

CONTROL & MONITORING

ALCMS

Airport Lighting Control & Monitoring System



Compliance with Standards

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

System Overview

ADB Safegate's 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. ADB SAFEGATE's ALCMS 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 or centralized PLC control and monitoring
- 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

ADB SAFEGATE's 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:

- ADB SAFEGATE's BRITE™ 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
- PLC (Programmable Logic Controller) - A centralized I/O based control and monitoring system utilizing off-the-shelf PLC components and programming intelligence.
- 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

ACE™ (Advanced Control Equipment)

ADB SAFEGATE's ALCMS design uses the ACE system 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.

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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 2084 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
- L-821 - Systems will support new or existing L-821 control panels with the addition of PLC components
- 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

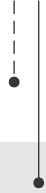
Fail-safe Option

- A = Preset
- B = Last State

Notes

1. 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
- CRT or 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

BRITE™

The ADB Safegate BRITE 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 the BRITE 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

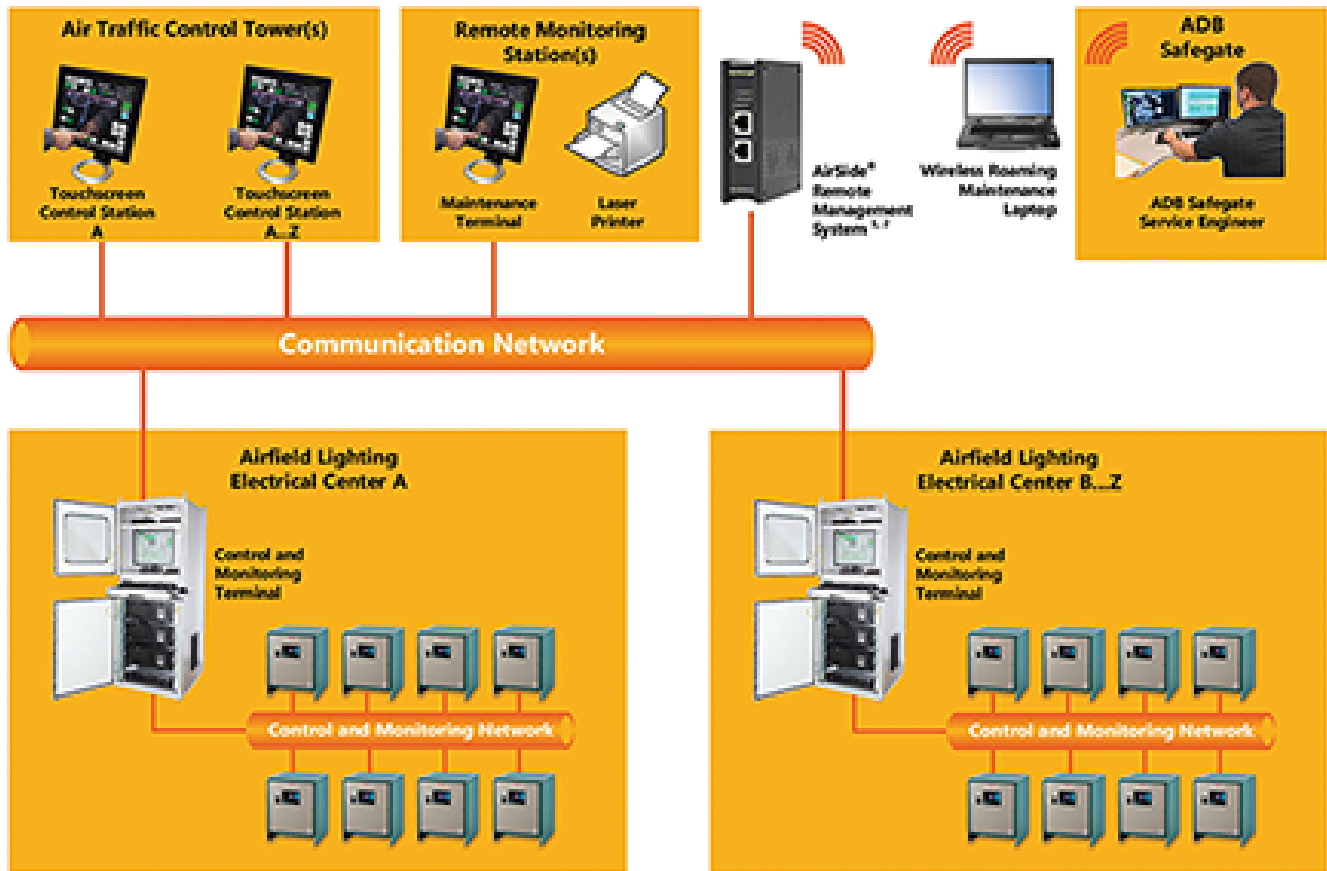
Controlling and monitoring the stop bar lights, taxiway entry lights, and presence detectors are accomplished by using ADB Safegate's BRITE Remote control devices. Each device on the airfield that requires individual control and monitoring is interfaced to one of the Remotes. All communication data is superimposed onto the airfield series circuit cabling (power-line) and is received by the BRITE Remotes. BRITE Remotes can also transmit a variety of monitoring data back to a BRITE Master. See data sheet 2092 for more information on ADB Safegate's BRITE System.

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

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General Application



Notes

¹ External internet connection is required via fi rewall 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.