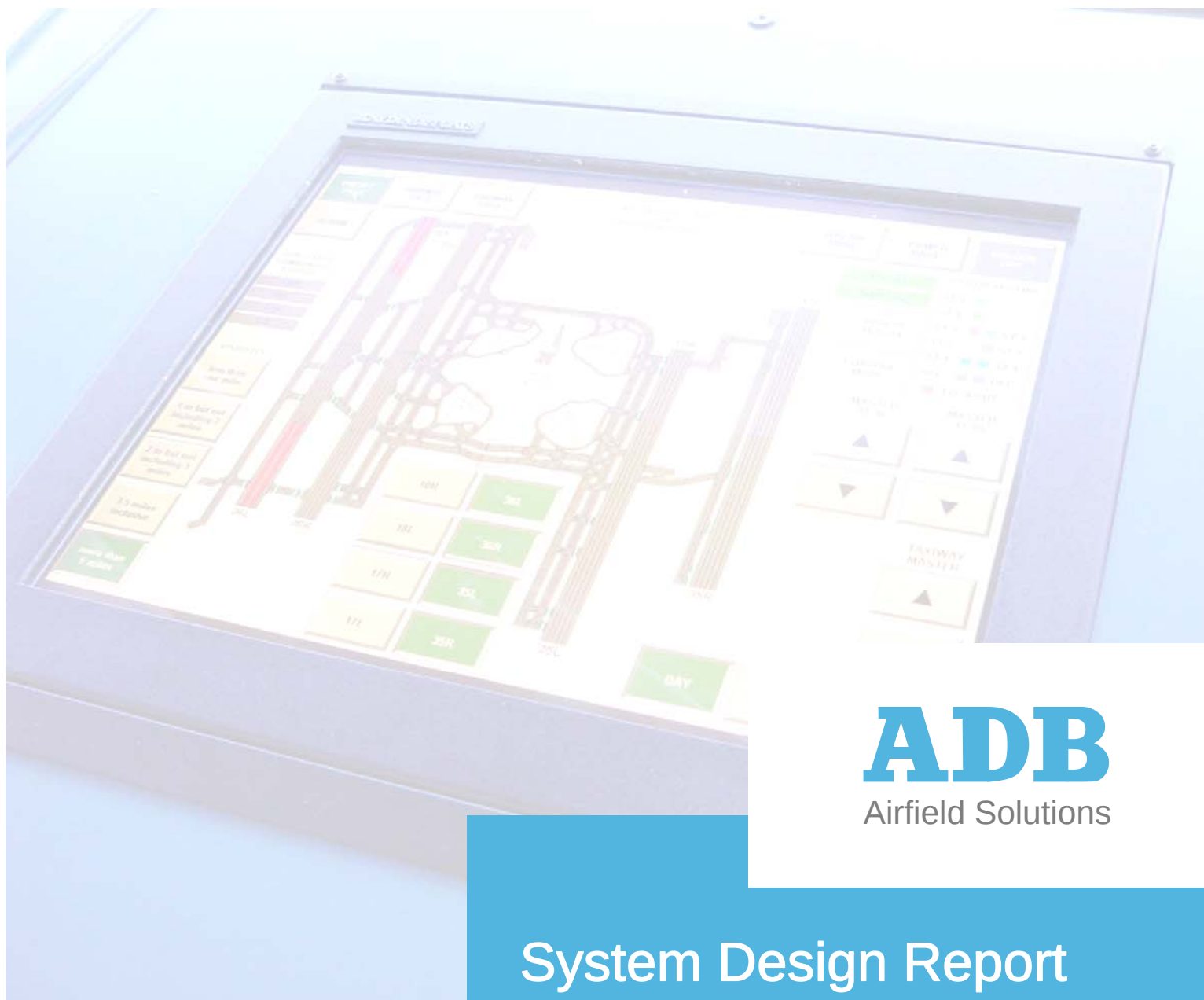




ADB
Airfield Solutions

System Design Report Remote Control System

Bonaire International Airport
Kralendijk, Bonaire, Netherlands

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Record of Changes

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1. Introduction

1.1 Overview

This document provides an extensive explanation of the new Commercially of the Shelf (COTS) Airfield Ground Lighting Remote Control System for BONAIRE INTERNATIONAL AIRPORT.

The new AGL-CS is based on Industrial Computers, PLC Equipment, Communication Equipment and Software. All of the equipment and software is provided from worldwide industry leaders. This system has been implemented based on solutions that are proven for industrial facilities and will allow the user to control, monitor and register all related activities.

1.2 Intention

This document details hardware and software components. The document also details the Bonaire International Airport GUI and system operation. Airport Administrative and user personnel will benefit from the information herein included.

1.3 Safety Notices

This section contains general safety instructions for using your ADB Airfield Solutions Remote Control equipment. Task and equipment specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

Safety to maintenance personnel is a primary consideration in the design of the Remote Control System. The following sections address this aspect of the system

All personnel must observe the safety regulations imposed at the site at all times. While every practicable safety precaution has been incorporated in this equipment, the following rules must be strictly observed:

Installers must observe all safety regulations at all times. Do not change plug-in components or make adjustments inside equipment with high voltage supply ON. Under certain conditions, dangerous potentials may exist in circuits with power controls in the off position due to charges retained by capacitors. To avoid casualties, always remove power, then discharge and ground by use of grounding rod, prior to touching any parts.

To use this equipment safely ADB recommends to:

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- Read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- Read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- Store this manual within easy reach of 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.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used.

1.4 Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



WARNING:

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



WARNING:

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



CAUTION:

Failure to observe may result in equipment damage.

1.5 Qualified Personnel

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 see that its personnel meet these requirements.

ADB Airfield Solutions has configured the new Remote Control System for Bonaire International Airport with three different intended qualified users: ATC-Tower personnel, Maintenance personnel and System Administrator.

In order to login to the system, the user will fill out the required information in the AGL-CS UTILITIES window. The OPERATOR NAME and the USER LEVEL PASSWORD must be filled in to obtain access to the system.

ADB has configured the system with the following three passwords corresponding to the levels of access.

ATCT USER
MAINT USER
ADMIN USER

Passwords will be presented to the system administrator during training.

1.6 Customer Support Services

To obtain product information, or for ordering, please contact the ADB Airfield Solutions 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.

1.7 Product Support Services

Product Support Team

The Product Support Team at ADB Airfield Solutions is available to provide emergency technical support. Trained to handle ADB's standard and customized products, our technicians are available during standard business hours 8 a.m. to 5 p.m. EST. From 5 p.m. to 8 a.m. and on weekends and holidays, customers can call 1.800.545.4157 to reach our Technical Service Call Center. Emergency calls will be redirected to a technician as needed. After-hour routine calls will be logged into the queue for response by 10 a.m. EST the next business day.

1.8 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:

- What is the airport 3-letter designator (DFW, ATL, ORD, etc.)?
- What is your customer number?
- What your name, phone#, and fax#?
- What is the best time to call you back?
- What is your e-mail address?
- What is reason for your call?
- What is the part# you are calling about?
- What is the serial#?
- Quantity? Actual? or Estimated?

Contact the Product Support Team at +1.800.545.4157 and Press 1.

1.9 Intended Use



WARNING: Use of 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.

ADB Airfield Solutions cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine replacement parts
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB Airfield Solutions equipment
- Allowing unqualified personnel to perform any task



WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install ADB Airfield Solutions and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- 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.

1.10 Operation of Equipment

Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

1.11 Maintenance, Troubleshooting, and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with ADB Airfield Solutions equipment should be permitted to service this equipment.

- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved ADB Airfield Solutions Inc. replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Do not service electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

2. Hardware Overview

2.1 General

The new remote control system is composed by commercially of the shelf parts. Two workstations are included; the Tower and AGL Room. One industrial enclosure housing Siemens S7-300 PLC equipment is provided at the AGL room. Two Communication Enclosures are provided; communication is based on a network that uses the existing ELV cables. Two uninterruptible power supplies are included one at the tower and one at the AGL room.

All equipment provided by ADB Airfield Solutions is rated 230VAC 50Hz.

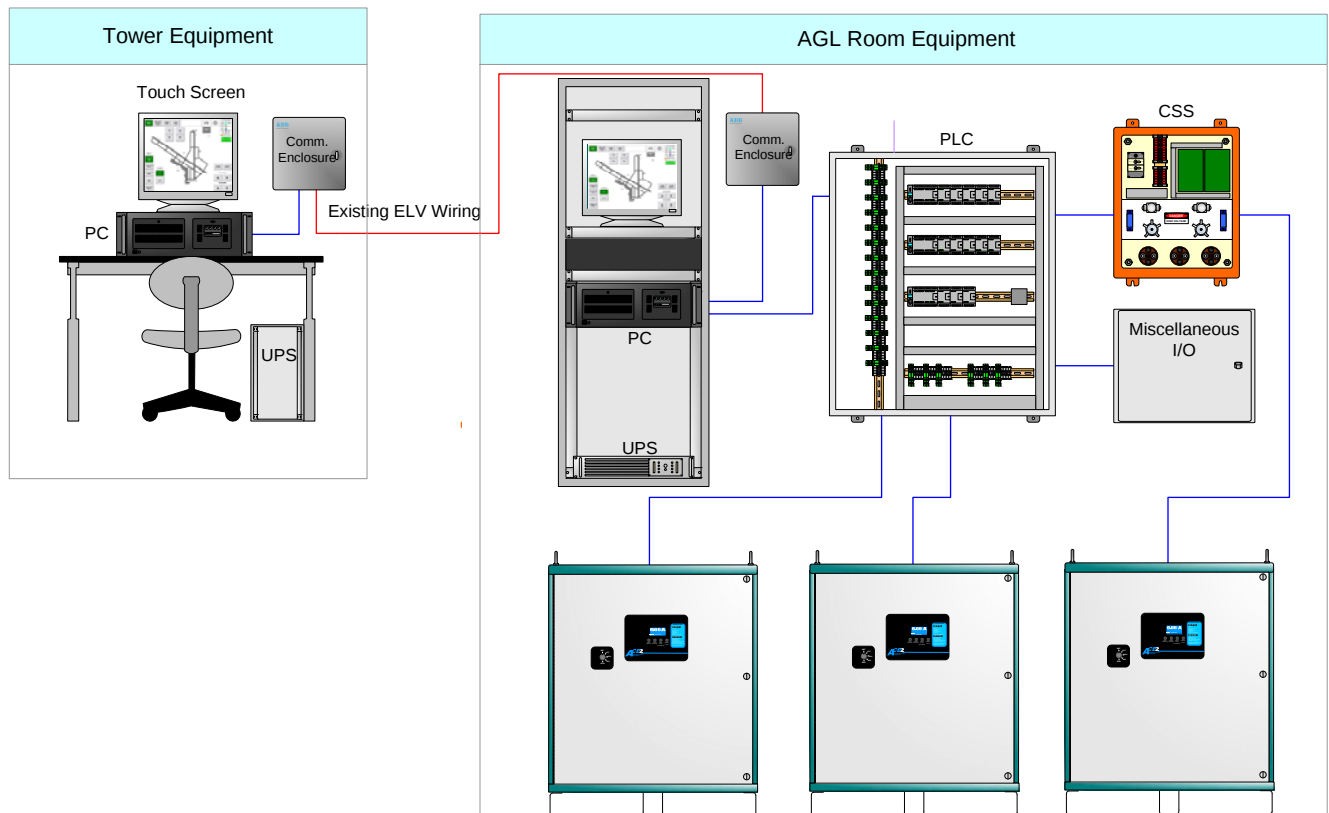


Figure 2-1 System Diagram

2.1.1 Tower Equipment

The tower equipment is composed by the following:

- High Resolution ELO2242L Touch Screen. Intelli-touch Technology
- Industrial-grade computer
- Processor Type Intel Pentium® 4
- Processor Clock Rate 2.5 GHz or better
- Hard Disk >400GB
- Keyboard
- Mouse
- Communication Enclosure composed by a Phoenix Contact DSL Modem and 24VDC Power Supply
- APC 3000VA 230VAC 50Hz Uninterruptible Power Supply

The tower equipment will be installed in the tower cab. All provided equipment must be powered by the included UPS, which must be powered by a dedicated 230VAC 50Hz circuit. The tower touch screen can be mounted on the tower console or mounted on the included VESA mount.

The tower UPS system will provide backup power for at least 15 minutes.

2.1.2 AGL Room Equipment

The AGL Room equipment is composed by the following:

- High Resolution ELO2242L Touch Screen
- Industrial-grade computer
- Processor Type Intel Pentium® 4
- Processor Clock Rate 2.5 GHz or better
- Hard Disk >400GB
- Keyboard
- Mouse
- Communication Enclosure composed by a Phoenix Contact DSL Modem and 24VDC Power Supply
- PLC Enclosure. Siemens S7-300 Equipment
- APC 3000VA 230VAC 50Hz Uninterruptible Power Supply

The AGL Room equipment will be installed in the tower cab. All provided equipment must be powered by the included UPS, which must be powered by a dedicated 230VAC 50Hz circuit.

The AGL room UPS system will provide backup power for at least 15 minutes.

2.2 Communication Network

The communication between the Tower and AGL room computers is achieved via a communication network composed by the existing ELV cable and the provided communication enclosures. Ethernet protocol is used.

The communication enclosure at the Tower Equipment connects to the existing ELV wiring and via CAT5 standard twisted pair to the “DSL” labeled Network Interface Card in the Tower industrial computer.

The communication enclosure at the AGL Equipment Room connects to the existing ELV wiring and via CAT5 standard twisted pair to the “DSL” labeled Network Interface Card in the AGL Room industrial computer. A second network cable connects from the “PLC” labeled Network Interface Card at the AGL Room industrial computer to the S7-300 PLC CPU.

Based on their reliability, performance and high engineering standards, ADB selected Industrial SHDSL Modems and Power Supplies for the communication enclosures manufactured by Phoenix Contact.

Figure 2-2 illustrates the provided communication hardware and the recommended wiring. This arrangement maximizes communication speed and reliability.

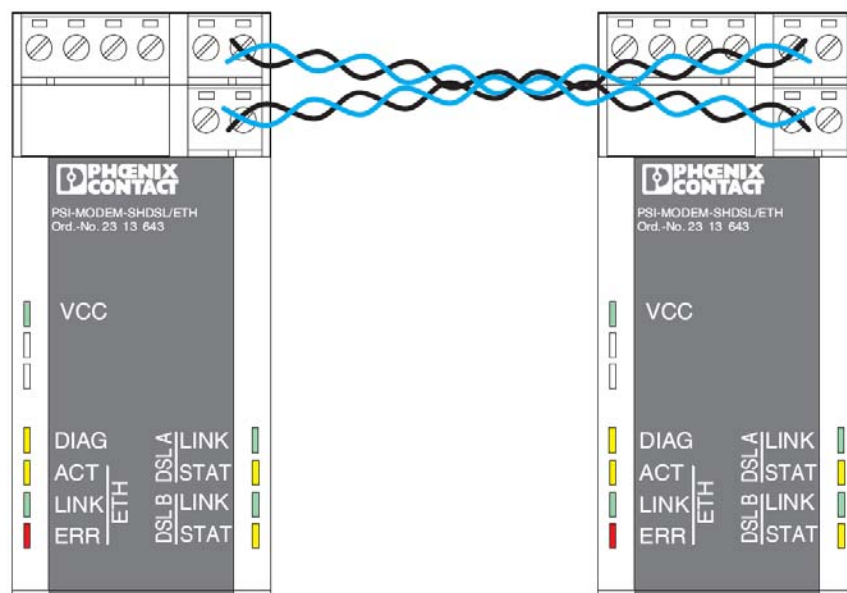


Figure 2-2 DSL Modem Point to Point Connection

2.3 Software

The Remote control system includes all required software to facilitate daily operations and maintenance tasks.

- The Tower industrial computer employs Siemens WINCC SYSTEM V7.0, RT 128
- The AGL room industrial computer employs Siemens WINCC/SERVER V7.0
- The AGL room industrial computer employs Siemens WINCC SYSTEM V7.0, RC 128
- The PLC Hardware has been programmed using Siemens STEP7 Professional 2010

2.4 Computer Functions

The tower computer will be capable of independently carrying out the tower control and monitoring processes. The tower computer will receive commands from the Touch screen control station and transfer lighting control commands to the AGL room equipment for its execution.

The tower computer will receive the airfield lighting status information from the AGL room industrial computer and transfer the status to the Touch screen display. In addition, the AGL room computer will be capable of independently carrying out all of the PLC interface control processes, decode all commands received from the Tower computer and transfer them to the corresponding PLC unit for execution, receive information from the PLC regarding the status of the Constant Current Regulators (CCRs).

2.5 Data Processing Unit

The Data Processing Unit at the AGL room has provisions to control the Constant Current Regulators, Circuit Selector Switch CSS and Floodlights.

The Data Processing Unit consists of one Industrial PC, one Touch screen monitor, PLC equipment, I/O modules and terminal blocks.

2.6 Circuits

The following Constant Current Regulators are controlled and monitored by the new Remote Control System. The control and monitoring of each CCR is achieved using multi-wire communication.

1. E1 Runway Circuit 1
2. E2 Runway Circuit 2
3. E3 Runway Circuit 3
4. P1 PAPI 10 28-1 (Circuit Selector Switch)
5. P2 PAPI 28-2
6. SPARE 1
7. SPARE 2
8. SPARE 3
9. SPARE 4
10. SPARE 5

The following Miscellaneous I/O are controlled by the new Remote Control System

1. APRON 1
2. APRON 2
3. APRON 3
4. APRON 4
5. APRON 5
6. APRON 6
7. APRON 7
8. APRON 8

3. Touchscreen Overview

3.1 Background

Airfield lighting control for many years was accomplished at lighting control panels (referred to as an L-821) using toggle switches, rotary knobs, and pushbutton switches. Decades ago, with the development and accessibility of new technologies, computerized Remote Control Systems appeared and have made its way in to the cabs of Air Traffic Control Towers around the world.

Since 1990 ADB Airfield Solutions based in Columbus Ohio, has designed, built and implemented 200 Remote Control Systems, including the busiest Airports and Air Force Bases around the world. Among others, ADB proudly has provided equipment to Atlanta Hartsfield, Chicago O'Hare, Luis Munoz Marin and Andrews Air Force Base in Washington DC.

Remote control systems with Touchscreen technology are a very flexible tool for air traffic controllers and have reduced the amount of time they spend controlling airfield lighting.

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

3.1.1 Installation

For Bonaire International Airport ADB has selected a touchscreen model 2242L from ELO (Tyco Electronics).

The Elo Touch System 2242L is a 22-inch open-frame touch monitor with ELO's Intelli Touch Plus touch technology.

For years ADB has implemented Remote Control Systems using ELO Touch Screens which have proved to be reliable, efficient and cost effective.

The remote control system for Bonaire International Airport includes two workstations; the Tower and the AGL Room.

The touchscreen at the Tower cab can be mounted using either the provided mounting brackets or the provided VESA mount. The Touch screen at the AGL Room is mounted inside the computer enclosure on a provided VESA mount.

3.1.2 Recommendations using the touch screen monitors



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

3.2 Touchscreen Buttons

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

Touch buttons have two states, released and pressed. **Figure 3-1** shows two touch buttons, the left button is shown in the released state (also referred to as “up”), and the right button is shown in the pressed state (also referred to as “down”). Note the difference in the shading of the borders and the color of the buttons. When a touchscreen button is selected or pressed its color will change from Gray to light Blue as shown in **Figure 3-1**.



Figure 3-1 Touch Buttons: Left released, right pressed

3.3 User Input

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

According to its manufacturer, Intelli Touch surface wave is the optical standard of touch. Its pure glass construction provides superior optical performance and makes it the most scratch-resistant technology available. It's nearly impossible to physically "wear out" this touchscreen.

Care should be taken that such objects will not scratch or otherwise damage the touchscreen surface. Examples of devices which will activate a touch input are the human finger, and a pencil eraser. Devices such as pens will not be seen as an active touch input to the touchscreen.



The finger should be used at all times for touchscreen input; any other foreign objects can scratch and damage the touchscreen.

3.4 Touchscreen Pages

Refer to Error! Reference source not found. and **Figure 3-3**

The Touchscreen buttons and graphics are separated onto different “**pages**”. The term “pages” denotes the different graphics and button screens that a single touchscreen monitor can display.

PRESET PAGE: this page allows the user to automatically activate circuits based on pre-established configurations. First the user will select the runway, then day or night and finally current airport visibility conditions.

The remote control system has been programmed to react to the previous inputs and will activate the required circuits accordingly.

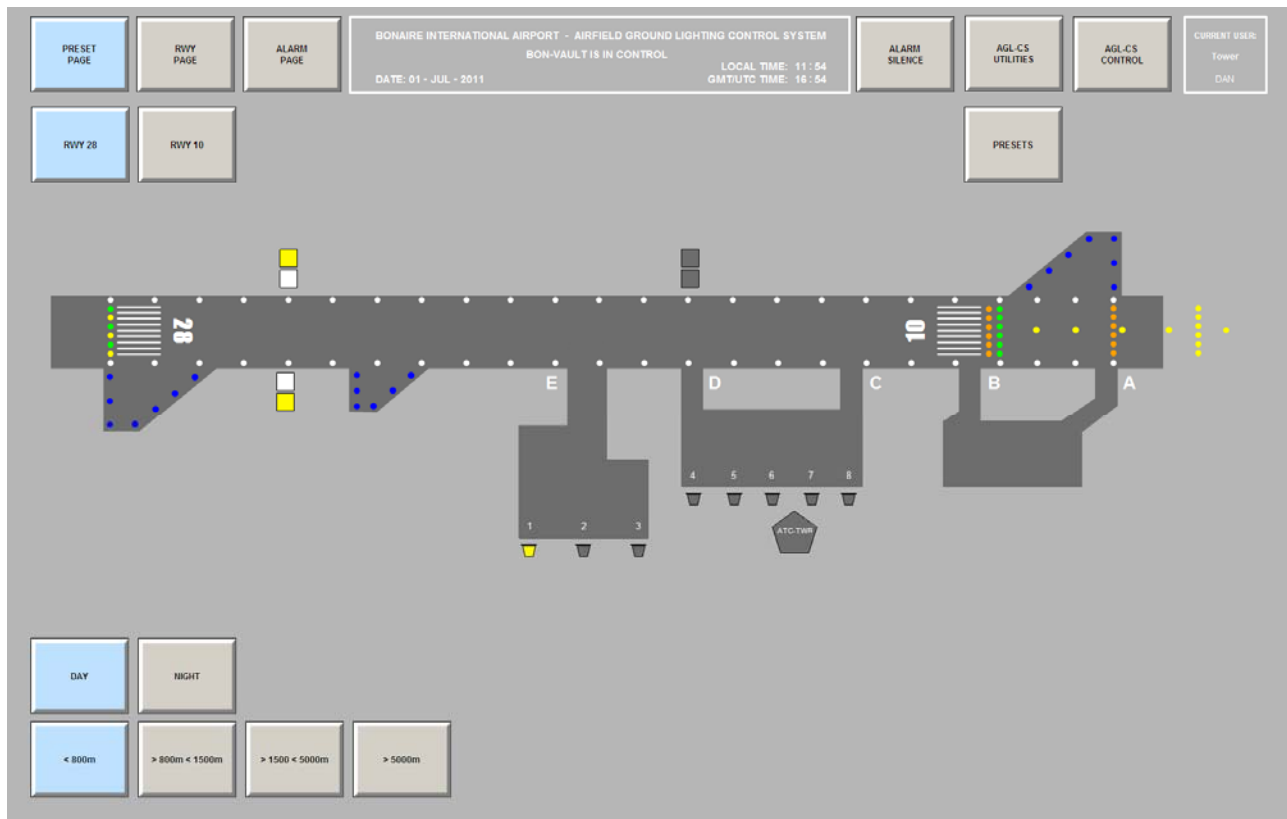


Figure 3-2: Preset Page

RWY PAGE: this page allows the user to individually control each one of the circuits that are part of the runway and PAPI lighting infrastructure. In this page the user will be able to modify intensities per circuit and turn on or off the circuits according to their needs. The commands entered through this page will override the settings activated from the preset page.

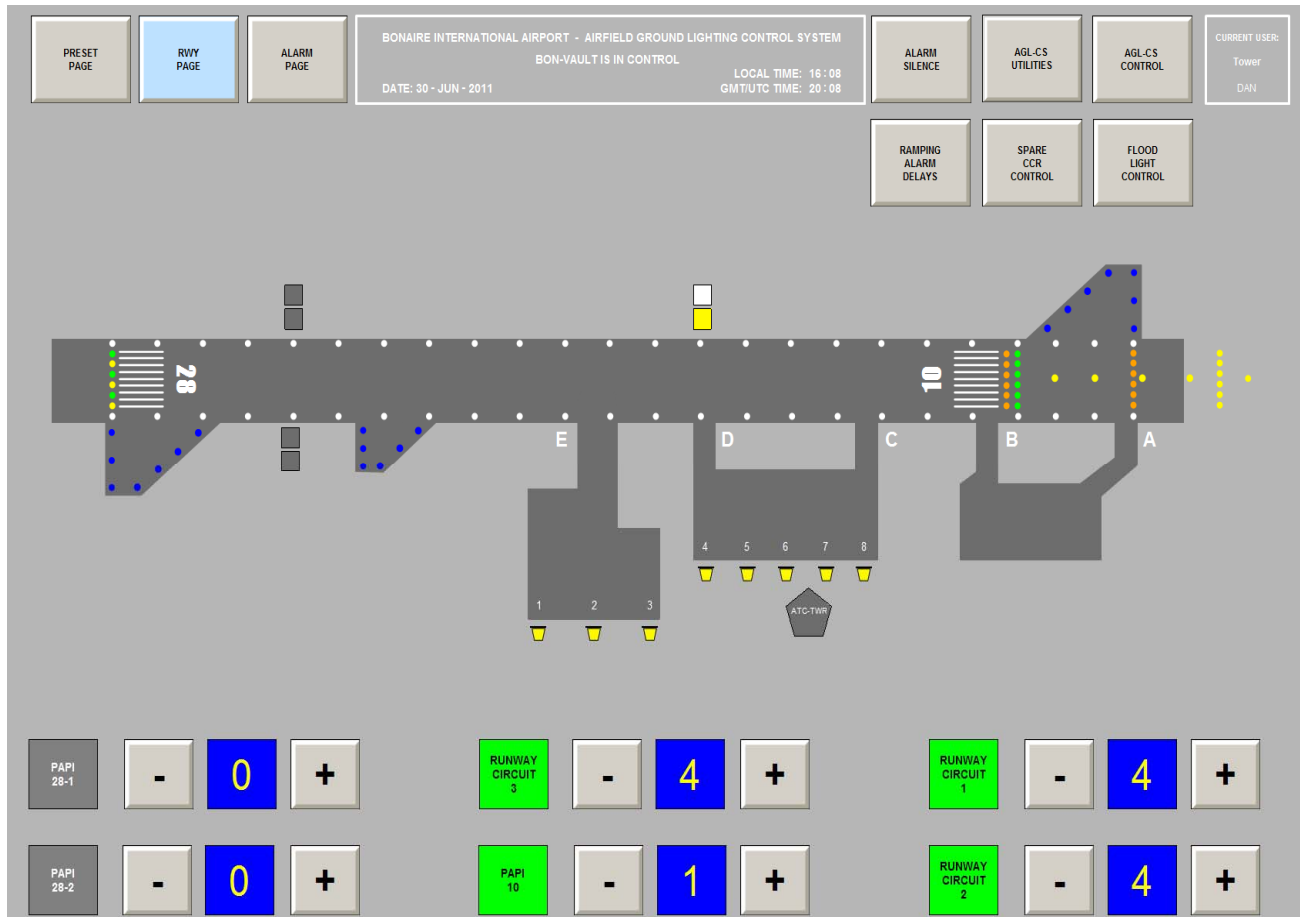


Figure 3-3: Runway Page

3.5 Circuit Buttons

There are different types of touch buttons that have different functions depending on the airfield lighting control application. One type is the **Circuit Button**. This button is directly associated with an individual airfield lighting group. Circuit selection buttons are used to choose the desired "lighting circuit". To access a Circuit button the user will select the RWY PAGE. An example is shown in **Figure 3-44**.

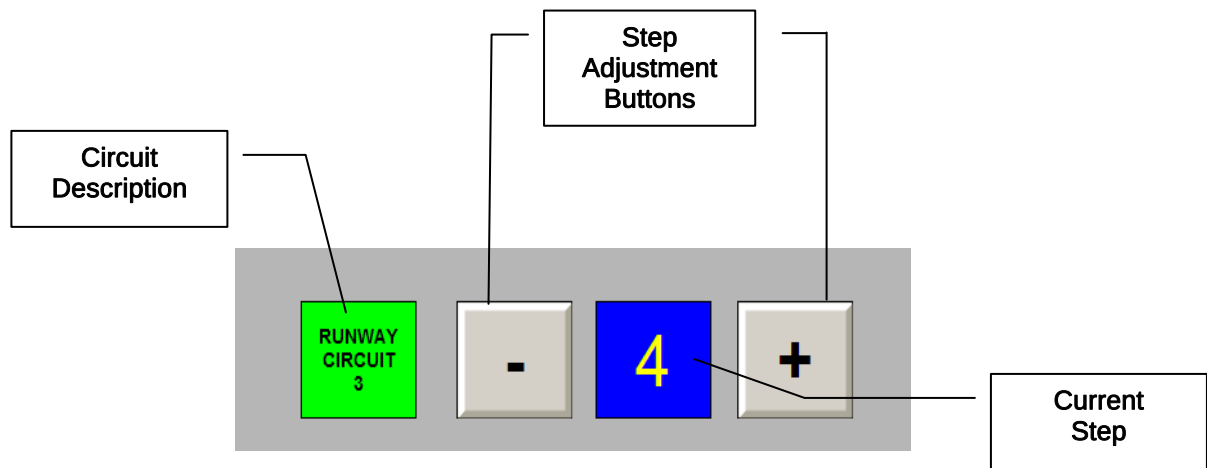


Figure 3-4: Circuit Buttons

Circuit Description:	Indicates which circuit (Constant Current Regulator) is controlled with the Circuit Buttons
Step Adjustment Buttons:	These buttons allow the user to increase or decrease the current intensity by one unit at a time
Current Step:	The Current step of the circuit is displayed to the right of the circuit description, and in-between the step adjustment buttons.
Button and graphics color:	Once the step is confirmed, the circuit description indicator changes color and the associated airfield graphics will also change color indicating that the command has been recognized.
Alarm indication:	If the circuit is in alarm, the circuit description indicator will change to red and the associated airfield graphics will also change to red. The Alarm Silence button will change to red and the audible alarm will go off in the tower cab. The user at the tower will be able to silence the audible alarm by pressing the Silence Alarm button.

3.6 Confirmation Buttons

The confirmation buttons appear after selecting the desired brightness step intensity. These buttons offer the operator one final opportunity to accept or deny the touch inputs. These buttons are two (2) momentary touch buttons labeled “OK,” and “CANCEL” as seen in **Figure 3-5**.

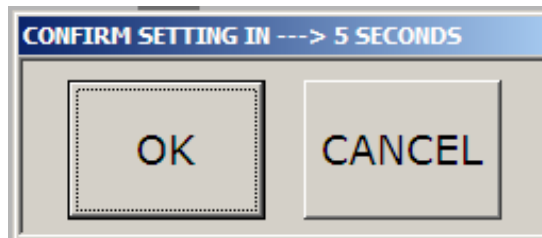


Figure 3-5: Confirmation Buttons

To accept the inputs, press the “OK” button to send the pending command message to the system and make the airfield lighting change.

To deny the inputs, press the “CANCEL” button. The touch inputs will be ignored and cleared from the touchscreen. In addition if no instruction is confirmed after 5 seconds the confirmation window disappears and no change is executed to the airfield lighting.

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

3.7 Airport Operation Status Field

Located centered on the main page is the airport operation status field. This field displays, local date information and local and GMT/UTC time. In addition, this field indicates the node that is currently controlling the remote control system. **Figure 3-6.**



Figure 3-6: Airport Operation Status Field

The airport operation status field includes the following information:

- **Name of Computer and Mode of operation:** There are two modes of operation for each computer station.
- **View Only:** This indicates that the current touchscreen is operating as a view only station. This means that the user can change between the different pages, but the touchscreen will not allow any touch inputs. The touchscreen will respond each time the screen is touched, but will not register the touch as a valid request.
- **Control Mode:** This indicates that the touchscreen has full control capabilities. Any and all valid touches and airfield lighting requests will be executed.
- **Date and Time:** The current system time and date will be displayed at all times.

3.8 Alarm Display and Alarm Silence Buttons

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

Alarm Silence Button is a button that flashes red when a new alarm is present in the REMOTE CONTROL. It is pressed to silence the audible alarm for the new alarm condition. Once pressed, the button stays solid red until the alarm is cleared. An indication is then logged in to the database and is viewable in the events log.

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

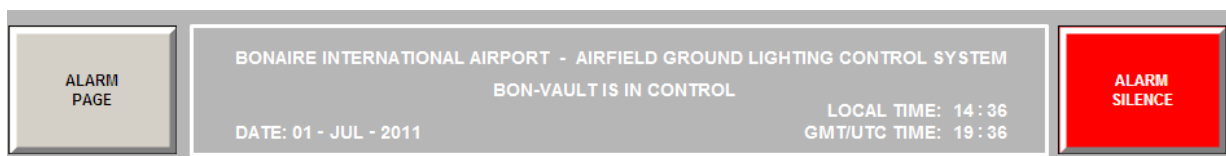


Figure 3-7: View Alarm and Alarm Silence

4. Control Pages

4.1 Overview

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

Each touchscreen control station is divided into several touchscreen pages. There are three different pages to the Remote Control System for Bonaire International Airport. PRESET PAGE, RYW PAGE and ALARM PAGE.

4.2 Preset Page

Refer to **Figure 4-5**. The preset page buttons are used to automatically activate circuits. The user can adjust the intensity of the complete airfield lighting based on current operations, time and visibility conditions.

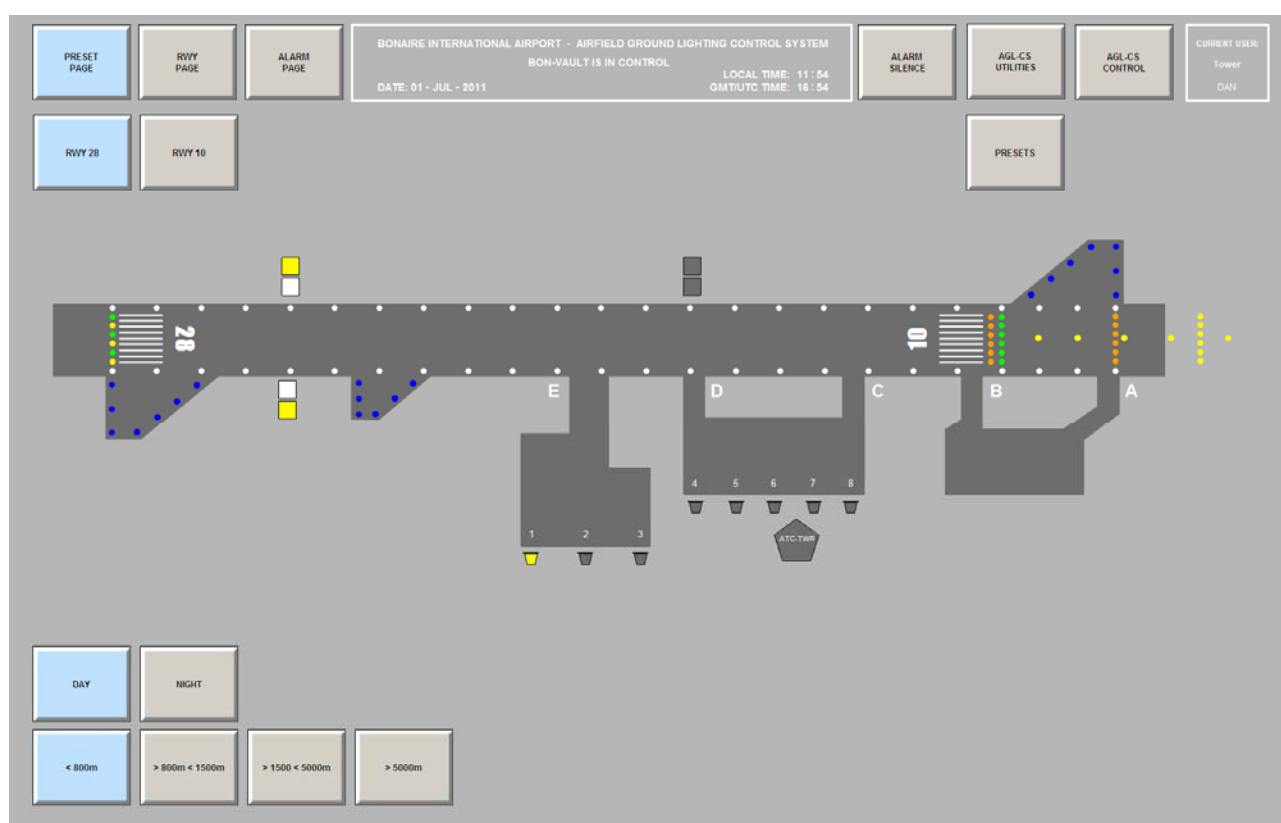


Figure 4-1: Circuit Buttons

4.3 Operating the Remote Control System from the Preset Page

To operate the Remote Control System from the Preset Page, the user must utilize the following sequence of commands:

1. Select the Preset Page Button. The system changes to Preset Page as indicated in **Figure 4-1**.
2. Select and confirm Runway Operations. The user may select button RWY 28 or RWY 10. **Figure 4-2** indicates RWY 28 has been selected.

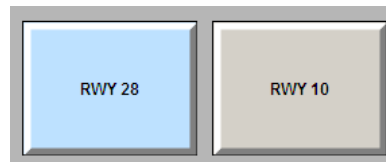


Figure 4-2: Runway Operations

3. Select and confirm Day or Night. The user may select button Day or Night depending on time of instruction. **Figure 4-3** indicates RWY 28 has been selected. During Night Operations the Remote control background will change to a dark gray color.

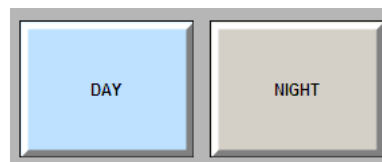


Figure 4-3: Day/Night Buttons

4. Select and confirm Visibility. The user will select the required visibility button based on current weather conditions. **Figure 4-4** indicates a current visibility of less than 800 meters has been selected.

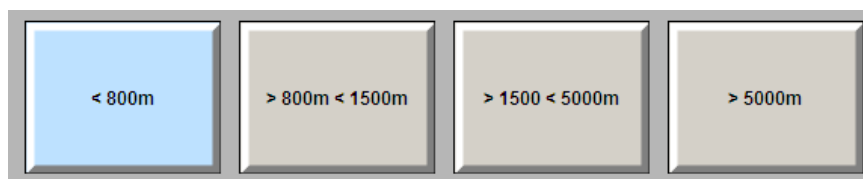


Figure 4-4: Runway Operations

4.4 Circuit Buttons

Refer to **Figure 4-5**. The circuit buttons are used to manually ramp circuits. The user can selectively adjust the lighting of individual circuits. The circuit buttons are located in the RWY Page.

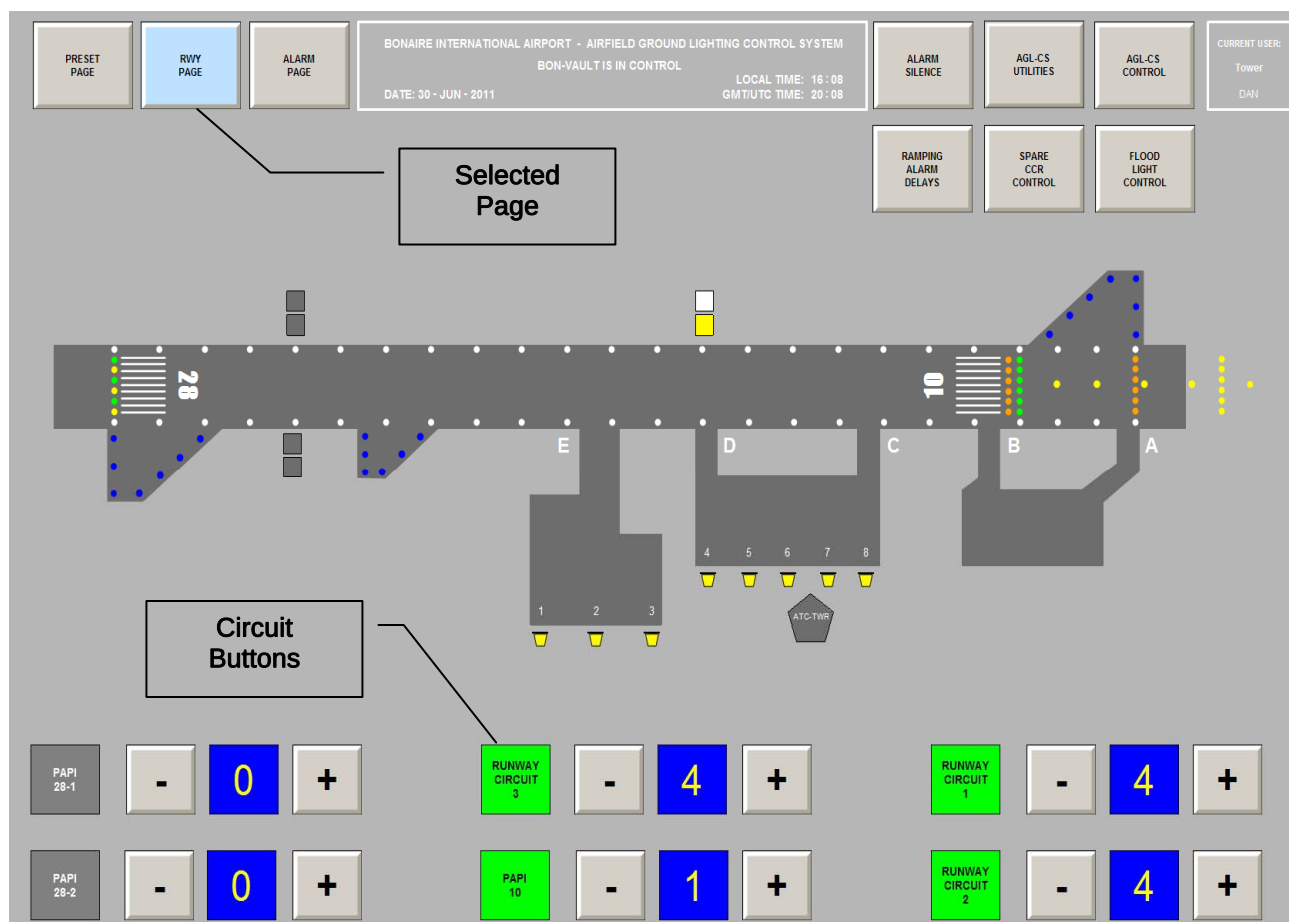


Figure 4-5: Circuit Buttons

4.4.1 Changing Intensities of Circuits Up or Down 1 Step intervals

To quickly adjust the lighting intensity of a specific circuit refer to **Figure 4-6**:

1. Press the PLUS (+) or MINUS (-) button located to the right of the Circuit Description Field. As each button is pushed an “OK” “CANCEL” (Confirmation Window Figure 2-5) window will appear to assure that the desired action is to be executed. If the “OK” button is pressed the circuit will adjust step according to the user input. If the “CANCEL” button is pressed, the command is ignored and the button will reset. The circuit will stay at last commanded state.

After either the “CONFIRM” or “REJECT” button is pressed, the pressed circuit button will automatically return to the released state.

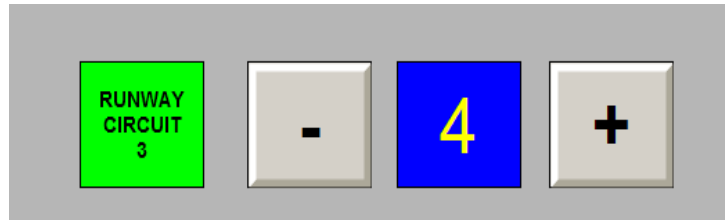


Figure 4-6: Circuit Buttons

4.4.2 Changing Intensities of Circuits Multiple Steps

To change the lighting intensity of a specific circuit:

1. Touch the Commanded Step indicator the color of the indicator will change from blue to yellow and intensity number will change from yellow to blue. This action will also bring up the Pop-up Step Selection menu **Figure 4-7**. To adjust lighting, press the button with the desired step. If the “OK” button is pressed the circuit will adjust step according to the user input. If the “CANCEL” button is pressed, the command is ignored and the button will reset. The circuit will stay at last commanded state. If no instruction is confirmed after five seconds the system will also stay at last commanded state.

After either the “CONFIRM” or “REJECT” button is pressed, the pressed circuit button will automatically return to the released state, and the Pop-up Step panel will be removed from display.

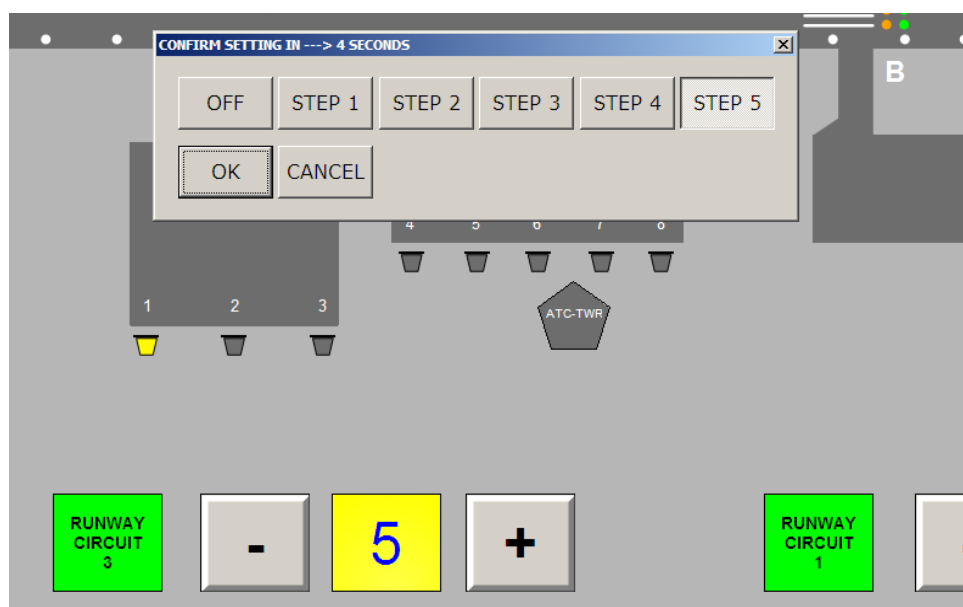


Figure 4-7: Step Selection Menu

4.5 Spare CCR Control

ADB has incorporated a Spare CCR Control window. To access the Spare CCR Control window the user will press the “SPARE CCR CONTROL” button which is located in the RWY PAGE as shown in **Figure 4-8**. After pressing the button a Pop-Up Window will appear and showing the Circuit Buttons for CCR SPARE1-5. The user will be able to control the SPARE CCRs as described in **Section 3.4**. To close the “SPARE CCR CONTROL” window the user will press the “SPARE CCR CONTROL” button.

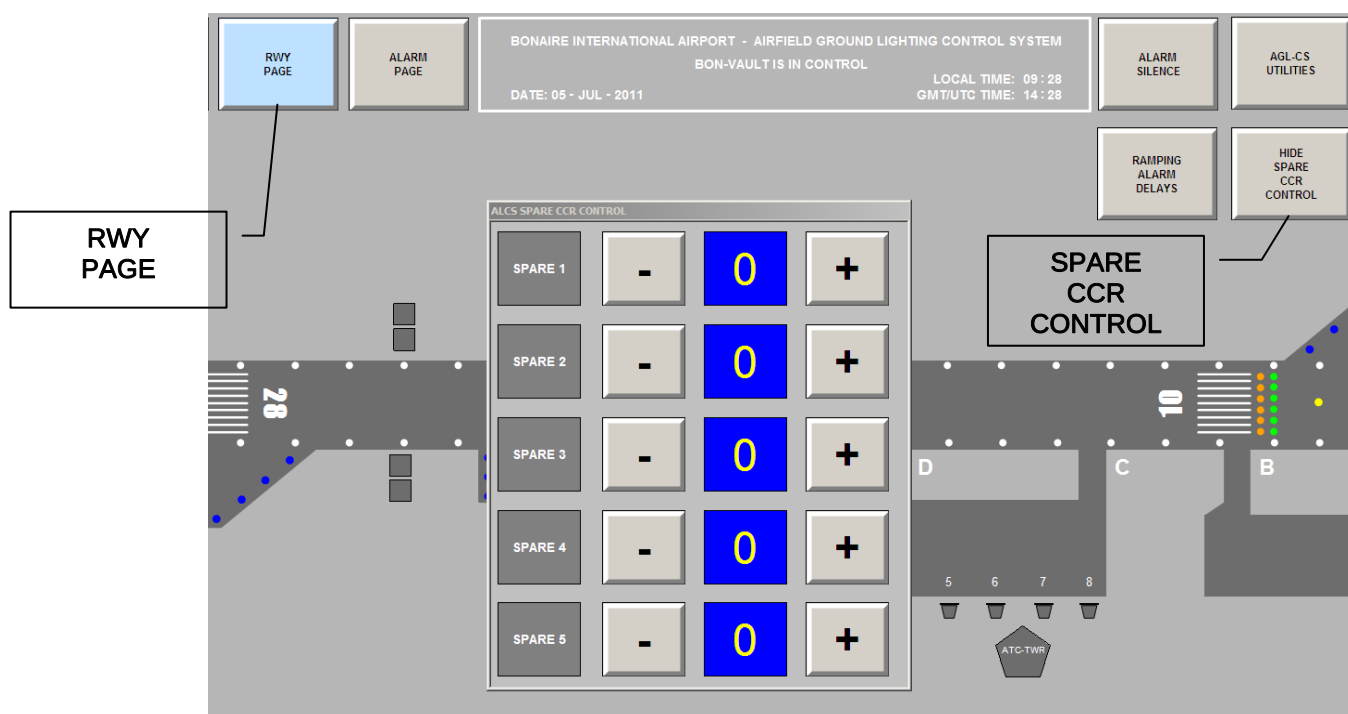


Figure 4-8: Spare CCR Control Window

4.6 Flood Light Control

ADB has included a Flood Light Control window. To access the Flood Light Control window the user will press the “FLOOD LIGHT CONTROL” button which is located in the RWY PAGE as shown in **Figure 4-9**. After pressing the button a Pop-Up Window will appear showing the Circuit Buttons to control a total of 8 floodlights. To close the “FLOOD LIGHT CONTROL” window the user will press the “HIDE FLOOD LIGHT CONTROL” button.

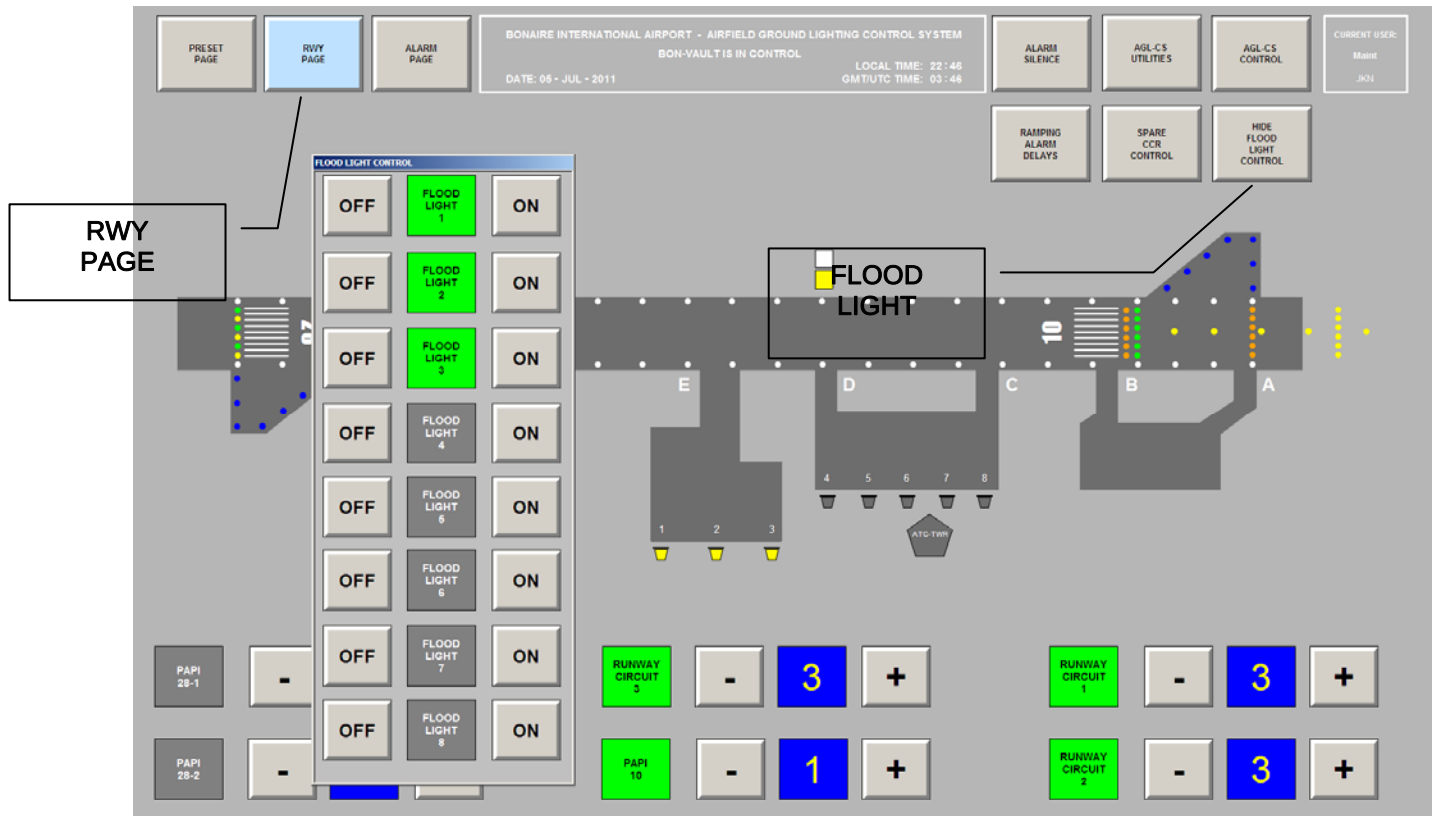


Figure 4-9: Floodlight Control Window

To adjust turn ON/OFF the floodlights the user must follow the next procedure:

1. Open the pop up window by pressing the “FLOODLIGHT CONTROL” button
2. Press select the desired floodlight number ON/OFF button accordingly
3. To close the pop up window press “HIDE FLOODLIGHT CONTROL” button

5. Utility Page

5.1 Utility Page

Refer to **Figure 5-1**. The utility functions are used for touchscreen maintenance and other administrative purposes. To get to the utility programs, select the “AGL-CS Utilities” button from any page.

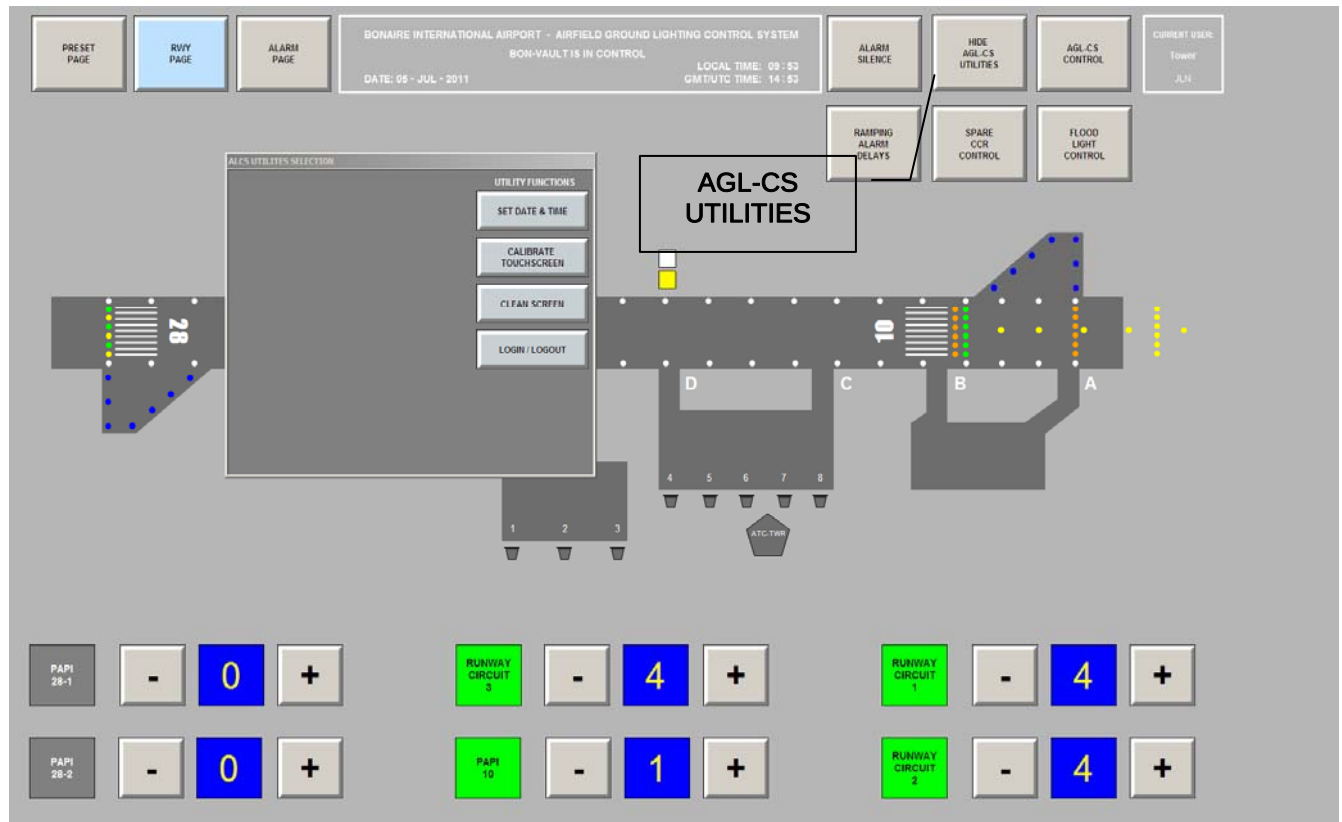


Figure 5-1. Utility Page

5.2 SET DAY & TIME Button

When the “SET DAY & TIME” button is pressed from the Utilities window, a pop up screen will appear as shown in **Figure 5-2**.

To adjust Date and Time the user must follow the next procedure:

4. Select “SET DATE & TIME” button from the utility functions list.
5. Type the correct local HOUR and hit enter in the keyboard
6. Type the correct local MINUTE and hit enter in the keyboard
7. Type the correct local MONTH and hit enter in the keyboard
8. Type the correct local DAY and hit enter in the keyboard
9. After successfully adjusted day and time the pop up utilities window can be closed by pressing the “HIDE AGL-CS UTILITIES” Button.

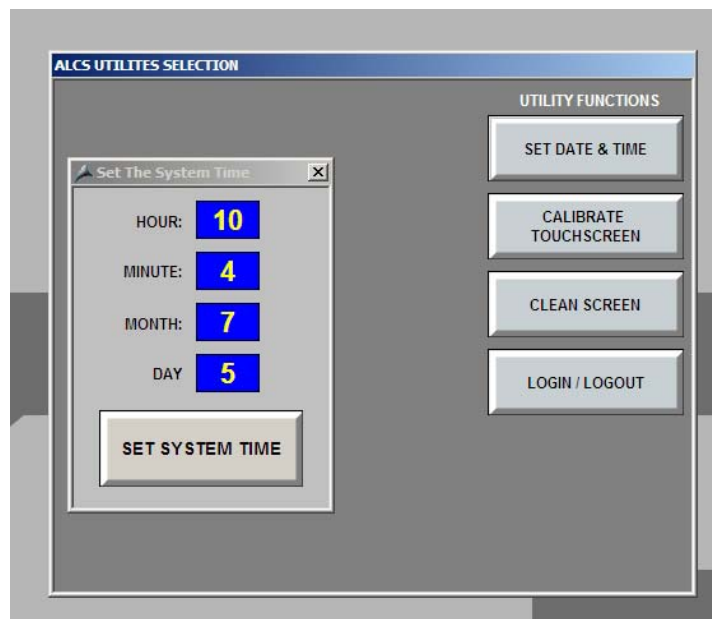


Figure 5-2. Set Day and Time

5.3 Calibrate Touchscreen Button

Occasionally the touchscreen may require calibration. If the touchscreen does not seem to be responding normally or your button presses are not accurately selecting certain buttons this is a good indication that someone may have moved the vertical or horizontal controls.

To calibrate the touch screen the user must follow the next procedure

1. Press the "CALIBRATE TOUCHSCREEN" button located at the Utility Functions part of the "AGL-CS UTILITIES" Button.

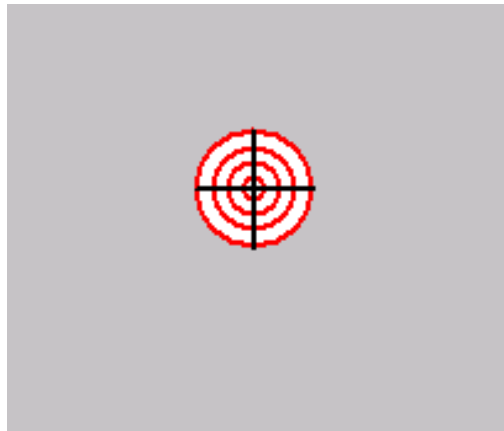


Figure 5-3. Calibrate Touchscreen



Important: The next few steps are very important and must be performed exactly as described or the touchscreen calibration can be corrupted at which point a keyboard will have to be connected to the touchscreen computer in order to "Cancel" the calibration. During the calibration process, DO NOT hold your touches to the screen. In other words, simply tap the screen quickly with your finger.

2. A target point (bulls-eye) will appear in the lower left-hand corner of the screen as seen in the figure to follow.
3. Position yourself in front of the touchscreen from a position of normal use and touch the first target point.
4. Stay in the same position of normal use and touch the subsequent target points.
5. At this point, touch a few points on the screen and verify that the cursor moves to each touch point and follows your finger closely. If it does, press "DONE" and the calibration is complete
6. If the cursor does not follow your finger, select the "CALIBRATE" button and the target areas will be displayed again and allow you to re-calibrate.
7. After successfully calibrated the touch screen the pop up utilities window can be closed by pressing the "HIDE AGL-CS UTILITIES" Button.

5.4 Clean Screen Button

The user may want to occasionally remove dust and fingerprints from the touch screen surface. In order to do this, the user can select the “CLEAN SCREEN” Button located in the utility functions pop up window.

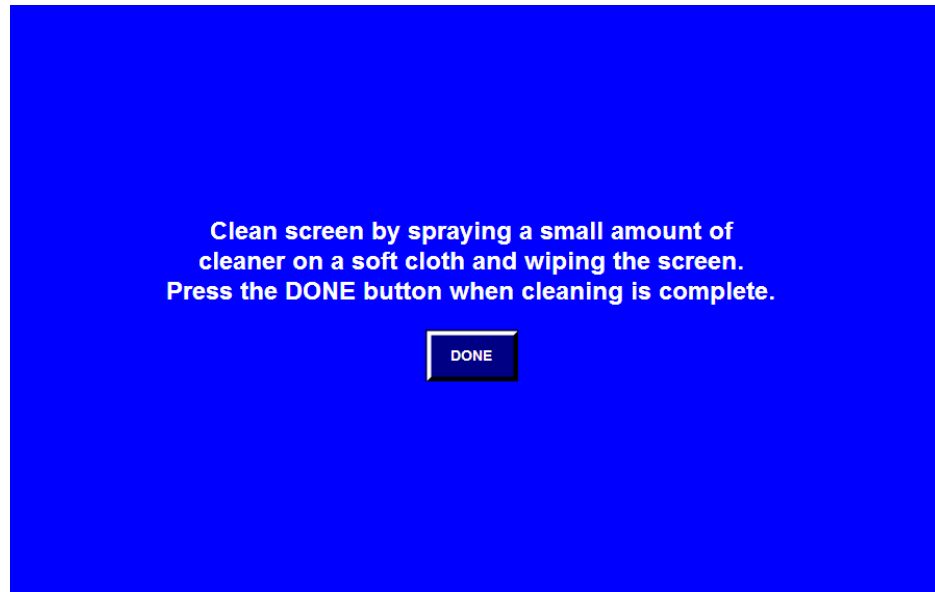


Figure 5-4: Cleaning the Screen

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

5.5 LOGIN / LOGOUT Button

Three different users (Tower, Maintenance and Administrator) will be allowed in to the Remote Control System as shown in **Figure 5-5**.

In order to Login the user must follow the next procedure

1. Press the “LOGIN / LOGOUT” button located at the Utility Functions part of the “AGL-CS UTILITIES” Button.
2. Type in the OPERATOR NAME and hit enter
3. Type in the USER LEVEL PASSWORD and hit enter
4. Select the corresponding Login Button according to the level of access permitted by the entered password
5. To Logout the system press the “LOGOUT” button

ADB has configured an automated logout structure based on user. The ATCT user will be automatically logged out after 8 hours. The MAINT user will be automatically logged out after one hour. The ADMIN user will be automatically logged out after one hour.

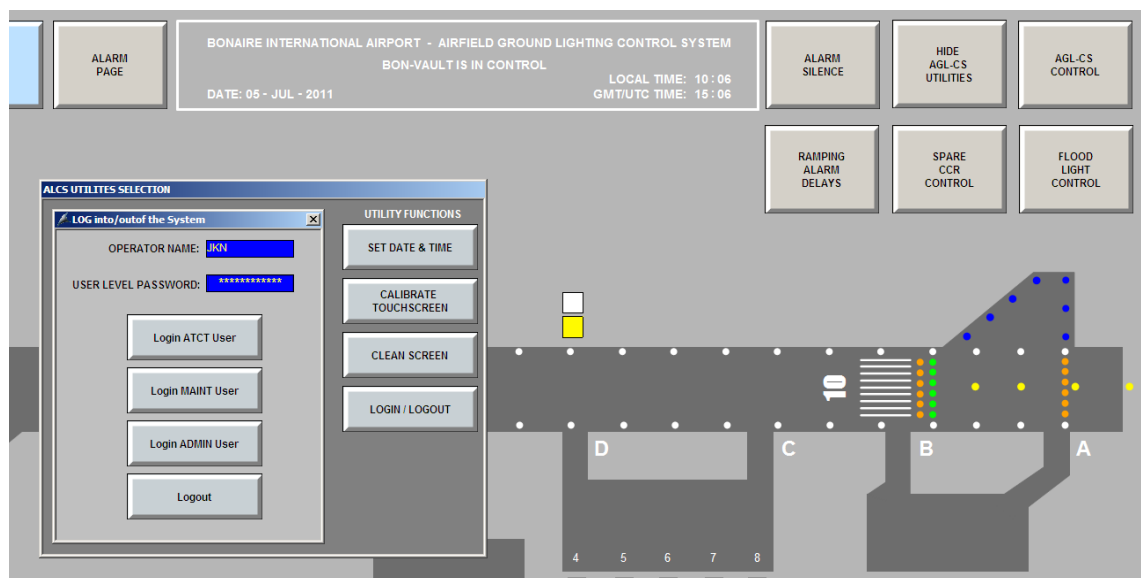


Figure 5-5: Login Screen

5.6 Control Buttons

The “Control Buttons” will authorize other workstations control of the CCR’s in the AGL room.

To change control of the airfield lighting to another station the user must follow the next procedure

1. Press the “AGL-CS CONTROL” button as shown in **Error! Reference source not found.**
2. The “LIGHTING CONTROL TRANSFER” pop up window will appear
3. Select the desired node
4. Confirm the selection on the confirmation pop up
5. The controlling node will change to the new node and the node will be shown in yellow the information will be also updated on the status field.

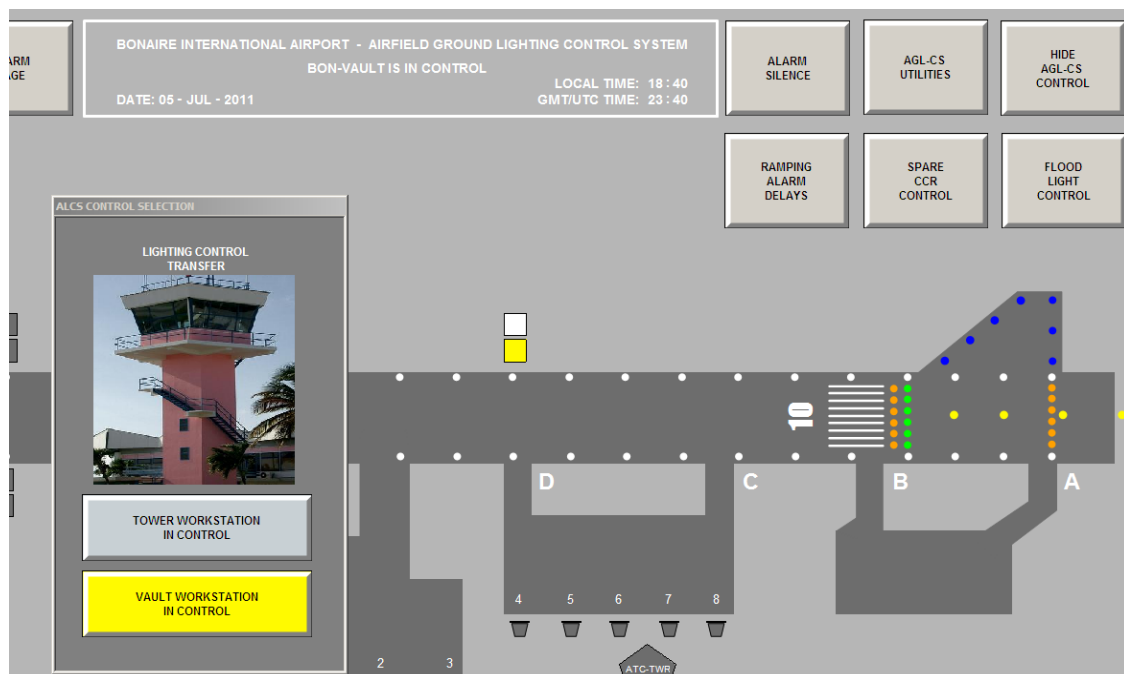


Figure 5-6: Control Transfer Buttons

5.6.1 How does Remote Control Work?

Once a remote subsystem has taken airfield lighting control, the commands from that location are sent to the AGL room similar to how the ATCT tower control the lights.

5.6.2 How do you give Remote Control back to the Tower?

Personnel can give control back to the tower by simply touching the “TOWER WORKSTATION IN CONTROL” button. This procedure will put that subsystem back in “VIEW ONLY” mode and will give control back to the ATC tower.

5.7 Alarm Overview

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

PRESET PAGE	RWY PAGE	ALARM PAGE	BONAIRE INTERNATIONAL AIRPORT - AIRFIELD GROUND LIGHTING CONTROL SYSTEM BON-VAULT IS IN CONTROL			ALARM SILENCE	AGL-CS UTILITIES	AGL-CS CONTROL	CURRENT USER: Tower J01
			DATE: 05 - JUL - 2011			LOCAL TIME: 19 : 26 GMT/UTC TIME: 00 : 26			
Date	Time	LOCATION	AFFECTS	CONDITION	PARAMETERS	STATUS	CONTROL USER		
06/30/11	12:55:37 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	DAVE		
06/30/11	12:55:38 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	DAVE		
06/30/11	12:55:38 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	DAVE		
06/30/11	12:55:40 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	DAVE		
06/30/11	12:55:42 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	DAVE		
06/30/11	12:56:47 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	DEB		
06/30/11	12:56:49 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	DEB		
06/30/11	12:56:53 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	DEB		
06/30/11	12:56:55 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	DEB		
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE			
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE			
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE			
06/30/11	12:58:14 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE			
06/30/11	12:58:14 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 3	ACTIVE			
06/30/11	12:59:27 PM	VAULT	CCR PAPI 10 28	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB		
06/30/11	12:59:27 PM	VAULT	CSS 28 LOOP 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB		
06/30/11	12:59:27 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB		
06/30/11	12:59:28 PM	VAULT	PAPI 28 - 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB		
06/30/11	12:59:29 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB		
06/30/11	12:59:31 PM	VAULT	RWY CIRCUIT 3	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB		
06/30/11	12:59:31 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB		
06/30/11	12:59:35 PM	VAULT	RWY CIRCUIT 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB		
06/30/11	12:59:35 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB		
06/30/11	12:59:37 PM	VAULT	RWY CIRCUIT 1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	JLB		
06/30/11	12:59:37 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	CLEARED	JLB		
06/30/11	12:59:38 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	ACTIVE	JLB		
06/30/11	01:00:04 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	JLB		
06/30/11	01:00:07 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	JLB		
06/30/11	01:00:08 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	JLB		
06/30/11	01:00:21 PM	VAULT	FLOODLIGHT #1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	JLB		
06/30/11	01:07:52 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	CLEARED	FFG		
06/30/11	01:07:56 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	CLEARED	FFG		
06/30/11	01:07:57 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	FFG		
06/30/11	01:08:00 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	FFG		
07/01/11	11:54:18 AM	VAULT	RWY CIRCUIT 1	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN		
07/01/11	11:54:18 AM	VAULT	RWY CIRCUIT 2	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN		
07/01/11	11:54:18 AM	VAULT	CCR PAPI 10 28	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN		
07/01/11	11:54:18 AM	VAULT	CSS 10 LOOP 1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	DAN		
07/01/11	11:54:18 AM	VAULT	CSS 28 LOOP 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	DAN		
07/01/11	11:54:18 AM	VAULT	PAPI 28 - 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	DAN		
07/01/11	02:36:04 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	pat		
07/01/11	02:47:11 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 5	CLEARED	pat		
07/01/11	03:31:32 PM	VAULT	RWY CIRCUIT 3	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLN		
07/01/11	03:31:44 PM	VAULT	FLOODLIGHT #1	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLN		
07/05/11	09:28:29 AM	VAULT	SPARE #1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	JLN		

Figure 5-7: Alarm Indication

The alarm log will display information highlighted in Red and information that is not highlighted and is shown in gray. Highlighted information indicates alarms the rest of the information are normal events that will be registered but are not an alarm.

Date	Time	LOCATION	AFFECTS	CONDITION	PARAMETERS	STATUS	CONTROL USER
06/30/11	12:55:37 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	DAVE
06/30/11	12:55:38 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	DAVE
06/30/11	12:55:38 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	DAVE
06/30/11	12:55:40 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	DAVE
06/30/11	12:55:42 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	DAVE
06/30/11	12:56:47 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	DEB
06/30/11	12:56:49 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	DEB
06/30/11	12:56:53 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	DEB
06/30/11	12:56:55 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	DEB
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	
06/30/11	12:58:14 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	
06/30/11	12:58:14 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	
06/30/11	12:58:14 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 3	ACTIVE	
06/30/11	12:59:27 PM	VAULT	CCR PAPI 10 28	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB
06/30/11	12:59:27 PM	VAULT	CSS 28 LOOP 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB
06/30/11	12:59:27 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB
06/30/11	12:59:29 PM	VAULT	PAPI 28 - 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB
06/30/11	12:59:29 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB
06/30/11	12:59:31 PM	VAULT	RWY CIRCUIT 3	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB
06/30/11	12:59:31 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB
06/30/11	12:59:35 PM	VAULT	RWY CIRCUIT 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLB
06/30/11	12:59:35 PM	VAULT	RWY CIRCUIT 2	FAILED TO RESPOND	FAILED STEP: 0	CLEARED	JLB
06/30/11	12:59:37 PM	VAULT	RWY CIRCUIT 1	NEW BRIGHTNESS STEP	NEW STEP: 3	VAULT	JLB
06/30/11	12:59:37 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	CLEARED	JLB
06/30/11	12:59:38 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	ACTIVE	JLB
06/30/11	01:00:04 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 4	ACTIVE	JLB
06/30/11	01:00:07 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	JLB
06/30/11	01:00:08 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 2	ACTIVE	JLB
06/30/11	01:00:21 PM	VAULT	FLOODLIGHT #1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	JLB
06/30/11	01:07:52 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 3	CLEARED	EFF
06/30/11	01:07:56 PM	VAULT	RWY CIRCUIT 3	FAILED TO RESPOND	FAILED STEP: 5	CLEARED	EFF
06/30/11	01:07:57 PM	VAULT	CCR PAPI 10 28	FAILED TO RESPOND	FAILED STEP: 4	CLEARED	EFF
06/30/11	01:08:00 PM	VAULT	PAPI 28 - 2	FAILED TO RESPOND	FAILED STEP: 2	CLEARED	EFF
07/01/11	11:54:18 AM	VAULT	RWY CIRCUIT 1	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN
07/01/11	11:54:18 AM	VAULT	RWY CIRCUIT 2	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN
07/01/11	11:54:18 AM	VAULT	CCR PAPI 10 28	NEW BRIGHTNESS STEP	NEW STEP: 5	VAULT	DAN
07/01/11	11:54:18 AM	VAULT	CSS 10 LOOP 1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	DAN
07/01/11	11:54:18 AM	VAULT	CSS 28 LOOP 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	DAN
07/01/11	11:54:18 AM	VAULT	PAPI 28 - 2	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	DAN
07/01/11	02:36:04 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 5	ACTIVE	pat
07/01/11	02:47:11 PM	VAULT	RWY CIRCUIT 1	FAILED TO RESPOND	FAILED STEP: 5	CLEARED	pat
07/01/11	03:31:32 PM	VAULT	RWY CIRCUIT 3	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLN
07/01/11	03:31:44 PM	VAULT	FLOODLIGHT #1	NEW BRIGHTNESS STEP	NEW STEP: 0	VAULT	JLN
07/05/11	09:28:29 AM	VAULT	SPARE #1	NEW BRIGHTNESS STEP	NEW STEP: 1	VAULT	JLN

7/5/2011
19:26 (LOC)
List: 0
Window: 61

SHOW ALARMS

SHOW EVENTS

GOTO FIRST

GOTO NEXT

FILTER EVENTS

GOTO LAST

GOTO PREVIOUS

SORT EVENTS

PRINT

Figure 5-8: Alarm Display Page

This listing is accessible at any REMOTE CONTROL subsystem location, and airport maintenance personnel will be familiar with the meaning of each alarm text.

5.8 Alarm Display Buttons

The buttons located at the base of the of the Alarm Display page are allow to organize and search for alarms or events.

- **SHOW ALARMS:** shows current alarms
- **SHOW EVENTS:** shows events and alarm history
- **GO TO FIRST:** shows the alarm display info first page
- **GO TO NEXT:** shows the alarm display info following page
- **FILTER EVENTS:** allows the user to filter events. Specify Selection pop up window will appear and the user will apply filtering inputs
- **GO TO LAST:** shows the alarm display info last page
- **GO TO PREVIOUS:** shows the alarm display info previous page
- **SORT EVENTS:** allows the user to sort events. Sort pop up window will appear and the user will apply filtering inputs
- **PRINT:** prints the alarm event report

5.9 Audible Alarm and Alarm Silence

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

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

5.10 Preset Tables

The system has been pre programmed with recommended preset settings. However the system is configurable and the preset settings can be adjusted according the airport needs.

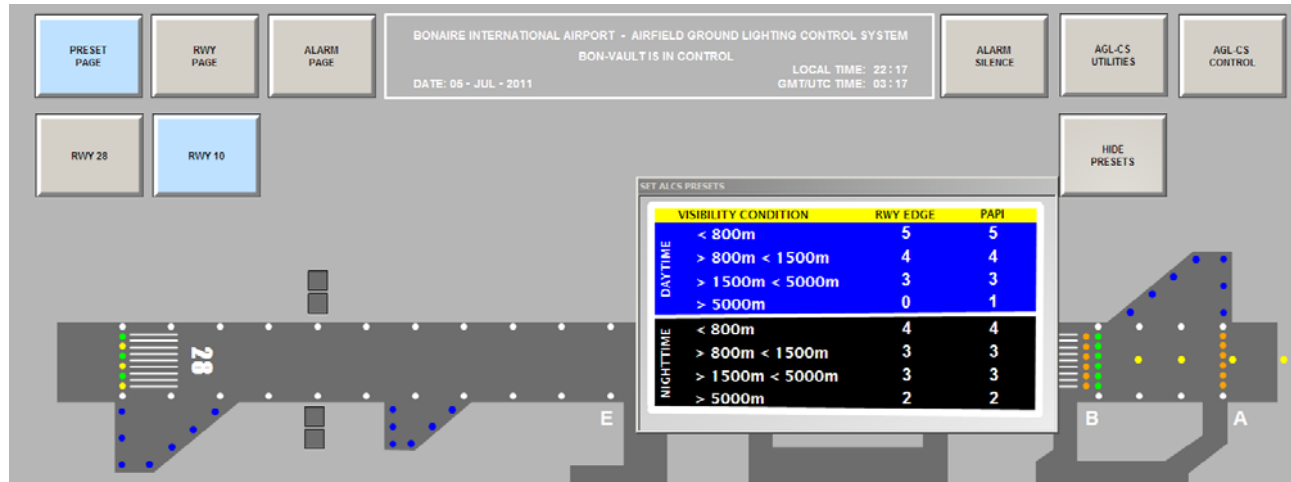


Figure 5-9: System Presets

The system presets pop up window will appear after pressing the SHOW/HIDE PRESETS Button located in the PRESET PAGE.

Only the system administrator will be allowed to change preset settings. To modify the system preset settings the system administrator must follow the next procedure

1. Login as a system administrator
2. Press the presets button located in the PRESET PAGE
3. The SET PRESETS pop up window will appear
4. Type in and enter the desired changes to the preset tables
5. Close the SET PRESETS pop up window by pressing the HIDE PRESETS button
6. Changes are now completed and the system will respond the new preset tables

6. Glossary

AGL	Airfield Ground Lighting
ALCS	Airfield Lighting Control System
ATCT	Air Traffic Control Tower
Miscellaneous I/O	Control and monitoring to all auxiliary equipment such as Apron Lights, Beacon, Windcone
CCR	Constant Current Regulator
CSS	Circuit Selector Switch
Ethernet	is a family of frame-based computer networking technologies for local area networks
HMI	Human/Machine Interface
GUI	Graphical User Interface
LED	Light Emitting Diode
PLC	Programmable Logic Controller
Modem	Device that modulates an analog carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information.
SHDSL	Single-Pair High-speed Digital Subscriber Line (SHDSL) is a form of DSL, a data communications technology that enables faster data transmission over copper lines