name listed to reveal the sub-menus.
- [C] Navigation Bar** The navigation bar is used to switch to other UI screens or features. To view a different UI screen, select the corresponding navigational bar.
- [D] Radio Buttons** Radio buttons appear below the navigation bar to show the available options for the selected UI screen. i.e. for the "System Overview" window, the Communication Overview is selected to display the status of the communication.

<b>[E] Data Window</b>	The Data Window consumes the majority of each UI screen. This area displays the specific information that was selected by the Navigation Bar and Radio Button. The title of the Data Window is display at the top of the window.
<b>[F] Minimize / Maximize</b>	The minimize and maximize buttons perform the standard windows command of minimizing and maximizing the current window
<b>[G] Close Window Button</b>	The close button performs the standard windows command of closing the current window.

## 2.5.2 Navigation Bar

The Portal's Navigation Bar is used to open and close all of the main ALCMS UI screens. Below is a summary of the available screens.

**Figure 18: ALCMS Portal Navigation Bar**



## 2.6 Touchscreen Application

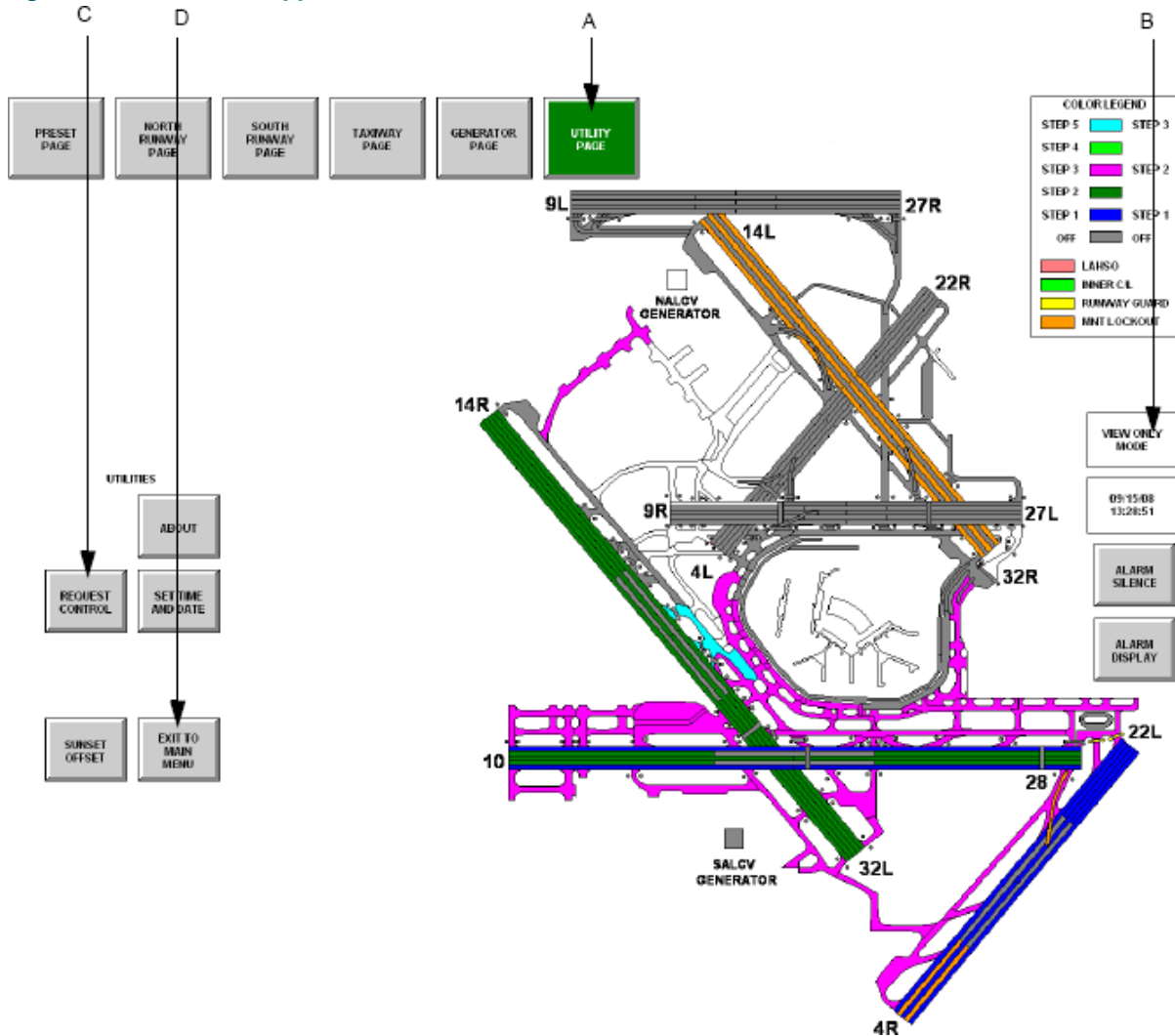
The Touchscreen application is available at all nodes even those that are not connected to an actual Touchscreen monitor (i.e. Electrical Centers, Vaults or Maintenance Centers).

When this application is selected, the Touchscreen graphics is displayed on the screen. When selected from a node other than the ATCT, typically all lighting control touch buttons on the screen are inactive and the various Touchscreen pages can only be viewed. Additionally, input commands are made by mouse clicks rather than by touches to the monitor surface. Otherwise the operation is identical, for a complete explanation of the set-up and use of the Touchscreen, the operator should refer to the following manual:

- 96A0270 Touch Screen Operator's Manual

Two features relevant to non ATCT personnel are Control Access Request, and the Mode Indicator.

**Figure 19: Touchscreen Application**



**[A] Utility Page Button**

Navigation button to select the Utility Page

**[B] Mode Indicator**

Current operating mode (Reference section 3.3.1)

**[C] Request Control Button**

Button used for a non-controlling Touchscreen to gain control of the Touchscreen Application (Reference section 3.3.2)

**[D] Exit Button**

Button use to exit the Touchscreen application for non-controlling nodes.

### 2.6.1 Mode Indicator

The Mode Indicator is a text box present on all Touchscreen pages, which informs the user of the Touchscreen’s current operating mode. Two modes are possible in an active ALCMS, View Only Mode and Control Mode. Control Mode means the Touchscreen process is in control of the airfield lighting and changes made to the Touchscreen will be commanded to the airfield lights. View Only Mode means that the Touchscreen process can only view the activities taking place on the Touchscreen display. A Touchscreen process in View Only mode is incapable of affecting the airfield lighting status from the Touchscreen application. A third “Demo Mode” is also available for training and review purposes. Contact your ADB sales representative to attain a copy of the Demo CD files required to run the “Demo Mode.”

### 2.6.2 Control Access Request

Touchscreen processes at stations remote from the tower cab automatically start in View Only mode. To change the Touchscreen process to Control Mode, a request for lighting control authorization must be made.

The user must go to the utility page of the Touchscreen interface, and request control. Then the correct password must be entered. After entering the password, a message box will display the message “Requesting Control Access.”

Typically at this time an operator from the ATCT will need to grant access by also navigating to the Utility page of the Touchscreen and clicking on the control authorization button and enabling control by selecting a radio button. At this point, the mode indicator will change from “View Only Mode” to “Control Mode” and from here on, any lighting changes made at this Touchscreen process will be commanded to the airfield.

In some ALCMS configurations the user can get immediate control by entering the correct user name and password without ATCT authorization. It is still necessary to coordinate with ATCT when doing this so that they are aware that they will temporarily not be in control of the ALCMS.

To exit Control Mode, the user must go to the utilities page and Exit the process by clicking the EXIT button.



#### Note

Operators in the tower cab can revoke control access previously granted, AT ANY TIME.



#### CAUTION

The remote Touchscreen feature is not to be used in place of proper lockout procedures.

### 2.6.3 System Overview Option

Selecting the “System Overview” **OPTIONAL** navigational bar will graphically display ALCMS system hardware status information. The buttons below the navigational bar are used to select the subsystem the user is interested in viewing.

#### Did you know?

*All ALCMS Portal graphical views (optional) can be zoomed in and out to provide greater detail and readability of specific details.*

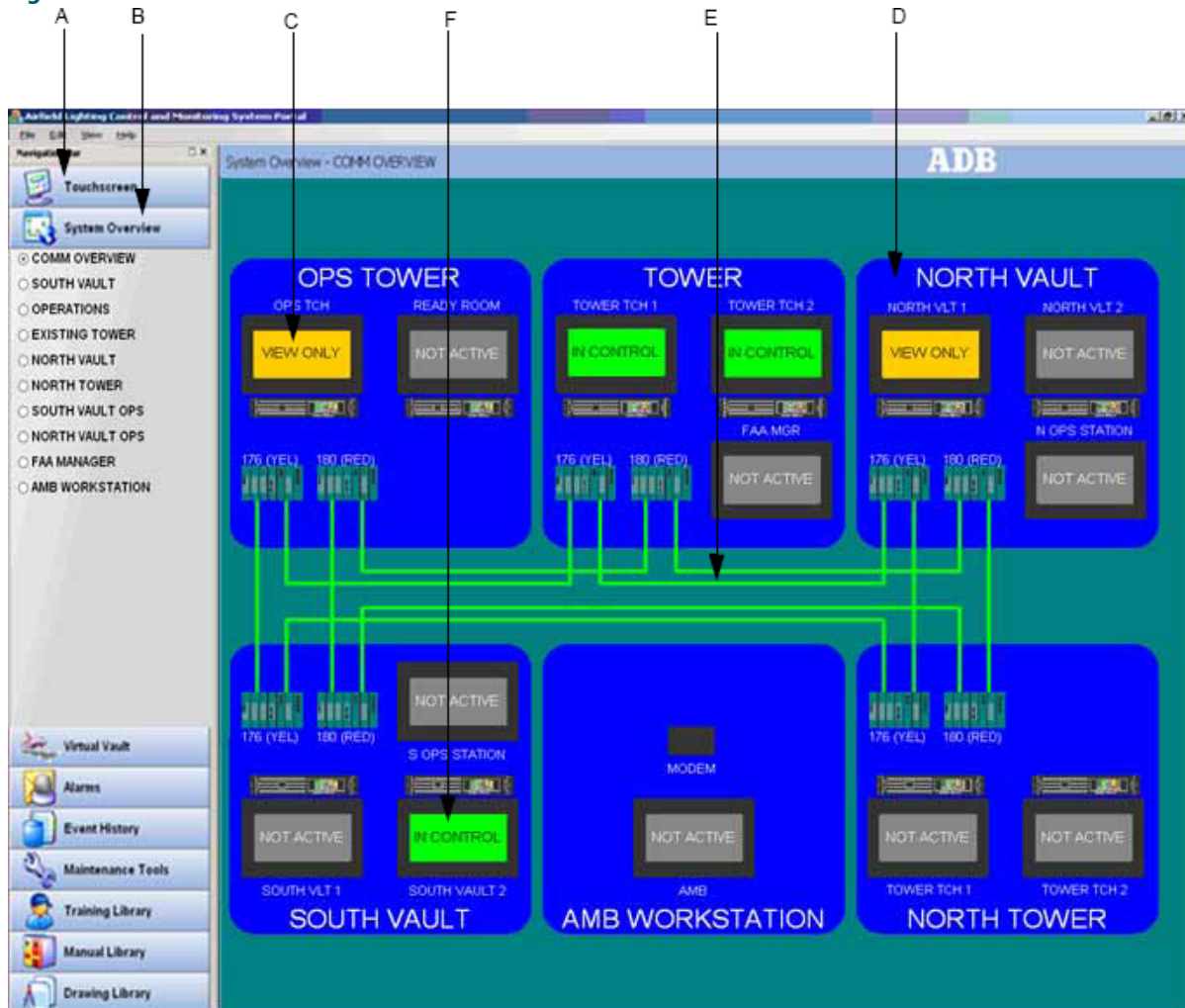
*To zoom in, click and drag using the left mouse button to create a window of the desired zoom area. Then release the left mouse button to zoom the window area*

*To zoom out, simply click the right mouse button and the screen will zoom out to original size.*

## 2.6.4 Communication Overview

Refer to Figure 20. Selecting the “Comm Overview” button will display the system overview and graphical representation of the communication system.

Figure 20: Communication Overview

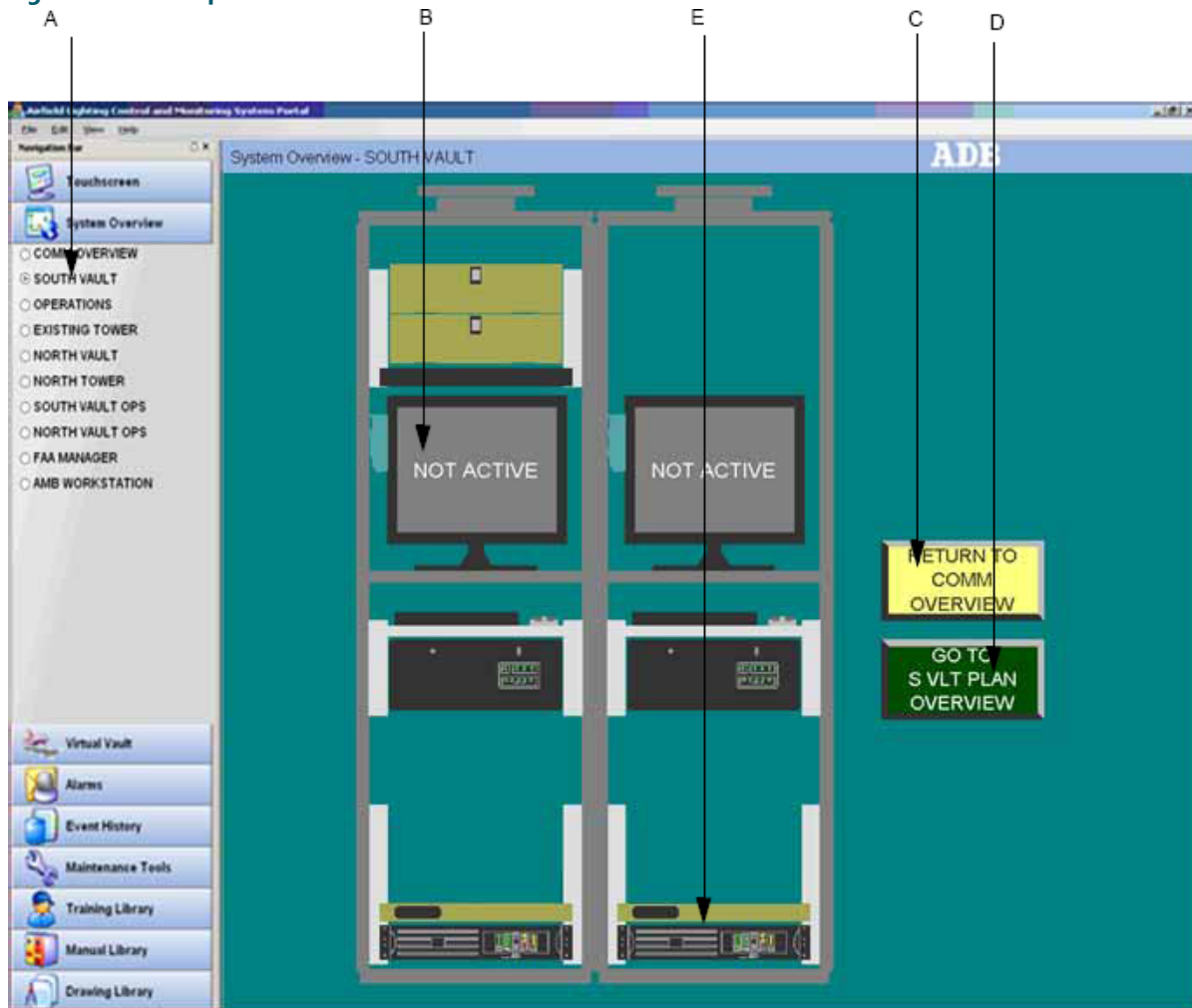


<b>[A] System Overview</b>	Navigational bar to graphically display system overview information
<b>[B] Comm. Overview</b>	Communication Overview button to select the communication and system overview status information.
<b>[C] Node Control</b>	Graphic depicting control status of the node location. <b>View Only</b> : Location can only view ALCMS status. <b>In Control</b> : Location can control the airfield lighting. <b>Not Active</b> : Location has control capabilities, but is currently not controlling.
<b>[D] Node Hyper link</b>	Double-clicking the node location will change to the detailed information regarding the selected node.
<b>[E] Comm. Status</b>	Graphic depicting the current status of the communication link. Green: Normal operation. Red: Communication failure.
<b>[F] UPS status</b>	Graphic depicting the status of the UPS. Double-click the UPS to display detail monitoring information.

### 2.6.4.1 Node Specific View

Refer to [Figure 21](#). Selecting the one of the radio buttons will graphically display detail status information about the ALCMS equipment in that node (S Vault shown).

**Figure 21: Node Specific View**



<b>[A] Node Specific View Button</b>	Button to select the detail view of the Node specific equipment.
<b>[B] Node Control</b>	<b>View Only:</b> Location can only view ALCMS status. <b>In Control:</b> Location can control the airfield lighting. <b>Not Active:</b> Location has control capabilities, but is currently not controlling.
<b>[C] Comm Overview</b>	Select this button to return to communication and system overview display.
<b>[D] Vault Overview</b>	Select this button to go to the detailed Vault Plan view to see details of the control equipment.
<b>[E] UPS Status</b>	Double-click the UPS graphic to see monitoring details of the UPS.

### 2.6.5 Virtual Vault

Selecting the “Virtual Vault” navigational bar will display the hardware status of the equipment in the ALV. If there are multiple vaults there will be radio buttons below the navigational bar are used to select the proper ALV location.

#### 2.6.5.1 Vault Tabular View

Refer to [Figure 22](#). The “Tabular View” button (default) will show a tabular table which contains detailed CCR status information.

By right clicking in the data field, the user can choose between 3 views: Simple, Maintenance and Administrator. The Maintenance view provides more columns than the Simple view and the Administrator view provides even more columns of CCR data.

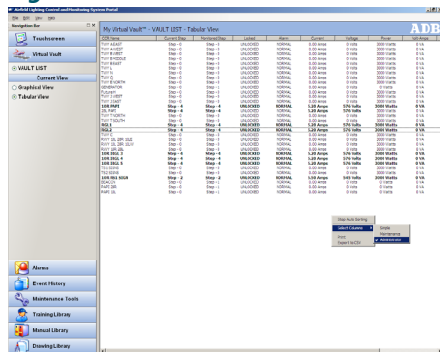
Also using the right click function, the user can Print the view or export the view to a .csv (Comma Separated Values) file.

The user is able to double-click any CCR to get a CCR Detailed View (Reference [CCR Detailed View](#)).

The Tabular View provides a Color Coded CCR State where:

- White – Normal
- Yellow – Warning
- Red – Alarm
- Orange – Maintenance Lockout

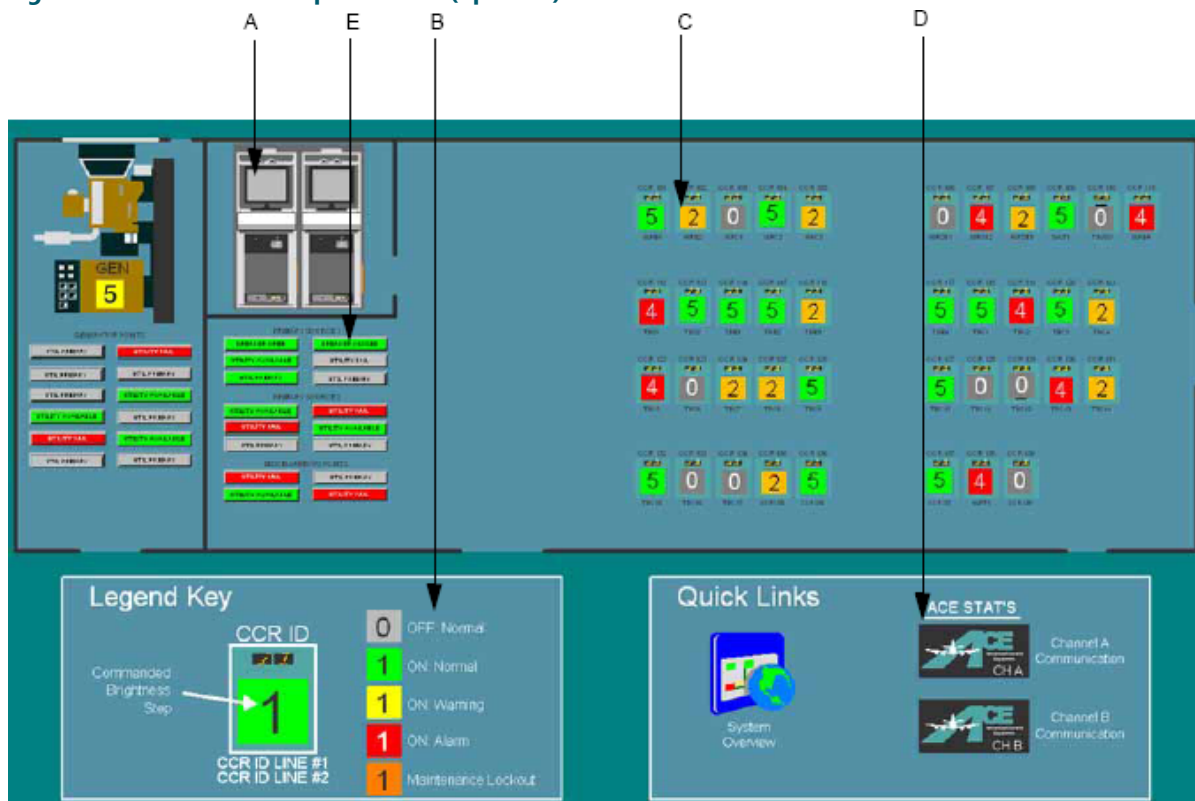
**Figure 22: Virtual Vault Tabular View**



2.6.5.2 Vault Graphical View (Optional)

Refer to [Figure 23](#). When toggling over to the graphical View radio button the ALCMS Portal will graphically display detail status information about the Vault control equipment (optional).

**Figure 23: Virtual Vault Graphical View (optional)**



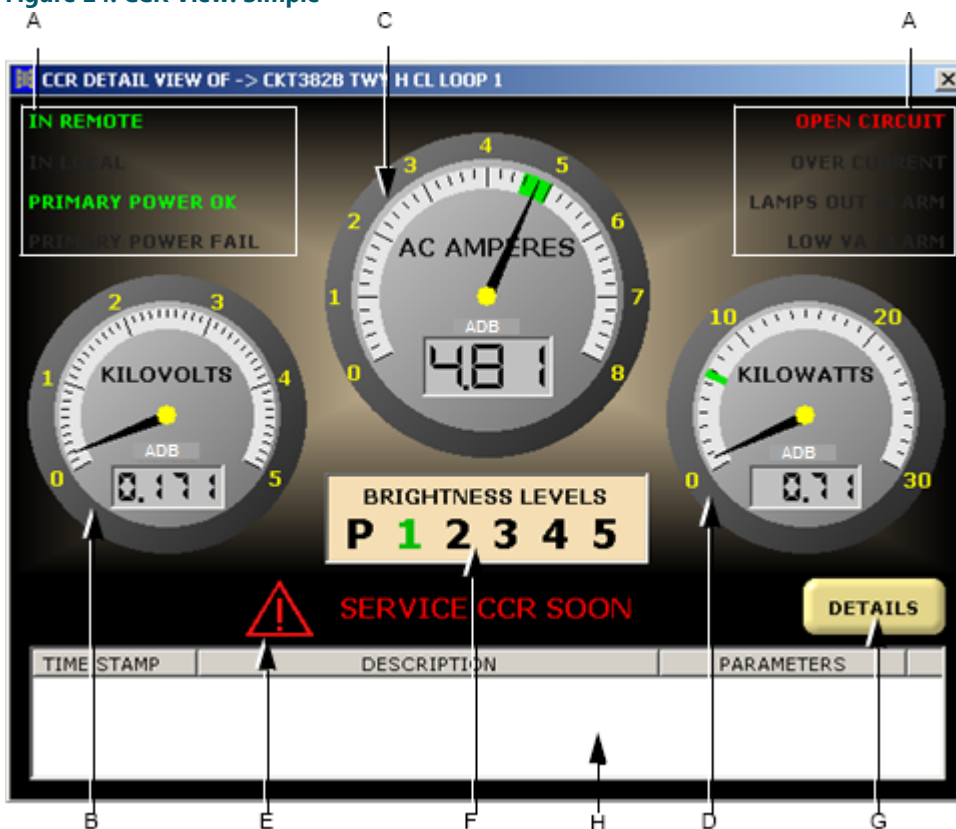


<b>[A] View Switching</b>	By double clicking on the graphic of the CPU enclosure or the 'Quick Links' the user can quickly change to communication overview and other detailed views.
<b>[B] CCR Legend</b>	Graphical legend detailing the various status colors used for the CCRs and what they correlate to.
<b>[C] CCS Status</b>	The By double clicking on the graphic of the CPU enclosure or the 'Quick Links' the user can quickly change to Graphical view shows an overview status of all of the CCRs. Also by double clicking any CCR, the user can open up the CCR detailed view (Reference <a href="#">Virtual Vault</a> ).
<b>[D] Launch ACE Status(optional)</b>	By double clicking the ACE Stat's buttons, the user can access 'ACE User' program ("ACE Statistics" on page 41).
<b>[E] I/O Indicators</b>	Indicators showing the status of all Input/Output equipment (i.e. Beacon, ATS/Generator).

### 2.6.5.3 CCR Detailed View

The user can access detailed status information by double-clicking on any CCR in the tabular index (or by double-clicking the graphical representation of the CCR if available). [Figure 24](#) shows an example of the CCR Detailed View in its default "simple" mode.

**Figure 24: CCR View: Simple**



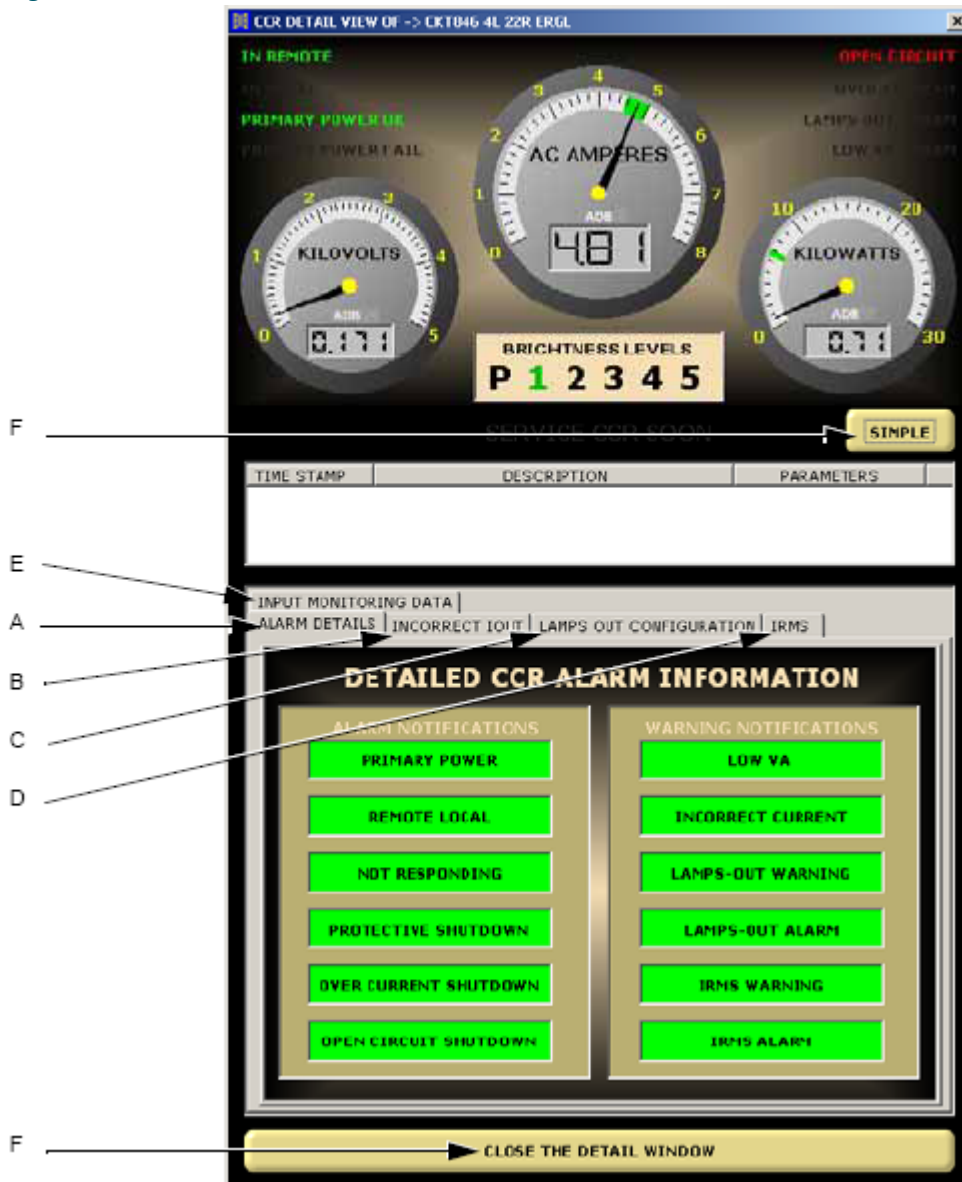
<b>[A] CCR Status Indicators</b>	Indicators that provide the current status of monitored CCR points
• IN REMOTE	CCR in Remote. Green: Normal Grey: Off
• IN LOCAL	CCR in Local. Red: In Local Grey: Off
• PRIMARY POWER OK	Primary Power available at CCR. Green: Normal Grey: Normal/Off
• PRIMARY POWER FAIL	Primary Power loss at CCR. Red: Alarm Grey: Normal/Off

• OPEN CIRCUIT	Open Circuit shutdown of CCR detected. Red: Alarm Grey: Normal/Off
• OVER CURRENT	Over Current shutdown of CCR detected. Red: Alarm Grey: Normal/Off
• LAMPS OUT ALARM	Lamps Out alarm resulting from too many lamps out. Red: Alarm Grey: Normal/Off
• LOW VA ALARM	Low VA alarm resulting from excessive drop in CCR load. Red: Alarm Grey: Normal/Off
<b>[B] Volt Meter</b>	Displays the monitored output voltage of the CCR. Measured in kilovolts. i.e. 0.171kV = 171V
<b>[C] Amp Meter</b>	Displays the output current of the CCR. Measure in Amps.
<b>[D] Watt Meter</b>	Displays the output wattage of the CCR. Measured in kilowatts. i.e. 0.71kW = 710W
<b>[E] Service Indicator</b>	Indicator lights red when an alarm condition is detected that requires immediate service
<b>[F] Commanded Step</b>	Step indicator shows the current commanded step
<b>[G] Detail View</b>	Displays drop-down window showing additional CCR status information
<b>[H] Current Alarms</b>	Displays current alarms related only to that CCR

### 2.6.5.4 CCR View: Alarm Details

Refer to [Figure 25](#). After selecting the “Details” button, a new window pops up below the current simple view. This is called the “Alarm Details” view. All indicators should be GREEN for normal operation.

**Figure 25: CCR View: Alarm Details**



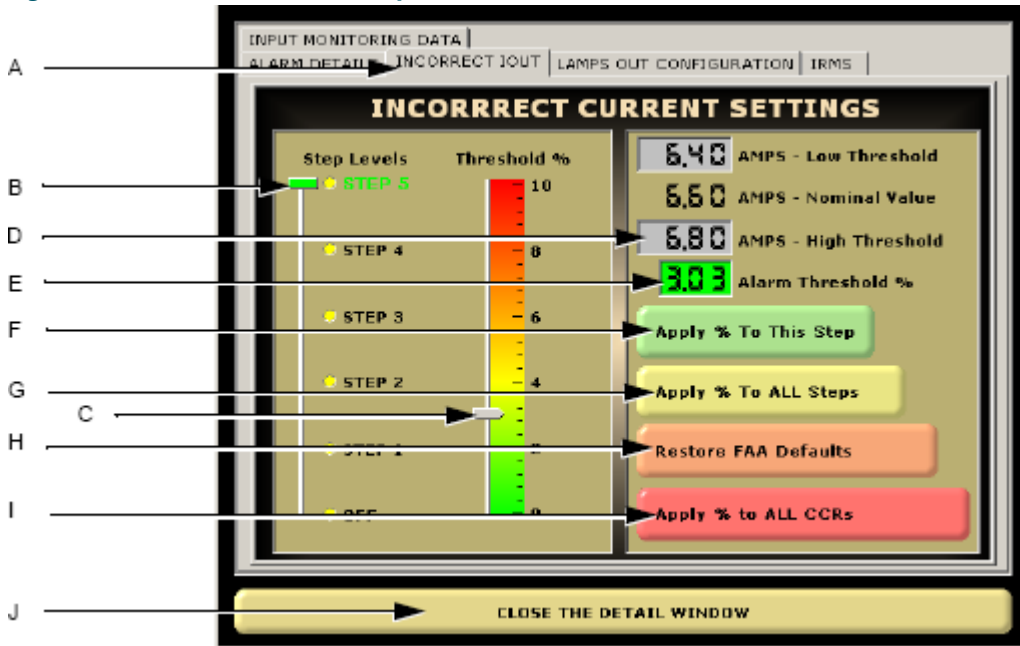
<b>[A] Alarm Details</b>	Quick dashboard to show all CCR monitored items and the current status. Green: Normal Yellow: Warning Red: Alarm.
<b>[B] Incorrect IOit</b>	Switches detailed tab view to allow changing the incorrect current warning and alarm thresholds.
<b>[C] Lamps Out Config</b>	Switches detailed tab view to allow changing the lamps out warning and alarm thresholds.
<b>[D] IRMS</b>	Switches detailed tab view to allow changing IRMS warning and alarm limits.
<b>[E] Input Monitoring Data</b>	Switches detailed tab view to show input current and voltage monitoring details.
<b>[F] Close Detail View</b>	Select this button to close the detail view and return to simple view.

### 2.6.5.5 Incorrect Output Current Settings

Refer to [Figure 26](#). From the CCR Alarm Details view, select the “Incorrect IOUt” tab to switch to the incorrect output current settings.

The ALCMS monitors the output current of each step of the CCRs to determine if the current falls within the “Low” and “High” thresholds limits [D]. If the monitored current is outside the thresholds, a warning message is reported to the ALCMS and the alarm database.

**Figure 26: CCR View: Incorrect Output Current**



### 2.6.5.6 Incorrect Output Current Overview

Refer to [Figure 26](#). The information on the incorrect current settings tab is as follows:

<b>[A] Incorrect Current Tab</b>	Tab selection for displaying Incorrect output current settings
<b>[B] Steps slide bar</b>	Slide bar used to select the desired step to make threshold changes. Not required if applying changes to ALL steps.
<b>[C] Threshold %slide bar</b>	Slide bar used to adjust the threshold %. FAA default is 3%.
<b>[D] Threshold Limits</b>	Displays the nominal output current for the selected step and shows the low and high thresholds based on the % limits set using the threshold slide bar [C].
<b>[E] Alarm % threshold</b>	Displays the current alarm % threshold. <b>Green:</b> Within FAA Limits. <b>Yellow:</b> Outside FAA limits. <b>Red:</b> Excessively outside FAA limits.
<b>[F] Apply % to Step</b>	Select this button to apply the changes to only the current CCR step selected
<b>[G] Apply % to ALL Steps</b>	Select this button to apply the changes to all CCR steps
<b>[H] Restore FAA Defaults</b>	Select this button to return tolerance settings to the FAA default of 3%
<b>[I] Apply to ALL CCRs</b>	Select this button to apply changes to ALL steps of ALL the CCRs
<b>[J] Close Detail View</b>	Select this button to close the detail view and return to simple view

### 2.6.5.7 Setting Incorrect Output Current Thresholds

Refer to [Figure 26](#).



**CAUTION**

Incorrect Output Current tolerance is set by default to the FAA standards of +/-3%. Adjusting output current limits beyond 3% should only be done temporarily. If a CCR and circuit cannot maintain 3% stability for output current, there is a more serious problem with the CCR and/or airfield circuit.

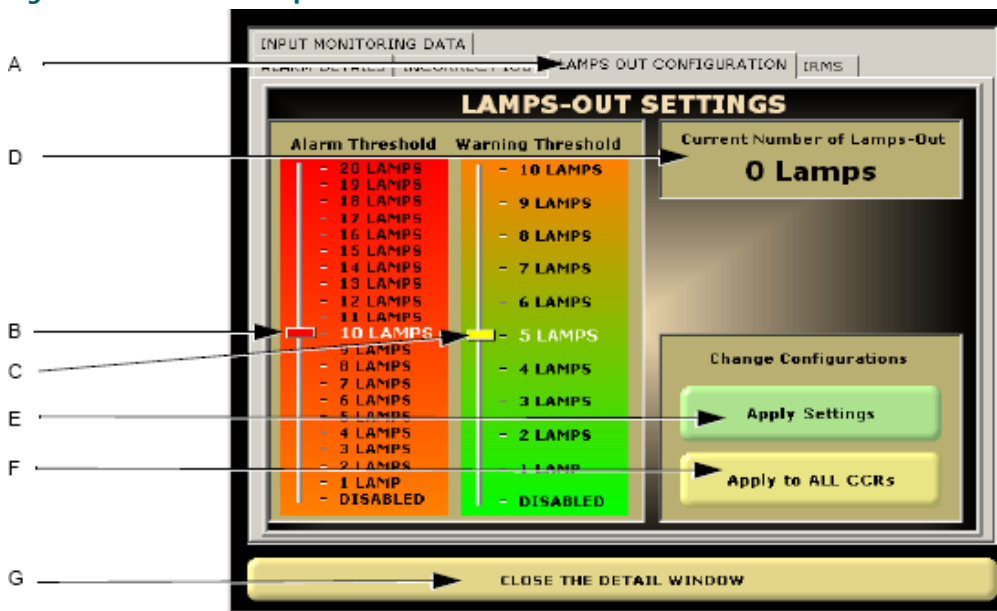
1. To adjust Incorrect Output Current threshold for a **single step**:
  - a) Select the step using the Step Level slide bar [B]
  - b) Adjust the threshold to the desired % using the threshold slide bar [C]
  - c) Select the "Apply % To This Step" button [F]
  - d) Answer "Yes" to the confirmation pop-up
2. To adjust Incorrect Output Current threshold for **ALL steps for a single CCR**:
  - a) Adjust the threshold to the desired % using the threshold slide bar [C]
  - b) Select the "Apply % To ALL Steps" button [G]
  - c) Answer "Yes" to the confirmation pop-up
3. To adjust Incorrect Output Current threshold for **ALL steps for ALL CCRs**:
  - a) Adjust the threshold to the desired % using the threshold slide bar [C]
  - b) Select the "Apply % To ALL CCRs" button [I]
  - c) Answer "Yes" to the confirmation pop-up
4. To restore FAA defaults for a single CCR:
  - a) Select the "Restore FAA Defaults" button [H]
  - b) Answer "Yes" to the confirmation pop-up

2.6.5.8 Lamps Out Configuration Settings Optional

Refer to Figure 27. From the CCR Alarm Details view, select the "Lamps Out Configuration" tab to switch to the lamps out settings.

If Lamps Out monitoring option is present, the ALCMS monitors each circuit for lamps out detection (refer to [VCP Lamps Out Configuration \(Optional\)](#)). If the quantity of lamps out falls above the "Warning" or "Alarm" thresholds limits, a warning/alarm message is reported to the ALCMS and the alarm database.

**Figure 27: CCR View: Lamps Out**



### 2.6.5.9 Lamps Out Overview

Refer to [Figure 27](#). The information on the lamps out configuration tab is as follows:

<b>[A] Lamps Out Tab</b>	Tab selection for displaying Lamps Out settings
<b>[B] Alarm slide bar</b>	Slide bar used to adjust the Alarm threshold for reporting a lamps out alarm. To adjust, click and drag the slide to the desired setting and release.
<b>[C] Warning slide bar</b>	Slide bar used to adjust the Warning threshold for reporting a lamps out warning. To adjust, click and drag the slide to the desired setting and release.
<b>[D] Current Lamps Out</b>	Displays the current number of lamps out detected by the monitoring system
<b>[E] Apply Settings</b>	Select this button to apply the changes to the CCR
<b>[F] Apply to ALL CCRs</b>	Select this button to apply the same changes to ALL CCRs
<b>[G] Close Detail View</b>	Select this button to close the detail view and return to simple view

### 2.6.5.10 Setting Lamps Out Warning and Alarm Thresholds

Refer to [Figure 27](#).

#### **Note**

Lamps Out warnings and alarms should be set to allow for proactive lamp replacement on circuits. Warnings thresholds are typically set at 5% of the total number of lamps and the alarm threshold is typically set at 10% of the total number of lamps.

1. To adjust Lamps Out Warning and Alarm thresholds for a **single CCR**:
  - a) Adjust the alarm threshold to the desired qty using the alarm slide bar [B]
  - b) Adjust the warning threshold to the desired qty using the warning slide bar [C]
  - c) Select the "Apply Settings" button [E]
  - d) Answer "Yes" to the confirmation pop-up
2. To adjust Lamps Out Warning and Alarm thresholds for **ALL CCRs**:
  - a) Adjust the alarm threshold to the desired qty using the alarm slide bar [B]
  - b) Adjust the warning threshold to the desired qty using the warning slide bar [C]
  - c) Select the "Apply to ALL CCRs" button [F]
  - d) Answer "Yes" to the confirmation pop-up

### 2.6.5.11 Disabling Lamps Out Monitoring

Refer to [Figure 27](#).

#### **Note**

Lamps Out monitoring can be disabled on any circuit. Depending on circuit conditions, it may be necessary to disable lamps out monitoring. Circuits with L-858 signs or circuits with insulation resistance readings that do not meet the minimum 100k Ohm requirements. Refer to the next section on conditions that affect lamps out monitoring.

To disable the lamps out monitoring **single CCR**:

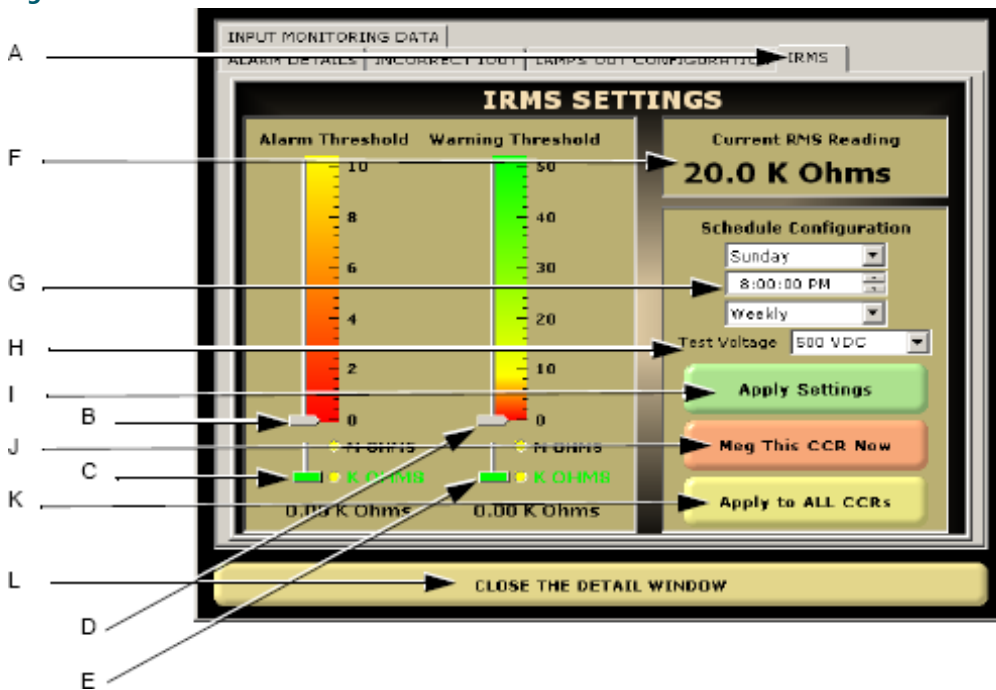
1. Adjust the alarm threshold to “Disabled” using the alarm slide bar [B]
2. Adjust the warning threshold to “Disabled” using the warning slide bar [C]
3. Select the “Apply Settings” button [E]
4. Answer “Yes” to the confirmation pop-up

### 2.6.5.12 Insulation Resistance Monitoring System [IRMS] Optional

Refer to [Figure 28](#). From the CCR Alarm Details view, select the “IRMS” tab to switch to the IRMS settings tools.

If the ALCMS has the IRMS option, the insulation resistance of the airfield circuits are monitored to determine if the Meg values have dropped below either the “Warning” [D] or “Alarm” [B] thresholds limits. If the Meg readings fall below the thresholds, a corresponding warning or alarm message is reported to the ALCMS and the alarm database.

**Figure 28: CCR View: IRMS**



### 2.6.5.13 IRMS Overview

Refer to [Figure 28](#). The information on the IRMS settings tab is as follows:

<b>[A] IRMS Tab</b>	Tab selection for displaying IRMS settings
<b>[B] Alarm slide bar</b>	Slide bar used to adjust alarm threshold. To move slide bar, click and drag to desired value and release
<b>[C] Alarm K/M Ohm Toggle</b>	Switches alarm threshold range between Kilo Ohms (10 <sup>3</sup> ) and Mega Ohms (10 <sup>6</sup> )
<b>[D] Warning slide bar</b>	Slide bar used to adjust warning threshold. To move slide bar, click and drag to desired value and release
<b>[E] Warning K/M Ohm Toggle</b>	Switches warning threshold range between Kilo Ohms (10 <sup>3</sup> ) and Mega Ohms (10 <sup>6</sup> )
<b>[F] Last Reading</b>	Displays the last IRMS Meg reading recorded. Used to adjust when the IRMS performs the Meg readings.
<b>[G] Schedule Configuration</b>	Day: when the readings start/occur. Time: When readings start/occur. Interval: How often the readings occur.

---

<b>[H] Test Voltage</b>	Adjust what voltage the IRMS using to Meg the circuits. Default is 1000VDC, but test voltage can be adjusted to 500VDC if required.
<b>[I] Apply Settings</b>	Button used to apply any setting changes made to IRMS
<b>[J] Meg Now</b>	Button used to force an immediate Meg reading of the circuit and display in the Last Reading display.
<b>[K] Apply to ALL</b>	Button used to apply any setting changes made to IRMS to ALL the CCRs
<b>[L] Close Detail View</b>	Select this button to close the detail view and return to simple view

---

#### 2.6.5.14 Setting IRMS Warnings and Alarm Thresholds

Refer to [Figure 28](#).



#### Note

IRMS warning and alarm limits should be set to allow for proactive monitoring of cabling insulation resistance deterioration. IRMS alarm limits set below 50k Ohm indicate a severe insulation resistance problem with the airfield lighting cabling.

---

#### To adjust Warning and Alarm thresholds for a single CCR:

1. Adjust the Alarm threshold to the desired Meg value using the Alarm slide bar [B]
2. Toggle the resistance value to either M Ohm of k Ohm using the Alarm toggle [C]
3. Adjust the Warning threshold to the desired Meg value using the Warning slide bar [D]
4. Toggle the resistance value to either M Ohm of k Ohm using the Warning toggle [E]
5. Select the "Apply Settings" button [I]
6. Answer "yes" to the confirmation pop-up

#### To adjust Warning and Alarm thresholds for a ALL CCRs:

7. Adjust the Alarm threshold to the desired Meg value using the Alarm slide bar [B]
8. Toggle the resistance value to either M Ohm of k Ohm using the Alarm toggle [C]
9. Adjust the Warning threshold to the desired Meg value using the Warning slide bar [D]
10. Toggle the resistance value to either M Ohm of k Ohm using the Warning toggle [E]
11. Select the "Apply to ALL CCRs" button [K]
12. Answer "yes" to the confirmation pop-up

#### 2.6.5.15 Activating and Scheduling Circuits for IRMS Readings

For detailed information on how to activate and schedule circuits for IRMS readings, please refer to the Insulation **Resistance Monitoring System (IRMS) User's Guide Document Number 96A0380**.

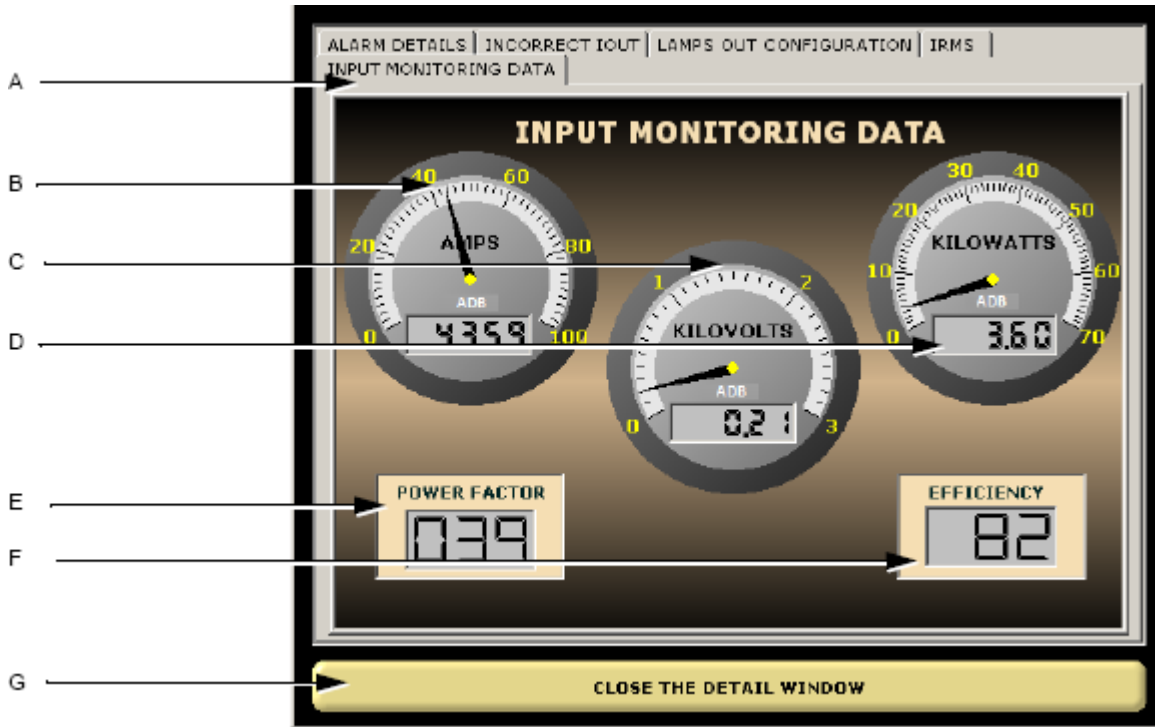
#### 2.6.5.16 Input Monitoring Data Optional

Refer to [Figure 29](#). From the CCR Alarm Details view, select the "Input Monitoring Data" tab to switch to the input monitoring tools.



If the ALCMS has the Input Monitoring option, the ALCMS monitors the input current, voltage and power and provides status information.

**Figure 29: CCR View: Input Monitoring**



Refer to Figure 30. The information on the Input Monitoring tab is as follows :

**[A] Input Monitoring Tab** Tab selection for displaying Input Monitoring Data

**[B] Input Current Meter** Displays the monitored input current. Measured in Amps

**[C] Input Voltage Meter** Displays the monitored input voltage of the CCR. Measured in kilovolts. i.e. .21kV = 210V

**[D] Input Wattage Meter** Displays the input wattage of the CCR. Measured in kilowatts. i.e. 5.1kW = 5100W

**[E] Power Factor** Digital display that shows the CCR Power Factor. Power Factor (pf) = cos (angle between V and I) also known as cos (phi). Power Factor values are based on CCRs operating at the highest intensity step, 100% loaded and input voltage within 3%. Information taken from CCR AC 150/5345-10F.

**Table 1: CCR Power Factor**

CCR Size Kilowatts (kW)	Minimum Power Factor (fraction)
< 10kW	.90
> 10kW	.95

Digital display that shows the CCR efficiency. Efficiency is calculated by Power Output divided by total power consumed and is a fraction.

**[F] Efficiency** Efficiency values are based on CCRs operating at the highest intensity step, 100% loaded and input voltage within 3%. Information taken from CCR AC 150/5345-10F

**Table 2: CCR Efficiency**

CCR Size Kilowatts (kW)	Minimum overall Efficiency (percent)
< 30kW	90
30kW	92
50kW	93
70kW	94

**[G] Close Detail View** Select this button to close the detail view and return to simple view

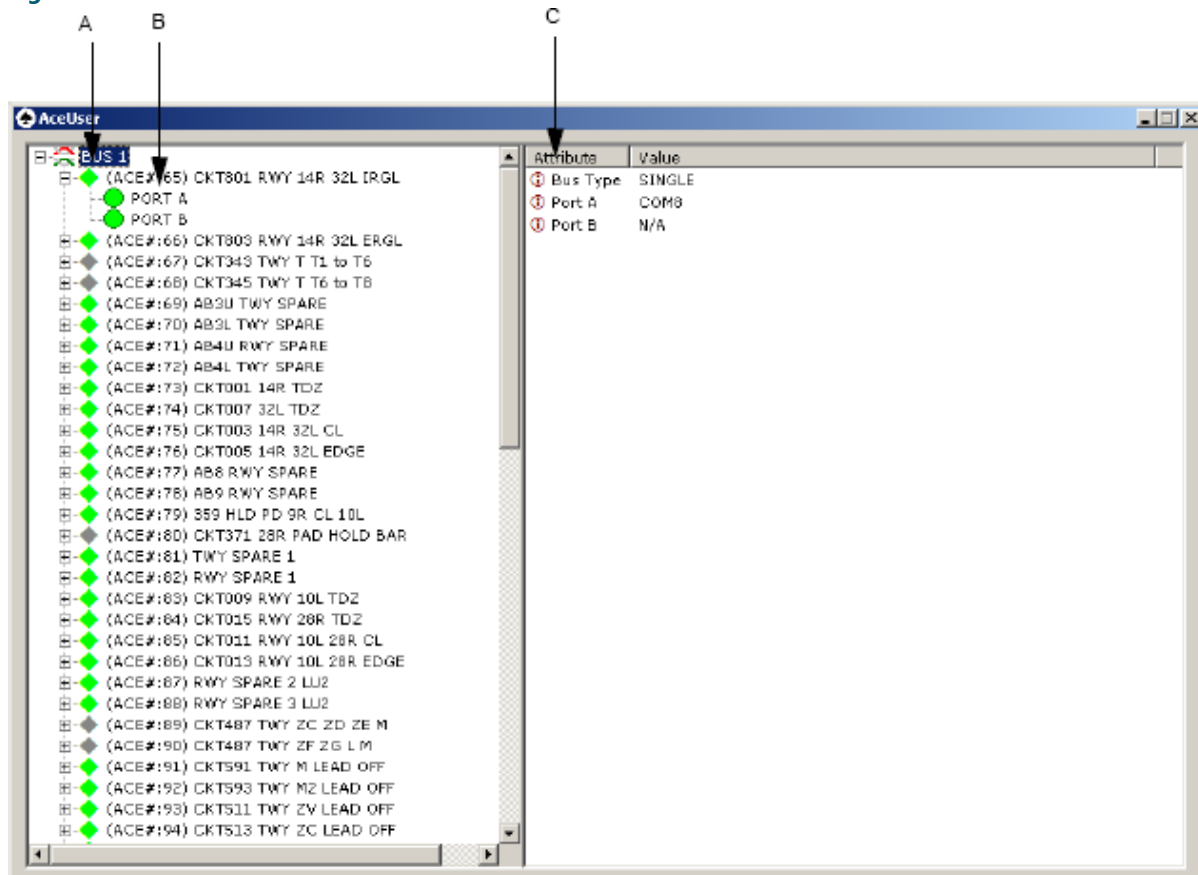
### 2.6.6 ACE Statistics

Refer to [Communication Overview](#). The user can access detailed status information of the ACE™ units by double-clicking one of the “ACE COMM” buttons.

#### 2.6.6.1 ACE™ User

After double-clicking one of the “ACE COMM” buttons, the ACE User application is launched as seen in [Figure 30](#).

**Figure 30: ACE™ User: Bus View**



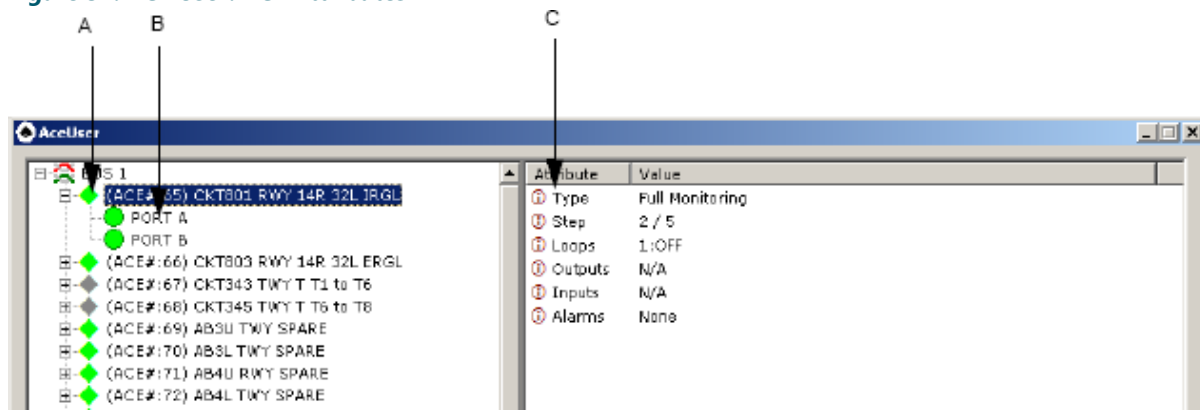
<b>[A] BUS 1</b>	Indicates all of the communication busses in the lighting vault. Each bus will have daisy-chained ACE™ units with redundant communication
<b>[B] ACE™ units</b>	Displays all the ACE™ units connected to that communication bus.
◆	ACE™ unit ON
◇	ACE™ unit OFF
●	Communication Port OK
●	Communication Port Alarm
<b>[C] BUS attributes</b>	Indicates the type of Bus and what communication channel is used.

• <b>Bus Type</b>	<p><b>SINGLE:</b> One (1) communication channel connected on that Computer (This is typical of a hot-standby computer system, each computer has a single channel).</p> <p><b>DUAL:</b> Two (2) communication channels connected on that Computer (This is typical of a single computer system).</p>
• <b>Port A</b>	Communication port address. N/A means the communication is thru the 2 <sup>nd</sup> computer.
• <b>Port B</b>	Communication port address. N/A means the communication is thru the 2 <sup>nd</sup> computer.

### 2.6.6.2 ACE™ Diagnostics

Refer to Figure 31. The ACE User application is used for detailed diagnostics and troubleshooting of individual ACE units.

**Figure 31: ACE User: ACE Attributes**



<b>[A] ACE™ unit</b>	List of all available ACE connected to the associated bus
<b>[B] Comm Ports</b>	Lists the ACE redundant communication channels
<b>[C] ACE Attributes</b>	With an ACE highlighted, lists the attributes of the selected ACE

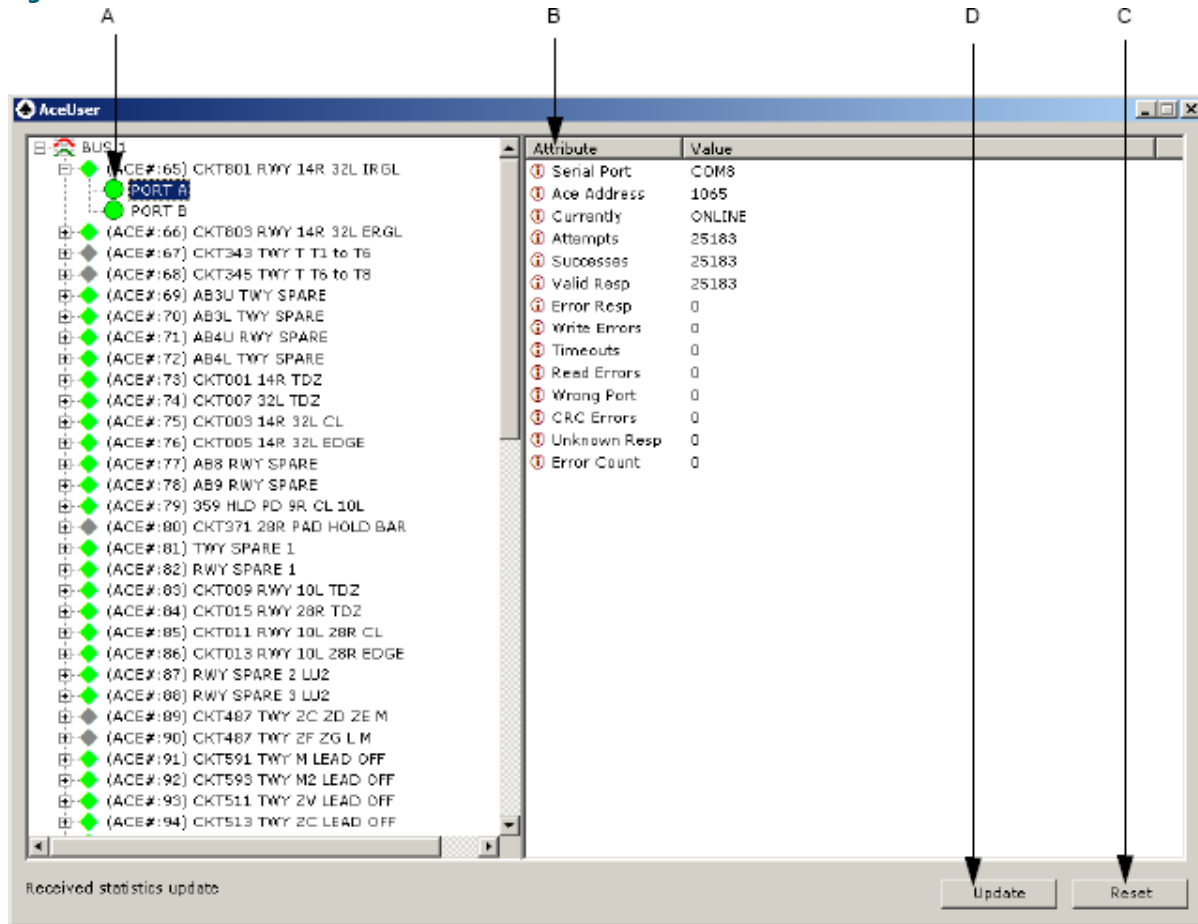
### 2.6.6.3 ACE™ Type

To review the ACE type, click on an ACE [A] in the list and the attributes will be displayed [C].

<b>Type</b>	ACE™ type and monitoring options
<b>Full monitoring</b>	Includes Lamps Out and IRMS
<b>IRMS only</b>	Includes only IRMS monitoring
<b>No monitoring</b>	Control only with no monitoring

<b>Direct I/O</b>	Control and monitoring of miscellaneous I/O
<b>Step</b>	2 / 5 2 = commanded step 5 = Total available steps <b>Loops</b> 1:OFF 1 = Loop number and OFF = Loop ON/OFF status <b>Outputs</b> N/A not used for control and monitoring ACE units <b>Inputs</b> N/A not used for control and monitoring ACE units
<b>Alarms</b>	Indicates any alarms that are currently being reported by the ACE™ including primary power, remote/local, incorrect current, lamps out etc.

**Figure 32: ACE User: ACE Comm Ports**



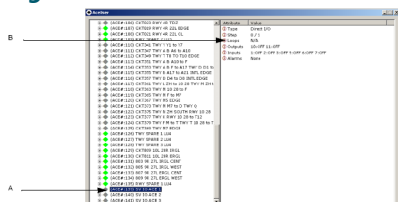
<b>[A] ACE™ Comm. Port</b>	If you are viewing "ACE Stats COMM A" them only communication port A statistic information will be visible
<b>[B] Comm Port A Stats</b>	Displays the Communication Port attributes and communication statistics for the selected ACE™
<b>[C] Reset Button</b>	Used to reset the communication statistics (Attempts, Successes, Valid Resp)
<b>[D] Update Button</b>	Used to refresh the communication statistic counts

### 2.6.6.4 ACE™ Communication Ports

To review the ACE™ communication port statistics, click on “Port A” [A] if viewing “ACE COMM CHA” or “Port B” if viewing “ACE COMM CH B. The Communication port attributes [B] will be displayed.

<b>Serial Port</b>	Computer serial port number used for that channels communication
<b>ACE Address</b>	Communication address for that port. Each channel and ACE™ has a unique ACE address
<b>Currently</b>	ONLINE: ACE™ functioning normally. OFFLINE: ACE™ turned OFF or not communicating
<b>Attempts</b>	Communication attempts since last Update or Reset
<b>Successes</b>	Communication successes since last Update or Reset
<b>Valid Resp</b>	Valid Communication responses since last Update or Reset
<b>Error Resp</b>	Number of communication errors that have occurred
<b>Write Errors</b>	Number of write errors that have occurred
<b>Timeouts</b>	Number of timeouts that have occurred
<b>Read Errors</b>	Number of read errors that have occurred
<b>Wrong Port</b>	Wrong port errors as a result of possible delayed communication or communication problems
<b>CRC Errors</b>	CRC errors as a result of possible delayed communication or communication problems
<b>Unknown Resp</b>	Unknown Resp errors as a result of possible delayed communication or communication problems
<b>Error Count</b>	Error Count as a result of possible communication problems

**Figure 33: ACE™ User: I/O ACE™ Statistics**



<b>[A] I/O ACE™ unit</b>	ACE™ unit used for controlling and monitoring miscellaneous Input/Output (I/O)
<b>[B] ACE™ Attributes</b>	I/O ACE™ attributes showing status off inputs and outputs

### 2.6.6.5 I/O ACE™ Statistics

To review I/O ACE™ statistics, click on an I/O type ACE™ [A] and the I/O attributes [B] will be displayed.

<b>Type</b>	ACE™ type and monitoring options
<ul style="list-style-type: none"> <li>• Full monitoring</li> </ul>	Includes Lamps Out and IRMS
<ul style="list-style-type: none"> <li>• IRMS only</li> </ul>	Includes only IRMS monitoring
<ul style="list-style-type: none"> <li>• No monitoring</li> </ul>	Control only with no monitoring
<ul style="list-style-type: none"> <li>• Direct I/O</li> </ul>	Control and monitoring of miscellaneous I/O
<b>Step</b>	0 / 1 0 = commanded step 1 = Total available steps

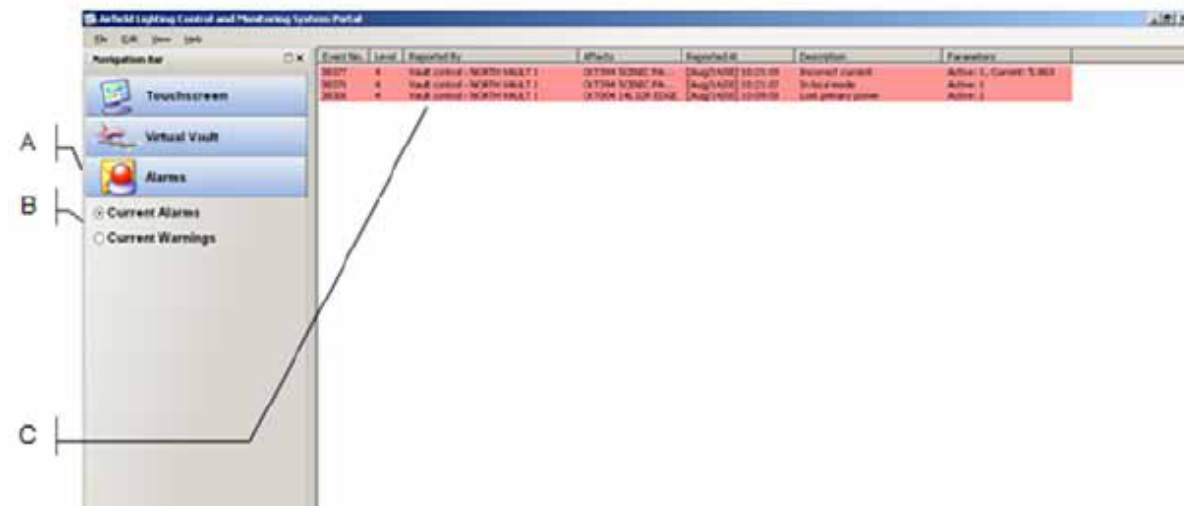
<b>Loops</b>	N/A not used for I/O type ACE™ units
<b>Outputs</b>	10:OFF 10 = Output number OFF: Output ON/OFF status
<b>Inputs</b>	1:OFF 1 = Input number OFF: Input ON/OFF status
<b>Alarms</b>	Indicates any alarms that are currently being reported by the ACE™ including primary power, remote/local, incorrect current, lamps out etc.

### 2.6.7 Alarms

Selecting the “Alarms” navigational bar will display the current alarms and warnings reported by the monitoring system. The information can be changed between current alarms and current warnings.

Refer to Figure 34. The “Current Alarms” radio button shows a table of the current active alarms being reported by the ALCMS system. By selecting the “Current Warning” radio button, the user can filter for Level 3 or warning events only. Whether filtering for warnings or alarms, the data is presented in the same manner.

**Figure 34: Alarms**



<b>[A] Alarms</b>	Navigational bar to display current active alarms and warnings
<b>[B] Current Alarms Button</b>	Button to view “Current Alarms”
<b>[C] Alarm Details</b>	Text information providing details of the alarm.
• Event No.:	Unique number tag associated with the alarm event Priority Level of the alarm condition, used for alarm filtering.
• Level:	<b>Level 1:</b> Error <b>Level 2:</b> Event <b>Level 3:</b> Warning <b>Level 4:</b> Alarm
• Reported By:	The equipment location that reported to alarm
• Affects:	Description of circuit / equipment that is affected by the alarm
• Reported At:	Date and time stamp when alarm was detected
• Description:	Description of alarm reported Monitored parameter details.
• Parameters:	<b>Active: 1</b> alarm is current. <b>Active: 0</b> when alarm was corrected

The alarms and warnings that are generated by the ALCMS can be filtered such that they are only reported to certain nodes. Warning and Alarm filtering is typically done to prevent information overload at ATCT nodes that are only concerned about critical level alarms.

### 2.6.8 Event History

Selecting the “Event History” navigational bar will display all of the alarms, warnings and events reported by the monitoring system.

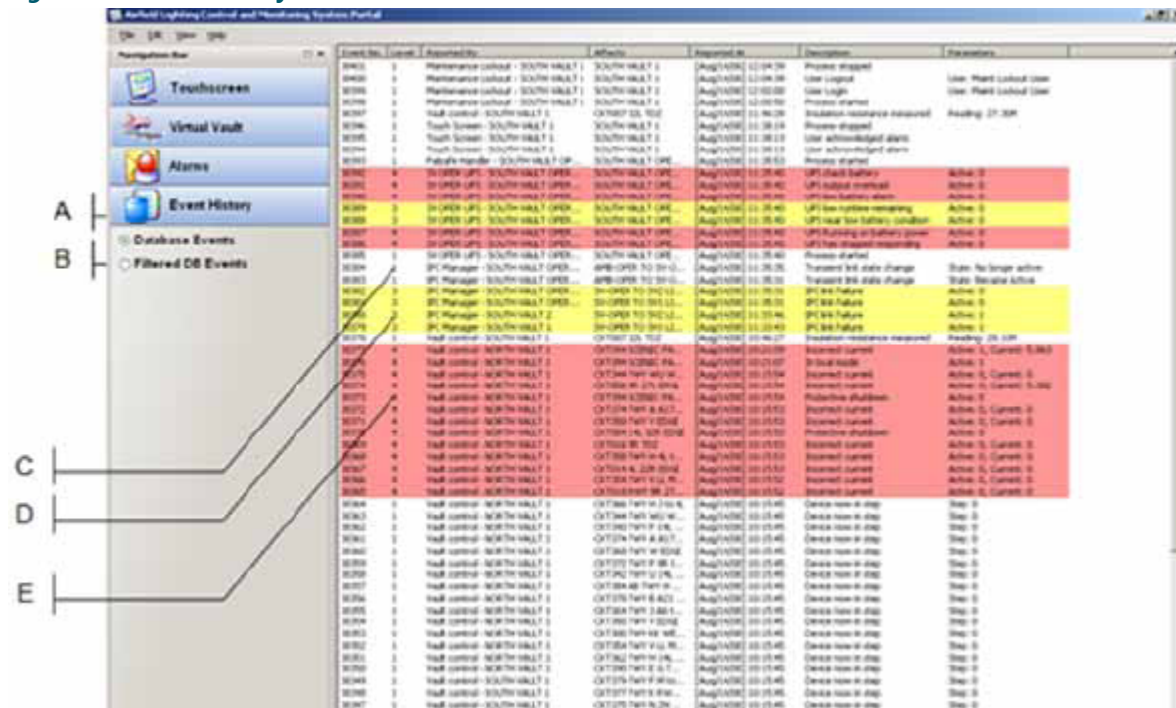
#### 2.6.8.1 Database Events

Refer to Figure 35. The “Database Events” shows a table of all the events recorded by the system. The events are displayed chronological order with most recent events logged at the top of the table.

#### 2.6.8.2 Retrieving More Events

Only the most recent 200 Event messages are displayed. To display the next 200 Event messages, right click in the display window and select, “More Events”.

**Figure 35: Events History**



<b>[A] Alarms</b>	Navigational bar to display current active alarms and warnings
<b>[B] Database Events Button</b>	Button to view all Event messages (Alarms, Warnings and Events)
<b>[C] Event Message</b>	Text information providing event details (White shading)
<b>[D] Warning Message</b>	Text information providing warning details (Yellow shading)
<b>[E] Alarm Message</b>	Text information providing alarm details (Red shading)

#### 2.6.8.3 Sorting Events

The displayed Events can be sorted by clicking on any of the column headings. The first click sorts ascending click the column heading again to sort descending.

#### 2.6.8.4 Filtered Database

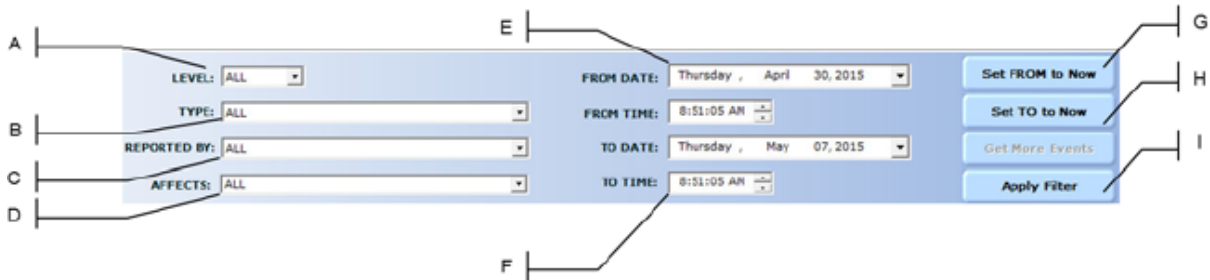
##### Events

The “Filtered Database Events” radio button allows the user to apply a filter and view only those event messages that meet the filter criteria. The filtered events are displayed chronological order with most recent events logged at the top of the table.

**To Filter Database Events :**

1. Select the “Filtered DB Events” radio button in the Navigation panel to launch the Filter Criteria window (Refer to Figure 36).
2. Fill in the filter criteria information according to the specific events that need to be viewed
3. Select the “Apply Filter” button [I].
4. Filter will be applied and the Events window will update with only events that meet the filter criteria.

**Figure 36: Event Filter Criteria**



[A] Level	Level of Event <b>Level 2: Event</b> <b>Level 3: Warning</b> <b>Level 4: Alarm</b>
[B] Type	Type of event to filter for. Change by using the drop down box
[C] Reported By	Computer location that reported the event. Change by using the drop down box
[D] Affects	Computer or circuit that was affected by the event. Change by using the drop down box
[E] From	Date range to filter From. Default is 1 month previous the current date. <b>To change, select a date from the calendar using the drop down box and adjust the time by clicking and holding the toggle buttons Up or Down</b>
[F] To	Date range to filter To. Default is the current date and time. <b>To change, select a date from the calendar using the drop down box and adjust the time by clicking and holding the toggle buttons Up or Down</b>
[G] Set “From” to Now	Change the “From:” fields to the current date and time.
[H] Set “To” to Now	Change the “To:” fields to the current date and time.
[I] Apply Filter	Button to apply filter to view only specific events that meet the filter criteria

**Did you know?**

*By pressing the UP arrow you can increase the time by 1 minute increments. By pressing the DOWN arrow, you decrease the time by 1 minute increments. If you hold down on the toggle buttons, the time can be quickly increased or decreased.*

**2.6.9 Maintenance Tools**

Selecting the “Maintenance Tools” navigational bar will display tools and programs used when performing service and maintenance on the ALCMS.

**2.6.9.1 Circuit Lockout View**

Refer to Figure 65. The Circuit Lockout view allows maintenance personnel to lock out a circuit to perform maintenance or service. By locking out a circuit, this suppresses any alarms in the ALCMS and prevents any Touchscreen from controlling the locked out circuit.

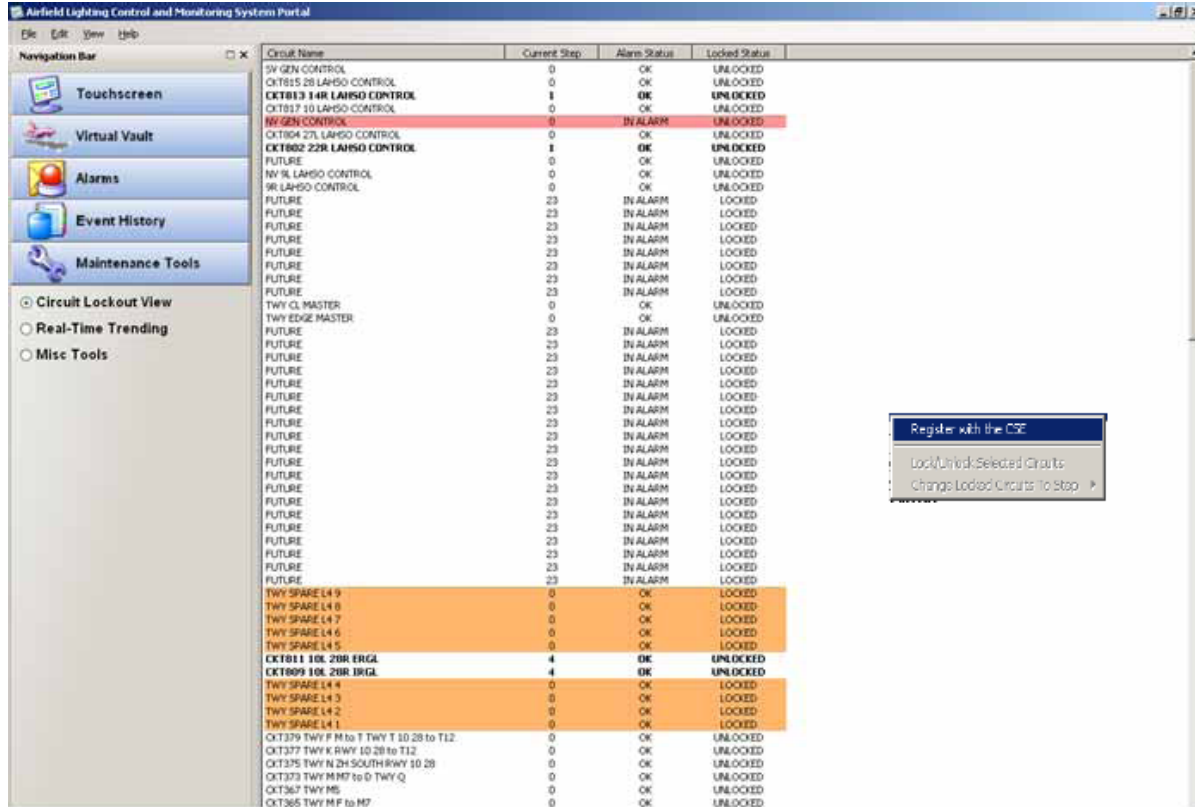




**CAUTION**

Circuit Lockout only locks the circuit out in the ALCMS software and is only used to provide visual indication to ATCT that a circuit is being serviced and also to suppress false alarms while the circuit or CCR is being serviced. Service Personnel MUST still utilize proper OSHA and airport lockout / tagout procedures before working on any high voltage equipment including CCRs and airfield circuits.

**Figure 37: Circuit Lockout Tool**



2.6.9.2 Locking and Unlocking a Single Circuit

**Register Circuit Lock Out: (Refer to Figure 38)**

1. Before you can use the Circuit Lockout, the user must register (login the computer).
2. To register, right click the mouse to display the register pop-up window.
3. Select the "Register with the CSE" option.
4. The computer is now logged in.

Proceed to next step.

**Figure 38: Locking Out Single Circuit**

Circuit Name	Current Step	Alarm Sta...	Locked Status
CKT011 RWY 10L 28R CL	4	OK	UNLOCKED
CKT013 RWY 10L 28R EDGE	4	OK	UNLOCKED
CKT015 RWY 28R TDZ	4	OK	UNLOCKED
CKT017 RWY 22L TDZ	0	OK	UNLOCKED
CKT019 RWY 4R 22L EDGE	4	OK	UNLOCKED
CKT021 RWY 4R 22L CL	4	OK	UNLOCKED
<b>CKT023 RWY 4R TDZ</b>	<b>0</b>	<b>OK</b>	<b>LOCKED</b>
CKT341 TWY Y Y1 to Y7	2	OK	UNLOCKED
CKT343 TWY T T1 to T6	3	OK	UNLOCKED
CKT345 TWY T T6 to T8	2	OK	UNLOCKED
CKT347 TWY A B A6 to A10	2	OK	UNLOCKED
CKT349 TWY T T8 to 10L	2	OK	UNLOCKED
CKT351 TWY A B A10 to F	2	OK	UNLOCKED
CKT353 TWY A B F to A17 TWY D D1 to D4	2	OK	UNLOCKED
CKT355 TWY R R11 to R71 INTL EDGE	2	OK	UNLOCKED
CKT357 TWY D D4 to D0 INTL EDGE	2	OK	UNLOCKED
CKT361 TWY L ZH to 10 28 TWY M ZH to 14	2	OK	UNLOCKED
CKT363 TWY M 10 28 to F	2	OK	UNLOCKED
CKT365 TWY M F to M7	2	OK	UNLOCKED
CKT367 TWY M5	2	OK	UNLOCKED
CKT369 TWY M7	1	OK	UNLOCKED
CKT371 28R PAD HOLD BAR	3	OK	UNLOCKED
CKT373 TWY M M7 to D TWY Q	2	OK	UNLOCKED
CKT375 TWY N ZH SOUTH RWY 10 28	2	OK	UNLOCKED
CKT377 TWY K RWY 10 28 to T12	2	OK	UNLOCKED
CKT379 TWY F M to T TWY T 10 28 to T12	2	OK	UNLOCKED
CKT381 TWY 5 53 to RWY 10 28	2	OK	UNLOCKED
<b>CKT383 TWY 54 CL</b>	<b>0</b>	<b>OK</b>	<b>UNLOCKED</b>
CKT385 TWY K T12 to 5	0	OK	UNLOCKED
CKT387 TWY 5 51 to 53	0	OK	UNLOCKED
CKT487 TWY ZC ZD ZE M	0	OK	UNLOCKED
CKT489 TWY ZF ZG L M	0	OK	UNLOCKED
CKT511 TWY 2V LEAD OFF	1	OK	UNLOCKED

- [A] Highlighted circuit** Highlighted circuits will appear with blue background and white text
- [B] Lock/Unlock option [C] Locked Circuit** Option used to lock or unlock a circuit Example of circuit LOCKED. Highlighted ORANGE. Graphics on the Touchscreen will also be ORANGE for that circuit.
- [D] Sort Column** Circuit list can be sorted ascending or descending by click on the top of the column. Click the column again to change between ascending and descending order
- [E] Unlocked Circuit** Example of UNLOCKED circuit

**Locking Out a SINGLE Circuit:**

5. Highlight the circuit to lockout [A]
6. Right click and select the "Lock/Unlock Selected Circuits" option [B]
7. Circuit status will change to "Locked" and will appear highlighted in **ORANGE** [C]

**Unlocking a SINGLE Circuit:**

8. Highlight the circuit to unlock [A]
9. Right click and select the "Lock/Unlock Selected Circuits" option [B]
10. Circuit status will change back to "UNLOCKED" and no longer be highlighted [E]

### 2.6.9.3 Locking and Unlocking Multiple Circuits

Refer to Figure 39.

**Figure 39: Locking Out Multiple Circuits**

Circuit Name	Current Step	Alarm Sta...	Locked Status
CKT011 RWY 10L 28R CL	4	OK	UNLOCKED
CKT013 RWY 10L 28R EDGE	4	OK	UNLOCKED
CKT015 RWY 28R TDZ	4	OK	UNLOCKED
CKT017 RWY 22L TDZ	0	OK	UNLOCKED
CKT019 RWY 4R 22L EDGE	4	OK	UNLOCKED
CKT021 RWY 4R 22L CL	4	OK	UNLOCKED
CKT023 RWY 4R TDZ	0	OK	LOCKED
CKT341 TWY Y Y1 to Y7	2	OK	UNLOCKED
CKT343 TWY T T1 to T6	3	OK	UNLOCKED
CKT345 TWY T T6 to T8	2	OK	UNLOCKED
CKT347 TWY A B A6 to A10	2	OK	UNLOCKED
CKT349 TWY T T8 to 10L	2	OK	UNLOCKED
CKT351 TWY A B A10 to F	2	OK	UNLOCKED
CKT353 TWY A B F to A17 TWY D D1 to D4	2	OK	UNLOCKED
CKT355 TWY D A17 to A21 INTL EDGE	2	OK	UNLOCKED
CKT357 TWY D D4 to D8 INTL EDGE	2	OK	UNLOCKED
CKT361 TWY L ZH to 10 28 TWY M ZH to 14	2	OK	UNLOCKED
CKT363 TWY M 10 28 to F	2	OK	UNLOCKED
CKT365 TWY M F to M7	2	OK	UNLOCKED
CKT367 TWY M5	2	OK	UNLOCKED
CKT369 TWY M7	1	OK	UNLOCKED
CKT371 28R PAD HOLD BAR	3	OK	UNLOCKED
CKT373 TWY M M7 to D TWY Q	2	OK	UNLOCKED
CKT375 TWY N ZH SOUTH RWY 10 28	2	OK	UNLOCKED
CKT377 TWY K RWY 10 28 to T12	2	OK	UNLOCKED
CKT379 TWY F M to T TWY T 10 28 to T12	2	OK	UNLOCKED
CKT381 TWY S 53 to RWY 10 28	2	OK	UNLOCKED
CKT383 TWY 54 CL	2	OK	LOCKED
CKT385 TWY K T12 to 5	2	OK	UNLOCKED
CKT387 TWY S 51 to 53	2	OK	UNLOCKED
CKT487 TWY ZC ZD ZEM	2	OK	UNLOCKED
CKT489 TWY ZF ZG L M	2	OK	UNLOCKED
CKT511 TWY ZV LEAD OFF	1	OK	UNLOCKED
CKT513 TWY ZC LEAD OFF	1	OK	UNLOCKED
CKT515 TWY S LEAD OFF	1	OK	UNLOCKED
CKT591 TWY M LEAD OFF	1	OK	UNLOCKED
CKT593 TWY M2 LEAD OFF	1	OK	UNLOCKED
CKT801 RWY 14R 32L IRGL	4	OK	UNLOCKED
CKT801B TWY SPARE	1	OK	UNLOCKED

<b>[A] Highlight circuit group</b>	Highlighted circuits will appear with blue background and white text.
<b>[B] Lock/Unlock option</b>	Option used to lock or unlock a circuit
<b>[C] Locked Circuit</b>	Example of circuit LOCKED. Text highlighted ORANGE. Graphics on the Touchscreen will also be ORANGE for that circuit.
<b>[D] Sort Column</b>	Circuit list can be sorted ascending or descending by click on the top of the column. Click the column again to change between ascending and descending order
<b>[E] Unlocked Circuit</b>	Example of UNLOCKED circuit

#### Locking Out MULTIPLE Circuits:

1. Method 1: Highlight a group of circuits by holding down the <SHIFT> key and selecting the first circuit and last circuit to lockout [A]
2. Method 2: While holding down the <CTRL> key, select one at a time each individual circuit that is to be locked out.
3. Right click and select the "Lock/Unlock Selected Circuits" option [B]
4. All selected circuits will change to "Locked" and will appear highlighted in **ORANGE** [C]

#### Unlocking MULTIPLE Circuits:

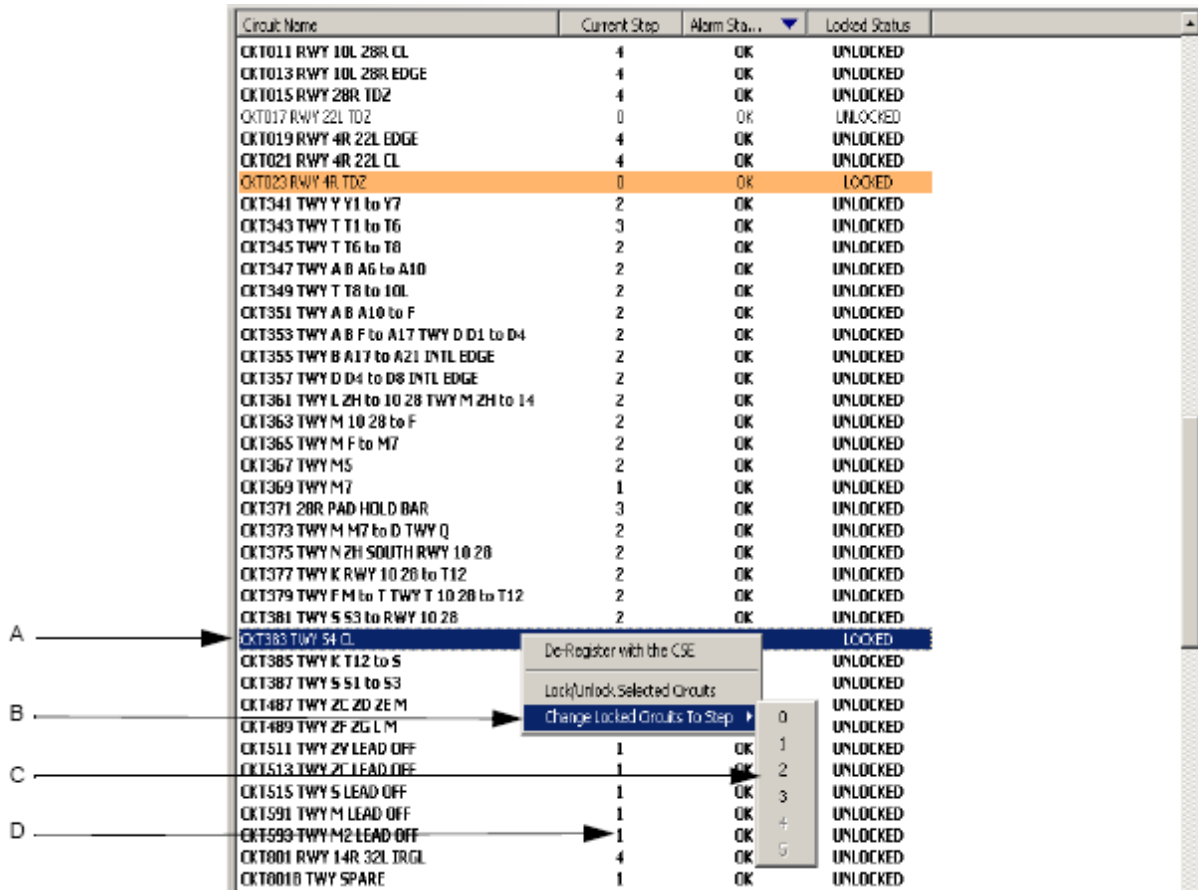
5. Using Method 1 or 2 in the above procedure, select the circuits to be unlocked.

6. Right click and select the "Lock/Unlock Selected Circuits" option [B]
7. Circuit status will change back to "UNLOCKED" and no longer be highlighted [E]

### 2.6.9.4 Changing Brightness Levels of LOCKED Circuits

Refer to [Figure 40](#)

**Figure 40: Changing Intensity of Locked Circuit**



<b>[A] Highlight circuit</b>	Highlighted circuit will appear with blue background and white text.
<b>[B] Change Step option</b>	Option used to change brightness level of a locked circuit
<b>[C] Circuit Steps</b>	Available brightness levels the circuit can be changed to
<b>[D] Step Status</b>	Current commanded brightness step of the circuit

#### Changing Brightness level of SINGLE Circuit:

1. Highlight the locked circuit to change brightness level [A].
2. Right click and select the "Change Locked Circuits To Step" option [B].
3. Select the desired brightness level from the available steps [C].
4. Circuit will change brightness level and reflect current step in the "Current Step" column [D].

#### Changing Brightness level of MULTIPLE Circuits:

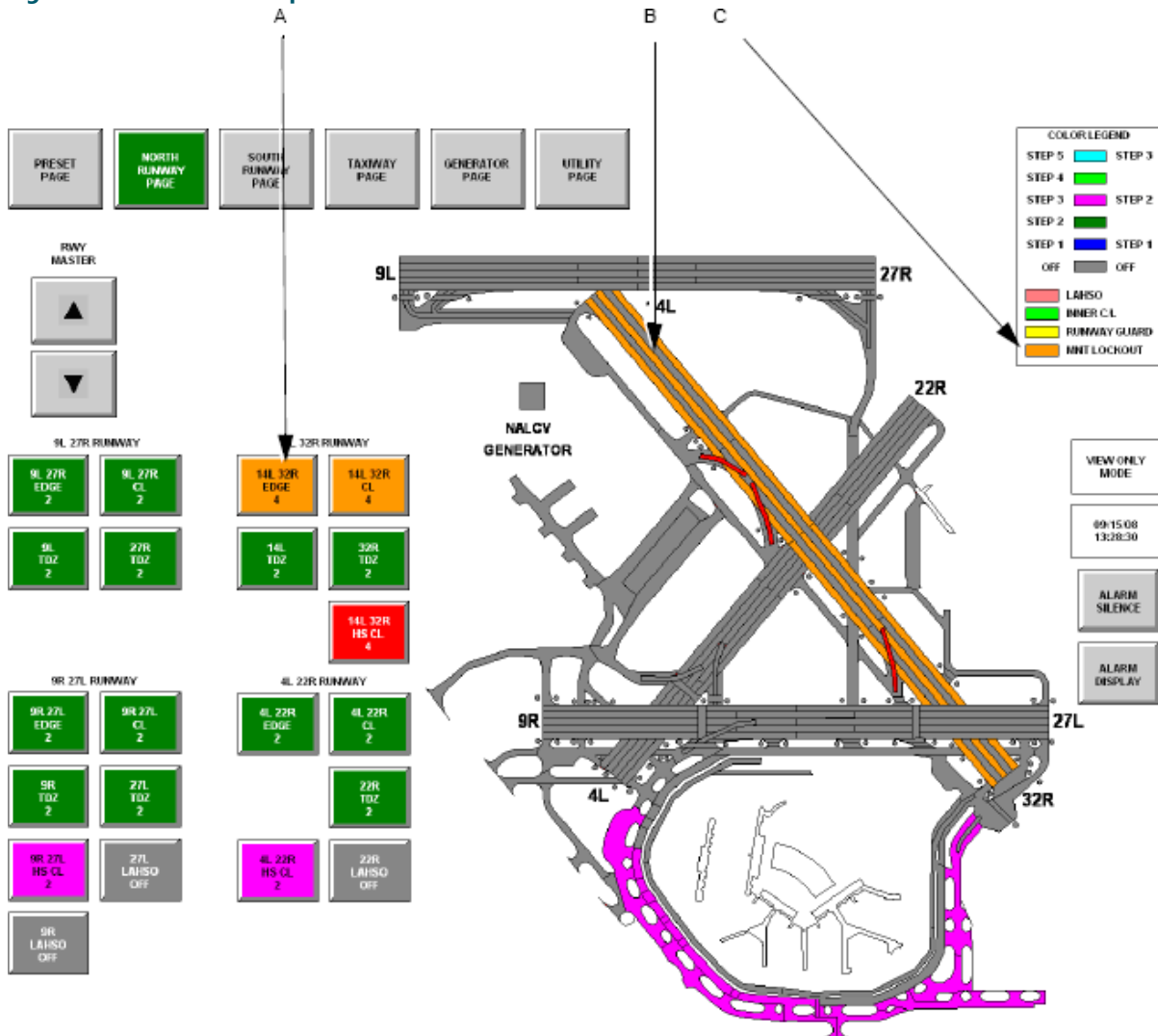
5. Method 1: Highlight a group of circuits by holding down the <SHIFT> key and selecting the first circuit and last circuit to lockout [A].
6. Method 2: While holding down the <CTRL> key, select one at a time each individual circuit that is to be locked out.
7. Right click and select the "Change Locked Circuits To Step" option [B].

8. Select the desired brightness level from the available steps [C].
9. Circuits will change brightness level and reflect current step in the "Current Step" column [D]

### 2.6.9.5 Touchscreen View of LOCKED Circuits

Refer to [Figure 41](#).

**Figure 41: Touchscreen Representation of Locked Circuits**



**[A] Button Locked**

Example of circuit button LOCKED as a result of Circuit Lockout. The buttons is highlighted ORANGE. The circuit cannot be controlled until it is unlocked by maintenance.

**[B] Graphics Locked**

Example of graphics LOCKED as a result of Circuit Lockout. The graphics is highlighted ORANGE. The graphics will remain locked until it is unlocked by maintenance.

**[C] Mnt Lockout**

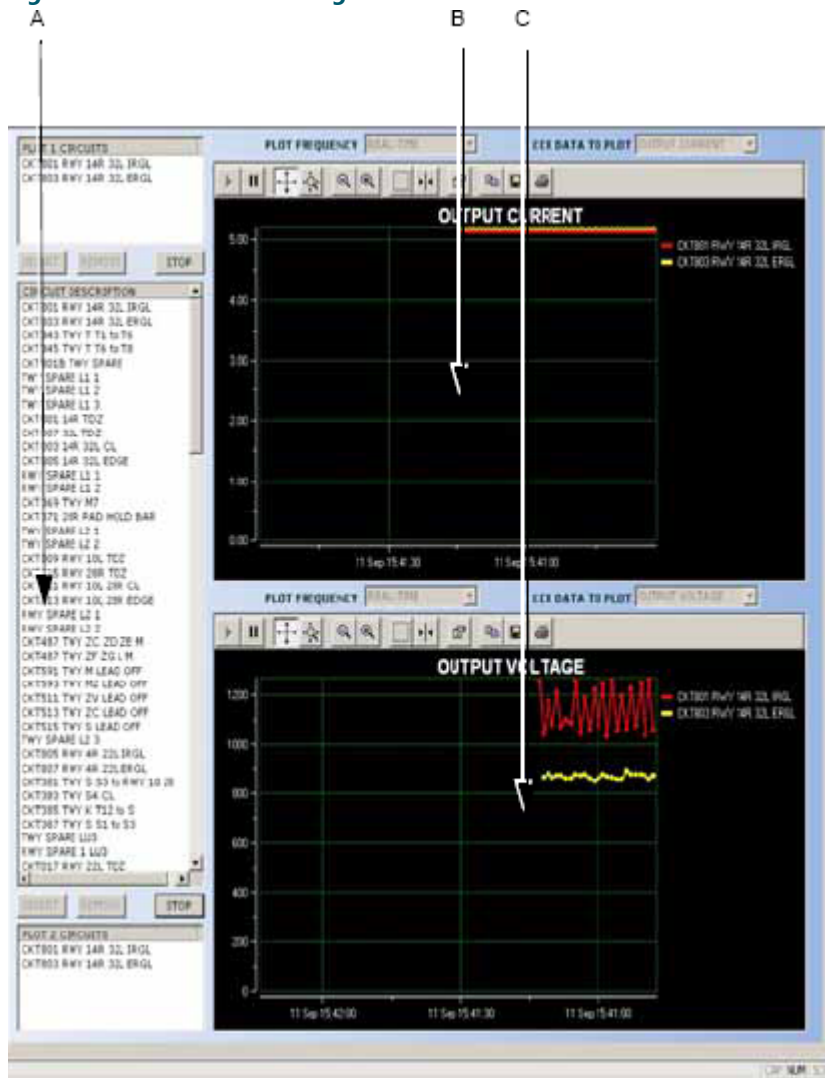
Color Legend key indicates to ATC that the highlighted ORANGE color indicates circuit lockout.

### 2.6.9.6 Real-Time Trending

Refer to [Figure 42](#).

The ALCMS can plot various data points for any of the circuits equipped with current and voltage monitoring using the “Real-Time Trending” radio button under the “Maintenance Tools” Navigation bar.

**Figure 42: Real-Time Trending Overview**

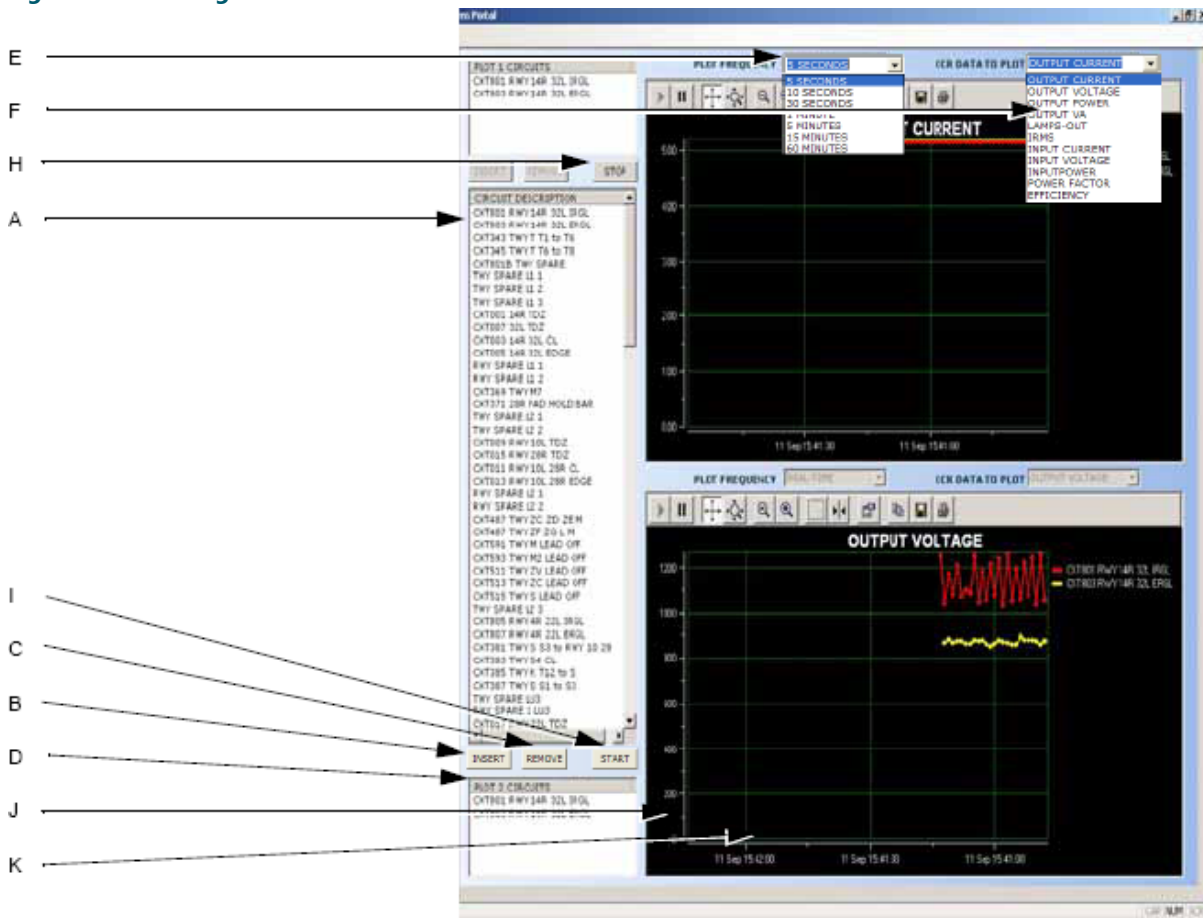


<b>[A] Circuit List</b>	Available circuits that can be plotted
<b>[B] Plot 1</b>	Trend plot 1 for circuits selected
<b>[C] Plot 2</b>	Trend plot 2 for circuits selected

### 2.6.9.7 Selecting a Circuit to Trend

Refer to [Figure 43](#).

**Figure 43: Selecting a Circuit to Trend**

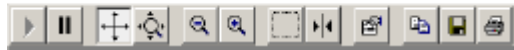


<b>[A] Circuit SelectionList</b>	List of all available circuits that can be trended
<b>[B] Insert</b>	Button used to insert selected (highlighted) circuit into the Plot Circuit List
<b>[C] Remove</b>	Button used to remove selected (highlighted) circuit from the Plot Circuit List
<b>[D] Selected Circuits List</b>	List of circuits that will be plotted
<b>[E] Plot Frequency</b>	How often the circuit data will be updated on the trend plot. i.e. 5 seconds means data points will be plotted every 5 seconds
<b>[F] Data To Plot</b>	Drop down selection box of what information should be plotted for the selected circuits
<b>[G] Start Trend Plot</b>	Start the trend plot in the corresponding window according to the selected frequency and data to plot
<b>[H] Stop Trend Plot</b>	Stop the trend plot
<b>[I] Plot Trend Toolbar</b>	Toolbar used to interact with the plot including scrolling, zooming, printing etc. Refer to the next section on using the toolbar
<b>[J] Y-Axis</b>	Display Amplitude value of readings
<b>[K] X-Axis</b>	Displays timescale of readings based on Plot Frequency selected













### 2.6.9.8 Plot Trend Toolbar

Refer to [Table 3](#).

A B C D E F G H I J K L



**Table 3: Plot Trend Toolbar**

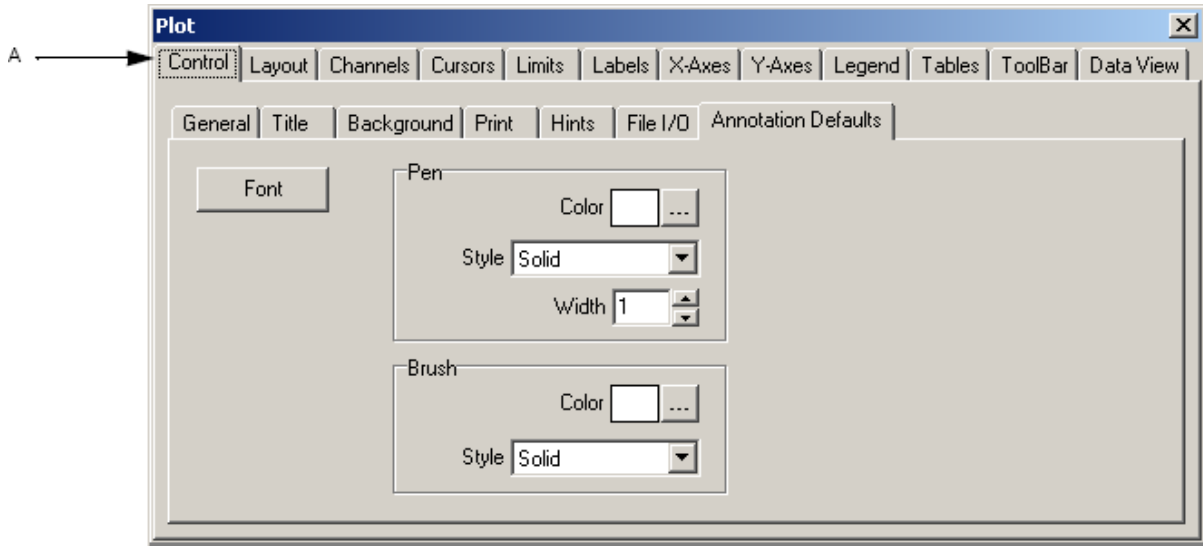
[A] Play/Resume 	Returns trending back to original real-time view.
[B] Pause 	Pauses trending to allow for zooming and scrolling of plot.
[C] Scroll X-Axis 	Used to increase or decrease the X-axis (timescale). Click and hold the left mouse button on the X-Axis. Slide mouse left/right to increase/decrease timescale resolution.
[D] Scroll Y-Axis 	Used to increase or decrease the amplitude of the plot. Click and hold the left mouse button on the Y-Axis. Slide mouse up/down to increase/decrease the graphs amplitude scale.
[E] Zoom Out 	Used to decrease magnification around mouse location. Click left mouse button on plot location to zoom out
[F] Zoom In 	Used to increase magnification around mouse location. Click left mouse button on plot location to zoom in
[G] Zoom Window 	Used to increase magnification within a selected window. Click and hold left mouse, drag to create zoom window and release
[H] Move Cursor 	Turns on or off a vertical measurement line that provides the properties of the graphic at the line/graphic intersection. Move cursor by placing the mouse over the line, holding down the left mouse button and dragging the line to the wanted graphic
[I] Plot Properties 	Used to change plotting properties of the graphics before printing. Refer to next section for Plot Properties.
[J] Copy to Clipboard 	Copies the displayed graphic to the Windows® clipboard
[K] Save to File 	Used to save graphic image to a file
[L] Print 	Used to send graphic image to printer



### 2.6.9.9 Plot Print Properties

Refer to [Figure 44](#). When the user selects the “Plot Properties” toolbar button, it will launch the “Plot” window as seen below. The various tabs in this tool allow the user to adjust several properties of the plot for viewing and printing.

**Figure 44: Plot Print Properties**



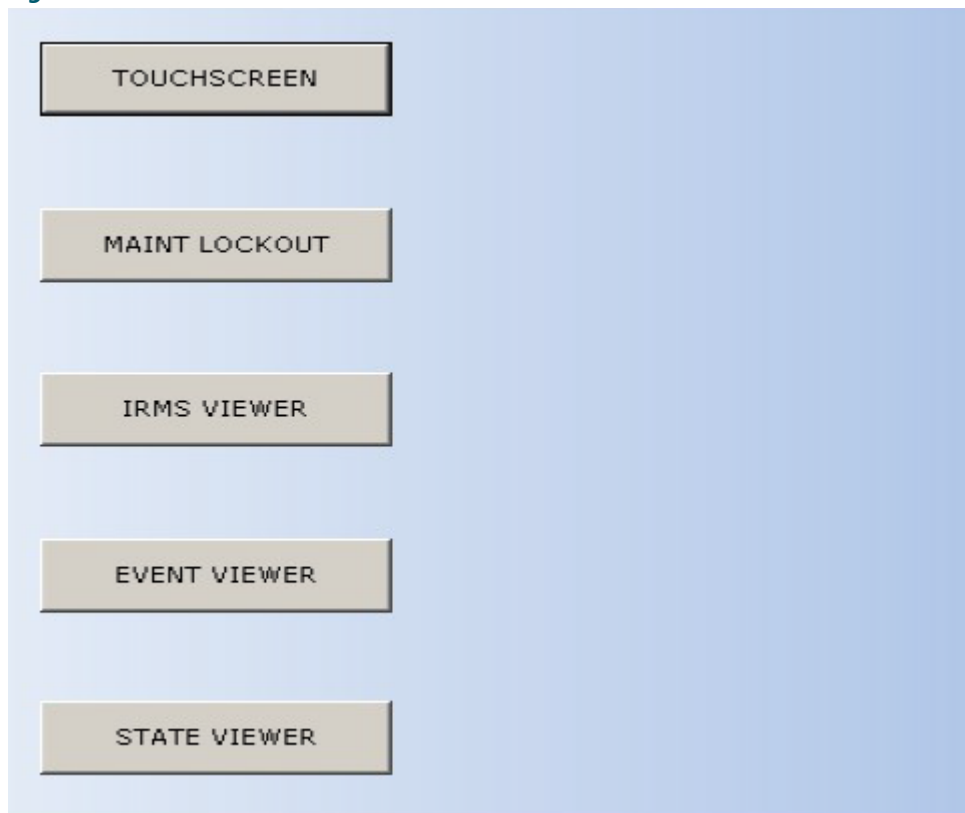
**[A] Plot Properties**

Several buttons used to adjust viewing and printing properties of the graphical plots

### 2.6.9.10 Miscellaneous Tools

Refer to [Figure 45](#). The “Misc Tools” button below the “Maintenance Tools” navigational bar are several buttons that are used to launch various tools.

**Figure 45: Miscellaneous Tools**



<b>Touchscreen Button</b>	Selecting the Touchscreen button launches the Touchscreen application similar to <a href="#">Navigation Bar</a> .
<b>Maintenance Lockout Button</b>	Selecting the Maintenance Lockout button launches the ( <a href="#">Classic Maintenance Lockout Feature</a> ).
<b>IRMS Viewer Button</b>	Selecting the IRMS Viewer button launches the IRMS Viewer application used to view IRMS data. Refer to IRMS Manual for more information ( <a href="#">IRMS Viewer</a> ).
<b>Event Viewer Button</b>	Selecting the Event Viewer button launches the Event Viewer which is visible by ATC personnel from the Touchscreen application ( <a href="#">Event Viewer</a> ). Selecting the State Viewer button launches the State Viewer which is only required for tracking CCR run time information.
<b>State Viewer Button</b>	All other CCR detail information is available using the "CCR Detail View" which is discussed in the next section ( <a href="#">State Viewer</a> ).

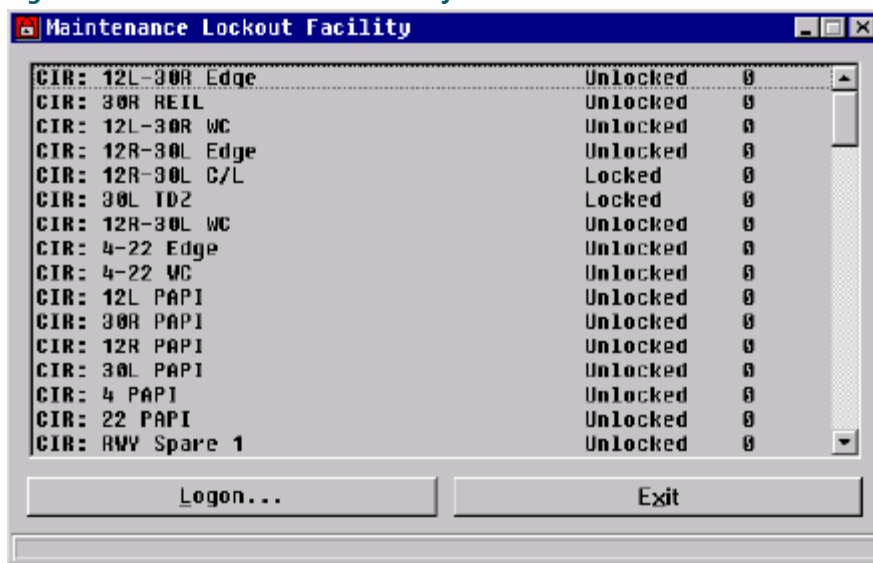
### 2.6.9.11 Classic Maintenance Lockout Feature

The following are the sequential steps to using you're the "classic" version of the ALCMS Maintenance Lockout Utility.

1. Once the Maintenance Lockout button is chosen from the "Misc Tools" section, the following window will appear.

This is your starting point to successfully locking out a circuit or circuits on the Airfield.

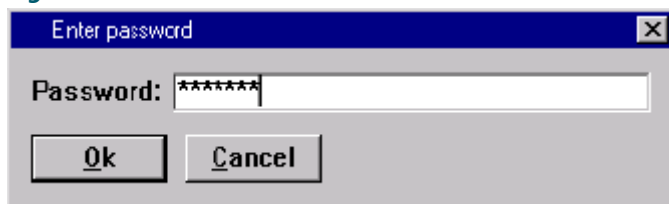
**Figure 46: Maintenance Lockout Facility**



2. Press the logon button to begin.

The system will then prompt you for the correct login and password. The following is the ALCMS logon prompt. By entering the correct user name and password, maintenance personnel will be able to use the maintenance lockout utility provided with the ADB ALCMS.

**Figure 47: Password Window**



3. When the "Enter Password" box appears, enter the correct password to start using the Maintenance Lockout Utility. Once you have typed the correct password, Press the "ENTER" button to enter the system password for system acceptance.

4. Once the correct system password has been entered, the following screen will be displayed.  
Notice that the Logon button has now changed to the “CHANGE” button. This is the button that will be used to change the state of a given circuit.
5. Simply select a circuit with the mouse, (Make sure that the circuit is highlighted before continuing) and press the change button.

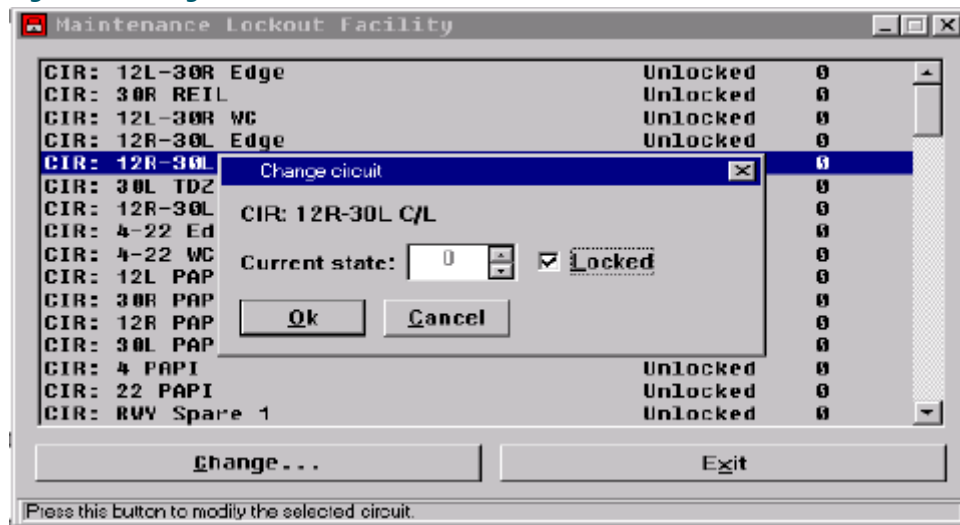
This will prompt you with the following screen:



**Note**

In this example, Circuit 12R-30L C/L is being locked out. Note that Circuit 12R-30L is highlighted and the change button was hit. To lock a circuit, simply check the Locked check box and press “O.K.” This will lock out that circuit and notification will be sent to the ATCT.

**Figure 48: Change Circuit Window**

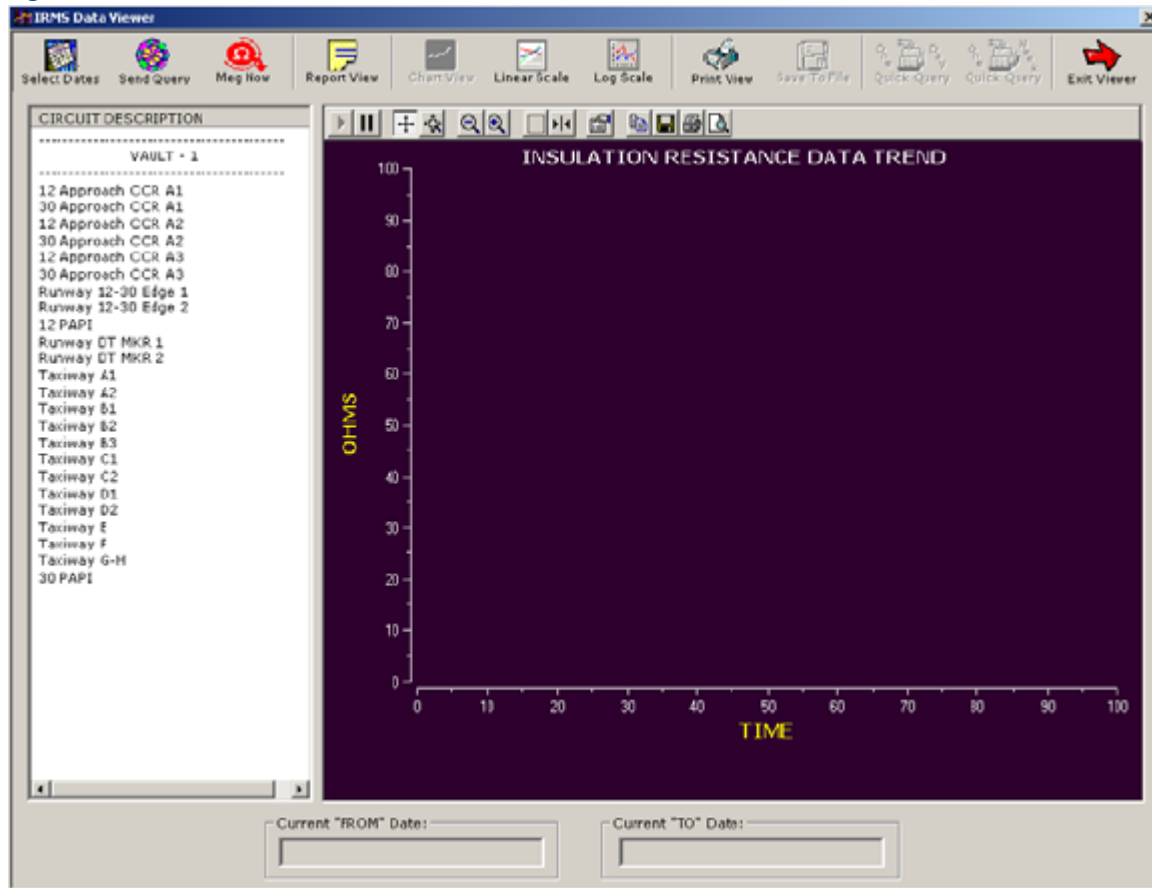


6. The maintenance lockout utility will confirm that circuit 12R-30L C/L is locked by displaying the text in orange. The Touchscreen graphic will also reflect the circuit being locked out. Refer to [Circuit Lockout View](#) for Circuit lockout details.

### 2.6.9.12 IRMS Viewer

The IRMS Viewer is accessed typically through the Windows Start Menu or via "Misc Tools". After the user selects the "IRMS Viewer" icon, the "IRMS Data Viewer" window is displayed as illustrated in Figure 49.

**Figure 49: Insulation Resistance Data Viewer Window**



The ALCMS software records the individual ACE™ IRMS resistance readings in the ALCMS database. Using the IRMS Viewer, the user can retrieve, plot and print the insulation resistance data for each of the circuits.

In order to view resistance data, the user must select the desired circuit or circuits and then adjust the date reading range to retrieve and execute a data query. (A query is when the computer system searches and retrieves information from the database based on the inputs that the user has selected).

The IRMS data can be displayed in either a tabular or graphical format over a period of time selected by the operator, who will specify a START and STOP date for the data display.

For a complete explanation of the set-up and use of the IRMS Viewer, the operator should refer to the following manual:

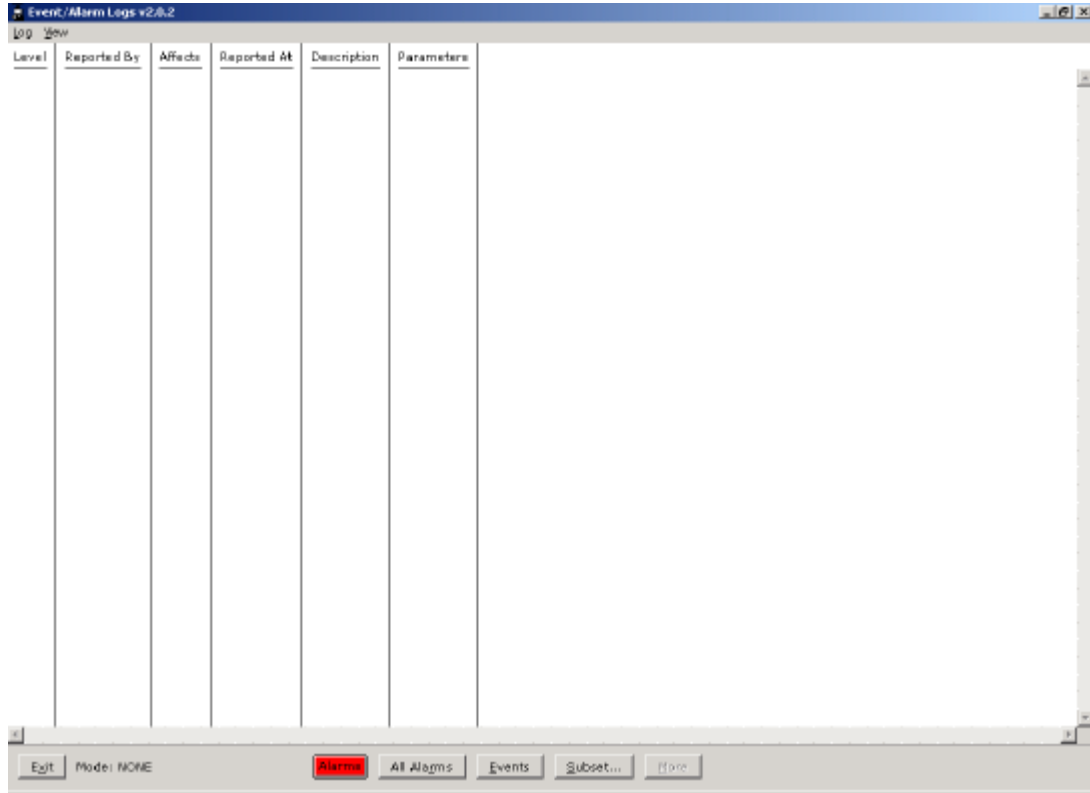
- 96A0380 Insulation Resistance Monitoring System (IRMS) User's Guide

### 2.6.9.13 Event Viewer

The Event Viewer function allows the user to investigate the recorded transactions or events that took place in the ALCMS. The user may filter the information displayed by date/time of occurrence, by the devices affected, or by the event type, or all of the above.

When the “Event Viewer” menu button is selected from the ALCMS Main Menu, the window shown in [Figure 50](#) is displayed. The event viewer displays information regarding all of the system events, including warning and alarm conditions that have occurred in the ALCMS.

**Figure 50: Event Viewer Window**



#### 2.6.9.14 Data Viewing Area

The data viewing area contains six columns. The column titled “Level,” contains icons (graphic representations) which indicate the level of severity of the event, Alarm, Warning, Error, or Event. The “Reported By” column contains a description of the subsystem and process which reported the event. The “Affects” column contains a description of the ALCMS component most directly affected by the event. The “Reported At” column contains the time stamp for the event, and the “Description” column contains the event description. The “Parameters” column contains information that is sent with the event message and is decoded by the Maintenance Center. These parameters are for debugging purposes only.

#### 2.6.9.15 Viewing Events

To view the event log, the user must select the “Events” toolbar button. The Mode description will display “Mode: EVENTS” to indicate that the selection was acknowledged. The event log will then display all events that have taken place during the ALCMS operation. Each event is stamped with the date and time that it was recorded by the system.

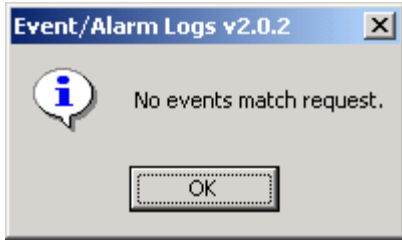
The event log, as viewed in the Event Viewer, can be filtered for specific information sets. The most common subset, the current alarms subset, can be accessed with a single button press.

#### 2.6.9.16 Viewing Active Alarms

To view the active alarms, the user must select the “Alarms” toolbar button. The Mode description will display “Mode: ALARMS” to indicate that the selection was acknowledged. The window will then display all alarms and warnings that have been activated, but not cleared. Each alarm is stamped with the date and time that it was recorded by the system.

If there are no active alarms in the system, a message will be displayed indicating that no active alarms exist. See [Figure 51](#).

**Figure 51: No Active Alarms Message**



#### 2.6.9.17 The More Button

The Event Viewer process receives approximately one page worth of information at a time from the Maintenance Center. To request the next “page” of data, the user must click on the “More” button. If the more button is grayed out as in [Figure 5](#) then there is no more data available to be retrieved.

#### 2.6.9.18 The Exit Button

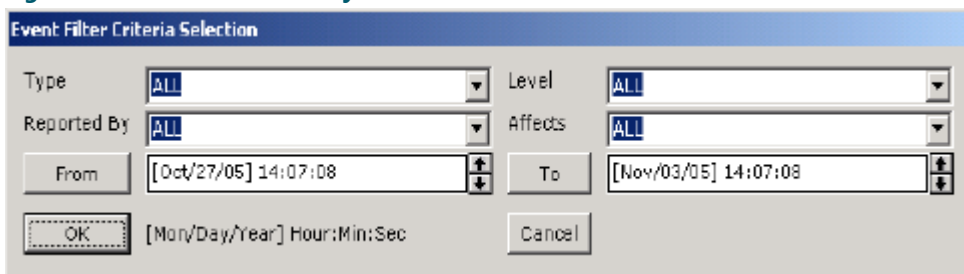
To exit the Event Viewer and return to the Main Menu, the user can click on the Exit button, or, choose Logs; Exit.

#### 2.6.9.19 Viewing Subsets

While viewing either the events or alarms as described in the previous sections, to reduce extraneous displayed information, the user can choose subset criteria. Once the subset criteria is entered, only those events that match the criteria will be displayed.

To enter the subset criteria and view a subset of the event log, select the “Subset” toolbar button. The Event filter window shown in the Figure to follow will be displayed.

**Figure 52: Subset Criteria Entry Window**



#### 2.6.9.20 Logs: Pull-down Menu

The “Event Viewer” window has pull down menus that provide an alternate method of selecting the various options discussed above. To display a pull down menu, select the menu title on the menu bar at the top of the screen. The available menu options will then appear below the title. Select an option by positioning the cursor over the desired option and selecting it.

- All events; is equivalent to clicking the Events button.
- Event subset; is equivalent to clicking the Subset... button.
- Alarms; is equivalent to clicking the Alarms button.
- Exit; is equivalent to clicking the E x it button.

#### Printing to Printer

Event logs can be printed out at any subsystem that is equipped with a printer. To print out an event log, first bring up the event data set that you wish to print.

Then select the “Logs” pull-down Menu bar, and clicking on the “Print” option and select the “To printer” option.

#### Printing to File

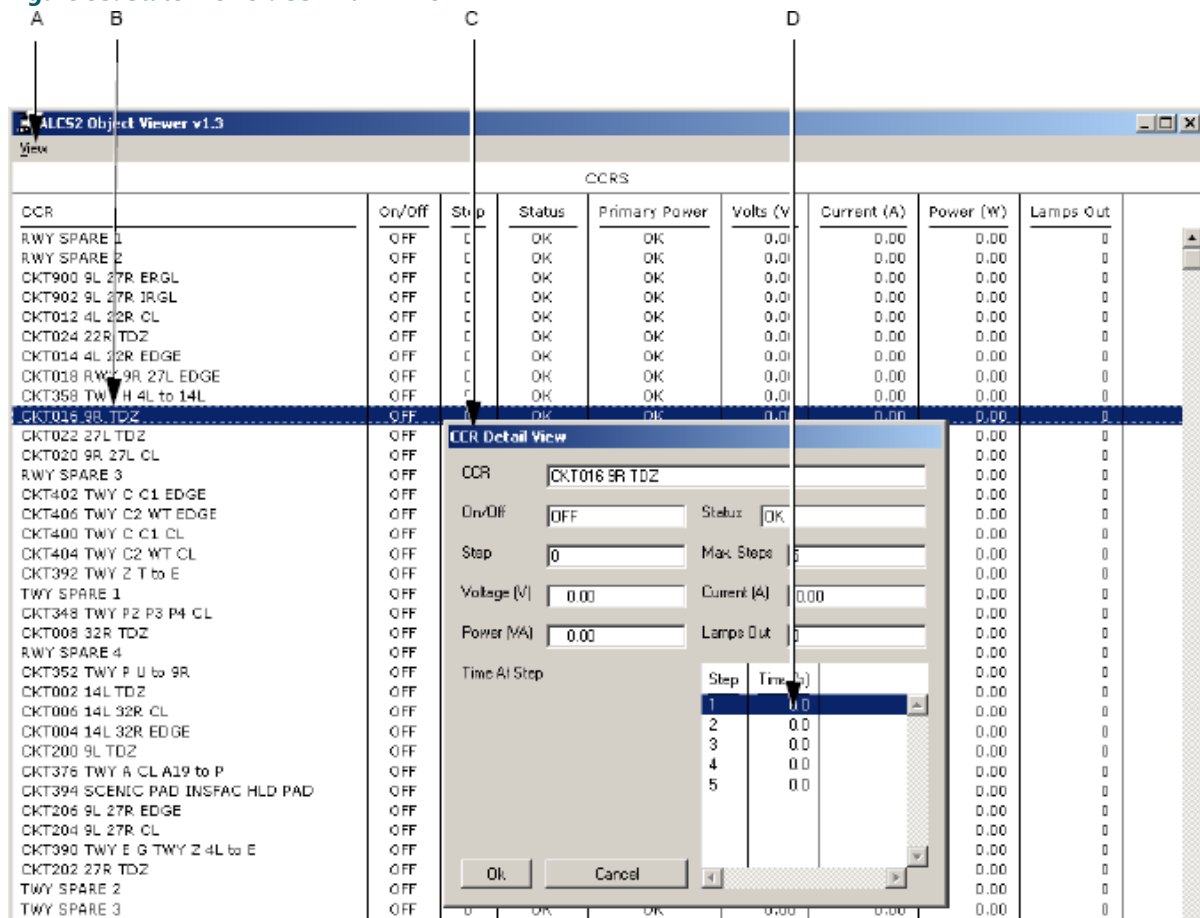
Event logs can be printed to a file for future use of for importing into another software program. To print an event log to a file, first bring up the event data set that you wish to print.

Then select the “Logs” pull-down Menu bar, and clicking on the “Print” option and select the “To File” option.

### 2.6.9.21 State Viewer

The State Viewer button is accessed via “Misc Tools”

**Figure 53: State Viewer: CCR Run Time**



<b>[A] View drop-down box</b>	Drop down box to select objects to view (Links, I/O and CCRs)
<b>[B] CCR State</b>	State Viewer showing CCR detail information
<b>[C] CCR Detail View</b>	By double-clicking a CCE, a detailed view window is displayed
<b>[D] Time At Step</b>	Within the detailed view, the CCR run time is displayed showing the amount of time a CCR has been running at each step

#### To View CCR Run time:

1. Select View and CCR from the drop down menu [A].
2. Highlight a CCR to view [B].
3. Double-click the CCR to display the detail view.
4. CCR Run Time is shown in detail view.

### 2.6.10 Library Files

By selecting the “Training Library”, “Manual Library” or “Drawing Library” from the navigational bar the ALCMS Portal will display Hyperlinks to the correspondid information requested. Selecting the various Hyperlinks in the data viewing window will call up an Adobe (.pdf) version of the selection in a separate window. The user can navigate and review the training program or can print out the training by using the “File” drop down menu.

### 2.6.10.1 Training Library

When "Training Library" Navigation tab is selected, the display area shows Hyperlinks regarding training programs for the ALCMS (Refer to Figure 54).

**Figure 54: Training Library Viewer**

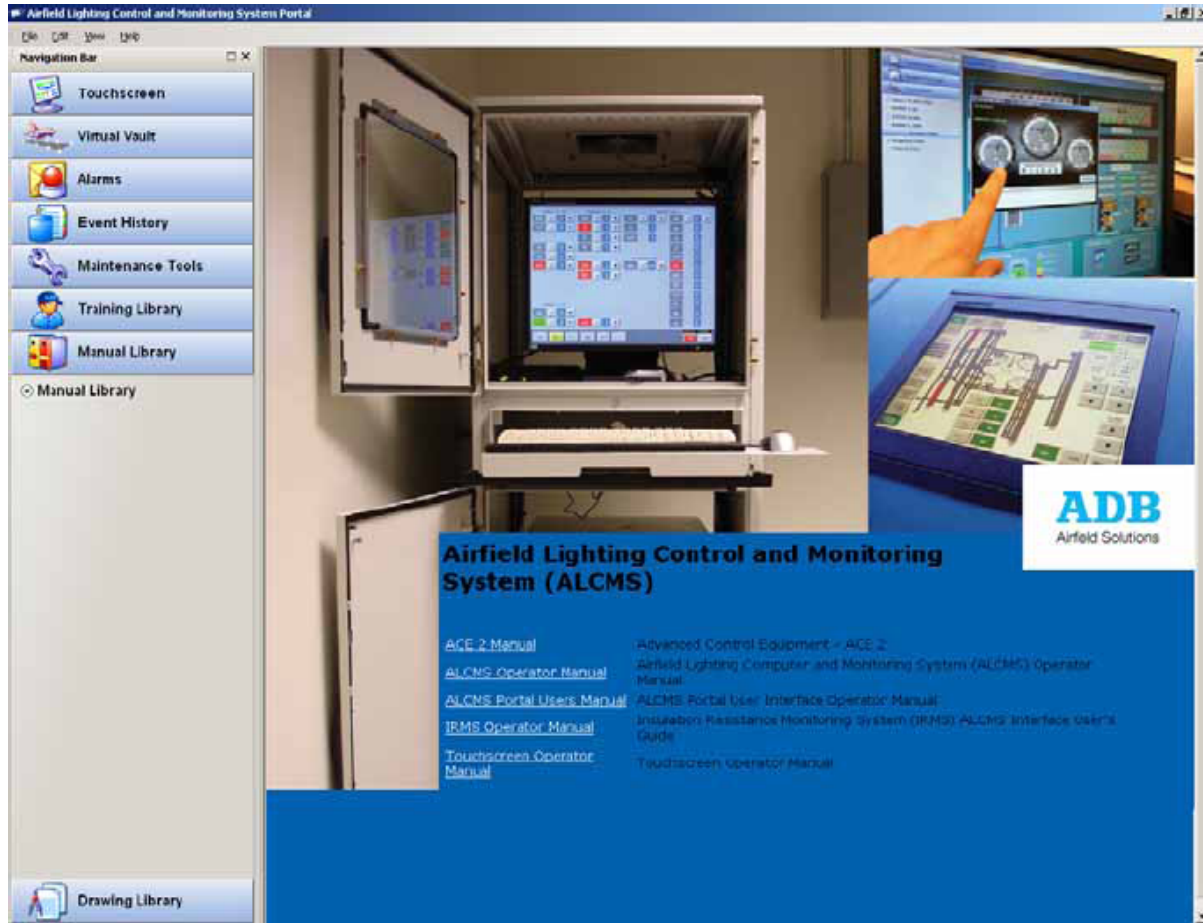




### 2.6.11 Manuals Library

When "Manual Library" Navigation tab is selected, the display area shows Hyperlinks of various manuals for the ALCMS (Refer to Figure 55).

**Figure 55: Manuals Library**



## 2.6.12 Drawing Library

When “Drawing Library” Navigation tab is selected, the display area shows a Hyperlink of latest drawing package for the site specific ALCMS (Refer to [Figure 56](#)).

**Figure 56: Drawing Library**



## 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**

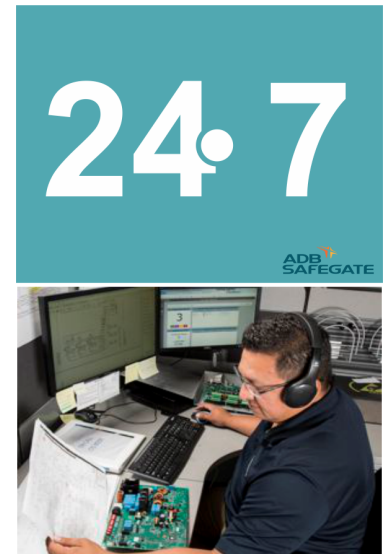
**ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304**

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



#### Note

For more information, see [www.adbsafegate.com](http://www.adbsafegate.com), or contact ADB SAFEGATE Support via email at [support@adbsafegate.com](mailto:support@adbsafegate.com) or

Brussels: +32 2 722 17 11

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](http://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.

## Company Addresses

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Americas LLC	ADB SAFEGATE, Americas: 977 Gahanna Parkway, Columbus, OH 43230 USA
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ADB SAFEGATE Airfield Technologies Ltd. China	ADB SAFEGATE, China: Unit 603, D Block, CAMIC International Convention Center, No 3, Hua Jia Di East road, ChaoYang district, Beijing 100102 P.R. China
Contact: Tel.: +86 (10) 8476 0106, Fax: +86 (10) 8476 0090	Email: <a href="mailto:china@safegate.com">china@safegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>
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## Powering Your Airport Performance from Approach to Departure

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